



# Series 21 Cylinders ISO 15552



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## **Series 21 Cylinders**

### **ISO 15552 - 32 to 100 mm Bore**

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### General

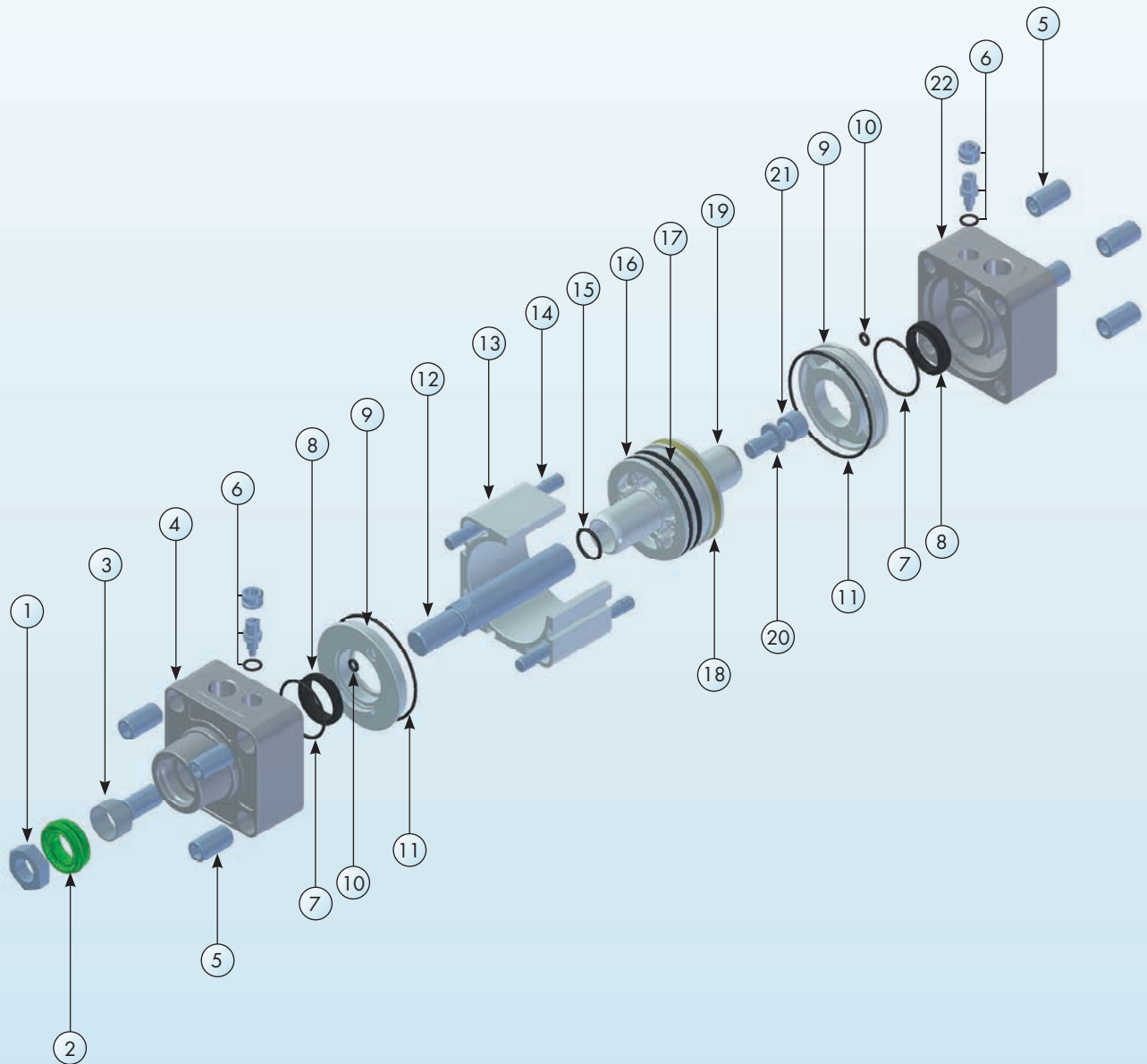
Series 21 cylinders are manufactured according to the ISO 15552 standard, which guarantees the interchangeability of the cylinders without mounted accessories. The cylinder's tube and end plates have a clean profile making them suitable for use in dusty environments as well as the food or similar industries where wash downs are necessary. The cylinder tube is internally and externally anodised, offering an excellent resistance to corrosion while providing a low friction surface for the piston.

This product has been designed to have extraordinary strength. The piston (always magnetic and complete with cushion bushings) is a solid aluminium block and the tube is assembled on covers with tie-rods. This easy structure, with simple modification of basic components, permits versions for high and low temperature applications. The cylinder is RoHS certified (Directive 2002/95/CE) and it is also available in the Atex version (Directive 94/9/CE) in zone II 2G/D c T4 T135°C -10°C <math>T\_0 < 50^{\circ}\text{C}</math>.

