DDM Torque Motor

超同步股份有限公司
CTB Co., Ltd.

CTB-PI-S-2603-01-01

COMPANY PROFILE

CTB Co., Ltd. was established in 2008, focusing on the field of intelligent manufacturing, providing core components such as servo motors, torque motors,motorized spindles, and professional automation servo control solutions. The company has two wholly-owned subsidiaries, Beijing CTB technology Co., Ltd. (established in 2000) and Shandong CTB Intelligent Equipment Co., Ltd. (established in 2017).

The company is a national high-tech enterprise, a national specialized and innovative "little giant" enterprise, and a listed enterprise on the New Third Board. The company has been recognized as a "National Green Factory" and a "Smart Factory" in Beijing. It is a Beijing patent demonstration unit, a Beijing enterprise technology research and development institution, and a Beijing enterprise technology center.

The company's products include a full range of industrial automation products such as AC servo motors, AC servo drives, PLC, motion controllers, core functional components such as torque motors, motorized spindles, direct drive turntables. The core technology has reached the international advanced level, and key products can replace imported similar products, widely used in CNC machine tools, industrial robots, industrial automation and other fields.

The company has core technologies with independent intellectual property rights, over 300 patents and software copyrights, including more than 30 invention patents. Its servo control system technology is at the leading level in China, and it has mastered core technologies such as servo control space vector algorithm, control software development, servo drive design, servo motor electromagnetic design, and manufacturing processes.

The company has two intelligent equipment industrial parks in Beijing and Shandong, with a business area of 100000 square meters. Advanced equipment, strict management, sufficient production capacity, and strong production and supply capabilities. There are 30 offices nationwide, with a sales and service network covering the north and south of China, providing efficient and professional pre-sales, in sales, and after-sales services for our customers.

INTELLIGENT PRODUCTION LINE


Servo Motor Production Line


Functional Component Line


Servo Drive Line


Precision Grinding Line


Punching-Shearing Line


Gantry-Machining Line

Model Description

Take DDM327 for example

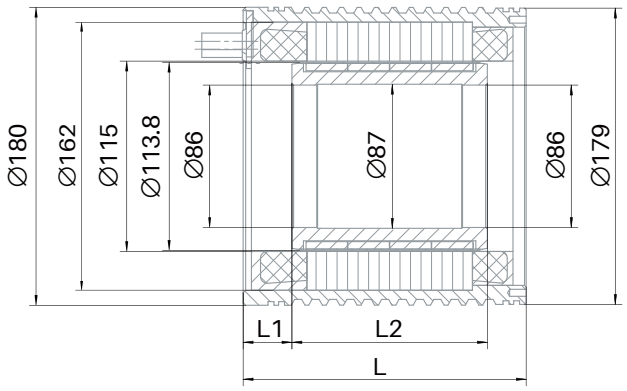
DDM 327 - L50 - 4 165T - 80 / 150

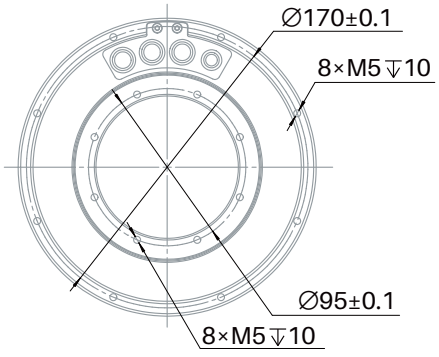
① ② ③ ④ ⑤ ⑥ ⑦

Code	Description	Instructions	Example Model
①	Motor type code	DDM: Torque Motor	Torque Motor
②	Product series	162 220 238 327 398 490	327
③	Core length	unit: mm	50 mm
④	Voltage rating	4: 400V	400V
⑤	Torque code	See the standard specification sheet for details	165N·m
⑥	Rated Speed	unit: rpm	Rated Speed: 80 rpm
⑦	Max. Speed	unit: rpm	Max. Speed: 150 rpm
Note	• Insulation class: Class H • Built-in KTY84-130 temperature sensor in the stator • Stator lead wire length: 0.5 m		

Frame Code: DDM162

◆ Overall Dimensions



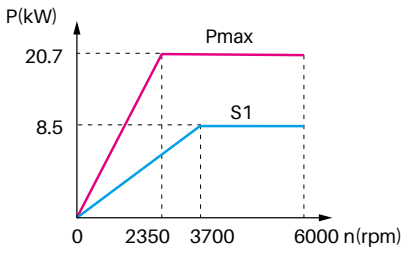


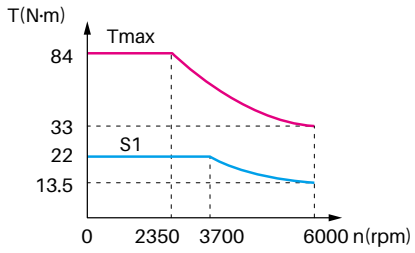
Motor Model	L1 (mm)	L (mm)	L2 (mm)
DDM162-L45	26	102	59
DDM162-L70		127	84
DDM162-L100	29.5	171	118
DDM162-L140	23	195	154

◆ Electrical Specifications

Model: DDM162-L45				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
8.5	380	17	79	22
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
84	370	600	3700	6000
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
12	0.888	0.3808	2.1289	2.1936
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
95	1.29	0.0047	Y	

