



Catalogo

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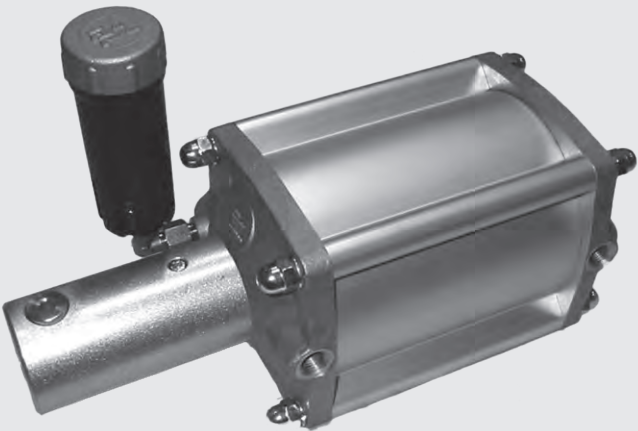
SPECIAL PRODUCTS

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AIR/OIL PRESSURE MULTIPLIERS

AIR/OIL PRESSURE MULTIPLIERS

The pressure multiplier uses a combination of air and oil to generate considerable pressures. The principle is based on the difference of the surface of the two pistons, which are connected by a single piston rod, so the pressure increases in proportion to the ratio of the two areas. The circuit is connected to the oil container allowing automatic compensation for minor leakage at each stroke. The pressure multipliers can be mounted in any position, but the recovery tank must be positioned vertically, higher than the multiplier. The use of FRL units of a suitable capacity in NI/min is required for efficient air treatment. It is advisable to mount a non-return valve before the pneumatic valve for use when the compressed air supply fails.

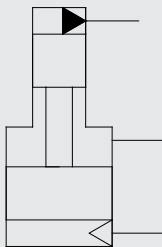


TECHNICAL DATA		SERIE 01	SERIE 02	SERIE 03
Bore	mm	100	100	160
Volume of oil supplied	cm ³	11÷57	31÷196	19÷192
Compression ratio		20:1÷39:1	4:1÷12,5:1	20:1÷52:1
Maximum pneumatic input pressure	bar	8	8	10
Maximum hydraulic output pressure	bar	312	100	500
Working temperature range	°C	-10°÷+70		
Recommended oil		TORQUE O MATIC D II ATF		
Fluid		Filtered lubricated or unlubricated air		
		If lubricated air is used, lubrication must be continuous		

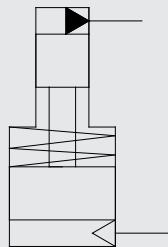
APPLICATIONS

For operating single-acting and dual-acting hydraulic cylinders. Clamping tools, vices, dies and moulds, device for bending, cutting, punching, drawing, calking and marking, and riveting modules.

- (P) = COMPRESSED-AIR RETURN
(M) = SPRING-LOADED RETURN



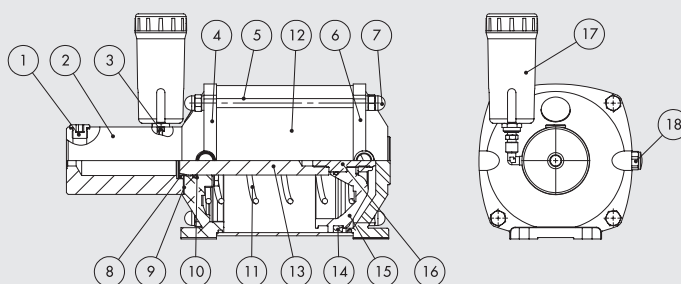
(P)



(M)

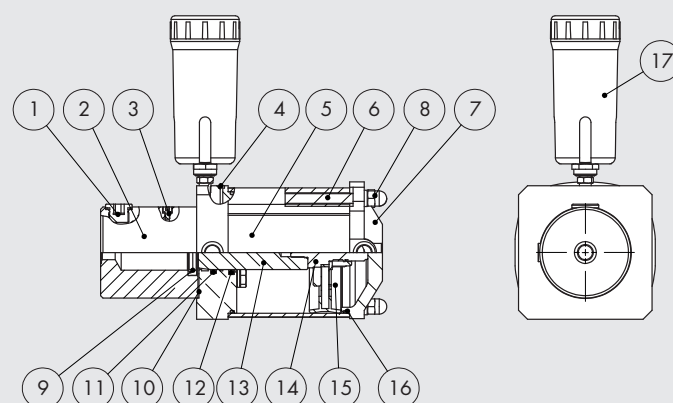
COMPONENTS FOR MULTIPLIERS 01 AND 03

- ① TRF CAP: galvanised steel
- ② OIL CHAMBER: painted steel
- ③ BLEED SCREW: galvanised steel
- ④ FRONT HEAD: forged aluminium
- ⑤ TIE RODS: galvanised steel
- ⑥ REAR HEAD: forged aluminium
- ⑦ BLIND NUT: galvanised steel
- ⑧ PISTON ROD SEAL: polyurethane
- ⑨ GASKET: Klingsil C-4430
- ⑩ OR SEAL: NBR rubber
- ⑪ SPRING: C85 steel (for boosters version "M")
- ⑫ LINER: Ø160 anodized aluminium pipe
Ø100 sectioned anodized aluminium pipe
- ⑬ PISTON ROD: H&D chromed steel
- ⑭ PISTON GASKET: rubber (version Ø160)
- ⑮ PISTON: forged aluminium / rubber (version Ø100)
- ⑯ PISTON ROD EXTENSION: galvanised steel
- ⑰ OIL TANK
- ⑱ SILENCER: nickel-plated brass



COMPONENTS FOR MULTIPLIER 02

- ① TRF CAP: galvanised steel
- ② OIL CHAMBER: painted steel
- ③ BLEED SCREW: galvanised steel
- ④ SINTERED FILTER: Bronze
- ⑤ LINER: sectioned and anodized aluminium Ø100
- ⑥ TIE RODS: galvanised steel
- ⑦ REAR HEAD: forged aluminium
- ⑧ BLIND NUT: galvanised steel
- ⑨ PISTON ROD SEAL: polyurethane
- ⑩ GASKET: Klingsil C-4430
- ⑪ OR SEAL: NBR rubber
- ⑫ PISTON ROD SEAL: NR rubber
- ⑬ PISTON ROD: H&T chromed steel
- ⑭ PISTON ROD EXTENSION: galvanised steel
- ⑮ PISTON: rubber
- ⑯ GASKET OK: NBR rubber
- ⑰ OIL TANK



KEY TO CODES

Z52	02 SERIES	100 BORE	28 PISTON ROD DIAMETER	05 STROKE (cm)	P RETURN
	01	100	16 18 20 22	05 08 10 15	P (Pneumatic) M (Spring-loaded (stroke 05 only))
	02	100	28 32 35	05 10 15 20	P (Pneumatic)
	03	160	22 25 32 35	05 07 10 15 20	P (Pneumatic) M (Spring)

SAMPLE APPLICATIONS

As explained above, the operating principle of pressure multipliers is based on the different surface of the two pistons, so the pressure increases directly in proportion to the area conversion ratio. An example of this concept is explained below.

Let us suppose the first piston has a surface area of 200 cm² and pushes a second piston with a surface area of 8 cm². The pressure reached by the oil is as follows:

$200 \text{ cm}^2 / 8 \text{ cm}^2$	=	$25 \times 6 \text{ bar (air)}$	=	150 bar (oil)
Conversion ratio		Input air pressure		Output oil pressure

Therefore a hydraulic cylinder with an inside diameter of 40 mm will generate the following force:

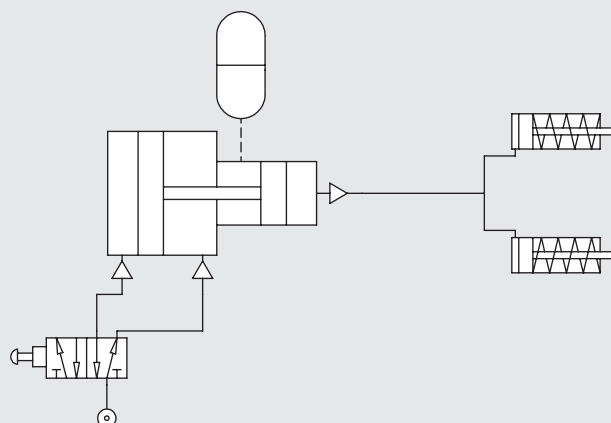
12.56 cm ²	x	150 bar	=	884 kg (1884 daN)
Cylinder area		Oil pressure		Force

EXAMPLE 1 – Control diagram for single-acting hydraulic cylinders

When a 5/2 valve sends a signal, air enters the multiplier and pushes the first piston. The second piston, which is connected to the first, plunges into an oil chamber, generating a pressure that is converted into a thrust force operating the two connected cylinders.

When the opposite signal is sent, the oil re-enters the chamber, aided by the springs in the cylinder.

Oil in the tank is used to make up for any leaks.

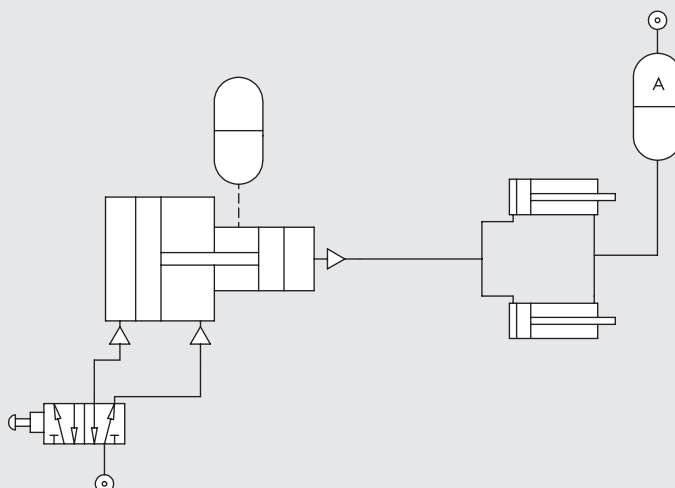


EXAMPLE 2 – Control diagram for dual-acting hydraulic cylinders

When a 5/2 valve sends a signal, air enters the multiplier and pushes the first piston. The second piston, which is connected to the first, plunges into an oil chamber, generating a pressure that is converted into a thrust force operating the two connected cylinders.

The cylinder return is regulated in this case by the pressure of the air in the compensator A.

Another multiplier can be installed instead of the compensator.

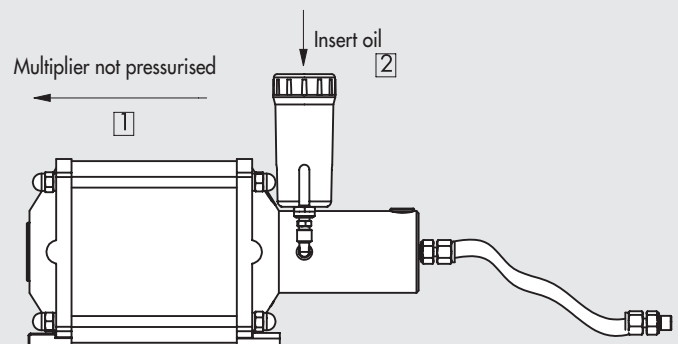


OIL FILLING METHODS

When designing the hydraulic circuit, it is necessary to take an important operation into consideration.

The oil tank must be positioned at the highest point of the circuit so that excess air can be released and the pressure maintained without any residual air.

METHOD 1 – Multiplier not pressurised



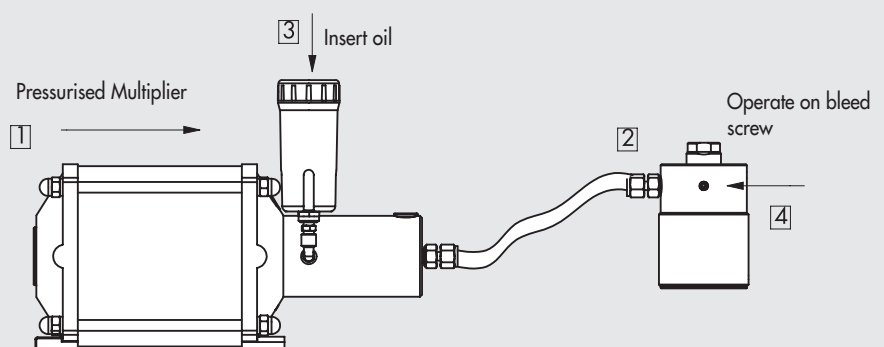
Connect the high-pressure pipe to the multiplier outlet.

Do not pressurize the surface, leaving the piston in the home position (1)

Fill the recovery tank (2) with oil until it starts to come out of the pipe.

The circuit is now full of oil, so connect the cylinder to the end of the pipe.

METHOD 2 – Multiplier pressurised



Connect one end of the high-pressure pipe to the multiplier outlet.

Pressurise the multiplier, WITHOUT FILLING WITH OIL (1).

Connect the other end of the pipe to the cylinder (2) and fill the tank (3) with oil.

Depressurise the multiplier you can see the oil in the tank returning to the steel chamber.

Unscrew the cylinder lead screw (4) slightly and feed LOW pressure air into the multiplier.

Oil will start to come out of the hole in the cylinder after a few cycles. Close the valve.

N.B. Do not unscrew the bleed screw completely as you would lose control of the oil.

SERIES 01 - AIR/OIL PRESSURE MULTIPLIERS BARREL DIAMETER 100 mm

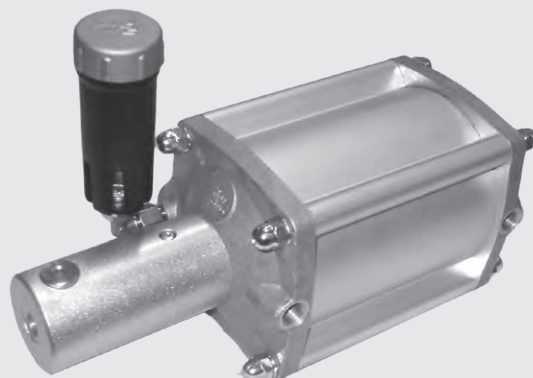
Available in 20 standard models:

- 4 with spring-loaded return
- 16 with pneumatic return

On request it is possible also to run some special applications, such as in cases where you need a higher multiplication ratio or dimensions in drawing.

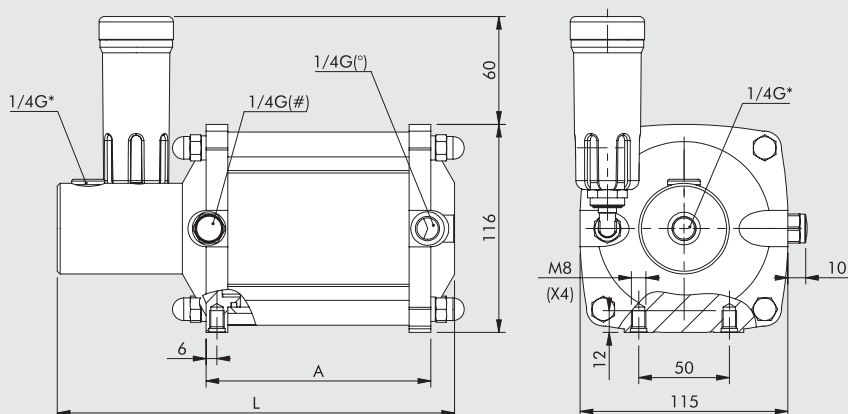
Multipliers can be ordered also without oil tank or with a larger tank. We can also add surface treatments on the internal and external parts in case you use multipliers in particular environments or in contact with corrosive substances.

See the section "Special Articles".



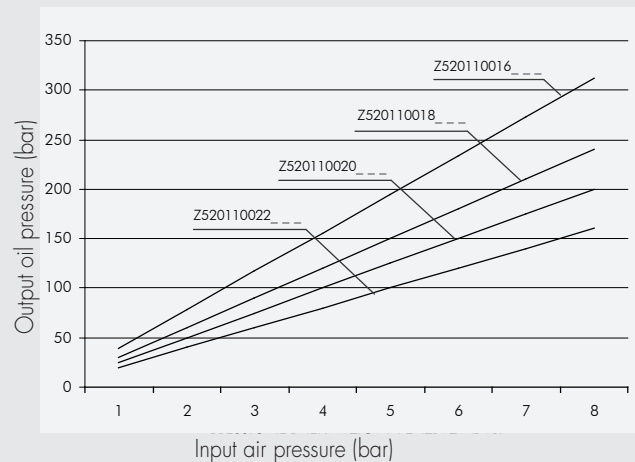
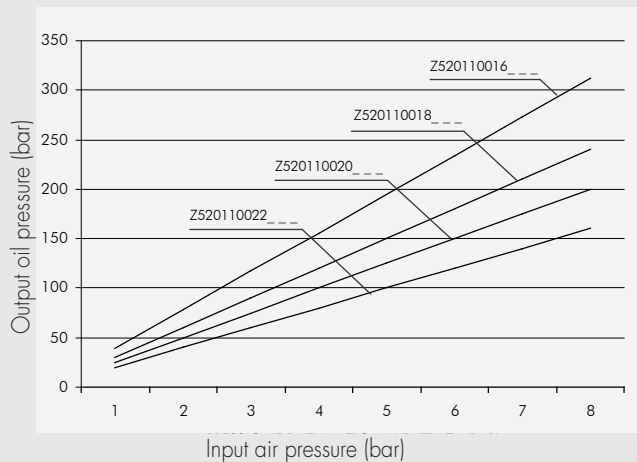
DIMENSIONS

- * = Oil flow:
Possible top and/or front connection
- (#) = With pneumatic return: air
With spring-loaded return: silencer mounted
- (o) = Air supply



Code	Pressure ratio	Oil with air at:		Oil Volume [cm³]	Air Volume [cm³]	A	L
		5 bar	8 bar				
Z52011001605M	39:1	195	312	11	390	124	220
Z52011001605P	39:1	195	312	11	390	124	220
Z52011001608P	39:1	195	312	16	628	154	280
Z52011001610P	39:1	195	312	20	785	174	320
Z52011001615P	39:1	195	312	30	1178	224	420
Z52011001805M	30:1	150	240	13	390	124	220
Z52011001805P	30:1	150	240	13	390	124	220
Z52011001808P	30:1	150	240	20	628	154	280
Z52011001810P	30:1	150	240	25	785	174	320
Z52011001815P	30:1	150	240	38	1178	224	420
Z52011002005M	25:1	125	200	16	390	124	220
Z52011002005P	25:1	125	200	16	390	124	220
Z52011002008P	25:1	125	200	25	628	154	280
Z52011002010P	25:1	125	200	31	785	174	320
Z52011002015P	25:1	125	200	47	1178	224	420
Z52011002205M	20:1	100	160	19	390	124	220
Z52011002205P	20:1	100	160	19	390	124	220
Z52011002208P	20:1	100	160	30	628	154	280
Z52011002210P	20:1	100	160	38	785	174	320
Z52011002215P	20:1	100	160	57	1178	224	420

