

# Ingersoll Rand

Air Motors





# Repairs Done Right. Service Made Simple.

Proper service of Ingersoll Rand/ARO air motors with quality-authorized parts will help prevent wear and tear, eliminate downtime and extend a product's life. That's why Ingersoll Rand (IR) has created a program that provides service and repairs to the end user through the use of Authorized Service Agents.

This newly developed program ensures that Ingersoll Rand maintenance and repair standards are met, through the use of genuine parts and service. Whether it's serious technical difficulties or just routine maintenance, products can be taken directly to any specified Authorized Service Agent. From there, the program has been set up to make certain that the air motor is put into the hands of reliable, fully trained IR service technicians. This process ensures that you have access to the expertise and resources of a full service center, regardless of geographic location.

## **Program Features:**

- One Face to the End User
- Quality repairs using genuine IR parts
- Access to an IR owned service center
- Fully trained service technicians using IR specified testing equipment
- Receive your quote in 48 hours or less
- 90 day repair warranty

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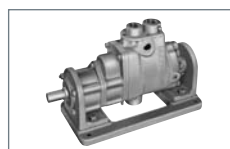
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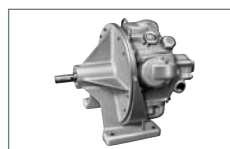
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## Introduction

For more than 125 years, Ingersoll Rand has been an industry leader in engineering and manufacturing air power. Ingersoll Rand is the expert in air power.

### Air Power

Creating sheer power from the natural environment, Ingersoll-Rand air motors are flexible, efficient alternatives to electric sources—perfect for a wide range of industrial applications. Consider these advantages:

- *Infinitely variable speeds and torques* via pressure regulation or air valves—no costly controls required
- *Instant starting, stopping and reversing* eliminates the delays of motor speed-up or slow-down periods
- *Will not overheat or burn out*, even when overloaded or run to stall
- *Safe operation in hazardous conditions*, with no electrical sparks or hydraulic fluids
- *Cool running characteristics minimize* the effects of hot, wet or dusty surroundings
- *Low maintenance*, based on simplicity of design and strength of construction
- *Excellent design flexibility*—a function of compact size, light weight, and high power output
- *Temperature range*—up to 150°F with standard lubrication and up to 300°F with high temperature lubrication



### Full Spectrum of Solutions

Ingersoll Rand offers well over 200 cataloged models of air motors, with an extensive range of options:

- *Reversible and non-reversible types*
- *Vane or piston configurations*
- *Geared and non-geared varieties*
- *0.10 to 30 horsepower*
- *23 rpm to 26,000 rpm speed ratings*
- *0.10 ft-lb. to 1090 ft-lb. torque ratings*

In addition, Ingersoll Rand maintains data on hundreds of special application air motors that have solved problems for design engineers around the world over the years. You can access this invaluable resource by contacting your Ingersoll Rand representative or distributor with details of your situation.

With over 125 years of engineering and manufacturing leadership, Ingersoll Rand is the expert in air power.





## Air Motor Performance Curves

The performance curves shown throughout this catalog can assist you in matching specific air motor models to requirements. Performance data within one series may vary slightly, depending on gear ratios. When this occurs, median performance for that series is indicated. Follow these guidelines for interpreting the performance curves:

### Horsepower

1. Locate operating speed on the correct horizontal axis of the bottom chart
2. Read Horsepower from the correct curve in the bottom chart

### Torque

1. Locate operating speed on the correct horizontal axis of the bottom chart
2. Read Torque from the correct curve in the bottom chart

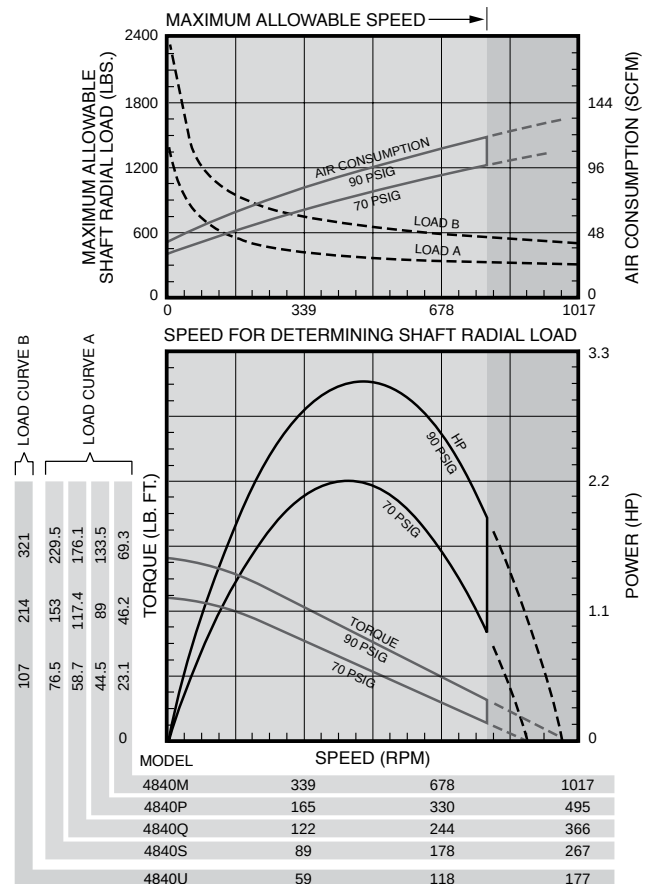
### Air Consumption

1. Locate operating speed on the correct horizontal axis on the bottom chart
2. Read Air Consumption from the correct curve in the top chart

### Maximum Allowable Shaft Radial Load

On applications where Shaft Radial Load is a factor:

1. Locate operating speed on the horizontal axis of the top chart
2. Read Shaft Radial Load on the correct Load Curve in the top chart



### Two 1/3 Horsepower Motors

The Ingersoll Rand reversible Series M004 Air Motor shown weighs only 2 3/8 lbs. It has integral gear reduction of 33 to 1 and a free speed of 450 rpm. The comparable horsepower 110 volt electric motor, with a free speed of 1725 rpm, weighs 15 1/2 lbs.



## Air Motor Selection and Characteristics

Ingersoll Rand offers two basic types of Air Motor:

### Vane Motors

Are smaller, lighter and less expensive than piston motors of similar power. Simple in design and construction, they can be operated in most any position. Vane motors are available in a broad range of speeds, torques and power and are the most widely used type of air motor.

### Radial Piston Motors

Operate at lower speeds than vane motors. Have excellent starting and speed control. Especially good for “lugging” heavy loads at slow speed. Standard operational position is horizontal.

### Reversible/Non-Reversible Air Motors

Non-reversible air motors are rated at slightly higher speeds, torques, and horsepower than reversible motors of the same family.

### Air Pressure

When selecting air motors, remember that the specification listings show only one set of performance figures, at a particular pressure —90 psig. Air motors are designed to produce optimum performance at this pressure.

