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climate control  
**electromechanical**  
filtration  
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process control  
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## R-Series

Ironcore Linear Motors



ENGINEERING YOUR SUCCESS.



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<b>Overview .....</b>	<b>5</b>
<b>Technical characteristics .....</b>	<b>7</b>
Technical data .....	7
Standards and conformance .....	9
Associated drives .....	9
Performance curves .....	10
Dimensions .....	14
Layout and connectors .....	20
Digital hall module - HES .....	21
<b>Accessories .....</b>	<b>21</b>
External linear encoders .....	21
<b>Order code .....</b>	<b>22</b>
Motor coil (with connector module) .....	22
Modular track .....	22

# Parker Hannifin

## Il leader globale nelle tecnologie motion & control

### Prodotti dal design globale

Parker Hannifin vanta più di 40 anni di esperienza nella progettazione e produzione di azionamenti, controllori, motori e prodotti meccanici. In qualità di leader nella tecnologia, Parker promuove lo sviluppo di prodotti globali in Europa, Nord America e Asia grazie a un team di tecnici appositamente dedicato.

### Presenza ed esperienza locale

Parker dispone di risorse tecniche locali con il compito di applicare i prodotti e le tecnologie alla necessità dei diversi mercati per meglio soddisfare i bisogni dei clienti.

### Produzione tesa a soddisfare i bisogni dei clienti

Parker si pone l'obiettivo di soddisfare le necessità dei clienti perchè possano operare con successo nel mercato industriale globale. I team di Parker che operano in produzione, sono alla costante ricerca di efficienza attraverso l'implementazione dei metodi lean a tutto il processo produttivo. La misura dell'efficienza di Parker sta nella capacità di soddisfare le aspettative dei clienti in termini di qualità e consegna. A tale fine, Parker opera e continua ad investire negli stabilimenti di Europa, Nord America e Asia.

### Siti produttivi mondiali per l'elettromeccanica

#### Europa

Littlehampton, Regno Unito  
Dijon, Francia  
Offenburg, Germania  
Filderstadt, Germania  
Milano, Italia

#### Asia

Wuxi, China  
Jangan, Corea  
Chennai, India

#### Nord America

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



Offenburg, Germania

### Produzione e supporto locale in Europa

Parker offre assistenza vendita e supporto tecnico locale, attraverso un team dedicato alla vendita e distributori tecnici autorizzati in tutta Europa.

Informazioni e contatti dei diversi Sales Offices sono presenti in ultima pagina o consultabili all'indirizzo [www.parker.com](http://www.parker.com)



Milano, Italia



Littlehampton, UK



Filderstadt, Germania



Dijon, Francia

# Ironcore Linear Motors - R-Series

## Overview

### Description

Parker ironcore linear motors, with their patented anticog-technology, produce the large forces needed for many industrial applications – without the roughness associated with traditional ironcore linear motors.

With forces ranging from 40 N continuous up to 7433 N peak, the family is well suited for a broad range of extremely demanding applications.

Parker offers modular magnet tracks for unrestricted travel length. The motor connector module with Hall sensors inside allow quick and easy installation while reducing overall maintenance costs. High-flex cables come standard.

Virtually cog-free operation combined with powerful ironcore technology make the family of motors a superior choice for affordable high-force, ultrasmooth motion.



### Features

- Ideal for high force applications
- Patented ultra-smooth anticog technology
- Connector modules allow quick and easy installation
- Internal thermal cutout switch protects coil
- Modular magnet tracks with flush mounted magnet separators
- Built-in cable strain relief
- Two lengths of modular magnet tracks allow unlimited length of travel
- Laminations and large surface area allows good heat dissipation
- Maintenance free operation - mechanical simplicity due to reduced component count

### Application

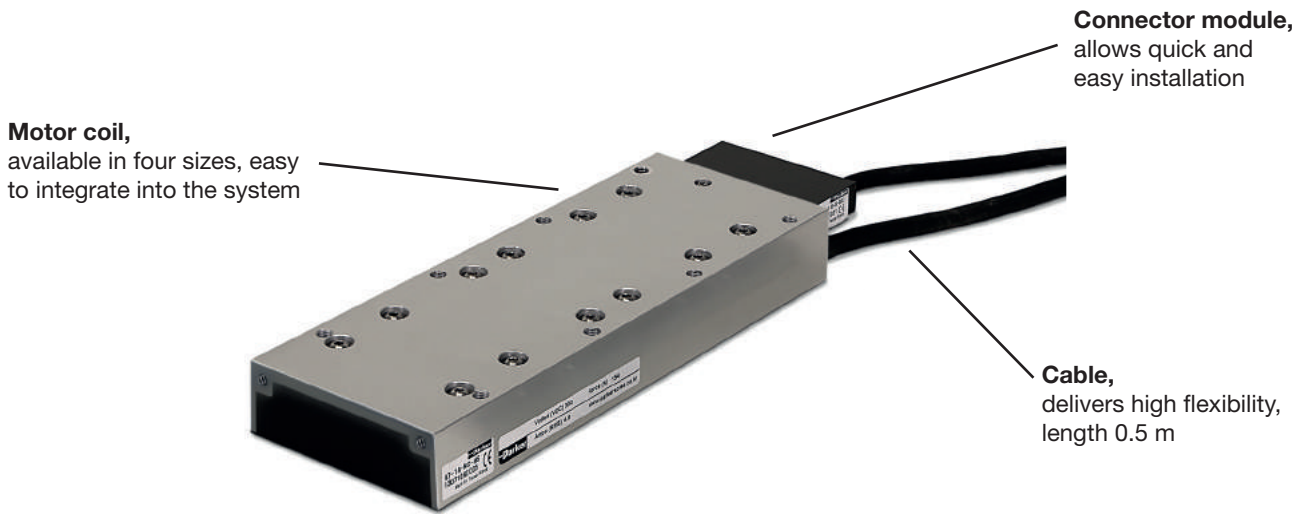
- Life science & medical application
- General automation
- Inkjet printing
- Semiconductors machine
- Material handling

### Technical characteristics - Overview

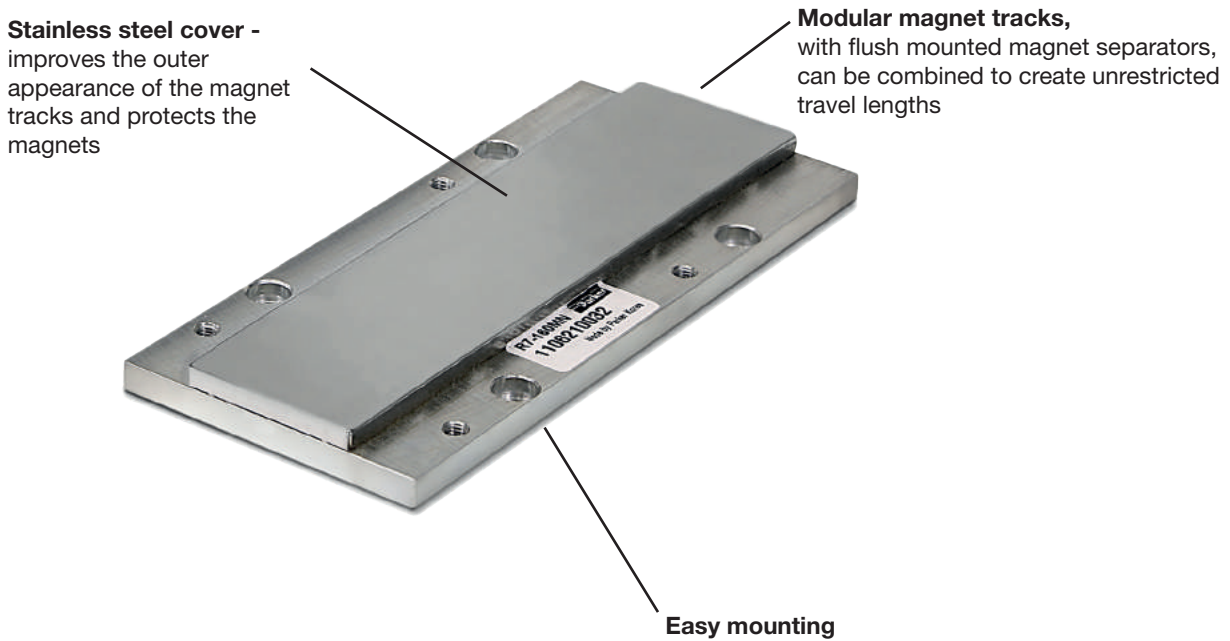
Motor type	Ironcore linear motor
Continuous power	96...1060 W
Continuous force	40...2230 N
Peak force	190...7433 N
Speed range	up to 7 m/s
Track length	160, 180, 240 mm
Cooling	Natural ventilation
Protection level IEC60034-5	IP00
Feedback	Hall digital sensors
Thermal protection	Thermo switch NC 90 °C
Marking	CE
Voltage supply	230 VAC
Temperature class	F
Connection	Flying leads

