Compact hydraulic power pack type KA 2 and KAW 2

Assembly instructions

Oil immersed compact hydraulic power pack built-in electric motor (single or 3-phase VAC versions) and single-circuit or dual-circuit pump.

For short period and intermittent operation (S2, S3).

(Translation of the original instructions)
B 8010-2
07-2022-1.1 en

HAWE HYDRAULIK

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Table of Contents

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.

You can request further information on the product at: HAWE Hydraulik SE, Einsteinring 17, 85609 Aschheim/Munich, Germany.

1.2 Safety instructions and symbols

Safety indication

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

Symbol	Meaning
DANGER	Draws your attention to a **hazardous** situation that can lead directly to **serious injury** or **death** if not avoided.
WARNING	Draws your attention to a **hazardous** situation that can indirectly lead to **serious injury** or **death** if not avoided.
CAUTION	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** ► Wear fitted clothing without protruding parts. ► Follow the safety data sheet of the hydraulic fluid.

1.3 Applicable documents

Directives and standards	Designation
2006/42/EC	Machinery Directive
2014/30/EU	EMC Directive
2014/35/EU	Low Voltage Directive
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
2014/68/EU	Pressure Equipment Directive (For devices with included accumulator or included TÜV valves. Testing acc. to order coding.)
DIN EN 60204-1 VDE0113-1:2019-06	Safety of machinery - Electrical equipment of machines
DIN EN ISO 12100	Safety of machinery - General principles for design - Risk assessment and risk reduction
DIN EN ISO 14123-1	Safety of machinery - Reduction of risks to health resulting from hazardous substances emitted by machinery - Part 1: Principles and specifications for machinery manufacturers
DIN EN ISO 4413	Hydraulic fluid power - General rules and safety requirements for systems and their components

Documents	Designation
D 5488/1	Oil recommendations
D 8010-2	**Data sheet** Characteristics and application ranges for this product
Manufacturer's operating instructions	**Machine manufacturer's hydraulic and electrical connection schematic** Document required to install hydraulic power pack correctly in entire machine
Manufacturer's operating instructions	**Optional add-ons to hydraulic power pack from other manufacturers** e.g. hydraulic accumulator, filter etc.
Explanations	"Declaration of incorporation", page 65 "Declaration of conformity", page 66

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 is designed as a hydraulic fluid supply in hydraulic systems.
- The product is designed for the following operating modes:
  - ► S2: Short period operation
  - ► S3: Periodic intermittent operation

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

- Use of hydraulic fluids other than those specified in these instructions
- Connecting consumers other than those specified
- Improperly installed, outdated, un-secured or damaged pipes and hose lines
- Use in atmospheres at risk of explosion
- Structural changes, especially if function and safety are compromised

2.3 Residual risks

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

⚠ DANGER

Risk to life due to explosive combustion

Hydraulic fluid, and its associated mists and vapors, is a fire accelerant. Contact with ignition sources will lead to explosive combustion. Risk of serious injury or death.

- Avoid fire, open flames, and smoking 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 severed 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 other people cannot enter the hazardous area.
- Wear gloves and appropriate footwear.

2.4 Duties of the operator

Observe and comply with regulations:

- The product must not be commissioned until the complete higher-level machine or system complies with the provisions, safety regulations and standards relevant in that country for the application.
- Observe and apply regulations for accident prevention and environmental protection.
- Assess and document any new dangers in the complete system's manual.

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 operating company must ensure the operating conditions (see the technical data) are within the limits for use of the product.
- Keep all instructions/signs on the product in legible condition and observe them.

Instruct personnel:

- Regularly train personnel in all points of these instructions and ensure 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, 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 their 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 (PPE) 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.

The supply of PPE, and instruction in its proper use, is carried out by the operator.

3 About this product

3.1 Markings

Example order coding KA 2

KA 24 KA 28	1 22	S L1	KS KTF	E/ P/	H 1,81 HZ 0,59/8,8	- AB1K/C180 - ...	- FSR-24V	- 3x400 V 50 Hz - 3x400 V 50 Hz	/24 V DC	- G 1/2 x 300

- Oil drain hose
- Fan motor voltage (additional option)
- Motor voltage, motor data
- Fan (on side)
- Valve combination acc. to commission number
- Pump version
- Electrical connection
- Additional options
- Installation position
- Tank size
- Basic type and motor power

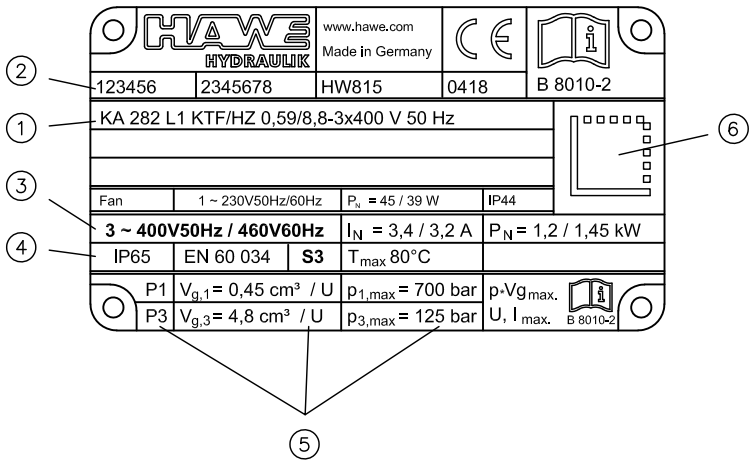
Motor type code

- Coding **KA** = 3-phase motor
- Coding **KAW** = AC motor

Type plate

The commission number on the type plate identifies the product uniquely and completely, including all fitted components.

The data are stored with the manufacturer and encoded in the DataMatrix on the type plate.



1 Order coding, type coding

2
- Customer order, commission number
- Production order
- Customer material number
- Date of manufacture (week XX in Year XX)

3
- Motor voltage/power frequency
- Nominal current I_N (at 50 Hz/60 Hz)
- Nominal power P_N (at 50 Hz/60 Hz)

The actual power consumption depends on the load and can be up to 1.8 x nominal power.

4
- Protection class
- EN standard
- Operating mode
- max. temperature

5
- Pump connection:
  P1: Single circuit:
  P1 and P3: Dual circuit
- Geometric output volume V_G (cm^3/rev)
- Pump's max. permissible operating pressure

6 DataMatrix code

3.2 Structure

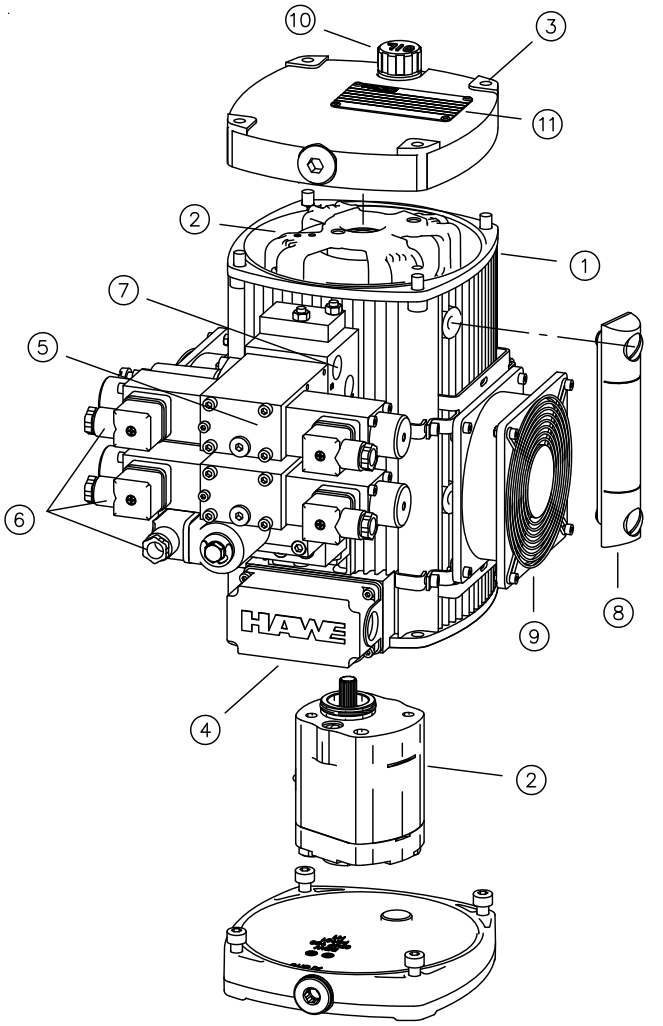
Compact hydraulic power packs are a type of hydraulic power pack. They are characterised by a highly compact design, since the motor shaft of the electric drive also acts as the pump shaft. Compact hydraulic power packs are designed to supply hydraulic circuits with hydraulic fluid.

The compact hydraulic power pack type KA consists of the tank, the integrated motor and the radial piston or gear pump directly attached to the motor shaft. The compact design that this achieves is a crucial advantage compared to conventional hydraulic power packs.

The compact hydraulic power pack's uncompromisingly module design will enable you to quickly and easily set up a variety of usage volumes and sizes. Compatible, ready-for-connection, complete solutions can be assembled easily using a wide range of connection blocks and the valve banks that can be combined with them.

For systems with high loads, a fan that enables additional heat dissipation can be optionally mounted on the housing. The fan is powered by a separate motor independently of the pump motor.

Compact hydraulic power pack type KA 2 and KAW 2



1 Tank with motor
2 Pump
3 Transport eyelets (e.g. for eye bolts)
4 Terminal box for electrically connecting motor and monitoring components, e.g. temperature and level switches
5 Connection block and valve bank
6 Electrical connection of valves and monitoring components, e.g. pressure switches
7 Hydraulic connections to consumers
8 Level gauge
9 External fan (optional)
10 Filler port (hydraulic fluid) and breather filter
11 Type plate

3.3 Control

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.

The following must be integrated in the machine controls:

- The technical data specifications in the data sheets must be complied with.

4 Transport and storage

In addition to the safety instructions presented in Section For your safety follow the safety instructions below.

⚠ WARNING

Falling, tipping and toppling heavy loads
Risk of serious injury

- ► Make sure that the danger zone, the area beneath suspended loads and the transport path is clear of people.
- ► Wear proper PPE.

NOTICE

Risk of damage from improper transport

- ► Only use the intended eyelets for transport.
- ► Make sure that belts or chains do not tear or knock components off the hydraulic power pack during transport.

NOTICE

Damage to the silica gel filter

- ► The tapped journal of the silica gel filter can shear off due to lateral forces. For transport and assembly the silica gel filter is therefore replaced by a tapped plug in the opening.
- ► Transport and assemble the hydraulic power pack only with the tapped plug screwed in.

NOTICE

Pollution from transport while filled with hydraulic fluid
Hydraulic fluid must be prevented from escaping into the environment.

- ► When transporting after prior use, drain the hydraulic fluid from the tank.
- ► Collect cleaning, operating and lubrication fluids and consumable materials in suitable containers and dispose of them according to local regulations.

4.1 Transport equipment

NOTICE

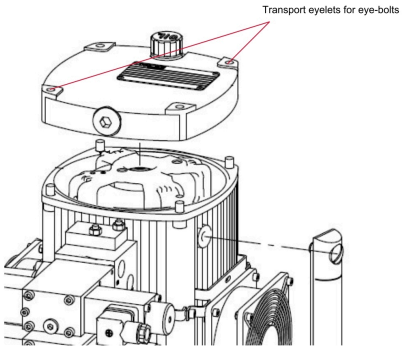
Preventing damage in transit

- ► Do not subject valves or other assembled components to any loads.
- ► Do not kink hoses.

Only tested and approved aids are permitted for use.

Transporting the product

☑ Make sure the eye-bolts are firmly attached, there are enough of them, and they are in the correct positions on the hydraulic power pack.

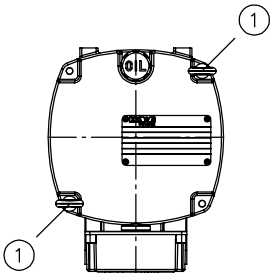


- Use at least 2 transport eye-bolts on tank for transport. (Layout: diagonal)
- Use the specified eye-bolts when moving the unit using belts, chains or carry handles.
- Transport methods depend on the hydraulic power pack's weight, see "General data", page 51.
- Use suitable lifting gear and pallet trucks.

Attachment points for transport eye-bolts

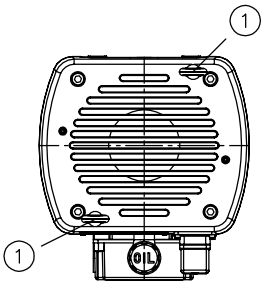
The eye-bolts are included with the product.

