

Compact hydraulic power pack type HICON

Original assembly instructions



Operating pressure p_{\max} :	170 bar
Geometric displacement volume:	0.5 cm ³ /rev
Usable volume (tank) $V_{\text{use max}}$:	0.6 l



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1 About these instructions

This manual is part of the product and describes the safe and proper use in all operating phases.

All photos and drawings in this manual show an available product variant. For precise details concerning the variant you have purchased, please refer to the type plate attached to the product.

-  ▶ Read instructions before use.
- ▶ Make the manual accessible to operating and maintenance personnel at all times.
- ▶ Keep this manual for the lifetime of the product.
- ▶ Only pass on the product to third parties together with this manual.

1.1 Target audience

The target audience of this manual is trained and qualified personnel who are familiar with the installation, operation and maintenance of machines.

The manual provides relevant information for the machine manufacturer and machine operator as well as for training courses.

1.2 Safety instructions and symbols

Safety indication

In these instructions, the following warning and safety notes are used:

Symbol	Meaning
	Draws your attention to a hazardous situation that can lead directly to serious injury or death if not avoided.
	Draws your attention to a hazardous situation that can indirectly lead to serious injury or death if not avoided.
	Draws your attention to a hazardous situation that can indirectly lead to light to moderate injury if not avoided.
	Notice to prevent environmental and material damage.
	Information to ensure the correct use of the product.

Safety symbols

	General safety symbol Draws your attention to additional safety information.		
	Slipping hazard		Dragging hazard from moving parts
	Harmful substances		Tripping and falling hazard
	Fire accelerants		Falling loads

	Burn hazard		Crushing hazard
	Electrical voltage		Suspended loads
	No access to persons with pacemakers and defibrillators		

Mandatory signs

Protective equipment	
	Safety boots Wear appropriate safety boots to protect your feet against mechanical hazards
	Work gloves Wear suitable work gloves to protect your hands against chemical and mechanical hazards.
	Safety goggles Wear safety goggles to protect your eyes against chemical and mechanical hazards.
	Protective clothing <ul style="list-style-type: none"> ▶ Wear fitted clothing without protruding parts. ▶ Follow the safety data sheet of the hydraulic fluid.

1.3 Applicable documents

Standard	Designation
2006/42/EC	Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC
2014/30/EU	Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility
2011/65/EU, RoHS	Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment
Regulation (EC) No 1907/2006	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EEC and 2000/21/EC
ISO 4406	Hydraulic fluid power. Fluids. Method for coding the level of contamination by solid particles
IEC 60529	Protection classes provided by housings (IP code) (IEC 60529:1989 + A1:1999 + A2:2013)
DIN EN ISO 12100	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN 626-1:1994+A1:2008	Safety of machinery — Reduction of risks to health from hazardous substances emitted by machinery — Part 1: Principles and specifications for machinery manufacturers
DIN EN 894-3	Safety of machinery - Ergonomics requirements for the design of displays and control actuators - Part 3: Control actuators

Standard	Designation
DIN EN 894-4	Safety of machinery - Ergonomics requirements for the design of displays and control actuators - Part 4: Location and arrangement of displays and control actuators
EN 953:1997+A1:2009	Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards
DIN EN 1005-2	Safety of machinery - Human physical performance - Part 2: Manual handling of machinery and component parts of machinery
DIN EN 1005-4	Safety of machinery - Human physical performance - Part 4: Evaluation of working postures and movements in relation to machinery
EN 1037:1995+A1:2008	Safety of machinery — Prevention of unexpected start-up
DIN EN ISO 4413	Hydraulic fluid power - General rules and safety requirements for systems and their components
EN 13478:2001+A1:2008	Safety of machinery — Fire prevention and protection
DIN EN ISO 13732-1	Ergonomics of the thermal environment - Methods for the assessment of human responses to contact with surfaces - Part 1: Hot surfaces
DIN EN ISO 13849-1	Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design
DIN EN ISO 13849-2	Safety of machinery - Safety-related parts of control systems - Part 2: Validation
DIN EN ISO 19353	Safety of machinery - Fire prevention and fire protection

2 For your safety

The product is built according to the state of the art and recognized safety regulations.

Nevertheless, there is a risk of personal injury and damage to property if this chapter and the safety instructions in this manual are not observed.

