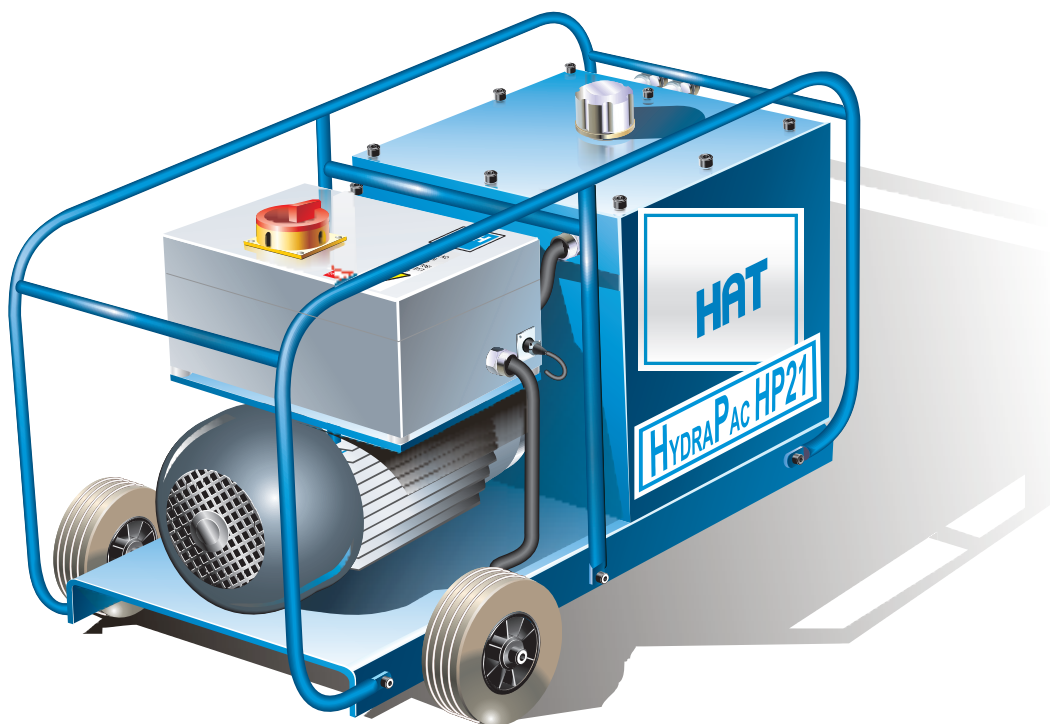


Instruction Manual



HP21, HP41, HP51

HydraPac Hydraulic Power Unit

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Warranty

The ninety day warranty herein expressed shall be the exclusive warranty on items 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 90 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.

Unit Warranty

Seller expressly disclaims any warranty express or implied, as to the condition, design, operation, merchantability or fitness for use of any unit, or part(s) thereof not manufactured and/or supplied by seller. The only warranties made with respect to such unit or part(s) thereof are those made by the manufacturer thereof and seller agrees to cooperate with buyer in enforcing such warranties when such action is necessary. Seller agrees to repair or replace F.O.B. seller's plant, any unit or part(s) thereof manufactured by it and proved to seller to be defective due to faulty workmanship or material.

Safety

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

- 1** Do not use outside the design intent.
- 2** Do not use equipment with this HydraPac other than that recommended and supplied by Avdel UK Limited.
- 3** Any modification undertaken by the customer to the HydraPac shall be the customer's entire responsibility.
- 4** Always disconnect the HydraPac from the power supply before attempting any work.
- 5** The HydraPac should always be positioned on a flat stable surface.
- 6** It is recommended that the HydraPac only be started with hoses and an installation tool attached.
- 7** Do not fit flexible hoses rated at less than 10 000 psi (69 mPa).
- 8** The operating pressure shall not exceed 8000 psi (55.2 mPa).
- 9** Take care to avoid entanglement of the trailing cable with any object on the floor.
- 10** The HydraPac should be kept clean for safe and easy operation.
- 11** When moving the HydraPac from place to place only pull on the handle, not on the hoses.
- 12** Ear protection must be worn by the operator and others in the vicinity utilising lockbolt installation tooling as noise levels for these tools exceed the permitted maximum. For these values see the installation tool technical manuals.

CAUTIONS

AVDEL RECOMMENDS THAT ONLY HYDRADRIV TOOLING BE USED WITH THE HYDRAPACS AS OTHER MAKES OF HYDRAULIC TOOLING MAY NOT OPERATE AT THE SAFE DESIGNED WORKING PRESSURES.

KEEP DIRT AND FOREIGN MATTER OUT OF THE HYDRAULIC SYSTEMS AS THIS WILL CAUSE THE HYDRAPAC TO MALFUNCTION.

Specifications

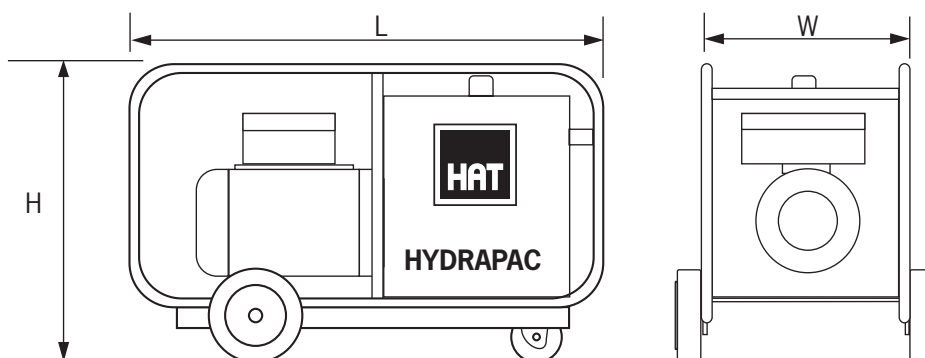
Intent of Use

To convert electrical energy into hydraulic energy that in turn will drive various hand held Hydraulic Powered Tools. The design pressures of these Tools must be compatible with the working pressures stipulated in the Tool Specifications below.

Tool Specification

Model	HP21	HP41	HP51
Electric Motor	2.2 kW 4 pole flange mount		
Power Supply	220/230V 1PH 50 Hz	380/415V 3PH 50 Hz	525V 3PH 50Hz
Full Load Amps	15.00	5.3	3.8
Working Pressure	55.2 mPa (8000 psi)		
Pull	20.7 ma (3000 psi)		
Return			
Delivery Volumes	2.6 l/min	3.3 l/min	3.3 l/min
Hydraulic Fluid	ISO VG 46 OR EQUIVALENT		
Pump	4 Cylinder radial		
Control	24V dc solenoid controlled directional valve coupled to a hydrafast combination pressure control and relief valve		
Length (L)	815 mm (32")		
Height (H)	530 mm (21")		
Width (W)	360 mm (14")		
Mass	98 kg with full oil tank		

Tool Dimensions



Putting into Service

IMPORTANT
Read the safety rules on page 4 carefully

Principle of Operation

The HydraPac is a High Pressure Hydraulic Pump delivering two different operating pressures for the two cycles of the tooling operation. A high pressure for the installation cycle (or pull cycle) and a lower pressure for the ejection cycle (or return cycle). Each HydraPac is provided with 10 m of trailing cable for connection of the electric power supply, a pair of Hydraulic Quick Couplers and an electrical socket for the Control Cord Connection.

