

# **Instruction Sheet**

**PowaPak™ Electric Power Consoles**

**EA - Electric Automatic - Fully Automatic**

**EU - Electric Ultra - Semi Automatic**

## CD with Instruction Sheets in PDF-format

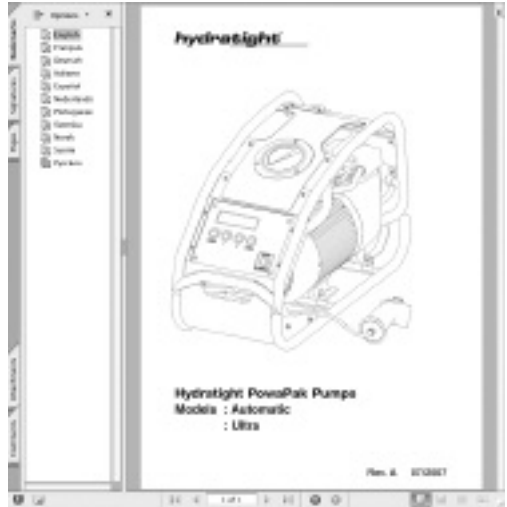
Please find the CD enclosed in the back of this manual

Choose the required product series from the left side of the screen, then click on the required language.

The following languages are listed:

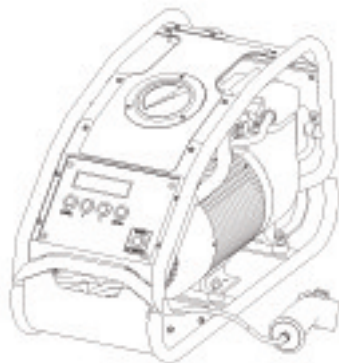
English (GB)  
Français (FR)  
Deutsch (DE)  
Italiano (IT)  
Danish (DN)

The install program of the Acrobat Reader 6.0 is included on the CD.



# Instruction Sheet

# PowaPak Electric Power Console



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## 1. Introduction

### PowaPak Automatic and Ultra Pumps

These units have been developed for an industrial environment for use with Hydraulic Torque Wrenches, the Automatic version using enhanced technology enabling automatic tightening of nuts to a predetermined torque value.

### Delivery Instructions

Upon delivery all components must be inspected for damage incurred during shipping. If damage is found, the carrier should be notified immediately. Shipping damage is not covered by the Hydratight warranty.

### CE Declaration of Conformity

Hydratight PowaPak Automatic and Ultra

Hydratight declares that these models meet the applicable standards and directives issued by the European Community. For details refer to the separate Certification.

## 2. Safety

Be aware that the operator is fully responsible during the operation of these units. Hydratight is not responsible for damage or injury caused by the misuse of this pump. Contact Hydratight immediately if a potentially hazardous situation arises.

Read this manual carefully and observe all safety precautions.

- Ensure that electric is switched off and unit is disconnected from the power source prior to any maintenance work.
- Make sure you have completed safety induction training specific to the work surroundings. The operator should be thoroughly familiar with the controls and the proper use of the Pump unit.
- Always wear eye protection and protective gloves, as a minimum.
- Make sure of the efficiency of the site earth connection before starting to use the Pump unit.

- Ensure that hoses and tools are connected correctly, and in good condition.
- Ensure cables and hoses are not placed under any tension, and are not formed into any tight bends.
- Never lift or drag the pump by the hoses or cables. Use handhold or lifting points provided.
- Never exceed the equipment maximum working pressure.
- Make sure the hydraulic pressure is dissipated to zero before attempting to disconnect hoses.
- Do not apply pressure to any disconnected hose or coupling.
- Do not try and loosen any coupling or connector while the equipment is pressurised.
- Never leave the Pump unit unattended while pressurised.
- Do not handle pressurised hoses
- Use only hoses and connectors recommended for this equipment.
- Make sure the hydraulic oil is at the correct level to avoid malfunctioning.
- Do not keep the motor loaded for long periods of time, as excessive heat will be generated.
- Keep all the hoses and connections clean and free of debris.
- Make sure that the electricity supply is correct for the Pump unit supplied (check data plate on reservoir).
- Servicing of the electrical system should only be carried out by a qualified electrician.
- Ensure Pump unit is placed on a stable flat surface, with enough space around it to enable connections and adjustments to be made.
- Always store Pump unit in a dry clean humid free environment. On reuse check rotor runs freely, and that electrical insulation is sound, and oil level is correct.
- Never detect possible leaks by touching the hoses, connections etc. High-pressure liquids can be injected into the skin causing serious injury.
- If the Pump unit is dropped from any height, have it inspected thoroughly before it is operated again.