Vertical version



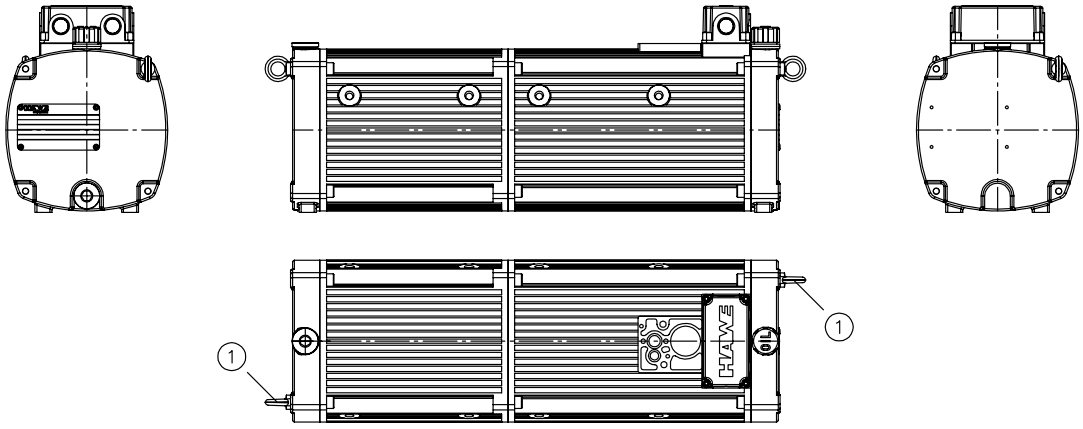
1 Eye-bolt screw-in points

Pump with fan



1 Eye-bolt screw-in points

Horizontal version



1 Eye-bolt screw-in points

4.2 Scope of delivery

Included in scope of delivery

- Hydraulic power pack (motor and pump in tank) with power connection (terminal box or HARTING plug) and, if applicable, suppressor
- 2 transport eye-bolts on container
- Temperature switch coding **T** on type KAW (hydraulic power pack with alternating current)
- Breather filter, with oil dipstick on some versions
- Oil drain screw or oil drain hose
- Cap for oil filler or filler reduction with screen

Additional accessories

depending on the variant chosen.

Type-specific parameters are listed on the product's type plate, e.g.: Data on motor and pump power.

For further technical data, refer to HAWE publication D 8010.

"Applicable documents", page 7

Not included in scope of delivery

Electrical connection

- Line connector M12x1, 4-pin for option **PM**.
- Line connector M12x1, 5-pin for option **KD, KS** (vertical version):
  (Coding **KD, KS** is level gauge with N/C or N/O contact switch)

Motor

- Operating capacitor for AC variant type KAW
- Motor protection circuit

Accessories for commissioning

- Damping elements for fastening
- Hydraulic fluid
- Electronic controller elements for the hydraulic system

4.3 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.

NOTICE

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.

4.4 Storage

NOTICE

Damage from incorrect storage

Protect the product from soiling and damage.

- ► Keep the product wrapped in a plastic bag when storing it to protect it from dust and constant air circulation.
- ► Seal all hydraulic fluid ports with caps or dummy plugs.
- ► Store the product in a position matching its intended mounting position, with the hydraulic fluid filler port at the top and the fluid drain at the bottom.

Store the product and its individual components as follows:

- Do not store outdoors.
- Store in an area that is dry and free of dust.
- Protect against sunlight (UV radiation).
- Storage temperature between 15 °C and +20 °C.
- Relative humidity 65% +/- 10%.
- 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.

5 Assembly and installation

In addition to the safety instructions presented in Section For your safety follow the safety instructions below.

⚠ WARNING

Risk of injury through crushing or cutting

Body parts might get trapped or severed 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 other people cannot enter the hazardous area.
- ► Wear gloves and appropriate footwear.

NOTICE

Material damage due to mechanical damage

Protect the product against mechanical damage, e.g. by applying suitable padding.

- ► such as foam, covers, cardboard

5.1 Mechanical connection

NOTICE

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.

NOTICE

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.

Add components which are not included in the scope of delivery (e.g. hydraulic fluid). Use filtered hydraulic fluid in accordance with the associated data sheet (D 8010).

Check

- ► before connecting components:

☑ The dimensions of all connections, ports and connecting lines correspond to the specifications of the system.

☑ Pipes, hose lines, fittings and couplings are designed to withstand the system's maximum pressure because pipes, hose lines, fittings and couplings with insufficient inner diameter and excessive length cause pressure losses. This impairs the performance of the hydraulic system.

☑ All lines are as short as possible and not kinked. No bend radii are smaller than the smallest bend

radius specified by the manufacturer.

☑ The smallest-possible number of fittings has been used so as to minimise potential leaks.

☑ Hydraulic lines have been installed with stress relief to reduce noise emission and damage from resonance.

☑ Cylinders, fittings, connectors and hose lines have been flushed before assembly to prevent contamination of the hydraulic system.

1. Place the hydraulic power pack in position in the higher-level machine.
2. Check the order coding to identify the intended installation position.
   - Vertical (type: **KA...S...**) or
   - Horizontal (type: **KA...L...)**
3. Check that the support/frame possesses sufficient load capacity. This depends on the hydraulic power pack's weight.
4. Drill fastening holes as instructed by the mounting hole pattern.
5. Bolt into the M8 threaded holes using the recommended damping elements.
6. Connect hydraulic lines.
   - Port P: Connect the hydraulic hoses properly.
   - Hydraulic fluid drain**:** Screw in the drain screw.
   - Directional valves: Connect any solenoid valves to the controller in accordance with the hydraulic schematic and function diagram.
7. After a week of operating time at the latest, check the fittings.

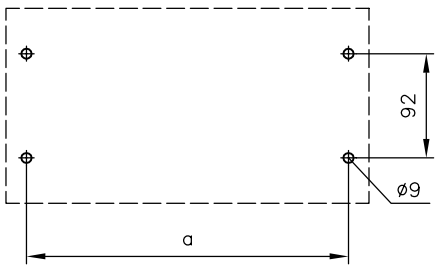
Installation position

- The horizontal version can also be incorporated vertically.
- If you are installing a horizontal version vertically:
  - Position with bleeder at top.
  - Position the integrated pump at the bottom.
- Top and bottom covers can be turned separately of one another.

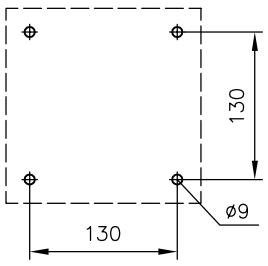
For detailed hydraulic data, see the type plate.

Mounting hole pattern

Horizontal version coding **L**



Vertical version coding **S**



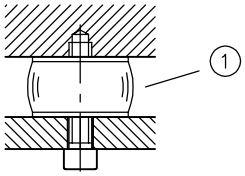
Coding tank size	a	Coding tank size	a
Without coding	284	21	536
1, 01	336	22	742
11	388	3	684
2, 02	484		

Recommended fastening with damping element

NOTICE

Installation information

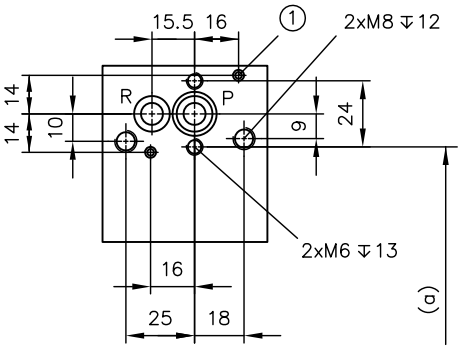
Subject vibration isolators to compressive stresses only.



1 Damping element ∅40x30/M8 (65 Shore)

Dimensions of hydraulic line ports

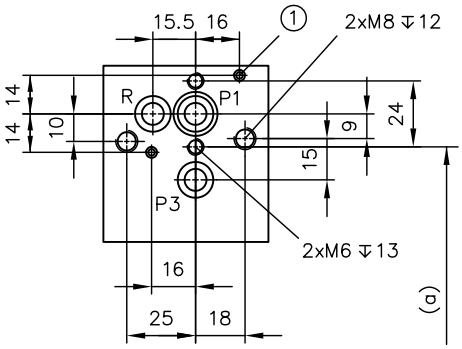
Single-circuit pump



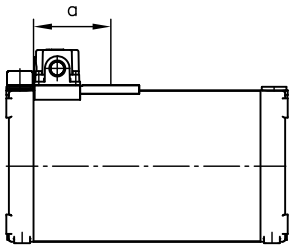
1 Centring pin ∅4 mm

a = 121.5

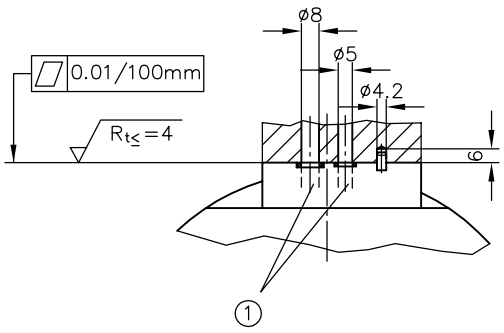
Dual-circuit pump with shared pedestal



1 Centring pin ∅4 mm



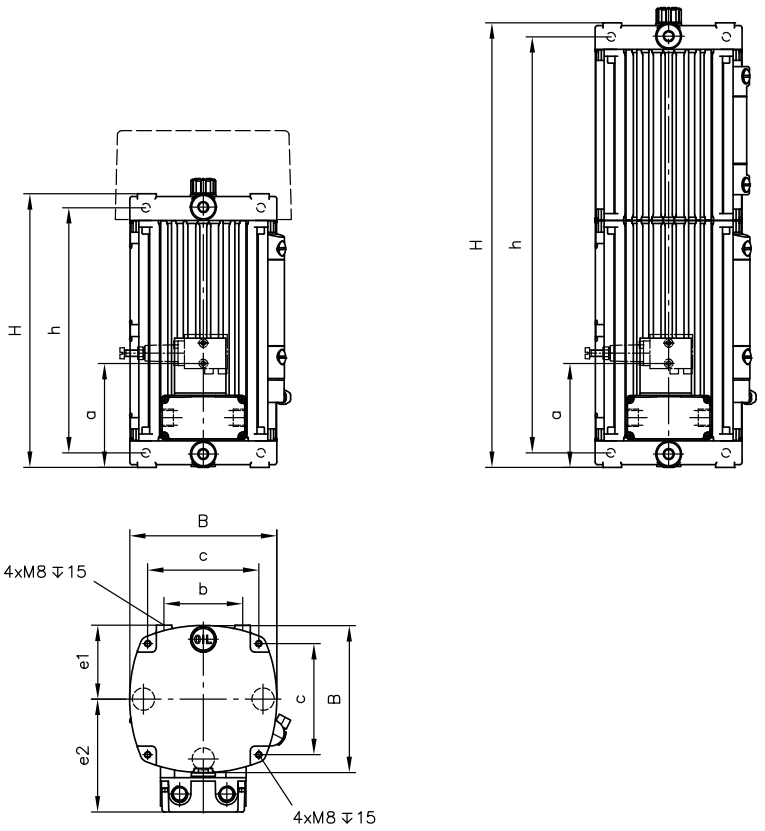
Hole for self-made connection block



1 Sealing of the connections:
P, P1, P3 = 8x2 NBR 90 Sh
R = 10.5x1.4x1.9 NBR (Kantseal)

5.1.1 Pump dimensions

Vertical version

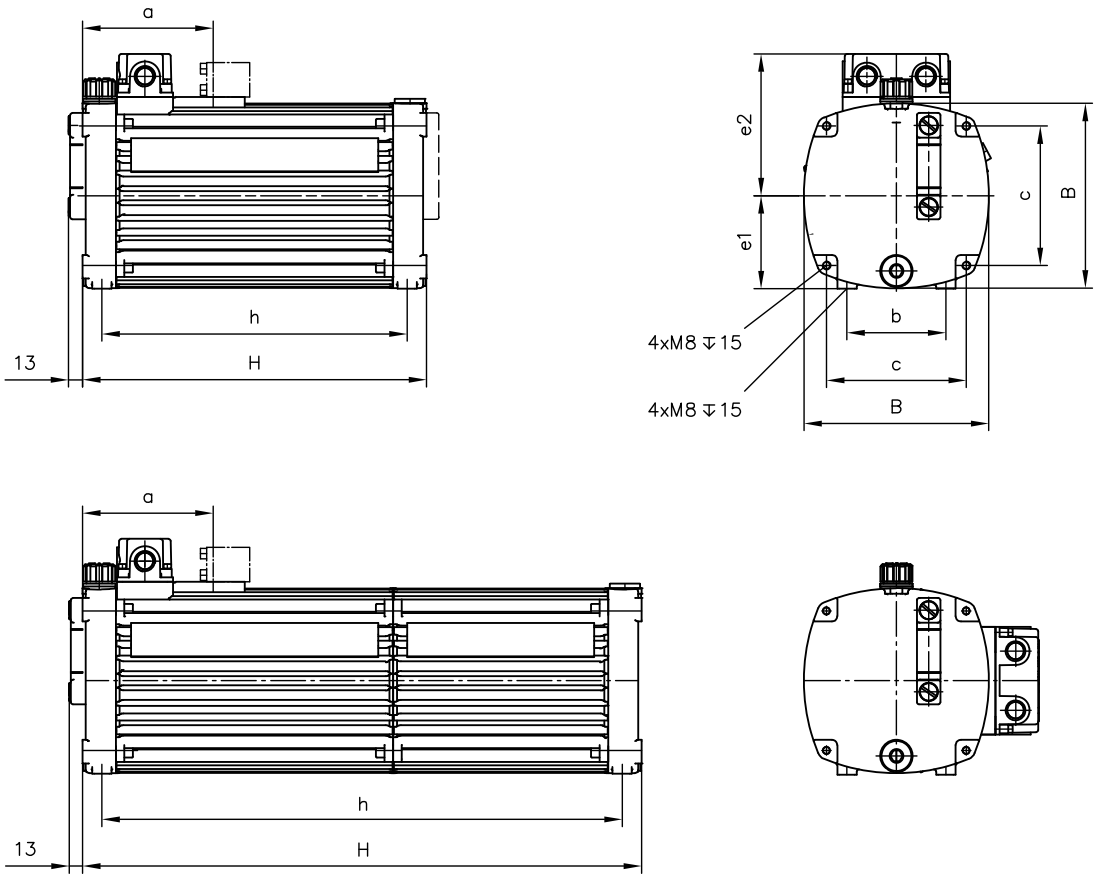


Basic type	B	e1	e2	c	b	a
KA 2/KAW 2	172	87.5	132	130	92	121.5

Coding tank size	H	h
Without coding	320	284
1, 01	372	336
11	424	388
2, 02*	520	484
21	572	536
22*	778	742
3	720	684

