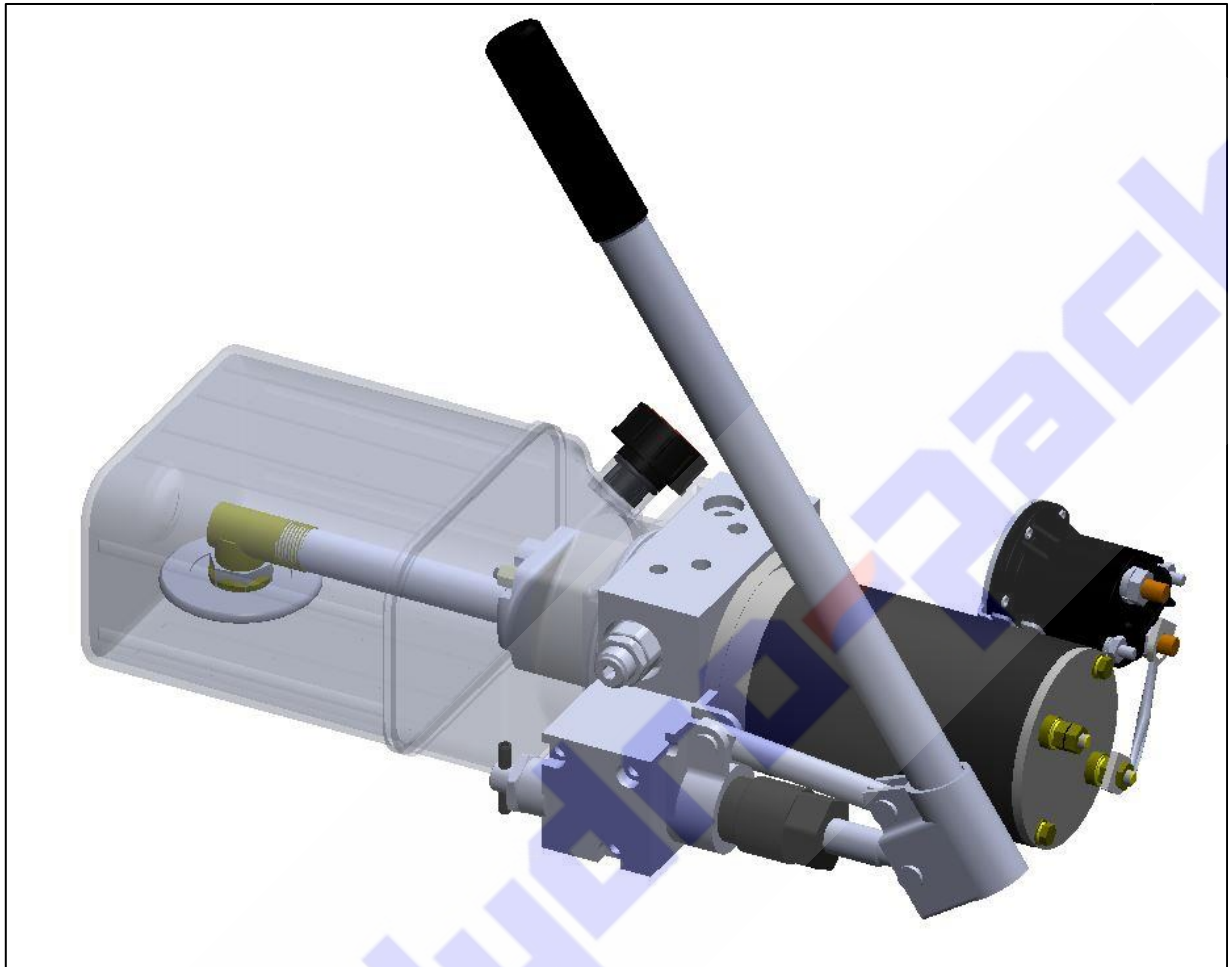


## MINI POWER PACKS

### DD.057 ENG R(0) WHEELCHAIR LIFT UNIT POWER PACK MANUAL



Attention! Before starting the hydraulic power pack operation, it is necessary to get acquainted with all the recommendations included in this manual. The producer does not bear any responsibility for damages occurred because of improper operation of hydraulic power pack or constructive changes.

