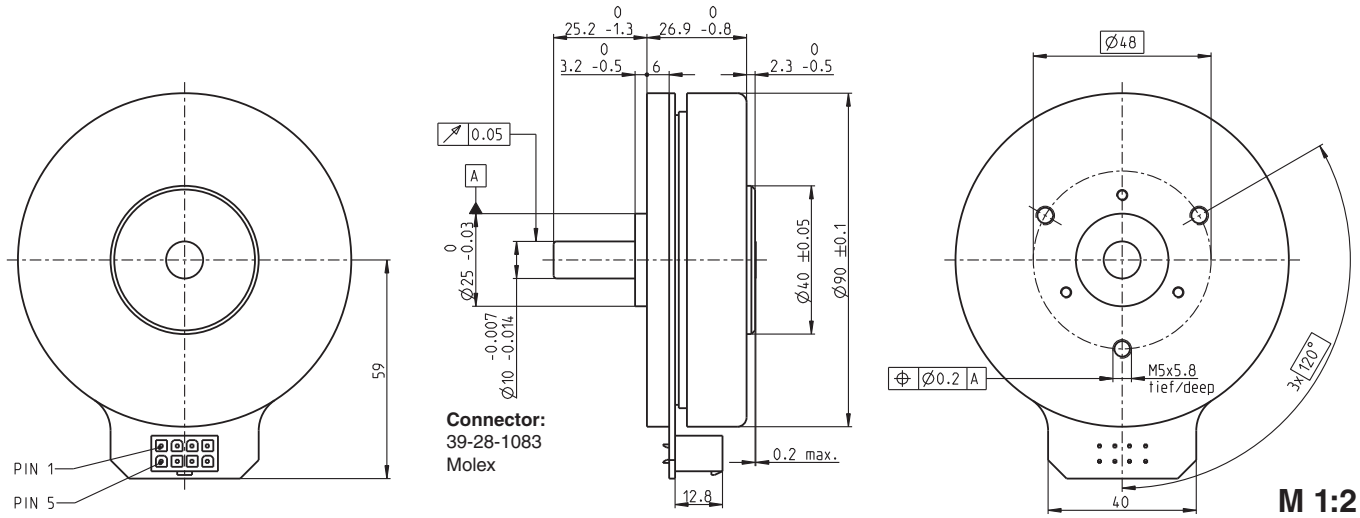


# EC 90 flat $\varnothing 90$ mm, brushless, 90 Watt



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

| Part Numbers      |        |        |        |
|-------------------|--------|--------|--------|
|                   |        |        |        |
| with Hall sensors | 323772 | 429271 | 244879 |

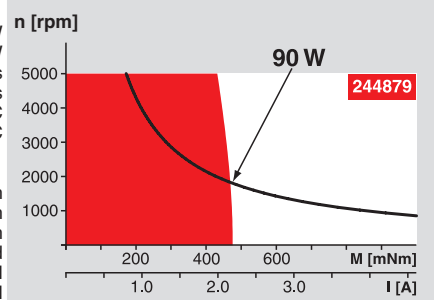
## Motor Data

|   |                  | 24 V  | 36 V  | 48 V  |
|---|------------------|-------|-------|-------|
| <b>Values at nominal voltage</b>            |                  |       |       |       |
| 1 Nominal voltage                           | V                | 24    | 36    | 48    |
| 2 No load speed                             | rpm              | 3190  | 3120  | 2080  |
| 3 No load current                           | mA               | 544   | 348   | 135   |
| 4 Nominal speed                             | rpm              | 2590  | 2510  | 1610  |
| 5 Nominal torque (max. continuous torque)   | mNm              | 444   | 560   | 533   |
| 6 Nominal current (max. continuous current) | A                | 6.06  | 4.76  | 2.27  |
| 7 Stall torque                              | mNm              | 4690  | 5730  | 4460  |
| 8 Starting current                          | A                | 70    | 69    | 21.1  |
| 9 Max. efficiency                           | %                | 84    | 87    | 85    |
| <b>Characteristics</b>                      |                  |       |       |       |
| 10 Terminal resistance phase to phase       | $\Omega$         | 0.343 | 0.522 | 2.28  |
| 11 Terminal inductance phase to phase       | mH               | 0.264 | 0.625 | 2.5   |
| 12 Torque constant                          | mNm/A            | 70.5  | 109   | 217   |
| 13 Speed constant                           | rpm/V            | 135   | 88    | 44    |
| 14 Speed/torque gradient                    | rpm/mNm          | 0.659 | 0.423 | 0.462 |
| 15 Mechanical time constant                 | ms               | 21.1  | 13.6  | 14.8  |
| 16 Rotor inertia                            | gcm <sup>2</sup> | 3060  | 3060  | 3060  |

## Specifications

- Thermal data**
- 17 Thermal resistance housing-ambient: 1.91 K/W
  - 18 Thermal resistance winding-housing: 2.6 K/W
  - 19 Thermal time constant winding: 46.6 s
  - 20 Thermal time constant motor: 283 s
  - 21 Ambient temperature: -40...+100°C
  - 22 Max. permissible winding temperature: +125°C
- Mechanical data (preloaded ball bearings)**
- 23 Max. permissible speed: 5000 rpm
  - 24 Axial play at axial load < 15 N: 0 mm
  - > 15 N: 0.14 mm
  - 25 Radial play preloaded: 0.14 mm
  - 26 Max. axial load (dynamic): 12 N
  - 27 Max. force for press fits (static) (static, shaft supported): 183 N
  - 28 Max. radial loading, 7.5 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: 12
- 30 Number of phases: 3
- 31 Weight of motor: 600 g

Values listed in the table are nominal.

### Connection

- Pin 1: Hall sensor 1
  - Pin 2: Hall sensor 2
  - Pin 3: V<sub>Hall</sub> 4.5...18 VDC
  - Pin 4: Motor winding 3
  - Pin 5: Hall sensor 3
  - Pin 6: GND
  - Pin 7: Motor winding 1
  - Pin 8: Motor winding 2
- Wiring diagram for Hall sensors see p. 31

### Cable

- Connection cable Universal, L = 500 mm: **339380**
- Connection cable to EPOS2, L = 500 mm: **354045**

## maxon Modular System

**Planetary Gearhead**

- $\varnothing 52$  mm
- 4 - 30 Nm
- Page 274

**Encoder MILE**

800 - 6400 CPT,  
2 channels  
Page 294

**Recommended Electronics:**

- ESCON 50/5 Page 321
- ESCON Module 50/5 321
- ESCON 70/10 321
- DECS 50/5 324
- DEC Module 50/5 325
- EPOS2 24/5, 50/5, 70/10 331
- EPOS2 P 24/5 334
- EPOS3 70/10 EtherCAT 337
- Notes 24