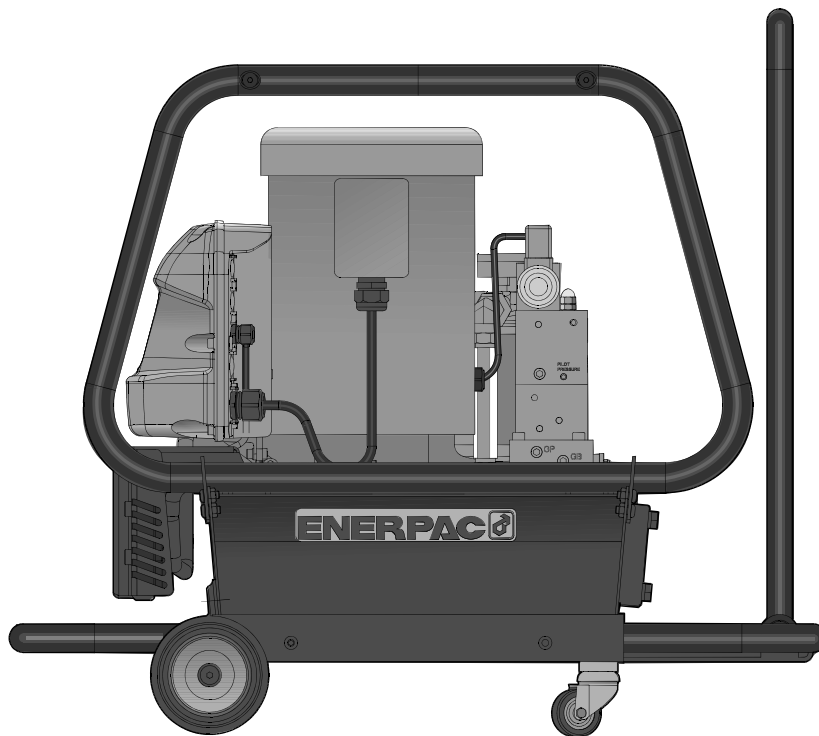
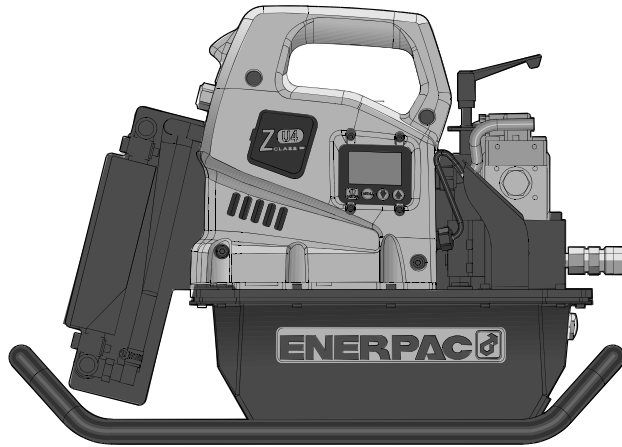


Instruction Manual

Original Instruction



PRO Series Pump

Hydraulic Power Unit

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Warranty

Avdel® Warranty

The One hundred and eighty (180) day warranty herein expressed shall be the exclusive warranty on products manufactured by seller and shall be in the place and stead of any other warranty, expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.

Seller shall not be liable for any loss or damage resulting from delays or non-fulfilment or orders owing to strikes, fires, accidents, transportation companies or for any reason or reasons beyond the control of seller or its suppliers.

All warranty claims must be submitted to the seller in writing, within 180 days from date of shipment, and no returns will be accepted without written permission.

Other provisions hereof notwithstanding, seller shall not be liable for any loss of business profits or any incidental or consequential damages incurred by Buyer or any third person in connection with the items or use thereof, however caused. Buyer's sole remedy shall be to return the defective products for repair, replacement or refund for the purchase price at seller's option.

Seller expressly disclaims any warranty express or implied, arising from overloading, unauthorized alterations, including repairs or attempted repairs by non-Avdel® personnel or use which is contrary to instructions for the products.

This warranty does not cover components or part(s) thereof not manufactured and /or supplied by seller. Such items are warranted to the extent of the warranty provided by the manufacturer of such items and seller agrees to cooperate with Buyer in enforcing such warranties when such action is necessary.

THE FOREGOING EXPRESS LIMITED WARRANTY AND REMEDY ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES AND REMEDIES; ANY IMPLIED WARRANTY AS TO QUALITY, FITNESS FOR PURPOSE, OR MERCHANTABILITY ARE HEREBY SPECIFICALLY DISCLAIMED AND EXCLUDED BY SELLER.

Unit Warranty

This product is warranted by ENERPAC® in accordance to the warranty terms as provided on their website at: <http://www.enerpac.com/en/warranty>. Seller agrees to co-operate with Buyer and to render assistance in enforcing ENERPAC's warranties where necessary.

Avdel UK Limited policy is one of continuous product development and improvement and we reserve the right to change the specification of any product without prior notice.

Safety Instructions

This instruction manual must be read with particular attention to the following safety rules, by any person installing or operating this pump.

1. Do not use outside the design intent.
2. Do not use equipment with this pump other than that recommended by Avdel UK Limited.
3. Any modification undertaken by the customer to the pump shall be the customer's entire responsibility.
4. Always fully disconnect the pump from the power supply before attempting any work.
5. The pump should always be positioned on a flat stable surface
6. Ear and eye protection must be worn by the operator and those in the vicinity. Noise levels for this equipment exceed the permitted maximum. For these values see pages 7 to 9 of this manual and the installation tool manuals.
7. Do not fit flexible hoses rated at less than 700 bar (10,000 psi) working pressure.
8. Avoid damaging hydraulic hoses. Avoid sharp bends and kinks when routing hydraulic hoses. Using a bent or kinked hose will cause severe back-pressure. Sharp bends and kinks will internally damage the hose leading to premature hose failure.
9. Do not drop heavy objects on hoses. A sharp impact may cause internal damage to hose wire strands and lead to premature hose failure.
10. Do not lift, pull or move the hydraulic pump unit using the hoses. Always use the pump unit handle or roll cage.
11. The normal operating pressure shall not exceed 550 bar (8,000 psi). Never set the relief valve to a higher pressure than the maximum rated pressure of the pump. Higher settings may result in equipment damage and/or personal injury.
12. The system operating pressure must not exceed the pressure rating of the lowest rated component in the system.
13. The pump should be kept clean and dry for safe and easy operation.
14. Keep hydraulic equipment away from flames and heat. Excessive heat will soften seals, resulting in fluid leaks. Heat also weakens hose materials. For optimum performance do not expose equipment to temperatures of 150 °F (65 °C) or higher. Protect hoses from weld spatter.
15. Do not handle pressurized hoses. Escaping oil under pressure can penetrate the skin, causing serious injury. If oil is injected under the skin, see a doctor immediately.
16. Do not use electric pumps in an explosive atmosphere. Adhere to all local and national electrical codes. A qualified electrician must do installation and modification.
17. These pumps have internal factory adjusted relief valves, which must not be repaired or adjusted except by an Authorized Avdel® Service Centre.
18. To prevent damage to pump motor, check specifications. Use of incorrect power source will damage the motor.
19. The machine must be maintained in a safe working condition at all times and examined at regular intervals for damage and function by trained competent personnel. Any dismantling procedure shall be undertaken only by personnel trained in Avdel® procedures. Do not dismantle the machine without prior reference to the maintenance instructions. Contact Avdel® with your training requirements.
20. The machine shall at all times be operated in accordance with relevant Health & Safety legislation. In the UK the "Health & Safety at Work etc Act 1974" applies. Any question regarding the correct operation of the machine must be directed to Avdel®.



