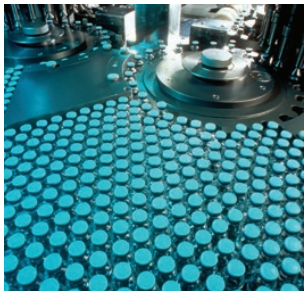
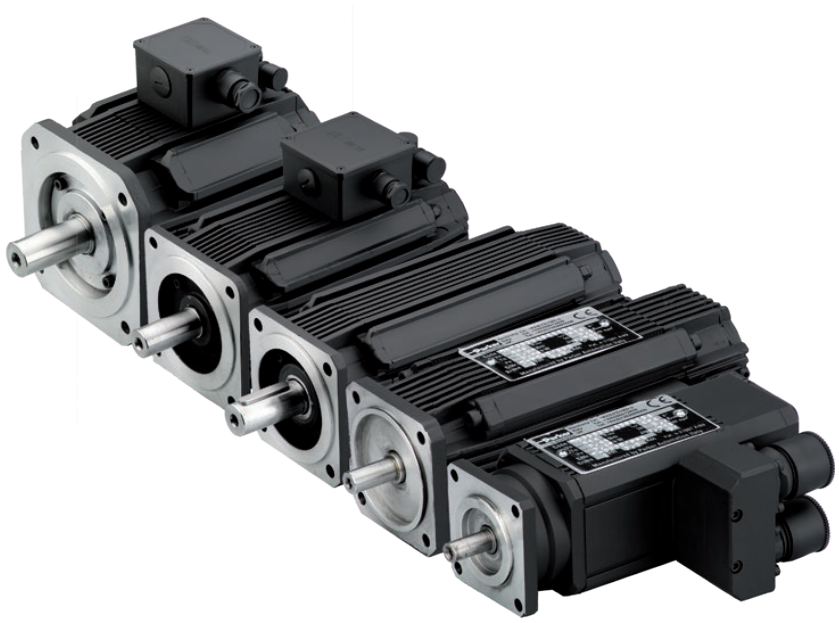
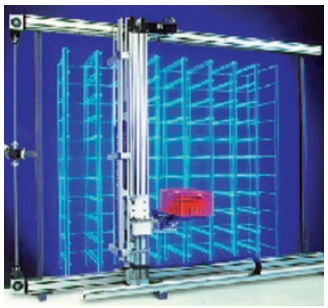


aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



MH / MB Series

Servo Motors from 0.5 to 285 Nm



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Servo Motor - MH / MB

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Milan, Italy

Littlehampton, UK

Filderstadt, Germany

Dijon, France

Servo Motor - MH / MB

Overview

Description

The MH / MB series caters for torques in the range of 0.5 to 285 Nm, speeds up to 10000 min^{-1} and includes a total of 50 models available across 5 frame sizes. Thanks to the high quality and performance of the Neodymium-Iron-Boron magnets, and also the encapsulation method used to fasten them to the shaft, the MH / MB series of motors can achieve very high accelerations and withstand high overload without the risk of demagnetisation or detachment of the magnets. Furthermore, shaft and flange size flexibility on all models provides the user with the possibility to optimise their motor selection for any given application.
Adequate mechanical over-sizing, low inertia in an extra-strong mechanism and a broad range of models permits the application of the MH / MB series in all fields where high dynamic performance and utmost reliability are crucial features.
Typical applications include any type of automatic machinery, especially in the product packaging and handling industry, and wherever the demand exists for axis speed and position synchronisation.

Features

- Large set of feedback option
- Customization
- Increase inertia option
- ATEX certification for MB105/145
- Options
  - Flying cables
  - Terminal box (power and resolver)
  - External encoder
  - Increased inertia
  - Brake
  - Feedback - resolver/incremental/ SinCos/absolute encoder
  - Thermal protection (PTC for MB and KTY compatible for MH)
  - Second shaft

Application

- Food, Pharma & Beverage
- Packaging Machines
- Material Forming
- Material Handling
- Factory Automation
- Life Science Diagnostic
- Automotive Industry / In-Plant
- Printing Industry
- Textile Machines
- Robotics
- Servo Hydraulic Pumps

Technical Characteristics - Overview

Motor Type	Permanent magnets synchronous servo motor
Rotor Design	Rotor with surface rare earth magnets
Power supply	230 VAC or 400 VAC
Operating temperature	-10/+40 °C
Number of poles	4 for M_ 70 8 for M_ 105-145-205-265
Power Range	0.05...67 kW
Torque Range	0.2...285 Nm
Speed Range	0...10000 min^{-1}
Mounting	Flange with smooth holes B14, B3 option
Shaft End	Plain keyed shaft Plain smooth shaft (option)
Cooling	Natural ventilation Self-ventilation (option for size 105-145-205) Forced ventilation (option for size 105-145-205) Water cooled (option for size 145)
Protection Level (IEC60034-5)	IP64 IP65 (option)
Feedback sensor	Resolver Absolute EnDat or Hiperface Incremental Encoder
Voltage Supply	230 / 400 VAC
Temperature Class	Class F
Connections	Connectors Flying cables Terminal Box (see table option for combination)
Marking	CE / UL (size 145/205 under preparation)
Standards In compliance with:	73/23/CEE and 93/68/CEE EN60034-1 EN60034-5 EN60034-5/A1 EN60034-9 EN60034-14

Technical Characteristics

MH / MB Motors, Size 70 - 0.5...2.5 Nm

230 VAC

Model	Size	Stall		Nominal			Peak Torque[1]	Inertia		Ke [2][3]	Kt [2][3]
		Torque [1]	Current	Torque [1]	Speed	Current		No brake	With brake		
		T_{065} (T_{105}) [Nm]	I_{065} [A]	T_{n065} [Nm]	n [min^{-1}]	I_{n065} [A]	T_{max} [Nm]	J [kgmm^2]	J [kgmm^2]	Ke [Vs]	Kt [Nm/A_{rms}]
M_ 70 20 0,5	70	0.5 (0.9)	0.44	0.5	2000	0.43	2.8	26	55	0.67	1.17
M_ 70 38 0,5			0.72	0.4	3800	0.66				0.41	0.71
M_ 70 75 0,5			1.37	0.4	7500	1.00				0.22	0.38
M_ 70 20 01		1.0 (1.6)	0.84	1.0	2000	0.80	5.1	40	69	0.72	1.25
M_ 70 38 01			1.39	0.8	3800	1.23				0.42	0.72
M_ 70 75 01			2.65	0.5	7500	1.43				0.23	0.39
M_ 70 20 1,5		1.5 (2.2)	1.23	1.5	2000	1.18	6.8	54	83	0.73	1.27
M_ 70 38 1,5			2.25	1.4	3800	1.96				0.42	0.72
M_ 70 75 1,5			4.07	0.7	7500	1.85				0.23	0.39
M_ 70 20 02		2.0 (2.7)	1.55	1.9	2000	1.47	8.4	68	97	0.78	1.36
M_ 70 38 02			2.82	1.7	3800	2.40				0.43	0.75
M_ 70 75 02			5.36	0.6	7500	1.74				0.23	0.39
M_ 70 20 2,5		2.5 (3.1)	1.90	2.4	2000	1.82	9.8	81	11	0.79	1.36
M_ 70 38 2,5			3.56	2.1	3800	3.01				0.42	0.73
M_ 70 75 2,5			6.77	0.6	7500	1.77				0.22	0.38

400 VAC

Model	Size	Stall		Nominal			Peak Torque[1]	Inertia		Ke [2][3]	Kt [2][3]
		Torque [1]	Current	Torque [1]	Speed	Current		No brake	With brake		
		T_{065} (T_{105}) [Nm]	I_{065} [A]	T_{n065} [Nm]	n [min^{-1}]	I_{n065} [A]	T_{max} [Nm]	J [kgmm^2]	J [kgmm^2]	Ke [Vs]	Kt [Nm/A_{rms}]
M_ 70 37 0,5	70	0.5 (0.9)	0.44	0.5	3700	0.41	2.8	26	55	0.67	1.17
M_ 70 70 0,5			0.72	0.4	7000	0.55				0.41	0.71
M_ 70 37 01		1.0 (1.6)	0.84	0.9	3700	0.74	5.1	40	69	0.72	1.25
M_ 70 70 01			1.39	0.6	7000	0.85				0.42	0.72
M_ 70 37 1,5		1.5 (2.2)	1.23	1.3	3700	1.07	6.8	54	83	0.73	1.27
M_ 70 70 1,5			2.25	0.8	7000	1.27				0.42	0.72
M_ 70 37 2,0		2.0 (2.7)	1.55	1.7	3700	1.32	8.4	68	97	0.78	1.36
M_ 70 70 2,0			2.82	0.9	7000	1.35				0.43	0.75
M_ 70 37 2,5		2.5 (3.1)	1.90	2.1	3700	1.60	9.8	81	110	0.79	1.36
M_ 70 70 2,5			3.56	1.2	7000	1.73				0.42	0.73

