Atlas™ Press
Air 1.6T

User Manual

Specac

Atlas™ Press Air 1.6T
User Manual

Atlas™ Press Air 1.6T

ATLAS™ PRESS AIR 1.6T USER MANUAL

1. Introduction

Thank you for purchasing a Specac product.

The Atlas™ Press Air 1.6T is a power-assisted press for the application of loads from 0.1 to 1.6 tons using compressed air as the force to apply the load. It is specifically suited to the preparation of solid sample discs that require very low loads for compaction of a powder sample, using Specac evacuable pellet die assemblies.

The Atlas™ Press Air 1.6T enables the controlled application and release of an applied load and can accommodate samples up to 57mm in diameter and between 44 and 133mm tall. The press works by forcing compressed air from a pump cylinder to a ram piston situated at the top of the press to compress a sample held in the pressing area. As the air pressure builds up in the press the load being applied to the sample is measured in units of force (pounds per square inch)) from a standard analogue and optional, additional digital pressure gauge. To measure the actual load in tonnage the conversion chart (**Figure 4**, page 14 of this instruction manual) is used. The application of a load will continue until the required load is reached and then held until released by the operator.

The press unit is quiet and clean in operation, (no fluids such as oil for hydraulic pressurization are used) and requires no mains power connectivity, therefore making it ideal for use in all environments.

An important part of the press is the front safety guard door. For any operation of the Atlas™ Press Air 1.6T the front safety guard door must be closed. Accidental opening of the guard, even if the press is under load, will automatically abort the pressing operation and reduce the load from the system to render it safe.

The Atlas™ Press Air 1.6T is fully CE marked to comply with strict European regulations.

2. Unpacking, Checking and Installation

Beware: **The Atlas™ Press Air 1.6T is heavy and care must be taken to transport it correctly.**

Having located the instruction manual please continue the unpacking procedure using the following guide.

The Atlas™ Press Air 1.6T is foam packed into its outer cardboard carry case. Remove the outer foam layer to gain access to the press which will be contained in a plastic bag.

Two people will be required to lift the bagged press from the foam and cardboard box for correct positioning. The weight of the press is approximately 35Kgs, so a suitable bench strong enough to support this weight is required. A compressed air supply line should also be near to the press for operation. The air pressure supply should be of a minimum of 50psi and a maximum of 145psi.

Once the Atlas™ Press Air 1.6T is correctly positioned, remove the outer plastic bag from the press and check that there is no damage to any of the components.

Attached to the left hand side of the press as you face its front there will be a small cardboard box. This box contains the lower bolster fitting (1), three disc springs (2), a stainless steel ring (3) and a dummy load cylinder block for the Atlas™ Press Air 1.6T. Remove the cardboard box, open and check the parts. These parts need to be correctly assembled in the Atlas™ Press Air 1.6T before use.

They are fitted as follows (See **Figure 1** – page 5).

