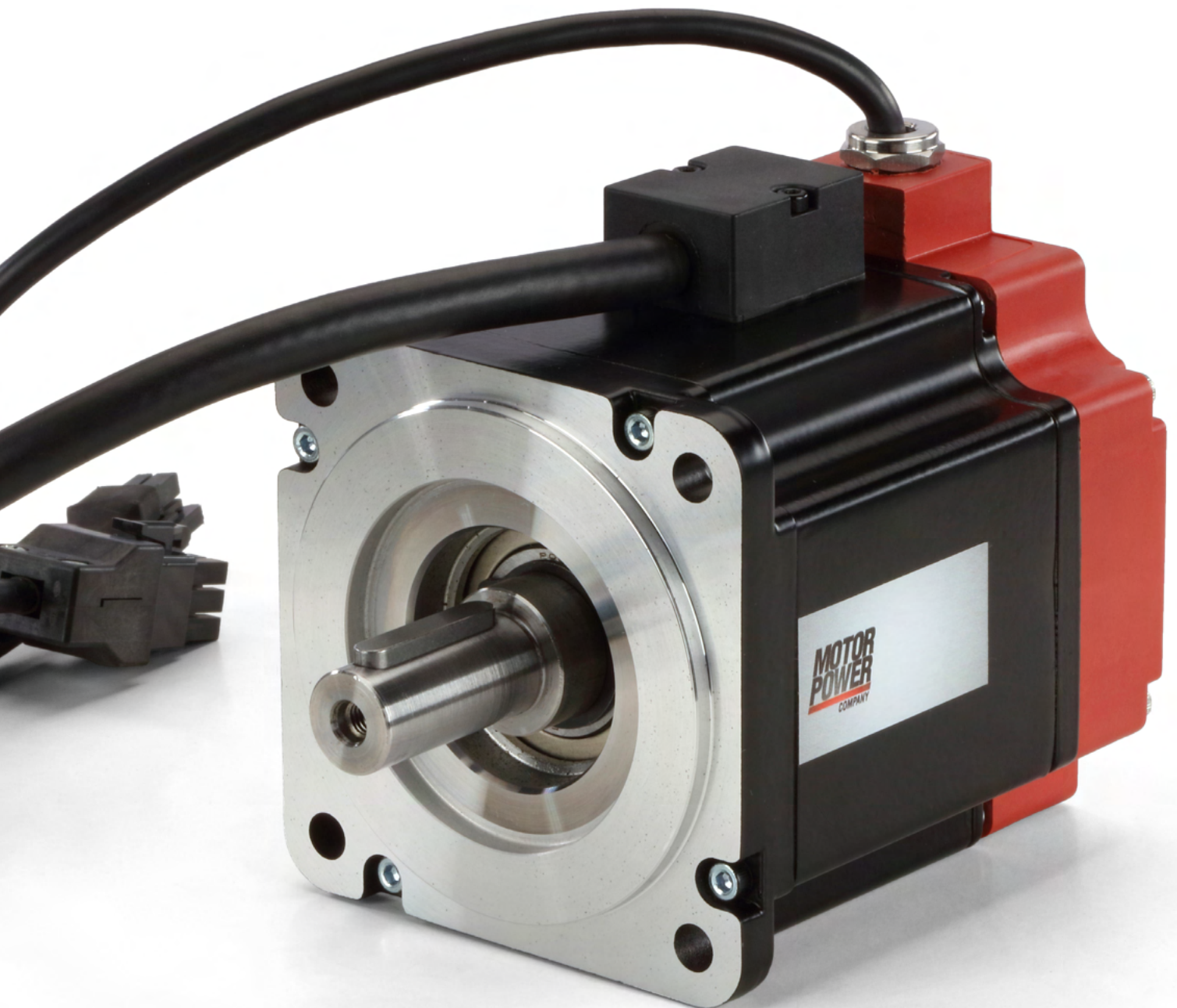


TC4

TETRA COMPACT⁴



SEE IT BEFORE IT HAPPENS

**MOTOR
POWER**
COMPANY



TETRA COMPACT 4

NEXT-LEVEL SERVO MOTORS

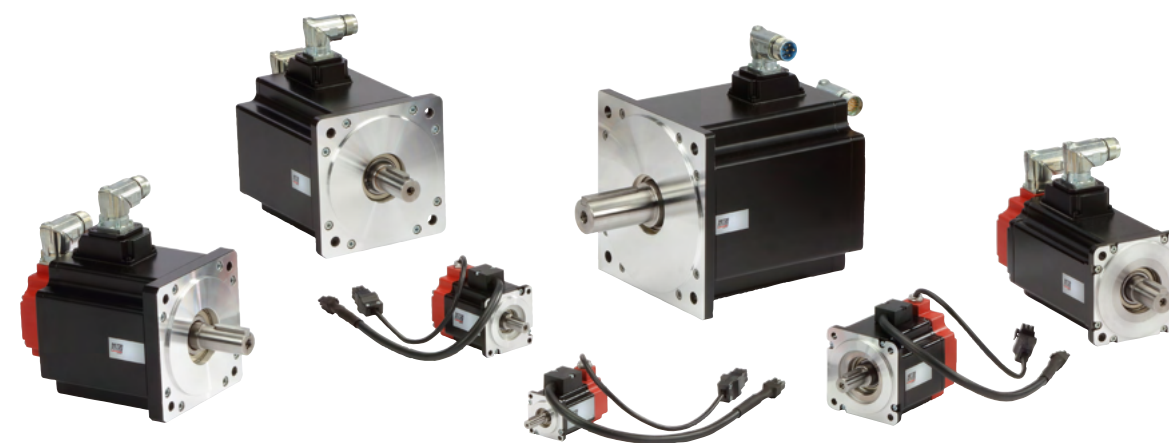
Introducing the TETRA COMPACT 4 series from Motor Power Company a breakthrough in high-performance brushless servo motors. Born from years of hands-on experience, these motors redefine the standards in the brushless servomotors category.

With a unique design that is 30% shorter than its predecessors, the TETRA COMPACT 4 series maintains exceptional power density, efficiency, and speed, setting a new benchmark for AC synchronous motors.

This series features 10-pole servomotors with a variety of feedback options, offering unmatched quality and a broad range of power ratings. Perfectly suited for modern machine performance requirements, Motor Power Company doesn't just provide individual components but complete motion solutions. Pairing these high-performance servomotors with versatile drives of the series BL servo, the TETRA COMPACT 4 series excels across a diverse array of applications. Welcome to a new era of innovation and efficiency in motion technology.

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FEATURES



Motor type	Three-phase BPM synchronous servo motor
POLES Number	10 (5 poles pair)
Available frame sizes	40 – 60 – 80 – 100 – 130 – 150 – 180 mm
Rated output torque	From 0.16 to 47.75 Nm
Rated output power	From 50 to 7500 W
Rated servomotor speed	Up to 6000 rpm
Maximum servomotor speed	Up to 8000 rpm
Insulation class	F (155 °C)
Protection class	IP 65 (with oil seal)
Ambient operating temperature	-20 ÷ +40 °C
Ambient storage temperature	-40 ÷ +70 °C
Relative humidity	5 ÷ 85 %, non-condensing
Cooling type	Natural convective
Maximum operating altitude	Up to 3000 m above sea level (derating 1%/100m from 1000m onwards)
Temperature sensor	PT1000 (no sensor for size 40)
Shaft end	Smooth or keyed
Feedback	Resolver, TTL Encoder, Absolute Encoder (Hiperface, EnDat, RS-485)*
Bearing life	20.000 h under rated operation condition
Balancing quality grade	G 6.3 according to ISO 1940
Magnet material	NdFeB with epoxy coating
External coating	RAL 9005 black powder
Approvals	CE, Rohs, Reach, UL file: E468964 Recognized TC4 40 24 Vdc and 48 Vdc models UL file: E216686 - MPC IF 155 Insulation File Marking

*Available also in single cable configuration

TC4

Example: TC4 40 1B 33 1 3 N1 0 1 D0 XXXX

1	MODEL	See PRODUCT LINEUP (p.8)
2	TYPE OF WINDING	See WINDING TABLE CODE (p.7)
3	WINDING VOLTAGE	0 → 24 Vdc 1 → 48 Vdc 6 → 60 Vdc 2 → 230 Vac 4 → 400 Vac
4	MECHANICAL ARRANGEMENT	0 Smooth shaft 1 Smooth shaft + oil seal 2 Keyed shaft 3 Keyed shaft + oil seal
5	FEEDBACK	A1* Hipurface absolute multi-turn encoder A3* Hipurface DSL absolute single-turn 20 bit encoder A4* Hipurface DSL absolute multi-turn 20 bit encoder A5* Hipurface safety DSL single-turn 20 bit encoder A6* Hipurface safety DSL multi-turn 20 bit encoder A15* Hipurface safety DSL single-turn 24 bit encoder A16* Hipurface safety DSL multi-turn 24 bit encoder A22* Safety EnDat 3 single-turn 19 bit encoder A23* Safety EnDat 3 multi-turn 19 bit encoder M1 TTL 2000 ppr encoder M2 Absolute single-turn 17-bit RS-485 encoder N1 A-format 24-bit absolute multi-turn with external battery (not included). Encoder N1 available for models 40-60-80 R1* Resolver

*Not available for TC4 40 models

6	BRAKE	0	Without brake
		1	With brake
7	Stator connection (Internal use only)	0	Stator wire connection
		1	Stator PWB connection
8	CONNECTION	D0	300mm cable lenght with 6 pins power AMP connector and 9 pins signal AMP connector, only for sizes 40-60-80
		D2	300mm cable lenght with 6 pins power AMP connector and 15 pins signal AMP connector. This connection is available only for sizes 40-60-80 with M1 encoder.
		G2	90° M23 turnable connectors - PT 1000 on power connector
		H2	90° M23 turnable connectors - PT 1000 on signal connector
		G3	90° M40 turnable connectors - PT 1000 on power connector
		H3	90° M40 turnable connectors - PT 1000 on signal connector
		G11	90° 915 YTEC turnable connector - PT 1000 on power connector
		H11	90° 915 YTEC turnable connector - PT 1000 on signal connector
		C21	One cable solution 90° M23 turnable connector

TC4



WINDING TABLE CODE

[illegible]

TC4

PRODUCT LINEUP

Servomotor Type	Stall torque M ₀ [Nm]	Nominal Torque M _n @3000 rpm	Nominal Torque M _n @6000 rpm	Peak Torque M _{max}	Nominal Power @3000 rpm	Nominal Power @6000 rpm	Continuous Working Speed n _M	Maximum Working Speed n _{Max}	Moment of Inertia w/o brake	24 Vdc	48 Vdc	230 Vac	400 Vac
[/]	[Nm]	[Nm]	[Nm]	[Nm]	[W]	[W]	[rpm]	[rpm]	[kg cm ²]	[/]	[/]	[/]	[/]
TC4 40 1A	0.215	0.210	0.200	0.75	65	125	3000/6000	8000	0.0305	√	√	√	√
TC4 40 1B	0.409	0.395	0.370	1.38	125	230	3000/6000	8000	0.0561	√	√	√	√
TC4 60 2A	0.87	0.85	0.82	3.05	265	515	3000/6000	8000	0.223			√	√
TC4 60 2B	1.62	1.52	1.35	5.60	475	850	3000/6000	8000	0.414			√	√
TC4 80 3A	1.80	1.78	1.56	6.30	555	980	3000/6000	8000	0.79			√	√
TC4 80 3B	3.80	3.45	2.60	13.30	1080	1630	3000/6000	8000	1.42			√	√
TC4 80 3C	4.60	3.91	2.88	16.10	1230	1800	3000/6000	8000	2.03			√	√
TC4 100 4A	6.45	5.80	4.00	16.50	1820	2510	3000/6000	6000	2.53			√	√
TC4 100 4B	10.16	8.36	6.08	33.00	2625	3820	3000/6000	6000	4.61			√	√
TC4 130 5F	4.77	3.18	-	14.30	1000	-	3000	4000	6.70			√	√
TC4 130 5G	7.16	4.77	-	21.48	1500	-	3000	4000	9.72			√	√
TC4 130 5H	9.55	6.36	-	28.65	2000	-	3000	4000	12.77			√	√

Servomotor Type	Stall torque M ₀ [Nm]	Nominal Torque M _n @3000 rpm	Nominal Torque M _n @4000 rpm	Peak Torque M _{max}	Nominal Power @3000 rpm	Nominal Power @4000 rpm	Continuous Working Speed n _M	Maximum Working Speed n _{Max}	Moment of Inertia w/o brake	24 Vdc	48 Vdc	230 Vac	400 Vac
[/]	[Nm]	[Nm]	[Nm]	[Nm]	[W]	[W]	[rpm]	[rpm]	[kg cm ²]	[/]	[/]	[/]	[/]
TC4 150 6A	15.00	11.80	9.32	33.50	3715	3900	3000/4000	4000	15.18			√	√
TC4 150 6B	29.40	20.00	15.00	68.50	6280	6280	3000/4000	4000	27.68			√	√
TC4 150 6C	41.77	20.96	12.66	100.00	6580	5300	3000/4000	4000	40.17			√	√

Servomotor Type	Stall torque M ₀ [Nm]	Nominal Torque M _n @2000 rpm	Nominal Torque M _n @3000 rpm	Peak Torque M _{max}	Nominal Power @2000 rpm	Nominal Power @3000 rpm	Continuous Working Speed n _M	Maximum Working Speed n _{Max}	Moment of Inertia w/o brake	24 Vdc	48 Vdc	230 Vac	400 Vac
[/]	[Nm]	[Nm]	[Nm]	[Nm]	[W]	[W]	[rpm]	[rpm]	[kg cm ²]	[/]	[/]	[/]	[/]
TC4 180 7A	9.55	9.55	6.37	28.65	2000	2000	2000/3000	4000	25.22			√	√
TC4 180 7C	16.70	16.70	11.15	50.30	3500	3500	2000/3000	4000	44.81			√	√

Servomotor Type	Stall torque M ₀ [Nm]	Nominal Torque M _n @1500 rpm	Nominal Torque M _n @2500 rpm	Peak Torque M _{max}	Nominal Power @1500 rpm	Nominal Power @2500 rpm	Continuous Working Speed n _M	Maximum Working Speed n _{Max}	Moment of Inertia w/o brake	24 Vdc	48 Vdc	230 Vac	400 Vac
[/]	[Nm]	[Nm]	[Nm]	[Nm]	[W]	[W]	[rpm]	[rpm]	[kg cm ²]	[/]	[/]	[/]	[/]
TC4 180 7D	28.65	28.65	17.20	71.62	4500	4500	1500/2500	4000	64.99			√	√
TC4 180 7E	35.00	35.00	21.00	87.53	5500	5500	1500/2500	4000	102.46			√	√
TC4 180 7F	47.75	47.75	28.65	119.37	7500	7500	1500/2500	4000	140.62			√	√

TETRA

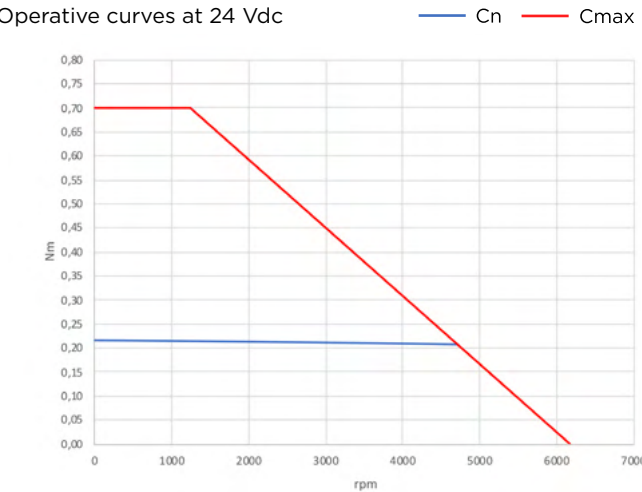
COMPACT

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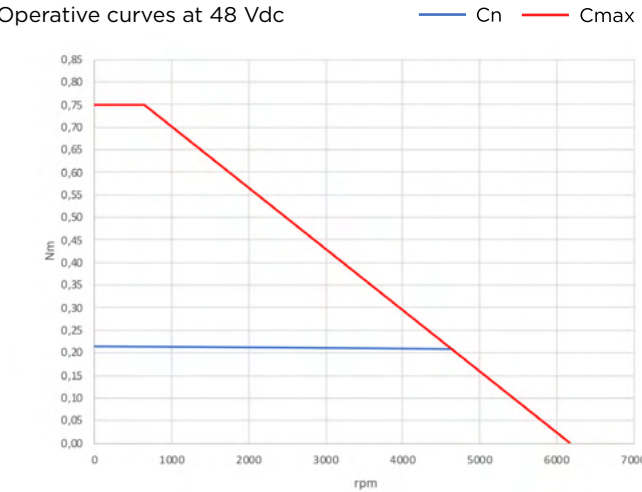
			24 Vdc	48 Vdc		230 Vac	
TYPE OF WINDING			77	78	33	09	09
ELECTRICAL DATA							
Continuous stall torque (*)	M ₀	[Nm]	0.215				
			0.70	0.75			
Nominal torque	M _n	[Nm]	0.21	0.21	0.20	0.21	0.20
Nominal power	P _n	[W]	65	65	125	65	125
Continuous stall current	I _o	[Arms]	5.20	2.60	3.25	0.72	0.72
Maximum current	I _{Max}	[Arms]	20.00	11.11	13.89	3.09	3.09
Nominal current	I _n	[Arms]	5.08	2.54	3.02	0.78	0.67
Nominal working speed	n _N	[rpm]	3000	3000	6000	3000	6000
Maximum working speed	n _{Max}	[rpm]	6175	6175	7800	8000	8000
Torque constant	K _t	[Nm/Arms]	0.041	0.083	0.066	0.298	0.298
Voltage constant	K _{e u-v}	[Vrms/krpm]	2.5	5.0	4.0	18.0	18.0
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	0.73	2.93	1.85	36.06	36.06
Winding inductance	L _{q u-v}	[mH]	0.31	1.24	0.77	15.62	15.62
Electrical time constant	Te	[ms]	0.42	0.42	0.42	0.43	0.43
Thermal resistance	Rth	[°C/W]	2.36				
Mechanical time constant (a)	Tm	[ms]	1.30	1.31	1.29	1.24	1.24
Rotor inertia without holding brake	J	[kg·cm²]	0.0305				
Rotor inertia with holding brake	J	[kg·cm²]	0.0326				
Mass without holding brake	m	[kg]	0.40				
Mass with holding brake	m	[kg]	0.56				
Max. axial shaft load 3000 / 6000 rpm	SL _a	[N]	45 / 35				
Max. radial shaft load 3000 / 6000 rpm	SL _r	[N]	120 / 95				

Rated output with 185 x 185 x 8 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback.
Current values rated @ 20°C.

