RINGSPANN®
Power Transmission

Installation and operating instructions for Hydraulic power unit HTP3 type

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Important

Please read these instructions carefully before installing and operating the product. Your particular attention is drawn to the notes on safety.

These installation and operating instructions are valid on condition that the product meets the selection criteria for its proper use. Selection and design of the product is not the subject of these installation and operating instructions.

Disregarding or misinterpreting these installation and operating instructions invalidates any product liability or guarantee by RINGSPANN; the same applies if the product is taken apart or changed.

These installation and operating instructions should be kept in a safe place and should accompany the product if it is passed on to others -either on its own or as part of a machine- to make it accessible to the user.

Safety Notice

- Installation and operation of this product should only be carried out by skilled personnel.
- Repairs may only be carried out by the manufacturer or accredited RINGSPANN agents.
- If a malfunction is indicated, the product or the machine into which it is installed, should be stopped immediately and either RINGSPANN or an accredited RINGSPANN agent should be informed.
- Switch off the power supply before commencing work on electrical components.
- Rotating machine elements must be protected by the purchaser to prevent accidental contact.
- Supplies abroad are subject to the safety laws prevailing in those countries.

This is a translation of the German original version!

In case of inconsistencies between the German and English version of this installation and operating instruction, the German version shall prevail.

CONTENTS

1 GENERAL

HTP3 type compact hydraulic power unit are used to open hydraulic safety brakes by pressurizing the circuit.

This power unit can manage the brakes in two different modes:

- **Electric control** mode In “electric” mode, a motor gear pump unit integrated into the tank pressurizes the hydraulic circuit of the brakes.
- M**anual control** mode. In “manual” mode, actuating a hand pump connected to the power unit's tank using a lever pressurizes the hydraulic circuit of the brakes.

Life-threatening danger!

Disc must be absolutely degreased before all contact with the brakes linings.

In case of lining pollution with grease, the nominal brake force is not guaranteed.

The power units are fail safe components.
All setting and repairs must be performed by skilled operators.

The oil temperature must never exceed 80°C.

When assembling, operating and maintaining the brake it is to be ensured that the entire drive train is secured against being switched on unintentionally. Moving parts can cause severe injury. Rotating parts (e.g. brake disc) must be secured by the operator against unintentional touching.

Strongly pre-loaded pressure springs are installed in the springed thrusters of the brake. The spring thruster may only be disassembled by the factory.

1.1 TECHNICAL CHARACTERISTICS

There is a type plate on the brake with a 16-digit article number. The exact design of the brake is defined by this article number only.

Rated voltage	: 400 V 3-phase – 50Hz
Tank volume	: 2.5 L
Maximum service volume	: 2.0 L
Max. admissible contamination rate acc. to NAS 1638	: 10
Ambient temperature	: - 20 to + 40°C
Ingress protection	: IP 55
Mounting form	: horizontal
Oil connection thread	: 3/8''

As well as these instructions, please also consider the catalogue data for the brake at www.ringspann.com and the drawings in the individual sections.

1.2 CONSTITUENT PARTS

1.2.1 MOTOR PUMP UNIT

This generator is composed of a 3-phase motor, which drives a gear pump, and a metal tank, all fitted around the flange. The tank is equipped with a gauge, a breather valve and a drain plug (located on the side of the flange).

Important!

The oil temperature must never exceed 80°C.

1.2.2 THE FUNCTION UNIT

The hydraulic function unit is directly fixed to the side of the flange at the pump output. It controls the circulation of oil between the tank, the pump and the actuator connected to the power unit. An 0.15 litre accumulator damps oil pulsations or excessive pressure increase.

1.2.3 THE ELECTRIC CABINET (optional)

The electric cabinet that controls the motor and the solenoid valve is attached to the motor.

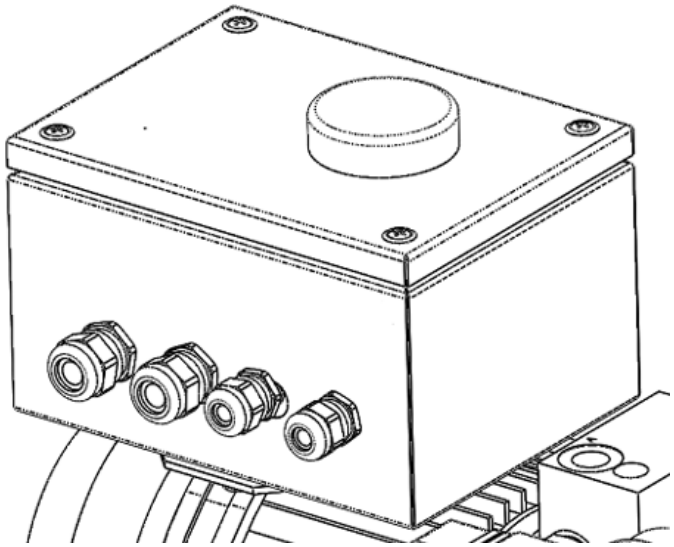

Fig. 1

2 FUNCTIONS

2.1 Normal operation “Electric control mode”

When 400V is powered on, the solenoid valve **12** closes the return circuit to the tank **3** and the pump **2** pressurizes the brakes (the brakes open due to pressurization). The upper threshold of the pressure switch **15** controls the stopping of the motor after a few seconds via the relay of the electric cabinet. The restart is activated when the pressure drops below the lower threshold of the pressure switch **15**. When the current is cut off, the solenoid valve **12** opens and the brakes close.

