

Pressure converter, pneumatic-hydraulic, single action

Operating pressure max. 225 bar, 230 bar

Conversion ratio 1:32, 1:33

Compressed air from the mains is converted into hydraulic high pressure by these pressure converters. Without this converting facilities, many clamping problems cannot be solved at all or only at high costs.

Technical characteristics

- The large oil tank automatically supplies the system with fresh oil according to the needs.
- Hydraulic piston with guide rings.
- The backstroke is produced by spring retraction. This offers the advantage of low air consumption and a single valve system.
- The moving parts are made of corrosion protected materials.

Contrary to hydraulic pumps, the maximum output of the pressure converter is restricted to one stroke.

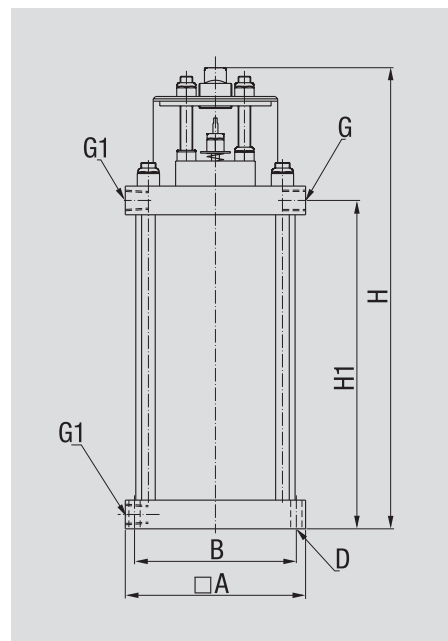
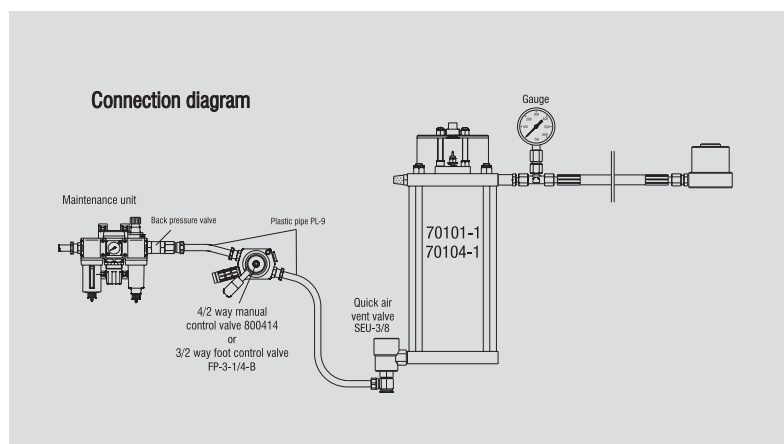
The amount of oil required per stroke is calculated as follows:

ATTENTION: A reserve of 20% should be taken into account!

Cylinders number x piston surface x stroke

Included accessories

- Connecting nipple R-1/4-1/4NPT (Air side)
- Adapter SAE4-1/4NPT (Oil side)
- Straight screw connection D8L-1/4NPT (Oil side)



Model no.	Ratio	Air pressure		Air consumption at 6 bar [l/stroke]	Operating pressure [bar]	Oil quantity/ stroke [cm³]	Oil volume (reservoir) [cm³]	A [mm]	B [mm]	D [mm]	H [mm]	H1 [mm]	Connection		Weight [kg]
		min	max.										Oil side	Air side	
		[bar]	[bar]										G	G1	
70101-1	1:33	3	7	5	230	16	170	103,2	115	7,2	295	210	SAE 4	1/4NPT	4,5
70104-1	1:32	3	7	16	225	64	690	146	165	8,6	435	335	SAE 4	1/4NPT	11



Operating pressure max. 256 bar

Conversion ratio 1:30

Compressed air from the mains is converted into hydraulic high pressure by these pressure converters. Without this converting facilities, many clamping problems cannot be solved at all or only at high costs.

Technical characteristics

- Metal oil tank with oil level indicator
- Fast backstroke by the 2.air line
- Works in vertical and horizontal position

CUSTOMER BUILD VERSIONS (E. G. HIGHER PRESSURE, HIGHER OIL QUANTITY/STROKE) POSSIBLE.

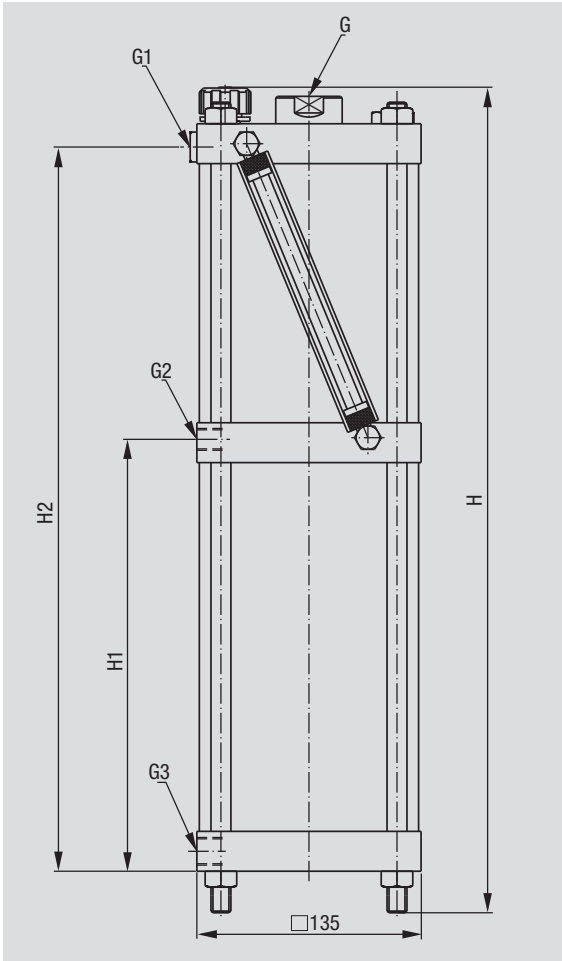
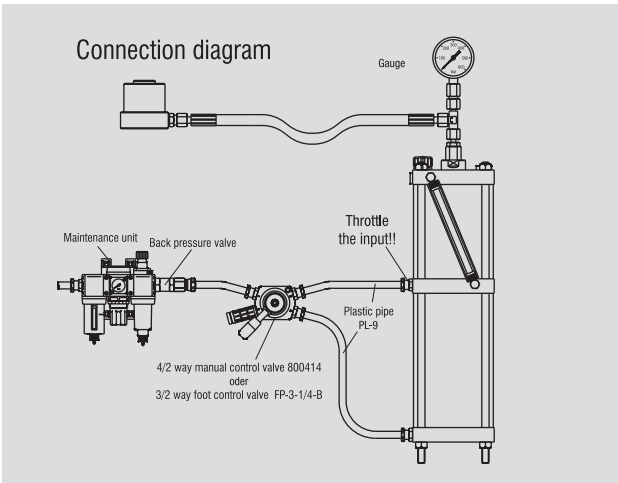
Contrary to hydraulic pumps, the maximum output of the pressure converter is restricted to one stroke (see table).
The amount of oil required per stroke is calculated as follows:

Cylinders number x piston surface x stroke

ATTENTION: A reserve of 20% should be taken into account!

