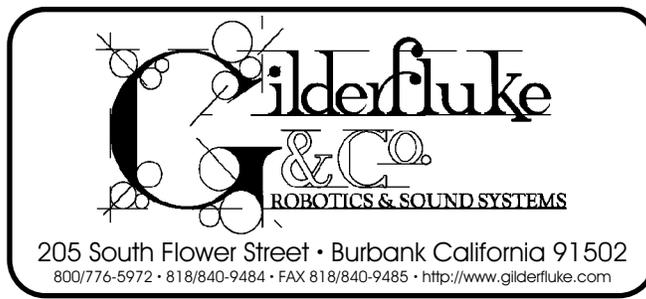


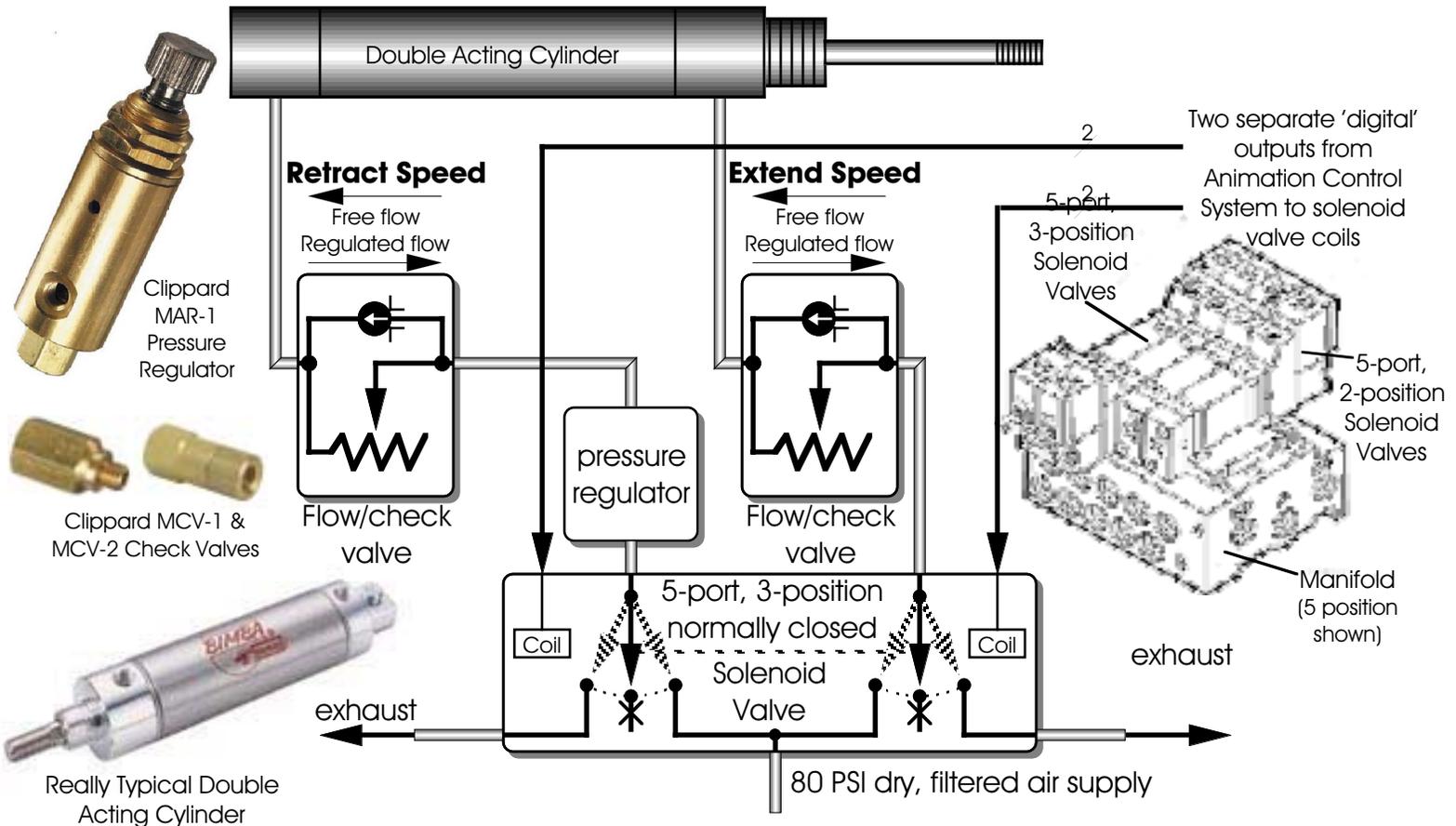


Clippard 15002-3  
10-32 T



Clippard 11752-1  
1/8" i.d. to 10-32 hose barb  
and  
Clippard 11752-2  
1/16" i.d. to 10-32 hose barb

### Double Acting Reversible Digital (DARD) plumbing (using one 5-port, 3-position valve):



This is the way we recommend plumbing double acting cylinders. It will allow certain digital moves to be stopped mid stroke and by the judicious application of 'English' on the programming buttons, can move with a slight range of speed. Since full pressure is normally applied to both sides of the cylinder, this style of hookup will have a slightly better response time than traditional plumbing. The two flow controls, which regulate flow out of the cylinder, don't interact when adjusted.

A 5-port, 3-position solenoid valve has five ports and two solenoid coils on it. One port is the compressed air supply input, two ports are exhaust, and two ports go to the cylinders (normally labeled 'C1' and 'C2' or 'A' and 'B'). The 5-port, 3-position solenoid valve closes both the cylinder ports when neither coil is energized. When either coil is energized, the supply air is routed to one of the cylinder ports, while the other cylinder port is routed to exhaust and the piston moves.

SMC 5-port, 3-position solenoid valves are available from McMaster-Carr (562/695-0677 [www.mcmaster.com](http://www.mcmaster.com)) as their part number (**62165K13**). They are rated for a lifespan of 50,000,000 cycles. These mount on single valve subbase plates (**62165K71**). Manifolds with four (**62165K43**) and eight positions (**62165K47**) are more often used. If you are moving something VERY large, you can use the larger SMC valves. If bought directly through a SMC distributor, you will have additional choices for valves and plumbing connections. Miniature air fittings are available from SMC, Clippard (877/245-6247 [www.clippard.com](http://www.clippard.com)), McMaster-Carr, and others.

If the solenoid valve you are using will let you do so, you can put simple needle valves on the solenoid valve exhaust ports in place of the flow/check valves shown. With the SMC valves, you can only do this only on the single valve mounts.

The regulator is used to minimize 'jumps' when changing directions, and 'creep' when holding still. It compensates for the larger piston surface area on the tail end of most pneumatic cylinders. When properly adjusted, the cylinder can be stopped or reversed in mid-stroke without jumping. A typical regulator is the Clippard MAR-1. These are small enough to mount in line with the flow controls. A 'balanced' type of cylinder (rotary actuator, double rod cylinder, or any other application with the load on both sides of the piston balanced) will let you eliminate the regulator.