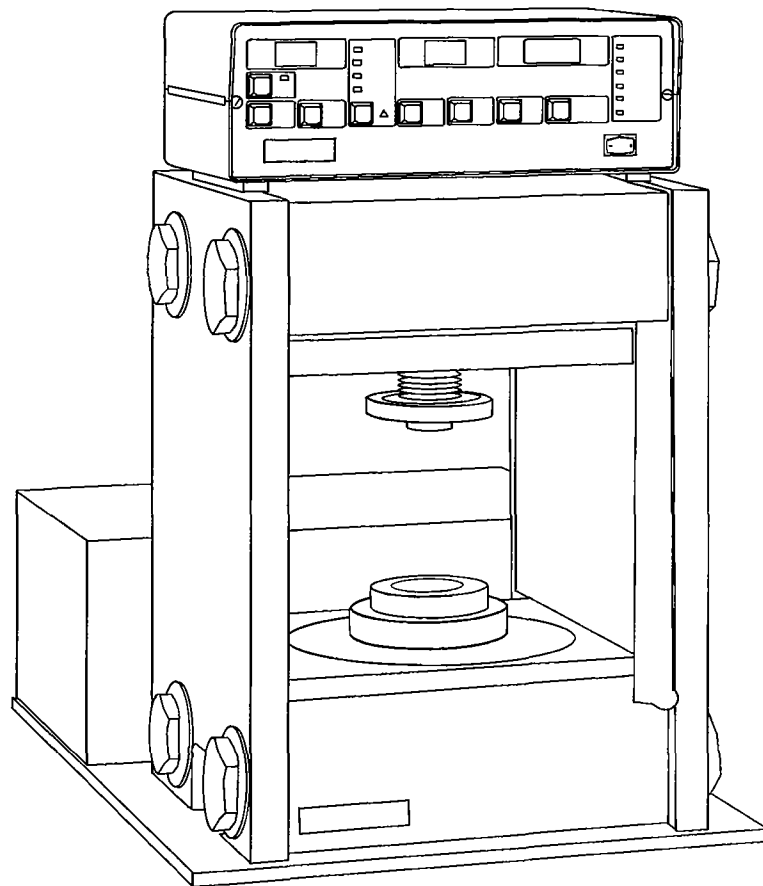




# **T40 Automatic Hydraulic Press P/N 25600/25601 series**

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## ***Workshop Manual***



***Specac***

T-40 Automatic Hydraulic Press P/N 25600/25601 SERIES

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## I Introduction

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This workshop manual has been written in sectional format to enable ease of use and allows different parts of the press to be serviced independently.

## 2 Tool Requirement

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The following tools will be required to enable proper maintenance to be carried out effectively and safety. Apart from the crane and the General Tool Kit, all the tools can be purchased separately from Specac.

1 Piston Seal Kit including:

- 1 piston seal
- 3 seal housing seals
- 2 manifold block seals

1 Priming Kit including:

- 1 blanking plug screw
- 1 piece of rubber tube

1 General Tool Kit including:

- 1 general purpose key
- 2 hexagon keys
- 1 ball driver
- 1 test meter

1 Wrench Set including:

- 1 large socket 2¼" 'T' bar wrench with delrin insert
- 1 special 'sliphammer' tool
- 1 torque wrench and 2 adaptors
- 1 set of allen keys
- 1 special 'C' spanner and 4 extractor screws

- 1.5 litre Can of Oil
- 1 Lifting Sling (supplied with press)
- A Crane

### 3 Warnings (Preparing the Press for Maintenance)

The motor pump assembly is situated at the rear of the press. After reading the following warnings, unclip and disconnect the motor connecting plug from the rear of the unit.

- 3.1 Firstly ensure that the piston is in its fully retracted state and no load pressure is displayed in the 'set ton' indicator (i.e. indicator reads zero).
- 3.2 Do not touch the male pins of the motor plug immediately after disconnection because the motor capacitor can store charge and give an electric shock.
- 3.3 Disconnect all plugs from the back panel of the control unit.
- 3.4 Ensure that there is a box or roll of tissue paper to wipe off the small amounts of oil that will drip from the pipes.

