Operation & Maintenance Manual

Part No :

200300600699-1

APPLICATION: TORQUE WRENCH

HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

This manual is to be kept for the future use.

CONTENT Page

HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

1. General Information

1.1. Introduction

These operation and maintenance instructions have been elaborated to the best of our knowledge. It should familiarize operators, users and servicing staff of the hydraulic power pack, with the installation, the function, the service and the maintenance, as well as the safety-related aspects. Furthermore, the instructions should guarantee that educated and qualified personnel are enabled to operate and to maintain the hydraulic power pack in accordance with the requirements.

However the instructions cannot cover all the conceivable aspects at the site of operation of the hydraulic power pack. Should you have questions to the hydraulic power pack or to its operation and maintenance instruction, please contact the manufacturer.

1.2. Significance of the operation and maintenance instruction

A precise knowledge of the contents of these instructions prior to initial start-up is essential for trouble-free operation. The instructions contain

- Important information on safety use of the hydraulic power pack.
- Important information on trouble-free operation and long service life.
- Important information on proper and professional maintenance and repair of the hydraulic power pack**.**

1.3. Legal Information

Without explicit authorization of HAWE Hydraulics Pvt Ltd. This operating and maintenance instruction is not allowed to be duplicated electronically or mechanically, distributed, altered, transferred, into another language translated or to be used otherwise - neither as total nor in partial.
The HAWE Hydraulics Pvt Ltd is not liable for damages, resulting from the operation and maintenance instruction has been not considered or only partially considered. The handing over of the operation and maintenance instruction justifies no claim on license or use.

1.4. Warranty and liability

Warranty and the warranty period follow after the respective contractual relationship as well as in agreement to our general terms of sale and delivery.
Guarantee and liability claims are excluded in general if they are to be led back on inappropriate use or disasters resulting from the action of foreign bodies and force majored.
The information in this manual has been checked carefully. Nevertheless, we are unable to accept liability for errors.

HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

1.5. Scope of supply

The hydraulic power pack is pre-assembled and delivered without oil filling.
The standard scope of supply consists of:

- Hydraulic power pack according to the enclosed hydraulic circuits.
- Operation and maintenance operation.

1.6. Version and revision level of operating and maintenance manual

The version and revision level of this operating and maintenance instruction is March 2011. We expressly point out that descriptions, illustrations and performance information are non binding. HAWE Hydraulics Pvt. Ltd reserves the right to implement technical modifications to the hydraulic power pack at any time in order to improve safety, reliability, function and design.

1.7. Composition of the operating and maintenance manual

In addition to the present manual the operating and maintenance instruction exists of the following documents. (In each case latest state)

- Assembly Drawing of Hydraulic Power Pack
- Hydraulic Diagram
- Accompanying Bill Of Materials

1.8. Co-valid Documents

- Additional documents / subsidiary technical documents
  The subsidiary technical documents comprise the documentation of purchased parts and individual components and on top of that it is a loose-leaf collection for information you will receive from us in irregular time intervals.
- General Operation manual for assembly, initial start –up and maintenance of hydraulic components and systems (Document No: B 5488)
- Minutes of test procedure (Done prior to delivery)
- Pressure Fluids – Notes for selection (Document No: D5488/1)

1.9. Conventions for this Manual

HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

1.9.1 Used symbols and hints in this instruction

DANGER

Warning of direct imminent danger to life and health of persons

Non-observance of this warning might result in severe damage to health including injuries that are dangerous to life

WARNING

Warning of direct imminent danger to life and health of persons

Non-observance of this warning might result in severe damage to health including injuries that are dangerous to life

CAUTION

Warning of direct imminent danger to life and health of persons

Non-observance of this warning might result in severe damage to health including injuries that are dangerous to life

NOTE

Important notes on the proper handling of the hydraulic power pack

Non-observance of this warning might result in trouble or negative effect on the environment.

TIP

Practical hints and particularly useful information

1.10. Purpose

HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

The hydraulic power pack according to assembly drawing number 50173 is solely designed for the operation of hydraulic torque wrench.

The purpose intends that the hydraulic power pack runs only for the duration of torque wrench operation.

The hydraulic power pack does not fulfill the ATEX guideline and is not intended for use in explosive-threatened surroundings.

1.11. Inappropriate use

The hydraulic power pack is not intended for any type of used other than that listed above and all other types of use will be considered as inappropriate use!
In particular, the following is forbidden:

- Running the hydraulic power pack with other fluids than the specified hydraulic fluid.
- Connecting and running other hydraulic devises other than torque wrench
- Running the hydraulic power pack with not properly installed, not secured, or even damaged hydraulic connecting pipes (hoses and tubes) between hydraulic power pack and the torque wrench.
- Modifying the hydraulic power pack for processing it with higher than the allowed working pressure.
- Implementing structural modifications of any type (mechanical, hydraulic or electrical) on the hydraulic power pack, which can influence function, hydraulic power pack safety and working safety without consent of HAWE Hydraulics Pvt. Ltd.

If the hydraulic power pack is not used as intended, this means that safe operation is not guaranteed!

