

## Innovation

### Hydraulic Brake - Smooth cylinder control.

Compressed air is a flexible way of delivering energy round a factory but the fact that air is compressible sometimes causes problems.....

Trying to control slow speed movement of a pneumatic cylinder especially when the load varies can be difficult. Take for example a cylinder raising a saw blade on a cut-off machine. Initially there is little load until the blade contacts the workpiece then the load increases, at the end of the cut the load rapidly decreases but because of the pressure built up in the cylinder it surges forward. The sudden speeding up of the saw means that when it reaches the end of its stroke there is a lot of energy to dissipate which can cause damage also the sudden speeding up can cause splintering of the workpiece.

#### Traditional Solutions

Traditionally for this type of application an air-over-oil solution was offered. This is a low pressure hydraulic system that uses compressed air to pressurise the oil. The oil being incompressible allows better speed control but the system is messy because it has to be bled to remove all the air from the hydraulic part of the system.

A better solution was to mount a hydraulic check cylinder in parallel with the pneumatic cylinder. This allowed the pneumatic cylinder to provide the force in either direction and the check cylinder to restrict the speed of travel.

The problem with this solution was that you have to mount both a hydraulic and pneumatic cylinder together which meant somehow joining both the piston rods and rear caps together. This made the solution bulky and also created offset loads because of the distance between the centre lines of the actuator and check cylinder.

#### Metal Work Hydraulic Brake

Our solution to this problem has been to incorporate the hydraulic check cylinder actually inside the pneumatic cylinder. The main differences compared to a conventional pneumatic cylinder are that the piston rod is a much bigger diameter and there is a valve block and compensator on one side.

The cylinder is operated as normal but by adjusting the hydraulic flow controls on the valve block the speed can be controlled down to much slower speeds than normal and independently of the cylinder loading.

This new design makes mounting simple, removes problems of



offset loads and is much less messy than air-over-oil systems.

#### Additional Features

There are a number of options for the hydraulic control of this actuator.

- ☞ Select either speed control on extension, speed control on retraction or speed control in both directions.
- ☞ A SKIP valve can be included in either direction so that the speed control can be overridden (maybe only part of the stroke needs to be at a controlled speed).
- ☞ A STOP valve can be included in either direction so that the actuator travel can be stopped mid stroke.

#### Reduced Installation, Commissioning & Maintenance Costs

The hydraulic Brake Cylinder conforms to ISO mounting dimensions and doesn't need separate oil reservoirs to be mounted as with an air-over-oil system.

Because it is self contained the system is filled and pre-bled so no messy, time consuming filling with oil and then trying to remove all the air bubbles from the system.

The compensator on the side of the cylinder shows clearly if the system ever needs topping up, this is carried out by removing a cover and using an oil gun on an inverted nipple (reducing the possibility of dirt getting into the system).

If you have an application where the load on a cylinder varies throughout its stroke and speed control is problematic then the Metal Work Hydraulic Brake provides a cost effective solution.

Contact us for further information and technical specifications.

## Special offer Aug/Sept 2007

Due to the demand for the ONE unit special in our last newsletter we are carrying it over to this issue.

Any order for a ONE air service unit during June, July & August will entitle the purchaser to \$50 of fittings and/or tubing free-of-charge

Reduce your assembly time and save space over a conventional air service unit.\

Quote **ONESON** when placing your order.

\* Fittings/tubing must be specified at the time of placing the order, \$ value is based on list price.