1)   Open the press safety guard front door (4).
2)   Insert the stainless steel ring (3) into the recess of the lower press block (5).
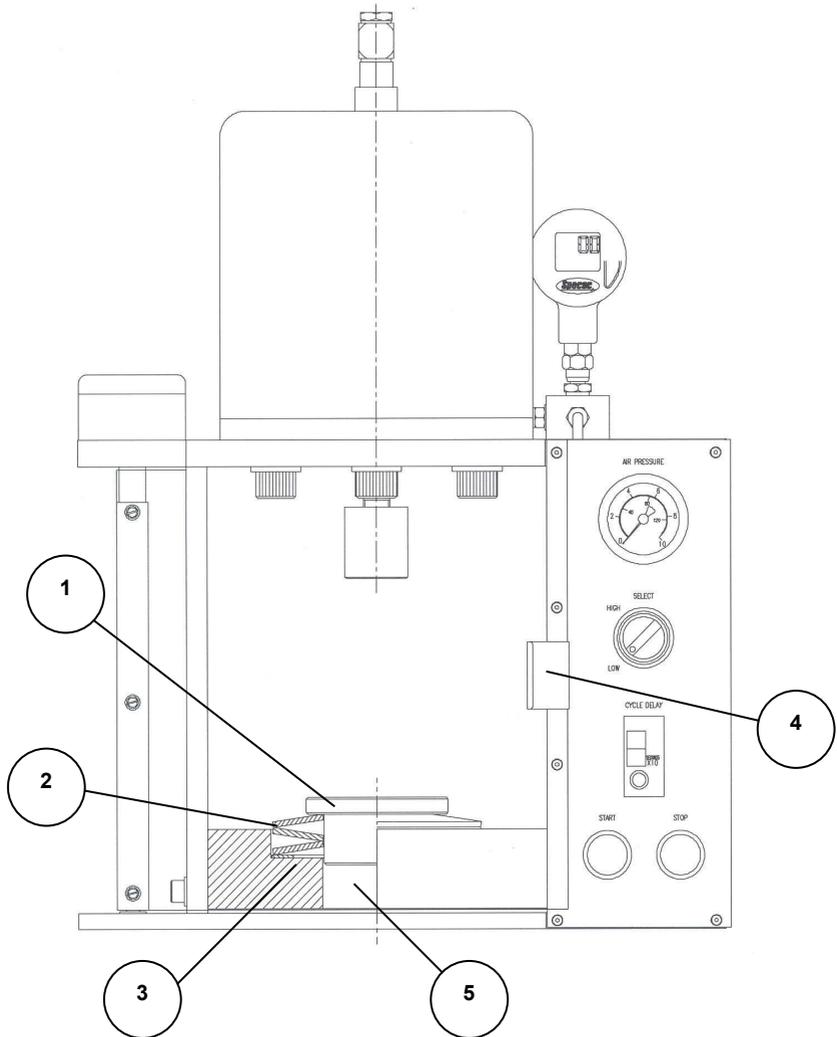3)   Insert the first disc spring (2) ensuring that the concave side is facing DOWN into the recess.

Figure 1. Front View Of The Atlas™ Air Press 1.6T

4)   Insert the second disc spring (2) ensuring that the concave side is facing UP into the recess.

5)   Insert the third disc spring (2) ensuring that the concave side is facing DOWN into the recess.

6)   Locate the lower bolster fitting (1) into all three disc springs (2) and the stainless steel ring (3).

7)   Close the safety guard front door (4).

The Atlas™ Press Air 1.6T is now ready to be attached to a suitable compressed air supply line. The main inline air supply push fit hose connector (6) at the rear and base of the press accepts 6mm outside diameter nylon tubing. (See **Figure 3** page 11 - ensure you connect with suitable pressure tubing). The tubing is simply pushed into the connector and is gripped. To disconnect the tubing from the press at any time, push in the end of the connector and pull out the tube.

For any inquiries to Specac regarding the Atlas™ Press Air 1.6T, the serial number must be quoted. The serial number is a five digit number and it is found on the appliance label at the rear of the press.

3. Safety

Specac recommends that certain safety precautions should be followed for any operational procedure of the Atlas™ Press Air 1.6T. The press is heavy and suitable care should be taken when moving or lifting the press.

Safety Regulations

CE Marking

This product bears the "CE" mark and complies with Council Directives 89/392/EEC and amendment 93/44/EEC relating to the Machinery Directive by application of testing to the safety standards IEC-348, EC-1010-1 and IEC-1010-2-010.

It also conforms with the protection requirements of Council Directives 97/23/EEC relating to the Pressure Directive by application of the Pressure Equipment Regulations 1999 amendment 2002, the Pressure Systems Safety Regulations 2000 and the Simple Pressure Vessels (Safety) Regulations 1991.

The above Directive Regulations are supported by Specac Technical File No. TF25100.

Operational Safety

The Atlas™ Press Air 1.6T is safe to use provided that it is operated as recommended and directed from this instruction manual.

The press should be connected to a compressed air supply that is capable of at least 50psi and up to 115psi air pressure (normal operating pressure) via a regulator and gauge and installed by qualified personnel.

The front safety guard door (4) is an important safety component and its mechanism is linked to the operation of the press. When the guard door is closed, in its safe position, the press is enabled to apply a load

to a sample. When the guard door is open the press operation is disabled. (Air pressure is released). Therefore, there is no risk of accidental harm due to operation of the press whilst handling samples within the pressing area.

If the guard door had been opened during a pressing operation and is closed again, the pressure will be re-applied and the timer will restart again from the initial set time period.

