Parker Pneumatic

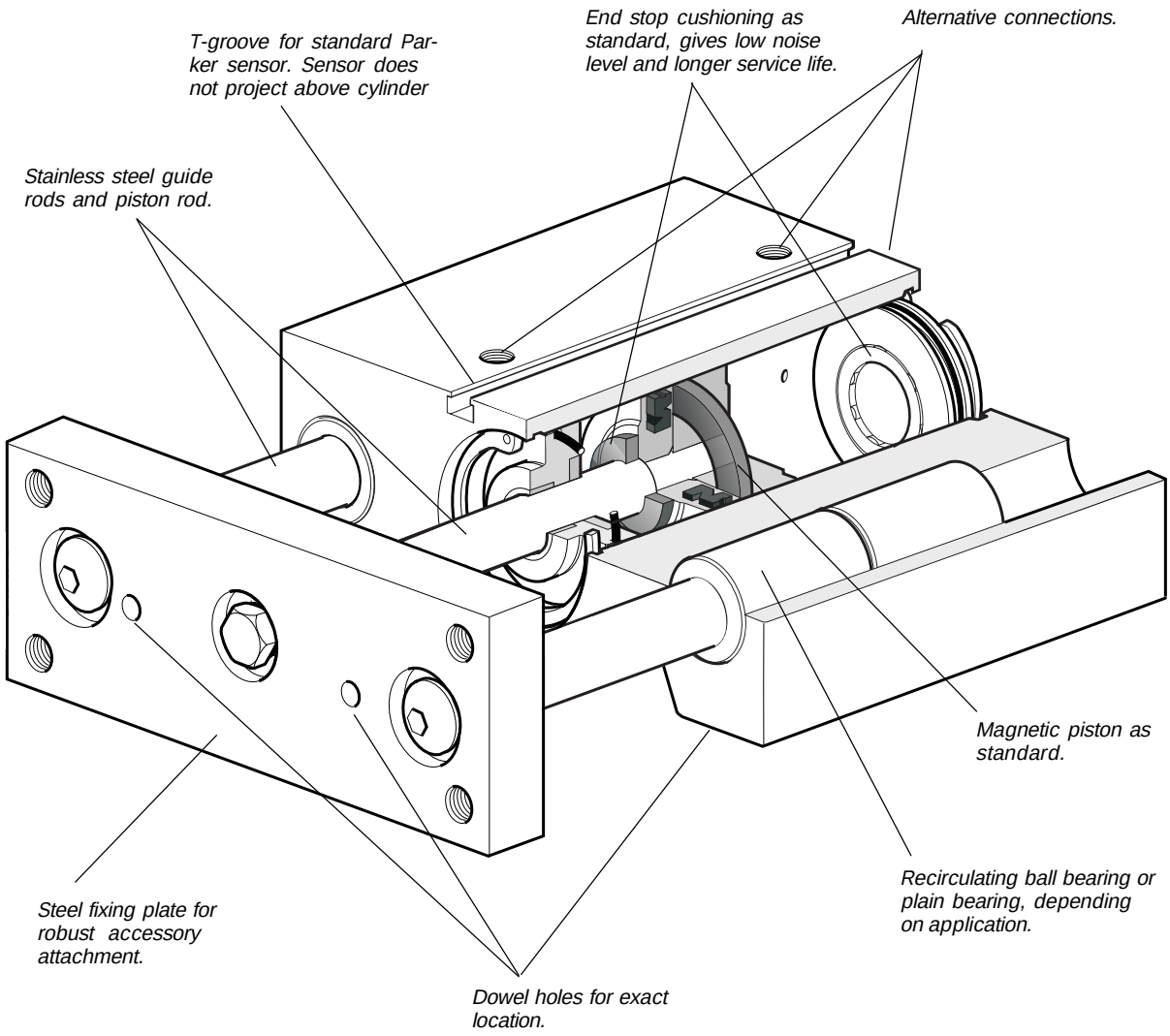
Pneumatic cylinders

Series P5T

Short Stroke Thrusters

Catalogue 9127007742GB-ul

Home



P5T Cylinder

P5T cylinders are a modern and versatile range of cylinders with integral guides. The cylinders are double-acting, with end stop cushioning for quiet and vibration-free operation. They have strong shafts to prevent twisting, and everything is integrated into the cylinder housing.

The complete programme of cylinders comprises 9 cylinder diameters, Ø16 - Ø100 mm and strokes ranging from 10 to 200 mm. As with other Parker cylinders, the cylinder is initially lubricated with a white, non-poisonous grease which is approved for use in foodstuff preparation (USDA).

The strong guide shafts make it possible to absorb considerable thrust forces and torque. The cylinder is available with two different types of bearing in contact with the shaft, a recirculating ball bearing or plain bearing.

Multiple choice of connections is also a feature, one version has two connections at the rear or two connections from above, selectable by moving the enclosed plugs, and another version with two side connections is also available.

The P5T range has an integrated T-groove for sensors in the body. The T-groove makes it quick and easy to install non-contact sensors without increasing the installation dimensions of the cylinders.

The attachment plate and cylinder housing have dowel holes to give exact location during assembly. This also facilitates cylinder replacement.

The surface-treated steel fixing plate provides robust attachment.

Fixed end stop cushioning
Polyurethane end stop cushioning built in to the end covers is standard

Clean external design
The cylinder is designed without pockets or other cutouts in the body, in which dirt or fluids could collect. This makes cleaning both simple and easy.

Non-contact sensing
All cylinders are supplied with a magnetic piston as standard, for non-contact sensing. Electronic type sensors and reed switches are available. They are supplied with either flying lead or cable plug connector.

Options
In addition to the standard designs, a number of variants of the P5T range are available to special order, to provide effective solutions in a large number of applications.

Cylinders with special strokes
Cylinders with two fixing plates
Cylinders with adjustable stops, with cushioning
High-temperature cylinders for the temperature range of -10°C to +150°C (not magnetic piston).

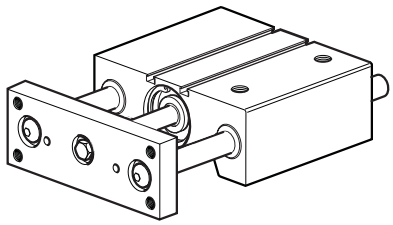
Plain bearing or recirculating ball bearings
The P5T is supplied with plain bearings as standard. This type of bearing has guide rods of greater diameter, providing excellent support for heavy loads, especially static loads. Plain bearings are highly tolerant of vibration and dirt, and are suitable for regular cleaning.

Recirculating ball bearings are used for applications which require high precision and low friction.

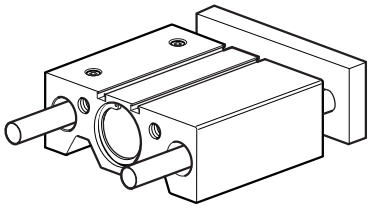
The choice should be based on the following factors:

Application requirements	Plain bearing	Recirculating ball bearings
Precision	Good	Excellent
Friction	Higher	Low
Coefficient of friction	Variable	Constant
Precision during service life	Variable	Constant
Static load capacity	Excellent	Good
Dynamic load capacity	Good, but with friction losses	Good
Vibration tolerance	Excellent	Average
Dirt tolerance	Excellent	Poor
Washing tolerance	Excellent	Poor

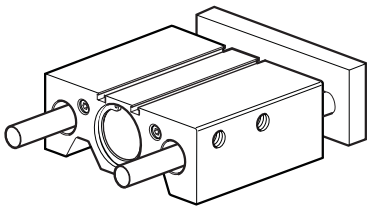
Special design for food industry applications
There is a special version of the P5T for food industry applications and other installation cases where high corrosion resistance and hygiene are required. This version has steel parts and other components in either stainless steel or special treated aluminium. Please contact Customer Service for more information.



