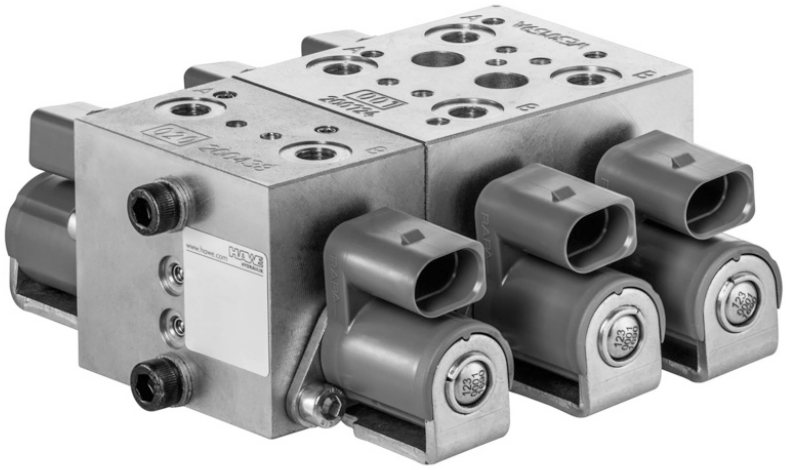
Valve bank (directional seated valve) type SLC

Product documentation

Operating pressure p_{max}:	150 bar
Flow rate Q_{max}:	1 lpm



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HAWE HYDRAULIK

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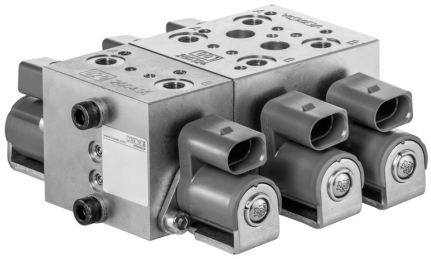
Table of Contents

1 Overview of valve bank (directional seated valve) type SLC

The directional seated valves are available as chained valves in a valve bank. This facilitates the combination of different circuit symbols or actuation types in order to save space, and such systems can also be used to actuate independent consumers.

The SLC chained valves are a combined design consisting of seated valves and releasable check valves. This allows hydraulic actuators to be held in position for long periods of time.

You can integrate T-throttles into the block to adjust actuator movements. The magnetic plugs used are connectors (Tyco MQS Quadlok or FEP flat plugs) used in the automotive industry. The low flow rates of up to 1 lpm allow mounting of mini-hydraulics system solutions.



Valve bank (directional seated valve) type SLC

Features and benefits

- Short switching times
- Requires little space thanks to compact design
- Energy-efficient thanks to low power consumption
- Hold hydraulic actuators in position for long periods of time

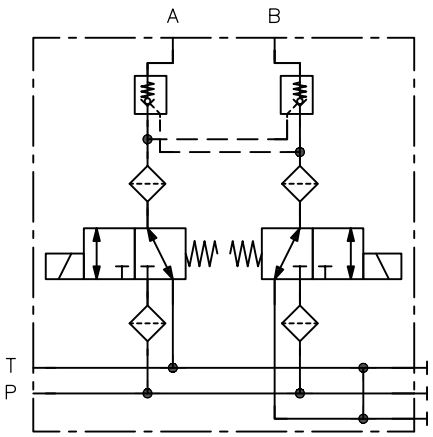
Intended applications

- Operating tables
- Rescue stretchers
- Floor-lock systems
- Commercial vehicles