* Tank sizes 02, 22 only appropriate for horizontal version

Horizontal version



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22*	778	742
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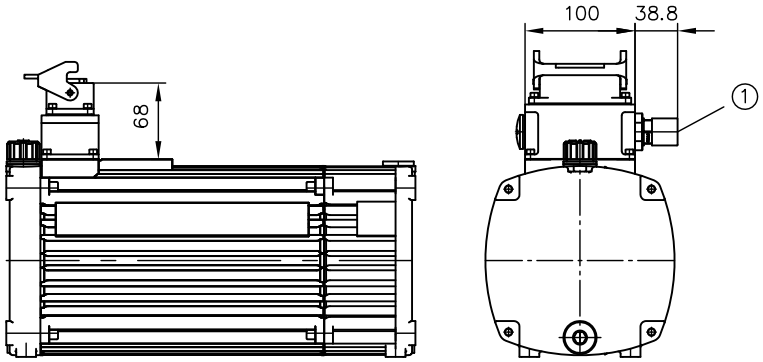
* Tank sizes 02, 22 only appropriate for horizontal version

5.1.2 Additional components' dimensions

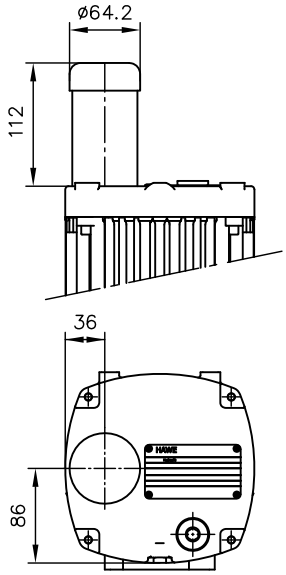
Terminal box



1 Suppressor coding **E**

Silica gel filter

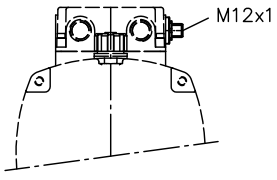
Coding **G**



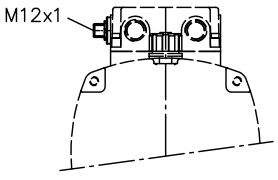
Temperature and/or level switch

Terminal box: M12 connections for temperature and/or level switch

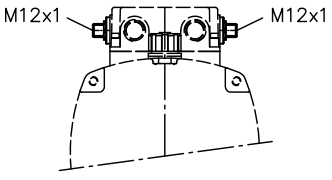
Coding **M, PM**



Coding **M1 and PM1**



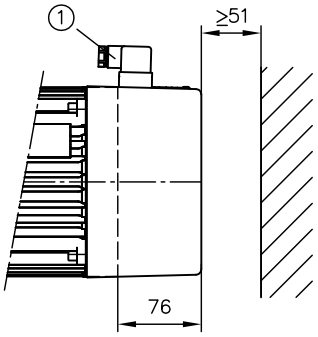
Coding **M2 and PM2**



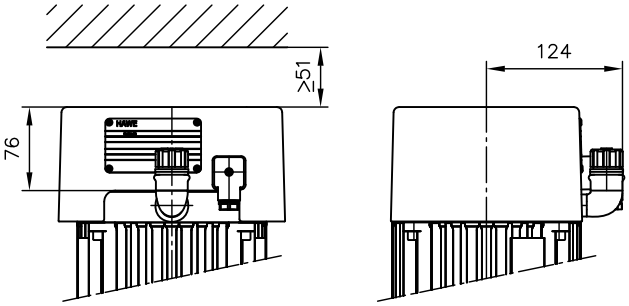
Fan

Minimum gap see drawing.

Horizontal version
Coding **F**, **F1**



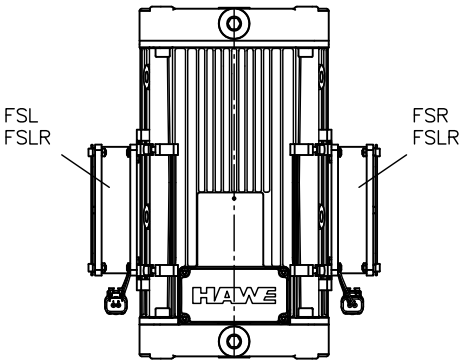
Vertical version
Coding **F**

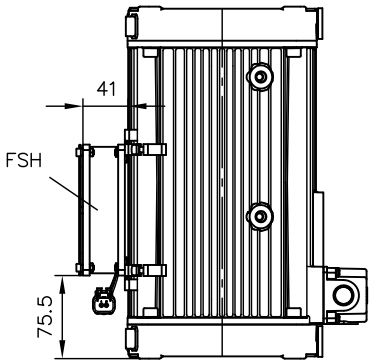


1 Electrical connection to fan

Fan (on side)

Coding **FSL, FSR, FSLR, FSH**

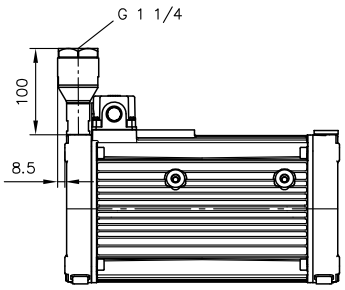




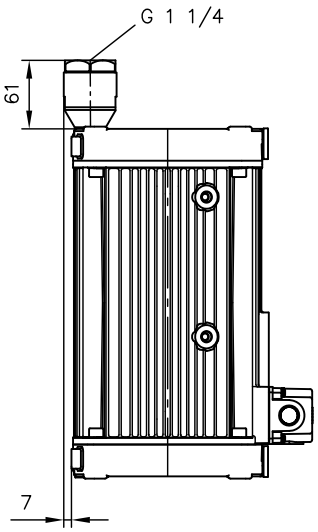
*Coding **FSL, FSR, FSLR, FSH***

Filler reduction

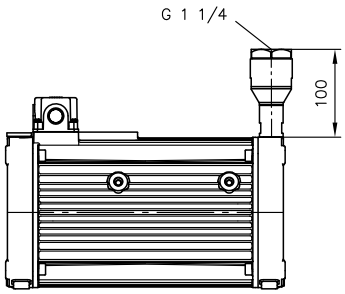
Coding **B**
Horizontal version



Coding **B**
Vertical version



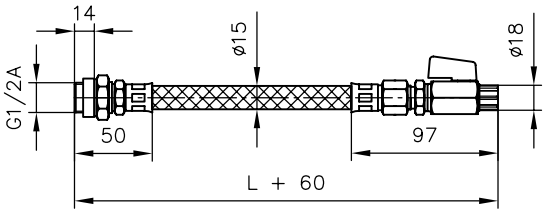
Coding **B1**
Horizontal version



Oil drain hose

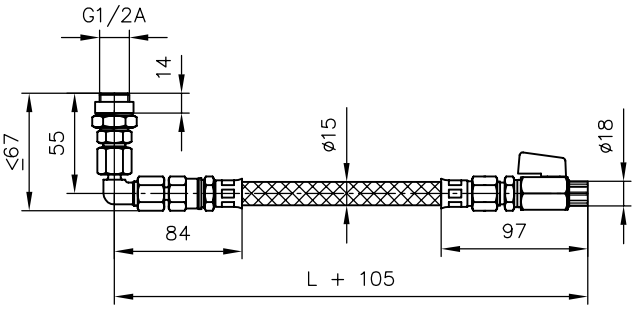
Coding **G 1/2 x L**

L = 300 mm/500 mm
with ball valve



Coding **G 1/2 W x L**

L = 300 mm/500 mm
with ball valve and elbow



5.2 Hydraulic connection

⚠ WARNING

Danger of crushing/malfunction from unexpected startup

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

- ► Keep the hazardous area clear of people.
- ► Wear protective clothing.

⚠ CAUTION

Risk of falling and harm to health through contact with hydraulic fluid

Coming into contact with hydraulic fluid can cause irritation of the eyes, mucous membranes or skin. Spilled or escaped hydraulic fluid may form a slippery film on the floor surface, which will is very easy to slip on.

- ► Wear personal protective equipment (safety glasses, gloves, mouth protection).
- ► Avoid prolonged skin contact with hydraulic fluids.
- ► Thoroughly wash any body parts exposed to hydraulic fluid.
- ► Observe safety instructions on the safety data sheet of the hydraulic fluid manufacturer.
- ► Make sure that the floor has a suitable slip resistance rating (we recommend R13 according to DIN 51130)

NOTICE

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.

Filling with hydraulic fluid

☑ Hydraulic system has been bled, see Chapter 7.2.4, "Bleed the hydraulic power pack", page 43

1. Open the tank filling screw.
2. Filter fresh hydraulic fluid. see Chapter 10.1, "Technical data", page 51
3. Pour the filtered hydraulic fluid into the tank.
4. Close the tank opening with the breather filter.

Silica gel filter

Installing the silica gel filter

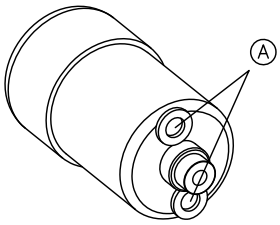
☑ Red caps are screwed onto the silica gel filter for protection during transport and storage.

1. Remove the caps.
2. Screw in the silica gel filter by hand. Caution: risk of breakage!

NOTICE

Remove the silica gel filter's caps before commissioning

There is a risk of damaging the hydraulic power pack during operation.



A Cap

5.3 Electrical connection

⚠ WARNING

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.

⚠ DANGER

Risk of injury due to electric shock from the operating capacitor

Burns, serious injuries or death may result if electromagnetic waves lead to functional interference with the temperature measurement.

- ► Ensure that the operating capacitor is discharged to a safe voltage level.

⚠ 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.

NOTICE

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 or 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 or an aggressive environment.
- ► To avoid overheating, always keep ventilation openings (if any) open to allow sufficient air circulation.

This is to avoid electromagnetic waves leading to functional interference

- Twist and shield the conductors.
- Route intersections at right angles.
- Connect the shield at only one end and close to the control system at ground potential.
- Route control cables and power cables separately.
- Leave a 10 to 20 cm gap between the control cables and power cables.
- Provide separate shields for analogue and digital control lines.

NOTICE

Notes on electrical connection and earthing

are included in the terminal box and in this manual.

Earthing see "Connecting the motor", page 33.

NOTICE

Disconnecting electrical power sources

- Plug connection on compact hydraulic power pack (various types of plug optionally available) or
- Power supply unit in overall machinery (see owner's operating instructions)

NOTICE

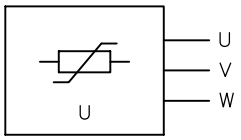
Ensuring electromagnetic compatibility (EMC)

If the product (1) is connected to a system (2), it will not produce any impermissible interference (3).

Tests validating immunity to interference for demonstrating compliance with the standard EN 60034-1 para. 12.1.2.1 or VDE 0530-1 are not required.

Any transient electromagnetic fields generated when switching the motor on or off that may cause interference can be attenuated using a suppressor(4).

Suppressor coding **E, PE**



(1) Induction motor acc. to EN 60034-1 section 12.1.2.1

(2) e.g. power supply acc. to EN 60034-1 section 6

(3) EN 60034-1 section 19

(4) Type 23140, 3x400 V AC 4 kW 50-60 Hz by Murr-Elektronik, D-71570 Oppenweiler or from HAWE.

5.3.1 Connecting the motor

1. Secure the unit against being switched on unintentionally.
2. Ensure no one is in the danger area.
3. Refer to the type plate to find out the connection type (terminal box or HARTING plug)
   ✓ Depending on the device version, the terminal box or HARTING plug connections feature a different design.
4. Wire the motor with the machine controls in accordance with the circuit diagram.
   ✓ Determine the maximum current consumption, page 59
   ✓ Data applies to radial piston pumps and gear pumps.
   ✓ The drive motor forms a closed, non-separable unit with the pump.
   ✓ Adjust the motor protection circuit as applicable.

   Set motor protection circuit to 0.85 to 0.9 times the motor current (I_M).
   - When operating normally, the motor protection circuit will not trip prematurely.
   - When the pressure-limiting valve triggers, the period until shutdown does not become long enough for the hydraulic fluid's temperature to exceed maximum.

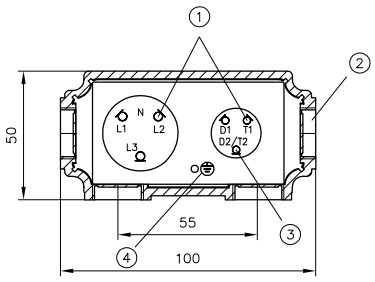
   ✓ Run a test to check the motor protection circuit's settings.
5. Connect the hydraulic power pack to the electrical power supply.
6. Check the electrical connections after a week's operating time.

