

ISO 15552 CYLINDER – SERIES 3 (EX ISO 6431)

**METAL
WORK**
P N E U M A T I C

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.

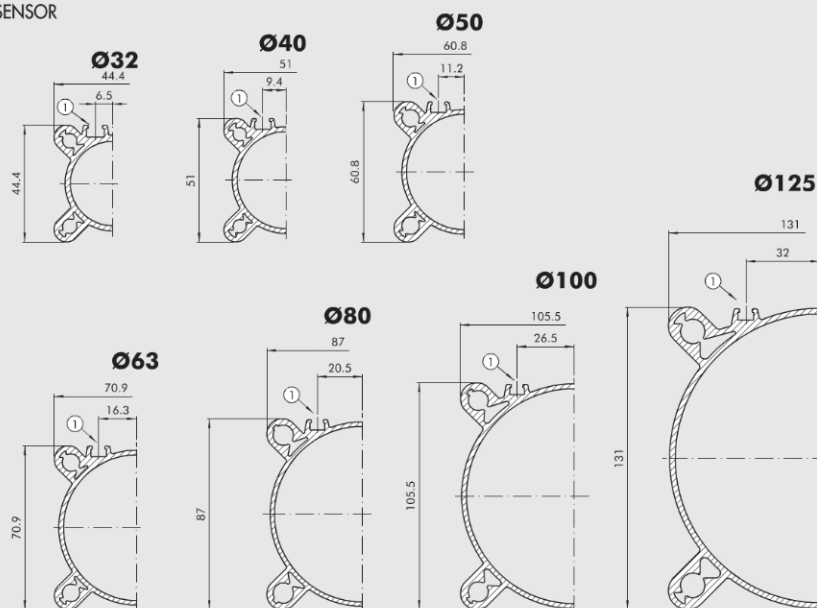


ACTUATORS

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 ≥ 1000 mm-stroke cylinders and for cylinder with ≥ 80 mm and over C C45 chromed rod, technopolymer piston: standard for cylinders of ≥ 32 to 63 mm with < 1000 mm strokes Z Stainless steel piston rod and nut aluminium piston X Stainless steel piston rod and nut technopolymer piston	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 = $\varnothing 100$ A2 = $\varnothing 125$				
	134 Rod lock version						
	■ 136 Version with piston rod lock						
	■ * 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 until $\varnothing 100$

■ Not available for gasket V or B

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

METAL WORK[®]
P N E U M A T I C

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.



