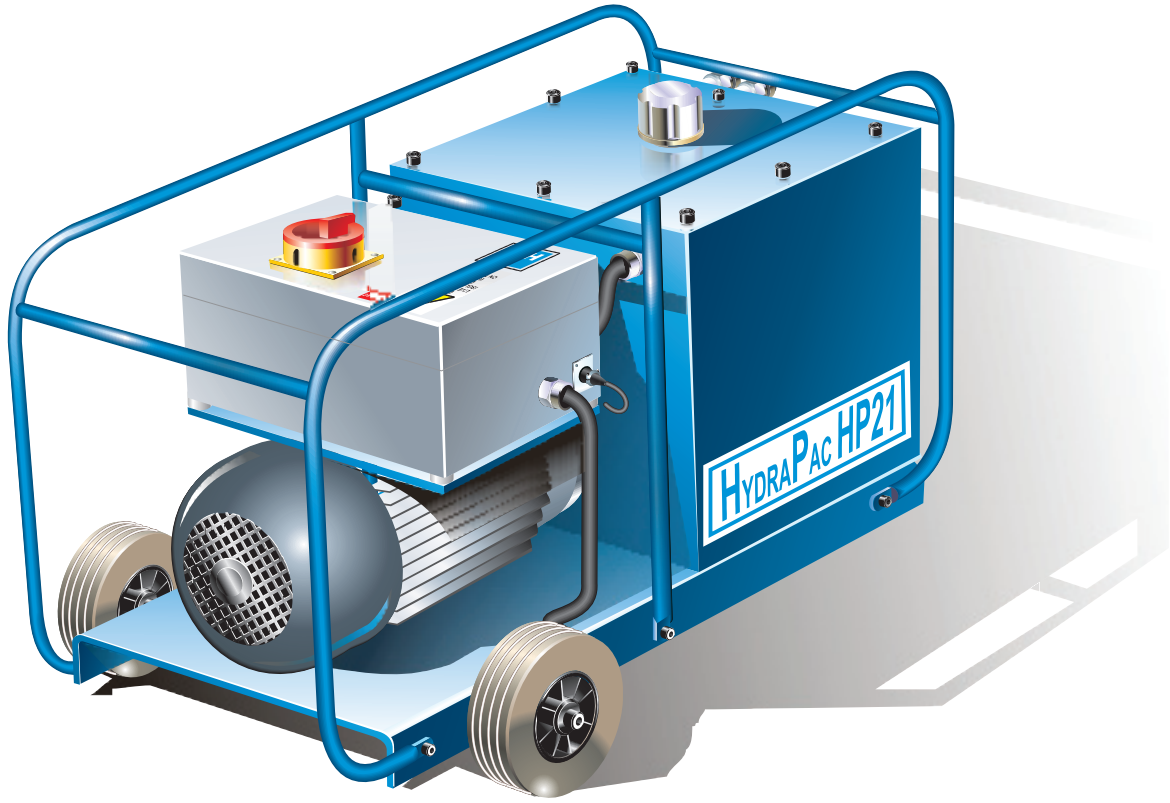
Avdel®

Instruction Manual

Original Instruction



HP21, HP41, HP51

HydraPac Hydraulic Power Unit

Contents

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 Rules

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 8,000 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 fastener 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

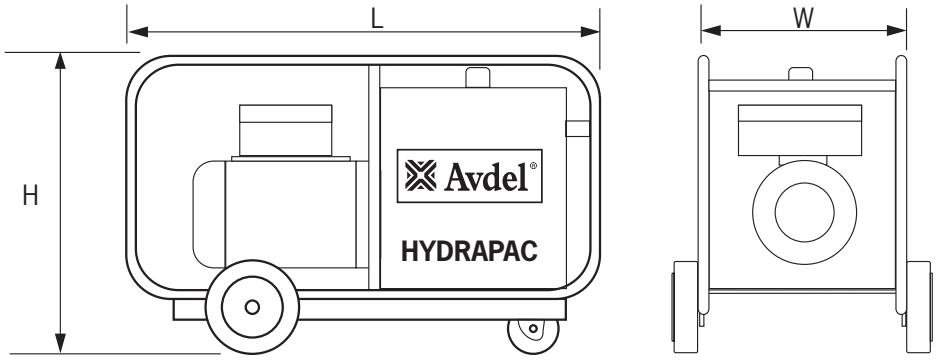
Intent of Use

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
Part Number	73401-02000	73400-02000	73403-02000
Electric Motor	2.2 kW 4 pole flange mount		
Power Supply	220/230 V 1 PH 50 Hz	380/415 V 3 PH 50 Hz	525 V 3 PH 50 Hz
Full Load Amps	15.0 A	5.3 A	3.8 A
Working Pressure Pull Return	55.2 MPa (8,000 psi) 20.7 MPa (3,000 psi)		
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")		

Tool Dimensions



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.

Putting into Service

Principle of Operation

IMPORTANT
Read the safety rules on page 4 carefully

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 **2A/B** 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 fastener 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 in not depressed within a preset period (normally set at 10 seconds for T10 Tools, 15 seconds for T30 and T40 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 Oil Level Indicator **5** located at the front of the HydraPac. Fill and/or top-up as required.
  Note: *Export units are shipped dry.*
- Ensure that the Isolator **12** on the HydraPac Enclosure Assembly **32** 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 Enclosure Assembly **32** on the HydraPac and to the Installation Tool to be used.
- Turn the HydraPac Isolator **12** 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 Hydrapac System is now ready for use.

Operating Instructions

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

Item numbers in **bold** refer to the General Assembly and Valve Set drawings and Parts Lists on pages 10 - 16.

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 HydraPac

Preparation

- Disconnect and remove the hose set and its control cord from the HydraPac.
- Remove the Tank Cover **35*** 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 **3** and **4** using a 4mm flat screwdriver.
- Remove the steel hydraulic pipe connecting the pump to the Valve Set **3** and **4** using a 20 mm spanner.