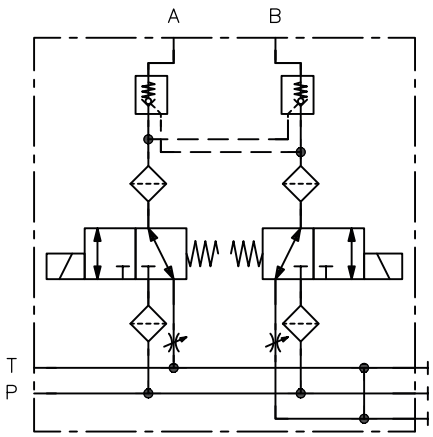
2 Available versions

Circuit symbol

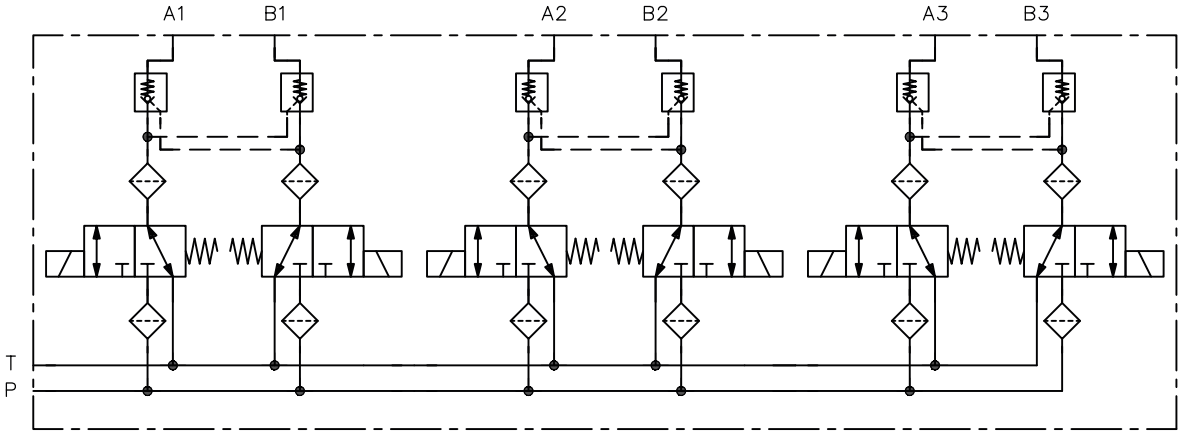
SLC 1



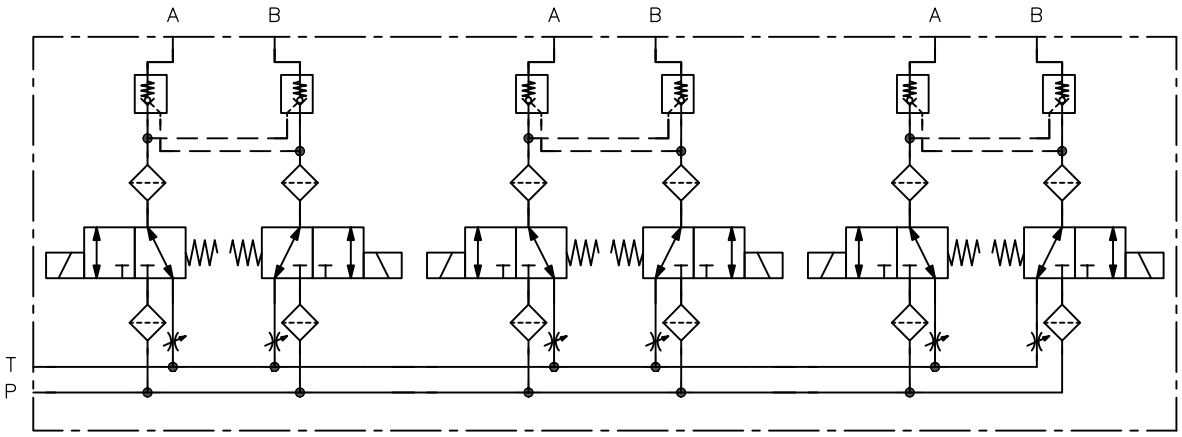
SLC 11



SLC 1-3



SLC 11-3



Ordering example

SLC1 SLC11	-7 -3	E

2.3 "Solenoid voltage and plug"

2.2 "Number of sections"

2.1 "Basic type and size"

2.1 Basic type and size

Type	Description	Pressure p_{max} (bar)	Flow rate Q_{max} (lpm)
SLC1	--	150	1
SLC11	with integrated throttle screws	150	1

2.2 Number of sections

Coding	Description
1	1-way
2	2-way
3	3-way
4	4-way
5	5-way
6	6-way
7	7-way
8	8-way

2.3 Solenoid voltage and plug

Coding	Electrical connection	Nominal voltage	Protection class (IEC 60529)
E	Micro Quadlok system for 2-pin socket housing AMP 968704 (or TE 1-1718333-1)	12 V DC	IP 50
D	Flat-contact housing for 2-pin plug FEP 42121600 (VW 1J0 973 702)	24 V DC	IP X6

The specifications regarding the IP protection class apply for versions featuring a properly assembled male connector.