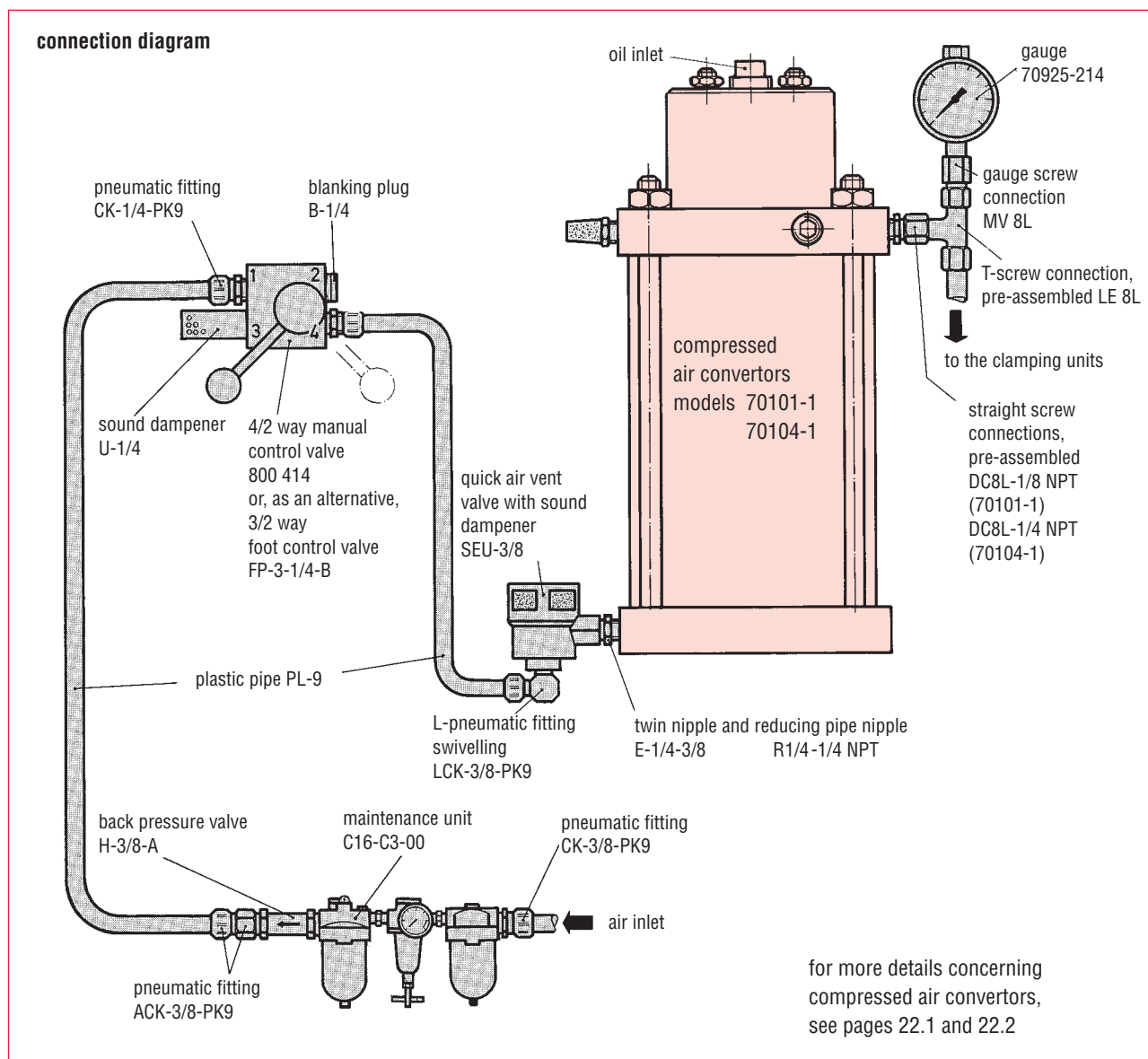
Included accessories

- Screw connection CK-1/4-PK9 (Air side)
- Screw connection CK-3/8-PK9 (Air side)
- Adapter GWR-3/8-1/4 (Oil side)
- Screw connection D8L-1/4 (Oil side)



Model no.	Ratio	Air pressure		Air consumption	Max . operating	Oil cunatity/	Oil volume	A	H	H1	H2	Connection				Weight
		min	max.	at 6 bar	pressure	stroke	(reservoir)					Oil side		Air side		
		[bar]	[bar]	[l/Hub]	[bar]	[cm³]	[cm³]	[mm]	[mm]	[mm]	[mm]	G	G1	G2	G3	
70104-2	1:30	3	7	16	210	64	690	135	ca. 500	260	436	G3/8	G1/4	G1/4	G3/8	11

Pressure convertor, pneumatic-hydraulic, single action



When assembling the compressed air convertor, take care that it is mounted in an upright position, close to and – if possible – above the clamping unit. On the air side, the pressure convertor is connected to the compressed air supply via a maintenance unit, a back pressure valve and a three-way valve.

The backstroke of the piston is carried out by spring retraction. This ensures economic compressed air consumption.

A quick air vent valve with a sound dampener should be fitted directly at the air inlet of the pressure convertor to provide rapid ventilation and dampening of the noise emitted by the pressure convertor.

The pressure convertors have 3 or 4 oil outlets.

An oil pressure gauge should be connected to one of the oil outlets in order to monitor the oil pressure of all oil outlets.

The pressure convertor's size (its effective oil volume) and the conversion ratio depend on the oil consumption and the maximum

permitted operating pressure of the clamping units. The maximum operating pressure should never be exceeded.

It is advisable to rely on the value indicated for the clamping cylinder as the maximum operating pressure and to divide this value by the conversion ratio (e.g. 33). It is then easy to set the resulting air pressure on the pressure regulator of the maintenance unit.

You can find out the oil consumption of a clamping unit by the following calculation:

$\text{piston surface (cm}^2\text{)} \times \text{stroke (cm)} = \text{oil consumption (cm}^3\text{)}.$

The addition of all oil consumption values will give you the total oil consumption value.

A reserve of 20% should be taken into account. A detailed assembly and repair instructions booklet is enclosed with each delivery.

Maximum Operating Pressure 350 bar

Workpieces can be efficiently clamped using this two-speed hydraulic pump with our single acting hydraulic clamping cylinders. If compressed air or hydraulic mains supply are not available (e. g. out-doors assembly work, energy failure etc.), the clamping units can be supplied with high pressure by means of this hand pump. Furthermore, this pump can be used to raise loads, to align or dismantle components, for carrying out adjustments and clamping procedures, and for a wide variety of other applications.

