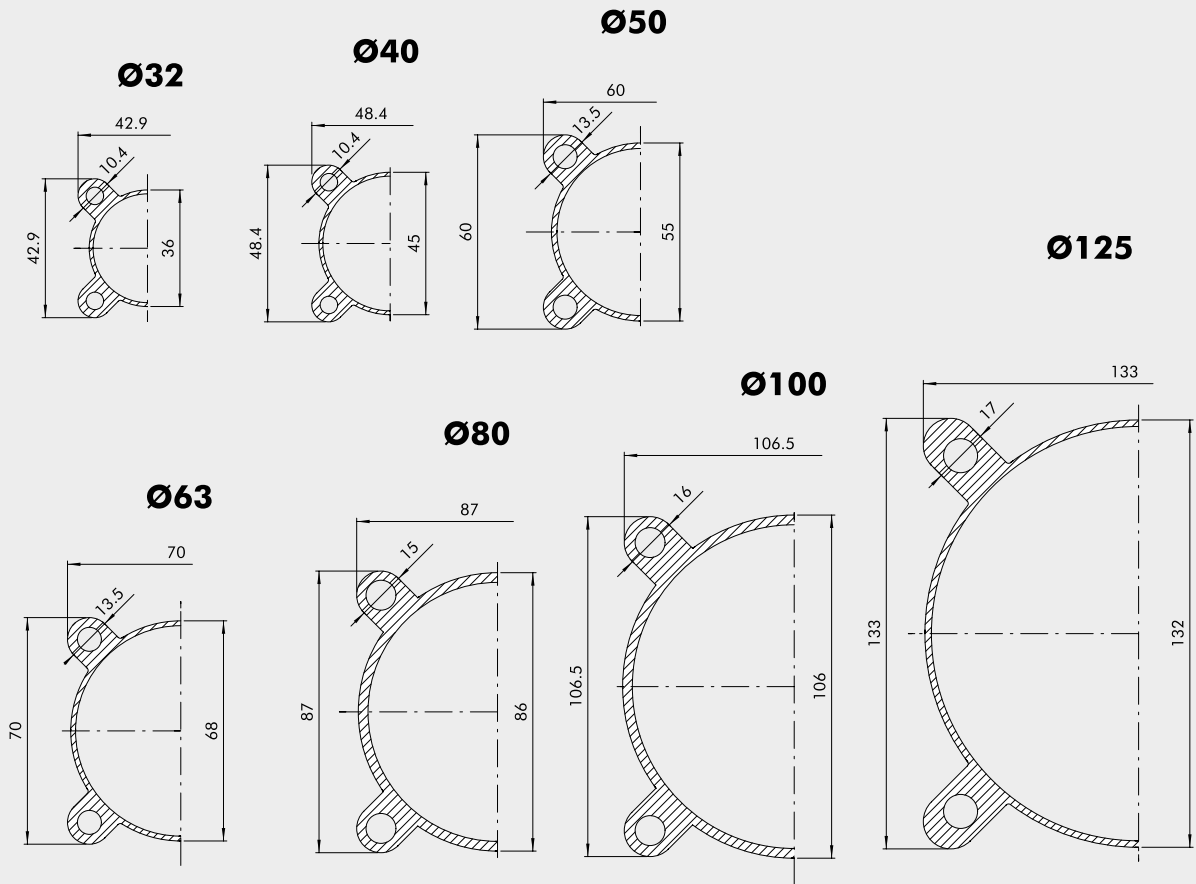


ISO 15552 CYLINDER SERIES STD

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.



BARREL CROSS SECTION



KEY TO CODES CYLINDER ISO 15552 STD

CYL	1 2 1 TYPE	0 Diameter	3 2 BORE	0 0 5 0 STROKE	C MATERIAL	P GASKETS	▼ E
	120 Double-acting, cushioned, non-magnetic	0	32	For the maximum	A C45 chromed piston rod, aluminium piston: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with ≥ 80 mm and over	N NBR gaskets	E Single-acting extended rod
	121 Double-acting, cushioned	S Non-magnetic	40	suppliable		P Polyurethane gaskets	
	122 Through-rod	▲ G No stick-slip	50	strokes, look at the technical data	C C45 chromed piston rod, technopolymer piston: standard for cylinders of $\varnothing 32$ to 63 mm with <1000 mm strokes	V FKM/FPM gaskets	
●	124 Double-acting, non-cushioned		63		Z Stainless steel piston rod and nut aluminium piston	● B Low temperature	
	125 Opposed		80		X Stainless steel piston rod and nut technopolymer piston	C "Combi" piston rod gasket	
+	126 Single-acting		■ 100			► R "Hard PU" piston rod gasket	
	127 Tandem		■ 125			● □ M "Metal" piston rod gasket	
	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 aluminum (A or Z)
- 126... Single-acting retracted rod
- 126...E Single-acting extended rod
- Not available in $\varnothing 32$