Many other speeds, torques and power can be obtained from the same motor by regulating the pressure, air supply or exhaust. While they will operate at pressures below 40 psig, their performance may not be consistent. They can also be operated above 100 psig, but often at the expense of increased maintenance.

A good rule to follow is to size an air motor based on approximately 70% of the lowest available air pressure. This will allow additional power for starting and possible overloading. See page 5 for performance characteristics at various air pressures.

### Maximum Power

Ungoverned air motors develop maximum horsepower at approximately 50% of free (unloaded) speed while governed motors reach their peak horsepower at about 80% of free speed. The only governed motors in this catalog are the 22 and 55 Series.

### Desired Operating Speed

The desired operating speed, not the free and unloaded speed should be considered when selecting air motors.

Ungoverned air motors should not be run unloaded. The performance curves in this catalog indicate the maximum speeds at which the motor should be operated. The nameplate stamped speed is present for identification only.

### Required Torque

Equally important as the speed at which an air motor is to be run is the required torque. The combination of the two factors—speed and torque—determine the power of the desired motor. Care should be taken to differentiate between stall (maximum) and running torques when selecting air motors.

### Speed and Torque

Starting torques are approximately 75% of stall torques.

Operating or running torques at any speed can be approximated from motor performance curves—or calculated using the formula:

$$\text{Torque (lb-ft)} = \frac{\text{Horsepower} \times 5250}{\text{speed (revolutions per minute)}}$$

$$\text{Torque (Nm)} = \frac{\text{Kilowatts} \times 9550}{\text{speed (revolutions per minute)}}$$

### Speed and Torque

When an air motor is to be used with a pulley, sprocket, or gear on the shaft, the overhung load (perpendicular to the shaft), commonly called “shaft radial loading” must be considered. It is shown in the performance curves and is generally assumed to be applied at the mid-point of the keyway of the shaft.

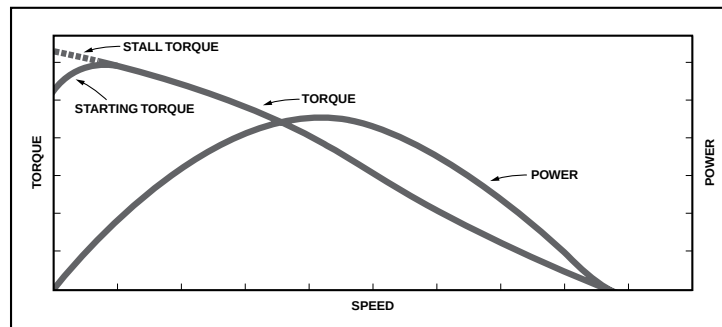


Fig. 1. Torque and power curves for a typical air motor. Torque is maximum at zero speed and zero at free speed. Any loading will slow the motor. As the load increases, the speed decreases and the torque increases until the motor stalls. If the load is decreased, the motor speed increases and its torque output decreases to match the applied load.



## Air System and Supply

Once an air motor has been selected, it is important to ensure that the desired air pressure is available at the motor, *while the motor is operating*. A pressure reading at the compressor does not mean that the same pressure will be available to an operating air motor, because of possible restrictions and friction losses in the air system. Exhaust restrictions can also affect air motor operation, and are often the cause of performance problems.

## Inlet Controls

When installing reversible air motors, a four-way valve or two three-way valves should be used to prevent blockage of the secondary Exhaust Port. This is the opposite Rotation Port to that which is being pressurized.

## Replacing Electric Motors with Air Motors

Electric motors, with the exception of series wound direct current motors, have entirely different performance characteristics than air motors. Therefore, their torque and speed curves will not match. Many electric motors are oversized to allow for overloading and lower power air motors can be used as replacements.

## Ingersoll Rand Assistance

Your Ingersoll Rand Air Motor distributor and factory representative are anxious to help with motor problems, applications and selections.

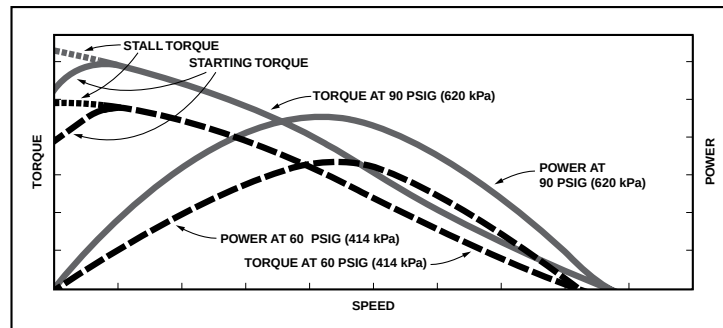


Fig. 2. Typical Air Motor torque and power curves at two different air pressures. Note that speed, torque and power decrease as the air pressure decreases.

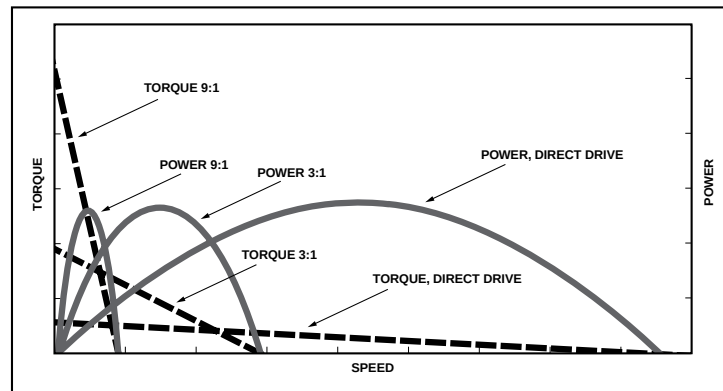


Fig. 3. Torque and power curves for geared and nongear motors. Note that reducing rpm by gearing steepens the torque curve while maintaining power. Gearing is often used to reduce the speed and increase the torque of air motors. The greater the gear reduction, the steeper will be the torque curve; thus, the higher speed motor will be more susceptible to a drop in speed as a load is applied than the slower speed motor with additional gearing.

## Varying Air Pressure

### How to Determine Performance Characteristics at Air Pressures Other than 90 psig

As air pressure changes, the performance characteristics will change by the percentages given below.