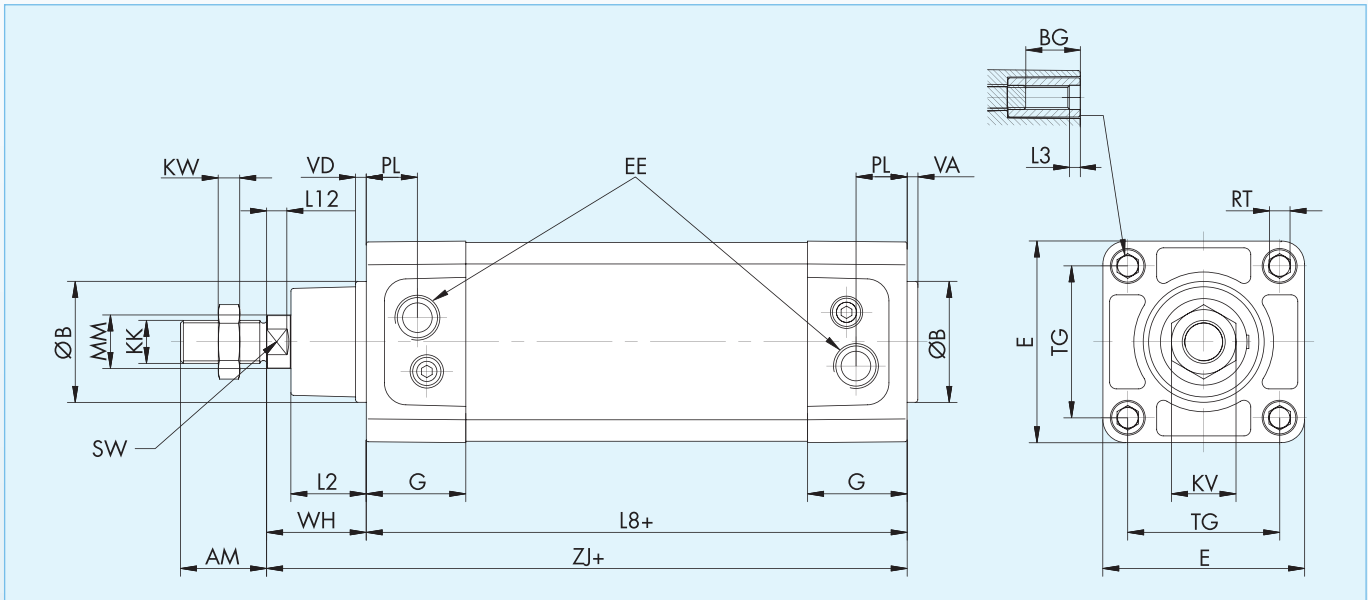
### Technical data

Piston diameters:	Ø 32, 40, 50, 63, 80, 100 (mm)						
Ports:	Ø 32 = G1/8; Ø 40÷50 = G1/4; Ø 63÷80 = G3/8; Ø 100 = G1/2						
End plates:	painted aluminium alloy casting						
Piston rod:	C45 chromium plated steel or AISI 303 stainless steel						
Profiled tube:	aluminium alloy anodised 15 µm						
Piston with cushion bushings:	aluminium alloy casting						
Tie-rods:	Fe 37						
Cushioning adjustment screw:	nickel-plated brass						
Piston rod seal:	polyurethane mixture 94 SH A (Viton® on request)						
Piston seal:	NBR rubber 70 SH A (Viton® on request)						
Cushion seals:	NBR rubber 90 SH A (Viton® on request)						
Other seals:	NBR rubber						
Operating medium:	5 µm filtered air, lubricated or not (dry air must be used for application below 0 °C)						
Max pressure:	10 bar						
Operating temperature:	-20 °C ÷ +80 °C						
Cushioning length:	Ø	32	40	50	63	80	100
	mm	20	22	26	30	32	34
Stroke tolerance:	Ø 32 - 50	< 500 mm: + 2,0 mm > 500 mm: + 3,2 mm					
	Ø 63 - 100	< 500 mm: + 2,5 mm > 500 mm: + 4,0 mm					
Standard strokes:	25, 50, 80, 100, 125, 160, 200, 250, 320, 400, 500 (mm)						

Explosion View



- |                                |                       |
|--------------------------------|-----------------------|
| 1. Piston rod nut              | 12. Piston rod        |
| 2. Piston rod seal             | 13. Cylinder body     |
| 3. Piston rod guide bushing    | 14. Tie-rod           |
| 4. Front cover                 | 15. Rubber seal       |
| 5. Tie-rod nut                 | 16. Piston seal       |
| 6. Cushioning adjustment screw | 17. Magnetic ring     |
| 7. Rubber seal                 | 18. Wear ring         |
| 8. Cushion seal                | 19. Piston            |
| 9. End cap cover ring          | 20. Washer            |
| 10. Rubber seal                | 21. Piston fixing nut |
| 11. Rubber seal                | 22. Rear cover        |



Ø	B*11	E	G	L2	L8+	L3	L12	EE	KK	ØMM	AM	BG	KV	KW	PL	RT	SW	TG	VA	VD	WH	ZJ+
32	30	45	30	18	94	5	6	G1/8	M10X1,25	12	22	16	17	6	13	M6	10	32,5	3	4	26	120
40	35	54	28	22	105	5	6	G1/4	M12X1,25	16	24	16	19	7	15	M6	13	38	3	4	30	135
50	40	64	30	26	106	5	8	G1/4	M16X1,5	20	32	16	24	8	15	M8	17	46,5	4	4	37	143
63	45	75	37	28	121	5	8	G3/8	M16X1,5	20	32	16	24	8	19	M8	17	56,5	4	4	37	158
80	45	93	37,5	31	128	5	10	G3/8	M20X1,5	25	40	17	30	9	20,5	M10	22	72	4	4	46	174
100	55	110	40	35	138	5	10	G1/2	M20X1,5	25	40	17	30	9	22	M10	22	89	4	4	51	189

Order code	21.	1	1	A.	0200	
Series Number	21					
Piston diameter						
	Ø 32	1				
	Ø 40	2				
	Ø 50	3				
	Ø 63	4				
	Ø 80	5				
	Ø 100	6				
Design						
	piston rod C45 (standard)			1		
	stainless steel piston rod			2		
	piston rod C45, Viton® seal			3		
	stainless steel piston rod, Viton® seal			4		
	Atex			X		
Version						
	double acting				A	
	through piston rod				B	
	back to back				C	
	tandem				D	
	two-strokes tandem				E	
	multi-position tandem				F	
Stroke						xxxx (yyyy)
Piston rod lock device assembled *						BS

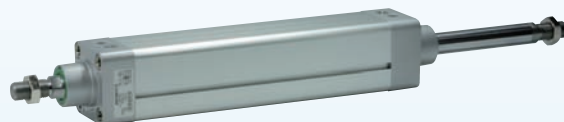
yyyy: please add stroke of the second cylinder only on versions C, E, F

\* only on versions A and B

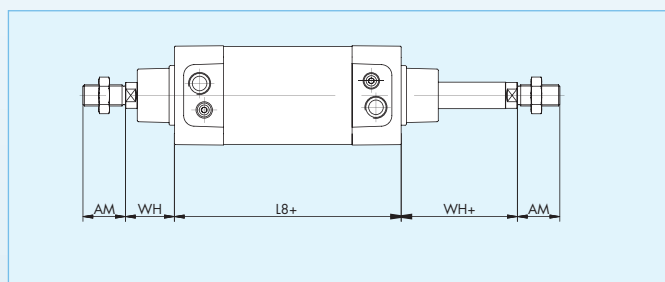
Special versions	KX.	1	1	A.	0200.	zzzz
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zzzz = project no. (added by factory)

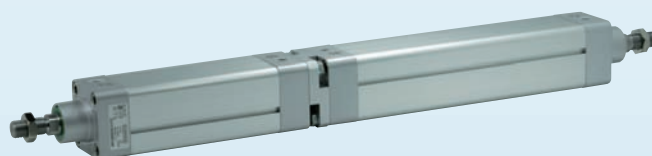
Through piston rod



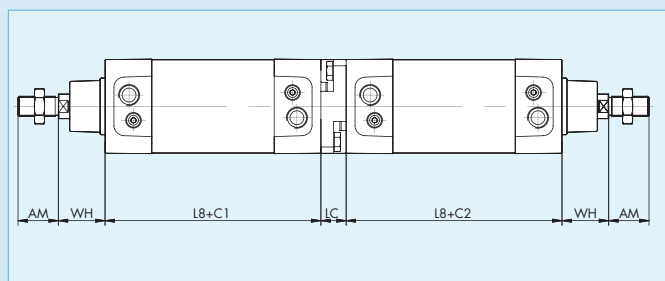
∅	AM	WH	L8+
32	22	26	94
40	24	30	105
50	32	37	106
63	32	37	121
80	40	46	128
100	40	51	138



