



How to Determine the Right-sized Cylinder for Your Job

Specifying the right cylinder for the right job results in better and longer cylinder performance. And that means lower overall operating costs.

Proper cylinder size selection begins by calculating 1) the weight of the load, 2) the required velocity, and 3) the air pressure used. Let's take a closer look at each of these three factors.

Weight of the load: This is set by the machine design. In order to move the load, you'll obviously need a cylinder that provides force greater than the load. We recommend allowing an additional factor of 25% force over the load to compensate for friction.

Velocity: Velocity is also usually set by machine design, but there's usually some latitude within a range. Low speeds (up to 4 in/sec) require 25% more force than the load, moderate speeds (4 to 16 in/sec) about 50% more and high speeds (greater than 16 in/sec) about twice as much.

Air pressure: You need consistent air flow at the minimum effective pressure to maintain the desired velocity. Operating the cylinder at too high a pressure accelerates seal wear and creates stress on the cylinder. Inconsistent pressure can cause system malfunction or failure.

Next you'll need to determine bore size. Let's look at an example assuming a maximum load of 100 lbs, a minimum velocity of 8 in/sec and a minimum pressure of 60 psi. The velocity is moderate, but the force should be about 50% greater than the load, or 150 lbs. Dividing the force (150) by the pressure (60) gives you a power factor of 2.5. A 2" bore cylinder, with a power factor of 3.1, provides the needed force.

You'll also have to consider stroke length, spring force and overall dimensions of the space. But this is only the start. If you'd like the full story on proper cylinder sizing and selection, contact Bimba Manufacturing Company, P.O. Box 68, Monee, Illinois 60449. Phone 708/534-8544, FAX 708/534-7473, Technical Assistance 800-44-BIMBA (800-442-4622).

The information presented is in Bimba's best engineering opinion and should be used for reference only. Recommendations derived should be verified under actual operating conditions. Bimba reserves the right to change specifications without prior notice.

Bimba Manufacturing Company
 Monee, IL 60449-0068
 Telephone: 708.534.8544
 Email: cs@bimba.com
www.bimba.com
 Rev Level: 0

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