2.1 Intended use

- The product is a technical work tool and intended for commercial and industrial use only.
- The product may only be operated in accordance with the technical data, operating conditions and performance limits specified in this manual.
- Only use original accessories and original spare parts approved by the manufacturer.
- The product may be used to control single and double-acting consumers. The size of the consumers is limited by the minimum and maximum fill volume of the tank.



Partly completed machinery

The product is a partly completed machine according to the EC Machinery Directive 2006/42/EC and is intended exclusively for installation in a machine or system. The product is controlled via the manufacturer's machine / plant control.

- ▶ Comply with the manufacturer's operating instructions.

2.2 Misuse

- Use in other operating modes than specified in the intended use
- Using the product beyond the specified performance limits
- Do not use the product in potentially explosive areas.
- Do not paint over seals and hose lines.

2.3 Residual risks

When handling hydraulic fluid, comply with the safety data sheet of the manufacturer of the hydraulic fluid.

DANGER



Risk to life due to explosive combustion

Hydraulic fluid and its associated mists and vapours are oxidizing. Contact with ignition sources will lead to explosive combustion. Risk of serious injury or death.

- ▶ Avoid fire and open light and do not smoke anywhere near the product.
- ▶ Immediately dispose of any flammable materials moistened with hydraulic fluid as hazardous waste.
- ▶ Do not use any flammable or corrosive cleaning agents.

⚠ WARNING**Electrical and magnetic fields**

Electrical and magnetic fields impair the functionality of cardiac pacemakers and implanted defibrillators.

- ▶ People with pacemakers or implanted defibrillators must maintain a sufficient distance from magnets.
- ▶ Advise people with pacemakers or implanted defibrillators against approaching magnets.
- ▶ Cordon off the area around the drive system and affix suitable warning signs to the barriers.

⚠ WARNING**Risk of injury through crushing or cutting**

Body parts might get trapped or cut off between the machine frame and hydraulic system in the event of careless transport, installation and de-installation.

- ▶ Never reach between the hydraulic system and the machine frame.
- ▶ Ensure that other people cannot enter the danger area.
- ▶ Wear gloves and work shoes.

2.4 Duties of the operator

Observe and comply with regulations:

- ▶ Do not put the product into operation until the complete machine or system complies with the country-specific regulations, safety regulations and standards of the application.
- ▶ Observe and apply regulations for accident prevention and environmental protection.

Operate product safely:

- ▶ Despite safety devices, the product still poses residual risks. Observe the safety instructions in this manual to reduce health hazards and avoid dangerous situations.
- ▶ The operator must ensure that the operating conditions (see general, hydraulic and electrical data) are within the operating limits of the product.
- ▶ Keep all instructions / signs on the product in legible condition and observe them.

Instruct personnel:

- ▶ Regularly train the personnel in all points of these instructions and ensure that they are observed.
- ▶ Ensure the terms of the industrial safety and operating instructions are observed.
- ▶ Only use qualified personnel. Due to their training and experience, the qualified personnel must be able to recognize risks and avoid possible hazards.

2.5 Qualification of the personnel

The activities described in these instructions require basic knowledge of mechanics, hydraulics and electrics.

For the transport and handling of heavy loads, additional knowledge in handling hoists and slings is required.

- ▶ The activities may only be carried out by an appropriate specialist or an instructed person under the supervision of a specialist.
- ▶ Activities other than those described in these instructions may only be performed by HAWE or authorized specialist companies.
- ▶ The personnel must have read and understood these instructions.

Trained personnel	Personnel instructed comprehensively, by skilled staff on behalf of the owner, in how to perform its appointed tasks and in how to use the product safely.
Specialist personnel	Due to their technical training, knowledge and experience, specialists are able to assess and carry out the assigned work and can independently recognize possible dangers.
Qualified electrician	A person with appropriate professional training, knowledge and experience, so that he/she can recognize and avoid dangers that can be caused by electricity.
Auditor	Persons of a technical inspection body who are authorized to perform testing and monitoring tasks for pressure equipment and electrical systems.

2.6 Personal protective equipment

Personal protective equipment is designed to prevent and reduce hazards.

In the instructions, safety instructions with mandatory symbols indicate the wearing of special protective equipment for special activities.

Instruction and supply is carried out by the operator.

3 About this product

3.1 Structure

The hydraulic power pack consists of a fully enclosed metal housing containing a tank, a brushless electric drive, and a gear pump.