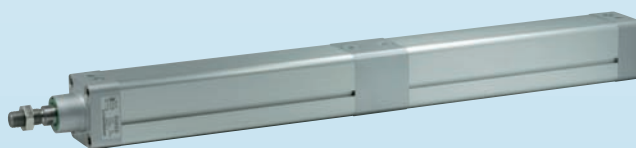
Back to back  
(C1 independent of C2)



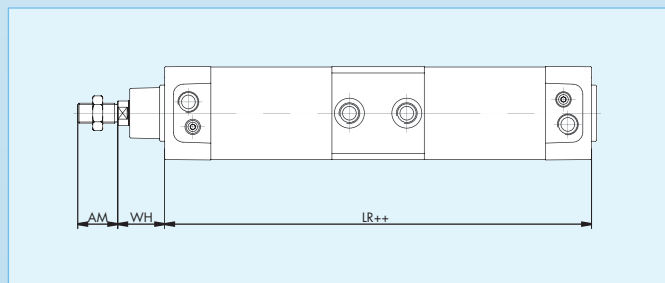
∅	AM	WH	L8+	LC
32	22	26	94	15
40	24	30	105	15
50	32	37	106	20
63	32	37	121	20
80	40	46	128	25
100	40	51	138	25



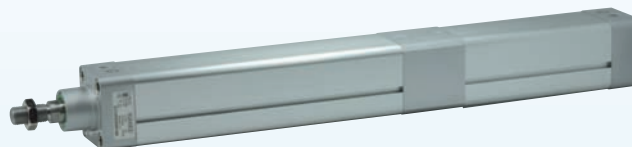
Tandem



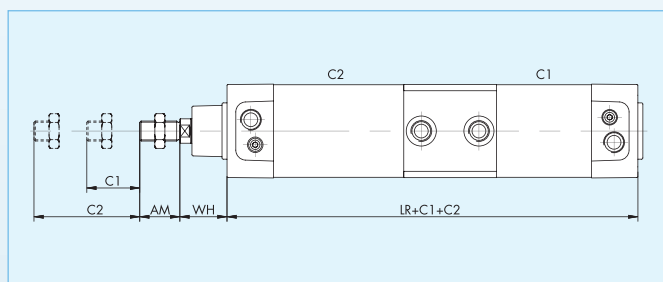
∅	AM	WH	LR++
32	22	26	188
40	24	30	210
50	32	37	212
63	32	37	242
80	40	46	256
100	40	51	276



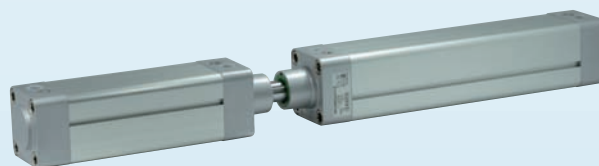
Two-strokes tandem  
(C2 bigger than C1)



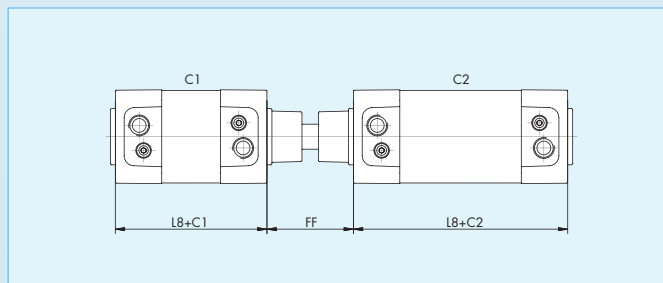
Ø	AM	WH	LR
32	22	26	188
40	24	30	210
50	32	37	212
63	32	37	242
80	40	46	256
100	40	51	276



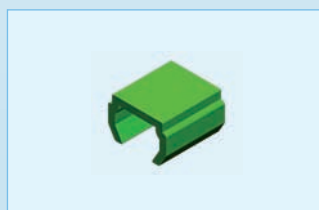
Multi-position tandem  
(C1 independent of C2)



Ø	FF	L8+
32	48	94
40	54	105
50	69	106
63	69	121
80	86	128
100	91	138



Cylinder groove cover



Order code	Description
20.001	Groove cover for use with position transmitter

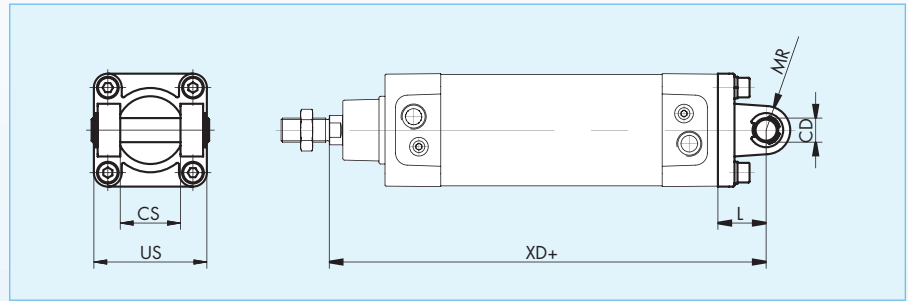
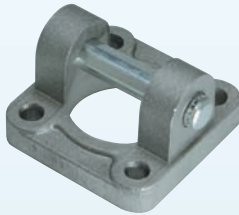
The cylinder groove cover is 2 m in length and can be cut to size.



Order code	Description
20.002	Standard groove cover

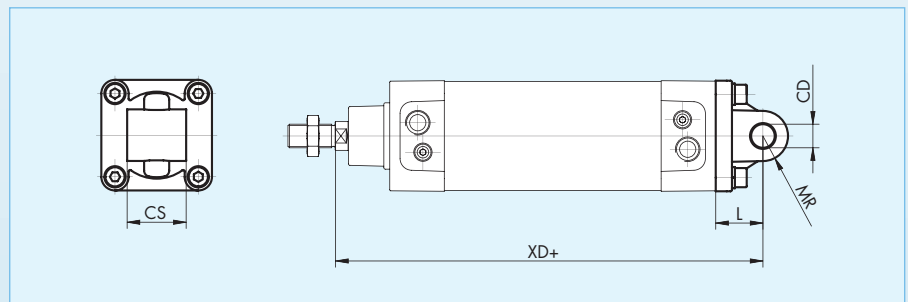
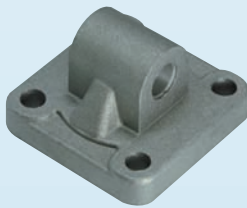
Specify length. Cover supplied cut to size.

