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Content Product group 7:

Power Units - General - Technical data	7.1000
Series 5 2,5 l/min., 400 bar	7.1000
Series 6 0,82 l/min., 400 bar	7.1500
Pneumatic hydraulic clamping pump	7.2000
Power Units Special design	7.2500
Accessories and Service	7.2500

For suitable die clamping elements,
please see our product groups 2, 3, 4 and 8.

Applications:

- ▶ power units for operating small and mid-sized hydraulic clamping systems
- ▶ suitable for both single-acting and double-acting cylinders

Description:

These power units are supplied as compact units ready for connection:

Complete with motor, pump, tank, connector block, pressure gauge, pressure switch, solenoid valves and, on request, electrical control systems, all packaged for upright positioning. Pump with three radial pistons, direction of rotation optional.

The power unit operates intermittently under automatic pressure control, i.e. when the set pressure is reached the motor is automatically switched off. If pressure drops 10% below the set value the pressure switch causes the motor to start again.

Additional pressure switches can be supplied to protect the machine. These switches are set so as to stop the machine if clamping pressure drops by more than 15%.

Special features:

- ▶ Compact, lightweight design
- ▶ Power unit supplied ready for installation
- ▶ Modular system enables individual schemes
- ▶ Valves closed in clamping position, preventing pressure loss in the event of power failure
- ▶ Plug-in type remote control pendant
- ▶ Optical oil level sighting
- ▶ Automatic switching off in the event of a lack of oil or increased oil temperature.



Power unit
4,2 l/min



Power unit
2,5 l/min



Power unit
0,8 l/min



Pneumatic hydraulic
clamping pump
0,8 l/min



Technical data

	Series 5	Series 6	Pneumatic- hydraulic
Hydraulic			
Pump displacement (l/min.)	2,5	0,82	0,8
Max. operating pressure (bar)	400	400	400
Total tank volume (l)	5,5	3,8	2,4
Useable tank volume (l)	3,2	1,8	1,9
Continuous duty (s)	30	30	-
Viscosity range (mm ² /s)	10- 500 to DIN 51519		
Max. noise level (dBA)	72	74	80
Type of valves	Seat valves, leak proof, max. 450 bar		
Max. valve flow (l/ min.)	8	8	8
Oil port	G 1/4	G 1/4	G 1/4
Hydraulic fluid	Hydraulic oil HLP 46 to DIN 51524		HLP 32
Electrical			
Motor voltage	380- 420 V/ 50 Hz/ 3~		-
Motor rating (kW)	1,1	0,37	2-4 bar
Solenoid valve voltage	24 V DC		-
Control voltage	24 V DC		-
Protection	IP 54		-
Motor speed (1/ min ⁻¹)	1450	2800	-
Direction of rotation optional	any		-
Continuous duty (bei 20°C) (%)	40	40	-
Weight without oil (kg)	approx. 47	approx. 22	ca. 16

For other sizes and special designs, please see 7.2500

Series 5



Series 6



Pneumatic hydraulic clamping pump



Important information

Power units should be located away from the dirty area around machine tools and clear of operator's handling space. Make sure

- that oil ports, pressure switches, oil drain plug and oil filler plug are readily accessible, and that pressure gauges, oil sight glasses and indicator lights are clearly visible.

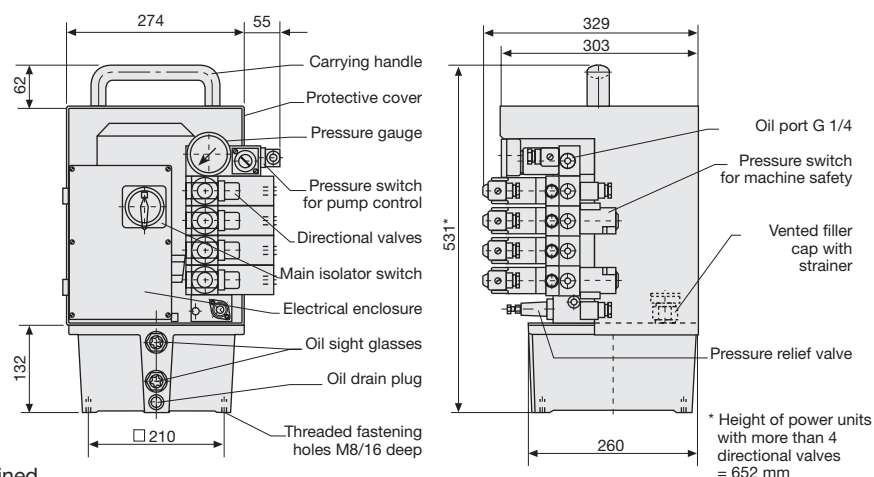
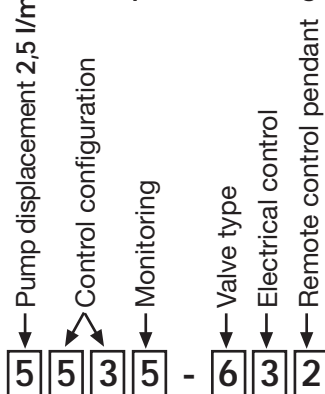
The power units conform to EC directives and bear the CE sign.

EMV Directive	EMV 89/336/EWG
"Machinery" Directive	ML 98/37/EG
Low-voltage Directive	NS 73/23/EWG

If other conditions apply please contact our technical sales department.



Example of ordering:



The order number for the power unit is obtained by selecting the index numbers for the required versions as shown in the tables below.