3 Parameters

3.1 General data

Version	Series connection for pipe connection
Design	Seated valves with releasable check valves
Material	Aluminium, steel
Actuation	electromagnetic
Installation position	any
Ports/connections	▪ **P** = Pump ▪ **T** = Tank ▪ **A_n, B_n** = Consumers
Flow direction	P → A, B A, B → T
Pilot ratio	for releasable check valve approx. 7 : 1
Hydraulic fluid	Hydraulic fluid, according to DIN 51 524 Parts 1 to 3; ISO VG 10 to 68 according to DIN ISO 3448 Viscosity range: 15 - 500 mm²/s
Cleanliness level	**ISO 4406** 19/17/14
Temperatures	Environment: approx. -10 ... +50 °C, hydraulic fluid: +10 ... +40 °C, ensure the correct viscosity range.

3.2 Weight

Type	**SLC1**	**SLC11**
1-way chained:	= 0.7 kg	= 0.8 kg
2-way chained:	= 1.2 kg	= 1.4 kg
3-way chained:	= 2.0 kg	= 2.2 kg
4-way chained:	= 2.3 kg	= 2.6 kg
5-way chained:	= 3.1 kg	= 3.4 kg
6-way chained:	= 3.6 kg	= 4.0 kg
7-way chained:	= 4.4 kg	= 4.9 kg
8-way chained:		= 5.5 kg

3.3 Pressure and volumetric flow

Operating pressure	see Chapter 2.1, "Basic type and size"
Flow rate	see Chapter 2.1, "Basic type and size"

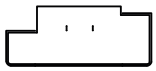
3.4 Electrical data

Electromagnetic actuation of each single valve

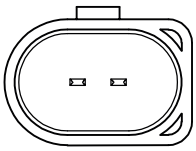
Coding	E	D
Nominal voltage	12 V DC	24 V DC
Switching voltage	min. 10 V DC	min. 20 V DC
Nominal current I_N	1.4 A	0.6 A
Nominal power P_N	0.015 kW	0.015 kW
Relative duty cycle	depending on environment, up to 50% duty cycle	depending on environment, up to 50% duty cycle
Resistance R_{20}	9.3 Ohm +/-5 %	35 Ohm +/-1 %
Diode	BZW04P28B	BZW06-28B
Inductance	15 mH	100 mH

Electrical connection

12 V: AMP



24 V: FEP

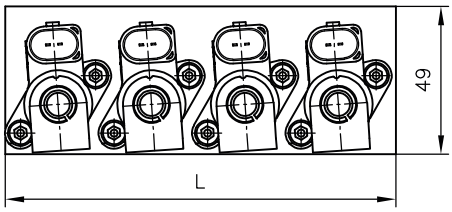


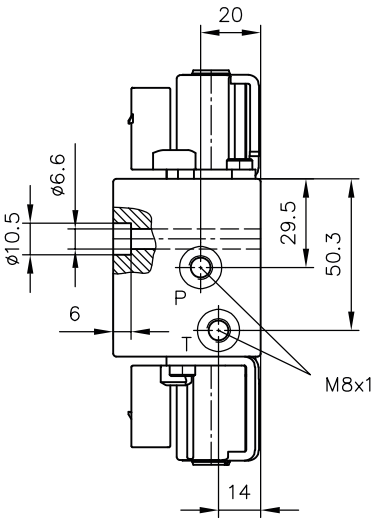
4 Dimensions

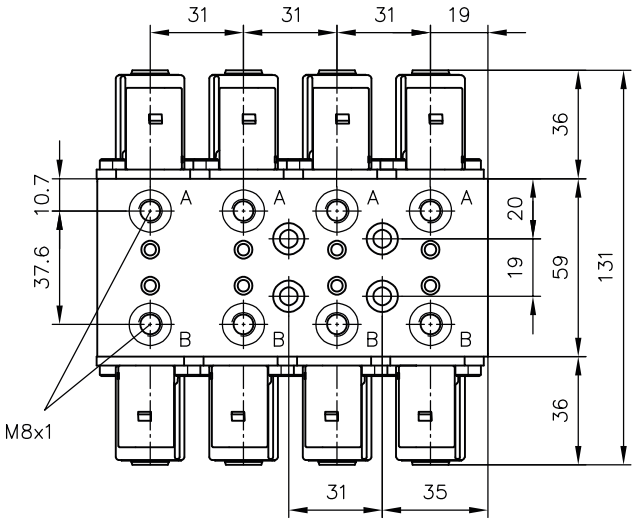
All dimensions in mm, subject to change.