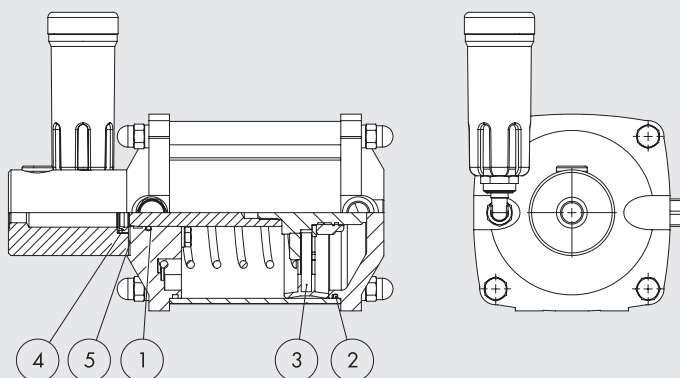
AIR PRESSURE / OIL PRESSURE DIAGRAM



SPRING-RETURN MULTIPLIER GASKETS KIT

Code	Bore	Refer
Z5201K_M	16 ÷ 22	① ② ③ ④ ⑤

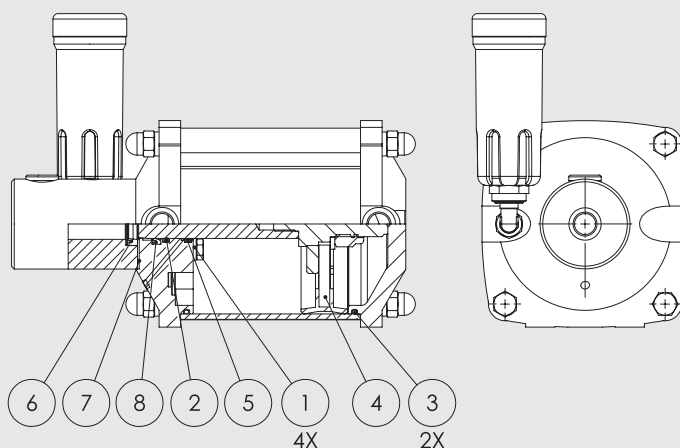
_ _ = Diameter of multiplier rod



PNEUMATIC-RETURN MULTIPLIER GASKETS KIT

Code	Bore	Refer
Z5201K_P	16 ÷ 22	① ② ③ ④ ⑤ ⑥ ⑦ ⑧

_ _ = Diameter of multiplier rod



SERIES 02 - AIR/OIL PRESSURE MULTIPLIERS BARREL DIAMETER 100 mm

Available in 12 standard models:
12 with pneumatic return

On request it is also possible to run some special applications, such as in cases where you need to have a higher multiplication ratio or dimensions in drawing.

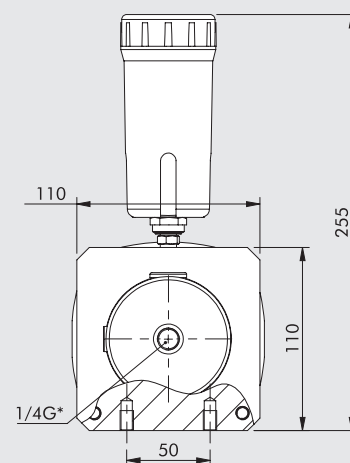
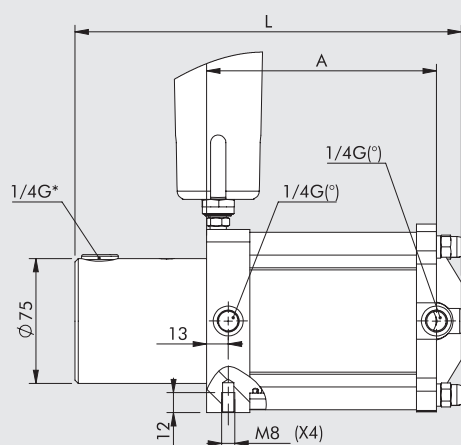
Multipliers can be ordered also without oil tank or with a larger tank. We can also add surface treatments on the internal and external parts in case you use multipliers in particular environments or in contact with corrosive substances.

See the section "Special Articles".



DIMENSIONS

- * = Oil flow:
Possible top and/or front connection
(o) = Air supply



Code	Pressure ratio	Oil with air at:		Oil Volume [cm³]	Air Volume [cm³]	A	L
		5 bar	8 bar				
Z52021002805P	12,5:1	62	100	31	390	138	230
Z52021002810P	12,5:1	62	100	61	785	188	330
Z52021002815P	12,5:1	62	100	91	1180	238	430
Z52021002820P	12,5:1	62	100	123	1570	288	530
Z52021003205P	9,5:1	47	76	40	390	138	230
Z52021003210P	9,5:1	47	76	80	785	188	330
Z52021003215P	9,5:1	47	76	120	1180	238	430
Z52021003220P	9,5:1	47	76	160	1570	288	530
Z52021003505P	8:1	40	64	48	390	138	230
Z52021003510P	8:1	40	64	96	785	188	330
Z52021003515P	8:1	40	64	144	1180	238	430
Z52021003520P	8:1	40	64	191	1570	288	530

SERIES 03 - AIR/OIL PRESSURE MULTIPLIERS

BARREL DIAMETER 160 mm

SPRING RETURN / PNEUMATIC RETURN

Available in 36 standard models:

16 with spring-loaded return

20 with pneumatic return

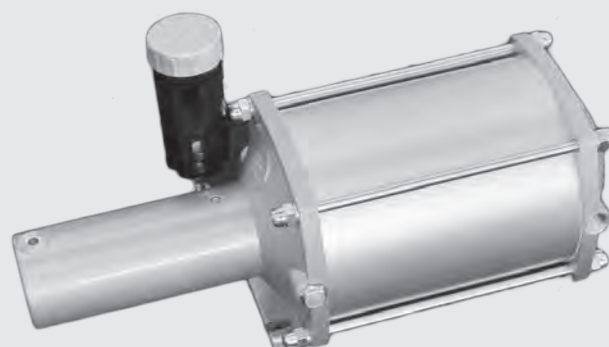
Special constructions on request

On request it's possible also to run some special applications, such as in cases where you need to have a higher multiplication ratio or dimensions in drawing.

Multipliers can be ordered also without oil tank or with a larger tank.

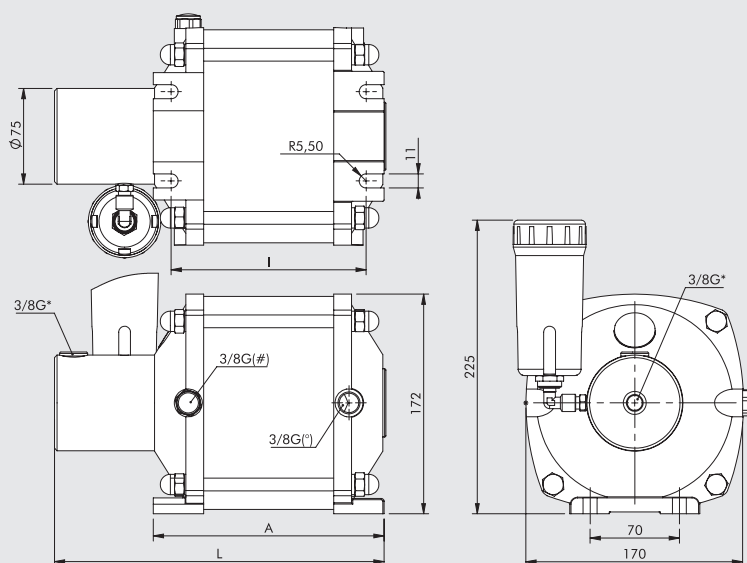
We can also add surface treatments on the internal and external parts in case you use multipliers in particular environments or in contact with corrosive substances.

See the section "Special Articles".



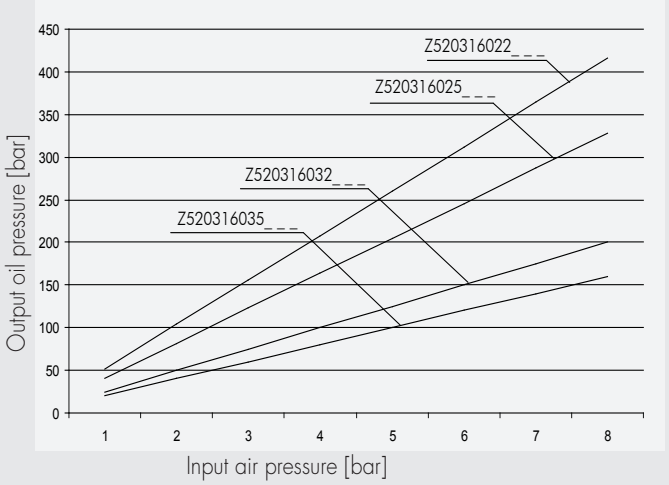
DIMENSIONS

- * = Oil flow:
Possible top and/or front connection
- (#) = With pneumatic return: air
With spring-loaded return: silencer mounted
- (o) = Air supply



Code	Pressure ratio	Oil with air at:		Oil Volume [cm ³]	Air Volume [cm ³]	I	A	L
		5 bar	8 bar					
Z52031602205M/P	52:1	260	416	19	1005	165	180	260
Z52031602207M/P	52:1	260	416	26	1405	185	200	300
Z52031602210M/P	52:1	260	416	38	2009	215	230	360
Z52031602215M/P	52:1	260	416	57	3015	265	280	460
Z52031602220P	52:1	260	416	75	4015	311	340	680
Z52031602505M/P	41:1	205	328	24	1005	165	180	260
Z52031602507M/P	41:1	205	328	34	1405	185	200	300
Z52031602510M/P	41:1	205	328	49	2009	215	230	360
Z52031602515M/P	41:1	205	328	73	3015	265	280	460
Z52031602520P	41:1	205	328	98	4015	311	340	680
Z52031603205M/P	25:1	125	200	40	1005	165	180	260
Z52031603207M/P	25:1	125	200	56	1405	185	200	300
Z52031603210M/P	25:1	125	200	76	2009	215	230	360
Z52031603215M/P	25:1	125	200	116	3015	265	280	460
Z52031603220P	25:1	125	200	160	4015	311	340	680
Z52031603505M/P	20:1	105	168	48	1005	165	180	260
Z52031603507M/P	20:1	105	168	67	1405	185	200	300
Z52031603510M/P	20:1	105	168	96	2009	215	230	360
Z52031603515M/P	20:1	105	168	144	3015	265	280	460
Z52031603520P	20:1	105	168	190	4015	311	340	680

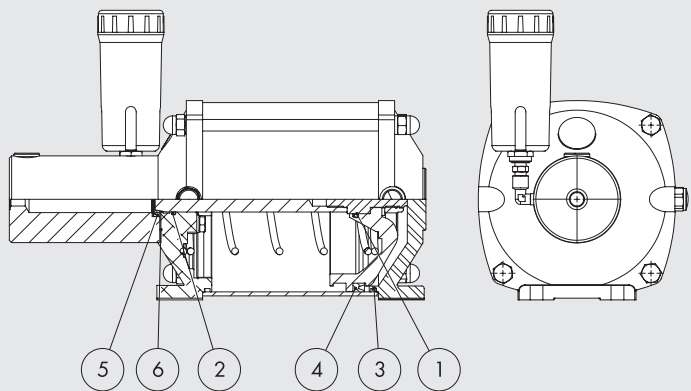
AIR PRESSURE / OIL PRESSURE DIAGRAM



SPRING-RETURN MULTIPLIER GASKETS KIT

Code	Bore	Refer
Z5203K__00M	22-25-32-35	① ② ③ ④ ⑤ ⑥

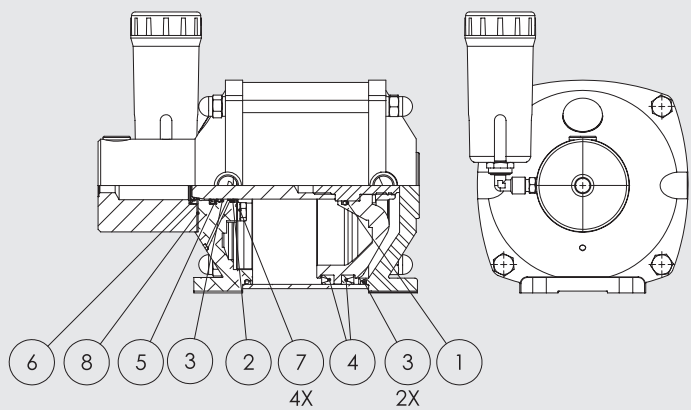
__ = Diameter of multiplier rod



PNEUMATIC-RETURN MULTIPLIER GASKETS KIT

Code	Bore	Refer
Z5203K__00P	22-25-32-35	① ② ③ ④ ⑤ ⑥ ⑦ ⑧

__ = Diameter of multiplier rod



SERIES 06 HYDRAULIC PUMPS

The hydraulic pump is operated by compressed air and has a capacity of 500 NI/min.

Three types of actuation are possible.

Manual: when the flywheel is turned clockwise, a valve delivers compressed air to the reciprocating pneumatic motor. When it is turned anticlockwise, the pump is no longer pressurized and the oil returns to the reservoir.

Pneumatic: the pump is operated by a remote pneumatic signal, allowing use in multiple systems.

No control: the pump is always pressurized.

In all three versions, when the pump reaches the pressure setting, it will deactivate. It restarts automatically only to compensate for strokes, pressure drops due to leaks, or system leaks.



APPLICATIONS

Hydraulic pumps can be used to supply high-pressure circuits, such as:

- single-acting cylinders
- multiple-circuit equipment (with the addition of a multiple valve)
- extractors, presses, and tools for bending, marking, drilling, blanking, upsetting and riveting.

TECHNICAL DATA

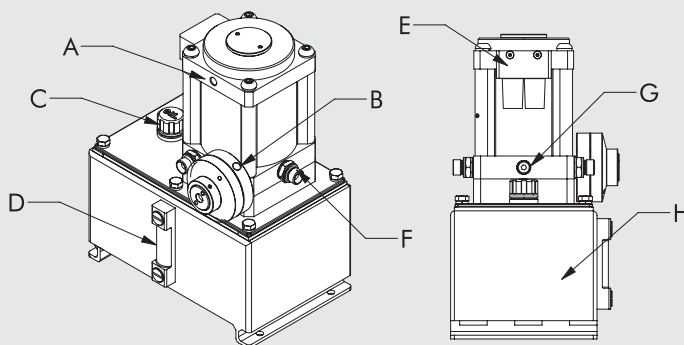
Bore	mm	100				
Piston rod dimensions	mm	14	16	18	20	22
Compression ratios		51:1	39:1	30:1	25:1	21:1
Oil flow rate	cm ³ /min	1500	2000	2500	3000	3400
Noise level	Db	89				
Maximum air flow required	NI/min	500				
Maximum air supply pressure	bar	2÷8				
Minimum pneumatic pressure for pneumatic control activation	bar	4				
Maximum hydraulic pressure at outlet	bar	40÷408				
Working temperature range	°C	-10°÷+70				
Recommended oil		TORQUEMATIC 2 DEXRON				
Fluid		Filtered air, lubricated or not.				
		If operating with lubricated air the lubrication must be continuous.				

KEY TO CODES

Z52	06	100	14	04	1	3
	SERIES	BORE	PISTON ROD DIAMETER	STROKE [cm]	CONTROL	RESERVOIR
	06	100	16 18 20 22	04	1 No control 2 Manual control 3 Pneumatic control	1 No tank 2 With tank 0.5 Litre 3 With tank 3 Litre 4 With tank 5 Litre

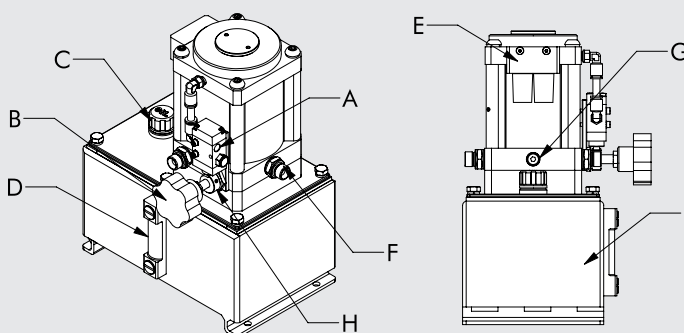
PNEUMATIC CONTROL VERSION COMPONENTS

- A** Pump air feeding Input
- B** Pneumatic control power Input
- C** Tank oil refill Plug
- D** Oil level in the tank
- E** Air filter
- F** Oil supply fitting
- G** Circuit air drain cap
- H** Oil tank



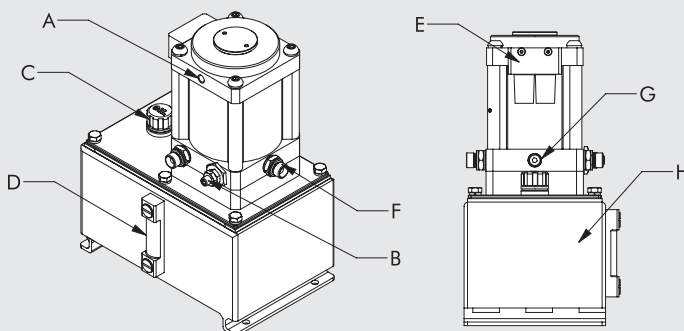
MANUAL CONTROL VERSION WITH HANDWHEEL COMPONENTS

- A** Pump air feeding Input
- B** Handwheel
- C** Tank oil refill Plug
- D** Oil level in the tank
- E** Air filter
- F** Oil supply fitting
- G** Circuit air drain cap
- H** Manual valve opening/closing cam
- I** Oil tank

