



ENG

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HARSH

# ESS Stepper Motor

made of stainless steel for tough environmental conditions

RoHS  
compliant

CE

The phytron ESS stainless steel series is designed for the toughest environmental conditions.

The ESS series consists of the motor sizes 45, 59, 80 and 100 with holding torques between 0.15 and 5.5 Nm.

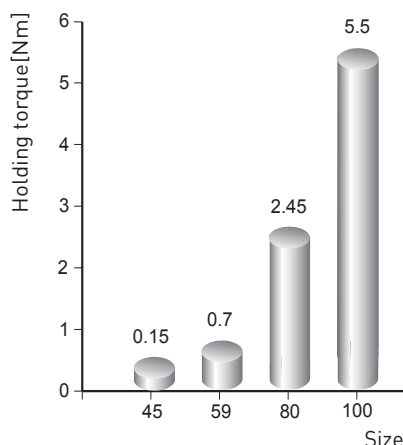
## Extreme Environment

The experience of more than 20 years phytron extreme environment stepper motor development results in reliable products for special requirements.

Due to their construction, the ESS motors are specified for surface temperatures from -40 to +150 °C.

The IP 67 protection class allows the ESS motors to operate under high air humidity, condensation and hoarfrost.

Particularly in the maritime and in the chemical industry, in modified version also in the food and fish processing industry, the ESS series proves its enormous advantages.