Control-configuration For hydraulic schematics, see pages 5 and 6

	Function	Application, special features	Remote control	
			plug-in	wired direct
21	w/o direct. valve (basic unit)	used if the power unit serves as a pressure generator only and if the hydraulic elements (cylinders) are externally controlled, e.g. by hand valves		
22	1 x single-acting	for single-acting cylinders, e.g. for machine vices hydr.-hydr. etc.	1x	
23	1 x single-acting	for spring clamping cylinders or roller bars	1x	
24	2 x single-acting	clamping circuits with separate control, same pressure, e.g. for reciprocal processing	2x	
25	2 x single-acting	simultaneous control, same pressure 1)		1x
26	1 x double-acting	for double-acting clamping elements 2)	1x	
27	2 x single-acting	1 HP circuit, 1 LP circuit, separately controlled 1) 3)	1x	
28	2 x single-acting	for spring clamping cylinders	2x	
29	3 x single-acting	separately controlled, same pressure	3x	
30	3 x single-acting	2 clamping circuits simultaneously controlled, 1 clamping circuit separately controlled, same pressure 1)		1x
31	1 x double, 1 x single	separately controlled, same pressure 2)	2x	
32	1 x double, 1 x single	separately controlled, same pressure 1) 2)		1x
33	3 x single-acting	2 HP clamping circuits, 1 LP circuit, separately controlled 1) 3)		1x
34	3 x single-acting	2 clamping circuits simultaneously controlled, 1 LP circuit		1x
35	1 x double, 1 x single	1 HP circuit double-acting, 1 LP circuit, separately controlled 1) 2) 3)		1x
36	4 x single-acting	separately controlled, same pressure	4x	-
37	4 x single-acting	2 x 2 circuits simultaneously controlled, same pressure 1)		1x
38	2 x double-acting	separately controlled, same pressure 2)	2x	
39	1 x double, 2 x single	separately controlled, same pressure 2)	3x	
40	2 x single-acting	1 HP circuit single-acting, 1 HP circuit for roller bar separately controlled		1x
41	3 x single-acting	2 HP circuit single-acting, 1 HP circuit for roller bar separately controlled		1x
42	3 x single-acting	2 HP circuit single-acting simultaneously controlled, 1 HP circuit for roller bar separately controlled		1x
43	1 x double, 1 x single	1 HP circuit double-acting, 1 HP circuit for roller bar separately controlled		1x
44	4 x single-acting	1 HP circuit single-acting, 2 HP circuit single-acting for 2 cylinders simultaneously controlled, 1 HP circuit for roller bar separately controlled		1x
45	1 x double, 2 x single	1 HP circuit single-acting for cylinder, 1 HP circuit double-acting for roller bar separately controlled		1x
46	5 x single-acting	2 HP circuits single-acting for cylinder simultaneously controlled, 2 x single-acting cylinders simultaneously controlled, 1 HP circuit for roller bar separately controlled		1x
47	1 x double, 3 x single	2 HP circuits for single-acting cylinders simultaneously controlled, 1 x HP circuit for double-acting cylinders, 1 HP circuit double-acting for roller bar separately controlled		1x
48	2 x double, 1 x single	2 HP circuits for double-acting cylinders separately controlled, 1 HP circuit double-acting for roller bar separately controlled		1x
51	2 x double-acting	separately controlled, same pressure 1) 2)		1x
52	1 x double, 2 x single	1 x double-acting separately controlled, 2 single-acting circuits simultaneously controlled 1) 2)		1x



	Function	Application, special features	Remote control	
			plug-in	wired direct
53	4 x single-acting	2 clamping circuits simultaneously controlled, 1 clamping circuit and 1 LP circuit separately controlled 1) 3)		1x
54	1 x double, 2 x single	1 double-acting and 1 single-acting clamping circuit and 1 LP circuit, separately controlled 1) 2) 3)		1x
55	5 x single-acting	2 x 2 clamping circuits simultaneously controlled, 1 LP circuit separately controlled 1) 3)		1x
56	1 x double, 3 x single	1 double-acting clamping circuit, 2 single-acting clamping circuits simultaneously controlled and 1 LP circuit 1) 2) 3)		1x
57	2 x double, 1 x single	2 double-acting clamping circuits separately controlled and 1 LP circuit 1) 2) 3)		1x

1) This version is only supplied with locking remote control pendant wired direct, without pilot lamp

2) The double-acting function is obtained by simultaneous operation of two 3/2 way valves

3) LP circuit with adjustable closing valve. Pressure setting range 40 - 100 bar.

Monitoring system

0	without machine safety	without oil level and temperature switch
1	with machine safety	with oil level and temperature switch
4	without machine safety	without oil level and temperature switch
5	with machine safety	with oil level and temperature switch

Machine safety

In-line pressure switch connected to the machine controls. Switch setting is 15% min. below clamping pressure. Only once the set pressure has been reached can the machine be operated.

If pressure drops below setting, the machine is automatically stopped.

Oil level and temperature switch

Oil level switch and temperature switch are provided to automatically switch off the pump motor if there is lack of oil, or if temperature exceeds 60°C. Both conditions are indicated by a pilot lamp on the electric enclosure.

Valve package

0		without directional seat valves		
6	Pressure relief valve and pressure switch not lockable	24 V DC	HAWE hole pattern	HAWE

Pressure relief valve and pressure switch

The operating pressure is infinitely variable between 100 and 400 bar.

Directional seat valves

With HAWE hole pattern, mounting dimensions as per HAWE data sheet D7470, size 1

Electrical controls

0	without	without terminal box	-	2)
1	controls	with terminal box	-	Motor-voltage
2	with	without remote control	-	
3	controls	with remote control	pendant plug-in 1)	380-420 V
4			wired direct	50Hz, 3~

1) the remote control pendant of clamping systems used in presses is always wired direct

2) Other voltages upon request

The power unit is supplied ready for connection including the necessary electrical and hydraulic equipment. The complete electrical system is installed in an enclosure. On request, the power unit is supplied without electrical control, with or without terminal box.

Remote control pendant

0		without remote control pendant	
1	Selector	-	
2	switch	with pilot lamp	
3	Key-operated	-	
4	switch	with pilot lamp	
5	Foot switch	-	

Selector switch

e.g. for simple and clear controls.