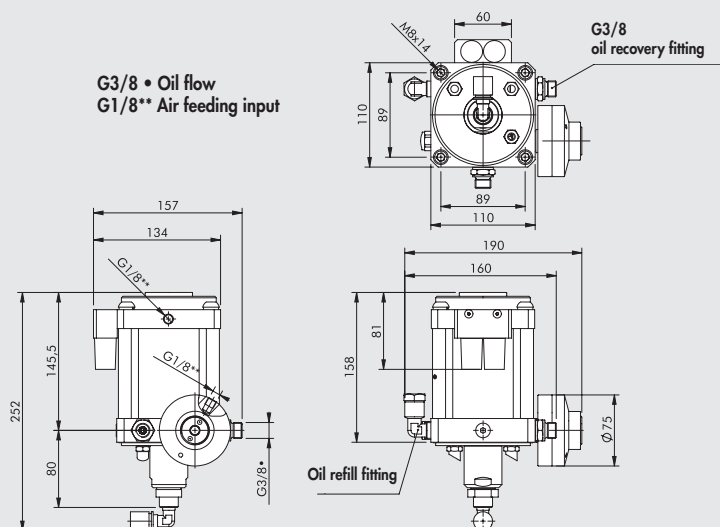


NO CONTROL VERSION OR FIXED CONTROL COMPONENTS

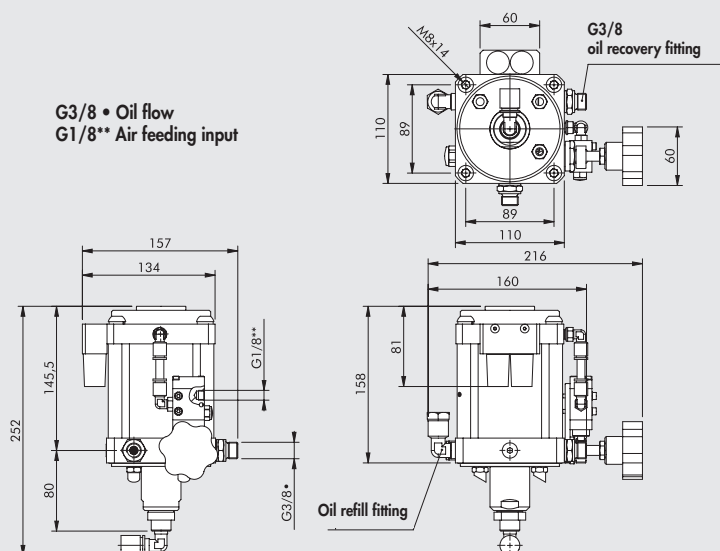
- A** Pump air feeding Input
- B** Fixed control dowel
- C** Tank oil refill Plug
- D** Oil level in the tank
- E** Air filter
- F** Oil supply fitting
- G** Circuit air drain cap
- H** Oil tank



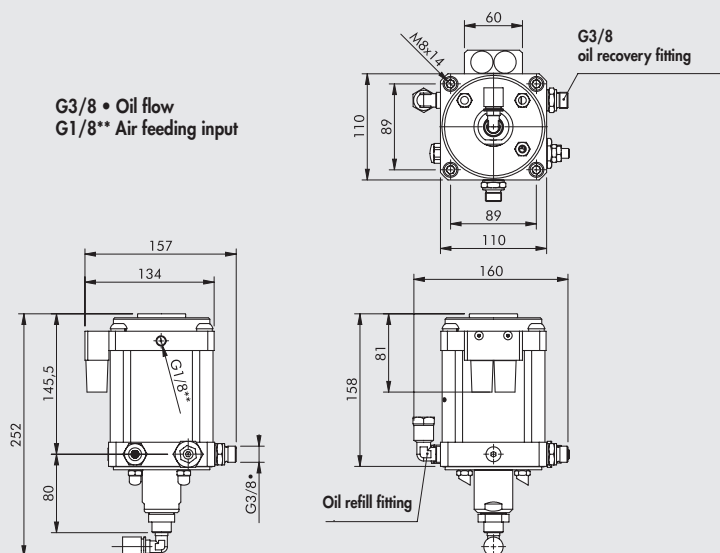
PNEUMATIC CONTROL DIMENSIONS



MANUAL CONTROL DIMENSIONS

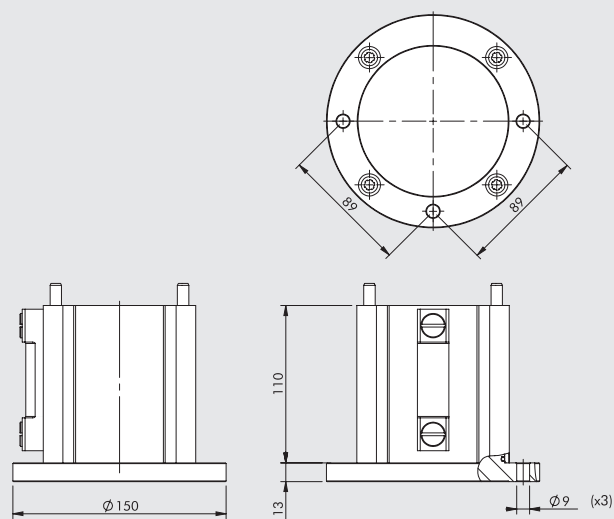


NO CONTROL DIMENSIONS

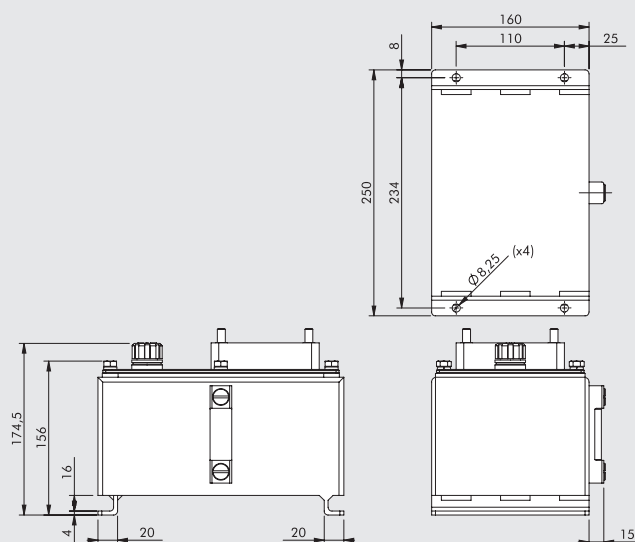


0,5 LITRE TANK DIMENSIONS

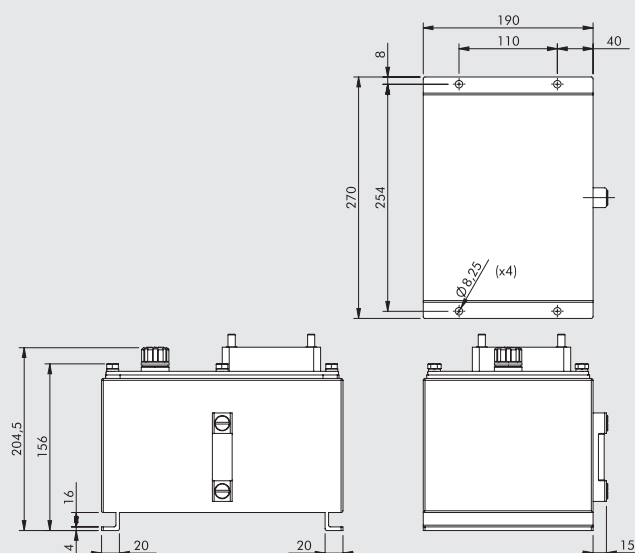
The 0.5 Lt. tank has the option - by unscrewing the 4 fixing screws - to get rotated keeping the level to the desired position.



3 LITRE TANK DIMENSIONS

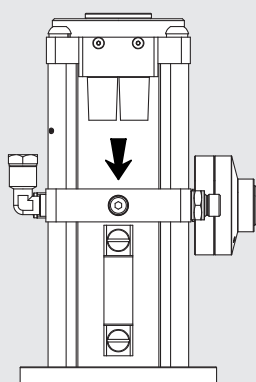


5 LITRE TANK DIMENSIONS

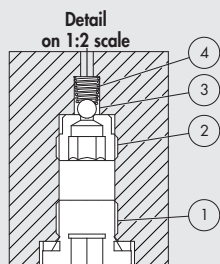


AIR DRAIN STAGES

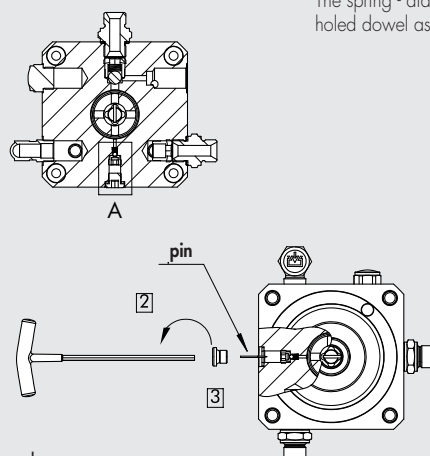
How to drain the pump if there is air in the circuit.



First, identify the cap of the drain placed in the central part of the intermediate flange under the filters.



In the sectional view we can see how a drain system is composed. We find the cap (1), the holed dowel (2), the ball (3), and finally the spring (4).



The operation principle is extremely simple, in fact it's nothing but a non-return valve. The spring - aided by the oil pressure - keeps the ball pressed against the wall of the holed dowel as long as we act manually on it.

FIRST STAGE:

Connect the hydraulic pump, fill the tank and operate the circuit.

At this point the pump should work.

Should it pump without going in pressure it means that there is air in the circuit.

We must then proceed with the next stages, that are the drain ones.

SECOND STAGE:

Unscrew the 1/8 cap (1) with the Allen key 5.

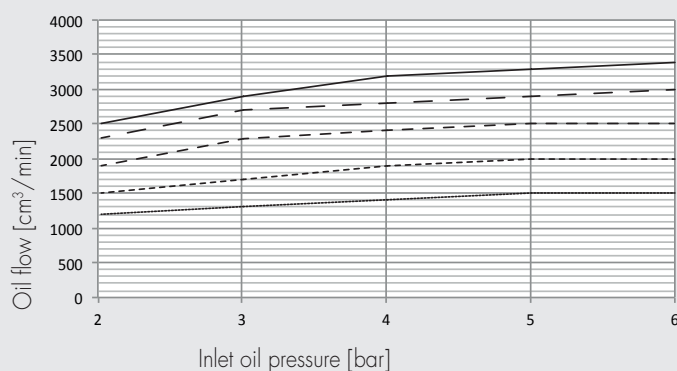
THIRD STAGE:

Bring the provided pin and - for each vacuum flow delivery of the pump - press on the ball (3) until a drop of oil comes out.

FOURTH STAGE:

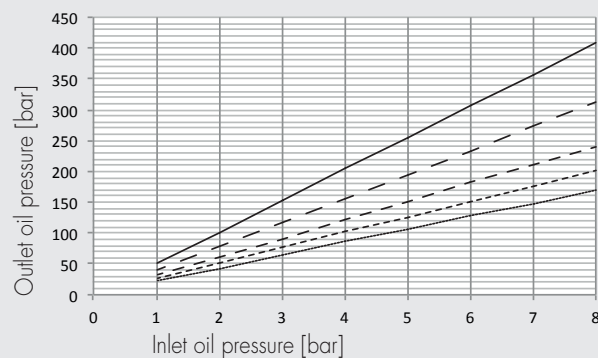
Now we are sure that the circuit is full, therefore we can unscrew the cap again.

AIR PRESSURE/ OIL FLOW DIAGRAM



..... D.St.14
 - - - - D.St.16
 - - - - D.St.18
 - - - - D.St.20
 ——— D.St.22

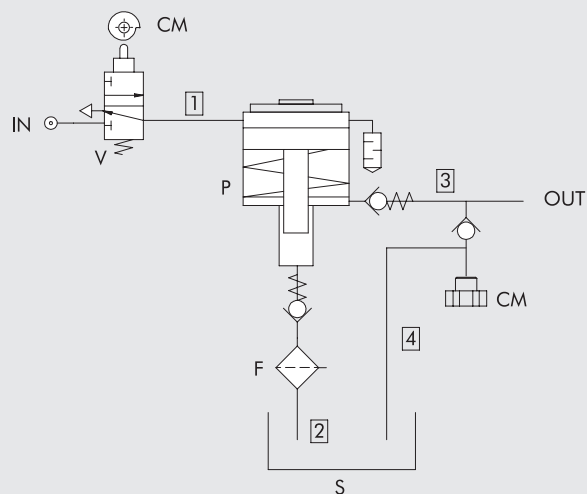
AIR PRESSURE/ OIL FLOW OUTLET DIAGRAM



—— Z52061001404 __
 - - Z52061001604 __
 - - - Z52061001804 __
 - - - Z52061002004 __
 ——— Z52061002204 __

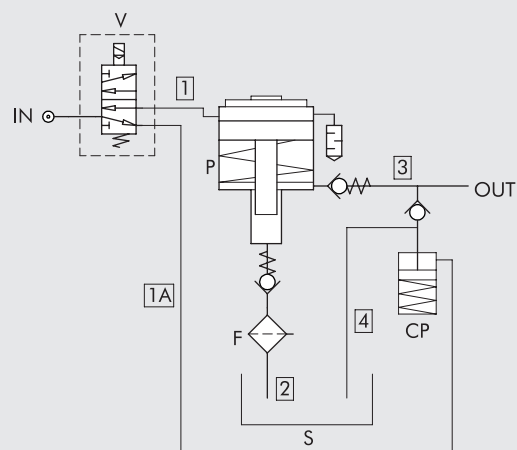
MANUAL CONTROL PUMP SCHEME

- IN = Air inlet
 OUT = Oil outlet
- P = Oleopneumatic pump
 V = 3/2 mechanical valve normally closed
 F = Oil filter
 S = Oil tank
 CM = Cam manual drive + handwheel
- 1 = Inlet air line
 2 = Inlet oil line
 3 = Oil supply line
 4 = Oil discharge line



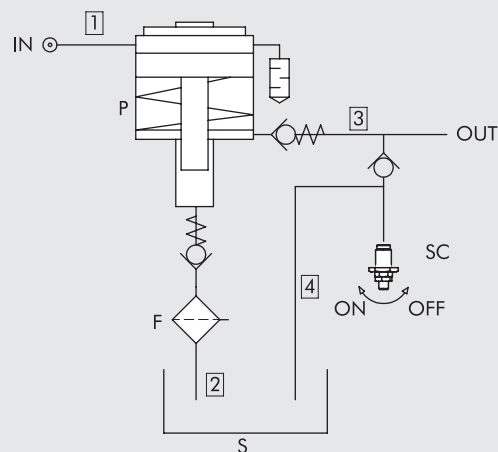
PNEUMATIC CONTROL PUMP SCHEME

- IN = Air inlet
 OUT = Oil outlet
- P = Oleopneumatic pump
 F = Oil filter
 S = Oil tank
 CM = Cam manual drive + handwheel
- V = NOT SUPPLIED valve
- 1 = Inlet air line
 1A = Pneumatic control inlet air line
 2 = Inlet oil line
 3 = Oil supply line
 4 = Oil discharge line



NO CONTROL PUMP SCHEME

- IN = Air inlet
 OUT = Oil outlet
- P = Oleopneumatic pump
 F = Oil filter
 S = Oil tank
 SC = Without control (the nut is needed only to discharge the pump in case of emergency)
- 1 = Inlet air line
 2 = Inlet oil line
 3 = Oil supply line
 4 = Oil discharge line



MAINTENANCE

Faults indicators

Sign	Cause	Solution
1 . The pump continues to pump but does not create pressure	1 .1 The correct discharge hasn't been carried out	1 .1 Carry out the discharge as described above
	1 .2 There is no oil in the tank	1 .2 Fill the oil tank
	1 .3 The drive is open and goes to discharge	1 .3 Close the drive
	1 .4 The internal gaskets are worn	1 .4 Replace the gasket kit
	1 .5 Oil suction filter obstructed	1 .5 Clean the oil filter
2 . Even if in pressure the pump continues to reactivate	2 .1 Outside circuit leak	2 .1 Check the entire circuit
	2 .2 The internal gaskets are worn	2 .2 Replace the gasket kit
	2 .3 Dirt in the ball bearing valves	2 .3 Clean the ball bearing valves, the filters and change the oil
3 . The pump works slowly	3 .1 Air pressure drop	3 .1 Check the air system
	3 .2 Lack of grease or lubrication	3 .2 Regreased or lubricate (if you start to use lubrication, effect it periodically)
	3 .3 Presence of dirt in the filters	3 .3 Remove and clean filters or replace them
	3 .4 Icing on the air filters	3 .4 Stop the pump and clean the filters from ice

Below you find some operations to effect a general but fundamental maintenance on the pump.

- Clean or replace the air filters consistently
- Regularly clean the oil filter from any possible residues in the tank
- Check the oil level in the tank
- We suggest a complete control of the oil in the system after about 2000 hours of work or every time it is polluted by external agents.

CAUTION:

DO NOT PERFORM MAINTENANCE WORK WHEN THE SYSTEM IS UNDER PRESSURE EITHER PNEUMATIC AND OLEODINAMIC.

COMPATIBLE OIL TABLE

For filling or topping up the oil we suggest the use only of the following oils:

- TORQUE o MATIC DATF
- MOBIL - ATF 220-32°
- BP - AUTRAN GM-MP 34°
- AGIP - ATF DEXRON 35°
- API - APILUBE ATF DEXRON IID
- ESSO - AUTOMATIC TRASMISSION FLUID D
- FIAT - TUTELA GI/A
- FINA - FINAMATIC II
- IP - TRASMISSION FLUID DX
- ROLOIL - HIDROMATIC - DEX
- SHELL - ATF DEXRON 11
- TOTAL - FLUIDE ATX

SERIE 59 MANUAL OIL RECHARGING PUMP

The series 59 manual pump is an useful accessories for recharging series BRK and integrated hydraulic brakes.

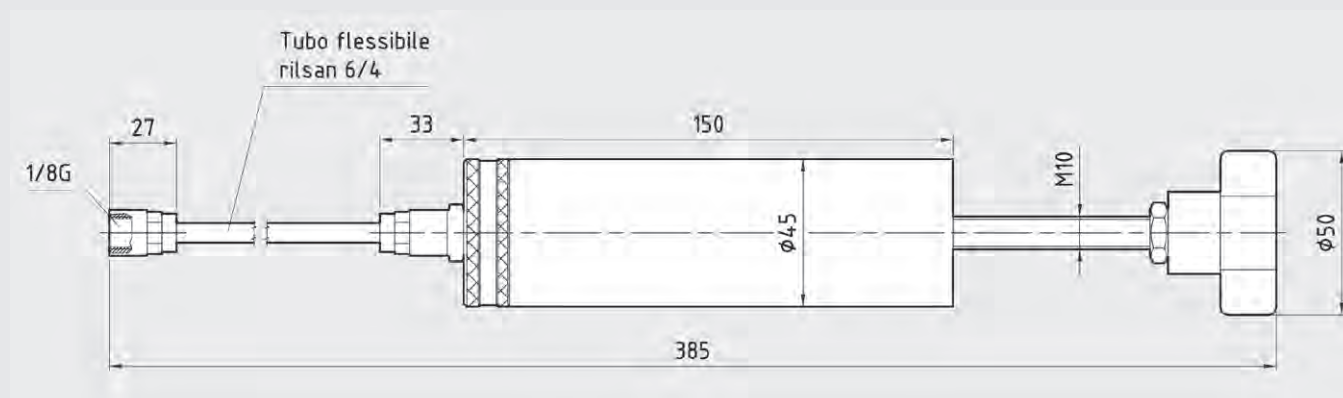
The aluminium chamber is filled with oil from the front. When the knob, which is connected to a piston by a threaded bar, is pressed, fluid is forced through a clear Rilsan tube.

