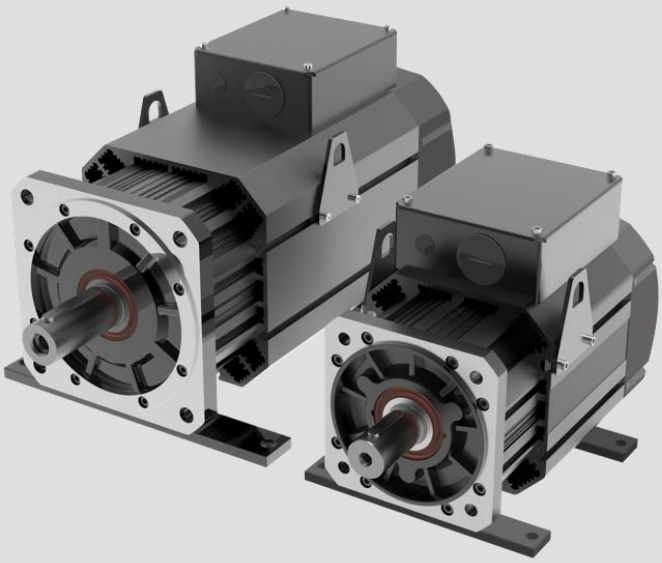
IMS20B Series Medium Power Servo Motor Product Manual



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SHENZHEN INVT ELECTRIC CO., LTD.

Preface

Overview

Thank you for purchasing the IMS20B series medium power servo motor.

IMS20B series medium power servo motor is a newly developed servo motor product by INVT, covering a power range of 6.3kW–74kW, with frame sizes of 200 and 263. It offers various inertia configurations and speed ranges, and different types of encoders can be configured according to customer requirements.

This product is suitable for the general automation industry, working with servo drives to achieve fast and precise position control, speed control, and torque control.

This manual provides product information, specifications, dimensions, and other relevant details about the motor. If you have any questions, please contact our technical support staff.

Readers

Personnel with electrical professional knowledge (such as qualified electrical engineers or personnel with equivalent knowledge).

Change history

The manual is subject to change irregularly without prior notice due to product version upgrades or other reasons.

No.	Change description	Version	Release date
1	First release.	V1.0	February 2025

Contents

1 Safety precautions

1.1 Safety declaration

Read this manual carefully and follow all safety precautions before moving, installing, operating and servicing the VFD. Otherwise, equipment damage or physical injury or death may be caused.

We shall not be liable or responsible for any physical injury or equipment damage caused due to failure to follow the safety precautions.

1.2 Safety level definition

Safety level	Description
	**Severe personal injury or even death can result if related requirements are not followed.**
	**Personal injury or equipment damage can result if related requirements are not followed.**

1.3 Personnel requirements

Trained and qualified professionals: People operating the equipment must have received professional electrical and safety training and obtained the certificates, and must be familiar with all steps and requirements of equipment installing, commissioning, running and maintaining and capable to prevent any emergencies according to experiences.

1.4 Safety guidelines

Unpacking inspection	
	● **Please confirm that the packaging of the servo motor product is intact, with no damage, rust, moisture, dampness, or deformation.** ● **Please handle with care when unpacking and retrieving the motor to avoid any collisions and damage to the motor.** ● **After opening the packaging box, please confirm that the machine is undamaged or unbroken, that all components are complete, and that the nameplate and label on the product body match the ordered model.**

Delivery	
	• Ensure that the motor is securely installed during transportation to prevent accidental falls. • Do not transport motor products with items that could cause damage. • Before handling large motor products, please check the fixed lifting position of the motor and ensure the safety of the lifting equipment during the handling process. • Do not move the motor by pulling the cables or the shaft.

Installation	
	• Please read this manual carefully before installation and strictly follow all safety precautions. • Please ensure that the mechanical strength of the installation location is sufficient to support the weight of the equipment. • Please check for any abnormalities in the motor mounting holes before installation. • Do not disassemble any components or parts of the motor. If any modifications are needed, please contact a professional. • When performing installation work, please cover the product to prevent metal shavings and foreign objects from entering the motor, which could affect its safety.

Cable selection	
	• Do install the overcurrent protector, leakage current protector and emergency device and confirm their effectiveness after wiring. • Please ensure that the AC power supply voltage matches the rated voltage of the servo motor. • Do not place the power cables and encoder cables in a strong magnetic field environment. • Please ensure that the equipment and products have good grounding.
	• Before wiring, please check the integrity of the power cables. Do not use power cables that are damaged or exposed. • Please ensure that the drive is correctly wired to the motor.

Check before power-on	
	• Please ensure that the product wiring connections are correct. • Please ensure that there are no personnel lingering around the drive, motor, and related equipment. • Please ensure that the key is securely fixed. If there is no coupling to secure the key, please remove the key to prevent it from flying out during motor operation.

	• Please ensure that the emergency stop switch is properly connected to the drive.

Running	
	• De-couple the motor load and run the motor independently during the trial operation to avoid accidents. • Do not touch conductive parts directly while in operation. • Do not connect or short-circuit any external cables of the motor, especially those related to electricity, with the housing or each other. • If you need to rewire the motor, please disconnect the power and wait for 15 minutes before proceeding.
	• Set the corresponding parameters before operation, otherwise the motor may run abnormally or beyond the expectation because of the load. • The motor housing heat sink can reach high temperatures during operation. Do not touch the motor housing heat sink.

Maintenance and repair	
	• Non-professional personnel are strictly prohibited from installing, wiring, maintaining, inspecting, or replacing components of the equipment. • For maintenance, repair, and component replacement of the motor, please contact a qualified technician. • Maintenance of the equipment is strictly prohibited while it is powered on.

Scrapping	
	• The components inside the motor contain heavy metals. Please follow the relevant national regulations and standards for the disposal of equipment and products. After disposal, the motor must be treated as industrial waste.

1.5 Warning symbols

To ensure safe operation, please strictly adhere to the safety labels affixed to the equipment. Do not damage or remove the safety labels. The warning symbols are as follows:

Warning symbols	Description
	Caution: high temperature on the motor surface!

	**Caution: risk of electric shock!**
	**Do not strike the motor shaft extension!**

2 Motor model selection

Medium-power servo motor					Servo drive	
Frame size	Output power (kW)	Rated torque (N・m)	Motor model	Rated current (A)	Rated voltage (V)	Recommended drive model
200	6.3	40	IMS20B-20M63C15C-4-**(4)	12.4	3PH 380	MH860A-S018TF SV-DA200-5R5-4
	7.1	40	IMS20B-20M71C17C-4-**(4)	13.1	3PH 380	MH860A-S018TF SV-DA200-5R5-4
	8	38	IMS20B-20M80C20C-4-**(4)	14.4	3PH 380	MH860A-S018TF SV-DA200-5R5-4
	9.4	60	IMS20B-20M94C15C-4-**(4)	17.1	3PH 380	MH860A-S018TF SV-DA200-7R5-4
	10.7	60	IMS20B-20M11D17C-4-**(4)	19.5	3PH 380	MH860A-S025TF SV-DA200-7R5-4
	12.2	58	IMS20B-20M12D20C-4-**(4)	21.6	3PH 380	MH860A-S025TF SV-DA200-7R5-4
	12.6	80	IMS20B-20M13D15C-4-**(4)	22.5	3PH 380	MH860A-S025TF SV-DA200-7R5-4
	14.2	80	IMS20B-20M14D17C-4-**(4)	26.1	3PH 380	MH860A-S032TF SV-DA200-011-4
	16.8	80	IMS20B-20M17D20C-4-**(4)	29.5	3PH 380	MH860A-S032TF SV-DA200-011-4
	15.7	100	IMS20B-20M16D15C-4-**(4)	27.9	3PH 380	MH860A-S032TF SV-DA200-011-4
	17.8	100	IMS20B-20M18D17C-4-**(4)	31	3PH 380	MH860A-S032TF SV-DA200-011-4
	20	95.3	IMS20B-20M20D20C-4-**(4)	34.5	3PH 380	MH860A-S038TF SV-DA200-015-4
	18.8	120	IMS20B-20M19D15C-4-**(4)	33.7	3PH 380	MH860A-S038TF SV-DA200-015-4
	21.4	120	IMS20B-20M21D17C-4-**(4)	38.5	3PH 380	MH860A-S045TF SV-DA200-015-4
	24.1	115.2	IMS20B-20M24D20C-4-**(4)	41.7	3PH 380	MH860A-S045TF SV-DA200-015-4
	22	140	IMS20B-20M22D15C-4-**(4)	38.6	3PH 380	MH860A-S045TF SV-DA200-015-4
	24.9	140	IMS20B-20M25D17C-4-**(4)	44.8	3PH 380	MH860A-S045TF SV-DA200-015-4

Medium-power servo motor					Servo drive	
Frame size	Output power (kW)	Rated torque (N • m)	Motor model	Rated current (A)	Rated voltage (V)	Recommended drive model
	27.4	130.7	IMS20B-20M27D20C-4-**(4)	48.6	3PH 380	MH860A-S060TF SV-DA200-015-4
	25.1	160	IMS20B-20M25D15C-4-**(4)	44.6	3PH 380	MH860A-S045TF SV-DA200-015-4
	28.5	160	IMS20B-20M29D17C-4-**(4)	51.4	3PH 380	MH860A-S060TF SV-DA200-037-4
	31.6	150.9	IMS20B-20M32D20C-4-**(4)	55.73	3PH 380	MH860A-S060TF SV-DA200-037-4
	28.3	180	IMS20B-20M28D15C-4-**(4)	49.2	3PH 380	MH860A-S060TF SV-DA200-012-4
	32	180	IMS20B-20M32D17C-4-**(4)	57.4	3PH 380	MH860A-S060TF SV-DA200-022-4
	35.6	169.9	IMS20B-20M36D20C-4-**(4)	62.2	3PH 380	MH860A-S075TF SV-DA200-022-4
263	28.3	180	IMS20B-26M28D15C-4-**(4)	50.4	3PH 380	MH860A-S060TF7 SV-DA200-022-4
	32	180	IMS20B-26M32D17C-4-**(4)	58.8	3PH 380	MH860A-S060TF7
	36.7	175.4	IMS20B-26M37D20C-4-**(4)	65.1	3PH 380	MH860A-S075TF7
	34.6	221	IMS20B-26M35D15C-4-**(4)	64.1	3PH 380	MH860A-S075TF7 SV-DA200-022-4
	39.2	217	IMS20B-26M39D17C-4-**(4)	65.1	3PH 380	MH860A-S075TF7 SV-DA200-022-4
	44.9	214.3	IMS20B-26M45D20C-4-**(4)	81.2	3PH 380	MH860A-S092TF7 SV-DA200-037-4
	40.8	260	IMS20B-26M41D15C-4-**(4)	71.2	3PH 380	MH860A-S075TF7 SV-DA200-037-4
	46.3	259	IMS20B-26M46D17C-4-**(4)	81.3	3PH 380	MH860A-S092TF7 SV-DA200-037-4
	49.8	238	IMS20B-26M50D20C-4-**(4)	86.6	3PH 380	MH860A-S092TF7 SV-DA200-037-4
	47.1	300	IMS20B-26M47D15C-4-**(4)	79.3	3PH 380	MH860A-S092TF7
	53.4	300	IMS20B-26M53D17C-4-**(4)	93.9	3PH 380	MH860A-S0115TF7
	57.7	276	IMS20B-26M58D20C-4-**(4)	99.7	3PH 380	MH860A-S115TF7 SV-DA200-045-4
	53.4	340	IMS20B-26M53D15C-4-**(4)	89.4	3PH 380	MH860A-S92TF7
	60.5	340	IMS20B-26M61D17C-4-**(4)	101.7	3PH 380	MH860A-S115TF7 SV-DA200-045-4
	65	310	IMS20B-26M65D20C-4-**(4)	113	3PH 380	MH860A-S115TF7 SV-DA200-055-4
	59.7	380	IMS20B-26M60D15C-4-**(4)	100	3PH 380	MH860A-S115TF7

Medium-power servo motor					Servo drive	
Frame size	Output power (kW)	Rated torque (N • m)	Motor model	Rated current (A)	Rated voltage (V)	Recommended drive model
						SV-DA200-045-4
	67.6	380	IMS20B-26M68D17C-4-**(4)	118.8	3PH 380	MH860A-S150TF7
	74	351	IMS20B-26M74D20C-4-**(4)	127.1	3PH 380	MH860A-S150TF7

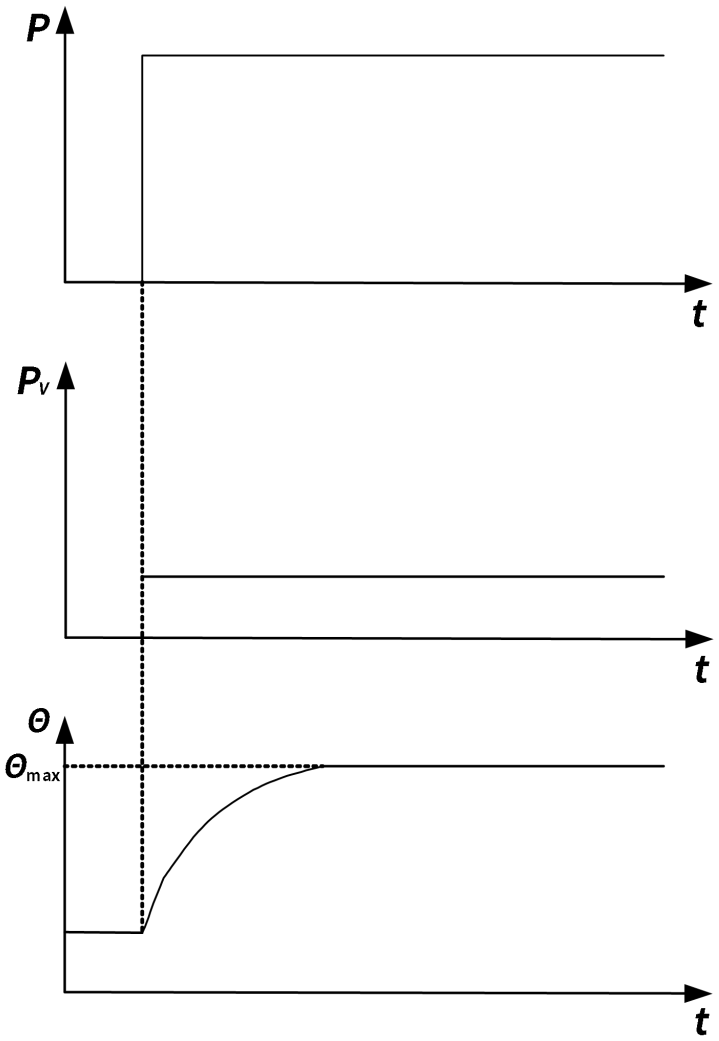
3 Common terms

3.1 Duty

A description of a series of load conditions that the motor experiences, including starting, electrical braking, no-load, shutdown, power interruption, as well as their duration and sequence. The duty complies with GB755.

