

Valve block

VB 25

Assembly and operating manual



Imprint

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congratulations on choosing a SCHUNK product. By choosing SCHUNK, you have opted for the highest precision, top quality and best service.

You are going to increase the process reliability of your production and achieve best machining results – to the customer's complete satisfaction.

SCHUNK products are inspiring.

Our detailed assembly and operation manual will support you.

Do you have further questions? You may contact us at any time – even after purchase.

Kindest Regards

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Table of contents

1	About this manual	4
1.1	Warnings.....	4
1.1.1	Key words.....	4
1.1.2	Symbols	4
1.2	Applicable documents	4
2	Basic safety notes	5
2.1	Intended use.....	5
2.2	Environmental and operating conditions.....	5
2.3	Product safety.....	5
2.3.1	Protective equipment	6
2.3.2	Constructional changes, attachments, or modifications.....	6
2.4	Personnel qualification.....	6
3	Warranty	7
4	Scope of delivery	7
5	Accessories	7
6	Technical data	8
7	Electrical and pneumatic block diagram	9
8	Assembly	10
8.1	Installation notes.....	10
8.2	Mechanical connection	11
8.2.1	VB 25 valve block overview.....	11
8.2.2	Valve block assembly	13
8.2.3	Assembly of a series of several valve blocks.....	14
8.2.4	Connections on the VB 25 valve block.....	15
8.3	Electrical connection	16
8.4	Start-up.....	17
9	Troubleshooting	18
9.1	24 V operating voltage display does not light up.....	18
9.2	Display for valve does not light up	18
9.3	24 V and valve display light up, valve does not switch supply pressure to the output.....	18
9.4	Valve block not tight when valves are switched off.....	19
10	Maintenance and Care	20

1 About this manual

This instruction is an integral part of the product and contains important information for a safe and proper assembly, commissioning, operation, maintenance and help for easier trouble shooting.

Before using the product, read and note the instructions, especially the chapter "Basic safety notes".

1.1 Warnings

The following key words and symbols are used to highlight dangers.

1.1.1 Key words

DANGER	Dangers for persons. Non-compliance will inevitably cause irreversible injury or death.
WARNING	Dangers for persons. Non-compliance may cause irreversible injury or death.
CAUTION	Dangers for persons. Non-observance may cause minor injuries.
NOTICE	Information about avoiding material damage

1.1.2 Symbols



Warning about a danger point



Warning about hand injuries



General mandatory sign to prevent material damage

1.2 Applicable documents

- General terms of business
- Catalog data sheet of the purchased product

The documents listed here, can be downloaded on our homepage www.schunk.com

2 Basic safety notes

2.1 Intended use

The module is designed exclusively to control compressed air.

The product is intended for installation in a machine/system. The requirements of the applicable guidelines must be observed and complied with.

The product may be used only in the context of its defined application parameters ([👉 6, Page 8](#)).

The module is not a safety component in accordance with the EC Machine Directive 2006/42/EC and must not be used in safety-related parts of machine control units.

Any other use or use exceeding that specified is regarded as inappropriate use. The manufacturer assumes no liability for any resulting damage.

2.2 Environmental and operating conditions

The module may be used only in the context of its defined application parameters ([👉 6, Page 8](#)).

2.3 Product safety

Dangers arise from the product, if:

- the product is not used in accordance with its intended purpose.
- the product is not installed or maintained properly.
- the safety and installation notes are not observed.

Avoid any manner of working that may interfere with the function and operational safety of the product.

Wear protective equipment.

NOTE

More information are contained in the relevant chapters.

2.3.1 Protective equipment

Provide protective equipment per EC Machinery Directive.

2.3.2 Constructional changes, attachments, or modifications

Additional drill holes, threads, or attachments that are not offered as accessories by SCHUNK may be attached only with permission of SCHUNK.

2.4 Personnel qualification

The integration, assembly, initial start-up and maintenance of the module as well as any repairs may only be performed by qualified personnel.