Note: *If the safety guard door shows any visible signs of damage (marks, scratches, etc) these may impair its effective performance for safe containment. Specac recommends that the safety guard door is replaced if damaged to conform to the correct safety standards.*

Other possible operational risks may be due to the specific samples, work or accessories (e.g. Specac Evacuable Pellet Dies) that are being used with the Atlas™ Press Air 1.6T. You should take note of the specific safety considerations involved with these items if they are being used.

• Do not exceed a load limit of 1.6 tons for the Atlas™ Press Air 1.6T.

• 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. Ambient temperature range allowable is 5C to 40C.

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

• Do not operate the press if it shows any visible damage. The press may have been dropped in transit or damaged in use. Seek advice.

• Do not continue operating the press if it fails to perform the intended measurement. Seek advice.

4. Operation

Once the Atlas™ Press Air 1.6T has been correctly installed and connected to an appropriate compressed air supply it is ready for operation. (See **Figures 2 and 3** – pages 10 and 11.)

On the front panel for operation there are the following features:-
• An analogue pressure gauge (7).
• A load range selector knob (8) .
• A timing mechanism (9).
• A green start button (10).
• A red stop button (11).
Situated on the top of the press by the compressed air cylinder (12), will be an optional, additional digital pressure gauge (13) – (if ordered). This gauge (13) provides a digital read out of the air pressure as an applied load to a sample, which is also measured at the analogue pressure gauge (7).

Setting HIGH and LOW Pressure Range

To start any pressing operation an applied load from a set air pressure must be established. The air pressure is set for both HIGH and LOW tonnage ranges by switching of the load range selector knob (8), and adjustment of the regulator for each range, (14 and 15) which are situated at the rear of the press.

To set a pressure for each range, carry out the following procedure.

1)   Open the safety guard door (4).
2)   Place the dummy load cylinder block (supplied) in the press, centrally on the lower bolster fitting (1).
3)   Close the safety guard door (4).

