

FANUC AC SPINDLE MOTOR α *i* series

DESCRIPTIONS

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Should you wish to export or re-export these products, please contact FANUC for advice.

In this manual we have tried as much as possible to describe all the various matters.

However, we cannot describe all the matters which must not be done, or which cannot be done, because there are so many possibilities.

Therefore, matters which are not especially described as possible in this manual should be regarded as "impossible".

SAFETY PRECAUTIONS

This "Safety Precautions" section describes the precautions which must be observed to ensure safety when using FANUC spindle motors.

Users of any spindle motor model are requested to read this manual carefully before using the spindle motor.

The users are also requested to read this manual carefully and understand each function of the motor for correct use.

The users are basically forbidden to do any behavior or action not mentioned in this manual. They are invited to ask FANUC previously about what behavior or action is prohibited.

For matters that are not described in this manual, a machine must be designed and assembled in accordance with EN60204-1 to ensure the safety of the machine and compliance with European specifications. For details, refer to the specification.

This product is manufactured under strict quality control. To apply this product to a facility expected to cause a serious accident or damage due to a failure in this product, install a safety device.

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DEFINITION OF WARNING, CAUTION, AND NOTE

This manual includes safety precautions for protecting the user and preventing damage to the machine. Precautions are classified into Warning and Caution according to their bearing on safety. Also, supplementary information is described as a Note. Read the Warning, Caution, and Note thoroughly before attempting to use the machine.



WARNING

Applied when there is a danger of the user being injured or when there is a damage of both the user being injured and the equipment being damaged if the approved procedure is not observed.



CAUTION

Applied when there is a danger of the equipment being damaged, if the approved procedure is not observed.

NOTE

The Note is used to indicate supplementary information other than Warning and Caution.

- Read this manual carefully, and store it in a safe place.

WARNING

WARNING

- **Be safely dressed when handling a motor.**

Wear safety shoes or gloves when handling a motor as you may get hurt on any edge or protrusion on it or electric shocks.

- **Use a crane or lift to move a motor from one place to another.**

A motor is heavy. If you lift the motor by hand, you may get a backache, or you may be seriously injured when you drop the motor. A suitable crane or lift must be used to move the motor. (For the weight of motors, refer to this manual.)

When moving a motor using a crane or lift, use a hanging bolt if the motor has a corresponding tapped hole, or textile rope if it has no tapped hole. If a motor is attached with a machine or any other heavy stuff, do not use a hanging bolt to move the motor as the hanging bolt and/or motor may get broken.

- **Before starting to connect a motor to electric wires, make sure they are isolated from an electric power source.**

A failure to observe this caution is very dangerous because you may get electric shocks.

- **Be sure to secure power wires and short-bars.**

If operation is performed with a terminal loose, the terminal block may become abnormally hot, possibly causing a fire. Also, the terminal may become disconnected, causing a ground fault or short-circuit, and possibly giving you electric shocks. See the section in this manual that gives the tightening torque for attaching power wires and short-bars to the terminal block.

- **Be sure to ground a motor frame.**

To avoid electric shocks, be sure to connect the grounding terminal in the terminal box to the grounding terminal of the machine.

- **Do not ground a motor power wire terminal or short-circuit it to another power wire terminal.**

A failure to observe this caution may cause electric shocks or a burned wiring.

* Some motors require a special connection such as a winding switching. Refer to their respective motor specification manuals for details.

- **Do not supply the power to the motor while any terminal is exposed.**

A failure to observe this caution is very dangerous because you may get electric shocks if your body or any conductive stuff touches an exposed terminal.

- **Do not bring any dangerous stuff near a motor.**

Motors are connected to a power line, and may get hot. If a flammable is placed near a motor, it may be ignited, catch fire, or explode.

- **If an alarm is issued, the spindle may coast.**

If an alarm is issued during spindle operation, the spindle may coast. Do not get close to the spindle or touch it until it is decelerated and stopped by mechanical friction load because the stop command and emergency stop are disabled while the spindle is coasting.

⚠ WARNING**- Do not get close to a rotary section of a motor when it is rotating.**

You may get your clothes or fingers caught in a rotary section, and may be injured. Before starting a motor, ensure that there is no stuff that can fly away (such as a key) on the motor.

Note that a motor with a through hole has a protruding shaft at its rear side and the shaft also rotates.

- Do not insert your finger or a stick into the fan motor.

A cover is mounted on the fan motor, but a stick may get inside it. When the fan is rotating, inserting your finger or a stick may injure you.

- Do not touch a motor with a wet hand.

A failure to observe this caution is very dangerous because you may get electric shocks.

- Before touching a motor, shut off the power to it.

Even if a motor is not rotating, there may be a voltage across the terminals of the motor.

Especially before touching a power supply connection, take sufficient precautions.

Otherwise you may get electric shocks.

- A voltage is applied for a while after the power is shut off. Before touching a motor, be sure to check 0 V.

There is a high voltage across power terminals for a while after the power is shut off. Do not touch a motor or connect the motor to another device before checking the voltage. Otherwise you may get electric shocks or the motor may get damaged. Be sure to check that the voltage is lowered to 0 V, then touch the motor.

- To drive a motor, use a specified amplifier and parameters.

If a motor is driven with a wrong combination of an amplifier and parameters, the motor may exhibit abnormal behavior, such as runaway or excessive torque output, possibly causing damage to the motor and machine. There also is a danger that workpieces, tools, or other objects may fly away due to excessive rotation, possibly injuring the user.

- Before driving a motor, be sure to secure it.

If a motor is driven without being secured, it may roll over during acceleration or deceleration, injuring the user.

- To drive a liquid-cooled motor, be sure to cool the motor with coolant.

If a motor is driven with a sealed cooling line while the coolant is remaining inside, inner pressure may increase by temperature rise, possibly causing damage to the motor. There is also a danger that motor parts may fly away.

CAUTION

CAUTION

- **Do not touch a motor when it is running or immediately after it stops.**
A motor may get hot when it is running. Do not touch the motor before it gets cool enough. Otherwise, you may get burned.
- **Be careful not get your hair or cloths caught in a fan.**
Be careful especially for a fan used to generate an inward air flow.
Be careful also for a fan even when the motor is stopped, because it continues to rotate while the amplifier is turned on.
- **FANUC spindle motors are designed for use with machine tool spindles. Do not use them for any other purpose.**
If a FANUC motor is used for an unintended purpose, it may cause an unexpected symptom or trouble. If you want to use a motor for an unintended purpose, previously consult with FANUC.
- **Ensure that a base or frame on which a motor is mounted is strong enough.**
Motors are heavy. If a base or frame on which a motor is mounted is not strong enough, it is impossible to achieve the required precision.
- **Ensure that motors and related components are mounted securely.**
If a motor or its component slips out of place or comes off when the motor is running, it is very dangerous.
- **Be sure to connect motor cables correctly.**
An incorrect connection of a cable cause abnormal heat generation, equipment malfunction, or failure. Always use a cable with an appropriate current carrying capacity (or thickness). For how to connect cables to motors, refer to their respective specification manuals.
- **Ensure that motors are cooled if they are those that require forcible cooling.**
If a motor that requires forcible cooling is not cooled normally, it may cause a failure or trouble. For a fan-cooled motor, ensure that it is not clogged or blocked with dust and dirt. For a liquid-cooled motor, ensure that the amount of the liquid is appropriate and that the liquid piping is not clogged. For both types, perform regular cleaning and inspection.
- **When attaching a component having inertia, such as a pulley, to a motor, ensure that any imbalance between the motor and component is minimized.**
If there is a large imbalance, the motor may vibrates abnormally, resulting in the motor being broken.
- **Be sure to attach a key to a motor with a keyed shaft.**
If a motor with a keyed shaft runs with no key attached, it may impair torque transmission or cause imbalance, resulting in the motor being broken. With the αi series, a shaft with no key is used as standard.
- **Do not step or sit on a motor.**
If you step or sit on a motor, it may get deformed or broken. Do not put a motor on another unless they are in packages.

⚠ CAUTION

- **When storing a motor, put it in a dry (non-condensing) place at room temperature (0 to 40 °C).**

If a motor is stored in a humid or hot place, its components may get damaged or deteriorated. In addition, keep a motor in such a position that its shaft is held horizontal and its terminal box is at the top.

- **Do not apply shocks to a motor or cause scratches to it.**

If a motor is subjected to shocks or is scratched, its components may be adversely affected, resulting in normal operation being impaired. Be very careful when handling plastic portions, sensors, and windings, because they are very liable to break. Especially, avoid lifting a motor by pulling its plastic portion, winding, or power cable.

- **Do not conduct dielectric strength or insulation test for a sensor.**

Such a test can damage elements in the sensor.

- **Do not disassemble a motor.**

Disassembling a motor may cause a failure or trouble in it.

If disassembly is in need because of maintenance or repair, please contact a service representative of FANUC.

- **Do not modify a motor.**

Do not modify a motor unless directed by FANUC. Modifying a motor may cause a failure or trouble in it.

- **Use a motor under an appropriate environmental condition.**

Using a motor in an adverse environment may cause a failure or trouble in it. Refer to this manual for details of the operating and environmental conditions for motors.

- **Do not apply a commercial power source voltage directly to a motor.**

Applying a commercial power source voltage directly to a motor may result in its windings being burned. Be sure to use a specified amplifier for supplying voltage to the motor.

NOTE

NOTE

- **Do not remove a nameplate from a motor.**

If a nameplate comes off, be careful not to lose it. If the nameplate is lost, the motor becomes unidentifiable, resulting in maintenance becoming impossible.

- **When testing the winding or insulation resistance of a motor, satisfy the conditions stipulated in IEC34.**

Testing a motor under a condition severer than those specified in IEC34 may damage the motor.

- **For a motor with a terminal box, make a conduit hole for the terminal box in a specified position.**

When making a conduit hole, be careful not to break or damage unspecified portions. Refer to an applicable specification manual.

- **Before using a motor, measure its winding and insulation resistances, and make sure they are normal.**

Especially for a motor that has been stored for a prolonged period of time, conduct these checks. A motor may deteriorate depending on the condition under which it is stored or the time during which it is stored. For the winding resistances of motors, refer to the appendix of this manual, or ask FANUC. For insulation resistances, see the following table.

- **To use a motor as long as possible, perform periodic maintenance and inspection for it, and check its winding and insulation resistances.**

Note that extremely severe inspections (such as dielectric strength tests) of a motor may damage its windings. For the winding resistances of motors, refer to the appendix of this specification manual, or ask FANUC. For insulation resistances, see the following table.

MOTOR INSULATION RESISTANCE MEASUREMENT

Measure an insulation resistance between each winding and motor frame using an insulation resistance meter (500 VDC). Judge the measurements according to the following table.

Insulation resistance	Judgment
100 MΩ or higher	Acceptable
10 to 100 MΩ	The winding has begun deteriorating. There is no problem with the performance at present. Be sure to perform periodic inspection.
1 to 10 MΩ	The winding has considerably deteriorated. Special care is in need. Be sure to perform periodic inspection.
Lower than 1 MΩ	Unacceptable. Replace the motor.

CAUTION LABEL

The following label is attached to the motor.

Attach this label to a prominent place on the motor to call attention to the user.



Heat caution label
(compliance with the IEC
standard)

Heat caution label

Since the motor is heated to a high temperature during operation or immediately after a stop, touching the motor may cause a burn.

So, attach this label to a prominent place to call attention when the surface is exposed and may be touched.

Remark:

The mark of this label conforms to the IEC standard, which is a global standard.

The mark has the meaning of heat caution, so the description is omitted.

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PREFACE

The models covered by this manual, and their abbreviations are:

Series	Model
<i>αiL</i> series 200V type	<i>αiL</i> 0.5/10000, <i>αiL</i> 0.5/15000, <i>αiL</i> 1/10000, <i>αiL</i> 1/15000, <i>αiL</i> 1/24000, <i>αiL</i> 1.5/10000, <i>αiL</i> 1.5/20000, <i>αiL</i> 2/10000, <i>αiL</i> 2/20000, <i>αiL</i> 3/10000, <i>αiL</i> 3/12000, <i>αiL</i> 3/15000, <i>αiL</i> 6/10000, <i>αiL</i> 6/12000, <i>αiL</i> 6/15000, <i>αiL</i> 8/8000, <i>αiL</i> 8/10000, <i>αiL</i> 8/12000, <i>αiL</i> 12/8000, <i>αiL</i> 12/12000, <i>αiL</i> 15/8000, <i>αiL</i> 15/12000, <i>αiL</i> 18/8000, <i>αiL</i> 18/12000, <i>αiL</i> 22/8000, <i>αiL</i> 22/12000, <i>αiL</i> 30/7000, <i>αiL</i> 40/7000, <i>αiL</i> 50/5000
<i>αiL</i> series 400V type	<i>αiL</i> 0.5/10000HV, <i>αiL</i> 1/10000HV, <i>αiL</i> 1.5/10000HV, <i>αiL</i> 2/10000HV, <i>αiL</i> 2/20000HV, <i>αiL</i> 3/10000HV, <i>αiL</i> 6/10000HV, <i>αiL</i> 8/8000HV, <i>αiL</i> 8/12000HV, <i>αiL</i> 12/8000HV, <i>αiL</i> 15/8000HV, <i>αiL</i> 15/10000HV, <i>αiL</i> 22/8000HV, <i>αiL</i> 22/10000HV, <i>αiL</i> 30/7000HV, <i>αiL</i> 40/7000HV, <i>αiL</i> 50/5000HV, <i>αiL</i> 60/5000HV, <i>αiL</i> 75/5000HV, <i>αiL</i> 100/5000HV, <i>αiL</i> 150/5000HV
<i>αiS</i> series 400V type	<i>αiS</i> 2000/2000HV
<i>αiP</i> series 200V type	<i>αiP</i> 12/6000, <i>αiP</i> 12/8000, <i>αiP</i> 15/6000, <i>αiP</i> 15/8000, <i>αiP</i> 18/6000, <i>αiP</i> 18/8000, <i>αiP</i> 22/6000, <i>αiP</i> 22/8000, <i>αiP</i> 30/6000, <i>αiP</i> 40/6000, <i>αiP</i> 50/6000, <i>αiP</i> 60/5000
<i>αiP</i> series 400V type	<i>αiP</i> 15/6000HV, <i>αiP</i> 15/8000HV, <i>αiP</i> 22/6000HV, <i>αiP</i> 22/8000HV, <i>αiP</i> 40/6000HV, <i>αiP</i> 50/6000HV, <i>αiP</i> 60/5000HV
<i>αiT</i> series 200V type	<i>αiT</i> 1/24000, <i>αiT</i> 1.5/20000, <i>αiT</i> 2/20000, <i>αiT</i> 3/12000, <i>αiT</i> 3/15000, <i>αiT</i> 6/12000, <i>αiT</i> 8/12000, <i>αiT</i> 8/15000, <i>αiT</i> 12/12000, <i>αiT</i> 15/10000, <i>αiT</i> 15/15000, <i>αiT</i> 22/10000
<i>αiT</i> series 400V type	<i>αiT</i> 1.5/20000HV, <i>αiT</i> 2/20000HV, <i>αiT</i> 3/12000HV, <i>αiT</i> 6/12000HV, <i>αiT</i> 8/12000HV, <i>αiT</i> 8/15000HV, <i>αiT</i> 15/10000HV, <i>αiT</i> 15/15000HV, <i>αiT</i> 22/10000HV
<i>αiL</i> series 200V type	<i>αiL</i> 8/20000, <i>αiL</i> 15/15000, <i>αiL</i> 26/15000
<i>αiL</i> series 400V type	<i>αiL</i> 8/20000HV, <i>αiL</i> 15/15000HV, <i>αiL</i> 26/15000HV

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ADDITIONAL INFORMATION

I. SPECIFICATIONS

JR AUTOMATION TECHNOLOGIES INC*
JDOWLING

1 LINEUP OF THE SERIES

1.1 MOTOR LINEUP

The FANUC AC Spindle Motor αi series consists of the series listed below with their features.

Series	Voltage	Continuous rated output kW	Feature	Example of applicable machine
$\alpha i I$	200V	0.55 to 45	Model that offers sufficient basic performance as the spindle of a machine tool	For Lathe and Machining center
	400V	0.55 to 150		
$\alpha i P$	200V	5.5 to 22	Model that achieves high torque in the low-speed zone	
	400V	7.5 to 22		
$\alpha i S$	400V	200	Model best suited to large size machine tools	
$\alpha i T$	200V	1.5 to 22	Model for direct spindle connection used with machining centers	For Machining center
	400V	1.5 to 22		
$\alpha i L$	200V	15 to 26	Liquid-cooled model for direct spindle connection used with high precision machining centers	
	400V	15 to 26		

Lineup for Spindle Motor αi series

- 200V type

Continuous rated output kW	αi series		αi P series	αi T series	αi L series
0.55	αi 0.5/10000	αi 0.5/15000			
1.1	αi 1/10000	αi 1/15000			
1.5	αi 1.5/10000	αi 1.5/20000		αi T 1.5/20000	
2.2	αi 2/10000	αi 1/24000 αi 2/20000		αi T 1/24000 αi T 2/20000	
3.7	αi 3/10000	αi 3/12000		αi T 3/12000	
5.5	αi 6/10000	αi 3/15000 αi 6/12000	αi P 12/6000 αi P 12/8000	αi T 3/15000 αi T 6/12000	
7.5	αi 8/8000	αi 6/15000 αi 8/12000	αi P 15/6000 αi P 15/8000	αi T 8/12000 αi T 8/15000	
9			αi P 18/ 6000 αi P 18/ 8000		
11	αi 12/8000	αi 12/12000	αi P 22/6000 αi P 22/ 8000	αi T 12/12000	
15	αi 15/8000	αi 15/12000	αi P 30/6000	αi T 15/10000 αi T 15/15000	αi L 8/20000
18.5	αi 18/8000	αi 18/12000	αi P 40/6000		αi L 15/15000
22	αi 22/8000	αi 22/12000	αi P 50/6000	αi T 22/10000	
26					αi L 26/15000
30	αi 30/7000		αi P 60/5000		
37	αi 40/7000				
45	αi 50/5000				

- 400V type

Continuous rated output kW	αi series		αi S series	αi P series	αi T series	αi L series
0.55	αi 0.5/10000HV					
1.1	αi 1/10000HV					
1.5	αi 1.5/10000HV				αi T 1.5/20000HV	
2.2	αi 2/10000HV	αi 2/20000HV			αi T 2/20000HV	
3.7	αi 3/10000HV				αi T 3/12000HV	
5.5	αi 6/10000HV				αi T 6/12000HV	
7.5	αi 8/8000HV	αi 8/12000HV		αi P 15/6000HV αi P 15/8000HV	αi T 8/12000HV αi T 8/15000HV	
9						
11	αi 12/8000HV			αi P 22/6000HV αi P 22/8000HV		
15	αi 15/8000HV	αi 15/10000HV			αi T 15/10000HV αi T 15/15000HV	αi L 8/20000HV
18.5				αi P 40/6000HV		αi L 15/15000HV
22	αi 22/8000HV	αi 22/10000HV		αi P 50/6000HV	αi T 22/10000HV	
26						αi L 26/15000HV
30	αi 30/7000HV			αi P 60/5000HV		
37	αi 40/7000HV					
45	αi 50/5000HV					
60	αi 60/5000HV					
75	αi 75/5000HV					
100	αi 100/5000HV					
150	αi 150/5000HV					
200			αi S 2000/2000HV			

 Model supporting winding switching

1.2 FEATURES

(1) αi L series, αi L π series

The FANUC AC spindle motor αi L series and αi L π series are ideal for CNC machine tool spindles.

Features

- The motor is compact, light-weight, and furnished with digital control for much higher performance.
- The rotor inertia of the motor is made smaller to shorten the acceleration/deceleration speed. Further, optimum control enables highly efficient cutting.
- The built-in αi M sensor or αi MZ sensor enables synchronous spindle and Z-axis feed and rigid tapping.
- Improvement in machining of the motor housing enhances the accuracy of the mounting part.
- Waterproof and pressure-proof design conforming to the international standard (IEC) is employed to improve reliability and make it resistant to most environments.

(2) αi S series

The FANUC AC spindle motor αi S series is suited to large size machine tool spindles.

Features

- The spindle motor line-up is reinforced by adding a large output 200 kW model.
- High torque 2000 Nm is achieved as continuous rated torque at low speed.
- High torque with a compact size is achieved by neodymium magnets.
- Further output power is enabled by the multi motors drive technology.

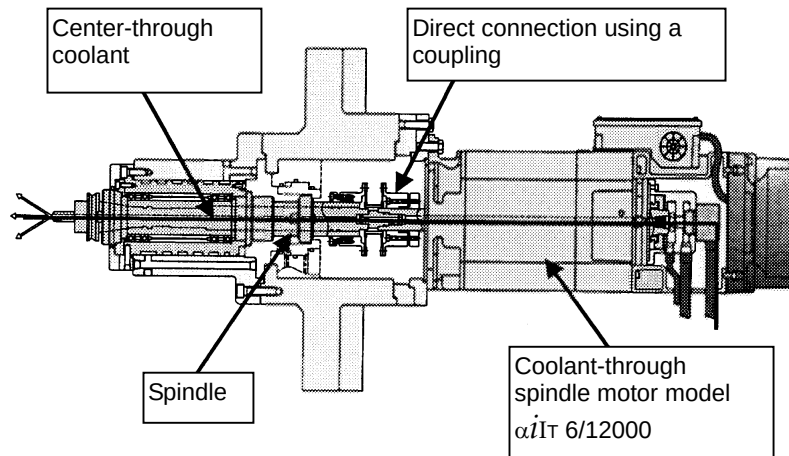
(3) αi L π series

Features

By directly connecting the spindle with a spindle motor (hollow shaft), higher-speed spindle rotation and highly efficient center-through coolant machining are enabled. A spindle of direct motor connection type is connected with a motor by using a coupling, so that this type of spindle has several advantages. For example, transfer of heat produced by the motor to the spindle is minimized, and each of the motor and spindle can be maintained separately.

Item of comparison	Belt driving, gear driving	Direct motor connection
Spindle rotation speed	-	Higher
Spindle vibration	-	Lower
Spindle heat-up	-	Lower

Example of spindle of direct motor connection structure



Features of a spindle of direct motor connection type

- <1> Higher-speed spindle rotation can be achieved.
- <2> Transfer of heat produced by the motor to the spindle is minimized.
- <3> Each of the motor and spindle can be maintained separately.

Caution

- (1) For attachment of this type of motor to a spindle, only coupling-based direct connection with the spindle is allowed. When a spindle of direct motor connection type is used, fretting can occur with the motor shaft in a short-time operation, or the bearing of the spindle or motor can be damaged if the spindle and motor are not aligned precisely. As the method of quantitatively determining whether a spindle and motor are aligned precisely, FANUC recommends the user to measure the vibration acceleration of the motor after connected with the spindle. For details, see Subsection 3.3.1, "Points about the Direct Connection Structure of Spindle Motors with a Through Hole" in Part III.
- (2) Do not apply a thrust load onto the motor shaft. Select a coupling that does not apply a thrust load onto the motor shaft due to a cause such as coolant pressure when the temperature rises or cutting is performed.

(4)αiIL series

The FANUC AC spindle motor αiIL series is liquid-cooled motors. They feature low temperature rise, high-speed, high torque at low speed, and low vibration.

Coupling an αiIL series 200V type motor directly to the spindle of a machining center makes it possible to realize gear-less, high-precision operation.

The motor shaft has a through hole, through which center-through coolant can be passed.

Features

- Thermal conduction to the spindle head and heat radiation to the machine column are reduced by cooling the front flange and motor case.
- A high torque at low rotation speed is realized by achieving high-efficient cooling based on liquid coolant and employing an output switching function (Y-Y switching).
- High-speed rotation is supported with grease-based lubrication.
- A vibration class of V3 (rotation component) is attained by strict rotor balance adjustments.
- The motor shaft is provided with a through hole for center-through coolant.
- The αiMZ sensor signal incorporated in the motor can be used in performing orientation and rigid tapping, so there is no need to mount a detector on the machine tool.

2 ORDERING SPECIFICATION NUMBER

The ordering specification number of the FANUC AC spindle motor αi series adheres to the notation below.

A06B-□□□□-B△○▽#abcd

□□□□ An ordering specification number are described on the tables after next page.

* Every combination doesn't exist.

- △ 1 : Flange mounting type
 2 : Foot mounting type
 5 : Flange mounting type(used in case of αi 12/8000 - αi 22/8000)
 6 : Foot mounting type(used in case of αi 12/8000 - αi 22/8000)

- 0 : Standard, without keyway
 1 : High-speed, without keyway
 2 : High-precision and low-vibration, without keyway
 3 : High-speed, high-precision, and low-vibration, without keyway
 4 : Ultrahigh-speed, high-precision, and low-vibration, without keyway
 5 : Standard, with keyway
 * Not all models have this number.

- ▽ 0 : αi M sensor, Rear exhaust fan
 1 : αi M sensor, Front exhaust fan
 2 : αi M sensor, without cooling fan
 3 : αi MZ sensor, Rear exhaust fan
 4 : αi MZ sensor, Front exhaust fan
 5 : αi MZ sensor, without cooling fan
 * Not all models have this number.

abcd An ordering specification number are described on the tables after next page.

* Not all models have this number.

The following ordering specification number adheres to the notation below only for the αi 100/5000HV.

A06B-1518-B△○▽#0302

- △○▽ 900 : Foot flange mounting type, without keyway, αi MZ sensor, rear exhaust fan
 901 : Foot flange mounting type, with keyway, αi MZ sensor, rear exhaust fan
 902 : Foot flange mounting type, without keyway, αi MZ sensor, front exhaust fan
 903 : Foot flange mounting type, with keyway, αi MZ sensor, front exhaust fan

The following ordering specification number adheres to the notation below for the αi S 2000/2000HV.

A06B-0091-B△○▽#0058

- △○▽ 140 : Without keyway, pulsecoder αi A1000, front exhaust fan

2. ORDERING

SPECIFICATION NUMBER

SPECIFICATION

B-65272EN/08

The following lists the combinations of selectable numbers in symbols in specification Nos.

(1) α iI series

200V type A06B-□□□□-B△○▽#abcd

Symbol in specification No. Model name	□□□□	△				○				▽						abcd	Shaft end seal
		1	2	5	6	0	2	3	5	0	1	2	3	4	5		
α iI 0.5/10000	1401	○	-	-	-	○	-	-	○	-	-	○	-	-	○	0P02	Oil seal
		○	-	-	-	-	○	-	-	-	-	○	-	-	○	0P22	Oil seal
α iI 0.5/15000	1400	○	-	-	-	○	-	-	-	-	-	○	-	-	○	0P01	Simplified labyrinth
		○	-	-	-	○	-	-	-	-	-	○	-	-	○	0P03	Oil seal
α iI 1/10000	1402	○	-	-	-	○	-	-	○	○	○	-	○	○	-	0P02	Oil seal
		-	○	-	-	○	-	-	○	○	○	-	○	○	-	0P09	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P22	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0P29	No seal
α iI 1/15000	1422	○	-	-	-	-	○	-	-	-	-	-	○	-	-	-	Simplified labyrinth
α iI 1/24000	1420	○	-	-	-	-	○	-	-	-	-	-	○	-	-	FS21	Simplified labyrinth
α iI 1.5/10000	1403	○	-	-	-	○	-	-	○	○	○	-	○	○	-	0P02	Oil seal
		-	○	-	-	○	-	-	○	○	○	-	○	○	-	0P09	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P22	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0P29	No seal
α iI 1.5/20000	1423	○	-	-	-	-	○	-	-	-	-	-	○	-	-	0S21	Simplified labyrinth
α iI 2/10000	1404	○	-	-	-	○	-	-	○	○	○	-	○	○	-	0P02	Oil seal
		-	○	-	-	○	-	-	○	○	○	-	○	○	-	0P09	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P22	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0P29	No seal
α iI 2/20000	1424	○	-	-	-	-	○	-	-	-	-	-	○	-	-	0S21	Simplified labyrinth
α iI 3/10000	1405	○	-	-	-	○	-	-	○	○	○	-	○	○	-	0P02	Oil seal
		-	○	-	-	○	-	-	○	○	○	-	○	○	-	0P09	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P22	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0P29	No seal
α iI 3/12000	1425	○	-	-	-	-	○	-	-	-	-	-	○	-	-	0S21	Simplified labyrinth
α iI 3/15000	1419	○	-	-	-	-	○	-	-	-	-	-	○	-	-	0S21	Simplified labyrinth
α iI 6/10000	1406	○	-	-	-	○	-	-	○	○	○	-	○	○	-	0P02	Oil seal
		-	○	-	-	○	-	-	○	○	○	-	○	○	-	0P09	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P22	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0P29	No seal
α iI 6/12000	1426	○	-	-	-	○	-	-	-	○	○	-	○	○	-	0P01	Simplified labyrinth
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P21	Simplified labyrinth
α iI 6/15000	1433	○	-	-	-	-	○	-	-	-	-	-	○	-	-	0S21	Simplified labyrinth
α iI 8/8000	1407	○	-	-	-	○	-	-	○	○	○	-	○	○	-	0P02	Oil seal
		-	○	-	-	○	-	-	○	○	○	-	○	○	-	0P09	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P22	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0P29	No seal

Symbol in specification No. Model name	□□□□	△				○				▽						abcd	Shaft end seal
		1	2	5	6	0	2	3	5	0	1	2	3	4	5		
αiI 8/10000	1427	○	-	-	-	○	-	-	-	○	○	-	○	○	-	0P01	Simplified labyrinth
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P21	Simplified labyrinth
αiI 8/12000	1427	○	-	-	-	-	-	○	-	○	-	-	○	-	-	0R21	Simplified labyrinth
αiI 12/8000	1408	-	-	○	-	○	-	-	○	○	○	-	○	○	-	0R02	Oil seal
		-	-	-	○	○	-	-	○	○	○	-	○	○	-	0R09	No seal
		-	-	○	-	-	○	-	-	○	-	-	○	-	-	0R22	Oil seal
		-	-	-	○	-	○	-	-	○	-	-	○	-	-	0R29	No seal
αiI 12/12000	1428	○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P21	Simplified labyrinth
αiI 15/8000	1409	-	-	○	-	○	-	-	○	○	○	-	○	○	-	0R02	Oil seal
		-	-	-	○	○	-	-	○	○	○	-	○	○	-	0R09	No seal
		-	-	○	-	-	○	-	-	○	-	-	○	-	-	0R22	Oil seal
		-	-	-	○	-	○	-	-	○	-	-	○	-	-	0R29	No seal
αiI 15/12000	1429	○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P21	Simplified labyrinth
αiI 18/8000	1410	-	-	○	-	○	-	-	○	○	○	-	○	○	-	0R02	Oil seal
		-	-	-	○	○	-	-	○	○	○	-	○	○	-	0R09	No seal
		-	-	○	-	-	○	-	-	○	-	-	○	-	-	0R22	Oil seal
		-	-	-	○	-	○	-	-	○	-	-	○	-	-	0R29	No seal
αiI 18/12000	1430	○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P21	Simplified labyrinth
αiI 22/8000	1411	-	-	○	-	○	-	-	○	○	○	-	○	○	-	0R02	Oil seal
		-	-	-	○	○	-	-	○	○	○	-	○	○	-	0R09	No seal
		-	-	○	-	-	○	-	-	○	-	-	○	-	-	0R22	Oil seal
		-	-	-	○	-	○	-	-	○	-	-	○	-	-	0R29	No seal
αiI 22/12000	1431	○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P21	Simplified labyrinth
αiI 30/7000	1412	○	-	-	-	○	-	-	○	○	○	-	○	○	-	0P02	Oil seal
		-	○	-	-	○	-	-	○	○	○	-	○	○	-	0P09	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P22	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0P29	No seal
αiI 40/7000	1413	○	-	-	-	○	-	-	○	○	○	-	○	○	-	0P02	Oil seal
		-	○	-	-	○	-	-	○	○	○	-	○	○	-	0P09	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P22	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0P29	No seal
αiI 50/5000	1414	○	-	-	-	○	-	-	○	○	○	-	○	○	-	0P02	Oil seal
		-	○	-	-	○	-	-	○	○	○	-	○	○	-	0P09	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P22	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0P29	No seal

2. ORDERING

SPECIFICATION NUMBER

SPECIFICATION

B-65272EN/08

400V type A06B-□□□□-B△○▽#abcd

Symbol in specification No. Model name	□□□□	△				○				▽						abcd	Shaft end seal
		1	2	5	6	0	2	3	5	0	1	2	3	4	5		
αiI 0.5/10000HV	1501	○	-	-	-	○	-	-	○	-	-	○	-	-	○	-	Oil seal
		○	-	-	-	-	○	-	-	-	-	○	-	-	○	0022	Oil seal
αiI 1/10000HV	1502	○	-	-	-	○	-	-	○	○	○	-	○	○	-	-	Oil seal
		-	○	-	-	○	-	-	○	○	○	-	○	○	-	-	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0022	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0029	No seal
αiI 1.5/10000HV	1503	○	-	-	-	○	-	-	○	○	○	-	○	○	-	-	Oil seal
		-	○	-	-	○	-	-	○	○	○	-	○	○	-	-	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0022	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0029	No seal
αiI 2/10000HV	1504	○	-	-	-	○	-	-	○	○	○	-	○	○	-	-	Oil seal
		-	○	-	-	○	-	-	○	○	○	-	○	○	-	-	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0022	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0029	No seal
αiI 2/20000HV	1524	○	-	-	-	-	○	-	-	-	-	-	○	-	-	0121	Simplified labyrinth
αiI 3/10000HV	1505	○	-	-	-	○	-	-	○	○	○	-	○	○	-	-	Oil seal
		-	○	-	-	○	-	-	○	○	○	-	○	○	-	-	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0022	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0029	No seal
αiI 6/10000HV	1506	○	-	-	-	○	-	-	○	○	○	-	○	○	-	-	Oil seal
		-	○	-	-	○	-	-	○	○	○	-	○	○	-	-	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P02	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0P09	No seal
αiI 8/8000HV	1507	○	-	-	-	-	○	-	-	○	-	-	○	-	-	-	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	-	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P22	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0P29	No seal
αiI 8/12000HV	1527	○	-	-	-	-	-	○	-	○	-	-	○	-	-	0121	Simplified labyrinth
αiI 12/8000HV	1508	-	-	○	-	○	-	-	○	○	○	-	○	○	-	-	Oil seal
		-	-	-	○	○	-	-	○	○	○	-	○	○	-	-	No seal
		-	-	○	-	-	○	-	-	○	-	-	○	-	-	0R22	Oil seal
		-	-	-	○	-	○	-	-	○	-	-	○	-	-	0R29	No seal
αiI 15/8000HV	1509	-	-	○	-	○	-	-	○	○	○	-	○	○	-	-	Oil seal
		-	-	-	○	○	-	-	○	○	○	-	○	○	-	-	No seal
		-	-	○	-	-	○	-	-	○	-	-	○	-	-	0R22	Oil seal
		-	-	-	○	-	○	-	-	○	-	-	○	-	-	0R29	No seal
αiI 15/10000HV	1529	○	-	-	-	○	-	-	-	○	-	-	○	-	-	-	Simplified labyrinth
αiI 22/8000HV	1511	-	-	○	-	○	-	-	○	○	○	-	○	○	-	-	Oil seal
		-	-	-	○	○	-	-	○	○	○	-	○	○	-	-	No seal
		-	-	○	-	-	○	-	-	○	-	-	○	-	-	0V22	Oil seal
		-	-	-	○	-	○	-	-	○	-	-	○	-	-	0V29	No seal
αiI 22/10000HV	1531	○	-	-	-	○	-	-	-	○	-	-	○	-	-	-	Simplified abyrinth
αiI 30/7000HV	1512	○	-	-	-	○	-	-	○	○	○	-	○	○	-	-	Oil seal
		-	○	-	-	○	-	-	○	○	○	-	○	○	-	-	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P22	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0P29	No seal

Symbol in specification No. Model name	□□□□	△				○				▽						abcd	Shaft end seal
		1	2	5	6	0	2	3	5	0	1	2	3	4	5		
αiI 40/7000HV	1513	○	-	-	-	○	-	-	○	○	○	-	○	○	-	0P02	Oil seal
		-	○	-	-	○	-	-	○	○	○	-	○	○	-	0P09	No seal
		○	-	-	-	-	○	-	-	○	-	-	○	-	-	0P22	Oil seal
		-	○	-	-	-	○	-	-	○	-	-	○	-	-	0P29	No seal

Symbol in specification No.	□□□□	△				○			▽						abcd	Shaft end seal
		1	2	8	9	0	2	5	0	1	2	3	4	5		
Model name <i>αiI</i> 50/5000HV	1514	○	-	-	-	○	-	○	○	○	-	○	○	-	-	Oil seal
		-	○	-	-	○	-	○	○	○	-	○	○	-	-	No seal
		○	-	-	-	-	○	-	○	-	-	○	-	-	0022	Oil seal
		-	○	-	-	-	○	-	○	-	-	○	-	-	0029	No seal
Model name <i>αiI</i> 60/5000HV	1515	○	-	-	-	○	-	○	○	○	-	○	○	-	0102	Oil seal
		-	○	-	-	○	-	○	○	○	-	○	○	-	0109	No seal
		○	-	-	-	-	○	-	○	-	-	○	-	-	0122	Oil seal
		-	○	-	-	-	○	-	○	-	-	○	-	-	0129	No seal
Model name <i>αiI</i> 75/5000HV	1516	-	-	○	-	○	-	○	-	-	-	○	○	-	-	Oil seal
Model name <i>αiI</i> 100/5000HV (*1)	1518	-	-	-	○	○	-	-	○	○	○	○	-	-	0302	Oil seal
Model name <i>αiI</i> 150/5000HV	1532	-	-	○	-	○	-	○	-	-	-	○	-	-	-	Oil seal

(*1) The specification number for the *αiI* 100/5000HV is exceptional. See page 7.

(2) *αiS* series

400V type A06B-□□□□-B△○▽#abcd

Symbol in specification No.	□□□□	△	○	▽	abcd	Shaft end seal
		1	4	0		
Model name <i>αiS</i> 2000/2000HV	0091	○	○	○	0058	Oil seal

(*1) The specification number for the *αiS* 2000/2000HV is exceptional. See page 7.

(3) *αiIp* series

200V type A06B-□□□□-B△○▽#abcd

Symbol in specification No.	□□□□	△				○				▽				abcd	Shaft end seal
		1	2	5	6	0	1	2	5	0	1	3	4		
Model name <i>αiIp</i> 12/6000	1448	○	-	-	-	○	-	-	○	○	○	○	○	0P02	Oil seal
		-	○	-	-	○	-	-	○	○	○	○	○	0P09	No seal
		○	-	-	-	-	-	○	-	○	-	○	-	0P22	Oil seal
		-	○	-	-	-	-	○	-	○	-	○	-	0P29	No seal
Model name <i>αiIp</i> 12/8000	1448	○	-	-	-	-	○	-	-	○	-	○	-	0R01	Simplified labyrinth
Model name <i>αiIp</i> 15/6000	1449	○	-	-	-	○	-	-	○	○	○	○	○	0P02	Oil seal
		-	○	-	-	○	-	-	○	○	○	○	○	0P09	No seal
		○	-	-	-	-	-	○	-	○	○	○	○	0P22	Oil seal
		-	○	-	-	-	-	○	-	○	○	○	○	0P29	No seal
Model name <i>αiIp</i> 15/8000	1449	○	-	-	-	-	○	-	-	○	-	○	-	0R01	Simplified labyrinth

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B-65272EN/08

Symbol in specification No. Model name	□□□□	Δ				○				▽				abcd	Shaft end seal
		1	2	5	6	0	1	2	5	0	1	3	4		
αiIP 18/6000	1456	○	-	-	-	○	-	-	○	○	○	○	○	0P02	Oil seal
		-	○	-	-	○	-	-	○	○	○	○	○	0P09	No seal
		○	-	-	-	-	-	○	-	○	○	○	○	0P22	Oil seal
		-	○	-	-	-	-	○	-	○	○	○	○	0P29	No seal
αiIP 18/8000	1456	○	-	-	-	-	○	-	-	○	-	○	-	0R01	Simplified labyrinth
αiIP 22/6000	1451	○	-	-	-	○	-	-	○	○	○	○	○	0P02	Oil seal
		-	○	-	-	○	-	-	○	○	○	○	○	0P09	No seal
		○	-	-	-	-	-	○	-	○	○	○	○	0P22	Oil seal
		-	○	-	-	-	-	○	-	○	○	○	○	0P29	No seal
αiIP 22/8000	1451	○	-	-	-	-	○	-	-	○	-	○	-	0R01	Simplified labyrinth
αiIP 30/6000	1452	○	-	-	-	○	-	-	○	○	○	○	○	0P02	Oil seal
		-	○	-	-	○	-	-	○	○	○	○	○	0P09	No seal
		○	-	-	-	-	-	○	-	○	-	○	-	0P22	Oil seal
		-	○	-	-	-	-	○	-	○	-	○	-	0P29	No seal
αiIP 40/6000	1453	○	-	-	-	○	-	-	○	○	○	○	○	0P02	Oil seal
		-	○	-	-	○	-	-	○	○	○	○	○	0P09	No seal
		○	-	-	-	-	○	-	-	○	-	○	-	0P22	Oil seal
		-	○	-	-	-	○	-	-	○	-	○	-	0P29	No seal
αiIP 50/6000	1454	-	-	○	-	○	-	-	○	○	○	○	○	0P02	Oil seal
		-	-	-	○	○	-	-	○	○	○	○	○	0P09	No seal
		-	-	○	-	-	○	-	-	○	-	○	-	0P22	Oil seal
		-	-	-	○	-	○	-	-	○	-	○	-	0P29	No seal
αiIP 60/5000	1455	○	-	-	-	○	-	-	○	○	○	○	○	0102	Oil seal
		-	○	-	-	○	-	-	○	○	○	○	○	0109	No seal
		○	-	-	-	-	○	-	-	○	-	○	-	0122	Oil seal
		-	○	-	-	-	○	-	-	○	-	○	-	0129	No seal

400V type A06B-□□□□-BΔ○▽#abcd

Symbol in specification No. Model name	□□□□	Δ				○				▽				abcd	Shaft end seal
		1	2	5	6	0	1	2	5	0	1	3	4		
αiIP 15/6000HV	1549	○	-	-	-	○	-	-	○	○	○	○	○	-	Oil seal
		-	○	-	-	○	-	-	○	○	○	○	○	-	No seal
		○	-	-	-	-	-	○	-	○	-	○	-	0022	Oil seal
		-	○	-	-	-	-	○	-	○	-	○	-	0029	No seal
αiIP 15/8000HV	1549	○	-	-	-	-	○	-	-	○	-	○	-	-	Simplified labyrinth
αiIP 22/6000HV	1551	○	-	-	-	○	-	-	○	○	○	○	○	-	Oil seal
		-	○	-	-	○	-	-	○	○	○	○	○	-	No seal
		○	-	-	-	-	-	○	-	○	-	○	-	0022	Oil seal
		-	○	-	-	-	-	○	-	○	-	○	-	0029	No seal
αiIP 22/8000HV	1551	○	-	-	-	-	○	-	-	○	-	○	-	-	Simplified labyrinth

Symbol in specification No. Model name	□□□□	△				○				▽				abcd	Shaft end seal
		1	2	5	6	0	1	2	5	0	1	3	4		
αiIP 40/6000HV	1553	○	-	-	-	○	-	-	○	○	○	○	○	-	Oil seal
		-	○	-	-	○	-	-	○	○	○	○	○	-	No seal
		○	-	-	-	-	-	○	-	○	-	○	-	0022	Oil seal
		-	○	-	-	-	-	○	-	○	-	○	-	0029	No seal
αiIP 50/6000HV	1554	○	-	-	-	○	-	-	○	○	○	○	○	-	Oil seal
		-	○	-	-	○	-	-	○	○	○	○	○	-	No seal
		○	-	-	-	-	-	○	-	○	-	○	-	0022	Oil seal
		-	○	-	-	-	-	○	-	○	-	○	-	0029	No seal
αiIP 60/5000HV	1555	○	-	-	-	○	-	-	○	○	○	○	○	0102	Oil seal
		-	○	-	-	○	-	-	○	○	○	○	○	0109	No seal
		○	-	-	-	-	-	○	-	○	-	○	-	0122	Oil seal
		-	○	-	-	-	-	○	-	○	-	○	-	0129	No seal

(4) αiIT series

200V type A06B-□□□□-B△○▽#abcd

Symbol in specification No. Model name	□□□□	△		○		▽	abcd	haft end seal	Distance block (*1)	
		1	2	3	3				Distance block	Distance block with windows
αiIT 1/24000	1460	○	○	-	○		FS21	Simplified labyrinth	A06B-1463-K560	-
αiIT 1.5/20000	1463	○	○	-	○		0S21	Simplified labyrinth		
αiIT 2/20000	1464	○	○	-	○		0S21	Simplified labyrinth	A06B-1464-K560	A06B-1464-K580
αiIT 3/12000	1465	○	○	-	○		0S21	Simplified labyrinth		
αiIT 3/15000	1475	○	-	○	○		0U21	Simplified labyrinth		
αiIT 6/12000	1466	○	○	-	○		0P21	Simplified labyrinth	A06B-1466-K560	A06B-1466-K580
αiIT 8/12000	1467	○	○	-	○		0P21	Simplified labyrinth		
αiIT 8/15000	1477	○	-	○	○		0121	Simplified labyrinth		
αiIT 12/12000	1468	○	-	○	○		0R21	Simplified labyrinth	A06B-1469-K560	A06B-1469-K580
αiIT 15/10000	1469	○	○	-	○		0P21	Simplified labyrinth		
αiIT 15/15000	1479	○	-	○	○		0P21	Simplified labyrinth		
αiIT 22/10000	1471	○	○	-	○		0P21	Simplified labyrinth		

(*1) Order the distance block separately the main motor unit (Separately packed.)

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400V type A06B-□□□□-B△○▽#abcd

Symbol in specification No. Model name	□□□□	△ ○ ▽				abcd	Shaft end seal	Distance block (*1)	
		1	2	3	3			Distance block	Distance block with windows
αiLT 1.5/20000HV	1563	○	○	-	○	0121	Simplified labyrinth	A06B-1463-K560	-
αiLT 2/20000HV	1564	○	○	-	○	0121	Simplified labyrinth	A06B-1464-K560	A06B-1464-K580
αiLT 3/12000HV	1565	○	○	-	○	0021	Simplified labyrinth		
αiLT 6/12000HV	1566	○	○	-	○	0021	Simplified labyrinth	A06B-1466-K560	A06B-1466-K580
αiLT 8/12000HV	1567	○	○	-	○	0021	Simplified labyrinth		
αiLT 8/15000HV	1577	○	-	○	○	0121	Simplified labyrinth	A06B-1469-K560	A06B-1469-K580
αiLT 15/10000HV	1569	○	○	-	○	0021	Simplified labyrinth		
αiLT 15/15000HV	1579	○	-	○	○	0P21	Simplified labyrinth		
αiLT 22/10000HV	1571	○	○	-	○	0021	Simplified labyrinth		

(*1) Order the distance block separately the main motor unit (Separately packed.)

(5) αiL series

200V type A06B-□□□□-B△○▽#abcd

Symbol in specification No. Model name	□□□□	△ ○ ▽				abcd	Shaft end seal
		1	3	4	5		
αiL 8/20000	1497	○	-	○	○	0N21	Simplified labyrinth
αiL 15/15000	1495	○	○	-	○	0121	Simplified labyrinth
αiL 26/15000	1494	○	○	-	○	0121	Simplified labyrinth

400V type A06B-□□□□-B△○▽#abcd

Symbol in specification No. Model name	□□□□	△ ○ ▽				abcd	Shaft end seal
		1	3	4	5		
αiL 8/20000HV	1597	○	-	○	○	0N21	Simplified labyrinth
αiL 15/15000HV	1595	○	○	-	○	0121	Simplified labyrinth
αiL 26/15000HV	1594	○	○	-	○	0121	Simplified labyrinth

3 MOTOR SPECIFICATIONS

3.1 TERMS

To ensure consistency with our other models (servo motor α iS series, built-in spindle motor BiI series, etc.), this manual uses some terms and symbols that are different from those used before.

The following table shows the correspondence between the key terms and symbols of the previous version (Edition 07) of the Descriptions (B-65272EN) and those of this version.

Correspondence table

This version (Edition 08)		Previous version (Edition 07)		Unit (SI)	Description
Term	Symbol	Term	Symbol		
S1 continuous rated output	P_c	Continuous rated output	-	kW	Output capable of operating the motor continuously
S2 ○-minute rated output(*1)	-	○-minute rated output(*1)	-	kW	Output capable of operating the motor for ○ minutes at room temperature
Steady-state maximum output(*2)	P_{max}	Allowable overload capacity	-	kW	Maximum output in the steady state
Maximum output at acceleration for PS selection	-	Maximum output during acceleration	-	kW	Maximum output at acceleration. Data used to select a power supply (α iPS), and not a guaranteed value.
S1 continuous rated current	I_c	Continuous rated current	-	A(rms)	Maximum value of the current necessary for outputting the S1 rated output P_c
S2 ○-minute rated current(*1)	-	○-minute rated current(*1)	-	A(rms)	Maximum value of the current necessary for outputting the S2 ○-minute rated output
Moment of inertia	-	Inertia	-	kg·m ²	Amount representing the magnitude of the inertia of a rotating object. It represents the magnitude of the property to resist a change in rotation when that change is made. It is expressed by the product of the weight of a portion of the object and the square of the distance from the rotation axis to that portion.
Rotor moment of inertia or Moment of inertia of rotor	J_m	Rotor inertia	-	kg·m ²	Moment of inertia of the rotor of the motor
Load moment of inertia	-	Load inertia	-	kg·m ²	Moment of inertia coupled to the rotor

(*1) ○ is replaced by a time such as 15 or 30.

(*2) Guideline for the maximum output in rated power voltage, not a guaranteed value.

3.2 CURVES AND DATA SHEET

3.2.1 About Characteristic Curves and Data Sheet

The specifications of each motor are described by the characteristic curves and data sheet given below.

(1) Characteristic curves

As characteristic curves, "speed-output characteristics" and "speed-torque characteristics" are provided for each motor.

Speed-output characteristics

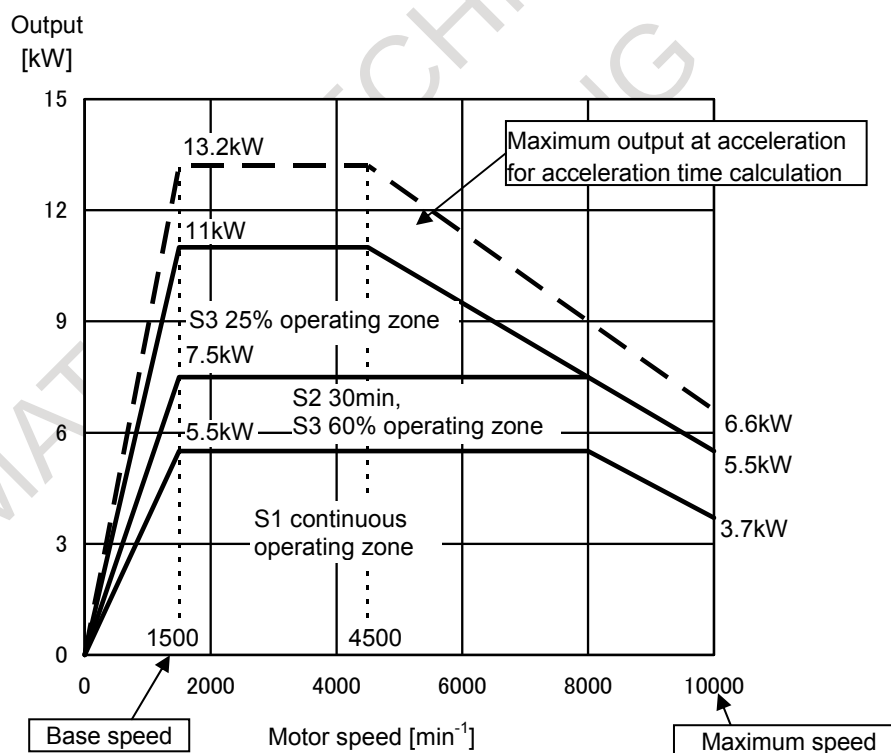
Speed-output characteristics show the relations between motor output and speed.

In the S1 continuous operating zone, the motor can be used continuously with any combination of speed and output.

The S2 $\bigcirc$ -minute operating zone is a zone in which the motor can be used at room temperature for the indicated time.

The S3 $\bigcirc$ % operating zone is a zone in which the motor can output the indicated percentage in a single cycle (10 minutes) in intermittent use.

A data sheet shows values when the input voltage is 200 V or 400V.

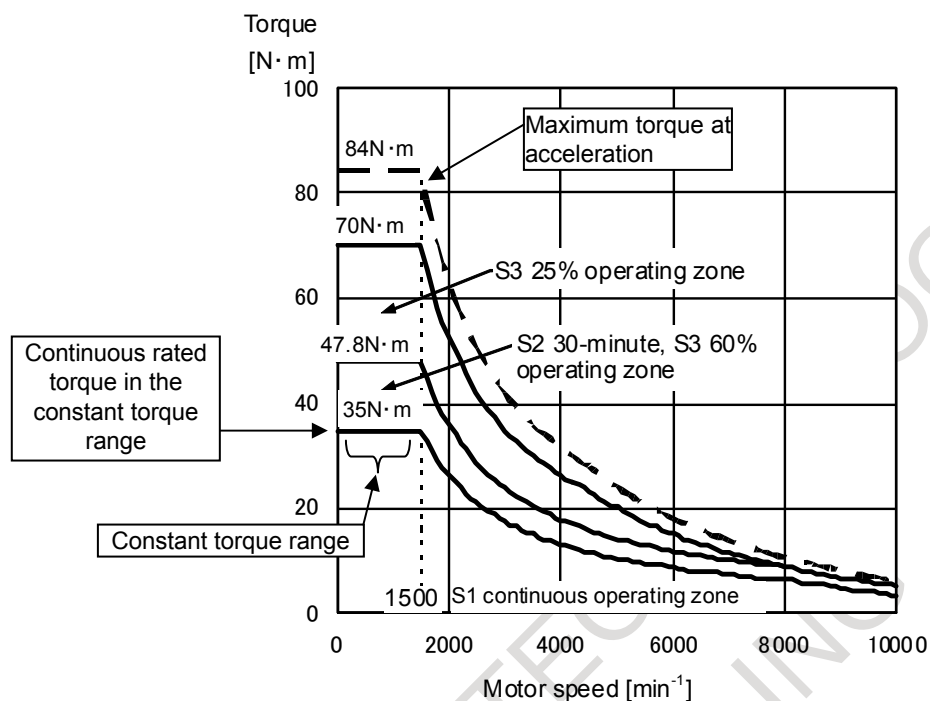


Speed-output characteristics chart

Example) αI 6/10000

Speed-torque characteristics

Speed-torque characteristics show the relations between motor torque and speed.
The definitions of S1, S2, and S3 are the same as those for speed-output characteristics.
A data sheet shows values when the input voltage is 200 V or 400V.



Speed-torque characteristics chart
Example) αiI 6/10000

Reference: Torque calculation

The torque T for any motor speed can be determined from the formula below.

$$T[\text{N}\cdot\text{m}] = P[\text{kW}] \times 1000 / 0.1047 / N[\text{min}^{-1}]$$

P[kW] : Motor output
N[min^{-1}] : Motor speed

Assuming that T is in units of [kgf·m]

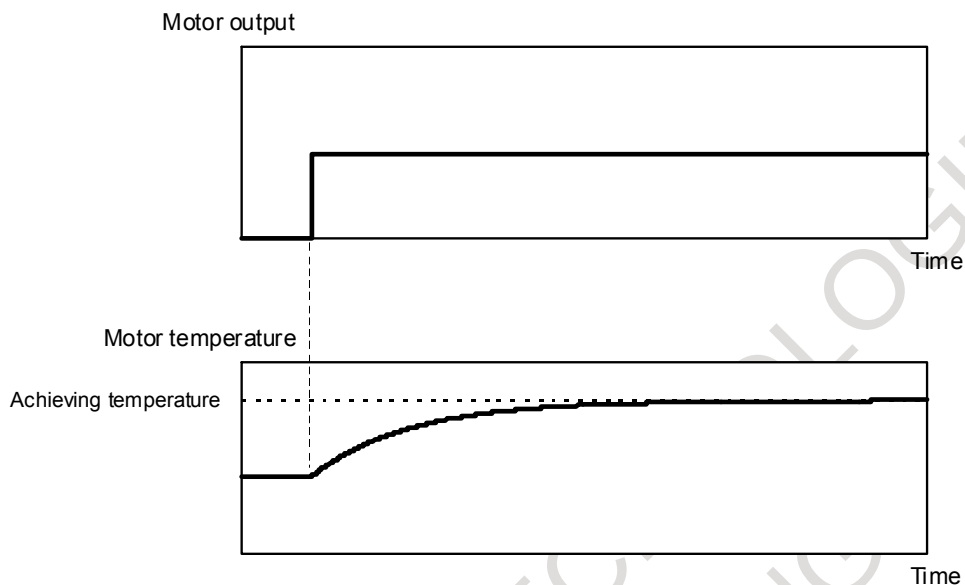
$$T[\text{kgf}\cdot\text{m}] = P[\text{kW}] \times 1000 / 1.0269 / N[\text{min}^{-1}]$$

(2) Data sheet

A data sheet lists parameters related to motor performance.
Parameters contained in a data sheet are as below.

S1 continuous rated output: P_c [kW]

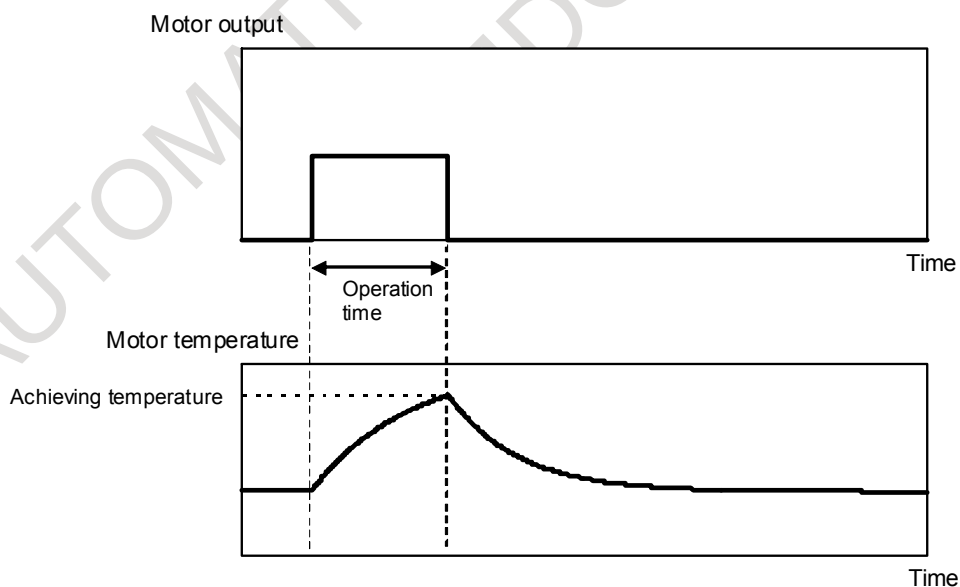
The S1 continuous rated output is the rating at which the motor can be used continuously with the indicated output.



The rated output is guaranteed at the rated power voltage (amplifier input: 200 or 400 VAC, 50/60Hz). If the input power voltage fluctuates, the rated output may not be achieved even within the permissible range.

S2 ○-minute rated output: [kW]

Output that can be used for the indicated time (○ minutes) with the motor being at room temperature.
If the output is to be used again, the motor must return to room temperature beforehand.



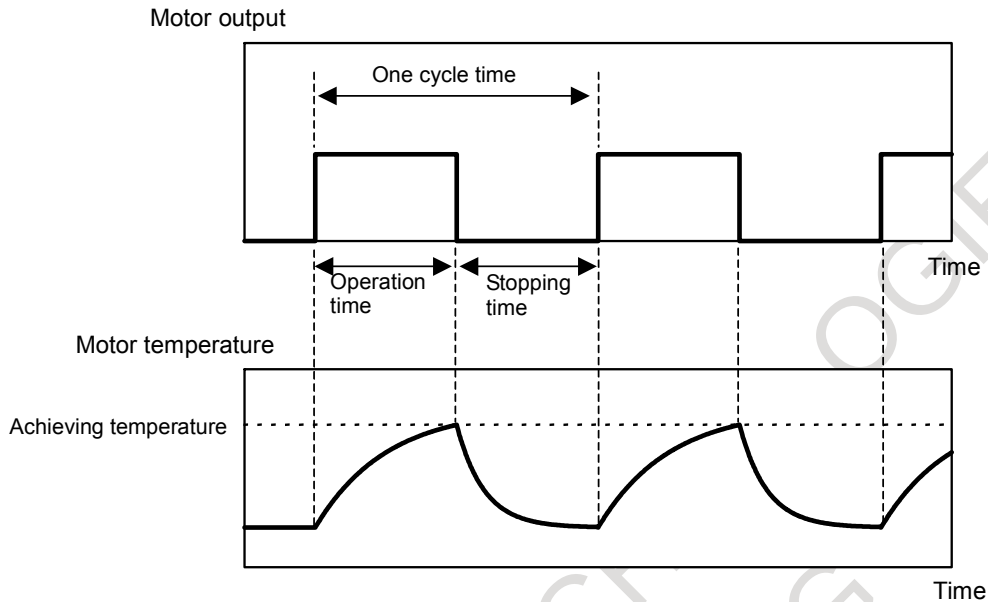
The rated output is guaranteed at the rated power voltage (amplifier input: 200 or 400 VAC, 50/60Hz). If the input power voltage fluctuates, the rated output may not be achieved even within the permissible range.

S3 ○-% rated output: [kW]

Output that can be used for the indicated cycle retention percentage (○%) in a single cycle.

Example)

If the S3 25% rated output is 11 kW, the output of 11 kW can be used for 2 minutes and 30 seconds in a 10-minute cycle, and the output stops for the remaining time of 7 minutes and 30 seconds.



$$\text{Cycle retention percentage} = \frac{\text{Operation time}}{\text{One cycle time}} \times 100[\%]$$

The rated output is guaranteed at the rated power voltage (amplifier input: 200 or 400 VAC, 50/60Hz). If the input power voltage fluctuates, the rated output may not be achieved even within the permissible range.

S1 continuous rated current: I_c [A]

Maximum current value necessary for obtaining the S1 continuous rated output.

S2 ○-minute rated current: [A]

Maximum current value necessary for obtaining the S2 ○-minute rated output.

S3 ○-% rated output: [A]

Maximum current value necessary for obtaining the S3 ○-% rated output.

Base speed (S1 rating): $[\text{min}^{-1}]$

Speed necessary for the S1 rated output to reach a maximum.

Base speed (S2 rating): $[\text{min}^{-1}]$

Speed necessary for the S2 rated output to reach a maximum.

Base speed (S3 rating): $[\text{min}^{-1}]$

Speed necessary for the S3 rated output to reach a maximum.

Max. speed: N_m $[\text{min}^{-1}]$

Maximum speed at which the motor can be operated.

Steady-state maximum output: $P_{\max}$ [kW]

Maximum output in the steady state. The maximum output at the rated power voltage is not a guaranteed value but a guideline.

Maximum output at acceleration for PS selection: [kW]

Maximum output at acceleration. It is data used to select a power supply (α iPS), and is not a guaranteed value.

Continuous rated torque in the constant torque range: [Nm]

S1 continuous rated torque that becomes constant in the speed range before the S1 continuous rated output is reached.

Moment of inertia of the rotor: J_m [kg·m²]

Moment of inertia of the rotor of the motor.

Weight: w [kg]

Weight of the motor.

Winding resistance: R_a [mΩ]

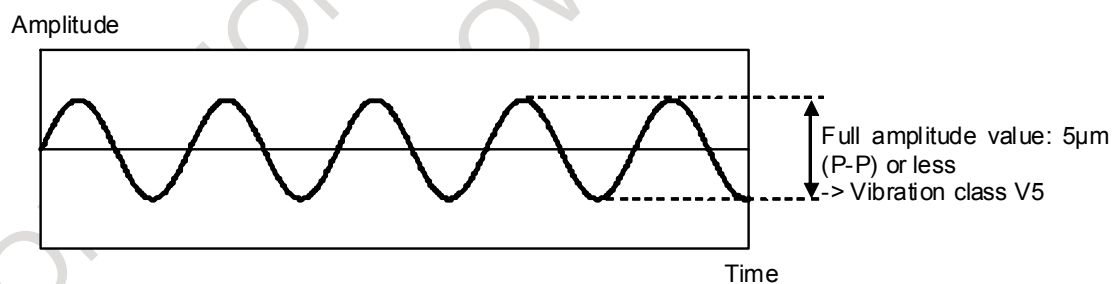
Resistance value between motor terminals. The value is a standard value at 20°C. ($\pm 10\%$)

Number of teeth for speed detection

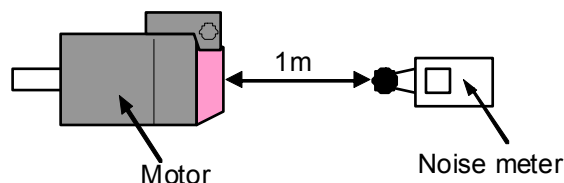
Number of teeth of the built-in sensor of the motor.

Vibration

Vibration class (rotation direction) of the motor (model without a key way). The vibration class is determined by measuring the full amplitude (P-P) of the motor when the motor is driven with no load and at the maximum speed. If, for example, the vibration class is V5, the full amplitude of the motor with no load and at the maximum speed is 5 μ m (P-P) or less.

**Noise**

Noise level of the motor. It is measured at a position 1 m apart from the motor, by using a frequency filter with the A characteristic.



* A characteristic.....Characteristic corrected to approximate human senses

Cooling system

Cooling system of the motor. The definition is as per IEC60034-6, and the IC code is as per IEC 34-6.

Rated power of the cooling fan

Rated power of the cooling fan.

For the specifications and characteristics of FANUC AC spindle motor αi series, characteristic curves and data sheets are provided for each motor.

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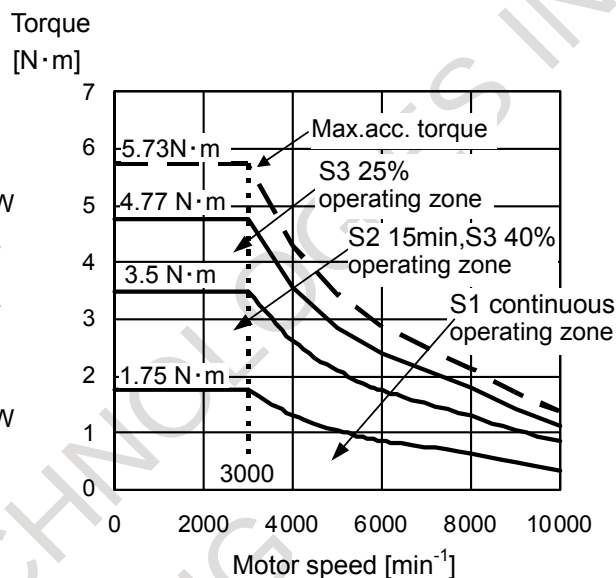
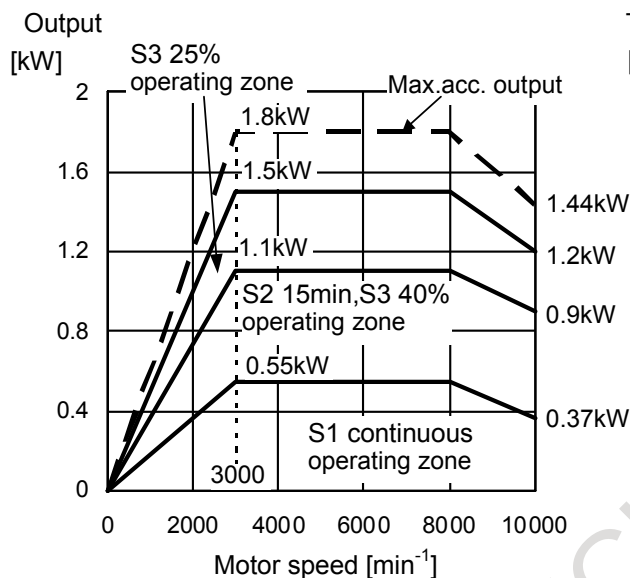
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3.2.2 α iI Series 200V-type

Model α iI 0.5/10000
Ordering specification number: A06B-1401-B□□□#□P□□

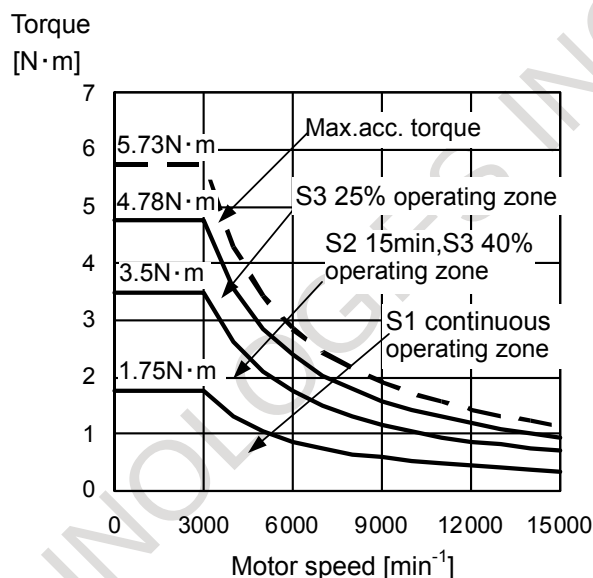
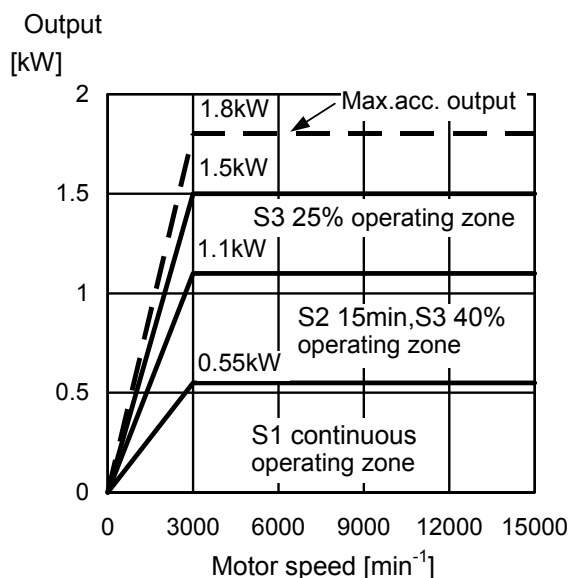
 Applicable amplifier: α iSP 2.2-B

 β iSVSP*-7.5-B


Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P_C	0.55 (0.74) kW (HP)
	S2 15 min rated, S3 40% rated		1.1 (1.5) kW (HP)
	S3 25% rated		1.5 (2.0) kW (HP)
Rated current	S1 continuous rated	I_C	7 A
	S2 15 min rated, S3 40% rated		11 A
	S3 25% rated		15 A
Speed	Base speed	N_b	3000 min ⁻¹
	Max. speed	N_{max}	10000 min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output kW
Maximum output at acceleration for PS selection			1.8 kW
Continuous rated torque in the constant torque range		T_b	1.75 (17.9) N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.00048 (0.0048) kg·m ² (kgf·cm·s ²)
Weight		W	7 Kg
Winding resistance (U-V, V-W, and W-U)		R_a	650 mΩ
Number of teeth for speed detection			64 λ/rev.
Vibration			V5(option V3)
Noise			75 or less dB(A)
Cooling system			Totally enclosed and non-cooled IC0A0
Rated power of the cooling fan			None W

Model α iI 0.5/15000

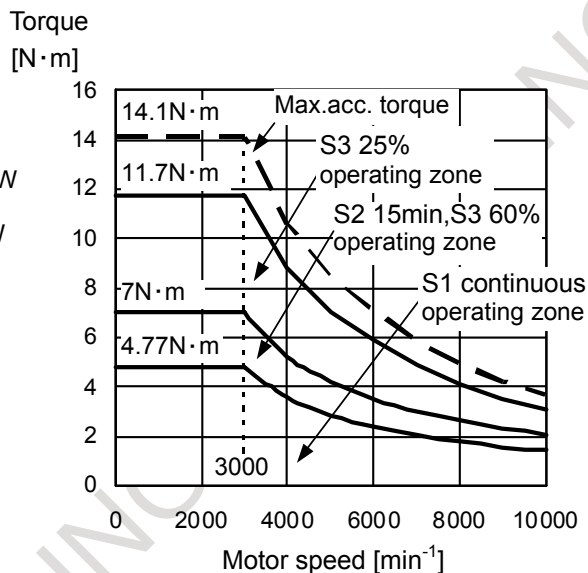
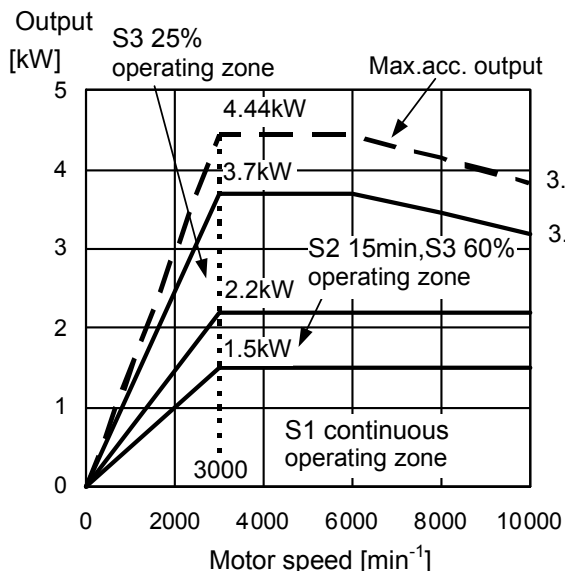
Ordering specification number: A06B-1400-B□□□#□□□□

Applicable amplifier: α iSP 2.2-B β iSVSP*-7.5-B

Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	0.55 (0.74) kW (HP)
	S2 15 min rated, S3 40% rated		1.1 (1.5) kW (HP)
	S3 25% rated		1.5 (2.0) kW (HP)
Rated current	S1 continuous rated	I_c	8 A
	S2 15 min rated, S3 40% rated		12 A
	S3 25% rated		15 A
Speed	Base speed	N_b	3000 min^{-1}
	Max. speed	$N_{\max}$	15000 min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output kW
Maximum output at acceleration for PS selection			1.8 kW
Continuous rated torque in the constant torque range		T_b	1.75 (17.9) $\text{N}\cdot\text{m}$ (kgf·cm)
Moment of inertia of the rotor		J_m	0.00048 (0.0048) $\text{kg}\cdot\text{m}^2$ (kgf·cm·s ²)
Weight		W	7 kg
Winding resistance (U-V, V-W, and W-U)		R_a	570 m Ω
Number of teeth for speed detection			64 $\lambda/\text{rev.}$
Vibration			V3
Noise			75 or less dB(A)
Cooling system			Totally enclosed and non-cooled IC0A0
Rated power of the cooling fan			None W

Model αi I 1/10000

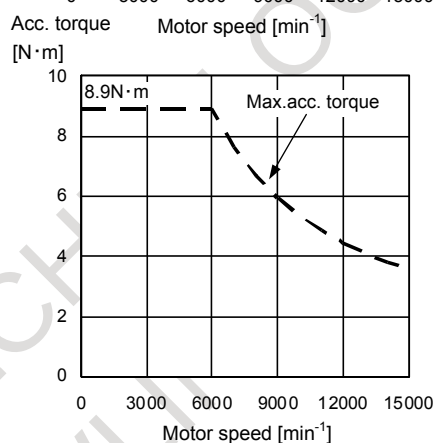
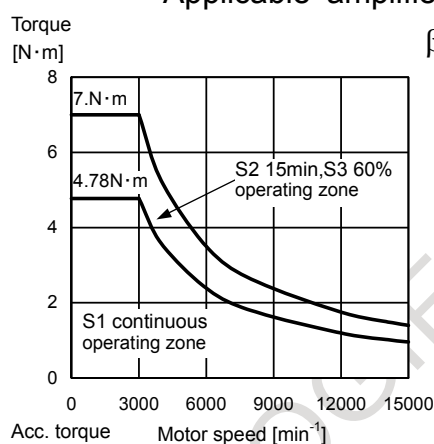
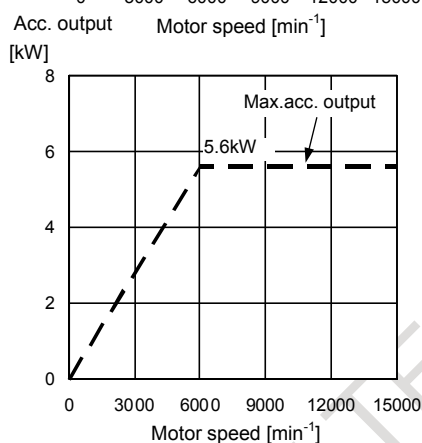
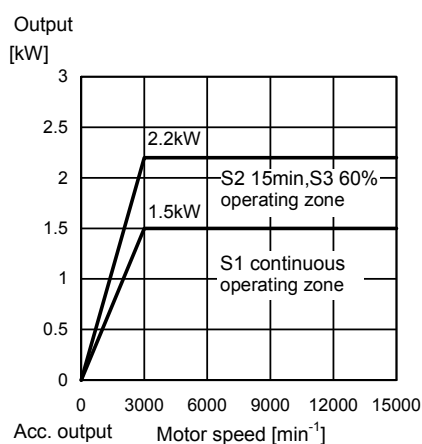
Ordering specification number: A06B-1402-B□□□#□□□□

Applicable amplifier: αi SP 2.2-B βi SVSP*-7.5-B

Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	1.5 (2.0) kW (HP)
	S2 15 min rated, S3 60% rated		2.2 (3.0) kW (HP)
	S3 25% rated		3.7 (5.0) kW (HP)
Rated current	S1 continuous rated	I_c	11 A
	S2 15 min rated, S3 60% rated		13 A
	S3 25% rated		19 A
Speed	Base speed	N_b	3000 min ⁻¹
	Max. speed	N_{max}	10000 min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output kW
Maximum output at acceleration for PS selection			4.44 kW
Continuous rated torque in the constant torque range		T_b	4.77 (48.7) N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.003 (0.03) kg·m ² (kgf·cm·s ²)
Weight		W	18 kg
Winding resistance (U-V, V-W, and W-U)		R_a	420 mΩ
Number of teeth for speed detection			128 1/rev.
Vibration			V5(option V3)
Noise			75 or less dB(A)
Cooling system(*8)			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			32 W

Model αi I 1/15000

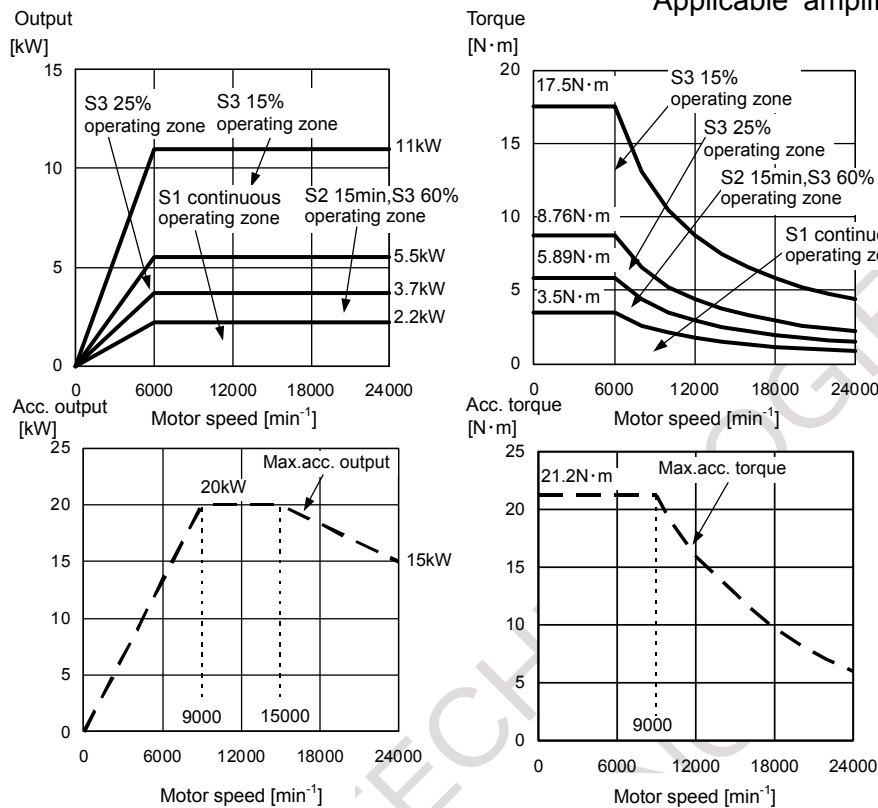
Ordering specification number: A06B-1422-B□□□

Applicable amplifier: αi SP 5.5-B βi SVSP*-7.5-B

Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	1.5 (2.0) kW (HP)
	S2 15 min rated, S3 60% rated		2.2 (3.0) kW (HP)
Rated current	S1 continuous rated	I_c	24 A
	S2 15 min rated, S3 60% rated		27 A
Speed	Base speed	N_b	3000 min^{-1}
	Max. speed	N_{max}	15000 min^{-1}
Steady-state maximum output		P_{max}	120% of maximum rated output kW
Maximum output at acceleration for PS selection			5.6 kW
Continuous rated torque in the constant torque range		T_b	4.77 (48.7) N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.003 (0.03) $\text{kg} \cdot \text{m}^2$ (kgf·cm·s ²)
Weight		W	18 kg
Winding resistance (U-V, V-W, and W-U)		R_a	102 mΩ
Number of teeth for speed detection			128 $\lambda/\text{rev.}$
Vibration			V3
Noise			75 or less dB(A)
Cooling system(*8)			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			32 W

Model αi I 1/24000

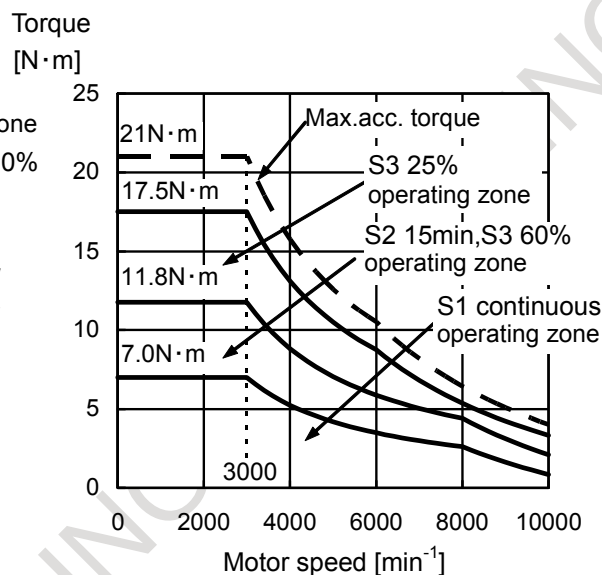
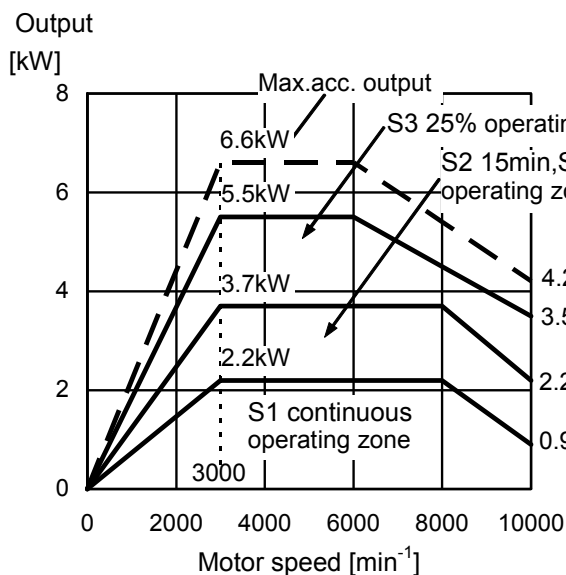
Ordering specification number: A06B-1420-B123#FS21

Applicable amplifier: αi SP 22-B βi SVSP*-18-B

Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P_C	2.2(3.0) kW (HP)
	S2 15 min rated, S3 60% rated		3.7(5.0) kW (HP)
	S3 25% rated		5.5(7.4) kW (HP)
	S3 15% rated		11(14.7) kW (HP)
Rated current	S1 continuous rated	I_C	32 A
	S2 15 min rated, S3 60% rated		42 A
	S3 25% rated		52 A
	S3 15% rated		84 A
Speed	Base speed	N_b	6000 min ⁻¹
	Max. speed	N_{max}	24000 min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output kW
Maximum output at acceleration for PS selection			22.0 kW
Continuous rated torque in the constant torque range		T_b	3.50 (35.7) N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.003 (0.03) kg·m ² (kgf·cm·s ²)
Weight		W	19 kg
Winding resistance (U-V, V-W, and W-U)		R_a	43.8 mΩ
Built-in detector			αi MZ sensor contained
Number of teeth for speed detection			128 λ /rev.
Vibration			V3
Noise			75 or less dB(A)
Cooling system(*8)			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			32 W

Model α iI 1.5/10000

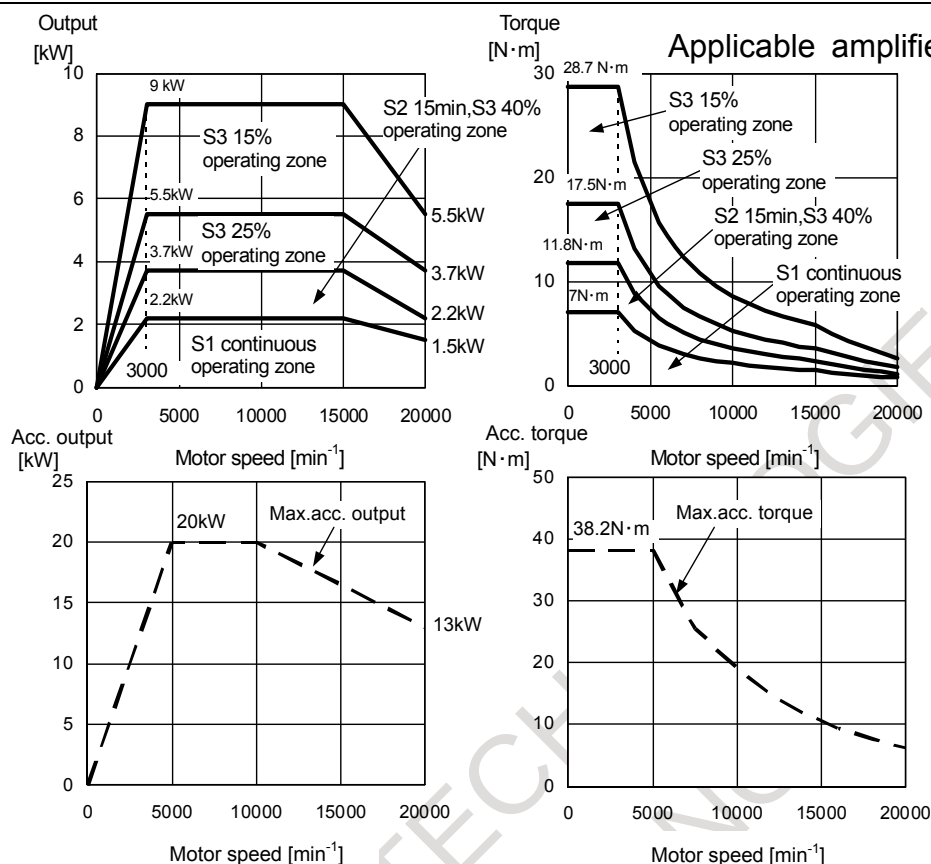
Ordering specification number: A06B-1403-B□□□#□P□□

Applicable amplifier: α iSP 5.5-B β iSVSP*-7.5-B

Item	Symbol	Value	Unit
Rated output	P_c	2.2	kW
		(3.0)	(HP)
		3.7	kW
Rated current	I_c	(5.0)	(HP)
		5.5	kW
		(7.4)	(HP)
Speed	N_b	13	A
		18	A
		24	A
Steady-state maximum output	P_{max}	3000	min^{-1}
		10000	min^{-1}
Maximum output at acceleration for PS selection		120% of maximum rated output	kW
Continuous rated torque in the constant torque range	T_b	6.6	kW
Moment of inertia of the rotor	J_m	7.0	N·m
Weight	W	(71)	(kgf·cm)
Winding resistance (U-V, V-W, and W-U)	R_a	0.0043	$\text{kg}\cdot\text{m}^2$
Number of teeth for speed detection		(0.04)	(kgf·cm·s ²)
Vibration		24	kg
Noise		410	mΩ
Cooling system(*8)		128	λ/rev.
Rated power of the cooling fan		V5(option V3)	
		75 or less	dB(A)
		Totally enclosed and fan cooled	
		IC0A6	
		32	W

Model αi I 1.5/20000

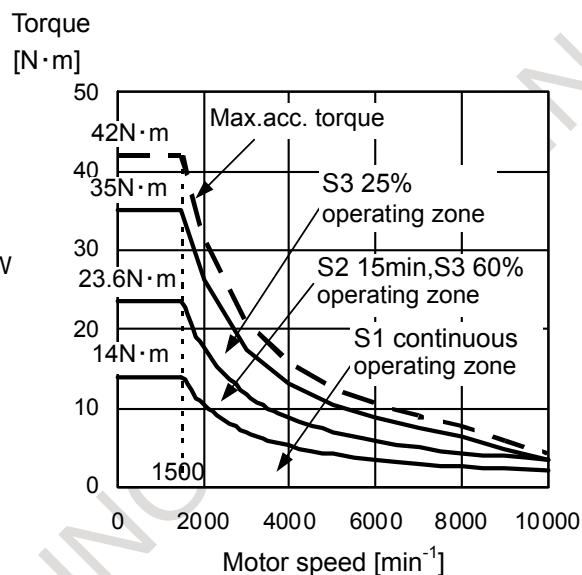
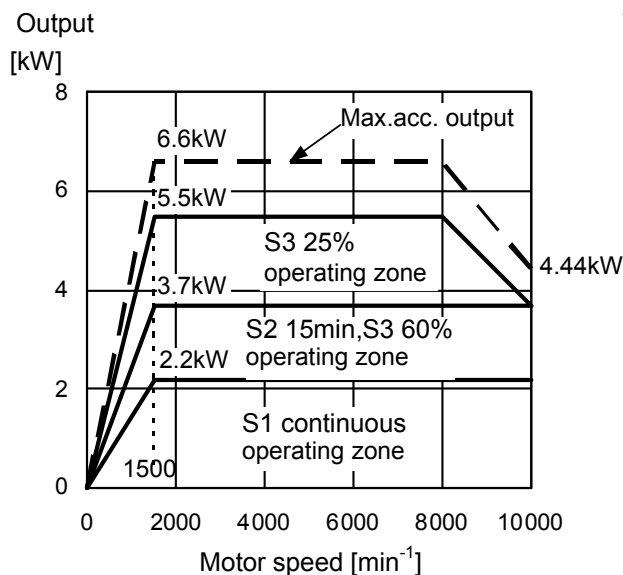
Ordering specification number: A06B-1423-B123#0S21



Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P_C	2.2 (3.0) kW (HP)
	S2 15 min rated, S3 40% rated		3.7 (5.0) kW (HP)
	S3 25% rated		5.5 (7.4) kW (HP)
	S3 15% rated		9 (12.0) kW (HP)
Rated current	S1 continuous rated	I_C	32 A
	S2 15 min rated, S3 40% rated		44 A
	S3 25% rated		54 A
	S3 15% rated		77 A
Speed	Base speed	N_b	3000 min ⁻¹
	Max. speed	N_{max}	20000 min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output kW
Maximum output at acceleration for PS selection			22.0 kW
Continuous rated torque in the constant torque range		T_b	7.00 (71.4) N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0043 (0.04) kg·m ² (kgf·cm·s ²)
Weight		W	24 kg
Winding resistance (U-V, V-W, and W-U)		R_a	61.5 mΩ
Built-in detector			αi MZ sensor contained
Number of teeth for speed detection			128 1/rev.
Vibration			V3
Noise			75 or less dB(A)
Cooling system(*8)			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			32 W

Model α iI 2/10000

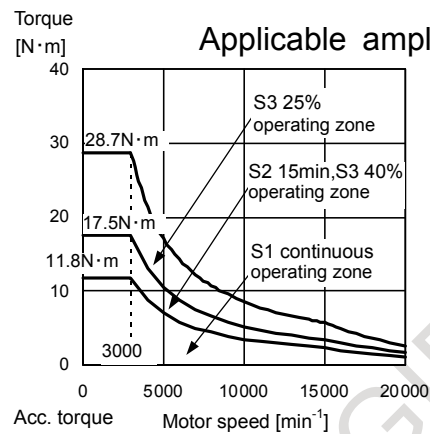
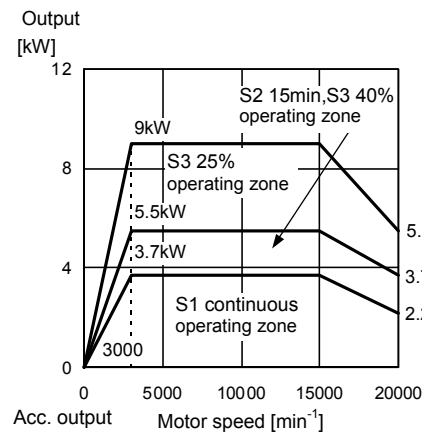
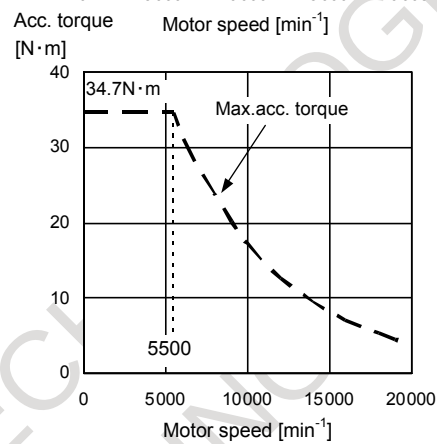
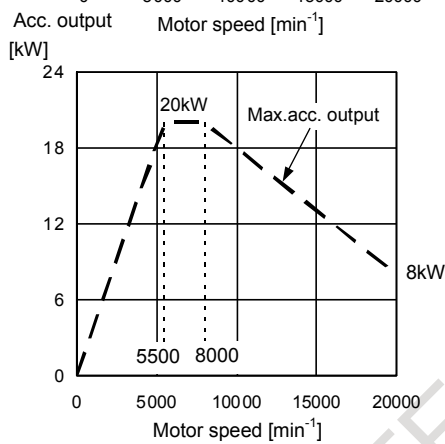
Ordering specification number: A06B-1404-B□□□#□P□□

Applicable amplifier: α iSP 11-B β iSVSP*-7.5-B

Item	Symbol	Value	Unit
Rated output	P_c	2.2 (3.0)	kW (HP)
		3.7 (5.0)	kW (HP)
		5.5 (7.4)	kW (HP)
Rated current	I_c	19	A
		27	A
		42	A
Speed	Base speed	N_b	1500 min ⁻¹
	Max. speed	N_{max}	10000 min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output kW
Maximum output at acceleration for PS selection			6.6 kW
Continuous rated torque in the constant torque range		T_b	14.0 (143) N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0078 (0.08) kg·m ² (kgf·cm·s ²)
Weight		W	27 kg
Winding resistance (U-V, V-W, and W-U)		R_a	307 mΩ
Number of teeth for speed detection			128 1/rev.
Vibration			V5(option V3)
Noise			75 or less dB(A)
Cooling system(*8)			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			38 W

Model αi I 2/20000

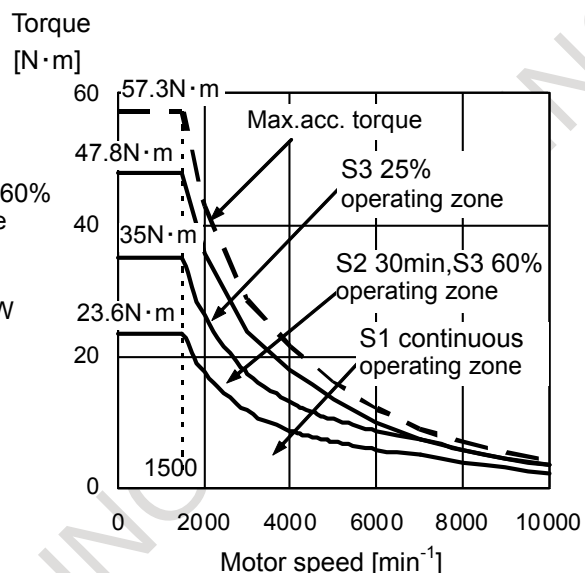
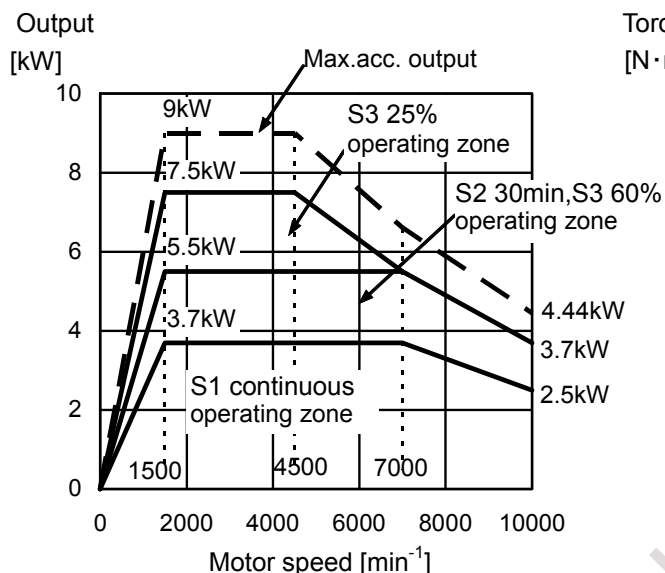
Ordering specification number: A06B-1424-B123#0S21

Applicable amplifier: αi SP 22-B βi SVSP*-18-B

Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	3.7 (5.0) kW (HP)
	S2 15 min rated, S3 40% rated		5.5 (7.4) kW (HP)
	S3 25% rated		9 (12.0) kW (HP)
Rated current	S1 continuous rated	I_c	53 A
	S2 15 min rated, S3 40% rated		70 A
	S3 25% rated		90 A
Speed	Base speed	N_b	3000 min ⁻¹
	Max. speed	N_{max}	20000 min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output kW
Maximum output at acceleration for PS selection			20.0 kW
Continuous rated torque in the constant torque range		T_b	11.8 (120) N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0078 (0.08) kg·m ² (kgf·cm·s ²)
Weight		W	27 kg
Winding resistance (U-V, V-W, and W-U)		R_a	48.5 mΩ
Built-in detector			αi MZ sensor contained
Number of teeth for speed detection			128 λ/rev.
Vibration			V3
Noise			75 or less dB(A)
Cooling system(*8)			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			38 W

Model α iI 3/10000

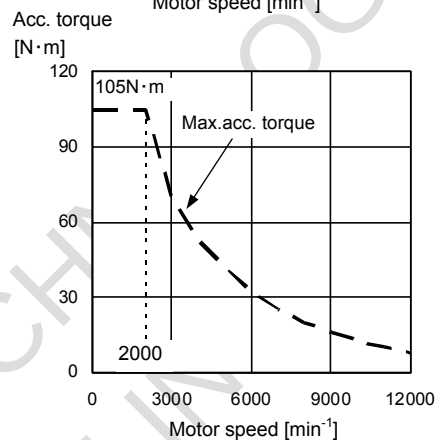
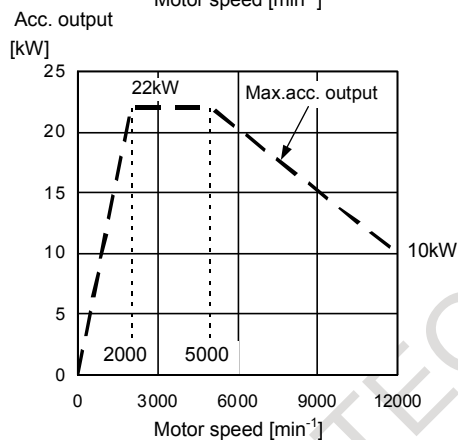
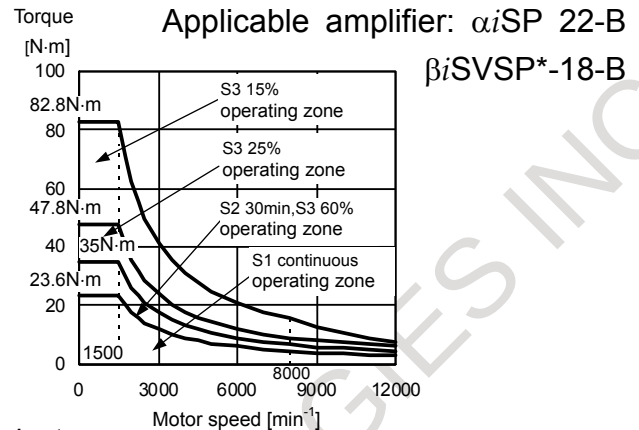
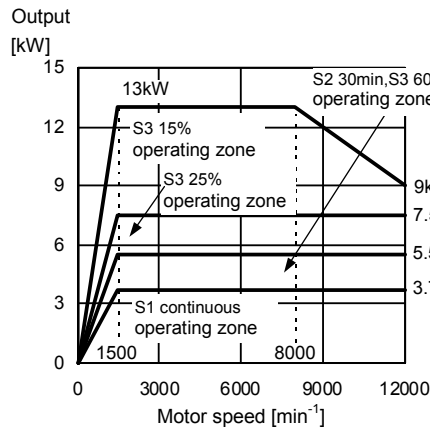
Ordering specification number: A06B-1405-B□□□#□P□□

Applicable amplifier: α iSP 11-B β iSVSP*-7.5-B

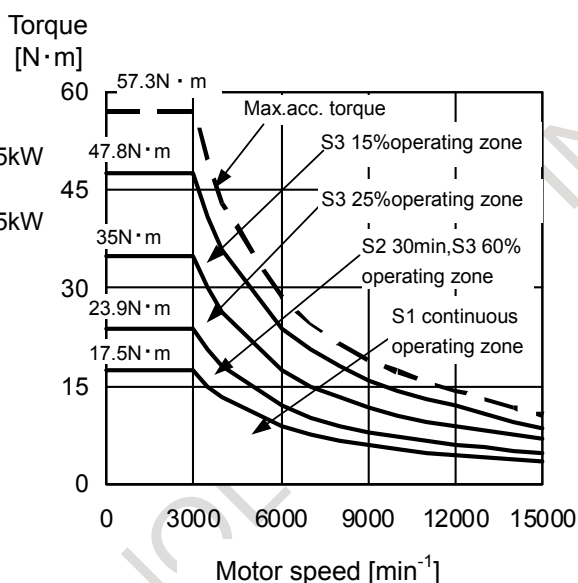
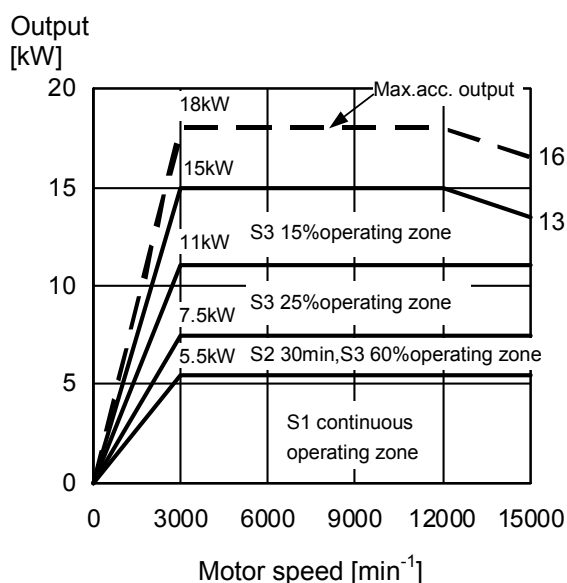
Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	3.7 (5.0) kW (HP)
	S2 30 min rated, S3 60% rated		5.5 (7.4) kW (HP)
	S3 25% rated		7.5 (10) kW (HP)
Rated current	S1 continuous rated	I_c	23 A
	S2 30 min rated, S3 60% rated		29 A
	S3 25% rated		39 A
Speed	Base speed	N_b	1500 min^{-1}
	Max. speed	$N_{\max}$	10000 min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output kW
Maximum output at acceleration for PS selection			9.0 kW
Continuous rated torque in the constant torque range		T_b	23.6 (240) N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0148 (0.15) $\text{kg} \cdot \text{m}^2$ (kgf·cm·s ²)
Weight		W	46 kg
Winding resistance (U-V, V-W, and W-U)		R_a	289 mΩ
Number of teeth for speed detection			128 1/rev.
Vibration			V5(option V3)
Noise			75 or less dB(A)
Cooling system(*8)			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			38 W

Model αi I 3/12000

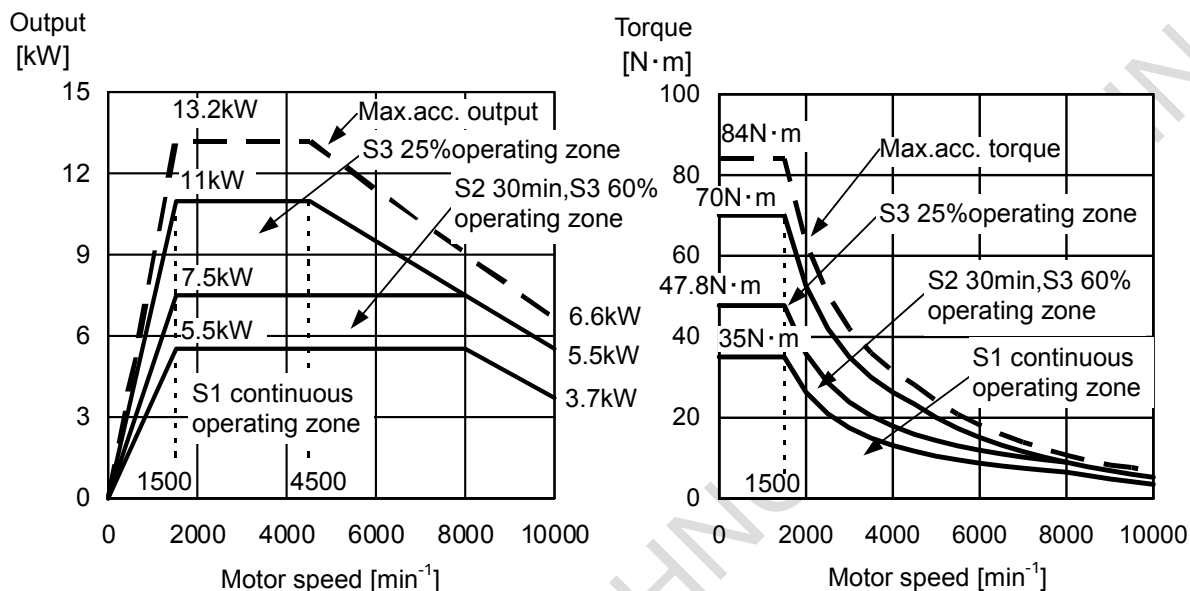
Ordering specification number: A06B-1425-B123#0S21



Item		Symbol	Value	Unit
Rated output	S1 continuous rated	P_C	3.7 (5.0)	kW (HP)
	S2 30 min rated, S3 60% rated		5.5 (7.4)	kW (HP)
	S3 25% rated		7.5 (10)	kW (HP)
	S3 15% rated		13 (17.5)	kW (HP)
Rated current	S1 continuous rated	I_C	36	A
	S2 30 min rated, S3 60% rated		46	A
	S3 25% rated		56	A
	S3 15% rated		90	A
Speed	Base speed	N_b	1500	min ⁻¹
	Max. speed	N_{max}	12000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			22.0	kW
Continuous rated torque in the constant torque range		T_b	23.6 (241)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0148 (0.15)	kg·m ² (kgf·cm·s ²)
Weight		W	46	kg
Winding resistance (U-V, V-W, and W-U)		R_a	100	mΩ
Built-in detector			αi MZ sensor contained	
Number of teeth for speed detection			128	1/rev.
Vibration			V3	
Noise			75 or less	dB(A)
Cooling system(*8)			Totally enclosed and fan cooled IC0A6	
Rated power of the cooling fan			38	W

Model α iI 3/15000**Ordering specification number: A06B-1419-B123#0S21**Applicable amplifier: α iSP 22-B

Item	Symbol	Value	Unit
Rated output	P_c	5.5 (7.4)	kW (HP)
		7.5 (10)	kW (HP)
		11 (14.7)	kW (HP)
		15 (20.1)	kW (HP)
Rated current	I_c	56	A
		65	A
		83	A
		104	A
Speed	N_b	3000	min^{-1}
	$N_{\max}$	15000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output
Maximum output at acceleration for PS selection		P_f	18
Continuous rated torque in the constant torque range		T_b	17.5 (178)
Moment of inertia of the rotor		J_m	0.0148 (0.15)
Weight		w	46
Winding resistance (U-V, V-W, and W-U)		R_a	32.0
Number of teeth for speed detection			128
Vibration			V3
Noise			75 or less
Cooling system(*8)			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			38

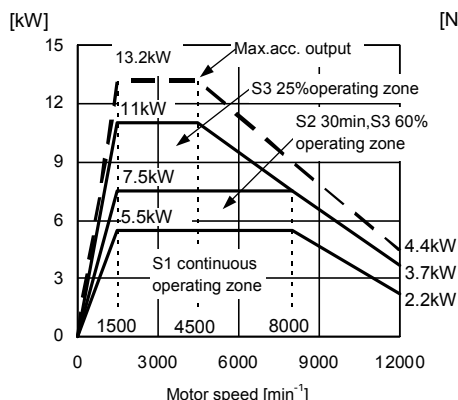
Model αi I 6/10000**Ordering specification number: A06B-1406-B□□□#□□□□**Applicable amplifier: αi SP 11-B βi SVSP*-11-B

Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	5.5 (7.4) kW (HP)
	S2 30 min rated, S3 60% rated		7.5 (10) kW (HP)
	S3 25% rated		11 (14.7) kW (HP)
Rated current	S1 continuous rated	I_c	43 A
	S2 30 min rated, S3 60% rated		49 A
	S3 25% rated		63 A
Speed	Base speed	N_b	1500 min ⁻¹
	Max. speed	N_{max}	10000 min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output kW
Maximum output at acceleration for PS selection			13.2 kW
Continuous rated torque in the constant torque range		T_b	35.0 (357) N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0179 (0.18) kg·m ² (kgf·cm·s ²)
Weight		W	51 kg
Winding resistance (U-V, V-W, and W-U)		R_a	118 mΩ
Number of teeth for speed detection			256 λ/rev.
Vibration			V5(option V3)
Noise			75 or less dB(A)
Cooling system(*8)			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			50 W

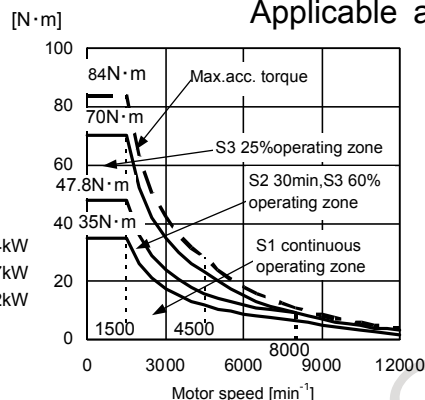
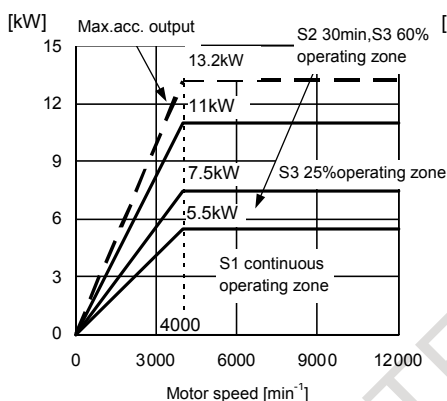
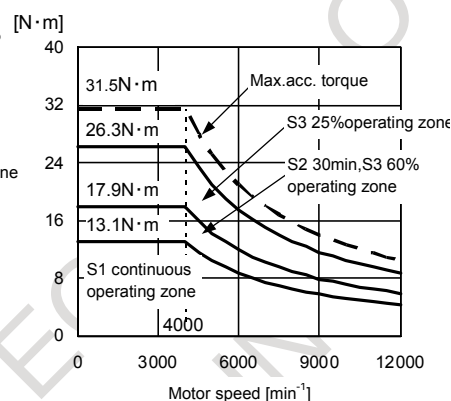
Model αi 6/12000

Ordering specification number: A06B-1426-B□□□#□□□□

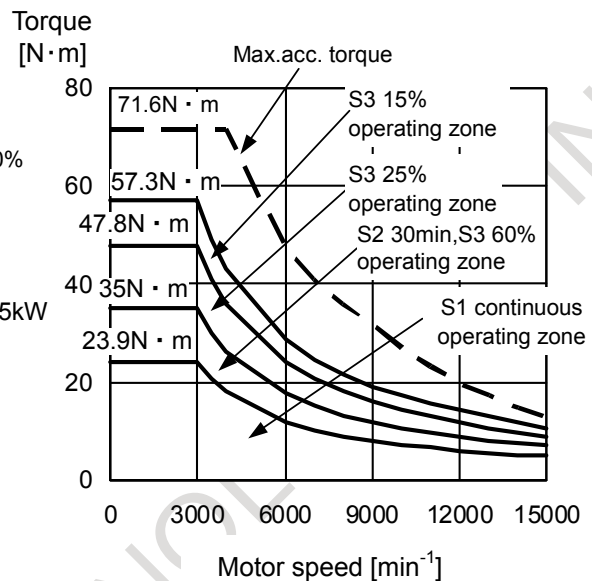
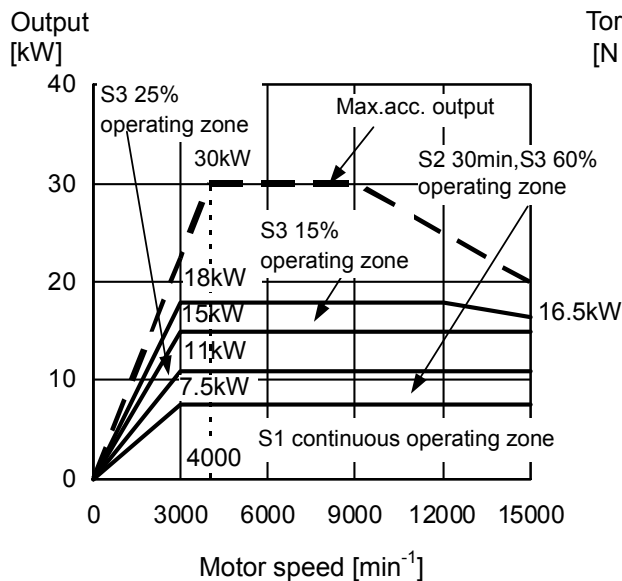
Low-speed winding output (Y connection)



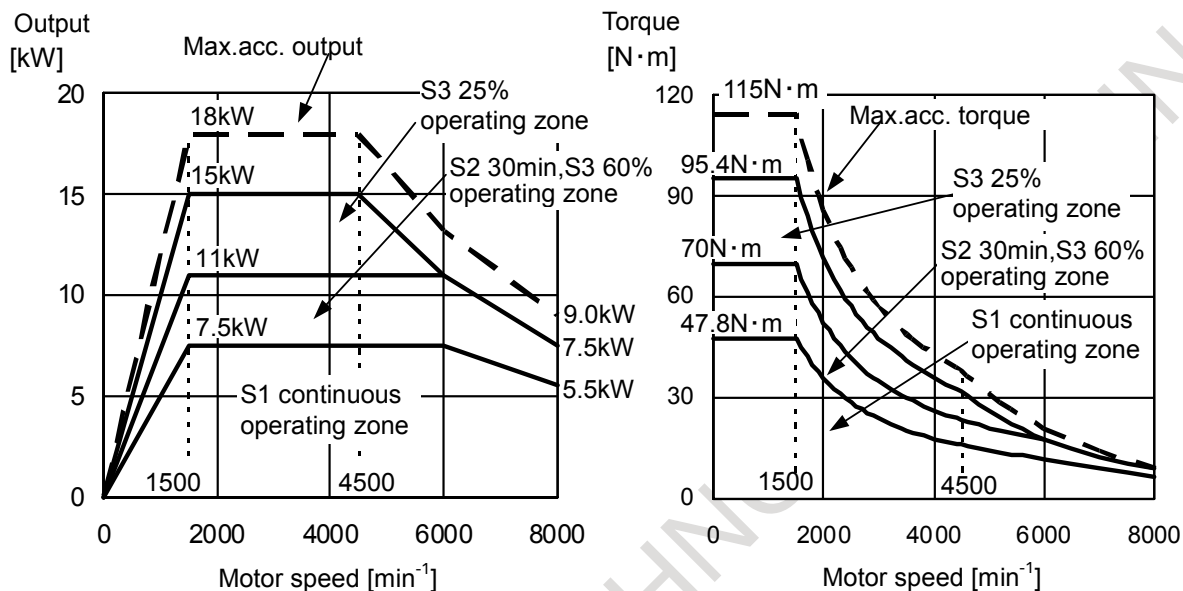
Low-speed winding torque (Y connection)

Applicable amplifier: αi SP 11-B βi SVSP*-11-BHigh-speed winding output (Δ connection)High-speed winding torque (Δ connection)

Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	5.5 (7.4)	5.5 (7.4)	kW (HP)
	S2 30 分 S3 60% rated		7.5 (10)	7.5 (10)	kW (HP)
	S3 25% rated		11 (14.7)	11 (14.7)	kW (HP)
Rated current	S1 continuous rated	I_C	38	38	A
	S2 30 分 S3 60% rated		48	45	A
	S3 25% rated		63	56	A
Speed	Base speed	N_b	1500	4000	min ⁻¹
	Max. speed	N_m	12000	12000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			13.2	13.2	kW
Continuous rated torque in the constant torque range		T_b	35.0 (357)	13.1 (133)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0179 (0.18)		kg·m ² (kgf·cm·s ²)
Weight		W	51		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	64.8		mΩ
Number of teeth for speed detection			256		λ/rev.
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system(*8)			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			50		W

Model αi I 6/15000**Ordering specification number: A06B-1433-B123#0S21**Applicable amplifier: αi SP 22-B

	Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	7.5 (10)	kW (HP)
	S2 30 min, S3 60% rated		11 (14.7)	kW (HP)
	S3 25% rated		15 (20.1)	kW (HP)
	S3 15% rated		18 (24.2)	kW (HP)
Rated current	S1 continuous rated	I_c	59	A
	S2 30 min, S3 60% rated		74	A
	S3 25% rated		91	A
	S3 15% rated		105	A
Speed	Base speed	N_b	3000	min^{-1}
	Max. speed	$N_{\max}$	15000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	kW
Maximum output at acceleration for PS selection		P_f	33	kW
Continuous rated torque in the constant torque range		T_b	23.8 (243)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0179 (0.18)	$\text{kg}\cdot\text{m}^2$ (kgf·cm·s ²)
Weight		w	51	kg
Winding resistance (U-V, V-W, and W-U)		R_a	29.8	mΩ
Number of teeth for speed detection			256	λ/rev.
Vibration			V3	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Rated power of the cooling fan			50	W

Model α iI 8/8000**Ordering specification number: A06B-1407-B□□□#□P□□**Applicable amplifier: α iSP 15-B β iSVSP*-15-B

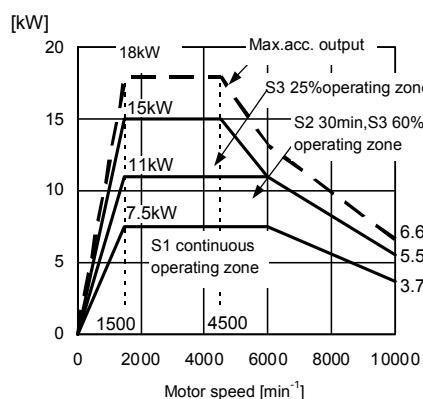
Item	Symbol	Value	Unit
Rated output	P_c	7.5 (10)	kW (HP)
		11 (14.7)	kW (HP)
		15 (20.1)	kW (HP)
Rated current	I_c	43	A
		53	A
		71	A
Speed	Base speed	N_b	1500 min ⁻¹
	Max. speed	N_{max}	8000 min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output
Maximum output at acceleration for PS selection			18.0 kW
Continuous rated torque in the constant torque range		T_b	47.8 N·m (487 kgf·cm)
Moment of inertia of the rotor		J_m	0.0275 kg·m ² (0.28 kgf·cm·s ²)
Weight		W	80 kg
Winding resistance (U-V, V-W, and W-U)		R_a	106 mΩ
Number of teeth for speed detection			256 1/rev.
Vibration			V5(option V3)
Noise			75 or less dB(A)
Cooling system(*8)			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			50 W

Model αi I 8/10000

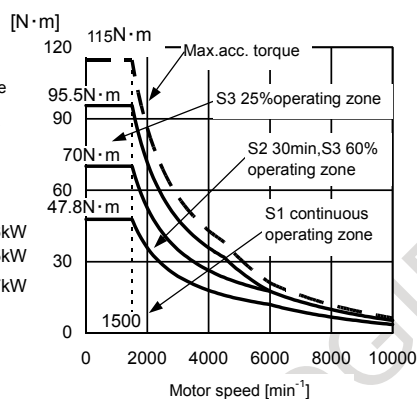
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Applicable amplifier: αi SP 15-B βi SVSP*-15-B

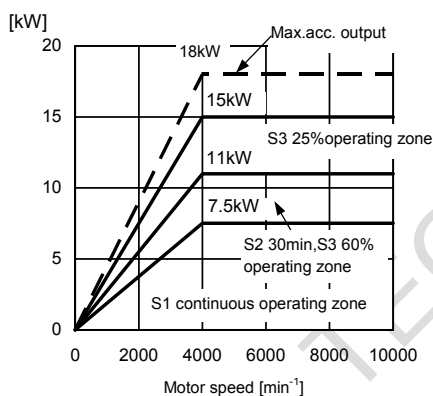
Low-speed winding output (Y connection)



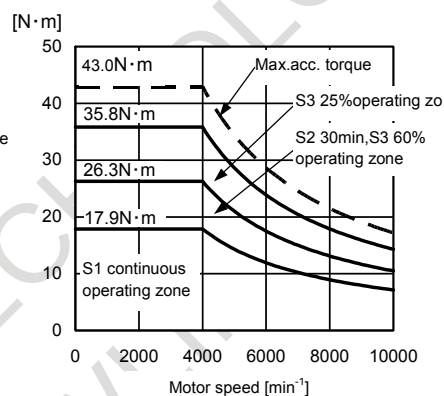
Low-speed winding torque (Y connection)



High-speed winding output (Δ connection)



High-speed winding torque (Δ connection)



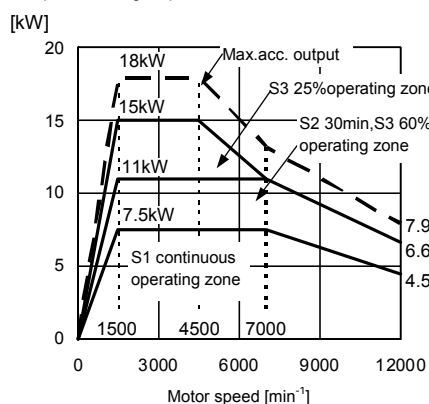
Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	7.5 (10)	7.5 (10)	kW (HP)
	S2 30 分 S3 60% rated		11 (14.7)	11 (14.7)	kW (HP)
	S3 25% rated		15 (20.1)	15 (20.1)	kW (HP)
Rated current	S1 continuous rated	I_C	43	46	A
	S2 30 分 S3 60% rated		53	56	A
	S3 25% rated		71	70	A
Speed	Base speed	N_b	1500	4000	min ⁻¹
	Max. speed	N_m	10000	10000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			18.0	18.0	kW
Continuous rated torque in the constant torque range		T_b	47.8 (487)	17.9 (183)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0275 (0.28)		kg·m ² (kgf·cm·s ²)
Weight		W	80		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	56		mΩ
Number of teeth for speed detection			256		λ/rev.
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system(*8)			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			50		W

Model αi I 8/12000

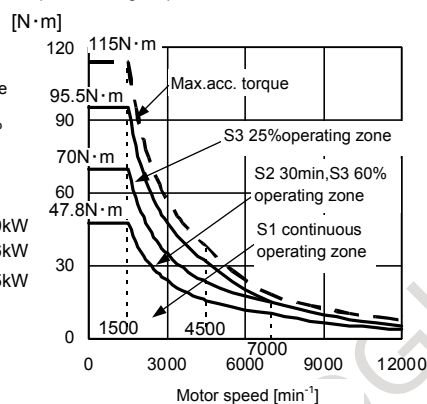
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Applicable amplifier: αi SP 15-B βi SVSP*-15-B

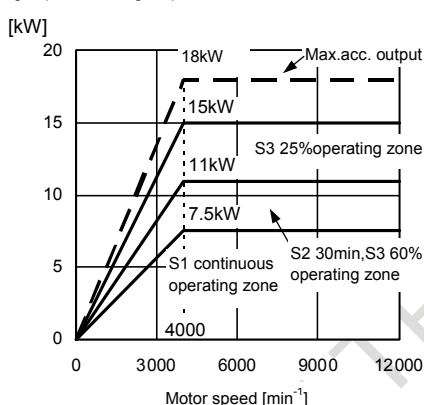
Low-speed winding output (Y connection)



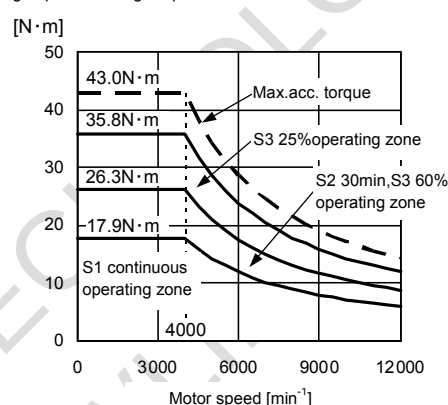
Low-speed winding torque (Y connection)



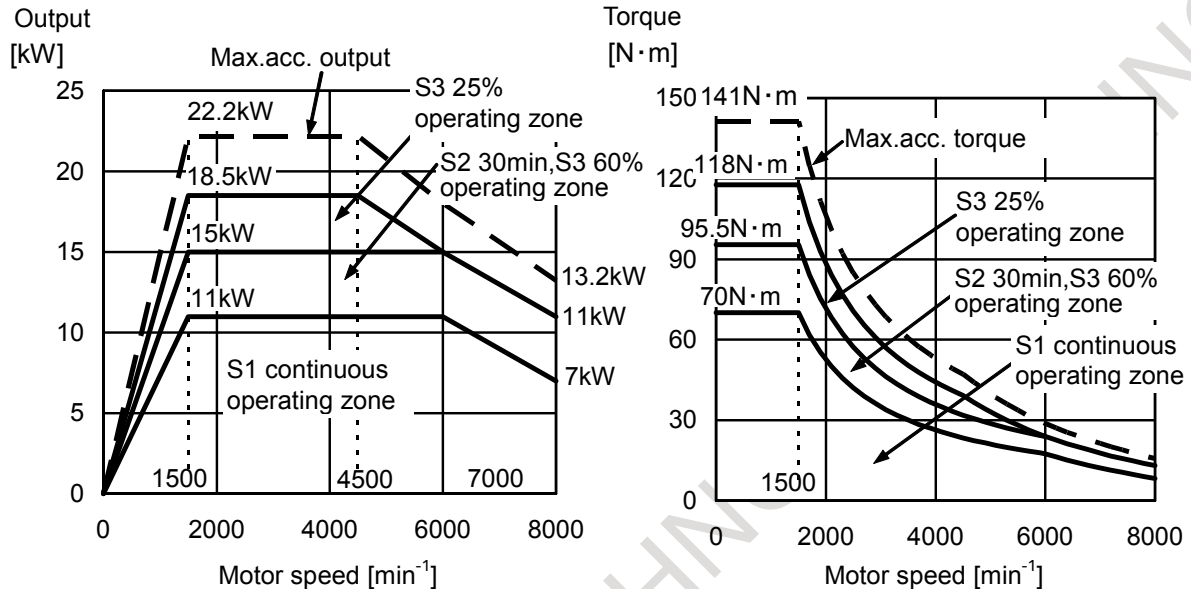
High-speed winding output (Δ connection)



High-speed winding torque (Δ connection)



Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	7.5 (10)	7.5 (10)	kW (HP)
	S2 30 分 S3 60% rated		11 (14.7)	11 (14.7)	kW (HP)
	S3 25% rated		15 (20.1)	15 (20.1)	kW (HP)
Rated current	S1 continuous rated	I_C	49	51	A
	S2 30 分 S3 60% rated		61	62	A
	S3 25% rated		72	81	A
Speed	Base speed	N_b	1500	4000	min ⁻¹
	Max. speed	N_m	12000	12000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			18.0	18.0	kW
Continuous rated torque in the constant torque range		T_b	47.8 (487)	17.9 (183)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0275 (0.28)		kg·m ² (kgf·cm·s ²)
Weight		W	80		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	56		mΩ
Number of teeth for speed detection			256		λ/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system(*8)			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			50		W

Model α iI 12/8000**Ordering specification number: A06B-1408-B□□□#□R□□**Applicable amplifier: α iSP 15-B β iSVSP*-18-B

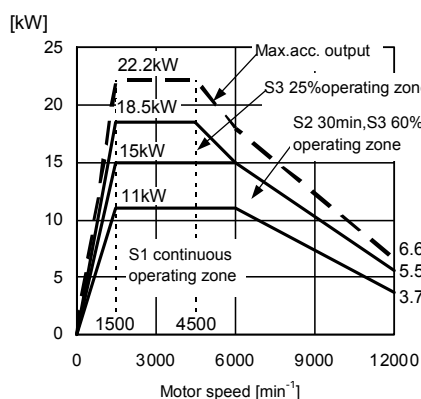
Item	Symbol	Value	Unit
Rated output	P_c	11 (14.7)	kW (HP)
		15 (20.1)	kW (HP)
		18.5 (24.8)	kW (HP)
Rated current	I_c	54	A
		64	A
		76	A
Speed	N_b	1500	min ⁻¹
	N_{max}	8000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output
Maximum output at acceleration for PS selection		22.2	kW
Continuous rated torque in the constant torque range		T_b	70.0 (714) N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.07 (0.77) kg·m ² (kgf·cm·s ²)
Weight		W	95 kg
Winding resistance (U-V, V-W, and W-U)		R_a	105 mΩ
Number of teeth for speed detection			256 1/rev.
Vibration			V5(option V3)
Noise			75 or less dB(A)
Cooling system(*8)			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			100 W

Model αi 12/12000

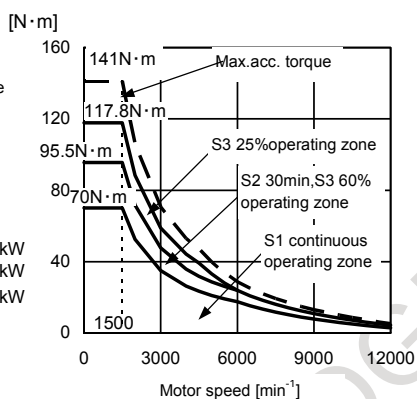
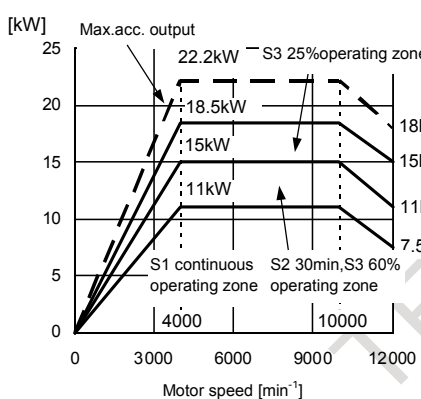
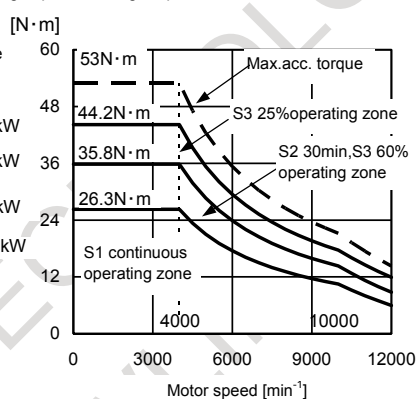
Ordering specification number: A06B-1428-B12□#0P21

Applicable amplifier: αi SP 15-B βi SVSP*-18-B

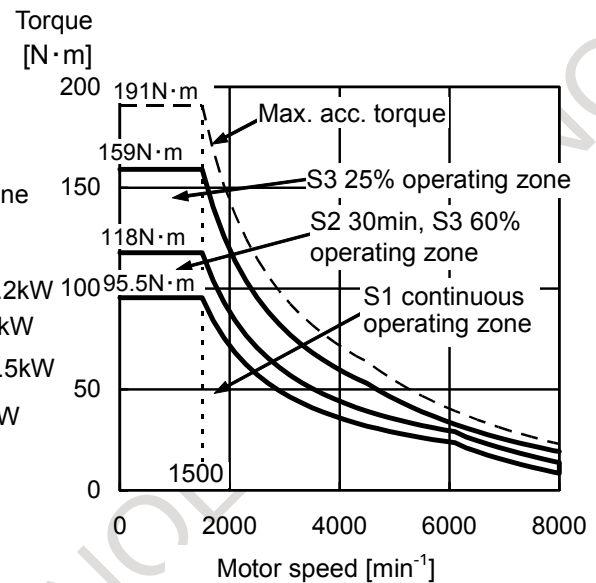
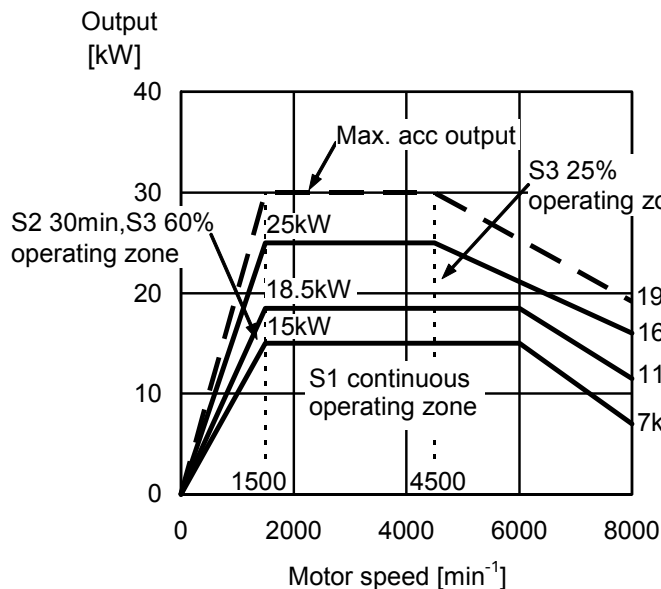
Low-speed winding output (Y connection)



Low-speed winding torque (Y connection)

High-speed winding output (Δ connection)High-speed winding torque (Δ connection)

Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	11 (14.7)	11 (14.7)	kW (HP)
	S2 30分 S3 60% rated		15 (20.1)	15 (20.1)	kW (HP)
	S3 25% rated		18.5 (24.8)	18.5 (24.8)	kW (HP)
Rated current	S1 continuous rated	I_C	54	52	A
	S2 30分 S3 60% rated		64	63	A
	S3 25% rated		76	76	A
Speed	Base speed	N_b	1500	4000	min^{-1}
	Max. speed	N_m	12000	12000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			22.2	22.2	kW
Continuous rated torque in the constant torque range		T_b	70.0 (714)	26.3 (268)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.07 (0.77)		$\text{kg}\cdot\text{m}^2$ ($\text{kgf}\cdot\text{cm}\cdot\text{s}^2$)
Weight		W	95		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	61.7		m Ω
Number of teeth for speed detection			256		1/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system(*8)			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			100		W

Model αi I 15/8000**Ordering specification number: A06B-1409-B□□□#□R□□**Applicable amplifier: αi SP 22-B

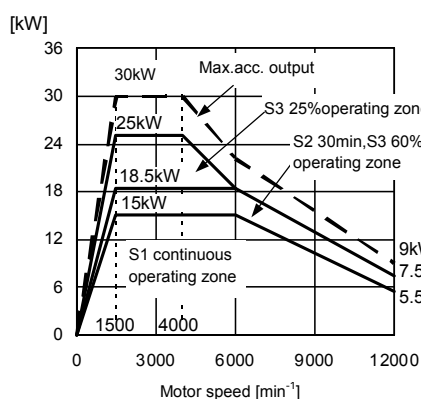
Item	Symbol	Value	Unit
Rated output	P_c	15 (20.1)	kW (HP)
		18.5 (24.8)	kW (HP)
		25 (33.5)	kW (HP)
Rated current	I_c	70	A
		82	A
		105	A
Speed	N_b	1500	min^{-1}
	$N_{\max}$	8000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output
Maximum output at acceleration for PS selection			30
Continuous rated torque in the constant torque range		T_b	95.5 (974)
Moment of inertia of the rotor		J_m	0.09 (0.93)
Weight		W	110
Winding resistance (U-V, V-W, and W-U)		R_a	79
Number of teeth for speed detection			256
Vibration			V5(option V3)
Noise			75 or less
Cooling system(*8)			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			100

Model αi I 15/12000

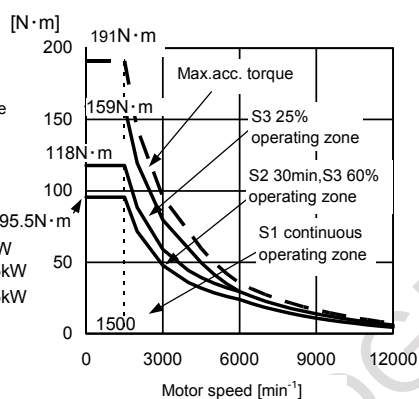
Ordering specification number: A06B-1429-B12□#0P21

Applicable amplifier: αi SP 22-B

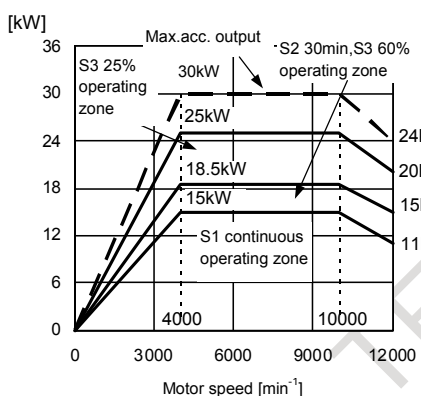
Low-speed winding output (Y connection)



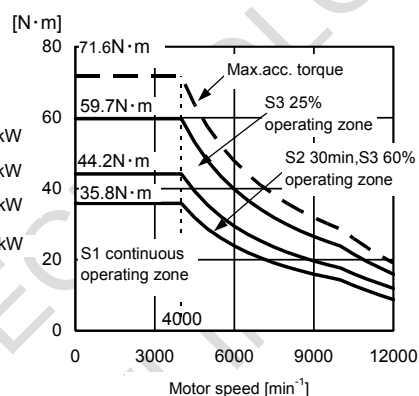
Low-speed winding torque (Y connection)



High-speed winding output (Δ connection)



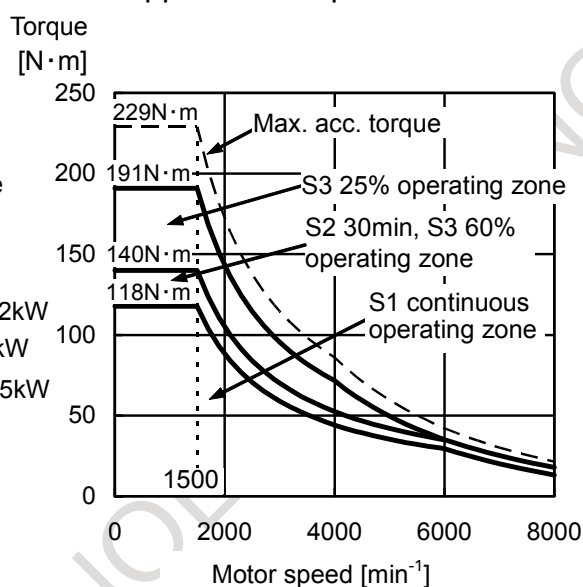
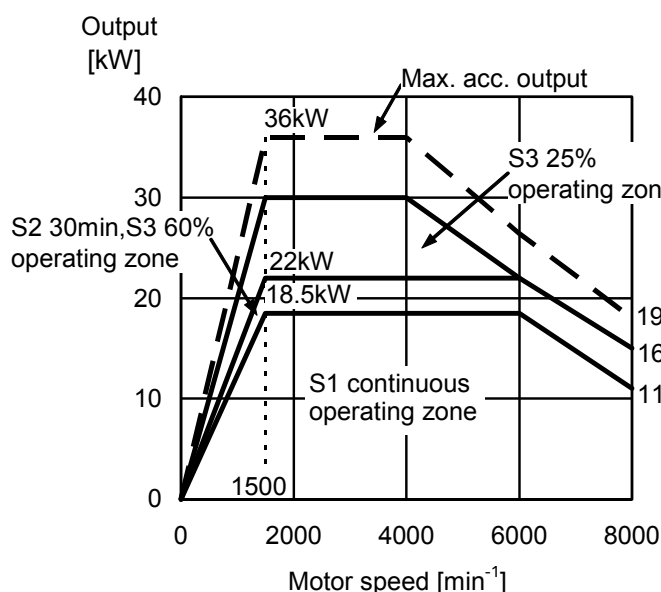
High-speed winding torque (Δ connection)



Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	15 (20.1)	15 (20.1)	kW (HP)
	S2 30 分 S3 60% rated		18.5 (24.8)	18.5 (24.8)	kW (HP)
	S3 25% rated		25 (33.5)	25 (33.5)	kW (HP)
Rated current	S1 continuous rated	I_C	70	71	A
	S2 30 分 S3 60% rated		82	81	A
	S3 25% rated		105	103	A
Speed	Base speed	N_b	1500	4000	min ⁻¹
	Max. speed	N_m	12000	12000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			30	30	kW
Continuous rated torque in the constant torque range		T_b	95.5 (974)	35.8 (365)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.09 (0.93)		kg·m ² (kgf·cm·s ²)
Weight		W	110		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	26.7		mΩ
Number of teeth for speed detection			256		λ/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system(*8)			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			100		W

Model αi I 18/8000

Ordering specification number: A06B-1410-B□□□#□R□□

Applicable amplifier αi SP 22-B

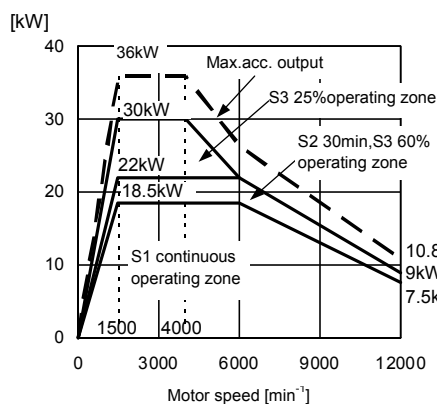
Item	Symbol	Value	Unit
Rated output	P_c	18.5 (24.8)	kW (HP)
		22 (29.5)	kW (HP)
		30 (40.2)	kW (HP)
Rated current	I_c	82	A
		95	A
		120	A
Speed	N_b	1500	min^{-1}
	$N_{\max}$	8000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output
Maximum output at acceleration for PS selection		36	kW
Continuous rated torque in the constant torque range		T_b	118 (1201)
Moment of inertia of the rotor		J_m	0.105 (1.08)
Weight		W	125
Winding resistance (U-V, V-W, and W-U)		R_a	84.9
Number of teeth for speed detection			256
Vibration			V5(option V3)
Noise			75 or less
Cooling system(*8)			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			100

Model α iI 18/12000

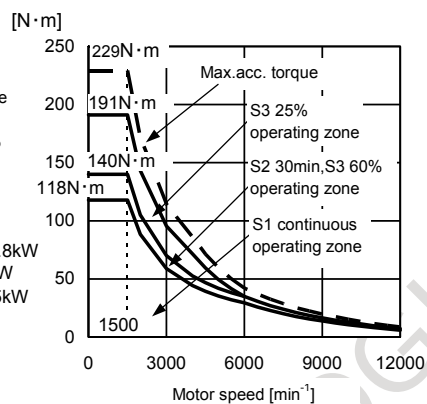
Ordering specification number: A06B-1430-B12□#0P21

Applicable amplifier: α iSP 22-B

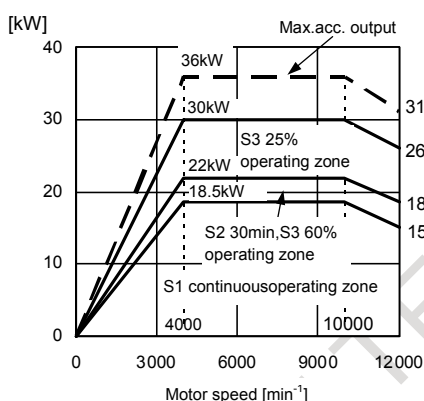
Low-speed winding output (Y connection)



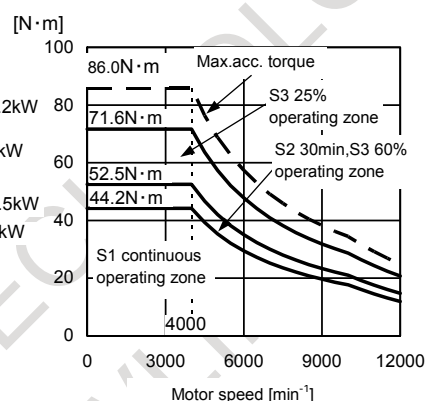
Low-speed winding torque (Y connection)



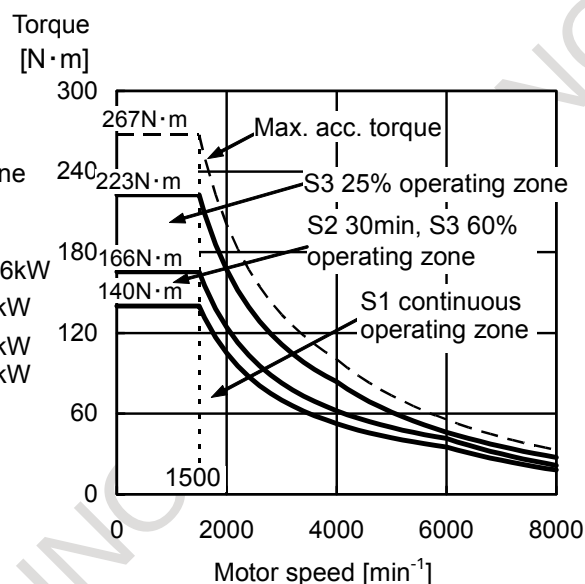
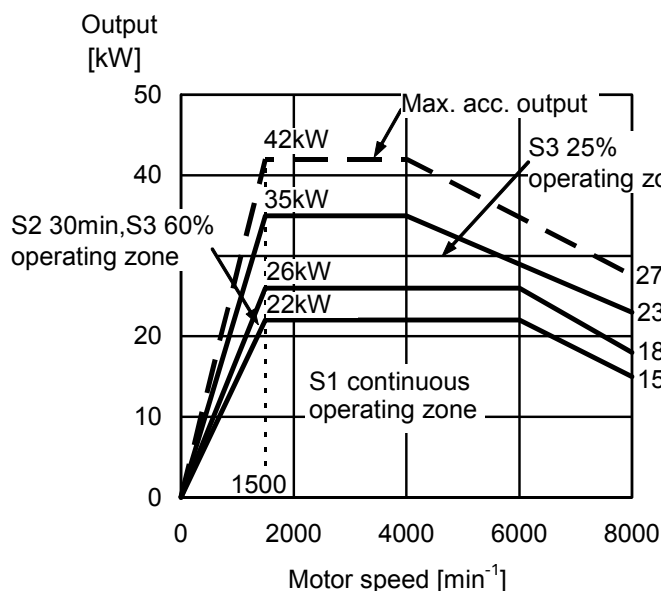
High-speed winding output (Δ connection)



High-speed winding torque (Δ connection)



Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	18.5 (24.8)	18.5 (24.8)	kW (HP)
	S2 30 分 S3 60% rated		22 (29.5)	22 (29.5)	kW (HP)
	S3 25% rated		30 (40.2)	30 (40.2)	kW (HP)
Rated current	S1 continuous rated	I_C	82	83	A
	S2 30 分 S3 60% rated		95	94	A
	S3 25% rated		120	111	A
Speed	Base speed	N_b	1500	4000	min ⁻¹
	Max. speed	N_m	12000	12000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			36.0	36.0	kW
Continuous rated torque in the constant torque range		T_b	118 (1201)	44.2 (450)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.105 (1.08)		kg·m ² (kgf·cm·s ²)
Weight		W	125		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	43.7		mΩ
Number of teeth for speed detection			256		λ/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system(*8)			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			100		W

Model αi I 22/8000**Ordering specification number: A06B-1411-B□□□#□R□□**Applicable amplifier: αi SP 26-B

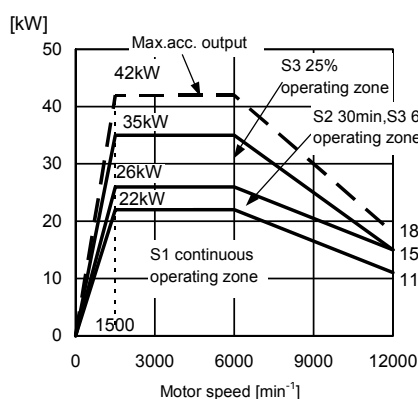
Item		Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	22 (29.5)	kW (HP)
	S2 30 min rated, S3 60% rated		26 (34.9)	kW (HP)
	S3 25% rated		35 (46.9)	kW (HP)
Rated current	S1 continuous rated	I_c	98	A
	S2 30 min rated, S3 60% rated		111	A
	S3 25% rated		147	A
Speed	Base speed	N_b	1500	min^{-1}
	Max. speed	$N_{\max}$	8000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			42	kW
Continuous rated torque in the constant torque range		T_b	140 (1428)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.128 (1.29)	$\text{kg} \cdot \text{m}^2$ (kgf·cm·s ²)
Weight		W	143	kg
Winding resistance (U-V, V-W, and W-U)		R_a	50.5	mΩ
Number of teeth for speed detection			256	$\lambda/\text{rev.}$
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system(*8)			Totally enclosed and fan cooled IC0A6	
Rated power of the cooling fan			100	W

Model αi I 22/12000

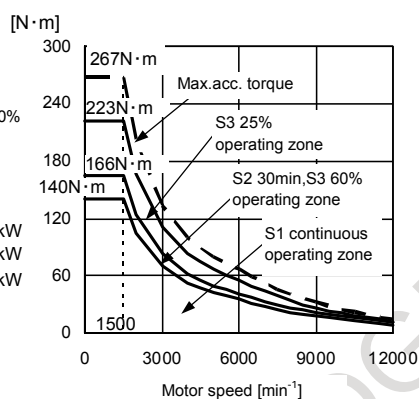
Ordering specification number: A06B-1431-B12□#0P21

Applicable amplifier: αi SP 26-B

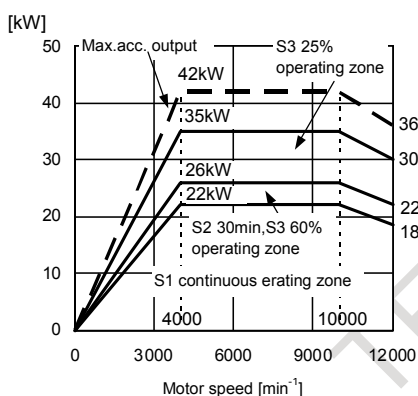
Low-speed winding output (Y connection)



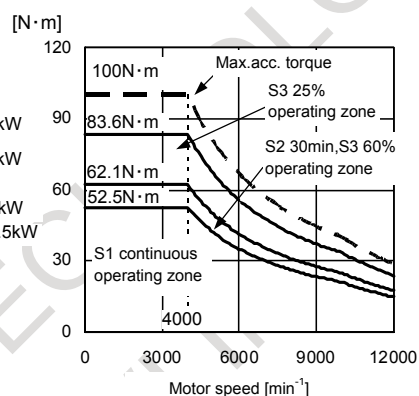
Low-speed winding torque (Y connection)



High-speed winding output (Δ connection)



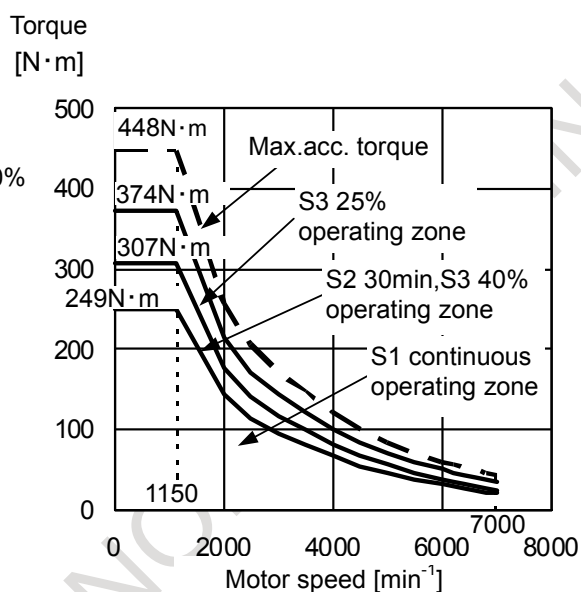
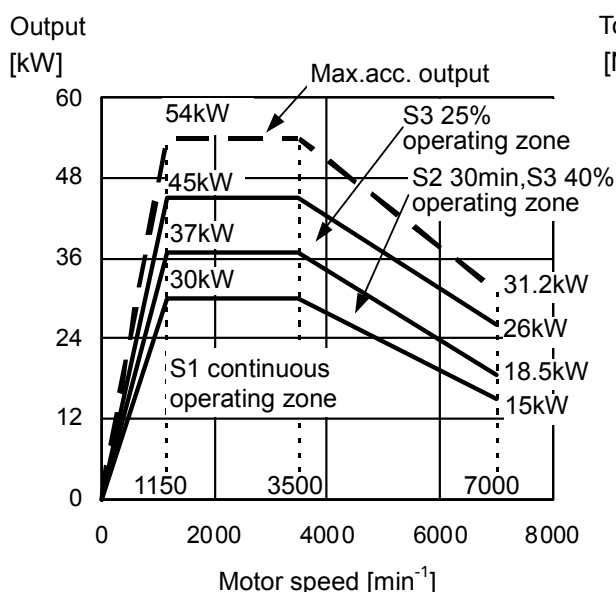
High-speed winding torque (Δ connection)



Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	22 (29.5)	22 (29.5)	kW (HP)
	S2 30 分 S3 60% rated		26 (34.9)	26 (34.9)	kW (HP)
	S3 25% rated		35 (46.9)	35 (46.9)	kW (HP)
Rated current	S1 continuous rated	I_C	100	101	A
	S2 30 分 S3 60% rated		111	112	A
	S3 25% rated		150	140	A
Speed	Base speed	N_b	1500	4000	min ⁻¹
	Max. speed	N_m	12000	12000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			42.0	42.0	kW
Continuous rated torque in the constant torque range		T_b	140 (1428)	52.5 (536)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.128 (1.29)		kg·m ² (kgf·cm·s ²)
Weight		W	143		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	16.0		mΩ
Number of teeth for speed detection			256		λ/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system(*8)			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			100		W

Model α iI 30/7000

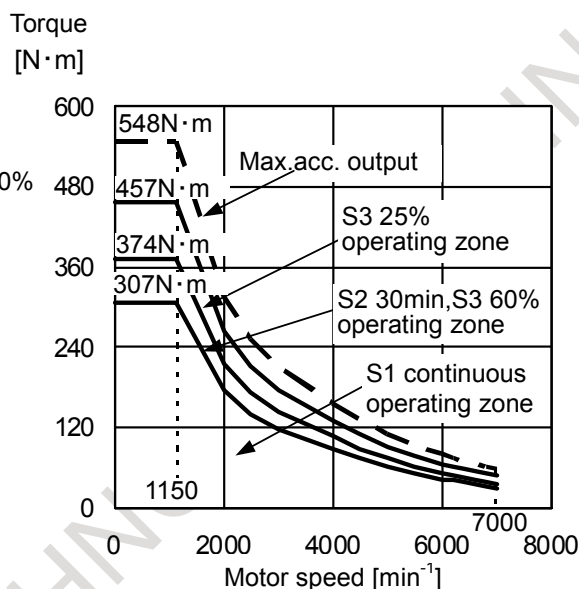
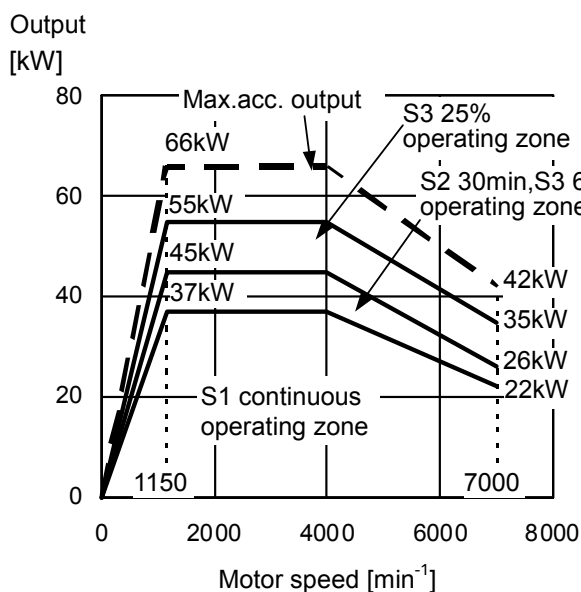
Ordering specification number: A06B-1412-B□□□#□P□□

Applicable amplifier: α iSP 37-B

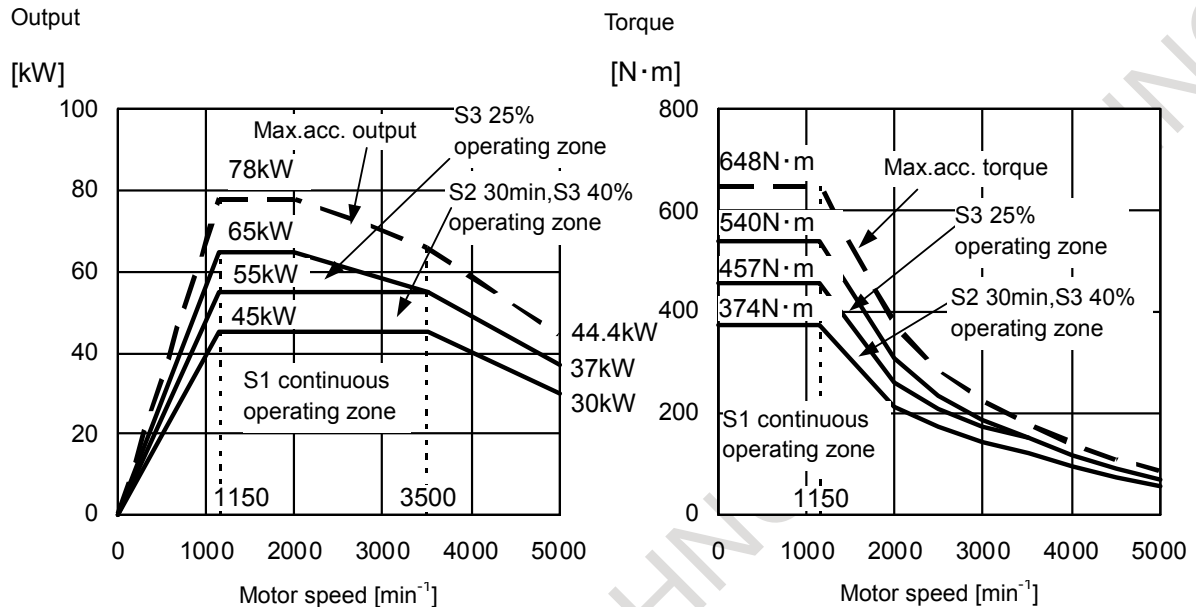
Item	Symbol	Value	Unit
Rated output	P_c	30 (40.2)	kW (HP)
		37 (49.6)	kW (HP)
		45 (60.3)	kW (HP)
Rated current	I_c	131	A
		155	A
		195	A
Speed	Base speed	N_b	1150 min ⁻¹
	Max. speed	N_{max}	7000 min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output kW
Maximum output at acceleration for PS selection			54 kW
Continuous rated torque in the constant torque range		T_b	249 (2542) N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.295 (3.0) kg·m ² (kgf·cm·s ²)
Weight		W	250 kg
Winding resistance (U-V, V-W, and W-U)		R_a	24.3 mΩ
Number of teeth for speed detection			256 λ/rev.
Vibration			V5(option V3)
Noise			75 or less dB(A)
Cooling system(*8)			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			160 W

Model α iI 40/7000

Ordering specification number: A06B-1413-B□□□#□P□□

Applicable amplifier: α iSP 45-B

Item		Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	37 (49.6)	kW (HP)
	S2 30 min rated, S3 60% rated		45 (60.3)	kW (HP)
	S3 25% rated		55 (73.7)	kW (HP)
Rated current	S1 continuous rated	I_c	160	A
	S2 30 min rated, S3 60% rated		185	A
	S3 25% rated		258	A
Speed	Base speed	N_b	1150	min ⁻¹
	Max. speed	N_{max}	7000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			66	kW
Continuous rated torque in the constant torque range		T_b	307 (3135)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.355 (3.6)	kg·m ² (kgf·cm·s ²)
Weight		W	290	kg
Winding resistance (U-V, V-W, and W-U)		R_a	13.8	mΩ
Number of teeth for speed detection			256	λ/rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system(*8)			Totally enclosed and fan cooled IC0A6	
Rated power of the cooling fan			160	W

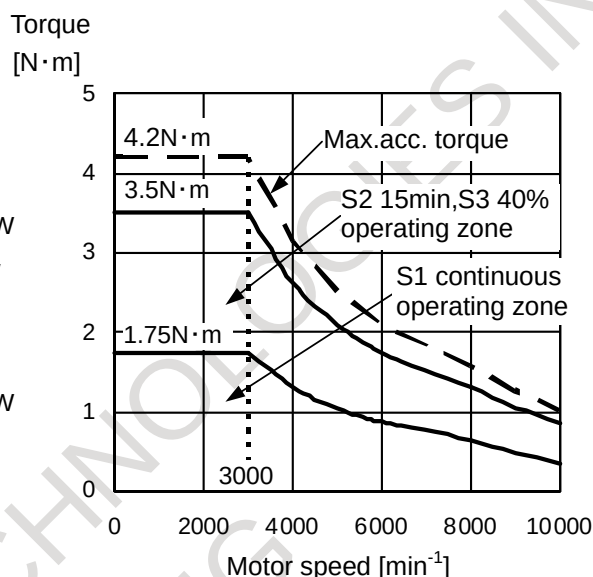
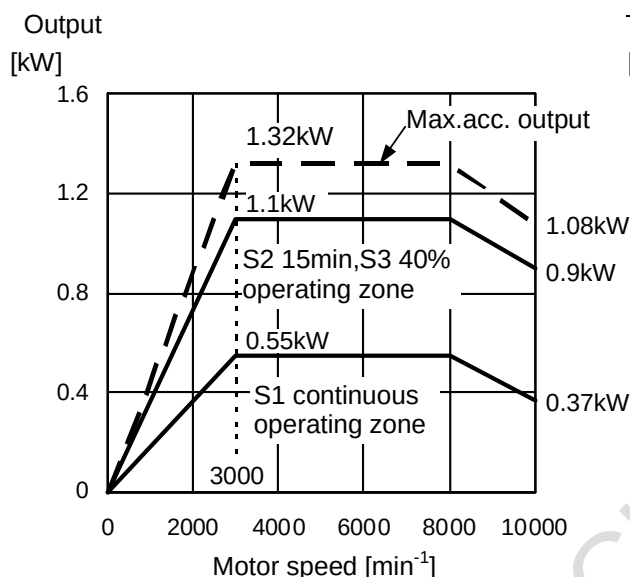
Model αi I 50/5000**Ordering specification number: A06B-1414-B□□□#□□□□**Applicable amplifier: αi SP 55-B

Item		Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	45 (60.3)	kW (HP)
	S2 30 min rated, S3 40% rated		55 (73.7)	kW (HP)
	S3 25% rated		65 (87.1)	kW (HP)
Rated current	S1 continuous rated	I_c	193	A
	S2 30 min rated, S3 40% rated		236	A
	S3 25% rated		273	A
Speed	Base speed	N_b	1150	min ⁻¹
	Max. speed	N_{max}	5000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			78	kW
Continuous rated torque in the constant torque range		T_b	374 (3810)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.49 (5.0)	kg·m ² (kgf·cm·s ²)
Weight		W	460	kg
Winding resistance (U-V, V-W, and W-U)		R_a	20.8	mΩ
Number of teeth for speed detection			256	λ/rev.
Vibration			V10(option V5)	
Noise			80 or less	dB(A)
Cooling system(*8)			Totally enclosed and fan cooled IC0A6	
Rated power of the cooling fan			185	W

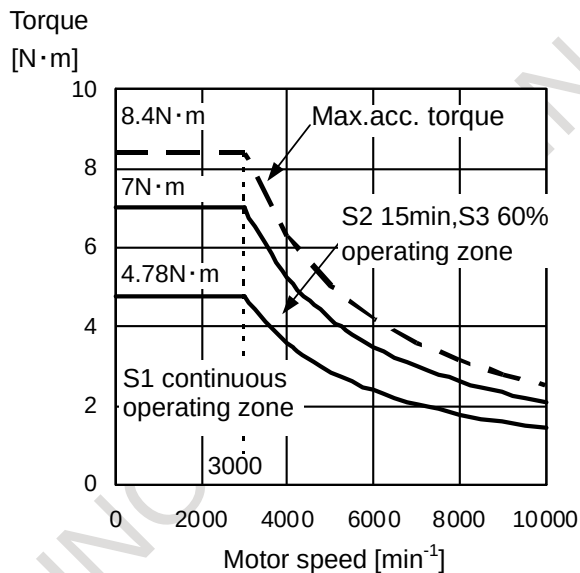
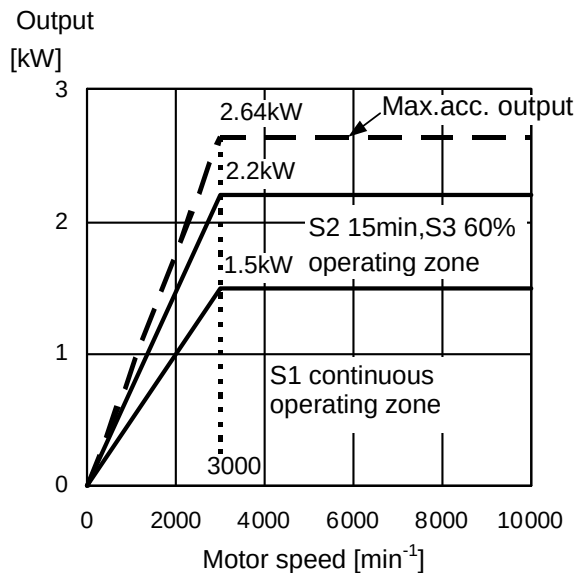
3.2.3 α iI Series 400V-type

Model α iI 0.5/10000HV
Ordering specification number: A06B-1501-B□□□

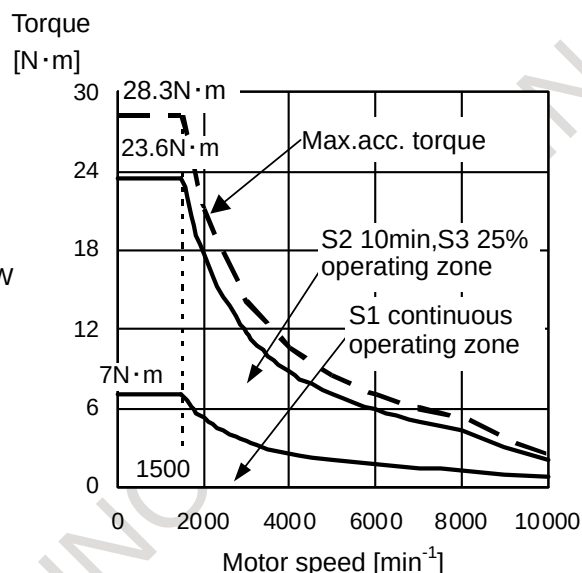
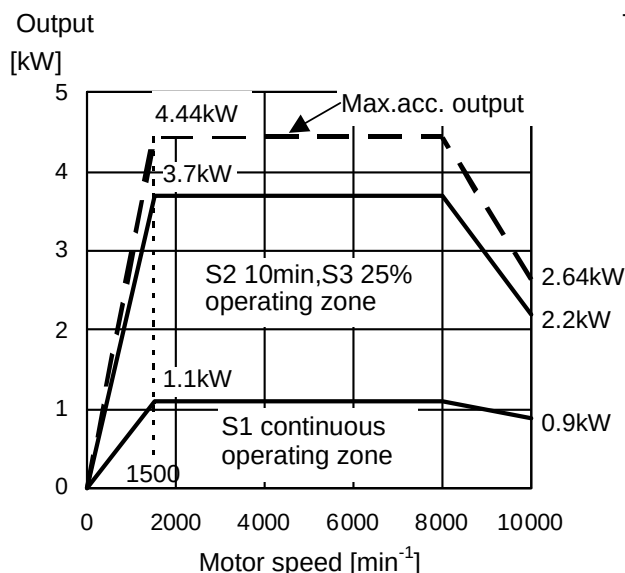
 Applicable amplifier: α iSP 5.5HV-B

 β iSVSP*-11HV-B


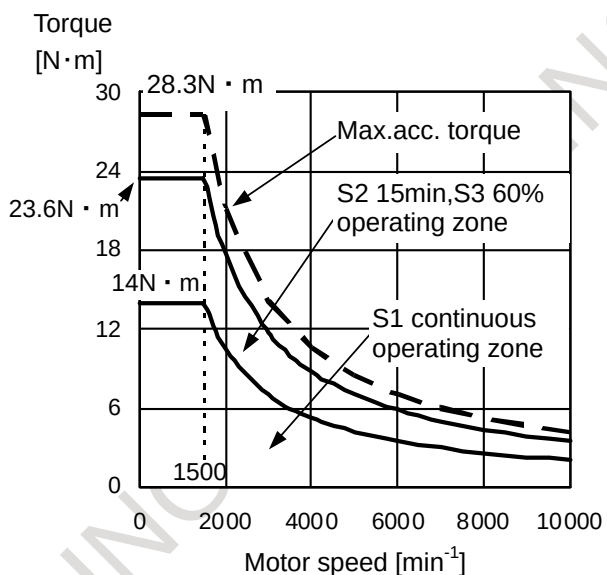
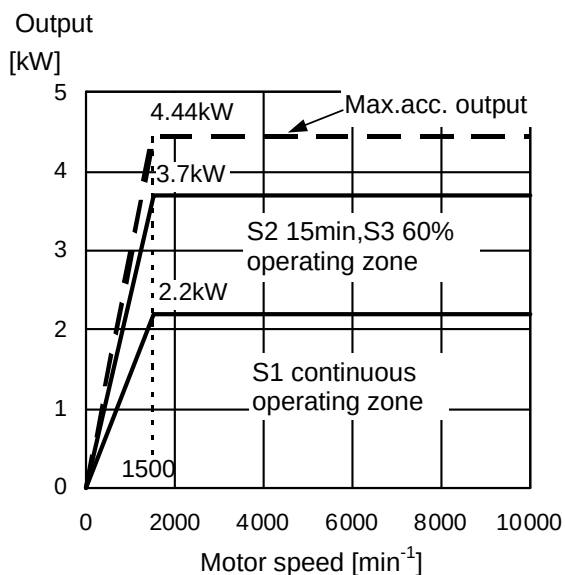
Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P_C	0.55 (0.74) kW (HP)
	S2 15 min rated, S3 40% rated		1.1 (1.5) kW (HP)
Rated current	S1 continuous rated	I_C	4 A
	S2 15 min rated, S3 40% rated		5 A
Speed	Base speed	N_b	3000 min ⁻¹
	Max. speed	N_{max}	10000 min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output kW
Maximum output at acceleration for PS selection			1.32 kW
Continuous rated torque in the constant torque range		T_b	1.75 (17.9) N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.00048 (0.0048) kg·m ² (kgf·cm·s ²)
Weight		W	7 kg
Winding resistance (U-V, V-W, and W-U)		R_a	2750 mΩ
Number of teeth for speed detection			64 λ/rev.
Vibration			V5(option V3)
Noise			75 or less dB(A)
Cooling system			Totally enclosed and non-cooled IC0A0
Rated power of the cooling fan			None W

Model αi I 1/10000HV**Ordering specification number: A06B-1502-B□□□**Applicable amplifier: αi SP 5.5HV-B βi SVSP*-11HV-B

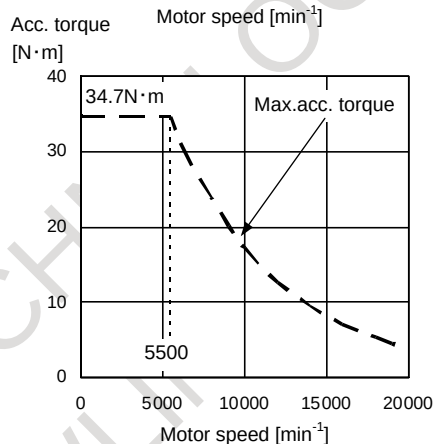
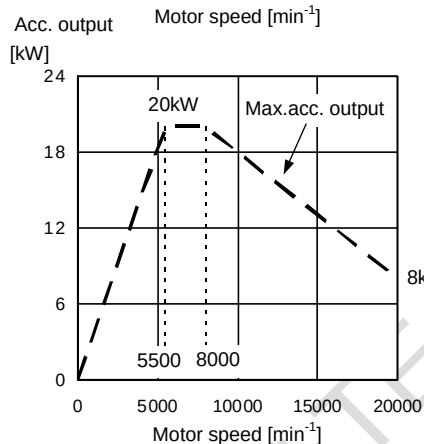
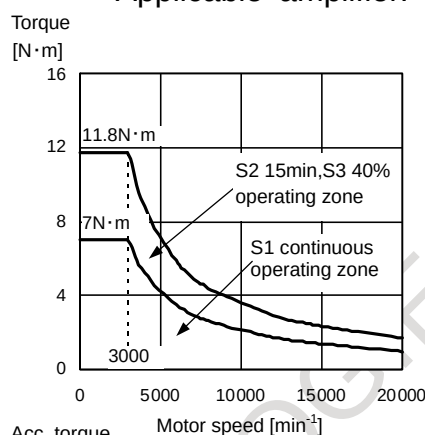
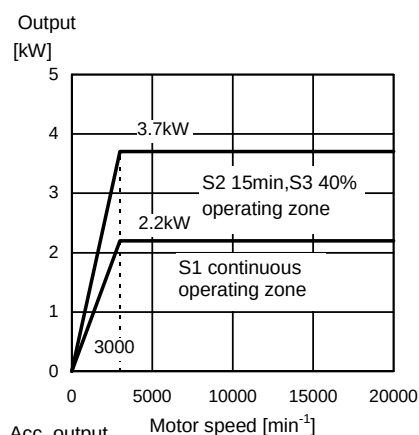
Item		Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	1.5 (2.0)	kW (HP)
	S2 15 min rated, S3 60% rated		2.2 (3.0)	kW (HP)
Rated current	S1 continuous rated	I_c	5	A
	S2 15 min rated, S3 60% rated		7	A
Speed	Base speed	N_b	3000	min^{-1}
	Max. speed	$N_{\max}$	10000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			2.64	kW
Continuous rated torque in the constant torque range		T_b	4.77 (48.7)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.003 (0.03)	$\text{kg} \cdot \text{m}^2$ (kgf·cm·s ²)
Weight		W	18	kg
Winding resistance (U-V, V-W, and W-U)		R_a	1970	mΩ
Number of teeth for speed detection			128	λ/rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Rated power of the cooling fan			28	W

Model αi I 1.5/10000HV**Ordering specification number: A06B-1503-B□□□**Applicable amplifier: αi SP 5.5HV-B βi SVSP*-11HV-B

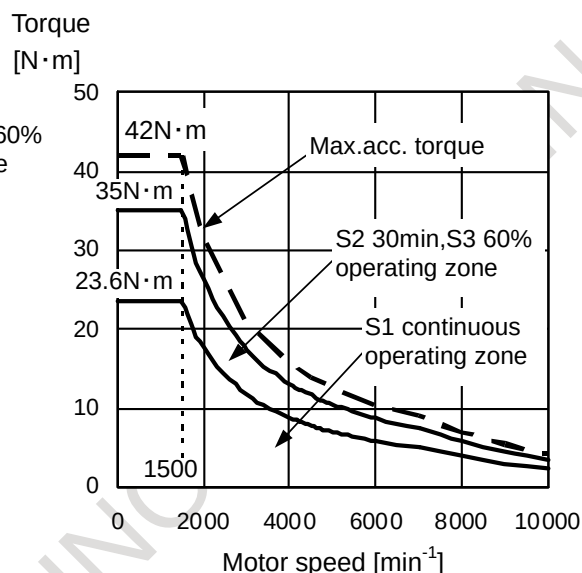
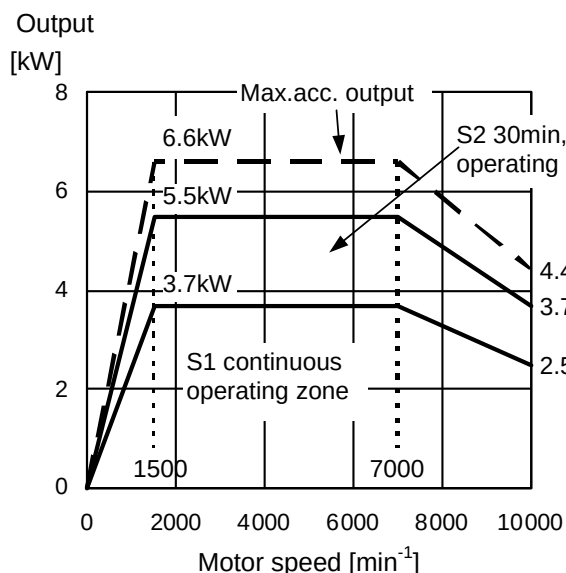
Item		Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	1.1 (1.5)	kW (HP)
	S2 10 min rated, S3 25% rated		3.7 (5.0)	kW (HP)
Rated current	S1 continuous rated	I_c	7	A
	S2 10 min rated, S3 25% rated		14	A
Speed	Base speed	N_b	1500	min^{-1}
	Max. speed	$N_{\max}$	10000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			4.44	kW
Continuous rated torque in the constant torque range		T_b	7.00 (71.4)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0043 (0.04)	$\text{kg}\cdot\text{m}^2$ (kgf·cm·s ²)
Weight		W	24	kg
Winding resistance (U-V, V-W, and W-U)		R_a	1761	mΩ
Number of teeth for speed detection			128	λ/rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Rated power of the cooling fan			28	W

Model αi I 2/10000HV**Ordering specification number: A06B-1504-B□□□**Applicable amplifier: αi SP 5.5HV-B βi SVSP*-11HV-B

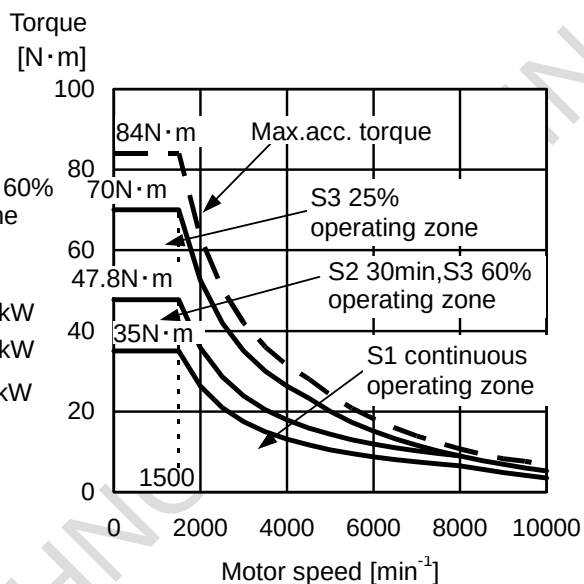
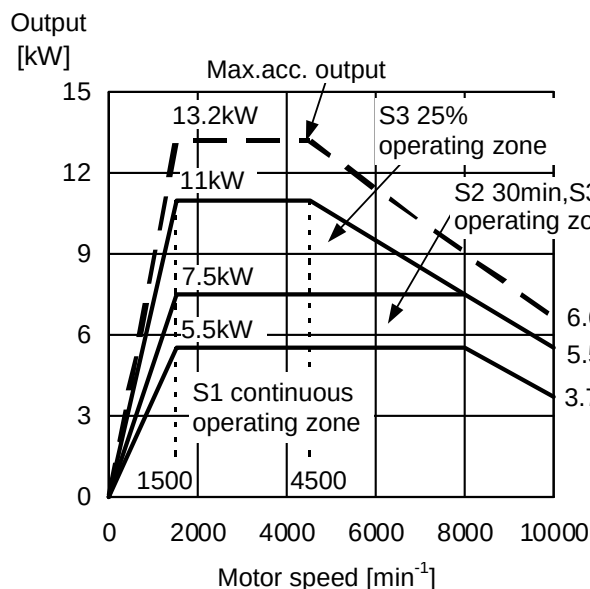
Item	Symbol	Value	Unit
Rated output	P_c	2.2 (3.0)	kW (HP)
		3.7 (5.0)	kW (HP)
Rated current	I_c	10	A
		15	A
Speed	N_b	1500	min ⁻¹
		10000	min ⁻¹
Steady-state maximum output	P_{max}	120% of maximum rated output	kW
Maximum output at acceleration for PS selection		4.44	kW
Continuous rated torque in the constant torque range	T_b	14.0 (143)	N·m (kgf·cm)
Moment of inertia of the rotor	J_m	0.0078 (0.08)	kg·m ² (kgf·cm·s ²)
Weight	W	27	kg
Winding resistance (U-V, V-W, and W-U)	R_a	1180	mΩ
Number of teeth for speed detection		128	λ/rev.
Vibration		V5(option V3)	
Noise		75 or less	dB(A)
Cooling system		Totally enclosed and fan cooled IC0A6	
Rated power of the cooling fan		34	W

Model α iI 2/20000HV**Ordering specification number: A06B-1524-B123#0121**Applicable amplifier: α iSP 30HV-B

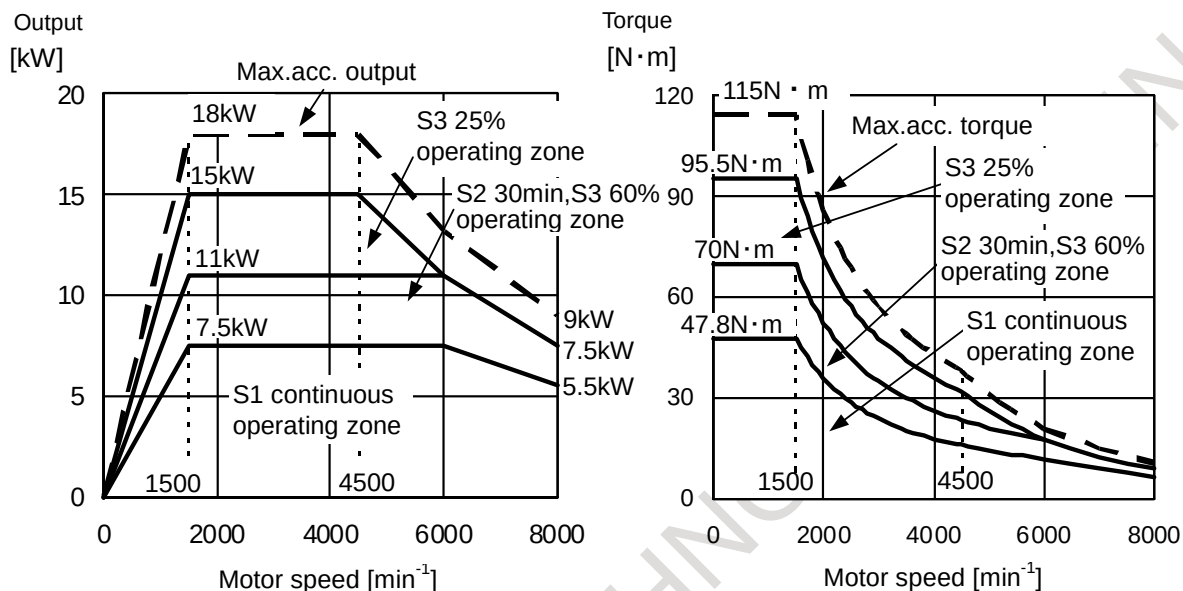
Item	Symbol	Value	Unit
Rated output	P_c	2.2 (3.0)	kW (HP)
		3.7 (5.0)	kW (HP)
Rated current	I_c	21	A
		28	A
Speed	Base speed	N_b	3000 min ⁻¹
	Max. speed	N_{max}	20000 min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output kW
Maximum output at acceleration for PS selection			20.0 kW
Continuous rated torque in the constant torque range		T_b	7.00 (71.5) N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0078 (0.08) kg·m ² (kgf·cm·s ²)
Weight		W	27 kg
Winding resistance (U-V, V-W, and W-U)		R_a	187 mΩ
Number of teeth for speed detection			128 λ/rev.
Vibration			V3
Noise			75 or less dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			34 W

Model αi I 3/10000HV**Ordering specification number: A06B-1505-B□□□**Applicable amplifier: αi SP 5.5HV-B βi SVSP*-11HV-B

Item		Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	3.7 (5.0)	kW (HP)
	S2 30 min rated, S3 60% rated		5.5 (7.4)	kW (HP)
Rated current	S1 continuous rated	I_c	11	A
	S2 30 min rated, S3 60% rated		14	A
Speed	Base speed	N_b	1500	min ⁻¹
	Max. speed	N_{max}	10000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			6.6	kW
Continuous rated torque in the constant torque range		T_b	23.6 (240)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0148 (0.15)	kg·m ² (kgf·cm·s ²)
Weight		W	46	kg
Winding resistance (U-V, V-W, and W-U)		R_a	1150	mΩ
Number of teeth for speed detection			128	λ/rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Rated power of the cooling fan			34	W

Model α iI 6/10000HV**Ordering specification number: A06B-1506-B□□□#□P□□**Applicable amplifier: α iSP 11HV-B β iSVSP*-11HV-B

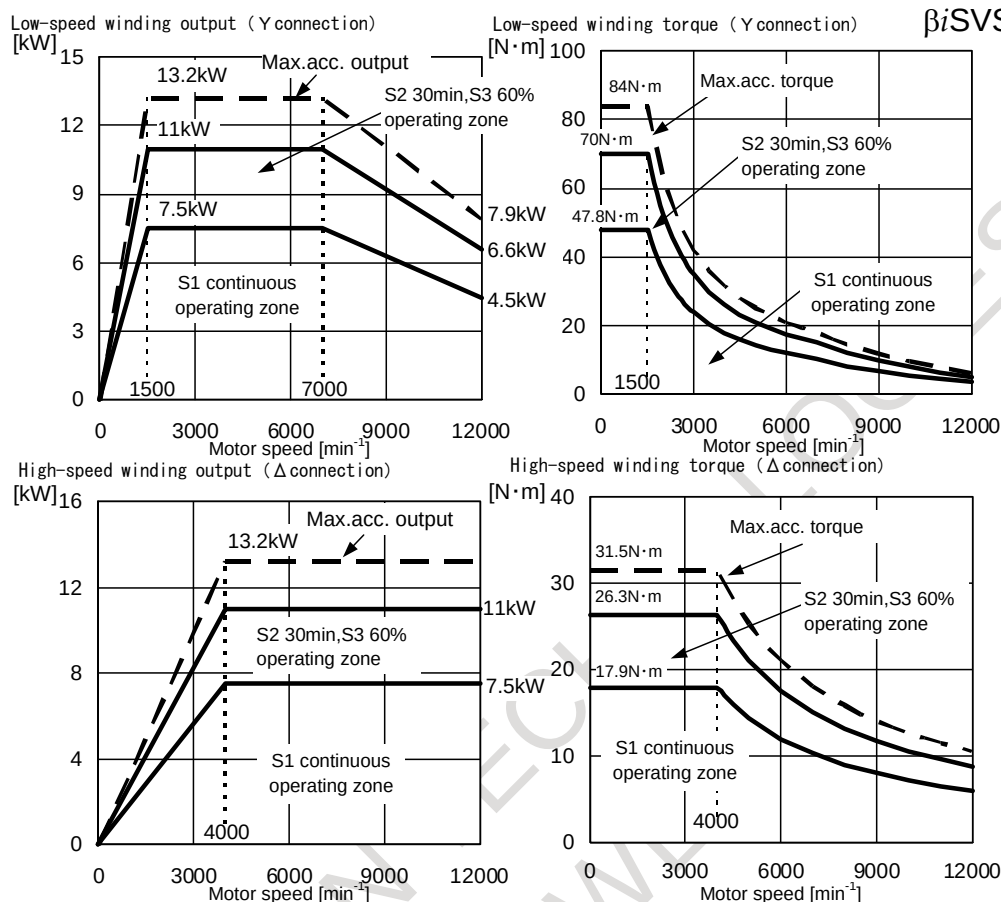
Item		Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	5.5 (7.4)	kW (HP)
	S2 30 min rated, S3 60% rated		7.5 (10)	kW (HP)
	S3 25% rated		11 (14.7)	kW (HP)
Rated current	S1 continuous rated	I_c	20	A
	S2 30 min rated, S3 60% rated		26	A
	S3 25% rated		32	A
Speed	Base speed	N_b	1500	min^{-1}
	Max. speed	$N_{\max}$	10000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			13.2	kW
Continuous rated torque in the constant torque range		T_b	35.0 (357)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0179 (0.18)	$\text{kg}\cdot\text{m}^2$ (kgf·cm·s ²)
Weight		W	51	kg
Winding resistance (U-V, V-W, and W-U)		R_a	434	m Ω
Number of teeth for speed detection			256	$\lambda/\text{rev.}$
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Rated power of the cooling fan			80	W

Model αi I 8/8000HV**Ordering specification number: A06B-1507-B□□□#□P□□**Applicable amplifier: αi SP 15HV-B βi SVSP*-18HV-B

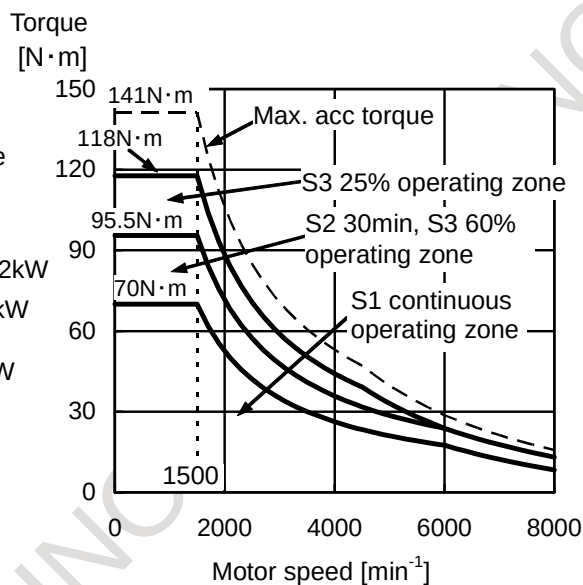
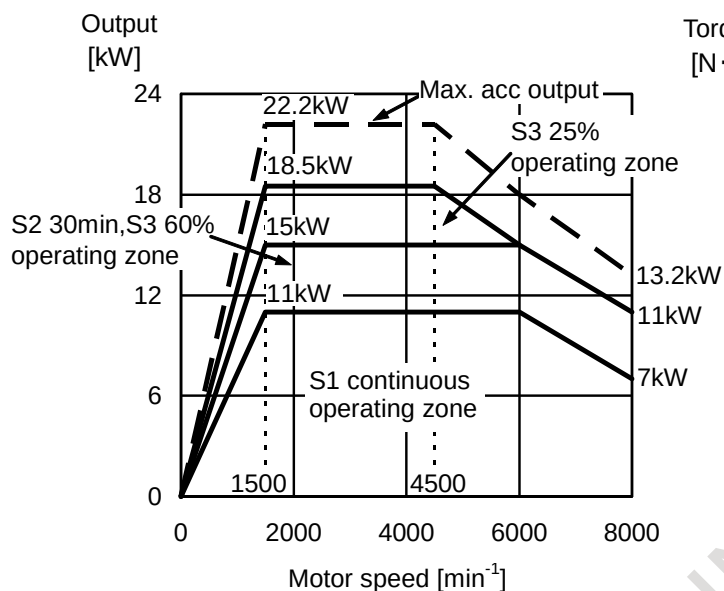
Item		Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	7.5 (10)	kW (HP)
	S2 30 min rated, S3 60% rated		11 (14.7)	kW (HP)
	S3 25% rated		15 (20.1)	kW (HP)
Rated current	S1 continuous rated	I_c	21	A
	S2 30 min rated, S3 60% rated		28	A
	S3 25% rated		36	A
Speed	Base speed	N_b	1500	min ⁻¹
	Max. speed	N_{max}	8000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			18.0	kW
Continuous rated torque in the constant torque range		T_b	47.7 (487)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0275 (0.28)	kg·m ² (kgf·cm·s ²)
Weight		W	80	kg
Winding resistance (U-V, V-W, and W-U)		R_a	448	mΩ
Number of teeth for speed detection			256	λ/rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Rated power of the cooling fan			80	W

Model αi I 8/12000HV

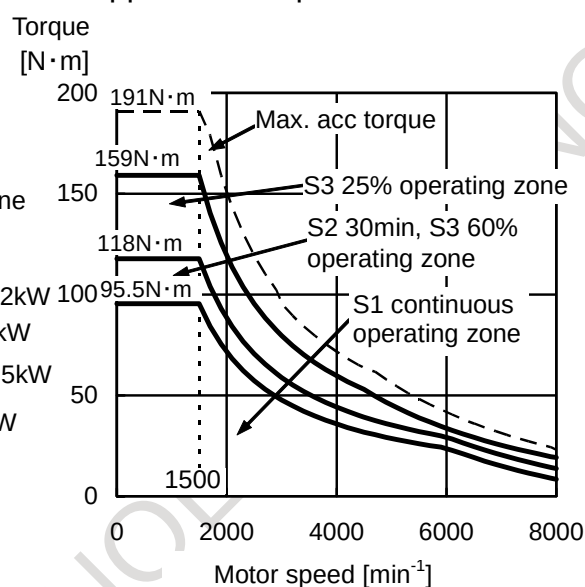
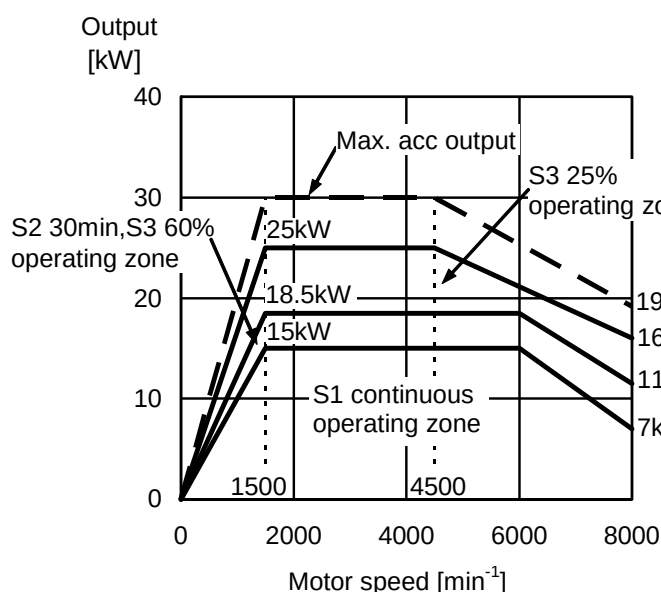
Ordering specification number: A06B-1527-B13□#0121

Applicable amplifier: αi SP 15HV-B βi SVSP*-18HV-B

Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P _C	7.5(10)	7.5(10)	kW(HP)
	S2 30 min rated, S3 60% rated		11(14.7)	11(14.7)	kW(HP)
Rated current	S1 continuous rated	I _C	23	25	A
	S2 30 min rated, S3 60% rated		29	30	A
Speed	Base speed	N _b	1500	4000	min ⁻¹
	Max. speed	N _{max}	12000	12000	min ⁻¹
Switching speed			4000		min ⁻¹
Steady-state maximum output		P _{max}	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			13.2		kW
Continuous rated torque in the constant torque range		T _b	47.7 (488)	17.9 (183)	N·m (kgf·cm)
Moment of inertia of the rotor		J _m	0.0275 (0.28)		kg·m ² (kgf·cm·s ²)
Weight		W	80		kg
Winding resistance (U-X, V-Y, and W-Z)		R _a	219		mΩ
Number of teeth for speed detection			256		λ/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			80		W

Model αi I 12/8000HV**Ordering specification number: A06B-1508-B□□□#□R□□**Applicable amplifier: αi SP 15HV-B βi SVSP*-18HV-B

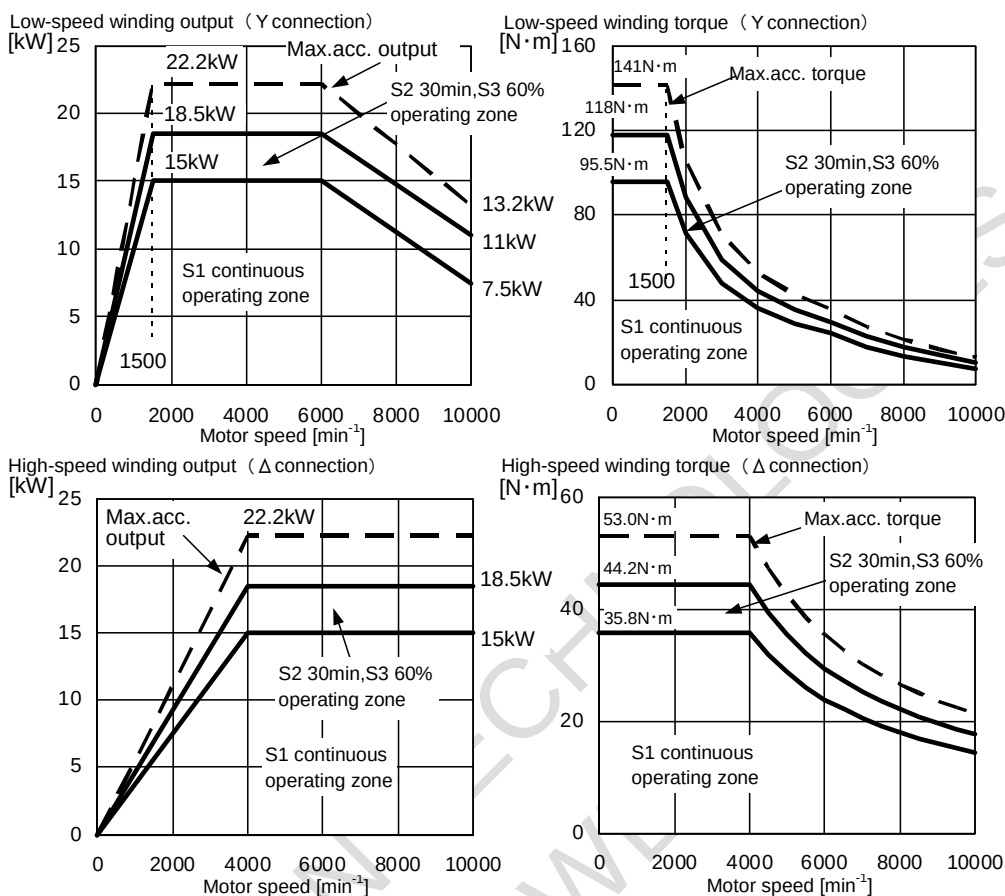
Item	Symbol	Value	Unit
Rated output	S1 continuous rated	11 (14.7)	kW (HP)
	S2 30 min rated, S3 60% rated	15 (20.1)	kW (HP)
	S3 25% rated	18.5 (24.8)	kW (HP)
Rated current	S1 continuous rated	27	A
	S2 30 min rated, S3 60% rated	33	A
	S3 25% rated	38	A
Speed	Base speed	1500	min ⁻¹
	Max. speed	8000	min ⁻¹
Steady-state maximum output		P _{max}	120% of maximum rated output
Maximum output at acceleration for PS selection			22.2
Continuous rated torque in the constant torque range		T _b	70.0 (714)
Moment of inertia of the rotor		J _m	0.07 (0.77)
Weight		W	95
Winding resistance (U-V, V-W, and W-U)		R _a	421.6
Number of teeth for speed detection			256
Vibration			V5(option V3)
Noise			75 or less
Cooling system			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			116

Model α iI 15/8000HV**Ordering specification number: A06B-1509-B□□□#□V□□**Applicable amplifier: α iSP 22HV-B

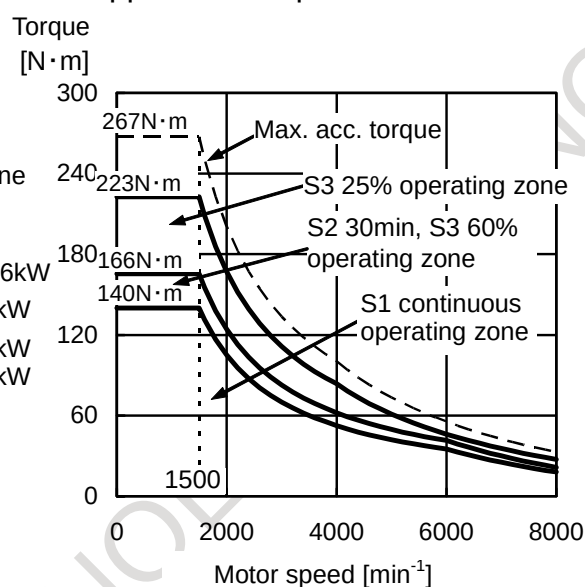
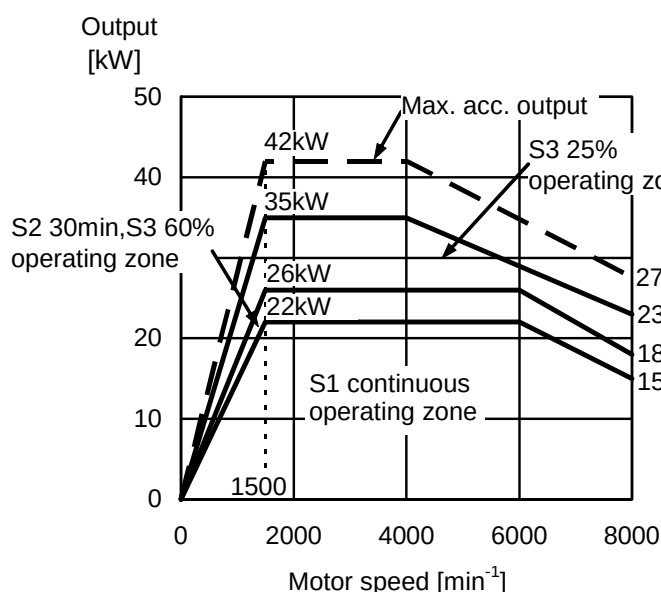
Item	Symbol	Value	Unit
Rated output	P_c	15 (20.1)	kW (HP)
		18.5 (24.8)	kW (HP)
		25 (33.5)	kW (HP)
Rated current	I_c	37	A
		45	A
		53	A
Speed	N_b	1500	min ⁻¹
	N_{max}	8000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output
Maximum output at acceleration for PS selection		30	kW
Continuous rated torque in the constant torque range		T_b	95.5 (974)
Moment of inertia of the rotor		J_m	0.09 (0.93)
Weight		W	110
Winding resistance (U-V, V-W, and W-U)		R_a	306
Number of teeth for speed detection			256
Vibration			V5(option V3)
Noise			75 or less
Cooling system			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			116

Model α iI 15/10000HV

Ordering specification number: A06B-1529-B10□

Applicable amplifier: α iSP 22HV-B

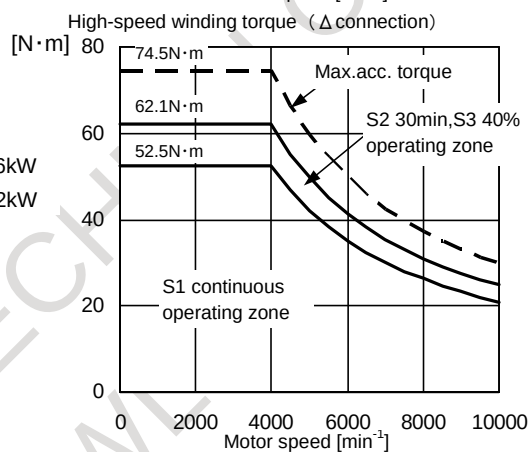
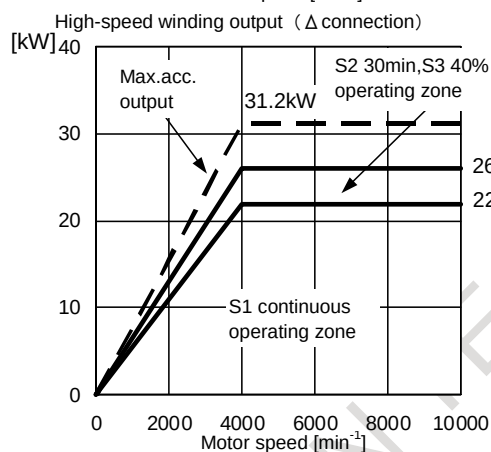
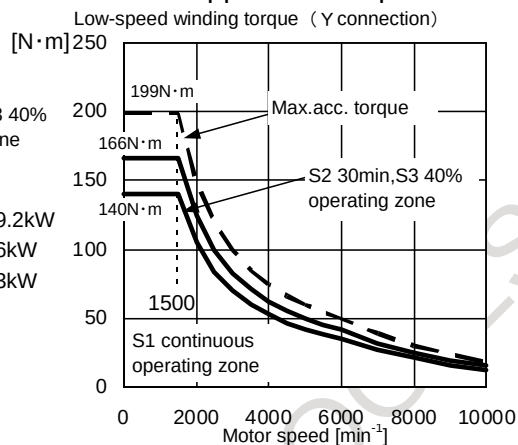
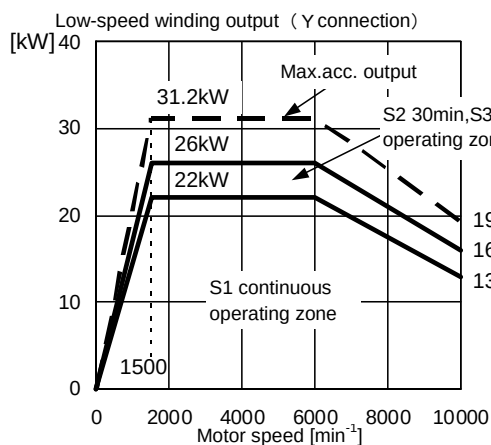
Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P _C	15(20.1)	15(20.1)	kW(HP)
	S2 30 min rated, S3 60% rated		18.5(24.8)	18.5(24.8)	kW(HP)
Rated current	S1 continuous rated	I _C	37	36	A
	S2 30 min rated, S3 60% rated		45	41	A
Speed	Base speed	N _b	1500	4000	min ⁻¹
	Max. speed	N _{max}	10000	10000	min ⁻¹
Switching speed			4000		min ⁻¹
Steady-state maximum output		P _{max}	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			22.2	22.2	kW
Continuous rated torque in the constant torque range		T _b	95.5 (974)	35.8 (365)	N·m (kgf·cm)
Moment of inertia of the rotor		J _m	0.09 (0.93)		kg·m ² (kgf·cm·s ²)
Weight		W	110		kg
Winding resistance (U-X, V-Y, and W-Z)		R _a	152		mΩ
Number of teeth for speed detection			256		λ/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			116		W

Model α iI 22/8000HV**Ordering specification number: A06B-1511-B□□□#□R□□**Applicable amplifier: α iSP 30HV-B

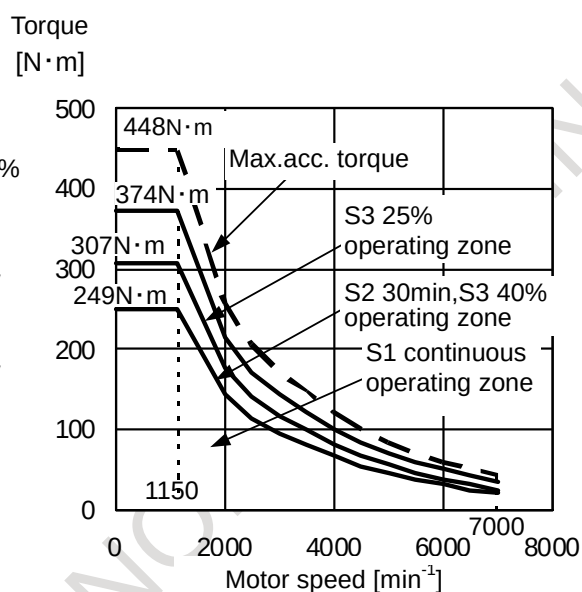
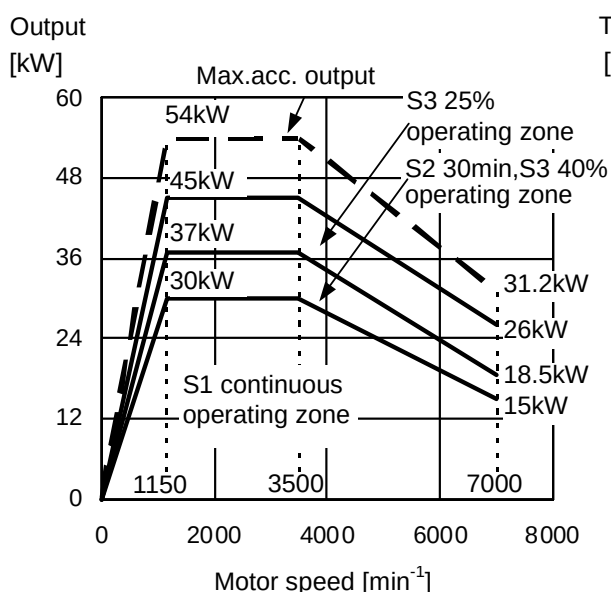
Item	Symbol	Value	Unit
Rated output	P_c	22 (29.5)	kW (HP)
		26 (34.9)	kW (HP)
		35 (46.9)	kW (HP)
Rated current	I_c	50	A
		57	A
		74	A
Speed	N_b	1500	min^{-1}
	$N_{\max}$	8000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output
Maximum output at acceleration for PS selection			42
Continuous rated torque in the constant torque range		T_b	140 (1428)
Moment of inertia of the rotor		J_m	0.128 (1.29)
Weight		W	143
Winding resistance (U-V, V-W, and W-U)		R_a	182
Number of teeth for speed detection			256
Vibration			V5(option V3)
Noise			75 or less
Cooling system			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			116

Model αi I 22/10000HV

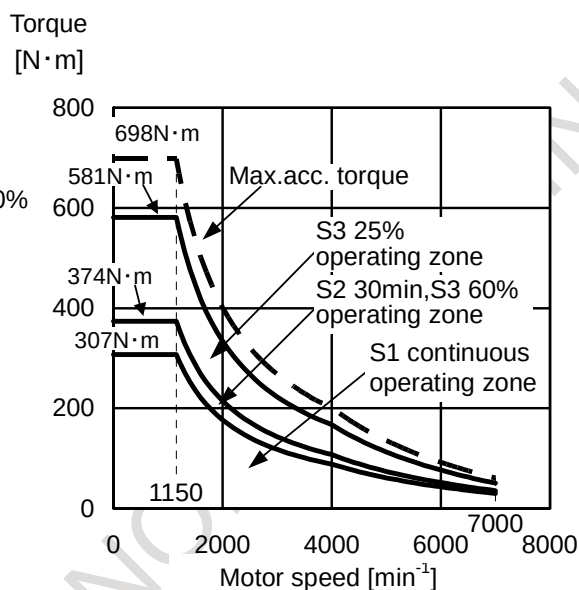
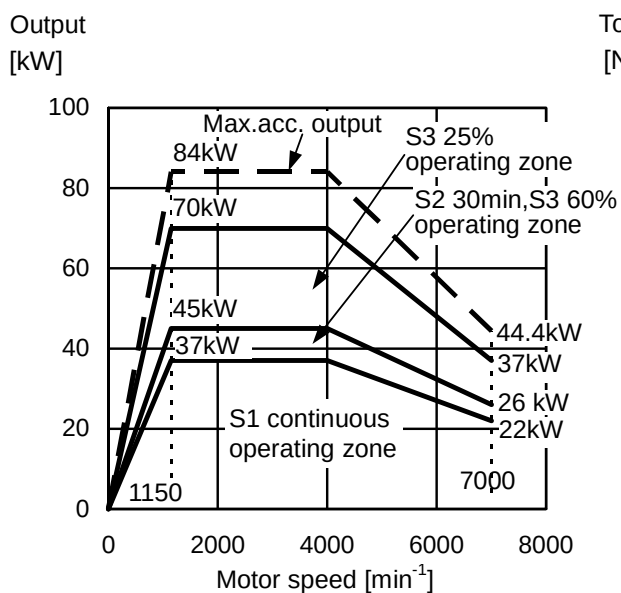
Ordering specification number: A06B-1531-B10□

Applicable amplifier: αi SP 30HV-B

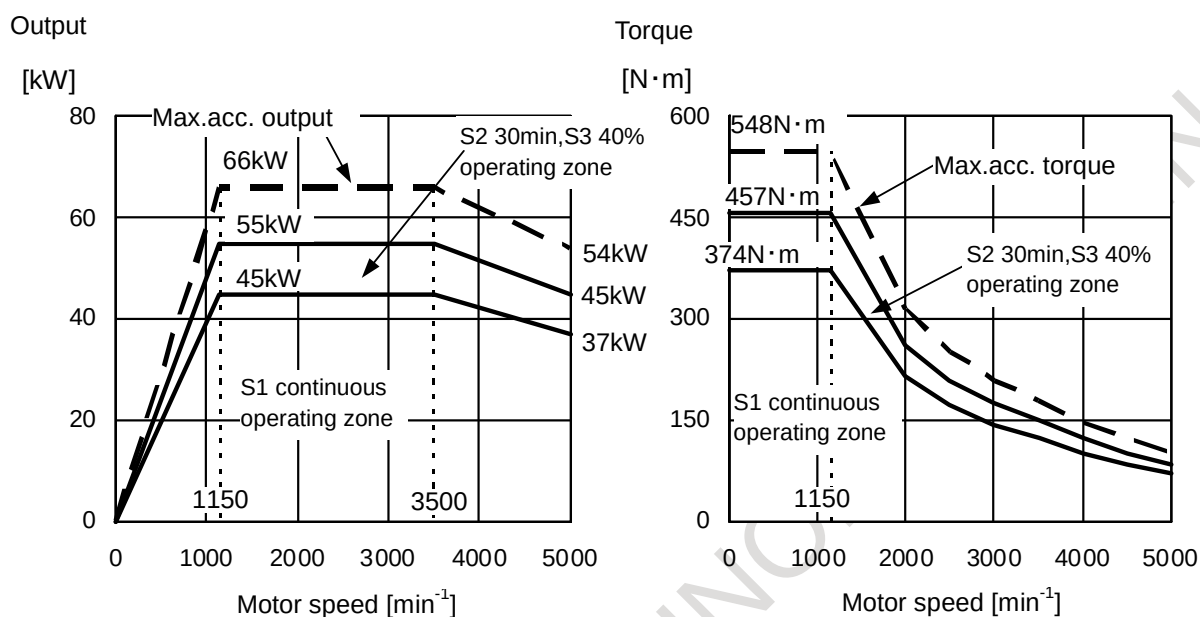
Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P_c	22(29.5)	22(29.5)	kW(HP)
	S2 30 min rated, S3 40% rated		26(34.9)	26(34.9)	kW(HP)
Rated current	S1 continuous rated	I_c	46	47	A
	S2 30 min rated, S3 40% rated		54	53	A
Speed	Base speed	N_b	1500	4000	min ⁻¹
	Max. speed	N_{max}	10000	10000	min ⁻¹
Switching speed			4000		min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			31.2		kW
Continuous rated torque in the constant torque range		T_b	140.0 (1429)	52.5 (536)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.128 (1.29)		kg·m ² (kgf·cm·s ²)
Weight		W	143		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	99.0		mΩ
Number of teeth for speed detection			256		λ/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			116		W

Model α iI 30/7000HV**Ordering specification number: A06B-1512-B□□□#□P□□**Applicable amplifier: α iSP 45HV-B

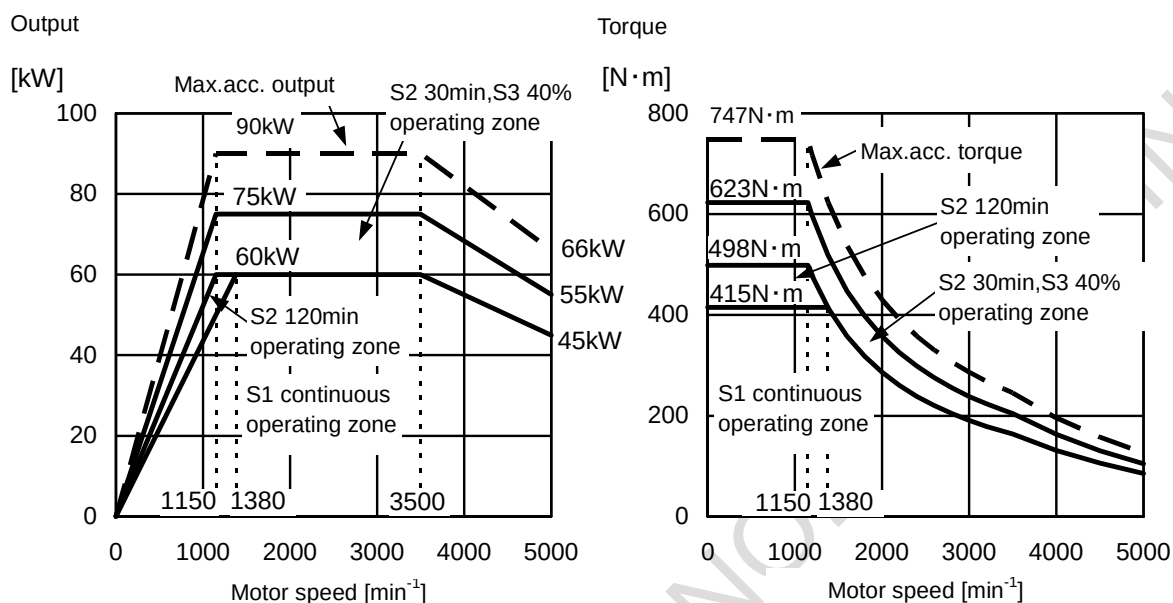
Item	Symbol	Value	Unit
Rated output	P_c	30 (40.2)	kW (HP)
		37 (49.6)	kW (HP)
		45 (60.3)	kW (HP)
Rated current	I_c	68	A
		81	A
		98	A
Speed	Base speed	N_b	1150 min ⁻¹
	Max. speed	N_{max}	7000 min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output kW
Maximum output at acceleration for PS selection			54 kW
Continuous rated torque in the constant torque range		T_b	249 (2540) N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.295 (3.0) kg·m ² (kgf·cm·s ²)
Weight		W	250 kg
Winding resistance (U-V, V-W, and W-U)		R_a	94 mΩ
Number of teeth for speed detection			256 λ/rev.
Vibration			V5(option V3)
Noise			75 or less dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			170 W

Model αi I 40/7000HV**Ordering specification number: A06B-1513-B□□□#□P□□**Applicable amplifier: αi SP 75HV-B

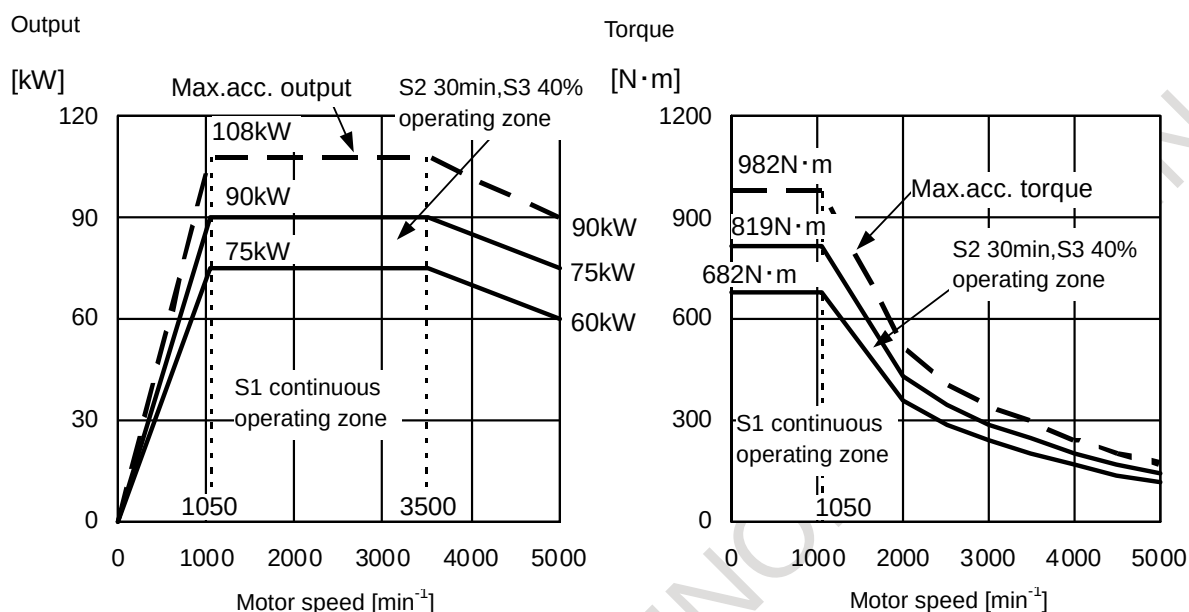
Item	Symbol	Value	Unit
Rated output	P_c	37 (49.6)	kW (HP)
		45 (60.3)	kW (HP)
		70 (93.9)	kW (HP)
Rated current	I_c	102	A
		120	A
		174	A
Speed	Base speed	N_b	1150 min ⁻¹
	Max. speed	N_{max}	7000 min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output kW
Maximum output at acceleration for PS selection			84 kW
Continuous rated torque in the constant torque range		T_b	307 (3135) N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.355 (3.6) kg·m ² (kgf·cm·s ²)
Weight		W	290 kg
Winding resistance (U-V, V-W, and W-U)		R_a	48.5 mΩ
Number of teeth for speed detection			256 λ/rev.
Vibration			V5(option V3)
Noise			75 以下 dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6
Rated power of the cooling fan			170 W

Model α iI 50/5000HV**Ordering specification number: A06B-1514-B□□□**Applicable amplifier: α iSP 45HV-B

Item		Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	45 (60.3)	kW (HP)
	S2 30 min rated, S3 40% rated		55 (73.7)	kW (HP)
Rated current	S1 continuous rated	I_c	86	A
	S2 30 min rated, S3 40% rated		101	A
Speed	Base speed	N_b	1150	min ⁻¹
	Max. speed	N_{max}	5000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			66	kW
Continuous rated torque in the constant torque range		T_b	374 (3813)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.49 (5.0)	kg·m ² (kgf·cm·s ²)
Weight		W	460	kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	83.2	mΩ
Number of teeth for speed detection			256	λ/rev.
Vibration			V10(option V5)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Rated power of the cooling fan			180	W

Model α iI 60/5000HV**Ordering specification number: A06B-1515-B□□□#□1□□**Applicable amplifier: α iSP 75HV-B

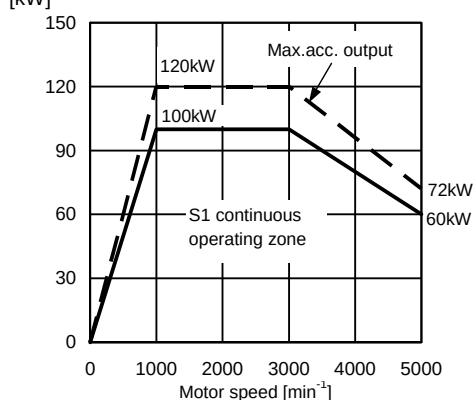
Item		Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	60 (80.4)	kW (HP)
	S2 120 min rated		60 (80.4)	kW (HP)
	S2 30 min rated, S3 40% rated		75 (100.5)	kW (HP)
Rated current	S1 continuous rated	I_c	113	A
	S2 120 min rated		129	A
	S2 30 min rated, S3 40% rated		156	A
Speed	Base speed	S1 continuous rated	1380	min ⁻¹
		S2 120 min rated	1150	min ⁻¹
		S2 30 min rated, S3 40% rated		
	Max. speed	N_{max}	5000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			90	kW
Continuous rated torque in the constant torque range		T_b	415 (4234)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.49 (5.0)	kg·m ² (kgf·cm·s ²)
Weight		W	468	kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	20.8	mΩ
Number of teeth for speed detection			256	λ/rev.
Vibration			V10(オブション V5)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Rated power of the cooling fan			180	W

Model α iI 75/5000HV**Ordering specification number: A06B-1516-B□□□**Applicable amplifier: α iSP 75HV-B

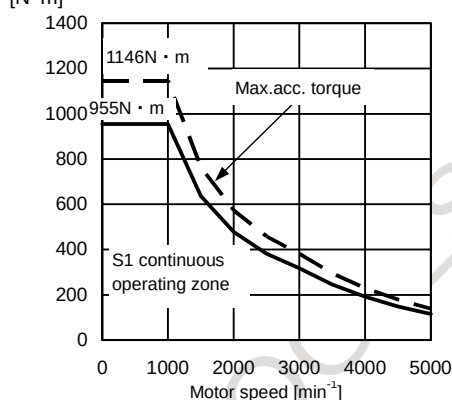
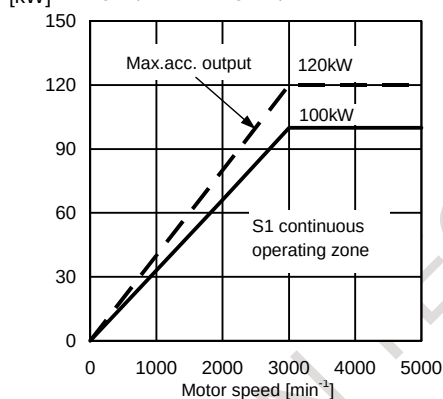
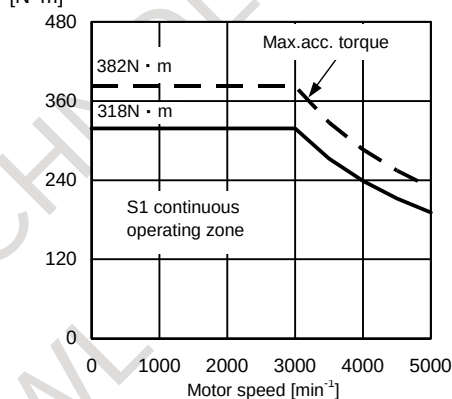
Item		Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	75 (100.5)	kW (HP)
	S2 30 min rated, S3 40% rated		90 (120.6)	kW (HP)
Rated current	S1 continuous rated	I_c	160	A
	S2 30 min rated, S3 40% rated		185	A
Speed	Base speed	N_b	1050	min ⁻¹
	Max. speed	N_{max}	5000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			108	kW
Continuous rated torque in the constant torque range		T_b	682 (6961)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.80 (8.2)	kg·m ² (kgf·cm·s ²)
Weight		W	690	kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	17.3	mΩ
Number of teeth for speed detection			256	λ/rev.
Vibration			V10	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Rated power of the cooling fan			250	W

Model α iI 100/5000HV**Ordering specification number: A06B-1518-B90□#0302****Applicable amplifier: α iSP 100HV-B**

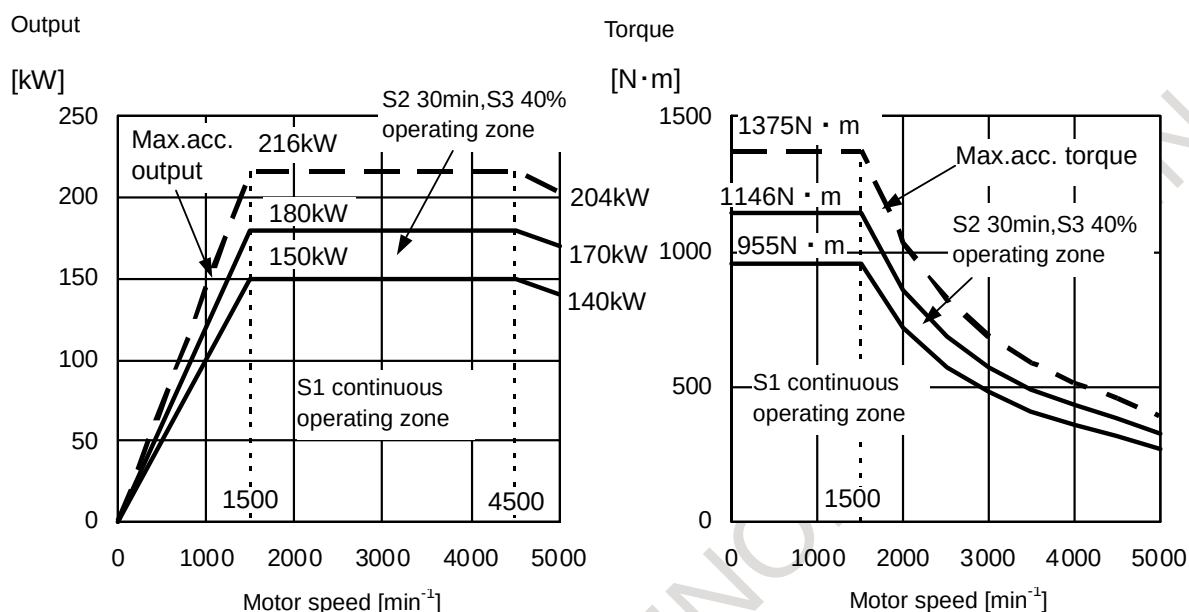
[kW] Low-speed winding output (Y connection)



[N·m] Low-speed winding torque (Y connection)

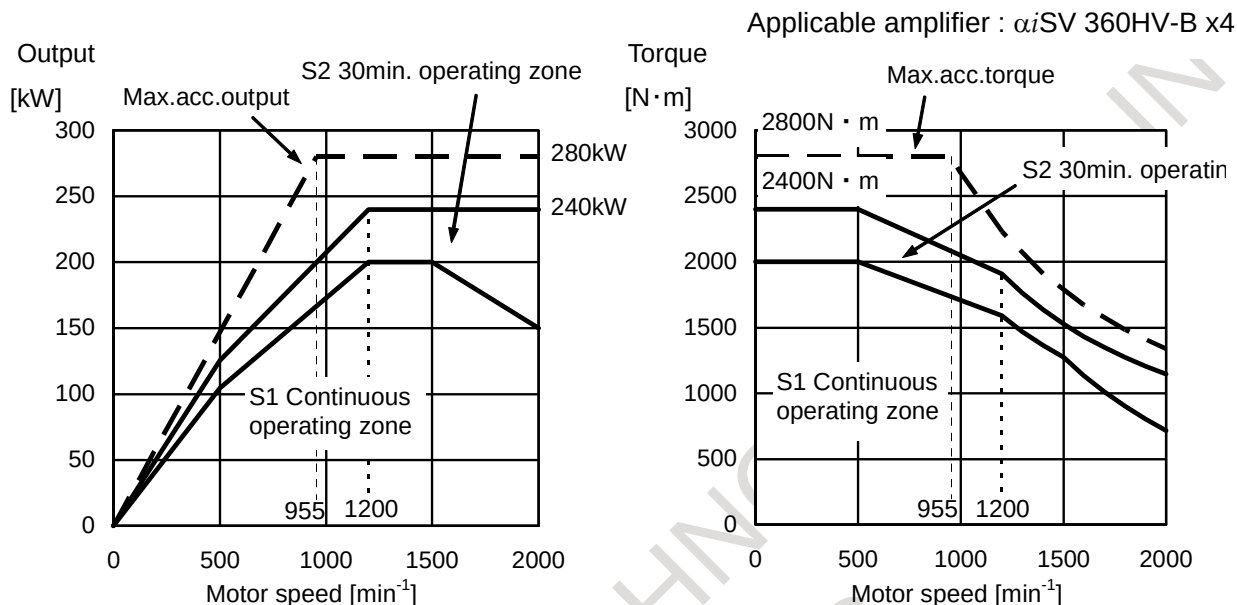
[kW] High-speed winding output (Δ connection)[N·m] High-speed winding torque (Δ connection)

Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_c	100 (134.0)	100 (134.0)	kW (HP)
Rated current	S1 continuous rated	I_c	191	200	A
Speed	Base speed	N_b	1000	3000	min ⁻¹
	Max. speed	N_m	5000	5000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			120	120	kW
Continuous rated torque in the constant torque range		T_b	955 (9738)	318 (3244)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.98 (10)		kg·m ² (kgf·cm·s ²)
Weight		W	825		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	20.0		mΩ
Number of teeth for speed detection			256		λ/rev.
Vibration			V10		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			250		W

Model α iI 150/5000HV**Ordering specification number: A06B-1532-B□□□**Applicable amplifier: α iSP 75HV-Bx2

Item		Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	150 (201.0)	kW (HP)
	S2 30 min rated, S3 40% rated		180 (241.2)	kW (HP)
Rated current	S1 continuous rated	I_c	309	A
	S2 30 min rated, S3 40% rated		358	A
Speed	Base speed	N_b	1500	min ⁻¹
	Max. speed	N_{max}	5000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			216	kW
Continuous rated torque in the constant torque range		T_b	955 (9738)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.98 (10)	kg·m ² (kgf·cm·s ²)
Weight		W	835	kg
Winding resistance (U1-V1, V1-W1, and U1-W1) (U2-V2, V2-W2, and U2-W2)		R_a	26.7	mΩ
Number of teeth for speed detection			256	λ/rev.
Vibration			V10	
Noise			80 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Rated power of the cooling fan			720	W

3.2.4 α iS Series 400V-type

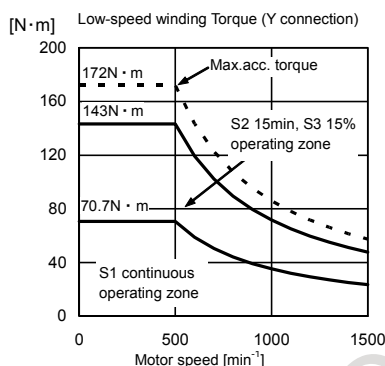
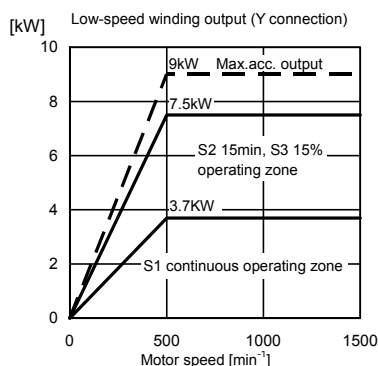
Model α iS 2000/2000HV
Ordering specification number: A06B-0091-B140#0058


Item		Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	200 (267)	kW (HP)
	S2 30 min rated		240 (320)	kW (HP)
Rated current	S1 continuous rated	I_c	358	A
	S2 30 min rated		429	A
Speed	Base speed	N_b	1200	min ⁻¹
	Max. speed	N_{max}	2000	min ⁻¹
Maximum output at acceleration for PS selection			280	kW
Steady-state maximum output		P_{max}	120% of maximum rated output	kW
Continuous rated torque in the constant torque range		T_b	2000 (20408)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	1.97 (20.1)	kg·m ² (kgf·cm·s ²)
Weight		W	1000	kgf
Winding resistance (U-V, V-W, and W-U)		R_a	29.4	mΩ
Vibration			V30	
Built-in detector			Pulsecoder α iA1000	
Resolution			1,000,000	Division/rev
Noise			80 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC416	
Rated power of the cooling fan			800	W

3.2.5 αi P Series 200V-type

Model αi P 12/6000

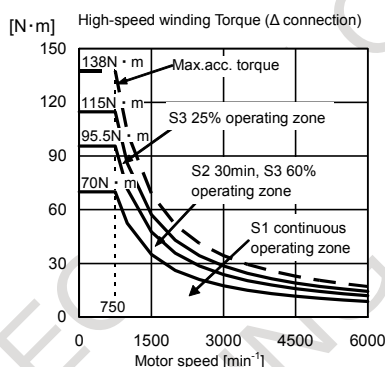
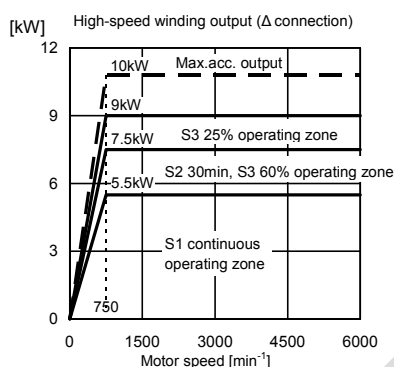
Ordering specification number: A06B-1448-B□□□#□□□□



Applicable amplifier:

αi SP 11-B

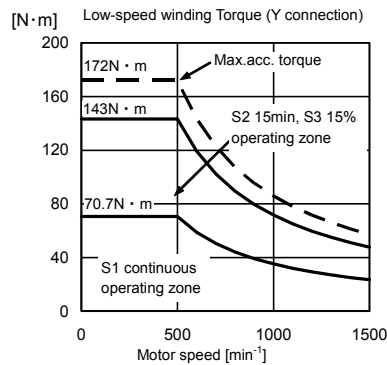
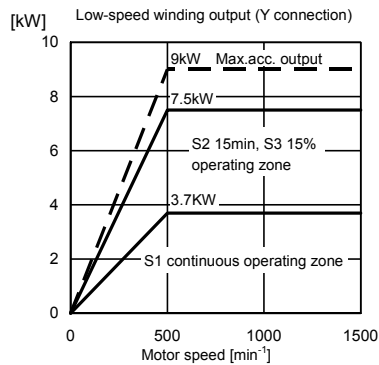
βi SVSP*-11-B



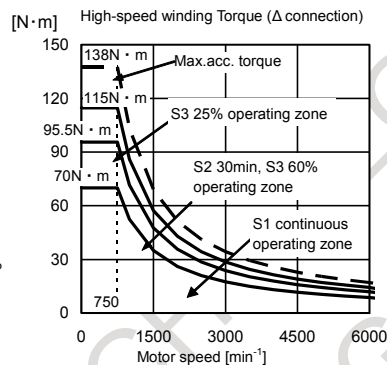
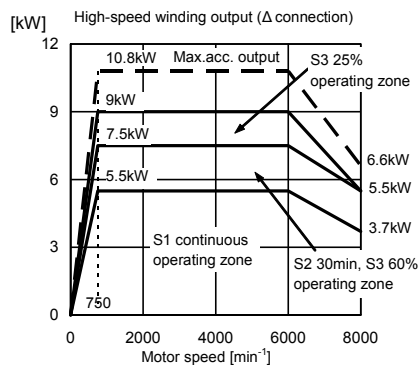
Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	3.7(4.9)	5.5(7.4)	kW(HP)
	S2 30 min, S3 60% rated		-	7.5(10)	kW(HP)
	S2 15 min, S3 15% rated		7.5(10)	-	kW(HP)
	S3 25% rated		-	9(12)	kW(HP)
Rated current	S1 continuous rated	I_C	23	39	A
	S2 30 min, S3 60% rated		-	49	A
	S2 15 min, S3 15% rated		42	-	A
	S3 25% rated		-	62	A
Speed	Base speed	N_b	500	750	min^{-1}
	Max. speed	N_m	1500	6000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			9	10.8	kW
Continuous rated torque in the constant torque range		T_b	70.7 (721)	70 (714)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.07 (0.77)		$\text{kg}\cdot\text{m}^2$ (kgf·cm·s ²)
Weight		W	95		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	301		m Ω
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			100		W

Model $\alpha i P$ 12/8000

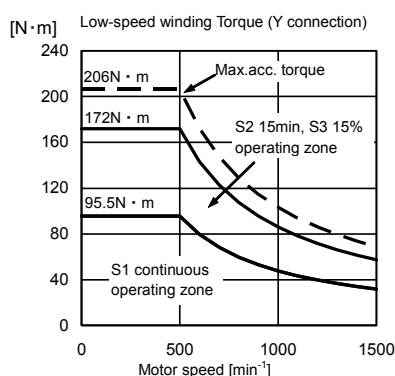
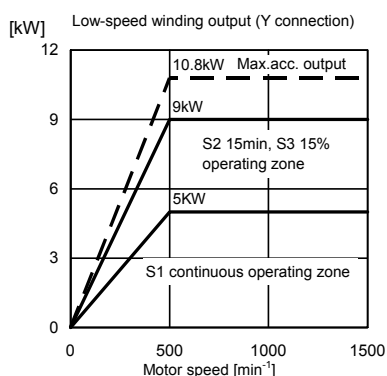
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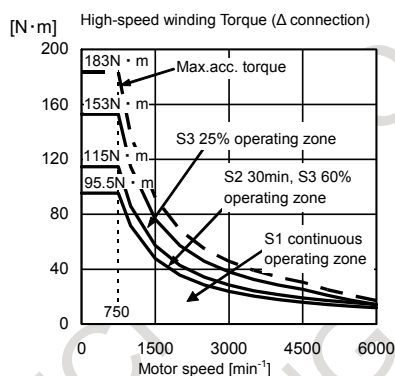
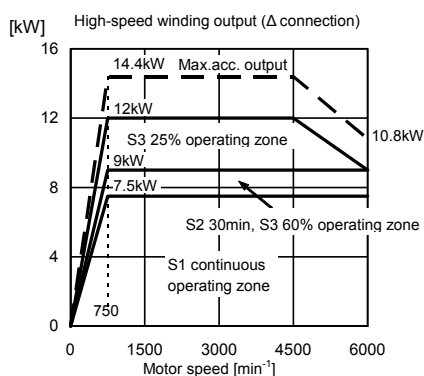
Applicable amplifier:

 αi SP 11-B βi SVSP*-11-B

Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	3.7(4.9)	5.5(7.4)	kW(HP)
	S2 30 min, S3 60% rated		-	7.5(10)	kW(HP)
	S2 15 min, S3 15% rated		7.5(10)	-	kW(HP)
	S3 25% rated		-	9(12)	kW(HP)
Rated current	S1 continuous rated	I_C	23	39	A
	S2 30 min, S3 60% rated		-	49	A
	S2 15 min, S3 15% rated		42	-	A
	S3 25% rated		-	62	A
Speed	Base speed	N_b	500	750	min^{-1}
	Max. speed	N_m	1500	8000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			9	10.8	kW
Continuous rated torque in the constant torque range		T_b	70.7 (721)	70 (714)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.07 (0.77)		$\text{kg}\cdot\text{m}^2$ ($\text{kgf}\cdot\text{cm}\cdot\text{s}^2$)
Weight		W	95		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	301		$\text{m}\Omega$
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			100		W

Model $\alpha i P$ 15/6000**Ordering specification number: A06B-1449-B□□□#□P□□**

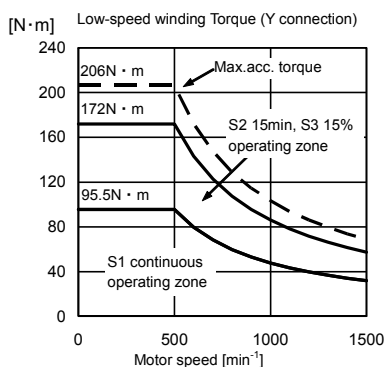
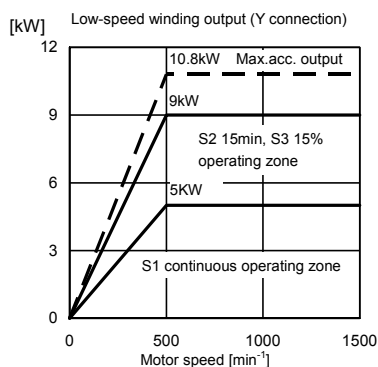
Applicable amplifier:

 αi SP 15-B βi SVSP*-15-B

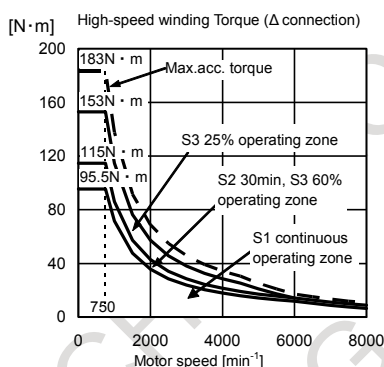
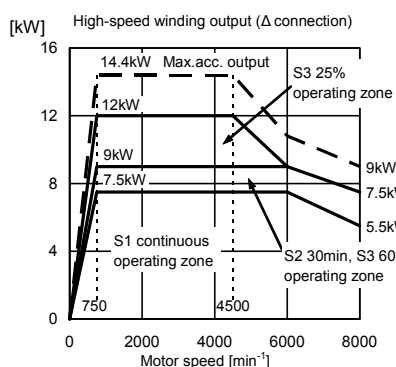
Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	5(6.6)	7.5(10)	kW(HP)
	S2 30 min, S3 60% rated		-	9(12)	kW(HP)
	S2 15 min, S3 15% rated		9(12)	-	kW(HP)
	S3 25% rated		-	12(16.1)	kW(HP)
Rated current	S1 continuous rated	I_C	40	50	A
	S2 30 min, S3 60% rated		-	58	A
	S2 15 min, S3 15% rated		61	-	A
	S3 25% rated		-	74	A
Speed	Base speed	N_b	500	750	min^{-1}
	Max. speed	N_m	1500	6000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			10.8	14.4	kW
Continuous rated torque in the constant torque range		T_b	95.5 (974)	95.5 (974)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.09 (0.93)		$\text{kg} \cdot \text{m}^2$ ($\text{kgf} \cdot \text{cm} \cdot \text{s}^2$)
Weight		W	110		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	220		m Ω
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			100		W

Model $\alpha i P$ 15/8000

Ordering specification number: A06B-1449-B11□#0R01



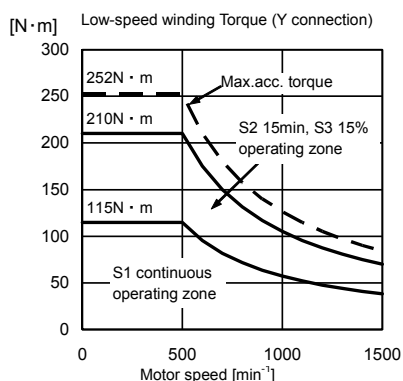
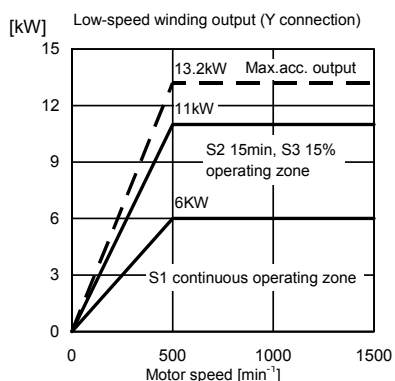
Applicable amplifier:

 αi SP 15-B βi SVSP*-15-B

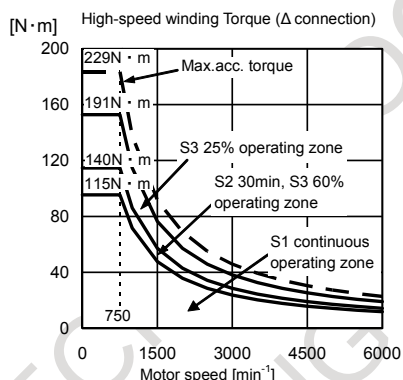
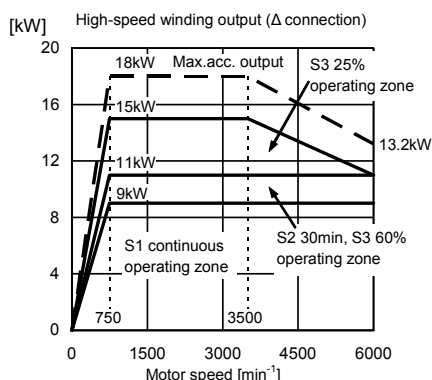
Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	5(6.6)	7.5(10)	kW(HP)
	S2 30 min, S3 60% rated		-	9(12)	kW(HP)
	S2 15 min, S3 15% rated		9(12)	-	kW(HP)
	S3 25% rated		-	12(16.1)	kW(HP)
Rated current	S1 continuous rated	I_C	40	50	A
	S2 30 min, S3 60% rated		-	58	A
	S2 15 min, S3 15% rated		61	-	A
	S3 25% rated		-	74	A
Speed	Base speed	N_b	500	750	min^{-1}
	Max. speed	N_m	1500	8000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			10.8	14.4	kW
Continuous rated torque in the constant torque range		T_b	95.5 (974)	95.5 (974)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.09 (0.93)		$\text{kg}\cdot\text{m}^2$ ($\text{kgf}\cdot\text{cm}\cdot\text{s}^2$)
Weight		W	110		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	220		$\text{m}\Omega$
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			100		W

Model $\alpha i P$ 18/6000

Ordering specification number: A06B-1456-B□□□#□P□□



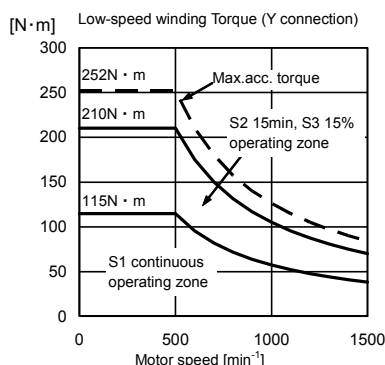
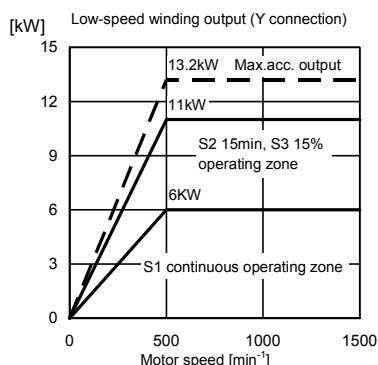
Applicable amplifier:

 αi SP 15-B βi SVSP*-15-B

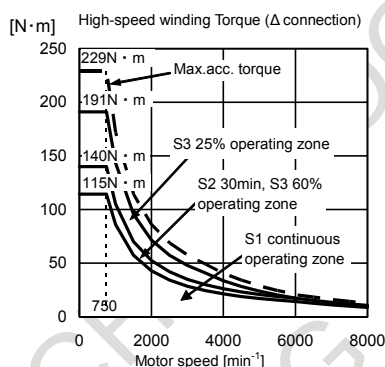
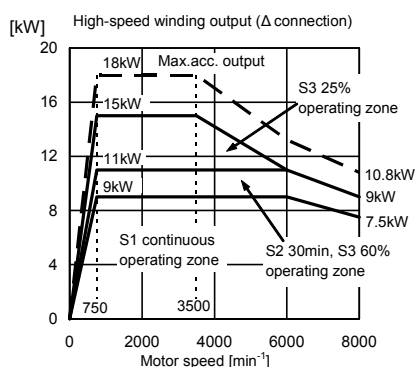
Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	6(8)	9(12)	kW(HP)
	S2 30 min, S3 60% rated		-	11(14.7)	kW(HP)
	S2 15 min, S3 15% rated		11(14.7)	-	kW(HP)
	S3 25% rated		-	15(20.1)	kW(HP)
Rated current	S1 continuous rated	I_C	32	55	A
	S2 30 min, S3 60% rated		-	63	A
	S2 15 min, S3 15% rated		53	-	A
	S3 25% rated		-	80	A
Speed	Base speed	N_b	500	750	min^{-1}
	Max. speed	N_m	1500	6000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			13.2	18.0	kW
Continuous rated torque in the constant torque range		T_b	115 (1169)	115 (1169)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.105 (1.08)		$\text{kg} \cdot \text{m}^2$ (kgf·cm·s ²)
Weight		W	125		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	220		m Ω
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			100		W

Model $\alpha i P$ 18/8000

Ordering specification number: A06B-1456-B11□#0R01



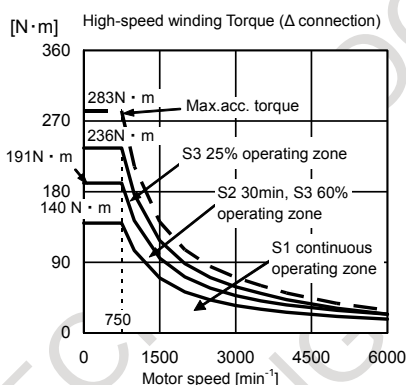
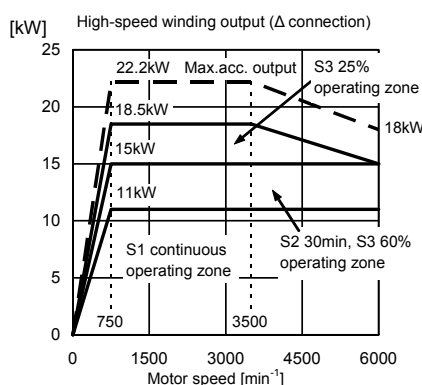
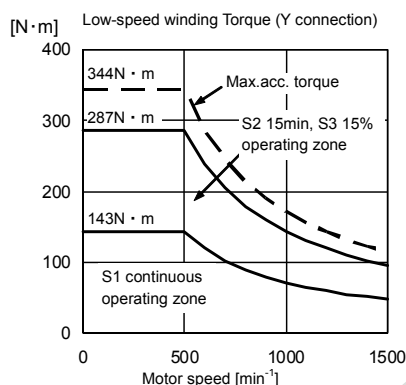
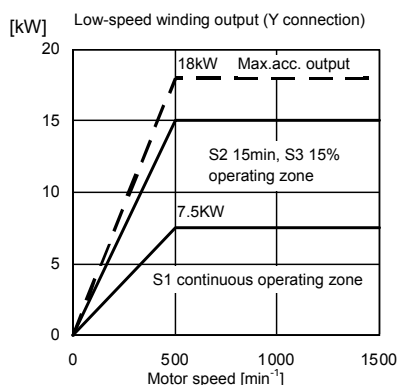
Applicable amplifier:

 αi SP 15-B βi SVSP*-15-B

Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	6(8)	9(12)	kW(HP)
	S2 30 min, S3 60% rated		-	11(14.7)	kW(HP)
	S2 15 min, S3 15% rated		11(14.7)	-	kW(HP)
	S3 25% rated		-	15(20.1)	kW(HP)
Rated current	S1 continuous rated	I_C	32	55	A
	S2 30 min, S3 60% rated		-	63	A
	S2 15 min, S3 15% rated		53	-	A
	S3 25% rated		-	80	A
Speed	Base speed	N_b	500	750	min^{-1}
	Max. speed	N_m	1500	8000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			13.2	18.0	kW
Continuous rated torque in the constant torque range		T_b	115 (1169)	115 (1169)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.105 (1.08)		$\text{kg} \cdot \text{m}^2$ ($\text{kgf} \cdot \text{cm} \cdot \text{s}^2$)
Weight		W	125		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	220		$\text{m}\Omega$
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			100		W

Model $\alpha i P$ 22/6000

Ordering specification number: A06B-1451-B□□□#□P□□

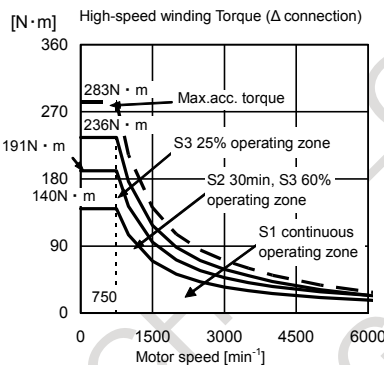
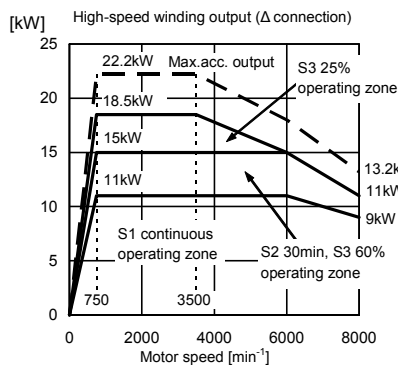
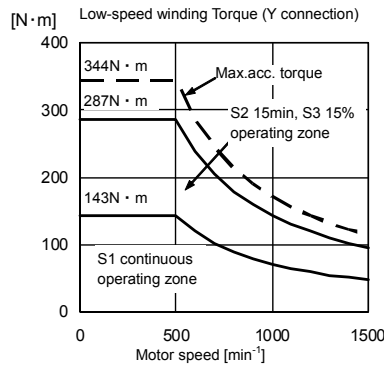
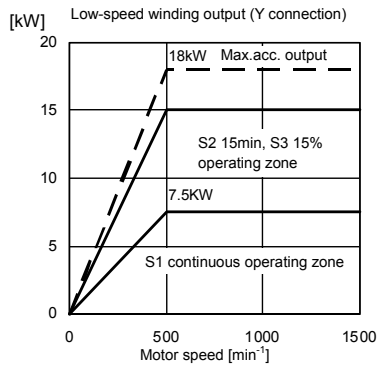
Applicable amplifier:
 $\alpha i SP$ 22-B

Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	7.5(10)	11(14.7)	kW(HP)
	S2 30 min, S3 60% rated		-	15(20.1)	kW(HP)
	S2 15 min, S3 15% rated		15(20.1)	-	kW(HP)
	S3 25% rated		-	18.5(24.8)	kW(HP)
Rated current	S1 continuous rated	I_C	43	69	A
	S2 30 min, S3 60% rated		-	88	A
	S2 15 min, S3 15% rated		80	-	A
	S3 25% rated		-	106	A
Speed	Base speed(*7)	N_b	500	750	min^{-1}
	Max. speed	N_m	1500	6000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			18.0	22.2	kW
Continuous rated torque in the constant torque range		T_b	143.2 (1461)	140 (1428)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.128 (1.29)		$\text{kg}\cdot\text{m}^2$ (kgf·cm·s ²)
Weight		W	143		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	161.9		m Ω
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			100		W

Model $\alpha i P$ 22/8000

Ordering specification number: A06B-1451-B11□#0R01

Applicable amplifier:

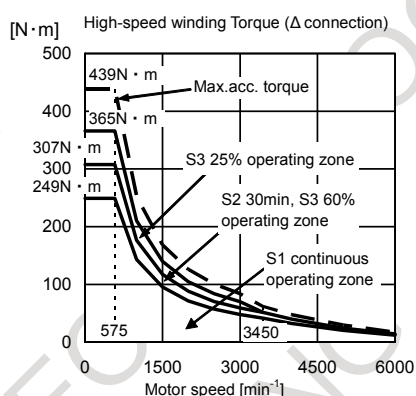
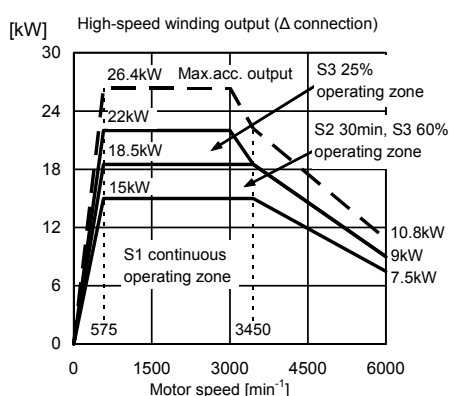
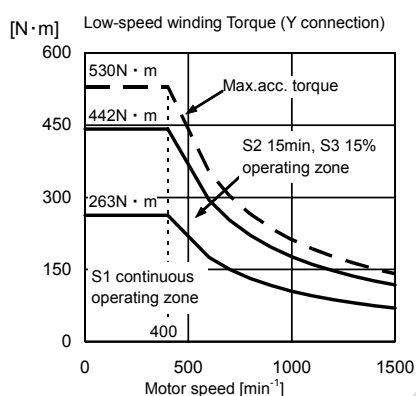
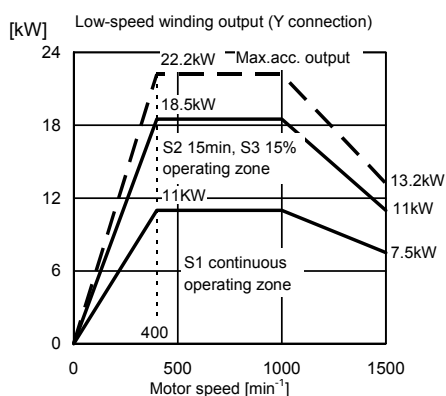
 $\alpha i SP$ 22-B

Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	7.5(10)	11(14.7)	kW(HP)
	S2 30 min, S3 60% rated		-	15(20.1)	kW(HP)
	S2 15 min, S3 15% rated		15(20.1)	-	kW(HP)
	S3 25% rated		-	18.5(24.8)	kW(HP)
Rated current	S1 continuous rated	I_C	43	69	A
	S2 30 min, S3 60% rated		-	88	A
	S2 15 min, S3 15% rated		80	-	A
	S3 25% rated		-	106	A
Speed	Base speed(*7)	N_b	500	750	min^{-1}
	Max. speed	N_m	1500	8000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			18.0	22.2	kW
Continuous rated torque in the constant torque range		T_b	143.2 (1461)	140 (1428)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.128 (1.29)		$\text{kg} \cdot \text{m}^2$ ($\text{kgf} \cdot \text{cm} \cdot \text{s}^2$)
Weight		W	143		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	161.9		$\text{m}\Omega$
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			100		W

Model $\alpha i P$ 30/6000

Ordering specification number: A06B-1452-B□□□#□P□□

Applicable amplifier:

 $\alpha i SP$ 22-B

Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	11(14.7)	15(20.1)	kW(HP)
	S2 30 min, S3 60% rated		-	18.5(24.8)	kW(HP)
	S2 15 min, S3 15% rated		18.5(24.8)	-	kW(HP)
	S3 25% rated		-	22(29.5)	kW(HP)
Rated current	S1 continuous rated	I_C	54	86	A
	S2 30 min, S3 60% rated		-	101	A
	S2 15 min, S3 15% rated		87	-	A
	S3 25% rated		-	115	A
Speed	Base speed	N_b	400	575	min^{-1}
	Max. speed	N_m	1500	6000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			22.2	26.4	kW
Continuous rated torque in the constant torque range		T_b	263 (2678)	249 (2540)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.295 (3.0)		$\text{kg} \cdot \text{m}^2$ ($\text{kgf} \cdot \text{cm} \cdot \text{s}^2$)
Weight		W	250		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	91.5		$\text{m}\Omega$
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			160		W

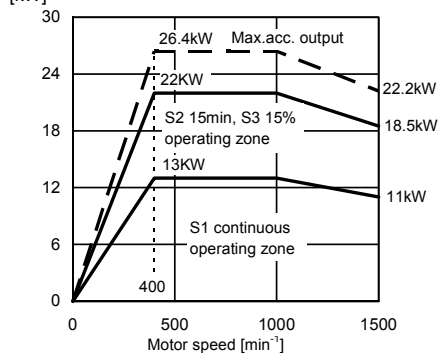
Model $\alpha i P$ 40/6000

Ordering specification number: A06B-1453-B□□□#□□□□

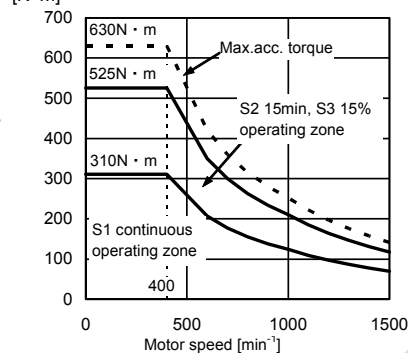
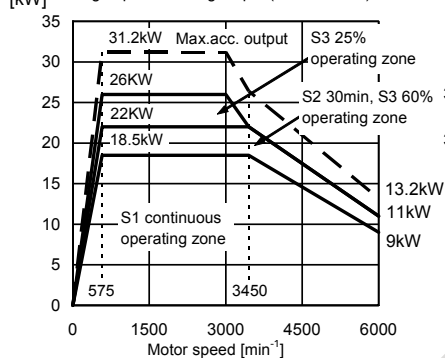
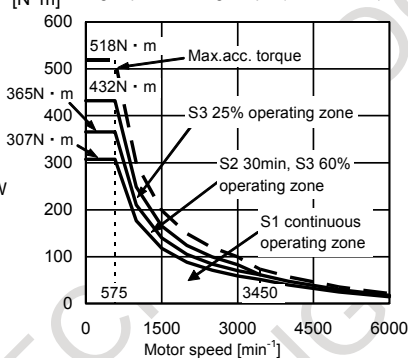
Applicable amplifier:

 αi SP 26-B

Low-speed winding output (Y connection)



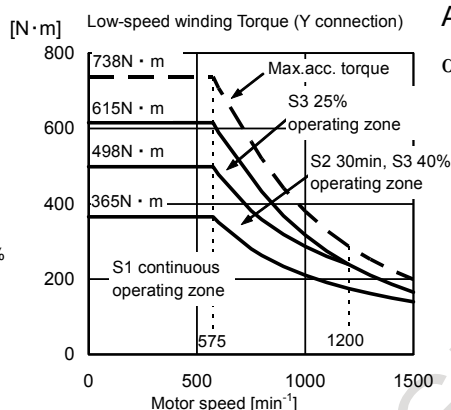
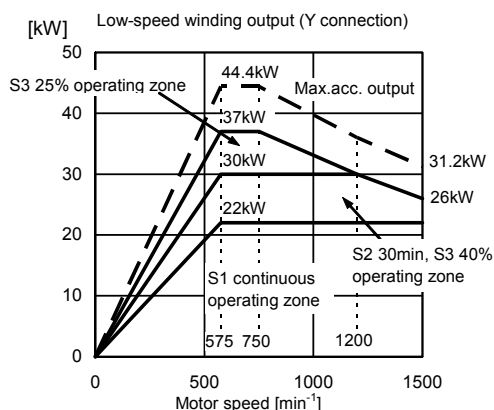
Low-speed winding Torque (Y connection)

High-speed winding output (Δ connection)High-speed winding Torque (Δ connection)

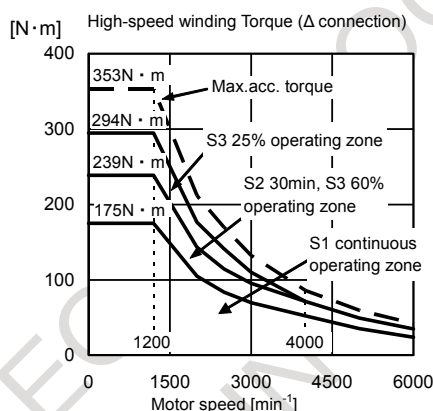
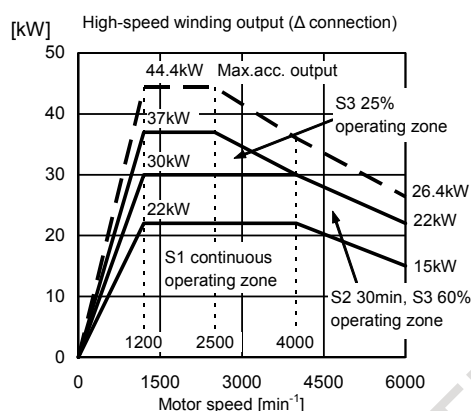
Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	13(17.3)	18.5(24.8)	kW(HP)
	S2 30 min, S3 60% rated		-	22(29.5)	kW(HP)
	S2 15 min, S3 15% rated		22(29.5)	-	kW(HP)
	S3 25% rated		-	26(34.9)	kW(HP)
Rated current	S1 continuous rated	I_C	70	108	A
	S2 30 min, S3 60% rated		-	123	A
	S2 15 min, S3 15% rated		115	-	A
	S3 25% rated		-	142	A
Speed	Base speed	N_b	400	575	min^{-1}
	Max. speed	N_m	1500	6000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			26.4	31.2	kW
Continuous rated torque in the constant torque range		T_b	310 (3165)	307 (3133)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.295 (3.0)		$\text{kg} \cdot \text{m}^2$ (kgf·cm·s ²)
Weight		W	250		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	76.2		m Ω
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			160		W

Model $\alpha i P$ 50/6000

Ordering specification number: A06B-1454-B□□□#□□□□



Applicable amplifier:

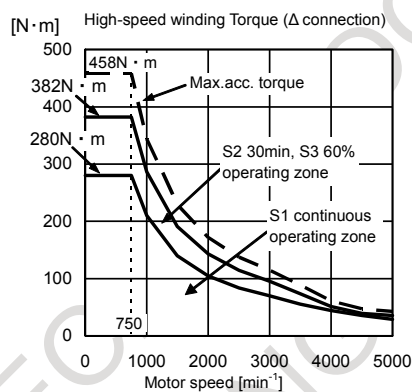
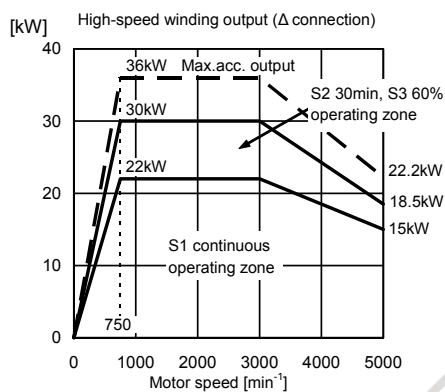
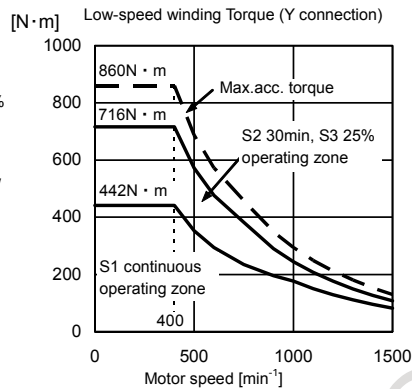
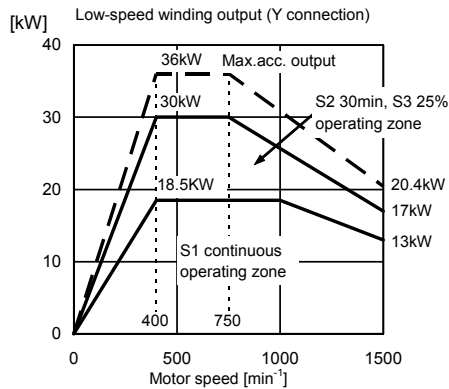
 αi SP 26-B

Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	22(29.5)	22(29.5)	kW(HP)
	S2 30 min, S3 60% rated		-	30(40.2)	kW(HP)
	S2 30 min, S3 40% rated		30(40.2)	-	kW(HP)
	S3 25% rated		37(49.7)	37(49.7)	kW(HP)
Rated current	S1 continuous rated	I_C	95	94	A
	S2 30 min, S3 60% rated		-	117	A
	S2 30 min, S3 40% rated		118	-	A
	S3 25% rated		156	143	A
Speed	Base speed	N_b	575	1200	min ⁻¹
	Max. speed	N_m	1500	6000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			44.4	44.4	kW
Continuous rated torque in the constant torque range		T_b	365 (3726)	175 (1785)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.355 (3.6)		kg·m ² (kgf·cm·s ²)
Weight		W	290		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	39.5		mΩ
Number of teeth for speed detection			256		λ/rev.
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			160		W

Model $\alpha i P$ 60/5000

Ordering specification number: A06B-1455-B□□□#□1□□

Applicable amplifier:

 $\alpha i SP$ 30-B

Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	18.5(24.8)	22(29.5)	kW(HP)
	S2 30 min, S3 60% rated		-	30(40.2)	kW(HP)
	S2 30 min, S3 25% rated		30(40.2)	-	kW(HP)
Rated current	S1 continuous rated	I_C	87	106	A
	S2 30 min, S3 60% rated		-	139	A
	S2 30 min, S3 25% rated		132	-	A
Speed	Base speed	N_b	400	750	min^{-1}
	Max. speed	N_m	1500	5000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			36	36	kW
Continuous rated torque in the constant torque range		T_b	442 (4504)	280 (2850)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.49 (5.0)		$\text{kg} \cdot \text{m}^2$ (kgf·cm·s ²)
Weight		W	468		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	45.4		mΩ
Number of teeth for speed detection			256		λ/rev.
Vibration			V10(option V5)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			185		W

3.2.6 αi IP Series 400V-type

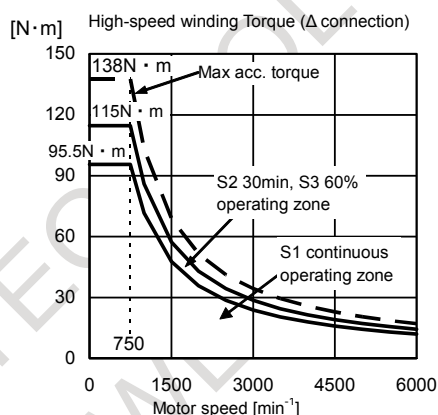
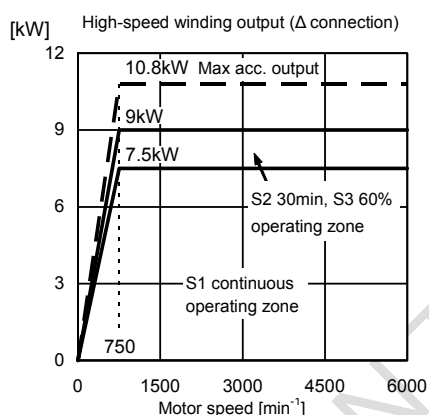
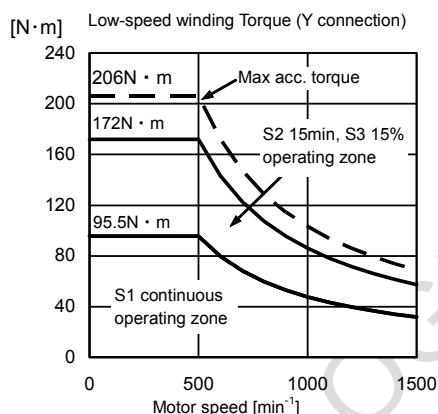
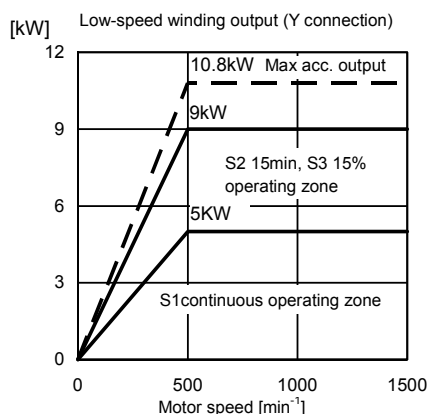
Model αi IP 15/6000HV

Ordering specification number: A06B-1549-B□□□

Applicable amplifier:

αi SP 15HV-B

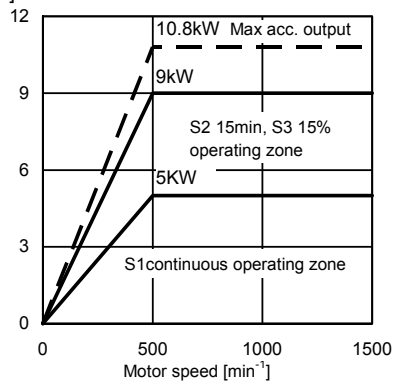
βi SVSP*-18HV-B



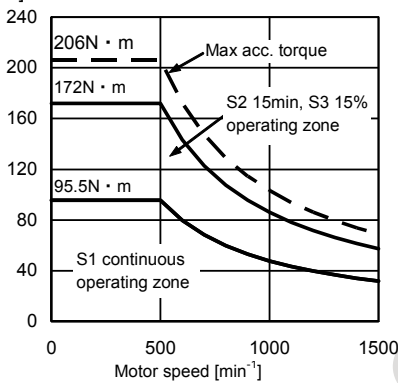
Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	5(6.6)	7.5(10)	kW(HP)
	S2 30 min, S3 60% rated		-	9(12)	kW(HP)
	S2 15 min, S3 15% rated		9(12)	-	kW(HP)
Rated current	S1 continuous rated	I_C	19	25	A
	S2 30 min, S3 60% rated		-	29	A
	S2 15 min, S3 15% rated		29	-	A
Speed	Base speed	N_b	500	750	min^{-1}
	Max. speed	N_m	1500	6000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			10.8	13.5	kW
Continuous rated torque in the constant torque range		T_b	95.5 (974)	95.5 (974)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.09 (0.93)		$\text{kg} \cdot \text{m}^2$ ($\text{kgf} \cdot \text{cm} \cdot \text{s}^2$)
Weight		W	110		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	933		m Ω
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			116		W

Model $\alpha i I_P$ 15/8000HV**Ordering specification number: A06B-1549-B11□**

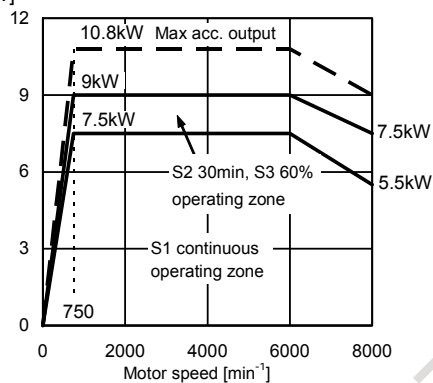
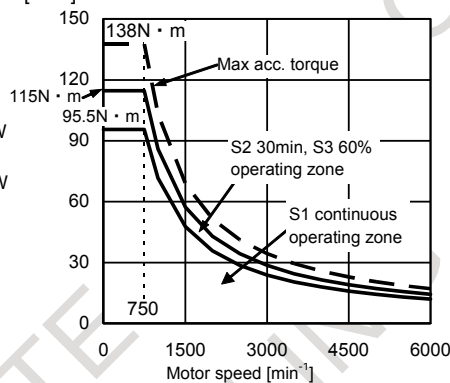
[kW] Low-speed winding output (Y connection)



[N·m] Low-speed winding Torque (Y connection)



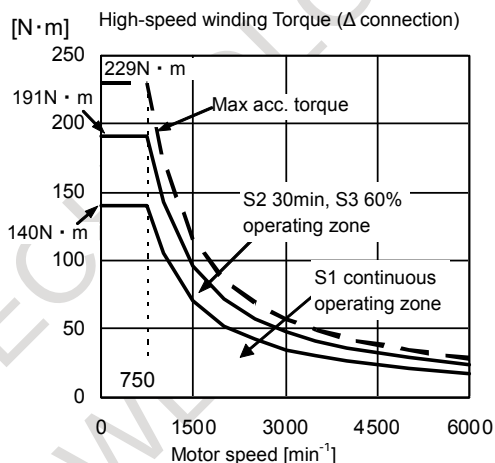
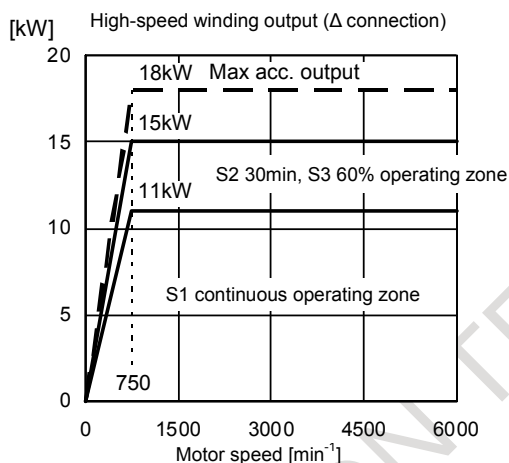
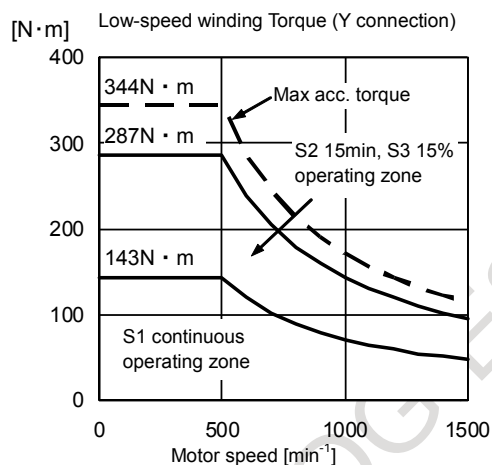
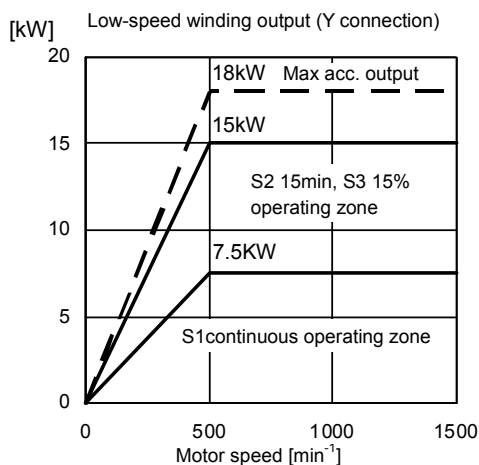
Applicable amplifier:

 αi SP 15HV-B βi SVSP*-18HV-B[kW] High-speed winding output (Δ connection)[N·m] High-speed winding Torque (Δ connection)

Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	5(6.6)	7.5(10)	kW(HP)
	S2 30 min, S3 60% rated		-	9(12)	kW(HP)
	S2 15 min, S3 15% rated		9(12)	-	kW(HP)
Rated current	S1 continuous rated	I_C	19	25	A
	S2 30 min, S3 60% rated		-	29	A
	S2 15 min, S3 15% rated		29	-	A
Speed	Base speed	N_b	500	750	min ⁻¹
	Max. speed	N_m	1500	8000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			10.8	13.5	kW
Continuous rated torque in the constant torque range		T_b	95.5 (974)	95.5 (974)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.09 (0.93)		kg·m ² (kgf·cm·s ²)
Weight		W	110		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	933		m Ω
Number of teeth for speed detection			256		λ /rev.
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			116		W

Model $\alpha i P$ 22/6000HV**Ordering specification number: A06B-1551-B□□□**

Applicable amplifier:

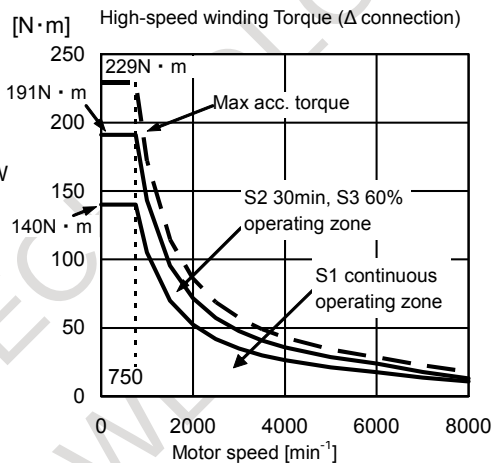
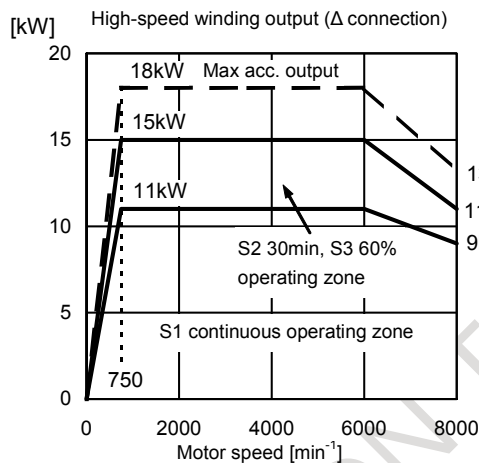
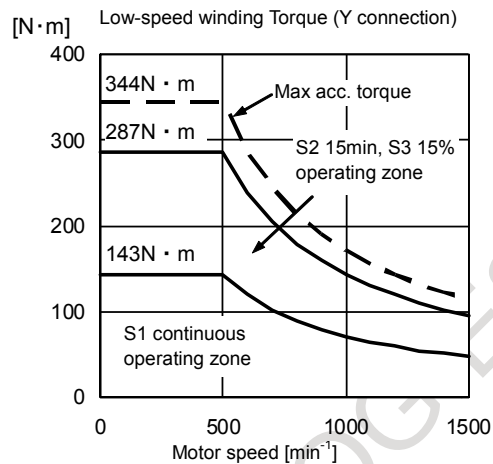
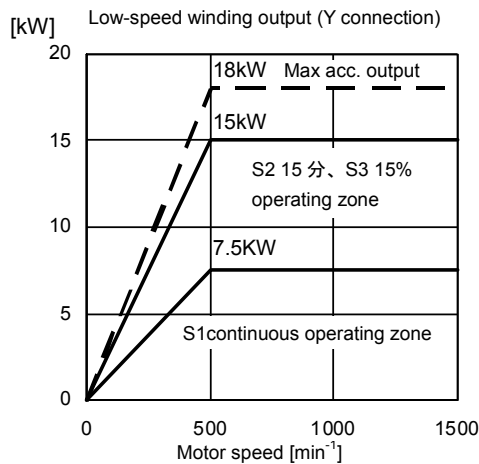
 $\alpha i SP$ 22HV-B

Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	7.5(10)	11(14.7)	kW(HP)
	S2 30 min, S3 60% rated		-	15(20.1)	kW(HP)
	S2 15 min, S3 15% rated		15(20.1)	-	kW(HP)
Rated current	S1 continuous rated	I_C	25	38	A
	S2 30 min, S3 60% rated		-	49	A
	S2 15 min, S3 15% rated		45	-	A
Speed	Base speed	N_b	500	750	min^{-1}
	Max. speed	N_m	1500	6000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			18.0	20.0	kW
Continuous rated torque in the constant torque range		T_b	143 (1461)	140 (1428)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.128 (1.29)		$\text{kg} \cdot \text{m}^2$ ($\text{kgf} \cdot \text{cm} \cdot \text{s}^2$)
Weight		W	143		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	645		m Ω
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			116		W

Model $\alpha i P$ 22/8000HV

Ordering specification number: A06B-1551-B11□

Applicable amplifier:

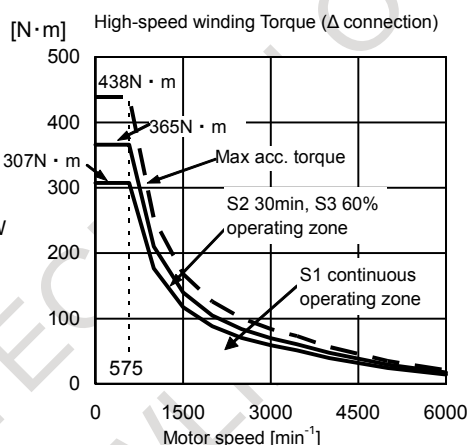
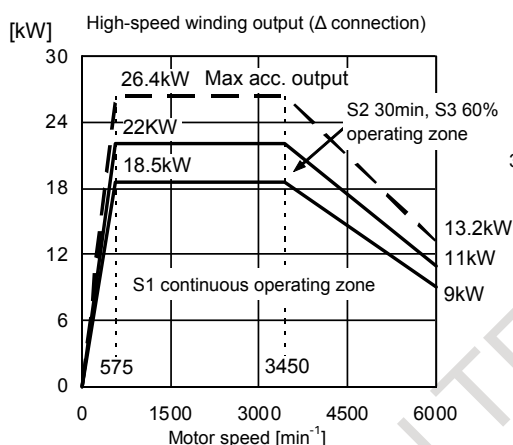
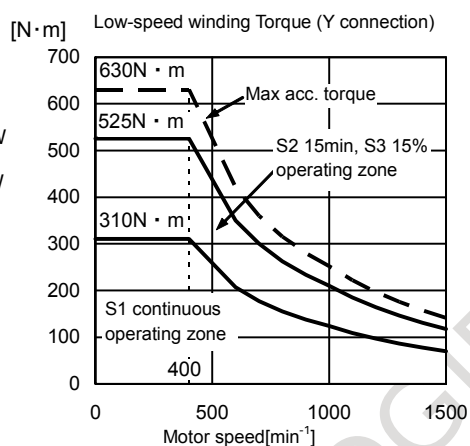
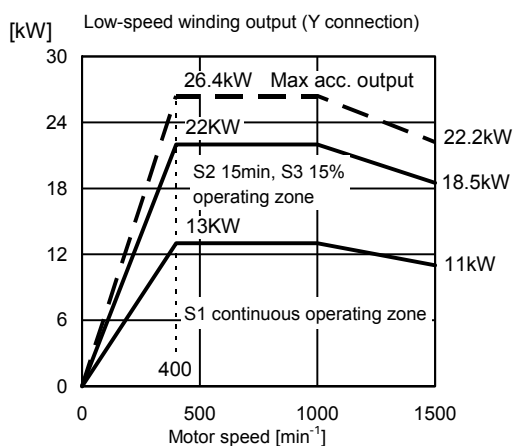
 $\alpha i SP$ 22HV-B

Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	7.5(10)	11(14.7)	kW(HP)
	S2 30 min, S3 60% rated		-	15(20.1)	kW(HP)
	S2 15 min, S3 15% rated		15(20.1)	-	kW(HP)
Rated current	S1 continuous rated	I_C	25	38	A
	S2 30 min, S3 60% rated		-	49	A
	S2 15 min, S3 15% rated		45	-	A
Speed	Base speed	N_b	500	750	min^{-1}
	Max. speed	N_m	1500	8000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			18.0	20.0	kW
Continuous rated torque in the constant torque range		T_b	143 (1461)	140 (1428)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.128 (1.29)		$\text{kg}\cdot\text{m}^2$ ($\text{kgf}\cdot\text{cm}\cdot\text{s}^2$)
Weight		W	143		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	645		m Ω
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			116		W

Model $\alpha i P$ 40/6000HV

Ordering specification number: A06B-1553-B□□□

Applicable amplifier:

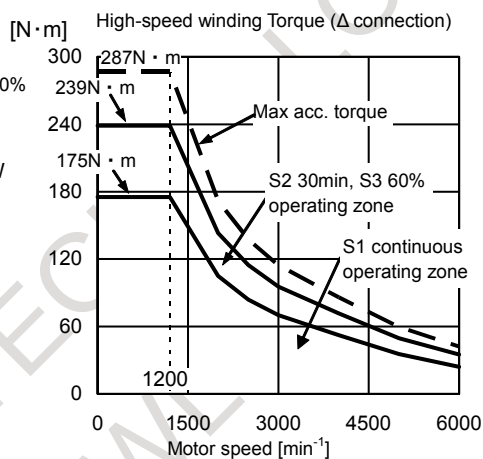
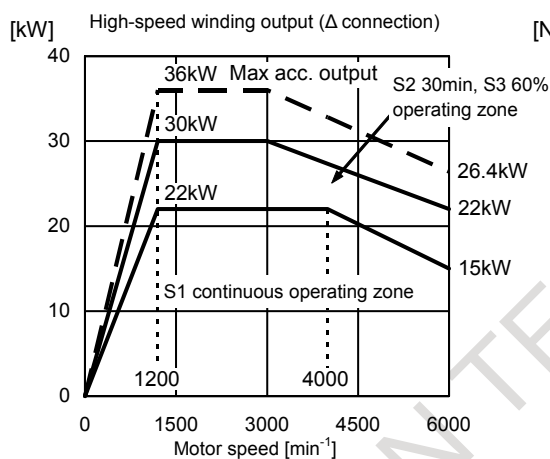
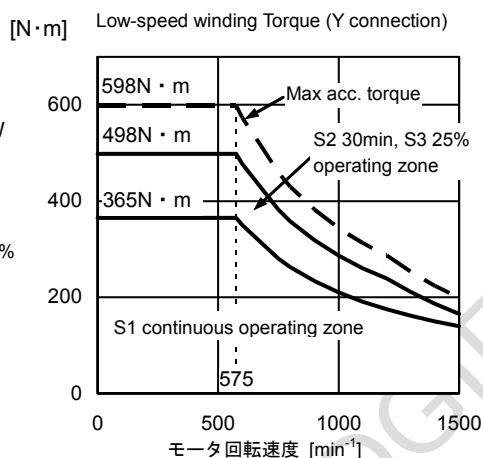
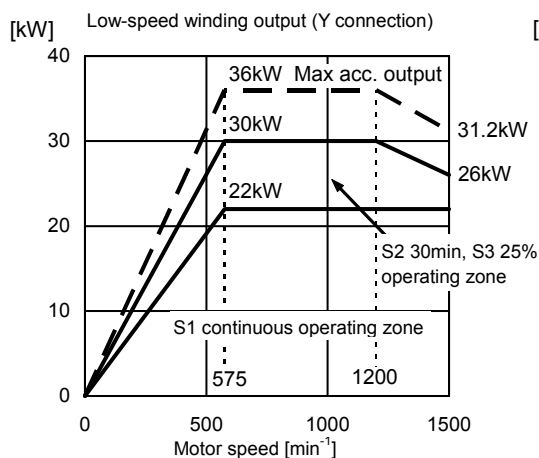
 $\alpha i SP$ 30HV-B

Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	13(17.3)	18.5(24.8)	kW(HP)
	S2 30 min, S3 60% rated		-	22(29.5)	kW(HP)
	S2 15 min, S3 15% rated		22(29.5)	-	kW(HP)
Rated current	S1 continuous rated	I_C	33	54	A
	S2 30 min, S3 60% rated		-	62	A
	S2 15 min, S3 15% rated		47	-	A
Speed	Base speed	N_b	400	575	min^{-1}
	Max. speed	N_m	1500	6000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			26.4	29.0	kW
Continuous rated torque in the constant torque range		T_b	310 (3165)	307 (3133)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.295 (3.0)		kg·m ² (kgf·cm·s ²)
Weight		W	250		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	293		mΩ
Number of teeth for speed detection			256		λ/rev.
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			170		W

Model $\alpha i P$ 50/6000HV

Ordering specification number: A06B-1554-B□□□

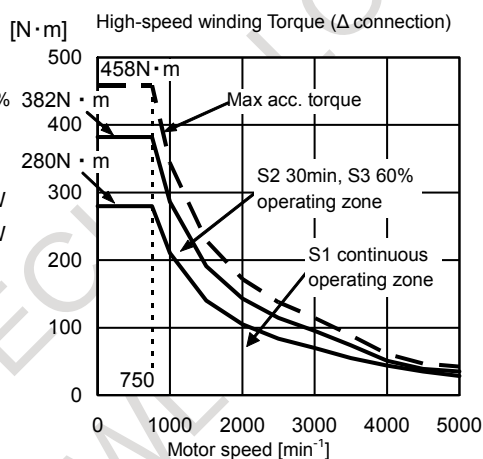
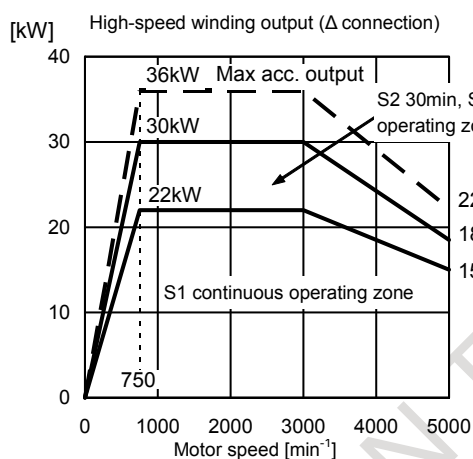
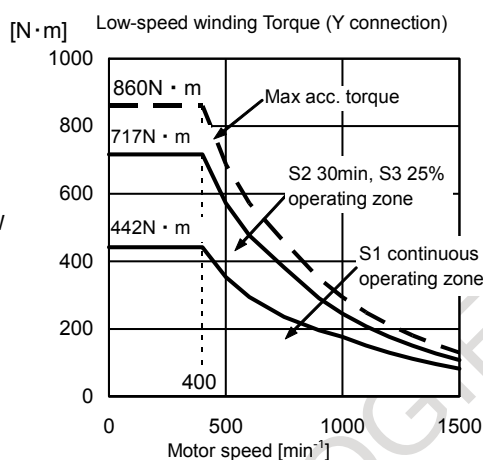
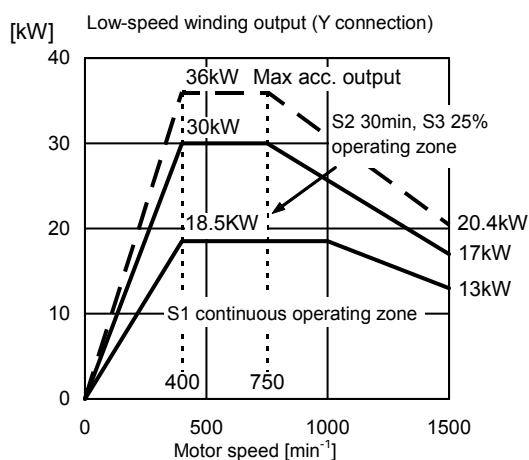
Applicable amplifier:

 $\alpha i SP$ 30HV-B

Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	22(29.5)	22(29.5)	kW(HP)
	S2 30 min, S3 60% rated		-	30(40.2)	kW(HP)
	S2 30 min, S3 25% rated		30(40.2)	-	kW(HP)
Rated current	S1 continuous rated	I_C	47	47	A
	S2 30 min, S3 60% rated		-	58	A
	S2 30 min, S3 25% rated		59	-	A
Speed	Base speed	N_b	575	1200	min^{-1}
	Max. speed	N_m	1500	6000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			35.4	35.4	kW
Continuous rated torque in the constant torque range		T_b	365 (3726)	175 (1785)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.355 (3.6)		$\text{kg} \cdot \text{m}^2$ (kgf·cm·s ²)
Weight		W	290		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	157		m Ω
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V5(option V3)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			170		W

Model $\alpha i P$ 60/5000HV**Ordering specification number: A06B-1555-B□□□#□1□□**

Applicable amplifier:

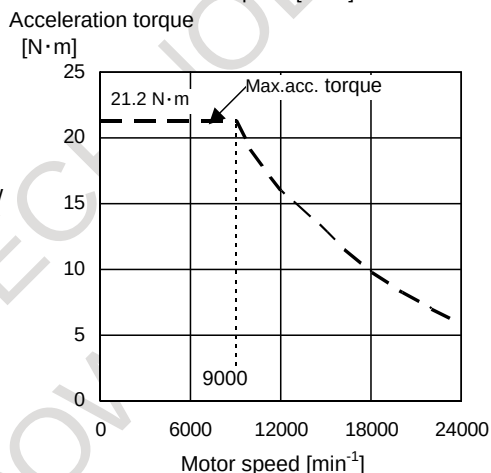
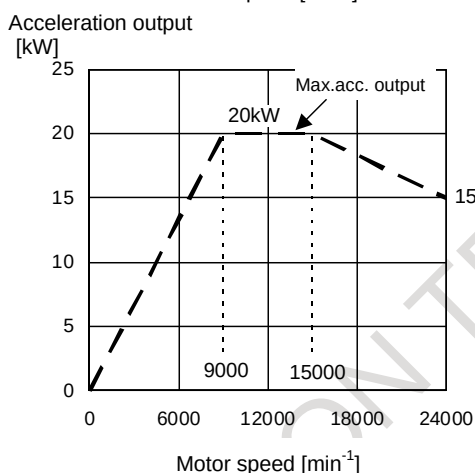
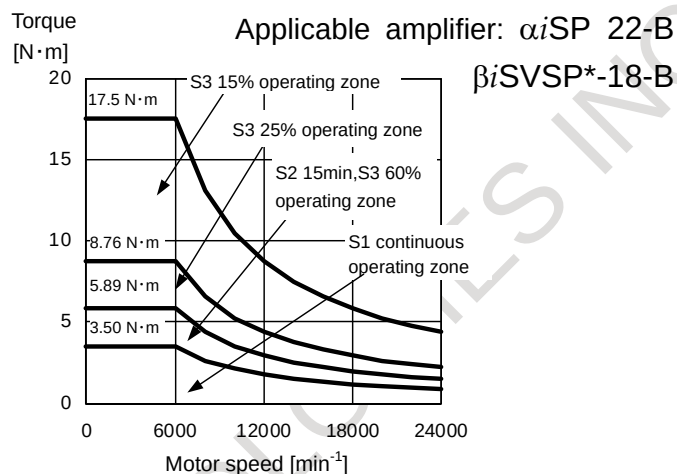
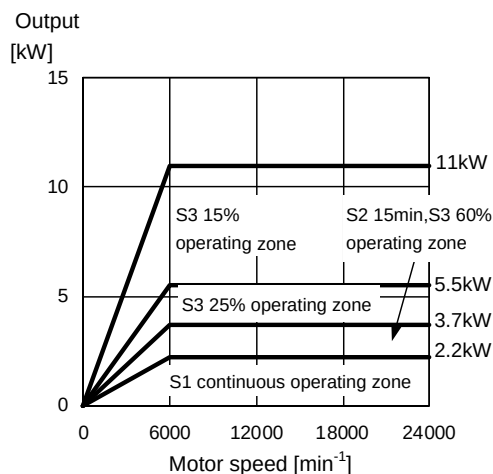
 $\alpha i SP$ 30HV-B

Item		Symbol	Value		Unit
			Low-speed winding	High-speed winding	
Rated output	S1 continuous rated	P_C	18.5(24.8)	22(29.5)	kW(HP)
	S2 30 min, S3 60% rated		-	30(40.2)	kW(HP)
	S2 30 min, S3 25% rated		30(40.2)	-	kW(HP)
Rated current	S1 continuous rated	I_C	44	57	A
	S2 30 min, S3 60% rated		-	70	A
	S2 30 min, S3 25% rated		66	-	A
Speed	Base speed	N_b	400	750	min^{-1}
	Max. speed	N_m	1500	5000	min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			36.0	36.0	kW
Continuous rated torque in the constant torque range		T_b	442 (4504)	280 (2850)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.49 (5.0)		kg·m ² (kgf·cm·s ²)
Weight		W	468		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	177		mΩ
Number of teeth for speed detection			256		λ/rev.
Vibration			V10(option V5)		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6		
Rated power of the cooling fan			180		W

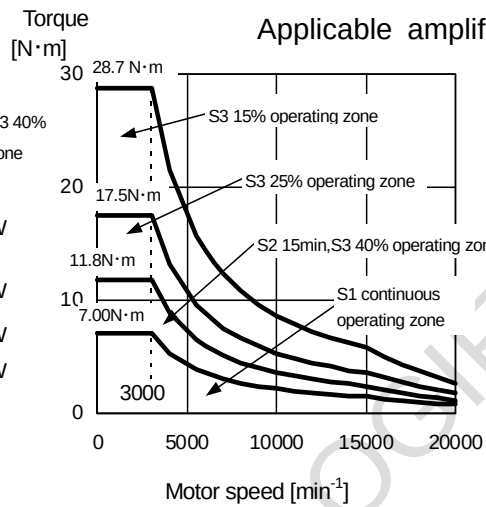
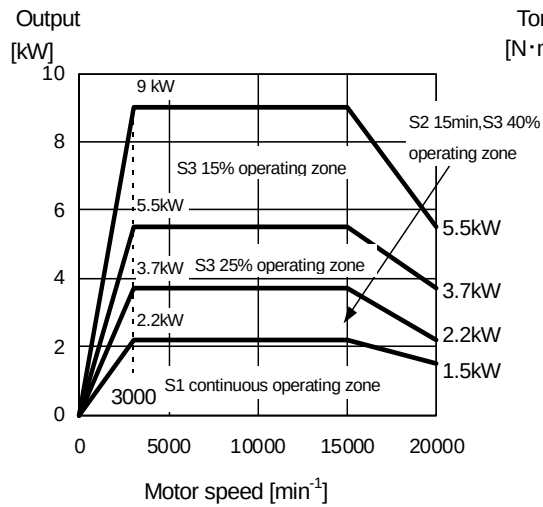
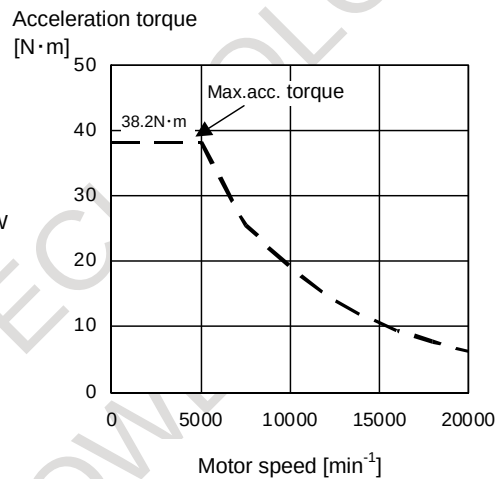
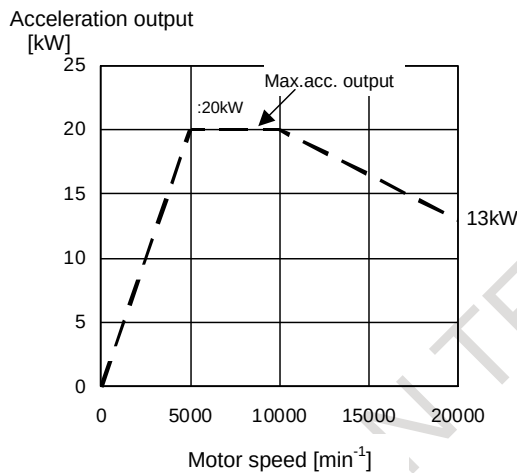
3.2.7 $\alpha i I_T$ Series 200V-type

Model $\alpha i I_T$ 1/24000

Ordering specification number: A06B-1460-B123#FS21



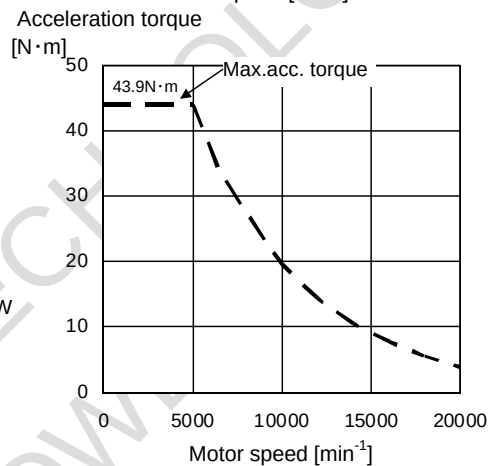
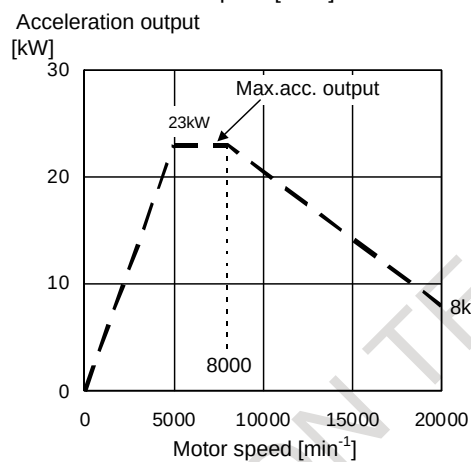
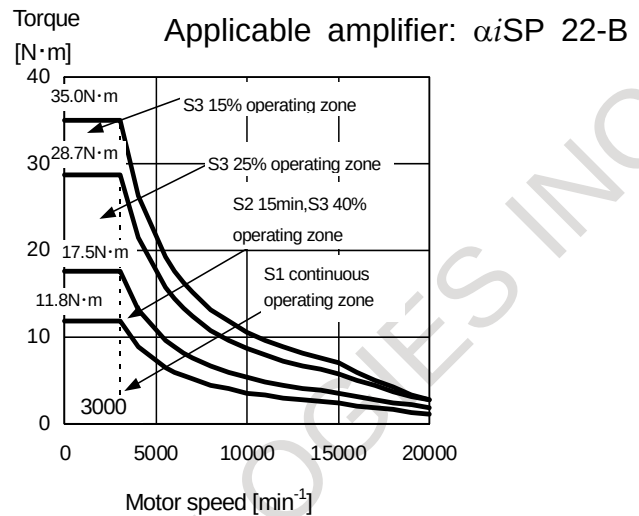
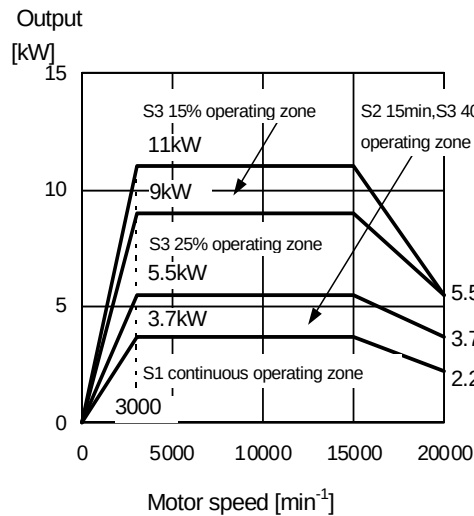
Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P _C	2.2(3.0) kW(HP)
	S2 15 min, S3 60% rated		3.7(5.0) kW(HP)
	S3 25% rated		5.5(7.4) kW(HP)
	S3 15% rated		11(14.7) kW(HP)
Rated current	S1 continuous rated	I _C	32 A
	S2 15 min, S3 60% rated		42 A
	S3 25% rated		52 A
	S3 15% rated		84 A
Speed	Base speed	N _b	6000 min ⁻¹
	Max. speed	N _{max}	24000 min ⁻¹
Steady-state maximum output		P _{max}	120% of maximum rated output kW
Maximum output at acceleration for PS selection			22.0 kW
Continuous rated torque in the constant torque range		T _b	3.50 (35.7) N·m (kgf·cm)
Moment of inertia of the rotor		J _m	0.003 (0.03) kg·m ² (kgf·cm·s ²)
Weight		W	18 kg
Winding resistance (U-V, V-W, and W-U)		R _a	43.8 mΩ
Built-in detector			$\alpha i MZ$ sensor contained
Number of teeth for speed detection			128 λ /rev.
Vibration			V3
Noise			75 or less dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)
Rated power of the cooling fan			32 W

Model $\alpha i T$ 1.5/20000**Ordering specification number: A06B-1463-B123#0S21**Applicable amplifier: αi SP 22-B βi SVSP*-18-B

Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	2.2(3.0) kW(HP)
	S2 15 min, S3 40% rated		3.7(5.0) kW(HP)
	S3 25% rated		5.5(7.4) kW(HP)
	S3 15% rated		9(12.0) kW(HP)
Rated current	S1 continuous rated	I_c	32 A
	S2 15 min, S3 40% rated		44 A
	S3 25% rated		54 A
	S3 15% rated		77 A
Speed	Base speed	N_b	3000 min^{-1}
	Max. speed	N_{max}	20000 min^{-1}
Steady-state maximum output		P_{max}	120% of maximum rated output kW
Maximum output at acceleration for PS selection			22.0 kW
Continuous rated torque in the constant torque range		T_b	7.00 (71.4) $\text{N}\cdot\text{m}$ (kgf·cm)
Moment of inertia of the rotor		J_m	0.0043 (0.04) $\text{kg}\cdot\text{m}^2$ (kgf·cm·s ²)
Weight		W	24 kg
Winding resistance (U-V, V-W, and W-U)		R_a	61.5 m Ω
Built-in detector			αi MZ sensor contained
Number of teeth for speed detection			128 $\lambda/\text{rev.}$
Vibration			V3
Noise			75 or less dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)
Rated power of the cooling fan			32 W

Model $\alpha i T$ 2/20000

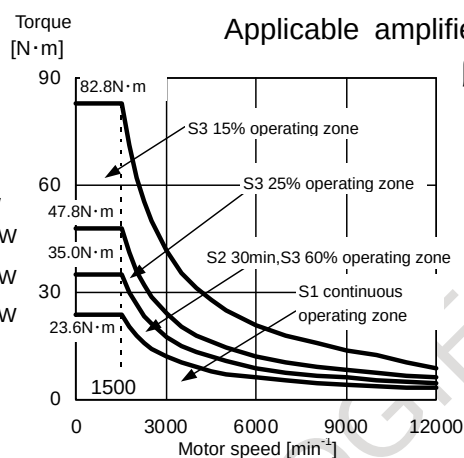
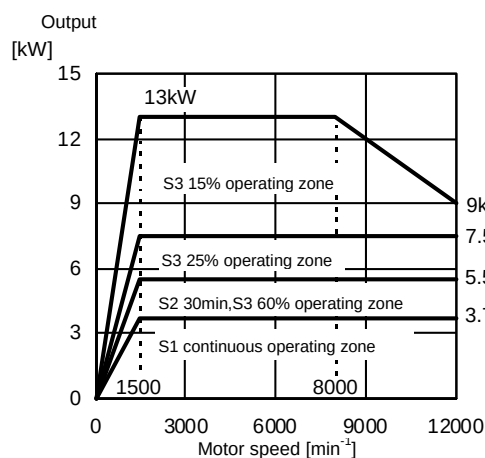
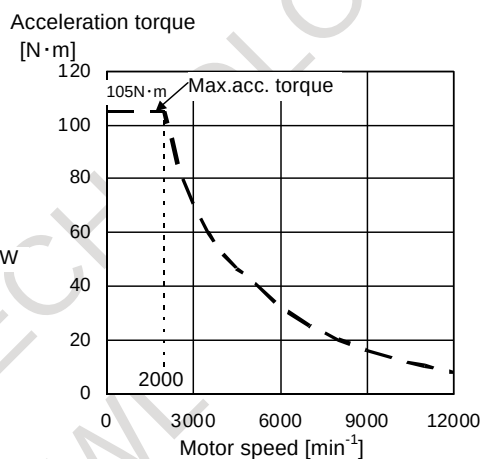
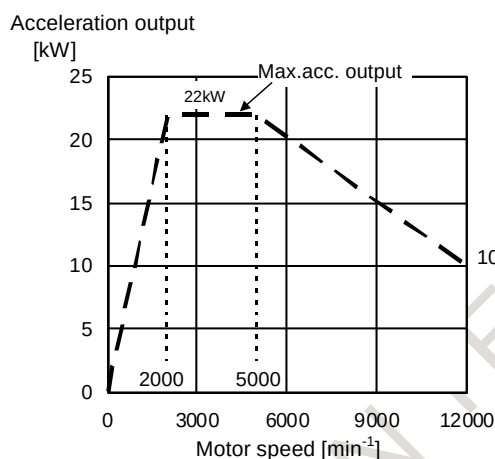
Ordering specification number: A06B-1464-B123#0S21



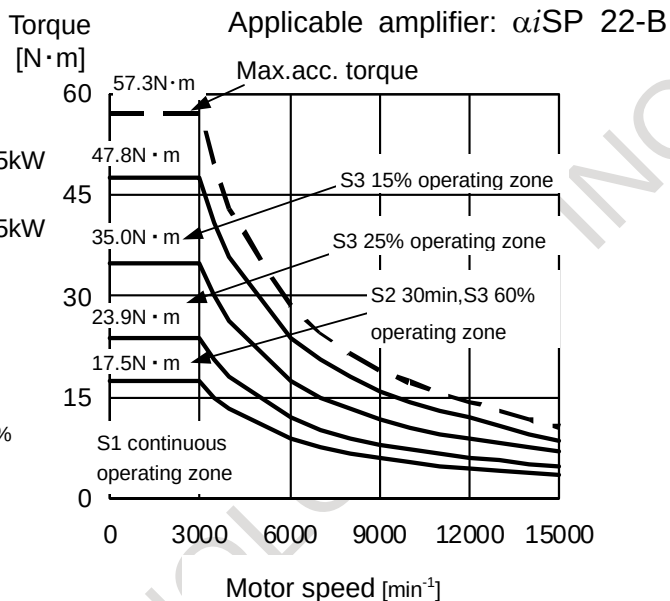
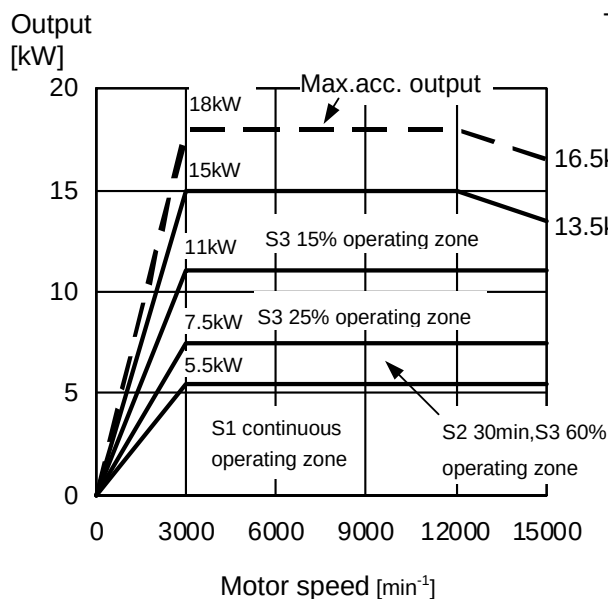
Item		Symbol	Value	Unit
Rated output	S1 continuous rated	P _C	3.7(5.0)	kW(HP)
	S2 15 min, S3 40% rated		5.5(7.4)	kW(HP)
	S3 25% rated		9(12.0)	kW(HP)
	S3 15% rated		11(14.7)	kW(HP)
Rated current	S1 continuous rated	I _C	53	A
	S2 15 min, S3 40% rated		70	A
	S3 25% rated		90	A
	S3 15% rated		106	A
Speed	Base speed	N _b	3000	min ⁻¹
	Max. speed	N _{max}	20000	min ⁻¹
Steady-state maximum output		P _{max}	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			26.0	kW
Continuous rated torque in the constant torque range		T _b	11.8 (120)	N·m (kgf·cm)
Moment of inertia of the rotor		J _m	0.0078 (0.08)	kg·m ² (kgf·cm·s ²)
Weight		W	27	kg
Winding resistance (U-V, V-W, and W-U)		R _a	48.5	mΩ
Built-in detector			αiMZ sensor contained	
Number of teeth for speed detection			128	λ/rev.
Vibration			V3	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)	
Rated power of the cooling fan			38	W

Model $\alpha i T$ 3/12000

Ordering specification number: A06B-1465-B123#0S21

Applicable amplifier: αi SP 22-B
 βi SVSP*-18-B

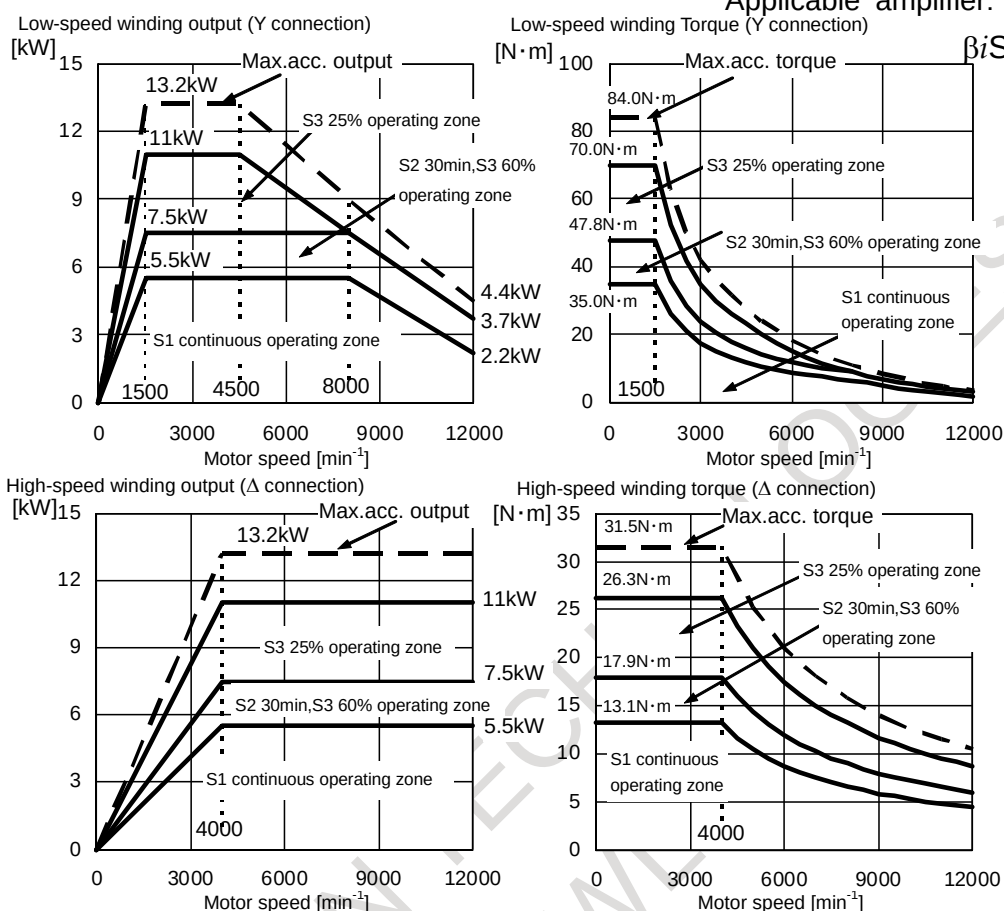
Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P _C	3.7(5.0)
	S2 30 min, S3 60% rated		5.5(7.4)
	S3 25% rated		7.5(10)
	S3 15% rated		13(17.3)
Rated current	S1 continuous rated	I _C	36
	S2 30 min, S3 60% rated		46
	S3 25% rated		56
	S3 15% rated		90
Speed	Base speed	N _b	1500
	Max. speed	N _{max}	12000
Steady-state maximum output		P _{max}	120% of maximum rated output
Maximum output at acceleration for PS selection			22.0
Continuous rated torque in the constant torque range		T _b	23.6 (241)
Moment of inertia of the rotor		J _m	0.0148 (0.15)
Weight		W	46
Winding resistance (U-V, V-W, and W-U)		R _a	100
Built-in detector			αi MZ sensor contained
Number of teeth for speed detection			128
Vibration			V3
Noise			75 or less
Cooling system			Totally enclosed and fan cooled (IC0A6)
Rated power of the cooling fan			38

Model $\alpha i I_T$ 3/15000**Ordering specification number: A06B-1475-B133#0U21**

Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	5.5(7.4)
	S2 30 min, S3 60% rated		7.5(10)
	S3 25% rated		11(14.7)
	S3 15% rated		15(20.1)
Rated current	S1 continuous rated	I_c	55
	S2 30 min, S3 60% rated		65
	S3 25% rated		81
	S3 15% rated		103
Speed	Base speed	N_b	3000
	Max. speed	N_{max}	15000
Steady-state maximum output		P_{max}	120% of maximum rated output
Maximum output at acceleration for PS selection			18.0
Continuous rated torque in the constant torque range		T_b	17.5 (179)
Moment of inertia of the rotor		J_m	0.0148 (0.15)
Weight		W	46
Winding resistance (U-V, V-W, and W-U)		R_a	32.0
Built-in detector			$\alpha i \text{MZ}$ sensor contained
Number of teeth for speed detection			128
Vibration			V3
Noise			75 or less
Cooling system			Totally enclosed and fan cooled (IC0A6)
Rated power of the cooling fan			38

Model $\alpha i I_T$ 6/12000

Ordering specification number: A06B-1466-B123#0P21

Applicable amplifier: $\alpha i SP$ 11-B $\beta i SVSP^*-11-B$ 

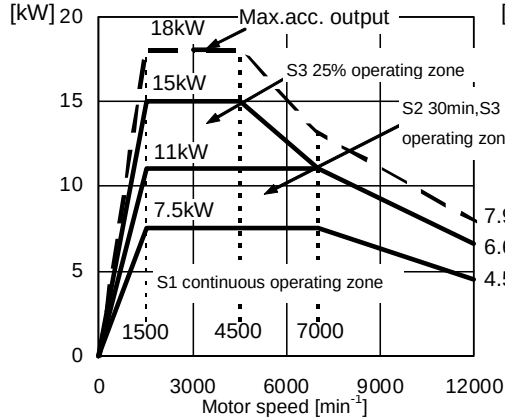
Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P_C	5.5(7.4)	5.5(7.4)	kW(HP)
	S2 30 min, S3 60% rated		7.5(10)	7.5(10)	kW(HP)
	S3 25% rated		11(14.7)	11(14.7)	kW(HP)
Rated current	S1 continuous rated	I_C	38	38	A
	S2 30 min, S3 60% rated		48	45	A
	S3 25% rated		63	56	A
Speed	Base speed	N_b	1500	4000	min ⁻¹
	Max. speed	N_{max}	12000	12000	min ⁻¹
Switching speed			4000		min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			13.2		kW
Continuous rated torque in the constant torque range		T_b	35.0 (357)	13.1 (134)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0179 (0.18)		kg·m ² (kgf·cm·s ²)
Weight		W	51		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	64.8		mΩ
Built-in detector			$\alpha i MZ$ sensor contained		
Number of teeth for speed detection			256		λ/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			50		W

Model $\alpha i T$ 8/12000

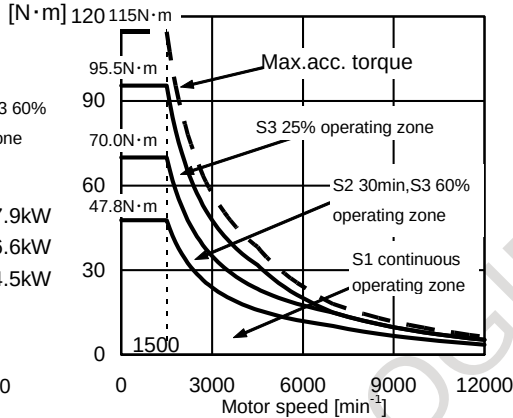
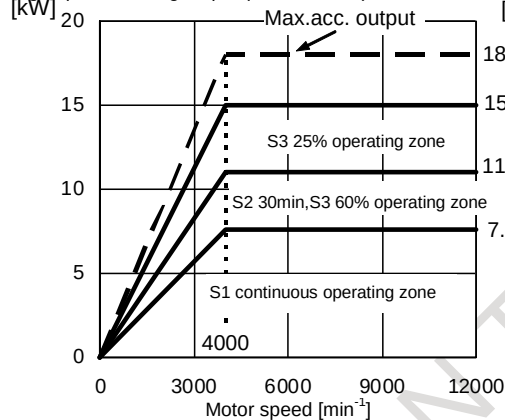
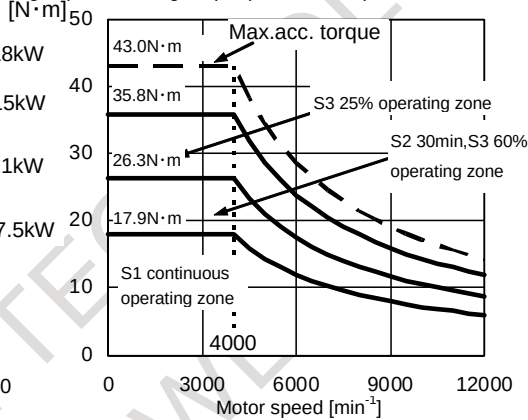
Ordering specification number: A06B-1467-B123#0P21

Applicable amplifier: αi SP 15-B βi SVSP*-15-B

Low-speed winding output (Y connection)



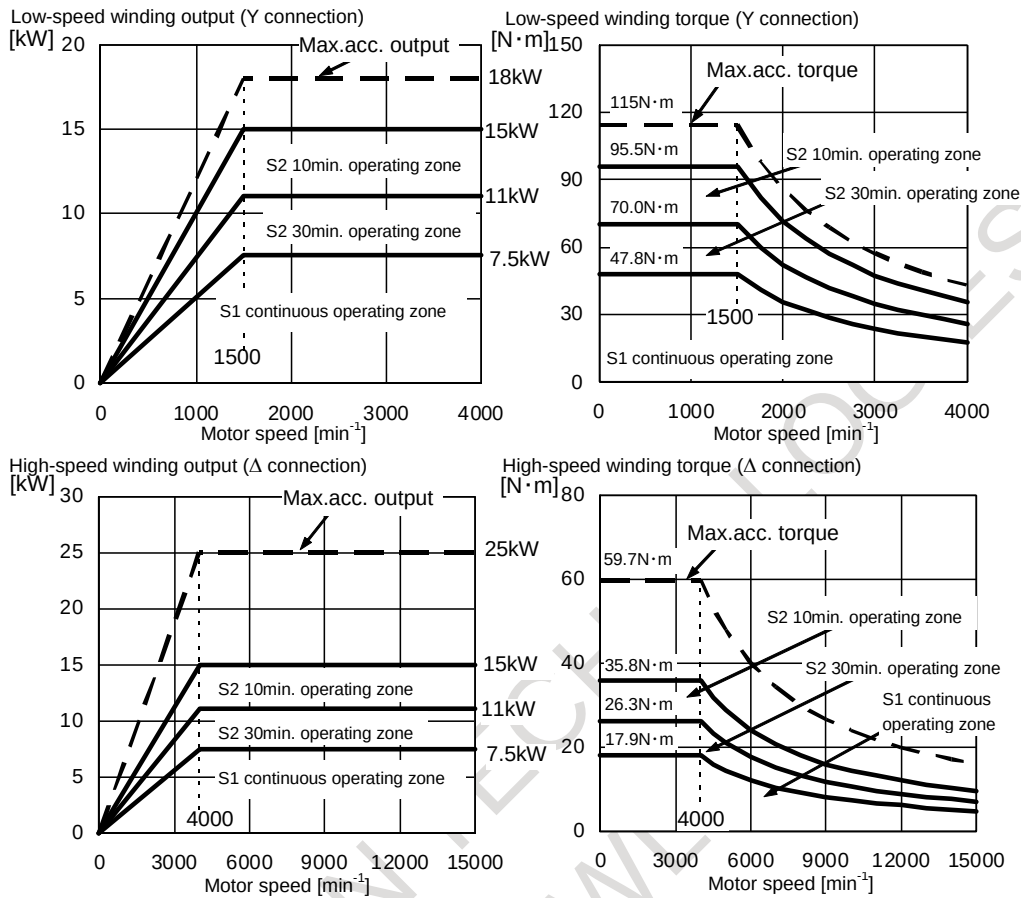
Low-speed winding torque (Y connection)

High-speed winding output (Δ connection)High-speed winding torque (Δ connection)

Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P_C	7.5(10)	7.5(10)	kW(HP)
	S2 30 min, S3 60% rated		11(14.7)	11(14.7)	kW(HP)
	S3 25% rated		15(20.1)	15(20.1)	kW(HP)
Rated current	S1 continuous rated	I_C	49	51	A
	S2 30 min, S3 60% rated		61	62	A
	S3 25% rated		72	81	A
Speed	Base speed	N_b	1500	4000	min^{-1}
	Max. speed	$N_{\max}$	12000	12000	min^{-1}
Switching speed			4000		min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			18		kW
Continuous rated torque in the constant torque range		T_b	47.8 (488)	17.9 (183)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0275 (0.28)		kg·m ² (kgf·cm·s ²)
Weight		W	80		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	56.0		m Ω
Built-in detector			αi MZ sensor contained		
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			50		W

Model $\alpha i T$ 8/15000

Ordering specification number: A06B-1477-B133#0121

Applicable amplifier: αi SP 26-B

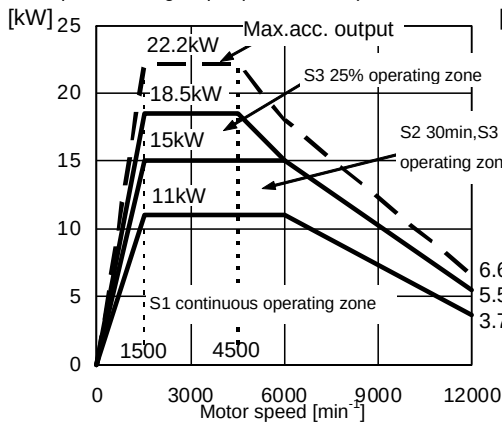
Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P_C	7.5(10)	7.5(10)	kW(HP)
	S2 30 min rated		11(14.7)	11(14.7)	kW(HP)
	S2 10 min rated		15(20.1)	15(20.1)	kW(HP)
Rated current	S1 continuous rated	I_C	70	73	A
	S2 30 min rated		90	89	A
	S2 10 min rated		108	105	A
Speed	Base speed	N_b	1500	4000	min^{-1}
	Max. speed	$N_{\max}$	4000	15000	min^{-1}
Switching speed			4000		min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			28.0		kW
Continuous rated torque in the constant torque range		T_b	47.8 (488)	17.9 (183)	$\text{N}\cdot\text{m}$ ($\text{kgf}\cdot\text{cm}$)
Moment of inertia of the rotor		J_m	0.0275 (0.28)		$\text{kg}\cdot\text{m}^2$ ($\text{kgf}\cdot\text{cm}\cdot\text{s}^2$)
Weight		W	80		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	31.0		$\text{m}\Omega$
Built-in detector			αi MZ sensor contained		
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			50		W

Model $\alpha i T$ 12/12000

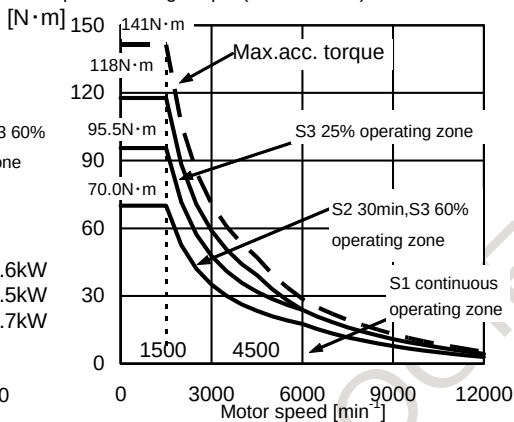
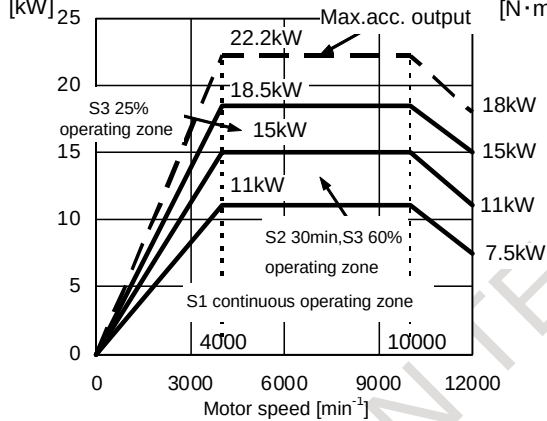
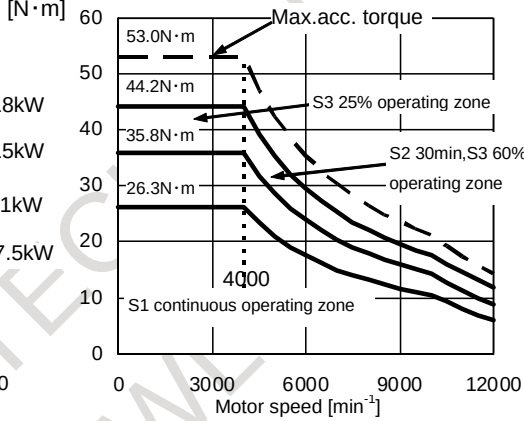
Ordering specification number: A06B-1468-B133#0R21

Applicable amplifier: αi SP 15-B βi SVSP*-18-B

Low-speed winding output (Y connection)



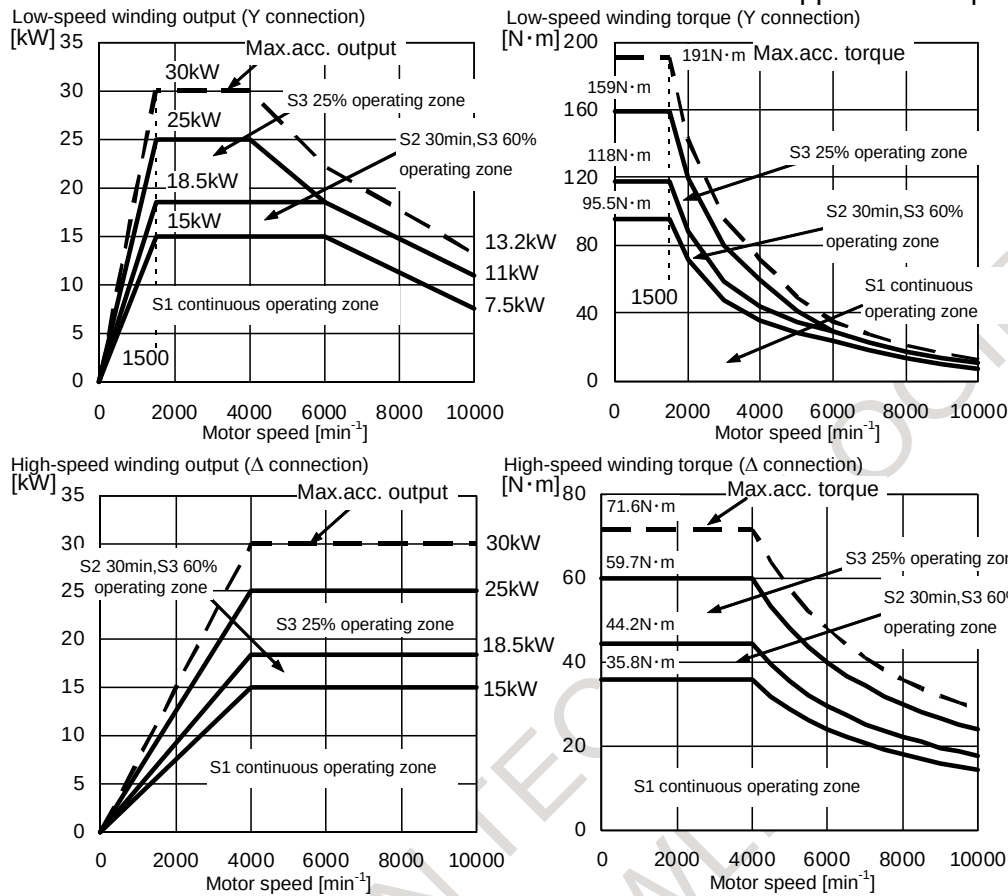
Low-speed winding torque (Y connection)

High-speed winding output (Δ connection)High-speed winding torque (Δ connection)

Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P_C	11(14.7)	11(14.7)	kW(HP)
	S2 30 min, S3 60% rated		15(20.1)	15(20.1)	kW(HP)
	S3 25% rated		18.5(24.8)	18.5(24.8)	kW(HP)
Rated current	S1 continuous rated	I_C	54	54	A
	S2 30 min, S3 60% rated		67	64	A
	S3 25% rated		77	74	A
Speed	Base speed	N_b	1500	4000	min^{-1}
	Max. speed	$N_{\max}$	12000	12000	min^{-1}
Switching speed			4000		min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			22.2		kW
Continuous rated torque in the constant torque range		T_b	70.0 (714)	26.2 (268)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.07 (0.77)		$\text{kg} \cdot \text{m}^2$ ($\text{kgf} \cdot \text{cm} \cdot \text{s}^2$)
Weight		W	95		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	61.0		m Ω
Built-in detector			αi MZ sensor contained		
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			100		W

Model $\alpha i T$ 15/10000

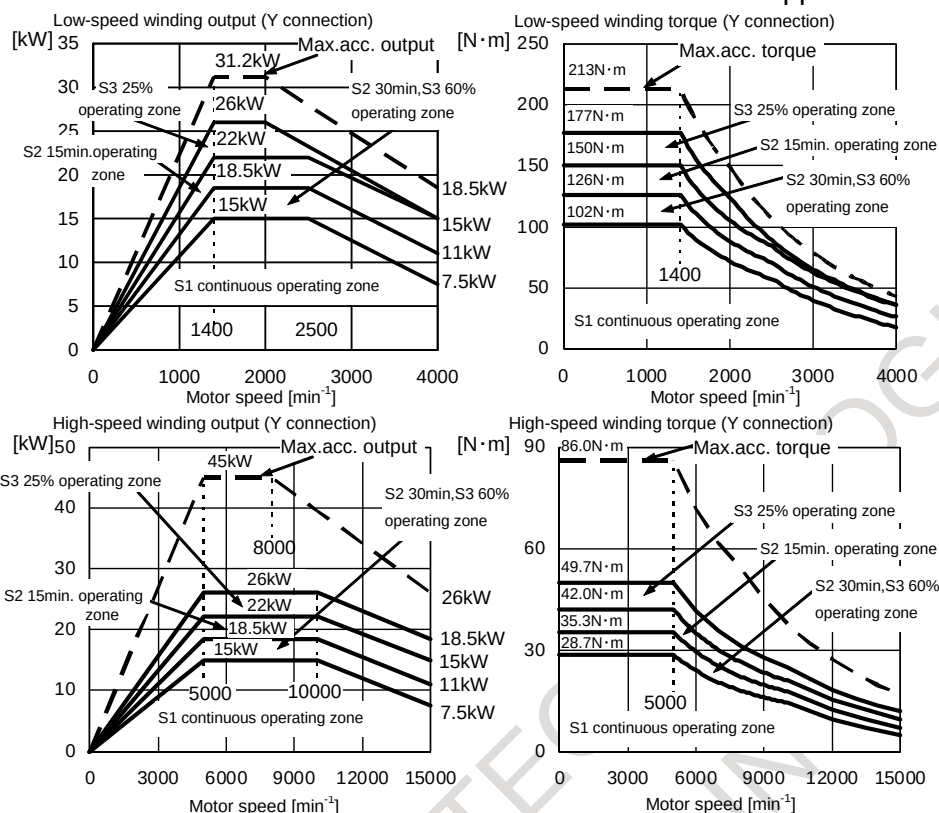
Ordering specification number: A06B-1469-B123#0P21

Applicable amplifier: αi SP 22-B

Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P_C	15(20.1)	15(20.1)	kW(HP)
	S2 30 min, S3 60% rated		18.5(24.8)	18.5(24.8)	kW(HP)
	S3 25% rated		25(33.5)	25(33.5)	kW(HP)
Rated current	S1 continuous rated	I_C	74	71	A
	S2 30 min, S3 60% rated		85	81	A
	S3 25% rated		105	103	A
Speed	Base speed	N_b	1500	4000	min^{-1}
	Max. speed	$N_{\max}$	10000	10000	min^{-1}
Switching speed			4000		min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			30		kW
Continuous rated torque in the constant torque range		T_b	95.5 (974)	35.8 (365)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.09 (0.93)		$\text{kg}\cdot\text{m}^2$ (kgf·cm·s ²)
Weight		W	110		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	40.0		m Ω
Built-in detector			αi MZ sensor contained		
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			100		W

Model $\alpha i T$ 15/15000

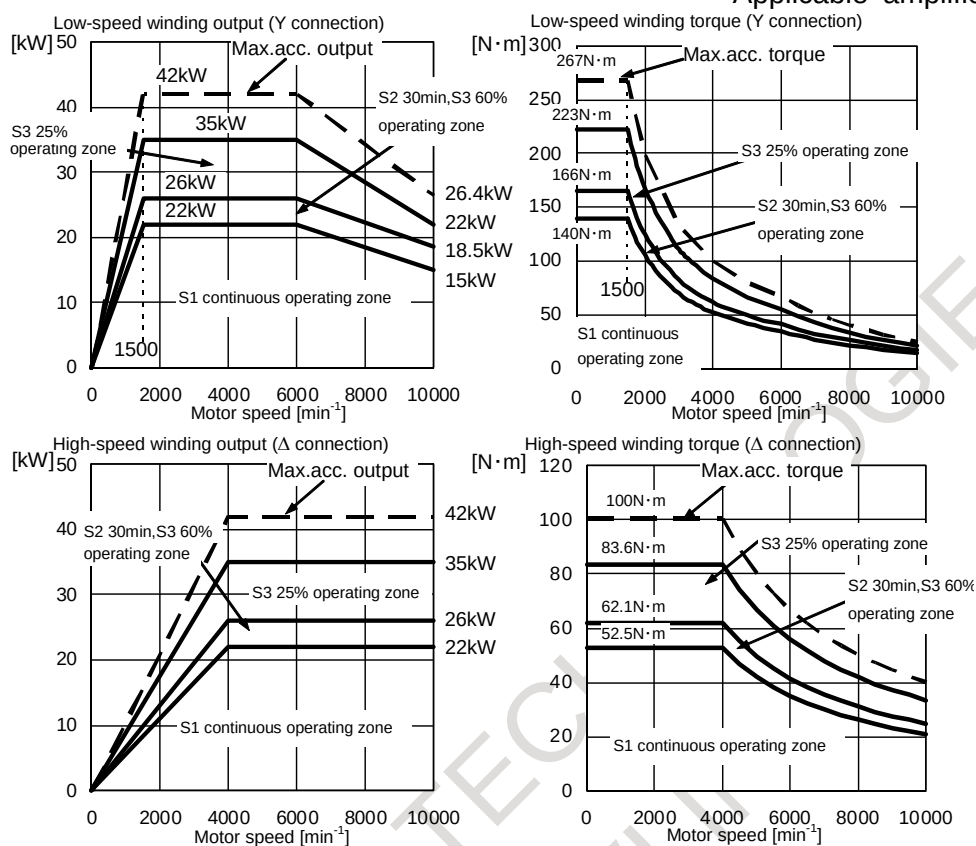
Ordering specification number: A06B-1479-B133#0P21

Applicable amplifier: $\alpha i SP$ 30-B

Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Y connection)	
Rated output	S1 continuous rated	P_C	15(20.1)	15(20.1)	kW(HP)
	S2 30 min, S3 60% rated		18.5(24.8)	18.5(24.8)	kW(HP)
	S2 15 min rated		22(29.5)	22(29.5)	kW(HP)
	S3 25% rated		26(34.9)	26(34.9)	kW(HP)
Rated current	S1 continuous rated	I_C	81	84	A
	S2 30 min, S3 60% rated		101	95	A
	S2 15 min rated		120	104	A
	S3 25% rated		141	118	A
Speed	Base speed	N_b	1400	5000	min ⁻¹
	Max. speed	N_{max}	4000	15000	min ⁻¹
Switching speed			3500		min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			50		kW
Continuous rated torque in the constant torque range		T_b	102 (1041)	28.7 (293)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.055 (0.56)		kg·m ² (kgf·cm·s ²)
Weight		W	121		kg
Winding resistance (U1-V1, V1-W1, and W1-U1)		R_a	72.8		mΩ
Winding resistance (U2-V2, V2-W2, and W2-U2)		R_a	29.8		
Built-in detector			$\alpha i MZ$ sensor contained		
Number of teeth for speed detection			256		λ/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			100		W

Model $\alpha i T$ 22/10000

Ordering specification number: A06B-1471-B123#0P21

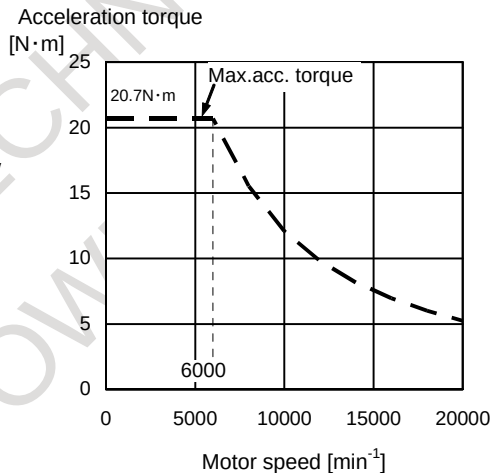
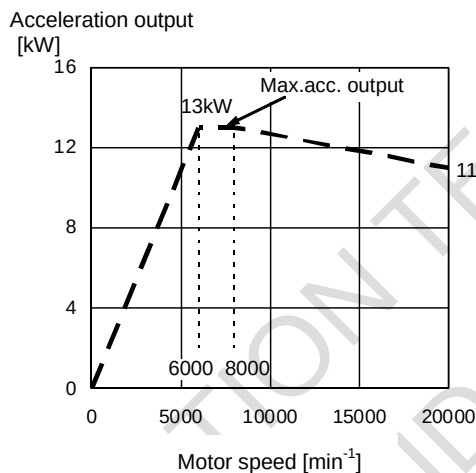
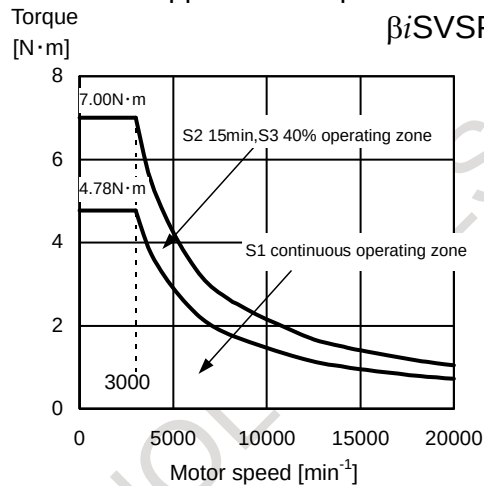
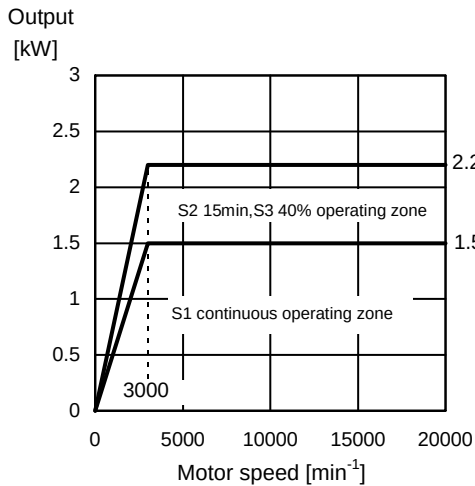
Applicable amplifier: $\alpha i SP$ 26-B

Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P_C	22(29.5)	22(29.5)	kW(HP)
	S2 30 min, S3 60% rated		26(34.9)	26(34.9)	kW(HP)
	S3 25% rated		35(46.9)	35(46.9)	kW(HP)
Rated current	S1 continuous rated	I_C	100	101	A
	S2 30 min, S3 60% rated		111	112	A
	S3 25% rated		150	140	A
Speed	Base speed	N_b	1500	4000	min ⁻¹
	Max. speed	N_{max}	10000	10000	min ⁻¹
Switching speed			4000		min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			42		kW
Continuous rated torque in the constant torque range		T_b	140 (1429)	52.5 (536)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.128 (1.29)		kg·m ² (kgf·cm·s ²)
Weight		W	143		kg
Winding resistance (U-X, V-Y, and W-Z)		R_a	24.0		mΩ
Built-in detector			$\alpha i MZ$ sensor contained		
Vibration			V3		
Number of teeth for speed detection			256		λ/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			100		W

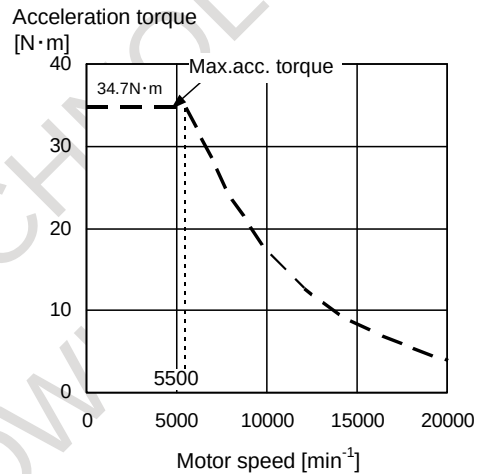
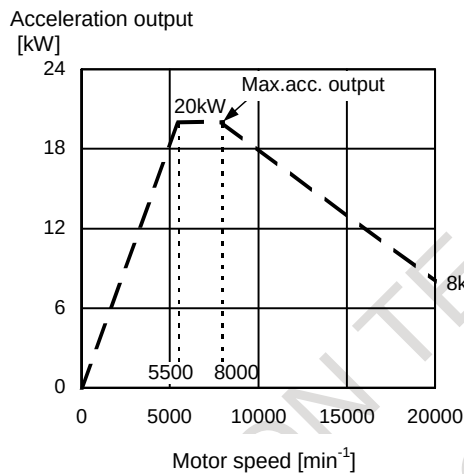
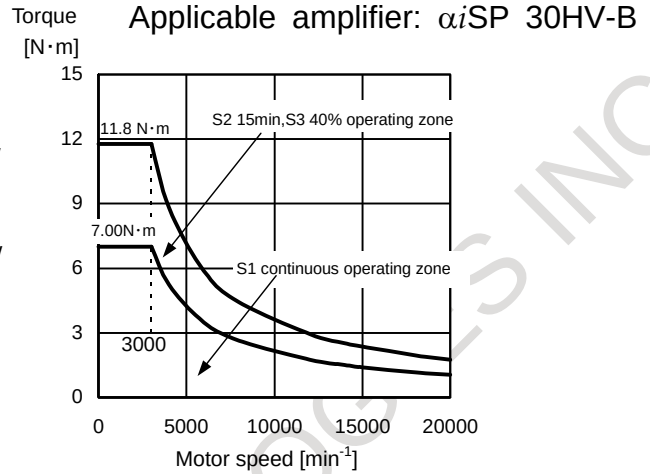
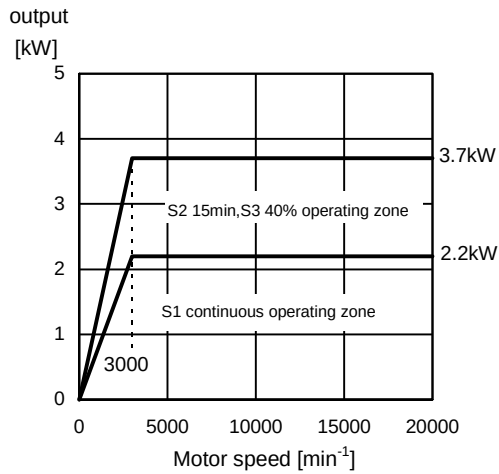
3.2.8 $\alpha i I_T$ Series 400V-type

Model $\alpha i I_T$ 1.5/20000HV
Ordering specification number: A06B-1563-B123#0121

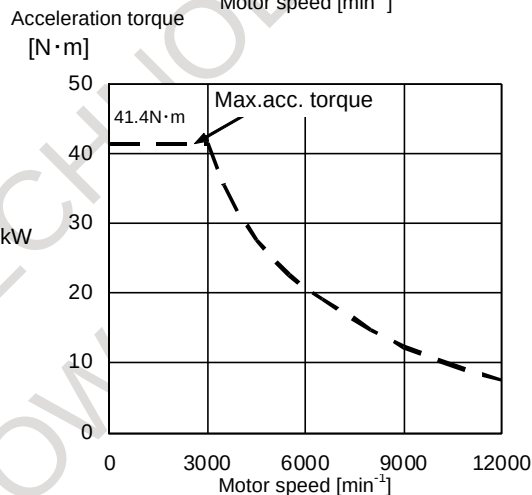
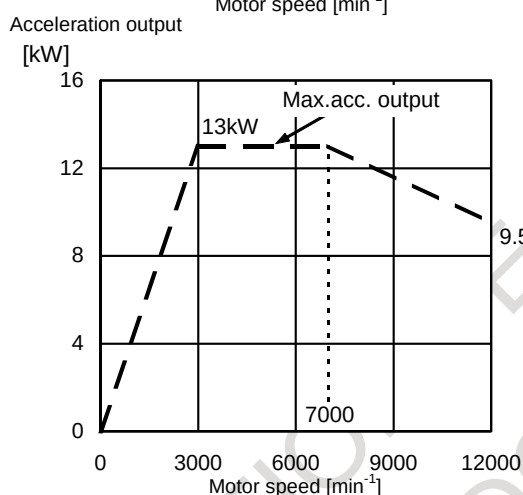
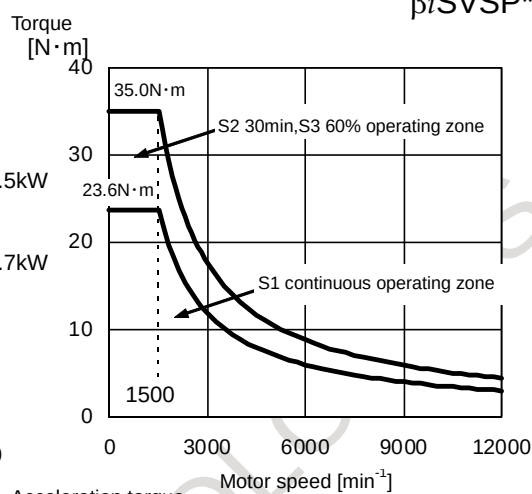
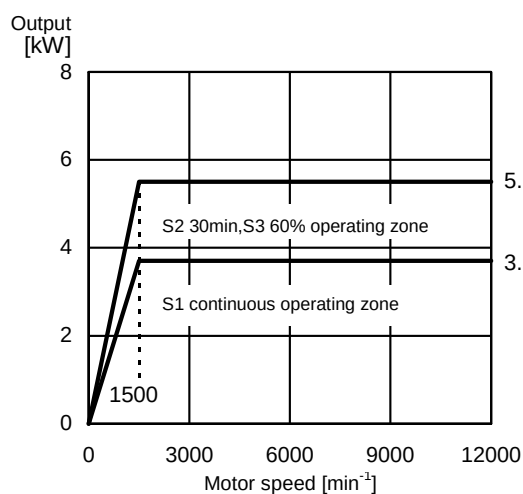
 Applicable amplifier: $\alpha i SP$ 15HV-B

 $\beta i SVSP^*$ -18HV-B


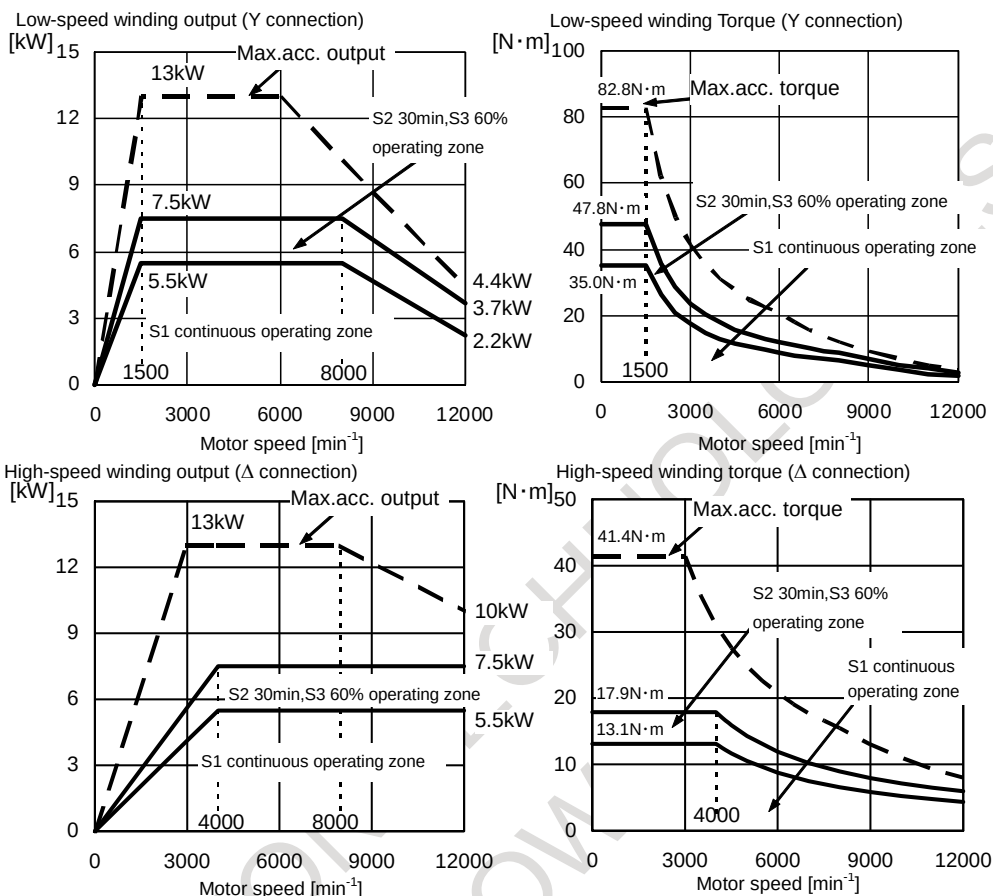
Item		Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	1.5(2.2)	kW(HP)
	S2 15 min, S3 40% rated		2.2(3.0)	kW(HP)
Rated current	S1 continuous rated	I_c	13	A
	S2 15 min, S3 40% rated		16	A
Speed	Base speed	N_b	3000	min ⁻¹
	Max. speed	N_{max}	20000	min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output	kW
Maximum output at acceleration for PS selection			13.0	kW
Continuous rated torque in the constant torque range		T_b	4.78 (48.8)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0043 (0.04)	kg·m ² (kgf·cm·s ²)
Weight		W	24	kg
Winding resistance (U-V, V-W, and W-U)			267	mΩ
Built-in detector			$\alpha i MZ$ sensor contained	
Number of teeth for speed detection			128	λ/rev.
Vibration			V3	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)	
Rated power of the cooling fan			28	W

Model $\alpha i I_T$ 2/20000HV**Ordering specification number: A06B-1564-B123#0121**

Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	2.2(3.0)
	S2 15 min, S3 40% rated		3.7(5.0)
Rated current	S1 continuous rated	I_c	21
	S2 15 min, S3 40% rated		28
Speed	Base speed	N_b	3000
	Max. speed	N_{max}	20000
Steady-state maximum output		P_{max}	120% of maximum rated output
Maximum output at acceleration for PS selection			20.0
Continuous rated torque in the constant torque range		T_b	7.00 (71.4)
Moment of inertia of the rotor		J_m	0.0078 (0.08)
Weight		W	27
Winding resistance (U-V, V-W, and W-U)			187
Built-in detector			αi MZ sensor contained
Number of teeth for speed detection			128
Vibration			V3
Noise			75 or less
Cooling system			Totally enclosed and fan cooled (IC0A6)
Rated power of the cooling fan			34

Model $\alpha i I_T$ 3/12000HV**Ordering specification number: A06B-1565-B123#0021**Applicable amplifier: αi SP 11HV-B βi SVSP*-11HV-B

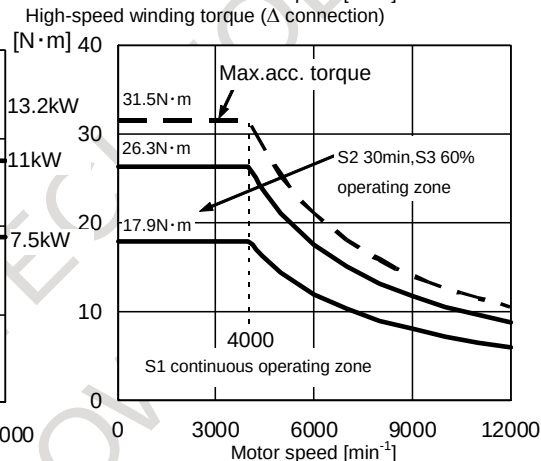
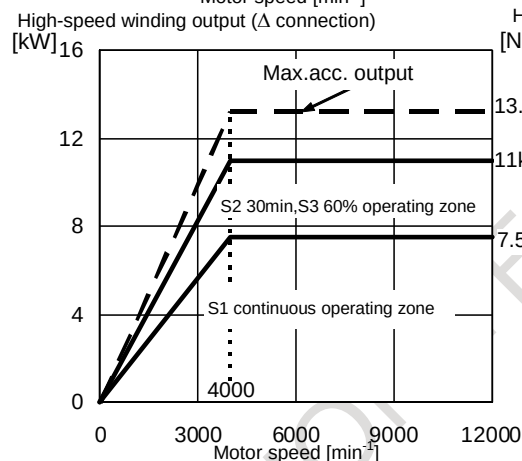
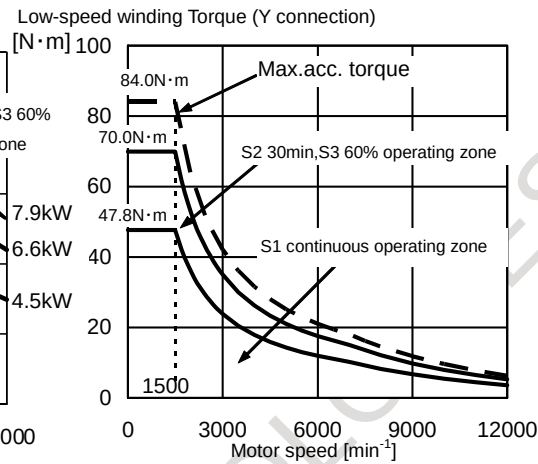
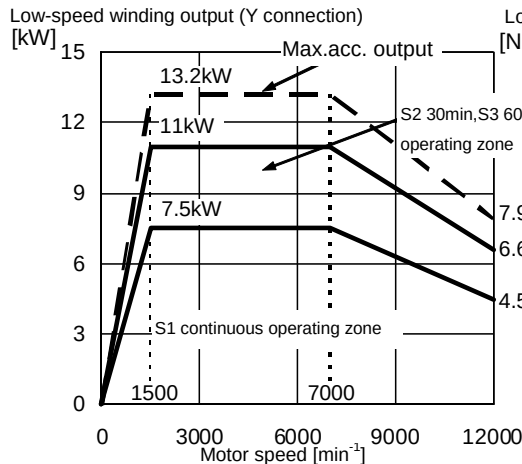
Item	Symbol	Value	Unit
Rated output	S1 continuous rated	P_c	3.7(5.0)
	S2 30 min, S3 60% rated		5.5(7.4)
Rated current	S1 continuous rated	I_c	18
	S2 30 min, S3 60% rated		23
Speed	Base speed	N_b	1500
	Max. speed	N_{max}	12000
Steady-state maximum output		P_{max}	120% of maximum rated output
Maximum output at acceleration for PS selection			13.0
Continuous rated torque in the constant torque range		T_b	23.6 (241)
Moment of inertia of the rotor		J_m	0.0148 (0.15)
Weight		W	46
Winding resistance (U-V, V-W, and W-U)			430
Built-in detector			αi MZ sensor contained
Number of teeth for speed detection			128
Vibration			V3
Noise			75 or less
Cooling system			Totally enclosed and fan cooled (IC0A6)
Rated power of the cooling fan			34

Model $\alpha i I_T$ 6/12000HV**Ordering specification number: A06B-1566-B123#0021**Applicable amplifier: αi SP 15HV-B βi SVSP*-18HV-B

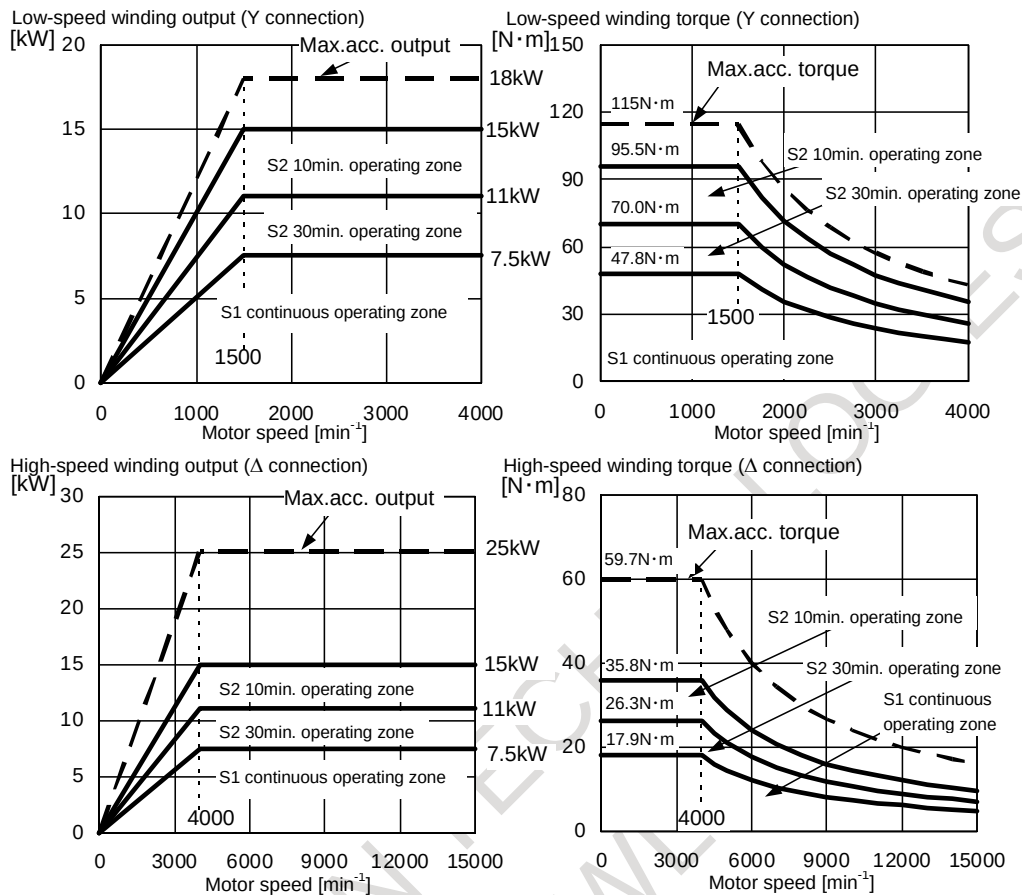
Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P_c	5.5(7.4)	5.5(7.4)	kW(HP)
	S2 30 min, S3 60% rated		7.5(10)	7.5(10)	kW(HP)
Rated current	S1 continuous rated	I_c	18	18	A
	S2 30 min, S3 60% rated		22	24	A
Speed	Base speed	N_b	1500	4000	min ⁻¹
	Max. speed	N_{max}	12000	12000	min ⁻¹
Switching speed			4000		min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			13.0		kW
Continuous rated torque in the constant torque range		T_b	35.0 (357)	13.1 (134)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0179 (0.18)		kg·m ² (kgf·cm·s ²)
Weight		W	51		kg
Winding resistance (U-X, V-Y, and W-Z)			238		mΩ
Built-in detector			αi MZ sensor contained		
Number of teeth for speed detection			256		λ/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			80		W

Model $\alpha i I_T$ 8/12000HV

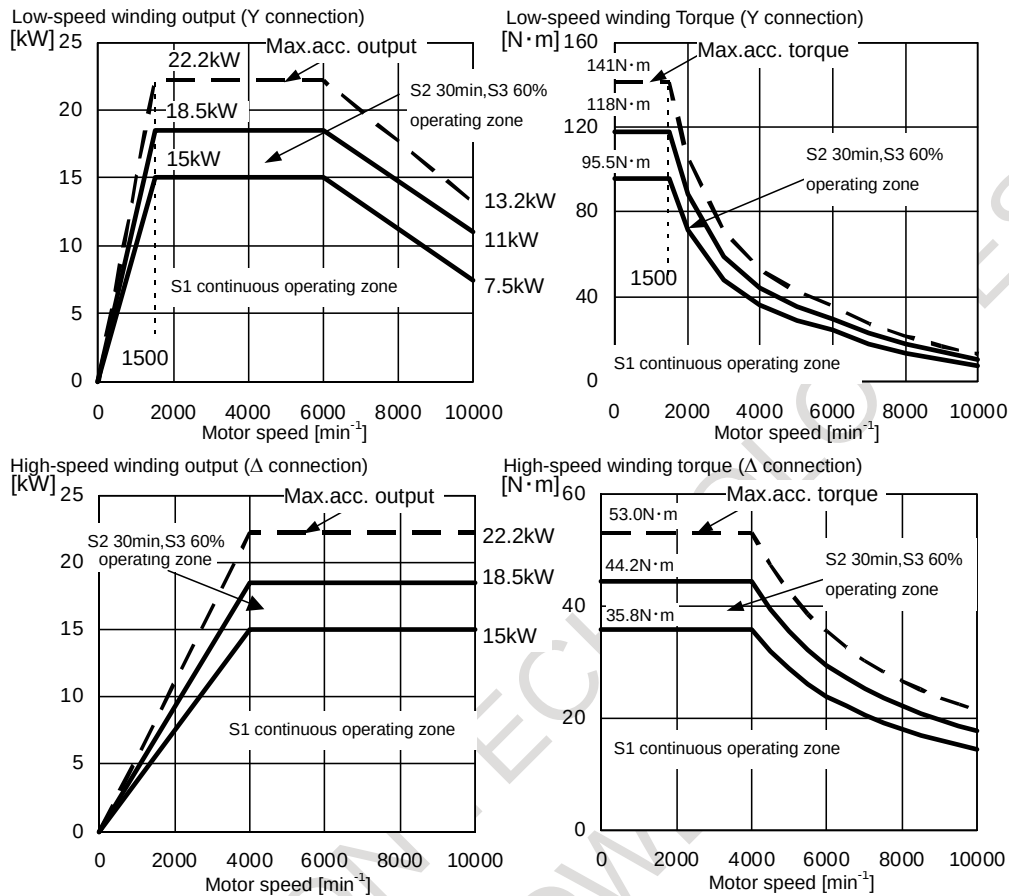
Ordering specification number: A06B-1567-B123#0021

Applicable amplifier: αi SP 15HV-B βi SVSP*-18HV-B

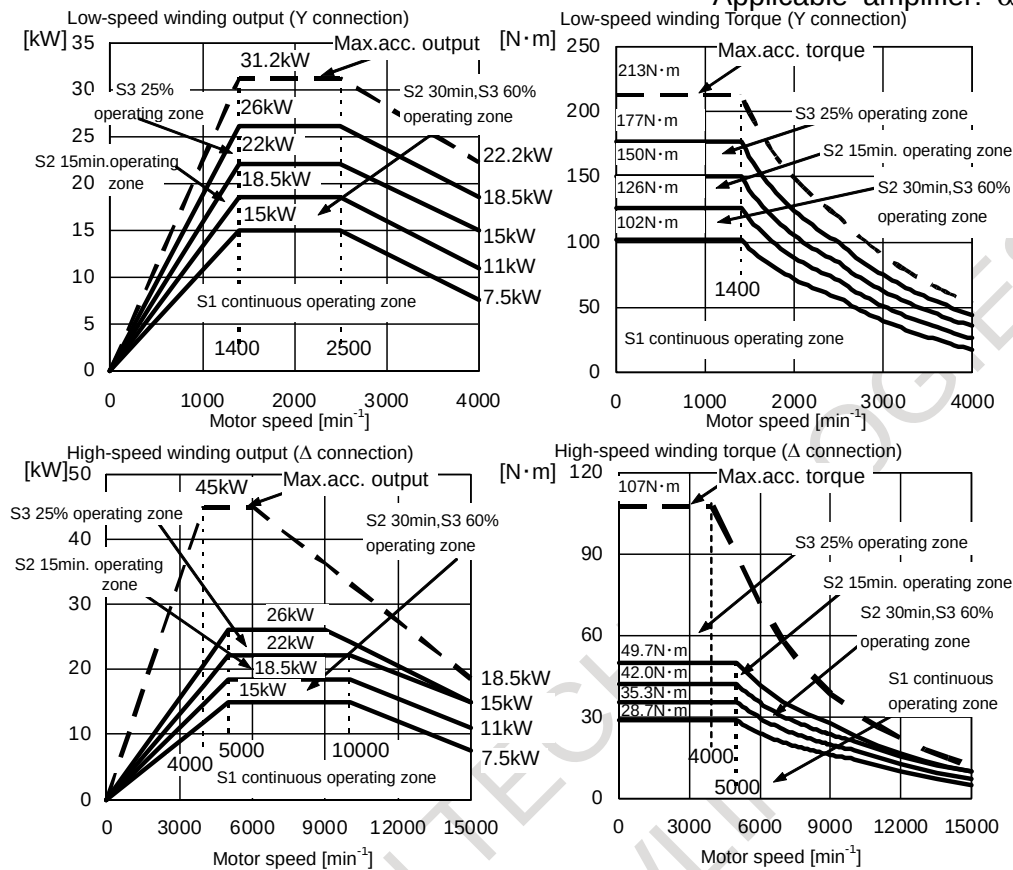
Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P_c	7.5(10)	7.5(10)	kW(HP)
	S2 30 min, S3 60% rated		11(14.7)	11(14.7)	kW(HP)
Rated current	S1 continuous rated	I_c	23	25	A
	S2 30 min, S3 60% rated		29	30	A
Speed	Base speed	N_b	1500	4000	min^{-1}
	Max. speed	$N_{\max}$	12000	12000	min^{-1}
Switching speed			4000		min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			13.2		kW
Continuous rated torque in the constant torque range		T_b	47.8 (488)	17.9 (183)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0275 (0.28)		$\text{kg} \cdot \text{m}^2$ (kgf·cm·s ²)
Weight		W	80		kg
Winding resistance (U-X, V-Y, and W-Z)			219		m Ω
Built-in detector			αi MZ sensor contained		
Number of teeth for speed detection			256		$\lambda/\text{rev.}$
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			80		W

Model $\alpha i I_T$ 8/15000HV**Ordering specification number: A06B-1577-B133#0121**Applicable amplifier: αi SP 30HV-B

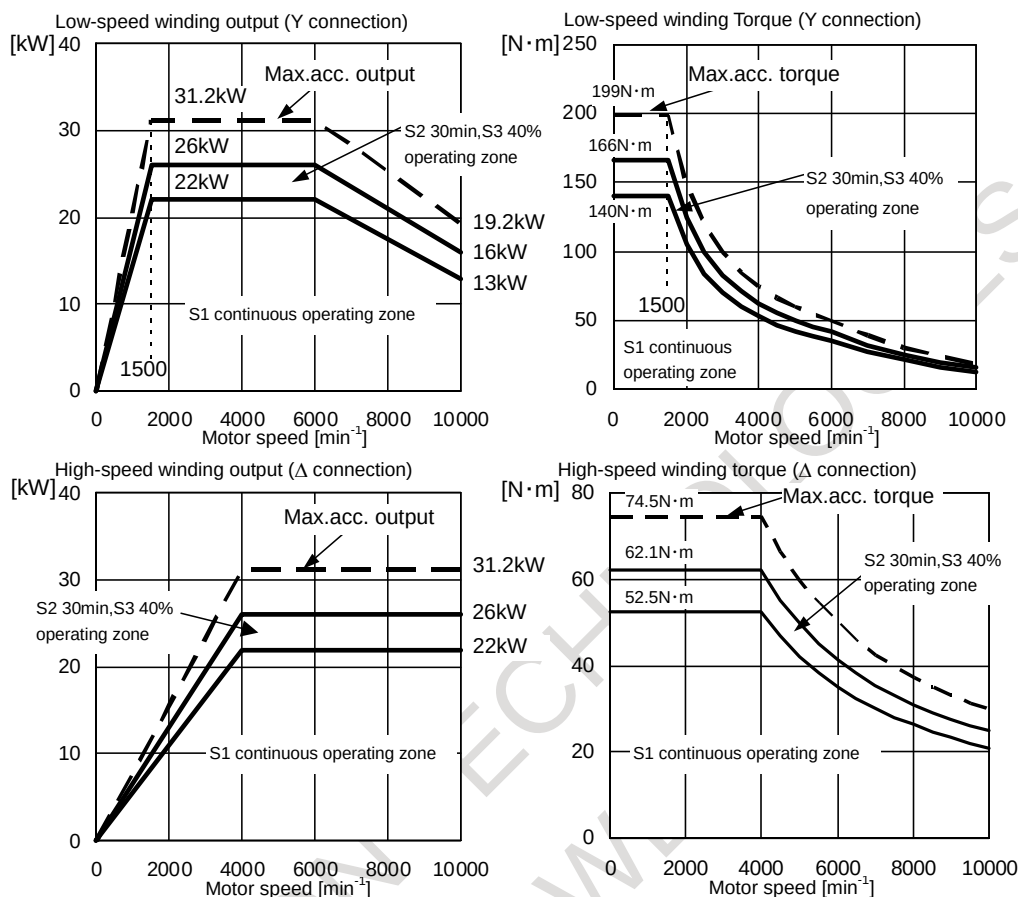
Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P_C	7.5(10)	7.5(10)	kW(HP)
	S2 30 min rated		11(14.7)	11(14.7)	kW(HP)
	S2 10 min rated		15(20.1)	15(20.1)	kW(HP)
Rated current	S1 continuous rated	I_C	35	37	A
	S2 30 min rated		44	45	A
	S2 10 min rated		55	53	A
Speed	Base speed	N_b	1500	4000	min ⁻¹
	Max. speed	N_{max}	4000	12000	min ⁻¹
Switching speed			4000		min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			28.0		kW
Continuous rated torque in the constant torque range		T_b	47.8 (488)	17.9 (183)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0275 (0.28)		kg·m ² (kgf·cm·s ²)
Weight		W	80		kg
Winding resistance (U-X, V-Y, and W-Z)			109		mΩ
Built-in detector			αi MZ sensor contained		
Number of teeth for speed detection			256		λ/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			80		W

Model $\alpha i I_T$ 15/10000HV**Ordering specification number: A06B-1569-B123#0021**Applicable amplifier: αi SP 30HV-B

Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P_C	15(20.1)	15(20.1)	kW(HP)
	S2 30 min, S3 60% rated		18.5(24.8)	18.5(24.8)	kW(HP)
Rated current	S1 continuous rated	I_C	37	36	A
	S2 30 min, S3 60% rated		45	41	A
Speed	Base speed	N_b	1500	4000	min ⁻¹
	Max. speed	N_{max}	10000	10000	min ⁻¹
Switching speed			4000		min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			22.2		kW
Continuous rated torque in the constant torque range		T_b	95.5 (974)	35.8 (365)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.09 (0.93)		kg·m ² (kgf·cm·s ²)
Weight		W	110		kg
Winding resistance (U-X, V-Y, and W-Z)			152		mΩ
Built-in detector			αi MZ sensor contained		
Number of teeth for speed detection			256		λ/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			116		W

Model $\alpha i I_T$ 15/15000HV**Ordering specification number: A06B-1579-B133#0P21**Applicable amplifier: αi SP 30HV-B

Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P_C	15(20.1)	15(20.1)	kW(HP)
	S2 30 min, S3 60% rated		18.5(24.8)	18.5(24.8)	kW(HP)
	S2 15 min rated		22(29.5)	22(29.5)	kW(HP)
	S3 25% rated		26(34.9)	26(34.9)	kW(HP)
Rated current	S1 continuous rated	I_C	48	46	A
	S2 30 min, S3 60% rated		58	56	A
	S2 15 min rated		68	68	A
	S3 25% rated		78	76	A
Speed	Base speed	N_b	1400	5000	min ⁻¹
	Max. speed	N_{max}	4000	15000	min ⁻¹
Switching speed			3500		min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			50		kW
Continuous rated torque in the constant torque range		T_b	102 (1041)	28.7 (293)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.055 (0.56)		kg·m ² (kgf·cm·s ²)
Weight		W	121		kg
Winding resistance (U-X, V-Y, and Z-W)			92.3		mΩ
Built-in detector			αi MZ sensor contained		
Number of teeth for speed detection			256		1/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			116		W

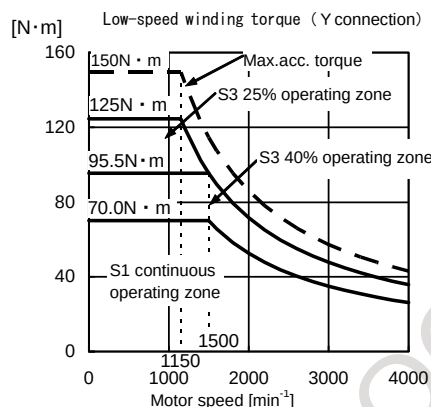
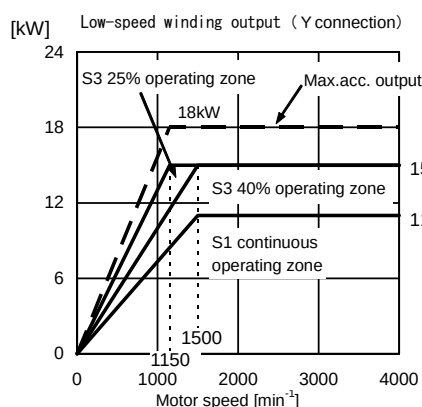
Model $\alpha i I_T$ 22/10000HV**Ordering specification number: A06B-1571-B123#0021**Applicable amplifier: αi SP 30HV-B

Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P_C	22(29.5)	22(29.5)	kW(HP)
	S2 30 min, S3 40% rated		26(34.9)	26(34.9)	kW(HP)
Rated current	S1 continuous rated	I_C	46	47	A
	S2 30 min, S3 40% rated		54	53	A
Speed	Base speed	N_b	1500	4000	min ⁻¹
	Max. speed	N_{max}	10000	10000	min ⁻¹
Switching speed			4000		min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			31.2		kW
Continuous rated torque in the constant torque range		T_b	140.0 (1429)	52.5 (536)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.128 (1.29)		kg·m ² (kgf·cm·s ²)
Weight		W	143		kg
Winding resistance (U-X, V-Y, and W-Z)			99.0		mΩ
Built-in detector			αi MZ sensor contained		
Number of teeth for speed detection			256		λ/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Totally enclosed and fan cooled (IC0A6)		
Rated power of the cooling fan			116		W

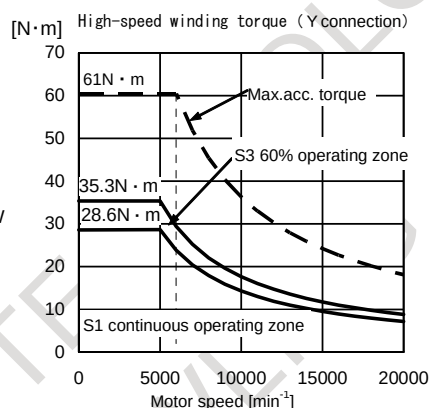
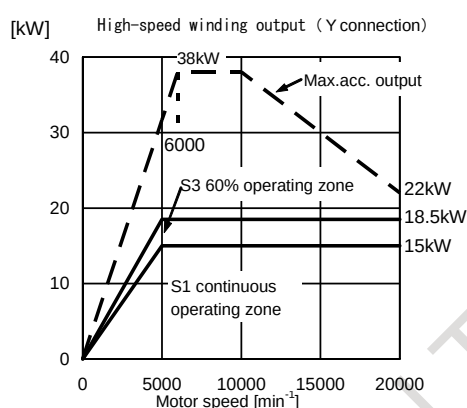
3.2.9 αi L Series 200V-type

Model αi L 8/20000

Ordering specification number: A06B-1497-B145#0N21



Applicable amplifier:
 αi SP 30-B
 Cooler capacity 2.9 kW
 (2500 kcal/h)

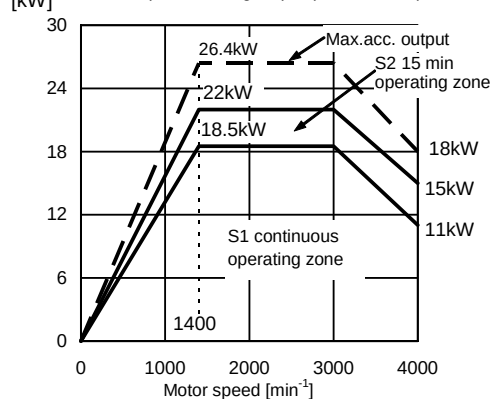


Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Y connection)	
Rated output	S1 continuous rated	P_C	11(14.7)	15(20.1)	kW(HP)
	S3 60% rated		-	18.5(24.8)	kW(HP)
	S3 40% rated		15(20.1)	-	kW(HP)
	S3 25% rated		15(20.1)	-	kW(HP)
Rated current	S1 continuous rated	I_C	76	107	A
	S3 60% rated		-	121	A
	S3 40% rated		96	-	A
	S3 25% rated		119	-	A
Speed	Base speed	N_b	1500	5000	min^{-1}
	Max. speed	$N_{\max}$	4000	20000	min^{-1}
Switching speed			4000		min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			41		kW
Continuous rated torque in the constant torque range		T_b	70.0 (715)	28.6 (292)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0275		$\text{kg} \cdot \text{m}^2$
			(0.28)		(kgf·cm·s ²)
Weight		W	80		kg
Winding resistance (U_1 - V_1 , V_1 - W_1 , and W_1 - U_1)			100		m Ω
Winding resistance (U_2 - V_2 , V_2 - W_2 , and W_2 - U_2)			40.5		m Ω
Winding resistance (U_1 - U_2 , V_1 - V_2 , and W_1 - W_2)			30.5		m Ω
Built-in detector			αi MZ sensor contained		
Number of teeth for speed detection			128		$\lambda/\text{rev.}$
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Liquid-cooling method (IC9U7A7)		

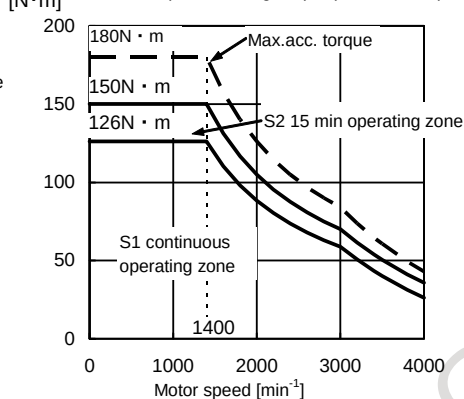
Model αi IL 15/15000

Ordering specification number: A06B-1495-B135#0121

Low-speed winding output (Y connection)

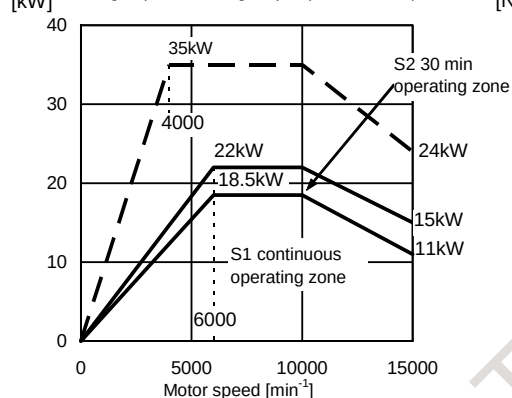


Low-speed winding torque (Y connection)

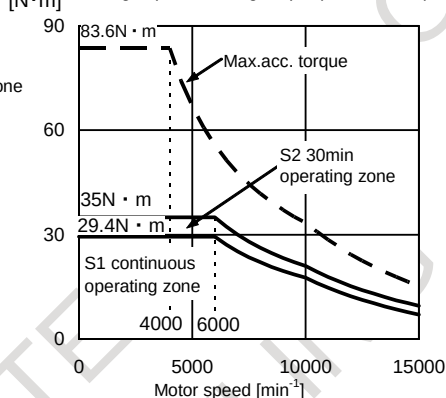


Applicable amplifier:
 αi SP 30-B
 Cooler capacity
 3.5kW(3000kcal/h)

High-speed winding output (Y connection)



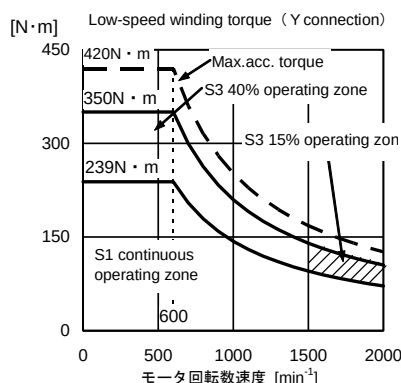
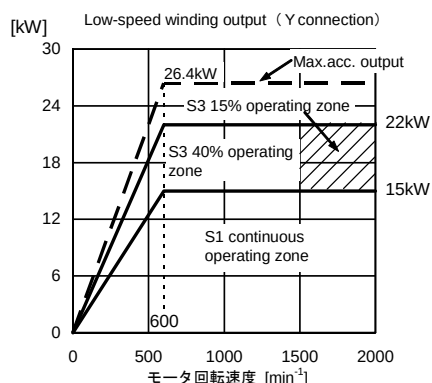
High-speed winding torque (Y connection)



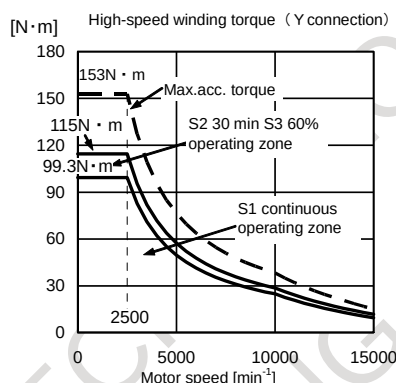
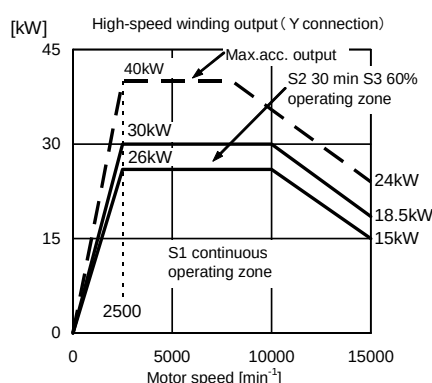
Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Y connection)	
Rated output	S1 continuous rated	P_C	18.5(24.8)	18.5(24.8)	kW(HP)
	S2 30 min rated		-	22(29.5)	kW(HP)
	S2 15 min rated		22(29.5)	-	kW(HP)
Rated current	S1 continuous rated	I_C	103	84	A
	S2 30 min rated		-	96	A
	S2 15 min rated		121	-	A
Speed	Base speed	N_b	1400	6000	min ⁻¹
	Max. speed	N_{max}	4000	15000	min ⁻¹
Switching speed			4000		min ⁻¹
Steady-state maximum output		P_{max}	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			41		kW
Continuous rated torque in the constant torque range		T_b	126 (1286)	29 (300)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.055		kg·m ²
			(0.56)		(kgf·cm·s ²)
Weight		W	140		kg
Winding resistance (U ₁ -V ₁ , V ₁ -W ₁ , and W ₁ -U ₁)			37.6		mΩ
Winding resistance (U ₂ -V ₂ , V ₂ -W ₂ , and W ₂ -U ₂)			19.6		mΩ
Winding resistance (U ₁ -U ₂ , V ₁ -V ₂ , and W ₁ -W ₂)			10.4		mΩ
Built-in detector			αi MZ sensor contained		
Number of teeth for speed detection			128		λ/rev.
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Liquid-cooling method (IC9U7A7)		

Model $\alpha i L$ 26/15000

Ordering specification number: A06B-1494-B135#0121



Applicable amplifier:
 αi SP 30-B
 Cooler capacity
 4.1kW(3500kcal/h)

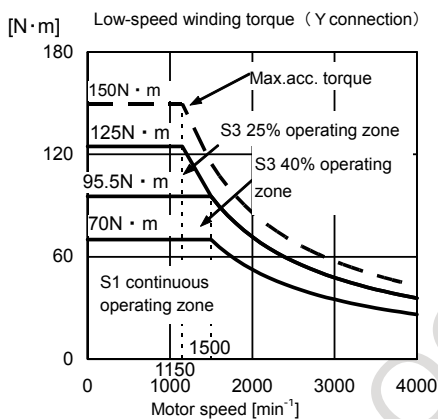
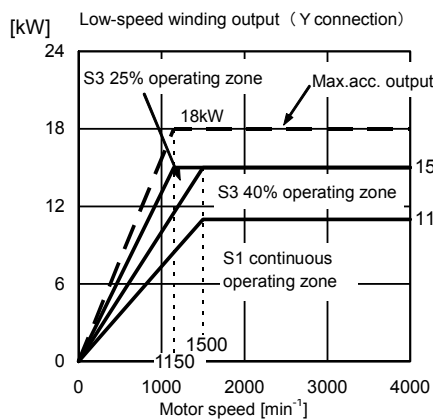


Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Y connection)	
Rated output	S1 continuous rated	P_c	15(20.1)	26(34.9)	kW(HP)
	S2 30 min, S3 60% rated		-	30(40.2)	kW(HP)
	S3 40% rated		22(29.5)	-	kW(HP)
	S3 15% rated		22(29.5)	-	kW(HP)
Rated current	S1 continuous rated	I_c	79	107	A
	S2 30 min, S3 60% rated		-	133	A
	S3 40% rated		108	-	A
	S3 15% rated		95	-	A
Speed	Base speed	N_b	600	2500	min^{-1}
	Max. speed	$N_{\max}$	2000	15000	min^{-1}
Switching speed			1800		min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			43		kW
Continuous rated torque in the constant torque range		T_b	239 (2435)	99.3 (1013)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.167		$\text{kg} \cdot \text{m}^2$
			(1.7)		(kgf·cm·s ²)
Weight		W	170		kg
Winding resistance (U ₁ -V ₁ , V ₁ -W ₁ , and W ₁ -U ₁)			128		mΩ
Winding resistance (U ₂ -V ₂ , V ₂ -W ₂ , and W ₂ -U ₂)			51.6		mΩ
Winding resistance (U ₁ -U ₂ , V ₁ -V ₂ , and W ₁ -W ₂)			39.0		mΩ
Built-in detector			αi MZ sensor contained		
Number of teeth for speed detection			128		$\lambda/\text{rev.}$
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Liquid-cooling method (IC9U7A7)		

3.2.10 αi IL Series 400V-type

Model αi IL 8/20000HV

Ordering specification number: A06B-1597-B145#0N21

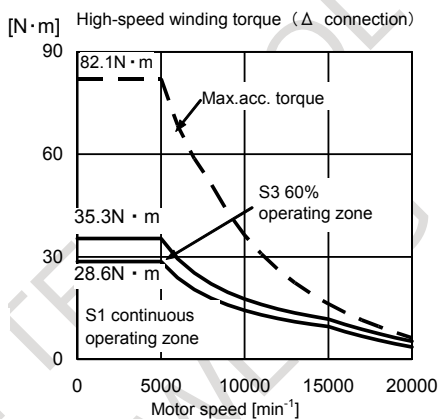
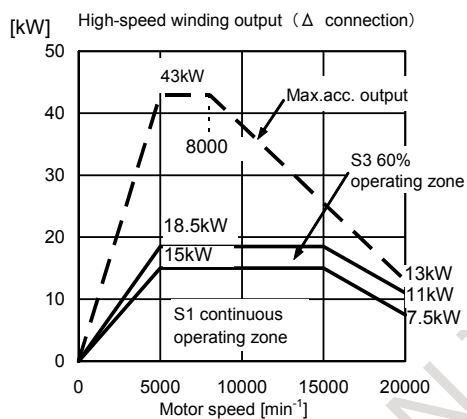


Applicable amplifier:

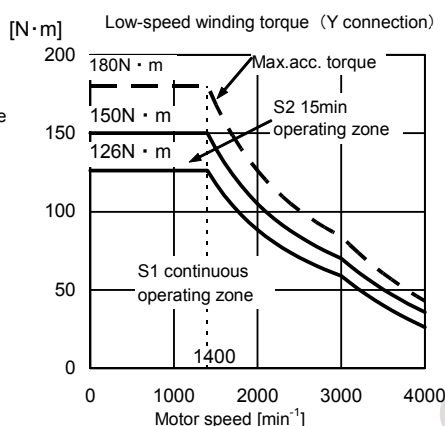
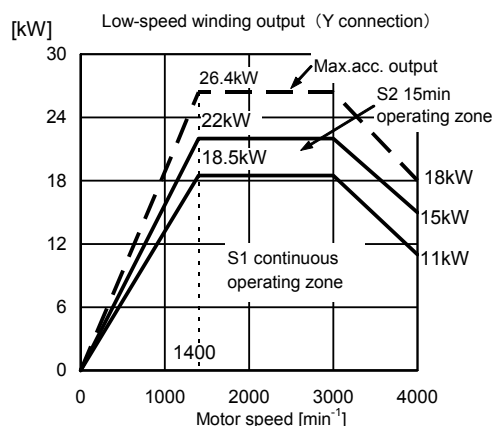
αi SP 45HV-B

Cooler capacity

2.9kW(2500kcal/h)



Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P_C	11(14.7)	15(20.1)	kW(HP)
	S3 60% rated			18.5(24.8)	kW(HP)
	S3 40% rated		15(20.1)		kW(HP)
	S3 25% rated		15(20.1)	-	kW(HP)
Rated current	S1 continuous rated	I_C	48	47	A
	S3 60% rated			53	A
	S3 40% rated		60		A
	S3 25% rated		75	-	A
Speed	Base speed	N_b	1500	5000	min^{-1}
	Max. speed	$N_{\max}$	4000	20000	min^{-1}
Switching speed			4000		min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			48		kW
Continuous rated torque in the constant torque range		T_b	70.0 (715)	28.6 (292)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.0275		$\text{kg} \cdot \text{m}^2$
			(0.28)		(kgf·cm·s ²)
Weight		W	80		kg
Winding resistance (U-X, V-Y, and W-X)			137		m Ω
Built-in detector			αi MZ sensor contained		
Number of teeth for speed detection			128		$\lambda/\text{rev.}$
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Liquid-cooling method (IC9U7A7)		

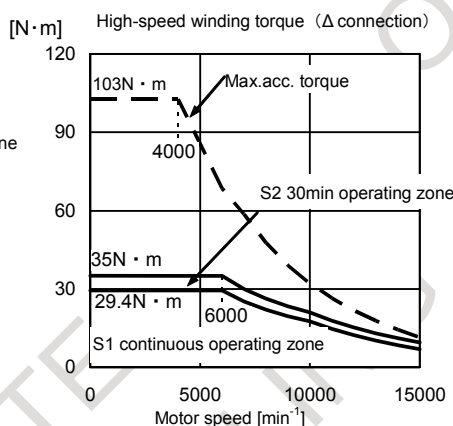
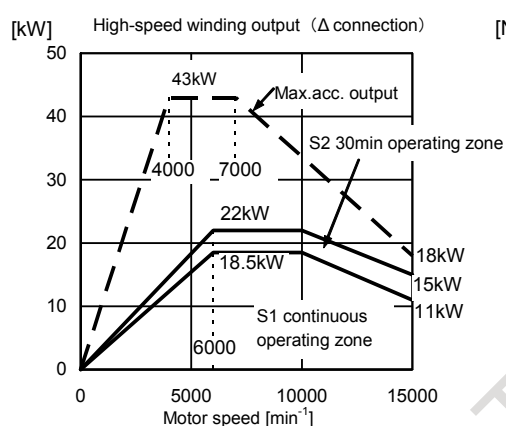
Model $\alpha i L$ 15/15000HV**Ordering specification number: A06B-1595-B135#0121**

Applicable amplifier:

 αi SP 45HV-B

Cooler capacity

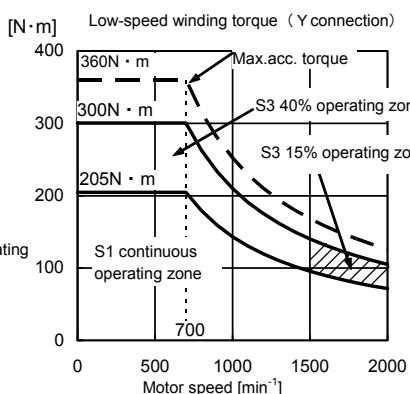
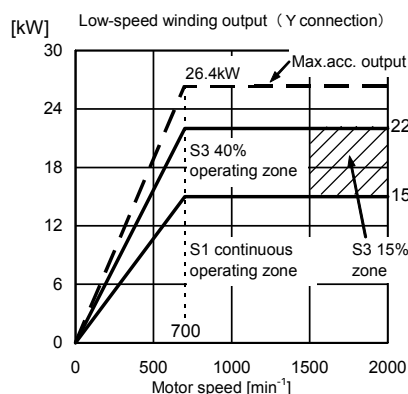
3.5kW(3000kcal/h)



Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P_C	18.5(24.8)	18.5(24.8)	kW(HP)
	S2 30 min rated		-	22(29.5)	kW(HP)
	S2 15 min rated		22(29.5)	-	kW(HP)
Rated current	S1 continuous rated	I_C	66	53	A
	S2 30 min rated		-	63	A
	S2 15 min rated		77	-	A
Speed	Base speed	N_b	1400	6000	min^{-1}
	Max. speed	$N_{\max}$	4000	15000	min^{-1}
Switching speed			4000		min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			48		kW
Continuous rated torque in the constant torque range		T_b	126 (1286)	29.4 (300)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.055		$\text{kg} \cdot \text{m}^2$
			(0.56)		(kgf·cm·s ²)
Weight		W	140		kg
Winding resistance (U-X, V-Y, and W-Z)			76.0		m Ω
Built-in detector			αi MZ sensor contained		
Number of teeth for speed detection			128		$\lambda/\text{rev.}$
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Liquid-cooling method (IC9U7A7)		

Model αi IL 26/15000HV

Ordering specification number: A06B-1594-B135#0121

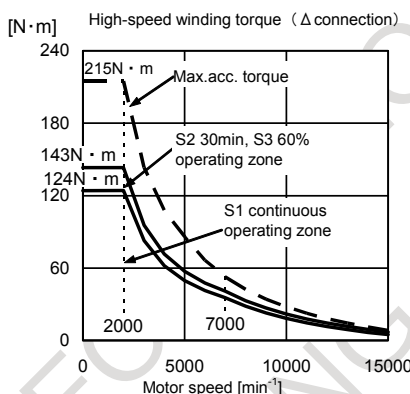
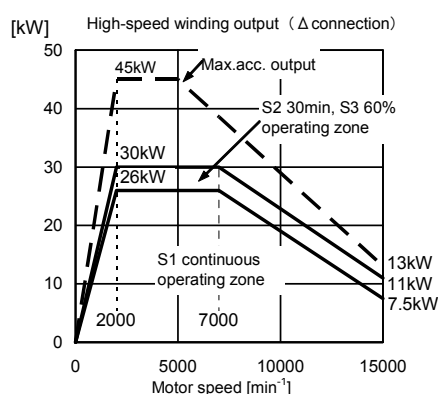


Applicable amplifier:

 αi SP 45HV-B

Cooler capacity

4.1kW(3500kcal/h)



Item		Symbol	Value		Unit
Connection			Low-speed winding (Y connection)	High-speed winding (Δ connection)	
Rated output	S1 continuous rated	P_C	15(20.1)	26(34.9)	kW(HP)
	S2 30 分、S3 60% rated		-	30(40.2)	kW(HP)
	S3 40% rated		22(29.5)	-	kW(HP)
	S3 15% rated		22(29.5)	-	kW(HP)
Rated current	S1 continuous rated	I_C	47	65	A
	S2 30 分、S3 60% rated		-	75	A
	S3 40% rated		66	-	A
	S3 15% rated		58	-	A
Speed	Base speed	N_b	700	2000	min^{-1}
	Max. speed	$N_{\max}$	2000	15000	min^{-1}
Switching speed			1500		min^{-1}
Steady-state maximum output		$P_{\max}$	120% of maximum rated output		kW
Maximum output at acceleration for PS selection			50		kW
Continuous rated torque in the constant torque range		T_b	205 (2088)	124 (1267)	N·m (kgf·cm)
Moment of inertia of the rotor		J_m	0.167		$\text{kg} \cdot \text{m}^2$
			(1.7)		(kgf·cm·s ²)
Weight		W	170		kg
Winding resistance (U-X, V-Y, and W-Z)			187		m Ω
Built-in detector			αi MZ sensor contained		
Number of teeth for speed detection			128		$\lambda/\text{rev.}$
Vibration			V3		
Noise			75 or less		dB(A)
Cooling system			Liquid-cooling method (IC9U7A7)		

- (*1) The applicable amplifier contained is a standard one.
 For αiI 0.5/10000, αiI 0.5/15000, αiI 1/10000, αiI 1/15000, αiI 1.5/10000, αiI 2/10000, and αiI 3/10000, $\beta iSVSP^*-11$, $\beta iSVSP^*-15$, and $\beta iSVSP^*-18$ are also applicable;
 For αiI 6/10000, αiI 6/12000, αiIp 12/6000, αiIp 12/8000, and αiIt 6/12000, $\beta iSVSP^*-15$ and $\beta iSVSP^*-18$ are also applicable; and
 for αiI 1.5/20000, αiI 8/8000, αiI 8/10000, αiI 8/12000, αiIp 15/6000, αiIp 15/8000, αiIp 18/6000, αiIp 18/8000, and αiIt 8/12000, $\beta iSVSP^*-18$ is also applicable.
- (*2) The protection class (IEC34-5) of the motor is IP54 when an oil seal is provided and IP40 when no oil seal is provided.
 The protection class of αiI 75/5000HV, αiI 100/5000HV, and αiI 150/5000HV is IP40 though an oil seal is provided, however.
 The protection class of the motor is IP40 when a simplified labyrinth is provided. The class is IP54, however, when the labyrinth seal on the front side of the output shaft and the flinger seal on the rear side are excluded. Ensure that the labyrinth seal and flinger seal are not directly exposed to coolant or mist.
 For the shaft end seal, see Chapter 2, "ORDERING SPECIFICATION NUMBER" in Part I.
- (*3) For models supporting winding switching, the CNC software option, switching magnetic contactor unit, and others associated with the output switch function are required. For models supporting winding switching, see Section 1.1, "MOTOR LINEUP" in Part I.
 For details of the output switch control, refer to the FANUC SERVO AMPLIFIER αi -B series DESCRIPTIONS (B-65412EN).
- (*4) Using αiI 150/5000HV requires the CNC software option (spindle tandem control).
- (*5) The input power supply voltage of a fan motor for αiI 1/10000HV, αiI 1.5/10000HV, αiI 2/10000HV, αiI 2/20000HV, αiI 3/10000HV, αiIt 1.5/20000HV, αiIt 2/20000HV, or αiIt 3/12000HV is 200/230 VAC, 1 ϕ , 50/60 Hz.
- (*6) The rated current of αiS 2000/2000HV indicates the total current of multiple connected amplifiers. When selecting a cable, consider a margin of 1.2 times the rated current.
- (*7) For the protection class of αiS 2000/2000HV, the fan motor is excluded.
- (*8) Since αiS 2000/2000HV is driven with multiple amplifiers, the torque tandem option or PWM distribution module is required depending on the target CNC type.
- (*9) αiS 2000/2000HV is driven as a servo axis motor using servo amplifiers. For details of parameter setting and others, contact FANUC.
- (*10) When assembling a motor with the machine, align the motor shaft with the spindle so that the vibration acceleration of the motor does not exceed 4.9 m/s^2 (0.5 G) (at maximum speed).
 (Before shipping machines, check that the vibration acceleration is 4.9 m/s^2 (0.5 G) or less for all motors.)
- (*11) Select a coupling that does not apply a thrust load onto the motor shaft due to a cause such as temperature rise or coolant pressure.
Note that in the direction in which the motor shaft is pushed toward the inside of the motor, the allowable load is 0 kgf.
 (When the motor shaft is inserted into the spindle to connect the motor shaft and spindle using a coupling, the motor shaft may remain pushed inside the motor. After connecting the spindle and motor shaft with a coupling, check whether the motor shaft is pushed inside the motor. For details, see Section 3.3, "WHEN A MOTOR IS DIRECTLY CONNECTED TO A SPINDLE VIA A COUPLING" in Part III.)

3.3 EXTERNAL DIMENSIONS

The external dimensions of the FANUC AC spindle motor β i series are given below.

In addition, shaft figure, allowable radial load, assembling accuracy, and power terminals are also provided.

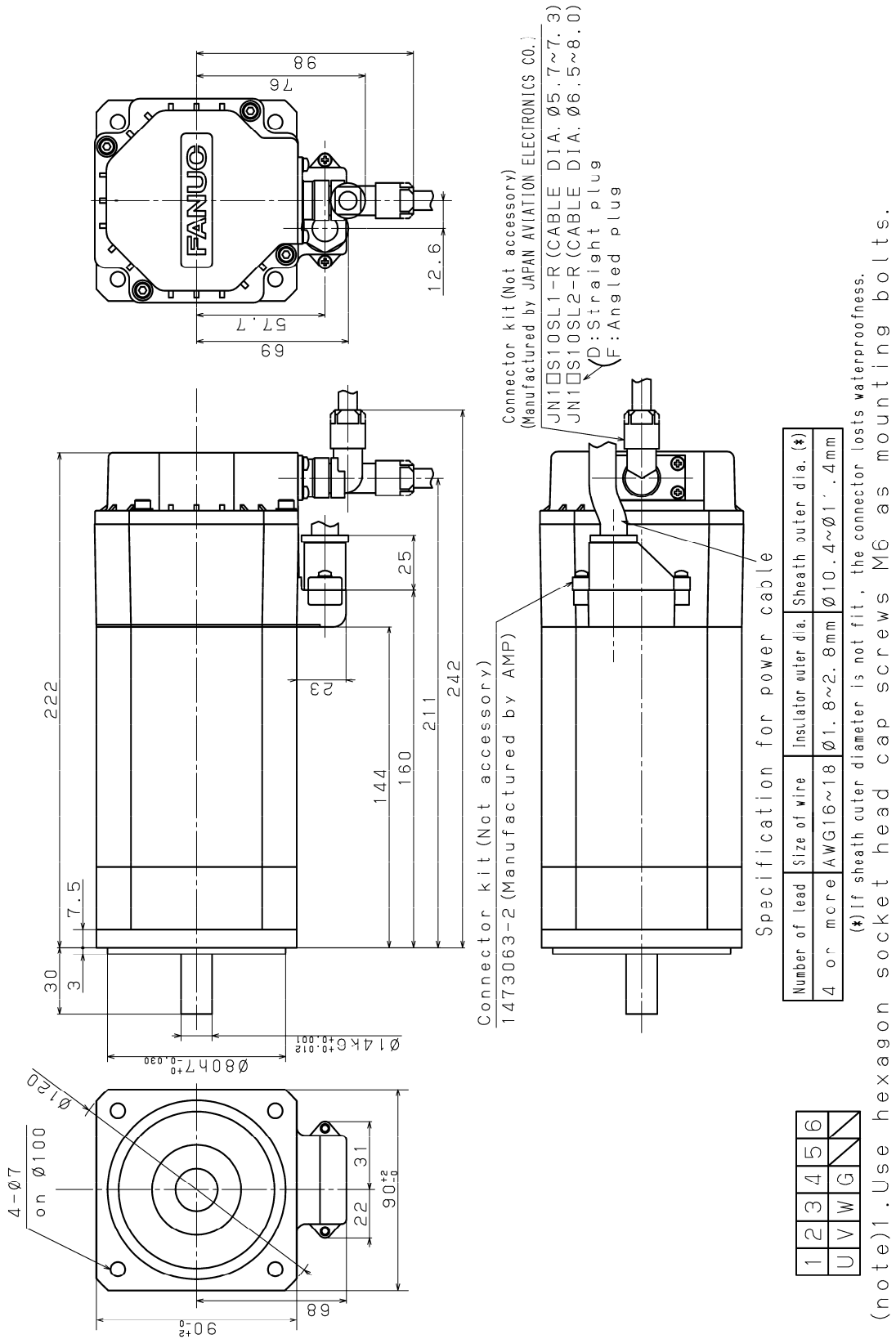
This section, "EXTERNAL DIMENSIONS", consists of the following.

3.3.1	Models α iI 0.5/10000, α iI 0.5/15000, α iI 0.5/10000HV	123
3.3.2	Models α iI 1/10000, α iI 1/15000, α iI 1/24000, α iI 1.5/10000, α iI 1/10000HV, α iI 1.5/10000HV	126
3.3.3	Models α iI 2/10000, α iI 2/20000, α iI 3/10000, α iI 3/12000, α iI 3/15000, α iI 2/10000HV, α iI 2/20000HV, α iI 3/10000HV	131
3.3.4	Models α iI 6/10000, α iI 6/12000, α iI 6/15000, α iI 8/8000, α iI 8/10000, α iI 8/12000, α iI 6/10000HV, α iI 8/8000HV	135
3.3.5	Models α iI 12/8000 to α iI 22/8000, α iI 12/12000 to α iI 22/12000, α iI 12/8000HV to α iI 22/8000HV, α iI _P 12/6000 to α iI _P 22/8000, α iI _P 15/6000HV to α iI _P 22/8000HV	140
3.3.6	Models α iI 30/7000, α iI 40/7000, α iI 30/6000HV, α iI 40/6000HV, α iI _P 30/6000 to α iI _P 50/6000, α iI _P 40/6000HV, α iI _P 50/6000HV	146
3.3.7	Models α iI 50/5000, α iI 50/5000HV, α iI 60/5000HV, α iI 75/5000HV, α iI 100/5000HV, α iI 150/5000HV, α iI _P 60/5000, α iI _P 60/5000HV	150
3.3.8	Model α iS 2000/2000HV	156
3.3.9	Models α iI _T 1/24000, α iI _T 1.5/20000, α iI _T 1.5/20000HV	159
3.3.10	Models α iI _T 2/20000, α iI _T 3/12000, α iI _T 3/15000, α iI _T 2/20000HV, α iI _T 3/12000HV	164
3.3.11	Models α iI _T 6/12000, α iI _T 8/12000, α iI _T 8/15000, α iI _T 6/12000HV, α iI _T 8/12000HV, α iI _T 8/15000HV	170
3.3.12	Models α iI _T 12/12000, α iI _T 15/10000, α iI _T 15/15000, α iI _T 22/10000, α iI _T 15/10000HV, α iI _T 15/15000HV, α iI _T 22/10000HV	176
3.3.13	Models α iI _L 8/20000, α iI _L 8/20000HV	182
3.3.14	Models α iI _L 15/15000, α iI _L 26/15000, α iI _L 15/15000HV, α iI _L 26/15000HV	185

3.3.1 Models α iI 0.5/10000, α iI 0.5/15000, α iI 0.5/10000HV

3.3.1.1 External dimensions

(1) Flange mounting type



3.3.1.2 Shaft figure

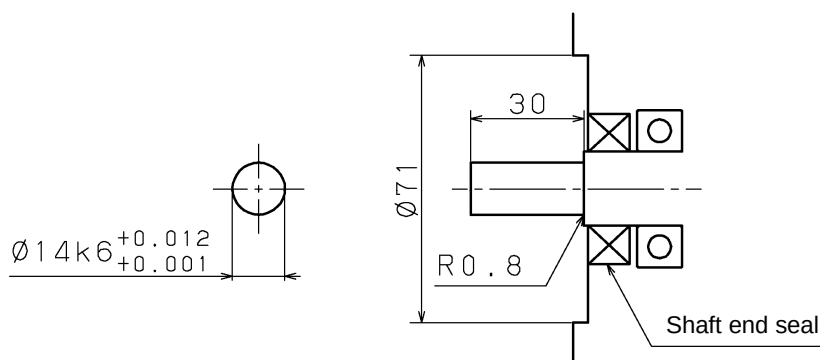
(1) Shaft figure types

The shaft figure for each motor is as given below.

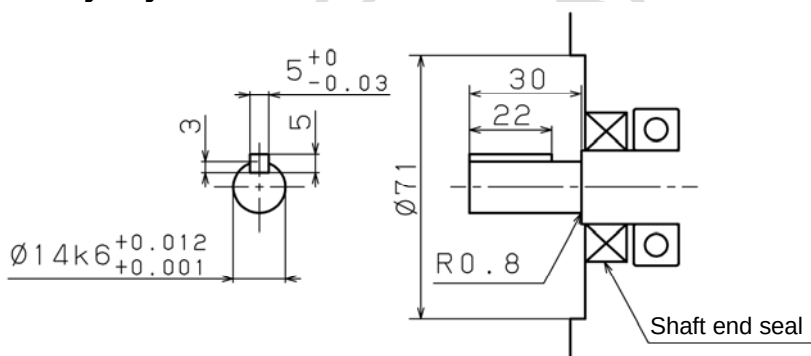
Model	Shaft without keyway		Shaft with keyway	
	Shaft diameter	Details	Shaft diameter	Details
$\alpha i l$ 0.5/10000, $\alpha i l$ 0.5/15000, $\alpha i l$ 0.5/10000HV	$\phi 14$	(2) (a)	$\phi 14$	(2) (b)

(2) Shaft details

(a) $\phi 14$ Shaft without keyway



(b) $\phi 14$ Shaft with keyway



3.3.1.3 Allowable radial load

Use the motor output shaft below the allowable radial loads shown in the table below.

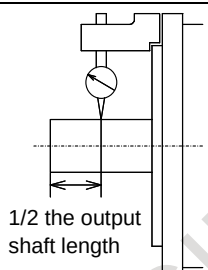
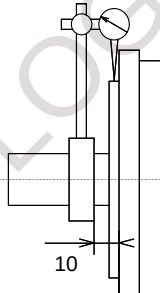
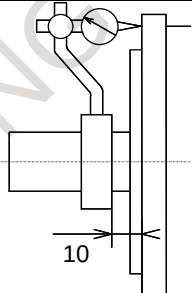
Model	Allowable radial load	
	At output shaft end	At output shaft center
$\alpha i l$ 0.5/10000, $\alpha i l$ 0.5/15000, $\alpha i l$ 0.5/10000HV	294N (30kgf)	323N (33kgf)

NOTE

- 1 When using a belt, adjust the tension so the allowable loads indicated above are not exceeded. If an excessive load is applied, consider the use of a support bearing on the machine side to maintain the long-term reliability of the motor. (If an excessive
- 2 When the belt tension is maximized at a point outside the output shaft end, the allowable loads are less than those at the output shaft end.
- 3 If a thrust load is applied when a helical gear or coupling is mounted, the shaft moves in the direction of the thrust. So, as a general rule, never apply a thrust load.

3.3.1.4 Assembling accuracy

The following table lists the assembling accuracy values.

Item	Model	$\alpha_i I$ 0.5/10000, $\alpha_i I$ 0.5/15000, $\alpha_i I$ 0.5/10000HV	Measuring method
Shaft run-out		20 μ m or less (10 μ m or less)	 1/2 the output shaft length
Run-out of the faucet joint for mounting the flange against the core of the shaft (only for flange type)		40 μ m or less (30 μ m or less)	 10
Run-out of the flange mounting surface against the core of the shaft (only for flange type)		80 μ m or less (40 μ m or less)	 10



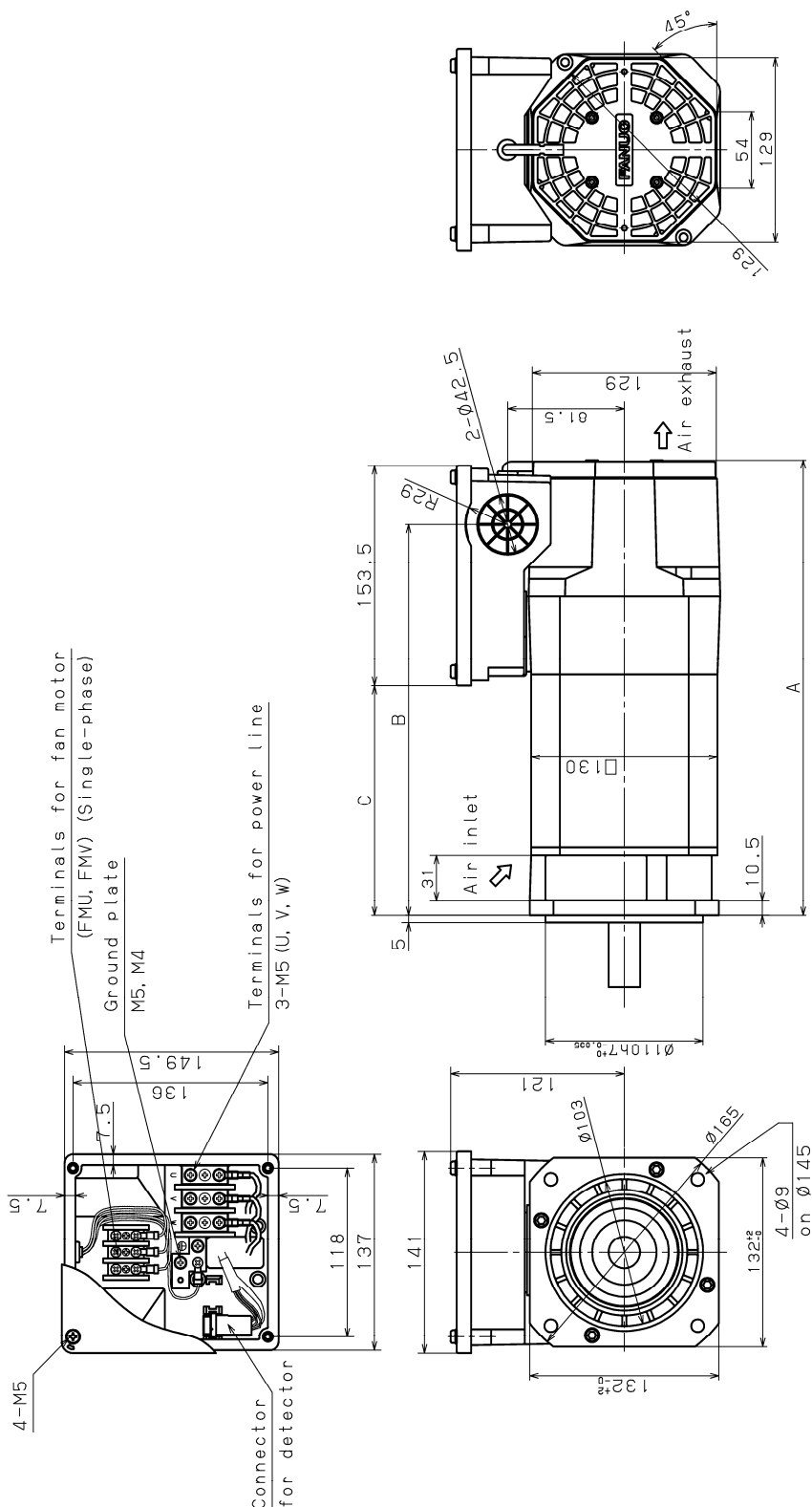
CAUTION

Values in parentheses represent the assembling accuracies of high-precision models.

3.3.2 Models $\alpha_i I$ 1/10000, $\alpha_i I$ 1/15000, $\alpha_i I$ 1/24000, $\alpha_i I$ 1.5/10000, $\alpha_i I$ 1.5/20000, $\alpha_i I$ 1/10000HV, $\alpha_i I$ 1.5/10000HV

3.3.2.1 External dimensions

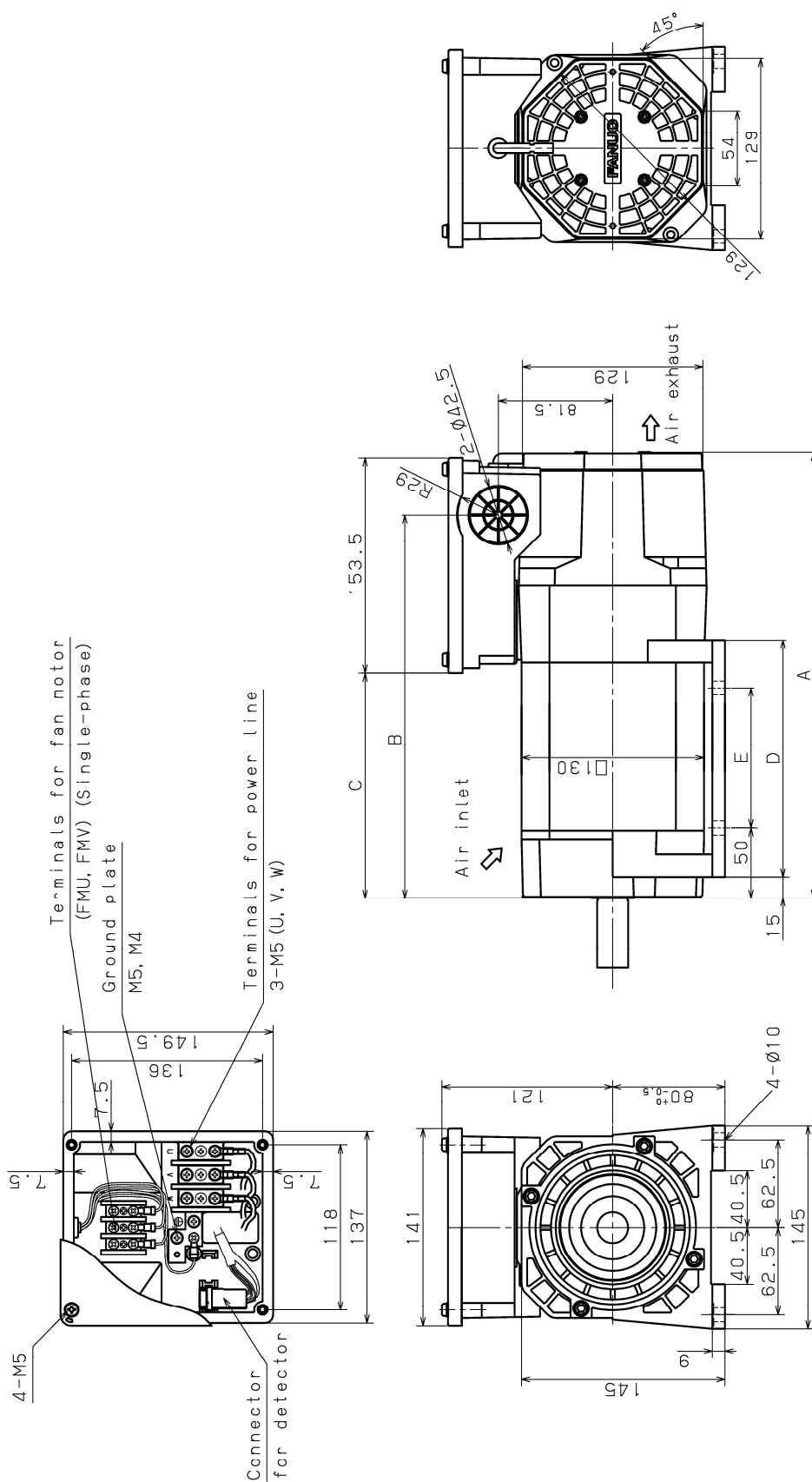
(1) Flange mounting type



MODEL	A	B	C
<i>oil</i> 1/10000, <i>oil</i> 1/15000, <i>oil</i> 1/10000HV	318	273.5	161
<i>oil</i> 1/24000	420	273.5	161
<i>oil</i> 1.5/10000, <i>oil</i> 1.5/20000, <i>oil</i> 1.5/10000HV	368	323.5	211

1. Use hexagon bolts M8, length 30mm or less as mounting bolts.
2. The reversed air flow direction is also available.

(2) Foot mounting type



MODEL	A	B	C	D	E
$\alpha I\ 1/10000, \alpha i\ 1/10000HV$	318	273.5	161	169	100
$\alpha I\ 1.5/10000, \alpha i\ 1.5/10000HV$	368	323.5	211	219	140

(Note) 1. Use hexagon head bolts M8,

length 20mm or less for mounting.
2. The reversed air flow direction is also available.

3.3.2.2 Shaft figure

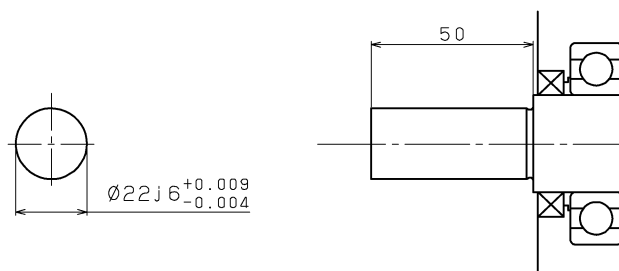
(1) Shaft figure types

The shaft figure for each motor is as given below.

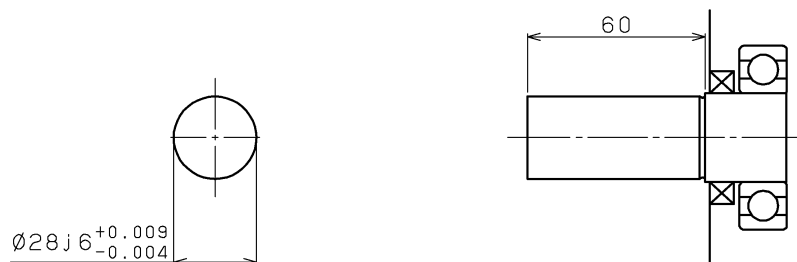
Model	Shaft without keyway		Shaft with keyway	
	Shaft diameter	Details	Shaft diameter	Details
$\alpha i l$ 1/10000, $\alpha i l$ 1/15000, $\alpha i l$ 1/24000, $\alpha i l$ 1/10000HV	$\phi 22$	(2) (a)	$\phi 22$	(2) (c)
$\alpha i l$ 1.5/10000, $\alpha i l$ 1.5/20000, $\alpha i l$ 1.5/10000HV	$\phi 28$	(2) (b)	$\phi 28$	(2) (d)

(2) Shaft details

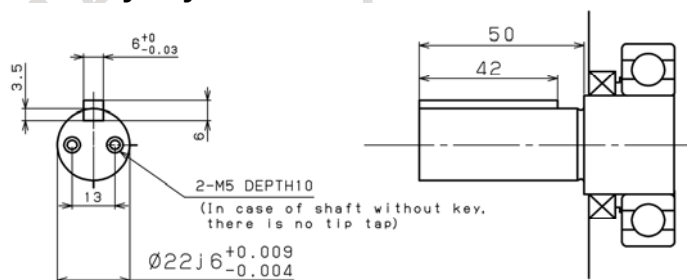
(a) $\phi 22$ Shaft without keyway



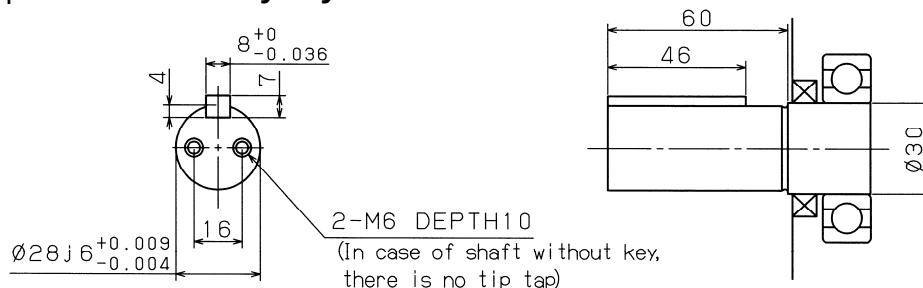
(b) $\phi 28$ Shaft without keyway



(c) $\phi 22$ Shaft with keyway



(d) $\phi 28$ Shaft with keyway



3.3.2.3 Allowable radial load

Use the motor output shaft below the allowable radial loads shown in the table below.

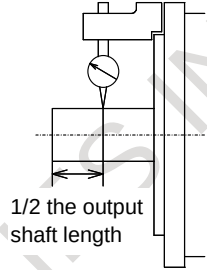
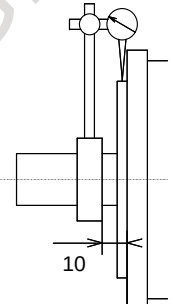
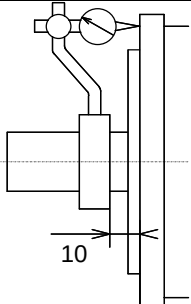
Model	Allowable radial load	
	At output shaft end	At output shaft center
$\alpha i I$ 1/10000, $\alpha i I$ 1/10000HV	392N (40kgf)	441N (45kgf)
$\alpha i I$ 1.5/10000, $\alpha i I$ 1.5/10000HV	882N (90kgf)	980N (100kgf)
$\alpha i I$ 1/15000, $\alpha i I$ 1/24000, $\alpha i I$ 1.5/20000	Direct connection to the spindle	

NOTE

- 1 When using a belt, adjust the tension so the allowable loads indicated above are not exceeded. If an excessive load is applied, consider the use of a support bearing on the machine side to maintain the long-term reliability of the motor. (If an excessive
- 2 When the belt tension is maximized at a point outside the output shaft end, the allowable loads are less than those at the output shaft end.
- 3 If a thrust load is applied when a helical gear or coupling is mounted, the shaft moves in the direction of the thrust. So, as a general rule, never apply a thrust load.

3.3.2.4 Assembling accuracy

The following table lists the assembling accuracy values.

Item	Model $\alpha i I$ 1/10000, $\alpha i I$ 1.5/10000, $\alpha i I$ 1/10000HV, $\alpha i I$ 1.5/10000HV	$\alpha i I$ 1/15000, $\alpha i I$ 1/24000, $\alpha i I$ 1.5/20000	Measuring method
Shaft run-out	20 μ m or less (10 μ m or less)	10 μ m or less	 1/2 the output shaft length
Run-out of the faucet joint for mounting the flange against the core of the shaft (only for flange type)	40 μ m or less (30 μ m or less)	30 μ m or less	 10
Run-out of the flange mounting surface against the core of the shaft (only for flange type)	80 μ m or less (40 μ m or less)	40 μ m or less	 10



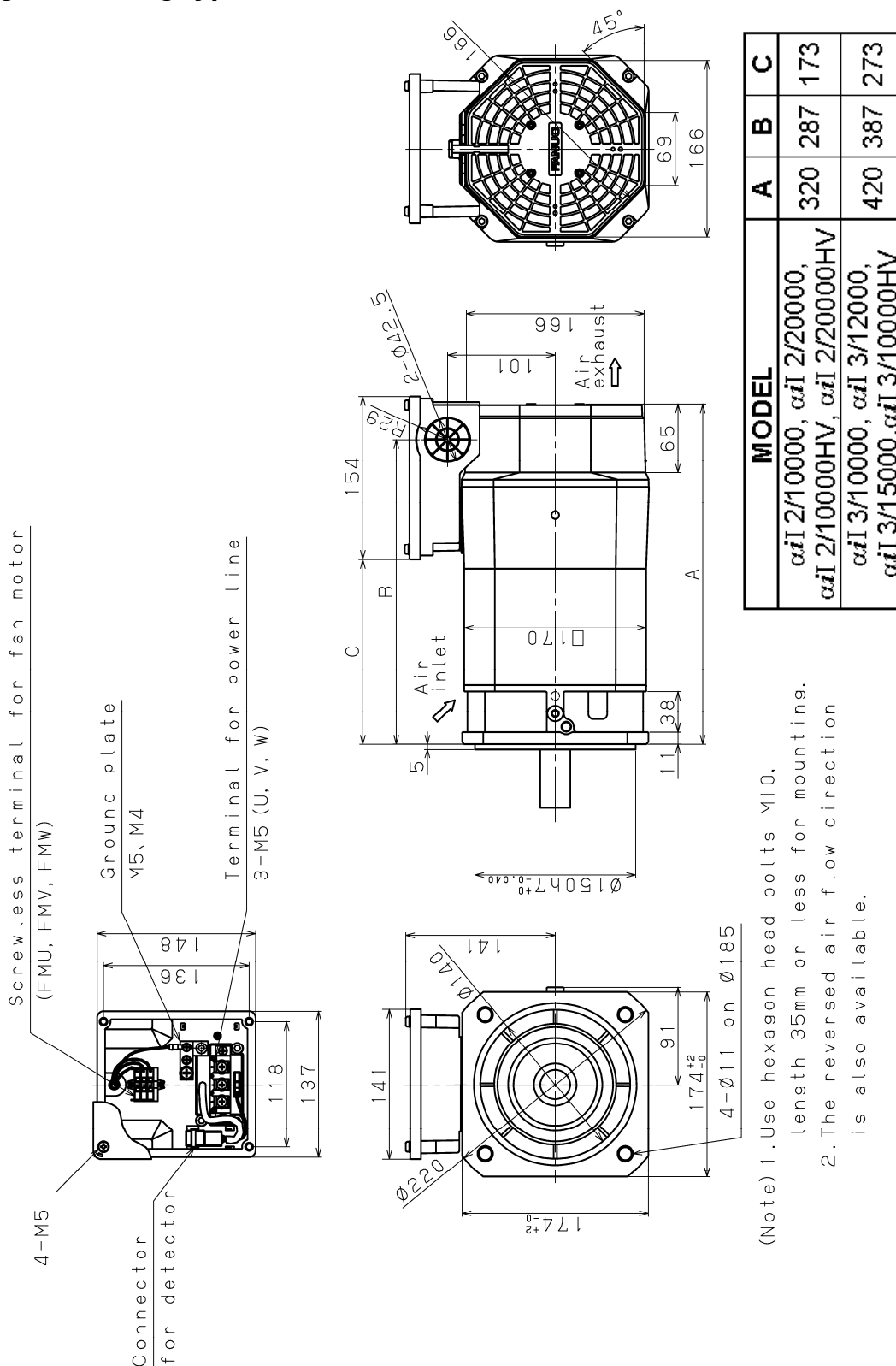
CAUTION

Values in parentheses represent the assembling accuracies of high-precision models.

3.3.3 Models α I 2/10000, α I 2/20000, α I 3/10000, α I 3/12000, α I 3/15000, α I 2/10000HV, α I 2/20000HV, α I 3/10000HV

3.3.3.1 External dimensions

(1) Flange mounting type



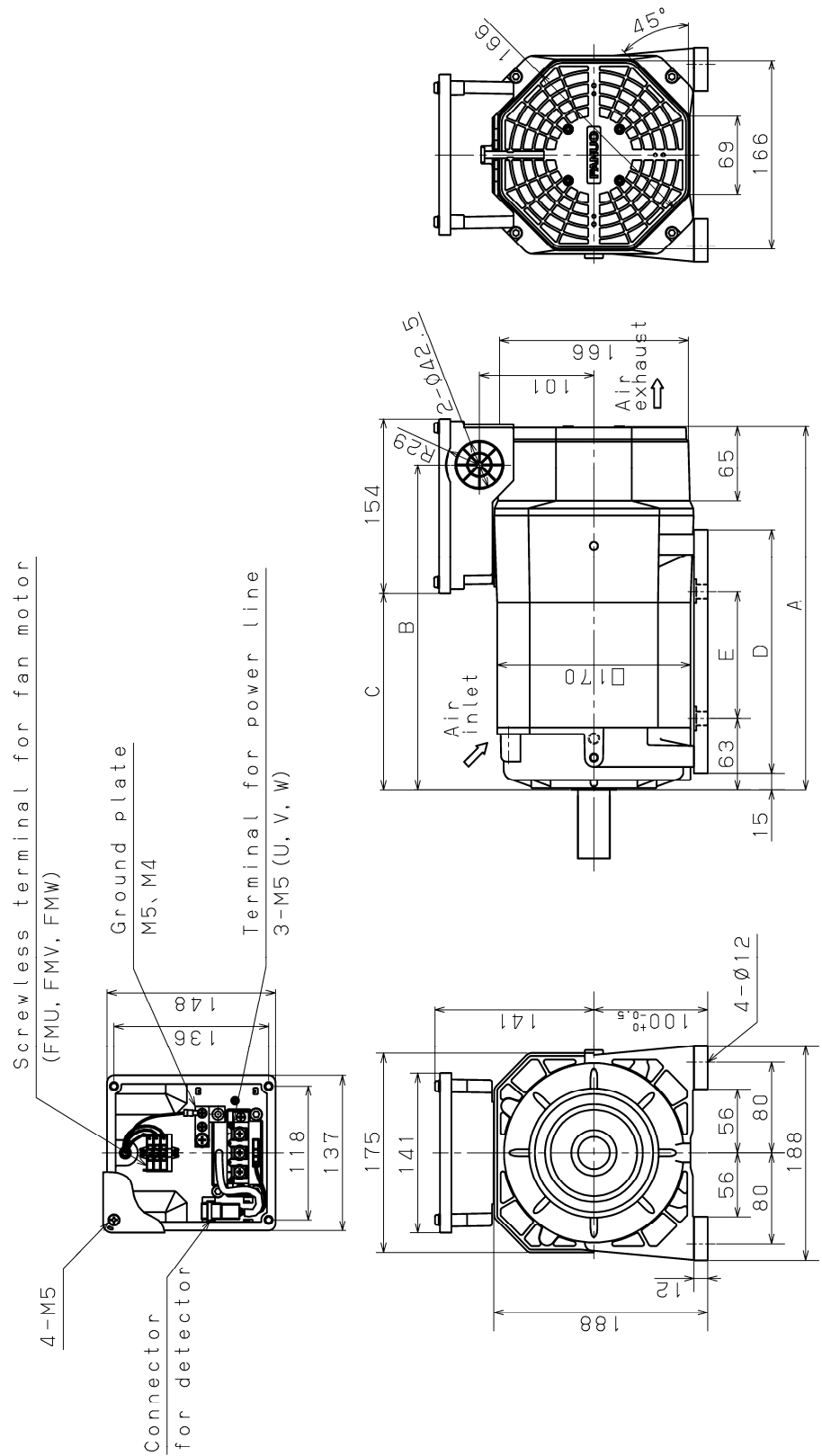
(Note) 1. Use hexagon head bolts M10.

length 35mm or less for mounting.

2. The reversed air flow direction

is also available.

(2) Foot mounting type



MODEL	A	B	C	D	E
α iI 2/10000, α iI 2/10000HV	320	287	173	214	112
α iI 3/10000, α iI 3/12000, α iI 3/10000HV	420	387	273	314	159

(Note) 1. Use hexagon head bolts M10, length 20mm or less for mounting.
2. The reversed air flow direction is also available.

3.3.3.2 Shaft figure

(1) Shaft figure types

The shaft figure for each motor is as given below.