S1 duty: Continuous duty

Operate under a constant load until reaching thermal stability, as shown in the following figure.



***P*: Load**

***P_V*: Electrical losses**

Θ : Temperature

Θ_{max} : Reach the maximum temperature

***t*: Time**

3.2 Ingress protection (IP) rating

The motor ingress protection rating is represented by a code that contains 2 letters and 2 digits. Including:

- **IP (Ingress Protection): The code letters indicate the protection levels against the contact and ingress of solid objects and water.**
- **First digit: 0 to 6, indicates the level of protection provided by the enclosure against contact with persons and against ingress of solid objects inside the enclosure.**
- **Second digit: 0 to 8, indicates the level of protection against harmful effects due to the ingress of water into the enclosure.**

Ingress protection rating	First digit	Meaning	Second digit	Meaning
IP	0	No protection at all	0	No protection at all
	1	Protection against solid objects with a diameter greater than 50mm	1	Protection against vertical water drops
	2	Protection against solid objects with a diameter greater than 12mm	2	Protection against vertical water drops at an angle of up to 15°
	3	Protection against solid objects with a diameter greater than 2.5mm	3	Protection against sprayed water at an angle of up to 60°
	4	Protection against solid objects with a diameter greater than 1mm	4	Protection against the splashing of water from any direction
	5	Protection against the ingress of dust in such an amount that it will not interfere with the operation of the equipment	5	Protection against the water jets from any direction
	6	Total protection against the ingress of any dust	6	Protection against powerful water jets from any direction
	-	-	7	Protection against the ingress of water when temporary immersed between 0.15m and 1m
	-	-	8	Protection against long periods of immersion under the conditions specified by the manufacturer

3.3 Rated parameters

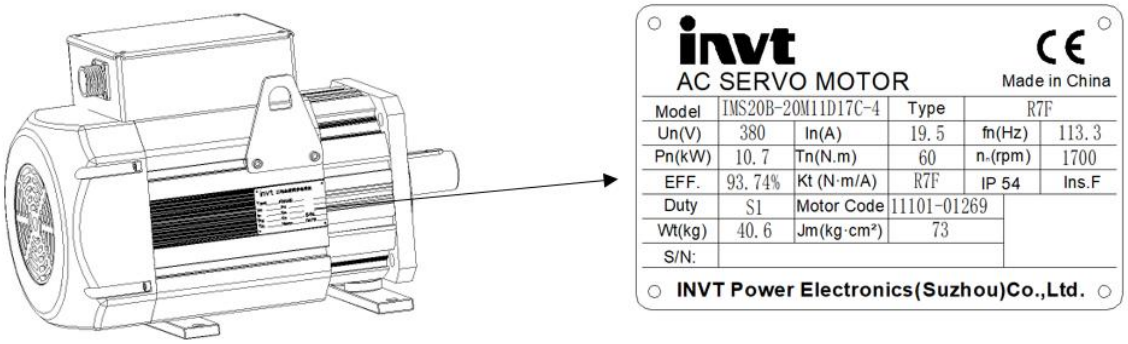
Terms	Description
Rated power	The continuous operating power of the motor under specified conditions. Special duty type need to be specified.
Rated rotation speed	The rotational speed of the motor when it outputs the rated power at rated voltage and rated frequency.
Rated torque	The output torque of the motor when it reaches thermal steady state at rated power and rated speed.
Rated current	The current of the motor when it operates under rated conditions and reaches thermal steady state.

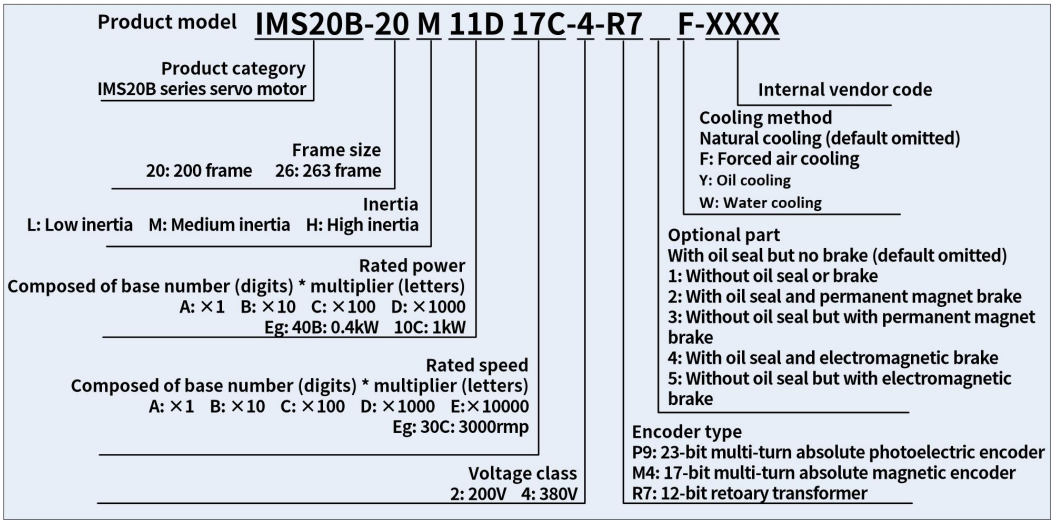
4 Product overview

4.1 Product features

- Comprehensive motor model: Involves 200 and 263 frame size motors, with a power range of 6.3kW to 74kW.
- Excellent motor performance: The motor has strong overload capacity.
- High control precision: The motor includes a 12-bit resolver encoder and a 23-bit absolute encoder.

4.2 Model and nameplate





4.3 Product parameters

Frame size	Output power (kW)	Rated speed (rpm)	Max. speed (rpm)	Rated current (A)	Peak current (A)	Rated torque (Nm)	Peak torque (Nm)	Motor model	Selectable encoder type
200	8.0	2000	3000	14.4	38.1	38	96	IMS20B-20M80C20C-4-R7F	R7 P9
								IMS20B-20M80C20C-4-P9F	
								IMS20B-20M80C20C-4-P94F	
	7.1	1700	2700	13.3	34.6	40	100	IMS20B-20M71C17C-4-R7F	
								IMS20B-20M71C17C-4-P9F	

								IMS20B-20M71C17C-4-P94F	
Frame size	Output power (kW)	Rated speed (rpm)	Max. speed (rpm)	Rated current (A)	Peak current (A)	Rated torque (Nm)	Peak torque (Nm)	Motor model	Selectable encoder type
200	6.3	1500	2500	12.4	33.4	40	100	IMS20B-20M63C15C-4-R7F	R7 P9
								IMS20B-20M63C15C-4-P9F	
								IMS20B-20M63C15C-4-P94F	
	12.2	2000	3000	21.6	57.1	58	145	IMS20B-20M12D20C-4-R7F	
								IMS20B-20M12D20C-4-P9F	
								IMS20B-20M12D20C-4-P94F	
	10.7	1700	2700	19.3	52.0	60	150	IMS20B-20M11D17C-4-R7F	
								IMS20B-20M11D17C-4-P9F	
								IMS20B-20M11D17C-4-P94F	
	9.4	1500	2500	17.1	45.2	60	150	IMS20B-20M94C15C-4-R7F	
								IMS20B-20M94C15C-4-P9F	
								IMS20B-20M94C15C-4-P94F	
	16.8	2000	3000	29.5	80.0	80	200	IMS20B-20M17D20C-4-R7F	
								IMS20B-20M17D20C-4-P9F	
								IMS20B-20M17D20C-4-P94F	
	14.2	1700	2700	25.5	68.5	80	200	IMS20B-20M14D17C-4-R7F	
								IMS20B-20M14D17C-4-P9F	
								IMS20B-20M14D17C-4-P94F	
	12.6	1500	2500	22.5	59.5	80	200	IMS20B-20M13D15C-4-R7F	
								IMS20B-20M13D15C-4-P9F	
								IMS20B-20M13D15C-4-P94F	
	20.0	2000	3000	34.2	90.0	96	238	IMS20B-20M20D20C-4-R7F	
								IMS20B-20M20D20C-4-P9F	
								IMS20B-20M20D20C-4-P94F	
	17.8	1700	2700	31.1	86.0	100	250	IMS20B-20M18D17C-4-R7F	
								IMS20B-20M18D17C-4-P9F	
								IMS20B-20M18D17C-4-P94F	
	15.7	1500	2500	27.9	72.7	100	250	IMS20B-20M16D15C-4-R7F	
								IMS20B-20M16D15C-4-P9F	
								IMS20B-20M16D15C-4-P94F	
	24.1	2000	3000	41.7	110.0	115	288	IMS20B-20M24D20C-4-R7F	
								IMS20B-20M24D20C-4-P9F	
								IMS20B-20M24D20C-4-P94F	
	21.4	1700	2700	38.0	103.0	120	300	IMS20B-20M21D17C-4-R7F	
								IMS20B-20M21D17C-4-P9F	
								IMS20B-20M21D17C-4-P94F	
	18.9	1500	2500	33.7	89.1	120	300	IMS20B-20M19D15C-4-R7F	
								IMS20B-20M19D15C-4-P9F	
								IMS20B-20M19D15C-4-P94F	
	27.4	2000	3000	48.6	125.0	131	327	IMS20B-20M27D20C-4-R7F	
								IMS20B-20M27D20C-4-P9F	
								IMS20B-20M27D20C-4-P94F	
	24.9	1700	2700	44.8	114.2	140	350	IMS20B-20M25D17C-4-R7F	
								IMS20B-20M25D17C-4-P9F	
								IMS20B-20M25D17C-4-P94F	

Frame size	Output power (kW)	Rated speed (rpm)	Max. speed (rpm)	Rated current (A)	Peak current (A)	Rated torque (Nm)	Peak torque (Nm)	Motor model	Selectable encoder type
200	22.0	1500	2500	38.6	100.7	140	350	IMS20B-20M22D15C-4-R7F	R7 P9
								IMS20B-20M22D15C-4-P9F	
								IMS20B-20M22D15C-4-P94F	
	31.6	2000	3000	54.0	139.0	151	376	IMS20B-20M32D20C-4-R7F	
								IMS20B-20M32D20C-4-P9F	
	28.5	1700	2700	51.4	136.0	160	400	IMS20B-20M29D17C-4-R7F	
								IMS20B-20M29D17C-4-P9F	
	25.2	1500	2500	44.6	117.9	160	400	IMS20B-20M25D15C-4-R7F	
								IMS20B-20M25D15C-4-P9F	
	35.6	2000	3000	62.2	154.0	170	424	IMS20B-20M36D20C-4-R7F	
								IMS20B-20M36D20C-4-P9F	
	32.1	1700	2700	55.7	146.9	180	450	IMS20B-20M32D17C-4-R7F	
								IMS20B-20M32D17C-4-P9F	
	28.3	1500	2500	49.2	130.0	180	451	IMS20B-20M28D15C-4-R7F	
								IMS20B-20M28D15C-4-P9F	