Safety Instructions

AVDEL® RECOMMENDS THAT ONLY AVDEL® INSTALLATION TOOLING BE USED WITH THE PUMP UNIT, AS OTHER MAKES OF HYDRAULIC TOOLING MAY NOT OPERATE AT THE SAFE DESIGNED WORKING PRESSURES.

KEEP DIRT AND FOREIGN MATTER OUT OF THE HYDRAULIC SYSTEM OF THE TOOL AS THIS WILL CAUSE THE TOOL AND PUMP UNIT TO MALFUNCTION.

Specification

Intent of Use

The pump unit may only be used in accordance with the operating instructions for Avdel® placing tools and for placing of Avdel® fasteners.

The pump unit is an electrically driven, hydraulic power source. When coupled to a compatible Avdel® placing tool and the relevant nose assembly is attached, it can then be used to install a range of Avbolt®, Avdelok®, Avseal®II, Avdelok®XT and Neobolt® fasteners in industrial environments.

The tool is fitted with two Hydraulic Hoses and an electrical Control Cable, 0.6m in length. Additional hydraulic hose and cable extension lengths are available to order separately as required. Refer to the table below for the available hose assembly lengths and associated part numbers.

HYDRAULIC HOSE ASSEMBLY	
PART NUMBER	HOSE LENGTH
07008-00448	5 Metre
07008-00449	10 Metre
07008-00450	15 Metre

The safety instructions must be followed at all times.

Specification

Pump Models 76501-02000 / 76501-02500 / 76502-02000 / 76502-02500

PUMP SPECIFICATION					
Pump Model:	PART NUMBER	76501-02000	76501-02500	76502-02000	76502-02500
	Name	PRO115-A	PRO115-F	PRO220-A	PRO220-F
	Enerpac® Pump Series	ZE4	ZE4	ZE4	ZE4
	Valve Part Number	VE42TQ-115V	VE42TQ-115V	VE42TQ-230V	VE42TQ-230V
Motor:	Power (kW)	1.12	1.12	1.12	1.12
Power Supply:	Voltage (V)	115	115	208-240	208-240
	Frequency (Hz)	50-60	50-60	50-60	50-60
	Phase	1	1	1	1
Current:	Full Load Amps (A)	18.0	18.0	6.8	6.8
Output Flow Rate:	l/min. at 7 bar	8.9	8.9	8.9	8.9
	l/min. at 50 bar	8.2	8.2	8.2	8.2
	l/min. at 350 bar	0.8	0.8	0.8	0.8
	l/min. at 600 bar	0.8	0.8	0.8	0.8
Pressure:	Maximum (bar)	600	600	600	600
	Working – Pull (bar)	510	510	510	510
	Working – Return (bar)	200	200	200	200
Reservoir:	Capacity (l)	10	10	10	10
Hydraulic Fluid:	Type	USE ONLY ENERPAC® HF-95 HYDRAULIC OIL			
Noise Level:	(dbA)	75	75	75	75
Weight:	without oil (kg)	42	78	42	78
	with full oil tank (kg)	51	87	51	87
Additional Features:	IP Rating	IP 54	IP 54	IP54	IP 54
	Heat Exchanger		✓		✓
	Skid Bar				
	Roll Cage		✓		✓
	Wheel Base		✓		✓
	Digital LCD Display	✓	✓	✓	✓

Specification

Pump Models 76503-02000 / 76503-02500 / 76504-02000 / 76504-02500

PUMP SPECIFICATION					
Pump Model:	PART NUMBER	76503-02000	76503-02500	76504-02000	76504-02500
	Name	PRO240-A	PRO240-F	PRO415-A	PRO415-F
	Enerpac® Pump Series	ZE4	ZE4	ZE4	ZE4
	Valve Part Number	VE42TQ-24V	VE42TQ-24V	VE42TQ-24V	VE42TQ-24V
Motor:	Power (kW)	1.12	1.12	1.12	1.12
Power Supply:	Voltage (V)	208-240	208-240	380-415	380-415
	Frequency (Hz)	50-60	50-60	50-60	50-60
	Phase	3	3	3	3
Current:	Full Load Amps (A)	6.8	6.8	3.0	3.0
Output Flow Rate:	l/min. at 7 bar	8.9	8.9	8.9	8.9
	l/min. at 50 bar	8.2	8.2	8.2	8.2
	l/min. at 350 bar	0.8	0.8	0.8	0.8
	l/min. at 600 bar	0.8	0.8	0.8	0.8
Pressure:	Maximum (bar)	600	600	600	600
	Working – Pull (bar)	510	510	510	510
	Working – Return (bar)	200	200	200	200
Reservoir:	Capacity (l)	10	10	10	10
Hydraulic Fluid:	Type	USE ONLY ENERPAC® HF-95 HYDRAULIC OIL			
Noise Level:	(dbA)	75	75	75	75
Weight:	without oil (kg)	42	78	42	78
	with full oil tank (kg)	51	87	51	87
Additional Features:	IP Rating	IP 54	IP 54	IP54	IP 54
	Heat Exchanger		✓		✓
	Skid Bar				
	Roll Cage		✓		✓
	Wheel Base		✓		✓
	Digital LCD Display	✓	✓	✓	✓

Specification

Pump Models 76505-02000 / 76505-02500 / 76506-02300 / 76507-2300

PUMP SPECIFICATION					
Pump Model:	PART NUMBER	76505-02000	76505-02500	76506-02300	76507-02300
	Name	PRO480-A	PRO480-F	PRO115E-D	PROE220E-D
	Enerpac® Pump Series	ZE4	ZE4	ZU4	ZU4
	Valve Part Number	VE42TQ-24V	VE42TQ-24V	VE42TQ-115V	VE42TQ-230V
Motor:	Power (kW)	1.12	1.12	1.25	1.25
Power Supply:	Voltage (V)	460-480	460-480	115	208-240
	Frequency (Hz)	50-60	50-60	50-60	50-60
	Phase	3	3	1	1
Current:	Full Load Amps (A)	2.4	2.4	21.0	11.0
Output Flow Rate:	l/min. at 7 bar	8.9	8.9	11.5	11.5
	l/min. at 50 bar	8.2	8.2	8.8	8.8
	l/min. at 350 bar	0.8	0.8	1.2	1.2
	l/min. at 600 bar	0.8	0.8	1.0	1.0
Pressure:	Maximum (bar)	600	600	600	600
	Working – Pull (bar)	510	510	510	510
	Working – Return (bar)	200	200	200	200
Reservoir:	Capacity (l)	10	10	4	4
Hydraulic Fluid:	Type	USE ONLY ENERPAC® HF-95 HYDRAULIC OIL			
Noise Level:	(dbA)	75	75	90	90
Weight:	without oil (kg)	42	78	32	32
	with full oil tank (kg)	51	87	36	36
Additional Features:	IP Rating	IP 54	IP 54	IP54	IP 54
	Heat Exchanger		✓	✓	✓
	Skid Bar			✓	✓
	Roll Cage		✓		
	Wheel Base		✓		
	Digital LCD Display	✓	✓	✓	✓

