Hengli®

1.1 DPSP Series Double-Acting cylinders

This series of cylinders comply with ISO15552 standard,the diameter of cylinder is ϕ32-125 it have numerous derivative types.

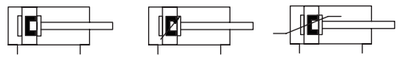
Summary

This series of cylinders comply with ISO15552 standard,the diameter of cylinder is ϕ32-125 it have numerous derivative types

Product features

- It is Square aluminum tube without tie rod，and it have anti-corrosion performance;
- Multiple buffering methods available for smooth adjustment;
- The piston seal adopts two Y-shaped unidirectional sealing structures with compensation function, low starting pressure, and long service life;
- Diversified brackets: various fixed and non fixed types. Fixed bracket for customers to choose from.

Diagram



P=Elastic buffering ring　PPV=Pneumatic buffering　PPS=Pneumatic buffering-self-adjusting

Models selection

DPSP	-32	×50	-PPV	A	-2F
Double-acting	①	②	③	④	⑤

①	-Diameter: 32 40 50 63 80 100 125
②	×Stroke:1...2800
③	-Buffer：P=Elastic buffering ring sat both ends;PPV=Pneumatic buffering, adjustable at both ends;PPS=Self-adjusting at both ends;
④	Position sensing: A=With magnetic switch;None=Without magnetic switch
⑤	-Derivative types

⑤ The type of piston rod		The type of thread of piston rod		End-position locking		The range of temperature	
	With one side		Male thread	E1	Both sides		Standard
2	Double-piston rod	F	Female thread	E2	With advanced piston rod	T	-40-80°C
				E3	With retracted piston rod	R	Heat-resistant seals max. 120°C

Technical parameter

General technical parameter							
Diameter ϕ	32	40	50	63	80	100	125
Standard	ISO 15552						
Model of operation	Double-acting						
Pneumatic connection	G1/8	G1/4	G1/4	G3/8	G3/8	G1/2	G1/2
Piston rod thread	M10x1.25	M12x1.25	M16x1.5	M16x1.5	M20x1.5	M20x1.5	M27x2
Stroke [mm]	1 ... 2800						
Design	Piston/Piston rod/Profile barrel						

- Technical parameter

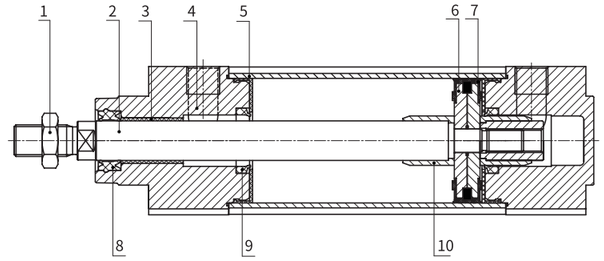
Buffer	
DPSP-...-P	Elastic buffer rings at both ends
DPSP-...-PPV	Pneumatic buffer, adjustable at both ends
DPSP-...-PPS	Pneumatic buffer, self-adjusting at both ends

Buffer length							
Diameter ϕ	32	40	50	63	80	100	125
-PPV [mm]	17	19	22	22	31	31	45
Position Sensing	Via proximity switch						
Type of mounting	With accessories						
	With female thread						
Mounting position	Any						

Operating and environmental conditions							
Diameter ϕ	32	40	50	63	80	100	125
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]						
Operating pressure MPa	0.06 ... 1.2		0.04 ... 1.2				0.02 ... 1
Environmental and fluid temperature	-20 ～ 80° C						
Corrosion resistance grade	2						

