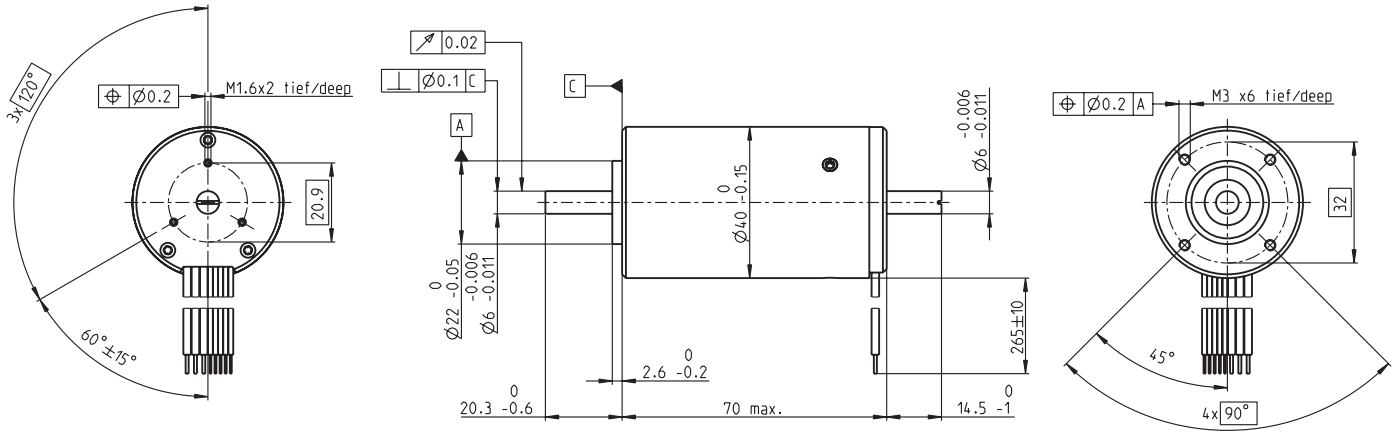


EC 40 Ø40 mm, brushless, 120 Watt

NRND See page 13
Not recommended for New Design



M 1:2

- Stock program
- Standard program
- Special program (on request)

Part Numbers

167176 167177 118894 118895 167178 167179 118896 118897 167180 118898 167181 167183 118899 118901

Motor Data

Values at nominal voltage		12	18	21	30	24	36	42	48	48	48	48	48	48
1 Nominal voltage	V	12	18	21	30	24	36	42	48	48	48	48	48	48
2 No load speed	rpm	10300	12000	10400	11600	10300	9830	10400	7560	10300	5930	5420	3530	2020
3 No load current	mA	886	754	515	426	443	275	258	139	222	97.8	86.2	48.6	24.4
4 Nominal speed	rpm	9050	10900	9240	10500	9160	8710	9290	6450	9190	4830	4290	2400	893
5 Nominal torque (max. continuous torque)	mNm	107	113	116	120	120	123	122	127	123	130	126	127	129
6 Nominal current (max. continuous current)	A	10.4	8.62	6.46	5.24	5.78	3.76	3.40	2.22	2.96	1.77	1.57	1.03	0.920
7 Stall torque	mNm	985	1340	1150	1420	1210	1200	1280	940	1270	743	639	410	237
8 Starting current	A	89.2	94.4	60.1	57.9	55.0	34.6	33.5	15.7	28.8	9.72	7.65	3.21	2.56
9 Max. efficiency	%	81	83	83	84	83	83	84	82	84	81	80	77	72
Characteristics														
10 Terminal resistance phase to phase	Ω	0.134	0.191	0.349	0.518	0.436	1.04	1.25	3.07	1.66	4.94	6.28	14.9	44.8
11 Terminal inductance phase to phase	mH	0.0266	0.0439	0.0797	0.132	0.106	0.263	0.319	0.788	0.425	1.28	1.52	3.56	10.7
12 Torque constant	mNm/A	11.0	14.2	19.1	24.6	22.1	34.7	38.2	60.1	44.1	76.4	83.5	128	221
13 Speed constant	rpm/V	865	673	500	389	433	275	250	159	216	125	114	74.8	43.2
14 Speed/torque gradient	rpm/mNm	10.5	9.05	9.13	8.20	8.55	8.26	8.20	8.12	8.16	8.07	8.59	8.76	8.75
15 Mechanical time constant	ms	9.39	8.06	8.13	7.30	7.61	7.35	7.30	7.22	7.26	7.18	7.64	7.79	7.78
16 Rotor inertia	gcm ²	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0