#### Ungoverned Air Motors

| Air Pressure (psig) | Free Speed (rpm) | Air Consumption at Free Speed (scfm) | Maximum Power (hp) | Speed at Maximum Horsepower (rpm) | Torque at Maximum Horsepower (lb.-ft.) | Air Consumption at Max. Power (scfm) | Stall or Starting Torque (lb.-ft.) |
|---------------------|------------------|--------------------------------------|--------------------|-----------------------------------|----------------------------------------|--------------------------------------|------------------------------------|
| 40                  | 80%              | 45%                                  | 30%                | 80%                               | 37.5%                                  | 45%                                  | 45%                                |
| 50                  | 84%              | 56%                                  | 44%                | 84%                               | 52.4%                                  | 56%                                  | 56%                                |
| 60                  | 88%              | 67%                                  | 58%                | 88%                               | 65.9%                                  | 67%                                  | 67%                                |
| 70                  | 92%              | 78%                                  | 72%                | 92%                               | 78.3%                                  | 78%                                  | 78%                                |
| 80                  | 96%              | 89%                                  | 86%                | 96%                               | 89.6%                                  | 89%                                  | 89%                                |
| 90                  | 100%             | 100%                                 | 100%               | 100%                              | 100.0%                                 | 100%                                 | 100%                               |
| 100                 | 104%             | 111%                                 | 114%               | 104%                              | 109.6%                                 | 111%                                 | 111%                               |

**Example:** Knowing the performance characteristics of a Model 3840P reversible ungoverned Air Motor at 90 psig (620 kPa) it is a simple matter to determine its characteristics at another air pressure. Using the percentages from the table for 60 psig (414 kPa), the performance becomes:

| Characteristic                       | Performance at 90 psig |   | Percentage Reduction | Performance at 60 psig |      |
|--------------------------------------|------------------------|---|----------------------|------------------------|------|
| Maximum Power (hp)                   | 1.35                   | x | 58%                  | =                      | .78  |
| Free Speed (rpm)                     | 440                    | x | 88%                  | =                      | 387  |
| Speed at Max Power (rpm)             | 215                    | x | 88%                  | =                      | 189  |
| Max (Stall) Torque (lb.-ft.)         | 53.5                   | x | 67%                  | =                      | 35.8 |
| Torque at Max Power (lb.-ft.)        | 33                     | x | 65.9%                | =                      | 21.7 |
| Starting Torque (lb.-ft.)            | 40                     | x | 67%                  | =                      | 26.8 |
| Air Consumption at Free Speed (scfm) | 54                     | x | 67%                  | =                      | 36.2 |
| Air Consumption at Max HP (scfm)     | 44                     | x | 67%                  | =                      | 29.5 |

#### Air Supply or Exhaust Regulation

Reducing or restricting the amount of air supplied to the motor has a similar effect to reducing the air pressure.

Choking or restricting the exhaust has a somewhat different effect, with the speed decreasing much more than the torque.

The effects of changes in pressure, air supply and exhaust regulation are summarized in the table at the right:

Exact variations in performance with “choked” motors are not tabulated; however, “on the job” tests will usually produce the desired results; sometimes from a combination of pressure adjustments and inlet and exhaust restrictions.

| Air Regulation                                              | Speed           | Torque          |
|-------------------------------------------------------------|-----------------|-----------------|
| Reduced air pressure, or restricting volume of air to motor | Reduced         | Greatly Reduced |
| Choking or restricting exhaust                              | Greatly Reduced | Reduced         |

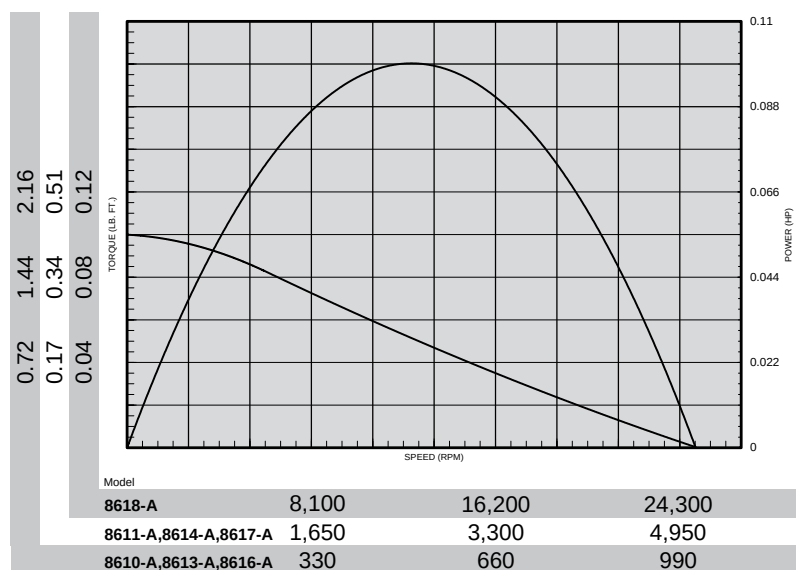
# In-Line Planetary Gear, Multi-Vane Air Motors

## 0000-Series

### Specifications

| TORQUE                    |               |            |                       |               |     |                    |     |                  |     |                   |      |        |           |      | AIR |  |  |  |
|---------------------------|---------------|------------|-----------------------|---------------|-----|--------------------|-----|------------------|-----|-------------------|------|--------|-----------|------|-----|--|--|--|
|                           |               | R.P.M.     |                       | OUTPUT        |     |                    |     | CONSUMPTION      |     | SOUND LEVEL       |      | WEIGHT |           | GEAR |     |  |  |  |
| MODEL                     | SPINDLE       | FREE SPEED | LOAD SPEED @MAX. H.P. | STALL lb. ft. | Nm  | @MAX. H.P. lb. ft. | Nm  | @FREE SPEED SCFM | L/s | @FREE SPEED dB(A) | lbs. | kg.    | REDUCTION |      |     |  |  |  |
| NON-REVERSIBLE - .10 H.P. |               |            |                       |               |     |                    |     |                  |     |                   |      |        |           |      |     |  |  |  |
| 8610-A                    | 3/8" Keyed    | 1,000      | 500                   | 1.8           | 2.4 | 1.05               | 1.4 | 9.5              | 4.5 | 80                | 90   | .40    | Double    |      |     |  |  |  |
| 8611-A                    | 3/8" Keyed    | 5,000      | 2,500                 | .42           | .6  | .21                | .3  | 9.5              | 4.5 | 80                | 80   | .36    | Single    |      |     |  |  |  |
| 8616-A                    | 3/8"-24 Th'd. | 1,000      | 500                   | 1.8           | 2.4 | 1.05               | 1.4 | 9.5              | 4.5 | 80                | .90  | .40    | Double    |      |     |  |  |  |
| 8617-A                    | 3/8"-24 Th'd. | 5,000      | 2,500                 | .42           | .6  | .21                | .3  | 9.5              | 4.5 | 80                | .80  | .36    | Single    |      |     |  |  |  |
| 8618-A                    | 3/8"-24 Th'd. | 25,000     | 13,000                | .10           | .1  | .04                | .05 | 9.5              | 4.5 | 80                | .80  | .36    | Single    |      |     |  |  |  |
| REVERSIBLE - .10 H.P.     |               |            |                       |               |     |                    |     |                  |     |                   |      |        |           |      |     |  |  |  |
| 8613-A                    | 3/8" Keyed    | 1,000      | 500                   | 1.8           | 2.6 | 1.05               | 1.4 | 11.5             | 5.4 | 80*               | .90  | .40    | Double    |      |     |  |  |  |
| 8614-A                    | 3/8" Keyed    | 5,000      | 2,500                 | .42           | .6  | .21                | .3  | 11.5             | 5.4 | 80*               | .80  | .36    | Single    |      |     |  |  |  |

\* Requires installation for reversible motors - shown on page 88.