## Product design

### Motor coil



### Modular track



# Technical characteristics

## Technical data

### Ironcore R5

	Unit	R5-1	R5-2
Winding (Series/Parallel/Triple)		S	S
Power Supply	[VAC]	230	
Continuous Force <sup>1)</sup>	[N]	40	90
Peak Force <sup>2)</sup>	[N]	190	325
Continuous Power	[W]	96	140
Peak Power	[W]	1920	2806
Nominal Speed	[m/s]	7	7
Continuous Current	[A <sub>RMS</sub> ]	1.7	3.0
Peak Current	[A <sub>RMS</sub> ]	7.9	13.5
Force Constant <sup>3)</sup>	[N/A]	22.5	22.5
Back EMF <sup>4)</sup>	[V/m/s]	22.83	27.4
Phase Resistance <sup>5)</sup>	[Ω]	14.3	7.8
Inductance <sup>6)</sup>	[mH]	21.5	13.3
Thermal Resistance	[°C/W]	0.78	0.53
Motor Constant <sup>7)</sup>	[N/W]	5.8	8.2

### Ironcore R7

	Unit	R7-1	R7-2		R7-3	
Winding (Series/Parallel/Triple)		S	S	P	S	T
Power Supply	[VAC]	230				
Continuous Force <sup>1)</sup>	[N]	154	308	308	462	462
Peak Force <sup>2)</sup>	[N]	587	1174	1174	761	761
Continuous Power	[W]	180	360	360	540	540
Peak Power	[W]	3600	7200	7200	10800	10800
Nominal Speed	[m/s]	7	6.3	7.0	4.2	7.0
Continuous Current	[A <sub>RMS</sub> ]	4.6	4.6	9.3	4.6	14.0
Peak Current	[A <sub>RMS</sub> ]	21	21	42	21	63
Force Constant <sup>3)</sup>	[N/A]	23.2	46.4	23.2	69.6	23.2
Back EMF <sup>4)</sup>	[V/m/s]	26.8	53.5	26.8	80.3	26.8
Phase Resistance <sup>5)</sup>	[Ω]	4	8	2	12	1.33
Inductance <sup>6)</sup>	[mH]	6.1	12.2	3.1	18.3	2
Thermal Resistance	[°C/W]	0.42	0.21	0.21	0.14	0.14
Motor Constant <sup>7)</sup>	[N/W]	11.5	16.2	16.2	19.9	19.9

Specifications are based on maintaining the air gap between the coil and track 0.7 mm.

- <sup>1)</sup> Continuous force and current based on coil winding temperature maintained at 100 °C.
- <sup>2)</sup> Peak force and current based on 5 % duty cycle and 1 second duration.
- <sup>3)</sup> The force constant gradually decreases at high current levels. At the peak current the force constant is reduced by 24 %.
- <sup>4)</sup> Back EMF measured between any two motor leads while moving at constant velocity. Value is amplitude or 0-Peak of sine wave produced.
- <sup>5)</sup> Resistance measured between any two motor leads with motor connected in Delta winding at 25 °C. For temperature at 100 °C, multiply resistance by 1295 (75 °C rise\*0.393 %/°C).
- <sup>6)</sup> Inductance measured using 1 Kz with the motor in the magnetic field.
- <sup>7)</sup> Motor constant is a measure of efficiency. Calculated dividing the force constant by the square root of the motor resistance at maximum operating temperature.

### Ironcore R10

	Unit	R10-1	R10-2		R10-3
Winding (Series/Parallel/Triple)		S	S	P	S
<b>Power Supply</b>	[VAC]	230			
<b>Continuous Force <sup>1)</sup></b>	[N]	374	747	747	1121
<b>Peak Force <sup>2)</sup></b>	[N]	1366	2731	2731	4097
<b>Continuous Power</b>	[W]	305	610	610	915
<b>Peak Power</b>	[W]	6098	12 196	12 196	18 294
<b>Nominal Speed</b>	[m/s]	6.2	3.1	6.2	2.1
<b>Continuous Current</b>	[A <sub>RMS</sub> ]	5.5	5.5	11	5.5
<b>Peak Current</b>	[A <sub>RMS</sub> ]	24.8	24.8	49.6	24.8
<b>Force Constant <sup>3)</sup></b>	[N/A]	47.7	95.5	47.7	143.2
<b>Back EMF <sup>4)</sup></b>	[V/m/s]	55.1	110.2	55.1	165.4
<b>Phase Resistance <sup>5)</sup></b>	[Ω]	4.1	8.2	2.05	12.3
<b>Inductance <sup>6)</sup></b>	[mH]	15.4	30.8	7.7	46.2
<b>Thermal Resistance</b>	[°C/W]	0.24	0.12	0.12	0.08
<b>Motor Constant <sup>7)</sup></b>	[N/W]	21.4	30.3	30.3	37.1

### Ironcore R16

	Unit	R16-1	R16-2		R16-3
Winding (Series/Parallel/Triple)		S	S	P	S
<b>Power Supply</b>	[VAC]	230			
<b>Continuous Force <sup>1)</sup></b>	[N]	743	1487	1487	2230
<b>Peak Force <sup>2)</sup></b>	[N]	2478	4955	4955	7433
<b>Continuous Power</b>	[W]	353	707	707	1060
<b>Peak Power</b>	[W]	7065	14 130	14 130	21 195
<b>Nominal Speed</b>	[m/s]	3.1	1.5	3.1	1
<b>Continuous Current</b>	[A <sub>RMS</sub> ]	5.5	5.5	11	5.5
<b>Peak Current</b>	[A <sub>RMS</sub> ]	24.6	24.8	49.3	24.6
<b>Force Constant <sup>3)</sup></b>	[N/A]	95.5	190.9	95.5	286.4
<b>Back EMF <sup>4)</sup></b>	[V/m/s]	110.2	220.5	110.2	330.7
<b>Phase Resistance <sup>5)</sup></b>	[Ω]	6.1	12.2	3.05	18.3
<b>Inductance <sup>6)</sup></b>	[mH]	29	58	14.5	87
<b>Thermal Resistance</b>	[°C/W]	0.21	0.11	0.11	0.07
<b>Motor Constant <sup>7)</sup></b>	[N/W]	39.6	55.9	55.9	68.5

Specifications are based on maintaining the air gap between the coil and track 0.7 mm.

- <sup>1)</sup> Continuous force and current based on coil winding temperature maintained at 100 °C.
- <sup>2)</sup> Peak force and current based on 5 % duty cycle and 1 second duration.
- <sup>3)</sup> The force constant gradually decreases at high current levels. At the peak current the force constant is reduced by 24 %.
- <sup>4)</sup> Back EMF measured between any two motor leads while moving at constant velocity. Value is amplitude or 0-Peak of sine wave produced.
- <sup>5)</sup> Resistance measured between any two motor leads with motor connected in Delta winding at 25 °C. For temperature at 100 °C, multiply resistance by 1295 (75 °C rise\*0.393 %/°C).
- <sup>6)</sup> Inductance measured using 1 Kz with the motor in the magnetic field.
- <sup>7)</sup> Motor constant is a measure of efficiency. Calculated dividing the force constant by the square root of the motor resistance at maximum operating temperature.



## Standards and conformance

### Low Voltage Directive

- 2006/95/EC

### Safety of machinery - Electrical equipment of machines - Part 1: General requirements

- Standard EN60204-1:2006 + A1:2009

Marked 

## Associated Drives

Parker can also offer suitable servo drives with a variety of different technology functions and communication options for use with the Ironcore linear motor.

Ironcore series	Continuous current [A]	Peak current [A]	Compax3	SLVD-N
R5-1S	1.7	7.9	C3S025V2	SLVD2N..
R5-2S	3.0	13.5	C3S063V2	SLVD5N..
R7-1S	4.6	21	C3S063V2	SLVD5N..
R7-2S	4.6	21	C3S063V2	SLVD5N..
R7-2P	9.3	42	C3S100V2	SLVD10N..
R7-3S	4.6	21	C3S063V2	SLVD5N..
R7-3T	14	63	C3S150V2	SLVD15N..
R10-1S	5.5	24.8	C3S063V2	SLVD7N..
R10-2S	5.5	24.8	C3S063V2	SLVD7N..
R10-2P	11	49.6	C3S150V2	SLVD15N..
R10-3S	5.5	24.8	C3S063V2	SLVD7N..
R16-1S	5.5	24.6	C3S063V2	SLVD7N..
R16-2S	5.5	24.8	C3S063V2	SLVD7N..
R16-2P	11	49.3	C3S150V2	SLVD15N..
R16-3S	5.5	24.6	C3S063V2	SLVD7N..