Female Trunnion  
(bolt and fixing screws included)



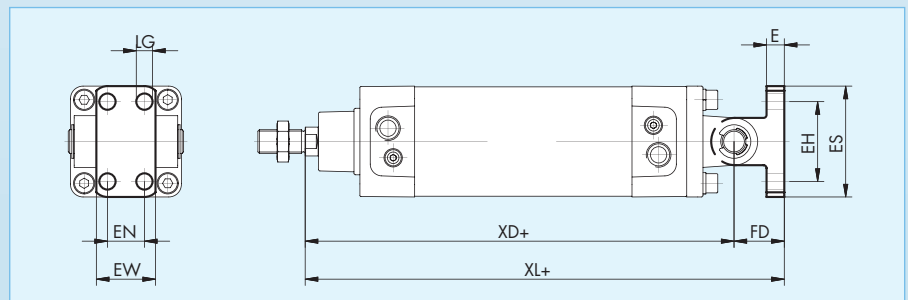
Order code	Ø	CS	US	L	XD+	CD	MR
18.001.01	32	26	45	22	142	10	11
18.001.02	40	28	52	25	160	12	13
18.001.03	50	32	65	27	170	12	13
18.001.04	63	40	75	32	190	16	17
18.001.05	80	50	95	36	210	16	17
18.001.06	100	60	115	41	230	20	21

Male Trunnion  
(fixing screws included)



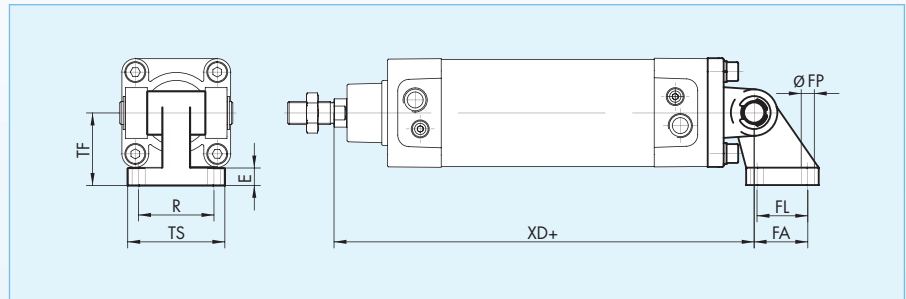
Order code	Ø	CS	L	XD+	CD	MR
18.002.01	32	26	22	142	10	11
18.002.02	40	28	25	160	12	13
18.002.03	50	32	27	170	12	13
18.002.04	63	40	32	190	16	17
18.002.05	80	50	36	210	16	17
18.002.06	100	60	41	230	20	21

Trunnion Mounting Bracket  
(Cetop standard -  
for use with female trunnion)



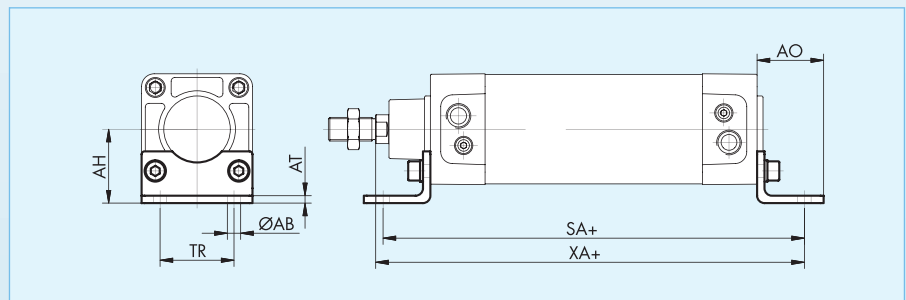
Order code	Ø	LG	EN	EW	XL+	XD+	FD	EH	ES	E
18.003.01	32	7	-	25	160	142	18	28	40	8
18.003.02	40	9	16	28	186	160	26	38	52	10
18.003.03	50	9	16	32	196	170	26	38	52	10
18.003.04	63	11	25	40	224	190	34	54	75	12
18.003.05	80	11	25	50	244	210	34	54	75	12
18.003.06	100	14	32	60	271	230	41	90	115	16

Square angle trunnion mounting bracket  
(for use with female trunnion)



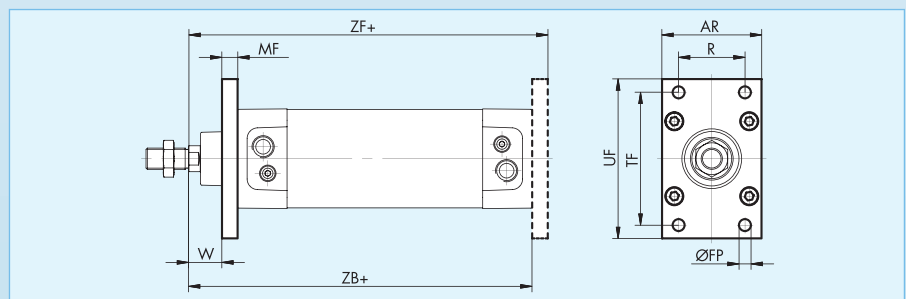
Order code	Ø	R	TS	FP	XD+	FA	FL	TF	E
18.014.01	32	38	31	7	142	21	18	32	8
18.014.02	40	41	35	7	160	24	22	36	10
18.014.03	50	50	45	9	170	33	30	45	12
18.014.04	63	52	50	9	190	37	35	50	12
18.014.05	80	66	60	11	210	47	40	63	14
18.014.06	100	76	70	14	230	55	50	71	15

Mounting bracket  
(fixing screws included -  
kit includes one bracket only)



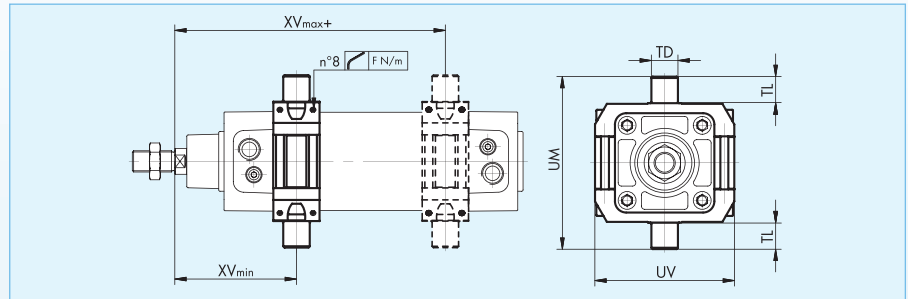
Order code	Ø	AT	AH	TR	AB	SA+	XA+	AO
18.005.01	32	4	32	32	7	142	144	35
18.005.02	40	4	36	36	9	161	163	43
18.005.03	50	4	45	45	9	170	175	47
18.005.04	63	6	50	50	9	185	190	47
18.005.05	80	6	63	63	12	210	215	61
18.005.06	100	6	71	75	14	220	230	66