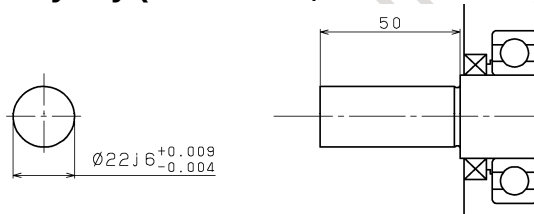
Model	Shaft without keyway		Shaft with keyway	
	Shaft diameter	Details	Shaft diameter	Details
$\alpha i I$ 2/10000, $\alpha i I$ 2/10000HV	$\phi 28$	(2) (a)	$\phi 28$	(2) (d)
$\alpha i I$ 2/20000, $\alpha i I$ 2/20000HV	$\phi 22$	(2) (b)		
$\alpha i I$ 3/10000, $\alpha i I$ 3/12000, $\alpha i I$ 3/15000, $\alpha i I$ 3/10000HV	$\phi 28$	(2) (c)	$\phi 28$	(2) (e)

(2) Shaft details

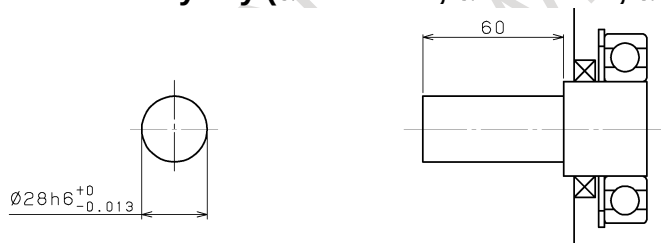
(a) $\phi 28$ Shaft without keyway ($\alpha i I$ 2/10000, $\alpha i I$ 2/10000HV)



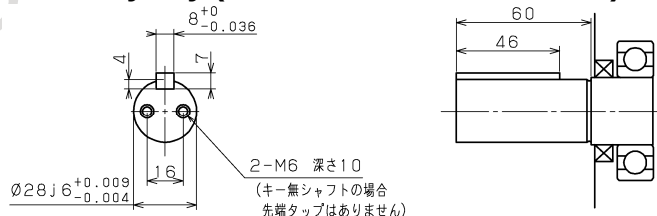
(b) $\phi 22$ Shaft without keyway ($\alpha i I$ 2/20000, $\alpha i I$ 2/20000HV)



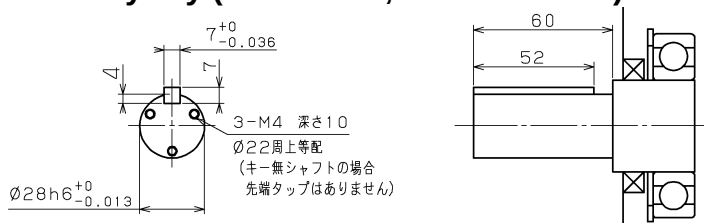
(c) $\phi 28$ Shaft without keyway ($\alpha i I$ 3/10000, $\alpha i I$ 3/12000, $\alpha i I$ 3/15000, $\alpha i I$ 3/10000HV)



(d) $\phi 28$ Shaft with keyway ($\alpha i I$ 2/10000, $\alpha i I$ 2/10000HV)



(e) $\phi 28$ Shaft with keyway ($\alpha i I$ 3/10000, $\alpha i I$ 3/10000HV)



3.3.3.3 Allowable radial load

Use the motor output shaft below the allowable radial loads shown in the table below.

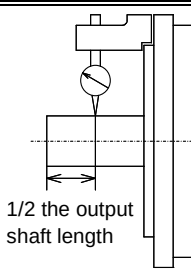
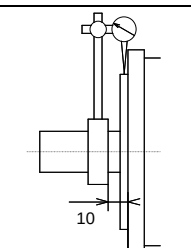
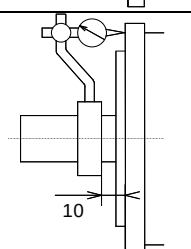
Model	Allowable radial load	
	At output shaft end	At output shaft center
$\alpha i I$ 2/10000, $\alpha i I$ 2/10000HV	1274N (130kgf)	1445N (147kgf)
$\alpha i I$ 3/10000, $\alpha i I$ 3/10000HV	1470N (150kgf)	1607N (164kgf)
$\alpha i I$ 3/12000	980N (100kgf)	1068N (109kgf)
$\alpha i I$ 2/20000, $\alpha i I$ 3/15000, $\alpha i I$ 2/20000HV	Direct connection to the spindle	

NOTE

- 1 When using a belt, adjust the tension so the allowable loads indicated above are not exceeded. If an excessive load is applied, consider the use of a support bearing on the machine side to maintain the long-term reliability of the motor. (If an excessive
- 2 When the belt tension is maximized at a point outside the output shaft end, the allowable loads are less than those at the output shaft end.
- 3 If a thrust load is applied when a helical gear or coupling is mounted, the shaft moves in the direction of the thrust. So, as a general rule, never apply a thrust load.

3.3.3.4 Assembling accuracy

The following table lists the assembling accuracy values.

Model Item	$\alpha i I$ 2/10000, $\alpha i I$ 3/10000, $\alpha i I$ 2/10000HV, $\alpha i I$ 3/10000HV	$\alpha i I$ 2/20000, $\alpha i I$ 3/12000, $\alpha i I$ 3/15000, $\alpha i I$ 2/20000HV	Measuring method
Shaft run-out	20 μ m or less (10 μ m or less)	10 μ m or less	 1/2 the output shaft length
Run-out of the faucet joint for mounting the flange against the core of the shaft (only for flange type)	40 μ m or less (30 μ m or less)	30 μ m or less	 10
Run-out of the flange mounting surface against the core of the shaft (only for flange type)	80 μ m or less (40 μ m or less)	40 μ m or less	 10



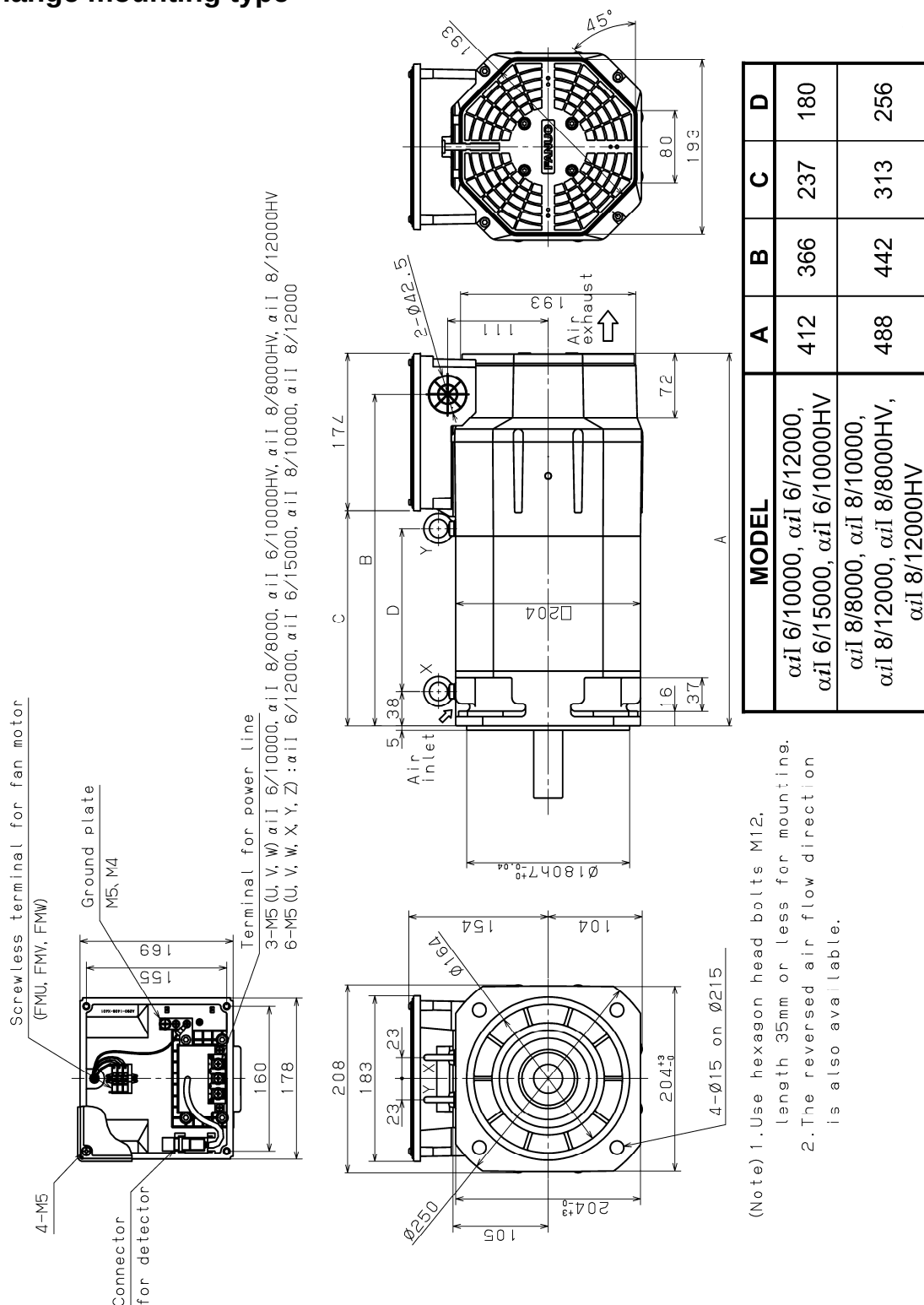
CAUTION

Values in parentheses represent the assembling accuracies of high-precision models.

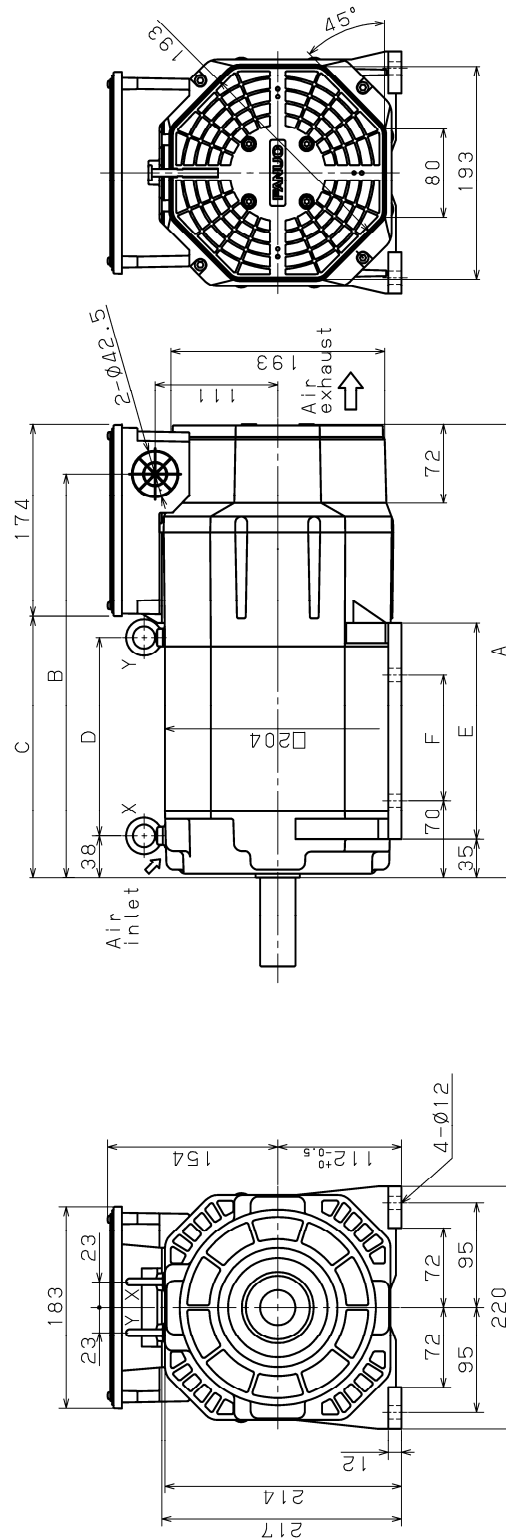
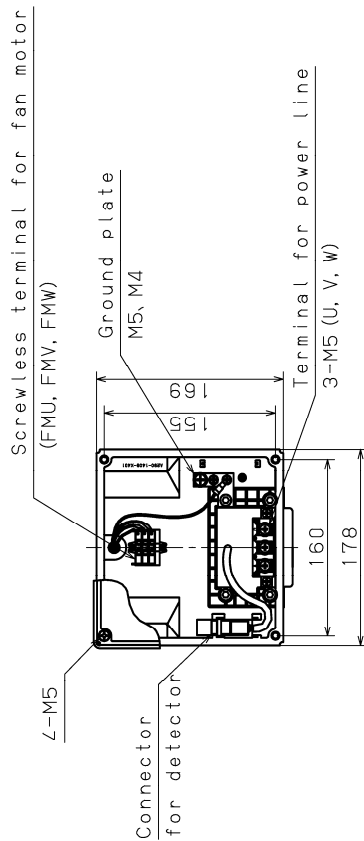
3.3.4 Models $\alpha i I$ 6/10000, $\alpha i I$ 6/12000, $\alpha i I$ 6/15000, $\alpha i I$ 8/8000, $\alpha i I$ 8/10000, $\alpha i I$ 8/12000, $\alpha i I$ 6/10000HV, $\alpha i I$ 8/8000HV, $\alpha i I$ 8/12000HV

3.3.4.1 External dimensions

(1) Flange mounting type



(2) Foot mounting type



MODEL	A	B	C	D	E	F
αI 6/10000, αI 6/10000HV	412	366	237	180	196	114
αI 8/8000, αI 8/8000HV	488	442	313	256	272	178

(Note) 1. Use hexagon head bolts M10.

length 30mm or less for mounting.
2. The reversed air flow direction is also available.

3.3.4.2 Shaft figure

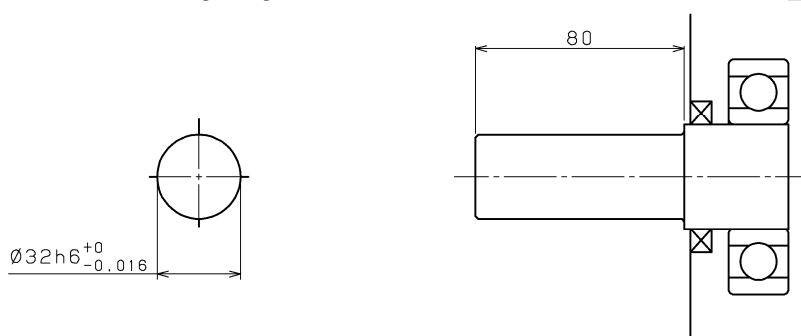
(1) Shaft figure types

The shaft figure for each motor is as given below.

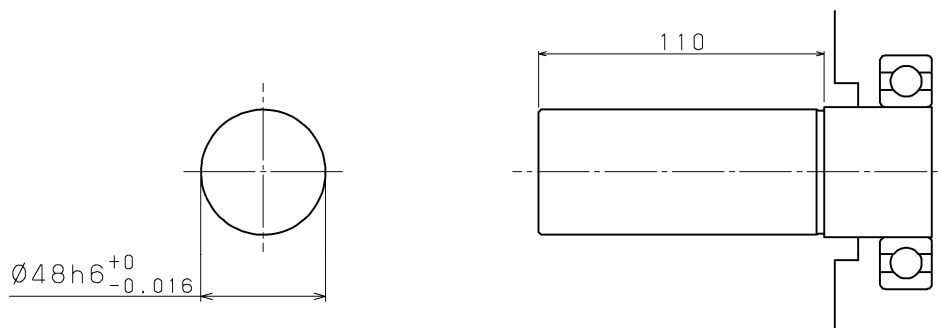
Model	Shaft without keyway		Shaft with keyway	
	Shaft diameter	Details	Shaft diameter	Details
$\alpha i l$ 6/10000, $\alpha i l$ 6/12000, $\alpha i l$ 6/15000, $\alpha i l$ 6/10000HV	$\phi 32$	(2) (a)	$\phi 32$	(2) (d)
$\alpha i l$ 8/8000, $\alpha i l$ 8/10000, $\alpha i l$ 8/8000HV	$\phi 48$	(2) (b)	$\phi 48$	(2) (e)
$\alpha i l$ 8/12000, $\alpha i l$ 8/12000HV	$\phi 38$	(2) (c)	-	-

(2) Shaft details

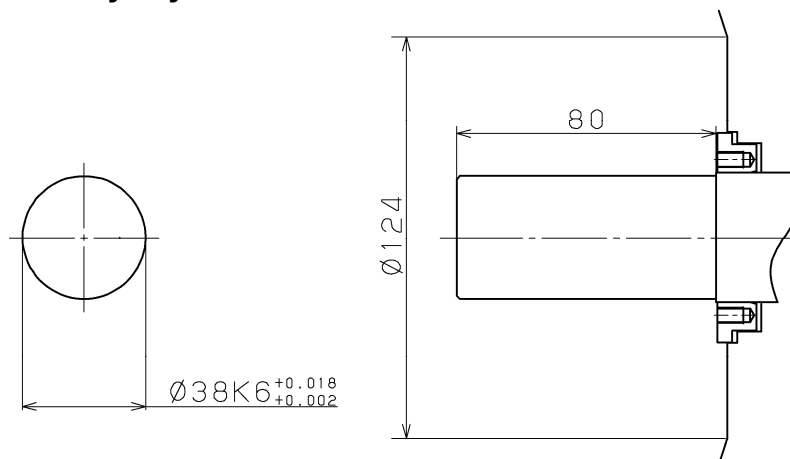
(a) $\phi 32$ Shaft without keyway

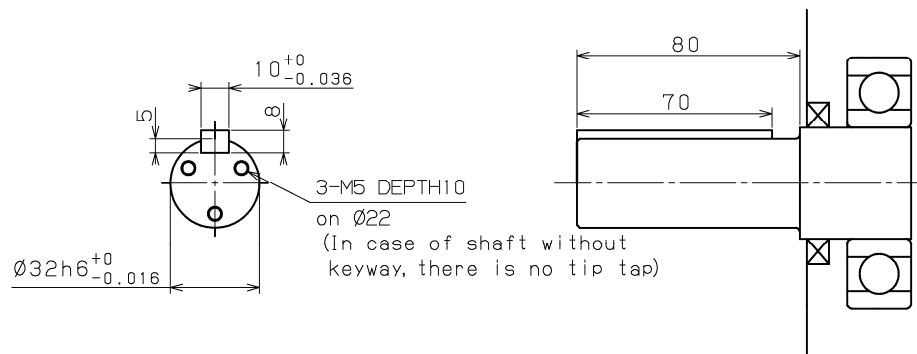
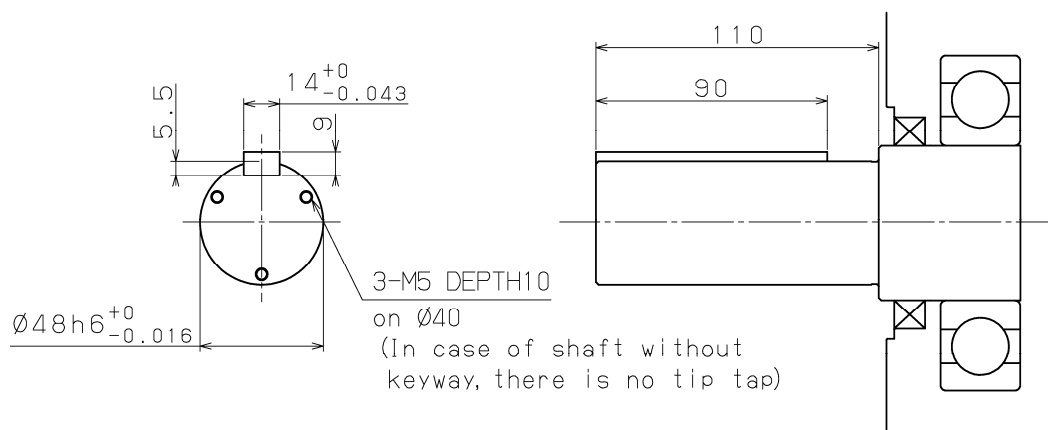


(b) $\phi 48$ Shaft without keyway



(c) $\phi 38$ Shaft without keyway



(c) $\phi 32$ Shaft with keyway**(d) $\phi 48$ Shaft with keyway****3.3.4.3 Allowable radial load**

Use the motor output shaft below the allowable radial loads shown in the table below.

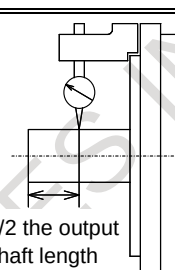
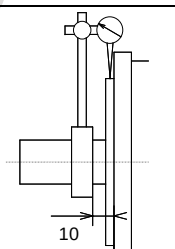
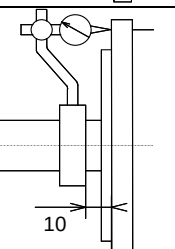
Model	Allowable radial load	
	At output shaft end	At output shaft center
$\alpha i l$ 6/10000, $\alpha i l$ 6/10000HV	1960N (200kgf)	2205N (225kgf)
$\alpha i l$ 8/8000, $\alpha i l$ 8/8000HV	2940N (300kgf)	3371N (344kgf)
$\alpha i l$ 6/12000	1470N (150kgf)	1656N (169kgf)
$\alpha i l$ 6/15000	Direct connection to the spindle	
$\alpha i l$ 8/10000	1960N (200kgf)	2244N (229kgf)
$\alpha i l$ 8/12000, $\alpha i l$ 8/12000HV	1568N (160kgf)	1764N (180kgf)

NOTE

- 1 When using a belt, adjust the tension so the allowable loads indicated above are not exceeded. If an excessive load is applied, consider the use of a support bearing on the machine side to maintain the long-term reliability of the motor. (If an excessive
- 2 When the belt tension is maximized at a point outside the output shaft end, the allowable loads are less than those at the output shaft end.
- 3 If a thrust load is applied when a helical gear or coupling is mounted, the shaft moves in the direction of the thrust. So, as a general rule, never apply a thrust load.

3.3.4.4 Assembling accuracy

The following table lists the assembling accuracy values.

Model Item	$\alpha i I$ 6/10000, $\alpha i I$ 8/8000, $\alpha i I$ 6/10000, $\alpha i I$ 8/8000HV	$\alpha i I$ 6/12000, $\alpha i I$ 6/15000, $\alpha i I$ 8/10000, $\alpha i I$ 8/12000, $\alpha i I$ 8/12000HV	Measuring method
Shaft run-out	20 μ m or less (10 μ m or less)	10 μ m or less	 1/2 the output shaft length
Run-out of the faucet joint for mounting the flange against the core of the shaft (only for flange type)	40 μ m or less (30 μ m or less)	30 μ m or less	 10
Run-out of the flange mounting surface against the core of the shaft (only for flange type)	80 μ m or less (40 μ m or less)	40 μ m or less	 10



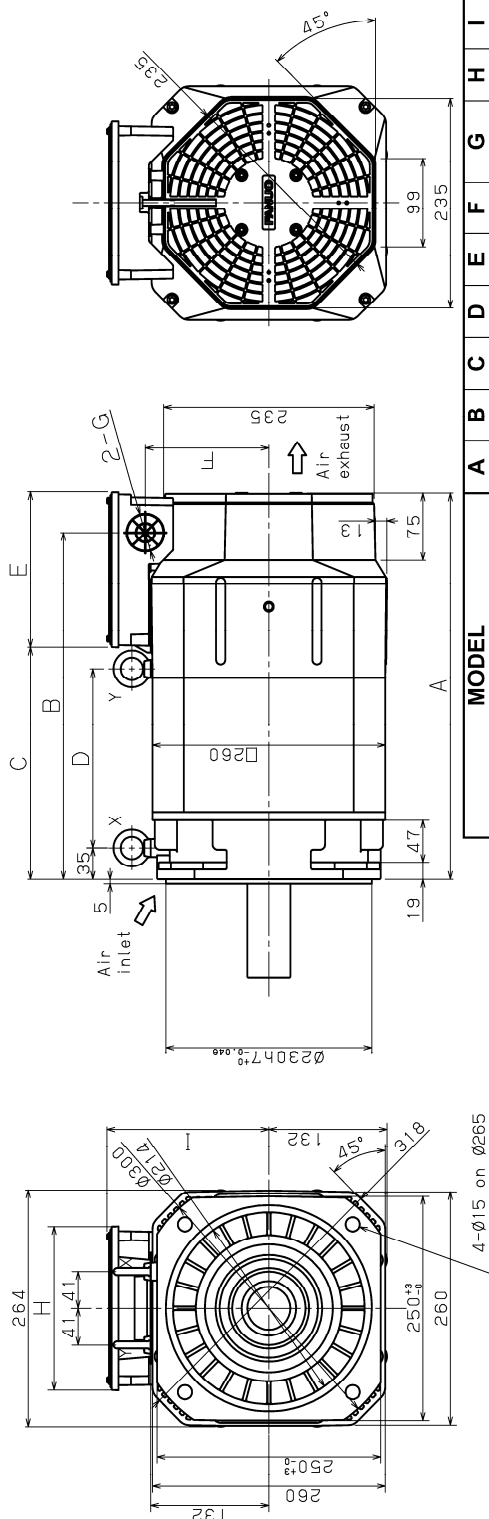
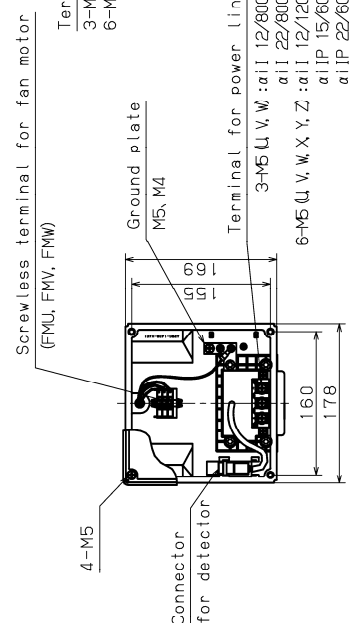
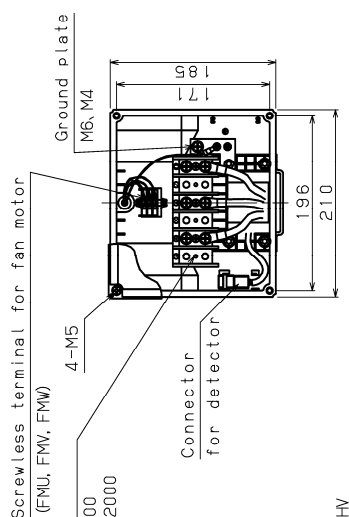
CAUTION

Values in parentheses represent the assembling accuracies of high-precision models.

3.3.5 Models $\alpha i I$ 12/8000 to $\alpha i I$ 22/8000, $\alpha i I$ 12/12000 to $\alpha i I$ 22/12000, $\alpha i I$ 12/8000HV to $\alpha i I$ 22/8000HV, $\alpha i I_P$ 12/6000 to $\alpha i I_P$ 22/8000, $\alpha i I_P$ 15/6000HV to $\alpha i I_P$ 22/8000HV

3.3.5.1 External dimensions

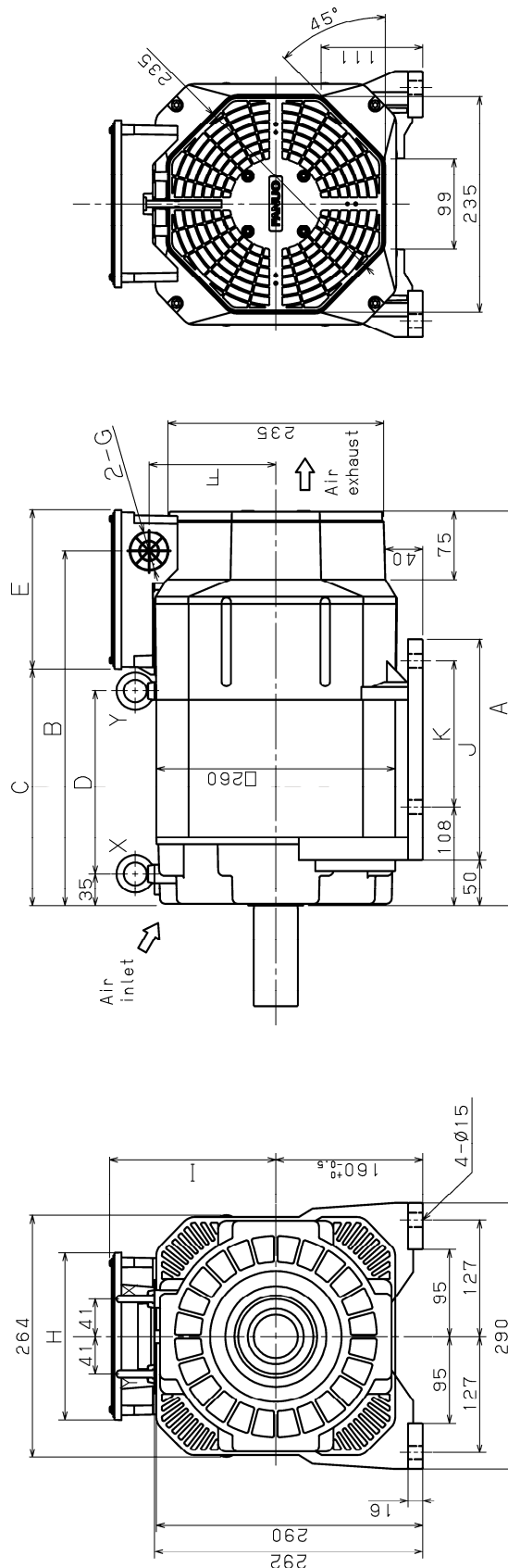
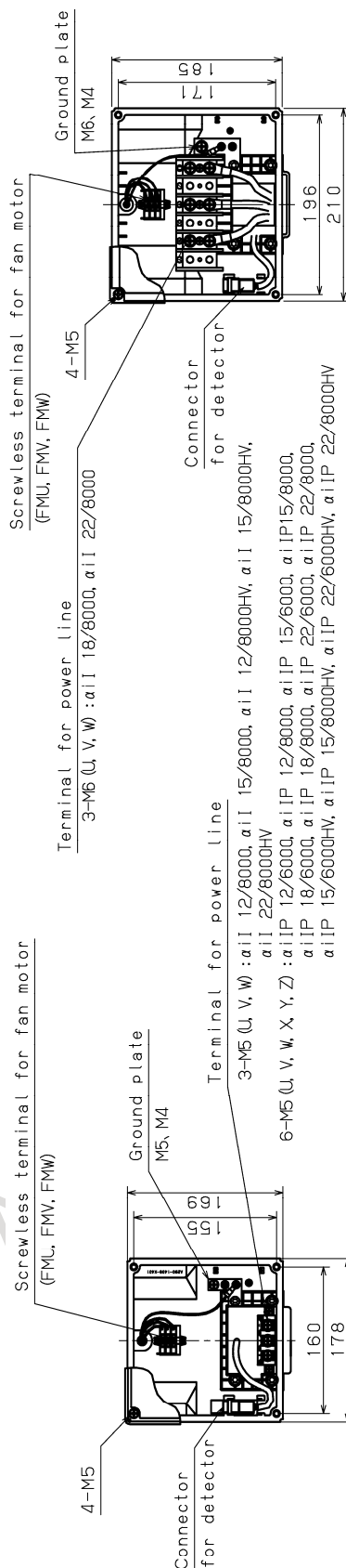
(1) Flange mounting type



MODEL	A	B	C	D	E	F	G	H	I
$\alpha i I$ 12/8000, $\alpha i I$ 12/12000, $\alpha i I$ 12/8000HV, $\alpha i I_P$ 12/6000, $\alpha i I_P$ 12/8000	432	388	259	200	174	138	$\phi 42.5$	183	181
$\alpha i I$ 15/8000, $\alpha i I$ 15/12000, $\alpha i I$ 15/8000HV, $\alpha i I_P$ 15/6000, $\alpha i I_P$ 15/8000, $\alpha i I_P$ 15/6000HV, $\alpha i I_P$ 15/8000HV	464	420	291	232	174	138	$\phi 42.5$	183	181
$\alpha i I$ 18/8000, $\alpha i I$ 18/12000	494	452	321	262	189	140	$\phi 61$	214	192
$\alpha i I_P$ 18/6000, $\alpha i I_P$ 18/8000	494	452	321	262	174	138	$\phi 42.5$	183	181
$\alpha i I$ 22/8000, $\alpha i I$ 22/12000	534	490	361	302	189	140	$\phi 61$	214	192
$\alpha i I$ 22/8000HV, $\alpha i I$ 22/10000HV $\alpha i I_P$ 22/6000, $\alpha i I_P$ 22/8000, $\alpha i I_P$ 22/6000HV, $\alpha i I_P$ 22/8000HV	534	490	361	302	174	138	$\phi 42.5$	183	181

(Note) 1. Use hexagon head bolts M12,
length 45mm or less for mounting.
2. The reversed air flow direction
is also available.

(2) Foot mounting type



MODEL	A	B	C	D	E	F	G	H	I	J	K
α IL 12/8000, α IL 12/8000HV, α ILP 12/6000, α ILP 12/8000	432	388	259	200	174	138	$\phi 42.5$	183	181	241	160
α IL 15/8000, α IL 15/8000HV, α ILP 15/6000, α ILP 15/8000, α ILP 15/6000HV, α ILP 15/8000HV	464	420	291	232	174	138	$\phi 42.5$	183	181	259	178
α IL 18/8000	494	452	321	262	189	140	$\phi 61$	214	192	259	140
α ILP 18/6000, α ILP 18/8000	494	452	321	262	174	138	$\phi 42.5$	183	181	259	140
α IL 22/8000	534	490	361	302	189	140	$\phi 61$	214	192	299	178
α IL 22/8000HV, α ILP 22/6000, α ILP 22/8000, α ILP 22/6000HV, α ILP 22/8000HV	534	490	361	302	174	138	$\phi 42.5$	183	181	299	178

(Note) 1. Use hexagon head bolts M12.

length 45mm or less for mounting.

2. The reversed air flow direction is also available.

3.3.5.2 Shaft figure

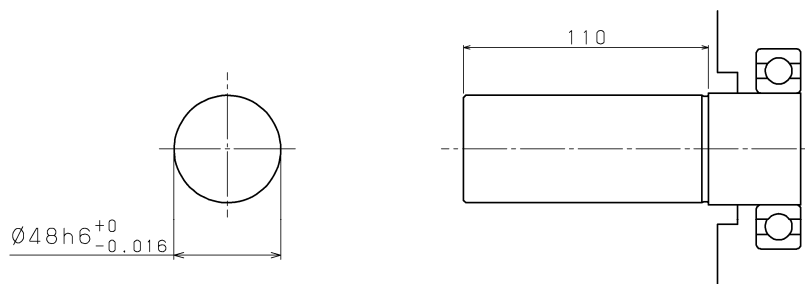
(1) Shaft figure types

The shaft figure for each motor is as given below.

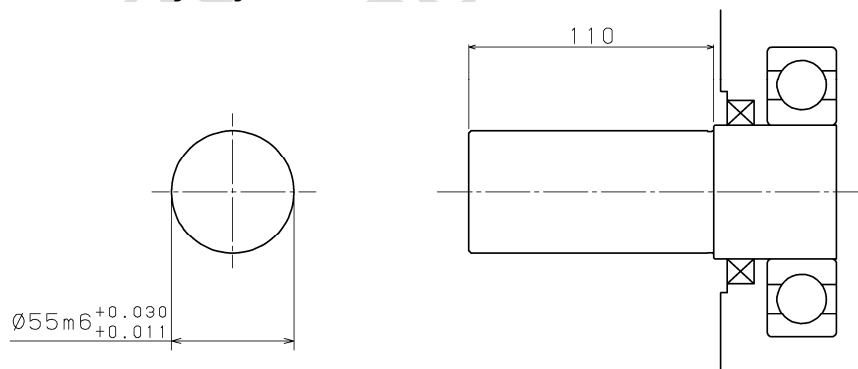
Model	Shaft without keyway		Shaft with keyway	
	Shaft diameter	Details	Shaft diameter	Details
<i>αiL</i> 12/8000, <i>αiL</i> 12/12000, <i>αiL</i> 15/8000, <i>αiL</i> 15/12000, <i>αiL</i> 12/8000HV, <i>αiL</i> 15/8000HV, <i>αiLP</i> 12/6000, <i>αiLP</i> 12/8000, <i>αiLP</i> 15/6000, <i>αiLP</i> 15/8000, <i>αiLP</i> 15/6000HV, <i>αiLP</i> 15/8000HV	φ48	(2) (a)	φ48	(2) (c)
<i>αiL</i> 18/8000, <i>αiL</i> 18/12000, <i>αiL</i> 22/8000, <i>αiL</i> 22/12000, <i>αiL</i> 22/8000HV, <i>αiL</i> 22/10000HV, <i>αiLP</i> 18/6000, <i>αiLP</i> 18/8000, <i>αiLP</i> 22/6000, <i>αiLP</i> 22/8000, <i>αiLP</i> 22/6000HV, <i>αiLP</i> 22/8000HV	φ55	(2) (b)	φ55	(2) (d)

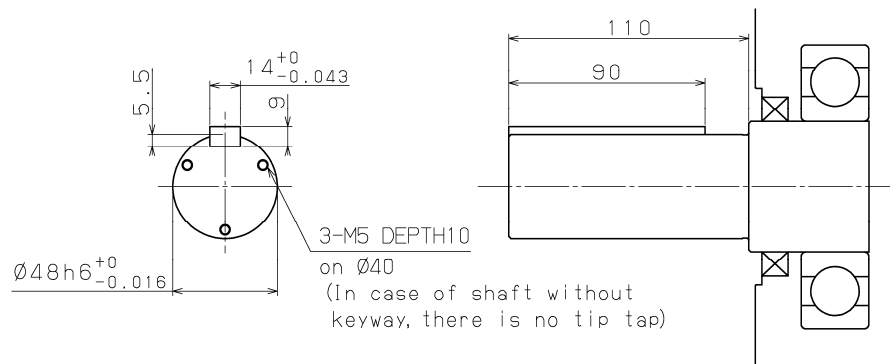
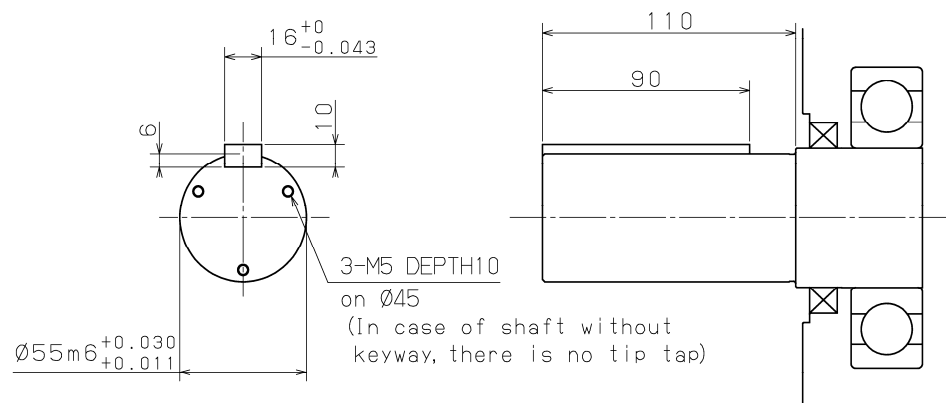
(2) Shaft details

(a) φ48 Shaft without keyway



(b) φ55 Shaft without keyway



(c) $\phi 48$ Shaft with keyway**(d) $\phi 55$ Shaft with keyway**

3.3.5.3 Allowable radial load

Use the motor output shaft below the allowable radial loads shown in the table below.

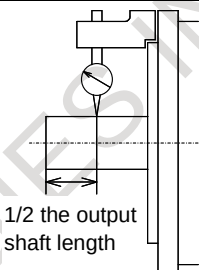
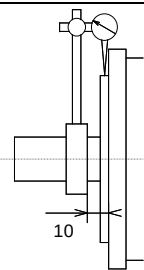
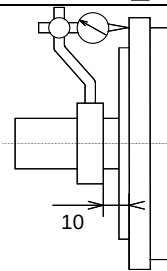
Model	Allowable radial load	
	At output shaft end	At output shaft center
$\alpha i l$ 12/8000, $\alpha i l$ 15/8000, $\alpha i l$ 12/8000HV, $\alpha i l$ 15/8000HV, $\alpha i l P$ 12/6000, $\alpha i l P$ 15/6000, $\alpha i l P$ 15/6000HV	2940N (300kgf)	3410N (348kgf)
$\alpha i l$ 18/8000, $\alpha i l$ 22/8000, $\alpha i l$ 22/8000HV, $\alpha i l P$ 18/6000, $\alpha i l P$ 22/6000, $\alpha i l P$ 22/6000HV	4410N (450kgf)	4988N (509kgf)
$\alpha i l$ 12/12000, $\alpha i l$ 15/12000, $\alpha i l P$ 12/8000, $\alpha i l P$ 15/8000, $\alpha i l P$ 15/8000HV	2450N (250kgf)	2842N (290kgf)
$\alpha i l$ 18/12000, $\alpha i l$ 22/12000, $\alpha i l P$ 18/8000, $\alpha i l P$ 22/8000, $\alpha i l P$ 22/8000HV	2940N (300kgf)	3332N (340kgf)

NOTE

- 1 When using a belt, adjust the tension so the allowable loads indicated above are not exceeded. If an excessive load is applied, consider the use of a support bearing on the machine side to maintain the long-term reliability of the motor. (If an excessive
- 2 When the belt tension is maximized at a point outside the output shaft end, the allowable loads are less than those at the output shaft end.
- 3 If a thrust load is applied when a helical gear or coupling is mounted, the shaft moves in the direction of the thrust. So, as a general rule, never apply a thrust load.

3.3.5.4 Assembling accuracy

The following table lists the assembling accuracy values.

Item \ Model	$\alpha i I$ 12/8000 to $\alpha i I$ 22/8000, $\alpha i I$ 12/8000HV to $\alpha i I$ 22/8000HV, $\alpha i I_P$ 12/6000 to $\alpha i I_P$ 22/8000, $\alpha i I_P$ 15/6000HV, $\alpha i I_P$ 22/6000HV	$\alpha i I$ 12/12000 to $\alpha i I$ 18/12000	Measuring method
Shaft run-out	20 μ m or less (10 μ m or less)	10 μ m or less	 1/2 the output shaft length
Run-out of the faucet joint for mounting the flange against the core of the shaft (only for flange type)	40 μ m or less (30 μ m or less)	30 μ m or less	 10
Run-out of the flange mounting surface against the core of the shaft (only for flange type)	80 μ m or less (40 μ m or less)	40 μ m or less	 10



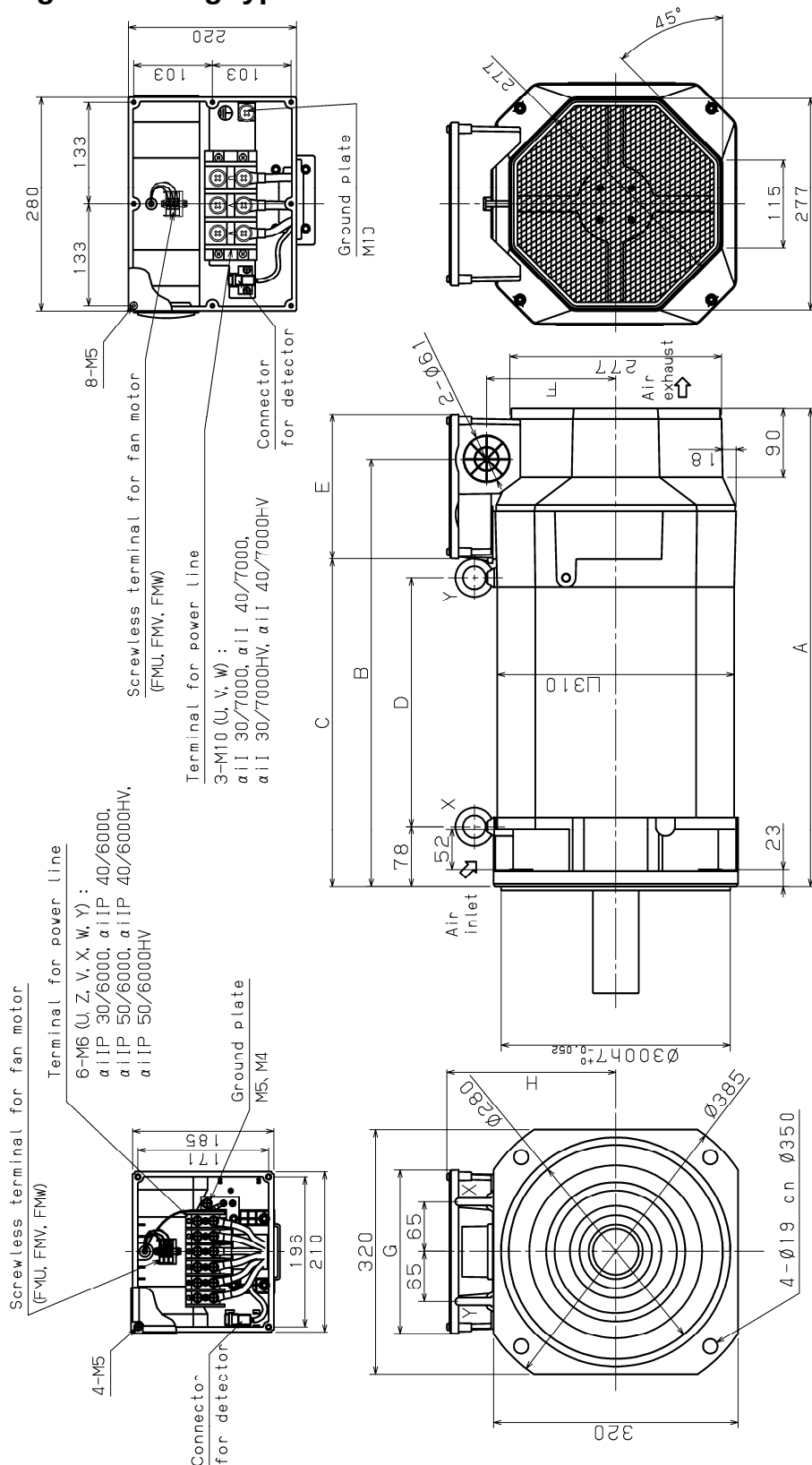
CAUTION

Values in parentheses represent the assembling accuracies of high-precision models.

3.3.6 Models αiI 30/7000, αiI 40/7000, αiI 30/7000HV, αiI 40/7000HV, αiI_P 30/6000 to αiI_P 50/6000, αiI_P 40/6000HV, αiI_P 50/6000HV

3.3.6.1 External dimensions

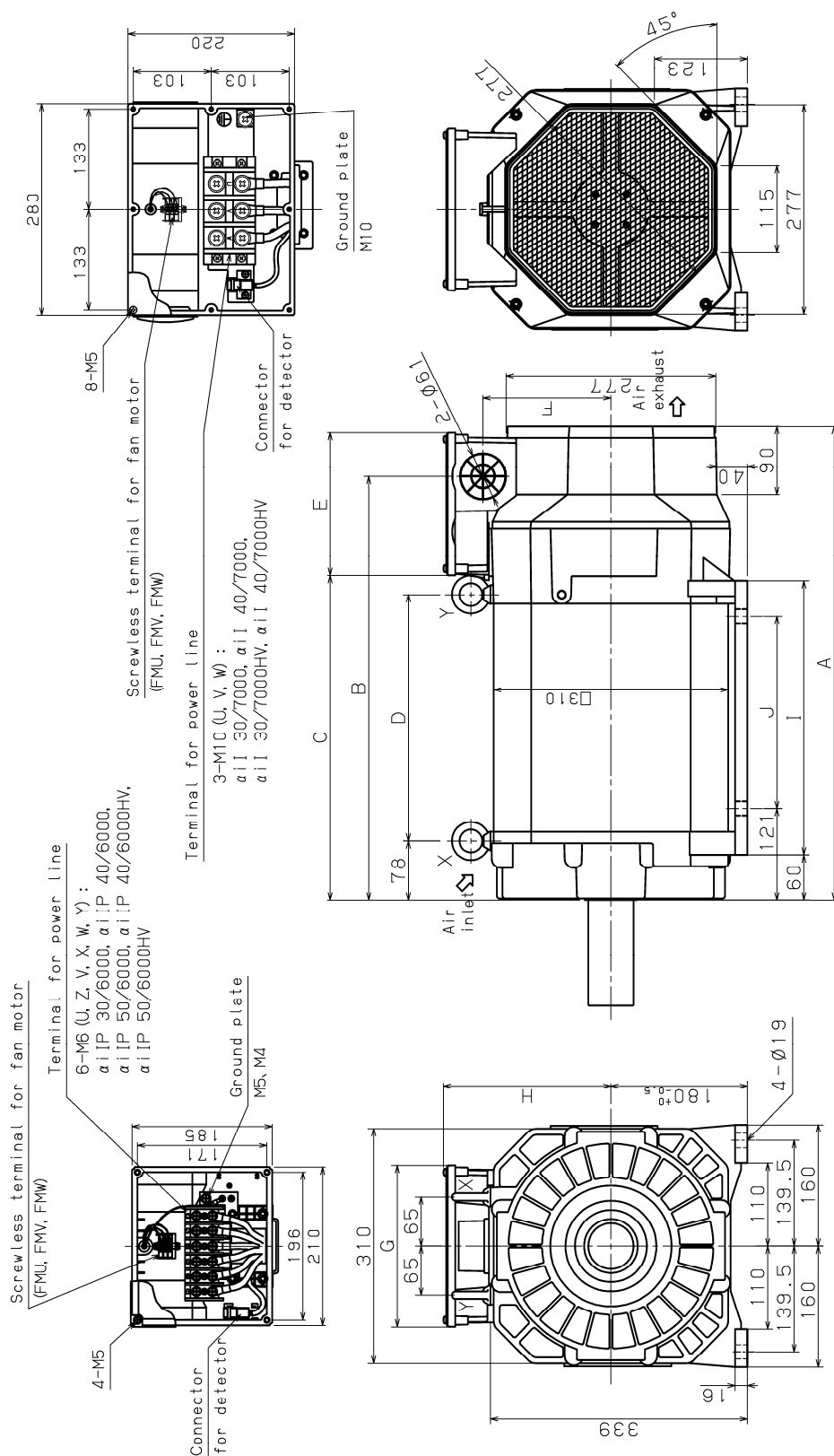
(1) Flange mounting type



MODEL	A	B	C	D	E	F	G	H
<i>α</i> ilP 30/7000, <i>α</i> ilP 30/7000HV	626	622.5	452	326	220	178	284	236
<i>α</i> ilP 30/6000, <i>α</i> ilP 40/6000, <i>α</i> ilP 40/6000HV	626	560	429	326	189	169	214	221
<i>α</i> ilP 40/7000, <i>α</i> ilP 40/7000HV	686	682.5	512	386	220	178	284	236
<i>α</i> ilP 50/6000, <i>α</i> ilP 50/6000HV	686	620	489	386	189	169	214	221

1. Use hexagon head bolts M16, length 50mm or less for mounting.
2. The reversed air flow direction is also available.

(2) Foot mounting type



MODEL	A	B	C	D	E	F	G	H	I	J
<i>ail</i> 30/7000, <i>ail</i> 30/7000HV	626	622.5	452	326	220	178	284	236	362	254
<i>ail</i> 30/6000, <i>ail</i> 40/6000,	626	560	429	326	189	169	214	221	362	254
<i>ail</i> 40/6000HV	686	682.5	512	386	220	178	284	236	422	254
<i>ail</i> 40/7000, <i>ail</i> 40/7000HV	686	620	489	386	189	169	214	221	422	254
<i>ail</i> 50/6000, <i>ail</i> 50/6000HV	686	620	489	386	189	169	214	221	422	254

(Note)

1. Use hexagon head bolts M16, length 40mm or less for mounting.
2. The reversed air flow direction is also available.

3.3.6.2 Shaft figure

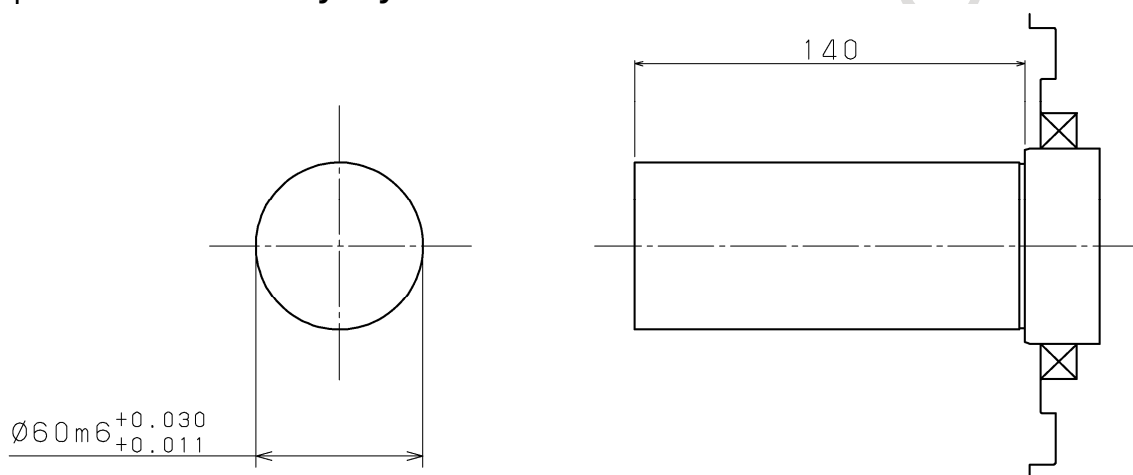
(1) Shaft figure types

The shaft figure for each motor is as given below.

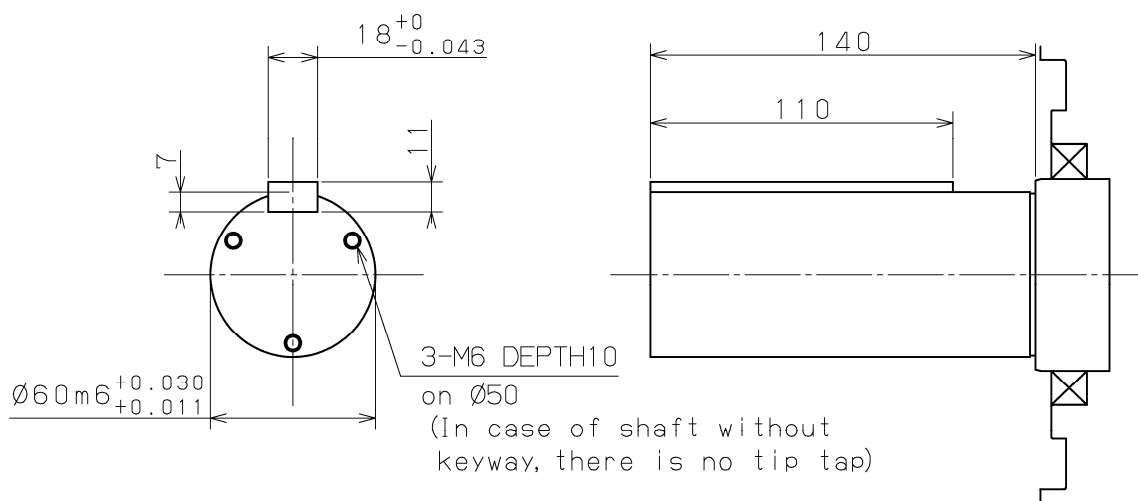
Model	Shaft without keyway		Shaft with keyway	
	Shaft diameter	Details	Shaft diameter	Details
$\alpha i l$ 30/7000, $\alpha i l$ 40/7000, $\alpha i l$ 30/7000HV, $\alpha i l$ 40/7000HV, $\alpha i l P$ 30/6000, $\alpha i l P$ 40/6000, $\alpha i l P$ 50/6000, $\alpha i l P$ 40/6000HV, $\alpha i l P$ 50/6000HV	$\phi 60$	(2) (a)	$\phi 60$	(2) (b)

(2) Shaft details

(a) $\phi 60$ Shaft without keyway



(b) $\phi 60$ Shaft with keyway



3.3.6.3 Allowable radial load

Use the motor output shaft below the allowable radial loads shown in the table below.

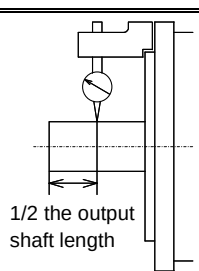
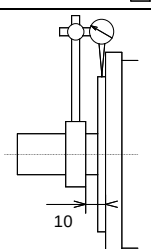
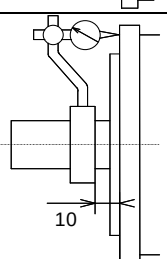
Model	Allowable radial load	
	At output shaft end	At output shaft center
$\alpha i I$ 30/7000, $\alpha i I$ 40/7000, $\alpha i I$ 30/7000HV, $\alpha i I$ 40/7000HV, $\alpha i I P$ 30/6000, $\alpha i I P$ 40/6000, $\alpha i I P$ 50/6000, $\alpha i I P$ 40/6000HV, $\alpha i I P$ 50/6000HV	5390N (550kgf)	6134N (626kgf)

NOTE

- 1 When using a belt, adjust the tension so the allowable loads indicated above are not exceeded. If an excessive load is applied, consider the use of a support bearing on the machine side to maintain the long-term reliability of the motor. (If an excessive
- 2 When the belt tension is maximized at a point outside the output shaft end, the allowable loads are less than those at the output shaft end.
- 3 If a thrust load is applied when a helical gear or coupling is mounted, the shaft moves in the direction of the thrust. So, as a general rule, never apply a thrust load.

3.3.6.4 Assembling accuracy

The following table lists the assembling accuracy values.

Item	Model $\alpha i I$ 30/7000, $\alpha i I$ 40/7000, $\alpha i I$ 30/7000HV, $\alpha i I$ 40/7000HV, $\alpha i I P$ 30/6000, $\alpha i I P$ 40/6000, $\alpha i I P$ 50/6000, $\alpha i I P$ 40/6000HV, $\alpha i I P$ 50/6000HV	Measuring method
Shaft run-out	20 μ m or less (10 μ m or less)	 1/2 the output shaft length
Run-out of the faucet joint for mounting the flange against the core of the shaft (only for flange type)	40 μ m or less (30 μ m or less)	 10
Run-out of the flange mounting surface against the core of the shaft (only for flange type)	80 μ m or less (40 μ m or less)	 10



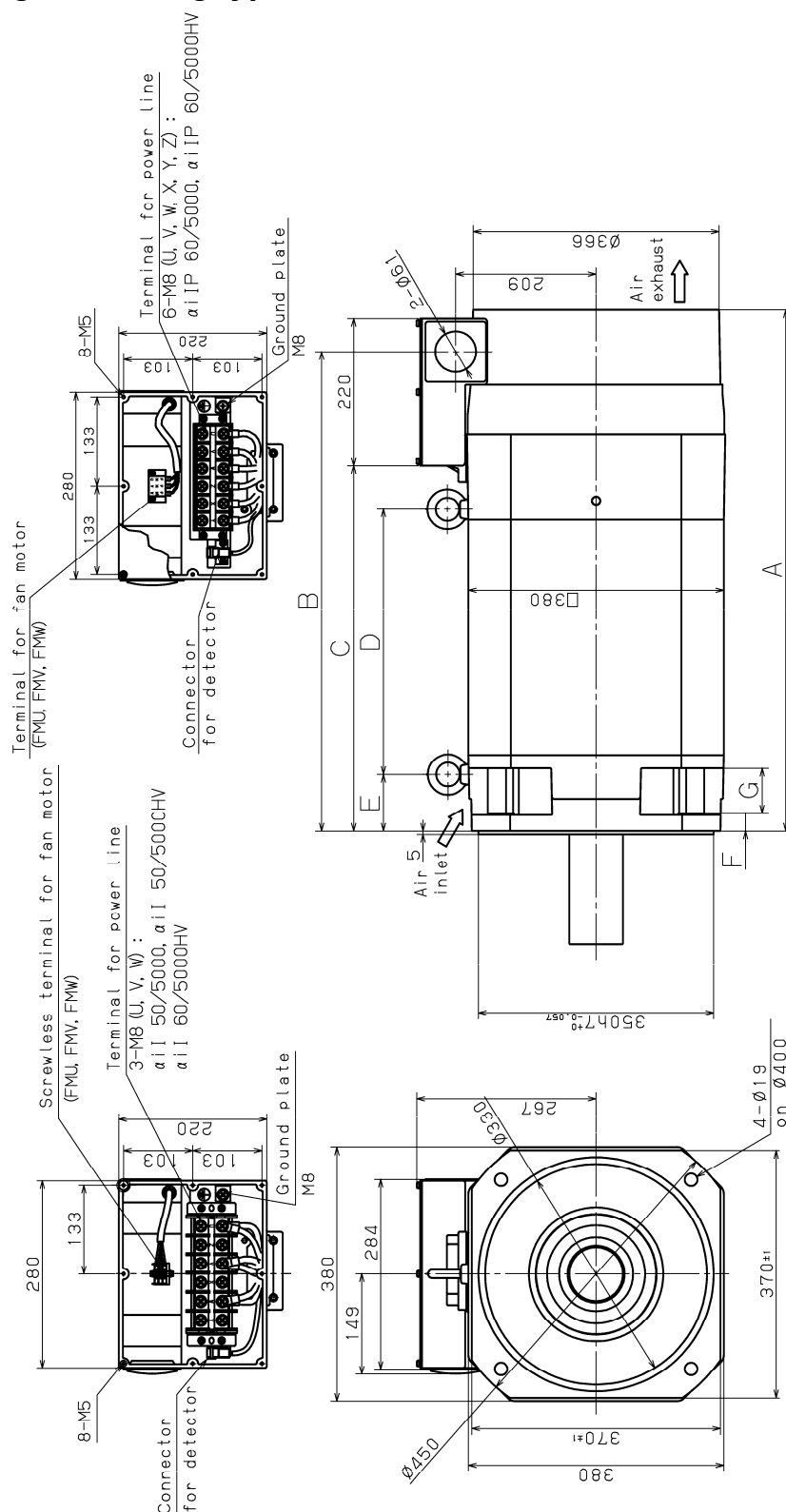
CAUTION

Values in parentheses represent the assembling accuracies of high-precision models.

3.3.7 Models αiI 50/5000, αiI 50/5000HV, αiI 60/5000HV, αiI 75/5000HV, αiI 100/5000HV, αiI 150/5000HV, αiI_P 60/5000, αiI_P 60/5000HV

3.3.7.1 External dimensions

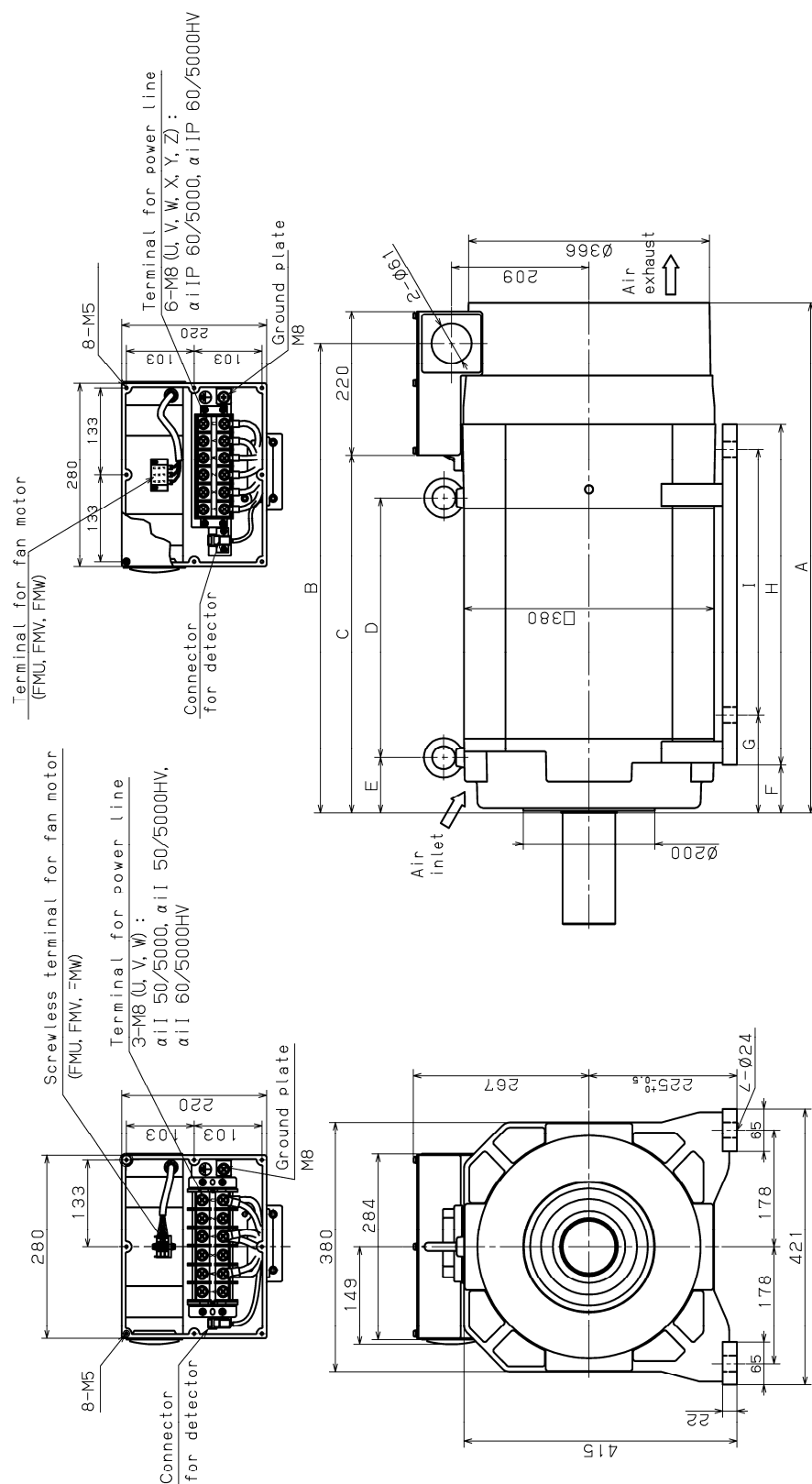
(1) Flange mounting type



MODEL	A	B	C	D	E	F	G
<i>α</i> l 50/5000, <i>α</i> l 50/5000HV	779	716.5	546	397	84	27	66
<i>α</i> l 60/5000HV,							
<i>α</i> l 60/5000	808	745.5	575	397	113	32	73

(Note) 1. Use hexagon head bolts M16, length 60mm or less for mounting.
2. The reversed air flow direction is also available.

(2) Foot mounting type

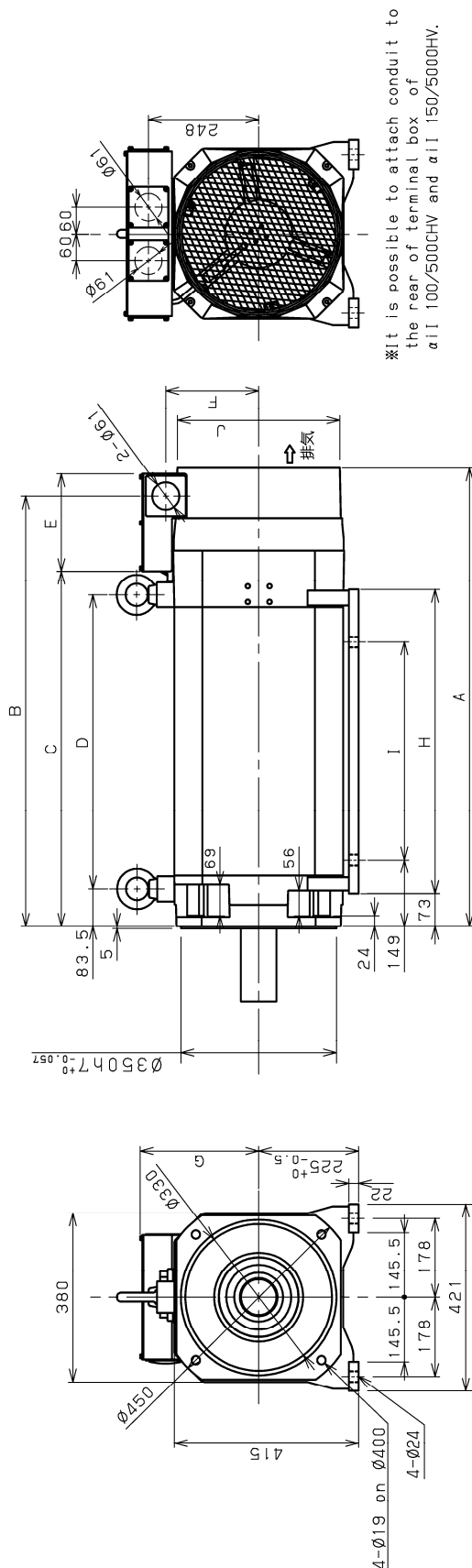
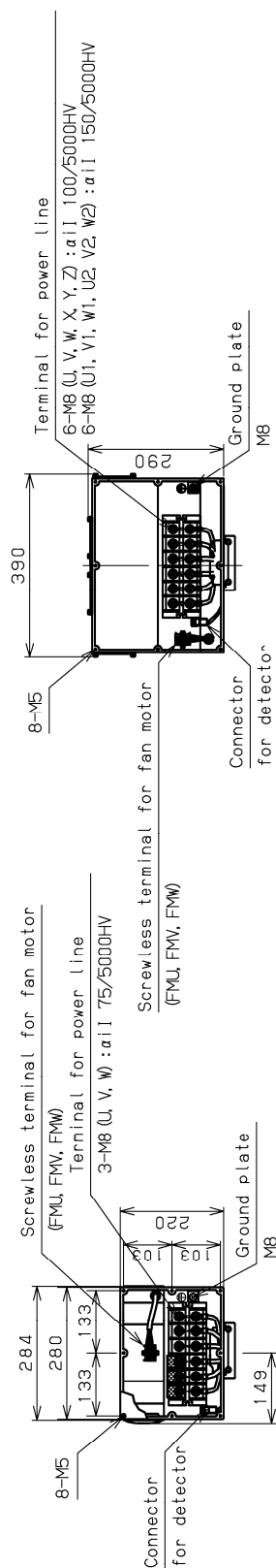


(Note)

1. Use hexagon head bolts M20, length 45mm or less for mounting.
2. The reversed air flow direction is also available.

MODEL	A	B	C	D	E	F	G	H	I
<i>ai</i> l 50/5000, <i>ai</i> l 50/5000HV	779	716.5	546	397	84	73	149	520	406
<i>ai</i> l 60/5000HV, <i>ai</i> l 60/5000HV	808	745.5	575	397	113	102	168	520	406

(2) Foot flange mounting type



(Note) 1. Use hexagon head bolts M20, length 45mm or less for foot mounting.

2. Use hexagon head bolts M16, length 55mm or less for flange mounting.

MODEL	A	B	C	D	E	F	G	H	I	J
α il 75/5000HV	1031	968.5	798	661.5	220	209	267	684	490	366
α il 100/5000HV	1171	1153	938	801	290	248	303	824	630	366
α il 150/5000HV	1232	1153	938	801	290	248	303	824	630	357

Shaft figure

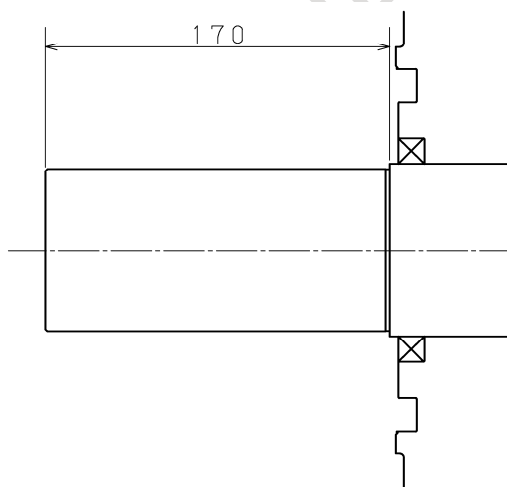
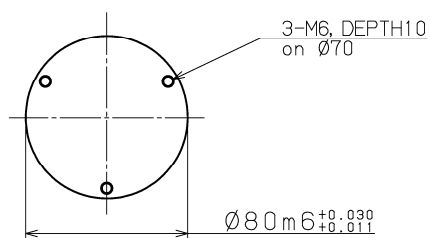
(1) Shaft figure types

The shaft figure for each motor is as given below.

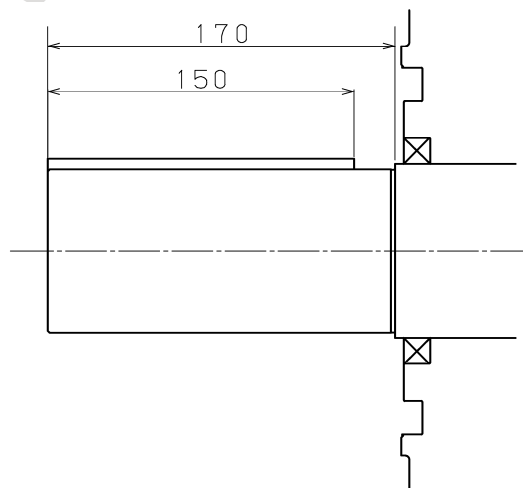
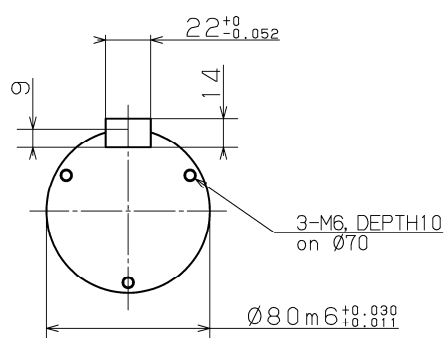
Model	Shaft without keyway		Shaft with keyway	
	Shaft diameter	Details	Shaft diameter	Details
$\alpha i l$ 50/5000, $\alpha i l$ 50/5000HV, $\alpha i l$ 60/5000HV, $\alpha i l$ 75/5000HV, $\alpha i l$ 100/5000HV, $\alpha i l$ 150/5000HV, $\alpha i l P$ 60/5000, $\alpha i l P$ 60/5000HV	$\phi 80$	(2) (a)	$\phi 80$	(2) (b)

(2) Shaft details

(a) $\phi 80$ Shaft without keyway



(b) $\phi 80$ Shaft with keyway



3.3.7.2 Allowable radial load

Use the motor output shaft below the allowable radial loads shown in the table below.

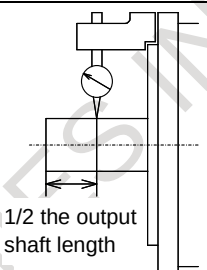
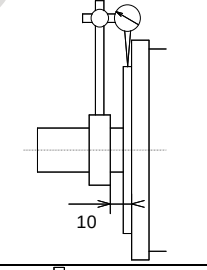
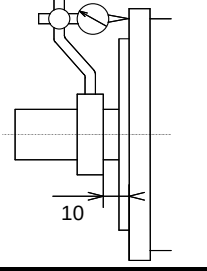
Model	Allowable radial load	
	At output shaft end	At output shaft center
<i>αi</i> L 50/5000, <i>αi</i> L 50/5000HV	10780N (1100kgf)	12300N (1255kgf)
<i>αi</i> L 60/5000HV, <i>αi</i> LP 60/5000, <i>αi</i> LP 60/5000HV	17250N (1760kgf)	19600N (2000kgf)
<i>αi</i> L 75/5000HV, <i>αi</i> L 100/5000HV, <i>αi</i> L 150/5000HV	8820N (900kgf)	9898N (1010kgf)

NOTE

- 1 When using a belt, adjust the tension so the allowable loads indicated above are not exceeded. If an excessive load is applied, consider the use of a support bearing on the machine side to maintain the long-term reliability of the motor. (If an excessive
- 2 When the belt tension is maximized at a point outside the output shaft end, the allowable loads are less than those at the output shaft end.
- 3 If a thrust load is applied when a helical gear or coupling is mounted, the shaft moves in the direction of the thrust. So, as a general rule, never apply a thrust load.

3.3.7.3 Assembling accuracy

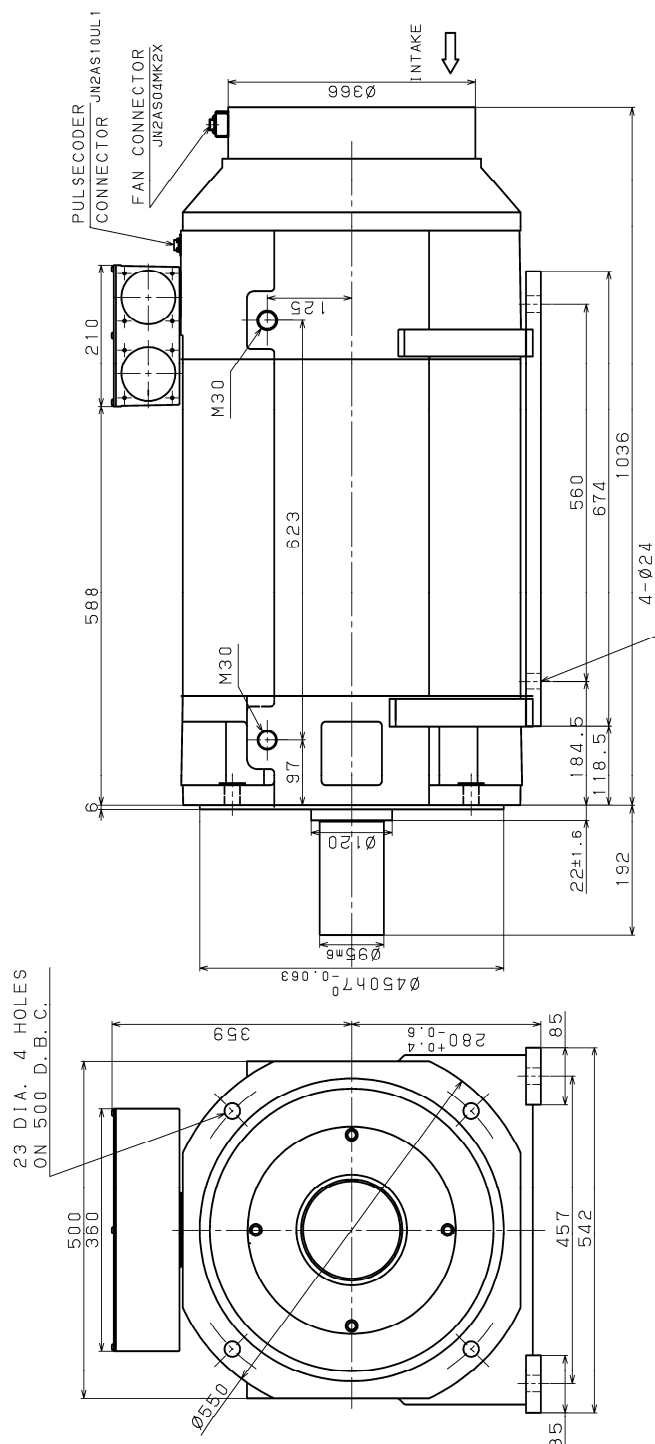
The following table lists the assembling accuracy values.

Item \ Model	$\alpha i I$ 50/5000, $\alpha i I$ 50/5000HV, $\alpha i I$ 60/5000HV, $\alpha i I_P$ 60/5000, $\alpha i I_P$ 60/5000HV	$\alpha i I$ 75/5000HV, $\alpha i I$ 100/5000HV, $\alpha i I$ 150/5000HV	Measuring method
Shaft run-out	20 μ m or less	40 μ m or less	 1/2 the output shaft length
Run-out of the faucet joint for mounting the flange against the core of the shaft (only for flange type)	60 μ m or less	200 μ m or less	 10
Run-out of the flange mounting surface against the core of the shaft (only for flange type)	100 μ m or less	200 μ m or less	 10

3.3.8 Model αiS 2000/2000HV

3.3.8.1 External dimensions

(1) Foot flange mounting type



(NOTE) 1. MOUNT THE MOTOR WITH THE FEET.
DO NOT USE THE FLANGE.
THE FLANGE IS DATUM TO THE MACHINE TOOL.
2. THE WEIGHT OF THIS MOTOR IS 1000kg.

- 1 The motor does not have any internal circuit breaker for protecting the fan. Prepare the circuit breaker in the power magnetics cabinet.
- 2 The motor cannot be mounted on the machine with just the flange. Mount the motor so that the shaft is placed horizontally and the foot is placed downward. Support the motor's own weight by securing the foot with bolts. Use the flange as the reference for aligning the motor with the machine.
- 3 For a mounting method other than the above, consult FANUC.

3.3.8.2 Shaft figure

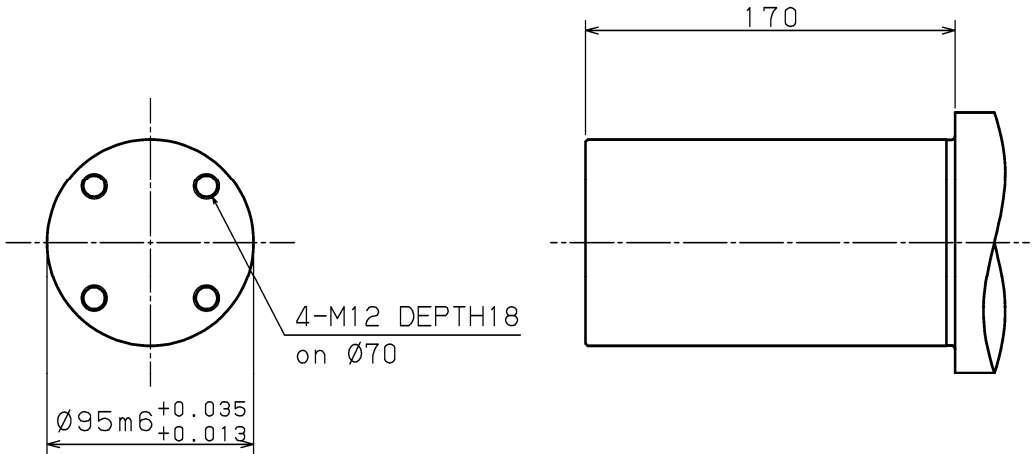
(1) Shaft figure types

The shaft figure for each motor is as given below.

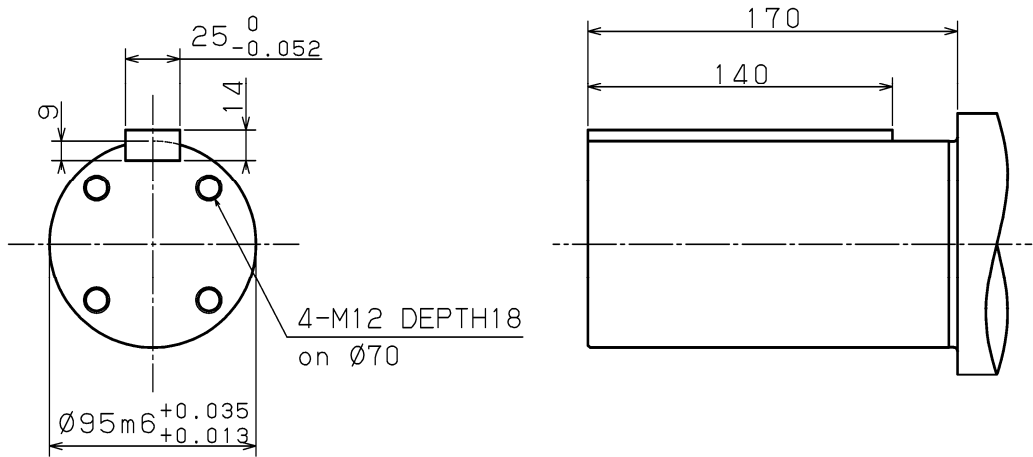
Model	Shaft without keyway		Shaft with keyway	
	Shaft diameter	Details	Shaft diameter	Details
αiS 2000/2000HV	$\phi 95$	(2) (a)	$\phi 95$	(2) (b)

(2) Shaft details

(a) $\phi 95$ Shaft without keyway



(b) $\phi 95$ Shaft with keyway



3.3.8.3 Allowable radial load

Use the motor output shaft below the allowable radial loads shown in the table below.

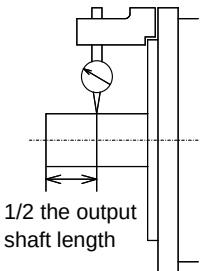
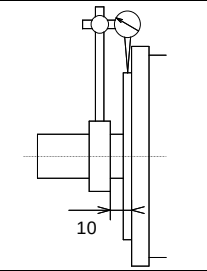
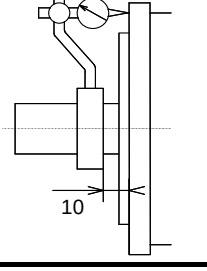
Model	Allowable radial load	
	At output shaft end	At output shaft center
α iS 2000/2000HV	8820N (900kgf)	1960N (200kgf)

NOTE

- 1 When using a belt, adjust the tension so the allowable loads indicated above are not exceeded. If an excessive load is applied, consider the use of a support bearing on the machine side to maintain the long-term reliability of the motor. (If an excessive
- 2 When the belt tension is maximized at a point outside the output shaft end, the allowable loads are less than those at the output shaft end.
- 3 If a thrust load is applied when a helical gear or coupling is mounted, the shaft moves in the direction of the thrust. So, as a general rule, never apply a thrust load.

3.3.8.4 Assembling accuracy

The following table lists the assembling accuracy values.

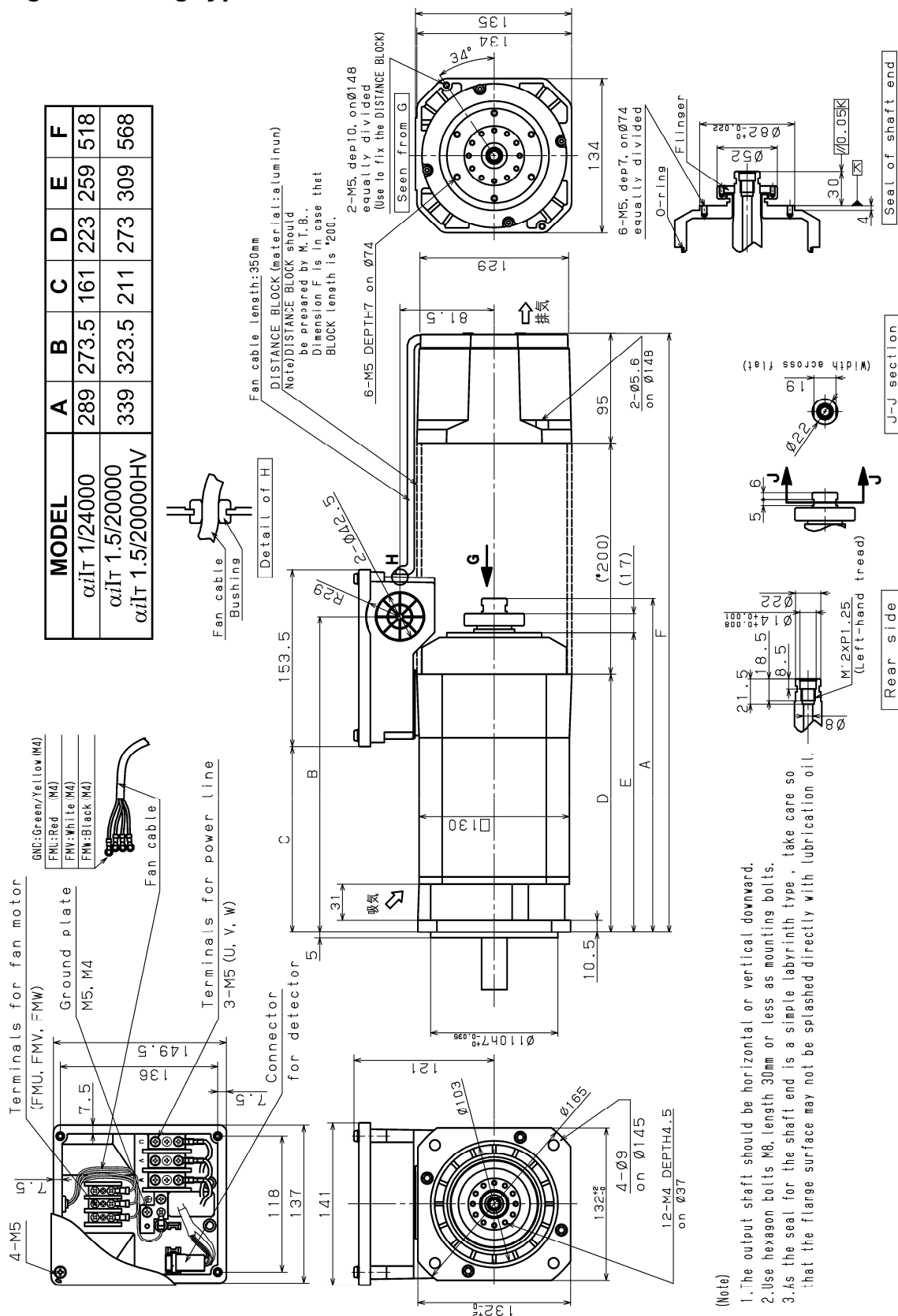
Item	Model α iS 2000/2000HV	Measuring method
Shaft run-out	80 μ m or less	 1/2 the output shaft length
Run-out of the faucet joint for mounting the flange against the core of the shaft (only for flange type)	130 μ m or less	 10
Run-out of the flange mounting surface against the core of the shaft (only for flange type)	160 μ m or less	 10

3.3.9 Models αI_T 1/24000, αI_T 1.5/20000, αI_T 1.5/20000HV

3.3.9.1 External dimensions

(1) Flange mounting type

MODEL	A	B	C	D	E	F
α iIT 1/24000	289	273.5	161	223	259	518
α iIT 1.5/20000						
α iIT 1.5/20000HV	339	323.5	211	273	309	568

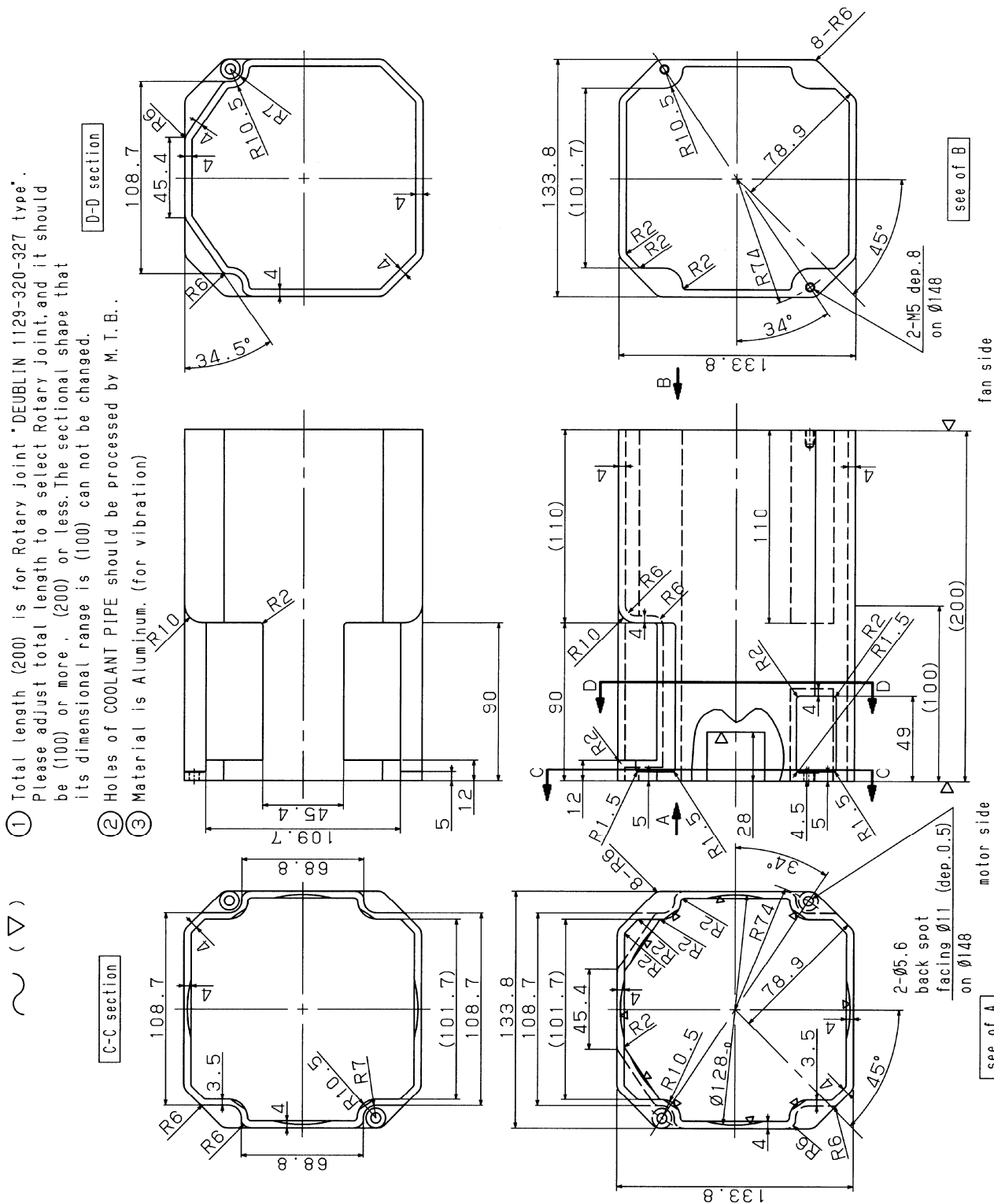


(Note)

1. The output shaft should be horizontal or vertical downward.
2. Use hexagon bolts M8, length 30mm or less as mounting bolts.
3. As the seal for the shaft end is a simple labyrinth type, take care so that the flange surface may not be splashed directly with lubrication oil.

(2) Distance block type αI_T 1.5

- ① Total length (200) is for Rotary joint "DEUBLIN 1129-320-327 type". Please adjust total length to a select Rotary joint, and it should be (100) or more, (200) or less. The sectional shape that its dimensional range is (100) can not be changed.
- ② Holes of COOLANT PIPE should be processed by M. T. B.
- ③ Material is Aluminum. (for vibration)



Shaft figure

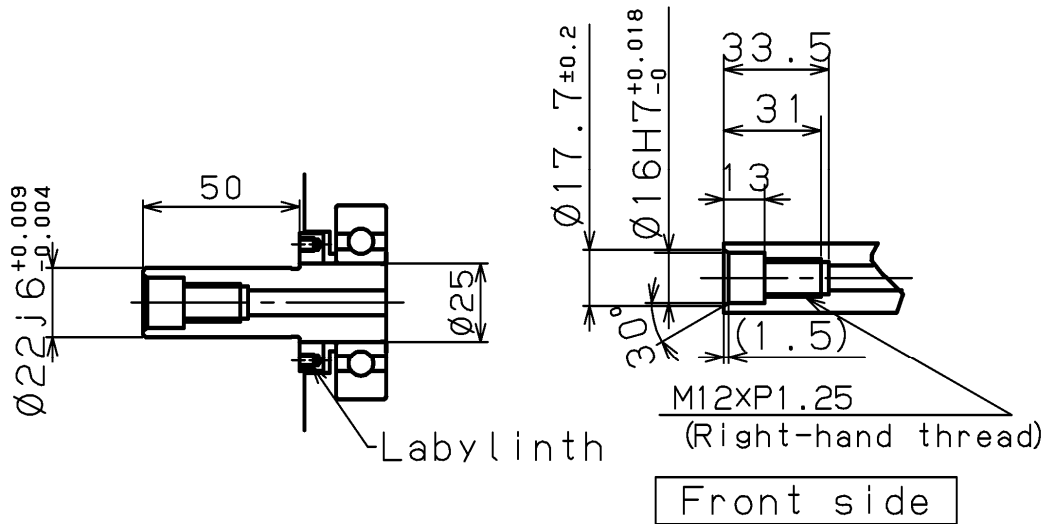
(1) Shaft figure types

The shaft figure for each motor is as given below.

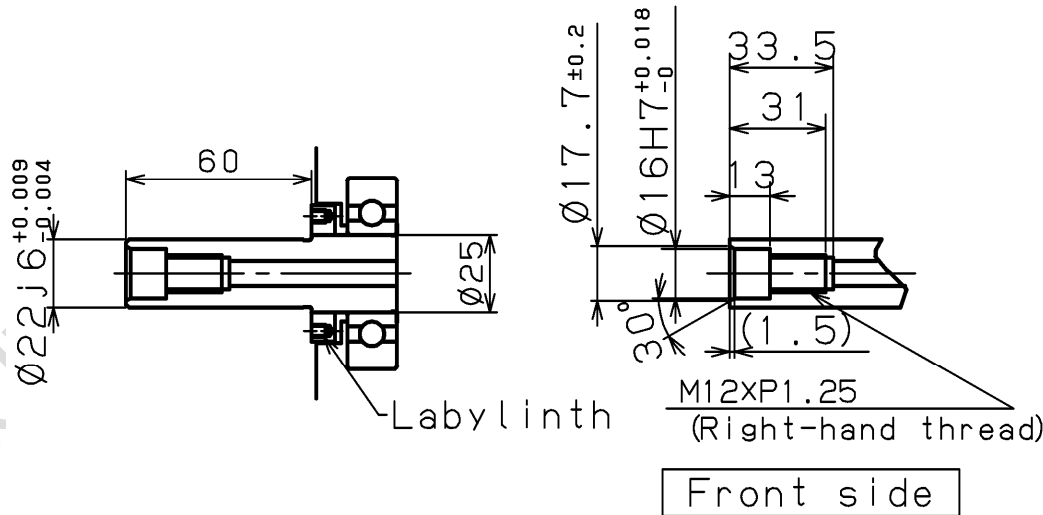
Model	Shaft without keyway	
	Shaft diameter	Details
αiI_T 1/24000	$\phi 22$	(2) (a)
αiI_T 1.5/20000, αiI_T 1.5/20000HV	$\phi 22$	(2) (b)

(2) Shaft details

(a) $\phi 22$ hollow shaft without keyway (αiI_T 1/24000)



(b) $\phi 22$ hollow shaft without keyway (αiI_T 1.5/20000, αiI_T 1.5/20000HV)



3.3.9.2 Allowable radial load

Use the motor so that the thrust load on the output shaft does not exceed the load listed in the table below.
(Only in the direction in which the motor shaft is pressed forward)

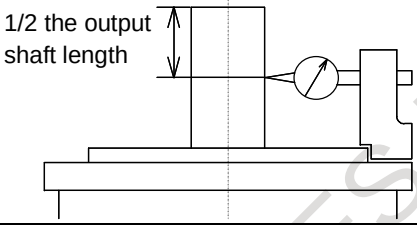
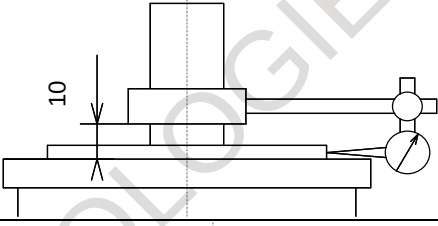
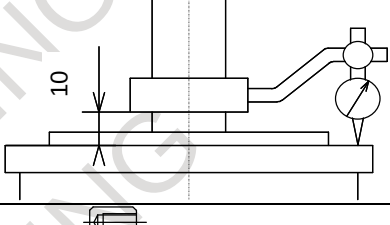
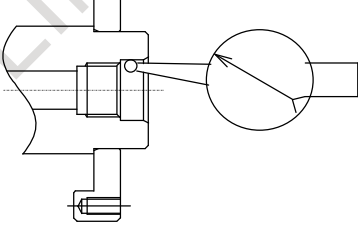
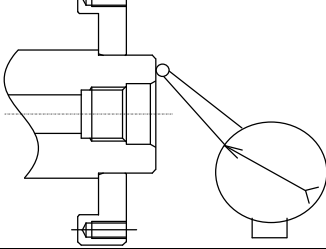
Model	Allowable thrust load
$\alpha i\Gamma$ 1/24000, $\alpha i\Gamma$ 1.5/20000, $\alpha i\Gamma$ 1.5/20000HV	58.8N (6kgf)

NOTE

- 1 Directly connect an $\alpha i\Gamma$ series spindle motor with the spindle so that no radial load is applied on the output shaft.

3.3.9.3 Assembling accuracy

The following table lists the assembling accuracy values.

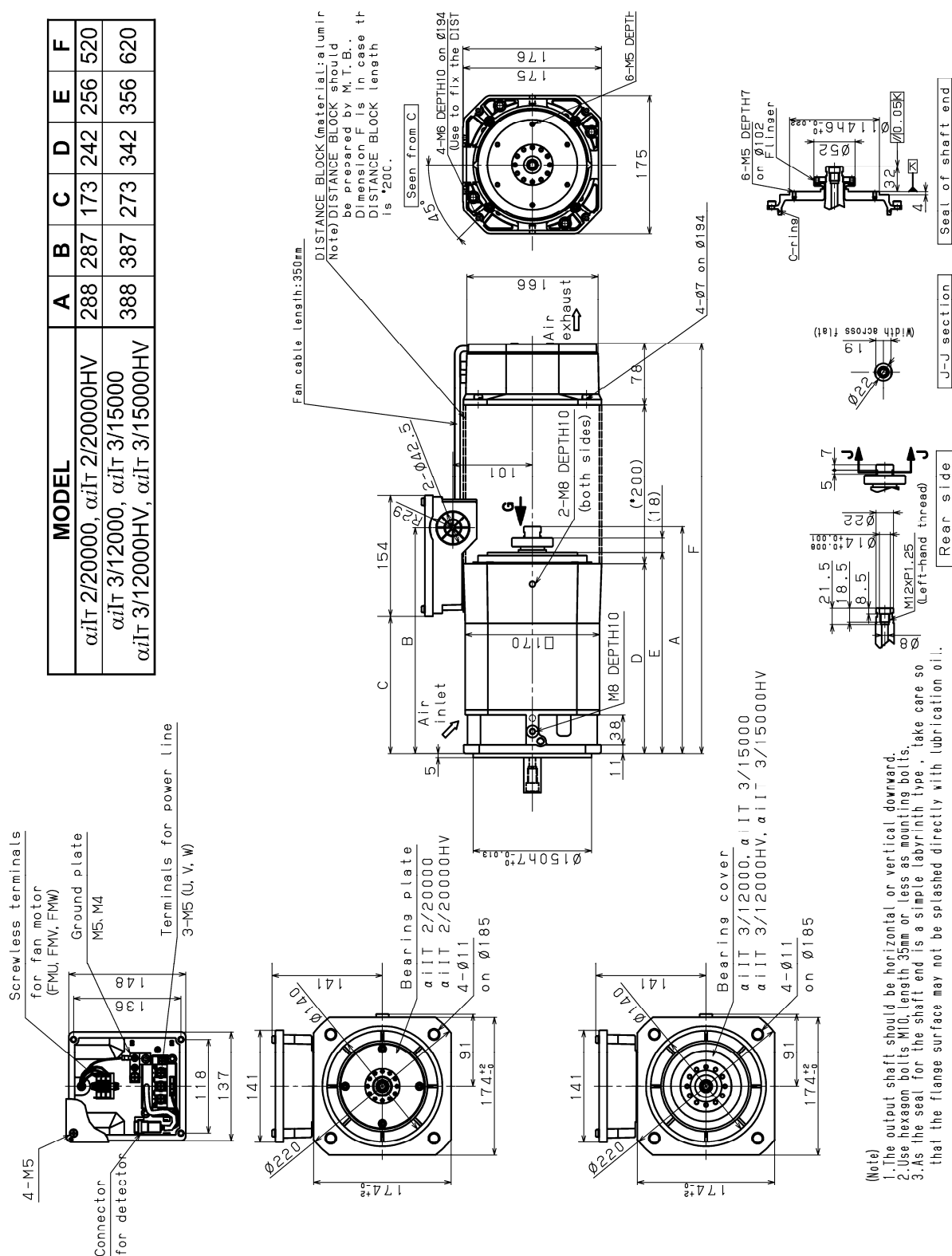
Item	Accuracy	Measuring method
Run-out at the end of the output shaft	10 μ m or less	 1/2 the output shaft length
Run-out of the faucet joint for mounting the flange against the core of the shaft	30 μ m or less	 10
Run-out of the flange mounting surface against the core of the shaft	40 μ m or less	 10
Front shaft end through hole inlet Rear shaft end through hole inlet Run-out of socket and spigot joint	20 μ m or less	
Run-out of front shaft end face Run-out of rear shaft end face	10 μ m or less	

3.3.10 Models αiI_T 2/20000, αiI_T 3/12000, αiI_T 3/15000, αiI_T 2/20000HV, αiI_T 3/12000HV

3.3.10.1 External dimensions

(1) Flange mounting type

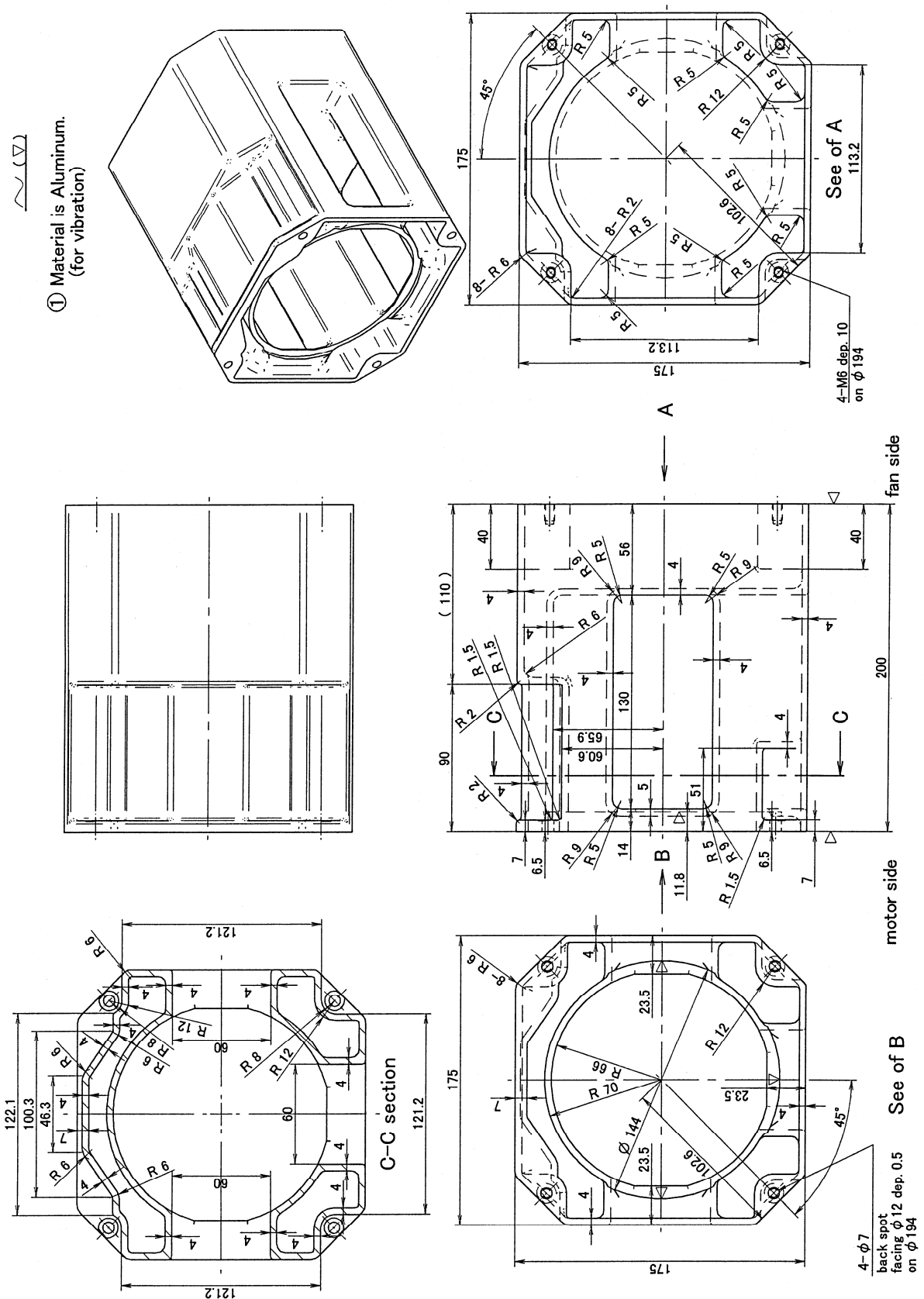
MODEL	A	B	C	D	E	F
$\alpha\text{IT } 2/20000, \alpha\text{IT } 2/20000\text{HV}$	288	287	173	242	256	520
$\alpha\text{IT } 3/12000, \alpha\text{IT } 3/15000$	388	387	273	342	356	620
$\alpha\text{IT } 3/12000\text{HV}, \alpha\text{IT } 3/15000\text{HV}$						



(Note)

1. The output shaft should be horizontal or vertical downward.
2. Use hexagon bolts M10, length 35mm or less as mounting bolts.
3. As the seal for the shaft end is a simple labyrinth type, it is not necessary to use a special sealant. However, if the seal is damaged, the flange surface may not be splashed directly with lubricant.

(3) Distance block with windows type αI_T 2



Shaft figure

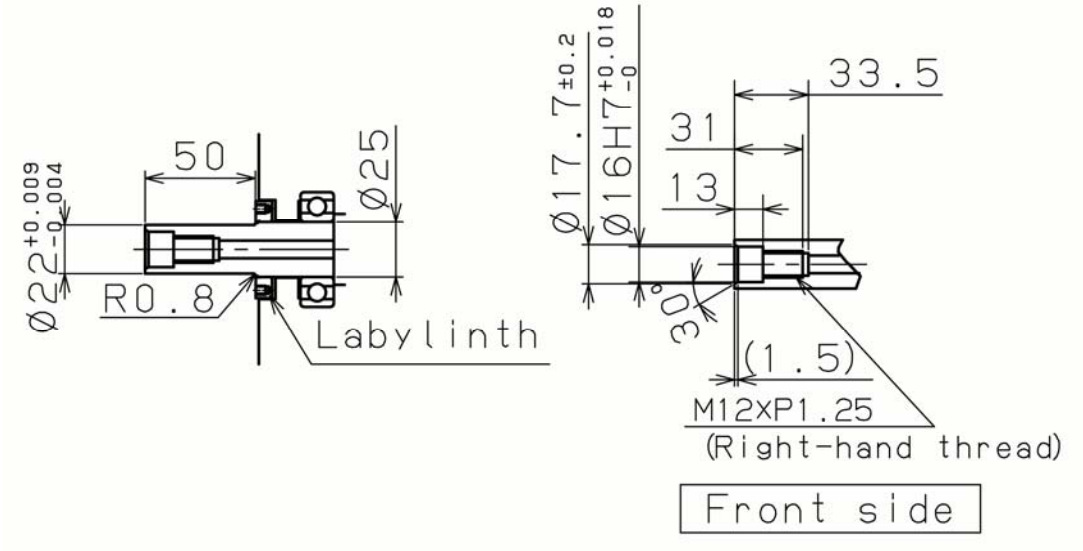
(1) Shaft figure types

The shaft figure for each motor is as given below.

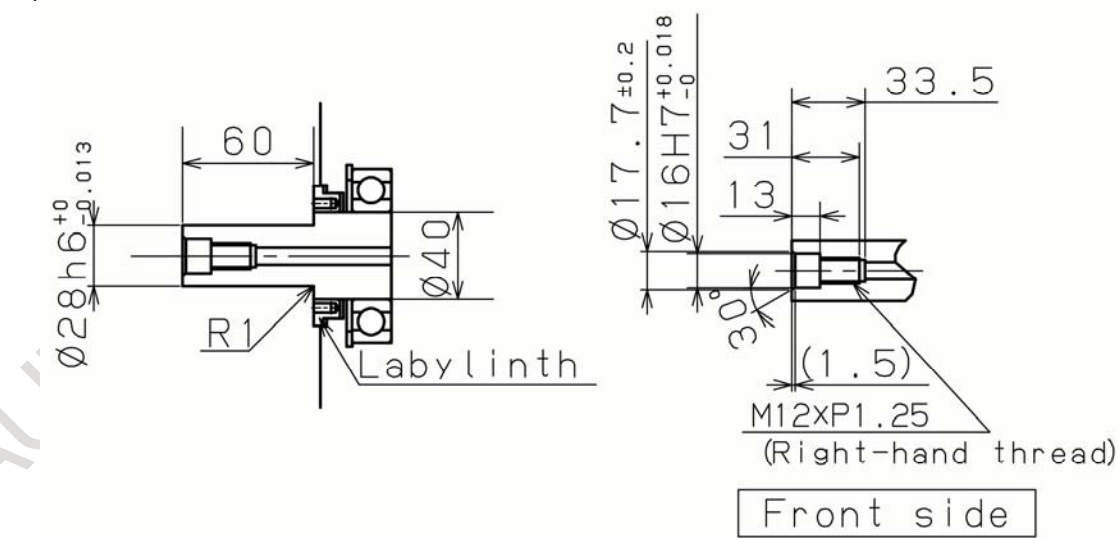
Model	Shaft without keyway	
	Shaft diameter	Details
$\alpha i l_T$ 2/20000, $\alpha i l_T$ 2/20000HV	$\phi 22$	(2) (a)
$\alpha i l_T$ 3/12000, $\alpha i l_T$ 3/15000, $\alpha i l_T$ 3/12000HV	$\phi 28$	(2) (b)

(2) Shaft details

(a) $\phi 22$ hollow shaft without keyway



(b) $\phi 28$ hollow shaft without keyway



3.3.10.2 Allowable radial load

Use the motor so that the thrust load on the output shaft does not exceed the load listed in the table below.
(Only in the direction in which the motor shaft is pressed forward)

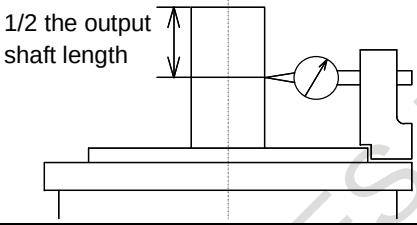
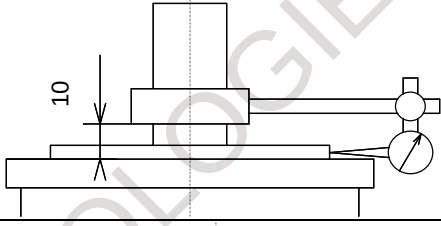
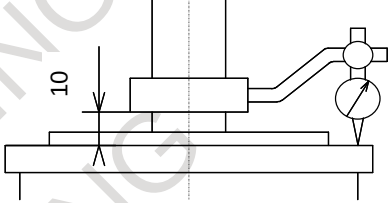
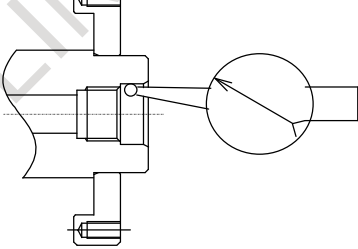
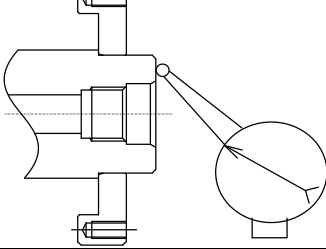
Model	Allowable thrust load
$\alpha i I_T$ 2/20000, $\alpha i I_T$ 3/12000, $\alpha i I_T$ 3/15000 $\alpha i I_T$ 2/20000HV, $\alpha i I_T$ 3/12000HV	58.8N (6kgf)

NOTE

- 1 Directly connect an $\alpha i I_T$ series spindle motor with the spindle so that no radial load is applied on the output shaft.

3.3.10.3 Assembling accuracy

The following table lists the assembling accuracy values.

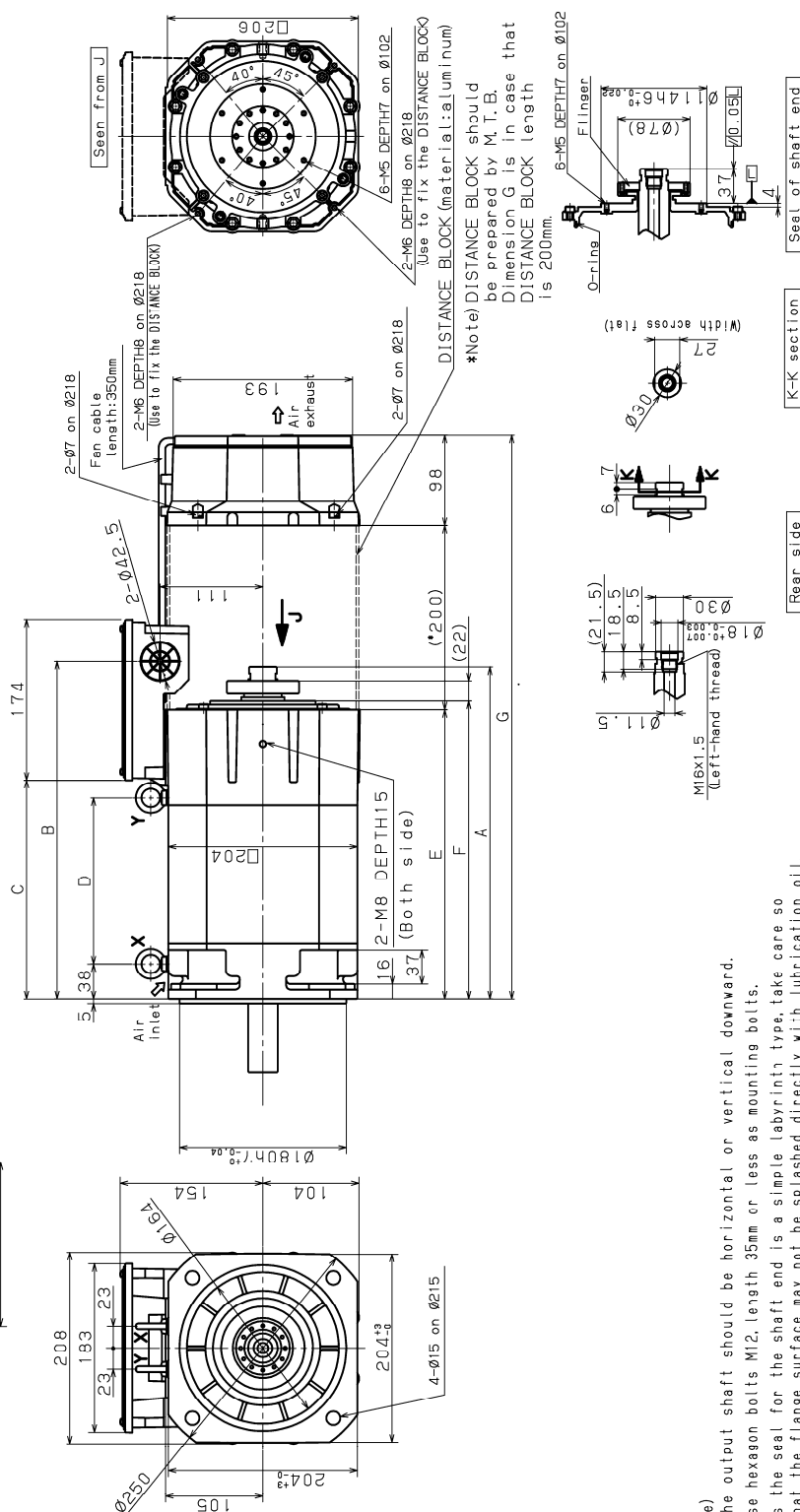
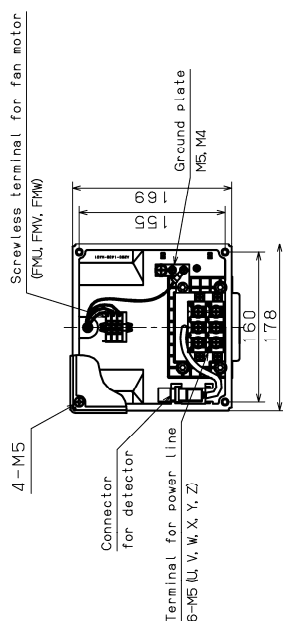
Item	Accuracy	Measuring method
Run-out at the end of the output shaft	10 μ m or less	 1/2 the output shaft length
Run-out of the faucet joint for mounting the flange against the core of the shaft	30 μ m or less	 10
Run-out of the flange mounting surface against the core of the shaft	40 μ m or less	 10
Front shaft end through hole inlet Rear shaft end through hole inlet Run-out of socket and spigot joint	20 μ m or less	
Run-out of front shaft end face Run-out of rear shaft end face	10 μ m or less	

3.3.11 Models αiI_T 6/12000, αiI_T 8/12000, αiI_T 8/15000, αiI_T 6/12000HV, αiI_T 8/12000HV, αiI_T 8/15000HV

3.3.11.1 External dimensions

(1) Flange mounting type

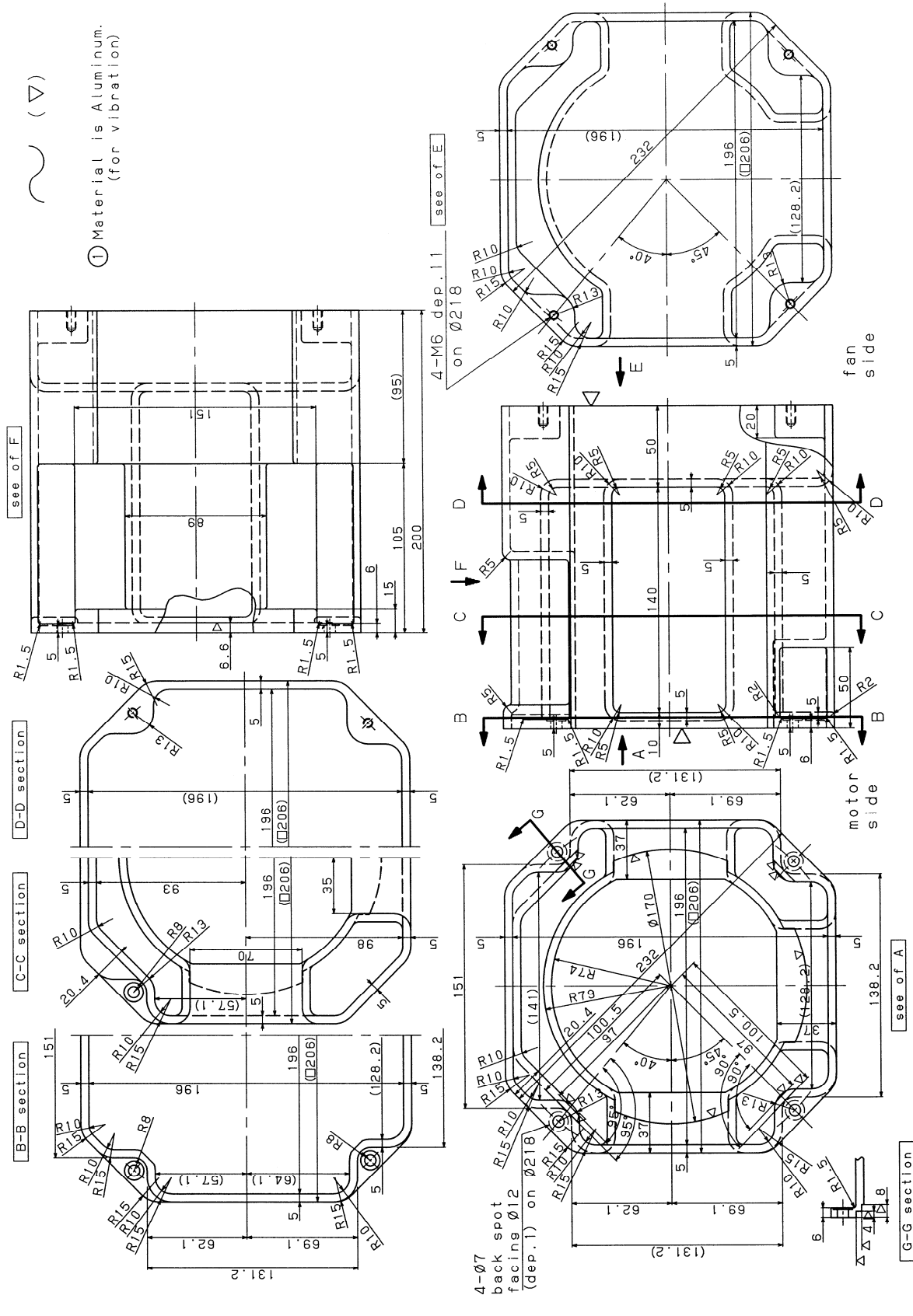
MODEL	A	B	C	D	E	F	G
α iIT 6/12000, α iIT 6/12000HV	360	366	237	180	314	323	612
α iIT 8/12000, α iIT 8/15000	436	442	313	256	390	399	688
α iIT 8/12000HV, α iIT 8/15000HV							



(Note)

1. The output shaft should be horizontal or vertical downward.
2. Use hexagon bolts M12, length 35mm or less as mounting bolts.
3. As the seal for the shaft end is a simple labyrinth type, take care that the flange surface may not be splashed directly with lubricant.

(3) Distance block with windows type αI_T 6



Shaft figure

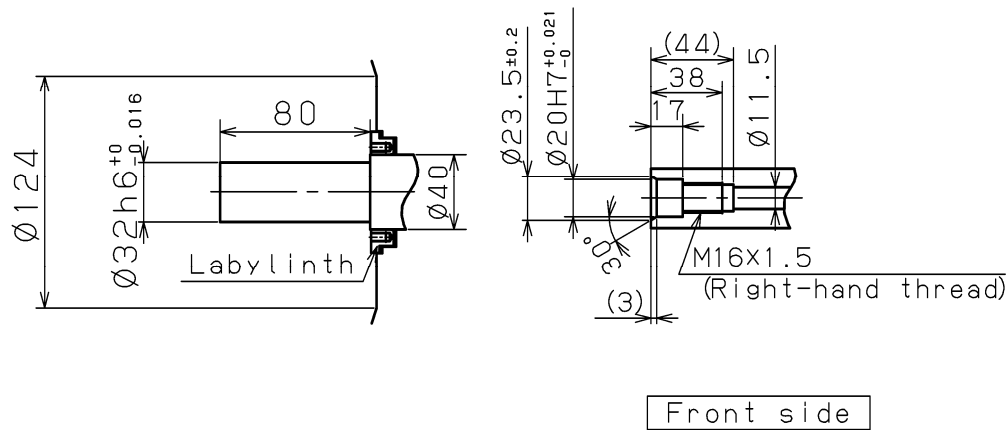
(1) Shaft figure types

The shaft figure for each motor is as given below.

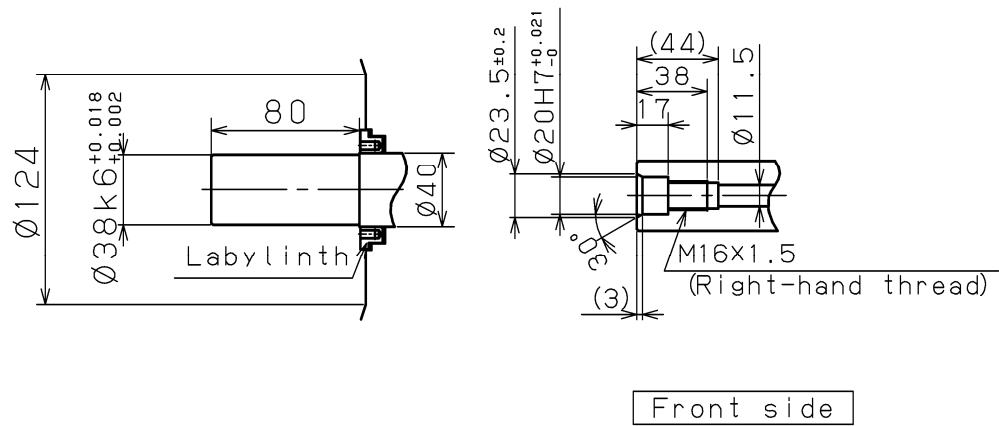
Model	Shaft without keyway	
	Shaft diameter	Details
$\alpha i I_T$ 6/12000, $\alpha i I_T$ 6/12000HV	$\phi 32$	(2) (a)
$\alpha i I_T$ 8/12000, $\alpha i I_T$ 8/15000, $\alpha i I_T$ 8/1200HV, $\alpha i I_T$ 8/15000HV	$\phi 38$	(2) (b)

(2) Shaft details

(a) $\phi 32$ hollow shaft without keyway



(b) $\phi 38$ hollow shaft without keyway



3.3.11.2 Allowable radial load

Use the motor so that the thrust load on the output shaft does not exceed the load listed in the table below.
(Only in the direction in which the motor shaft is pressed forward)

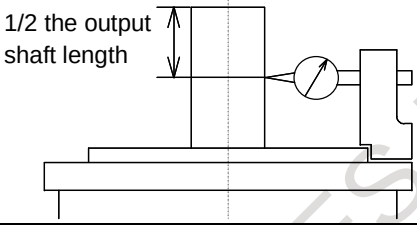
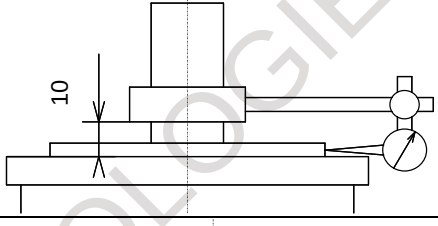
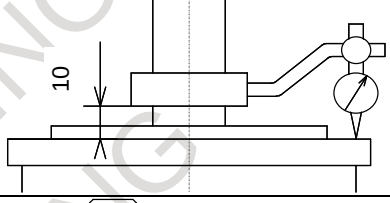
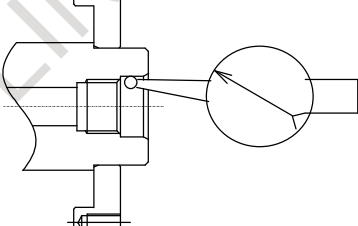
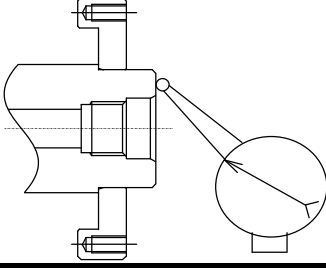
Model	Allowable thrust load
$\alpha i I_T$ 6/12000, $\alpha i I_T$ 8/12000, $\alpha i I_T$ 8/15000, $\alpha i I_T$ 6/12000HV, $\alpha i I_T$ 8/12000HV, $\alpha i I_T$ 8/15000HV	127N (13kgf)

NOTE

- 1 Directly connect an $\alpha i I_T$ series spindle motor with the spindle so that no radial load is applied on the output shaft.

3.3.11.3 Assembling accuracy

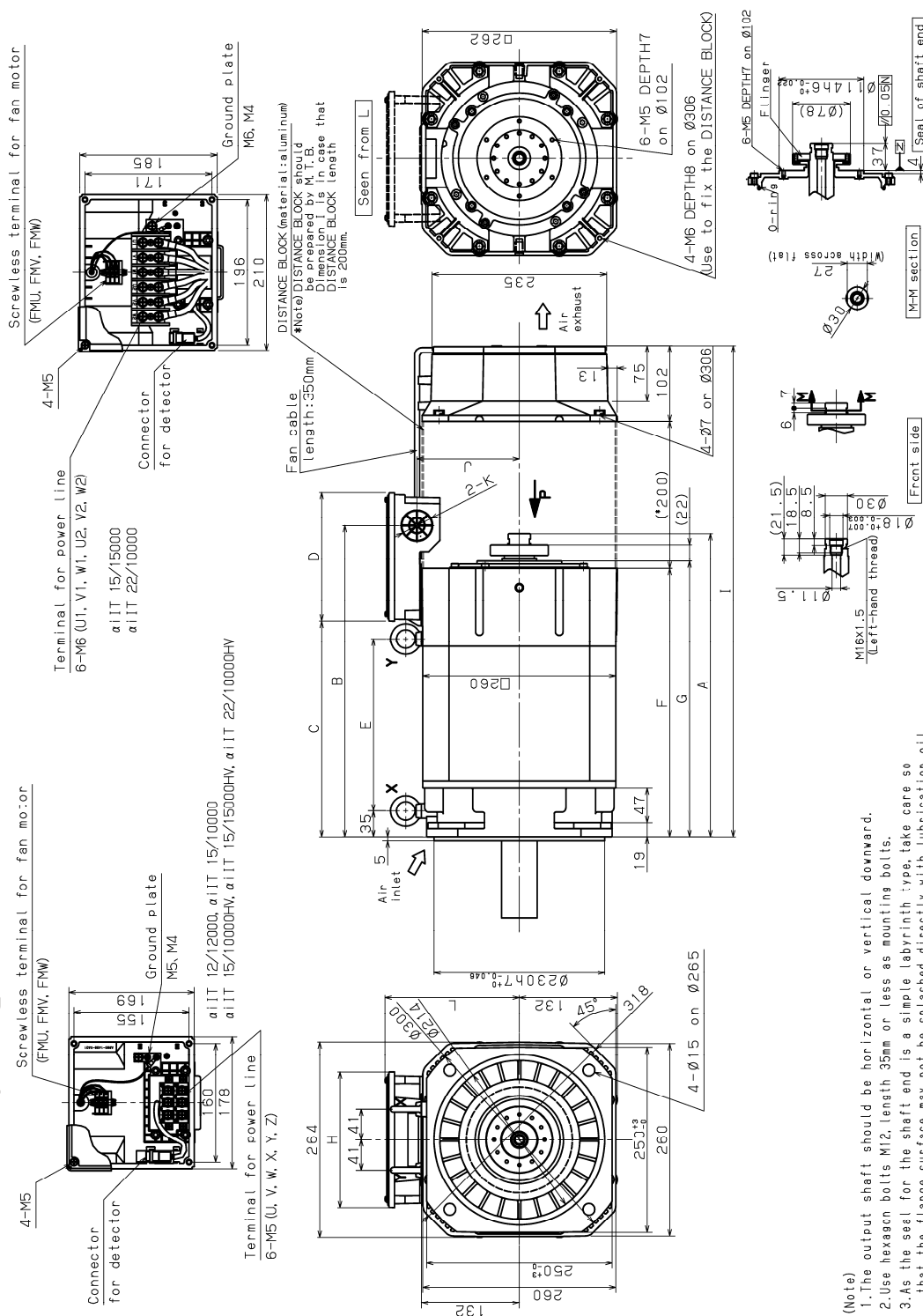
The following table lists the assembling accuracy values.

Item	Accuracy	Measuring method
Run-out at the end of the output shaft	10 μ m or less	 1/2 the output shaft length
Run-out of the faucet joint for mounting the flange against the core of the shaft	30 μ m or less	 10
Run-out of the flange mounting surface against the core of the shaft	40 μ m or less	 10
Front shaft end through hole inlet Rear shaft end through hole inlet Run-out of socket and spigot joint	20 μ m or less	
Run-out of front shaft end face Run-out of rear shaft end face	10 μ m or less	

3.3.12 Models $\alpha i I_T$ 12/12000, $\alpha i I_T$ 15/10000, $\alpha i I_T$ 15/15000, $\alpha i I_T$ 22/10000, $\alpha i I_T$ 15/10000HV, $\alpha i I_T$ 15/15000HV, $\alpha i I_T$ 22/10000HV

3.3.12.1 External dimensions

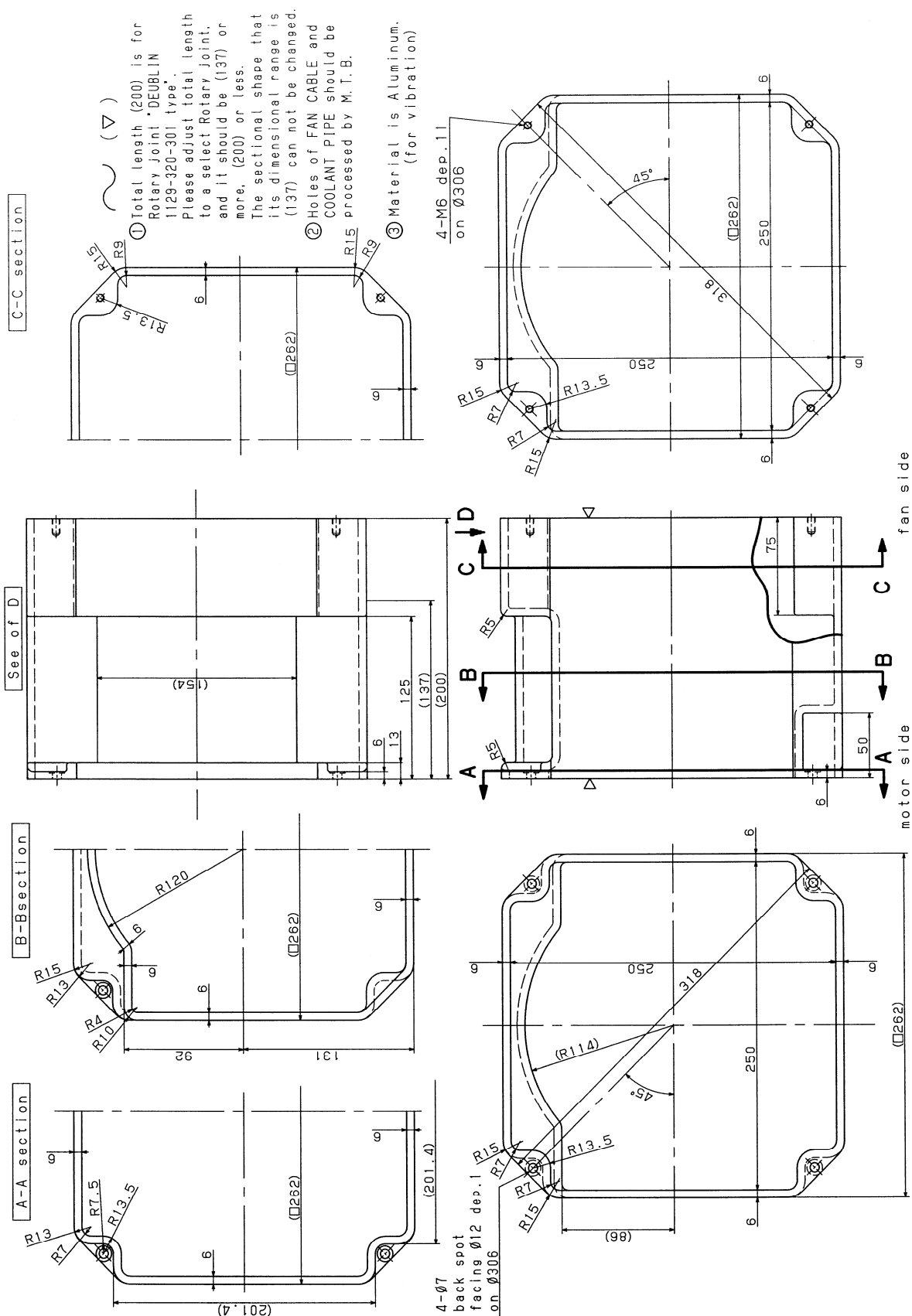
(1) Flange mounting type



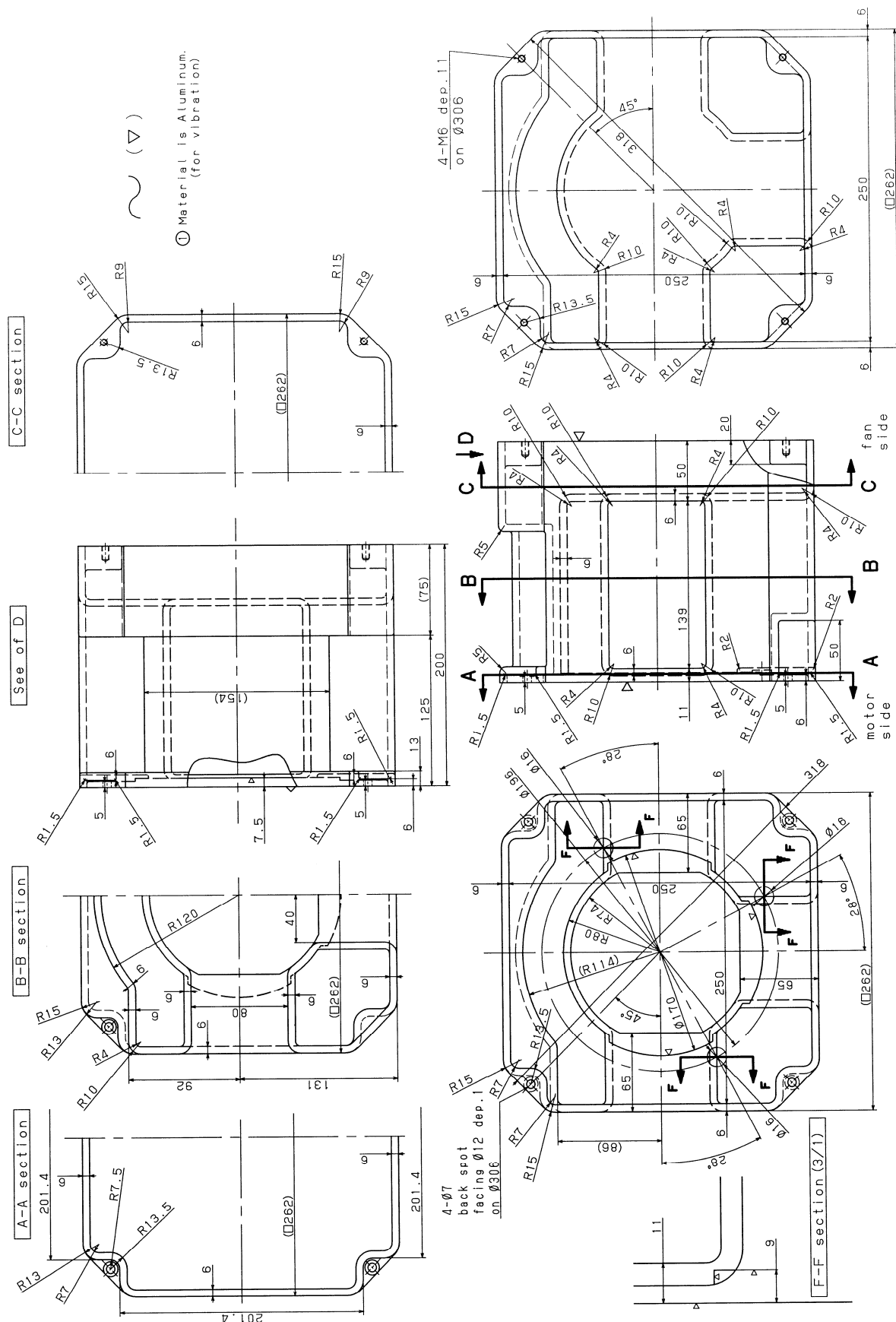
(Note)

1. The output shaft should be horizontal or vertical downward.
2. Use hexagon bolts M12, length 35mm or less as mounting bolts.
3. As the seal for the shaft end is a simple labyrinth type, take care so that the flange surface may not be splashed directly with lubrication

MODEL	A	B	C	D	E	F	G	H	I	J	K
<i>airt</i> 12/12000	377	388	259	174	200	330	340	183	632	138	$\phi 42.5$
<i>airt</i> 15/10000, <i>airt</i> 15/10000HV	409	420	291	174	232	362	372	183	664	138	$\phi 42.5$
<i>airt</i> 15/15000	453	466	335	189	276	406	416	214	708	140	$\phi 61$
<i>airt</i> 15/15000HV	453	464	335	174	276	406	416	183	708	138	$\phi 42.5$
<i>airt</i> 22/10000	479	492	361	189	302	432	442	214	734	140	$\phi 61$
<i>airt</i> 22/10000HV	479	490	361	174	302	432	442	183	734	138	$\phi 42.5$

(2) Distance block type αI_T 15

(3) Distance block with windows type αI_T 15



Shaft figure

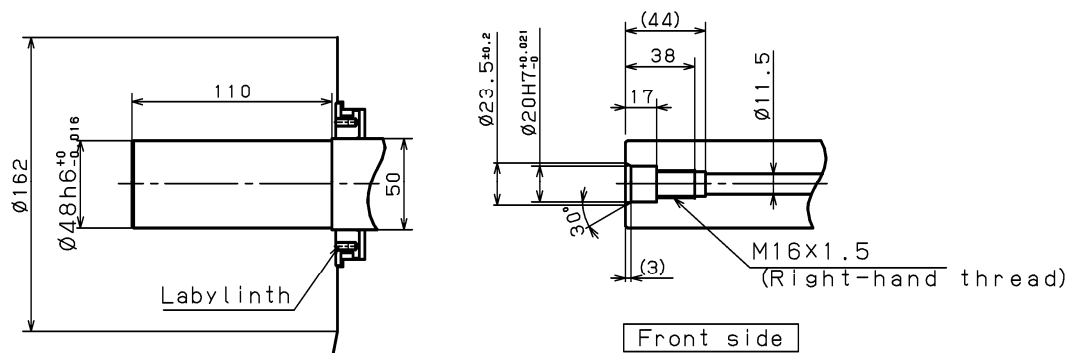
(1) Shaft figure types

The shaft figure for each motor is as given below.

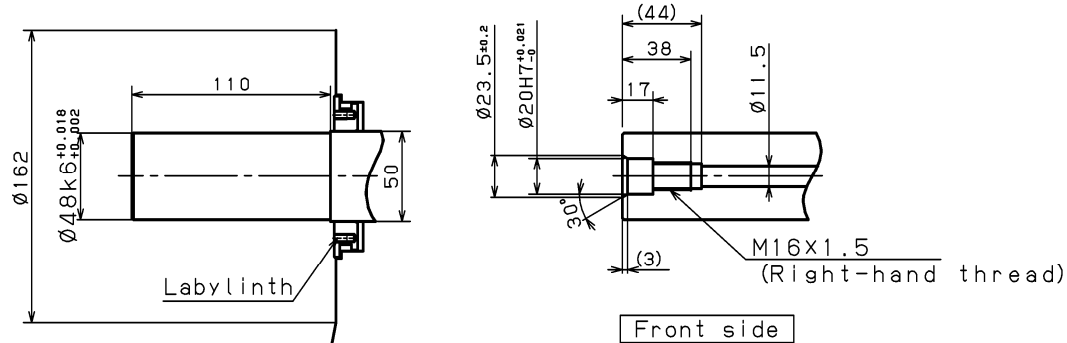
Model	Shaft without keyway	
	Shaft diameter	Details
$\alpha i I_T$ 12/12000, $\alpha i I_T$ 15/10000, $\alpha i I_T$ 22/10000, $\alpha i I_T$ 15/10000HV, $\alpha i I_T$ 22/10000HV	$\phi 48$	(2) (a)
$\alpha i I_T$ 15/15000, $\alpha i I_T$ 15/15000HV	$\phi 48$	(2) (b)

(2) Shaft details

(a) $\phi 48$ hollow shaft without keyway ($\alpha i I_T$ 12/12000, $\alpha i I_T$ 15/10000, $\alpha i I_T$ 22/10000, $\alpha i I_T$ 15/10000HV, $\alpha i I_T$ 22/10000HV)



(b) $\phi 48$ hollow shaft without keyway ($\alpha i I_T$ 15/15000, $\alpha i I_T$ 15/15000HV)



3.3.12.2 Allowable radial load

Use the motor so that the thrust load on the output shaft does not exceed the load listed in the table below.
(Only in the direction in which the motor shaft is pressed forward)

Model	Allowable thrust load
$\alpha i\Gamma$ 12/12000, $\alpha i\Gamma$ 15/10000, $\alpha i\Gamma$ 15/15000, $\alpha i\Gamma$ 22/10000, $\alpha i\Gamma$ 15/10000HV, $\alpha i\Gamma$ 15/15000HV, $\alpha i\Gamma$ 22/10000HV	127N (13kgf)

NOTE

- 1 Directly connect an $\alpha i\Gamma$ series spindle motor with the spindle so that no radial load is applied on the output shaft.