Key-operated switch

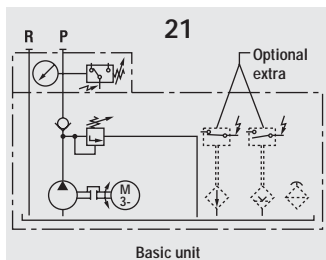
Prevents unauthorised operation

Foot switch

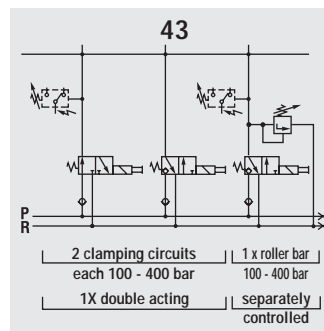
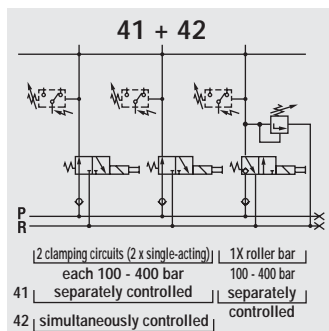
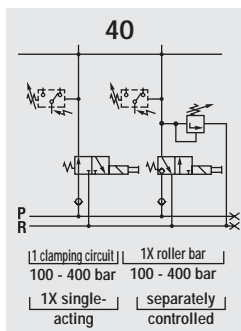
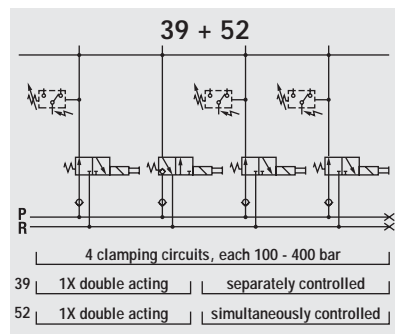
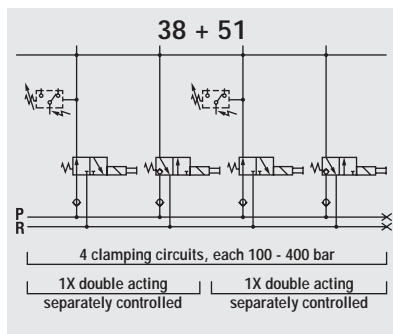
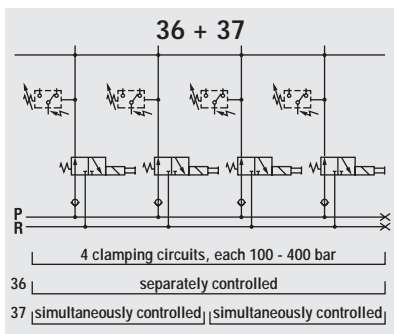
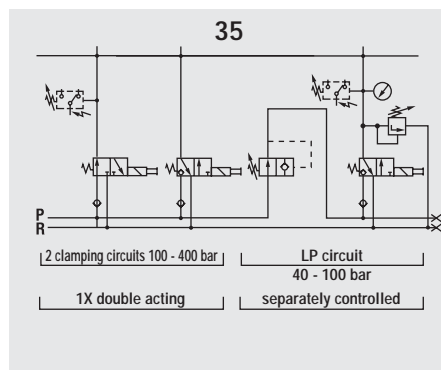
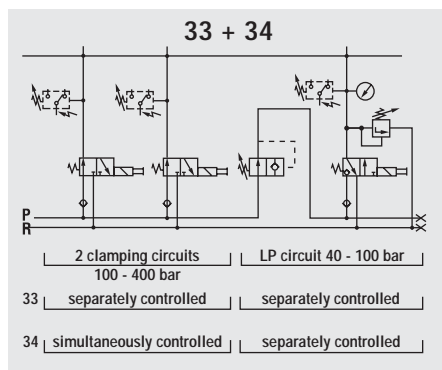
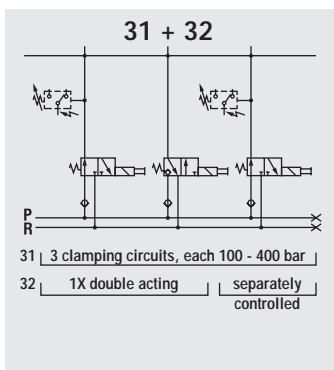
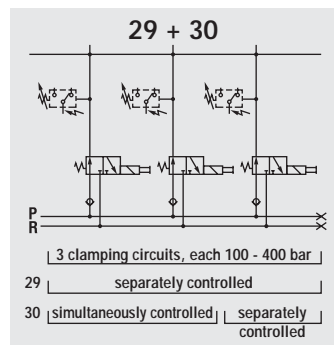
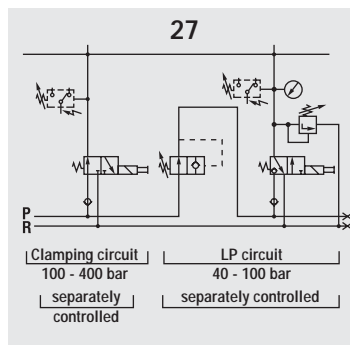
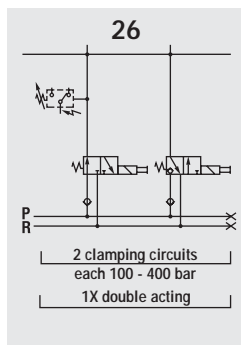
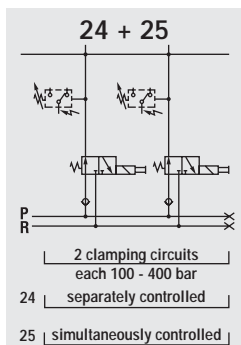
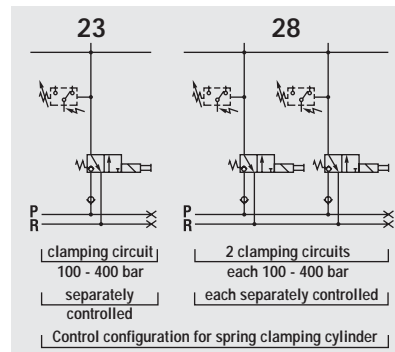
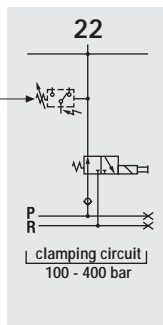
Housing made from rugged aluminium die-casting provided with protective hood. Is recommended when both hands are used for workpiece loading and positioning. Observe accident prevention regulations!



Hydraulic schematics / Control-configuration

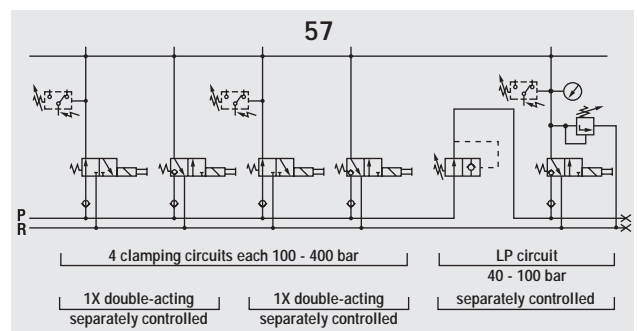
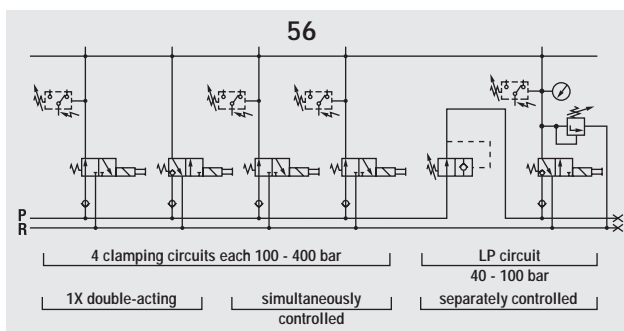
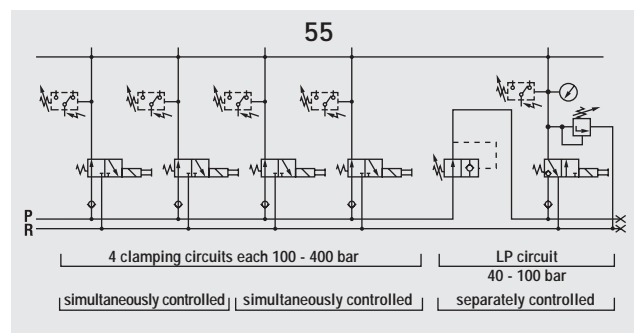
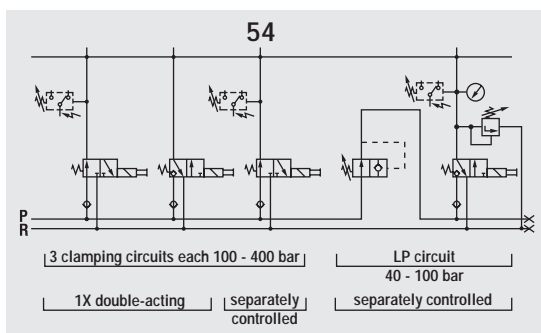
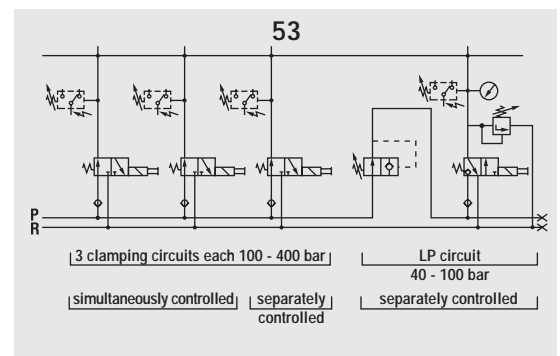
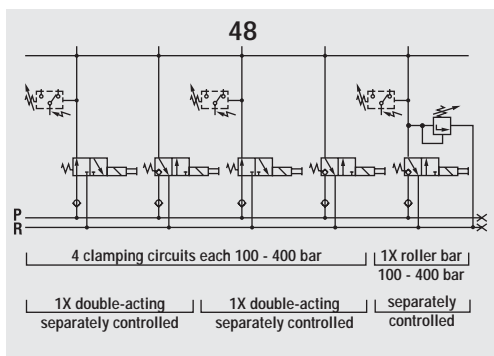
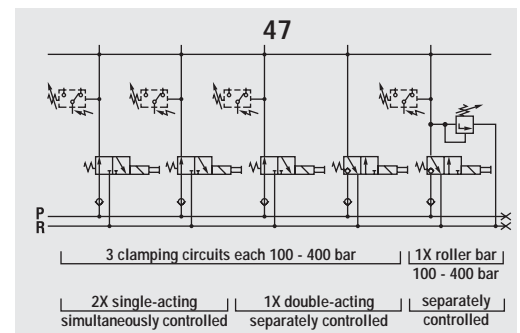
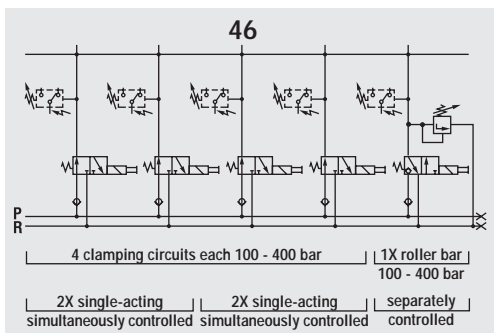
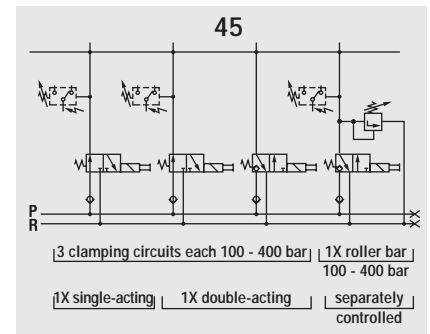
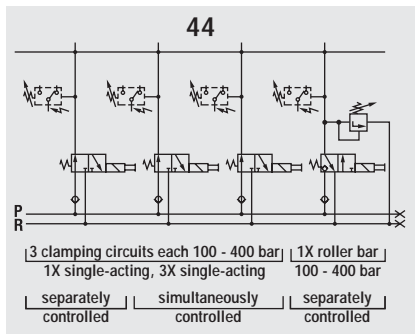