Specification

Pump Models 76508-02000 / 76508-02500 / 76510-02500 / 76510-2500

PUMP SPECIFICATION					
Pump Model:	PART NUMBER	76508-02000	76508-02500	76510-02000	76510-02500
	Name	PRO240 PLUS-A	PRO240 PLUS-F	PRO415 PLUS-A	PRO415 PLUS-D
	Enerpac® Pump Series	ZE6	ZE6	ZE6	ZE6
	Valve Part Number	VE42TQ-24V	VE42TQ-24V	VE42TQ-24V	VE42TQ-24V
Motor:	Power (kW)	5.6	5.6	5.6	5.6
Power Supply:	Voltage (V)	208-240	208-240	380-415	380-415
	Frequency (Hz)	50-60	50-60	50-60	50-60
	Phase	3	3	3	3
Current:	Full Load Amps (A)	16.8	16.8	10.2	10.2
Output Flow Rate:	l/min. at 7 bar	12.3	12.3	12.3	12.3
	l/min. at 50 bar	12.2	12.2	12.2	12.2
	l/min. at 350 bar	2.9	2.9	2.9	2.9
	l/min. at 600 bar	2.7	2.7	2.7	2.7
Pressure:	Maximum (bar)	600	600	600	600
	Working – Pull (bar)	510	510	510	510
	Working – Return (bar)	200	200	200	200
Reservoir:	Capacity (l)	10	10	10	10
Hydraulic Fluid:	Type	USE ONLY ENERPAC® HF-95 HYDRAULIC OIL			
Noise Level:	(dbA)	80	80	80	80
Weight:	without oil (kg)	69	104	69	104
	with full oil tank (kg)	78	113	78	113
Additional Features:	IP Rating	IP 54	IP 54	IP54	IP 54
	Heat Exchanger		✓		✓
	Skid Bar				
	Roll Cage		✓		✓
	Wheel Base		✓		✓
	Digital LCD Display	✓	✓	✓	✓

Specification

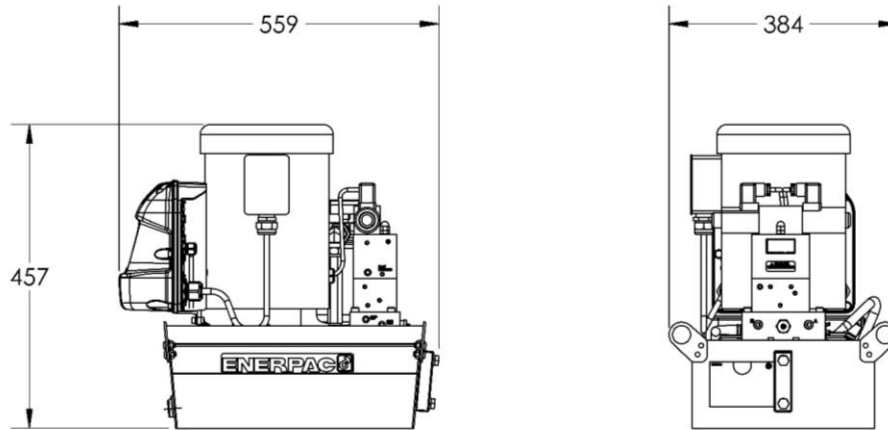
Pump Models 76511-02000 / 76511-02500

PUMP SPECIFICATION			
Pump Model:	PART NUMBER	76511-02000	76511-02500
	Name	PRO480 PLUS-A	PRO480 PLUS-D
	Enerpac® Pump Series	ZE6	ZE6
	Valve Part Number	VE42TQ-24V	VE42TQ-24V
Motor:	Power (kW)	5.6	5.6
Power Supply:	Voltage (V)	460-480	460-480
	Frequency (Hz)	50-60	50-60
	Phase	3	3
Current:	Full Load Amps (A)	8.4	8.4
Output Flow Rate:	l/min. at 7 bar	12.3	12.3
	l/min. at 50 bar	12.2	12.2
	l/min. at 350 bar	2.9	2.9
	l/min. at 600 bar	2.7	2.7
Pressure:	Maximum (bar)	600	600
	Working – Pull (bar)	510	510
	Working – Return (bar)	200	200
Reservoir:	Capacity (l)	10	10
Hydraulic Fluid:	Type	USE ONLY ENERPAC® HF-95 HYDRAULIC OIL	
Noise Level:	(dbA)	80	80
Weight:	without oil (kg)	69	104
	with full oil tank (kg)	78	113
Additional Features:	IP Rating	IP 54	IP 54
	Heat Exchanger		✓
	Skid Bar		
	Roll Cage		✓
	Wheel Base		✓
	Digital LCD Display	✓	✓

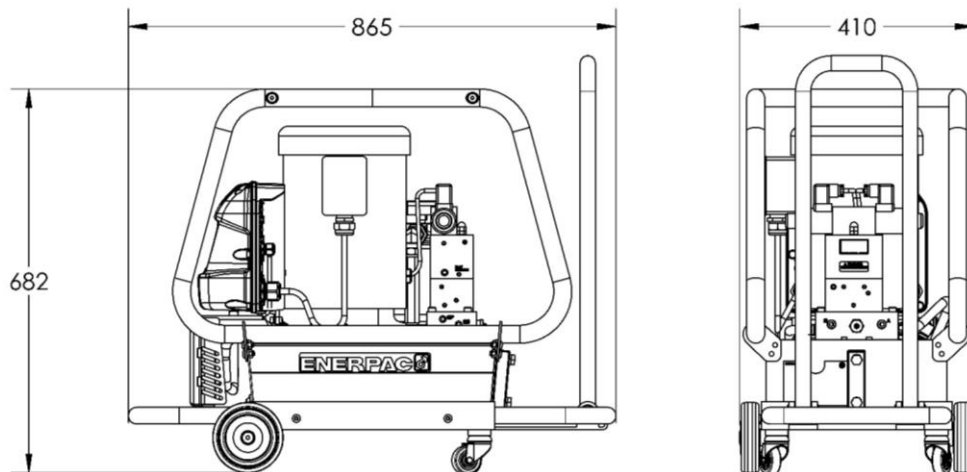
Specification

Pump Unit Dimensions

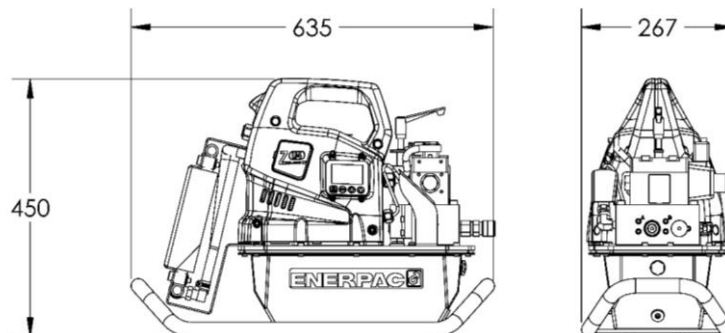
- (a) Pump Models 76501-02000 / 76503-02000 / 76504-02000 / 76505-02000 / 76508-02000 / 76510-02000 / 76511-02000



- (b) Pump Models 76501-02500 / 76503-02500 / 76504-02500 / 76505-02500 / 76508-02500 / 76510-02500 / 76511-02500



- (c) Pump Models 76506-02300 / 76507-02300



All dimensions are shown in millimetres.

