rexroth
A Bosch Company

IndraDyn S

MSC Motor

Operating Instructions
R912008407

Edition 05

Record of Revision

Edition	Release Date	Notes
DOK-MOTOR*-MSC********-IT01-EN-P	2020.04	First release
DOK-MOTOR*-MSC********-IT02-EN-P	2020.04	New functions
DOK-MOTOR*-MSC********-IT03-EN-P	2020.06	Power extension
DOK-MOTOR*-MSC********-IT04-EN-P	2021.01	Power extension
DOK-MOTOR*-MSC********-IT05-EN-P	2022.02	Content update

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Table of Contents

1 Product information

1.1 General information

The series of Rexroth MSC motors (permanent magnet synchronous motor) include 4 flange sizes, 15 models and multiple variants within the power range from 400 W to 7.5 kW. Used with Rexroth IndraDrive ACS01 servo drives, it can meet the needs of different industrial applications.

1.2 Basic features

Product	3-phase permanent magnet synchronous motor
Ambient temperature	0...40 ℃
Degrees of protection	IP67*
Cooling type	Natural cooling
Installation height	Up to 1000 m above sea level
Insulation Level	155 ℃ (F)
Encoder	23-bit, single-turn or multi-turn absolute value encoder
Electrical connection	Amp plug (400 W, 750 W) Aviation plug (other power)
Brake unit	24 V DC, optional
Shaft seal	Standard
Shaft	with threaded hole and removable key slot

Tab. 1-1: MSC Basic features

☞ *: Except for motor connectors.

1.3 Identification

1.3.1 Motor plates

Product information are shown in the motor plates.

TYP	Product typecode	**n(N)**	Rated speed
MNR	Material number	**U(N)**	Rated voltage
SN	Serial number	**I(N)**	Rated current
FD	Production date	**Encoder**	Encoder information
P(N)	Rated power	**Brake**	Brake information (optional)

Fig. 1-1: Motor plates (Examples)

1.3.2 Safety sign

please notice the safety and prohibition signs on the motors. The specific meaning of signs are shown in the table below.

Sign	Meaning
	The temperature of the motor surface can be higher than 60 ℃. Risk of burns!
	Do not knock the motor shaft, otherwise it may lead to machine failure.

Tab. 1-2: Safety sign of motor

2 Type code

2.1 Type code-MSC060

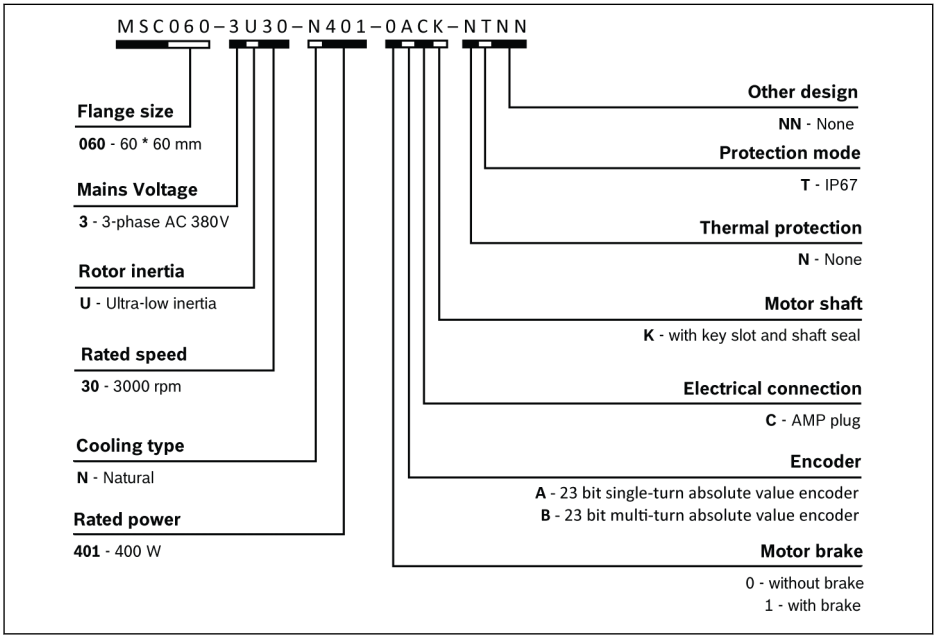


Fig. 2-1: Type code-MSC060

Select the corresponding required motor type in the table below.

Number	Type
1	MSC060-3U30-N401-0ACK-NTNN
2	MSC060-3U30-N401-0BCK-NTNN
3	MSC060-3U30-N401-1ACK-NTNN
4	MSC060-3U30-N401-1BCK-NTNN

Tab. 2-1: Motor list-MSC060

2.2 Type code-MSC080

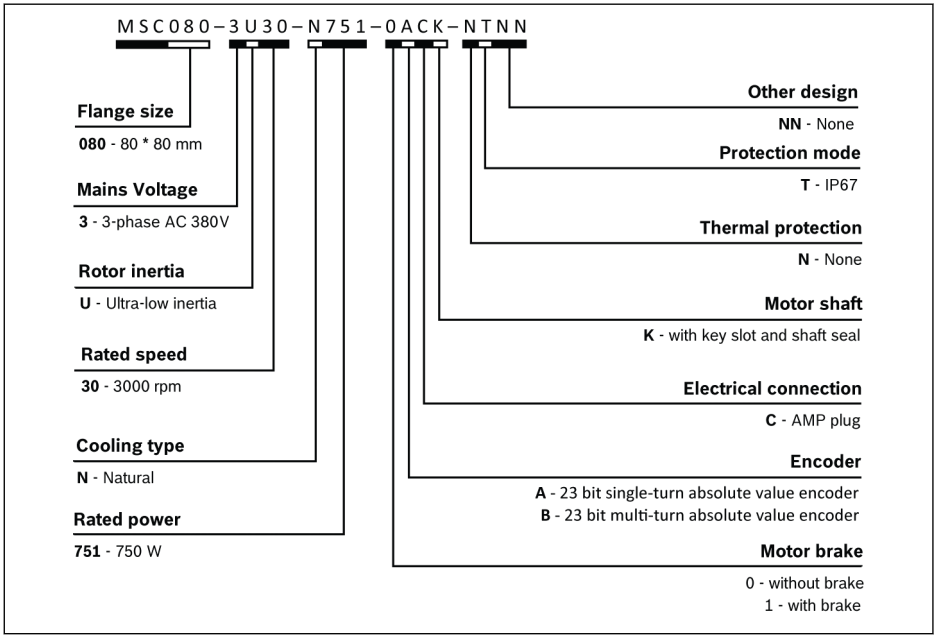


Fig. 2-2: Type code-MSC080

Select the corresponding required motor type in the table below.

Number	Type
1	MSC080-3U30-N751-0ACK-NTNN
2	MSC080-3U30-N751-1ACK-NTNN
3	MSC080-3U30-N751-0BCK-NTNN
4	MSC080-3U30-N751-1BCK-NTNN

Tab. 2-2: Motor list-MSC080

2.3 Type code-MSC130

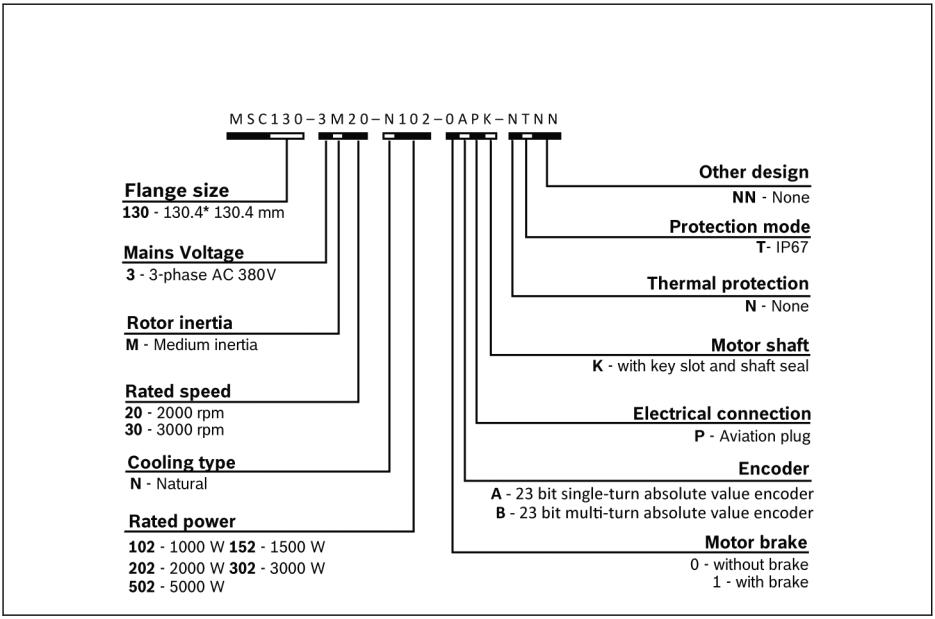


Fig. 2-3: Type code-MSC130

Select the corresponding required motor type in the table below.

Number	Type
1	MSC130-3M20-N102-0APK-NTNN
2	MSC130-3M20-N102-1APK-NTNN
3	MSC130-3M20-N102-0BPK-NTNN
4	MSC130-3M20-N102-1BPK-NTNN
5	MSC130-3M20-N152-0APK-NTNN
6	MSC130-3M20-N152-1APK-NTNN
7	MSC130-3M20-N152-0BPK-NTNN
8	MSC130-3M20-N152-1BPK-NTNN
9	MSC130-3M20-N202-0APK-NTNN
10	MSC130-3M20-N202-1APK-NTNN
11	MSC130-3M20-N202-0BPK-NTNN
12	MSC130-3M20-N202-1BPK-NTNN
13	MSC130-3M20-N302-0APK-NTNN
14	MSC130-3M20-N302-1APK-NTNN
15	MSC130-3M20-N302-0BPK-NTNN

Number	Type
16	MSC130-3M20-N302-1BPK-NTNN
17	MSC130-3M30-N152-0APK-NTNN
18	MSC130-3M30-N152-0BPK-NTNN
19	MSC130-3M30-N152-1APK-NTNN
20	MSC130-3M30-N152-1BPK-NTNN
21	MSC130-3M30-N302-0APK-NTNN
22	MSC130-3M30-N302-0BPK-NTNN
23	MSC130-3M30-N302-1APK-NTNN
24	MSC130-3M30-N302-1BPK-NTNN
25	MSC130-3M30-N502-0APK-NTNN
26	MSC130-3M30-N502-0BPK-NTNN
27	MSC130-3M30-N502-1APK-NTNN
28	MSC130-3M30-N502-1BPK-NTNN