Anyone assigned by the operating company with work on the module must read and understand the complete assembly and operating manual, in particular the chapter "Basic safety notes" ([👉 2, Page 5](#)). This applies in particular to occasional personnel, such as maintenance personnel.

The following work safety notes are to be observed in particular:

- The operator is **obliged** to inform the manufacturer immediately about any noticeable changes to the valve block which compromise safety.
- As a general rule, all work on the valve block is to be performed only in shutdown mode. No electrical or pneumatic signals must be present.

3 Warranty

The warranty is valid for 24 months from the delivery date to the production facility under the following conditions:

- Intended use in 1-shift operation
- Observe the mandatory maintenance and lubrication intervals
- Observe the environmental and operating conditions

Parts touching the work piece and wear parts are not part of the warranty.

4 Scope of delivery

The scope of delivery includes:

- Valve block VB in the ordered model.


5 Accessories

A VB25 accessory pack is required for each valve block.

Content of the accessories pack:

- Connection cable
- O-ring (14x1.5)
- G1/8 locking screw

A wide range of accessories are available for this module.

For information about which accessories can be used with the appropriate product version  catalog.

6 Technical data

Size	25
Mechanical operating data	
Weight [g]	450
Number of valves	2 to 4 MV 25 valves
Dimensions [mm]	85 x 85 x 28
Ambient temperature [°C]	
Min.	-15
Max.	40
Sealing material	Viton - incompatible with hot water, steam, amines, organic acids and polar solvents
Protection class	IP 50 in installed condition with cover plate
Switching times [ms]	6 depending on the supply voltage
Electrical operating data	
Operating voltage [V]	24 ± 10 %
Electrical connection	M14 circular plug, 12-pin
Sensor connections	Four M8 circular plugs, 3-pin, on the side. Two sensor sockets at top upon request
Power consumption per valve	Switch-on phase of 0 to 15 ms: 4.5 W power drop after 15 ms: 2.5 W
Control inputs	Input impedance level of 6.8 kΩ
Operating data for compressed air connection	
Pressure medium	Filtered compressed air, 40µm, dry, oil free, compressed air purity classes ISO 8573-1 7 4 2
Function	3/2 directional control valve
Supply pressure range	2 to 8 bar. Other supply pressures upon request
Compressed air connection	G 1/8
Nominal flow rate Qn	135 NI/min per output according to ISO 6358
Leakage rate per valve [mNI/min]	8

Further technical data can be found in the catalog data sheet.
The most recent version applies.