The bell housing contains the following:

- hydraulically actuated shuttle valve
- two configurable pressure-limiting valves for safeguarding the system pressure
- two check valves for stop function that can be activated hydraulically
- two overpressure valves for safeguarding maximum pressure in the event of heating
- emergency manual valve

3.2 Functions

Further information see "Circuit diagram".

	Motor	Check valve 1	Check valve 2
Pressure at connection A	ON (anti-clockwise rotation direction)	OPEN	OPEN
Consumer hydraulically held in place	OFF	CLOSED	CLOSED
Pressure at connection B	ON (clockwise rotation direction)	OPEN	OPEN

Pressure at connection A Energize the electric drive so there is pressure at connecting line A. The motor and pump deliver a flow rate. The flow rate flows via the open check valves to consumer port A.

Stop function The electric drive is not energized. The closed check valves ensure the consumer remains hydraulically held in place.

Pressure at connection B Energize the electric drive so there is pressure at connecting line B. The pump and motor deliver a flow rate. The flow rate flows via the open check valves to consumer port B.

Manual override The system can be switched to a pressureless state using the emergency manual valve.

⚠ CAUTION

Injuries due to cylinders dropping down in the event of a strong pressure drop

In the event of a strong pressure drop, connected cylinders may drop down very quickly, causing damage or injuries.

- ▶ Secure connected cylinders before opening the emergency manual valve.

Opening the emergency manual valve:

1. Unscrew the screw attached to the side of the connection block anti-clockwise by 3 to a maximum of 5 revolutions.
 - ✓ Port A is connected to the tank.
 - ✓ A line to Port B is opened if turned by a further revolution.

! DAMAGE**Damage to the environment or property due to leaking hydraulic fluid**

If the screw is unscrewed too far, it may jump out due to the system pressure and hydraulic fluid may leak.

2. Closing the emergency manual valve: Tighten the screw with a torque of $3.0 + 0.5$ Nm.

Protection against overpressure

The configurable pressure-limiting valves are installed upstream of the check valves. Two additional pressure-limiting valves with a higher opening pressure located downstream of the check valves protect the system against excessive pressure. Hydraulic fluid flows back to the tank.

3.3 Control

i All of the necessary safety equipment, safety functions and the safety controller should be provided by the machine manufacturer.

- The motor's duty cycle should be monitored by the device control. An increase in the duty cycle is an indicator of abnormal internal leakage.

Observe the following safety instructions additionally to the safety instructions in chapter [For your safety](#).

⚠ CAUTION**Personal injury through tipping or falling load**

The product might tip over or fall during transport. This could lead to hands and feet becoming trapped.

- ▶ Adhere to the symbols on the packaging.
- ▶ Use permitted transport aids to carefully transport the product as close to the installation location as possible.
- ▶ Select transport aids that will allow the maximum load to be transported safely.
- ▶ Wear safety shoes, work gloves and safety glasses.

4.1 Scope of delivery

Delivery of the completely assembled units includes:

- Hydraulic power pack
 - Current-carrying lines with eyelets
 - Connecting lines for CAN bus and signal control with free cable ends
 - Hydraulic connections with protective covers

Hydraulic fluid is not included in the scope of delivery.

4.2 Checking the delivery**Unpacking**

1. Remove product.
2. Check product for transport damage and completeness.
 - ▶ Note transport damage on the transport documents or on the carrier's delivery bill.
 - ▶ Document transport damage with photos and report to the manufacturer.
3. Properly dispose of the product packaging in accordance with local regulations.

! DAMAGE**For any defect found, file a complaint immediately with:**

HAWE Hydraulik SE
Einsteinring 17
85609 Aschheim near Munich, Germany
Tel.: +49 89 379100-1491
service@hawe.de

Claims for damages can only be addressed within the applicable complaint periods. HAWE does not accept any liability for subsequent complaints.

4.3 Storage

DAMAGE

Property damage from incorrect storage

Incorrect storage can lead to damage. Refer to the technical data.

Store the product and its individual components as follows:

- Store in accordance with IP67.
- Protect against sunlight (UV radiation).
- Storage temperature between -40 °C and +80 °C
- Do not store near sources of ignition or heat, aggressive media (e.g. acids, fuels or lubricants) or ozone-producing sources of light (e.g. fluorescent light sources, mercury-vapour lamps).
- If stored for more than 2 years, protect the valves and valve controls against resinification of the hydraulic fluid. Please contact the hydraulic fluid manufacturer in this regard.
- Avoid electric drives and electronic components being subjected to mechanical shocks.

