



T-40 Automatic Hydraulic Press

User Manual



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2I-25600 Issue 8

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1. Introduction

The T-40 Automatic Hydraulic press has been designed for use in a wide range of pressing applications up to 40 tons load. Many types of laboratory and industrial samples such as KBr discs for infrared analysis and samples for X-Ray fluorescence and X-Ray diffraction analysis can be handled in a routine manner.

The press can be operated in a simple mode by selection of pressing parameters via push button controls, or using a microprocessor facility. The unit is compact and modular – the hydraulic pressing hardware being separated from the electronic control system enabling easy update and maintenance.

The automatic press has a large daylight (distance between pressing faces) and a wide die locator diameter allowing the use of a variety of sample holders such as Evacuatable Pellet Dies and Heated Platens. Evacuation of the dies is incorporated into the press design together with several safety features. High impact resistant plastic guards and electronic interlock are some of the many essential features provided for safe and reliable use.

WEEE Directive For Equipment Disposal



The symbol (above) on the back of the press indicates that this product complies with the Waste Electrical and Electronic Equipment Directive (WEEE). If this product is in use and was purchased within the European Union, please contact your local sales agent or Specac to make arrangements for disposal of this equipment.

2. Specifications

The T-40 Autopress has been designed and tested in accordance with safety class 1 requirements of IEC348 and 1010 safety requirements for electronic measuring apparatus.

Safety Warnings

This instruction manual contains some warning information on safety that must be followed by the user to ensure safe operation and maintain the equipment in a safe condition. The equipment has been designed for indoor use. It may occasionally be subjected to temperatures between -10C and +5C without degrading its safety.

CE Mark

The T-40 Autopress bears the CE mark and complies with Machinery Directive 89/392/EEC and amendment 93/44/EEC.

General Specification

T-40 Autopress (P/N 25600 – 220 volts, P/N 25601 – 110 volts)

Maximum load on ram.....	40 tons (40,639Kgs)
Load applied displayed to.....	0.1 ton
Digital display setting.....	4 tons to 40 tons
Digital display increment.....	1 ton
Die locator diameter (standard).....	80mm
Die locator diameter (optional).....	up to 200mm
Top bolster diameter.....	32mm
Top bolster adjustment.....	35mm
Ram diameter.....	100mm
Ram stroke (ram travel).....	38mm
Ram approach rate.....	8.7 sec/cm (220volts) 15.1 sec/cm (110 volts)
Max daylight (standard).....	135mm
Max daylight (optional).....	152mm

T-40 Automatic Hydraulic Press

Min daylight.....	35mm
Width (side plate to internal cover).....	247.5mm
Width (centralised).....	210mm
Depth (front guard to rear guard).....	240mm
Depth (centralised).....	210mm
Baseplate (length x depth).....	280 x 500mm
Height (with control box).....	568mm
Weight.....	145Kg (Net)
	180Kg (including packaging)
Voltage.....	220-240 volts (50Hz)
	110-120 volts (60Hz)
Finish.....	Pearl white/ Nimbus grey
Operation.....	Microprocessor control of bi-directional motor pump connecting with hydraulic cylinder.
Load applied deviation	
Set value stopping error....	1 ton +3% of set value (after 5 sec)
Pressure drop back rate....	1 ton per minute (warm) measured after 5 sec over 5 min period @ typically 30 tons.
Temperature range	
Normal operating range.....	15C to 35C
Max safe working range.....	5C to 40C
Noise level.....	Typically 67 to 70 db (A weighted) at 1 meter
Recommended oil.....	Tellus 68
Typical oil capacity.....	1.75 to 2.0 liters maximum.
Duty cycle.....	50% (Please contact Specac if this figure is expected to be exceeded.)

3. Unpacking of the T-40 Autopress

The T-40 Autopress is packaged in a box containing both the press mainframe and the electronic control unit. The package stands on 4 inch wooden blocks which enables initial transportation by fork lift truck.

Warning: *The press is very heavy. Lift only using suitable equipment and move it in a safe manner.*

The packaging (544mm x 724mm x 748mm high) comprises of a base pallet and top cover. The top cover is attached to the base pallet by four screws and is further secured by straps.

Undo the straps and remove the four package assembly screws at the base.

Remove the top cover by lifting upwards.

The press is held rigidly in an upright position during transit by a packaging board on top of the press secured by the lifting eye bolts. Unscrew the lifting eye bolts and remove the packaging board.

Tear open the protective plastic cover around the press assembly.

Check that the following press items are in the packaging.

- 1 T-40 Automatic hydraulic press mainframe.
- 2 Lifting eye bolts and plastic washers.
- 1 Lifting strap.
- 1 Aluminium cylinder test sample.
- 1 Cardboard box containing:
 - 1 Electronic control unit.
 - 1 Mains cable.
 - 1 Operating manual.