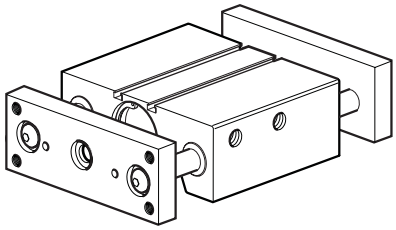
Double acting, connections on top.



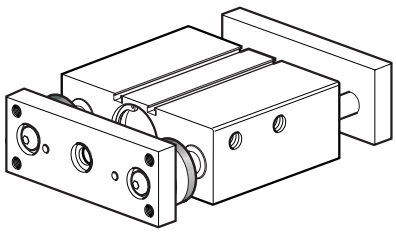
Double acting, connections at rear.



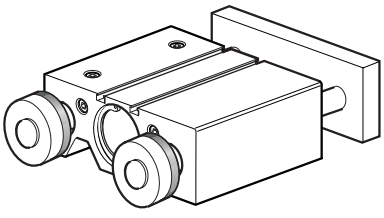
Double acting, connections on side.



Double acting with two fixing plates, side connections are recommended.



Double acting with two fixing plates and adjustable end stops with cushioning, side connections are recommended.



Double acting with one fixing plate adjustable end stops with cushioning, connections on side, on top or at rear.

Main data: P5T

Cylinder designation	Cylinder diam. mm	area cm^2	Piston rod diam. mm	area cm^2	Theoretical cylinder thrust at 6 bar outward stroke N	return stroke N	Air con-sump-tion litre	Connection thread
P5T-•016•G••XXX[1]	16	2,0	8	0,5	120	90	0,026	M5
P5T-•020•G••XXX[1]	20	3,1	10	0,8	188	138	0,040	G1/8
P5T-•025•G••XXX[1]	25	4,9	10	0,8	295	247	0,063	G1/8
P5T-•032•G••XXX[1]	32	8,0	16	2,0	482	363	0,105	G1/8
P5T-•040•G••XXX[1]	40	12,6	16	2,0	754	633	0,162	G1/8
P5T-•050•G••XXX[1]	50	19,6	20	3,1	1178	990	0,253	G1/4
P5T-•063•G••XXX[1]	63	31,2	20	3,1	1870	1682	0,414	G1/4
P5T-•080•G••XXX[1]	80	50,3	25	4,9	3016	2721	0,669	G3/8
P5T-•100•G••XXX[1]	100	78,5	25	4,9	4712	4418	1,043	G3/8

1) XXX = stroke
• = option, as in ordering key
2) Free air consumption for 10 mm stroke for a double stroke at 6 bar.

Weights in kg

Cylinder diam. mm	Type of bearing	Shaft diam. mm	Standard stroke **10**	**25**	**40**	**50**	**75**	**100**	**125**	**150**	**175**	**200**
16	Plain bearing	10	0,35	0,43	0,51	0,57	0,70	0,84				
	Recirculating ball	8	0,32	0,39	0,46	0,51	0,64	0,76				
20	Plain bearing	12		0,76	0,86	0,94	1,11	1,29	1,47			
	Recirculating ball	10		0,70	0,80	0,86	1,03	1,19	1,36			
25	Plain bearing	16		1,13		1,39	1,65	1,91	2,17	2,43		
	Recirculating ball	12		0,98		1,20	1,43	1,65	1,88	2,11		
32	Plain bearing	20		1,67		2,07	2,46	2,86	3,26	3,65	4,05	4,45
	Recirculating ball	16		1,51		1,86	2,21	2,56	2,91	3,27	3,62	3,97
40	Plain bearing	20		2,00		2,42	2,84	3,26	3,68	4,10	4,52	4,84
	Recirculating ball	16		1,82		2,20	2,57	2,95	3,32	3,70	4,08	4,45
50	Plain bearing	25		2,63		3,22	3,81	4,40	4,99	5,59	6,18	6,77
	Recirculating ball	20		2,35		2,87	3,39	3,92	4,44	4,96	5,48	6,01
63	Plain bearing	25		3,29		3,98	4,66	5,34	6,02	6,71	7,39	8,07
	Recirculating ball	20		2,99		3,60	4,22	4,83	5,45	6,06	6,67	7,29
80	Plain bearing	30		6,06		7,12	8,18	9,24	10,30	11,36	12,42	13,48
	Recirculating ball	25		5,66		6,63	7,61	8,58	9,56	10,53	11,51	12,49
100	Plain bearing	35		10,69		12,03	13,37	14,47	16,05	17,39	18,73	20,08
	Recirculating ball	30		10,16		11,40	12,64	13,89	15,13	16,37	17,61	18,85

Material specification

Standard specification

Body	Natural anodised aluminium
End pieces	Black anodised aluminium
Piston rod	Stainless steel (SS 2346)
Guide rods	Stainless steel (SS 2346)
Plain bearing	PTFE / Steel
Ball bushing	Steel
Plate	Surface treated steel
Screws	Surface treated steel
Piston	Natural anodised aluminium
Magnetic ring	Rubber-bound magnetic material
Cushioning rings	Polyurethane
Piston seal	Nitrile rubber, NBR
O-rings	Nitrile rubber, NBR
Piston bearing	UHMWPE plastic