WARNING

Not HAWE Hydraulics Pvt. Ltd. but the user of the hydraulic power pack is responsible for all personal injury and damage to property incurred as a result of use not as intended.

NOTE

HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

1.12. Manufacturer

HAWE Hydraulics Pvt. Ltd
No. 68, Industrial Suburb 2nd stage,
Yeshwanthpur, Bangalore: 560022, India
Tel: +91 (80) 41952000
Fax: +91 (80) 41952001
Email: haweindia@airtelmail.in

1.13. Scope

This operation manual clearly explains the process of using the HAWE Hydraulic aggregate for torque wrench application.

1.14. Aggregate details

The HAWE Hydraulic aggregate as per general assembly drawing 50173 is a compact hydraulic system with oil immersed motor for hydraulic torque wrenches.

2. Safety information

2.1. General safety information

The chapter safety information describes possible dangers which can appear during operation, servicing and repairing of hydraulic power pack. HAWE Hydraulics Pvt. Ltd. eliminated all possible risks as good as possible.

All remaining risks are described in this operating and maintenance instruction and must be followed by all persons working at the hydraulic power pack absolutely.

In addition to this operating and maintenance instruction are to be followed all valid laws and orders, the accident prevention regulations, all order signs and hints on the hydraulic power pack.

Before delivery, the hydraulic power packs are functionally checked.

Nevertheless, improper installation, improper start-up, inappropriate use as well as improper maintenance and repairs may result in personal injury or property damage.

2.2. Organization Instructions

The operation and maintenance instruction must be always available in legible condition at the application place of the hydraulic power pack. It must be guaranteed that all persons, working on the hydraulic power can read the operating and maintenance instruction any time.

In addition to the operating and maintenance instruction, company instructions according to health and safety regulations and regulations of working materials usage must be provided.
Before starting any work, all staff entrusted with the tasks of commissioning work, servicing and repair work on the hydraulic power pack must have read and understood the operating and maintenance instruction.

All safety signs and name plates at the hydraulic power pack are always to be held in a well readable state. Damaged or unreadable signs are immediately to be renewed

WARNING

The information given in this chapter is intended as an overview and does not exempt you from the obligation to familiarize yourself fully with the chapter on safety!

2.3. Special Kinds of Danger

Technical installations and machines which are subject to accident prevention regulations are sure only if the hydraulic and electric control corresponds to the accident prevention regulations

WARNING

All pipe-, hose-, valve connections and tube fittings must be checked at least once every six months for leakages and externally recognizable damages.
Damages must be immediately removed

WARNING

Escaping hydraulic oil can lead to injuries and fires.

WARNING

HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

WARNING

Before opening the hydraulic system (removing valves or opening connections) the complete system and specially the hydraulic accumulators must be unpressurized.

2.4. Personnel Choice and Personnel Qualification

Commissioning works, maintenance works and repair work to the hydraulic power pack are only allowed to be carried out by capably qualified and trained experts, which have attained by her vocational training about a sufficient skill and professional knowledge in dealing with hydraulic equipments.

Sufficient professional knowledge also contain that the maintenance staff disposes of precise knowledge with regard to construction, function and cooperation of the hydraulic single components. Also the specialist staff must be able to read hydraulic diagrams or electric-hydraulic diagrams and to understand them.

The specialist staff must know the operating and maintenance instruction and act there after. The respective competence of the specialist staff must be clearly fixed by the user of the hydraulic power pack.

Trainee operating personnel may at first only work on the hydraulic power pack under the supervision of an experienced person. Successful completion of the induction period should be confirmed in writing.

Furthermore, the following activities require special qualifications

Works on the electric installation, the electric commissioning (connecting) and the electric withdrawal from service (disconnecting) of the hydraulic power pack, may be executed only by skilled electricians, considering the electric-technical regulations.

2.5. User's Duty of Care

The hydraulic power pack as per HAWE PC 609 is designed and manufactured under consideration of all relevant harmonized standards as well as further technical specifications.

The hydraulic power pack thus conforms to the current level of technology and guarantees the highest possible degree of safety.

No modifications to the hydraulic power pack may be carried out on ones own authority for safety reasons

All planned changes must be approved in writing by the company HAWE Hydraulics Pvt Ltd.

WARNING

Only use original spare parts / original wearing parts / original accessories – these parts are designed especially for the hydraulic power pack. In using outside purchasing parts it is not guaranteed that they are designed and manufactured appropriate for demand and safety

Parts and extra equipment which was not delivered by HAWE are also not released by HAWE for the use in or with the hydraulic power pack**.**

However, in practice, safe operation of the hydraulic power packs can be achieved only if all measures required for it are taken. It lies in the scope of duty of the user to take care that these measures are planned and that implementation thereof is inspected.