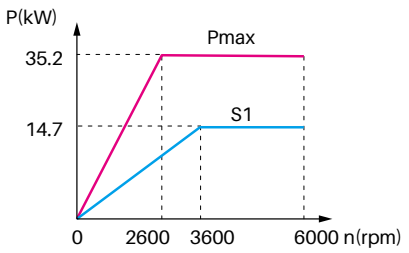
Characteristic Curve

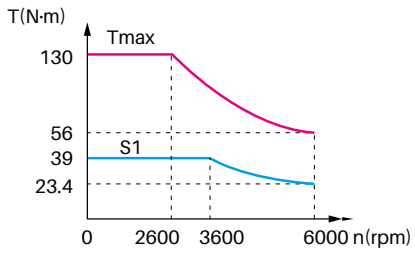




Model: DDM162-L70				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
14.7	380	28.4	119	39
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
130	360	600	3600	6000
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
12	0.876	0.1881	1.3818	1.4239
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
96	1.37	0.0066	Y	

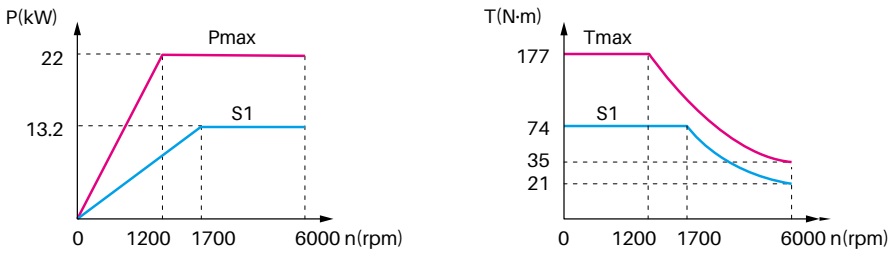
Characteristic Curve



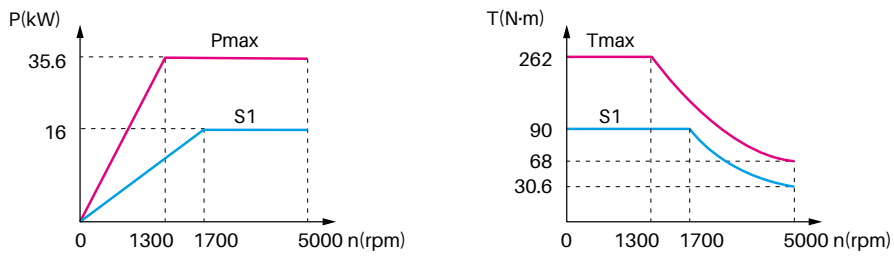


◆ Electrical Specifications

Model: DDM162-L100				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
13.2	374	27	80	74
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
177	170	600	1700	6000
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
12	0.838	0.4869	4.0591	4.1798
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
185	2.74	0.0093	Y	
Characteristic Curve				

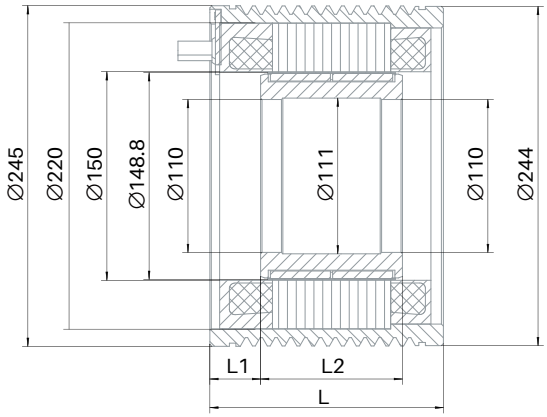


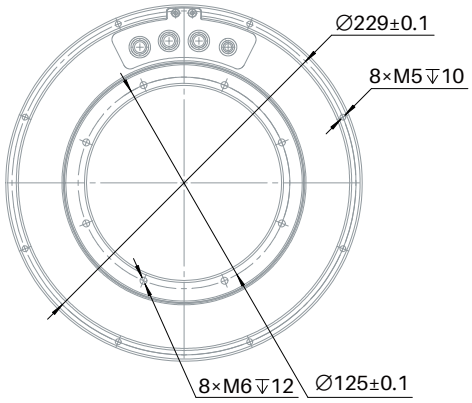
Model: DDM162-L140				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
13.2	374	27	80	74
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
262	170	500	1700	5000
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
12	0.852	0.2417	2.2779	2.3173
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
175	2.31	0.0122	Y	
Characteristic Curve				



Frame Code：DDM220

◆ Overall Dimensions

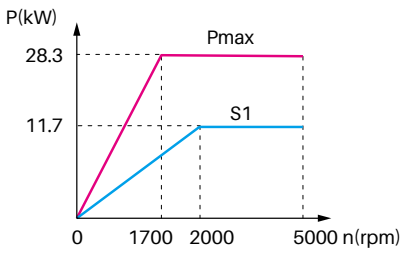


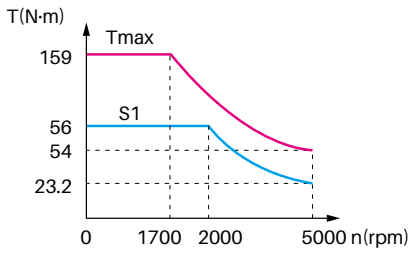


Motor Model	L1 （mm）	L （mm）	L2 （mm）
DDM220-L50	34.5	130	65
DDM220-L85	36.5	168	102
DDM220-L90	39		