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## SECTION A: GENERAL DATA

### A1 PRODUCER

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### A2 INTRODUCTION

The present manual of operation is intended for users of hydraulic dock leveler power packs. It contains the necessary information for assembly, initial starting into actuation, maintenance, correct and safety work with the hydraulic power packs.

During the compiling of this manual the experience of the producing company and its specialists are taken into consideration. With special responsibility it is recommended that our indications to be followed up in the part treating the safety precautions at work with the machine.

The operations that request disassembly and assembly of the power pack and electric elements have to be implemented by only qualified and authorized specialists. The repair works and adjustments that are not included in this manual should not be carried out.

### A3 PRODUCT CLAIMS

At occurrence of technical problem, please contact technical department of Hydropack. (support@hidros.com.tr) Please send us an e-mail or call with us regarding your claim. Please also provide us the following information so that we can help you better:

- Code of power pack which is on label (Label is located on oil tank.)
- Working voltage and frequency
- Working pressure
- Displacement of the pump
- Date of production
- Detailed description of the claim
- Working time of the power unit

## A4 LABEL

Technical information of power pack (Such as motor power, pump displacement, oil tank size, etc.) can be seen on label. Label is located on oil tank.

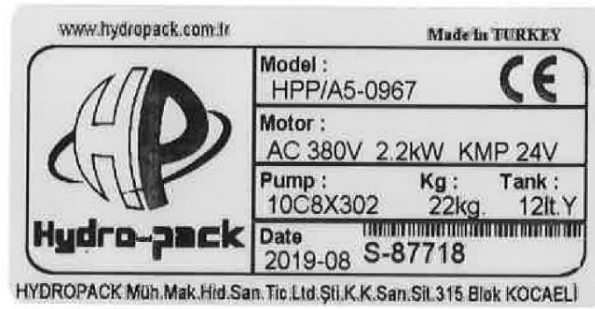


Photo 1. Label of power unit

## A5 APPLICATIONS

The hydraulic power pack is intended for integration in hydraulic system of wheelchair lift units in order to provide hydraulic energy to platform lifting/lowering. The unit can also be used for any single acting applications.

There is a normally closed 2/2 carriage valve for unloading purpose. Hand pump is integrated for lifting when there is problem with electricity. To adjust return speed, a pressure compensated flow control valve was built in. Check valve and pressure relief valve are also integrated with the manifold.

## A6 WORKING CONDITIONS AND REQUIREMENTS

The hydraulic power pack is intended to be used in covered premises as well as at open area at ambient temperature of - 25 to +50°C. Air humidity up to 80 %.

## A7 TECHNICAL CHARACTERISTIC

The power packs are designed and accomplished so that they provide flow from 0,8 L/min to 4.3 L/min depending on selected hydraulic pump (0.25 cc/rev up to 1.25 cc/rev) Working pressure is from 40 to 220 bar depends on the size of the selected hydraulic pump and electric motor. 0.5 kW and 0.8 kW 12-24 V DC motors can be used with the system.

## A8 NOISE CHARACTERISTIC

The hydraulic power pack does not emit noise higher than 85 dB in accordance to EN 60034–9.

## A9 WORKING LIQUID

The oil tank must be filled with new, filtered mineral based ISO 6743/4 fluid. Hydraulic oils at mineral or synthetic base with viscosity rate from 15 to 68 cST at temperature of 40 °C. Hydraulic fluid may change regarding working climate. Please do not use motor oil, diesel oil or water as fluid in the system. Class of filtration -9 NAS 1638.

Hydraulic fluid should be changed after 6 months or 1 year depends on usage in application. (After initial 100 operation hours, afterwards once every 3000 hours is recommended.) Suction filter needs to be cleaned as well. If there is decrease on fluid level, additional oil should be put in.

## **SECTION B: SAFETY TECHNICS**

### **B1 RULES FOR TECHNICAL SAFETY**

To work with the power pack it could be allowed only personel who is acknowledged with the rules for actuation of electrical equipments and equipments working under pressure.