Hydraulic diagram:

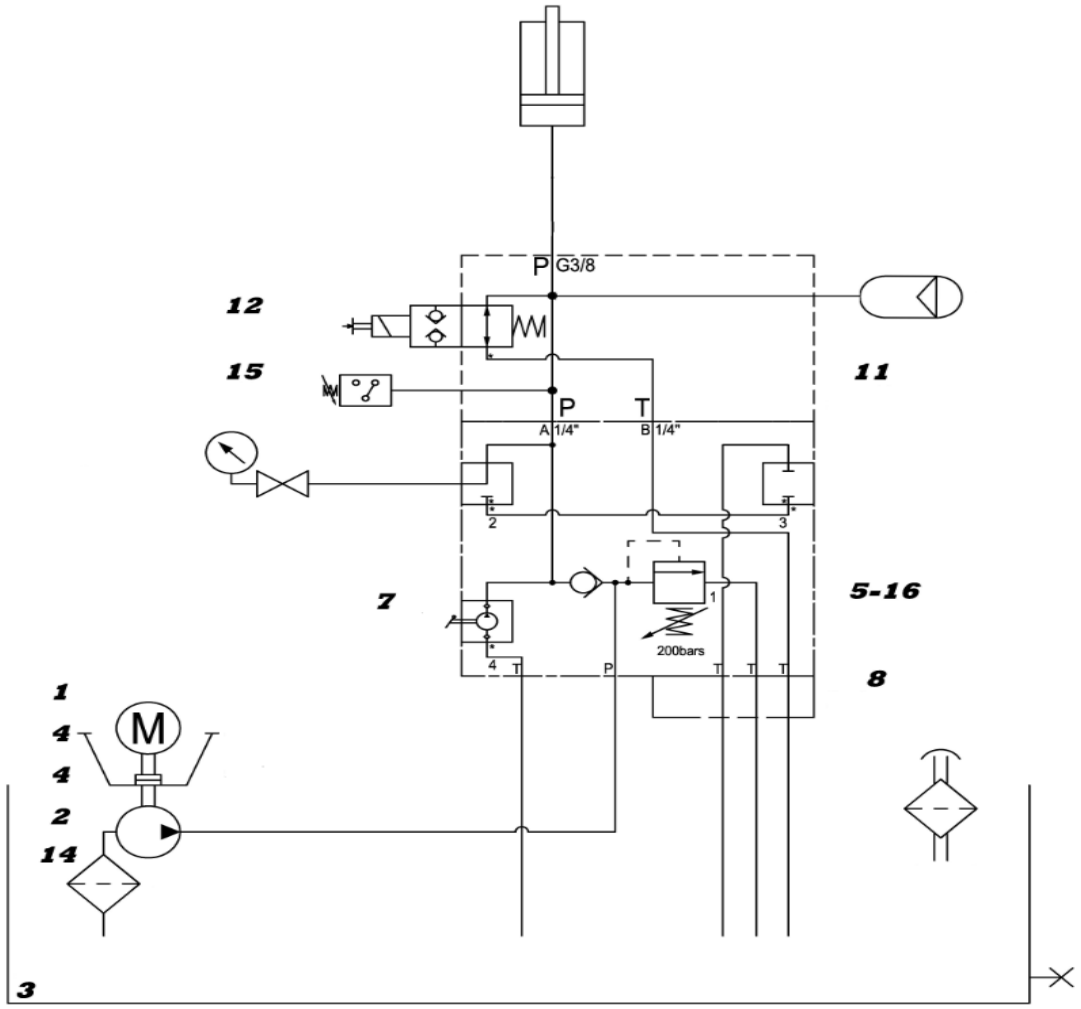

Fig. 2.1

2.2 Standby pump “manual mode”

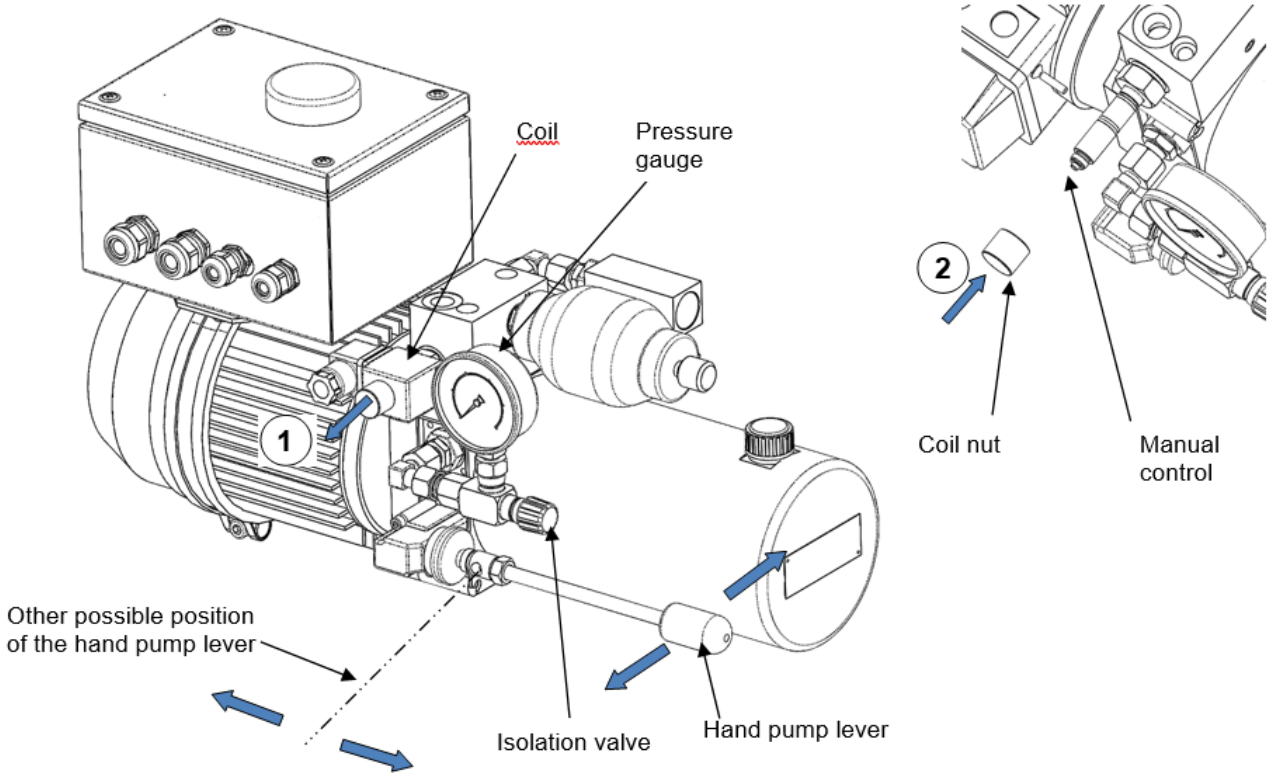

Fig. 2.2

For manual mode, open the pressure gauge isolation valve, activate manual control by placing the coil **1** and his nut then fully tighten the coil **2** nut again and then actuate the hand pump lever.

A pressure gauge indicates the pressure during pumping. Make sure the pressure does not exceed the max. pressure. Be careful to put back the coil with its nut.

Important!

Close the isolation valve when in operation to prevent any damage to the pressure gauge.

3 INSTALLATION

Important!

EACH POWER UNIT IS SET AND TESTED AT THE FACTORY BEFORE DELIVERY; THE CUSTOMER DOES NOT NEED TO ADJUST OR MODIFY THE FUNCTION UNIT.

MODIFYING THESE SETTINGS WILL VOID THE MANUFACTURER'SWARRANTY.

3.1 Delivery condition

The power unit is delivered:

- Oil tank empty. (With oil can depending on request).
- Pressure switch **15** thresholds set depending on the application.
- Pressure limiter calibrated depending on the application.
- Sets of fittings and hoses depending on the application.
- Pre-charge accumulator depending on the application.

3.2 Layout

The power unit must remain in a horizontal position, the axis of the cylindrical tank parallel to the floor and the level perpendicular to the floor.
Protect the generator from dust, moisture, splashing, etc.
Allow adequate ventilation for heat dissipation.
The flatness required for the mounting surface is 0.3/100 mm.

It is fixed in the flange by 2x M10 holes, centre distance 82 ± 0.2 mm.

Important!

In case the hand pump lever operating space is insufficient, the hand pump may be turned and attached at 90° to the tank.