### 3. Assembly

The pump unit reservoir is supplied without oil. Fill the pump through the oil filler cap (**Fig. 1**) using the oil recommended in section 9 to suit the operating environment.

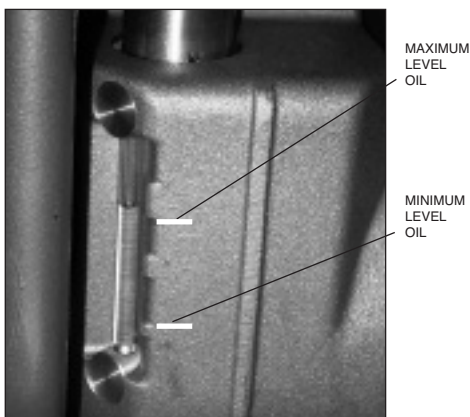


**Fig. 1**

**Important** – the pump contains two linked hydraulic chambers therefore it is **essential** to fill the pump as below. Observe the max and min oil levels as shown in **Fig. 2**.

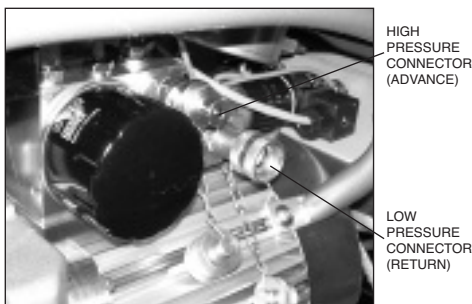
- Fill to max level & allow settling (level drops as second chamber fills via porting).
- Refill to max level.
- Check and refill after initial operation of the pump i.e. manifold assembly primed.

Prior to each use ensure the oil level is correct, top up if necessary.



**Fig. 2**

Connect the hoses to the pump connectors as indicated in **Fig. 3**.



**Fig. 3**

Ensure electrical compatibility of the pump and the power supply, check the information on the pump data plate attached to the reservoir.

Check the cables for signs of damage before connecting the pump to the power supply. If it is necessary to replace the power cable, ensure the cable is attached securely to the plug, and that the shroud is fitted correctly to prevent ingress of moisture.

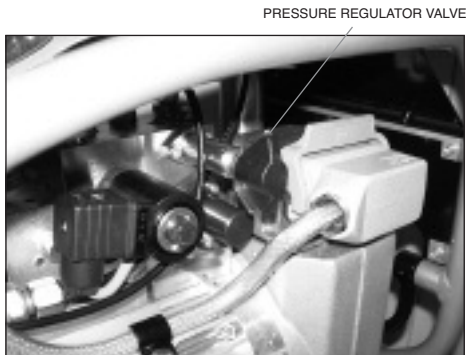
The pump control panel is non-serviceable, if defective return the pump to Hydratight or an authorised service centre for repair. Any intervention will invalidate the Hydratight's warranty and responsibility.

#### 4. Operation

Depending on the model, the pump can be operated in the following modes:-

Ultra Model - Manual mode only. Automatic Model - Manual or Automatic mode.

The operation of both pump models consists of increasing the hydraulic pressure through a low-pressure gear pump to 97 bar, then increasing to 700 bar utilising a high-pressure piston pump. A pressure regulator valve enables adjustment of the oil pressure (**Fig. 4**).

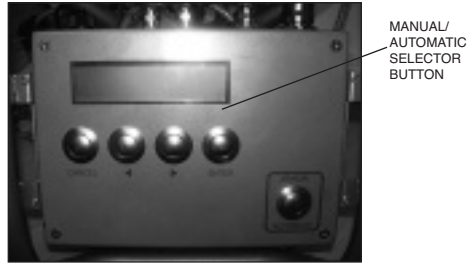


**Fig. 4 Pressure regulator**

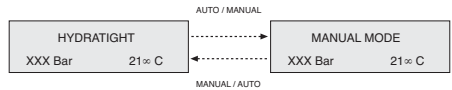
##### 4.1 Manual Mode (Ultra & Automatic Models)

In manual mode the hydraulic outlet pressure is controlled by the manual pressure regulator valve (Fig. 4) for both the Ultra and Automatic model. With the torque wrench and hoses connected, the regulator valve can be adjusted until the desired pressure is indicated on the pressure gauge or LCD (Automatic model only).

Upon switching on, the Automatic model defaults to Automatic mode so it is necessary to change to 'manual mode'. Pressing the "MANUAL/AUTOMATIC" button (Fig 5) on the control panel will change to show "MANUAL MODE" flashing on the display (Fig 6).



