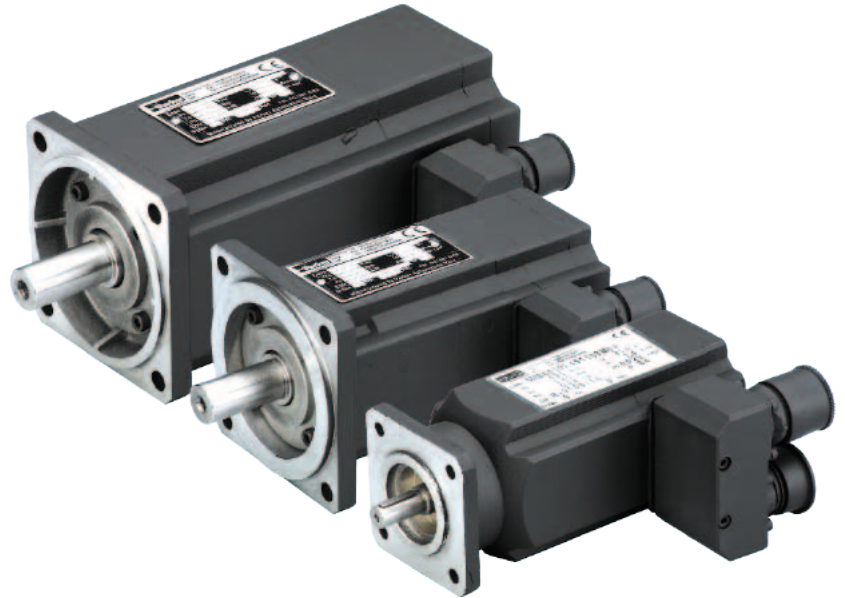
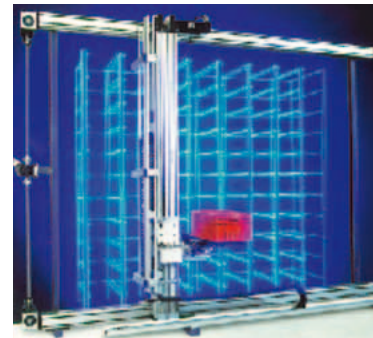


aerospace  
climate control  
**electromechanical**  
filtration  
fluid & gas handling  
hydraulics  
pneumatics  
process control  
sealing & shielding



## SMB / SMH Series

Low Inertia Servo Motors



ENGINEERING YOUR SUCCESS.



**WARNING – USER RESPONSIBILITY**

**FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.**

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# Parker Hannifin

## The global leader in motion and control technologies

### A world class player on a local stage

#### Global Product Design

Parker Hannifin has more than 40 years experience in the design and manufacturing of drives, controls, motors and mechanical products. With dedicated global product development teams, Parker draws on industry-leading technological leadership and experience from engineering teams in Europe, North America and Asia.

#### Local Application Expertise

Parker has local engineering resources committed to adapting and applying our current products and technologies to best fit our customers' needs.

#### Manufacturing to Meet Our Customers' Needs

Parker is committed to meeting the increasing service demands that our customers require to succeed in the global industrial market. Parker's manufacturing teams seek continuous improvement through the implementation of lean manufacturing methods throughout the process. We measure ourselves on meeting our customers' expectations of quality and delivery, not just our own. In order to meet these expectations, Parker operates and continues to invest in our manufacturing facilities in Europe, North America and Asia.

#### Electromechanical Worldwide Manufacturing Locations

##### Europe

Littlehampton, United Kingdom  
Dijon, France  
Offenburg, Germany  
Filderstadt, Germany  
Milan, Italy

##### Asia

Wuxi, China  
Chennai, India

##### North America

Rohnert Park, California  
Irwin, Pennsylvania  
Charlotte, North Carolina  
New Ulm, Minnesota



Offenburg, Germany

#### Local Manufacturing and Support in Europe

Parker provides sales assistance and local technical support through a network of dedicated sales teams and authorized technical distributors throughout Europe.

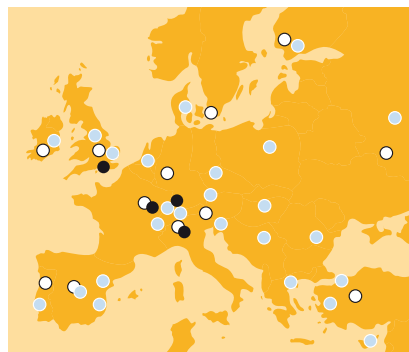
For contact information, please refer to the Sales Offices on the back cover of this document or visit [www.parker.com](http://www.parker.com)



Milan, Italy



Littlehampton, UK



- Electromechanical Manufacturing
- Parker Sales Offices
- Distributors



Dijon, France

# Low Inertia Servo Motors - SMB / SMH

## Overview

### Description

The SMB / SMH\* Series of highly-dynamic brushless servo motors have been design to combine the cutting-edge technology of Parker Hannifin products with an extremely high performance.

Thanks to the innovative "salient pole" technology, the motor's dimensions are considerably reduced with significant advantages in terms of specific torque, overall dimensions and dynamic performance. Compared to traditional-technology brushless servo motors, the specific torque is approximately 30 % higher, overall dimensions are considerably reduced and, consequently rotor inertias are extremely low. Thanks to the high quality of Neodymium-Iron-Boron magnets, and also the encapsulation method used to fasten them to the shaft, the SMB/H motors can achieve very high acceleration and withstand high overloads without risk of demagnetisation or detachment of the magnets.

Specific applications for the SMB/H Series include all types especially those for the packaging and handling industry, and all those applications where very high dynamic performances and very low inertias are required.

### Features

- High number of feedback options
- Customised windings/voltages
- Increased Inertia option
- Multiple connection options

### Application

- Food, Pharma & Beverage
- Packaging Machines
- Material Forming
- Material Handling
- Factory Automation
- Life Science Diagnostic
- Automotive Industry / In-Plant
- Printing Industry
- Textile Machines
- Robotics
- Servo Hydraulic Pumps



### Technical Characteristics - Overview

<b>Motor Type</b>	Permanent magnets synchronous servomotor
<b>Rotor Design</b>	Rotor with surface rare earth magnets
<b>Number of poles</b>	10 for SM_ 42 8 for SM_ 60-82-100-115-142-170
<b>Power Range</b>	0.1 – 9.4 kW
<b>Torque Range</b>	0.35 – 60 Nm
<b>Speed Range</b>	0 – 7500 min <sup>-1</sup>
<b>Mounting</b>	Flange with smooth holes
<b>Shaft End</b>	Plain keyed shaft Plain smooth shaft (option)
<b>Cooling</b>	Natural ventilation
<b>Protection Level (IEC60034-5)</b>	IP64 IP65 (option/standard for SM_170) IP67 (option for SM_170)
<b>Feedback sensor</b>	Resolver Absolute Endat or Hiperface Incremental Encoder
<b>Thermal protection</b>	PTC for SMB and KTY for SMH
<b>Other options</b>	Brake Second shaft Increased inertia
<b>Marking</b>	CE / UL (SM_42 and SM_170 excluded)
<b>Voltage Supply</b>	80 / 230 / 400 VAC other voltage under request
<b>Temperature Class</b>	Class F
<b>Connections</b>	Rotatable connectors Flying cables Terminal Box (see table option for combination) Special connector (under request)

\* SMB: for Drives TPD-M, SLVD-N, TWIN-N, SPD-N, Hi-Drive  
SMH: for Drive Compax3

# Technical Characteristics

## Technical Data

### 230 VAC supply voltage

Model <sup>(4)</sup>	Size	Stall <sup>(1)</sup>		Nominal <sup>(1)</sup>			Peak <sup>(1)</sup>	Inertia		Ke <sup>(2) (3)</sup>	Kt <sup>(2) (3)</sup>
		Torque	Current	Torque	Speed	Current	Torque	No brake	With brake		
		T <sub>065</sub> (T <sub>105</sub> ) [Nm]	I <sub>065</sub> [A]	T <sub>n065</sub> [Nm]	n [min <sup>-1</sup> ]	I <sub>n065</sub> [A]	T <sub>max</sub> [Nm]	J [kgmm <sup>2</sup> ]	J [kgmm <sup>2</sup> ]	Ke [Vs]	Kt [Nm/A <sub>rms</sub> ]
SM_42 60 0,35	42	0.35 0.45	0.78	0.15	6000	0.38	0.9	13	n.a.	0.29	0.46
SM_60 30 0,55	60	0.55 (0.68)	0.7	0.50	3000	0.66	1.7	18	30.5	0.44	0.76
SM_60 45 0,55			1.0	0.39	4500	0.74				0.30	0.53
SM_60 60 0,55			1.4	0.24	6000	0.60				0.23	0.40
SM_60 16 1,4		1.4 (1.7)	0.95	1.35	1600	0.91	4.4	30	42.5	0.85	1.48
SM_60 30 1,4			1.73	1.20	3000	1.50				0.47	0.81
SM_60 45 1,4			2.37	1.00	4500	1.69				0.34	0.59
SM_60 60 1,4			2.98	0.80	6000	1.70				0.27	0.47
SM_60 75 1,4			3.85	0.15	7500	0.41				0.21	0.36
SM_82 10 03	82	3 (3.7)	1.2	2.9	1000	1.2	9	140	183	1.43	2.48
SM_82 16 03			1.8	2.9	1600	1.7				0.96	1.66
SM_82 30 03			3.1	2.7	3000	2.8				0.55	0.96
SM_82 33 03			3.5	2.4	3300	2.8				0.49	0.85
SM_82 45 03			4.7	2.2	4500	3.4				0.37	0.64
SM_82 60 03			6.1	1.5	6000	3.1				0.28	0.49
SM_82 75 03			7.5	0.6	7500	1.6				0.23	0.40
SM_100 16 06	100	6 (9)	3.7	5.8	1600	3.6	18	336	440	0.92	1.60
SM_100 30 06			5.9	5.0	3000	4.9				0.59	1.02
SM_100 45 06			9.4	3.5	4500	5.5				0.37	0.64
SM_100 55 06			11.8	2.6	5500	5.1				0.29	0.51
SM_100 75 06			14.7	0.6	7500	1.5				0.24	0.41
SM_115 16 10	115	10 (12.5)	6.0	9.0	1600	5.4	32	900	1000	0.96	1.66
SM_115 30 10			10.5	8.0	3000	8.4				0.55	0.95
SM_115 40 10			14.7	7.6	4000	11.2				0.39	0.68
SM_115 54 10			18.2	7.1	5400	12.9				0.32	0.55
SM_142 18 15	142	15 (19)	9.7	13.3	1800	8.6	47	1400	1600	0.89	1.54
SM_142 30 15			16.0	12.5	3000	13.4				0.54	0.94
SM_170 11 35	170	35	13.3	30	1100	11.4	111	2900	4500	1.52	2.6
SM_170 16 35			20	28	1600	11				1.03	1.8
SM_170 30 60			29	26	2500					0.69	1.2

