Pneumatic Conversion Actuators

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Features & Benefits

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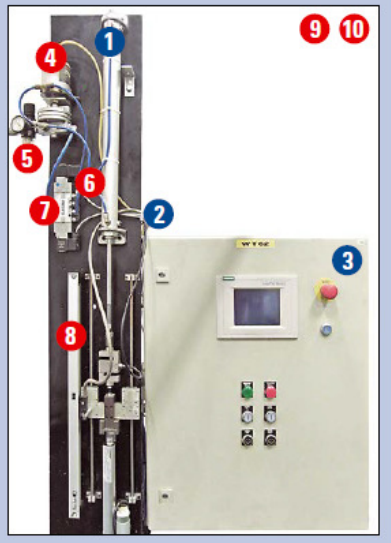
- **Switch from Pneumatic to Electromechanical and experience:**
  - **More Flexibility**
  - **Higher power output**
  - **Increased energy efficiency**
- **The many advantages:**
  - **Faster and simpler sizing and selection**
  - **More predictable performance**
  - **Reduced service and maintenance**
  - **More flexible production from easier programming and positioning changes**
  - **More accurate moves of higher loads for the same or smaller envelope size**
  - **Smoother and quieter operation**
  - **Faster and simpler installation**
  - **Reduced energy costs**
  - **Increased reliability**

Electromechanical Actuator vs. Pneumatic Solution

	Electromechanical Design	Pneumatic Design
1. Actuator / cylinder 2. Cables 3. Control box --- 4. Servo valve 5. Regulator 6. Air hoses 7. Valve block 8. Linear scale 9. Compressor 10. Other equipment		
Controllability	★★★★	★★
Load	★★★	★★
Accuracy	★★★★	★
Speed	★★★	★★★★
Maintenance	★★★	★
Noise	★★★	★★
Installed Cost	★★	★★★★
Operating Cost	★★★★	★
Total Cost	★★★	★★

Both equipments on the images perform the same operation and are shown in the same scale.

★	Poor
★★	Fair
★★★	Good
★★★★	Excellent

Interchange

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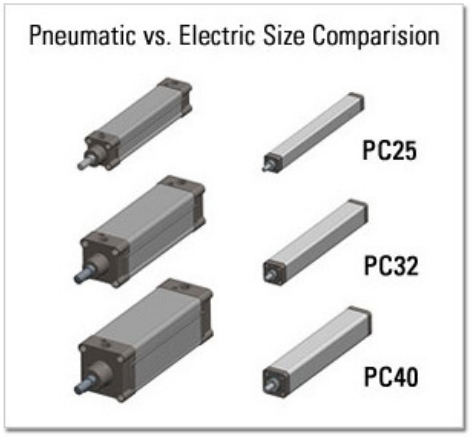
WHY ELECTRIC? | SAVINGS ESTIMATOR | INTERCHANGE | PC BENEFITS | APPLICATIONS | CONTACT US

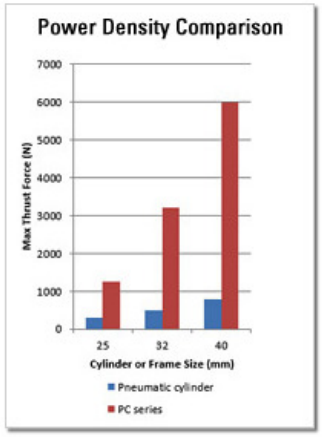
Home › Interchange

Simple Interchange

Thomson's PC Series of electric actuators comply to ISO 15552, a standard for metric pneumatic cylinders. This standard governs the mechanical interface dimensions of both the cylinder and its mounting accessories. Upgrading your machine to realize the benefits of electric actuation is made simple, with the following dimensions set to match ISO:

- Frame size
- Mounting thread size and bolt circle diameter
- Rod end and clevis interface
- Trunnion, foot and face mounting





Benefit from exceptional power density in one of two ways:

1. Save valuable space in your machine using smaller frame size actuators to replace pneumatic cylinders

2. Enjoy longer life and higher reliability by taking advantage of the higher force of an electric actuator in the same frame size as your pneumatic cylinder.

CONTACT US

Brochure

See complete specifications for the PC Series.

Download Now »

Get Started

Make the move to electric PC Series actuators

Get Started »

Market & Applications

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- **Form, Fill and Seal**
  - Material handling in form, fill and seal applications
  - Electromechanical actuators providing higher precision and repeatability than a pneumatic solution

- **Grading**
  - Sorting arms and pushers in grading applications.
    The predictable life and minimum maintenance of an electromechanical actuator ensures minimum downtime.

- **Converting and Container Manufacturing**
  - Molding, can and box manufacturing often requires several axes in sync and operates in confined spaces.
    Save space and installation time while improving accuracy over high speeds by switching to electromechanical solution.

- **Inspection**
  - Testing and checking is essential to overall product quality.
    The superior accuracy and repeatability of an electromechanical actuator is a major advantage over a pneumatic solution at this critical step.

Market & Applications

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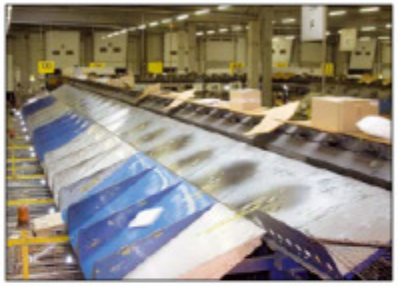
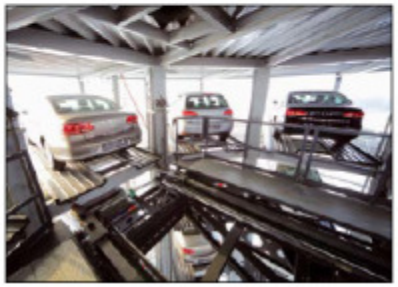
- **Marking and Printing**
  - Electromechanical actuators are an ideal choice for the end of the manufacturing line, where labels and printing often takes place but no air lines may be present.

- **Secondary Packaging**
  - Automation is increasing at the end of the line and the space-saving design of electromechanical actuators enable higher loads without taking up unnecessary space.

- **Conveying, sorting and Pick And Place**
  - Typical applications where requirements and variations of the products coming down the line. Electromechanical actuators allow you to change the positions quickly with a program change, instead of having to redesign or change the cylinder.



- **Automated Storage and Retrieval**
  - High duty cycles in harsh environments common.
    Reduce maintenance and downtime while consuming less energy when you choose electromechanical actuators instead of pneumatic.



PC Series Brochure

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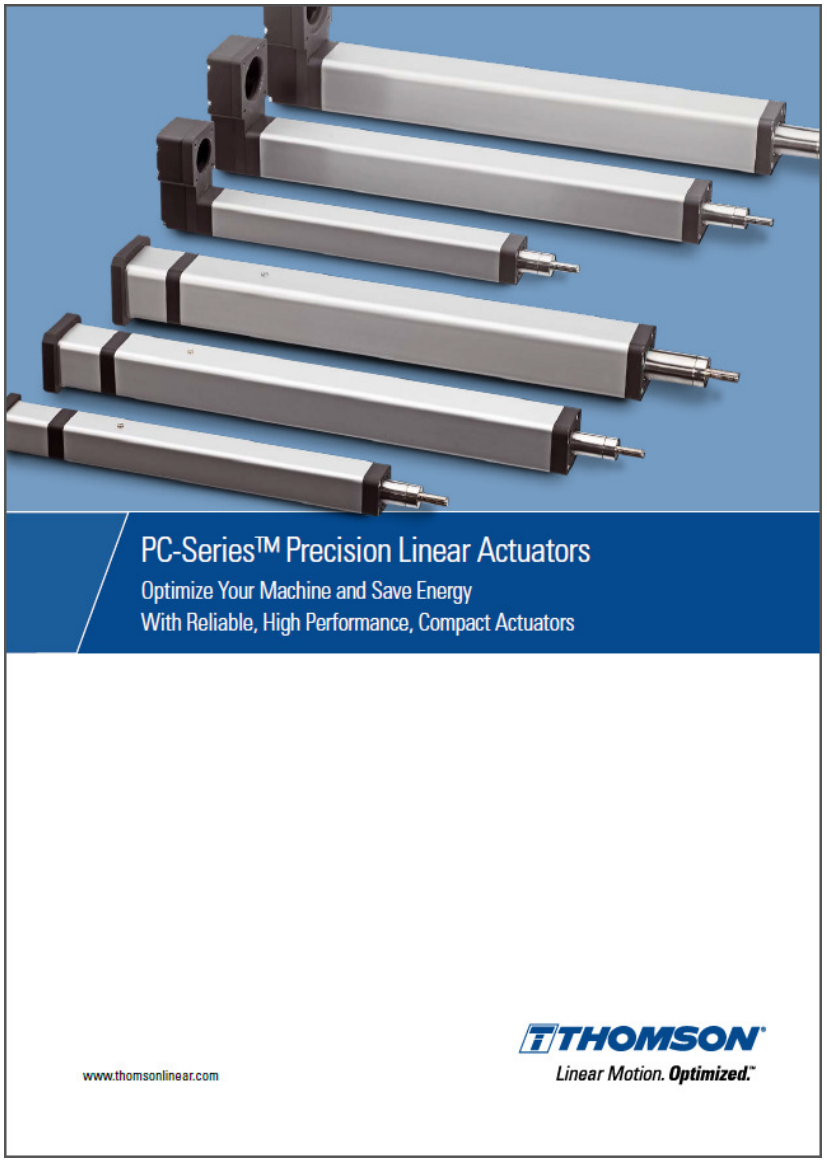