### Standard Equipment

Steel motor housing, flush-type grease fittings at rotation points for gear and bearing lubrication, exhaust manifold rotatable within 360°, and muffler.



### Equipment Options

41058 Flange Bracket

41057 Foot Bracket



41058



41057

### Options for Motors with Thread Spindles

30384-5 3/8" (9.5 mm) Male Square-Drive Adapter

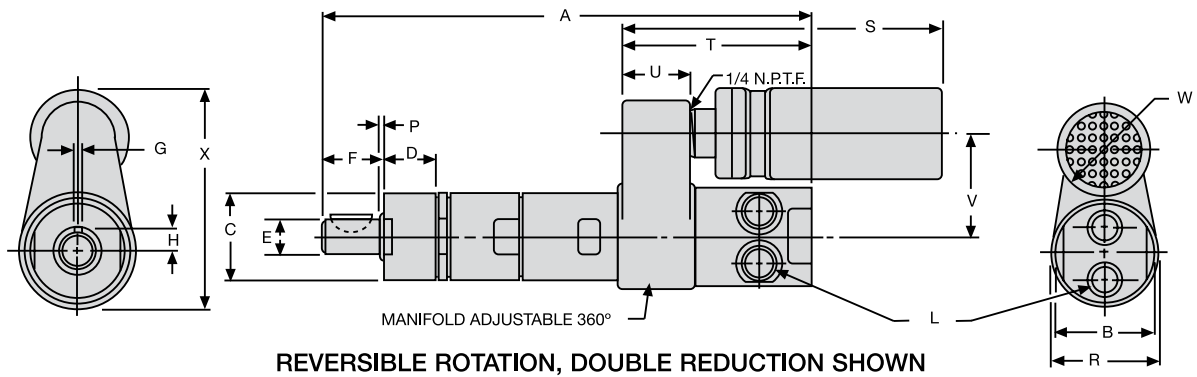
30384-9 1/2" (12.7 mm) Male Square-Drive Adapter

30712 1/4" (6.4 mm) Female Hex Ball-Lock Adapter for screwdriver bits

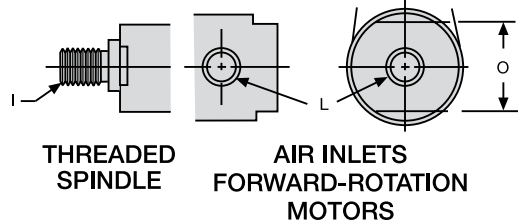
47340 1/4" (6.4 mm) Capacity Drill Chuck



## 0000-Series and Mounting Accessory Dimensions

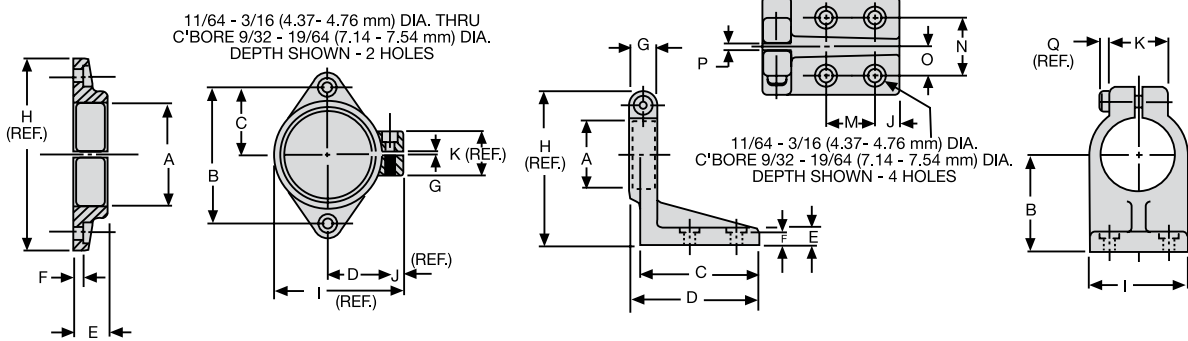


| Gear Reduction | DIMENSION A           |                  |                                  |                       |
|----------------|-----------------------|------------------|----------------------------------|-----------------------|
|                | Models 8617-A, 8618-A | Model 8616-A     | 8611-A, 8612-A<br>8614-A, 8615-A | Models 8610-A, 8613-A |
| Single         | 4-7/16<br>113 mm      | —                | 4-1/2<br>114 mm                  | —                     |
| Double         | —                     | 5-7/32<br>132 mm | —                                | 5-9/32<br>134 mm      |



| Scale  | B      | C              | D              | E            | F-Keyed Spindle | F-Th'd. Spindle | G              | H            | I                 | L           | O   |
|--------|--------|----------------|----------------|--------------|-----------------|-----------------|----------------|--------------|-------------------|-------------|-----|
| Inches | 1-1/16 | .936<br>.937   | .580<br>.590   | .374<br>.375 | .644<br>.691    | .581<br>.628    | .0938<br>.0948 | .228<br>.238 | 3/8"-24<br>UNF-2A | 1/8<br>NPTF | 7/8 |
| mm     | 27     | 23.77<br>23.80 | 14.73<br>14.99 | 9.50<br>9.53 | 16.36<br>17.55  | 14.76<br>15.95  | 2.38<br>2.41   | 5.79<br>6.05 | Th'd.             | Air Inlet   | 22  |

| Scale  | P-Keyed Spindle | P-Th'd Spindle | R     | Reversible Direction | Single Direction | T      | U   | V     | W  | X      |
|--------|-----------------|----------------|-------|----------------------|------------------|--------|-----|-------|----|--------|
| Inches | .149<br>.186    | .024<br>.061   | 1-1/8 | 3-7/16               | 4-7/16           | 2-1/32 | 3/4 | 1-1/8 | 1  | 2-3/16 |
| mm     | 3.78<br>4.72    | .61<br>1.55    | 28    | 87 mm                | 113 mm           | 51     | 19  | 28    | 25 | 55     |



| Scale  | A              | B              | C              | D              | E            | F            |
|--------|----------------|----------------|----------------|----------------|--------------|--------------|
| Inches | .937<br>.938   | 1.745<br>1.755 | .870<br>.880   | .677<br>.697   | .365<br>.385 | .177<br>.197 |
| mm     | 23.80<br>23.83 | 44.32<br>44.58 | 22.10<br>22.35 | 17.20<br>17.45 | 9.27<br>9.78 | 4.50<br>5.00 |

| Scale  | A              | B              | C              | D              | E            | F            | G            | H      |
|--------|----------------|----------------|----------------|----------------|--------------|--------------|--------------|--------|
| Inches | .937<br>.938   | 1.249<br>1.251 | 1.609<br>1.640 | 1.734<br>1.765 | .240<br>.260 | .177<br>.197 | .182<br>.192 | 2-7/32 |
| mm     | 23.80<br>23.83 | 31.72<br>31.78 | 40.87<br>41.66 | 44.04<br>44.83 | 6.10<br>6.60 | 4.50<br>5.00 | 4.62<br>4.88 | 56.36  |

| Scale  | G            | H     | I     | J    | K     |
|--------|--------------|-------|-------|------|-------|
| Inches | 1/64<br>3/64 | 2-1/8 | 1-1/2 | 3/16 | 3/4   |
| mm     | 0.40<br>1.19 | 53.98 | 38.10 | 4.76 | 19.05 |

| Scale  | I              | J            | K              | M              | N              | O            | P            | Q    |
|--------|----------------|--------------|----------------|----------------|----------------|--------------|--------------|------|
| Inches | 1.234<br>1.265 | .296<br>.328 | .734<br>.765   | .620<br>.630   | .745<br>.755   | .370<br>.380 | .046<br>.078 | 1/8  |
| mm     | 31.34<br>32.13 | 7.52<br>8.33 | 18.64<br>19.43 | 15.75<br>16.00 | 18.92<br>19.18 | 9.40<br>9.65 | 1.17<br>1.98 | 3.18 |