<sup>(1)</sup> Data referred to motor mounted on a steel flange in horizontal position with resolver and without brake. Stall torques refer to motor turning at 100 min<sup>-1</sup>

<sup>(2)</sup> Data measured at 20 °C. When "hot" consider -0.09 %/K derating

<sup>(3)</sup> Manufacturing tolerance ±10 %

<sup>(4)</sup> SMB: for Drives TPD-M, SLVD-N, Twin-N, SPD-N, Hi-Drive  
 SMH: for Drive Compax3

400 VAC power supply

Model <sup>(4)</sup>	Size	Stall <sup>(1)</sup>		Nominal <sup>(1)</sup>			Peak <sup>(1)</sup>	Inertia		Ke <sup>(2) (3)</sup>	Kt <sup>(2) (3)</sup>
		Torque	Current	Torque	Speed	Current	Torque	No brake	With brake		
		T <sub>065</sub> (T <sub>105</sub> ) [Nm]	I <sub>065</sub> [A]	T <sub>n065</sub> [Nm]	n [min <sup>-1</sup> ]	I <sub>n065</sub> [A]	T <sub>max</sub> [Nm]	J [kgmm <sup>2</sup> ]	J [kgmm <sup>2</sup> ]	Ke [Vs]	Kt [Nm/A <sub>rms</sub> ]
SM_60 30 1,4	60	1.4 (1.7)	0.95	1.2	3000	0.81	4.4	30	42.5	0.81	1.48
SM_60 45 1,4			1.37	1.0	4500	0.98				0.59	1.02
SM_60 60 1,4			1.73	0.8	6000	0.99				0.68	0.81
SM_60 75 1,4			2.15	0.15	7500	0.23				0.38	0.65
SM_82 30 03	82	3 (3.7)	1.8	2.7	3000	1.6	9	140	183	0.96	1.66
SM_82 45 03			2.7	2.2	4500	2.0				0.64	1.11
SM_82 56 03			3.1	1.6	5600	1.7				0.55	0.96
SM_82 60 03			3.5	1.7	6000	2.0				0.49	0.85
SM_82 75 03			4.4	0.6	7500	0.9			0.39	0.68	
SM_100 30 06	100	6 (9)	3.7	5.0	3000	3.1	18	336	440	0.92	1.60
SM_100 45 06			5.6	3.5	4500	3.3				0.62	1.07
SM_100 56 06			5.9	2.5	5600	2.4				0.59	1.02
SM_100 75 06			9.4	0.6	7500	0.9				0.37	0.64
SM_115 20 10	115	10 (12.5)	4.5	9.0	2000	4.06	32	900	1000	1.28	2.22
SM_115 30 10			6.0	8.0	3000	4.82				0.96	1.66
SM_115 40 10			8.0	7.6	4000	6.05				0.73	1.26
SM_115 56 10			10.5	6.0	5600	6.30				0.55	0.95
SM_142 20 15	142	15 (19)	6.4	13.0	2000	5.5	47	1400	1600	1.36	2.35
SM_142 30 15			9.7	12.5	3000	8.1				0.89	1.54
SM_142 45 15			14.4	10.9	4500	10.5				0.60	1.04
SM_142 56 15			16.0	9.2	5600	9.8				0.54	0.94
SM_142 10 17		17 (21)	3.5	16.4	1000	3.4	54			2.83	4.90
SM_142 30 17			9.6	14.0	3000	8.1				1.02	1.77
SM_142 56 17			15.8	10.6	5600	9.8				0.62	1.08
SM_170 10 35	170	35	6.8	31	1000	6.1	111	2900	4500	2.95	5.1
SM_170 20 35			13.3	27	2000	10.3				1.52	2.6
SM_170 27 35			18	22	2700	11				1.15	2.0
SM_170 30 35			20	19	3000					1.03	1.8
SM_170 10 60		60	11.7	53	1000	10.4	190	5800	7400	2.95	5.1
SM_170 20 60			22.6	44	2000	16.6				1.53	2.7
SM_170 30 60	35.7		30	3000	17.9	0.97				1.7	

<sup>(1)</sup> Data referred to motor mounted on a steel flange in horizontal position with resolver and without brake. Stall torques refer to motor turning at 100 min<sup>-1</sup>

<sup>(2)</sup> Data measured at 20 °C. When "hot" consider -0.09 %/K derating

<sup>(3)</sup> Manufacturing tolerance data ±10 %

<sup>(4)</sup> SMB: for Drives TPD-M, SLVD-N, Twin-N, SPD-N, Hi-Drive  
SMH: for Drive Compax3

**STANDARDS**

In compliance with: 2006/95 EC

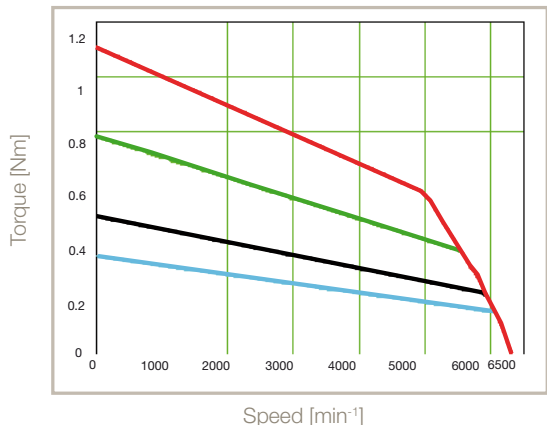
- EN60034-1
- EN60034-5
- EN60034-5/A1

Marked  Marked  (except SM\_42 and SM\_170)