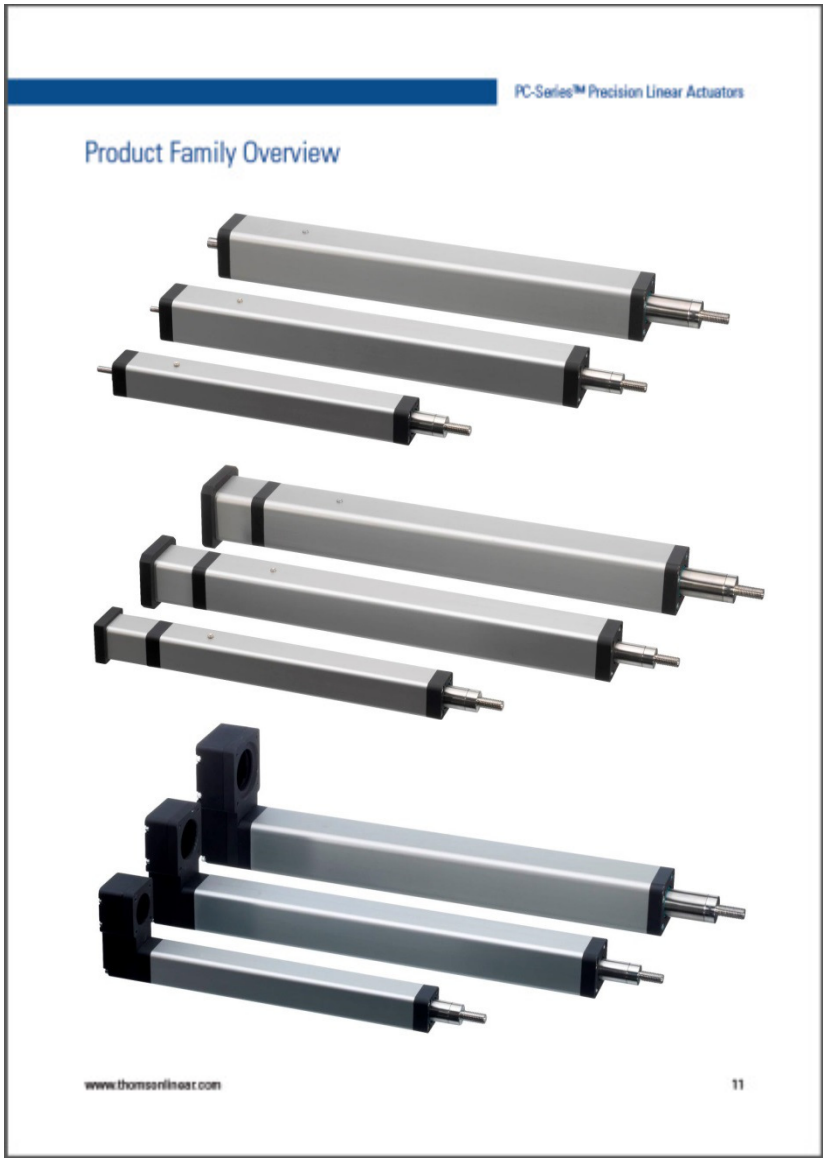

PC Series Features and Benefits

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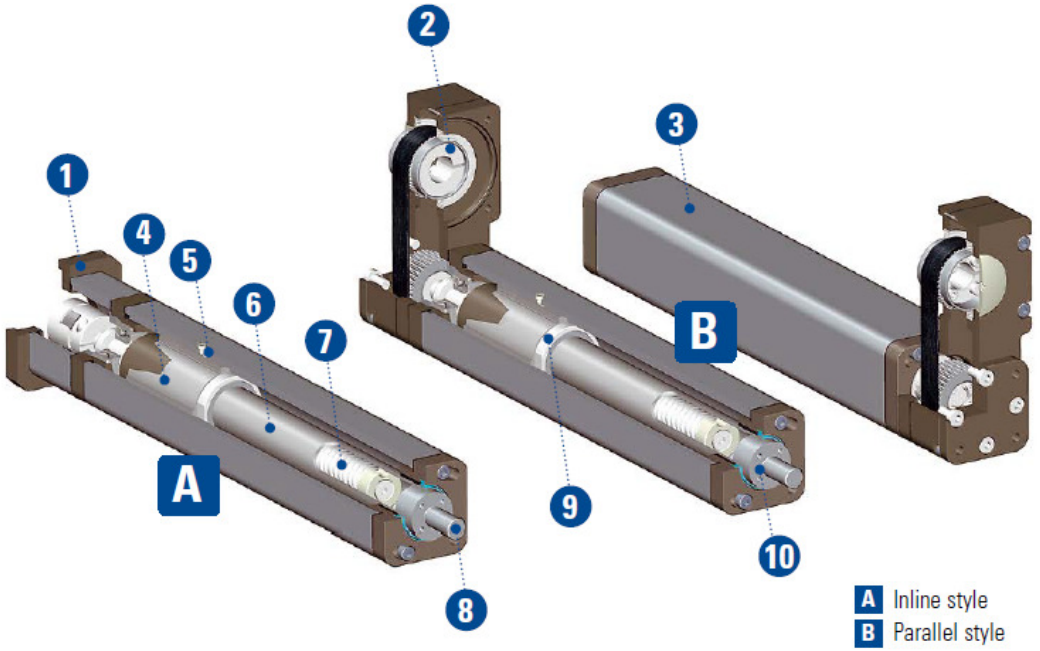
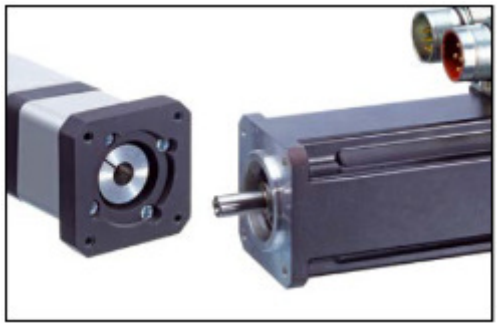
- **Precision screw for long life**
- **One point "Park-and-Lube" for quick and easy lubrication**
- **Stainless steel tube and hardware with smooth outer profile for washdown and harsh environment**
- **ISO dimension mounting pattern and rod adapter**
- **Preloaded molded carrier for anti-rotation and side load capabilities**
- **IP65 sealed for harsh environment**



- **AND Thomson RediMount™ System**
  providing quick and easy motor mounting

  Catalog elaborately describing the benifits and simplicity over this motor mount system



	Feature	Benefit
1	Thomson RediMount™ system motor flange	Quick and easy mounting of over 250 motors
2	Belt gear with Thomson RediMount™ flange	Quick and easy mounting of over 250 motors
3	Smooth exterior profile	Efficient washdown
4	Precision screw	Smooth operation and long life
5	One point lubrication	Quick and easy lubrication
6	Robust stainless steel tube	Suitability for heavy loads and harsh environments
7	High precision ball nut	High repeatability and positioning accuracy
8	ISO-dimensioned male rod adapter	Simple accessory mounting
9	Preloaded single-piece molded carrier	Anti-rotation and side load capable
10	IP65 extension tube seal and guide system	Suitable for harsh environments

RediMount Motor Mounting

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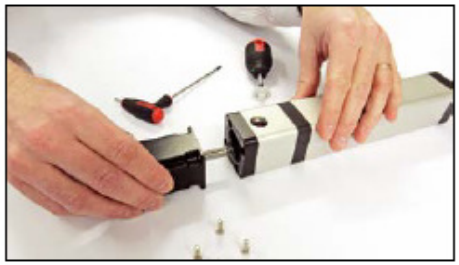
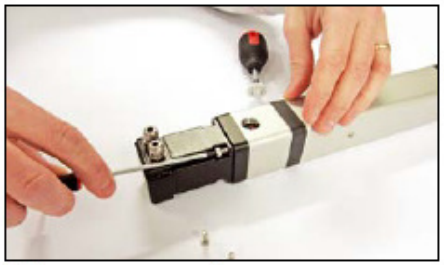
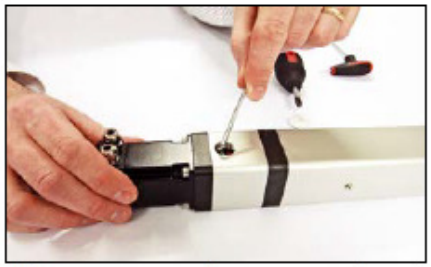
RediMount™ Motor Mounting Steps


