

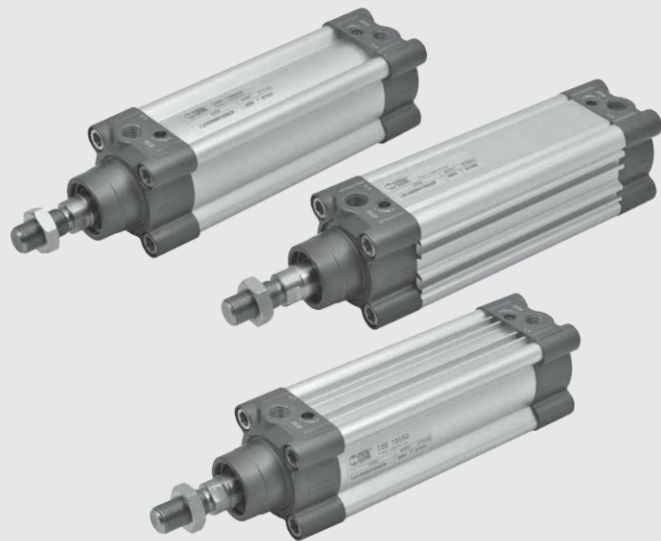
# ISO 15552 CYLINDER (EX ISO 6431)

Cylinders made to ISO 15552 available in various versions and with a wide range of accessories:

- Configuration with or without magnet
- Single- or double acting – single- or through-rod
- Wide choice of NBR, POLYURETHANE and FKM/FPM gaskets (for high temperatures, for low temperature)
- Special versions on request
- Fixing accessories, guide units and mechanical piston rod lock.

They are available in three series, which differ according to the shape of the barrel and, consequently, the type of sensors and accessories that can be mounted.

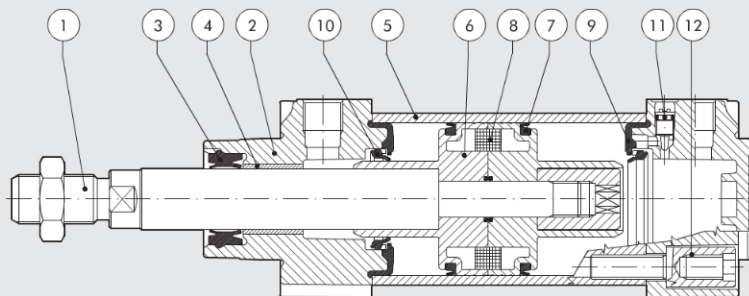
These cylinders are called series STD, type A, series 3.



TECHNICAL DATA		Polyurethane	NBR	FKM/FPM	Low Temperature
Max operating pressure	bar			10	
	MPa			1	
	psi			145	
Temperature range	°C	-10 to +80	-10 to +80	-10 to +150 (non-magnetic cyl.)	-35 to +80
Fluid		Unlubricated air. Lubrication, if used, must be continuous			
Bore	mm	32; 40; 50; 63; 80; 100; 125			
Design		Heads with Tap Tite screws			
Standard stroke †	mm	Single-acting: for bores 32 to 63 strokes from 1 to 250 Double-acting: for bores 32 to 80 strokes from 1 to 2800 for bores 100 to 125 strokes from 1 to 2600			
Versions		Double-acting cushioned, Single-acting extended or retracted rod cushioned, Through-rod cushioned, Long cushioning, High-temperature, Piston rod lock, Oil seal, Through-rod oil seal, Low friction, No stick-slip. All versions come complete with magnet. Supplied without magnet on request.			
Sensor magnet		Inrush pressure			
		Ø 32; 40: 0.4 bar Ø 50; 63 strokes < 1500 mm: 0.3 bar; strokes > 1500 mm: 0.4 bar Ø 80; 100; 125 strokes < 1500 mm: 0.2 bar; strokes > 1500 mm: 0.4 bar			
Notes		<b>For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air.</b> † Maximum recommended strokes. Higher values can create operating problems See cylinder "General technical data" at the beginning of the chapter See cylinder "General technical data" at the beginning of the chapter			
Forces generated at 6 bar thrust/retraction					
Weights					

## COMPONENTS

- ① PISTON ROD: C45 steel or stainless steel, thick chromed
- ② HEAD: die cast aluminium
- ③ PISTON ROD GASKET: polyurethane, NBR or FKM/FPM
- ④ GUIDE BUSHING: steel strip with bronze and PTFE insert
- ⑤ BARREL: drawn anodised calibrated aluminium
- ⑥ HALF-PISTON: self-lubricating technopolymer with built-in cushioning olives (aluminium with PTFE pad for diameters 80-100-125)
- ⑦ PISTON GASKET: polyurethane, NBR or FKM/FPM
- ⑧ MAGNET: plastoferrite
- ⑨ BUFFER + Static O-rings: NBR or FKM/FPM
- ⑩ CUSHIONING GASKET: polyurethane, NBR or FKM/FPM
- ⑪ CUSHIONING NEEDLE: OT 58 with needle out movement safety system even when fully open
- ⑫ SCREWS: Tap Tite for assembly



# ISO 15552 CYLINDER – SERIES STD (EX ISO 6431)



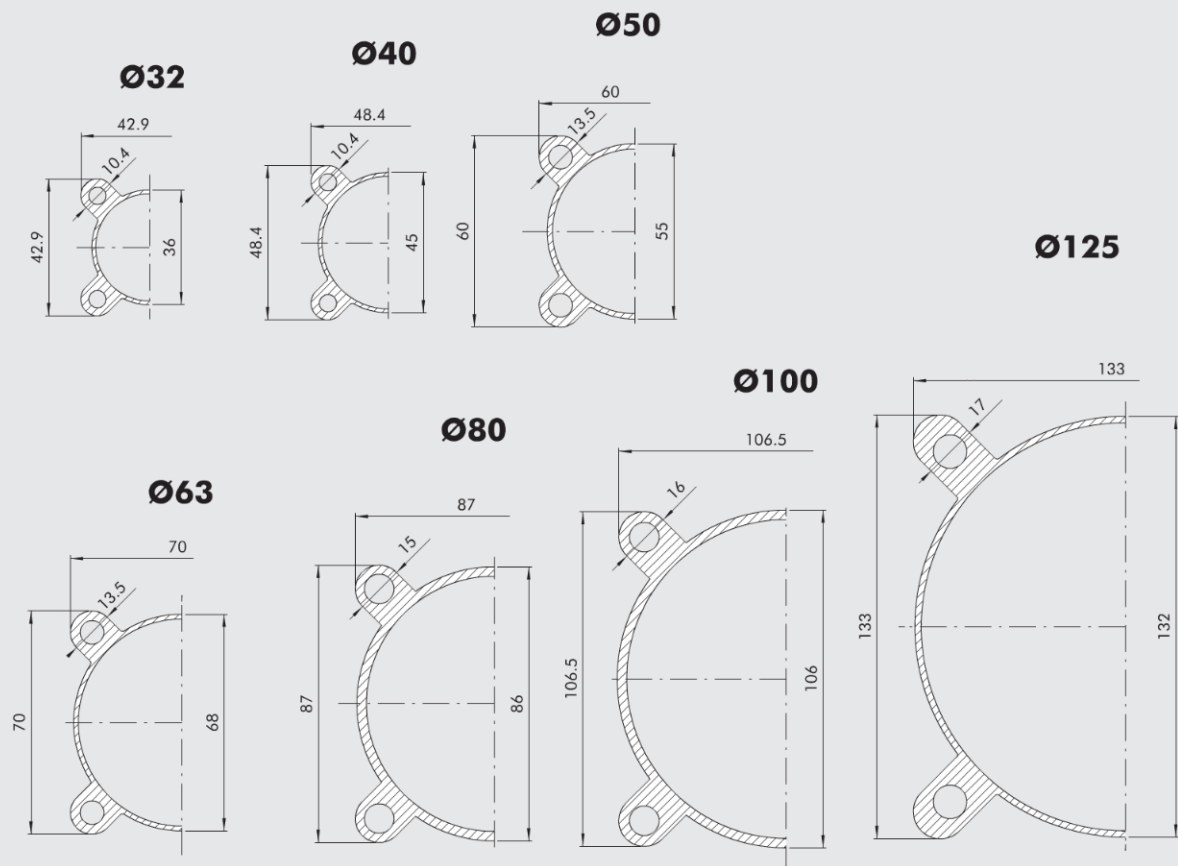
ISO 15552 cylinders, featuring a smooth barrel with no longitudinal slots. This means it is easier to clean the cylinder and there are fewer points where dirt can collect. Specific brackets are required for mounting magnetic sensors.