Material specification

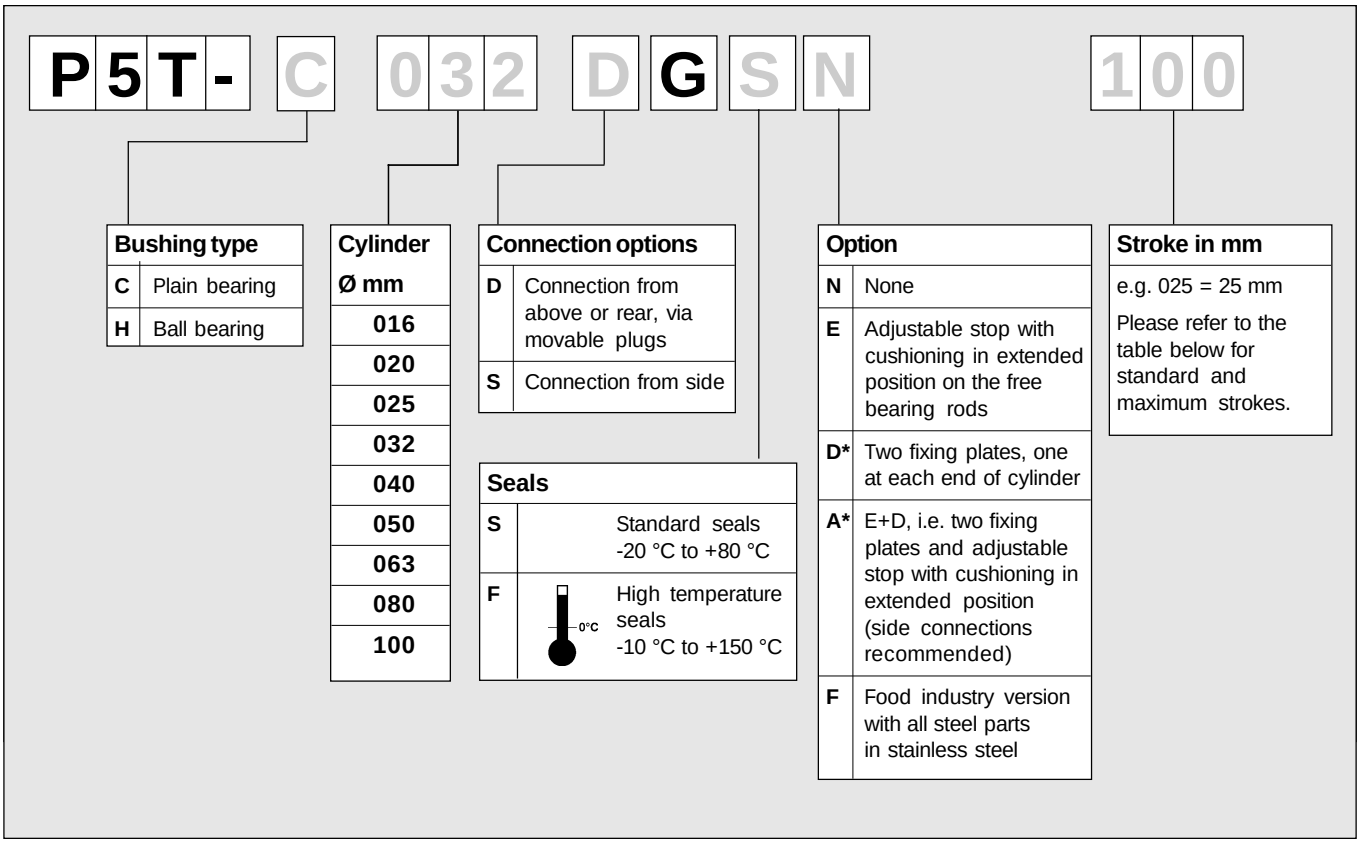
High temperature option

Seals	Fluorocarbon rubber, FPM
Piston bearing	Bronze filled PTFE

Other data

Working medium	Dry, filtered air
Working pressure	max. 10 bar
Working temperature	max +80 °C
	min -20 °C
High temp. option	max +150 °C
	min -10 °C

Ordering key



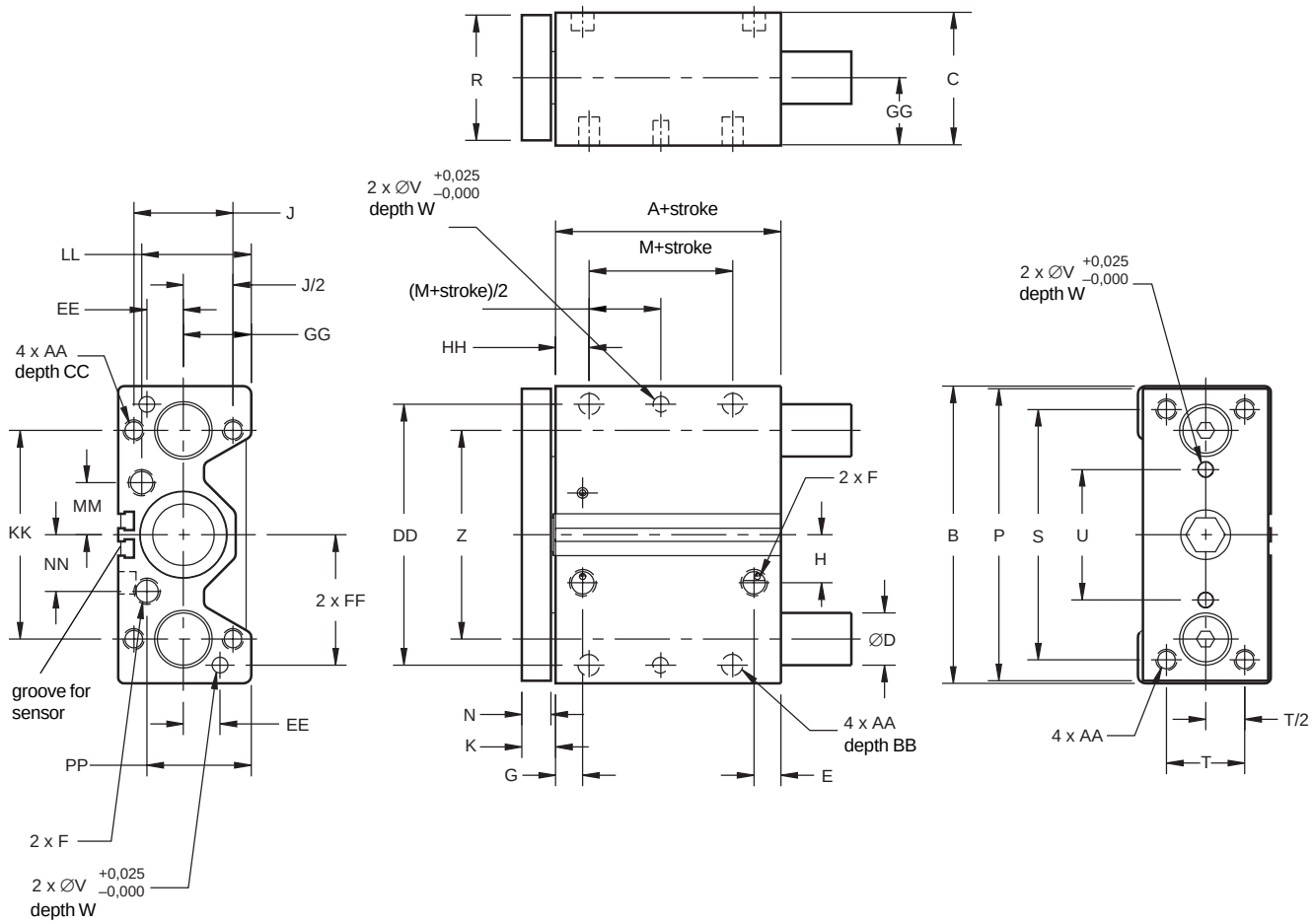
* Please note that the load capacity increases for the versions with two fixing plates, due to greater bearing distance.

Standard strokes

Order no. XXX = Stroke	Cylinder diam. (mm)	● Standard stroke (mm) 10	25	40	50	75	100	125	150	175	200	Stroke to special order
Double acting												
P5T-•016•G••XXX	16	●	●	●	●	●	●					
P5T-•020•G••XXX	20		●	●	●	●	●	●	●			
P5T-•025•G••XXX	25		●		●	●	●	●	●			
P5T-•032•G••XXX	32		●		●	●	●	●	●	●	●	
P5T-•040•G••XXX	40		●		●	●	●	●	●	●	●	
P5T-•050•G••XXX	50		●		●	●	●	●	●	●	●	
P5T-•063•G••XXX	63		●		●	●	●	●	●	●	●	
P5T-•080•G••XXX	80		●		●	●	●	●	●	●	●	
P5T-•100•G••XXX	100		●		●	●	●	●	●	●	●	

Dimensions, P5T basic cylinder

Connection option **D** (connection from above or rear)