When connected to the correct power supply and then coupled hydraulically and electrically to an Installation Tool, the HydraPac will start up on depressing the Trigger Switch on the Installation Tool. With the switch remaining depressed, the solenoid valve in the HydraPac then becomes energised directing the Oil to the High Pressure Installation side of the Installation Tool.

- Note:*
1. *If the Trigger Switch is not released before the piston in the Installation Tool reaches the end of its stroke, the Combination Valve will enter the idle mode thereby safely dumping all the Hydraulic Pressure into the tank. This "Dumping" will also occur if any blockage occurs in the Hydraulic System.*
 2. *In the unlikely event of a total failure of the Primary Safety Hydraulic Pressure Relief Valve Mechanism, a second Safety Relief Valve is located on the Pump Manifold.*

On completion of the LockBolt installation cycle, the trigger switch is released, de-energising the Solenoid Valve which directs the lower pressure oil flow to the return side of the Installation Tool. On completion of the return cycle the Combination Valve automatically puts the HydraPac into "Idle Mode". The oil continues to flow through the Valve Assembly but returns directly to the tank at the idle pressure of 1.3 mPa. On depressing the Tool Trigger Switch, the cycle is initiated.

If the Tool Trigger switch is not depressed within a preset period (normally set at 10 seconds for T10 Tools, 15 seconds for T30 Tools, and 25 seconds for T51 Tools), the HydraPac will enter its "Sleep Mode" thereby conserving electricity and wear and tear on the components.

The period before entering the "Sleep Mode" can be varied to suit the users needs and conditions.

The HydraPac will automatically start up again on depressing the Tool Trigger switch again.

Preparation for Use

- Check the Oil Level in the Tank using the Gauge located at the front of the HydraPac. Fill and/or top-up as required.
Note: Export units are shipped dry.
- Ensure that the Isolator on the HydraPac Electric Enclosure is turned to "Off".
- Connect the Power Supply Trailing Cable to the correct power supply for the HydraPac Model (see page 5) and turn the power supply switch "On".
- Connect one end of the Hose Set Quick Couplers to the HydraPac and the other end to each other.
- Connect the Hose Set Control Cord to the Socket in the Electrical Enclosure on the HydraPac and to the Installation Tool to be used.
- Turn the HydraPac Isolator to "On".
- Depress and release the Installation Tool Trigger Switch. The HydraPac should now be running in the "Idle Mode".
- Allow the HydraPac to go into its "Sleep Mode". Repeat this step and the previous step a few times. This will allow the oil to circulate freely through the hoses and back to the tank removing any possible air from the system.
- With the HydraPac in the "Sleep Mode", connect the Installation Tool to be used to the Hose Set.
- Cycle the Tool a few times checking if the "Sleep Mode" timer allows enough time for the tool to complete its "return cycle".
Note: The timer setting can be increased or decreased to suit individual tools and application conditions.

The HAT System is now ready for use.

Operating Instructions

For Operating Instructions please refer to the Instructions contained in the Installation Tool Manual.

Mechanical Maintenance

WARNINGS

Before commencing with any maintenance whatsoever, the Isolator on the HydraPac Control Box must be turned "OFF" and the Power Supply Trailing Cable be disconnected from the power supply.

Due to the high hydraulic operating pressures, it is imperative that only suitably qualified, trained and equipped personnel be permitted to service or repair these units.

Dismantling the Nose Assembly

Preparation

- Disconnect and remove the hose set and its control cord from the HydraPac.
- Remove the Tank Cover using a 5 mm allen key.
- Remove the Drain Plug with a 13mm spanner and drain the oil.
- Disconnect the electrical connection from the solenoid on the Valve Set using a 4mm flat screwdriver.
- Remove the steel hydraulic pipe connecting the pump to the Valve Set using a 20 mm spanner.

Removing the Valve Set (C025 and C027)

- Note the relative positions of the Male and Female couplers. Unscrew and remove the Hydraulic Quick Couplers **2** using a 24mm spanner.
- Unscrew the Bulkhead Adaptors **1** and remove the Valve Set comprising Directional Valve **101B** and the Combination Valve **114** using a 27 and a 24 mm spanner.

Separating the Valve Set

- Unscrew and remove the four M5 socket screws located in the Directional Valve **101B** using a 4 mm allen key

To Strip the Combination Valve

- Unscrew the four M4 Socket Head Cap Screws **103** securing each of the two Spring Domes **106** using a 3 mm allen key.
- Remove the two Spring Domes and take out the Springs **108** and Bearing Pads **107**.
- Remove the two Plungers **109** from the Combination Valve Body **110** taking care to identify each ones own location.

Directional Valve

The only component on this unit that can be replaced is the Solenoid Coil. This can be removed by unscrewing the nylon securing nut and sliding off the Coil. Care should be taken not to lose the square section rubber cushion between the Nut and the Coil and the 'O' Ring behind the Coil.

Assembly of the coil is simply the reverse to the stripping procedure above.

Removing the Pump

- Remove the eight M10 Nyloc Nuts **36** using a 17 mm spanner
- Slide the Manifold Flange **7** off the Studs **15**.
- Slide the four Pump Elements **8** off the Studs **15** taking care to keep them intact once free of the Bearing **14** by supporting the Piston with a finger.

Removing the Electric Motor

- Push the connecting block for the solenoid out of the Hirschmann Cap and disconnect the two wires using a 4 mm flat screwdriver.
- Unscrew and remove the Gland Clamp Screw using a 17 mm spanner and feed the wire through the Gland **18**.
- Support the Electric Motor **16** and remove the two M6 Socket Head Cap Screws located inside the Tank using a 5 mm allen key.
- Slide the motor away from the tank.
- The Eccentric Shaft Bearing **14** can be removed with a conventional bearing puller.
Note: Only remove this item if it has to be replaced or the motor stripped for extensive maintenance.

Item numbers in **bold** refer to the general assembly and combination valve drawings and parts lists on pages 10-16.

Mechanical Maintenance

Assembly

Fitting the Eccentric Bearing

- Remove the Fan Motor Cover by unscrewing the 4 screws using a 6 mm wide screwdriver.
- Place this end of the Shaft against a solid base.
- Fit the Eccentric Shaft Bearing **14** onto the Shaft.
Note: It is strongly recommended that a small press be utilised for this procedure.
- Replace the Fan Cover and 4 screws using a 4 mm screwdriver.

Installing the Electric Motor

- Ensure that both the Motor Flange, the Gasket and the Mounting Plate **17** are free from any dirt.
- Smear both sides of the Gasket with a non-adhesive sealant.
- Supporting the Motor **16** and ensuring that the Electric Enclosure **32** is on top, slide the motor studs through the holes in the Mounting Plate.
- Secure the Motor to the Plate from inside the Tank with the two M6 Socket Head Cap Screws using a 5 mm allen key
- Feed the Solenoid Wire through the Gland **29** in the Mounting Plate leaving a little slack between the Electric Enclosure Assembly **32** and the Mounting Plate **17** and tighten the Gland Screw using a 17mm spanner.