ACTUATORS

ISO 15552 CYLINDER – SERIES STD

## BARREL CROSS SECTION



## KEY TO CODES CYLINDER ISO 15552 STD

CYL	1 2 1 TYPE	0	3 2 BORE	0 0 5 0 STROKE	C MATERIAL	P GASKETS	▼ E
	120 Double-acting, cushioned, non-magnetic	0 Diameter	32	For the maximum suppliable strokes, look at the technical data	A C45 chromed rod, aluminium piston rod: standard for all cylinders with $\geq 1000$ mm-stroke cylinders and for cylinder with $\varnothing 80$ mm and over	N NBR gaskets P Polyurethane gaskets V FKM/FPM gaskets	E Single-acting extended rod
	121 Double-acting, cushioned	S Non-magnetic ▲ G No stick-slip	40 50 63 80				
	122 Through-rod		■ 100		C C45 chromed rod, technopolymer piston: standard for cylinders of $\varnothing 32$ to 63 mm with $<1000$ mm strokes	● B Low temperature	
	124 Double-acting, non-cushioned		■ 125				
	125 Opposed				Z Stainless steel piston rod and nut aluminium piston		
+	126 Single-acting					X Stainless steel piston rod and nut technopolymer piston	
	127 Tandem						
*	134 Rod lock version						
*	136 Version with piston rod lock						
* ♦	137 Piston rod lock + guide unit						

■ In the code of cylinder with letter in fourth position  $\varnothing 100$  becomes A1;  $\varnothing 125$  becomes A2

● Only available for versions with aluminium piston (A or Z)

+ Available until  $\varnothing 63$  and only the versions with piston in aluminium (A or Z)

126... Single-acting retracted rod

126...E Single-acting extended rod

▼ Letter to be added only to the single acting extended rod version

▲ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only

♦ Available up to  $\varnothing 100$

\* Not available for gaskets V or B

## KEY TO CODES CYLINDER ISO 15552 STD LOW-FRICTION

CYL	1 2 3	A TYPE	3 2 BORE	0 0 5 0 STROKE	C MATERIAL	P GASKETS
		A Low friction, type A	32	$\varnothing 32$ to 80 stroke 1 to 2800 mm $\varnothing 100$ to 125 stroke 1 to 2600 mm	A C45 chromed rod, aluminium piston rod: standard for all cylinders with $\geq 1000$ mm-stroke cylinders and for cylinder with $\varnothing 80$ mm and over	N NBR gaskets P Polyurethane gaskets V FKM/FPM gaskets
		B Low friction, type B	40			
		C Low friction, type C	50		C C45 chromed rod, technopolymer piston: standard for cylinders of $\varnothing 32$ to 63 mm with $<1000$ mm strokes	
		D Low friction, type D	63			
		E Low friction, type E	80		Z Stainless steel piston rod and nut aluminium piston	
		F Low friction, type F	A1 = $\varnothing 100$ A2 = $\varnothing 125$			X Stainless steel piston rod and nut technopolymer piston

## KEY TO CODES CYLINDER ISO 15552 STD LONG-CUSHIONING

CYL	1 3 1	A TYPE	3 2 BORE	0 0 5 0 STROKE	A MATERIAL	P GASKETS
		A 200 mm front/rear cushioning cone – 200 mm ext.	32	1 to 2600 mm	A C45 chromed rod, aluminium piston rod for all sizes	N NBR gaskets P Polyurethane gaskets
		B 150 mm front/rear cushioning cone – 150 mm ext.	40			
		C 100 mm front/rear cushioning cone – 100 mm ext.	50		Z Stainless steel piston rod and nut aluminium piston	* V FKM/FPM gaskets
		D 150 mm front/rear cushioning cone – 200 mm ext.	63			
		E 100 mm front/rear cushioning cone – 200 mm ext.				
		F 50 mm front/rear cushioning cone – 100 mm ext.				
		G 100 mm front/rear cushioning cone – 150 mm ext.				
		H 200 mm front cushioning cone – 200 mm ext.				
		I 150 mm front cushioning cone – 150 mm ext.				
		L 100 mm front cushioning cone – 100 mm ext.				
		M 150 mm front cushioning cone – 200 mm ext.				
		N 100 mm front cushioning cone – 150 mm ext.				
		O 50 mm front cushioning cone – 100 mm ext.				
		Q 200 mm rear cushioning cone – 200 mm ext.				
		R 150 mm rear cushioning cone – 150 mm ext.				
		S 100 mm rear cushioning cone – 100 mm ext.				
		T 150 mm rear cushioning cone – 200 mm ext.				
		U 100 mm rear cushioning cone – 200 mm ext.				
		V 50 mm rear cushioning cone – 100 mm ext.				

\* Version valid only for types: Q, R, S, T, U and V.

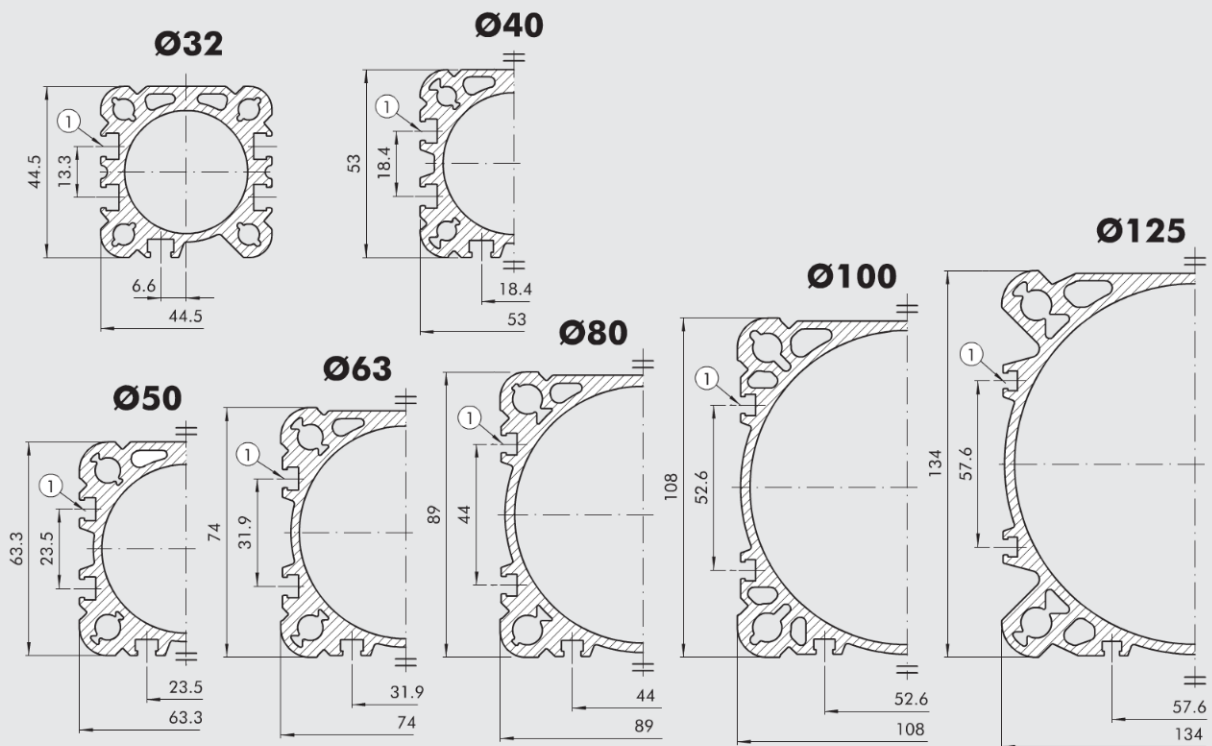
# ISO 15552 CYLINDER – TYPE A (EX ISO 6431)