### 4 Motor and Pump Assembly

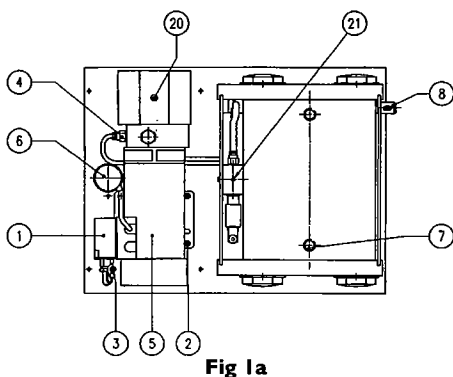


Fig 1a

#### 4.1 Removal of 240V Pump/Motor

- 4.11 Remove the cover on the motor assembly.
- 4.12 Undo the four screws of the motor wiring cover (1) Fig. 1a and disconnect all internal wiring. Ensure that you note how the wiring was connected.
- 4.13 Using a 5mm A/F shortened allen key remove the four fixing screws (2) which secure the motor to the baseplate. Do not unscrew the earth wire screw (3) in the baseplate.
- 4.14 Unscrew the hydraulic pipe nuts (4) which connect the pipes to the pump.
- 4.15 Gently pull the pipes slightly away from the pump block.
- 4.16 Disconnect the thermal switch (5) wiring.
- 4.17 The capacitor (6) has a U-shaped groove in the base which hooks into a metal plate on the baseplate and twisted to secure. To remove, twist the capacitor anti-clockwise (about 90°) and pull away from the motor. It is not essential to remove the capacitor (6).
- 4.18 Remove the motor and pump assembly from the press.

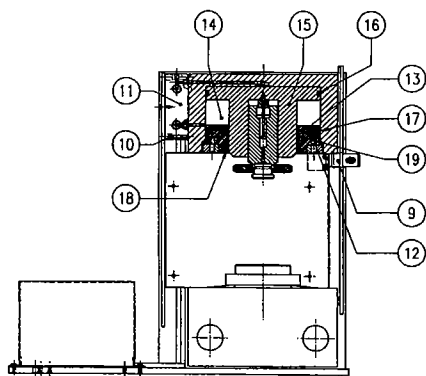


Fig 1b

#### 4.2 Removal of 110V Pump/Motor

- 4.21 Remove the cover on the motor assembly.
- 4.22 Making a note of how all wires are connected, remove the

wires from the terminal block on the baseplate.

- 4.23 Unclip the capacitor from its spring fixing, also unscrew the bolts that hold the small black box to the baseplate.
- 4.24 Unscrew the four bolts that secure the motor to the baseplate.
- 4.25 Unscrew the hydraulic pipe nuts (4) which connect the pipes to the pump.
- 4.26 Gently pull the pipes slightly away from the pump block.
- 4.27 Disconnect the thermal switch (5) wiring
- 4.28 Remove the motor and pump assembly from the press.

### 4.3 Replacement

*Note: Always replace the motor and pump assembly as a complete unit. Do not attempt to separate them as misalignment can cause damage to the pump's internal seals.*

- 4.3.1 Re-align the motor mounting bracket with the fixing holes in the baseplate and affix the four screws loosely. Push the motor as far towards the press as possible and then tighten the screws up.
- 4.32 Re-attach the hydraulic pipes and fill the reservoir (20) with the recommended oil to approximately 10mm below the filling hole. Do not replace motor cover or reservoir plug yet.
- 4.33 Re-connect all cables to the control unit and re-wire the motor as before (refer to 3.1.2).
- 4.34 Replace the capacitor (6) (if removed) and re-wire the thermal switch (5).
- 4.35 With nothing in the press, turn on the mains power and switch on the controller. Set 'hold time' to 0 and 'set ton' to 4 tons.
- 4.36 Press the 'start/stop' button and allow the piston to start its full travel to bottom limit. At the end of its travel allow the press to stand for approximately 5 minutes.
- 4.37 Press the release 'Rel' button for the piston to retract. Repeat pressing until the piston is fully retracted. Then wait for approximately 5 minutes.
- 4.38 Repeat the piston up and down full movements several times, waiting about 5 minutes between full travels each time until air is expelled from the system. A good visual aid is to look at the condition of the oil through the reservoir filling hole; if the oil is clear, then there is no air in the system. If it is frothy then there is still some air in the system and procedures 3.2.6 and 3.2.7 need to be repeated several times more.

- 4.39 When the oil is clear replace the reservoir plug and motor cover.