For safety functioning of the hydraulic power pack it is necessary to be kept the following rules:

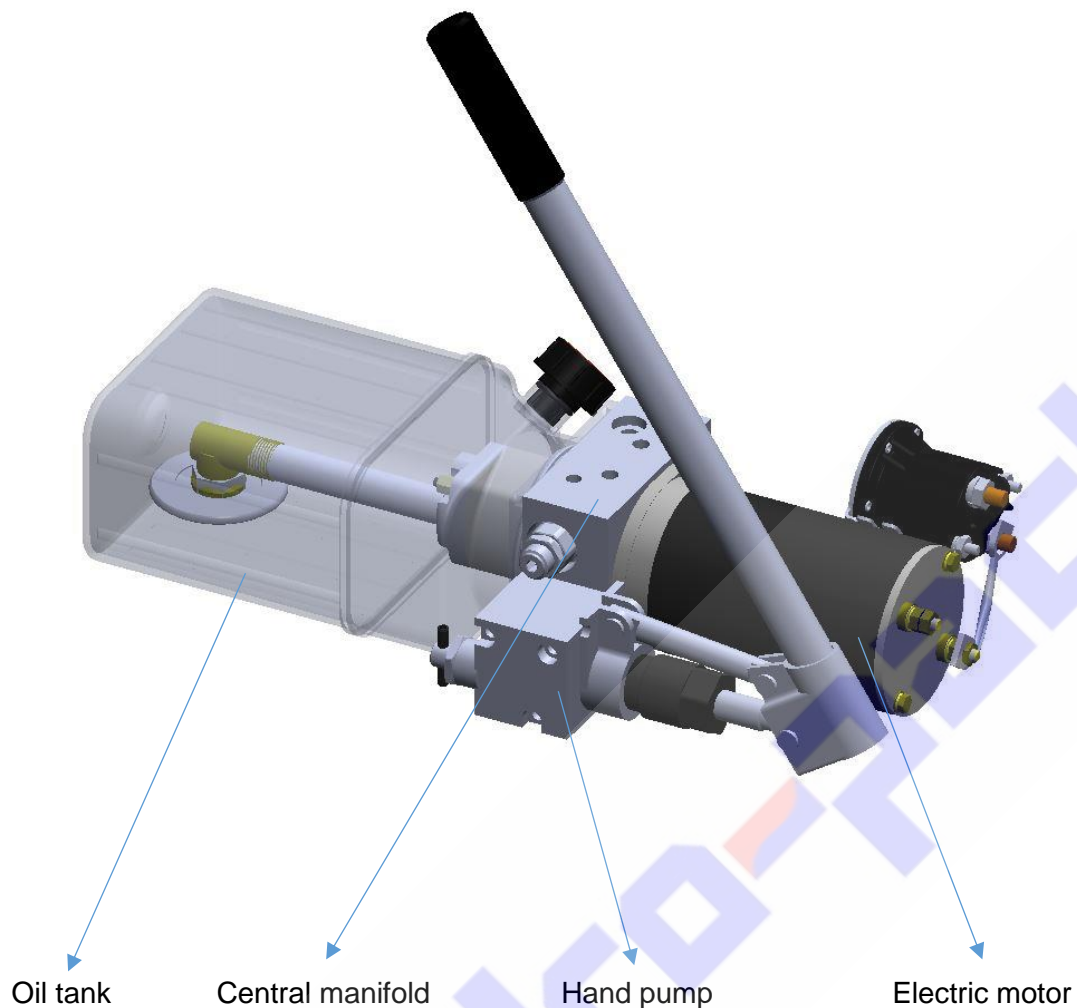
- It is not allowed an actuation of the power pack with replaced cap of the terminal connecting box of the motor or using connectors on the coils of the solenoid valves that are not of the same type like these with which the power pack is accomplished.
- The connection has to be done from a qualified electrician. During the connection it should be observed the direction of rotation of the electric motor. Electric motor rotation from shaft view must be anti-clockwise.
- Hydraulic connection must be carried out carefully. There is one outlet port on the manifold that needs to be connected to the actuator in the system.
- The selection of the pipelines must be complied with the system pressure and flow rate.
- The tube connectors must be fixed tightly. It should not be allowed any fluid leakage at the outer surfaces. Proper sealing elements should be used.
- It is not permitted the replacement of the air breather with plug.
- It is not permitted pressure relief valve readjustment to a higher pressure.
- The power pack must be fixed to a basement or to a stable frame.
- It is not allowed the power pack use in explosion – hazardous and combustable environment.
- Lack of oil may cause damage to hydraulic pump.
- Insulated cables must be used in connection.
- Power pack assembly should not be carried out in watery environment.
- DC motor + & - poles should not contact each other.
- DC motor cable ends must be insulated.
- DC motor should not operate without starter assembled on it.
- There are breathers with red color on oil tanks. Blind plugs should not assemble on these breathers.
- Hose diameters should not be too small.