To apply a load from the air pressure a time MUST be established using the timing mechanism (9). A time for pressing can be set between a minimum of 5 seconds and a maximum of 10 minutes. To select a time, rotate the little thumb wheel on the mechanism (9) to the
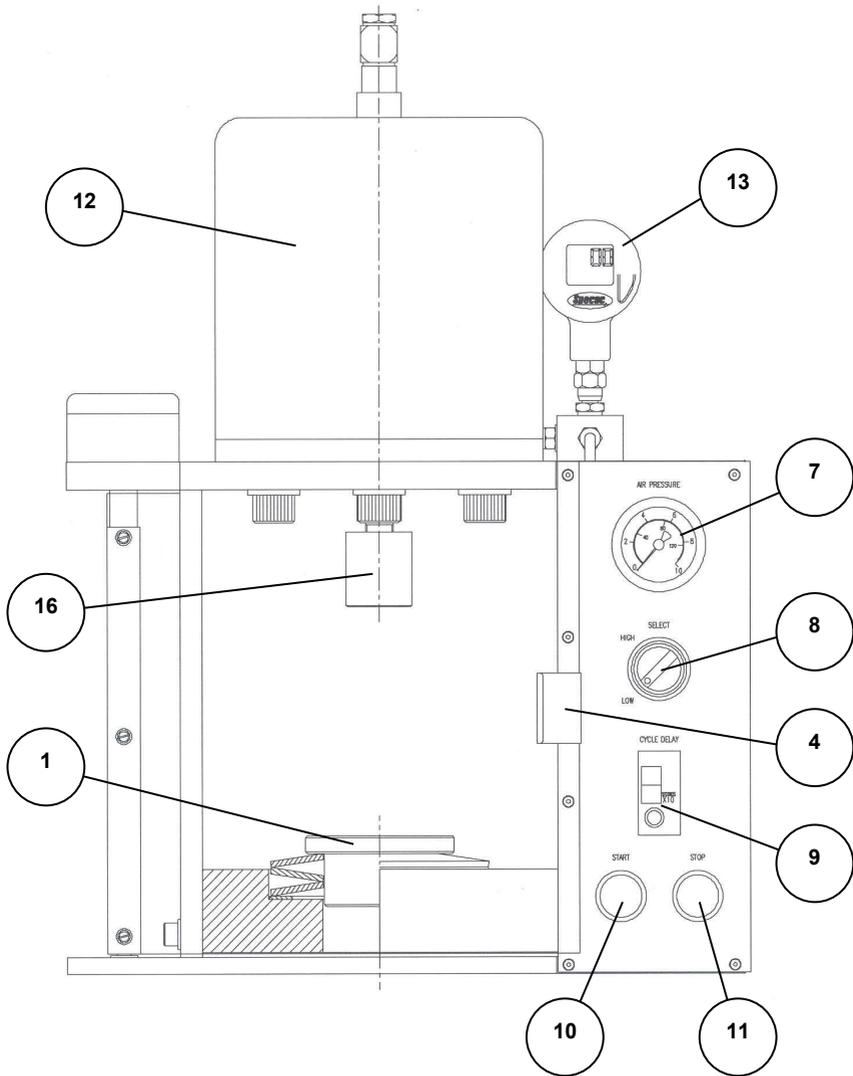
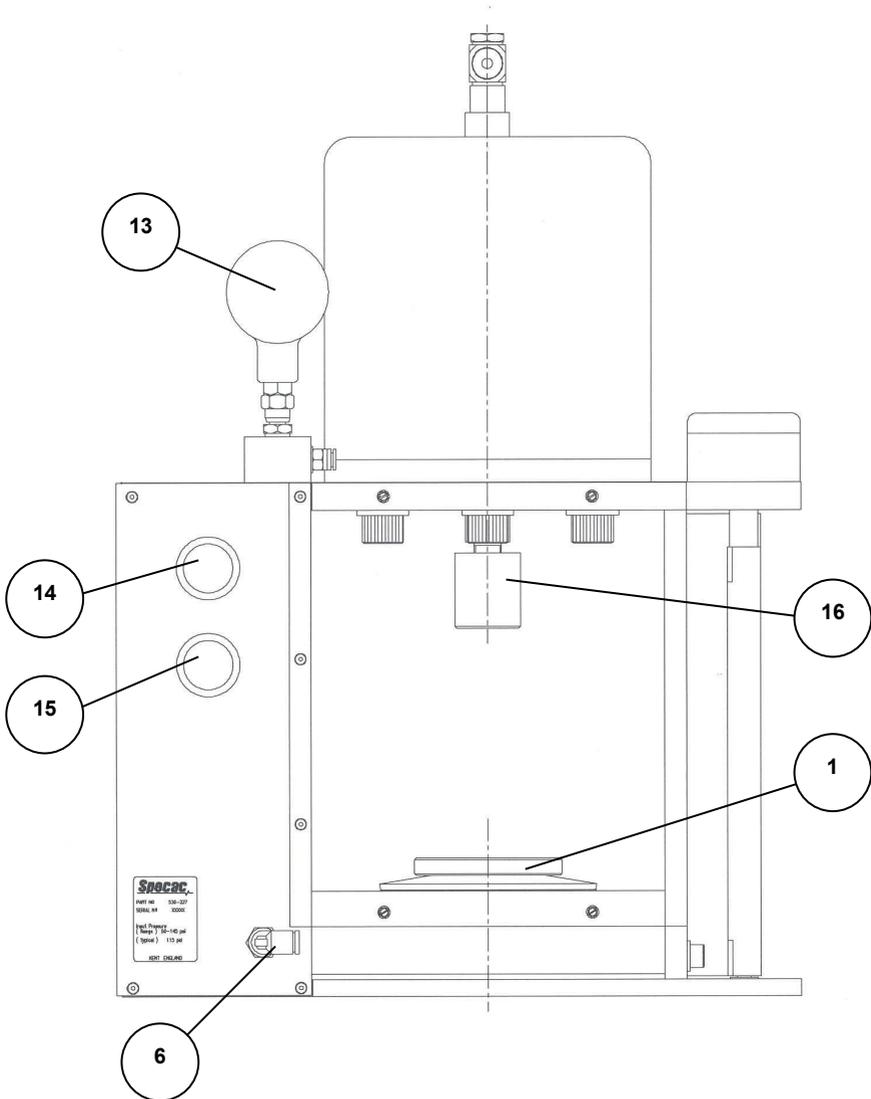**Figure 2**. Front View Of The Atlas™ Press Air 1.6T

Figure 3. Rear View Of The Atlas™ Press Air 1.6T

desired setting. (The timer value setting is 10 times the value required. Hence to set a time of 5 seconds rotate the wheel until the digits 50 are seen in the viewing window of the timer).