Removing the Valve Set 3 and 4

- Note the relative positions of the Male and Female couplers. Unscrew and remove the Hydraulic Quick Couplers **2A/B** using a 24mm spanner.
- Unscrew the Bulkhead Adaptors **1** and remove the Valve Set comprising Directional Valve **3** and the Combination Valve **4** using a 27 and a 24 mm spanner.

Separating the Valve Set 3 and 4

- Unscrew and remove the four M5 Socket Screws **102** located in the Directional Valve **3** using a 4 mm allen key

To Strip the Combination Valve 4

- 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 **106** and take out the Springs **108** and Bearing Pads **107**.
- Remove the two Plungers **109** from the Combination Valve body **4** taking care to identify each ones own location.

Directional Valve 3

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 Eccentric Shaft 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 **29** using a 17 mm spanner and feed the wire through the Gland **29**.
- Support the Electric Motor **16** and remove the two M6 socket head cap screws located inside the Tank **35*** using a 5 mm allen key.
- Slide the Electric Motor **16** away from the Tank **35***.
- 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 Valve Set drawings and Parts Lists on pages 10 - 16.

Mechanical Maintenance

Assembly

Fitting the Eccentric Bearing

- Remove the Fan Motor Cover **16** 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 Motor Cover **16** and 4 screws using a 4 mm screwdriver.

Installing the Electric Motor

- Ensure that both the Motor Flange **16**, the gasket and the Mounting Plate **35*** are free from any dirt.
- Smear both sides of the gasket with a non-adhesive sealant.
- Supporting the Electric Motor **16** and ensuring that the Enclosure Assembly **32** is on top, slide the motor Studs **15** through the holes in the Mounting Plate **35***.
- Secure the Electric Motor **16** to the Mounting Plate **35*** 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 **35*** leaving a little slack between the Enclosure Assembly **32** and the Mounting Plate **35*** and tighten the Gland Screw **29** 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 **35***, lift the piston against the spring and slide the Element **8** over the Studs **15** and the Eccentric Shaft Bearing **14** until they are up against the Mounting Plate **35***. Repeat for all four Elements.

  Note: *HP41 and HP51 models have four equal size Elements. The HP21 and HP41 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 4

- Replace the two Plungers **109** in their respective ports.

  Note: *It is essential for efficient valve functioning that the plungers are placed in their original positions.*
- Loosen the two Nuts **105** with a 10mm spanner and a 5 mm allen key and back-off the pressure adjusting screws **104** 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 Combination Valve **4** and secure with the four Screws **103** in each Spring Dome **106** using a 3 mm allen key.

Assembling the Valve Set 3 and 4

- Ensure that the four 'O' Rings **113** are in place on top of the face of the Combination Valve **4**.
- Place the Directional Valve **3** over the Combination Valve **4**, locating the Dowel Pin in the recess provided.
- Secure the two valves **3** and **4** with the four M5 Socket Head Cap Screws **102** using a 4 mm allen key.

Installing the Valve Set 3 and 4

- 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 **4**, place the Valve Set **3** and **4** 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 **3** and **4** 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 Valve Set drawings and Parts Lists on pages 10 - 16.

Mechanical Maintenance

Assembly (continued)

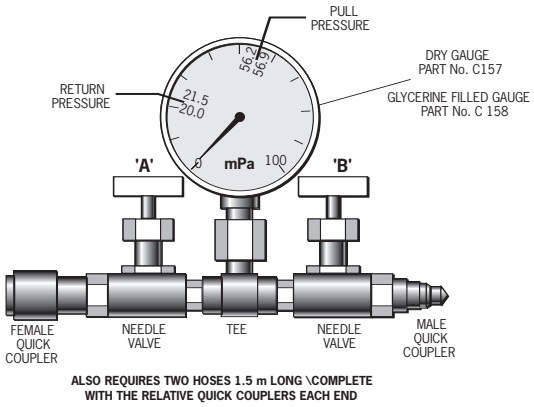
Final Assembly

- 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 fluid stipulated in the Technical Specifications on page 5.

Pressure Setting

- Connect the Pressure Setting Gauge Set and Hoses (73010-00003) to the HydraPac.
- Plug in the Setting Trigger 73010-00004 (see illustration below).
- Place the Tank Cover Assembly **35*** loosely in position. This is to prevent excessive oil splash during setting.
- Connect to the HydraPac power supply and switch on.
- Turn the Isolator **12** on the Enclosure Assembly **32** to 'On'.
- Ensure that both needle 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 Needle 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. Needle Valve 'A' must be fully open and Needle 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 Assembly **35*** with the 10 mm socket head cap screw using a 5 mm allen Key and reset the timer if need be.