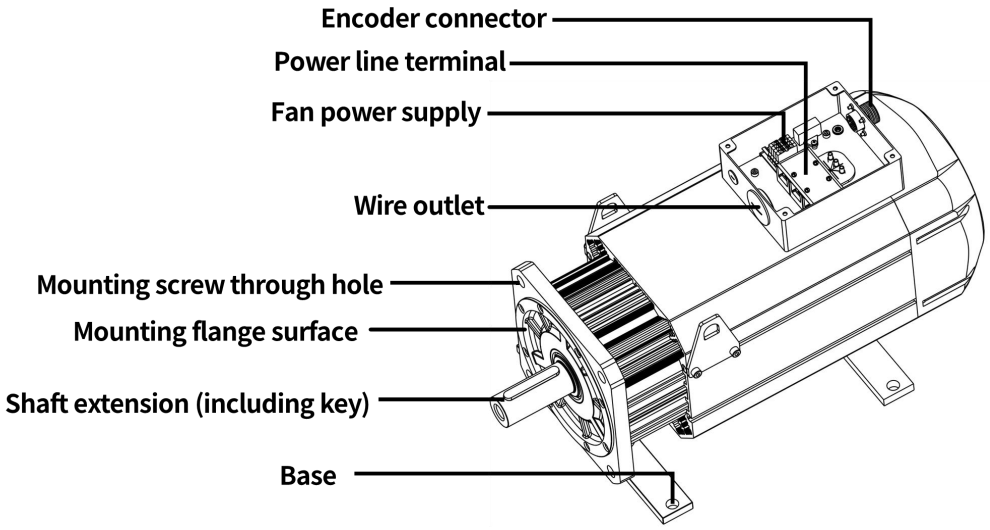
Frame size	Output power (kW)	Rated speed (rpm)	Max. speed (rpm)	Rated current (A)	Peak current (A)	Rated torque (Nm)	Peak torque (Nm)	Motor model	Selectable encoder type
263	28	1500	2500	50.4	155.2	180	479	IMS20B-26M28D15C-4-R7F	R7 P9
								IMS20B-26M28D15C-4-P9F	
								IMS20B-26M28D15C-4-P94F	
	32	1700	2700	58.8	183.7	180	467	IMS20B-26M32D17C-4-R7F	
								IMS20B-26M32D17C-4-P9F	
								IMS20B-26M32D17C-4-P94F	
	37	2000	3000	65.1	185	175.2	438	IMS20B-26M37D20C-4-R7F	
								IMS20B-26M37D20C-4-P9F	
								IMS20B-26M37D20C-4-P94F	
	34.6	1500	2500	64.1	183.5	221	539	IMS20B-26M35D15C-4-R7F	
								IMS20B-26M35D15C-4-P9F	
								IMS20B-26M35D15C-4-P9	

Frame size	Output power (kW)	Rated speed (rpm)	Max. speed (rpm)	Rated current (A)	Peak current (A)	Rated torque (Nm)	Peak torque (Nm)	Motor model	Selectable encoder type
								4F	
Frame size	Output power (kW)	Rated speed (rpm)	Max. speed (rpm)	Rated current (A)	Peak current (A)	Rated torque (Nm)	Peak torque (Nm)	Motor model	Selectable encoder type
263	39	1700	2700	65.1	192	217	571	IMS20B-26M39D17C-4-R7F	R7 P9
								IMS20B-26M39D17C-4-P9F	
								IMS20B-26M39D17C-4-P94F	
	45	2000	3000	81.2	230	214	536.7	IMS20B-26M45D20C-4-R7F	
								IMS20B-26M45D20C-4-P9F	
								IMS20B-26M45D20C-4-P94F	
	41	1500	2500	71.2	202	260.5	651.3	IMS20B-26M41D15C-4-R7F	
								IMS20B-26M41D15C-4-P9F	
	46	1700	2700	81.3	242.9	259	671	IMS20B-26M46D17C-4-R7F	
								IMS20B-26M46D17C-4-P9F	
	49.8	2000	3000	86.6	234	238	624	IMS20B-26M50D20C-4-R7F	
								IMS20B-26M50D20C-4-P9F	
	47	1500	2500	79.3	225	300	750	IMS20B-26M47D15C-4-R7F	
								IMS20B-26M47D15C-4-P9F	
	53	1700	2700	93.9	257	300	776	IMS20B-26M53D17C-4-R7F	
								IMS20B-26M53D17C-4-P9F	
	58	2000	3000	99.7	253.4	276	706	IMS20B-26M58D20C-4-R7F	
								IMS20B-26M58D20C-4-P9F	
	53.4	1500	2500	89.4	254	340	850	IMS20B-26M53D15C-4-R7F	
								IMS20B-26M53D15C-4-P9F	
	60.5	1700	2700	101.7	265.8	340	856	IMS20B-26M61D17C-4-R7F	
								IMS20B-26M61D17C-4-P9F	
	65	2000	3000	113	297.3	310	844	IMS20B-26M65D20C-4-R7F	
								IMS20B-26M65D20C-4-P9F	
	60	1500	2500	100	284	380	950	IMS20B-26M60D15C-4-R7F	
								IMS20B-26M60D15C-4-P9F	
	67.6	1700	2700	118.8	311	380	950	IMS20B-26M68D17C-4-R7F	

Frame size	Output power (kW)	Rated speed (rpm)	Max. speed (rpm)	Rated current (A)	Peak current (A)	Rated torque (Nm)	Peak torque (Nm)	Motor model	Selectable encoder type
								IMS20B-26M68D17C-4-P9F	
	74	2000	3000	127.1	340.8	351	898.9	IMS20B-26M74D20C-4-R7F	
								IMS20B-26M74D20C-4-P9F	

4.4 Product component

- **Schematic diagram of components for frame size 200/263 motor**



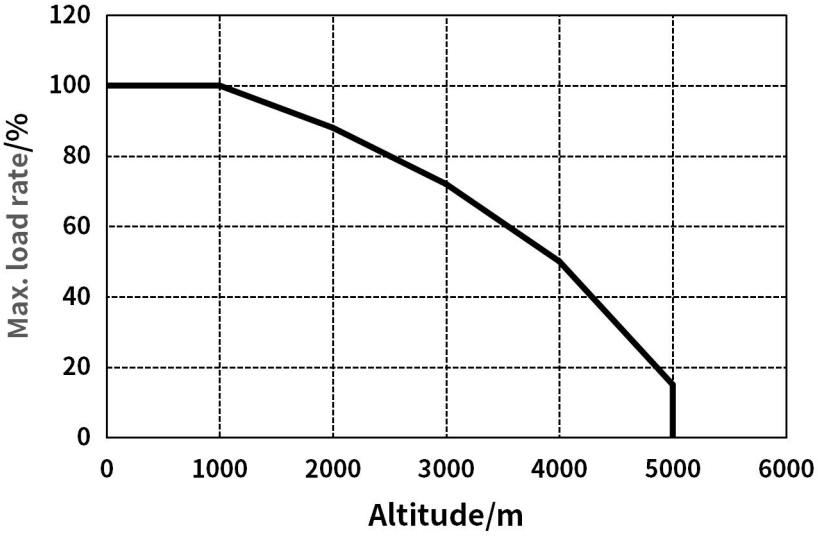
5 General specifications

5.1 Mechanical characteristics

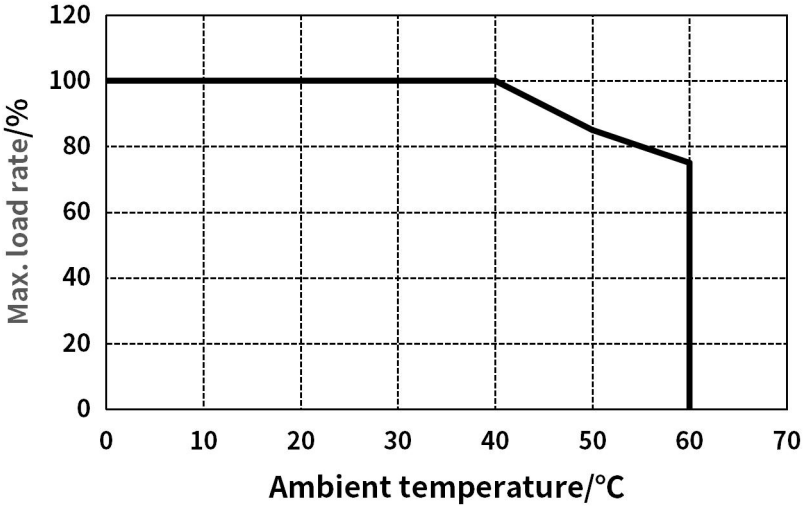
Item	Medium-power servo motor
Duty	S1 continuous
Running environment temperature	-20℃ – +40℃ (No freezing)
Storage temperature	-20℃–+60℃
Running environment humidity	20%–90% RH (no condensation)
Vibration	25m/s²
Impact	50m/s²
Exciting method	Permanent magnetic
Installation methods	IMB35 (Horizontal with base, flange), IMB5
Insulation class	F
Insulation resistance	DC500V, > 100MΩ
Insulation voltage	AC 1500V for 1 minute (220V class); AC 1800V for 1 minute (380V class)
Enclosure IP rating	IP54 (excluding shaft extension and cable ends)
Rotation direction	Under the forward command, the rotation appears counterclockwise (CCW) when viewed from the load side.
Altitude	Below 1000 meters. For altitudes above 1000 meters, please derate. For details, refer to the altitude derating curve.

5.2 Derating characteristics

5.2.1 Derating due to altitude



5.2.2 Derating due to temperature



6 Medium-power servo motor

6.1 200 frame

6.1.1 Motor parameters

Model		IMS20B-20M					
		80C20C	71C17C	63C15C	12D20C	11D17C	94C15C
Rated voltage (V)		380					
Rated speed (rpm)		2000	1700	1500	2000	1700	1500
Rated power (kW)		8	7.1	6.3	12.2	10.7	9.4
Rated frequency (Hz)		133.3	113.3	100	133.3	113.3	100
Rated current (A)		14.4	13.3	12.4	21.6	19.3	17.1
Rated torque (N・m)		38	40	40	58.1	60	60
Peak current (A)		38.1	34.6	33.4	57.1	52	45.2
Peak torque at 0.5 times the rated speed (N・m)		96	100	100	145.3	150	150
Max. speed (rpm)		3000	2700	2500	3000	2700	2500
Peak torque at rated speed (N・m)		66	66	66	120	120	120
Torque constant (N・m/A)		2.64	3.05	3.23	2.69	3.08	3.51
Line resistance (Ω)		1.29	1.58	2.01	0.701	0.93	1.197
Back EMF constant (V/krpm)		177.2	199.9	233.0	182	205	238
Rotation inertia ($kg・cm^2$)	Standard	52	52	52	73	73	73
	Brake type	64	64	64	85	85	85
Motor weight (kg)	Standard	35.2	35.2	35.2	40.6	40.6	40.6
	Brake type	47.4	47.4	47.4	52.8	52.8	52.8
Brake specifications	Holding torque (N・m)	⩾150					
	Supply voltage (DC V)	24					
	Rated power (W)	55					
	Pick-up voltage (V)	⩽18					
	Drop-out voltage (V)	>1.2					
	Insulation resistance (Ω)	>100M					
Fan specifications	Type	Centrifugal fan					
	Rated power (W)	50/64					
	Rated voltage (V AC)	220					
	Rated frequency (Hz)	50/60					
	Rated current (A)	0.22/0.28					

Model	IMS20B-20M

		17D20C	14D17C	13D15C	20D20C	18D17C	16D15C
Rated voltage (V)		380					
Rated speed (rpm)		2000	1700	1500	2000	1700	1500
Rated power (kW)		16.8	14.2	12.6	20	17.8	15.7
Rated frequency (Hz)		133.3	113.3	100	133.3	113.3	100
Rated current (A)		29.5	26.1	22.5	34.2	31.1	27.9
Rated torque (N・m)		80	80	80	96	100	100
Peak current (A)		80	69	59.5	90	86	72.7
Peak torque at 0.5 times the rated speed (N・m)		200	200	200	238	250	250
Max. speed (rpm)		3000	2700	2500	3000	2700	2500
Peak torque at rated speed (N・m)		163	163	163	202	215	186
Torque constant (N・m/A)		2.71	3.07	3.56	2.78	3.23	3.58
Line resistance (Ω)		0.48	0.584	0.81	0.35	0.45	0.61
Back EMF constant (V/krpm)		186.5	205	242.5	186.5	209.8	233.3
Rotation inertia ($kg・cm^2$)	Standard	94	94	94	115	115	115
	Brake type	106	106	106	127	127	127
Motor weight (kg)	Standard	46	46	46	51.5	51.5	51.5
	Brake type	58.2	58.2	58.2	63.7	63.7	63.7
Brake specifications	Holding torque (N・m)	⩾150					
	Supply voltage (DC V)	24					
	Rated power (W)	55					
	Pick-up voltage (V)	⩽18					
	Drop-out voltage (V)	>1.2					
	Insulation resistance (Ω)	>100M					
Fan specifications	Type	Centrifugal fan					
	Rated power (W)	50/64					
	Rated voltage (V AC)	220					
	Rated frequency (Hz)	50/60					
	Rated current (A)	0.22/0.28					