Terminal box

NOTICE

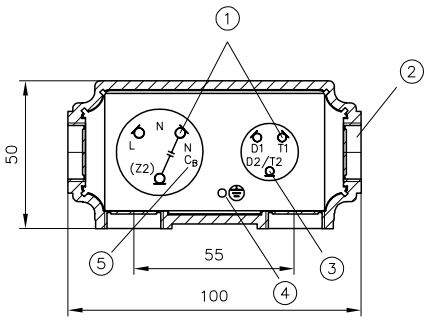
The operating capacitor (C_B) is not included.

3-phase motor



1 Flat plug
2 4x cable fittings M20x1.5
3 For vertical version (only D2/T2-T1)
4 Earth

AC motor

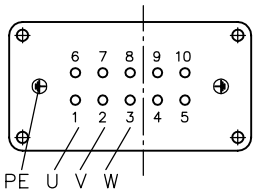


1 Flat plug
2 4x cable fittings M20x1.5
3 For vertical version (only D2/T2-T1)
4 Earth
5 C_B - operating capacitor (not included)

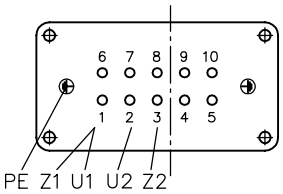
HARTING plug

Coding **P**

3-phase motor

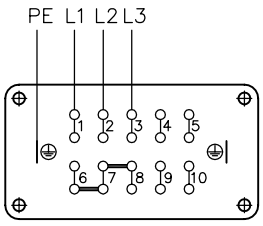


AC motor

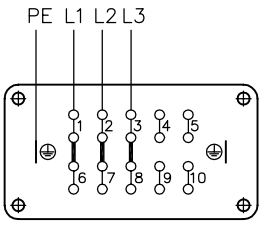


HARTING plug (on-site connection)

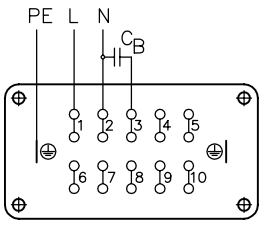
3-phase motor ⅄



3-phase motor △



AC motor



C_B – operating capacitor is not included in the scope of delivery

5.3.2 Connecting level switch and temperature switch

1. Secure the unit against being switched on unintentionally.
2. Ensure no one is in the danger area.
3. Refer to the type plate for configuration of level switch and temperature switch and connect via terminal box or HARTING plug.
4. Check the electrical connections after a week's operating time.

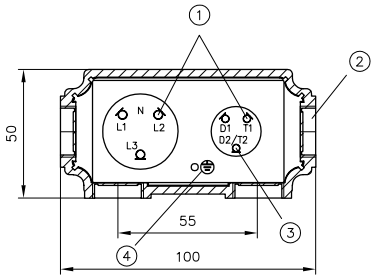
Level switch duty cycle
Dropping hydraulic fluid level:
If the amount of hydraulic fluid removed during each duty cycle causes the oil level to fall below the level switch's monitoring level, take suitable electrical measures to mute the signal until the fluid level rises above the monitoring level once again when the hydraulic fluid flows back in at the end of the duty cycle.

Terminal box

NOTICE

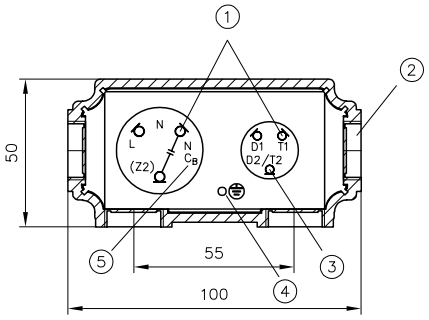
The operating capacitor (C_B) is not included.

3-phase motor



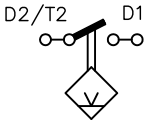
1 Flat plug
2 4x cable fittings M20x1.5
3 For vertical version (only D2/T2-T1)
4 Earth

AC motor

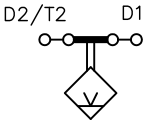


1 Flat plug
2 4x cable fittings M20x1.5
3 For vertical version (only D2/T2-T1)
4 Earth
5 C_B - operating capacitor (not included)

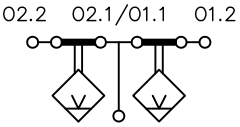
Level switch
Coding **S**



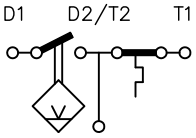
Level switch
Coding **D**



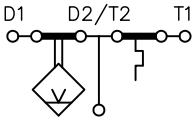
Level switch
Coding **DD**



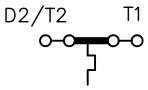
Level switch
Coding **ST**



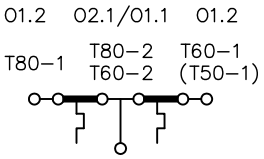
Level switch
Coding **DT**



Temperature switch
Coding **T**



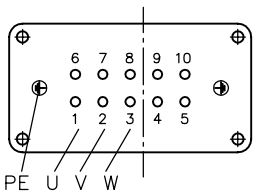
Temperature switch
Coding **TT50**



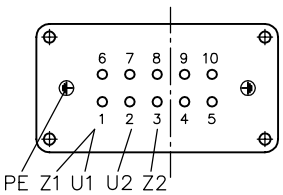
HARTING plug

Coding **P**

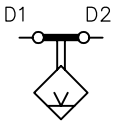
3-phase motor



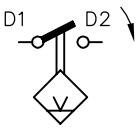
AC motor



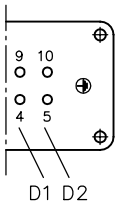
Coding **D**
(N/C contact)



Coding **S**
(N/O contact)

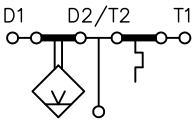


Coding **D, S**
(HARTING plug)



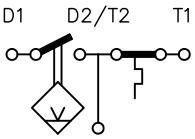
Level switch

Coding **DT**



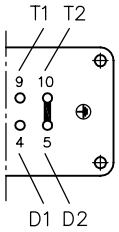
Level switch

Coding **ST**



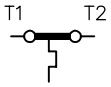
HARTING plug

Coding **DT, ST**



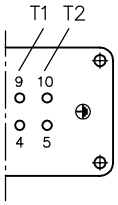
Temperature switch

Coding **T**



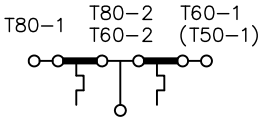
HARTING plug

Coding **T**



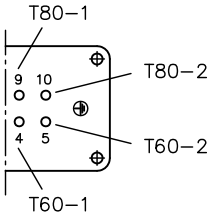
Temperature switch

Coding **TT50, TT60**



HARTING plug

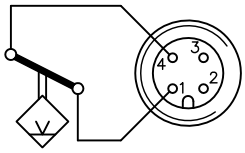
Coding **TT50, TT60**



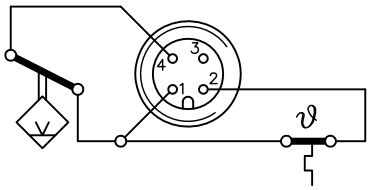
Additional connection M12x1, 4-pin

Coding **M, M1, PM, PM1**

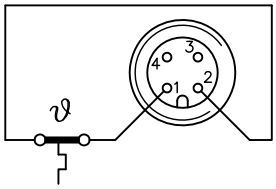
Pin assignment for level switch
Coding **D, S**



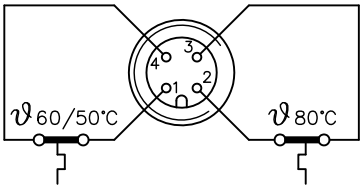
Pin assignment for temperature switch and level switch
(horizontal version only)
Coding **ST, DT**



Pin assignment for temperature switch
Coding **T**



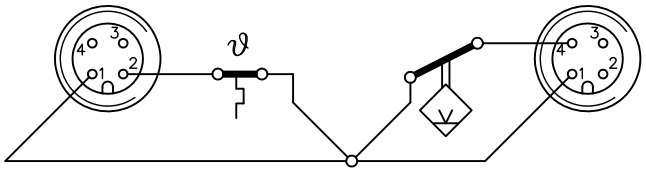
Pin assignment for two temperature switches
Coding **TT50, TT60**



Additional connection 2x M12x1, 4-pin

Coding **M2 and PM2**

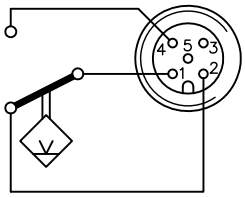
Coding **DT, ST**
One temperature switch and one level switch (horizontal version):



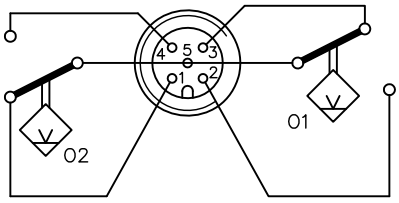
Additional connection M12x1, 5-pin

Coding **PM**

Coding **KD, KS**



Coding **KDD**



5.3.3 Connecting the fan

☑ Product type features fan option (order coding in D 8010).

1. Secure the unit against being switched on unintentionally.
2. Ensure no one is in the danger area.
3. Wire the fan with the machine controls in accordance with the circuit diagram.
4. Connect the hydraulic power pack to the electrical power supply.
5. Check the electrical connections after a week's operating time.

6 Start-up

Prerequisites for commissioning
The product may only be put into commission once it has been installed in the machine or system it is intended for and this machine or system complies fully with the European Machinery Directive.

The pressure-limiting valve has been factory-set to the maximum permissible operating pressure of the hydraulic power pack and marked with sealing wax. Do not adjust without consulting HAWE.

⚠ DANGER

Improper commissioning may cause the hydraulic drives to move unexpectedly.
Risk of serious injury or death.

- Before beginning disassembly, relieve the system of hydraulic pressure.
- A corresponding warning sign (HAWE order number 7788 022 (4708 4258-00)) must be attached in an easily visible place on or near the hydraulic accumulator.
- No modifications of any kind (mechanical, welding or soldering work) may be made to the accumulator.

⚠ CAUTION

Overloading components due to incorrect pressure settings.
Risk of minor injury.

- Always monitor the pressure gauge when setting and changing the pressure.
- Take note of the maximum pressure of the pump.

⚠ CAUTION

Danger of burning due to hot metal surfaces on the hydraulic power pack, particularly on the tank, motor, valve blocks and valves.
Risk of minor burns

- Do not touch the hydraulic power pack or directional valve solenoids during operation.
- Allow the hydraulic power pack and directional valve solenoids to cool down before any work.
- Wear protective gloves.
- If surface temperatures >60°C occur during operation, set up safety barriers.
- Ensure that fresh air can be drawn in and that warm air can escape.
- No changes of any kind (mechanical, welding or soldering work) may be made.

Check for correct connection

☑ Only trained specialist personnel may perform commissioning.

☑ The unit is secured against being switched on unintentionally.

☑ Any accumulator systems have been filled,
see Chapter 7.2.9, "Checking accumulator systems", page 47

1. Mechanical: attachment to the machine, the frame and the base
2. Hydraulic: piping, hoses, cylinders, motors
3. Electrical: Wiring, power supply, control

Set motor protection circuit

1. Set motor protection circuit to approximately 0.85 to 0.9 times the motor current (I_M).
   ✓ When operating normally, the motor protection circuit will not trip prematurely.
   ✓ When the pressure-limiting valve triggers, the period until shutdown does not become long enough for the hydraulic fluid's temperature to exceed its permissible maximum.
2. Run a test run to check the motor protection circuit's settings.

Additional safety precautions against malfunctions are the temperature switches, level switches and pressure switches. These are optionally available for the hydraulic power pack.

Filling the hydraulic power pack with hydraulic fluid

NOTICE

Dirt must not enter the product

Otherwise, the product may suffer damage

- Fill hydraulic fluid via the system filter or a mobile filter station wherever possible.
- Observe the recommended cleanliness class for the hydraulic fluid.
- Keep all pipes, hose lines, fittings and couplings clean.
- Carry out all work in a clean environment.
- Clean hands and clothing before working.

NOTICE

Accumulator systems

- Fill accumulators using designated equipment in accordance with the pressure specifications of the hydraulic schematic.
- Observe the manufacturer's corresponding operating instructions and hydraulic schematics.

Filling hydraulic fluid

☑ Only use the hydraulic fluid specified for the system.

1. Refer to the table for filling quantity.
2. Fill hydraulic fluid via the system filter or a mobile filter station.
3. Fill up to the top marking on the fill level monitor.
4. Bleed the hydraulic lines connecting 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.
5. Bleed the hydraulic power pack, see Chapter 7.2.4, "Bleed the hydraulic power pack", page 43

Coding	Fill volume V_{fill} (l)	Usable volume vertical V_{usable} (l)	Usable volume horizontal V_{usable} (l)
--	3.9	1.85	1.5
1	5.0	2.7	2.0
01	5.0	1.85	2.0
11	6.1	2.7	2.5
2	7.5	5.45	3.15
02	7.5	--	3.15
21	8.6	5.45	3.65
22	11.1	--	4.8
3	11.1	9.05	4.8

The fill volume and usable volume may deviate from the indicated values, depending on the motor and pump.

Fill volume and usable volume may be slightly less than the values indicated here, depending on the motor and pump. The difference may be up to 3 l (usable volume) or 1 l (fill volume).