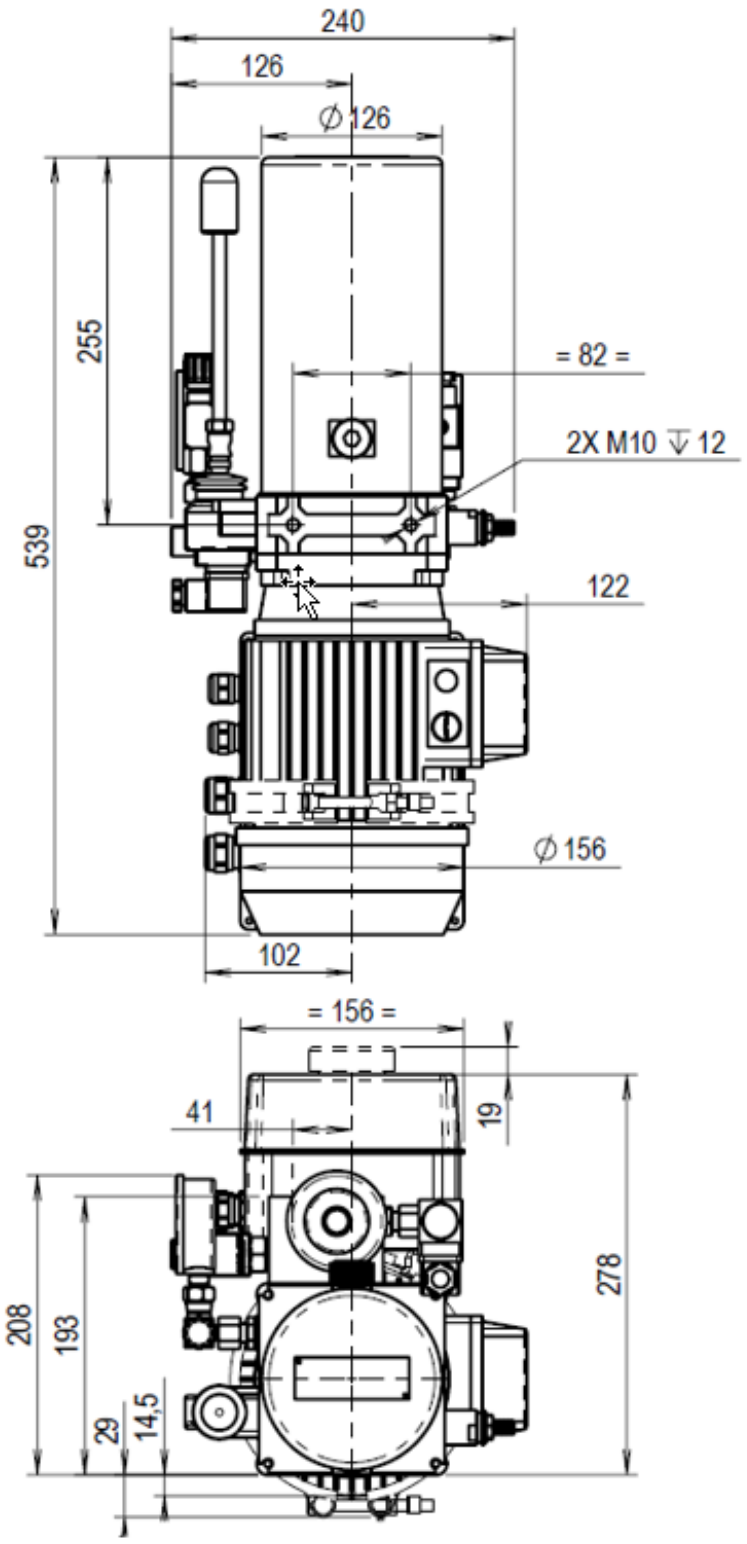
240
126
Ø126
255
= 82 =
2X M10 ↧12
539
122
Ø156
102
= 156 =
41
19
278
208
193
29
14,5

Fig. 3.1

3.3 Piping

The circuit must be thoroughly cleaned inside. The examination should be performed before filling the powerunit.

Clean the pipes, screw connections and receivers (dirt, scale, sand, weld seams, chips, etc.) linking thepower unit to the brake(s). Insofar as possible, strip the welded pipes and check them individually.

Connect the hydraulic power unit to the brake(s) on the outlet **A** of the function unit (G 3/8'' female).

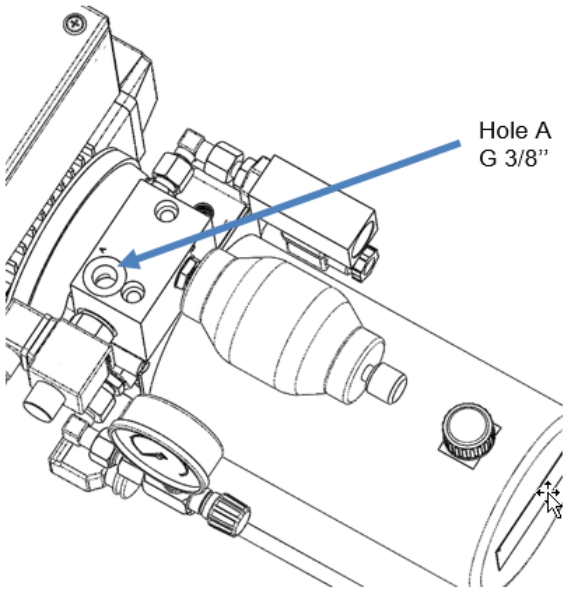

Fig. 3.2

Important!

Never use hemp, putty, Teflon, etc. for the piping

Place the lines and pipes such that they are free from stress and secure them so as to avoid oscillations. The connection to the actuator must be flexible and must respect the tightening torques recommended for screw connections.

Important!

If Brakes are supplied with the power unit connected mechanically and hydraulically. Connection therefore means simply connecting the electric power supply.

3.4 **Filling the tank**

Important!

This oil must be clean maximum permitted level of pollution as per NAS 1638: 10µm.

Use only new fluid and never mix several types all brands of fluid.

Procedure:

- Check the cleanliness of the filling filter.
- Ensure perfect cleanliness when filling.
- Fill the tank via the filler cap through a fine filter, filter fineness 10µm absolute, or using a filtration unit, up to the maximum level.