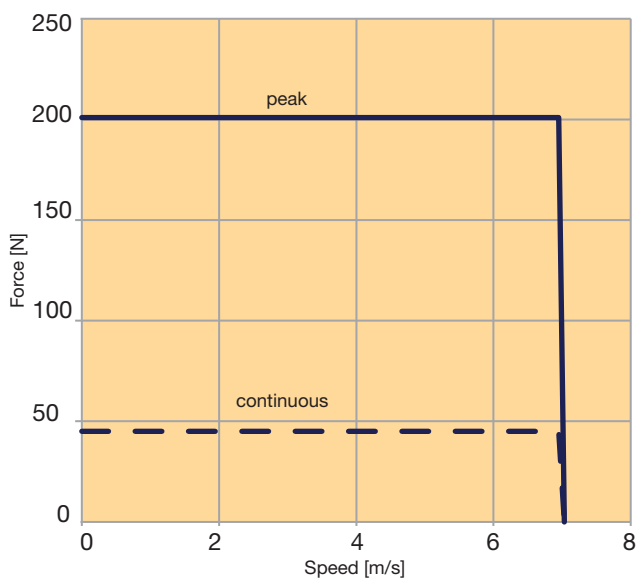
Note:

Above motor and drive combinations based on continuous motor current ratings. Smaller amplifiers (for low force, high speed) or larger amplifiers (using higher peak current for faster accelerations) may be appropriate depending upon the application requirements. Contact our technical support in evaluating appropriate motor/drive combinations.

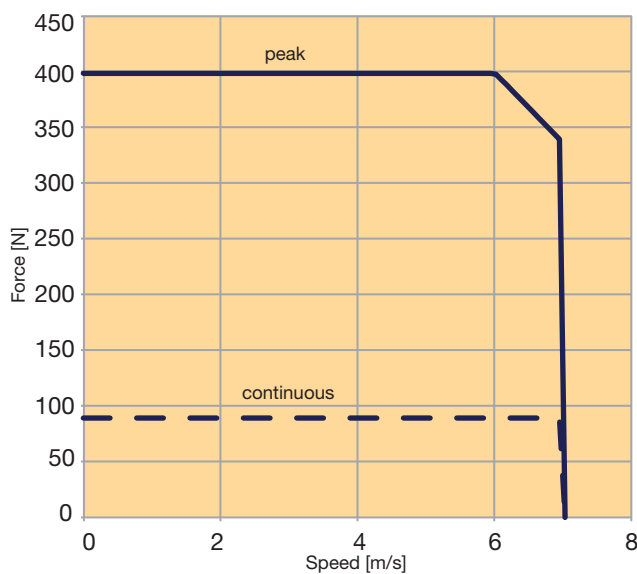
## Performance curves

### Ironcore R5

#### R5-1 series (dynamic)

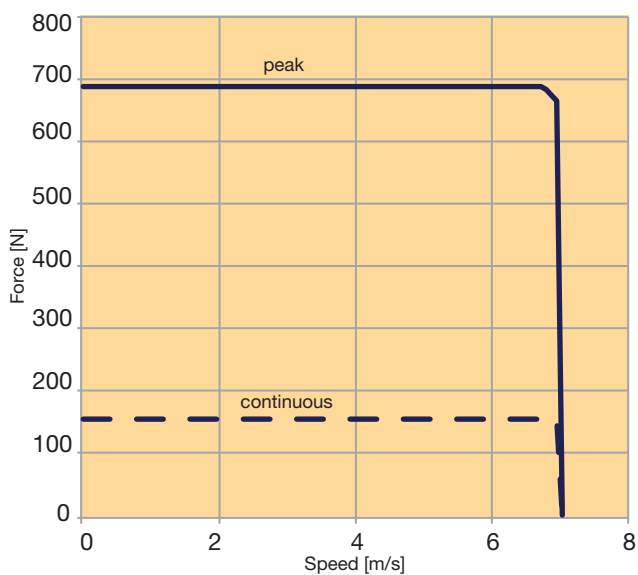


#### R5-2 series (dynamic)



### Ironcore R7

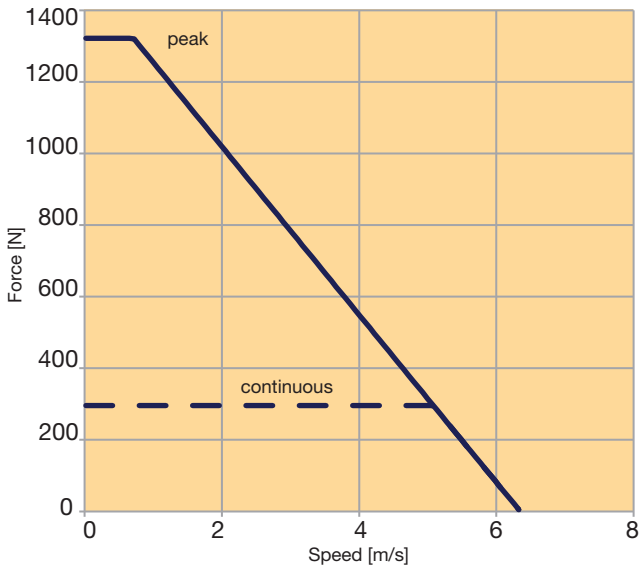
#### R7-1 series (dynamic)



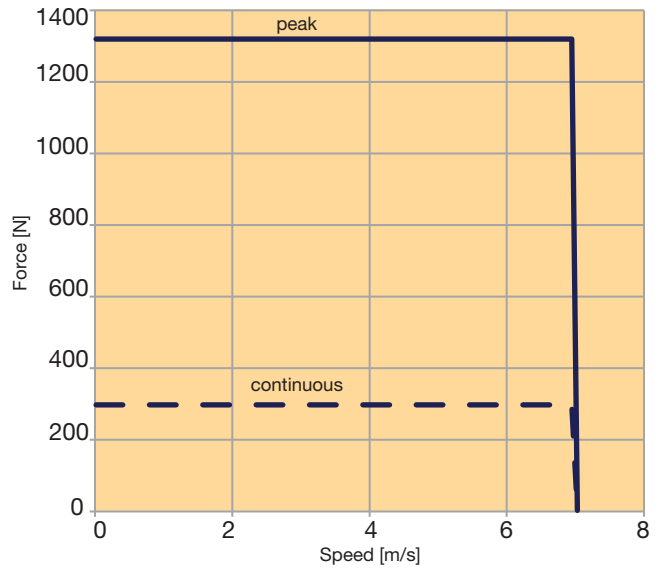
Simulated force-speed curves with a amplifier at 340 VDC.  
Assumes motor is mounted to an aluminum plate with dimensions of at least the size indicated in the thermal test condition.  
Maximum winding temperature is 155°C. Thermal protection device may be at a lower temperature.  
These ratings are valid for Parker Hannifin Drives. Other drives may not achieve the same ratings.

