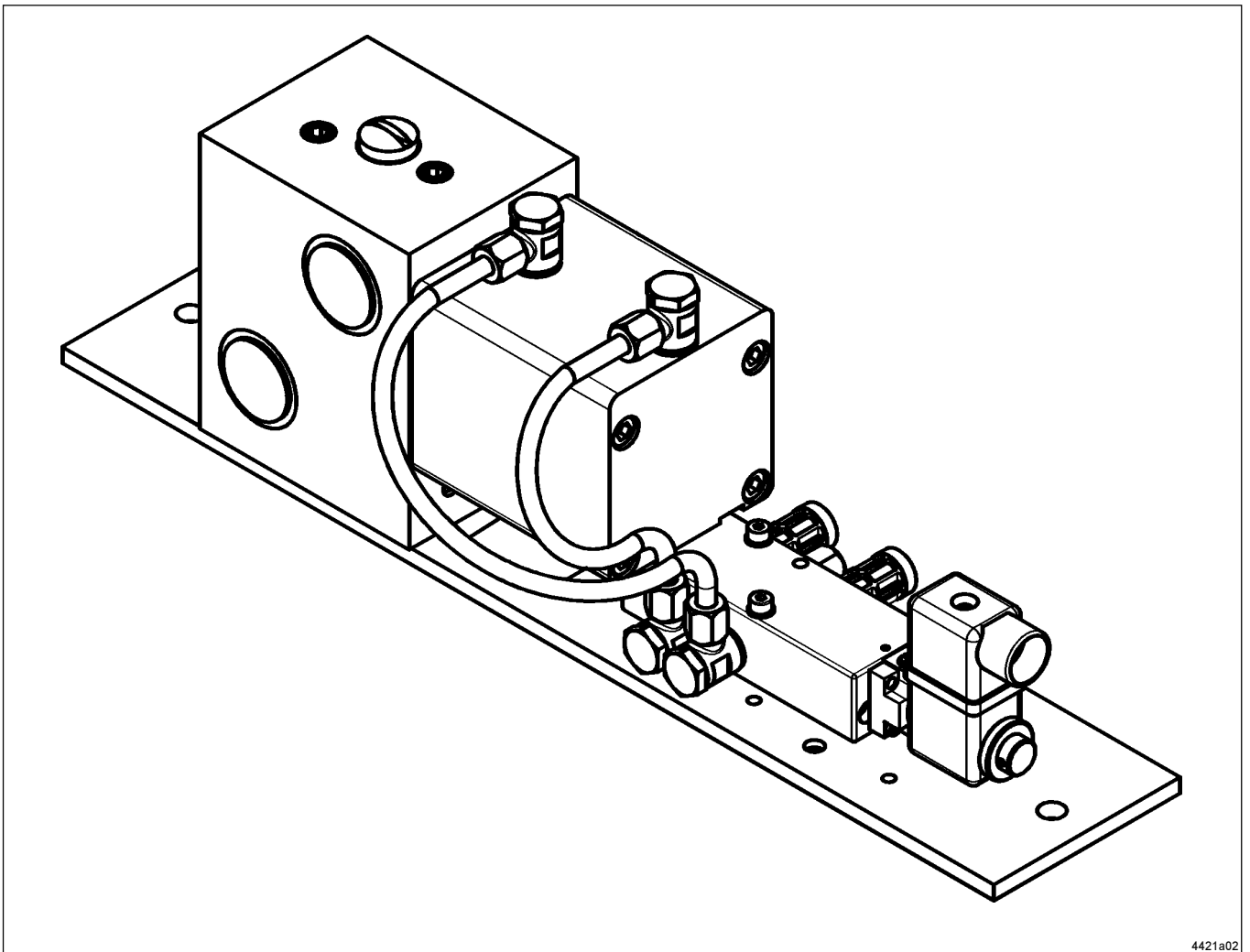


Pneumatically Operated Change-Over Valve Model MP2 and Pneumatically Operated Way Valve Model WS-P2



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Subject to change without notice

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Safety Instructions

Appropriate Use

- The product is exclusively designed for the use in centralized lubrication systems.
- Do not exceed the maximum ratings mentioned in the Technical Data, particularly the maximum operating pressure.
- Any other use will not be conform.
- The manufacturer is not responsible for damage resulting from incorrect use.