Pressure switch
for machine
safety
(optional extra)





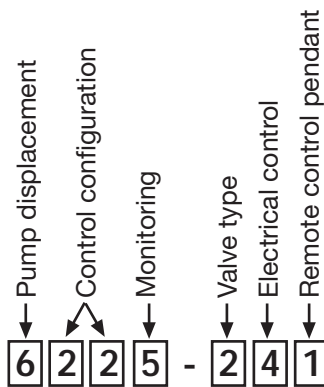
Hydraulic schematics / Control-configuration



Power Unit Series 6, 0.82 l/min.



HILMA



The order number for the power unit is obtained by selecting the index numbers for the required versions as shown in the tables below.

Pump displacement

- | | |
|---|--|
| 6 | Power unit with a displacement of 0.82 l/min.
Max. operating pressure 400 bar |
|---|--|

Control configuration

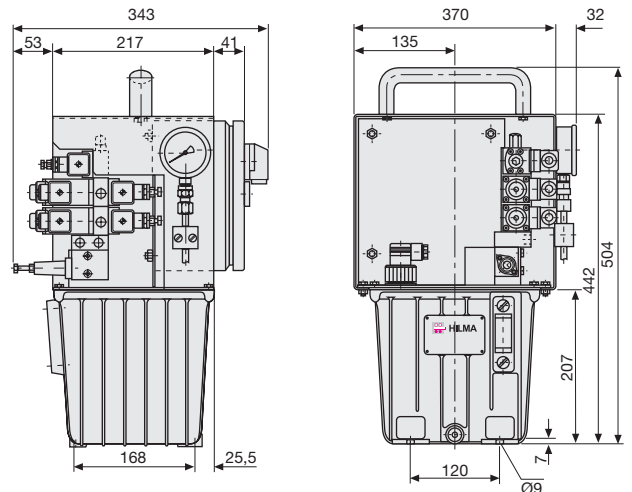
with pressure relief valve and pressure switch for pump control

- | | |
|----|---|
| 21 | without directional valve (basic unit), with P and R port (G 1/4) |
| 22 | 1 circuit for single-acting cylinders |
| 23 | 1 circuit for hydraulic roller bars/spring clamp |
| 24 | 2 circuits for single-acting cylinders |
| 26 | 2 circuits for double-acting cylinders |

Pressure relief valve and pressure switch
Operating pressure infinitely variable between 100 and 400 bar

Monitoring system

- | | |
|---|---|
| 0 | without machine safety,
without oil level and oil temperature monitoring |
| 1 | without machine safety,
with oil level and oil temperature monitoring |
| 4 | with machine safety,
without oil level and oil temperature monitoring |
| 5 | with machine safety,
with oil level and oil temperature monitoring |



Valve package

- | | |
|---|--------------------------------------|
| 0 | without directional seat valves |
| 2 | with directional seat valve, 24 V DC |

Electrical controls

- | | |
|---|--|
| 0 | without electrical controls, without terminal box |
| 1 | without electrical controls, with terminal box |
| 2 | with electrical controls, without remote control pendant |
| 4 | with electrical controls, with remote control pendant |

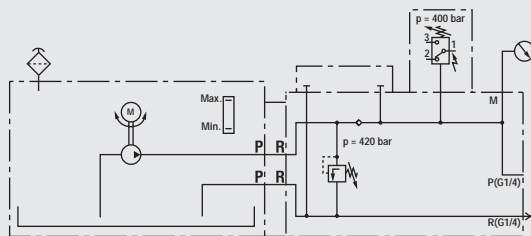
The power unit is supplied ready for connection including the necessary electrical and hydraulic equipment. The complete electrical system is installed in an enclosure. On request, the power unit is supplied without electrical control, with or without terminal box.