1) Select a long delay time (at least 1 minute) by adjustment of the timing mechanism (9).
2) Now turn the load range selector knob (8) on the front panel to the HIGH range and push the green start button (10). The piston ram (16) from the cylinder (12) will lower to make contact with the top of the dummy load block and begin to apply a load. The HIGH range pressure value (to apply a particular load) can now be set by adjustment of the air pressure using the UPPER pressure regulator control (14) situated at the rear of the press.
3) Set the HIGH range pressure value required and then push the red stop button (11). Wait for the piston (16) to retract into the cylinder (12).
4) Now turn the load range selector knob (8) on the front panel to the LOW range and push the green start button (10). The piston ram (16) from the cylinder (12) will lower to make contact with the top of the dummy load block and begin to apply a load. The LOW range pressure value (to apply a particular load) can now be set by adjustment of the air pressure using the LOWER pressure regulator control (15) situated at the rear of the press.
5) Set the LOW range pressure value required and then push the red stop button (11). Wait for the piston (16) to retract into the cylinder (12).

The Atlas™ Press Air 1.6T has now been set with the particular pressure and hence tonnage load settings that can be applied from selection of the HIGH or LOW tonnage range.

Pressing A Sample

When pressing an actual sample the dummy load cylinder block is replaced by the sample (e.g. an evacuable Pellet Die), a particular pressing time is set by the timing mechanism (9) and the load range selector knob (8) is set to the HIGH or LOW Range.

Pressing of the green start button (10) applies the set tonnage load for the HIGH or LOW range setting. The load is applied until the red stop button (11) is depressed or the time set has elapsed, whereby the piston ram (16) retracts back into the cylinder (12).

Both the analogue pressure gauge (7) and the optional, additional digital pressure gauge (13), (if fitted) will read the same air pressure being applied to the cylinder (12) of the Atlas™ Press Air 1.6T. To convert the pressure reading into a tonnage load use the psi to tons conversion chart shown at **Figure 4**. (See page 14.)

The psi to tons conversion chart is also used to set a particular line pressure from the regulator for the HIGH or LOW pressure range, such that a particular tonnage load can be applied. (e.g. to apply a load of 1.2 tons adjust the regulator for the HIGH range limit to 80psi.)
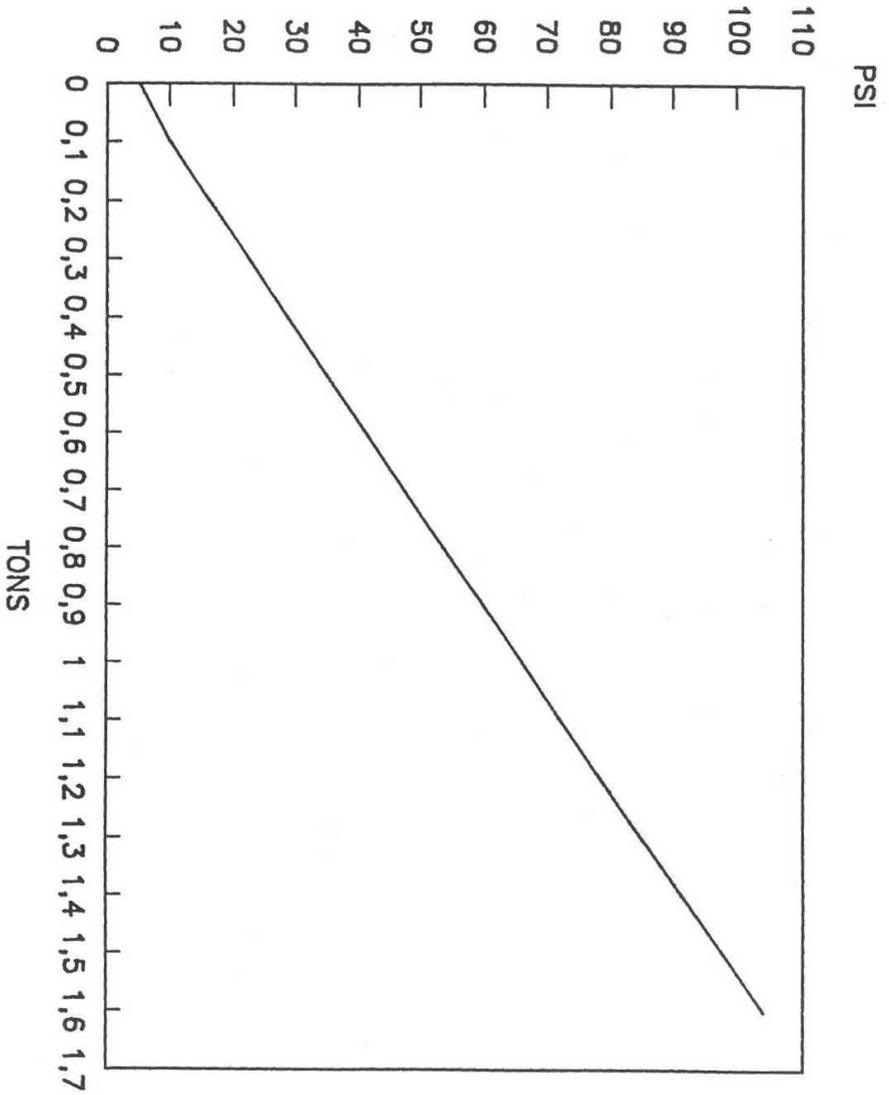
Figure 4. PSI /Tons Load Conversion Chart For Atlas™ Press Air 1.6T

