

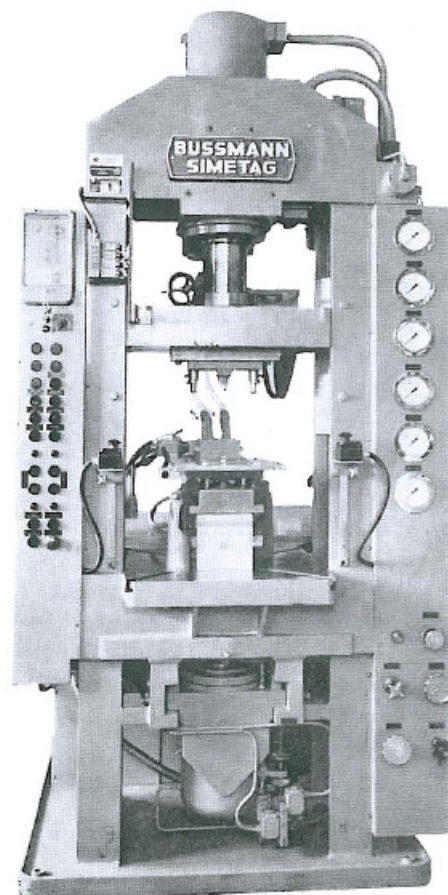
Pos. 04-37

BUSSMANN-SIMETAG POWDER COMPACTION PRESS

Hydraulic press HPM 60 Typ M 2109, EIR 10 237

The press with built in "FLEXIBILITY"

This press is with adaptor tool and press can be used at once for the production



- **A Hydraulic Press, completely self contained, tested, shipped ready to operate and requires no pits or special foundations.**
- **Dual - range tonnage control**
- **Density or height control**
- **Pre-pressing for voluminous powders**
- **Adjustable pressure dwell control**
- **Hi-Lo speed control**
- **Hydraulic parts release**
- **Adjustable float control**
- **Cavity filling control**
- **Tool safety sequence control**
- **3-position selector cycle control**
 1. **Manual - for set-up**
 2. **Semi-Automatic - for delicate parts**
 3. **Automatic - for normal production**
- **“FLEXIBILITY”**

Designed for Parts Production of all shapes and configurations producing uniform density in non-uniform cross section

For Compacting:

- **Metal powders**
- **Ferrites**
- **Ceramics**
- **And all other compactible powders**

TECHNICAL DATA

| | | |
|--|------------------------|------------------|
| Max. power of upper ram | 60 tons | |
| Max. power of upper ram in low pressure range | 9 tons | |
| Retraction force of upper ram | 30 tons | |
| Max. force of upper punch ejector | 400 lbs. | |
| Withdrawal force of lower ram | 40 tons | |
| Hydraulic resistance for floating die action (max) | 3527 lbs. | |
| Max. attainable pressure in hydraulic system | 4267 lbs. | |
| Max. stroke of upper ram | 11,8 in. | |
| Max. stroke of lower ram | 4,7 in. | |
| Number of strokes per min. at normal operating Conditions | 14-16 | |
| Speed of upper ram (unloaded motions) | 6.6 in/sec | |
| Average speed of upper ram (loaded motions) | 0,37 in/sec | |
| Speed of pumps (number of revolutions per min) | 920 | |
| Electrical power requirements | 7 KW | |
| Max. daylight between upper and lower platens | 29,5 in | |
| Size of lower table | 19,7 x 19,7 in. | |
| Size of upper table | 19,7 x 10,6 in. | |
| Lower ram tool connection thd. | 2 ½ in x 12 | |
| Overall press | Height | 7,9 ft |
| Dimensions | Width | 4,1 ft |
| | Depth | 4,6 ft |
| Dimension of machine base | | 3,35 ft |
| | | 4,60 ft |
| Net Weight | | 4.300 lbs |

GENERAL DESCRIPTION

The Model 8M press is powered by hydraulic pumping equipment unique in design. When flow is the demand of the system, all vane and piston pumps supply oil; when pressure is the demand, then automatically various sections of the pump no longer in use will dump to tank and the system pressure will increase to satisfy the work required. By this step method there are no system demand peaks and system heat is at a minimum. Shifting of valves and the movements of cylinders are so sequenced with oil flows that the system is completely free of hydraulic shock.

The hydraulic system — self-contained with its reservoir, valving, gauging and control — is piped and tested ready for operation in your plant. The machine is designed so that floor loading is uniform and it does not require pits or special foundation, a great asset when considering plant growth and rearrangement of machinery.