7 Electrical and pneumatic block diagram

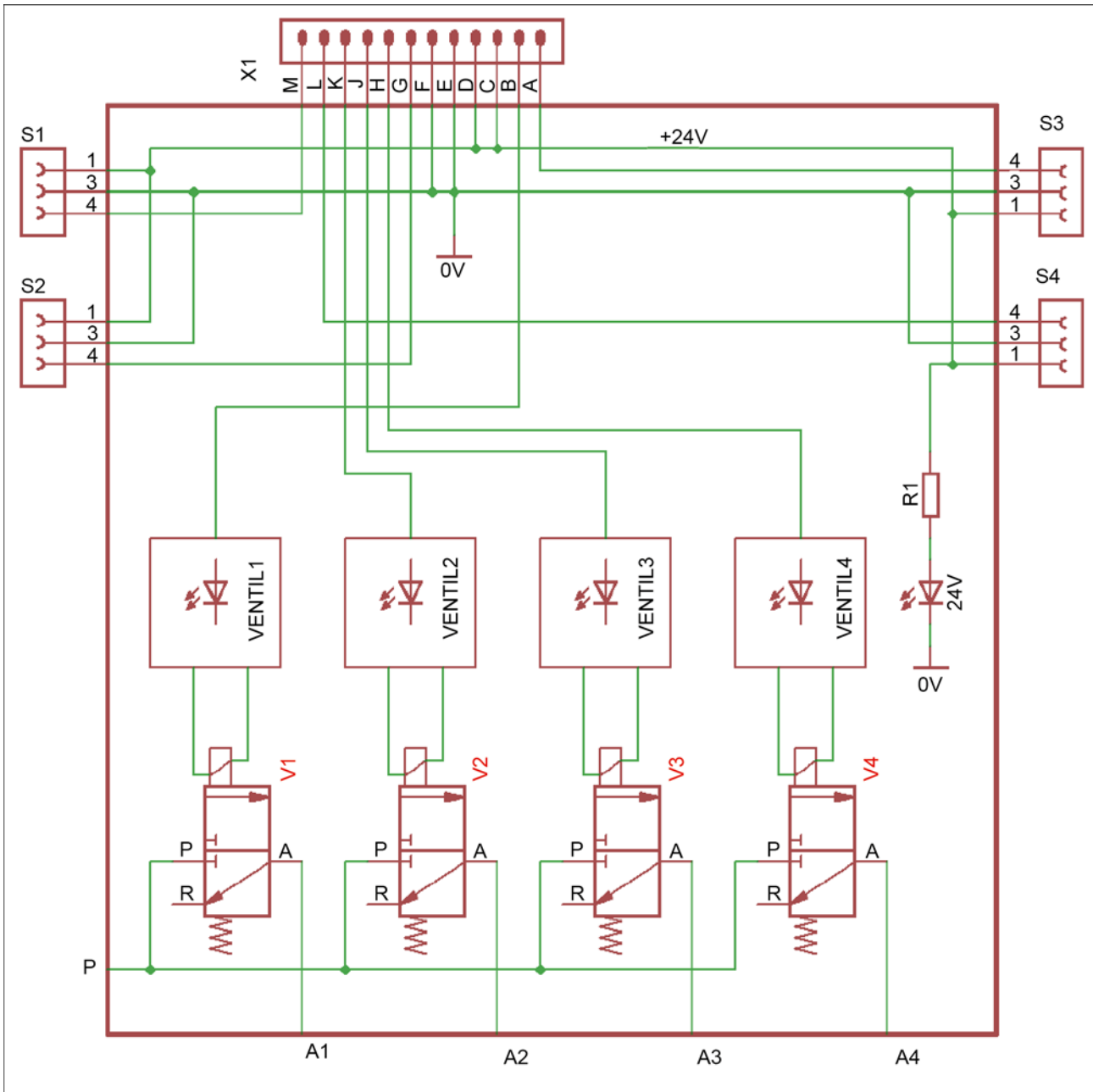






Fig. 1

8 Assembly

8.1 Installation notes

	 WARNING
	<p>Risk of injury when working on the module!</p> <ul style="list-style-type: none"> • Switch off the energy supply. • Switch off the electrical and pneumatic signals.

	NOTICE
	<p>The electronic components on the circuit board can be destroyed by electrostatic discharge.</p> <ul style="list-style-type: none"> • Make sure the valve block is only touched by the metal frame and the circuit board is not touched at all after removing the ESD packaging for the assembly of the valve block.

	NOTICE
	<p>Observe the requirements for the air supply. (↩ 6, Page 8) "Technical Data"</p>

NOTE

The following procedure is to be strictly observed for the installation of the valve block:

- The valve cartridge and accessories are supplied separately and must be assembled on site.
- The description of the installation is based on a fully equipped valve block with MV 25 micro valves.