◆ Electrical Specifications

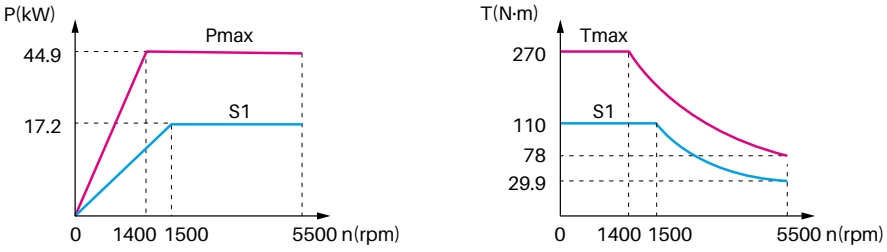
Model: DDM220-L50				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
11.7	323	26	81	56
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
159	200	500	2000	5000
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
12	0.8719	0.2579	2.8	2.77
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
146	2.15	0.0160	Y	
Characteristic Curve				



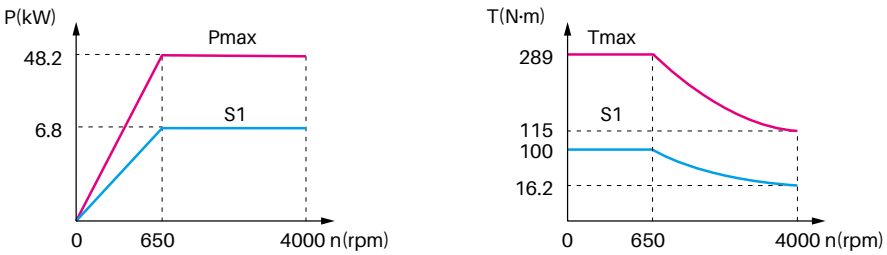


◆ Electrical Specifications

Model: DDM220-L85				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
17.2	297	43	134	110
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
270	150	550	1500	5500
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
12	0.8533	0.1641	2.25	2.2108
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
173	2.56	0.0251	Y	
Characteristic Curve				

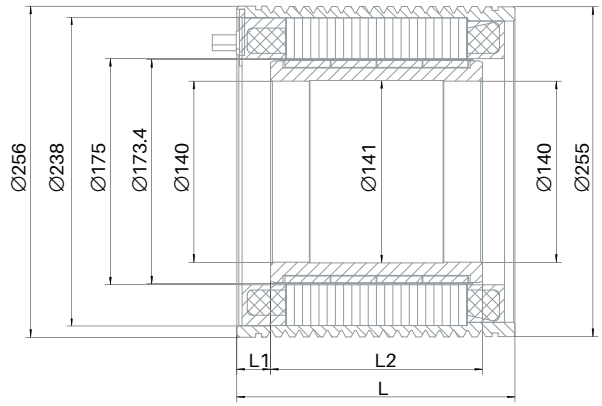


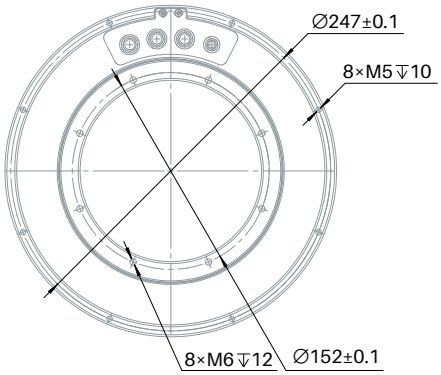
Model: DDM220-L90				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
6.8	118	45	142	100
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
289	65	400	650	4000
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
12	0.877	0.1317	1.819	1.8014
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
155	2.22	0.0251	Y	
Characteristic Curve				



Frame Code: DDM238

◆ Overall Dimensions



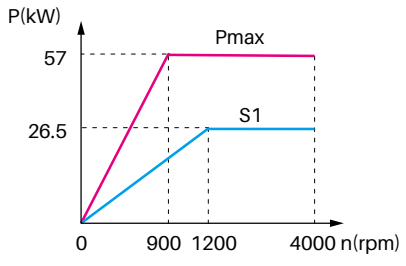


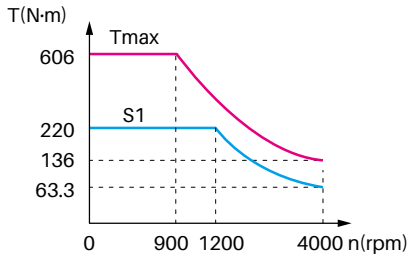
Motor Model	L1 (mm)	L (mm)	L2 (mm)
DDM238-L140	26	215	164
DDM238-L160	31	235	185
DDM238-L200	36	279	216

◆ Electrical Specifications

Model: DDM238-L140				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
26.5	354	57	208	220
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
606	115	400	1150	4000
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
12	0.8588	0.1659	2.4645	2.5823
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
261	3.86	0.0613	Y	

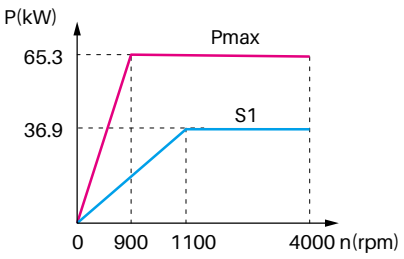
Characteristic Curve

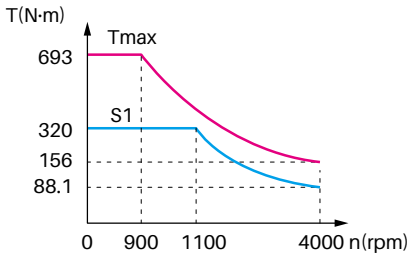




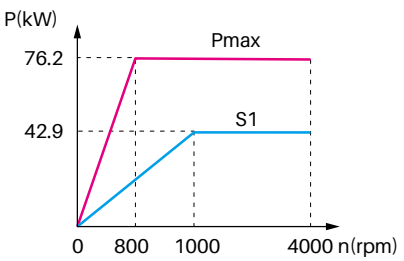
◆ Electrical Specifications

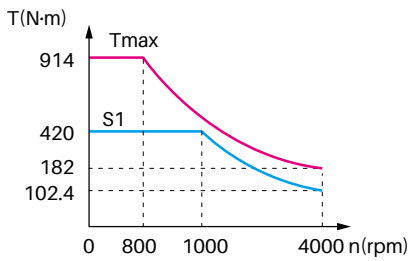
Model: DDM238-L160				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
36.9	347	95	234	320
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
693	110	400	1100	4000
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
12	0.79	0.1383	2.0998	2.1587
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
263	3.37	0.0691	Y	
Characteristic Curve				





