

ETH Electro Cylinder

Parker High Force Electro Thrust Cylinder



ENGINEERING YOUR SUCCESS.

High Force Electro Thrust Cylinder - ETH

Overview

Description

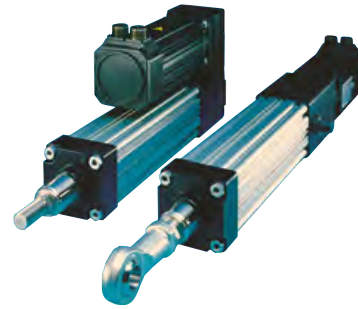
The ETH electro cylinder closes the gap between pneumatic and hydraulic actuators; it can act as a suitable alternative to both in many applications and can have the added benefit of increasing the reliability of the production process. Taking the costs for air and oil into consideration, you will find that in most cases an electromechanical system such as the ETH electro cylinder offers the more economical solution. Combined with a wide choice of accessories, the ETH becomes a highly customisable solution, suitable for a variety of applications.

Typical applications




- **Material handling and feed systems**
 - wood working and plastics industries
 - vertical actuators for loading machine tools
 - in the textile industry for tensioning / gripping textile fabrics
 - in the automotive industry for transporting and feeding components
- Testing equipment and laboratory applications
- Valve and flap actuation
- Pressing
- Packaging machinery
- Process automation in the food and beverage industry

Features

- Unrivalled power density - high forces and small frame sizes
- Cabling can be concealed in the profile
- Accessories with integrated force sensors help to spread and even to control forces precisely
- Optimized for safe handling and simple cleaning
- High service life
- Reduced maintenance costs thanks to lubricating access in the cylinder flange
- Easy replacement due to pneumatic ISO flange norm (DIN ISO 15552:2005-12) conformity
- Integrated anti-rotation device
- Reduced noise emission
- All from one source:
We offer the complete drive train: Drive controllers, motors and gearboxes to match the Electro Cylinder



Technical Characteristics - Overview

Type	ETH Electro Cylinder
Frame sizes	ETH032 / ETH050 / ETH080 / ETH100 / ETH125
Screw lead	5, 10, 16, 20 mm
Stroke	up to 2000 mm
Traction/thrust force	up to 114 000 N
Speed	up to 1.3 m/s
Acceleration	up to 15 m/s ²
Equivalent dynamic axial force at a lifetime of 2500 km	up to 49 600 N
Efficiency	up to 90 %
Repeatability	up to ± 0.03 mm
Protection classes	IP54 IP54 with stainless steel screws IP65
Drive	Inline: Axial drive or parallel drive with high performance toothed belt
Directives	2011/65/EC: Conform to RoHS  2014/34/EU Equipment group II Category 2, authorized for gas atmospheres zone 1 and zone 2
Classification	ETH032, 050:  II 2G Ex h IIC T4 Gb ETH080*:  II 2G Ex h IIB T4 Gb Conformity certificate number: EPS 13 ATEX 2 592 X (X: there are special specification of use, please observe the intended use of the ATEX Cylinder)

* ETH100,ETH125: on request only

We also offer customized solutions:

If your application requires a special version of the ETH cylinder, please contact your local Parker Sales Office.

- Customized mountings and rod ends
- Mounting of customer motors
- Preparation of the cylinder for use under aggressive environmental conditions
- Overlong thrust rod
- Polished thrust rod
- Thrust rod hard-chrome plated

ETH Electro Cylinders

Cylinder size type	Unit	ETH032			ETH050			ETH080		
		M05	M10	M16	M05	M10	M20	M05	M10	M32
Screw lead	[mm]	5	10	16	5	10	20	5	10	32
Screw diameter	[mm]	16			20			32		

Travels, speeds and accelerations

Available strokes ¹⁾	[mm]	continuous from 50-1000 & standard strokes			continuous from 50-1200 & standard strokes			continuous from 50-1600 & standard strokes		
Max. permissible speed at stroke =										
50-400 mm	[mm/s]	333	667	1067	333	667	1333	267	533	1707
600 mm	[mm/s]	286	540	855	333	666	1318	267	533	1707
800 mm	[mm/s]	196	373	592	238	462	917	267	533	1707
1000 mm	[mm/s]	146	277	440	177	345	684	264	501	1561
1200 mm	[mm/s]	-	-	-	139	270	536	207	394	1233
1400 mm	[mm/s]	-	-	-	-	-	-	168	320	1006
1600 mm	[mm/s]	-	-	-	-	-	-	140	267	841
Max. Acceleration	[m/s ²]	4	8	12	4	8	15	4	8	15