- ▲ 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
- ▼ Letter to be added only to the single acting extended rod version
- The 126 (single-action) type and the (No-stick-slip) version G are not available

KEY TO CODES CYLINDER ISO 15552 STD LOW-FRICTION

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

KEY TO CODES CYLINDER ISO 15552 STD LONG-CUSHIONING

CYL	1 3 1 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			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		Z Stainless steel piston rod and nut aluminium piston	
	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

ACTUATORS

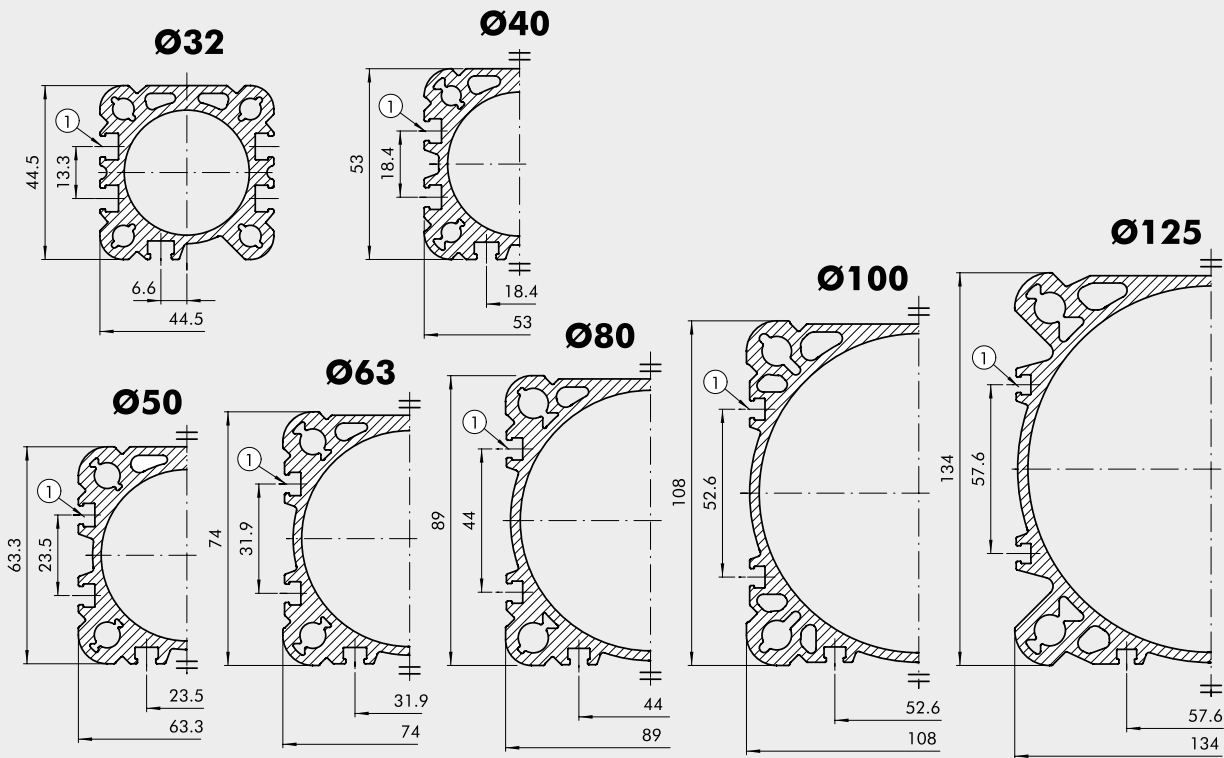
ISO 15552 CYLINDER – TYPE A

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	A C45 chromed piston rod, aluminium piston: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with ≥ 80 mm and over	N NBR gaskets	E Single-acting extended rod
●	122 Through-rod	▲ B No stick-slip	40	suppliable strokes, look at the technical data		P Polyurethane gaskets	
	124 Double-acting, non-cushioned	C Non-magnetic	50			V FKM/FPM gaskets	
	125 Opposed		63			● B Low temperature rod gasket	
+	126 Single-acting		80		C C45 chromed piston rod, technopolymer piston: standard for cylinders of ≥ 32 to 63 mm with <1000 mm strokes	C “Combi” piston rod gasket	
	127 Tandem		A1 = $\varnothing 100$			► R “Hard PU” piston rod gasket	