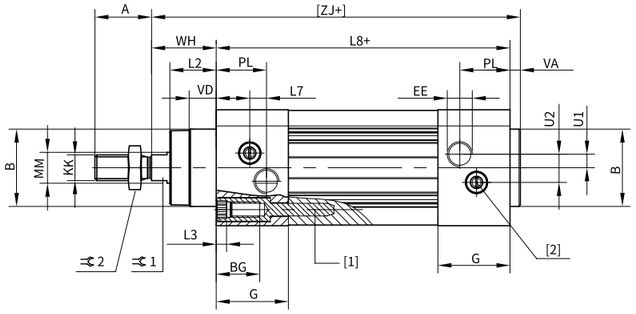
Forces [N] and impact energy [J]							
Diameter ϕ	32	40	50	63	80	100	125
Theoretical force at 6 bar, advancing	483	754	1178	1870	3016	4712	7363
Theoretical force at 6 bar, retracting	415	633	990	1682	2721	2721	4418
Max. Impact energy in the end positions	0.4	0.7	1.0	1.3	1.8	2.5	2.5
Attention： V Permissible impact velocity E Max. impact energy m_1 Moving mass (drive) m_2 Moving payload	Permissible impact velocity：$V=\sqrt{\frac{2\times E}{m_1+m_2}}$　Maximum permissible mass：$m_2=\frac{2\times E}{V^2}-m_1$						
	This parameter represents the maximum value that can be reached. Maximum allowable impact energy must be observed.						

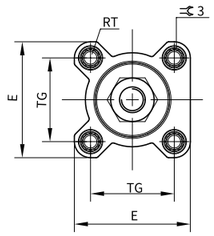
Structure Diagram



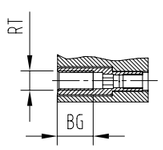
Standard cylinder	
[1] Nut	Galvanized steel
[2] Piston rod	High-alloy steel
[3] Bearing	POM/Bronze(-E1/-E2/-E3)
[4] Cover	Coated die-cast aluminium
[5] Profile barrel	Anodized wrought aluminium alloy
[6] Piston	Anodized wrought aluminium alloy
[7] Piston seal	TPE-U(PU)
[8] Piston rod seal	PUR
[9] Buffer seal	PUR
[10] Buffer shaft sleeve	POM
– Housing, end-position locking	Anodized wrought aluminium alloy
- Spring	High-alloy stainless steel
– Flange screw	Galvanized steel

Dimensions

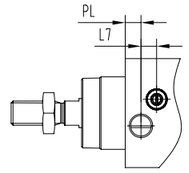




ϕ 80/125

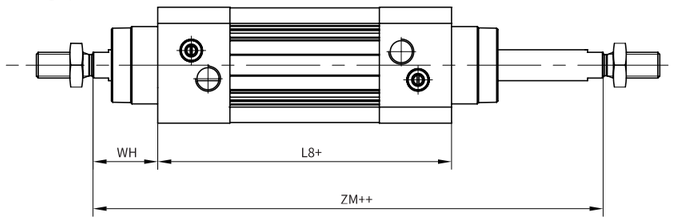


ϕ 125



+ =plus stroke length
[1] Socket head screw with female thread for mounting components
[2] Adjusting screw for adjustable end-position cushioning

T – Through piston rod



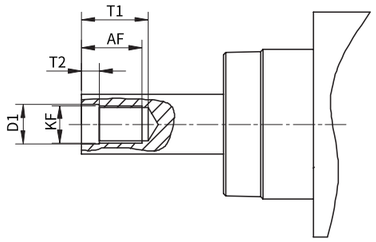
+ = plus stroke length
++ = plus 2x stroke length

-Dimensions

Diameter ϕ[mm]	A–0.5	Bϕd11	BGmin	E+0.5	EE	G–0.2	U2±0.1	U1±0.1	KK
32	22	30	16	45	G1/8	28	5.7	5.25	M10x1.25
40	24	35	16	54	G1/4	33	8	4	M12x1.25
50	32	40	16	64	G1/4	33	10.4	5.5	M16x1.5
63	32	45	16	75	G3/8	40.3	12.75	6.25	M16x1.5
80	40	45	17	93	G3/8	43	12.5	8	M20x1.5
100	40	55	17	110	G1/2	48	13.5	10	M20x1.5
125	54	60	20	136	G1/2	44.7	13	8	M27x2

Diameter ϕ[mm]	L2	L3max.	L7	L8±0.4	MMϕ	PL±0.1	RT	TG±0.3
32	18–0.2	5	6.5	94	12	19.5	M6	32.5
40	21.3–0.2	5	7.5	105	16	22.5	M6	38
50	26.8–0.2	5	9.5	106	20	22.5	M8	46.5
63	27–0.2	5	9	121	20	27.5	M8	56.5
80	34.2–0.2	-	11	128	25	30	M10	72
100	38–0.2	-	7.5	138	25	31.5	M10	89
125	45.5–0.3	-	10	160	32	22.5	M12	110