8.2 Mechanical connection

8.2.1 VB 25 valve block overview

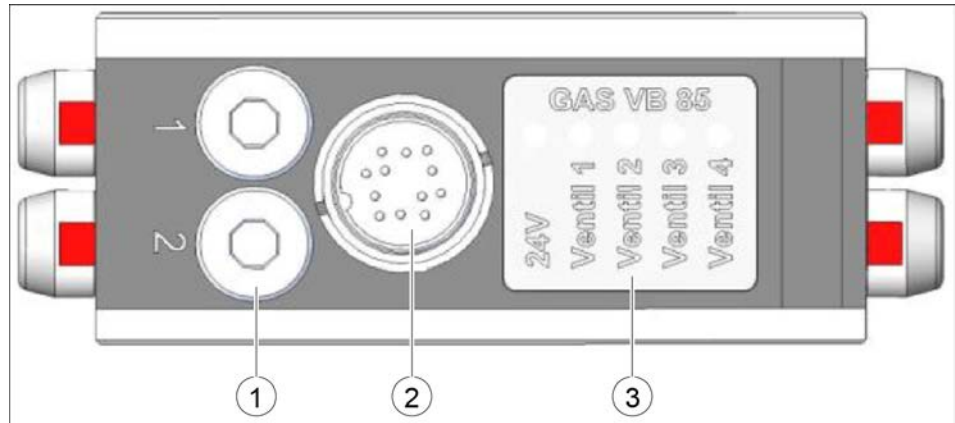


Fig. 2

1	G1/8" locking screws for alternative position of the S1 and S2 sensor sockets
2	12-pin plug
3	Display field with indicator lights

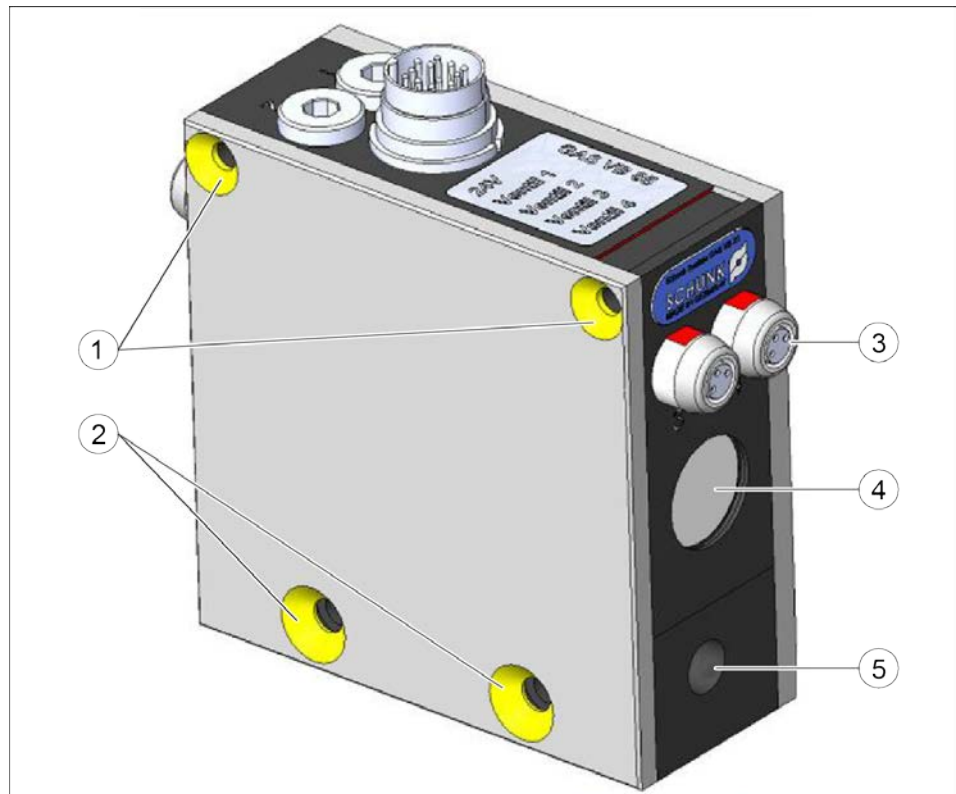


Fig. 3

1	2 x fixing bore for screw (M4 x 35)
2	2 x fixing bore for screw (M5 x 35)
3	M8 sensor sockets
4	Sound absorber for exhaust air R
5	Supply air connection P