[1] Data referred to motor suspend in horizontal position in free still air, 20 °C ambient temperature
[2] Data measured at 20 °C. When "hot" consider 5 % derating
[3] Tolerance data ±10 %

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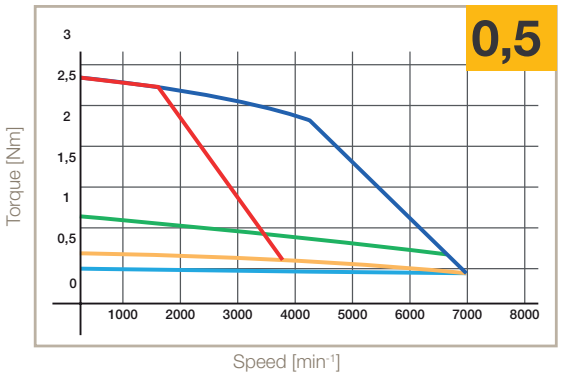
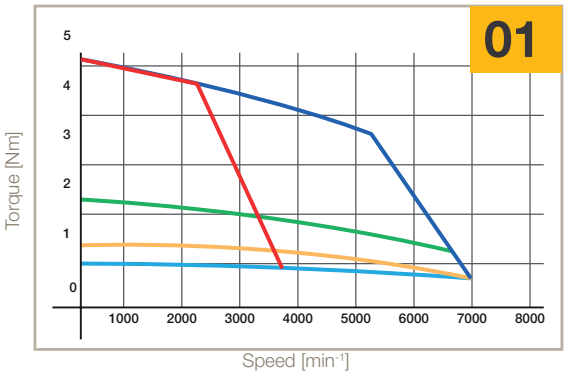
Speed Torque Curves

MH/MB70

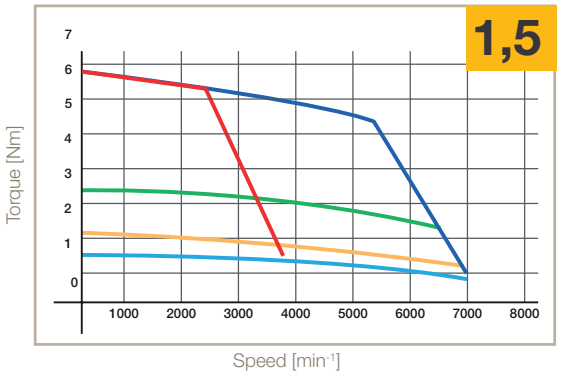
3800 min^{-1} 230 V - 7000 min^{-1} 400 V



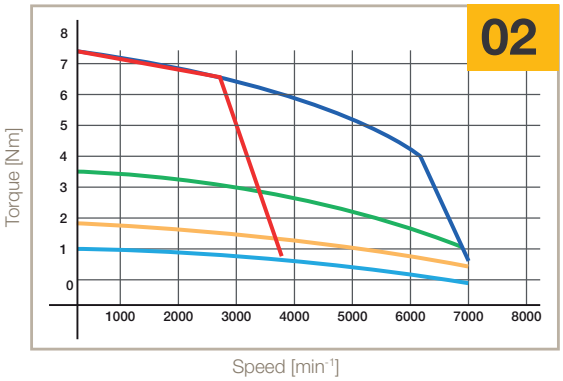
3800 min^{-1} 230 V - 7000 min^{-1} 400 V



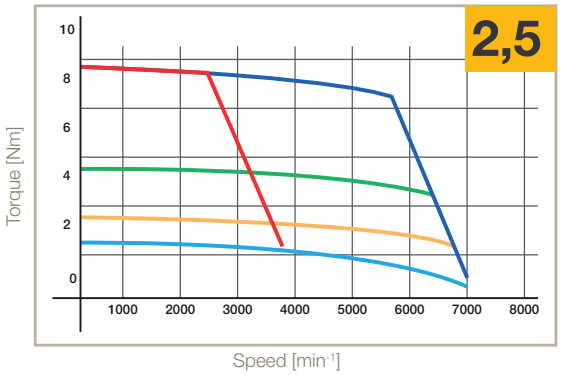
3800 min^{-1} 230 V - 7000 min^{-1} 400 V



3800 min^{-1} 230 V - 7000 min^{-1} 400 V



3800 min^{-1} 230 V - 7000 min^{-1} 400 V



S1 65 K, ΔT
S3 10 %, 5 min, 400 V
S3 10 %, 5 min, 230 V
S3 50 %, 5 min
S3 20 %, 5 min

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MH / MB Motors, Size 105 - 2.2...8 Nm

230 VAC

Model	Size	Stall		Nominal			Peak Torque[1]	Inertia		Ke [2][3]	Kt [2][3]
		Torque [1]	Current	Torque [1]	Speed	Current		No brake	With brake		
		T_{065} (T_{105}) [Nm]	I_{065} [A]	T_{n065} [Nm]	n [min^{-1}]	I_{n065} [A]	T_{max} [Nm]	J [kgmm^2]	J [kgmm^2]	Ke [Vs]	Kt [Nm/A_{rms}]
M_ 105 16 02	105	2.2 (3.5)	1.5	2.2	1600	1.4	11.0	190	253	0.9	1.63
M_ 105 25 02			2.1	2.1	2500	2.0				0.6	1.11
M_ 105 30 02			2.8	2.1	3000	2.6				0.5	0.83
M_ 105 50 02			4.3	1.8	5000	3.5				0.3	0.55
M_ 105 16 04		4.0 (6.1)	2.6	4.0	1600	2.5	19.5	340	403	1.0	1.65
M_ 105 25 04			3.8	3.7	2500	3.5				0.7	1.13
M_ 105 30 04			5.0	3.6	3000	4.4				0.5	0.85
M_ 105 50 04			7.4	2.7	5000	5.0				0.3	0.58
M_ 105 16 06		6.0 (8.3)	3.9	5.9	1600	3.7	26.2	480	543	1.0	1.65
M_ 105 25 06			5.6	5.5	2500	5.0				0.7	1.15
M_ 105 30 06			7.4	5.2	3000	6.4				0.5	0.87
M_ 105 50 06			11.2	3.6	5000	6.7				0.3	0.58
M_ 105 16 08		8.0 (10.0)	5.2	7.8	1600	5.0	31.7	620	683	1.0	1.65
M_ 105 25 08			7.5	7.2	2500	6.6				0.7	1.15
M_ 105 30 08			9.7	6.8	3000	8.2				0.5	0.88
M_ 105 50 08			14.2	4.4	5000	7.9				0.4	0.61

400 VAC

Model	Size	Stall		Nominal			Peak Torque[1]	Inertia		Ke [2][3]	Kt [2][3]
		Torque [1]	Current	Torque [1]	Speed	Current		No brake	With brake		
		T_{065} (T_{105}) [Nm]	I_{065} [A]	T_{n065} [Nm]	n [min^{-1}]	I_{n065} [A]	T_{max} [Nm]	J [kgmm^2]	J [kgmm^2]	Ke [Vs]	Kt [Nm/A_{rms}]
M_ 105 30 02	105	2.2 (3.5)	1.5	2.1	3000	1.4	11.0	190	253	0.9	1.63
M_ 105 45 02			2.1	1.9	4500	1.8				0.6	1.11
M_ 105 60 02			2.8	1.7	6000	2.2				0.5	0.83
M_ 105 30 04		4.0 (6.1)	2.6	3.6	3000	2.3	19.5	340	403	1.0	1.65
M_ 105 45 04			3.8	3.0	4500	2.8				0.7	1.13
M_ 105 60 04			5.0	2.4	6000	3.0				0.5	0.85
M_ 105 30 06		6.0 (8.3)	3.9	5.3	3000	3.4	26.2	480	543	1.0	1.65
M_ 105 45 06			5.6	4.1	4500	3.8				0.7	1.15
M_ 105 60 06			7.4	3.0	6000	3.7				0.5	0.87
M_ 105 30 08		8.0 (10.0)	5.2	6.9	3000	4.4	31.7	620	683	1.0	1.65
M_ 105 45 08			7.5	5.2	4500	4.9				0.7	1.15
M_ 105 60 08			9.7	3.6	6000	4.4				0.5	0.88