Diameter ϕ[mm]	VA	VD+0.5	WH+2.2	ZJ+1.8	ZM	⥽1	⥽2	⥽3
32	$4_{-0.2}$	10	25	119.1	146.1	10	16	6
40	$4_{-0.2}$	10.5	28.7	133.9	164.8	13	18	6
50	$4_{-0.2}$	11.5	35.6	141.8	179.8	17	24	8
63	$4_{-0.2}$	15	35.9	157.1	195.4	17	24	8
80	$4_{-0.2}$	15.7	45.4	173.6	221	22	30	6
100	$4_{-0.2}$	19.2	49.3	187.5	238.8	22	30	6
125	$6_{-0.3}$	20.5	64.1	225	290	27	41	8



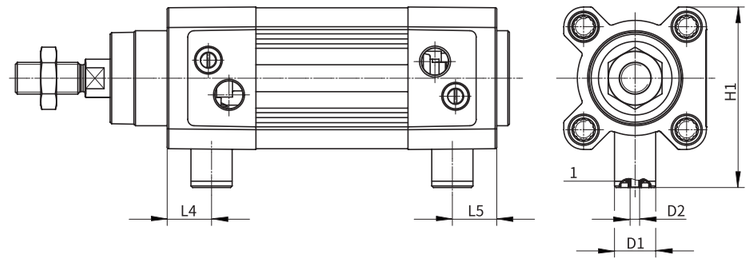
F - Female thread					
ϕ[mm]	AFmin.	D1	KF	T1max.	T2
32	12	6.4	M6	16	2.6
40	12	8.4	M8	16	3.3
50	16	10.5	M10	21	4.7
63	16	10.5	M10	21	4.7
80	20	13	M12	26.5	6.1
100	20	13	M12	26.5	6.1
125	32	17	M16	40	8

-Dimensions

E1/E2/E3 – End-position locking							
Diameter ϕ		32	40	50	63	80	100
Operating mode of clamping unit		Positive interlocking with stop cylinder					
		Release through compressed air					
Static holding force [N]		500	500	2000	2000	5000	5000
Max. axial backlash with end position locked [mm]		1.3	1.3	1.3	1.5	1.5	1.5
Min. unlocking pressure	[MPa]	⩽ 0.25		⩽ 0.15			
	[bar]	⩽ 2.5		⩽ 1.5			
Max. locking pressure	[MPa]	⩾ 0.05					
	[bar]	⩾ 0.5					

Attention:
•In order to ensure that the lock is completely released prior to starting the drive movement, end-position locking should only be used in conjunction with double-acting cylinders with exhaust-air flow control.
• The end-position locking may only be released if the forces at the piston have reached equilibrium. Otherwise, a sudden movement of the piston rod could cause accidents. Blocking off the air supply at both ends (e.g. with a 5/3-way valve) does not provide any safety.
• The piston rod can be locked in any stroke position once the drive is brought mechanically into its end position.
• An excessive end-position cushioning setting (more than 50% closed) can result in the locking bolt not engaging reliably, resulting in premature wear.
• The exhaust hole must not be closed.

E1/E2/E3 – End-position locking



Note:
[1] The connection is used for the manual interlock and/or ducted exhaust air. It must not be sealed or pressurised

E1 - End-position locking at both ends					
ϕ[mm]	D1ϕ	D2	H1	L4	L5
32	13	M3	57.5	14	14
40	13	M3	64	17	17
50	20	M5	78.5	18	18
63	20	M5	84.5	25	25
80	30	M5	105	22	22
100	30	M5	113.5	25.5	25.5