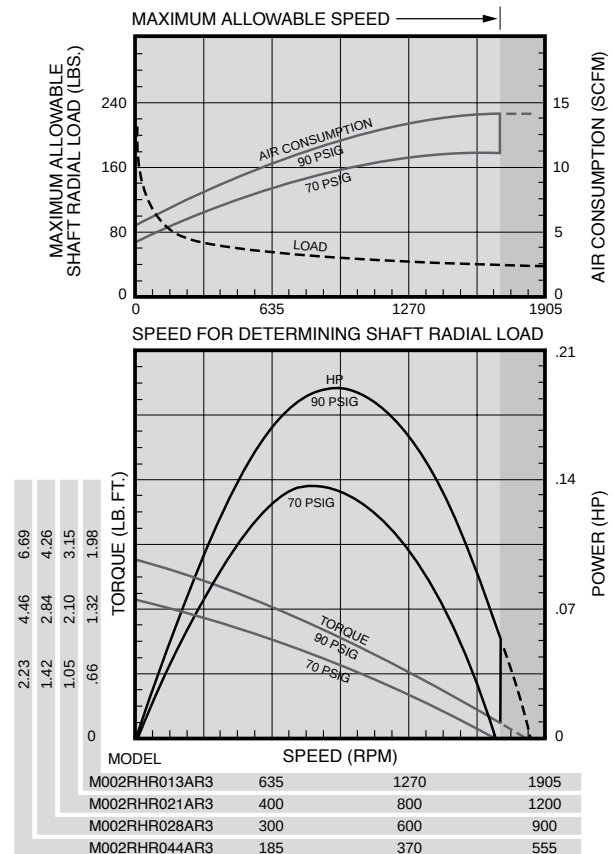
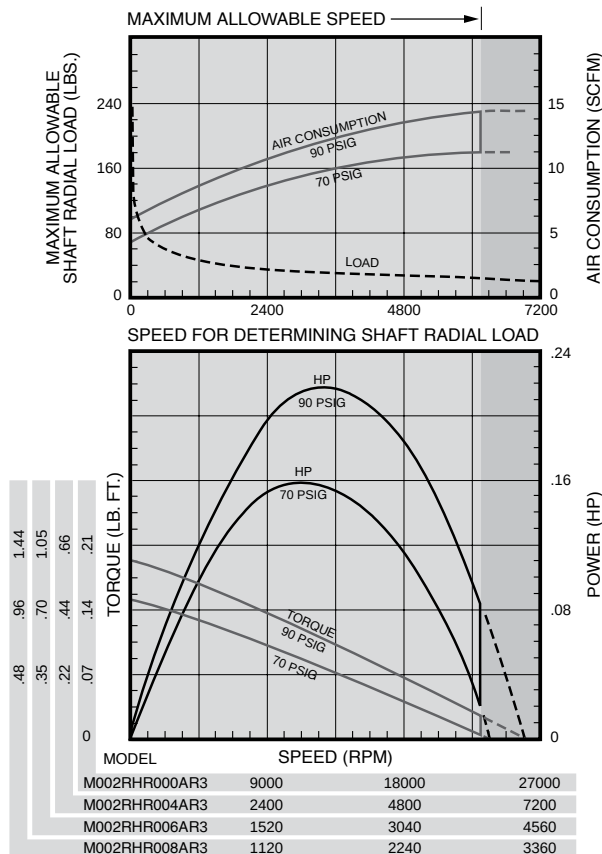
## Series M002 Multi-Vane Air Motors