**Ironcore R7**

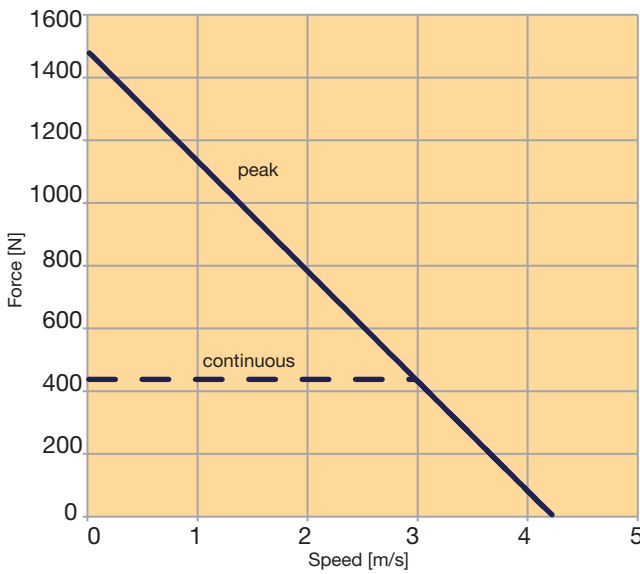
**R7-2 series (dynamic)**



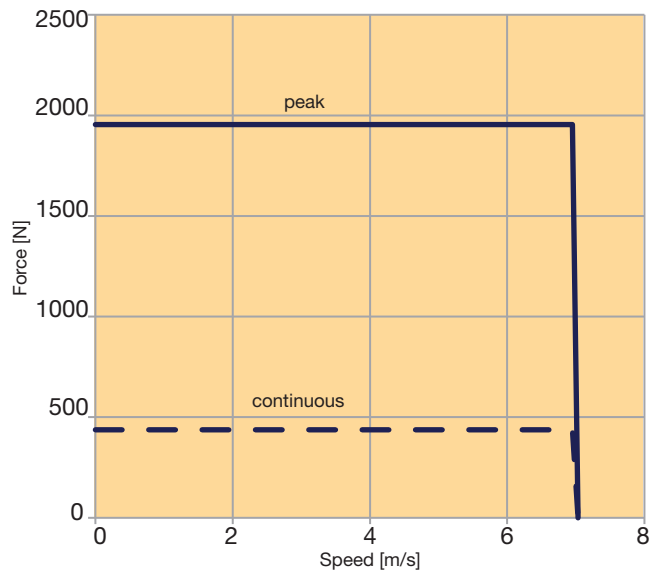
**R7-2 parallel (dynamic)**



**R7-3 series (dynamic)**



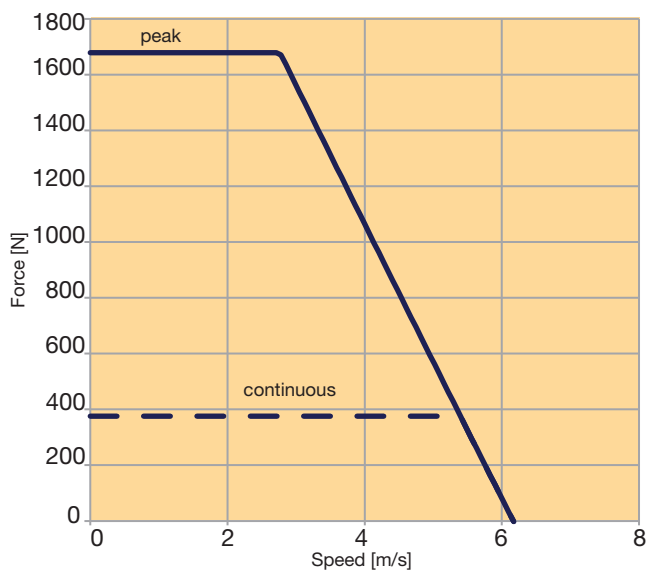
**R7-3 triple (dynamic)**



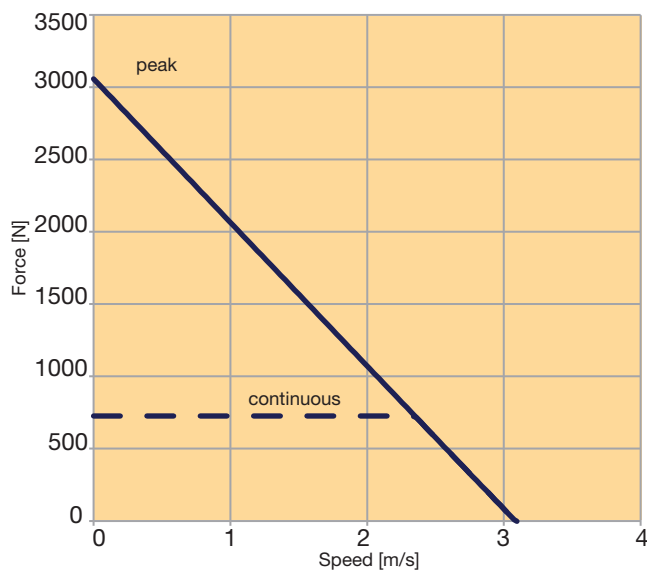
Simulated force-speed curves with a amplifier at 340 VDC.  
Assumes motor is mounted to an aluminum plate with dimensions of at least the size indicated in the thermal test condition.  
Maximum winding temperature is 155°C. Thermal protection device may be at a lower temperature.  
These ratings are valid for Parker Hannifin Drives. Other drives may not achieve the same ratings.

**Ironcore R10**

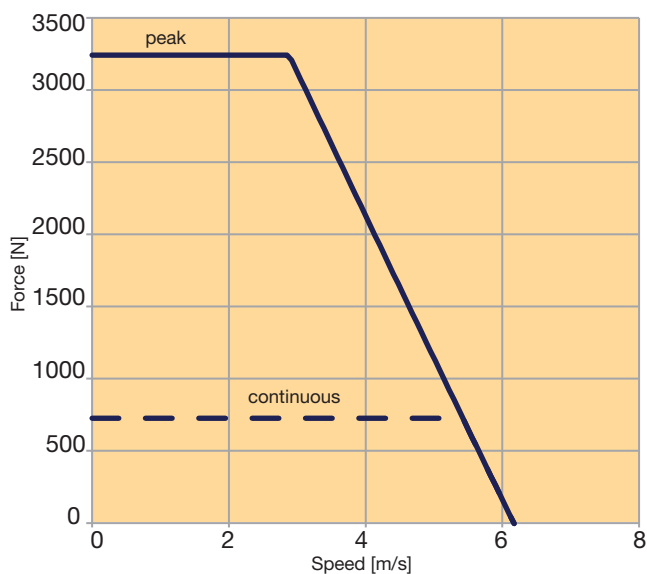
**R10-1 series (dynamic)**



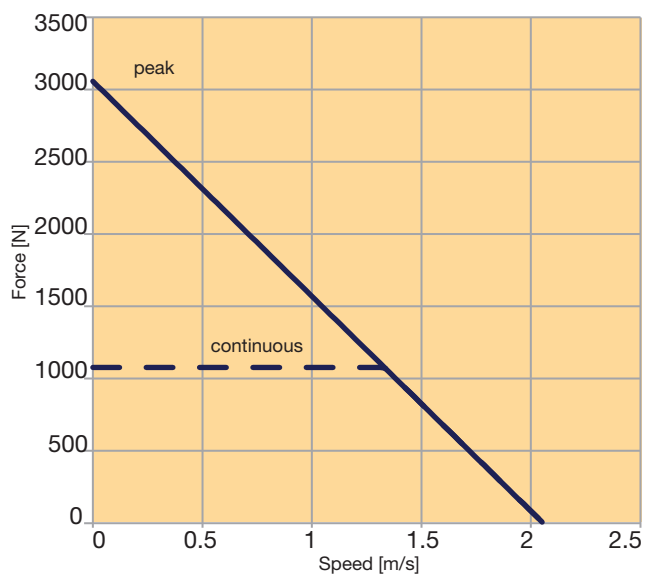
**R10-2 series (dynamic)**



**R10-2 parallel (dynamic)**



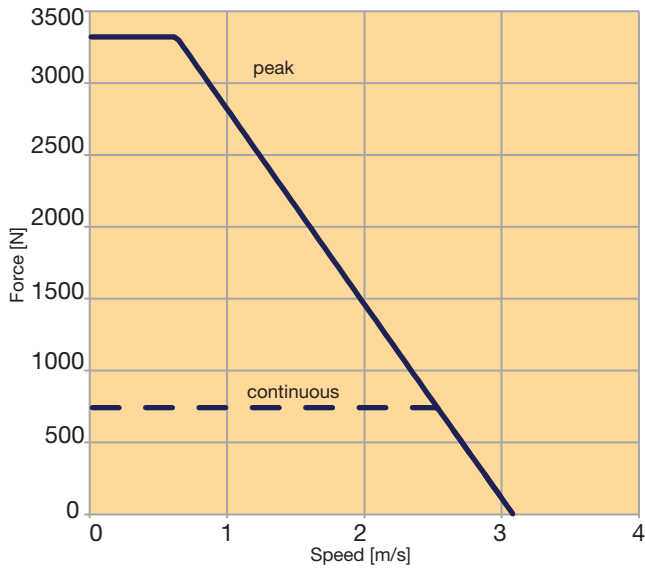
**R10-3 series (dynamic)**



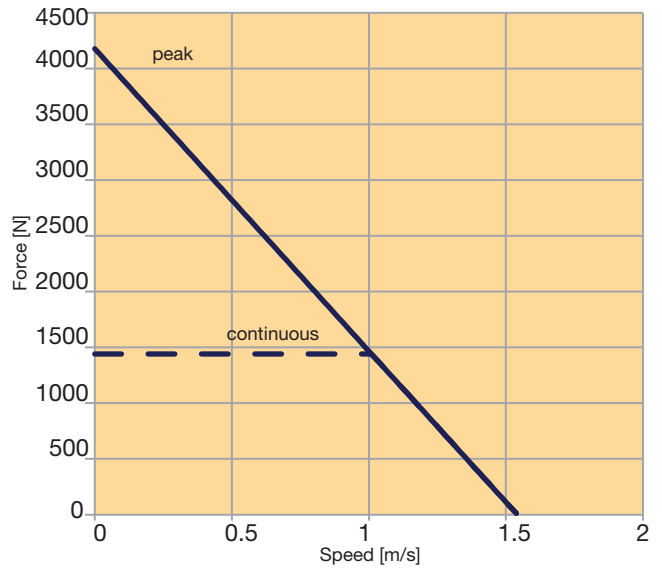
Simulated force-speed curves with a amplifier at 340 VDC.  
Assumes motor is mounted to an aluminum plate with dimensions of at least the size indicated in the thermal test condition.  
Maximum winding temperature is 155°C. Thermal protection device may be at a lower temperature.  
These ratings are valid for Parker Hannifin Drives. Other drives may not achieve the same ratings.