Tab. 2-3: Motor list-MSC130

2.4 Type code-MSC180

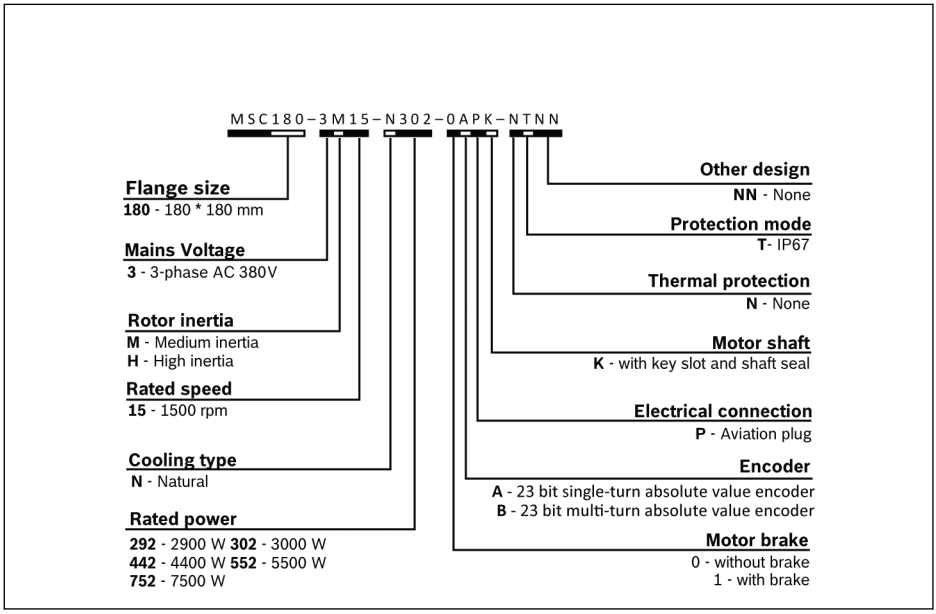


Fig. 2-4: Type code-MSC180

Select the corresponding required motor type in the table below.

Number	Type
1	MSC180-3M15-N302-0APK-NTNN
2	MSC180-3M15-N302-1APK-NTNN
3	MSC180-3M15-N302-0BPK-NTNN
4	MSC180-3M15-N302-1BPK-NTNN
5	MSC180-3M15-N442-0APK-NTNN
6	MSC180-3M15-N442-1APK-NTNN
7	MSC180-3M15-N442-0BPK-NTNN
8	MSC180-3M15-N442-1BPK-NTNN
9	MSC180-3M15-N552-0APK-NTNN
10	MSC180-3M15-N552-1APK-NTNN
11	MSC180-3M15-N552-0BPK-NTNN
12	MSC180-3M15-N552-1BPK-NTNN
13	MSC180-3M15-N752-0APK-NTNN
14	MSC180-3M15-N752-1APK-NTNN
15	MSC180-3M15-N752-0BPK-NTNN
16	MSC180-3M15-N752-1BPK-NTNN
17	MSC180-3H15-N292-0APK-NTNN
18	MSC180-3H15-N292-0BPK-NTNN
19	MSC180-3H15-N292-1APK-NTNN
20	MSC180-3H15-N292-1BPK-NTNN
21	MSC180-3H15-N442-0APK-NTNN
22	MSC180-3H15-N442-0BPK-NTNN
23	MSC180-3H15-N442-1APK-NTNN
24	MSC180-3H15-N442-1BPK-NTNN

Tab. 2-4: Motor list-MSC180

3 Technical data

3.1 MSC060

3.1.1 Technical data-MSC060

Description	Symbol	Unit	Deviation	MSC060-3U30-N401
Rated power	P-R	kW	-	0.4
Rated torque	T-R	N-m	-	1.27
Max. torque	T-max	N-m	-	3.81
Rated speed	N-R	rpm	-	3000
Max. speed	N-max	rpm	-	6000
Rated current	I-R	A	-	1.5
Max. current	I-max	A	-	4.5
Torque constant	Kt	N-m/A	± 10%	0.85
Voltage constant	Ke	V/krpm	± 10%	56.2
Rotational inertia(without brake)	Jm	Kg-cm^2	± 10%	0.28
Rotational inertia(with brake)	Jm	Kg-cm^2	± 10%	0.34
Winding resistance	Ra	Ω	± 10%	9.6
Winding inductance	L	mH	± 10%	32.3
Pair of poles	-	-	-	4
Weight (without brake)	W	kg	-	1.37
Weight (with brake)	W	kg	-	1.87
Brake torque	-	N-m	-	2
Brake voltage	-	V	-	24
Brake current	-	A	-	0.262
Brake turn on time	-	ms	-	32
Brake turn off time	-	ms	-	17

Tab. 3-1: Technical data-MSC060

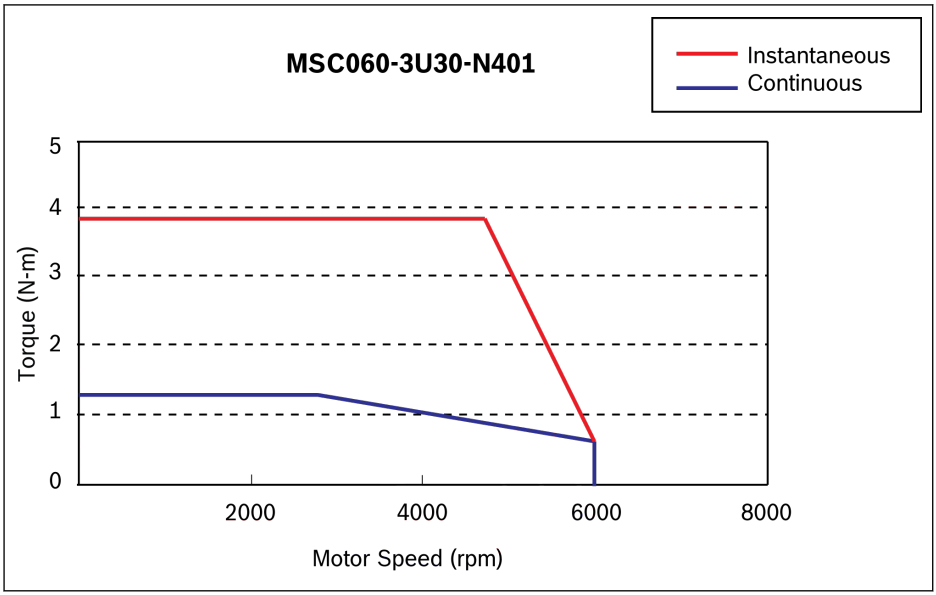


Fig. 3-1: MSC060-3U30-N401 speed-torque curve

3.1.2 Figures and dimensions of MSC060

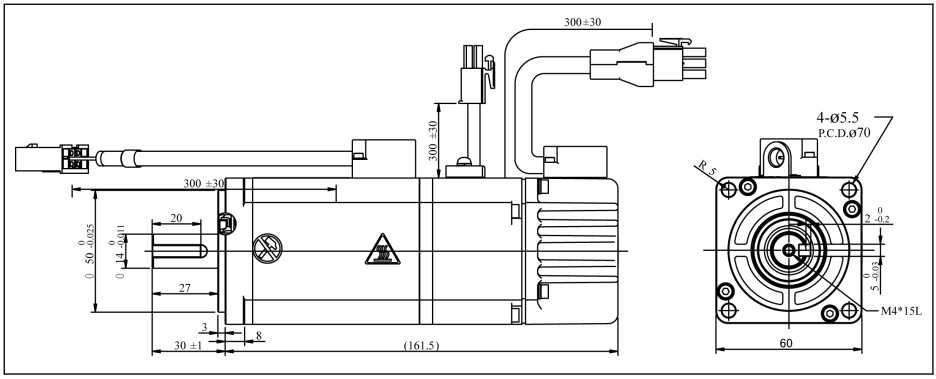


Fig. 3-2: Mounting dimension-MSC060 with brake

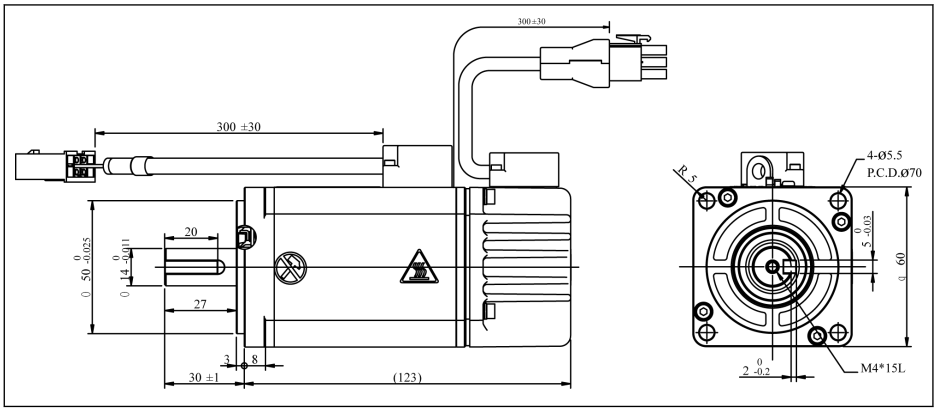


Fig. 3-3: Mounting dimension-MSC060 without brake

3.2 MSC080

3.2.1 Technical data-MSC080

Description	Symbol	Unit	Deviation	MSC080-3U30-N751
Rated power	P-R	kW	-	0.75
Rated torque	T-R	N-m	-	2.39
Max. torque	T-max	N-m	-	7.16
Rated speed	N-R	rpm	-	3000
Max. speed	N-max	rpm	-	5000
Rated current	I-R	A	-	2.5
Max. current	I-max	A	-	9

Description	Symbol	Unit	Deviation	MSC080-3U30-N751
Torque constant	Kt	N-m/A	± 10%	0.95
Voltage constant	Ke	V/krpm	± 10%	64.6
Rotational inertia(without brake)	Jm	Kg-cm^2	± 10%	0.9
Rotational inertia(with brake)	Jm	Kg-cm^2	± 10%	1.03
Winding resistance	Ra	Ω	± 10%	4.55
Winding inductance	L	mH	± 10%	29.4
Pair of poles	-	-	-	4
Weight (without brake)	W	kg	-	2.4
Weight (with brake)	W	kg	-	3.8
Brake torque	-	N-m	-	3
Brake voltage	-	V	-	24
Brake current	-	A	-	0.43
Brake turn on time	-	ms	-	35
Brake turn off time	-	ms	-	25