Operation of the change-over valve and the way valve

- The product should be used only if it is in a good state.
- Defects which impair the function and the safety must be remedied immediately.
- The function of the change-over valve is only guaranteed if clean hydraulic oil and lubricant are used.
- If you require more information than mentioned in this Owner Manual, please contact us (see address on bottom of the page).

Maintenance and Repairs

- Before executing maintenance and repair work on the product read the Owner Manual and the Safety Instructions.
- The Owner Manual must be available at the place where the unit is in operation.
- Alterations or modifications of the product are only allowed if approved by the manufacturer.
- Use only original spare parts for repair work.
- If other parts are used, the manufacturer may be released from his liability for the resulting damage.

Structure and Mode of Operation

The change-over valve operates like a hydraulically operated 4/2-way valve which alternately discharges the lubricant fed by the pump into one of both main lines, while the other main line is connected to the return line connection of the pump.

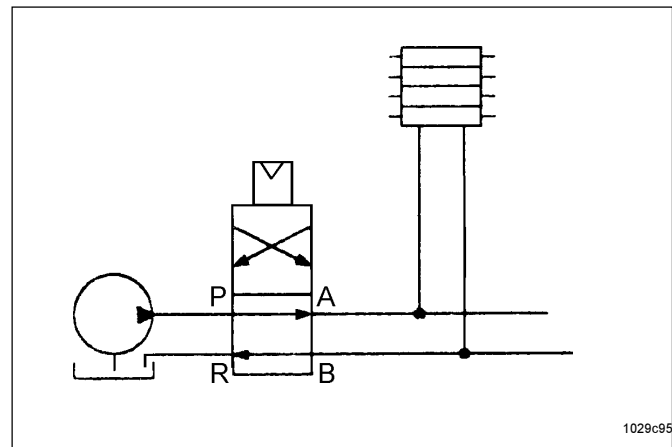


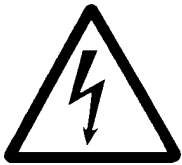
Fig. 1: MP2 used as a change-over valve for two-line systems

Erection and Assembly

Requirements on the installation site:

- even, solid and vibration-free installation site
- protected from dust and dirt
- safe from atmospheric influences
- position of installation: any

Electric Connection



- Before connecting the unit, disconnect the system from the power supply.
- The assembly and installation of electrical devices should be carried out only by an electrician!
- Observe the relevant rules of engineering and the respective safety provisions (rules, standards).
- Perform the electrical connection of the solenoid in accordance with the connection diagram.

CAUTION

The supply voltage and the voltage of the solenoid valve must agree.

Operating Instructions

Putting into operation

- After connection of the tube lines and the electric lines, the change-over valve is ready for operation.

Maintenance and repairs

- Repair work should be carried out only by qualified personnel using original replacement parts. Provided that only clean lubricant is used, the product does not need any particular maintenance.
The reversing piston is subject to natural wear which depends on the operating time and the operating pressure adjusted. For repairs, the complete reversing block must be replaced because the piston is fit to precise tolerances in the factory.