**Ironcore R16**

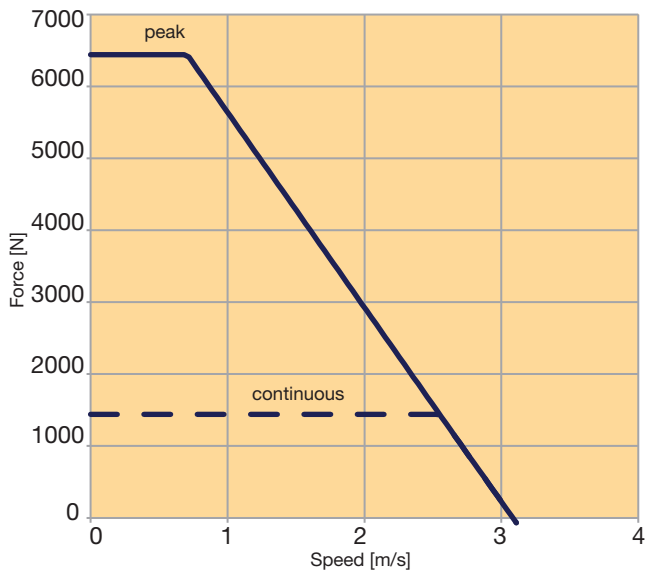
**R16-1 series (dynamic)**



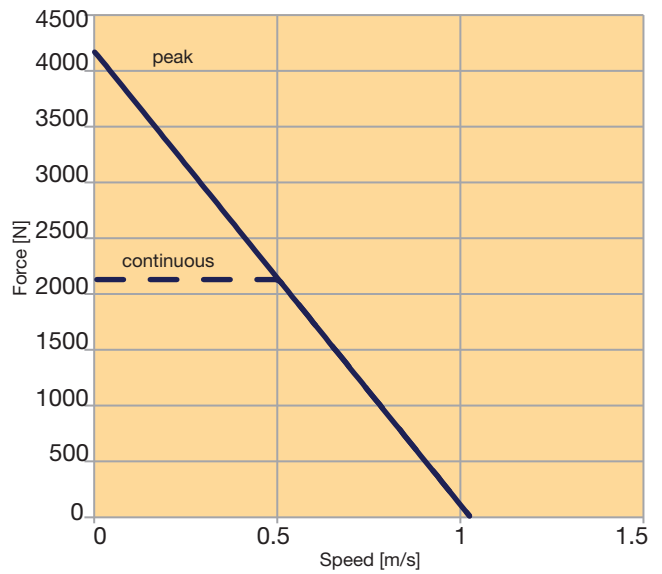
**R16-2 series (dynamic)**



**R16-2 parallel (dynamic)**



**R16-3 series (dynamic)**

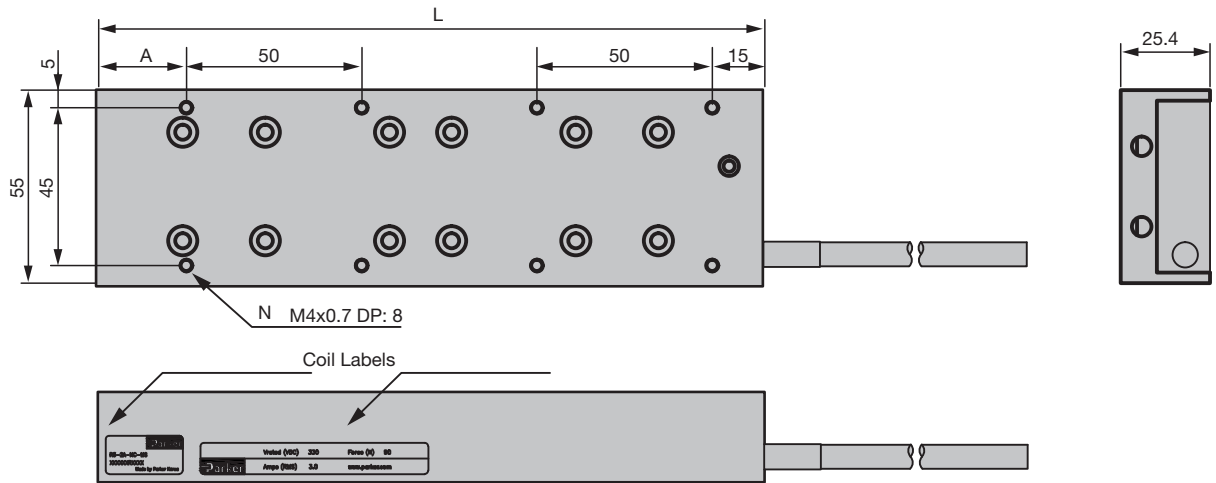


Simulated force-speed curves with a amplifier at 340 VDC.  
Assumes motor is mounted to an aluminum plate with dimensions of at least the size indicated in the thermal test condition.  
Maximum winding temperature is 155°C. Thermal protection device may be at a lower temperature.  
These ratings are valid for Parker Hannifin Drives. Other drives may not achieve the same ratings.

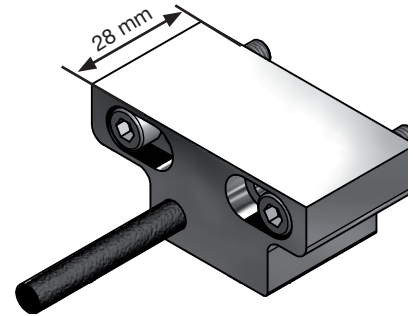
## Dimensions

### R5 - Coil

Dimensions [mm]



### R5 - Connector Module



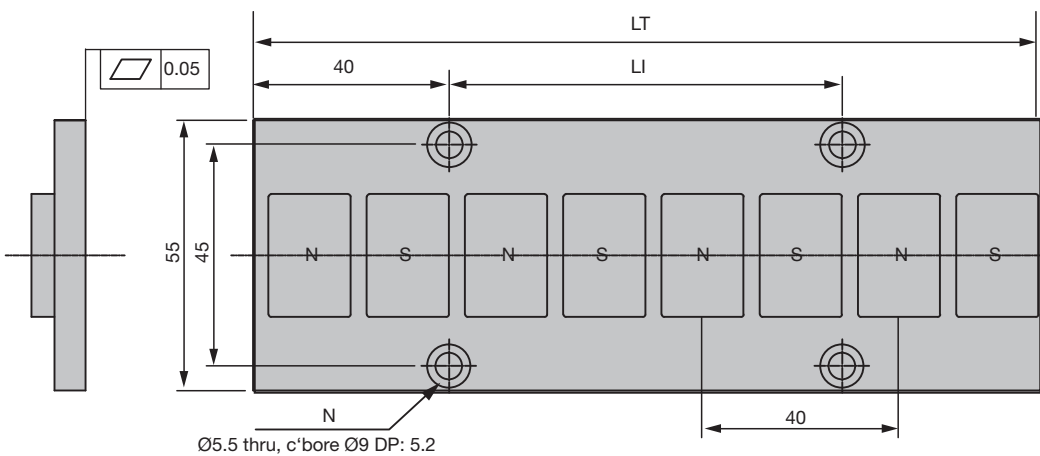
	Unit	R5-1	R5-2
Coil Wweight	[kg]	0.6	3.0
Attractive force	[N]	667	979
Electrical cycle length <sup>1)</sup>	[mm]	40	40
Cable length	[mm]	500	500

<sup>1)</sup> The force constant decreases at high current levels.

R5 - Coil	L [mm]	N (Number of holes)	OAL <sup>1)</sup> [mm]	A [mm]	Winding
R5-1A-NC-HS	130	6	158	15	series
R5-2A-NC-HS	190	8	218	25	series

<sup>1)</sup> Dimension with HES sensor

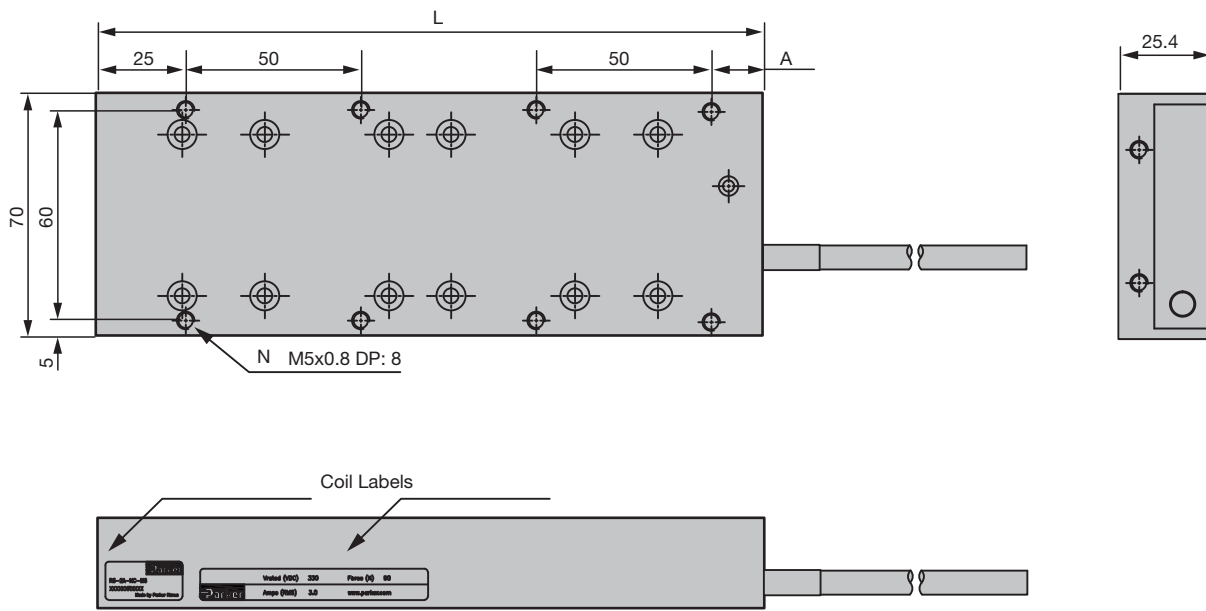
### R5 - Modular track



R5 - Modular Track	LI (Incremental Length) [mm]	Minimum Length [mm]	LT (Length Magnet Track) [mm]	N (Number of holes)	Weight [kg]
R5-160MN	80	40	160	6	4.8
R5-240MN	80	40	240	8	7.2