Installing the Pump

- Ensure that the 'O' rings are firmly in position on each Element's Discharge Port.
- With the Discharge Port facing away from the Mounting Plate **17**, lift the Piston against the Spring and slide the Element **8** over the Studs **15** and the Bearing **14** until they are up against the Mounting Plate. Repeat for all four Elements.
*Note: HP41 and HP51 models have four equal size Elements. The HP21 and HP42 however have two different size elements. Equal size Elements **MUST** be assembled so that they are diametrically opposed.*
- Slide the Manifold Flange **7** over the Studs **15** ensuring that the ports are facing the Elements and that the symbol 'T' is located on top.
- Tighten the eight Nyloc Nuts **36** to 30 Nm in an opposing sequence using a 17 mm socket and torque wrench.

Assembling the Combination Valve

- Replace the two Plungers **109** in their respective ports.
Note: It is essential for efficient Valve Functioning that the Plungers be placed in their original positions.
- Loosen the two nuts with a 10mm spanner and a 5 mm allen key and back-off the Pressure Adjusting Screws on top of the Spring Domes **106** about three turns.
- Insert the Bearing Pads **107** and Springs **108** in that order into the Spring Domes **106**.
- Locate the Spring Dome Spigots in the matching recesses in the Valve Body **110** and secure with the four Screws **103** in each Dome using a 3 mm allen key.

Assembling the Valve Set

- Ensure that the four 'O' Ring Seals **113** are in place on top of the face of the Directional Valve **101**.
- Place the Directional Valve **101** over the Combination Valve **114**, locating the Dowel Pin in the recess provided.
- Secure the two Valves with the four M5 Socket Head Cap Screws **102** using a 4 mm allen key.

Installing the Valve Set

- Screw the two Nuts on the Bulkhead Adaptors **1** as far on as possible by hand and slide the Washers as close as possible to them.
- Ensuring that the two 'O' Rings **111** are in place over Discharge Ports in the Combination Valve **114**, place the Valve over the two holes provided in the tank.
- Screw the long side of the Bulkhead Adaptors **1** into the ports and tighten using a 24 mm spanner
- Secure the valve set to the tank by tightening the two Nuts up against the Washers with a 27 mm spanner.
- Looking from the non-motor end of the HydraPac, fit the Male Quick Coupler **2A** to the Right Hand Side Adaptor and the Female Quick Coupler **2B** to the Left Hand Side and tighten using a 24 mm spanner for both.

Item numbers in **bold** refer to the general assembly and combination valve drawings and parts lists on pages 10-16.

Mechanical Maintenance

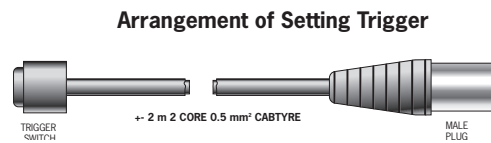
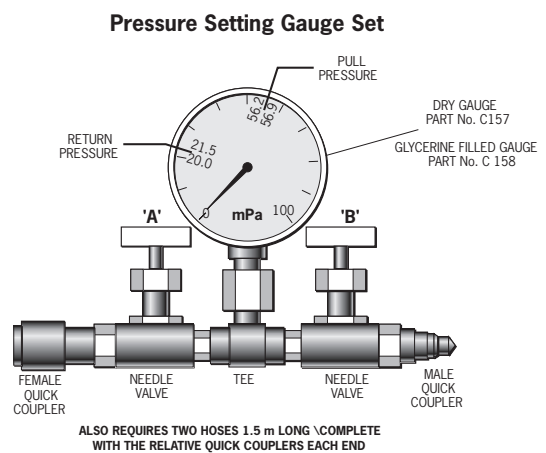
Assembly (continued)

Final Assembly

- Connect the Steel Pipe to the Pump and Valve Set and tighten using a 20 mm spanner.
- Connect the solenoid wire to its terminal block using a 3 mm flat screwdriver. Place the block in position on the solenoid and secure with the screws provided.
- Ensure that the Oil Drain Plug has been replaced and tightened using a 13 mm spanner.
- Fill to the maximum level indicated on the Oil Level Indicator **5** with the grade of hydraulic oil stipulated in the Technical Specifications on page 5.

Pressure Setting

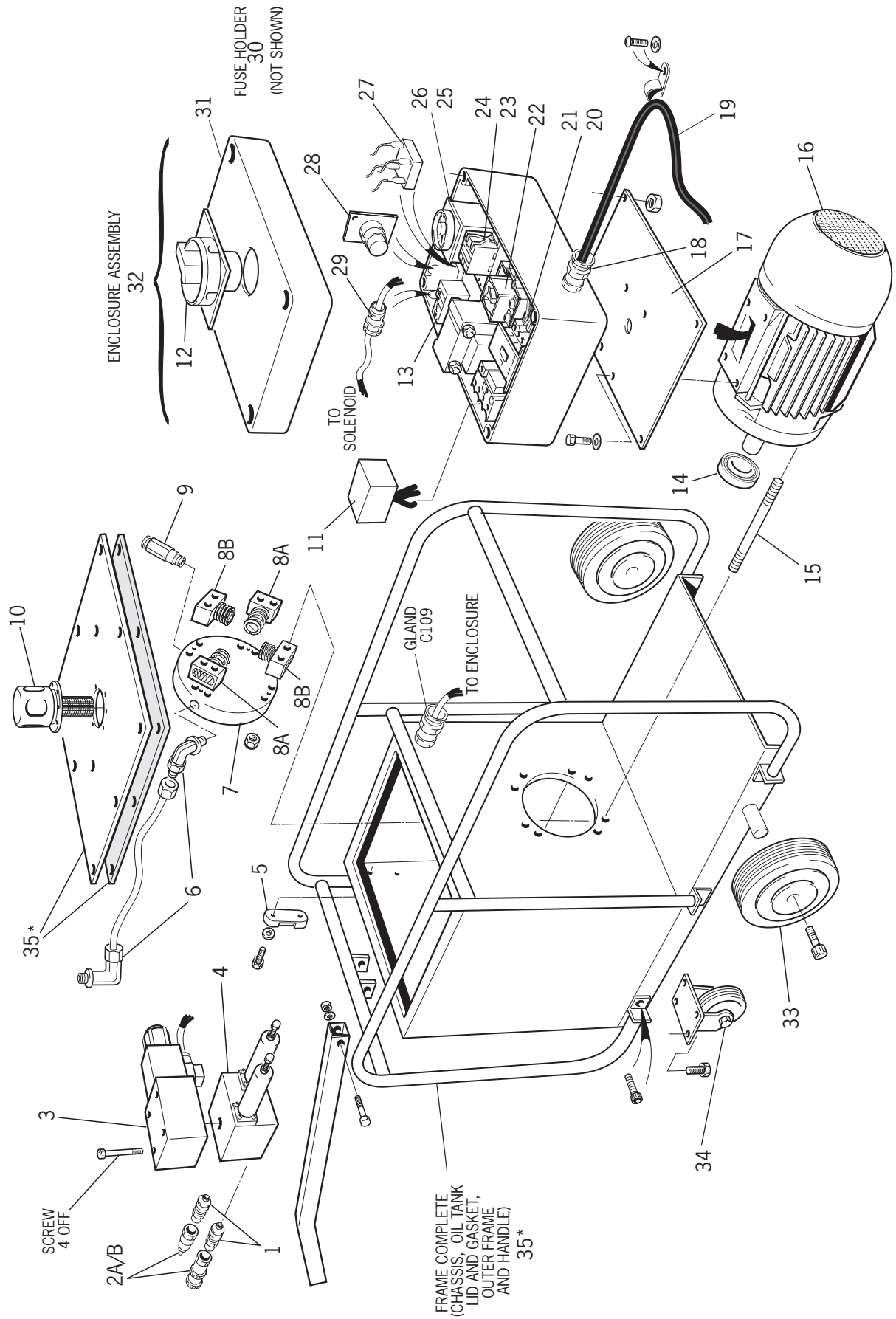
- Connect the Pressure Setting Gauge Set and Hoses to the HydraPac.
- Plug in the Setting Trigger (see illustration below).
- Place the Tank Cover Assembly loosely in position. This is to prevent excessive oil splash during setting.
- Connect to the HydraPac Power Supply and switch on.
- Turn the isolator on the electric enclosure to 'On'.
- Ensure that both Valves on the Pressure Setting Gauge Set are fully open.
- Depress and release the Trigger a few times allowing the oil to circulate freely. This will remove all the air from the hydraulic system and also indicate if the Directional Valve is functioning.
- Keeping the Trigger Switch depressed, slowly close the Valve 'A'. reading the pressure on the gauge take note of the pressure when the release valve opens. Adjust the screw on the left hand side Spring Dome, (the lower of the two domes) to obtain the setting given on the Gauge Set illustration. Once the correct pressure setting has been achieved, lock the adjusting screw in place with the nut provided using a 10 mm spanner.
- To set the Return Pressure repeat as in previous step but with the Trigger Switch released. Valve 'A' must be fully open and Valve 'B' utilised to obtain the setting. Adjustments for the pressure are to be made on the second Spring Dome.
- On completion of the pressure settings, replace and secure the tank cover with the 10 mm socket head cap screw using a 5 mm allen Key and reset the timer if need be.