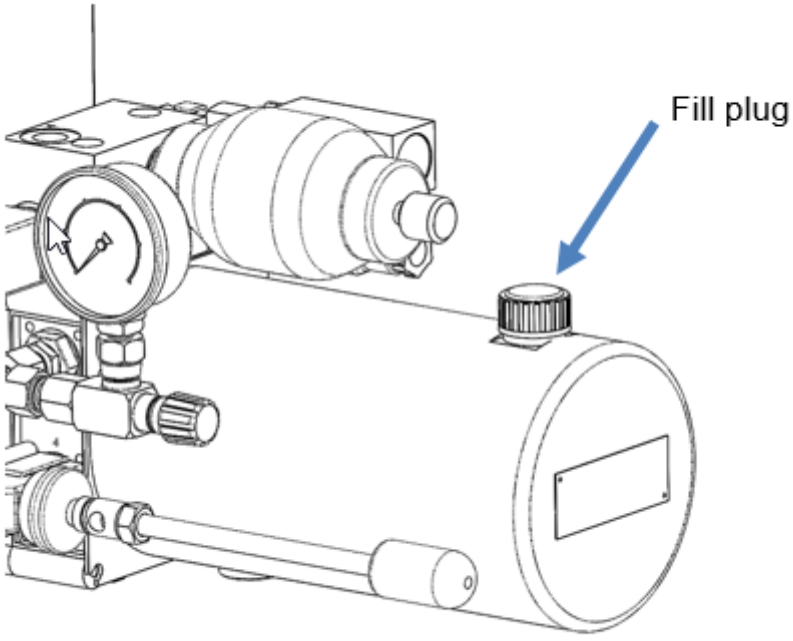

Fig. 3.3

For an ambient temperature range from 0 through 60°C, recommended oil is ISO HM32. By instance, RINGSPANN uses FUCHS RENOLIN EXTRA 32S.

Outside of the above temperature range, the viscosity shall be between 12 and 100mm²/s with a possibility to extend this range from 10 thru. 400mm²/s in case of exceptional use.

3.5 Electrical connection

3.5.1 Without electrical cabinet

Connect the 400V + earth to the motor terminal box and the 24Vcc to the solenoid valve terminals and pressure switch terminals.

Important!

The pressure switch must be powered only with filtered DC voltage max 32V.

The standard motor has an output of 750W or 1100Wand must be protected upstream by a motor protection magneto-thermal 3-pole circuit-breaker 1.6A to 2.5A.
Remember that two of the phases are likely to be reversed upon start-up, to ensure the correct direction of rotation of the motor. The motor must be cut off depending on the pressure switch output status.

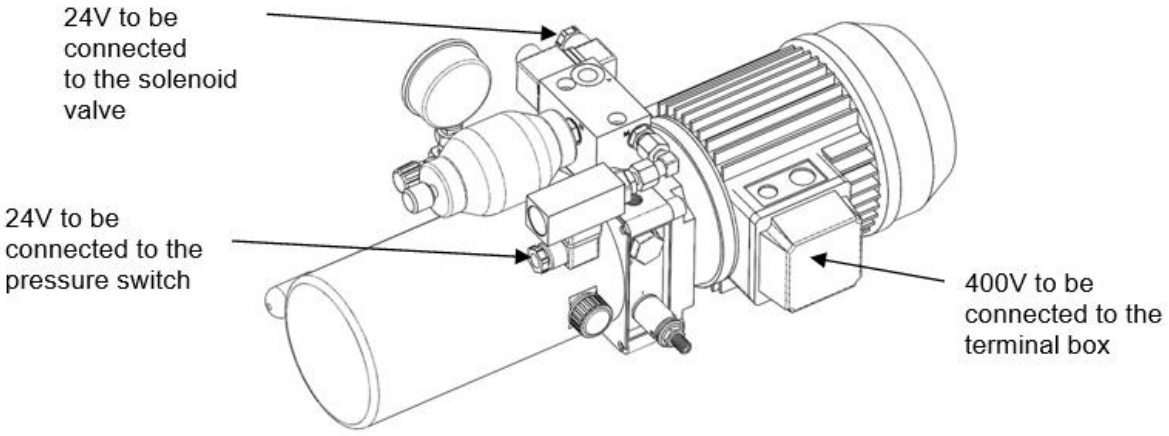

Fig. 3.4

Important!

Remember that two of the phases are likely to be reversed upon start-up,to ensure the correct direction of rotation of the motor.

3.5.2 Cabinet on hydraulic power unit (optional)

In the electrical cabinet, via the ISO20 cable gland (clamping capacity ∅ 6 to 13 mm), route a 3-wire + earth cable (min. cross-section 1.5 mm²). Connect the three phases and earth to the appropriate terminal.

The standard motor has an output of 750W – 1100W and must be protected upstream by a motor protection magneto-thermal 3-pole circuit-breaker 1.6 to 2.5 A. Remember that two of the phases are likely to be reversed upon start-up, to ensure the correct direction of rotation of the motor.