ACTUATORS

ISO 15552 ULTRA-LOW FRICTIONS CYLINDER

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

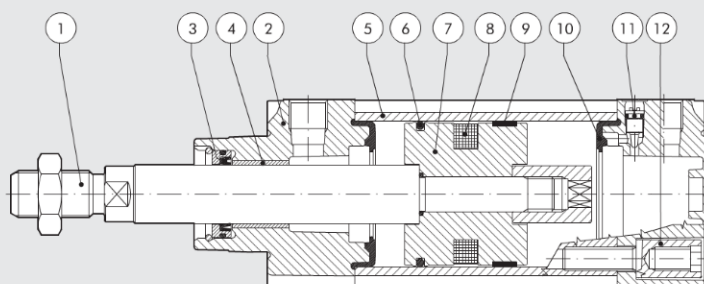
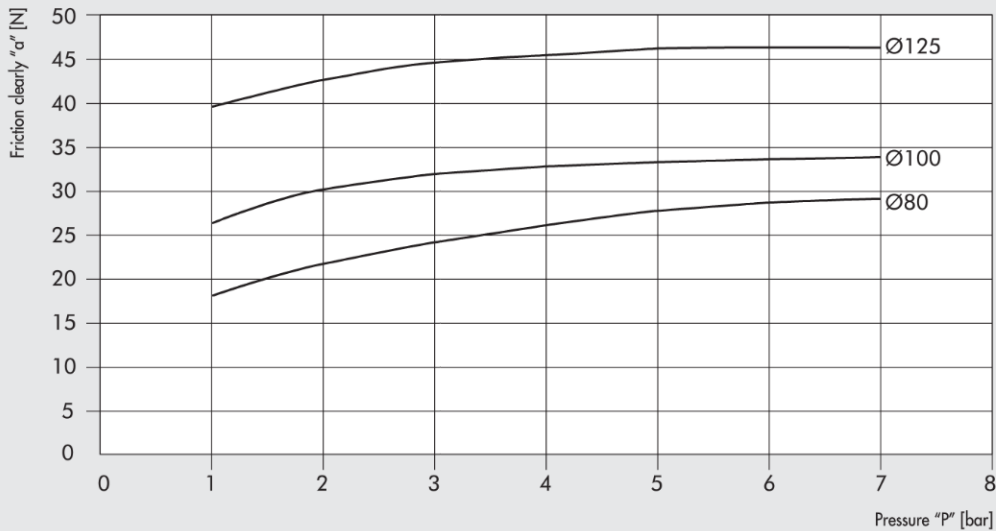
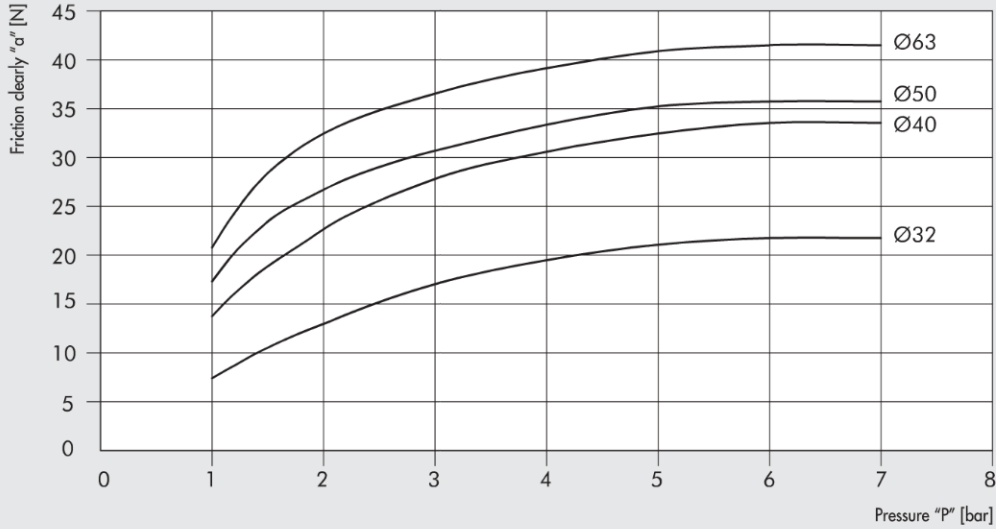


DIAGRAM OF THE CLEAN FRICTIONS



The clean friction values "α" 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:

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

where "S" is the thrust section in cm²

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)

**METAL
WORK**[®]
P N E U M A T I C

ACTUATORS

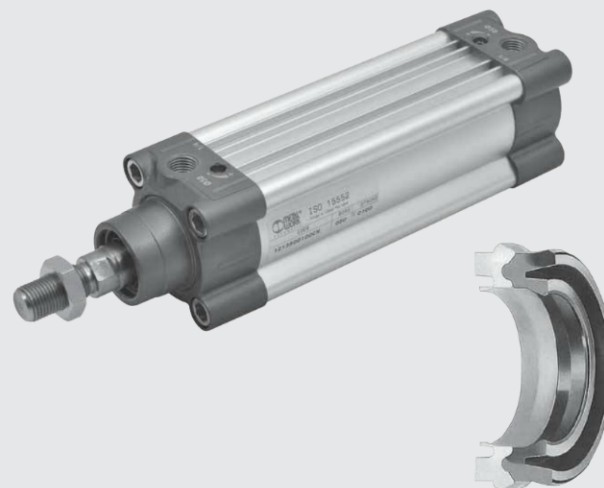
In some applications the piston rod is exposed to pollutants and dirt, which tend to adhere to the surface.