	134 Rod lock version		A2 = $\varnothing 125$			● □ M “Metal” piston rod gasket	
*	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 aluminum (A or Z)
- 126... Single-acting retracted rod
- 126...E Single-acting extended rod
- Not available in $\varnothing 32$
- ▼ 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
- The 126 (single-action) type and the (No-stick-slip) version B are not available

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	A C45 chromed piston rod, aluminium piston: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with ≥ 80 mm and over	N NBR gaskets
		B Low friction, type B	40	stroke 1 to 2800 mm		P Polyurethane gaskets
		C Low friction, type C	50	$\varnothing 100$ to 125		V FKM/FPM gaskets
		D Low friction, type D	63	stroke 1 to 2600 mm	C C45 chromed piston rod, technopolymer piston: standard for cylinders of $\varnothing 32$ to 63 mm with <1000 mm strokes	
		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 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 piston rod, aluminium piston for all sizes	N NBR gaskets
		B 150 mm front/rear cushioning cone – 150 mm ext.	40			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		Z Stainless steel piston rod and nut aluminium piston	
		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.

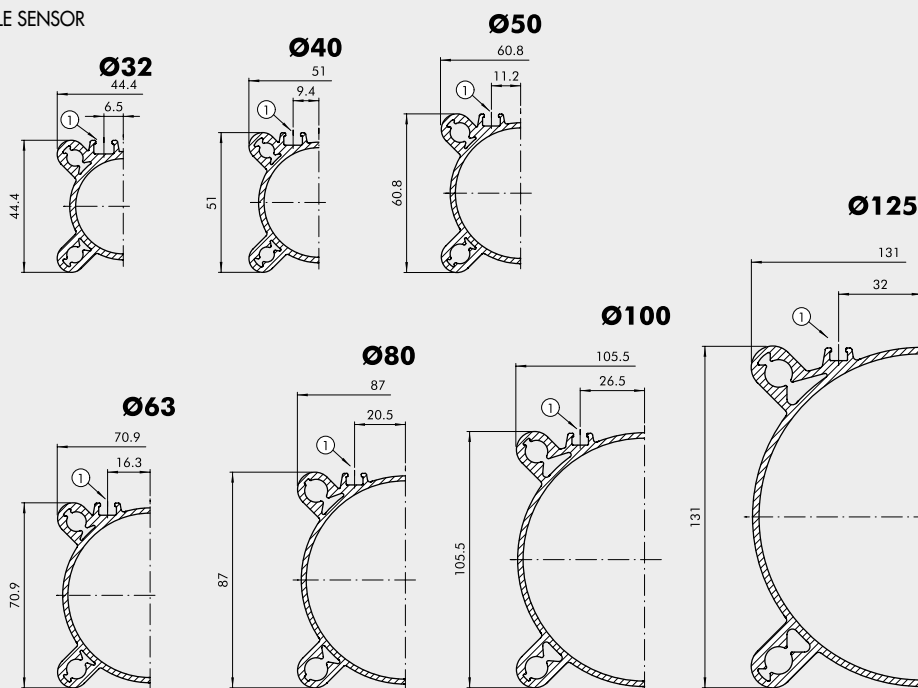
ISO 15552 CYLINDER SERIES 3

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.