Tab. 3-2: Technical data-MSC080

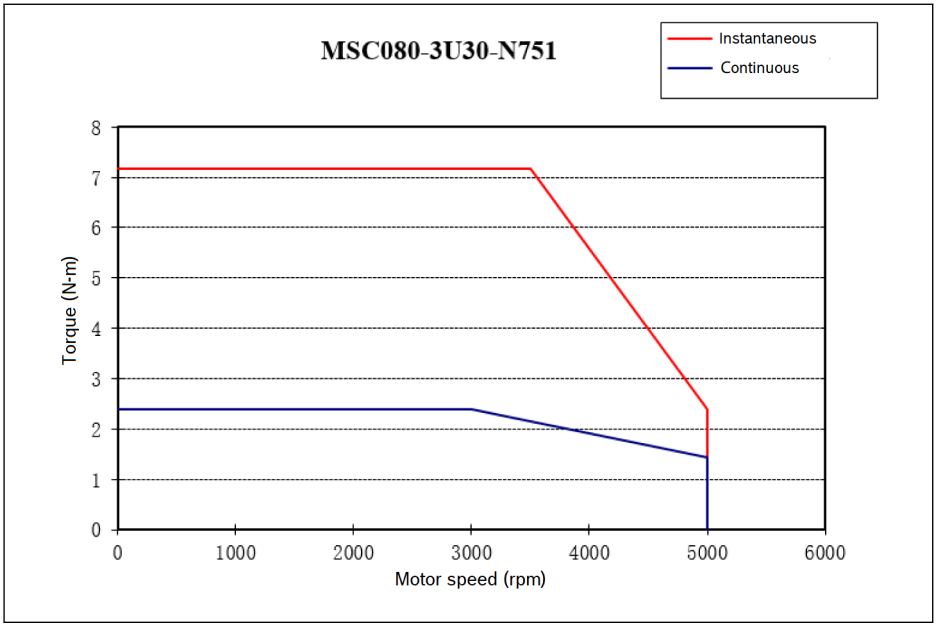


Fig. 3-4: MSC080-3U30-N751 speed-torque curve

3.2.2 Figures and dimensions of MSC080

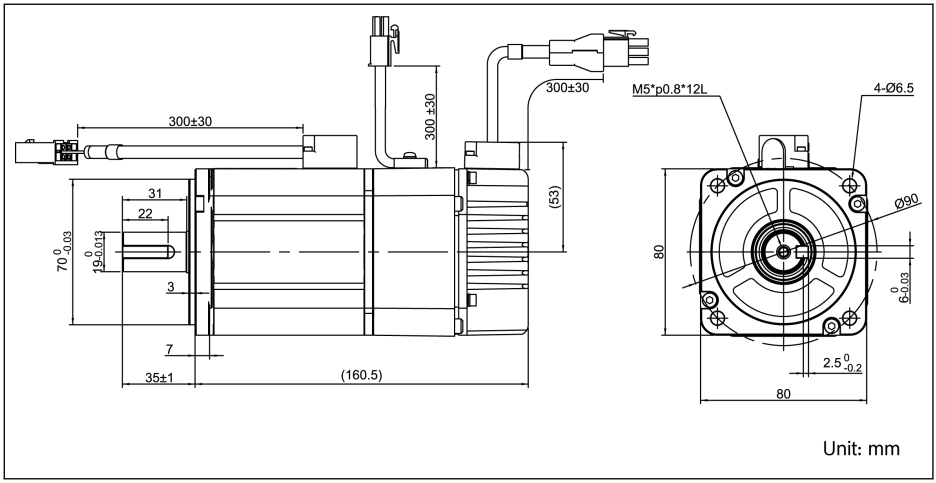


Fig. 3-5: Mounting dimension-MSC080 with brake

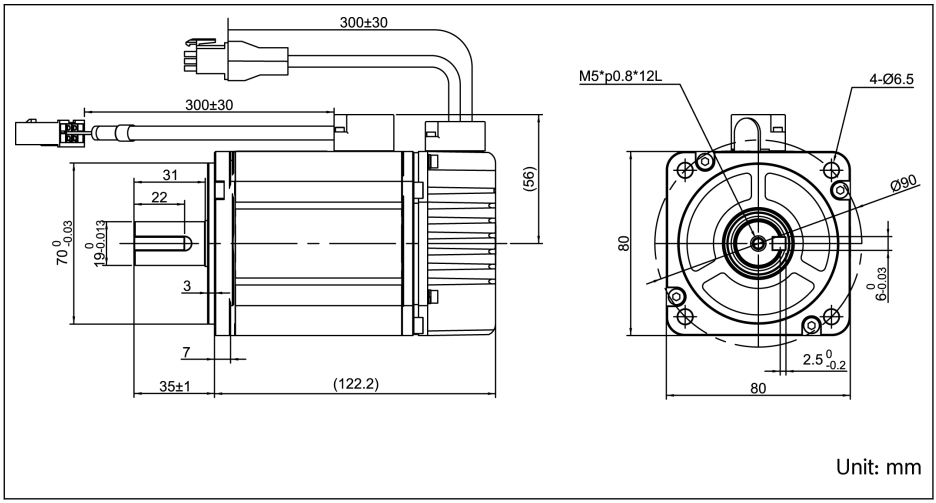


Fig. 3-6: Mounting dimension-MSC080 without brake

3.3 MSC130

3.3.1 Technical data-MSC130

Description	Symbol	Unit	Deviation	MSC130-3M20-N102	MSC130-3M20-N152	MSC130-3M30-N152	MSC130-3M20-N202
Rated power	P-R	kW	-	1	1.5	1.5	2
Rated torque	T-R	N-m	-	4.77	7.16	4.77	9.55
Max. torque	T-max	N-m	-	14.31	21.48	14.33	28.65
Rated speed	N-R	rpm	-	2000	2000	3000	2000
Max. speed	N-max	rpm	-	3000	3000	4500	3000
Rated current	I-R	A	-	2.4	4.36	3.95	5.78
Max. current	I-max	A	-	7.2	13.08	11.85	17.34
Torque constant	Kt	N-m/A	± 10%	2.06	1.8	1.33	1.764
Voltage constant	Ke	V/krpm	± 10%	120	109.28	80.64	107
Rotational inertia(without brake)	Jm	Kg-cm^2	± 10%	6.26	8.88	6.26	12.14
Rotational inertia(with brake)	Jm	Kg-cm^2	± 10%	6.96	9.58	6.96	12.84
Winding resistance	Ra	Ω	± 10%	4.9	2.42	2.1	1.45
Winding inductance	L	mH	± 10%	21.2	13	10.65	8.96
Pair of poles	-	-	-	4	4	4	4
Weight (without brake)	W	kg	-	6.47	8.08	6.47	10.16
Weight (with brake)	W	kg	-	8.08	9.69	8.08	11.77
Brake torque	-	N-m	-	20	20	20	20
Brake voltage	-	V	-	24	24	24	24
Brake current	-	A	-	0.816	0.816	0.816	0.816
Brake turn on time	-	ms	-	76	76	76	76
Brake turn off time	-	ms	-	27	27	27	27

Tab. 3-3: Technical data-MSC130

Description	Symbol	Unit	Deviation	MSC130-3M20-N302	MSC130-3M30-N302	MSC130-3M30-N502
Rated power	P-R	kW	-	3	3	5
Rated torque	T-R	N-m	-	14.32	9.55	16.05
Max. torque	T-max	N-m	-	42.96	28.65	48.15

Description	Symbol	Unit	Deviation	MSC130-3M20-N302	MSC130-3M30-N302	MSC130-3M30-N502
Rated speed	N-R	rpm	-	2000	3000	3000
Max. speed	N-max	rpm	-	3000	4500	4500
Rated current	I-R	A	-	8.9	9.9	14.9
Max. current	I-max	A	-	26.7	29.7	44.7
Torque constant	Kt	N-m/A	± 10%	1.78	1.01	1.08
Voltage constant	Ke	V/krpm	± 10%	107.84	64.4	71.83
Rotational inertia(without brake)	Jm	Kg-cm^2	± 10%	17.92	12.14	17.92
Rotational inertia(with brake)	Jm	Kg-cm^2	± 10%	18.62	12.84	18.62
Winding resistance	Ra	Ω	± 10%	0.83	0.48	0.34
Winding inductance	L	mH	± 10%	5.89	3.27	2.61
Pair of poles	-	-	-	4	4	4
Weight (without brake)	W	kg	-	13.87	11.77	13.87
Weight (with brake)	W	kg	-	15.48	13.87	15.48
Brake torque	-	N-m	-	20	20	20
Brake voltage	-	V	-	24	24	24
Brake current	-	A	-	0.816	0.816	0.816
Brake turn on time	-	ms	-	76	76	76
Brake turn off time	-	ms	-	27	27	27