Pressure Setting Gauge Set



Arrangement of Setting Trigger

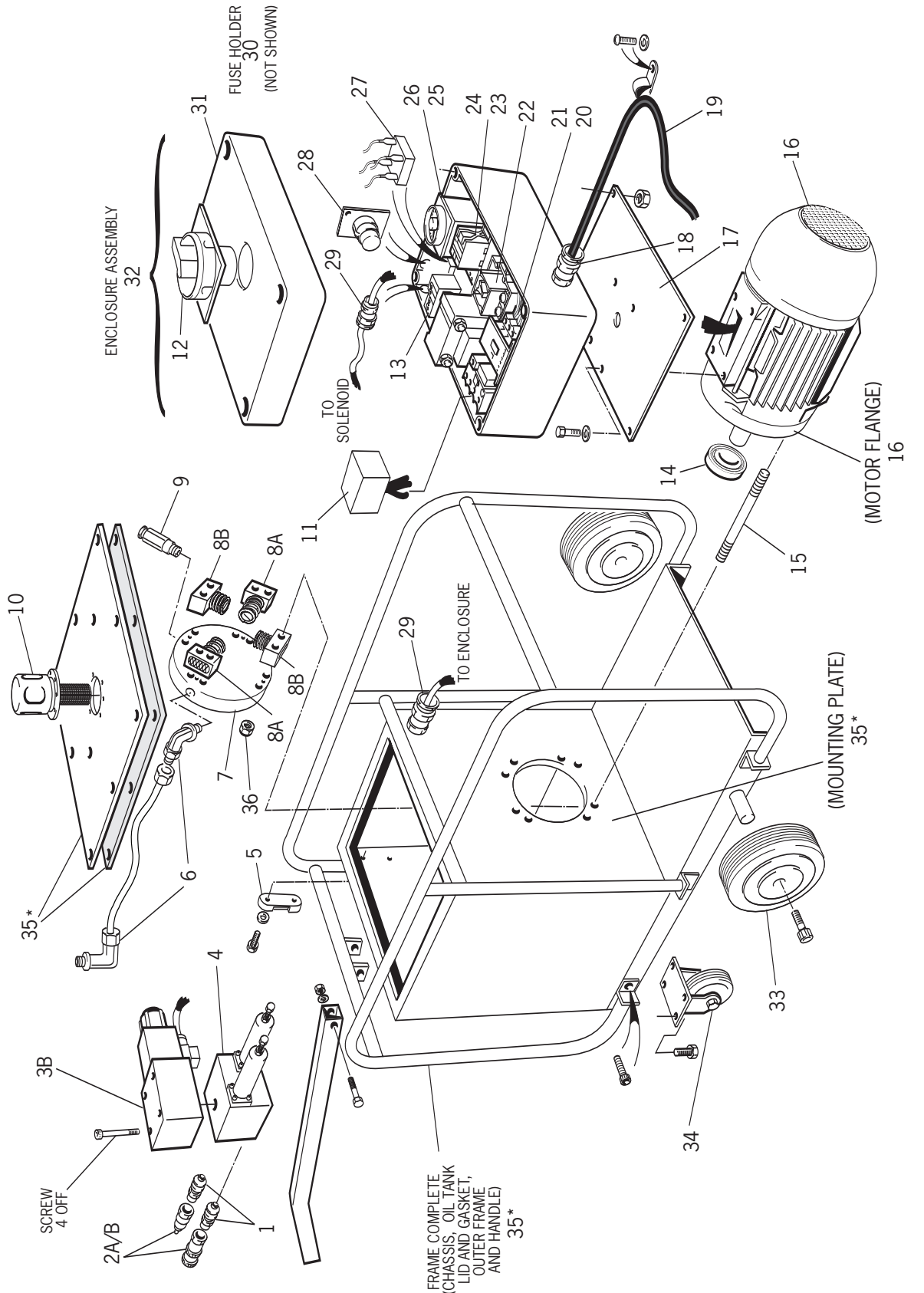
Note: *It may be necessary during Pressure Setting to temporarily increase the delay time on the "Sleep Mode" Timer.*

Pressure Setting Kits

PRESSURE SETTING KITS	
PART NUMBER	**DESCRIPTION**
73010-00001	HAND PUMP TEST SET
73010-00003	PRESSURE TEST GAUGE SET
73010-00004	SETTING TRIGGER

Item numbers in **bold** refer to the General Assembly and Valve Set drawings and Parts Lists on pages 10 - 16.