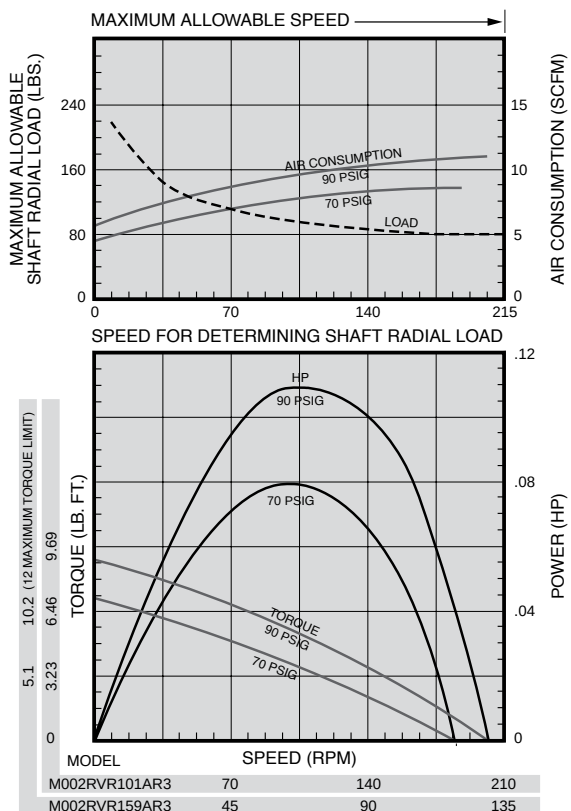
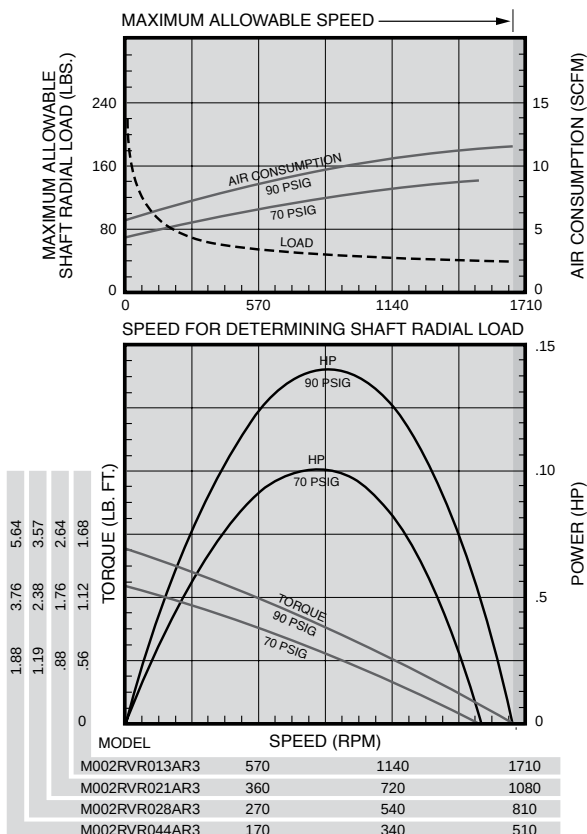
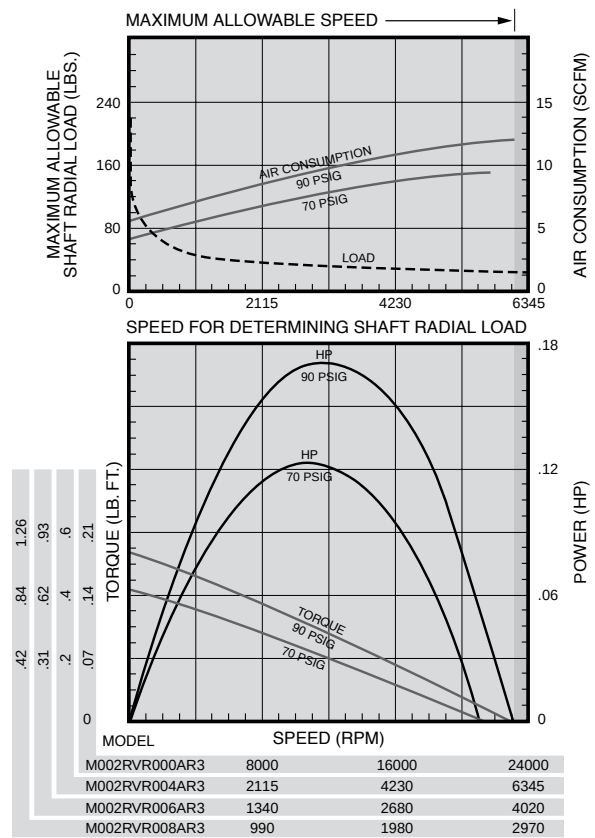
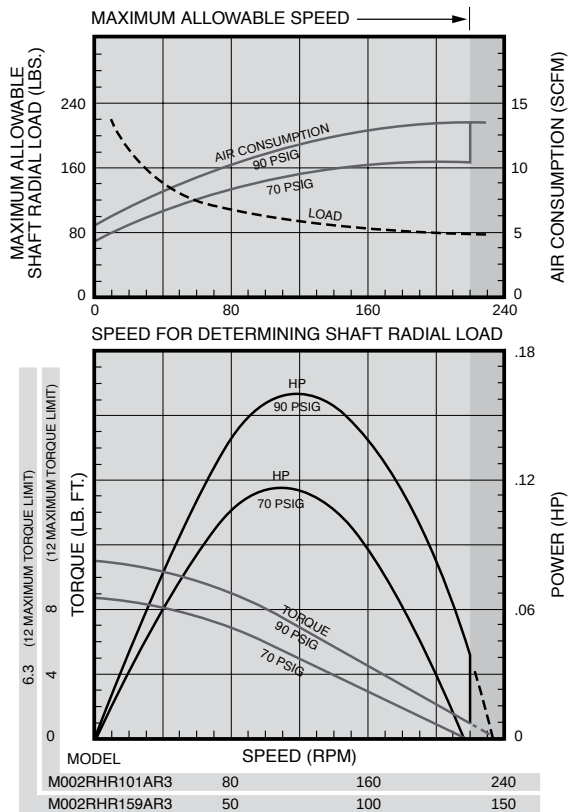
### Specifications

| Model                                                                                  | Max. Power |      | Speed at Max. Power | Free Speed ▲ | Starting Torque |       | Stall Torque |       | Air Consumption at Max. Power |                   | Weight |      |
|----------------------------------------------------------------------------------------|------------|------|---------------------|--------------|-----------------|-------|--------------|-------|-------------------------------|-------------------|--------|------|
|                                                                                        | hp         | kw   | rpm                 | rpm          | lb.-ft.         | Nm    | lb.-ft.      | Nm    | scfm                          | m <sup>3</sup> /m | lb.    | kg   |
| <b>Non-Reversible</b> Direction of rotation is counterclockwise when facing the shaft. |            |      |                     |              |                 |       |              |       |                               |                   |        |      |
| M002RHR000AR3                                                                          | 0.25       | 0.19 | 12,250              | 26,000       | 0.15            | 0.20  | 0.20         | 0.27  | 12.0                          | 0.34              | 1      | 0.46 |
| M002RHR004AR3                                                                          | 0.22       | 0.16 | 3250                | 6920         | 0.45            | 0.61  | 0.61         | 0.83  | 11.9                          | 0.34              | 1      | 0.46 |
| M002RHR006AR3                                                                          | 0.22       | 0.16 | 2060                | 4385         | 0.72            | 0.98  | 0.96         | 1.30  | 11.9                          | 0.34              | 1½     | 0.49 |
| M002RHR008AR3                                                                          | 0.22       | 0.16 | 1520                | 3240         | 0.98            | 1.33  | 1.31         | 1.78  | 11.9                          | 0.34              | 1      | 0.46 |
| M002RHR013AR3                                                                          | 0.19       | 0.14 | 880                 | 1840         | 1.36            | 2.50  | 1.82         | 2.47  | 11.8                          | 0.33              | 1½     | 0.50 |
| M002RHR021AR3                                                                          | 0.19       | 0.14 | 555                 | 1165         | 2.16            | 2.93  | 2.88         | 3.90  | 11.8                          | 0.33              | 1½     | 0.50 |
| M002RHR028AR3                                                                          | 0.19       | 0.14 | 410                 | 860          | 2.92            | 3.96  | 3.90         | 5.29  | 11.8                          | 0.33              | 1½     | 0.50 |
| M002RHR044AR3                                                                          | 0.19       | 0.14 | 262                 | 545          | 4.61            | 6.25  | 6.15         | 8.34  | 11.8                          | 0.33              | 1½     | 0.50 |
| M002RHR101AR3                                                                          | 0.16       | 0.12 | 112                 | 228          | *8.32           | *11.2 | *11.1        | *15.0 | 11.7                          | 0.33              | 1½     | 0.54 |
| M002RHR159AR3                                                                          | 0.16       | 0.12 | 71                  | 145          | *13.1           | *17.7 | *17.5        | *23.7 | 11.7                          | 0.33              | 1½     | 0.54 |
| <b>Reversible</b>                                                                      |            |      |                     |              |                 |       |              |       |                               |                   |        |      |
| M002RVR000AR3                                                                          | 0.20       | 0.15 | 11,500              | 23,000       | 0.13            | 0.18  | 0.18         | 0.24  | 9.8                           | 0.28              | 1      | 0.46 |
| M002RVR004AR3                                                                          | 0.17       | 0.13 | 3045                | 6090         | 0.40            | 0.54  | 0.54         | 0.73  | 9.7                           | 0.27              | 1      | 0.46 |
| M002RVR006AR3                                                                          | 0.17       | 0.13 | 1930                | 3860         | 0.64            | 0.87  | 0.86         | 1.17  | 9.7                           | 0.27              | 1½     | 0.49 |
| M002RVR008AR3                                                                          | 0.17       | 0.13 | 1425                | 2850         | 0.87            | 1.18  | 1.16         | 1.57  | 9.7                           | 0.27              | 1      | 0.46 |
| M002RVR013AR3                                                                          | 0.14       | 0.10 | 820                 | 1645         | 1.17            | 1.58  | 1.56         | 2.11  | 9.6                           | 0.27              | 1½     | 0.50 |
| M002RVR021AR3                                                                          | 0.14       | 0.10 | 520                 | 1045         | 1.85            | 2.51  | 2.47         | 3.35  | 9.6                           | 0.27              | 1½     | 0.50 |
| M002RVR028AR3                                                                          | 0.14       | 0.10 | 385                 | 770          | 2.50            | 3.39  | 3.34         | 4.53  | 9.6                           | 0.27              | 1½     | 0.50 |
| M002RVR044AR3                                                                          | 0.14       | 0.10 | 240                 | 485          | 3.96            | 5.37  | 5.28         | 7.16  | 9.6                           | 0.27              | 1½     | 0.50 |
| M002RVR101AR3                                                                          | 0.11       | 0.08 | 104                 | 209          | *6.78           | *9.19 | *9.05        | *12.2 | 9.5                           | 0.27              | 1½     | 0.54 |
| M002RVR159AR3                                                                          | 0.11       | 0.08 | 66                  | 132          | *10.7           | *14.5 | *14.2        | *19.3 | 9.5                           | 0.27              | 1½     | 0.54 |