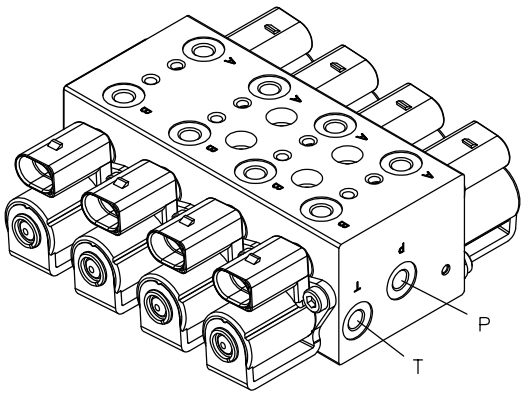
INFORMATION
The illustrations show the 24 V version

SLC 1







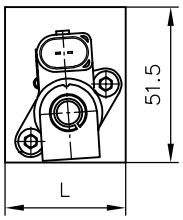


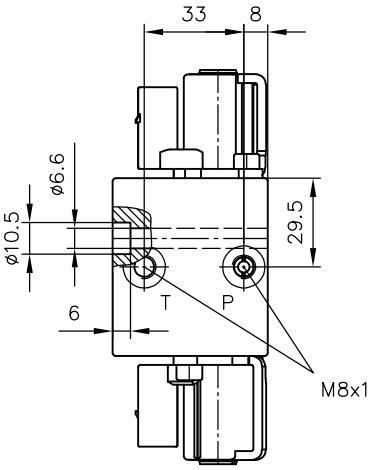
	L
SLC 1-1	40
SLC 1-2	70
SLC 1-3	101
SLC 1-4	129,5
SLC 1-5	162
SLC 1-6	193
SLC 1-7	224

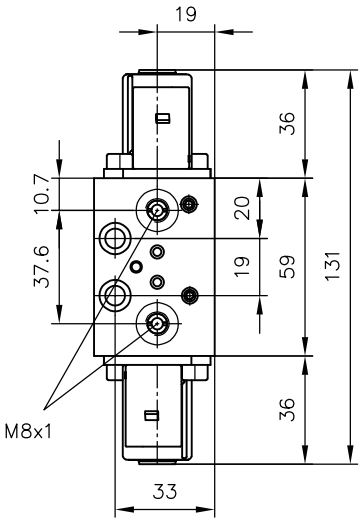
INFORMATION

The illustrations show the 24 V version

SLC 11-1







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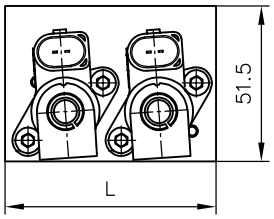