Tab. 3-4: Technical data-MSC130

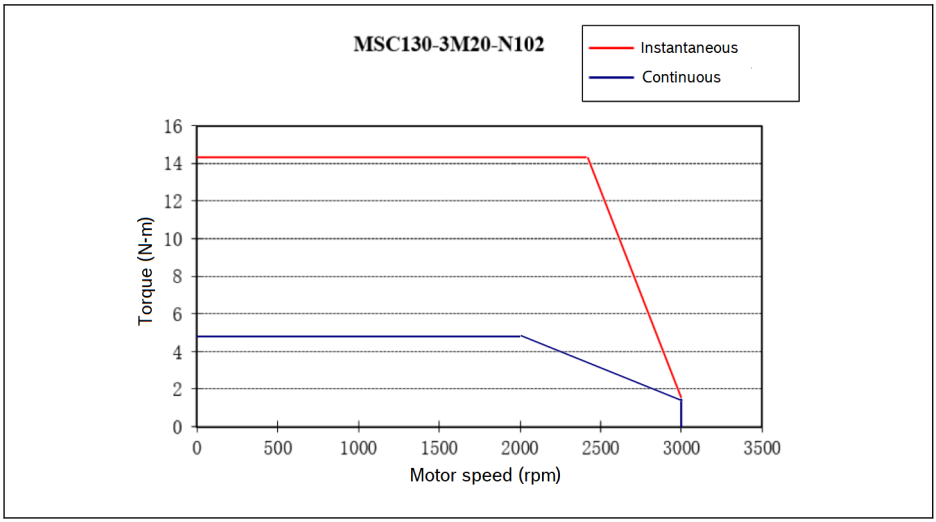


Fig. 3-7: MSC130-3M20-N102 speed-torque curve

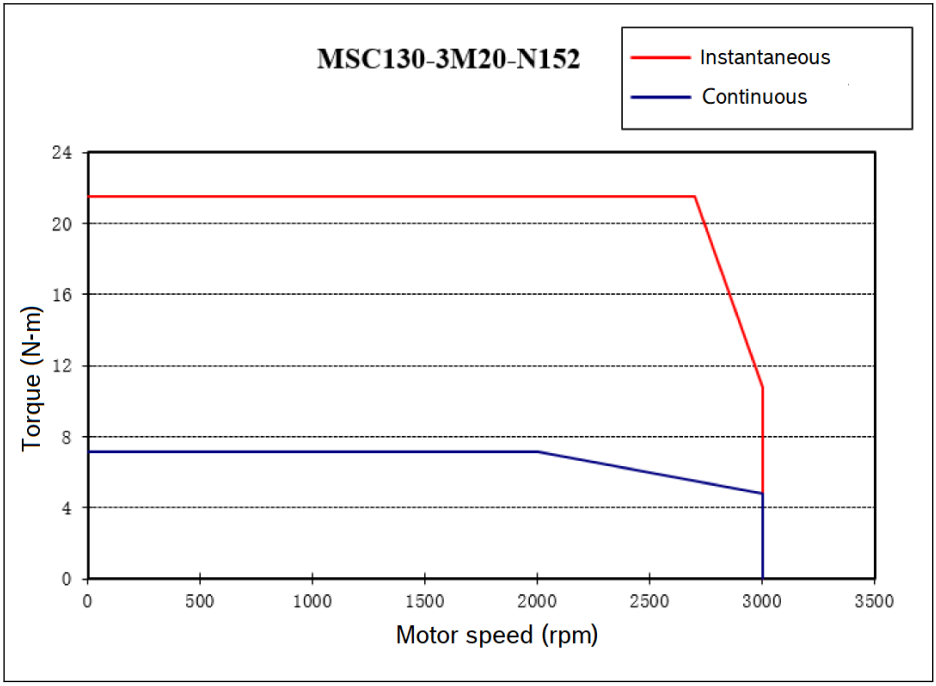


Fig. 3-8: MSC130-3M20-N152 speed-torque curve

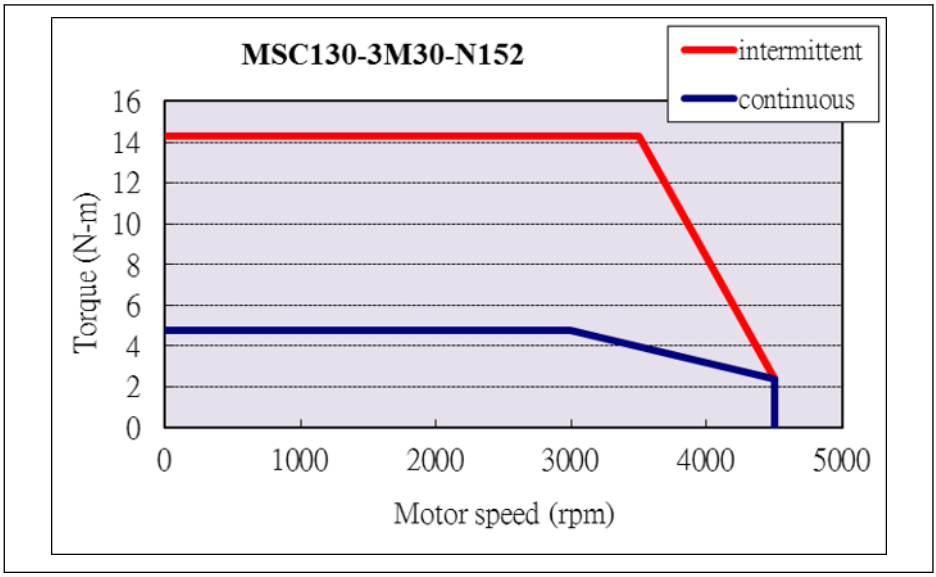


Fig. 3-9: MSC130-3M30-N152 speed-torque curve

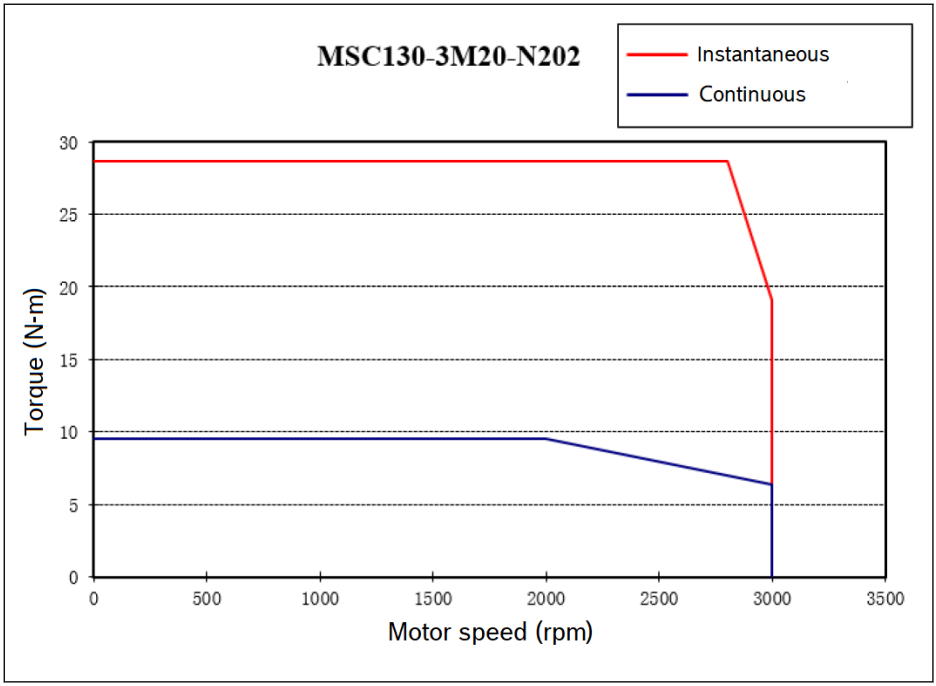


Fig. 3-10: MSC130-3M20-N202 speed-torque curve

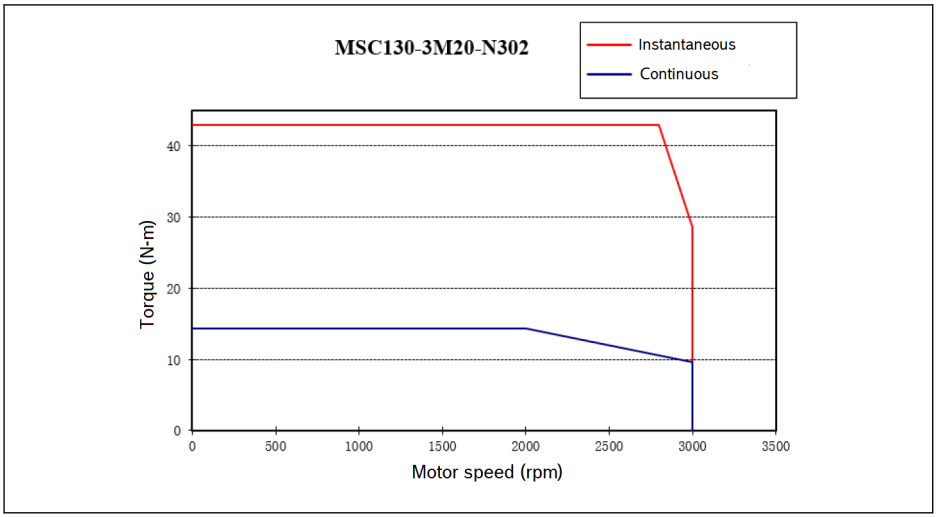


Fig. 3-11: MSC130-3M20-N302 speed-torque curve

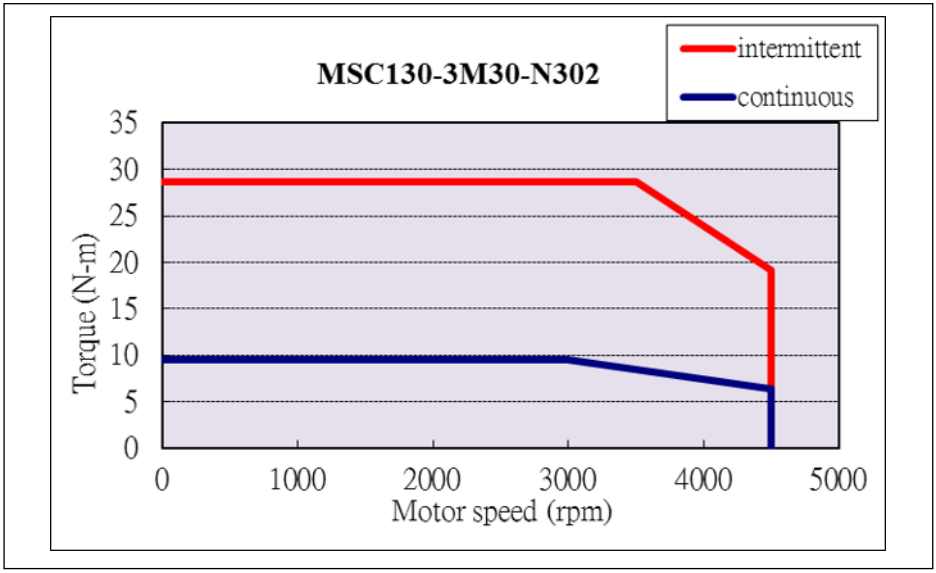


Fig. 3-12: MSC130-3M30-N302 speed-torque curve

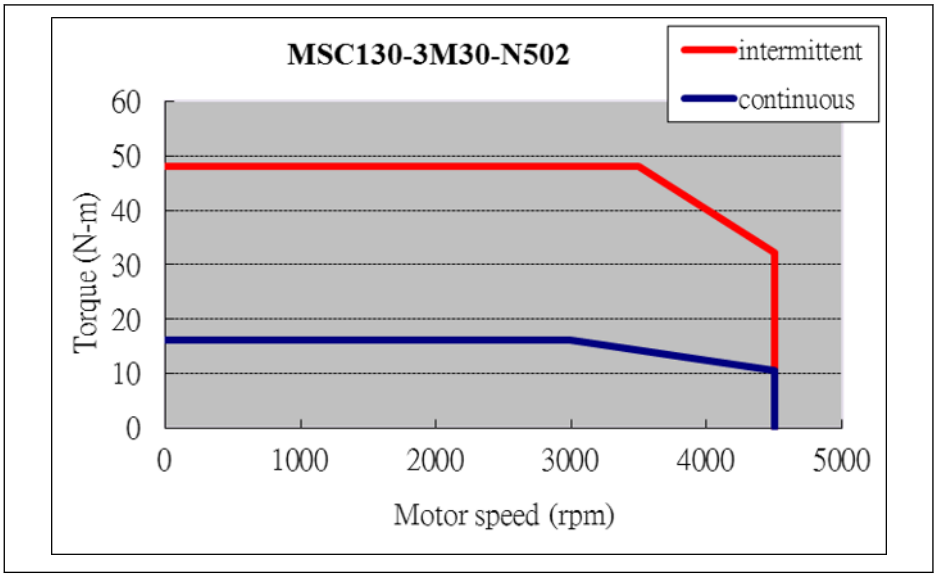


Fig. 3-13: MSC130-3M30-N502 speed-torque curve

3.3.2 Figures and dimensions of MSC130

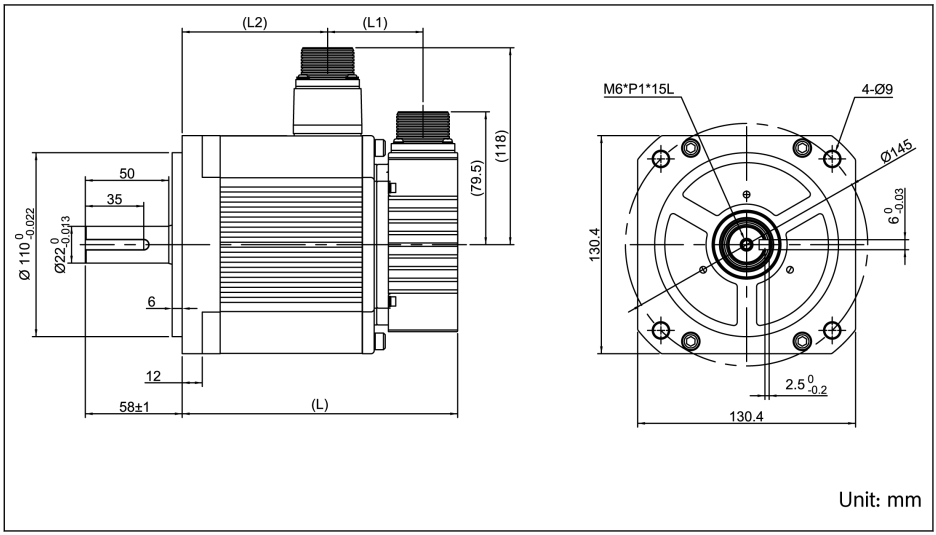


Fig. 3-14: Figures-MSC130

Motor	L	L1	L2
MSC130-3M20-N102-0...	164.8	57.1	87

MSC130-3M20-N102-1...	219.3	111.6	87
MSC130-3M20-N152-0...	184.8	57.1	107
MSC130-3M20-N152-1...	239.3	111.6	107
MSC130-3M30-N152-0...	164.8	57.1	87
MSC130-3M30-N152-1...	219.3	111.6	87
MSC130-3M20-N202-0...	214.8	57.1	137
MSC130-3M20-N202-1...	269.3	111.6	137
MSC130-3M20-N302-0...	264.8	57.1	187
MSC130-3M20-N302-1...	319.3	111.6	187
MSC130-3M30-N302-0...	214.8	57.1	137
MSC130-3M30-N302-1...	269.3	111.6	137
MSC130-3M30-N502-0...	264.8	57.1	193
MSC130-3M30-N502-1...	319.3	111.6	187

Tab. 3-5: Mounting dimension-MSC130

3.4 MSC180

3.4.1 Technical data-MSC180

Description	Symbol	Unit	Deviation	MSC180-3M15-N302	MSC180-3M15-N442	MSC180-3M15-N552
Rated power	P-R	kW	-	3	4.4	5.5
Rated torque	T-R	N-m	-	19.1	28	35.1
Max. torque	T-max	N-m	-	47.75	70	87.75
Rated speed	N-R	rpm	-	1500	1500	1500
Max. speed	N-max	rpm	-	2000	2000	2000
Rated current	I-R	A	-	8.2	12.4	15.5
