



Keywords:- Presses, Dies, Heated Platens, Film Makers

Choices of Specac Presses and Press Related Accessories

Presses



Atlas™ Auto/Power



Manual Hydraulic



T40 Automatic



Atlas™ Air

Specac makes a variety of hydraulic presses for a wide range of pressing applications. There is also a range of accessories that can be used within the presses themselves, for the formation and preparation of particular sample types prior to analysis by techniques such as Infrared or X-Ray spectroscopies. The Specac accessories that can be used within the presses are evacuable pellet dies, heated platens and film maker systems.

The Specac presses themselves can be categorised as manual or automatic operated press systems. For manual operation this involves building up the pressure on the system and hence the load that can be applied by hand pumping the press, whereas an automatic press is the build up of pressure on the system and application of a load via pushing of a button. There are different versions of automatic presses and they can be further categorised as to their mode of operation and functionality.

The following table helps to categorise the press offerings.

Press Name	Part Number	Type	Pressure System (Fluid)	Operation To Apply Load	Functionality To Apply Load	Load Range In Tons
15 Ton Manual	15011	Manual	Oil (Tellus 37)	Hand Pump	Manual	1 to 15
25 Ton Manual	25011	Manual	Oil (Tellus 37)	Hand Pump	Manual	1 to 25
Atlas Air 1.6T	25100	Automatic	Compressed Air	Button Press	Power Assisted	0.2 to 1.6
Atlas Power T8	25400	Automatic	Oil (Tellus 37)	Button Press	Power Assisted	1 to 8
Atlas Power T25	25420	Automatic	Oil (Tellus 37)	Button Press	Power Assisted	3 to 25
Atlas Auto T8	25440	Automatic	Oil (Tellus 37)	Button Press	Programmable Automatic	1 To 8
Atlas Auto T25	25460	Automatic	Oil (Tellus 37)	Button Press	Programmable Automatic	3 To 25
T40 Automatic	25600	Automatic	Oil (Tellus 68)	Button Press	Programmable Automatic	4 to 40

Each press can be specifically chosen to fulfil a particular application dependent principally on the load range that can be applied. The load is **applied** according to the operation and **the way** that the load is applied is due to the functionality of the press.

Further to the functionality in respect of the Atlas Auto or Power T8 and T25 presses and the T40 Automatic press, incorporated into the pressing mechanism are compression disc springs that allow for a slow release of any load to the sample pressing procedure. In the compression process the disc springs will be initially compressed before full resistance is met to stop the travel of the piston. When any stored load is released the disc springs will relax to their non-compressed state and hence provide for a slow release of a full load. For some samples, a slow load release helps to keep the sample in a compacted state and to minimise risk of fracture.

Accessories To Be Used In The Presses

The Specac presses are designed to apply a specific **load** to a sample, but it is actually the accessory itself within the press that determines the specific **pressure** applied to the sample.

To give an example, if a 13mm evacuatable pellet die P/N 3000 filled with a powder sample is placed within a 15 ton manual hydraulic press P/N 15011, an applied load of 10 tons (i.e. 22400 lbs) is being spread over an area of 132.73 mm² (or 0.205 in²). This equates to a pressure of 109,268 lbs per square inch or 48.78 tons per square inch.

Similarly, when a film maker accessory (P/N's 15620 or 15800) is placed in a press, the load is being spread over an area of film of 660.51 mm², the films being produced having a 29mm diameter. During this method of film preparation from a melted sample, a load of 1 to 2 tons is usually sufficient to apply an appropriate pressure to the sample.

Evacuatable Pellet Dies

Evacuatable Pellet Dies will fit into any of the Specac presses. However, it is usual that a larger diameter size of evacuatable pellet die requires a higher load to be applied by a press for compaction of the sample. The dies themselves are rated to a particular tonnage load maximum and so when certain combinations of a die size are used in a particular press, care must be observed that the maximum tonnage load for the die is not exceeded.

The range of Evacuatable Pellet Dies supplied as standard are:-

P/N 03060	5mm evacuatable pellet die	(Max load 2.0 Tons)
P/N 03100	10mm evacuatable pellet die	(Max load 5.0 Tons)
P/N 03000	13mm evacuatable pellet die	(Max load 10.0 Tons)
P/N 03165	20mm evacuatable pellet die	(Max load 25.0 Tons)
P/N 03300	32mm evacuatable pellet die	(Max load 50.0 Tons)
P/N 03290	40mm evacuatable pellet die	(Max load 85.0 Tons)



Atlas™ Lightweight Dies

Two sizes of lightweight evacuatable pellet dies are available for use in all of the presses, but most specifically in combination with the Atlas™ Auto and Power presses. Their lighter body weight, due to their smaller physical size, makes them easier to handle when carrying out repetitive pressing applications such as pellet preparation for XRF spectroscopy. These dies do not have any internal pressing pellets. A sample powder is compressed between the plunger and base.

P/N 25410	32mm Atlas™ evacuatable pellet die	(Max load 25.0 Tons)
P/N 25411	40mm Atlas™ evacuatable pellet die	(Max load 25.0 Tons)

Atlas Heated Platens P/N 15515



The Atlas™ Heated Platens P/N 15515 fit into all of the Specac presses as standard **except** the Atlas™ Air 1.6T. This accessory converts a press to offer a heated surface of 100mm diameter for pressing at temperatures up to 300°C and a maximum load of 15 tons.

Film Maker Accessories P/N's 15620 and 15800



Constant Thickness Film Maker



High Temperature Film Maker

The film maker accessories from Specac are supplied in two versions. The Constant Thickness Film Maker Accessory P/N 15620 **must** be used in conjunction with the Atlas™ Heated Platens P/N 15515 and can be operated up to 300°C temperatures and at loads up to 4 tons maximum. The High Temperature Film Maker Accessory P/N 15800 has its own form of heated platens built into the accessory and so does not require use of the Heated Platens 15515. This Film Maker accessory has a maximum operating temperature of 400°C and an operating load of 2 tons.

Both Film Maker Accessories are used in the manual hydraulic presses P/N's 15011 and 25011 as standard. The load application by gentle hand pumping from these types of presses, allows for the very fine control one may need to press a film from a melted sample.

Both Film Maker accessories produce 29mm diameter films with thicknesses at 0.015, 0.025, 0.05, 0.1, 0.2 and 0.5mms, depending on the choice of spacing rings. In operation, users must be careful not to exceed the specified maximum loads so as to prevent damage to the accessory and platens.