3.3.12.3 Assembling accuracy

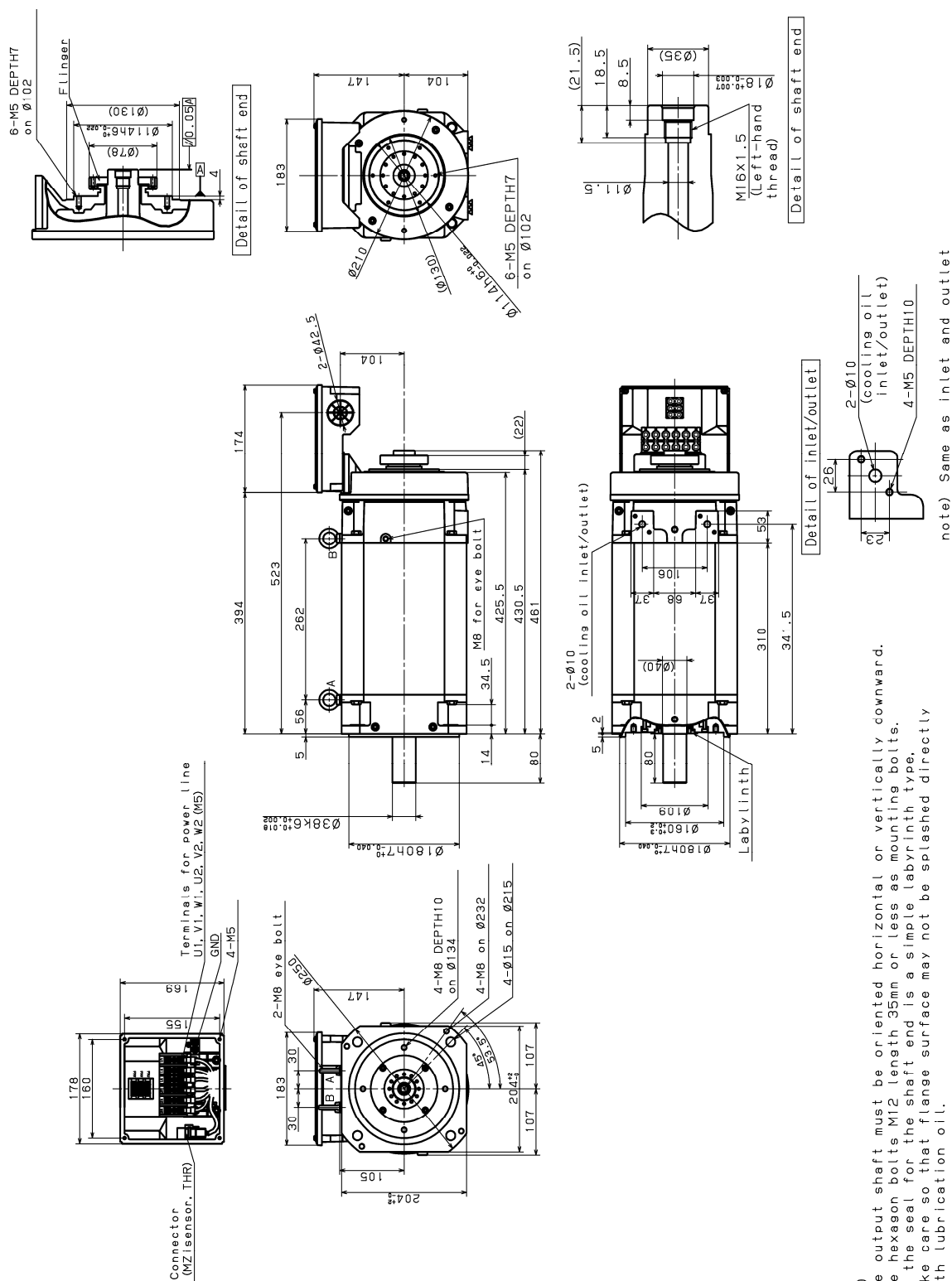
The following table lists the assembling accuracy values.

Item	Accuracy	Measuring method
Run-out at the end of the output shaft	10 μ m or less	1/2 the output shaft length
Run-out of the faucet joint for mounting the flange against the core of the shaft	30 μ m or less	10
Run-out of the flange mounting surface against the core of the shaft	40 μ m or less	10
Front shaft end through hole inlet Rear shaft end through hole inlet Run-out of socket and spigot joint	20 μ m or less	
Run-out of front shaft end face Run-out of rear shaft end face	10 μ m or less	

3.3.13 Models αiL 8/20000, αiL 8/20000HV

3.3.13.1 External dimensions

(1) Flange mounting type



(Note)

1. The output shaft must be oriented horizontal or vertically downward.
2. Use hexagon bolts M12 length 35mm or less as mounting bolts.
3. As the seal for the shaft end is a simple labyrinth type, take care so that flange surface may not be splashed directly with lubrication oil.

Shaft figure

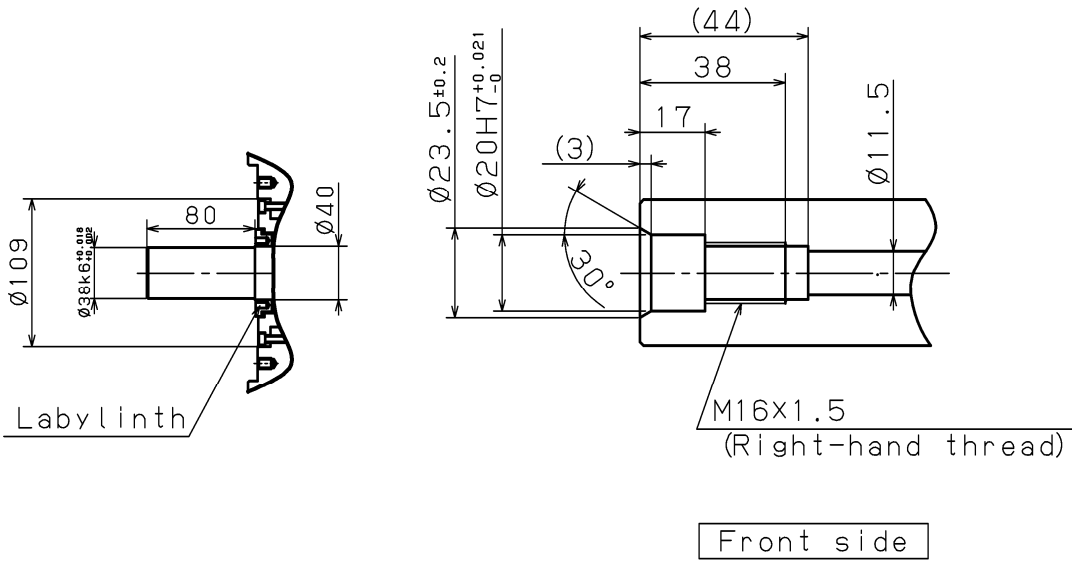
(1) Shaft figure types

The shaft figure for each motor is as given below.

Model	Shaft without keyway	
	Shaft diameter	Details
αiL 8/20000, αiL 8/20000HV	$\phi 38$	(2) (a)

(2) Shaft details

(a) $\phi 38$ Shaft without keyway



3.3.13.2 Allowable radial load

Use the motor so that the thrust load on the output shaft does not exceed the load listed in the table below.
(Only in the direction in which the motor shaft is pressed forward)

Model	Allowable thrust load
$\alpha i L$ 8/20000, $\alpha i L$ 8/20000HV	58.8N (6kgf)

NOTE

- 1 Directly connect an $\alpha i L$ series spindle motor with the spindle so that no radial load is applied on the output shaft.

3.3.13.3 Assembling accuracy

The following table lists the assembling accuracy values.

Item	Accuracy	Measuring method
Run-out at the end of the output shaft	10 μ m or less	
Run-out of the faucet joint for mounting the flange against the core of the shaft	30 μ m or less	
Run-out of the flange mounting surface against the core of the shaft	40 μ m or less	
Front shaft end through hole inlet Rear shaft end through hole inlet Run-out of socket and spigot joint	20 μ m or less	
Run-out of front shaft end face Run-out of rear shaft end face	10 μ m or less	

3.3.14.1 External dimensions

(1) Flange mounting type

[illegible]

(Note)

1. The output shaft must be oriented horizontal or vertically downward.
2. Use hexagon bolts M12, length 40mm or less as mounting bolts.
3. As the seal for the shaft end is a simple labyrinth type, take care so that the flange surface may not be splashed directly with lubrication oil.

3.3.14.2 Allowable radial load

Use the motor so that the thrust load on the output shaft does not exceed the load listed in the table below.
(Only in the direction in which the motor shaft is pressed forward)

Model	Allowable thrust load
$\alpha i L$ 15/15000, $\alpha i L$ 26/15000, $\alpha i L$ 15/15000HV, $\alpha i L$ 26/15000HV	127N (13kgf)

NOTE

- 1 Directly connect an $\alpha i T$ series spindle motor with the spindle so that no radial load is applied on the output shaft.

3.3.14.3 Assembling accuracy

The following table lists the assembling accuracy values.

Item	Accuracy	Measuring method
Run-out at the end of the output shaft	10 μ m or less	1/2 the output shaft length
Run-out of the faucet joint for mounting the flange against the core of the shaft	30 μ m or less	10
Run-out of the flange mounting surface against the core of the shaft	40 μ m or less	10
Front shaft end through hole inlet Rear shaft end through hole inlet Run-out of socket and spigot joint	20 μ m or less	
Run-out of front shaft end face Run-out of rear shaft end face	10 μ m or less	

3.4 COOLING FAN

A cooling fan is mounted to the FANUC AC spindle motor αi series (other than some models including the $\alpha i L$ series). This cooling fan is described in this section.

This section, "COOLING FAN", consists of the following.

3.4.1 Cooling Fan Specifications	189
3.4.2 Cooling Fan Connection	190

3.4.1 Cooling Fan Specifications

Fan motor current values

$\alpha i I$, $\alpha i P$, $\alpha i T$ series 200V type	50Hz				60Hz			
	Usable voltage [V]	Rated voltage [V]	Rated current [A]	Surge current [App]	Usable voltage [V]	Rated voltage [V]	Rated current [A]	Surge current [App]
$\alpha i I$ 1, $\alpha i I$ 1.5, $\alpha i T$ 1, $\alpha i T$ 1.5	160-270	200	0.09	0.40	160-270	200	0.10	0.40
$\alpha i I$ 2, $\alpha i I$ 3, $\alpha i T$ 2, $\alpha i T$ 3	170-240	200	0.09	0.40	170-240	200	0.10	0.40
$\alpha i I$ 6, $\alpha i I$ 8, $\alpha i T$ 6, $\alpha i T$ 8	170-240	200	0.13	0.58	170-240	200	0.14	0.55
$\alpha i I$ 12 to $\alpha i I$ 22, $\alpha i P$ 12 to $\alpha i P$ 22, $\alpha i T$ 12 to $\alpha i T$ 22	170-240	200	0.20	1.81	170-240	200	0.30	1.69
$\alpha i I$ 30, $\alpha i I$ 40, $\alpha i P$ 30, $\alpha i P$ 40, $\alpha i P$ 50	170-253	200	0.45	3.12	170-253	200	0.48	3.06
$\alpha i I$ 50, $\alpha i I$ 60, $\alpha i P$ 60	170-253	200	0.42	3.18	170-253	200	0.55	3.14

$\alpha i I$, $\alpha i S$, $\alpha i P$, $\alpha i T$ series 400V type	50Hz				60Hz			
	Usable voltage [V]	Rated voltage [V]	Rated current [A]	Surge current [App]	Usable voltage [V]	Rated voltage [V]	Rated current [A]	Surge current [App]
$\alpha i I$ 1HV, $\alpha i I$ 1.5HV, $\alpha i T$ 1.5HV	170-220	200	0.09	0.37	195-253	230	0.11	0.42
$\alpha i I$ 2HV, $\alpha i I$ 3HV, $\alpha i T$ 2HV, $\alpha i T$ 3HV	170-220	200	0.11	0.37	195-253	230	0.13	0.42
$\alpha i I$ 6HV, $\alpha i I$ 8HV, $\alpha i T$ 6HV, $\alpha i T$ 8HV	323-440	400	0.07	0.31	391-528	480	0.08	0.35
$\alpha i I$ 12HV to $\alpha i I$ 22HV, $\alpha i P$ 15HV, $\alpha i P$ 22HV, $\alpha i T$ 15HV, $\alpha i T$ 22HV	323-440	400	0.15	1.09	391-528	480	0.16	1.26
$\alpha i I$ 30HV, $\alpha i I$ 40HV, $\alpha i P$ 40HV, $\alpha i P$ 50HV	320-460	380	0.22	1.86	320-460	380	0.26	1.82
$\alpha i I$ 50HV, $\alpha i I$ 60HV $\alpha i P$ 60HV	320-460	400	0.22	1.84	320-460	400	0.28	1.76
$\alpha i I$ 75HV, $\alpha i I$ 100HV	320-528	400	0.30	2.06	320-528	400	0.36	2.01
$\alpha i I$ 150HV	340-480	400	0.7	6.36	340-528	400	1.2	5.76
$\alpha i S$ 2000HV	340-480	400	0.8	6.36	340-528	400	1.3	5.76

NOTE

- 1 The term "surge current" represents a peak-to-peak current that flows when the power is turned on.
- 2 The values listed below are a rough standard. They are not guaranteed.

3.4.2 Cooling Fan Connection

Cable for the fan motor

The machine tool builder is to prepare the following cable for the fan motor:

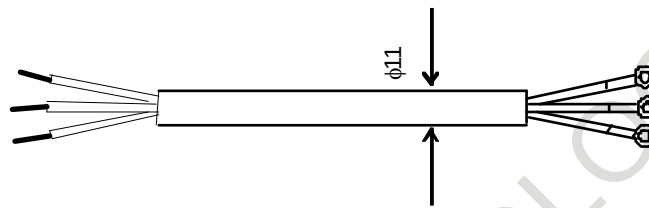
Vinyl heavy-duty power cord JIS C 3312 3-conductor

Conductor: 37/0.26 (2 mm²)

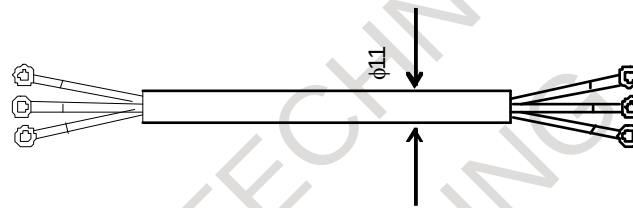
Sheath: PVCφ11

Crimp terminal:T2-4S

- (1) For a non-screw terminal block (Peel off each wire sheath on the motor side by 8 to 9 mm.)



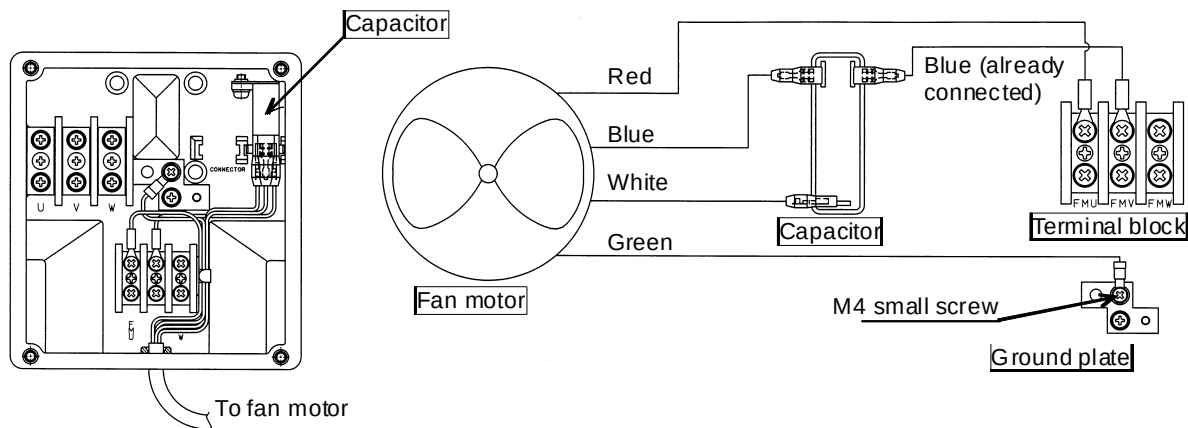
- (2) For an M4 or M3.5 screw terminal block (Attach crimp terminals to the both ends.)



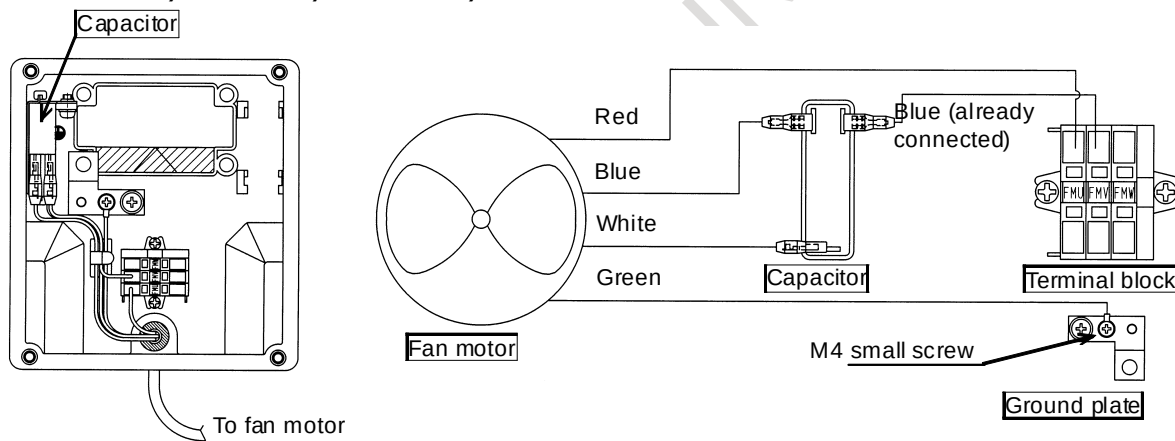
Connection of a single-phase fan motor

The input power requirements of the fan motor for αiI 1HV to αiI 3HV or αiI_T 1.5HV to αiI_T 3HV are 200/230 VAC +10% -15%, single-phase, and 50/60 Hz $\pm$ 1 Hz.

For αiI 1HV, αiI 1.5HV, and αiI_T 1.5HV



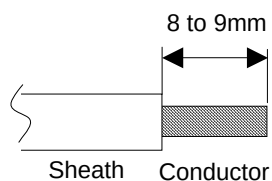
For αiI 2HV, αiI 3HV, αiI_T 2HV, and αiI_T 3HV



Method of connection to a non-screw terminal for the fan motor

Peel-off length of a wire sheath

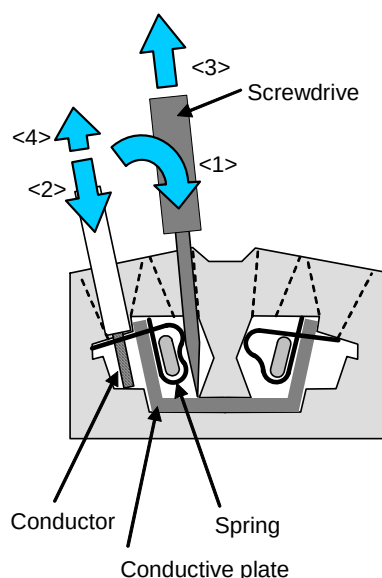
By using an appropriate tool, peel off each wire sheath by 8 to 9 mm.



Screwdriver

Use a flat-blade screwdriver with a blade size of 3.5×0.5 mm. (210-120J (standard type), 210-350J (short type) manufactured by WAGO)

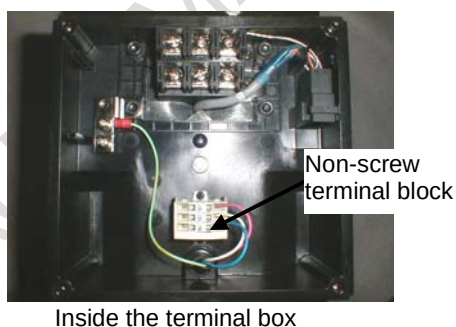
Connection procedure



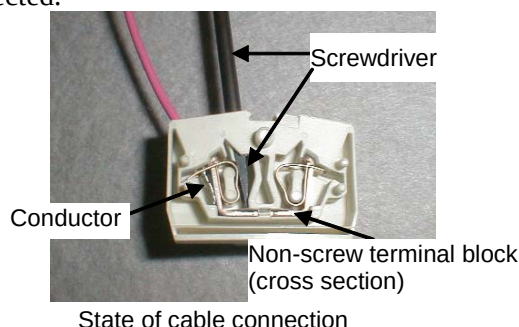
- <1> Insert the tip of the screwdriver into the screwdriver insertion slot (small rectangular hole) until the tip touches the spring. Next, while tilting the screwdriver toward the inside of the terminal block, push the screwdriver until it butts the conductive plate. In this state, the spring is opened completely, and the screwdriver is held in the terminal block. Ensure that the screwdriver is secured. Otherwise, the next step (wire insertion) cannot be conducted easily.
- <2> Check the peel-off length (8 to 9 mm), then insert the wire into the wire insertion slot (large rectangular hole) until it stops, by sliding the wire along the outer side of the hole slowly so that the conductor does not become loose. Be careful not to push a thin wire excessively.
- <3> While holding down the inserted wire by one hand, extract the screwdriver. The spring is closed to make a connection.
- <4> By slightly pulling the wire, check that the wire is connected firmly. The wire need not be pulled intensely.

Cautions

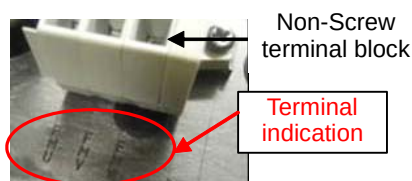
- Only one wire must be connected to one spring.
- A wire, which may be a stranded wire or single conductor, can be directly connected without performing terminal processing if its sheath is peeled off. A wire after ferrule processing can also be connected.



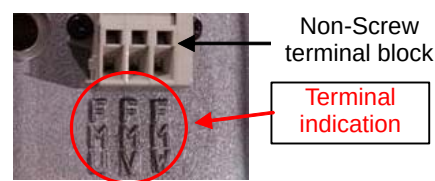
Inside the terminal box



State of cable connection



Terminal indication of Non-screw terminal block(Plastic terminal box)



Terminal indication of Non-screw terminal block(Aluminum terminal box)

※Terminal indication of the fan motor is indicated on the terminal box from the end of June, 2014.

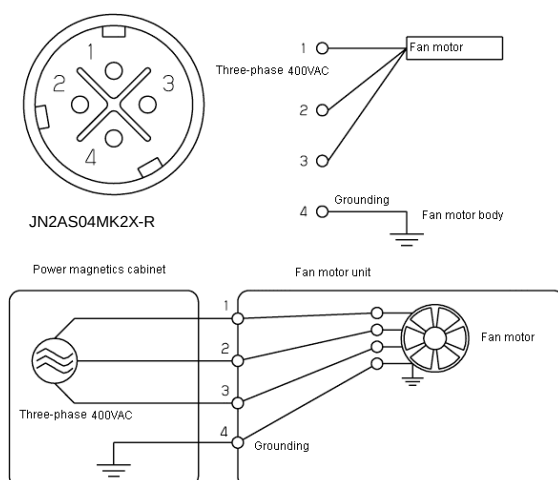
Specification of the connector for the α iS2000HV fan motor

To supply power to the α iS2000HV fan, a dedicated connector is used.

The following shows the specification of the connector on the motor side and wiring diagram.

Manufacture : Japan Aviation Electronics Industry

Manufacturer specification: JN2AS04MK2X-R

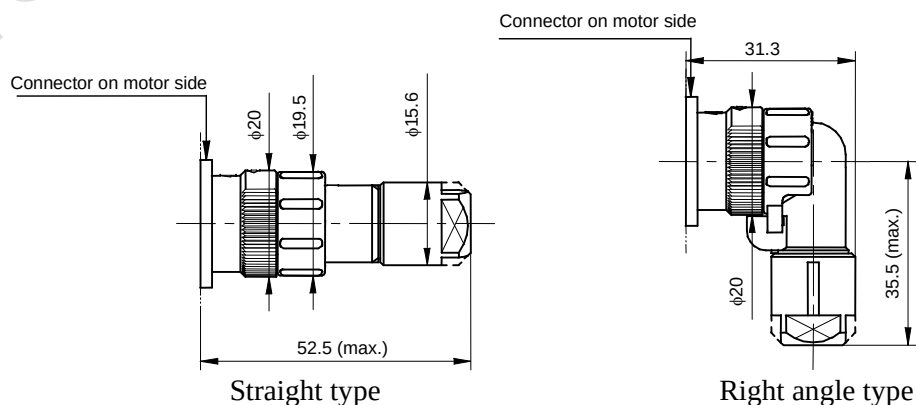


The rotation direction is clockwise (CW) when viewed from the rear side of the motor. Make connections so that the sequence of the three phases, R, S, and T, is correct. If the sequence is not correct, the fan rotates in the reverse direction. In this case, the load current of the fan motor increases, which may cause the fan to overheat and stop. When the fan rotates in the reverse direction, the direction of the wind is the same because of the radial type of fan motor, but the cooling effect deteriorates since the air volume decreases.

The following shows the specification of the connector on the cable side.

This connector is drip-proof and requires no special tool since it is a solder type connector.

Connector specifications	Straight type	JN2DS04FK2X-R (Japan Aviation Electronics Industry) A06B-6114-K214#S (FANUC specification)
	Right angle type	JN2FS04FK2X-R (Japan Aviation Electronics Industry) A06B-6114-K214#E (FANUC specification)
Compatible cable	AWG#16 or less (1.25mm ² or less) * Solder pot diameter ϕ 1.9	
Insulation external diameter	ϕ 2.7 or less	
Compatible cable O.D.	ϕ 6.5 or 8.0	
Example of applicable wire	600-V rated cable (300/500-V rated cable: IEC standard)	
Applicable wire size and cable length	0.5 mm ² or more (AWG#20)	



If the cable length is longer than or equal to 50 m, take measures such as installation of repeaters so that the sum of wire resistance (for both ways) becomes 1.5 Ω or less.

3.5 LIQUID COOLING

The FANUC AC spindle motor α iL series is liquid-cooled motors. This section describes the liquid cooling method.

Cooling conditions

Item		α iL 8/20000	α iL 15/15000	α iL 26/15000
Cooler capacity	kw (kcal/h)	2.3 to 3.5 ^{(*)1} (2000 to 3000)	2.9 to 3.5 ^{(*)1} (2500 to 3000)	2.9 to 4.1 ^{(*)1} (2500 to 3500)
Liquid coolant		1. Oil 2. Liquid additive (Example: 2% SHELL DONAX CC) ^{(*)2}		
Liquid coolant flow	L/min	10 or higher		
Liquid coolant pressure	kPa (kgf/cm ²)	490 or lower (5 or lower) (as measured at the cooling pipe inlet)		
Liquid coolant viscosity	m ² /sec (cSt)	1.0 × 10 ⁻⁵ or lower (10 or lower)		
Liquid coolant specific heat	J/g·K	1.87		
Liquid coolant density	g/cm ³	0.78		
Liquid coolant temperature	(*)3	Room temperature + 0 to +10°C (as measured at the cooling pipe inlet)		

(*)1 This cooler capacity meets the corresponding CE marking standard.

(*)2 It has been confirmed that a dilute solution with 2% of "SHELL DNAX CC" made by SHELL is usable for cooling.

(*)3 If the temperature of the liquid coolant is lower than the room temperature as measured at the cooling pipe inlet, it is likely that condensation may occur in the motor. Be sure to strictly observe the specified temperature.

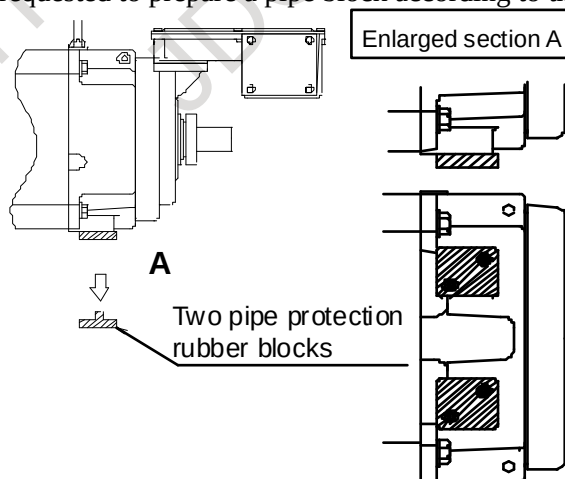
Liquid coolant piping

This motor series needs cooling based on liquid coolant.

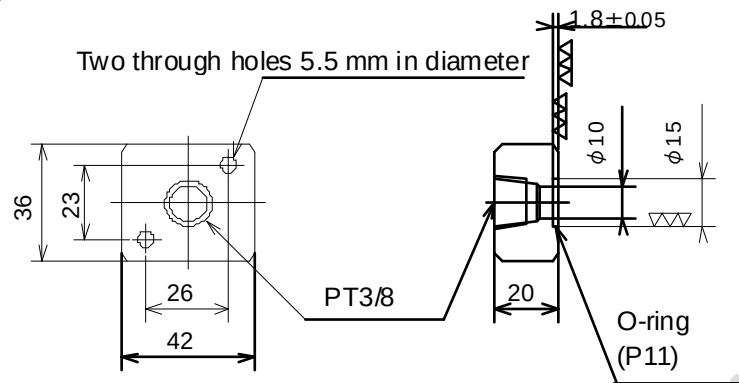
- Factory-setting

The motor comes with rubber blocks for pipe protection.

The machine tool builder is requested to prepare a pipe block according to the following drawing.



- Example of a pipe block



WARNING

To drive this motor series, be sure to cool the motor with coolant. If a motor is driven with a sealed cooling line while the coolant is remaining inside, inner pressure may increase by temperature rise, possibly causing damage to the motor. There is also a danger that motor parts may fly away.

4 BUILT-IN DETECTOR

This chapter describes detectors built into the standard spindle motor.

4.1 α iM/MZ SENSOR

The α iM/MZ sensor is a detector built into the standard spindle motor.

4.1.1 Type and Specification Method

(Omitted because they depend on which motor is specified.)

(Reference)

The α iM/MZ sensor is available in the types below.

α iM/MZ sensor types

Sensor name	One-rotation signal detection	Number of teeth
α iM sensor	No	64 λ , 128 λ , 256 λ
α iMZ sensor	Yes	

4.1.1 Outline

(Omitted because the sensor is built into the motor.)

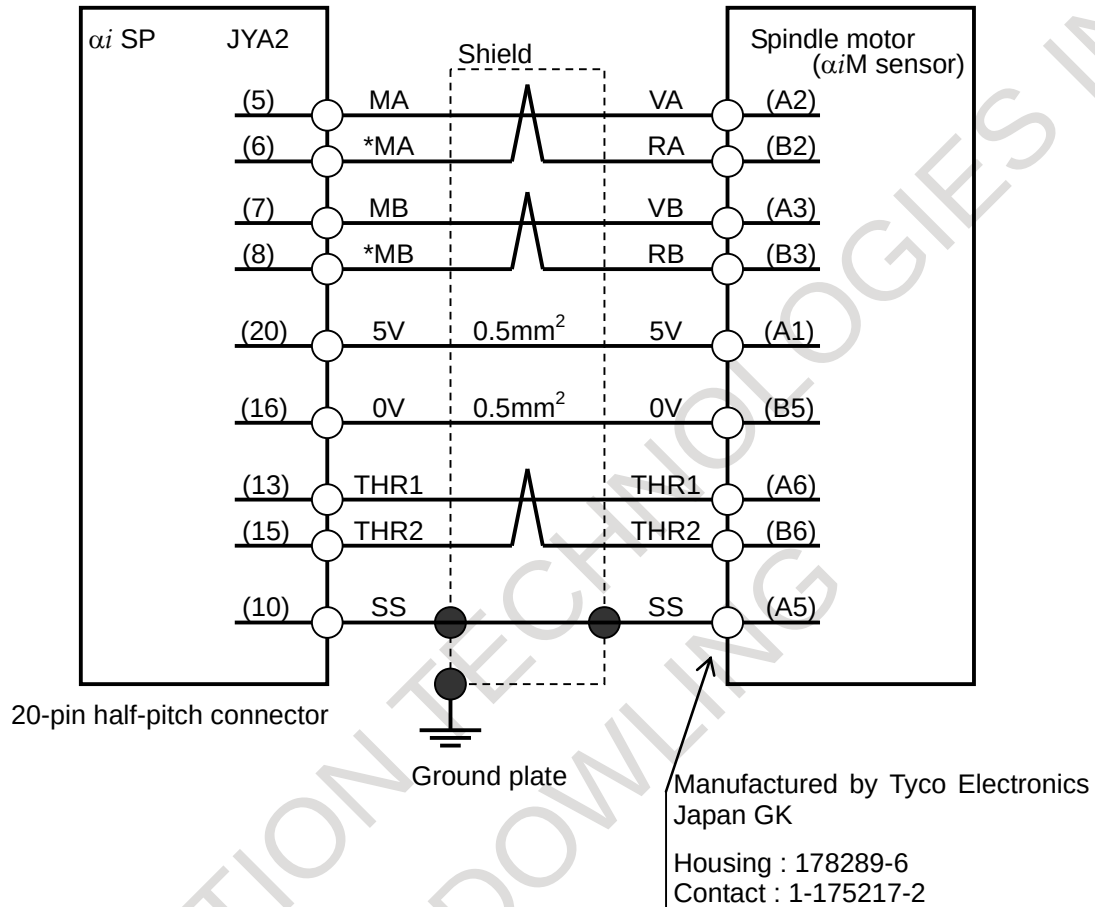
4.1.2 Connection

For the α iM sensor → Cable K14

For the α iMZ sensor → Cable K17

4.1.3 Details of Cable K14

4.1.3.1 For the spindle motor with α iM sensor (except for model α iI 0.5)



Cable specification : 6 common shielded cable (Three 0.18mm^2 twisted pairs + 0.5mm^2 wires)
Recommended cable conductor : A66L-0001-0368

NOTE

- 1 Use pins 20 and 16 of JYA2 for 5 V and 0 V to prevent the sensor from being damaged if the connector is attached in a wrong way.
- 2 For the recommended cable conductor, the maximum length is 72 m.
- 3 If using a cable conductor other than the recommended one, make sure that the sum of the 5V-0V electric wire resistances is $5\ \Omega$ or less.
- 4 For an explanation of the recommended cable and the JYA2-side connector conforming to the recommended cable, refer to the FANUC SERVO AMPLIFIER α i series DESCRIPTIONS (B-65282EN) or FANUC SERVO AMPLIFIER α i-B series DESCRIPTIONS (B-65412EN).



WARNING

If the feedback signal is connected incorrectly, an unpredictable motor operation may occur.

Connector pin assignment

JYA2

9	5V	10	SS	19	#	20	5V
7	MB	8	*MB	17	#	18	5V
5	MA	6	*MA	15	THR2	16	0V
3	OH1	4	OH2	13	THR1	14	0V
1	MZ	2	*MZ	11	#	12	0V

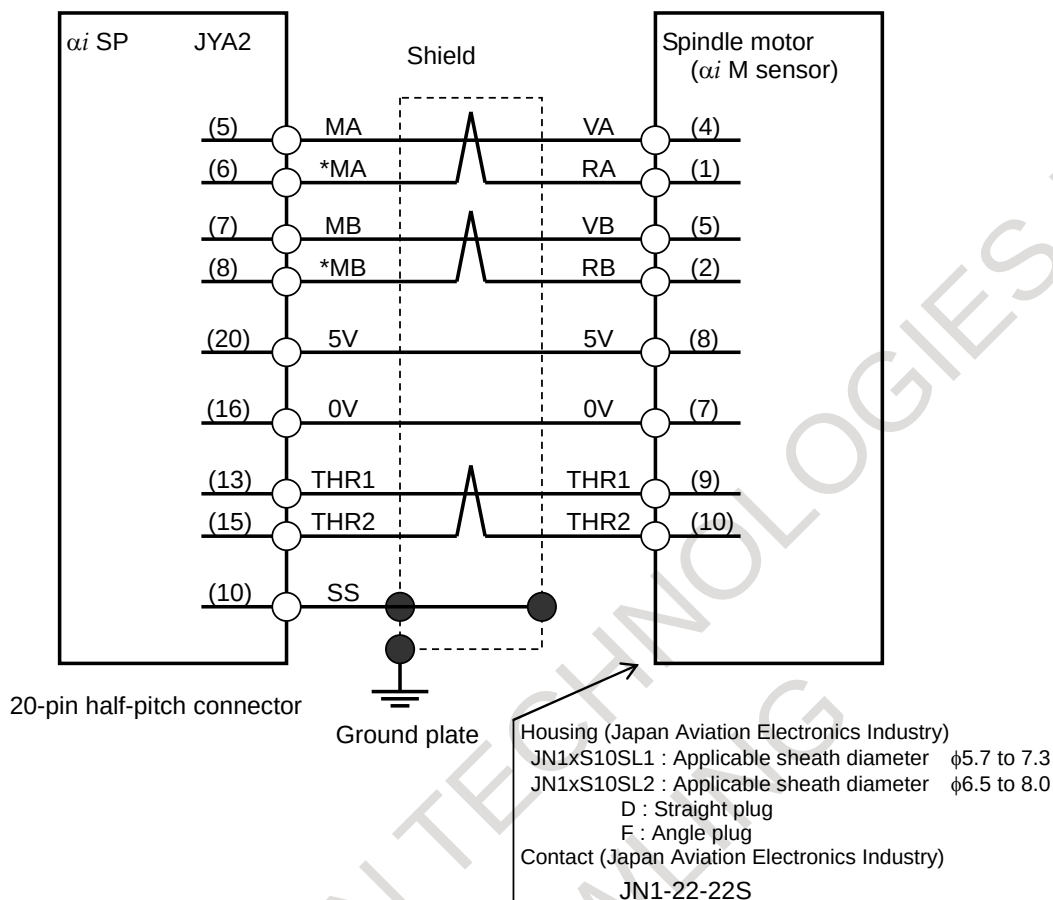
NOTE

Do not use any pin that is marked #, because they may already be in use for input/output signals for an optional PCB.

Pin arrangement of the connector (manufactured by Tyco Electronics Japan GK) on the motor side

A1	+5V	B1	
A2	VA	B2	RA
A3	VB	B3	RB
A4		B4	
A5	SS	B5	0V
A6	THR1	B6	THR2

4.1.3.2 For the spindle motor with αi M sensor (model αi I 0.5)



Cable specification : 2 common shielded cable (Three 0.2mm^2 twisted pairs + 0.3mm^2 wires)
 Recommended cable conductor : A66L-0001-0482

NOTE

- 1 Use pins 20 and 16 of JYA2 for 5 V and 0 V to prevent the sensor from being damaged if the connector is attached in a wrong way.
- 2 For the recommended cable conductor, the maximum length is 41 m.
- 3 If using a cable conductor other than the recommended one, make sure that the sum of the 5V-0V electric wire resistances is $5\ \Omega$ or less.
- 4 For an explanation of the recommended cable and the JYA2-side connector conforming to the recommended cable, refer to the FANUC SERVO AMPLIFIER αi series DESCRIPTIONS (B-65282EN) or FANUC SERVO AMPLIFIER αi -B series DESCRIPTIONS (B-65412EN).



WARNING

If the feedback signal is connected incorrectly, an unpredictable motor operation may occur.

Connector pin assignment

Pin arrangement of the connector (manufactured by Japan Aviation Electronics Industry) on the motor side

1	RA
2	RB
3	
4	VA
5	VB
6	
7	0V
8	5V
9	THR1
10	THR2

- Crimp tool specification

A06B-6114-K201#JN1E (Applicable wire diameter : AWG#21,#23,#25)

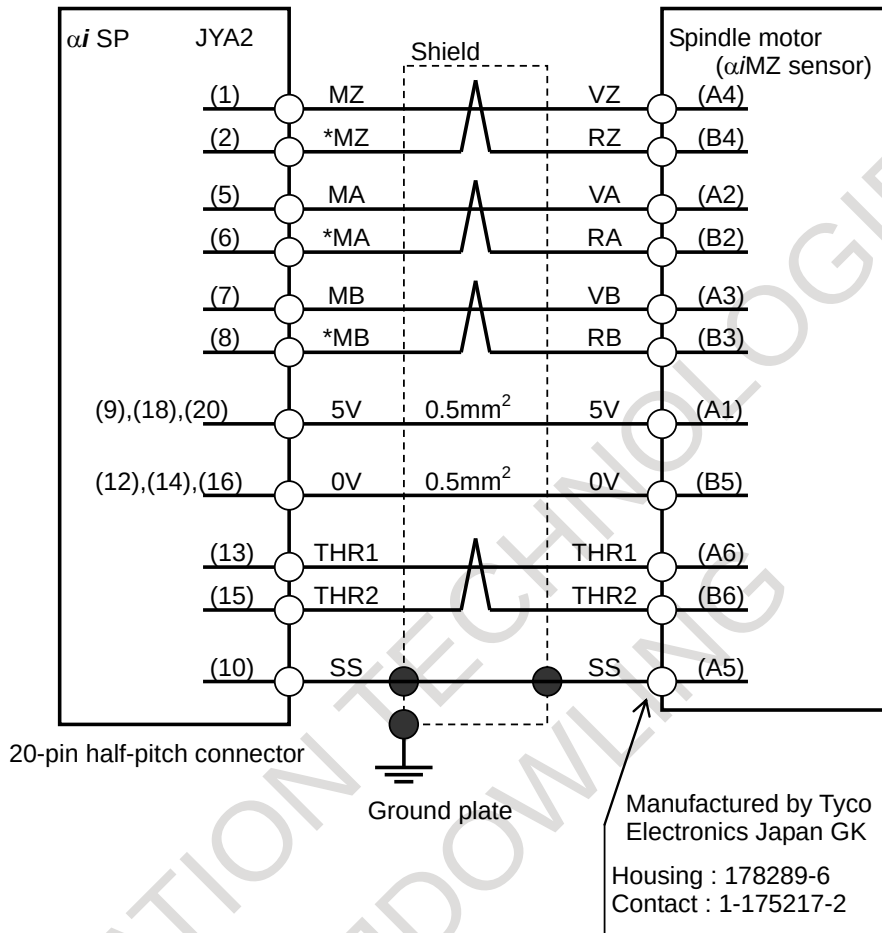
- Connector kit specification

A06B-6114-K200#S: Straight plug (including a contact)

A06B-6114-K200#E: Elbow plug (including a contact)

4.1.4 Details of cable K17

4.1.4.1 For the spindle motor with αi MZ sensor (except for model αi 0.5)



Cable specification : 6 common shielded cable (Four 0.18mm² twisted pairs + 0.5mm² wires)
Recommended cable conductor : A66L-0001-0368

NOTE

- 1 Use pins 20 and 16 of JYA2 for 5 V and 0 V to prevent the sensor from being damaged if the connector is attached in a wrong way.
- 2 For the recommended cable conductor, the maximum length is 50 m.
- 3 If using a cable conductor other than the recommended one, make sure that the sum of the 5V-0V electric wire resistances is 4 Ω or less.
- 4 For an explanation of the recommended cable and the JYA2-side connector conforming to the recommended cable, refer to the FANUC SERVO AMPLIFIER αi series DESCRIPTIONS (B-65282EN) or FANUC SERVO AMPLIFIER αi -B series DESCRIPTIONS (B-65412EN).



WARNING

If the feedback signal is connected incorrectly, an unpredictable motor operation may occur.

Connector pin assignment

JYA2

See Subsection for cable K14.

JYA4

9	5V	10	SS	19	#	20	5V
7	MB	8	*MB	17	#	18	5V
5	MA	6	*MA	15		16	0V
3	#	4	#	13		14	0V
1	MZ	2	*MZ	11	#	12	0V

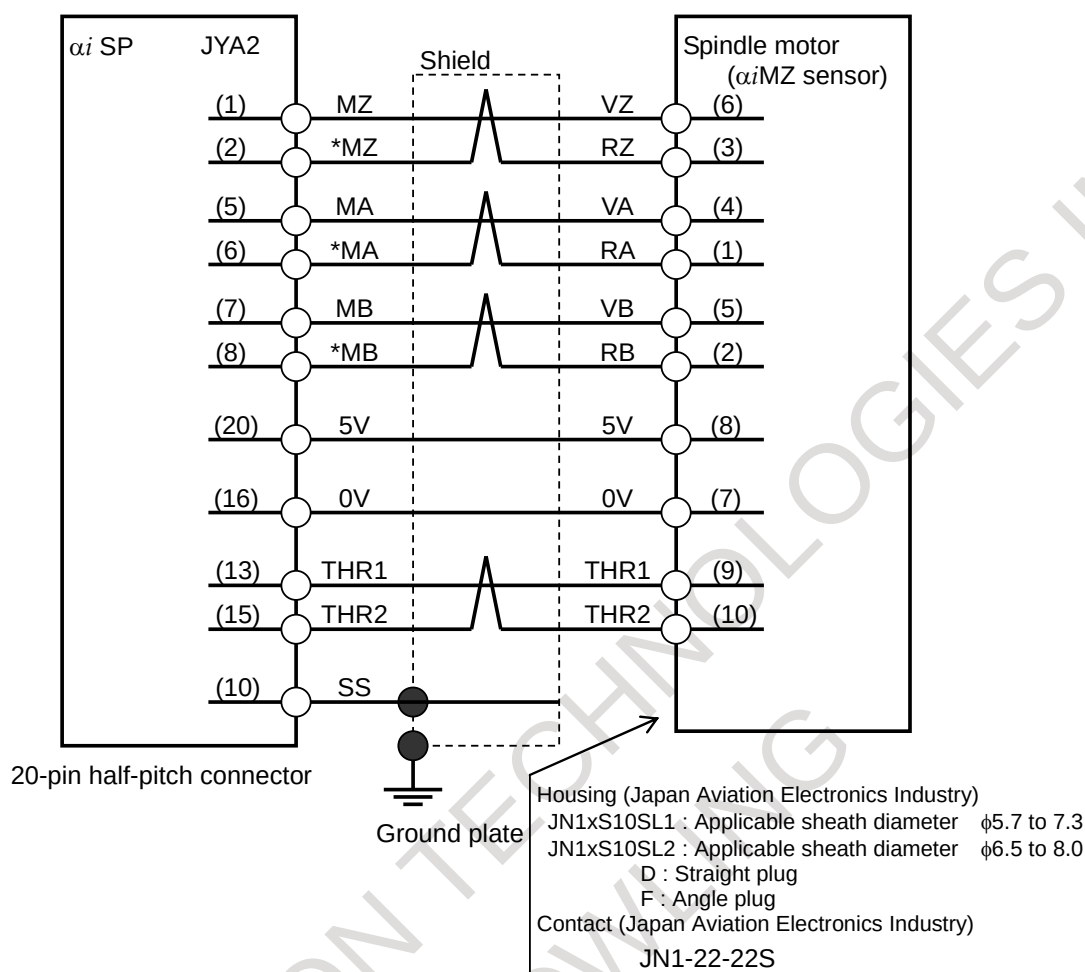
NOTE

Do not use any pin that is marked #, because they may already be in use for input/output signals for an optional PCB.

Pin arrangement of the connector (manufactured by Tyco Electronics Japan GK) on the motor side

A1	+5V	B1	
A2	VA	B2	RA
A3	VB	B3	RB
A4	VZ	B4	RZ
A5	SS	B5	0V
A6	THR1	B6	THR2

4.1.4.2 For the spindle motor with αi MZ sensor (model $\alpha i I0.5$)



Cable specification : 2 common shielded cable (Four 0.2mm^2 twisted pairs + 0.3mm^2 wires)
 Recommended cable conductor : A66L-0001-0482

NOTE

- 1 Use pins 20 and 16 of JYA2 for 5 V and 0 V to prevent the sensor from being damaged if the connector is attached in a wrong way.
- 2 For the recommended cable conductor, the maximum length is 28 m.
- 3 If using a cable conductor other than the recommended one, make sure that the sum of the 5V-0V electric wire resistances is $4\ \Omega$ or less.
- 4 For an explanation of the recommended cable and the JYA2-side connector conforming to the recommended cable, refer to the FANUC SERVO AMPLIFIER αi series DESCRIPTIONS (B-65282EN) or FANUC SERVO AMPLIFIER αi -B series DESCRIPTIONS (B-65412EN).



WARNING

If the feedback signal is connected incorrectly, an unpredictable motor operation may occur.

Connector pin assignment

Pin arrangement of the connector (manufactured by Japan Aviation Electronics Industry) on the motor side

1	RA
2	RB
3	RZ
4	VA
5	VB
6	VZ
7	0V
8	5V
9	THR1
10	THR2

- Crimp tool specification
A06B-6114-K201#JN1E (Applicable wire diameter : AWG#21,#23,#25)
- Connector kit specification
A06B-6114-K200#S: Straight plug (including a contact)
A06B-6114-K200#E: Elbow plug (including a contact)

4.2 PULSECODER

The FANUC AC spindle motor α iS series has an internal Pulsecoder (optical encoder) as a feedback detector which detects the position, speed, and others. The Pulsecoder outputs position information and alarm signal. The Pulsecoder is built into the motor, so its outline drawing is not provided in this section.

4.2.1 Pulsecoder Specification

The specification of the Pulsecoder is listed below.

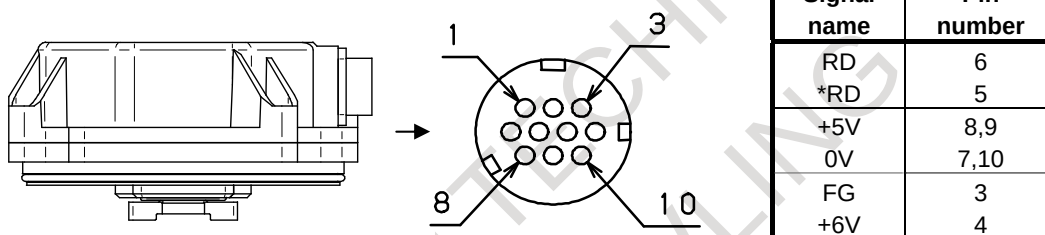
Pulsecoder type	Resolution [Division/rev]	Absolute/incremental	Applicable motor
α iA1000	1,000,000	Absolute	α iS series

4.2.2 Connecting Pulsecoder

The Pulsecoder connector specification and signals are shown below.

Manufacture: Japan Aviation Electronics Industry

Manufacturer specification: JN2AS10UL1-R



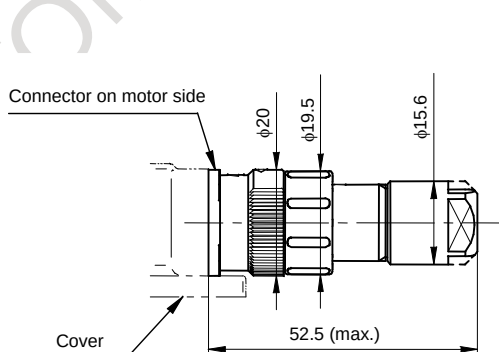
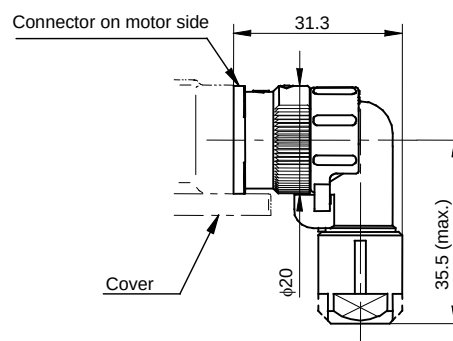
4.2.3 Cable Connector Specification

A small dedicated connector common to the α i series servo motors is used for the signal connector. This connector is drip-proof when engaged with the connector on the motor side. The following types of cable connection are available: Crimp type and solder type. The crimp type requires a dedicated crimping tool. Note that there are restrictions on the diameter of used wire, considering cable crimping and voltage drop. For the cable connecting the Pulsecoder and amplifier, refer to “FANUC SERVO AMPLIFIER α i-B series DESCRIPTIONS (B-65412EN)” or “FANUC SERVO AMPLIFIER α i series DESCRIPTIONS (B-65282EN)”.

Crimp type connector

		For signal	
Connector specifications	Straight type	JN2DS10SL1-R or JN2DS10SL2-R: Connector, JN1-22-22S: Contact (Japan Aviation Electronics Industry) A06B-6114-K204#S (FANUC specification) * Including the contact	
	Right angle type	JN2FS10SL1-R or JN2FS10SL2-R: Connector, JN1-22-22S: Contact (Japan Aviation Electronics Industry) A06B-6114-K204#E (FANUC specification) * Including the contact	
Insulation external diameter		φ1.5 or less	
Compatible cable O.D.		φ5.7 to φ7.3: JN2DS10SL1-R or JN2FS10SL1-R φ6.5 to φ8.0: JN2DS10SL2-R or JN2FS10SL2-R * With the FANUC specifications, two types of bushings: for φ5.7 to φ7.3 and for φ6.5 to φ8.0 are included.	
Used wire		Cable length: 28 m or less	Cable length: 50 m or less
	5V,0V	0.3 mm ² × 2	0.5mm ² ×2 * Use a cable of which strand configuration is 20/0.18 or 104/0.08.
	6V	0.3 mm ²	0.5mm ² * Use a cable of which strand configuration is 20/0.18 or 104/0.08.
	RD,*RD	Twisted pair of at least 0.18 mm ²	
Tool for crimping terminal		AWG#21 (0.5mm ² :20/0.18), AWG#23 (0.3mm ²), AWG#25 (0.18mm ²)	CT150-2-JN1-E (Japan Aviation Electronics Industry) A06B-6114-K201#JN1E (FANUC specification)
		AWG#20 (0.5mm ² :104/0.08), AWG#21 (0.5mm ² :20/0.18), AWG#25 (0.18mm ²)	CT150-2-JN1-D (Japan Aviation Electronics Industry) A06B-6114-K201#JN1D (FANUC specification)
Tool for pulling terminal out		ET-JN1 (Japan Aviation Electronics Industry) A06B-6114-K201#JN1R (FANUC specification)	

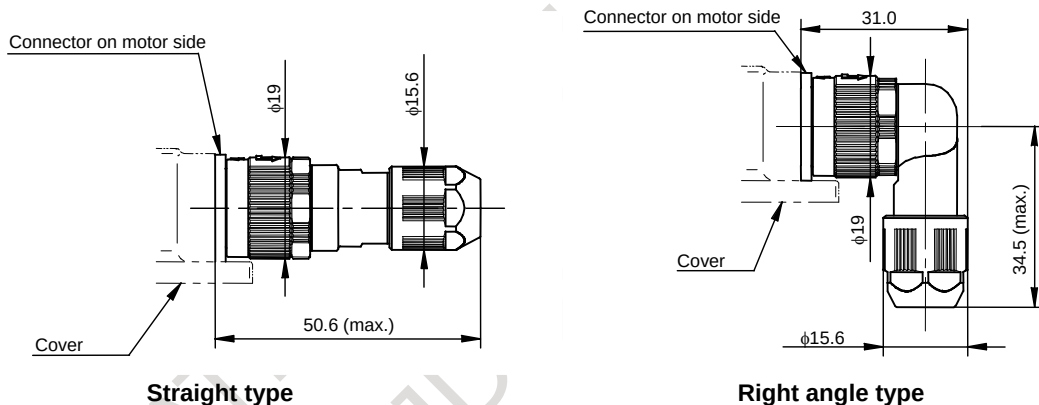
The outside dimensions of each type of connector when engaged are shown below:

**Straight type****Right angle type**

Solder type connector

		For signal	
Connector specifications	Straight type	HR34B-12WPA-10S or HR34B-12WPB-10S (Hirose Electric) A06B-6114-K205#S (FANUC specification)	
	Right angle type	HR34B-12WLPA-10S or HR34B-12WLPB-10S (Hirose Electric) A06B-6114-K205#E (FANUC specification)	
Applicable wire size		AWG#20 or less ($\phi 0.8\text{mm}$ or less)	
Compatible cable O.D.		$\phi 5.7$ to $\phi 7.3$: HR34B-12WPA-10S or HR34B-12WLPA-10S $\phi 6.5$ to $\phi 8.0$: HR34B-12WPB-10S or HR34B-12WLPB-10S * FANUC specification includes two types of bushings and end nuts for $\phi 5.7$ to $\phi 7.3$ and for $\phi 6.5$ to $\phi 8.0$.	
Used wire		Cable length: 28 m or less	Cable length: 50 m or less
	5V,0V	$0.3\text{ mm}^2 \times 2$	$0.5\text{ mm}^2 \times 2$
	6V	0.3 mm^2	0.5 mm^2
	RD,*RD	Twisted pair of at least 0.18 mm^2	

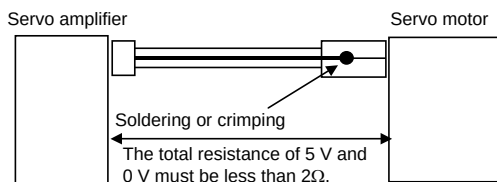
The outside dimensions of each type of connector when engaged are shown below:



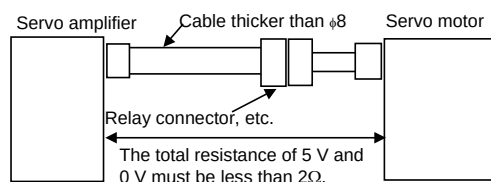
⚠ CAUTION

- 1 In case that the cable is prepared by MTB, total resistance of 5V and 0V must be less than 2Ω .
- 2 Pulsecoder side connector can accept maximum 0.5 mm^2 (wire construction 20/0.18 or 104/0.08, diameter $\phi 1.5$ or less) wire and sheath diameter is $\phi 5.7$ to $\phi 8.0$. In case of using thicker wire or cable, take measures described below.

Case 1] Cable conductor exceeds 0.5 mm^2 .



[Case 2] Sheath diameter of exceeds $\phi 8$.

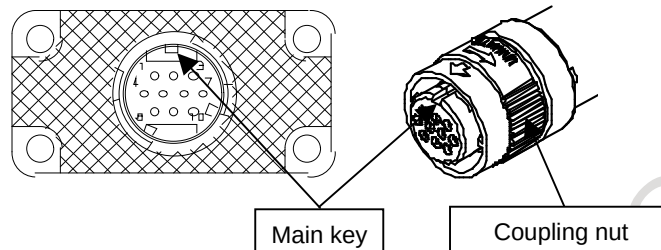


4.2.4 Procedure for Engaging Feedback cable connectors

Engage the feedback cable connectors according to the procedure described below, and check that they are engaged securely.

1 Checking the mating surfaces and the key direction

Check that the mating surfaces are free from any substance such as foreign particles or oil.

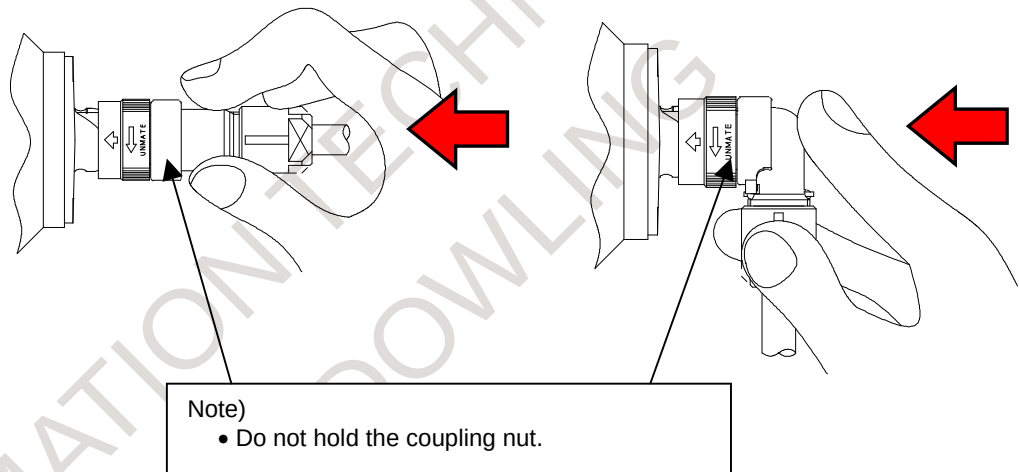


2 Engaging the connectors

Hold the connector at the position shown in the figure, insert it straightforward until it snaps into place.

Straight type

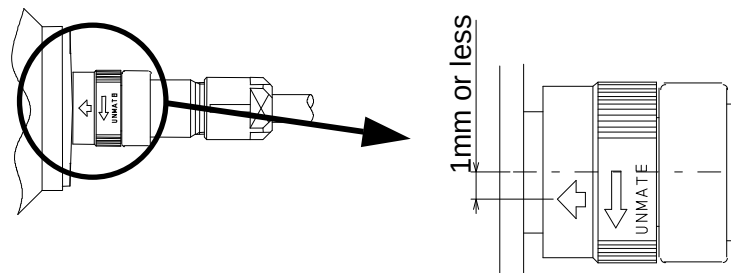
Right angle type



3 Checking the engaged status

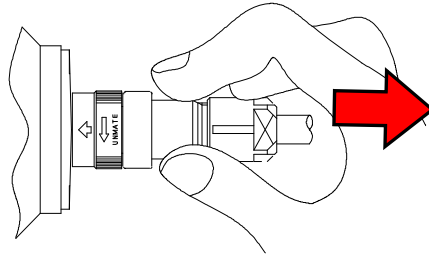
<1> Check that the arrow on the connector is positioned at the center as shown in the figure below.

If the arrow is not at the center, turn the coupling nut by hand so that the arrow is at the correct position.

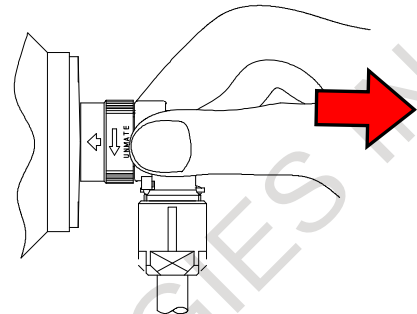


- <2> Hold the connector at the position shown in the following figure, and check that the connector does not come off when it is pulled lightly.

Straight type



Right angle type



Note)

- Do not pull the cable.
- Pull the connector straightforward.

5 DYNAMIC BRAKE

The FANUC AC spindle motor α iS series is synchronous motors using permanent magnets. When an emergency stop, power failure, or alarm occurs, this motor does not enter the free running state, but the motor power leads are automatically placed in the short circuit state, and the motor can be stopped by a dynamic brake. The use of the dynamic brake can greatly reduce the spindle stopping time as compared with that when the motor is stopped only with mechanical friction.

When a dynamic brake is used, high braking torque is generated. Since the braking torque and braking force are transmitted to the machine according to the load inertia ratio, the machine and motor must be strong enough to withstand them.

Even when no dynamic brake is used, the spindle stopping time of a motor using permanent magnets is shorter than that of a general induction motor since a braking effect is obtained with iron loss generated in the free running state.

For the wiring method, refer to the FANUC SERVO AMPLIFIER α i-B series DESCRIPTIONS (B-65412EN).

5.1 STANDARD STOPPING TIME

This section describes standard times required for stopping a motor if an emergency stop, power failure, or alarm occurs when a dynamic brake is used and when it is not used. For each case, the following main elements affect the stopping time:

With a dynamic brake: Dynamic braking torque

With no dynamic brake: Braking effect of iron loss and deceleration torque by mechanical friction

The standard stopping times are as follows when the motor is running alone.

With a dynamic brake (when the motor is running alone)

α iS2000/2000HV: 0.6sec

With no dynamic brake (when the motor is running alone)

α iS2000/2000HV: 30sec

* The motor stops within a timer shorter than that for a general induction motor because of the braking effect of iron loss specific to synchronous motors.

The above values indicate the time required for stopping the motor running at the maximum rotation speed. When there is load inertia, the following equation can be used to calculate the standard stopping time:

JM: Motor inertia (kg m^2)

JL: Load inertia (kgm^2)

ts: Stopping time (sec)

$$ts = (\text{stopping time when motor is running alone}) \times (JM + JL) \div JM$$

The actual stopping time differs depending on mechanical friction and deceleration start speed.

5.5 NOTES ON USING A DYNAMIC BRAKE

With a dynamic brake, the motor power leads are placed in the short circuit state, the mechanical rotational energy is converted into electric energy, and the energy is consumed as heat by resistors. As a device which automatically places the power leads in the short circuit state, a dynamic brake module is required.

Dynamic brake module specification: A06B-6069-H300

For one servo amplifier, one dynamic brake module is required.

Since the mechanical rotational and kinetic energy are mainly consumed as heat by the resistors in the dynamic brake module with a dynamic brake, it must be used under the resistance of the resistors. For this reason, there are restrictions on load inertia and used rotation speed. When the motor is to run at up to the maximum rotation speed, the load inertia ratio (ratio of the load inertia value to the motor inertia value) must not exceed the following values:

$\alpha iS2000/2000HV$: 8.5 times

When the motor is not to run at up to the maximum rotation speed, a dynamic brake can be used with a larger load inertia ratio. In this case, the following equation must be satisfied:

JM: Motor inertia (kg m^2)

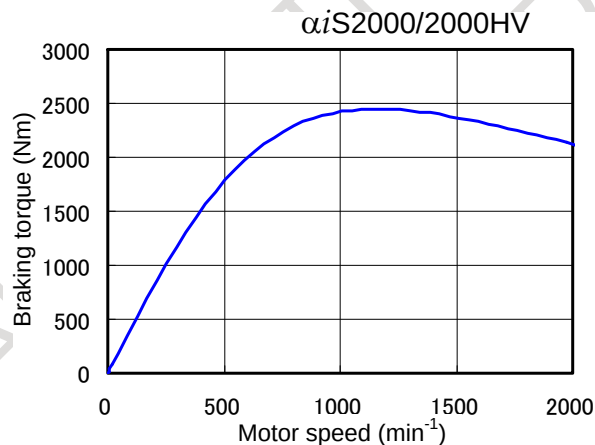
JL: Load inertia (kg m^2)

V: Maximum rotation speed (min^{-1})

When $\alpha iS2000/2000HV$ is used: $1/2 \times (JM+JL) \times (V/60 \times 2\pi)^2 < 408,000 \text{ (J)}$

5.6 DYNAMIC BRAKING TORQUE

The following graphs show the relationships between the speed and braking torque when a dynamic brake is used. The machine must be strong enough to withstand the braking torque.



The deceleration torque machine through a coupling or the like differs depending on the load inertia, mechanical friction, and other factors since the above torque is also used for decelerating the motor rotor. The torque transmitted to the machine can be calculated using the following equation:

T_{DB} : Dynamic braking torque

T_F : Friction torque

Torque transmitted to the machine $= JL/(JM+JL) \times T_{DB} - JM/(JM+JL) \times T_F$

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II. CONFIGURATION AND SELECTION

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1 CONDITIONS FOR APPROVAL RELATED TO THE IEC60034 STANDARD

This Subsection describes the conditions the following FANUC AC spindle motor αi series must clear before they can be approved for the IEC60034 standard. For details on EMC compliance authorization, refer to the separate manual "Compliance with EMC Directives."

This chapter, "CONDITIONS FOR APPROVAL RELATED TO THE IEC60034 STANDARD", consists of the following sections:

1.1 TYPES OF MOTORS TO BE APPROVED	215
1.2 APPROVED SPECIFICATIONS	218

1.1 TYPES OF MOTORS TO BE APPROVED

The following FANUC AC Spindle Motor αi series can comply with the IEC60034 standard if you follow the descriptions in this chapter.

The TUV mark is printed on the nameplate of a motor approved for the standard.

The following tables list the standard approval status of each motor.

αi series – 200-V type

Model name	Motor specification number	Standard approval status
αi 0.5/10000	A06B-1401-B1xx#0Px2	Preparing for approval
αi 1/10000	A06B-1402-Bxxx#0Pxx	Preparing for approval
αi 1/15000	A06B-1422-B123	Approved
αi 1/24000	A06B-1420-B123#FS21	Preparing for approval
αi 1.5/10000	A06B-1403-Bxxx#0Pxx	Preparing for approval
αi 1.5/20000	A06B-1423-B123#0S21	Preparing for approval
αi 2/10000	A06B-1404-Bxxx#0Pxx	Preparing for approval
αi 2/20000	A06B-1424-B123#0S21	Preparing for approval
αi 3/10000	A06B-1405-Bxxx#0Pxx	Preparing for approval
αi 3/12000	A06B-1425-B123#0S21	Preparing for approval
αi 3/15000	A06B-1419-B123#0S21	Preparing for approval
αi 6/10000	A06B-1406-Bxxx#0Pxx	Preparing for approval
αi 6/12000	A06B-1426-B1xx#0Px1	Preparing for approval
αi 6/15000	A06B-1433-B123#0S21	Preparing for approval
αi 8/8000	A06B-1407-Bxxx#0Pxx	Preparing for approval
αi 8/10000	A06B-1427-B1xx#0Px1	Preparing for approval
αi 8/12000	A06B-1427-B13x#0R21	Preparing for approval
αi 12/8000	A06B-1408-Bxxx#0Pxx	Preparing for approval
αi 12/12000	A06B-1428-B12x#0P21	Preparing for approval
αi 15/8000	A06B-1409-Bxxx#0Pxx	Preparing for approval
αi 15/12000	A06B-1429-B12x#0P21	Preparing for approval
αi 18/8000	A06B-1410-Bxxx#0Pxx	Preparing for approval
αi 18/12000	A06B-1430-B12x#0P21	Preparing for approval
αi 22/8000	A06B-1411-Bxxx#0Pxx	Preparing for approval
αi 22/12000	A06B-1431-B12x#0P21	Preparing for approval
αi 30/7000	A06B-1412-Bxxx#0Pxx	Preparing for approval
αi 40/7000	A06B-1413-Bxxx#0Pxx	Preparing for approval
αi 50/5000	A06B-1414-Bxxx#0Pxx	Preparing for approval

1. CONDITIONS FOR
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***αiI* series – 400-V type**

Model name	Motor specification number	Standard approval status
<i>αiI</i> 0.5/10000HV	A06B-1501-B1xx#xxxx	Approved
<i>αiI</i> 1/10000HV	A06B-1502-Bxxx#xxxx	Approved
<i>αiI</i> 1.5/10000HV	A06B-1503-Bxxx#xxx	Approved
<i>αiI</i> 2/10000HV	A06B-1504-Bxxx#xxx	Approved
<i>αiI</i> 3/10000HV	A06B-1505-Bxxx#xxx	Approved
<i>αiI</i> 6/10000HV	A06B-1506-Bxxx#0Pxx	Preparing for approval
<i>αiI</i> 8/8000HV	A06B-1507-Bxxx#0Pxx	Preparing for approval
<i>αiI</i> 12/8000HV	A06B-1508-Bxxx#0Pxx	Preparing for approval
<i>αiI</i> 15/8000HV	A06B-1509-Bxxx#0Pxx	Preparing for approval
<i>αiI</i> 22/8000HV	A06B-1511-Bxxx#0Pxx	Preparing for approval
<i>αiI</i> 30/7000HV	A06B-1512-Bxxx#xxxx	Approved
<i>αiI</i> 40/7000HV	A06B-1513-Bxxx#xxxx	Approved
<i>αiI</i> 50/5000HV	A06B-1514-Bxxx#xxxx	Approved
<i>αiI</i> 60/5000HV	A06B-1515-Bxxx#xxxx	Approved
<i>αiI</i> 75/5000HV	A06B-1516-B8x3	Approved
<i>αiI</i> 100/5000HV	A06B-1518-B90x#0302	Preparing for approval
<i>αiI</i> 150/5000HV	A06B-1532-B8x3	Approved

***αiS* series**

Model name	Motor specification number	Standard approval status
<i>αiS</i> 2000/2000HV	A06B-0091-B140#0058	Approved

***αiIP* series – 200-V type**

Model name	Motor specification number	Standard approval status
<i>αiIP</i> 12/6000	A06B-1448-Bxxx#0Pxx	Preparing for approval
<i>αiIP</i> 15/6000	A06B-1449-Bxxx#0Pxx	Preparing for approval
<i>αiIP</i> 18/6000	A06B-1456-Bxxx#0Pxx	Preparing for approval
<i>αiIP</i> 22/6000	A06B-1451-Bxxx#0Pxx	Preparing for approval
<i>αiIP</i> 30/6000	A06B-1452-Bxxx#0Pxx	Preparing for approval
<i>αiIP</i> 40/6000	A06B-1453-Bxxx#0Pxx	Preparing for approval
<i>αiIP</i> 50/6000	A06B-1454-Bxxx#0Pxx	Preparing for approval
<i>αiIP</i> 60/6000	A06B-1455-Bxxx#0Pxx	Preparing for approval

***αiIP* series – 400-V type**

Model name	Motor specification number	Standard approval status
<i>αiIP</i> 15/6000HV	A06B-1549-Bxxx#00xx	Approved
<i>αiIP</i> 22/6000HV	A06B-1551-Bxxx#00xx	Approved
<i>αiIP</i> 40/6000HV	A06B-1553-Bxxx#00xx	Approved
<i>αiIP</i> 50/6000HV	A06B-1554-Bxxx#00xx	Approved
<i>αiIP</i> 60/6000HV	A06B-1555-Bxxx#01xx	Approved

$\alpha i\Gamma$ series – 200-V type

Model name	Motor specification number	Standard approval status
$\alpha i\Gamma$ 1/24000	A06B-1460-B123#FS21	Preparing for approval
$\alpha i\Gamma$ 1.5/20000	A06B-1463-B123#0S21	Preparing for approval
$\alpha i\Gamma$ 2/20000	A06B-1464-B123#0S21	Preparing for approval
$\alpha i\Gamma$ 3/12000	A06B-1465-B123#0S21	Preparing for approval
$\alpha i\Gamma$ 3/15000	A06B-1475-B133#0U21	Preparing for approval
$\alpha i\Gamma$ 6/12000	A06B-1466-B123#0P21	Preparing for approval
$\alpha i\Gamma$ 8/12000	A06B-1467-B123#0P21	Preparing for approval
$\alpha i\Gamma$ 8/15000	A06B-1477-B133#0121	Approved
$\alpha i\Gamma$ 12/12000	A06B-1468-B133#0R21	Preparing for approval
$\alpha i\Gamma$ 15/10000	A06B-1469-B123#0P21	Preparing for approval
$\alpha i\Gamma$ 15/15000	A06B-1479-B133#0P21	Preparing for approval
$\alpha i\Gamma$ 22/10000	A06B-1471-B123#0P21	Preparing for approval

 $\alpha i\Gamma$ series – 400-V type

Model name	Motor specification number	Standard approval status
$\alpha i\Gamma$ 1.5/20000HV	A06B-1563-B123#0121	Approved
$\alpha i\Gamma$ 2/20000HV	A06B-1564-B123#0121	Approved
$\alpha i\Gamma$ 3/12000HV	A06B-1565-B123#0021	Approved
$\alpha i\Gamma$ 6/12000HV	A06B-1566-B123#0021	Approved
$\alpha i\Gamma$ 8/12000HV	A06B-1567-B123#0021	Approved
$\alpha i\Gamma$ 8/15000HV	A06B-1577-B133#0121	Approved
$\alpha i\Gamma$ 15/10000HV	A06B-1569-B123#0021	Approved
$\alpha i\Gamma$ 15/15000HV	A06B-1579-B133#0221	Approved
$\alpha i\Gamma$ 22/10000HV	A06B-1571-B123#0021	Approved

 $\alpha i\Lambda$ series – 200-V type

Model name	Motor specification number	Standard approval status
$\alpha i\Lambda$ 8/20000	A06B-1497-B145#0N21	Preparing for approval
$\alpha i\Lambda$ 15/15000	A06B-1495-B135#0121	Preparing for approval
$\alpha i\Lambda$ 26/15000	A06B-1494-B135#0121	Preparing for approval

 $\alpha i\Lambda$ series – 400-V type

Model name	Motor specification number	Standard approval status
$\alpha i\Lambda$ 8/20000HV	A06B-1597-B145#0N21	Preparing for approval
$\alpha i\Lambda$ 15/15000HV	A06B-1595-B135#0121	Preparing for approval
$\alpha i\Lambda$ 26/15000HV	A06B-1594-B135#0121	Preparing for approval

1.2 APPROVED SPECIFICATIONS

The following specifications are approved for the IEC60034 standard.

(1) Motor speed (IEC60034-1)

The "allowable maximum speed" are given on the data sheet in Chapter 3, "MOTOR TYPES" in Part II. The allowable maximum speeds are specified in such a way that the approval conditions of the IEC60034-1 standard, as they relate to rotational speed, are satisfied.

(2) Output (IEC60034-1)

The "rated output" available with a motor is given on the data sheet in Chapter 3, "MOTOR TYPES" in Part II. This rated output is guaranteed under the insulation class H, as the continuous output (S1), short time use rating (S2), and repeated use rating (S3) in the rated speed range.

(3) Protection type (IEC60034-5)

According to IEC 60034-5, the models equipped with an oil seal comply with the degree of protection IP54, and the other models comply with IP40. Even for the models complying with IP40, their motor main body excluding the output shaft end (with a simple labyrinth for the high-speed models or with no seal for the foot mounting type models) complies with IP54.

IP5□ : Machine protected from dust

- Ingress of dust is not totally prevented, but dust does not enter in sufficient quantity to interfere with satisfactory operation of the motor.

IP4□ : Machine protected from introduction of solid foreign matter over 1.0 mm

- Electric cables and wires with a diameter or thickness greater than 1.0 mm do not enter.

IP□4 : Machine protected from water spray

- Water sprayed on the motor from any direction will have no harmful effect.

IP□0 : Machine not protected

- No special protection is provided to prevent ingress of water.

Note that these models satisfy the provisions for short-time water immersion, and do not guarantee their water-proof performance in an atmosphere in which cutting fluid is applied directly to the motor.

(4) Cooling method (IEC60034-6)

The cooling method of the motor is as given below.

Motor model	IC code	Method
$\alpha i l$ 0.5/1000, $\alpha i l$ 0.5/10000HV	IC0A0	Totally closed and naturally cooled
$\alpha i l$ 1 to $\alpha i l$ 50, $\alpha i l$ 1HV to $\alpha i l$ 150HV, $\alpha i S$ 2000/2000HV, $\alpha i l_P$ 12 to $\alpha i l_P$ 60, $\alpha i l_P$ 15HV to $\alpha i l_P$ 60HV, $\alpha i l_T$ 1.5 to $\alpha i l_T$ 22, $\alpha i l_T$ 1.5HV to $\alpha i l_T$ 22HV	IC0A6	Air cooling with a fully closed, external independent fan
$\alpha i l_L$ 8 to $\alpha i l_L$ 26, $\alpha i l_L$ 8HV to $\alpha i l_L$ 26HV	IC9U7A7	Liquid-cooling method

(5) Mounting method (IEC60034-7)

$\alpha i l$ 0.5 to $\alpha i l$ 50, $\alpha i l$ 0.5HV to $\alpha i l$ 150HV, $\alpha i l_P$ 12 to $\alpha i l_P$ 60, and $\alpha i l_P$ 15HV to $\alpha i l_P$ 60HV can be mounted as follows:

IMB5: Flange mounting with the shaft facing sideways(from the rear)

IMV1: Flange mounting with the shaft facing downward(from the rear)

IMB6: Shaft facing sideways, foot mounting on the left

IMB7: Shaft facing sideways, foot mounting on the right

IMB8: Shaft facing sideways, foot mounting on the top

IMV5: Shaft facing downward, foot mounting

Use a motor with the output axis being between 45° upward and vertical downward.

$\alpha i I$ 1/15000, $\alpha i I$ 1.5/20000, and $\alpha i I$ 2/20000 can be mounted as follows:

IMB5: Flange mounting with the shaft facing sideways(from the rear)

IMV1: Flange mounting with the shaft facing downward(from the rear)

Use a motor with the output shaft being horizontal or vertical downward.

$\alpha i S$ 2000/2000HV can be mounted as follows. For a mounting method other than that below, consult FANUC.

IMB3: Shaft facing sideways, foot mounting on the bottom

$\alpha i I_T$ 1 to $\alpha i I_T$ 22, $\alpha i I_T$ 1.5HV to $\alpha i I_T$ 22HV, $\alpha i L$ 8 to $\alpha i L$ 26, and $\alpha i L$ 8HV to $\alpha i L$ 26HV can be mounted as follows:

IMB5: Flange mounting with the shaft facing sideways(from the rear)

IMV1: Flange mounting with the shaft facing downward(from the rear)

Use a motor with the output shaft being horizontal or vertical downward.

(6) Heat protection (IEC60034-11)

The spindle motor conforms to the heat protection standard (IEC60034-11) by using an overheat protection circuit with temperature detection (overheat alarm).

(7) Grounding (IEC60204-1)

The spindle motor has been confirmed to conform to the safety standard IEC60204-1 by verifying the continuity between the ground terminal plate of the conductive plate for screwing and the housing inside the terminal box in accordance with the standard.

The ground wire to be connected to the motor must have a diameter not smaller than the diameter of each phase wire.

(8) Remarks

For details on EMC compliance authorization, refer to the separate manual "Compliance with EMC Directives"

Mechanical and electrical safety of each motor should be evaluated after the motor is mounted on the machine.

2 MOTOR TYPES

2.1 SELECTING MOTOR SPECIFICATIONS ACCORDING TO THE SPINDLE STRUCTURE

Each model includes the types of motors listed below, and the user can make an optimal choice according to the spindle driving structure.

See the chapter 1, "ORDERING SPECIFICATION NUMBER" in the Part I or Order List (B-65271EN) for available motors.

Item	Type	Use	Remarks
Mounting types	Flange mounting type	Connected to spindle via a gear Directly connected to a spindle Connected to spindle via a belt	The motor can be positioned accurately.
	Foot mounting type	Connected to spindle via a belt	
Built-in detector	αi M sensor	When connected to the spindle via a belt or gear at a deceleration ratio other than 1:1 (When the spindle has a sensor)	For a detailed explanation, refer to the following descriptions: FANUC SERVO AMPLIFIER αi -B series DESCRIPTIONS (B-65412EN)
	αi MZ sensor	When connected to the spindle via a belt, gear, or coupling on a 1:1 basis (When the spindle has no sensor)	
Shaft figure	With no key	Connected to a pulley	A shaft with no key is used as standard to facilitate pulley and gear balance correction and acceleration/deceleration operation. When a shaft with a key is needed, contact your FANUC sales representative.
Cooling air exhaust direction	Rearward exhaust (Exhaust from side opposite the output shaft)	When the machine is positioned at the output shaft side	Direct the exhaust out and away from the machine.
	Forward exhaust (Exhaust from the output shaft side)	When the machine is positioned at the side opposite the output shaft	
Output shaft seal	Oil seal	Gear connection, direct connection, and belt driving	Used in flange mounting type standard-speed models.
	Labyrinth	Belt driving and direct connection (Only when no lubricant or coolant splashes onto the flange surface of the motor)	Used in flange mounting type high-speed models. (Some high-speed models have an oil seal.)
	No seal	Belt driving (Only when no lubricant splashes onto the flange surface of the motor)	Foot-mounting type models have no output shaft seal, but can be changed to a model with an oil seal or labyrinth. For the models that can be changed, refer to "Order List" (B-65271EN).
Maximum speed	Standard-speed model	-	Consider the maximum speed of each model and select a model accordingly.
	High-speed model	-	

2.2 SPINDLE MOTOR SELECTION CONDITIONS

Selecting a spindle motor is based on the acceleration output and cutting output required of the spindle motor and so on. In selecting a motor, calculate these outputs according to this chapter and check that the values meet the selection conditions contained in this chapter.

The spindle motor selection conditions are as described below.

[Selection condition 1] Motor speed

- **The motor speed must not exceed the maximum motor speed.**

Calculate the motor speed and check that the speed does not exceed the maximum motor speed.

[Selection condition 2] Acceleration time

- **Acceleration can be made with a desired time constant.**

Since the load torque generally helps deceleration, if acceleration can be executed with a desired time constant, deceleration can be made with the same time constant, through both acceleration and deceleration should be considered in principle. Calculate the acceleration time and check that it does not exceed the desired acceleration time constant.

[Selection condition 3] RMS output

- **The RMS output in a single cycle has a value more than enough for the S1 continuous rated output.**

The motor generates heat in proportion to the square of the output. For a spindle motor, for which load conditions constantly fluctuate, therefore, it is necessary to calculate the RMS output in a single cycle and check that the value is more than enough for the S1 continuous rated output.

Caution is required, particularly if the cutting output, acceleration/deceleration conditions, and so on vary greatly in a single cycle.

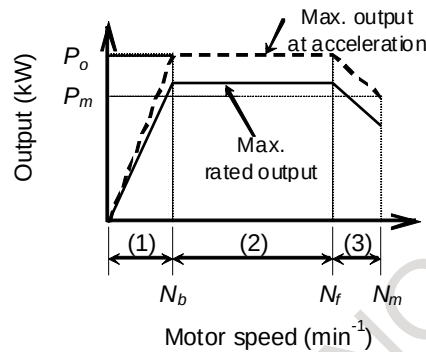
If the frequency of acceleration/deceleration increases, the ratio that the acceleration/deceleration output accounts for in the total operating time increases, making the RMS torque larger. In this case, increasing the acceleration/deceleration time constant is effective in reducing the RMS output.

2.3 DETERMINING THE ACCELERATION TIME

The maximum output at acceleration is shown with broken line in a speed-output characteristic chart, such as that in Section 3.2 in Part II.

(The output at acceleration/deceleration for each model is not a guaranteed value but a guideline.)

For output characteristics such as those shown in the figure below, the acceleration time can be calculated as a reference value from the formula below. The load torque of the machine is not included in this calculation, so the actual acceleration time may be slightly longer than the time calculated here.



J_L	: Load inertia converted for the motor shaft [kgm ²]
J_m	: Moment of inertia of the rotor [kgm ²]
P_o , P_m	: Output [kW]
N_b , N_f , N_m	: Motor speed [min ⁻¹]

- (1) Acceleration time (t_1) in the constant-torque range (0 to N_b)

$$t_1 = 0.01097 \cdot \frac{(J_L + J_m) \cdot N_b^2}{P_o \cdot 1000} \quad [\text{sec}]$$

- (2) Acceleration time (t_2) in the constant-output range (N_b to N_f)

$$t_2 = 0.01097 \cdot \frac{(J_L + J_m) \cdot (N_f^2 - N_b^2)}{2 \cdot P_o \cdot 1000} \quad [\text{sec}]$$

- (3) Acceleration time (t_3) in the decreasing-output range (N_f to N_m)

$$t_3 = 0.01097 \cdot \frac{(J_L + J_m) \cdot (N_m - N_f) \cdot \left\{ (N_m - N_f) - \frac{P_o \cdot N_m - P_m \cdot N_f}{P_m - P_o} \cdot \ln \frac{P_m}{P_o} \right\}}{(P_m - P_o) \cdot 1000} \quad [\text{sec}]$$

The total time (t) required for acceleration in the range from 0 to N_m is $t_1 + t_2 + t_3$ [sec]

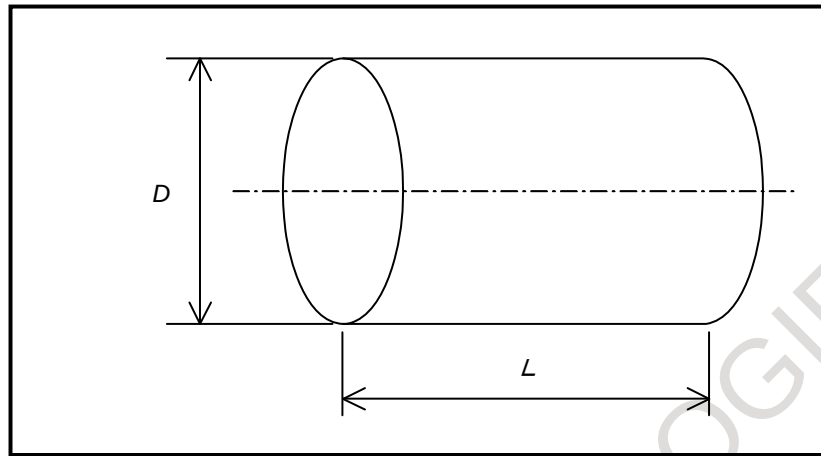
NOTE

This is not a guaranteed value but a guideline.

Deceleration can be controlled so that the time required for deceleration is nearly equal to that for acceleration. When the power voltage is high, or the impedance of the power is high, however, the time required for deceleration may not be made equal to that for acceleration.

Reference 1

The moment of inertia of a cylindrical object rotating about its central axis is calculated as follows:



-SI unit-----

$$J_b = \frac{\pi \gamma_b}{32} D_b^4 L_b \quad [\text{kg} \cdot \text{m}^2]$$

J_b : Moment of inertia [$\text{kg} \cdot \text{m}^2$]

γ_b : Weight of the object per unit volume [kg/m^3]

D_b : Diameter of the object [m]

L_b : Length of the object [m]

-Gravitational system of units-----

$$J_b = \frac{\pi \gamma_b}{32 \times 980} D_b^4 L_b \quad [\text{kgf} \cdot \text{cm} \cdot \text{s}^2]$$

J_b : Moment of inertia [$\text{kgf} \cdot \text{cm} \cdot \text{s}^2$]

γ_b : Weight of the object per unit volume [kg/cm^3]

D_b : Diameter of the object [cm]

L_b : Length of the object [cm]

Reference 2

The moment of inertia applied to the motor shaft for J_0 is calculated as follows:

$$J = \left(\frac{Z_1}{Z_2} \right)^2 \times J_0 \quad \text{or} \quad \left(\frac{1}{Z} \right)^2 \times J_0$$

J_0 : Moment of inertia before deceleration

Z_1 : Number of teeth of the gear on the motor side (for gear connection)

Z_2 : Number of teeth of the gear on the spindle side (for gear connection)

$1/Z$: Deceleration ratio

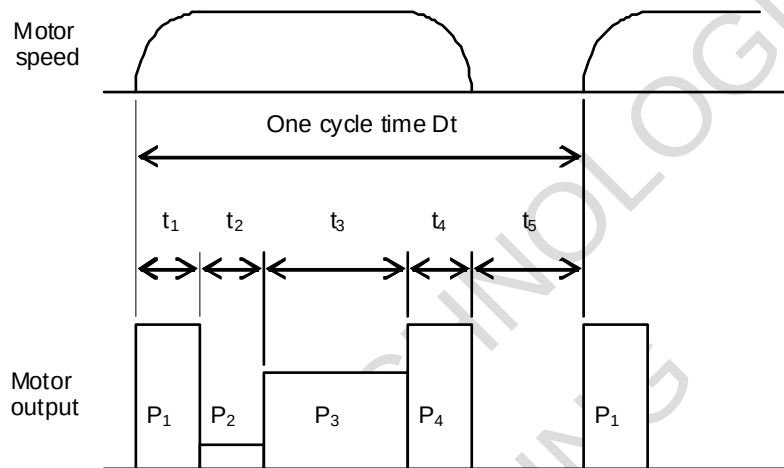
2.4 DETERMINING THE RMS OUTPUT

When machining is to be performed with the frequent acceleration/deceleration of the spindle, it is necessary to make sure that the RMS output in a single cycle does not exceed the S1 rated output.

(Comparing the RMS output with the S1 rated output provides a guideline as to whether continuous use is possible or not, but does not guarantee continuous use.)

The following describes how to determine the RMS output for a representative model of an AC spindle motor.

For a cycle such as that shown in the figure below, the RMS output can be calculated as a reference value from the formula below. The load torque of the machine is not included in this calculation, so the actual RMS output may be slightly larger than the RMS output calculated here.



P_1, P_4 : Acceleration/deceleration output [kW]

P_2 : Output with no load [kW]

P_3 : Cutting output [kW]

$$\text{RMS output } P_{av} = \sqrt{\frac{P_1^2 t_1 + P_2^2 t_2 + P_3^2 t_3 + P_4^2 t_4}{Dt}} \quad [\text{kW}]$$

NOTE This is not a guaranteed value but a guideline.

NOTE

- 1 Cutting output P_3 at motor speed N which is lower than base speed N_b shall be calculated by the following equation.

$$P_3 = P_C \times N_b / N \quad [\text{kW}] \quad (P_C: \text{Actual cutting output})$$

- 2 In case that P_3 is calculated by the load indicator voltage, use the following equation.

$$P_3 = P_1 \times L_3 / 10 \quad [\text{kW}] \quad (L_3: \text{Load indicator voltage in cutting [V]})$$

III. HANDLING, INSTALLATION, AND USE ENVIRONMENT OF THE MOTOR

JR AUTOMATION TECHNOLOGIES INC*
JDOWLING

1 MOTOR HANDLING

This chapter contains notes on handling the FANUC AC spindle motor βi series.

This chapter, "MOTOR HANDLING", consists of the following sections:

1.1	CHECKING A DELIVERED SPINDLE MOTOR AND STORING A SPINDLE MOTOR.....	227
1.2	SEPARATING AND DISPOSING OF A SPINDLE MOTOR.....	228

1.1 CHECKING A DELIVERED SPINDLE MOTOR AND STORING A SPINDLE MOTOR

When the spindle motor is delivered, check the following items.

- The motor meets the specifications. (Specifications of the model/shaft/sensor)
- Damage caused by the transportation.
- The shaft is normal when rotated by hand.
- Looseness or play in screws.

FANUC spindle motors are completely checked before shipment, and the inspection at acceptance is normally unnecessary. When an inspection is required, check the specifications (wiring, current, voltage, etc.) of the motor and sensor. Store the motor indoors. The storage temperature is -20°C to +60°C. Avoid storing in the following places.

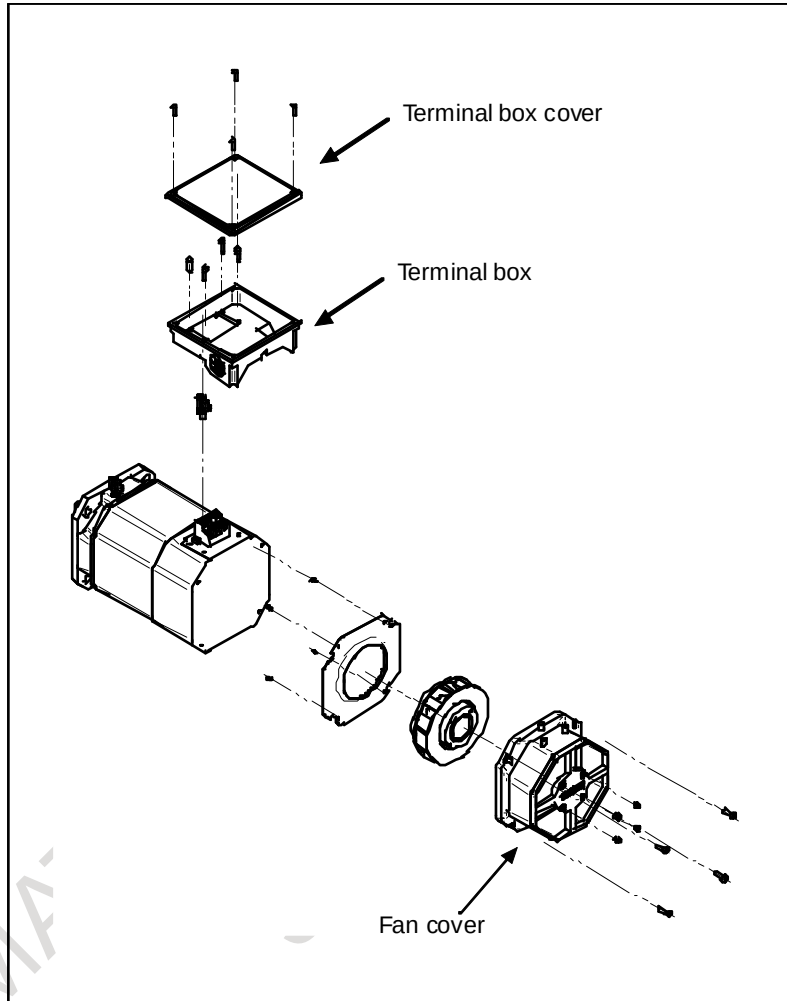
- Place with high humidity so condensation will form.
- Place with extreme temperature changes.
- Place always exposed to vibration.
(The bearing may be damaged.)
- Place with much dust.

1.2 SEPARATING AND DISPOSING OF A SPINDLE MOTOR

Separating and disposing of plastic and metal parts of a motor

Separate plastic parts (terminal box, terminal box cover, and fan cover) and dispose of them by disassembling the motor as shown in the figure below. The following plastic material is used:

Plastic material :>(PBT+PC)-GF(30)FR(17)<



2 NOTES ON INSTALLATION

This chapter contains notes on installing the FANUC AC spindle motor *αi* series.

This chapter, "NOTES ON INSTALLATION", consists of the following sections:

2.1	COMMON	229
2.2	AMBIENT TEMPERATURE, HUMIDITY, INSTALLATION HEIGHT, AND VIBRATION	235
2.3	USAGE CONSIDERING ENVIRONMENTAL RESISTANCE	236

2.1 COMMON

Be sure to observe the following, regardless of the connection method of the motor:



WARNING

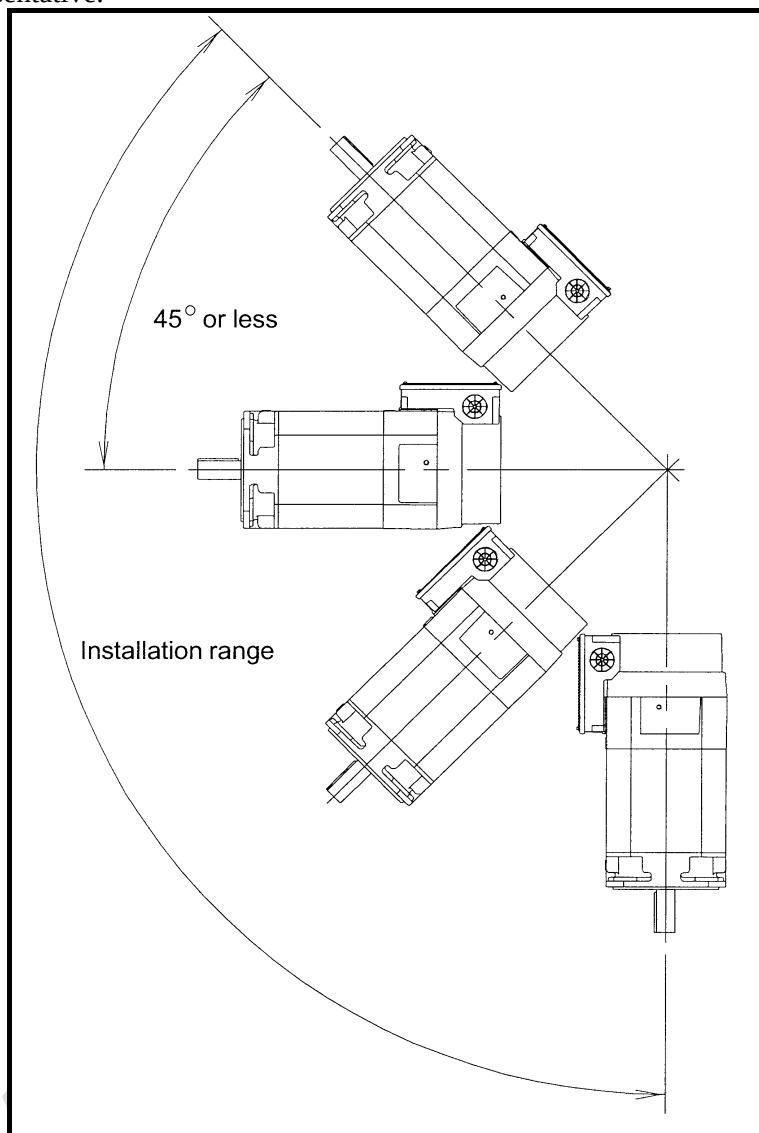
When connecting a metallic conduit to a plastic terminal box, connect the conduit to ground on the power magnetics cabinet side.



CAUTION

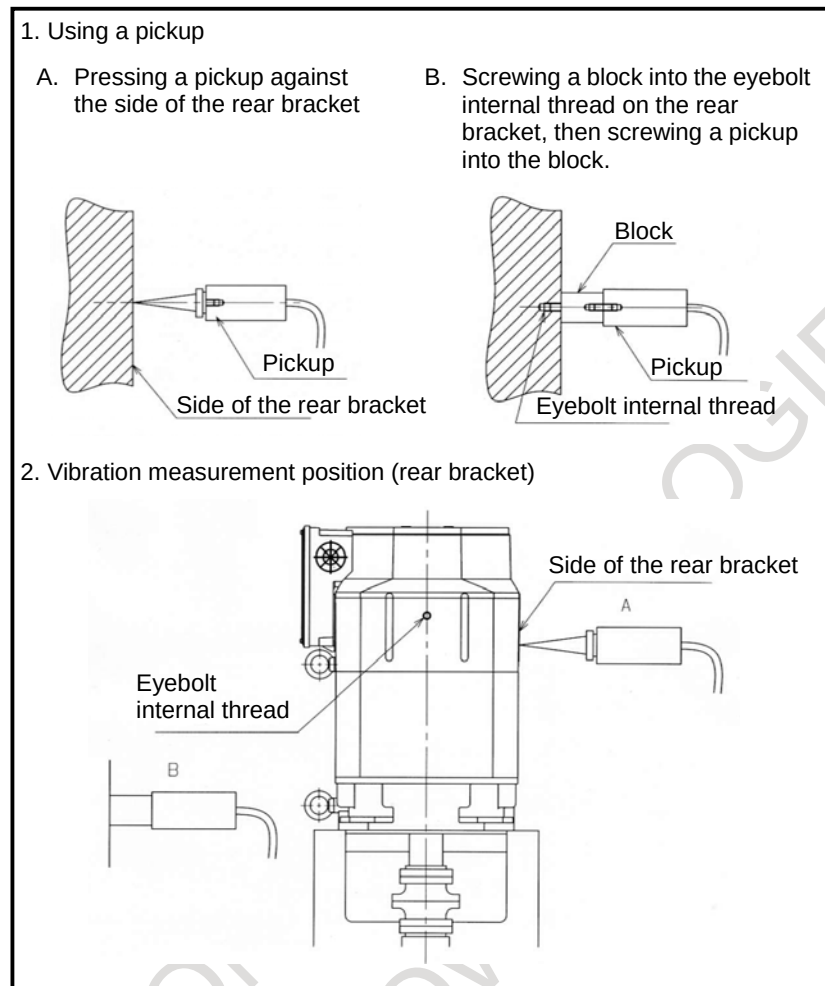
- 1 Mount the motor so that the output shaft points in a direction ranging within 45 degrees above the horizontal to vertically downwards.

- 2 When the motor needs to be pointed to more than 45 degrees above the horizontal, consult you FANUC representative.



- 3 Use the eyebolt of the motor to lift only a single motor, (gear and pulley may be attached).
 - 4 Place a cover over an air-cooled motor to prevent the motor from being exposed to coolant or lubricant.
 - 5 Limit the vibration acceleration at the rear bracket of the motor to 4.9 m/s^2 (0.5 G) to ensure the long-term reliability of each part of the motor.
In particular, to limit the acceleration in the case of direct connection to 4.9 m/s^2 (0.5 G), carefully perform centering with the mating spindle and make the motor shaft parallel with the spindle.
- Details of the measuring method
Measuring instrument:
Equivalent to the VM-3024S manufactured by IMV CORPORATION (For details, see Section 3.3, "WHEN A MOTOR IS DIRECTLY CONNECTED TO A SPINDLE VIA A COUPLING" in this part.)
Condition: At the time of highest-speed rotation with no load
Measurement frequency range with no load at the highest speed:
10 to 1000 Hz

Criteria: 4.9 m/s^2 (0.5 G) or less at the rear bracket



6 Dynamic balance

During high-speed operation, a small imbalance may cause a large vibration, resulting in an unusual sound, premature bearing damage, or some other abnormality.

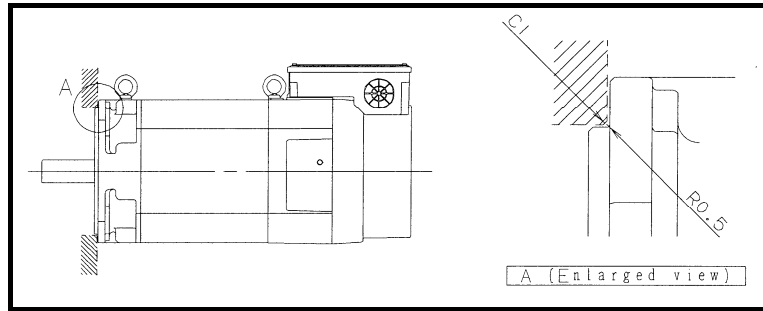
Therefore, reduce the amount of the imbalance with the dynamic balance of the other rotation shafts, as well as the gear and pulley mounted on the output shaft of the motor, as much as possible.

- Balance correction

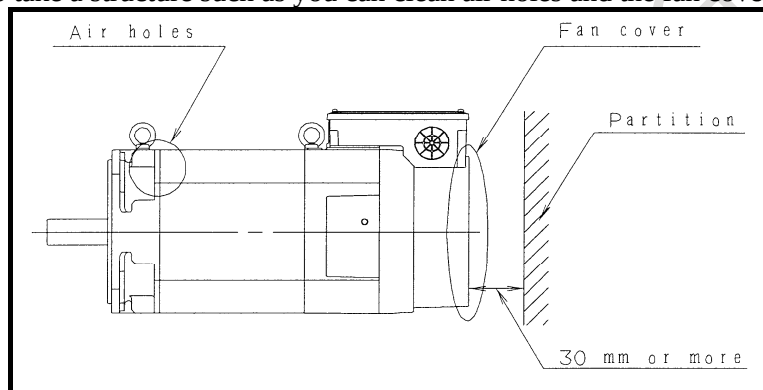
With the αi series, a shaft with no key is used as standard to facilitate the balance correction of a pulley, gear, and coupling attached to the shaft. Use a completely symmetric pulley, gear, or coupling, and use a backlash-less tightening part such as a SPANN ELEMENTE to secure a pulley, gear, or coupling to the shaft. When attaching a pulley to a shaft, for example, adjust the periphery vibration to within $20 \mu\text{m}$. This basically eliminates the need for balance correction. To further reduce the vibration level, make a field balance correction, for example, by tightening a screw into the tapped hole for balance correction provided on a component such as a pulley.

7 Vibrations applied to the motor must be 4.9 m/s^2 (0.5 G) or less in a state where the motor is attached to the machine.

- 8 The edge of the faucet joint to mount the flange mounting type motor should be chamfered about C1.



- 9 Please space 30 mm or more between the fan cover and the partition to keep the cooling ability well. We recommend to take a structure such as you can clean air holes and the fan cover easily.

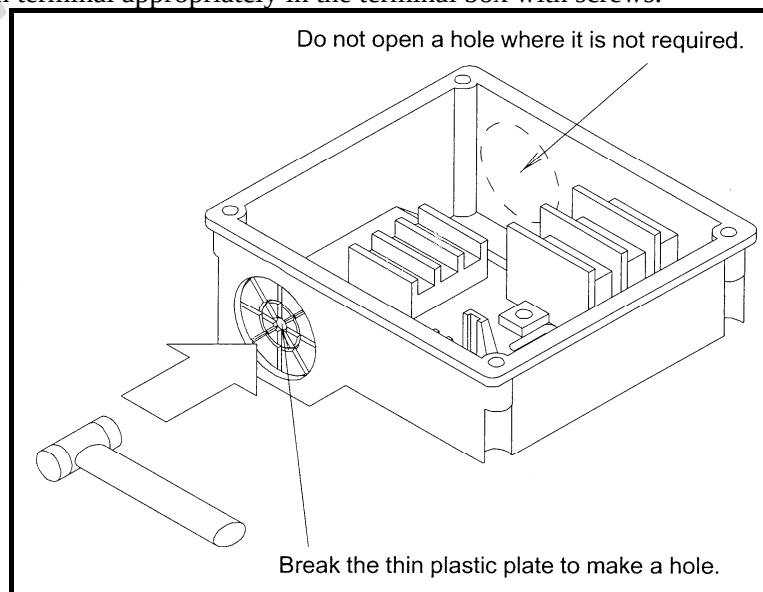


NOTE

1 Cable wiring

Follow the procedure below to install the cable. (Except for the α iS series motors)

- (1) Use a hammer to strike the portion for the cable hole on the terminal box and open the hole. This time, pay attention not to break the other place except hole. (In some models, it is not necessary to make a hole.)
- (2) Thread the cable through a conduit. Connect the conduit with the connector. (*1)
- (3) Tighten the connector at the cable hole of the terminal box using a nut. (*2, *3)
- (4) Connect each terminal appropriately in the terminal box with screws.



When a hole once made is not used, purchase the following rubber bushing and mount it at the hole.

Model	Ordering number
α IL 1 to α IL 15 , α ILP 12 to α ILP 22 α ILT 1/24000 to α ILT 15/10000 α IL 6HV to α IL 22HV α ILP 15HV , α ILP 22HV α ILT 1.5/20000HV to α ILT 22/10000HV α ILL 8/20000 , α ILL 8/20000HV	A06B-0754-K001
α IL 18, α IL 22, α ILP 30, α ILP 40, α ILP 50 α ILP 40HV , α ILP 50HV α ILT 15/15000, α ILT 22/10000 α ILL 15/15000, α ILL 26/15000 α ILL 15/15000HV, α ILL 26/15000HV	A06B-0731-K001

High-speed models are same as above.

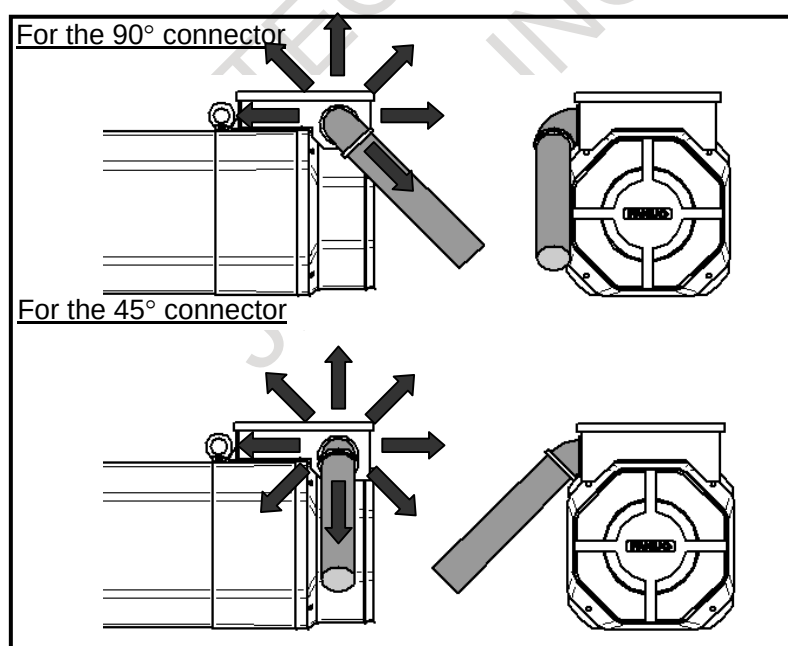
NOTE 1

When the 90 degrees connector is used in the following models, the mounting direction of the conduit is restricted to prevent interference between the conduit and the motor. To allow the conduit to be mounted in any direction, use the 45 degrees connector.

(In a model other than the following, the conduit can be mounted in any direction even when the 90 degrees connector is used.)

Applicable models:

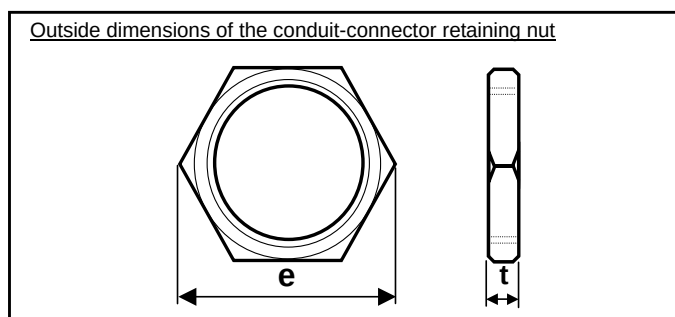
α IL 12 to α IL 15, α ILP 12 to α ILP 22, α ILT 15/10000, α IL 12HV to α IL 22HV, α ILP 15/6000HV to α ILP 22/6000HV, α ILT 15/10000HV , α ILT 15/15000HV, α ILT 22/10000HV



NOTE 2

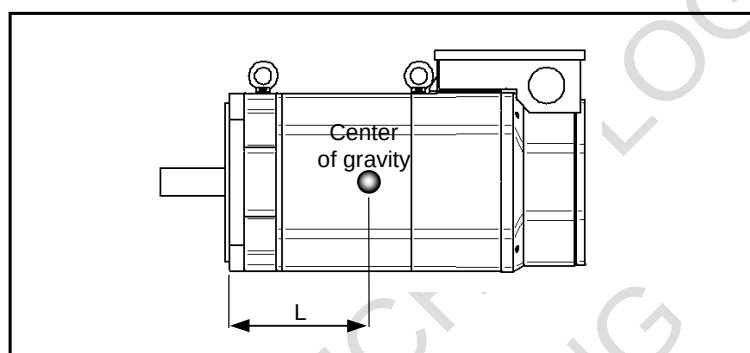
The nut used to fasten the connector to the terminal box must be smaller than the size listed below. (Any larger nut interferes with the terminal box.) For the diameter of the cable hole in each model, refer to the outside dimension drawing of the respective models.

Cable hole diameter	Outside diameter e	Width t
ϕ 42.5 mm	53 mm (maximum)	9 mm (maximum)
ϕ 61 mm	80 mm (maximum)	15 mm (maximum)



2 Center of gravity

The distance L from the flange end face to the center of gravity in each model is listed below.



α I series 200-V type	α I series 400-V type	α S series 400-V type	α IP series 200-V type	α IP series 400-V type	Center of gravity [mm]
α iL 0.5/10000 α iL 0.5/15000	α iL 0.5/10000HV	-	-	-	95±5
α iL 1/10000 α iL 1/15000 α iL 1/24000	α iL 1/10000HV	-	-	-	125±5
α iL 1.5/10000 α iL 1.5/20000	α iL 1.5/10000HV	-	-	-	145±5
α iL 2/10000 α iL 2/20000	α iL 2/10000HV α iL 2/20000HV	-	-	-	125±5
α iL 3/10000 α iL 3/12000 α iL 3/15000	α iL 3/10000HV	-	-	-	170±5
α iL 6/10000 α iL 6/12000 α iL 6/15000	α iL 6/10000HV	-	-	-	150±5
α iL 8/8000 α iL 8/10000	α iL 8/8000HV	-	-	-	185±5
α iL 12/8000 α iL 12/12000	α iL 12/8000HV	-	α iLP 12/6000 α iLP 12/8000	-	160±5
α iL 15/8000 α iL 15/12000	α iL 15/8000HV	-	α iLP 15/6000 α iLP 15/8000	α iLP 15/6000HV α iLP 15/8000HV	170±5
α iL 18/8000 α iL 18/12000	-	-	α iLP 18/6000 α iLP 18/8000	-	190±5
α iL 22/8000 α iL 22/12000	α iL 22/8000HV	-	α iLP 22/6000 α iLP 22/8000	α iLP 22/6000HV α iLP 22/8000HV	205±5
α iL 30/7000	α iL 30/7000HV	-	α iLP 30/6000 α iLP 40/6000	α iLP 40/6000HV	240±5
α iL 40/7000	α iL 40/7000HV	-	α iLP 50/5000	α iLP 50/6000HV	
α iL 50/5000	α iL 50/5000HV	-	-	-	

αiI series 200-V type	αiI series 400-V type	αiS series 400-V type	αiIp series 200-V type	αiIp series 400-V type	Center of gravity [mm]
-	α iI 60/5000HV	-	α iIp 60/5000	α iIp 60/5000HV	
-	α iI 75/5000HV	-	-	-	
-	α iI 100/5000HV	-	-	-	
-	α iI 150/5000HV	-	-	-	
-	-	α iS 2000/2000HV	-	-	

2.2 AMBIENT TEMPERATURE, HUMIDITY, INSTALLATION HEIGHT, AND VIBRATION

Ambient temperature

The ambient temperature should be 0°C to 40°C. If the ambient temperature exceeds this range, the operating conditions must be eased to prevent the motor and detector from overheating. (The specification values and external dimensions in the data sheet assume an ambient temperature of 20°C.)

Ambient humidity

The ambient humidity should be 80%RH or less and no condensation should not be caused.

Installation height

Up to 1,000 meters above the sea level requires, no particular provision for attitude. When operating the machine at a higher level, special care is unnecessary if the ambient temperature is lowered 1°C at every 100m higher than 1,000m. For example, when the machine is installed at a place of 1,500 meters above sea level, there is no problem if the ambient temperature is 35°C or less.

Vibration

When installed in a machine, the vibration applied to the motor must not exceed 49m/s² (5G).

If any one of the four environmental conditions (ambient temperature, ambient humidity, installation height, and vibration) specified above is not satisfied, the output must be restricted.

2.3 USAGE CONSIDERING ENVIRONMENTAL RESISTANCE

CAUTION

The motor is an electric part, and if the lubricant or cutting fluid falls on the motor, it will enter the inside of the motor, possibly adversely affecting the motor. In particular, if the cutting fluid adheres to the motor, it will deteriorate the resin or rubber sealing members, causing a large amount of cutting fluid to enter the inside of the motor and possibly damaging the motor. When using the motor, note the points described below.

1. Level of motor protection

According to IEC 60034-5, the models equipped with an oil seal comply with the degree of protection IP54, and the other models comply with IP40. Even for the models complying with the degree of protection IP40, their motor main body excluding the output shaft end (with a simplified labyrinth for the high-speed models or with no seal for the foot mounting type models) complies with IP54. $\alpha i I$ 75/5000HV to $\alpha i I$ 150/5000HV comply with IP40 through an oil seal is provided, however. $\alpha i S$ 2000/2000HV complies with IP44.

Note that these models satisfy the provisions for short-time water immersion, and do not guarantee their water-proof performance in an atmosphere in which cutting fluid is applied directly to the motor. Before actual use, note the points described below.

2. Motor periphery

If the cutting fluid or lubricant falls on the motor, it will adversely affect the sealing properties of the motor surface, entering the inside of the motor and possibly damaging the motor.

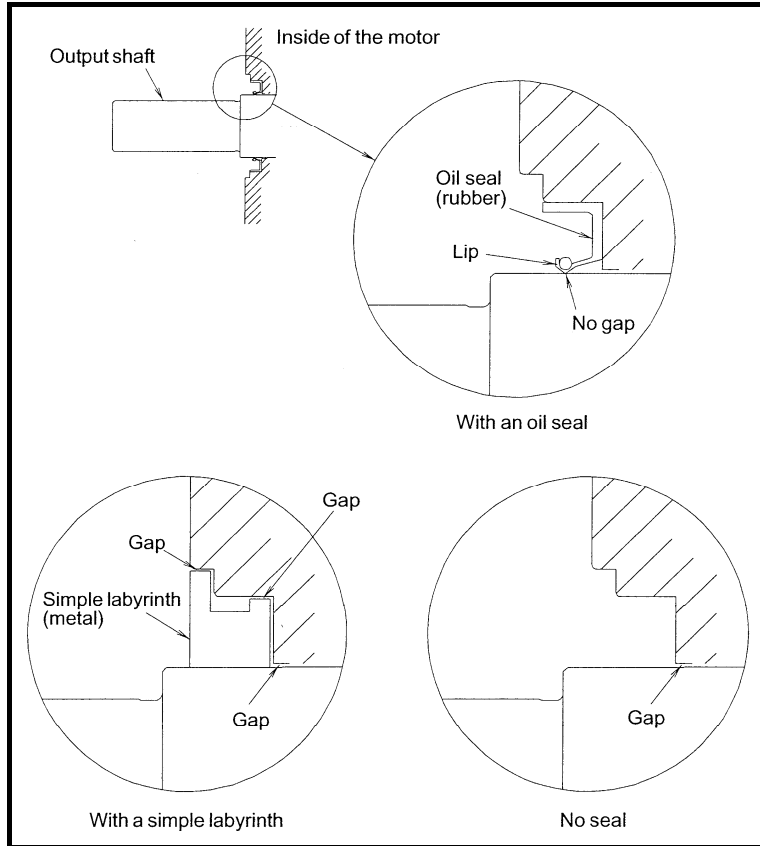
- Make sure that the motor surface is never wet with the cutting fluid or lubricant, and also make sure that no fluid builds up around the motor. If there is a possibility of the surface being wet, a cover is required.



- If the cutting fluid is misted, the cutting fluid may be condensed on the inside of the cover and fall on the motor. Make sure that no condensed droplets fall on the motor.
- If the inside of the machine is full of misted cutting fluid, the cutting fluid adhered to the motor can enter the inside of the motor and damage the motor. Install a mist collector with an appropriate capacity to prevent the inside of the machine from becoming full of mist.
- Completely separate the machining area from the motor area, using a telescopic cover, accordion curtain, and so on. Note that partitions such as accordion curtains are consumable and require periodic inspection for damage.

3. Output shaft seal

To prevent cutting lubricant or dust from penetrating inside the motor, one of the following output shaft seals is provided on the output shaft. (For the use and applicable motors, see Section 3.1, "SELECTING MOTOR SPECIFICATIONS ACCORDING TO THE SPINDLE STRUCTURE" in Part II.)



For those models with an oil seal, ensure that the surface of the lubricant is below the lip of the oil seal.

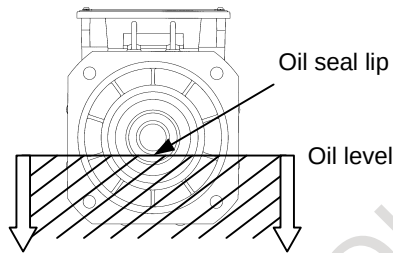
If a simple labyrinth is used as the output shaft seal or if no seal is provided (foot mounting type), ensure that lubricant does not splash onto the flange surface. If such a motor is directly mounted on a gear box, the lubricant may gradually penetrate inside the motor even when no lubricant splashes on flange surface, thus resulting in motor failure. Therefore, do not mount such a motor on a gear box directly.

When the motor is used in an environment in which lubricant does not splash onto the motor, the simple labyrinth type instead of the oil seal type may be selected. Generally in a dry environment, the motor temperature of the simple labyrinth type will increase more moderately than that of the oil seal type.

3.1 oil seal

The shaft of the motor is provided with an oil seal to prevent entry of lubricant and other fluids into the motor. (The foot mounting type is excluded.) It does not, however, completely prevent the entry of lubricant and other fluids depending on the working conditions.

- When the motor is rotating, the oil seal has an effect of discharging any oil that enters, but if it is pressurized for a long time when the motor is stopped, it may allow oil to enter through the lip. When lubrication with an oil bath is conducted for gear engagement, for example, the oil level must be below the lip of the oil seal of the shaft, and the oil level must be adjusted so that the oil does nothing but splash on the lip.



Diameters of the oil seal lips of motor shafts

Motor model	Oil seal diameter [mm]
<i>α</i> il 0.5, <i>α</i> il 0.5HV	φ20
<i>α</i> il 1, <i>α</i> il 1.5, <i>α</i> il 1HV, <i>α</i> il 1.5HV	φ30
<i>α</i> il 2, <i>α</i> il 3, <i>α</i> il 6, <i>α</i> il 2HV, <i>α</i> il 3HV, <i>α</i> il 6HV	φ40
<i>α</i> il 8, <i>α</i> il 8HV	φ50
<i>α</i> il 12, <i>α</i> il 15, <i>α</i> il 18, <i>α</i> il 22, <i>α</i> il 12HV, <i>α</i> il 15HV, <i>α</i> il 22HV, <i>α</i> ilP 12, <i>α</i> ilP 15, <i>α</i> ilP 18, <i>α</i> ilP 22, <i>α</i> ilP 15HV, <i>α</i> ilP 22HV	φ60
<i>α</i> il 30, <i>α</i> il 40, <i>α</i> il 30HV, <i>α</i> il 40HV, <i>α</i> ilP 30, <i>α</i> ilP 40, <i>α</i> ilP 50, <i>α</i> ilP 40HV, <i>α</i> ilP 50HV	φ70
<i>α</i> il 50, <i>α</i> il 50HV, <i>α</i> il 60HV, <i>α</i> il 75HV, <i>α</i> il 100HV, <i>α</i> il 150HV, <i>α</i> ilP 60, <i>α</i> ilP 60HV	φ85
<i>α</i> iS 2000/2000HV	φ120

- If foreign matter such as cutting chips is caught by the oil seal lip, it will be easily worn, losing its sealing properties. When the motor is used within a splash guard, and so cutting chips may fall on the motor, for example, take measures to prevent cutting chips from entering near the lip.
- In an environment in which dry and wet states alternate, if cutting fluid splashes onto the lip after it has worn in a dry state, the cutting fluid may easily enter the inside of the motor. In this case, provide a cover to prevent cutting fluid from splashing onto the oil seal of the motor.
- Ensure that no pressure is applied to the lip of the oil seal.
- The oil seal shows its sealing effect when a part such as the gear coupling is lubricated by oil bath. Cutting fluid does not provide lubrication for the oil seal lip, so the cutting fluid may easily penetrate the seal. Therefore, provide a cover to prevent cutting fluid from splashing onto the oil seal.

3.2 When the oil seal is not used

When a simple labyrinth is used (high-speed model) as the output shaft seal or when no seal is provided (foot mounting type), ensure that lubricant does not splash onto the flange surface directly. If such a motor is directly mounted on a gear box, lubricant may gradually enter the inside of the motor even when the flange surface is protected against lubricant splash, therefore resulting in motor failure. So, do not mount such a motor on a gear box directly.

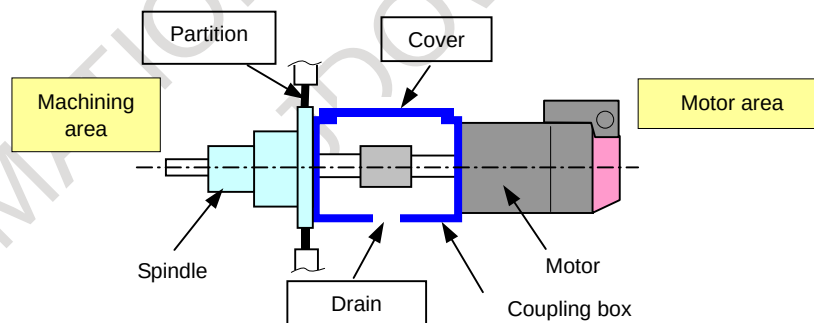
NOTE

- 1 The foot mounting type motors are not equipped with an oil seal. When an oil seal is necessary, add #0002 to a motor drawing number when ordering the motor. The oil seal, however, cannot be added to the high-speed models. For details, refer to the order list (B-65271EN).
Example)
Model α iI 12/7000 (foot mounting type, with no key, rear exhaust)
To add an oil seal to A06B-1408-B200, order A06B-1408-B200#0002.
- 2 When lubricant does not splash onto the oil seal, remove the coil spring of the oil seal to reduce friction between the lip and shaft.
This does not affect sealing from dry dust.
When the area in which the shaft touches the oil seal is dry, turning the shaft at a high speed may generate contact sound (abnormal sound) from that area or may damage the lip.

4. Motor coupling

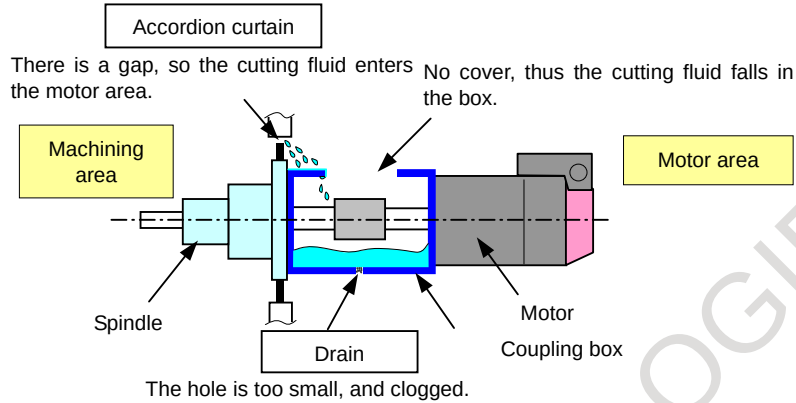
When a coupling box is used to connect the motor to the machine, take measures as follows not to allow leaked cutting fluid to build up in the coupling box.

- Provide a cover for the top and sides of the coupling box.
- Provide a drain hole at the bottom of the coupling box. The hole must be large enough to avoid clogging.



<Fault example>

The cutting fluid leaks from a gap in the accordion curtain to the motor area, and builds up in the coupling box. While the spindle is moving, the cutting fluid ripples, splashing onto the oil seal of the motor. The cutting fluid enters the inside of the motor there in large quantities, deteriorating the insulation of the motor.

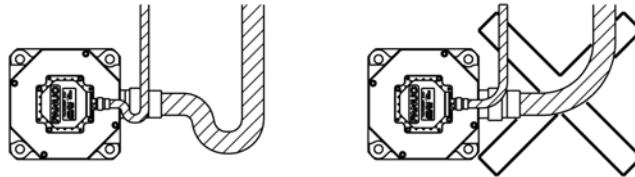


5. Connectors, terminal box, and their surroundings

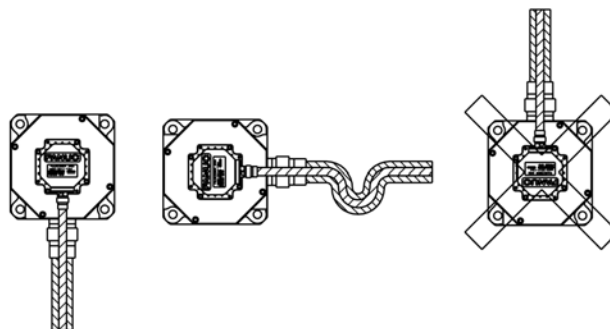
5.1 Connectors

$\alpha i I$ 0.5/10000 and $\alpha i I$ 0.5/10000HV use connectors to connect the power and signal cables.

- Make sure that no cutting fluid is introduced to the motor via cables. If the motor connector is used horizontally, this can be accomplished by forming a slack in the cable.



- If the motor connector is directed upward, the cutting fluid collects into the cable connector. Whenever possible, direct the motor connector sideways or downward.

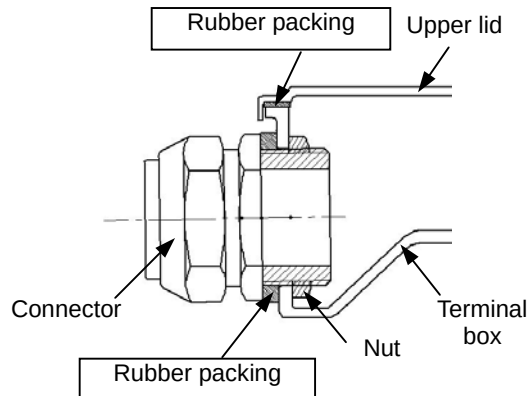


5.2 Terminal box

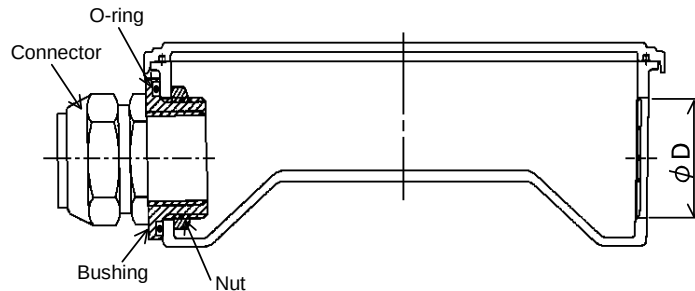
Models other than $\alpha i I$ 0.5/10000 and $\alpha i I$ 0.5/10000HV use a terminal box to connect the power and signal cables.

- When a conduit is attached to the terminal box, use a water-proof connector with rubber packings to prevent lubricant and cutting fluid from entering the inside of the terminal box through its cable holes.

- On the inner side of the upper lid of the terminal box, a rubber water-proof packing is installed. Ensure that the packings are not damaged, then install the lid so that no foreign matter is caught.



- If the connector you want to use is smaller than the cable hole on the terminal box, prepare the bushing, nut, and O-ring shown below.



Cable hole diameter ϕD	O-ring code	
	JIS B 2401	ISO 3601-1
$\phi 42.5$ mm	P46	C0462G
$\phi 61$ mm	P65	C0650G

NOTE

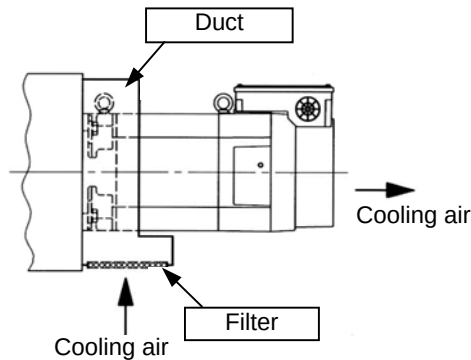
For the diameter of the cable hole in each model, refer to the outside dimension drawing of the respective models.

6. Fan motor and its surroundings

If lubricant or cutting fluid mist, particles, or cutting chips are drawn into the fan motor, the air holes in the motor and the blades of the fan motor will clog, causing the cooling capacity to reduce. Employ a machine structure that allows clean, cooling air to be fed into the motor.

Example)

When a duct with a filter is installed on a flange mounting type motor with a rear exhaust (The filter requires periodic cleaning.)



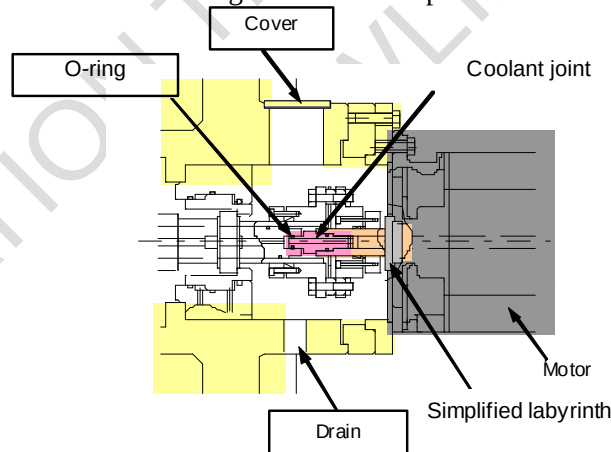
7. Motor with a through hole

The αiI_T series and αiI_L series motors with a through hole comply with the degree of protection IP40. The motor main body excluding the simplified labyrinth at the end of the output shaft and the flinger at the rear end of the shaft complies with IP54. When center through coolant machining is performed, employ such a structure that cutting fluid leaked from the coolant joint or rotation joint does not enter the inside of the motor.

7.1 Front side of the motor

A simplified labyrinth is mounted on the shaft on the front side of the motor. Therefore, a splash of cutting fluid or cutting fluid leaked from the coolant joint can enter the inside of the motor.

- Employ such a structure that the O-ring of the coolant joint is not damaged by sliding.
- Provide a drain not to allow leaked cutting fluid to build up in case the O-ring is damaged.



7.2 Rear side of the motor

When a separate external support type rotation joint is installed at the rear end of the shaft, cutting fluid leaks from the seal (where the stationary side and the rotation side come in contact); therefore, employ such a structure that the leaked cutting fluid does not enter the inside of the motor.

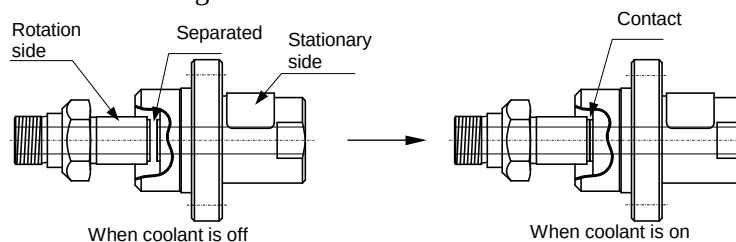
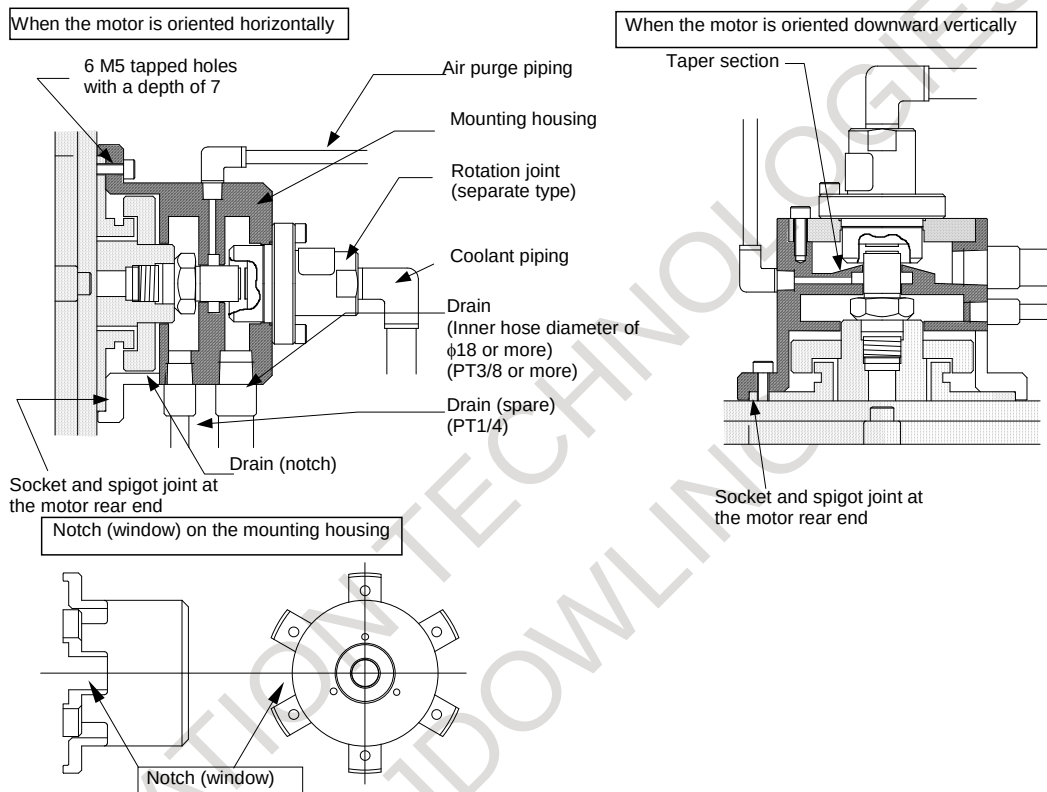


Fig. Example of a separate external support type rotation joint

- Provide the rotation joint mounting housing with notches and drains not to allow leaked cutting fluid to build up in the housing.
- The rotation joint is a consumable part. It requires periodic inspection and replacement.
- If the rotation joint is damaged, a large amount of cutting fluid can leak out. So, provide the mounting housing with many notches.
- When the motor is oriented downward vertically, enhance drainage by means such as air purging.



8 Notes on cutting fluid

Cutting fluid containing highly active sulfur or chlorine, oil-free cutting fluid called synthetic cutting fluid, and highly alkaline, water-soluble cutting fluid in particular significantly affect the CNC, motor, or amplifier. Even when these components are protected from direct spraying of cutting fluid, problems as described below may arise. So special care should be taken.

- **Cutting fluid containing highly active sulfur or chlorine**
Some cutting fluids containing sulfur or chlorine show extremely high activity. Attachment of such cutting fluid to the CNC, motor, or amplifier can cause chemical reaction with plastic and so on, therefore resulting in corrosion or deterioration of them. And ingress of such cutting fluid into the CNC, motor, or amplifier can cause corrosion of copper, silver, and so on used as parts' materials, therefore resulting in parts' failures.
- **Synthetic cutting fluid with high permeability**
Some synthetic type cutting fluids that use polyalkylene glycol (PAG) as a lubricant have extremely high permeability. Such cutting fluid can easily penetrate into the motor even if the motor is sealed well. Ingress of such cutting fluid into the CNC, motor, or amplifier can degrade insulation or lead to parts' failures.

- Highly alkaline, water-soluble cutting fluid
Some cutting fluids that strengthen pH by alkanolamine show strong alkalinity of pH10 or higher when diluted to the standard level. Ingress of such cutting fluid into the CNC, motor, or amplifier can cause chemical reaction with plastic and so on and deteriorate them.

3 MOTOR INSTALLATION

This chapter describes how to install the FANUC AC spindle motor α i series.

This chapter, "MOTOR INSTALLATION", consists of the following sections:

3.1	WHEN A MOTOR IS CONNECTED TO A SPINDLE VIA A BELT	245
3.2	WHEN A MOTOR IS CONNECTED TO A SPINDLE VIA A GEAR.....	247
3.3	WHEN A MOTOR IS DIRECTLY CONNECTED TO A SPINDLE VIA A COUPLING.....	248

3.1 WHEN A MOTOR IS CONNECTED TO A SPINDLE VIA A BELT

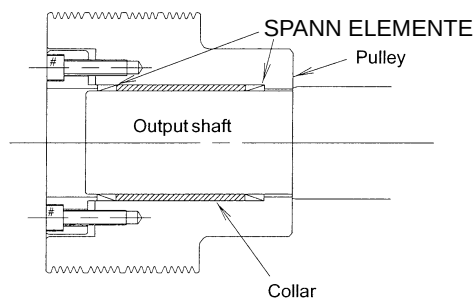
CAUTION

- 1 Mounting the pulley
 - The gap between the inner surface of the motor pulley and output shaft should be 10 μ m to 15 μ m.
 - If the gap is large when the high-speed rotation (4500 min⁻¹), fretting produced at the gap causes a large vibration, resulting in damage to the motor bearing.
 - As the vibration is intensified, fretting occurs in the gap mentioned above, and the pulley and shaft can stick to each other.
 - To secure a pulley, use a friction-tightening part such as a SPANN ELEMENTE or clamping sleeve.

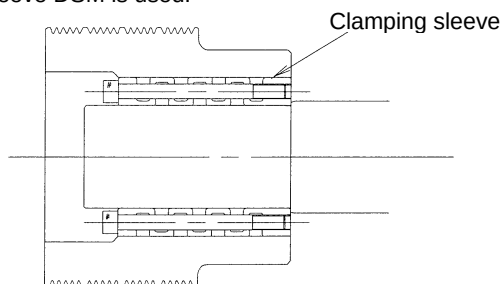
NOTE

The SPANN ELEMENTE RfN8006 is manufactured by RINGFEDER.
The clamping sleeve DSM is manufactured by SPIETH.

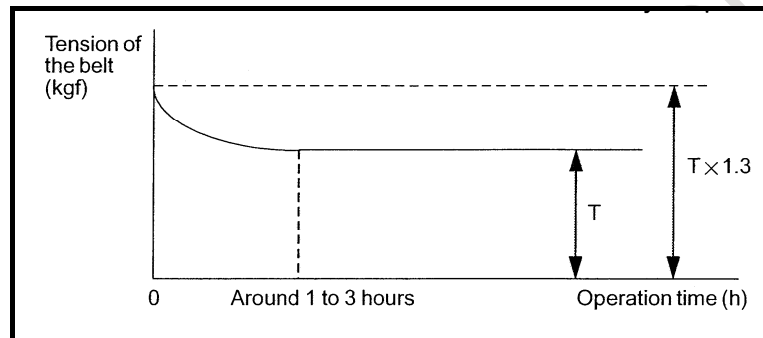
Example 1 Two sets of SPANN ELEMENTE RfN8006 are used.
The collar is pinched at two points by the two sets.



Example 2 Clamping sleeve DSM is used.



- 2 After attaching a pulley to the motor, adjust the runout of the belt groove to within 20 μm (T.I.R).
- 3 Before the belt is looped, FANUC recommends that the dynamic balance (field balance) be corrected.
- 4 Limit the radial load applied to the motor output shaft by the tension of the belt to the allowable value described in the manual for each series. If the allowable value is exceeded, the bearing or shaft may fail prematurely.
- 5 The tension of the belt is reduced as a result of abrasion during the initial several hours of operation. To transfer torque normally after this reduction in tension, the initial tension before operation should be set to a value 1.3 times the actually required tension T .

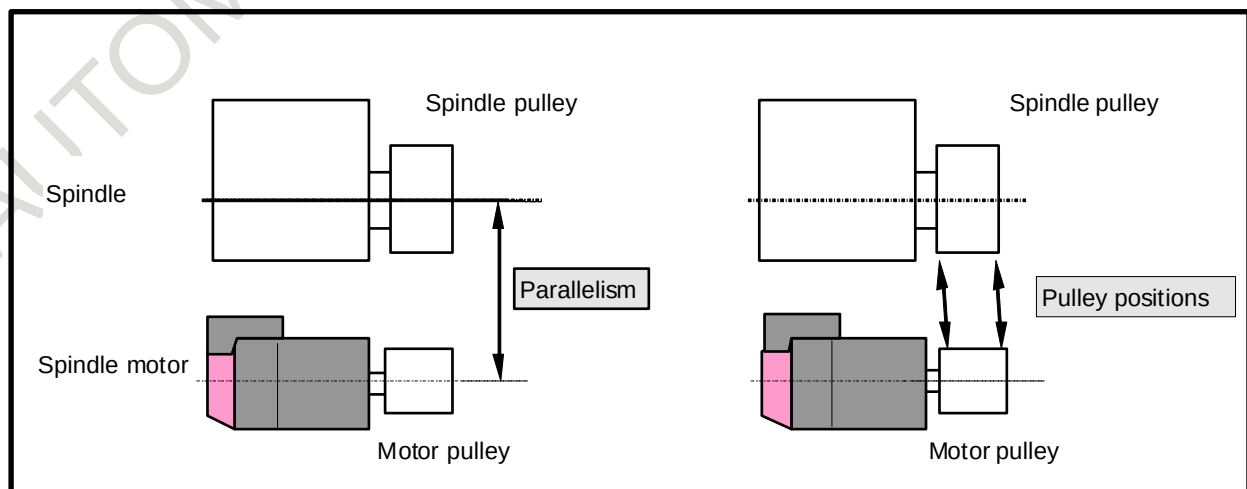


Recommended belts:

Ribace manufactured by BANDO.

Ribstar manufactured by MITSUBOSHI.

- 6 Use an appropriate tension gage to tension the belt.
Examples
Sonic type:
U-305 series manufactured by UNITTA.
CLAVIS belt tension meter by IDS (UK)
- 7 Reduce the deviation between the positions of the motor and machine pulleys in the shaft direction as much as possible and ensure that the center lines of the shafts are as parallel as possible.



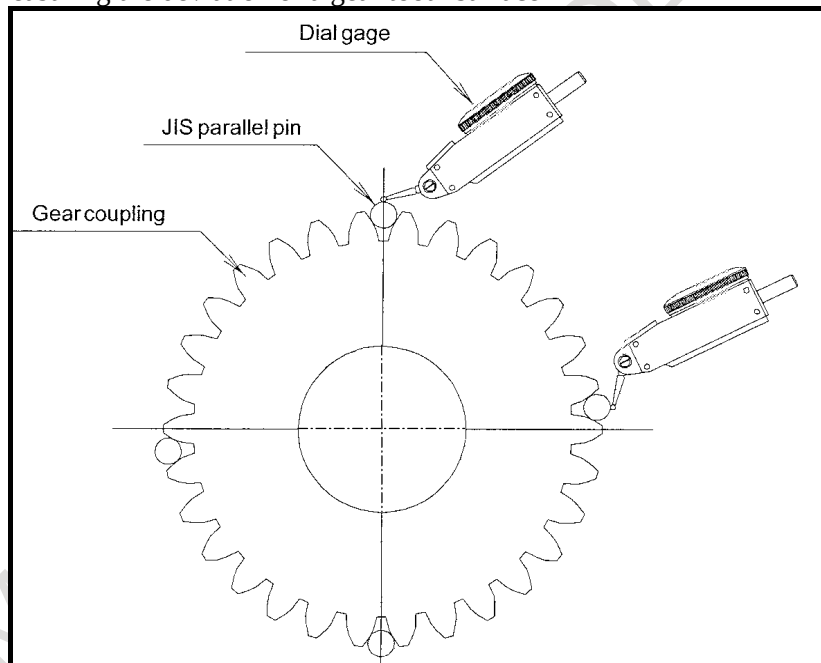
NOTE

- 1 Prevent oil or dust from entering between the belt and the pulley. Otherwise, the belt may slip.
- 2 If the allowable radial load is exceeded, reduce the load by using support bearings on the machine side or directly connecting to the machine in order to secure reliability for an extended period of time.

3.2 WHEN A MOTOR IS CONNECTED TO A SPINDLE VIA A GEAR

**CAUTION**

- 1 Do not use a helical gear which applies a load in the motor axial direction.
- 2 To prevent unusual gear sounds, apply the following precautions:
 - (1) The deviation of the gear tooth surface should indicate the proper value.
(Tip) Measuring the deviation of a gear tooth surface



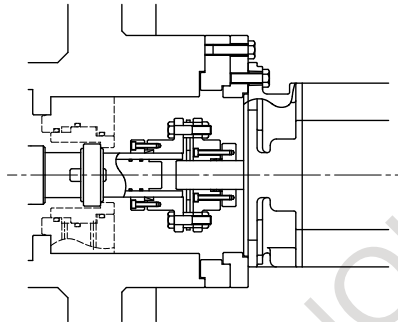
- (2) The correct backlash should be provided.
 - (3) The perpendicularity of the motor flange mounting surface to the machine shaft should indicate the proper value.
- 3 Mount the motor on the machine so that the vibration acceleration is $4.9\text{m/s}^2(0.5G)$ or less when it is measured using the method described in CAUTION 5 of Section 3.1, "COMMON".

3.3 WHEN A MOTOR IS DIRECTLY CONNECTED TO A SPINDLE VIA A COUPLING



CAUTION

- 1 When connecting the spindle and motor shaft, be sure to use a flexible coupling.
(Flexible coupling examples)
 - Diaphragm coupling (EAGLE INDUSTRY CO., LTD.)
 - Oldham's coupling
 - Gear coupling (MIKI PULLEY)



Example of disk coupling

Flexible coupling has three tolerances of degree of freedom: radial, angular, and axial displacement. This enables coupling with less vibration and less noise to achieve high-speed rotation.