Putting Into Service

Principle of Operation

IMPORTANT - READ BOTH THE SAFETY RULES ON PAGE 3 AND 4 AND PLACING TOOL INSTRUCTION MANUAL CAREFULLY BEFORE PUTTING INTO SERVICE

The PRO units are high pressure hydraulic pumps delivering two different operating pressures for the pull and return cycle of Avdel® placing tools; High pressure (c510bar) during the pull cycle and a lower pressure (c200bar) during the return cycle.

When connected to the correct power supply and then coupled electrically and hydraulically to the placing tool, the pump will operate when the trigger switch on the placing tool is activated.

When the trigger switch is depressed, the motor will start and the solenoid valve located in the hydraulic pump unit is energised, directing the pressurised oil flow to the pull side of the placing tool piston. This also allows the oil in the return side of the placing tool to flow to the reservoir. The placing tool piston will move rearwards.

Releasing the trigger switch will cause the solenoid to de-energise and direct the flow of pressurised oil into the return side of the placing tool piston. The oil in the pull side will be directed to the reservoir simultaneously. The placing tool piston will then return.

If the trigger is not released, the placing tool piston will continue move towards the rear of the tool until it reaches the end of its stroke. The pressure in the pull side will then increase until a preset 'High Pressure' value is achieved (refer to pages 20 to 22). At this point the solenoid valve will automatically de-energise and reverse the flow of pressurised oil to the return side of the placing tool.

At the point of releasing the trigger or when the High Pressure value is achieved, the solenoid valve will de-energise and activate a preset 'Return Timer'. This controls the time that the pump motor will continue run before switching to the idle mode. The timer can be manually set between 5 and 20 seconds to ensure that the placing tool piston always fully returns to the forward position (refer to page 19).

When the piston returns to the fully forward position, the pressure will increase to preset low pressure value - c200bar. The pump motor will continue to run until the Return Timer has expired. After this time period the motor will stop automatically and valve will switch to the idle position. The solenoid valve will then automatically cycle to release pressurised oil to the reservoir from both the pull and return side of the placing tool.

This keeps the installation tool in the forward position. No pressure will be present in the hydraulic system at this point.

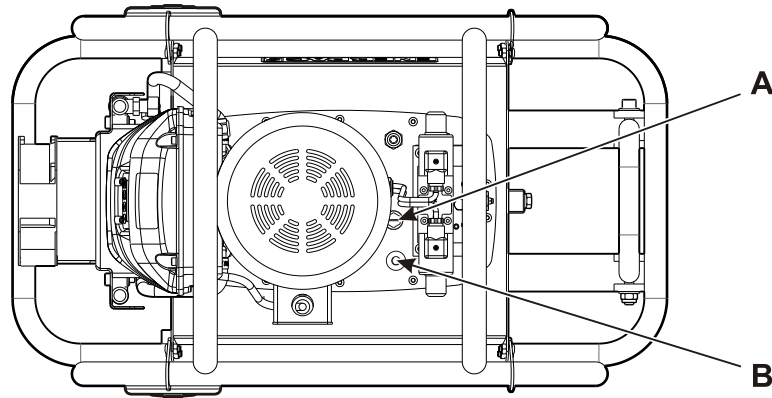
The hydraulic pump unit will automatically start up on depression of the tool trigger switch.

Preparation for Use

- Position the pump to ensure that air flow around the motor and cooling fan is unobstructed. Keep the motor and cooling fan clean to ensure maximum cooling during operation.
- For shipping purposes, a red shipping plug (A) is installed in the breather port on the top of the reservoir. Before using, replace the shipping plug with the black breather cap supplied. **Note:** The breather port is separate from the oil fill port (B). Oil fill port (B) uses a SAE #10 plug. Refer to the illustration on page 12.
- Check the oil level of the pump prior to start-up. If necessary add clean oil by removing plug (B) from the cover plate. The reservoir is full when the oil level reaches the top of the sight glass.
- Use only Enerpac® HF oil – the use of any other oil may cause the pump to malfunction and will render the Enerpac® warranty null and void. Hydraulic oil is available to order under the following part numbers.

Putting Into Service

Preparation for Use (continued)



HYDRAULIC OIL			
PART NUMBER	07992-00081	07992-00082	07992-00083
Enerpac® Part Number	HF-95X	HF-95Y	HF-95T
Volume	1 Litre	5 Litres	20 Litres
Viscosity	32 mm²/s	32 mm²/s	32 mm²/s

- **IMPORTANT** - Add oil only when the placing tool piston is in the fully forward position or the system will contain more oil than the reservoir can hold.
- Ensure that the mains power supply to the pump unit is turned 'Off'.

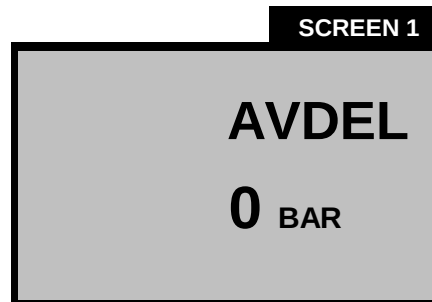
IMPORTANT – BEFORE PUTTING THE TOOL AND HOSE ASSEMBLY INTO SERVICE:

- ENSURE THAT THE PUMP PRESSURE RELIEF VALVES HAVE BEEN SET IN ACCORDANCE WITH THE INSTRUCTION ON PAGES 20 TO 22 AND THE MAXIMUM PRESSURES SPECIFIED FOR THE PLACING TOOL AND HOSES.
- ENSURE THAT BOTH ITEMS ARE PRIMED WITH HYDRAULIC FLUID IN ACCORDANCE WITH THE PROCEDURE IN THE PLACING TOOL INSTRUCTION MANUAL AND THE INSTRUCTIONS ON PAGE 20.
- Connect the hydraulic hose quick couplers to the pump unit before connecting the electrical control cable. Hoses and control cable must be connected in this order and disconnected in reverse order.
- Switch on the mains supply to the hydraulic pump unit. Wait 5 seconds for the pump unit to complete the boot sequence, before pressing the trigger switch. When all set the LCD screen on the pump unit will display 'AVDEL' and '0 bar'.
- During the boot sequence the pump control system identifies any trigger operation as a potential malfunction and prevents the motor from starting. The LCD screen will display 'BUTTON FAULT' in this instance. Reset by switching off the power supply for 10 seconds.
- Depress and release the placing tool trigger switch a few times to almost the full stroke of the tool to circulate hydraulic fluid.
- Observe action of tool. Check for fluid leaks and ensure that in the idler mode the piston is in the fully forward position.

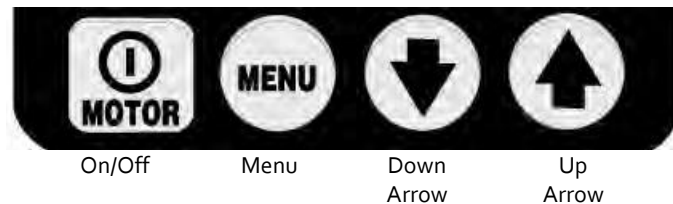
Putting Into Service

Pump LCD Menus and Operating Instructions

- Connect the unit to the power supply and switch on. Wait 5 seconds for the pump unit to complete the boot sequence, before pressing the trigger switch. When all set, the LCD screen on the pump unit will display 'AVDEL' and a numeric display of the current pump-pressure. This should read '0 BAR'.



- During the boot sequence the pump control system identifies any trigger operation as a potential malfunction and prevents the motor from starting. The LCD screen will display 'BUTTON FAULT' in this instance. Reset by switching off the power supply for 10 seconds.
- In addition to the tool trigger switch, which is used to operate the basic function of the pump, the pump control unit also has four buttons below the LCD screen that are the main interface between the operator and the unit.