**Fig. 5 Automatic/Manual Selection**



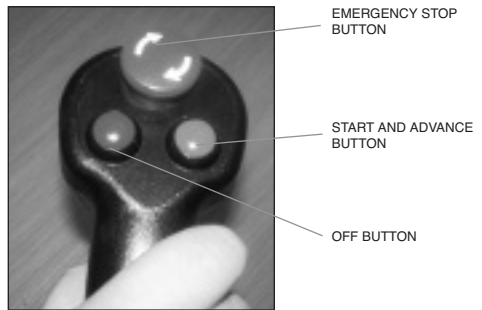
**Fig. 6 Automatic/Manual Display**

Depressing the "START/ADVANCE" button (see Fig 7.) on the handset will advance the wrench. When the button is released the wrench will retract.

To switch off simply, press the "OFF" button (see Fig 7.) on the handset, this will initiate the following actions:-

- i) Retract the wrench.
- ii) Reduce the hydraulic system pressure.
- iii) Switch off the pump.

A two second delay is possible before initiation however it is not necessary to keep the button depressed.



**Fig. 7 Handset Buttons**

The Automatic model enables the user to switch units of oil pressure (Bar or psi, left

hand) and oil temperature (°C or °F, right hand) in each screen, by pressing “◀” or “▶” keys (see Fig. 8). The error and maintenance messages (described later) are also active.

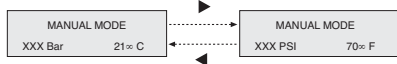


Fig. 8 Unit Selection

#### 4.2 Automatic Mode (Automatic Model Only)

To use the pump in automatic mode the manual pressure regulator valve (Fig. 4) must be closed.

Upon switching on the pump defaults to automatic mode and displays the default screen (Fig. 9). As described previously in Sect 4.1 „manual mode” pressing “◀” or “▶” keys will switch the units of oil pressure and oil temperature (Fig. 9).

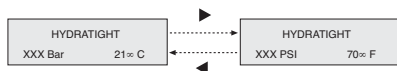


Fig. 9 Default Screen

For automatic operation it is necessary for the following data to be entered into the pump

- Tool (wrench) reference
- Required torque or tool pressure

The data is used to create a tightening sequence consisting of a series of tool advance and retract cycles that will terminate when the pre-programmed torque or pressure is achieved. The unit monitors the cycle time to determine when the tightening sequence is complete. To ensure the final tightening torque has been achieved the unit automatically applies several further cycles.

The required torque or pressure controls when the tightening sequence is complete and the tool reference ensures the pressure does not exceed the maximum allowable for that tool.

The data is entered either manually at the control panel or via PC software available

from Hydratight. The following instructions are based on manual entry at the control panel.

Once the tightening sequence has been generated the pump is ready for use. The tightening sequence can be used to tighten numerous fasteners, however if the pump is switched off the tightening sequence data will be lost. It is therefore advisable that the data be stored as a ‘program’ so it can be reused. The pump allows for up to 50 programs to be stored.

It is possible to run an automatic tightening sequence by either of the following:-

- Load an existing program (see 4.2.1)
- Create a tightening sequence (4.2.3)
- Create a New Program (see 4.2.3)

Fig. 10 below indicates the main menu that is accessed from default screen by pressing the “ENTER” key.

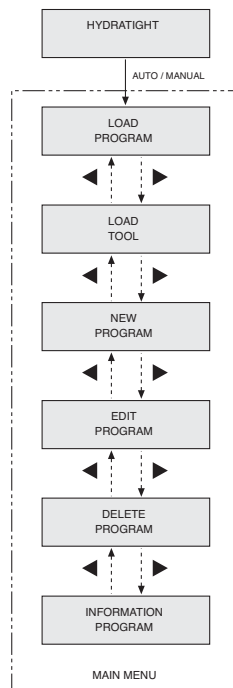
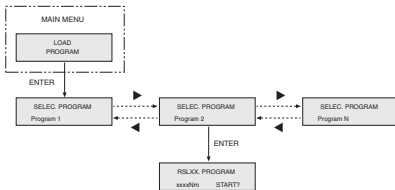


Fig. 10 Default Screen

Pressing the “◀” or “▶” keys moves between the screens. Programs can be created, deleted or edited from the pumps main menu system or via connection to PC software.

#### 4.2.1 Load Program

From the main menu locate the “LOAD PROGRAM” screen by scrolling with the “◀” or “▶” keys then press the “ENTER” key. Select the desired program by scrolling with the “◀” or “▶” keys then press the “ENTER” button again. **Fig.11** gives an example of program 2 being selected.



**Fig. 11 Loading a Program**

Once the required program has been selected, one or numerous fasteners can be tightened.