## 5 Piston Assembly

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### 5.1 Removal

- 5.1.1 Ensure that the piston is in its fully retracted state and that the 'set ton' indicator reads 4 tons and 'hold time' indicator reads 0.
- 5.1.2 Switch off the controller and disconnect from power supply.
- 5.1.3 Disconnect all plugs from the rear panel of the controller unit and remove the controller unit from the press.
- 5.1.4 Using the eye bolt and sling used to originally unpack the press, screw the eye bolt into the tapped holes (7) in the top of the piston block. Thread the sling through the eye bolts as illustrated on page 10 (Safety Precautions).
- 5.1.5 Using a crane, hook the sling and take up the slack to support the weight of the top block without lifting the press.
- 5.1.6 Remove the top guard by unscrewing the handle knob (8) and the screw at the bottom which fixes the magnetic catch (9) (Fig. 1b) to the guard. Then slide completely up.
- 5.1.7 The back guard is held by one screw at the top centre. Remove the screw and slide the guard completely up to remove it.
- 5.1.8 Remove the four fixing screws (10) of the manifold block (11) at the rear of the top pump block and pull away. do not disconnect the pipes from the block. There are two seals recessed into the manifold block which may be changed.
- 5.1.9 Using the T-bar with delrin insert, remove the four large bolts which secures the top block.

*Note: On later presses with serial no. 11464 and above built after 31/8/95 a special 'sliphammer' tool is required to remove bolt sleeves after removing the bolts.*

- 5.1.10 Lift the block gently by the crane and lie it on its side. Remove the sling and eye bolts, then turn the block so that the piston faces upwards.
- 5.1.11 With the special 'C-shaped' extractor tool align the pegs in the tool with any three of the four holes in the keep ring (12) inside the block. Turn clockwise to unscrew but do not remove the ring completely from the block. Leave about 3 threads holding.

- 5.1.12 Align the 4 clearance holes in the keep ring with the 4 tapped holes inside the seal housing (13) beneath the keep ring (12).
- 5.1.13 Insert the 4 M6 x 25 cap head screws into the 4 holes in the keep ring and screw into the tapped holes in the seal housing (13). This should extract the seal housing together with the O-ring seals from the piston housing cavity (14).
- 5.1.14 Finally use the 'C-shaped' extractor tool to unscrew the keep ring completely. Pull the keep ring and seal housing assembly out of the piston housing cavity. Remove the 4 screws to separate the two units.
- 5.1.15 Siphon the oil out of the piston housing cavity and pull out piston (15).

## **5.2 Replacement**

- 5.2.1 Using a soft tissue or lint-free cloth clean the seal housing (13), piston housing cavity (14) and piston (15) especially the grooves of the sealing O-rings.
- 5.2.2 Lightly smear oil on all 4 replacement seal rings (piston O-ring seal (16), seal housing outer O-ring (17), seal housing inner O-ring (18) and seal housing inside slide ring (19)).
- 5.2.3 Slide the piston back into the housing and ensure that it is pushed down to the bottom.
- 5.2.4 Place the seal housing over the piston, rotating slightly by hand and tap gently home with a mallet.
- 5.2.5 Tightly screw down the keep ring with the 'C-shaped' extractor tool first by hand, then tap the handle with a mallet to tighten it further.
- 5.2.6 Re-assemble the press in a reverse procedure from above (i.e. 4.1.10 to 4.1.1).
- 5.2.7 Re-torque the four large bolts of the top block using the torque wrench set to 110ft lbs.
- 5.2.8 The press will now require priming (see section 5).

## 6 Priming the Press

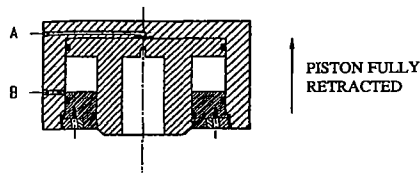


Fig 3a

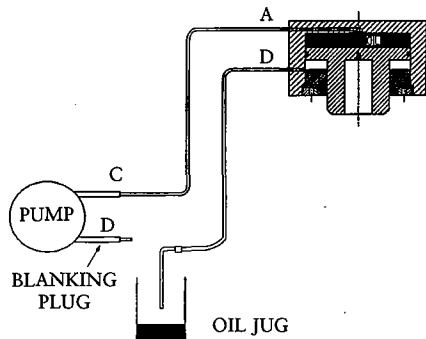
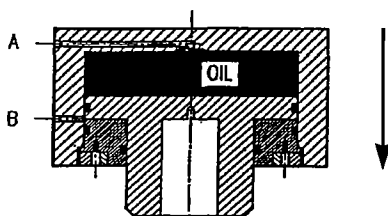