Observe the following safety instructions additionally to the safety instructions in chapter [For your safety](#).

! DAMAGE**Material damage due to mechanical damage**

Protect the product from mechanical damage during assembly and installation, e.g. by padding.

5.1 Mechanical connection**! DAMAGE****Property damage from incorrectly installed hydraulic system**

- ▶ Assembly by trained specialists only.
- ▶ Ensure all labels and markings of the hydraulic system are easily visible and legible after assembly.
- ▶ Check installation space/connection points for damage.

Add components which were not included in the scope of delivery (e.g. hydraulic fluid). Use filtered hydraulic fluid (10 µm).

1. Place the hydraulic power pack in position in the higher-level machine.
2. Ensure all the fastening bores and hydraulic connections align correctly.
3. Attach the hydraulic power pack using the two M8 threads with a maximum torque of 18 Nm.
4. After a week of operating time at the latest, check the fittings.

5.2 Hydraulic connection**! DAMAGE****Damage from connecting soiled components**

Connecting soiled components may cause system failure and irreparable damage.

- ▶ Clean the workspace before connecting the hydraulic system.
- ▶ Clean hydraulic components before connecting the hydraulic system.
- ▶ Only use hydraulic fluid of sufficient grade.

! DAMAGE**Damage to valves caused by air bubbles**

The system to be connected must already be filled with hydraulic fluid free of air bubbles before the hydraulic power pack is connected. Air bubbles in the hydraulic fluid cause damage to valves.

Connecting hydraulic hoses Protective transport caps have been removed.

1. Connect the hose via thread H1/8".
 - ✓ max. screw-in depth: 9.3 mm
 - ✓ max. tightening torque: depending on connection material, max. 7 Nm

Filling with hydraulic fluid

- ☑ The system to be connected is already filled with hydraulic fluid free of air bubbles.
- 1. Open the tank filling screw.
- 2. Filter fresh hydraulic fluid (Titan CHF 11S or Titan CHF 202). Recommended filter: 10 µm.
- 3. Turn the hydraulic power pack so that the tank points upwards.
- 4. Pour the filtered hydraulic fluid into the tank.
 - ▶ Maximum permissible quantity (see Chapter 10.1, "Technical data") can be read from the oil level gauge if the installation position is horizontal. Use a dipstick if the installation position is vertical.
- 5. Gently shake the hydraulic power pack so that the air bubbles pass into the tank.
 - ✓ Wait a few hours until all the air bubbles are in the tank.
- 6. Operate the system with the hydraulic power pack 2-3x with low pressure until there is no more air in the system.
- 7. Close the tank filling screw with a tightening torque of 6 + 2 Nm.
- 8. Assemble the hydraulic power pack in the intended installation position.
- 9. Vent the hydraulic system using the venting provisions on the consumer.
- 10. Correctly dispose of the hydraulic fluid, hydraulic fluid container and any cloths contaminated with hydraulic fluid.

5.3 Electrical connection

DANGER



Risk of fatal injury from electric shock

Touching live components directly or indirectly causes injury or death.

- ▶ Electrical and electronic components must only be replaced and connected by trained specialist personnel.
- ▶ Obey all applicable electrical safety rules.
- ▶ Only connect electric lines to the hydraulic system while the system is de-energized.

WARNING



Electrical and magnetic fields

Electrical and magnetic fields impair the functionality of cardiac pacemakers and implanted defibrillators.

- ▶ People with pacemakers or implanted defibrillators must maintain a sufficient distance from magnets.
- ▶ Advise people with pacemakers or implanted defibrillators against approaching magnets.
- ▶ Cordon off the area around the drive system and affix suitable warning signs to the barriers.

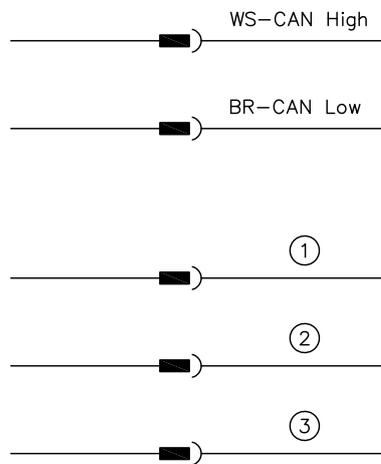
! DAMAGE

Hazard for electronic components – property damage

Electromagnetic waves lead to malfunctions of electrical or electronic equipment.