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	A C45 chromed piston rod, aluminium piston: standard for all cylinders with ≥ 1000 mm-stroke cylinders and for cylinder with ≥ 80 mm and over	N NBR gaskets	E Single-acting extended rod
●	122 Through-rod	◆ 4 Series 3	40	suppliable	standard for cylinders of ≥ 1000 mm-stroke cylinders and for cylinder with ≥ 80 mm and over	P Polyurethane gaskets	
	124 Double-acting, non-cushioned	No stick slip	50	strokes, look at the technical data	C C45 chromed piston rod, technopolymer piston: standard for cylinders of ≥ 1000 mm-stroke cylinders and for cylinder with ≥ 80 mm and over	V FKM/FPM gaskets	
	125 Opposed	5 Series 3	63		standard for cylinders of ≥ 1000 mm-stroke cylinders and for cylinder with ≥ 80 mm and over	● B Low temperature	
+	126 Single-acting	Non-magnetic	80		standard for cylinders of ≥ 1000 mm-stroke cylinders and for cylinder with ≥ 80 mm and over	C "Combi" piston rod gasket	
	127 Tandem		A1 = $\varnothing 100$		standard for cylinders of ≥ 1000 mm-stroke cylinders and for cylinder with ≥ 80 mm and over	► R "Hard PU" piston rod gasket	
■	134 Rod lock version		A2 = $\varnothing 125$		standard for cylinders of ≥ 1000 mm-stroke cylinders and for cylinder with ≥ 80 mm and over	● ■ M "Metal" piston rod gasket	
■ *	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 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
- Not available in $\varnothing 32$
- The 126 (single-action) type and the (No-stick-slip) version 4 are not available

ISO 15552 LOW-FRICTION CYLINDER
CODE 123 FOR SERIES STD
CODE 129 FOR TYPE A

The low-friction cylinder is typically used as a dandy or tensioning cylinder since it is a single-acting cylinder without a return spring. The configurations are shown below:

- 1) The best type is A as it involves less friction.
- 2) Type B should be used when the cylinder is working under normal conditions outside the pneumatic cushioning area.
Cushioning is only for emergency use. It acts as a shock absorber in the case of malfunction.
- 3) Type C differs from type A due to the presence of a piston rod gasket that prevents dirt getting in when operating in dirty environments.
- 4) Type D differs from type B due to the presence of a piston rod gasket that prevents dirt getting in when operating in dirty environments.
- 5) Type E should be used when the pressurized chamber is the front one.
- 6) For type F, see point 2.

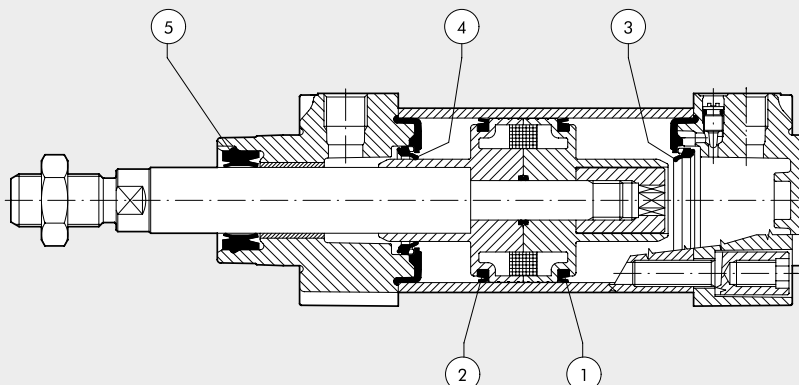


NB. THE CYLINDER IS ALWAYS SINGLE-ACTING WITHOUT A RETURN SPRING.

[illegible]

COMPONENTS

- ① Rear chamber piston gasket made of polyurethane, NBR or FKM/FPM
- ② Front chamber piston gasket made of polyurethane, NBR or FKM/FPM
- ③ Rear chamber cushioning gasket made of polyurethane, NBR or FKM/FPM
- ④ Front chamber cushioning gasket made of polyurethane, NBR or FKM/FPM
- ⑤ Piston rod gasket made of polyurethane, NBR or FKM/FPM



ISO 15552 ULTRA-LOW FRICTIONS CYLINDER

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 anodized 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