Cylinder diam. mm	A mm	B mm	C mm	D1*) mm	D2*) mm	E mm	F	G mm	H mm	J mm	K mm	M mm	N mm	P mm	R mm	S mm	T mm	U mm	V mm
16	37,8	64	31	8	10	10,1	M5	10,1	7	22	9,9	7	7,9	62	25,4	52	16	20	3
20	35	74	36	10	12	19	G1/8	10	15,8	26	9,9	10	7,9	72	31,8	60	18	30	4
25	38	88	42	12	16	21	G1/8	11,4	15,5	32	9,9	10	7,9	86	38	70	26	34	4
32	36	114	51	16	20	10,3	G1/8	10,4	18,4	38	13,1	5	11,1	112	44,5	96	30	50	6
40	44	124	51	16	20	12,1	G1/8	14,9	22,5	38	13,1	10	11,1	122	44	106	30	60	6
50	44,9	140	62	20	25	14,5	G1/4	16,1	27	44	14,7	10	12,7	138	57	120	40	60	8
63	50,1	150	75	20	25	16,4	G1/4	14,5	33	44	14,7	10	12,7	148	70	130	50	72	8
80	59,5	188	95	25	30	17,5	G3/8	19	37	56	18	15	16	185	88,9	160	60	92	10
100	66**)	224	115	30	35	21,9**)	G3/8	23	40	62	18	15	16	221	108	190	80	114	10

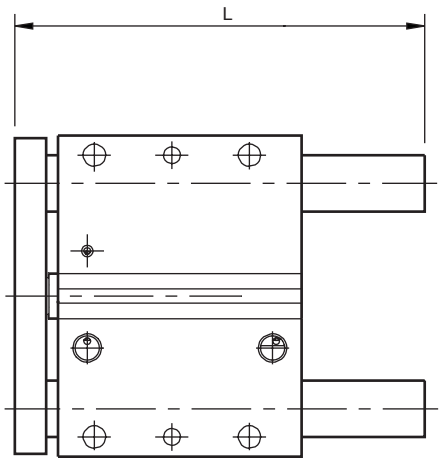
Cylinder diam. mm	W mm	Z mm	AA	BB mm	CC mm	DD mm	EE mm	FF mm	GG mm	HH mm	KK mm	LL mm	MM mm	NN mm	PP mm	Piston rod Ø mm
16	6	42	M5x0,8	7,5	10	54	8	27	15	13,1	42	22,5	11,3	9,7	23	8
20	6	52	M5x0,8	7,5	10	64	10	32	17	13,1	52	26	15,4	15,4	26	10
25	6	62	M6x1,0	10	12	76	11	38	21	14,1	62	33,4	17	17	33,4	10
32	6	80	M8x1,25	11	16	100	14	50	26	12,9	80	42	20	21,7	38	16
40	6	90	M8x1,25	11	16	110	14	55	26	13,9	90	41	24	26,4	37,9	16
50	8	100	M10x1,5	12	20	124	16	62	30	14,3	100	51	29	33	44	20
63	8	110	M10x1,5	15	20	132	18	66	36,5	16,3	110	62	36	37,8	57,8	20
80	10	140	M12x1,75	18	24	166	22	83	46,5	21	140	78	45	48	75,5	25
100	10	170	M14x2,0	21	28	200	24	100	56,5	25	170	91,5	53	51	95.5	25

Length tolerance ± 1 mm
Stoke tolerance + 1.5/0 mm
*) D1 = bearing rod diameter for recirculating ball bearing
*) D2 = bearing rod diameter for plain bearing
**) Stroke 25 mm, A=75 mm, E=28 mm

Dimensions, P5T basic cylinder

Standard lengths

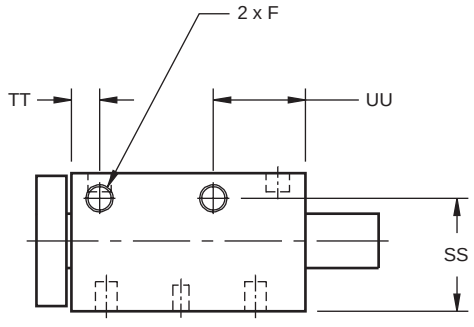
Cylinder diam mm	Stroke mm	L mm
16	10	36,2
	25, 40, 50, 75	60,2
	100	75,2
20	25, 40, 50, 75	66,9
	100, 125	91,9
25	25, 50, 75, 100	69,9
	125, 150	91,9
32	25, 50, 75, 100	77,9
	125, 150, 175, 200	116,0
40	25, 50, 75, 100	77,9
	125, 150, 175, 200	116,0
50	25, 50, 75, 100	84,0
	125, 150, 175, 200	124,1
63	25, 50, 75, 100	84,0
	125, 150, 175, 200	124,1
80	25, 50, 75, 100	101,8
	125, 150, 175, 200	140,0
100	25	122,8
	50, 75, 100	120,3
	125, 150, 175, 200	158,4



Dimensions, P5T basic cylinder

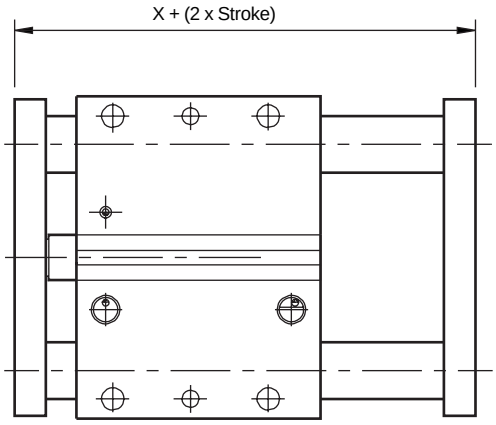
Connection option **S** (side connections)

Cylinder diam. mm	SS mm	TT mm	UU mm	F
16	24,1	10	20	M5
20	29,2	10	20	M5
25	35,2	11,4	25	M5
32	41,7	10,4	34	G1/8
40	41,7	14,9	34	G1/8
50	51,3	16,1	38	G1/4
63	60,7	15,6	41,8	G1/4
80	75,5	19	47	G3/8
100	83,7	23	53,3	G3/8



Dimensions, P5T basic cylinder

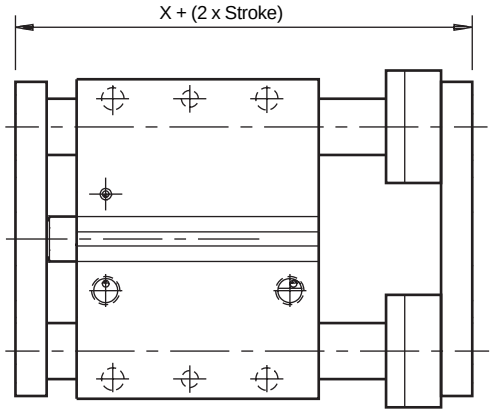
Option **D**



Please note that load capacity increases with two fixing plates, due to greater bearing distance.

Dimensions, P5T with two fixing plates and adjustable end stop with cushioning

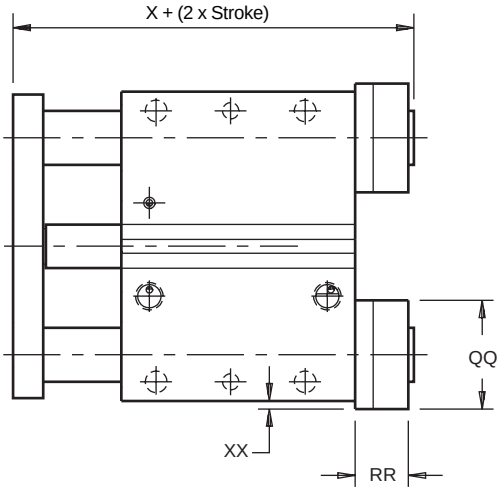
Option **A**



Cylinder diam. mm	Guide rod dia, mm	X for option D mm	A mm	E mm	QQ mm	RR mm	XX mm
16	8	57,6	70,6	62,7	18,0	13,0	0
	10	57,6	70,6	62,7	24,0	13,0	1
20	10	54,9	67,9	59,9	24,0	13,0	1
	12	54,9	72,6	64,6	28,0	17,7	3
25	12	57,8	75,5	67,6	28,0	17,7	1
	16	57,8	77,5	69,6	34,0	19,7	4
32	16	62,2	81,9	70,8	34,0	19,7	0
	20	62,2	83,9	72,8	41,4	21,7	3,7
40	16	70,2	89,9	78,8	34,0	19,7	0
	20	70,2	91,9	80,8	41,4	21,7	3,7
50	20	74,3	96,0	83,3	41,4	21,7	0,7
	25	74,3	96,0	83,3	50,8	21,7	5,4
63	20	79,5	101,2	88,5	41,4	21,7	0,7
	25	79,5	101,2	88,5	50,8	21,7	5,4
80	25	95,5	117,2	101,2	50,8	21,7	1,4
	30	95,5	117,2	101,2	60,5	21,7	6,3
100	30	102,0	123,7	107,7	60,5	21,7	3,3
	35	102,0	123,7	107,7	65,0	21,7	5,5