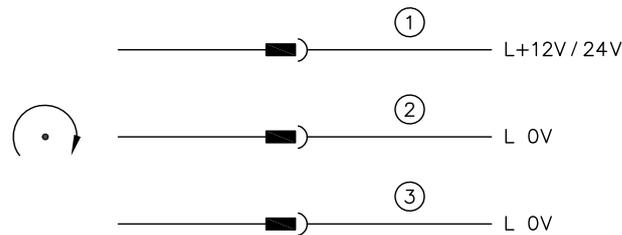
- ▶ To prevent electrostatic discharge, do not touch electronic components and contacts.
- ▶ After switching off the electrical power supply, wait at least 15 minutes for the energy stored in the capacitors to dissipate.
- ▶ Do not expose components to moisture and an aggressive environment.
- ▶ To avoid overheating, always keep ventilation openings (if any) open and allow sufficient air circulation.

1. Secure the unit against being switched on unintentionally.
2. Wire the motor with the machine controls in accordance with the circuit diagram.

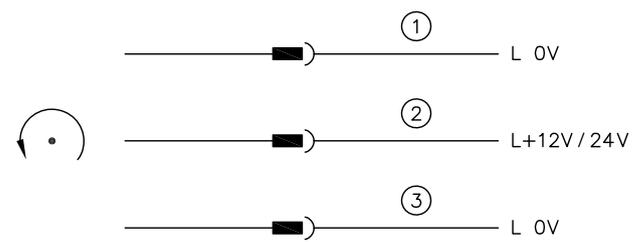


- 1 WH - signal 12 V/24 V port A flow, port B
- 2 GN - signal 12 V/24 V port B flow, port A
- 3 GY - signal GND

Flow at A and reflux at B



- 1 WH - signal 12 V/24 V
- 2 GN - signal 0 V
- 3 GY - signal GND

Flow at B and reflux at A

- 1 WH - signal 0 V
- 2 GN - signal 12 V/24 V
- 3 GY - signal GND

3. Connect the hydraulic power pack to the electrical power supply.
4. Check the electrical connections after a week's operating time.

**⚠ WARNING****Danger of crushing/malfunction from unexpected startup**

Body parts may be crushed or severed if the system starts up unexpectedly.

- ▶ Keep the danger zone clear of people.
- ▶ Wear protective clothing.

**⚠ CAUTION****Burn hazard from hot surfaces and hydraulic fluid**

A burn hazard results from directly or indirectly coming into contact with hot hydraulic fluid and hot components of the hydraulic system.

- ▶ Wear work gloves.
- ▶ Arrange the access to the hydraulic system in such a way that hot surfaces are not accessible to the user.
- ▶ Wait until the hydraulic system has cooled down before servicing or disassembling it.

Only trained specialist personnel may perform commissioning.

The unit is secured against being switched on unintentionally.

1. Check the hydraulic power pack has been connected correctly:

- ✓ mechanically: flange
- ✓ hydraulically: hose lines, hydraulic fluid
- ✓ electrically: wiring, power supply, control
- ✓ fixed installation: attachment to the machine, in/on the base

2. Check the hydraulic fluid level.

3. Vent the connected hydraulic lines to the hydraulic power pack.

During the venting process, it is not permitted for anyone to be in the hazardous area. Please refer to the operating instructions of the machine manufacturer/system operator for the measures and regulations for a safe venting process.

4. Check the hydraulic fluid level again after several strokes or after the hydraulic system has been vented.

5. Check valve switching and functional sequence as per the [Functions](#) .

6.1 Switching the hydraulic system on/off

The hydraulic system is switched on and off via the system controller. Initial start-up of the system must have been performed properly.

7 Maintenance

Maintenance measures consist of inspection, service and repair. Maintenance measures are described here.

- ▶ Maintenance work must only be carried out by qualified personnel.
- ▶ Tasks not described in this chapter may only be carried out by HAWE Service.
- ▶ If faults or damage occur, switch off the hydraulic system immediately.
- ▶ Observe the information in the supplier documentation.
- ▶ Document all activities in a maintenance log.

WARNING

Danger of accident and fatal injury due to lack of maintenance or careless maintenance

Omitted or negligently performed maintenance can cause the hydraulic system to malfunction. Improperly performed maintenance or improperly conducted troubleshooting can pose a danger to personnel.