Insert motor shaft into coupling

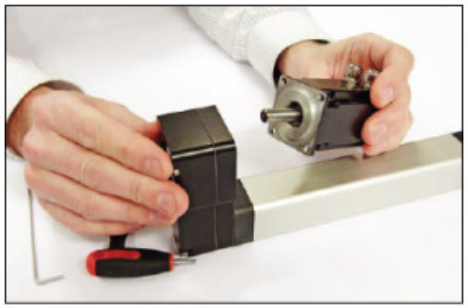

Tighten motor mounting screws


Tighten motor coupling screws and install sealing plug

- **Quick and easy installation!**
- **RediMount motor mounting system for both inline and parallel motor mounting!**

Quick and Reliable Installation

- Install in less than 5 minutes with the Thomson RediMount™ motor mounting system
- Use your own motor! RediMount is pre-engineered for more than 600 different motor types and sizes
- Reduce time spent aligning the actuator and motor with the RediMount pre-aligned solution
- Easily upgrade your machine from pneumatics utilizing the PC- Series ISO standard mounting interfaces

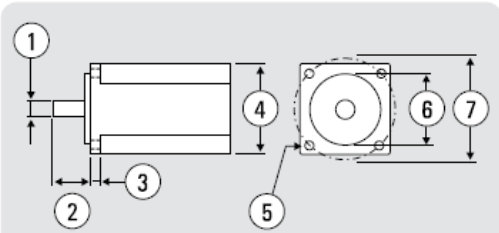

The RediMount system makes motor mounting fast and easy

- **Understand the key dimensions to determine Your Motor ID!**

RediMount™ Selection

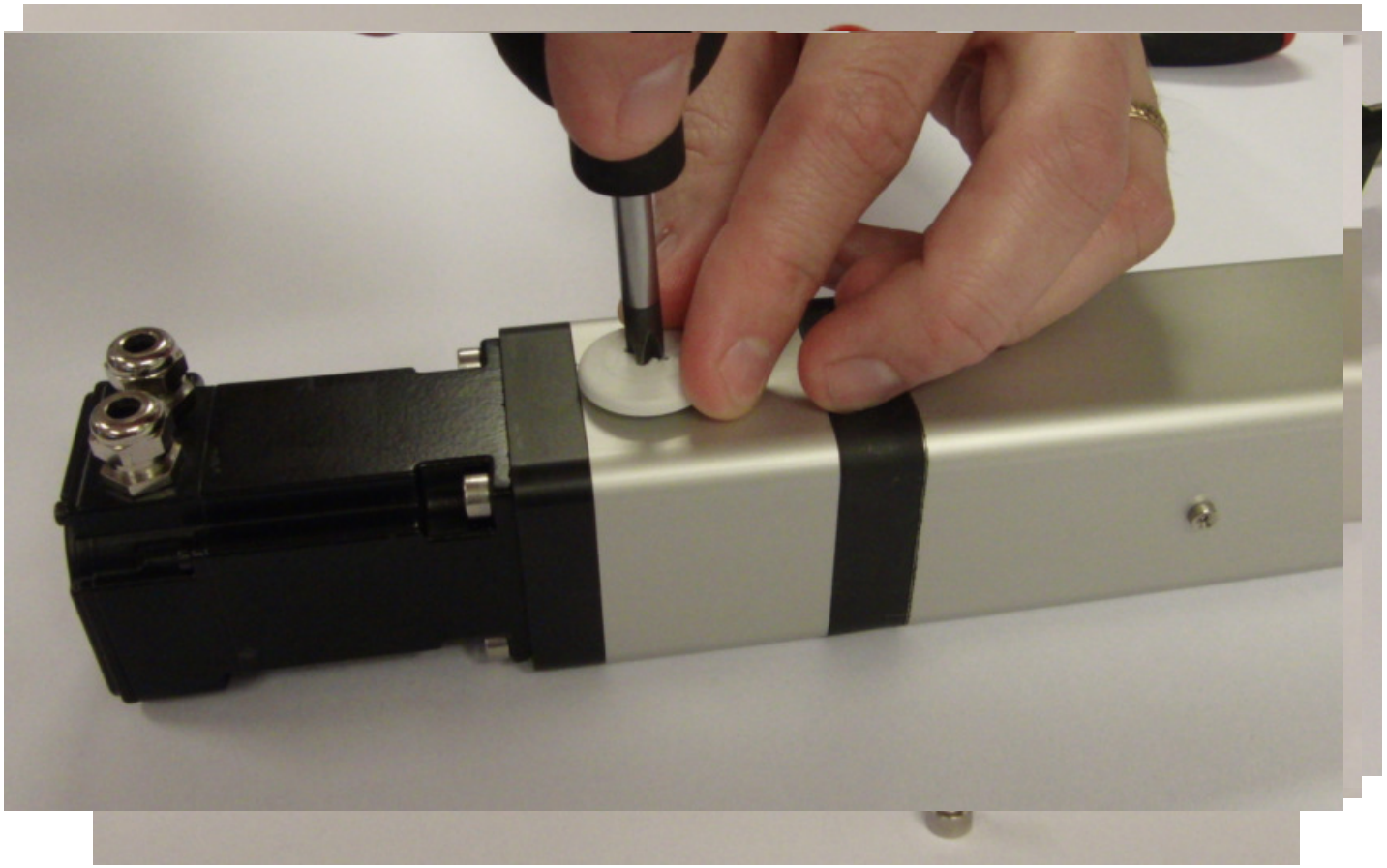
These are the key dimensions you need to know to be able to define the RediMount code and flange size for your choice of motor and PC-Series actuator.

1. Motor shaft diameter
2. Motor shaft length
3. Mounting flange thickness
4. Motor square/diameter size
5. Mounting bolt thru hole diameter
6. Motor pilot diameter
7. Mounting bolt circle



Let our online RediMount selection tool assist you!
www.thomsonlinear.com/pcseries

PC Series Inline Redimount



PC Series Parallel Redimount

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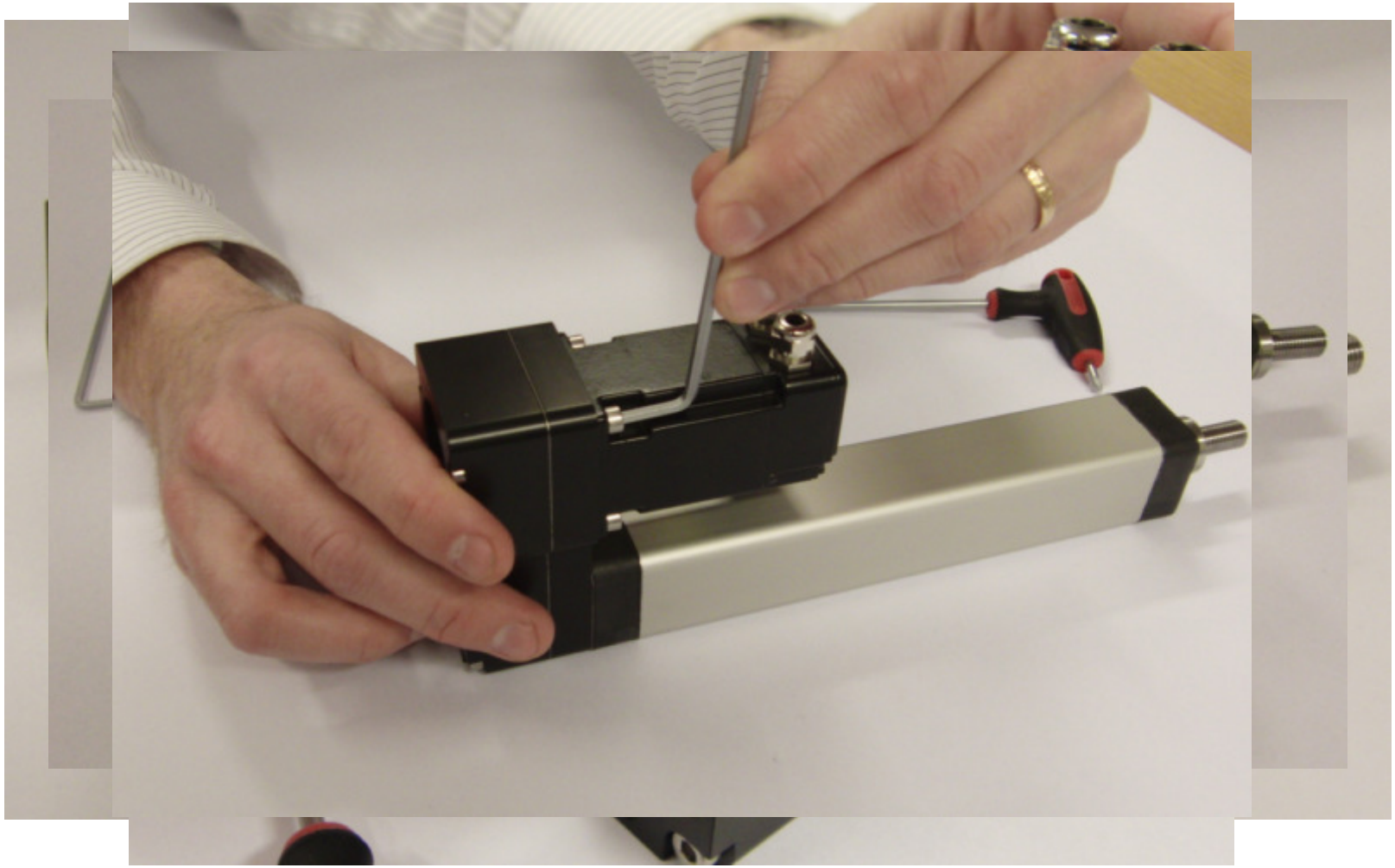