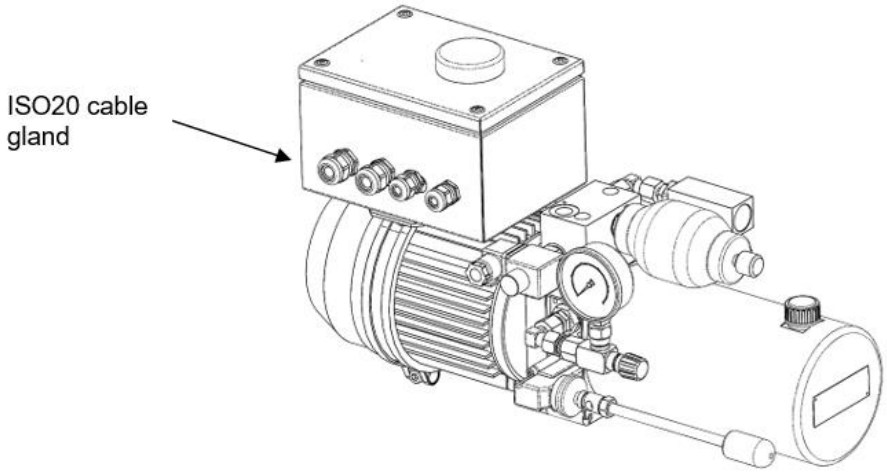

Fig. 3.5

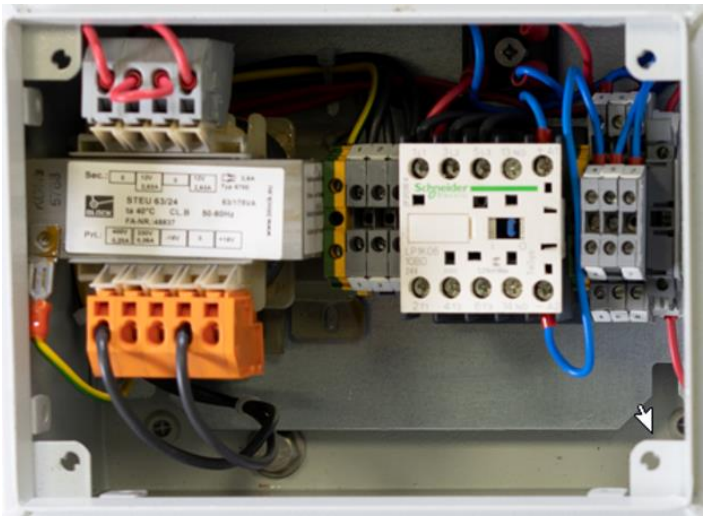

Fig. 3.6

Important!

Remember that two of the phases are likely to be reversed upon start-up,to ensure the correct direction of rotation of the motor.

The electrical diagram below explains the basic principle and is not contractually binding:

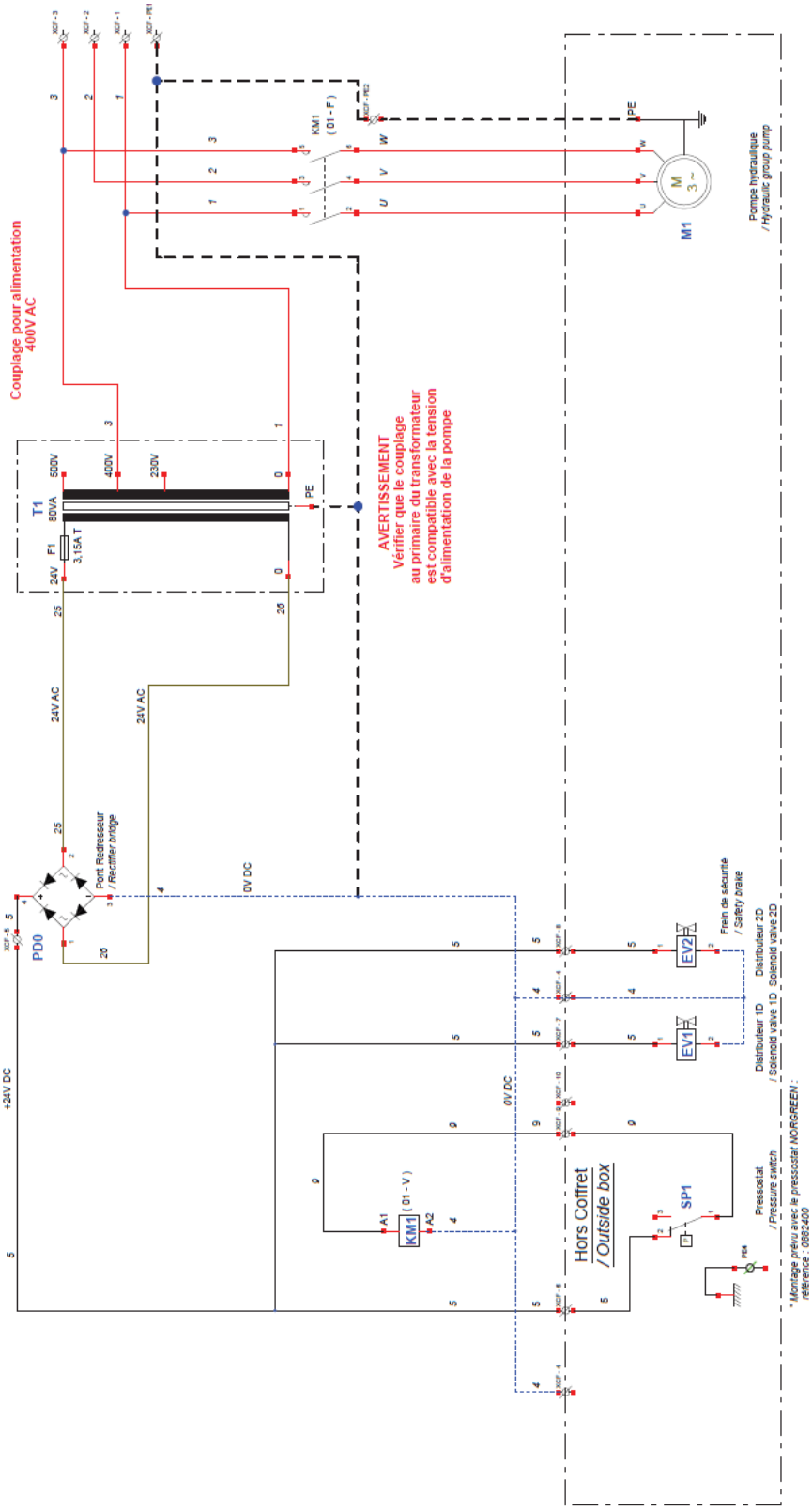

Fig. 3.7

4 INITIAL START-UP

1. Bleed the hydraulic circuit Bleeding should be done successively with the hand pump.

2. Switch on the power unit.

3. When the pressure reaches the upper threshold setting of the pressure switch **15**, the motor must stop not later than 5 to 10 seconds of operation.
   If the motor does not stop, cut off the power supply and reverse two of the supply wires at the terminal and repeat the previous operation.