## **SECTION C: DESCRIPTION OF THE HYDRAULIC POWER PACK**

### **C1 MAIN PARTS**

The power pack is consisted on the following main elements:

- Electric motor
- Central manifold
- Hydraulic gear pump
- Oil tank
- Filter
- Hand pump and unloading valve
- Pressure relief valve
- Pressure compensated flow control valve
- Normally closed 2/2 cartridge valve



**Photo 2.** Main components of wheelchair lift unit power pack

At switching on the power of the electric motor, it drives the gear pump. The pump sucks the working liquid from the tank and directs it to central manifold and from there to the actuators of the system. Outlet port must be connected to the actuator. When electric motor is off and normally closed 2/2 valve coil is energised, oil will return to reservoir.

## **C2 ELECTRICAL PARTS**

The hydraulic power pack is assembled with:

- Electric motor
- 2/2 cartridge solenoid valve

The electric motor can be 0.5 kW or 0.8 kW, 12-24 V DC.

The solenoid elements are cartridge type. Their coils can operate under voltages of 12, 24 or 220 V. The connectors are made under DIN 43650.

## SECTION D: WORKING WITH HYDRAULIC POWER PACK

The power pack work is determined by the machine at which it is integrated. During operation of power pack it is not allowed the presence of leakage of working fluid on the outside surfaces. The power pack is switched when the motor is supplied with the necessary voltage. The control is effected by proper combination of switching on the motor and the solenoid valves.

## SECTION E: POWER PACK ASSEMBLY

### E1 REQUIREMENT OF THE WORKING AREA

The power pack must be mounted using M10 holes. The working area around the power pack must be free and an access to the oil filler, to the valves and the unloading throttle has to be ensured. The power packs must not be placed in closed areas that may prevent its cooling. The power pack should not contact with any parts that may vibrate and transmit noise.

### E2 TRANSPORT OF THE HYDRAULIC POWER PACK

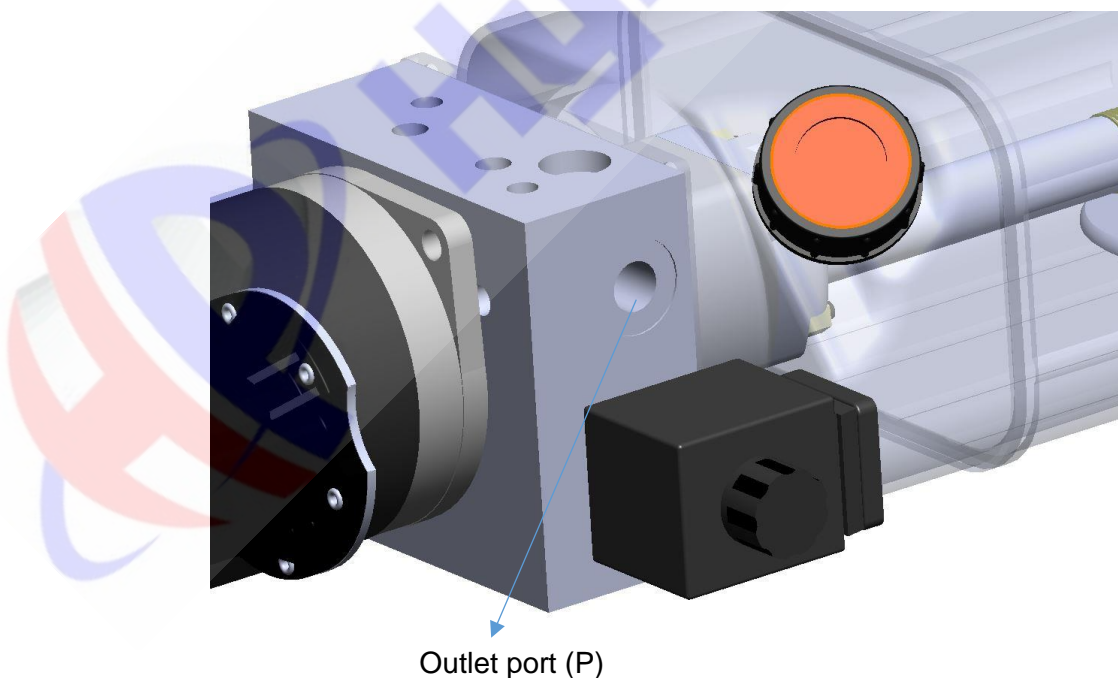
The power pack can be transported with any kind of covered transport. At its transporting it should be observed the recommendations on the carton. If there is oil inside the tank during transportation, air breather should be replaced with blind plug or oil should be pour out before transport.