## Speed Torque Curves

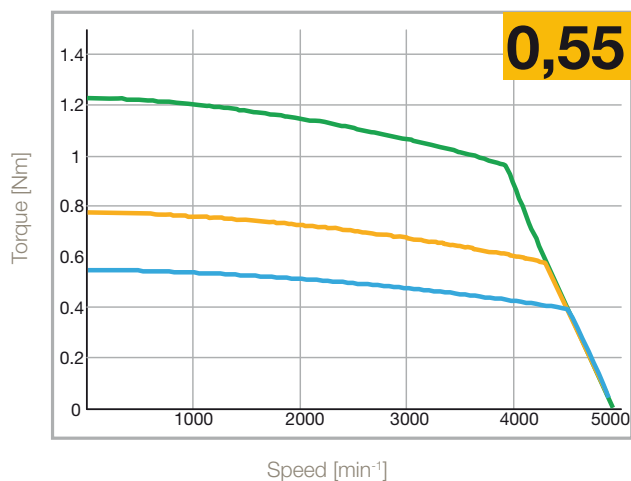
### SMB/H42

6000 min<sup>-1</sup> 230 V

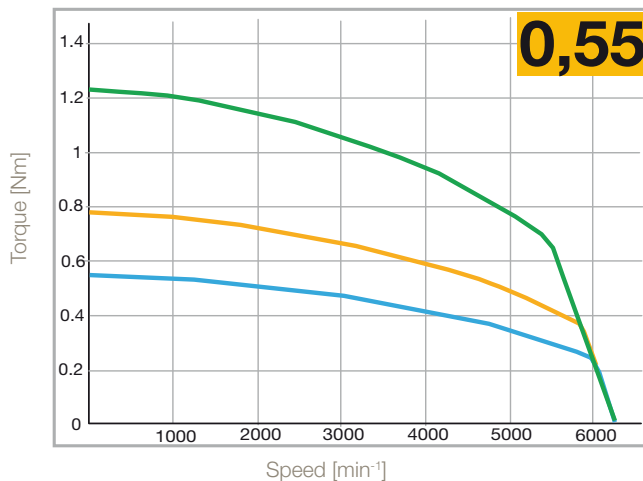


### SMB/H60

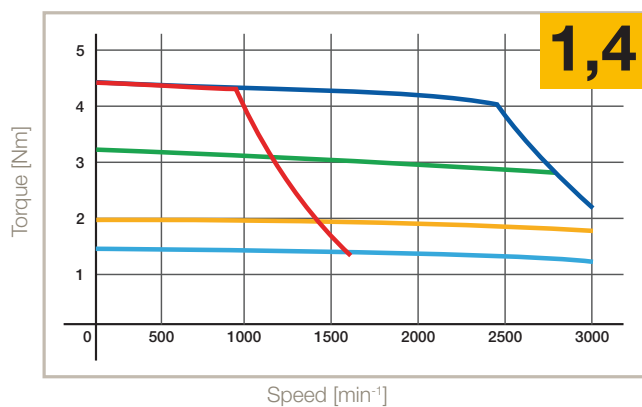
4500 min<sup>-1</sup> 230 V



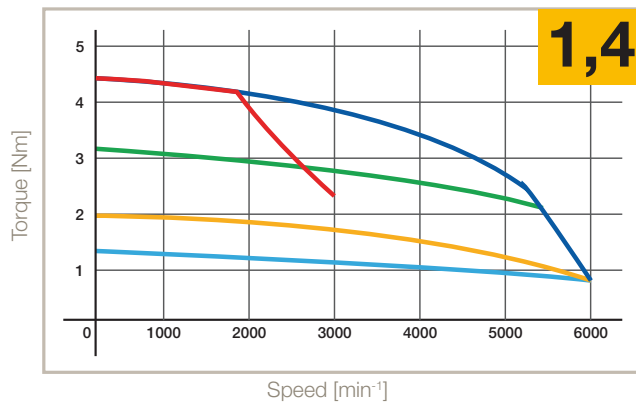
6000 min<sup>-1</sup> 230 V



1600 min<sup>-1</sup> 230 V - 3000 min<sup>-1</sup> 400 V



3000 min<sup>-1</sup> 230 V - 6000 min<sup>-1</sup> 400 V

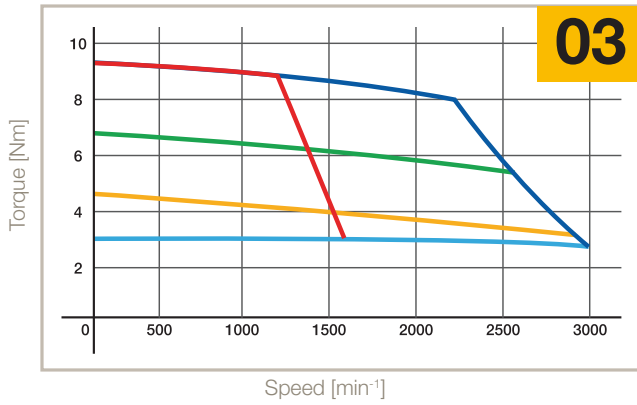


- S1 65 K, ΔT
- S3 10 %, 5 min, 400 V
- S3 50 %, 5 min
- S3 10 %, 5 min, 230 V
- S3 50 %, 5 min
- S3 20 %, 5 min

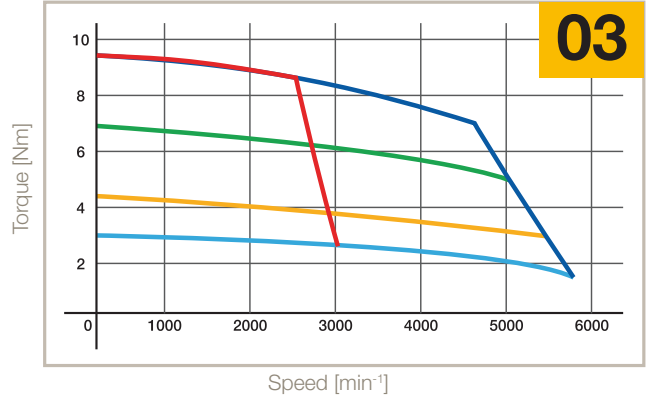


**SMB/H82**

1600 min<sup>-1</sup> 230 V - 3000 min<sup>-1</sup> 400 V

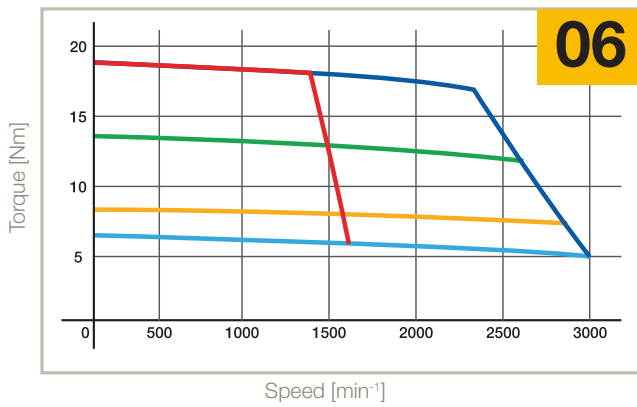


3000 min<sup>-1</sup> 230 V - 5600 min<sup>-1</sup> 400 V

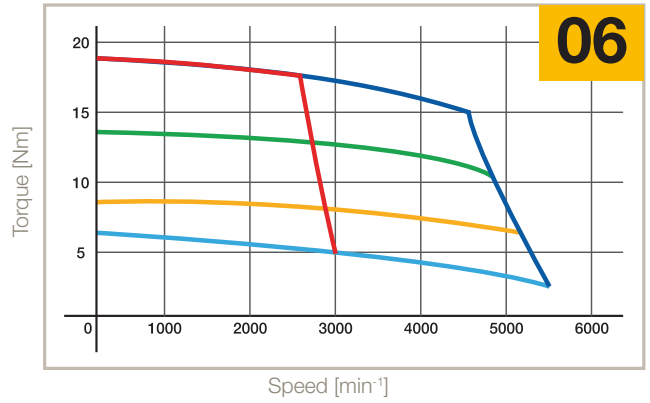


**SMB/H100**

1600 min<sup>-1</sup> 230 V - 3000 min<sup>-1</sup> 400 V

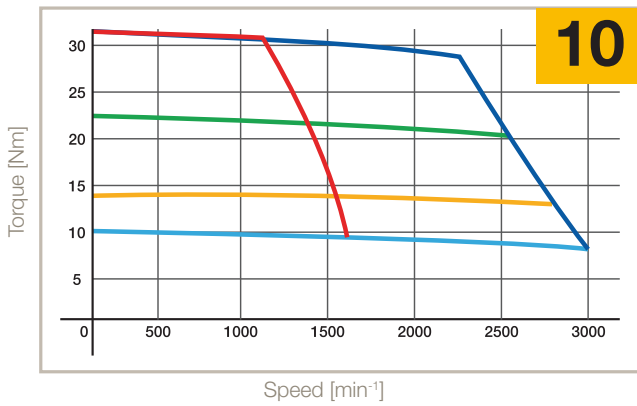


3000 min<sup>-1</sup> 230 V - 5600 min<sup>-1</sup> 400 V

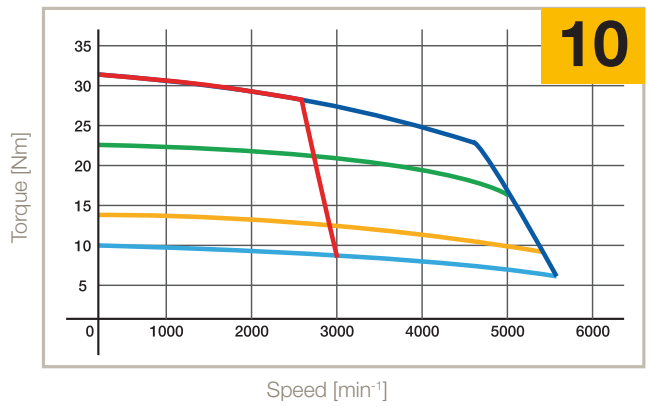


**SMB/H115**

1600 min<sup>-1</sup> 230 V - 3000 min<sup>-1</sup> 400 V



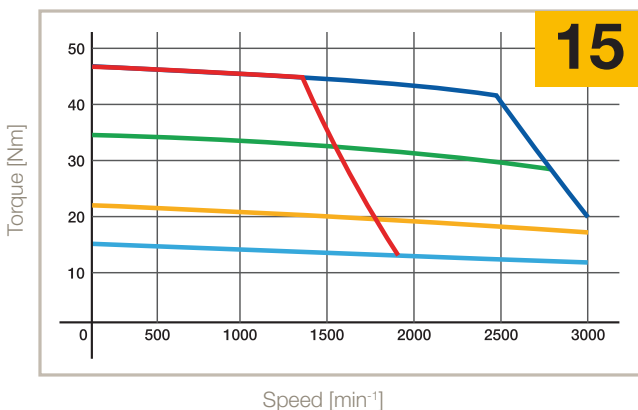
3000 min<sup>-1</sup> 230 V - 5600 min<sup>-1</sup> 400 V



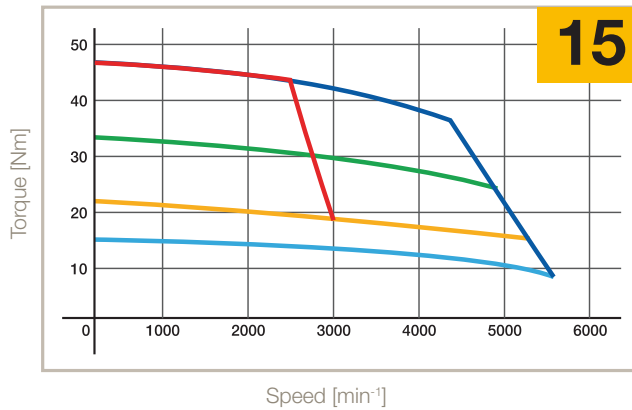
- S1 65 K, ΔT
- S3 10 %, 5 min, 400 V
- S3 10 %, 5 min, 230 V
- S3 50 %, 5 min
- S3 50 %, 5 min
- S3 20 %, 5 min

**SMB/H142**

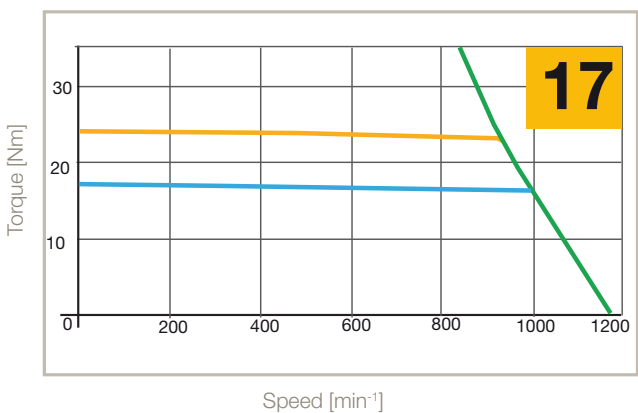
1800 min<sup>-1</sup> 230 V - 3000 min<sup>-1</sup> 400 V