8.2.2 Valve block assembly

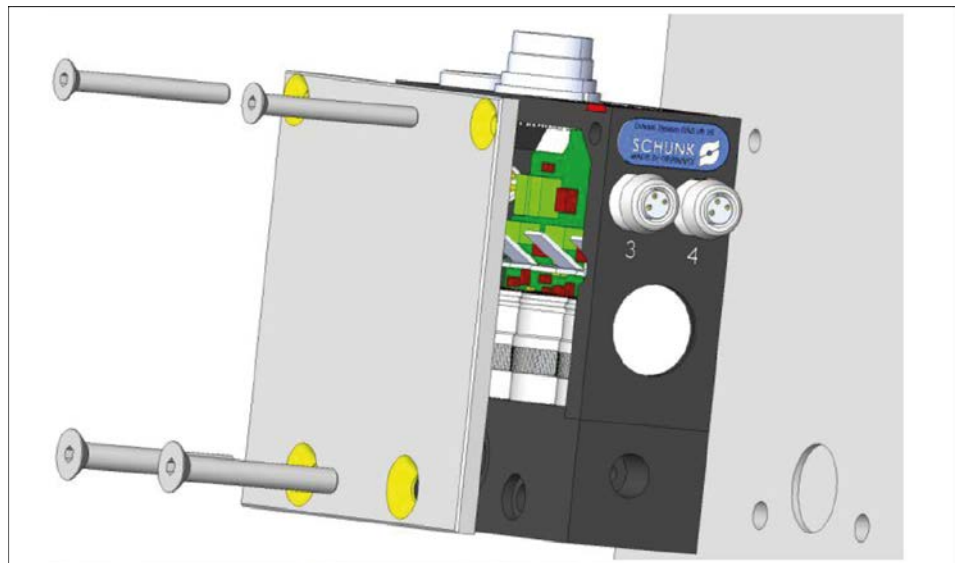


Fig. 4



NOTICE

The 14 x 1.5 O-ring for the air feed-through can fall out.

- Check whether the O-ring is there before applying the cover plate.

The valve block is mounted in the control cabinet or machine / automated system with the mounting screws (2 x M5 x 35 and 2 x M4 x 35, ISO 10642). The cover plate on the front side serves as housing end plate.