ISO 15552 cylinders, featuring a barrel with longitudinal slots on three sides for inserting and securing retractable sensors. The same slots can also be used for valves and other mechanical parts.



## BARREL CROSS SECTION

① SLOTS FOR RETRACTABLE SENSOR



## KEY TO CODES CYLINDER ISO 15552 TYPE "A"

CYL	1 2 1 TYPE	A	3 2 BORE	0 0 5 0 STROKE	C MATERIAL	P GASKETS	▼ E
	121 Double-acting, cushioned	A Standard	32	For the maximum suppliable strokes, look at the technical data	A C45 chromed rod, aluminium piston rod: standard for all cylinders with $\geq 1000$ mm-stroke cylinders and for cylinder with $\varnothing 80$ mm and over	N NBR gaskets	E Single-acting extended rod
	122 Through-rod	▲ B No stick-slip	40		P Polyurethane gaskets		
	124 Double-acting, non-cushioned	C Non-magnetic	50		V FKM/FPM gaskets		
	125 Opposed		63		● B Low temperature		
	126 Single-acting		80				
+	127 Tandem		A1 = $\varnothing 100$ A2 = $\varnothing 125$		C C45 chromed rod, technopolymer piston: standard for cylinders of $\varnothing 32$ to 63 mm with <1000 mm strokes		
	134 Rod lock version				Z Stainless steel piston rod and nut aluminium piston		
*	136 Version with piston rod lock				X Stainless steel piston rod and nut technopolymer piston		
* ◆	137 Piston rod lock + guide unit						

● Only available for versions with aluminium piston (A or Z)

+ Available until  $\varnothing 63$  and only the versions with piston in aluminum (A or Z)  
126... Single-acting retracted rod  
126...E Single-acting extended rod

▼ Letter to be added only to the single acting extended rod version

▲ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only

◆ Available up to  $\varnothing 100$

\* Not available for gaskets V or B

## KEY TO CODES CYLINDER ISO 15552 LOW-FRICTION TYPE "A"

CYL	1 2 9	A TYPE	3 2 BORE	0 0 5 0 STROKE	C MATERIAL	P GASKETS
		A Low friction, type A	32	$\varnothing 32$ to 80 stroke 1 to 2800 mm $\varnothing 100$ to 125 stroke 1 to 2600 mm	A C45 chromed rod, aluminium piston rod: standard for all cylinders with $\geq 1000$ mm-stroke cylinders and for cylinder with $\varnothing 80$ mm and over	N NBR gaskets
		B Low friction, type B	40		P Polyurethane gaskets	
		C Low friction, type C	50		V FKM/FPM gaskets	
		D Low friction, type D	63			
		E Low friction, type E	80		C C45 chromed rod, technopolymer piston: standard for cylinders of $\varnothing 32$ to 63 mm with <1000 mm strokes	
		F Low friction, type F	A1 = $\varnothing 100$ A2 = $\varnothing 125$		Z Stainless steel piston rod and nut aluminium piston	
				X Stainless steel piston rod and nut technopolymer piston		

## KEY TO CODES CYLINDER ISO 15552 LONG-CUSHIONING TYPE "A"

CYL	1 3 0	A TYPE	3 2 BORE	0 0 5 0 STROKE	A MATERIAL	P GASKETS
		A 200 mm front/rear cushioning cone – 200 mm ext.	32	1 to 2600 mm	A C45 chromed rod, aluminium piston rod for all sizes	N NBR gaskets
		B 150 mm front/rear cushioning cone – 150 mm ext.	40		Z Stainless steel piston rod and nut aluminium piston	P Polyurethane gaskets
		C 100 mm front/rear cushioning cone – 100 mm ext.	50			* V FKM/FPM gaskets
		D 150 mm front/rear cushioning cone – 200 mm ext.	63			
		E 100 mm front/rear cushioning cone – 200 mm ext.				
		F 50 mm front/rear cushioning cone – 100 mm ext.				
		G 100 mm front/rear cushioning cone – 150 mm ext.				
		H 200 mm front cushioning cone – 200 mm ext.				
		I 150 mm front cushioning cone – 150 mm ext.				
		L 100 mm front cushioning cone – 100 mm ext.				
		M 150 mm front cushioning cone – 200 mm ext.				
		N 100 mm front cushioning cone – 150 mm ext.				
		O 50 mm front cushioning cone – 100 mm ext.				
		Q 200 mm rear cushioning cone – 200 mm ext.				
		R 150 mm rear cushioning cone – 150 mm ext.				
		S 100 mm rear cushioning cone – 100 mm ext.				
		T 150 mm rear cushioning cone – 200 mm ext.				
		U 100 mm rear cushioning cone – 200 mm ext.				
		V 50 mm rear cushioning cone – 100 mm ext.				

\* Version valid only for types: Q, R, S, T, U and V.



# ISO 15552 CYLINDER – SERIES 3 (EX ISO 6431)



ISO 15552 cylinders, featuring specially-shaped barrels designed to reduce weight to a minimum.  
Two T-slots on the same side as the threaded fittings can take retractable sensors.  
The other three sides of the barrel are smooth, with no slots, and hence easy to clean.