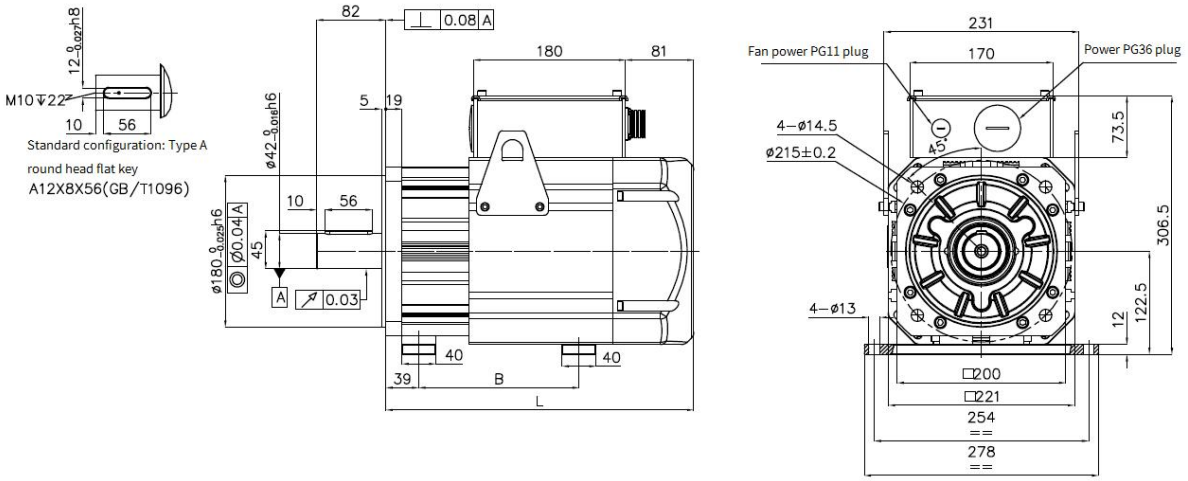
Model	IMS20B-20M					
	24D20C	21D17C	19D15C	27D20C	25D17C	22D15C
Rated voltage (V)	380					
Rated speed (rpm)	2000	1700	1500	2000	1700	1500
Rated power (kW)	24.1	21.4	18.9	27.4	24.9	22
Rated frequency (Hz)	133.3	113.3	100	133.3	113.3	100

Rated current (A)		41.7	38.0	33.7	48.6	44.8	38.6
Rated torque (N・m)		115	120	120	131	140	140
Peak current (A)		110.0	103.0	89.1	125.0	114.2	100.7
Peak torque at 0.5 times the rated speed (N・m)		288	300	300	327	350	350
Max. speed (rpm)		3000	2700	2500	3000	2700	2500
Peak torque at rated speed (N・m)		261	250	250	264	300	289
Torque constant (N・m/A)		2.76	3.12	3.56	2.70	3.13	3.63
Line resistance (Ω)		0.26	0.35	0.445	0.21	0.29	0.38
Back EMF constant (V/krpm)		181.9	206	238	176	207	240
Rotation inertia ($kg・cm^2$)	Standard	135	135	135	156	156	156
	Brake type	147	147	147	168	168	168
Motor weight (kg)	Standard	56.8	56.8	56.8	62.3	62.3	62.3
	Brake type	69	69	69	74.5	74.5	74.5
Brake specifications	Holding torque (N・m)	⩾150					
	Supply voltage (DC V)	24					
	Rated power (W)	55					
	Pick-up voltage (V)	⩽18					
	Drop-out voltage (V)	>1.2					
	Insulation resistance (Ω)	>100M					
Fan specifications	Type	Centrifugal fan					
	Rated power (W)	50/64					
	Rated voltage (V AC)	220					
	Rated frequency (Hz)	50/60					
	Rated current (A)	0.22/0.28					

Model	IMS20B-20M					
	32D20C	29D17C	25D15C	36D20C	32D17C	28D15C
Rated voltage (V)	380					
Rated speed (rpm)	2000	1700	1500	2000	1700	1500
Rated power (kW)	31.6	28.5	25.2	35.6	32	28.3
Rated frequency (Hz)	133.3	113.3	100	133.3	113.3	100
Rated current (A)	54.0	51.4	44.6	62.2	55.7	49.2
Rated torque (N・m)	151	160	160	170	180	180
Peak current (A)	139.0	136	117.9	154.0	146.9	130
Peak torque at 0.5 times the rated speed (N・m)	376	400	400	424	450	450
Max. speed (rpm)	3000	2700	2500	3000	2700	2500

Peak torque at rated speed (N・m)		330	350	350	365	396	365
Torque constant (N・m/A)		2.71	3.11	3.59	2.73	3.14	3.66
Line resistance (Ω)		0.19	0.23	0.317	0.17	0.20	0.295
Back EMF constant (V/krpm)		186.5	205.2	243	186.0	208	252
Rotation inertia ($kg \cdot cm^2$)	Standard	177	177	177	196	196	196
Motor weight (kg)	Standard	67.7	67.7	67.7	73.1	73.1	73.1
Fan specifications	Type	Centrifugal fan					
	Rated power (W)	50/64					
	Rated voltage (V AC)	220					
	Rated frequency (Hz)	50/60					
	Rated current (A)	0.22/0.28					

6.1.2 Motor dimension

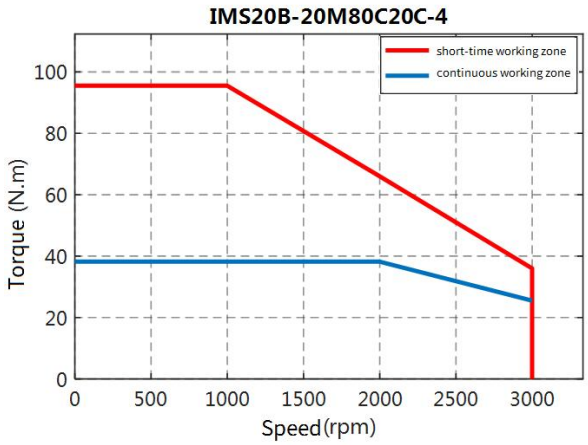


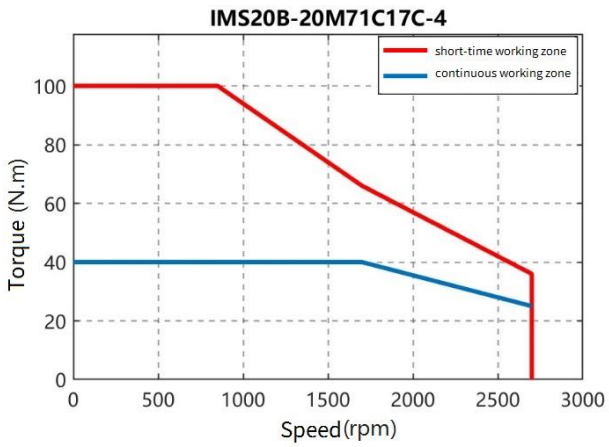
Model	B	L
IMS20B-20M80C20C	165 (225)	337 (411)
IMS20B-20M71C17C	165 (225)	337 (411)
IMS20B-20M63C15C	165 (225)	337 (411)
IMS20B-20M12D20C	190 (250)	365 (439)
IMS20B-20M11D17C	190 (250)	365 (439)
IMS20B-20M94C15C	190 (250)	365 (439)
IMS20B-20M17D20C	220 (280)	393 (467)
IMS20B-20M14D17C	220 (280)	393 (467)
IMS20B-20M13D15C	220 (280)	393 (467)
IMS20B-20M20D20C	230 (290)	421 (495)
IMS20B-20M18D17C	230 (290)	421 (495)
IMS20B-20M16D15C	230 (290)	421 (495)

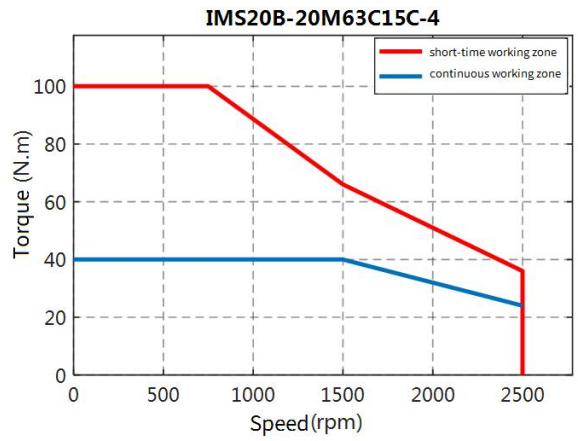
Model	B	L
IMS20B-20M24D20C	270 (330)	449 (523)
IMS20B-20M21D17C	270 (330)	449 (523)
IMS20B-20M19D15C	270 (330)	449 (523)
IMS20B-20M27D20C	300 (360)	477 (551)
IMS20B-20M25D17C	300 (360)	477 (551)
IMS20B-20M22D15C	300 (360)	477 (551)
IMS20B-20M32D20C	340	505
IMS20B-20M29D17C	340	505
IMS20B-20M25D15C	340	505
IMS20B-20M36D20C	360	553
IMS20B-20M32D17C	360	553
IMS20B-20M28D15C	360	553

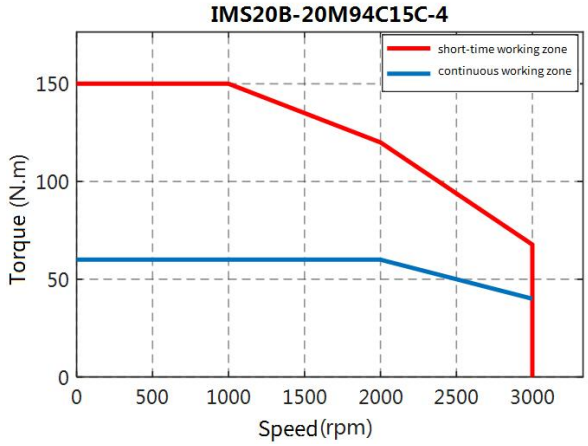
Note: The data in parentheses refers to the brake motor specifications.

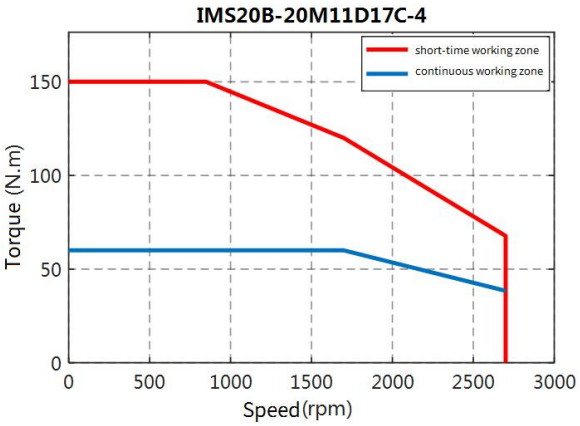
6.1.3 External characteristic curve

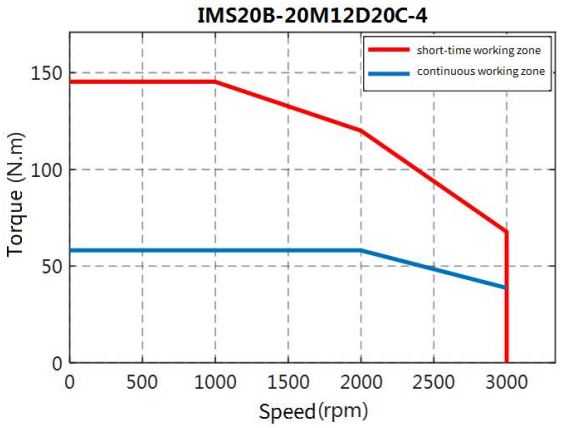


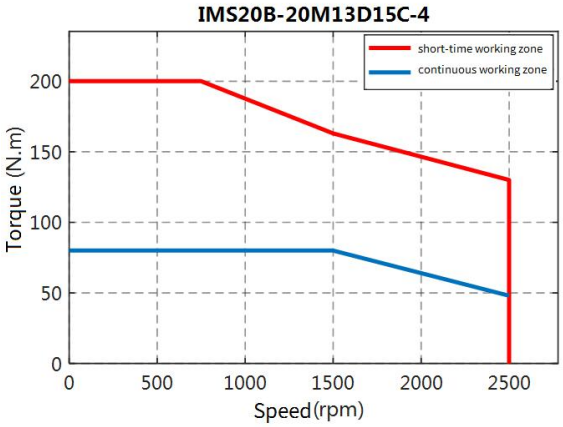


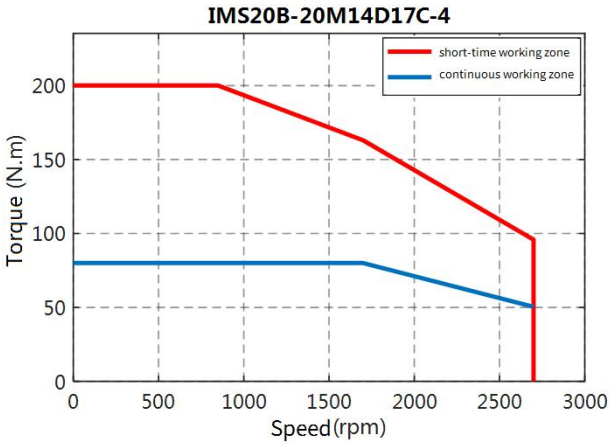


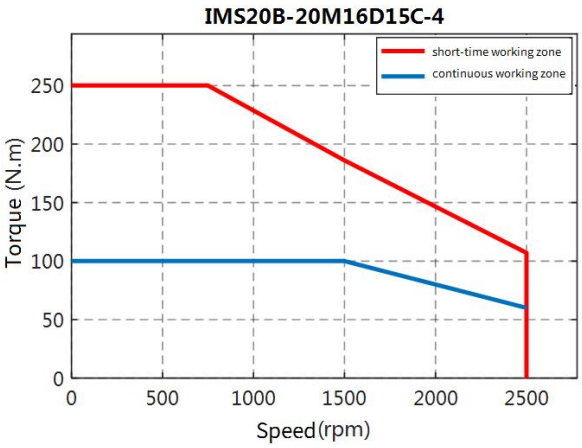


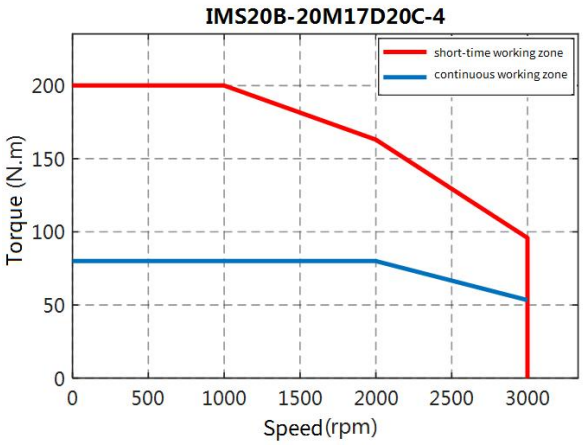

IMS20B-20M11D17C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
50
100
150
0
500
1000
1500
2000
2500
3000