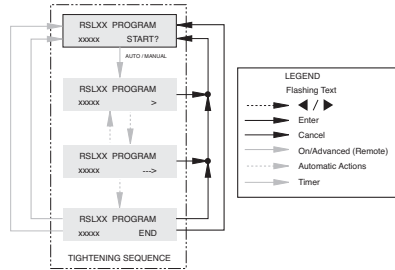
The screens shown during the tightening sequence are indicated in **Fig. 12**. The initial screen shows the program name, tool reference, torque or pressure with “START” indicating the program is now ready for use. Start the pump by pressing the “Start/Advance Button” on the Handset (see **Fig. 7**).

For safety, it is necessary to hold down the “Start/Advance” button to maintain the tightening sequence. If the button is released the sequence will stop and the tool will return to the retract position.

As indicated in **Fig. 12** the program automatically alternates between the second and third screens during the tightening operation.

When the tightening sequence is complete the final screen is displayed momentarily indicating the sequence has ended and the torque or pressure has been achieved.

After a period of inactivity the display will return to the first screen of the sequence, ready for another tightening sequence. Alternatively the user can return to the initial screen immediately by pressing the “ENTER” key.



**Fig. 12 Tightening Sequence**

#### 4.2.2 Create Tightening Sequence

With reference to **Fig. 13** from the main menu locate the “LOAD TOOL” screen by scrolling with the “◀” or “▶” keys then press the “ENTER” key. Scroll through the available tools using the “◀” or “▶” keys. Once the desired tool is displayed, it can be selected by pressing the “ENTER” key. Next use the “◀” or “▶” keys, to select the required magnitude (Torque or Pressure), press “ENTER” to select the desired value.

If Torque is selected, use the “◀” or “▶” keys, to switch between the operating units of Nm or ftlbs. If Pressure is selected, use the “◀” or “▶” keys, to switch between the operating units of bar or psi. Once the desired unit is displayed press the “ENTER” key to select it.

The final screen requires the torque or pressure value to be entered. In this screen, a cursor appears under the digit that can be modified. The “◀” or “▶” keys will allow increasing or decreasing values of the digit being modified. The “ENTER” key will displace the cursor to the next digit (right) and the “CANCEL” key will displace the cursor to the previous digit (left).

**Important Note** – The pump does not allow the input of values that exceed the pressure limits of the selected tool.

Once the desired value has been entered, the “ENTER” key must be pressed again and this will advance to the tightening sequence screen (Fig. 13).

Automatic tightening can now be carried out by pressing the “Start/Advance Button” on the Handset as described in section 4.2.1 and Fig. 12.

Having created the tightening sequence if the pump is switched off all data is lost. It is therefore recommended that the data be saved as a Program. From the tightening sequence initial screen press the “▶” key (Fig. 14). This displays the screen requesting confirmation to save the data, press the “ENTER” key to accept. The next menu screen allows entry of

the program name. On these screens the “ENTER”, “CANCEL” and the “◀” or “▶” keys allow entry of numbers and text. The “ENTER” and “CANCEL” keys move the cursor to the next and previous character respectively while the “◀” or “▶” keys decrease and increase respectively the number or text character being entered. The name length is limited to a maximum of eight characters (all eight characters must be filled however blank spaces can be entered by pressing the ‘ENTER’ key). Pressing the ‘ENTER’ key once the final character has been entered will save the program. Refer to Fig.14 for the keystroke sequence required to carry out these actions.

2 Characters available:  
 \_0123456789ABCDEFGHIJKLMNOPS  
 TUVWXYZ

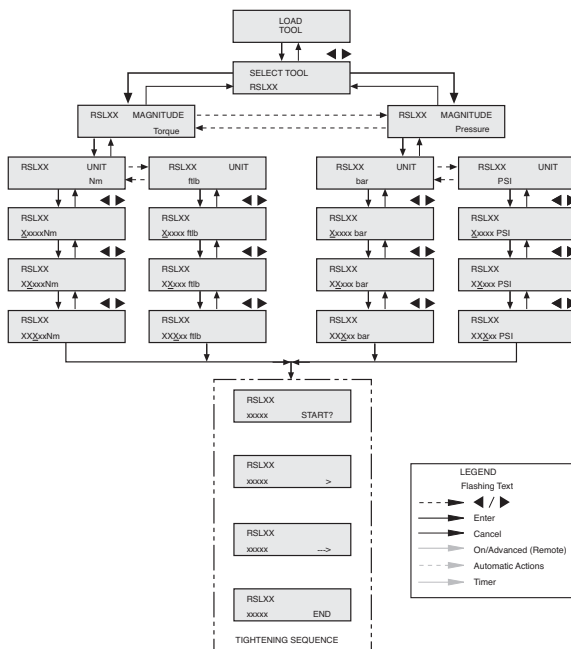
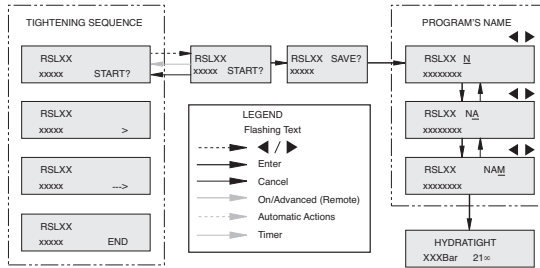