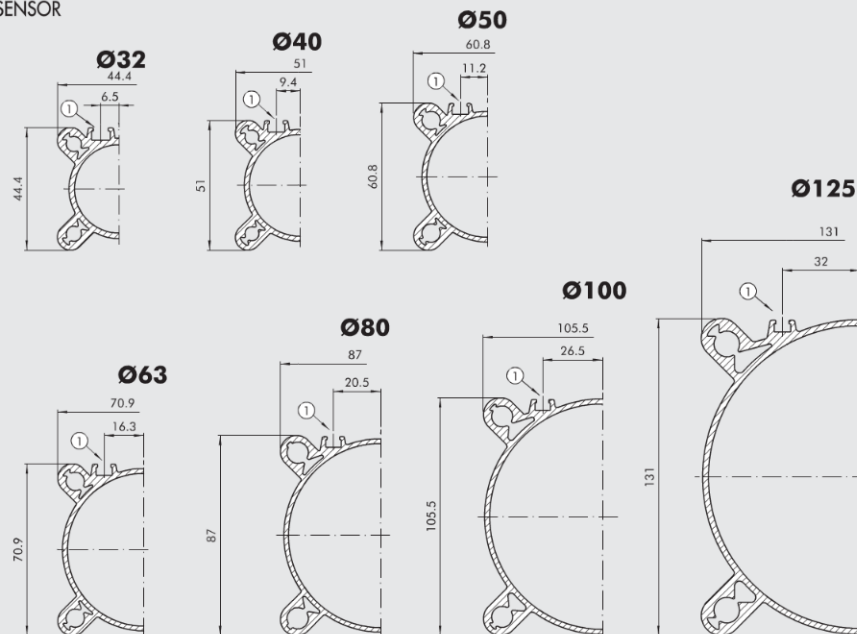


ACTUATORS

ISO 15552 CYLINDER – SERIES 3

## BARREL CROSS SECTION

① SLOTS FOR RETRACTABLE SENSOR



## KEY TO CODES

CYL	1 2 1 TYPE	3	3 2 BORE	0 0 5 0 STROKE	C MATERIAL	P GASKETS	▼ E
	121 Double-acting, cushioned	3 Series 3	32	For the maximum applicable strokes, look at the technical data	A C45 chromed rod, aluminium piston rod: standard for all cylinders with $\geq 1000$ mm-stroke cylinders and for cylinder with $\varnothing 80$ mm and over C C45 chromed rod, technopolymer piston: standard for cylinders of $\varnothing 32$ to $63$ mm with $< 1000$ mm strokes	N NBR gaskets P Polyurethane gaskets V FKM/FPM gaskets ● B Low temperature	E Single-acting extended rod
	122 Through-rod	4 Series 3	40				
	124 Double-acting, non-cushioned	No stick slip	50				
	125 Opposed	5 Series 3	63				
+	126 Single-acting	Non-magnetic	80				
	127 Tandem		A1 = $\varnothing 100$				
	134 Rod lock version		A2 = $\varnothing 125$				
■	136 Version with piston rod lock				Z Stainless steel piston rod and nut aluminium piston		
■ *	137 Piston rod lock + guide unit				X Stainless steel piston rod and nut technopolymer piston		

- Only available for versions with aluminium piston (A or Z)
- + Available until  $\varnothing 63$  and only the versions with piston in aluminium (A or Z)
- 126... Single-acting retracted rod
- 126...E Single-acting extended rod

- ▼ Letter to be added only to the single acting extended rod version
- ◆ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only
- \* Available until  $\varnothing 100$
- Not available for gasket V or B



# ISO 15552 ULTRA-LOW FRICTIONS CYLINDER (EX ISO 6431)



A typical ultra-low friction cylinder is generally used as an oscillating or tensioning cylinder. It is single acting, in the sense that compressed air is normally fed into one of the two chambers only. An external force acts on the other side. Metal Work's ultra-low friction cylinder is designed as a double-acting one, which means the compressed air can be fed into the rear or either the front chamber. They are built to comply with ISO 15552 and are available with or without a magnet. Supplied with a series 3 barrel.

A through-rod version is not available.

These cylinders are always non-cushioned.

The gaskets are made of NBR.

A full range of accessories is available.



TECHNICAL DATA		NBR
Max operating pressure	bar	10
	MPa	1
	psi	145
Temperature range	°C	-10 to +80
Fluid		Unlubricated air
Bore	mm	32; 40; 50; 63; 80; 100; 125
Standard stroke	mm	1 to 1200
Design		Heads with Tap Tite screws
Versions		Double-acting magnetic, Double-acting non-magnetic (always "No stick-slip" cylinder)
Sensor magnet		All the versions with or without magnet
Inrush pressure	bar	Ø 32 = 0.08 Ø 40 = 0.06 Ø 50 = 0.05 Ø 63 = 0.04 Ø 80 = 0.03 Ø 100 = 0.03 Ø 125 = 0.03
Forces generated at 6 bar thrust/retraction		See cylinder "General technical data" at the beginning of the chapter
Weights		See cylinder "General technical data" at the beginning of the chapter
Notes		There may be leakage between the two chambers in the presence of low pressures (up to 1 bar)

## COMPONENTS

- ① PISTON ROD: C45 steel or stainless steel, thick chromed
- ② HEAD: die cast aluminium
- ③ PISTON ROD GASKET: NBR
- ④ GUIDE BUSHING: steel strip with bronze insert
- ⑤ BARREL: drawn anodised calibrated aluminium
- ⑥ PISTON GASKET: NBR
- ⑦ HALF-PISTON: aluminium alloy
- ⑧ MAGNET: plastoferrite
- ⑨ GUIDE RING: special technopolymer
- ⑩ BUFFER + Static O-rings: NBR
- ⑪ CUSHIONING NEEDLE: OT 58 with needle out movement safety system even when fully open
- ⑫ SCREWS: Tap Tite for assembly

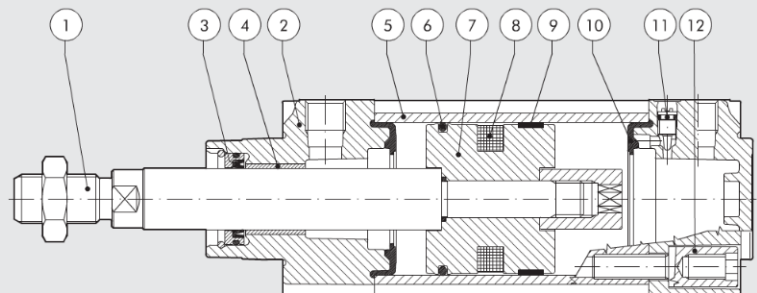
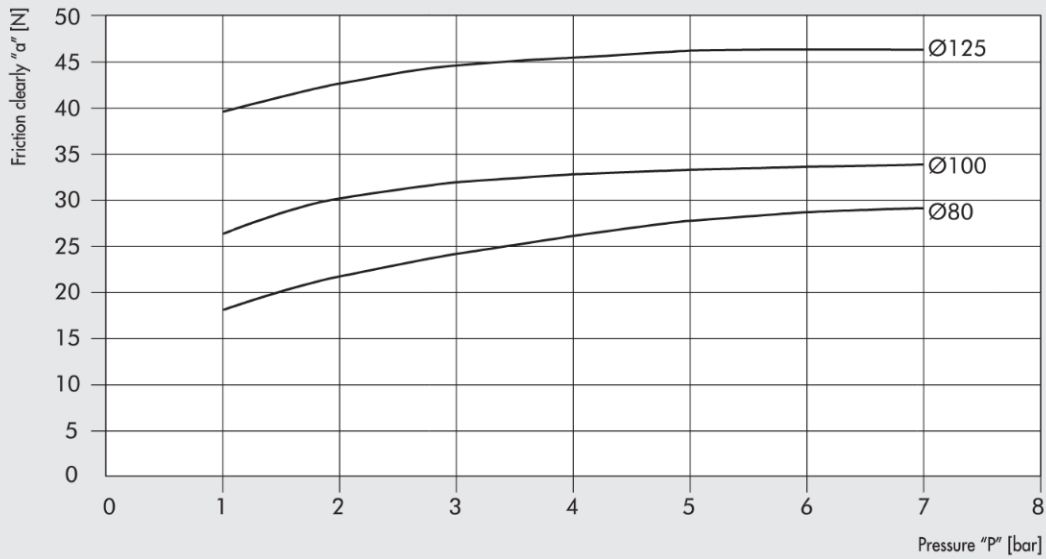
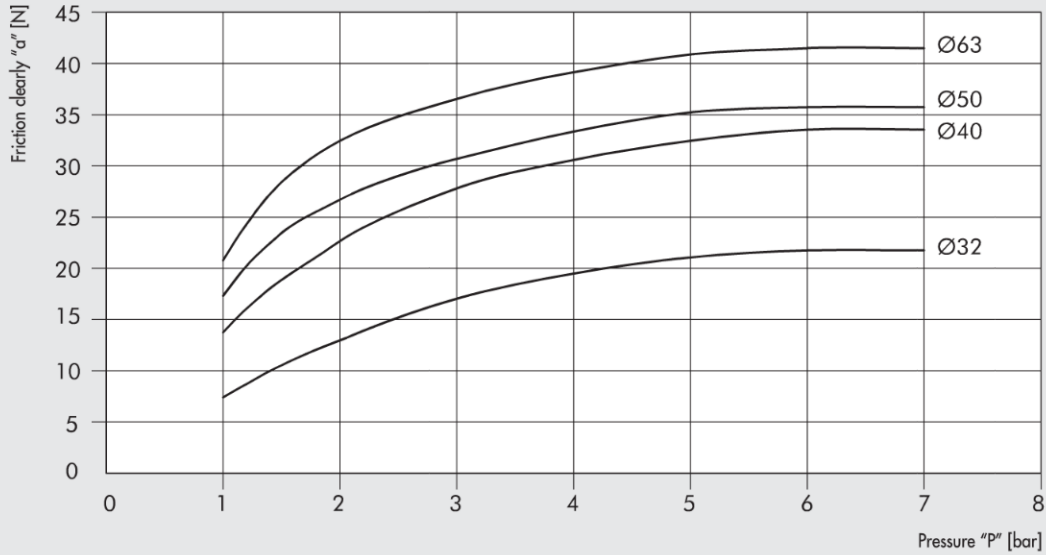