IMS20B-20M12D20C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
50
100
150
0
500
1000
1500
2000
2500
3000

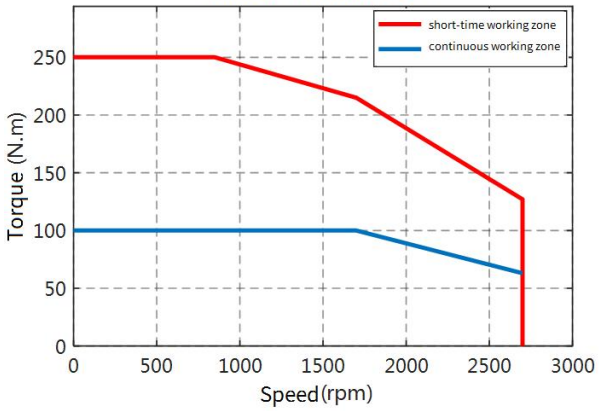

IMS20B-20M13D15C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
50
100
150
200
0
500
1000
1500
2000
2500


IMS20B-20M14D17C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
50
100
150
200
0
500
1000
1500
2000
2500
3000

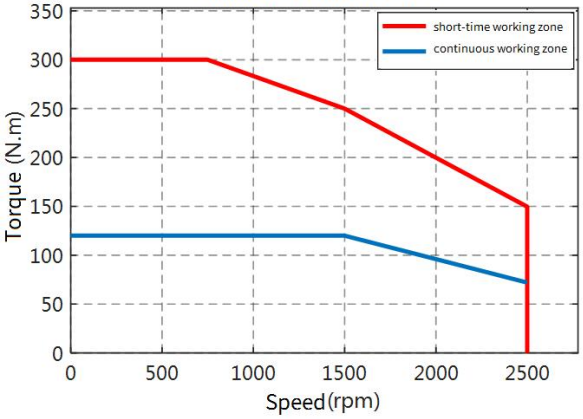

IMS20B-20M16D15C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
50
100
150
200
250
0
500
1000
1500
2000
2500


IMS20B-20M17D20C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
50
100
150
200
0
500
1000
1500
2000
2500
3000

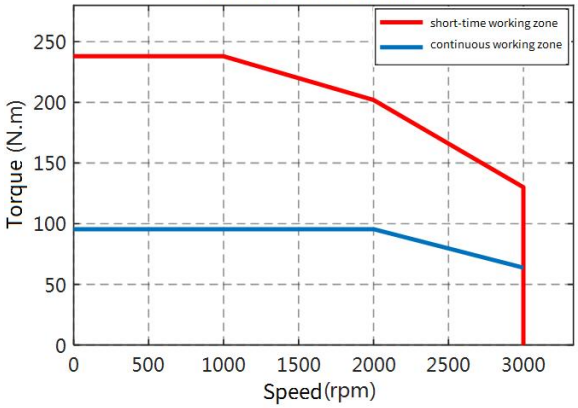
IMS20B-20M18D17C-4



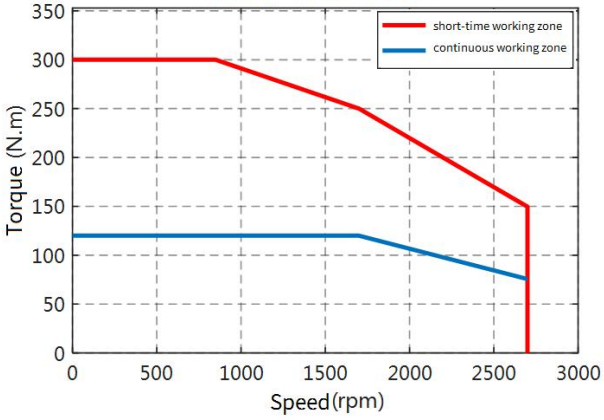
IMS20B-20M19D15C-4



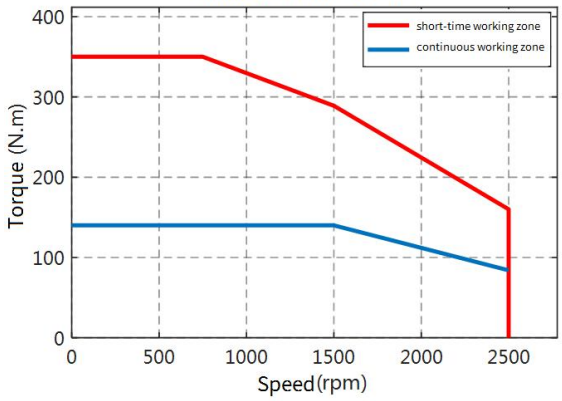
IMS20B-20M20D20C-4



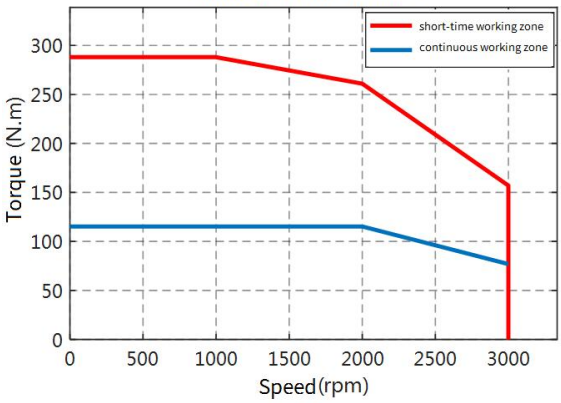
IMS20B-20M21D17C-4



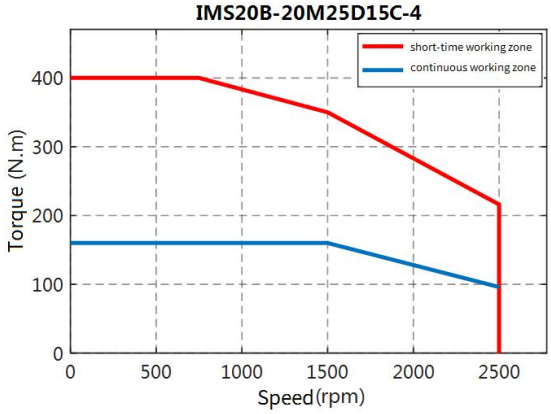
IMS20B-20M22D15C-4



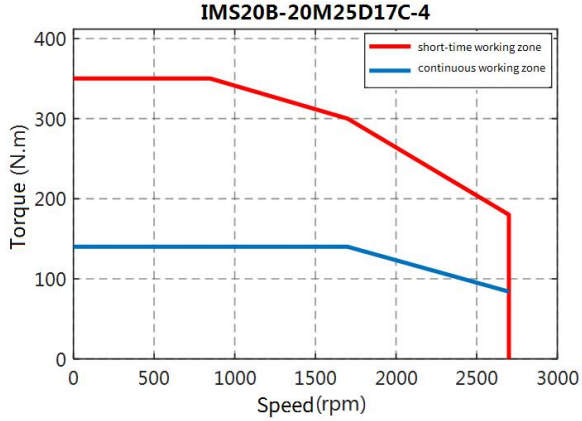
IMS20B-20M24D20C-4

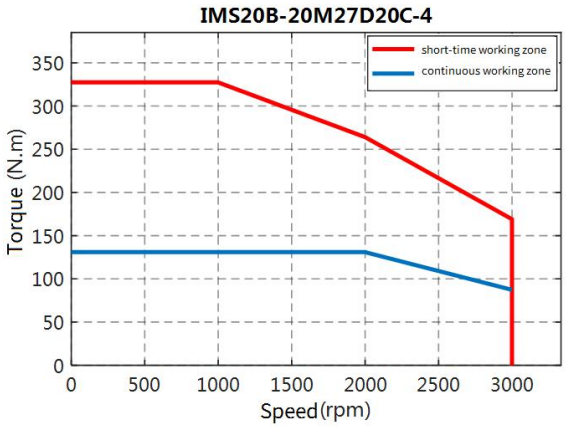


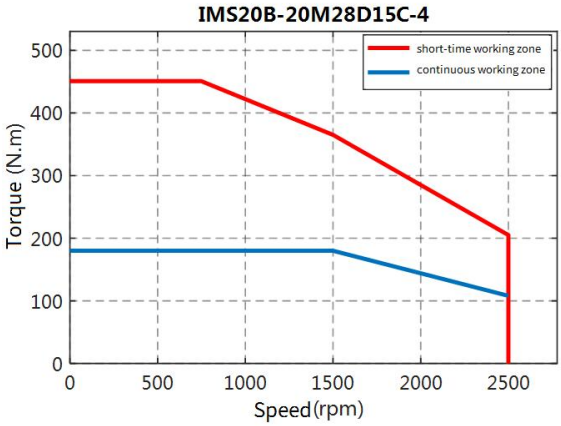
IMS20B-20M25D15C-4

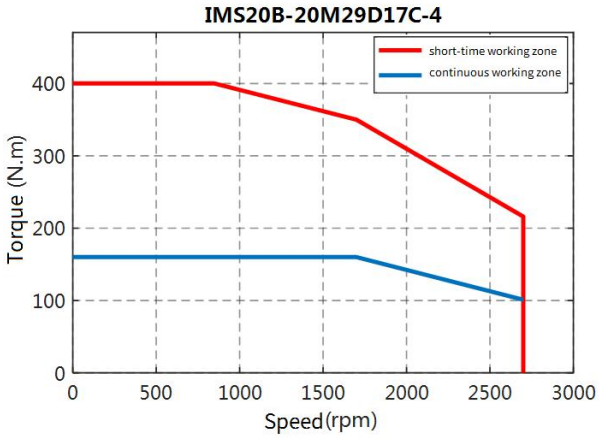


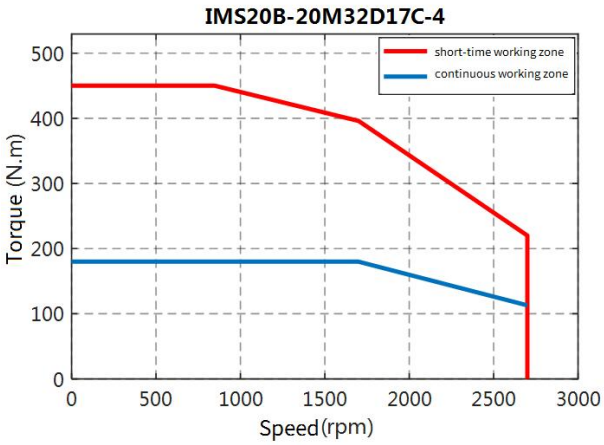
IMS20B-20M25D17C-4

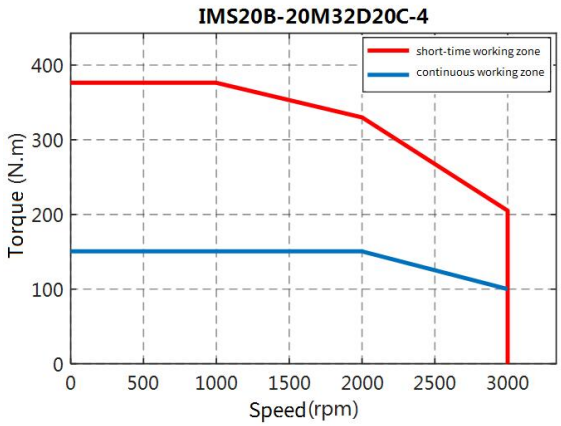


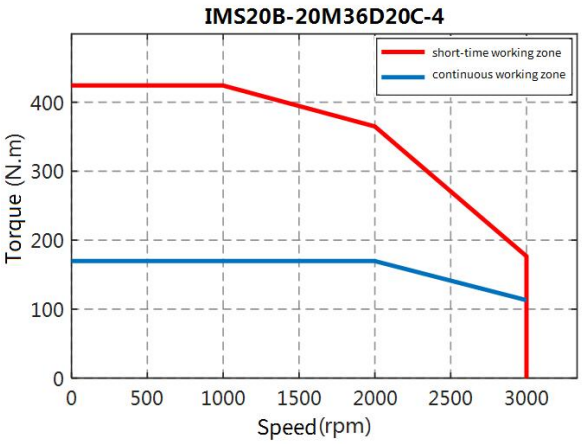

IMS20B-20M27D20C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
50
100
150
200
250
300
350
0
500
1000
1500
2000
2500
3000