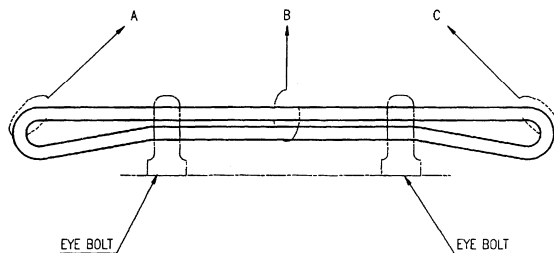
SAFETY PRECAUTIONS

1. LIFTING HAZARD

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

2. Weight: 145Kg.

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



The electronic control unit is packaged separately in a cardboard box on top of the pump motor cover at the rear of the press. Remove this box before further handling of the press.

Note: Store the packaging materials in a safe place for the future if the press is required to be returned to Specac for servicing.

4. Installation of the T-40 Autopress

Safety Precautions

Lifting Hazard

The T-40 Autopress is very heavy. Lift only using suitable equipment and position it in a safe manner.

Electrical Hazard

Check that the input voltage (240v or 110v) engraved on the plate on the rear of the presses electronic control box is compatible with your AC mains voltage.

The electrical supply connection to the plug must be earthed. The protective action earth contact must not be negated by use of an extension cord without a protective conductor.

Any interruption of the protective conductor inside or outside the apparatus or disconnection of the protective earth terminal is likely to make the apparatus dangerous. Intentional interruption is prohibited.

If this apparatus is to be energised via an external autotransformer for voltage reduction, make sure its common terminal is connected to the neutral (earth pole) of the power supply. Any wiring for plug connections should be carried out by a qualified person. The following colour code is used on a 3 pin plug.

Brown – (L) Live, Blue - (N) Neutral, Yellow/Green – (E) Earth.

When the apparatus is connected to the supply, terminals may be live. Opening of covers or removal of parts (except those to which access can be gained by hand) is likely to expose live parts. To avoid a risk of electrocution DO NOT remove any covers of the electronic control unit, motor or motor plug BEFORE disconnecting the mains supply.

Make sure that only fuses with the required current rating and specified type are used for replacement. The use of make-shift fuses and the short-circuiting of fuse holders are prohibited.

When the motor is switched off from the mains supply. Wait one minute before disconnecting the motor plug or mains input cable, as capacitors can store charge and give severe shock.

Whenever it is likely that the protection has been impaired, the apparatus should be made inoperative and be secured against an unintended operation.

Operational Hazards

Danger: *Do not attempt to use without both safety guards in place. Should a die or sample or component fail, the energy stored in the disc springs could be released and an explosive type hazard will exist.*

Do not exceed a load of 40 tons.

Do not attempt to press potentially combustible materials or materials with a low flash point temperature.

Do not operate the press in very hot or very cold environments.

Do not operate the press in WET, DAMP or HUMID environments. (Allow time for condensation to evaporate before operation, if it has been stored in cold conditions.)

Do not operate the press if it shows visible signs of damage. The unit may have been dropped in transit or in use.

Do not operate the press if it fails to perform the intended measurements. The apparatus may have been subjected to prolonged storage under unfavourable conditions, damaged in transit or use, or may require servicing and maintenance.

Repair or Maintenance Hazards

The apparatus shall be disconnected from all voltage sources before it is opened for any adjustment, replacement, maintenance or repair. Any adjustment, maintenance or repair of the opened apparatus under voltage should be avoided as far as possible and if inevitable, should be carried out only by a skilled person who is aware of the hazards involved. Capacitors inside the apparatus may still be charged even if the apparatus has been disconnected from all voltage sources.

Installation

Warning: *Please read the section on **Safety Precautions** before proceeding with installation of the T-40 Autopress.*

Moving the press to Required Position

Place the plastic washers over the lifting holes on top of the Autopress mainframe and tightly screw in the lifting eye bolts.

Thread the lifting strap as shown in the diagram Fig. 1, through the lifting eye bolts and hook the strap to suitable lifting gear (e.g. mobile crane hook). Points A, B and C should all be looped over the lifting hook.

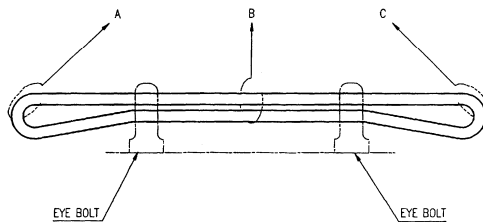


Fig. 1 Lifting arrangement for strap through eye bolts

Note: *The recommended strapping path of the lifting strap to the press ensures even weight distribution on the threaded lifting eye bolts, thus preventing damage to the threads.*

Lift the press off the pallet onto a solid working bench and manoeuvre to its desired position. If the press has to be carried along on the lifting strap (unsupported at the base) for any distance, do not lift the press more than 6 inches from the floor whilst wheeling along.

When the press is in position, remove the strap, lifting eye bolts and plastic washers and store these parts safely for possible re-use at a later date.