The user must, in particular, ensure that

- The hydraulic power pack is used only as intended.
- The hydraulic power pack is operated only in flawless, operational condition and is checked regularly for proper operation.
- Required personal safety equipment for commissioning, servicing and repair personnel is available and is used.
- The operating and maintenance instructions are always available in legible condition and in full at the hydraulic power pack's place of use.
- Enough qualified, authorized and introduced specialist staff works only on the hydraulic power pack

2.6. Environmental Protection

CAUTION

Comply with the legal obligations for accident prevention and correct recycling/disposal when carrying out work of any nature on or with the hydraulic power pack

In particular at installation and maintenance work as well as with the withdrawal from service must be take care, potential ground water polluting substances such as fat, oils, solvents containing cleansing liquids or something similar- do not contaminate the soil or are discharged into the sewage network

These substances must be kept, transported, collected and disposed in suitable containers.

HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

2.7. Cleanliness

WARNING

Cleanness and cleanliness is an essential condition for a safe operation and a safe handling of the hydraulic power pack

Therefore keep meticulously clean the hydraulic power pack and its surroundings at the application place.
This in particular also must be considered while handling hydraulic oil.

Attention slipping danger!

Patches of oil have led quite often to heavy accidents.

Remove, probably existing oil patches immediately with suitable oil binding agents and decontaminate the binding agent appropriate for environment.

No modifications to the hydraulic power pack may be carried out on ones own authority for safety reasons

All planned changes must be approved in writing by the company HAWE Hydraulics Pvt.Ltd

3. Transport

3.1. Delivery State

The delivery of the hydraulic power packs occurs without oil filling.

3.2. Damages In Transport

Check the hydraulic power pack thoroughly on possible damages in transport

Remove the tightening straps carefully

Inspect the hydraulic power pack for completeness and possible damages on the basis of the part list Document (photograph) any damage and report it to the claims office of the transport insurer.

Reservations, such as “not inspected” or “accepted with reservation”, will be equated with acceptance of the deficiency or damage

HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

3.3. Basic safety hints for shipping and transport of Hydraulic power packs.

Please, follow the following safety hints and measures by shipping, also further shipping of the hydraulic power packs to the end customer:

CAUTION

Because of environment protection transport and ship the hydraulic power packs basically without oil filling.

CAUTION

Protect hydraulic power packs to be transported carefully by suitable lashing and tightening straps against tilting or slipping.

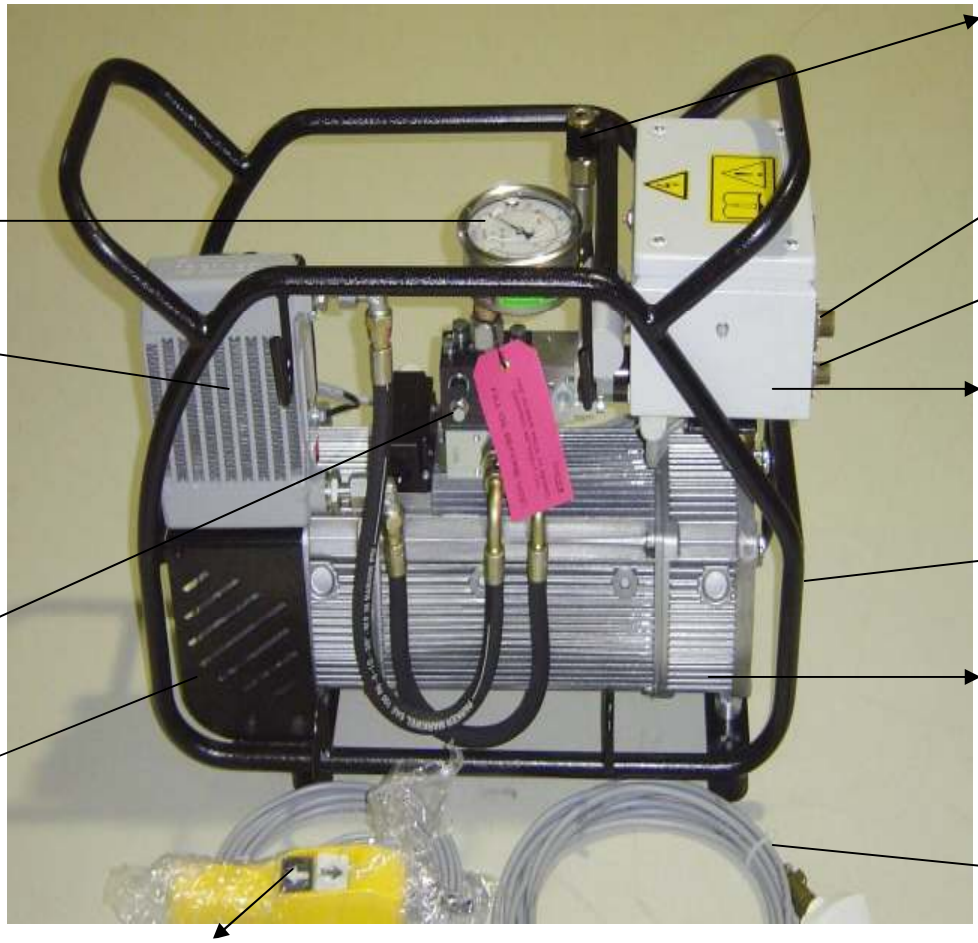
Pay attention, besides to the fact that no pipes or cables are damaged by the tightening straps or are clamped.

Use while fastening edges protection parts to avoid around wearing and tearing of the tightening straps.