Dimensions, P5T with adjustable end stop with cushioning

Option **E**



Maximum load

P5T cylinders can absorb the same load, irrespective of how it is installed.
The loading diagram is based on a service life for the cylinder of at least 10 million cycles. At higher loadings, the service life will be reduced..

Use the following formula to calculate the permissible load capacity under other service life conditions.

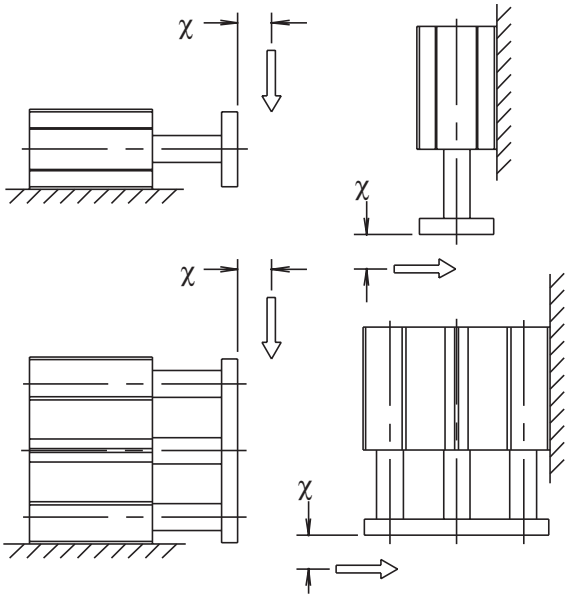
$L_x = 10/X * L_{10}$

Where:
L_x = Max load at desired service life
X = Desired service life in millions of cycles
L_{10} = Max load for 10 million cycles

Example

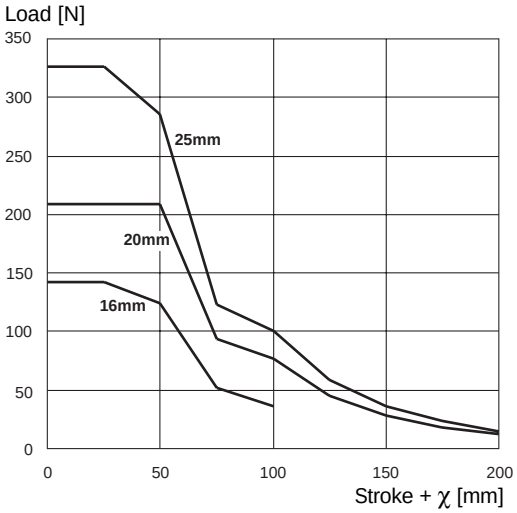
Estimate the load limit for a P5T-32 with plain bearing and stroke + χ = 50 mm, and desirable service life 20 million cycles

$L_{20} = 10/20 * 370\ N = 185\ N$

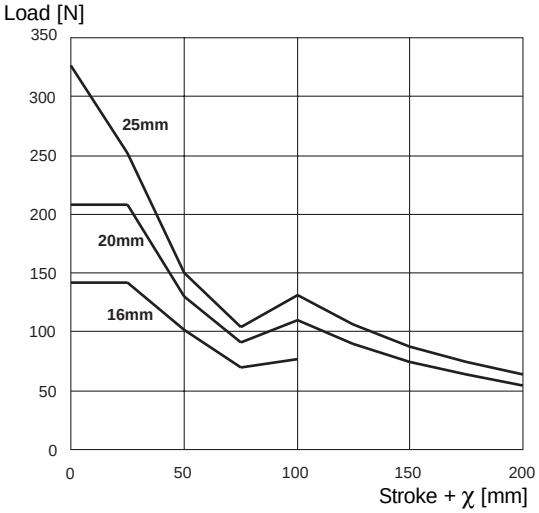


Load capacity as a function of Stroke + χ

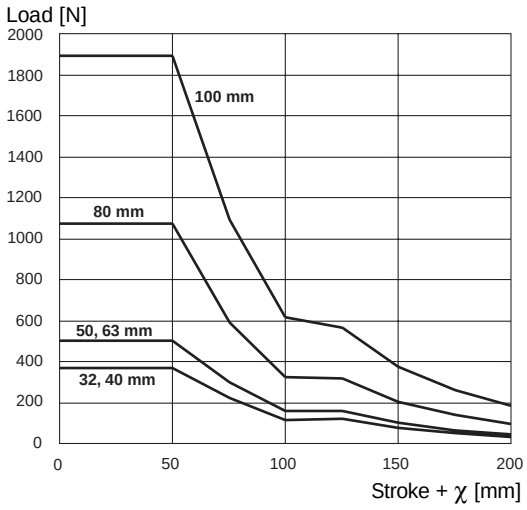
Plain bearing (cylinder dia. 16-25 mm)



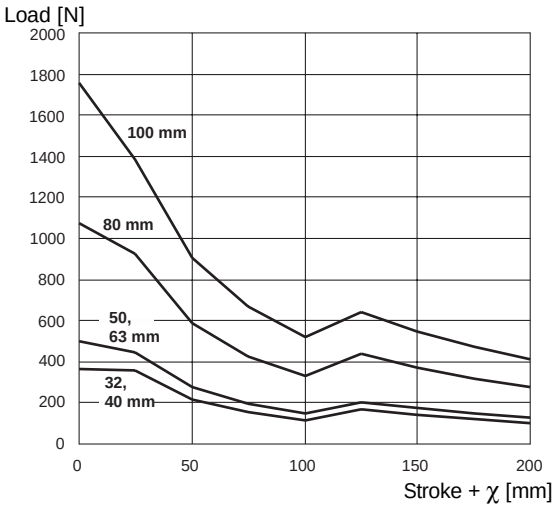
Recirculating ball bearing (cylinder dia. 16-25 mm)



Plain bearing (cylinder dia. 32-100 mm)

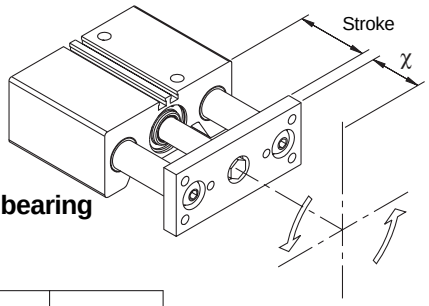


Recirculating ball bearing (cylinder dia. 32-100 mm)



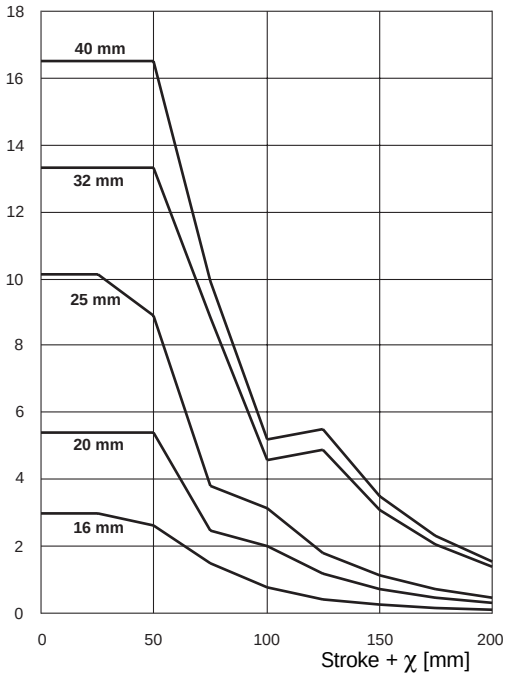
Maximum symmetric torque

When the torque is symmetric, you can apply more load to the cylinder because each rod absorbs an equal amount of force.