Preparing the Press for Use

Lift the guard (1) up (see diagram Fig. 2) and remove the packing material inside the press by unscrewing the top bolster lead screw (2) that is holding the packing in place. This packing is also holding firmly in place the aluminium cylinder test sample, the die locator (3) and the disc springs (4) during transportation. For use the aluminium cylinder test sample must be removed. The die locator (3) may be removed and relocated upside down within the disc springs (4) if wished. This allows for different height dies or samples to be used within the press.

Remove the screw retaining the rear guard to the press frame. Lift the rear guard and remove temporarily from the press. There are three power cables gathered together in a plastic covering. Remove the plastic covering and pull (route) the three cables up towards the rear and the top of the press. Replace the rear guard and tighten its retaining screw ensuring that the three power cables now rest over the top edge of the rear guard.

Remove the electronic control unit from its box and place it on top of the press frame. The two white plastic legs of the controller unit should be inserted into the threaded lifting holes on top of the press frame with the control buttons facing the front of the press.

From the three power cables, connect the grey colored seven pin plug from the press to the "Output" socket on the back of the electronic control unit and secure with the swing metal clip on the socket.

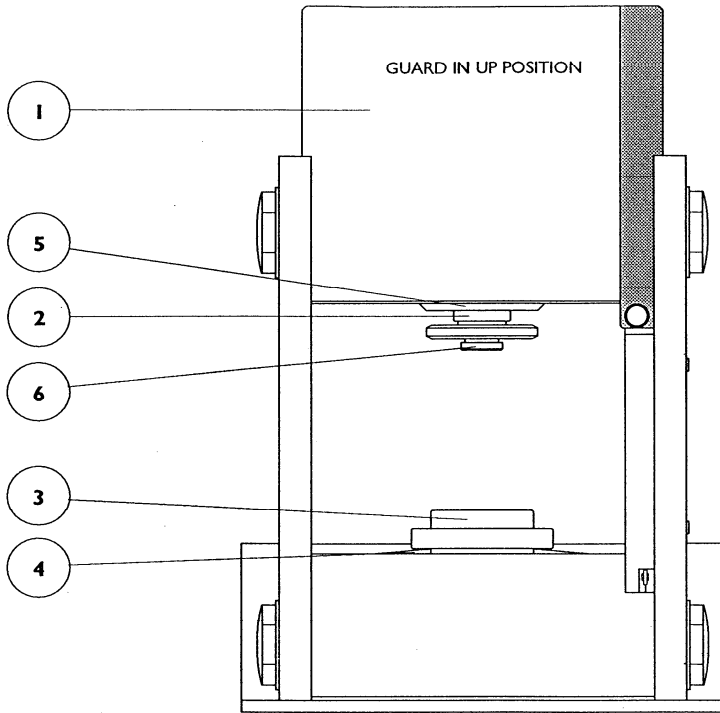


Fig. 2 Front View Of T-40 Autopress

Connect the cable with the six pin plug to the "T/DCR" socket on the back of the control unit and similarly, the cable with the eight pin plug to the terminal socket marked "I/Lock".

The additional RS232 socket at the back of the electronic control unit has been provided for future upgrade if required.

Connect the mains lead to the electrical supply ensuring that the voltage engraved on the plate by the mains socket applies to your mains supply. Ensure that the power supply cable is protected by a fuse (or fuses) from 7A up to and including 13A.

Important: *The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. The protective action earth contact must not be negated by use of an extension cord without a protective conductor.*

If this apparatus is to be energised via an external autotransformer for voltage reduction, make sure its common terminal is connected to the neutral (earth pole) of the power supply.

5. Operation of the T-40 Autopress

Important Note

Before performing any power up test, make certain that there is a gap of greater than 3mm between the top bolster pressing face and the aluminium test sample. This will ensure that the press can correctly check the zero load calibration of the transducer. If this gap is not achieved the test sample will become “jammed” in the press during the cycle to set the calibration zero. If this does happen the following procedure must be adopted.

- 1) Push the **REL** (Release) button and wait 5 seconds as the piston ram retracts.
- 2) Open the guard before the piston ram is fully retracted. (A beeping noise indicating an open guard will be heard).
- 3) Turn the knob handle of the lead screw anti-clockwise to release the pressure on the aluminium test sample.
- 4) Reset the minimum gap (3mm or greater) between the top bolster pressing face and the test sample and start again.

Self Diagnostic Test

Turn the controller POWER switch to the position indicated “-“. The controller will undergo an automatic self diagnostic test in the following sequence:-

A whistle sound followed by the figure “8” is displayed momentarily in all digital readout positions. This will be followed by another whistle sound to blank the display.

All the light indicators on the panel will be lit momentarily and then blanked except the yellow “OFF” indicator.

The colors of the panel indicators are as follow:

“MINS” - green	“@ TONS” – green
“SECS” - green	“RUN” – green

“OFF”	- yellow	“DELAY”	– yellow
“C”	- yellow	“@TEMP”	– yellow
“PROG”	- yellow	“GUARD”	– red
“OIL”	- red		

The SET TONS will read “4”.
The LOAD TONS will read “0”.