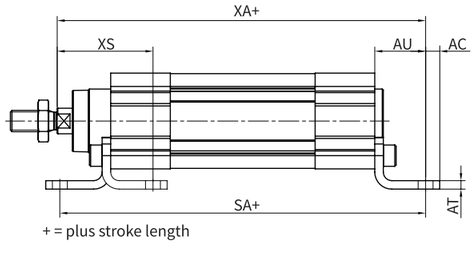
E2 – End-position locking with advanced piston rod				
ϕ[mm]	D1ϕ	D2	H1	L4
32	13	M3	57.5	14
40	13	M3	64	17
50	20	M5	78.5	18
63	20	M5	84.5	25
80	30	M5	105	22
100	30	M5	113.5	25.5

E3 – End-position locking with retracted piston rod				
ϕ[mm]	D1ϕ	D2	H1	L5
32	13	M3	57.5	14
40	13	M3	64	17
50	20	M5	78.5	18
63	20	M5	84.5	25
80	30	M5	105	22
100	30	M5	113.5	25.5

Type of mounting

LB Axial foundation Type

Material: Galvanized steel

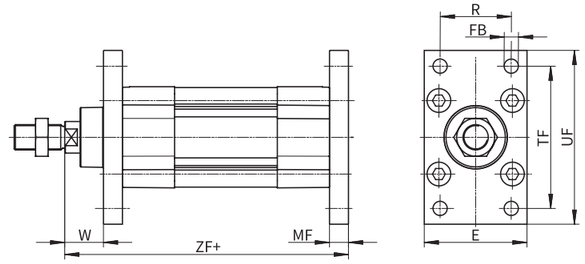


+ = plus stroke length

Diameter ϕ[mm]	ABϕ	AH	AO	AT	AU	SA	TR	US	XA	XS
32	7	32	6.5	4	24	142	32	45	143.1	46
40	10	36	9	4	28	161	36	54	161.9	52.7
50	10	45	9.5	5	32	170	45	64	173.8	62.6
63	10	50	12.5	5	32	185	50	75	189.1	62.9
80	12	63	15	6	41	210	63	93	214.6	80.4
100	14.5	71	17.5	6	41	220	75	110	228.5	84.3
125	16.5	90	22	8	45	250	90	131	270	102

FA/FB Front Rear Flange Type

Material: Galvanized steel



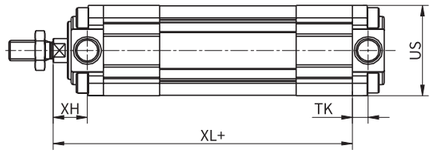
+ = plus stroke length

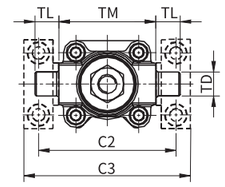
Diameter ϕ[mm]	E	FBϕH13	MF	R	TF	UF	W	ZF
32	45	7	10	32	64	80	16	129.1
40	54	9	10	36	72	90	18.7	143.9
50	65	9	12	45	90	110	23.6	153.8
63	75	9	12	50	100	120	23.9	169.1
80	93	12	16	63	126	150	29.4	189.6
100	110	14	16	75	150	175	33.3	203.5
125	132	16	20	90	180	210	45	245

- Type of mounting

TA /TB Front axle end pin seat type

Material: Galvanized steel



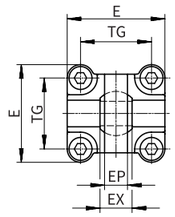


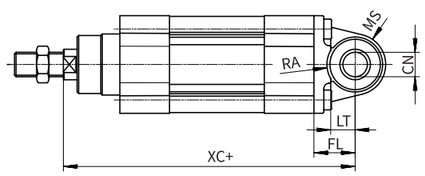
+ = plus stroke length

Diameter ϕ[mm]	C2	C3	TDϕe9	TK	TL	TM	US	XH	XL
32	71	86	12	16	12	50	45	18	127.1
40	87	105	16	20	16	63	54	18.7	143.9
50	99	117	16	24	16	75	64	23.6	153.8
63	116	136	20	24	20	90	75	23.9	169.1
80	136	156	20	28	20	110	93	31.4	187.6
100	164	189	25	28	25	132	110	30.3	206.5
125	192	217	25	50	25	160	131	40	250