Dimensions [mm]

**R7 - Coil**



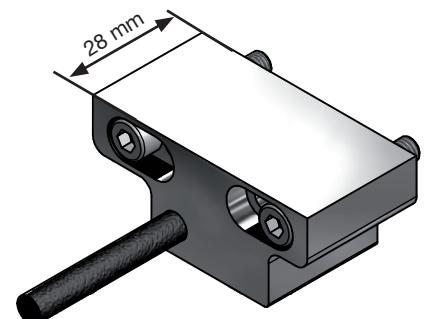
	Unit	R7-1	R7-2	R7-3
Coil weight	[kg]	1.5	3.0	4.5
Attractive force	[N]	1557	3114	4671
Electrical cycle length <sup>1)</sup>	[mm]	40	40	40
Cable length	[mm]	500	500	500

<sup>1)</sup> The force constant decreases at high current levels.

R7 - Coil	L [mm]	N (Number of holes)	OAL <sup>1)</sup> [mm]	A [mm]	Winding
R7-1A-HS	190	8	218	15	Series
R7-2A-HS	350	14	378	25	Series
R7-2A-HP	350	14	378	25	Parallel
R7-3A-HS	510	20	538	35	Series
R7-3A-HT	510	20	538	35	Triple

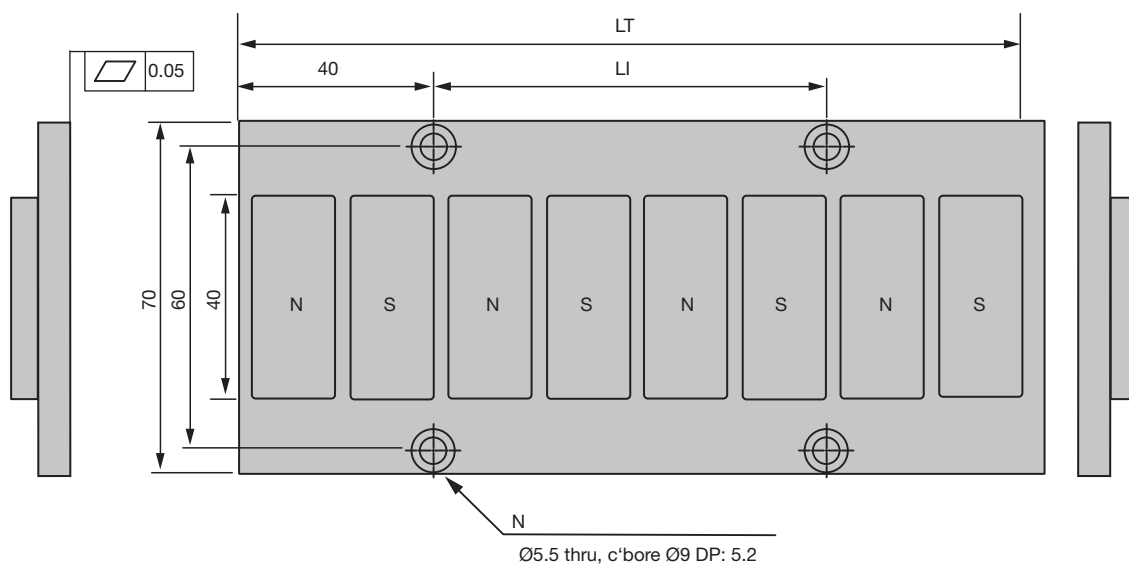
<sup>1)</sup> Dimension with HES sensor

**R7 - Connector module**



**R7 - Modular track**

Dimensions [mm]

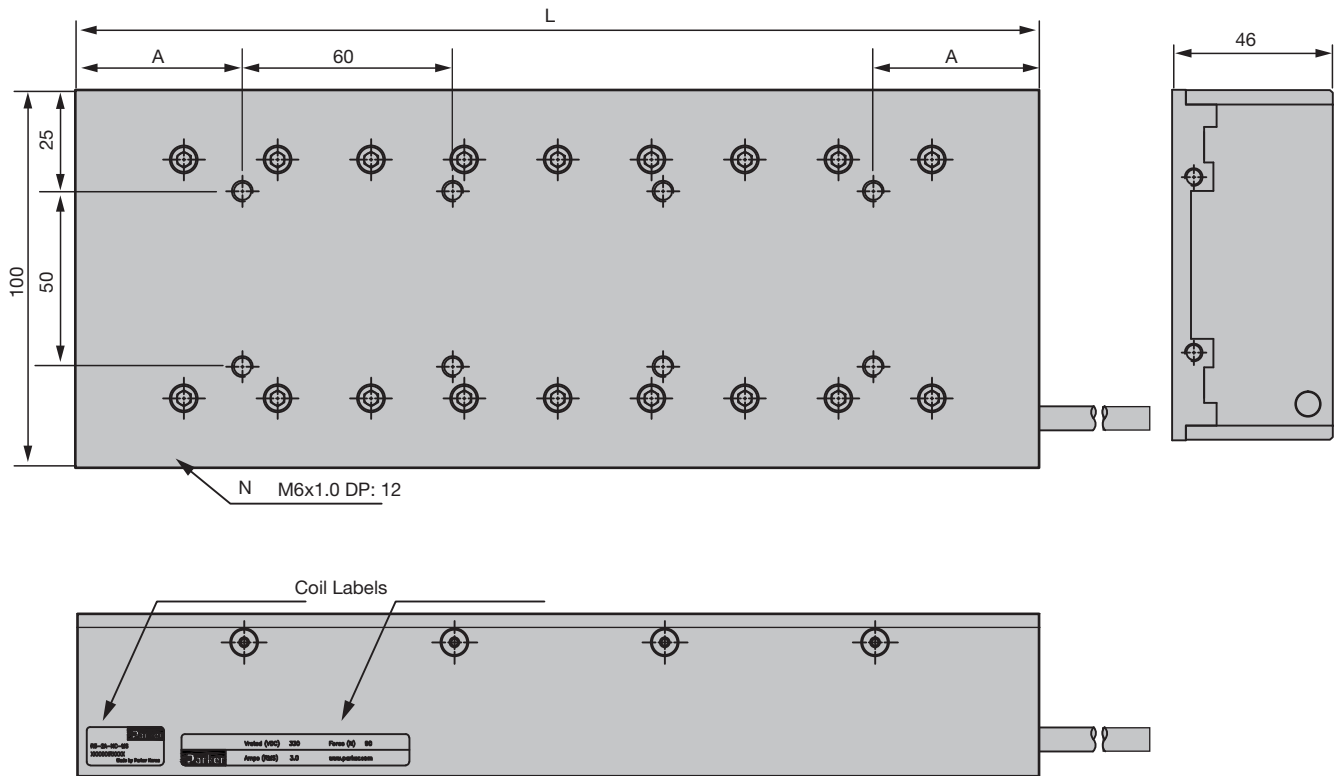


R7 - Modular track	LI (Incremental length) [mm]	Minimum length [mm]	LT (Length magnet track) [mm]	N (Number of holes)	Weight [kg]
R7-160MN	80	160	160	4	7.3
R7-240MN	80	160	240	6	11



Dimensions [mm]

**R10 - Coil**



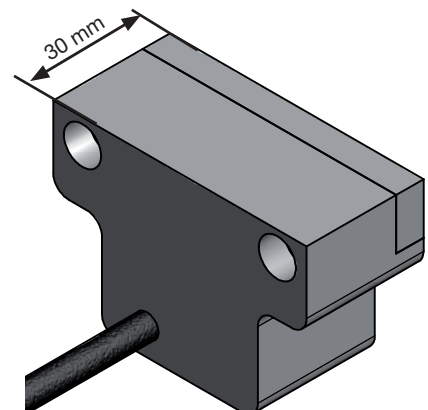
	Unit	R10-1	R10-2	R10-3
Coil weight	[kg]	4.5	9.1	13.6
Attractive force	[N]	3559	7117	10675
Electrical cycle length <sup>1)</sup>	[mm]	60	60	60
Cable length	[mm]	500	500	500

<sup>1)</sup> The force constant decreases at high current levels.