PC Series Performance Overview

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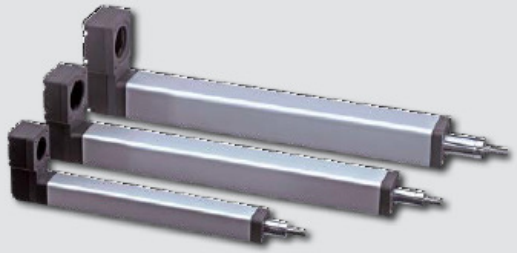
Product Family Overview

The PC-Series™ is available in three sizes (PC25, PC32 and PC40) and two styles (inline and parallel).

Family Overview	
Inline Style	Parallel Style
	

		PC25	PC32	PC40
Screw Type		ball screw	ball screw	ball screw
Max. Load (Fx)	[N]	1250	3200	6000
Max. Stroke	[mm]	600	1200	1200
Max. Speed	[m/s]	1.33	1.00	1.66
Profile Size	[mm]	34 × 34	45 × 45	55 × 55
Screw Diameter	[mm]	10	12	20
Screw Lead	[mm]	3, 10	4, 10	5, 10, 20
Protection Class	[mm]	IP65	IP65	IP65

PC Series Technical Pages

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Specifications - PC25

Standard Features and Benefits

- Compact, robust and reliable
- Stroke up to 600 mm
- Load up to 1250 N
- Speed up to 1.33 m/s
- Stainless steel extension tube
- IP65 as standard
- Mounting accessories according to pneumatic ISO standard

General Specifications

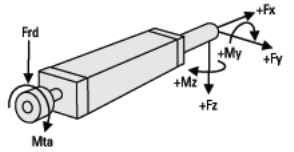
Parameter	PC25
Profile size (w × h) [mm]	34 × 34
Type of screw	ball screw
Protection class	IP65
Lubrication	one point lubrication of ball screw

Performance Specifications

Parameter		PC25
Stroke length (S max), maximum	[mm]	600
Linear speed, maximum	[m/s]	1.33
Acceleration, maximum	[m/s²]	10
Repeatability	[± mm]	0.01
Input speed, maximum	[rpm]	8000
Operation temperature limits	[°C]	-20 – +70
Dynamic load (Fx), maximum	[N]	1250
Dynamic load (Fy), maximum	[N]	20
Dynamic load (Fy), maximum	[N]	20
Dynamic load torque (Mz, My), maximum	[Nm]	10
Screw versions, diameter (d0) / lead (p)	[mm]	10/03, 10/10
Drive shaft force (Frd), maximum	[N]	100
Input torque, maximum (RediMount models)	[Nm]	2.3
Drive shaft torque (Mta), maximum	[Nm]	4.0

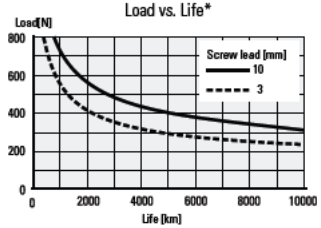
* The Load vs. Life diagram show the life for an actuator with max. dynamic load in one direction and no load in the other. For detailed life time calculations, please see to the online sizing and selection tool at www.thomsonlinear.com/??????????.

Definition of Forces

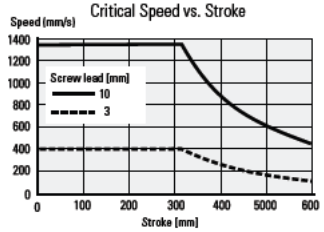


Performance Diagrams

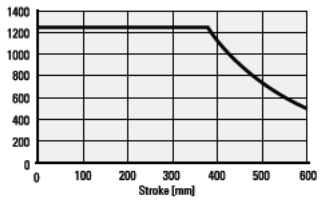
Load vs. Life*



Critical Speed vs. Stroke

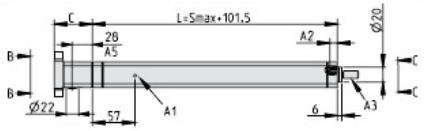


Column Load Limit vs. Stroke

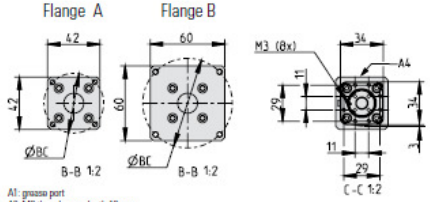


Dimensions - PC25

Dimensions for Inline Style with RediMount Flange



Flange A Flange B



A1: grease port
A2: M3 thread, max. depth 10 mm.
A3: male threaded rod end shown, see ordering key and accessories for information on all available ends.
A4: side of cover tube for mounting of sensors.
A5: distance to center of coupling tightening hole.

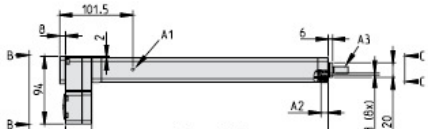
Dimensions	Projection
METRIC	

Bell House Length (C)	
Motor shaft length [mm]	C [mm]
19 - 24	52
24 - 29	57
29 - 34	62
34 - 39	67

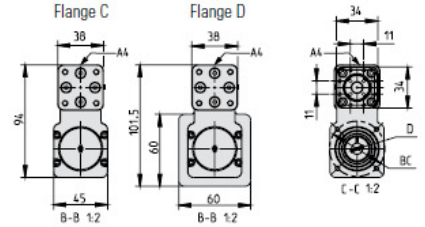
RediMount Flange Motor Dimensions Compatibility		
Motor data	Flange A [mm]	Flange B [mm]
Bolt circle diameter (BC)	43.8 - 48	48 - 72
Shaft diameter	5 - 11	
Shaft length	19 - 39	
Pilot diameter	16 - 36	16 - 54
Pilot length	max. 4	

Weight of Unit [kg]
0.543 + (S [mm] × 0.0021)

Dimensions for Parallel Style with RediMount Motor Flange



Flange C Flange D



A1: grease port
A2: M3 thread, max. depth 10 mm.
A3: male threaded rod end shown, see ordering key and accessories for information on all available ends.
A4: side of cover tube for mounting of sensors.