- Tolerances of radial and angular displacement: Slight radial and angular displacement that could not be absorbed by centering are absorbed.
- Tolerance of axial displacement: Extension of the spindle and motor shaft due to temperature increase is absorbed.

(Caution)

- These tolerances are criteria for preventing the coupling from being damaged, not criteria for preventing load from being applied to the spindle and motor bearings. Therefore, to perform rotation with low vibration and low noise before high-speed rotation is achieved, the spindle and motor shaft must be centered.
 - FANUC has confirmed that with a coupling (disk coupling) that permits only the degrees of freedom of angular and axial displacement, rotation can take place properly if centering has been performed with a concentricity of 5 μm .
- 2 It is important to perform centering and obtain parallelism to avoid having to recourse to the flexibility of the coupling.
At high speeds, any radial displacement may cause the bearing to fail prematurely.
 - 3 Check all machines before shipping to confirm that the vibration acceleration is 0.5 G (4.9m/s^2) or less when measured using the method described in CAUTION 5 of Section 3.1, "COMMON".
 - 4 Set the torsional rigidity of the coupling to an appropriate high value. If the torsional rigidity is low, vibration may be produced during orientation.
 - 5 When attaching the coupling to the motor shaft, never use a hammer or the like; otherwise, impact load is applied to the bearing.
 - 6 When the motor shaft and the spindle are to be connected via a coupling, the motor shaft may remain pressed inside the motor when the motor shaft is inserted into the spindle. (Caution is required particularly for Oldham's coupling which requires large thrust force to be engaged.)

With the motor shaft remaining pressed inside the motor, the precompression load of the built-in bearing of the motor may be lost or become excessive, possibly causing the bearing to be defective. After connection via a coupling, check that the motor shaft does not remain pressed inside the motor.

NOTE

1 Examples of how to check that the motor shaft does not remain pressed inside the motor

- After connection via a coupling, check that the axis direction dimension (total length) of the coupling itself is correct.

* In some cases, if the motor shaft is not inserted correctly, the total length may be longer than the normal dimension.

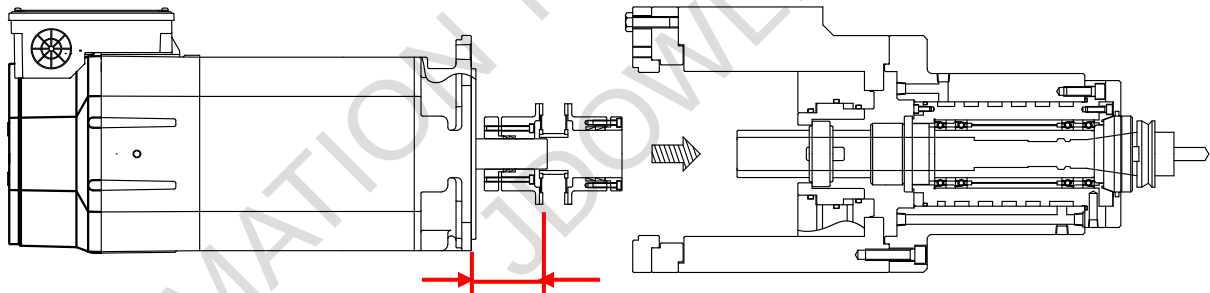
- Before inserting the coupling, measure the distance between the coupling and a datum plane of the motor (such as the inside low end), and check that the distance does not change after insertion.

Alternatively, prepare a datum plane on the machine side to facilitate measurement inside the coupling box, check the positional relation between the datum plane of the motor and the datum plane on the machine side first, and then check the position of the coupling from the datum plane on the machine side.

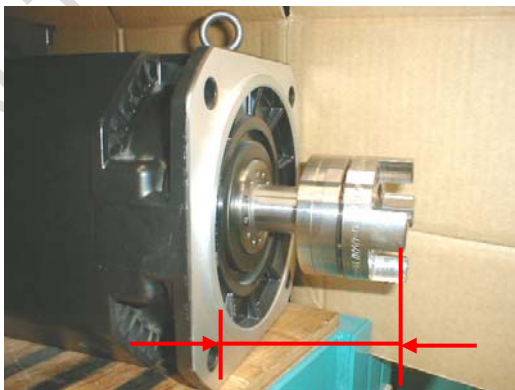
2 If the motor shaft remains pressed inside the motor

- Mount a coupling or the like to the motor shaft and pull the coupling to bring the motor shaft back to the original position.

(Reference)

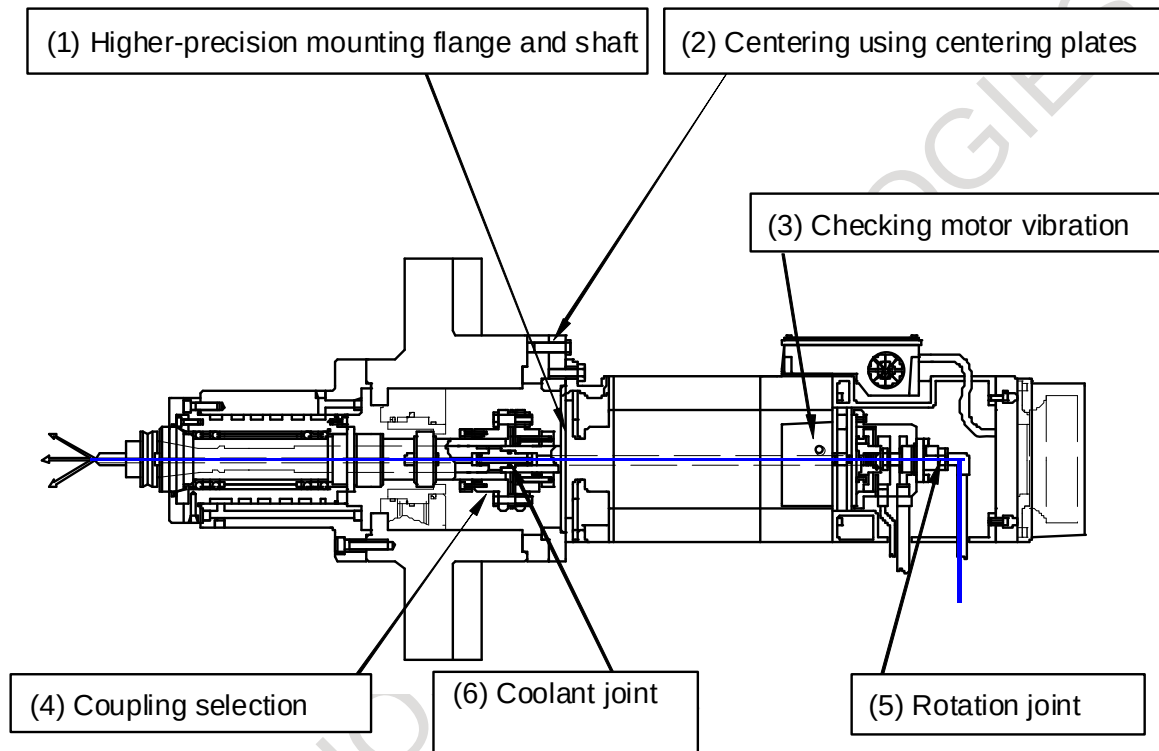


(Example) For a solid shaft motor



3.3.1 Points about the Direct Connection Structure of Spindle Motors with a Through Hole

If the motor shaft and spindle are not centered precisely when the spindle motor is directly connected to the spindle, fretting can occur with the motor shaft in a short-time operation, or the bearing of the motor can be damaged because of vibration occurring at the joint. Six important points for high-speed rotation with low vibration in a direct motor connection structure are described below.



Higher-precision mounting flange and shaft

With high-precision and low-vibration specification motors, and αiI_r series and αiI_L series motors, a mounting flange and shaft are assembled with higher precision for direct connection with the spindle. For details, see the assembling accuracy list corresponding to each motor.

Centering using centering plates

When connecting the spindle with the motor shaft, make centering with a target concentricity of $5\mu\text{m}$.

If centering accuracy measurement is difficult, the use of mounting plates for centering (called centering plates below) between the spindle head and motor is recommended. The MTB is requested to prepare centering plates.

When making centering plates, produce a socket and spigot joint on both sides with a target concentricity of $5\mu\text{m}$ or less for the spigot joint and inner surface and with a target parallelism of $20\mu\text{m}$ or less for both sides.

For centering, it is advisable to prepare a stand and orient the spindle upward.

1. When one centering plate is used

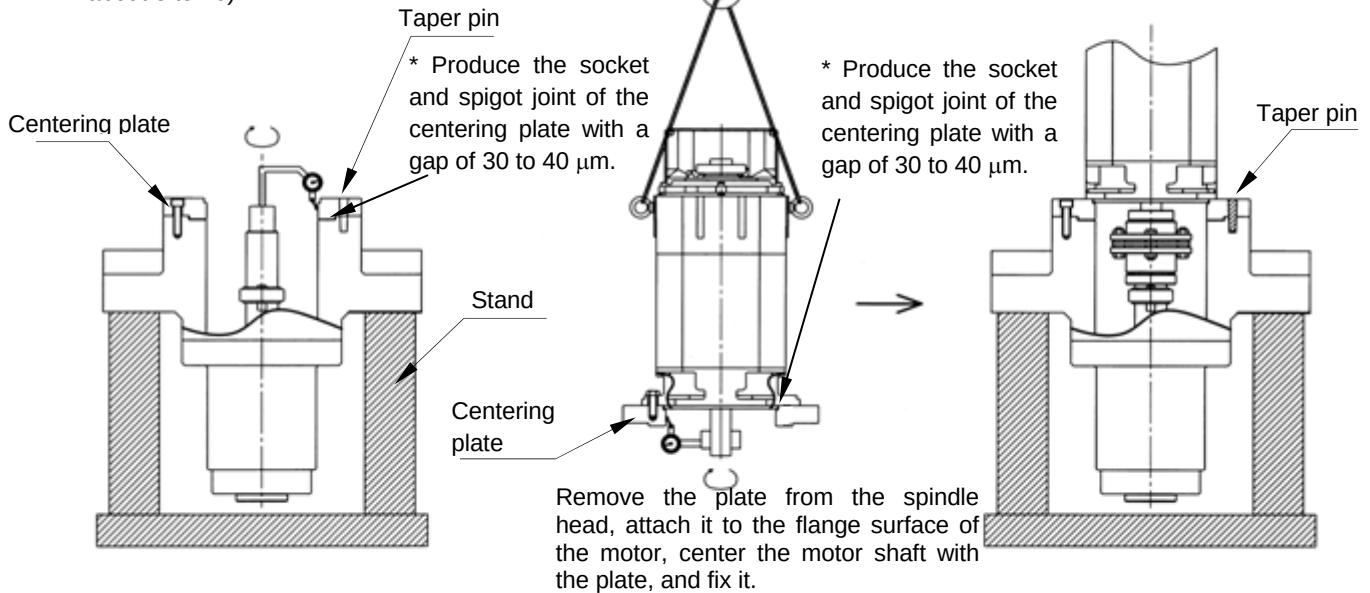
First, attach the centering plate to the spindle head and center the spindle with the inner surface of the centering plate.

Then, position the centering plate by putting a taper pin (with a diameter of about 8 to 10) on the spindle head.

Then, remove the centering plate from the spindle head, attach it to the flange surface of the motor, center the motor shaft with the inner surface of the centering plate, and fix it.
Finally, attach the motor with the centering plate attached to the spindle head using the taper pin.

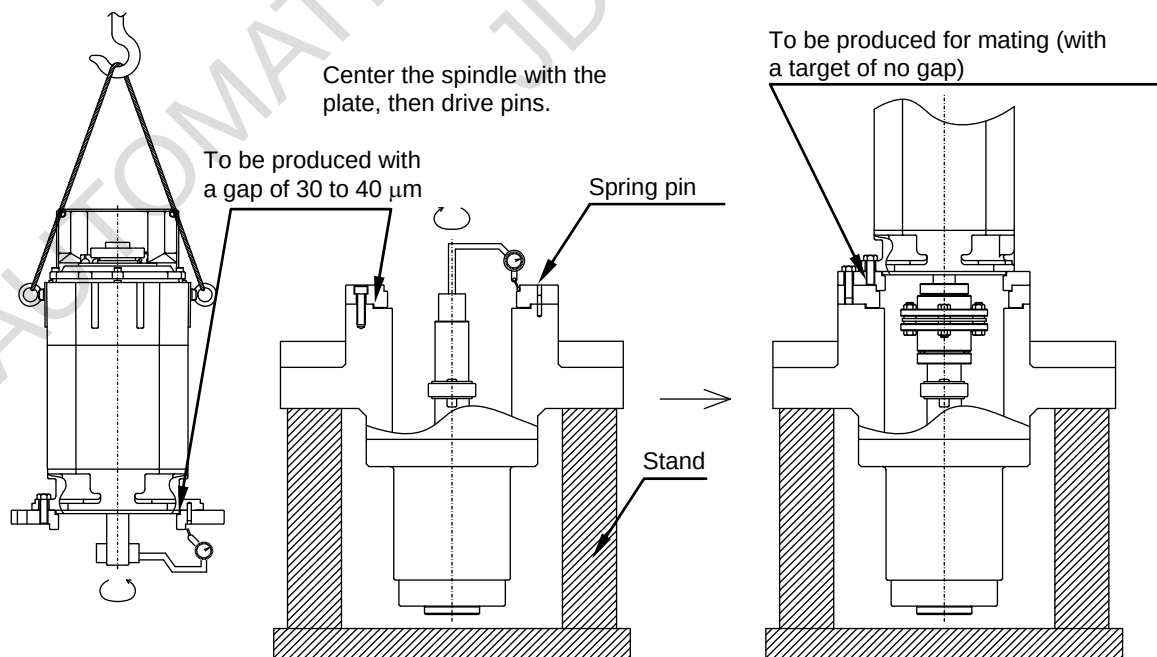
Center the spindle with the plate and fix the plate on the spindle head by putting a taper pin (with a diameter of about 8 to 10).

Attach the motor with the plate attached to the spindle head using the taper pin.



2. When two centering plates are used

Prepare two centering plates: one for the motor and the other for the spindle head. Mate the socket and spigot joints of the plates (with a target of no gap). After centering of the plate for the motor with the motor shaft, center the plate for the spindle head with the spindle. Then, attach the motor with the plate to the plate for the spindle head.



This centering structure allows high-precision installation even in the case of motor replacement in the field.

Checking motor vibration (to see whether centering is successful)

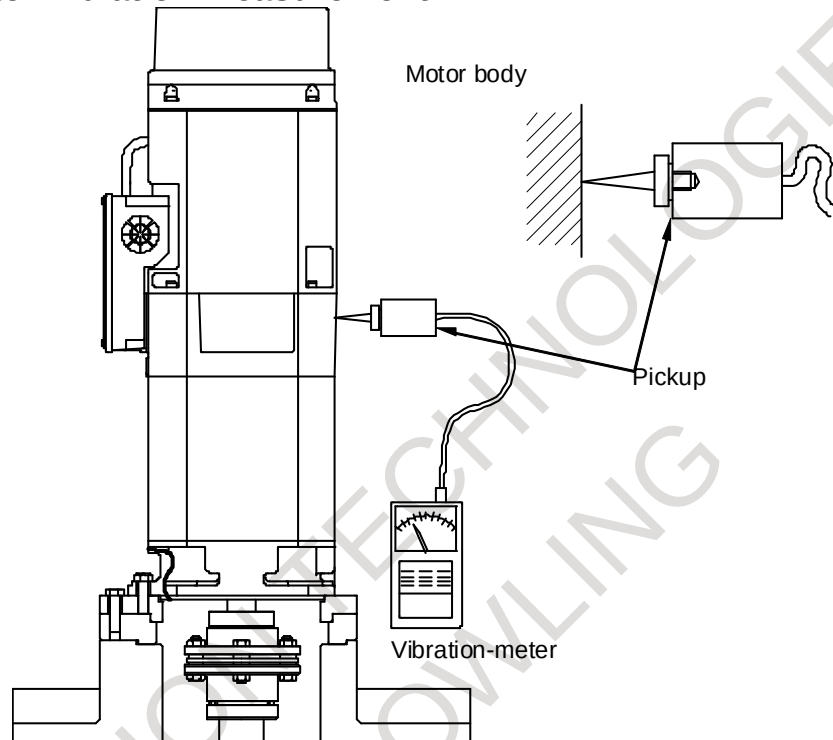
To check whether the spindle is centered with the motor successfully, measure the vibration acceleration of the motor.

Center the motor shaft with the spindle so that the vibration acceleration of the motor does not exceed 4.9m/s^2 (0.5 G) at maximum speed.

(Frequency range: 10 to 1000 Hz)

Before shipping machines, check that the vibration acceleration is 4.9m/s^2 (0.5G) or less for all motors.

Method of motor vibration measurement



Recommended vibration-meter

The following vibration-meter is recommended:

Name : SmartVibro
Model : VM-3024S
Manufacturer : IMV CORPORATION
Setting : The frequency range is fixed to 10 to 1000 Hz, so that this vibration-meter is suitable for the measurement of motor rotation components.
Select EQP (equivalent peak value) for Calculation setting.

An equivalent of the above vibration-meter, for example, the following vibration-meter is also available:

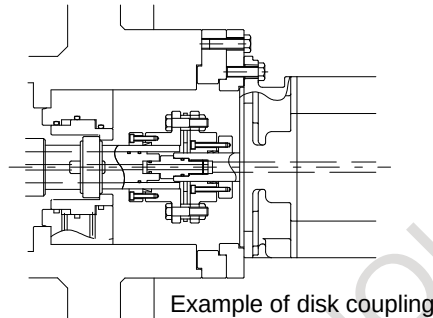
Name : Vibration Analyzer
Model : VA-12
Manufacturer : RION Co., Ltd.
Setting : Set 10 Hz for the high-pass filter and 1 kHz for the low-pass filter to make the vibration-meter suit for the measurement of motor rotation components.
This vibration-meter can display only m/s^2 (RMS) as the acceleration unit, so it is necessary to convert the value to m/s^2 (EQP). (To convert the RMS value to the EQP value, multiply the measurement value by $\sqrt{2}$.)

Coupling selection

1. If a thrust load is applied on a motor shaft, the shaft moves in the direction of the thrust. So, it is necessary to select a coupling which does not apply a thrust load on motor shaft (at the time of connecting, with increasing temperature and so on). For that reason, be sure to use a flexible coupling for connecting the spindle and motor shaft.

(Flexible coupling examples)

- Diaphragm coupling (EAGLE INDUSTRY CO., LTD.)
- Oldham's coupling
- Gear coupling (MIKI PULLEY)



Example of disk coupling

Flexible coupling has three tolerances of degree of freedom: eccentricity, declination, and axial displacement. This enables coupling with less vibration and less noise to achieve high-speed rotation.

- Tolerances of eccentricity and declination: Slight eccentricity and declination that could not be absorbed by centering are absorbed.
- Tolerance of axial displacement: Extension of the spindle and motor shaft due to temperature increase is absorbed.

(Caution)

- These tolerances are criteria for preventing the coupling from being damaged, not criteria for preventing load from being applied to the spindle and motor bearings. Therefore, to perform rotation with low vibration and low noise before high-speed rotation is achieved, the spindle and motor shaft must be centered.
 - FANUC has confirmed that with a coupling (disk coupling) that permits only the degrees of freedom of declination and axial displacement, rotation can take place properly if centering has been performed with a concentricity of 5 μm .
- 2 It is important to perform centering and obtain parallelism to avoid having to recourse to the flexibility of the coupling.
At high speeds, any eccentricity may cause the bearing to fail prematurely.
 - 3 Use a coupling in which thrust load is not applied to the motor shaft by, for example, an increased temperature, cutting operation, or coolant pressure.
 - 4 Set the torsional rigidity of the coupling to an appropriate high value. If the torsional rigidity is low, vibration may be produced during orientation.
 - 5 When attaching the coupling to the motor shaft, never use a hammer or the like; otherwise, impact load is applied to the bearing.
 - 6 After a motor shaft is inserted into spindle for connecting spindle and a motor shaft with a coupling, a motor shaft may remain pushed inside the motor. (Caution is required particularly for Oldham's coupling which requires large thrust force to be engaged.)

If motor is driven with motor shaft pushed inside the motor, pressure of motor bearings may be too much or too low, and the bearing may be broken.

Please check whether or not motor shaft is pushed inside the motor after connecting the spindle and a motor shaft with a coupling.

NOTE

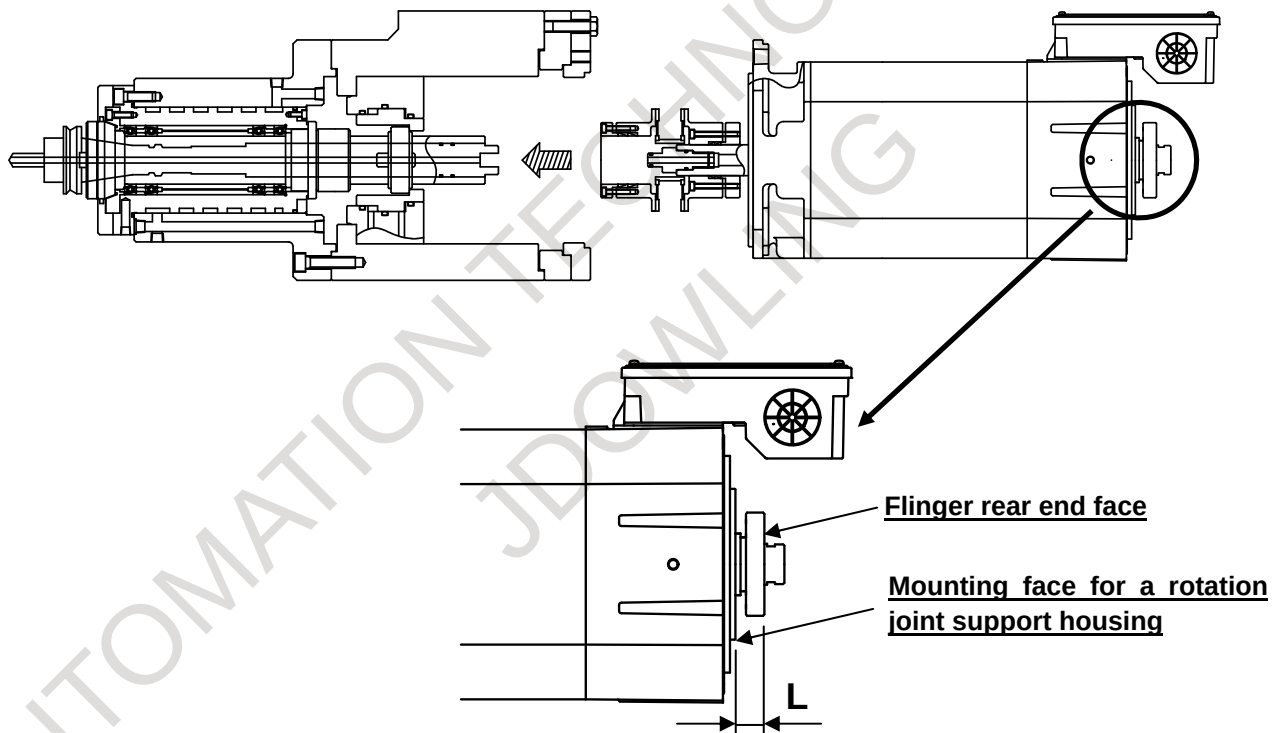
1 How to check whether or not motor shaft is pushed inside the motor

- When the motor shaft is inserted into the spindle to connect the motor shaft and spindle using a coupling, the motor shaft may remain pushed inside the motor. So, measure the distance (L in the figure below) between the mounting face for a rotation joint support housing and the flinger rear end face before and after insertion, and check that the two measured values are identical.
- Check whether or not the axial length of the coupling(full length) is correct after connecting the spindle and a motor shaft with coupling.
 - * The axial length of the coupling may be longer than normal length if connection of a coupling is not correct.

2 If the motor shaft remains pressed inside the motor

- The motor shaft of a spindle motor with a through hole protrudes from the rear side of the motor. Push the motor shaft back to the original position.

(Reference)



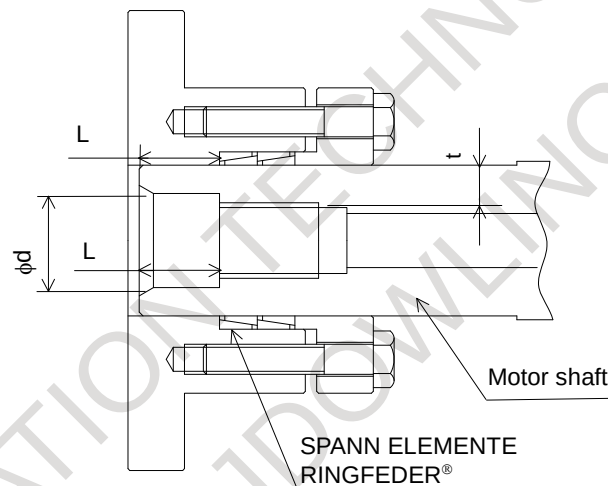
NOTE

Select SPANN ELEMENTE that can withstand a torque(*1) 3.6 times greater than the S3 rated torque to protect against slippage in intermittent cutting. With the models $\alpha i\Gamma$ 1/24000, $\alpha i\Gamma$ 1.5/20000, and $\alpha i\Gamma$ 2/20000, however, the motor shaft to which a SPANN ELEMENTE is fastened is thin. So, select SPANN ELEMENTE and a fastening method so that the stress applied to the motor shaft does not exceed the yield point of the motor shaft (490 N/mm²). As shown below, provide a space of L mm or more between the SPANN ELEMENTE and the tip of the motor shaft.

*1 With the high-acceleration type models $\alpha i\Gamma$ 1/24000, $\alpha i\Gamma$ 1.5/20000, $\alpha i\Gamma$ 2/20000, $\alpha i\Gamma$ 3/12000, and $\alpha i\Gamma$ 3/15000, select SPANN ELEMENTE that can withstand a torque 3 times greater than the maximum torque at acceleration time.

See the example of SPANN ELEMENTE selection shown below. For the method of calculation and the location of fastening to the motor shaft, contact the following company:

TAKEDA TRADE CO., LTD. (RINGFEDER®)



The models $\alpha i\Gamma$ 1.5/20000 and $\alpha i\Gamma$ 2/20000 have a less thickness (t).



[Stress applied to motor shaft] ≤ [Motor shaft yield point (490 N/mm²)]

Model	$\alpha i\Gamma$ 1/24000 $\alpha i\Gamma$ 1.5/20000 $\alpha i\Gamma$ 2/20000 $\alpha i\Gamma$ 3/12000	$\alpha i\Gamma$ 6/12000 $\alpha i\Gamma$ 8/12000 $\alpha i\Gamma$ 8/15000 $\alpha i\Gamma$ 15/10000 $\alpha i\Gamma$ 15/15000 $\alpha i\Gamma$ 22/10000
ϕd	$\phi 16^{+0.018}_{-0}$	$\phi 20^{+0.021}_{-0}$
L	13	17

Model	$\alpha i\Gamma$ 8/20000	$\alpha i\Gamma$ 15/15000 $\alpha i\Gamma$ 26/15000
ϕd	$\phi 20^{+0.021}_{-0}$	$\phi 30^{+0.0233}_{-0}$
L	17	20

An example of SPANN ELEMENTE selection for the model $\alpha i\tau$ 2/20000 is given below.

[Example of selection]

Condition 1: Two sets of SPANN ELEMENTE RfN8006 22 × 26 (inner diameter × outer diameter) are used.
Condition 2: Four M5 bolts (strength class: 12.9) are tightened by a tightening torque of 10.0 [N·m].



Surface pressure P (170.7 [N/mm²]) is produced on the motor shaft, and torque T (128.2 [N·m]) becomes transferable.



Checking transferable torque T
[Check]: Transferable torque $T \geq 3$ times maximum torque at motor acceleration time
The maximum torque at acceleration time of the model $\alpha i\tau$ 2/20000 is 34.8 [N·m]^{(*)2}. Accordingly, the following transferable torque is obtained:
 $128.2 \geq 3 \times 34.8$



From the produced surface pressure P and the transferable torque T, check stress σ applied onto the motor shaft.
[Check]: Stress σ applied onto the motor shaft $\leq$ Motor shaft yield point (490 [N/mm²])
From the produced surface pressure P (170.7 [N/mm²]) and the transferable torque (128.2 [N·m]), stress σ applied onto the motor shaft is calculated as $\sigma = 453.1$ [N/mm²]. Accordingly, the following is obtained:
 $453.1 \leq 490$

*2 This data is calculated from a maximum output at acceleration time used as a guideline for power supply (αiPS) selection and from the motor base speed, and is not a guaranteed value.

Rotation joint

When coolant is flown through the through hole of the motor shaft, a coolant pressure acts on the end face of the coolant joint attached to the shaft front end, thus producing a thrust load that pushes the motor shaft backward.

If a rotation joint of separate external support type is attached to the motor shaft rear end, a coolant pressure acts also on the rotation joint to push the motor shaft forward, and therefore the thrust load can be canceled.

(To use a rotation joint of other than the separate external support type, consult with FANUC.)

The $\alpha i I_T$ series is designed assuming that a rotation joint indicated in the table below is attached to the shaft rear end:

Rotation joints of separate external support type manufactured by Deublin or Rix.

Motor model	$\alpha i I_T$ 1 to $\alpha i I_T$ 3		$\alpha i I_T$ 6 to $\alpha i I_T$ 22 $\alpha i I_L$ 8 to $\alpha i I_L$ 26	
Mounting screw size	M12 $\times$ 1.25 (left-hand screw)		M16 $\times$ 1.5 (left-hand screw)	
Piping direction	Straight type	Elbow type	Straight type	Elbow type
Specification of Deublin (Caution)	1129-036-327	1129-033-327	1129-036-301	1129-033-301
Specification of Rix (Caution)	ESX20M-S012	ESX20M-E012	ESX20M-S016	ESX20M-E016
Function	Spindle-through coolant during rotation or stopping Air-through during stopping (Air-through disabled during rotation)			



CAUTION

For selecting a rotation joint, if the coolant through frequency is high during the tact time when the rotation joint is used on a dedicated machine or line machine, be sure to consult with the rotation joint manufacturer.
Deublin provides rotation joints for a dedicated machine and line machine.
Contact Deublin.

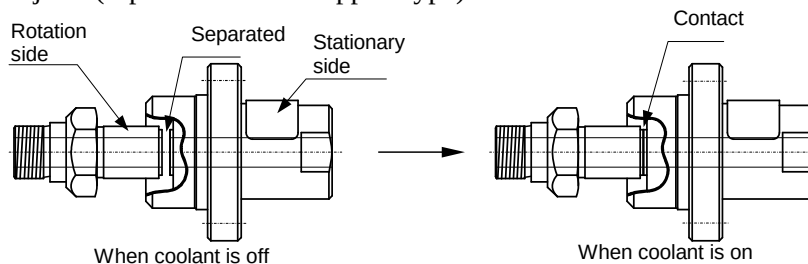
NOTE

Inquire the following of the rotation joint manufacturer:

- Details of features of the rotation joint and its installation
- Type for enabling air-through during rotation

For rotation joints and support housings, contact:
Deublin Japan Ltd.
Rotation Joint Div., RIX CORPORATION Co., LTD.

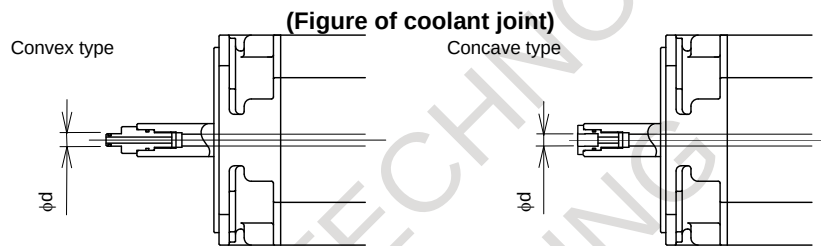
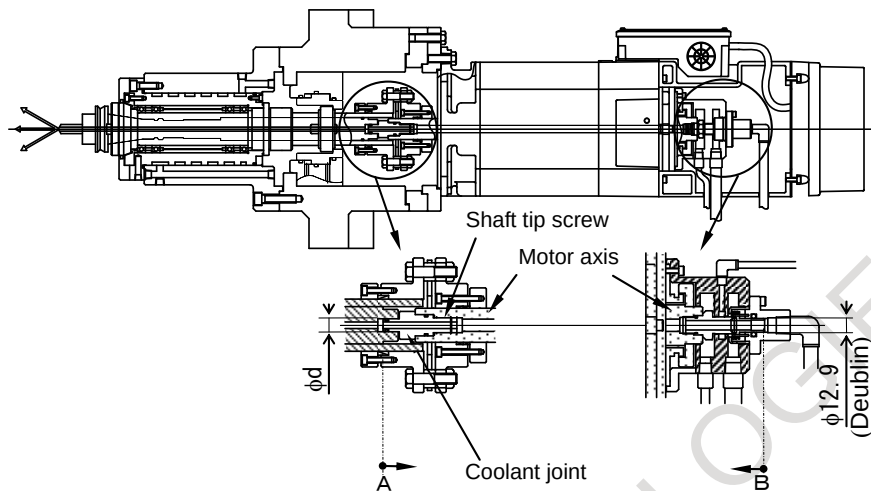
Example of rotation joint (separate external support type)



* Before attaching a rotation joint to the motor shaft, apply screw locking adhesive.

COOLANT JOINT

The machine tool builder is to prepare the following coolant joint:



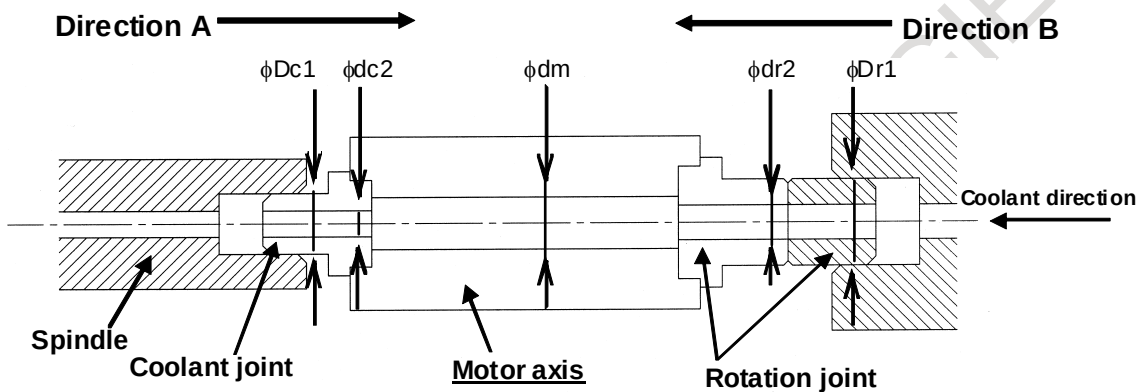
- *
 - When installing the coolant joint, apply thread-locking adhesive to the joint, and be sure to use the screw used at the end of the motor axis.
 - Press the coolant joint against the axis end face.
- (1) When center-through coolant is used, thrust load due to coolant is applied between the spindle and motor and between the motor and rotation joint. The motor can be made stable without affecting impacts such as pulsation of the coolant pump by setting a slightly larger thrust load in direction B in the above figure than a thrust load in direction A.
 - (2) When a recommended rotation joint is used, the pressure reception diameter on the rotation joint side is 12.9 (Deublin) or 12.6 (Rix). So, ensure that the pressure reception diameter (ϕd) on the side of a coolant joint attached to the motor shaft tip follows the table below.

* When the coolant pressure is 70 kgf/cm² or less (For a coolant pressure of more than 70 kgf/cm², consult with FANUC.)

Motor model	Manufacturer	Rotation joint specification	Pressure reception diameter ϕ d on coolant joint side	Shaft tip screw size
$\alpha i I T$ 1 to $\alpha i I T$ 3	Deublin	1129-036-327 1129-033-327	$\Phi 12.5$	M12
	Rix	ESX20M-S012 ESX20M-E012	$\Phi 12.2$	

Motor model	Manufacturer	Rotation joint specification	Pressure reception diameter ϕd on coolant joint side	Shaft tip screw size
$\alpha i \Gamma$ 6 to $\alpha i \Gamma$ 22 $\alpha i \Gamma$ 15 to $\alpha i \Gamma$ 26	Deublin	1129-036-301 1129-033-301	$\Phi 12.0$	M16
	Rix	ESX20M-S016 ESX20M-E016	$\Phi 11.7$	
$\alpha i \Gamma$ 8/20000	Deublin	1129-036-301 1129-033-301	$\Phi 12.5$	
	Rix	ESX20M-S016 ESX20M-E016	$\Phi 12.2$	

(3) Concept of thrust load applied to the motor



<1> In the above figure, calculate the thrust load applied to the motor.

Coolant pressure: P

Outside diameter of coolant joint: $\phi Dc1$, outside area: $Sc1$

Inside diameter of coolant joint: $\phi dc2$, inside area: $Sc2$

Inside diameter of motor axis: ϕdm , inside area: Sm

Outside diameter of rotation joint: $\phi Dr1$, outside area: $Sr1$

Inside diameter of rotation joint: $\phi dr2$, inside area: $Sr2$

• Thrust load applied to the motor in direction A: $F_A = P(Sc1 - Sc2) + P(Sm - Sr2)$

• Thrust load applied to the motor in direction B: $F_B = P(Sr1 - Sr2) + P(Sm - Sc2)$

• Total thrust load applied to the motor:

$$F = F_B - F_A = P(Sr1 - Sr2) + P(Sm - Sc2) - (P(Sc1 - Sc2) + P(Sm - Sr2)) \\ = P(Sr1 - Sc1) = P(\pi(\phi Dr1)^2/4 - \pi(\phi Dc1)^2/4)$$

Therefore, only the coolant pressure, the outside diameter of the rotation joint ($\phi Dr1$), and the outside diameter of the coolant joint ($\phi Dc1$) are related to the calculation of the thrust load applied to the motor.

<2> Example for calculating the thrust load

Assume that the coolant pressure is 70 kgf/cm^2 , the pressure reception diameter is $\phi Dc1 = \phi 12$.

Also assume that the rotation joint is manufactured by Deublin ($\phi Dr1 = \phi 12.9$).

The thrust load applied to the motor is then calculated as follows:

$$F = 70 \text{ kgf/cm}^2 \times (1.31 \text{ cm}^2 (\phi 12.9) - 1.13 \text{ cm}^2 (\phi 12)) = 12.6 \text{ kgf}$$

A thrust load of 12.6 kgf is applied in such a direction that it presses the motor shaft forward.

Also when the pressure reception diameter is $\phi Dc1 = \phi 12.5$, a thrust load of 5.6 kgf can be obtained by similar calculation.

(4) Allowable thrust load on the motor (in the direction in which the motor shaft is pressed forward)

Motor model	Allowable thrust load
$\alpha i I_T$ 1 to $\alpha i I_T$ 3 $\alpha i L$ 8/20000	58.8N (6kgf)
$\alpha i I_T$ 6 to $\alpha i I_T$ 22 $\alpha i L$ 15 to $\alpha i L$ 26	127N (13kgf)

Rotation joint support housing

The machine tool builder is to prepare a rotation joint support housing. To secure a housing, use a socket and spigot joint and six M5 tapped holes at the motor rear end. Prepare six M5 bolts to secure a housing. When a rotation joint of separate external support type is used, cutting fluid leaks from the sealing section (contact section between the stationary side and rotation side). So, be sure to provide a drain on the housing for the rotation joint. A drain of PT3/8 or more is required, and a hose with an inner diameter of $\phi 12$ mm or more is required.

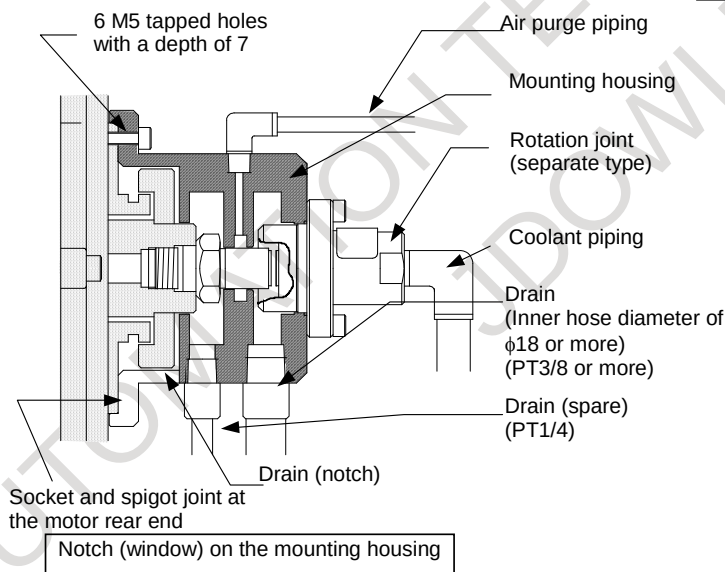
(To determine the final figure of a drain, be sure to contact the manufacturer of a rotation joint.)

A housing of labyrinth structure for preventing cutting fluid from penetrating into the inside of the motor is required. Particularly when the motor is oriented downward vertically, enhance drainage by means such as air purging.

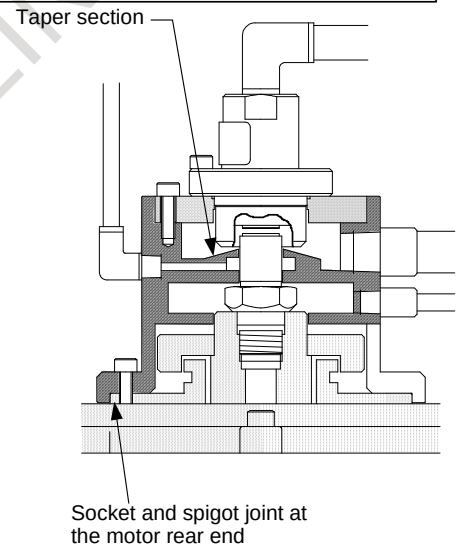
When the rotation joint is damaged, a large amount of cutting fluid can leak. So, provide many notches on the housing. Moreover, attach a flow rate sensor to the drain to perform periodic flow rate management. For details, refer to the specifications of each rotation joint.

(Example of rotation joint support housing)

When the motor is oriented horizontally



When the motor is oriented downward vertically

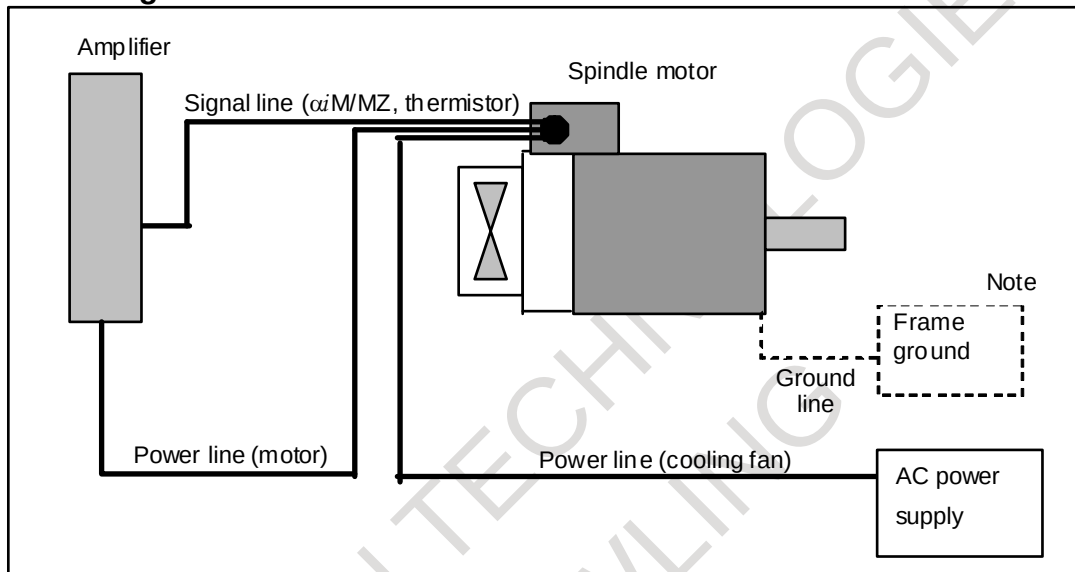


4 CONNECTING A SPINDLE MOTOR

4.1 CONNECTING A SPINDLE MOTOR

The FANUC AC spindle motor αi series requires that the power line of the motor and the signal line of the detector be connected to the amplifier. The cooling fan must also be connected to the prescribed power supply.

Connection diagram

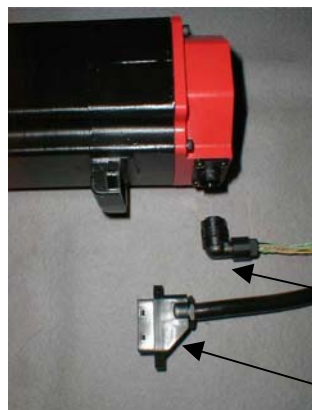


⚠ CAUTION

If a motor is not connected to ground through the machine (cabinet) in which the motor is installed, connect the motor grounding point and the amplifier grounding point to absorb noise. In this case, use a wire with a thickness of at least 1.25 mm², other than the GND conductor in the power line. Keep the wire as far from the power line as possible.

4.1.1 Connecting the Power Line of αi I 0.5/10000, αi I 0.5/15000 and αi I 0.5/10000HV

The power line and signal line are connected with the connector. Use the shield cable for the connection. Refer to FANUC SERVO AMPLIFIER αi series DESCRIPTIONS (B-65282EN) for other respects in the connection.



Signal line connector

Power line connector

(1) Connection of power lead

Connector parts related to cable side

	Ordering number	Tyco Electronics AMP specification
Connector kit of power lead	A06B-6114-K220/S (FANUC specification : A63L-0001-0875/SC)	1473063-2

Power lead specification

Number of core	Conductor size	Grounding cable cross-section	Sheath diameter (Note)
4 or more	AWG16 to 18	$\phi 1.8$ to 2.8mm	$\phi 9.2$ to 11.4mm

NOTE

If the outer sheath diameter is inadequate, the waterproofness can degrade.

Connector pins arrangement

1	2	3	4	5	6
U	V	W	G	-	-

4.1.2 Connecting the Power Line of α iI 1 to α iI 50, α iI 1HV to α iI 150HV, α iI_P 12 to α iI_P 60, α iI_P 15HV to α iI_P 60HV, α iI_T 1 to α iI_T 22, α iI_T 1.5HV to α iI_L 22HV, α iI_L 8 to α iI_L 26, α iI_L 8HV to α iI_L 26HV

Connect the cables for the motor power line and fan motor to the terminal block in the terminal box.
 α iM sensor or α iMZ sensor signal or thermistor signal use a connector manufactured by Tyco Electronics AMP.

The connector housing and the connector are attached to the motor.

α iI 1 to α iI 50

Model	Size of screws used in the terminal block	Power lead		Fan motor
		U,V,W,G	U,V,W,X,Y,Z,G	FMU,FMV,FMW
α iI 1/10000, α iI 1.5/10000		M5	-	M4
α iI 2/10000 to α iI 15/8000		M5	-	Screw-less terminal block
α iI 18/8000 to α iI 22/8000		M6	-	Screw-less terminal block
α iI 30/7000 to α iI 40/7000		M10	-	Screw-less terminal block
α iI 50/5000		M8	-	Screw-less terminal block
α iI 1/15000, α iI 1/24000, α iI 1.5/20000		M5	-	M4
α iI 2/20000, α iI 3/12000, α iI 3/15000		M5	-	Screw-less terminal block
α iI 6/12000 to α iI 15/12000		-	M5	Screw-less terminal block
α iI 18/12000 to α iI 22/12000		-	M6	Screw-less terminal block

* For α iI 6/15000, it is necessary to order three jumpers (A65L-0001-0630#SD) separately.

α iI 1HV to α iI 50HV

Model	Size of screws used in the terminal block	Power lead			Fan motor	
		U,V,W,G	U,V,W,X,Y,Z,G	U ₁ ,V ₁ ,W ₁ ,U ₂ ,V ₂ ,W ₂ ,G	FMU,FMV,FMW	FMU,FMV
α iI 1/10000HV to α iI 1.5/10000HV		M5	-	-	-	M4
α iI 2/10000HV to α iI 3/10000HV		M5	-	-	-	Screw-less terminal block
α iI 6/10000HV to α iI 22/8000HV		M5	-	-	Screw-less terminal block	-
α iI 30/7000HV, α iI 40/7000HV		M10	-	-	Screw-less terminal block	-
α iI 50/5000HV		M8	-	-	Screw-less terminal block	-
α iI 60/5000HV		M10	-	-	M3.5	-
α iI 75/5000HV		M8	-	-	Screw-less terminal block	-
α iI 100/5000HV		-	M8	-	Screw-less terminal block	-
α iI 150/5000HV		-	-	M8	Screw-less terminal block	-

4. CONNECTING A SPINDLE MOTOR

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$\alpha i P$ 12 to $\alpha i P$ 60

Model	Size of screws used in the terminal block	Power lead	Cooling fan
		U,V,W,X,Y,Z,G	FMU,FMV,FMW
$\alpha i P$ 12/6000 to $\alpha i P$ 22/6000		M5	Screw-less terminal block
$\alpha i P$ 30/6000 to $\alpha i P$ 50/6000		M6	Screw-less terminal block
$\alpha i P$ 60/5000		M8	M3.5

$\alpha i P$ 15HV to $\alpha i P$ 60HV

Model	Size of screws used in the terminal block	Power lead	Cooling fan
		U,V,W,X,Y,Z,G	FMU,FMV,FMW
$\alpha i P$ 15/6000HV, $\alpha i P$ 22/6000HV		M5	Screw-less terminal block
$\alpha i P$ 40/6000HV, $\alpha i P$ 50/6000HV		M6	Screw-less terminal block
$\alpha i P$ 60/5000HV		M8	M3.5

$\alpha i T$ 1 to $\alpha i T$ 22

Model	Size of screws used in the terminal block	Power lead			Cooling fan
		U,V,W,G	U,V,W,X,Y,Z,G	U1,V1,W1,U2,V2,W2,G	FMU,FMV,FMW
$\alpha i T$ 1/24000, $\alpha i T$ 1.5/20000		M5	-	-	M4
$\alpha i T$ 2/20000, $\alpha i T$ 3/12000, $\alpha i T$ 3/15000		M5	-	-	Screw-less terminal block
$\alpha i T$ 6/12000 to $\alpha i T$ 15/10000		-	M5	-	Screw-less terminal block
$\alpha i T$ 15/15000		-	-	M6	Screw-less terminal block
$\alpha i T$ 22/10000		-	M6	-	Screw-less terminal block

$\alpha i T$ 1.5HV to $\alpha i T$ 22HV

Model	Size of screws used in the terminal block	Power lead		Cooling fan	
		U,V,W,G	U,V,W,X,Y,Z,G	FMU,FMV,FMW	FMU,FMV
$\alpha i T$ 1.5/20000HV		M5	-	-	M4
$\alpha i T$ 2/20000HV, $\alpha i T$ 3/12000HV		M5	-	-	Screw-less terminal block
$\alpha i T$ 6/12000HV to $\alpha i T$ 22/10000HV		-	M5	Screw-less terminal block	-

$\alpha i L$ 8 to $\alpha i L$ 26

Model	Size of screws used in the terminal block	Power lead
		U1,V1,W1,U2,V2,W2,G
$\alpha i L$ 8/20000		M5
$\alpha i L$ 15/15000, $\alpha i L$ 26/15000		M6

α iL 8HV to α iL 26HV

Model	Size of screws used in the terminal block	Power lead
		U,V,W,X,Y,Z,G
α iL 8/20000HV		M5
α iL 15/15000HV, α iL 26/15000HV		M6

(1) Cable for the power lead

For the power lead cable specification, refer to "FANUC SERVO AMPLIFIER α i series DESCRIPTIONS (B-65282EN)".

FANUC recommends the following cables with a small cable diameter:

LMFC power lead: Fire-retardant Polyflex power cable (Heat resistance: 105°C)

Flonlex power lead: Manufactured by HITACHI CABLE, Ltd. (Heat resistance: 200°C)

FLUBON WIRE: Manufactured by KURABE (Heat resistance: 200°C)

(2) Cable for the fan motor

For the fan motor current value and cable specifications, refer to Section I.4.3, "FAN MOTOR CONNECTION" in this manual.

(3) Connection of power leads to the terminal block**⚠ WARNING**

To attach the power leads and jumpers, follow the procedure described in this section to make connections with specified torque. And do not loosen the screws not to wire. Driving a motor with terminals loosened could result in the terminal board overheating and causing a fire. In addition, it may remove terminal to cause a ground fault, short circuit, or electric shock.

⚠ CAUTION

- When attaching the power leads and jumpers to the terminal board of a motor, tighten the screws with torque specified in the table. For the terminal size of a terminal block, see Section 2.1.4.3, "Connecting the Power Line of α iL 1 to α iL 50, α iL 1HV to α iL 150HV, α iLP 12 to α iLP 60, α iLP 15HV to α iLP 60HV, α iLT 1 to α iLT 22, α iLT 1.5HV to α iL 22HV, α iL 8 to α iL 26, α iL 8HV to α iL 26HV " in Part III.

Terminal size	Tightening torque [N·m]
M4	1.1 to 1.5
M5	2.0 to 2.5
M6	3.5 to 4.5
M8	8 to 10
M10	15 to 16

- To maintain the required isolation distance, observe the following:
 - When attaching a crimp terminal at the end of a power lead, cover the crimped portion of the crimp terminal with insulating tube.
 - If the terminal board is provided with an insulating cover, fasten the power leads with the screws, and then put back the insulating cover in place.
- If you want to energize an output switching type motor only with the low- or high-speed winding rather than switching its output, jumper the low- or high-speed winding, whichever is applicable, and then connect three power leads (the U-, V-, and W-phase wires) to the motor (except for the α iLT 15/12000 and α iL series motors).

For the following motors, a jumper is provided as standard in the terminal block.

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Model name	Type of supplied jumper
α IL 6/12000, α IL 8/10000 α IL 12/12000, α IL 15/12000 α IL 18/12000, α IL 22/12000	For low-speed winding (Y connection)
α ILP 12/6000, α ILP 12/8000 α ILP 15/6000, α ILP 15/8000 α ILP 18/6000, α ILP 18/8000 α ILP 22/6000, α ILP 22/8000 α ILP 30/6000, α ILP 40/6000 α ILP 15/6000HV, α ILP 22/6000HV α ILP 40/6000HV	For High-speed winding (Δ connection)

α IL 6/15000 is a motor energized only with the high-speed winding (Δ connection) rather than switching its output. Order the following jumpers separately.

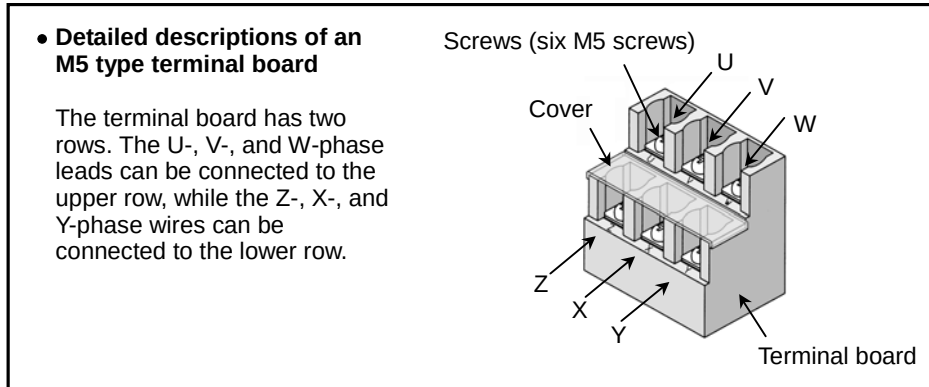
Terminal size	Specification of the winding to be used	Ordering number	Required quantity
α IL 6/15000	High-speed winding	A65L-0001-0630/SD	3

If you want to any other output switching type motor, place an order for jumpers according to the following list.

Terminal size	Specification of the winding to be used	Ordering number	Required quantity
M5	Low-speed winding	A65L-0001-0630/SS	1
M5	High-speed winding	A65L-0001-0630/SD	3
M6	Low-speed winding	A290-1410-X416	1
M6	High-speed winding	A290-1410-X417	3

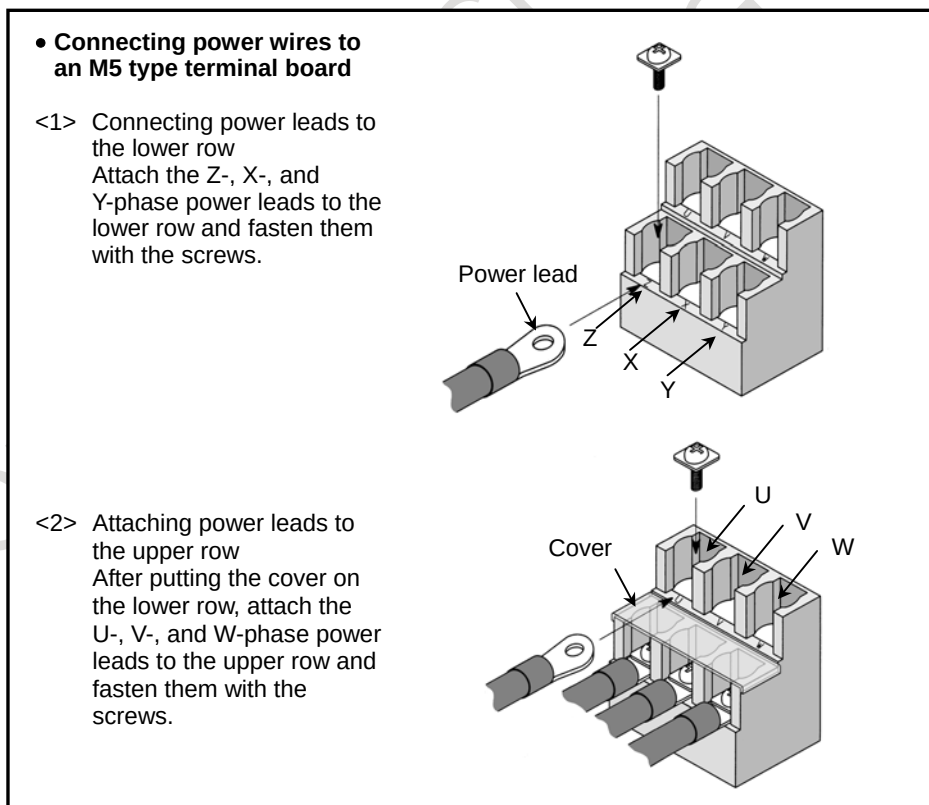
5. How to connect power leads to output switching type motors

For output switching type motors, six power leads (the U-, V-, W-, X-, Y-, and Z-phase wires) can be connected on the terminal board.



1) Using the motor by switching its output

To use the motor by switching its output, connect the six power leads (the U-, V-, W-, X-, Y-, and Z-phase wires) respectively to the terminal board screws marked U, V, W, X, Y, and Z. (For the αi Tr 15/12000 and αi L series motors, the terminal board screws are marked U₁, V₁, W₁, U₂, V₂, and W₂.)



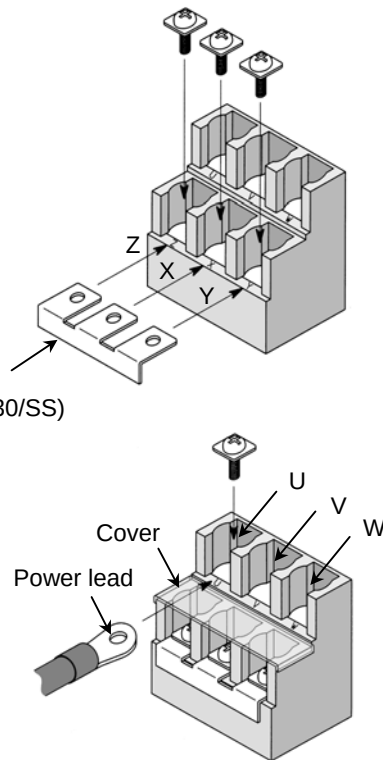
- 2) Using the motor by energizing it only with the low-speed winding (Y connection) rather than switching its output

• Connecting power leads to an M5 type terminal board

- <1> Mounting a jumper
Mount a jumper on the lower row to make electric connections (Z-X-Y) among the three terminals on the lower row.

Jumper
(A65L-0001-0630/SS)

- <2> Attaching power leads
After putting the cover on the lower row, attach the U-, V-, and W-phase power leads to the upper row and fasten them with the screws.

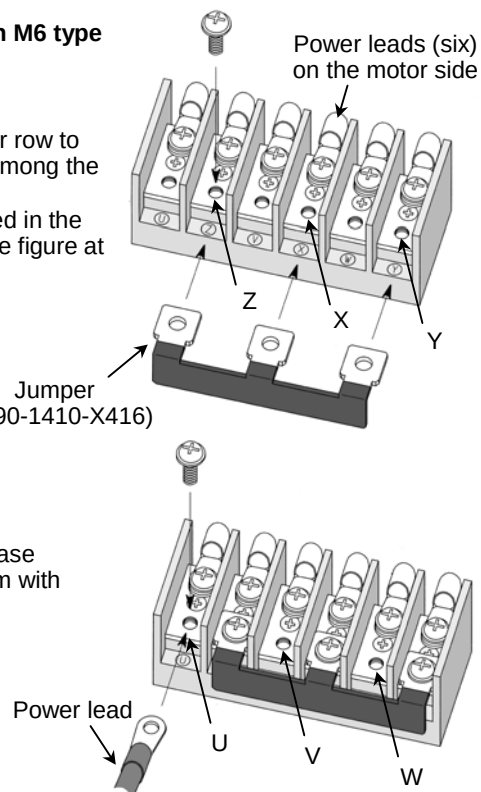


• Connecting power leads to an M6 type terminal board

- <1> Mounting a jumper
Mount a jumper on the lower row to make electric connections among the Z, X, and Y terminals. The jumper must be mounted in the specified orientation. See the figure at the right.

Jumper
(A290-1410-X416)

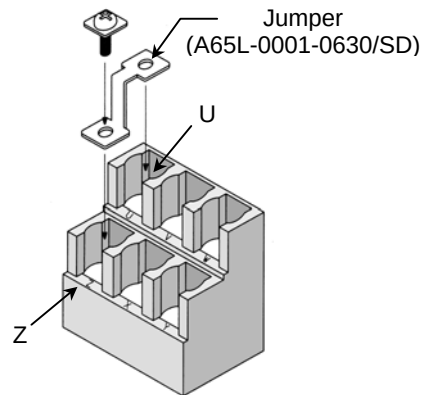
- <2> Attaching power leads
Attach the U-, V-, and W-phase power leads and fasten them with the screws.



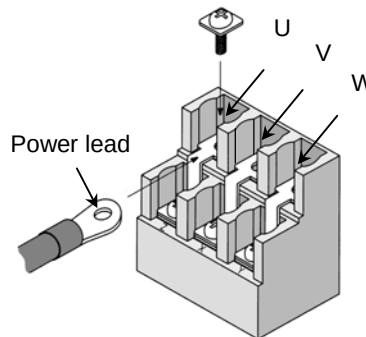
- 3) Using the motor by energizing it only with the high-speed winding (Δ connection) rather than switching its output

• **Connecting power leads to an M5 type terminal board**

- <1> Mounting jumpers
Mount three jumpers between the upper and lower rows to make electric connections between U and Z, between V and X, and between W and Y.

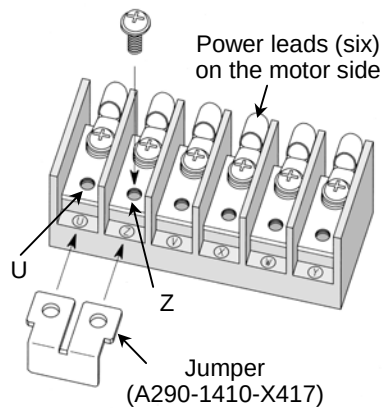


- <2> Attaching power leads
Attach the U-, V-, and W-phase power leads to the upper row and fasten them with the screws. No cover need be put on the lower row.

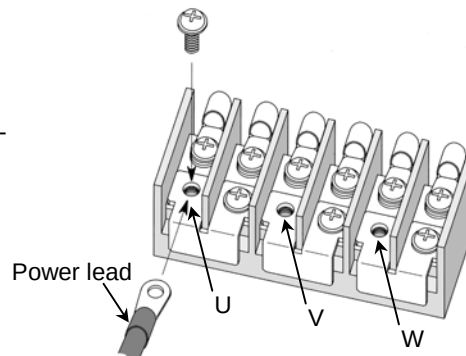


• **Connecting power leads to an M6 type terminal board**

- <1> Mounting jumpers
Mount three jumpers to make an electric connection in each pair of adjacent terminals (between U and Z, between V and X, and between W and Y). The jumper must be mounted in the specified orientation. See the figure at the right.



- <2> Attaching power leads
Attach the U-, V-, and W-phase power leads and fasten them with the screws.



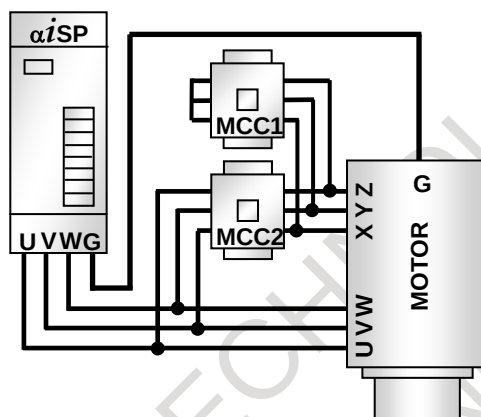
5. Connecting the motor and amplifier when output switching is used

To use output switching, connect the motor and amplifier as shown in the figure below. The switching method varies depending on the model used. Confirm the switching method by referring to Chapter 2, "SPECIFICATIONS", in each series.

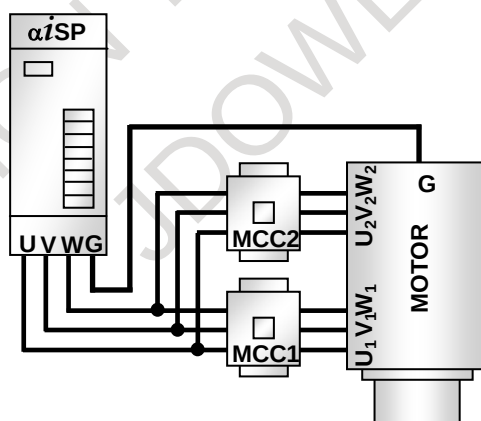
6. Connection between the motor and amplifier when winding switching is used

When winding switching is used, connect the motor and amplifier as shown in the figure below. The switching method varies depending on the model used. Confirm the switching method by referring to Chapter 2, "SPECIFICATIONS", in each series.

1) Y-Δ switching



2) Y-Y switching



Relationship between the magnetic contactors (MCC) and the low- and high-speed windings

	Low-speed winding	High-speed winding
MCC1	ON	OFF
MCC2	OFF	ON

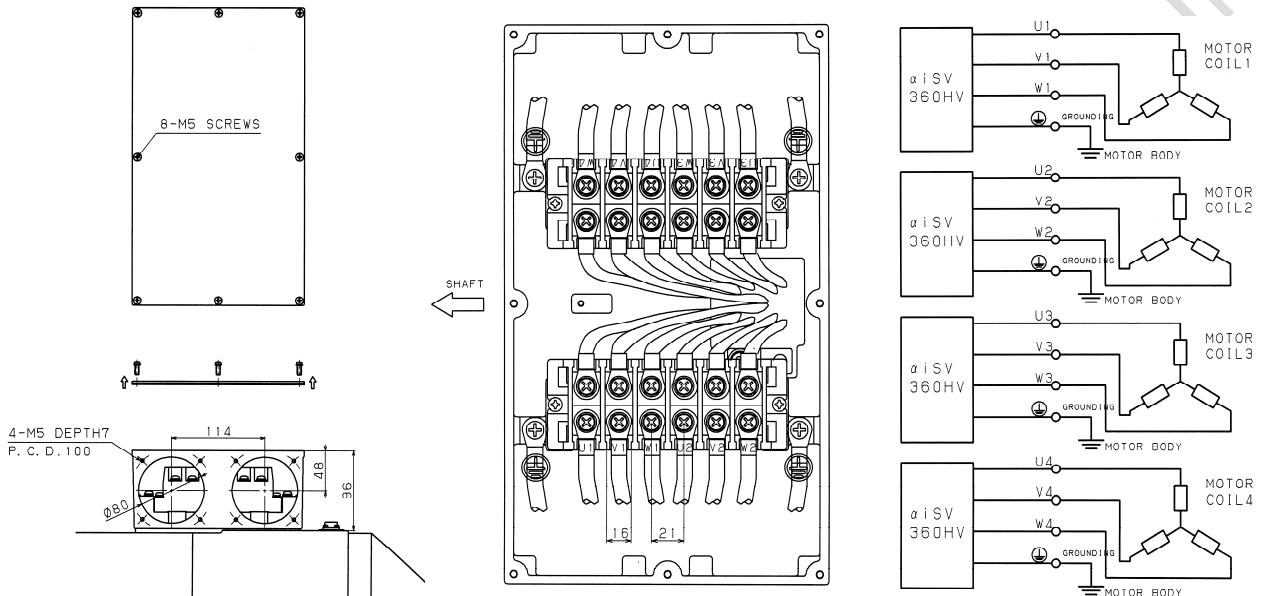
NOTE

- For explanations about the switching unit and the low-/high-speed winding switching sequence, refer to the FANUC SERVO AMPLIFIER αi -B series DESCRIPTIONS (B-65412EN).

4.1.3 Connecting the Power Line of α iS 2000/2000HV

For wiring, the eight M5 pan head machine screws can be removed to take apart the terminal box. For mounting, tighten the screws with a tightening torque of "2.0 to 2.5 Nm" with no foreign matter caught after ensuring that the rubber water-proof packing is not damaged.

This motor is driven by four α iSV 360HV servo amplifiers. To four sets of U, V, and W terminals in the motor terminal block, one set of U, V, and W terminals is connected for each amplifier.



Power terminal size, grounding terminal size: M6
Screw tightening torque: 3.5Nm to 4.5Nm

⚠ CAUTION

- 1 When attaching the power leads and jumpers to the terminal block, follow the procedure described in this section to make connections with the specified torque properly. Driving a motor with a loose terminal could result in the terminal block overheating and causing a fire. In addition, it may remove a terminal to cause a ground fault, short circuit, or electric shock.
- 2 To maintain the required isolation distance, observe the following points. When attaching a crimp terminal at the end of a power lead, be sure to cover the crimped portion of the crimp terminal with insulating tube. When the terminal block is provided with an insulating cover, fasten the power leads with the screws, and then put the insulating cover back in place.

(1) Cable for the power lead

For the power lead cable specifications, refer to the FANUC SERVO AMPLIFIER α i series DESCRIPTIONS (B-65282EN).

(2) Cable for the fan motor

For the fan motor current value and cable specifications, refer to Section I.4.3, "FAN MOTOR CONNECTION" in this manual.

4.1.4 Connection of Signal Lead

The αiM sensor or αiMZ sensor signal or thermistor signal use a connector manufactured by Tyco Electronics AMP. The connector housing and the connector are attached in the terminal box.

(1) Connector attachment for a motor with a built-in $\alpha iM/\alpha iMZ$ sensor

For the signal connectors, see Section 4.1.3 "Connection" in Part I.

(2) Connection to the Pulsecoder

αiS 2000/2000HV has an internal Pulsecoder (optical encoder) as a feedback detector which detects the position, speed, and others. The Pulsecoder outputs position information and alarm signal. The Pulsecoder is built into the motor. For the signal connector, see Section 4.3, "CONNECTION" in Part I.

5 NOTES ON OPERATION



WARNING

- 1 When supplying voltage to the spindle motor or the fan motor, ensure that the earth cable is connected to the earth terminal and secure that the spindle motor is put to earth certainly. In addition, be sure to check that the power cable and jumper are secured to the terminal block.



CAUTION

- 1 After a continuous and long operation, the temperature of model α I 0.5 may rise higher than other motors because they have no fan motor. So please treat them carefully.

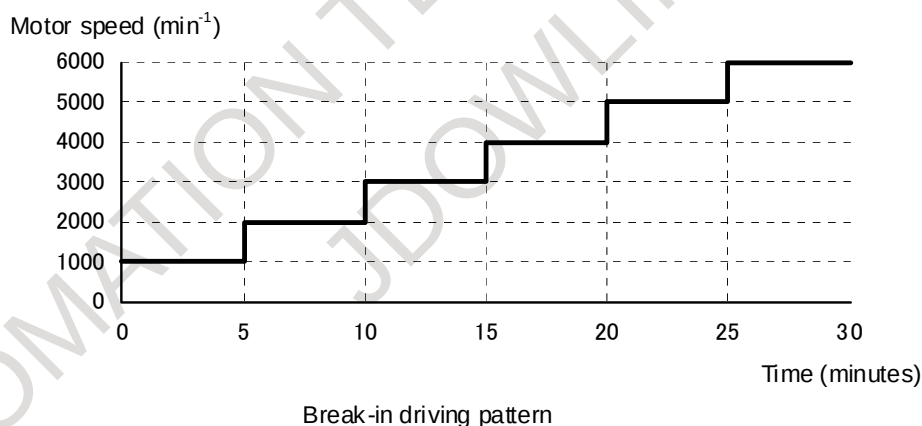
5. NOTES ON OPERATION

- 2 Sound and vibration
Check that there is no abnormal sound or vibration.
- 3 Cooling
Clean off dust from the cooling air inlet and outlet of the stator every year, and check the flow of air carefully. The table given below indicates the direction of the rotation of the cooling fan when viewed from the rear side of the motor. Check that the actual rotating direction is correct.

Model names	Rear exhaust (Exhaust on side opposite to load axis)	Front exhaust (Exhaust on load axis side)
<i>ai</i> l 1, <i>ai</i> l 1.5 <i>ai</i> l 1HV, <i>ai</i> l 1.5HV <i>ai</i> l τ 1, <i>ai</i> l τ 1.5, <i>ai</i> l τ 1.5HV	Clockwise (CW)	Clockwise (CW)
Models other than the above	Counterclockwise (CCW)	Clockwise (CW)

NOTE

1. When a motor is driven for the first time, after a motor has been stored for a long time, or after the machine is moved or transported, be sure to break in the motor. As break-in, increase the speed of the motor from 1000 min^{-1} to its maximum speed in 1000 min^{-1} increments, and operate the motor at each speed for about 5 minutes.
Grease is filled in motor bearings for lubrication. In a motor in the initial status or motor after stored for a long time, the grease is not filled uniformly in bearings. The use of the motor without break-in may cause unusual sound, vibration, or premature bearing damage.



APPENDIX

JR AUTOMATION TECHNOLOGIES INC*
JDOWLING

JR AUTOMATION TECHNOLOGIES INC*
JDOWLING

A

PARAMETER TABLE FOR EACH MOTOR MODEL

For FANUC spindle motors, each model has specific drive parameters predetermined for it. Use caution because if a motor is driven with other than the prescribed parameters, this will cause the motor to be defective.

A.1 SPINDLE MOTOR αi series	278
A.2 SPINDLE MOTOR αi P series	289
A.3 SPINDLE MOTOR αi T series	293
A.3 SPINDLE MOTOR αi L series	293

For an explanation of any matters that are not contained in this document, refer to the descriptions below.

FANUC AC SPINDLE MOTOR αi series,
FANUC AC SPINDLE MOTOR βi series,
FANUC BUILT-IN SPINDLE MOTOR $B i$ series
PARAMETER MANUAL (B-65280EN)

NOTE

- 1 For an explanation of the parameter numbers for those models that are not contained here, refer to the Parameter Manual (B-65280EN).
- 2 For those models for which no parameter tables are provided, such as models under development, contact a FANUC service representative.

A.1 SPINDLE MOTOR αI series

Motor model	αI 0.5/10000	αI 0.5/15000	αI 1/15000	αI 1/24000	αI 1.5/20000	αI 2/10000	αI 2/20000
Applicable amplifier	αI SP 2.2-B	αI SP 2.2-B	αI SP 5.5-B	αI SP 22-B	αI SP 22-B	αI SP 11-B	αI SP 22-B
Model code	—	372	—	—	—	373	—
Low-speed winding characteristics	—	—	—	—	—	—	—
Hogh-speed winding characteristics	0.55/1.1/1.5kW 3000/10000min ⁻¹	0.55/1.1/1.5 kW 3000/15000 min ⁻¹	1.5/2.2kW 3000/15000min ⁻¹	2.2/3.7/5.5/11 kW 6000/24000min ⁻¹	2.2/3.7/5.5/9 kW 3000/20000min ⁻¹	2.2/3.7/5.5 kW 1500/10000 min ⁻¹	3.7/5.5/9 kW 3000/20000min ⁻¹
4007	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4008	00010000	00010000	00000000	00000000	00000000	00010000	00000000
4009	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000000	00000000	00000001	00000001	00000001	00000000	00000001
4011	00001000	00001000	00011001	00011001	00011001	00001001	00011001
4012	10000010	10000010	10000000	10000010	10000010	10000010	10000000
4013	00001100	00001100	00001100	00001100	00001100	00001100	00001100
4019	00000100	00000100	00000100	00000100	00000100	00000100	00000100
4020	10000	15000	15000	24000	20000	10000	20000
4023							
4039	0	0	0	0	0	0	0
4040		2 (*3)		2(*3)	2 (*3)	3 (*3)	
4041							
4048		6 (*3)		10(*3)	9 (*3)	13 (*3)	
4049							
4080	20560	20570	65	15447	5981	20575	92
4083	30	30	30	10	10	30	10
4093							
4100	3400	3300	3100	6100	3300	1550	3100
4101	100	100	93	99	87	85	100
4102	6500	8226	8015	11558	7145	2567	6432
4103	0	0	78	66	70	0	92
4104	3000	2000	1000	1300	3000	4500	1700
4105	0	46	0	0	0	96	0
4106	7500	6000	3000	2800	3000	15000	2500
4107	0	0	0	0	0	0	0
4108	0	0	0	0	0	0	0
4109	25	25	25	25	25	25	25
4110	1571	1508	341	915	838	949	588
4111	361	346	102	299	260	298	175
4112	200	200	200	200	200	200	200
4113	2077	2078	1870	1978	2227	992	1800
4114	24320	0	0	0	0	0	0
4115	100	100	100	90	90	100	80
4116	13760	13770	9669	10318	10289	9300	16564
4117	90	90	90	90	90	90	90
4118	100	100	100	28260	100	100	100
4119	5	5	5	5	1	10	2
4120	0	0	0	0	0	0	0
4124	0	0	0	0	0	0	0
4127	327	327	176	600	490	300	292
4128	105	110	80	0	102	107	0
4129	0	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700	25700
4134	110	110	110	110	110	110	110
4136	0	0	0	0	0	0	0
4138	0	0	0	0	0	0	0
4139	0	0	0	0	0	0	0
4140	0	0	0	0	0	0	0
4141	0	0	0	0	0	0	0
4142	0	0	0	0	0	0	0
4143	0	0	0	0	0	0	0
4144	0	0	0	0	0	0	0
4145	0	0	0	0	0	0	0
4146	0	0	0	0	0	0	0
4147	0	0	0	0	0	0	0
4148	0	0	0	0	0	0	0
4149	0	0	0	0	0	0	0
4150	0	0	0	0	0	0	0
4151	0	0	0	0	0	0	0
4152	0	0	0	0	0	0	0
4153	0	0	0	0	0	0	0
4154	0	0	0	0	0	0	0
4155	0	0	0	0	0	0	0
4156	0	0	0	0	0	0	0
4158	0	0	0	0	0	0	0
4159	0	0	0	0	0	0	0
4161	0	0	0	0	0	0	0
4165	0	0	0	0	0	0	0
4166	0	0	0	0	0	0	0
4169	0	0	0	0	0	0	0
4400							
Maximum output during acceleration (for PS selection)	1.8kW	1.8kW	5.6kW	22kW	22kW	6.6kW	20kW

(*3) Set this value as the initial value of the velocity loop gain.

A.PARAMETER TABLE FOR EACH MOTOR MODEL

Motor model	ai 13/10000	ai 13/12000	ai 13/15000	ai 16/10000	ai 16/12000	ai 16/12000(*4)	ai 18/8000
Applicable amplifier	ai SP 11-B	ai SP 22-B	ai SP 22-B	ai SP 11-B	ai SP 11-B	ai SP 11-B	ai SP 15-B
Model code	—	—	—	363	421	—	364
Low-speed winding characteristics	—	—	—	—	5.5/7.5/11 kW 1500/12000 min ⁻¹	5.5/7.5/11 kW 1500/12000 min ⁻¹	—
Hogh-speed winding characteristics	3.7/ 5.5 / 7.5 kW 1500/10000min ⁻¹	3.7/5.5/7.5/13 kW 1500/12000min ⁻¹	5.5/7.5/11/15kW 3000/15000min ⁻¹	5.5/7.5/11kW 1500/10000min ⁻¹	5.5/7.5/11 kW 4000/12000 min ⁻¹	—	7.5/11/15kW 1500/8000min ⁻¹
4007	00000000	00000000	00000100	00000000	00000000	00000000	00000000
4008	00010000	00000000	00000000	00010000	00010000	00010000	00010000
4009	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000000	00000000	00010001	00000000	00000000	00000000	00000000
4011	00001001	00011001	00001001	00001010	00001010	00001010	00001010
4012	10000010	10000010	10000010	10000111	10000111	10000111	10000010
4013	00001100	00001100	00001100	00001100	00001100	00001100	00001100
4019	00000100	00000100	00000100	00000100	00000100	00000100	00000100
4020	10000	12000	15000	10000	12000	12000	8000
4023					333 (*2)		
4039	0	0	0	0	0	0	0
4040			4(*3)				
4041							
4048			18(*3)				
4049							
4080	15445	20570	12870	16710	75	12870	20565
4083	30	30	30	30	30	30	30
4093				0	240	0	0
4100	1600	1600	3150	1570	4400	1570	1600
4101	100	100	100	100	100	100	94
4102	1967	3015	4725	2016	4838	2016	1656
4103	0	4939	0	0	0	0	0
4104	6000	1700	2000	3000	1200	3000	6000
4105	0	0	103	138	119	138	121
4106	13000	4000	7000	6000	2500	6000	20000
4107	0	0	0	0	138	0	0
4108	0	0	0	0	0	0	0
4109	25	25	25	25	25	25	25
4110	949	1117	614	603	479	603	754
4111	258	399	229	261	198	261	265
4112	19400	200	200	200	200	200	200
4113	1077	900	904	690	800	690	790
4114	0	19200	0	0	17920	0	19200
4115	100	80	100	100	100	100	100
4116	7950	7376	7375	6500	6500	6500	8118
4117	28250	90	90	90	90	90	90
4118	110	90	100	100	100	100	100
4119	5	9	10	527	15	527	12
4120	0	0	0	0	0	0	0
4124	0	0	0	0	0	0	0
4127	243	421	327	240	240	240	240
4128	0	110	0	6505	105	6505	117
4129	0	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700	25700
4134	110	110	110	130	130	130	130
4136	0	0	0	0	30	0	0
4138	0	0	0	0	1570	0	0
4139	0	0	0	0	100	0	0
4140	0	0	0	0	2016	0	0
4141	0	0	0	0	0	0	0
4142	0	0	0	0	3000	0	0
4143	0	0	0	0	6000	0	0
4144	0	0	0	0	0	0	0
4145	0	0	0	0	25	0	0
4146	0	0	0	0	603	0	0
4147	0	0	0	0	261	0	0
4148	0	0	0	0	200	0	0
4149	0	0	0	0	690	0	0
4150	0	0	0	0	0	0	0
4151	0	0	0	0	100	0	0
4152	0	0	0	0	6500	0	0
4153	0	0	0	0	90	0	0
4154	0	0	0	0	100	0	0
4155	0	0	0	0	0	0	0
4156	0	0	0	0	0	0	0
4158	0	0	0	0	6505	0	0
4159	0	0	0	0	0	0	0
4161	0	0	0	0	25700	0	0
4165	0	0	0	0	527	0	0
4166	0	0	0	0	12870	0	0
4169	0	0	0	0	0	0	0
4400				00000001 (*6)	00010001(*6)	00000001(*6)	
Maximum output during acceleration (for PS selection)	9kW	22kW	18kW	13.2kW	13.2kW	13.2kW	18.0kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching motor.

(*6) Change parameters manually according to the table after load parameters automatically with the model code.

A. PARAMETER TABLE FOR EACH MOTOR MODEL

APPENDIX

B-65272EN/08

Motor model	ai 18/10000	ai 18/10000(*4)	ai 18/12000	ai 18/12000(*4)	ai 12/8000	ai 12/12000	ai 12/12000(*4)	ai 15/8000
Applicable amplifier	ai SP 15-B	ai SP 15-B	ai SP 15-B	ai SP 15-B	ai SP 15-B	ai SP 15-B	ai SP 15-B	ai SP 22-B
Model code	422	—	423	—	—	424	—	—
Low-speed winding characteristics	7.5/11/15 kW 1500/10000 min ⁻¹	7.5/11/15 kW 1500/10000 min ⁻¹	7.5/11/15 kW 1500/12000 min ⁻¹	7.5/11/15 kW 1500/12000 min ⁻¹	—	11/15/18.5 kW 1500/12000 min ⁻¹	11/15/18.5 kW 1500/12000 min ⁻¹	—
Hogh-speed winding characteristics	7.5/11/15 kW 4000/10000 min ⁻¹	—	7.5/11/15 kW 4000/12000 min ⁻¹	—	11/15/18.5kW 1500/8000min ⁻¹	11/15/18.5 kW 4000/12000 min ⁻¹	—	15/18.5/25kW 1500/8000min ⁻¹
4007	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4008	00010000	00010000	00010000	00010000	00010000	00010000	00010000	00010000
4009	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4011	00001010	00001010	00001010	00001010	00001010	00001010	00001010	00001010
4012	10000010	10000010	10000010	10000010	10000010	10000010	10000010	10000010
4013	00001100	00001100	00001100	00001100	00001100	00001100	00001100	00001100
4019	00000100	00000100	00000100	00000100	00000100	00000100	00000100	00000100
4020	10000	10000	12000	12000	8000	12000	12000	8000
4023	400 (*2)	—	333 (*2)	—	—	333 (*2)	—	—
4039	0	0	0	0	0	0	0	0
4040	—	—	—	—	—	—	—	—
4041	—	—	—	—	—	—	—	—
4048	—	—	—	—	—	—	—	—
4049	—	—	—	—	—	—	—	—
4080	12877	17749	15186	15693	16735	75	16735	24410
4083	30	30	30	30	30	30	30	30
4093	240	0	240	0	0	202	0	0
4100	4006	1600	3580	1505	1550	3800	1550	1500
4101	82	94	71	74	100	80	100	100
4102	4006	1656	3580	1642	1922	3593	1922	1710
4103	0	0	0	0	0	0	0	0
4104	2050	6000	4000	8000	3000	1800	3000	5500
4105	160	121	97	88	324	341	324	314
4106	7600	20000	14000	24000	10000	6000	10000	5500
4107	121	0	88	0	0	324	0	0
4108	0	0	0	0	0	0	0	0
4109	25	25	25	25	25	25	25	25
4110	854	754	421	566	905	595	905	794
4111	305	265	157	229	337	223	337	305
4112	200	200	200	200	200	200	200	200
4113	598	790	980	1090	295	280	295	304
4114	0	19200	22528	21760	0	0	0	23040
4115	100	100	100	100	100	100	100	100
4116	5734	8118	11031	8000	5279	5280	5279	5177
4117	100	90	90	90	90	90	90	90
4118	100	100	100	100	100	100	100	100
4119	16	12	522	521	32	34	32	31
4120	0	0	0	0	0	0	0	0
4124	0	0	0	0	0	0	0	0
4127	240	240	240	240	202	202	202	200
4128	0	117	0	0	0	0	0	105
4129	0	0	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700	25700	25700
4134	130	130	130	130	130	130	130	130
4136	30	0	30	0	0	30	0	0
4138	1600	0	1505	0	0	1550	0	0
4139	94	0	74	0	0	100	0	0
4140	1656	0	1642	0	0	1922	0	0
4141	0	0	0	0	0	0	0	0
4142	6000	0	8000	0	0	3000	0	0
4143	20000	0	24000	0	0	10000	0	0
4144	0	0	0	0	0	0	0	0
4145	25	0	25	0	0	25	0	0
4146	754	0	566	0	0	905	0	0
4147	265	0	229	0	0	337	0	0
4148	200	0	200	0	0	200	0	0
4149	790	0	1090	0	0	295	0	0
4150	19200	0	21760	0	0	0	0	0
4151	100	0	100	0	0	100	0	0
4152	8118	0	8000	0	0	5279	0	0
4153	90	0	90	0	0	90	0	0
4154	100	0	100	0	0	100	0	0
4155	0	0	0	0	0	0	0	0
4156	0	0	0	0	0	0	0	0
4158	117	0	0	0	0	0	0	0
4159	0	0	0	0	0	0	0	0
4161	25700	0	25700	0	0	25700	0	0
4165	12	0	521	0	0	32	0	0
4166	17749	0	15693	0	0	16735	0	0
4169	0	0	0	0	0	0	0	0
4400	—	—	—	—	—	—	—	—
Maximum output during acceleration (for PS selection)	18kW	18kW	18kW	18kW	22.2kW	22.2kW	22.2kW	30.0kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*3) Set this value as the initial value of the velocity loop gain.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching motor.

A.PARAMETER TABLE FOR EACH MOTOR MODEL

Motor model	ai 1 15/12000	ai 1 15/12000(*4)	ai 1 18/8000	ai 1 18/12000	ai 1 18/12000(*4)	ai 1 22/8000	ai 1 22/12000	ai 1 22/12000(*4)
Applicable amplifier	ai SP 22-B	ai SP 22-B	ai SP 22-B	ai SP 22-B	ai SP 22-B	ai SP 26-B	ai SP 26-B	ai SP 26-B
Model code	425	—	—	426	—	—	427	—
Low-speed winding characteristics	15/18.5/25 kW 1500/12000 min ⁻¹	15/18.5/25 kW 1500/12000 min ⁻¹	—	18.5/22/30 kW 1500/12000 min ⁻¹	18.5/22/30 kW 1500/12000 min ⁻¹	—	22/26/35 kW 1500/12000 min ⁻¹	22/26/35 kW 1500/12000 min ⁻¹
Hogh-speed winding characteristics	15/18.5/25 kW 4000/12000 min ⁻¹	—	18.5/22/30kW 1500/8000min ⁻¹	18.5/22/30 kW 4000/12000 min ⁻¹	—	22/26/35kW 1500/8000min ⁻¹	22/26/35 kW 4000/12000 min ⁻¹	—
4007	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4008	00010000	00010000	00010000	00010000	00010000	00010000	00010000	00010000
4009	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4011	00001010	00001010	00001010	00001010	00001010	00001010	00001010	00001010
4012	10000010	10000010	10000111	10000111	10000111	10000111	10000111	10000111
4013	00001100	00001100	00001100	00001100	00001100	00001100	00001100	00001100
4019	00000100	00000100	00000100	00000100	00000100	00000100	00000100	00000100
4020	12000	12000	8000	12000	12000	8000	12000	12000
4023	333 (*2)	—	—	333 (*2)	—	—	333 (*2)	—
4039	0	0	0	0	0	0	0	0
4040	17 (*3)	7 (*3)	—	18 (*3)	7 (*3)	—	—	—
4041	7 (*3)	—	—	7 (*3)	—	—	—	—
4048	81 (*3)	32 (*3)	—	86 (*3)	32 (*3)	—	—	—
4049	32 (*3)	—	—	32 (*3)	—	—	—	—
4080	15445	17498	18005	15439	15714	15460	80	16735
4083	30	30	30	30	30	30	30	30
4093	200	0	0	195	0	0	191	0
4100	4200	1500	1700	4050	1700	1550	4000	1520
4101	85	100	100	98	100	100	78	94
4102	3482	1710	1909	4582	1909	1756	3504	1709
4103	0	0	0	0	0	0	0	0
4104	1700	5500	1600	900	1600	1500	1400	2200
4105	347	314	310	299	310	329	360	318
4106	5500	5500	5000	2200	5000	5000	1400	4600
4107	314	0	0	310	0	0	318	0
4108	0	0	0	0	0	0	0	0
4109	25	25	25	25	25	25	25	25
4110	575	794	943	754	943	924	604	823
4111	212	305	418	330	418	353	218	312
4112	200	200	200	200	200	200	200	200
4113	275	304	308	319	308	290	265	300
4114	23040	23040	0	0	0	23040	0	19200
4115	100	100	100	100	100	100	100	100
4116	5126	5177	4500	4100	4500	5000	5523	5593
4117	29530	90	90	90	90	90	90	90
4118	100	100	100	100	100	100	100	100
4119	35	31	31	30	31	29	36	32
4120	0	0	0	0	0	0	0	0
4124	0	0	0	0	0	0	0	0
4127	200	200	195	195	195	191	191	191
4128	0	105	0	0	0	0	0	108
4129	0	0	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700	25700	25700
4134	130	130	130	130	130	130	130	130
4136	30	0	0	30	0	0	30	0
4138	1500	0	0	1700	0	0	1520	0
4139	100	0	0	100	0	0	94	0
4140	1710	0	0	1909	0	0	1709	0
4141	0	0	0	0	0	0	0	0
4142	5500	0	0	1600	0	0	2200	0
4143	5500	0	0	5000	0	0	4600	0
4144	0	0	0	0	0	0	0	0
4145	25	0	0	25	0	0	25	0
4146	794	0	0	943	0	0	823	0
4147	305	0	0	418	0	0	312	0
4148	200	0	0	200	0	0	200	0
4149	304	0	0	308	0	0	300	0
4150	23040	0	0	0	0	0	19200	0
4151	100	0	0	100	0	0	100	0
4152	5177	0	0	4500	0	0	5593	0
4153	90	0	0	90	0	0	90	0
4154	100	0	0	100	0	0	100	0
4155	0	0	0	0	0	0	0	0
4156	0	0	0	0	0	0	0	0
4158	105	0	0	0	0	0	108	0
4159	0	0	0	0	0	0	0	0
4161	25700	0	0	25700	0	0	25700	0
4165	31	0	0	31	0	0	32	0
4166	17498	0	0	15714	0	0	16735	0
4169	0	0	0	0	0	0	0	0
4400	—	—	00000001 (*6)	00010001 (*6)	00000001 (*6)	00000001 (*6)	00010001 (*6)	00000001 (*6)
Maximum output during acceleration (for PS selection)	30kW	30kW	36.0kW	36kW	36kW	42.0kW	42kW	42kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*3) Set this value as the initial value of the velocity loop gain.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching motor.

(*6) Change parameters manually according to the table after load parameters automatically with the model code.

A. PARAMETER TABLE FOR EACH MOTOR MODEL

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Motor model	ai 1 30/7000	ai 1 40/7000
Applicable amplifier	ai SP 37-B	ai SP 45-B
Model code	374	375
Low-speed winding characteristics	—	—
Hogh-speed winding characteristics	30/37/45 kW 1150/7000 min ⁻¹	37/45/55 kW 1150/7000 min ⁻¹
4007	00000000	00000000
4008	00010000	00010000
4009	00000000	00000000
4010	00010000	00010000
4011	00001010	00001010
4012	10000000	10000000
4013	00001100	00001100
4019	00000100	00000100
4020	7000	7000
4023		
4039	0	0
4040		
4041		
4048		
4049		
4080	16734	16208
4083	30	30
4093		
4100	1260	1230
4101	100	100
4102	1886	1611
4103	0	0
4104	2500	3000
4105	516	461
4106	4000	4000
4107	0	0
4108	0	0
4109	25	25
4110	1341	771
4111	524	312
4112	200	200
4113	185	207
4114	0	0
4115	100	100
4116	4526	4614
4117	90	90
4118	100	100
4119	52	46
4120	0	0
4124	0	0
4127	180	178
4128	90	0
4129	0	0
4130	25700	25700
4134	130	130
4136	0	0
4138	0	0
4139	0	0
4140	0	0
4141	0	0
4142	0	0
4143	0	0
4144	0	0
4145	0	0
4146	0	0
4147	0	0
4148	0	0
4149	0	0
4150	0	0
4151	0	0
4152	0	0
4153	0	0
4154	0	0
4155	0	0
4156	0	0
4158	0	0
4159	0	0
4161	0	0
4165	0	0
4166	0	0
4169	0	0
4400		
Maximum output during acceleration (for PS selection)	54kW	66kW

Motor model	$\alpha i 1 0.5/10000$	$\alpha i 1 0.5/15000$	$\alpha i 1 1/15000$	$\alpha i 1 1/24000$	$\alpha i 1 1.5/20000$	$\alpha i 1 2/10000$	$\alpha i 1 2/20000$
Applicable amplifier	βi SVSP-7.5-B	βi SVSP-7.5-B	βi SVSP-7.5-B	βi SVSP-18-B	βi SVSP-18-B	βi SVSP-7.5-B	βi SVSP-18-B
Model code	—	372	—	—	—	373	—
Low-speed winding characteristics	—	—	—	—	—	—	—
Hogh-speed winding characteristics	0.55/1.1/1.5kW 3000/10000min ⁻¹	0.55/1.1/1.5 kW 3000/15000 min ⁻¹	1.5/2.2kW 3000/15000min-1	2.2/3.7/5.5/11 kW 6000/24000min-1	2.2/3.7/5.5/9 kW 3000/20000min-1	2.2/3.7/5.5 kW 1500/10000 min ⁻¹	3.7/5.5/9 kW 3000/20000min-1
4007	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4008	00010000	00010000	00000000	00000000	00000000	00010000	00000000
4009	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000000	00000000	00000001	00000001	00000001	00000000	00000001
4011	00001000	00001000	00011001	00011001	00011001	00001001	00011001
4012	10000010	10000010	10000000	10000010	10000010	10000010	10000000
4013	00001100	00001100	00001100	00001100	00001100	00001100	00001100
4019	00000100	00000100	00000100	00000100	00000100	00000100	00000100
4020	10000	15000	15000	24000	20000	10000	20000
4023							
4039	0	0	0	0	0	0	0
4040		2 (*3)		2(*3)	2 (*3)	3 (*3)	
4041							
4048		6 (*3)		10(*3)	9 (*3)	13 (*3)	
4049							
4080	20560	20570	65	15447	5981	20575	92
4083	30	30	30	10	10	30	10
4093							
4100	3400	3300	3100	6100	3300	1550	3100
4101	100	100	93	99	87	85	100
4102	6500	8226	8015	11558	7145	2567	6432
4103	0	0	78	66	70	0	92
4104	3000	2000	1000	1300	3000	4500	1700
4105	0	46	0	0	0	96	0
4106	7500	6000	3000	2800	3000	15000	2500
4107	0	0	0	0		0	0
4108	0	0	0	0	0	0	0
4109	25	25	25	25	25	25	25
4110	2514	2413	546	915	838	759	588
4111	361	346	102	299	260	298	175
4112	200	200	200	200	200	200	200
4113	2077	2078	1870	1978	2227	992	1800
4114	24320	0	0	0	0	0	0
4115	100	100	100	90	90	100	80
4116	13760	13770	9669	10318	10289	9300	16564
4117	90	90	90	90	90	90	90
4118	100	100	100	28260	100	100	100
4119	5	5	5	5	1	10	2
4120	0	0	0	0	0	0	0
4124	0	0	0	0	0	0	0
4127	240	327	176	600	490	300	292
4128	105	110	80	0	102	107	0
4129	0	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700	25700
4134	110	110	110	110	110	110	110
4136	0	0	0	0	0	0	0
4138	0	0	0	0	0	0	0
4139	0	0	0	0	0	0	0
4140	0	0	0	0	0	0	0
4141	0	0	0	0	0	0	0
4142	0	0	0	0	0	0	0
4143	0	0	0	0	0	0	0
4144	0	0	0	0	0	0	0
4145	0	0	0	0	0	0	0
4146	0	0	0	0	0	0	0
4147	0	0	0	0	0	0	0
4148	0	0	0	0	0	0	0
4149	0	0	0	0	0	0	0
4150	0	0	0	0	0	0	0
4151	0	0	0	0	0	0	0
4152	0	0	0	0	0	0	0
4153	0	0	0	0	0	0	0
4154	0	0	0	0	0	0	0
4155	0	0	0	0	0	0	0
4156	0	0	0	0	0	0	0
4158	0	0	0	0	0	0	0
4159	0	0	0	0	0	0	0
4161	0	0	0	0	0	0	0
4165	0	0	0	0	0	0	0
4166	0	0	0	0	0	0	0
4169	0	0	0	0	0	0	0
4400							
Maximum output during acceleration (for PS selection)	1.8kW	1.8kW	5.6kW	22kW	22kW	6.6kW	20kW

(*3) Set this value as the initial value of the velocity loop gain.

A. PARAMETER TABLE FOR EACH MOTOR MODEL

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Motor model	ai13/10000	ai13/12000	ai16/10000	ai16/12000	ai16/12000(*4)	ai18/8000	ai18/10000	ai18/10000(*4)
Applicable amplifier	βi SVSP-11-B	βi SVSP-18-B	βi SVSP-11-B	βi SVSP-11-B	βi SVSP-11-B	βi SVSP-15-B	βi SVSP-15-B	βi SVSP-15-B
Model code	—	—	(363)	(421)	—	(364)	(422)	—
Low-speed winding characteristics	—	—	—	5.5/7.5/11 kW 1500/12000 min ⁻¹	5.5/7.5/11 kW 1500/12000 min ⁻¹	—	7.5/11/15 kW 1500/10000 min ⁻¹	7.5/11/15 kW 1500/10000 min ⁻¹
Hogh-speed winding characteristics	3.7/ 5.5 / 7.5 kW 1500/10000min ⁻¹	3.7/5.5/7.5/13 kW 1500/12000min ⁻¹	5.5/7.5/11kW 1500/10000min ⁻¹	5.5/7.5/11 kW 4000/12000 min ⁻¹	—	7.5/11/15kW 1500/8000min ⁻¹	7.5/11/15 kW 4000/10000 min ⁻¹	—
4007	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4008	00010000	00000000	00010000	00010000	00010000	00010000	00010000	00010000
4009	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4011	00001001	00011001	00001010	00001010	00001010	00001010	00001010	00001010
4012	10000010	10000000	10000111	10000111	10000111	10000010	10000010	10000010
4013	00001100	00001100	00001100	00001100	00001100	00001100	00001100	00001100
4019	00000100	00000100	00000100	00000100	00000100	00000100	00000100	00000100
4020	10000	12000	10000	12000	12000	8000	10000	10000
4023				333 (*2)			400 (*2)	
4039	0	0	0	0	0	0	0	0
4040								
4041								
4048								
4049								
4080	15445	20570	16710	75	12870	20565	12877	17749
4083	30	30	30	30	30	30	30	30
4093			0	240	0	0	240	0
4100	1600	1600	1570	4400	1570	1600	4006	1600
4101	100	100	100	100	100	94	82	94
4102	1967	3015	2016	4838	2016	1656	4006	1656
4103	0	4939	0	0	0	0	0	0
4104	6000	1700	3000	1200	3000	6000	2050	6000
4105	0	0	138	119	138	121	160	121
4106	13000	4000	6000	2500	6000	20000	7600	20000
4107	0	0	0	138	0	0	121	0
4108	0	0	0	0	0	0	0	0
4109	25	25	25	25	25	25	25	25
4110	949	1117	603	479	603	754	854	754
4111	258	399	261	198	261	265	305	265
4112	19400	200	200	200	200	200	200	200
4113	1077	900	690	800	690	790	598	790
4114	0	19200	0	17920	0	19200	0	19200
4115	100	80	100	100	100	100	100	100
4116	7950	7376	6500	6500	6500	8118	5734	8118
4117	28250	90	90	90	90	90	100	90
4118	110	90	100	100	100	100	100	100
4119	5	9	527	15	527	12	16	12
4120	0	0	0	0	0	0	0	0
4124	0	0	0	0	0	0	0	0
4127	243	421	240	240	240	240	240	240
4128	0	110	6505	105	6505	117	0	117
4129	0	0	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700	25700	25700
4134	110	110	130	130	130	130	130	130
4136	0	0	0	30	0	0	30	0
4138	0	0	0	1570	0	0	1600	0
4139	0	0	0	100	0	0	94	0
4140	0	0	0	2016	0	0	1656	0
4141	0	0	0	0	0	0	0	0
4142	0	0	0	3000	0	0	6000	0
4143	0	0	0	6000	0	0	20000	0
4144	0	0	0	0	0	0	0	0
4145	0	0	0	25	0	0	25	0
4146	0	0	0	603	0	0	754	0
4147	0	0	0	261	0	0	265	0
4148	0	0	0	200	0	0	200	0
4149	0	0	0	690	0	0	790	0
4150	0	0	0	0	0	0	19200	0
4151	0	0	0	100	0	0	100	0
4152	0	0	0	6500	0	0	8118	0
4153	0	0	0	90	0	0	90	0
4154	0	0	0	100	0	0	100	0
4155	0	0	0	0	0	0	0	0
4156	0	0	0	0	0	0	0	0
4158	0	0	0	6505	0	0	117	0
4159	0	0	0	0	0	0	0	0
4161	0	0	0	25700	0	0	25700	0
4165	0	0	0	527	0	0	12	0
4166	0	0	0	12870	0	0	17749	0
4169	0	0	0	0	0	0	0	0
4400			00000001 (*6)	00010001(*6)	00000001(*6)			
Maximum output during acceleration (for PS selection)	9kW	22kW	13.2kW	13.2kW	13.2kW	18.0kW	18kW	18kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching motor.

(*6) Change parameters manually according to the table after load parameters automatically with the model code.

Motor model	ai 1 8/12000	ai 1 8/12000(*4)	ai 1 12/8000	ai 1 12/12000	ai 1 12/12000(*4)
Applicable amplifier	βi SVSP-15-B	βi SVSP-15-B	βi SVSP-18-B	βi SVSP-18-B	βi SVSP-18-B
Model code	(423)	—	—	(424)	—
Low-speed winding characteristics	7.5/11/15 kW 1500/12000 min ⁻¹	7.5/11/15 kW 1500/12000 min ⁻¹	—	11/15/18.5 kW 1500/12000 min ⁻¹	11/15/18.5 kW 1500/12000 min ⁻¹
Hogh-speed winding characteristics	7.5/11/15 kW 4000/12000 min ⁻¹	—	11/15/18.5kW 1500/8000min ⁻¹	11/15/18.5 kW 4000/12000 min ⁻¹	—
4007	00000000	00000000	00000000	00000000	00000000
4008	00010000	00010000	00010000	00010000	00010000
4009	00000000	00000000	00000000	00000000	00000000
4010	00000000	00000000	00000000	00000000	00000000
4011	00001010	00001010	00001010	00001010	00001010
4012	10000010	10000010	10000010	10000010	10000010
4013	00001100	00001100	00001100	00001100	00001100
4019	00000100	00000100	00000100	00000100	00000100
4020	12000	12000	8000	12000	12000
4023	333 (*2)	—	—	333 (*2)	—
4039	0	0	0	0	0
4040	—	—	—	—	—
4041	—	—	—	—	—
4048	—	—	—	—	—
4049	—	—	—	—	—
4080	15186	15693	16735	75	16735
4083	30	30	30	30	30
4093	240	0	0	202	0
4100	3580	1505	1550	3800	1550
4101	71	74	100	80	100
4102	3580	1642	1922	3593	1922
4103	0	0	0	0	0
4104	4000	8000	3000	1800	3000
4105	97	88	324	341	324
4106	14000	24000	10000	6000	10000
4107	88	0	0	324	0
4108	0	0	0	0	0
4109	25	25	25	25	25
4110	421	566	1207	793	1207
4111	157	229	337	223	337
4112	200	200	200	200	200
4113	980	1090	295	280	295
4114	22528	21760	0	0	0
4115	100	100	100	100	100
4116	11031	8000	5279	5280	5279
4117	90	90	90	90	90
4118	100	100	100	100	100
4119	522	521	32	34	32
4120	0	0	0	0	0
4124	0	0	0	0	0
4127	240	240	202	202	202
4128	0	0	0	0	0
4129	0	0	0	0	0
4130	25700	25700	25700	25700	25700
4134	130	130	130	130	130
4136	30	0	0	30	0
4138	1505	0	0	1550	0
4139	74	0	0	100	0
4140	1642	0	0	1922	0
4141	0	0	0	0	0
4142	8000	0	0	3000	0
4143	24000	0	0	10000	0
4144	0	0	0	0	0
4145	25	0	0	25	0
4146	566	0	0	1207	0
4147	229	0	0	337	0
4148	200	0	0	200	0
4149	1090	0	0	295	0
4150	21760	0	0	0	0
4151	100	0	0	100	0
4152	8000	0	0	5279	0
4153	90	0	0	90	0
4154	100	0	0	100	0
4155	0	0	0	0	0
4156	0	0	0	0	0
4158	0	0	0	0	0
4159	0	0	0	0	0
4161	25700	0	0	25700	0
4165	521	0	0	32	0
4166	15693	0	0	16735	0
4169	0	0	0	0	0
4400	—	—	—	—	—
Maximum output during acceleration (for PS selection)	18kW	18kW	22.2kW	22.2kW	22.2kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching motor.

A. PARAMETER TABLE FOR EACH MOTOR MODEL

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Motor model	ai 1 0.5/10000HV	ai 1 1/10000HV	ai 1 1.5/10000HV	ai 1 2/10000HV	ai 1 2/20000HV	ai 1 3/10000HV	ai 1 8/12000HV	ai 1 8/12000HV(*4)
Applicable amplifier	ai SP 5.5HV-B	ai SP 5.5HV-B	ai SP 5.5HV-B	ai SP 5.5HV-B	ai SP 30HV-B	ai SP 5.5HV-B	ai SP 15HV-B	ai SP 15HV-B
Model code	311	313	315	317	—	319	—	—
Low-speed winding characteristics	—	—	—	—	—	—	7.5/11kW 1500/12000min ⁻¹	7.5/11kW 1500/12000min ⁻¹
Hogh-speed winding characteristics	0.55/1.1kW 3000/10000min ⁻¹	1.5/2.2kW 3000/10000min ⁻¹	1.1/3.7kW 1500/10000min ⁻¹	2.2/3.7kW 1500/10000min ⁻¹	2.2/3.7kW 3000/20000min ⁻¹	3.7/5.5kW 1500/10000min ⁻¹	7.5/11kW 4000/12000min ⁻¹	—
4007	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4008	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4009	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4011	00011000	00011001	00011001	00011001	00011001	00011001	00011010	00011010
4012	10000010	10000010	10000010	10000010	10000010	10000010	10000010	10000010
4013	00001100	00001100	00001100	00001100	01010000	00001100	00001100	00001100
4019	00000100	00000100	00000100	00000100	00000100	00000100	00000100	00000100
4020	10000	10000	10000	10000	20000	10000	12000	12000
4023							333(*2)	
4039	0	0	0	0	0	0	0	0
4040								6(*3)
4041							6(*3)	
4048								6(*3)
4049							6(*3)	
4080	85	20565 20570(*1)	14173 14170(*1)	80 65(*1)	11605	85 75(*1)	9050	14938
4083	30	30	30	30	10	30	30	30
4093	0	0	0	0	0	0	176	0
4100	3250	2600	1610	1500	3400	1400	3750	1550
4101	100	85	100	100	41	100	85	84
4102	6503	3600	2745	4421	6612	2288	3798	1957
4103	45 0(*1)	83 0(*1)	65 0(*1)	50 0(*1)	92	61 0(*1)	89	74
4104	4500	6000	5000	5000	2700	7000	3800	7000
4105	46	43	40	102	0	109	101	95
4106	4500	6000	12000	5000	4500	7000	10000	18000
4107	0	0	0	0	0	0	95	0
4108	0	0	0	0	0	0	0	0
4109	25	25	25	25	25	25	25	25
4110	3143	1423	1109	1397	1052	1077	569	838
4111	245	103	220	318	235	237	100	186
4112	200	200	200	200	200	200	200	200
4113	2058	2200	2400	935	1700	873	950	1000
4114	23040	14080	17920	110	0	20480	0	0
4115	100	100	100	100	100	100	100	100
4116	13641	17300	10218	10519	11131	9908	8736	8737
4117	90	90	90	90	90	90	90	90
4118	100	100	100	100	100	100	90	90
4119	5	4	4	10	5	11	10	266
4120	0	0	0	0	0	0	0	0
4124	0	0	0	0	0	0	0	0
4127	240	176	404	202	202	178	176	176
4128	120	75	107	90	88	90	0	0
4129	0	0	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700	25700	25700
4134	110	110	110	110	110	110	130	130
4136	0	0	0	0	0	0	30	0
4138	0	0	0	0	0	0	1550	0
4139	0	0	0	0	0	0	84	0
4140	0	0	0	0	0	0	1957	0
4141	0	0	0	0	0	0	74	0
4142	0	0	0	0	0	0	7000	0
4143	0	0	0	0	0	0	18000	0
4144	0	0	0	0	0	0	0	0
4145	0	0	0	0	0	0	25	0
4146	0	0	0	0	0	0	838	0
4147	0	0	0	0	0	0	186	0
4148	0	0	0	0	0	0	200	0
4149	0	0	0	0	0	0	1000	0
4150	0	0	0	0	0	0	0	0
4151	0	0	0	0	0	0	100	0
4152	0	0	0	0	0	0	8737	0
4153	0	0	0	0	0	0	90	0
4154	0	0	0	0	0	0	90	0
4155	0	0	0	0	0	0	0	0
4156	0	0	0	0	0	0	0	0
4158	0	0	0	0	0	0	0	0
4159	0	0	0	0	0	0	0	0
4161	0	0	0	0	0	0	25700	0
4165	0	0	0	0	0	0	266	0
4166	0	0	0	0	0	0	14938	0
4169	0	0	0	0	0	0	0	0
Maximum output during acceleration (for PS selection)	1.32kW 2.59kW(*1)	2.64kW 3.0kW(*1)	4.44kW 6.3kW(*1)	4.44kW 7.5kW(*1)	20kW	6.6kW 8.9kW(*1)	13.2kW	13.2kW

(*1) This setting makes the maximum output during acceleration greater and the acceleration time reduced.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching motor.

A.PARAMETER TABLE FOR EACH MOTOR MODEL

Motor model	ai I 12/8000HV	ai I 15/8000HV	ai I 15/10000HV	ai I 15/10000HV	ai I 22/8000HV	ai I 22/10000HV	ai I 22/10000HV	ai I 30/6000HV
Applicable amplifier	ai SP15HV	ai SP 22HV-B	ai SP 30HV-B	ai SP 30HV-B	ai SP 30HV-B	ai SP 30HV-B	ai SP 30HV-B	ai SP 45HV-B
Model code	—	—	—	—	—	—	—	329
Low-speed winding characteristics	—	—	15/18.5kW 1500/10000min ⁻¹	15/18.5kW 1500/10000min ⁻¹	—	22/26kW 1500/10000min ⁻¹	22/26kW 1500/10000min ⁻¹	—
Hogh-speed winding characteristics	11/15kW 1500/7000min ⁻¹	15/18.5/25kW 1500/7000min ⁻¹	15/18.5kW 4000/10000min ⁻¹	—	22/26/35kW 1500/7000min ⁻¹	22/26kW 4000/10000min ⁻¹	—	30/37kW 1150/6000min ⁻¹
4007	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4008	00000000	00010000	00000000	00000000	00010000	00000000	00000000	00000000
4009	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4011	00011010	00001010	00011010	00011010	00001010	00011010	00011010	00011010
4012	10000000	10000111	10000010	10000010	10000010	10000010	10000010	10000000
4013	00001100	00001100	01010000	01010000	00001100	01010000	01010000	01010000
4019	00000100	00000100	00000100	00000100	00000100	00000100	00000100	00000100
4020	8000	8000	10000	10000	8000	10000	10000	6000
4023	—	—	400	400	—	400	0	0
4039	0	0	0	0	—	0	0	0
4040	—	—	—	—	7(*3)	—	—	—
4041	—	—	—	—	—	—	—	—
4048	—	—	—	—	34(*3)	—	—	—
4049	—	—	—	—	—	—	—	—
4080	88 85(*1)	21480	80	65	23125	83	18517	98
4083	30	30	30	30	30	30	30	30
4093	0	—	148	0	—	142	—	0
4100	1550	1550	4000	1500	1520	3630	1500	1230
4101	100	100	53	73	100	74	84	85
4102	1754	1972	3464	1972	1794	3318	1669	1617
4103	88 0(*1)	0	70	65	0	93	82	55
4104	2000	1700	2800	4500	4000	2100	4000	2500
4105	347	0	0	0	0	0	0	597
4106	4500	3800	2800	4500	15000	6300	12000	4000
4107	0	0	0	0	0	0	0	0
4108	0	0	0	0	0	0	0	0
4109	25	25	25	25	25	25	25	25
4110	1077	999	857	1499	870	666	984	1257
4111	250	450	229	425	295	160	270	455
4112	200	200	200	200	200	200	200	200
4113	275	280	280	280	300	265	275	160
4114	0	21760	0	23040	0	0	0	0
4115	100	100	100	100	100	100	100	100
4116	5800	5153	5184	5153	4295	5000	4991	5056
4117	90	90	90	90	90	90	90	90
4118	100	100	100	100	100	90	90	100
4119	35	34	34	34	32	50	70	60
4120	0	0	0	0	0	0	0	0
4124	0	0	0	0	0	0	0	0
4127	164	200	148	148	191	142	142	148
4128	108	105	0	0	102	98	103	110
4129	0	0	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25750	25700	25700
4134	130	130	130	130	130	130	130	130
4136	0	0	0	0	0	30	0	0
4138	0	0	1500	0	0	1500	0	0
4139	0	0	73	0	0	84	0	0
4140	0	0	1972	0	0	1669	0	0
4141	0	0	65	0	0	82	0	0
4142	0	0	4500	0	0	4000	0	0
4143	0	0	4500	0	0	12000	0	0
4144	0	0	0	0	0	0	0	0
4145	0	0	25	0	0	25	0	0
4146	0	0	1499	0	0	984	0	0
4147	0	0	425	0	0	270	0	0
4148	0	0	200	0	0	200	0	0
4149	0	0	280	0	0	275	0	0
4150	0	0	23040	0	0	0	0	0
4151	0	0	100	0	0	100	0	0
4152	0	0	5153	0	0	4991	0	0
4153	0	0	90	0	0	90	0	0
4154	0	0	100	0	0	90	0	0
4155	0	0	0	0	0	0	0	0
4156	0	0	0	0	0	0	0	0
4158	0	0	0	0	0	103	0	0
4159	0	0	0	0	0	0	0	0
4161	0	0	25700	0	0	25700	0	0
4165	0	0	34	0	0	70	0	0
4166	0	0	65	0	0	18517	0	0
4169	0	0	0	0	0	0	0	0
Maximum output during acceleration (for PS selection)	18.0kW 20.3kW(*1)	30kW	22.2kW	22.2kW	42kW	31.2kW	31.2kW	44.4kW

(*1) This setting makes the maximum output during acceleration greater and the acceleration time reduced.

(*3) Set this value as the initial value of the velocity loop gain.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching motor.

A. PARAMETER TABLE FOR EACH MOTOR MODEL

APPENDIX

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Motor model	<i>ai</i> L 40/6000HV	<i>ai</i> L 50/5000HV	<i>ai</i> L 60/5000HV	<i>ai</i> L 75/5000HV	<i>ai</i> L 100/5000HV	<i>ai</i> L 150/5000HV
Applicable amplifier	<i>ai</i> SP 45HV-B	<i>ai</i> SP 45HV-B(*5)	<i>ai</i> SP 75HV-B	<i>ai</i> SP 75HV-B(*5)	<i>ai</i> SP 100HV-	<i>ai</i> SP 75HV-B
Model code	330	376	331	377	428	—
Low-speed winding characteristics	—	—	—	—	100kW 1000/5000min ⁻¹	—
Hogh-speed winding characteristics	37/45 kW 1500/6000 min ⁻¹	45/55kW 1150/5000min ⁻¹	60/75kW 1150/5000min ⁻¹	75/90kW 1050/5000min ⁻¹	100kW 3000/5000min ⁻¹	150/180kW 1500/5000min ⁻¹
4007	00000000	00000000	00000000	00000000	00000000	00000000
4008	00010000	00010000	00000000	00010000	00010000	00000000
4009	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000000	00000000	00000000	00010001	00010001	00010001
4011	00001010	00001010	00011010	00001010	00001010	00001010
4012	10000000	10000000	10000000	10000000	10000000	10000000
4013	01010000	00001100	00011000	00001100	00001100	00001100
4019	00000100	00000100	00000100	00000100	00000100	00000100
4020	6000	5000	5000	5000	5000	5000
4023					600(*2)	
4039	0	0	0	0	0	
4040						
4041						
4048						
4049						
4080	82	18000	90	20560	85	10591
4083	30	30	30	30	30	30
4093	0	0	0	0	120	
4100	1600	1150	1130	1100	3050	1520
4101	100	85	100	100	90	100
4102	1940	1175	1491	1254	3210	1551
4103	0	0	85	0	0	0
4104	2500	4000	3500	2500	1400	2500
4105	546	492	495	531	555	0
4106	2800	6000	7000	4000	2300	4000
4107	0	0	0	0	555	0
4108	0	0	0	0	0	0
4109	25	25	25	25	25	25
4110	718	678	1174	887	1131	973
4111	252	274	345	292	379	324
4112	200	200	200	200	200	200
4113	175	194	193	180	172	172
4114	0	0	0	0	0	0
4115	100	100	100	100	100	100
4116	6212	5045	5042	4794	4691	4691
4117	90	90	90	90	90	90
4118	100	100	100	100	100	100
4119	54	49	49	53	55	55
4120	0	0	0	0	0	0
4124	0	0	0	0	0	0
4127	146	147	150	144	120	144
4128	115	0	0	110	0	120
4129	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700
4134	130	130	130	130	130	130
4136	0	0	0	0	30	0
4138	0	0	0	0	1020	0
4139	0	0	0	0	79	0
4140	0	0	0	0	1042	0
4141	0	0	0	0	0	0
4142	0	0	0	0	4000	0
4143	0	0	0	0	7000	0
4144	0	0	0	0	0	0
4145	0	0	0	0	25	0
4146	0	0	0	0	993	0
4147	0	0	0	0	352	0
4148	0	0	0	0	200	0
4149	0	0	0	0	172	0
4150	0	0	0	0	0	0
4151	0	0	0	0	100	0
4152	0	0	0	0	4691	0
4153	0	0	0	0	90	0
4154	0	0	0	0	100	0
4155	0	0	0	0	0	0
4156	0	0	0	0	0	0
4158	0	0	0	0	0	0
4159	0	0	0	0	0	0
4161	0	0	0	0	25700	0
4165	0	0	0	0	55	0
4166	0	0	0	0	16730	0
4169	0	0	0	0	0	0
Maximum output during acceleration (for PS selection)	54kW	66kW	90kW	108kW	120kW	219kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*5) Spindle amplifiers indicated by A06B-612x-... are not applicable.

A.2 SPINDLE MOTOR αi series

Motor model	αi 18/6000	αi 18/6000(*4)	αi 22/6000	αi 22/6000(*4)	αi 30/6000	αi 30/6000(*4)
Applicable amplifier	αi SP 15-B	αi SP 15-B	αi SP 22-B	αi SP 22-B	αi SP 22-B	αi SP 22-B
Model code	429	—	430	—	—	—
Low-speed winding characteristics	6/11kW 500/1500min ⁻¹	6/11kW 500/1500min ⁻¹	7.5/15kW 500/1500min ⁻¹	7.5/15kW 500/1500min ⁻¹	11/18.5kW 400/1500min ⁻¹	11/18.5kW 400/1500min ⁻¹
Hogh-speed winding characteristics	9/11/15kW 750/6000min ⁻¹	—	11/15/18.5kW 750/6000min ⁻¹	—	15/18.5/22kW 575/6000min ⁻¹	—
4007	00000000	00000000	00000000	00000000	00000000	00000000
4008	00010000	00010000	00010000	00010000	00000000	00000000
4009	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000000	00000000	00000000	00000000	00000000	00000000
4011	00001010	00001010	00001010	00001010	00011010	00011010
4012	10000111	10000111	10000111	10000111	10000000	10000000
4013	00001100	00001100	01010000	01010000	00001100	00001100
4019	00000100	00000100	00000100	00000100	00000100	00000100
4020	6000	6000	6000	6000	6000	6000
4023	125(*2)	125(*2)	125(*2)	125(*2)	96	96
4039	0	0	0	0	0	0
4040	7 (*3)	6 (*3)	7 (*3)	6 (*3)	10(*3)	8(*3)
4041	6 (*3)	—	6 (*3)	—	8(*3)	—
4048	32 (*3)	29 (*3)	32 (*3)	26 (*3)	47(*3)	39(*3)
4049	29 (*3)	—	26 (*3)	—	39(*3)	—
4080	25153	15425	21062	75	70	50
4083	30	30	30	30	30	30
4093	300	—	240	—	202	—
4100	1261	755	800	530	575	400
4101	100	88	100	100	100	100
4102	1261	755	1342	930	889	684
4103	0	0	0	0	56	0
4104	3200	8000	2500	6500	4200	4700
4105	318	303	318	292	0	0
4106	7000	23000	2500	15000	7500	7800
4107	303	0	292	0	0	0
4108	0	0	0	0	0	0
4109	25	25	25	25	25	25
4110	755	1489	914	1886	750	2011
4111	311	650	387	617	320	733
4112	200	200	200	200	200	200
4113	300	315	300	327	198	165
4114	0	0	23040	20480	0	0
4115	100	100	100	100	100	100
4116	5671	5660	6196	4813	6050	6008
4117	90	90	90	90	90	28250
4118	90	115	100	110	100	100
4119	32	10	301	20	48	58
4120	0	0	0	0	0	0
4124	0	0	0	0	0	0
4127	200	300	202	240	176	202
4128	0	0	0	90	0	90
4129	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700
4134	130	130	130	130	130	130
4136	30	0	30	0	—	0
4138	755	0	530	0	400	0
4139	88	0	100	0	100	0
4140	755	0	930	0	684	0
4141	0	0	0	0	0	0
4142	8000	0	6500	0	4700	0
4143	23000	0	15000	0	7800	0
4144	0	0	0	0	0	0
4145	25	0	25	0	25	0
4146	1489	0	1886	0	2011	0
4147	650	0	617	0	733	0
4148	200	0	200	0	200	0
4149	315	0	327	0	165	0
4150	0	0	20480	0	0	0
4151	100	0	100	0	100	0
4152	5660	0	4813	0	6008	0
4153	90	0	90	0	28250	0
4154	115	0	110	0	100	0
4155	0	0	0	0	0	0
4156	0	0	0	0	0	0
4158	0	0	90	0	90	0
4159	0	0	0	0	0	0
4161	25700	0	25700	0	25700	0
4165	10	0	20	0	58	0
4166	15425	0	75	0	50	0
4169	0	0	0	0	0	0
4400	00000001(*6)	—	00000001(*6)	—	00000000	00000000
Maximum output during acceleration (for PS selection)	18kW	18kW	22.2kW	22.2kW	28.3kW	28.3kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*3) Set this value as the initial value of the velocity loop gain.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching moto

(*6) Change parameters manually according to the table after load parameters automatically with the model code.

A. PARAMETER TABLE FOR EACH MOTOR MODEL

APPENDIX

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Motor model	ai 1p 40/6000	ai 1p 40/6000(*4)	ai 1p 50/6000	ai 1p 50/6000(*4)	ai 1p 60/5000	ai 1p 60/5000(*4)
Applicable amplifier	ai SP 26-B	ai SP 26-B	ai SP 26-B	ai SP 26-B	ai SP 30-B	ai SP 30-B
Model code	—	—	431	—	—	—
Low-speed winding characteristics	13/22kW 400/1500min ⁻¹	13/22kW 400/1500min ⁻¹	22/30/37kW 575/1500min ⁻¹	22/30/37kW 575/1500min ⁻¹	18.5/30kW 400/1500min ⁻¹	18.5/30kW 400/1500min ⁻¹
Hogh-speed winding characteristics	18.5/22/26kW 575/6000min ⁻¹	—	22/30/37kW 1200/6000min ⁻¹	—	22/30kW 750/5000min ⁻¹	—
4007	00000100	00000100	00000000	00000000	00000000	00000000
4008	00000000	00000000	00010000	00010000	00000000	00000000
4009	00000000	00000000	00000000	00000000	00000000	00000000
4010	00010000	00010000	00000000	00000000	00000000	00000000
4011	00011010	00011010	00001010	00001010	00011010	00011010
4012	10000010	10000010	10000111	10000111	10000000	10000000
4013	00001100	00001100	00001100	00001100	01010000	01010000
4019	00000100	00000100	00000100	00000100	00000100	00000100
4020	6000	6000	6000	6000	5000	5000
4023	96	—	200(*2)	200(*2)	167(*2)	—
4039	0	0	0	0	0	0
4040	7(*3)	9(*3)	13 (*3)	6 (*3)	—	—
4041	9(*3)	—	6 (*3)	—	—	—
4048	40(*3)	39(*3)	59 (*3)	28 (*3)	—	—
4049	39(*3)	—	28 (*3)	—	—	—
4080	38	65	16738	95	75	45
4083	30	30	30	30	30	30
4093	203	—	202	—	195	—
4100	675	430	1230	630	750	420
4101	99	100	100	100	84	85
4102	835	713	1491	881	861	497
4103	0	73	0	0	80	0
4104	3500	5000	4000	6000	5000	8000
4105	475	478	464	438	487	490
4106	6500	7000	6500	10000	9000	12000
4107	478	—	438	0	490	—
4108	0	0	0	0	0	0
4109	25	25	25	25	25	25
4110	1052	2155	924	1508	1018	1764
4111	363	655	326	609	280	510
4112	200	200	200	200	200	200
4113	199	200	206	218	196	195
4114	0	0	0	0	0	0
4115	100	100	100	100	100	100
4116	3600	5200	6156	5000	5050	5045
4117	24154	90	90	90	90	90
4118	100	100	100	100	100	100
4119	48	48	46	44	49	20
4120	0	—	0	—	0	—
4124	0	0	0	0	0	0
4127	169	203	202	202	164	195
4128	110	0	0	85	0	0
4129	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700
4134	130	130	130	130	130	130
4136	0	0	30	0	30	0
4138	430	0	630	0	420	0
4139	100	0	100	0	85	0
4140	713	0	881	0	497	0
4141	73	0	0	0	0	0
4142	5000	0	6000	0	8000	0
4143	7000	0	10000	0	12000	0
4144	0	0	0	0	0	0
4145	25	0	25	0	25	0
4146	2155	0	1508	0	1764	0
4147	655	0	609	0	510	0
4148	200	0	200	0	200	0
4149	200	0	218	0	195	0
4150	0	0	0	0	0	0
4151	100	0	100	0	100	0
4152	5200	0	5000	0	5045	0
4153	90	0	90	0	90	0
4154	100	0	100	0	100	0
4155	0	0	0	0	0	0
4156	0	0	0	0	0	0
4158	0	0	85	0	0	0
4159	0	0	0	0	0	0
4161	25700	0	25700	0	25700	0
4165	48	0	44	0	20	0
4166	65	0	95	0	45	0
4169	—	0	0	0	0	0
4400	00000000	00000000	00010001(*6)	00000001(*6)	—	—
Maximum output during acceleration (for PS selection)	31.2kW	31.2kW	44.4kW	44.4kW	36.0kW	36.0kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*3) Set this value as the initial value of the velocity loop gain.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching motor.

(*6) Change parameters manually according to the table after load parameters automatically with the model code.

Motor model	α I _P 18/6000	α I _P 18/6000(*4)
Applicable amplifier	β I SVSP-15-B	β I SVSP-15-B
Model code	429	—
Low-speed winding characteristics	6/11kW 500/1500min ⁻¹	6/11kW 500/1500min ⁻¹
Hogh-speed winding characteristics	9/11/15kW 750/6000min ⁻¹	—
4007	00000000	00000000
4008	00010000	00010000
4009	00000000	00000000
4010	00000000	00000000
4011	00001010	00001010
4012	10000111	10000111
4013	00001100	00001100
4019	00000100	00000100
4020	6000	6000
4023	125(*2)	125(*2)
4039	0	0
4040	7 (*3)	6 (*3)
4041	6 (*3)	
4048	32 (*3)	29 (*3)
4049	29 (*3)	
4080	25153	15425
4083	30	30
4093	300	
4100	1261	755
4101	100	88
4102	1261	755
4103	0	0
4104	3200	8000
4105	318	303
4106	7000	23000
4107	303	0
4108	0	0
4109	25	25
4110	755	1489
4111	311	650
4112	200	200
4113	300	315
4114	0	0
4115	100	100
4116	5671	5660
4117	90	90
4118	90	115
4119	32	10
4120	0	
4124	0	0
4127	200	300
4128	0	0
4129	0	0
4130	25700	25700
4134	130	130
4136	30	0
4138	755	0
4139	88	0
4140	755	0
4141	0	0
4142	8000	0
4143	23000	0
4144	0	0
4145	25	0
4146	1489	0
4147	650	0
4148	200	0
4149	315	0
4150	0	0
4151	100	0
4152	5660	0
4153	90	0
4154	115	0
4155	0	0
4156	0	0
4158	0	0
4159	0	0
4161	25700	0
4165	10	0
4166	15425	0
4169	0	0
4400	00000001(*6)	
Maximum output during acceleration (for PS selection)	18kW	18kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*3) Set this value as the initial value of the velocity loop gain.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching motor.

(*6) Change parameters manually according to the table after load parameters automatically with the model code.

A. PARAMETER TABLE FOR EACH MOTOR MODEL

APPENDIX

B-65272EN/08

Motor model	αi IP 15/6000HV	αi IP 15/8000HV	αi IP 22/6000HV	αi IP 22/8000HV	αi IP 40/6000HV	αi IP 50/6000HV	αi IP 60/5000HV
Applicable amplifier	αi SP15HV-B	αi SP15HV-B	αi SP 22HV-B	αi SP 22HV-B	αi SP 30HV-B	αi SP 30HV-B	αi SP 30HV-B
Model code	416	—	—	—	418	419	420
Low-speed winding characteristics	5/9kW 500/1500min ⁻¹	5/9kW 500/1500min ⁻¹	7.5/15kW 500/1500min ⁻¹	7.5/15kW 500/1500min ⁻¹	13/22kW 400/1500min ⁻¹	22/30kW 575/1500min ⁻¹	18.5/30kW 400/1500min ⁻¹
Hogh-speed winding characteristics	7.5/9kW 750/6000min ⁻¹	7.5/9kW 750/8000min ⁻¹	11/15kW 750/6000min ⁻¹	11/15kW 750/8000min ⁻¹	18.5/22kW 575/6000min ⁻¹	22/30kW 1200/6000min ⁻¹	22/30kW 750/5000min ⁻¹
4007	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4008	00000000	00000000	00010000	00010000	00000000	00000000	00000000
4009	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4011	00011010	00011010	00001010	00001010	00011010	00011010	00001010
4012	10000010	10000010	10000010	10000010	10000000	10000010	10000000
4013	00001100	00001100	01010000	01010000	01010000	01010000	01010000
4019	00000100	00000100	00000100	00000100	00000100	00000100	00000100
4020	6000	8000	6000	8000	6000	6000	5000
4023	125	94	125(*2)	94(*2)	96(*2)	167	150(*2)
4039	0		0	0	0	0	0
4040							
4041							
4048							
4049							
4080	95	95	75	75	73	80	80
4083	30	30	30	30	30	30	30
4093	216	216	240	240	203	164	195
4100	760	760	760	760	600	1120	863
4101	90	90	88	88	100	100	100
4102	1460	1460	1240	1240	889	1356	863
4103	60	60	0	0	75	85	0
4104	5000	5000	5000	5000	6400	6000	6000
4105	367	0	286	286	531	475	495
4106	12000	12000	15000	15000	6400	16000	14000
4107	289	0	288	288	516	508	492
4108	0	0	0	0	0	0	0
4109	25	25	25	25	25	25	25
4110	1384	1384	903	903	1098	838	764
4111	330	330	382	382	304	225	229
4112	200	200	200	200	200	200	200
4113	260	260	334	334	180	201	193
4114	0	0	20480	20480	20480	0	0
4115	100	100	100	100	100	100	100
4116	4600	4600	4500	4500	6043	6202	5045
4117	90	90	90	90	90	90	90
4118	100	100	90	90	90	100	100
4119	37	37	29	29	53	48	49
4120	0	0	0	0	0	0	0
4124	0	0	0	0	0	0	0
4127	144	144	164	164	143	164	164
4128	103	103	105	105	115	104	0
4129	0	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700	25700
4134	130	130	130	130	130	130	130
4136	30		30	30	30	30	30
4138	530	530	500	500	430	699	500
4139	75	75	60	60	100	95	100
4140	726	726	717	717	661	699	500
4141	75	75	0	0	60	95	0
4142	10000	10000	8500	8500	8600	10000	11000
4143	28000	28000	19000	19000	8600	24000	22000
4144	0	0	0	0	0	0	0
4145	25	25	25	25	25	25	25
4146	1934	1934	1571	1571	2514	1374	1331
4147	465	465	620	620	726	395	424
4148	200	200	200	200	200	200	200
4149	330	330	332	332	185	188	194
4150	0	0	23040	23040	23040	0	0
4151	100	100	100	100	100	100	100
4152	5167	5167	5542	5542	6040	6203	5045
4153	90	90	90	90	90	90	90
4154	100	100	90	90	90	100	100
4155	0	0	0	0	0	0	0
4156	0	0	0	0	0	0	0
4158	0	0	0	0	0	120	0
4159	0	0	0	0	0	0	0
4161	25700	25700	25700	25700	25700	25700	25700
4165	29	29	29	29	52	51	49
4166	80	80	85	85	65	63	70
4169	0		0	0	0	0	0
Maximum output during acceleration (for PS selection)	13.5kW	13.5kW	20kW	20kW	29.0kW	35.4kW	36.0kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

A.3 SPINDLE MOTOR $\alpha i I_T$ series

Motor model	$\alpha i I_T$ 1/24000	$\alpha i I_T$ 1.5/20000	$\alpha i I_T$ 2/20000	$\alpha i I_T$ 3/12000	$\alpha i I_T$ 3/15000	$\alpha i I_T$ 6/12000	$\alpha i I_T$ 6/12000(*4)
Applicable amplifier	αi SP 22-B	αi SP 22-B	αi SP 22-B	αi SP 22-B	αi SP 22-B	αi SP 11-B	αi SP 11-B
Model code	—	—	—	—	—	—	—
Low-speed winding characteristics	—	—	—	—	—	5.5/7.5/11 kW 1500/12000 min ⁻¹	5.5/7.5/11 kW 1500/12000 min ⁻¹
Hogh-speed winding characteristics	2.2/3.7/5.5/11kW 6000/24000min ⁻¹	2.2/3.7/5.5/9kW 3000/20000min ⁻¹	3.7/5.5/9/11kW 3000/20000min ⁻¹	3.7/5.5/7.5/13kW 1500/12000min ⁻¹	5.5/7.5/11/15kW 3000/15000min ⁻¹	5.5/7.5/11 kW 4000/12000 min ⁻¹	—
4007	00000000	00000000	00000000	00000000	00000100	00000000	00000000
4008	00000000	00000000	00000000	00000000	00000000	00010000	00010000
4009	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000001	00000001	00000001	00000001	00010001	00000001	00000001
4011	00011001	00011001	00011001	00011001	00001001	00001010	00001010
4012	10000010	10000010	10000010	10000010	10000010	10000111	10000111
4013	00001100	00001100	00001100	00001100	00001100	00001100	00001100
4019	00000100	00000100	00000100	00000100	00000100	00000100	00000100
4020	24000	20000	20000	12000	15000	12000	12000
4023						333 (*2)	
4039	0	0	0	0	0	0	0
4040	2(*3)	2(*1)			4(*3)		
4041							
4048	10(*3)	9(*1)			18(*3)		
4049							
4080	15447	5981	24410	16730	12870	75	12870
4083	10	10	10	30	30	30	30
4093						240	0
4100	6100	3300	3200	1600	3150	4400	1570
4101	99	87	100	100	100	100	100
4102	11558	7145	6432	3015	4725	4838	2016
4103	66	70	75	4939	0	0	0
4104	1300	3000	2700	3200	2000	1200	3000
4105	0	0	0	0	103	119	138
4106	2800	3000	5300	7500	7000	2500	6000
4107	0	0	0	0	0	138	0
4108	0	0	0	0	0	0	0
4109	25	25	25	25	25	25	25
4110	915	838	588	1117	614	479	905
4111	299	260	222	399	229	198	261
4112	200	200	200	200	200	200	200
4113	1978	2227	1800	900	904	800	690
4114	0	0	0	19200	0	17920	0
4115	90	90	80	80	100	100	100
4116	10318	10289	16564	7376	7375	6500	6500
4117	90	90	90	90	90	90	90
4118	28260	100	100	90	100	100	100
4119	5	1	2	9	10	15	527
4120	0	0	0	0	0	0	0
4124	0	0	0	0	0	0	0
4127	600	490	357	421	327	240	240
4128	0	102	105	110	0	105	6505
4129	0	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700	25700
4134	110	110	110	110	110	130	130
4136	0	0	0	0	0	30	0
4138	0	0	0	0	0	1570	0
4139	0	0	0	0	0	100	0
4140	0	0	0	0	0	2016	0
4141	0	0	0	0	0	0	0
4142	0	0	0	0	0	3000	0
4143	0	0	0	0	0	6000	0
4144	0	0	0	0	0	0	0
4145	0	0	0	0	0	25	0
4146	0	0	0	0	0	905	0
4147	0	0	0	0	0	261	0
4148	0	0	0	0	0	200	0
4149	0	0	0	0	0	690	0
4150	0	0	0	0	0	0	0
4151	0	0	0	0	0	100	0
4152	0	0	0	0	0	6500	0
4153	0	0	0	0	0	90	0
4154	0	0	0	0	0	100	0
4155	0	0	0	0	0	0	0
4156	0	0	0	0	0	0	0
4158	0	0	0	0	0	6505	0
4159	0	0	0	0	0	0	0
4161	0	0	0	0	0	25700	0
4165	0	0	0	0	0	527	0
4166	0	0	0	0	0	12870	0
4169	0	0	0	0	0	0	0
4400						00010001(*6)	00000001(*6)
Maximum output during acceleration (for PS selection)	22kW	22kW	26kW	22kW	18kW	13.2kW	13.2kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*3) Set this value as the initial value of the velocity loop gain.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching moto

(*6) Change parameters manually according to the table after load parameters automatically with the model code.

A. PARAMETER TABLE FOR EACH MOTOR MODEL

APPENDIX

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Motor model	ai I _r 8/12000	ai I _r 8/12000(*4)	ai I _r 8/15000	ai I _r 8/15000(*4)	ai I _r 12/12000	ai I _r 12/12000(*4)	ai I _r 15/10000	ai I _r 15/10000(*4)
Applicable amplifier	ai SP 15-B	ai SP 15-B	ai SP 26-B	ai SP 26-B	ai SP 15-B	ai SP 15-B	ai SP 22-B	ai SP 22-B
Model code	—	—	—	—	—	—	—	—
Low-speed winding characteristics	7.5/11/15 kW 1500/12000 min ⁻¹	7.5/11/15 kW 1500/12000 min ⁻¹	7.5/11/15kW 1500/4000min ⁻¹	7.5/11/15kW 1500/4000min ⁻¹	11/15/18.5 kW 1500/12000min ⁻¹	11/15/18.5 kW 1500/12000min ⁻¹	15/18.5/25 kW 1500/10000 min ⁻¹	15/18.5/25 kW 1500/10000 min ⁻¹
Hogh-speed winding characteristics	7.5/11/15 kW 4000/12000 min ⁻¹	—	7.5/11/15kW 4000/15000min ⁻¹	—	11/15/18.5 kW 4000/12000min ⁻¹	—	15/18.5/25 kW 4000/10000 min ⁻¹	—
4007	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4008	00010000	00010000	00000000	00000000	00010000	00010000	00010000	00010000
4009	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000001	00000001	00000001	00000001	00000001	00000001	00000001	00000001
4011	00001010	00001010	00011010	00011010	00001010	00001010	00001010	00001010
4012	10000010	10000010	10000010	10000010	10000010	10000010	10000010	10000010
4013	00001100	00001100	01010000	01010000	00001100	00001100	00001100	00001100
4019	00000100	00000100	00000100	00000100	00000100	00000100	00000100	00000100
4020	12000	12000	15000	4000	12000	12000	10000	10000
4023	333 (*2)	—	267 (*2)	—	333 (*2)	—	400 (*2)	—
4039	0	0	0	0	0	0	0	0
4040	—	—	—	—	—	—	17 (*3)	7 (*3)
4041	—	—	4 (*3)	—	—	—	7 (*3)	—
4048	—	—	—	—	—	—	81 (*3)	32 (*3)
4049	—	—	4 (*3)	—	—	—	32 (*3)	—
4080	15186	15693	18774	95	75	16735	15445	19290
4083	30	30	30	30	30	30	30	30
4093	240	0	240	0	202	0	200	0
4100	3580	1505	4040	1570	3800	1550	4200	1500
4101	71	74	84	90	80	100	85	100
4102	3580	1642	5161	2592	3593	1922	3482	1710
4103	0	0	0	0	0	0	0	0
4104	4000	8000	2700	5000	1800	3000	1700	5500
4105	97	88	95	91	341	324	347	314
4106	14000	24000	9200	16000	6000	10000	5500	5500
4107	88	0	91	0	324	0	314	0
4108	0	0	0	0	0	0	0	0
4109	25	25	25	25	25	25	25	25
4110	421	566	503	754	595	905	575	794
4111	157	229	105	192	223	337	212	305
4112	200	200	200	200	200	200	200	200
4113	980	1090	1000	1050	280	295	275	304
4114	22528	21760	28160	0	0	0	23040	23040
4115	100	100	100	100	100	100	100	100
4116	11031	8000	10984	11083	5280	5279	5126	5177
4117	90	90	90	90	90	90	29530	90
4118	100	100	90	100	100	100	100	100
4119	522	521	10	15	34	32	35	31
4120	0	0	0	0	0	0	0	0
4124	0	0	0	0	0	0	0	0
4127	240	240	240	240	202	202	200	200
4128	0	0	0	110	0	0	0	105
4129	0	0	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700	25700	25700
4134	130	130	130	130	130	130	130	130
4136	30	0	30	0	30	0	30	0
4138	1505	0	1570	0	1550	0	1500	0
4139	74	0	90	0	100	0	100	0
4140	1642	0	2592	0	1922	0	1710	0
4141	0	0	0	0	0	0	0	0
4142	8000	0	5000	0	3000	0	5500	0
4143	24000	0	16000	0	10000	0	5500	0
4144	0	0	0	0	0	0	0	0
4145	25	0	25	0	25	0	25	0
4146	566	0	754	0	905	0	794	0
4147	229	0	192	0	337	0	305	0
4148	200	0	200	0	200	0	200	0
4149	1090	0	1050	0	295	0	304	0
4150	21760	0	0	0	0	0	23040	0
4151	100	0	100	0	100	0	100	0
4152	8000	0	11083	0	5279	0	5177	0
4153	90	0	90	0	90	0	90	0
4154	100	0	100	0	100	0	100	0
4155	0	0	0	0	0	0	0	0
4156	0	0	0	0	0	0	0	0
4158	0	0	110	0	0	0	105	0
4159	0	0	0	0	0	0	0	0
4161	25700	0	25700	0	25700	0	25700	0
4165	521	0	15	0	32	0	31	0
4166	15693	0	95	0	16735	0	19290	0
4169	0	0	0	0	0	0	0	0
4400	—	—	—	—	—	—	—	—
Maximum output during acceleration (for PS selection)	18kW	18kW	28kW	28kW	22.2kW	22.2kW	30kW	30kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*3) Set this value as the initial value of the velocity loop gain.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching motor.