Mounting plate  
(fixing screws included)



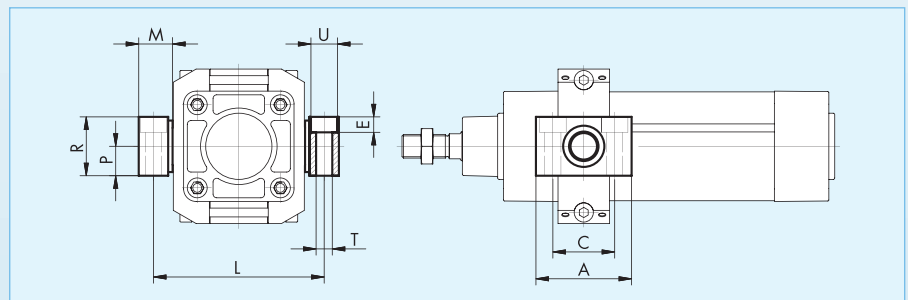
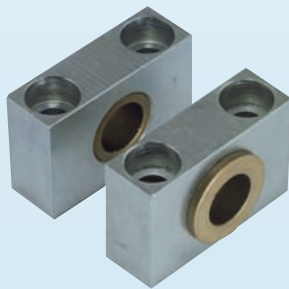
Order code	Ø	W	ZF+	R	FP	TF	UF	ZB+	AR	MF
18.006.01	32	16	130	32	7	64	80	120	50	10
18.006.02	40	20	145	36	9	72	90	135	55	10
18.006.03	50	25	155	45	9	90	110	143	65	12
18.006.04	63	25	170	50	9	100	120	158	75	12
18.006.05	80	31	189	63	12	126	150	174	95	15
18.006.06	100	36	204	75	14	150	178	189	115	15

Swivel Bearing  
(adjustable)



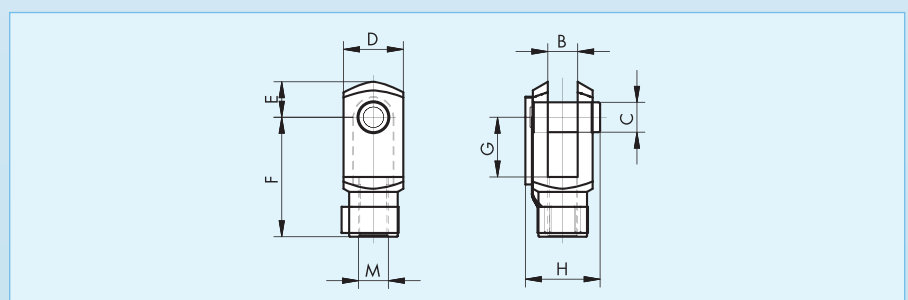
Order code	Ø	TD e <sup>9</sup>	TL h <sup>14</sup>	UM	UV	XVmin	XVmax+	F [N/m]
21.1R.07	32	12	12	74	65	66,5	79,5	2
21.2R.07	40	16	16	95	75	71	94	2
21.3R.07	50	16	16	107	85	80	100	2,5
21.4R.07	63	20	20	130	105	91,5	103,5	2,5
21.5R.07	80	20	20	150	130	101	118,5	5
21.6R.07	100	25	25	182	145	113,5	126,5	5

Swivel Bearing Support  
(set of 2)



Order code	Ø	A	C	P	R	M	L	ØT	ØU	E
20.007.11	32	46	32	15	30	18	71	7	11	6,5
20.007.12	40	55	36	18	36	21	87	9	15	8,5
20.007.12	50	55	36	18	36	21	99	9	15	9,5
20.007.14	63	65	42	20	40	23	116	11	18	10,5
20.007.14	80	65	42	20	40	23	136	11	18	10,5
20.007.16	100	75	50	25	14	28,5	164	13	20	12,5

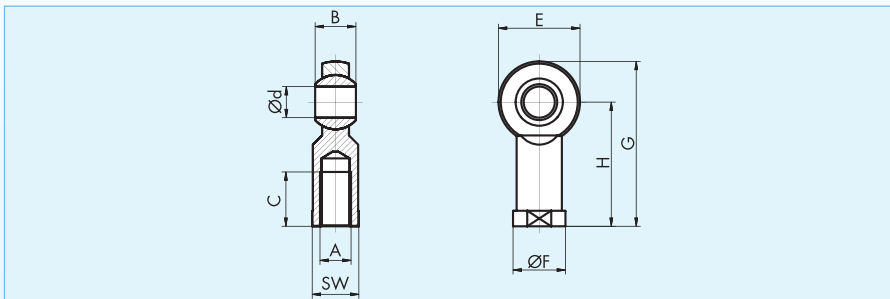
Clevis  
(lockable pin included)



Order code	Ø	M	B	C	D	E	F	G	H
18.008.01	32	M10x1,25	10	10	20	12	40	20	26
18.008.02	40	M12x1,25	12	12	24	14	48	24	32
18.008.03	50	M16x1,5	16	16	32	19	64	32	40
18.008.03	63	M16x1,5	16	16	32	19	64	32	40
18.008.04	80	M20x1,5	20	20	40	25	80	40	48
18.008.04	100	M20x1,5	20	20	40	25	80	40	48



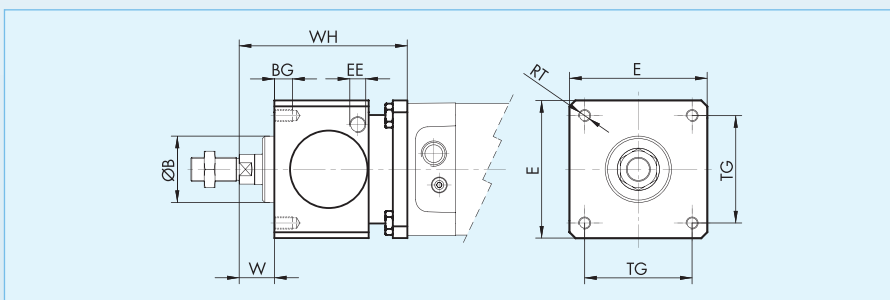
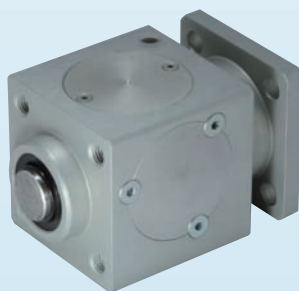
Rod end - spherical bearing