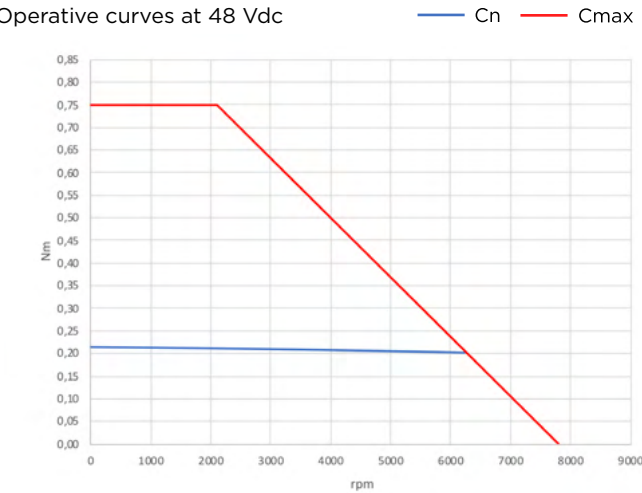
401A 77



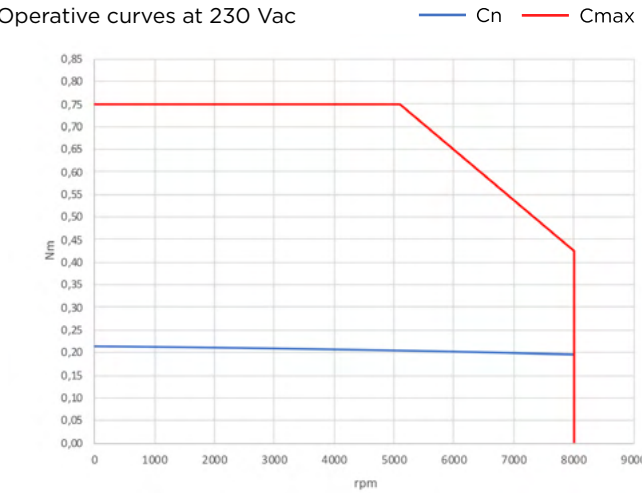
401A 78



401A 33



401A 09

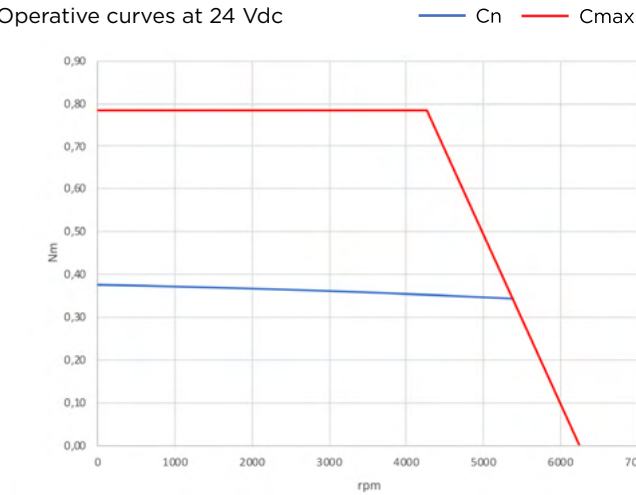


Operative temperature -20 ÷ +40 °C
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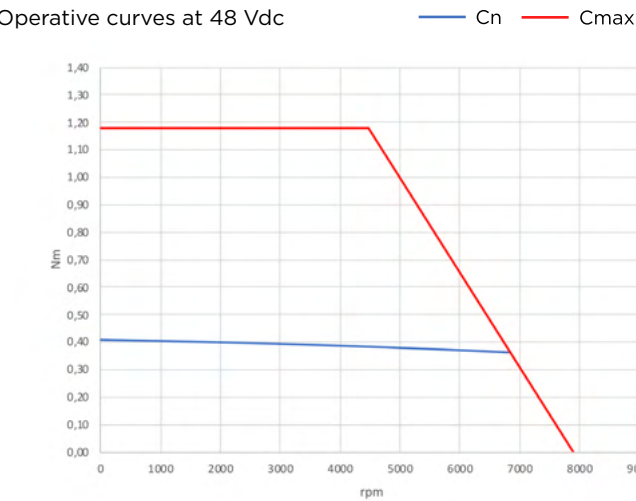
			24 Vdc		48 Vdc		230 Vac	
TYPE OF WINDING			77	78	33	13	13	
ELECTRICAL DATA								
Continuous stall torque (*)	M ₀	[Nm]	0.37	0.409				
Peak torque	M _{Max}	[Nm]	0.785	1.38	1.18	1.38		
Nominal torque	M _n	[Nm]	0.360	0.395	0.37	0.395	0.37	
Nominal power	P _n	[W]	125	125	230	125	230	
Continuous stall current	I ₀	[Arms]	8.95	4.95	6.18	0.90	0.90	
Maximum current	I _{Max}	[Arms]	20.00	19.40	20.00	3.53	3.53	
Nominal current	I _n	[Arms]	8.71	4.78	5.59	0.87	0.81	
Nominal working speed	n _N	[rpm]	3000	3000	6000	3000	6000	
Maximum working speed	n _{Max}	[rpm]	6250	6250	8000	7890	7800	
Torque constant	K _t	[Nm/Arms]	0.041	0.083	0.066	0.455	0.455	
Voltage constant	K _{e u-v}	[Vrms/krpm]	2.5	5.0	4.0	27.5	27.5	
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	0.253	1.019	0.632	30.85	30.85	
Winding inductance	L _{q u-v}	[mH]	0.149	0.596	0.361	17.68	17.68	
Electrical time constant	Te	[ms]	0.59	0.59	0.57	0.57	0.57	
Thermal resistance	Rth	[°C/W]	1.85					
Mechanical time constant (°)	Tm	[ms]	0.83	0.83	0.81	0.83	0.83	
Rotor inertia without holding brake	J	[kg·cm²]	0.0561					
Rotor inertia with holding brake	J	[kg·cm²]	0.0580					
Mass without holding brake	m	[kg]	0.49					
Mass with holding brake	m	[kg]	0.68					
Max. axial shaft load 3000 / 6000 rpm	SL _a	[N]	45 / 35					
Max. radial shaft load 3000 / 6000 rpm	SL _r	[N]	120 / 95					

Rated output with 185 x 185 x 8 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback.
Current values rated @ 20°C.

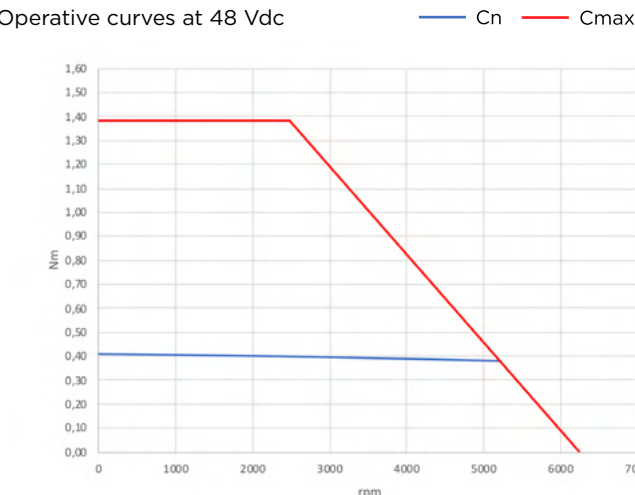
401B 77



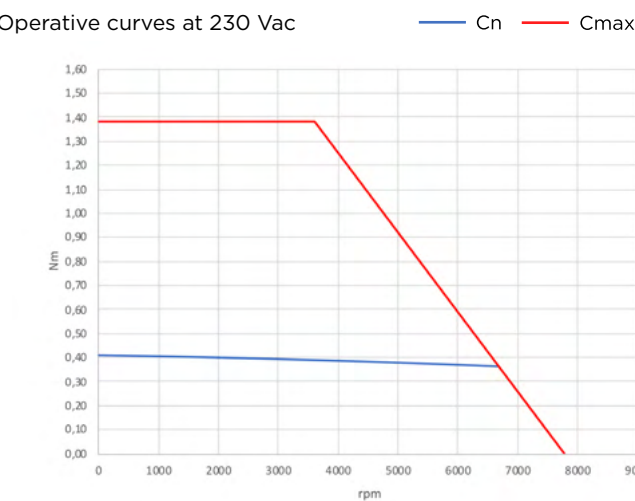
401B 33



401B 78



401B 13



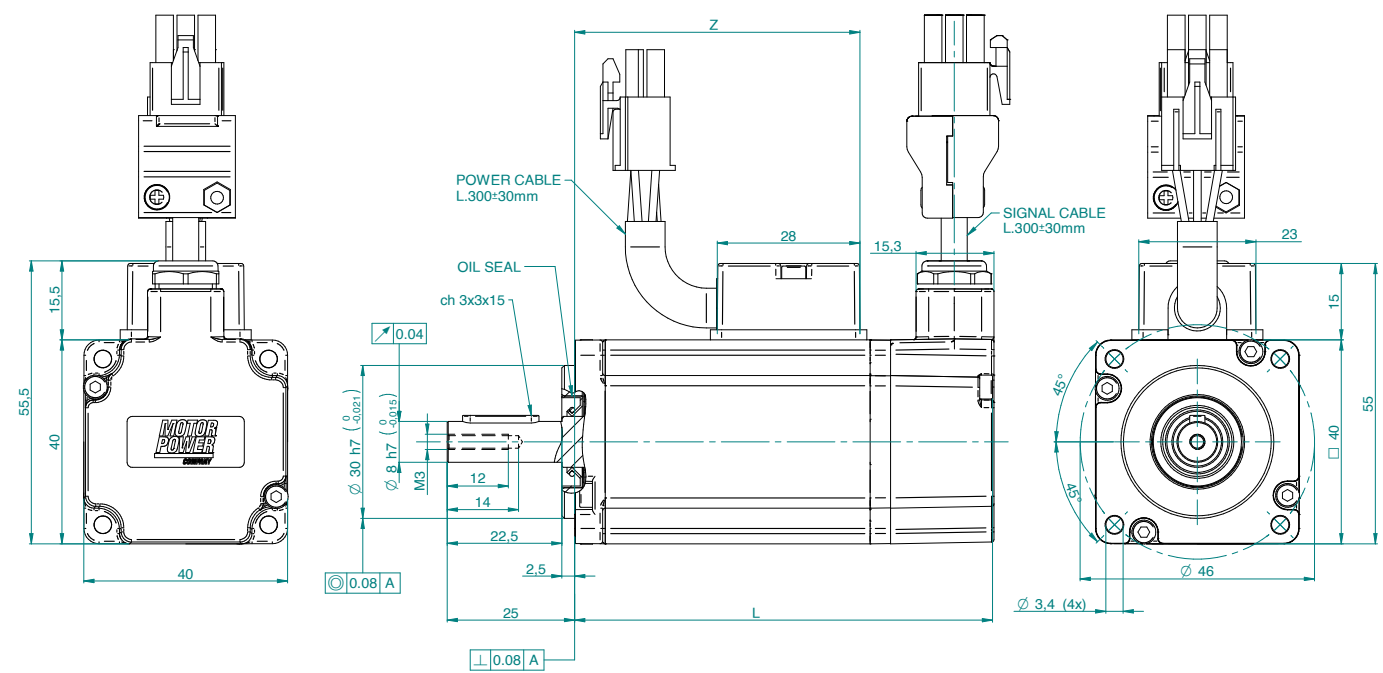
Operative temperature -20 ÷ +40 °C
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TC4

40 EXTERNAL DIMENSIONS

DO/D2 connection

Model	Feedback tipe	L [mm]	L with brake [mm]	Z [mm]	Z with brake [mm]
1A	N1-M1-M2	66.0	89.0	40.0	40.0
1B	N1-M1-M2	82.0	105.0	56.0	56.0



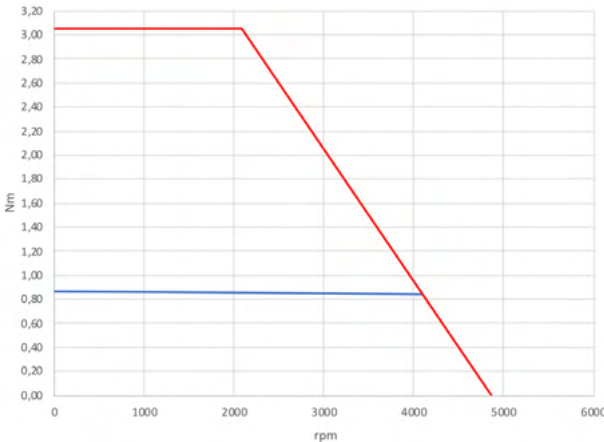
TETRA
COMPACT460

			230 Vac		400 Vac	
TYPE OF WINDING			20	21	16	15
ELECTRICAL DATA						
Continuous stall torque (*)	M ₀	[Nm]	0.87			
Peak torque	M _{Max}	[Nm]	3.05			
Nominal torque	M _n	[Nm]	0.85	0.82	0.85	0.82
Nominal power	P _n	[W]	265	490	265	490
Continuous stall current	I ₀	[Arms]	1.20	1.65	0.73	0.96
Maximum current	I _{Max}	[Arms]	5.23	7.24	3.18	4.19
Nominal current	I _n	[Arms]	1.17	1.56	0.71	0.90
Nominal working speed	n _N	[rpm]	3000	5700	3000	5700
Maximum working speed	n _{Max}	[rpm]	4850	6760	5140	6800
Torque constant	K _t	[Nm/Arms]	0.728	0.526	1.20	0.91
Voltage constant	K _{e u-v}	[Vrms/krpm]	44.0	31.8	72.5	55.0
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	20.19	10.24	51.62	31.75
Winding inductance	L _{q u-v}	[mH]	28.32	14.93	77.18	44.50
Electrical time constant	Te	[ms]	1.40	1.46	1.50	1.40
Thermal resistance	Rth	[°C/W]	1.60			
Mechanical time constant (°)	Tm	[ms]	0.85	0.83	0.80	0.86
Rotor inertia without holding brake	J	[kg·cm²]	0.223			
Rotor inertia with holding brake	J	[kg·cm²]	0.236			
Mass without holding brake	m	[kg]	0.92			
Mass with holding brake	m	[kg]	1.44			
Max. axial shaft load 3000 / 6000 rpm	SL _a	[N]	42 / 32			
Max. radial shaft load 3000 / 6000 rpm	SL _r	[N]	260 / 200			

Rated output with 250 x 250 x 12 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback.
Current values rated @ 20°C.

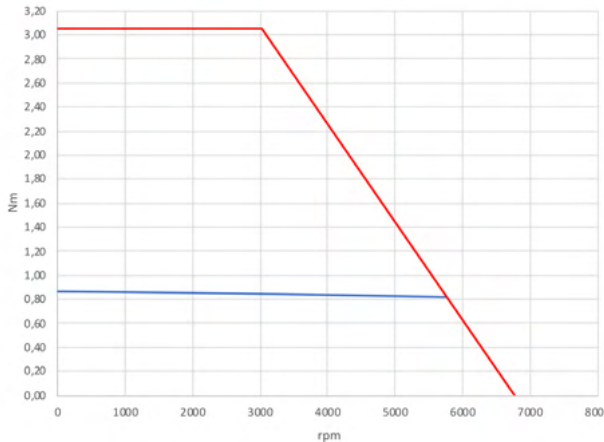
602A 20

Operative curves at 230 Vac



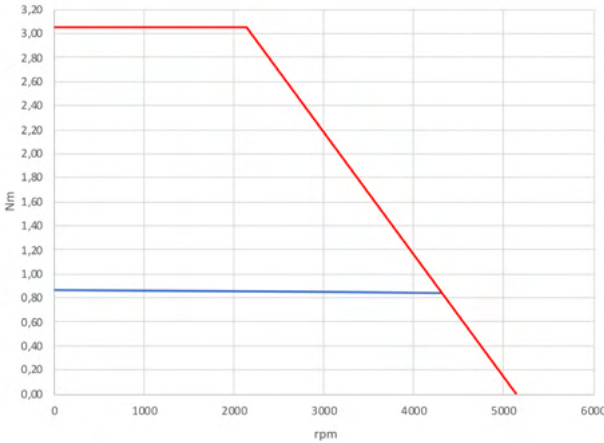
602A 21

Operative curves at 230 Vac



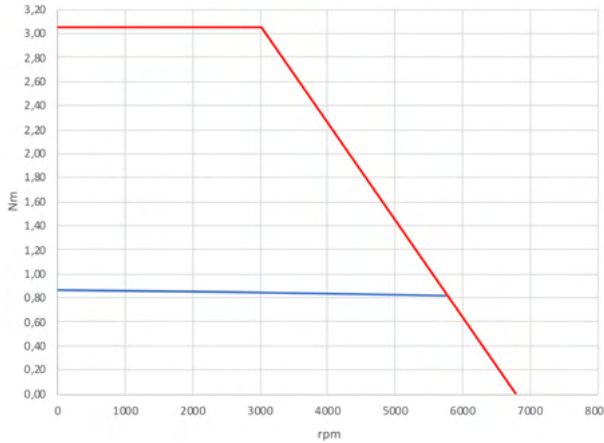
602A 16

Operative curves at 400 Vac



602A 15

Operative curves at 400 Vac



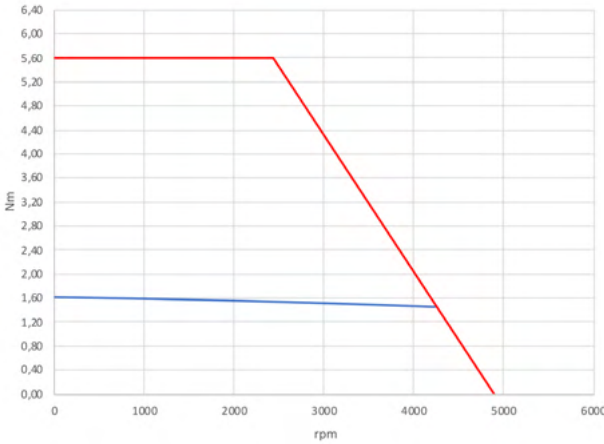
Operative temperature -20 ÷ +40 °C
Any specifications are subjected to change without notice.
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TYPE OF WINDING			230 Vac		400 Vac	
			20	21	16	15
ELECTRICAL DATA						
Continuous stall torque (*)	M ₀	[Nm]	1.62			
Peak torque	M _{Max}	[Nm]	5.60			
Nominal torque	M _n	[Nm]	1.52	1.35	1.52	1.35
Nominal power	P _n	[W]	475	850	475	850
Continuous stall current	I ₀	[Arms]	2.23	3.08	1.35	1.78
Maximum current	I _{Max}	[Arms]	8.92	12.34	5.41	7.13
Nominal current	I _n	[Arms]	2.09	2.57	1.27	1.48
Nominal working speed	n _N	[rpm]	3000	6000	3000	6000
Maximum working speed	n _{Max}	[rpm]	4890	6800	5170	6840
Torque constant	K _t	[Nm/Arms]	0.728	0.526	1.20	0.91
Voltage constant	K _{e u-v}	[Vrms/krpm]	44.0	31.8	72.5	55.0
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	7.35	3.85	19.55	11.77
Winding inductance	L _{q u-v}	[mH]	14.76	7.75	40.29	22.93
Electrical time constant	Te	[ms]	2.02	2.02	2.07	1.96
Thermal resistance	Rth	[°C/W]	1.24			
Mechanical time constant (°)	Tm	[ms]	0.57	0.57	0.56	0.59
Rotor inertia without holding brake	J	[kg·cm²]	0.414			
Rotor inertia with holding brake	J	[kg·cm²]	0.427			
Mass without holding brake	m	[kg]	1.33			
Mass with holding brake	m	[kg]	1.85			
Max. axial shaft load 3000 / 6000 rpm	SL _a	[N]	42 / 32			
Max. radial shaft load 3000 / 6000 rpm	SL _r	[N]	260 / 200			

Rated output with 250 x 250 x 12 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback.
Current values rated @ 20°C.