General Assembly of HP21 HydraPac 73401-02000

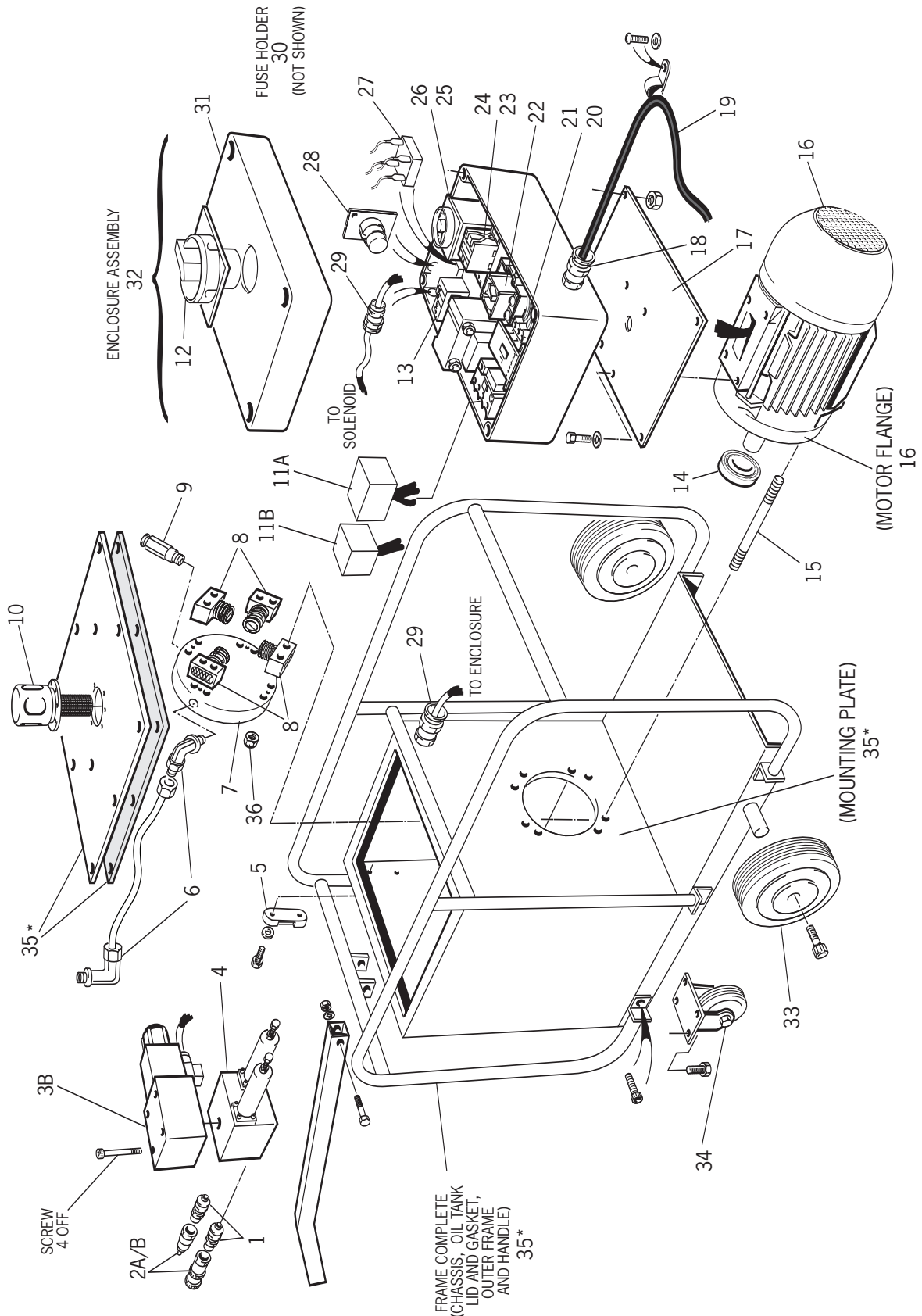


Parts List for HP21 HydraPac 73401-02000

HP21 73401-02000 HYDRAPAC PARTS LIST

ITEM	PART Nº	DESCRIPTION	QTY
1	CO28	BULK HEAD ADAPTOR	2
2A/B	HS01	HYDRAULIC QUICK COUPLER (MALE/FEMALE)	2
3B	C166	DIRECTIONAL VALVE 24Vdc	1
4	CO27	COMBINATION VALVE	1
5	C116	OIL LEVEL INDICATOR	1
6	CO86	ELBOW	2
7	CO36	MANIFOLD FLANGE	1
8A	PE8	PUMP ELEMENTS	2
8B	PE10	PUMP ELEMENTS	2
9	C231	RELIEF VALVE	1
10	C117	OIL FILLER BREATHER	1
11	CO95	SURGE ARRESTOR	1
12	CO30	ISOLATOR	1
13	C081	TRANSFORMER 220V	1
14	CO35	ECCENTRIC SHAFT BEARING	1
15	CO34	STUD	8
16	CO22	ELECTRIC MOTOR (FAN MOTOR COVER/MOTOR FLANGE)	1
17	CO89	MOUNTING PLATE	1
18	C104	GLAND	2
19	CO93	TRAILING CABLE	2
20	CO51	THERMAL OVERLOAD	1
21	CO50	CONTACTOR	1
22	CO30	ISOLATOR	1
23	CO80	BASEY(RELAY)	2
24	CO79	RELA	1
25	C124	BASE (TIMER)	2
26	C132	TIMER	2
27	CO97	BRIDGE RECTIFIER	1
28	C111	CANNON FLUSH PLUG	1
29	C109	GLAND	1
30	C107	FUSE HOLDER (NOT SHOWN)	1
31	C105	ENCLOSURE LID	1
32	CO90	ENCLOSURE ASSEMBLY	1
33	C119	WHEEL	2
34	CO77	CASTOR WHEEL	1
35	CO20	FRAME COMPLETE (CHASSIS, OIL TANK, LID & GASKET, OUTER FRAME & HANDLE)	1
36	-	M10 NYLOC NUTS	8

General Assembly of HP41 HydraPac 73400-02000



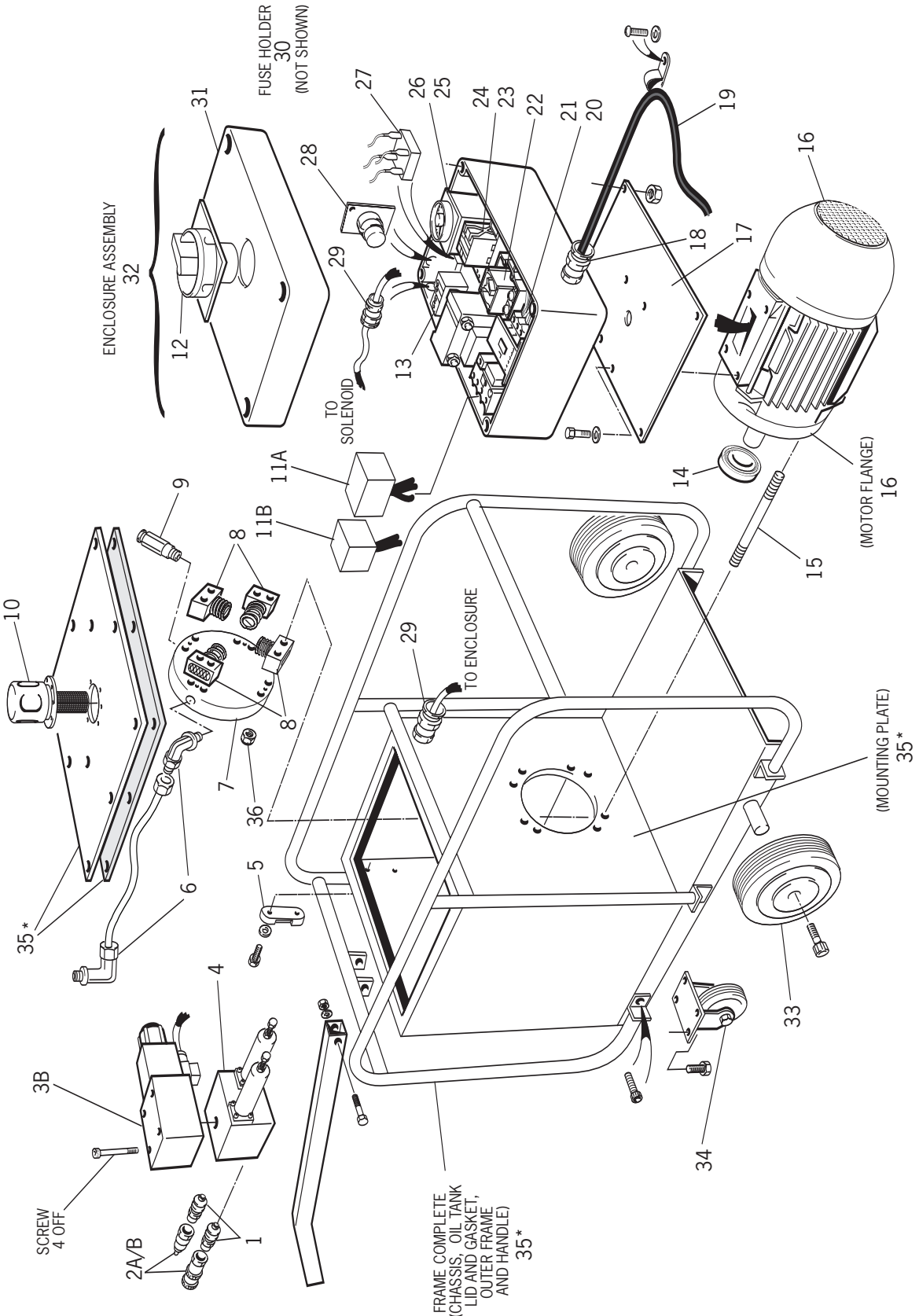
Parts List for HP41 HydraPac 73400-02000