The piston ram (5) will retract to its upper limit and stop. It will then move down a short distance and stop in order to check the zero load calibration of the transducer. The LOAD TONS display will then read 0.1 ton (+/- 0.1) and the press is now ready to begin an operation cycle.

The Function Buttons

The buttons on the front panel of the electronic control unit, when pushed perform the following functions. These can be tried using the aluminium test sample cylinder supplied.

Loading a Sample

First you will need to load the sample into the press. Lift up the front safety guard and insert the test sample cylinder or an evacuable pellet die assembly centrally on the die locator (3). Adjust the top bolster lead screw (2) until the top bolster pressing face (6) is at a gap of no less than 3mm to the top of the sample to be pressed. The die locator (3) has circular rings to help positioning of the test sample or a die centrally.

When the sample to be pressed has been correctly positioned close the front safety guard by pushing down.

Triangular Button

The button with the **triangular** symbol is used to select the HOLD TIME for an applied load in minutes or seconds or to switch the function off. An appropriate light illuminates to identify which time function has been selected. Minutes and seconds illuminate green and

the HOLD TIME screen will display the number value in red (minutes or seconds). The off position illuminates yellow and when selected, the HOLD TIME screen will be blanked. The light position corresponding to the °C indicator is not used.

Upward and Downward Buttons

The buttons with the **upward** pointing arrows will increase the HOLD TIME and the SET TONS loads. A maximum of 99 minutes or 99 seconds (whichever is selected) is allowed for the HOLD TIME and 40 Tons as the SET TONS load.

The buttons with the **downward** pointing arrows will reduce the HOLD TIME and the SET TONS load. A minimum of 1 minute or 1 second (whichever is selected) is allowed for the HOLD TIME and 4 Tons as the SET TONS load.

REL (Release) Button

The **REL** (Release) button will release the applied load and reset the LOAD TONS to 0.0. When the button is depressed and there is no applied load, the upper piston ram bolster face will retract further upwards about 6mm and set at a 0.0 ton value. Every time the **REL** button is depressed this sequence will be repeated until the piston ram cannot retract any further. At this upper limit the LOAD TONS of 0.0 will be reset at the same position of the piston ram.

When the piston ram and bolster pressing face is moving downwards to apply a load, or has already started to apply a load to a sample, if the **REL** button is pressed the operation will stop. Almost immediately, the piston ram and bolster face will retract and the LOAD TONS will be reset to 0.0.

Note: *Depression of the **REL** button functions as a **STOP** procedure and returns the press to a safe status of no load being applied.*

START/STOP Button

The **START/STOP** button when pressed once will initiate running of the motor and pressing of a sample. In this mode of operation, if the **START/STOP** button is depressed one or more times before any applied load has been registered on the LOAD TONS screen, the press will undergo a stop-start-stop-start sequence. In the stop mode the LOAD TONS screen will go blank. In the start mode the LOAD TONS screen will display 0.0.

In the stop mode with a blanked LOAD TONS screen, if the **REL** button is depressed, the piston ram bolster face will retract and the LOAD TONS screen will be reset to 0.0.

When the press has actually started applying a load to a sample and a value has been registered on the LOAD TONS screen, the press can still be stopped using the **START/STOP** button. At this stage the partial applied load will not be registered and the LOAD TONS screen will be blanked. Further depression of the **START/STOP** button to restart pressing will cause the partial applied load to be released. The piston ram bolster face will retract to set 0.0 on the LOAD TONS screen and then automatically re-apply the set load.

Note: *The press will not complete applying the full load from a partially applied load if stopped during the pressing cycle.*

If a full load has been applied and is registered on the LOAD TONS screen, pressing the **START/STOP** button once will release the load. The piston ram bolster face will retract to set 0.0 on the LOAD TONS screen and the set load will automatically be re-applied. The @TONS indicator will be lit when the full set load has been applied to the sample.

Note: *Once a full load has been applied and registered on the LOAD TONS screen the **START/STOP** button only operates as a **restart** button and not a **stop** button. To release the load or stop pressing the **REL** button should be used. However, the load will be automatically released if the HOLD TIME screen is lit (minutes or seconds) and the time set elapses.*

Once the pressing operation is underway the RUN indicator light will be on and all the buttons will be deactivated except the **REL** and **START/STOP** buttons. This is also the case during the countdown of any time delay indicated from the HOLD TIME screen.

PROG (Program) Button

The **PROG** (Program) button allows for quick programming of standard pressing conditions that will be used repeatedly. The programs are stored in memory to facilitate quick operation and high sample throughput. Nine program registers (P1 to P9) are available to store nine sets of conditions in memory. The conditions will be an applied set load and a HOLD TIME in minutes or seconds or with no HOLD TIME.