Setting pump's rotation direction

1. Briefly run the drive motor
   ✓ The pump is pumping hydraulic fluid

☑ The pump is not pumping hydraulic fluid

2. Check that the motor's rotation direction matches the pump's rotation direction
   - Radial piston pump = any
   - Gear pump = anticlockwise
3. For 3-phase version and Z-pump
   ► If there is no delivery flow, swap over two of the three main conductors.

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.

In addition to the safety instructions presented in Section For your safety follow the safety instructions below.

⚠ WARNING

Risk of injury from electrical, mechanical or hydraulic hazards when working on the hydraulic power pack
Risk of serious injury or death

- ► Prior to all work on the hydraulic power pack, disconnect the power supply from the drive motor.
- ► Prior to all work on the hydraulic power pack, relieve the pressure in the hydraulic system.

⚠ CAUTION

The hydraulic power pack and valves' solenoids may become hot during operation.
Risk of injury from minor burns

- ► If surface temperatures >60°C occur during operation, set up safety barriers.
- ► Allow the hydraulic power pack and the solenoids to cool sufficiently before touching them.
- ► Ensure the device can aspirate sufficient volumes of fresh air and hot air can escape.
- ► Modifications of any kind, especially mechanical, welding or soldering, are prohibited.

NOTICE

Disconnecting electrical power sources

- ► Plug connection on compact hydraulic power pack (various types of plug optionally available) or
- ► Power supply unit in overall machinery (see owner's operating instructions)

NOTICE

Damage from improper cleaning

- Only clean with the hydraulic connections sealed to prevent cleaner from entering.
- Do not use aggressive cleaning agents.
- Treat the product only with suitable cleaning agents.
- Do not use a high-pressure cleaner.

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.

	as required	Every 3 months	Every 6 months	Once a year	Every 2 years	Every 6 years, after 10 years at the latest
Check safety markings				✓		
Hydraulic fluid: "Checking the fluid level", page 44		✓				
"Replacing the hydraulic fluid", page 45	✓			✓		
"Checking and replacing the silica gel filter", page 46			✓			
Change pressure and return line filter (if present)	✓			✓		
"Visual check: Hydraulic lines (pipes and hoses)", page 43 and replace if necessary	✓			✓		
"Visual check: Electrics (cables, connections, plugs)", page 43 and replace if necessary	✓			✓		
Electric drive: "Checking electrical equipment", page 47					✓	
"Checking and replacing hydraulic hoses", page 43						✓

7.2 Service

7.2.1 Visual check: Hydraulic lines (pipes and hoses)

Immediately repair any damage of this kind to hydraulic lines:

- ► External leakages
- ► Visible signs of external damage cracks, kinks, detaching, cuts, abrasion, material fatigue etc.
- ► Hose deformation when unpressurised and when pressurised

7.2.2 Visual check: Electrics (cables, connections, plugs)

Immediately repair any damage of this kind to electrical systems:

- ► Visible signs of external damage, like brittle insulation, abrasion, kinks, material aging etc.
- ► Corroded electrical plugs and sockets

7.2.3 Checking and replacing hydraulic hoses

NOTICE

When handling hydraulic hoses, observe the applicable standards, regulations and rules:

- ISO 17165-2: Recommended practices for hydraulic hose lines.
- DGUV Rule 113-015 (BGR 237 – German regulations for occupational insurance schemes) hydraulic hose lines – “Rules for safe use”.
- DGUV information sheet no. 015 “Testing and replacing hydraulic hose lines”.

7.2.4 Bleed the hydraulic power pack

⚠ WARNING

Risk of injury from pressurised components

Risk of serious injury or death.

- ► Check all components for correct installation before charging the hydraulic system to operating pressure.

⚠ WARNING

Risk of injury from pressurised bleeder screw

Risk of serious injury or death

- ► Depressurise the hydraulic power pack before bleeding.

NOTICE

The hydraulic system is bled using bleeder screws.

Bleed the system through a consumer that has a high point within the hydraulic system.

On the hydraulic power pack

☑ The directional valve is in the switching position in which the pump can idle (see manufacturer’s hydraulics schematic).

1. Slightly unscrew the bleeder screw.
2. Switch the pump on and off several times so that the pump cylinders bleed automatically.

- If the controller is not designed for this:
  - Connect a pipe screw connection with a short pipe end fitting and a transparent plastic hose to port P.
  - Insert the other end into the tank filler opening (unscrew the breather filter).

✓ When the hydraulic fluid flow is free of bubbles, the pump has been bled.

3. Then move the consumer(s) back and forth several times to remove any trapped air and to assure movement is smooth.
4. If the consumers have bleed points, loosen the locking elements and tighten them only when the escaping hydraulic fluid is free of bubbles. Catch the escaping hydraulic fluid.
5. Properly dispose of the escaped hydraulic fluid, hydraulic fluid container and any cloths contaminated with hydraulic fluid.
6. Tighten the bleeder screw again.

On a consumer in a high position

1. Slightly unscrew the bleeder screw.
   ✓ The bleeding process is complete when hydraulic fluid flows out without bubbles.
2. Tighten the bleeder screw again.

7.2.5 Checking the fluid level

Dropping hydraulic fluid levels may indicate leaks in the system.

Electric fill level monitor

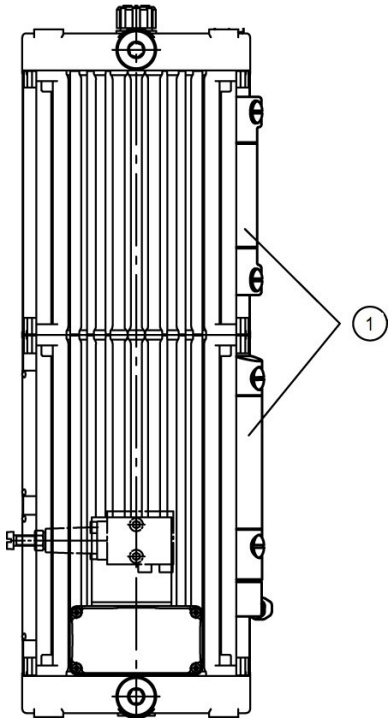
☑ Level gauge with level switch

- ► The level switch triggers a signal when the minimum fluid level is reached.
- ► Top up the hydraulic fluid at the latest when the fluid level has reached its minimum.

Visual fill level monitor

☑ Visual level gauge

- ► Use the visual level gauge to check the hydraulic fluid level when the system is unpressurised.
- ► Top up the hydraulic fluid at the latest when the fluid level has reached its minimum.



1 Visual level gauge

7.2.6 Replacing the hydraulic fluid

⚠ WARNING

Danger of scalding from hot hydraulic fluid.
Danger of scalding.

- ► Please note hydraulic fluid remains very hot even a long time after switching off.
- ► Allow the complete system to cool down before carrying out any work.
- ► Avoid skin contact with hot hydraulic fluid.

NOTICE

- ► Do not release hydraulic fluid into the environment.
- ► Collect cleaning, operating and lubrication fluids and consumable materials in suitable containers and dispose of them according to local regulations.

Maintenance interval

Once a year.

☑ 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.

Draining

☑ Keep a vessel handy to catch the expended hydraulic fluid. The vessel needs to be big enough to catch all the fluid.
☑ Keep a vessel handy to catch the expended hydraulic fluid. The vessel needs to be big enough to catch all the fluid.
1. Depressurise the hydraulic system.
2. Unscrew and remove the filler and breather filter.
3. Optional: Remove and check the silica gel filter, replace it if necessary.
4. Drain the used hydraulic fluid.

There are two ways to drain the hydraulic fluid:

(1) Using drain screw

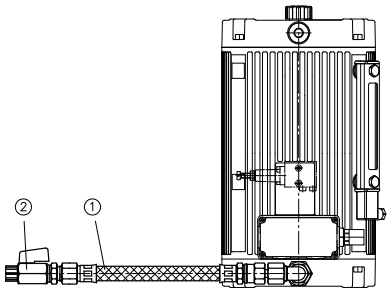
☑ Directional valve is closed.

1. Undo the drain screw on the product.
2. Drain the expended hydraulic fluid into a separate vessel.
3. Screw the drain screw back in (tightening torque: 9 Nm).

(2) Using drain hose

☑ Directional valve is closed.

1. Open the drain valve (2) on the drain hose (1).
2. Drain the expended hydraulic fluid into a separate vessel.
3. Close the drain valve (2) again



1 Drain hose
2 Drain valve

NOTICE

Dirt must not enter the product

Otherwise, the product may suffer damage

- ► Fill hydraulic fluid via the system filter or a mobile filter station wherever possible.
- ► Observe the recommended cleanliness class for the hydraulic fluid.
- ► Keep all pipes, hose lines, fittings and couplings clean.
- ► Carry out all work in a clean environment.
- ► Clean hands and clothing before working.

NOTICE

Replace the oil filter when changing the hydraulic fluid.

- ► Otherwise, the fresh hydraulic fluid will be contaminated again.

Filling hydraulic fluid

1. Fill hydraulic fluid into the hydraulic power pack through the system filter or a mobile filter station.
2. While changing the hydraulic fluid, keep an eye on the level switch and monitor its signals.
3. Screw the breather filter or silica gel filter back in.
4. Switch on the hydraulic power pack.
   ✓ The hydraulic accumulator fills automatically.
5. Bleed the hydraulic system.
   ✓ The hydraulic power pack is ready for operation.

7.2.7 Checking and replacing the silica gel filter

Maintenance interval

Once a year

Replace the silica gel filter if it is clogged

- red: OK
- orange: Please replace

☑ Contamination indicator: The filter material on the silica gel filter has turned pink

1. Depressurise the system
2. Remove the used silica gel filter
3. Screw in a new silica gel filter
4. Before commissioning, take the red sealing plug off the underside of the new silica gel filter
   ✓ The silica gel filter is ready for use

7.2.8 Checking electrical equipment

NOTICE

Testing electrical equipment

- ► The testing must only be performed by an electrically skilled person or by electrically instructed personnel.
- ► Only use suitable measurement and test devices.
- ► The high-voltage test values or results of the insulation test may be impaired due to old or contaminated hydraulic fluid.

NOTICE

Operating electrical systems safely

You can only properly and reliably operate electrical systems or equipment in a safe manner if their condition is guaranteed to be perfect at all times. The German DGUV Vorschrift 3 accident prevention regulations specifie inspection intervals and test methods. The associated instructions (DA) detail how the safety goals can be achieved.

Recurring inspections acc. to DGUV Vorschrift 3

- Visual check
- Check PE and equipotential bonding
- Check insulation
- Check shutdown conditions
- Check circuit breakers
- Measure ground
- Test certificate

7.2.9 Checking accumulator systems

Maintenance interval

As required.

NOTICE

Damage to accumulator systems

Accumulators should be filled using designated equipment in accordance with the pressure specifications of the hydraulic schematic. The relevant operating and maintenance manuals must be followed.

Checking and filling

NOTICE

Refer to the following additionally applicable documents concerning checking and filling of accumulator systems:

- ► D 7969
- ► D 7571

7.3 Repairs

Spare and wearing parts

- ► Trained specialist personnel can perform repairs themselves.
- ► Order spare and wearing parts from the manufacturer by providing the commission number (see type plate).

The motor cannot be replaced as it is an integral part of the tank.

NOTICE

For safety reasons, only genuine spare parts and accessories may be used.

HAWE Hydraulik SE disclaims any liability or warranty for damage caused by the use of non-genuine spare parts and accessories.

8 Disassembly and disposal

In addition to the safety instructions presented in Section For your safety follow the safety instructions below.

⚠ WARNING

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.

⚠ 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.

NOTICE

- ► Do not release hydraulic fluid into the environment.
- ► Collect cleaning, operating and lubrication fluids and consumable materials in suitable containers and dispose of them according to local regulations.

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 cloths, 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	Remedy
Consumer does not move	Power supply disrupted	Measure the voltage.	Restore power supply.
	control circuit faulty (e.g. relay)	Measure the control voltage/check the relay.	Replace the control circuit. Contact HAWE.
	motor faulty	There is voltage present but the motor does not work.	Replace hydraulic power pack/ motor. Contact HAWE.
Hydraulic power pack does not build up pressure, or the pressure is too low	Faulty connections		► Check connections ► "Visual check: Hydraulic lines (pipes and hoses)", page 43
	Supply voltage too low	Measure voltage directly on the motor.	Restore power supply.
	Hydraulic power pack faulty		Replace the hydraulic power pack.
	Pump/motor faulty		**Hydraulic power pack** ► Shut down ► Repair or replace
	Delivery flow direction wrong		► Setting pump's rotation direction see page 40
	Deviations of the pressure specifications		► "Get in touch with manufacturer", page 69
Hydraulic power pack provides no flow rate, or the flow rate is too low	Hydraulic power pack faulty		Replace the hydraulic power pack.
Excessive noise production	Hydraulic fluid level too low (foaming hydraulic fluid)		► Filling hydraulic fluid see page 46
	Pump/motor faulty		**Hydraulic power pack** ► Shut down ► Repair or replace

10 Appendix

Further documentation, such as technical data sheets, circuit diagrams, bills of material, installation drawings, as well as optional documents (e.g. works test certificate) form part of the technical documents and are delivered 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

Type-specific parameters are listed on the product's type plate, e.g.: Data on motor and pump power.

For further technical data, refer to HAWE publication D 8010.