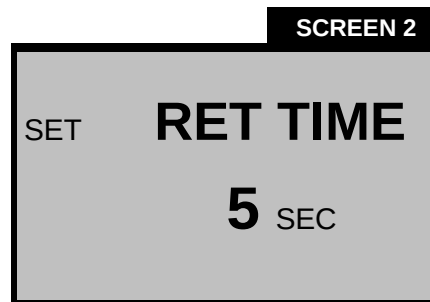
- The On/Off MOTOR button toggles the motor Off. The Off function is available on this button even if the pump is **not** in the LOCAL mode, but is operated by the placing tool.
- The MENU button enables the operator to step from normal operational mode into menus. With repeated pressing the operator steps through the various menus. Pressing the Menu button also saves any changes made. To return to the normal operational mode, press and hold the Menu button for two seconds or don't push any button for 60 seconds.
- The Down Arrow and Up Arrow buttons serve two purposes. When the display shows one of the menus, the Down Arrow and Up Arrow buttons are used to step through the menu's options. When the pump is placed in LOCAL Mode, the Down Arrow and Up Arrow buttons switch the valve solenoid between the pull and return side of the placing tool. The placing tool trigger is non-operational in LOCAL mode.

Putting Into Service

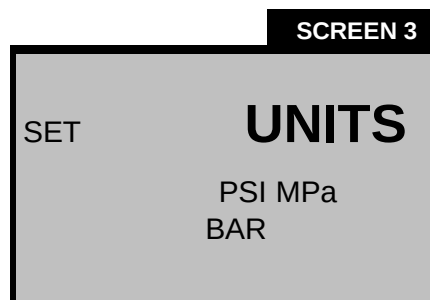
LCD Menus

The software provides the operator with the following Menus:

- **RET TIME** – This screen allows the operator to set the value of the Return Timer. This timer controls the time that the pump motor will continue to run, after releasing the trigger or achieving the 'High Pressure' value, before switching to the idle mode. Set the timer between 5 and 20 seconds by pressing the Down or Up Arrow buttons. The time will change in increments of 1 second. Save the setting and step forward using the MENU button.



- **UNITS** – This screen allows the operator to set the units of pressure-measurement that are displayed on the screen during operation of the pump. Set the pressure units to PSI / MPa / BAR by pressing the Down or Up Arrow buttons. BAR is the default setting. Save the setting and step forward using the MENU button.

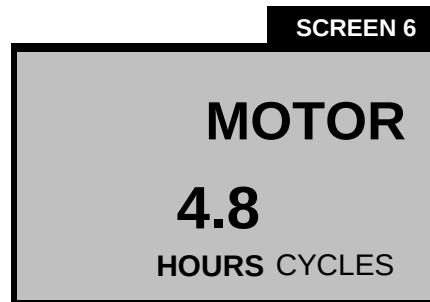


- **AUTOMODE ON** – (Not shown) This screen indicates that the pump is set to operate in 'Automode', whereby the preset 'High Pressure' value controls the point at which solenoid valve will automatically de-energise and reverse the flow of pressurised oil to the return side of the placing tool. This function is locked and cannot be changed.
- **HI PRESS** – This screen allows the operator to set the maximum pull pressure to which the placing tool will operate and auto-return. Set the high pressure value by pressing the Down or Up Arrow buttons. The pressure will change in increments of 10 bar. Save the setting and step forward using the MENU button.

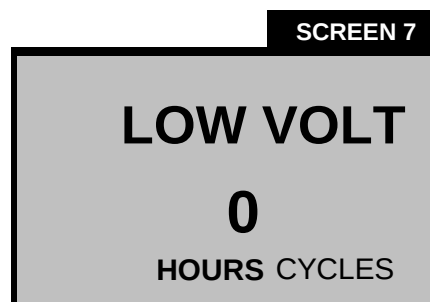


Putting Into Service

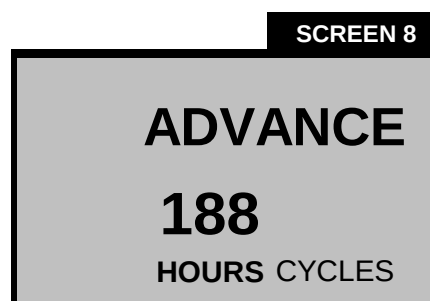
- **MOTOR** – This screen displays the number of hours or On/Off cycles the motor has been operated. Toggle between Hours and Cycles by pressing the Down or Up Arrow buttons. The counter is non-resettable. Save the setting and step forward using the MENU button.



- **LOW VOLT** – This screen displays the low voltage hour-meter (non-resettable). "LOW VOLT" is defined as an operating condition with the main power supply at or below 80% of nominal voltage. This screen allows the operator to read the number of hours the pump has been operated in a low voltage condition. Step forward by pressing the MENU button.

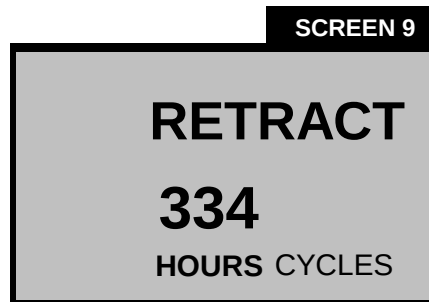


- **ADVANCE** – This screen displays the number of hours (On/Off cycles) the Advance solenoid has been operated. This is the placing tool pull cycle. Toggle between **HOURS** and **CYCLES** by pressing either the Down or Up Arrow buttons. Step forward by pressing the MENU button.



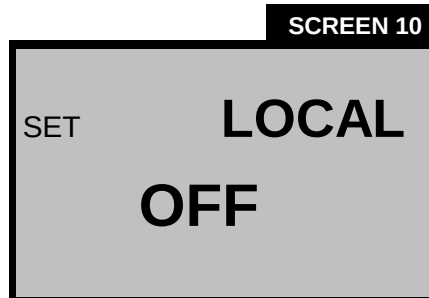
Putting Into Service

- **RETRACT** – This screen displays the number of hours (On/Off cycles) the Retract solenoid has been operated. This is the placing tool return cycle. Toggle between **HOURS** and **CYCLES** by pressing either the Down or Up Arrow buttons. Step forward by pressing the MENU button.



- **LOCAL** – This screen allows the operator to toggle the LOCAL mode ON or OFF, default is OFF. With LOCAL mode ON, the shroud buttons replace the placing tool trigger button as the method to operate the pump. In LOCAL mode the Up Arrow switches the solenoid valve between the two positions and the MOTOR On/Off will start and stop the motor/pump. Toggle LOCAL mode ON or OFF by pressing the Down (Up) Arrow button. Save setting and step forward by pressing the MENU button.

Note: For normal operation LOCAL must be set to OFF.



- **LANGUAGE** – This screen allows the operator to change the display language by pressing the Down (Up) Arrow buttons. Save setting and step forward by pressing the MENU button.



Putting Into Service

- **DIAGNOSE** – This screen allows the operator to troubleshoot connection issues between the placing tool and the pump by displaying if the microprocessor has received a signal from the trigger button. No signal indicates the problem is most likely with the trigger or trigger control cord.



00001 BAR displayed when placing tool trigger button is not activated.
01001 BAR displayed when the placing tool trigger is pressed.