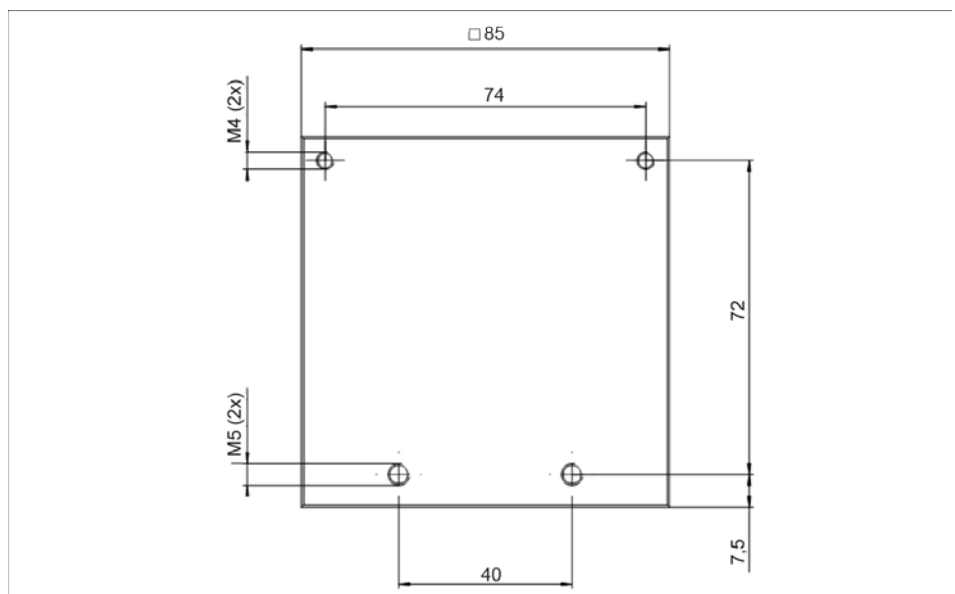


Fig. 5 Valve block drilling pattern

8.2.3 Assembly of a series of several valve blocks

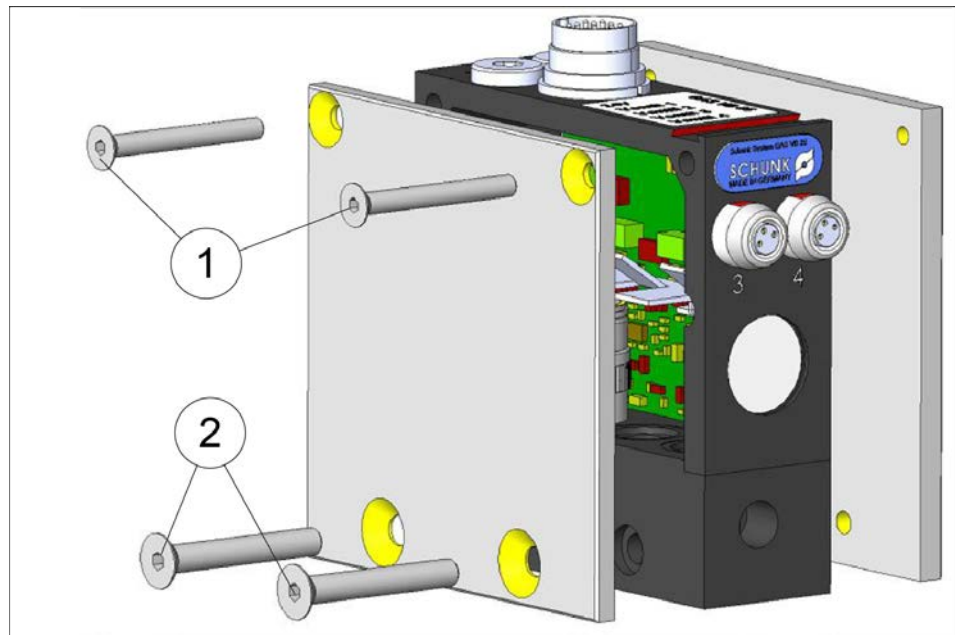



Fig. 6

- 1 Unscrew the screws (1) with a 2.5 mm Allen key and the screws (2) with a 3.0 mm Allen key.
- 2 Remove the valve cover from both sides.

	NOTICE
	<p>The 14 x 1.5 O-ring for the air feed-through can fall out.</p> <ul style="list-style-type: none"> • Check whether the O-ring is there before connecting the valve blocks.

- 3 Connect the valve blocks by means of "metal/guide rods".
- 4 Integrate the VB 25 multiple block in the machine/automated system or control cabinet with connecting elements/screws.

Several valve blocks can be connected to each other. Each block can be supplied by the central pressure supply in the event of a multiple series connection.