[1] Data referred to motor suspend in horizontal position in free still air, 20 °C ambient temperature
[2] Data measured at 20 °C. When "hot" consider 5 % derating
[3] Tolerance data ±10 %

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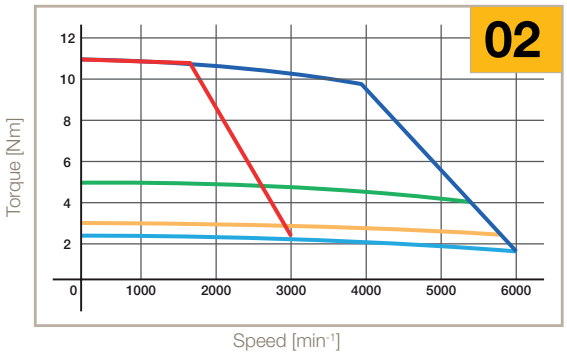
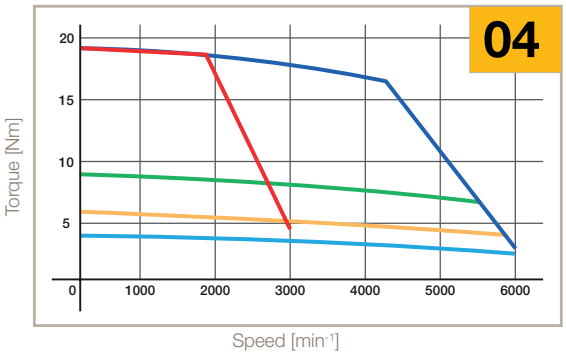
Speed Torque Curves

MH/MB105

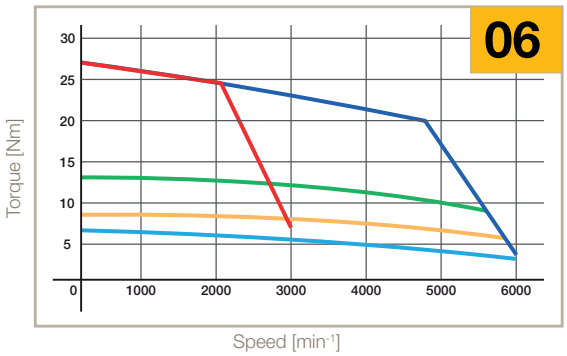
3000 min^{-1} 230 V - 6000 min^{-1} 400 V



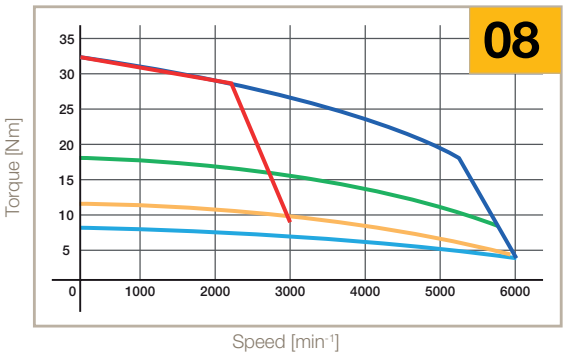
3000 min^{-1} 230 V - 6000 min^{-1} 400 V



3000 min^{-1} 230 V - 6000 min^{-1} 400 V



3000 min^{-1} 230 V - 6000 min^{-1} 400 V



S1 65 K, ΔT
S3 10 %, 5 min, 400 V
S3 10 %, 5 min, 230 V
S3 50 %, 5 min
S3 20 %, 5 min

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MH / MB Motors, Size 145 - 4.5...28 Nm

230 VAC

Model	Size	Stall		Nominal			Peak Torque[1]	Inertia		Ke [2][3]	Kt [2][3]
		Torque [1]	Current	Torque [1]	Speed	Current		No brake	With brake		
		T_{065} (T_{105}) [Nm]	I_{065} [A]	T_{n065} [Nm]	n [min^{-1}]	I_{n065} [A]	T_{max} [Nm]	J [kgmm^2]	J [kgmm^2]	Ke [Vs]	Kt [Nm/A_{rms}]
M_ 145 5,5 04	145	4.5 (9)	1.1	4.6	550	1.1	28	780	975	2.1	3.65
M_ 145 11 04			2.3	4.6	1100	2.4				1.2	2.03
M_ 145 16 04			3.4	4.5	1600	3.3				0.8	1.42
M_ 145 25 04			4.7	4.3	2500	4.5				0.6	1.01
M_ 145 40 04			8.1	4.1	4000	7.2				0.4	0.60
M_ 145 5,5 08		8.7 (16)	2.0	8.7	550	2.0	49	1050	1245	2.7	4.69
M_ 145 11 08			3.7	8.7	1100	3.6				1.4	2.49
M_ 145 16 08			5.4	8.6	1600	5.2				1.0	1.70
M_ 145 25 08			8.2	8.1	2500	7.4				0.7	1.14
M_ 145 40 08			12.3	7.0	4000	9.7				0.4	0.76
M_ 145 5,5 15		15.0 (27)	3.3	15.0	550	3.2	86	1600	1795	2.9	4.94
M_ 145 11 15			6.2	14.7	1100	5.9				1.5	2.59
M_ 145 16 15			9.1	14.3	1600	8.5				1.0	1.78
M_ 145 25 15			14.2	13.6	2500	12.5				0.7	1.14
M_ 145 40 15			21.3	10.9	4000	15.0				0.4	0.76
M_ 145 5,5 22		22.0 (37)	4.7	21.9	550	4.6	117	2150	2345	2.9	5.03
M_ 145 11 22			8.9	21.3	1100	8.4				1.5	2.65
M_ 145 16 22			13.1	20.8	1600	12.1				1.0	1.80
M_ 145 25 22			20.8	19.1	2500	17.6				0.7	1.13
M_ 145 40 22			31.1	13.4	4000	18.6				0.4	0.76
M_ 145 5,5 28		28.0 (45)	5.9	27.8	550	5.8	143	2700	2895	2.9	5.07
M_ 145 11 28			11.3	26.9	1100	10.6				1.5	2.65
M_ 145 16 28			17.0	26.2	1600	15.5				1.0	1.78
M_ 145 25 28			26.5	23.2	2500	21.4				0.7	1.13
M_ 145 40 28			39.6	14.1	4000	19.7				0.4	0.76

400 VAC

Model	Size	Stall		Nominal			Peak Torque[1]	Inertia		Ke [2][3]	Kt [2][3]
		Torque [1]	Current	Torque [1]	Speed	Current		No brake	With brake		
		T_{065} (T_{105}) [Nm]	I_{065} [A]	T_{n065} [Nm]	n [min^{-1}]	I_{n065} [A]	T_{max} [Nm]	J [kgmm^2]	J [kgmm^2]	Ke [Vs]	Kt [Nm/A_{rms}]
M_ 145 10 04	145	4.5 (9)	1.1	4.5	1000	1.1	28	780	975	2.1	3.65
M_ 145 20 04			2.3	4.5	2000	2.3				1.2	2.03
M_ 145 30 04			3.4	4.3	3000	3.2				0.8	1.42
M_ 145 45 04			4.7	3.9	4500	4.0				0.6	1.01
M_ 145 10 08		8.7 (16)	2.0	8.7	1000	1.9	49	1050	1245	2.7	4.69
M_ 145 20 08			3.7	8.4	2000	3.5				1.4	2.49
M_ 145 30 08			5.4	7.9	3000	4.8				1.0	1.70
M_ 145 45 08			8.2	7.1	4500	6.6				0.7	1.14
M_ 145 10 15		15.0 (27)	3.3	14.8	1000	3.1	86	1600	1795	2.9	4.94
M_ 145 20 15			6.2	13.7	2000	5.5				1.5	2.59
M_ 145 30 15			9.1	12.7	3000	7.5				1.0	1.78
M_ 145 45 15			14.2	9.8	4500	9.1				0.7	1.14
M_ 145 10 22		22.0 (37)	4.7	21.4	1000	4.5	117	2150	2345	2.9	5.03
M_ 145 20 22			8.9	19.4	2000	7.6				1.5	2.65
M_ 145 30 22			13.1	17.3	3000	10.1				1.0	1.80
M_ 145 45 22			20.8	11.6	4500	10.8				0.7	1.13
M_ 145 10 28		28.0 (45)	5.9	27.1	1000	5.6	143	2700	2895	2.9	5.07
M_ 145 20 28			11.3	23.9	2000	9.4				1.5	2.65
M_ 145 30 28			17.0	21.1	3000	12.5				1.0	1.78
M_ 145 45 28			26.5	10.0	4500	9.4				0.7	1.13