Forces

Max. axial traction/thrust force motor inline		[N]		3700	2400		7000	4400		25 100	10600
Max. axial traction/ thrust force depending on the motor speed n of parallel motor	n < 100 rpm	[N]	3600	3280	2050	9300	4920	2460	17 800	11 620	3630
	100 < n < 300 rpm	[N]		2620	1640	7870	3930	1960		10 720	3350
	n > 300 rpm	[N]		1820	1140	5480	2740	1370			
Equivalent dynamic axial force at a service life of 2500 km		[N]	1130	1700	1610	2910	3250	2740	3140	7500	6050

Transmissible torque / thrust force factor

Transmissible torque depending on the motor speed n of parallel motor	n < 100 rpm	[Nm]	6.5			9.7			22.8		
	100 < n < 300 rpm	[Nm]	5.2			7.7			22.8		
	n > 300 rpm	[Nm]	3.6			5.4			21.1		
Thrust force factor motor inline		[N/Nm]	1131	565	353	1131	565	283	1131	565	177
Force constant motor parallel		[N/Nm]	1018	509	318	1018	509	254	1018	509	159

Mass

Mass of basic unit with zero stroke (including cylinder rod)	[kg]	1.2	1.2	1.3	2.2	2.3	2.5	6.9	7.6	8.7
Weight of additional length (including cylinder rod)	[kg/m]	4.8			8.6			18.7		
Weight of cylinder rod with zero stroke	[kg]	0.06			0.15			0.59		
Weight of cylinder rod - additional length	[kg/m]	0.99			1.85			4.93		

Mass moments of inertia

Motor parallel without stroke	[kgmm ²]	8.3	8.8	14.1	30.3	30.6	38.0	215.2	213.6	301.9
Motor inline without stroke	[kgmm ²]	7.1	7.6	12.9	25.3	25.7	33.1	166.2	164.5	252.9
Parallel/inline motor per meter	[kgmm ² /m]	41.3	37.6	41.5	97.7	92.4	106.4	527.7	470.0	585.4

Accuracy: Repeatability (ISO230-2)

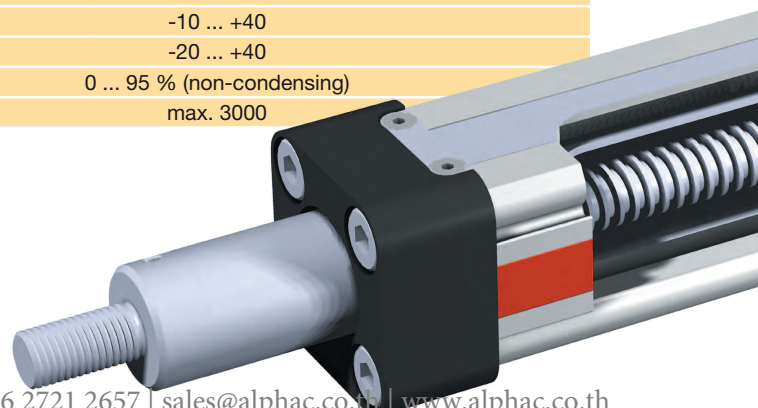
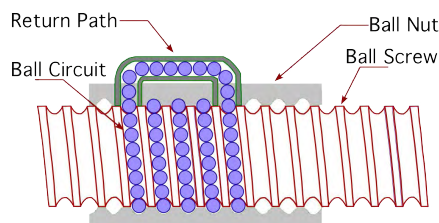
Motor inline	[mm]	±0.03								
Motor parallel	[mm]	±0.05								

Efficiency

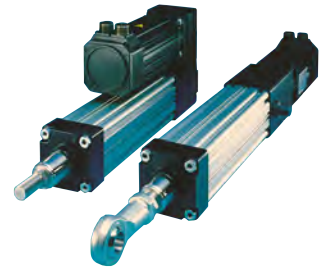
Motor inline	the efficiency includes all friction torques	[%]	90							
Motor parallel		[%]	81							

Ambient conditions

Operating temperature	[°C]	-10 ... +70								
Ambient temperature	[°C]	-10 ... +40								
Storage temperature	[°C]	-20 ... +40								
Humidity	[%]	0 ... 95 % (non-condensing)								
Location height range	[m]	max. 3000								