Note: It may be necessary during Pressure Setting to temporarily increase the delay time on the "Sleep Mode" Timer.

Item numbers in **bold** refer to the general assembly and combination valve drawings and parts lists on pages 10-16.

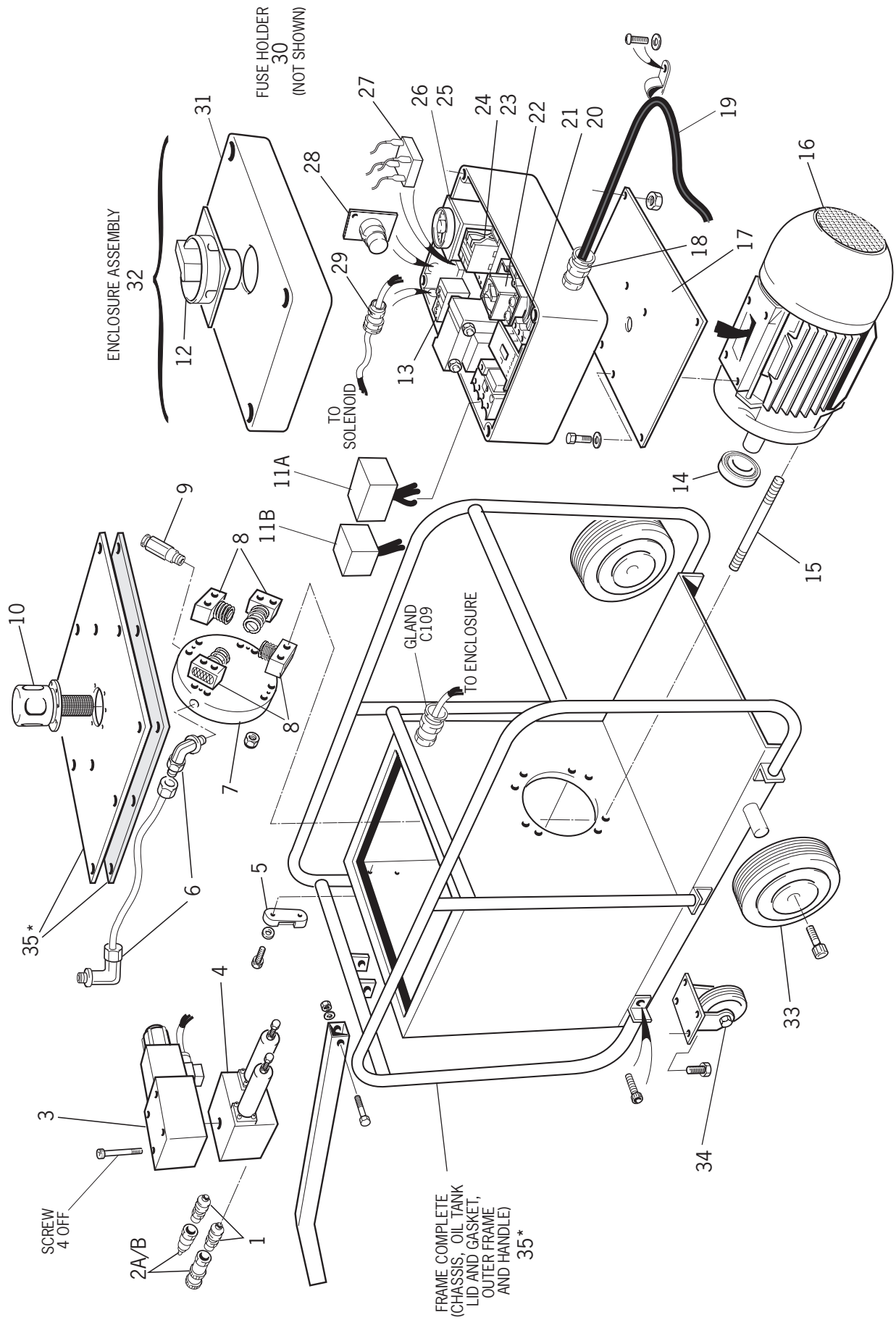
General Assembly of HP21 HydraPac



Parts List for HP21 HydraPac

HYDRAPAC HP21 VALVE PARTS LIST									
ITEM	PART N°	DESCRIPTION	QTY	ITEM	PART N°	DESCRIPTION	QTY		
1	C028	BULK HEAD ADAPTOR	2	19	C093	TRAILING CABLE	1		
2A/B	HS01	HYDRAULIC QUICK COUPLER (MALE/FEMALE)	2	20	C051	THERMAL OVERLOAD	1		
3	C166	DIRECTIONAL VALVE	1	21	C050	CONTACTOR	1		
4	C027	COMBINATION VALVE	1	22	C030	ISOLATOR	1		
5	C116	OIL LEVEL INDICATOR	1	23	C080	BASE (RELAY)	1		
6	C086	ELBOW	2	24	C079	RELAY	1		
7	C036	MANIFOLD FLANGE	1	25	C124	BASE (TIMER)	1		
8A	PE8	PUMP ELEMENTS	2	26	C132	TIMER	1		
8B	PE10	PUMP ELEMENTS	2	27	C097	BRIDGE RECTIFIER	1		
9	C231	RELIEF VALVE	1	28	C111	CANNON FLUSH PLUG	1		
10	C117	OIL FILLER BREATHER	1	29	C109	GLAND	1		
11	C095	SURGE ARRESTOR	1	30	C107	FUSE HOLDER (NOT SHOWN)	1		
12	C030	ISOLATOR	1	31	C105	ENCLOSURE LID	1		
13	C081	TRANSFORMER 220V	1	32	C090	ENCLOSURE ASSEMBLY	1		
14	C035	ECCENTRIC SHAFT BEARING	1	33	C119	WHEEL	2		
15	C034	STUD	8	34	C077	CASTOR WHEEL	1		
16	C022	MOTOR	1	35	C020	FRAME COMPLETE (CHASSIS, OIL TANK, LID & GASKET, OUTER FRAME & HANDLE)	1		
17	C089	MOUNTING PLATE	1						
18	C104	GLAND	1						