IMS20B-20M28D15C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
100
200
300
400
500
0
500
1000
1500
2000
2500


IMS20B-20M29D17C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
100
200
300
400
0
500
1000
1500
2000
2500
3000


IMS20B-20M32D17C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
100
200
300
400
500
0
500
1000
1500
2000
2500
3000


IMS20B-20M32D20C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
100
200
300
400
0
500
1000
1500
2000
2500
3000


IMS20B-20M36D20C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
100
200
300
400
0
500
1000
1500
2000
2500
3000

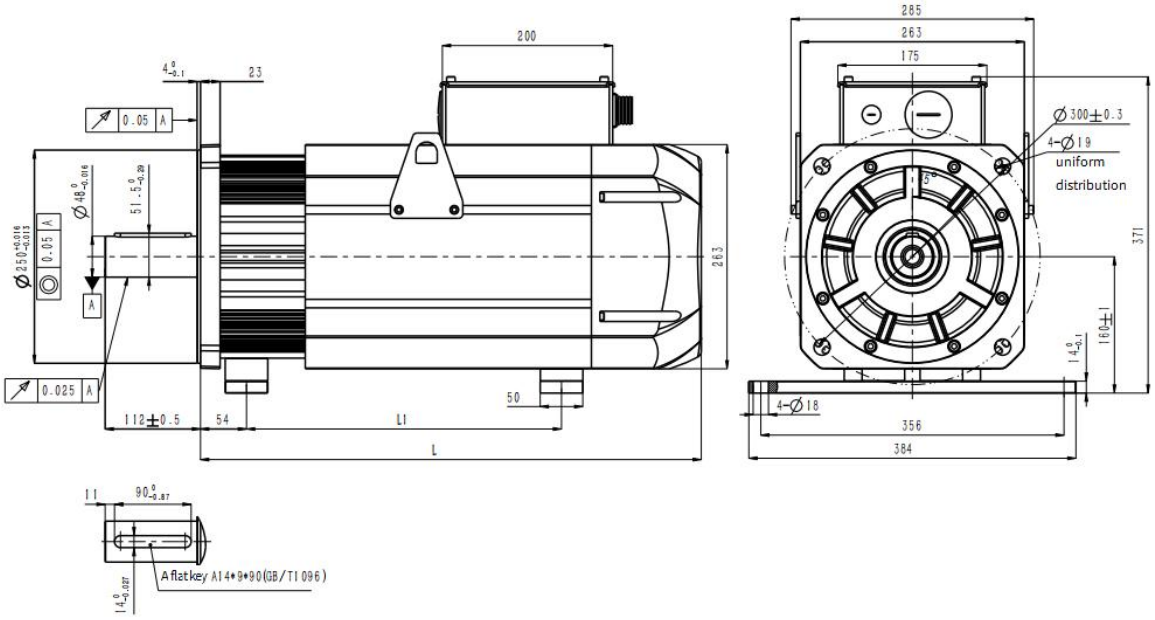
6.2 263 frame

6.2.1 Motor parameters

Model		IMS20B- 26M								
		28D15C	32D17C	37D20C	35D15C	39D17C	45D20C	41D15C	46D17C	50D20C
Rated voltage (V)		380								
Rated speed (rpm)		1500	1700	2000	1500	1700	2000	1500	1700	2000
Rated power (kW)		28	32	37	34.6	39	45	41	46	49.8
Rated frequency (Hz)		100	113.3	133.3	100	113.3	133.3	100	113.3	133.3
Rated current (A)		50.4	58.8	65.1	64.1	65.1	81.2	71.2	81.3	86.6
Rated torque (N・m)		180	180	175.2	221	217	214	260.5	259	238
Peak current (A)		155.2	183.7	185	183.5	192	230	202	242.9	234
Peak torque at 0.5 times the rated speed (N・m)		479	467	438	539	571	536	651	671	624
Max. speed (rpm)		2500	2700	3000	2500	2700	3000	2500	2700	3000
Peak torque at rated speed (N・m)		316	335	335	346	405	390.4	471.6	472	434
Torque constant (N・m/A)		3.57	3.06	2.69	3.45	3.33	2.64	3.66	3.19	2.75
Line resistance (Ω)		0.27	0.21	0.14	0.20	0.17	0.111	0.152	0.13	0.10
Back EMF constant (V/krpm)		233.3	196.2	170.2	224.3	214.3	167.9	232.1	202.9	181.1
Rotation inertia (kg・cm^2)	Standard	242	242	242	297	297	297	351	351	351
	Brake type	260	260	260	315	315	315	/		
Motor weight (kg)	Standard	82	82	82	93	93	93	104	104	104
	Brake type	95	95	95	106	106	106	/		
Brake specifications	Holding torque (N・m)	200	200	200	200	200	200	/		
	Supply voltage (DC V)	24	24	24	24	24	24	/		
	Rated power (W)	55	55	55	55	55	55	/		
	Pick-up voltage (V)	18	18	18	18	18	18	/		
	Drop-out voltage (V)	1.2	1.2	1.2	1.2	1.2	1.2	/		
	Insulation resistance (Ω)	>100M						/		
Fan specifications	Type	AC centrifugal fan								
	Rated power (W)	135								
	Rated voltage (V AC)	230								
	Rated frequency (Hz)	50								
	Rated current (A)	0.5								

Model		IMS20B- 26M								
		47D15C	53D17C	58D20C	53D15C	61D17C	65D20C	60D15C	68D17C	74D20C
Rated voltage (V)		380								
Rated speed (rpm)		1500	1700	2000	1500	1700	2000	1500	1700	2000
Rated power (kW)		47	53	58	53.4	60.5	65	60	67.6	74
Rated frequency (Hz)		100	113.3	133.3	100	113.3	133.3	100	113.3	133.3
Rated current (A)		79.3	93.9	99.7	89.4	101.7	113	100	118.8	127.1
Rated torque (N・m)		300	300	276	340	340	310	380	380	351
Peak current (A)		225	257	253.4	254	265.8	297.3	284	311	340.8
Peak torque at 0.5 times the rated speed (N・m)		750	776	706	850	856	844	950	950	898.9
Max. speed (rpm)		2500	2700	3000	2500	2700	3000	2500	2700	3000
Peak torque at rated speed (N・m)		514.6	515	503	585.8	634	586	711.3	767	694
Torque constant (N・m/A)		3.78	3.19	2.76	3.8	3.34	2.74	3.8	3.20	2.76
Line resistance (Ω)		0.138	0.11	0.08	0.12	0.10	0.71	0.1	0.08	0.06
Back EMF constant (V/krpm)		225.2	210.9	185	245.1	218.4	180.6	243.7	203.2	175.7
Rotation inertia ($kg・cm^2$)	Standard	406	406	406	461	461	461	515	515	515
	Brake type	/								
Motor weight (kg)	Standard	115	115	115	126	126	126	137	137	137
	Brake type	/								
Brake specifications	Holding torque (N・m)	/								
	Supply voltage (DC V)	/								
	Rated power (W)	/								
	Pick-up voltage (V)	/								
	Drop-out voltage (V)	/								
	Insulation resistance (Ω)	/								
Fan specifications	Type	AC centrifugal fan								
	Rated power (W)	135								
	Rated voltage (V AC)	230								
	Rated frequency (Hz)	50								
	Rated current (A)	0.5								

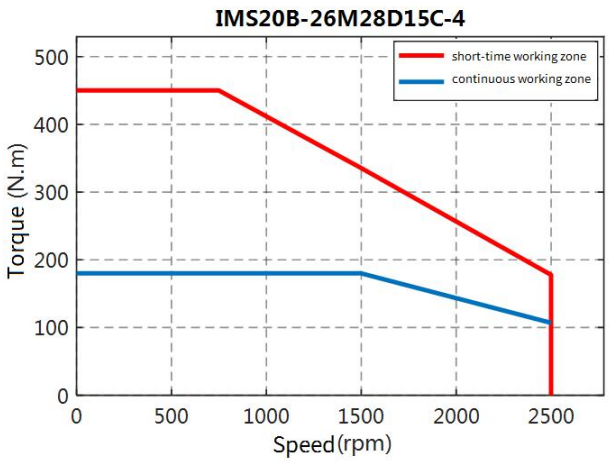
6.2.2 Motor dimension

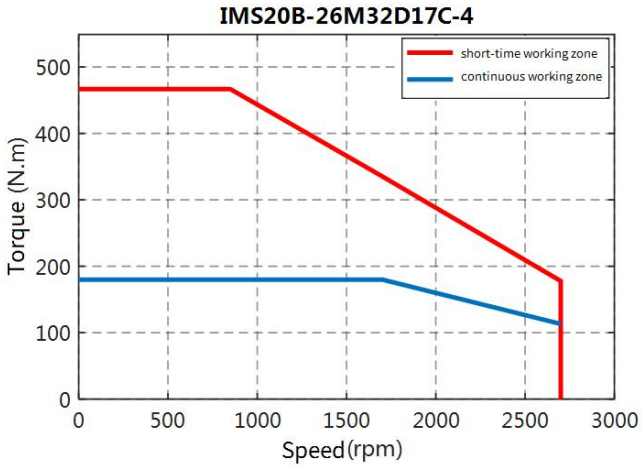


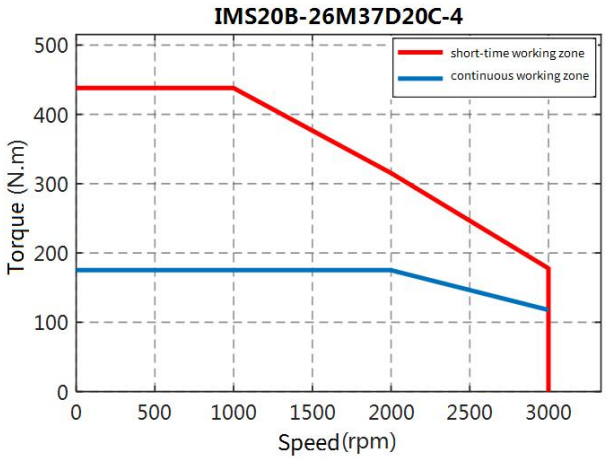
Model	L1	L
IMS20B- 26M28D15C	255 (300)	508 (593)
IMS20B- 26M32D17C	255 (300)	508 (593)
IMS20B- 26M 37D20C	255 (300)	508 (593)
IMS20B- 26M35D15C	300 (370)	548 (633)
IMS20B- 26M39D17C	300 (370)	548 (633)
IMS20B- 26M45D20C	300 (370)	548 (633)
IMS20B- 26M41D15C	370	588
IMS20B- 26M46D17C	370	588
IMS20B- 26M50D20C	370	588
IMS20B- 26M47D15C	400	628
IMS20B- 26M53D17C	400	628
IMS20B- 26M58D20C	400	628
IMS20B- 26M53D15C	440	668
IMS20B- 26M61D17C	440	668
IMS20B- 26M65D20C	440	668
IMS20B- 26M60D15C	480	708
IMS20B- 26M68D17C	480	708
IMS20B- 26M 74D20C	480	708

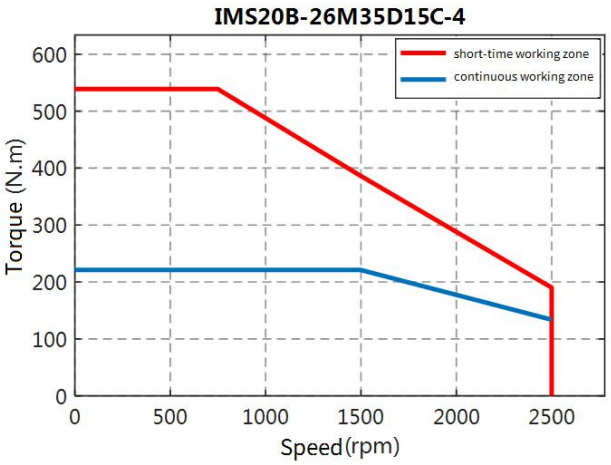
Note: The data in parentheses refers to the brake motor specifications.