3000 min<sup>-1</sup> 230 V - 5600 min<sup>-1</sup> 400 V

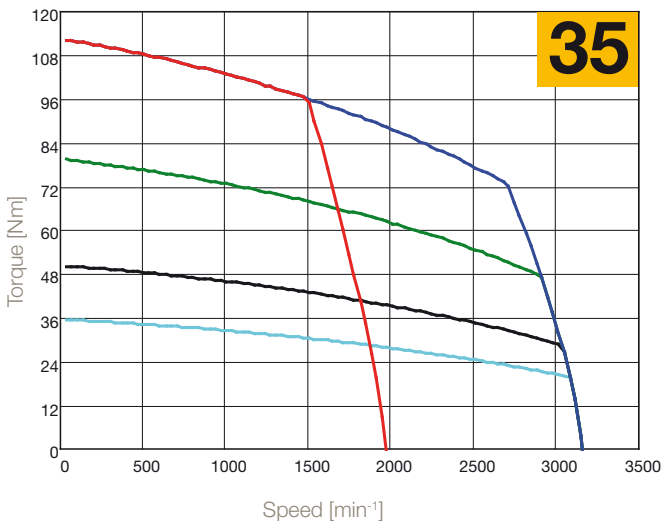


1000 min<sup>-1</sup> 400 V

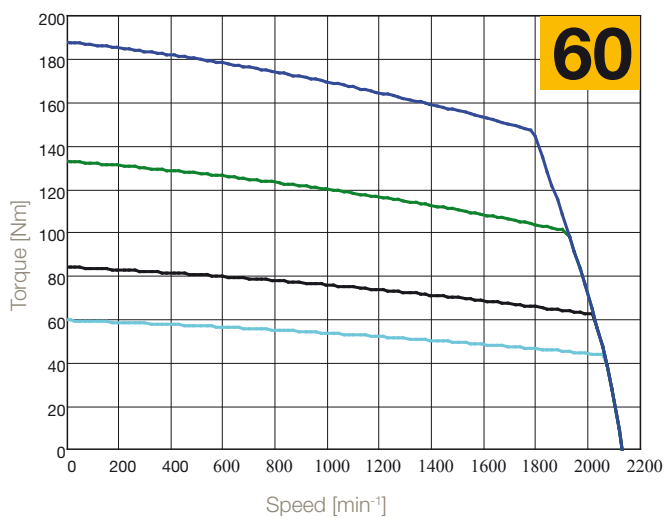


**SMB/H170**

1600 min<sup>-1</sup> 230 V - 3000 min<sup>-1</sup> 400 V

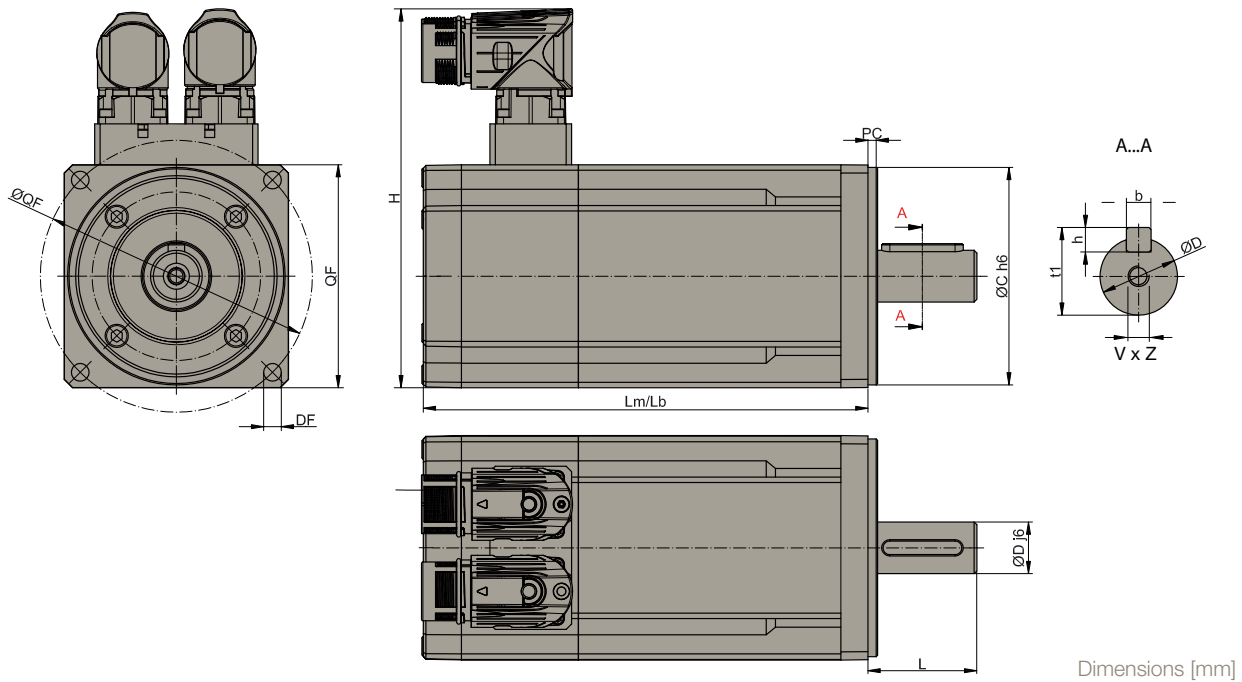


2000 min<sup>-1</sup> 400 V



- S1 65 K, ΔT
- S3 10 %, 5 min, 230 V
- S3 10 %, 5 min, 400 V
- S3 20 %, 5 min
- S3 50 %, 5 min
- S3 50 %, 5 min

## Dimensions of Standard Motors with Resolver Feedback



Dimensions [mm]

Motors Size			LM LB	Weight [kg]	DxL	bxh	t1	VxZ	H	C	ØQF	DF	PC	QF	Order Code QF												
SMB / H	42	0,35	110	0.85	9x25	3 x 3	10.2	M3x9	67 Layout 0V	30	50	3.2	2.5	42	5												
			140													1											
	60	0,55	1,4	91.2	1	9x20	3x3	10.2	-	118 Layout 2I	40	63	5.5	2.5	60	8											
				137													1.3	11x23	4x4	12.5	M4x10	60	75	6	2.5	70	5
		1,4	129.5	1.5	9x20	3x3	10.2	-	M4x10		40	63	5.5	2.5	60	8											
																	161	1.8	11x23	4x4	12.5	M4x10	60	75	6	2.5	70
	82	03		159	3.6	11x23 <sup>(2)</sup>	4x4	12.5	M4x10	140 Layout 2I	60	75	6	2.5	70	7											
				202													4.3	14x30	5x5	16	M5x12.5	80	100	6.5	3.5	82	8
				163.5													3.6	11x23 <sup>(2)</sup>	4x4	12.5	M4x10	95	115	9	3.5	100	5
	206.5	4.3	14x30	5x5	16	M5x12.5	19x40 <sup>(1)</sup>	6x6	21.5	M6x16																	
	100	06		191.5	4.7	19x40	6x6	21.5	M6x16	157.5 Layout 2I	80	100	7	3.5	100	8											
				238.5													5.3	24x50	8x7	27	M8x19	95	115	9	3.5	100	5
	115	10		220	7.7	19x40	6x6	21.5	M6x16	157.5 Layout 2I	95	115	9	3.5	115	9											
																	265	9.7	24x50	8x7	27	M8x19	95	130	9	3.5	115
				28x60	8x7	31	M10x22	110	130		9	3.5	130	7													
															130	165	11	3.5	145	5							
142	15		243	13	19x40	6x6	21.5	M6x16	185 Layout 2I	130	165	11	3.5	142	5												
			293													16	24x50	8x7	27	M8x19	130	165	11	3.5	142	5	
170	35		306	30	38x80	10x8	41	M12x32	212.3 Layout 2I	180	215	14	4	170	5												
			409													50	38x80	10x8	41	M12x32	212.3 Layout 2I	180	215	14	4	170	5

**LM:** Motor's length without brake and with resolver  
**LB:** Motor's length with brake and resolver  
**DxL:** Shaft diameter x shaft length  
**bxh:** Key dimension  
**t1:** Overall shaft height  
**VxZ:** Shaft hole depth  
**C:** Centering

**H:** Height  
**DF:** Fixing holes  
**ØQF:** Interaxis hole  
**QF:** Mounting flange  
**PC:** Centre Depth

<sup>1)</sup> not available with flange 7

<sup>2)</sup> only for torque <2 Nm

## Options

Parker SMB / SMH family motors are available with standard and custom options to adapt motor on your application. If the option for your application is not listed, please consult our technical department.

### Holding Brake

All SMB / SMH motors are available with option holding brake.

The fail-safe (supply voltage 24 VDC  $\pm 10\%$ ) holding brake is incorporated in the motor at the opposite side of the front flange (SM\_170 front side) and is applied when there is no voltage present. Because of the power loss caused by the brake, torque values must be reduced by 5 %. The holding brakes shall be used with the motor at a standstill and not for dynamic braking. For normal uses, they are maintenance free brakes.

Motor	Voltage [V]	Current [A]	Torque @20 °C [Nm]	Added Length with resolver [mm]	Added Weight [kg]	Added Inertia [kgmm <sup>2</sup> ]
SMB / SMH42	24	0.25	0.4	30	0.15	10
SMB / SMH60	24	0.34	2.2	31.5	0.3	12.5
SMB / SMH82	24	0.5	5	43	0.7	43
SMB / SMH100	24	0.67	11	47	0.6	104
SMB / SMH115	24	0.67	11	45	2	100
SMB / SMH142	24	0.75	22	50	3	200
SMB / SMH170	24	7.67	70	-	2	1600

### Medium Inertia

Where the application needs different values of inertia, SMB / SMH can provide a standard adder.

Motor	Added inertia [kgmm <sup>2</sup> ]	Added length with resolver [mm]	Added weight [kg]
SMB / SMH60	29	31.5	0.32
SMB / SMH82	270	43	0.91
SMB / SMH100	284	47	0.68
SMB / SMH115	900	45	2.28
SMB / SMH142	690	50	2.49
SMB / SMH170	consult Parker	consult Parker	consult Parker

### Feedback

Motors may be equipped with various feedback types in order to meet the different requirements for precision, signal that the application needs. The standard motor includes the resolver feedback. Hiperface Encoder, DSL Encoder, EnDat Encoder, Incremental Encoder are available like the following tables.