## In Focus



high precision

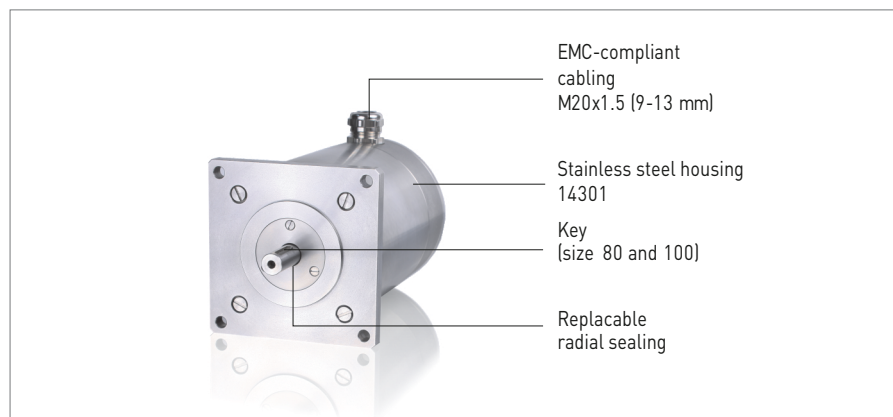


temperature

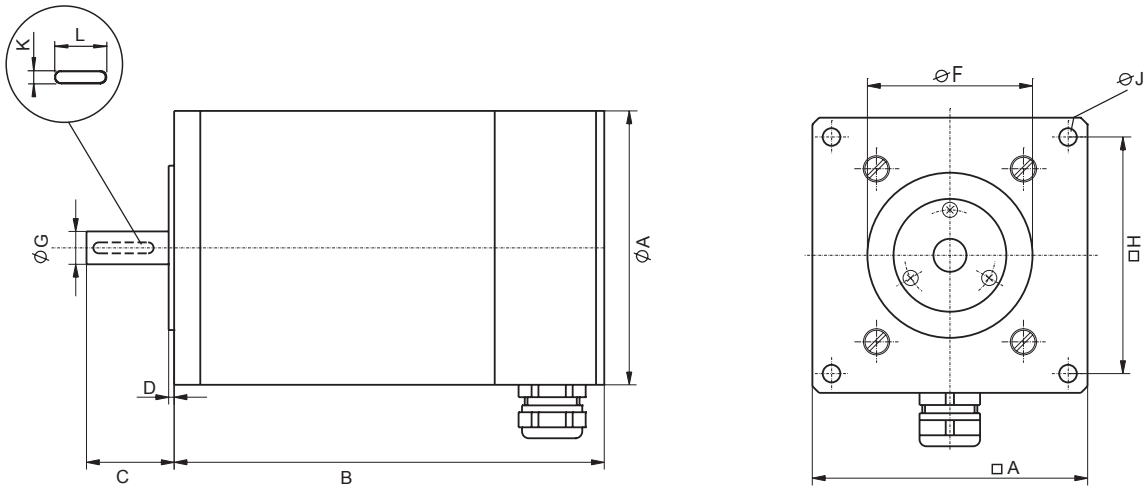


smooth running

- 2-phase hybrid stepper motors
- 4-leads, parallel windings
- Stainless steel housing
- 4 standard size: 45, 59, 80 und 100
- Admissible surface temperature range: -40 bis +150 °C
- Protection class IP 67, rel. humidity 95 %
- Holding torques from 150 mNm to 5.5 Nm
- Standard number of steps/rev: 200, step angle: 1.8°
- Design voltage acc. to EN 60034:
  - ESS 45 and 59: 100 V<sub>AC</sub>
  - ESS 80 and 100: 200 V<sub>AC</sub>
- Insulation class C acc. to VDE 0530
- Test voltage:
  - ESS 45: 560 VAC
  - ESS 59 and ESS 80/100: 1200 VAC
- EMC-compliant cabling 20x1.5 (9-13 mm)
- Replaceable radial sealing



## Dimensions Stepper motor ESS / Key / Flange / Shaft



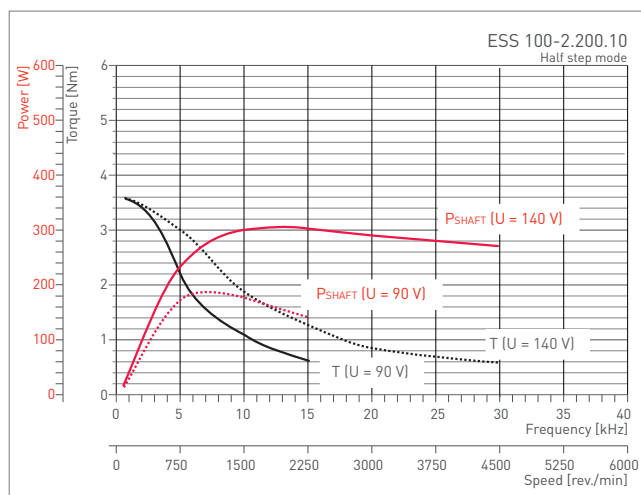
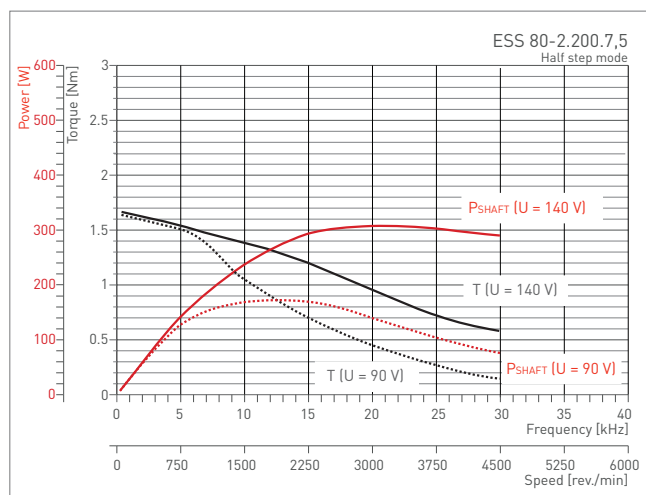
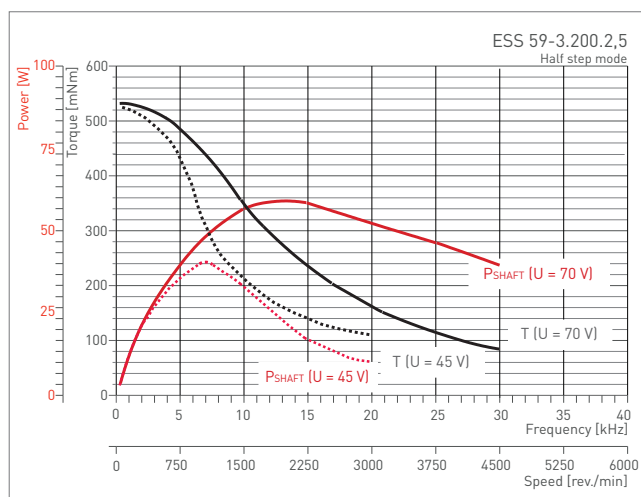
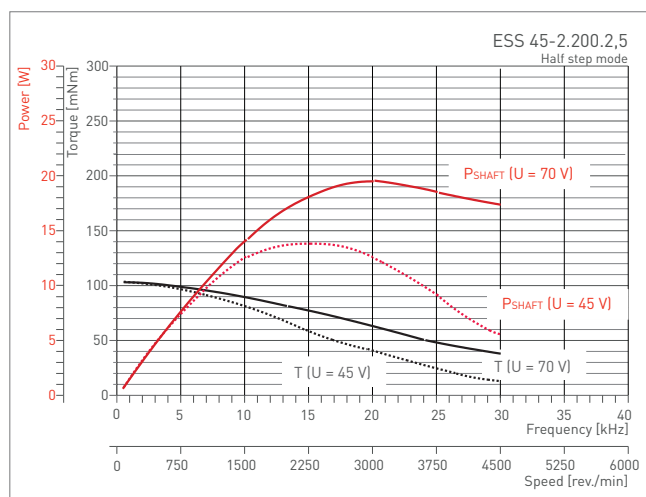
## Dimensions / Mechanical and Electrical Characteristics