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.

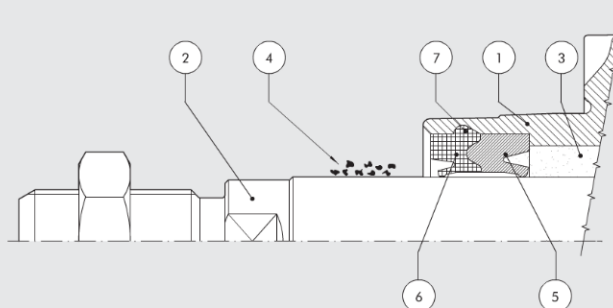
Friction is reduced. The materials used in the scraper ring and sealing element make the gasket extremely long lasting.

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:

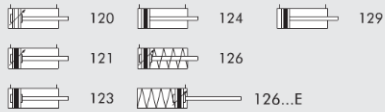
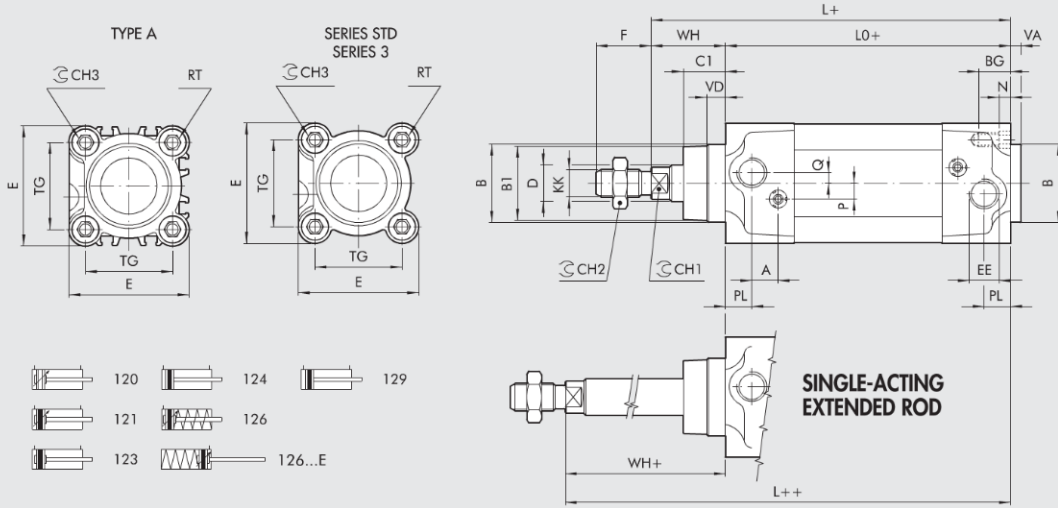
1210320100CC: ISO 15552 cylinder, dual-acting, cushioned, magnetic, diameter 32, stroke 100 mm, piston rod made of C45 chrome, COMBI piston rod gasket, other gaskets NBR.