CAQ Swivel flange

Material: Die-cast aluminum





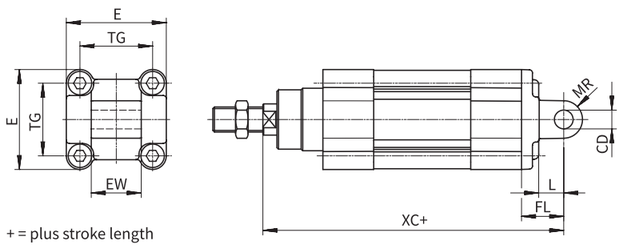
+ = plus stroke length

Diameter ϕ[mm]	CN	E	EP±0.2	EX	FL±0.2	LT	MS	RA+1	TG	XC
32	10+0.013	45+0.2/–0.5	10.5	14	22	13	15+0.5	14.5	32.5	141.1
40	12+0.015	54–0.5	12	16	25	16	17+0.5	17.5	38	158.9
50	16+0.015	64–0.6	15	21	27	16	20+0.5	18.5	46.5	168.8
63	16+0.015	74.5±0.5	15	21	32	21	23–0.5	23	56.5	189.1
80	20+0.018	92.2±0.8	18	25	36	22	28–0.5	36	72	209.6
100	20+0.018	109+1/–0.7	18	25	41	27	30±0.5	95	89	228.5
125	30+0.018	132+1/–0.7	25	37	50	30	39±0.5	100	110	275

- Type of mounting

CA Single-ear

Material: Die-cast aluminum

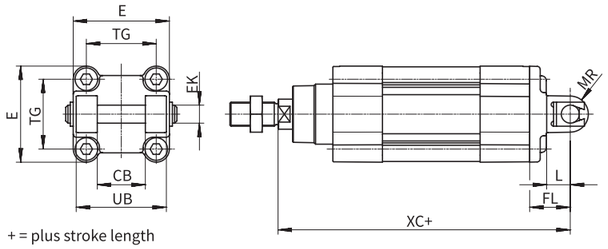


+ = plus stroke length

Diameter ϕ[mm]	CDϕH9	E	EWh12	FL±0.2	L	MR	TG	XC
32	10	45+0.2/–0.5	26	22	13	10	32.5	141.1
40	12	54–0.5	28	25	16	12	38	158.9
50	12	64–0.6	32	27	16	12	46.5	168.8
63	16	75–0.6	40	32	21	16	56.5	189.1
80	16	93–0.8	50	36	22	16	72	209.6
100	20	110+0.3/–0.8	60	41	27	20	89	228.5
125	25	131–0.8	70	50	30	25	110	275

CB Double-ear

Material: Die-cast aluminum



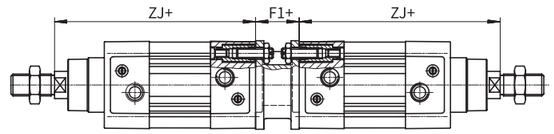
+ = plus stroke length

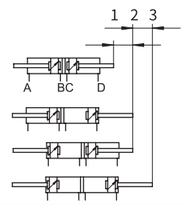
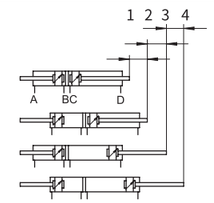
Diameter ϕ[mm]	CBh14	E	EKϕH9/e8	FL±0.2	L	MR–0.5	TG	UBh14	XC
32	26	45+0.2/–0.5	10	22	13	8.5	32.5	45	141.1
40	28	54–0.5	12	25	16	12	38	52	158.9
50	32	64–0.6	12	27	16	12	46.5	60	168.8
63	40	75–0.6	16	32	21	16	56.5	70	189.1
80	50	93–0.8	16	36	22	16	72	90	209.6
100	60	110+0.3/–0.8	20	41	27	20	89	110	228.5
125	70	131–0.8	25	50	30	25	110	130	275

- Type of mounting

DW Multi-position kit

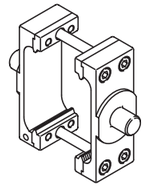
Material:
Flange: Wrought aluminium alloy
Threaded pins, hex nuts:
Galvanized steel