Remote control pendant

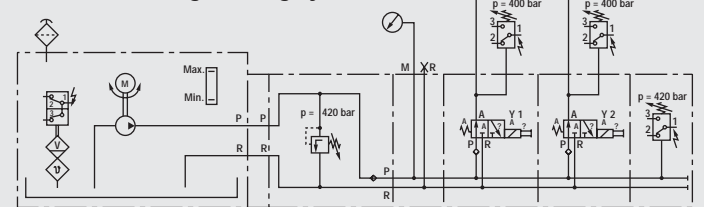
- | | |
|---|--|
| 0 | without remote control pendant |
| 1 | selector switch |
| 2 | selector switch with pilot lamp for operating pressure |
| 5 | foot switch |

Hydraulic schematics

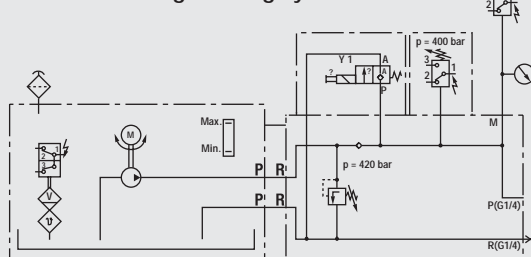
6210-020 without valve



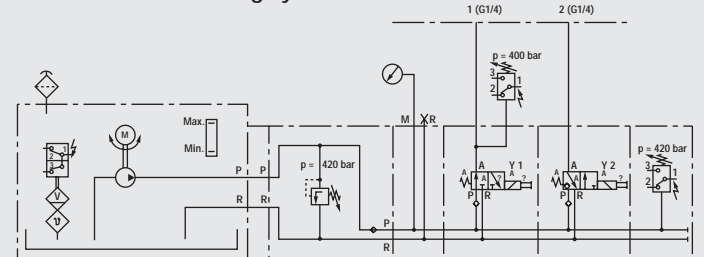
6245-241 with valves
for 2 single-acting cylinders



6225-241 with valve
for single-acting cylinder



6265-241 with valves for
1 double-acting cylinder



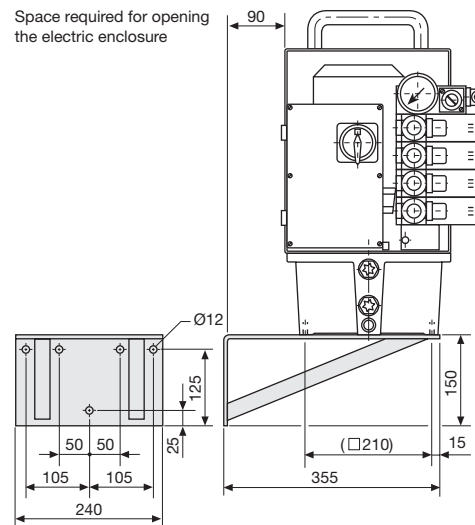


Wall bracket

For fastening the power unit on machine columns, supports, walls etc.

Part no. 5100-001 Series 5

Part no. 5.0330.0205 Series 6



Pedestal

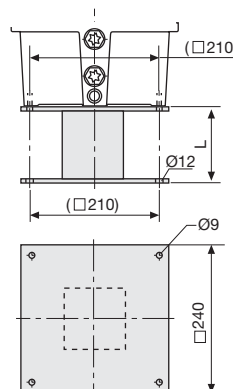
For fastening the power unit on the floor, on machine beds, on the press head etc. etc.

Part no. 5100-002 for L = 250 mm Series 5

Part no. 5100-003 for L = 1000 mm Series 5

Part no. 5.0330.0206 for L = 250 mm Series 6

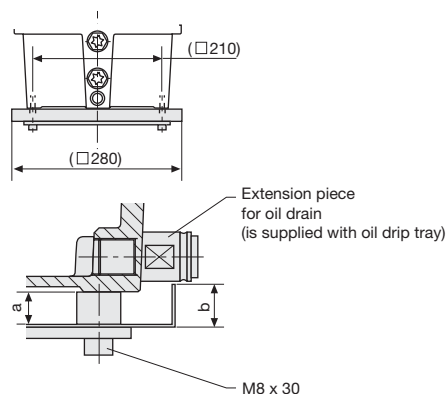
Part no. 5.0330.0207 for L = 1000 mm Series 6



Oil drip tray

Prevents oil around the power unit splashed during filling or escaped due to leakage.

a (mm)	15	72
b (mm)	20	80
Part no.	5100-004	5100-007



Mounting bars

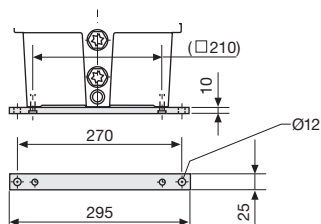
are fastened to the underside of the oil tank using screws. The brackets extending on the sides are used for fastening the power unit from above using screws M19.

Supply package:

2 mounting bars

4 pan head screws M6 x 16, DIN 7984

Part no. 5100-005

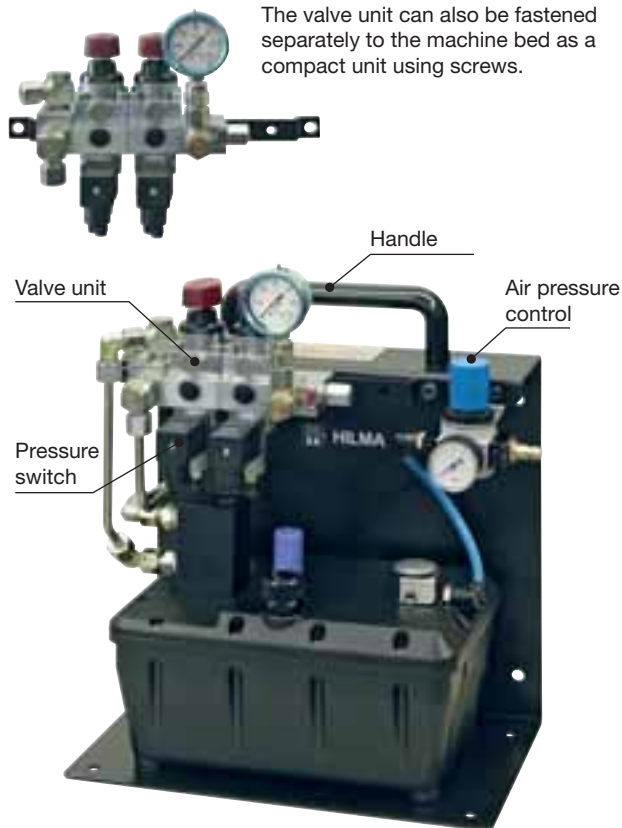


For other hydraulic accessories, please see product group 11

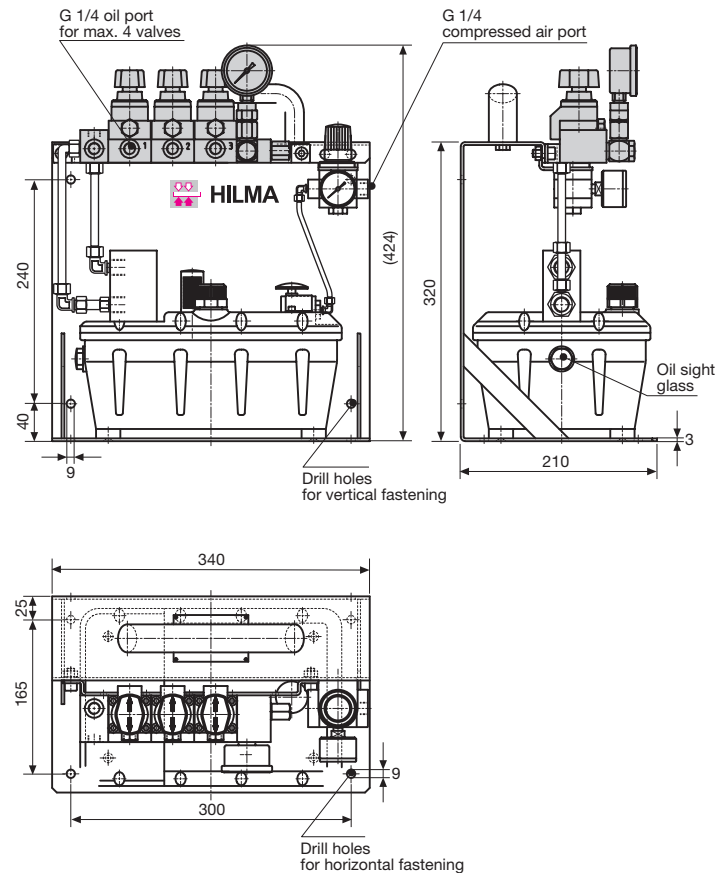
Pneumatic-hydraulic clamping pump 100 or 400 bar with a flow of 0.8 l/min.



HILMA



The valve unit can also be fastened separately to the machine bed as a compact unit using screws.



Application and description:

This compact pneumatic-hydraulic clamping pump, ready for installation, is particularly suitable for small and medium clamping applications on presses and machines.

The clamping circuits are activated using hand valves. A separate valve is provided for each clamping circuit. The hand valves can also be fastened together as a complete valve package in a position which is readily accessible to the operator, e.g. near to the machine bed (see illustration above).

The clamping pump operates intermittently under automatic pressure control, i.e. when the set pressure is reached, the motor is automatically switched off. In the version fitted with a machine safety device, a pressure switch signals a pressure drop to the machine.

The clamping pump may be connected to any compressed air network with a pressure reducer. It is equipped with a pressure control valve for regulating the air pressure, a pressure gauge, oil sight glass, hand valves, handle, cover sheet, connector block, silencer, oil filling and pressure switch (optional extra). On request, versions with pilot-controlled valves or for double-acting applications are also available.

Technical data:

Max. pump displacement:	0.8 l/min at 0 bar 0.3 l/min at 400 bar
Max. operating pressure:	100 or 400 bar
Min. operating pressure:	100 bar
Max. air pressure:	4.0 bar
Min. air pressure:	2.0 bar
Total tank volume:	2.4 litres
Useable tank volume:	1.9 litres
Hydraulic fluid:	Hydraulic oil HLP 32/ VG32
Weight:	16 kg
Oil port:	G 1/4
Compressed air port:	G 1/4
Noise level:	80 dBA
Temperature range:	between 5° and 35°C



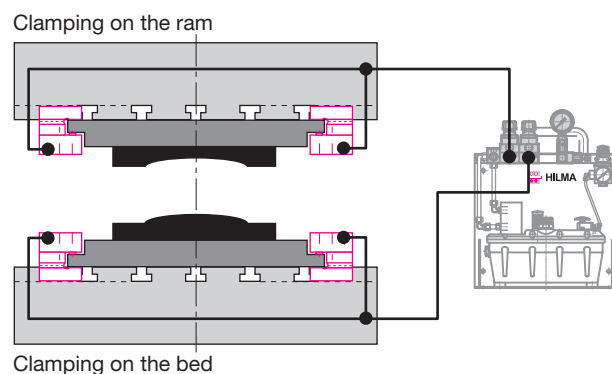
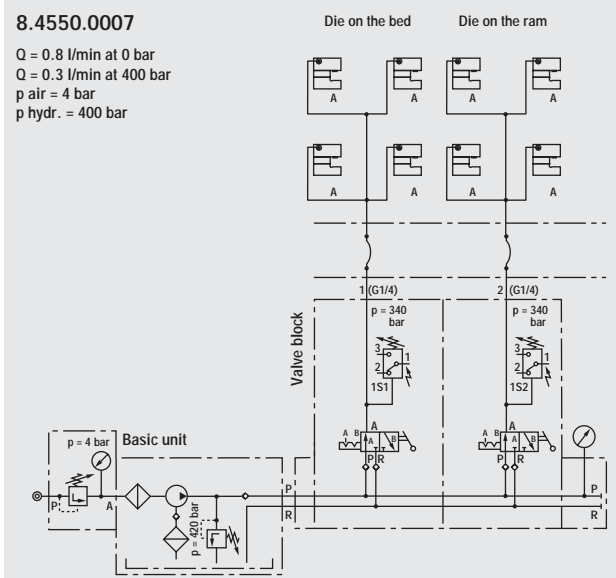
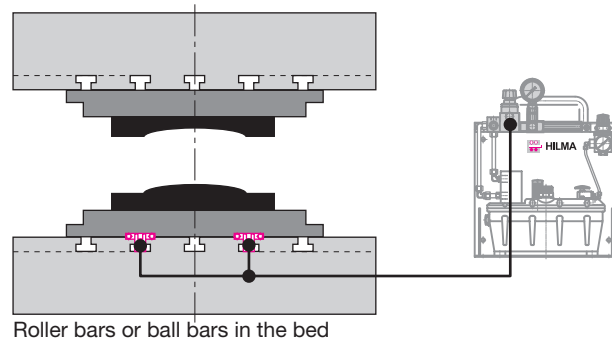
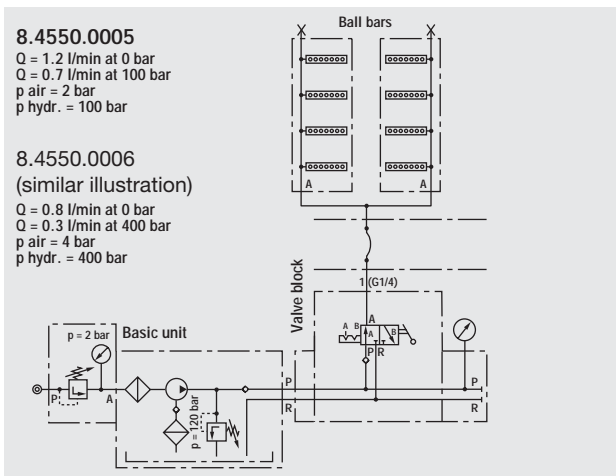
HILMA

Pneumatic-hydraulic clamping pump 100 or 400 bar with a flow of 0.8 l/min.