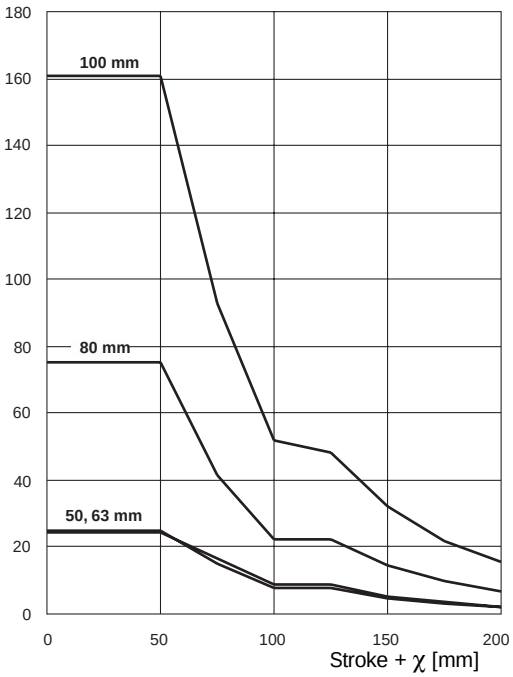


Maximum torque as a function of Stroke + χ

Recirculating ball and Plain bearing (Cylinder dia. 16-40 mm)

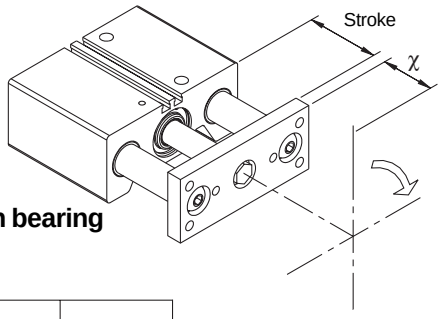


Recirculating ball and Plain bearing (Cylinder dia. 50-100 mm)



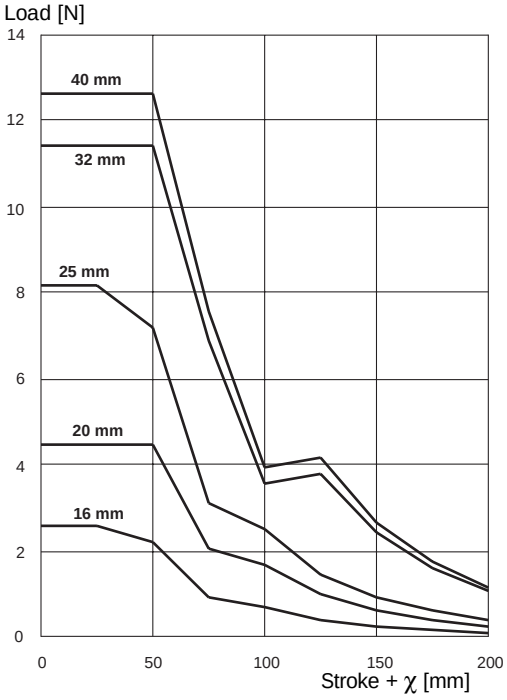
Max asymmetric torque

Asymmetric torque occurs when the load is applied to one side of the cylinder.

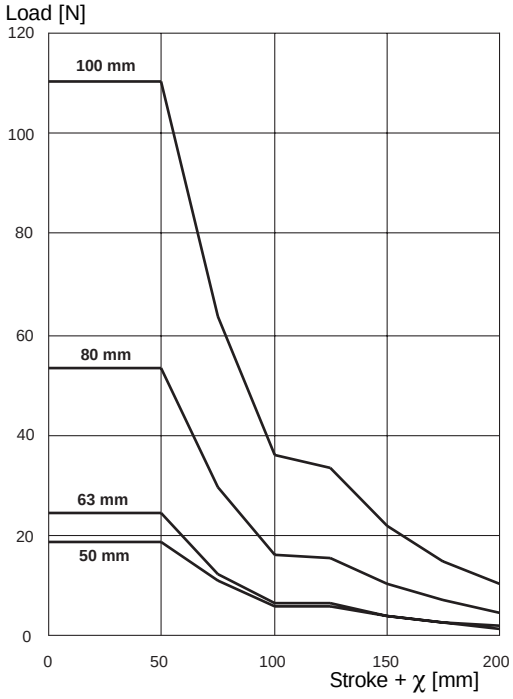


Maximum torque as a function of Stroke + χ

Recirculating ball and Plain bearing (Cylinder dia. 16-40 mm)

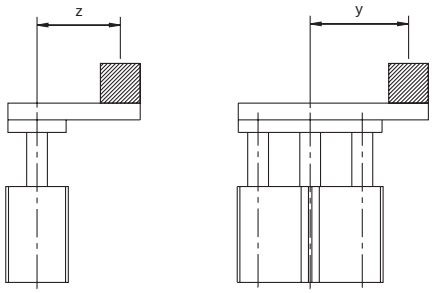


Recirculating ball and Plain bearing (Cylinder dia. 50-100 mm)



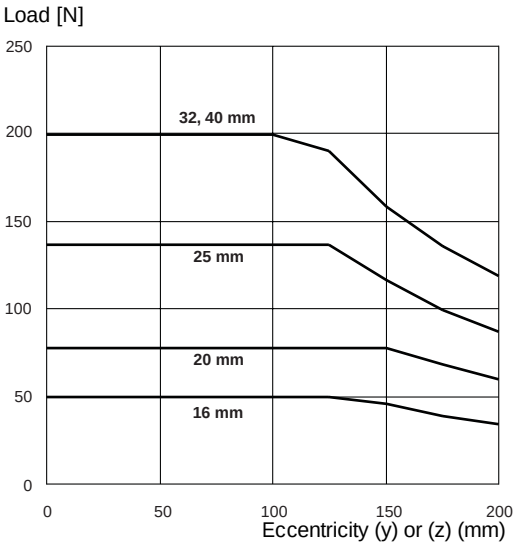
Maximum load during vertical lift

The P5T cylinder has the capacity to absorb eccentric loadings irrespective of location.
The load is assumed to be placed directly on the plate.