DIAGRAM OF THE CLEAN FRICTIONS



The clean friction values "a" in N have been obtained by inserting in the back chamber the pressure "P" in bars, and simultaneously by detecting the necessary force "F" in N to make the rod re-enter, applying the following formula:

$$a = F - [(P \times S) \times 9.81]$$

where "S" is the thrust section in cm<sup>2</sup>

KEY TO CODES

CYL	1 2 3 TYPE	3	3 2 BORE	0 1 0 0 STROKE	A MATERIAL	N GASKETS
	123 Ultra-low friction	3 Double-acting magnetic 5 Double-acting not magnetic	32 40 50 63 80 A1 = 100 A2 = 125	From 1 to 1200 mm	A C45 chromed rod, aluminium piston rod Z Stainless steel piston rod and nut aluminium piston	N NBR gaskets

ALL the cylinders are No stick-slip.  
ALL the cylinders are non-cushioned.  
Ultra-low friction cylinders are not available in the through-rod version.

# ISO 15552 CYLINDER WITH "COMBI" PISTON ROD GASKET (EX ISO 6431)



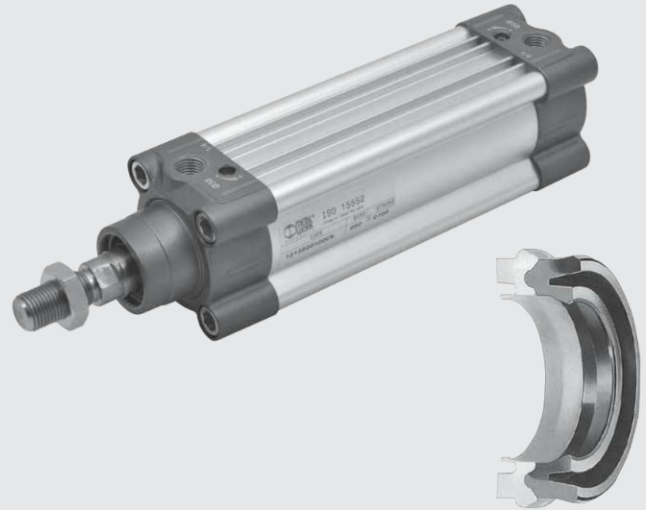
In some applications the piston rod is exposed to pollutants and dirt, which tend to adhere to the surface.

Ordinary gaskets are made of relatively soft elastomers as their main job is to provide a pneumatic seal. In critical applications they are unable to scrape dirt off the surface of the piston rod.

COMBI piston rod gaskets are designed to solve these problems.

They are made up of two separate parts:

- a **sealing element**, inside the cylinder, made of a special NBR elastomer with a Shore A hardness of 80 to provide a pneumatic seal.
- a **scraper ring**, outside the cylinder, made of highly wear-resistant plastic.



## FEATURES AND ADVANTAGES

COMBI gaskets have three functions - sealing, scraping and securing. The outer projection of the scraper ring secures the cylinder head in its seat, so steel retaining rings are not required. This eliminates the risk of corrosion due to the presence of metal.

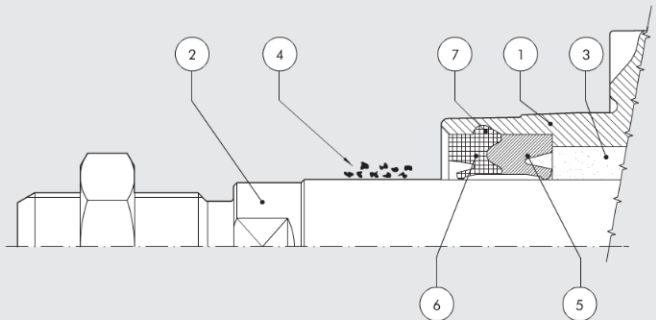
Friction is reduced. The materials used in the scraper ring and sealing element make the gasket extremely long lasting.

Cylinders with COMBI gaskets can be used with unlubricated dry air. The cylinder head seat is the same as for other Metal Work cylinder gaskets, so the cylinder head is standard.

## OPERATING PRINCIPLE

The gasket is housed in the cylinder head ①. Inside the cylinder there is compressed air ③. Dirt ④ deposits on the piston rod ②.

The sealing element ⑤ provides the pneumatic seal. The scraper ring ⑥ cleans the piston rod. The projection ⑦ on the scraper ring secures the gasket in the cylinder head seat.



## TECHNICAL DATA

Bores: 32; 40; 50; 63; 80; 100; 125.

The same as for ISO 15552 cylinders with NBR gaskets.

**Maximum** recommended speed: 1 m/s.

## KEY TO CODES

The codes for ISO 15552 cylinders apply, the last letter C identifying the type of gasket.

**"Long cushioning" version not provided.**

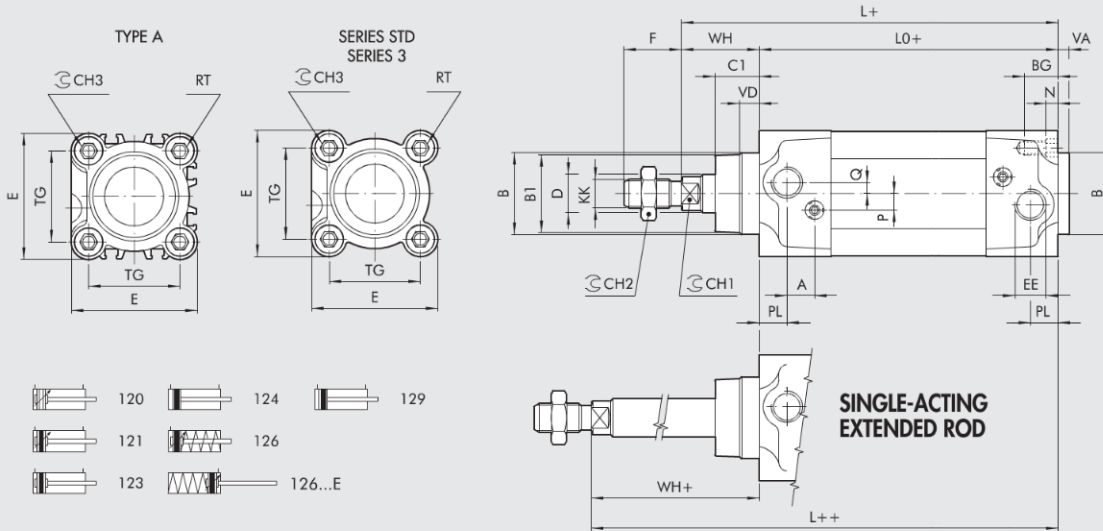
**Example:**

**1210320100CC:** ISO 15552 cylinder, dual-acting, cushioned, magnetic, diameter 32, stroke 100 mm, piston rod made of C45 chrome, COMBI piston rod gasket, other gaskets NBR.