Before carrying out electrical repair work on the product, please observe the following:

- * Disconnect the system from the power supply and take the necessary measures to avoid it being switched on again by accident.
- * Reduce the system pressure to zero
- * Risk of lubricant splashing off

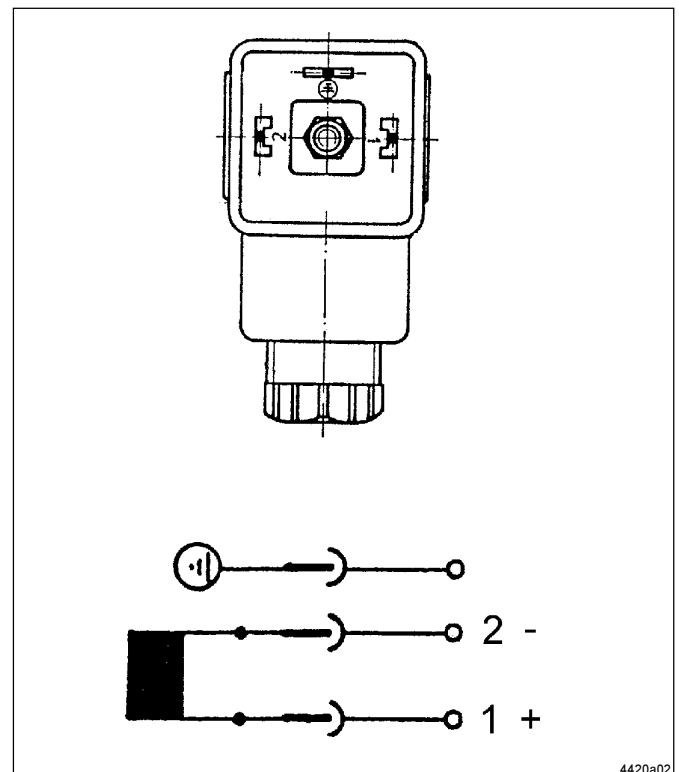
Technical Data

Threaded connection:	G 3/4
Flow rate:	$Q_{max} = 65 \text{ dm}^3\text{h}^{-1}$
Operating pressure, lubricant:	$p_{max} = 400 \text{ bar}$
Drive medium	
Oiled compressed air:	$p_{max} = 10 \text{ bar}$
Operating temperature:	-20°C bis +70°C
Sound pressure level:	< 70 dBA
Weight:	7.7 kg
Position of installation:	any

Data for solenoid valve:

Voltages:	see page 4
Power consumption, AC operate voltage:	22 VA
Power consumption, DC operation:	8.2 W
Power consumption, AC operation:	10.08 VA
Voltage fluctuations:	10 %
Type of protection:	IP 65
Insulation class:	F
Electrical connection:	connector plug DIN 43650 B cable entry PG 11

Terminal diagram for socket



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Troubleshooting

In case of defects, first check whether the pump operates with full pressure.

<ul style="list-style-type: none"> • Fault: No changing-over process is initiated 	
<ul style="list-style-type: none"> • Cause 	<ul style="list-style-type: none"> • Remedy
<ul style="list-style-type: none"> • Solenoid valve defective • No air pressure available or air pressure too low • No voltage supply or voltage supply too low • End-of-line pressure switch does not transmit any signal (for change-over valve MP2) 	<ul style="list-style-type: none"> • Replace solenoid valve • Check the air pressure supply • Check the voltage supply and the coil • Check function, adjustment and electric cable of end-of-line pressure switch
<ul style="list-style-type: none"> • Fault: no pressure build-up or pressure build-up too slow 	
<ul style="list-style-type: none"> • Cause 	<ul style="list-style-type: none"> • Remedy
<ul style="list-style-type: none"> • Leakage in the line system or in the two-line metering devices • Piston in reversing housing worn 	<ul style="list-style-type: none"> • Check the main lines and the two-line metering devices • Replace the complete reversing housing (pos.1,fig.4)

Part numbers of standard change-over valves

Description	Supply voltage	Part n°.
MP2-24DC change-over valve	24 V DC	618-28965-2
MP2-110AC/50-60Hz change-over v.	110V, 50/60 Hz	618-28964-2
MP2-110VDC change-over valve	110V DC	618-28963-1
MP2-220AC change-over valve	220V, 50/60 Hz	618-28966-2