### E3 POWER PACK PROTECTION

The hydraulic power pack is taken out of the carton. The polyethylene packing is removed of it. The safety plugs are replaced of the supply ports.

### E4 CONNECTING PORTS

There is one outlet port (P) on central manifold that needs to be connected to the actuator. Port thread is G 1/4" as standard. Max. tightening torque of the fitting is 50 Nm.



**Photo 3.** Connection port (pressure port) on central manifold

## E5 CONNECTION TO HYDRAULIC SYSTEM

The pipelines from the power pack are connected to actuators in the system. Hydraulic circuit and technical information can be found on technical drawing. After the final installation of the power pack, the clean working liquid is poured into the tank to the indicated level. Please clean all hydraulic parts concerned before mounting. Please check the oil level in the tank after initial operation.

## E6 CONNECTION TO ELECTRICAL SYSTEM

Hydropack power packs are supplied with starter relay which is assembled on DC motor. Cables from battery must be connected to terminals on DC motor. The connecting of the power pack to the electrical system should be done by a certified electrician as the rules for safety work with electrical equipments should be observed. Low voltage can cause damage to motor. DC motor should not run for long period of time.



**Photo 3.** Connection on DC motor

For detailed information, please refer to “DD.043 R(0) Remote control connection on power units” document or contact us.

## SECTION F MAINTENANCE OF THE HYDRAULIC POWER PACK

### F1 CLEANING OF THE POWER PACK

The cleaning of the power pack is made by textile cloth without using any cleaning substances or solvents. The cloth should not left any filaments on the treated surfaces. Once yearly it is necessary changing oil and flushing tank. Oil change is done in the following way:

- The pressure is unloaded in the system.
- The power pack is switched off from the electric installation.
- The pipelines are disassembled. The screws by which the power pack is fixed to the basement are unscrewed.
- The power pack is placed vertically on the tank and the fixing screws are unscrewed.



- The electric motor is placed outside together with the central manifold and the pump. The old oil is poured out and the internal surface of the tank is cleaned. The suction filter is cleaned also.

After cleaning, the electric motor with the central manifold are placed on the tank. The fixing screws and the bracket are screwed. The assembled power pack is installed on its working position. The working liquid is poured up to the indicated level. The air breather must be closed firmly. The pipelines are assembled and the power pack is connected to electrical system in accordance to the way of application.

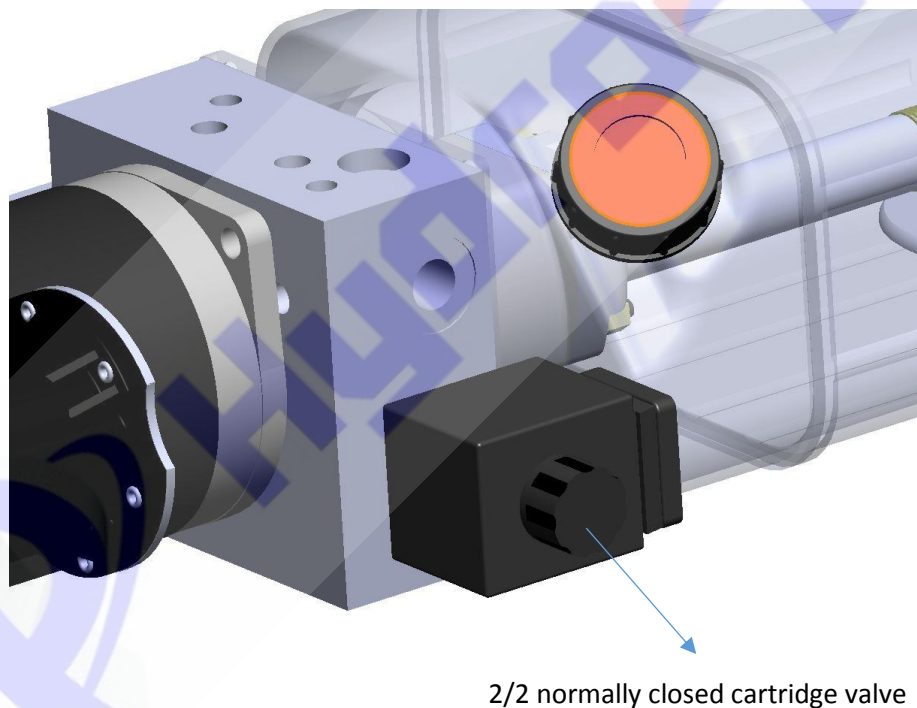
**Dirty oil sharply decreases the life time of power pack.**