Return Timer Setting

The pump has an adjustable Return Timer that allows operator to set the length of time that the motor will run, after releasing the trigger or achieving the 'High Pressure' value, before switching to idle mode.

The timer can be set at any value between 5 and 20 seconds, but must be adjusted to allow the placing tool piston sufficient time to fully return before switching the motor off.

The following timer settings are recommended for the Avdel® range of placing tools and pumps.

PUMP RETURN TIMER SETTING				
TOOL PART NUMBER	73430-02000	73432-02000	73434-02000	73435-02000
TOOL MODEL	AV™10	AV™15	AV™30	AV™50
ZU4 Pump – Timer Setting	5 seconds	5 seconds	8 seconds	10 seconds
ZE4 Pump – Timer Setting	5 seconds	5 seconds	8 seconds	10 seconds
ZE6 Pump – Timer Setting	5 seconds	5 seconds	5 seconds	6 seconds

The process below explains how to correctly set the Return Timer.

- Connect the unit to the power supply and switch on as described on pages 13 and 14.
- Press the MENU button on the LCD screen until the 'RET TIME' menu is displayed.
- Use the Up and Down Arrows to adjust to the timer in 1 second intervals to the desired value.
- Save the setting and return to the 'AVDEL' display by pressing and holding the MENU button for 2 seconds. The timer is now set.

Putting Into Service

Pressure Settings

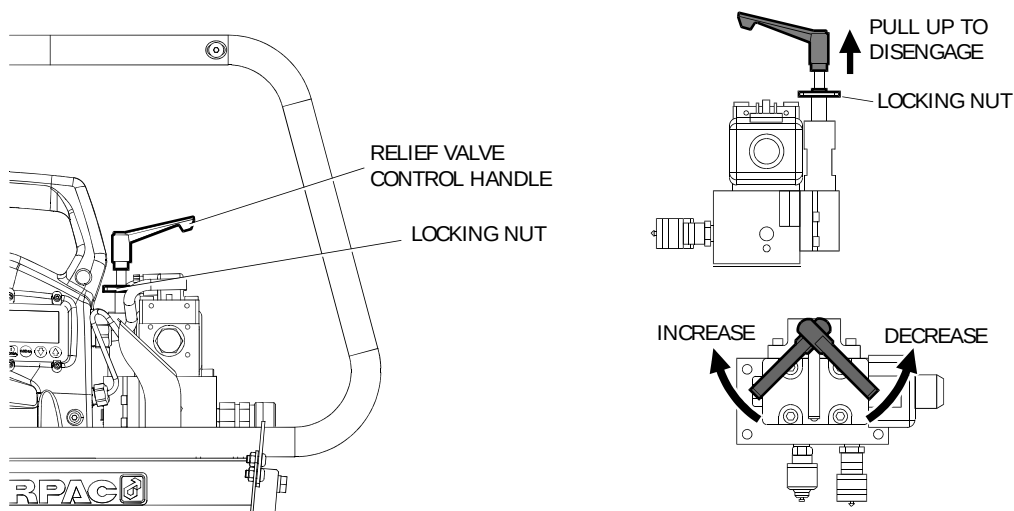
The pump has two methods for limiting the pull / advance pressure to the placing tool and further pressure relief valve for limiting the return pressure. The process below explains how to correctly set these pressure limits.

Pull / Advance Pressure Settings:

IMPORTANT – THE PULL / ADVANCE PRESSURE RELIEF VALVE SETTING MUST NOT EXCEED 550 BAR.

IMPORTANT – THE HIGH PRESSURE ('HI PRESS') SETTING MUST NOT EXCEED 510 BAR WHEN CONNECTED TO THE PLACING TOOL.

- Disconnect the placing tool and hoses from the pump.
- Connect the unit to the power supply and switch on, as described on pages 11 and 12.
- Activate the LOCAL mode by displaying the 'LOCAL' menu and toggling the setting to 'ON' using the Arrow buttons. Save the setting by pressing the MENU button once.
- Display the 'HI PRESS' menu and adjust the value to 600 BAR using the Up Arrow button. Save the setting and return to the 'AVDEL' display by pressing and holding the MENU button for 2 seconds.
- Turn on the pump by pressing the MOTOR On/Off button.
- Press and hold the Up Arrow. This will switch the valve solenoid to the pull / advance position and the relief valve pressure setting will be displayed on the LCD screen. Releasing the Up Arrow will switch the valve solenoid back to the return position and the return relief valve pressure will be displayed on the screen. The motor will then switch off after 5 to 20 seconds and the solenoid valve will switch to the idle position.
- Loosen the relief valve locking nut and turn the relief valve control handle counter-clockwise until there is a light drag when turning, this will decrease the pull / advance pressure. Refer to the illustration below.



Putting Into Service

Pressure Settings

- Start the pump and press and hold the Up Arrow as previously described to build pressure in the pull / advance circuit. While holding the Up Arrow button turn the relief valve control handle until the pressure display reads **530 to 550 BAR**.
- **Note:** To get an accurate setting, decrease the pressure to a point below the final setting and then slowly increase the pressure until it reaches the final setting.
- Tighten the relief valve locking nut.
- Release the Up Arrow button. Then recheck the final pressure setting by pressing the Up Arrow and pressurising the system.
- De-activate the LOCAL mode by displaying the 'LOCAL' menu and toggling the setting to 'OFF'. Save the setting by pressing the MENU button once.
- Display the 'HI PRESS' menu and adjust the value to **510 BAR** using the Down Arrow button. Save the setting and return to the 'AVDEL' display by pressing and holding the MENU button for 2 seconds.

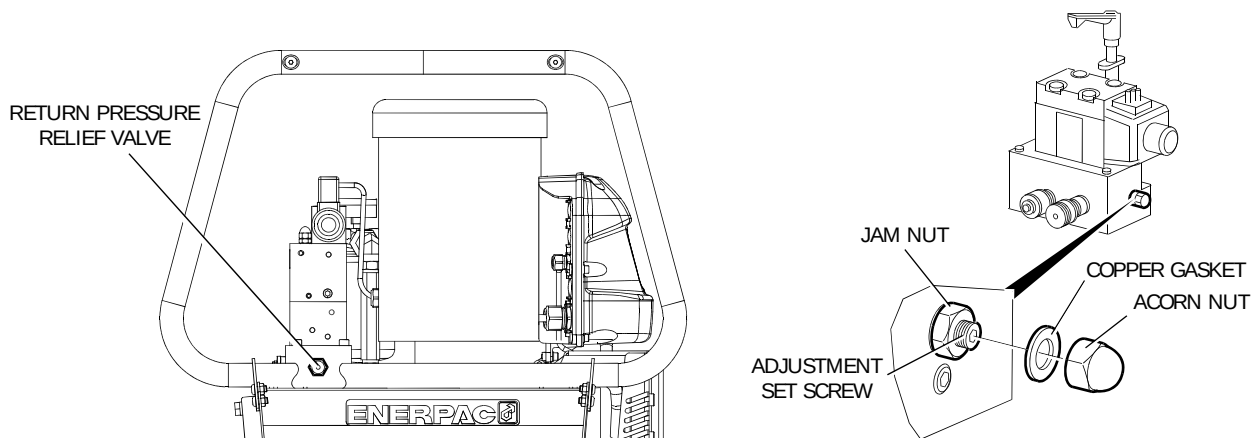
Note: For the pressure relief valve and High Pressure switch to function correctly, the pressure relief valve setting must be at least 20 bar higher than the High Pressure switch value.