HP41 73400-02000 HYDRAPAC PARTS LIST

ITEM	PART Nº	DESCRIPTION	QTY
1	C028	BULK HEAD ADAPTOR	2
2A/B	HS01	HYDRAULIC QUICK COUPLER (MALE/FEMALE)	2
3B	C166	DIRECTIONAL VALVE 24Vdc	1
4	C027	COMBINATION VALVE	1
5	C116	OIL LEVEL INDICATOR	1
6	C086	ELBOW	2
7	C036	MANIFOLD FLANGE	1
8	PE10	PUMP ELEMENTS	4
9	C231	RELIEF VALVE	1
10	C117	OIL FILLER BREATHER	1
11A	C095	SURGE ARRESTOR	1
11B	C096	SURGE ARRESTOR	1
12	C030	ISOLATOR	1
13	C082	TRANSFORMER	1
14	C035	ECCENTRIC SHAFT BEARING	1
15	C034	STUD	8
16	C023	ELECTRIC MOTOR (FAN MOTOR COVER/MOTOR FLANGE)	1
17	C089	MOUNTING PLATE	1

ITEM	PART Nº	DESCRIPTION	QTY
18	C104	GLAND	1
19	C094	TRAILING CABLE	1
20	C052	THERMAL OVERLOAD	1
21	C050	CONTACTOR	1
22	C030	ISOLATOR	1
23	C080	BASE (RELAY)	1
24	C079	RELAY	1
25	C124	BASE (TIMER)	1
26	C132	TIMER	1
27	C097	BRIDGE RECTIFIER	1
28	C111	CANNON FLUSH PLUG	1
29	C109	GLAND	1
30	C107	FUSE HOLDER (NOT SHOWN)	1
31	C105	ENCLOSURE LID	1
32	C155	ENCLOSURE ASSEMBLY	1
33	C119	WHEEL	2
34	C077	CASTOR WHEEL	1
35	C020	FRAME COMPLETE (CHASSIS, OIL TANK, LID & GASKET, OUTER FRAME & HANDLE)	1
36	-	M10 NYLOC NUTS	8