Fig 3b



PISTON AT FULL 1 1/2" TRAVEL  
DOWNWARDS

Fig 3c

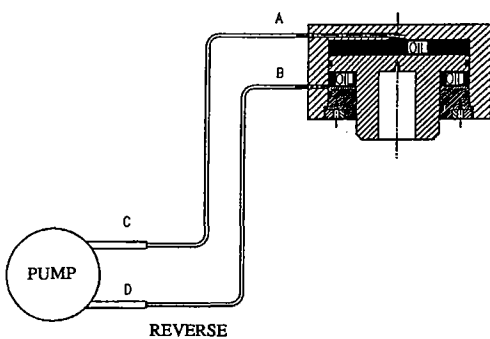


Fig 3d

Begin with the piston fully retracted (Fig. 3a) and nothing inside the sample compartment (i.e. no load).

### 6.1 Filling the space above the piston with oil (see Fig. 3b).

- 6.1.1 Set the tonnage on the 'set ton' to 4 tons, and the hold time to zero. Ensure piston is fully retracted and nothing is in the press sample compartment.
- 6.1.2 Remove the reservoir cap (20) on the motor pump oil container and fill the reservoir with the recommended oil.
- 6.1.3 Disconnect the reverse pump outlet pipe 'D' and fit the blanking plug screw to the pump.
- 6.1.4 Fit the rubber tube supplied with priming kit to the end of the tube removed from 'D' and insert the open end in a jug or container to hold the waste oil.
- 6.1.5 Using the 'start/stop' button start the press to drive the pump in the forward direction so that the oil pressure pumps the piston downwards.

*Note: Keep the pump reservoir topped up during the first half of the piston travel (approximately three quarter inch). Then allow the level to drop during the second half of the piston travel.*

- 6.1.6 Press the 'start/stop' button to stop the motor when the piston has reached its full 1 1/2" of travel as in Fig. 3c.

### 6.2 Filling the space below the piston with oil (see Fig. 3d).

- 6.2.1 Remove the blanking plug from the reverse pump outlet, and re-connect pipe at 'D'.
- 6.2.2 With the piston in a fully downward position (Fig. 3c) ensure the tonnage is set to 4 tons and hold time is zero (no delay).
- 6.2.3 Press the release (Rel) button to drive the pump motor in the reverse direction so that oil pressure pumps the piston upwards. This clears away air from the top of the piston.

*Note: Keep the pump reservoir topped up during the first half inch of piston travel.*

- 6.2.4 Keep running the piston upwards until piston is fully retracted (Fig. 3a).
- 6.2.5 Press the 'start/stop' button to stop the pump if necessary.



### 6.3 Bleeding the Pump

- 6.3.1 Run the pump forward full travel and backward full travel several times until all air is expelled.

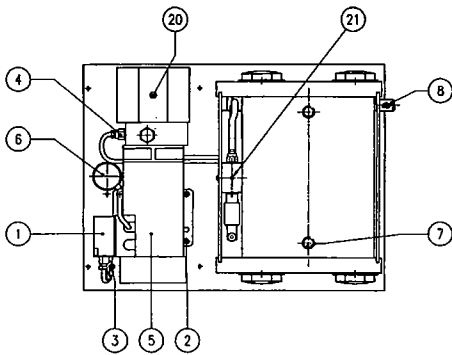
*Note: Wait about 5 minutes for air to rise in reservoir between full travels.*

- 6.3.2 After each upward or downward travel, when the motor stops, unscrew the oil bleed grub screw (21) in the top of the manifold block about 1/4 turn to release the air trapped in the manifold or the top of the piston, then re-tighten before next upward or downward movement.

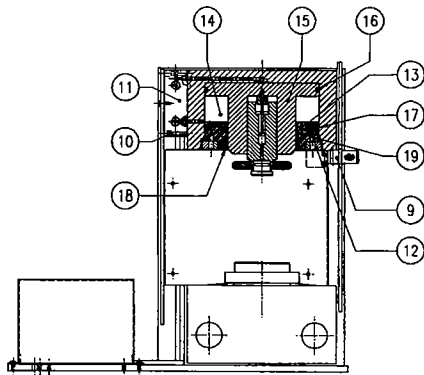
*Note: Do not unscrew the bleed screw when the press is under pressure.*

- 6.3.3 Resume of priming instructions can be found on page 10, Section 8 under 'Cylinder Block Oil Filling'.