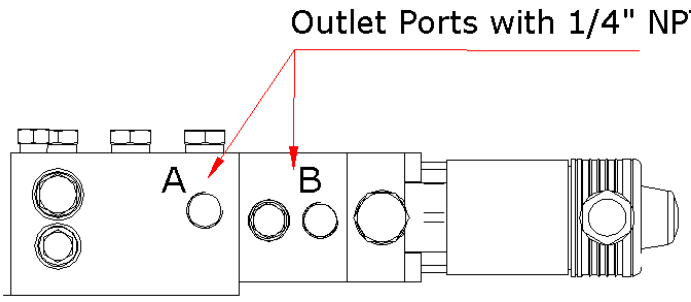
HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

4. Product Description

4.1. The Hydraulic Power Pack



PRESSURE RELIEF VALVE KNOB



HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

PUSH BUTTON 1
MOTOR ON/TORQUE

PUSH BUTTON 2
MOTOR OFF

4.2. Technical details

- Mains Voltage: 1 ~ 230 V 50 Hz
- Solenoid Voltage: 230 VAC
- Main Consumption: 7.20 A
- Motor Capacity: 1.10 KW
- Protected According to: IP 54
- Nominal Pressure: 10-700 Bar
- Flow: 1st Stage: ~9.7 lpm(70 Bar)
- 2nd Stage : ~1 lpm (700 Bar)
- Tank Volume: 6 Litre
- Usable Volume: 3 Litre
- Oil Type : ISO VG 32 - 68
- Weight ready for use: 38 Kg without oil

Ventilator fan

- Mains Voltage: 1 ~ 230 V 50 Hz
- Nominal Power: 45 W
- Rotation speed: 2800 /min
- Protection : IP 44

Additional features

- Remote Control Pendant with two push buttons of 24 V DC supply
- Visual Temperature Strips (60^0- 90^0 C)
- Visual Oil Level Gauge
- Safety Interlock: If the power pack is kept running idle without pressurizing for more than 60 seconds, the power pack is switched OFF automatically. To start the Power Pack again, the STOP button (Push Button 2) has to be pressed once before the START button (Push Button 1) is pressed.
- Temperature Interlock: If the temperature of the hydraulic oil rises above 80^0 C, power pack switches off automatically.

5. Installation and startup

5.1. Installation and Preparatory works

The hydraulic power pack must be kept as shown in the general assembly drawing and as near as possible in the range of the braking cylinders.

1. Check the hydraulic unit for visual damage/corrosion
2. Check the mounting hole pattern of the base plate
3. Electrical connection: Check the Harting connector and connection layout for motor, valves and sensors. Connect the power cord to single phase, 230 V AC supply.
4. Ensure that the drain valve is closed tightly before filling oil.
5. Fill up the tank of the power unit with specified fluid till the top level, indicated by the fluid level gauge.
6. Use clean hoses and fittings. Flush all pipes and hoses before connecting to the power unit. Flushing should be done using a separate pump unit.
7. Connect the hydraulic power pack to the appropriate hoses A and B ports (1/4" NPT) and ensure firm connection. The wiring and the electrical connection of the hydraulic power pack must be carried out by a qualified technician. Keep the drain valve in open position.
8. Set the main pressure relief valve to low pressure and bleed the hydraulic system manually and electrically
9. Restore the relief valve settings to the original value and connect the output ports to the Torque wrench application as per the hydraulic circuit.

NOTE

The hydraulic oil cleanliness should confirm to NAS 9 level.

The Drain valve has to be opened before starting the Hydraulic system.

5.2. CONTROL FUNCTIONS

The power pack can be used for torque wrench application and is to be operated with the help of the control pendant provided with the power pack. The control panel is equipped with an inbuilt PLC logic which controls the operation of the power pack.

5.3. CONTROL PENDANT

- The control pendant provided with the power pack consists of two individual push type buttons.

- The first button (Named Button 1) is used to set the power pack in operation while the second button (Named Button 2) is used to switch OFF the power pack.

HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

5.3.1 **PUSH BUTTON 1:**

- Button 1 pressed and released: The Power Pack is switched ON and retraction of the Torque Wrench tool takes place with the pressure gauge reading the return line relief valve setting.

- Button 1 pressed again and held: Pressurizing of the Torque Wrench tool takes place with the maximum pressure achievable depending on the main relief valve setting.

5.3.2 **PUSH BUTTON 2:**

Button 2 pressed and released: Power Pack is switched OFF and the pressure gauge indicates zero pressure.

5.4. TORQUE SETTING

- The required pressure for the torque to be achieved can be selected from the Torque vs. Pressure table provided by the torque tool manufacturer.

- For setting the pressure, the push button 1 has to be pressed and released and then again pressed and held. In this condition the main relief valve knob has to be turned clockwise to increase the pressure and anti clockwise to decrease the maximum pressure setting.

6.0 Maintenance and Servicing

6.1. Maintenance and trouble shooting

WARNING

Not properly maintained hydraulic systems can cause accidents which can result in heavy injuries or accidents
Before carrying out any work on the system, the hydraulic power pack have to be completely depressurised!
The aggregate must be excluded from electric power connection before working on it!