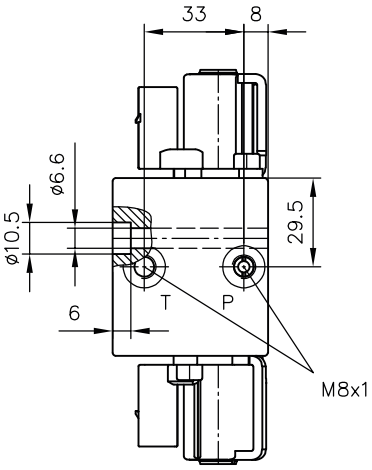

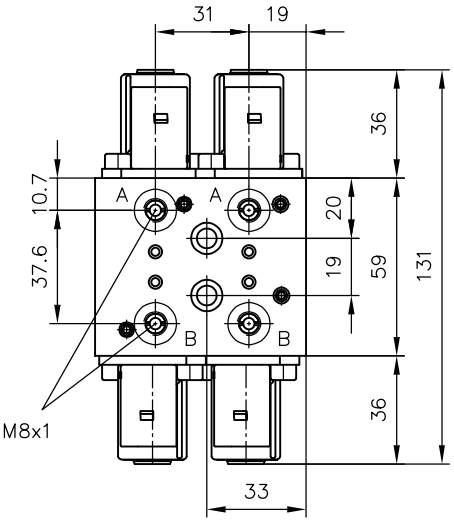

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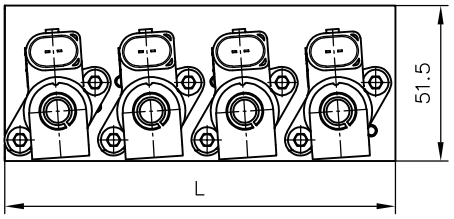
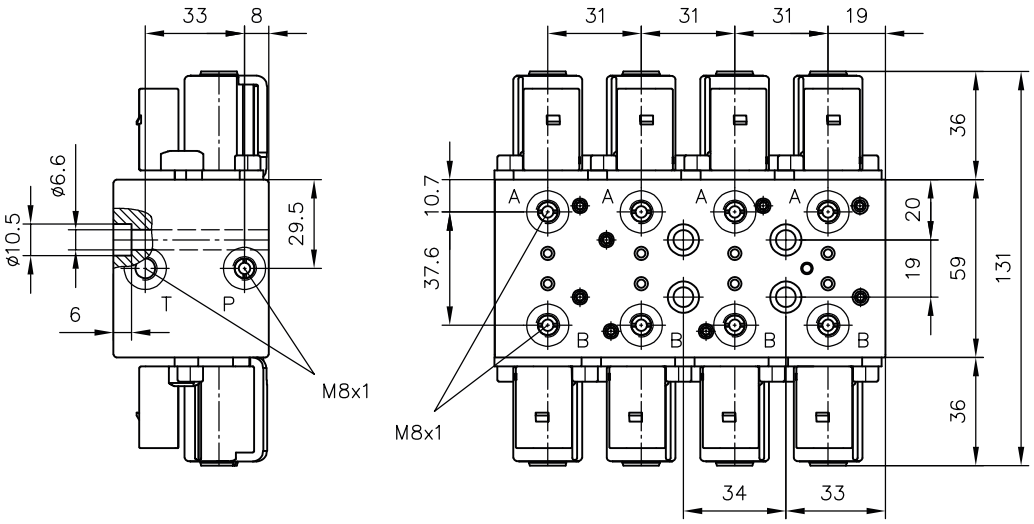
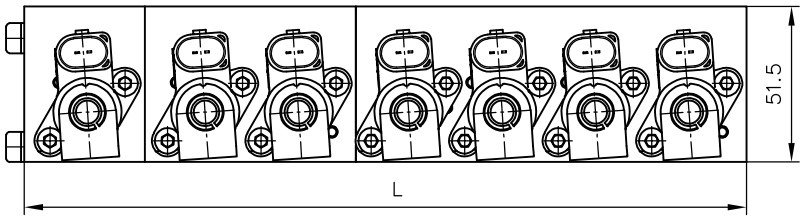
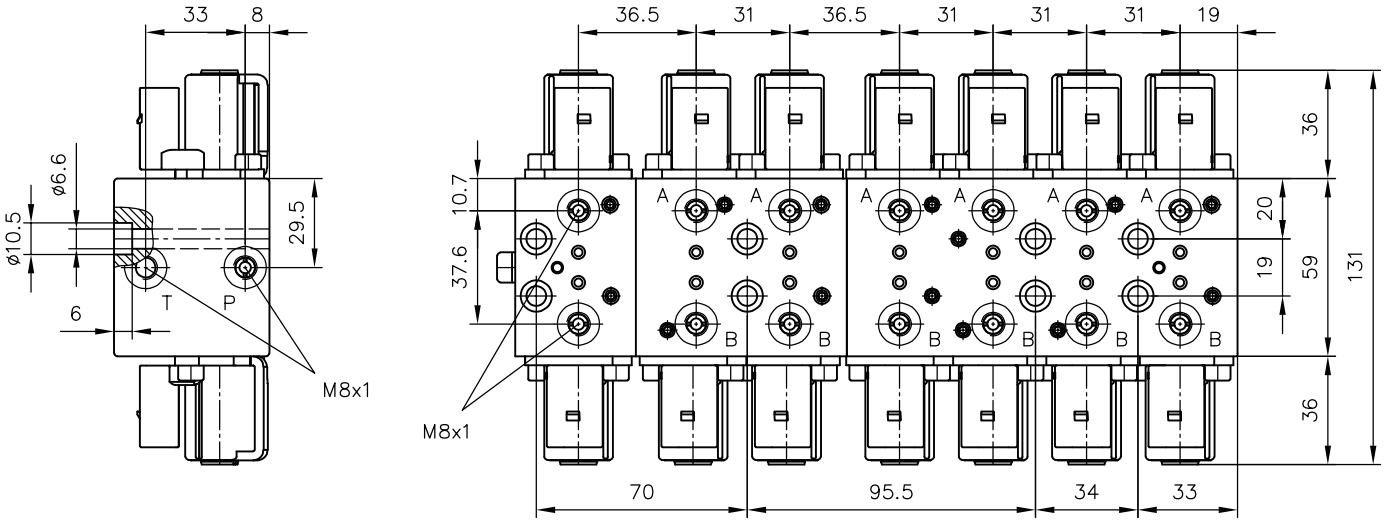
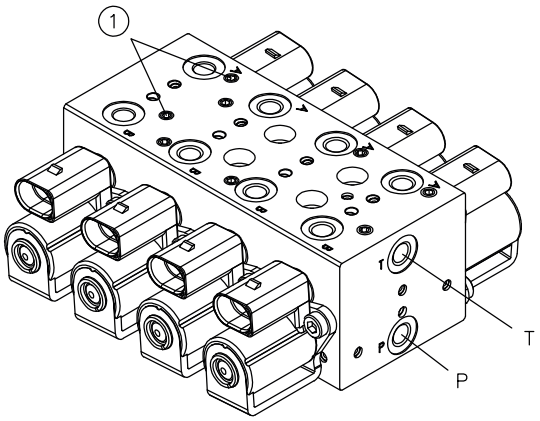