4. Check that the brakes are open.

   In satisfactory operating conditions, the motor must stop quickly after a start-up; check that the operation is normal by performing a few runs. In case of problem, refer to chapter 9.

Important!

Bleed the hydraulic circuit refer also to the manual of the brakes for bleeding them.

5 PERIODIC MAINTENANCE

The following points must be checked:

At initial start-up:
- Check all functions
- Oil level adjustment.

1 week after initial start-up:
- Check all functions.
- Oil level check.
- Check for leaks.

Every month
- Check the level and re-adjust
- Visually check the fittings and hoses, tighten if necessary.
- Check the pressure using the pressure gauge.
- Clean the motor ventilation.

Every year
- Replace oil in the power unit.
- Carry out a complete cleaning.
- Check pressure of accumulators.

Every 2 years
- Replace the solenoid valve.

Every 5 years
- Replace the electric pump.
- Replace the manual pump.
- Replace the tank seals.

Important!

ACCUMULATORS: These devices always remain under pressure, do not dismantle. The charging pressure must be checked regularly at least once a year. During maintenance work on the system, the accumulator must first be deflated by actuating 12 manually with the power pack out of voltage.

No machining, welding or brazing must be carried out on the accumulator shell.

6 MAINTENANCE

6.1 Draining/filling

The power unit has a drain plug (hexagon wrench 10 mm A/F).
Refer to chapter 3.4 for filling or topping up.

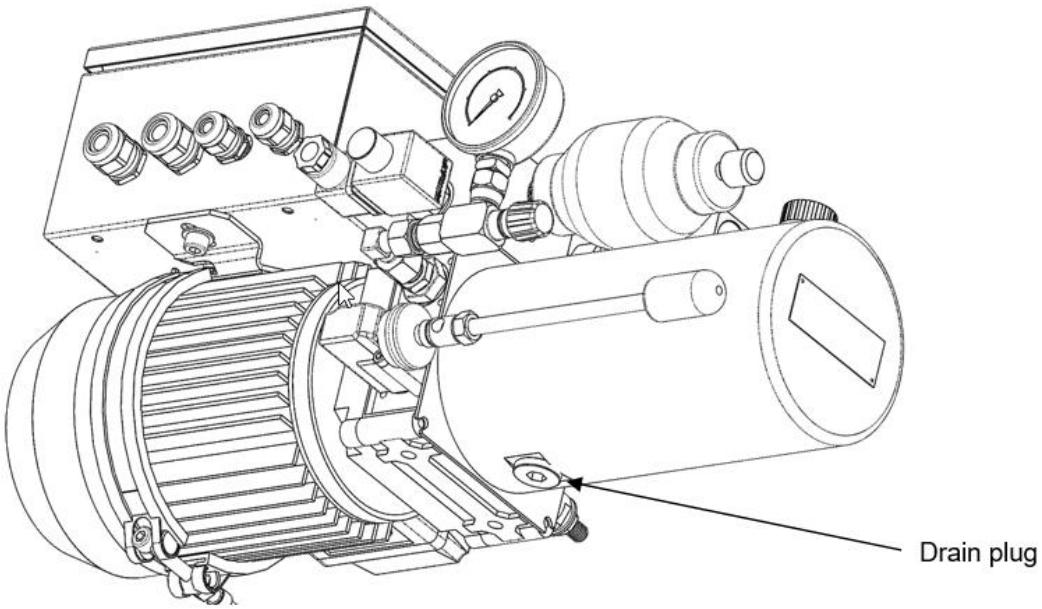

Fig 6.1

6.2 Adjusting the pressure limiter

Important!

The limiter is factory-set and does not need any adjustment. If this limiter needs to be adjusted, refer to values on the identification plate of power unit or contact RINGSPANN.

Caution: This adjustment changes the setting of the pressure switch 15 see Fig. 6.3.

Procedure:

- Make sure the hydraulic circuit has been bled see chapter 4.4.
- Open the pressure gauge valve.
- Loosen the L limiter's locknut. (13 mm A/F)
- Unscrew the H limiter (hexagon wrench 4 mm A/F).
- Switch on the power unit.
- Tighten the limiter L again until the desired value is reached on the pressure gauge.
- Adjust the upper threshold SP1 of the pressure switch to the desired value for the limiter (see following section).
- When the value is increased, the motor stops when the limiter's setting value is equal to the upper threshold SP1
- Lock the locknut L once the adjustment is made.
- Adjust the pressure switch as described in the following section.