General Assembly of HP51 HydraPac 73403-02000

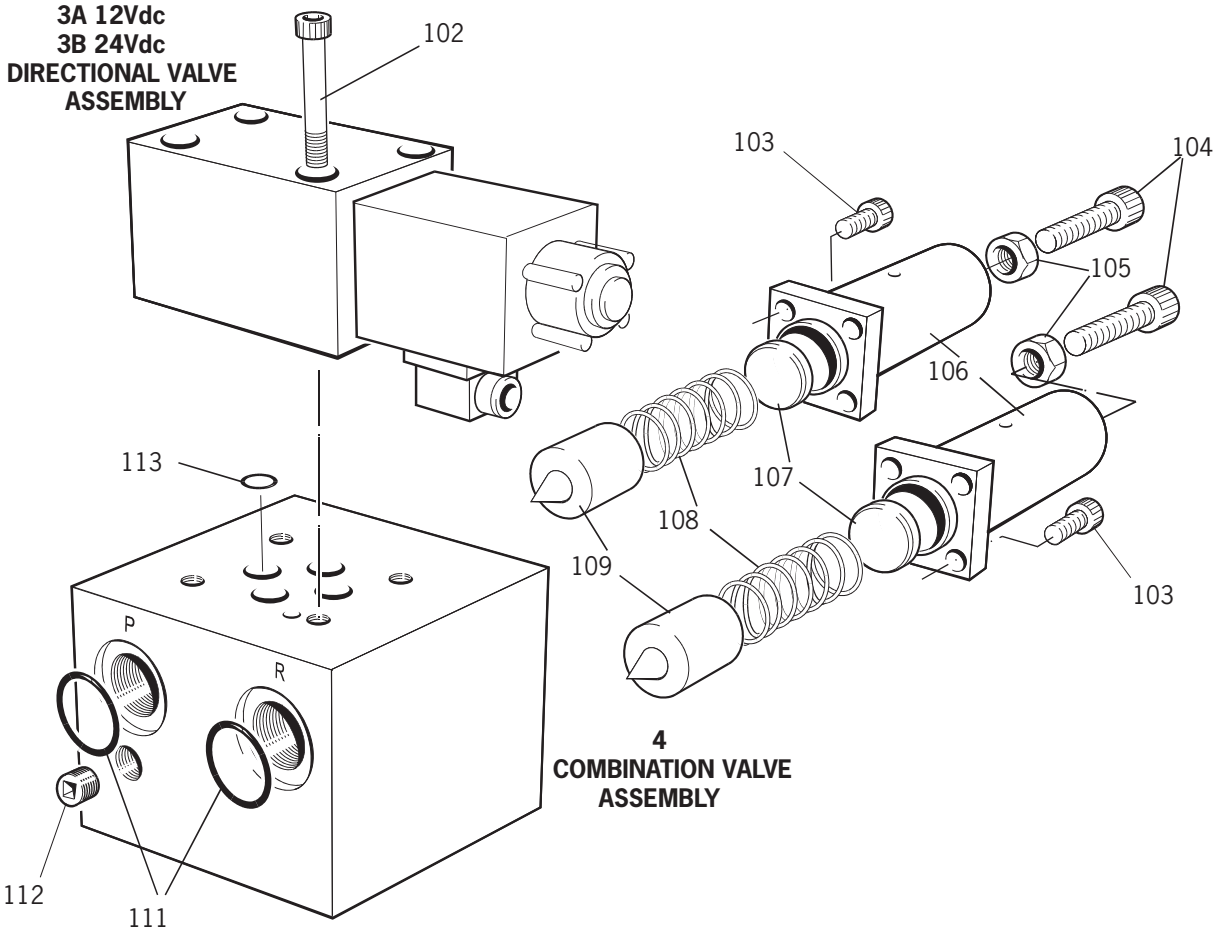


Parts List for HP51 HydraPac 73403-02000

HP51 73403-02000 HYDRAPAC PARTS LIST

ITEM	PART Nº	DESCRIPTION	QTY
1	C028	BULK HEAD ADAPTOR	2
2A/B	HS01	HYDRAULIC QUICK COUPLER (MALE/FEMALE)	2
3B	C166	DIRECTIONAL VALVE 24Vdc	1
4	C027	COMBINATION VALVE	1
5	C116	OIL LEVEL INDICATOR	1
6	C086	ELBOW	2
7	C036	MANIFOLD FLANGE	1
8	PE10	PUMP ELEMENTS	4
9	C231	RELIEF VALVE	1
10	C117	OIL FILLER BREATHER	1
11A	C095	SURGE ARRESTOR	1
11B	C096	SURGE ARRESTOR	1
12	C030	ISOLATOR	1
13	C150	TRANSFORMER	1
14	C035	ECCENTRIC SHAFT BEARING1	1
15	C034	STUD	8
16	C024	ELECTRIC MOTOR (FAN MOTOR COVER/MOTOR FLANGE)	1
17	C089	MOUNTING PLATE	1
18	C104	GLAND	2
19	C094	TRAILING CABLE	1
20	C052	THERMAL OVERLOAD	1
21	C050	CONTACTOR	1
22	C030	ISOLATOR	1
23	C080	BASE (RELAY)	1
24	C079	RELAY	1
25	C124	BASE (TIMER)	1
26	C132	TIMER	1
27	C097	BRIDGE RECTIFIER	1
28	C111	CANNON FLUSH PLUG	1
29	C109	GLAND	1
30	C107	FUSE HOLDER (NOT SHOWN)	1
31	C105	ENCLOSURE LID	1
32	C153	ENCLOSURE ASSEMBLY	1
33	C119	WHEEL	2
34	C077	CASTOR WHEEL	1
35	C020	FRAME COMPLETE (CHASSIS, OIL TANK, LID & GASKET, OUTER FRAME & HANDLE)	1
36	-	M10 NYLOC NUTS	8

General Assembly and Parts List for Valve Set



VALVE SET PARTS LIST			
ITEM	PART Nº	DESCRIPTION	QTY
3A	C165	DIRECTIONAL VALVE 12V DC	1
3B	C166	DIRECTIONAL VALVE 24V DC	1
4	CO27	COMBINATION 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
111	R210	'O' RING	2
112	MS01	PLUG	1
113	R012	'O' RING	4

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 Enclosure Assembly **32** with a flat screwdriver and remove the Enclosure Lid **31**. The Timer **26** and Relay **24** can now be removed 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 Assembly **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 Assembly **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 **16**, the Mounting Plate **17** can be removed by loosening and removing the four screws securing it to the Motor **16**. Ensure that its relative position to the motor is noted.

Assembly

- If the Mounting Plate **17** has been removed from the Motor **16**, 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 Assembly **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.

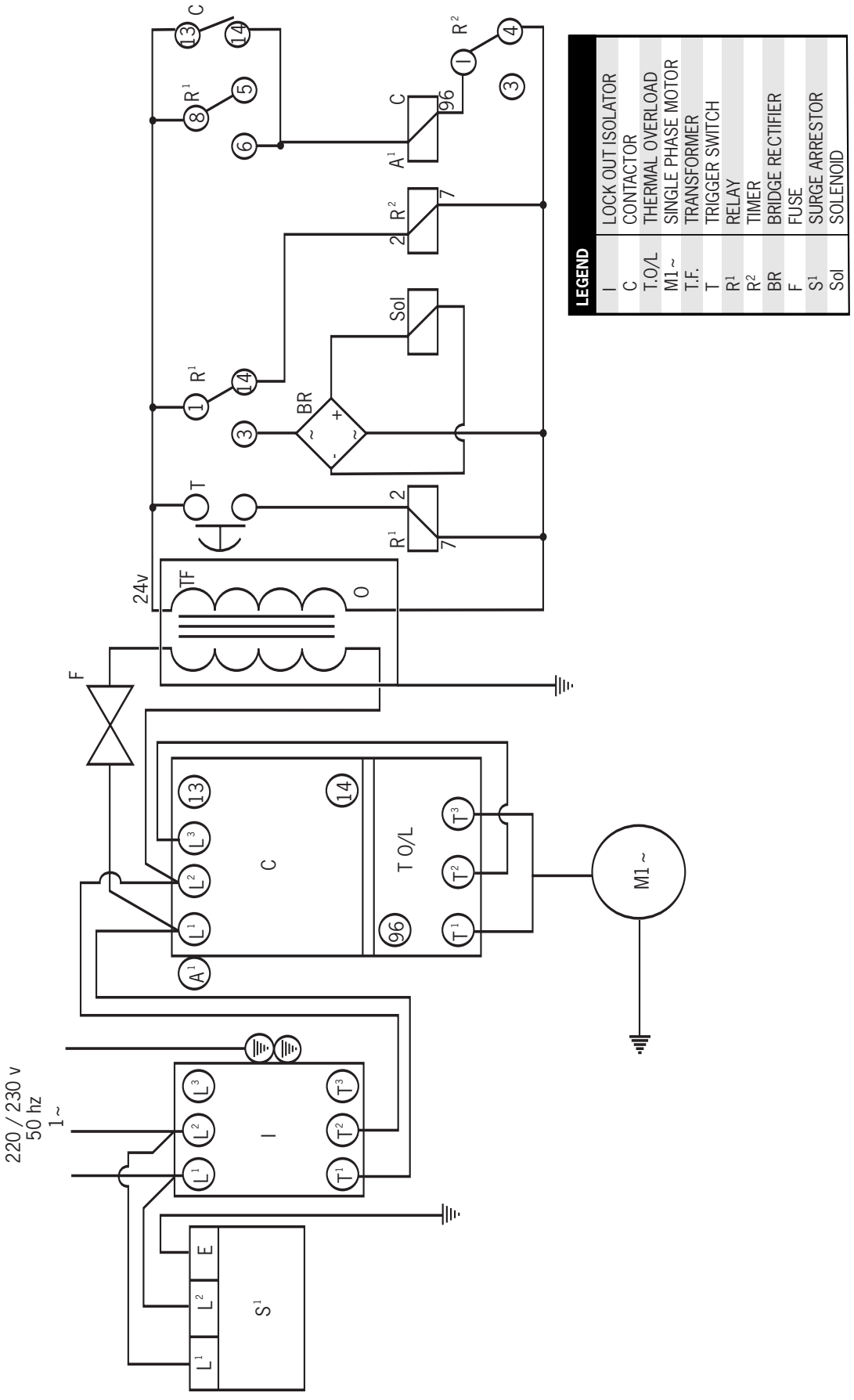
  Note: *3 phase motors are not direction sensitive.*
- Replace and tighten all panel wires using a flat screwdriver.
- Feed the solenoid wire through the Gland **29** and connect to the Bridge Rectifier **27**. Tighten the Gland **29** using a 20 mm spanner.
- Replace the Enclosure Lid **31** and secure 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