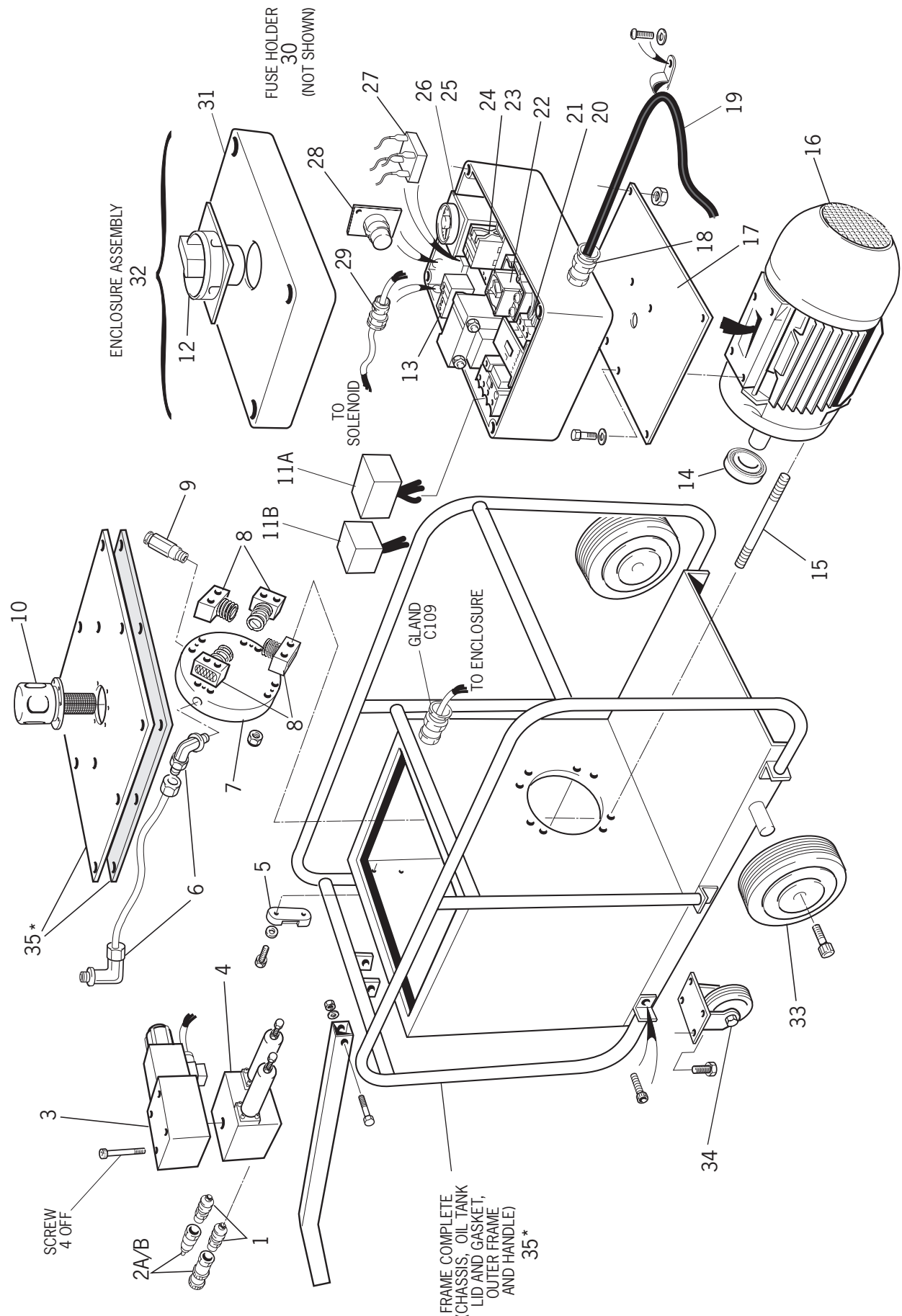
General Assembly of HP41 HydraPac



Parts List for HP41 HydraPac

HYDRAPAC HP41 VALVE PARTS LIST									
ITEM	PART N°	DESCRIPTION	QTY	ITEM	PART N°	DESCRIPTION	QTY		
1	C028	BULK HEAD ADAPTOR	2	19	C094	TRAILING CABLE	1		
2A/B	HS01	HYDRAULIC QUICK COUPLER (MALE/FEMALE)	2	20	C052	THERMAL OVERLOAD	1		
3	C166	DIRECTIONAL VALVE	1	21	C050	CONTACTOR	1		
4	C027	COMBINATION VALVE	1	22	C030	ISOLATOR	1		
5	C116	OIL LEVEL INDICATOR	1	23	C080	BASE (RELAY)	1		
6	C086	ELBOW	2	24	C079	RELAY	1		
7	C036	MANIFOLD FLANGE	1	25	C124	BASE (TIMER)	1		
8	PE10	PUMP ELEMENTS	4	26	C132	TIMER	1		
9	C231	RELIEF VALVE	1	27	C097	BRIDGE RECTIFIER	1		
10	C117	OIL FILLER BREATHER	1	28	C111	CANNON FLUSH PLUG	1		
11A	C095	SURGE ARRESTOR	1	29	C109	GLAND	1		
11B	C096	SURGE ARRESTOR	1	30	C107	FUSE HOLDER (NOT SHOWN)	1		
12	C030	ISOLATOR	1	31	C105	ENCLOSURE LID	1		
13	C082	TRANSFORMER	1	32	C155	ENCLOSURE ASSEMBLY	1		
14	C035	ECCENTRIC SHAFT BEARING	1	33	C119	WHEEL	2		
15	C034	STUD	8	34	C077	CASTOR WHEEL	1		
16	C023	MOTOR	1	35	C020	FRAME COMPLETE (CHASSIS, OIL TANK, LID & GASKET, OUTER FRAME & HANDLE)	1		
17	C089	MOUNTING PLATE	1						
18	C104	GLAND	1						