Fig. 13 Creating a Tightening Sequence



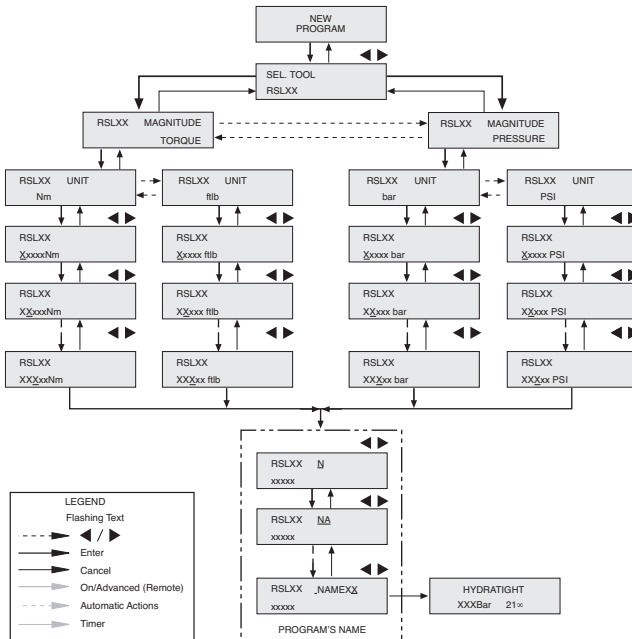
**Fig. 14 Creating a Program from a Tightening Sequence**

It is important to note that the pump does not allow the creation of programs with empty names, or identical names to those already stored in the memory. Should this occur a message will be displayed followed by the option to change the name.

This name creating sequence is also used to edit the name of an existing program as described later in 4.2.4.

**4.2.3 New Program**

From the main menu use the “←” or “▶” keys to select “NEW PROGRAM” then press “ENTER”. Fig. 15 indicates the sequence to follow for entering the required program data i.e. Tool Ref, Torque/Pressure, Units, Numeric Value, and Program name. With the exception that the program name is automatically requested, the sequence is identical to those previously illustrated in Fig. 13 and Fig. 14.



**Fig. 15 Creating a New Program**

### 4.2.4 Edit Program

It may be necessary to change some of the parameters that define a program (tool ref, torque, pressure etc) or the program name. This can be achieved from the main menu by using the “←” or “→” keys to select “EDIT PROGRAM”. Once accepted by pressing the “ENTER” button, the same sequence of steps as previously shown in “New Program” section (4.2.3. and Fig. 14) will be displayed.

Press the “ENTER” key once the desired program has been selected then continue using the “ENTER” key until the required parameter (or name) to be changed is selected. Edit the values or characters as previously described in the ‘tightening sequence’ section (4.2.2).

Fig. 16 indicates the sequence to follow for editing a program.