## **F2 PRESSURE ADJUSTMENT**

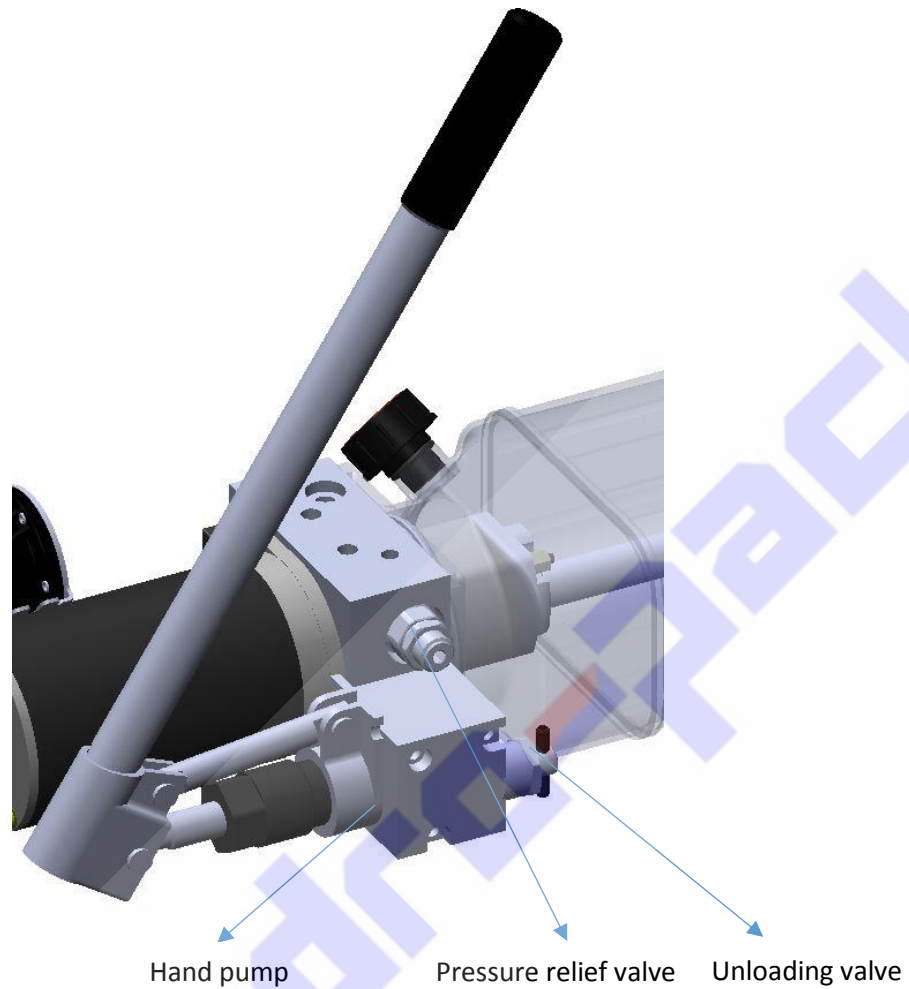
The pressure adjustment in the hydraulic power pack is made by means of pressure relief valve which is built in on main manifold. The pressure adjustment is effected in the following order:

- A pressure gauge is installed at port "P". The nut of the adjusting screw is unlocked. The adjusting screw is unscrewed up to its end.
- The hydraulic power is switched on and the adjusting screw is activated (clockwise to increase, anti-clockwise to decrease) until it reaches the desired pressure. Then the nut is locked.

