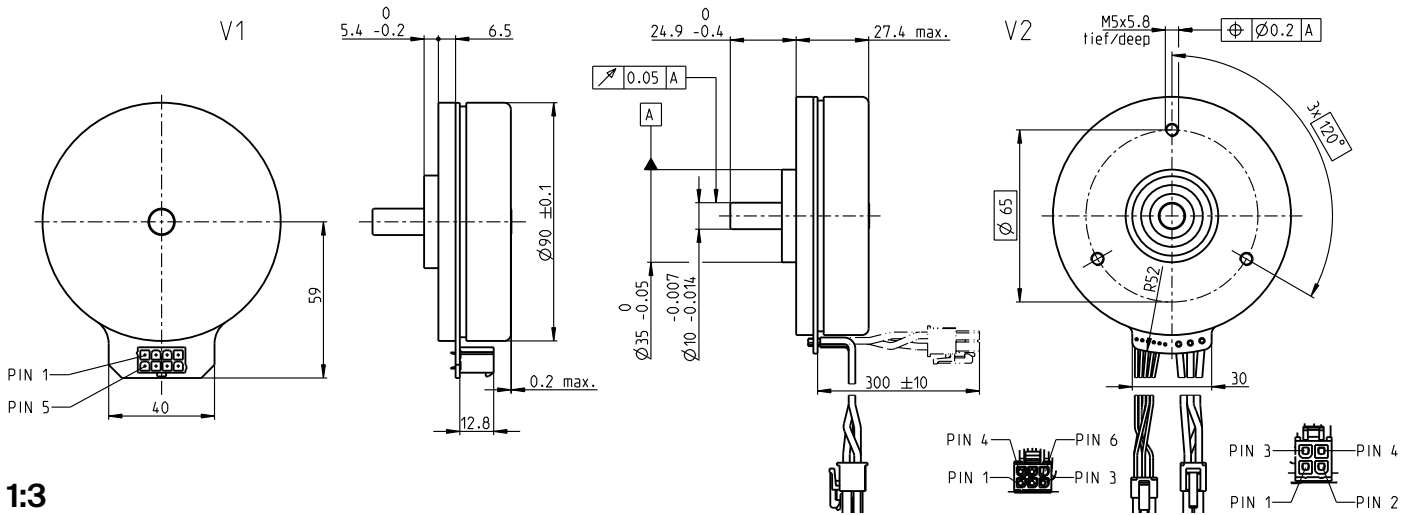


# EC 90 flat Ø90 mm, brushless, 160 watt



EC flat

## M 1:3

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

### Part Numbers

	586655	515458	505592	580047
V1 with Hall sensors				
V2 with Hall sensors and cables	607321	607322	607323	607324

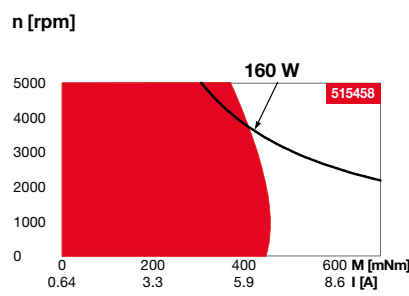
### Motor Data

Values at nominal voltage		V	12	24	36	60
1 Nominal voltage	V		12	24	36	60
2 No load speed	rpm		3170	3170	3070	2600
3 No load current	mA		1320	658	420	197
4 Nominal speed	rpm		2710	2720	2640	2200
5 Nominal torque (max. continuous torque)	mNm		458	457	453	460
6 Nominal current (max. continuous current)	A		12.8*	6.39	4.09	2.1
7 Stall torque <sup>1</sup>	mNm		7400	7910	7580	6410
8 Stall current	A		208	111	68.9	29.6
9 Max. efficiency	%		85	85	85	85
<b>Characteristics</b>						
10 Terminal resistance phase to phase	Ω		0.0577	0.216	0.523	2.03
11 Terminal inductance phase to phase	mH		0.058	0.232	0.554	2.15
12 Torque constant	mNm/A		35.6	71.2	110	217
13 Speed constant	rpm/V		268	134	86.8	44.1
14 Speed/torque gradient	rpm/mNm		0.435	0.407	0.412	0.412
15 Mechanical time constant	ms		14.4	13.5	13.7	13.7
16 Rotor inertia	gcm <sup>2</sup>		3170	3170	3170	3170

### Specifications

- Thermal data**
- 17 Thermal resistance housing-ambient 1.75 K/W
  - 18 Thermal resistance winding-housing 3.71 K/W
  - 19 Thermal time constant winding 69.8 s
  - 20 Thermal time constant motor 260 s
  - 21 Ambient temperature -40...+100°C
  - 22 Max. winding temperature +125°C
- Mechanical data (preloaded ball bearings)**
- 23 Max. speed 5000 rpm
  - 24 Axial play at axial load 0.14 mm
  - 25 Radial play preloaded
  - 26 Max. axial load (dynamic) 34 N
  - 27 Max. force for press fits (static) (static, shaft supported) 440 N
  - 28 Max. radial load, 10 mm from flange 8000 N

### 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**

### Other specifications

- 29 Number of pole pairs 11
- 30 Number of phases 3
- 31 Weight of motor 630 g

Details on catalog page 46

Values listed in the table are nominal.

Connection V1		V2 (sensors, AWG 24)	
Pin 1	Hall sensor 1	Pin 1	Hall sensor 1
Pin 2	Hall sensor 2	Pin 2	Hall sensor 2
Pin 3	V <sub>Hall</sub> 4.5...24 VDC	Pin 3	Hall sensor 3
Pin 4	Motor winding 3	Pin 4	GND
Pin 5	Hall sensor 3	Pin 5	V <sub>Hall</sub> 4.5...24 VDC
Pin 6	GND	Pin 6	N.C.
Pin 7	Motor winding 1		
Pin 8	Motor winding 2		

V2 (motor, AWG 16)	
Pin 1	Motor winding 1
Pin 2	Motor winding 2
Pin 3	Motor winding 3
Pin 4	N.C.

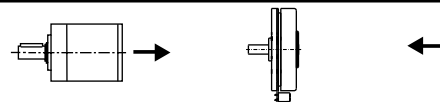
Wiring diagram for Hall sensors see p. 59

Connector	Part number
Molex 46015-0806	43025-0600
Molex	39-01-2040

**Connection cable for V1**  
Universal, L = 500 mm **339380**  
to EPOS4, L = 500 mm **354045**  
<sup>1</sup>Calculation does not include saturation effect (p. 71/178)

### maxon Modular System

**Planetary Gearhead**  
Ø52 mm  
4-30 Nm  
Page 410-411



**Encoder MILE**  
512-6400 CPT,  
2 channels  
Page 463

### Recommended Electronics:

Notes	Page 46
ESCON Mod. 50/4 EC-S	501
ESCON Mod. 50/5	501
ESCON Mod. 50/8 (HE)	502
ESCON 50/5	503
ESCON 70/10	503
DEC Module 50/5	505
EPOS4 Mod./Comp. 50/5	510
EPOS4 Mod./Comp. 50/8	511
EPOS4 Mod./Comp. 50/15	514
EPOS4 50/5	515
EPOS4 70/15	515
EPOS4 Disk 60/12	517

Note: The cable alignment relative to the mounting holes of the gearhead is not defined.

\*In combination with EPOS4 positioning controllers, the connector technology limits the nominal current (max. continuous current load) is limited to 11 A.