Survey over pneumatically operated way valve WS-P2

Symbol	Description	Part N°.	Part N°. for Way-Valve Housing
<p>4422a02</p>	2/2 way valve, normally open WS-P2-W20-220/50	625-28994-2	518-32294-1
<p>4423a02</p>	2/2 way valve, normally closed WS-P2-W2G-24/00	625-28974-2	518-32294-1
<p>4424a02</p>	3/2 way valve, normally open from P to A WS-P2-W3R-24/00	625-29046-2	518-32294-1
	WS-P2-W3R-220/50	625-28973-2	518-32294-1
<p>4425a02</p>	3/2 way valve, normally open from R to B WS-P2-W3A-24/00	625-29111-1	525-31500-2
	WS-P2-W3A-110/50	625-28687-2	525-31500-2
	WS-P2-W3A-220/50	625-26040-3	525-31500-2
<p>4426a02</p>	4/2 way slide valve normally open WS-P2-A20-24/00	625-28498-2	525-31499-2
<p>4427a02</p>	4/2 way slide valve normally closed WS-P2-A2G-24/00	625-26434-3	525-31499-2
	WS-P2-A2G-220/50	625-26037-3	525-31499-2

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Single parts of the change-over valve and the way valve

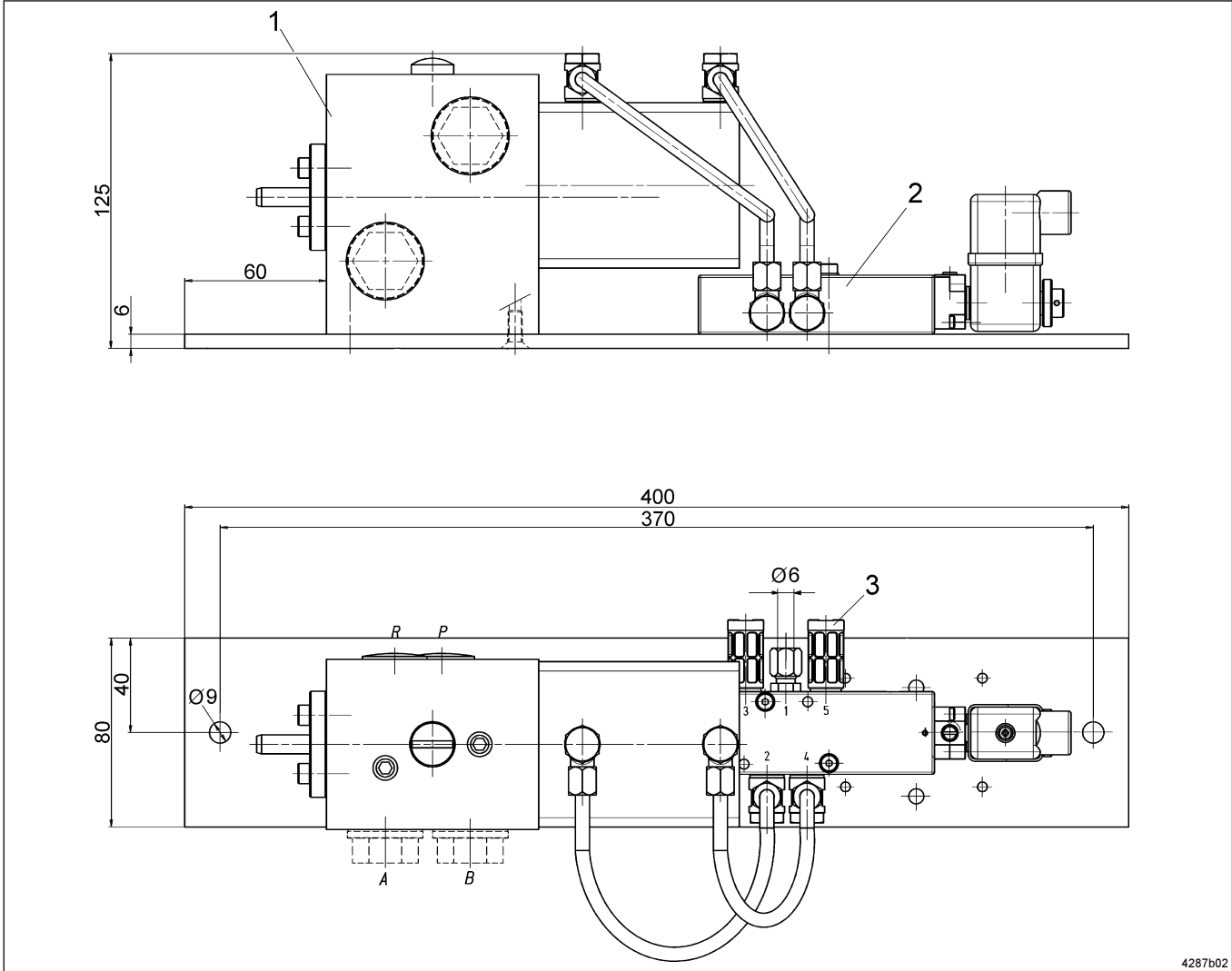


Fig. 2: Structure of the MP2 change-over valve and the way valve WS-P2

Item	Designation	Qty.	Part N°.
1	Reversing housing assy. with cylinder for MP2 (for way valve S-N°. acc. to table on page 5) (see next page for single parts)	1	518-32294-1
2	5/2 way solenoid valve 24VDC	1	253-14071-5
	220VAC	1	253-14071-6
	110VAC	1	253-14058-2
	110VDC	1	253-14072-6
3	Muffler U1/8	1	253-14055-1