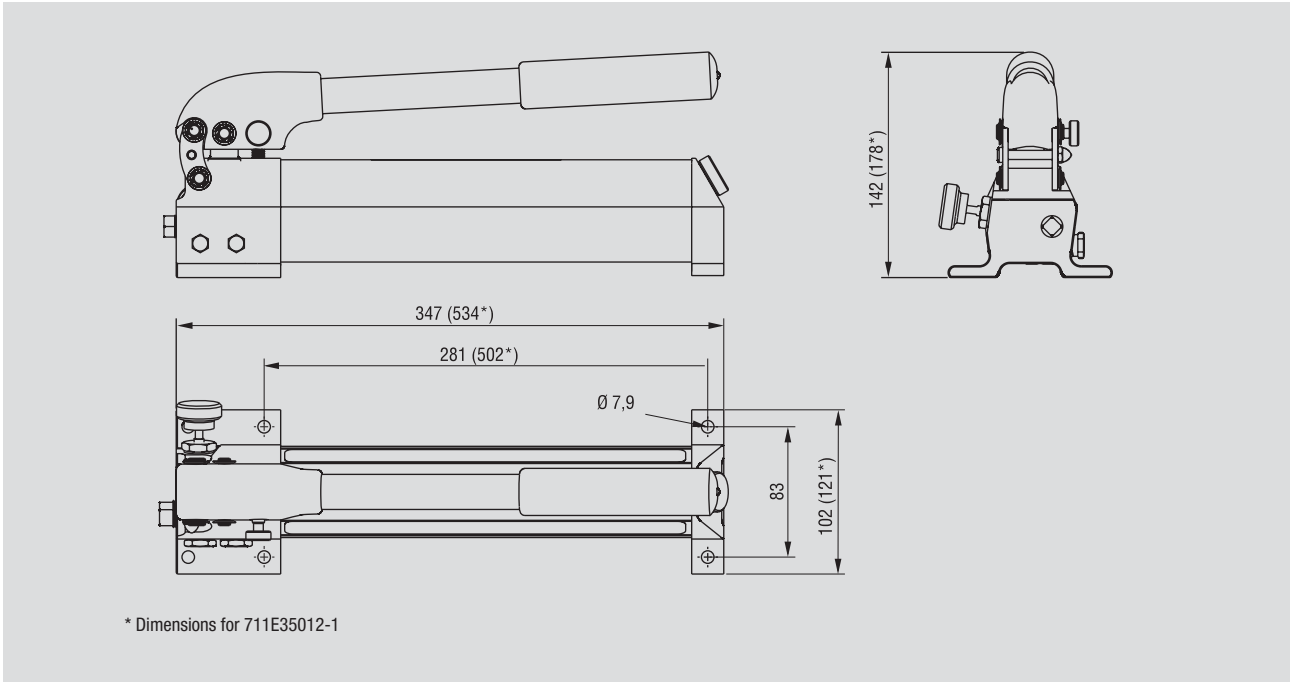
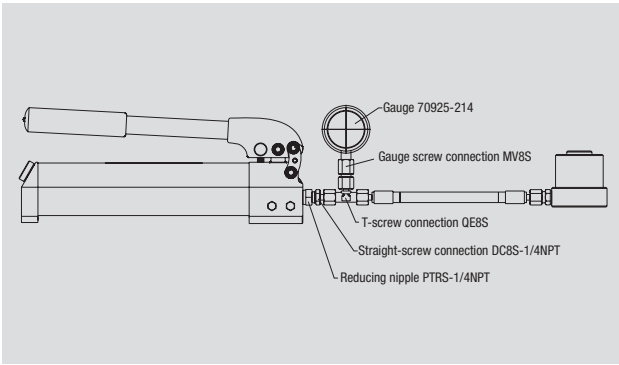
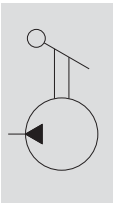
Features

- All metal constructions, won't burn through in welding environments
- Two-speed reduces handle strokes so you work faster and easier
- Formed metal handle provides less flex, and reduces operator fatigue
- Relief valve inboard of check valve prevents loads from drifting down
- Large valve knob gives added control for slowly metering loads down

Included Accessories

- 1 Reducing nipple, model no. PTRS-1/4NPT
- 1 Straight screw connection, model no. D8S-1/4NPT

Symbol



Model no.	Oiloutput/stroke		Max. pressure		Handle Effort	Reservoir		Weight
	LP [cm³]	HP [cm³]	LP [bar]	HP [bar]		Oilcapacity [cm³]	usable Oilcapacity [cm³]	
711E35004-1	4,1	0,9	59	350	37	475	443	2,3
711E35012-1	12	2,6	59	350	44	1131	1082	4,1

Air hydraulic pumps, single action

Max. operating pressure 210 bar, 700 bar

Conversion ratio 1:30, 1:100

This air hydraulic pump can activate a higher number of clamping cylinders simultaneously due to the tank volume of 1600 cm³.

The compact lightweight design allows to set up the pumps wherever required.

Technical characteristics

- Switching on the pump and releasing the hydraulic system's pressure is carried out by foot activation or by using a remote hand control. In case the input pressure decreases or the air supply completely fails, an integrated back pressure valve prevents pressure loss in the clamping circuit.

- Aluminium tank

Included accessories

Air side:

1 transition nipple, order no. **R1/4-1/4 NPT**

Oil side:

1 reducing nipple, order no. **PTRS-1/4 NPT**

1 straight screw connector,

order no. **D8L-1/4 NPT** or **D8S-1/4 NPT**

See pages 25.7 to 25.13 for all screw connections



models no. **70130, 70130-Y12**
with foot control



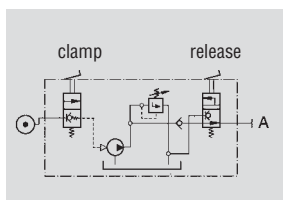
models no. **70130-Y12-F**
with remote control

See page 22.6 for sample connection.

Schematic diagram

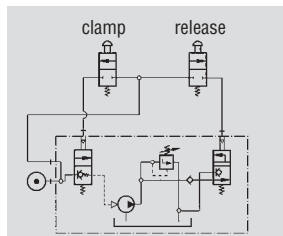
Model 70130

Model 70130-Y12

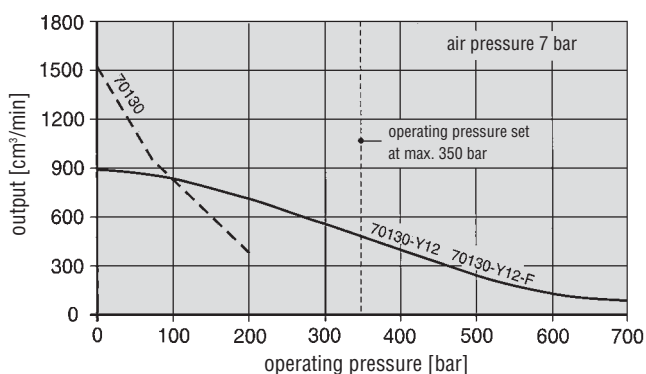


Schematic diagram

Model 70130-Y12-F

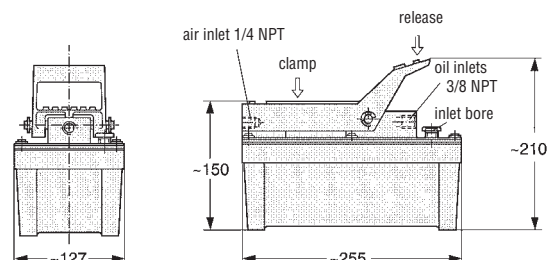


Output characteristics

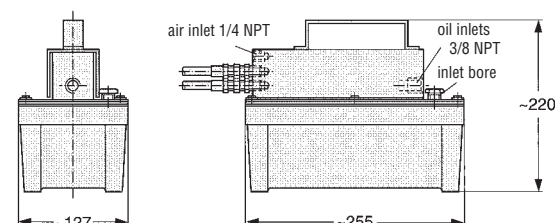


models **70130** und **70130-Y12**

connection example see p. 21.3 and p. 25.15



model **70130-Y12-F**



Model no.		Ratio	Oil content of the pump [cm³]	Useable oil quantity [cm³]	Air inlet pressure		Max. operating pressure [bar]	Air consumption at 6 bar [m³/min]	Sound level [dB (A)]	Weight ~	
with foot control	with remote control				min. [bar]	max. [bar]				with foot control [kg]	with remote control [kg]
70130	—	1 : 30	1720	1600	3	7	210	0,5	72	6,5	—
70130-Y12	70130-Y12-F	1 : 100	1720	1600	3	7	700	0,5	72	6,5	8,3

Maximum operating pressure 700 bar

Conversion ratio 1:100

The functioning method of this air hydraulic pump is the same as that of model 70130-Y12, except that it is actuated by the manual valve.