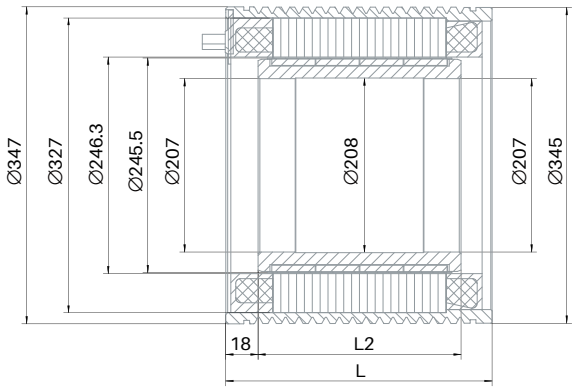
Model: DDM238-L200				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
42.9	350	110	283	420
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
914	100	400	1000	4000
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
12	0.79	0.1226	1.9302	1.9847
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
289	3.82	0.0807	Y	
Characteristic Curve				

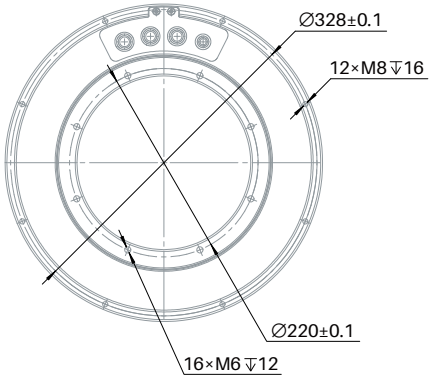




Frame Code: DDM327

◆ Overall Dimensions

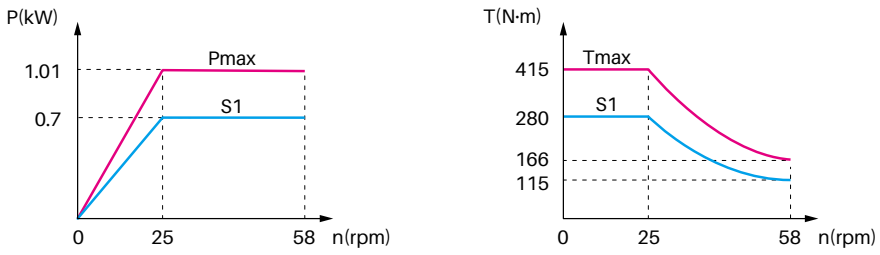




Motor Model	L （mm）	L2 （mm）
DDM327-L50	110	80
DDM327-L75	135	107
DDM327-L100	160	132
DDM327-L150	210	182
DDM327-L200	260	232

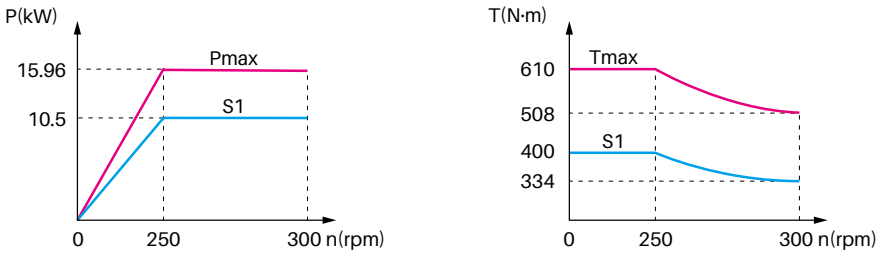
◆ Electrical Specifications

Model: DDM327-L50				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
0.7	243	5.8	11	280
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
415	10	23.2	25	58
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
48	0.94	15.36	124.7	135.3
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
3363	48.3	0.096	Y	
Characteristic Curve				

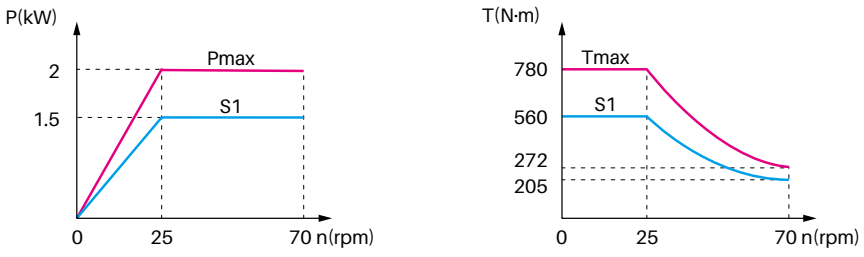


◆ Electrical Specifications

Model: DDM327-L75				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
10.5	303	31.7	62	400
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
610	100	120	250	300
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
48	0.76	0.614	5.454	5.934
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
862	12.6	0.126	Y	
Characteristic Curve				