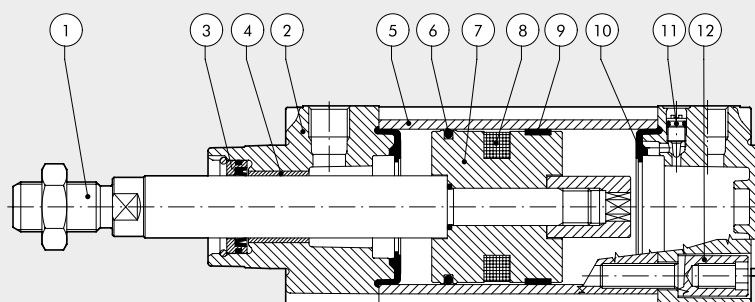
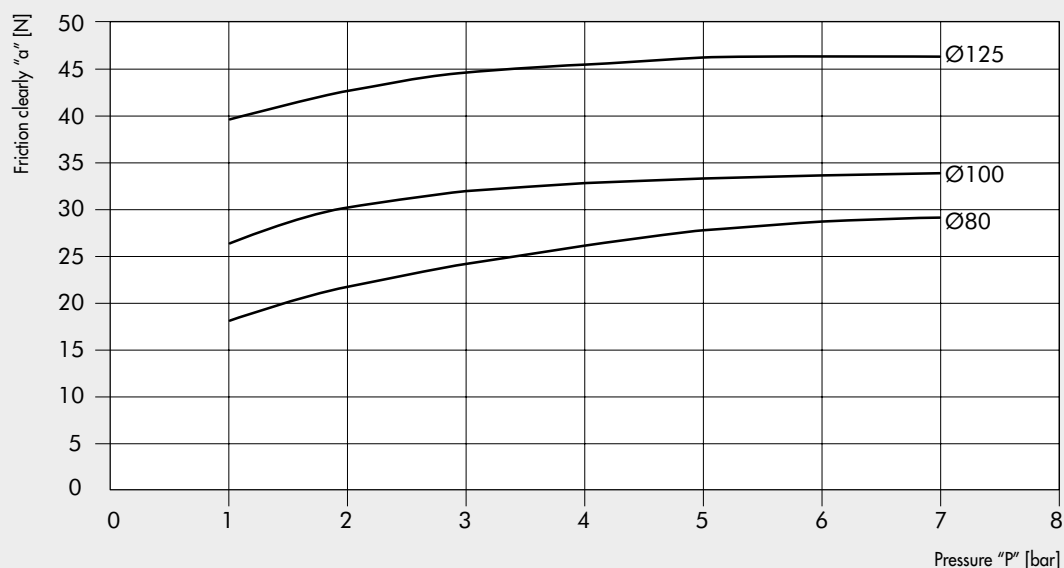
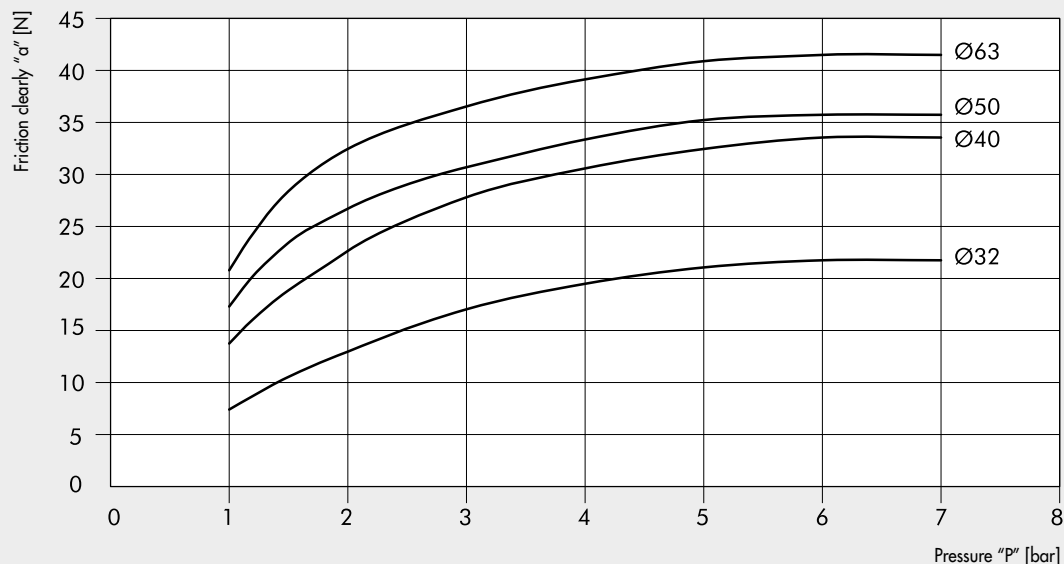