Order code	Ø	A	B	C	d <sup>H7</sup>	E	F	G	H	SW
18.009.01	32	M10x1,25	14	20	10	28	19	57	43	17
18.009.02	40	M12x1,25	16	22	12	32	22	66	50	19
18.009.03	50	M16x1,5	21	28	16	42	27	85	64	22
18.009.03	63	M16x1,5	21	28	16	42	27	85	64	22
18.009.04	80	M20x1,5	25	33	20	50	34	102	77	30
18.009.04	100	M20x1,5	25	33	20	50	34	102	77	30

Piston rod lock device

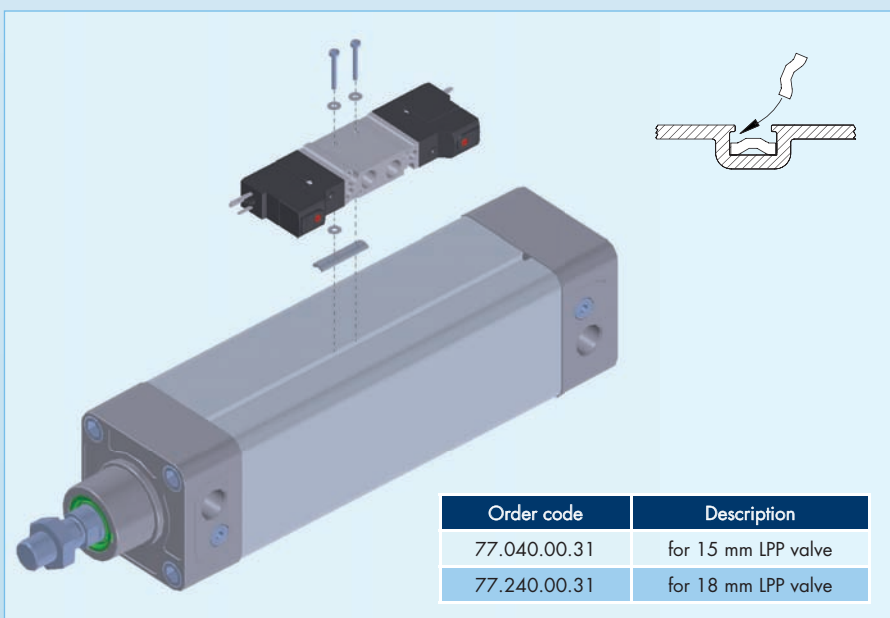
(operating pressure: 3 to 6 bar  
locking by friction with piston rod stopped  
Special length piston rod may be required)



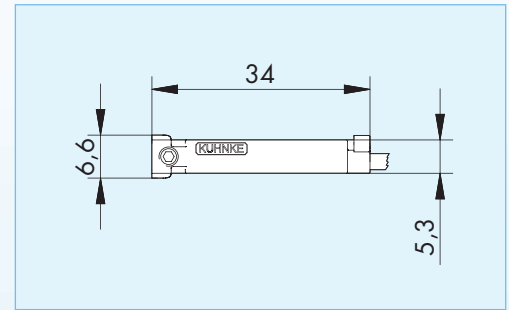
Order code	Ø	B	BG	E	EE	RT	TG	W	WH	F <sub>max</sub> [N]
KBS.3001.032	32	30	8	47	G1/8	M6	32,5	26	86	790
KBS.3001.040	40	35	8	54	G1/8	M6	38	30	100	1240
KBS.3001.050	50	40	12	65	G1/8	M8	46,5	37	127	1930
KBS.3001.063	63	45	12	75	G1/8	M8	56,5	37	127	3060
KBS.3001.080	80	45	16	95	G1/4	M10	72	46	156	5400
KBS.3001.100	100	55	16	114	G1/4	M10	89	51	161	7700

LPP valve mounting Bracket

(kit includes 10 brackets and mounting screws)

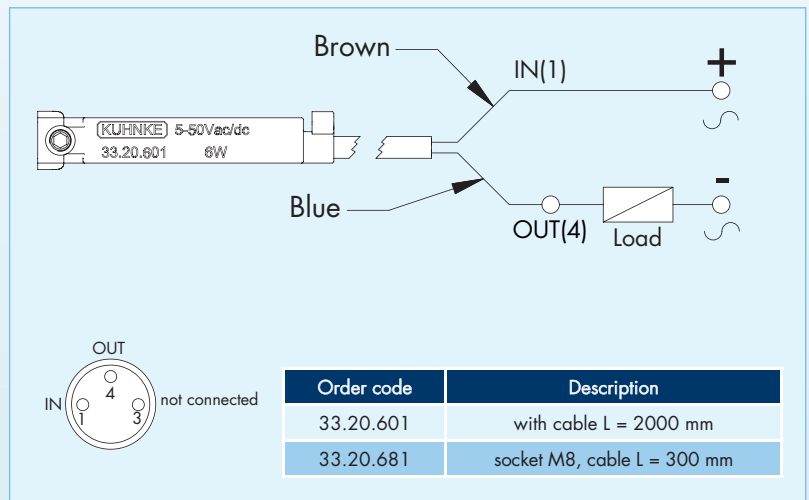


Order code	Description
77.040.00.31	for 15 mm LPP valve
77.240.00.31	for 18 mm LPP valve



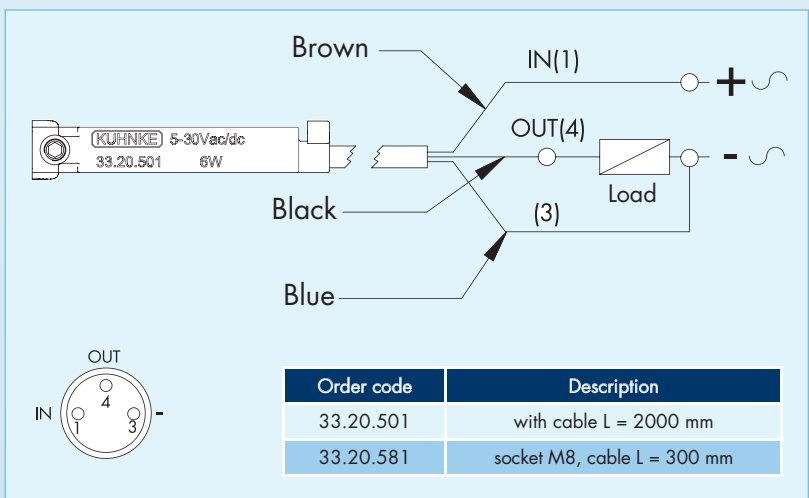
Position transmitter REED (2 pole)

Contact type: N.O.  
 Cable: 2 x 0,14 mm<sup>2</sup>  
 Switching capacity: max 6 W  
 Switching voltage: 5-50 V AC/DC  
 Switching current: max 200 mA  
 Voltage drop: 3 V  
 Switching time: 0,6 ms  
 Switching rate: max 400 Hz  
 Service life: 10<sup>7</sup> switchings, depending on the load  
 Ambient temperature range: -5°C ÷ +75°C  
 Protection class: IP67  
 Status indicator: LED  
 Housing material: plastic