Motor model	ai Ir 15/15000	ai Ir 15/15000(*4)	ai Ir 22/10000	ai Ir 22/10000(*4)
Applicable amplifier	ai SP 30-B	ai SP 30-B	ai SP 26-B	ai SP 26-B
Model code	—	—	—	—
Low-speed winding characteristics	15/18.5/22/26 kW 1400/4000 min ⁻¹	15/18.5/22/26 kW 1400/4000 min ⁻¹	22/26/35 kW 1500/10000 min ⁻¹	22/26/35 kW 1500/10000 min ⁻¹
Hogh-speed winding characteristics	15/18.5/22/26 kW 5000/15000 min ⁻¹	—	22/26/35 kW 4000/10000 min ⁻¹	—
4007	00000100	00000100	00000000	00000000
4008	00000000	00000000	00010000	00010000
4009	00000000	00000000	00000000	00000000
4010	00010001	00010001	00000001	00000001
4011	00011010	00011010	00001010	00001010
4012	10000010	10000010	10000111	10000111
4013	00001100	00001100	00001100	00001100
4019	00000100	00000100	00000100	00000100
4020	15000	15000	10000	10000
4023	233	—	400 (*2)	—
4039	0	0	0	0
4040	14(*3)	4(*3)	19 (*3)	7 (*3)
4041	4(*3)	—	7 (*3)	—
4048	64(*3)	18(*3)	90 (*3)	34 (*3)
4049	18(*3)	—	34 (*3)	—
4080	15956	17488	80	16735
4083	30	30	30	30
4093	208	—	191	0
4100	5100	1450	4000	1520
4101	59	70	78	94
4102	5392	1783	3504	1709
4103	78	0	0	0
4104	2700	7400	1400	2200
4105	251	251	360	318
4106	7700	14800	1400	4600
4107	251	0	318	0
4108	0	0	0	0
4109	25	25	25	25
4110	887	2155	604	823
4111	300	761	218	312
4112	200	200	200	200
4113	380	380	265	300
4114	0	0	0	19200
4115	100	100	100	100
4116	9314	7955	5523	5593
4117	21850	26970	90	90
4118	28250	90	100	100
4119	25	25	36	32
4120	0	0	0	0
4124	0	0	0	0
4127	208	208	191	191
4128	105	0	0	108
4129	0	0	0	0
4130	25700	25700	25700	25700
4134	130	130	130	130
4136	30	0	30	0
4138	1450	0	1520	0
4139	70	0	94	0
4140	1783	0	1709	0
4141	0	0	0	0
4142	7400	0	2200	0
4143	14800	0	4600	0
4144	0	0	0	0
4145	25	0	25	0
4146	2155	0	823	0
4147	761	0	312	0
4148	200	0	200	0
4149	380	0	300	0
4150	0	0	19200	0
4151	100	0	100	0
4152	7955	0	5593	0
4153	26970	0	90	0
4154	90	0	100	0
4155	0	0	0	0
4156	0	0	0	0
4158	0	0	108	0
4159	0	0	0	0
4161	25700	0	25700	0
4165	25	0	32	0
4166	17488	0	16735	0
4169	0	0	0	0
4400	—	—	00010001 (*6)	00000001(*6)
Maximum output during acceleration (for PS selection)	50kW	50kW	42kW	42kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*3) Set this value as the initial value of the velocity loop gain.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching motor.

(*6) Change parameters manually according to the table after load parameters automatically with the model code.

A. PARAMETER TABLE FOR EACH MOTOR MODEL

APPENDIX

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Motor model	ai I _r 1/24000	ai I _r 1.5/20000	ai I _r 3/12000	ai I _r 6/12000	ai I _r 6/12000(*4)	ai I _r 8/12000	ai I _r 8/12000(*4)
Applicable amplifier	βi SVSP-18-B	βi SVSP-18-B	βi SVSP-18-B	βi SVSP-11-B	βi SVSP-11-B	βi SVSP-15-B	βi SVSP-15-B
Model code	—	—	—	—	—	—	—
Low-speed winding characteristics	—	—	—	5.5/7.5/11 kW 1500/12000 min ⁻¹	5.5/7.5/11 kW 1500/12000 min ⁻¹	7.5/11/15 kW 1500/12000 min ⁻¹	7.5/11/15 kW 1500/12000 min ⁻¹
Hogh-speed winding characteristics	2.2/3.7/5.5/11kW 6000/24000min ⁻¹	2.2/3.7/5.5/9kW 3000/20000min ⁻¹	3.7/5.5/7.5/13kW 1500/12000min ⁻¹	5.5/7.5/11 kW 4000/12000 min ⁻¹	—	7.5/11/15 kW 4000/12000 min ⁻¹	—
4007	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4008	00000000	00000000	00000000	00010000	00010000	00010000	00010000
4009	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000001	00000001	00000001	00000001	00000001	00000001	00000001
4011	00011001	00011001	00011001	00001010	00001010	00001010	00001010
4012	10000010	10000010	10000010	10000111	10000111	10000010	10000010
4013	00001100	00001100	00001100	00001100	00001100	00001100	00001100
4019	00000100	00000100	00000100	00000100	00000100	00000100	00000100
4020	24000	20000	12000	12000	12000	12000	12000
4023				333 (*2)		333 (*2)	
4039	0	0	0	0	0	0	0
4040	2(*3)	2(*1)					
4041							
4048	10(*3)	9(*1)					
4049							
4080	15447	5981	16730	75	12870	15186	15693
4083	10	10	30	30	30	30	30
4093				240	0	240	0
4100	6100	3300	1600	4400	1570	3580	1505
4101	99	87	100	100	100	71	74
4102	11558	7145	3015	4838	2016	3580	1642
4103	66	70	4939	0	0	0	0
4104	1300	3000	3200	1200	3000	4000	8000
4105	0	0	0	119	138	97	88
4106	2800	3000	7500	2500	6000	14000	24000
4107	0	0	0	138	0	88	0
4108	0	0	0	0	0	0	0
4109	25	25	25	25	25	25	25
4110	915	838	1117	479	905	421	566
4111	299	260	399	198	261	157	229
4112	200	200	200	200	200	200	200
4113	1978	2227	900	800	690	980	1090
4114	0	0	19200	17920	0	22528	21760
4115	90	90	80	100	100	100	100
4116	10318	10289	7376	6500	6500	11031	8000
4117	90	90	90	90	90	90	90
4118	28260	100	90	100	100	100	100
4119	5	1	9	15	527	522	521
4120	0	0	0	0	0	0	0
4124	0	0	0	0	0	0	0
4127	600	490	421	240	240	240	240
4128	0	102	110	105	6505	0	0
4129	0	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700	25700
4134	110	110	110	130	130	130	130
4136	0	0	0	30	0	30	0
4138	0	0	0	1570	0	1505	0
4139	0	0	0	100	0	74	0
4140	0	0	0	2016	0	1642	0
4141	0	0	0	0	0	0	0
4142	0	0	0	3000	0	8000	0
4143	0	0	0	6000	0	24000	0
4144	0	0	0	0	0	0	0
4145	0	0	0	25	0	25	0
4146	0	0	0	905	0	566	0
4147	0	0	0	261	0	229	0
4148	0	0	0	200	0	200	0
4149	0	0	0	690	0	1090	0
4150	0	0	0	0	0	21760	0
4151	0	0	0	100	0	100	0
4152	0	0	0	6500	0	8000	0
4153	0	0	0	90	0	90	0
4154	0	0	0	100	0	100	0
4155	0	0	0	0	0	0	0
4156	0	0	0	0	0	0	0
4158	0	0	0	6505	0	0	0
4159	0	0	0	0	0	0	0
4161	0	0	0	25700	0	25700	0
4165	0	0	0	527	0	521	0
4166	0	0	0	12870	0	15693	0
4169	0	0	0	0	0	0	0
4400				00010001(*6)	00000001(*6)		
Maximum output during acceleration (for PS selection)	22kW	22kW	22kW	13.2kW	13.2kW	18kW	18kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*3) Set this value as the initial value of the velocity loop gain.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching motor.

(*6) Change parameters manually according to the table after load parameters automatically with the model code.

Motor model	αi Ir 12/12000	αi Ir 12/12000(*4)
Applicable amplifier	βi SVSP-18-B	βi SVSP-18-B
Model code	—	—
Low-speed winding characteristics	11/15/18.5 kW 1500/12000min ⁻¹	11/15/18.5 kW 1500/12000min ⁻¹
Hogh-speed winding characteristics	11/15/18.5 kW 4000/12000min ⁻¹	—
4007	00000000	00000000
4008	00010000	00010000
4009	00000000	00000000
4010	00000001	00000001
4011	00001010	00001010
4012	10000010	10000010
4013	00001100	00001100
4019	00000100	00000100
4020	12000	12000
4023	333 (*2)	
4039	0	0
4040		
4041		
4048		
4049		
4080	75	16735
4083	30	30
4093	202	0
4100	3800	1550
4101	80	100
4102	3593	1922
4103	0	0
4104	1800	3000
4105	341	324
4106	6000	10000
4107	324	0
4108	0	0
4109	25	25
4110	793	1207
4111	223	337
4112	200	200
4113	280	295
4114	0	0
4115	100	100
4116	5280	5279
4117	90	90
4118	100	100
4119	34	32
4120	0	0
4124	0	0
4127	202	202
4128	0	0
4129	0	0
4130	25700	25700
4134	130	130
4136	30	0
4138	1550	0
4139	100	0
4140	1922	0
4141	0	0
4142	3000	0
4143	10000	0
4144	0	0
4145	25	0
4146	1207	0
4147	337	0
4148	200	0
4149	295	0
4150	0	0
4151	100	0
4152	5279	0
4153	90	0
4154	100	0
4155	0	0
4156	0	0
4158	0	0
4159	0	0
4161	25700	0
4165	32	0
4166	16735	0
4169	0	0
4400		
Maximum output during acceleration (for PS selection)	22.2kW	22.2kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching motor.

A. PARAMETER TABLE FOR EACH MOTOR MODEL

APPENDIX

B-65272EN/08

Motor model	ai Ir 1.5/15000HV	ai Ir 2/20000HV	ai Ir 3/12000HV	ai Ir 6/12000HV	ai Ir 6/12000HV(*4)	ai Ir 8/12000HV	ai Ir 8/12000HV(*4)
Applicable amplifier	ai SP 15HV-B	ai SP 30HV-B	ai SP 11HV-B	ai SP 15HV-B	ai SP 15HV-B	ai SP 15HV-B	ai SP 15HV-B
Model code	—	—	—	—	—	—	—
Low-speed winding characteristics	—	—	—	5.5/7.5kW 1500/12000min ⁻¹	5.5/7.5kW 1500/12000min ⁻¹	7.5/11kW 1500/12000min ⁻¹	7.5/11kW 1500/12000min ⁻¹
Hogh-speed winding characteristics	1.5/2.2kW 3000/15000min ⁻¹	2.2/3.7kW 3000/20000min ⁻¹	3.7/5.5kW 1500/12000min ⁻¹	5.5/7.5kW 4000/12000min ⁻¹	—	7.5/11kW 4000/12000min ⁻¹	—
4007	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4008	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4009	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000001	00000001	00000001	00000001	00000001	00000001	00000001
4011	00011001	00011001	00011001	00011010	00011010	00011010	00011010
4012	10000010	10000010	10000010	10000010	10000010	10000010	10000010
4013	00001100	01010000	00001100	00001100	00001100	00001100	00001100
4019	00000100	00000100	00000100	00000100	00000100	00000100	00000100
4020	15000	20000	12000	12000	12000	12000	12000
4023				333(*2)		333(*2)	
4039	0	0	0	0	0	0	0
4040							6(*3)
4041						6(*3)	
4048							6(*3)
4049						6(*3)	
4080	9045	11605	90	96	19807	9050	14938
4083	10	10	30	30	30	30	30
4093	0	0	0	164	0	176	0
4100	3500	3400	1550	4030	1570	3750	1550
4101	33	41	82	51	67	85	84
4102	7257	6612	2864	4526	2475	3798	1957
4103	80	92	90	67	68	89	74
4104	3500	2700	4000	2700	4600	3800	7000
4105	48	0	112	127	131	101	95
4106	3500	4500	14000	7000	12000	10000	18000
4107	0	0	0	131	0	95	0
4108	0	0	0	0	0	0	0
4109	25	25	25	25	25	25	25
4110	1005	1052	559	862	1508	569	838
4111	233	235	190	190	360	100	186
4112	200	200	200	200	200	200	200
4113	2000	1700	850	750	730	950	1000
4114	0	0	0	19200	19200	0	0
4115	100	100	100	100	100	100	100
4116	9815	11131	7377	8202	8202	8736	8737
4117	90	90	90	90	90	90	90
4118	100	100	110	90	100	90	90
4119	5	5	11	13	13	10	266
4120	0	0	0	0	0	0	0
4124	0	0	0	0	0	0	0
4127	176	202	178	164	164	176	176
4128	90	88	0	105	113	0	0
4129	0	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700	25700
4134	110	110	110	130	130	130	130
4136	0	0	0	30	0	30	0
4138	0	0	0	1570	0	1550	0
4139	0	0	0	67	0	84	0
4140	0	0	0	2475	0	1957	0
4141	0	0	0	68	0	74	0
4142	0	0	0	4600	0	7000	0
4143	0	0	0	12000	0	18000	0
4144	0	0	0	0	0	0	0
4145	0	0	0	25	0	25	0
4146	0	0	0	1508	0	838	0
4147	0	0	0	360	0	186	0
4148	0	0	0	200	0	200	0
4149	0	0	0	730	0	1000	0
4150	0	0	0	19200	0	0	0
4151	0	0	0	100	0	100	0
4152	0	0	0	8202	0	8737	0
4153	0	0	0	90	0	90	0
4154	0	0	0	100	0	90	0
4155	0	0	0	0	0	0	0
4156	0	0	0	0	0	0	0
4158	0	0	0	113	0	0	0
4159	0	0	0	0	0	0	0
4161	0	0	0	25700	0	25700	0
4165	0	0	0	13	0	266	0
4166	0	0	0	19807	0	14938	0
4169	0	0	0	0	0	0	0
Maximum output during acceleration (for PS selection)	13kW	20kW	13kW	13kW	13kW	13.2kW	13.2kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*3) Set this value as the initial value of the velocity loop gain.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching motor.

A.PARAMETER TABLE FOR EACH MOTOR MODEL

Motor model	ai 1r 8/15000HV	ai 1r 8/15000HV(4)	ai 1r 15/10000HV	ai 1r	ai 1r 15/15000HV	ai 1r	ai 1r 22/10000HV	ai 1r 22/10000HV(4)
Applicable amplifier	ai SP 30HV-B	ai SP 30HV-B	ai SP 30HV-B	ai SP 30HV-B	ai SP 30HV-B	ai SP 30HV-B	ai SP 30HV-B	ai SP 30HV-B
Model code	—	—	—	—	—	—	—	—
Low-speed winding characteristics	7.5/11/15kW 1500/4000min ⁻¹	7.5/11/15kW 1500/4000min ⁻¹	15/18.5kW 1500/10000min ⁻¹	15/18.5kW 1500/10000min ⁻¹	15/18.5/22/26kW 1400/4000min ⁻¹	15/18.5/22/26kW 1400/4000min ⁻¹	22/26kW 1500/10000min ⁻¹	22/26kW 1500/10000min ⁻¹
Hogh-speed winding characteristics	7.5/11/15kW 4000/15000min ⁻¹	—	15/18.5kW 4000/10000min ⁻¹	—	15/18.5/22/26kW 5000/15000min ⁻¹	—	22/26kW 4000/10000min ⁻¹	—
4007	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4008	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4009	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000001	00000001	00000001	00000001	00000001	00000001	00000001	00000001
4011	00011010	00011010	00011010	00011010	00011010	00011010	00011010	00011010
4012	10000010	10000010	10000010	10000010	10000111	10000111	10000010	10000010
4013	01010000	01010000	01010000	01010000	01010000	01010000	01010000	01010000
4019	00000100	00000100	00000100	00000100	00000100	00000100	00000100	00000100
4020	15000	4000	10000	10000	12000	4000	10000	10000
4023	267(*2)	—	400(*2)	—	292	—	400(*2)	—
4039	0	0	0	0	0	0	0	0
4040	—	4(*3)	—	—	8(*3)	4(*3)	—	—
4041	4(*3)	—	—	—	4(*3)	—	—	—
4048	—	4(*3)	—	—	8(*3)	4(*3)	—	—
4049	4(*3)	—	—	—	4(*3)	—	—	—
4080	98	92	80	65	18005	12895	83	18517
4083	30	30	30	30	30	30	30	30
4093	240	0	148	0	208	—	142	0
4100	4000	1630	4000	1500	4600	1480	3630	1500
4101	81	93	53	73	50	100	74	84
4102	5660	2913	3464	1972	4279	2232	3318	1669
4103	86	85	70	65	0	0	93	82
4104	3000	5500	2800	4500	2000	4000	2100	4000
4105	101	87	341	341	0	—	360	347
4106	3000	5500	2800	4500	3400	6500	6300	12000
4107	87	0	341	0	0	—	347	0
4108	0	0	0	0	0	0	0	0
4109	25	25	25	25	25	25	25	25
4110	646	984	857	1499	755	1191	666	984
4111	166	282	229	425	310	463	160	270
4112	200	200	200	200	200	200	200	200
4113	950	1100	280	280	400	430	265	275
4114	0	0	0	23040	0	0	0	0
4115	100	100	100	100	100	100	100	100
4116	8703	8708	5184	5153	9570	9567	5000	4991
4117	90	90	90	90	90	90	90	90
4118	90	90	100	100	100	90	90	90
4119	266	9	34	34	24	22	50	70
4120	0	0	0	0	0	0	0	0
4124	0	0	0	0	0	0	0	0
4127	240	240	148	148	208	208	142	142
4128	105	106	0	0	95	103	98	103
4129	0	0	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700	25700	25700
4134	130	130	130	130	130	130	130	130
4136	30	0	30	0	0	0	30	0
4138	1630	0	1500	0	1480	0	1500	0
4139	93	0	73	0	100	0	84	0
4140	2913	0	1972	0	2232	0	1669	0
4141	85	0	65	0	0	0	82	0
4142	5500	0	4500	0	4000	0	4000	0
4143	5500	0	4500	0	6500	0	12000	0
4144	0	0	0	0	0	0	0	0
4145	25	0	25	0	25	0	25	0
4146	984	0	1499	0	1191	0	984	0
4147	282	0	425	0	463	0	270	0
4148	200	0	200	0	200	0	200	0
4149	1100	0	280	0	430	0	275	0
4150	0	0	23040	0	0	0	0	0
4151	100	0	100	0	100	0	100	0
4152	8708	0	5153	0	9567	0	4991	0
4153	90	0	90	0	90	0	90	0
4154	90	0	100	0	90	0	90	0
4155	0	0	0	0	0	0	0	0
4156	0	0	0	0	0	0	0	0
4158	106	0	0	0	103	0	103	0
4159	0	0	0	0	0	0	0	0
4161	25700	0	25700	0	25700	0	25700	0
4165	9	0	34	0	22	0	70	0
4166	92	0	65	0	12895	0	18517	0
4169	0	0	0	0	0	0	0	0
Maximum output during acceleration (for PS selection)	28kW	28kW	22.2kW	22.2kW	50kW	50kW	31.2kW	31.2kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*3) Set this value as the initial value of the velocity loop gain.

(*4) This setting is used when only a low-speed winding is connected without the output range being switched in the output range switching motor.

A.4 SPINDLE MOTOR αiL series

Motor model	αiL 8/20000	αiL 15/15000	αiL 26/15000
Applicable amplifier	αi SP 30-B	αi SP 30-B	αi SP 30-B
Model code	—	—	—
Low-speed winding characteristics	11/15kW 1150/4000min ⁻¹	18.5/22kW 1400/4000min ⁻¹	15/22kW 600/2000min ⁻¹
Hogh-speed winding characteristics	15/18.5kW 5000/20000min ⁻¹	18.5/22kW 6000/15000min ⁻¹	26/30kW 2500/15000min ⁻¹
4007	00000000	00000000	00000000
4008	00000000	00000000	00000000
4009	00000000	00000000	00000000
4010	00000001	00000001	00000001
4011	00011001	00011001	00011001
4012	10000010	10000010	10000010
4013	01010000	01010000	01010000
4019	00000100	00000100	00000100
4020	20000	15000	15000
4023	200(*2)	267(*2)	120(*2)
4039	0	0	0
4040			
4041	3(*3)	4(*3)	5(*3)
4048			
4049	3(*3)	4(*3)	5(*3)
4080	11856	12115	12875
4083	20	30	30
4093	164	143	176
4100	5070	6000	2470
4101	69	52	70
4102	6960	6153	2580
4103	0	89	97
4104	2100	1800	2100
4105	95	318	298
4106	3900	2800	4600
4107	83	318	227
4108	0	0	0
4109	25	25	25
4110	805	1207	1207
4111	217	343	344
4112	200	200	200
4113	1005	300	320
4114	0	0	0
4115	100	100	100
4116	9613	7537	4716
4117	90	90	90
4118	100	90	100
4119	778	32	286
4120	0	0	0
4124	0	0	0
4127	148	143	138
4128	0	0	0
4129	0	0	0
4130	25700	25700	25700
4134	130	130	130
4136	30	30	30
4138	1350	1470	700
4139	75	79	67
4140	2605	2573	873
4141	0	0	0
4142	5600	4000	7000
4143	7000	6000	12000
4144	0	0	0
4145	25	25	25
4146	1724	2011	2321
4147	504	585	685
4148	200	200	200
4149	1145	300	420
4150	0	0	19200
4151	100	100	100
4152	10911	7536	4711
4153	90	90	90
4154	110	100	120
4155	0	0	0
4156	0	0	0
4158	110	107	105
4159	0	0	0
4161	25700	25700	25700
4165	8	32	23
4166	12893	75	60
4169	0	0	0
Maximum output during acceleration (for PS selection)	41kW	41kW	43kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

(*3) Set this value as the initial value of the velocity loop gain.

Motor model	αi IL 8/20000HV	αi IL 15/15000HV	αi IL 26/15000HV
Applicable amplifier	αi SP 45HV-B	αi SP 45HV-B	αi SP 45HV-B
Model code	—	—	—
Low-speed winding characteristics	11/15kW 1150/4000min ⁻¹	18.5/22kW 1400/4000min ⁻¹	15/22kW 700/2000min ⁻¹
Hogh-speed winding characteristics	15/18.5kW 5000/20000min ⁻¹	18.5/22kW 6000/15000min ⁻¹	26/30kW 2000/15000min ⁻¹
4007	00000000	00000000	00000000
4008	00000000	00000000	00000000
4009	00000000	00000000	00000000
4010	00000001	00000001	00000001
4011	00011001	00011001	00011001
4012	10000010	10000010	10000010
4013	01010000	01010000	01010000
4019	00000100	00000100	00000100
4020	20000	15000	15000
4023	200(*2)	267(*2)	100
4039	0	0	0
4040			
4041	3(*3)	5(*3)	7(*3)
4048			
4049	3(*3)	5(*3)	7(*3)
4080	95	19792	14165
4083	30	30	30
4093	164	143	176
4100	5050	5500	2030
4101	53	44	79
4102	6274	5335	2633
4103	0	94	95
4104	3400	2300	3500
4105	105	298	245
4106	5000	2600	5500
4107	84	251	212
4108	0	0	0
4109	25	25	25
4110	862	1437	1508
4111	255	456	475
4112	200	200	200
4113	907	320	390
4114	0	0	0
4115	100	90	100
4116	9345	8423	4525
4117	90	90	90
4118	90	90	90
4119	523	30	24
4120	0	0	0
4124	0	0	0
4127	148	143	138
4128	112	95	98
4129	0	0	0
4130	25700	25700	25700
4134	130	130	130
4136	30	30	30
4138	1320	1480	810
4139	88	92	77
4140	3163	2777	1248
4141	0	0	0
4142	7000	4800	6500
4143	10000	5200	12000
4144	0	0	0
4145	25	25	25
4146	1207	2011	2011
4147	375	632	639
4148	200	200	200
4149	1140	380	450
4150	0	0	0
4151	100	100	100
4152	12110	9785	4525
4153	90	90	85
4154	90	90	85
4155	0	0	0
4156	0	0	0
4158	123	0	0
4159	0	0	0
4161	25700	25700	25700
4165	8	10	21
4166	95	14180	60
4169	0	0	0
Maximum output during acceleration (for PS selection)	48kW	48kW	50kW

(*2) When using the SDT signal, manually change the parameters that were automatically set.

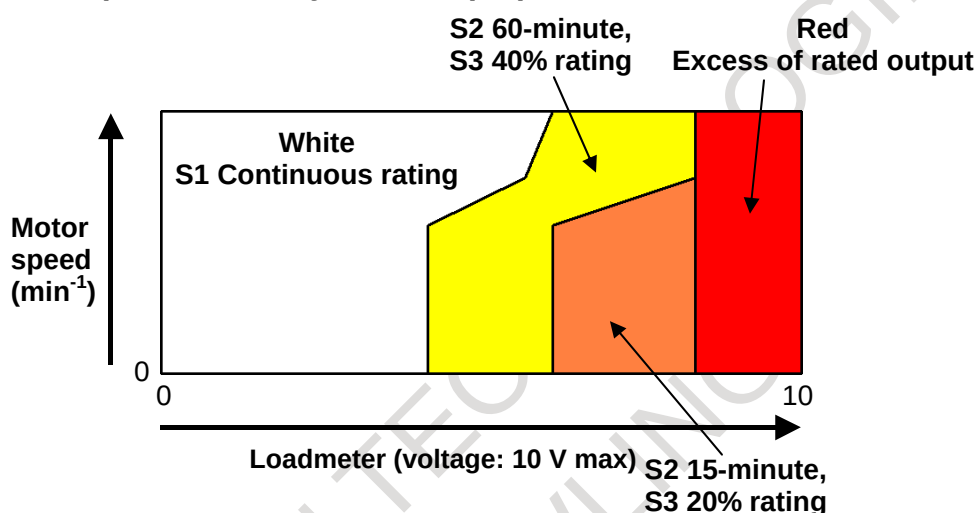
(*3) Set this value as the initial value of the velocity loop gain.

B LOADMETER (DYNAMOMETER)

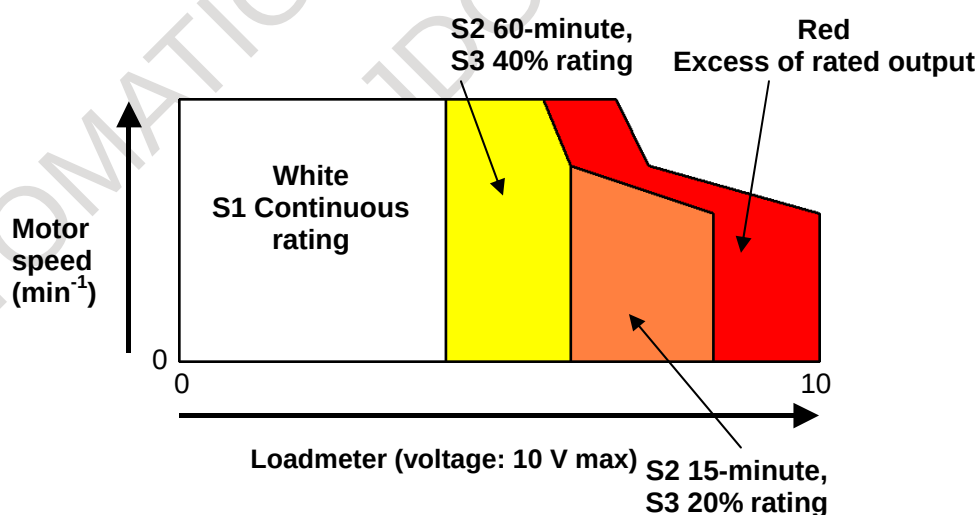
The loadmeter (dynamometer) shows the percentage of the load (load factor) to the maximum output that the motor can produce. At the maximum output, 10 V is output. It is output on pin 16 of the JY1 connector of the spindle amplifier (α iSP). (For details, refer to "FANUC SERVO AMPLIFIER β i series Descriptions" (B-65322EN).) Two types of loadmeter are available : Load meter (Normalized by max. output) and Load meter (Normalized by cont. rated output). (For details, refer to technical report (B-65280EN/08-015) , or ask FANUC.)

Example

- Load meter (Normalized by max. output)



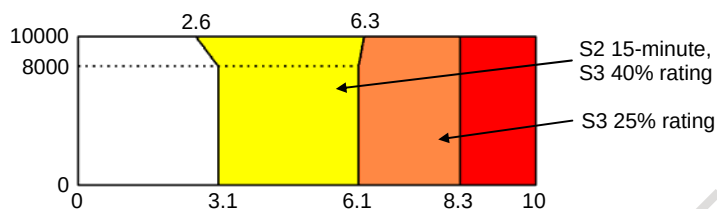
- Load meter (Normalized by cont. rated output)



B.1 $\alpha i I$ series 200-V type

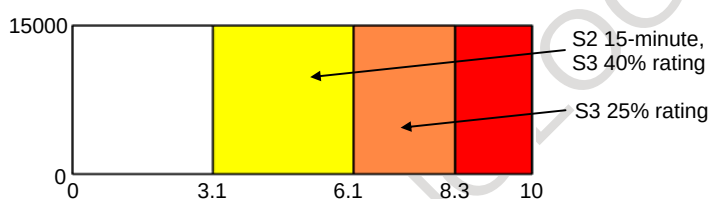
$\alpha i I$ 0.5/10000

Load meter
(Normalized by max. output)
(Normalized by cont. rated
output)



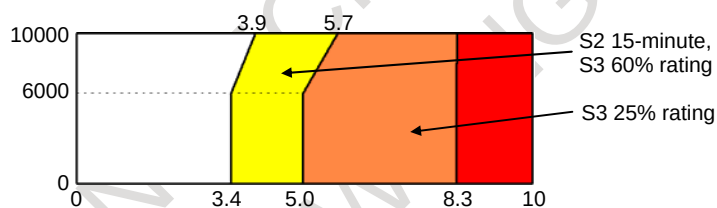
$\alpha i I$ 0.5/15000

Load meter
(Normalized by max. output)
(Normalized by cont. rated
output)

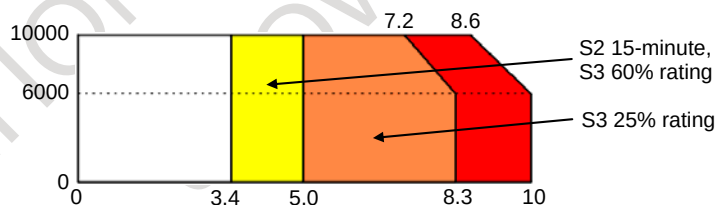


$\alpha i I$ 1/10000

Load meter
(Normalized by max. output)

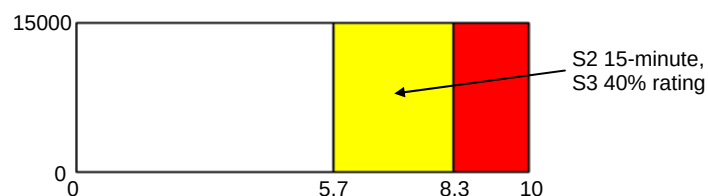


Load meter
(Normalized by cont. rated
output)



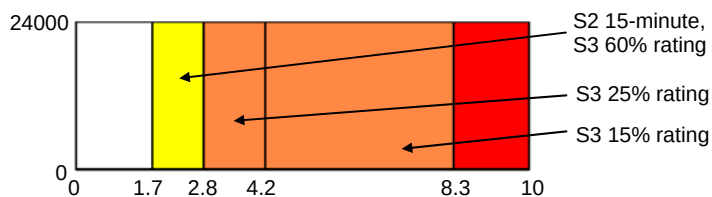
$\alpha i I$ 1/15000

Load meter
(Normalized by max. output)
(Normalized by cont. rated
output)

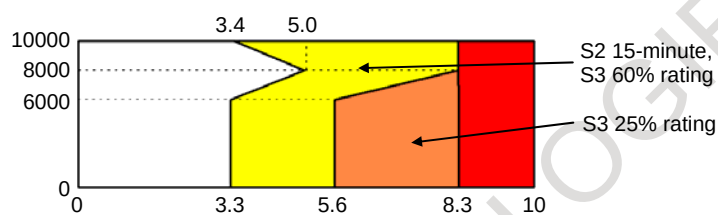


αI 1/24000

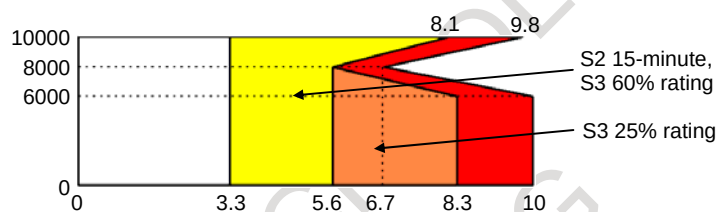
Load meter
(Normalized by max. output)
(Normalized by cont. rated
output)

 **αI 1.5/10000**

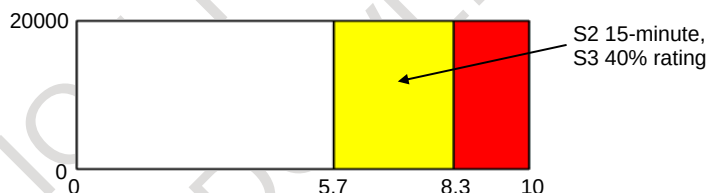
Load meter
(Normalized by max. output)



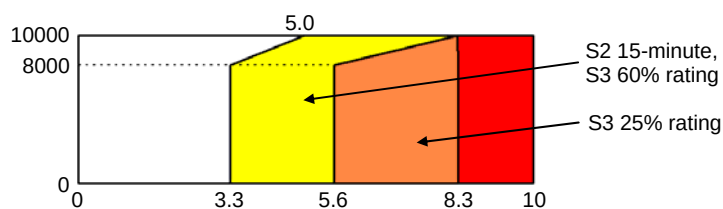
Load meter
(Normalized by cont. rated
output)

 **αI 1.5/20000**

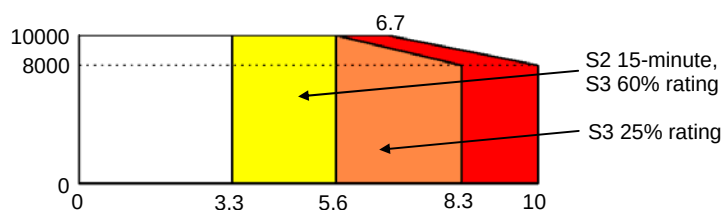
Load meter
(Normalized by max. output)
(Normalized by cont. rated
output)

 **αI 2/10000**

Load meter
(Normalized by max. output)

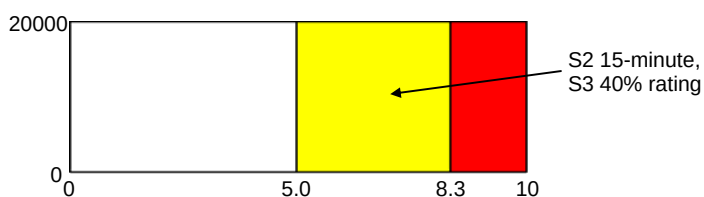


Load meter
(Normalized by cont. rated
output)

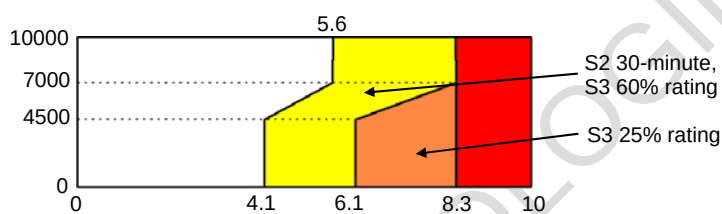


$\alpha i I$ 2/20000

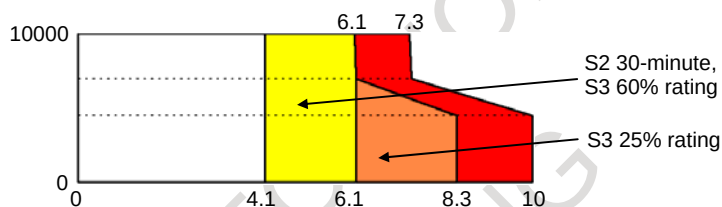
Load meter
(Normalized by max. output)
(Normalized by cont. rated
output)

 **$\alpha i I$ 3/10000**

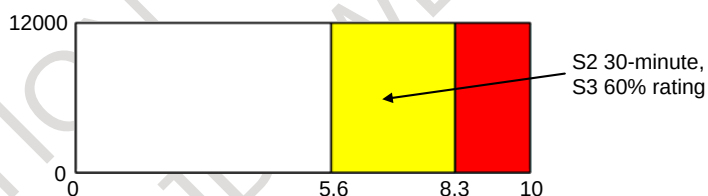
Load meter
(Normalized by max. output)



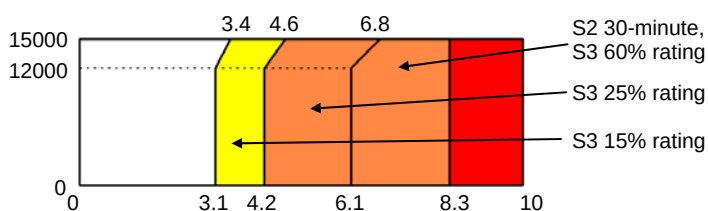
Load meter
(Normalized by cont. rated
output)

 **$\alpha i I$ 3/12000**

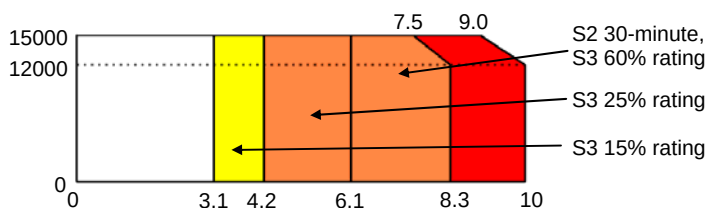
Load meter
(Normalized by max. output)
(Normalized by cont. rated
output)

 **$\alpha i I$ 3/15000**

Load meter
(Normalized by max. output)

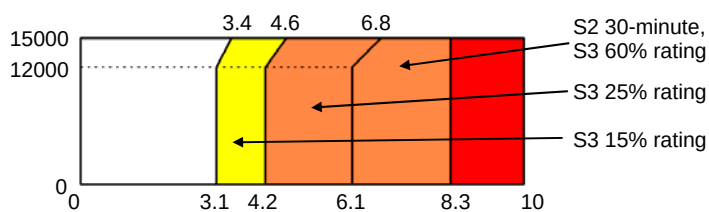


Load meter
(Normalized by cont. rated
output)

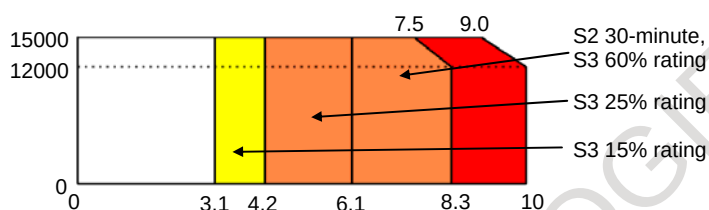


α/I 3/15000

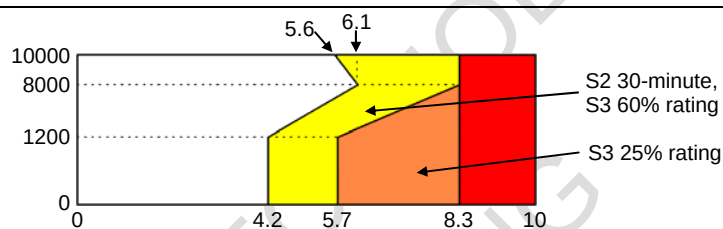
Load meter
(Normalized by max. output)



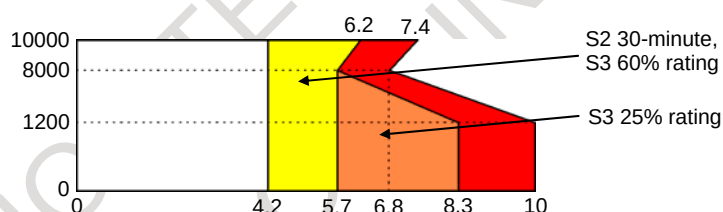
Load meter
(Normalized by cont. rated output)

 α/I 6/10000

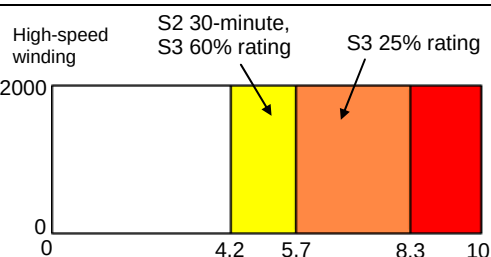
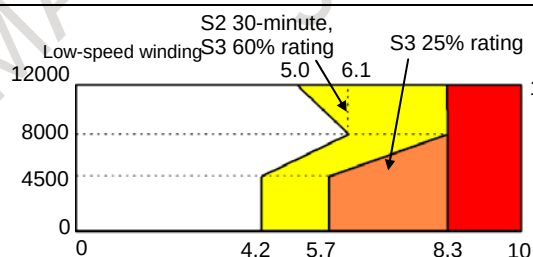
Load meter
(Normalized by max. output)



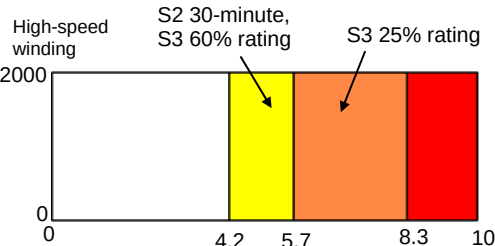
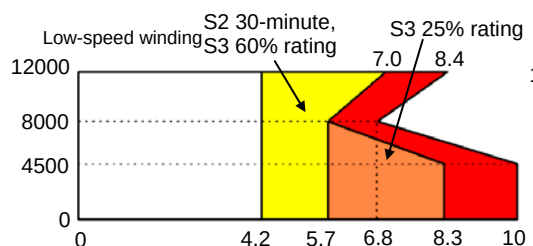
Load meter
(Normalized by cont. rated output)

 α/I 6/12000

Load meter
(Normalized by max. output)

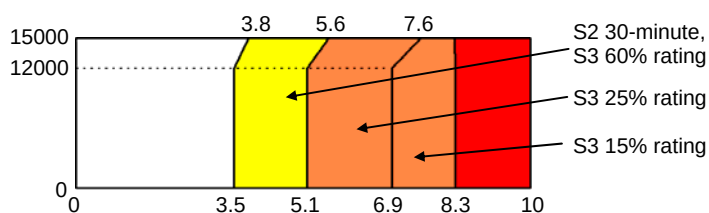


Load meter
(Normalized by cont. rated output)

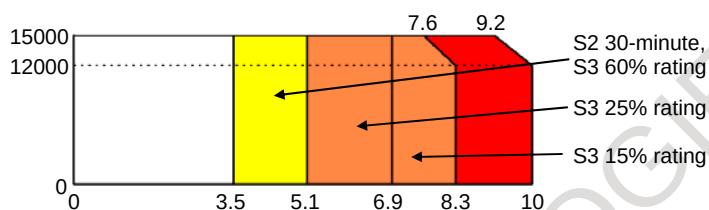


α/I 6/15000

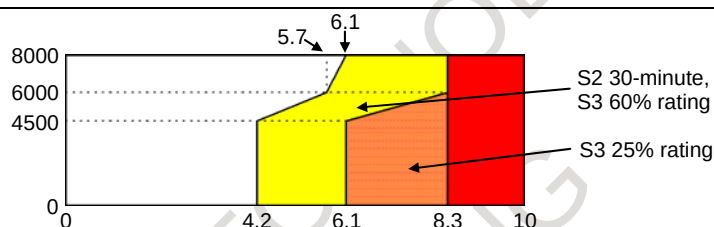
Load meter
(Normalized by max. output)



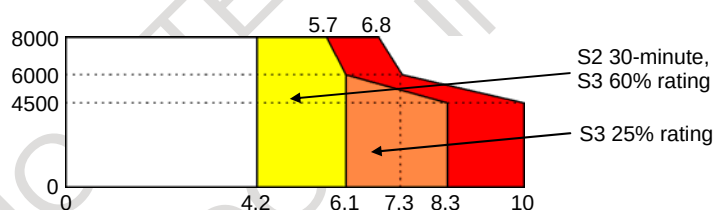
Load meter
(Normalized by cont. rated output)

 **α/I 8/8000**

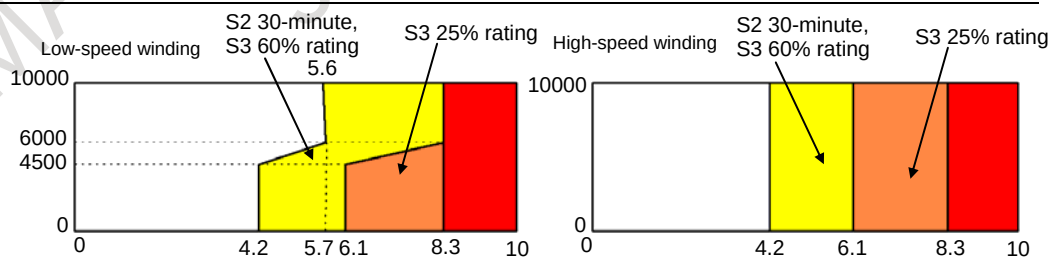
Load meter
(Normalized by max. output)



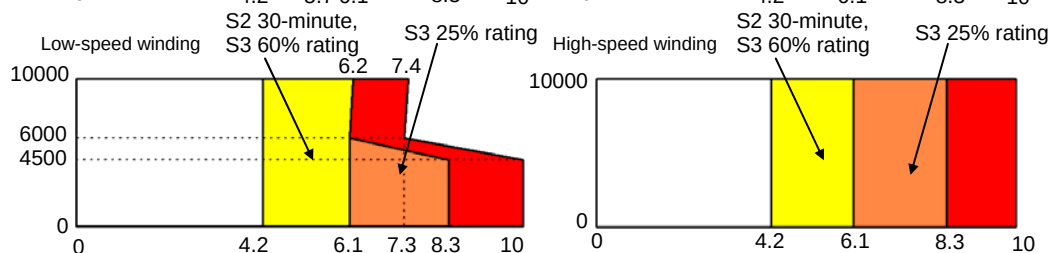
Load meter
(Normalized by cont. rated output)

 **α/I 8/10000**

Load meter
(Normalized by max. output)

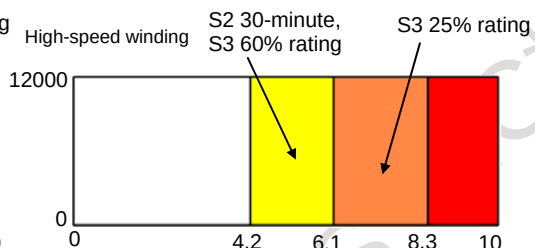
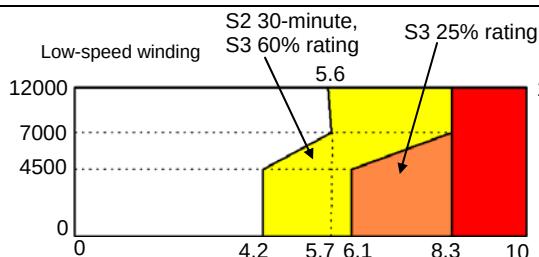


Load meter
(Normalized by cont. rated output)

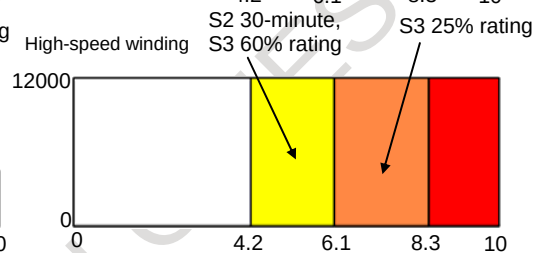
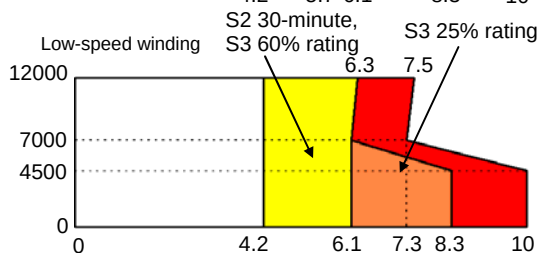


αI 8/12000

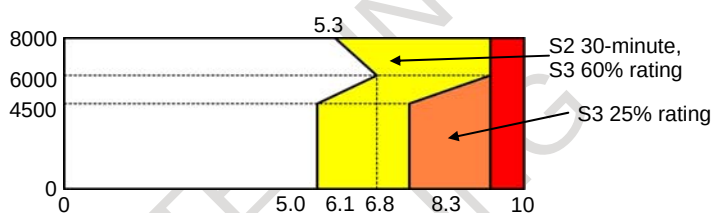
Load meter
(Normalized by max.
output)



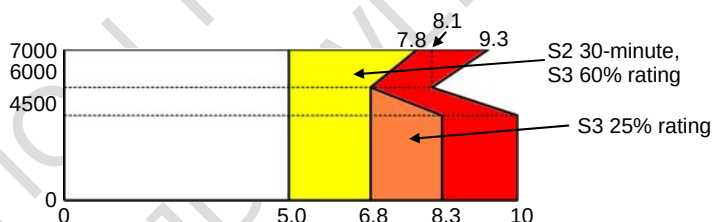
Load meter
(Normalized by cont.
rated output)

 αI 12/8000

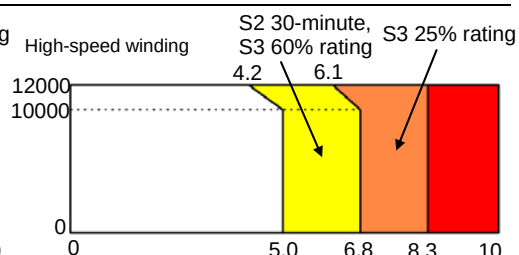
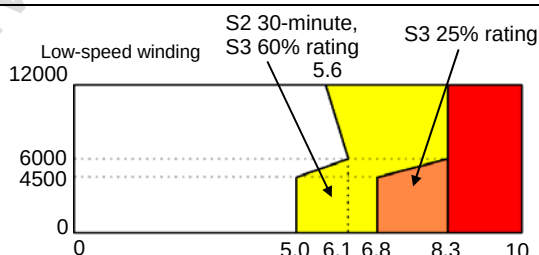
Load meter
(Normalized by max. output)



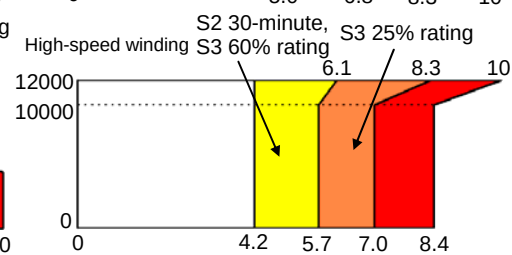
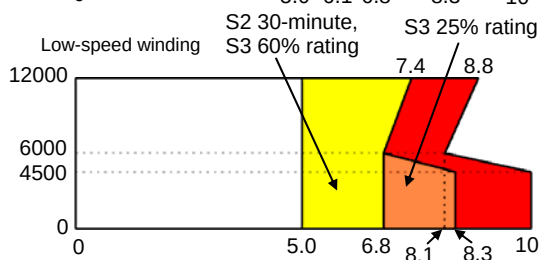
Load meter
(Normalized by cont. rated
output)

 αI 12/12000

Load meter
(Normalized by max.
output)

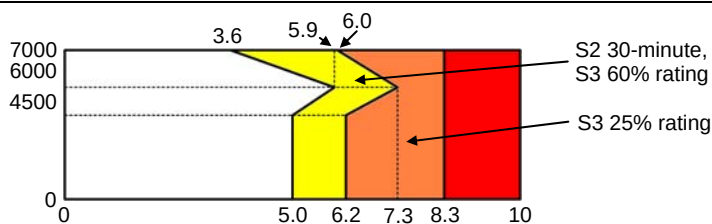


Load meter
(Normalized by cont.
rated output)

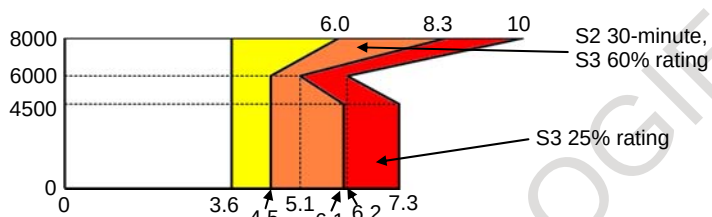


αI 15/8000

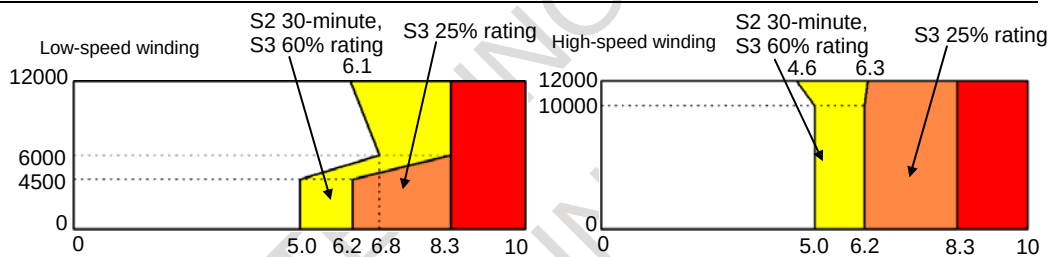
Load meter
(Normalized by max. output)



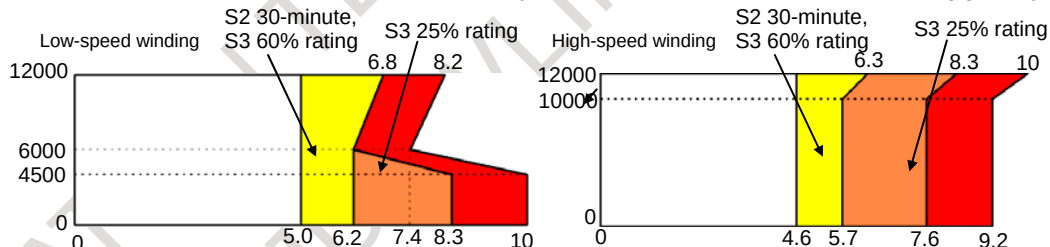
Load meter
(Normalized by cont. rated output)

 **αI 15/12000**

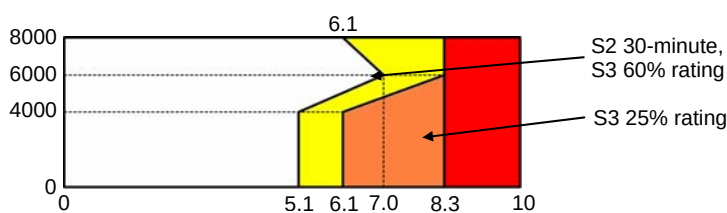
Load meter
(Normalized by max. output)



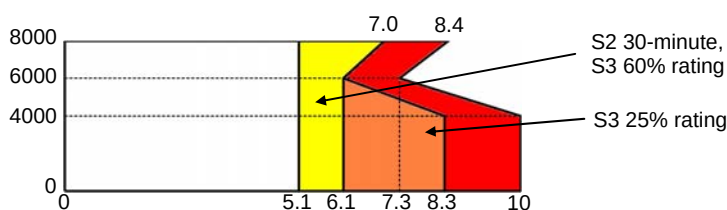
Load meter
(Normalized by cont. rated output)

 **αI 18/8000**

Load meter
(Normalized by max. output)

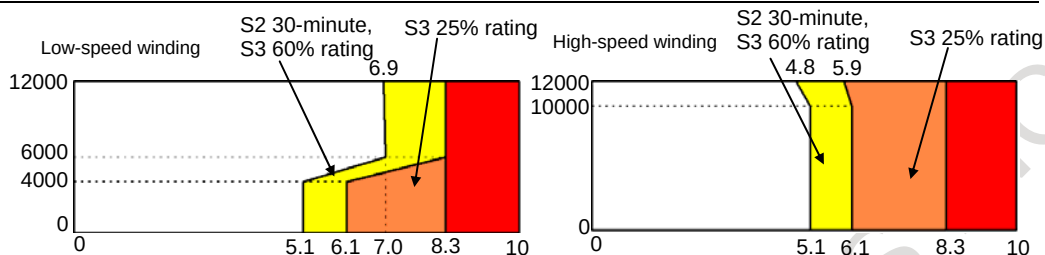


Load meter
(Normalized by cont. rated output)

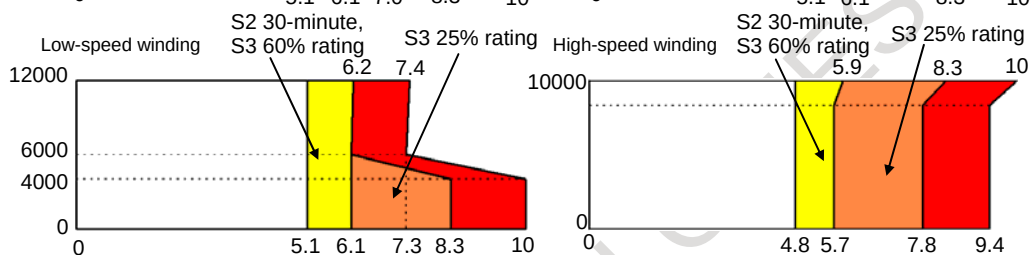


α iI 18/12000

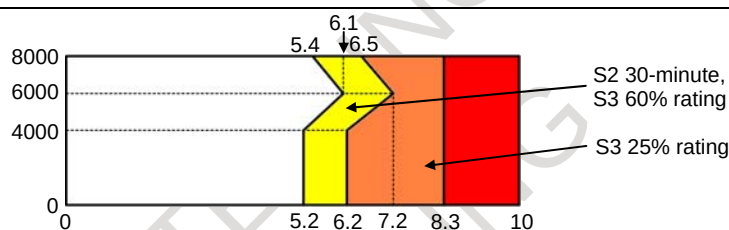
Load meter
(Normalized by max.
output)



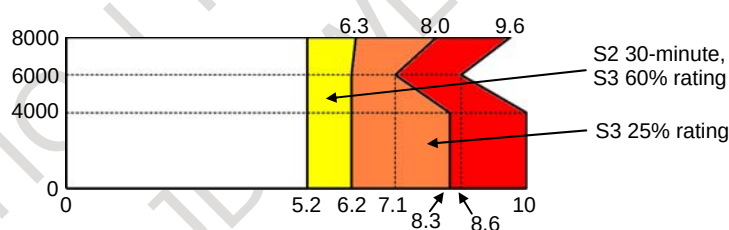
Load meter
(Normalized by cont.
rated output)

 **α iI 22/8000**

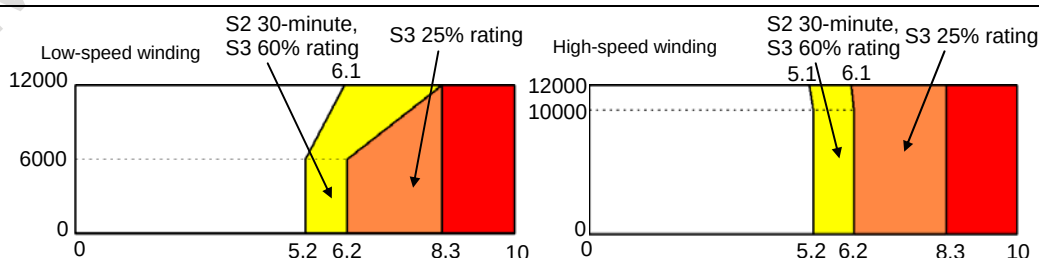
Load meter
(Normalized by max. output)



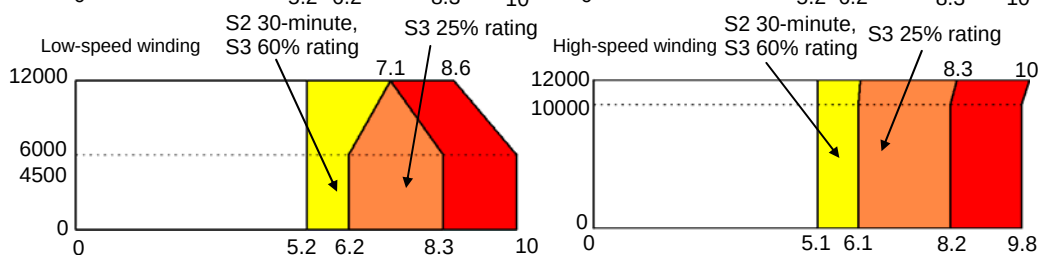
Load meter
(Normalized by cont. rated
output)

 **α iI 22/12000**

Load meter
(Normalized by max.
output)

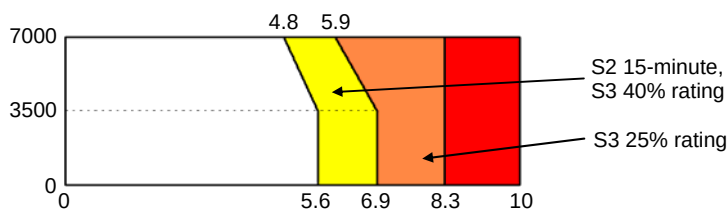


Load meter
(Normalized by cont.
rated output)

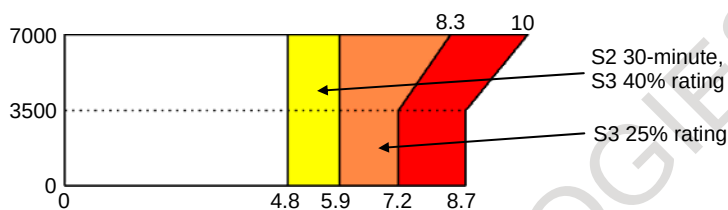


αI 30/7000

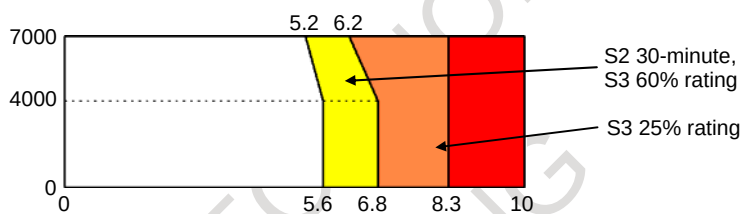
Load meter
(Normalized by max. output)



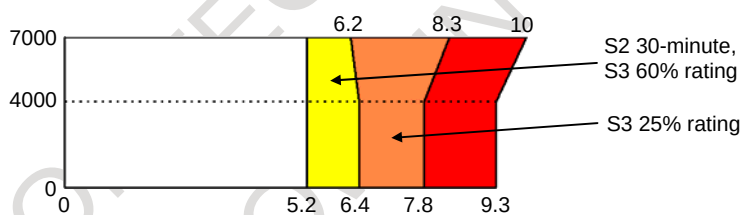
Load meter
(Normalized by cont. rated
output)

 **αI 40/7000**

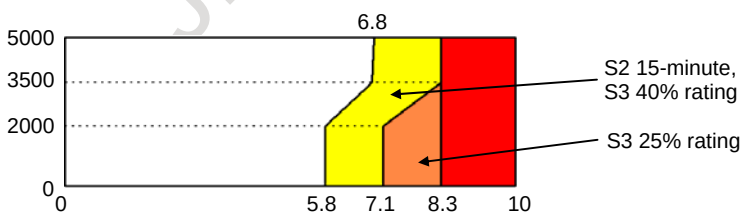
Load meter
(Normalized by max. output)



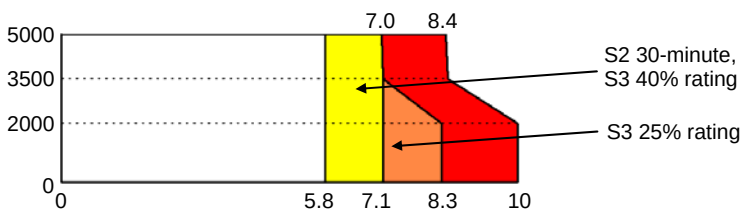
Load meter
(Normalized by cont. rated
output)

 **αI 50/5000**

Load meter
(Normalized by max. output)

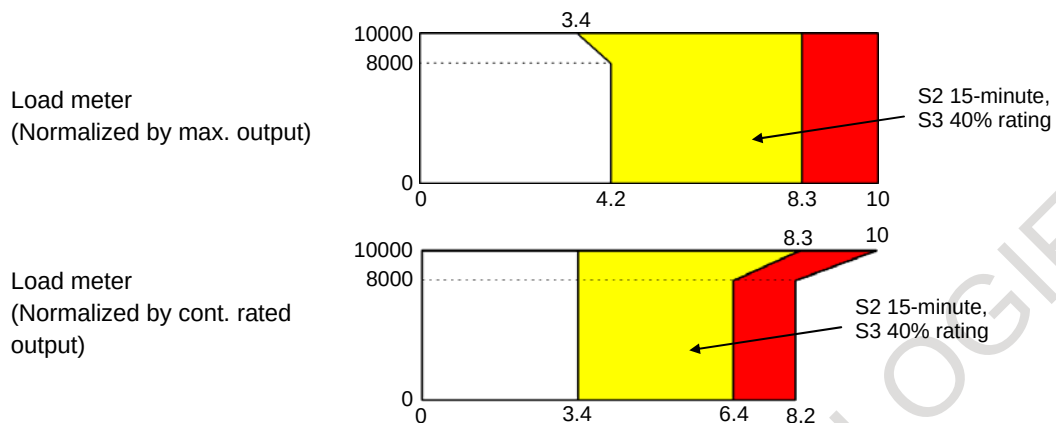


Load meter
(Normalized by cont. rated
output)

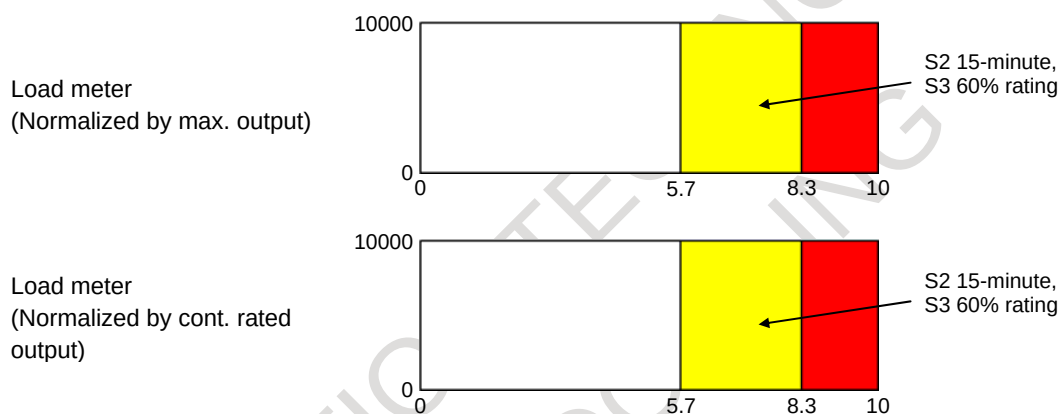


B.2 αI series 400-V type

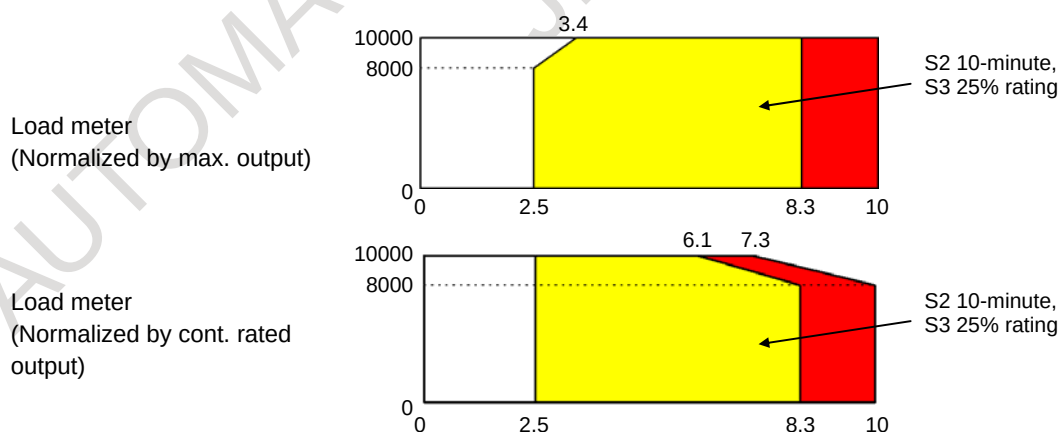
αI 0.5/10000HV



αI 1/10000HV

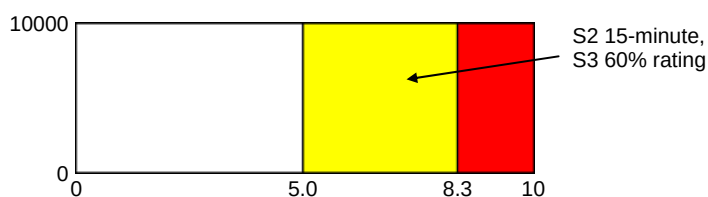


αI 1.5/10000HV

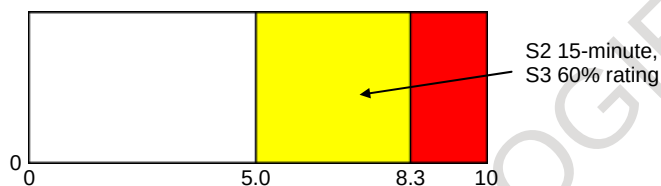


αI 2/10000HV

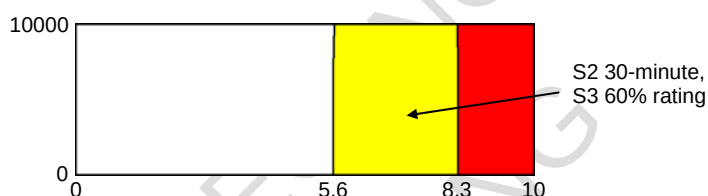
Load meter
(Normalized by max. output)



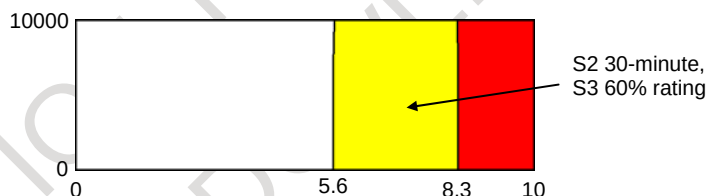
Load meter
(Normalized by cont. rated output)

 **αI 3/10000HV**

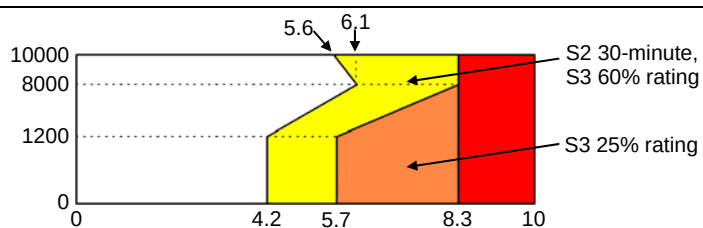
Load meter
(Normalized by max. output)



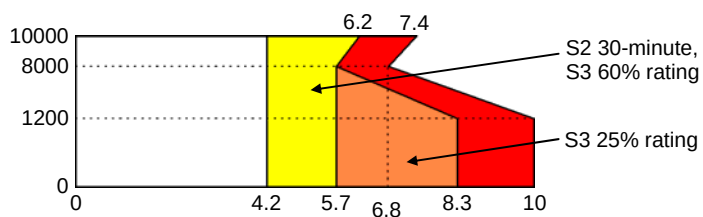
Load meter
(Normalized by cont. rated output)

 **αI 6/10000HV**

Load meter
(Normalized by max. output)

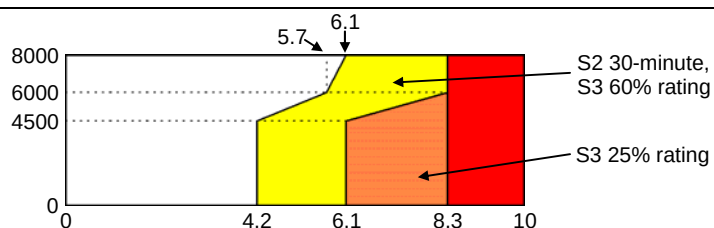


Load meter
(Normalized by cont. rated output)

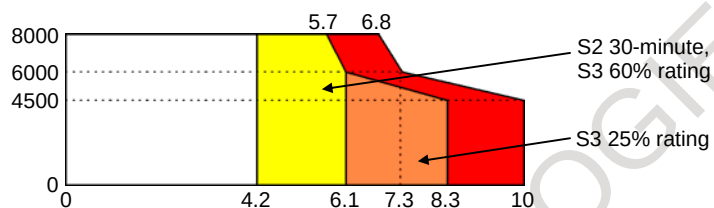


αI 8/8000HV

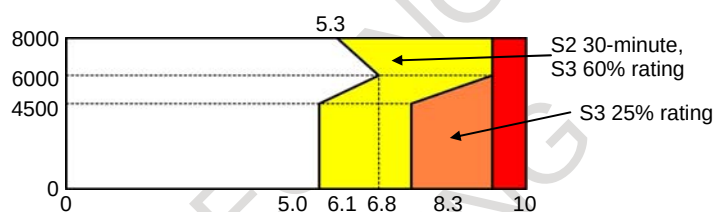
Load meter
(Normalized by max. output)



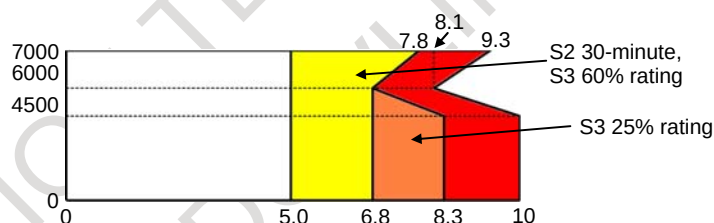
Load meter
(Normalized by cont. rated
output)

 **αI 12/8000HV**

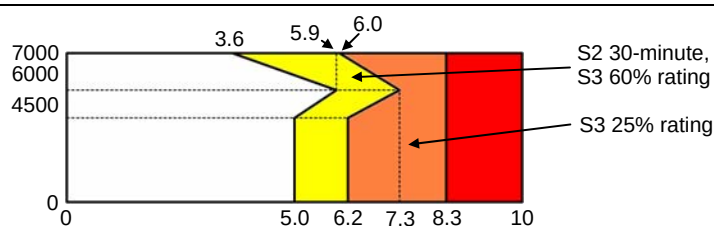
Load meter
(Normalized by max. output)



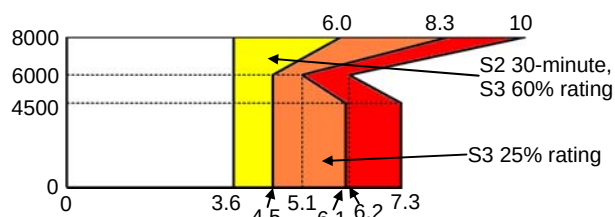
Load meter
(Normalized by cont. rated
output)

 **αI 15/8000HV**

Load meter
(Normalized by max. output)

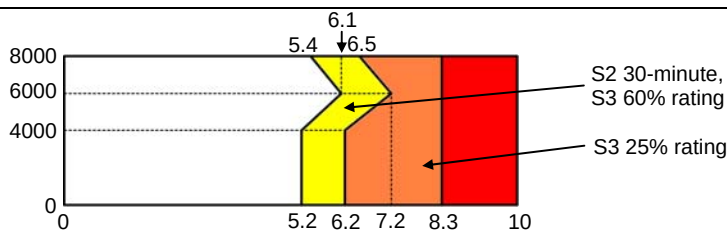


Load meter
(Normalized by cont. rated
output)

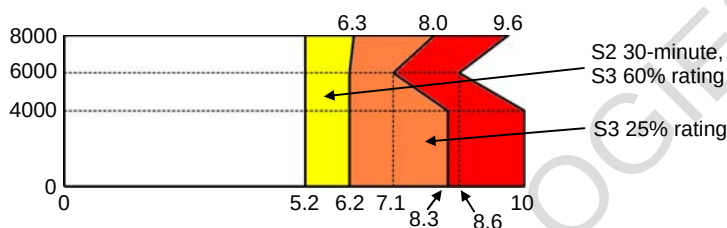


αI 22/8000HV

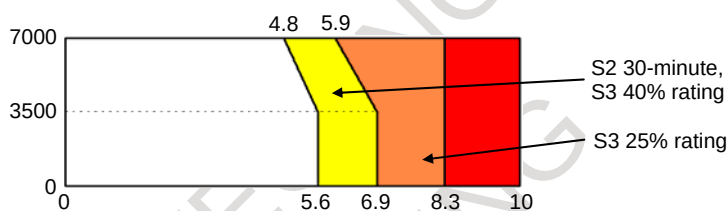
Load meter
(Normalized by max. output)



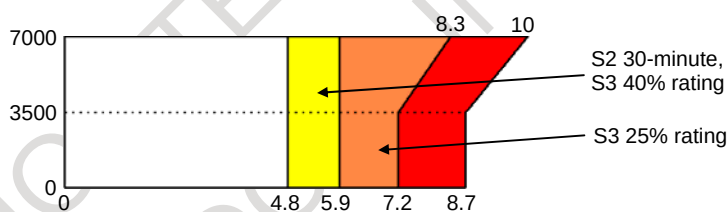
Load meter
(Normalized by cont. rated
output)

 **αI 30/7000HV**

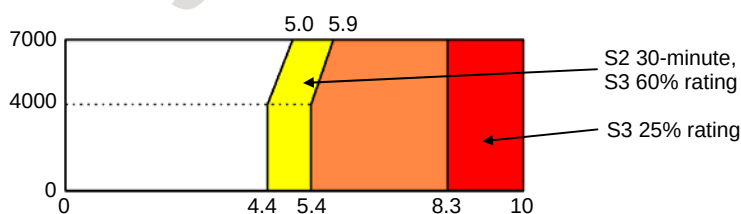
Load meter
(Normalized by max. output)



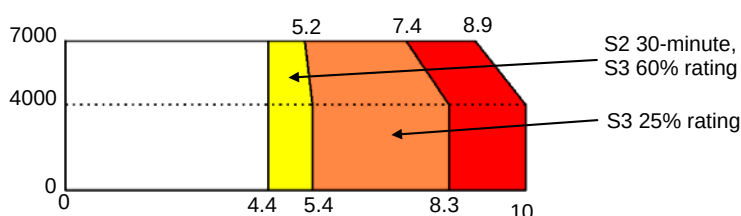
Load meter
(Normalized by cont. rated
output)

 **αI 40/7000HV**

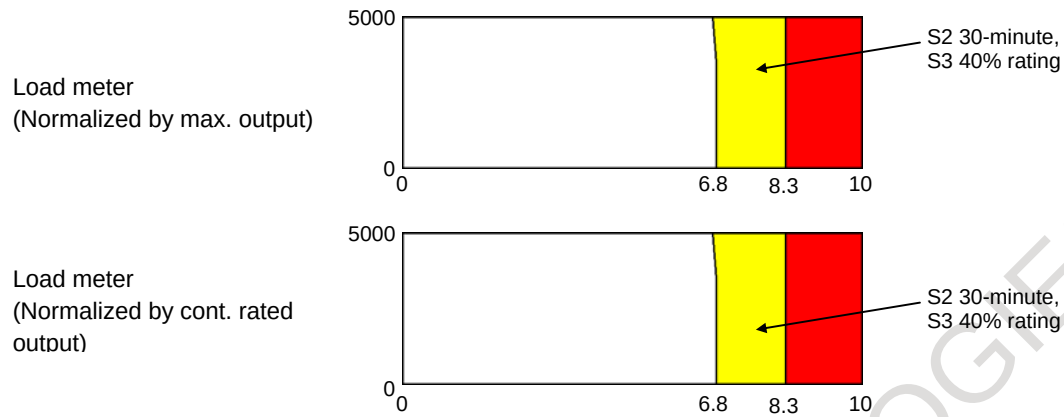
Load meter
(Normalized by max. output)



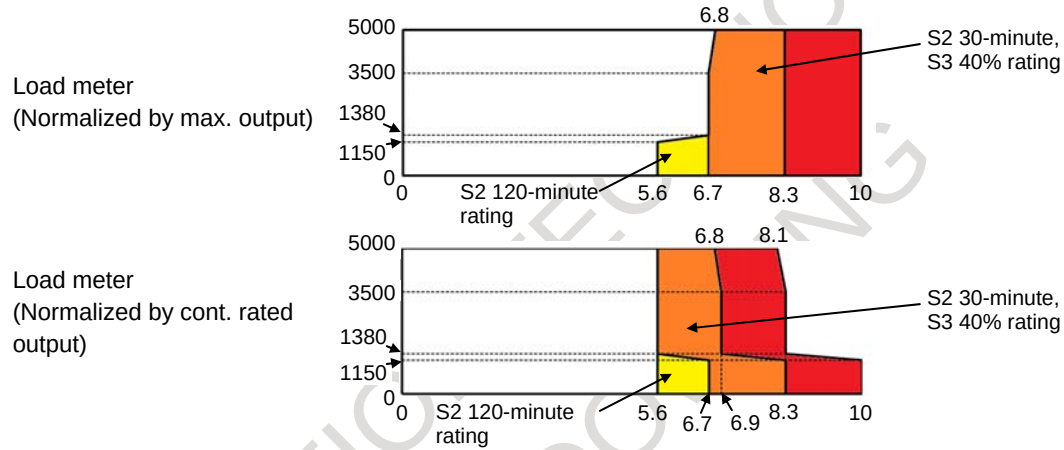
Load meter
(Normalized by cont. rated
output)



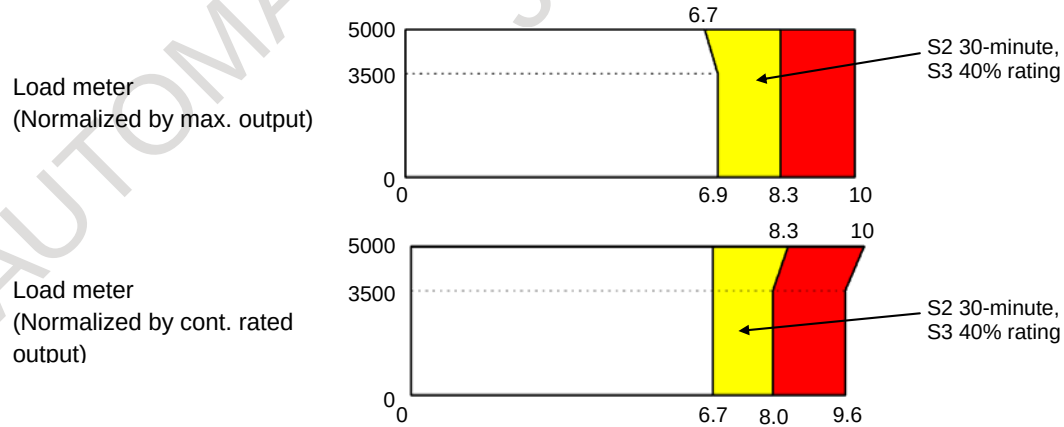
***α*I 50/5000HV**



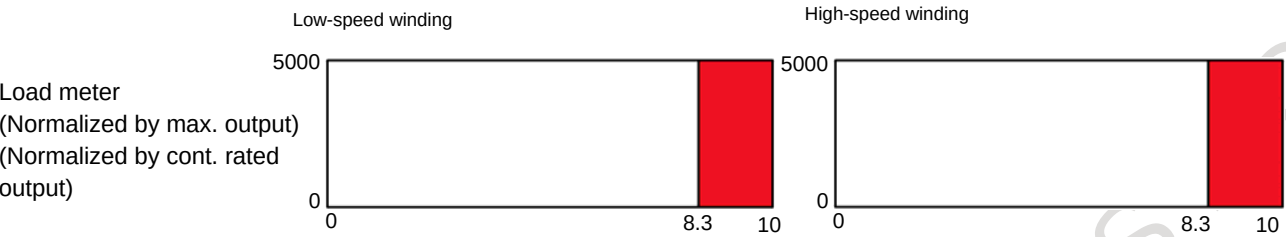
***α*I 60/5000HV**



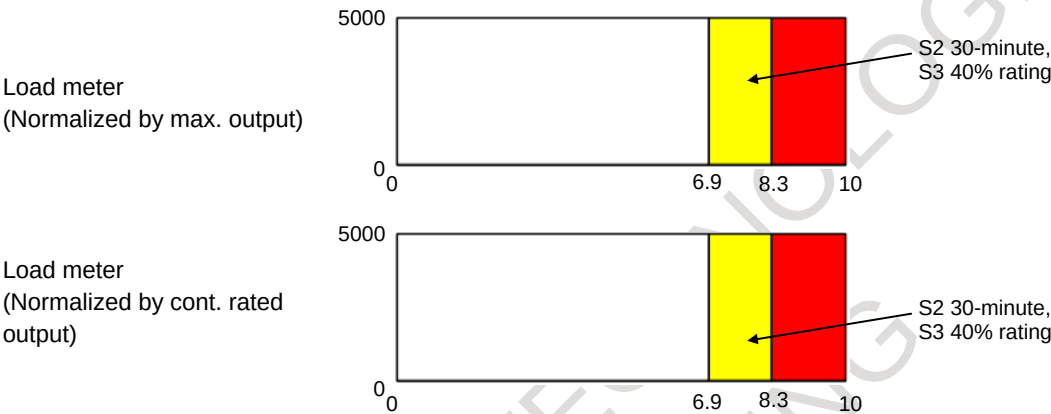
***α*I 75/5000HV**



α iI 100/5000HV



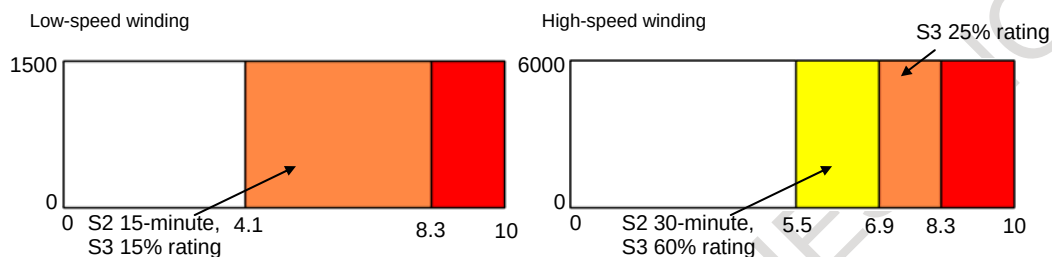
α iI 150/5000HV



B.3 αiIP series 200-V type

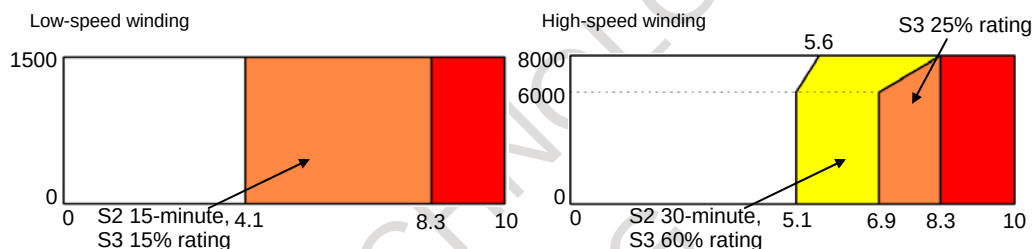
αiIP 12/6000

Load meter
(Normalized by max.
output)

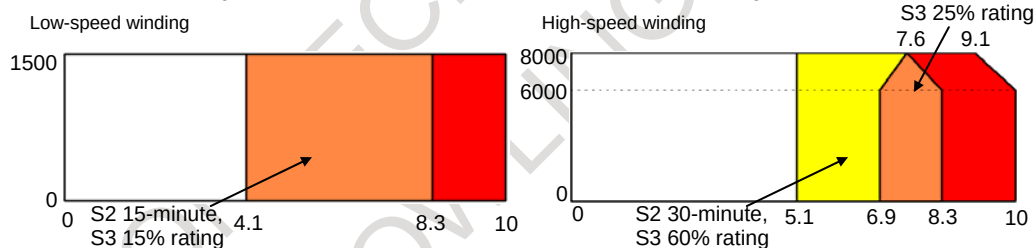


αiIP 12/8000

Load meter
(Normalized by max.
output)

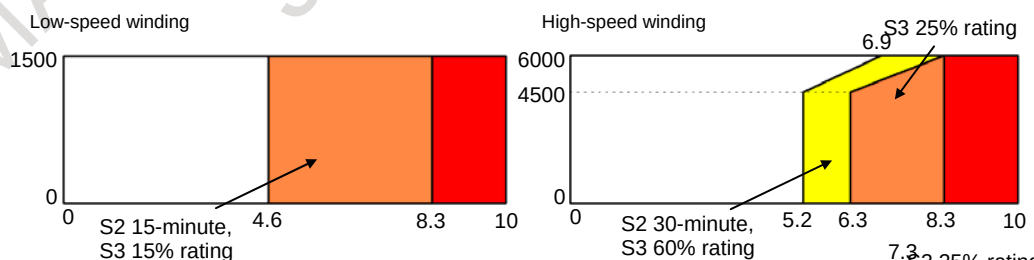


Load meter
(Normalized by cont.
rated output)

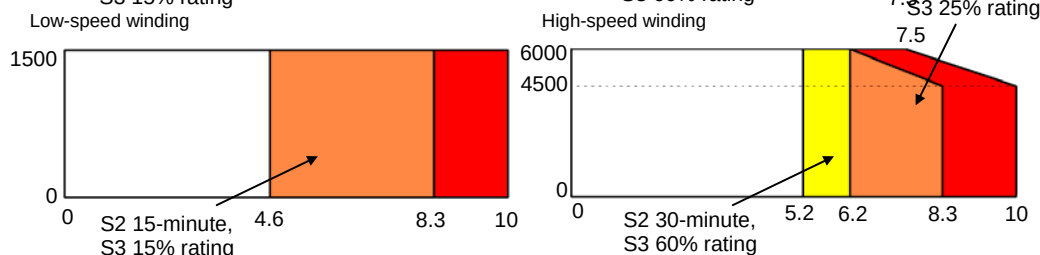


αiIP 15/6000

Load meter
(Normalized by max.
output)

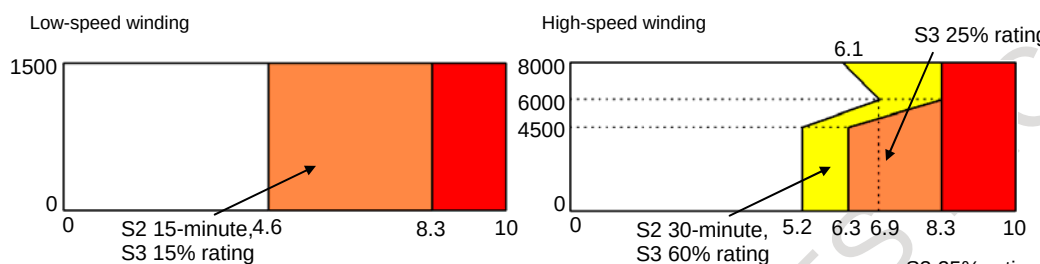


Load meter
(Normalized by cont.
rated output)

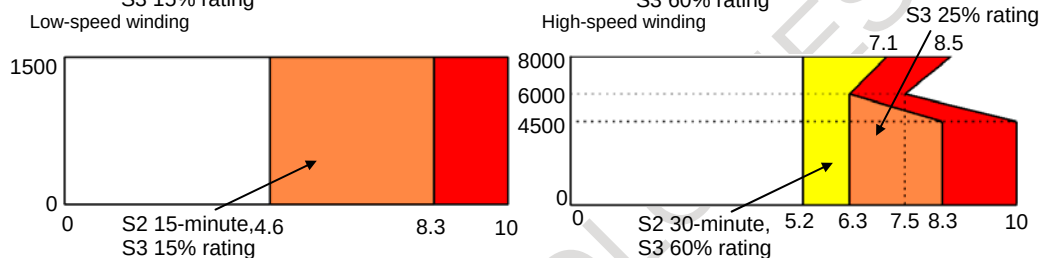


αI_P 15/8000

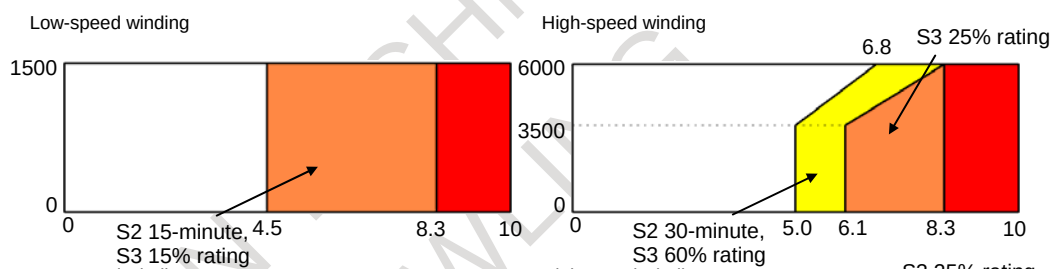
Load meter
(Normalized by max.
output)



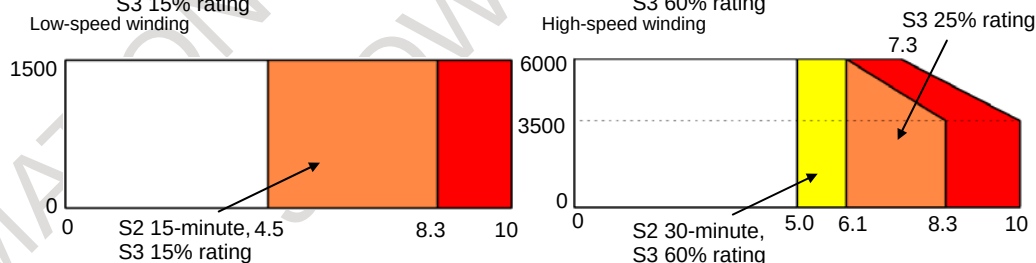
Load meter
(Normalized by cont.
rated output)

 **αI_P 18/6000**

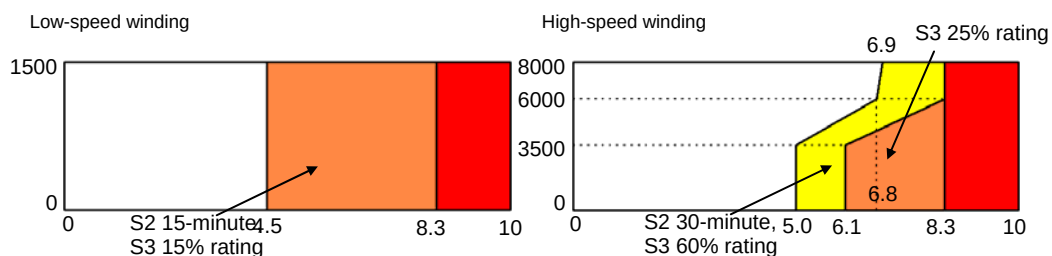
Load meter
(Normalized by max.
output)



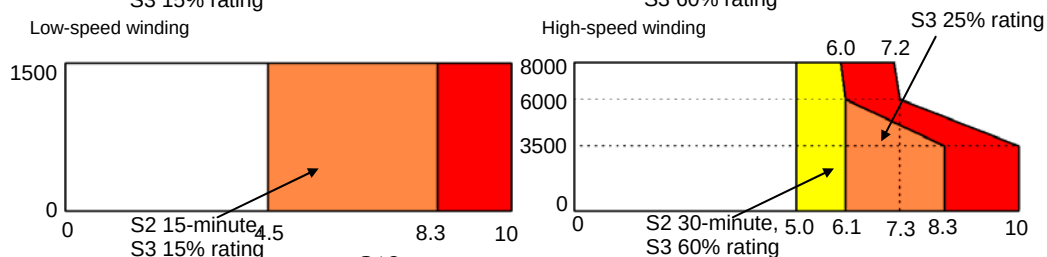
Load meter
(Normalized by cont.
rated output)

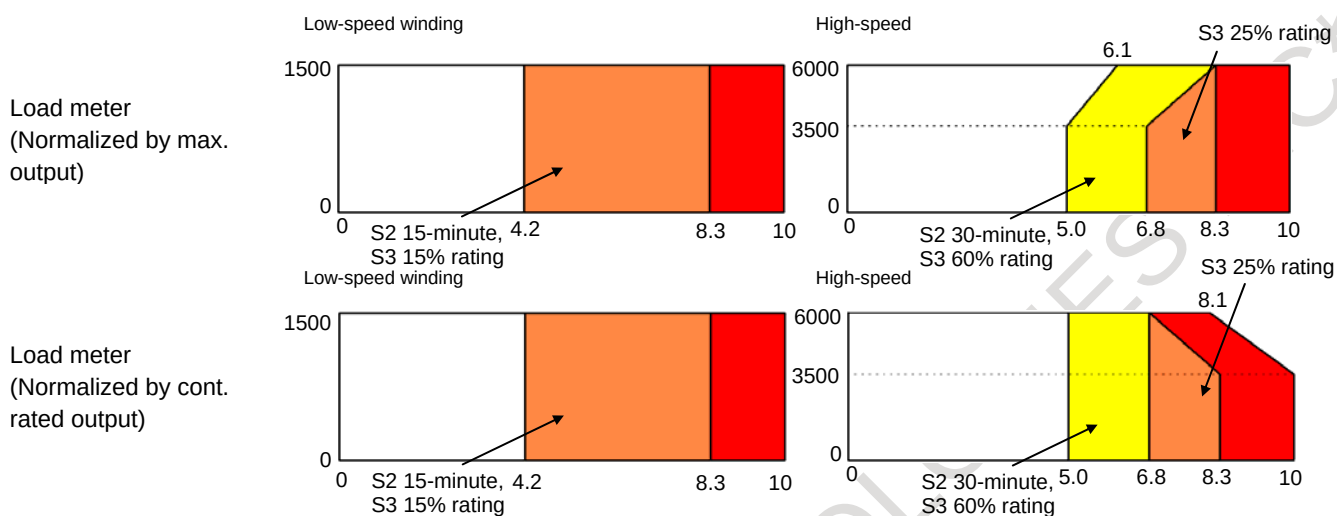
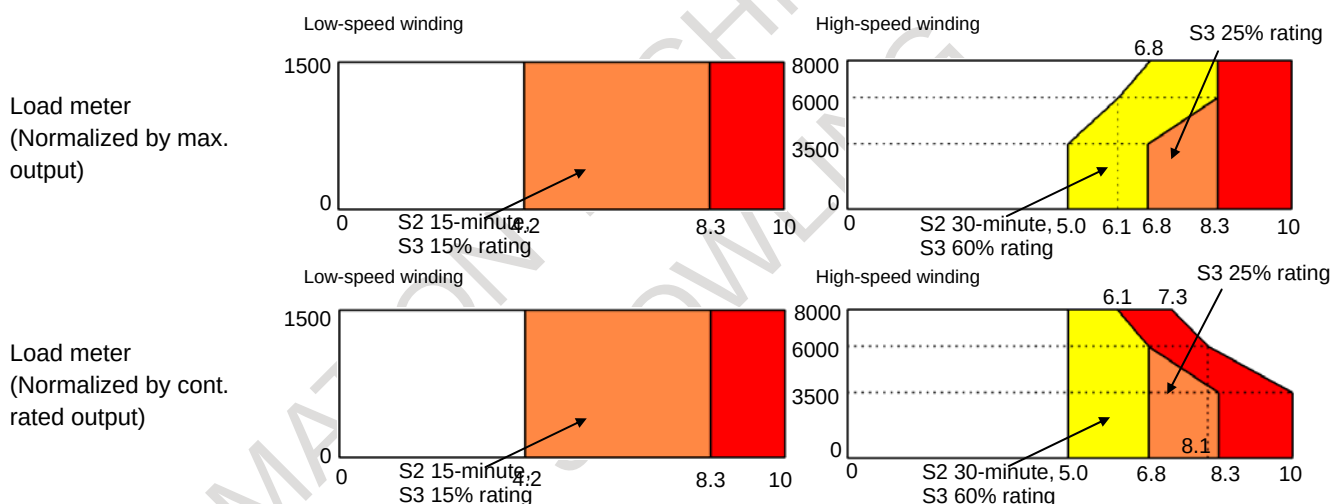
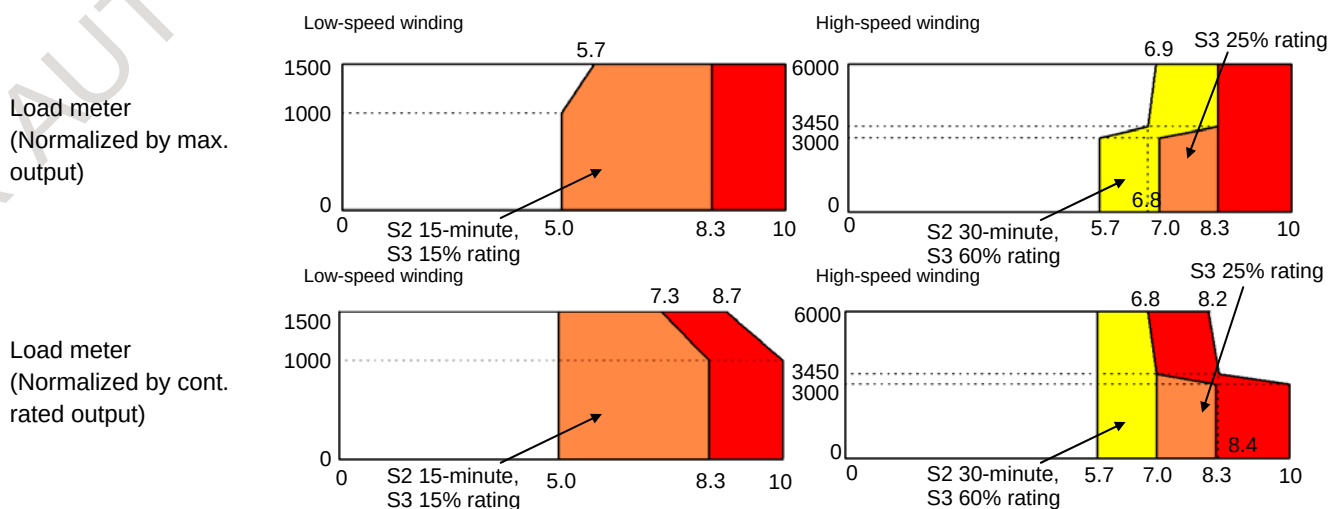
 **αI_P 18/8000**

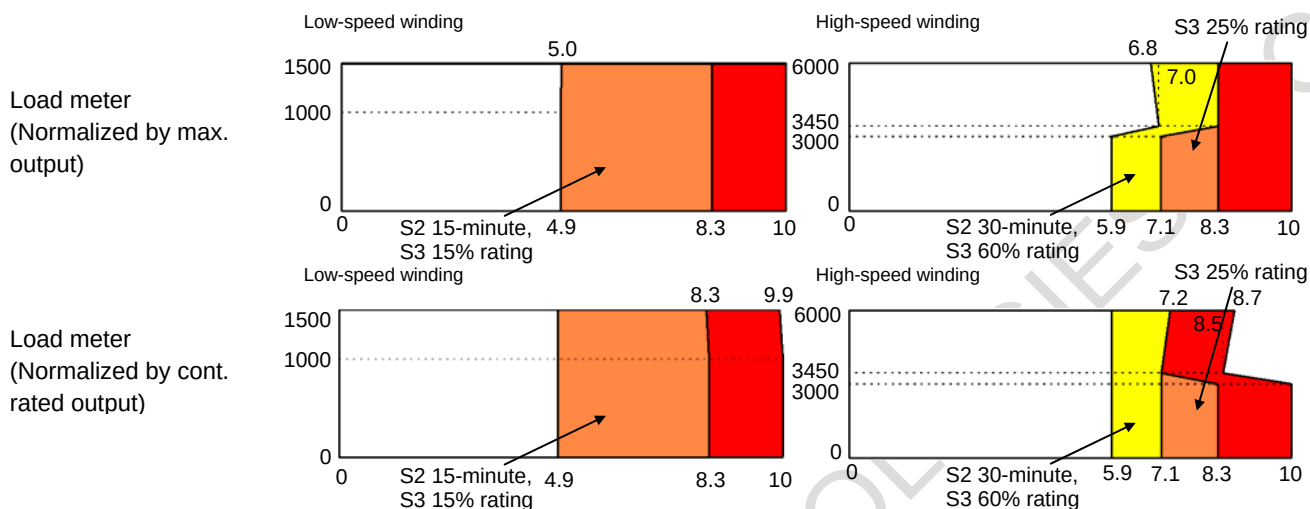
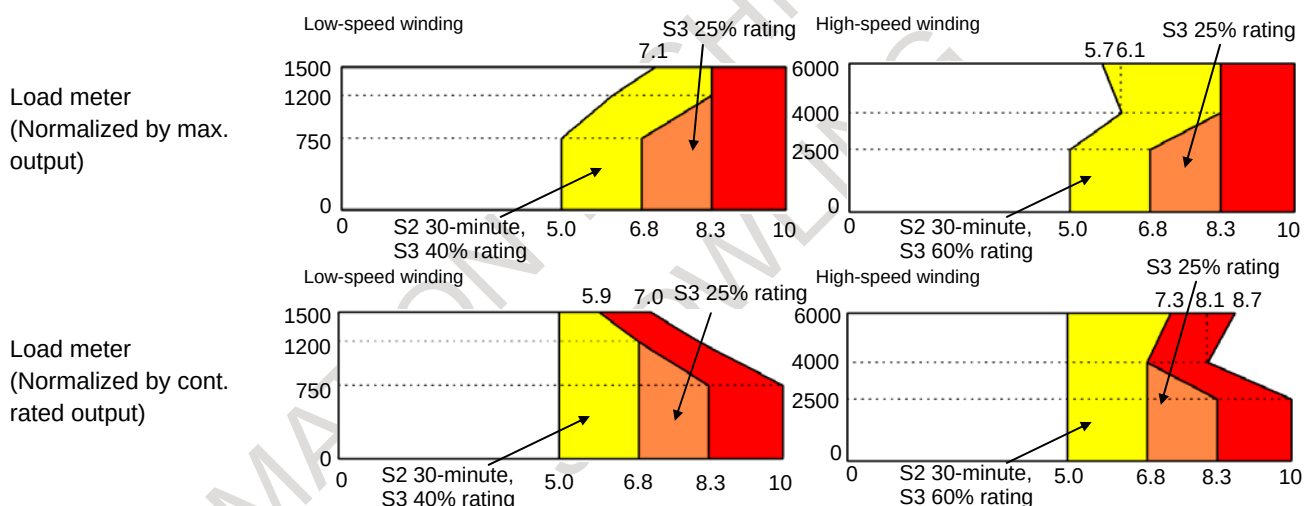
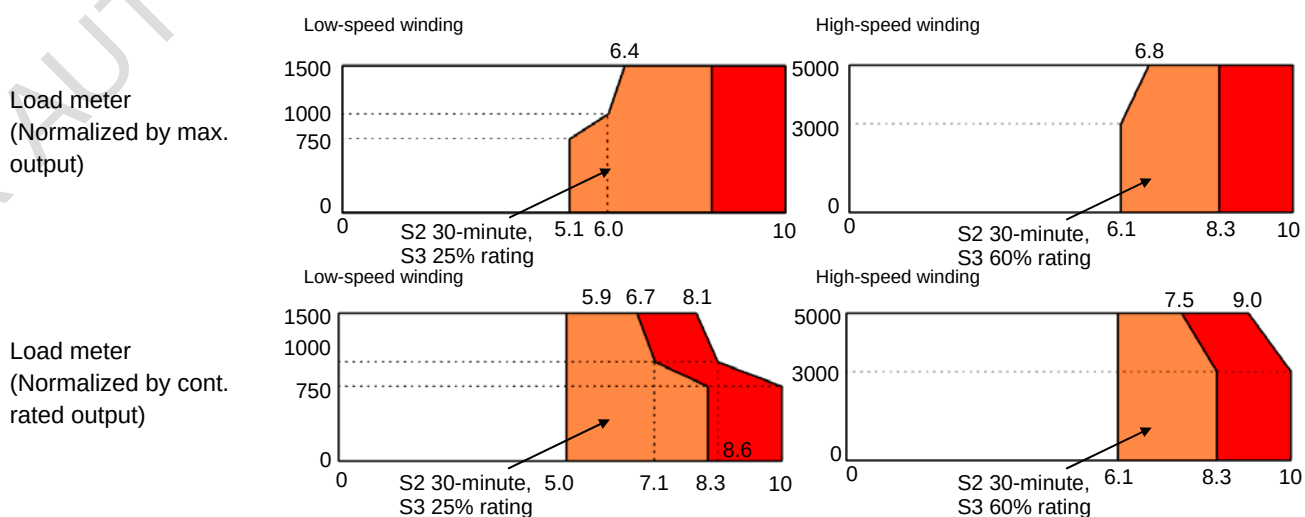
Load meter
(Normalized by max.
output)



Load meter
(Normalized by cont.
rated output)

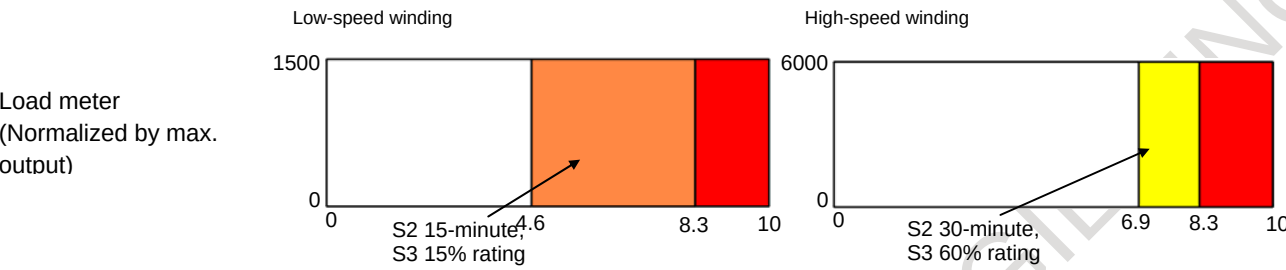


α iP 22/6000 **α iP 22/8000** **α iP 30/6000**

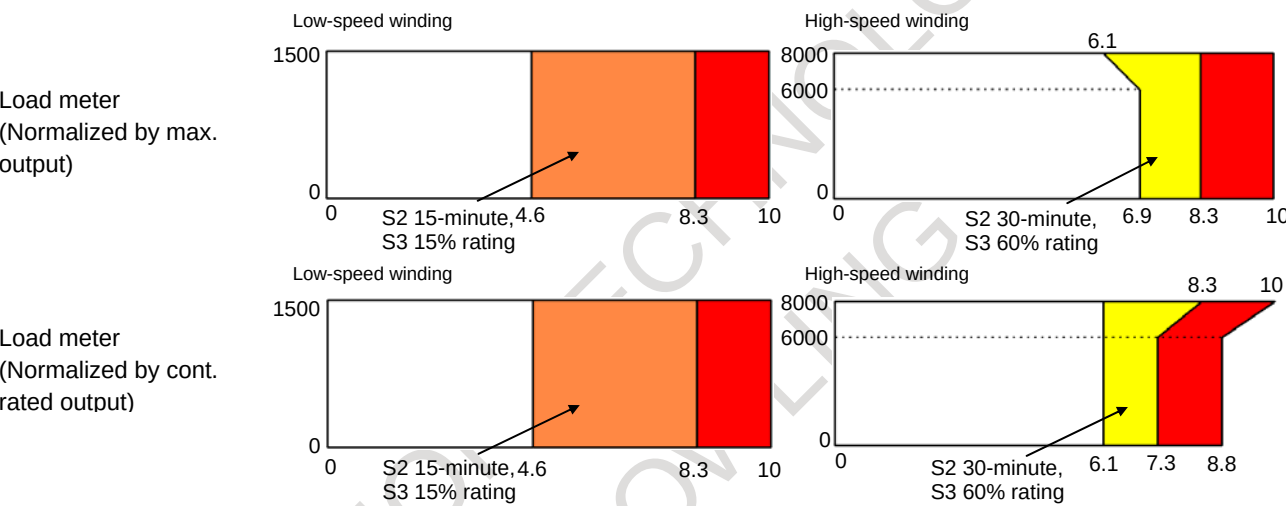
αiIP 40/6000 **αiIP 50/6000** **αiIP 60/6000**

B.4 αiIP series 400-V type

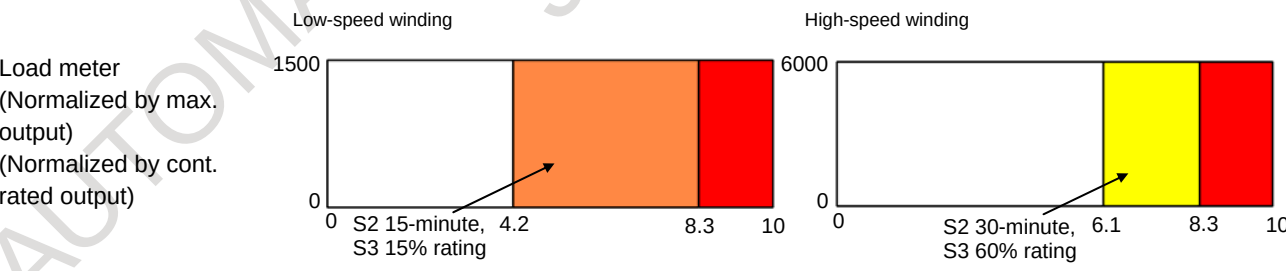
αiIP 15/6000HV



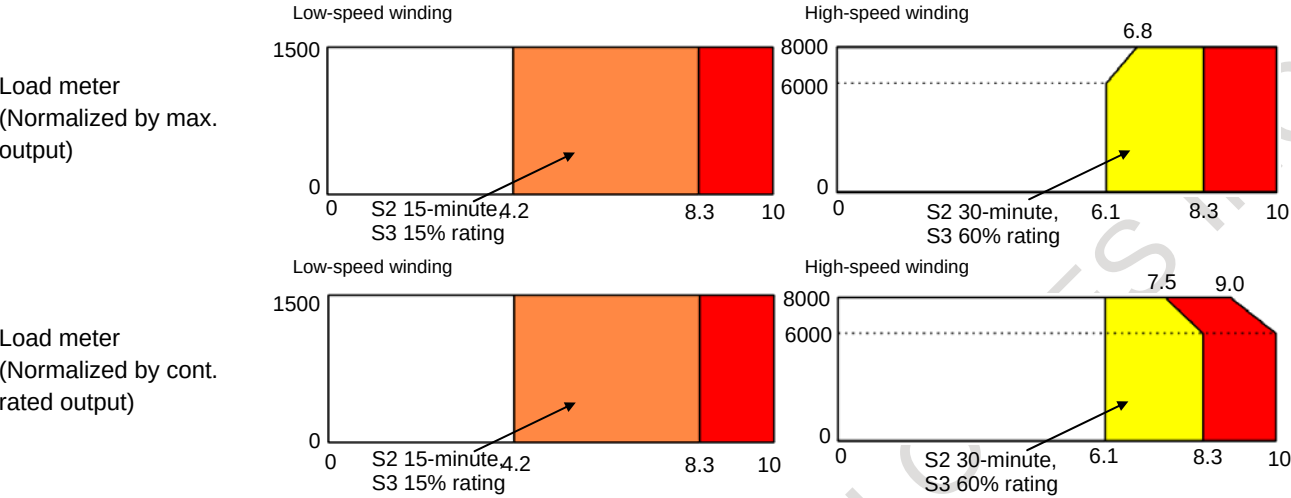
αiIP 15/8000HV



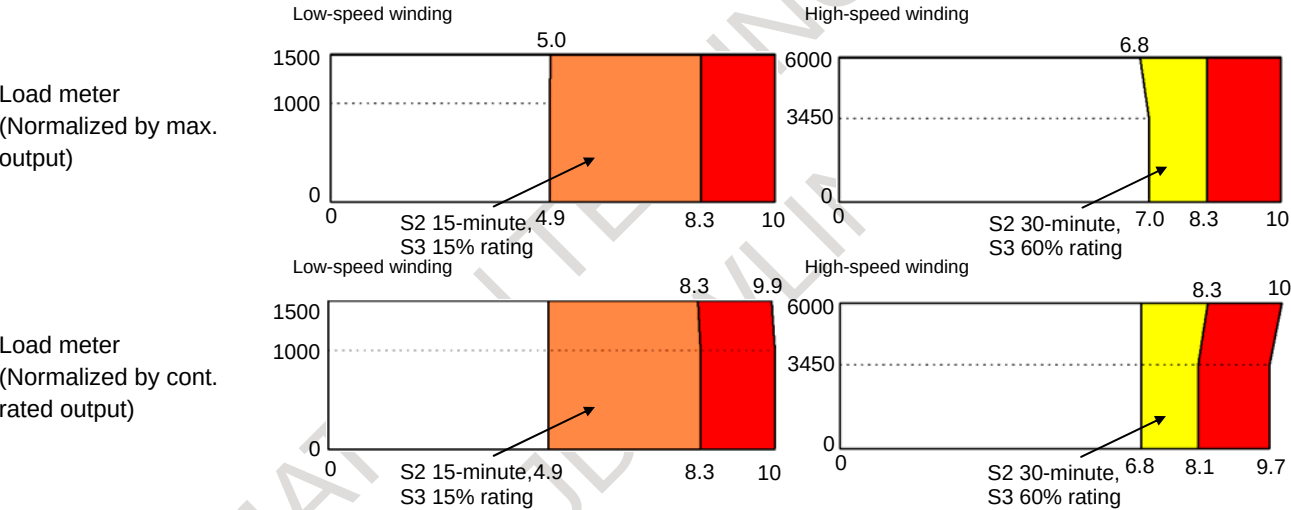
αiIP 22/6000HV

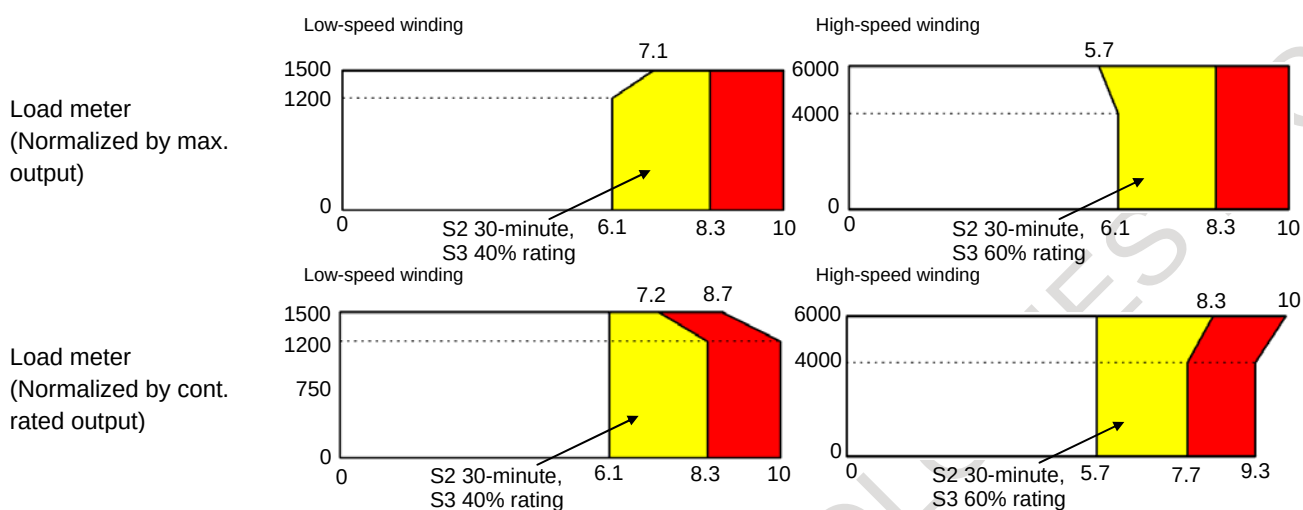
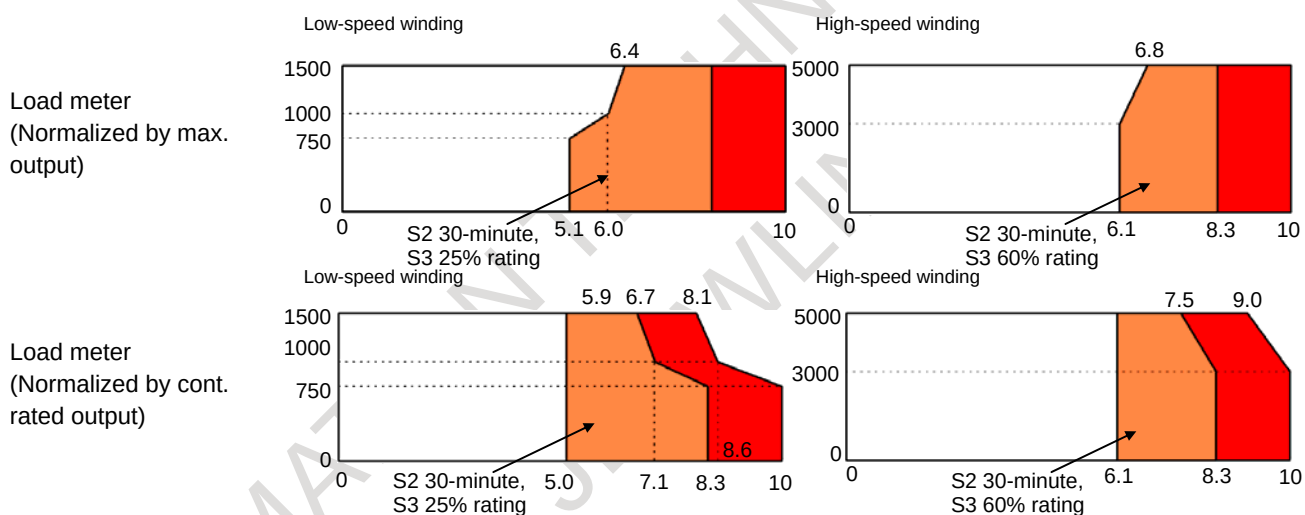


α iP 22/8000HV



α iP 40/6000HV

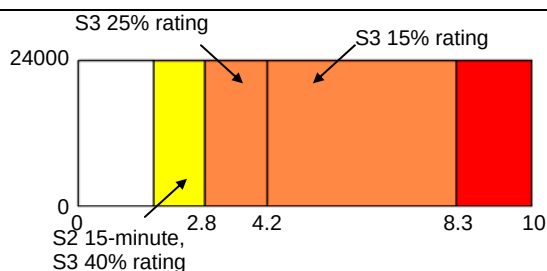


α iP 50/6000HV **α iP 60/5000HV**

B.5 $\alpha i I_T$ series 200-V type

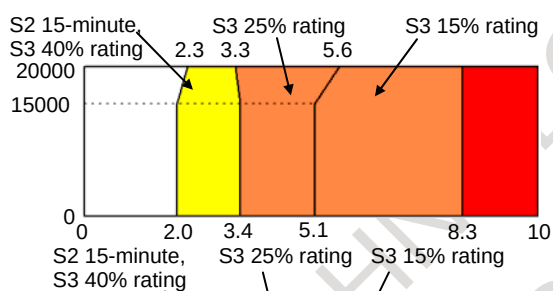
$\alpha i I_T$ 1/24000

Load meter
(Normalized by max. output)
(Normalized by cont. rated
output)

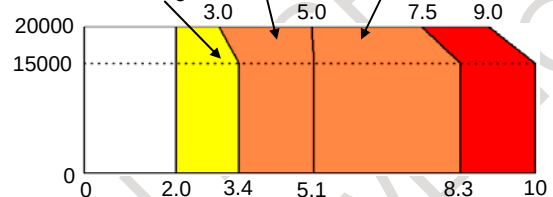


$\alpha i I_T$ 1.5/20000

Load meter
(Normalized by max. output)

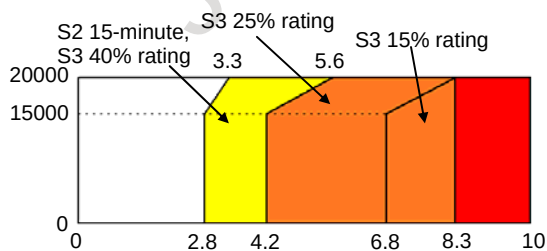


Load meter
(Normalized by cont. rated
output)

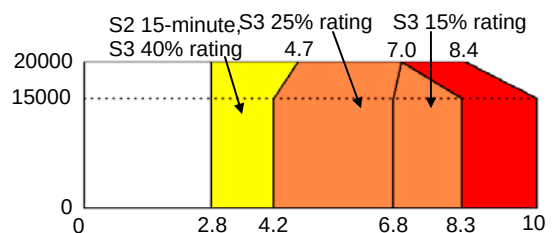


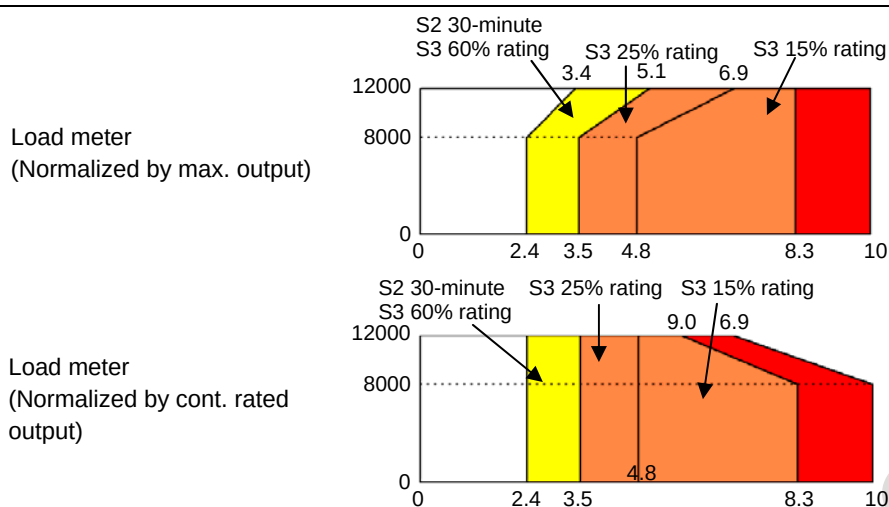
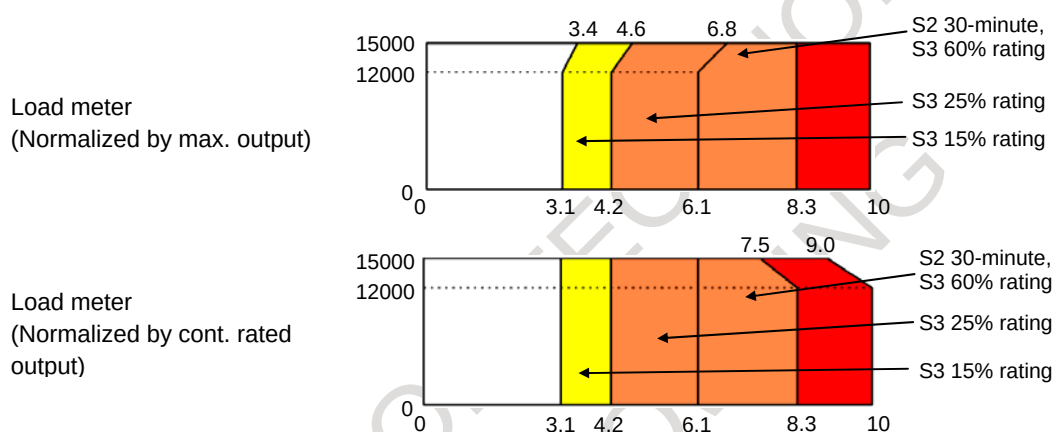
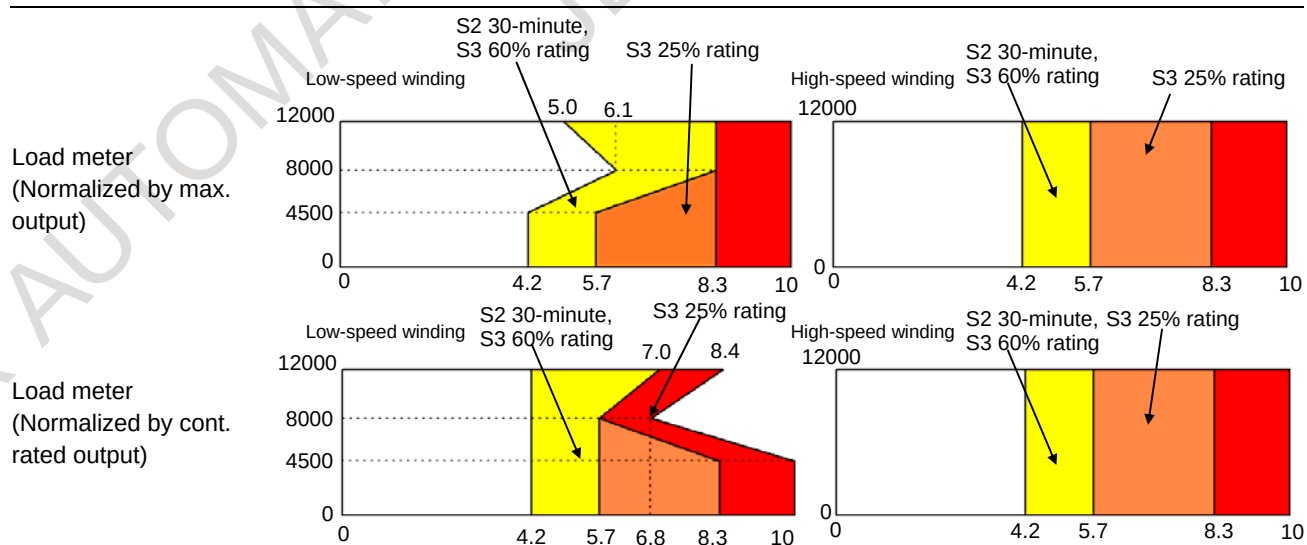
$\alpha i I_T$ 2/20000

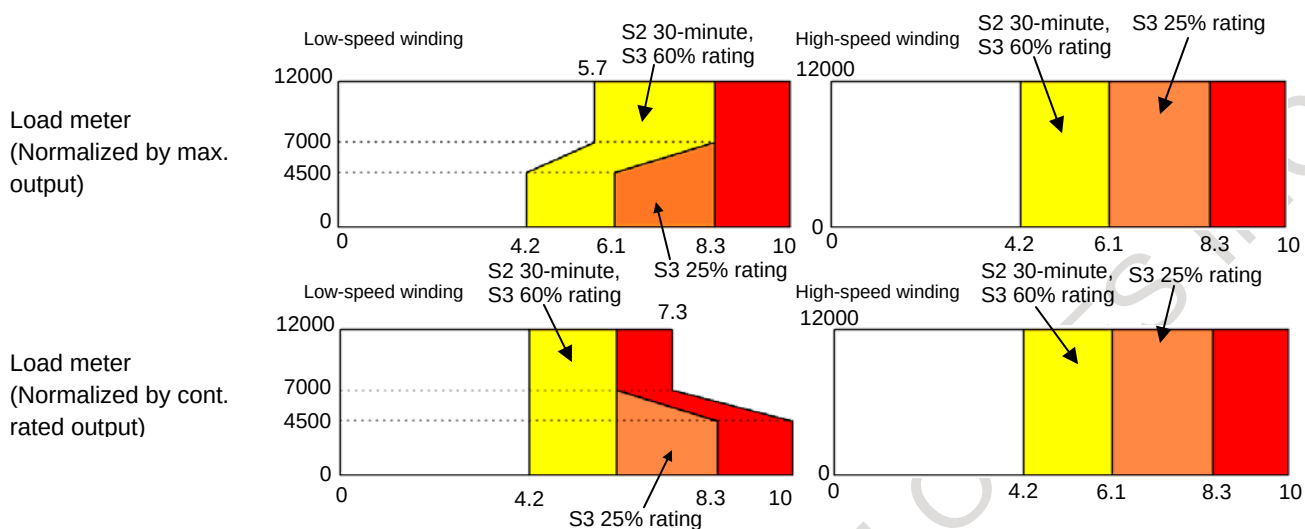
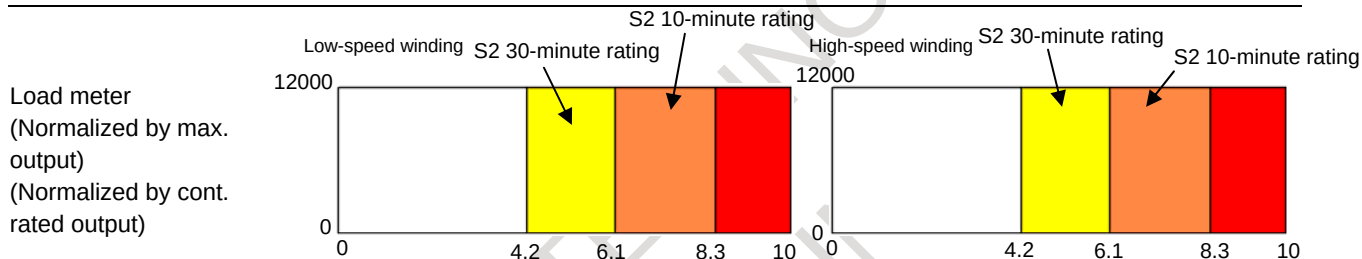
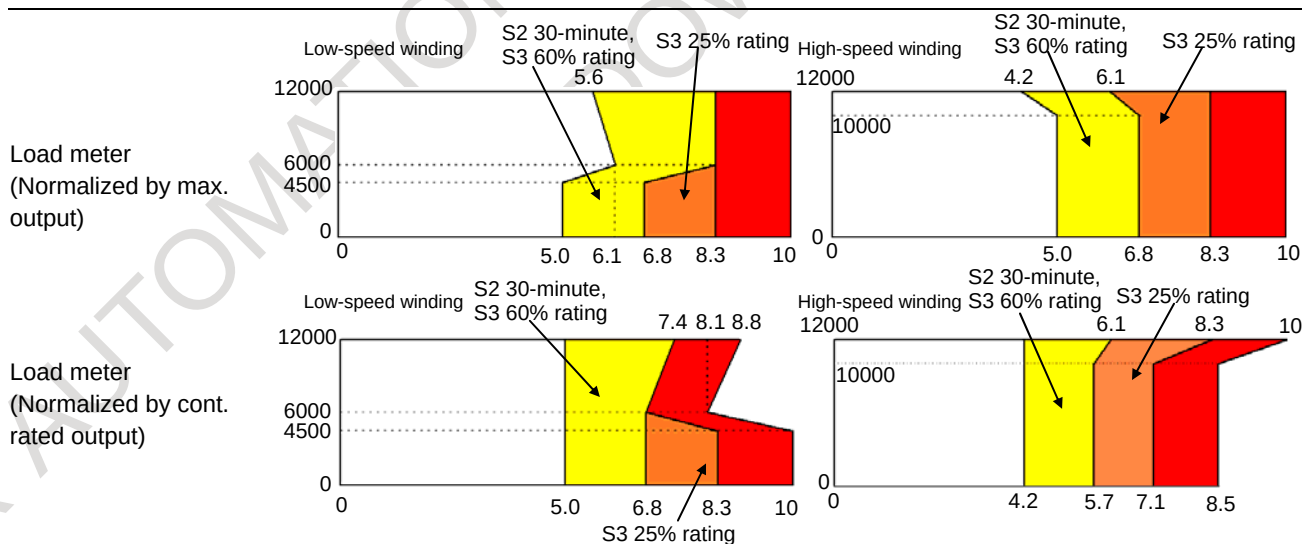
Load meter
(Normalized by max. output)

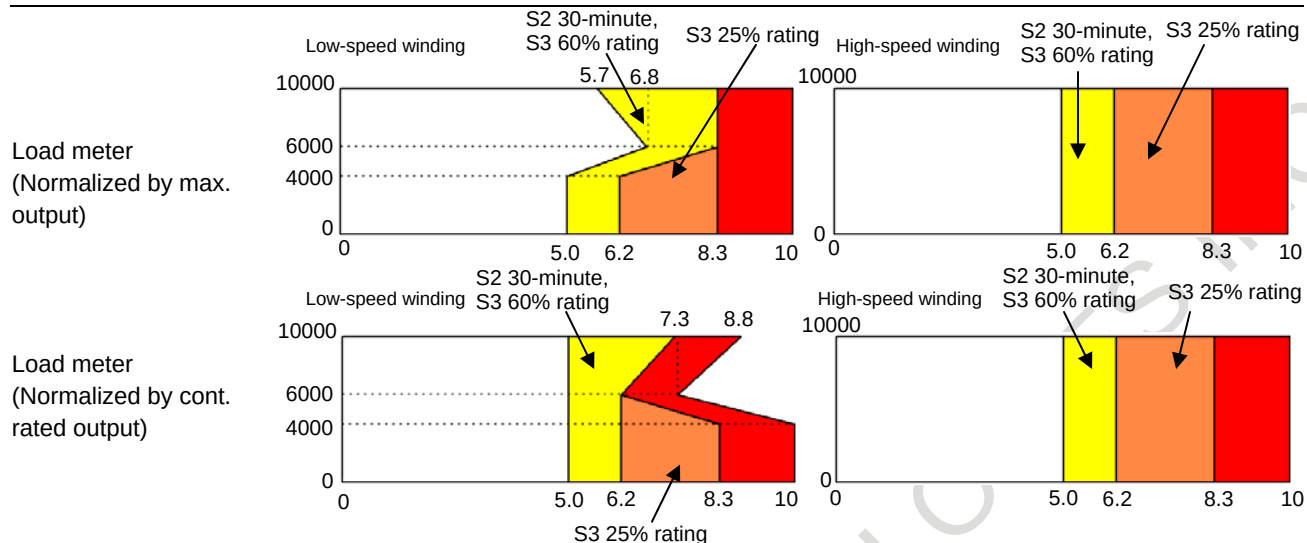
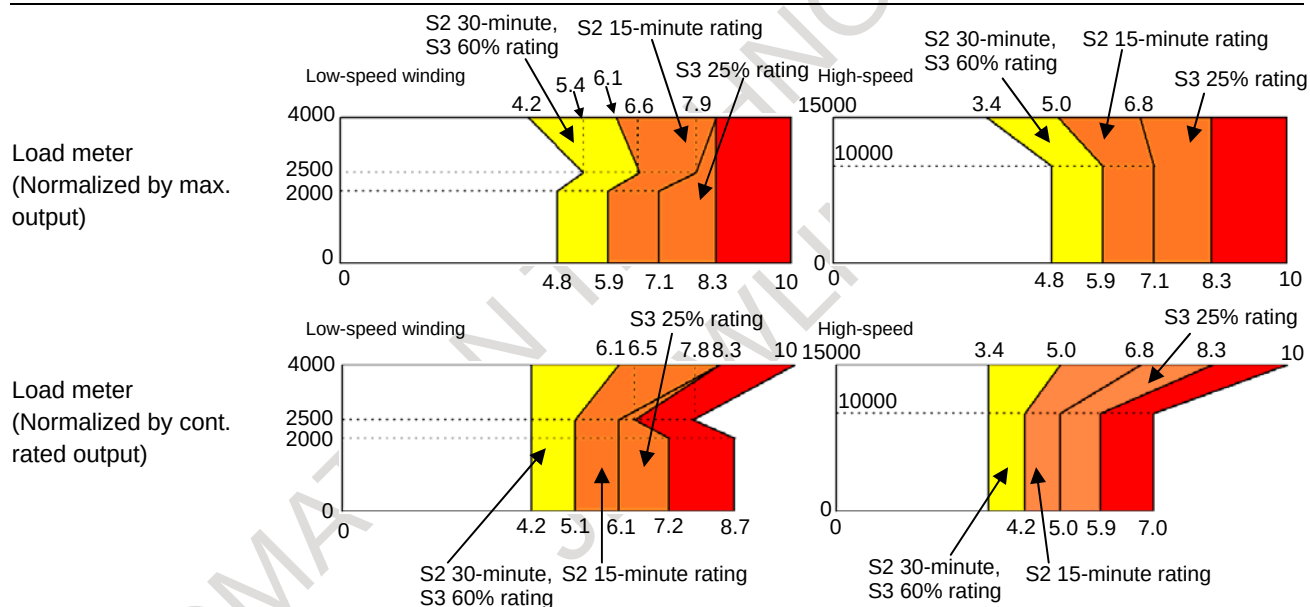
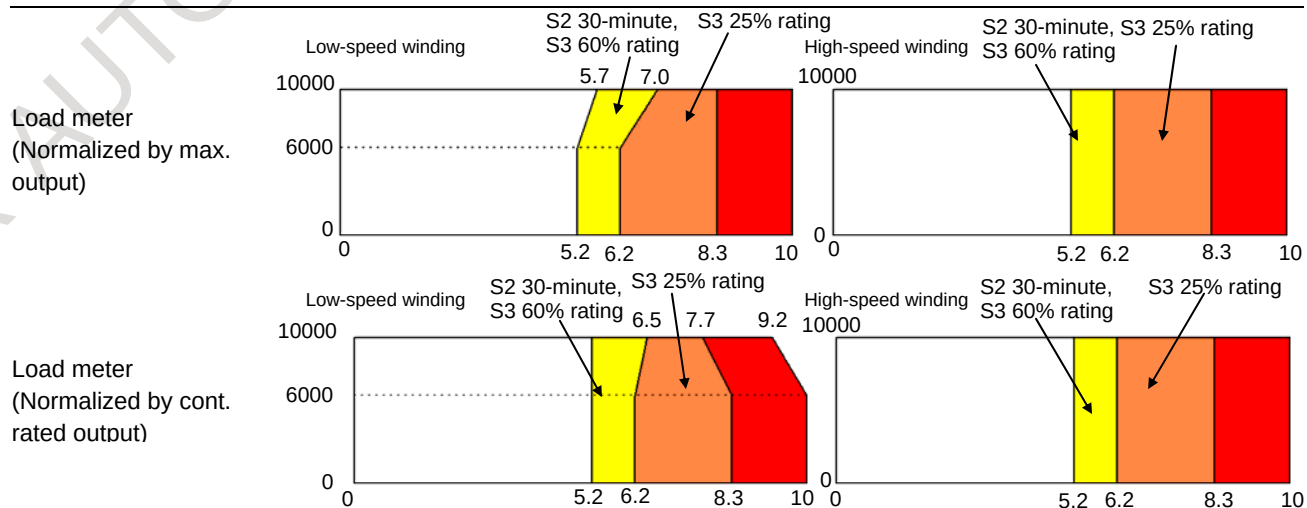


Load meter
(Normalized by cont. rated
output)



αI_T 3/12000 αI_T 3/15000 αI_T 6/12000

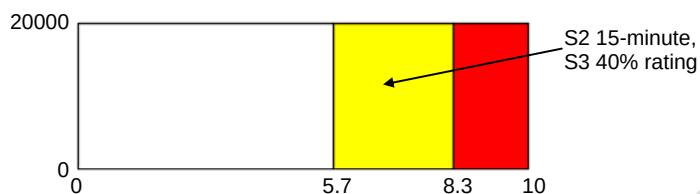
$\alpha/I\tau$ 8/12000 **$\alpha/I\tau$ 8/15000** **$\alpha/I\tau$ 12/12000**

$\alpha i \Gamma 15/10000$  $\alpha i \Gamma 15/15000$  $\alpha i \Gamma 22/10000$ 

B.6 $\alpha i I_T$ series 400-V type

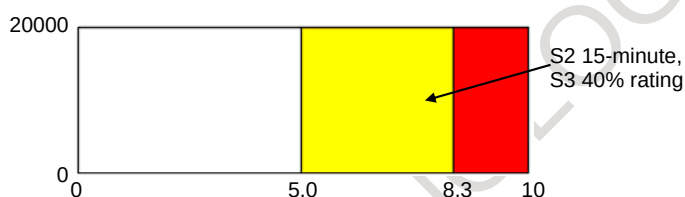
$\alpha i I_T$ 1.5/20000HV

Load meter
(Normalized by max. output)
(Normalized by cont. rated
output)



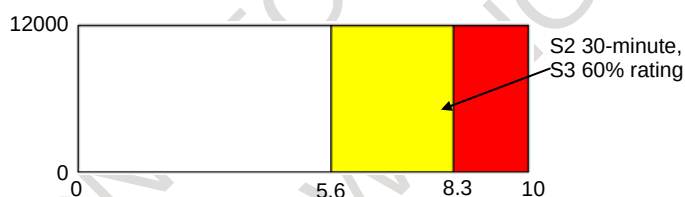
$\alpha i I_T$ 2/20000HV

Load meter
(Normalized by max. output)
(Normalized by cont. rated
output)



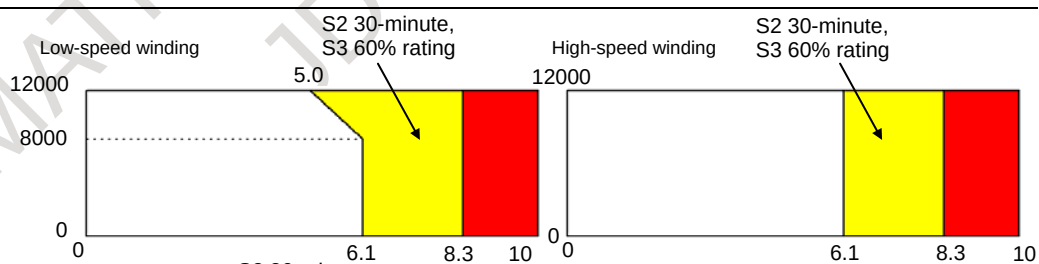
$\alpha i I_T$ 3/12000HV

Load meter
(Normalized by max. output)
(Normalized by cont. rated
output)

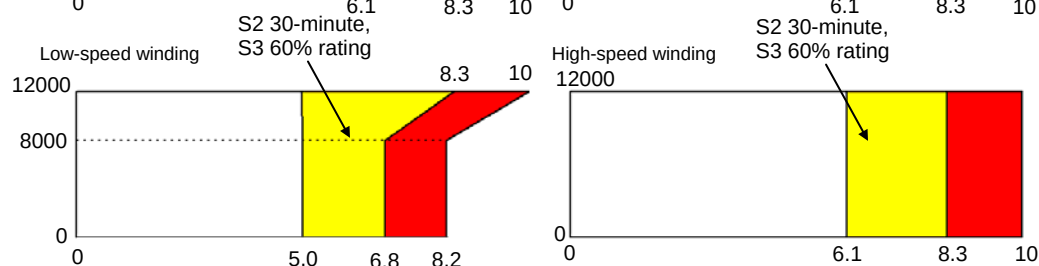


$\alpha i I_T$ 6/12000HV

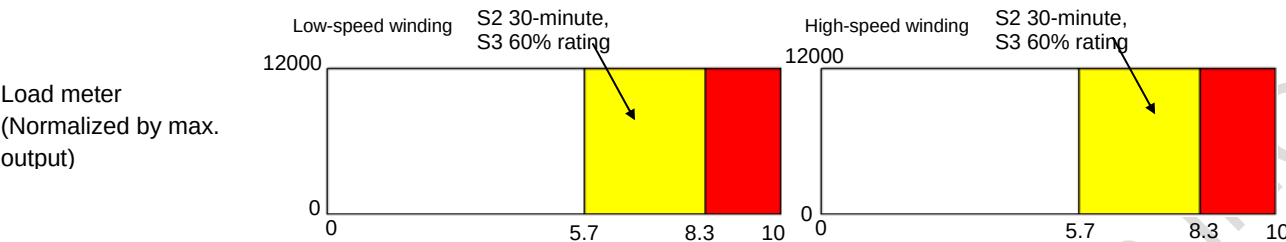
Load meter
(Normalized by max.
output)



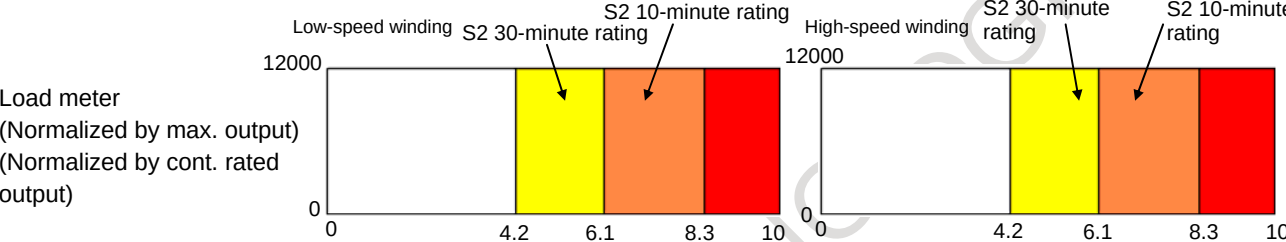
Load meter
(Normalized by cont.
rated output)



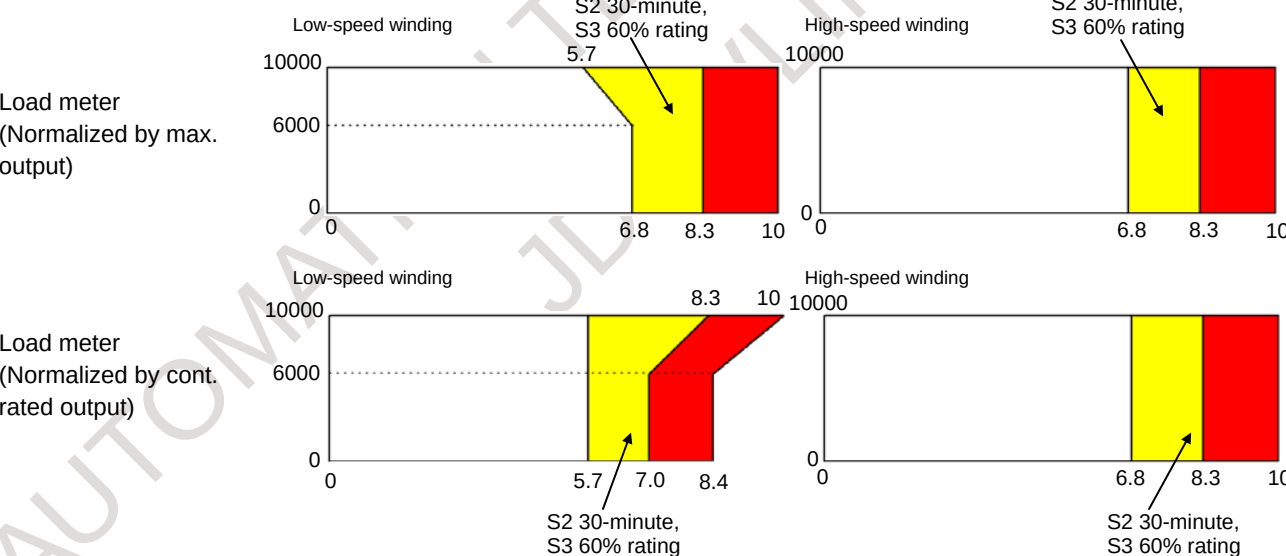
αI_T 8/12000HV

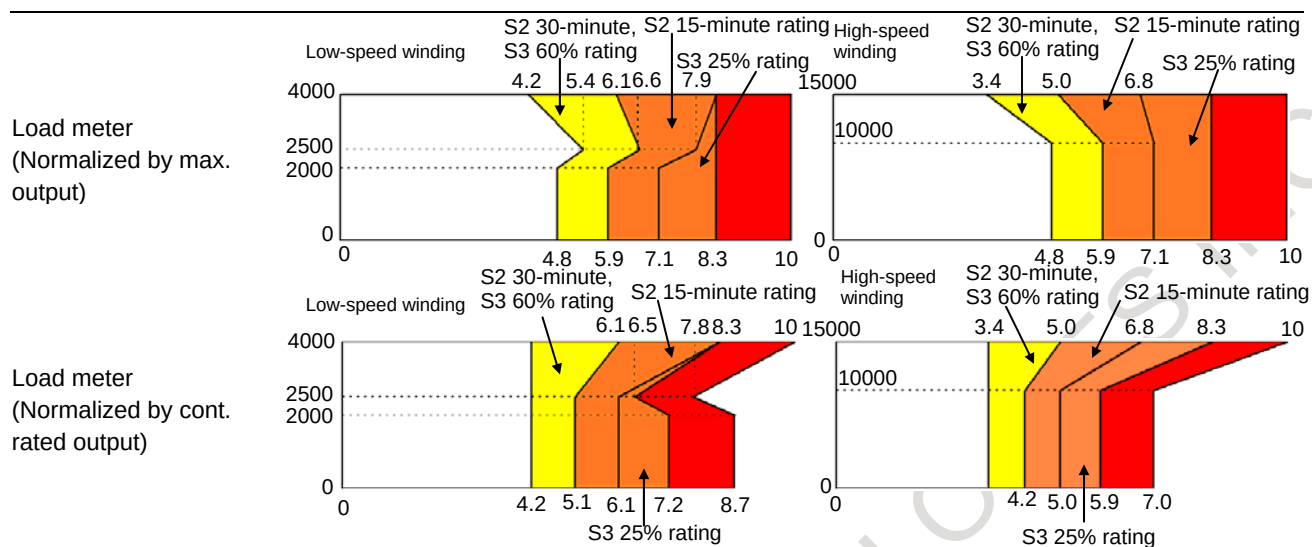
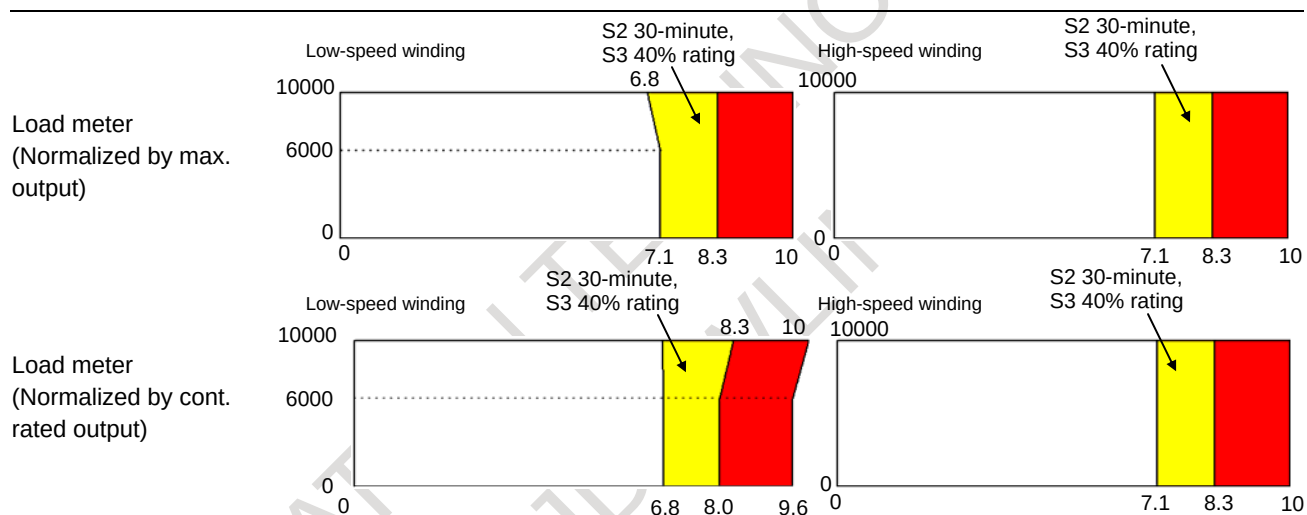


αI_T 8/15000HV



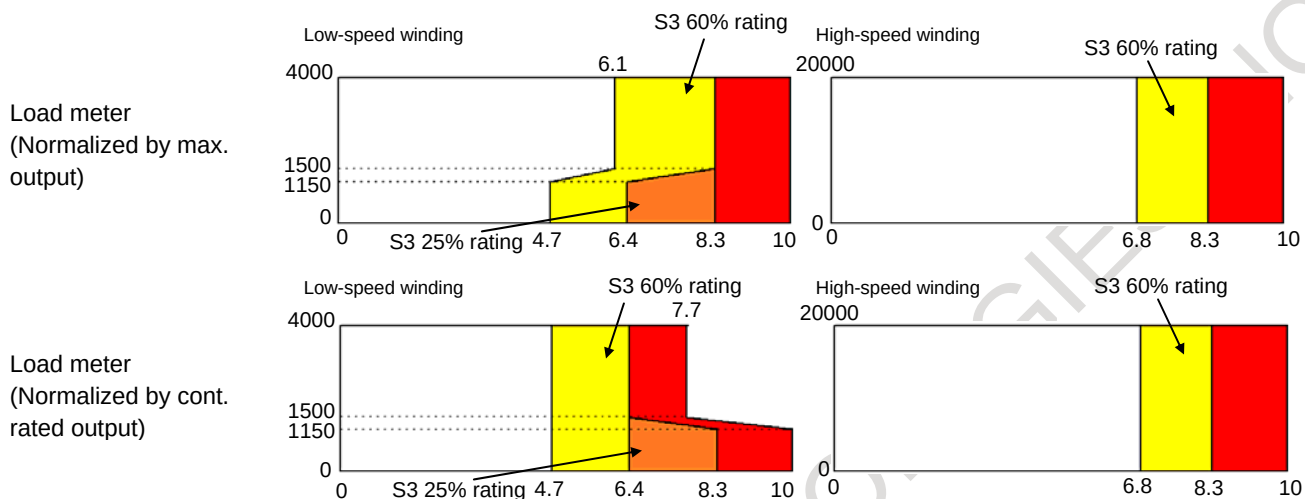
αI_T 15/10000HV



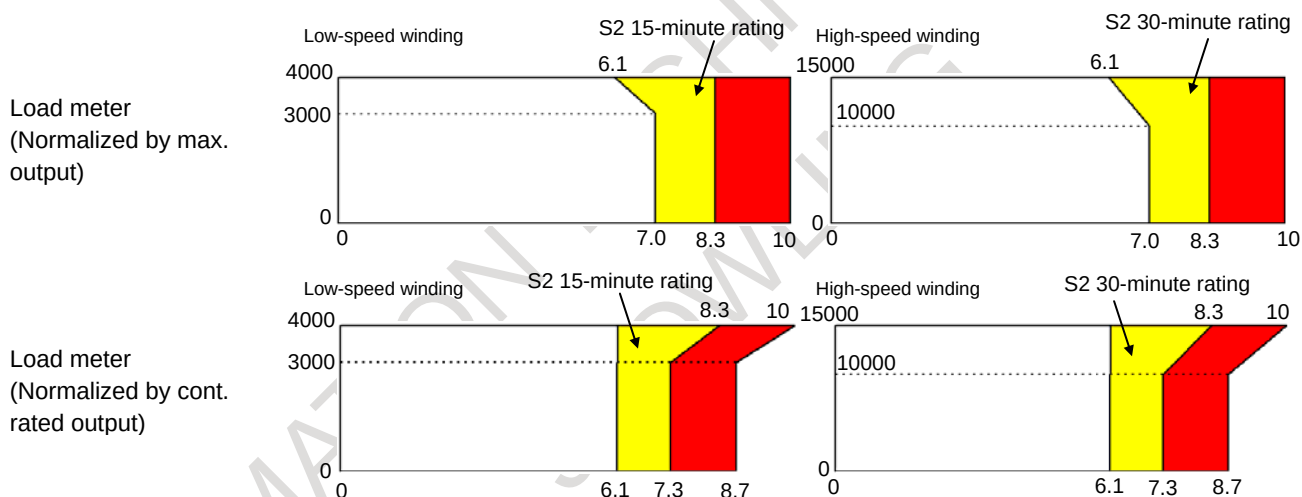
$\alpha i T$ 15/15000HV **$\alpha i T$ 22/10000HV**

B.7 αiL series 200-V type

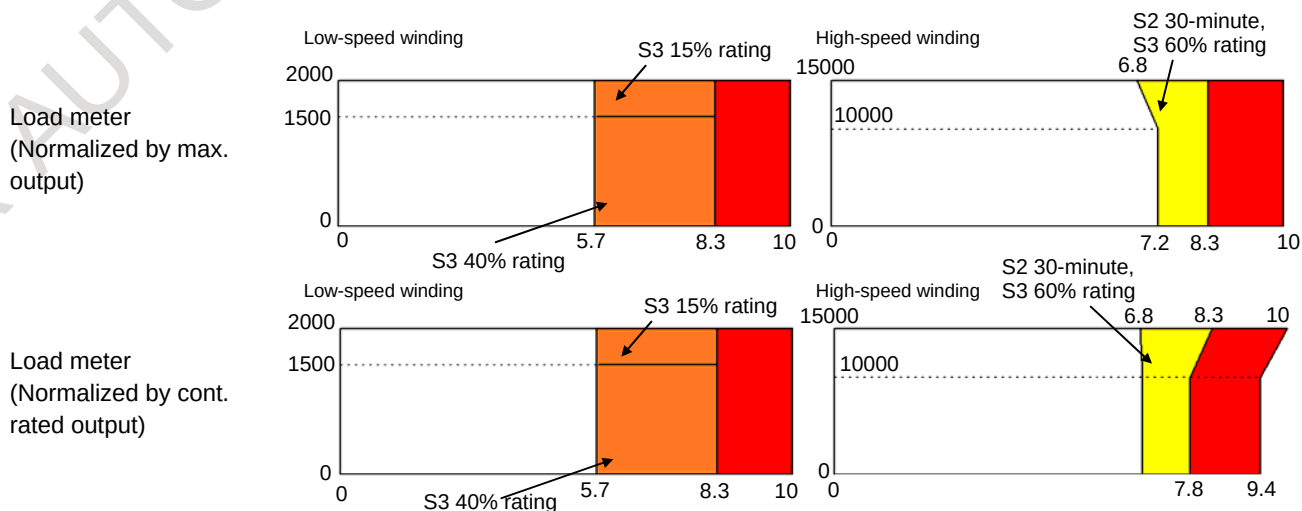
αiL 8/20000



αiL 15/15000



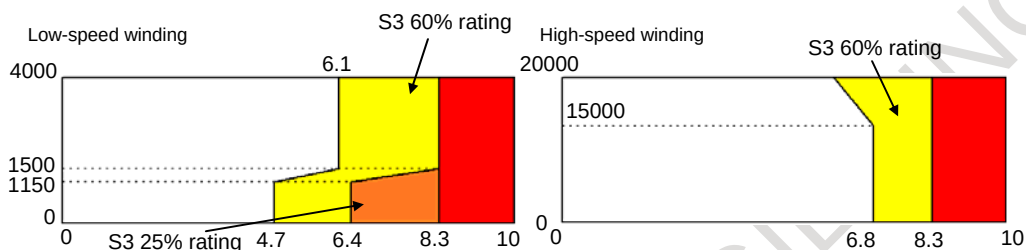
αiL 26/15000



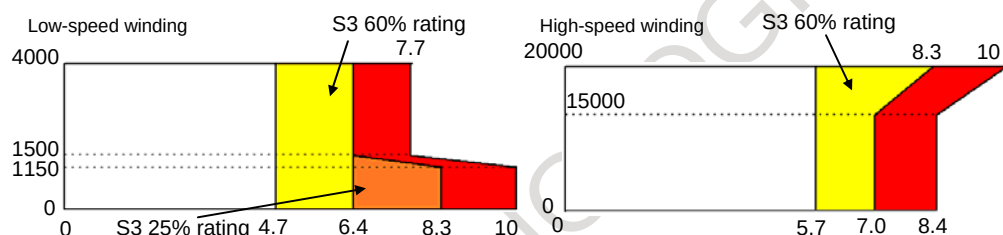
B.8 $\alpha i\text{IL}$ series 400-V type

$\alpha i\text{IL}$ 8/20000HV

Load meter
(Normalized by max.
output)

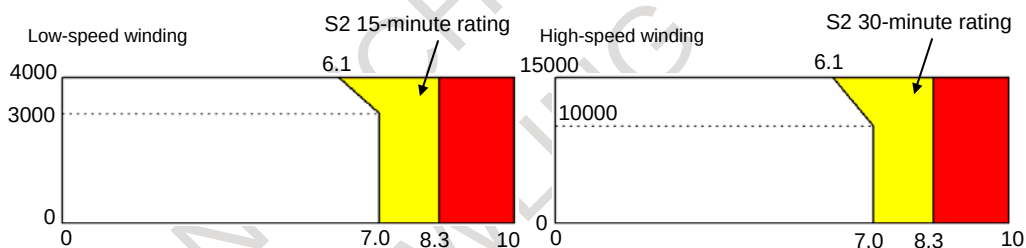


Load meter
(Normalized by cont.
rated output)

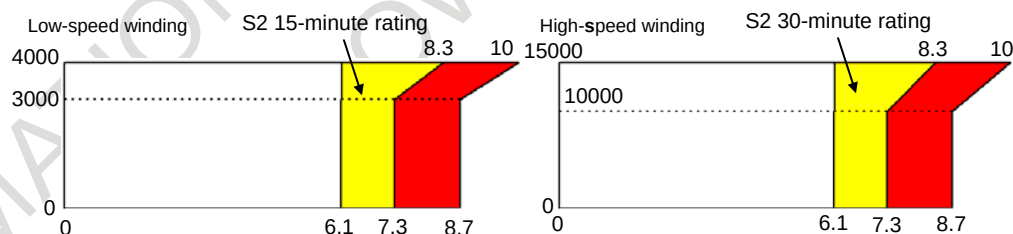


$\alpha i\text{IL}$ 15/15000HV

Load meter
(Normalized by max.
output)

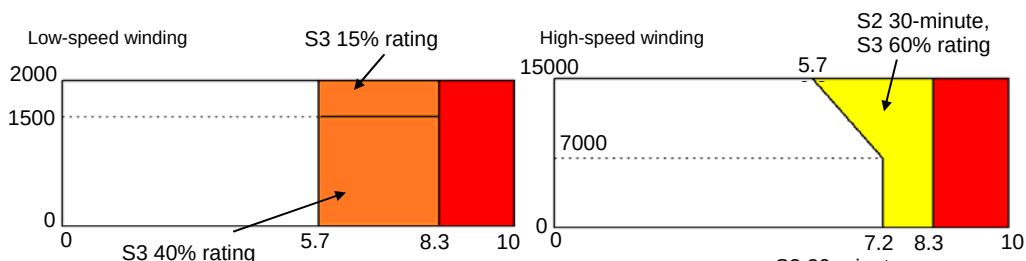


Load meter
(Normalized by cont.
rated output)

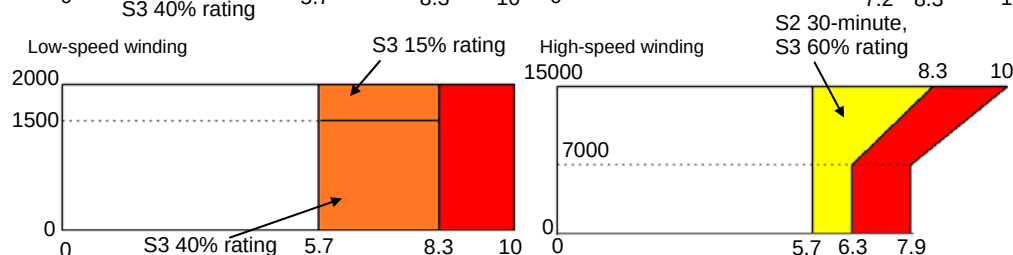


$\alpha i\text{IL}$ 26/15000HV

Load meter
(Normalized by max.
output)



Load meter
(Normalized by cont.
rated output)



JR AUTOMATION TECHNOLOGIES INC*
JDOWLING

ADDITIONAL INFORMATION

JR AUTOMATION TECHNOLOGIES INC*
JDOWLING

Increasing max. speed of AC SPINDLE MOTOR α iI series

1. Type of applied documents

Name	FANUC AC SPINDLE MOTOR α i series DESCRIPTIONS
Spec. No./Ver.	B-65272EN/08

2. Summary of Change

Group	Name / Outline	New, Add Correct, Del	Applicable Date
Basic Function			
Optional Function			
Unit			
Maintenance Parts			
Notice			
Correction	Error correction of the acceleration max. output for selecting power supply and the parameter.	Correct	2015.11
Another			

				TITLE Increasing max speed of AC SPINDLE MOTOR α iI series	
02	15.11.24	T.Saitou	Error correction		
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 1/33

Increasing max. speed of AC SPINDLE MOTOR α iI series

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II . ORDERING SPECIFICATION NUMBER.....	4
III . MOTOR SPECIFICATIONS.....	6
IV . OUTLINE DRAWINGS.....	25
V . PARAMETER.....	32

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 2/33

I. GENERAL

We increase the max rotation speed of AC spindle motors α iI 12/7000~ α iI 22/7000, α iI 12/7000HV~ α iI 22/7000HV up to 8000 min⁻¹ by increasing allowable speed of the motor bearing.
This document describes above models.