This pump actuates both single and double acting cylinders.

Technical characteristics

- An integrated back pressure valve prevents pressure loss in the clamping circuit. In case of a pressure drop of about 10 bar within the clamping circuit, the pump automatically restarts to pump oil in order to restore the set pressure.
- Aluminium tank

Recommended Accessories:

Air side:

1 transition nipple, order no. **R1/4-1/4 NPT**

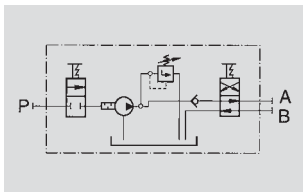
Oil side:

2 reducing nipples, order no. **PTRS-1/4 NPT**

2 straight screw connectors, order no. **D8S-1/4 NPT**

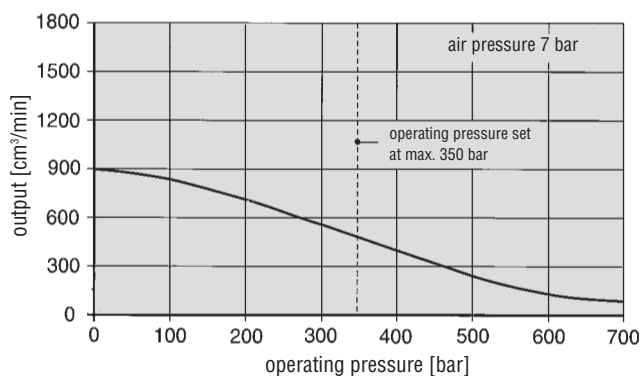
See pages 25.7 to 25.13 for all screw connections.

Schematic diagram

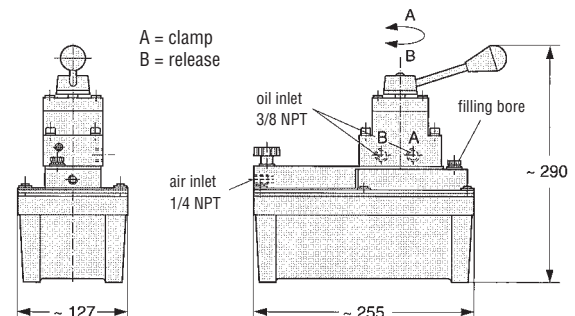


air hydraulic pump, model 70130-Y12-F for operating single action cylinders on a rolling table

Output characteristics



Connection example, see p. 25.15



Model no.	Ratio	Oil content of the pump [cm³]	Useable oil volume [cm³]	Air inlet pressure min. [bar]	Air inlet pressure max. [bar]	Max. operating pressure [bar]	Air consumption at 6 bar [m³/min]	Sound level [dB(A)]	Weight ~ [kg]
70130-Y12-H	1 : 100	1720	1600	3	7	700	0,5	72	8,4

Air hydraulic pump

Max operating pressure 360 bar

Conversion rate 1:60

The Air-Hydraulic-Pump 70130-HW1DP is a pneumatically operated, valve controlled reciprocating pump, with a conversion ration of 1:60. Hydraulic output pressure is controlled by regulating the input air pressure. An inlet pressur of 5 bar air produces 300 bar outlet oil pressure.

Features

- 1 conversion rate
- high no-load output flow
- horizontal or vertical installation
- changeover from continous pump operation (automatic pump action increase in case of pressure drop) to stop mode (step-by-step extension of the cylinder)
- 2,5 litre tank volume
- oil level indicator
- 1 circuit (single or double action)

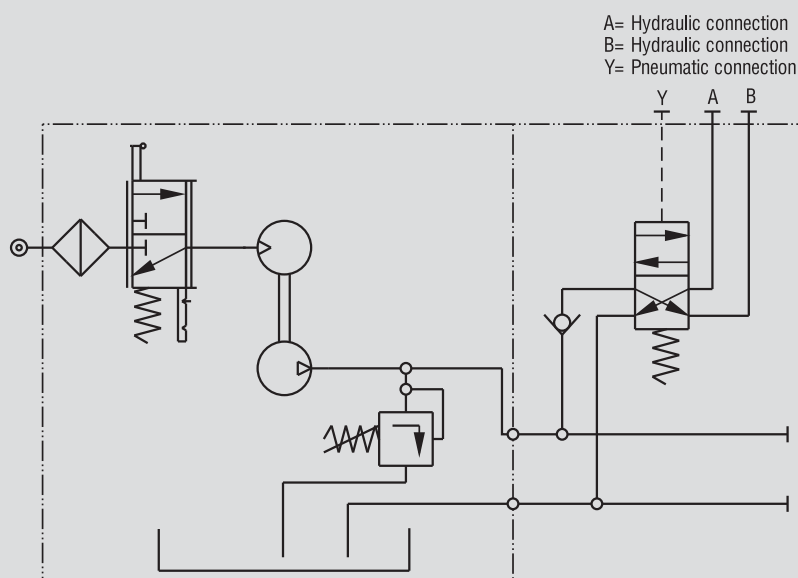
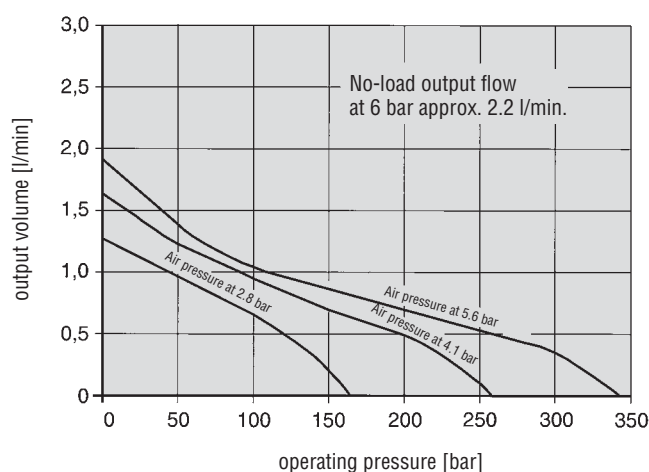
Recommended accessories (separate order)