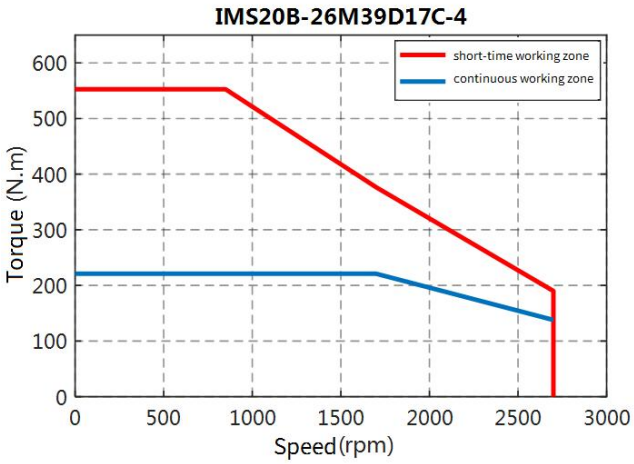
6.2.3 External characteristic curve

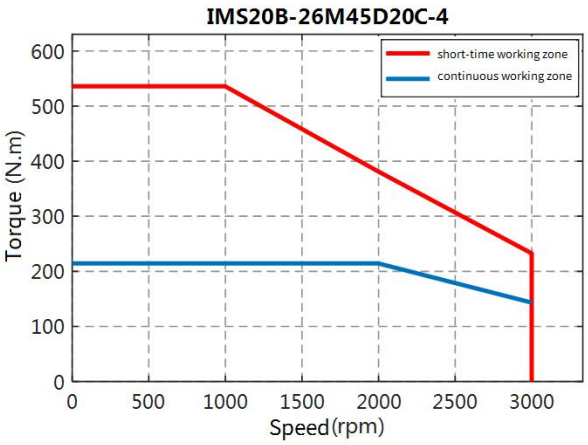


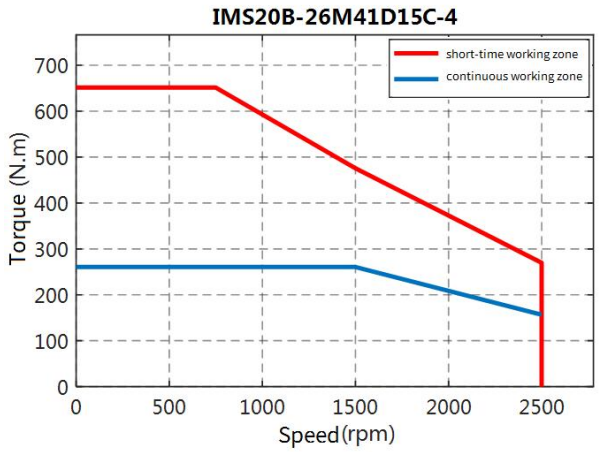


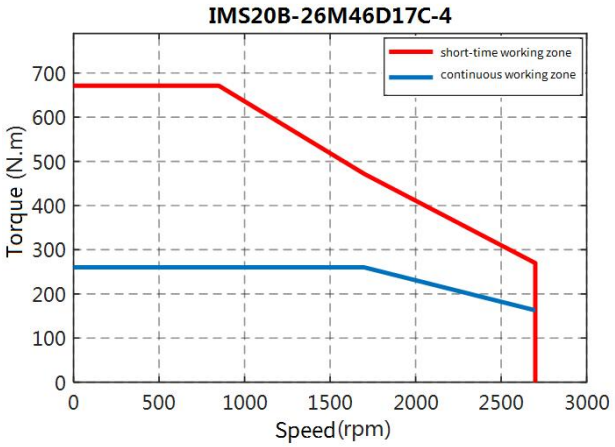


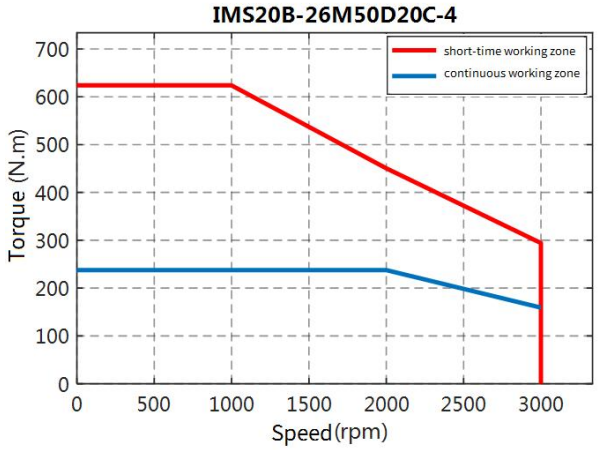


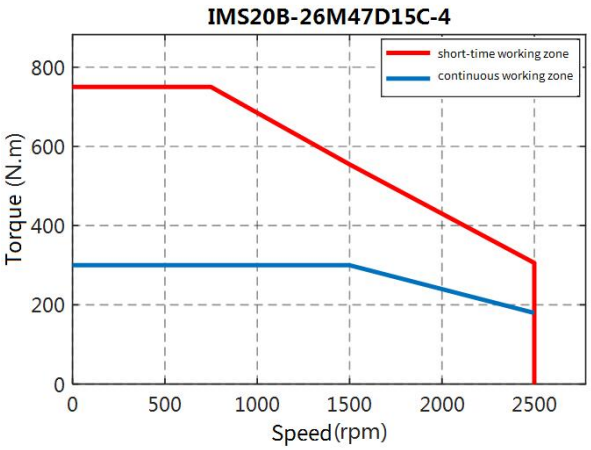


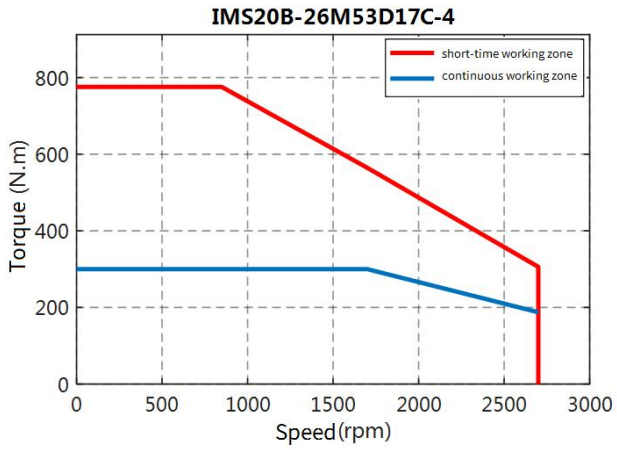


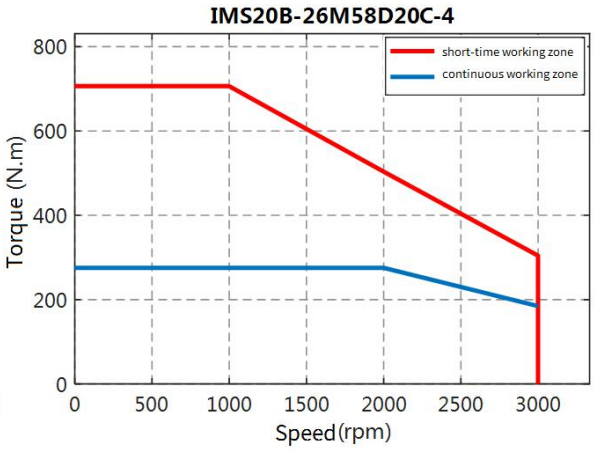

IMS20B-26M41D15C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
100
200
300
400
500
600
700
0
500
1000
1500
2000
2500

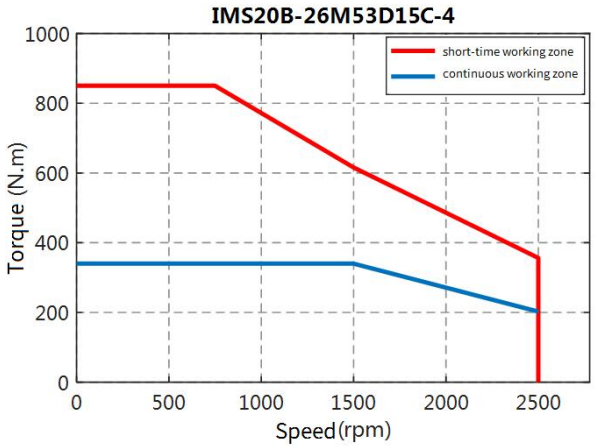

IMS20B-26M46D17C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
100
200
300
400
500
600
700
0
500
1000
1500
2000
2500
3000

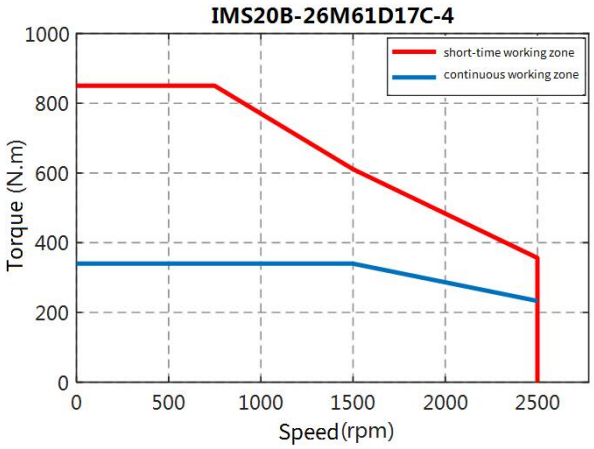

IMS20B-26M50D20C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
100
200
300
400
500
600
700
0
500
1000
1500
2000
2500
3000

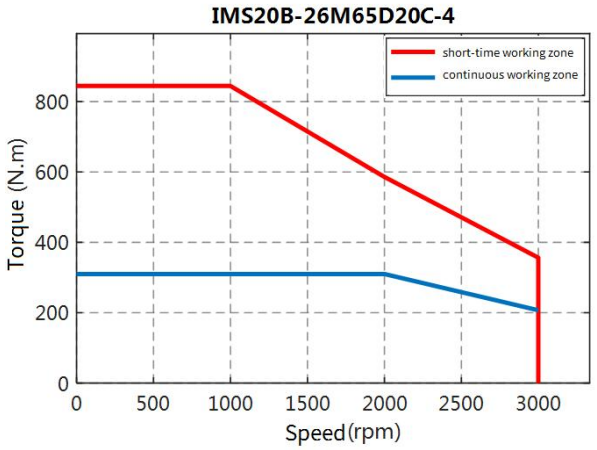

IMS20B-26M47D15C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
200
400
600
800
0
500
1000
1500
2000
2500

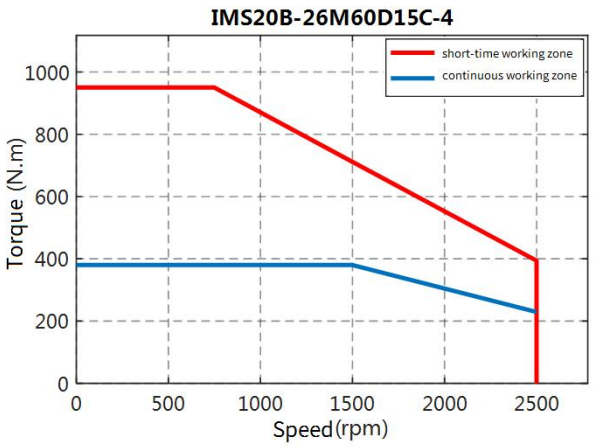

IMS20B-26M53D17C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
200
400
600
800
0
500
1000
1500
2000
2500
3000

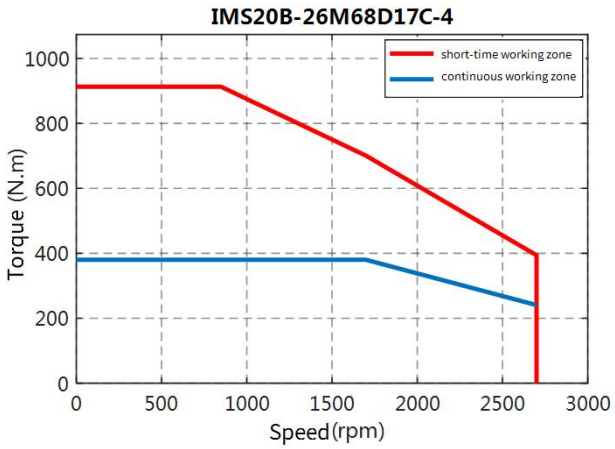

IMS20B-26M58D20C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
200
400
600
800
0
500
1000
1500
2000
2500
3000

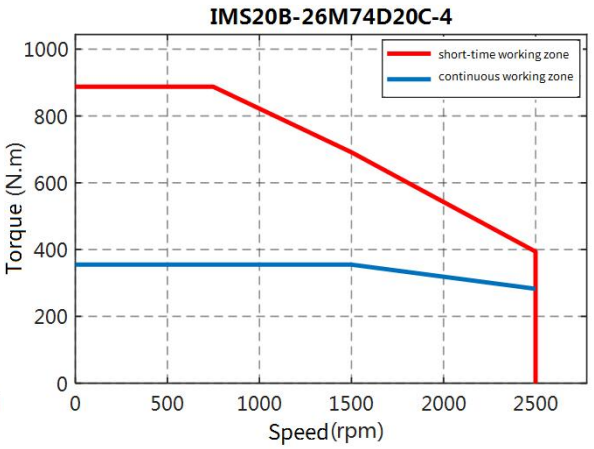

IMS20B-26M53D15C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
200
400
600
800
1000
0
500
1000
1500
2000
2500