Accessibility and ease of maintenance is assured with the use of standard component parts. Spare parts depot is maintained with the availability of service engineers.

BASIC DESIGN AND OPERATION

The Bussmann-Simetag press is an all steel fabricated design with cast steel platens. It has two major hydraulic cylinders; the upper cylinder for compacting and the lower cylinder for tool operation. An auxiliary cylinder built into the upper platen serves as an ejector to remove compacts with projections from the upper punches.

The lower platen is mounted to the press frame. It is ribbed on the underside to resist deflection under load and contains T-slots on the upper side for clamping the die set. A hole in the center of the table allows the piston rod extension of the lower cylinder to pass through it. The upper end of the piston rod extension is screw threaded to the die set. The lower cylinder is mounted to the press frame beneath the lower table and is connected to the piston rod extension. Its stroke is adjustable and its function is to control the movements of the die set throughout the pressing cycle, i. e. filling, floating, and withdrawal. The die set clamped to the press table contains the die, punches, and core rods.

All necessary operator's controls as may be required for "Flexibility" in press operation are located on the electric and hydraulic control panel. The sequence control, actuated by limit switches, is adjustable to suit the part being compacted; and it also prevents damage to the press or tool as each movement of the cylinders is interlocked with the next movement to make the press fail-safe.

Die filling is accomplished either by suction or the drop method through a powder hopper, powder feed hoses, a shuttle box, and a hydraulic actuating and shaking cylinder. The powder hopper, which contains the bulk of the material, is connected to the shuttle box by means of hoses. Powder flows continuously from the hopper to the shuttle box thus maintaining a uniform column of powder over the cavity at all times. The number of shakes that the shuttle box will make over the die cavity is controlled by a counting relay on the electrical panel. With standard equipment, this can be varied from 0-19. The feeder plate is mounted on the table of the die set and travels with the die set through the fill, compaction, and withdrawal cycle. The shuttle box also pushes the compact off of the lower punches after withdrawal of the die.

The Bussmann-Simetag press, using the withdrawal method, is capable of producing simple as well as complex shapes. Compacting of the powder can be most uniform by regulating the die float of the machine and the fill depth of the compensating punches in the die set. The die can be floated either by friction or by hydraulic oil from the upper cylinder. The piston of the lower cylinder is supported by hydraulic oil while the die is in the filling position. The load on the lower ram can be adjusted to provide just sufficient pressure to support the die, and any additional load will cause the die to move downwards displacing oil out of the cylinder. Force floating the die by means of the upper cylinder is done electrically, as well as hydraulically. The die will be made to float at any predetermined point in the passing cycle at adjustable rates. This is a definite advantage when molding many materials.

Other features included in the basic press are:

DUAL-RANGE TONNAGE CONTROL: The machine is capable of accurately pressing with good reproducibility loads below 5 per cent of the total pressing capacity. This is accomplished by means of differential areas on the upper cylinder piston. A single adjustment on the control panel covers both low and high pressing ranges.

DENSITY OR HEIGHT CONTROL: Parts produced on the Bussmann-Simetag press can be molded to definite densities regardless of the compacting height. This is accomplished by allowing the press to operate at a definite load which is determined by the pressure setting on the machine. A mechanical-electric control mechanism provides a means by which the cycle may be ended, regardless of the pressure setting on the machine, at any point on the downward stroke of the upper ram.

PRE-PRESSING: When compacting voluminous powders and certain other materials, it is desirable to pre-press the powder in the die in order to rid the compact of air. In this instance the upper punch will move a predetermined distance into the die before it stops and momentarily retracts to allow the compact to breathe. The upper punch again descends compacting the powder at full pressure.

ADJUSTABLE DWELL CONTROL: Some materials require a dwell under pressure. A pressure dwell control is provided that operates over a range of 0 to 60 seconds.

HI-LO SPEED CONTROL: This feature is most useful for tool and press set-up.

HYDRAULIC RELEASE: Placed in a recess in the center of the upper platen is a small hydraulic cylinder. This cylinder is used for releasing the compact from multiple upper punches.

3-POSITION SELECTOR CYCLE CONTROL:

1. "MANUAL — used for press set-up or operational adjustment
2. "SEMIAUTOMATIC — used for equipment checkout or compaction of delicate parts
3. "AUTOMATIC — used for continuous production

The advantages offered by an electrically controlled hydraulic press are many. Flexibility and finger-tip control place in the hands of the operator all possible combinations for the production of quality parts.

Why not arrange for a thorough demonstration at our Customer Service Laboratory?