2 pneumatic fitting no. **CK-1/4-PK6**

Schematic diagram



Output characteristics

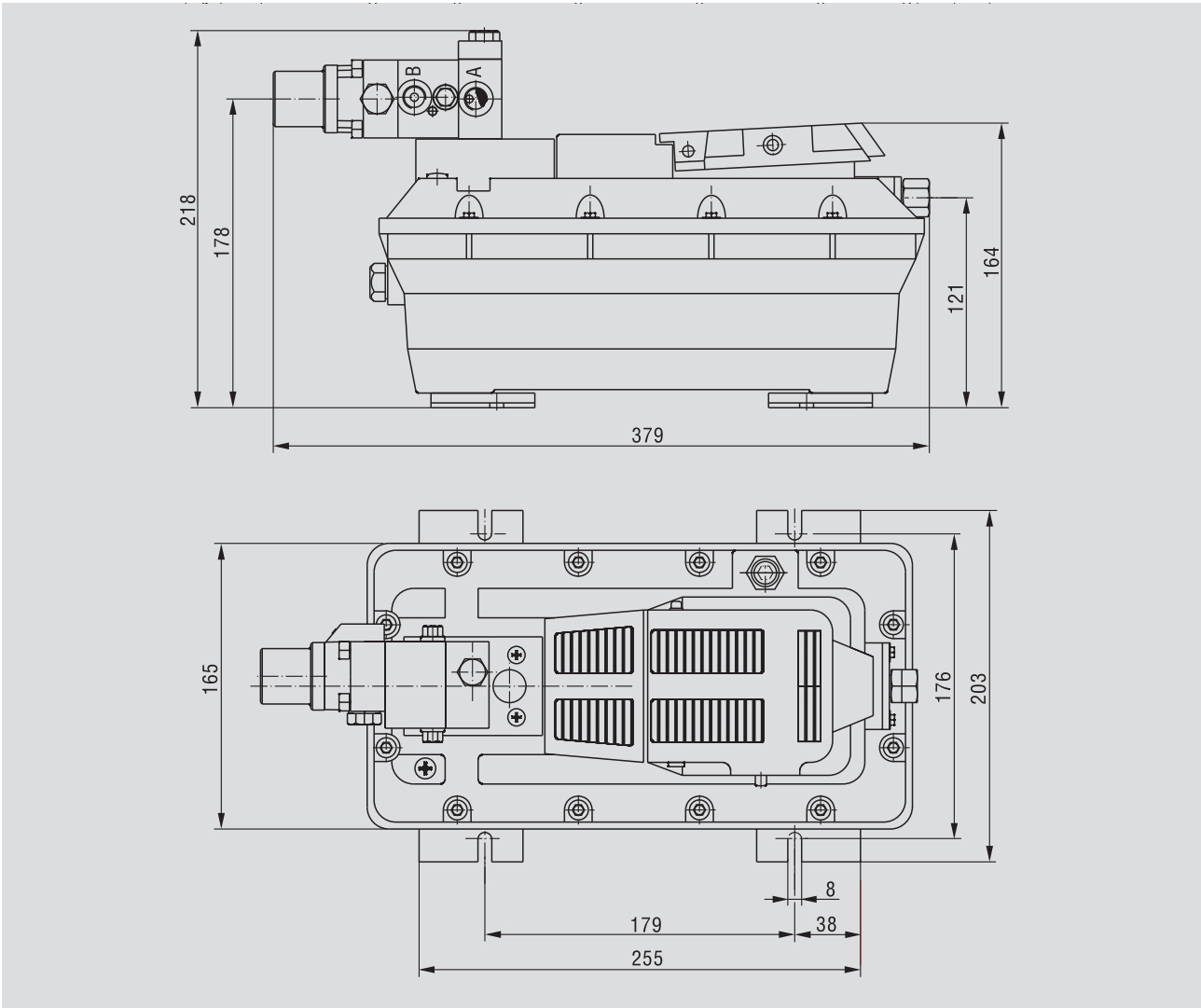
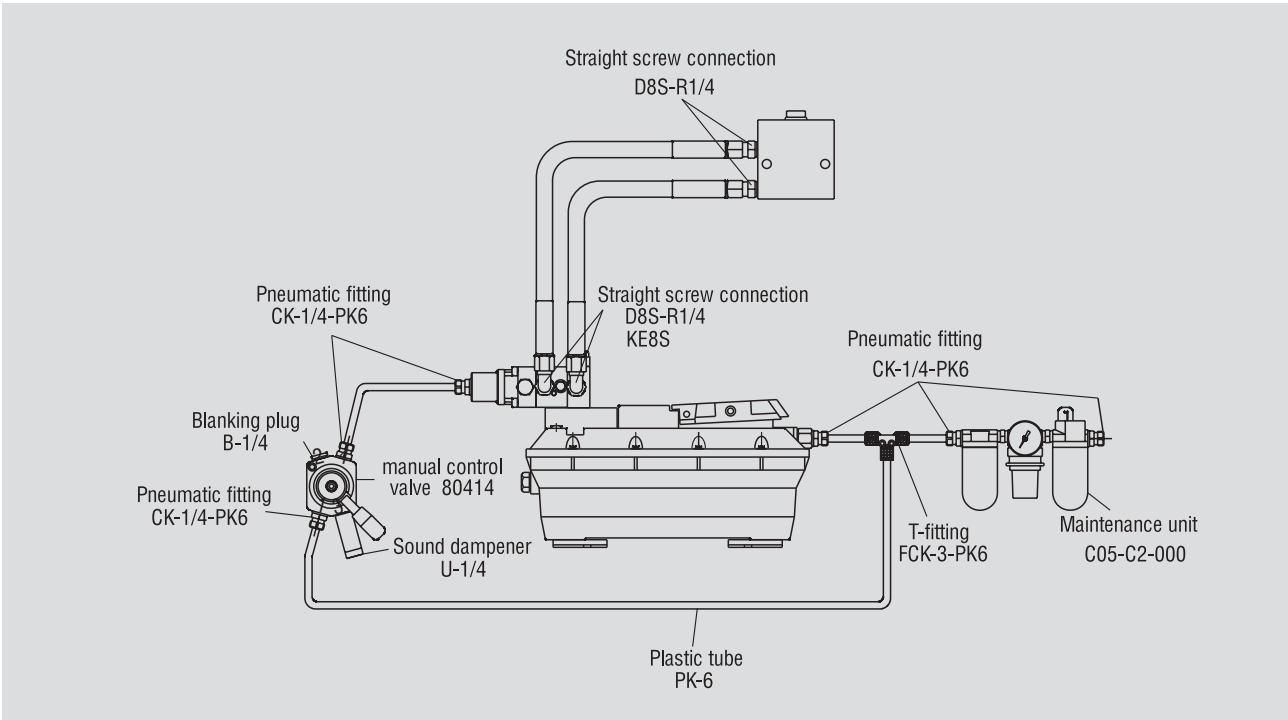


Model no.	Control valves activation	Type of actuation	Oil content of the pump cm ³	Useable oil qunatity cm ³	Air inlet pressure		Air consumption at 6 bar m ³ /min	Sount level db	Weight kg
					min. [bar]	max. [bar]			
70130-HW1DP	1 Circuit* pneumatic*	Clamping/ punching	2500	2100	3	6	0,5	79	6,4

*Pump with more than one circuit or with electrically controlled valves also available on request

Connection diagram

In this connection diagram you can see the air-hydraulic-pump 70130-HW1DP, double action control, with pneumatic controlled valves.