ISO 15552 CYLINDER WITH "COMBI" PISTON ROD GASKET

ISO 15552 CYLINDER DIMENSIONS

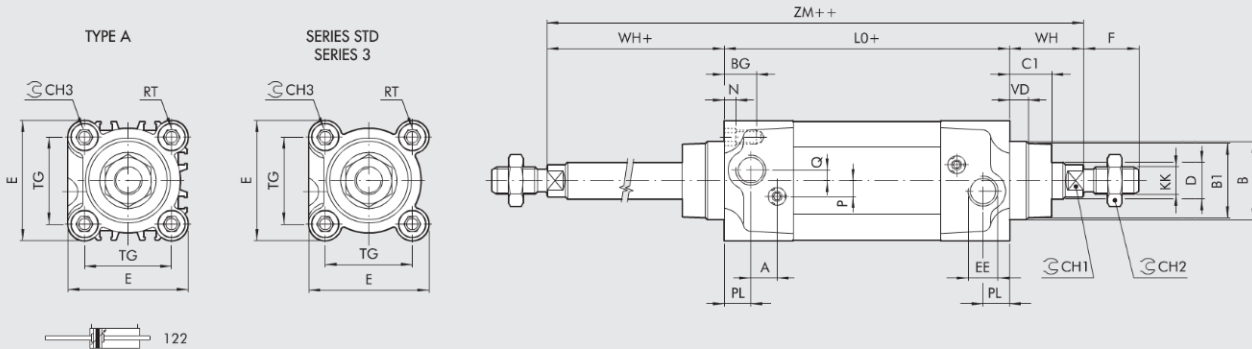
DIMENSIONS

STANDARD VERSION



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

THROUGH-ROD VERSION



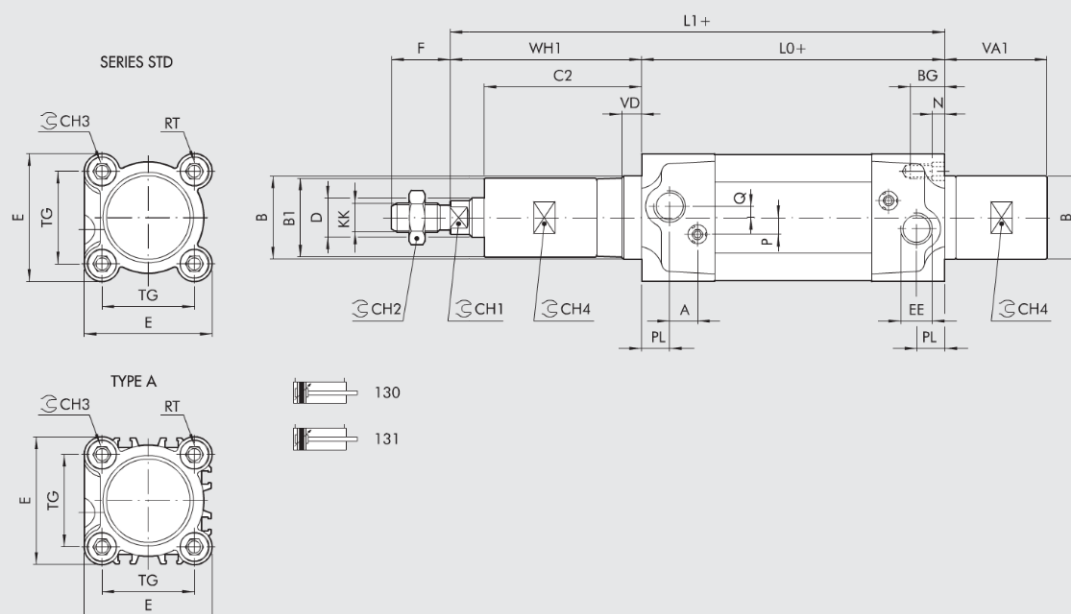
Ø	PL	VD	A	B	B ₁	WH	C ₁	CH ₁	CH ₂	CH ₃	KK	D	TG	VA	F	EE	RT	E	L	L ₀	ZM	BG	N	P	Q
32	10	6.5	10	30	28	26	16	10	17	6	M10x1.25	12	32.5	4	22	G1/8	M6	46	120	94	146	14.5	4.5	6	4
40	12	8	10	35	33	30	20	13	19	6	M12x1.25	16	38	4	24	G1/4	M6	54	135	105	165	14.5	4.5	6	4
50	14	13	10	40	38	37	25	17	24	8	M16x1.5	20	46.5	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 ₀								L							
	126...	126...E	Ø 32		Ø 40		Ø 50		Ø 63		Ø 32		Ø 40		Ø 50		Ø 63	
0 - 25	ISO	ISO	94	94	105	105	106	106	121	121	120	120	135	135	143	143	158	158
26 - 50	ISO	NON ISO	94	115	105	129.5	106	130.5	121	145.5	120	141	135	159.5	143	167.5	158	182.5
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	182.5	207
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	207	231.5
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	231.5	256
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	256	280.5
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	280.5	305
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	305	329.5
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	329.5	354
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	354	378.5