- ▶ Read and abide by all instructions provided in this section.

Observe the following safety instructions additionally to the safety instructions in chapter [For your safety](#).

7.1 Maintenance plan

Failure of hydraulic systems

Hydraulic system failures are often caused by an incorrect choice of hydraulic fluid or excessive solid contamination in the hydraulic fluid. High solid contamination is due to lack of maintenance of the hydraulic system.

- ▶ Select hydraulic fluid according to specifications.
- ▶ Carry out the activities described in this section carefully and in due time.

Activities to be performed	Interval		
	Once a week following commissioning	As required	Once a year
Check safety markings			✓
Checking the electrical contacts	✓	✓	
Visual check for external leakage	✓	✓	
Check the cable for damage		✓	
Vent the hydraulic system		✓	
Checking the hydraulic fluid level		✓	
Replacing the hydraulic fluid		✓	

7.2 Service

7.2.1 Vent the hydraulic system

The machine manufacturer must set up provisions for venting on the consumer for the hydraulic system.

7.2.2 Checking the hydraulic fluid level

DAMAGE

Material damage due to operation without hydraulic fluid

If the hydraulic fluid level falls below the minimum level, the operating temperature may rise, the hydraulic pumps may suck in air and the hydraulic pump may fail due to cavitation.

- ▶ During initial commissioning and after each opening of the hydraulic system
- ▶ Fluid level too low: top up hydraulic fluid.

1. Check the fluid level in the tank.
 - ▶ If the installation position is horizontal, read off the maximum permissible level of the hydraulic fluid from the oil level gauge.
 - ▶ If the installation position is vertical, determine the maximum permissible level of the hydraulic fluid using a dipstick.
2. Fluid level too low: top up hydraulic fluid.

CAUTION



Overpressure in the tank due to an excessive filling quantity

If too much hydraulic fluid is filled into the tank, overpressure occurs. The tank container can burst and the escaping hydraulic fluid may cause serious injuries.

- ▶ Do not exceed the maximum usable tank volume.
- ▶ Wear protective clothing.

Fill volume of hydraulic fluid

Coding	Fill volume (l)	Usable volume (l)
1	0.370	0.300
2	0.560	0.450
3	0.750	0.600

7.2.3 Replacing the hydraulic fluid

- The hydraulic system is switched off and secured against unintentional restart.
 - The system is pressureless.
 - The work environment is clean.
1. Wait until the system has cooled down.
 2. Place a suitable receptacle under the hydraulic power pack.
 3. Open the tank filling screw.
 4. Tilt the hydraulic power pack so that the hydraulic fluid can completely flow out of the tank into the receptacle.
 5. Filter fresh hydraulic fluid (Titan CHF 11S or Titan CHF 202). Recommended filter: 10 µm.
 6. Turn the hydraulic power pack so that the tank points upwards.
 7. Pour the filtered hydraulic fluid into the tank.
 - ▶ Maximum permissible quantity (see Chapter 10.1, "Technical data") can be read from the oil level gauge if the installation position is horizontal. Use a dipstick if the installation position is vertical.
 8. Gently shake the hydraulic power pack so that the air bubbles pass into the tank.
 - ✓ Wait a few hours until all the air bubbles are in the tank.

9. Operate the system with the hydraulic power pack 2-3x with low pressure until there is no more air in the system.
10. Close the tank filling screw with a tightening torque of 6 + 2 Nm.
11. Assemble the hydraulic power pack in the intended installation position.
12. Vent the hydraulic system using the venting provisions on the consumer.
13. Correctly dispose of the hydraulic fluid, hydraulic fluid container and any cloths contaminated with hydraulic fluid.

! DAMAGE

Damage to valves caused by air bubbles

The system to be connected must already be filled with hydraulic fluid free of air bubbles before the hydraulic power pack is connected. Air bubbles in the hydraulic fluid cause damage to valves.

Disassembly

1. Shut down the hydraulic system in the machine controls.
2. Secure it against unintentional restarting.
 - ✓ System shut down securely.
3. Drain hydraulic fluid.
 - ✓ The hydraulic system has been depressurized and can be disassembled.
4. Disconnect electrical cables.
5. Disconnect hydraulic lines.
6. Disassemble electrical and hydraulic components.
7. Properly dispose of all disassembled parts.