IMS20B-26M61D17C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
200
400
600
800
1000
0
500
1000
1500
2000
2500


IMS20B-26M65D20C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
200
400
600
800
0
500
1000
1500
2000
2500
3000

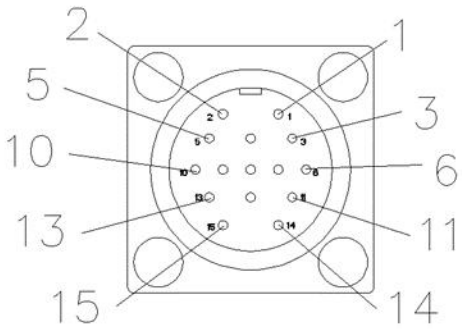

IMS20B-26M60D15C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
200
400
600
800
1000
0
500
1000
1500
2000
2500

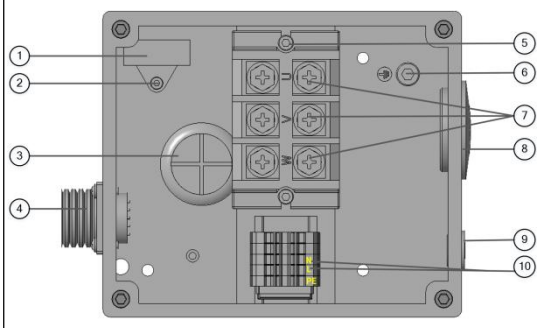

IMS20B-26M68D17C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
200
400
600
800
1000
0
500
1000
1500
2000
2500
3000


IMS20B-26M74D20C-4
short-time working zone
continuous working zone
Torque (N.m)
Speed(rpm)
0
200
400
600
800
1000
0
500
1000
1500
2000
2500

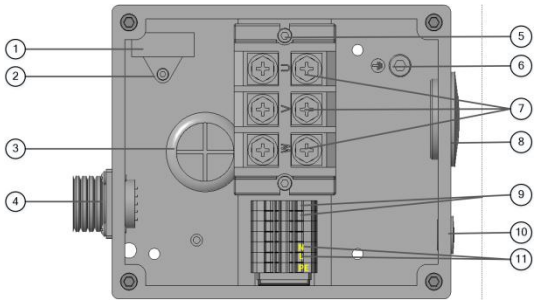
7 Terminal and junction box description

- 200/263 frame terminal and junction box

Encoder terminal outline diagram	Pin No.	23-bit single/multi-turn absolute encoder	12-bit resolver
 15-Pin Xinfeng YD28J15Z aviation connector	1	PE+	PE
	2	SD+	Ref+
	3	SD-	Ref-
	4	5V	Cos-
	5	GND	Cos+
	6	VB_5V	Sin+
	7	VB_GND	Sin-
	8	KTY84-130+	KTY84-130+
	9	KTY84-130-	KTY84-130-

Junction box outline diagram	No.	Component name
	1	Fan capacitor
	2	M4 hex socket screw
	3	Motor outlet hole Be cautious to prevent small parts/foreign objects from falling.
	4	YD28 aviation connector
	5	2-M5 hex socket screw
	6	M8 (M6) connection junction box and housing/grounding marking
	7	M8 bolt for UVW power line
	8	PG36 plug
	9	PG11 plug

	10	220V fan power terminal

Junction box (with brake) outline diagram	No.	Component name
	1	Fan capacitor
	2	M4 hex socket screw
	3	Motor outlet hole Be cautious to prevent small parts/foreign objects from falling.
	4	YD28 aviation connector
	5	2-M5 hex socket screw
	6	M8 (M6) connection junction box and housing/grounding marking
	7	M8 bolt for UVW power line
	8	PG36 plug
	9	Brake 24V power supply terminal
	10	PG11 plug
	11	220V fan power terminal

8 Installation instructions

8.1 Unpacking inspection

After receiving the product, please perform the following checks to ensure the safe use of the product.

Inspecting the packaging

Before unpacking, check whether the product package is intact–whether the package is damaged, dampened, soaked, or deformed. After unpacking, check whether the interior surface of the packing box is abnormal, for example, in wet condition.

Inspecting the machine and its components

After unpacking, check whether the equipment enclosure is damaged or cracked, whether the parts inside the packing box are complete, and whether the nameplate and label on the product body are consistent with the model ordered.

8.2 Mechanical installation

8.2.1 Preparing

■ **Safety instructions**

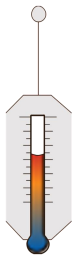
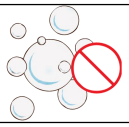
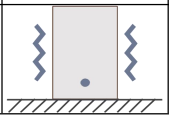
Only qualified personnel who have received training are allowed to perform the tasks described in this chapter. Please read the following installation preparations carefully before proceeding with the installation to ensure a smooth process and to avoid personal injury or equipment damage.

Item	Description
	● Carry out operations according to the safety instructions. Ensure the motor power has been disconnected before installation. If the motor has been powered on, disconnect the drive and wait for at least 15 minutes, and ensure the POWER indicator is off before proceeding to the next step. ● The motor installation must be designed and done according to applicable local laws and regulations. We do not assume any liability whatsoever for any equipment installation which breaches local laws or regulations.

■ **Installation environment and site**

Environment requirements

Environment	Requirement

Environment	Requirement	
Temperature		● Refer to the motor mechanical characteristics description. ● The temperature does not change rapidly. ● When the equipment is installed in a closed space, such as control cabinet, use a cooling fan or air conditioner for cooling when necessary. ● When the temperature is too low, if you want to use the equipment that has been idled for a long time, install an external heating device before the use to eliminate the freeze inside the equipment. Otherwise, the equipment may be damaged.
Relative humidity (RH)		● See section 5.1 Mechanical characteristics ● The max. RH cannot exceed 60% in the environment with corrosive gases.
Altitude		● Lower than 1000m. ● When the altitude exceeds 1000m, please derate according to the altitude derating curve. ● When the altitude exceeds 3000m, consult our local dealer or office for details.
Vibration		See section 5.1 Mechanical characteristics

Site requirement

Site		Requirement
Indoor		Without electromagnetic radiation sources and direct sunlight. Note: The motor must be installed in a clean and well-ventilated environment based on the housing IP rating.
		Without foreign objects such as oil mist, metal powder, conductive dust, and water
		Without radioactive, corrosive, hazard, and combustible and explosive substances Note: Do not install the motor onto combustible objects.
		With low salt content.

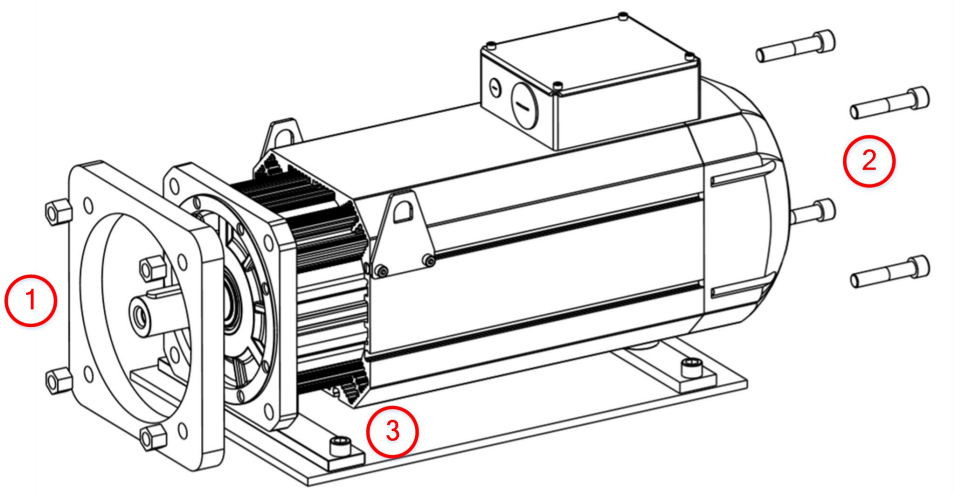
8.2.2 Installation method

The installation procedures are as follows:

Step 1 Clear the installation area and prepare the necessary tools and components.

Step 2 Check and confirm that all components are in good condition and that the motor operates normally.

Step 3 Choose an appropriate installation method to ensure that the drive center axis is aligned and does not exceed the allowable tolerance range. Secure the motor using bolts, avoiding any striking to prevent damage.



① Flange fixing nut ② Flange fixing bolt ③ Anchor bolt

Note:

- During the handling of the motor, do not pull on the motor leads or output shaft. It is recommended to use the lifting lugs on both sides of the motor for installation.
- The recommended installation method is IMB35. The flange and base must be secured on a flat supporting surface. If there is a height difference between the motor and the driven machinery, shimming must be done, and the area of the shim must be larger than the area of the motor's base.
- When using a coupling for transmission, the motor's shaft centerline must coincide with the load's shaft centerline.
- During installation, please ensure that all mounting holes are securely locked with steel bolts (strength grade 8.8 or higher) and nuts. In areas prone to rust, stainless steel bolts should be used, and in high-vibration environments, anti-vibration pads should be installed.
- Do not strike or hammer during the motor assembly to avoid damage to the encoder or shafts.
- After installation, check each component individually, and only start trial operation after confirming that all connections are secure.
- Please wipe the slushing oil on the motor shaft before using.

8.3 Check after installation

After installation, please check each item in the following table.

Check item	Content	Confirmation
Ambient environment	Ambient temperature is less than 40℃.	☐
	RH is less than 90%.	☐
	Vibration acceleration is less than 0.5G(4.9m/S^2).	☐
	No dust, corrosive gases, or oil contamination.	☐
	No tools or foreign objects (including cable ends, metal shavings, and other hazardous materials) are piled around.	☐
	No condensation or water droplets on the exterior of the machine.	☐

Check item	Content	Confirmation
Mechanical parts	The motor installation location meets design and specification requirements.	☐
	The installation of the motor and the connection of shafts and mechanics are reliable.	☐
	The motor and the machines are available to run.	☐
	Do not run the motor at negative load. Note: Negative load indicates that the direction of the output torque of the motor is contrary to the motor speed direction.	☐
Wiring parts	All wiring comply with the standard wiring shown in the installation section.	☐
	The external terminal (SON) for servo enabling is set to OFF.	☐
	The cable stress is within the designated range.	☐
	The motor is properly grounded.	☐

9 Common faults

Fault	Possible cause	Solution
Motor not operating when powered on	The power supply cable is disconnected.	Check the wiring and connect it correctly.
	The motor encoder cable is disconnected, and there is a fault in the servo drive.	Check the encoder cable and inspect the output of the servo drive.
	Motor overload prevents startup.	Reduce or remove the load, then restart.
Motor power-on overspeed	The initial angle of the encoder is not recognized.	Reinitialize the encoder initial angle.
Abnormal noise from motor	The motor current loop gain is too high and the power supply phase sequence is reversed.	Contact the technician to adjust the current loop gain value and check the power supply phase sequence.
	Poor installation of the oil seal.	Check the installation status of the oil seal or replace the oil seal.
	Friction occurring in the brake pads.	Please contact your supplier or local INVT technician for assistance.
	There is a foreign object inside the motor.	
	The bearing is damaged.	
Motor operation vibration	Abnormal feedback from the motor encoder.	Check whether the shielding and grounding of the motor encoder cable are in good condition.
	The motor encoder is loose.	Please contact your supplier or local INVT technician for assistance.
	Current loop gain mismatch.	Contact the technician to adjust the current loop gain value.
Reverse rotation direction	Incorrect motor rotation direction setting.	Check the rotation direction setting of the servo drive motor.
Slow motor acceleration	Incorrect motor acceleration time setting.	Check the acceleration time setting of the servo drive motor.
	Motor overload prevents startup.	Reduce or remove the load.
Motor overheating	The motor is operating under overload conditions.	Reduce the motor load.

Fault	Possible cause	Solution
	Abnormal motor heat dissipation.	Check that there are no obstructions around the motor.
Brake not responding when powered on	Brake wiring disconnection.	Check the brake connection wires.
	The brake is faulty.	Please contact INVT technical support personnel for assistance.
	Incorrect power supply voltage for the brake.	Check the output voltage of the brake power supply and use a compliant power supply.
Insufficient brake torque	The brake friction pads are worn out.	Replace the motor.

10 Certification categories and standards

10.1 CE certification

Certification	Standard
EMC command 2014/30/EU	EN 61000-6-4:2019 EN 61000-6-4:2019
Low voltage directive (LVD) 2014/35/EU	EN 60034-1:2010

10.2 UL certification

Certification	Standard
UL/cUL certification	UL 1004-1 UL 1004-6 CSA C22.2 No. 100

10.3 China energy efficiency label