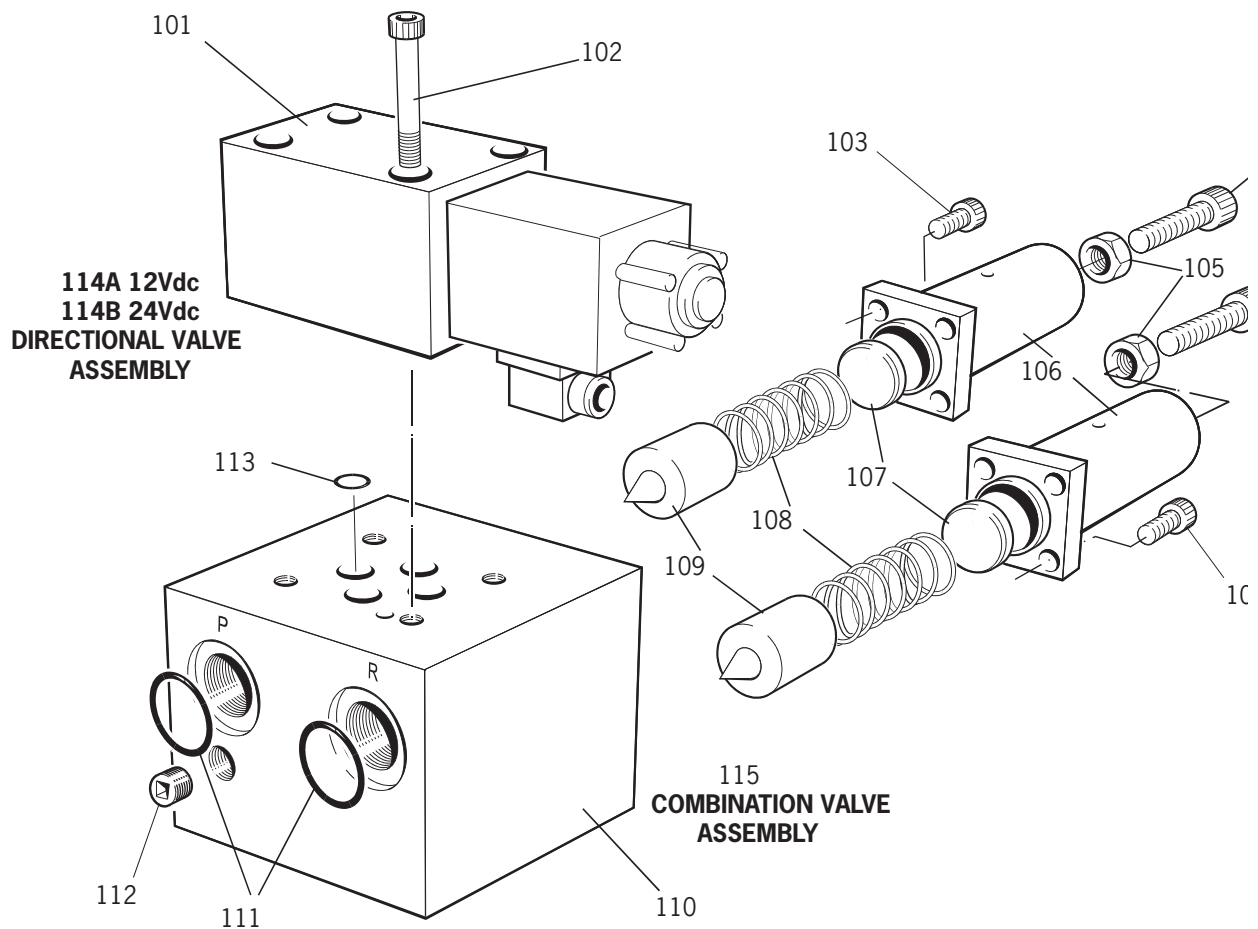
General Assembly of HP51 HydraPac



Parts List for HP51 HydraPac

HYDRAPAC HP51 VALVE PARTS LIST									
ITEM	PART N°	DESCRIPTION	QTY	ITEM	PART N°	DESCRIPTION	QTY		
1	C028	BULK HEAD ADAPTOR	2	19	C094	TRAILING CABLE	1		
2A/B	HS01	HYDRAULIC QUICK COUPLER (MALE/FEMALE)	2	20	C052	THERMAL OVERLOAD	1		
3	C166	DIRECTIONAL VALVE	1	21	C050	CONTACTOR	1		
4	C027	COMBINATION VALVE	1	22	C030	ISOLATOR	1		
5	C116	OIL LEVEL INDICATOR	1	23	C080	BASE (RELAY)	1		
6	C086	ELBOW	2	24	C079	RELAY	1		
7	C036	MANIFOLD FLANGE	1	25	C124	BASE (TIMER)	1		
8	PE10	PUMP ELEMENTS	4	26	C132	TIMER	1		
9	C231	RELIEF VALVE	1	27	C097	BRIDGE RECTIFIER	1		
10	C117	OIL FILLER BREATHER	1	28	C111	CANNON FLUSH PLUG	1		
11A	C095	SURGE ARRESTOR	1	29	C109	GLAND	1		
11B	C096	SURGE ARRESTOR	1	30	C107	FUSE HOLDER (NOT SHOWN)	1		
12	C030	ISOLATOR	1	31	C105	ENCLOSURE LID	1		
13	C150	TRANSFORMER	1	32	C106	ENCLOSURE LID	1		
14	C035	ECCENTRIC SHAFT BEARING	1	33	C153	ELECTRIC ENCLOSURE ASSEMBLY	1		
15	C034	STUD	8	34	C119	WHEEL	2		
16	C024	MOTOR	1	35	C077	CASTOR WHEEL	1		
17	C089	MOUNTING PLATE	1	36	C020	FRAME COMPLETE (CHASSIS, OIL TANK, LID & GASKET, OUTER FRAME & HANDLE)	1		
18	C104	GLAND	1	37	-	M10 NYLOC NUTS	8		

General Assembly and Parts List for Combination Valve



COMBINATION VALVE PARTS LIST			
ITEM	PART N°	DESCRIPTION	QTY
101	C116	DIRECTIONAL VALVE	1
102	CS26	SOCKET HEAD CAP SCREW	4
103	CS12	SOCKET HEAD CAP SCREW	8
104	CS34	SOCKET HEAD CAP SCREW	2
105	XN014	HEXAN NUT	2
106	CO41	SPRING DOME	2
107	CO42	BEARING PAD	2
108	CO40	SPRING	2
109	CO44	PLUNGER	2
110	CO43	VALVE BODY & SEAT	1
111	R210	'O' RING	2
112	MS01	PLUG	1
113	R	'O' RING	4
114A	CO26	DIRECTIONAL VALVE ASSEMBLY 12V DC	1
114B	CO25	DIRECTIONAL VALVE ASSEMBLY 24V DC	1
115	CO27	VALVE COMBINATION ASSEMBLY	1

Electrical Maintenance

Minor Maintenance

- To replace the fuse unscrew the Fuse Holder Cap **30** by hand and remove the fuse.
- To replace the 'Plug-in' Components, ie. Timer **26** and Relay **24**, loosen the four corner screws found on top of the Electric Enclosure **31** with a flat screwdriver and remove the cover. The Timer **26** and Relay **24** can now be re moved by simply 'unplugging'. For identification of these items, see the wiring diagrams on pages 18-20 and the general assemblies and parts lists on pages 10-16.
- To reset the Thermal Overload **20** on the Contactor **21**, remove the cover as above and depress the blue button located on the contactor assembly.