▲ ALL models must be operated with sufficient load to prevent speed from exceeding maximum allowable speed shown on performance curve.

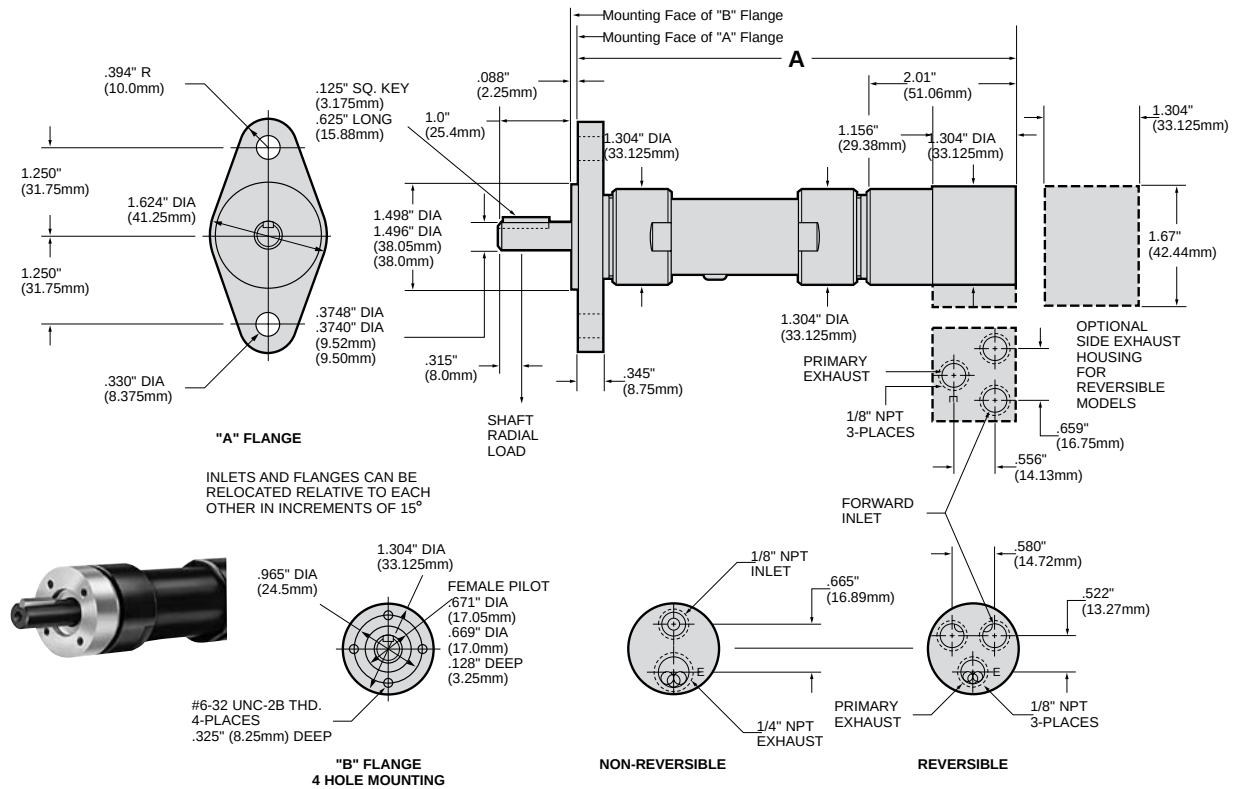
\* Applications with these models must be limited to 12 lb.-ft. (16.3 Nm) torque.  
Performance figures are at 90 psig (620 kPa) air pressure.



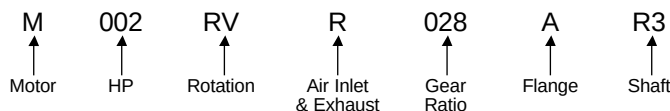


## Series M002 Multi-Vane Air Motors

### Dimensions



### Series M002 Model Number Symbolization



HP = Approximate horsepower range (.11 to .25)

Rotation = RV Reversible

RH Non-Reversible, Right Hand from Rear of Motor (CCW facing shaft)

LH Non-Reversible, Left Hand from Rear of Motor (CW facing shaft)

Air Inlet & Exhaust = R Rear, S Side (Side Inlet and Exhaust available on Reversible Models only)

Gear Ratio = 028 is 1 to 28, 044 is 1 to 44, etc.