When the **PROG** button is pressed the indicator directly above it will be lit. A number will flash once in the HOLD TIME screen and P1 (Program 1) will be displayed in the LOAD TONS screen. Subsequent pressing of the **PROG** button will change the display in the LOAD TONS screen to P2 and progressively to P9 and then back to P1.

Basic Operation

With the aluminium cylinder test sample loaded into the press (see Loading a Sample) use the **upwards** and **downwards** arrowed buttons to register a required value on the SET TONS screen indicator. Ensure that the HOLD TIME screen is blank and that the hold time OFF indicator is lit (yellow).

Note: *The **minimum** press tonnage load that can be selected is 4 tons. Be certain that the evacuable pellet die assembly to be used in later sample pressings will withstand this minimum set tonnage load.*

Press the **START/STOP** button to initiate the pressing process.

When the full SET TONS load has been registered in the LOAD TONS screen the press motor stops. Wait for about 30 seconds and then press the **REL** button to release the load being applied.

Note: *If the **START/STOP** button is now pressed instead of the **REL** button, the piston ram bolster face will retract, reset at 0.0 tons and automatically start pressing again.*

Remove the pressed sample and insert the next sample. If the same tonnage load to apply is required, continue by pressing the **START/STOP** button.

Please note that by pressing a sample without any HOLD TIME being selected (hold time OFF light is lit), the press **will not** automatically reapply a load to the sample, if the LOAD TONS value indicated drops below the applied SET TONS value indicated.

Operation Using a HOLD TIME Function

Load a sample into the press and set the required SET TONS load to apply. (Same as for the Basic Operation – see page 18).

Select the HOLD TIME units required in either seconds or minutes by pressing the **triangular** button. The appropriate indicator will be lit depending on whether OFF, SECS, or MINS has been selected.

Select a HOLD TIME in the screen using the **upward** or **downward** buttons below the HOLD TIME screen. 1 to 99 seconds or 1 to 99 minutes can be selected.

Press the **START/STOP** button to commence the pressing process.

The SET TONS load will be applied to the sample and will be registered on the LOAD TONS screen. This load will be maintained on the sample for the hold time that has been set in the HOLD TIME screen. The DELAY indicator will be lit (yellow) for the duration of the hold time. After the set hold time has elapsed (which will be counted down on the HOLD TIME screen) the load on the sample will be automatically released.

Note: *During the countdown of any set hold time all of the buttons will be deactivated except the **REL** and **START/STOP** buttons.*

If the **REL** button is pressed during the set hold time countdown, the pressing procedure is stopped and the piston ram bolster face retracts to its start position.

If the **START/STOP** button is pressed once during the set hold time countdown the countdown stops and the HOLD TIME is reset to its initial value. The Load TONS screen is blanked but the piston ram bolster face is still in contact with the sample. Pressing the **START/STOP** button a second time will allow the piston ram bolster face to retract, reset at 0.0 tons and automatically start pressing again the SET TONS load at the set HOLD TIME being displayed.

When the pressing cycle has completed remove the sample and load the press with the next sample. Continue with the above procedure by pressing the **START/STOP** button if the same pressing conditions are required. If you wish to change the HOLD TIME or SET TONS load, alter these before pressing the **START/STOP** button.

Please note that by pressing a sample using a HOLD TIME (hold time SECS or MINS light is lit), the press **will** automatically reapply a load to the sample, if the LOAD TONS value indicated drops below the applied SET TONS value indicated. Usually the LOAD TONS indicator has to drop by about 1.0 ton before automatic re-application of a load to the original SET TONS value.

Operation Using a Stored Program (PROG Button)

Load a sample into the press and set the required SET TONS load to apply. (Same as for the Basic Operation – see page xx).

Press the **PROG** button. The last tonnage load value stored will be displayed in the SET TONS screen and P1 in the LOAD TONS screens. The HOLD TIME screen will be blanked if the previous program hold time had been set to OFF, or show the value in SECS or MINS if these had been selected. (The appropriate indicator, OFF, SECS or MINS would be lit). The PROG indicator will be lit (yellow). Select the HOLD TIME units required in either seconds or minutes or switch to OFF by pressing the **triangular** button. The appropriate

indicator will be lit depending on whether OFF, SECS, or MINS has been selected.

Select a HOLD TIME in the screen using the **upward** or **downward** buttons below the HOLD TIME screen. 1 to 99 seconds or 1 to 99 minutes can be selected.

Using the **upward** or **downward** buttons below the SET TONS screen, select a load from a minimum of 4 to a maximum of 40 tons.

The values for HOLD TIME and SET TONS will now be set in the memory as P1 – i.e. Program 1. To set any other programs from P2 through to P9, push the **PROG** button to change to the next program and input the HOLD TIME and SET TONS values required.

To initiate any of the programs, select the appropriate program by repeated pushing of the **PROG** button - e.g. three times to get to P3. Then push the START/STOP button twice to start the pressing procedure. The first push of the START/STOP button registers the program to be used and the second push starts the press.