R10 - Coil	L [mm]	N (Number of holes)	OAL <sup>1)</sup> [mm]	A [mm]	Winding
R10-1A-HS	275.5	8	305.5	47.75	Series
R10-2A-HS	515.5	16	545.5	47.75	Series
R10-2A-HP	515.5	16	545.5	47.75	Parallel
R10-3A-HS	755.5	24	785.5	47.75	Series

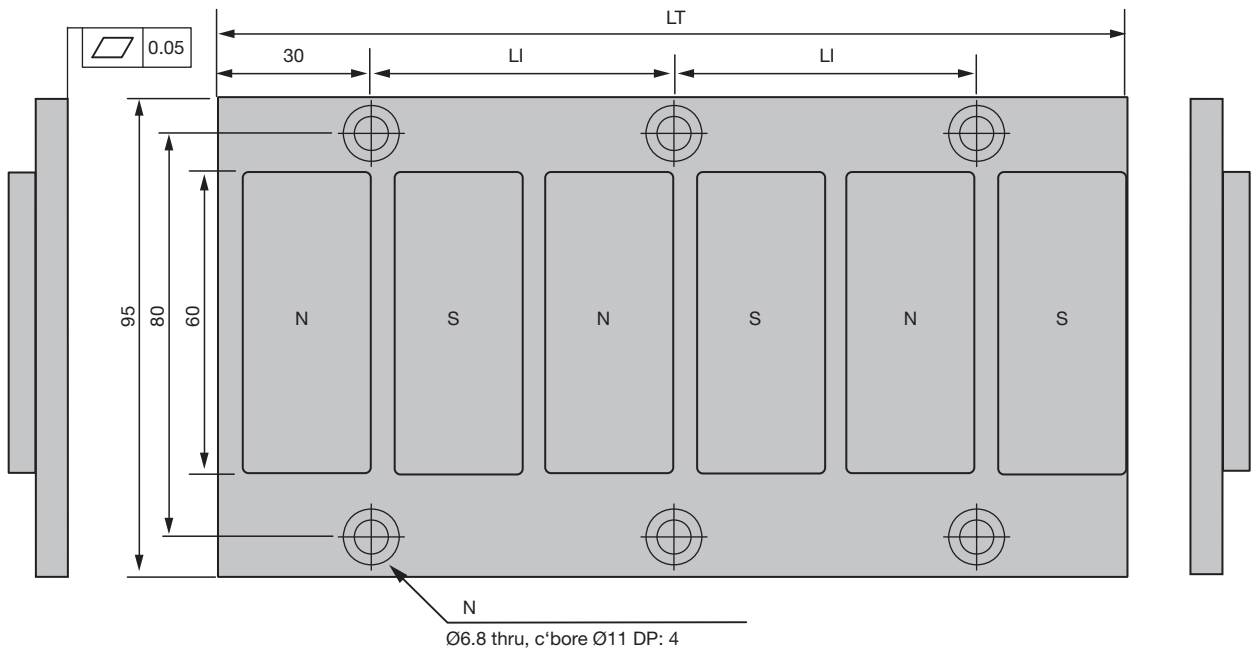
<sup>1)</sup> Dimension with HES sensor

**R10 - Connector module**



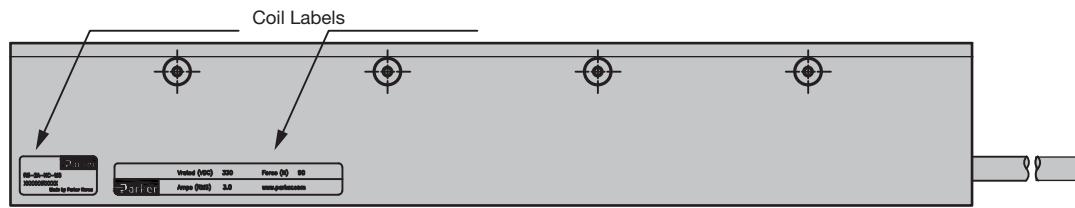
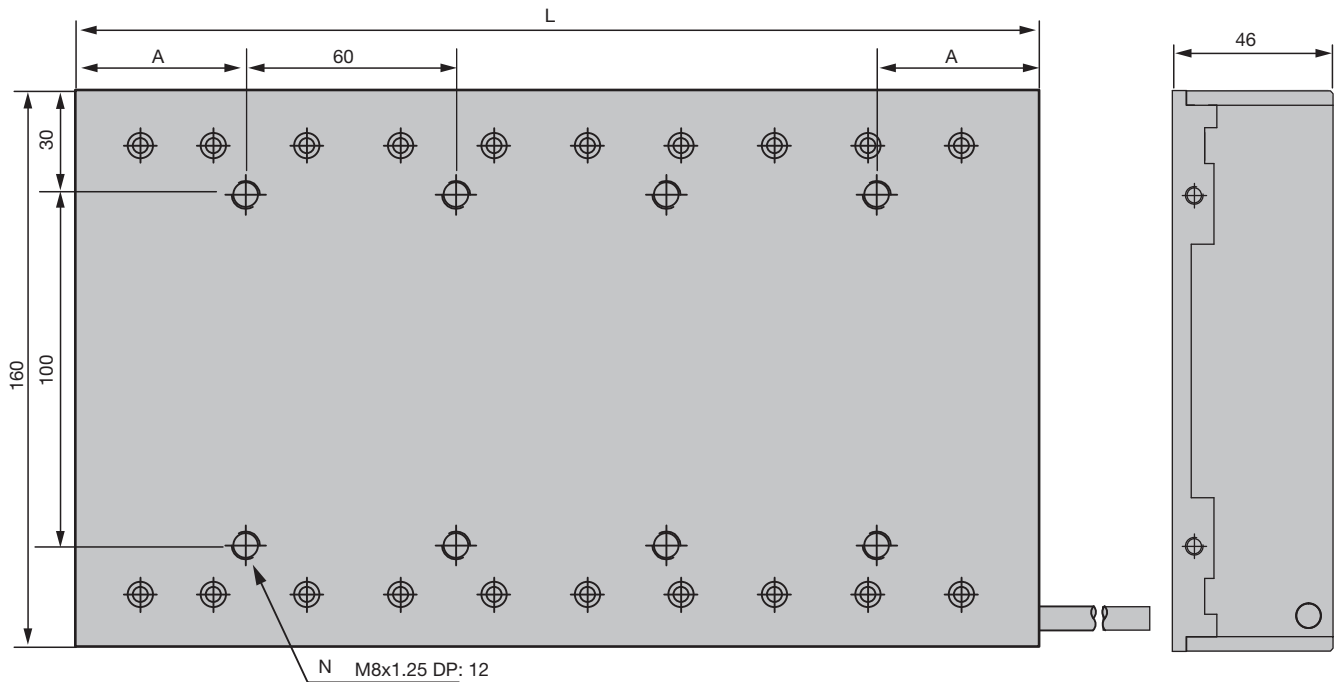
**R10 - Modular Track**

Dimensions [mm]



R10 - Modular Track	LI (Incremental Length) [mm]	Minimum Length [mm]	LT (Length Magnet Track) [mm]	N (Number of holes)	Weight [kg]
R10-180MN	60	180	180	6	12
R10-240MN	60	180	240	8	15.7

**R16 - Coil**



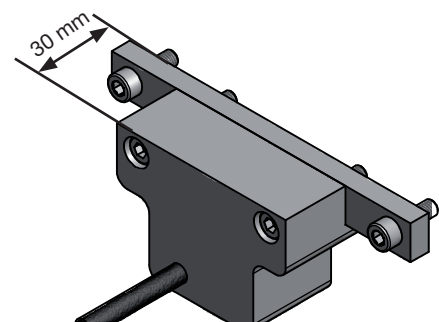
	Unit	R16-1	R16-2	R16-3
Coil weight	[kg]	9.1	18.2	27.3
Attractive force	[N]	7117	14234	21351
Electrical cycle length <sup>1)</sup>	[mm]	60	60	60
Cable length	[mm]	500	500	500

<sup>1)</sup> The force constant decreases at high current levels.