#### Resolver

Poles	2
Transformation ratio	0.5
Operating temperature	-50...+150 °C
SM_ associations	All Sizes

#### Incremental Encoder with Hall Sensor

Code	A1	A2	A3	B3	C4	D3
Resolution [C/T]	2000	2048	4096	2048	5000	5000
Poles	8					
System accuracy	$\pm 32''$	$\pm 32''$	$\pm 16''$	$\pm 32''$	$\pm 13''$	$\pm 13''$
Voltage	+5 VDC $\pm 5\%$ - 200 mA					
Reference mark	Yes					
Max speed [min <sup>-1</sup> ]	6000					
Output circuit	Line drive differential mode 20 mA					
Operating temperature	-20 °C...+100 °C		-20 °C...+85 °C		-20 °C...+100 °C	
SM_ motors associations						
SM_42	N	N	N	N	N	N
SM_60	N	N	N	Y (+17 mm length)	N	Y (+17 mm length)
SM_82	Y	Y	Y	N	Y	N
SM_100	Y	Y	Y	N	Y	N
SM_115	Y	Y	Y	N	Y	N
SM_142	Y	Y	Y	N	Y	N
SM_170	Y	Y	Y	N	Y	N

### Hiperface Absolute Encoder

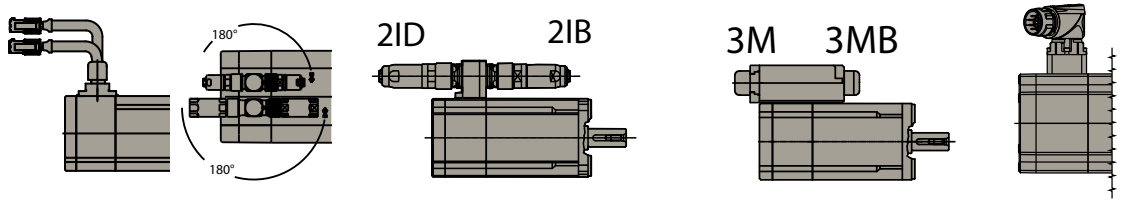
Code	S1	S2	S3	S4	S5	S6
Type	Optical					
Turn	Single	Multi	Single	Multi	Single	Multi
Incremental signals	1 V <sub>PP</sub>				-	-
Line count	1024		128		-	-
Resolution	32768 (15 bit)		4096 (12 bit)		262 144 (18 bits)	
Absolute rotation	1	4096	1	4096	1	4096
System accuracy	±45"		±320"		±40"	
Power supply	8 VDC				7...12 VDC	
Max speed [min <sup>-1</sup> ]	6000		12000	9000		
Temperature	-20 °C...+115 °C		-20 °C...+110 °C		20 °C...+105 °C	
Safety integrity level	SIL2 (IEC 61508), SILCL2 (IEC 62061)				SIL2 (IEC 61508), SILCL2 (IEC 62061)	
<b>SM_ motors associations</b>						
SM_42	N	N	N	N	N	N
SM_60	N		Y (+17 mm length without brake) (+30 mm length with brake)		Y (+17 mm length without brake) (+30 mm length with brake)	
SM_82	Y (+17 mm length without brake) (+30 mm length with brake)		Y	Y	Y	Y
SM_100	Y (+20 mm length)				Y (+20 mm length)	
SM_115	Y	Y	Y	Y	Y	Y
SM_142	Y	Y	Y	Y	Y	Y
SM_170	Y	Y	Y	Y	Y	Y

Code	A6	A7	C6	C7	G4
Type	Optical				Capacitive
Turn	Single	Multi	Single	Multi	Multi
Incremental signals	1 V <sub>PP</sub>				
Line count	1024		128		16
Resolution	32768 (15 bit)		4096 (12 bit)		
Absolute rotation	1	4096	1	4096	512
System accuracy	±45"		±320"		±288"
Power supply	8 VDC				
Max speed [min <sup>-1</sup> ]	6000		12000	9000	6000
Temperature	-20 °C...+115 °C		-20 °C...+110 °C		-20 °C...+115 °C
Safety integrity level	Not Available		Not Available		
<b>SM_ motors associations</b>					
SM_42	N	N	N	Y (+17 mm length) (56 mm rear flange)	N
SM_60	N		Y (+17 mm length without brake) (+30 mm length with brake)		
SM_82	Y (+17 mm length without brake) (+30 mm length with brake)		Y	Y	Y
SM_100	Y (+20 mm length)				
SM_115	Y	Y	Y	Y	Y
SM_142	Y	Y	Y	Y	Y
SM_170	Y	Y	Y	Y	Y

### EnDat Absolute Encoder

Code	B9	D5	F2	F4
Type	Inductive	Optical		Inductive
Turn	Multi			
Incremental signals	1 V <sub>PP</sub>			
Line count	32	512		16
Positions per revolutions	131 072 (17 bit)	8192 (13 bit)		262 144 (18 bit)
Distinguishable revolutions	4096	4096		
System accuracy	±400"	±60"		±480"
Power supply	5 VDC			
Max speed [min <sup>-1</sup> ]	12 000	7 000	12 000	
Temperature	-20 °C...+115 °C	-30 °C...+115 °C	-40 °C...+115 °C	-20 °C...+115 °C
Absolute position values	EnDat 2.1	EnDat 2.2		EnDat 2.1
Safety integrity level	Not Available			
<b>SM_ motors associations</b>				
SM_42	N	N	N	N
SM_60	N	N	Y (+17 mm length without brake) (+9 mm length with brake)	
SM_82	Y (+22.5 mm length without brake) (+18 mm length with brake)		N	N
SM_100	Y (+20 mm length)		N	N
SM_115	Y	Y	N	N
SM_142	Y	Y	N	N
SM_170	Y	Y	N	N

## Layout and Connectors



	200 mm Flying leads with molex plugs 0V	2x Parallel upright connectors 2I	2x Forward facing connectors 2IB	2x Rear facing connectors 2ID	Terminal box rear facing 3M	Terminal box forward facing 3MB	Hiperface DSL® Connector (IZ)
SMB_42	Y	N	N	N	N	N	N
SMB_60	Y	Y	Y	Y	Y	Y	N
SMB_82	N	Y	Y	Y	Y	Y	N
SMB_100	N	Y	Y	Y	Y	Y	N
SMB_115	N	Y	Y	Y	Y	Y	N
SMB_142	N	Y	Y	Y	Y	Y	N
SMH_42	Y	N	N	N	N	N	N
SMH_60	Y	Y	Y	N	N	N	N
SMH_82	N	Y	Y	N	N	N	N
SMH_100	N	Y	Y	N	N	N	N
SMH_115	N	Y	Y	N	N	N	N
SMH_142	N	Y	Y	N	N	N	N
SME_42	Y	N	N	N	N	N	Y
SME_60	N	N	Y	Y	N	N	Y
SME_82	N	N	Y	Y	N	N	Y
SME_100	N	N	Y	Y	N	N	Y
SME_115	N	Y	N	N	N	N	Y
SME_142	N	Y	N	N	N	N	Y
SME_170	N	Y	N	N	N	N	Y

### Power connector (0V)

6	5	4
3	2	1

Pin	Description
1	GND - shield
2	Brake 0 VDC
3	Brake +24 VDC
4	W
5	V
6	U

Part number	
CONMOT6M	Female Connector

### Resolver connector (0V)

12	11	10	9	8	7
6	5	4	3	2	1

Pin	Description
1	n.c.
2	n.c.
3	n.c.
4	PTC
5	PTC
6	GND - shield
7	SIN +
8	SIN -
9	COS +
10	COS -
11	EXTC -
12	EXTC +

Part number	
CONRES12M	Female Connector

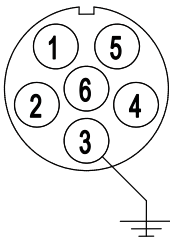
### Hiperface connector (0V)

12	11	10	9	8	7
6	5	4	3	2	1

Pin	Description
1	SIN +
2	SIN -
3	RS485 +
4	0 V
5	PTC
6	PTC
7	VDC +
8	COS +
9	COS -
10	RS485 -
11	GND - shield
12	n.c.

Part number	
CONRES12M	Female Connector

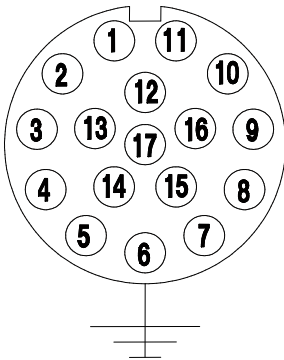
**Power connector (2I, 2IB, 2ID)**



Pin	Description
1	U
2	V
3	GND - shield
4	Brake +24 VDC
5	Brake 0 VDC
6	W

Part number	
<b>CONMOT82F</b>	Female Connector

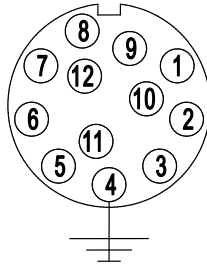
**Incremental encoder connector (2I, 2IB, 2ID)**



Pin	Description	
1	5 V	
2	0 V	
3	A +	
4	A -	
5	B +	
6	B -	
7	Z +	
8	PTC	KTY -
6	PTC	KTY +
10	Z -	
11	Hall A +	
12	Hall A -	
13	Hall B +	
14	Hall B -	
15	Hall C +	
16	Hall C -	
17	n.c.	