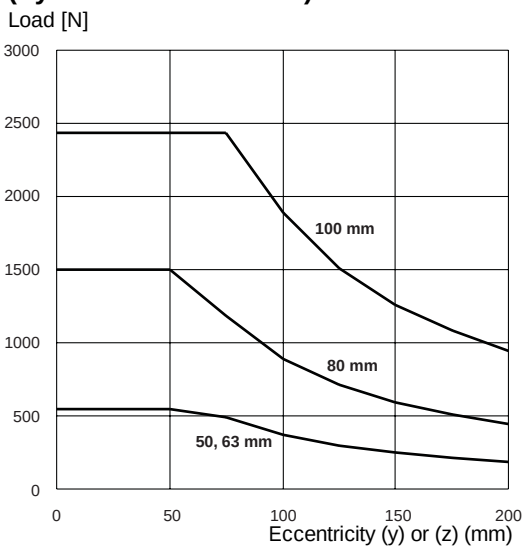


Maximum vertical load as a function of eccentricity

Recirculating ball and Plain bearing (Cylinder dia. 16-40 mm)



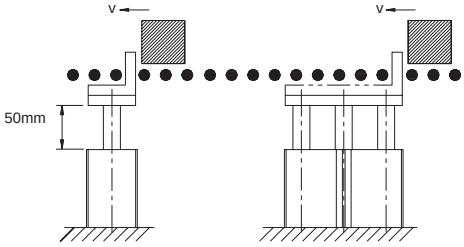
Recirculating ball and Plain bearing (Cylinder dia. 50-100 mm)



Maximum loading as a stop cylinder

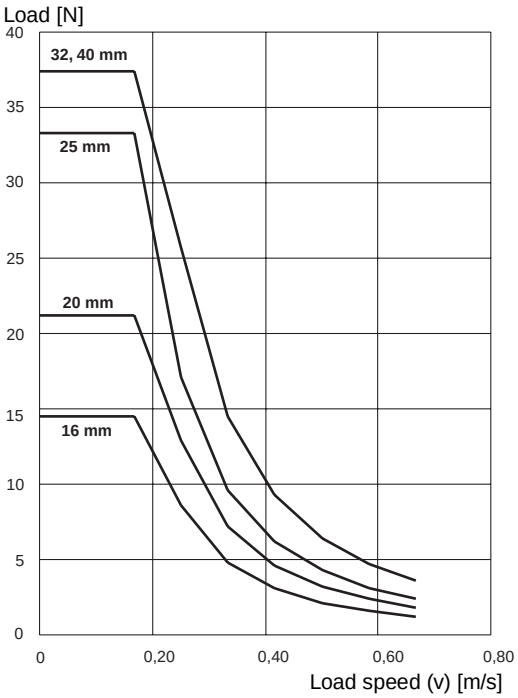
The P5T cylinder can be used as a stop cylinder. It can be used both horizontally and vertically.

NOTE! Cylinders with plain bearings are recommended for this type of application.

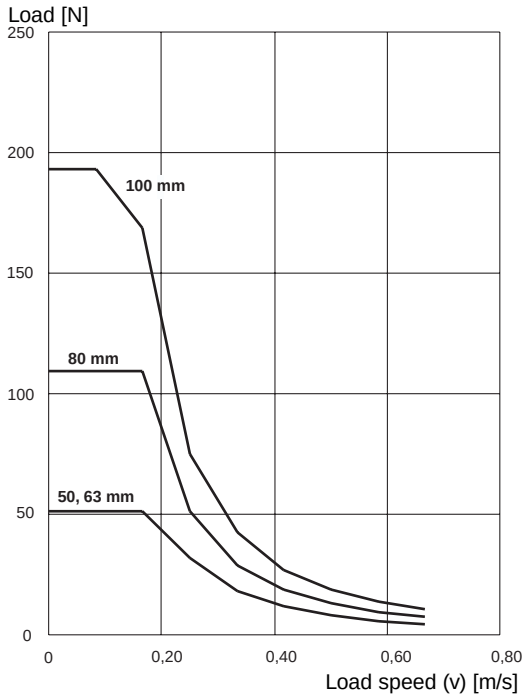


Load stopping capacity as a function of speed

Plain bearing (Cylinder dia. 16-40 mm)

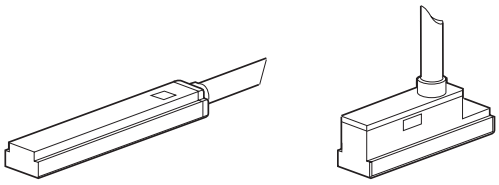


Plain bearing (Cylinder dia. 50-100 mm)



Reed switch sensors

The reed switch sensors incorporate a well-proven, universal-voltage, compact reed switch element, making them suitable for a wide range of applications. They can work with electronic control systems or conventional relay systems. No environment is too severe.

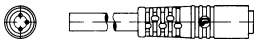


Technical data

Design	Reed
Output	Making
Voltage range	
cable 3 and 10 m	10-120 VAC, 10-30 VDC
cable with diam. 8 mm male connector	10-30 VAC/DC
Max permissible ripple	10%
Max voltage drop	3 V
Max load current	100 mA
Max breaking power (resistive)	10 W
Min actuating distance	5 mm
Hysteresis	≤1,0 mm
Repeatability accuracy	≤0,2 mm
Max on/off switching frequency	400 Hz
Max on/off switching time	1 ms
Encapsulation	IP 67
Temperature range	–25 °C to +75 °C
Indication	LED, yellow
Shock resistance	30 g
Material, housing	PA 12
Material, mould	Epoxy
All cables	PVC 3x0,14 mm^2
Mounting	T slot
Connector	Diam. 8 mm snap on

Ordering data

Order code	Output	Cable connection	Cable length	Weight kg
Reed sensors				
P8S-TRFLX	making	straight	3 m	0,030
P8S-TRFTX	making	straight	10 m	0,110
P8S-TRSHX	making	straight	0,3 m*	0,005
P8S-SRELX	making	90°	3 m	0,030
P8S-SRETX	making	90°	10 m	0,110
P8S-SRTHX	making	90°	0,3 m*	0,005

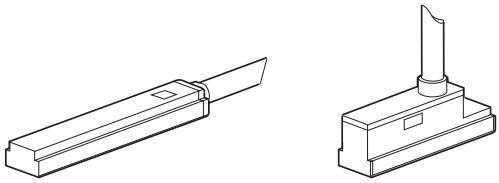


Cable for sensors		
9126344341**	3 m	0,055
9126344342**	10 m	0,175

*) 0,3 m cable with diam. 8 mm male part connector
**) Cable including female part connector, for sensor.

Electronic sensors

These sensors are of solid-state type, with no moving parts. Short-circuit and transient protection is incorporated as standard. The integral electronics make these sensors suitable for applications with very high switching frequencies.

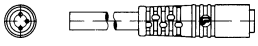


Technical data

Design	Hall element
Output	PNP resp. NPN, N.O.
Voltage range	10-30 VDC
Max permissible ripple	10%
Max voltage drop	2 V
Max load current	150 mA
Max breaking power (resistive)	6 W
Internal consumption	15 mA
Min actuating distance	5 mm
Hysteresis	≤1,5 mm
Repeatability accuracy	≤0,2 mm
Max on/off switching frequency	
P8S-SPELXD, -SPETXD, -SPTHXD	5 kHz
others	50 Hz
Max on/off switching time	0,8/3,0 ms
Encapsulation	IP 67
Temperature range	–25 °C to +75 °C
Indication	LED, yellow
Shock resistance	30 g
Material, housing	PA 12
Material, mould	Epoxy
All cables	PVC 3x0,14 mm^2
Connector	Diam. 8 mm snap on
Mounting	T slot