At the end of the tube is an 1/8" fitting with a hole in it for connecting to the brake valve.

Comes in a single model.



DIMENSIONS



ACCESSORIES

OIL PACKAGE

Torque or Matic D I ATF oil is available in 1-litre AND 10-litre packs.
For technical data sheets, please contact our design office.

Ordering code:

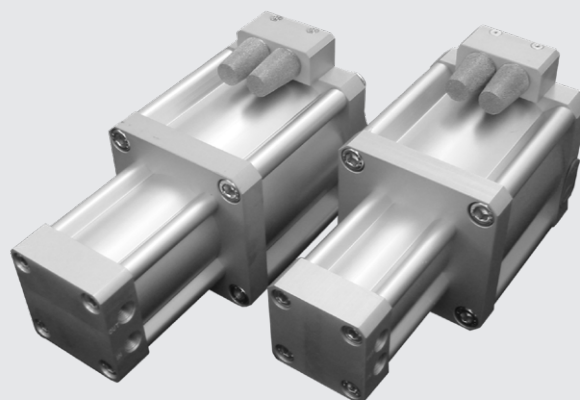
Z5259540001	1 Lt
Z5259540002	10 Lt

SERIES 08 AIR/AIR PRESSURE MULTIPLIER (BOOSTER)



The air-air pressure multiplier, or booster, is an automatic device that compresses air to give an outlet pressure that is two or four times greater than the inlet pressure. It is normally used to locally intensify the input pressure of one or more actuators. As it is entirely pneumatic, it can be used when electric devices are not recommended.

The novelty is that the booster has built-in non-return valves that maintain the outlet pressure even when the supply of compressed air is cut off. This means it is necessary to interrupt the supply and relieve the circuit before doing anything to the device. It is advisable to install a tank after the booster to prevent fluctuations in outlet pressure.



TECHNICAL DATA		Z5208100500400	Z5208100630400
Chamber 1 bore	mm	100	100
Chamber 2 bore		50	63
Compression ratio		4:1	2.5:1
Inlet pressure	bar	2÷8	2÷8
Noise level	Db	90	89
Operating temperature	°C	-10°÷+60°	-10°÷+60°
Fluid		Filtered air, lubricated or not. If operating with lubricated air the lubrication must be continuous.	

KEY TO CODING

Z52	08 SERIES	100 CHAMBER 1 BORE	50 CHAMBER 2 BORE	04 STROKE [cm]	00 RETURN
	08	100	50 63	04	00 STANDARD 01 WITH REGULATION 02 WITH REGULATION

The difference between the pneumatic chamber 1 and pneumatic chamber 2 determines the booster multiplication ratio.

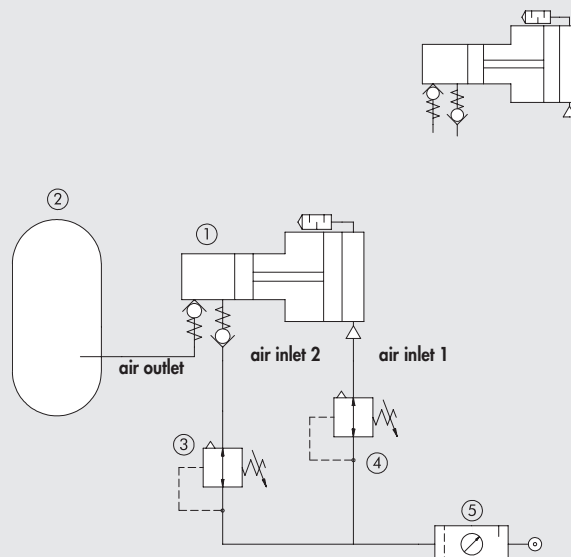
APPLICATIONS

Air-air boosters are used for instance in seal or burst tests, or to increase power in cylinders to avoid having to replace them with ones with a larger diameter.

RECOMMENDED CIRCUIT

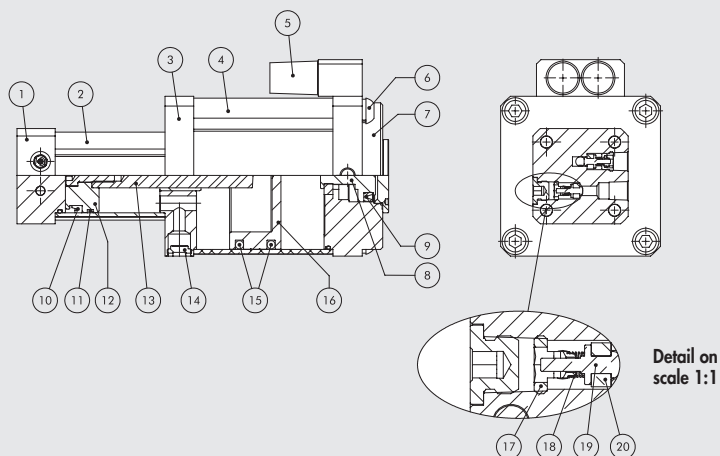
- ① Air-air booster
- ② Tank
- ③ Pressure regulator
- ④ Pressure regulator
- ⑤ FRL units

To achieve the correct booster pressure ratio, regulators 3 and 4 must have the same pressure.



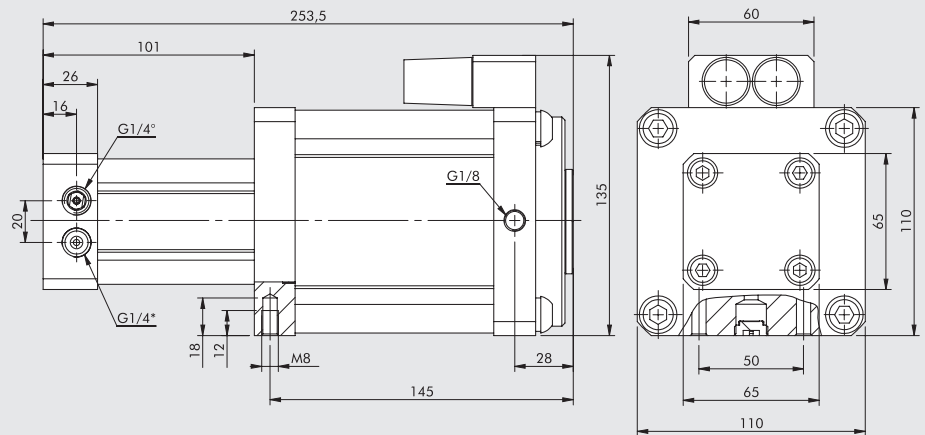
COMPONENTI

- ① FRONT CYLINDER HEAD: 2011 neutral anodised aluminium
- ② FRONT LINING: Ø50/Ø63 profiled anodised aluminium
- ③ INTERMEDIATE CYLINDER HEAD: 2011 neutral anodised aluminium
- ④ REAR LINING: Ø100 profiled anodised aluminium
- ⑤ SILENCER: nickel-plated brass
- ⑥ BOLT: white galvanised steel
- ⑦ REAR CYLINDER HEAD: 2011 neutral anodised aluminium
- ⑧ EXCHANGER PISTON: brass
- ⑨ EXCHANGER GASKET: NBR rubber
- ⑩ PISTON GASKET: NBR rubber
- ⑪ GUIDE BANDS: phenolic resin
- ⑫ PISTON Ø50/Ø63: 2011 aluminium
- ⑬ PISTON ROD Ø16: C45 ground chrome steel
- ⑭ FILTER: sintered bronze
- ⑮ PISTON GASKET Ø100: NBR OR compound and plastoferrite band
- ⑯ PISTON Ø100: 2011 aluminium
- ⑰ VNR RING NUT: nickel-plated brass
- ⑱ VNR SPRING: stainless steel
- ⑲ VNR PISTON: brass
- ⑳ VNR SOLID GASKET: CSC polyurethane



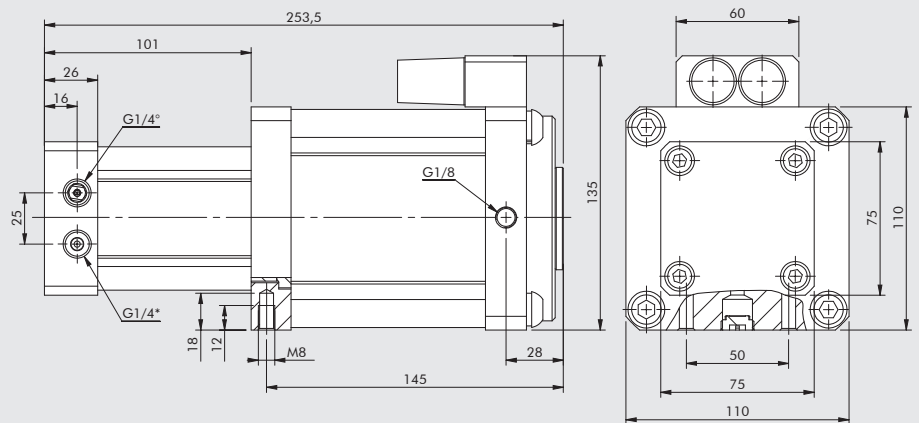
DIMENSIONS: Z5208100500400

G1/8 = air inlet 1
G1/4* = air inlet 2
G1/4° = boosted air outlet



DIMENSIONS: Z5208100630400

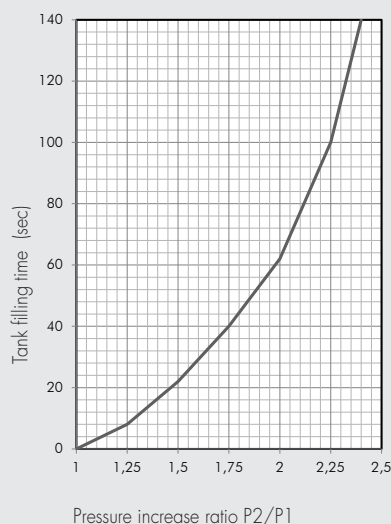
G1/8 = air inlet 1
G1/4* = air inlet 2
G1/4° = boosted air outlet



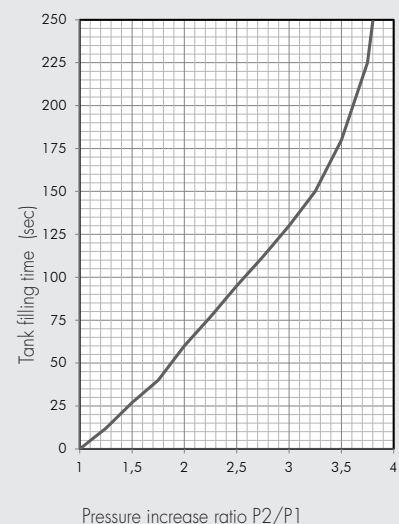
TANK FILLING CURVES

The graphs below refer to the filling of a 10-litre tank and show the pressure increase ratio $P_2:P_1$ as a function of time [s].
When calculating the tank filling time, the ratio $P_2:P_1$ must have 2 values. The first value is the ratio of the initial tank pressure " P_i " to the booster supply pressure " P_a "; the second value is the ratio of the final tank pressure " P_f " to the supply pressure " P_a ".

Z5208100630400



Z5208100500400



The data required to calculate the tank filling time are thus:

P_a = air-air booster supply pressure
 P_i = initial pressure in the tank
 P_f = Final pressure in the tank
 V = Volume of the tank

EXAMPLE OF CALCULATION

Let us assume we need to fill a 50 litre tank with our booster ratio 4:1 (Z5208100500400) at a pressure of 5 bar.
The tank has an initial pressure of 6 bar, which needs to be increased to 15 bar.
In short,

- $P_a = 5$ bar
- $P_i = 6$ bar
- $P_f = 15$ bar
- $V = 50$ l

Now let us calculate the initial and final ratios $P_2:P_1$.

$$P_2:P_1(i) = P_i:P_a = 6/5 = 1.2$$

$$P_2:P_1(f) = P_f:P_a = 15/5 = 3$$

Now let us go to the relevant booster graph and read the time value in relation to the pressure ratios we have just calculated.

With $P_2:P_1(i)$, time $T_i = 15$ s

With $P_2:P_1(f)$, time $T_f = 130$ s

The difference between the final time and the initial time gives the value T to be inserted in the final formula:

$$T = T_f - T_i = 130 - 15 = 115 \text{ s}$$

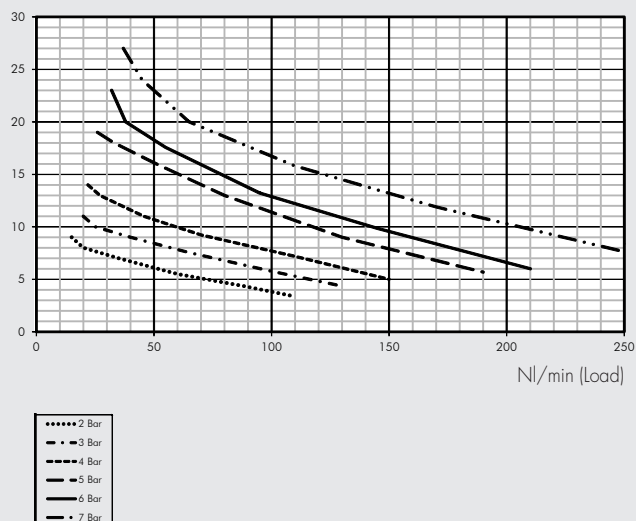
The filling time T_r for a 50 litre tank will be:

$$T_r = T * V / 10 = 115 * 50 / 10 = 575 \text{ s}$$

FLOW RATE CHARTS

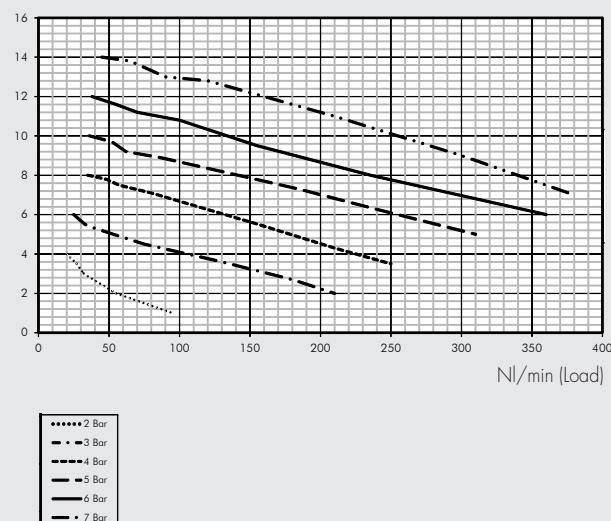
Z5208100500400

bar (Downstreaming pressure)



Z5208100630400

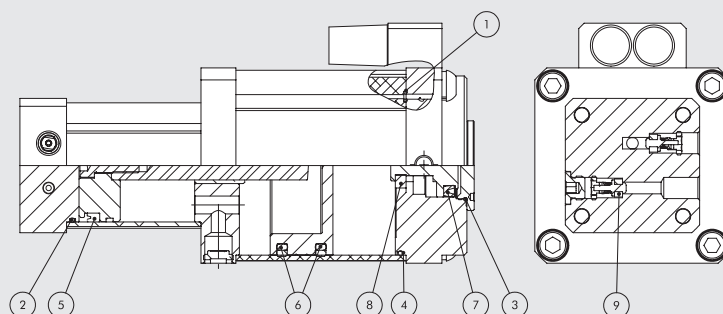
bar (Downstreaming pressure)



SET OF SPARE GASKETS

Code	Bore	Refer
Z5208K__100	50-63	1 2 3 4 5 6 7 8 9

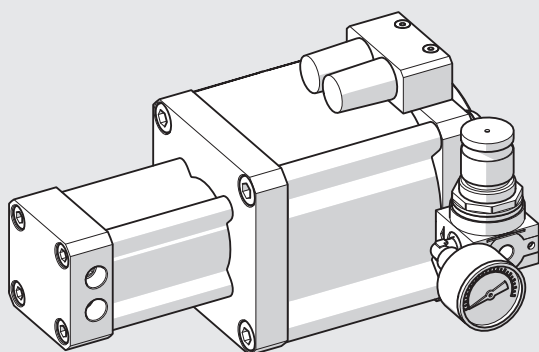
__ = Bore



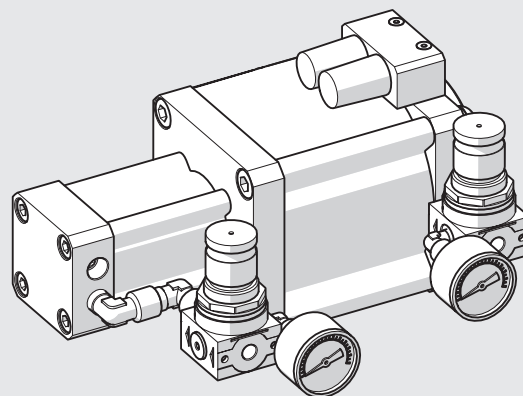
ACCESSOIRES

The air-air booster is available with 1 or 2 regulators, complete with G1/8 or G1/4 male-male fittings, pressure gauge and 12 bar bit.

Z5208100__0401



Z5208100__0402



SERIES 09 AIR/OIL MIXING NOZZLE

The air-oil mixing nozzle can be used in different applications in direct or indirect lubrication, for example:

- for cooling chip removal tools, such as hard metal milling tools, high-speed bits, blades, and saws for cutting ferrous and non-ferrous metals;
- during cold pressing, drilling and drawing
- for lubricating moving parts.