5. Optional Digital Pressure Gauge Instructions

The digital pressure gauge (13) has a Max.-/Min.- display with an accuracy of 0.1% FS (typical).

The digital pressure gauge has two operating keys. The left key (SELECT) serves to select the functions and the pressure units. The right key (ENTER) activates the selected function or pressure unit. The right key is also used to switch between the MAX.- and MIN.- value.

Turn-On

Pressing the SELECT key turns the digital pressure gauge on. The gauge subsequently displays the software version (year/week), the full-scale pressure range, the actual pressure (top display) and the last measured MAX.- value (bottom display).

The digital pressure gauge has the following functions:-

RESET:	Max.-/Min.- value are set to the actual pressure
OFF:	Turns off the instrument
MANO:	Releases the following functions:
ZERO SEt:	Sets a new Zero reference
ZERO rES:	Sets the Zero to factory setting
CONT on:	Deactivates the automatic turn-off function
CONT off:	Activates the automatic turn-off function (the instrument turns off 15 minutes after the last key function) followed by the unit selection: **bar, mbar/hPa, kPa, Mpa, PSI**

Example: Setting a new pressure unit (mbar/hPa)

1) Turn on the digital pressure gauge by shortly pressing the SELECT key.
2) Wait for the gauge's measuring mode (approx. 3 seconds).
3) Press the SELECT key 3 times: **MANO** appears.
4) Press ENTER: **ZERO SEt** appears.
5) Press SELECT: **ZERO rES** appears.
6) Press SELECT: **CONT on** or **CONT off** appears.

7)   Press SELECT: **BAR** appears.
8)   Press SELECT: **mbar/hPa** appears.
9)   Press ENTER: The new pressure unit is set.

 The digital pressure gauge returns to the measuring mode.

Figure 5. Front View Of The Digital Pressure Gauge

Display of the Minimum Pressure Value

When in the measuring mode (Display: Actual Pressure and Max.-
value), you may display the Min.- value for 5 seconds by shortly
pressing the ENTER key.

Notes

1) The functions and units can also be called up by keeping the SELECT key depressed. Releasing the key enables the displayed function or unit to be activated with the ENTER key.
2) If the selected function or unit is not activated within 5 seconds with the ENTER key, the digital pressure gauge returns to the measuring mode without changing any settings.
3) Turning the digital pressure gauge on and off does not influence any of the previous settings.
4) If the **CONT on** function is activated, it is indicated with a flashing sign on the display.
5) If a pressure cannot be represented on the display, **OFL** (overflow) or **UFL** (underflow) appears on the display.
6) If the actual pressure goes beyond the measuring range, the last valid pressure value starts flashing on the display.

Battery Change/Battery Life

When the battery starts weakening, a low battery warning (BAT LOW) will appear in the upper left corner of the display.

Battery change: Open the battery compartment and change the battery (type CR 2430)

The battery life is 1400 hours in normal measuring mode.