When the SET TONS load is reached and registered in the LOAD TONS screen the time DELAY indicator will light and the HOLD TIME registered will count down. After the HOLD TIME reaches zero, the load will be released and the programmed values will be reset ready to take another sample. During the countdown all buttons will be deactivated except the **REL** and **START/STOP** buttons.

While in a particular program mode after pushing the **PROG** button, if you want to use the press but wish to ignore the programs stored in the memory, push the **START/STOP** button once to display the programmed values with 0.0 tons displayed in the LOAD TONS screen. You can then enter any desired values required for the HOLD TIME or SET TONS and then operate the press. Push the **START/STOP** button again and the press will now apply the SET TONS load for any HOLD TIME that has been selected.

Note: *Any changes to the displayed program at this stage will be stored in memory when the press is switched off.*

Evacuation of Samples in Pellet Dies

The evacuation of a sample in a pellet die to remove water vapour can be carried out inside the press by feeding the vacuum connection tubing hose through the gap at the bottom on either side of the press. Usually, vacuum tubing can be quite thick in size, so the gap on the bottom left side of the press (between the side plate and spring rings) is slightly wider than on the right and this may be the best position to route the tubing.

There is a gap at the bottom of the rear guard whereby vacuum tubing can also be routed to connect to the evacuation port of a pellet die within the press.

Heated Platens P/N 15515

The gaps in the press for vacuum tubing may also be used to feed the electrical cables and water cooling tubing of the Electrically Heated Platens P/N 15515 when installed in the T-40 Autopress.

For installation, the anvil (bolster face) (6) of the top leadscrew (2) is removable to allow the top heated platen to attach to the leadscrew. Remove the anvil (6) by pulling down against the leadscrew (2). An O-ring holds the anvil (6) in position. Insert the split spindle connection of the top heated platen into the hollow of the lead screw (2) after the anvil (6) has been removed. The connection is secured by turning the screw in the split spindle clockwise, which opens out the spindle fitting inside the leadscrew (2).

The bottom heated platen simply fits over the lower die locator (3).

Notes

Bleeping Sound

The push button entries are acknowledged with audible beeps. The sound can be muted and reactivated by pushing and holding down the

triangular button in combination with the **upward** or **downward** arrow buttons below the SET TONS screen.

The **triangular** button with the **downward** button mutes the sound. The **triangular** button with the **upward** button reactivates the sound.

Minimum Load

The minimum SET TONS load allowed is 4 tons. This is the minimum set load the T-40 Autopress can achieve with good certainty.

Load Accuracy

There will be variation in stopping accuracy from one press unit to another, with some units exhibiting overshooting and others stopping at a value below the desired SET TONS load. This is normal and will depend on a combination of different parameters (e.g. stiffness/free rotation or wear of the pump, the friction and stiction of the hydraulic cylinder, the motor inertia and the temperature and viscosity of the oil.)

The T-40 Autopress will perform within the following limits at typically 30 tons with a solid bar as a test sample.

Set value stopping error.....1 ton + 3% of set value (after 5 secs)

Pressure drop back rate.....1 ton per minute (warm) measured after 5 secs over 5 mins period.

Slower drop back rates would be expected with the oil being cold. (The pressure drop rate will be slower at lower tonnage.) The actual pressure drop may vary from specified values depending on the type of sample being pressed.

6. Repair and Maintenance

Important

Repairs and maintenance of the T-40 Autopress must be carried out by a suitably qualified person or competent personnel only.

Checking Hydraulic Oil Level

Warning: *These instructions **MUST** be followed before attempting to perform an oil check.*

- Ensure that the piston is in its fully retracted state (i.e. the ram (5) is fully up) and no load is being displayed in SET TONS indicator screen (i.e. indicator reads 0.0)
- Power down the press and disconnect the mains connecting plug (7) from the rear of the electronic control unit (8).

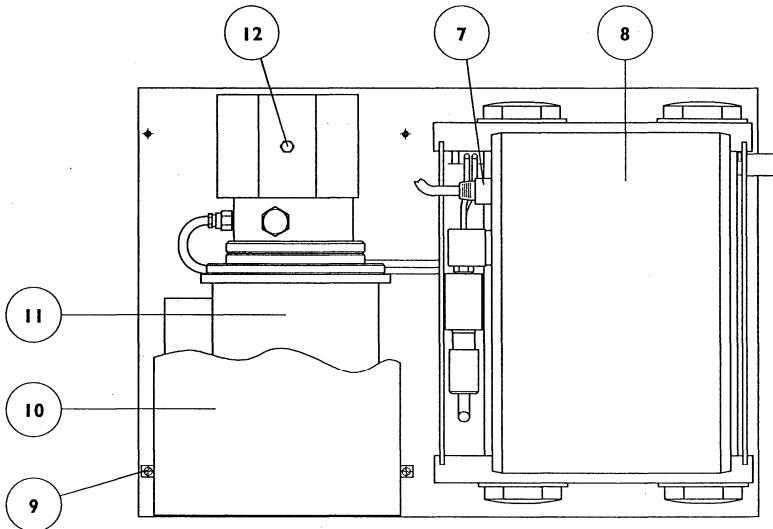


Fig. 3 Top view of T-40 Autopress

- Do not touch the male pins of the motor plug after disconnection because the motor capacitor can store charge and give an electric shock.
- Ensure that there is a supply of tissue paper to wipe off the small amounts of oil that may drip during filling.