# ISO 15552 CYLINDER DIMENSIONS

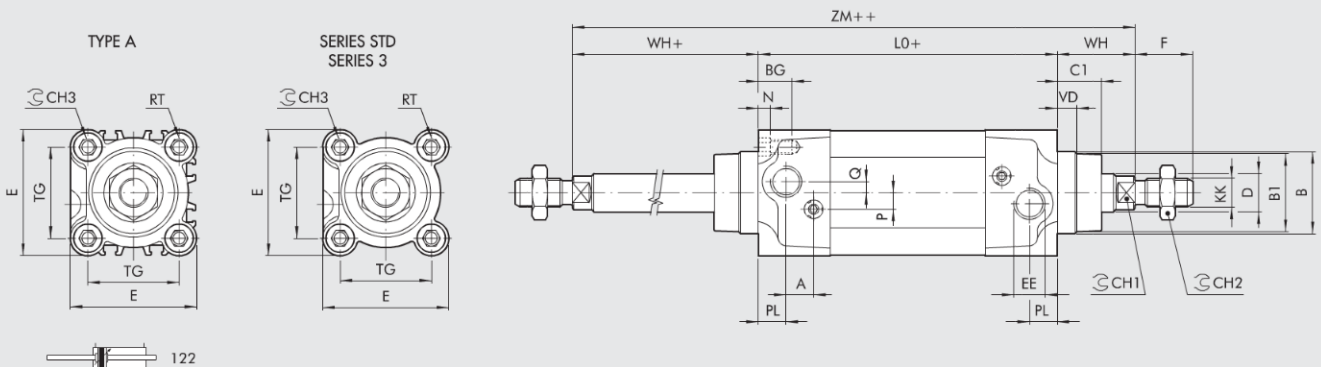
## DIMENSIONS

### STANDARD VERSION



+ = ADD THE STROKE  
 ++ = ADD TWICE THE STROKE

### THROUGH-ROD VERSION



Ø	PL	VD	A	B	B <sub>1</sub>	WH	C <sub>1</sub>	CH <sub>1</sub>	CH <sub>2</sub>	CH <sub>3</sub>	KK	D	TG	VA	F	EE	RT	E	L	L <sub>0</sub>	ZM	BG	N	P	Q
32	10	6.5	10	30	28	26	16	10	17	6	M10x1.25	12	32.5	4	22	G1/8	M6	46	120	94	146	14.5	4.5	6	4
40	12	8	10	35	33	30	20	13	19	6	M12x1.25	16	38	4	24	G1/4	M6	54	135	105	165	14.5	4.5	6	4
50	14	13	10	40	38	37	25	17	24	8	M16x1.5	20	46.5	4	32	G1/4	M8	64.5	143	106	180	17.5	5.5	6	6
63	16	14	10	45	40	37	25	17	24	8	M16x1.5	20	56.5	4	32	G3/8	M8	75.5	158	121	195	17.5	5.5	6	6
80	18	12	12	45	43	46	33	22	30	10	M20x1.5	25	72	4	40	G3/8	M10	94	174	128	220	21.5	5.5	10	7
100	20	14	12	55	49	51	38	22	30	10	M20x1.5	25	89	4	40	G1/2	M10	111	189	138	240	21.5	5.5	10	7
125	25	20	10	60	54	65	45	27	41	12	M27x2	32	110	6	54	G1/2	M12	135	225	160	290	25.5	6.5	12	8

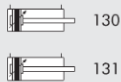
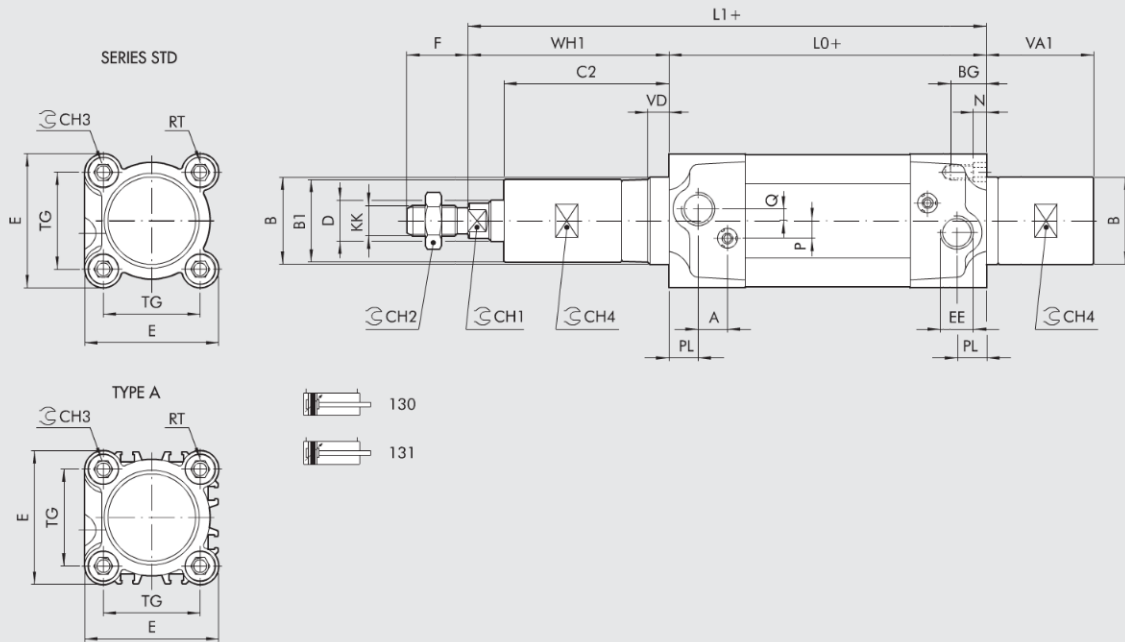
VERSION 126... (SINGLE-ACTING RETRACTED ROD)

VERSION 126...E (SINGLE-ACTING EXTENDED ROD)

Stroke	L <sub>0</sub>										L									
	Ø 32		Ø 40		Ø 50		Ø 63		Ø 32		Ø 40		Ø 50		Ø 63					
	126...	126...E	126...	126...E	126...	126...E	126...	126...E	126...	126...E	126...	126...E	126...	126...E	126...	126...E				
0 - 25	ISO	ISO	94	94	105	105	106	106	121	121	120	120	135	135	143	143				
26 - 50	ISO	NON ISO	94	115	105	129.5	106	130.5	121	145.5	120	141	135	159.5	143	167.5				
51 - 75	NON ISO	NON ISO	115	136	129.5	154	130.5	155	145.5	170	141	162	159.5	184	167.5	192				
76 - 100	NON ISO	NON ISO	136	157	154	178.5	155	179.5	170	194.5	162	183	184	208.5	192	216.5				
101 - 125	NON ISO	NON ISO	157	178	178.5	203	179.5	204	194.5	219	183	204	208.5	233	216.5	241				
126 - 150	NON ISO	NON ISO	178	199	203	227.5	204	228.5	219	243.5	204	225	233	257.5	241	265.5				
151 - 175	NON ISO	NON ISO	199	220	227.5	252	228.5	253	243.5	268	225	246	257.5	282	265.5	290				
176 - 200	NON ISO	NON ISO	220	241	252	276.5	253	277.5	268	292.5	246	267	282	306.5	290	314.5				
201 - 225	NON ISO	NON ISO	241	262	276.5	301	277.5	302	292.5	317	267	288	306.5	331	314.5	339				
226 - 250	NON ISO	NON ISO	262	283	301	325.5	302	326.5	317	341.5	288	309	331	355.5	339	363.5				