There is a possibility to have several connections on the front nozzle. See section "Special Items"



TECHNICAL DATA

Pressure range	bar
Maximum oil consumption with air at 6 bar	l/min
Working temperature range	°C
Fluid	

Z52091009000

2÷10

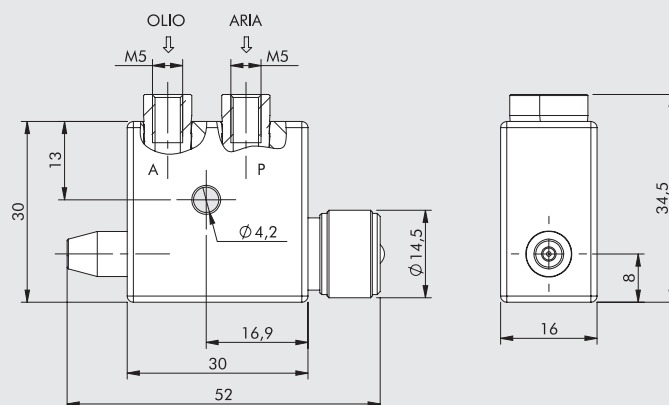
30

-10°÷+70

Filtered air with or without lubrication
If you use lubricated air the lubrication must be continuous

DIMENSIONS AND ORDERING CODE

Code	Description
Z52091009000	Air/oil mixing nozzle



OPERATION

The reservoir pipe is inserted in hole A and the compressed air pipe in hole P.

The atomizer, which is based on the Venturi principle, is activated by short, continuous pulses. The fluids are drawn by the air speed and atomized. The amount of fluid can be regulated by means of a pin.

Oil inlet (A) has a check valve that provides the seal to prevent the reservoir from emptying when not in use.

It is not advisable to mount the oil tank above the mixing nozzle.

SERIES 09/M METHACRYLATE TANKS



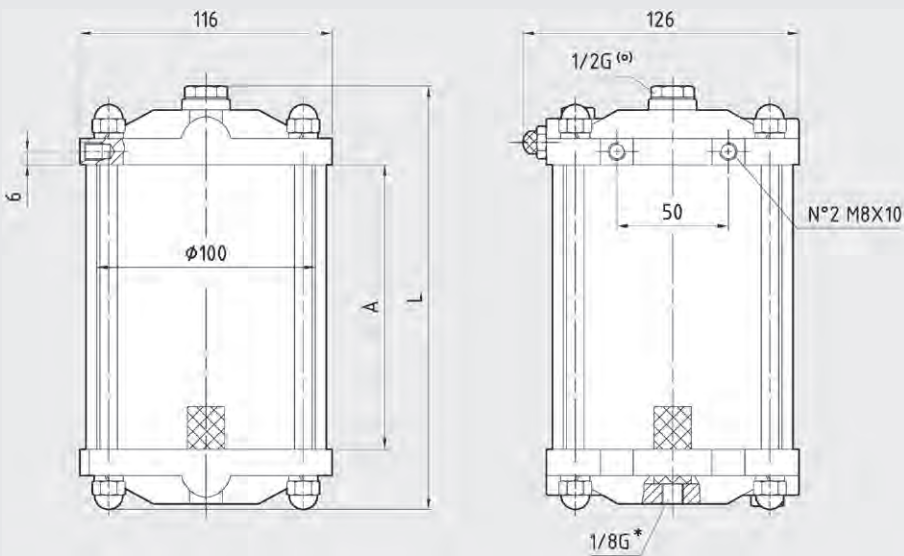
The tank consists of two die-cast aluminium flanges and a clear methacrylate pipe, all joined together by means for four galvanised steel tie rods. It comes complete with a filter on the air suction side, a filter for fluids inside and a 1/2" filling cap. Two M8 holes for fixing onto the equipment are provided on the upper and lower flanges.

IMPORTANT:
Never pressurize the tank.



DIMENSIONS AND ORDERING CODES

(o) = Oil filling
* = oil output



Code	Descriptions	A	L
Z52091001075	Methacrylate 750cc tank with pipe	100	160
Z52091001100	Methacrylate 1000cc tank with pipe	130	190
Z52091001120	Methacrylate 1200cc tank with pipe	150	210

SERIES 09 ALLUMINIUM TANKS AND COMPENSATORS

Series 09 has been extended with the addition of an air/oil compensator.

The Ø100 air/oil compensator consists of two aluminium flanges and an anodized jacket with an ISO profile, all joined together by means of eight screws. The Ø160 compensator consists of 2 aluminium flanges, 4 steel tie rods and a Ø160 anodized pipe.

A fixed or moving piston rod and a magnetic or non-magnetic piston are mounted inside. The operating principle is very simple.

It uses the pressure of entering air to move the piston, which in turn pushes oil into the circuit.

The application and the space available will determine which model to use.

Standard models with a Ø100 jacket are available in capacities 1-2-3 litres. Models with a Ø160 jacket are available in capacities 4-5-8-10 litres.

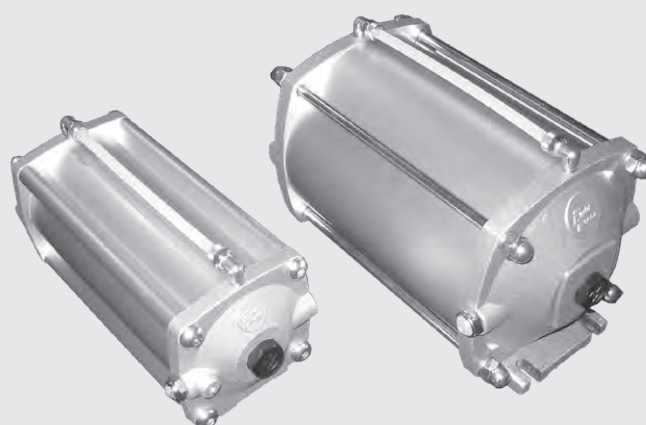
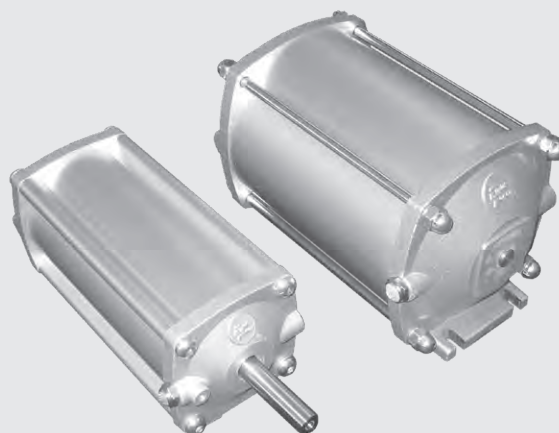
The Ø100 tank also consists of two aluminium flanges and an anodized jacket with an ISO profile, all joined together by means of eight screws. The Ø160 tank consists of 2 aluminium flanges, 4 steel tie rods and an anodized pipe.

The tank is supplied complete with a filter on the air intake side, a liquid filter inside and a 1/2" filling cap.

Ø100 models have four M8 holes on the flanges for fixing to the equipment, and Ø160 have four 12mm slots.

Standard models can take such optionals as an internal electromagnetic level gauge or a pressure regulator and gauge.

Standard models with a Ø100 jacket are available in capacities 1-2-3 litres. Models with a Ø160 jacket are available in capacities 4-5-8-10 litres.

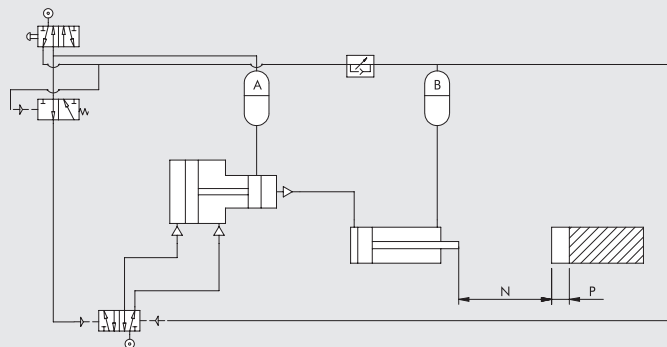
[illegible]

APPLICATIONS

The application of the tank is fairly intuitive - it is mainly used to increase the amount of oil in a system when small leaks occur.

The compensator has numerous applications as it also exploits a compressed air input. It can be used as a normal tank, or as an air/oil cylinder for instance.

The diagram below shows a typical application of a compensator.



The oil in compensator A, which compressed by the air, passes into the chamber of the multiplier and then into the double-acting cylinder with a long stroke. The cylinder performs the approach stroke (N) and stops.

A command then pressurises the multiplier, which intervenes on the work stroke (P), which requires a greater force and hence a higher pressure, and performs the last part of the stroke.

Cylinder retraction is given by compensator B, which is operated by a set pressure and sends oil into the cylinder chamber.

The piston retracts, pushing oil into the multiplier and hence back into compensator A. In this case, the multiplier alone would not have enough oil to perform the cylinder approach stroke (N), which is why the two compensators have been added.

KEY TO CODE

Z52	09 SERIES	160 BORE	1 MODEL	0400 CAPACITY [cl]	E OPTIONAL
	09	100	1 Tank	0100 0200 0300	0 No L Electromag. level R Pressure regulator E Level + regulator
		160	2 Mobile piston rod compensator	0400 0500 0800 1000	M Magnetic N Non Magnetic
			3 Fixed piston rod compensator		M Magnetic

OPTIONALS AND SPECIAL APPLICATIONS

Our standard models of tanks and compensators have capacities ranging from 1 to 10 litres, but intermediate or greater capacities are available on request.

If special requirements are expressed, the quotation will be accompanied by a new identification code a drawing showing the maximum dimensions.

EXTERNAL SURFACE TREATMENT

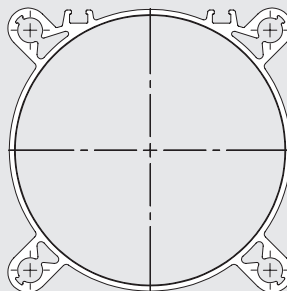
If the compensators or tanks are intended for use in special sectors, such as the food industry, the outer surface can undergo chemical nickel-plating treatment.

This is a heat treatment that increases the hardness of the material to 650 ± 50 HV. The thickness of the nickel plating makes them extremely wear resistant.

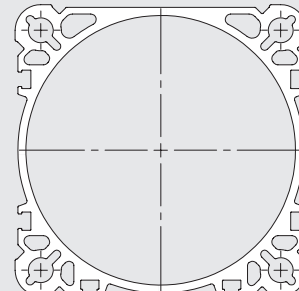
This gives the product a nickel-white colour.

SPECIAL PROFILES

With diam 100 magnetic tanks or compensators, which require external sensors, the profile of the jacket can be altered. The diagram below shows two possible profiles.



ISO SERIES 3 PROFILE



ISO TYPE A PROFILE

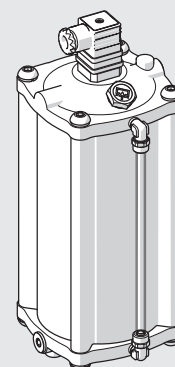
TANK OPTIONS

TANK WITH ELECTROMAGNETIC LEVEL SENSOR

One of the tank accessories available is an electromagnetic level sensor. It exploits the force of the magnet in the float to change the electrical condition of a reed contact. Main technical features of our level sensors:

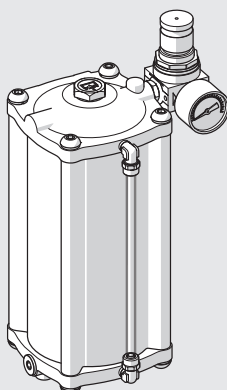
- APPLICATION: mineral oil
- FIXING ELEMENT: anodized aluminium
- PISTON ROD: brass
- FLOAT: foam nylon
- O-RING SEALS: NBR
- CONNECTOR: DIN43650
- CONTACT: NO/NC reed (SPDT)
- MAX SWITCHING POWER: 80W
- MAX SWITCHING CURRENT: 1 A
- MAX SWITCHING VOLTAGE: 250VAC
- TEMPERATURE RANGE: -15°C to +80°C

Level sensors for particular applications, such as the food Industry, are available on request.



PRESSURE REGULATOR

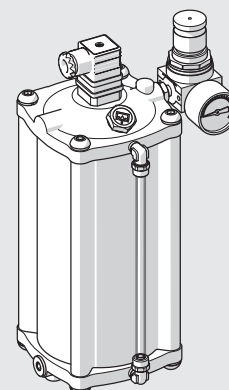
If the tank needs to be pressurised, it is advisable to apply a pressure regulator with a 12 bar gauge at the air inlet.



Tank	Fittings
Z52091001___R	1/8
Z52091601___R	1/4

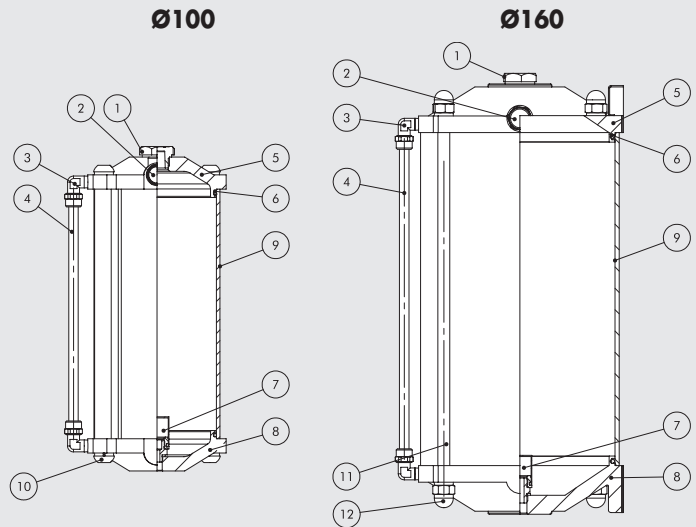
PRESSURE REGULATOR + ELECTROMAGNETIC LEVEL SENSOR

The last option is a tank complete with a pressure regulator and gauge plus an electromagnetic level sensors.



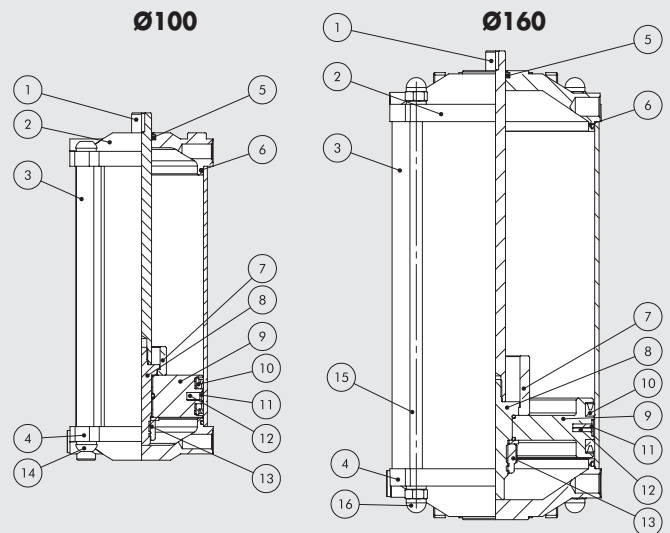
COMPONENTS: TANK Ø100 - Ø160

- ① CAP: plastic
- ② SILENCER: nickel-plated brass
- ③ ELBOWS: nickel-plated brass
- ④ OIL LEVEL: 8/6 Rilsan clear pipe
- ⑤ UPPER HEAD: diecast aluminium
- ⑥ O-RING SEAL: NBR
- ⑦ OIL FILTER: neutral anodized aluminium
- ⑧ LOWER HEAD: diecast aluminium
- ⑨ JACKET: profiled and anodized aluminium Ø100
neutral anodized aluminium Ø160
- ⑩ NUTS AND SCREWS: white galvanised steel (model Ø100)
- ⑪ TIE RODS: white galvanised steel (model Ø160)
- ⑫ BLIND NUTS: white galvanised steel (model Ø160)



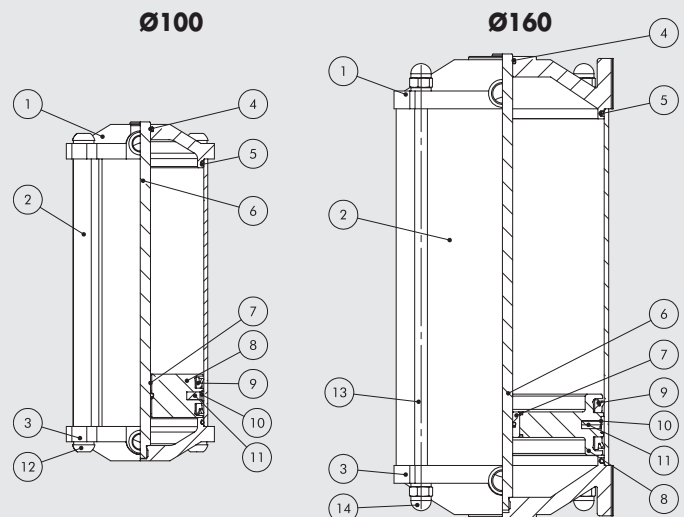
COMPONENTS: MOVING PISTON ROD COMPENSATOR Ø100 - Ø160

- ① PISTON ROD Ø16: chromed steel - ground
- ② UPPER HEAD: diecast aluminium
- ③ JACKET: profiled and anodized aluminium Ø100
neutral anodised aluminium Ø160
- ④ LOWER HEAD: diecast aluminium
- ⑤ PISTON ROD SCRAPER SEAL: NBR
- ⑥ O-RING SEAL: NBR
- ⑦ SPACER: neutral anodized aluminium
- ⑧ PISTON ROD EXTENSION: white galvanised steel
- ⑨ PISTON Ø100 - Ø160: aluminium alloy 2011
- ⑩ PISTON GASKET: NBR
- ⑪ GUIDING RING: special technopolymer
- ⑫ MAGNET: plastoferrite (version with magnet only)
- ⑬ SELF-LOCKING NUT: white galvanised steel
- ⑭ TCB HEX SCREW: white galvanised steel (model Ø100)
- ⑮ TIE RODS: white galvanised steel (model Ø160)
- ⑯ BLIND NUTS: white galvanised steel (model Ø160)