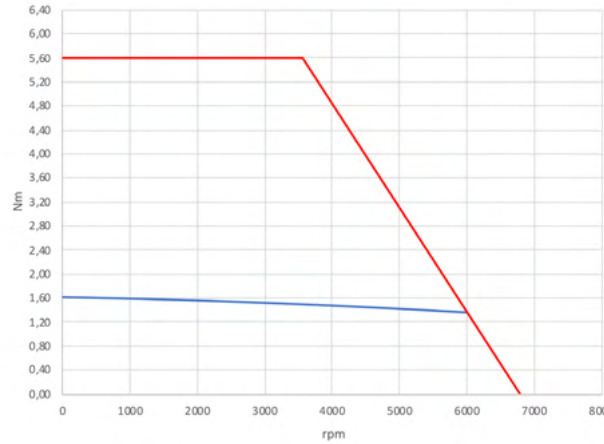
602B 20

Operative curves at 230 Vac



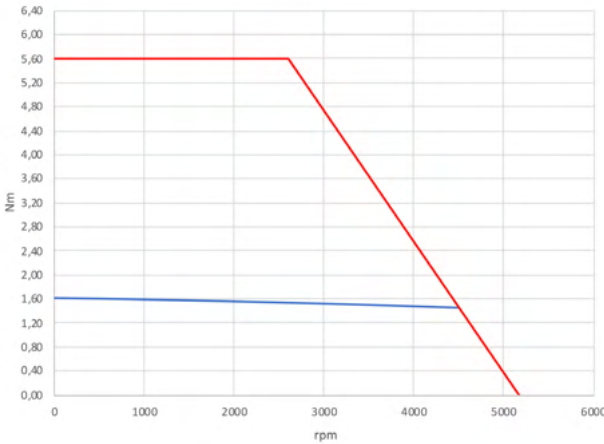
602B 21

Operative curves at 230 Vac



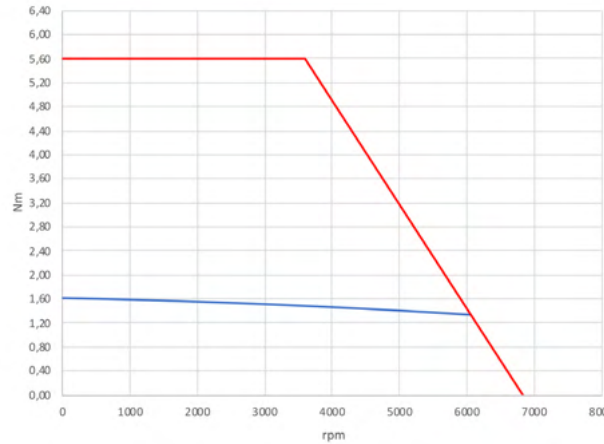
602B 16

Operative curves at 400 Vac



602B 15

Operative curves at 400 Vac



Operative temperature -20 ÷ +40 °C
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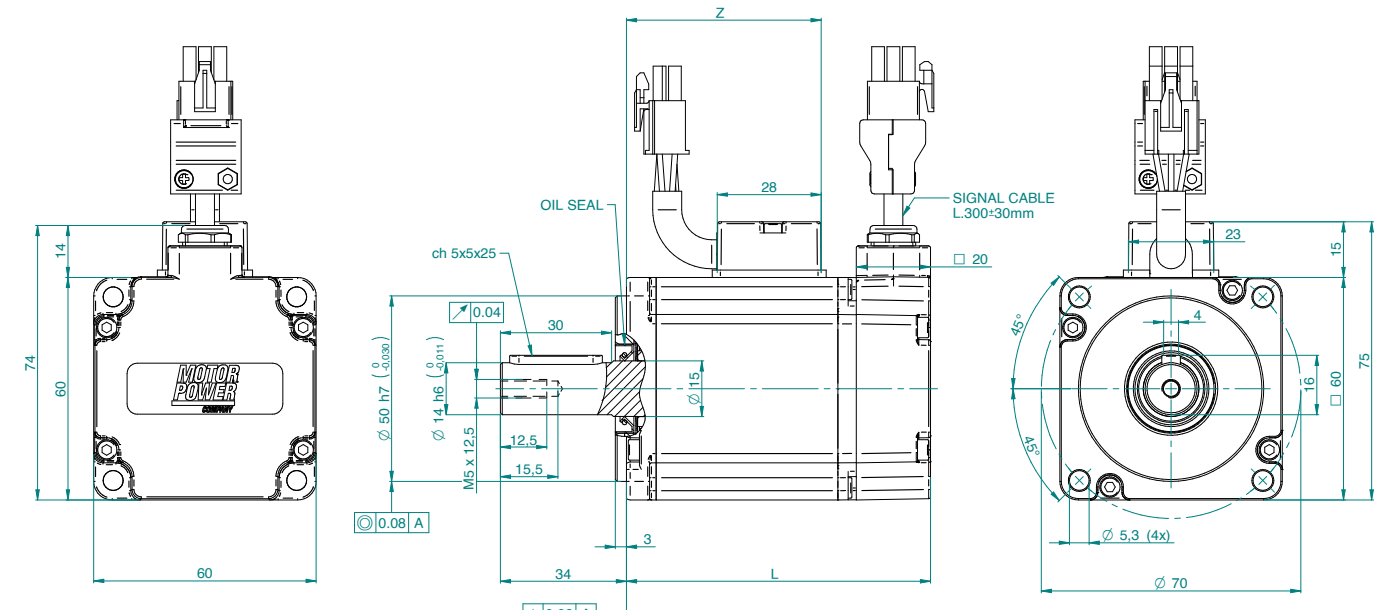
TC4

60

EXTERNAL DIMENSIONS

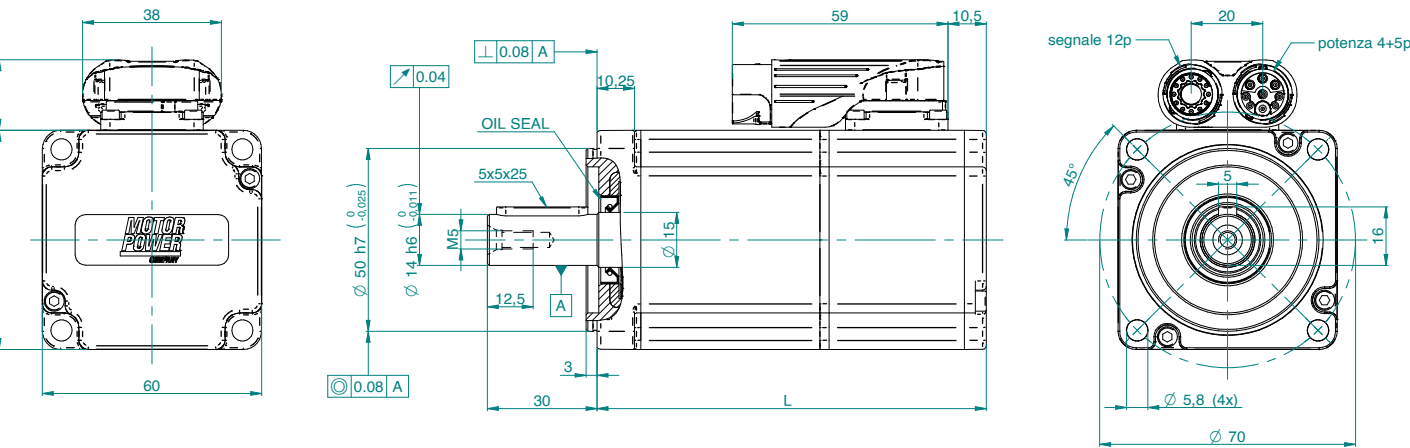
D0/D2 connection

Model	Feedback tipe	L [mm]	L with brake [mm]	Z [mm]	Z with brake [mm]
2A	N1-M1-M2	82.0	112.0	52.5	52.5
2B	N1-M1-M2	105.0	135.0	75.5	75.5



G11/H11 connection

Model	Feedback tipe	L [mm]	L with brake [mm]
2A	A22-A23-M1-M2-N1-R1	106.5	136.0
2B	A22-A23-M1-M2-N1-R1	129.5	159.0
2A	A1-A15-A16	116.5	146.0
2B	A1-A15-A16	139.5	169.0



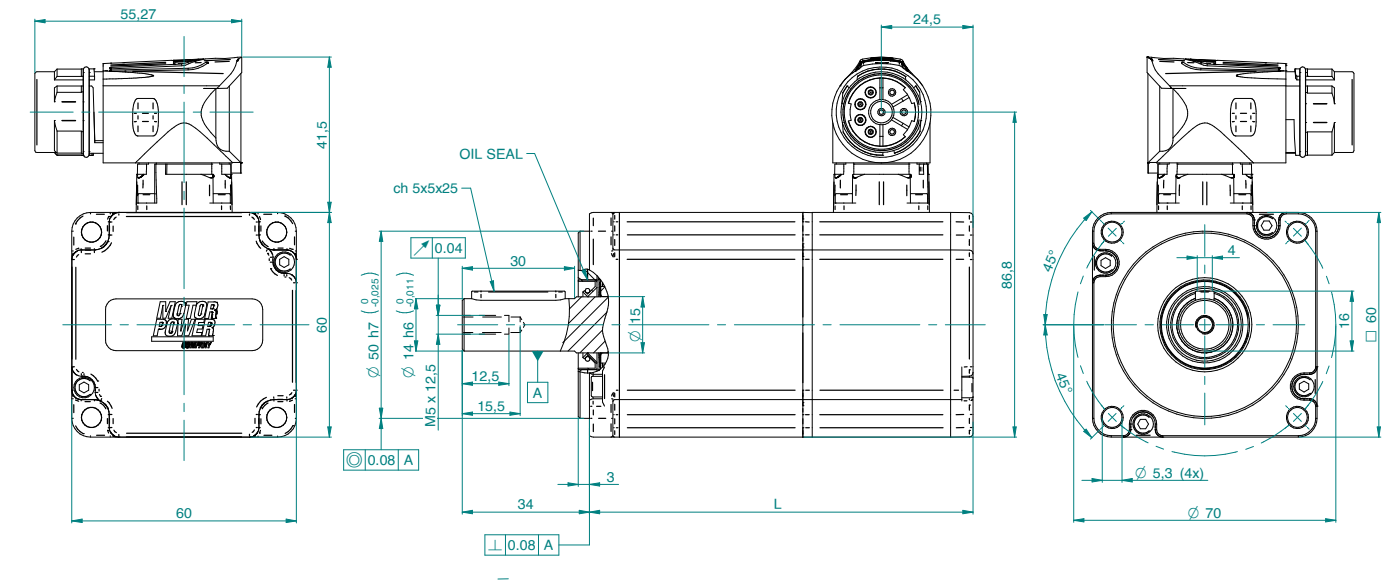
TC4

60

EXTERNAL DIMENSIONS

C21 connection

Model	Feedback tipe	L [mm]	L with brake [mm]
2A	A22-A23	102.5	132.0
2B	A22-A23	125.5	155.0
2A	A3-A4-A5-A6-A15-A16	112.5	142.0
2B	A3-A4-A5-A6-A15-A16	135.5	165.0





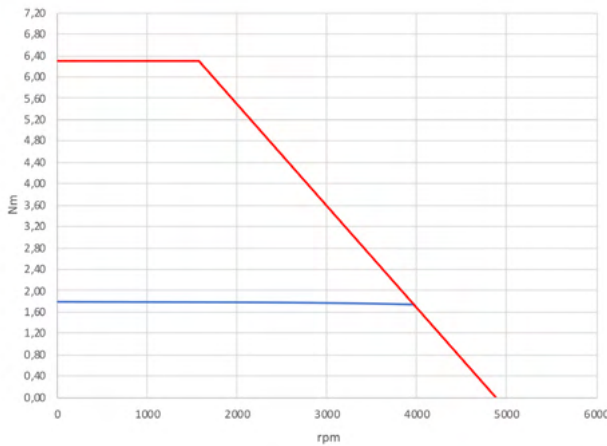
20 horizontal lines for notes

			230 Vac		400 Vac	
TYPE OF WINDING			20	21	16	15
ELECTRICAL DATA						
Continuous stall torque (*)	M ₀	[Nm]	1.80			
Peak torque	M _{Max}	[Nm]	6.30			
Nominal torque	M _n	[Nm]	1.78	1.59	1.78	1.59
Nominal power	P _n	[W]	555	950	555	950
Continuous stall current	I ₀	[Arms]	2.47	3.42	1.50	1.98
Maximum current	I _{Max}	[Arms]	12.53	17.33	7.60	10.02
Nominal current	I _n	[Arms]	2.45	3.02	1.48	1.75
Nominal working speed	n _N	[rpm]	3000	5700	3000	5700
Maximum working speed	n _{Max}	[rpm]	4875	6780	5150	6820
Torque constant	K _t	[Nm/Arms]	0.728	0.526	1.20	0.91
Voltage constant	K _{e u-v}	[Vrms/krpm]	44.0	31.8	72.5	55.0
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	6.84	3.43	17.60	10.35
Winding inductance	L _{q u-v}	[mH]	18.50	9.66	50.18	29.00
Electrical time constant	Te	[ms]	2.71	2.81	2.84	2.80
Thermal resistance	Rth	[°C/W]	1.09			
Mechanical time constant (°)	Tm	[ms]	1.02	0.98	0.97	1.03
Rotor inertia without holding brake	J	[kg·cm²]	0.79			
Rotor inertia with holding brake	J	[kg·cm²]	0.86			
Mass without holding brake	m	[kg]	1.83			
Mass with holding brake	m	[kg]	2.62			
Max. axial shaft load 3000 / 6000 rpm	SL _a	[N]	115 / 90			
Max. radial shaft load 3000 / 6000 rpm	SL _r	[N]	440 / 350			

Rated output with 250 x 250 x 12 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback.
Current values rated @ 20°C.

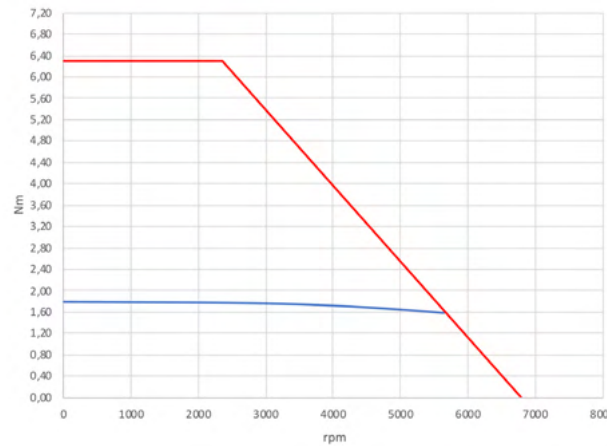
803A 20

Operative curves at 230 Vac



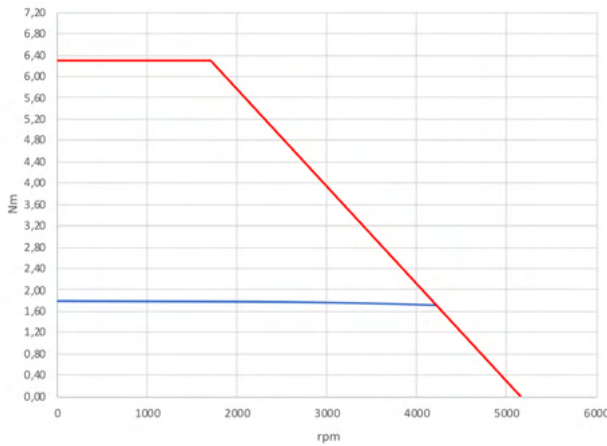
803A 21

Operative curves at 230 Vac



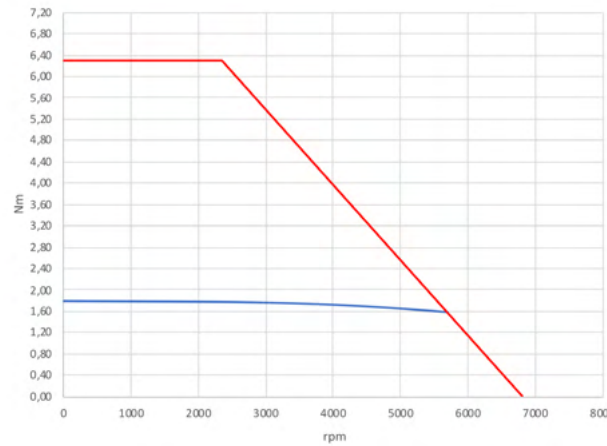
803A 16

Operative curves at 400 Vac



803A 15

Operative curves at 400 Vac



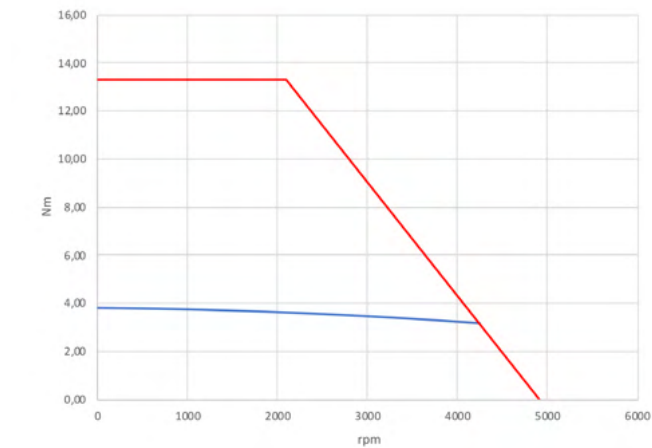
Operative temperature -20 ÷ +40 °C
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			230 Vac		400 Vac	
TYPE OF WINDING			20	21	16	15
ELECTRICAL DATA						
Continuous stall torque (*)	M ₀	[Nm]	3.80			
Peak torque	M _{Max}	[Nm]	13.30			
Nominal torque	M _n	[Nm]	3.45	2.60	3.45	2.60
Nominal power	P _n	[W]	1080	1630	1080	1630
Continuous stall current	I ₀	[Arms]	5.22	7.22	3.17	4.18
Maximum current	I _{Max}	[Arms]	23.83	32.97	14.46	19.06
Nominal current	I _n	[Arms]	4.74	4.94	2.88	2.86
Nominal working speed	n _N	[rpm]	3000	6000	3000	6000
Maximum working speed	n _{Max}	[rpm]	4915	6830	5190	6870
Torque constant	K _t	[Nm/Arms]	0.728	0.526	1.20	0.91
Voltage constant	K _{e u-v}	[Vrms/krpm]	44.0	31.8	72.5	55.0
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	1.62	0.88	4.29	2.60
Winding inductance	L _{q u-v}	[mH]	7.76	4.02	20.86	12.31
Electrical time constant	Te	[ms]	4.87	4.63	4.95	4.70
Thermal resistance	Rth	[°C/W]	0.90			
Mechanical time constant (°)	Tm	[ms]	0.43	0.45	0.42	0.44
Rotor inertia without holding brake	J	[kg·cm²]	1.42			
Rotor inertia with holding brake	J	[kg·cm²]	1.50			
Mass without holding brake	m	[kg]	2.76			
Mass with holding brake	m	[kg]	3.37			
Max. axial shaft load 3000 / 6000 rpm	SL _a	[N]	115 / 90			
Max. radial shaft load 3000 / 6000 rpm	SL _r	[N]	440 / 350			

Rated output with 250 x 250 x 12 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback.
Current values rated @ 20°C.