**DIMENSIONS CUSHIONING VERSION**

+ = ADD THE STROKE



Ø	PL	VD	A	B	B <sub>1</sub>	CH <sub>1</sub>	CH <sub>2</sub>	CH <sub>3</sub>	CH <sub>4</sub>	KK	D	TG	F	EE	RT	E	L <sub>0</sub>	BG	N	P	Q
32	10	6.5	10	30	29	10	17	6	27	M10x1.25	12	32.5	22	G1/8	M6	46	94	14.5	4.5	6	4
40	12	8	10	35	34	13	19	6	30	M12x1.25	16	38	24	G1/4	M6	54	105	14.5	4.5	6	4
50	14	13	10	40	38	17	24	8	35	M16x1.5	20	46.5	32	G1/4	M8	64.5	106	17.5	5.5	6	6
63	16	14	10	45	38	17	24	8	35	M16x1.5	20	56.5	32	G3/8	M8	75.5	121	17.5	5.5	6	6

**100 mm CUSHIONING**

Ø	WH <sub>1</sub>	C <sub>2</sub>	VA <sub>1</sub>	L <sub>1</sub>
32	106	96	79	200
40	107	97	76.5	212
50	113.5	101.5	76.5	219.5
63	113.5	101.5	76.5	234.5

**150 mm CUSHIONING**

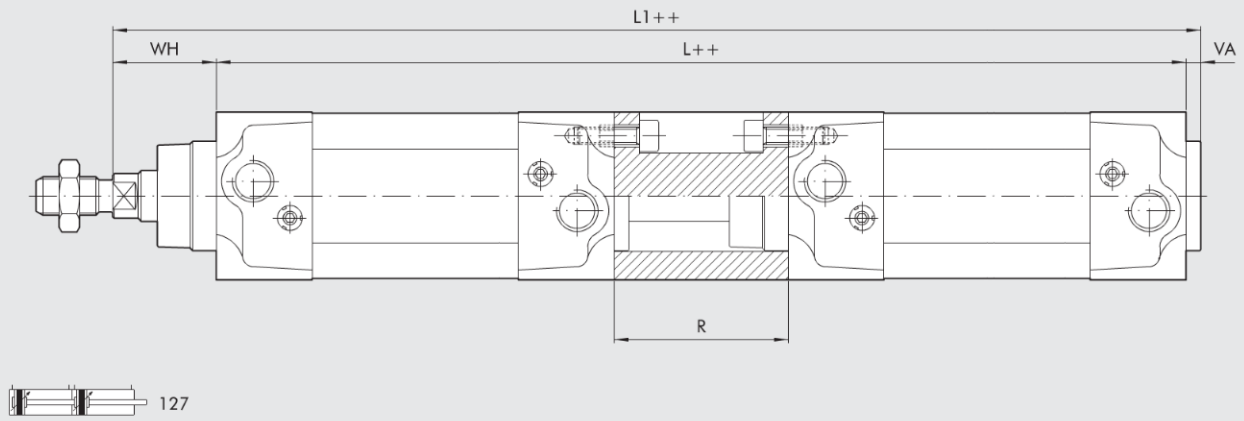
Ø	WH <sub>1</sub>	C <sub>2</sub>	VA <sub>1</sub>	L <sub>1</sub>
32	156	146	129	250
40	157	147	121.5	262
50	162.5	150.5	119.5	268.5
63	162.5	150.5	123.5	283.5

**200 mm CUSHIONING**

Ø	WH <sub>1</sub>	C <sub>2</sub>	VA <sub>1</sub>	L <sub>1</sub>
32	206	196	179	300
40	207	197	176.5	312
50	213.5	201.5	176.5	319.5
63	213.5	201.5	176.5	334.5

**DIMENSIONS OF TANDEM VERSION**

++ = ADD TWICE THE STROKE

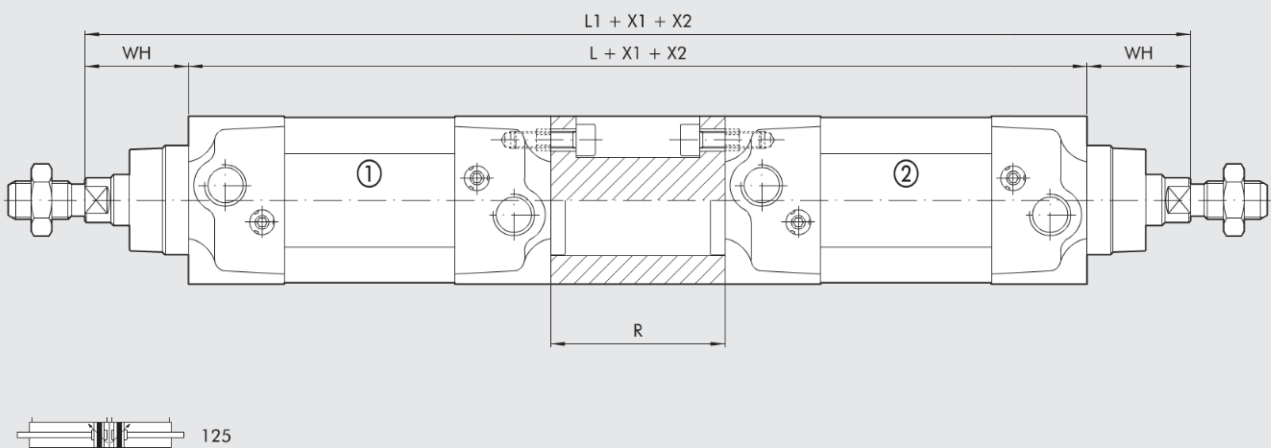


Ø	WH	VA	R	L	L <sub>1</sub>
32	26	4	55	243	273
40	30	4	55	265	299
50	37	4	68	280	321
63	37	4	68	310	351
80	46	4	92	348	398
100	51	4	92	368	423
125	65	6	120	440	511

Refer to standard cylinders for other values.

**DIMENSIONS OF OPPOSED VERSION**

X1 = STROKE CYLINDER 1  
X2 = STROKE CYLINDER 2



Ø	WH	R	L	L <sub>1</sub>
32	26	55	243	295
40	30	55	265	325
50	37	68	280	354
63	37	68	310	384
80	46	92	348	440
100	51	92	368	470
125	65	120	440	570

Refer to standard cylinders for other values.



# ISO 15552 TWO-FLAT CYLINDER (EX ISO 6431)



This version of cylinder is used to keep the parts fixed to the piston rod at an angle and to apply torques within the specified limits. The piston rod of the Two-Flat has two opposing longitudinal surfaces; it is made of stainless steel.

The front cylinder head includes a sintered bronze bush that matches the profile of the piston rod and prevents it from rotating on its own axis. A special polyurethane gasket ensures pneumatic seal and prevents the accumulation of dirt. This technical solution is more reliable and gives a better pneumatic seal than with square or hexagonal piston rods. Supplied in series STD, with a smooth barrel, and type A or series 3, with a barrel with slots for retractable sensors.

They are available in several versions and with a wide range of accessories:

- with or without magnet
- double acting, single piston rod
- double acting, through rod; one piston rod is Two-Flat, the other cylindrical
- fixing accessories.