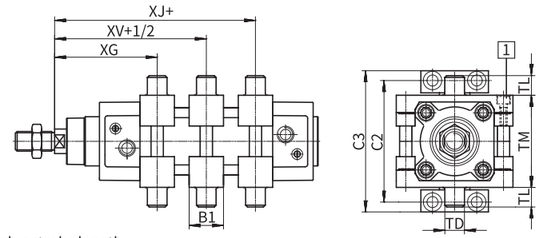


Diameter ϕ[mm]	F1	ZJ +1.8	Max.complete stroke [mm]	To achieve 3 positions Connection two cylinders with the same stroke	To achieve 4 positions Connection two cylinders with the same stroke
32	27	119.1	500		
40	27	133.9	800		
50	32	141.8	800		
63	28	157.1	700		
80	38	173.6	1000		
100	38	187.5	900		
125	48	225	1000		

TR Trunnion flange kit

The kit can be attached at any position along the profile barrel of the cylinder.
Material: Die-cast Aluminium

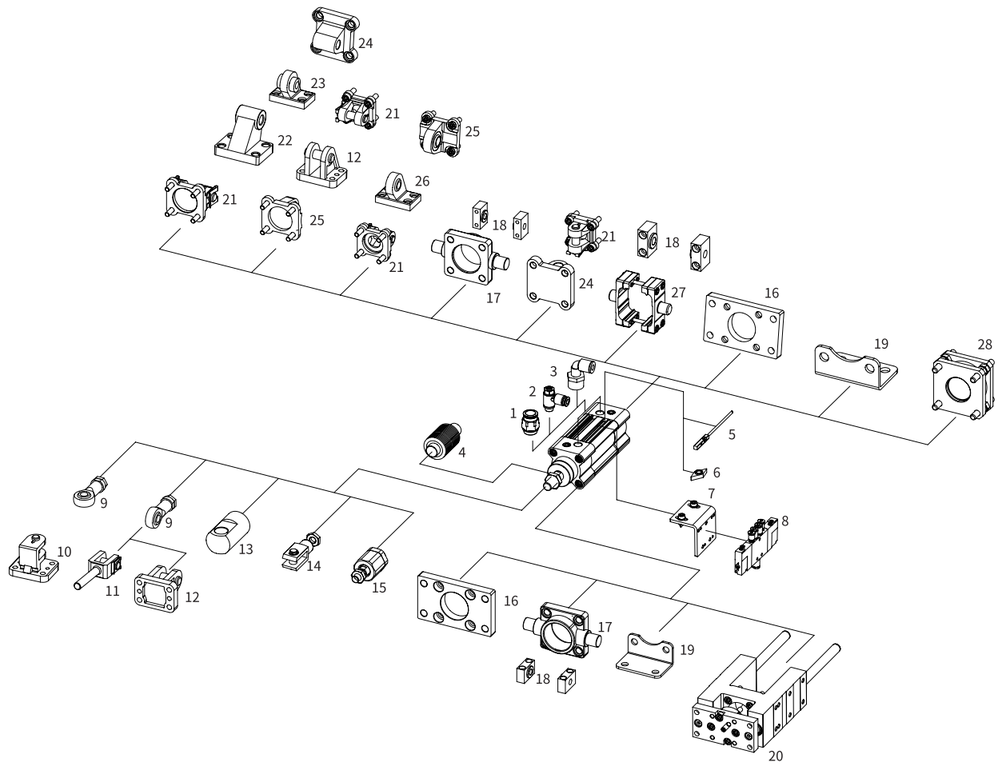




+ = plus stroke length
+ 1/2 = plus half stroke length [1] Max. tightening torque

Diameter ϕ[mm]	B1	C2	C3	TDϕe9	TL	TM	UW	XGmin.	XJmax.	XV	Max.[Nm]
32	30	71	86	12	12	50	65	69±1.4	76±1.4	73±1.4	4+1
40	32	87	105	16	16	63	75	77.7±1.4	84.9±1.4	81.2±1.4	8+1
50	34	99	117	16	16	75	95	85.6±1.4	91.8±1.4	88.6±1.4	8+2
63	41	116	136	20	20	90	105	96.9±1.8	96.1±1.8	96.4±1.8	18+2
80	41	136	156	20	20	110	130	110.4±1.8	108.6±1.8	109.4±1.8	28+2
100	48	164	189	25	25	132	145	121.3±1.8	115.5±1.8	118.3±1.8	28+2
125	50	192	217	25	25	160	177	134.7±1.8	155.3±1.8	145±1.8	40+2