Return Pressure Settings:

IMPORTANT – THE RETURN PRESSURE RELIEF VALVE SETTING MUST NOT EXCEED 225 BAR.

The return pressure relief valve will be factory set, but should this need adjusting the following process must be followed.

- Disconnect the placing tool and hoses from the pump.
- The return pressure relief valve is positioned on the left hand side of the valve block manifold. Refer to the illustration below.
- Connect the unit to the power supply and switch on as described on page 13 and 14.



Putting Into Service

Pressure Settings

- Activate the LOCAL mode by displaying the 'LOCAL' menu and toggling the setting to 'ON' using the arrow buttons. Save the setting by pressing the Menu button once.
- Turn on the pump by pressing the MOTOR On/Off button once. The return relief valve pressure will be displayed on the LCD screen. The pressure will be displayed for 5 to 20 seconds, depending on the Return Timer setting, after this time the motor will switch off and the solenoid valve will switch to the idle position.
- Remove the acorn nut and copper gasket and loosen the jam nut.
- Start the pump as described above to build pressure in the return circuit. Then using an Allen key, turn the adjustment set screw counter clockwise to decrease the pressure and clockwise to increase the pressure.
- Adjust the set screw until the pressure display reads **225 BAR**.
- **Note:** To get an accurate setting, decrease the pressure to a point below the final setting and then slowly increase the pressure until it reaches the final setting.
- Tighten the jam nut when the desired pressure is set and then replace the copper gasket and acorn nut. Then recheck the final pressure setting by pressing the MOTOR On/Off button once and pressurising the system.
- De-activate the LOCAL mode by displaying the 'LOCAL' menu and toggling the setting to 'OFF'. Save the setting by pressing the MENU button once. Save the setting and return to the 'AVDEL' display by pressing and holding the MENU button for 2 seconds.

Priming the Hydraulic Hose Set

Before use, the Hydraulic Hose Set will need priming with oil to ensure all air is removed from each of the two hoses.

- Take the first hose within the hose set and connect the male quick coupler on one end to the female quick coupler on pump valve port A. Then take the female quick coupler on the other end of the hose and connect this to the male quick coupler on pump valve port B.
- Connect the pump unit to the power supply and switch on as described on pages 13 and 14.
- Activate the LOCAL mode by displaying the 'LOCAL' menu and toggling the setting to 'ON' using the Arrow buttons. Save the setting by pressing the MENU button and holding for 2 seconds.
- Start the pump by pressing and holding the Up Arrow for approximately 20 seconds. Oil will be pumped from the reservoir tank through port A and into the hose and then back into the reservoir via port B. Any air in the hose will be expelled into the reservoir.
- Release the Up Arrow button and then press MOTOR On/Off button once to stop the motor. The solenoid valve will then switch to the idle position.
- De-activate the LOCAL mode by displaying the 'LOCAL' menu and toggling the setting to 'OFF'. Save the setting by pressing the MENU button and holding for 2 seconds.
- Disconnect the pump unit from the power supply and then disconnect the hydraulic hose from both valve ports.
- Repeat the above procedure to prime the second hydraulic hose.

Maintenance and Servicing

IMPORTANT - Only fully trained and qualified hydraulic technicians should service the pump or system components. Please contact Avdel® for your servicing, repair and training requirements. Service Instructions and repair parts sheet are available on request.

The following checks and maintenance must be carried out on a regular basis.

Frequently inspect all system components for leaks or damage. Repair or replace damaged components. Electrical components, for example, the power-cord, may only be repaired or replaced by a qualified electrician, adhering to all applicable local and national codes.

Daily

- Check the pump and hoses for oil leaks.
- Check the oil level of the pump prior to start-up, and add oil, if necessary, by removing the fill port cap. Always be sure that the placing tool piston is fully returned before adding fluid to the reservoir. Refer to page 13 and 14.
- Check the stroke of the placing tool.
- Check the function of the High Pressure relief valve.

Weekly

- Check for wear and tear on trailing cable.
- Check for wear and tear on umbilical sleeve, trigger control cable and hydraulic hoses.
- Check for leakage and/or wear and tear on hydraulic quick connectors.
- Check tightness of hydraulic fittings and fasteners on the pump unit.
- Check for oil contamination.

Change Oil and Clean Reservoir

Enerpac® HF oil is a crisp blue colour. Frequently check oil condition for contamination by comparing pump oil to new Enerpac® oil. As a general rule, completely drain and clean the reservoir every 250 hours or more frequently if used in dirty environments.

Note: This procedure requires that you remove the pump from the reservoir. Work on a clean bench and dispose of used oil according to local codes.

- Unscrew the 13 bolts holding the cover plate to the reservoir and lift the pump unit out of the reservoir. Be careful not to damage the filter screen.
- Pour all oil out of the reservoir.
- Thoroughly clean the reservoir and reservoir magnet with a suitable cleaning agent.
- Remove the pick-up filter screen for cleaning. (Do not pull on the screen or the bottom of the intake to avoid possible damage). Clean the screen with solvent and a soft brush. Reinstall.
- Reassemble the pump and reservoir, installing a new reservoir gasket.
- Fill the reservoir with clean Enerpac® hydraulic oil. The reservoir is full when oil level is in middle of the sight gauge.

Maintenance and Servicing

Changing the Filter Element

A return line filter may be ordered as an accessory to the pump. The filter element should be replaced every 250 hours, or more frequently in dirty environments. The filter manifold is equipped with a 25 psi (1.7 bar) bypass to prevent over pressure rupture if filter plugging occurs. Filter element replacement part number is PF25.

Enerpac® HF Hydraulic Oil General Safety Data

First Aid

SKIN:

Unlikely to cause harm to the skin on brief or occasional contact but prolonged or exposure may lead to dermatitis. Wash skin thoroughly with soap and water as soon as reasonably practicable. Remove heavily contaminated clothing and wash underlying skin.

Laundry contaminated clothing.

ORAL:

Unlikely to cause harm if accidentally swallowed in small doses, though larger quantities may cause nausea and diarrhea. If contamination of the mouth occurs, wash out thoroughly with water. Except as a deliberate act, the ingestion of large amounts of product is unlikely. If it should occur, do not induce vomiting; obtain medical advice. Take person to nearest medical centre.

EYES:

Unlikely to cause more than transient stinging or redness if accidental eye contact occurs.

Wash eyes thoroughly with copious quantities of water, ensuring eyelids are held open. Obtain medical advice if any pain or redness develops or persists.

DISPOSAL:

Remove all spills with inert absorbent material. Ventilate spill area. Place contaminated materials in a disposable container and dispose in a manner consistent with local regulations.

Fire

FLASH POINT: 200°C.

Extinguish with either dry chemical, foam or carbon dioxide. Do not enter confined space without self contained breathing apparatus.

Handling

Use barrier cream or oil resistant gloves.

Storage

Undercover and consistent with local regulations for inflammable material.

Fault Diagnosis

IMPORTANT - Only fully trained and qualified hydraulic technicians should service the pump or system components. Please contact Avdel for your servicing, repair and training requirements. Service Instructions and repair parts sheet are available on request.