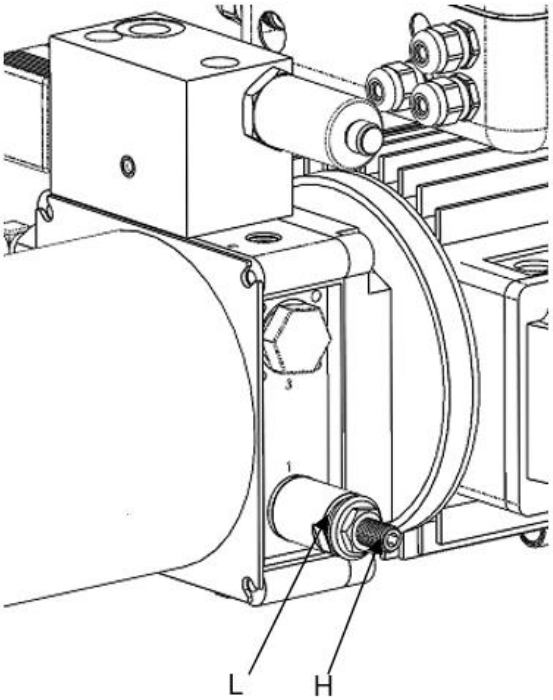

Fig 6.2

6.3 **Adjusting the pressure switch**

Important!

The pressure switch 15 is factory-set and does not need any adjustment. If this limiter needs to be adjusted, refer to values on the identification plate of power unit or contact RINGSPANN.

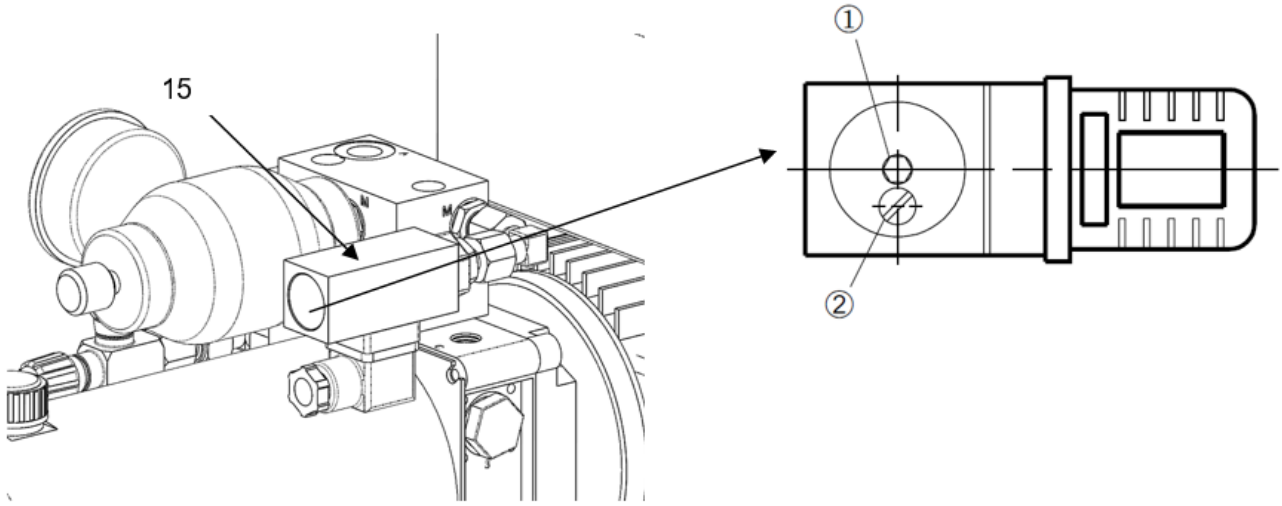

Fig. 6.3

1: Adjustment of switching
(hexagon wrench 5 mm A/F)

2: Detend

Important!

This adjustment changes the setting of the pressure switch 15.

7 SPARE PARTS

Item number	Description	Reference
12	Electro valve 2/2 normally open 24V DC	DIS CLA CRP -04
15	Double threshold electromechanical pressure switch 40 – 420b	PRE MEC 18D

8 STORAGE

If the power unit is left inactive for more than three months, make sure the tank is full.
The power unit must be stored in a dry place and must be packed in a way that protects it from dust and splashes. Suitable plugs must be inserted into the holes. The circuit will have to be bled for restarting it.

Important!

Every year, use a product such as Rustol OWATROL to prevent corrosion

9 TROUBLESHOOTING

KIND OF DEFECT	CHECK	SOLUTION
The calipers do not open in electric mode	The supply voltage of the motor The direction of rotation of the motor	Reverse 2 phases
	The fluid level	Top up the level
	The power supply to solenoid valves	
	Check the circuit pressure on the pressure gauge (13)	Calibrate the pressure limiter (1R) and adjust the thresholds of the pressure switch (1SP) chapter 6.2 and chapter 6.3
The calipers do not remain open in electric mode	Tightness of the hydraulic unit / piping / fittings / cylinder / piston	Replace the defective element
	The power supply to solenoid valves	
The motor does not stop when there is pressure	Check the pressure switch (15) upper and lower thresholds	Adjust the upper threshold and the lower threshold chapter 6.3
	Pressure limiter	Calibrate the pressure limiter chapter 6.2
	Tightness of the unit	Correct the tightness
The power unit starts up too often	Tightness of the circuit	Correct the tightness
	Impurities allow the oil to leak out	Drain and repeat the operations in chapter 3.4 and chapter 4.4
The calipers open and close slowly	There may be air in the circuit	Bleed according to chapter 4.4

10 Reference drawing