Hydraulic fluids (mineral oil) are fire supportive and inflammable.
Therefore fires, open light and smoking are forbidden at the site of the power pack.
In repaircase, use exclusively original spare parts and approved lubricants.

HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

6.2. Preventive Maintenance

- Regularly check the oil level in the power pack at the visual level indicator provided below the filler breather. Ensure the oil level is up to the visual marking. Always use clean hydraulic oil (ISO VG 32 -68)
- The power pack has to be protected against entry of dirt or other contaminant which might result in the malfunctioning of the system.
- The hydraulic oil used has to be regularly checked for dirt and contamination and has to be replaced with new oil at regular intervals.
- Never try to disassemble the hydraulic system. An attempt to repair the system and its components by personnel without thorough knowledge of the product can lead to damages and further malfunctioning of the system.
- The power pack has to be regularly checked for damages and leaks and corrective action has to be taken immediately for the same.

Insuffeciently maintained , faultily installed and broken hydraulic hose lines have led in the past over and over again to heavy accidents.

WARNING

6.2.1. Trouble shooting

<u>Dismantling the hydraulic system</u>
Hydraulic systems are pressurised. With improper dismantling, hydraulic oil might escape under high pressure and or lead to unforseen movement of hydraulic drive mechanism (e.g cylinders) and cause heavy accidents.

WARNING

To avoid these risks and before carrying out any work on the system, hydraulic system must be absolutely unpressurised.

Also for troubleshooting, the below mentioned pamphlets have been provided. If not, they can be requested at HAWE Hydraulics Pvt. Ltd, Bangalore.

B 5488: General operating manual for the assembly, initial operation and maintenance of hydraulic components and systems.
D 5488/1: Pressure fluids – notes for selection.

HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

6.3. Possible Fault Reasons and Trouble shooting

6.3.1 Excessive Noise

Excessive noise in new hydraulic systems and power packs are often due to the frothing of the hydraulic oil, because of the presence of air in the system.
The following are the possible causes:

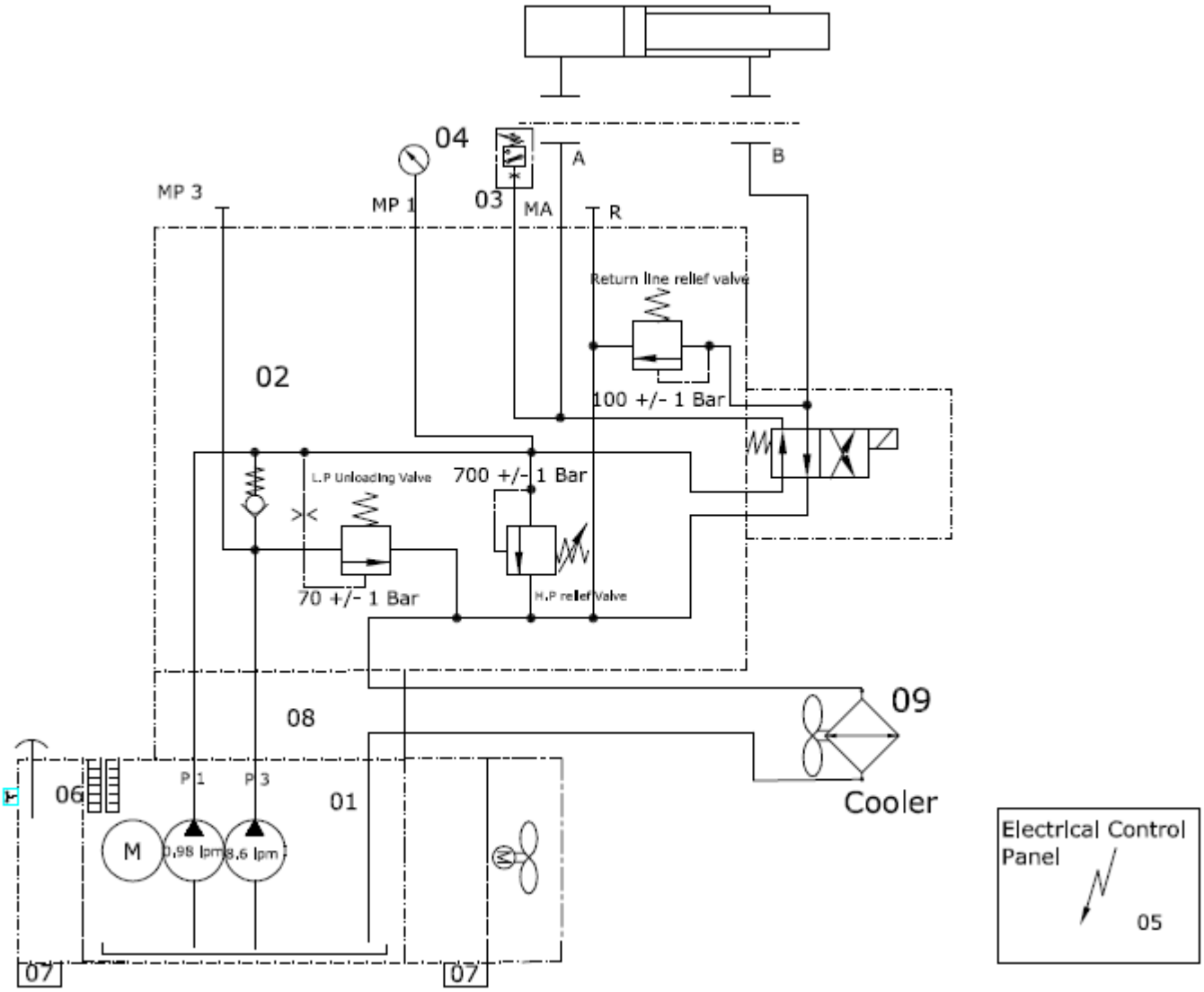
- The hydraulic oil level in the tank is too low
- Air bubbles might be trapped in the system due to inadequate bleeding
- During starting of the hydraulic power pack, pockets of air led into the hydraulic system leading to noises. After short operation, the enclosed air reaches in the tank where it can escape out through the breather.
- Noise may be also due to misaligned or non tension free installed screw connections or fluids.