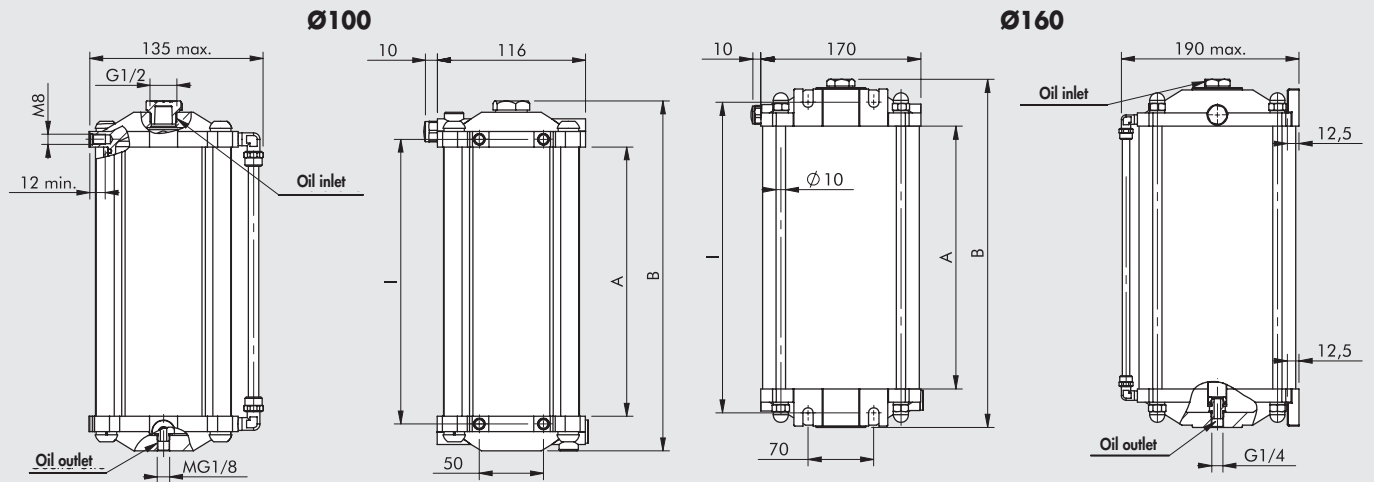


COMPONENTS: FIXED PISTON ROD COMPENSATOR Ø100 - Ø160

- ① UPPER HEAD: diecast aluminium
- ② JACKET: profiled and anodized aluminium Ø100
neutral anodised aluminium Ø160
- ③ LOWER HEAD: diecast aluminium
- ④ ROD O-RING SEAL: NBR
- ⑤ HEAD O-RING SEAL: NBR
- ⑥ STELO Ø16: Chromium plated ground steel
- ⑦ BOCCOLA GUIDA STELO: Bronze
- ⑧ PISTON ROD Ø100 - Ø160: aluminium alloy 2011
- ⑨ PISTON ROD GASKET: NBR
- ⑩ GUIDING RING: special technopolymer
- ⑪ MAGNET: plastoferrite
- ⑫ TCB HEX. SCREW: white galvanised steel (model Ø100)
- ⑬ TIE RODS: white galvanised steel (model Ø160)
- ⑭ BLIND NUTS: white galvanised steel (model Ø160)



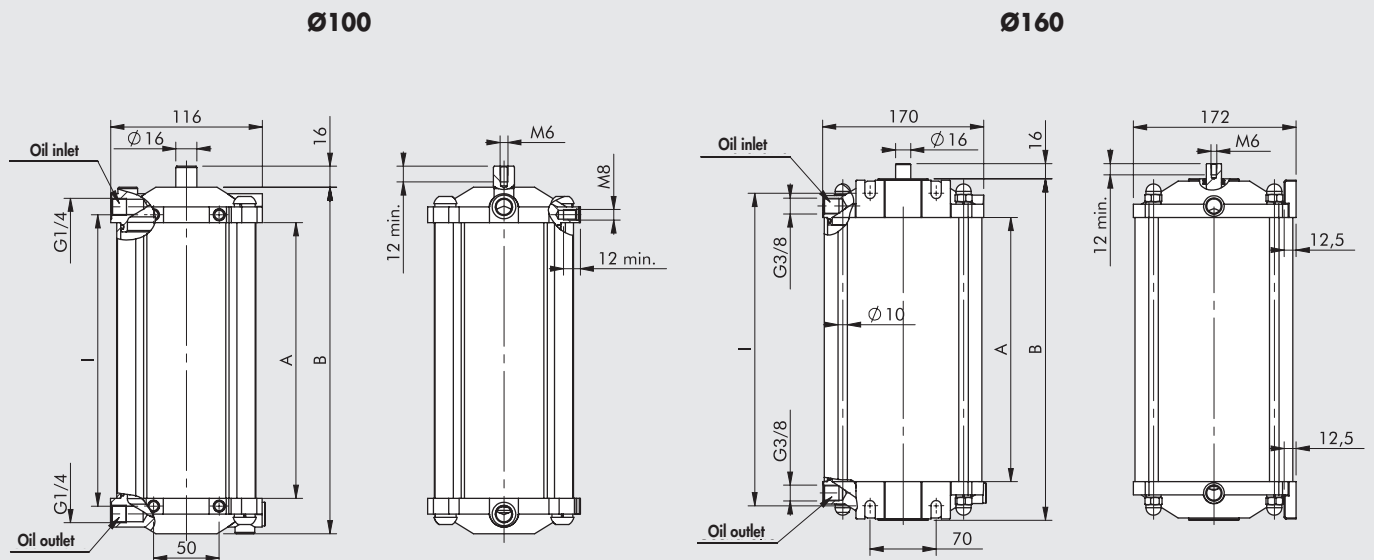
DIMENSIONS: TANK Ø100 - Ø160



Code	A	B	I
Z520910010100	210	273	222
Z520910010200	340	403	352
Z520910010300	460	523	472

Code	A	B	I
Z5209160104000	280	371	331
Z5209160105000	330	421	381
Z5209160108000	480	571	531
Z5209160110000	580	671	631

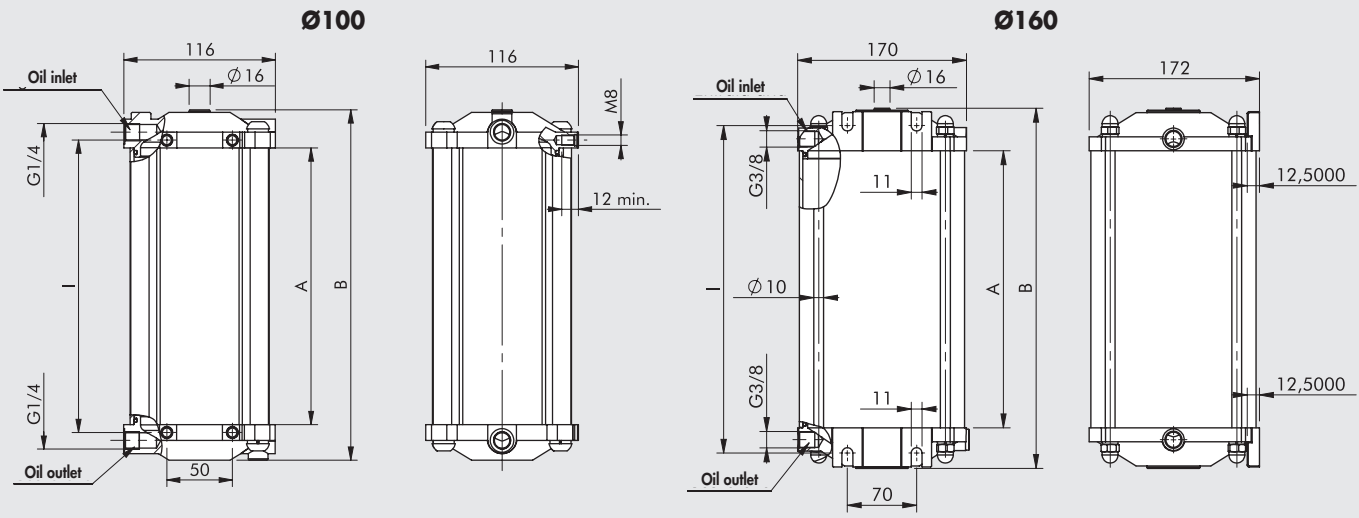
DIMENSIONS: MOVING PISTON ROD COMPENSATOR Ø100 - Ø160



Code	A	B	I
Z520910020100N/M	210	264	222
Z520910020200N/M	340	394	352
Z520910020300N/M	460	514	472

Code	A	B	I
Z520916020400N/M	280	362	331
Z520916020500N/M	330	412	381
Z520916020800N/M	480	562	531
Z520916021000N/M	580	662	631

DIMENSIONS: FIXED PISTON ROD COMPENSATOR Ø100 - Ø160



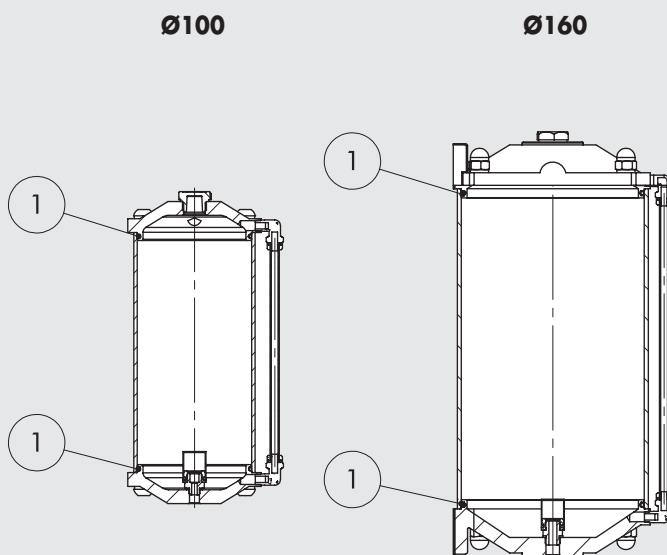
Code	A	B	I
Z520910030100N/M	210	266	222
Z520910030200N/M	340	396	352
Z520910030300N/M	460	516	472

Code	A	B	I
Z520916030400N/M	280	364	331
Z520916030500N/M	330	414	381
Z520916030800N/M	480	564	531
Z520916031000N/M	580	664	631

NOTES

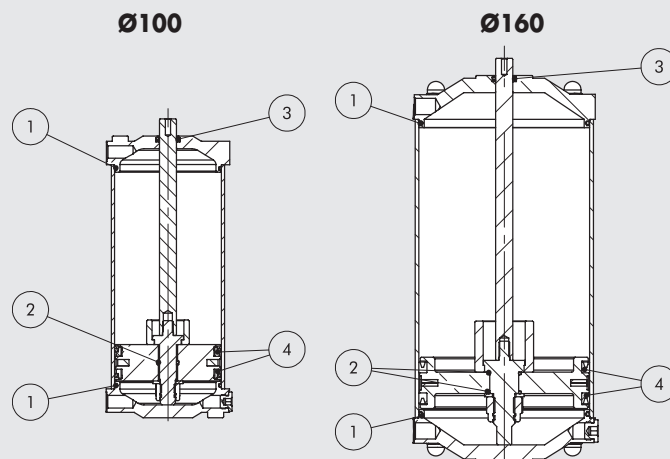
GASKETS KIT FOR SPARE PARTS: TANK Ø100 - Ø160

Code	Bore
Z5209K10001	100
Z5209K10001	160



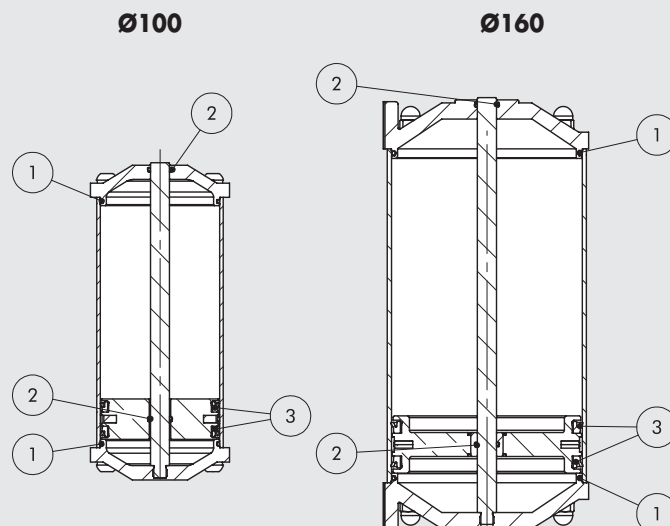
GASKETS KIT FOR SPARE PARTS: MOVING PISTON ROD COMPENSATOR Ø100 - Ø160

Code	Bore
Z5209K10002	100
Z5209K16002	160



GASKETS KIT FOR SPARE PARTS: FIXED PISTON ROD COMPENSATOR Ø100 - Ø160

Code	Bore
Z5209K10003	100
Z5209K16003	160



SERIES 10 METHACRYLATE PNEUMATIC LUBRICATOR



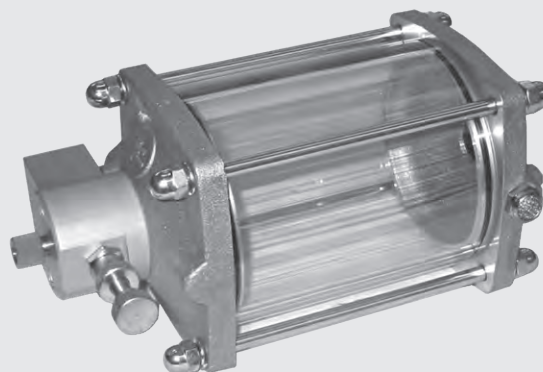
The reservoir is comprised of two die-cast aluminium flanges and a clear methacrylate or aluminium pipe, joined together by four galvanised steel tie rods.

It is equipped with a filter on the air intake side, a filter for the fluids inside and a 1/2 G filling plug.

The upper flange, at the back, comes with M8 holes for fixing to the equipment.

IMPORTANT:

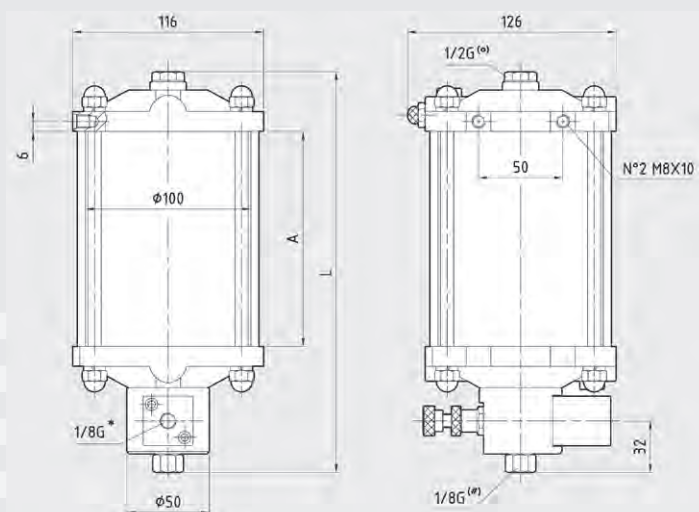
Never pressurize the reservoir.



DIMENSIONS AND ORDERING CODE

- * = Air supply
- (#) = Oil outlet
- (o) = Oil inlet

Code	Description	A	L
Z52101001912075	750cc tank with methacrylate pipe	100	210
Z52091001912100	1000cc tank with methacrylate pipe	130	240
Z52091001912120	1200cc tank with methacrylate pipe	150	260



APPLICATIONS

The suction pumping unit is located at the bottom of the lubricator and comes complete with an outflow regulator.

A pneumatic pulse actuates the valve piston rod, which plunges into the chamber and forces fluid out through the fitting hole at the bottom.

When the signal is interrupted, the amount of liquid can be regulated on the knob provided as the piston rod retracts.

APPLICATION EXAMPLE

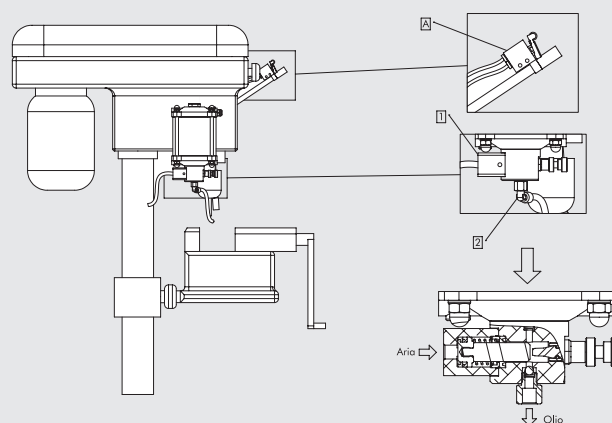
The figure shows a lubricator mounted on a machine tool.

OPERATION:

A mechanically- or electrically-operated valve (A), mounted on the machine tool, sends a compressed air pulse directly to the valve (1).

The valve piston rod plunges into the chamber and forces fluid out through flow port (2).

This application is used to lubricate the part or tool at a precise point and at exactly the right moment

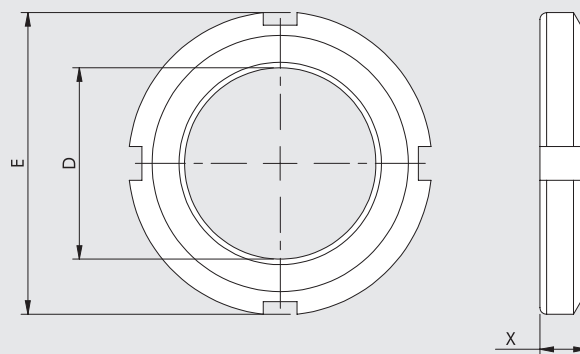


RING NUTS FOR THREADED CYLINDERS

THREADED RING NUT - SERIES 47

Made of stainless steel.
Comes in 5 models.

CODE	D	E	X
Z5247GF3552	M35x1.5	52	8
Z5247GF3652	M36x1.5	52	8
Z5247GF4058	M40x1.5	58	9
Z5247GF4868	M48x1.5	68	10
Z5247GF6885	M68x2	85	12



APPLICATIONS

Used for the support and easy positioning of cylinders with an externally threaded body.

Before introducing the section on hydraulic cylinders, we feel it appropriate to explain in simple terms how to choose a cylinder, possibly combined with a pressure booster.

First we have to know what are the key data that are indispensable to start our calculation:

FORCE (kg) – required to move the load and specified by the customer

AIR PRESSURE (bar) – available and supplied by the air circuit

STROKE (mm) – indispensable for the type of movement to perform

LAYOUT – not to be overlooked at the design stage of the machine.

Then we can start with the mathematical calculation.

A sample calculation is given below.

For example:

Force 3000 kg

Air pressure in a 5 bar circuit

Useful stroke 20 mm

Free layout

We first identify the various cylinders available in the catalogue and analyse their characteristics to select the one appropriate for us.

We can immediately discard the series 21, 22, 23 due to their short strokes, and the series 14 because it cannot develop the force we require.

Let's focus on the series 18.

We can see that cylinders Ø36 and 40 do not generate 3000 kg, not even at 350 bar. We can therefore identify our cylinder and feel safe in choosing the Z5218685725.

The values stated in the catalogue are:

Force at 200 Bar = 5100 kg

Force at 350 Bar = 8925 kg

Surface area = 25.5 cm²

Volume = 63.80 cm³

Let's now choose the associated booster. We calculate the hydraulic pressure we need to achieve 3000 kg and divide it by the surface area of our cylinder, and we get:

$$3000\text{kg} / 25.5 \text{ cm}^2 = 118 \text{ bar}$$

Now let's move to the booster section and identify the models which, when driven by air pressure at 5 bar, can reach 118 bar oil pressure that is useful for our case.