Peripherals overview



· List of installation components and accessories

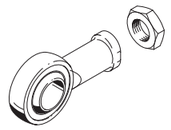
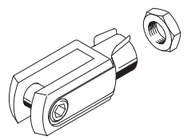
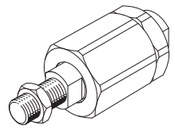
Serial number	Code	Name	Description
1	PC	Push-in fitting	For connecting compressed air tubing with standard O.D.
2	NSE	One-way flow control valve	For speed regulation
3	PL	Push-in fitting	Right Angle
4	FCZ	Dust guard	Protects the cylinder (piston rod, seal and bearings) against a wide range of media and thus prevents premature wear
5	C	Magnetic switch	Can be integrated in the cylinder profile barrel
6	-	Slot nut	Inserted in slot from above
7	-	Mounting kit	For mounting the valve
8	-	Solenoid valve	For standards-based cylinder
9	YY	Fish eye joint	With spherical bearing
10	CBZ	Right-angle clevis foot	-
11	YF	Y joint	With male thread
12	CBG	Clevis foot	
13	I	I joint	Permits a swivelling movement of the cylinder in one plane
14	Y	Y joint	Permits a swivelling movement of the cylinder in one plane
15	FD	Self-aligning rod coupler	For compensating radial and angular deviations
16	FA/FB	Front / rear flange	• For bearing or end caps • Cannot be used on the bearing cap in combination with the bellows kit FCZ

- Peripherals overview

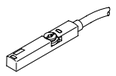
- · List of installation components and accessories

Serial number	Code	Name	Description
17	TA/TB/TC	Front / center / rear axle pin seat	• For bearing or end caps • Cannot be used on the bearing cap in combination with the bellows kit FCZ
18	TZ	Trunnion support	Used in conjunction with TA/TB/TC/TR
19	LB	Foot mounting	For bearing or end caps
20	DX	Guide unit	For protecting standards-based cylinders against rotation at high torque loads
21	CB	Double-ear	For end caps
22	LN	Clevis foot	Used in conjunction with CB
23	LNQ2	Ball articulated ear ring support	With spherical bearing
24	CA	Single-ear	For end caps
25	CAQ	Single-ear belt bearing	For end caps
26	LNQ	Clevis foot with bearing	With spherical bearing
27	TR	Trunnion flange kit	For mounting anywhere along the cylinder profile barrel
28	DW	Multi-position kit	For connecting two cylinders with identical piston diameters to form a multi-position cylinder

· Piston rod accessories

Name	Diameter ϕ	TYPE	Name	Diameter ϕ	TYPE
Fish eye joint YY			I joint		
	32	YY-M10×1.25		32	I-M10×1.25
	40	YY-M12×1.25		40	I-M12×1.25
	53，63	YY-M16×1.5		50, 63	I-M16×1.5
	80，100	YY-M20×1.5		80, 100	I-M20×1.5
	125	YY-M27×2		125	I-M27×2
Y joint			Self-aligning rod coupler FD		
	32	Y-M10×1.25		32	FD-M10×1.25
	40	Y-M12×1.25		40	FD-M12×1.25
	53，63	Y-M16×1.5		53，63	FD-M16×1.5
	80，100	Y-M20×1.5		80，100	FD-M20×1.5
	125	Y-M27×2		125	FD-M27×2

· C Magnetic switch

Magnetic switch is used for T-groove						
	The way of mounting	Switching output	Connection	Cable length [m]	Type	Diameter ϕ
N/O						
	Inserterable in the slot from above, flush with the cylinder profile.	PNP	Magnetoresistive，3-wire	1.3	CDX-13P-1.3	32~125
		NPN	Magnetoresistive，3-wire	1.3	CDX-13N-1.3	
		R	Tongue spring type，2-wire	1.3	CDX-13R-1.3	
				2.5	CDX-13R-2.5	

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