6.3.2 Pressure not developing when the electric motor and pump is running

- Check the level of oil in the system.
- Check if the relief valve settings are as required. Reset if required.
- Check for leakage in the system. Arrest them immediately if any.

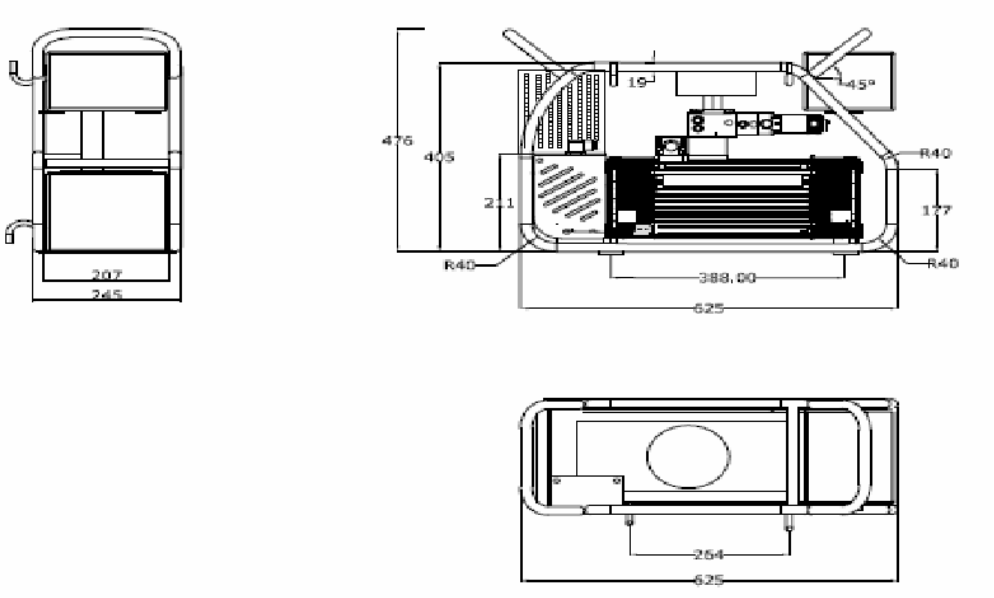
HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