SLC 11-7







1 Adjusting screw for return throttle (T-throttle)

	L
SLC 11-1	40
SLC 11-2	70
SLC 11-3	110
SLC 11-4	129,5
SLC 11-5	169,5
SLC 11-6	199,5
SLC 11-7	239,5
SLC 11-8	269,5

5 Installation, operation and maintenance information

Observe the document B 5488 “General operating instructions for assembly, commissioning, and maintenance.”

5.1 Intended use

This product is intended exclusively for hydraulic applications (fluid technology).

The user must observe the safety measures and warnings in this document.

Essential requirements for the product to function correctly and safely:

- ► All information in this documentation must be observed. This applies in particular to all safety measures and warnings.
- ► The product must only be assembled and put into operation by specialist personnel.
- ► The product must only be operated within the specified technical parameters described in detail in this document.
- ► All components must be suitable for the operating conditions when using an assembly.
- ► The operating instructions for the components, assemblies and the specific complete system must also always be observed.

If the product can no longer be operated safely:

1. Remove the product from operation and mark it accordingly.
   ✓ It is then not permitted to continue using or operating the product.

5.2 Assembly information

The product must only be installed in the complete system with standard and compliant connection components (screw fittings, hoses, pipes, fixtures etc.).

The product must be shut down correctly prior to disassembly (in particular in combination with hydraulic accumulators).

DANGER
Sudden movement of the hydraulic drives when disassembled incorrectly
Risk of serious injury or death

- ► Depressurise the hydraulic system.
- ► Perform safety measures in preparation for maintenance.

Electrical and hydraulic connection

NOTICE
Only use suitable fittings

1. Space required for assembly, installation and commissioning: 500 x 100 x 250 mm (WxHxD).
2. Place the product in position in the higher-level machine.
3. Ensure that all the fastening bores and hydraulic connections align correctly.
4. Tighten the hydraulic connections and fastening screws of the valve bank correctly.
5. Connect the electromagnetic valves to the control system:

INFORMATION
It is not permitted to actuate more than one solenoid per valve unit at the same time .

- ► see Chapter 2.3, "Solenoid voltage and plug" plug, conductor cross-section 0.3 - 1.5 mm².
- ► Use the cable with the matching plug in accordance with the technical data sheet.
- ► Ensure that you are using the right power supply: 12 V DC (15 W), 24 V DC (15 W).
- ► Push the cable plug into the coil bushing.
- ► Then, connect the cable to the electrical power supply.

6. Turn the return throttle's adjusting screws all the way inwards, clockwise, using the hex key with 2.5 width across flats.
   - ► Note the end stop when turning them inwards.
   - ► Do not turn the adjusting screw out further than flush with the valve body.
7. Apply the desired operating pressure to the product .
   - ► Note the operating pressure of the higher-level machine/unit.
   - ► If external leakage occurs, reduce the operating pressure and re-tighten the fittings.
8. Test the fittings and electrical connection after a week of operating time.