Note)

The items that are not mentioned this document correspond to below specifications.

SPINDLE MOTOR: FANUC AC SPINDLE MOTOR α iI series DESCRIPTION (B-65272EN)

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 3/33

II. ORDERING SPECIFICATION NUMBER

The ordering specification numbers of the spindle motors added have the following format:

A06B-□□□□-B△○▽#abcd

□□□□ An ordering specification number are described on the tables after next page.

*Every combination doesn't exist.

△ 5: Flange mounting type

6: Foot mounting type

○ 0: Without keyway

2 High accuracy/Low vibration, Without keyway

5: With keyway

▽ 0: α iM sensor, Rear exhaust

1: α iM sensor, Front exhaust

3: α iMZ sensor, Rear exhaust

4: α iMZ sensor, Front exhaust

abcd An ordering specification number are described on the tables after next page.

*Every combination doesn't exist.

b 1 : Standard output

R : Power up model(S3 25% rated added)

U : Power up model(S3 15% rated added)

V : Power up model(S3 25% rated added)

※In case of α iI 15/8000HV, V is used for the power up model(S3 25% rated added).

c 0 : Standard accuracy

2 : High accuracy

d 2 : With oil-seal

9 : With no seal

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 4/33

The following table lists the allowable combinations of numbers represented by symbols in ordering specification numbers.

α iI series (200V) Δ 0 6 B - $\square\square\square\square$ - B Δ $\bigcirc$ ∇ # a b c d

Model	Symbol in specification No. $\square\square\square\square$	Δ		$\bigcirc$			∇				a	b			c		d	
		5	6	0	2	5	0	1	3	4	0	1	R	U	0	2	2	9
α iI 12/8000	1408	$\bigcirc$	-	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	-
		$\bigcirc$	-	-	$\bigcirc$		$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$
		-	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$
		-	$\bigcirc$	-	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$
α iI 15/8000	1409	$\bigcirc$	-	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	-
		$\bigcirc$	-	-	$\bigcirc$		$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$
		-	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$
		-	$\bigcirc$	-	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$
α iI 18/8000	1410	$\bigcirc$	-	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	-
		$\bigcirc$	-	-	$\bigcirc$		$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$
		-	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$
		-	$\bigcirc$	-	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$
α iI 22/8000	1411	$\bigcirc$	-	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	-
		$\bigcirc$	-	-	$\bigcirc$		$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$
		-	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$
		-	$\bigcirc$	-	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$

α iI series (400V) Δ 0 6 B - $\square\square\square\square$ - B Δ $\bigcirc$ ∇ # a b c d

Model	Symbol in specification No. $\square\square\square\square$	Δ		$\bigcirc$			∇				a	b				c		d	
		5	6	0	2	5	0	1	3	4	0	1	R	U	V	0	2	2	9
α iI 12/8000HV	1508	$\bigcirc$	-	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	-	$\bigcirc$	-	$\bigcirc$	-
		$\bigcirc$	-	-	$\bigcirc$		$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	-	-	$\bigcirc$	$\bigcirc$	-
		-	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	-	$\bigcirc$	-	$\bigcirc$	$\bigcirc$
		-	$\bigcirc$	-	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	-	-	$\bigcirc$	$\bigcirc$	$\bigcirc$
α iI 15/8000HV	1509	$\bigcirc$	-	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	-
		$\bigcirc$	-	-	$\bigcirc$		$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	-
		-	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$
		-	$\bigcirc$	-	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$
α iI 22/8000HV	1511	$\bigcirc$	-	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	-	$\bigcirc$	-	$\bigcirc$	-
		$\bigcirc$	-	-	$\bigcirc$		$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	-	-	$\bigcirc$	$\bigcirc$	-
		-	$\bigcirc$	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	-	$\bigcirc$	-	$\bigcirc$	$\bigcirc$
		-	$\bigcirc$	-	$\bigcirc$	-	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	-	-	-	$\bigcirc$	$\bigcirc$	$\bigcirc$

*In case of α iI 15/8000HV power up model(S3 25% rated added), b= V is used.

				TITLE Increasing max speed of AC SPINDLE MOTOR α iI series
02	15.11.24	T.Saitou	Error correction	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02 CUST.
Ed.	Date	Design.		FANUC CORPORATION SHEET 5/33

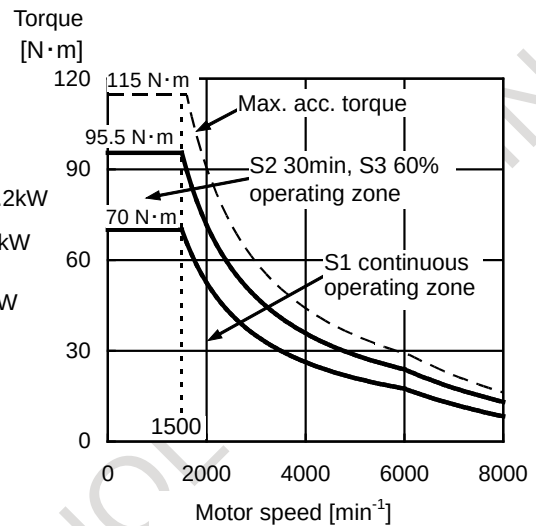
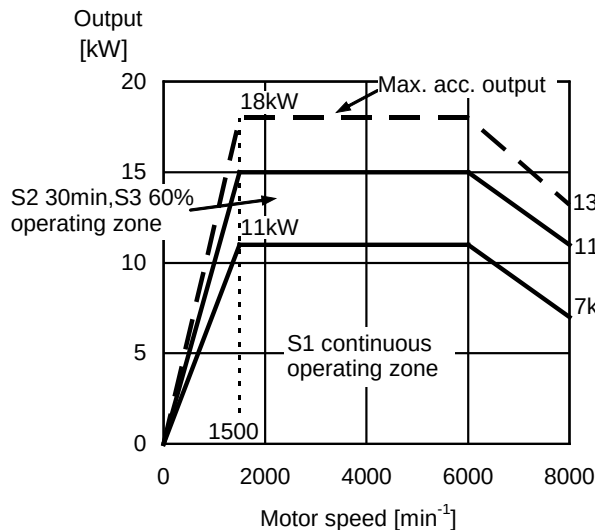
III. MOTOR SPECIFICATIONS

Model αi 12/8000

Ordering specification number : A06B-1408-B□□□#01□□

Applicable spindle amplifier αi SP 15-B

βi SVSP*-18-B



Parameter		Symbol	Value	Unit
Rated output (*1)	S1 cont. rated	P_c	11 (14.7)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		15 (20.1)	kW (HP)
Rated current (*3)	S1 cont. rated	I_c	54	A
	S2 30 min rated, S3 60% rated(*2)		64	A
Speed	Base speed	N_b	1500	min^{-1}
	Maximum speed	N_m	8000	min^{-1}
Maximum output in steady state(*4)		P_{max}	120% of max. rated output	kW
Acceleration max. output for selecting power supply(*5)			18 ~~22.2~~ 22	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	70.0 (714)	$\text{N} \cdot \text{m}$ ($\text{kgf} \cdot \text{cm}$)
Moment of inertia of rotor		J_m	0.07 (0.77)	$\text{kg} \cdot \text{m}^2$ ($\text{kgf} \cdot \text{cm} \cdot \text{s}^2$)
Weight		W	95	kg
Winding resistance(U-V, V-W, W-U)		R_a	116	$\text{m}\Omega$
Number of detected gear teeth per rotation			256	$\lambda / \text{rev.}$
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			100	W

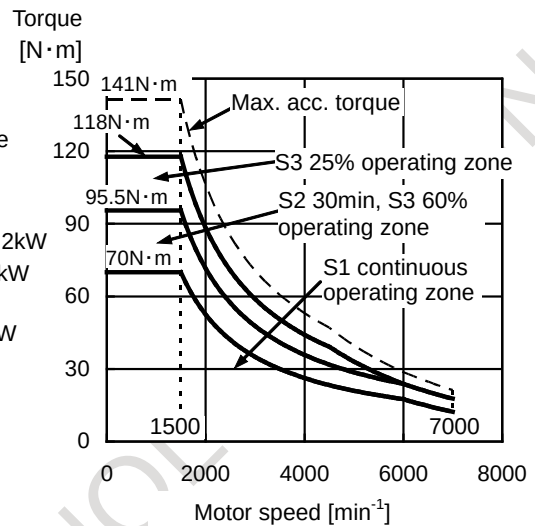
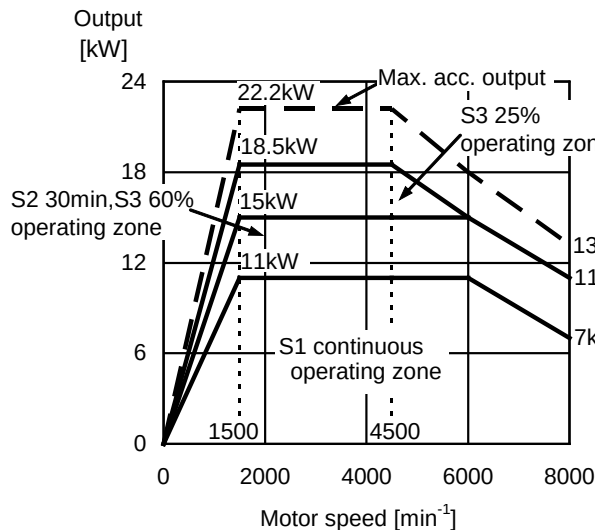
				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR αi I series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 6/33

Model α i 12/8000 Power up model(S3 25% rated added)

Ordering specification number : A06B-1408-B□□□#0R□□

Applicable spindle amplifier α iSP 15-B

β iSVSP*-18-B



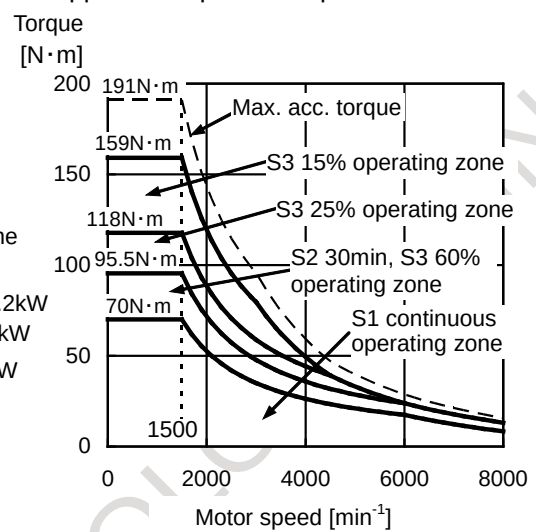
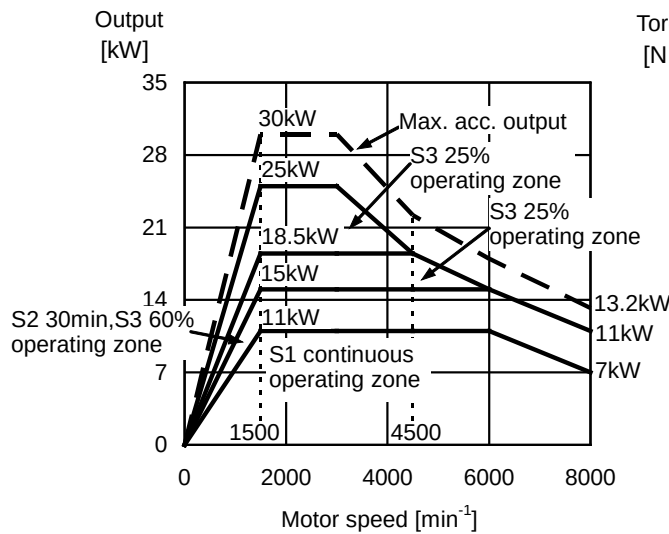
Parameter		Symbol	Value	Unit
Rated output (*1)	S1 cont. rated	P_c	11 (14.7)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		15 (20.1)	kW (HP)
	S3 25% rated(*2)		18.5 (24.8)	kW (HP)
Rated current (*3)	S1 cont. rated	I_c	54	A
	S2 30 min rated, S3 60% rated(*2)		64	A
	S3 25% rated(*2)		76	A
Speed	Base speed	N_b	1500	min^{-1}
	Maximum speed	N_m	8000	min^{-1}
Maximum output in steady state(*4)		$P_{\max}$	120% of max. rated output	kW
Acceleration max. output for selecting power supply(*5)			22.2	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	70.0 (714)	N·m (kgf·cm)
Moment of inertia of rotor		J_m	0.07 (0.77)	$\text{kg} \cdot \text{m}^2$ (kgf·cm·s ²)
Weight		W	95	kg
Winding resistance(U-V, V-W, W-U)		R_a	116	m Ω
Number of detected gear teeth per rotation			256	λ /rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			100	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α i series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 7/33

Model α iI 12/8000 Power up model(S3 15% rated added)

Ordering specification number : A06B-1408-B□□□#0U□□

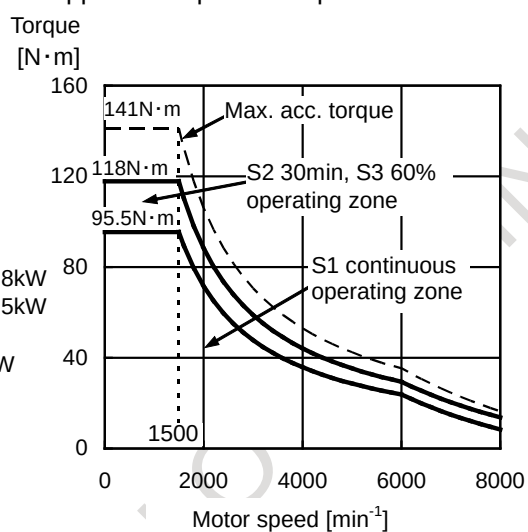
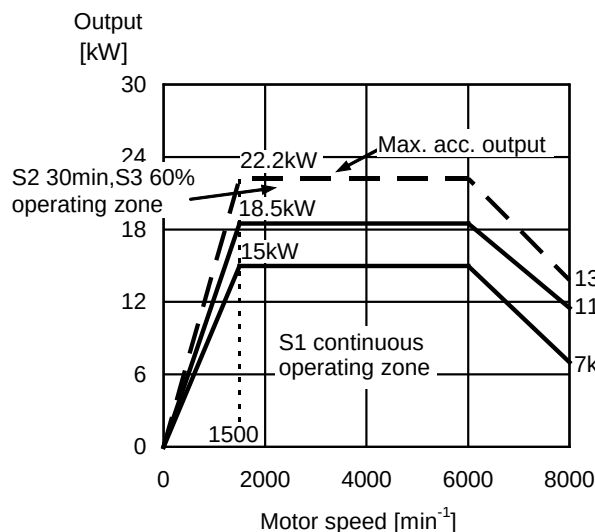
Applicable spindle amplifier α iSP 22-B



Parameter		Symbol	Value	Unit
Rated output (*1)	S1 cont. rated	P_c	11 (14.7)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		15 (20.1)	kW (HP)
	S3 25% rated(*2)		18.5 (24.8)	kW (HP)
	S3 15% rated(*2)		25 (33.5)	kW (HP)
Rated current (*3)	S1 cont. rated	I_c	54	A
	S2 30 min rated, S3 60% rated(*2)		64	A
	S3 25% rated(*2)		76	A
	S3 15% rated(*2)		102	A
Speed	Base speed	N_b	1500	min ⁻¹
	Maximum speed	N_m	8000	min ⁻¹
Maximum output in steady state(*4)		P_{max}	120% of max. rated output	kW
Acceleration max. output for selecting power supply(*5)			30 ~~22.2~~ 22	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	70.0 (714)	N·m (kgf·cm)
Moment of inertia of rotor		J_m	0.07 (0.77)	kg·m ² (kgf·cm·s ²)
Weight		W	95	kg
Winding resistance(U-V, V-W, W-U)		Ra	116	mΩ
Number of detected gear teeth per rotation			256	λ /rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			100	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 8/33

Model α iI 15/8000
Ordering specification number : A06B-1409-B□□□#01□□

 Applicable spindle amplifier α iSP 22-B


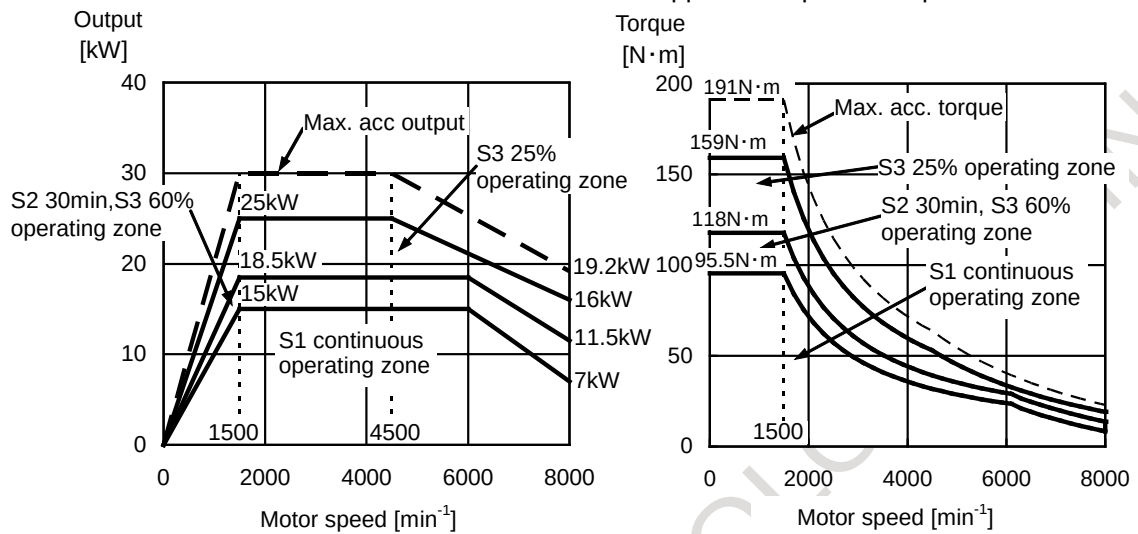
Parameter		Symbol	Value	単位
Rated output (*1)	S1 cont. rated	P_c	15 (20.1)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		18.5 (24.8)	kW (HP)
Rated current (*3)	S1 cont. rated	I_c	70	A
	S2 30 min rated, S3 60% rated(*2)		82	A
Speed	Base speed	N_b	1500	min^{-1}
	Maximum speed	N_m	8000	min^{-1}
Maximum output in steady state(*4)		$P_{\max}$	120% of max. rated output	kW
Acceleration max. output for selecting a power supply(*5)			22.2 ~~20.2~~	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	95.4 (974)	$\text{N} \cdot \text{m}$ ($\text{kgf} \cdot \text{cm}$)
Moment of inertia of rotor		J_m	0.09 (0.93)	$\text{kg} \cdot \text{m}^2$ ($\text{kgf} \cdot \text{cm} \cdot \text{s}^2$)
Weight		W	110	kg
Winding resistance(U-V, V-W, W-U)		R_a	79.0	$\text{m} \Omega$
Number of detected gear teeth per rotation			256	$\lambda / \text{rev.}$
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			100	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 9/33

Model α i 15/8000 Power up model(S3 25% rated added)

Ordering specification number : A06B-1409-B□□□#0R□□

Applicable spindle amplifier α iSP 22-B



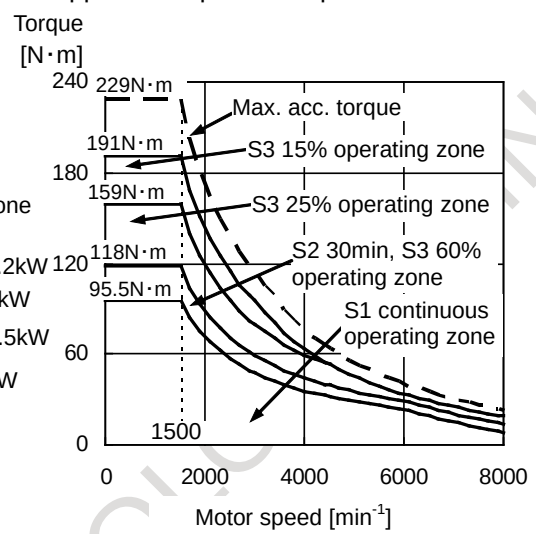
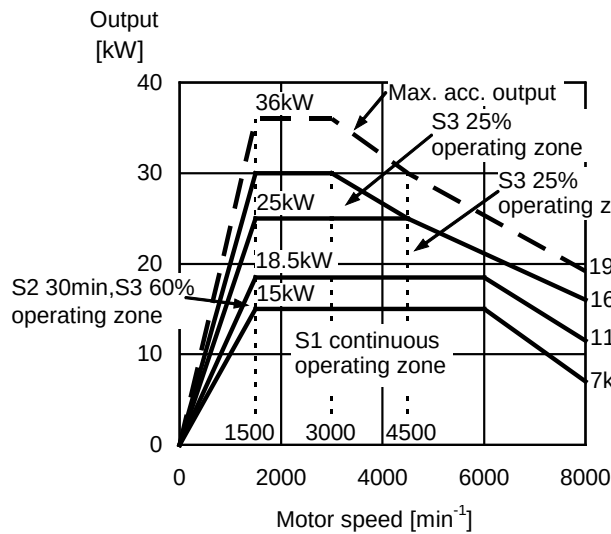
Parameter		Symbol	Value	単位
Rated output (*1)	S1 cont. rated	P_c	15 (20.1)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		18.5 (24.8)	kW (HP)
	S3 25% rated(*2)		25 (33.5)	kW (HP)
Rated current (*3)	S1 cont. rated	I_c	70	A
	S2 30 min rated, S3 60% rated(*2)		82	A
	S3 25% rated(*2)		105	A
Speed	Base speed	N_b	1500	min ⁻¹
	Maximum speed	N_m	8000	min ⁻¹
Maximum output in steady state(*4)		P_{max}	120% of max. rated output	kW
Acceleration max. output for selecting a power supply(*5)			30	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	95.4 (974)	N·m (kgf·cm)
Moment of inertia of rotor		J_m	0.09 (0.93)	kg·m ² (kgf·cm·s ²)
Weight		W	110	kg
Winding resistance(U-V, V-W, W-U)		R_a	79.0	mΩ
Number of detected gear teeth per rotation			256	λ /rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			100	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α i series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 10/33

Model α i 15/8000 Power up model(S3 15% rated added)

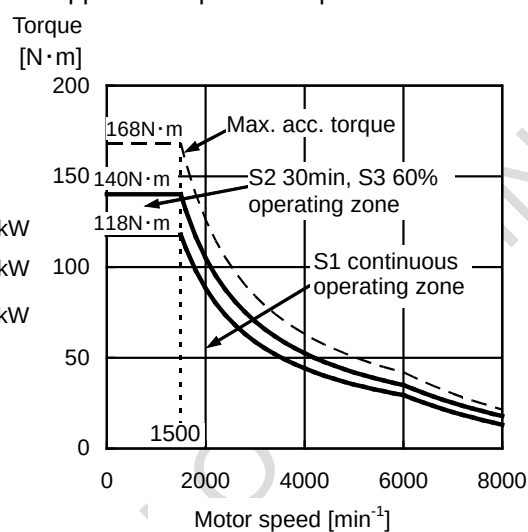
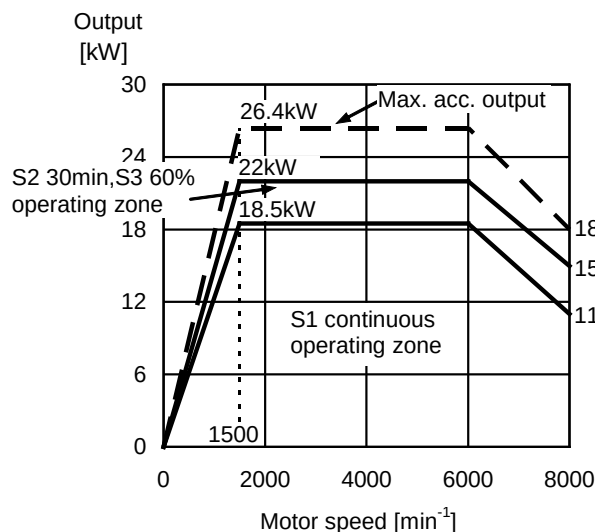
Ordering specification number : A06B-1409-B□□□#0U□□

Applicable spindle amplifier α iSP 22-B



Parameter		Symbol	Value	単位
Rated output (*1)	S1 cont. rated	P_c	15 (20.1)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		18.5 (24.8)	kW (HP)
	S3 25% rated(*2)		25 (33.5)	kW (HP)
	S3 15% rated(*2)		30 (40.2)	kW (HP)
Rated current (*3)	S1 cont. rated	I_c	70	A
	S2 30 min rated, S3 60% rated(*2)		82	A
	S3 25% rated(*2)		105	A
	S3 15% rated(*2)		123	A
Speed	Base speed	N_b	1500	min^{-1}
	Maximum speed	N_m	8000	min^{-1}
Maximum output in steady state(*4)		$P_{\max}$	120% of max. rated output	kW
Acceleration max. output for selecting a power supply(*5)			36 ~~20.2~~	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	95.4 (974)	$\text{N} \cdot \text{m}$ ($\text{kgf} \cdot \text{cm}$)
Moment of inertia of rotor		J_m	0.09 (0.93)	$\text{kg} \cdot \text{m}^2$ ($\text{kgf} \cdot \text{cm} \cdot \text{s}^2$)
Weight		W	110	kg
Winding resistance(U-V, V-W, W-U)		R_a	79.0	$\text{m} \Omega$
Number of detected gear teeth per rotation			256	$\lambda / \text{rev.}$
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			100	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α i series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 11/33

Model αi 18/8000
Ordering specification number : A06B-1410-B□□□#01□□
Applicable spindle amplifier αi SP 22-B


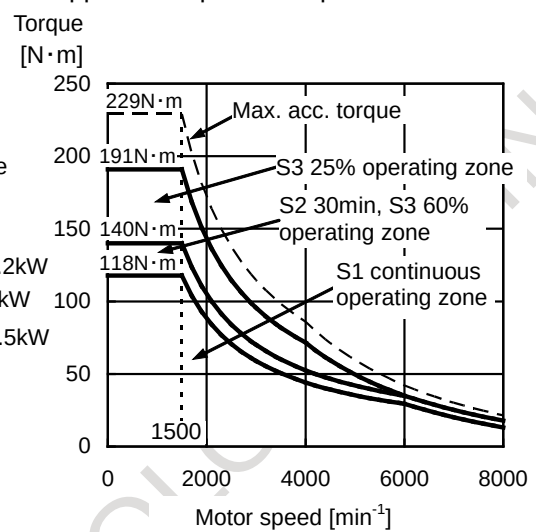
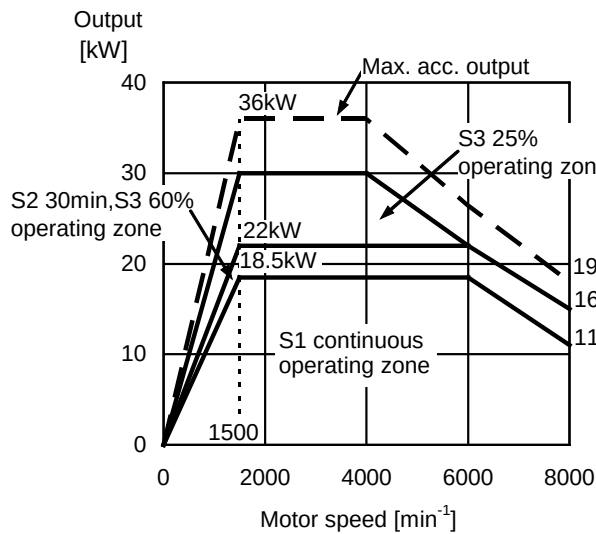
Parameter		Symbol	Value	Unit
Rated output (*1)	S1 cont. rated	P_c	18.5 (24.8)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		22 (29.5)	kW (HP)
Rated current (*3)	S1 cont. rated	I_c	82	A
	S2 30 min rated, S3 60% rated(*2)		95	A
Speed	Base speed	N_b	1500	min^{-1}
	Maximum speed	N_m	8000	min^{-1}
Maximum output in steady state(*4)		$P_{\max}$	120% of max. rated output	kW
Acceleration max. output for selecting a power supply(*5)			26.4 ~~26.2~~	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	117.7 (1201)	N·m (kgf·cm)
Moment of inertia of rotor		J_m	0.105 (1.08)	$\text{kg} \cdot \text{m}^2$ ($\text{kgf} \cdot \text{cm} \cdot \text{s}^2$)
Weight		W	125	kg
Winding resistance(U-V, V-W, W-U)		R_a	84.9	$\text{m}\Omega$
Number of detected gear teeth per rotation			256	$\lambda / \text{rev.}$
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			100	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR αi I series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 12/33

Model α iI 18/8000 Power up model(S3 25% rated added)

Ordering specification number : A06B-1410-B□□□#0R□□

Applicable spindle amplifier α iSP 22-B



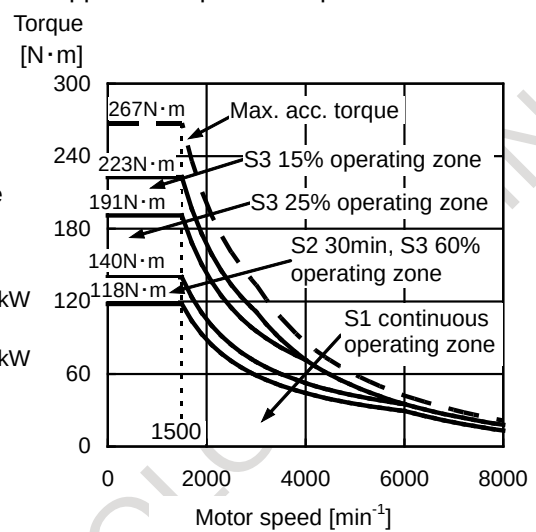
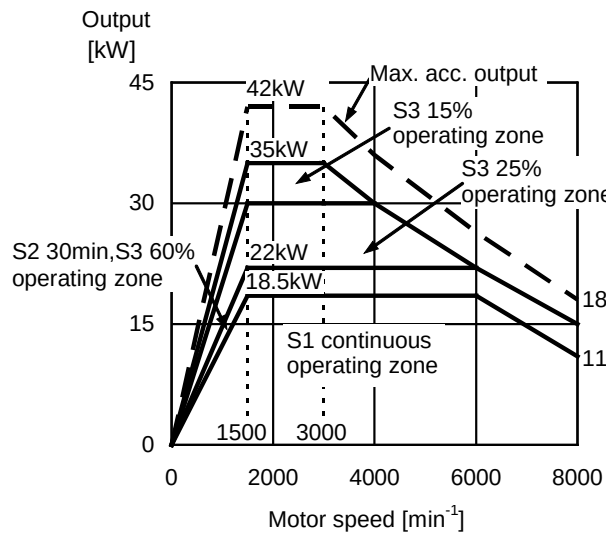
Parameter		Symbol	Value	Unit
Rated output (*1)	S1 cont. rated	P_c	18.5	kW
			(24.8)	(HP)
	S2 30 min rated, S3 60% rated(*2)		22	kW
			(29.5)	(HP)
	S3 25% rated(*2)		30	kW
			(40.2)	(HP)
Rated current (*3)	S1 cont. rated	I_c	82	A
	S2 30 min rated, S3 60% rated(*2)		95	A
	S3 25% rated(*2)		120	A
Speed	Base speed	N_b	1500	min ⁻¹
	Maximum speed	N_m	8000	min ⁻¹
Maximum output in steady state(*4)		P_{max}	120% of max. rated output	kW
Acceleration max. output for selecting a power supply(*5)			36	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	117.7	N·m
			(1201)	(kgf·cm)
Moment of inertia of rotor		J_m	0.105	kg·m ²
			(1.08)	(kgf·cm·s ²)
Weight		W	125	kg
Winding resistance(U-V, V-W, W-U)		R_a	84.9	mΩ
Number of detected gear teeth per rotation			256	λ/rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			100	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 13/33

Model α i 18/8000 Power up model(S3 15% rated added)

Ordering specification number : A06B-1410-B□□□#0U□□

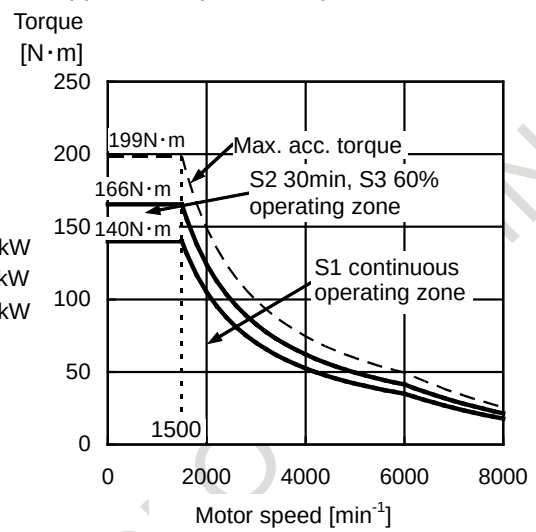
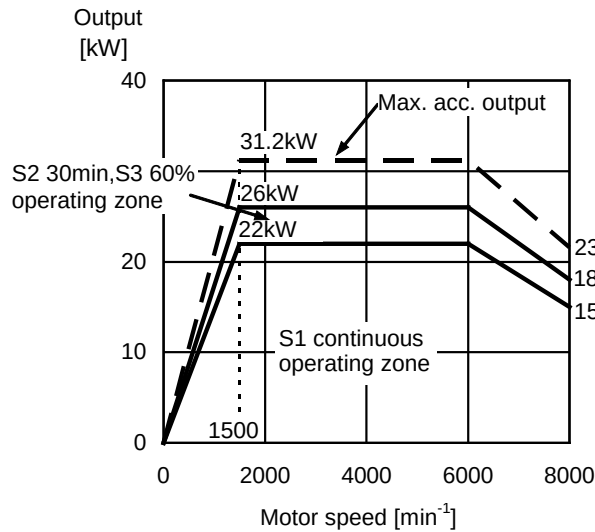
Applicable spindle amplifier α iSP 26-B



Parameter	Symbol	Value	Unit
Rated output (*1)	P_c	18.5	kW
		(24.8)	(HP)
		22	kW
		(29.5)	(HP)
Rated current (*3)	I_c	30	A
		(40.2)	(HP)
		35	A
		(46.9)	(HP)
Speed	N_b	82	min ⁻¹
		95	min ⁻¹
		120	min ⁻¹
		140	min ⁻¹
Maximum output in steady state(*4)	P_{max}	120% of max. rated output	kW
Acceleration max. output for selecting a power supply(*5)		42 ~~36~~ (2)	kW
Output torque (Cont. rated torque at const. rated torque range)	T_b	117.7	N·m
		(1201)	(kgf·cm)
Moment of inertia of rotor	J_m	0.105	kg·m ²
		(1.08)	(kgf·cm·s ²)
Weight	W	125	kg
Winding resistance(U-V, V-W, W-U)	Ra	84.9	mΩ
Number of detected gear teeth per rotation		256	λ /rev.
Vibration		V5(option V3)	
Noise		75 or less	dB(A)
Cooling system		Totally enclosed and fan cooled IC0A6	
Cooling fan		100	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α i series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 14/33

Model α iI 22/8000
Ordering specification number : A06B-1411-B□□□#01□□

 Applicable spindle amplifier α iSP 26-B


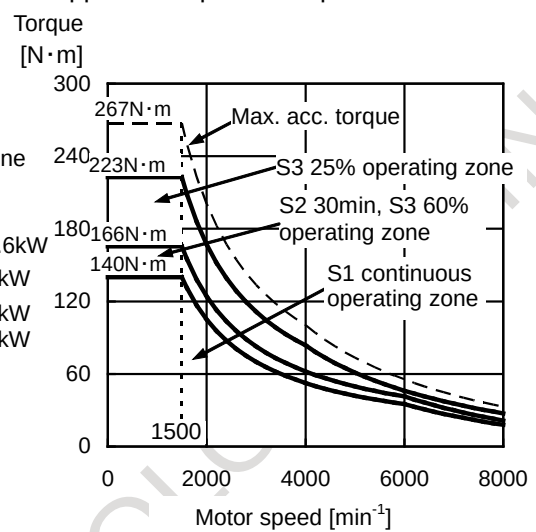
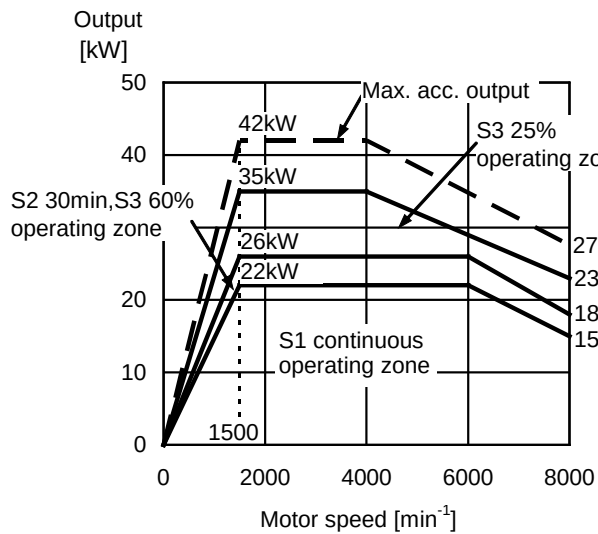
Parameter		Symbol	Value	Unit
Rated output (*1)	S1 cont. rated	P_c	22 (29.5)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		26 (34.9)	kW (HP)
Rated current (*3)	S1 cont. rated	I_c	98	A
	S2 30 min rated, S3 60% rated(*2)		111	A
Speed	Base speed	N_b	1500	min^{-1}
	Maximum speed	N_m	8000	min^{-1}
Maximum output in steady state(*4)		$P_{\max}$	120% of max. rated output	kW
Acceleration max. output for selecting a power supply(*5)			31.2 ~~42~~ 2	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	140 (1428)	N·m (kgf·cm)
Moment of inertia of rotor		J_m	0.128 (1.29)	$\text{kg} \cdot \text{m}^2$ (kgf·cm·s ²)
Weight		W	143	kg
Winding resistance(U-V, V-W, W-U)		R_a	51.2	mΩ
Number of detected gear teeth per rotation			256	λ /rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			100	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 15/33

Model α i 22/8000 Power up model(S3 25% rated added)

Ordering specification number : A06B-1411-B□□□#0R□□

Applicable spindle amplifier α iSP 26-B



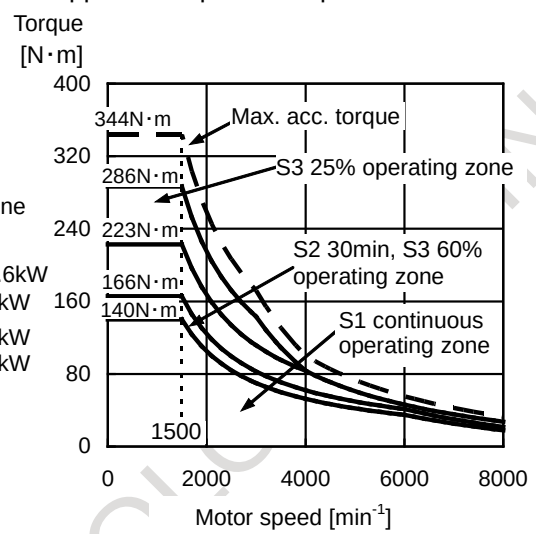
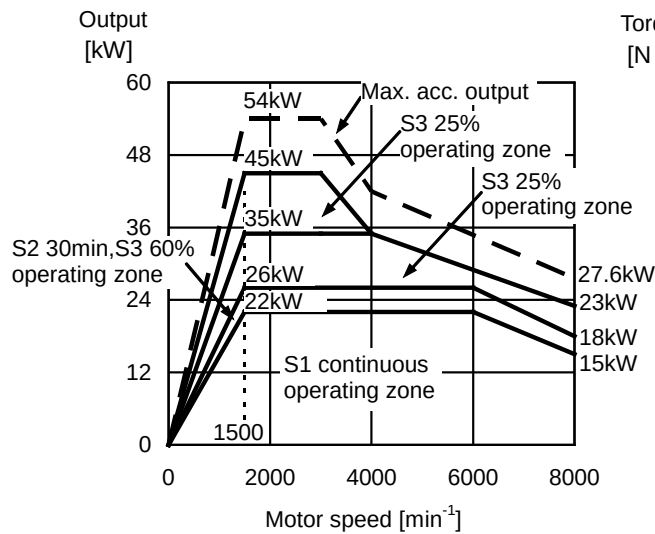
Parameter		Symbol	Value	Unit
Rated output (*1)	S1 cont. rated	P_c	22 (29.5)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		26 (34.9)	kW (HP)
	S3 25% rated(*2)		35 (46.9)	kW (HP)
Rated current (*3)	S1 cont. rated	I_c	98	A
	S2 30 min rated, S3 60% rated(*2)		111	A
	S3 25% rated(*2)		147	A
Speed	Base speed	N_b	1500	min ⁻¹
	Maximum speed	N_m	8000	min ⁻¹
Maximum output in steady state(*4)		P_{max}	120% of max. rated output	kW
Acceleration max. output for selecting a power supply(*5)			42	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	140 (1428)	N·m (kgf·cm)
Moment of inertia of rotor		J_m	0.128 (1.29)	kg·m ² (kgf·cm·s ²)
Weight		W	143	kg
Winding resistance(U-V, V-W, W-U)		Ra	51.2	mΩ
Number of detected gear teeth per rotation			256	λ/rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			100	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α i series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 16/33

Model α iI 22/8000 Power up model(S3 15% rated added)

Ordering specification number : A06B-1411-B□□□#0U□□

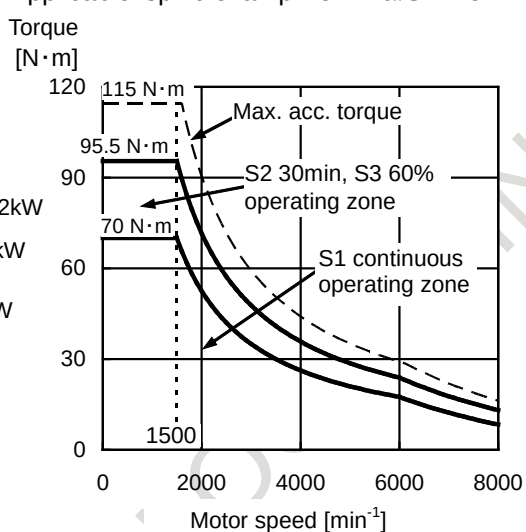
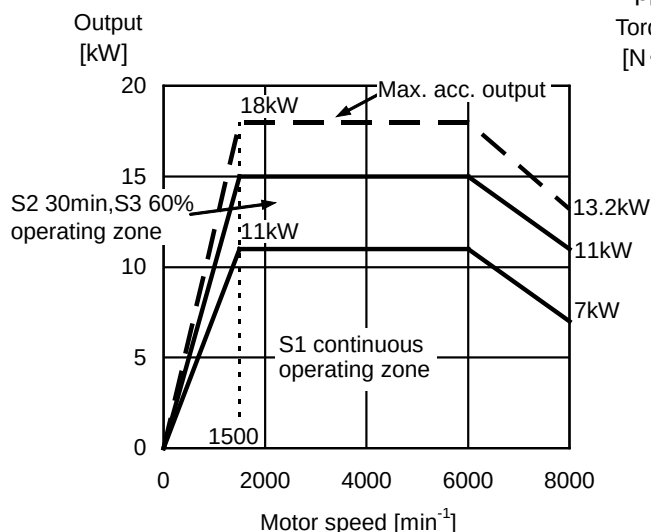
Applicable spindle amplifier α iSP 30-B



Parameter		Symbol	Value	Unit
Rated output (*1)	S1 cont. rated	P _c	22 (29.5)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		26 (34.9)	kW (HP)
	S3 25% rated(*2)		35 (46.9)	kW (HP)
	S3 15% rated(*2)		45 (60.3)	kW (HP)
Rated current (*3)	S1 cont. rated	I _c	98	A
	S2 30 min rated, S3 60% rated(*2)		111	A
	S3 25% rated(*2)		147	A
	S3 15% rated(*2)		176	A
Speed	Base speed	N _b	1500	min ⁻¹
	Maximum speed	N _m	8000	min ⁻¹
Maximum output in steady state(*4)		P _{max}	120% of max. rated output	kW
Acceleration max. output for selecting a power supply(*5)			54 ~~42~~ 2	kW
Output torque (Cont. rated torque at const. rated torque range)		T _b	140 (1428)	N·m (kgf·cm)
Moment of inertia of rotor		J _m	0.128 (1.29)	kg·m ² (kgf·cm·s ²)
Weight		W	143	kg
Winding resistance(U-V, V-W, W-U)		R _a	51.2	mΩ
Number of detected gear teeth per rotation			256	λ /rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			100	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 17/33

Model α i 12/8000HV
Ordering specification number: A06B-1508-B□□□#01□□

 Applicable spindle amplifier α iSP 15HV-B


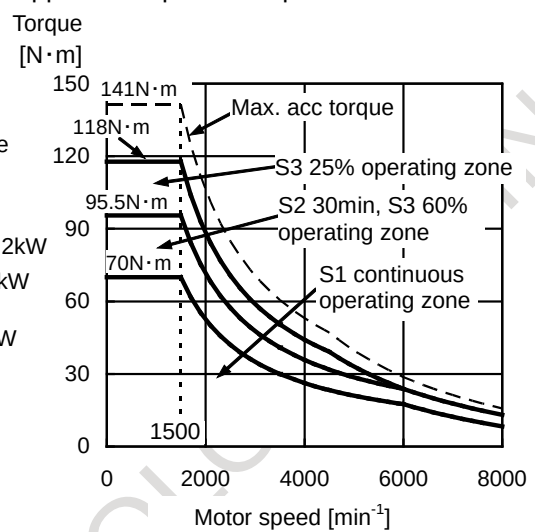
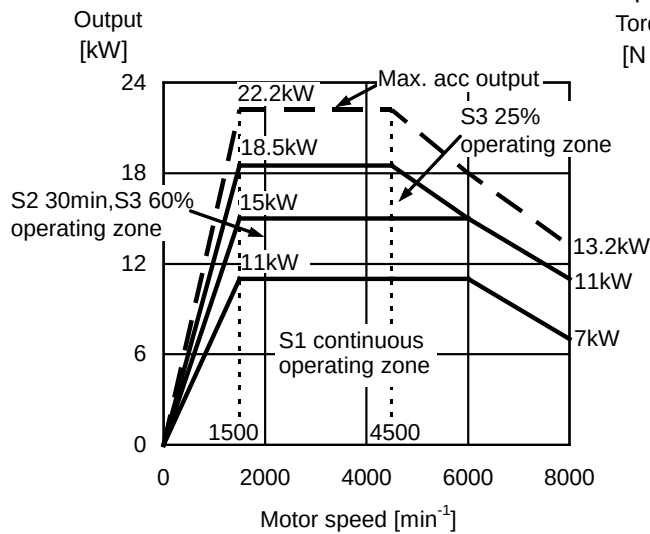
Parameter		Symbol	Value	Unit
Rated output (*1)	S1 cont. rated	P_c	11 (14.7)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		15 (20.1)	kW (HP)
Rated current (*3)	S1 cont. rated	I_c	27	A
	S2 30 min rated, S3 60% rated(*2)		33	A
Speed	Base speed	N_b	1500	min^{-1}
	Maximum speed	N_m	8000	min^{-1}
Maximum output in steady state(*4)		$P_{\max}$	120% of max. rated output	kW
Acceleration max. output for selecting a power supply(*5)			18 ~~22.2~~ 2	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	70.0 (714)	N·m (kgf·cm)
Moment of inertia of rotor		J_m	0.07 (0.77)	$\text{kg} \cdot \text{m}^2$ (kgf·cm·s ²)
Weight		W	95	kg
Winding resistance(U-V, V-W, W-U)		R_a	442	mΩ
Number of detected gear teeth per rotation			256	λ /rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			116	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α i series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 18/33

Model α iI 12/8000HV Power up model(S3 25% rated added)

Ordering specification number : A06B-1508-B□□□#0R□□

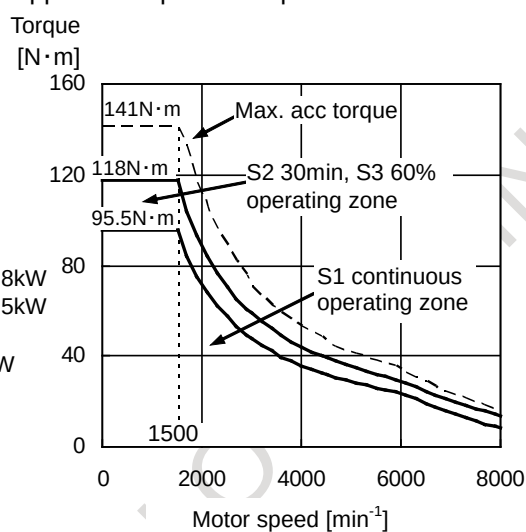
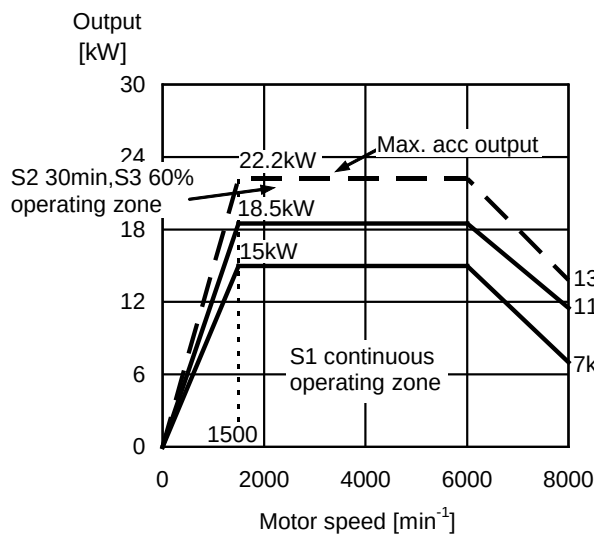
Applicable spindle amplifier α iSP 15HV-B



Parameter		Symbol	Value	Unit
Rated output (*1)	S1 cont. rated	P_c	11 (14.7)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		15 (20.1)	kW (HP)
	S3 25% rated(*2)		18.5 (24.8)	kW (HP)
Rated current (*3)	S1 cont. rated	I_c	27	A
	S2 30 min rated, S3 60% rated(*2)		33	A
	S3 25% rated(*2)		38	A
Speed	Base speed	N_b	1500	min^{-1}
	Maximum speed	N_m	8000	min^{-1}
Maximum output in steady state(*4)		$P_{\max}$	120% of max. rated output	kW
Acceleration max. output for selecting a power supply(*5)			22.2	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	70.0 (714)	N·m (kgf·cm)
Moment of inertia of rotor		J_m	0.07 (0.77)	$\text{kg} \cdot \text{m}^2$ ($\text{kgf} \cdot \text{cm} \cdot \text{s}^2$)
Weight		W	95	kg
Winding resistance(U-V, V-W, W-U)		R_a	442	$\text{m}\Omega$
Number of detected gear teeth per rotation			256	$\lambda/\text{rev.}$
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			116	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 19/33

Model α iI 15/8000HV
Ordering specification number : A06B-1509-B□□□#01□□

 Applicable spindle amplifier α iSP 22HV-B


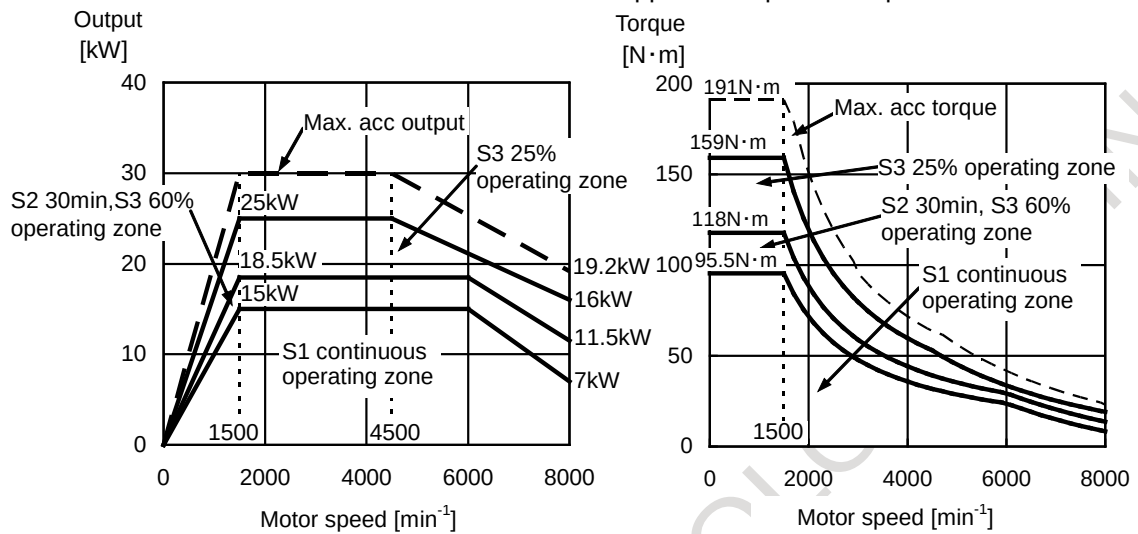
Parameter		Symbol	Value	Unit
Rated output (*1)	S1 cont. rated	P_c	15 (20.1)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		18.5 (24.8)	kW (HP)
Rated current (*3)	S1 cont. rated	I_c	37	A
	S2 30 min rated, S3 60% rated(*2)		45	A
Speed	Base speed	N_b	1500	min^{-1}
	Maximum speed	N_m	8000	min^{-1}
Maximum output in steady state(*4)		$P_{\max}$	120% of max. rated output	kW
Acceleration max. output for selecting a power supply(*5)			22.2 ~~20.2~~	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	95.4 (974)	N·m (kgf·cm)
Moment of inertia of rotor		J_m	0.09 (0.93)	$\text{kg} \cdot \text{m}^2$ (kgf·cm·s ²)
Weight		W	110	kg
Winding resistance(U-V, V-W, W-U)		Ra	306	mΩ
Number of detected gear teeth per rotation			256	λ /rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			116	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 20/33

Model α iI 15/8000HV Power up model(S3 25% rated added)

Ordering specification number : A06B-1509-B□□□#0V□□

Applicable spindle amplifier α iSP 22HV-B



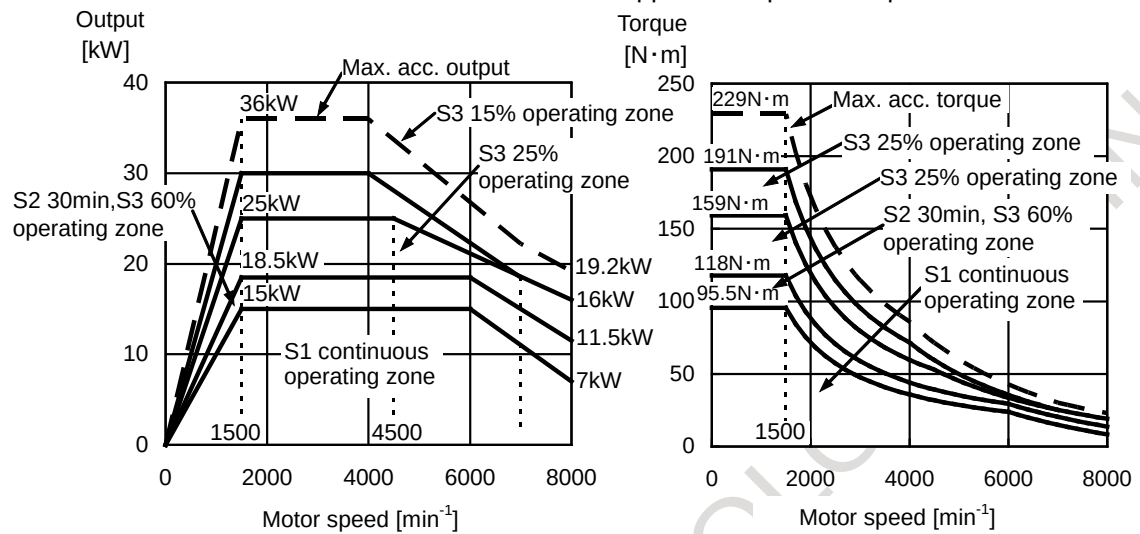
Parameter		Symbol	Value	Unit
Rated output (*1)	S1 cont. rated	P_c	15 (20.1)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		18.5 (24.8)	kW (HP)
	S3 25% rated(*2)		25 (33.5)	kW (HP)
Rated current (*3)	S1 cont. rated	I_c	36	A
	S2 30 min rated, S3 60% rated(*2)		45	A
	S3 25% rated(*2)		53	A
Speed	Base speed	N_b	1500	min ⁻¹
	Maximum speed	N_m	8000	min ⁻¹
Maximum output in steady state(*4)		P_{max}	120% of max. rated output	kW
Acceleration max. output for selecting a power supply(*5)			30	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	95.4 (974)	N·m (kgf·cm)
Moment of inertia of rotor		J_m	0.09 (0.93)	kg·m ² (kgf·cm·s ²)
Weight		W	110	kg
Winding resistance(U-V, V-W, W-U)		Ra	306	mΩ
Number of detected gear teeth per rotation			256	λ /rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			116	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 21/33

Model α iI 15/8000HV Power up model(S3 15% rated added)

Ordering specification number : A06B-1509-B□□□#0U□□

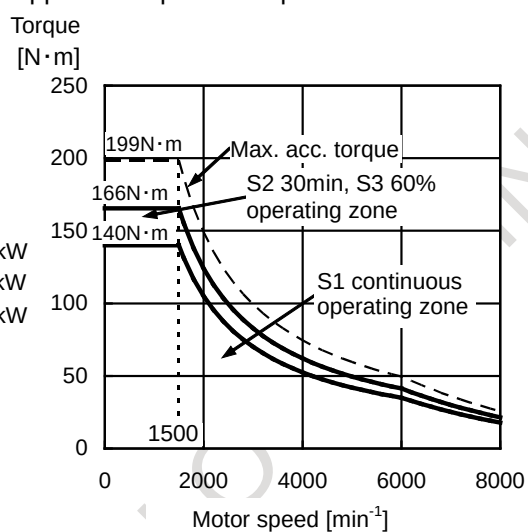
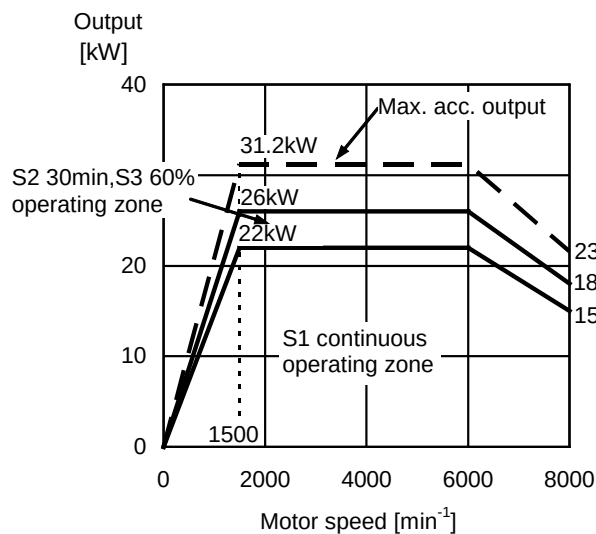
Applicable spindle amplifier α iSP 22HV-B



Parameter		Symbol	Value	Unit
Rated output (*1)	S1 cont. rated	P_c	15 (20.1)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		18.5 (24.8)	kW (HP)
	S3 25% rated(*2)		25 (33.5)	kW (HP)
	S3 15% rated(*2)		30 (40.2)	kW (HP)
Rated current (*3)	S1 cont. rated	I_c	37	A
	S2 30 min rated, S3 60% rated(*2)		44	A
	S3 25% rated(*2)		58	A
	S3 15% rated(*2)		71	A
Speed	Base speed	N_b	1500	min ⁻¹
	Maximum speed	N_m	8000	min ⁻¹
Maximum output in steady state(*4)		P_{max}	120% of max. rated output	kW
Acceleration max. output for selecting a power supply(*5)			36 ~~30~~ (2)	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	95.4 (974)	N·m (kgf·cm)
Moment of inertia of rotor		J_m	0.09 (0.93)	kg·m ² (kgf·cm·s ²)
Weight		W	110	kg
Winding resistance(U-V, V-W, W-U)		R_a	306	mΩ
Number of detected gear teeth per rotation			256	λ /rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			116	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 22/33

Model α iI 22/8000HV
Ordering specification number : A06B-1511-B□□□#01□□

 Applicable spindle amplifier α iSP 30HV-B


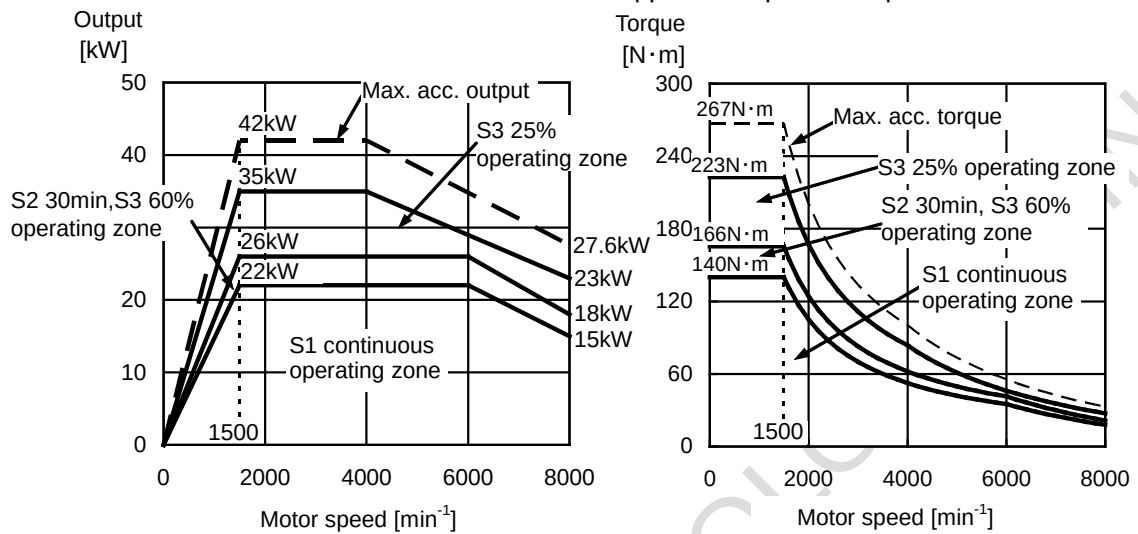
Parameter		Symbol	Value	Unit
Rated output (*1)	S1 cont. rated	P_c	22 (29.5)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		26 (34.9)	kW (HP)
Rated current (*3)	S1 cont. rated	I_c	50	A
	S2 30 min rated, S3 60% rated(*2)		57	A
Speed	Base speed	N_b	1500	min^{-1}
	Maximum speed	N_m	8000	min^{-1}
Maximum output in steady state(*4)		$P_{\max}$	120% of max. rated output	kW
Acceleration max. output for selecting a power supply(*5)			31.2 ~~42~~ 2	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	140 (1428)	N·m (kgf·cm)
Moment of inertia of rotor		J_m	0.128 (1.29)	$\text{kg} \cdot \text{m}^2$ ($\text{kgf} \cdot \text{cm} \cdot \text{s}^2$)
Weight		W	143	kg
Winding resistance(U-V, V-W, W-U)		R_a	182	$\text{m}\Omega$
Number of detected gear teeth per rotation			256	$\lambda / \text{rev.}$
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			116	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 23/33

Model α iI 22/8000HV Power up model(S3 25% rated added)

Ordering specification number : A06B-1511-B□□□#0R□□

Applicable spindle amplifier α iSP 30HV-B



Parameter		Symbol	Value	Unit
Rated output (*1)	S1 cont. rated	P_c	22 (29.5)	kW (HP)
	S2 30 min rated, S3 60% rated(*2)		26 (34.9)	kW (HP)
	S3 25% rated(*2)		35 (46.9)	kW (HP)
Rated current (*3)	S1 cont. rated	I_c	50	A
	S2 30 min rated, S3 60% rated(*2)		57	A
	S3 25% rated(*2)		74	A
Speed	Base speed	N_b	1500	min ⁻¹
	Maximum speed	N_m	8000	min ⁻¹
Maximum output in steady state(*4)		P_{max}	120% of max. rated output	kW
Acceleration max. output for selecting a power supply(*5)			42	kW
Output torque (Cont. rated torque at const. rated torque range)		T_b	140 (1428)	N·m (kgf·cm)
Moment of inertia of rotor		J_m	0.128 (1.29)	kg·m ² (kgf·cm·s ²)
Weight		W	143	kg
Winding resistance(U-V, V-W, W-U)		R_a	182	mΩ
Number of detected gear teeth per rotation			256	λ/rev.
Vibration			V5(option V3)	
Noise			75 or less	dB(A)
Cooling system			Totally enclosed and fan cooled IC0A6	
Cooling fan			116	W

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 24/33

(*1) The rated output is guaranteed at the rated voltage.(Amplifier input: 200 to 240VAC, 50/60 Hz or 400 to 4800VAC, 50/60 Hz)

If the input voltage fluctuates, it is possible that the rated output cannot be obtained even when such fluctuations are within the allowable fluctuation range.

(*2) The cycle time is 10 minutes, S3 60%: ON 6 minutes, OFF 4 minutes and S3 25%: ON 2.5 minutes, OFF 7.5 minutes.

(*3) The rated current is not a guaranteed value but a guideline for the maximum current at rated output.

(*4) This is not a guaranteed value but a guideline for the maximum motor output at a rated supply voltage.

(*5) These values are to be used only as guidance for selecting a power supply (α iPS) and are not guaranteed.

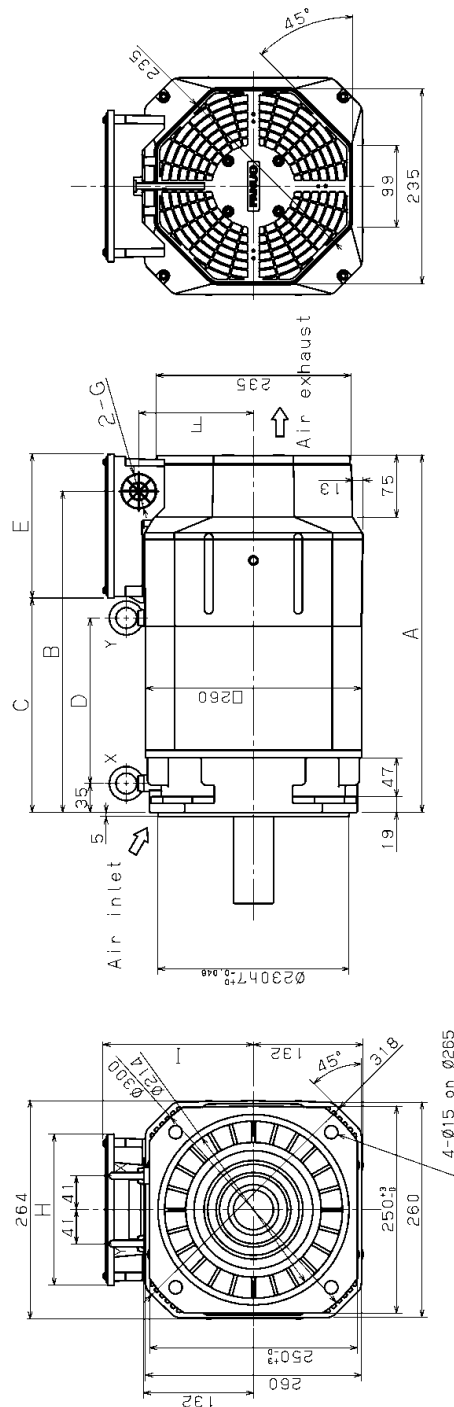
(*6) Degree of protection:with oil seal: IP54, without oil seal: IP40.

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 25/33

IV. OUTLINE DRAWINGS

OUTLINE DRAWINGS

(1) FLANGE MOUNTING TYPE

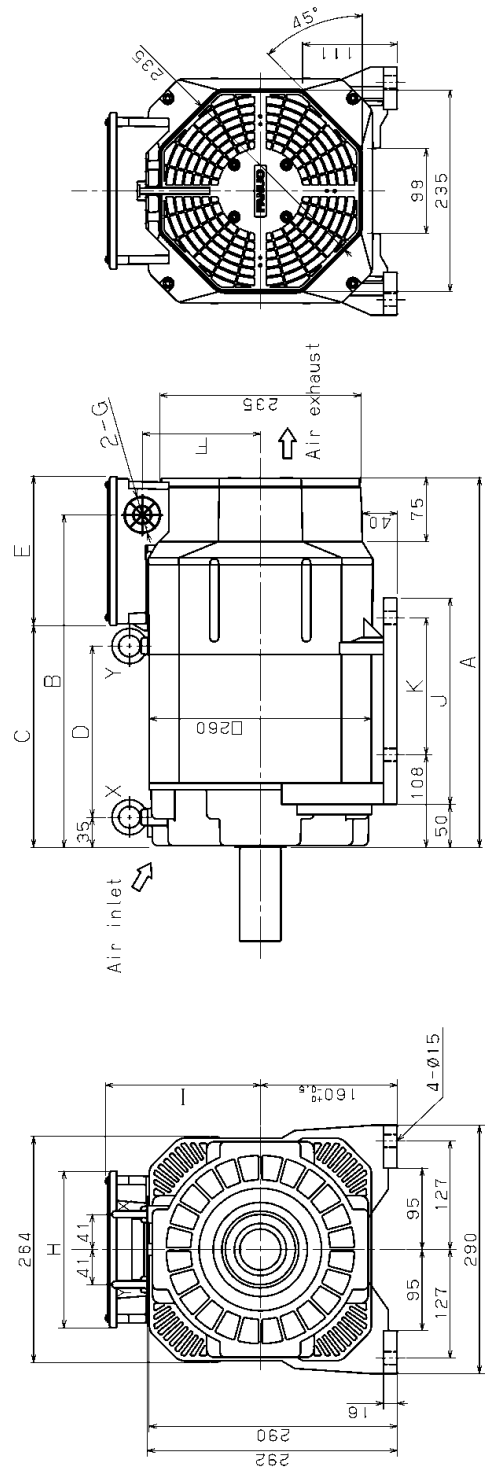


(Note) 1. Use hexagon head bolts M12, length 45mm or less for mounting.
2. The reversed air flow direction is also available.

MODEL	A	B	C	D	E	F	G	H	I
α i1 12/8000, 12/8000HV	432	388	259	200	174	138	ϕ 42.5	183	181
α i1 15/8000, α i1 15/8000HV	464	420	291	232	174	138	ϕ 42.5	183	181
α i1 18/8000	494	450	321	262	189	140	ϕ 61	214	192
α i1 22/8000	534	490	361	302	189	140	ϕ 61	214	192
α i1 22/8000HV	534	490	361	302	174	138	ϕ 42.5	183	181

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α i1 series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 26/33

(2)FOOT MOUNTING TYPE



(Note) 1. Use hexagon head bolts M12,
length 45mm or less for mounting.
2. The reversed air flow direction
is also available.

MODEL	A	B	C	D	E	F	G	H	I	J	K
α i12/8000, α i12/8000HV	432	388	259	200	174	138	ϕ 42.5	183	181	241	160
α i15/8000, α i15/8000HV	464	420	291	232	174	138	ϕ 42.5	183	181	259	178
α i18/8000	494	450	321	262	189	140	ϕ 61	214	192	259	140
α i22/8000	534	490	361	302	189	140	ϕ 61	214	192	299	178
α i22/8000HV	534	490	361	302	174	138	ϕ 42.5	183	181	299	178

				TITLE		
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series		
01	15.06.15	T.Saitou		DRAW. No.	B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET	27/33

OUTLINE DRAWINGS OF SHAFT

(1) Shaft shape types

The shaft of the motors have following shapes:

$\alpha i I$ series 200V type

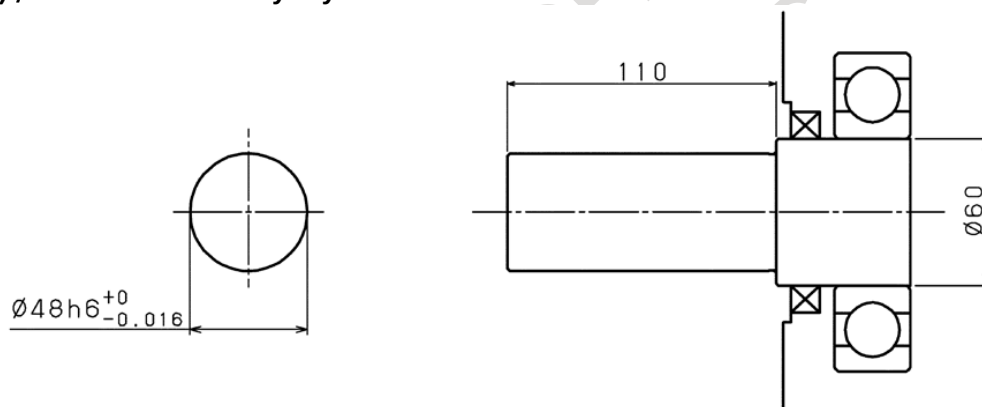
Model	Shaft without keyway		Shaft with keyway	
	Diameter	Detail	Diameter	Detail
$\alpha i I$ 12/8000	$\phi 48$	(2) (a)	$\phi 48$	(2) (c)
$\alpha i I$ 15/8000	$\phi 48$	(2) (a)	$\phi 48$	(2) (c)
$\alpha i I$ 18/8000	$\phi 55$	(2) (b)	$\phi 55$	(2) (d)
$\alpha i I$ 22/8000	$\phi 55$	(2) (b)	$\phi 55$	(2) (d)

$\alpha i I$ series 400V type

Model	Shaft without keyway		Shaft with keyway	
	Diameter	Detail	Diameter	Detail
$\alpha i I$ 12/8000HV	$\phi 48$	(2) (a)	$\phi 48$	(2) (c)
$\alpha i I$ 15/8000HV	$\phi 48$	(2) (a)	$\phi 48$	(2) (c)
$\alpha i I$ 22/8000HV	$\phi 55$	(2) (b)	$\phi 55$	(2) (d)

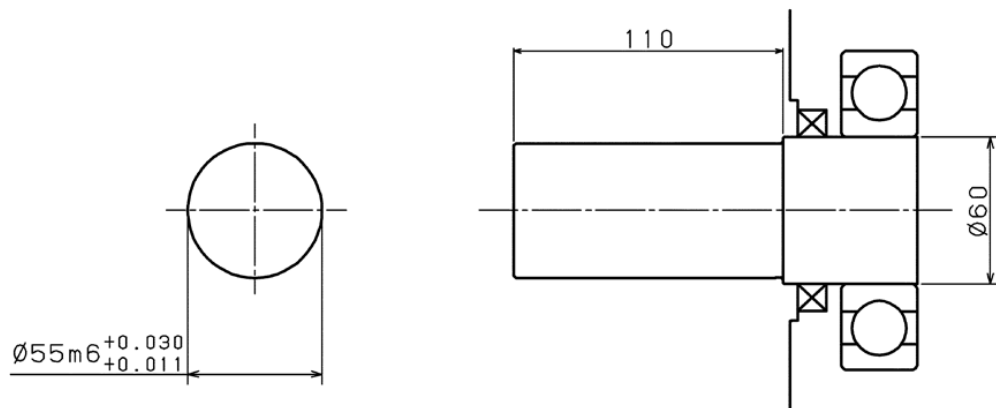
(2) Shaft details

(a) $\phi 48$ shaft without keyway

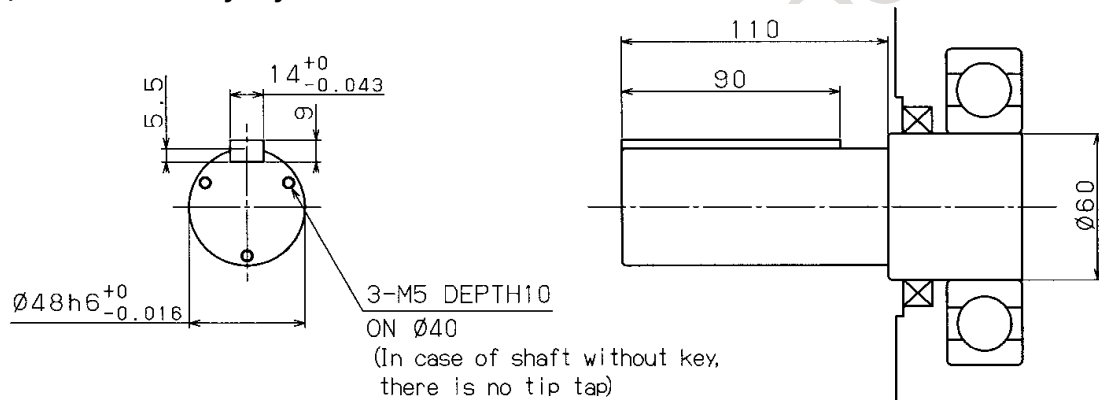


				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR $\alpha i I$ series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 28/33

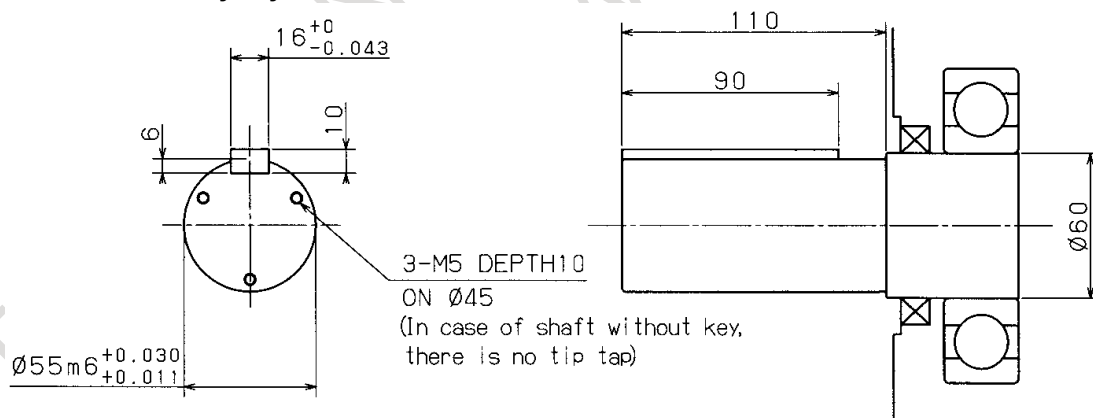
(b) $\phi 55$ shaft without keyway



(c) $\phi 48$ shaft with keyway



(d) $\phi 55$ shaft with keyway



				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR αi I series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 29/33

ALLOWABLE RADIAL LOAD

Use the motor output shaft below the allowable radial loads shown in the table below.

Model	Allowable radial load (kgf)	
	At output shaft end	At output shaft center
α iI 12/8000, α iI 15/8000, α iI 12/8000HV, α iI 15/8000HV,	2940N (300kgf)	3410N (348kgf)
α iI 18/8000, α iI 22/8000 α iI 22/8000HV,	4410N (450kgf)	4988N (509kgf)

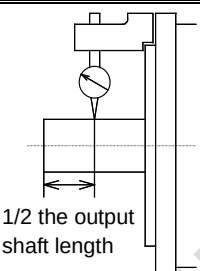
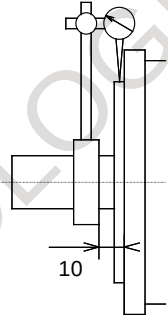
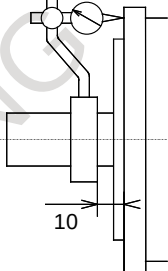
NOTE

- 1 When using a belt, adjust the tension so the allowable loads indicated above are not exceeded. If an excessive load is applied, consider the use of a support bearing on the machine side to maintain the long-term reliability of the motor. (If an excessive load is applied, it is possible that an abnormal sound may occur.)
- 2 When the belt tension is maximized at a point outside the output shaft end, the allowable loads are less than those at the output shaft end.
- 3 If a thrust load is applied when a helical gear is used, the shaft moves in the direction of the thrust. So, as a general rule, never apply a thrust load.

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR α iI series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 30/33

SHAFT RUN-OUT PRECISION

The shaft run-out precision is indicated below.

Item	Model	$\alpha i I$ 12/8000 ~ $\alpha i I$ 22/8000, $\alpha i I$ 12/8000HV ~ $\alpha i I$ 22/8000HV	Measuring method
Run-out at the end of the output shaft		20 μ m or less (10 μ m or less)	 1/2 the output shaft length
Run-out of the faucet joint for mounting the flange against the core of the shaft (only for flange type)		40 μ m or less (30 μ m or less)	 10
Run-out of the flange mounting surface against the core of the shaft (only for flange type)		80 μ m or less (40 μ m or less)	 10



CAUTION

Values in parentheses represent the assembling accuracies of high-precision models.

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR $\alpha i I$ series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 31/33

V. PARAMETER

The following table lists the parameter for each models.

For those models for which no parameter tables are provided, contact a FANUC service representative.

Motor model	<i>αi</i> I 12/8000	<i>αi</i> I 12/8000	<i>αi</i> I 12/8000 Power up model (S3 25% rated added)	<i>αi</i> I 12/8000 Power up model (S3 25% rated added)	<i>αi</i> I 15/8000	<i>αi</i> I 15/8000 Power up model (S3 25% rated added)	<i>αi</i> I 18/8000	<i>αi</i> I 18/8000 Power up model (S3 25% rated added)
Applicable amplifier	<i>αi</i> SP15-B	<i>βi</i> SVSPx18-B	<i>αi</i> SP15-B	<i>βi</i> SVSPx18-B	<i>αi</i> SP22-B	<i>αi</i> SP22-B	<i>αi</i> SP22-B	<i>αi</i> SP22-B
Low-speed winding characteristics	—	—	—	—	—	—	—	—
High-speed winding characteristics	11/15kW 1500/8000min ⁻¹	11/15kW 1500/8000min ⁻¹	11/15/18.5kW 1500/8000min ⁻¹	11/15/18.5kW 1500/8000min ⁻¹	15/18.5kW 1500/8000min ⁻¹	15/18.5/25kW 1500/8000min ⁻¹	18.5/22kW 1500/8000min ⁻¹	18.5/22/30kW 1500/8000min ⁻¹
FS30/ FS0i-D								
4007	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4008	00000000	00000000	00010000	00010000	00000000	00010000	00000000	00010000
4009	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000000	00000000	00000000	00000000	00000000	00000000	00000000	00000000
4011	00011010	00011010	00001010	00001010	00011010	00001010	00011010	00001010
4012	10000010	10000010	10000010	10000010	10000010	10000010	10000010	10000111
4013	00001100	00001100	00001100	00001100	01010000	00001100	01010000	00001100
4019	00000100	00000100	00000100	00000100	00000100	00000100	00000100	00000100
4020	8000	8000	8000	8000	8000	27000 8000	8000	27000 8000
4023								
4039	0	0	0	0	0	0	0	0
4040								
4041								
4048								
4049								
4080	70	70	16735	16735	20555	24410	11615	18005
4083	30	30	30	30	30	30	30	30
4093	0	0	0	0	0	0	0	0
4100	1500	1500	1550	1550	1500	1500	1520	1700
4101	100	100	100	100	95	100	100	100
4102	1500	1500	1922	1922	1710	1710	1813	1909
4103	0	0	0	0	0	0	84	0
4104	7000	7000	3000	3000	5500	5500	3000	1600
4105	0	0	0	0	0	0	0	0
4106	7000	7000	10000	10000	5500	5500	10000	5000
4107	0	0	0	0	0	0	0	0
4108	0	0	0	0	0	0	0	0
4109	25	25	25	25	25	25	25	25
4110	595	793	905	1207	794	794	943	943
4111	173	173	337	337	243	305	333	418
4112	200	200	200	200	200	200	200	200
4113	311	311	295	295	304	304	308	308
4114	23040	23040	0	0	23040	23040	0	0
4115	100	100	100	100	100	100	100	100
4116	5000	5000	5279	5279	5177	5177	3600	4500
4117	90	90	90	90	90	90	90	90
4118	100	100	100	100	100	100	100	100
4119	31	31	32	32	31	31	31	31
4120	0	0	0	0	0	0	0	0
4124	0	0	0	0	0	0	0	0
4127	164	164	202	202	148	200	143	195
4128	0	0	0	0	105	105	0	0
4129	0	0	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700	25700	25700
4134	130	130	130	130	130	130	130	130
4136	0	0	0	0	0	0	0	0
4138	0	0	0	0	0	0	0	0
4139	0	0	0	0	0	0	0	0
4140	0	0	0	0	0	0	0	0
4141	0	0	0	0	0	0	0	0
4142	0	0	0	0	0	0	0	0
4143	0	0	0	0	0	0	0	0
4144	0	0	0	0	0	0	0	0
4145	0	0	0	0	0	0	0	0
4146	0	0	0	0	0	0	0	0
4147	0	0	0	0	0	0	0	0
4148	0	0	0	0	0	0	0	0
4149	0	0	0	0	0	0	0	0
4150	0	0	0	0	0	0	0	0
4151	0	0	0	0	0	0	0	0
4152	0	0	0	0	0	0	0	0
4153	0	0	0	0	0	0	0	0
4154	0	0	0	0	0	0	0	0
4155	0	0	0	0	0	0	0	0
4156	0	0	0	0	0	0	0	0
4158	0	0	0	0	0	0	0	0
4159	0	0	0	0	0	0	0	0
4161	0	0	0	0	0	0	0	0
4165	0	0	0	0	0	0	0	0
4166	0	0	0	0	0	0	0	0
4169	0	0	0	0	0	0	0	0
4400								00000001
Maximum output during acceleration (for PS selection)	18.0kW	18.0kW	22.2kW	22.2kW	22.2kW	30.0kW	26.4kW	36.0kW

				TITLE
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR <i>αi</i> I series
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02 CUST.
Ed.	Date	Design.		FANUC CORPORATION SHEET 32/33

Motor model	αi I 22/8000	αi I 22/8000 Power up model (S3 25% rated added)	αi I 12/8000HV	αi I 15/8000HV	αi I 15/8000HV	αi I 22/8000HV
Applicable amplifier	αi SP26-B	αi SP26-B	αi SP15HV-B	αi SP30HV-B	αi SP22HV-B	αi SP30HV-B
Low-speed winding characteristics	—	—	—	—	—	—
High-speed winding characteristics	22/26kW 1500/8000min ⁻¹	22/26/35kW 1500/8000min ⁻¹	11/15kW 1500/8000min ⁻¹	15/18.5kW 1500/8000min ⁻¹	15/18.5kW 1500/8000min ⁻¹	22/26kW 1500/8000min ⁻¹
FS30i FS0i-D						
4007	00000000	00000000	00000000	00000000	00000000	00000000
4008	00000000	00010000	00000000	00000000	00000000	00000000
4009	00000000	00000000	00000000	00000000	00000000	00000000
4010	00000000	00000000	00000000	00000000	00000000	00000000
4011	00011010	00001010	00011010	00011010	00011010	00011010
4012	10000010	10000111	10000000	10000010	10000010	10000010
4013	01010000	00001100	00001100	01010000	01010000	01010000
4019	00000100	00000100	00000100	00000100	00000100	00000100
4020	8000	8000	8000	8000	8000	8000
4023						
4039	0	0	0	0	0	0
4040						
4041						
4048						
4049						
4080	80	15460	88 85(*1)	65	65	75
4083	30	30	30	30	30	30
4093	0	0	0	0	0	0
4100	1500	1550	1550	1500	1500	1595
4101	95	100	100	73	73	100
4102	1756	1756	1754	1972	1972	1595
4103	0	0	88 0(*1)	65	65	0
4104	4500	1500	2000	4500	4500	5000
4105	0	0	0	0	0	0
4106	4500	5000	4500	4500	4500	5000
4107	0	0	0	0	0	0
4108	0	0	0	0	0	0
4109	25	25	25	25	25	25
4110	924	924	1077	1499	999	838
4111	252	353	250	425	425	223
4112	200	200	200	200	200	200
4113	290	290	275	280	280	325
4114	0	23040	0	23040	23040	20480
4115	100	100	100	100	100	100
4116	5564	5000	5800	5153	5153	5572
4117	29530	90	90	90	90	90
4118	110	100	100	100	100	100
4119	29	29	35	34	34	29
4120	0	0	0	0	0	0
4124	0	0	0	0	0	0
4127	142	191	164	148	148	142
4128	105	0	108	0	0	0
4129	0	0	0	0	0	0
4130	25700	25700	25700	25700	25700	25700
4134	130	130	130	130	130	130
4136	0	0	0	0	0	0
4138	0	0	0	0	0	0
4139	0	0	0	0	0	0
4140	0	0	0	0	0	0
4141	0	0	0	0	0	0
4142	0	0	0	0	0	0
4143	0	0	0	0	0	0
4144	0	0	0	0	0	0
4145	0	0	0	0	0	0
4146	0	0	0	0	0	0
4147	0	0	0	0	0	0
4148	0	0	0	0	0	0
4149	0	0	0	0	0	0
4150	0	0	0	0	0	0
4151	0	0	0	0	0	0
4152	0	0	0	0	0	0
4153	0	0	0	0	0	0
4154	0	0	0	0	0	0
4155	0	0	0	0	0	0
4156	0	0	0	0	0	0
4158	0	0	0	0	0	0
4159	0	0	0	0	0	0
4161	0	0	0	0	0	0
4165	0	0	0	0	0	0
4166	0	0	0	0	0	0
4169	0	0	0	0	0	0
4400		00000001				
Maximum output during acceleration (for PS selection)	31.2kW	42.0kW	18.0kW 20.3kW(*1)	22.2kW	22.2kW	31.2kW

(*1) This setting makes the maximum output during acceleration greater and the acceleration time reduced

				TITLE	
02	15.11.24	T.Saitou	Error correction	Increasing max speed of AC SPINDLE MOTOR αi I series	
01	15.06.15	T.Saitou		DRAW. No. B-65272EN/08-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 33/33

JR AUTOMATION TECHNOLOGIES INC*
JDOWLING

Information of Correction about FANUC AC SPINDLE MOTOR *αi* series DESCRIPTIONS

1. Type of applied documents

Name	FANUC AC SPINDLE MOTOR <i>αi</i> series DESCRIPTIONS
Spec. No./Ver.	B-65272EN/08-05

2. Summary of Change

Group	Name / Outline	New, Add Correct, Del	Applicable Date
Basic Function			
Optional Function			
Unit			
Maintenance Parts			
Notice			
Correction	Information of correction about FANUC AC SPINDLE MOTOR <i>αi</i> series DESCRIPTIONS	Correct	2015.12
Another			

				TITLE Information of Correction about FANUC AC SPINDLE MOTOR <i>αi</i> series DESCRIPTIONS	
01	15.11.27	Yukawa		DRAW. No. B-65272E/08-05	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 1/5

3. General

There was the wrong description with FANUC AC SPINDLE MOTOR α i series DESCRIPTIONS. We correct the following wrong description.

1. Correcting the wrong descriptions of the parameter table of α i 12/8000HV In the APPENDIX A.1.
2. Correcting the wrong descriptions of the parameter table of α i 15/8000HV In the APPENDIX A.1.
3. Correcting the wrong descriptions of the parameter table of α i 22/8000HV In the APPENDIX A.1.

				TITLE Information of Correction about FANUC AC SPINDLE MOTOR α i series DESCRIPTIONS	
01	15.11.27	Yukawa		DRAW. No. B-65272E/08-05	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 2/5

4. Details

1. Parameter table of αi 12/8000HV

In the APPENDIX A.1 of FANUC AC SPINDLE MOTOR αi series DESCRIPTIONS B-65272EN/08, there was the wrong description with maximum speed of parameter table. We correct it as follows. To put it concretely, "7000min⁻¹" is corrected to "8000min⁻¹" with the maximum speed of the parameter table of αi 12/8000HV.

SPECIFICATIONS

[Wrong description]

Motor model	αi 12/8000HV
Applicable amplifier	αi SP15HV
Model code	—
Low-speed winding characteristics	—
High-speed winding characteristics	11/15kW 1500/7000min ⁻¹
4007	00000000
4008	00000000
4009	00000000
4010	00000000
4011	00011010
4012	10000000
4013	00001100
4019	00000100
4020	8000
4023	0
4039	0
4040	0
4041	0
4048	0
4049	0
4080	88
4083	85(*1)
4093	30
4100	1550
4101	100
4102	1754
4103	88
4104	0(*1)
4105	2000
4106	347
4107	4500
4108	0
4109	25
4110	1077
4111	250
4112	200
4113	275
4114	0
4115	100
4116	5800
4117	90
4118	100
4119	35
4120	0
4124	0
4127	164
4128	108
4129	0
4130	25700
4134	130
4136	0
4138	0
4139	0
4140	0
4141	0
4142	0
4143	0
4144	0
4145	0
4146	0
4147	0
4148	0
4149	0
4150	0
4151	0
4152	0
4153	0
4154	0
4155	0
4156	0
4158	0
4159	0
4161	0
4165	0
4166	0
4169	0
Maximum output during acceleration (for PS selection)	18.0kW 20.3kW(*1)

[Corrected description]

Motor model	αi 12/8000HV
Applicable amplifier	αi SP15HV
Model code	—
Low-speed winding characteristics	—
High-speed winding characteristics	11/15kW 1500/8000min ⁻¹
4007	00000000
4008	00000000
4009	00000000
4010	00000000
4011	00011010
4012	10000000
4013	00001100
4019	00000100
4020	8000
4023	0
4039	0
4040	0
4041	0
4048	0
4049	0
4080	88
4083	85(*1)
4093	30
4100	1550
4101	100
4102	1754
4103	88
4104	0(*1)
4105	2000
4106	347
4107	4500
4108	0
4109	25
4110	1077
4111	250
4112	200
4113	275
4114	0
4115	100
4116	5800
4117	90
4118	100
4119	35
4120	0
4124	0
4127	164
4128	108
4129	0
4130	25700
4134	130
4136	0
4138	0
4139	0
4140	0
4141	0
4142	0
4143	0
4144	0
4145	0
4146	0
4147	0
4148	0
4149	0
4150	0
4151	0
4152	0
4153	0
4154	0
4155	0
4156	0
4158	0
4159	0
4161	0
4165	0
4166	0
4169	0
Maximum output during acceleration (for PS selection)	18.0kW 20.3kW(*1)

				TITLE Information of Correction about FANUC AC SPINDLE MOTOR αi series DESCRIPTIONS	
01	15.11.27	Yukawa		DRAW. No. B-65272E/08-05	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 3/5

2. Parameter table of αi 15/8000HV

In the APPENDIX A.1 of FANUC AC SPINDLE MOTOR αi series DESCRIPTIONS B-65272EN/08, there were the wrong description with maximum speed and No.4080 of parameter table. We correct them as follows. To put them concretely, "7000min⁻¹" is corrected to "8000min⁻¹" with the maximum speed, and "21480" is corrected to "21840" with the No.4080 of the parameter table of αi 15/8000HV.

SPECIFICATIONS

[Wrong description]

Motor model	αi 15/8000HV
Applicable amplifier	αi SP 22HV-B
Model code	—
Low-speed winding characteristics	—
High-speed winding characteristics	15/18.5/25kW 1500/7000min ⁻¹
4007	00000000
4008	00010000
4009	00000000
4010	00000000
4011	00001010
4012	10000111
4013	00001100
4019	00000100
4020	8000
4023	
4039	0
4040	
4041	
4048	
4049	
4080	21480
4083	30
4093	
4100	1550
4101	100
4102	1972
4103	0
4104	1700
4105	0
4106	3800
4107	0
4108	0
4109	25
4110	999
4111	450
4112	200
4113	280
4114	21760
4115	100
4116	5153
4117	90
4118	100
4119	34
4120	0
4124	0
4127	200
4128	105
4129	0
4130	25700
4134	130
4136	0
4138	0
4139	0
4140	0
4141	0
4142	0
4143	0
4144	0
4145	0
4146	0
4147	0
4148	0
4149	0
4150	0
4151	0
4152	0
4153	0
4154	0
4155	0
4156	0
4158	0
4159	0
4161	0
4165	0
4166	0
4169	0
Maximum output during acceleration (for PS selection)	30kW

[Corrected description]

Motor model	αi 15/8000HV
Applicable amplifier	αi SP 22HV-B
Model code	—
Low-speed winding characteristics	—
High-speed winding characteristics	15/18.5/25kW 1500/8000min ⁻¹
4007	00000000
4008	00010000
4009	00000000
4010	00000000
4011	00001010
4012	10000111
4013	00001100
4019	00000100
4020	8000
4023	
4039	0
4040	
4041	
4048	
4049	
4080	21840
4083	30
4093	
4100	1550
4101	100
4102	1972
4103	0
4104	1700
4105	0
4106	3800
4107	0
4108	0
4109	25
4110	999
4111	450
4112	200
4113	280
4114	21760
4115	100
4116	5153
4117	90
4118	100
4119	34
4120	0
4124	0
4127	200
4128	105
4129	0
4130	25700
4134	130
4136	0
4138	0
4139	0
4140	0
4141	0
4142	0
4143	0
4144	0
4145	0
4146	0
4147	0
4148	0
4149	0
4150	0
4151	0
4152	0
4153	0
4154	0
4155	0
4156	0
4158	0
4159	0
4161	0
4165	0
4166	0
4169	0
Maximum output during acceleration (for PS selection)	30kW

				TITLE Information of Correction about FANUC AC SPINDLE MOTOR αi series DESCRIPTIONS	
01	15.11.27	Yukawa		DRAW. No. B-65272E/08-05	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 4/5

3. Parameter table of αi I 22/8000HV

In the APPENDIX A.1 of FANUC AC SPINDLE MOTOR αi series DESCRIPTIONS B-65272EN/08, there was the wrong description with maximum speed of parameter table. We correct it as follows. To put it concretely, "7000min⁻¹" is corrected to "8000min⁻¹" with the maximum speed of the parameter table of αi I 22/8000HV.

SPECIFICATIONS

[Wrong description]

Motor model	αi I 22/8000HV
Applicable amplifier	αi SP 30HV-B
Model code	—
Low-speed winding characteristics	—
High-speed winding characteristics	22/26/35kW 1500/7000min ⁻¹
4007	00000000
4008	00010000
4009	00000000
4010	00000000
4011	00001010
4012	10000010
4013	00001100
4019	00000100
4020	8000
4023	
4039	
4040	7(*3)
4041	
4048	34(*3)
4049	
4080	23125
4083	30
4093	
4100	1520
4101	100
4102	1794
4103	0
4104	4000
4105	0
4106	15000
4107	0
4108	0
4109	25
4110	870
4111	295
4112	200
4113	300
4114	0
4115	100
4116	4295
4117	90
4118	100
4119	32
4120	0
4124	0
4127	191
4128	102
4129	0
4130	25700
4134	130
4136	0
4138	0
4139	0
4140	0
4141	0
4142	0
4143	0
4144	0
4145	0
4146	0
4147	0
4148	0
4149	0
4150	0
4151	0
4152	0
4153	0
4154	0
4155	0
4156	0
4158	0
4159	0
4161	0
4165	0
4166	0
4169	0
Maximum output during acceleration (for PS selection)	42kW

[Corrected description]

Motor model	αi I 22/8000HV
Applicable amplifier	αi SP 30HV-B
Model code	—
Low-speed winding characteristics	—
High-speed winding characteristics	22/26/35kW 1500/8000min ⁻¹
4007	00000000
4008	00010000
4009	00000000
4010	00000000
4011	00001010
4012	10000010
4013	00001100
4019	00000100
4020	8000
4023	
4039	
4040	7(*3)
4041	
4048	34(*3)
4049	
4080	23125
4083	30
4093	
4100	1520
4101	100
4102	1794
4103	0
4104	4000
4105	0
4106	15000
4107	0
4108	0
4109	25
4110	870
4111	295
4112	200
4113	300
4114	0
4115	100
4116	4295
4117	90
4118	100
4119	32
4120	0
4124	0
4127	191
4128	102
4129	0
4130	25700
4134	130
4136	0
4138	0
4139	0
4140	0
4141	0
4142	0
4143	0
4144	0
4145	0
4146	0
4147	0
4148	0
4149	0
4150	0
4151	0
4152	0
4153	0
4154	0
4155	0
4156	0
4158	0
4159	0
4161	0
4165	0
4166	0
4169	0
Maximum output during acceleration (for PS selection)	42kW

				TITLE Information of Correction about FANUC AC SPINDLE MOTOR αi series DESCRIPTIONS	
01	15.11.27	Yukawa		DRAW. No. B-65272E/08-05	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 5/5

JR AUTOMATION TECHNOLOGIES INC*
JDOWLING

The modification of front flange of AC Spindle motor α i 0.5 size

1. Type of applied documents

Name	FANUC AC SPINDLE MOTOR α i series DESCRIPTIONS FANUC AC SPINDLE MOTOR β i series DESCRIPTIONS FANUC AC SPINDLE MOTOR α i -B series/ β i -B series DESCRIPTIONS
Spec. No./Ver.	B-65272EN/08 B-65312EN/05 B-65452EN/01

2. Summary of Change

Group	Name / Outline	New, Add Correct, Del	Applicable Date
Basic Function	The modification of front flange of AC Spindle motor α i 0.5 size	Add	2018.6
Optional Function			
Unit			
Maintenance Parts			
Notice			
Correction			
Another			

				TITLE	
				The modification of front flange of AC Spindle motor α i 0.5 size	
01	18.05.24	Y. Mishima		DRAW. No. B-65452EN/01-04_B-65272EN/08-06_B-65312EN/05-01	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 1/2

The modification of front flange of AC Spindle motor α iI 0.5 etc

1. General

The shape of the front flange α iI 0.5 size is modified.

(A hole to the front flange is added to drain the varnish, and the hole will be filled with a plug.)

Please be sure that this modification has no change on motor installation and external dimensions.

(There is no change on external dimensions described on the DESCRIPTIONS)

2. The reason of modification

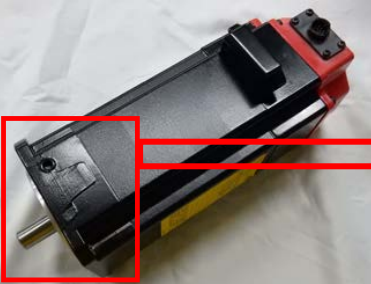
In order to change the manufacturing method of the motor, we added a hole to the front flange to drain the varnish.

3. Application models and application schedule

Application models	Application schedule (※)
Present models (A06B-xxxx-B***) 1400、1401、1481、1501、2400、2401、2481、2501	June 2018

※) The timing of application may differ on different models.

4. Modified part

	Appearance 1 (motor)	Appearance 2 (front flange)
Former front flange		
New front flange		

The hole for draining the varnish is filled with a plug.

				TITLE	
				The modification of front flange of AC Spindle motor α iI 0.5 size	
01	18.05.24	Y. Mishima		DRAW. No. B-65452EN/01-04_B-65272EN/08-06_B-65312EN/05-01	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 2/2

The modification of AC Spindle motor α i 0.5 size front flange painting range

1. Type of applied documents

Name	FANUC AC SPINDLE MOTOR α i series DESCRIPTIONS FANUC AC SPINDLE MOTOR β i series DESCRIPTIONS FANUC AC SPINDLE MOTOR α i -B series/ β i -B series DESCRIPTIONS
Spec. No./Ver.	B-65272EN/08 B-65312EN/05 B-65452EN/01

2. Summary of change

Group	Name / Outline	New, Add Correct, Del	Applicable Date
Basic Function	The modification of AC Spindle motor α i 0.5 size front flange painting range	Add	2018.9
Optional Function			
Unit			
Maintenance Parts			
Notice			
Correction			
Another			

				TITLE The modification of AC Spindle motor α i 0.5 size front flange painting range	
01	18.09.07	Y. Mishima		DRAW. No. B-65452EN/01-06_B-65272EN/08-07_B-65312EN/05-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 1/2

The modification of AC Spindle motor α I 0.5 size front flange painting range

1. General

The painting range of α I 0.5 size front flange is modified.

(Painting to the inner side of the mounting part of the motor is added.)

Please be sure that this modification has no change on motor installation and external dimensions.

(There is no change on external dimensions described on the DESCRIPTIONS)

2. The reason of modification

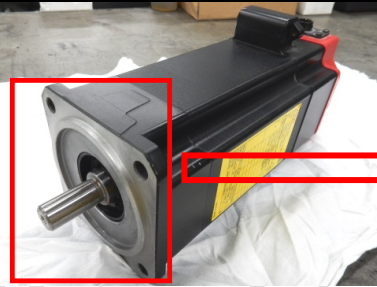
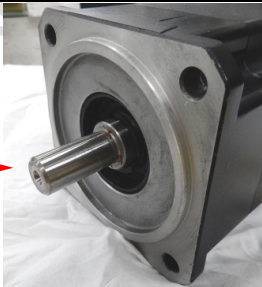
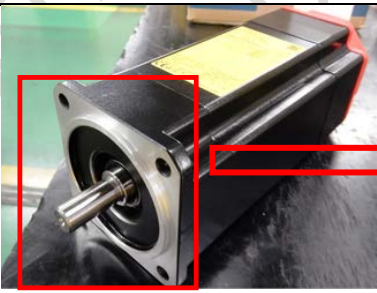
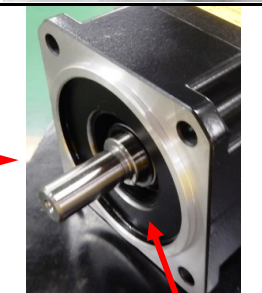
In order to unify the painting range with the spindle motor of other models, we paint the inner side of the mounting part of the motor.

3. Application models and application schedule

Application models	Application schedule (※)
Present models (A06B-xxxx-B***) 1400、1401、1481、1501、2400、2401、2481、2501	Sep. 2018

※) The timing of application may differ on each models.

4. Modified part

	Appearance 1 (motor)	Appearance 2 (front flange)
Former front flange		
New front flange		

New painting range

				TITLE The modification of AC Spindle motor α I 0.5 size front flange painting range	
01	18.09.07	Y. Mishima		DRAW. No. B-65452EN/01-06_B-65272EN/08-07_B-65312EN/05-02	CUST.
Ed.	Date	Design.		FANUC CORPORATION	SHEET 2/2

Cleaning/ Inspection Procedures for Fan Motor of Spindle Motor

1. Type of applied technical documents

Name	FANUC AC SPINDLE MOTOR αi series, DESCRIPTIONS FANUC AC SERVO MOTOR αi series, FANUC AC SPINDLE MOTOR αi series, FANUC SERVO AMPLIFIER αi series MAINTENANCE MANUAL FANUC AC SPINDLE MOTOR βi series, DESCRIPTIONS FANUC AC SERVO MOTOR βi series, FANUC AC SPINDLE MOTOR βi series, FANUC SERVO AMPLIFIER βi series MAINTENANCE MANUAL FANUC AC SPINDLE MOTOR αi-B series, FANUC AC SPINDLE MOTOR βi-B series, DESCRIPTIONS FANUC AC SERVO MOTOR αi-B/αi series, FANUC AC SPINDLE MOTOR αi-B series, FANUC SERVO AMPLIFIER αi-B series, FANUC AC SERVO MOTOR βi-B/βi series, FANUC AC SPINDLE MOTOR βi-B series, FANUC SERVO AMPLIFIER βi-B series MAINTENANCE MANUAL
Spec.No.	B-65272EN/08, B-65285EN/04, B-65312EN/05, B-65325EN/02, B-65452EN/03, B-65515EN/01,

2. Summary of Change

Group	Name	New, Add, Correct, Delete,	Applicable Date
Basic Function			
Optional Function			
Unit			
Maintenance Parts			
Notice			
Correction			
Another	Cleaning/ Inspection Procedures for Fan Motor of Spindle Motor	Add	Oct.2019

				TITLE Cleaning/ Inspection Procedures for Fan Motor of Spindle Motor	
				DRAW. No. B-65272EN/08-09 B-65285EN/04-05 B-65312EN/05-03 B-65325EN/02-02 B-65452EN/03-04 B-65515EN/01-03	CUST
01	12.Nov.19	Mukai	Newly designed Hayahi		
Ed.	Date	Design	Description	FANUC CORPORATION	SHEET 1/10

Cleaning/ Inspection Procedures for Fan Motor of Spindle Motor

1. Outline

In order to guarantee enough cooling of spindle motors, regular cleaning and inspection is necessary as described in DESCRIPTIONS and MAINTENANCE MANUAL.

However, there are cases in which cleaning and inspection is not conducted regularly and therefore leading to failure and trouble. If the fan motor stop, an overheat alarm may occur and the machine may stop. In the worst case, driving under conditions in which cutting fluid or its mist is splashed on the motor may lead to combustibility of sludge accumulated on the fan motors(*). Regular cleaning and inspection is highly recommended.

Please contact FANUC if there is any question regarding the contents of this report. FANUC service department will conduct inspection at your request so please contact FANUC if necessary.

(*) Our fan cover is made with self-extinguishing material which the flammability is V-0, so if there is no foreign matter, it is not combustibility.

2. Frequency of Cleaning and Inspection

Recommended: once every three months

The standard frequency of cleaning and inspection is once every three months. The frequency may differ according to the condition the motor is used in.

3. Safety Precautions

When cleaning and inspecting the fan motors, please keep in mind the precautions described as follows.

WARNING

- Before touching a motor, shut off the power to it.

Even if a motor is not rotating, there may be a voltage across the terminals of the motor.

Especially before touching a power supply connection, take sufficient precautions.

Otherwise you may get electric shocks.

- A voltage is applied for a while after the power is shut off. Before touching a motor, be sure to check 0 V.

There is a high voltage across power terminals for a while after the power is shut off. Do not touch a motor or connect the motor to another device before checking the voltage. Otherwise you may get electric shocks or the motor may get damaged. Be sure to check that the voltage is lowered to 0 V, then touch the motor.

- Do not insert your finger or a stick into the fan motor.

A cover is mounted on the fan motor, but a stick may get inside it. When the fan is rotating, inserting your finger or a stick may injure you.

				TITLE	
				Cleaning/ Inspection Procedures for Fan Motor of Spindle Motor	
				DRAW. No. B-65272EN/08-09 B-65285EN/04-05 B-65312EN/05-03 B-65325EN/02-02 B-65452EN/03-04 B-65515EN/01-03	CUST
01	12.Nov.19	Mukai	Newly designed Hayahi		
Ed.	Date	Design	Description		
				FANUC CORPORATION	SHEET 2/10

⚠ CAUTION

- Do not touch a motor when it is running or immediately after it stops.
A motor may get hot when it is running. Do not touch the motor before it gets cool enough. Otherwise, you may get burned.
- Be careful not get your hair or cloths caught in a fan.
Be careful especially for a fan used to generate an inward air flow.
Be careful also for a fan even when the motor is stopped, because it continues to rotate while the amplifier is turned on.
- Be sure to connect motor cables correctly.
An incorrect connection of a cable cause abnormal heat generation, equipment malfunction, or failure.
Always use a cable with an appropriate current carrying capacity (or thickness). For how to connect cables to motors, refer to their respective specification manuals.

※ Precautions are classified into Warning and Caution according to their bearing on safety. Read all Warnings and Cautions thoroughly before attempting to use the machine.

⚠ WARNING

Applied when there is a danger of the user being injured or when there is a danger of both the user being injured and the equipment being damaged if the approved procedure is not observed.

⚠ CAUTION

Applied when there is a danger of the equipment being damaged, if the approved procedure is not observed.

				TITLE Cleaning/ Inspection Procedures for Fan Motor of Spindle Motor	
				DRAW. No. B-65272EN/08-09 B-65285EN/04-05 B-65312EN/05-03 B-65325EN/02-02 B-65452EN/03-04 B-65515EN/01-03	CUST
01	12.Nov.19	Mukai	Newly designed Hayahi		
Ed.	Date	Design	Description	FANUC CORPORATION	SHEET 3/10

4. Cleaning/ Inspection Procedures and Work Descriptions

4.1 Cleaning/ Inspection Procedures

Regular inspection is composed of checking mechanical (i.e. rotation) and electrical state of the fan motor.

Follow the procedures below and clean or replace the fan motor in accordance.

As for the details of the content and criteria, refer to Subsection 4.2.

4.1.1 Mechanical Inspection Procedures

If the state of the fan motor is not visible, follow the procedures in Subsection 4.1.2 “Electrical Inspection Procedures, Cleaning and Replacement of the Fan Motor”.

If the state is visible, check the state of rotation.

Check if the fan motor is rotating or not when the power is on and follow the procedures below.

1) If the Fan Motor is Rotating

Go on to Subsection 4.1.2 “Electrical Inspection Procedures, Cleaning and Replacement of the Fan Motor” and follow the procedures.

If the fan motor is clogged with foreign materials such as dust and metal chips, spindle motor’s cooling will be insufficient and may cause failure and trouble. If there is a visible foreign materials, please clean the fan motor following the procedures in Subsection 4.2 “Cleaning of the Fan Motor”.

2) If the Fan Motor is not Rotating

Replace the fan motor following the procedure in Subsection 4.2 “Replacement of the Fan Motor”

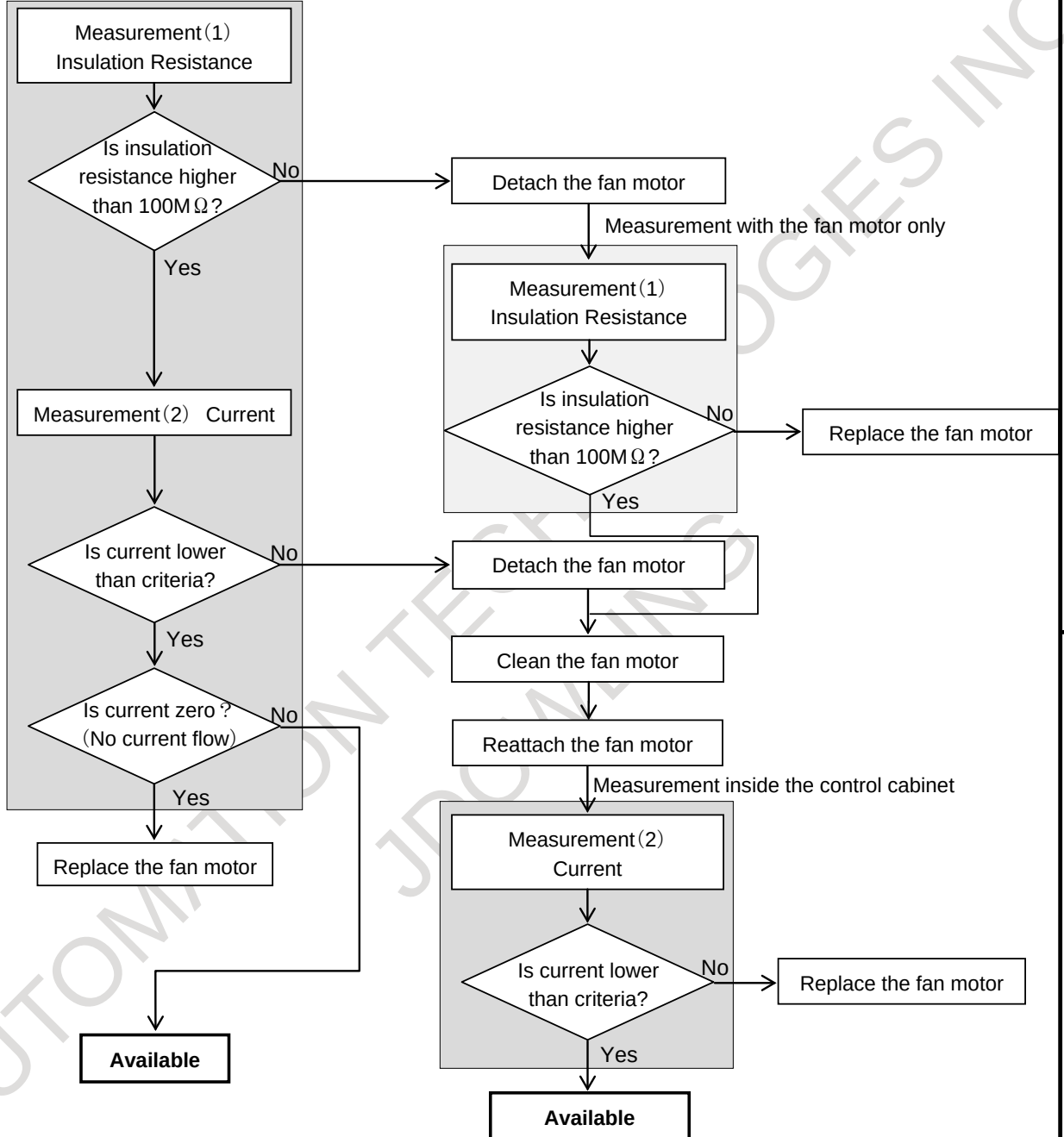
				TITLE Cleaning/ Inspection Procedures for Fan Motor of Spindle Motor	
				DRAW. No. B-65272EN/08-09 B-65285EN/04-05 B-65312EN/05-03 B-65325EN/02-02 B-65452EN/03-04 B-65515EN/01-03	CUST
01	12.Nov.19	Mukai	Newly designed Hayahi		
Ed.	Date	Design	Description	FANUC CORPORATION	SHEET 4/10

4.1.2 Electrical Inspection Procedures, Cleaning and Replacement of the Fan Motor

Follow the procedures below and clean or replace the fan motor in accordance.

As for the details of the content and criteria, refer to Subsection 4.2.

Measurement inside the control cabinet



※ Please contact FANUC if there is any question regarding the contents of this report. FANUC service department will conduct inspection at your request so please contact FANUC if necessary.

				TITLE Cleaning/ Inspection Procedures for Fan Motor of Spindle Motor	
				DRAW. No. B-65272EN/08-09 B-65285EN/04-05 B-65312EN/05-03 B-65325EN/02-02 B-65452EN/03-04 B-65515EN/01-03	CUST
01	12.Nov.19	Mukai	Newly designed	Hayahi	
Ed.	Date	Design	Description		FANUC CORPORATION SHEET 5/10

4.2 Work Descriptions and Criteria for Cleaning and Inspection

- ※ If you do not own an insulation resistance meter and a clamp meter necessary for the following measurements, confirm that the fan motor is rotating correctly by vision. If the fan motor is found to be not clean, follow the procedures “Cleaning of the Fan Motor”.

Measurement (1) Insulation Resistance

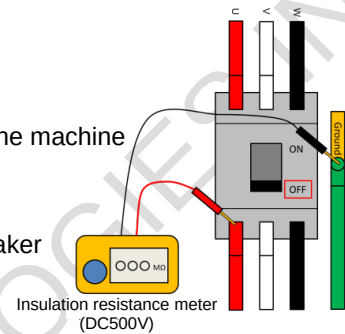
Instrument : insulation resistance meter (DC500V)

Point : breaker or terminal block inside the control cabinet of the machine

Method :

- ① Turn off the power of the machine.
- ② Measure the insulation resistance using the terminal on the breaker or terminal block connected to power leads of the fan motor.
Measure between one of the three power leads and ground.

Criteria : No failure if the insulation resistance is above 100MΩ.



- ※ If the fan motor is sharing the same breaker with other equipment, measure the insulation resistance between the power leads of fan motor and the ground wire by isolating the power leads of fan motor or isolating the fan motor.

Measurement (2) Current

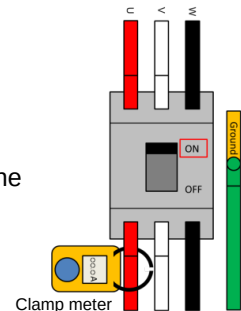
Instrument : clamp meter

Point : power leads of fan motor inside the control cabinet of the machine

Method :

- ① Attach a clamp meter to one of the power leads of the fan motor.
- ② Turn on the power of the fan motor.
- ③ Measure the current flowing to the fan motor.

Criteria : No failure if the current is below the critical value shown in the chart below (i.e. 20% higher than the rated current), and above zero.



⚠ WARNING

- The measurement is done while the power is on. Take enough safety measures to prevent electric shock.

				TITLE	
				Cleaning/ Inspection Procedures for Fan Motor of Spindle Motor	
				DRAW. No.	CUST
				B-65272EN/08-09 B-65285EN/04-05 B-65312EN/05-03 B-65325EN/02-02 B-65452EN/03-04 B-65515EN/01-03	
01	12.Nov.19	Mukai	Newly designed Hayahi		
Ed.	Date	Design	Description	FANUC CORPORATION	SHEET 6/10

Current Criteria (α I-B, β I-B Series)

For model series aside from α I-B and β I-B, contact FANUC sales department or service department.

α I-B, α IP-B, α IT-B, α IP-T-B, β I-B, β IP-B, β IT-B Series 200V Type	50Hz		60Hz	
	Rated Current [A]	Critical Value [A]	Rated Current [A]	Critical Value [A]
α I 1-B, α I 1.5-B, α IT 1-B, α IT 1.5-B	0.09	0.11	0.10	0.12
α I 2-B, α I 3-B, α IT 2-B, α IT 3-B, β I 3-B, β I 6-B, β IC 3-B, β IC 6-B	0.09	0.11	0.10	0.12
α I 6-B, α I 8-B, α IT 6-B, α IT 8-B, β I 8-B, β I 12-B, β IP 12-B, β IT 12-B, β IC 8-B	0.13	0.16	0.14	0.17
α I 12-B~ α I 22-B, α IP 12-B~ α IP 22-B, α IT 12-B~ α IT 22-B, α IP-T 22-B, β I 15-B, β IP 15-B~ β IP 30-B, β IT 15-B	0.20	0.24	0.30	0.36
α I 30-B, α I 40-B, α IP 30-B, α IP 40-B, α IP 50-B, β IP 40-B	0.45	0.54	0.48	0.58
α I 50-B, α I 60-B, α IP 60-B	0.42	0.50	0.55	0.66

α I-B, α IP-B, α IT-B, β I-B, β IT-B Series 400V Type	50Hz		60Hz	
	Rated Current [A]	Critical Value [A]	Rated Current [A]	Critical Value [A]
α I 1HV-B, α I 1.5HV-B, α IT 1.5HV-B	0.09	0.11	0.11	0.13
α I 2HV-B, α I 3HV-B, α IT 2HV-B, α IT 3HV-B, β I 3HV-B, β I 6HV-B,	0.11	0.13	0.13	0.16
α I 6HV-B, α I 8HV-B, α IT 6HV-B, α IT 8HV-B, β I 8HV-B, β I 12HV-B	0.07	0.08	0.08	0.10
α I 12HV-B~ α I 22HV-B, α IP 15HV-B, α IP 22HV-B, α IT 15HV-B, α IT 22HV-B, β I 15HV-B	0.15	0.18	0.16	0.19
α I 30HV-B, α I 40HV-B, α IP 40HV-B, α IP 50HV-B	0.22	0.26	0.26	0.31
α I 50HV-B, α I 60HV-B, α IP 60HV-B	0.22	0.26	0.28	0.34
α I 75HV-B, α I 100HV-B	0.30	0.36	0.36	0.43
α I 150HV-B	0.70	0.84	1.2	1.44

; α I, β I series are similar to the above.

				TITLE Cleaning/ Inspection Procedures for Fan Motor of Spindle Motor	
				DRAW. No. B-65272EN/08-09 B-65285EN/04-05 B-65312EN/05-03 B-65325EN/02-02 B-65452EN/03-04 B-65515EN/01-03	CUST
01	12.Nov.19	Mukai	Newly designed Hayahi		
Ed.	Date	Design	Description	FANUC CORPORATION	SHEET 7/10

Detaching the Fan Motor

- ① Unscrew the 4 bolts on the terminal box and remove the lid of terminal box.



4 bolts

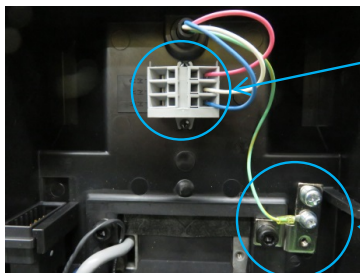
Lid of terminal box



Inside the terminal box

Terminal box of the motor

- ② Detach the power leads of fan motor from terminal block and ground wire from ground, both located inside the terminal box.



Terminal box

Ground



- ③ Unscrew the 4 bolts on the fan motor and detach the fan motor from the spindle motor. During this operation, be careful not to detach the rubber bushing from the terminal box hole.



4 bolts

Rubber bushing



				TITLE	
				Cleaning/ Inspection Procedures for Fan Motor of Spindle Motor	
				DRAW. No.	CUST
				B-65272EN/08-09 B-65285EN/04-05 B-65312EN/05-03 B-65325EN/02-02 B-65452EN/03-04 B-65515EN/01-03	
01	12.Nov.19	Mukai	Newly designed	Hayahi	
Ed.	Date	Design	Description	FANUC CORPORATION	SHEET 8/10

Cleaning of the Fan Motor

- ① Blow off the sludge accumulated around the fan motor by blowing compressed air.
If the sludge cannot be blown off, please replace the fan motor.



Air blower

- ② Blow compressed air from the space between bell mouth and impeller and blow off the sludge accumulated inside of the fan motor.



Impeller

Bell mouth



Blown off sludge

				TITLE Cleaning/ Inspection Procedures for Fan Motor of Spindle Motor	
				DRAW. No. B-65272EN/08-09 B-65285EN/04-05 B-65312EN/05-03 B-65325EN/02-02 B-65452EN/03-04 B-65515EN/01-03	CUST
01	12.Nov.19	Mukai	Newly designed Hayahi		
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Reattaching the Fan Motor

- ① Pull the power leads of the fan motor through the rubber bushing and draw them into the terminal box.
Spraying lubricant on the rubber tube of the power leads will make the operation easier.
- ② Fix the fan motor on the spindle motor with 4 bolts.
On tightening the bolts, control the torque to the correct value. (Tightening torque: 2.8~4.0Nm)
- ③ Connect the power leads to the terminal block and ground wire to the ground in the terminal box.

Power leads wiring of the fan motor

The fan motor has 3 power leads and 1ground wire.

Wire the power leads to the terminals FMU, FMV and FMW printed on the terminal block in the terminal box or imprinted on the terminal box.

Wire the ground wire to the screw with the ground mark.

Type and color	Connection point
Power lead (Red)	terminal FMU
Power lead (White)	terminal FMV
Power lead (Blue or black)	terminal FMW
Ground wire (Green and yellow)	Screw of the ground terminal

- ④ Fix the lid on the terminal box with 4 bolts.
On tightening the bolts, control the torque to the correct value. (Tightening torque: 2.8~4.0Nm)
- ⑤ Verify that the fan motor is rotating in the correct direction by vision right after the power is put on or right after the power is shut off.



Replacement of the Fan Motor

- ① Detach the fan motor following the procedures in “Detaching the Fan Motor”.
- ② Have a replacement fan motor at hand and attach the new fan motor following the procedures in “Reattaching the Fan Motor”.

※ If a replacement fan is not available soon enough, make sure to shut off the power by dropping the breaker or disconnecting the power leads on the fan motor as a temporary treatment until the fan motor is replaced.

motor is replaced.				TITLE Cleaning/ Inspection Procedures for Fan Motor of Spindle Motor	
				DRAW. No. B-65272EN/08-09 B-65285EN/04-05 B-65312EN/05-03 B-65325EN/02-02 B-65452EN/03-04 B-65515EN/01-03	CUST
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REVISION RECORD

Edition	Date	Contents
08	Jul., 2015	• Thorough reorganization of the entire manual • Addition of following models - αiL 0.5/15000, αiL 1/24000, αiL 3/15000, αiL 6/15000, αiL 2/20000HV, αiL 8/12000HV, αiL 15/10000HV, , αiL 22/10000HV
07	May, 2012	• Addition of following model - αiL 150/5000HV • Addition of following items in Appendix - Outline drawings of straight shaft with key - Checking the winding resistance
06	Jun., 2009	• Addition of the models following Large Spindle Motor series - Large type of αi series, αiL series and αiS series
05	Sep., 2006	• Changing of model names of following series - αiL series, αiLP series, αiLT series, and αiLL series • Increase of torque of short-time rating at low speed in αiL series
04	Mar., 2003	• Changing of model names of following series - αiLP series, αiLT series, αiLL series, $\alpha(HV)iP$, $\alpha(HV)iT$, and $\alpha(HV)iL$ series • Deleting of αCi series
03	Sep., 2002	• Addition of following series - αLi series and $\alpha L(HV)i$ series
02	Dec., 2001	• Addition of following series - Large type of αi series, αCi series, $\alpha(HV)i$ series, $\alpha P(HV)i$ series, and $\alpha T(HV)i$ series
01	Jul., 2001	

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