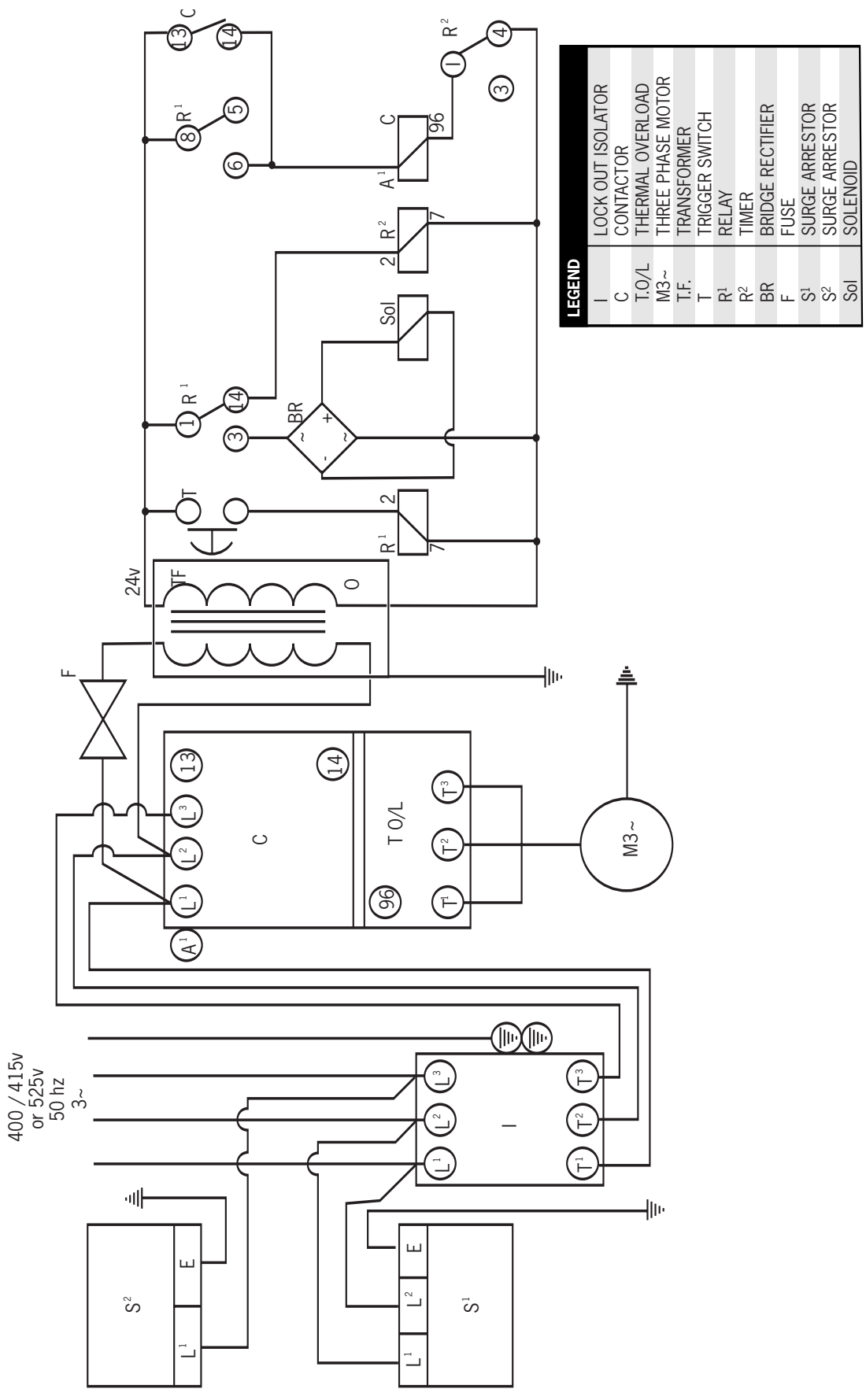
With these basic Functions in Operation, the HydraPac is ready for use.

Item numbers in **bold** refer to the General Assembly and Valve Set drawings and Parts Lists on pages 10 - 16.