Part number	
<b>CONENCF</b>	Female Connector

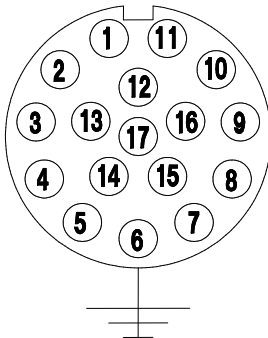
**Resolver connector (2I, 2IB, 2ID)**



Pin	Description	
1	SIN -	
2	SIN +	
3	n.c.	
4	GND - shield	
5	n.c.	
6	n.c.	
7	EXCT -	
8	PTC	KTY -
9	PTC	KTY +
10	EXCT +	
11	COS +	
12	COS -	

Part number	
<b>CONRES82F</b>	Female Connector

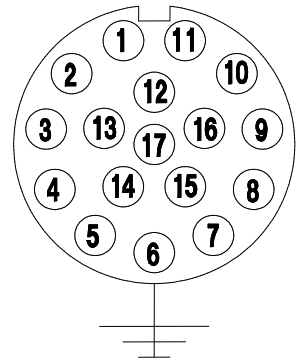
**Absolute encoder SINCOS - EnDat (2I, 2IB, 2ID)**



Pin	Description	
1	UP Sensor	
2	n.c.	
3	n.c.	
4	0 V Sensor	
5	PTC	KTY -
6	PTC	KTY +
7	UP	
8	CK +	
9	CK -	
10	0 V	
11	GND - shield	
12	B +	
13	B -	
14	Data +	
15	A +	
16	A -	
17	Data -	

Part number	
<b>CONENCF</b>	Female Connector

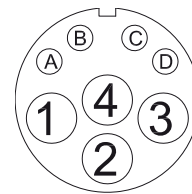
**Absolute encoder SINCOS - Hiperface (2I, 2IB, 2ID)**



Pin	Description	
1	SIN +	
2	SIN -	
3	RS485 +	
4	n.c.	
5	n.c.	
6	n.c.	
7	GND - shield	
8	PTC	KTY -
9	PTC	KTY +
10	+ VDC	
11	COS +	
12	COS -	
13	RS485 -	
14	n.c.	
15	n.c.	
16	n.c.	
17	n.c.	

Part number	
<b>CONRES82F</b>	Female Connector

**Hiperface DSL® Connector (IZ)**



Pin	Description
1	U
2	GND
3	V
4	W
A	Brake +
B	Brake -
C	Signal +
D	Signal -

Part number	
<b>CONMOT2IZF</b>	Female Connector



## Associated Drives

Motor	Rated Speed [min <sup>-1</sup> ]	Stall Current [A]	SLVD-N (230V) SPD/TWIN (400V)	TPD-M	Compax3	638
<b>230 VAC supply voltage</b>						
SM 42 60 0,35	6000	0.78	SLVD1N...	TPD-M02...	C3S025V2...	638A-01-3-F...
SM 60 30 0,55	3000	0.7	SLVD1N...	TPD-M02...	C3S025V2...	638A-01-3-F...
SM 60 45 0,55	4500	1	SLVD1N...	TPD-M02...	C3S025V2...	638A-01-3-F...
SM 60 60 0,55	6000	1.4	SLVD2N...	TPD-M02...	C3S025V2...	638A-02-3-F...
SM 60 16 1,4	1600	0.95	SLVD1N...	TPD-M02...	C3S025V2...	638A-01-3-F...
SM 60 30 1,4	3000	1.73	SLVD2N...	TPD-M02...	C3S025V2...	638A-02-3-F...
SM 60 45 1,4	4500	2.37	SLVD5N...	TPD-M05...	C3S063V2...	638A-04-3-F...
SM 60 60 1,4	6000	2.98	SLVD5N...	TPD-M05...	C3S063V2...	638A-04-3-F...
SM 60 75 1,4	7500	3.85	SLVD5N...	TPD-M05...	C3S063V2...	638A-04-3-F...
SM 82 10 03	1000	1.2	SLVD2N...	TPD-M02...	C3S025V2...	638A-02-3-F...
SM 82 16 03	1600	1.8	SLVD2N...	TPD-M02...	C3S025V2...	638A-02-3-F...
SM 82 30 03	3000	3.1	SLVD5N...	TPD-M05...	C3S063V2...	638A-04-3-F...
SM 82 33 03	3300	3.5	SLVD5N...	TPD-M05...	C3S063V2...	638A-04-3-F...
SM 82 45 03	4500	4.7	SLVD5N...	TPD-M05...	C3S063V2...	638A-06-3-F...
SM 82 60 03	6000	6.1	SLVD7N...	TPD-M08...	C3S063V2...	638B-08-3-F...
SM 82 75 03	7500	7.5	SLVD7N...	TPD-M08...	C3S100V2...	638B-08-3-F...
SM 100 16 06	1600	3.7	SLVD5N...	TPD-M05...	C3S063V2...	638A-04-3-F...
SM 100 30 06	3000	5.9	SLVD7N...	TPD-M08...	C3S063V2...	638A-06-3-F...
SM 100 45 06	4500	9.4	SLVD10N...	TPD-M10...	C3S100V2...	638B-10-3-F...
SM 100 55 06	5500	11.8	SLVD15N...	TPD-M15...	C3S150V2...	638B-15-3-F...
SM 100 75 06	7500	14.7	SLVD15N...	TPD-M15...	C3S150V2...	638B-15-3-F...
SM 115 16 10	1600	6	SLVD7N...	TPD-M08...	C3S063V2...	638A-06-3-F...
SM 115 30 10	3000	10.5	SLVD10N...	TPD-M10...	C3S100V2...	638B-10-3-F...
SM 115 40 10	4000	14.7	SLVD15N...	TPD-M15...	C3S150V2...	638B-15-3-F...
SM 115 54 10	5400	18.2	n.a.	TPD-M30...	n.a.	n.a.
SM 142 18 15	1800	9.7	SLVD10N...	TPD-M10...	C3S100V2...	638B-10-3-F...
SM 142 30 15	3000	16	SLVD17N...	TPD-M30...	n.a.	n.a.
SM 170 11 35	1100	13.3	SLVD15N...	TPD-M15...	C3S150V2...	638-B-15-3-F...
SM 170 16 35	1600	20	n.a.	TPD-M30...	C3S300V2...	n.a.
SM 170 25 35	2500	29	n.a.	TPD-M30...	n.a.	n.a.
<b>400 VAC supply voltage</b>						
SM 60 30 1,4	3000	0.95	SPD2N.. / TWIN2N	TPD-M02..	C3S015V4..	638B-03-6-F...
SM 60 45 1,4	4500	1.37	SPD2N.. / TWIN2N	TPD-M02..	C3S015V4..	638B-03-6-F...
SM 60 60 1,4	6000	1.73	SPD2N.. / TWIN2N	TPD-M02..	C3S038V4..	638B-03-6-F...
SM 60 75 1,4	7500	2.15	SPD5N.. / TWIN5N	TPD-M05..	C3S038V4..	638B-03-6-F...
SM 82 30 03	3000	1.8	SPD2N.. / TWIN2N	TPD-M02..	C3S038V4..	638B-03-6-F...
SM 82 45 03	4500	2.7	SPD5N.. / TWIN5N	TPD-M05..	C3S038V4..	638B-05-6-F...
SM 82 56 03	5600	3.1	SPD5N.. / TWIN5N	TPD-M05..	C3S038V4..	638B-05-6-F...
SM 82 60 03	6000	3.5	SPD5N.. / TWIN5N	TPD-M05..	C3S038V4..	638B-05-6-F...
SM 82 75 03	7500	4.4	SPD5N.. / TWIN5N	TPD-M05..	C3S075V4..	638B-05-6-F...
SM 100 30 06	3000	3.7	SPD5N.. / TWIN5N	TPD-M05..	C3S038V4..	638B-05-6-F...
SM 100 45 06	4500	5.6	SPD8N.. / TWIN8N	TPD-M08..	C3S075V4..	638B-08-6-F...
SM 100 56 06	5600	5.9	SPD8N.. / TWIN8N	TPD-M08..	C3S075V4..	638B-08-6-F...
SM 100 75 06	7500	9.4	SPD16N..	TPD-M15..	C3S150V4..	638B-10-6-F...
SM 115 20 10	2000	4.5	SPD5N.. / TWIN5N	TPD-M05..	C3S075V4..	638B-05-6-F...
SM 115 30 10	3000	6.0	SPD8N.. / TWIN8N	TPD-M08..	C3S075V4..	638B-08-6-F...
SM 115 40 10	4000	8.0	SPD8N.. / TWIN8N	TPD-M08..	C3S150V4..	638B-10-6-F...
SM 115 56 10	5600	10.5	SPD16N..	TPD-M15..	C3S150V4..	638B-15-6-F...
SM 142 20 15	2000	6.4	SPD8N.. / TWIN8N	TPD-M08..	C3S075V4..	638B-08-6-F...
SM 142 30 15	3000	9.7	SPD16N..	TPD-M10..	C3S150V4..	638B-10-6-F...
SM 142 45 15	4500	14.4	SPD16N..	TPD-M15..	C3S150V4..	638B-15-6-F...
SM 142 56 15	5600	16	SPD16N..	TPD-M30..	C3S300V4..	n.a.
SM 170 10 35	1000	6.8	SPD8N.. / TWIN8N	TPD-M08..	C3S075V4..	638B-08-6-F...
SM 170 20 35	2000	13.3	SPD16N..	TPD-M15..	C3S150V4..	638B-15-6-F...
SM 170 27 35	2700	18	n.a.	TPD-M30..	C3S300V4..	n.a.
SM 170 30 35	3000	20	n.a.	TPD-M30..	C3S300V4..	n.a.
SM 170 10 60	1000	11.7	SPD16N..	TPD-M15..	C3S150V4..	638B-15-6-F...
SM 170 20 60	2000	22.6	n.a.	TPD-M30..	C3S300V4..	n.a.
SM 170 30 60	3000	35.7	n.a.	n.a.	C3H050V4	n.a.