6.4. HYDRAULIC CIRCUIT DRAWING

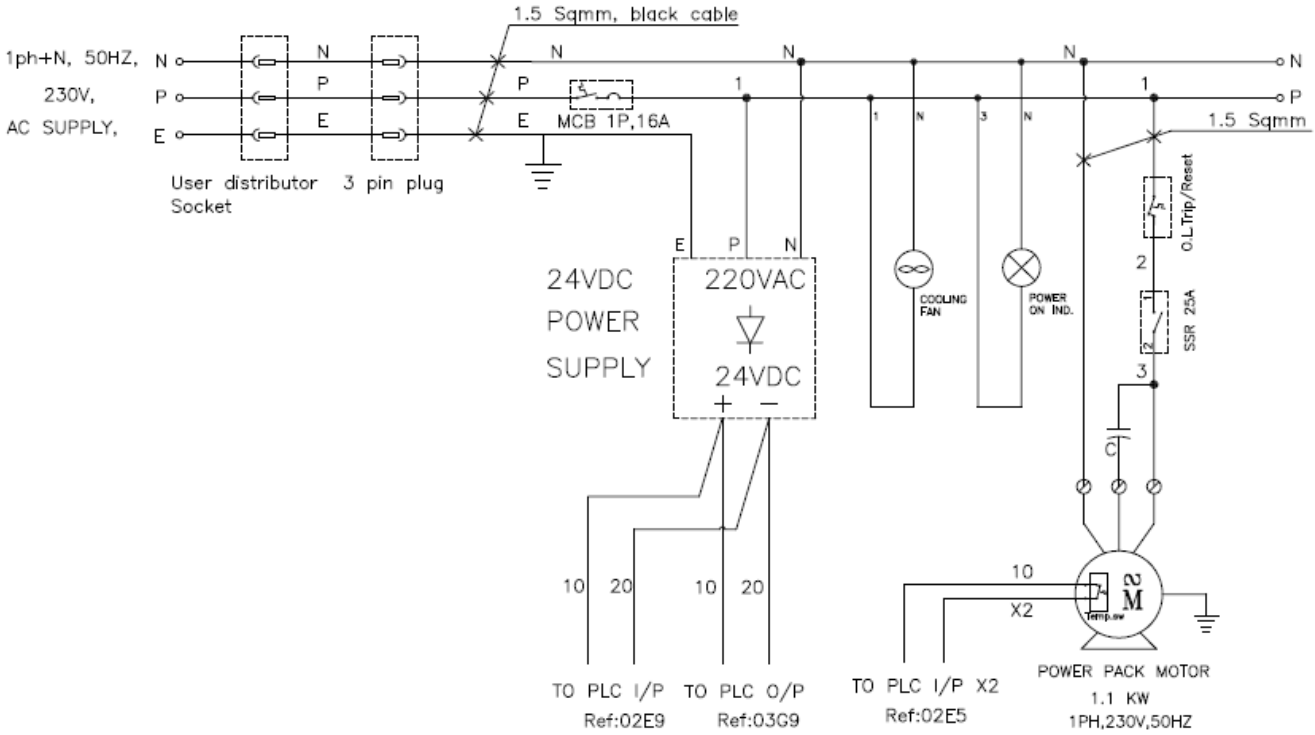


HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

6.5. GENERAL ASSEMBLY DRAWING

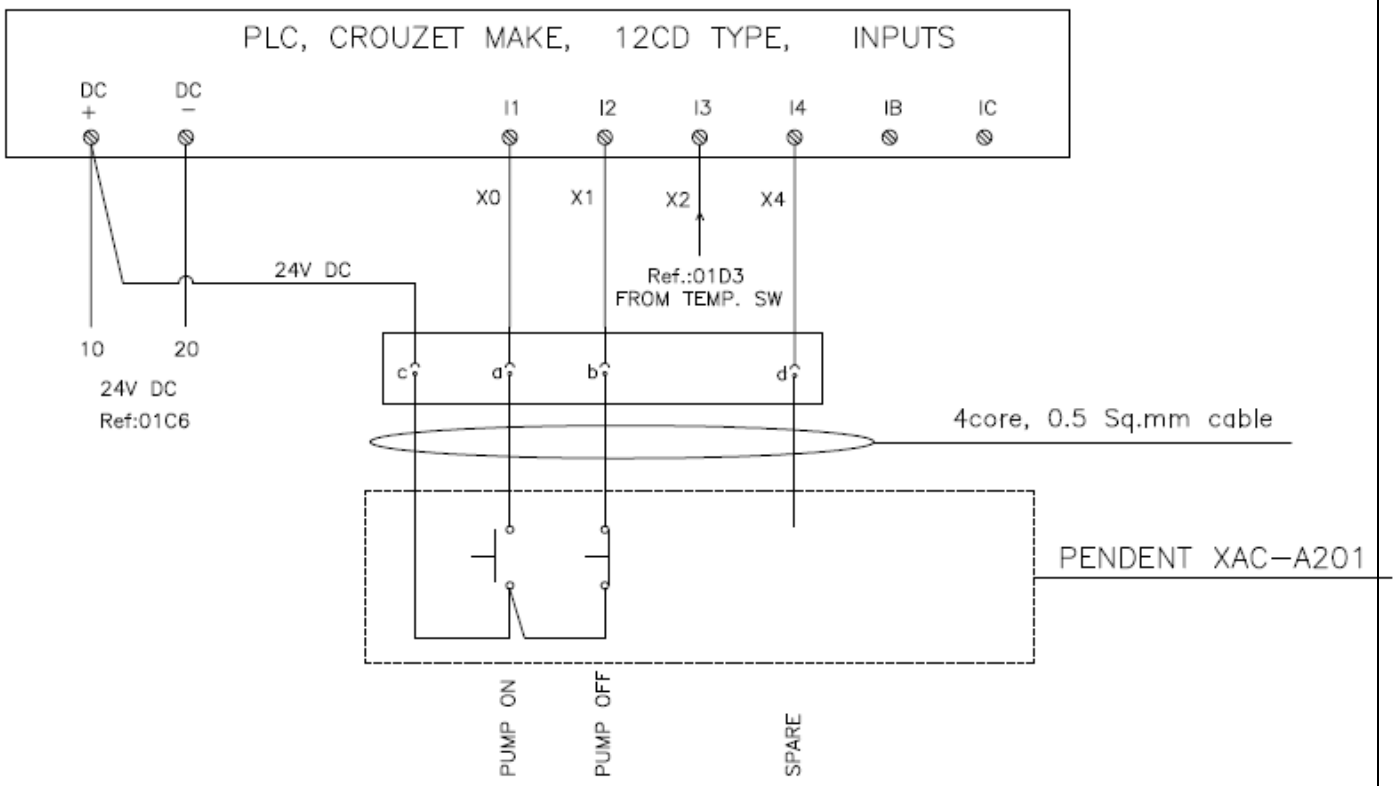


6.6. ELECTRICAL DRAWING

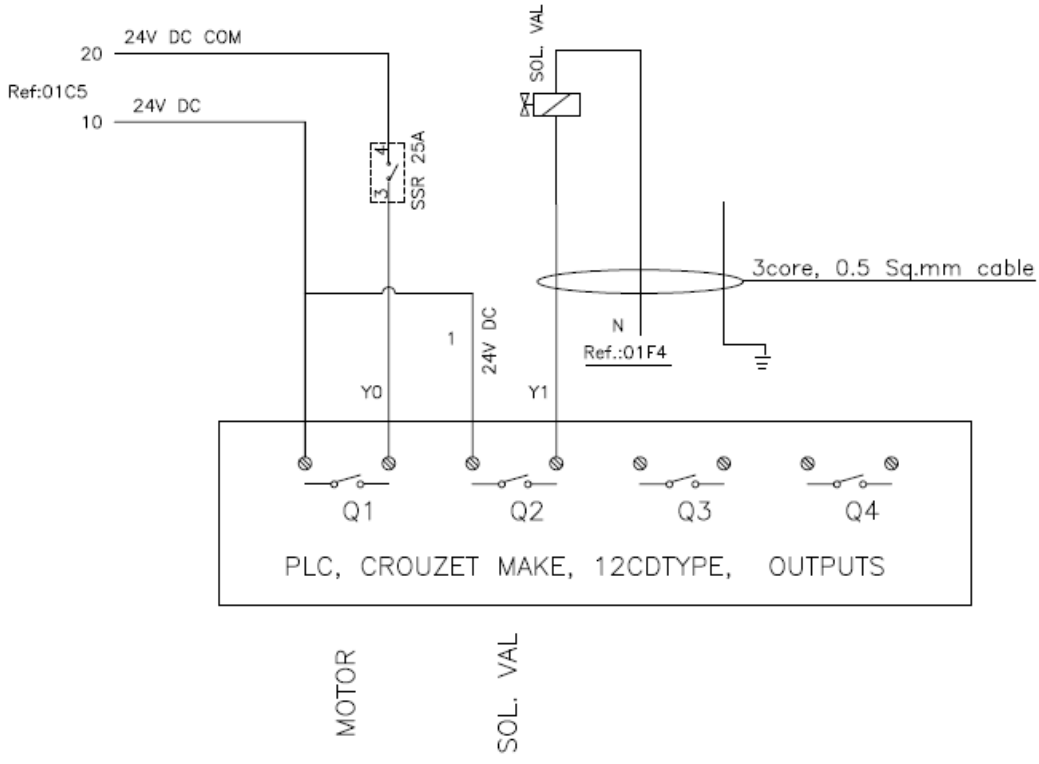


HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in

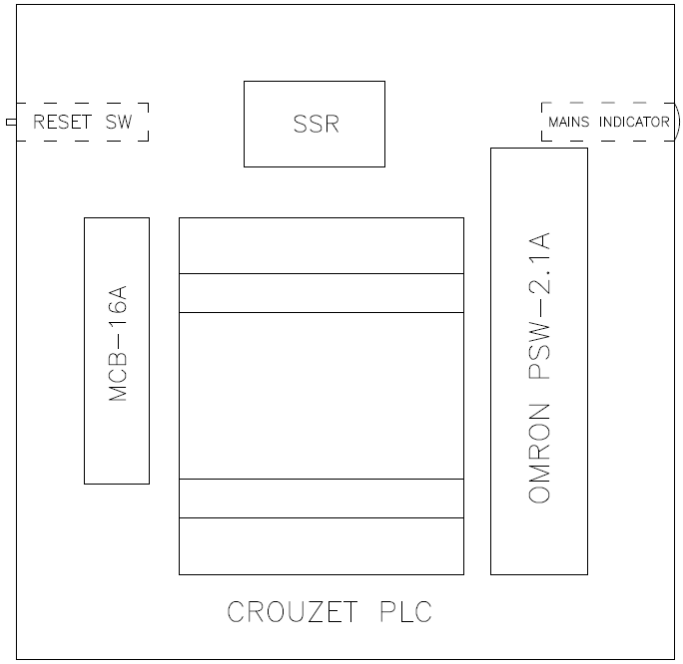
6.7. ELECTRICAL LAYOUT DRAWING



6.8 WIRE DRAWING FOR CONTROL PENDANT



HAWE Hydraulics Pvt. Ltd., No. 68, Industrial Suburb, 2nd Stage, Yeshwanthpur, Bangalore 560022, Tel: +91 80 41952000, Email: haweindia@aiirtelmail.in



POWER CORD: 6 m cable

REMOTE CORD: 6 m cable

6.9. Critical Spare Parts List

Item No	Description	Model code
01	Level indicator	
02	Pressure limiting valve	NA 21 NPTF-A 700 D/70/100-GZ4-1-G24
03	Direction seated valve	GZ 3-1 G 24
04	Pressure gauge	Panel mounting type
05	Electrical pendant	
06	Seal kit	
07	Control Panel	