Ordering data

Order code	Output	Cable connection	Cable length	Weight kg
Electronic sensors				
P8S-TPFLX	PNP, N.O.	straight	3 m	0,030
P8S-TPFTX	PNP, N.O.	straight	10 m	0,110
P8S-TPSHX	PNP, N.O.	straight	0,3 m*	0,005
P8S-TNFLX	NPN, N.O.	straight	3 m	0,030
P8S-TNFTX	NPN, N.O.	straight	10 m	0,110
P8S-TNSHX	NPN, N.O.	straight	0,3 m*	0,005
P8S-SPELXD	PNP, N.O.	90°	3 m	0,030
P8S-SPETXD	PNP, N.O.	90°	10 m	0,110
P8S-SPTHXD	PNP, N.O.	90°	0,3 m*	0,005
P8S-SNELX	NPN, N.O.	90°	3 m	0,030
P8S-SNETX	NPN, N.O.	90°	10 m	0,110
P8S-SNTHX	NPN, N.O.	90°	0,3 m*	0,005

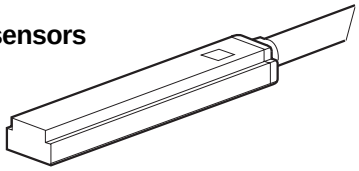


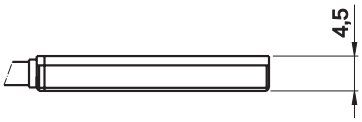
Cable for sensors		
9126344341**	3 m	0,055
9126344342**	10 m	0,175

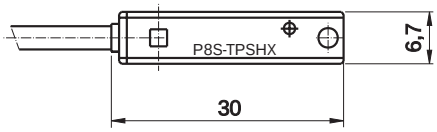
Dimensions

Reed and electronic sensors

P8S-TRFLX
P8S-TRFTX
P8S-TRSHX
P8S-TPFLX
P8S-TPFTX
P8S-TPSHX
P8S-TNFLX
P8S-TNFTX
P8S-TNSHX

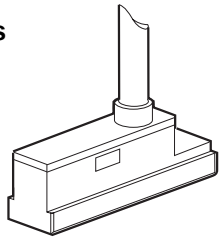


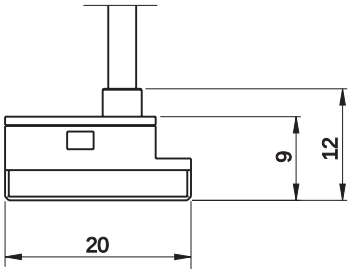


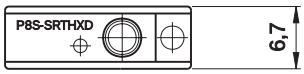


Reed and electronic sensors

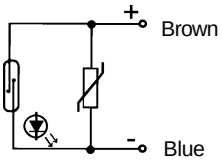
P8S-SPELXD
P8S-SPETXD
P8S-SPTHXD
P8S-SRELX
P8S-SRETX
P8S-SRTHX
P8S-SNELX
P8S-SNETX
P8S-SNTHX

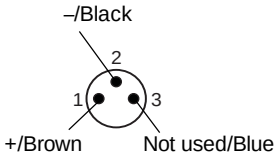




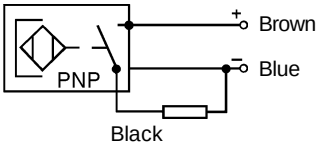


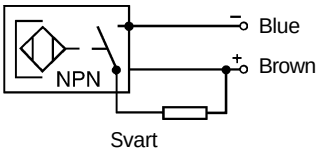
Reed sensor symbol

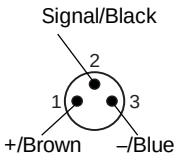


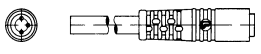


Electronic sensor symbol



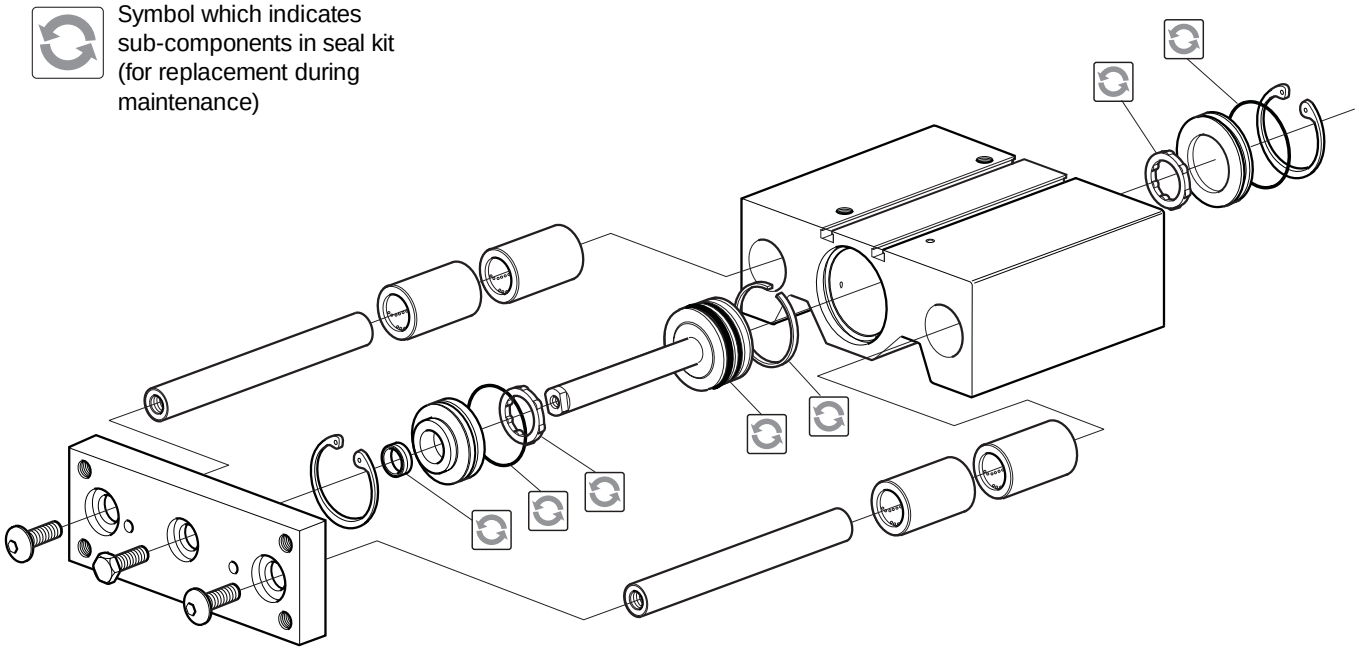




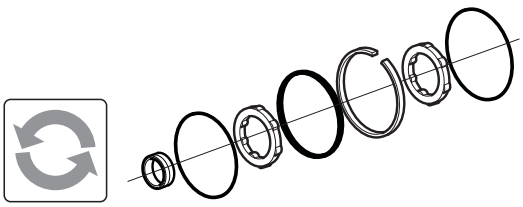


Colours according to cable 9126344341
9126344342

Symbol which indicates sub-components in seal kit (for replacement during maintenance)



Seal kits for P5T



Cylinder diam. mm	Standard temperature Nitrile rubber	High temperature Fluorocarbon rubber
16	**PSK-P5T16**	**PSK-P5T16F**
20	**PSK-P5T20**	**PSK-P5T20F**
25	**PSK-P5T25**	**PSK-P5T25F**
32	**PSK-P5T32**	**PSK-P5T32F**
40	**PSK-P5T40**	**PSK-P5T40F**
50	**PSK-P5T50**	**PSK-P5T50F**
63	**PSK-P5T63**	**PSK-P5T63F**
80	**PSK-P5T80**	**PSK-P5T80F**
100	**PSK-P5T100**	**PSK-P5T100F**

Grease for P5T

Weight	Standard temperature	High temperature
30 g	**9127394541**	**9127394521**