Max. current	I-max	A	-	20.5	31	38.8
Torque constant	Kt	N-m/A	± 10%	2.33	2.26	2.26
Voltage constant	Ke	V/krpm	± 10%	154.7	150	150.5
Rotational inertia(without brake)	Jm	$Kg\text{-}cm^2$	± 10%	39.95	59.17	77.9
Rotational inertia(with brake)	Jm	$Kg\text{-}cm^2$	± 10%	42.36	61.58	80.31
Winding resistance	Ra	Ω	± 10%	1.1	0.576	0.415
Winding inductance	L	mH	± 10%	25.9	15.6	11.6
Pair of poles	-	-	-	4	4	4
Weight (without brake)	W	kg	-	16.9	22.1	27.1
Weight (with brake)	W	kg	-	21	26	31
Brake torque	-	N-m	-	40	40	74
Brake voltage	-	V	-	24	24	24
Brake current	-	A	-	1.15	1.15	1.1
Brake turn on time	-	ms	-	200	200	180
Brake turn off time	-	ms	-	80	80	80

Tab. 3-6: Technical data-MSC180

Description	Symbol	Unit	Deviation	MSC180-3M15-N752	MSC180-3H15-N292	MSC180-3H15-N292
Rated power	P-R	kW	-	7.5	2.9	2.9
Rated torque	T-R	N-m	-	47.8	18.6	18.6
Max. torque	T-max	N-m	-	122.6	45.1	45.1

Description	Symbol	Unit	Deviation	MSC180-3M15-N752	MSC180-3H15-N292	MSC180-3H15-N292
Rated speed	N-R	rpm	-	1500	1500	1500
Max. speed	N-max	rpm	-	2000	3000	3000
Rated current	I-R	A	-	20.2	11.4	11.4
Max. current	I-max	A	-	51.8	27.7	27.7
Torque constant	Kt	N-m/A	± 10%	2.37	1.63	1.63
Voltage constant	Ke	V/krpm	± 10%	149.5	107.52	107.52
Rotational inertia(without brake)	Jm	Kg-cm^2	± 10%	108.4	45.55	45.55
Rotational inertia(with brake)	Jm	Kg-cm^2	± 10%	110.88	47.96	47.96
Winding resistance	Ra	Ω	± 10%	0.335	0.47	0.47
Winding inductance	L	mH	± 10%	8.5	11.18	11.18
Pair of poles	-	-	-	4	4	4
Weight (without brake)	W	kg	-	34.8	18	18
Weight (with brake)	W	kg	-	38.7	22.5	22.5
Brake torque	-	N-m	-	74	40	40
Brake voltage	-	V	-	24	24	24
Brake current	-	A	-	1.1	1.15	1.15
Brake turn on time	-	ms	-	180	200	200
Brake turn off time	-	ms	-	80	80	80