This result should be combined with the oil volume needed by our cylinder to operate and that supplied by the booster.

We see that the boosters in the series 01 can easily reach 118 bar but they do not supply sufficient oil; conversely the oil flow rate in the series 02 is greater but it does not reach the pressure we need.

We are therefore forced to move on to the series 03.

We immediately realise that booster Z52031603210 do the job as it can develop as many as 125 bar of oil at 5 bar and supply 76-80 cm³ of oil, which is sufficient for our cylinder.

Now we only need to opt for a pneumatic or a spring return.

SERIES 18 SINGLE-ACTING SPRING-RETURN CYLINDERS WITH EXTERNAL THREADED BODY

Single-acting clamp cylinders with spring return and threaded outer body. Due to their small overall dimensions and a considerable thrust force, they are used for single or multiple locking of parts. They can be housed directly in the fixtures or in the appropriate threaded rings (see page 38). They are controlled by pressure multipliers or hydraulic pumps and are used only with oil. The 18 Series is available in 8 models.

CAUTIONS:

The cylinders can also be used at the end of the stroke because they have an internal spacer which, in addition to blocking the movement of the piston, allows you to choose the desired intermediate stroke.



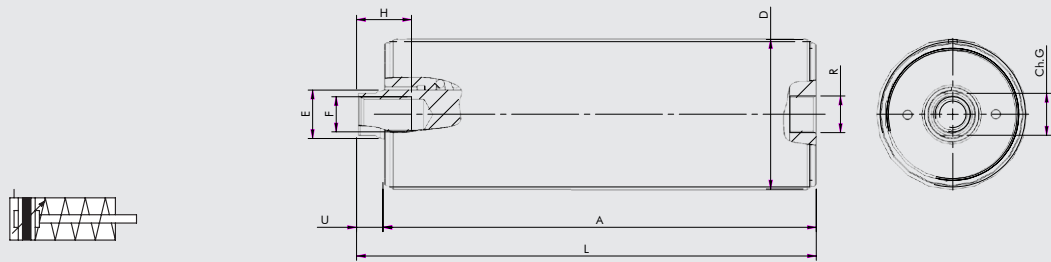
TECHNICAL DATA		SERIES 18
Bore	mm	Ø25; Ø32; Ø40; Ø55
Standard stroke	mm	for bores Ø25 and Ø32 from 1 to 30mm for bores Ø32, Ø40 and Ø55 from 1 to 50mm
Force exercised by pressure	daN	Di 200 bar 980÷4740 Di 350 bar 1715÷8500
Working temperature range	°C	-10°÷+70
Recommended oil		TORQUE O MATIC D II ATF

KEY TO CODES

Z52	14	30	22	05
	SERIES	THREADED OUTSIDE DIAMETER	BORE	STROKE (mm)
	18	36	25	Da 1 a 30
		40	32	Da 1 a 50
		48	40	
		68	55	

The new external chemical nickel plating treatment and the stems stainless steel, allow the new cylinders to be used in the food and pharmaceutical sectors.

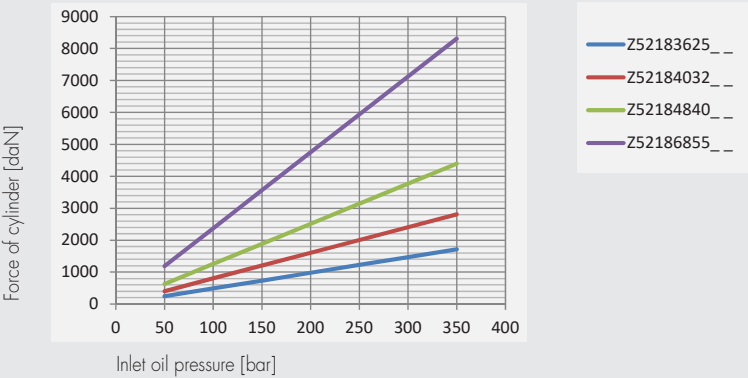
CHARACTERISTICS AND DIMENSIONS - SERIES 18



CODE	FORCE [daN]		SURFACE AREA [cm²]	OIL VOLUME [cm³]	STROKE [mm]	A	D	E	F	L	H	U	Ch.G	R
	200 bar	350 bar												
Z52183625_ _	981	1715	4.90	Min 0.49 Max 14.7	Da 1mm A 30mm	111	M 36 x 1.5	14	M 8	121	15	10	11	G 1/8
Z52184032_ _	1606	2810.5	8.03	Min 0.80 Max 40.15	Da 1mm A 50mm	167	M 40 x 1.5	16	M 10	177	20	10	13	G 1/8
Z52184840_ _	2512	4396	12.56	Min 1.25 Max 62.8	Da 1mm A 50mm	171	M 48 x 1.5	16	M 10	181	20	10	13	G 1/4
Z52186855_ _	5749	8309	23.74	Min 2.37 Max 118.7	Da 1mm A 50mm	197	M 68 x 2	22	M 16	209	25	12	19	G 3/8

FORCE/PRESSURE DIAGRAM

SERIES 18



SERIE 33 DOUBLE-ACTING CYLINDERS WITH EXTERNAL THREADED BODY

Double-acting cylinders with customizable strokes from 1 mm to 100mm and external threaded body for easy application on equipment.
The stem has an internal female thread to facilitate attachment to equipment.
They must only be used with compatible oil.



APPLICATIONS

They are used for the construction of fixtures and tools for blanking, drawing and drilling thin sheet metal and pipes.
Double acting operation is required to ensure safe return of the tool.

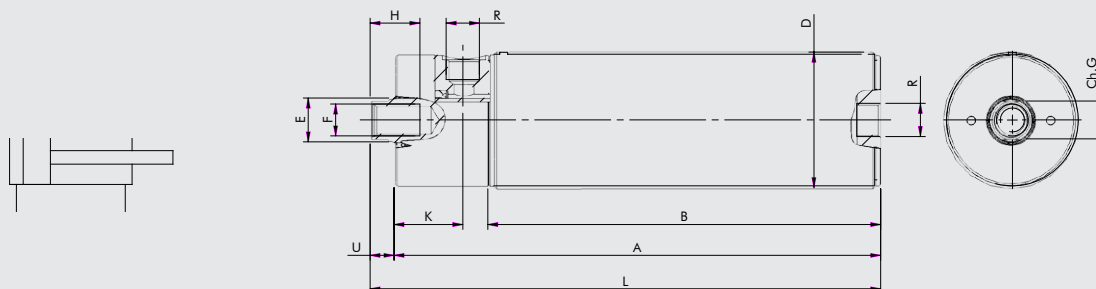
If requested, it is possible to substitute the internal seals and activate the cylinder, only during the return phase, with pneumatic pressure.

KEY TO CODE

Z52	33	68	55	50
	SERIES	THREADED EXTERNAL DIAMETER	BODE	STROKE [mm]
	33	40	32	From 1 mm to 100mm
		48	40	
		68	55	

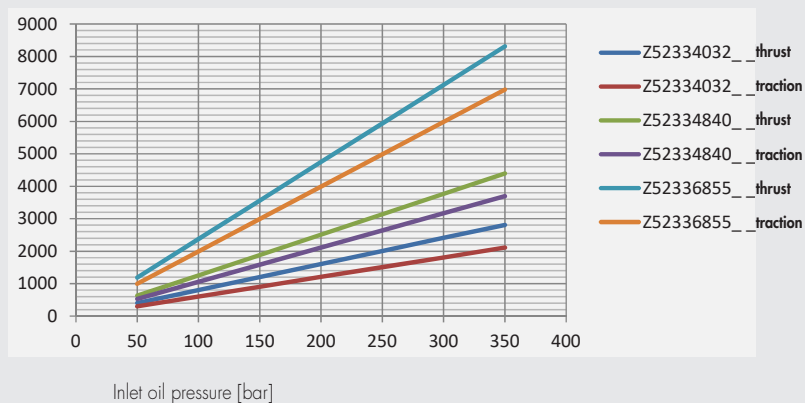
The new external chemical nickel plating treatment and the stems stainless steel, allow the new cylinders to be used in the food and pharmaceutical sectors.

CHARACTERISTICS AND DIMENSIONS



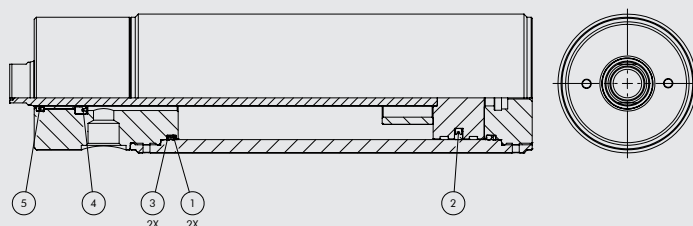
CODE	FORCE AT 250 bar [daN]		SURFACE AREA [cm ²]		VOLUME [cm ³]		CORSIA [mm]	A	B	D	E	F	H	CH. G	K	L	U	R (Oil inlet)
	Spinta	Traz.	Spinta	Traz.	Spinta	Traz.												
Z52334032__	2000	1500	8.03	6.03	Min 0.8 Max 80.3	Min 0.6 Max 60.3	Da 1 mm A 100 mm	205	167	M40x1.5	16	M0	20	13	30	215	10	G 1/8
Z52334840__	3100	2640	12.56	10.56	Min 1.25 Max 62.8	Min 1.05 Max 105.6	Da 1 mm A 100 mm	214	171	M48x1.5	16	M10	20	13	32	224	10	G 1/4
Z52336855__	5935	4985	23.75	19.94	Min 2.37 Max 118.7	Min 1.99 Max 199	Da 1 mm A 100 mm	244	197	M68x2	22	M16	25	19	34	256	14	G 3/8

FORCE/PRESSURE DIAGRAM



GASKETS KIT

Code	Bore	Refer
Z5233K40032	32	① ② ③ ④ ⑤
Z5233K48040	44	
Z5233K68055	55	



SERIES 51 HYDRAULIC BRAKE WITH M35x1.5 EXTERNAL THREAD

This brake consists of a cylinder with an external threaded body, which encloses a hydraulic circuit.

When the hydraulic brake rod is struck by a moving mass, it closes a one-way valve, forcing the oil to pass through a pin with an adjustable choke and into a chamber with a compensation tank.

When it retracts, the spring-loaded piston rod opens a valve, allowing the oil to flow freely and quickly to the initial position.

It comes in 3 models.



TECHNICAL DATA

Gasket		NBR
Standard strokes		25, 45, 70
Speed	mm/min.	10÷3000
Maximum force	kg	250
Fixing to the fixture		Supporting range
Working temperature range	°C	-10°÷+70
Recommended oil		TORQUE o MATIC DATF

APPLICATIONS

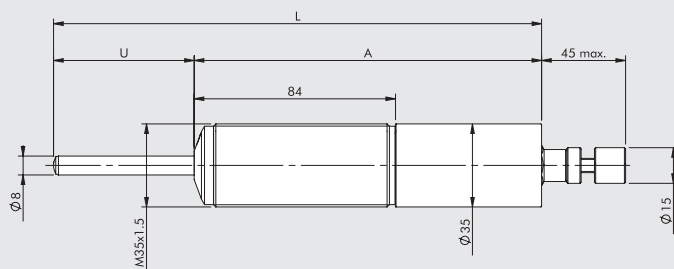
In the construction of fixtures, under certain circumstances the great advantage of a pneumatic system is offset by the inability to precisely regulate the end-of-stroke speed.

With hydraulic cartridge brakes, the speed of the last 25, 45 and 70 mm of the stroke of manual or pneumatic moving units or parts can be regulated hydraulically.

They are used for controlling the final speed of feed units, drilling machines, pneumatic cylinders and pneumatic or hand-operated moving masses.

DIMENSIONS

Code	Stroke [mm]	A	L	U
Z5251LR025N	25	115	149	34
Z5251LR045N	45	145	204	59
Z5251LR070N	70	185	268	85



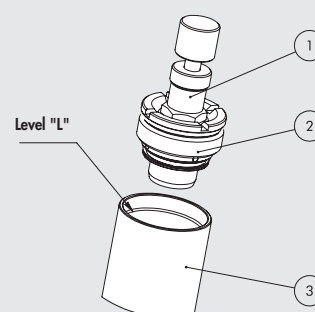
FILLING INSTRUCTIONS

1° OP.: Turn the pin (1) fully anticlockwise;

2° OP.: Turn the plug (2) anticlockwise and remove it using the spanner provided;

3° OP.: Fill the chamber (3) with the recommended oil (see DATA SHEET table) until it reaches the level mark (L), up to the thread limit;

4° OP.: Tighten the filling plug (2) turning clockwise. Excess oil will come out as you do so. Reposition the pin (1) that determines the speed. Now the brake is loaded.



SERIES V OIL FLOW REGULATOR VALVES

This section covers the range of valves regulating or interrupting the oil flow in a circuit.

Various types of valves are available and, depending on the customer requirements, they can be fitted with either SKIP (acceleration) or STOP valves, normally open or normally closed, with or without regulation needle.

The standard models are:

Z52VARE18 SKIP valve with NO control
Z52VARE18 NC SKIP valve with NC control

Z52VSSR18 STOP valve without NO control
Z52VSSR18NC STOP valve without NC control

Z52VSRE18 STOP valve with NO control
Z52VSRE18NC STOP valve with NC control

Z52VSREBY18 STOP valve with NO by-pass control
Z52VSREBY18NC STOP valve with NC by-pass control

The oil ports on the valve are G1/8 while those regarding the pneumatic valves come with an M5 thread.

The components of the pneumatic valve are made of aluminium.
 The gaskets are made of NRB and PU.

For special applications, please contact our design office.

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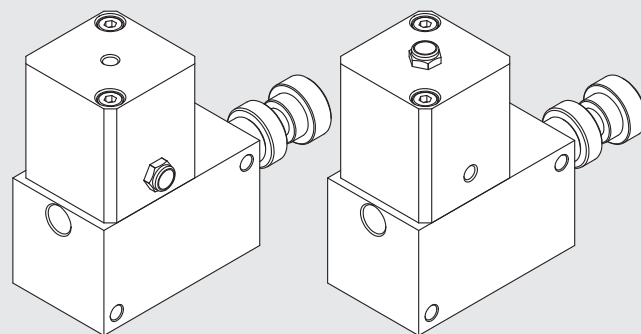
Z52VARE18 - Z52VARE18NC Z52VSRE18 - Z52VSRE18NC

These are SKIP and STOP valves with regulation needle and can be normally open (NO) or normally closed (NC).

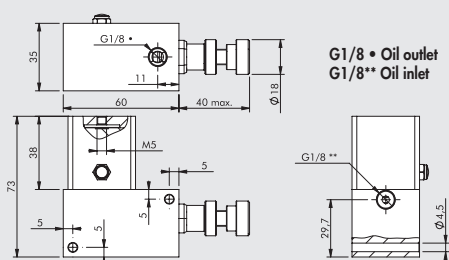
The oil enters in the G1/8 hole at the front and flows through the STOP or SKIP valve.

The STOP NO valve, when enabled, immediately stops the flow, while the SKIP NO valve deviates it and force the oil to flow through the regulator and get it come out from the hole underneath.

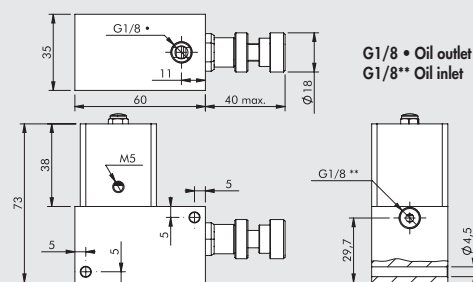
In the NC versions the flow is normally interrupted.



Z52VARE18
Z52VARE18



Z52VARE18NC
Z52VSRE18NC

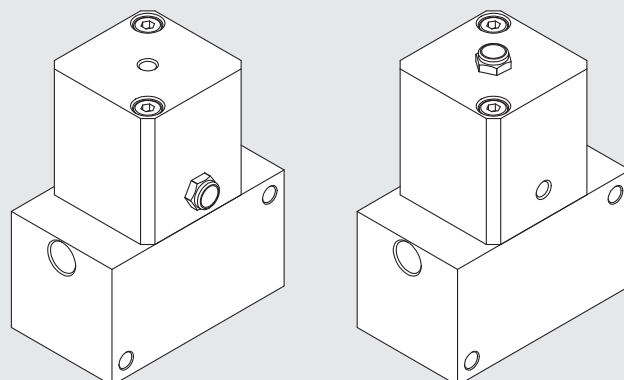


Z52VSSR18 - Z52VSSR18NC

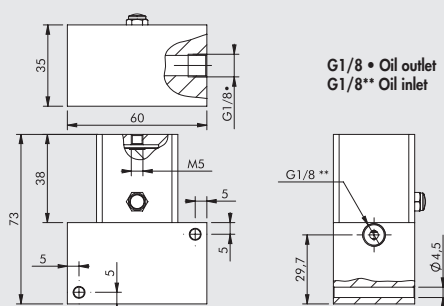
These are STOP valves without a regulation needle. They can be either normally open or normally closed.

The oil enters the G1/8 hole at the front and flows through the NO STOP valve which, when enabled, immediately stops the flow. When the valve is depressurized, the oil comes out of the hole underneath.

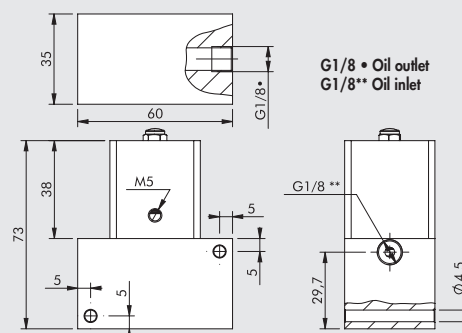
In the NC versions the flow is normally interrupted.



Z52VSSR18



Z52VSSR18NC



Z52VSREBY18 - Z52VSREBY18NC

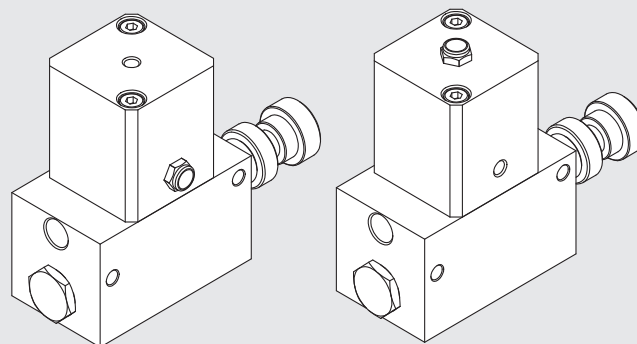
These are STOP valves with a regulation needle. They can be either normally open or normally closed and feature a bypass circuit inside.