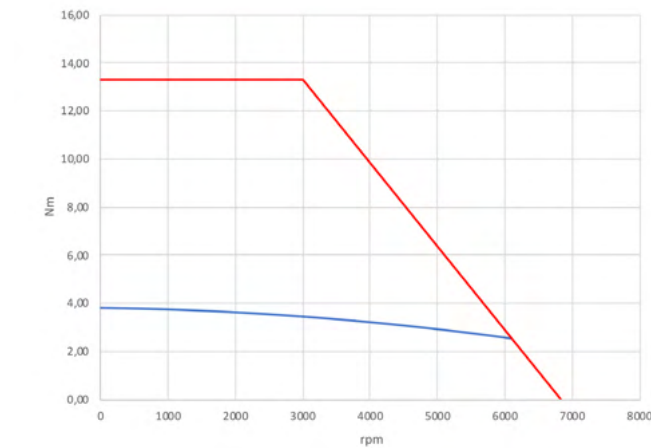
803B 20

Operative curves at 230 Vac



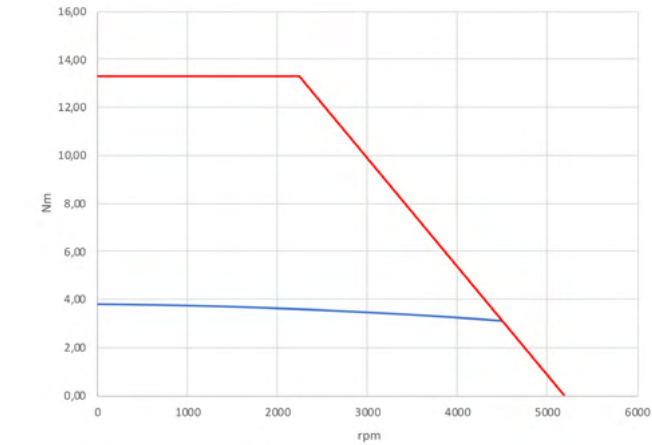
803B 21

Operative curves at 230 Vac



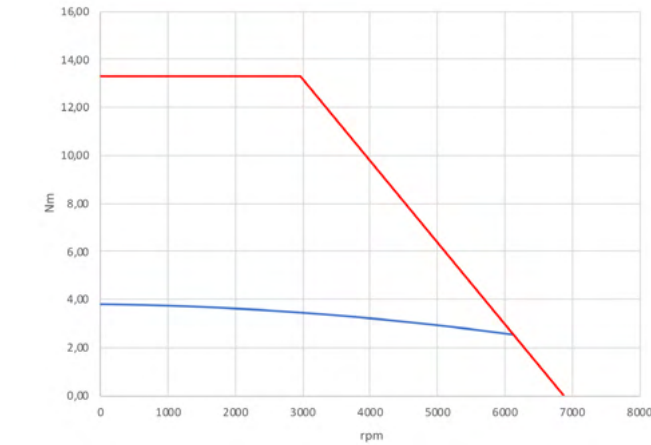
803B 16

Operative curves at 400 Vac



803B 15

Operative curves at 400 Vac



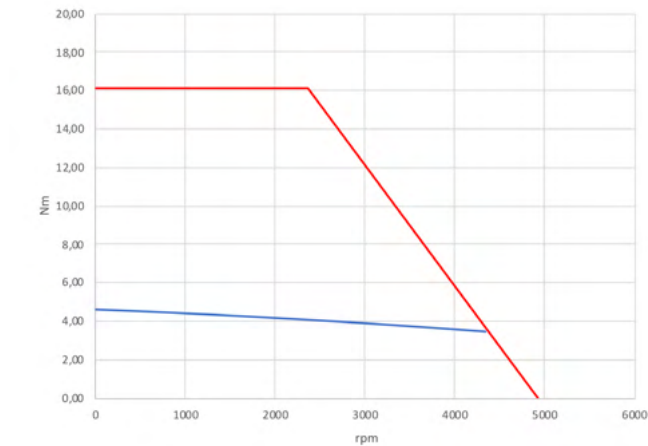
Operative temperature -20 ÷ +40 °C
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			230 Vac		400 Vac	
TYPE OF WINDING			20	21	16	15
ELECTRICAL DATA						
Continuous stall torque (*)	M ₀	[Nm]	4.60			
Peak torque	M _{Max}	[Nm]	16.10			
Nominal torque	M _n	[Nm]	3.91	2.88	3.91	2.88
Nominal power	P _n	[W]	1230	1800	1230	1800
Continuous stall current	I ₀	[Arms]	6.32	8.75	3.84	5.06
Maximum current	I _{Max}	[Arms]	27.31	37.79	16.58	21.85
Nominal current	I _n	[Arms]	5.37	5.48	3.26	3.17
Nominal working speed	n _N	[rpm]	3000	6000	3000	6000
Maximum working speed	n _{Max}	[rpm]	4920	6840	5200	6880
Torque constant	K _t	[Nm/Arms]	0.728	0.526	1.20	0.91
Voltage constant	K _{e u-v}	[Vrms/krpm]	44.0	31.8	72.5	55.0
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	1.28	0.68	3.41	2.05
Winding inductance	L _{q u-v}	[mH]	5.89	3.20	16.20	9.40
Electrical time constant	Te	[ms]	4.61	4.72	4.76	4.60
Thermal resistance	Rth	[°C/W]	0.88			
Mechanical time constant (°)	Tm	[ms]	0.49	0.50	0.48	0.50
Rotor inertia without holding brake	J	[kg·cm²]	2.03			
Rotor inertia with holding brake	J	[kg·cm²]	2.11			
Mass without holding brake	m	[kg]	3.25			
Mass with holding brake	m	[kg]	3.87			
Max. axial shaft load 3000 / 6000 rpm	SL _a	[N]	115 / 90			
Max. radial shaft load 3000 / 6000 rpm	SL _r	[N]	440 / 350			

Rated output with 250 x 250 x 12 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback.
Current values rated @ 20°C.

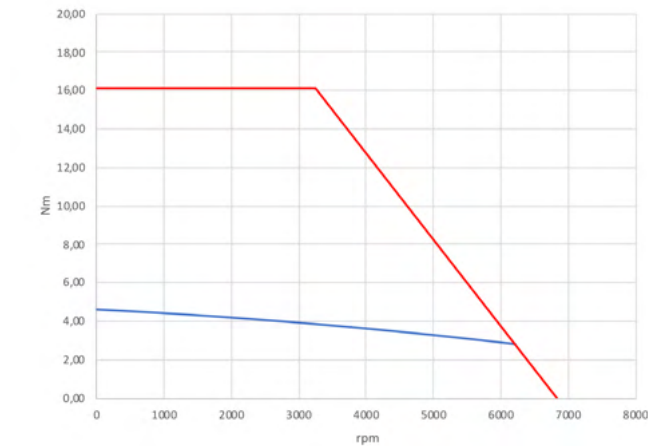
803C 20

Operative curves at 230 Vac



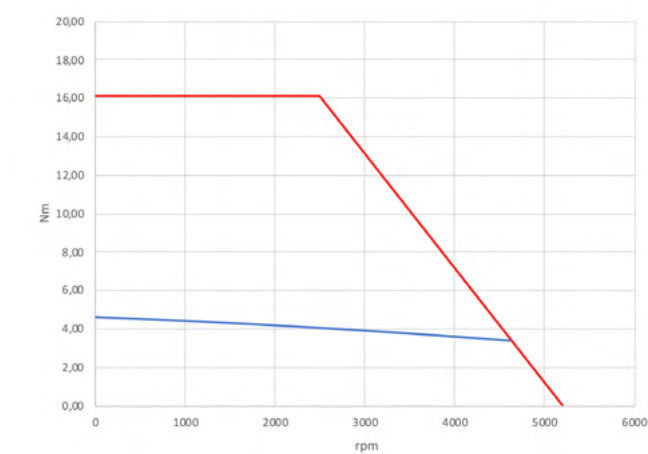
803C 21

Operative curves at 230 Vac



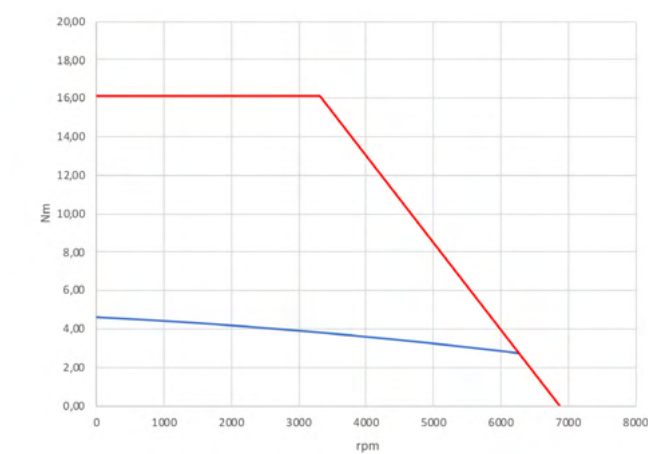
803C 16

Operative curves at 400 Vac



803C 15

Operative curves at 400 Vac

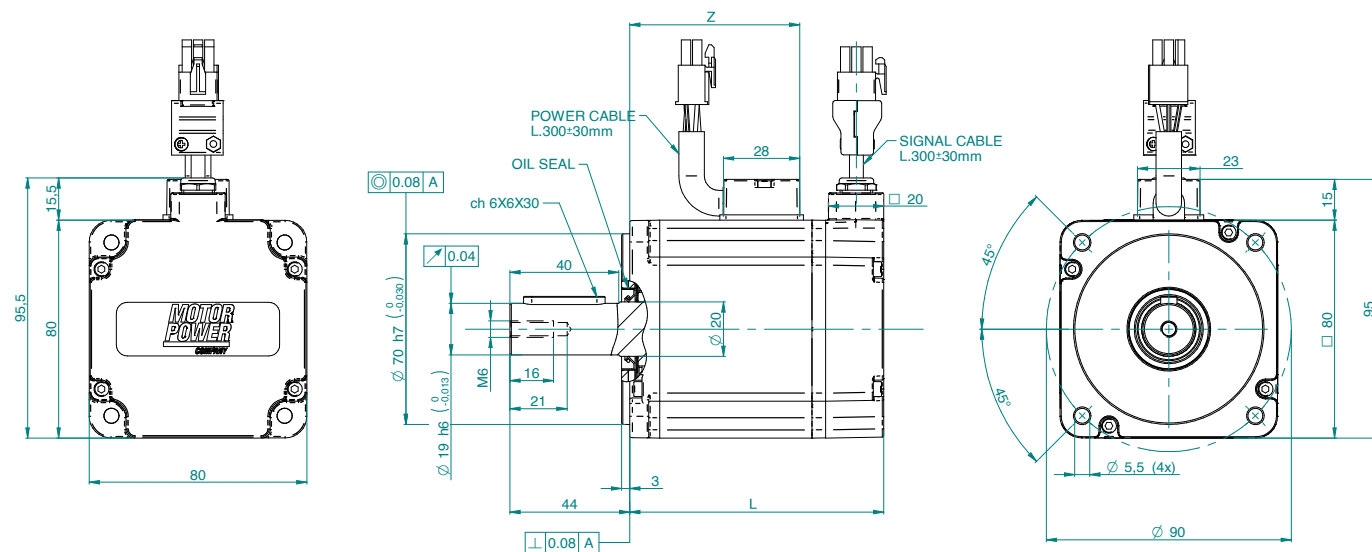


Operative temperature -20 ÷ +40 °C
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TC4 80 EXTERNAL DIMENSIONS

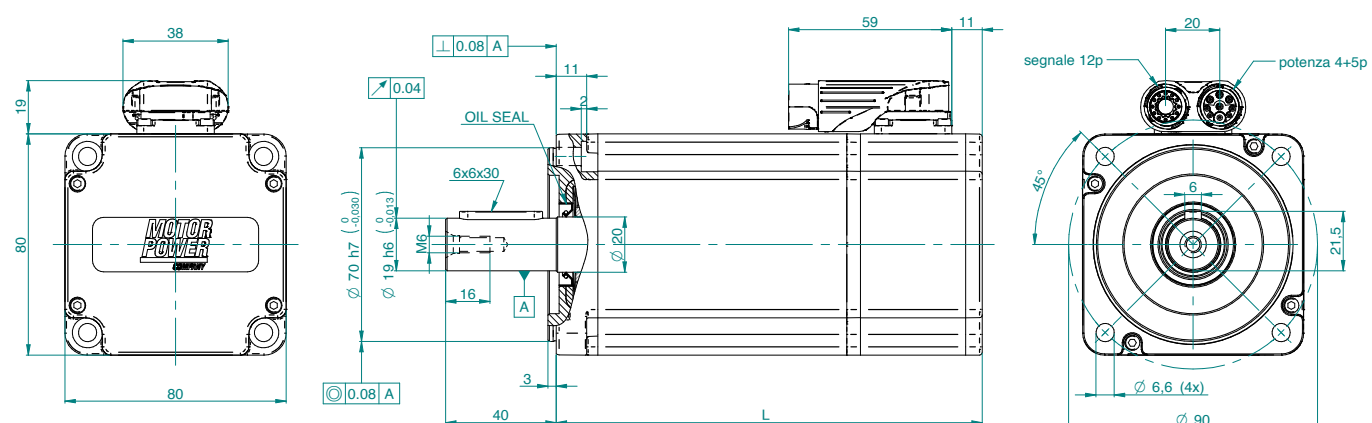
D0/D2 connection

Model	Feedback type	L [mm]	L with brake [mm]	Z [mm]	Z with brake [mm]
3A	N1-M1-M2-R1	93.0	125.0	62.5	62.5
3B	N1-M1-M2-R1	115.0	147.0	84.5	84.5
3C	N1-M1-M2-R1	127.0	159.0	96.0	96.0
3A	A1	120.0	152.0	62.5	62.5
3B	A1	142.0	174.0	84.5	84.5
3C	A1	154.0	186.0	96.0	96.0



G11/H11 connection

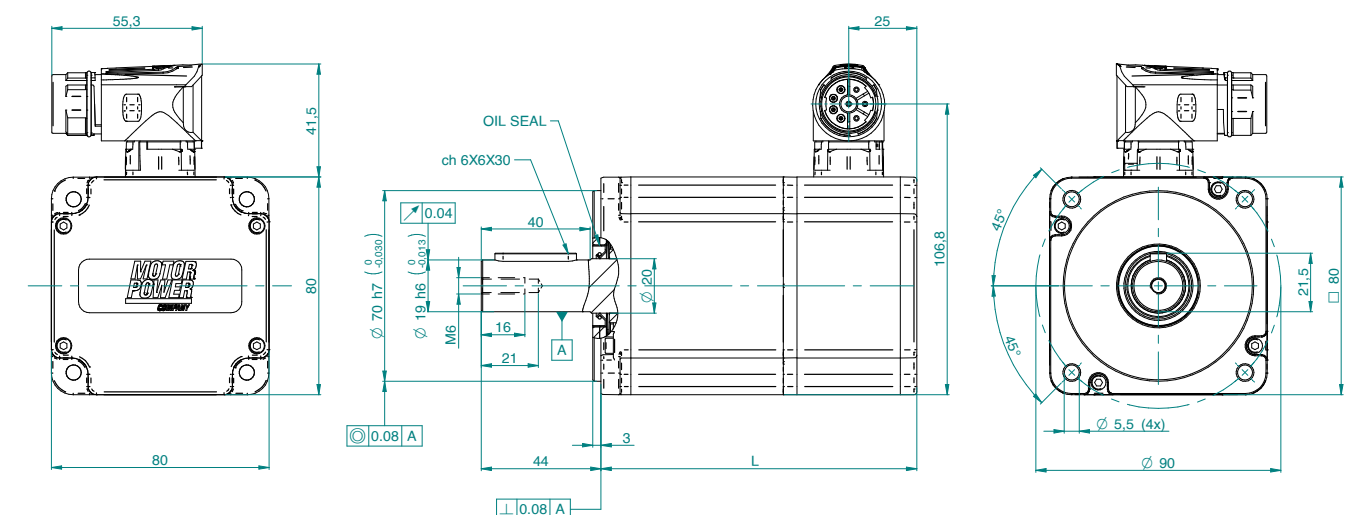
Model	Feedback type	L [mm]	L with brake [mm]
3A	A22-A23-M1-M2-N1-R1	120.0	149.0
3B	A22-A23-M1-M2-N1-R1	142.0	171.0
3C	A22-A23-M1-M2-N1-R1	154.0	183.0
3A	A1-A15-A16	130.0	159.0
3B	A1-A15-A16	152.0	181.0
3C	A1-A15-A16	164.0	193.0



TC4 80 EXTERNAL DIMENSIONS

C21 connection

Model	Feedback type	L [mm]	L with brake [mm]
3A	A22-A23	116.0	145.0
3B	A22-A23	138.0	167.0
3C	A22-A23	150.0	179.0
3A	A3-A4-A5-A6-A15-A16	126.0	155.0
3B	A3-A4-A5-A6-A15-A16	148.0	177.0
3C	A3-A4-A5-A6-A15-A16	160.0	189.0





Handwriting practice lines consisting of 20 horizontal grey lines.

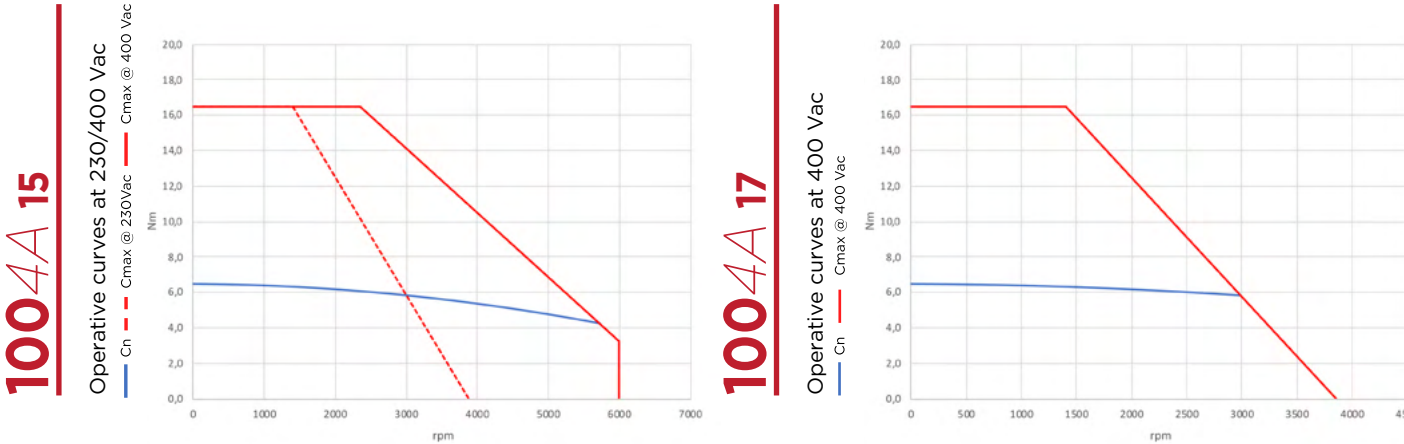
100 4A RATINGS and SPECIFICATION

			230 Vac	400 Vac	
TYPE OF WINDING			15	15	17
ELECTRICAL DATA					
Continuous stall torque (*)	M ₀	[Nm]		6.45	
Peak torque	M _{Max}	[Nm]		16.5	
Nominal torque	M _n	[Nm]	5.8	4.38	5.8
Nominal power	P _n	[W]	1820	2520	1820
Continuous stall current	I ₀	[Arms]	7.09	7.09	4.03
Maximum current	I _{Max}	[Arms]	25.12	25.12	14.29
Nominal current	I _n	[Arms]	6.38	4.81	3.63
Nominal working speed	n _N	[rpm]	3000	5500	3000
Maximum working speed	n _{Max}	[rpm]	3880	6000	3850
Torque constant	K _t	[Nm/Arms]	0.91	0.91	1.60
Voltage constant	K _{e u-v}	[Vrms/krpm]	55.0	55.0	96.7
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	1.50	1.50	4.20
Winding inductance	L _{q u-v}	[mH]	14.28	14.28	44.43
Electrical time constant	Te	[ms]	9.54	9.54	10.58
Thermal resistance	Rth	[°C/W]		0.63	
Mechanical time constant (a)	Tm	[ms]	0.46	0.46	0.41
Rotor inertia without holding brake	J	[kg·cm²]		2.53	
Rotor inertia with holding brake	J	[kg·cm²]		2.65	
Mass without holding brake	m	[kg]		5.55	
Mass with holding brake	m	[kg]		6.60	
Max. axial shaft load 3000 / 6000 rpm	SL _a	[N]		245 / 140	
Max. radial shaft load 3000 / 6000 rpm	SL _r	[N]		690 / 540	

Rated output with 300 x 300 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback. Current values rated @ 20°C.

TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C
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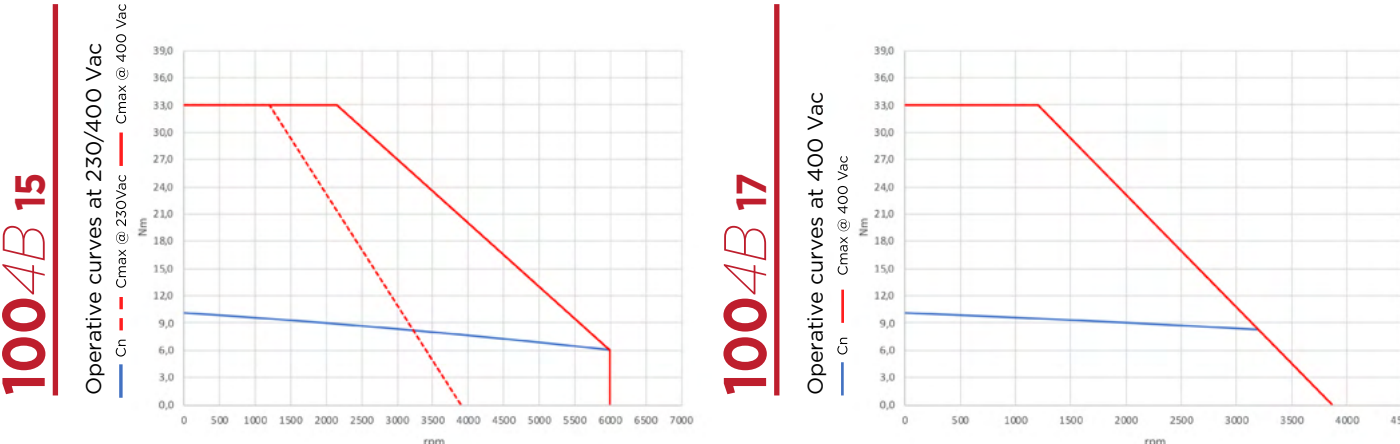
100 4B RATINGS and SPECIFICATION

				230 Vac	400 Vac	
		TYPE OF WINDING		15	15	17
ELECTRICAL DATA						
Continuous stall torque (*)	M ₀	[Nm]	10.16			
Peak torque	M _{Max}	[Nm]	33.00			
Nominal torque	M _n	[Nm]	8.36	6.08	8.36	
Nominal power	P _n	[W]	2620	3820	2620	
Continuous stall current	I ₀	[Arms]	11.17	11.17	6.35	
Maximum current	I _{Max}	[Arms]	50.66	50.66	28.82	
Nominal current	I _n	[Arms]	9.19	6.68	5.23	
Nominal working speed	n _N	[rpm]	3000	6000	3000	
Maximum working speed	n _{Max}	[rpm]	3900	6000	3860	
Torque constant	K _t	[Nm/Arms]	0.91	0.91	1.60	
Voltage constant	K _{e u-v}	[Vrms/krpm]	55.0	55.0	96.7	
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	0.61	0.61	1.94	
Winding inductance	L _{q u-v}	[mH]	7.14	7.14	22.22	
Electrical time constant	Te	[ms]	11.63	11.63	11.46	
Thermal resistance	Rth	[°C/W]	0.48			
Mechanical time constant (°)	Tm	[ms]	0.34	0.34	0.35	
Rotor inertia without holding brake	J	[kg·cm²]	4.61			
Rotor inertia with holding brake	J	[kg·cm²]	4.73			
Mass without holding brake	m	[kg]	8.09			
Mass with holding brake	m	[kg]	9.14			
Max. axial shaft load 3000 / 6000 rpm	SL _a	[N]	245 / 140			
Max. radial shaft load 3000 / 6000 rpm	SL _r	[N]	690 / 540			

Rated output with 300 x 300 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake.
(a) without brake and without feedback. Current values rated @ 20°C.

TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C
Any specifications are subjected to change without notice.
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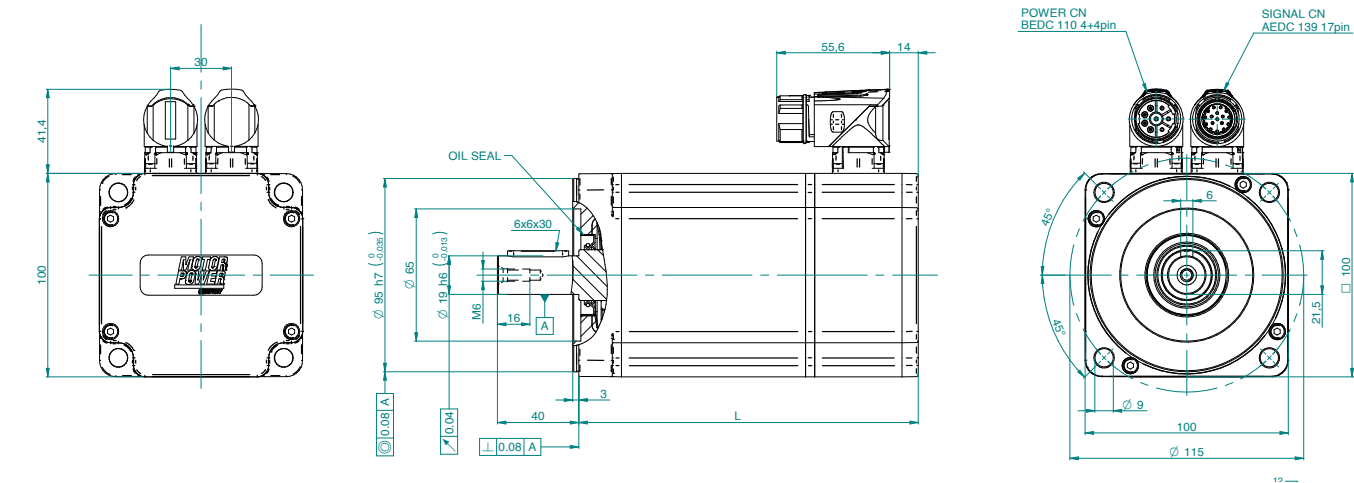


TC4

100 EXTERNAL DIMENSIONS

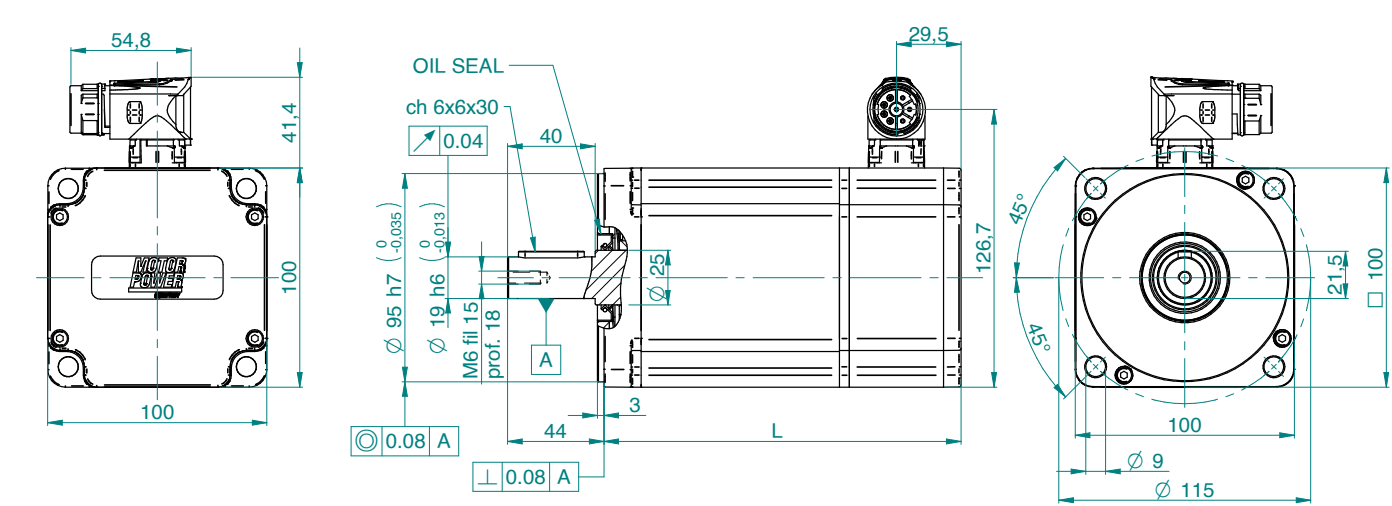
G2/H2 connection

Model	Feedback tipe	L [mm]	L with brake [mm]
4A	A22-A23-M1-M2	167.0	197.0
4B	A22-A23-M1-M2	212.0	242.0
4A	A1-A15-A16-R1	183.0	213.0
4B	A1-A15-A16-R1	228.0	258.0



C21 connection

Model	Feedback tipe	L [mm]	L with brake [mm]
4A	A22-A23	163.0	193.0
4B	A22-A23	208.0	238.0
4A	A3-A4-A5-A6-A15-A16	179.0	209.0
4B	A3-A4-A5-A6-A15-A16	224.0	254.0



TETRA
COMPACT4130

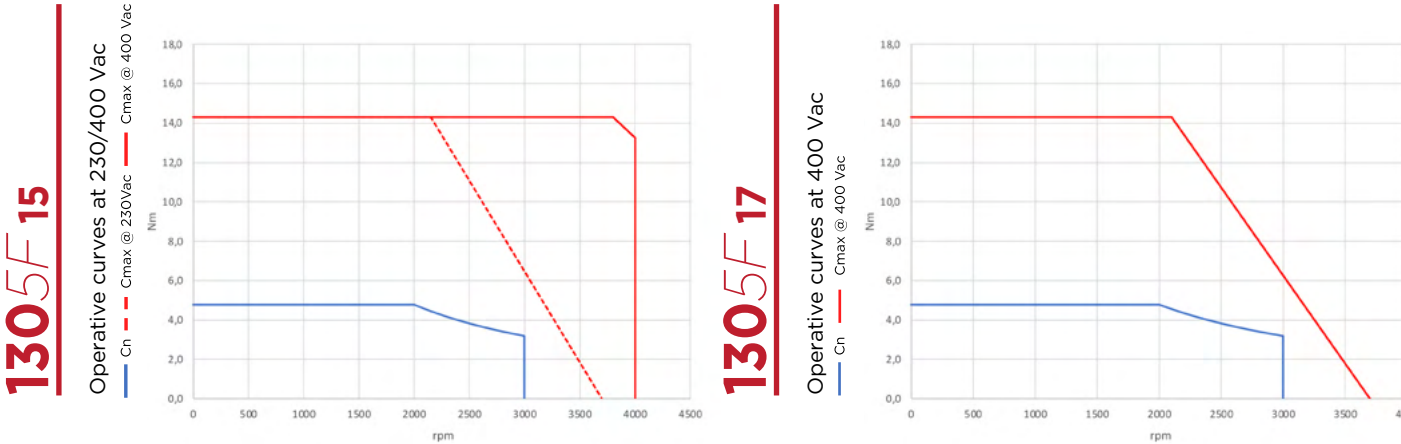
130 5F RATINGS and SPECIFICATION

			230 Vac		400 Vac	
TYPE OF WINDING			15	15	17	
ELECTRICAL DATA						
Continuous stall torque (*)	M _o	[Nm]	4.77			
Peak torque	M _{Max}	[Nm]	14.3			
Nominal torque	M _n	[Nm]	3.18			
Nominal power	P _n	[W]	1000			
Continuous stall current	I _o	[Arms]	5.24	5.24	2.98	
Maximum current	I _{Max}	[Arms]	18.28	18.28	10.40	
Nominal current	I _n	[Arms]	3.50	3.50	1.99	
Nominal working speed	n _N	[rpm]	3000			
Maximum working speed	n _{Max}	[rpm]	3700	4000	3700	
Torque constant	K _t	[Nm/Arms]	0.91	0.91	1.60	
Voltage constant	K _{e u-v}	[Vrms/krpm]	55.0	55.0	96.7	
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	0.81	0.81	2.46	
Winding inductance	L _{q u-v}	[mH]	9.37	9.37	29.20	
Electrical time constant	Te	[ms]	11.53	11.53	11.85	
Thermal resistance	Rth	[°C/W]	-			
Mechanical time constant (a)	Tm	[ms]	0.66	0.66	0.65	
Rotor inertia without holding brake	J	[kg·cm²]	6.70			
Rotor inertia with holding brake	J	[kg·cm²]	7.95			
Mass without holding brake	m	[kg]	7.35			
Mass with holding brake	m	[kg]	8.87			
Max. axial shaft load 3000 rpm	SL _a	[N]	230			
Max. radial shaft load 3000 rpm	SL _r	[N]	1200			

Rated output with 400 x 400 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback. Current values rated @ 20°C.

TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C
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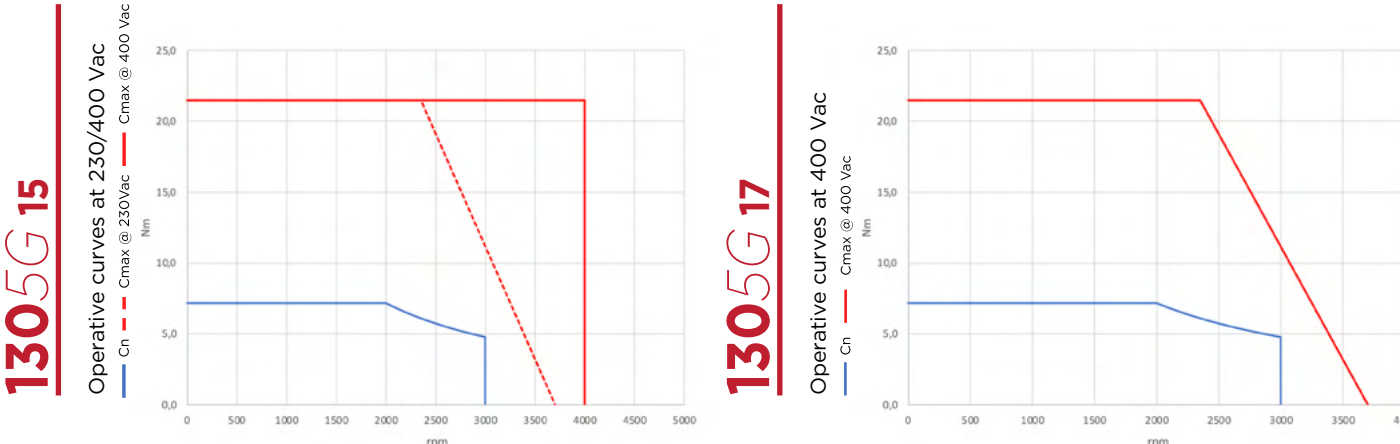
130 5G RATINGS and SPECIFICATION

			230 Vac		400 Vac	
TYPE OF WINDING			15	15	17	
ELECTRICAL DATA						
Continuous stall torque (*)	M _o	[Nm]	7.16			
Peak torque	M _{Max}	[Nm]	21.48			
Nominal torque	M _n	[Nm]	4.78			
Nominal power	P _n	[W]	1500			
Continuous stall current	I _o	[Arms]	7.87	7.87	4.48	
Maximum current	I _{Max}	[Arms]	26.83	26.83	15.26	
Nominal current	I _n	[Arms]	5.24	5.24	2.98	
Nominal working speed	n _N	[rpm]	3000			
Maximum working speed	n _{Max}	[rpm]	3700	4000	3700	
Torque constant	K _t	[Nm/Arms]	0.91	0.91	1.60	
Voltage constant	K _{e u-v}	[Vrms/krpm]	55.0	55.0	96.7	
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	0.51	0.51	1.54	
Winding inductance	L _{q u-v}	[mH]	5.69	5.69	17.42	
Electrical time constant	Te	[ms]	11.29	11.29	11.32	
Thermal resistance	Rth	[°C/W]	-			
Mechanical time constant (a)	Tm	[ms]	0.59	0.59	0.58	
Rotor inertia without holding brake	J	[kg·cm²]	9.72			
Rotor inertia with holding brake	J	[kg·cm²]	10.98			
Mass without holding brake	m	[kg]	8.80			
Mass with holding brake	m	[kg]	10.32			
Max. axial shaft load 2000 rpm	SL _a	[N]	230			
Max. radial shaft load 2000 rpm	SL _r	[N]	1200			

Rated output with 400 x 400 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback. Current values rated @ 20°C.

TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C
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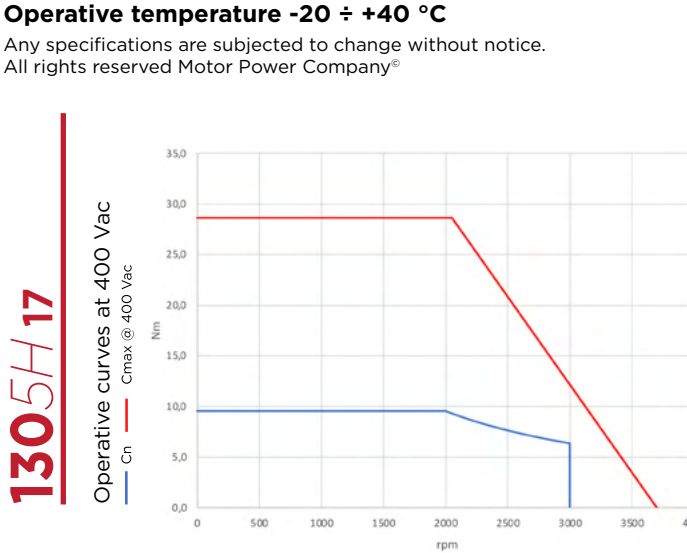
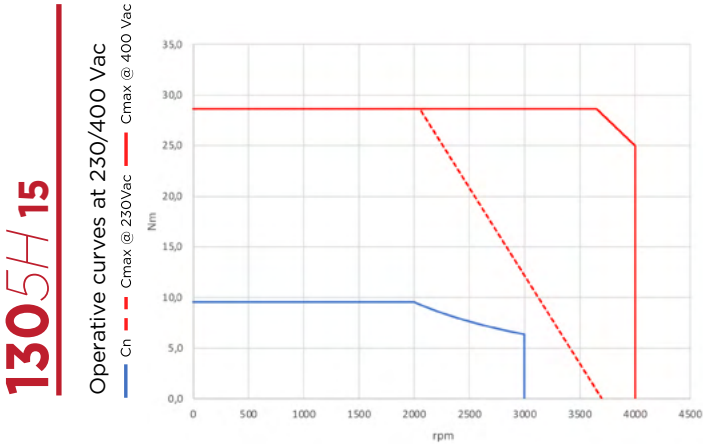


130 5H RATINGS and SPECIFICATION

			230 Vac		400 Vac	
TYPE OF WINDING			15	15	17	
ELECTRICAL DATA						
Continuous stall torque (*)	M _o	[Nm]	9.55			
Peak torque	M _{Max}	[Nm]	28.65			
Nominal torque	M _n	[Nm]	6.37			
Nominal power	P _n	[W]	2000			
Continuous stall current	I _o	[Arms]	10.50	10.50	5.97	
Maximum current	I _{Max}	[Arms]	35.00	35.00	19.90	
Nominal current	I _n	[Arms]	7.00	7.00	3.98	
Nominal working speed	n _N	[rpm]	3000			
Maximum working speed	n _{Max}	[rpm]	3700	4000	3700	
Torque constant	K _t	[Nm/Arms]	0.91	0.91	1.60	
Voltage constant	K _{e u-v}	[Vrms/krpm]	55.0	55.0	96.7	
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	0.35	0.35	1.02	
Winding inductance	L _{q u-v}	[mH]	4.33	4.33	13.27	
Electrical time constant	Te	[ms]	12.19	12.19	13.02	
Thermal resistance	Rth	[°C/W]	-			
Mechanical time constant (°)	Tm	[ms]	0.55	0.55	0.51	
Rotor inertia without holding brake	J	[kg·cm²]	12.77			
Rotor inertia with holding brake	J	[kg·cm²]	14.04			
Mass without holding brake	m	[kg]	10.54			
Mass with holding brake	m	[kg]	12.68			
Max. axial shaft load 2000 rpm	SL _a	[N]	230			
Max. radial shaft load 2000 rpm	SL _r	[N]	1200			

Rated output with 400 x 400 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback. Current values rated @ 20°C.