Control configurations

Part no.	Operating pressure (bar)	Function	Control
8.4550.0005	100	1 circuit for single-acting cylinder, e.g. for ball bars	without pressure switch
8.4550.0006	400	1 circuit for single-acting cylinder, e.g. for roller bars	without pressure switch
8.4550.0007	400	2 circuits for single-acting cylinders, e.g. 1 x clamping on the bed and 1 x clamping on the ram	with machine safety
8.4550.0008	400	3 circuits for single-acting cylinders, e.g. 1 x clamping on the bed and 2 x clamping on the ram	with machine safety
8.4550.0009	400	3 circuits for single-acting cylinders, e.g. 1 x clamping on the bed and 1 x clamping on the ram and 1 x lifting of roller bars	with machine safety
8.4550.0010	400 + low pressure 100	3 circuits for single-acting cylinders, e.g. 1 x clamping on the bed and 1 x clamping on the ram and 1 x lifting of ball bars (100 bar)	with machine safety
8.4550.0011	400	4 circuits for single-acting cylinders, e.g. 1 x clamping on the bed and 2 x clamping on the ram and 1 x lifting of roller bars	with machine safety
8.4550.0012	400+ low pressure 100	4 circuits for single-acting cylinders, e.g. 1 x clamping on the bed and 2 x clamping on the ram and 1 x lifting of ball bars (100 bar)	with machine safety
8.4550.0013	400	3 circuits for single-acting cylinders, e.g. 1 x clamping on the bed and 2 x clamping on the ram	without machine safety

Hydraulic schematics



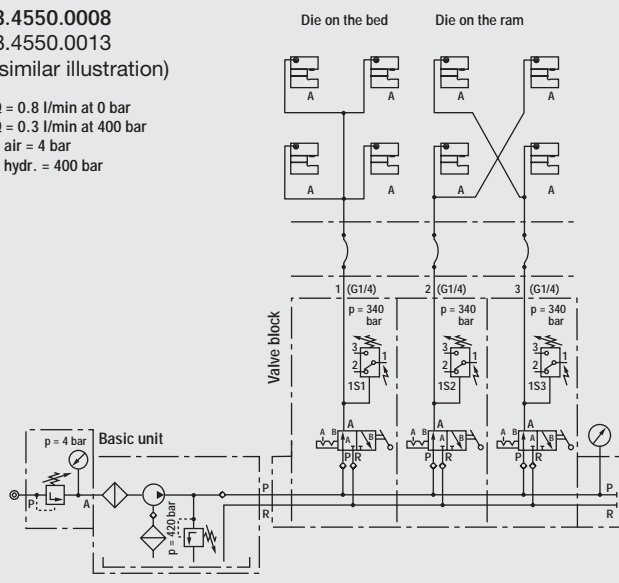
Pneumatic-hydraulic clamping pump 100 or 400 bar with a flow of 0.8 l/min.



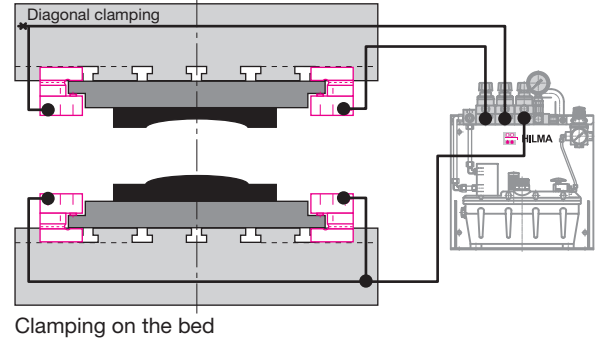
HILMA

8.4550.0008
8.4550.0013
(similar illustration)

Q = 0.8 l/min at 0 bar
Q = 0.3 l/min at 400 bar
p air = 4 bar
p hydr. = 400 bar

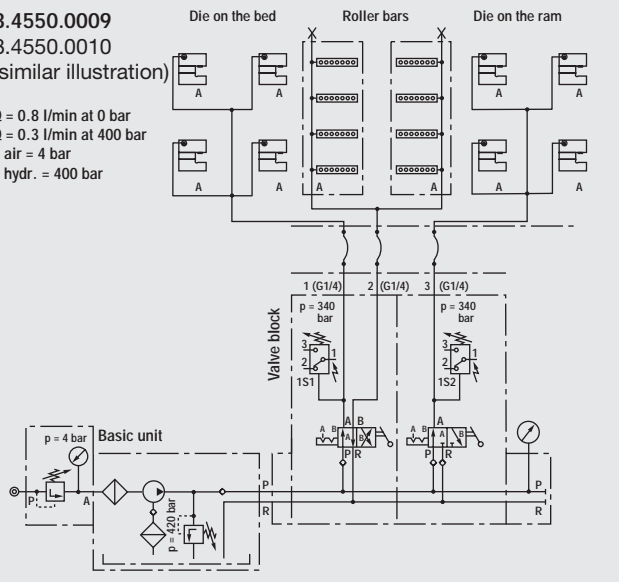


Clamping on the ram

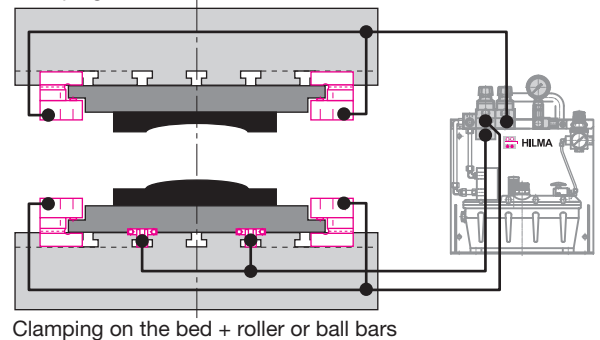


8.4550.0009
8.4550.0010
(similar illustration)

Q = 0.8 l/min at 0 bar
Q = 0.3 l/min at 400 bar
p air = 4 bar
p hydr. = 400 bar

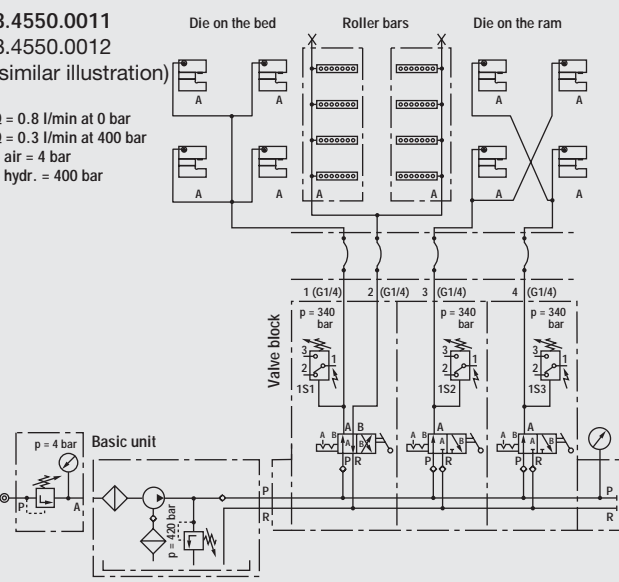


Clamping on the ram

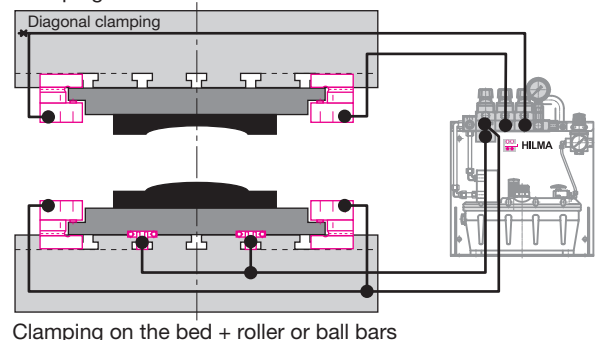


8.4550.0011
8.4550.0012
(similar illustration)