Dimensions	Projection
METRIC	

RediMount Flange Motor Dimensions Compatibility		
Motor data	Flange C [mm]	Flange D [mm]
Bolt circle diameter (BC)	25 - 51	51 - 72
Shaft diameter	5 - 10	
Shaft length	13 - 35	
Pilot diameter	16 - 39	16 - 54
Pilot length	max. 4	
Motor square/diameter	max. 66.5	

Weight of Unit [kg]
0.778 + (S [mm] × 0.0021)

PC Series Smart Part Number

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Ordering Key

1	2	3	4	5	6	7	8	9
PC	25	LX	423	B10–	0270	M	J	1

1. Actuator type
PC = PC-Series precision linear actuator

2. Size
25 = profile size 34 × 34 mm
32 = profile size 45 × 45 mm
40 = profile size 55 × 55 mm

3. Transmission type
SX = inline style, directly coupled, no RediMount flange
LX = inline style, directly coupled, RediMount flange
PA = parallel style, 1:1 belt gear in standard position

4. RediMount motor flange code [1]
000 – 998 = code for suitable flange when customers choice of motor is known
999 = code used when customers choice of motor is unknown
XXX = code used when unit has no RediMount flange. [2]

5. Screw type and lead
B03– = ball screw, 3 mm lead (possible for PC25 only)
B04– = ball screw, 4 mm lead (possible for PC32 only)
B05– = ball screw, 5 mm lead (possible for PC40 only)
B10– = ball screw, 10 mm lead (possible for all sizes)
B20– = ball screw, 20 mm lead (possible for PC40 only)

6. Stroke length (S max)
0000 – 9999 = distance in mm

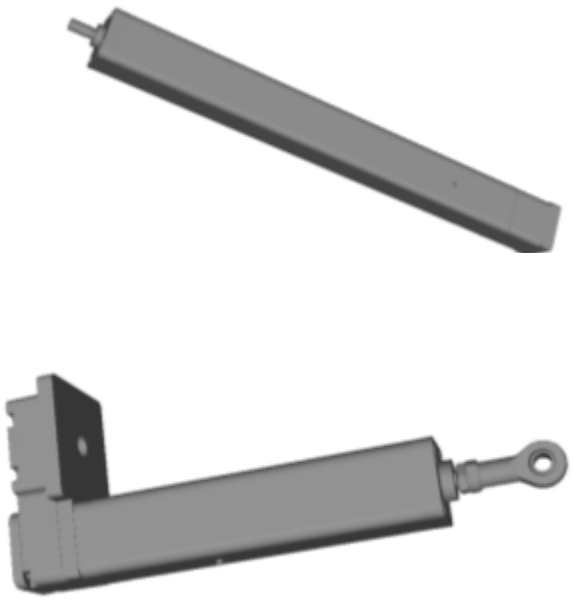
7. Cylinder mounting
R = rear trunnion (fixed, mounted on belt gear)
C = rear clevis
F = feet kit
M = trunnion (movable)
T = front trunnion (fixed, mounted on front housing)
P = front mounting plate
X = without any cylinder mounting

8. Rod end
M = male thread (standard)
F = female thread
J = spherical joint
C = front clevis

9. Environmental
1 = IP65 rating (standard)

(1) See list of RediMount codes and compatable motors in table on page ???.
(2) Always use XXX in combination with transmission type SX.

PC Series 3D Model downloads



Configurator | CAD-Format: Step

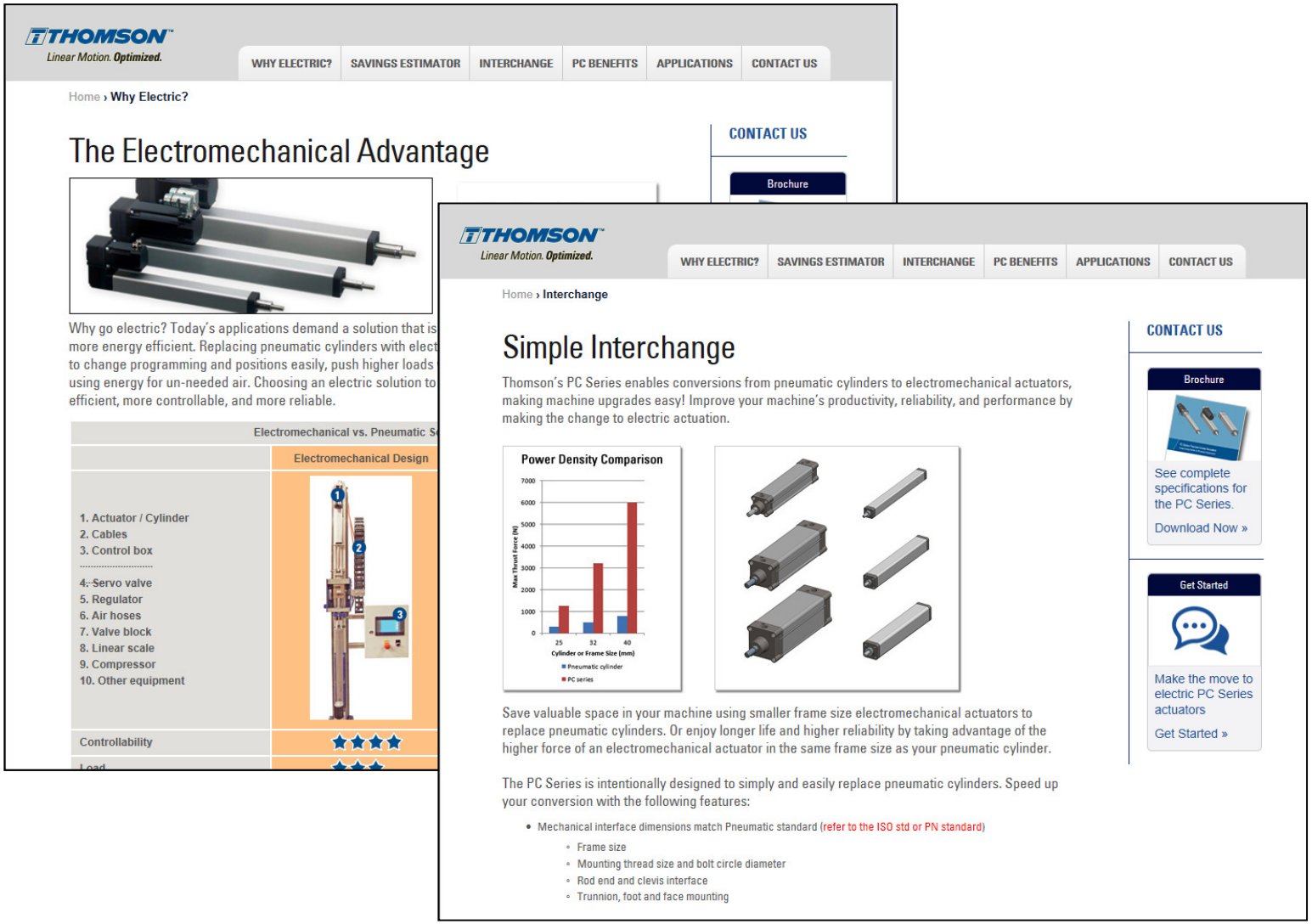
Unit type	PC		
Unit size	32		
Drive type	PA = Parallel belt gear in standard position		
Redimount motor mounting	999 = Redimount flange C		
Screw type	B04 = Ball screw, 4mm lead		
Cylinder mounting	X = Without any cylinder mounting		
Rod end	M = Male thread		
Stroke (mm)	10	Min - Max	10 - 1200
Rod position at download (mm)	0	Min - Max	0 - 10
Trunnion position (mm)	-	Min - Max	-
Environmental	1 = IP65 rating		
Part number	PC32PA999B04-0010XM1		

Request quotation | Put in cart | CAD-file | Data sheet

- **3D Model downloads with smart box product configurator**
- **Intuitive layout with smart boundaries to avoid mistakes in choosing non valid configurations!**

PC Series Microsite

- **Focus on the benefits changing from Pneumatic to Electromechanical**



PC Series on Thomsonlinear.com

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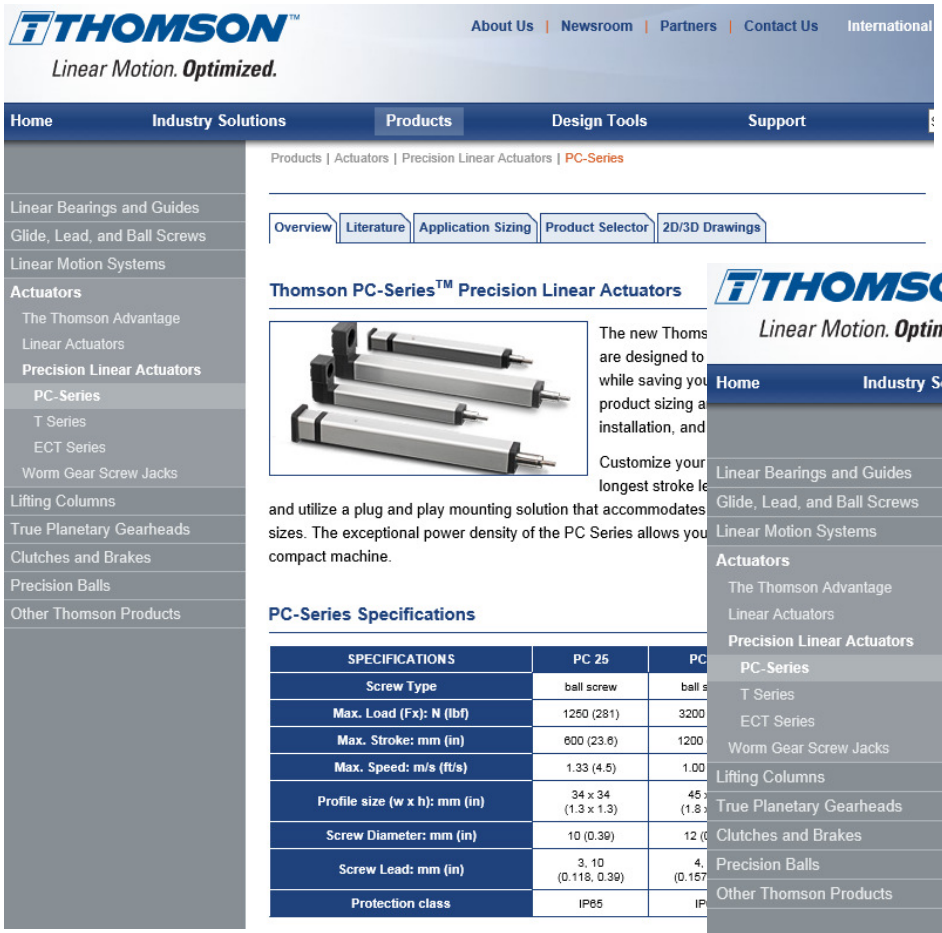

