Lab Press - Ease Of Use

The line pressure of the hydraulic fluid is generated by pumping up the fluid in the press, which requires physical labor (work) when using a manual press. Accordingly, users who need presses with a lower clamp force or clamp tonnage capacity may still want to consider using a higher capacity press because less physical labor will be required to pump the press up to the desired load or force. As can be seen from the examples, less work is required to get substantially the same force out of a 20 ton press than out of a 12 ton press. The 20 ton press requires only 60% of the work that is required to pump a 12 ton press to 10 tons of force.

We employed this concept with the 40 ton E-Z Press™ which uses an oversized hydraulic jack. The normal constraints on choosing a higher capacity press are that they tend to be more expensive and in many cases they are significantly heavier and much larger. In the case of the ICL
E-Z Press™ line, we can provide presses up to 40 tons in capacity weighing 150 pounds and with a very small footprint.

Work can also be decreased by the use of leverage. To reduce the amount of work required to jack a press to the required line pressure some users employ a longer handle. Optional extra length handles are available for 12 and 20 ton E-Z Presses™ at modest cost.

Another means of limiting the physical work involved in jacking a press up to its rated force or tonnage is to automate the process. There are two methods of automating a press. First, it can be driven by a pneumatic motor which is powered by compressed air. The advantages of this method are that pneumatic drives are comparatively light, compact and inexpensive, and the same unit can be operated anywhere in the world without regard to differences in electrical current. Pneumatic systems can be coupled with manually operated valves to regulate the decompression (bleed off) rate of the press. A second automation option is to compress the hydraulic fluid in the press by means of an electric pump. Hydraulic fluid pumps driven by electric motors facilitate use of electronic digital controls that can more precisely regulate increases and decreases in pressure than can manual or pneumatic powered systems. However, electronically controlled systems tend to be considerably heavier, bulkier and more expensive than systems driven by a pneumatic motor.

Sample Compartment Size – Daylight Opening And Platen Size

The size of the sample compartment is always an important consideration when specifying a lab press. Most of ICL's ergonomic lightweight E-Z Presses™ and Air-EZ™ presses use small 4.5″ (114.3mm) diameter platens and feature daylight openings ranging from 5 1/2″ (139.7mm) to 8 1/4″. This is large enough for all IR or XRF pelletizing and briquetting applications and for pressing thin films from polymers, but special applications may require a larger daylight opening. For larger daylight openings, a column press is normally the solution. Column presses feature larger platens and larger daylight openings, but they are considerably heavier and bulkier than the ergonomic E-Z Presses™ and Air-EZ™ Presses.

Alternatives To Lab Presses For Solid Sampling

There are several alternatives to lab presses for solid sampling. These include sampling with horizontal ATR's such as the Split Pea™ (0015-7463) and Basics™ (0015-4713), diffuse reflection for sampling KBr powder/sample matrices (see Part No. 0016-4657), spin casting of thin polymer films from solutions instead of pressing them with polished anvils (see Roto-Film™) and diamond cells for pressing solid samples (see Part No. 0012-6544).

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