Disposal

Dispose of hydraulic fluid and system components as follows:

- ▶ Dispose of hydraulic fluid, packaging/containers, soaked cleaning cloth, etc., as stipulated in the specifications for hydraulic fluid according to the regional waste disposal requirements.
- ▶ Dispose of the electronic components at approved collection points or with approved disposal companies according to local regulations.
- ▶ Dispose of metal with approved specialist disposal companies.

9 Troubleshooting

The following table lists possible faults and measures to eliminate these. Contact the manufacturer in case of faults that cannot be remedied by following the descriptions here.

Fault	Possible cause	Test	Rectification
Consumer does not move	Power supply disrupted	Measure the voltage.	Restore power supply.
	Control system defective	Measure control voltages.	Replace the hydraulic power pack.
		Control the hydraulic power pack via GUI (graphic user interface) and read out the error code.	Depending on the error code, replace the hydraulic power pack.
Hydraulic power pack does not build up pressure, or the pressure is too low	Supply voltage too low	Measure voltage directly on the motor.	Restore power supply.
	Hydraulic power pack faulty		Replace the hydraulic power pack.
Hydraulic power pack provides no flow rate, or the flow rate is too low	Hydraulic power pack faulty		Replace the hydraulic power pack.
Holding function does not work.	Hydraulic power pack faulty		Replace the hydraulic power pack.

10 Appendix

Other documents, such as technical data sheets, the TÜV certificate, the letter stipulating service life, the load case definition, the installation drawing, as well as optional documents such as a factory test certificate, form part of the technical documentation, and will be sent separately.

The attached product information from third-party manufacturers is not necessarily the most current version. To obtain the latest product information, contact the respective manufacturer.

10.1 Technical data

10.1.1 Weight

Weight	3.5 to 4 kg without hydraulic fluid (depends on version)
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10.1.2 General data

Installation position	<ul style="list-style-type: none"> ▪ horizontal (mounting flange on side, hydraulic port on top) ▪ vertical (tank on top, mounting flange on side, hydraulic port on side)
Attachment	2 fastening holes M8
Screws	A70 stainless steel
Operating pressure	170 bar
Max. flow rate	3.0 lpm
Tank pressure	-0.5 to 1.5 bar
Bursting pressure	625 bar
Pressure limitation	via valves separately for A and B side from 20 to 170 bar in increments of 10 bar (tolerance +10 bar)
Pump design	Gear pump
Reversible	yes
Hydraulic fluid	Hydraulic fluid, Titan CHF 11S or Titan CHF 202 Viscosity range: 10 - 500 mm ² /s
Cleanliness level	ISO 4406 <u>20/18/15</u>
Temperatures	Environment: approx. -25 to +77°C, hydraulic fluid: -40 to +70°C, ensure correct viscosity range
Service life	400 operating hours

Vibration/impact	Vibrations, sinusoidal	DIN EN 60068-2-6	sine: 3 g, 5 to 100 Hz, 3x15 h per axis
	Vibrations, broadband noise (digital control) and guidelines	DIN EN 60068-2-64	broadband: 1.4 g, 5 to 200 Hz, 3x8 h per axis
	Vibrations	DIN EN 60068-2-29	Shock (impact) 30 g, 15000 x 6 ms
	Shocks	DIN EN 60068-2-27	3 shocks at 5 g, 11 ms in each + and - direction (18 shocks)
Minimum space requirements (LxWxH)	<ul style="list-style-type: none"> ▪ Tank size 1: 198 x 111 x 95 cm ▪ Tank size 2: 223 x 111 x 95 cm ▪ Tank size 3: 248 x 111 x 95 cm 		

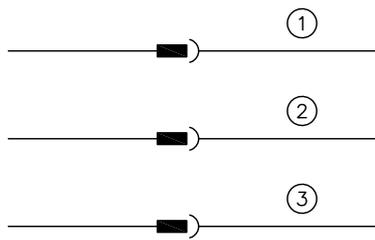
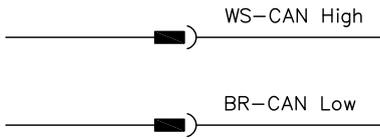
10.1.2.1 Tank size

Coding	Fill volume (l)	Usable volume (l)
1	0.370	0.300
2	0.560	0.450
3	0.750	0.600