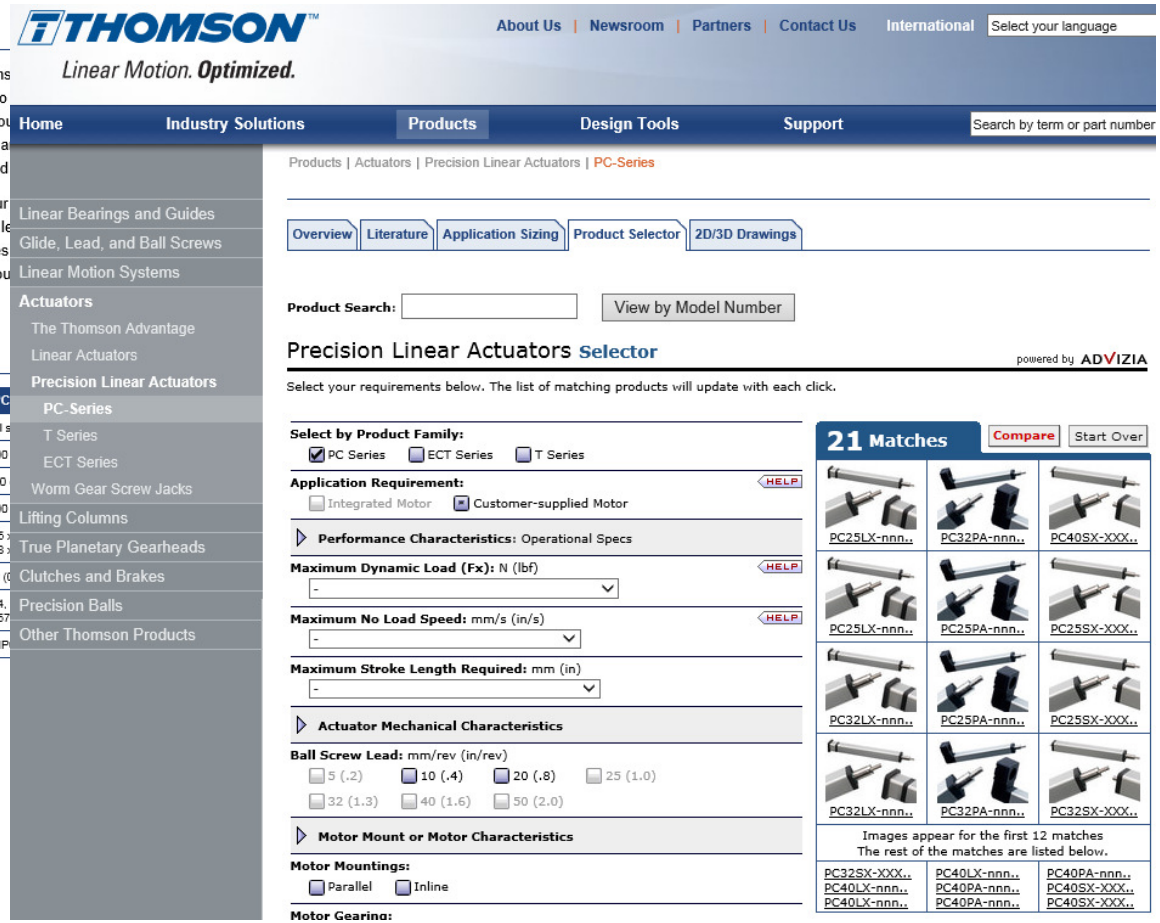

PC Series Sizing Tools

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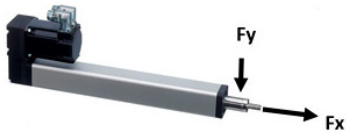
Application Sizing Tool for PC Series Actuators

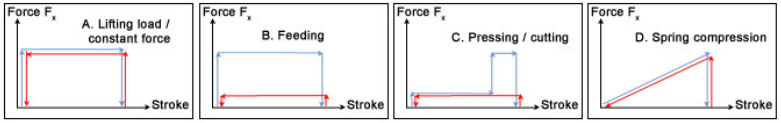
Fill in the yellow cells with your application details to determine the PC Series actuator solutions that are the best fit for your application.



About Your Application

Select units	Metric units		Time to make the move	1	sec
Max force Fx	800	N	Cycles per minute	1	
Force Fy	0.1	N	Working hours per day	8	
Stroke	400	mm	Working days per year	240	

Select Your Load Profile



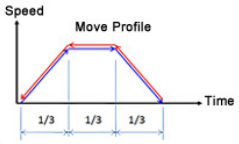
Move profile type (see above) B — Typical application for feeding. High force forward, low return

PC Series Solutions

Type of unit	Lifetime hours	Lifetime Years	Lifetime Millions of Cycles	Drive torque Nm	Max speed rpm
PC25...B10	153	2.4	0.01	2.16	3600
PC32...B10	2,450	38.3	0.15	2.27	3600
PC40...B10	7,463	>50	0.45	2.37	3600
PC40...B20	14,927	>50	0.90	4.27	1800

Move Summary

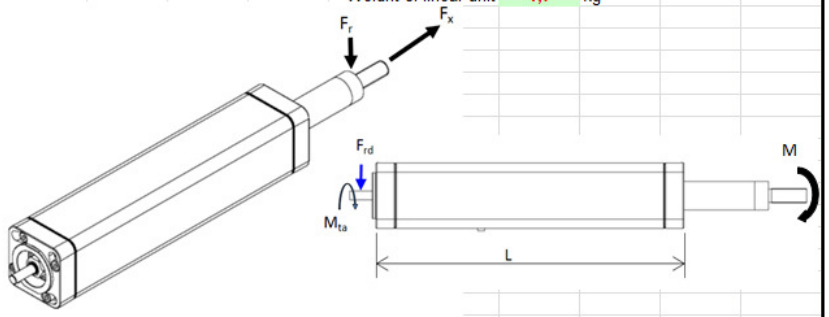
Average speed	400.0	mm/s
Top speed	600.0	mm/s
Acceleration	1.8	m/s²
Duty cycle	3%	



- **"Customer friendly" selection tool**

- **AE sizing and selection tool**

Project									
Date					Ref: xxx				
	Type of unit	PC32		PC32					
	Ball screw	ø12	mm diameter		Profile size	45 x 45	mm		
	Lead	4			Repeatability	0,05	mm		
	Stroke S =	200	mm		Length L =	305	mm		
					Weight of linear unit	1,7	kg		



Axial load/force Fx	800	N	OK		
Total mass to move	0	kg			
Radial force Fr	0	N	OK		
Load torque My	0	Nm	OK		
Radial force on shaft Frd	0	N	OK		
Average load fm	0,81				
Life time ball screw			3 926	hours	1 413 km
Life time ballbearings			9 767	hours	3 516 km
Drive torque input shaft at constant speed			0,7	Nm	
Drive torque during acceleration on input shaft			0,7	Nm	OK
Drive shaft speed			1500	rpm	

Energy savings estimator

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Energy Cost Estimator

Compare Pneumatic and Electromechanical Solutions

Fill in the yellow cells with your application details to see whether you can save by replacing pneumatics with an electromechanical solution.
Blue cells contain calculations default values typical for industrial users. To over-ride a default value, fill in the yellow cell underneath it.