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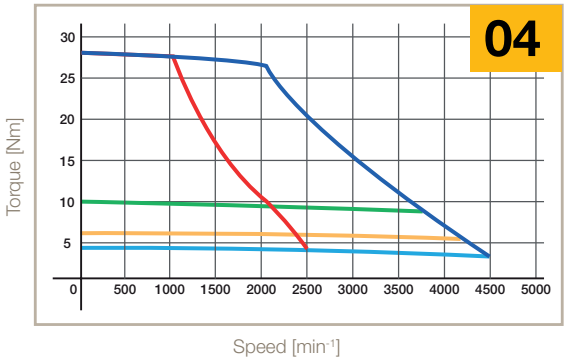
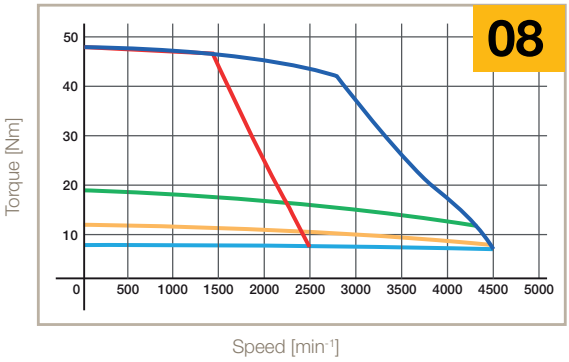
Speed Torque Curves

MH/MB145

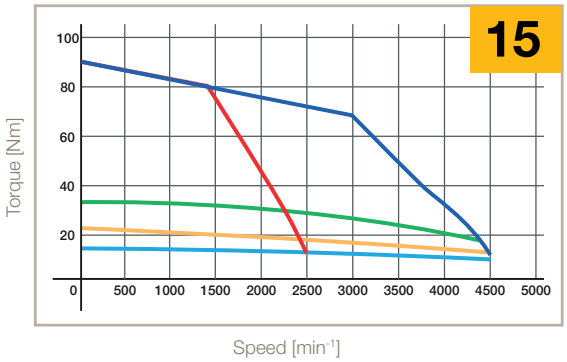
2500 min^{-1} 230 V - 4500 min^{-1} 400 V



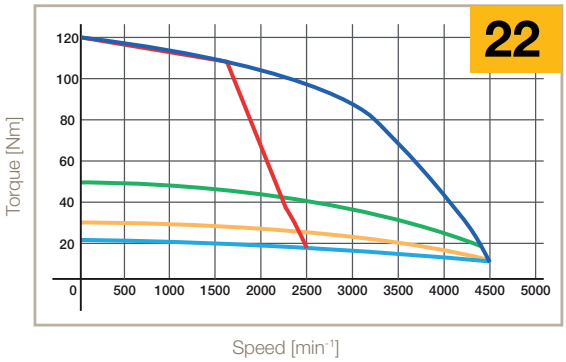
2500 min^{-1} 230 V - 4500 min^{-1} 400 V



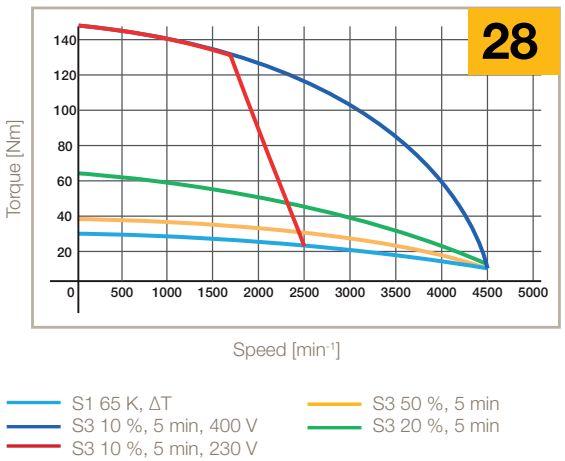
2500 min^{-1} 230 V - 4500 min^{-1} 400 V



2500 min^{-1} 230 V - 4500 min^{-1} 400 V



2500 min^{-1} 230 V - 4500 min^{-1} 400 V



(1) Data referred to motor suspend in horizontal position in free still air, 20 °C ambient temperature
(2) Data measured at 20 °C. When "hot" consider 5 % derating
(3) Tolerance data ±10 %

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MH / MB Motors, Size 205 - 15...90 Nm

230 VAC

Model	Size	Stall		Nominal			Peak Torque[1]	Inertia		Ke [2][3]	Kt [2][3]
		Torque [1]	Current	Torque [1]	Speed	Current		No brake	With brake		
		T_{065} (T_{105}) [Nm]	I_{065} [A]	T_{n065} [Nm]	n [min^{-1}]	I_{n065} [A]	T_{max} [Nm]	J [$kgmm^2$]	J [$kgmm^2$]	Ke [Vs]	Kt [Nm/A_{rms}]
M_ 205 11 15	205	15 (22)	6.3	14.7	1150	6.2	69	3500	4035	1.4	2.38
M_ 205 17 15			8.6	14.4	1700	8.3				1	1.74
M_ 205 5,5 28		28 (39)	6.9	28.6	550	6.9	123	5000	5535	2.5	4.35
M_ 205 11 28			13.0	28.2	1150	12.7				1.3	2.31
M_ 205 17 28			20.1	27.6	1700	19.3				0.9	1.50
M_ 205 5,5 50		50 (70)	12.4	51.3	550	12.3	222	8000	8535	2.5	4.35
M_ 205 11 50			22.1	50.0	1150	21.3				1.4	2.45
M_ 205 17 50			33.1	48.0	1700	30.8				0.9	1.63
M_ 205 5,5 70		70 (98)	16.8	71.1	550	16.5	310	11 000	11 535	2.6	4.49
M_ 205 11 70			30.7	68.6	1150	29.3				1.4	2.45
M_ 205 17 70			46.1	65.0	1700	41.7				0.9	1.63
M_ 205 5,5 90		90 (126)	22.1	90.9	550	21.8	398	14 000	14 535	2.5	4.35
M_ 205 11 90			44.3	87.0	1150	41.8				1.3	2.18
M_ 205 17 90			59	81.7	1700	52.4				0.9	1.63

400 VAC

Model	Size	Stall		Nominal			Peak Torque[1]	Inertia		Ke [2][3]	Kt [2][3]
		Torque [1]	Current	Torque [1]	Speed	Current		No brake	With brake		
		T_{065} (T_{105}) [Nm]	I_{065} [A]	T_{n065} [Nm]	n [min^{-1}]	I_{n065} [A]	T_{max} [Nm]	J [$kgmm^2$]	J [$kgmm^2$]	Ke [Vs]	Kt [Nm/A_{rms}]
M_ 205 20 15	205	15 (22)	6.3	14.1	2000	5.9	69	3500	4035	1.4	2.38
M_ 205 30 15			8.6	13.4	3000	7.7				1	1.74
M_ 205 10 28		28 (39)	6.9	28.2	1000	6.8	123	5000	5535	2.5	4.35
M_ 205 20 28			13.0	27.3	2000	12.3				1.3	2.31
M_ 205 30 28			20.1	25.7	3000	18.0				0.9	1.50
M_ 205 10 50		50 (70)	12.4	50.4	1000	12.1	222	8000	8535	2.5	4.35
M_ 205 20 50			22.1	47.0	2000	20.1				1.4	2.45
M_ 205 30 50			33.1	41.7	3000	26.8				0.9	1.63
M_ 205 10 70		70 (98)	16.8	69.4	1000	16.1	310	11 000	11 535	2.6	4.49
M_ 205 20 70			30.7	62.9	2000	26.9				1.4	2.45
M_ 205 30 70			46.1	52.3	3000	33.7				0.9	1.63
M_ 205 10 90		90 (126)	22.1	88.2	1000	21.2	398	14 000	14 535	2.5	4.35
M_ 205 20 90			44.3	78.3	2000	37.7				1.3	2.18
M_ 205 30 90			59.0	61.6	3000	39.7				0.9	1.63

[1] Data referred to motor suspend in horizontal position in free still air, 20 °C ambient temperature
[2] Data measured at 20 °C. When "hot" consider 5 % derating
[3] Tolerance data ±10 %