10.1.3 Electrical data

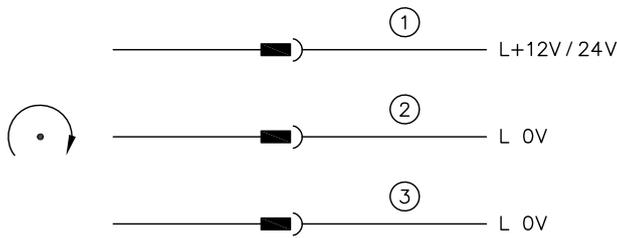
Rated voltage	12 to 24 V DC	
Current consumption	see characteristic curves, max. 105 A at 12 V or 52.5 A at 24 V	
Overload protection	Temperature switch (NTC)	
Power	1500 W	
Duty cycle	Continuous operation:	S1 at 030 bar and 1.5 lpm
	Intermittent operation:	S3 at 060 bar and 2.0 lpm and 45% duty cycle
	Intermittent operation:	S3 at 080 bar and 1.5 lpm and 25% duty cycle
	Intermittent operation:	S3 at 150 bar and 1.0 lpm and 10% duty cycle
Protection class	IP 67 according to IEC 60529	
Software control	CAN bus: Flow rate limit A and B side 0.5 to 3.0 lpm, separately to 0 to 100% open flow through A or B, when running	
Hardware control	two signal lines for 12 V or 24 V for flow through A or B	

Terminal assignment 12 V DC/24 V DC



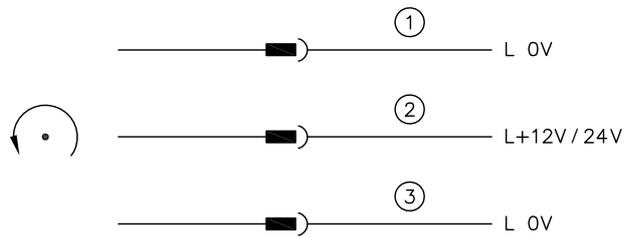
- 1 WH - signal 12 V/24 V port A flow, port B
- 2 GN - signal 12 V/24 V port B flow, port A
- 3 GY - signal GND

Flow at A and reflux at B



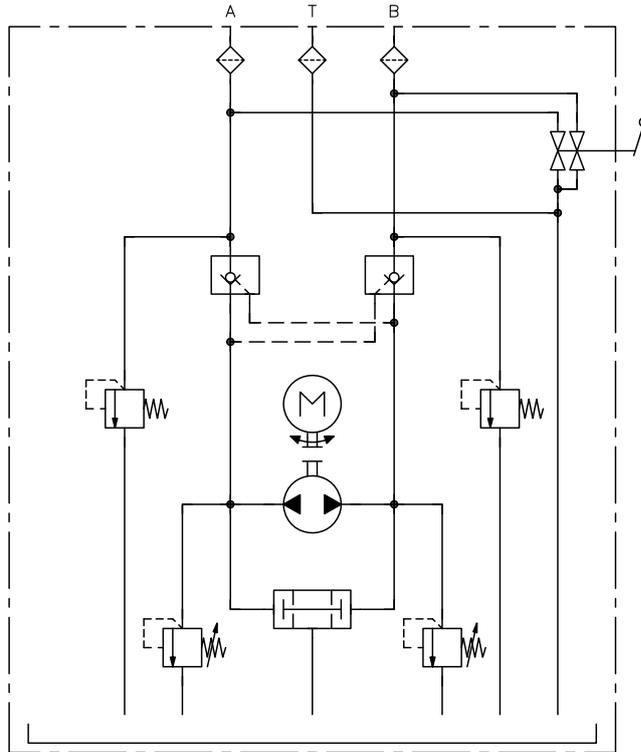
- 1 WH - signal 12 V/24 V
- 2 GN - signal 0 V
- 3 GY - signal GND

Flow at B and reflux at A



- 1 WH - signal 0 V
- 2 GN - signal 12 V/24 V
- 3 GY - signal GND

10.2 Circuit diagram



Further information

HAWE Hydraulik SE is a responsible development partner with application expertise and experience in more than 70 areas of mechanical and plant engineering. The product range includes hydraulic power packs, constant and variable pumps, valves, sensors and accessories. Modular systems are complemented by electronic components, are perfectly coordinated with the hydraulic components and simplifying control, signal evaluation and fault detection. The intelligent system solutions reduce energy consumption and operating costs. Compact drives save space and permit innovative machine design.

The company is certified in accordance with ISO 9001, ISO 4413, ISO 50001, OHSAS 18001.



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