Subject to change without notice

Single parts of reversing housing with cylinder

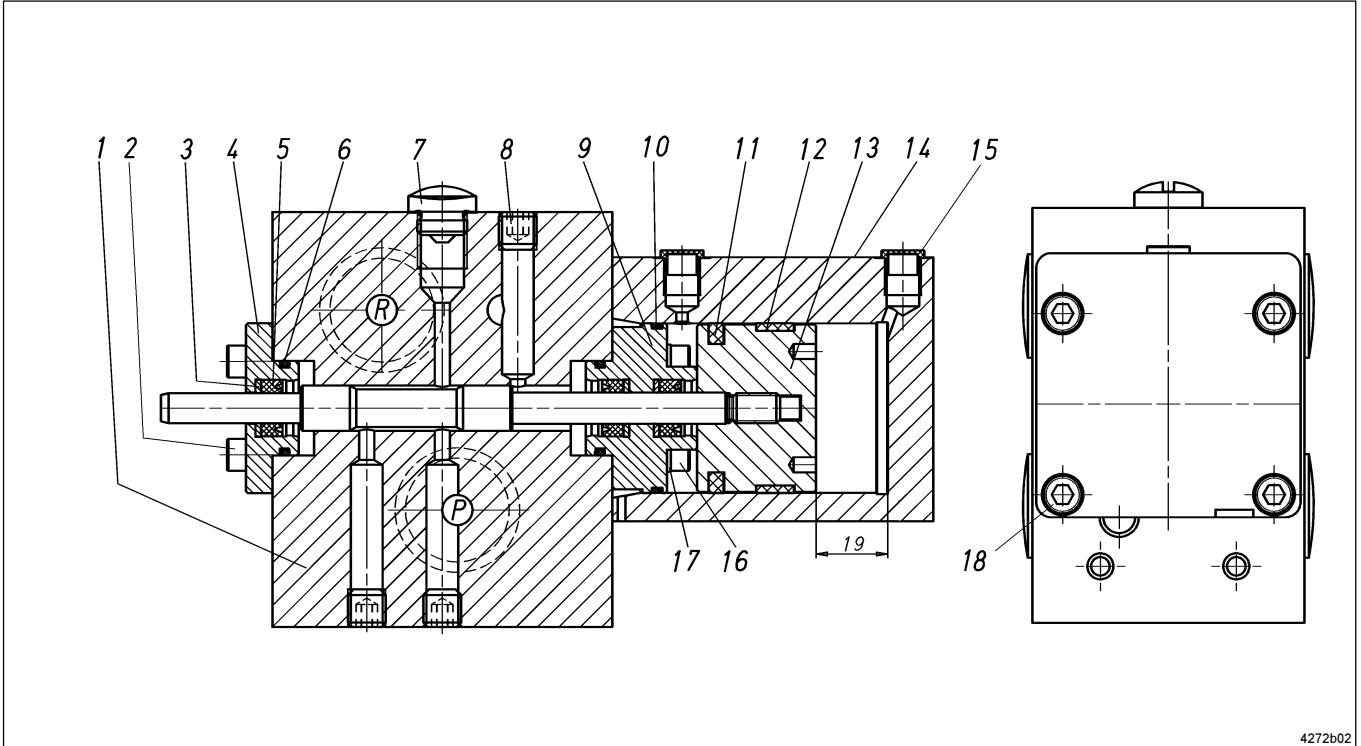


Fig. 3: Single parts of reversing housing

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Item	Description	Qty.	Part N°.
1	Reversing housing assy. with pistom (for MP, 2/2- and 3/2-way valve) for 4/2-way valve	1	525-31478-1
2	Hex. socket head screw M 5x16C	4	201-12546-4
3	Seal. ring, leather 7.8x15.3x1.5	3	306-17805-1
4	Sealing flange, housing	1	418-24847-1
5	U-cup sealing ring 8x15x5,7x3,8	3	220-12236-9
6	O-ring 21x2	2	219-12224-1
7	Closure plug G 1/4x8	1	303-17526-2
8*	Set screw M10	4	204-12112-2
9	Sealing flange, cylinder	1	418-24846-1
10	O-ring 41x1,78	1	219-14138-4
11	Compact seal	1	220-13782-2
12	Piston guiding ring EKF 45	1	220-13782-3
13	Piston D45	1	310-19802-1
14	Cylinder	1	418-70088-1
15	Closure plug	2	233-13100-8
16	Hex. socket head screw M 5x25C	4	201-12017-8
17	Screw head sealing ring	4	220-14101-2
18	Hex. socket head screw M 6x90	4	201-10010-2
	Set of sealing rings consisting of items 3, 5, 6, 10	1	518-31019-1
*	blocked with Loctite 270		

Note:

A pressure gauge (option) can be connected to item 6 (closure plug).

Tightening torques:

Item 6: 30 Nm
Item 15: 6 Nm
Item 17: 13 Nm

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Manufacturer's declaration as defined by EU machinery directive 98/37/EG, Annex II B

We hereby declare that the supplied model

**Change-over valve model MP2 ...
and way valve model WS-P2 ...**

in the version supplied by us is intended to be incorporated into machinery covered by this directive and that it may not be put into operation until the machinery into which the product is to be incorporated has been declared in conformity with the provisions of the above mentioned EU machinery directive including any amendments valid by the point of time of the declaration.

Applied harmonized standards, in particular:

- | | |
|------------|---------------------------------------------------------------------------------------|
| EN 292-1 | Safety of machinery, part 1
Basic terminology, methodology |
| EN 292-2 | Safety of machinery, part 2
Technical guiding principles and specifications |
| EN 809 | Pumps and pump units for liquids,
safety requirements |
| EN 60204-1 | Safety of machinery
Electric equipment of machines
Part 1: General requirements |



Walldorf, May 17, 2000 , Dr. Ing. Z. Paluncic