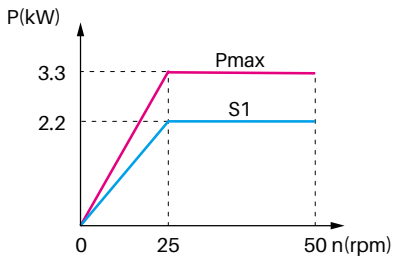


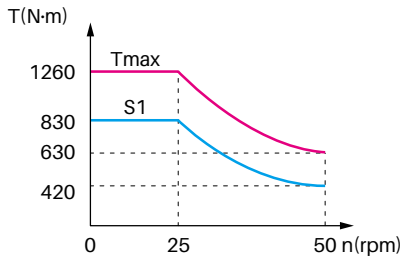
Model: DDM327-L100				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
1.5	199	13	22	560
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
780	10	28	25	70
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
48	0.93	5.325	51.48	55.96
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
3062	43.1	0.156	Y	
Characteristic Curve				



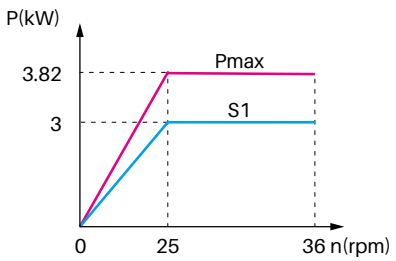
◆ Electrical Specifications

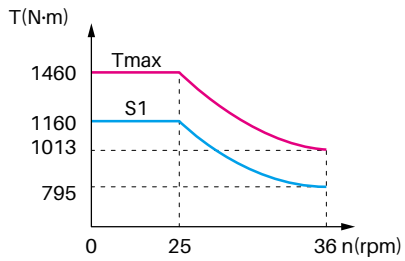
Model: DDM327-L150				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
2.2	251	14.3	28	830
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
1260	10	20	25	50
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
48	0.93	5.759	58.7	63.75
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
4024	58.0	0.218	Y	
Characteristic Curve				





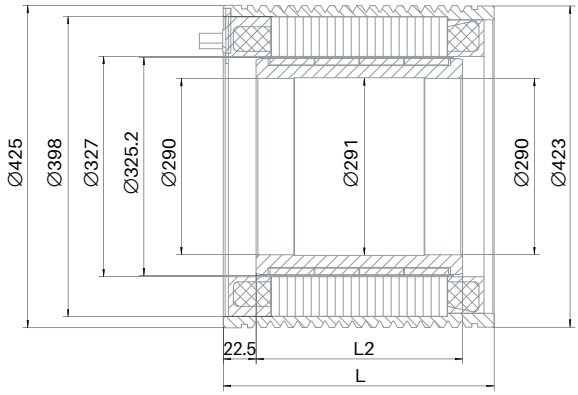
Model: DDM327-L200				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
3.0	309	16	23	1160.6
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
1460	10	14.4	25	36
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
48	0.92	6.202	68.86	74.56
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
5032	72.5	0.279	Y	
Characteristic Curve				

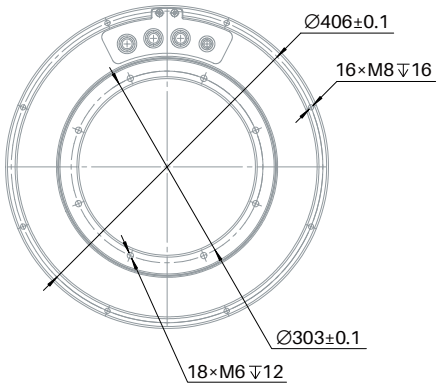




Frame Code: DDM398

◆ Overall Dimensions

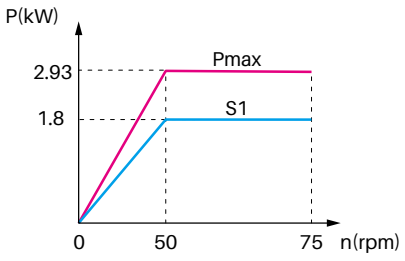


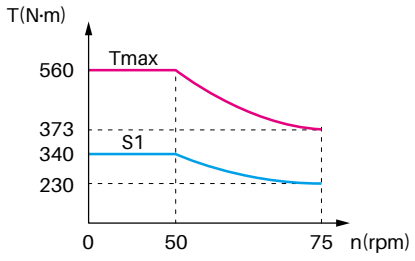


Motor Model	L （mm）	L2 （mm）
D D M 3 9 8 - L 5 0	120	82
D D M 3 9 8 - L 7 5	145	107
D D M 3 9 8 - L 1 0 0	170	132
D D M 3 9 8 - L 1 5 0	220	182
D D M 3 9 8 - L 2 0 0	270	232

◆ Electrical Specifications

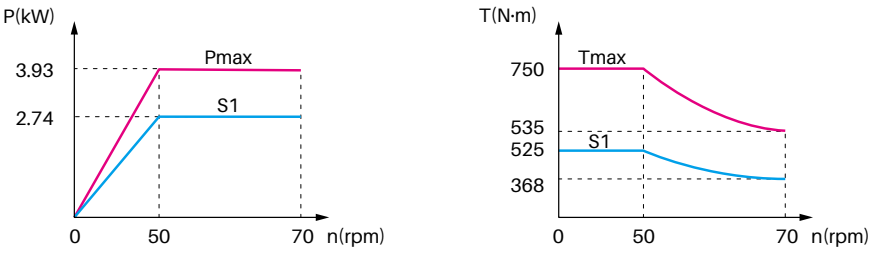
Model: DDM398-L50				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
1.8	286	6.8	13	341
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
560	26.67	40	50	75
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
64	0.90	7.892	54.47	64.88
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
3322	50.2	0.223	Y	
Characteristic Curve				