## Order Code

### Serie SMB / SME \*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Order example	SMB	A	60	30	1,4	5	9		2I		64	A6	M	2

<b>1 Type Of Motor (mandatory field)</b>	<b>SME</b>	Standard Motor with Encoder SME Series
	<b>SMB</b>	Standard Motor with Resolver SMB Series
<b>2 Brake Option</b>	<b>empty field</b>	No Brake Option
	<b>A</b>	Motor with Holding Brake
<b>3 Motor Frame Size (mandatory field)</b>	<b>42</b>	Torque 0.35 Nm
	<b>60</b>	Torque range 0.55 or 1.4 Nm
	<b>82</b>	Torque 3 Nm
	<b>100</b>	Torque range 6 Nm
	<b>115</b>	Torque range 10 Nm
	<b>142</b>	Torque range 15 or 17 Nm
	<b>170</b>	Torque range 35 or 60 Nm
<b>4 Winding (mandatory field)</b>	<b>nn</b>	min <sup>-1</sup> (x100) see "Technical Data" (page 6)
<b>5 Motor Torque (mandatory field)</b>	<b>nn</b>	Torque [Nm] see "Technical Data" (page 6)
<b>6 Flange (mandatory field)</b>	<b>5</b>	All sizes
	<b>7</b>	Only for Size 82 and 115
	<b>8</b>	Only for Size 60, 82, 100 and 115
	<b>9</b>	Only for Size 115
<b>7 Shaft (mandatory field)</b>	<b>9</b>	9x25 mm for size 42 - 9x20 mm for size 60
	<b>11</b>	11x23 mm for size 60
	<b>14</b>	14x30 mm for size 82
	<b>19</b>	19x40 mm for size 82/100/115/142
	<b>24</b>	24x50 mm for size 100/115/142
	<b>28</b>	28x60 mm for size 115/142
	<b>38</b>	38x80 mm for size 170
<b>8 Key Shaft option</b>	<b>empty field</b>	Shaft with Key
	<b>S</b>	Shaft without key
<b>9 Layout - Connectors (mandatory field)</b>	<b>0V</b>	Cable exit and Molex Flying connectors - 200 mm above
	<b>2I</b>	Rotatable Interconnectron receptacles
	<b>2IB</b>	90° Interconnectron receptacles - forward facing
	<b>2ID</b>	90° Interconnectron receptacles - rear facing
	<b>3M</b>	Terminal box rear facing
	<b>3MB</b>	Terminal box forward facing
<b>10 Female connectors option</b>	<b>empty field</b>	With Female / flying connectors
	<b>W</b>	Without Female / flying connectors
<b>11 Protection Degree (mandatory field)</b>	<b>64</b>	IP64
	<b>65</b>	IP65 (standard for SMB170)
	<b>67</b>	IP67 (optional for SMB170)
<b>12 Feedback</b>	<b>empty field</b>	Standard Resolver [SMB]
	<b>A1</b>	Encoder 1024 ppr + Hall - TAMAGAWA OIH48
	<b>A2</b>	Encoder 2048 ppr + Hall - TAMAGAWA OIH48
	<b>A3</b>	Encoder 4096 ppr + Hall - TAMAGAWA OIH48
	<b>A6</b>	SinCos Hiperface Encoder Single-Turn - STEGMANN SRS50/52
	<b>A7</b>	SinCos Hiperface Encoder Multi-Turn - STEGMANN SRS50/52
	<b>B3</b>	Encoder 2048 ppr + Hall - TAMAGAWA OIH35
	<b>B9</b>	SinCos EnDat Encoder Multi-Turn - HEIDENHAIN EQI1331
	<b>C4</b>	Encoder 5000 ppr + Hall - TAMAGAWA OIH48
	<b>C6</b>	SinCos Hiperface Encoder Single-Turn - STEGMANN SKS36
	<b>C7</b>	SinCos Hiperface Encoder Multi-Turn - STEGMANN SKM36
	<b>D3</b>	Encoder 5000ppr + Hall - TAMAGAWA OIH35
	<b>D5</b>	SinCos EnDat Encoder Multi-Turn - HEIDENHAIN EQN1325
	<b>F2</b>	SinCos EnDat Encoder Multi-Turn - HEIDENHAIN EQN1125
	<b>F4</b>	SinCos EnDat Encoder Multi-Turn - HEIDENHAIN EQI1130
	<b>G4</b>	SinCos Hiperface Encoder Multi-Turn - STEGMANN SEL37
	<b>S1</b>	SinCos Hiperface Encoder Single-Turn - STEGMANN SRS50S, SIL2
	<b>S2</b>	SinCos Hiperface Encoder Multi-Turn - STEGMANN SRS50S, SIL2
	<b>S3</b>	SinCos Hiperface Encoder Single-Turn - STEGMANN SKS36S, SIL2
	<b>S4</b>	SinCos Hiperface Encoder Multi-Turn - STEGMANN SKM36S, SIL2
	<b>S5</b>	32768 steps/rev Single Turn Hiperface DSL® Encoder Feedback SIL2
	<b>S6</b>	32768 steps/rev x 4096 Multi Turn Hiperface DSL® Encoder Feedback SIL2

\* SMB: for Drives TPD-M, SLVD-N, TWIN-N, SPD-N, Hi-Drive

**13 Option Inertia**

**empty field** Standard Inertia

**M** Medium Inertia

**14 Voltage**

**0A** 24 VDC

**0B** 34 V

**0C** 48 VDC

**0D** 50 V

**0E** 60 V

**0L** 60 VDC

**0F** 72 VDC

**0G** 74 V

**0** 80 V

**0I** 95 V

**0H** 96 V

**1A** 108-110 VDC

**1D** 120 VDC

**1B** 125 V

**1C** 150 VDC

**1** 180 V

**1E** 185 VDC

**2B** 200 VDC

**2** 220-230 V

**2A** 222 V

**3** 330 V

**4** 380-400 V

**4A** 425 VDC

**4C** 460 V

**4B** 490 V

## Order Code

### Serie SMH\*

	1	2	3	4	5	6	7	8	9	10	11	12	13
Order example	SMH	A	60	30	1,4	5	9		2I	64	A6	M	2

<b>1</b>	<b>Type Of Motor (mandatory field)</b>
SMH	Standard Motor with Resolver SMH Series
<b>2</b>	<b>Brake Option</b>
empty field	No Brake Option
A	Motor with Holding Brake (brakes when the supply voltage is 0)
<b>3</b>	<b>Motor Frame Size (mandatory field)</b>
42	Torque 0.35 Nm
60	Torque range 0.55 or 1.4 Nm
82	Torque 3 Nm
100	Torque range 6 Nm
115	Torque range 10 Nm
142	Torque range 15 or 17 Nm
170	Torque range 35 or 60 Nm
<b>4</b>	<b>Winding (mandatory field)</b>
nn	min <sup>-1</sup> (x100) see "Technical Data" (page 6)
<b>5</b>	<b>Motor Torque (mandatory field)</b>
nn	Torque [Nm] see "Technical Data" (page 6)
<b>6</b>	<b>Flange (mandatory field)</b>
5	B5 Flange
7	Only for Frame 82 and 115
8	Only for Frame 60, 82, 100 and 115
9	Only for Frame 115
<b>7</b>	<b>Shaft (mandatory field)</b>
9	9x25 mm for size 42 - 9x20 mm for size 60
11	11x23 mm for size 60
14	14x30 mm for size 82
19	19x40 mm for size 82/100/115/142
24	24x50 mm for size 100/115/142
28	28x60 mm for size 115/142
38	38x80 mm for size 170
<b>8</b>	<b>Key Shaft option</b>
empty field	Shaft with Key
S	Shaft without key
<b>9</b>	<b>Layout - Connectors (mandatory field)</b>
0V	Cable exit and Molex Flying connectors - 200 mm above
2I	Rotatable Interconnectron receptacles
2IB	90° Interconnectron receptacles - forward facing
2ID	90° Interconnectron receptacles - rear facing

<b>10</b>	<b>Protection Degree (mandatory field)</b>
64	IP64
65	IP65 (standard for SMB170)
67	IP67 (optional for SMB170)
<b>11</b>	<b>Feedback</b>
A6	SinCos Hiperface Encoder Single-Turn - STEGMANN SRS50/52
A7	SinCos Hiperface Encoder Multi-Turn - STEGMANN SRM50/52
C6	SinCos Hiperface Encoder Single-Turn - STEGMANN SKS36
C7	SinCos Hiperface Encoder Multi-Turn - STEGMANN SKM36
G4	SinCos Hiperface Encoder Multi-Turn - STEGMANN SEL37
G5	SinCos Hiperface Encoder Multi-Turn - STEGMANN SEL52
S1	SinCos Hiperface Encoder Single-Turn - STEGMANN SRS50S, SIL2
S2	SinCos Hiperface Encoder Multi-Turn - STEGMANN SRM50S, SIL2
S3	SinCos Hiperface Encoder Single-Turn - STEGMANN SKS36S, SIL2
S4	SinCos Hiperface Encoder Multi-Turn - STEGMANN SKM36S, SIL2
<b>12</b>	<b>Option Inertia</b>
empty field	Standard Inertia
M	Medium Inertia
<b>13</b>	<b>Voltage</b>
2	220-230 V
4	380-400 V

\* SMH: for Drive Compax3

## Order Code

### Motor Power Cable for SMB Motors

	1	2	3	4	5	6	7
Order example	CAVOMOT	A	1,5x	5	PM	I	40

<b>1</b>	<b>CAVOMOT</b>	
	CAVOMOT	Power cable drive - motor
<b>2</b>	<b>Brake wire</b>	
	empty field	without brake wire
	A	Brake wire
<b>3</b>	<b>Section [mm<sup>2</sup>]</b>	
	1,5x	1,5 mm <sup>2</sup>
	2,5x	2,5 mm <sup>2</sup>
	4x, 6x, 10x,	4 mm <sup>2</sup> , 6 mm <sup>2</sup> , 10 mm <sup>2</sup> ,
	25x	25 mm <sup>2</sup> (not for "PM" type)
<b>4</b>	<b>Length [m]</b>	
	1, ...*	Length in metre
<b>5</b>	<b>Application Type</b>	
	PF-	Standard cable
	PM-	High flex cable
<b>6</b>	<b>Motor Connector</b>	
	I	Interconnectron Connector [all layout]
	3	Terminal Connection Box [all layout except 3M/3MB/3MC/3MA]
	S	Terminal Connection Box [layout 3M/3M/3MC/3MA]
	F	Faston Connector [layout SMB42 0V]
<b>7</b>	<b>Motor Size</b>	
	40..265	Motor Size