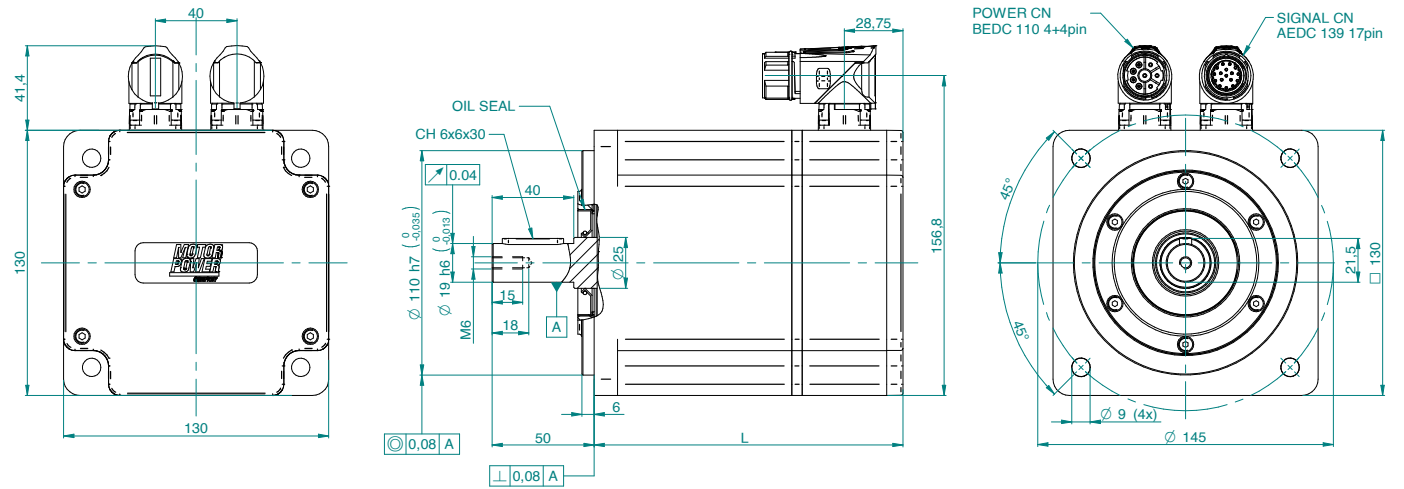
TORQUE/SPEED CHARTS



130 EXTERNAL DIMENSIONS

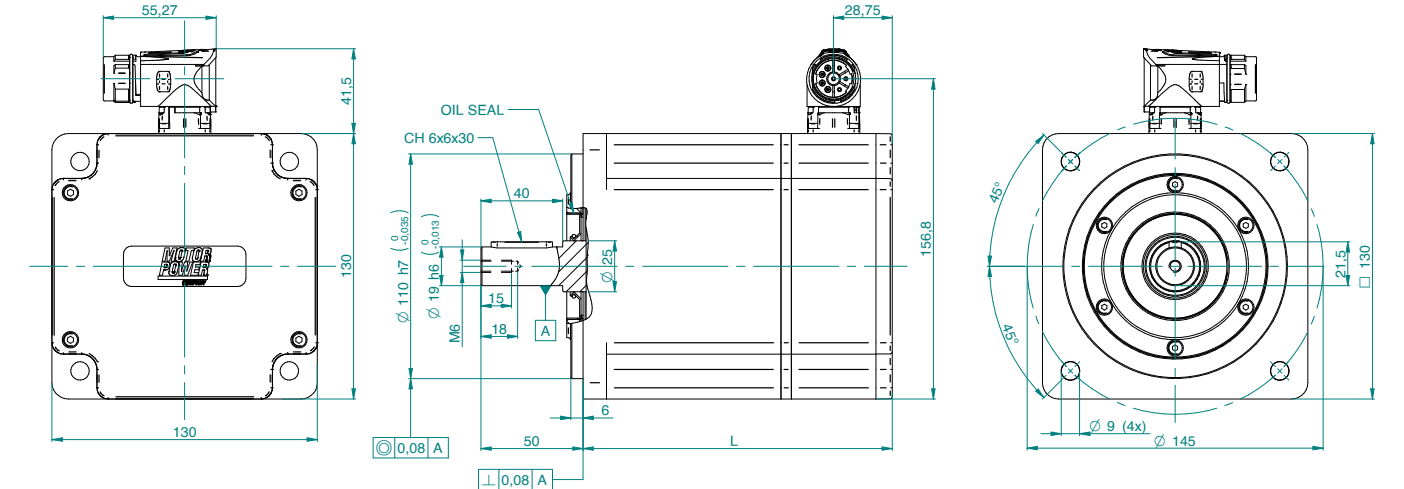
G2/H2 connection

Model	Feedback tipe	L [mm]	L with brake [mm]
5F	A22-A23-M1-M2	151.5	180.0
5G	A22-A23-M1-M2	167.5	196.0
5H	A22-A23-M1-M2	184.5	210.0
5F	A1-A15-A16-R1	167.5	196.0
5G	A1-A15-A16-R1	183.5	212.0
5H	A1-A15-A16-R1	200.5	226.0



C21 connection

Model	Feedback tipe	L [mm]	L with brake [mm]
5F	A22-A23	151.5	180.0
5G	A22-A23	167.5	196.0
5H	A22-A23	184.5	205.0

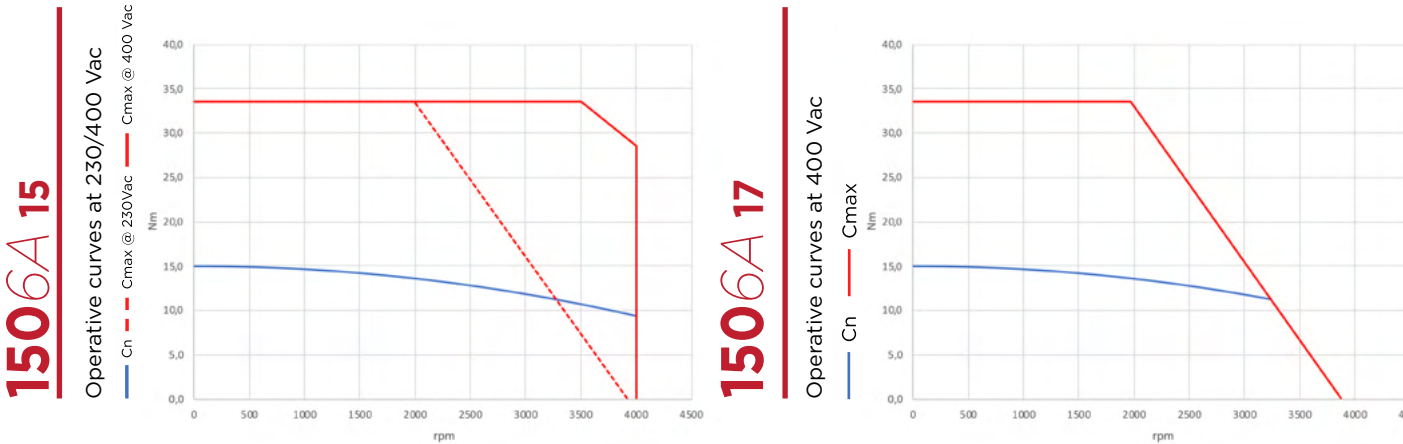


			230 Vac		400 Vac	
			15	15	17	
ELECTRICAL DATA						
Continuous stall torque (*)	M ₀	[Nm]	15.0			
Peak torque	M _{Max}	[Nm]	33.5			
Nominal torque	M _n	[Nm]	11.8			
Nominal power	P _n	[W]	3715			
Continuous stall current	I ₀	[Arms]	16.49	16.49	9.38	
Maximum current	I _{Max}	[Arms]	44.91	44.91	25.54	
Nominal current	I _n	[Arms]	12.97	12.97	7.38	
Nominal working speed	n _N	[rpm]	3000			
Maximum working speed	n _{Max}	[rpm]	3920	4000	3880	
Torque constant	K _t	[Nm/Arms]	0.91	0.91	1.60	
Voltage constant	K _{e u-v}	[Vrms/krpm]	55.0	55.0	96.7	
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	0.31	0.31	0.95	
Winding inductance	L _{q u-v}	[mH]	4.47	4.47	13.82	
Electrical time constant	Te	[ms]	14.28	14.28	14.49	
Thermal resistance	Rth	[°C/W]	0.53			
Mechanical time constant (a)	Tm	[ms]	0.57	0.57	0.57	
Rotor inertia without holding brake	J	[kg·cm²]	15.18			
Rotor inertia with holding brake	J	[kg·cm²]	16.55			
Mass without holding brake	m	[kg]	13.68			
Mass with holding brake	m	[kg]	17.20			
Max. axial shaft load 3000 rpm	SL _a	[N]	420			
Max. radial shaft load 3000 rpm	SL _r	[N]	1750			

Rated output with 475 x 475 x 20 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback. Current values rated @ 20°C.

TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C
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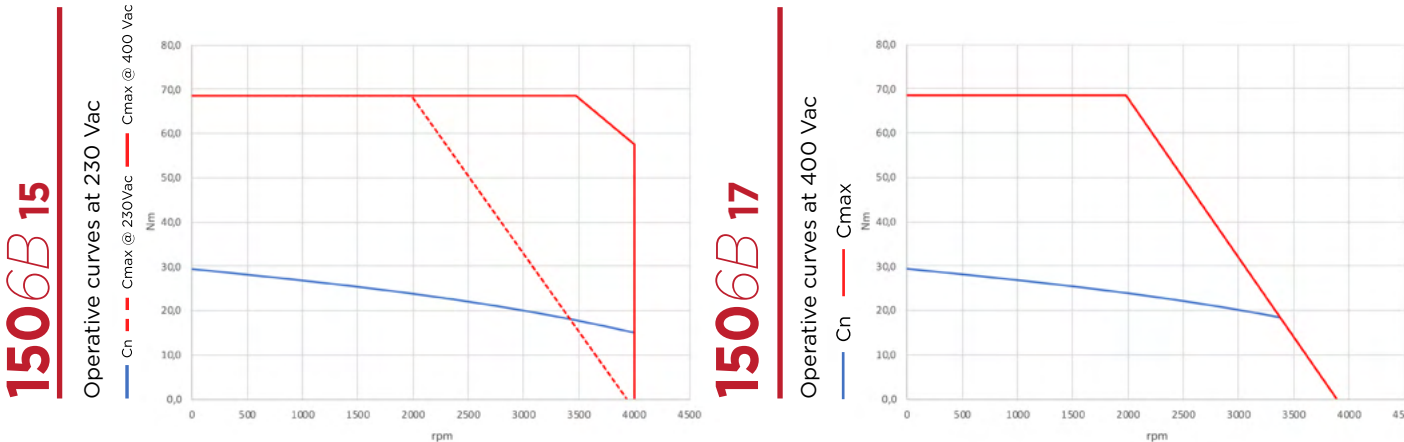
150 6B RATINGS and SPECIFICATION

			230 Vac	400 Vac	
TYPE OF WINDING			15	15	17
ELECTRICAL DATA					
Continuous stall torque (*)	M ₀	[Nm]	29.4		
Peak torque	M _{Max}	[Nm]	68.5		
Nominal torque	M _n	[Nm]	20.0		
Nominal power	P _n	[W]	6280		
Continuous stall current	I ₀	[Arms]	32.32	32.32	18.38
Maximum current	I _{Max}	[Arms]	91.94	91.94	52.29
Nominal current	I _n	[Arms]	21.99	21.99	12.50
Nominal working speed	n _N	[rpm]	3000		
Maximum working speed	n _{Max}	[rpm]	3930	4000	3890
Torque constant	K _t	[Nm/Arms]	0.91	0.91	1.60
Voltage constant	K _{e u-v}	[Vrms/krpm]	55.0	55.0	96.7
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	0.11	0.11	0.36
Winding inductance	L _{q u-v}	[mH]	2.23	2.23	6.78
Electrical time constant	Te	[ms]	20.01	20.01	18.78
Thermal resistance	Rth	[°C/W]	0.38		
Mechanical time constant (°)	Tm	[ms]	0.37	0.37	0.39
Rotor inertia without holding brake	J	[kg·cm²]	27.68		
Rotor inertia with holding brake	J	[kg·cm²]	28.76		
Mass without holding brake	m	[kg]	18.00		
Mass with holding brake	m	[kg]	22.40		
Max. axial shaft load 3000 rpm	SL _a	[N]	420		
Max. radial shaft load 3000 rpm	SL _r	[N]	1750		

Rated output with 475 x 475 x 20 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing. (*) without brake. (a) without brake and without feedback. Current values rated @ 20°C.

TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C
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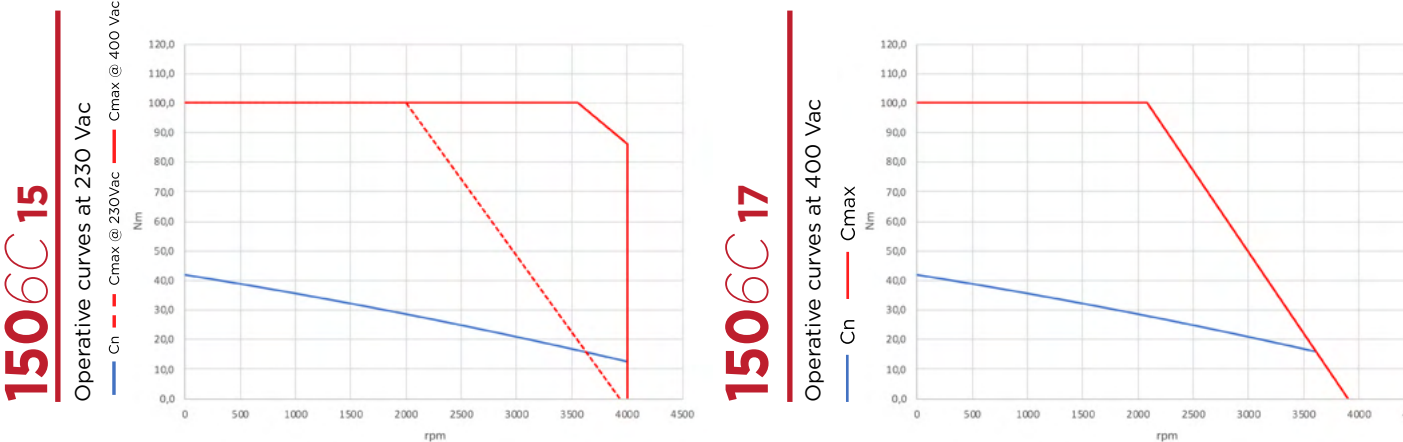
150 6C RATINGS and SPECIFICATION

			230 Vac	400 Vac	
TYPE OF WINDING			15	15	17
ELECTRICAL DATA					
Continuous stall torque (*)	M ₀	[Nm]	41.77		
Peak torque	M _{Max}	[Nm]	100.0		
Nominal torque	M _n	[Nm]	20.96		
Nominal power	P _n	[W]	6580		
Continuous stall current	I ₀	[Arms]	45.92	45.92	26.12
Maximum current	I _{Max}	[Arms]	129.33	129.33	73.56
Nominal current	I _n	[Arms]	23.04	23.04	13.10
Nominal working speed	n _N	[rpm]	3000		
Maximum working speed	n _{Max}	[rpm]	3940	4000	3900
Torque constant	K _t	[Nm/Arms]	0.91	0.91	1.60
Voltage constant	K _{e u-v}	[Vrms/krpm]	55.0	55.0	96.7
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	0.072	0.072	0.19
Winding inductance	L _{q u-v}	[mH]	1.54	1.54	4.52
Electrical time constant	Te	[ms]	21.11	21.11	23.24
Thermal resistance	Rth	[°C/W]	0.38		
Mechanical time constant (a)	Tm	[ms]	0.35	0.35	0.31
Rotor inertia without holding brake	J	[kg·cm²]	40.17		
Rotor inertia with holding brake	J	[kg·cm²]	41.25		
Mass without holding brake	m	[kg]	23.26		
Mass with holding brake	m	[kg]	27.67		
Max. axial shaft load 3000 rpm	SL _a	[N]	420		
Max. radial shaft load 3000 rpm	SL _r	[N]	1750		

Rated output with 475 x 475 x 20 mm aluminium heat sink flange coupling. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing. (*) without brake. (a) without brake and without feedback. Current values rated @ 20°C.

TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C
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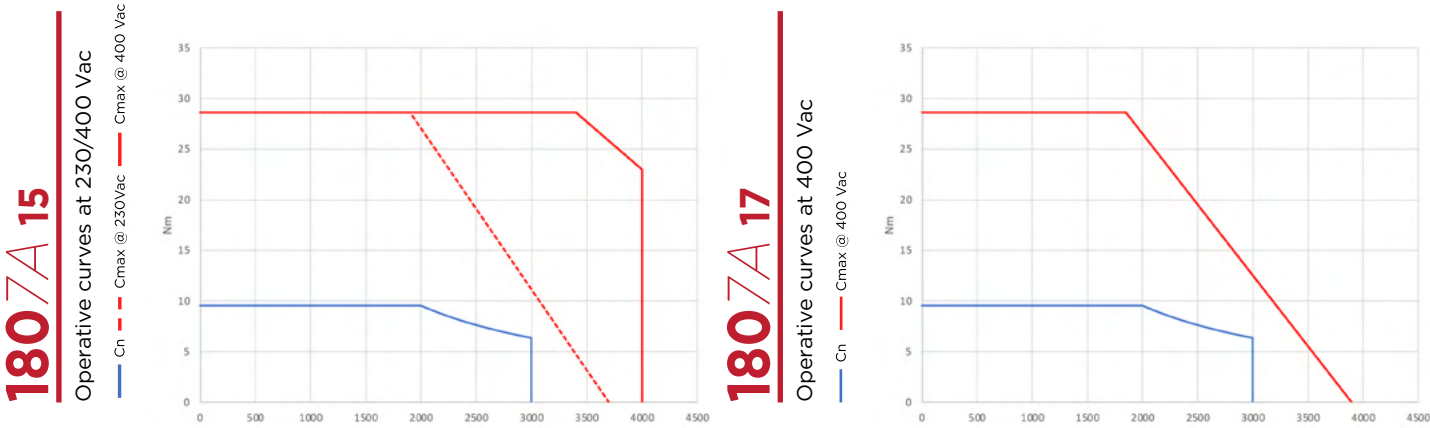
180 7A RATINGS and SPECIFICATION

			230 Vac		400 Vac	
TYPE OF WINDING			15	15	17	
ELECTRICAL DATA						
Continuous stall torque (*)	M ₀	[Nm]	9.55			
Peak torque	M _{Max}	[Nm]	28.65			
Nominal torque	M _n	[Nm]	6.37			
Nominal power	P _n	[W]	2000			
Continuous stall current	I ₀	[Arms]	10.50	10.50	5.97	
Maximum current	I _{Max}	[Arms]	42.00	42.00	23.88	
Nominal current	I _n	[Arms]	7.00	7.00	3.98	
Nominal working speed	n _N	[rpm]	3000			
Maximum working speed	n _{Max}	[rpm]	3700	4000	3700	
Torque constant	K _t	[Nm/Arms]	0.91	0.91	1.60	
Voltage constant	K _{e u-v}	[Vrms/krpm]	55.0	55.0	96.7	
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	0.39	0.39	1.20	
Winding inductance	L _{q u-v}	[mH]	4.60	4.60	14.48	
Electrical time constant	Te	[ms]	11.79	11.79	12.07	
Thermal resistance	Rth	[°C/W]	-			
Mechanical time constant (a)	Tm	[ms]	1.19	1.19	1.18	
Rotor inertia without holding brake	J	[kg·cm²]	25.22			
Rotor inertia with holding brake	J	[kg·cm²]	30.39			
Mass without holding brake	m	[kg]	14.64			
Mass with holding brake	m	[kg]	19.64			
Max. axial shaft load 2000 rpm	SL _a	[N]	500			
Max. radial shaft load 2000 rpm	SL _r	[N]	2300			

Rated output with 550 x 550 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
 (*) without brake. (a) without brake and without feedback. Current values rated @ 20°C.

TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C
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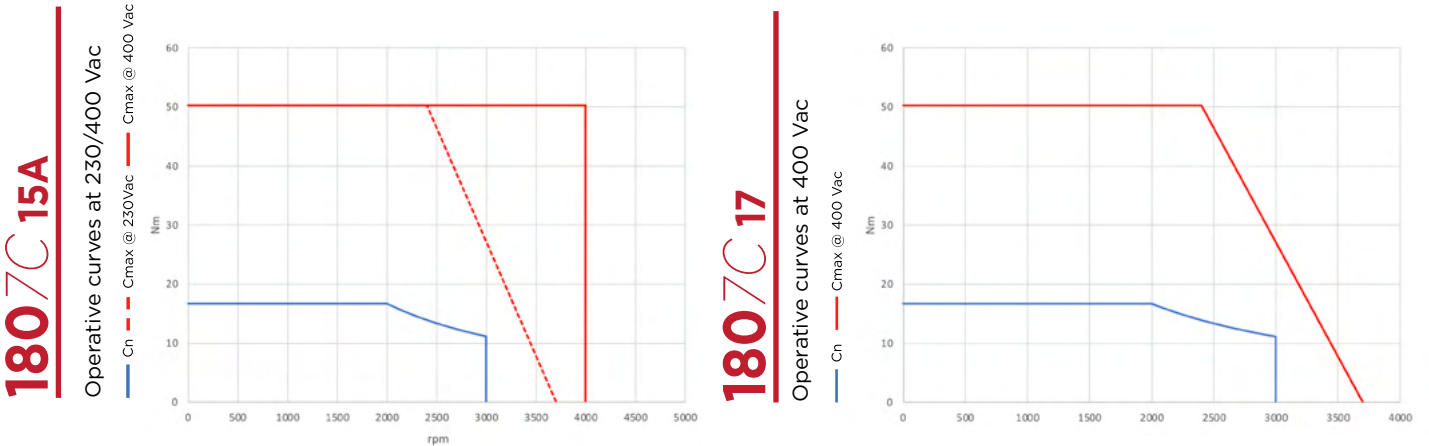
180 7C RATINGS and SPECIFICATION

			230 Vac		400 Vac	
TYPE OF WINDING			15	15	17	
ELECTRICAL DATA						
Continuous stall torque (*)	M ₀	[Nm]	16.7			
Peak torque	M _{Max}	[Nm]	50.3			
Nominal torque	M _n	[Nm]	11.14			
Nominal power	P _n	[W]	3500			
Continuous stall current	I ₀	[Arms]	18.36	18.36	10.44	
Maximum current	I _{Max}	[Arms]	65.05	65.05	37.00	
Nominal current	I _n	[Arms]	12.25	12.25	6.97	
Nominal working speed	n _N	[rpm]	3000			
Maximum working speed	n _{Max}	[rpm]	3700	4000	3700	
Torque constant	K _t	[Nm/Arms]	0.91	0.91	1.60	
Voltage constant	K _{e u-v}	[Vrms/krpm]	55.0	55.0	96.7	
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	0.13	0.13	0.37	
Winding inductance	L _{q u-v}	[mH]	2.13	2.13	6.62	
Electrical time constant	Te	[ms]	16.38	16.38	17.89	
Thermal resistance	Rth	[°C/W]	-			
Mechanical time constant (a)	Tm	[ms]	0.68	0.68	0.68	
Rotor inertia without holding brake	J	[kg·cm²]	44.81			
Rotor inertia with holding brake	J	[kg·cm²]	46.60			
Mass without holding brake	m	[kg]	20.0			
Mass with holding brake	m	[kg]	25.0			
Max. axial shaft load 2000 rpm	SL _a	[N]	500			
Max. radial shaft load 2000 rpm	SL _r	[N]	2300			

Rated output with 550 x 550 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
 (*) without brake. (a) without brake and without feedback. Current values rated @ 20°C.

TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C
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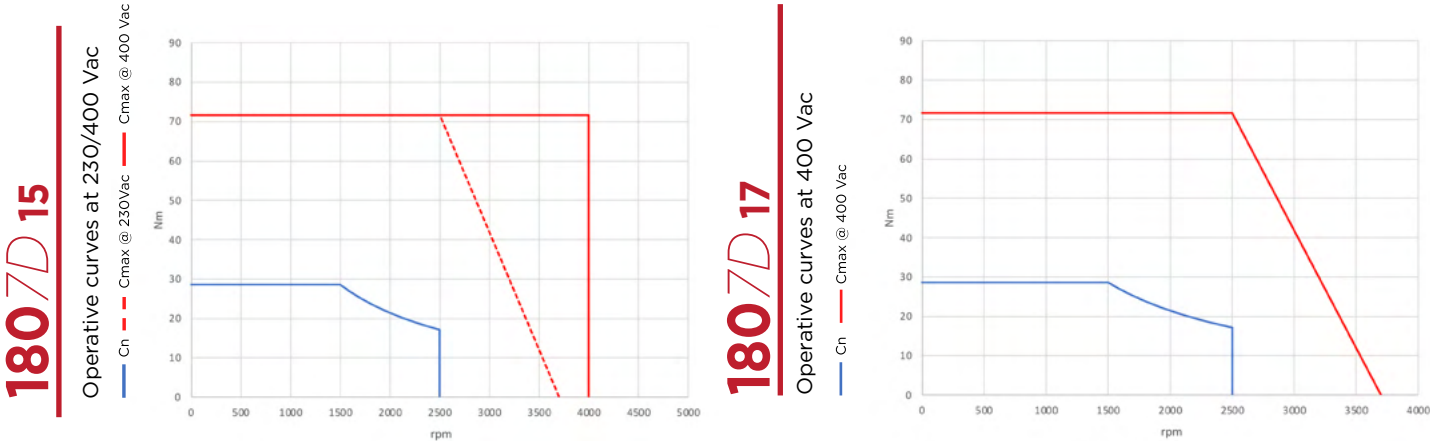
180 7D RATINGS and SPECIFICATION

TYPE OF WINDING	230 Vac		400 Vac	
	15	15	17	
ELECTRICAL DATA				
Continuous stall torque (*)	M _o	[Nm]	28.65	
Peak torque	M _{Max}	[Nm]	71.62	
Nominal torque	M _n	[Nm]	17.20	
Nominal power	P _n	[W]	4500	
Continuous stall current	I _o	[Arms]	31.50	17.90
Maximum current	I _{Max}	[Arms]	92.60	52.68
Nominal current	I _n	[Arms]	18.91	10.75
Nominal working speed	n _N	[rpm]	2500	
Maximum working speed	n _{Max}	[rpm]	3700	3700
Torque constant	K _t	[Nm/Arms]	0.91	1.60
Voltage constant	K _{e u-v}	[Vrms/krpm]	55.0	96.7
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	0.07	0.21
Winding inductance	L _{q u-v}	[mH]	1.42	4.21
Electrical time constant	Te	[ms]	20.29	20.05
Thermal resistance	Rth	[°C/W]	-	
Mechanical time constant (a)	Tm	[ms]	0.55	0.54
Rotor inertia without holding brake	J	[kg·cm²]	64.99	
Rotor inertia with holding brake	J	[kg·cm²]	66.78	
Mass without holding brake	m	[kg]	25.69	
Mass with holding brake	m	[kg]	31.40	
Max. axial shaft load 2000 rpm	SL _a	[N]	500	
Max. radial shaft load 2000 rpm	SL _r	[N]	2300	

Rated output with 550 x 550 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback. Current values rated @ 20°C.

TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C
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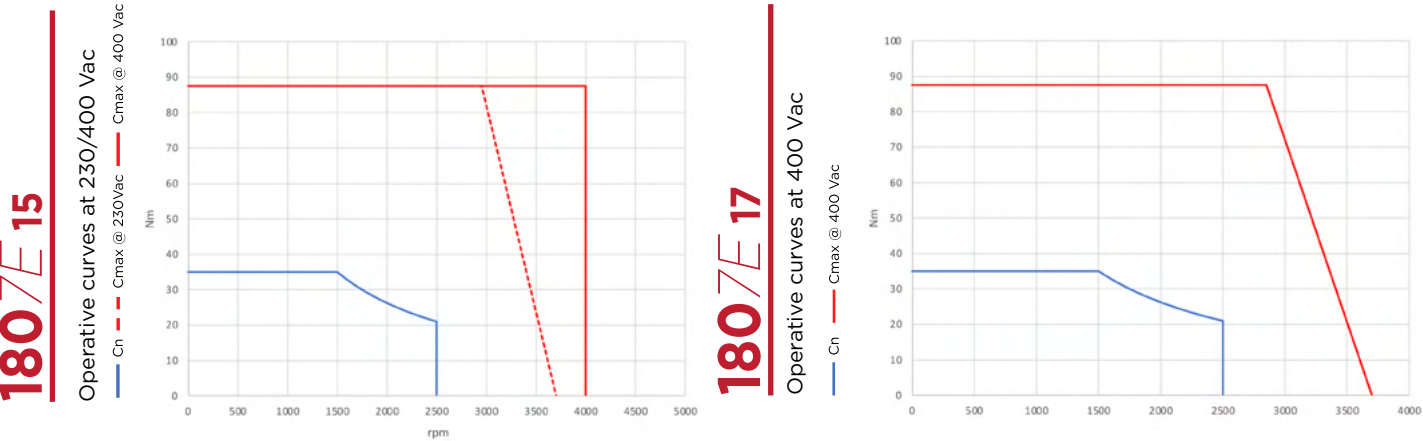
180 7E RATINGS and SPECIFICATION

TYPE OF WINDING	230 Vac		400 Vac	
	15	15	17	
ELECTRICAL DATA				
Continuous stall torque (*)	M _o	[Nm]	35.0	
Peak torque	M _{Max}	[Nm]	87.53	
Nominal torque	M _n	[Nm]	21.0	
Nominal power	P _n	[W]	5500	
Continuous stall current	I _o	[Arms]	38.47	21.88
Maximum current	I _{Max}	[Arms]	113.20	64.38
Nominal current	I _n	[Arms]	23.08	13.13
Nominal working speed	n _N	[rpm]	2500	
Maximum working speed	n _{Max}	[rpm]	3700	3700
Torque constant	K _t	[Nm/Arms]	0.91	1.60
Voltage constant	K _{e u-v}	[Vrms/krpm]	55.0	96.7
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	0.04	0.12
Winding inductance	L _{q u-v}	[mH]	0.81	2.64
Electrical time constant	Te	[ms]	21.89	22.76
Thermal resistance	Rth	[°C/W]	-	
Mechanical time constant (a)	Tm	[ms]	0.46	0.46
Rotor inertia without holding brake	J	[kg·cm²]	102.46	
Rotor inertia with holding brake	J	[kg·cm²]	104.30	
Mass without holding brake	m	[kg]	34.15	
Mass with holding brake	m	[kg]	39.09	
Max. axial shaft load 2000 rpm	SL _a	[N]	500	
Max. radial shaft load 2000 rpm	SL _r	[N]	2300	

Rated output with 550 x 550 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback. Current values rated @ 20°C.

TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C
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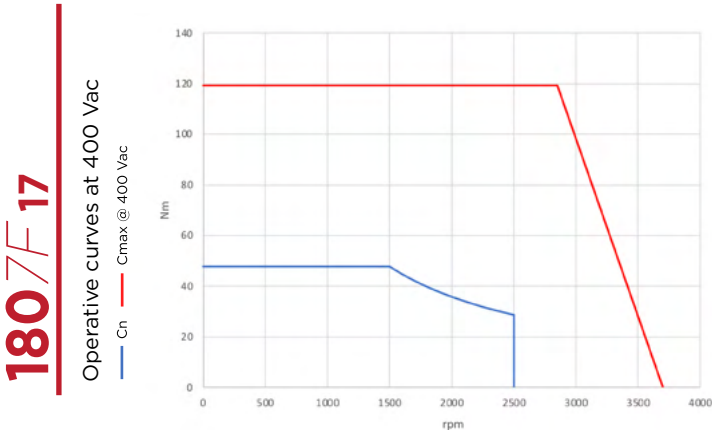


		400 Vac	
TYPE OF WINDING		17	
ELECTRICAL DATA			
Continuous stall torque (*)	M ₀	[Nm]	47.75
Peak torque	M _{Max}	[Nm]	119.37
Nominal torque	M _n	[Nm]	28.65
Nominal power	P _n	[W]	7500 (*1)
Continuous stall current	I ₀	[Arms]	29.85
Maximum current	I _{Max}	[Arms]	87.80
Nominal current	I _n	[Arms]	17.91
Nominal working speed	n _N	[rpm]	2500
Maximum working speed	n _{Max}	[rpm]	4000
Torque constant	K _t	[Nm/Arms]	1.60
Voltage constant	K _{e u-v}	[Vrms/krpm]	96.7
Winding resistance @ 20 °C	R _{u-v}	[Ohm]	0.10
Winding inductance	L _{q u-v}	[mH]	2.30
Electrical time constant	Te	[ms]	23.71
Thermal resistance	Rth	[°C/W]	-
Mechanical time constant (a)	Tm	[ms]	0.38
Rotor inertia without holding brake	J	[kg·cm²]	140.62
Rotor inertia with holding brake	J	[kg·cm²]	142.66
Mass without holding brake	m	[kg]	44.52
Mass with holding brake	m	[kg]	49.59
Max. axial shaft load 2000 rpm	SL _a	[N]	500
Max. radial shaft load 2000 rpm	SL _r	[N]	2300

Rated output with 550 x 550 x 20 mm aluminium heat sink flange. Derating must be considered if the oil seal is applied - IP 54 standard shaft bushing.
(*) without brake. (a) without brake and without feedback. Current values rated @ 20°C.

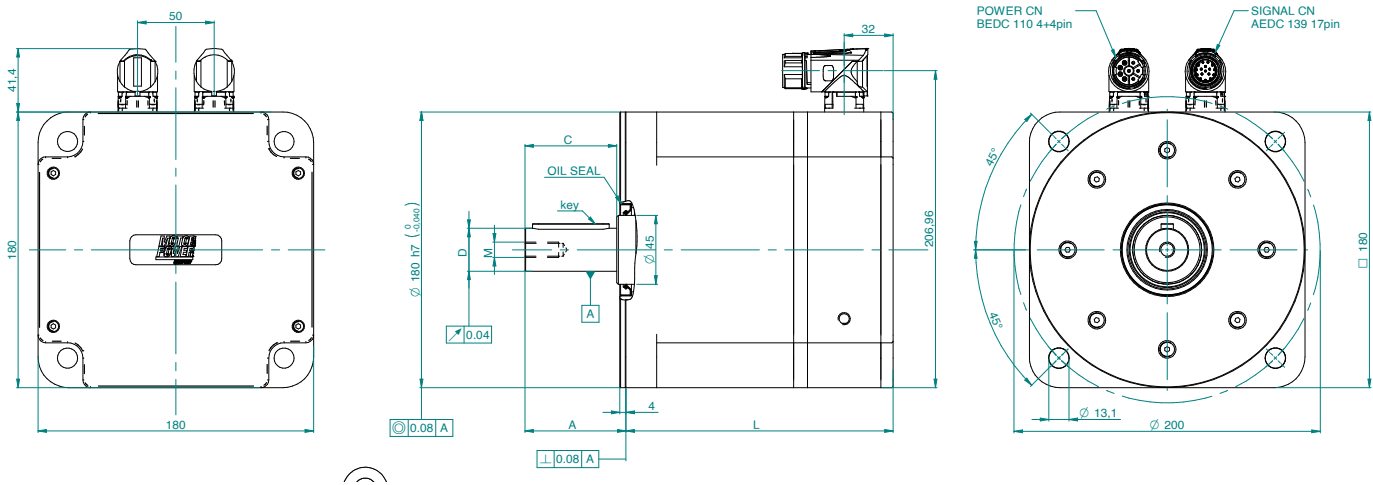
TORQUE/SPEED CHARTS

Operative temperature -20 ÷ +40 °C
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G2/H2 connection

Model	Feedback tipe	L [mm]	L with brake [mm]	D [mm]	A [mm]	C [mm]	M	Key (b x h x l)
7A	A22-A23-M1-M2	174.5	209.0	28.0	66.0	60.0	M10x22	8 x 7 x 50
7C	A22-A23-M1-M2	207.5	242.0	28.0	66.0	60.0	M10x22	8 x 7 x 50
7D	A22-A23-M1-M2	240.5	275.0	38.0	86.0	80.0	M12x28	10 x 8 x 70
7E	A22-A23-M1-M2	284.5	319.0	38.0	86.0	80.0	M12x28	10 x 8 x 70
7F	A22-A23-M1-M2	347.5	382.0	38.0	86.0	80.0	M12x28	10 x 8 x 70
7A	A1-A15-A16-R1	190.5	225.0	28.0	66.0	60.0	M10x22	8 x 7 x 50
7C	A1-A15-A16-R1	223.5	258.0	28.0	66.0	60.0	M10x22	8 x 7 x 50
7D	A1-A15-A16-R1	256.5	291.0	38.0	86.0	80.0	M12x28	10 x 8 x 70
7E	A1-A15-A16-R1	300.5	335.0	38.0	86.0	80.0	M12x28	10 x 8 x 70
7F	A1-A15-A16-R1	363.5	398.0	38.0	86.0	80.0	M12x28	10 x 8 x 70