Tab. 3-7: Technical data-MSC180

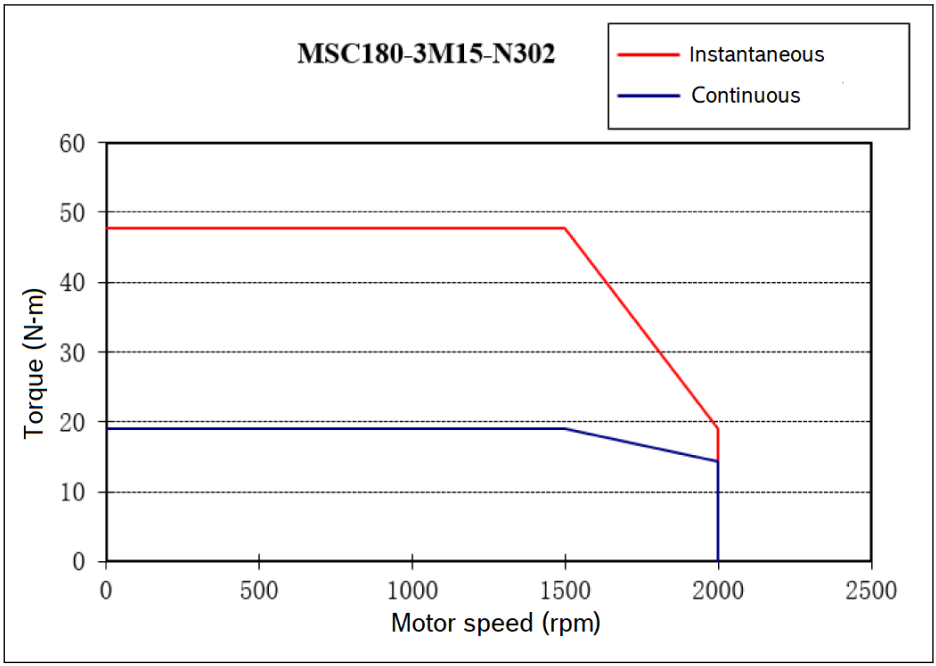


Fig. 3-15: MSC180-3M15-N302 speed-torque curve

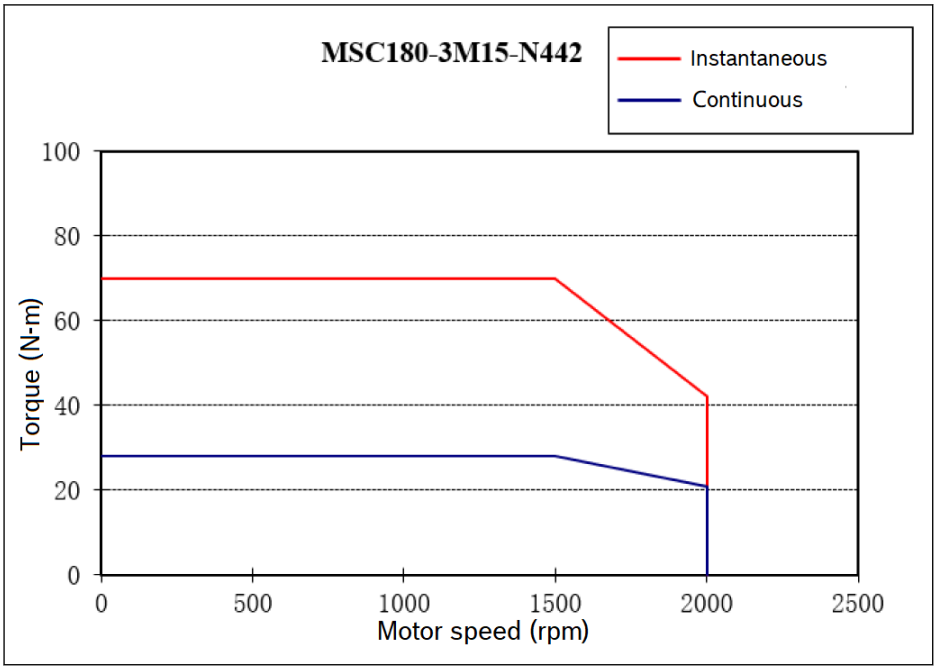


Fig. 3-16: MSC180-3M15-N442 speed-torque curve

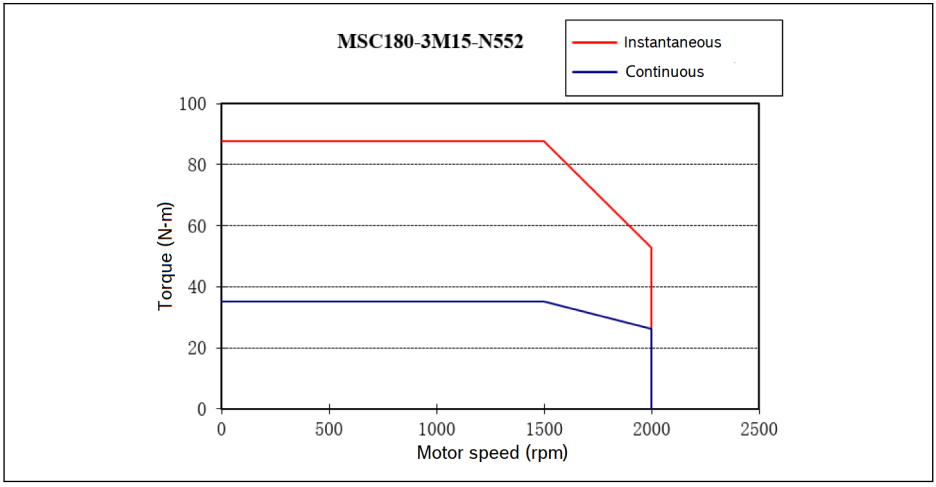


Fig. 3-17: MSC180-3M15-N552 speed-torque curve

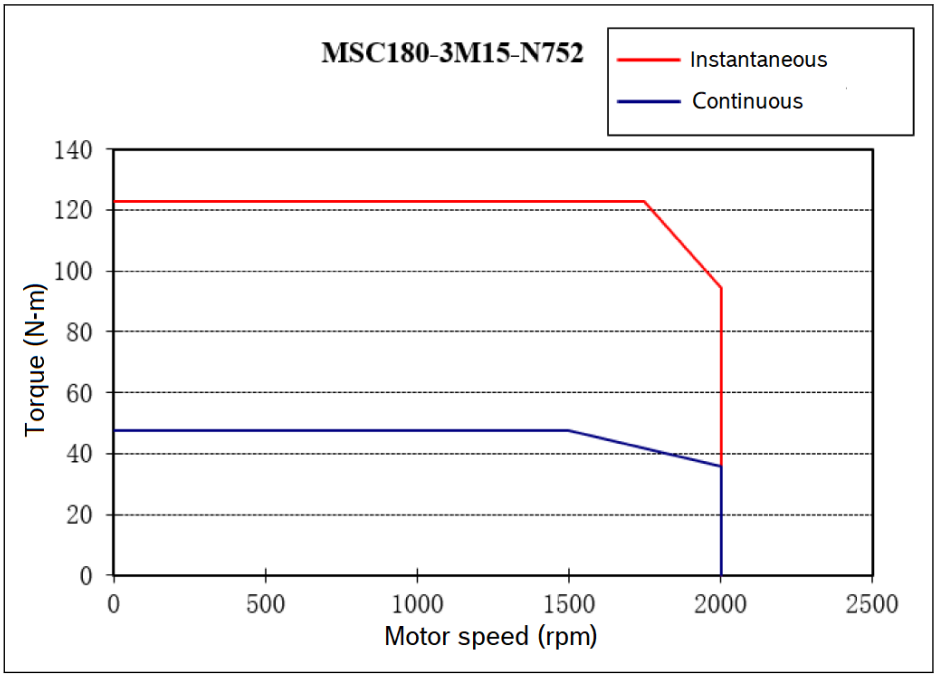


Fig. 3-18: MSC180-3M15-N752 speed-torque curve

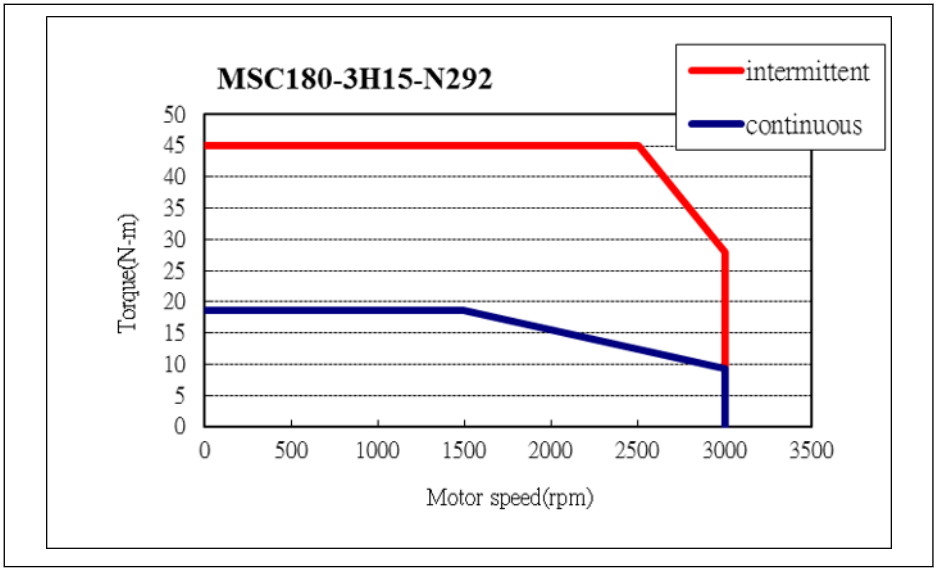


Fig. 3-19: MSC180-3H15-N292 speed-torque curve

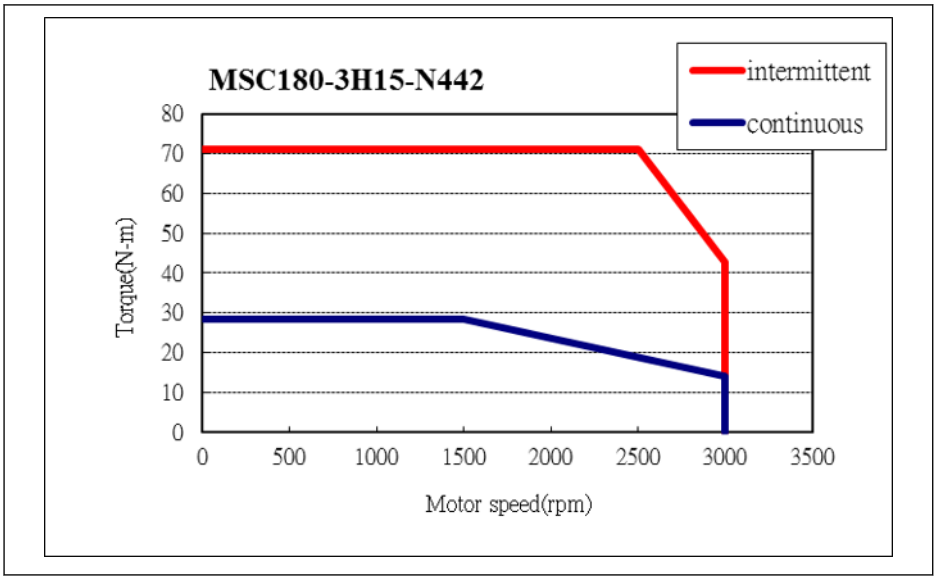


Fig. 3-20: MSC180-3H15-N442 speed-torque curve

3.4.2 Figures and dimensions of MSC180

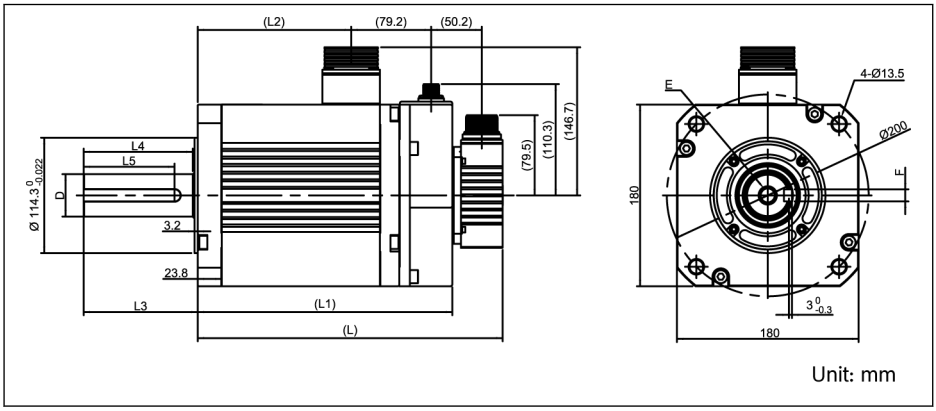


Fig. 3-21: Figures-MSC180 with brake

Motor	D	E	F	L	L1	L2	L3	L4	L5
MSC180-3M15-N302-1...	$Ø35^{0}_{-0.013}$	M12*24L	$10^{0}_{-0.036}$	244.6	194.7	94.5	79±1	74	60
MSC180-3M15-N442-1...	$Ø35^{0}_{-0.013}$	M12*24L	$10^{0}_{-0.036}$	274.6	224.7	124.5	79±1	74	60

Motor	D	E	F	L	L1	L2	L3	L4	L5
MSC180-3M15-N552-1...	$Ø42^{0}_{-0.016}$	M16*3 2L	$12^{0}_{-0.036}$	302.1	252.2	152	113±1	108	90
MSC180-3M15-N752-1...	$Ø42^{0}_{-0.016}$	M16*3 2L	$12^{0}_{-0.036}$	359.6	309.7	209.5	113±1	108	90
MSC180-3H15-N292-1	$Ø35^{0}_{-0.013}$	M12*2 4L	$10^{0}_{-0.036}$	253.6	203.7	103.5	79±1	74	60
MSC180-3H15-N442-1	$Ø35^{0}_{-0.013}$	M12*2 4L	$10^{0}_{-0.036}$	285.6	235.7	135.5	79±1	74	60