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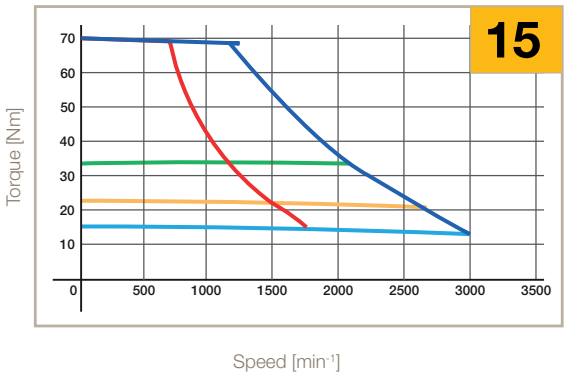
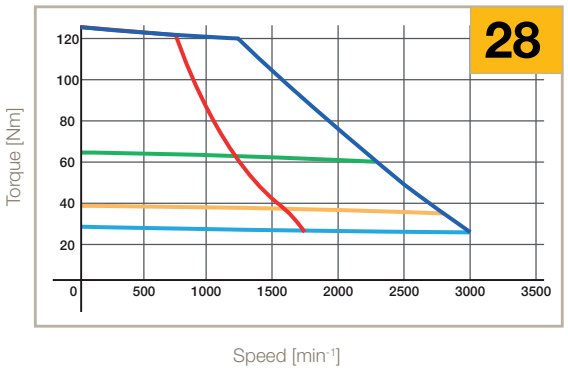
Speed Torque Curves

MH/MB205

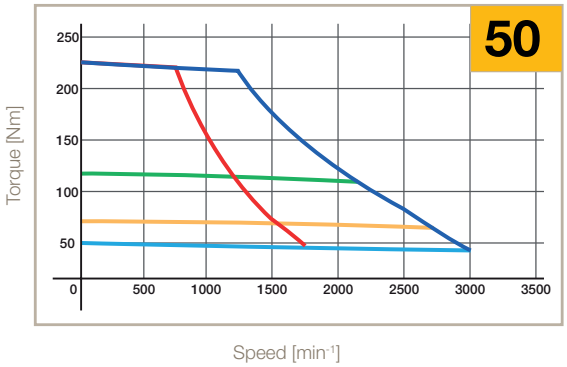
1700 min^{-1} 230 V - 3000 min^{-1} 400 V



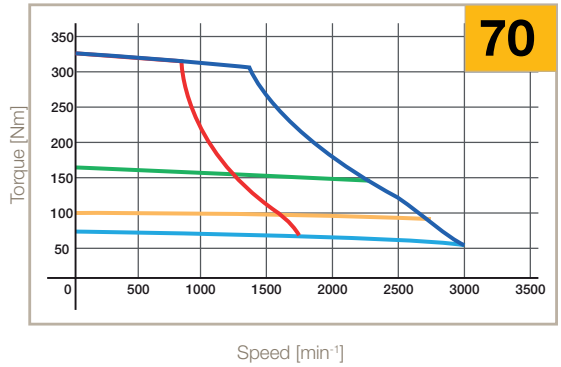
1700 min^{-1} 230 V - 3000 min^{-1} 400 V



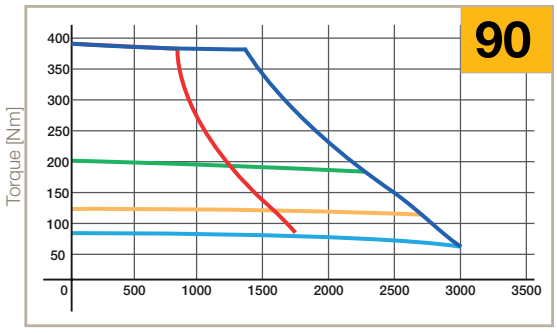
1700 min^{-1} 230 V - 3000 min^{-1} 400 V



1700 min^{-1} 230 V - 3000 min^{-1} 400 V



1700 min^{-1} 230 V - 3000 min^{-1} 400 V



S1 65 K, ΔT
S3 10 %, 5 min, 400 V
S3 10 %, 5 min, 230 V
S3 50 %, 5 min
S3 20 %, 5 min

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MH / MB Motors, Size 265 - 75...270 Nm

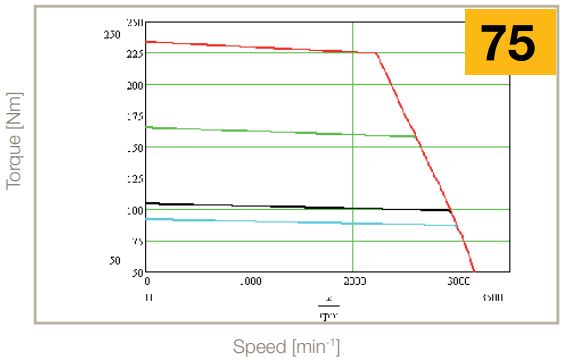
400 VAC

Model	Size	Stall		Nominal			Peak Torque[1]	Inertia		Ke [2][3]	Kt [2][3]
		Torque [1]	Current	Torque [1]	Speed	Current		No brake	With brake		
		T_{065} (T_{105}) [Nm]	I_{105} [A]	T_{n105} [Nm]	n [min^{-1}]	I_{n105} [A]	T_{max} [Nm]	J [kgmm^2]	J [kgmm^2]	Ke [Vs]	Kt [Nm/A_{rms}]
M_ 265 10 75	265	75 (95)	17.8	94	1000	17.6	240	22000	30100	3.08	5.33
M_ 265 20 75			35.6	92	2000	34.5				1.54	2.67
M_ 265 30 75			55.3	87	3000	48,8				1.03	1.78
M_ 265 10 150		145 (175)	32.8	175	1000	32.8	480	36000	44100	3.08	5.33
M_ 265 20 150			73.7	170	2000	71.6				1.37	2.37
M_ 265 30 150			98.1	144	3000	80.7				1.03	1.78
M_ 265 10 220		205 (255)	47.8	254	1000	47.6	695	49000	61960	3.08	5.33
M_ 265 20 220			95.6	231	2000	86.6				1.54	2.67
M_ 265 30 220			143	185	3000	104				1.03	1.78
M_ 265 10 285		270 (330)	69.5	325	1000	68.5	900	63000	75960	2.74	4.75
M_ 265 20 285			139	288	2000	121				1.37	2.37
M_ 265 30 285			185	215	3000	151				1.03	1.78

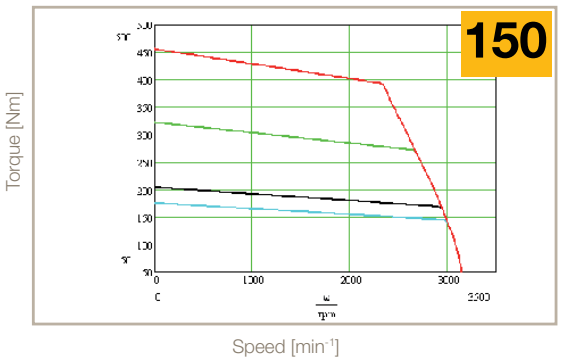
[1] Data referred to motor suspend in horizontal position in free still air, 20 °C ambient temperature
[2] Data measured at 20 °C. When "hot" consider 5 % derating
[3] Tolerance data ±10 %