Undo the four screws (9) and remove the motor cover (10) from the motor pump/oil reservoir assembly (11) situated at the rear of the press.

Remove the reservoir filler plug (12).

Fill the reservoir with the recommended oil to approximately 10mm below the top of the filling hole.

Replace the filler plug (12), motor cover (10) and reconnect the mains plug to the electronic control unit.

Repair and Servicing

For safety reasons we recommend that the press is returned to Specac or your appointed supplier for servicing and repair. The press should be returned in its original packaging for safe transportation.

In the event of qualified personnel capable of undertaking major service and repairs being available, an optional Workshop Manual and Repair Tool Kit is available from Specac to enable the work to be carried out safely. Please note that the Tool Kit is usually available as a loan item for hire, however a Tool Kit for your particular press can be quoted if required. Please contact Specac for details.

7. Fault Finding Diagnostics

If the T-40 Autopress does not operate as intended the following guide may help to correct for the fault. If in doubt about an unintentional operation please contact Specac.

SYMPTOMS	REMEDY
No Power (no LED lit).	Check rear panel fuse. Check mains plug fuse. If fault persists contact Specac.
Self diagnostic test not Completed.	Check front guard closed. Check for loose plug connections. Thermal switch may be inactive – need to contact Specac.
Completes self diagnostic test but repeat retract of piston ram to top limit.	REL front panel switch stuck or is faulty. Contact Specac for advice.
Press “bleeps” continuously.	Close guard door. Check rear panel pressure transducer plug. Check rear panel interlock cable plug.
Pump motor does not run.	Check rear panel pump/motor cable connections. Check if motor hot and if oil light on. Contact Specac for advice.
Piston ram retracts very slowly or does not retract.	Check hydraulic oil level. Air in hydraulic oil – must be bled so contact Specac for advice.
Piston ram at top limit and cannot release sample.	Push REL button. Allow piston ram to retract slightly but switch off power before ram moves down again. Remove sample.
Press at high tonnage load and cannot release load.	Contact Specac for advice.

8. Press Parts Identification List

- (1) Plastic front safety guard
- (2) Top bolster lead screw
- (3) Die locator
- (4) Disc springs
- (5) Piston ram
- (6) Top bolster anvil
- (7) Mains connecting plug
- (8) Electronic control unit
- (9) Fixing screws
- (10) Motor pump cover
- (11) Motor pump/oil reservoir assembly
- (12) Filler plug

9. Alternative Low Tonnage Range Version

1 to 4 Tons Version of the T-40 Autopress

The T-40 Autopress may be supplied as an alternative version from the 4 to 40 tons load range as standard. The press will have a different EPROM and software and alternative disc springs are used with the die locator (3).

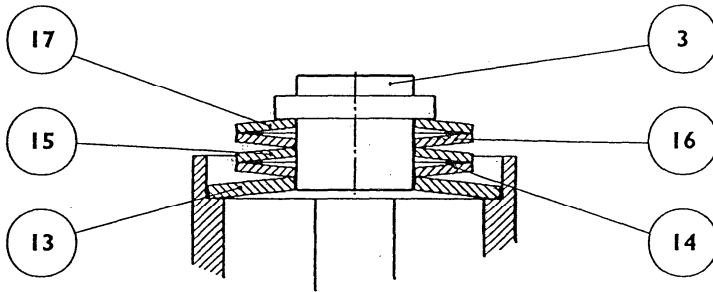
Correct EPROM Software

Ensure the correct EPROM and software has been installed in the electronic control unit (8). On powering up of the press the software version number 0202r2.0 will appear in the display. This indicates that the correct EPROM for the 1 to 4 tons load range of operation has been fitted.

Correct Installation of the Alternative Disc Springs

Ensure that the alternative disc springs supplied are fitted in the correct order in the press. The disc spring assembly for the 1 to 4 tons load range comprises of five discs. Their installation is shown as in Fig 4.

- Disc 1 (13) [200mm dia. x 10mm thick] convex side up.
- Disc 2 (14) [160mm dia. x 6mm thick] concave side up.
- Disc 3 (15) [160mm dia. x 6mm thick] convex side up.
- Disc 4 (16) [160mm dia. x 6mm thick] concave side up.
- Disc 5 (17) [160mm dia. x 6mm thick] convex side up.



The die locator (3) should be inserted with the shorter step upwards as shown. The longer step piece projecting downwards holds the disc springs centrally.

DO NOT USE the die locator (3) with the long step up.