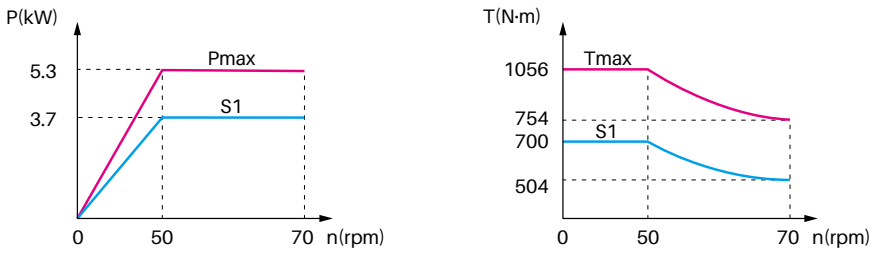


◆ Electrical Specifications

Model: DDM398-L75				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
2.7	302	10	16	525
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
760	22.67	37.3	50	70
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
64	0.90	5.76	39.4	47.19
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
3482	52.5	0.295	Y	
Characteristic Curve				

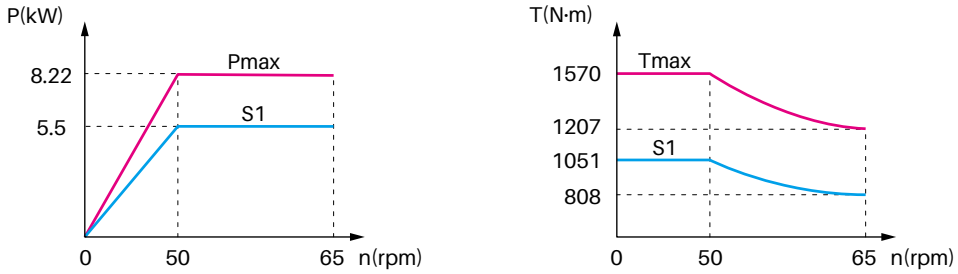


Model: DDM398-L100				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
3.7	300	13	22	700
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
1056	26.67	37.3	50	70
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
64	0.89	4.111	30.96	37.11
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
3572	53.8	0.365	Y	
Characteristic Curve				

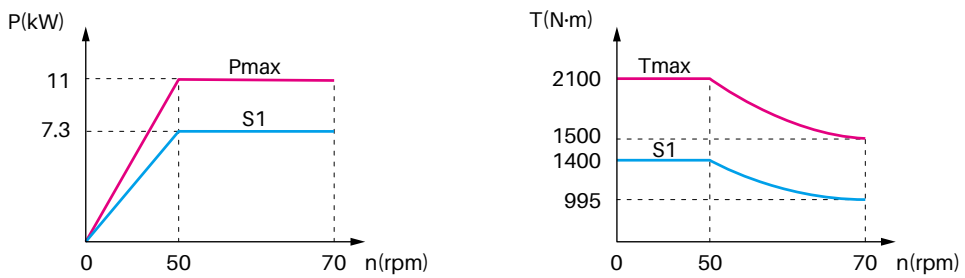


◆ Electrical Specifications

Model: DDM398-L150				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
5.5	308	18.6	31	1051.3
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
1570	26.67	34.6	50	65
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
64	0.89	2.798	22.67	27.19
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
3750	56.6	0.512	Y	
Characteristic Curve				

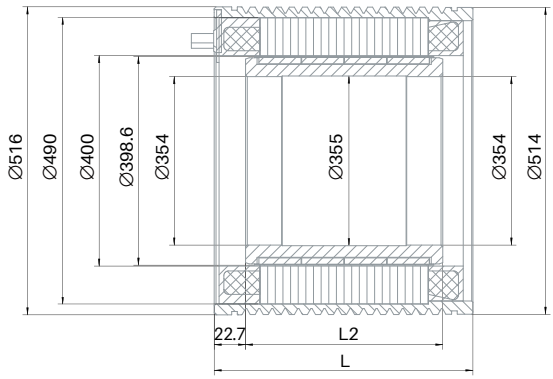


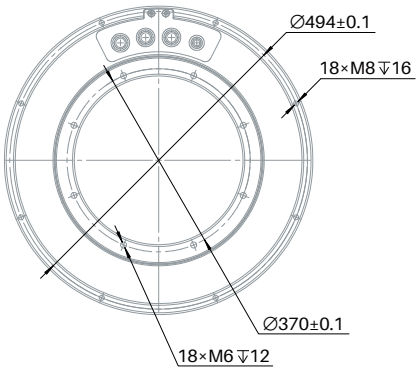
Model: DDM398-L200				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
7.3	303	25	43	1400
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
2100	26.67	37.3	50	70
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
64	0.89	1.994	16.66	19.98
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
3714	56.0	0.657	Y	
Characteristic Curve				



Frame Code: DDM490

◆ Overall Dimensions

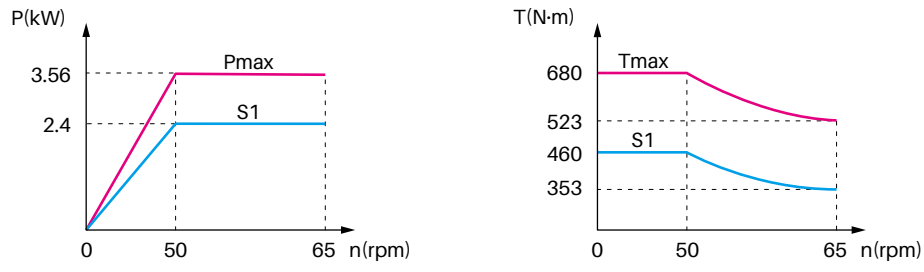




Motor Model	L （mm）	L2 （mm）
DDM490-L50	120	82
DDM490-L75	145	107
DDM490-L100	170	132
DDM490-L150	220	182
DDM490-L200	270	232