Air hydraulic pumps, single and double action

Operating pressure max. 150 bar, 360 bar, 600 bar.

Conversion ratio 1:25, 1:60, 1:100

These air hydraulic pumps are designed for various hydraulic applications, especially for intermittent operation. By connecting a 3/2-way or 4/2-way pneumatic valve, the built-in hydraulic valves for stroke and backstroke can be actuated. The pumps are complete, and only have to be connected to the existing compressed air supply.

Technical characteristics

- Pressure build-up almost pulsation free
- Compact pump - low required space
- Different conversion ratios available
- Integrated back pressure valve leads to reduced air consumption
- In case of a pressure drop of approximately 10 bar within the pressure circuit, the pump automatically restarts to pump oil in order to restore the set pressure.
- Control of connected cylinders effected by a pneumatic manual or foot valve

Recommended accessories (separate order)

AIR SIDE

1 4/2-ways manual-control-valve **800414** or

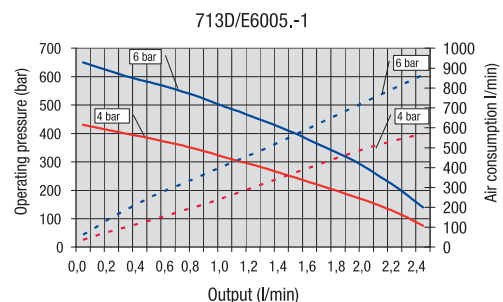
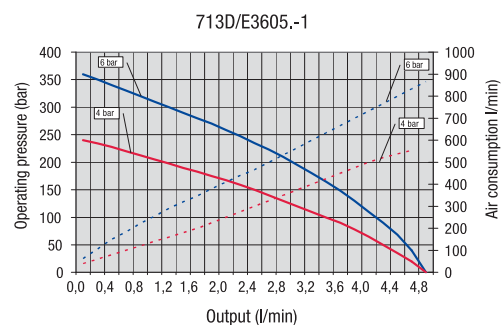
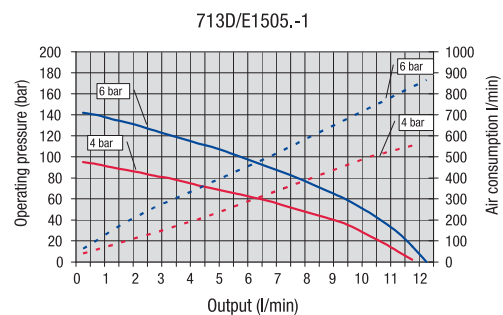
1 3/2-way-foot-control-valve **FP-3-1/4-H**

2 screw-in connections **CK-1/4-PK6**

1 screw-in connections **CK-3/8-PK9**

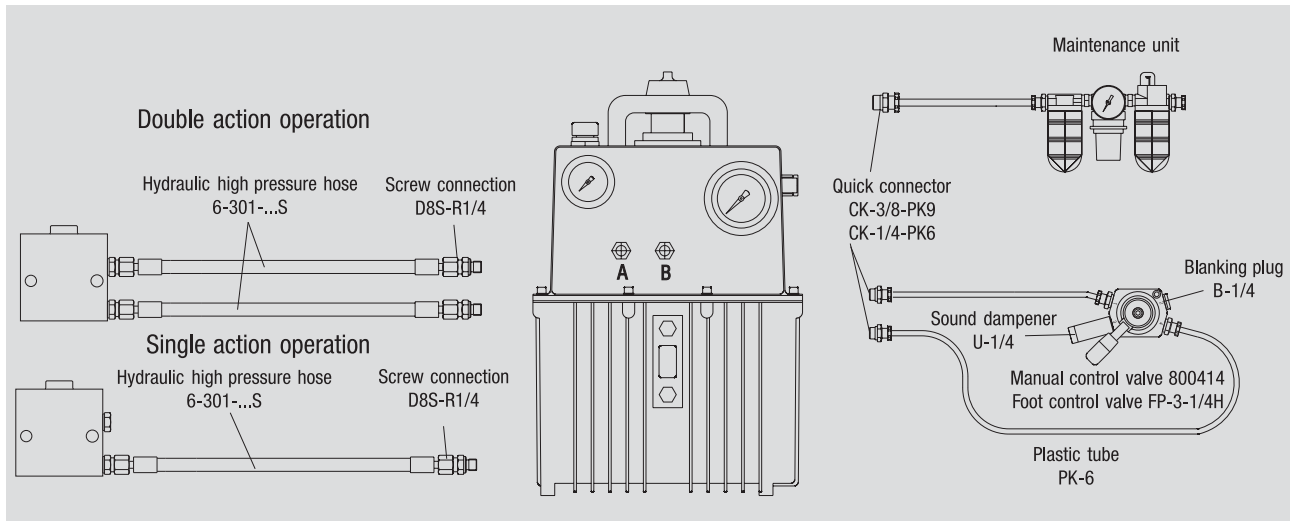
OIL SIDE

1 or 2 straight screw connections **D8S-R1/4**

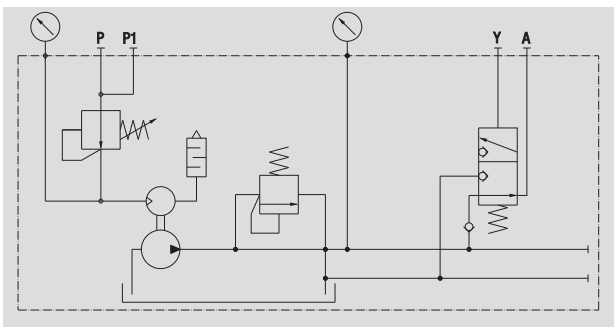


Model-no.		Conversion ratio	Operating pressure max. [bar]	Oil content of the pump [l]	Usable oil amount [l]	Input air pressure		Connections	Sound level [dB(A)]	Weight ~ [kg]
single action	double action					min. [bar]	max. [bar]			
713E15051-1	—	1 : 25	150	8	5,5	1,5	6	1xG1/4	65	30
—	713D15051-1	1 : 25	150	8	5,5	1,5	6	2xG1/4	65	31
713E36051-1	—	1 : 60	360	8	5,5	1,5	6	1xG1/4	65	30
—	713D36051-1	1 : 60	360	8	5,5	1,5	6	2xG1/4	65	31
713E60051-1	—	1 : 100	600	8	5,5	1,5	6	1xG1/4	65	30
—	713D60051-1	1 : 100	600	8	5,5	1,5	6	2xG1/4	65	31

Connection diagram: in this connection diagram you can see an air hydraulic pump, double action, with pneumatic control. On a single action design, the connection B does not apply.