8.2.4 Connections on the VB 25 valve block

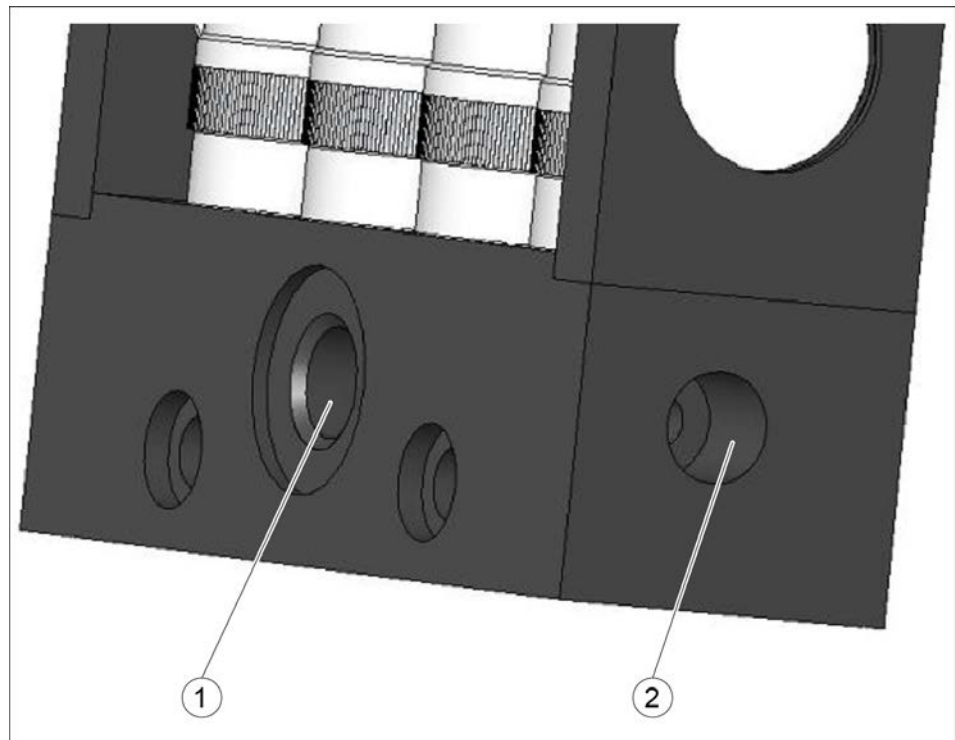


Fig. 7


1	Feed-through P	2	Connection P
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Install the compressed air supply (G1/8 thread size).

The compressed air supply is possible from both sides. Seal unused supply openings with a locking screw.

The compressed air supply is transferred from valve block to valve block through a through-bore.

8.3 Electrical connection

	NOTICE
	<p>Damage to the valve block due to a faulty electrical connection! Observe the maximum values of the electrical supply (Fig. 6, Page 8).</p>

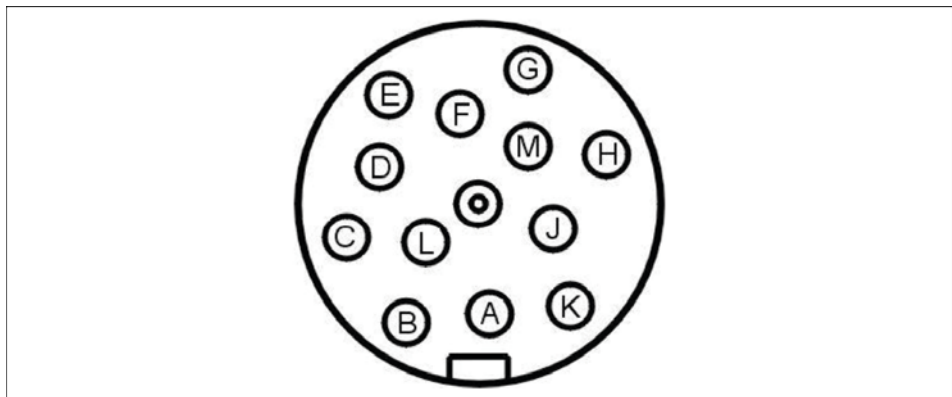


Fig. 8

Designation	Color	Pin no.	Level
+24 V	gn	C	24 V ± 10 %
+24 V	ye	D	24 V ± 10 %
GND	gr	E	0 V
GND	pk	F	0 V
Switching signal, valve 1	bn	B	Inactive = 0 V..2 V Active = 4 V.. 26 V
Switching signal, valve 2	pr	K	Inactive = 0 V..2 V Active = 4 V.. 26 V
Switching signal, valve 3	bk	J	Inactive = 0 V..2 V Active = 4 V.. 26 V
Switching signal, valve 4	rd	H	Inactive = 0 V..2 V Active = 4 V.. 26 V
Sensor output 1	rdbu	M	Sensor signal
Sensor output 2	bu	G	Sensor signal
Sensor output 3	wh	A	Sensor signal
Sensor output 4	grpk	L	Sensor signal

- 1 Mount 12-pin circular plug for power supply.