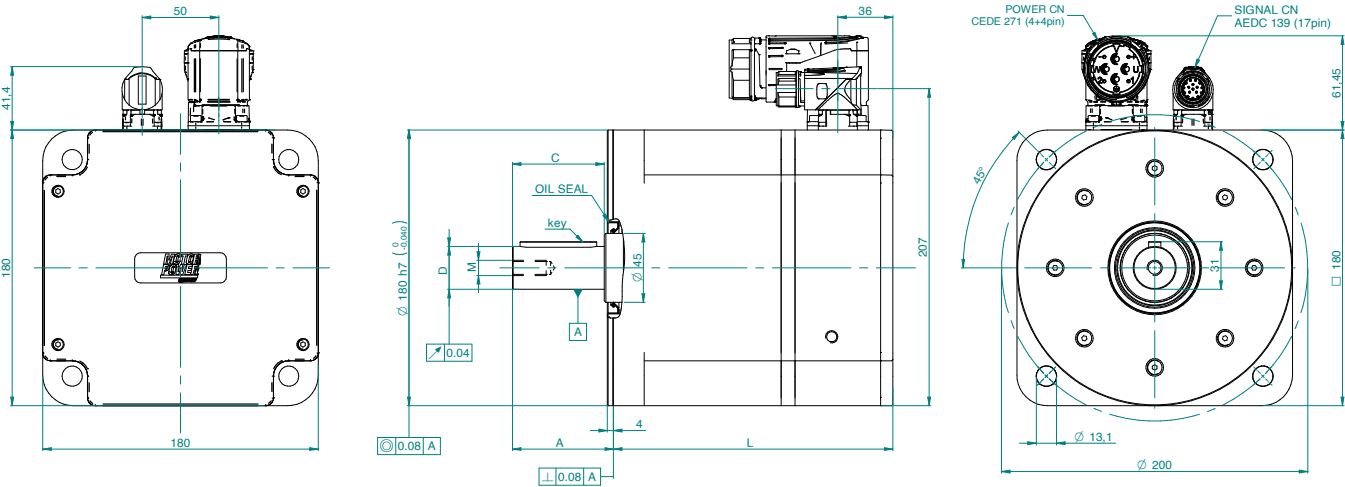


TC4 180

EXTERNAL DIMENSIONS

G3/H3 connection

Model	Feedback tipe	L [mm]	L with brake [mm]	D [mm]	A [mm]	C [mm]	M	Key (b x h x l)
7A	A22-A23-M1-M2	184.5	219	28.0	66.0	60.0	M10x22	8 x 7 x 50
7C	A22-A23-M1-M2	217.5	252	28.0	66.0	60.0	M10x22	8 x 7 x 50
7D	A22-A23-M1-M2	250.5	285	38.0	86.0	80.0	M12x28	10 x 8 x 70
7E	A22-A23-M1-M2	294.5	329	38.0	86.0	80.0	M12x28	10 x 8 x 70
7F	A22-A23-M1-M2	357.5	392	38.0	86.0	80.0	M12x28	10 x 8 x 70
7A	A1-A15-A16-R1	200.5	235	28.0	66.0	60.0	M10x22	8 x 7 x 50
7C	A1-A15-A16-R1	233.5	268	28.0	66.0	60.0	M10x22	8 x 7 x 50
7D	A1-A15-A16-R1	266.5	301	38.0	86.0	80.0	M12x28	10 x 8 x 70
7E	A1-A15-A16-R1	310.5	345	38.0	86.0	80.0	M12x28	10 x 8 x 70
7F	A1-A15-A16-R1	373.5	408	38.0	86.0	80.0	M12x28	10 x 8 x 70

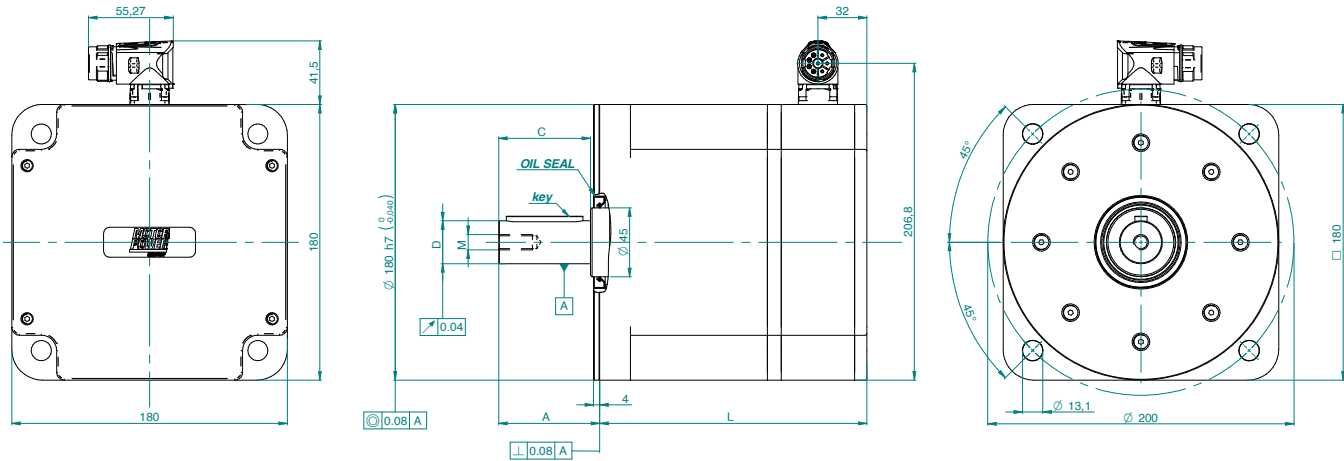


TC4 180

EXTERNAL DIMENSIONS

C21 connection

Model	Feedback tipe	L [mm]	L with brake [mm]	D [mm]	A [mm]	C [mm]	M	Key (b x h x l)
7A	A22-A23	174.5	209.0	28.0	66.0	60.0	M10x22	8 x 7 x 50
7C	A22-A23	207.5	242.0	28.0	66.0	60.0	M10x22	8 x 7 x 50
7D	A22-A23	240.5	275.0	38.0	86.0	80.0	M12x28	10 x 8 x 70
7E	A22-A23	284.5	319.0	38.0	86.0	80.0	M12x28	10 x 8 x 70
7F	A22-A23	347.5	382.0	38.0	86.0	80.0	M12x28	10 x 8 x 70



feedback

TC4 Resolver

		R1	
Motor size		TC4 60 - TC4 80	TC4 100 - TC4 130 - TC4 150 - TC4 180
Nominal voltage	[Vrms]	7±5%	
Nominal current	[mA]	50	
Phase shift	[deg]	+3°	-5°
Minimum sin amplitude	[mVrms]	20	
Frequency	[kHz]	10	
Poles number	[/]	2	
Tranformer ratio	[/]	0.5 ± 5%	
Input impedance	[Ohm]	130 + j280	110+j140
Output impedance	[Ohm]	425 + j755	130+j240
System accuracy	[']	± 10'	
Rotor inertia	[kg cm2]	0.03	0.1

TC4 Encoder

Type	M1	M2
	M-CODER IH INCREMENTAL WITH HALL SENSOR ENCODER	M-CODER ST ABSOLUTE ENCODER
Protocol/Interface	Line Driver A/B/Z - U/V/W	RS 485 2.5 Mbit
Resolution	2-5000 ppr	17-bit
Accuracy	+/- 250"	
Working temperature	-40 °C ÷ +125 °C	
Working speed	< 12.000 rpm	
Max acceleration	100.000 rad/s²	
Inertia	5.6 x 10-5 kg cm²	
Weigth	20 g	
Main supply voltage	5 - 12 V	
Current consumption	100 mA (Max)	
External battery voltage	-	
External battery current consumption	-	
Note	Condition monitoring option	

	A1	A3	A4
Type	HIPERFACE ABSOLUTE MULTITURN ENCODER	HIPERFACE DSL ABSOLUTE SINGLETURN ENCODER	HIPERFACE DSL ABSOLUTE MULTITURN ENCODER
Protocol/Interface	HIPERFACE®	HIPERFACE DSL®	
Resolution	128 line	20 bit	
N° absolute multiturn steps	4096 (12 bit)	-	4096 (12 bit)
Accuracy	4096 (12 bit)	+/- 100”	
Working temperature	-20 °C ... +100 °C	-20 °C ... +115 °C	
Working speed	<9000 rpm	<12000 rpm	
Max acceleration	500.000 rad/s²		
Inertia	4,5 gcm²		
Weigth	70 g	100 g	
Main supply voltage	7 - 12 V		
Current consumption	60 mA (withoul Load)	150 mA (max)	
External battery voltage	-		
External battery current consumption	-		
Notes	Mechanical multiturn	-	Mechanical multiturn

TC4 Encoder

	A5	A6	A15
Type	HIPERFACE SAFETY DSL SINGLETURN 20 BIT ENCODER	HIPERFACE SAFETY DSL MULTITURN 20 BIT ENCODER	HIPERFACE SAFETY DSL SINGLETURN 24 BIT ENCODER
Protocol/Interface	HIPERFACE DSL®		
Resolution	20 bit		24 bit
N° absolute multiturn steps	-	4096 (12 bit)	-
Accuracy	+/- 100''		+/- 25''
Working temperature	-20 °C ... +115 °C		-40 °C ... +115 °C
Working speed	<12000 rpm		<9000 rpm
Max acceleration	250.000 rad/s²		
Inertia	5 gcm²		
Weight	100 g		
Main supply voltage	7 - 12 V		
Current consumption	150 mA (max)		
External battery voltage	-		
External battery current consumption	-		
Notes	Mechanical multiturn		
Safety function	SIL2 (IEC 61508) PL.d (EN ISO 13849-1:2015)		

	A16	A22	A23
Type	HIPERFACE SAFETY DSL MULTITURN 24 BIT ENCODER	ENCODER SAFETY ENDAT 3 SINGLETURN 19 BIT ENCODER	ENCODER SAFETY ENDAT 3 MULTITURN 19 BIT ENCODER
Protocol/Interface	HIPERFACE DSL®	ENDAT 3®	
Resolution	24 bit	19 bit	
N° absolute multiturn steps	4096 (12 bit)	-	4096 (12 bit)
Accuracy	+/- 25''	+/- 120''	
Working temperature	-40 °C ... +115 °C	-40 °C ... +110 °C	
Working speed	<9000 rpm	<15000 rpm	<12000 rpm
Max acceleration	250.000 rad/s²	≤ 1 · 10⁵ rad/s²	
Inertia	5 gcm²	0.2 · 10⁻⁶ kgm²	
Weigth	100 g	40 g	40 g
Main supply voltage	7 - 12 V	3,6 - 14 V	
Current consumption	150 mA (Max)	95 mA at 5 V (w/o load)	115 mA at 5 V (w/o load)
External battery voltage	-	-	-
External battery current consumption	-	-	-
Note	Mechanical multiturn	-	Mechanical multiturn
Safety function	SIL2 (IEC 61508) PL.d (EN ISO 13849-1:2015)	SIL3 (IEC 61508) PL.e	

TC4 Encoder

	N1
Type	A-format 24-bit absolute multi-turn (with battery) and absolute single turn encoder (without battery). Encoder N1 available for models 40-60-80
Protocol/Interface	A-FORMAT RS 485 2,5-16Mbits
Resolution	24 bit
N° absolute multiturn steps	65536 (16 bit)
Accuracy	+/- 90''
Working temperature	-20 °C ... +105 °C
Working speed	<8000 rpm
Max acceleration	1.0 × 10⁵ rad/s²
Inertia	2.6 × 10⁻⁹ kg*m²
Weigth	13 g
Main supply voltage	5 +/- 10% V
Current consumption	80uA typical 110 uA max
External battery voltage	3,6 +/-10% V
External battery current consumption	55uA typical 110 uA max
Note	Feedback N1 is provided as singleturn device. With the multiturn usage battery must be applied. Please reach out our application team for assistance with the electric scheme connection.

specifications

TC4 Brake features

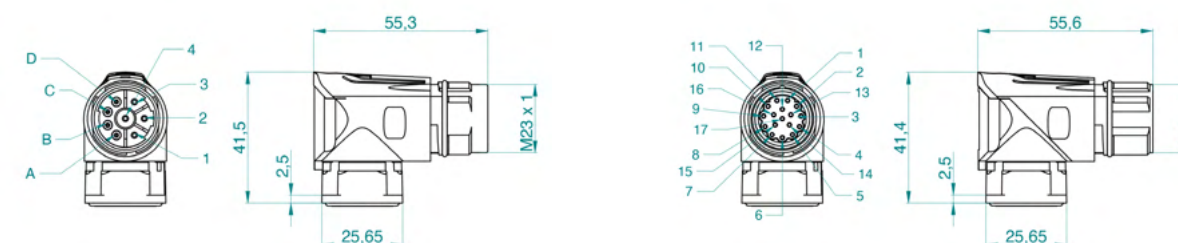
MOTOR SIZE		40	60	80	100	130	150	180
Operating motor temperature	[°C]	-20 ÷ 120						
External ambient temperature	[°C]	-20 ÷ 40						
Standard brake duty	-	Stationary						
Minimum dry static torque (-20 ÷ 120 °C)	[Nm]	0.32	1.3	2.5	6.5	9.6	32	48
Nominal operating voltage (± 10 %)	[Vdc]	24						
Power consumption at 20 °C (± 7 %)	[W]	4.35	11.2	10.2	10.4	19.7	30	49.6
Release time	[ms]	22	58	46	49	71	185	120
Brake release time (pull-in)	[ms]	77	25	58	30	39	66	37
Maximum backlash	[deg]	1.2						

TC4 Wiring motor connection

Connectors with G2 connection

Power connector		Feedback connector				
Pin	Function	Pin	A1	M1	N1	R1
1	Phase U	1	-	Hall W	-	-
2	PE	2	-	Hall U	-	-
3	Phase W	3	0 Vdc	0 Vdc	0 Vdc	-
4	Phase V	4	7-12 Vdc	+5 Vdc	+5 Vdc	-
A	Brake + (#)	5	/sin	/ChA	/data	/sin
B	Brake - (#)	6	sin	ChA	data	sin
C	PT 1000 +	7	/data	/ChZ	-	/ref
D	PT 1000 -	8	data	ChZ	-	ref
		9	-	Hall V	-	-
		10	shield	shield	shield	shield
		11	/cos	/ChB	-	/cos
		12	cos	ChB	-	cos
		13	-	Hall /W	-	-
		14	-	Hall /V	-	-
		15	-	Hall /U	-	-
		16	-	-	-	-
		17	-	-	-	-

(#) Optional





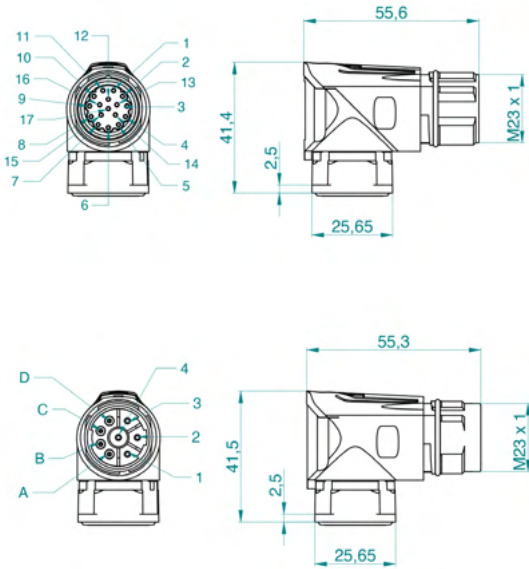
Connectors with H2 connection

Power connector		Feedback connector				
Pin	Function	Pin	A1	M1	N1	R1
1	Phase U	1	-	Hall W	-	-
2	PE	2	-	Hall U	-	-
3	Phase W	3	0 Vdc	0 Vdc	0 Vdc	-
4	Phase V	4	7-12 Vdc	+5 Vdc	+5 Vdc	-
A	brake + (#)	5	/sin	/ChA	/data	/sin
B	brake - (#)	6	sin	ChA	data	sin
C	-	7	/data	/ChZ	-	/ref
D	-	8	data	ChZ	-	ref
		9	-	Hall V	-	-
		10	shield	shield	shield	shield
		11	/cos	/ChB	-	/cos
		12	cos	ChB	-	cos
		13	-	Hall /W	-	-
		14	-	Hall /V	-	-
		15	-	Hall /U	-	-
		16	PT 1000 +	PT 1000 +	PT 1000 +	PT 1000 +
		17	PT 1000 -	PT 1000 -	PT 1000 -	PT 1000 -

(#) Optional

One cable connector with C21 connection

Pin	Function
1	Phase U
2	PE
3	Phase W
4	Phase V
A	Data +
B	Data -
C	Brake +
D	Brake -



Connectors with G3 connection

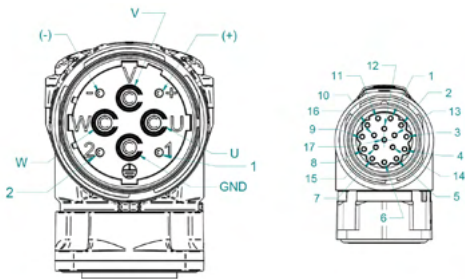
Power connector		Feedback connector			
Pin	Function	Pin	A1	M1	R1
U	Phase U	1	-	-	-
PE	PE	2	-	-	-
W	Phase W	3	0 Vdc	shield	-
V	Phase V	4	7-12 Vdc	S1	-
+	brake + (#)	5	/sin	/S1	/sin
-	brake - (#)	6	sin	S2	sin
1	PT 1000 +	7	/data	/S2	/ref
2	PT 1000 -	8	data	S3	ref
		9	-	/S3	-
		10	shield	ChA	shield
		11	/cos	Index	/cos
		12	cos	/Index	cos
		13	-	/ChA	-
		14	-	ChB	-
		15	-	/ChB	-
		16	-	+5 Vdc	-
		17	-	0 Vdc	-

(#) Optional

Connectors with H3 connection

Power connector		Feedback connector			
Pin	Function	Pin	A1	M1	R1
U	Phase U	1	-	PT 1000 +	-
PE	PE	2	-	PT 1000 -	-
W	Phase W	3	0 Vdc	shield	-
V	Phase V	4	7-12 Vdc	S1	-
+	brake + (#)	5	/sin	/S1	/sin
-	brake - (#)	6	sin	S2	sin
1	-	7	/data	/S2	/ref
2	-	8	data	S3	ref
		9	-	/S3	-
		10	shield	ChA	shield
		11	/cos	Index	/cos
		12	cos	/Index	cos
		13	-	/ChA	-
		14	-	ChB	-
		15	-	/ChB	-
		16	PT 1000 +	+5 Vdc	PT 1000 +
		17	PT 1000 -	0 Vdc	PT 1000 -

(#) Optional



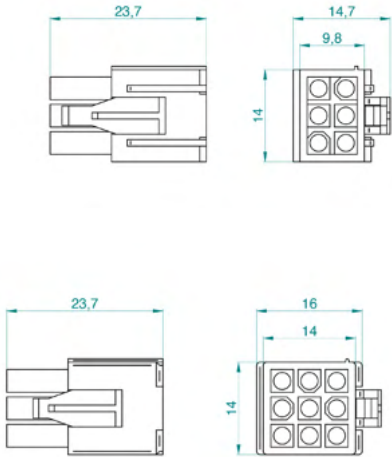
TC4 Wiring motor connection



Connectors with D0 connection (9 pins, only for models 40-60-80)

Power connector		Feedback connector			
Pin	Function	Pin	A1	N1	R1
1	Phase U	1	data +	data +	sin
2	Phase V	2	+ sin	-	/sin
3	Phase W	3	Refsin	-	cos
4	PE	4	data -	data -	/cos
5	PT 1000 + / brake + (#)	5	+ cos	-	ref
6	PT 1000 - / brake - (#)	6	Refcos	-	/ref
		7	8V / us	+ 5V	-
		8	0V	0V	-
		9	shield	shield	shield

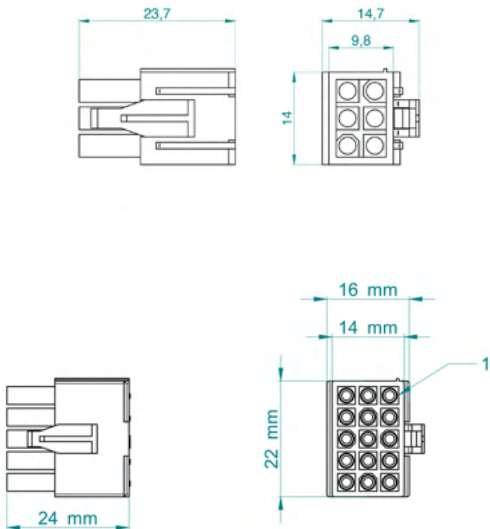
(#) Optional



Connectors with D2 connection (15 pins, only for models 40-60-80)

Power connector		Feedback connector	
Pin	Function	Pin	M1
1	Phase U	1	Ch A
2	Phase V	2	Ch/A
3	Phase W	3	Ch B
4	PE	4	Ch/B
5	PT 1000 + / brake + (#)	5	Ch Z
6	PT 1000 - / brake - (#)	6	Ch/Z
		7	Hall U
		8	Hall/U
		9	Hall V
		10	Hall/V
		11	Hall W
		12	Hall/W
		13	5 Vdc
		14	0 Vdc
		15	Shield

(#) Optional



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