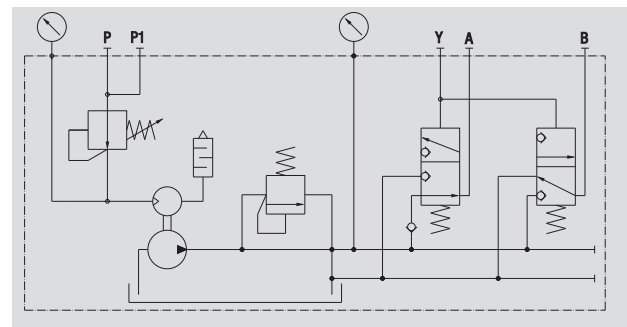


Clamping circuit combinations



1 clamping circuit*, single action*

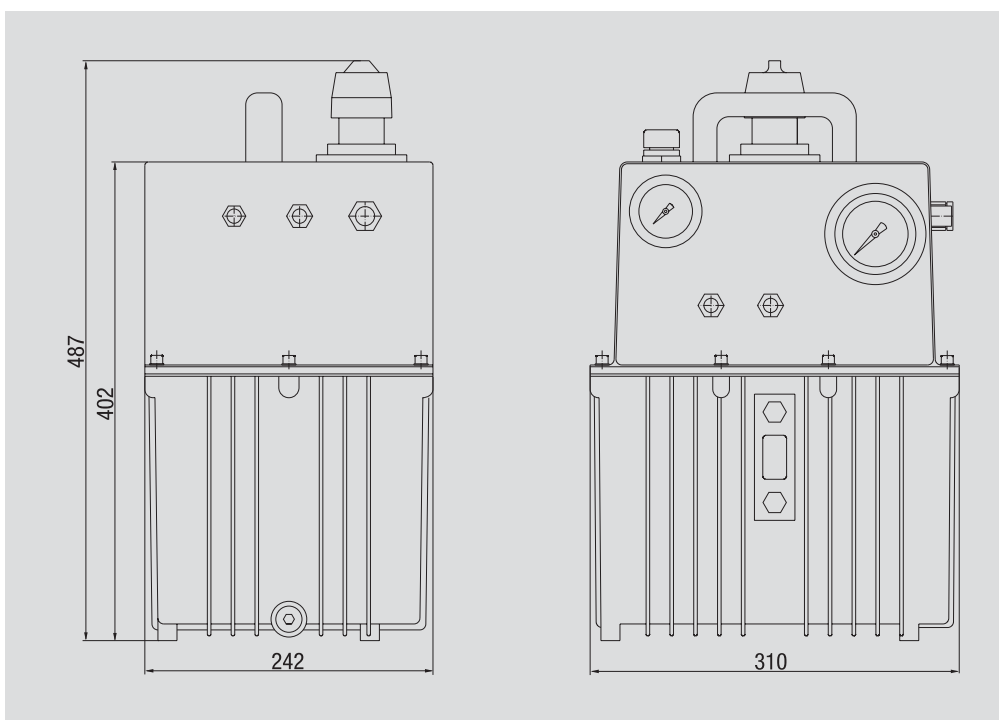
713E15051-1, 713E36051-1, 713E60051-1



1 clamping circuit*, double action*

713D15051-1, 713D36051-1, 713D60051-1

* Pumps with more circuits, with electrically controlled valves, positioning circuit or accumulator control unit circuit are also available.



Electro-hydraulic pump unit

Operating Pressure max 350 bar

Oil output 4,92 l/min

This hydraulic power pack is used for machine tools (lathes and milling machines), jigs or general machine applications for permanent and intermittend operation.

Optionally the hydraulic power pack is available with electronic control. After the unit has been filled with hydraulic oil and connected to the electrical supply, the equipment is immediately ready for operation.

Technical data

1. General parameters

Nomenclature	Radial piston pump and gear pump with integrated motor
Design	Oil immersed compact hydraulic power pack for permanent and intermittend operation (S1/S6 service)
Cooling	Finned tubular tank with additional fan wheel
Mounting position	horizontal
Noise level	68-70 db (A)

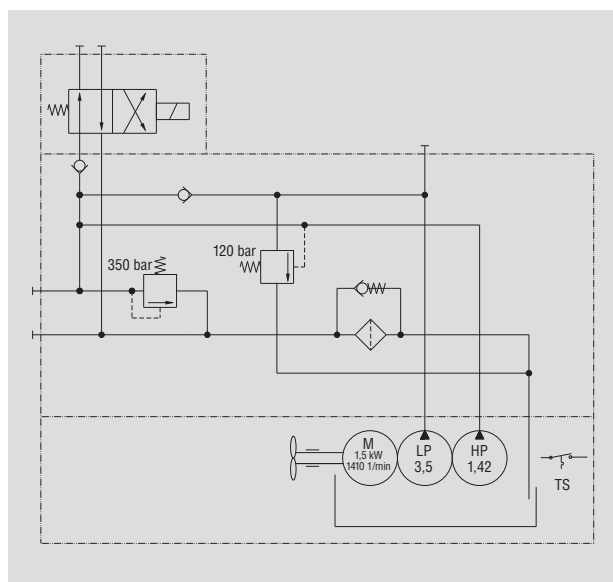
2. Hydraulic parameters

Max. operating pressure	350 bar*
Oil output	3,50l low pressure*
	1,42l high pressure*
Max. filling volume	5,5 l
Max. usable volume	1,7 l

3. Electrical parameters

Design	3 phase main, 4 pole*
Nominal output	1,5 kW
Nominal speed	1410 1/min
Nominal voltage	3~400/230V 50Hz
Nominal current	3,5A/ 6,1A
cos ρ	0,83
Operating method	S1 permanent operation S6 intermittend operation
Temperature switch	Switch off the pump if the fluid temperature rises over 80°C

* Electrical hydraulic pump units with higher capacity and other voltages are available on request



Recommended Accessorie (separat order)