About Your Application

Cylinder diameter	60	mm	Cycles per minute	10	
Stroke	400	mm	Working hours	16	per day
Region or Country	Germany		Working days	240	per year
Currency	Euro		Default estimated cost for energy	0.1121	Euro per kWh
Default exchange rate	0.74	= 1 USD	Known cost for energy	0.0000	Euro per kWh (Use 0 for default)
Known exchange rate	0.00	= 1 USD (Use 0 for default)	Default estimated cost for air	0.0374	Euro / m³
			Known cost for air	0.0000	Euro / m³ (Use 0 for default)

Pneumatic Solution

Air pressure	6	bar
Air volume	7	m³ per hour
Maximum force available	1663	N forward
Pneumatic energy cost estimate	**1,051**	**Euro per year**

Electromechanical Solution

Default total efficiency factor **h**	60%	(mechanical unit, gear, motor, drive...)
Known efficiency factor **h**	0%	(Use 0 for default)
Force equal to pneumatic cylinder	1663	N forward
Known required force	0	N forward (Use 0 for default)
Rate of energy consumption	22178	Ws per minute
Energy use estimate	1419	kWh per year
Electromechanical energy cost estimate	**159**	**Euro per year**

Electromechanical saves 892 Euro per year

http://www.thomsonlinear.com/micro/conversion_eng/savings_estimator.html

Images

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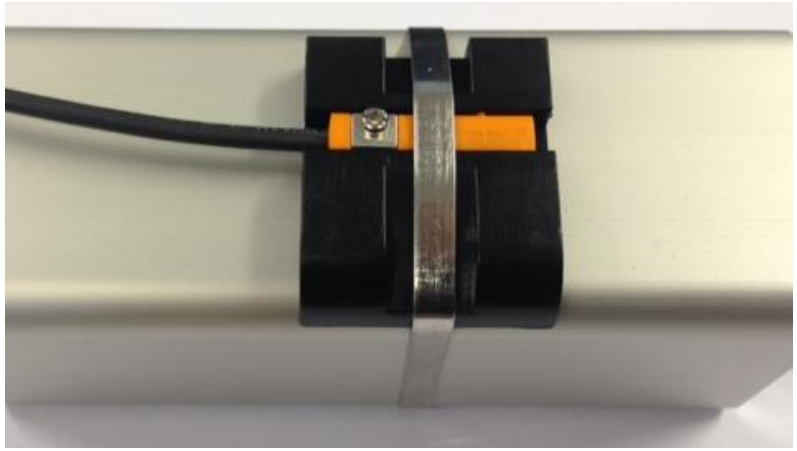
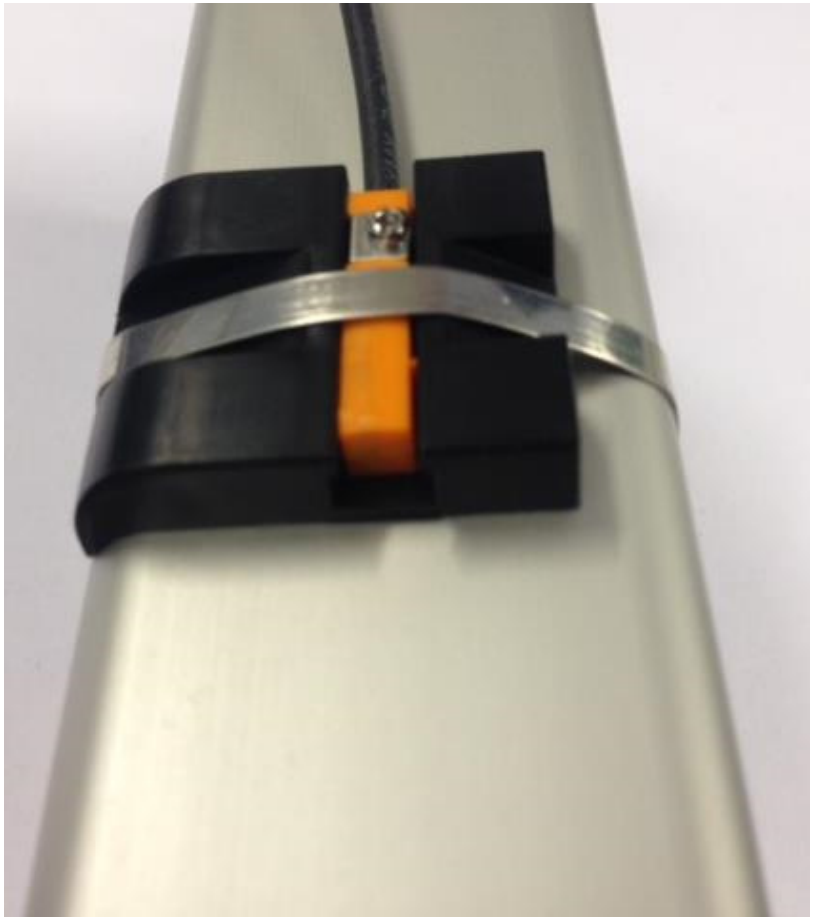
Limit switch with holder





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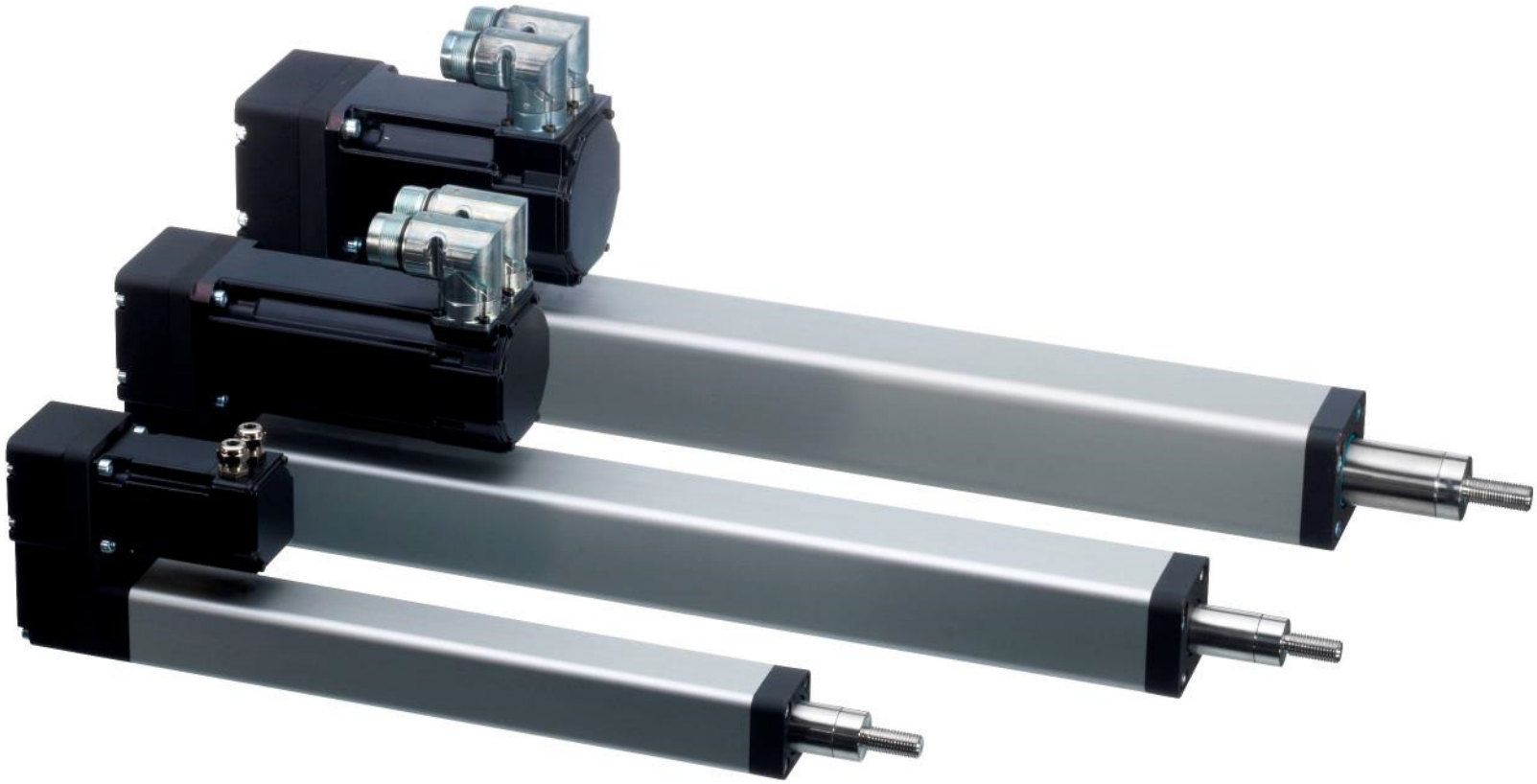