"Applicable documents", page 7

10.1.1 General data

Conformity	▪ Declaration of incorporation ▪ Declaration of conformity"Declaration of conformity", page 66 ▪ UL conformity of stator insulating system ► UL reference E216350 ▪ UL conformity of the fans F, F1 ► UL reference E93656
Designation	Hydraulic power pack
Design	Valve-controlled radial piston pump or gear pump
Model	Compact hydraulic power pack (closed unit with a pump, electric drive and tank)
Operating mode	▪ Short period operation (S2) ▪ Periodic intermittent operation (S3)
Material	Housing: Aluminium
Attachment	M8 threaded holes, see dimensioned drawings
Installation position	Vertical (KA...S) or horizontal (KA...L)
Line connection	only via bolted-on connection blocks Basic pump: see mounting hole pattern
Rotation direction	Radial piston pump – any Gear pump – anticlockwise

Speed range (min ... max)	Radial piston pump **H**	200 to 3500 rpm
	Gear pump **Z**	
	Z 1.1 to Z 1.7	800 to 5000 rpm
	Z 2.0 to Z 2.7	600 to 4500 rpm
	Z 3.5 to Z 6.4	500 to 4000 rpm
	Z 6.9 to Z 8.4	500 to 3800 rpm
	Z 8.8 to Z 11.3	500 to 3000 rpm
Silica gel filter	Filter area	26.6 cm²
	Desiccant quantity	125 g
	Absorption capacity	150 ml
	Filter efficiency	3 µm absolute; (β≥200)
	Operating temperature range	-30°C to +90°C
Filler screen	Coding	B, B1
	Screen mesh size	0.63 mm
	Connection	G 1 1/4

10.1.2 Weight

w/o hydraulic fluid
w/o connection blocks

Type	H (3 cylinders*)	H (6 cylinders*)	Z	HZ
KA 21, 23	10.9 kg	11.5 kg	12.7 kg	13.2 kg
KA 22, 24	13.2 kg	13.6 kg	15.0 kg	15.5 kg
KA 26, 28, 29	14.7 kg	15.1 kg	16.5 kg	17.0 kg

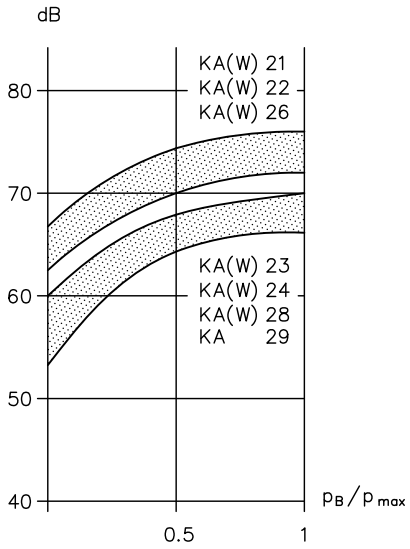
Coding tank size	Additional weight
01, 1	+ 0.7 kg
02, 2	+ 2.2 kg
11	+ 1.4 kg
21	+ 2.9 kg
22, 3	+ 4.4 kg

Coding fan	Additional weight
F, F1	+ 2.7 kg
FSL, FSR, FSH	+ 0.54 kg (1x110 V, 1x230 V) + 0.22 kg (24 V DC)
FSLR	+ 1.1 kg (1x110 V, 1x230 V) + 0.45 kg (24 V DC)

* The number of cylinders depends on the delivery flow coding.

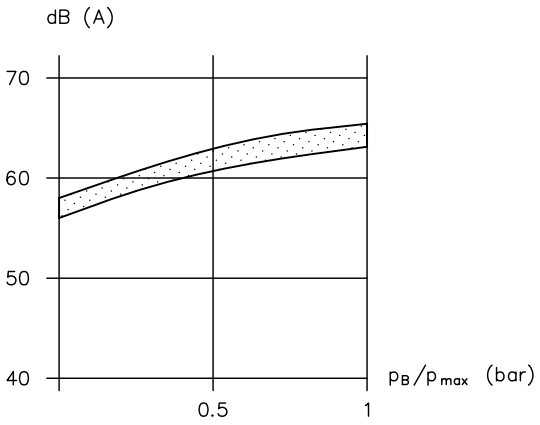
10.1.3 Characteristic lines

Radial piston pump



pB/pmax pressure ratio; dB noise level (A)

Gear pump



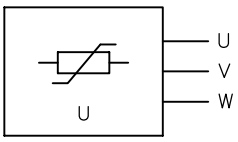
pB/pmax pressure ratio; dB noise level (A)

10.1.4 Hydraulic data

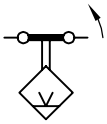
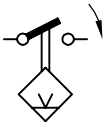
Pressure	Pressure side (port P): depends on version and delivery flow. Suction side (vessel interior): ambient air pressure. Not suitable for charging. p_{min} = 30 bar (due to dynamic pressure)
Start against pressure	The version with 3-phase motor can start against the pressure p_{Max}. The AC motor version can only act counter to a minor pressure.
Hydraulic fluid	Hydraulic fluid, according to DIN 51 524 Parts 2 to 3; ISO VG 10 to 68 according to DIN ISO 3448 **Coding H** Viscosity range: 4 - 800 mm²/s Optimal operating range: approx. 10 - 500 mm²/s Also suitable for biologically degradable hydraulic fluids type HEPG (polyalkylene glycol) and HEES (synthetic ester) at operating temperatures up to approx. +70°C. **Coding Z** Viscosity range: 10 - 750 mm²/s Optimal operating range: approx. 12 - 500 mm²/s Also suitable for biologically degradable hydraulic fluids type HEES (synthetic ester) at operating temperatures up to approx. +70°C.
Cleanliness level	**ISO 4406** 21/18/15...19/17/13
Temperatures	Environment: approx. -20 ... +80 °C, hydraulic fluid: -25 ... +80 °C, ensure the correct viscosity range. Start temperature: down to -40 °C is permissible (take account of the start viscosities!), as long as the steady-state temperature is at least 20 K higher during subsequent operation. Biologically degradable hydraulic fluids: note manufacturer specifications. With consideration for the seal compatibility, not above +70°C.

10.1.5 Electrical data

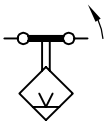
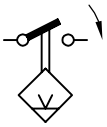
- Data applies to radial piston pumps and gear pumps
- The drive motor forms a closed, non-separable unit with the pump.

Connection	**part of product** • For version with HARTING plug, housing with female insert HARTING HAN 1 ES or equivalent, cable cross section 1.5 mm² • For version with integrated terminal box, flat plug sleeve 6.3 AMP **not supplied** • For terminal box version: Cable fitting M20x1.5 and cable lugs M5 • for option M.., PM.. : Line connector M12x1, 4-pin • for option KD, KS (vertical version): M12x1, 5-pole
Protection class	IP 54 according to IEC 60529 The breather filter must be safeguarded against moisture penetration.
Protection class	VDE 0100 Protection class 1
Insulation	**designed in accordance with EN 60 664-1** • For 4-wire AC voltage systems L1-L2-L3-PE (3-phase systems) **with** an earthed neutral point up to 500 V AC nominal phase voltage phase-phase • For 3-wire AC voltage systems L1-L2-L3 (3-phase systems) **without** an earthed neutral point up to a nominal phase voltage of 300 V AC phase-phase • for a single-phase and earthed 2-wire alternating current system L-N (alternating current or mains) up to a nominal voltage of 300 V AC.
Insulation material class	F
Suppressor **Coding E, PE**	Type RC 3 R ▪ Operating voltage: 3x 575 V AC ▪ Frequency: 10 to 400 Hz ▪ max. motor power: 4.0 kW 

Level switch for type KA...L (horizontal)

Max. DC/AC switching capacity	30 VA
Max. DC/AC current	0.5 A (cos φ = 1)
Max. voltage	230 V AC/DC
Electrical connection	on terminal box/HARTING plug
Circuit symbol	Coding **KD** (N/C contact)  Coding **KS** (N/O contact) 

Level switch for type KA...S (vertical)

DC/AC switching capacity	5 W
Max. DC/AC current	0.25 A
Max. voltage	50 V AC/DC
Electrical connection	Line connector acc. to 175301-803-B/ISO 6952 (industrial standard) M12x1, 5-pin (coding **M**, **M1**, **M2**, **PM**, **PM1**, **PM2**)
Circuit symbol	Coding **KD** (N/C contact)  Coding **KS** (N/O contact) 

Temperature switch

Response temperature acc. to installed temperature switch.

Bimetallic-element switch

- design: thermal-magnetic circuit breaker (type **KAW**)
- design: separate temperature switch (type **KA**)

Signal indication	80°C ± 5K (coding **T, TT50, TT60**) 60°C ± 5K (coding **T60, TT60**) 50°C ± 5K (coding **T50, TT50**)
Max. voltage	600 V 50/60 Hz
Nominal current (cos φ ~ 0.95 / 0.6)	2.5 A/1.6 A
Max. current at 24 V (cos φ = 1)	1.5 A
Electrical connection	on terminal box/HARTING plug
Circuit symbol	

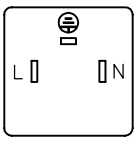
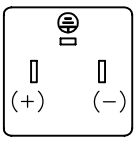
Level gauge with visual temperature indicator

Coding **KC, KDC, KSC**

Temperature display	0°C to 100°C
Protection class	IP 65
KDC, KSC	with level switch N/C contact (KDC) or N/O contact (KSC)

Fan connection and motor data

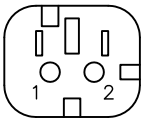
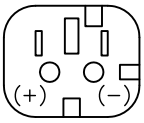
Coding **F, F1**

Temperature range	-30°C ... +50°C
Electrical connection	Line connector acc. to EN 175 301-803 A Coding **F** 1x230 V 50/60 Hz ⊥ 1x110 V 60 Hz ⊥  Coding **F1** 24V DC 
Motor data	U_N / P_N(W) / Rotation speed (rpm) / Protection class

U_N	P_N(W)	Rotation speed (rpm)	Protection class
1x230 V 50/60 Hz ⊥	45	2800/3250	IP 44
1x110 V 60 Hz ⊥	38	3250	IP 44
24 V DC	12	3050	IP 20

Fan (on side) connection and motor data

Coding **FSL, FSR, FSH, FSLR**

Electrical connection	Tyco line connector TE 776427-1 1x230 V 50/60 Hz ⊥ 1x115 V 50 Hz ⊥ 1x110 V 60 Hz ⊥ 	Tyco line connector TE 776427-2 24V DC 

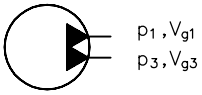
Motor data

U_N	P_N(W)	Rotation speed (rpm)	Protection class
1x230 V 50/60 Hz ⊥	19	2650/3100	IP 68
1x110 V 50/60 Hz ⊥	19	2650/3100	IP 68
24 V DC	5	2800	IP 68

10.1.6 Motor data

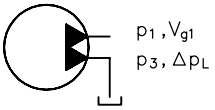
- The current consumption of the motor is dependent on the load. The nominal values only apply for one operating point. In modes S2 and S3 the motor may be used at up to about 1.8 times its nominal power. The heat development which is increased here is cooled in the no-load phases or during downtimes.
- The current and pump delivery flow can be estimated on the basis of the medium and maximum hydraulic work values $(pV_g)_m$ and $(pV_g)_{max}$.
- The relevant load case is responsible for current consumption in dual-circuit pumps. The hydraulic work of the individual circuits is to be determined and added.

All connections pressurised:



Dual-circuit pumps $(pV_g)_{calc.} = p_1\ V_{g1} + p_3\ V_{g3}$

One connection pressurised, the other one delivering in circulation mode:



Dual-circuit pumps $(pV_g)_{calc.} = p_1\ V_{g1} + \triangle p_L\ V_{g3}$

- Versions with 1-phase motors:
  Actual current consumption is also dependent on the size of the operating capacitor
  The operating capacitor is not included in the scope of supply.
- Re. the specification for the operating capacitor
  - 1x230 V 50 Hz - ... µF / 400 V DB
  - 1x220 V 60 Hz - ... µF / 400 V DB
  - 1x115 V 50 Hz - ... µF / 230 V DB
  - 1x110 V 60 Hz - ... µF / 230 V DB
- Voltage tolerances: ± 10% (IEC 60038), at 3x460/265 V 60 Hz ± 5%
  It can be operated at undervoltage. Notes on performance limitations:
- For pump version **Z**, **HH** or **HZ** the max working stroke $(pV_g)_{max}$ needs to be reduced by 10% .