At the delivery stage, the oil enters the G1/8 hole at the front and flows through the NO STOP valve which, when enabled, immediately stops the flow.

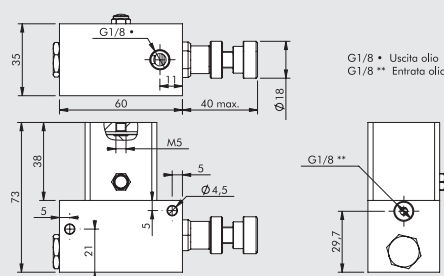
When the valve is depressurized, the oil flows through the desired regulator and comes out of the hole underneath.

At the return stage, the oil does no longer follow the same delivery route but flows through a by-pass circuit, skips the valve and is drained off immediately to allow for a quicker return.

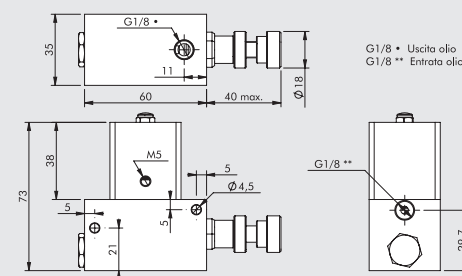
In the NC versions the flow is normally interrupted.



Z52VSREBY18



Z52VSREBY18NC



SPECIAL PRODUCTS

This section contains our increasingly wide range of special products.

Our strength consists of assisting the customer step by step at the design stage and the subsequent development of the desired product, always maintaining a direct exchange of information to facilitate and speed up the entire process.

These articles are used on all the equipment requiring the installation of parts with oversized or reduced dimensions, with high pressure hose pipes, remote flow regulators and much more besides.

Below is a list and a brief description of our main special articles.

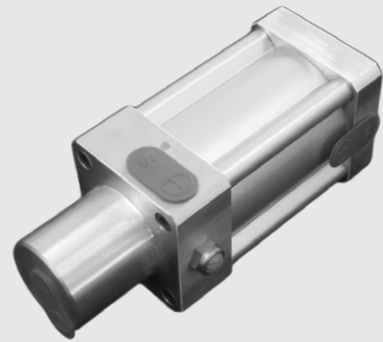
MULTIPLIERS

SPECIAL FEATURES:

Pneumatic liner Ø63.
Pressure ratio 3:1
Special seals for oil DOT 4

USE:

Fitted on a tool machine with a flywheel and hydraulic clamps.
The pressure generated by the booster closes the clamps that stop flywheel rotation.

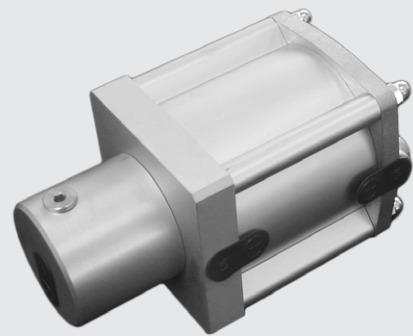


SPECIAL FEATURES:

Air/water booster
Pressure ratio 4:1
Special seals for water

USE:

Used as a test instrument in boiler systems to detect any water leakage in the circuit.



SPECIAL FEATURES:

Oil/oil booster
Pressure ratio 16:1
Special seals for high pressure

USE:

Used on equipment requiring high pressures with special layout.



SPECIAL FEATURES:

Increased stroke 200mm.

Increased oil volume

USE:

Thanks to its high oil flow rate, it can drive long-stroke cylinders requiring a higher volume of oil than the standard.


SPECIAL FEATURES:

Surface treatment of chemical nickel-plating.

USE:

Since it is used on equipment in contact with food, all the external parts are treated with a special process of chemical nickel-plating associated with dehydrogenation.


SPECIAL FEATURES:

Equipped a with a manifold.

Air ports on the opposite side compared to the standard side.

USE:

Supplied complete with a manifold to control several cylinders in a single supply.



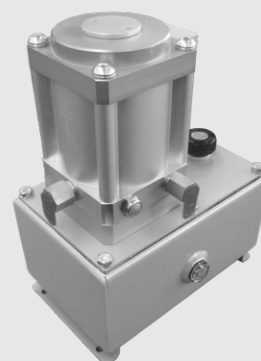
PUMPS

SPECIAL FEATURES:

Special fittings

USE:

Supplied complete with special fittings to facilitate and speed up the installation on equipment.



MIXING NOZZLES

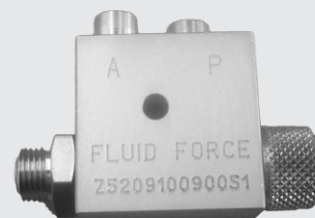
SPECIAL FEATURES:

Special G1/8 fitting

USE:

Thanks to the special G1/8 fitting, it can be fitted directly onto the machine to be lubricated.

We can make nozzles of different materials and with surface treatments on request.



EQUALIZERS

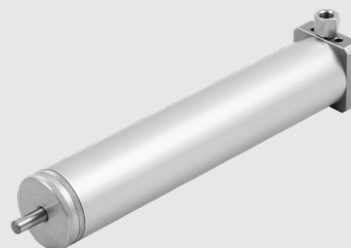
SPECIAL FEATURES:

Liner Ø40

Reduced layout

USE:

Thanks to its minimal layout, it offsets small amounts of oil.



LUBRICATORS

SPECIAL FEATURES:

Oversized oil tank

USE:

This is a lubricator with micrometric regulation of lubrication, guaranteed connection at low flow rates and with an oil tank bigger than the standard.



CYLINDERS

SPECIAL FEATURES:

Liner inside Ø40
Stroke 40 mm

USE:

Mounted on agricultural machinery



SPECIAL FEATURES:

Special layout with a hole for oscillation.

USE:

The hole in the upper part of the liner facilitates the attachment and oscillation on a moulding machine.
When the mould descends, the cylinder acts as a cushion and dampens the blow.



SPECIAL FEATURES:

Mechanical locking with Belleville springs

USE:

Used for thrust functions, these cylinders are ideal when a permanent, safe locking at a constant force is required for an indefinite time, without maintaining the connection under permanent pressure using control units or other means.



SPECIAL FEATURES:

Double-acting cylinder
Equipped with a regulator for descent

USE:

A double-acting cylinder mounted on a press can regulate the piston rod stroke by means of a retainer so as to ensure constant operation.



SPECIAL FEATURES:

Double-acting cylinder
Short stroke

USE:

Mounted on machines cutting low-thickness sheet metal.

**SPECIAL FEATURES:**

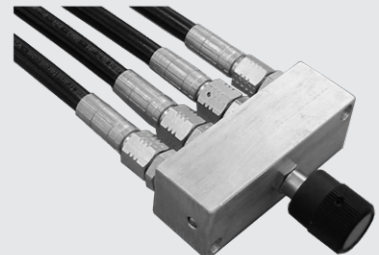
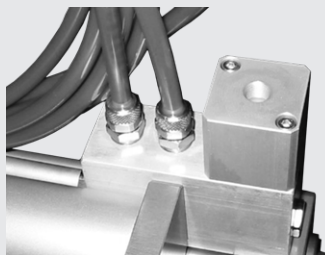
Vertical regulation
Side loading valve

USE:

Due to a problem of layout, the rear part of the brake must not have protrusions, so both regulation and filling operations are made laterally.

**REGULATION**

- Remote regulation with Rilsan tubes and Tognella regulators;
- Remote regulation with high-pressure R7 / R1 tubes and Tognella regulators;
- Single-turn and multi-turn regulation

**SPECIAL FEATURES:**

2 brakes with one regulation
Remote regulation unit with high-pressure pipes

USE:

Mounted on a large diameter cylinder, they are used as a guide for simultaneous descent.

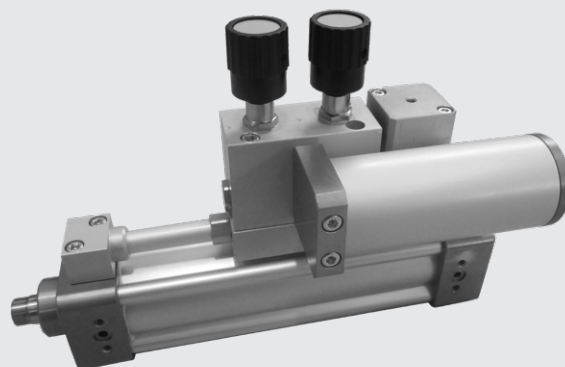


SPECIAL FEATURES:

Tank rotated by 180°
Special regulators

USE:

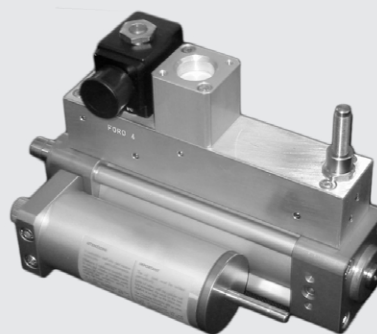
Being subjected to continuous, constant manual regulation, it requires easy-to-handle and accessible grips.


SPECIAL FEATURES:

Special valve unit complete with vertical regulation, electric valve and manual release valve.

USE:

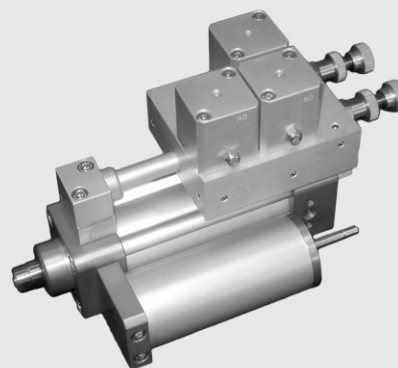
Mounted on safety locks, it requires an electric control of the valve and manual release in case of emergency.


SPECIAL FEATURES:

Double regulation in one direction.
Multiple regulation block with 3 valves.

USE:

It is mounted on a welding machine carrying out different machining. During the first cycle a quick-feed valve and a stop valve are used for a type of welding. During the second cycle the brake is required to stop only at the desired position and complete the other welding.


SPECIAL FEATURES:

Remote tank connected to a high-pressure pipe.

USE:

Mounted on woodworking machinery, it performs a high number of cycles, which is why it causes oil overheating. With the tank placed at a certain distance, this problem can be avoided.

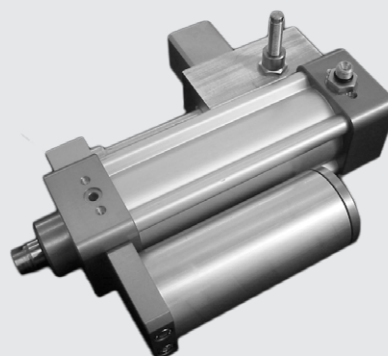


SPECIAL FEATURES:

Side regulation needle without knob
Side loading valve

USE:

For overall dimension problems, it is provided without the regulation knob.

**SPECIAL FEATURES:**

Remote regulation with high-pressure pipes
Multi-turn regulator
Dual electric acceleration-stop valve
Customised special heads

USE:

Mounted on saws and cutters. Regulation should be positioned on a control panel distant from the brake.

**SPECIAL FEATURES:**

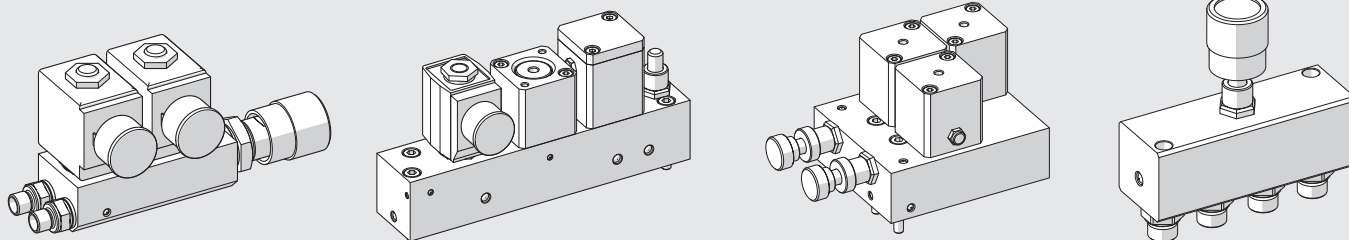
Remote regulation with Rilsan pipes
Tognella regulator

USE:

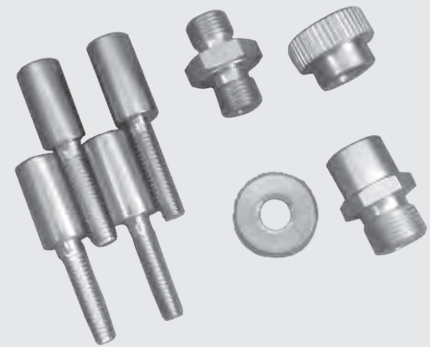
Grinding machines equipped with low-pressure cylinders (max force generated 120 kg). For this reason, the remote Tognella regulator is connected by Rilsan pipes.

**CONTROL**

- Special blocks of valves according to drawing;
- Blocks for electric valves;

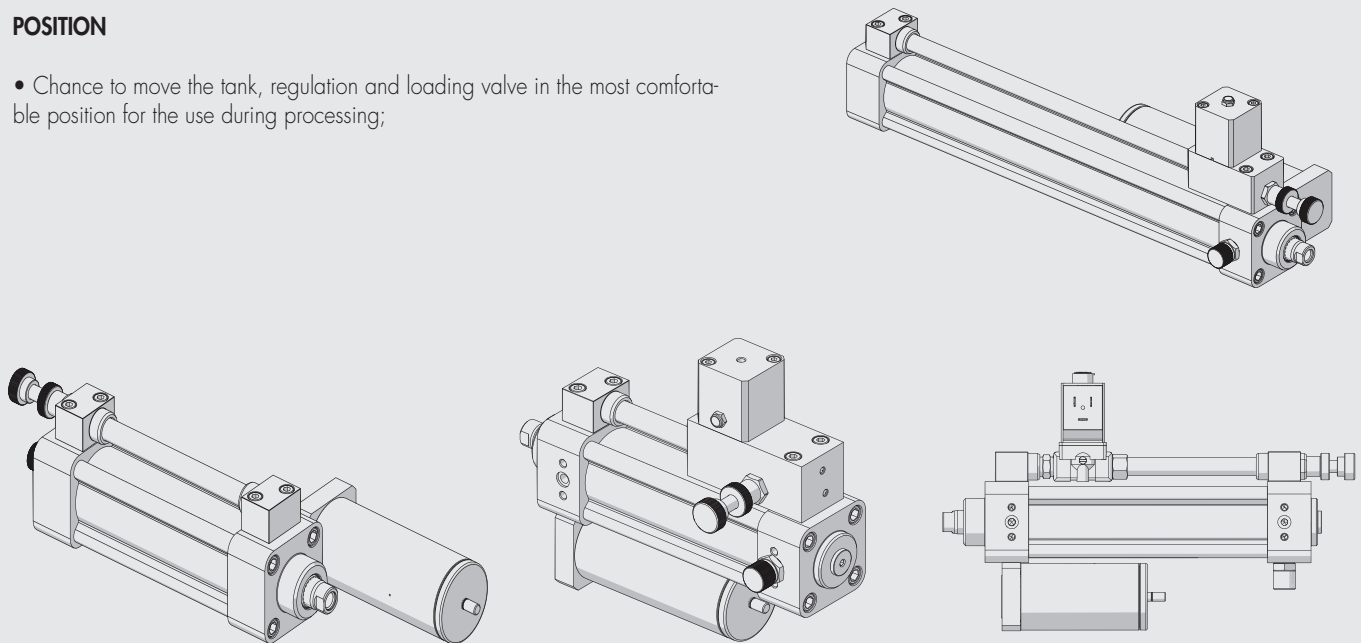


- FKM / FPM gaskets;
- High temperature gaskets,
- Surface treatment of chemical nickel plating with stainless steel rod (for food uses)



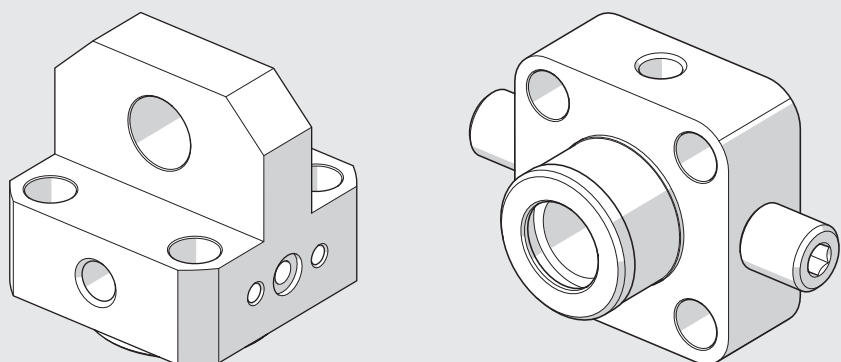
POSITION

- Chance to move the tank, regulation and loading valve in the most comfortable position for the use during processing;



HEADS

- Special heads with integrated hinge;
- Special heads with integrated pins.



VERTICAL HYDROPNEUMATIC UNIT

SPECIAL FEATURES:

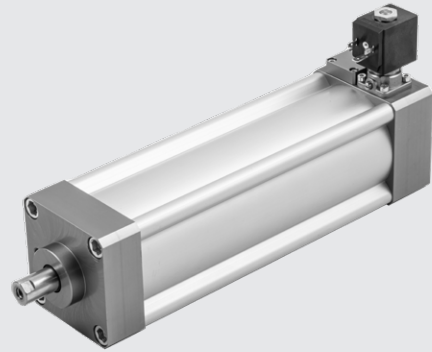
Air/oil vertical automatic hydropneumatic unit with upward rod.

Thrust Bore Ø80

Strokes on request

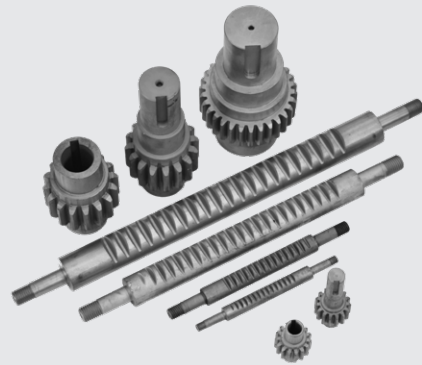
USE:

Equipped with 1 or 2 solenoid valves which control the speed or the stop of the rod in any required position.



STRUCTURES AND PROCESSINGS

We have the chance to manufacture pinions and racks having special diameters and modules.



NOTES

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