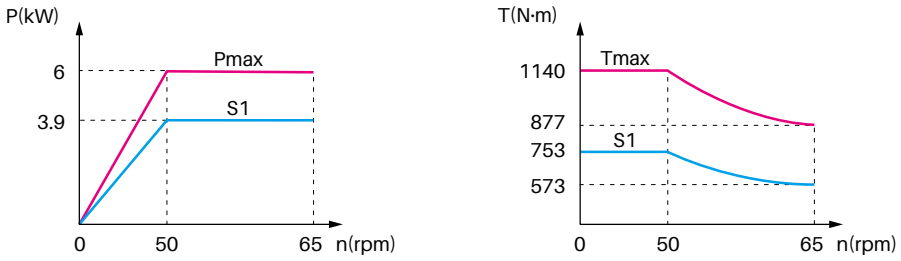
◆ Electrical Specifications

Model: DDM490-L50				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
2.4	303	9	15	460
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
680	31.67	41.16	50	65
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
76	0.88	6.228	40.76	48.7
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
3414	51.1	0.532	Y	
Characteristic Curve				

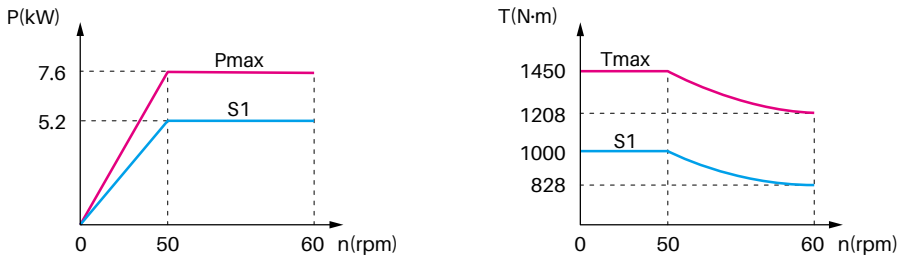


◆ Electrical Specifications

Model: DDM490-L75				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
3.9	297	14.5	26	753
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
1140	31.67	41.6	50	65
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
76	0.86	3.364	27.17	32.98
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
3500	51.9	0.703	Y	
Characteristic Curve				

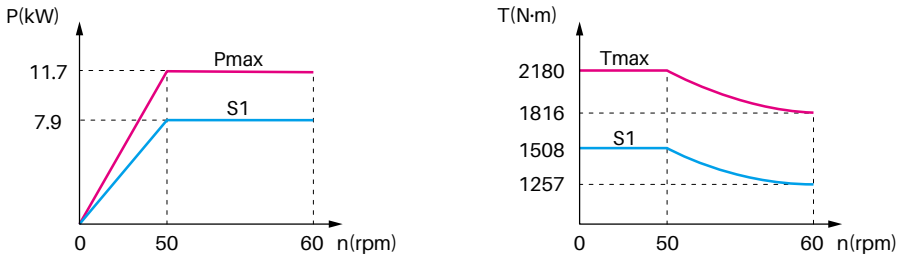


Model: DDM490-L100				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
5.2	307	18	30	1000
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
1450	31.67	38	50	60
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
76	0.84	2.464	22.97	28.03
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
3756	55.6	0.874	Y	
Characteristic Curve				

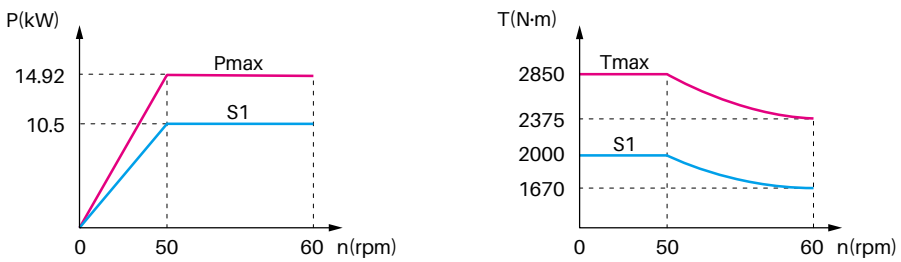


◆ Electrical Specifications

Model: DDM490-L150				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
7.9	311	26	45	1508
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
2180	31.67	38	50	60
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
76	0.83	1.544	16.45	20.15
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
3926	58.0	1.216	Y	
Characteristic Curve				



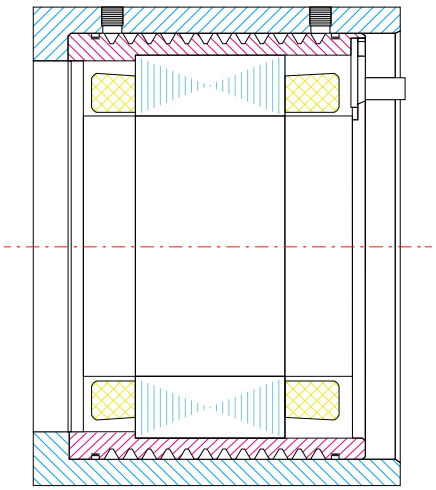
Model: DDM490-L200				
Rated Power kW	Rated Voltage V	Rated Current A	Max. Current	Rated Torque N·m
10.5	319	33	53	2000
Max. Torque N·m	Rated Frequency Hz	Max. Frequency Hz	Rated Speed rpm	Max. Speed rpm
2850	31.67	38	50	60
Pole No.	Power Factor	Stator Phase Resistance Ω(20℃)	D-axis inductance mH	Q-axisinductance mH
76	0.83	1.18	13.34	16.36
Back EMF Constant V/krpm	Torque Constant N·m/A	Moment of Inertia kg·m²	Connection	
4096	60.6	1.557	Y	
Characteristic Curve				