Tab. 3-8: Mounting dimension-MSC180 with brake

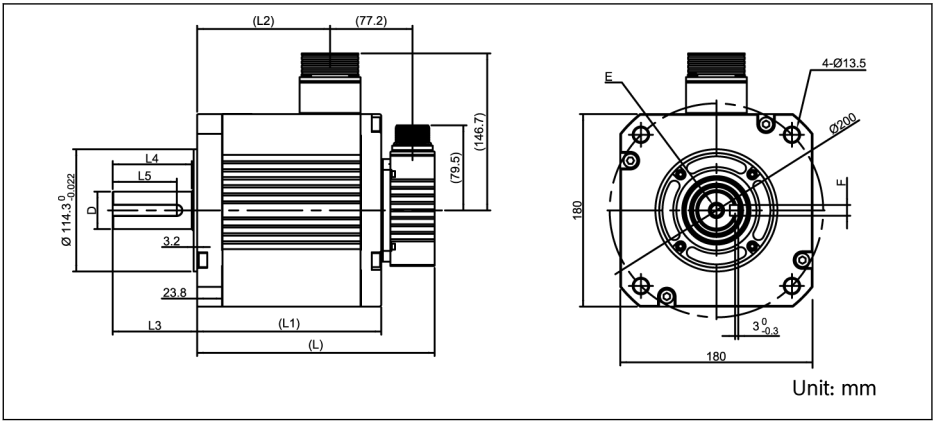


Fig. 3-22: Figures-MSC180 without brake

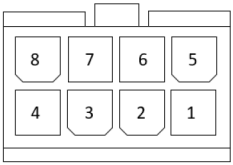
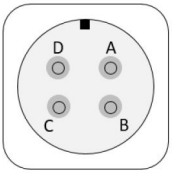
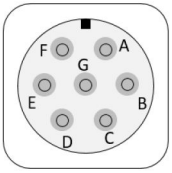
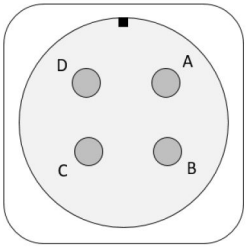
Motor	D	E	F	L	L1	L2	L3	L4	L5
MSC180-3M15-N302-0...	$Ø35^{0}_{-0.013}$	M12*2 4L	$10^{0}_{-0.036}$	192.4	142.5	94.5	79±1	74	60
MSC180-3M15-N442-0...	$Ø35^{0}_{-0.013}$	M12*2 4L	$10^{0}_{-0.036}$	222.4	172.5	124.5	79±1	74	60
MSC180-3M15-N552-0...	$Ø42^{0}_{-0.018}$	M16*3 2L	$12^{0}_{-0.036}$	249.9	200	152	113±1	108	90
MSC180-3M15-N752-0...	$Ø42^{0}_{-0.018}$	M16*3 2L	$12^{0}_{-0.036}$	307.4	257.5	209.5	113±1	108	90
MSC180-3H15-N292-0	$Ø35^{0}_{-0.013}$	M12*2 4L	$10^{0}_{-0.036}$	201.4	151.5	103.5	79±1	74	60
MSC180-3H15-N442-0	$Ø35^{0}_{-0.013}$	M12*2 4L	$10^{0}_{-0.036}$	233.4	183.5	135.5	79±1	74	60

Tab. 3-9: Mounting dimension-MSC180 without brake

4 Wiring

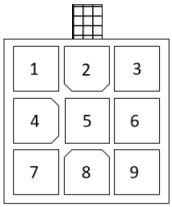
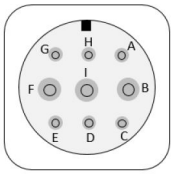
4.1 Terminals

4.1.1 Power terminals

Motor	Power terminals	Pin definition
MSC060 MSC080		1: U 2: W 3: V 4: Ground connection 5: Shield 6...8: Reserved
MSC130 without brake		A: U B: W C: V D: Ground connection
MSC130 with brake		A: 24 V brake B: U C: Ground connection D: Reserved E: V F: 0 V brake G: W
MSC180		A: U B: W C: V D: Ground connection

Tab. 4-1: Power terminals

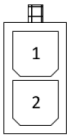
4.1.2 Encoder terminals

Motor	Encoder terminals	Pin definition
MSC060 MSC080		1: +5V 2: 0V 3: VB+* 4: VB- * 5: SD+ 6: SD- 7...8: Reserved 9: Shield
MSC130 MSC180		A: VB+* B: +5V C: VB- * D: SD- E: Reserved F: Shield G: Reserved H: SD+ I: 0V

Tab. 4-2: Encoder terminals

*: if it is a single turn encoder, the pin is reserved.

4.1.3 Brake terminals

Motor	Brake terminals	Pin definition
MSC060 MSC080		1: 24 V brake 2: 0 V brake
MSC180		A: 0 V brake B: 24 V brake C: Reserved

Tab. 4-3: Brake terminals

4.2 Cables

4.2.1 Power cables

Power cables build a electrical connection between the 3-phase input power of motors and the output of drives. The brake cable of MSC130 is integrated in the power cable, while the MSC060, MSC080 and MSC180 need separate brake cable.

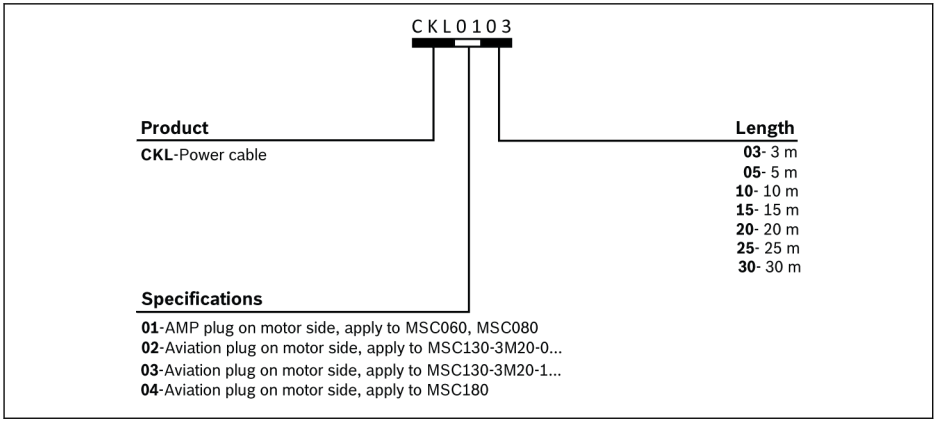


Fig. 4-1: Power cable typecode definition

4.2.2 Encoder cables

The battery box that integrated in the encoder cable is delivered in ready-for use state with battery. Battery change privately is forbidden, you should contact Rexroth service if there was a need.

Encoder cables connect the motor encoder and interface of drive encoder, providing the required feedback to drive control.

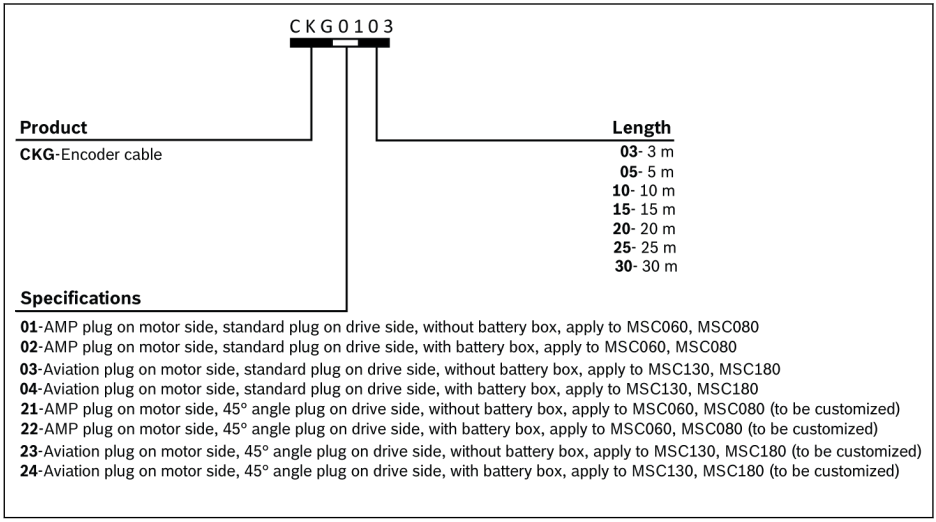


Fig. 4-2: Encoder cable typecode definition

Please pay attention to the following safety precautions when using the cable with battery box :

Batteries consist of active chemicals in a solid housing. Therefore, improper handling can cause injury or property damage.

Risk of injury by improper handling!

- Do not attempt to reactivate low batteries by heating or other methods (risk of explosion and cauterization).
- Do not attempt to recharge the batteries as this may cause leakage or explosion.
- Do not throw batteries into open flames.
- Do not dismantle batteries.
- When replacing the battery/batteries, do not damage the electrical parts installed in the devices.
- Only use the battery types specified for the product.

Environmental protection and disposal! The batteries contained in the product are considered dangerous goods during land, air, and sea transport (risk of explosion) in the sense of the legal regulations. Dispose of used batteries separately from other waste. Observe the national regulations of your country.

4.2.3 Brake cables

In accordance to requirements, if you choose the motor with brake, please select a suitable separate brake cable for MSC060, MSC080 or MSC180 according to the following table.

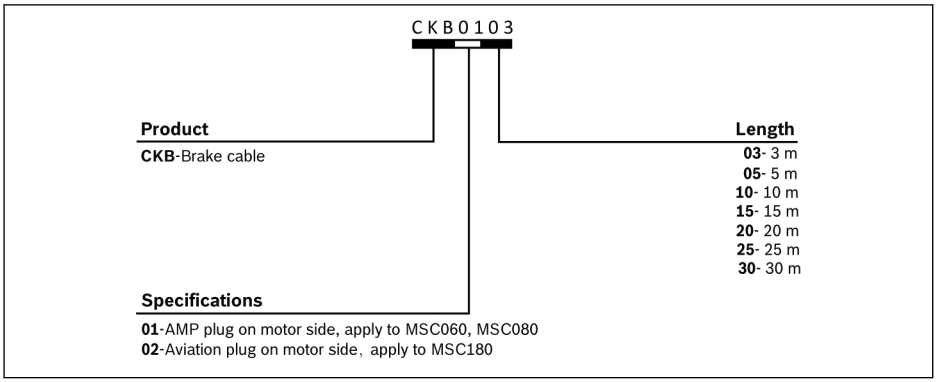


Fig. 4-3: Brake cable typecode definition

4.3 Encoder

4.3.1 Single-turn absolute encoder

Description	Unit	Value
Power	V	4.75...5.25
Max. current consumption	mA	150
Resolution	-	23 bit
Max. speed	rpm	6,000
Data transmission method	-	Serial data

Tab. 4-4: Single-turn absolute encoder

4.3.2 Multi-turn absolute encoder

Description	Unit	Value
Power	V	4.75...5.25
Max. current consumption	mA	150
Battery box	-	Yes
Max. speed	rpm	6,000
Resolution	-	23 bit
Turns	-	512
Data transmission method	-	Serial data

Tab. 4-5: Multi-turn absolute encoder

5 Operation and maintenance

5.1 Operation, transport and storage

The product shall be used in accordance with the following environmental conditions:

- ambient temperature: 0...+40 ℃
- Altitude: 0...1,000 m
- Relative humidity: 5...95 %
- Absolute humidity: 1...29 g/m^3
- No condensation

Avoid shock or vibration on transportation and maintain the original package. please use the motor's own eyebolt and confirm that the eyebolt connection is reliable before hoisting. Do not pull the outgoing line of motor and encoder.