DIMENSIONS CUSHIONING VERSION

+ = ADD THE STROKE



Ø	PL	VD	A	B	B ₁	CH ₁	CH ₂	CH ₃	CH ₄	KK	D	TG	F	EE	RT	E	L ₀	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 ₁	C ₂	VA ₁	L ₁
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

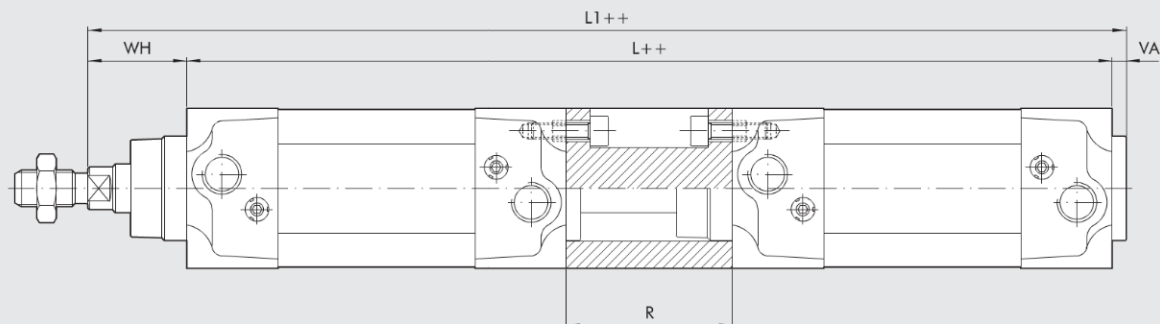
Ø	WH ₁	C ₂	VA ₁	L ₁
32	156	146	129	250
40	157	147	121.5	262
50	162.5	150.5	119.5	268.5
63	162.5	150.5	123.5	283.5

200 mm CUSHIONING

Ø	WH ₁	C ₂	VA ₁	L ₁
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

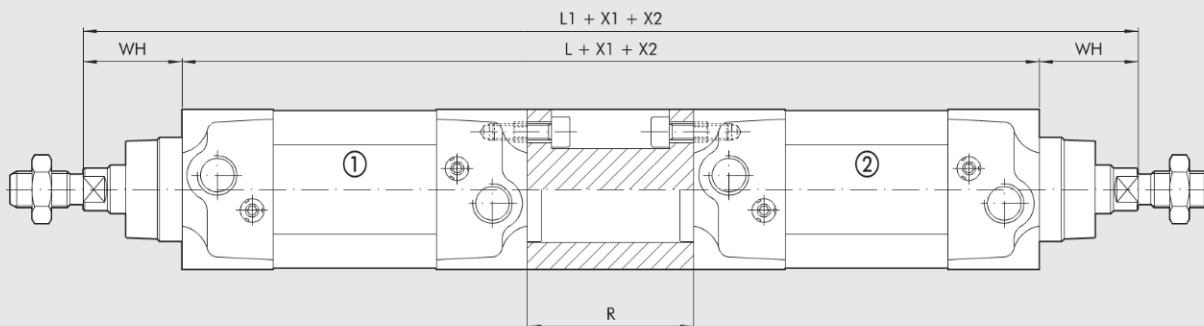


Ø	WH	VA	R	L	L ₁
32	26	4	55	243	273
40	30	4	55	265	299
50	37	4	68	280	321
63	37	4	68	310	351
80	46	4	92	348	398
100	51	4	92	368	423
125	65	6	120	440	511

Refer to standard cylinders for other values.

DIMENSIONS OF OPPOSED VERSION

X1 = STROKE CYLINDER 1
X2 = STROKE CYLINDER 2



Ø	WH	R	L	L ₁
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.