Ranges/Calibration

The factory setting of the Zero for the ranges –1…3 bar or –1…30 bar is at 0 bar absolute. For sealed gauge pressure measurements, activate **ZERO SEt** at ambient pressure.

Instruments with the ranges 0…300 bar or 0…700 bar are calibrated in a sealed gauge mode with 1 bar absolute pressure as a Zero reference.

6. Legend For Atlas™ Press Air 1.6T

1)   Lower bolster fitting
2)   Disc spring
3)   Stainless steel ring
4)   Safety guard front door
5)   Recess of lower press block
6)   Air supply line hose fitting connector
7)   Analogue pressure gauge
8)   Load range selector knob
9)   Timing mechanism
10)   Green start button
11)   Red stop button
12)   Air cylinder
13)   Digital pressure gauge (fitting optional).
14)   High range (upper) pressure regulator
15)   Low range (lower) pressure regulator
16)   Piston ram

7. Specifications For Atlas™ Press Air 1.6T

Air Pressure Input

50psi minimum, 145psi maximum.

Load On Sample

High Setting Range (0.1 to 1.6 tons)
0.1 ton at 10psi minimum.
1.6 tons at 104psi maximum.

Low Setting Range (0.1 to 0.4 tons)
0.1 ton at 10psi minimum.
0.4 tons at 29psi maximum.

Selectable increment : 10psi.
Repeatability: 5psi.

Pressing Compartment Dimensions

220mm width x 250mm depth x 133mm height.

Overall Dimensions

390mm wide x 265mm depth x 545mm height.

Weight

35kgs nett.
40kgs with packaging.

Specac

EC Declaration of Conformity

This is to certify that the
AIR PRESS Product No. 25100.

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   **TF25100**

Conforms with the protection requirements of Council Directives 97/23/EEC relating to the PRESSURE DIRECTIVE, by application of

1)   The Pressure Equipment Regulations 1999 amendment 2002.
     The Pressure Systems Safety Regulations 2000
     The Simple Pressure Vessels (Safety) Regulations 1991.

2) Supported by SPECAC Technical File No.   **TF25100**

Responsible Person:

Name:	Mr G.Poulter	**Signature:**	
Position:	Technical Director	**Of:**	Specac Limited
Date:	21st. Jan. 2005		
Serial No:		conforms to the above	
Name:		**Signature:**	
Position:		**Of:**	
Date:			

Original to file/1 Copy to Customer: Drawing No: 3MZ221406A   Issue: 1

Worldwide Distribution

France
Eurolabo - Paris.
Tel.01 42 08 01 28
Fax 01 42 08 13 65
email: contact@eurolabo.fr

Germany
L.O.T. - Oriel GmbH & Co,
KG - Darmstadt
Tel: 06151 88060
Fax: 06151 880689
email:info@LOT-Oriel.de
Website: www.LOT-Oriel.com/de

Japan
Systems Engineering Inc. -Tokyo
Tel: 03 3946 4993
Fax: 03 3946 4983
email:systems-eng@systems-eng.co.jp
Website: www.systems-eng.co.jp

Spain
Teknokroma S.Coop C. Ltda
Barcelona
Tel:93 674 8800
Fax: 93 675 2405
email:comercial@teknokroma.es

Switzerland
Portmann InstrumentsAG
Biel-Benken
Tel: 061 726 6555
Fax: 061 726 6550
email:info@portmann-instruments.ch
Website: www.portmann-
instruments.ch

USA
SPECAC INC.
414 Commerce Drive
Suite 175,
Fort Washington,
PA 19034, USA
Tel: 215 793 4044
Fax: 215 793 4011

United Kingdom
Specac Ltd. - London
River House, 97 Cray Avenue,
Orpington
Kent BR5 4HE
Tel:+44 (0) 1689 873134
Fax:+44 (0) 1689 878527
Registered No. 1008689 England

Brilliant Spectroscopy™

www.specac.com

SPECAC INC.
414 Commerce Drive
Suite 175,
Fort Washington,
PA 19034, USA
Tel: 215 793 4044
Fax: 215 793 4011

SPECAC LIMITED
River House, 97 Cray Avenue,
Orpington
Kent BR5 4HE
Tel: +44 (0) 1689 873134
Fax: +44 (0) 1689 878527
Registered No. 1008689 England