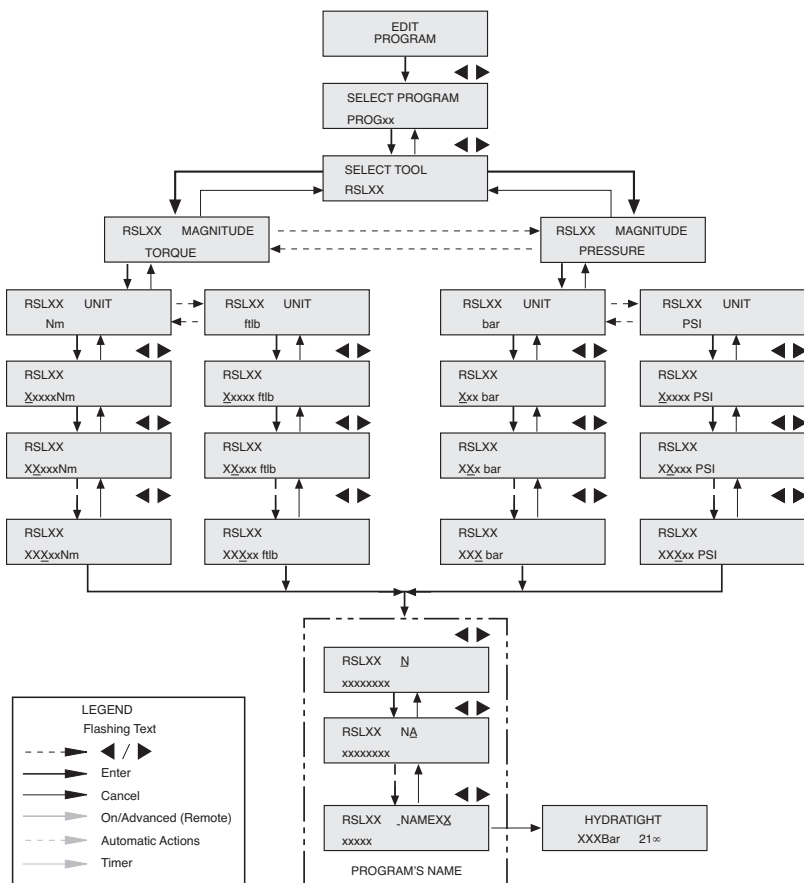


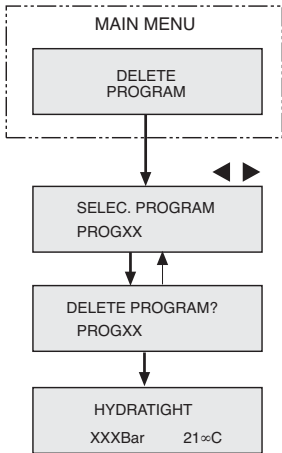
Fig. 16 Editing a Program

### 4.2.5 Delete Program

Should it be necessary to delete a program from the pump memory follow the sequence shown in **Fig. 17**. Programs that have been protected using the PC software will display a padlock icon at the end of the program name. It is not possible to delete protected programs at the pump control panel. Protected programs can only be unprotected and deleted from PC software program.

To delete an unprotected program (without padlock icon) from the pump control panel select “DELETE PROGRAM” then press the “ENTER” key. Use the “◀” or “▶” keys to find the program to be deleted.

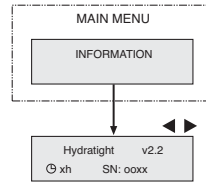
Press “ENTER” to delete the selected program. The next screen requests confirmation to delete the program, press the “ENTER” key to accept. The control panel returns to the default screen.



**Fig. 17 Delete Program**

### 4.2.6 Information and Error Messages

The final main menu is the “INFORMATION” screen, which provides the pump data including the operating hours, the pump program version, and the serial number (See **Fig. 18**).



**Fig. 18 Information Screen**

The performance of the pump is continuously monitored during operation such that the pump will automatically stop if problems occur.

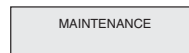
The following are monitored:-

- Motor Temperature
- Hydraulic Oil Level
- Oil Temperature
- Oil Pressure
- Temperature Sensor Operation
- Pressure Transducer Operation
- Solenoid Valve Operation

When an error is detected, the pump will stop the current tightening sequence, retract the tool (if possible), stop the pump and display the error message.

For safety reasons, an error message cannot be deleted until the error has been rectified and accepted by pressing the “ENTER” button. Only then can the pump be restarted.

To ensure maintenance is carried out at periodic intervals the pump displays a maintenance warning relating to the number of operating hours (**Fig. 19**). If the pump detects that the recommended time for maintenance inspection has been exceeded, a warning will appear when the pump is switched on. The maintenance warning can be accepted by pressing ‘ENTER’ to continue using the pump if necessary however maintenance should be carried out at the next available period.



**Fig. 19 Maintenance Warning**

Fig. 20 shows a diagram of the complete menu system for the pump. Refer to the Legend associated with the diagram to ensure familiarity regarding the effects of certain actions and error messages.

done at the pump control panel and require the PC software program. To use the software, the pump must be connected to the PC via the cable supplied. The pump must be connected to the power supply to communicate with the PC software.

Certain activities e.g. deletion of protected programs, changing languages etc cannot be