Q = 0.8 l/min at 0 bar
Q = 0.3 l/min at 400 bar
p air = 4 bar
p hydr. = 400 bar



Clamping on the ram





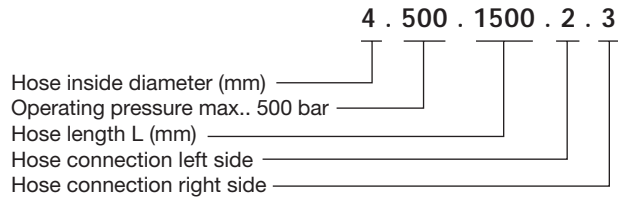
Accessories

High-pressure hoses NW4

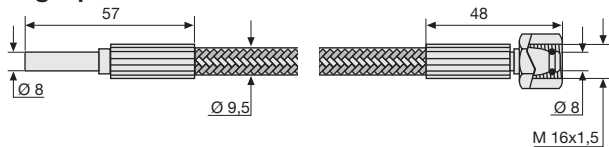
The freely selectable hose lengths should be generously dimensioned, in order to avoid kinking, chafing, torsion, pulling and crushing loads as well as too tight bending radii. Hoses must be protected against hot chips. Bursting pressure: 2000 bar, minimum bending radius: 100 mm

For more information, see DIN 20066.

Part no. for variable lengths and connections

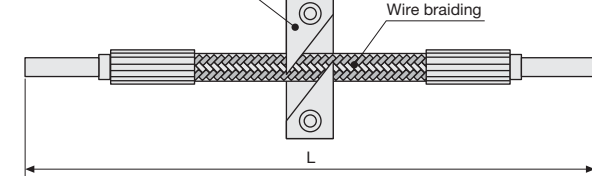


High-pressure hose

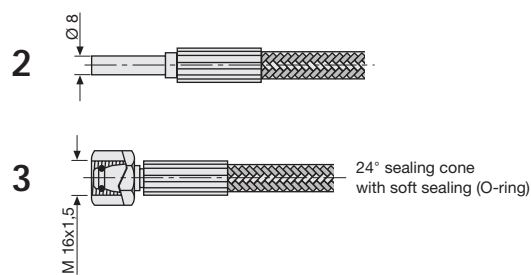


Part no. 5.5065.0003

Hose holder made from Delrin



Hose connections left side / right side



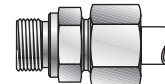
Preferred lengths of type 4.500.XXXX.3.3

Both ends with a hose connection union nut
M16 x 1.5 (available from stock)

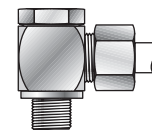
Part no.	Length	Connection
2.7001.0131	600 mm	both sides M 16 x 1.5
2.7001.0133	800 mm	both sides M 16 x 1.5
2.7001.0137	1200 mm	both sides M 16 x 1.5
2.7001.0141	1600 mm	both sides M 16 x 1.5

Pressure reducer:	9511-005
Male stud coupling G 1/4	2.8001.0004 (for pipe diameter 8 mm)
Swivel banjo coupling G 1/4	2.8029.0002 (for pipe diameter 8 mm)
Screwed fitting G 1/4 hose connection	3890-093
High-pressure hose, black	3890-131

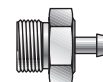
Male stud coupling



90° swivel banjo coupling

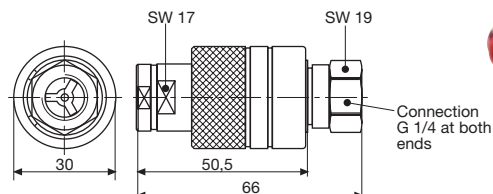


Screwed fitting



Quick disconnect

Part no.	Designation
9384-006	Quick disconnect, complete
9384-101	Coupler
9384-206	Fitting





Power units with large displacement



Technical data

Max. flow	4,2 l/min.
Max. operating pressure	400 bar
Tank volume	9 l
Oil port	G 3/8
Hydraulic fluid	Hydraulic oil HLP 46 to DIN 51524
Motor voltage	380-420 V/50 Hz/3~
Motor rating	2,2 kW
Type of valve	Seat valves, leak proof, max. 500 bar
Solenoid voltage	24 VDC
Protection	IP 54
Dimensions (LxBxH)	approx. 400 x 400 x 600 mm depending on displacement and valve design
Weight	approx. 40 - 60 kg depending on design



Frame-type power unit for 3 forging presses:
12 clamping circuits with pressure reduction for temperature
compensation
high pressure 4.2 l/min., 400 bar
cooling return flow: 45 l/min., 10 bar

Technical data

Max. flow	45 l/min.
Max. operating pressure	400 bar
Other technical data will be made available during the course of the project	

Planning and installation of complete oil-hydraulic systems including complex electrical controls, designed to suit Hilma-Römheld clamping elements used by our customers.

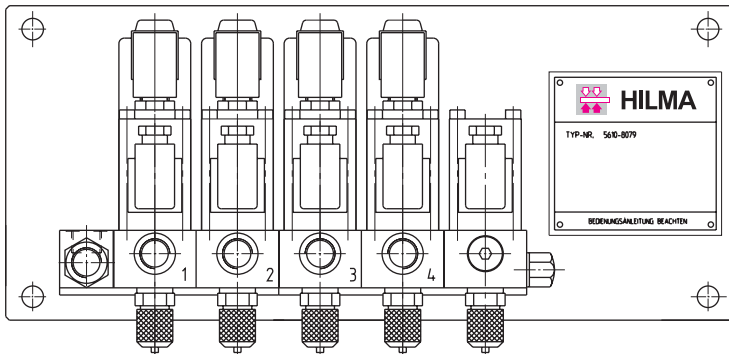
Suitable for all clamping elements used on presses, especially on power and forging presses.

Our large range of power units and clamping elements for presses enables us to meet your specific requirements.

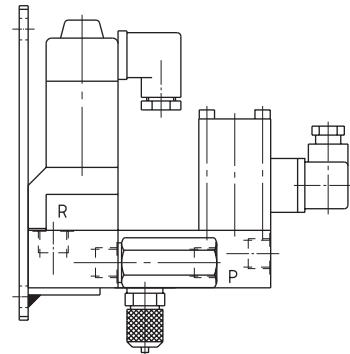




Valve packages fastened to the press ram or the press bed



4-circuit valve packages with pump pressure switch



Technical data

Max. flow	8 l/min
Oil port	G 3/8
Hydraulic fluid	Hydraulic oil HLP 46 to DIN 51524
Type of valve	Seat valves, leak proof, max. 500 bar
Solenoid voltage	24 V DC

Other versions are available upon request

The service we offer you

In addition to the cost effectiveness of our products, our customers also benefit from our efficient service.

Our service includes

- preparation and installation of hydraulic systems to suit specific applications
- manufacture, installation and commissioning of complete hydraulic systems
- repair and maintenance of hydraulic cylinders, clamping elements and power units supplied
- trouble-shooting and repair on the customer's premises
- constant repair service and fast response on our premises

All over the world our service is ready to act and to guarantee immediate help.

Specially trained, experienced staff make sure that problems are solved rapidly and proficiently.

You can rely on it!