Start-up

☑ Start-up may only be carried out by trained specialist personnel.

☑ The unit is secured against unintended activation.

1. Check that the hydraulic power pack is connected correctly:
   - ✓ mechanically/hydraulically
   - ✓ electrically: power supply, control
   - ✓ fixed installation: attachment to the machine, in/on the base
2. Configure the flow rate on the return throttles one after another:
   - a) Energize the solenoid of one valve unit
   - b) Turn on the motor of the attached unit (e.g. hydraulic power pack).
   - c) Open the adjusting screw counter clockwise, until the desired flow rate is achieved (as a maximum so it is flush with the valve body).
   - d) Repeat steps 2a and 2c until all flow rates are configured on the return throttles.
   - e) Then, check and readjust the configured flow rates.
   - f) Secure the adjusting screws against unauthorised tampering using a threadlocker.

⚠ CAUTION

Unwanted or sudden opening of the add-on valves due to careless configuration of the flow rate.

If not all of the return throttles are configured and opened, then counter-pressure can build up upstream of the releasable check valves, causing the check valve to open. Flow rate and pressure cannot be kept stable (fluctuating operating state).

- ► Configure all the return throttles during commissioning.
- ► Secure the adjusting screws with the threadlocker after configuration.

5.3 Operating instructions

Observe product configuration and pressure/flow rate.

The statements and technical parameters in this document must be strictly observed.
The instructions for the complete technical system must also always be followed.

NOTICE

- ► Read the documentation carefully before usage.
- ► The documentation must be accessible to the operating and maintenance staff at all times.
- ► Keep documentation up to date after every addition or update.

⚠ CAUTION

Overloading components due to incorrect pressure settings.

Risk of minor injury.

- Pay attention to the maximum operating pressure of the pump, valves and fittings.
- Always monitor the pressure gauge when setting and changing the pressure.

Purity and filtering of the hydraulic fluid

Fine contamination can significantly impair the function of the product. Contamination can cause irreparable damage.

Examples of fine contamination include:

- Swarf
- Rubber particles from hoses and seals
- Dirt due to assembly and maintenance
- Mechanical debris
- Chemical ageing of the hydraulic fluid

NOTICE

New hydraulic fluid from the manufacturer may not have the required purity.

Damage to the product is possible.

- ► Filter new hydraulic fluid to a high quality when filling.
- ► Do not mix hydraulic fluids. Always use hydraulic fluid that is from the same manufacturer, of the same type, and with the same viscosity properties.

For smooth operation, pay attention to the cleanliness level of the hydraulic fluid (cleanliness level see Chapter 3, "Parameters").

Additionally applicable document: D 5488/1 Oil recommendations

5.4 Maintenance information

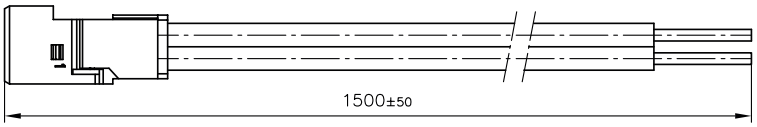
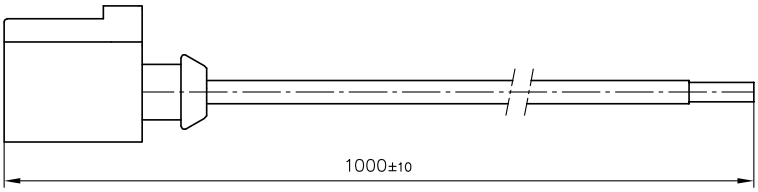
Check regularly (at least once a year) by visual inspection whether the hydraulic connections are damaged. If external leakages are found, shut down and repair the system.

Clean the surface of the device regularly (at least once a year) (dust deposits and dirt).

6 Other information

6.1 Accessories, spare and individual parts

To purchase spare parts, please see HAWE Hydraulik interactive contact map.

Appropriate connector	for coding magnetic plug	Rated voltage	SAP no.	
Micro Quadlock system socket housing, 2-pin	E	12 V DC	014-2034-0	
Connector FEP 42121600 or VW 1J0973702	D	24 V DC	014-1103-0	

References

Additional versions

- valve bank (directional seated valve) type TLC 3: D 6020 TLC 3
- seated valve type SP 1 chained together as type SL 1: D 6024

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