Major Maintenance

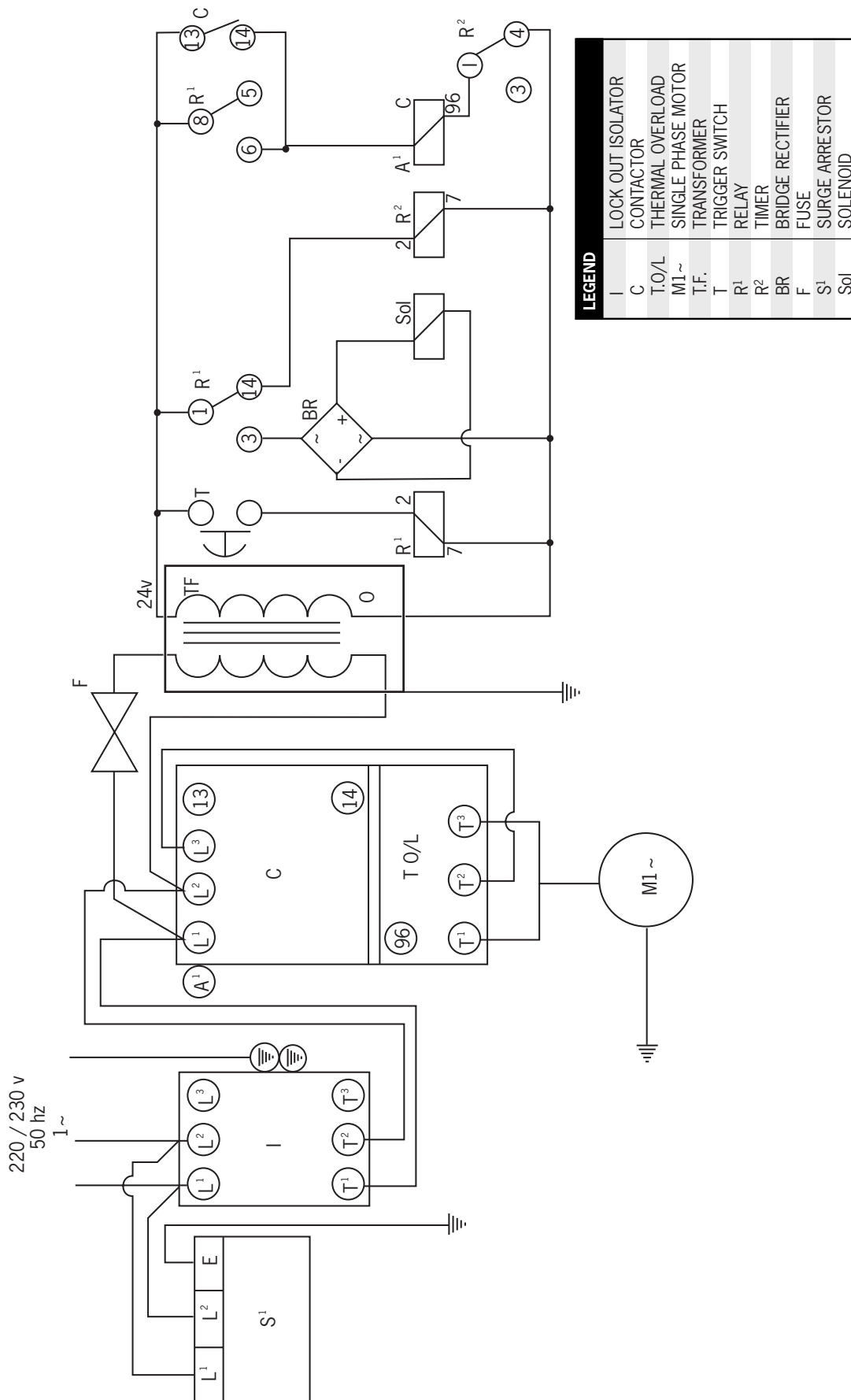
- Remove the Enclosure Lid **31** as above.
- Pull the two wires leading to the solenoid off the Bridge Rectifier **27** and feed them through the Gland **18** in the Enclosure **32**.
- Loosen the motor connections at the Contactor **21** and the motor earth wire from the Isolator **22** and free the wires.
- Separate the Enclosure **32** from the Mounting Plate **17** by loosening and removing the four screws found in the four corners at the bottom of the Enclosure using a flat screwdriver and a 7 mm spanner
- All the major components ie. Contactor **21**, Transformer **13** and the Bridge Rectifier **27** can now be removed and replaced using a flat screwdriver and a 7 mm spanner.
- If it becomes necessary to effect major maintenance on the motor, the Enclosure Adaptor Plate can be removed by loosening and removing the four screws securing it to the motor. Ensure that its relative position to the motor is noted.

Assembly

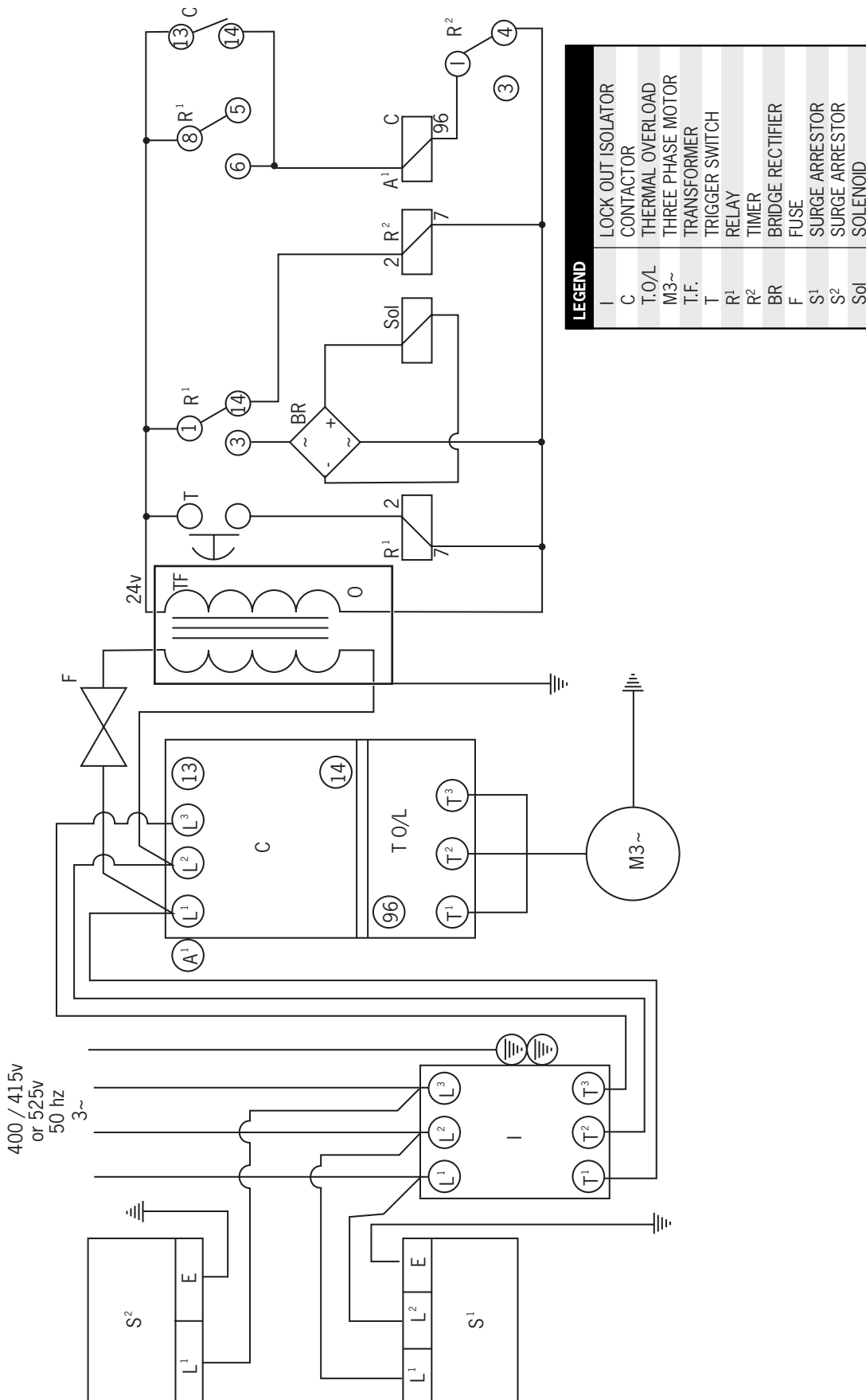
- If the Mounting Plate **17** has been removed from the motor, replace and secure with the four screws using a flat screwdriver and a 7 mm spanner.
- Feed the motor wires through the base of the Enclosure **32** and re-mount it on the Mounting Plate **17** and secure with the four screws using a flat screwdriver and a 7 mm spanner.
- Re-connect the motor wires as given in the wiring diagrams on pages 18-20 using a 4 mm flat screwdriver.
Note: 3 phase motors are not direction sensitive.
- Replace and tighten all panel wires using a flat screwdriver.
- Feed the solenoid wire through the Gland **29** and connect to the Bridge Rectifier **27** and tighten the gland using a 20 mm spanner.
- Replace the Enclosure Lid **31** and secure using a flat screwdriver.
Note: Replacement of the valve solenoid has been detailed in the Mechanical Maintenance Section on page 7.
- Connect to the power supply, switch 'On' and test for the function of the Directional Valve Solenoid and the Sleep Mode