DIAGRAM OF THE CLEAN FRICTIONS



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 cm²

KEY TO CODES

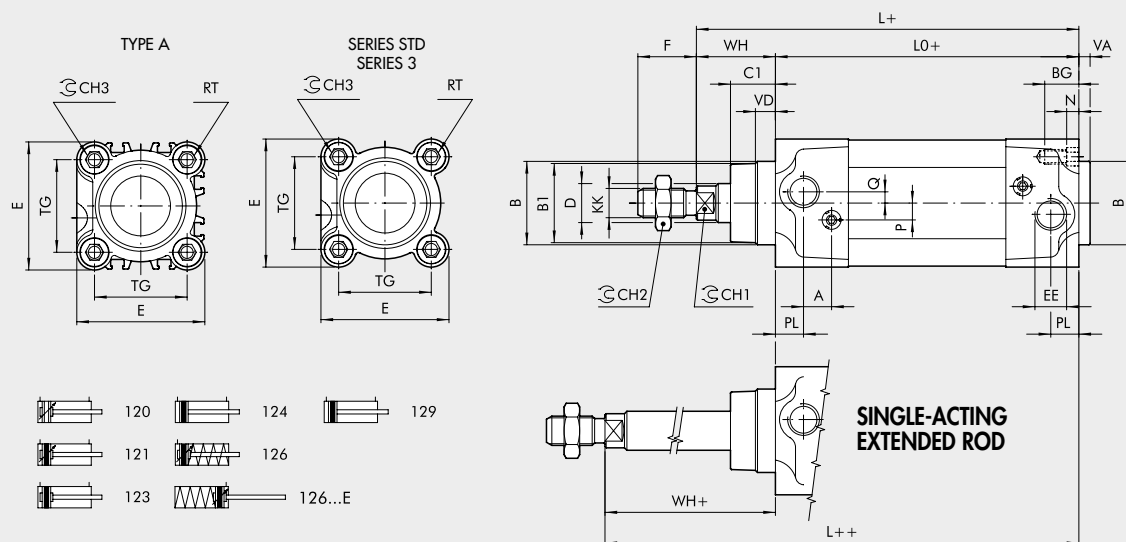
CYL	1 2 3 TYPE	3	3 2 BORE	0 1 0 0 STROKE	A MATERIAL	N GASKETS
	123 Ultra-low friction	3 Double-acting magnetic 5 Double-acting not magnetic	32 40 50 63 80 A1 = 100 A2 = 125	From 1 to 1200 mm	A C45 chromed piston rod, aluminium piston rod Z Stainless steel piston rod and nut aluminium piston	N NBR gaskets

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 DIMENSIONS

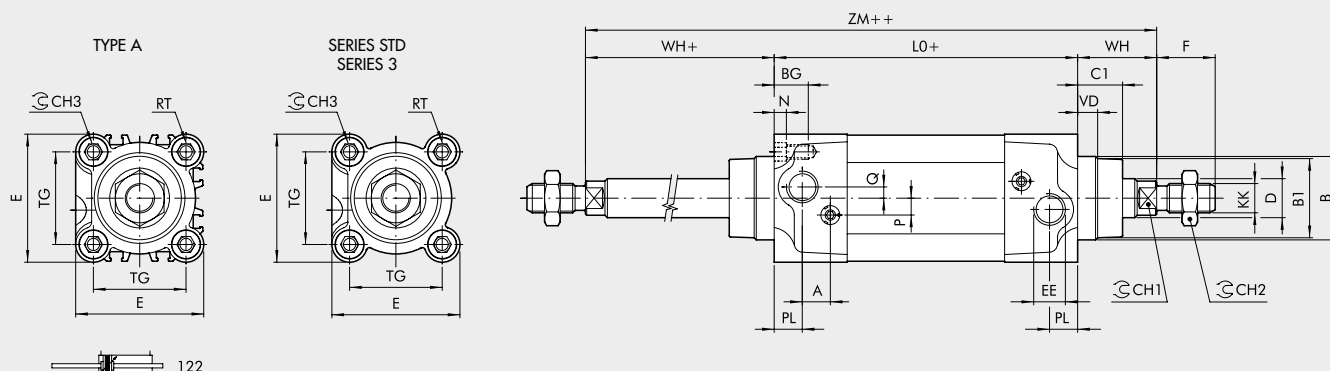
DIMENSIONS

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)

			L ₀										L									
Stroke	126...	126...E	Ø 32	Ø 40	Ø 50	Ø 63	Ø 32	Ø 40	Ø 50	Ø 63	Ø 32	Ø 40	Ø 50	Ø 63	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	158	158	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	158	182.5	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	182.5	207	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	207	231.5	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	231.5	256	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	256	280.5	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	280.5	305	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	305	329.5	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	329.5	354	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	354	378.5	354	378.5