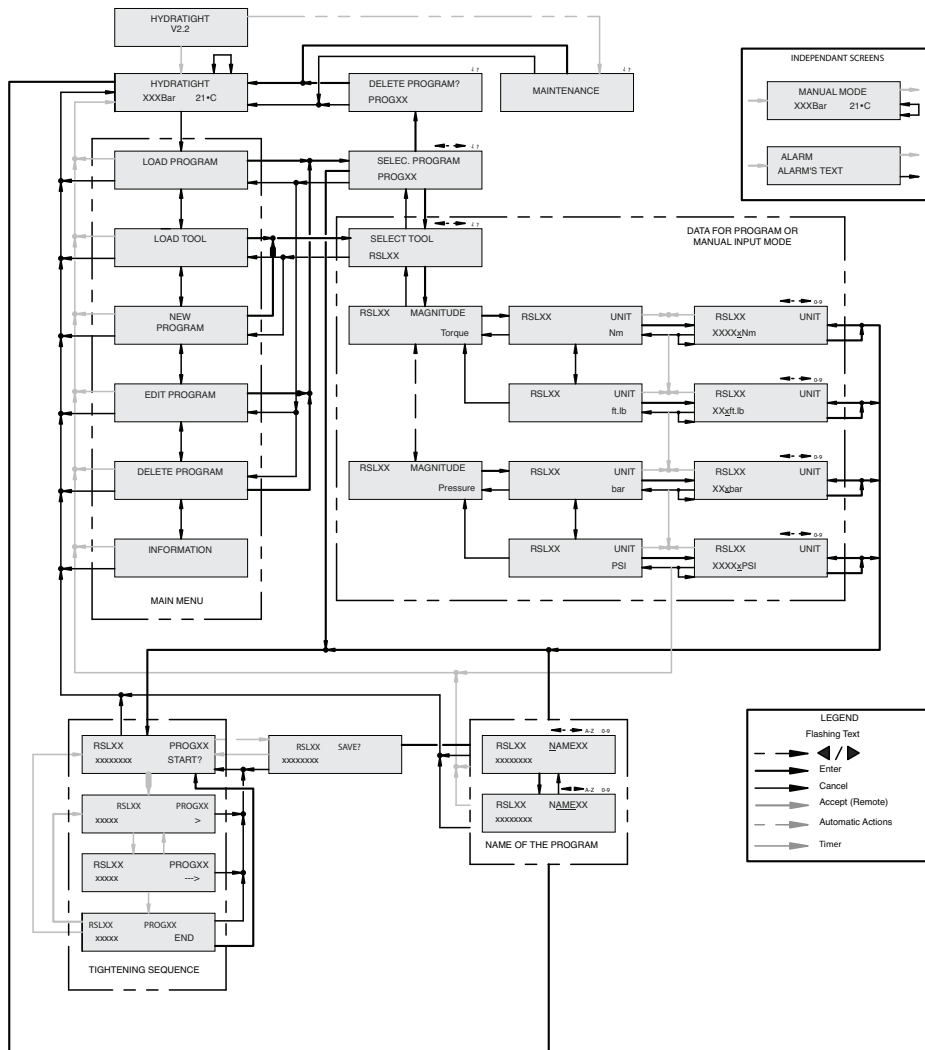


Fig. 20 Complete Menu System

## 5. Maintenance and Troubleshooting

**Important** – Prior to any maintenance, depressurise the hydraulic system and disconnect the pump from the electrical supply.

For normal use **Fig. 21** can be used for guidance, however in extreme working

conditions maintenance should be carried out more frequently.

Refer to the Chart in **Fig. 22** for information. If the pump requires technical service or spare parts, contact Hydratight or any of their authorised Service Centres.

Frequency	Maintenance
Prior to each use	Check the oil level in the reservoir is between the maximum and minimum indicators.  Set zero pressure, then incrementally adjust pressure up to 150Bar (2175psi) and check for leaks, increase to 700Bar (10000psi), whilst audibly monitoring for noise indicating possible wear or damage. If necessary contact Hydratight for advice.
Monthly	Check that the unit reaches the maximum pressure.  Check all power cable, hydraulic hoses and couplings for damage. Replace as required.
After 200 hours of use	It is recommended that the pump is returned to Hydratight or one of their authorised service centres for a complete maintenance check.

**Fig. 21 Maintenance Schedule**

Problem	Cause	Solution
Motor does not start	Emergency switch depressed	Check the switch
	Damaged wiring	Check and fix the wiring
	Pressure retained in the manifold block	Open the regulator valve fully and start the motor, readjust the valve to the correct pressure
Motor overheating	The hydraulic oil level is incorrect	Fill with oil to the maximum level, if the problem persists check for leaks
Pressure increase very slowly	Oil Contaminated	Empty the oil and refill with the correct oil
Correct pressure not achieved	The adjustment is incorrect	Adjust to the correct pressure and lock off

**Fig. 22 Troubleshooting**

## 6. Technical Specifications

Electric Input	230V 1Ph
Frequency	50Hz
Max Advance Pressure	690 Bar (10000 psi)
Max Retract Pressure	110 Bar (1595 psi)
Power	1.5kW
Current Draw (Full Load)	10.5A
R.P.M.	2800
First Stage Flow	4.0 lpm
Second Stage Flow	1.11 lpm
Reservoir Capacity	3.7 litres
Usable Oil	1.7 litres
Sound Level	78 dB
Protection Classification	IP54

Electric Input	115V 1Ph
Frequency	50/60 Hz
Max Advance Pressure	690 Bar (10000 psi)
Max Retract Pressure	110 Bar (1595 psi)
Power	1.5kW
Current Draw (Full Load)	20.5A
R.P.M.	3420
First Stage Flow	4.01 lpm
Second Stage Flow	1.11 lpm
Reservoir Capacity	3.7 litres
Usable Oil	1.7 litres
Sound Level	78 dB
Protection Classification	IP54

## 7. Warranty

- Hydratight guarantees the PowaPak Pump only for the purpose for which it is intended.
- The pump is guaranteed against defects in workmanship and materials for **two years** from the date on which the product is delivered to the original purchaser.
- Hydratight reserves the right to replace partially or completely to satisfy the warranty.