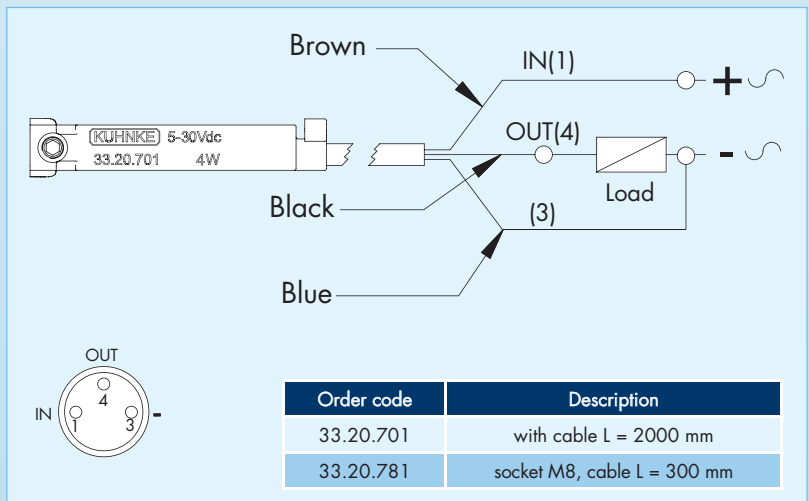
Position transmitter REED (3 pole)

Contact type: N.O.  
 Cable: 3 x 0,14 mm<sup>2</sup>  
 Switching capacity: max 6 W  
 Switching voltage: 5-30 V AC/DC  
 Switching current: max 500 mA  
 Voltage drop: 0,1 V  
 Switching time: 0,6 ms  
 Switching rate: max 400 Hz  
 Service life: 10<sup>7</sup> switchings, depending on the load  
 Ambient temperature range: -5°C ÷ +75°C  
 Protection class: IP67  
 Status indicator: LED  
 Housing material: plastic



Electronic Position transmitter

Contact Type: PNP (N.O.)  
 Cable: 3 x 0,14 mm<sup>2</sup>  
 Switching capacity: max 4 W  
 Switching voltage: 5-30 V DC  
 Switching current: max 200 mA  
 Voltage drop: 0,7 V  
 Switching time: 0,8 µs  
 Switching rate: max 1 kHz  
 Service life: 10<sup>11</sup> switchings, depending on the load  
 Ambient temperature range: -5°C ÷ +75°C  
 Protection class: IP67  
 Status indicator: LED  
 Housing material: plastic



## Position transmitter assembly



1. Insert the transmitter into the groove from the top.



2. Turn the transmitter 90° clockwise.



3. Lay the transmitter on the groove making sure that the locking tooth is well fixed.



4. Tighten the screw (max torque 0,3 Nm).

## Position transmitter disassembly



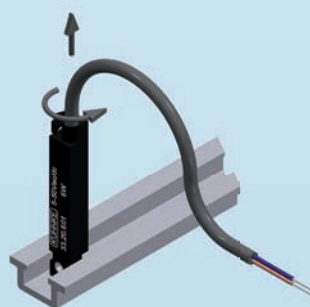
1. Loosen the screw.



2. Unlock the tooth using a screwdriver.

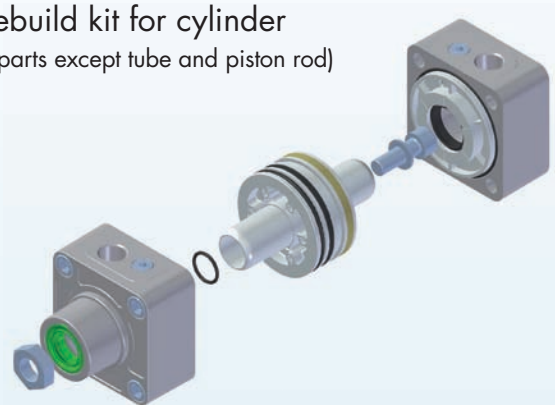


3. Lift the transmitter from the groove.



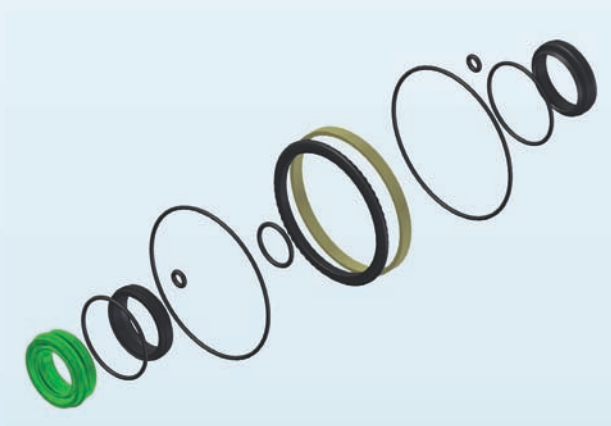
4. Turn the transmitter 90° anti-clockwise and lift out.

Complete rebuild kit for cylinder  
(kit includes all parts except tube and piston rod)



Ø	Order code
32	21.1R.01
40	21.2R.01
50	21.3R.01
63	21.4R.01
80	21.5R.01
100	21.6R.01

Seal kit



Ø	Order code
32	21.1R.11
40	21.2R.11
50	21.3R.11
63	21.4R.11
80	21.5R.11
100	21.6R.11

Viton® seal kit



Ø	Order code
32	21.1R.12
40	21.2R.12
50	21.3R.12
63	21.4R.12
80	21.5R.12
100	21.6R.12

Rod seal kit



Ø	Order code	
	Polyurethane (std)	Viton®
32	21.1R.15	21.1R.16
40	21.2R.15	21.2R.16
50	21.3R.15	21.3R.16
63	21.4R.15	21.4R.16
80	21.5R.15	21.5R.16
100	21.6R.15	21.6R.16

## Piston rod

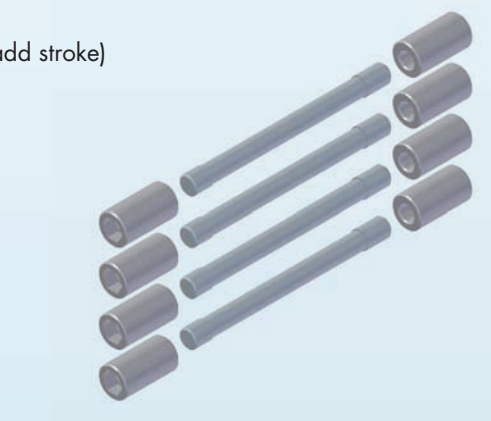
(xxxx = please add stroke)