Products shall be stored in a dry and dust-free indoor enviroment away from sunlight. The ambient temperature is -20...+60℃ and relative humidity less than 80%.

5.2 Safety notice for using

- Please read this manual carefully. Using the moter outside of the operating conditions described in this documentation is defined as "unintended use".
- This product need to be used with Rexroth ACS converter. Please see chapter 8 "Appendix" on page 37.
- Check the type plate, motor and accessories.
- Before commissioning the machine, please confirm the electrical connection and the safety of electric and machinery.

6 Environmental protection and disposal

6.1 Environmental protection

Production processes

The products are manufactured in energy- and resource-optimized production processes which allow re-using and recycling the resulting waste. We regularly try to replace pollutant-loaded raw materials and supplies by more environment-friendly alternatives.

No release of hazardous substances

Our products do not contain any hazardous substances which may be released in the case of appropriate use. Normally, our products will not have any negative influences on the environment.

Significant components

Significant components of our products are:

· Steel / Stainless steel
· Aluminum
· Copper
· Brass
· Magnetic materials
· Electronic components

6.2 Disposal

Return of products

Our products can be returned to us for disposal free of charge. However, this requires that the products be free from oil, grease or other dirt.

Furthermore, the products returned for disposal may not contain any undue foreign material or foreign components.

Deliver the products "free domicile" to the following address:

Shanghai Bosch Rexroth Hydraulics & Automation Ltd. Factory automation service
Branch No.9, Lane 3999 Xiu Pu Road Kang Qiao Pu Dong District 201315 Shanghai P.R. CHINA
Tel: 400-880-7030

Packaging

Packaging materials consist of cardboard, wood and polystyrene They can be recycled anywhere without any problem.

For ecological reasons, please refrain from returning the empty packages to us.

Batteries and accumulators

Batteries and accumulators can be labeled with this symbol.

The symbol indicating "separate collection" for all batteries and accumulators is the crossed-out wheeled bin.

End users in the EU are legally bound to return used batteries and accumulators. Outside the validity of the EU Directive 2006/66/EC, the particularly applicable regulations must be followed.

Batteries and accumulators can contain hazardous substances which can harm the environment or people's health when improperly stored or disposed of.

After use, the batteries or accumulators contained in Rexroth products must be properly disposed of according to the country-specific collection systems.

Recycling

Most of the products can be recycled due to their high content of metal. In order to recycle the metal in the best possible way, the products must be disassembled into individual assemblies.

Metals contained in electric and electronic assemblies can also be recycled by means of special separation processes.

Plastic parts of the products may contain flame retardants. These plastic parts are labeled according to EN ISO 1043. They have to be recycled separately or disposed of according to the applicable legal provisions.

7 Service and support

Our worldwide service network provides an optimized and efficient support. Our experts offer you advice and assistance if you have any queries. Service Time: 09:00-18:00 on workday.

Service China

Our service center in Shanghai, is responsible for all you service-related queries.

Contact the **service center** under:

Phone:	400-880-7030 / 13801995233
Fax:	+86 021-2091 7305
E-mail:	svf@boschrexroth.com.cn
Internet:	www.boschrexroth.com.cn/faservice

Additional information on service, repair (e.g. delivery addresses) and training can be found on our internet sites.

Service worldwide

Outside Germany, please contact your local service office first. For hotline numbers, refer to the sales office addresses on the internet.

Preparing information

To be able to help you more quickly and efficiently, please have the following information ready:

- Detailed description of malfunction and circumstances
- Type plate specifications of the affected products, in particular type codes and serial numbers
- Your contact data (phone and fax number as well as your e-mail address)

8 Appendix

MSC Motor	ACS driver*	Power cable	Encoder cable		Brake cable
			Single-turn	Multi-turn	
MSC060-3U30-N401-0ACK-NTNN	ACS1-W008-EA3-BB-ETECxxNN-2xRSxNNx0NN-NN	CKL01xx	CKG01xx	CKG02xx	-
MSC060-3U30-N401-0BCK-NTNN					
MSC060-3U30-N401-1ACK-NTNN					CKB01xx
MSC060-3U30-N401-1BCK-NTNN					

***: Only when the firmware version of ACS driver meets 20V26 or above, can MSC motor be used.**

Tab. 8-1: Component list - MSC060

MSC Motor	ACS driver*	Power cable	Encoder cable		Brake cable
			Single-turn	Multi-turn	
MSC080-3U30-N751-0ACK-NTNN	ACS1-W008-EA3-BB-ETECxxNN-2xRSxNNx0NN-NN	CKL01xx	CKG01xx	CKG02xx	-
MSC080-3U30-N751-1ACK-NTNN					
MSC080-3U30-N751-0BCK-NTNN					CKB01xx
MSC080-3U30-N751-1BCK-NTNN					

***: Only when the firmware version of ACS driver meets 20V26 or above, can MSC motor be used.**

Tab. 8-2: Component list - MSC080

MSC Motor	ACS driver*	Power cable	Encoder cable		Brake cable
			Single-turn	Multi-turn	
MSC130-3M20-N102-0APK-NTNN	ACS1-W008-EA3-BB-ETECxxNN-2xRSxNNxONN-NN	CKL02xx	CKG03xx	CKG04xx	-
MSC130-3M20-N102-1APK-NTNN					
MSC130-3M20-N102-0BPK-NTNN		CKL03xx			-
MSC130-3M20-N102-1BPK-NTNN					
MSC130-3M20-N152-0APK-NTNN	ACS1-W018-EA3-BB-ETECxxNN-2xRSxNNxONN-NN	CKL02xx			-
MSC130-3M20-N152-1APK-NTNN					
MSC130-3M20-N152-0BPK-NTNN		CKL03xx			-
MSC130-3M20-N152-1BPK-NTNN					
MSC130-3M20-N202-0APK-NTNN	ACS1-W018-EA3-BB-ETECxxNN-2xRSxNNxONN-NN	CKL02xx			-
MSC130-3M20-N202-1APK-NTNN					
MSC130-3M20-N202-0BPK-NTNN		CKL03xx			-
MSC130-3M20-N202-1BPK-NTNN					
MSC130-3M20-N302-0APK-NTNN	ACS1-W028-EA3-BB-ETECxxNN-2xRSxNNxONN-NN	CKL02xx			-
MSC130-3M20-N302-1APK-NTNN					
MSC130-3M20-N302-0BPK-NTNN		CKL03xx			-
MSC130-3M20-N302-1BPK-NTNN					

MSC Motor	ACS driver*	Power cable	Encoder cable		Brake cable
			Single-turn	Multi-turn	
MSC130-3M30-N152-0APK-NTNN	ACS1-W018-EA3-BB-ETECxxNN-2xRSxNNx0NN-NN	CKL02xx	CKG03xx	CKG04xx	-
MSC130-3M30-N152-0BPK-NTNN					
MSC130-3M30-N152-1APK-NTNN		CKL03xx			-
MSC130-3M30-N152-1BPK-NTNN					
MSC130-3M30-N302-0APK-NTNN	ACS1-W028-EA3-BB-ETECxxNN-2xRSxNNx0NN-NN	CKL02xx			-
MSC130-3M30-N302-0BPK-NTNN					
MSC130-3M30-N302-1APK-NTNN		CKL03xx			-
MSC130-3M30-N302-1BPK-NTNN					
MSC130-3M30-N502-0APK-NTNN	ACS1-W036-EA3-BB-ETECxxNN-2xRSxNNx0NN-NN	CKL02xx			-
MSC130-3M30-N502-0BPK-NTNN					
MSC130-3M30-N502-1APK-NTNN		CKL03xx			-
MSC130-3M30-N502-1BPK-NTNN					

***: Only when the firmware version of ACS driver meets 20V26 or above, can MSC motor be used.**

Tab. 8-3: Component list - MSC130

MSC Motor	ACS driver*	Power cable	Encoder cable		Brake cable
			Single-turn	Multi-turn	
MSC180-3M15-N302-0APK-NTNN	ACS1-W028-EA3-BB-ETECxxNN-2xRSxNNx0NN-NN	CKL04xx	CKG03xx	CKG04xx	-
MSC180-3M15-N302-1APK-NTNN					
MSC180-3M15-N302-0BPK-NTNN					CKB02xx
MSC180-3M15-N302-1BPK-NTNN					
MSC180-3M15-N442-0APK-NTNN	ACS1-W036-EA3-BB-ETECxxNN-2xRSxNNx0NN-NN				-
MSC180-3M15-N442-1APK-NTNN					
MSC180-3M15-N442-0BPK-NTNN					CKB02xx
MSC180-3M15-N442-1BPK-NTNN					
MSC180-3M15-N552-0APK-NTNN	ACS1-W036-EA3-BB-ETECxxNN-2xRSxNNx0NN-NN				-
MSC180-3M15-N552-1APK-NTNN					
MSC180-3M15-N552-0BPK-NTNN					CKB02xx
MSC180-3M15-N552-1BPK-NTNN					
MSC180-3M15-N752-0APK-NTNN	ACS1-W054-EA3-BB-ETECxxNN-2xRSxNNx0NN-NN				-
MSC180-3M15-N752-1APK-NTNN					
MSC180-3M15-N752-0BPK-NTNN					CKB02xx
MSC180-3M15-N752-1BPK-NTNN					

MSC Motor	ACS driver*	Power cable	Encoder cable		Brake cable
			Single-turn	Multi-turn	
MSC180-3H15-N292-0APK-NTNN	ACS1-W028-EA3-BB-ETECxxNN-2xRSxNNxONN-NN	CKL04xx	CKG03xx	CKG04xx	-
MSC180-3H15-N292-0BPK-NTNN					
MSC180-3H15-N292-1APK-NTNN					CKB02xx
MSC180-3H15-N292-1BPK-NTNN					
MSC180-3H15-N442-0APK-NTNN	ACS1-W054-EA3-BB-ETECxxNN-2xRSxNNxONN-NN				-
MSC180-3H15-N442-0BPK-NTNN					
MSC180-3H15-N442-1APK-NTNN					CKB02xx
MSC180-3H15-N442-1BPK-NTNN					

***: Only when the firmware version of ACS driver meets 20V26 or above, can MSC motor be used.**

Tab. 8-4: Component list - MSC180

Notes

rexroth
A Bosch Company

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R912008407

DOK-MOTOR*-MSC********-IT05-EN-P