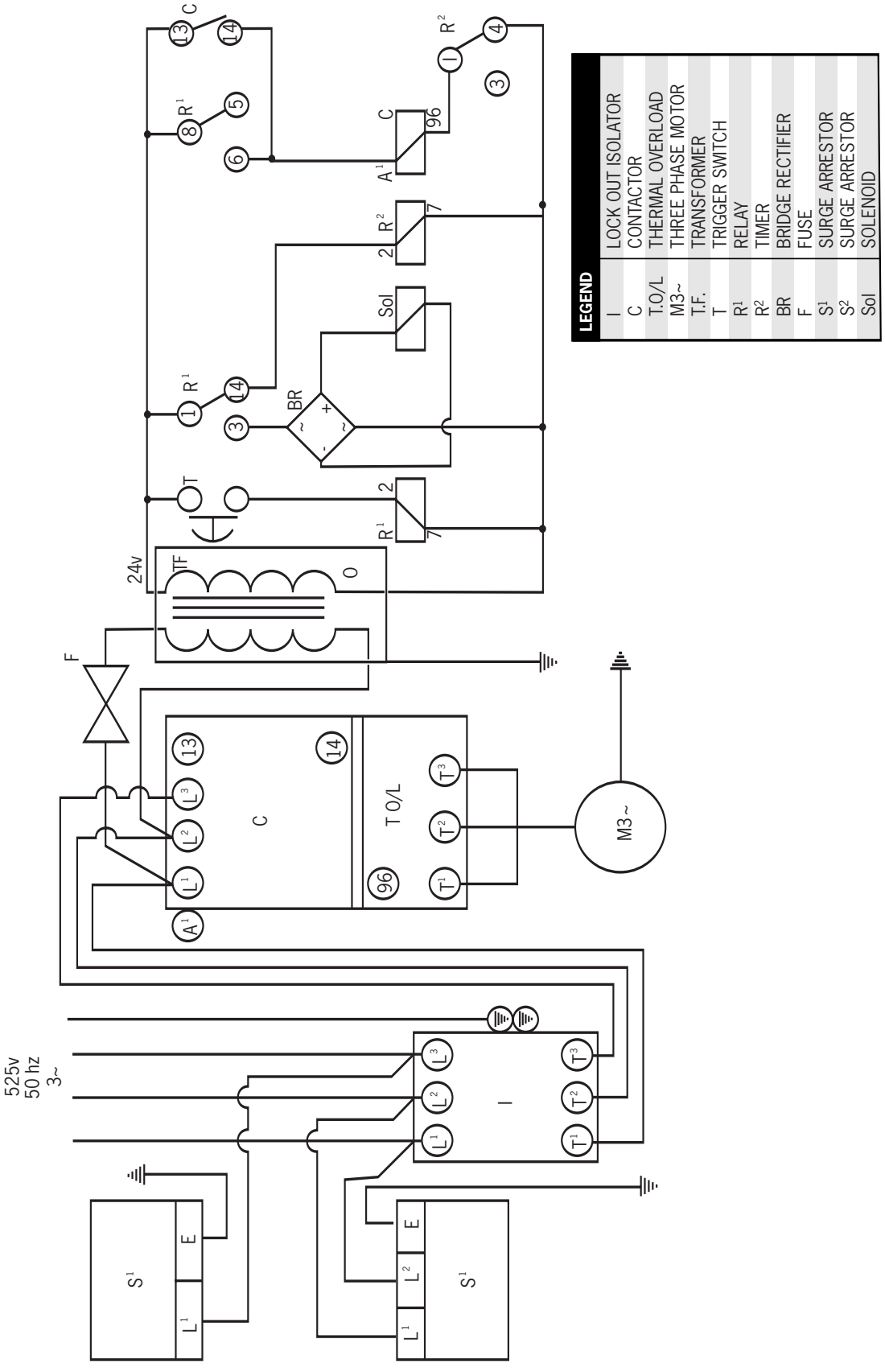
Wiring Diagram for HP21 HydraPac
73401-02000



Wiring Diagram for HP41 HydraPac 73400-02000



Wiring Diagram for HP51 HydraPac 73403-02000



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	Incorrect power supply	Check power supply	5
	Main power supply not switched ON	Switch power supply ON	
	Isolator in switched OFF position	Switch Isolator ON	
	Control Cord is not plugged in correctly	Check the Control Cord is plugged in at both the HydraPac and the Installation Tool	6
	The fuse has blown	Replace fuse	17
	The overload on the Contactor has 'tripped out'	Reset Contactor Switch	17
	Damaged wires in the Control Cord	Replace Control Cord	
	Loose/damaged connections to Transformer	Repair connections	
	Damaged Trigger Switch	Replace Trigger Switch	
	The Contactor Coil has burnt out	Replace Contactor Coil	
	The Motor has burnt out	Replace Motor	7,8,17
The Motor is running but the Installation Tool does not cycle	Hydraulic Hoses not connected	Check for correct connections at HydraPac and Installation Tool	6
	Faulty Hydraulic Quick Couplers	Replace Quick Couplers	7
	Faulty electrical connections to Valve Set	Check electrical connections	
	Faulty Directional Valve	Replace Valve	8
	Faulty Bridge Rectifier	Replace Bridge Rectifier	17
	Loose Manifold flange/damaged 'O' rings	Replace 'O' rings/tighten Manifold flange	8
	Loose hydraulic pipe connections within oil tank	Tighten connections	9
	Faulty hydraulic pipe between pump and valve	Replace hydraulic pipe	
	Eccentric bearing loose on motor drive shaft	Replace eccentric bearing	8
Installation Tool cycles but does not complete the installation in breaking off the Lockbolt Pintail	Pull cycle pressure is low	Check pressure setting. Pressure relief to open between 56.2 and 56.9 MPa. (Use the Pressure Test Gauge Set to Check and reset if necessary).	9
	Internal hydraulic leakage	Check hydraulic fittings and pipes. Tighten/replace as necessary.	7-9
	High oil temperature	(60°C Max) Check for restriction in hydraulic line - check couplings and replace if necessary	
Installation Tool does not eject the Collar from the Anvil.	'Sleep Mode' Timer setting is incorrect	Recommended minimum settings: T10 - 10 seconds T30 - 15 seconds T40 - 15 seconds T51 - 25 seconds	6
	Return Cycle Pressure is too low	Check pressure setting. Idler valve to open between 20.0 and 21.7 MPa.	9

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 2006/42/EC

A. Seewraj - Product Engineering Manager - Automation Tools

Welwyn Garden City - date of issue

CE **This box contains a power tool which is in conformity with Machines Directive 2006/42/EC. The 'Declaration of Conformity' is contained within.**

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