\* Available lengths in meter: 1,2,5,10,15,20,30,40 50

### Motor Cable for Hiperface DSL®

	1	2	3	4	5	6	7
Order example	CAVODSL	1,5x	3	PM-	TPD-	A00-	C

<b>1</b>	<b>Cable</b>	
	CAVODSL	Motor Cable for Single Cable Servo Drive System based on Hiperface DSL®
<b>2</b>	<b>Section [mm<sup>2</sup>]</b>	
	1,5x	1,5 mm <sup>2</sup>
	2,5x	2,5 mm <sup>2</sup>
	4x, 6x, 10x,	4 mm <sup>2</sup> , 6 mm <sup>2</sup> , 10 mm <sup>2</sup> ,
	25x	25 mm <sup>2</sup>
<b>3</b>	<b>Length [m]</b>	
	1, ...	Length in metre (max. 50 m)
<b>4</b>	<b>Application Type</b>	
	PM-	Moving Application
<b>5</b>	<b>Drive Type</b>	
	TPD-	TPD Drive
<b>6</b>	<b>Option</b>	
	...	Special customer drawing Internal table code
<b>7</b>	<b>Connector</b>	
	C	Mating connector Mating connector in the motor package

### Feedback Cable for SMB Motors

	1	2	3	4	5
Order example	CAVORESX	4	PM	I	SLVDN

<b>1</b>	<b>Signal Cable type</b>	
	CAVORESX	Resolver
	CAVOENCX	Incremental encoder
	CAVOABSX	Absolute Encoder EnDat+SinCos
	CAVOHIPX	Absolute Encoder Hiperface+SinCos
	CAVOSINX	SinCos Encoder
	CAVOHALX	SinCos Encoder + Hall sensor
<b>2</b>	<b>Length [m]</b>	
	1, ...*	Length in metre
<b>3</b>	<b>Application Type</b>	
	PM-	Moving Application
<b>4</b>	<b>Motor Connector</b>	
	I	Interconnectron Connector [all layout]
	S	Terminal Connection Box layout 3M/3M/3MC/3MA and motor MBX
	F	Faston Connector [layout SMB40 0V]
<b>5</b>	<b>Drive Type</b>	
	SLVDN	SLVD-N Drive
	TPD	TPD-M
	SPD/TWIN	TWIN_N e SPD_N Drive or wire without connector drive side
	HIDRIVE	Hi-Drive

## Order Code

### Motor Power Cable for SMH Motors

	1	2
Order example:	<b>MOK</b>	<b>55/02</b>

<b>1</b>	<b>Cable</b>
<b>MOK</b>	Motor cable <sup>(2)</sup>
<b>2</b>	<b>Type</b>
	for SMH / MH56 / MH70 / MH105 <sup>(3)</sup>
<b>55/....<sup>(1)</sup></b>	1,5 mm <sup>2</sup> ; up to 13,8 A
<b>54/....<sup>(1)</sup></b>	1,5 mm <sup>2</sup> ; up to 13,8 A Moving application
<b>56/....<sup>(1)</sup></b>	2,5 mm <sup>2</sup> ; up to 18,9 A
<b>57/....<sup>(1)</sup></b>	2,5 mm <sup>2</sup> ; up to 18,9 A Moving application

MOK55 and MOK54 are also possible for linear motors LXR406, LXR412 and BLMA.

### Feedback Cable for SMH Motors

	1
Order example:	<b>REK42/02</b>

<b>1</b>	<b>Zubehör</b>
	for MH/SMH-Motors
<b>REK42/....<sup>(1)</sup></b>	Resolver cable <sup>(2)</sup>
<b>REK41/....<sup>(1)</sup></b>	Resolver cable <sup>(2)</sup> Moving application
<b>GBK24/....<sup>(1)</sup></b>	SinCos© Feedback cable <sup>(2)</sup> Moving application
<b>GBK38/....<sup>(1)</sup></b>	EnDat 2.1 Feedback cable <sup>(2)</sup> Moving application
<b>GBK23/....<sup>(1)</sup></b>	Encoder cable <sup>(2)</sup>

### Length code for cables

<sup>(1)</sup> Length code 1 (Example: SSK01/09 = length 25 m)

Length [m]	1,0	2,5	5,0	7,5	10,0	12,5	15,0	20,0	25,0	30,0	35,0	40,0	45,0	50,0
Order code	01	02	03	04	05	06	07	08	09	10	11	12	13	14

<sup>(2)</sup> Color according to DESINA

<sup>(3)</sup> with motor connector

<sup>(4)</sup> with cable eye for motor terminal box



# Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374



## Aerospace

### Key Markets

Aftermarket services  
Commercial transports  
Engines  
General & business aviation  
Helicopters  
Launch vehicles  
Military aircraft  
Missiles  
Power generation  
Regional transports  
Unmanned aerial vehicles

### Key Products

Control systems & actuation products  
Engine systems & components  
Fluid conveyance systems & components  
Fluid metering, delivery & atomization devices  
Fuel systems & components  
Fuel tank inerting systems  
Hydraulic systems & components  
Thermal management  
Wheels & brakes



## Climate Control

### Key Markets

Agriculture  
Air conditioning  
Construction Machinery  
Food & beverage  
Industrial machinery  
Life sciences  
Oil & gas  
Precision cooling  
Process  
Refrigeration  
Transportation

### Key Products

Accumulators  
Advanced actuators  
CO<sub>2</sub> controls  
Electronic controllers  
Filter driers  
Hand shut-off valves  
Heat exchangers  
Hose & fittings  
Pressure regulating valves  
Refrigerant distributors  
Safety relief valves  
Smart pumps  
Solenoid valves  
Thermostatic expansion valves



## Electromechanical

### Key Markets

Aerospace  
Factory automation  
Life science & medical  
Machine tools  
Packaging machinery  
Paper machinery  
Plastics machinery & converting  
Primary metals  
Semiconductor & electronics  
Textile  
Wire & cable

### Key Products

AC/DC drives & systems  
Electric actuators, gantry robots & slides  
Electrohydraulic actuation systems  
Electromechanical actuation systems  
Human machine interface  
Linear motors  
Stepper motors, servo motors, drives & controls  
Structural extrusions



## Filtration

### Key Markets

Aerospace  
Food & beverage  
Industrial plant & equipment  
Life sciences  
Marine  
Mobile equipment  
Oil & gas  
Power generation & renewable energy  
Process  
Transportation  
Water Purification

### Key Products

Analytical gas generators  
Compressed air filters & dryers  
Engine air, coolant, fuel & oil filtration systems  
Fluid condition monitoring systems  
Hydraulic & lubrication filters  
Hydrogen, nitrogen & zero air generators  
Instrumentation filters  
Membrane & fiber filters  
Microfiltration  
Sterile air filtration  
Water desalination & purification filters & systems



## Fluid & Gas Handling

### Key Markets

Aerial lift  
Agriculture  
Bulk chemical handling  
Construction machinery  
Food & beverage  
Fuel & gas delivery  
Industrial machinery  
Life sciences  
Marine  
Mining  
Mobile  
Oil & gas  
Renewable energy  
Transportation

### Key Products

Check valves  
Connectors for low pressure fluid conveyance  
Deep sea umbilicals  
Diagnostic equipment  
Hose couplings  
Industrial hose  
Mooring systems & power cables  
PTFE hose & tubing  
Quick couplings  
Rubber & thermoplastic hose  
Tube fittings & adapters  
Tubing & plastic fittings



## Hydraulics

### Key Markets

Aerial lift  
Agriculture  
Alternative energy  
Construction machinery  
Forestry  
Industrial machinery  
Machine tools  
Marine  
Material handling  
Mining  
Oil & gas  
Power generation  
Refuse vehicles  
Renewable energy  
Truck hydraulics  
Turf equipment

### Key Products

Accumulators  
Cartridge valves  
Electrohydraulic actuators  
Human machine interfaces  
Hybrid drives  
Hydraulic cylinders  
Hydraulic motors & pumps  
Hydraulic systems  
Hydraulic valves & controls  
Hydrostatic steering  
Integrated hydraulic circuits  
Power take-offs  
Power units  
Rotary actuators  
Sensors



## Pneumatics

### Key Markets

Aerospace  
Conveyor & material handling  
Factory automation  
Life science & medical  
Machine tools  
Packaging machinery  
Transportation & automotive

### Key Products

Air preparation  
Brass fittings & valves  
Manifolds  
Pneumatic accessories  
Pneumatic actuators & grippers  
Pneumatic valves & controls  
Quick disconnects  
Rotary actuators  
Rubber & thermoplastic hose & couplings  
Structural extrusions  
Thermoplastic tubing & fittings  
Vacuum generators, cups & sensors



## Process Control

### Key Markets

Alternative fuels  
Biopharmaceuticals  
Chemical & refining  
Food & beverage  
Marine & shipbuilding  
Medical & dental  
Microelectronics  
Nuclear Power  
Offshore oil exploration  
Oil & gas  
Pharmaceuticals  
Power generation  
Pulp & paper  
Steel  
Water/wastewater

### Key Products

Analytical Instruments  
Analytical sample conditioning products & systems  
Chemical injection fittings & valves  
Fluoropolymer chemical delivery fittings, valves & pumps  
High purity gas delivery fittings, valves, regulators & digital flow controllers  
Industrial mass flow meters/controllers  
Permanent no-weld tube fittings  
Precision industrial regulators & flow controllers  
Process control double block & bleeds  
Process control fittings, valves, regulators & manifold valves



## Sealing & Shielding

### Key Markets

Aerospace  
Chemical processing  
Consumer  
Fluid power  
General industrial  
Information technology  
Life sciences  
Microelectronics  
Military  
Oil & gas  
Power generation  
Renewable energy  
Telecommunications  
Transportation

### Key Products

Dynamic seals  
Elastomeric o-rings  
Electro-medical instrument design & assembly  
EMI shielding  
Extruded & precision-cut, fabricated elastomeric seals  
High temperature metal seals  
Homogeneous & inserted elastomeric shapes  
Medical device fabrication & assembly  
Metal & plastic retained composite seals  
Shielded optical windows  
Silicone tubing & extrusions  
Thermal management  
Vibration dampening

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