Speed Torque Curves

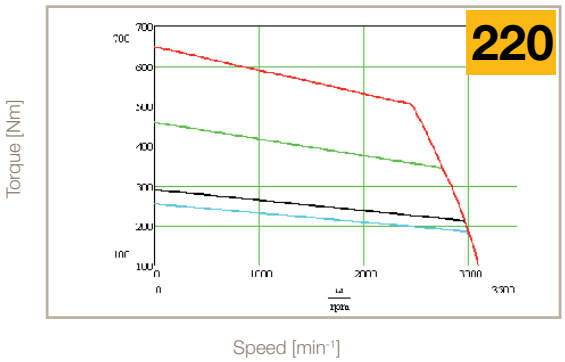
3000 min^{-1} 400 V



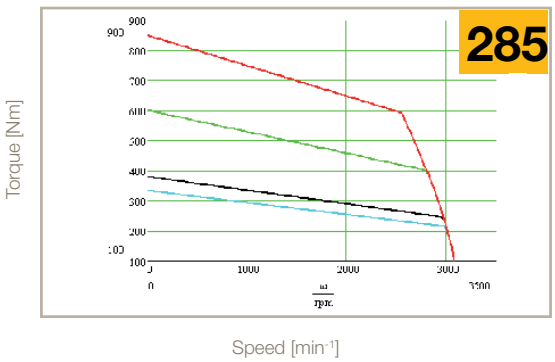
3000 min^{-1} 400 V



3000 min^{-1} 400 V



3000 min^{-1} 400 V



S1 65 K, ΔT
S3 10 %, 5 min, 400 V
S3 50 %, 5 min
S3 20 %, 5 min

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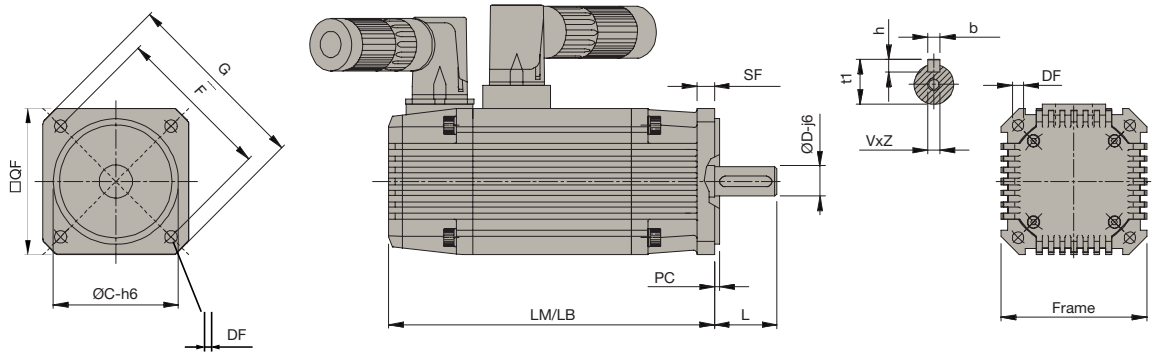
Dimensions



Motor - Size		LM/LB	Weight	DxL	bxh	t1	VxZ	C	F	DF	G	SF	PC	QF	Order code QF
70	0,5	158/214	2	11x23 14x30	4x4 5x5	12.5 16	M4x10 M4x12.5	60	75	6	90	8.5	2.5	70	5
	01	188/244	2.8												
	1,5	218/274	3.5												
	02	248/304	4.3												
	2,5	278/334	5.1												
105	02	186/250	5	19x40 24x50	6x6 8x7	21.5 27	M6x16 M8x19	95	115	9.5	140	10	3.5	105	5
	04	229/293	7					95	115	9.5	140	10	3.5	105	4
	06	273/337	9					80	115	9.5	140	10	3.5	105	9
	08	317/381	11					110	115	9.5	140	10	3.5	105	6
145	04	200/274	8	19x40 24x50 28x60	6x6 8x7	21.5 27 31	M6x16 M8x19 M10x22	130	165	11.5	200	12	3.5	145	5
	08	231/305	12												
	15	292/366	18					130	165	11.5	200	12	3.5	145	4
	22	354/428	23												
	28	416/490	28												
205	15	239/338	20	38x80 42x110	10x8 12x8	41 45	M12x32 M16x40	180	215	14	250	18	4	205	5
	28	273/372	29												
	50	342/441	44												
	70	411/510	59												
	90	480/579	74												
265	75	340/475	89	48X110	14x9	51.5	M16x40	250	300	19	342	35	4	264	5
	150	447/582	126												
	220	554/689	164												
	285	661/796	203												

LM: Motor length without brake with resolver
LB: Motor length with brake with resolver
DxL: Shaft
bxh: Key
t1: Overall shaft height
VxZ: Shaft hole depth
mm for dimensions, kg for weight

C: Center
F: Distance between center of holes clamp
DF: Fixing holes
G: Dimension in diagonal
SF: Flange thickness
PC: Centering depht
QF: Flange square

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Options

Parker Mx family motors are available with standard and custom options to adapt motor on your application.
If the option for your application is not listed, please consult our technical department.

Holding Brake

All MH, MB motors are available with an optional holding brake. Two different brake types exist, standard holding brake (option A) and special brake (option B) depending on the features of your application needs.
Incorporated into the motor is the fail-safe holding brake (supply voltage 24 VDC ±10 %) which is applied when no voltage is present. Because of the power taken by the brake, torque values must be reduced by 5 % (10 % for size 265). The holding brake shall be used with the motor only at a standstill and not for dynamic braking. For maintenance, please refer to technical manual.

Holding Brake [1]	Option	Voltage [V]	Current @20 °C [A]	Torque @20 °C [Nm]	Added Length [mm]	Added Weight [kg]	Torque derating of motor
M_70_A	A	24 ±10 %	0.53	2	56	1.1	5 %
M_70_B	B	n.a.					
M_105_A	A	24 ±10 %	1.1	10	64	3	5 %
M_105_B	B	n.a.					
M_145_A_04	A	24 ±10 %	1.8	4	74	5	5 %
M_145_A_08				8			
M_145_A_15				15			
M_145_A_22				22			
M_145_A_28				28			
M_145_B	B	24 ±10 %	0.8	22	74	5	5 %
M_205_B	B	24 ±10 %	2.1	120	99	14	5 %
M_265_A_75	A	24 ±10 %	2.9	225	135	30	10 %
M_265_A_150							
M_265_A_220				450		35	
M_265_A_285							
M_265_B	B	n.a.					

[1] If more than one option is required, please check with our technical department the feasibility.

Fan cooling

For high duty cycle applications, Parker offer 3 different types of cooling option: servo-ventilated, self ventilated and water cooled. Please refer to motors in the table below.
With servo-ventilated the motors (order Code M_SV), an increase of 25 % torque and current based on nominal values (except for the maximum torque and current data) is provided. The servo-ventilated 205 motor is equipped with an external condenser for starting the fan.
With the self-ventilated option (order Code M_V), the torque is increased proportionally to the nominal speed.
For water-cooled motors (order code M_W, available only for size 145), consider a performance increase of approx. 100 % in the torque and current, except peak data.

Motor MB / MH	Option [1]	Voltage	Current [A]	Frequency [Hz]	Speed [min^{-1}]	Added Length [mm]	Added Weight [kg]	Torque increasing of motor
105	SV	24 VDC ±10 %	0.17	n.a.	3000	64	1	25 %
	V	n.a.	n.a.	n.a.	n.a.	34	0.25	Depending of speed
145	SV	230 VAC Single Phase ±10 %	0.35	50	3000	97	2	25 %
	V	n.a.	n.a.	n.a.	n.a.	44	0.55	Depending of speed
205	SV	230 VAC Single Phase ±10 %	0.22	50	3000	109	2.2	25 %
	V	n.a.	n.a.	n.a.	n.a.	54	1.1	Depending of speed

[1] If more than one option is required, please check with our technical department the feasibility.

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Feedback options

M_ motors are available with standard resolver feedback, but for different type of application we can offer the following types of feedback:

- Incremental Encoder with hall sensors
- Hiperface absolute encoder (single or multi-turn), DSL®
- EnDat absolute encoder (single or multi-turn)

Resolver

Poles	2
Transformation ratio	0.5
Operating temperature	-50...+150 °C
Motor associations	all sizes

Incremental Encoder with Hall Sensor

Code	**A1**	**A2**	**A3**	**B1**	**C4**
Resolution [C/T]	2000	2048	4096	3000	5000
Poles	8			4	8
System Accuracy	±32"	±32"	±16"	±22"	±13"
Voltage	+5 VDC ±5 % - 200 mA				
Reference Mark	Yes				
Max Speed [min^{-1}]	6000				
Output Circuit	Line drive differential mode 20 mA				
Operating Temperature	-20...+100 °C	-20...+85 °C	-20...+100 °C		
M_ Motors Associations					
M_70	-	-	-	Δ 10 mm	-
M_105	✓	✓	✓	-	✓
M_145	✓	✓	✓	-	✓
M_205	✓	✓	✓	-	✓
M_265	-	-	-	-	-

- Not possible
✓ Possible without increment
Δ Possible with increment motor length

Hiperface Absolute Encoder

Code	**S1**	**S2**	**A6**	**A7**	**S5**	**S6**	**L2**	**L4**
Type	Optical							
Turn	Single	Multi	Single	Multi	Single	Multi	Multi	Multi
Incremental Signals	1 V_{PP}				-	-	-	-
Line Count	1024				-	-	-	-
Resolution	32 768 (15 bit)		32 768 (15 bit)		262 144 (18 bit)		2 097 152 (21 bit)	
Absolute rotation	1	4096	1	4096	1	4096	4096	
System Accuracy	±45"				±40"		±52"	
Power Supply	8 VDC				7...12 VDC		7...12 VDC	
Max Speed [min^{-1}]	6000				-		9000	
Temperature	-20...+115°C				-20...+105°C		-30°C... +120°C	-30°C ... +115°C
Safety integrity level	SIL2 (IEC 61508), SILCL2 (IEC 62061)		Not Available		SIL2 (IEC 61508), SILCL2 (IEC 62061)		-	SIL2 (IEC 61508), SILCL2 (IEC 62061)
MB / MH Motors Associations								
M_70	Δ 10 mm	Δ 10 mm	Δ 10 mm	Δ 10 mm	-	-	-	-
M_105	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm	-	-	-	-
M_145	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm
M_205	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm	Δ 19 mm
M_265	-	-	-	-	-	-	-	-