Specifications

Thermal data	
17 Thermal resistance housing-ambient	3.2 K/W
18 Thermal resistance winding-housing	1.2 K/W
19 Thermal time constant winding	17.1 s
20 Thermal time constant motor	1050 s
21 Ambient temperature	-20...+100°C
22 Max. permissible winding temperature	+125°C

Mechanical data (preloaded ball bearings)	
23 Max. permissible speed	18000 rpm
24 Axial play at axial load < 8 N	0 mm
24 Axial play at axial load > 8 N	max. 0.14 mm
25 Radial play	preloaded
26 Max. axial load (dynamic)	7 N
27 Max. force for press fits (static) (static, shaft supported)	133 N
27 Max. force for press fits (static) (static, shaft supported)	5000 N
28 Max. radial loading, 5 mm from flange	70 N

Other specifications	
29 Number of pole pairs	1
30 Number of phases	3
31 Weight of motor	390 g

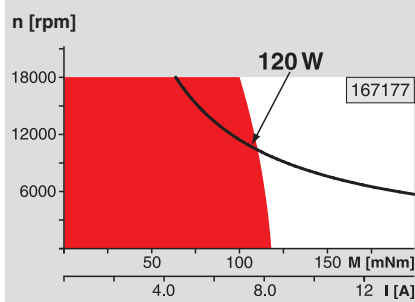
Values listed in the table are nominal.
Explanation of the figures on page 161

Connection motor (Cable AWG 22)
red Motor winding 1
black Motor winding 2
white Motor winding 3

Connection sensors (Cable AWG 26)¹⁾
green VHall 4.5 ... 24 VDC
blue GND
red/grey Hall sensor 1
black/grey Hall sensor 2
white/grey Hall sensor 3
Wiring diagram for Hall sensors see p. 35

1) Not lead through in combination with resolver.

Operating Range



Comments

Continuous operation
In observation of above listed thermal resistance (lines 17 and 18) the maximum permissible winding temperature will be reached during continuous operation at 25°C ambient.
= Thermal limit.

Short term operation
The motor may be briefly overloaded (recurring).

— Assigned power rating

maxon Modular System

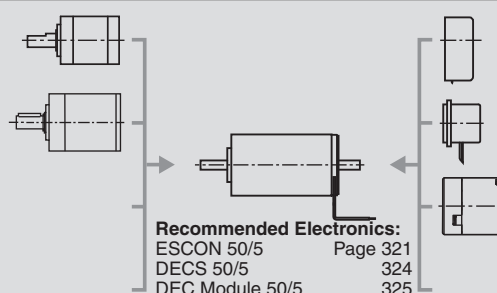
Overview on page 20 - 25

Planetary Gearhead

Ø42 mm
3 - 15 Nm
Page 270

Planetary Gearhead

Ø52 mm
4 - 30 Nm
Page 273



Recommended Electronics:

ESCON 50/5	Page 321
DECS 50/5	324
DEC Module 50/5	325
EPOS2 24/5, 50/5, 70/10	331
EPOS2 P 24/5	334
Notes	24

Encoder HED_5540

500 CPT,
3 channels
Page 306/308

Resolver Res 26

Ø26 mm
10 V
Page 316

Brake AB 28

24 VDC
0.4 Nm
Page 348