TECHNICAL DATA		POLYURETHANE			
Max operating pressure	bar	10			
	MPa	1			
	psi	145			
Temperature range	°C	-10 to +80			
Fluid		Unlubricated air. Lubrication, if used, must be continuous			
Bore	mm	32; 40; 50; 63			
Design		Heads with Tap Tite screws			
Maximun stroke	mm	Ø 32 = 300	Ø 40 = 400	Ø 50 = 500	Ø 63 = 500
Versions		Double-acting cushioned, Through-rod cushioned, No stick-slip			
Sensor magnet		All versions come complete with magnet. Supplied without magnet on request			
Inrush pressure	bar	Ø 32 = 0.4	Ø 40 = 0.4	Ø 50 = 0.3	Ø 63 = 0.3
Max torque on piston rod	Nm	Ø 32 = 0.2	Ø 40 = 0.4	Ø 50 = 1	Ø 63 = 1
Maximum rotation on the rod	degrees	Ø 32 = 1° 30'	Ø 40 = 1° 30'	Ø 50 = 1°	Ø 63 = 1°
Forces generated at 6 bar thrust/retraction		See cylinder "General technical data" at the beginning of the chapter			
Weights		See cylinder "General technical data" at the beginning of the chapter			
Notes		For speeds lower than 0.2 m/s to prevent surging, use the version No stick-slip and non-lubricated air			

## KEY TO CODES FOR ISO 15552 TWO-FLAT STD CYLINDERS

CYL	1 2 1 TYPE	0	3 2 BORE	0 0 5 0 STROKE	F MATERIAL	P GASKETS
	120 Double-acting, cushioned, non-magnetic	0 Diameter S Non-magnetic ▲ G No stick-slip	32 40 50 63	+ Ø 32 stroke 1 to 300 mm + Ø 40 stroke 1 to 400 mm + Ø 50 to 63 stroke 1 to 500 mm	F "Two-Flat" piston rod AISI 303 stainless steel nut	P Polyurethane gaskets
	121 Double-acting, cushioned					
	122 Through-rod					

+ Maximum recommended strokes. Higher values can create operating problems

▲ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only

## KEY TO CODES FOR ISO 15552 TWO-FLAT TYPE A CYLINDERS

CYL	1 2 1 TYPE	A	3 2 BORE	0 0 5 0 STROKE	F MATERIAL	P GASKETS
	121 Double-acting, cushioned	A Standard ▲ B No stick-slip C Non-magnetic	32 40 50 63	+ Ø 32 stroke 1 to 300 mm + Ø 40 stroke 1 to 400 mm + Ø 50 to 63 stroke 1 to 500 mm	F "Two-Flat" piston rod AISI 303 stainless steel nut	P Polyurethane gaskets
	122 Through-rod					

+ Maximum recommended strokes. Higher values can create operating problems

▲ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only

KEY TO CODES FOR ISO 15552 TWO-FLAT SERIES 3 CYLINDERS

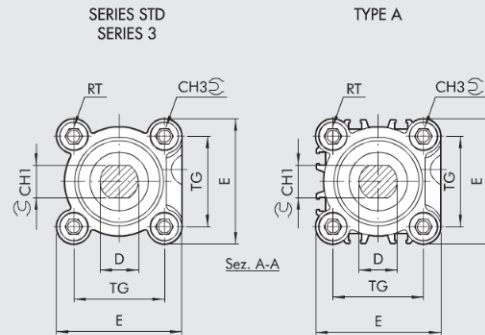
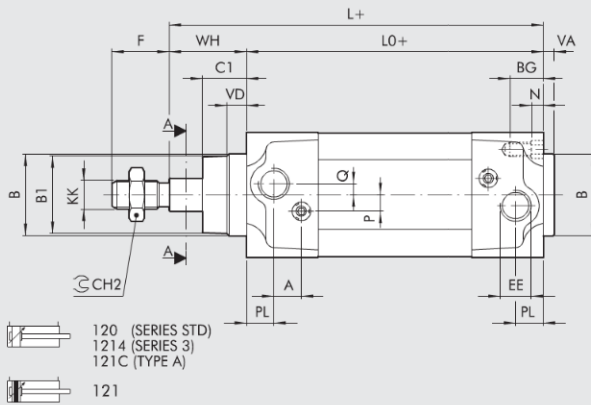
CYL	1 2 1	3	3 2	0 0 5 0	F	P
	<b>TYPE</b>		<b>BORE</b>	<b>STROKE</b>	<b>MATERIAL</b>	<b>GASKETS</b>
121	Double-acting cushioned	3 Series 3	32	+ Ø 32 stroke 1 to 300 mm	F "Two-Flat" piston rod	P Polyurethane gaskets
122	Through-rod	▲ 4 Series 3 No stick-slip	40	+ Ø 40 stroke 1 to 400 mm	AISI 303 stainless steel nut	
		5 Series 3 Non-magnetic	50	+ Ø 50 to 63 stroke 1 to 500 mm		
			63			

+ Maximum recommended strokes. Higher values can create operating problems  
 ▲ For speeds lower than 0.2 m/s, to prevent surging. Use no-lubricated air only

DIMENSIONS

STANDARD VERSION

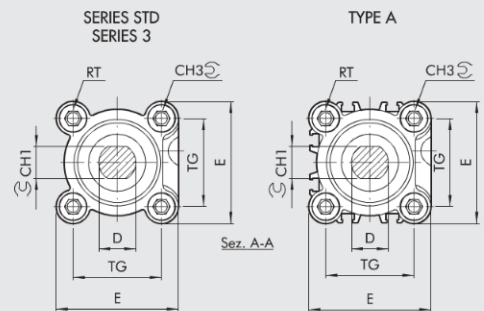
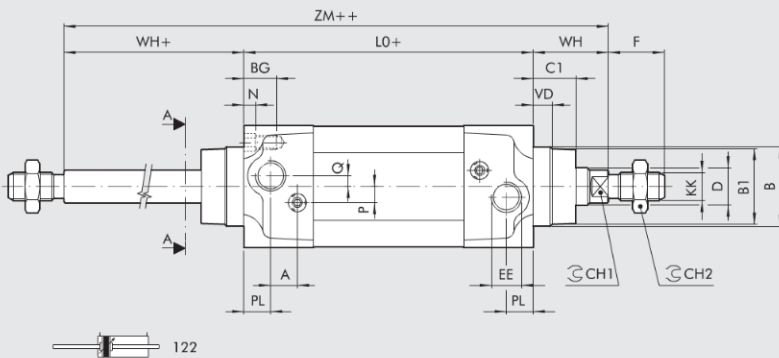
+ = ADD THE STROKE



- 120 (SERIES STD)
- 1214 (SERIES 3)
- 121C (TYPE A)
- 121

THROUGH-ROD VERSION

+ = ADD THE STROKE  
 ++ = ADD TWICE THE STROKE



Ø	PL	VD	A	B	B <sub>1</sub>	WH	C <sub>1</sub>	CH <sub>1</sub>	CH <sub>2</sub>	CH <sub>3</sub>	KK	D	TG	VA	F	EE	RT	E	L	L <sub>0</sub>	ZM	BG	N	P	Q
32	10	6.5	10	30	28	26	16	10	17	6	M10x1.25	12	32.5	4	22	G1/8	M6	46	120	94	146	14.5	4.5	6	4
40	12	8	10	35	33	30	20	13	19	6	M12x1.25	16	38	4	24	G1/4	M6	54	135	105	165	14.5	4.5	6	4
50	14	13	10	40	38	37	25	17	24	8	M16x1.5	20	46.5	4	32	G1/4	M8	64.5	143	106	180	17.5	5.5	6	6
63	16	14	10	45	40	37	25	17	24	8	M16x1.5	20	56.5	4	32	G3/8	M8	75.5	158	121	195	17.5	5.5	6	6