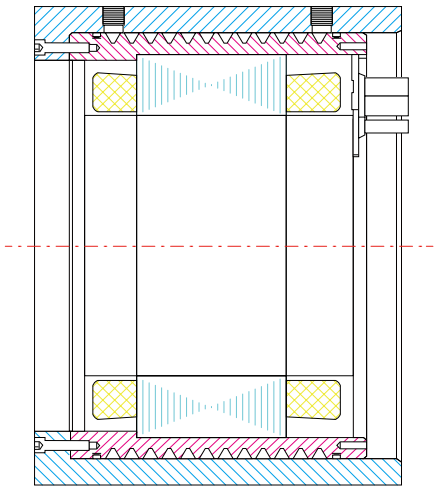
Stator and Rotor Mounting & Fixing Methods

◆ Stator Mounting:Two mounting methods are available for stator installation:

Interference Fit Mounting



Clearance Fit Mounting



Notes

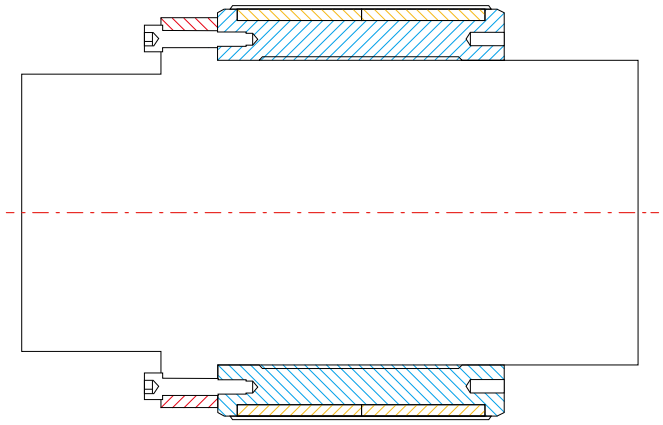
For both interference fit and clearance fit mounting types, seal ring guiding structures shall be machined inside the housing to prevent cutting of the seal ring.

The inlet and outlet of cooling liquid shall align with the two annular grooves at the leftmost and rightmost ends of the integrated motor stator outer surface to avoid insufficient cooling.

The material of seal rings shall be considered during hot fitting; fluororubber is recommended to prevent high-temperature aging of seal rings.

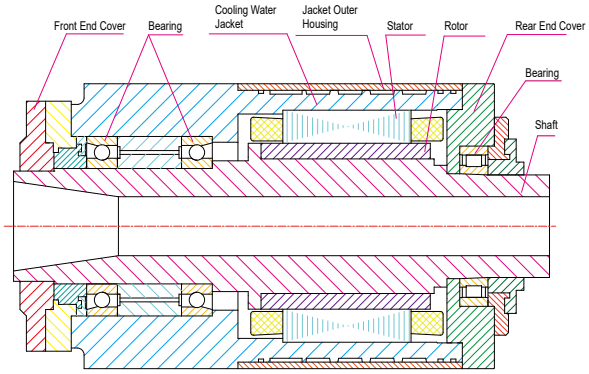
◆ Rotor Mounting:The rotor is fixed by screw fastening.

Screw Fastening Mounting



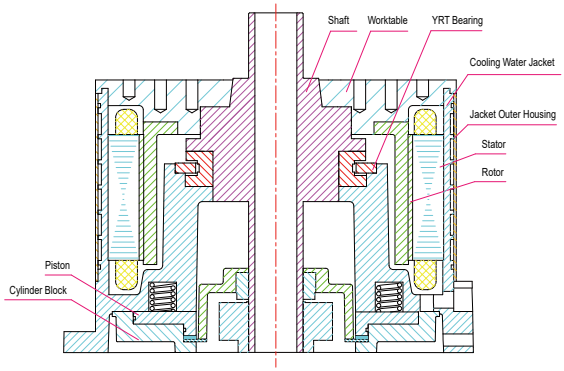
Design Scheme

◆ Turn-Mill Motorized Spindle



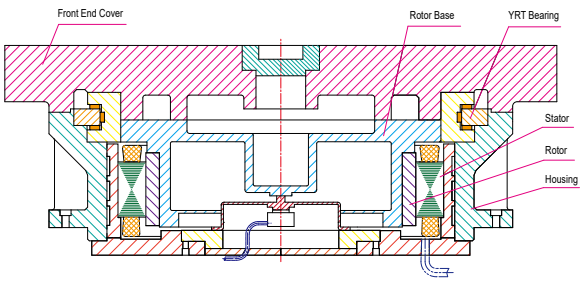
Applicable Range: CNC milling machines, machining centers, CNC boring machines, vertical lathes

◆ Direct-Drive Rotary Table for Robots



Applicable Range: Single-axis direct-drive rotary tables for robots, indexing tables for automatic production lines

◆ Machine Tool Rotary Table



Applicable Range: CNC milling machines, machining centers, CNC boring machines, vertical lathes

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MOTORIZED TURNING SPINDLE

MOTORIZED MILLING SPINDLE

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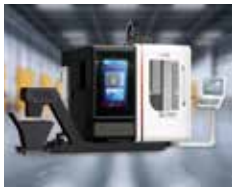
TURN-MILL MACHINING CENTER



5-AXIS MACHINING CENTER

5-AXIS TOOL GRINDING MACHINE

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