- Not possible
✓ Possible without increment
Δ Possible with increment motor length

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EnDat Absolute Encoder

Code	B9	D5
Type	Inductive	Optical
Turn	Multi	Multi
Incremental Signals	$1V_{PP}$	
Line Count	32	512
Positions per revolutions	524288 (19bit)	8192 (13 bit)
Distinguishable revolutions	4096	
System Accuracy	±400"	±60"
Power Supply	5 VDC	
Max Speed [min^{-1}]	12000	7000
Temperature	-20...+115 °C	-30...+115 °C
Absolute position values	EnDat 2.1	EnDat 2.2
Safety integrity level:	not available	
M_ Motors Associations		
M_70	-	-
M_105	Δ 19 mm	Δ 19 mm
M_145	✓	Δ 19 mm
M_205	Δ 19 mm	Δ 19 mm
M_265	-	✓

- Not possible
✓ Possible without increment
Δ Possible with increment motor length

Technical specification for high inertia

Option Inertia	Added ...	Unit	105				145					205				
			02	04	06	08	04	08	15	22	28	15	28	50	70	90
M	Inertia	[kgmm²]	140				790					4400				
	Length	[mm]	0				0					0				
	Weight	[kg]	0.340				0.990					2.065				
ML	Inertia	[kgmm²]	530			n.a.	1770				n.a.	12100				n.a.
	Length	[mm]	64			n.a.	74				n.a.	99				n.a.
	Weight	[kg]	1.5			n.a.	3.3	3.6			n.a.	7.6	11.9			n.a.

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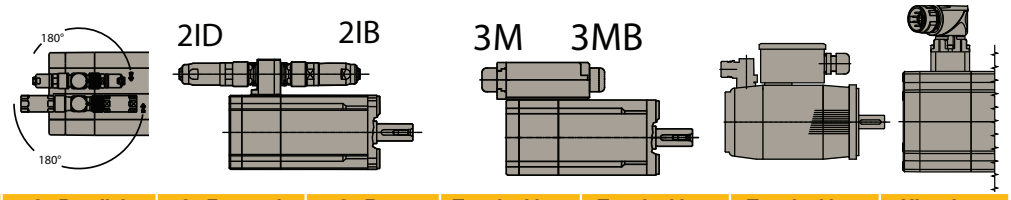
Layout and connectors

M_ motors are available with different combinations of connectors and layout, depending of size of motor and the application



	2x Parallel upright connectors 2I	2x Forward facing connectors 2IB	2x Rear facing connectors 2ID	Terminal box rear facing 3M	Terminal box forward facing 3MB	Terminal box forward facing 3I	Hiperface DSL® connetor IZ
MH__70	✓	-	-	-	-	-	-
MH__105	✓	-	-	-	-	-	-
MH__145	-	-	-	-	-	✓	✓
MH__205	-	-	-	-	-	✓	✓
MH__265	-	-	-	✓	-	-	-
MB__70	✓	-	-	✓	✓	-	-
MB__105	✓	-	-	✓	✓	-	-
MB__145	✓	-	-	✓	✓	✓	✓
MB__205	-	-	-	✓	✓	✓	✓
MB__265	-	-	-	✓	-	-	-
ME__70	✓	-	-	-	-	-	-
ME__105	✓	-	-	-	-	-	-
ME__145	✓	-	-	-	-	✓	✓
ME__205	-	-	-	-	-	✓	✓
ME__265	-	-	-	✓	-	-	-

- Not possible
✓ Possible without increment
Δ Possible with increment motor length

Shaft

M_ motors are available with or without key option; shafts are available in different sizes suitable for your existing machine or gearbox

Increased Safety

M_ motors size 105 and 145 are also available with increased safety which conform to ATEX.... directive 94/9/CE Ⓔx II 2G Ex e II T3 with environment temperature between -20 and +40 °C
Only with drive HIDX. The feature and characteristics of the MBX motors are different from the standard version. For more info please consult technical department of Parker EME.

Custom options

Flange and shafts

In addition to the standard product it is possible to specify a fully customized mechanical interface for the motor ie flange, shaft and mounting holes. This option requires technical collaboration between the customer and Parker.

KIT (frameless) options

We can also supply our motors as only stator + rotor. Our mechanical team will develop / propose the right solution for your mechanical application which integrates into the existing elements of the machine.
A second output shaft / external encoder mount
Certain applications need a second shaft on the rear of motor; for this reason with M_ motors we offer alternative solutions for adding existing feedback or other mechanical accessories. For more details contact your Parker sales engineer.

Order Code

MH / MB Motors

To ensure that you select the correct motor we recommend that you have the following information.

- Diagram speed / time of load cycle to identify the type of the cycle (S1, S3 or others)
- Information about inertia load system
- Check the duty cycle - acceleration/deceleration
- Calculate the average torque and peak torque of the system
- Calculate the average speed and maximum speed of the cycle
- Check the temperature and altitude of environment / application
- Check the mechanical compatibility

With these preliminary data you can start to choice the motor (with the correct drive) for your application.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Order example	**MH**	**x**	**A**	**V**	**205**	**11**	**28**	**5**	**9**		**2IB**			**64**	**A1**			**2**

1	**Type Of Motor (mandatory field)**	
	MH	Motor with Resolver MH Series for PSD/C3
	MB	Motor with Resolver MB Series for TPDM/ SLVDN
	ME	Motor with Encoder ME Series for TPDM/ SLVDN
2	**EX Protection**	
	Empty field	Standard motor no EX Certification
	x	Motor with EX Certification (increased protection safety) (only for 105 and 145 without the holding brake at 3000 min^{-1}) (only with HID, MB)
3	**Brake Option**	
	empty field	No Brake Option
	A	Motor with Holding Brake (brakes when the supply voltage is 0)
	B	Motor with Holding Brake (size145 up to 15Nm and 205)
4	**Cooling Option**	
	empty field	no cooling option
	V	Motor with shaft-drive fan cooling
	SV	Motor with (single-phase) motorised fan cooling
	W	Water cooled motor (only size 145)
5	**Motor Frame Size (mandatory field)**	
	70	Torque range 0.5…2,5 Nm
	105	Torque range 2.2…8 Nm
	145	Torque range 4.5…28 Nm
	205	Torque range 15…90 Nm
	265	Torque range 75…265 Nm
6	**Winding (mandatory field)**	
	nn	min^{-1} (x100) except for size 205 1150 min^{-1} which is only 11
7	**Motor Torque (mandatory field)**	
	nn	Torque in Nm
8	**Flange (mandatory field)**	
	5	B5 Flange
	6	116 mm Flange, only for frame 105
	9	96 mm Flange, only for frame 105

9	**Shaft (mandatory field)**	
	11	11x23 mm for size 70
	14	14x30 mm for size 70
	19	19x40 mm for size 105/145
	24	24x50 mm for size 105/145
	28	28x60 mm for size 145
	38	38x80 mm for size 205
	42	42x110 mm for size 205
	48	48x110 mm for size 265
	A*	Special shaft under request
10	**Key Shaft option**	
	empty field	Shaft with key
	S	Shaft without key
11	**Layout - Connectors (mandatory field)**	
	2I	Interconnectron rotatables receptacles (not for size 265 and 205 with brake)
	3M	Terminal Box - opposite shaft glands
	3MB	Terminal Box -toward shaft glands
	2IB	90° Interconnectron receptacles - forward facing
	2ID	90° Interconnectron receptacles - rear facing
	3I	Terminal Box + Interconnectron 90° (not for size 265)
	3MBS	Terminal Box + Interconnectron 90° (only for size 265)
12	**Female connectors option**	
	empty field	With Female / flying connectors
	W	Without Female / flying connectors
13	**Form Option**	
	empty field	no Foot Mount Option
	3	B3 - Foot Mount Option
14	**Protection Degree (mandatory field)**	
	64	IP64
	65	IP65