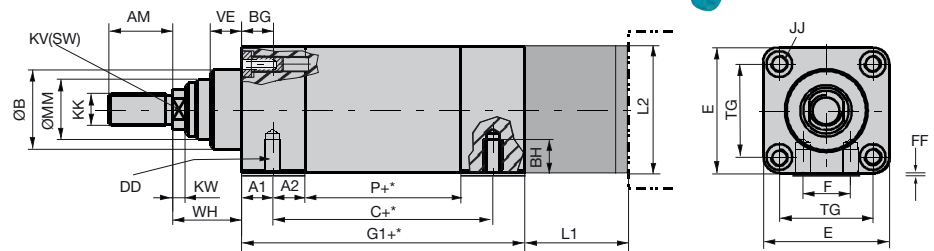


ETH Electro Cylinders



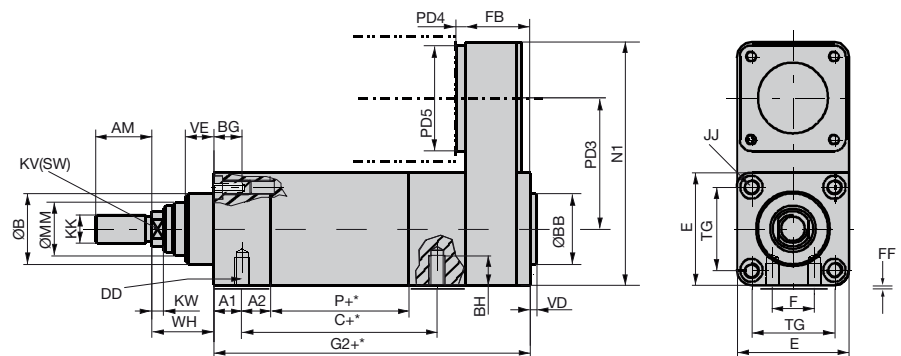
Electro Cylinder

prepared for inline motor mounting



Electro Cylinder

prepared for parallel motor mounting



+* =Measure + length of desired stroke.

Dimensions Standard / (IP-Version)

Cylinder size	Unit	ETH32			ETH50			ETH80		
Screw lead		M05	M10	M16	M05	M10	M20	M05	M10	M32
C	[mm]	93.5 (94.5)	103 (103.5)	106.5 (107.5)	99.5 (100.5)	105.5 (106.5)	117.5 (118.5)	141.5 (142.5)	159.5 (160.5)	189.5 (190.5)
G1	[mm]	133 (180.5)	142 (189.5)	146 (193.5)	154 (198.5)	160 (204.5)	172 (216.5)	197 (259.5)	215 (277.5)	245 (307.5)
G2	[mm]	180.5 (228.5)	189.5 (237.5)	193.5 (241.5)	194 (239)	200 (245)	212 (257)	257 (320)	275 (338)	305 (368)
P	[mm]	66	75	79	67	73	85	89	107	137
A1	[mm]	14 (60)			15.5 (58.5)			21 (82)		
A2	[mm]	17			18.5			32		
AM	[mm]	22			32			40		
BG	[mm]	16			25			26		
BH	[mm]	9			12.7			17.5		
DDMounting thread	[mm]	M6x1.0 ⁽¹⁾			M8x1.25			M10x1.5		
E	[mm]	46.5			63.5			95		
F	[mm]	16			24			30		
FF	[mm]	0.5			0.5			1.0		
JJ	[mm]	M6x1.0			M8x1.25			M10x1.5		
KK	[mm]	M10x1.25			M16x1.5			M20x1.5		
KV	[mm]	10			17			22		
ØMM	[mm]	22			28			45		
TG	[mm]	32.5			46.5			72		
KW	[mm]	5			6.5			10		
N1	[mm]	126			160			233.5		
FB	[mm]	47.5 (48)			40 (40.5)			60 (60.5)		
VD	[mm]	4			4			4		
ØBB	[mm]	30			40			45		
VE	[mm]	12			16			20		
WH	[mm]	26			37			46		
ØB	[mm]	30			40			60		

⁽¹⁾ Notwithstanding the current standards, you should provide thru holes with a diameter of at least 7 mm in any component you wish to fix with the front screws (with JJ= M6x1 thread).