Ø	Order code	
	C45 chromium-plated steel	AISI 303 stainless steel
32	21.1R.74.xxxx	21.1R.73.xxxx
40	21.2R.74.xxxx	21.2R.73.xxxx
50	21.3R.74.xxxx	21.3R.73.xxxx
63	21.4R.74.xxxx	21.4R.73.xxxx
80	21.5R.74.xxxx	21.5R.73.xxxx
100	21.6R.74.xxxx	21.6R.73.xxxx

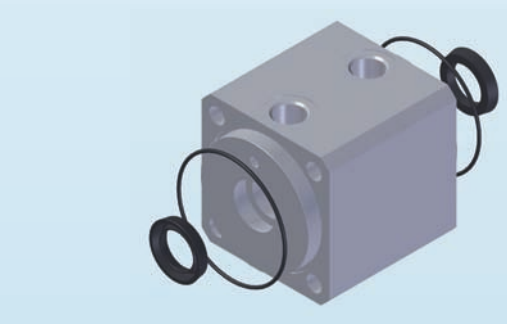
## Tie-rod kit

(xxxx = please add stroke)



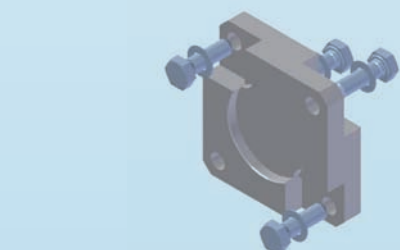
Ø	Order code
32	21.1R.75.xxxx
40	21.2R.75.xxxx
50	21.3R.75.xxxx
63	21.4R.75.xxxx
80	21.5R.75.xxxx
100	21.6R.75.xxxx

## Tandem cover kit



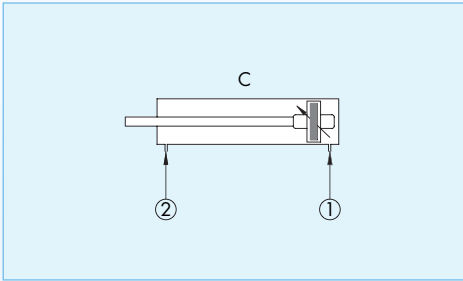
Ø	Order code
32	21.1R.82
40	21.2R.82
50	21.3R.82
63	21.4R.82
80	21.5R.82
100	21.6R.82

## Back to back plate kit



Ø	Order code
32	21.1R.83
40	21.2R.83
50	21.3R.83
63	21.4R.83
80	21.5R.83
100	21.6R.83

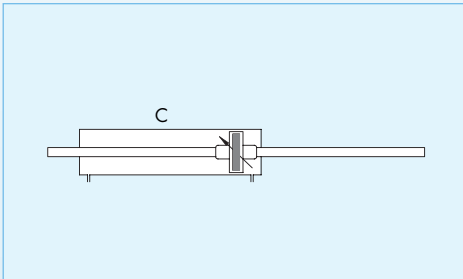
Version A



Double acting cylinder

This is the standard cylinder.  
Pressure in 1: rod out  
Pressure in 2: rod in

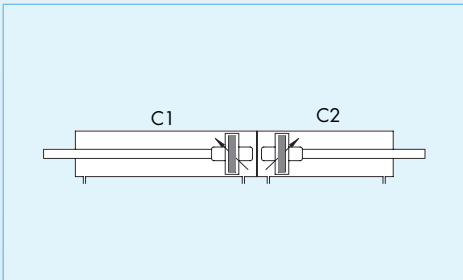
Version B



Through rod cylinder

This is a double acting cylinder with piston rod coming out from both end covers.  
Piston rod comes out from the opposite cover as regards the pressurized one.

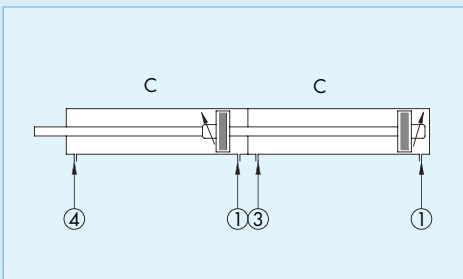
Version C



Back to back cylinder

Two standard double acting cylinders are joined together with a flange on rear covers.  
Both cylinders operate independent of each other, and they work as two standard cylinders.

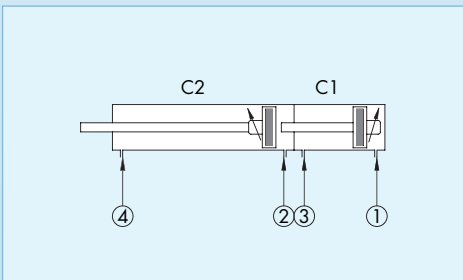
Version D



Tandem cylinder

This cylinder is used to double the force.  
Piston rod is one single piece passing through both cylinders (for this reason the strokes of the cylinders have to be exactly the same).  
Pressure in 1: pressurizing both cylinders from the rear covers (port 1), piston rod moves out.  
Piston Rod return: to have the rod retract, it is necessary to feed both cylinders (ports 3 and 4) or, if there is no load on rod return (load is applied only on the forward stroke), the rod can be returned by applying pressure only on one cylinder (3 or, in preference, 4).

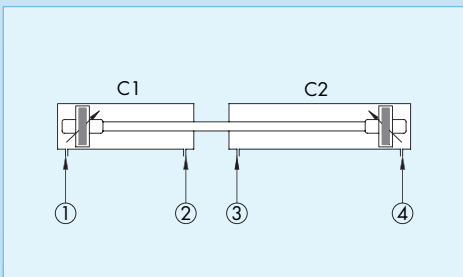
Version E



Two-strokes tandem cylinder

This is a tandem cylinder with two different piston rods (back piston rod "pushes" against the piston of the front cylinder) used to reach two sequential positions. The produced force is the one of a single cylinder.  
The stroke of the back cylinder (C1) must be less than the one of the front cylinder (C2).  
Pressure in 1: both piston rods run to the stroke of the rear cylinder (C1).  
Pressure in 2: the piston rod of the front cylinder will complete the remaining stroke (C2 less C1).  
Piston Rod return: to return the rod, pressurize the front of cylinder C2 (4).

Version F



Multi-position tandem

By coupling the piston rods of two cylinders with 2 different strokes (face-to-face) it is possible to reach up to three positions (we don't consider the rod in position, called zero setting, when both cylinders are pressurized in 2 and 3).  
Strokes are independent of each other.  
Pressure only in 1: cylinder runs to stroke C1 (Return setting: pressure in 2).  
Pressure only in 4: cylinder runs to stroke C2 (Return setting: pressure in 3).  
Pressure in 1 and 4 at the same time or sequential: cylinder runs to stroke C1 and C2.  
Zero setting: pressure in 2 and 3 at the same time or sequential.