SYMPTOM	POSSIBLE CAUSE	REMEDY	PAGE REF.
Pump/Motor will not start	Fault condition	Refer to Pump LCD Menus and Operating Instructions and Fault Conditions for details	15 to 18, 27
	Incorrect power supply	Check power supply against specification	7 to 11
	Trigger control cable not connected correctly	Check control cable is correctly connected at pump and placing tool	13, 15
	Damaged trigger switch	Refer to placing tool Instruction manual for repair/replacement	
Trigger Button does not function	Pump in local mode	Turn off Local Mode - Refer to Pump LCD Menus and Operating Instructions	18
		Refer to Diagnose Menu	19
	Trigger, control cable or connector damaged	Refer to placing tool Instruction manual for repair/replacement	
Motor running but placing tool does not function	Hydraulic Hoses not connected	Check for correct connections at pump and placing tool	13, 15
	Faulty hydraulic quick couplers	Replace quick couplers - refer to placing tool instruction manual	
	Low oil level	Add oil - refer to Putting into Service and Maintenance and Servicing	13, 14, 23, 24
	External system leak	Inspect and repair or replace	
	Internal leak in pump	See authorized service center	
	Internal leak in valve	See authorized service center	
	Internal leak in system component	See authorized service center	
Motor stops under load	Low voltage	Refer to Fault Conditions	27
		Turn off other electric loads	
		Use heavier gauge extension cord	
Solenoid valve will not operate	No power or wrong voltage	Connect to correct power source per pump name plate & specification	7 to 11
	Solenoid cable disconnected or damaged	Connect, repair, or replace cable	
	Valve out of adjustment	See authorized service center	

Fault Diagnosis

SYMPTOM	POSSIBLE CAUSE	REMEDY	PAGE REF.
Pump fails to build pressure or less than full pressure	Low oil level	Add oil - refer to Putting into Service and Maintenance and Servicing	13, 14, 23, 24
	Relief valve set too low	Adjust Pull/Advance Pressure Relief Valve and High Pressure setting	20, 21
	External system leak	Inspect and repair or replace	
	Internal leak in pump	See authorized service center	
	Internal leak in valve	See authorized service center	
	Internal leak in system component	See authorized service center	
Pump builds full pressure, but pintail does not break	Breakload greater than placing tool capacity at full pressure.	Refer to placing tool Instruction manual	
	Flow to placing tool blocked	Check hydraulic couplers for full engagement	
	High Pressure value or Pull / Advance Pressure relief valve value set too low	Adjust Pull/Advance Pressure Relief Valve and High Pressure setting	20, 21
Placing tool piston will not return	Return flow restricted or blocked	Check couplers for full engagement and/or fault	
	Hydraulic hoses not connected	Check for correct connections at pump and placing tool	
	Valve malfunction	See authorized service center	
	Cylinder return spring broken	See authorized service center	
Placing tool does not eject the collar from the anvil	Return Timer setting incorrect - set too low	Adjust Return Timer to recommended setting	19
	Return pressure relief valve set too low	Adjust return pressure relief valve to correct setting	21, 22
Piston does not auto-return or auto-returns erratically.	Pressure relief valve setting at or below the High Pressure value	Set user adjustable relief valve 30 bar above "HI PRESS"	20, 21
	High Pressure value below 96 bar	Increase High Pressure value above 96 bar	16, 20
Pump runs hot	Advance or retract flow restricted	Check couplers for full engagement	
	High ambient temperature		
Pump pressure goes above "HI PRESS" value.	Cylinder comes to a sudden stop (i.e., strokes out)	Set user adjustable relief valve 30 bar above "HI PRESS" valve to redirect excess oil flow	20, 21

Fault Diagnosis

Fault Conditions

Any fault will shut down and prevent pump from starting.

Clearing a Fault Condition from the LCD

After the fault causing problem has been corrected, clear the fault message from the LCD by disconnecting electrical power from the pump, wait until all characters clear the LCD (~ 10 seconds), then reconnect power.

Power Failure

Display: "POWER OFF"

The Power Off fault is displayed when the main power supply drops to 65% or less of nominal voltage. The pump will automatically shut off the valves and the motor, and display "Power Off" on the LCD.

Note: Power Off is also displayed for several seconds after the unit is disconnected from electrical power.

Button Fault

Display: "BUTTON FAULT"

The Button Fault is displayed when the microprocessor detects any button press during the boot sequence or if shroud on/off button is held in for more than 3 seconds.

Motor Overload

Display: "MTR OVLD" - Motor Overload

The Motor Overload fault is displayed when the electric current drawn by the motor exceeds the pre-set limit of the internal circuit breaker. (The internal circuit breaker will automatically reset once the condition has been corrected; however, the operator must clear the fault and then press the motor on/off button to restart the motor).

Warning Conditions

All warnings notify operator of abnormal operating condition, however, allow pump to continue operating. Warnings will automatically clear once issue has been resolved.

Low Voltage

Display: "LOW VOLT"

A "Low Voltage" condition is defined as an operating condition with the main power supply is at or below 80% of nominal voltage. While running the pump under this condition, the "Low Voltage" signal will flash on the LCD and the Low Voltage hours will be counted and stored on the control board. Normal pump operation is still provided.

CAUTION: For optimized pump performance it is recommended NOT to run the pump at Low Voltage condition.

Notes

EC-Declaration of Conformity

Original

We, **Avdel UK Limited; Stanley House, Works Road, Letchworth Garden City, Hertfordshire, SG6 1JY UNITED KINGDOM**, declare under our sole responsibility that the product:

Model: Pump Hydraulic Power Unit

Description	Model No.	Description	Model No.
PRO115-A	76501-02000	PRO480-F	76505-02500
PRO115-F	76501-02500	PRO115E-D	76506-02300
PRO220-A	76502-02000	PRO220E-D	76507-02300
PRO220-F	76502-02500	PRO240 PLUS-A	76508-02000
PRO240-A	76503-02000	PRO240 PLUS-D	76508-02500
PRO240-F	76503-02500	PRO415 PLUS-A	76510-02000
PRO415-A	76504-02000	PRO415 PLUS-D	76510-02500
PRO415-F	76504-02500	PRO480 PLUS-A	76511-02000
PRO480-A	76505-02000	PRO480 PLUS-D	76511-02500

To which this declaration relates is in conformity with the following standards:

EMC Directive 89/336/EEC, 92/31/EEC and 93/68/EEC	NEN-EN-ISO 12100-1:2003
EN 55014-1:2001/A2:2002	NEN-EN-ISO 12100-2:2003
EN 55014-2:2001/A1:2002	EN 1050:1997
EN 61000-4-5:1995/A1:2001	ENERPAC® and ACTUANT specifications and standards
NEN-EN 982:1996 + A1:2008	

According to the guidelines of:

The Machinery Directive 2006/42/EC	Low Voltage Directive 73/23/EEC and 93/68/EEC
EMC Directive 89/336/EEC, 92/31/EEC and 93/68/EEC	General Product Safety Directive 2001/95/EEC

A K Seewraj

Technology Manager – EU Blind Fastening

Avdel UK Limited; Stanley House, Works Road, Letchworth Garden City,
Hertfordshire, SG6 1JY UNITED KINGDOM

Signature



Place of issue Letchworth Garden City

Date of issue



This machinery is in conformity with Machinery Directive 2006/42/EC.



For an authorized distributor nearby please check
www.StanleyEngineeredFastening.com/econtact/distributors

<i>Manual Number</i>	<i>Issue</i>	<i>C/N</i>
07900-01030	C	17/206

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STANLEY
Engineered Fastening

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Avdel UK Limited
Stanley House, Works Road
Letchworth Garden City, Hertfordshire, SG6 1JY
Tel. +44 (0)1582 900-000 ~ Fax -001
Enquiries2@sbdinc.com

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