For detailed information, please refer to "DD.030 ENG R(0) Adjusting relief valve pressure on power pack" document.



**Photo 6.** 2/2 normally closed cartridge valve



**Photo 7.** Hand pump, pressure relief valve and unloading valve

Factory setting of the power packs can usually meet the requirements of most field applications. Users must be cautious when resetting the settings on the manifold. Loose lock nut of pressure relief valve. Adjusting screw is turned clockwise to increase pressure setting or anti-clockwise to decrease pressure setting.

***Attention! Please do not pass max. working pressure indicated on technical drawing.***

### F3 PROBLEM SOLVING

PROBLEM	REASONS	METHOD OF ELIMINATION
<b>Motor doesn't run</b>	<ul style="list-style-type: none"> <li>• Wrong motor wiring</li> <li>• Starter relay problem</li> </ul>	<ul style="list-style-type: none"> <li>• Check and correct wiring</li> <li>• Check starter relay</li> </ul>
<b>Starter relay clicks but motor doesn't turn</b>	<ul style="list-style-type: none"> <li>• Loose wire from relay to motor</li> <li>• Wrong cable size from batter to motor</li> <li>• Starter relay housing is cracked</li> </ul>	<ul style="list-style-type: none"> <li>• Check wiring</li> <li>• Change to proper size of cable</li> <li>• Replace starter relay</li> </ul>
<b>Cylinder doesn't hold</b>	<ul style="list-style-type: none"> <li>• Check valve problem</li> </ul>	<ul style="list-style-type: none"> <li>• Disassemble check valve, clean with brake cleaner and air gun then assemble again</li> </ul>
<b>Cylinder doesn't retract</b>	<ul style="list-style-type: none"> <li>• 2/2 cartridge coil is not energised.</li> <li>• Damaged cartridge valve</li> </ul>	<ul style="list-style-type: none"> <li>• Check and correct the wiring</li> <li>• Replace the cartridge valve</li> </ul>
<b>Not sufficient pressure</b>	<ul style="list-style-type: none"> <li>• Lack of oil inside the tank</li> <li>• Damaged pressure relief valve</li> <li>• Damaged hydraulic pump</li> <li>• Filter is blocked</li> <li>• Air in system</li> </ul>	<ul style="list-style-type: none"> <li>• The oil is filled up</li> <li>• Readjustment of the relief valve</li> <li>• Replacement</li> <li>• Replacement</li> <li>• Elimination of the air</li> </ul>
<b>Overheating</b>	<ul style="list-style-type: none"> <li>• Electrical ground problem</li> <li>• Defective battery</li> <li>• Pressure relief valve setting problem</li> <li>• Contaminant stuck on relief valve</li> <li>• DC motor problem</li> </ul>	<ul style="list-style-type: none"> <li>• Check electrical connection</li> <li>• Check batter performance</li> <li>• Clean the relief valve with brake cleaner and air gun to remove contaminant and assemble again</li> <li>• Replace DC motor</li> </ul>

All power packs are tested 100% before delivery to customer. Please kindly contact us for all questions.

## SECTION G WARRANTY

The producer guarantees the conformance of the product to the standard and technical documentation and its work capability at actuation complied with the present manual.

Please do not take out product label on oil tank during warranty period.

The guarantee period is 12 months from the date of starting in operation, but not more than 18 months from the purchase date.

The producer undertakes to eliminate the defects occurred because of its fault.

The guarantee conditions are not be carried out if the user has made a repair without permission and has not kept the clauses mentioned in the present manual.

The guarantee engagements of the producer will be implemented in its factory or in authorized service by it.

<b>PRODUCT CODE</b>	HPP ...
<b>SERIAL NO</b>	
<b>DATE OF PRODUCTION</b>	

Warranty is only valid on document which has date, stamp and signature information.

RELEASE DATE:

STAMP AND SIGNATURE

**HYDRO-PACK Mühendislik Makina Hidrolik San. ve Tic. Ltd. Şti.**

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