

Model PM 50/20 Intensifier Press
Operation & Maintenance Instructions



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1. CHARACTERISTICS

Approach - Power with 6 kg/cm² air pressure = 800 kg, adjustable between 3 and 7 kg/cm²

Maximum stroke - 32 mm. Automatic until the tooling contacts the work piece.

Working Force - Power at 6 kg/cm² = 20 tons and 10 tons respectively, continually adjustable from 0 to 7 kg/cm² air pressure.

Maximum effective stroke - 2 mm and 4.5 mm, automatic after the approach stroke.

Air Feed - Compressed air through the supply unit. Air pressure from 3 to 7 kg/cm² according to needs.

Drive - Dual hand controls with anti-tie down feature.

Operating Position - The press can be placed at any position.

Weight - Complete press = 285 kg. Cylinder weight = 35 kg.

Sizes - Refer to the DG General Dimensions print.

Other Characteristics - On Request.

2. OPERATING FEATURES

2.1 – The press operates under two automatic steps. It first performs the approach stroke with very low power until the tooling touches the workpiece. It is then followed by the second step, which provides the high power output.

2.2 – These two steps operate automatically when the drive (push buttons) are pressed. As a safety means, the press returns to its stand-by position when the drive is released regardless of the phase running at that moment.

2.3 – The return of the press to its stand-by position is performed also automatically through an adjustable timer T (dwell timer) in the control box (refer to the EN Pneumatic System print). When operating with defined forces, the time setting should allow to totally stabilize the air pressure shown on the pressure gage.

2.4 - The approach force is proportional to the pressure set on the air supply unit G.

The working force is proportional to the pressure set through regulator R and shown by the pressure gage M; both of them placed on the machine front. For each kg/cm² of air the press provides 3,300 kg and 1,650 kg of working force respectively, being adjustable from 0 to 7 kg/cm². It is possible to obtain a more accurate indication of the press force through the oil pressure intake # 23 leading to the cylinder, although care must be taken to prevent loss of oil. Such options can be provided upon request.

3. START-UP

3.1 - Unpack the press and remove the rust protection layer, etc. Place the machine on an appropriate support table using the lifting eye on its upper (top) end.

3.2 - Attach the press firmly as well as the table and rod tooling (refer to the DG Dimensions print) and then install them properly so that the least possible stroke is obtained. The total stroke should always be under 35mm. Proper guarding must be employed at all times

3.3 - Supply air pressure to the air intake labeled G.

3.4 - Set the low-power regulator for the low pressure test. Start the machine (using push-buttons) and adjust the return timer and the P (check as needed).

4. - MAINTENANCE

4.1 - This press has been engineered so as to provide a long operating life without having any maintenance procedures. The rods are tempered steel and chrome plated. The cylinders are also chrome-plated and all the moving parts run on precision low friction guides and couplings.

4.2 - Whenever rod 13 does not have full extension, the air within the oil chamber should be purged. This operation is carried out by loosening the cylinder from its support, and placing it upside-down. Loosen screw 14, and introduce rod 13 down to its stop.

4.3 - Whenever lack of power is noticed and the oil in the machine is to be checked or refilled – the machine need not be sent back to the factory to carry out such procedure- the oil to be used should be the hydraulic type Exxon Type H 32, or similar. The oil capacity is about 1 liter.

4.4 - The oil drainage can be performed by releasing plug 14 or 23 (refer to print SC). Rods 9 and 13 must be kept retracted (at rest) by means of a stop placed under rod 13, so that it will not move, and then low pressure air blown through the inlet corresponding to A+, making piston 10 advance.

4.5 - Refilling of cylinder can be performed either in its normal upright position, or upside –down (rod 13 upwards, loosening the cylinder from its support), although the draining procedure should have been performed previously.

A. Refilling in its normal upright position

- 1.** Put a stop under rod 13 so that it allows the rod to have a very short stroke, about 5mm. Remove plug 23 and blow low pressure air through it to shift pistons 10 and 12 up to their stop. Replace plug 23.
- 2.** Remove the four upper nuts that attach the assembly and then remove flange 3 and the upper parts.
- 3.** Pour the oil through the center hole in position 10 moving the assembly to make sure that there is no air left inside.
- 4.** Reassemble the whole unit and remove previously placed stop limiting the stroke of rod 13.
- 5.** Now connect the normal air to the press so it goes to its stand-by position. Loosen slightly plug 23 so that the excess oil is drained off when rod 13 goes back to its stand-by position. Retighten plug 23.