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15	Feedback
empty field	Resolver (Standard) not for ME motors
A1	Tamagawa OIH48 2000 ppr / on request - No Stock
A2	Tamagawa OIH48 2048 ppr for size 105/145/205
A3	Tamagawa OIH48 4096 ppr for size 105/145/205
A6	Stegman SRS50 Hiperface Single-Turn for size 70/105/145/205
A7	Stegman SRM50 Hiperface Multi-Turn for size 70/105/145/205
B1	Encoder 3000 ppr + Hall - TAMAGAWA OIH35
B9	SinCos EnDat Encoder Multi-Turn - HEIDENHAIN EQI1331
C4	Encoder 5000 ppr + Hall - TAMAGAWA OIH48
D5	SinCos EnDat Encoder Multi-Turn - HEIDENHAIN EQN1325
S1	SinCos Hiperface Encoder Single-Turn - STEGMANN SRS50S
S2	SinCos Hiperface Encoder Multi-Turn - STEGMANN SRS50S
S5	Hiperface DSL® Encoder Feedback SIL2 262 144 ppr - Single Turn
S6	Hiperface DSL® Encoder Feedback SIL2 262 144 ppr - Multi Turn
L2	Hiperface DSL® Encoder Feedback 2 097 152 ppr x 4096 Multi Turn
L4	Hiperface DSL® Encoder Feedback SIL2 2 097 152 ppr x 4096 Multi Turn

16	Option Inertia
empty field	Standard Inertia
M	Medium Inertia
ML	High Inertia

17	Special Option
empty field	No Special Option
Exx	Prearrangement for external encoder mounting; where xx is the model of feedback

18	Voltage
2	220-230 V
4	380-400 V

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Order Code

Motor Power Cable for MH / MB Motors

	1	2	3	4		5		6		7		8
Order example	**CBM**	**005**	**H**	**D**	**-**	**M15**	**-**	**PSX**	**-**	**0010**	**-**	**00**

1	**Power Cable Drive**	
	CBM	Power cable drive
2	**Section [mm²]**	
	005	0.5 mm²
	007	0.7 mm²
	010	1 mm²
	015	1.5 mm²
	025	2.5 mm²
3	**Cable**	
	S	Standard
	H	High Flex
4	**Brake**	
	0	Power cable standard - without brake
	B	Power cable standard - with brake
	D	DSL® Power cable with brake
5	**Motor Connector**	
	M15	M15 Interconnectron connector
	M23	M23 Interconnectron connector
	M40	M40 Interconnectron connector
6	**Drive**	
	PSX	Parker PSD1-S
	PMX	Parker PSD1-M
	SDX	Parker Servonet DC
7	**Length**	
	0000	Cable length 4 digits (example 50 m = 0500)*
8	**Special Execution**	
	00	Standard

* Available length in meter: 1; 2.5; 5; 7.5; 10; 15; 20; 25; 30; 35; 40; 45; 50

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Motor Feedback Cable for MH / MB Motors

	1	2	3	4		5		6		7		8
Order example	**CBF**	**RE0**	**H**	**0**	**-**	**M15**	**-**	**PSX**	**-**	**0010**	**-**	**00**

1	**Power Cable Drive**	
	CBF	Feedback cable drive
2	**Feedback**	
	RE0	Resolver
3	**Cable**	
	H	High Flex
4	**Brake**	
	0	Power cable standard - without brake
5	**Motor Connector**	
	M15	M15 Interconnectron connector
	M23	M23 Interconnectron connector
	M40	M40 Interconnectron connector
6	**Drive**	
	PSX	Parker PSD1-S
	PMX	Parker PSD1-M
	SDX	Parker Servonet DC
7	**Length**	
	0000	Cable length 4 digits (example 50 m = 0500)*
8	**Special Execution**	
	00	Standard

* Available length in meter: 1; 2.5; 5; 7.5; 10; 15; 20; 25; 30; 35; 40; 45; 50

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Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374

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Key Markets

Aftermarket services
Commercial transports
Engines
General & business aviation
Helicopters
Launch vehicles
Military aircraft
Missiles
Power generation
Regional transports
Unmanned aerial vehicles

Key Products

Control systems & actuation products
Engine systems & components
Fluid conveyance systems & components
Fluid metering, delivery & atomization devices
Fuel systems & components
Fuel tank inerting systems
Hydraulic systems & components
Thermal management
Wheels & brakes

Climate Control

Key Markets

Agriculture
Air conditioning
Construction Machinery
Food & beverage
Industrial machinery
Life sciences
Oil & gas
Precision cooling
Process
Refrigeration
Transportation

Key Products

Accumulators
Advanced actuators
CO_2 controls
Electronic controllers
Filter driers
Hand shut-off valves
Heat exchangers
Hose & fittings
Pressure regulating valves
Refrigerant distributors
Safety relief valves
Smart pumps
Solenoid valves
Thermostatic expansion valves

Electromechanical

Key Markets

Aerospace
Factory automation
Life science & medical
Machine tools
Packaging machinery
Paper machinery
Plastics machinery & converting
Primary metals
Semiconductor & electronics
Textile
Wire & cable

Key Products

AC/DC drives & systems
Electric actuators, gantry robots & slides
Electrohydrostatic actuation systems
Electromechanical actuation systems
Human machine interface
Linear motors
Stepper motors, servo motors, drives & controls
Structural extrusions

Filtration

Key Markets

Aerospace
Food & beverage
Industrial plant & equipment
Life sciences
Marine
Mobile equipment
Oil & gas
Power generation & renewable energy
Process
Transportation
Water Purification

Key Products

Analytical gas generators
Compressed air filters & dryers
Engine air, coolant, fuel & oil filtration systems
Fluid condition monitoring systems
Hydraulic & lubrication filters
Hydrogen, nitrogen & zero air generators
Instrumentation filters
Membrane & fiber filters
Microfiltration
Sterile air filtration
Water desalination & purification filters & systems

Fluid & Gas Handling

Key Markets

Aerial lift
Agriculture
Bulk chemical handling
Construction machinery
Food & beverage
Fuel & gas delivery
Industrial machinery
Life sciences
Marine
Mining
Mobile
Oil & gas
Renewable energy
Transportation

Key Products

Check valves
Connectors for low pressure fluid conveyance
Deep sea umbilicals
Diagnostic equipment
Hose couplings
Industrial hose
Mooring systems & power cables
PTFE hose & tubing
Quick couplings
Rubber & thermoplastic hose
Tube fittings & adapters
Tubing & plastic fittings

Hydraulics

Key Markets

Aerial lift
Agriculture
Alternative energy
Construction machinery
Forestry
Industrial machinery
Machine tools
Marine
Material handling
Mining
Oil & gas
Power generation
Refuse vehicles
Renewable energy
Truck hydraulics
Turf equipment

Key Products

Accumulators
Cartridge valves
Electrohydraulic actuators
Human machine interfaces
Hybrid drives
Hydraulic cylinders
Hydraulic motors & pumps
Hydraulic systems
Hydraulic valves & controls
Hydrostatic steering
Integrated hydraulic circuits
Power take-offs
Power units
Rotary actuators
Sensors

Pneumatics

Key Markets

Aerospace
Conveyor & material handling
Factory automation
Life science & medical
Machine tools
Packaging machinery
Transportation & automotive

Key Products

Air preparation
Brass fittings & valves
Manifolds
Pneumatic accessories
Pneumatic actuators & grippers
Pneumatic valves & controls
Quick disconnects
Rotary actuators
Rubber & thermoplastic hose & couplings
Structural extrusions
Thermoplastic tubing & fittings
Vacuum generators, cups & sensors

Process Control

Key Markets

Alternative fuels
Biopharmaceuticals
Chemical & refining
Food & beverage
Marine & shipbuilding
Medical & dental
Microelectronics
Nuclear Power
Offshore oil exploration
Oil & gas
Pharmaceuticals
Power generation
Pulp & paper
Steel
Water/wastewater

Key Products

Analytical Instruments
Analytical sample conditioning products & systems
Chemical injection fittings & valves
Fluoropolymer chemical delivery fittings, valves & pumps
High purity gas delivery fittings, valves, regulators & digital flow controllers
Industrial mass flow meters/controllers
Permanent no-weld tube fittings
Precision industrial regulators & flow controllers
Process control double block & bleeds
Process control fittings, valves, regulators & manifold valves

Sealing & Shielding

Key Markets

Aerospace
Chemical processing
Consumer
Fluid power
General industrial
Information technology
Life sciences
Microelectronics
Military
Oil & gas
Power generation
Renewable energy
Telecommunications
Transportation

Key Products

Dynamic seals
Elastomeric o-rings
Electro-medical instrument design & assembly
EMI shielding
Extruded & precision-cut, fabricated elastomeric seals
High temperature metal seals
Homogeneous & inserted elastomeric shapes
Medical device fabrication & assembly
Metal & plastic retained composite seals
Shielded optical windows
Silicone tubing & extrusions
Thermal management
Vibration dampening

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