Motor data for 3-phase motor

Basic type	Nominal voltage and power frequency U_N (V), f (Hz)	Nominal power P_N (kW)	Rated speed n_N (rpm)	Nominal current I_N (A)	Starting current ratio I_A / I_N	Power factor cos φ	Hydraulic work value $(pV_g)_{max}$ (bar cm³)
KA 21	3x400 V 50 Hz	0,55	2790	1,25	4.8	0.84	165
	3x460 V 60 Hz	0,66	3350	1,3	5,4	0,88	165
	3x230 V 50 Hz	0,55	2790	2,2	4,8	0,84	165
	3x690 V 50 Hz Y	0,55	2790	0,73	4,8	0,84	165
KA 22	3x400 V 50 Hz	1,1	2790	2,7	5.4	0.83	520
	3x460 V 60 Hz	1,32	3400	2,6	7,1	0,80	520
	3x230 V 50 Hz	1,32	2790	4,7	5,4	0,83	520
	3x690 V 50 Hz Y	1,1	2790	1,55	6,3	0,83	490
	3x200 V 50 Hz	1.1	2820	5.5	5.4	0.74	490
	3x220 V 60 Hz*	1,1	3380	4,9	6,2	0,88	350
KA 23	3x400 V 50 Hz	0.37	1360	1.0	4.3	0.80	220
	3x460 V 60 Hz	0,44	1650	1,0	4,4	0,81	220
	3x230 V 50 Hz	0,37	1360	1,75	4,3	0,80	220
	3x690 V 50 Hz Y S3	0,75	1330	1,3	3,0	0,75	385
	3x575 V 60 Hz Y S3	0,75	1670	1,4	3,8	0,75	360
	3x200 V 50 Hz	0.37	1410	2.3	4.8	0.67	290
	3x220 V 60 Hz*	0,37	1690	2,0	4,8	0,67	210
KA 24	3x400 V 50 Hz	0,75	1360	2,2	4,3	0.74	590
	3x460 V 60 Hz	0,9	1650	2,1	5,4	0,74	590
	3x230 V 50 Hz	0,75	1360	3,8	4,3	0,74	590
	3x500 V 50 Hz	0.75	1400	1.8	4.3	0,71	590
	3x575 V 60 Hz	0,9	1700	1,6	4,8	0,68	590
	3x200 V 50 Hz	0.75	1390	4.5	4.8	0.67	610
	3x220 V 60 Hz*	0,75	1680	3,9	4,8	0,67	460
KA 26	3x400 V 50 Hz	1.4	2810	3.3	5.1	0.82	585
	3x460 V 60 Hz	1,68	3340	3,0	5,0	0,90	585
	3x230 V 50 Hz	1,4	2810	5,7	5,1	0,82	585
	3x500 V 50 Hz	1.4	2820	2.35	6,0	0.85	590
	3x575 V 60 Hz	1,4	3450	2,0	7,1	0,86	590
	3x380 V 60 Hz Y	1,4	3450	3,05	7,1	0,86	630
	3x200 V 50 Hz	1.4	2840	6.4	6.2	0.79	630
	3x220 V 60 Hz*	1,4	3450	5,3	7,1	0,86	630
KA 28	3x400 V 50 Hz	1.2	1380	3.4	4.8	0.76	870
	3x460 V 60 Hz	1,45	1680	3,2	5,0	0,78	870
	3x230 V 50 Hz	1,2	1380	5,9	4,8	0,76	870
	3x200 V 50 Hz	1.1	1390	6.3	5.1	0.67	785
	3x220 V 60 Hz*	1,1	1690	5,5	5,1	0,76	665

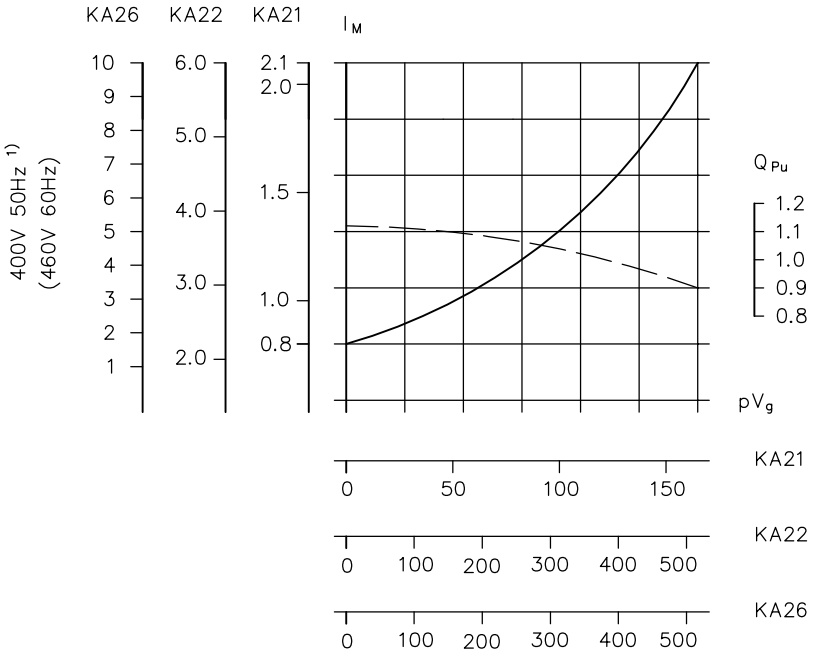
* Motors for 200 V 50 Hz or 220 V 60 Hz networks (Japan)

Basic type	Nominal voltage and power frequency U_N (V), f (Hz)	Nominal power P_N (kW)	Rated speed n_N (rpm)	Nominal current I_N (A)	Starting current ratio I_A / I_N	Power factor cos φ	Hydraulic work value $(pV_g)_{max}$ (bar cm³)
KA 29	3x400 V 50 Hz	1.6	1390	6.7	3.8	0.54	1250
	3x460 V 60 Hz	1,92	1690	6,2	3,8	0,54	1250
	3x230 V 50 Hz	1,6	1390	11,6	3,8	0,54	1250
	3x200 V 50 Hz	1.6	1400	12.5	3.9	0.55	1225
	3x220 V 60 Hz*	1,92	1680	10,8	3,9	0,55	1060

* Motors for 200 V 50 Hz or 220 V 60 Hz networks (Japan)

Current consumption characteristic lines KA 21, KA 22, KA 26

Operating voltage **3x400/230 V 50 Hz ⅄△, 3x460/265 V 60 Hz ⅄△**

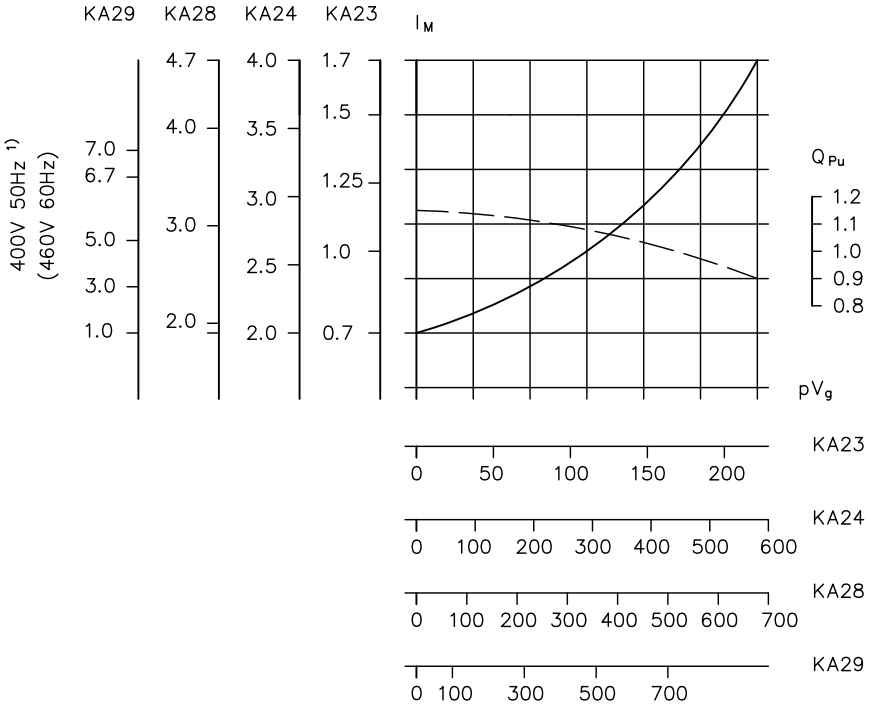


pV_g hydraulic work value (bar cm³); I_M motor current (A); Q_{Pu} delivery flow characteristic (trend) 1.0

1) For values at 230 V 50 Hz (265 V 60 Hz), values must be multiplied by √3.

Current consumption characteristic lines KA 23, KA 24, KA 28, KA 29

Operating voltage **3x400/230 V 50 Hz ⅄△, 3x460/265 V 60 Hz ⅄△**



pV_g hydraulic work value (bar cm³); I_M motor current (A); Q_{Pu} delivery flow characteristic (trend) 1.0

1) For values at 230 V 50 Hz (265 V 60 Hz), values must be multiplied by √3.

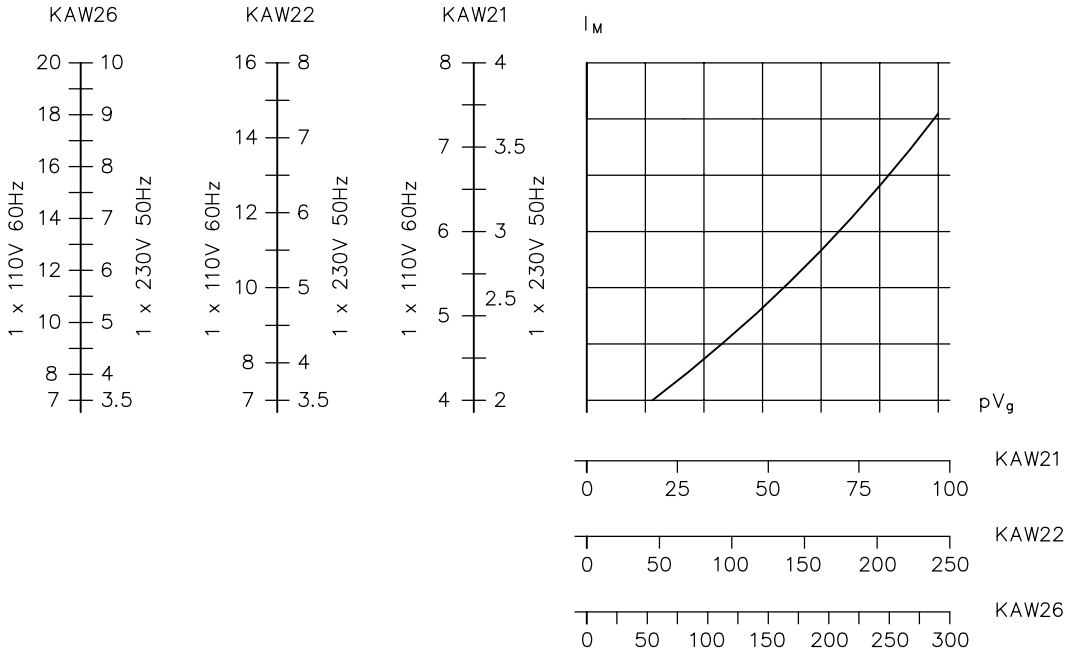
Motor data AC motor

Basic type	Nominal voltage and power frequency U_N (V), f (Hz)	Nominal power P_N (kW)	Rated speed n_N (rpm)	Nominal current I_N (A)	Starting current ratio I_A / I_N	Power factor cos φ	Operating capacitor* C_B (µF)	Hydraulic work value $pV_{g\ max}$ (bar/cm³)
KAW 21	1x230 V 50 Hz ⊥	0.37	2770	2.5	3.7	0.97	24	100
	1x110 V 60 Hz ⊥	0.37	3340	5.5	3.0	0.96	50	70
KAW 22	1x230 V 50 Hz ⊥	0.75	2810	4.75	4.4	0.94	32	230
	1x110 V 60 Hz ⊥	0.75	3400	12.0	3.5	0.90	120	175
	1x220 V 60 Hz ⊥	0.75	3400	6.0	3.5	0.90	30	200
KAW 23	1x230 V 50 Hz ⊥	0.25	1380	1.9	3.0	0.91	18	145
	1x110 V 60 Hz ⊥	0.25	1650	4.4	3.2	0.96	50	100
KAW 24	1x230 V 50 Hz ⊥	0.5	1390	4.1	2.9	0.95	32	350
	1x110 V 60 Hz ⊥	0.5	1680	9.0	3.3	0.98	65	210
	1x220 V 60 Hz ⊥	0.5	1680	3.9	2.9	0.98	25	275
KAW 26	1x230 V 50 Hz ⊥	1.1	2770	7.2	4.8	0.98	32	275
	1x110 V 60 Hz ⊥	1.1	3340	15.0	4.0	0.99	100	235
	1x220 V 60 Hz ⊥	1.1	3340	7.2	4.0	0.99	25	275
	1x115 V 50 Hz ⊥	1.1	2750	15.0	4.0	0.96	120	260
KAW 28	1x230 V 50 Hz ⊥	0.7	1370	5.1	3.0	0.94	36	400
	1x110 V 60 Hz ⊥	0.7	1650	10.5	3.0	0.98	100	315