With these basic Functions in Operation, the HydraPac is ready for use.

Wiring Diagram for HP21 HydraPac



Wiring Diagram for HP41 HydraPac



LEGEND	
I	LOCK OUT ISOLATOR
C	CONTACTOR
T.O/L	THERMAL OVERLOAD
M3~	THREE PHASE MOTOR
T.F.	TRANSFORMER
T	TRIGGER SWITCH
R ¹	RELAY
R ²	TIMER
BR	BRIDGE RECTIFIER
F	FUSE
S ¹	SURGE ARRESTOR
S ²	SURGE ARRESTOR
Sol	SOLENOID

Servicing the Tool

Daily

- Check for oil leaks.
- Check oil level.
- Test function of high pressure relief valve.

Weekly

- Check for wear and tear on trailing cable.
- Check for wear and tear on umbilical sleeve and hoses.

Every 1200 working hours (at least once a year)

The HydraPac should be taken out of service and checked for:

- General wear and tear on Pump Unit
- Tightness of all Fasteners.
- Oil contamination

Service Tools

- Open Ended Spanners - 10, 13, 17, 19, 24, 27 mm
- Allen Keys - 3 mm, 4 mm, 5 mm, 6 mm
- Flat screwdrivers - 4 mm wide, 6 mm wide
- Torque wrench and 17 mm socket.

Hydraulic Oil General Safety Data

First Aid

SKIN:

Under normal conditions skin irritation will not occur, contaminated skin should however be washed thoroughly with soap and water. Launder contaminated clothing.

ORAL:

If swallowed and person is conscious give water or milk. Do not induce vomiting unless on advice of medical personnel. Take person to nearest medical centre.

EYES:

Flush immediately with water for several minutes

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

Symptom	Possible Cause	Remedy	Page Ref
Motor does not start when the Trigger Switch on the Installation Tool is depressed	<p>The HydraPac is properly connected to the correct Power Supply.</p> <p>The main Power Supply is switched 'on'.</p> <p>The Isolator on the HydraPac is turned to 'on'.</p> <p>The Control Cord is plugged in at both the HydraPac and the Installation Tool.</p> <p>The fuse has blown.</p> <p>The overload on the Contactor has tripped out.</p> <p>There are any loose connections in the Control Cord system, eg. Trigger Switch and Plug.</p> <p>There are any broken wires in the Control Cord.</p> <p>There are any loose or broken connections to the Transformer</p> <p>The Trigger Switch is functioning correctly.</p> <p>The Contactor Coil has burnt out.</p> <p>The Motor has burnt out.</p>		
The Motor is running but the Tool does not cycle	<p>The Hoses at both the HydraPac and the Installation Tool are connected correctly.</p> <p>The HydraPac Quick Couplers are faulty.</p> <p>Electrical Connections to the Solenoid Valve are sound.</p> <p>Solenoid is faulty.</p> <p>Direction Valve Spool is jammed.</p> <p>Bridge Rectifier has burnt out.</p> <p>The manifold Flange has come loose causing 'o' rings to break and leak.</p> <p>Hydraulic Pipe connections are tight inside the tank.</p> <p>Hydraulic Pump to Valve pipe is sound.</p> <p>Motor Drive Shaft and Eccentric Bearing is intact.</p>		
Installation Tool Cycles but does not complete the Installation in breaking off the Lockbolt Pintail.	<p>Pull Cycle Pressure is low. Pressure relief valve to open between 56.2 and 56.9 mPa.</p> <p>(Use the Pressure Test Gauge Set to Check and reset if necessary.)</p> <p>There are any leaks in the internal Hydraulic Connections.</p> <p>The oil temperature is too high. (The recommended maximum temperature is 60°C.)</p>		
Installation Tool does not eject the Collar from the Anvil.	<p>'Sleep Mode' Timer setting is correct. Recommended minimum settings:</p> <p>T10 - 10 seconds</p> <p>T30 - 15 seconds</p> <p>T51 - 25 seconds</p> <p>Return Cycle Pressure is too low. Idler Valve to open between 20.0 and 21.7 mPa</p>		

Declaration of Conformity

We, Avdel UK Limited, Watchmead Industrial Estate, Welwyn Garden City, Herts, AL7 1LY
declare under our sole responsibility that the product:

Model: HP21, HP41, HP51

Serial No.

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

EN ISO 12100 - parts 1 & 2	
BS EN ISO 8662 - part 6	BS EN ISO 11202
BS EN ISO 3744	BS EN 982
ISO EN 792 part 13 - 2000	BS EN 983

following the provisions of the Machine Directive 89/392/EC
(as amended by Directive 91/368/EC, 93/44/EC as superceded by 98/37/EC and 93/68/EC)



A R Dear - Design & Development Manager

Welwyn Garden City - date of issue



**This box contains a power tool which is in
conformity with Machines Directive
89/392/EEC. The 'Declaration of Conformity'
is contained within.**



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