Size	Standard design 200-steps/rev.											Electrical Characteristics <sup>2)</sup>			Standards			Mechanical Characteristics				
												Current per phase I	Resistance per phase <sup>3)</sup>	Inductance per phase <sup>3)</sup>	Protection class	High voltage test	Design voltage	Holding torque	Detent torque	Mass inertia	Bearing load	
		A	B	C	D	F	G <sup>1)</sup>	H	J	K	L										A	Ω
45	ESS 45-2.200.2,5	45	81	16	1.5	22	5	38	3.2	-	-	2.5	0.34	0.6	IP 67	EN 60034-1 2005	>100	0.15	0.005	0.045	20	40
59	ESS 59-3.200.2,5	59	98.5	22	1.5	38	6.35	49	5.2	-	-	2.5	0.8	2				0.7	0.05	0.24	40	80
80	ESS 80-2.200.7,5	80	131	27	2	50	10	68	6.4	3	20	7.5	0.2	2			>200	2.45	0.12	1.24	50	180
100	ESS 100-2.200.10	100	157	32	2	60	12	86	6.4	4	22	10	0.15	2.1				5.5	1.14	4.4	70	300

<sup>1)</sup> Shaft diameter tolerance: g5<sup>2)</sup> Electrical connection, 4-leads, parallel connected, bipolar control mode<sup>3)</sup> ± 10%

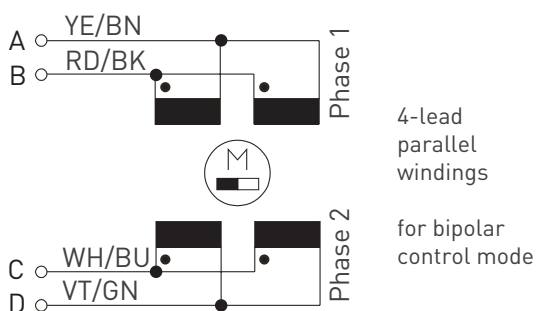
## Frequency and Power Characteristics

The curves correspond to the limit values of the operational characteristics (M) as a function of the control pulses (frequency/speed), for two different supply voltages (U). The motor connection type is 4-leads with parallel windings. The motors are controlled by phytron stepper motor power stages in the half-step mode. For each frequency curve, the power characteristic ( $P_{\text{SHAFT}}$ ) indicates the power delivered by the output shaft.



## ESS Connection Diagram

The phytron stepper motors ESS are standard wired as 4-lead parallel windings.



Important:

All values and characteristics given above were measured at ambient temperature of 25 °C (77 °F).

# Harsh

## Ordering Code

	Type	Edge dimension	Length	Number of steps	Nominal current	Winding	
Ordering Code	ESS	59 - 3	200	2.5	4Lp	XX	

## Options

Edge dimension / Length	45-2 / 59-3 / 80-2 / 100-2
Nominal current	45-2 and 59-3: 2.5 A 80-2: 7.5 A 100-2: 10 A
Option	

## Optional Accessories

- Shielded temperature cable
- Motor cable set
- Motor connector set
- Gear shaft sealings

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