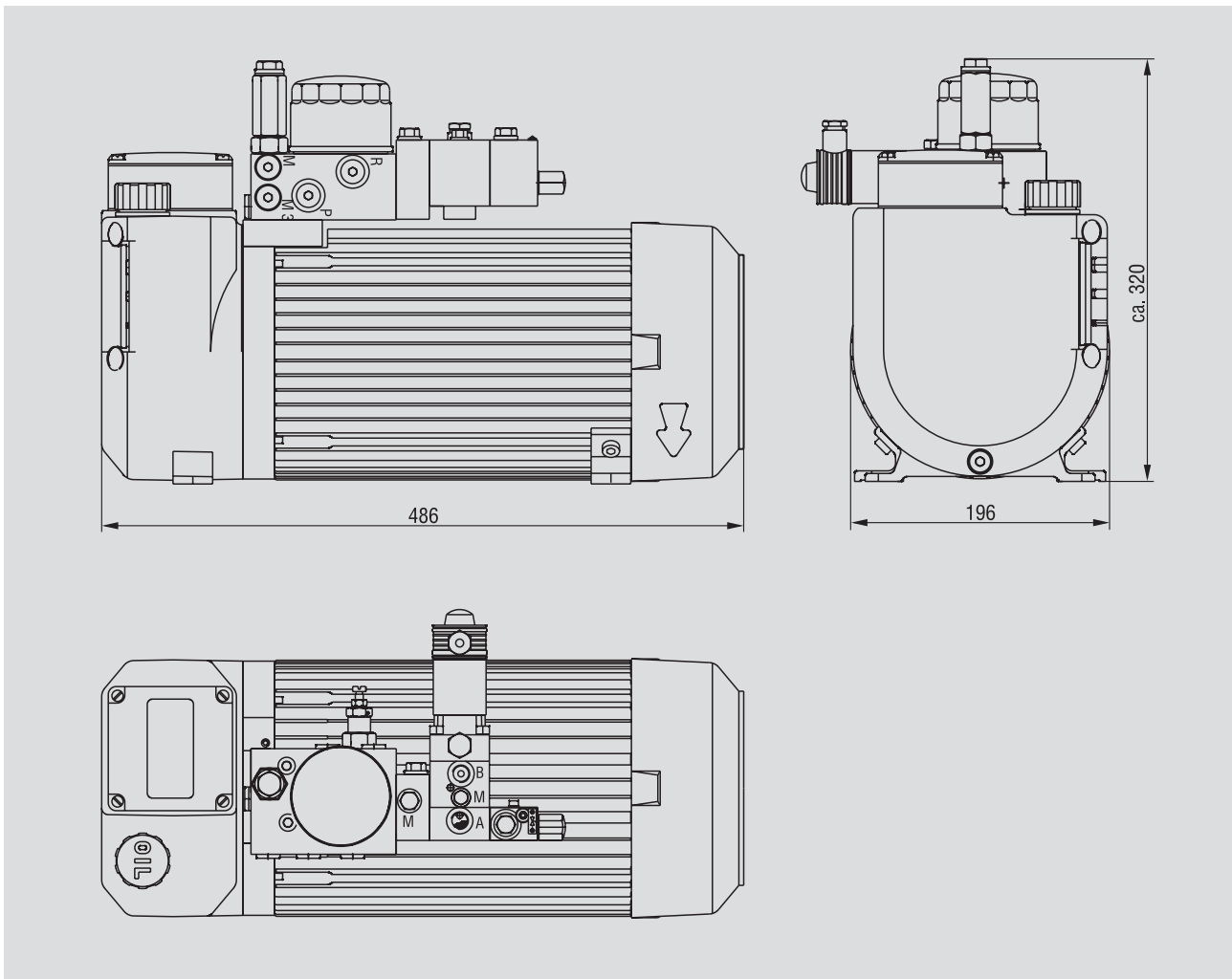
1 or 2 straight srew connector D8S-R1/4

Electronic control 718D3500501E:

On/Off/Emergency switch on separate switch board, actuation with foot- or hand-operated switch (separate order). The cycle time could be changed by time-lag relay. The control box is not mounted on the top of the pump. Connecting wire for switch board and foot or hand-operated switch: ca. 3m.

Model no.	Control valves	Type of actuation	Filling volume cm ³	usable volume cm ³	Connection	Noise level db	Weight kg
718D3500501	1 circuit single-/double action	Claming/ Punching	5500	1700	2x G1/4	70	20





Other special solutions available on request



4 clamping circuits



2 clamping circuits with accumulators

Pressure convertor, hydraulic-hydraulic

Max. operating pressure 360 bar

Conversion ratio 1:1.6 to 1:9

This pressure converter is an add-on to systems whose supply pressure is too low to meet the needs of some applications. For example, if you wish to operate a hydraulic clamping unit in a machine tool whose oil supply just delivers 60 bar, you would have the pressure converter increase the low input pressure to the high output pressure and maintain it by automatically filling up the oil consumed at the high-pressure end. By compensating for minor leaks in the high-pressure system the unit will maintain the high pressure practically without consuming any energy and generating only a small amount of heat. Due to the fact that the supply pressure and the high pressure are directly proportionally related, the supply pressure can be used to regulate the high pressure. The pressure converter does not limit the oil volume required by the consumer in any way because the converter lets all of the pump output go through the low-pressure part of the system. Pressure converters are designed with a variety of applications in mind such as clamping, stamping, punching.

Features

- 8 conversion ratios (see table)
- high capacity, small size
- once built up, the pressure remains constant by automatically supplying some extra oil to the consumer to compensate for any loss of pressure supplied via the IN port
- no dynamic seals, therefore long life cycle
- to be able to switch over the consumer cylinders from forward stroke to backstroke, the converter can be equipped with a 4/2 or 4/3-way valve (electrically or manually operated) upon request

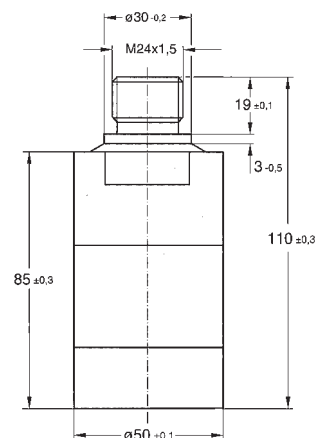
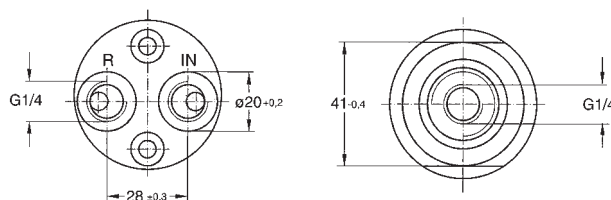
Recommended accessories (order separately)

You need the following fittings to connect the converter to hydraulic pipes and tubes:

3 straight screw-in connections,

order no. **D8S-R1/4**

See p 25.7 to 25.10 for all screw connections



Model no.	Conversion Ratio	Max. input volume [l/min]	Max. output volume (during pressure conversion) [l/min]	Max. input pressure [bar]	Max. output pressure [bar]	Connection G	Weight ~ [kg]
70-HC2/1,5	1,5	8	1,0	200	300	G1/4	1
70-HC2/2,0	2,0	8	0,8	200	400	G1/4	1
70-HC2/2,8	2,8	8	0,6	200	560	G1/4	1
70-HC2/3,2	3,2	15,0	2,5	200	640	G1/4	1
70-HC2/4,0	4,0	14,0	2,0	200	800	G1/4	1
70-HC2/5,0	5,0	14,0	1,6	160	800	G1/4	1
70-HC2/6,6	6,6	13,0	1,3	120	800	G1/4	1
70-HC2/9,0	9,0	13,0	0,9	85	800	G1/4	1

Hydraulic synchronous flow dividers are required whenever several hydraulic cylinders need to be extended or retracted absolutely synchronously, e.g. to evenly lift something or to clamp a part with true reference to a centre. They can also help to operate several hydraulic punching units: punching a sheet in several places at the same time avoids moving or warping the sheet in the process.

Function

Hydraulic synchronous flow dividers are based on the principle of mechanically coupled hydraulic cylinders (displacement cylinders) which are extended together by a main cylinder.

Every working cylinder requires a displacement cylinder. During every stroke, all working cylinders are supplied with the same volume of oil. The working method is illustrated by the schematic diagram on page 22.14.

Features

- The compact unit consists of the main cylinder plus the displacement cylinders plus integrated stop valves for resynchronising the system after a leak has caused some loss of oil.
- Single-action and double-action operation of the cylinders connected to the divider unit
- Every unit is accurately adapted to the customer's needs
- Automatically controlled solenoid stop valves for permanent resynchronisation
- Accuracy of synchronisation > 99%
- Air and electrohydraulic pumps available as power sources

Please add to your inquiry or order:

- Max. operating pressure of the main cylinders used
- Number, piston diameter and stroke of the hydraulic cylinders used
- Intended use, e.g. clamping, lifting, punching etc.
- Manual or automatic synchronisation
- Type of power source: air hydraulic or electrical pump