Operation

These instructions apply ONLY to the 1 to 4 tons version of the T-40 Autopress. It is important to read the other sections of this instruction manual to understand the operation of the T-40 Autopress

The LOAD TONS and SET TONS values displayed on the screen should be divided by a factor of 10 to correspond to the **ACTUAL** applied load. e.g. 10 tons equates to 1 ton.

The **upward** and **downward** arrowed buttons increase or decrease the SET TONS load as standard.

The hold time can be set on the 1 to 4 ton version Autopress from 0 to 120 seconds or 0 to 120 minutes depending on whether the SECS or MINS option is selected. (Just 0 to 99 seconds or minutes is standard on the 40 tons version.)

The HOLD TIME screen will show a value of 0 to 99 denoting zero up to 99 seconds or minutes, but will display 0.0 to 2.0 (decimal spot in value) to denote the time from 100 to 120 seconds or minutes.

Note: Use of the **upward** arrow button below the HOLD TIME screen will increase the time from zero to maximum and the **downward** arrow button will decrease the time from maximum to zero.

With a sample loaded in the press and when the **START/STOP** button is pushed and the press motor starts to run, there will be an initial reading in the LOAD TONS indicator of about 0.4 tons before the compacting action begins. This is normal and is due to the back pressure generated in the system. This value will be cancelled out at the final load reading and does not introduce an error to the final displayed value.

When the actual compacting starts, if the **START/STOP** button is pushed the press motor will stop and the load will be maintained. To release the load, use the **REL** button. If the **START/STOP** button is pushed again without releasing the load, the pressing will begin from the position reached previously until it reaches the SET TONS load.

If the HOLD TIME facility is used the press will maintain the applied load within the tolerance of the SET TONS value during the hold time period. If the LOAD TONS value drops below 5% to 10% of the SET TONS value, the press will start automatically and re-apply the load to a figure nearer the SET TONS value.

The following figures are typical readings for a HOLD TIME of 120 seconds that will be maintained.

SET TONS	LOAD TONS
1.0	0.9 to 1.1
2.0	1.9 to 2.1
3.0	2.8 to 3.1
4.0	3.8 to 4.1

Occasionally, it may be necessary to use the **REL** button to completely retract the piston ram press face from the sample in order to remove the sample from the press. This may be required when high tonnage loads are used, or with long HOLD TIMES on samples that relax/yield under load and require frequent load re-application.



EC Declaration of Conformity

This is to certify that the
T-40 AUTOMATIC PRESS Product No. 25600/25601

Manufactured By:
SPECAC LIMITED

Conforms with the protection requirements of Council Directives 89/392/EEC and amendment 93/44/EEC relating to the MACHINERY DIRECTIVE, by the application of:

- 1) Testing to the following SAFETY standards:
 - IEC-348
 - EC-1010-1
 - IEC-1010-2-010
- 2) Supported by SPECAC Technical File No. **TF25600**

Conforms with the protection requirements of Council Directives 89/336/EEC and amendments 92/31/EEC 93/68/EEC, relating to the EMC DIRECTIVE, by the application of

- 1) Testing to the following generic standards
 - EN50081-1 EMC EMISSIONS
 - EN50082-1 EMC IMMUNITY
- 2) Supported by SPECAC Technical File No. **TF25600**

Responsible Person:

Name: Mr G.Poulter

Signature:

Position: Technical Director

Of: Specac Limited

Date: 16th December 1999

Serial No: conforms to the above

Name: **Signature:**

Position: **Of:**

Date:

Original to file/1 Copy to Customer:

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Issue: 2

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A SMITHS INDUSTRIES COMPANY



TEST CERTIFICATE

T-40 AUTOMATIC HYDRAULIC PRESS

Product No.: 25600 25601 Voltage.: 240v 115v Other ()

Serial No.: _____ Order No.: _____

Software Version: _____ Transducer Serial No.: _____

Transducer Sensitivity: = 10mv/v Software Controlled 40tons: = _____ mv

Item	Check/Test	Checked
1	Visual inspection of paint	<input type="checkbox"/>
2	Check for oil leaks	<input type="checkbox"/>
3	Check piston travel	<input type="checkbox"/>
4	Press able to reach 40 tons	<input type="checkbox"/>
5	Drop back @ 40 tons = 1 ton per minute over 4 min period (ie 4 minutes up to 4 tons)	<input type="checkbox"/>
6	Pressure Relief Valve set to 45 tons	<input type="checkbox"/>
7	Packing	
	1 Press	<input type="checkbox"/>
	1 Control unit	<input type="checkbox"/>
	1 Mains lead	<input type="checkbox"/>
	1 Manual	<input type="checkbox"/>
	1 Bolster	<input type="checkbox"/>
	1 Packing piece	<input type="checkbox"/>
	1 3 metre sling	<input type="checkbox"/>
	2 Eye Bolts	<input type="checkbox"/>
	2 Washers	<input type="checkbox"/>

Tested By: _____

Final Approval By: _____ Date: _____

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3MZ14991 issue 2

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