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## Simplicity

Multicyl simplifies the field of air/oil intensifiers whilst saving up to 80% of the compressed air used in other systems. This two-stage pressure intensifier produces its dynamic force by means of regular shop air and the most elementary air control valve — that's all that's required. The compact design incorporates the hydraulic functions completely within the one, integral unit, eliminating the need for an external oil reservoir or complicated control circuit.

## Tooling

Designed originally for the hole punching field where a spring returned tool is used, Multicyl applications are innumerable, replacing conventional punch presses for many assembly operations and practically every die operation imaginable. Energy is conserved by building a depth stop into the tooling thus reducing the length of the working stroke.

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## Energy

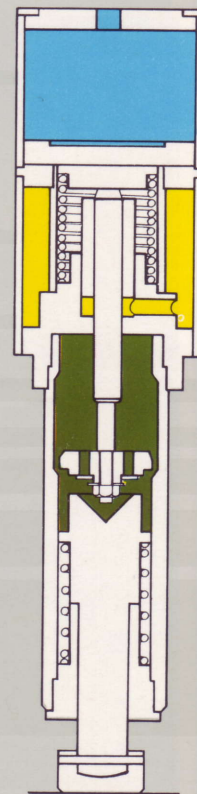
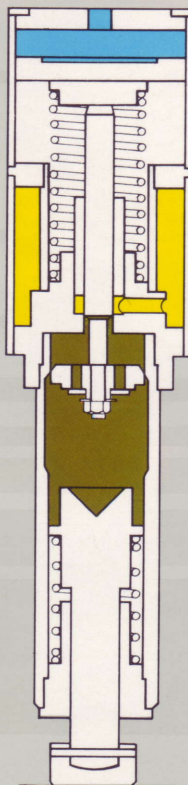
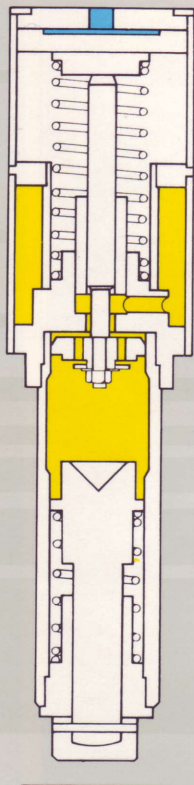
The unique two-stage action of Multicyl is designed to conserve energy by tailoring its output to suit the requirements of the job. Multicyl saves up to 80% of the energy used in other air operated systems performing a similar function, such as air cylinders or single stage pressure intensifiers.

## Stroke

Multicyl reduces the need for fine adjustment by producing its working stroke wherever the low pressure force is exceeded — anywhere on the overall stroke. Its 'jam-proof' action will bottom-out at the end of the working stroke or wherever the high pressure force is exceeded.

## Fast Set-Up

The threaded body facilitates fast tool set-ups and eliminates the need for special fastening holes used with flange style mountings. Quick connecting air control fittings allow fast pneumatic hook-ups.



## The Air Cylinder

The air cylinder function is completely separated from the hydraulic functions of the Multicyl. The single acting cylinder is spring returned and its overall stroke may be reduced according to the working requirement of the application. The theoretical force produced by the air cylinder is reduced by the return spring resistance.

## The Low Pressure Cylinder

With the introduction of air to the Multicyl, the low pressure valve closes and hydraulically moves the ram piston in relation to the air cylinder. As the stroke advances, oil behind the low pressure piston is replenished from the oil reservoir. The ram will be allowed to stall if the working resistance is greater than this low pressure force.

## The High Pressure Cylinder

Now the Multicyl acts as an air/oil intensifier, by intensifying the force of the air cylinder by the ratio of the area of the high pressure piston to the area of the ram piston. The smaller high pressure piston must now move proportionately further in order to advance the ram piston with this increased force.

## Spherical Pivot Point

The Multicyl ram piston is designed to prevent internal side loading by means of a spherical pivot point, which transmits the force to the Multicyl striker plate. This feature reduces internal wear on seals and bearings, and compensates for out of parallel die conditions, where the top bolster may move slightly out of parallel to the bottom bolster. This feature also helps to co-ordinate the action of a multiple Multicyl application, where the actuation may not be simultaneous, for reasons of poor air delivery or signal delay. In order to mount small tools upon the end of the ram special punch holders may be supplied upon request.

## The 'Flow-By' Principle

If the ram stops, due to resistance, before the high pressure piston has reached the main body seals, the patented Multicyl 'flow-by' principle comes into effect. The piston is allowed to continue its advance as entrapped oil begins to 'flow-by' the low pressure piston by means of precisely controlled clearances. When the high pressure stage is reached the low pressure piston becomes ineffective due to an increase in bore diameter of the cylinder.