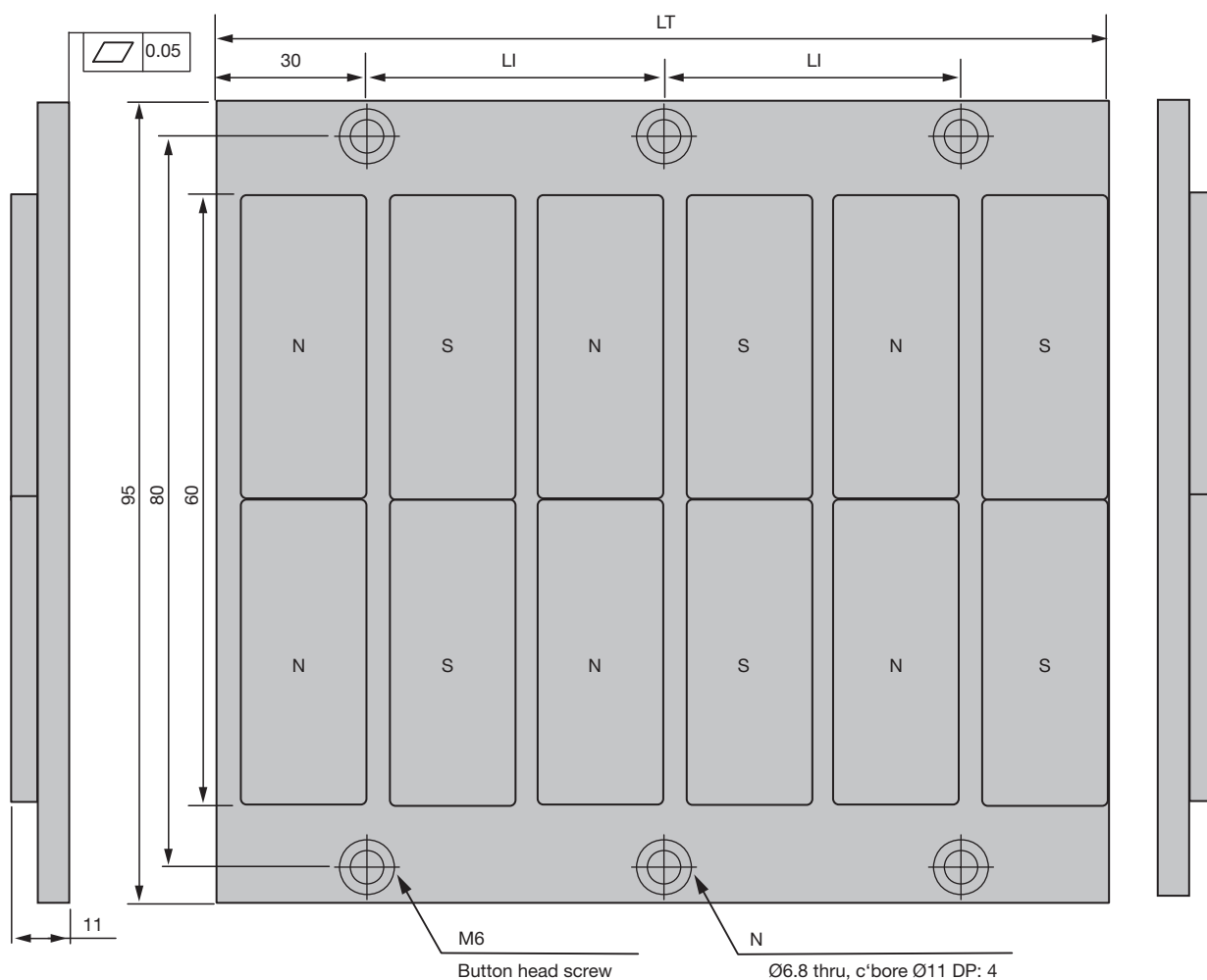
R16 - Coil	L [mm]	N (Number of holes)	OAL <sup>1)</sup> [mm]	A [mm]	Winding
R16-1A-HS	275.5	8	305.5	47.75	S
R16-2A-HS	515.5	16	545.5	47.75	S
R16-2A-HP	515.5	16	545.5	47.75	P
R16-3A-HS	755.5	24	785.5	47.75	S

<sup>1)</sup> Dimension with HES sensor

**R16 - Connector module**

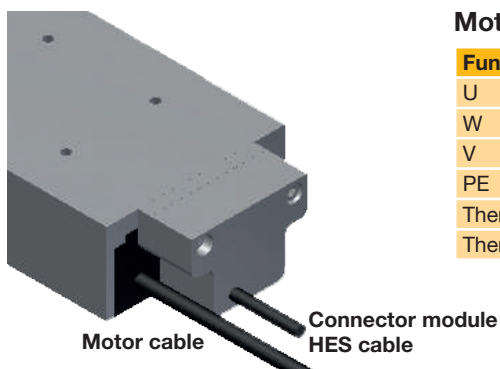


**R16 - Modular track**



R16- Modular track	LI (Incremental length) [mm]	Minimum length [mm]	LT (Length magnet track) [mm]	N (Number of holes)	Weight [kg]
R16-180MN	60	180	180	6	20
R16-240MN	60	180	240	8	27

**Layout and connectors**



**Motor cable wiring**

Function	Color
U	Red/Yellow
W	Brown/Yellow
V	Orange/Yellow
PE	Green/Yellow
Thermo+	Grey
Thermo-	Violet

**HES cable wiring**

Function	Color
+5 V	Black
GND	White
HES C	Yellow
HES B	Blue
HES A	Green
Shield	Shield

## Digital Hall module - HES

The commutation method of the R-series ironcore motors relies on Hall Effect Sensors (HES); they sense the presence of a magnetic field and provide an output as a function of theforcer position. HES sensors, mounted on Parker Ironcore motor, have 3 digital hall sensors, each shifted 120 degrees; the forcer position can be resolved to any of three segments over 360 electrical degrees.

The Hall Sensors used in the Ironcore motors have the following features:

- NPN open collector rated at 10 mA, 5 V max
- Power supply +5 VDC (Hall\_PWR) and GN (Hall\_GND)

## Accessories

### External linear encoders

There are a variety of methods to provide linear positional feedback to the motion controller. There are analog transducers, rack-and-pinion style potentiometers, and laser interferometers, to name a few. Each has its own level of accuracy and cost. But far and away the most popular feedback device for linear motor positioning systems is the linear encoder. There are two popular styles of linear encoders – optical and magnetic.

<b>MSK500010KE1</b>	Incremental, digital interface, resolution 1 $\mu\text{m}$ <ul style="list-style-type: none"> <li>• Max. resolution up to 1 <math>\mu\text{m}</math></li> <li>• Repeat accuracy <math>\pm 0.01</math> mm</li> <li>• Status LED display</li> <li>• Works with magnetic band MB500</li> <li>• Reading distance up to 2 m</li> </ul>
<b>LIC 2117</b>	Absolute, EnDat interface, resolution 0.1 $\mu\text{m}$ <ul style="list-style-type: none"> <li>• Max. resolution up to 0.1 <math>\mu\text{m}</math></li> <li>• Repeat accuracy <math>\pm 15</math> <math>\mu\text{m}</math></li> <li>• EnDat2.2</li> <li>• Reading distance up to 3 m</li> </ul>
<b>TTK50 – HXQ0K02</b>	Absolute, Hiperface interface, resolution 0.24 $\mu\text{m}$ <ul style="list-style-type: none"> <li>• Max. resolution up to 0.24 <math>\mu\text{m}</math></li> <li>• Repeat accuracy <math>&lt; 0.5</math> <math>\mu\text{m}</math></li> <li>• Hiperface</li> <li>• Reading distance up to 940 mm</li> </ul>

## Order code

### Motor coil (with Connector module)

	1		2	3		4	5
Order example	<b>R5</b>	-	<b>1</b>	<b>A</b>	-	<b>H</b>	<b>S</b>

<b>1 Series</b>	
<b>R5</b>	Ironcore Coil 190/325N peak force - 40/90 continuous force
<b>R7</b>	Ironcore Coil 587/1174/761N peak force - 154/308/462 continuous force
<b>R10</b>	Ironcore Coil 1366/2731/4097N peak force - 374/747/1121 continuous force
<b>R16</b>	Ironcore Coil 2478/4955/7433N peak force - 743/1487/2230 continuous force
<b>2 Coil Size</b>	
<b>1</b>	One pole
<b>2</b>	Two pole
<b>3</b>	Three pole (only R7)
<b>3 Mounting</b>	
<b>A</b>	Standard Mounting
<b>4 Connector Module</b>	
<b>H</b>	Hall Sensor Ready for apply to Hall Sensor
<b>5 Winding</b>	
<b>S</b>	Series
<b>P</b>	Parallel ( 2 Poles only)
<b>T</b>	Triple (3 Poles only) - (only R7)

### Modular track

	1		2	3	4
Order example	<b>R5</b>	-	<b>160</b>	<b>M</b>	<b>C</b>

<b>1 Series</b>	
<b>R5</b>	For R5 Coil
<b>R7</b>	For R7 Coil
<b>R10</b>	For R10 Coil
<b>R16</b>	For R16 Coil
<b>2 Track Length <sup>1)</sup></b>	
<b>160</b>	160 mm for R5 and R7
<b>180</b>	180 mm for R10 and R16
<b>240</b>	240 mm for all models
<b>3 Mounting</b>	
<b>M</b>	Modular (standard)
<b>4 Magnet Coating</b>	
<b>C</b>	With stainless steel cover (standard)

<sup>1)</sup> Parker offers modular magnet tracks between 160 and 240 mm that can be combined to create unrestricted travel lengths.

### Safety precautions:

Use extreme caution in handling tracks. Ironcore Linear Motors contain exposed magnets and have an open magnetic field. Any ferrous metal, steel or iron, will be attracted to the magnet track. The amount of attractive force increases significantly as the distance from the magnet decreases. Severe injury may occur to fingers or hands if caught between the track and coil or other metal object.

Use extreme caution when installing the coil. The data sheet lists the attractive force between the coil and track. Refer to the "Motor Installation Guide" for proper installation instructions.

Any person with medical electronic implants should use extreme caution when near an open magnetic field. The magnetic field could interfere with the medical device's operation.

Any person working or handling the tracks should remove personal effects. Items such as jewelry, watches, keys and credit cards may be damaged or adversely affected by the magnetic field.



# 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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### US Product Information Centre

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