* Recommended operating capacitor

Current consumption characteristic lines KAW 21, KAW 22, KAW 26

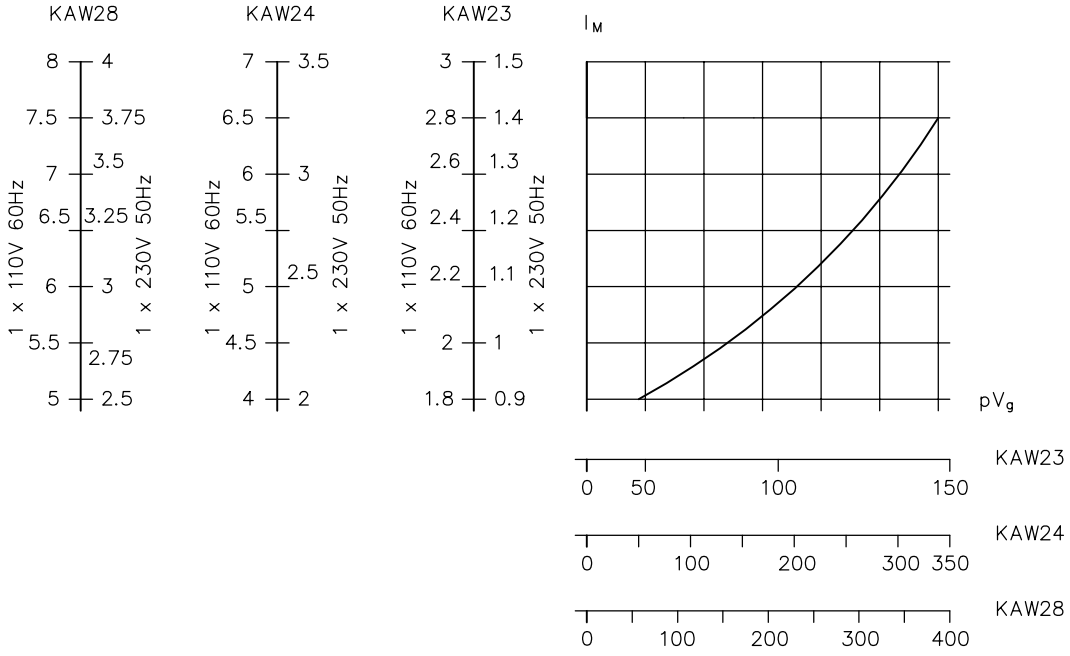
Operating voltage **1x230 V 50 Hz/1x110 V 60 Hz**



pV_g hydraulic work (bar cm³); I_M motor current (A);

Current consumption characteristic lines KAW 23, KAW 24, KAW 28

Operating voltage **1x230 V 50 Hz/1x110 V 60 Hz**



pV_g hydraulic work (bar cm³); I_M motor current (A);

10.2 Declaration of incorporation

HAWE HYDRAULIK

Solutions for a World under Pressure

Declaration of incorporation of partly completed machinery – original
according to Supply of Machinery (Safety) Regulations 2008, 2008 No. 1597, annex II B
Einbauerklärung einer unvollständigen Maschine - Original
nach Supply of Machinery (Safety) Regulations 2008, 2008 No. 1597, Anhang II B

Manufacturer: *Hersteller:*	HAWE Hydraulik SE Einsteinring 17 DE-85609 Aschheim/München

This declaration of incorporation is issued under the sole responsibility of the manufacturer.
Die alleinige Verantwortung für die Ausstellung dieser Einbauerklärung trägt der Hersteller.

Partly completed machinery: *Unvollständige Maschine:*	**Type KA(W) acc. to our documentation D 8010** Typ KA(W) nach unserer Dokumentation D 8010
The following essential health and safety requirements of Directive 2008 No. 1597 apply: *Die folgenden grundlegenden Sicherheits- und Gesundheitsschutzanforderung der Richtlinie 2008 No. 1597 kommen zur Anwendung:*	***Chapters (Abschnitte) 1.1.2, 1.1.3, 1.1.5, 1.2 complete (komplett), 1.3.1, 1.3.2, 1.3.4, 1.3.6, 1.3.7, 1.5.1, 1.5.2, 1.5.3, 1.5.4, 1.5.5, 1.5.6, 1.5.8, 1.5.9, 1.5.16, 1.6.3, 1.7.1, 1.7.3, 1.7.4 and 1.7.4.3.***
The following designated standards or other technical specifications have been applied: *Es wurden folgende harmonisierte Normen oder andere technische Spezifikationen zugrunde gelegt:*	**DIN EN ISO 12100:2011-03**
Person authorised to compile the technical file: *Dokumentationsbevollmächtigter:*	Koppen & Lethem Ltd 3 Glenholm Park, Brunel Drive Newark | Nottinghamshire | NG24 2EG United Kingdom

The relevant technical documentation is compiled in accordance with part B of Annex VII.
Die speziellen technischen Unterlagen nach Anhang VII Teil B wurden erstellt.

The manufacturer undertakes to electronically transmit the special technical documents on the partly completed machinery to national authorities on request.
Der Hersteller verpflichtet sich, die speziellen technischen Unterlagen zur unvollständigen Maschine einzelstaatlichen Stellen auf Verlangen elektronisch zu übermitteln.

The partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of the directive 2008 No. 1597.
Die unvollständige Maschine darf erst dann in Betrieb genommen werden, wenn festgestellt wurde, dass die Maschine, in die die unvollständige Maschine eingebaut werden soll, den Bestimmungen der Richtlinie 2008 No. 1597.

Aschheim, 2022-07-12

Axel Schwerdtfeger, CTO

Dogan Basöz, Product Manager

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Europäische Aktiengesellschaft (SE) . Sitz der Gesellschaft: München . USt ID Nr: DE180016108 . Registergericht München HRB 174760
Vorstand: Robert Schullan, Axel Schwerdtfeger, Wolfgang Sochor, Markus Unterstein, Jiang Ye
Vorsitzender des Aufsichtsrats: Karl Haeusgen
Hypo-Vereinsbank München, 1780008454 (BLZ 700 202 70), IBAN DE53 7002 0270 1780 0084 54, BIC HYVEDEMMXXX
Commerzbank München, 150623700 (BLZ 700 400 41), IBAN DE56 7004 0041 0150 6237 00, BIC COBADEFFXXX
Baden-Württembergische Bank, 2368049 (BLZ 600 501 01), IBAN DE90 6005 0101 0002 3680 49, BIC SOLADEST
Bayerische Landesbank, 203693428 (BLZ 700 500 00), IBAN DE86 7005 0000 0203 6934 28, BIC BYLADEMMXXX

Zertifiziert nach
ISO 9001
ISO 14001
ISO 50001
ISO 45001

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9998 5909 00

10.3 Declaration of conformity

HAWE HYDRAULIK

Solutions for a World under Pressure

UKCA-Declaration of conformity - original
UKCA Konformitätserklärung - Original

Manufacturer: *Hersteller:*	HAWE Hydraulik SE Einsteinring 17 DE-85609 Aschheim/München

This declaration of conformity is issued under the sole responsibility of the manufacturer.
Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.

Product: *Produkt:*	Type KA(W) acc. to our documentation D 8010 Typ KA(W) nach unserer Dokumentation D 8010
Object of the declaration: *Gegenstand der Erklärung*	Immersed Motor of hydraulic power pack *Unterölmotor des Hydraulikaggregates*
The object of the declaration described above complies with the relevant designated standards of the United Kingdom: *Der oben beschriebene Gegenstand der Erklärung erfüllt die einschlägigen Harmonisierungsrechtsvorschriften des UK:*	Electrical Equipment (Safety) Regulations 2016 No. 1101
The following designated standards or other technical specifications have been applied: *Es wurden folgende harmonisierte Normen oder andere technische Spezifikationen zugrunde gelegt:*	EN 60204-1:2018
Person authorised to compile the technical file: *Dokumentationsbevollmächtigter:*	Koppen & Lethem Ltd 3 Glenholm Park, Brunel Drive Newark | Nottinghamshire | NG24 2EG United Kingdom

Aschheim, 2022-07-12

Axel Schwerdtfeger, CTO

Dogan Basöz, Product Manager

HAWE Hydraulik SE . Einsteinring 17 . D-85609 Aschheim/München . info@hawe.de . Tel. +49 89 379100-1000 . Fax +49 89 379100-91000
Europäische Aktiengesellschaft (SE) . Sitz der Gesellschaft: München . USt ID Nr: DE180016108 . Registergericht München HRB 174760
Vorstand: Robert Schullan, Axel Schwerdtfeger, Wolfgang Sochor, Markus Unterstein, Jiang Ye
Vorsitzender des Aufsichtsrats: Karl Haeusgen
Hypo-Vereinsbank München, 1780008454 (BLZ 700 202 70), IBAN DE53 7002 0270 1780 0084 54, BIC HYVEDEMMXXX
Commerzbank München, 150623700 (BLZ 700 400 41), IBAN DE56 7004 0041 0150 6237 00, BIC COBADEFFXXX
Baden-Württembergische Bank, 2368049 (BLZ 600 501 01), IBAN DE90 6005 0101 0002 3680 49, BIC SOLADEST
Bayerische Landesbank, 203693428 (BLZ 700 500 00), IBAN DE86 7005 0000 0203 6934 28, BIC BYLADEMMXXX

Zertifiziert nach
ISO 9001
ISO 14001
ISO 50001
ISO 45001
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9998 5909 00

10.4 UKCA certificates

HAWE HYDRAULIK

Solutions for a World under Pressure

Declaration of incorporation of partly completed machinery – original
according to Supply of Machinery (Safety) Regulations 2008, 2008 No. 1597, annex II B
Einbauerklärung einer unvollständigen Maschine - Original
nach Supply of Machinery (Safety) Regulations 2008, 2008 No. 1597, Anhang II B

Manufacturer: *Hersteller:*	HAWE Hydraulik SE Einsteinring 17 DE-85609 Aschheim/München

This declaration of incorporation is issued under the sole responsibility of the manufacturer.
Die alleinige Verantwortung für die Ausstellung dieser Einbauerklärung trägt der Hersteller.

Partly completed machinery: *Unvollständige Maschine:*	**Type KA(W) acc. to our documentation D 8010** Typ KA(W) nach unserer Dokumentation D 8010
The following essential health and safety requirements of Directive 2008 No. 1597 apply: *Die folgenden grundlegenden Sicherheits- und Gesundheitsschutzanforderung der Richtlinie 2008 No. 1597 kommen zur Anwendung:*	***Chapters (Abschnitte) 1.1.2, 1.1.3, 1.1.5, 1.2 complete (komplett), 1.3.1, 1.3.2, 1.3.4, 1.3.6, 1.3.7, 1.5.1, 1.5.2, 1.5.3, 1.5.4, 1.5.5, 1.5.6, 1.5.8, 1.5.9, 1.5.16, 1.6.3, 1.7.1, 1.7.3, 1.7.4 and 1.7.4.3.***
The following designated standards or other technical specifications have been applied: *Es wurden folgende harmonisierte Normen oder andere technische Spezifikationen zugrunde gelegt:*	**DIN EN ISO 12100:2011-03**
Person authorised to compile the technical file: *Dokumentationsbevollmächtigter:*	Koppen & Lethem Ltd 3 Glenholm Park, Brunel Drive Newark | Nottinghamshire | NG24 2EG United Kingdom

The relevant technical documentation is compiled in accordance with part B of Annex VII.
Die speziellen technischen Unterlagen nach Anhang VII Teil B wurden erstellt.

The manufacturer undertakes to electronically transmit the special technical documents on the partly completed machinery to national authorities on request.
Der Hersteller verpflichtet sich, die speziellen technischen Unterlagen zur unvollständigen Maschine einzelstaatlichen Stellen auf Verlangen elektronisch zu übermitteln.

The partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of the directive 2008 No. 1597.
Die unvollständige Maschine darf erst dann in Betrieb genommen werden, wenn festgestellt wurde, dass die Maschine, in die die unvollständige Maschine eingebaut werden soll, den Bestimmungen der Richtlinie 2008 No. 1597.

Aschheim, 2022-07-12

Axel Schwerdtfeger, CTO

Dogan Basöz, Product Manager

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Europäische Aktiengesellschaft (SE) . Sitz der Gesellschaft: München . USt ID Nr: DE180016108 . Registergericht München HRB 174760
Vorstand: Robert Schullan, Axel Schwerdtfeger, Wolfgang Sochor, Markus Unterstein, Jiang Ye
Vorsitzender des Aufsichtsrats: Karl Haeusgen
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Commerzbank München, 150623700 (BLZ 700 400 41), IBAN DE56 7004 0041 0150 6237 00, BIC COBADEFFXXX
Baden-Württembergische Bank, 2368049 (BLZ 600 501 01), IBAN DE90 6005 0101 0002 3680 49, BIC SOLADEST
Bayerische Landesbank, 203693428 (BLZ 700 500 00), IBAN DE86 7005 0000 0203 6934 28, BIC BYLADEMMXXX

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UKCA-Declaration of conformity - original
UKCA Konformitätserklärung - Original

Manufacturer: *Hersteller:*	HAWE Hydraulik SE Einsteinring 17 DE-85609 Aschheim/München

This declaration of conformity is issued under the sole responsibility of the manufacturer.
Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.

Product: *Produkt:*	Type KA(W) acc. to our documentation D 8010 Typ KA(W) nach unserer Dokumentation D 8010
Object of the declaration: *Gegenstand der Erklärung*	Immersed Motor of hydraulic power pack *Unterölmotor des Hydraulikaggregates*
The object of the declaration described above complies with the relevant designated standards of the United Kingdom: *Der oben beschriebene Gegenstand der Erklärung erfüllt die einschlägigen Harmonisierungsrechtsvorschriften des UK:*	Electrical Equipment (Safety) Regulations 2016 No. 1101
The following designated standards or other technical specifications have been applied: *Es wurden folgende harmonisierte Normen oder andere technische Spezifikationen zugrunde gelegt:*	EN 60204-1:2018
Person authorised to compile the technical file: *Dokumentationsbevollmächtigter:*	Koppen & Lethem Ltd 3 Glenholm Park, Brunel Drive Newark | Nottinghamshire | NG24 2EG United Kingdom

Aschheim, 2022-07-12

Axel Schwerdtfeger, CTO

Dogan Basöz, Product Manager

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Zertifiziert nach
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www.hawe.com

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11 Contact details

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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 to ISO 9001, ISO 4413, ISO 50001, OHSAS 18001.

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You can find further information on HAWE Hydraulik, your local contact and the range of hydraulics training sessions offered at: www.hawe.com.

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