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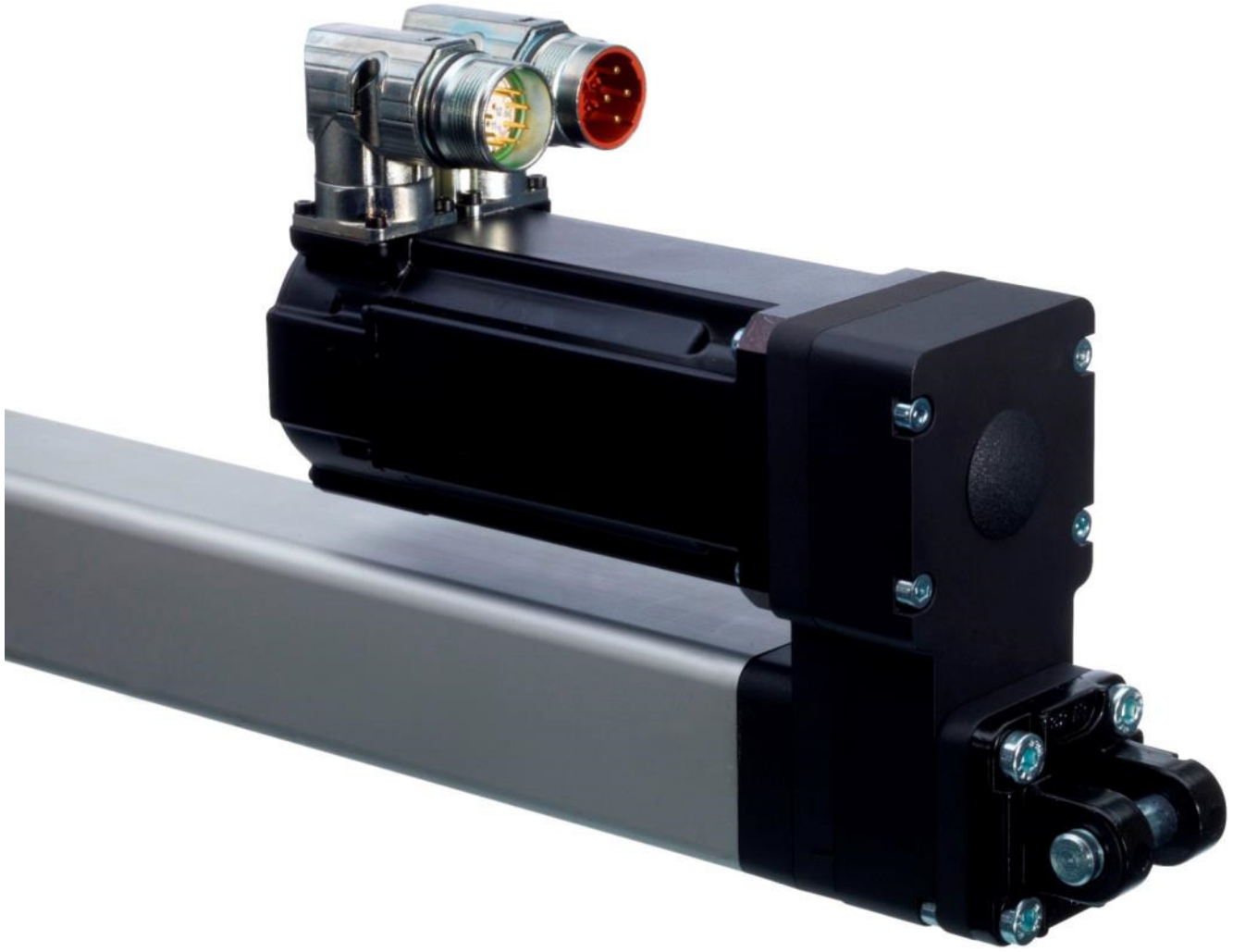

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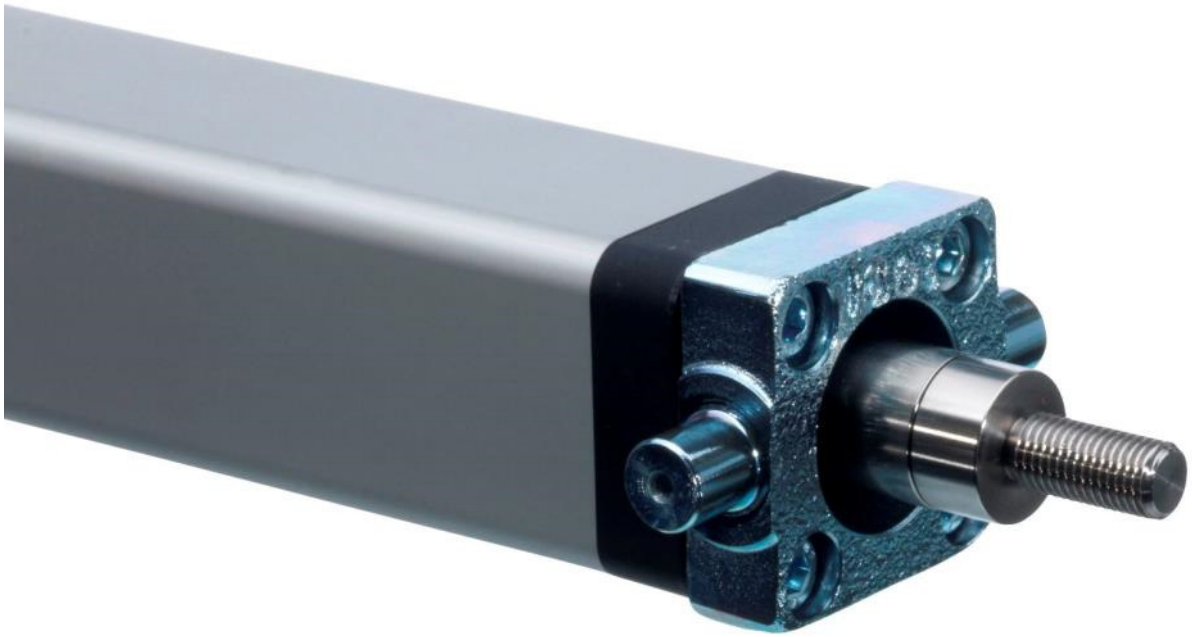

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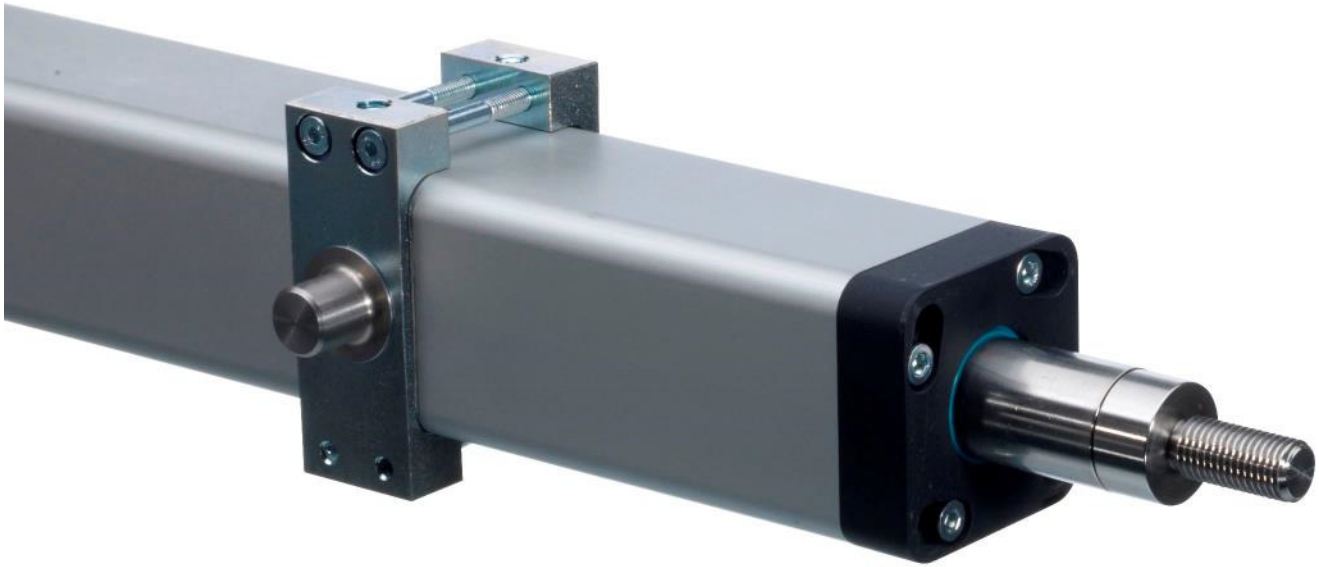

Questions and Answers

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