**Important Note** – Changing one or more components does not extend the warranty.

The warranty does not apply in the following cases:-

- Incorrect disassembly, re-installation of replacement parts and assembly.
- Defects or wear due to carelessness or negligence.
- Non adherence to recommended maintenance schedule.
- Modification to the operating conditions.
- Incorrect storage of the pump unit as described in section 2.
- If other than original Hydratight spare parts are used for repair.

## 8. Spare Parts

Refer to the “Repair Parts Sheets”, or contact Hydratight for information to attain correct parts.

## 9. Hydraulic Fluids

The industrial standard "ISO Viscosity classification for liquid lubricants" is covered by ISO3448, DIN51519. The index No. following the ISO VG prefix indicates the nominal viscosity at 40 degrees centigrade.

Guidelines for selection:-

- **VG10, VG15**

Systems intended for short operating periods or use in an open environment. Systems

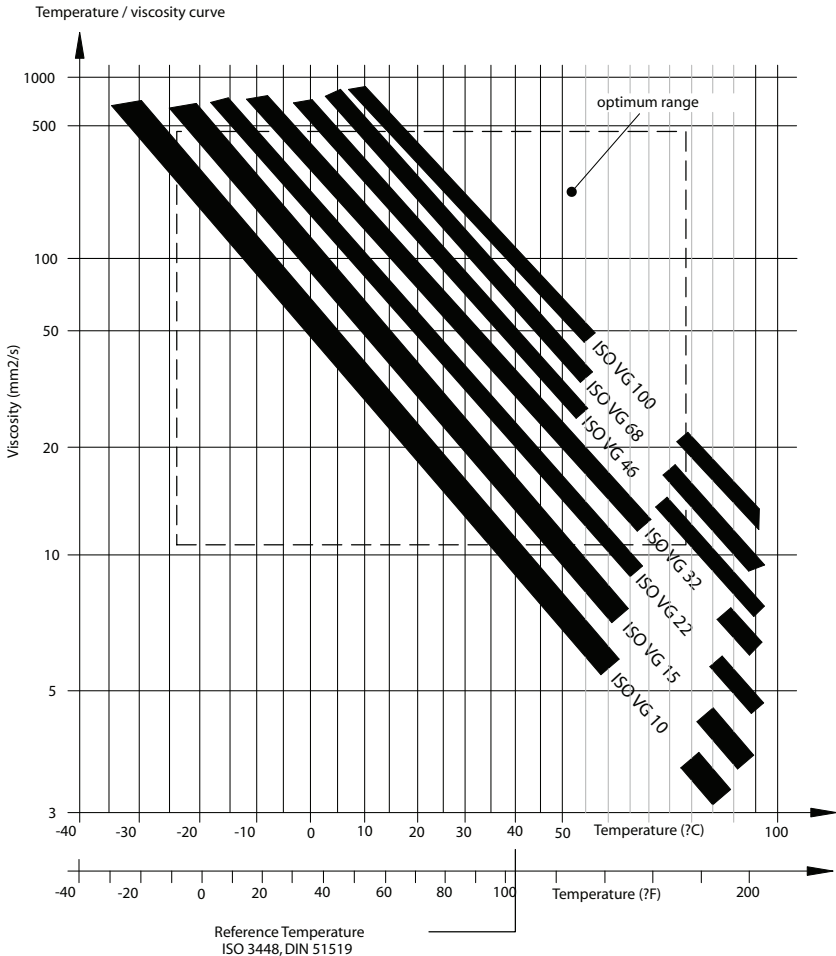
intended for continuous operation (for use in open environment, operation in winter).

- **VG22, VG32**

General application (for use in open environment, operation in summer only).

- **VG46, VG68**

Systems used in tropical conditions at ambient temperatures up to 40°C or enclosed environments.







**Please contact Hydratight if the CD is not included,  
or visit [www.hydratight.com](http://www.hydratight.com) for a download of the manual.**



**hydratight**

**CD includes PowaPak Electric Power Console  
instruction sheets in the following languages:**

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Deutsch  
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**[www.hydratight.com](http://www.hydratight.com)  
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Fax: +1 651 388 0002  
Email: solutions@dlricci.com

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Email: rio@hydratight.com

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