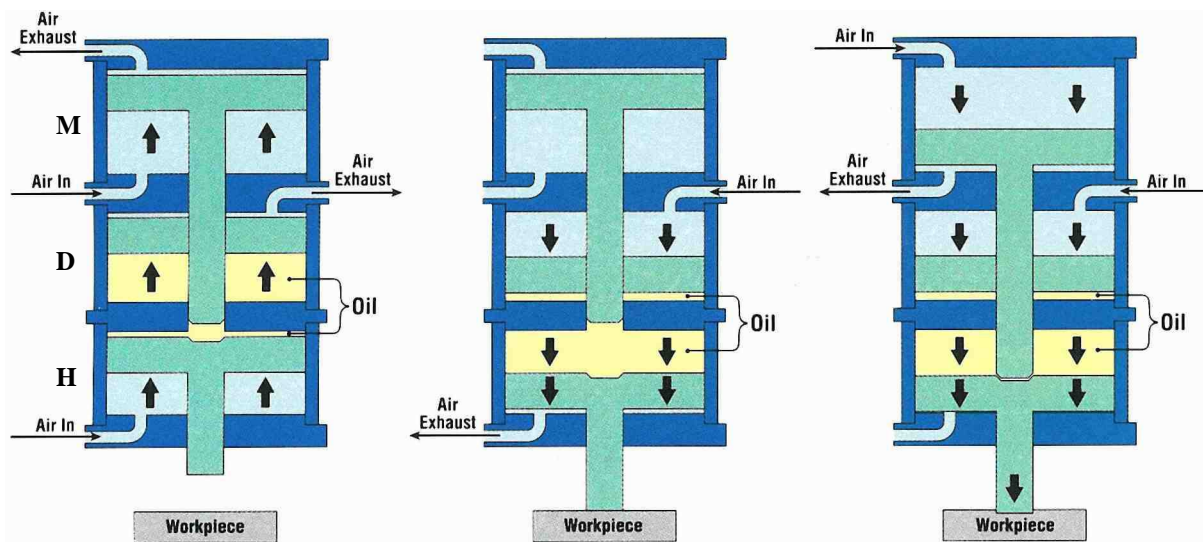
B. Refilling when the machine is upside-down

- 1.** See A1 above. Loosen the cylinder set from its support, and place it with rod 13 upright.
- 2.** Remove the plug 14 inside rod 13 and introduce a long filler tube, with enough clearance to remove the air inside. Pour the oil through the tube until it overflows, moving the assembly so that no air is left inside.
- 3.** See A5 above. The cylinder must be previously set up on its support.

STRENGTH INTENSIFIER CYLINDER ASSEMBLY

1 – DESCRIPTION

1.1 - It consists of three compartments, M, D, and H. the corresponding pistons move inside them, #8 at M, #10 at D and #12 at H.



1.2 - All Pistons are pneumatically operated. The whole volume comprised between the lower part of piston #10 at D, and the upper part of piston #12 at H, is filled with oil: it can pass from D to H and vice versa, provided that spindle #9 with its piston #8 is at rest, in order to keep this transmission line open. The oil must be absolutely full, allowing the transmission of movement from piston #10 to piston #12 and vice versa.

1.3 - The pressure multiplication is carried out by piston #8 with its spindle #9 according to the rate than the section (area) ratio between piston and spindle, as the latter gets into the oil through H upper compartment.

Example: With a 20 sq. cm section in piston #8, and 1 sq. cm. In spindle, if we apply 1 kg/sq. cm. through the upper part of piston #8, we will obtain 20 kg/sq. cm. In oil in the upper chamber of H. this higher pressure is applied on piston #12 at H, producing great strength in spindle #13.

1.4 - The stroke that can be achieved by piston #12 with great strength, depends on the movement depth of diver spindle #9, the volumes dislodged by spindle #9 and piston #12 being equal.

2 - OPERATION

2.1 - When air is let in through A+ and let out through A-, piston #10 moves, and as a result, so does piston #12 with its spindle #13, until contact is established with the part. This approach stroke, with low (power) strength, must not exceed 32mm.

2.2 - After the approach stroke, air is automatically let in through B+ and let out through B-, and piston #8 with its diver spindle #9 are set in motion. The latter shuts between D and H and gets into H, Producing the pressure multiplication described under 1.3.

2.3 - Once time (dwell) is completed, as set in the adjustable timer, or by releasing the drive, all pistons go back to their former positions, air being let in through A- and out through A+; air is let in as well through B-, and through B+.

3 – OIL PRESSURE

3.1 - Oil pressure range can be measured from 0 to 200 kg/sq. cm. A gauge, installed in place of plug #23, allows great accuracy in measuring pressure. Screw #14, Placed inside the spindle, allows as well access to oil, with a reversal of assembly (by loosening it out of its support). This hole is very useful to blow off any air that may have been accumulated inside the oil chamber, by hitting on spindle #13 and trying to drive it in, until just oil goes out. This operation becomes necessary when spindle #13 cannot be totally extended, as air has been trapped and volume increased in the oil chamber.

