

ESTIMATING AIR CYLINDER SPEED

The Kinetic energy that originates from an air cylinder driven mass is dependent upon the square of its moving velocity. The actual velocity of an air cylinder is difficult to calculate due to the many factors involved including: unbalance between the load resistance and developed air cylinder force; control valve sizing for pressurizing and venting the air cylinder; applied air pressure etc. The following chart provides estimated cylinder speeds for a variety of air cylinder bore and control valve combinations. The chart assumes that the air cylinder develops twice the force required to overcome the load resistance with an operating pressure of 80 to 100 psig (552 to 690 kPa) and valve porting as noted.

ESTIMATED CYLINDER SPEED

Figures in the body of the table below are speeds in inches per second.

CYLINDER BORE	ACTUAL VALVE ORIFICE SIZE					
	1/32"	1/16"	1/8"	1/4"	3/8"	1/2"
1"	6	15	37	110		
1 1/8"	5	12	28	85		
1 1/2"	3	7	16	50	125	
1 3/4"	2	5	11	35	87	140
2"	1	4	9	28	70	112
2 1/2"		2	6	18	45	72