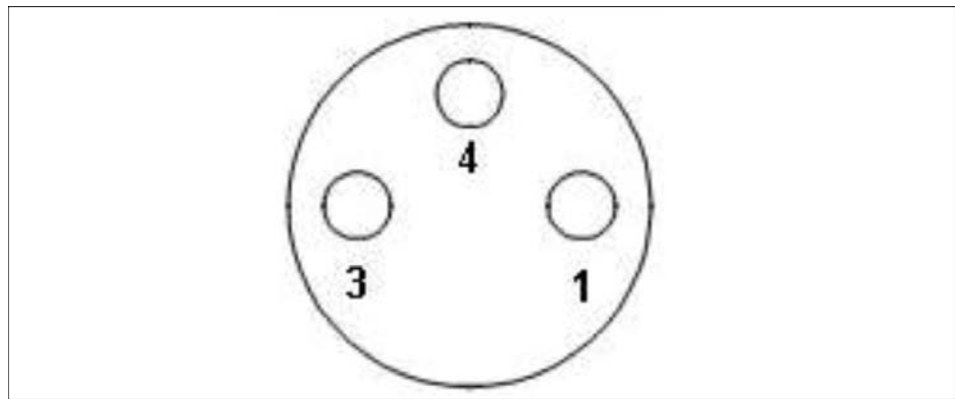




Fig. 9 Sensor socket view on plug side

1	+24 V	3	GND	4	Signal
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2 Mount circular plug for the sensors.

The connection assignment of the M8 sensor socket on the valve block corresponds to the standard connection assignment of a 3-pin sensor.

8.4 Start-up

	 WARNING
	<p>Risk of injury due to objects falling or being ejected from the machine/automated system!</p> <ul style="list-style-type: none"> • Check whether all screw connections are tight prior to the start-up or restart.

✓ The valve block with a pressure range of 2 - 8 bar requires a minimum supply pressure of 2 bar in order to switch the valves.

1 Create the supply pressure within the pressure range of the valve (see data sheet/catalog).

2 Apply the operating voltage (☞ data sheet/catalog).



3 Switch on switching signals 1 to 4.

⇒ The supply pressure is put through to the valve outlet of the actuated valves.

4 Switch off switching signals 1 to 4.

⇒ The valve outlet is separated from the supply pressure and, in the case of 3/2 directional control valves, is ventilated by means of the lateral sound absorbers in the valve block housing.

9 Troubleshooting

	 WARNING
	<p>Risk of injury due to unexpected movements of the machine/automated system!</p> <ul style="list-style-type: none"> Switch off the energy supply when performing any work on the valves. Switch off the operating voltage and supply pressure.

9.1 24 V operating voltage display does not light up

Possible cause	Corrective action
Incorrect supply voltage polarity or supply voltage not connected.	Make the correct connection assignment as described in chapter 7.3.

9.2 Display for valve does not light up

Possible cause	Corrective action
Valve is not actuated or actuated with an insufficient level.	Actuate the valve.

9.3 24 V and valve display light up, valve does not switch supply pressure to the output

Possible cause	Corrective action
Supply pressure is too low.	Increase the supply pressure to the minimum operating pressure.

9.4 Valve block not tight when valves are switched off

Possible cause	Corrective action
Supply pressure is too high.	Reduce the supply pressure to the maximum operating pressure.
Assembly error	Check the sealing elements and locking screws.

10 Maintenance and Care

The valve block is maintenance free if used appropriately.