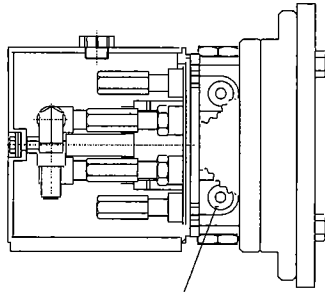
## 7 Parts Identification List



1. Motor wiring cover
2. Fixing screws of motor mounting
3. Earth wire screw
4. Pipe nuts on pump block
5. Thermal switch
6. Capacitor
7. Tapped holes in top block
8. Front guard handle knob
9. Magnetic catch
10. Manifold block fixing screws
11. Manifold block
12. Keep ring
13. Seal housing
14. Piston housing cavity
15. Piston
16. Piston 'O' ring seal
17. Seal housing outer 'O' ring seal
18. Seal housing inner 'O' ring seal
19. Seal housing slide ring seal
20. Reservoir cap
21. Oil bleed grub screw



## 8 Resume - Cylinder Block Oil Filling



BLANK OFF PUMP PORT (VENT PIPE TO CONTAINER IF REQUIRED).

Disconnect the return pipe attached to the pump (lower pipe) and blank off at the pump.

Fill the large diameter side of the piston using the pump (always keeping the reservoir topped up preventing air from entering the system).

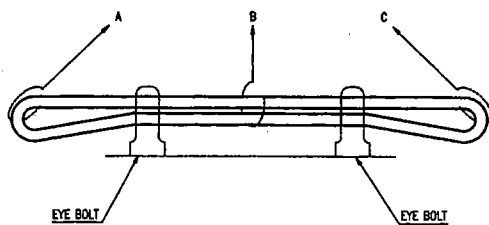
Once full, re-connect the return pipe to the pump and top up the oil reservoir.

Finally, retract the piston to the home position.

Oil Type: Tellus 68 (Shell)

Oil Capacity 2 Litres

## 9 Safety Precautions



### Lifting Hazard

The press is heavy. Lift only using suitable equipment and move in a safe manner.

Weight: 145kg

Thread lifting straps through eye bolts and lift from points A, B and C as shown.

## 10 T-40 Automatic Press Spare Parts and Tools

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|  | Part Number  |
|--|--|
| Motor Pump Assembly (110V)   | 523-029  |
| Motor Pump Assembly (240V)   | 543-021  |
| Microprocessor Board   | 248-065  |
| Fuse Kit (3 types, 3 off each)   | 254-065 - 3 amp<br>254-030 - 1.25 amp<br>254-019 - 0.250 amp                                     |
| Pressure Transducer  | 523-012  |
| Complete Cylinder Block Assembly   | 543-027  |
| Electronic Control Box (includes microprocessor board)   | 523-010  |
| Micro Switch Assembly  | 523-013  |
| Thermal Switch   | 258-029  |
| Front Guard  | 315-109  |
| Rear Guard   | 327-097  |
| Small Anvil  | 345-002  |
| Large Anvil  | 321-195  |
| Top Bolster Lead Screw   | 321-150  |
| Hand Wheel   | 317-112  |
| 'C' Spanner/Extraction Bolts   | 320-008/530-290  |
| Seal Kit comprising:<br>1 piston seal, 3 seal housing, 2 manifold block seals<br>Pipe Olives (4) + Seals (5) | 25610<br>385-057 - Pipe Olive<br>385-082 - Fittings (4 off)<br>385-083 - Transducer Seal (1 off) |
| 2 1/4" Large Socket, 'T'-Bar Wrench, Nylon Insert  | 820-052/820-053/323-037  |
| Torque Wrench and 2 Adaptors   | 820-056/820-055/820-054  |
| Special 'Sliphammer' Tool  | 530-291  |
| Hydraulic Oil (3 litres)   | 612-035  |
| Priming Kit including tubing and plug  | 530-292  |
| Set of Allen Keys  | 821-036  |
| Workshop Manual (excluding replacement of Electrical Parts)  | 614-134  |

Re-calibration of press and the issue of Certificate of Conformity traceable to a NAMAS issued certificate is available. Details on application.

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