Flange = A 2 Hole Flange, B 4 Hole Face Mounting

Shaft = R3 3/8" Round Keyed

T3 3/8"-24 UNF-2A Threaded  
Threaded Shaft Extension is 1" (25.4 mm) with Threaded Length from Shaft End of .87" (22 mm)  
Threaded Shaft Pilot at End is .315" (8 mm) Dia. Max. by .374" (9.5 mm) Long

S3 3/8" Square Drive  
Square Shaft Extension is 1.791" (45.5 mm)

### Dimensions

| Gear Ratios<br>(Refer to Model No.) | A     |        |
|-------------------------------------|-------|--------|
|                                     | in.   | mm     |
| 000, 004, 008                       | 4.989 | 126.73 |
| 006, 013, 021, 028, 044             | 5.510 | 139.93 |
| 101, 159                            | 6.020 | 152.91 |

### Equipment Options

| Furnished with Cataloged Models | Standard Options                                            | Extra Options                                                                                              |
|---------------------------------|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| 2 Hole Flange Mounting          | 4 Hole Face Mounting                                        | R1440-212-1<br>3/8" Square Drive Adapter, 1" long with 3/8"-24 Female threads for use with Threaded Shaft. |
| 3/8" Round Keyed Shaft          | 3/8"-24 Threaded Shaft                                      |                                                                                                            |
|                                 | Side Inlet and Exhaust Housing (for Reversible Models only) | Required for 3/8" Adapter<br>(2) 4UA9-561 set screws<br>(1) 8U-722 Bail                                    |

Note: On all Series M002, M004, and M007 Air Motors, performance is the same for both directions of rotation. On Non-Reversible models, direction of rotation may be easily changed without the need of additional parts by inverting cylinder.

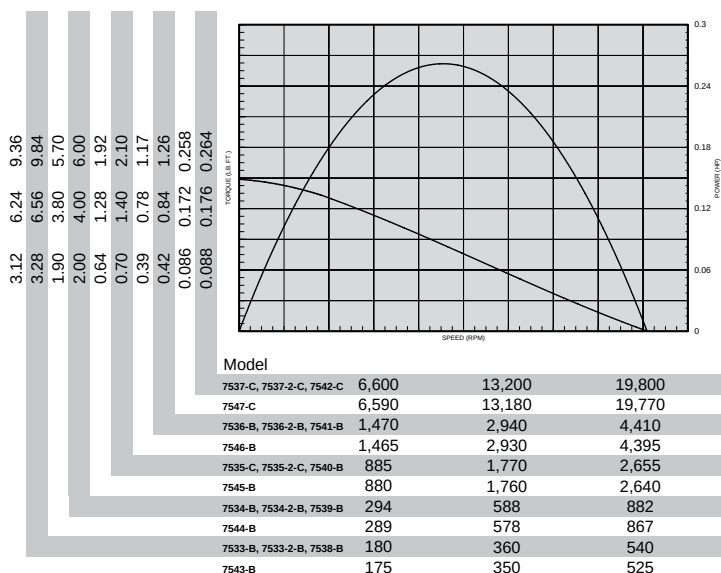


## 000-Series Power Motors

### Specifications

| MODEL                     | SPINDLE       | TORQUE |            |       |            |      |             |      |             | AIR   |      | SOUND LEVEL |           | WEIGHT  |    | GEAR |
|---------------------------|---------------|--------|------------|-------|------------|------|-------------|------|-------------|-------|------|-------------|-----------|---------|----|------|
|                           |               | R.P.M. |            | STALL | OUTPUT     |      | CONSUMPTION | L/s  | @FREE SPEED | dB(A) | lbs. | kg.         | REDUCTION |         |    |      |
|                           |               | FREE   | LOAD SPEED |       | @MAX. H.P. | Nm   |             |      |             |       |      |             |           | lb. ft. | Nm |      |
| NON-REVERSIBLE - .25 H.P. |               |        |            |       |            |      |             |      |             |       |      |             |           |         |    |      |
| 7538-B                    | 3/8" Keyed    | 550    | 325        | 8.2   | 11.1       | 4.0  | 5.4         | 18.1 | 8.5         | 75    | 1.82 | .82         | Double    |         |    |      |
| 7539-B                    | 3/8" Keyed    | 900    | 550        | 5.0   | 6.7        | 2.4  | 3.2         | 18.1 | 8.5         | 75    | 1.82 | .82         | Double    |         |    |      |
| 7540-B                    | 3/8" Keyed    | 2,700  | 1,600      | 1.75  | 2.3        | .82  | 1.1         | 18.1 | 8.5         | 75    | 1.52 | .68         | Single    |         |    |      |
| 7541-B                    | 3/8" Keyed    | 4,500  | 2,700      | 1.05  | 1.4        | .49  | .66         | 18.1 | 8.5         | 75    | 1.52 | .68         | Single    |         |    |      |
| 7542-C                    | 3/8" Keyed    | 20,000 | 12,000     | .22   | .3         | .11  | .14         | 18.1 | 8.5         | 75    | 1.52 | .68         | Single    |         |    |      |
| 7533-B                    | 3/8"-24 Th'd. | 550    | 325        | 8.2   | 11.1       | 4.0  | 5.4         | 18.1 | 8.5         | 75    | 1.82 | .82         | Double    |         |    |      |
| 7534-B                    | 3/8"-24 Th'd. | 900    | 550        | 5.0   | 6.7        | 2.4  | 3.2         | 18.1 | 8.5         | 75    | 1.82 | .82         | Double    |         |    |      |
| 7535-C                    | 3/8"-24 Th'd. | 2,700  | 1,600      | 1.75  | 2.3        | .82  | 1.1         | 18.1 | 8.5         | 75    | 1.52 | .68         | Single    |         |    |      |
| 7536-B                    | 3/8"-24 Th'd. | 4,500  | 2,700      | 1.05  | 1.4        | .49  | .66         | 18.1 | 8.5         | 75    | 1.52 | .68         | Single    |         |    |      |
| 7537-C                    | 3/8"-24 Th'd. | 20,000 | 12,000     | .22   | .3         | .11  | .14         | 18.1 | 8.5         | 75    | 1.52 | .68         | Single    |         |    |      |
| REVERSIBLE - .25 H.P.     |               |        |            |       |            |      |             |      |             |       |      |             |           |         |    |      |
| 7543-B                    | 3/8" Keyed    | 550    | 300        | 7.80  | 10.6       | 4.37 | 5.9         | 20.0 | 9.4         | 75*   | 1.82 | .82         | Double    |         |    |      |
| 7544-B                    | 3/8" Keyed    | 900    | 550        | 4.75  | 6.4        | 2.62 | 3.5         | 20.0 | 9.4         | 75*   | 1.82 | .82         | Double    |         |    |      |
| 7545-B                    | 3/8" Keyed    | 2,700  | 1,500      | 1.60  | 2.2        | .87  | 1.1         | 20.0 | 9.4         | 75*   | 1.52 | .68         | Single    |         |    |      |
| 7546-B                    | 3/8" Keyed    | 4,500  | 2,400      | .98   | 1.3        | .55  | .7          | 20.0 | 9.4         | 75*   | 1.52 | .68         | Single    |         |    |      |
| 7547-C                    | 3/8" Keyed    | 20,000 | 11,000     | .22   | .3         | .12  | .16         | 20.0 | 9.4         | 75*   | 1.52 | .68         | Single    |         |    |      |

\*Requires installation for reversible motors - shown on page 85.



### Standard Equipment

Steel motor housing, flush-type grease fittings at rotation points for gear and bearing lubrication, exhaust manifold and muffler.



### Equipment Options

- 37898 Flange Bracket
- 37899 Foot Bracket



37898

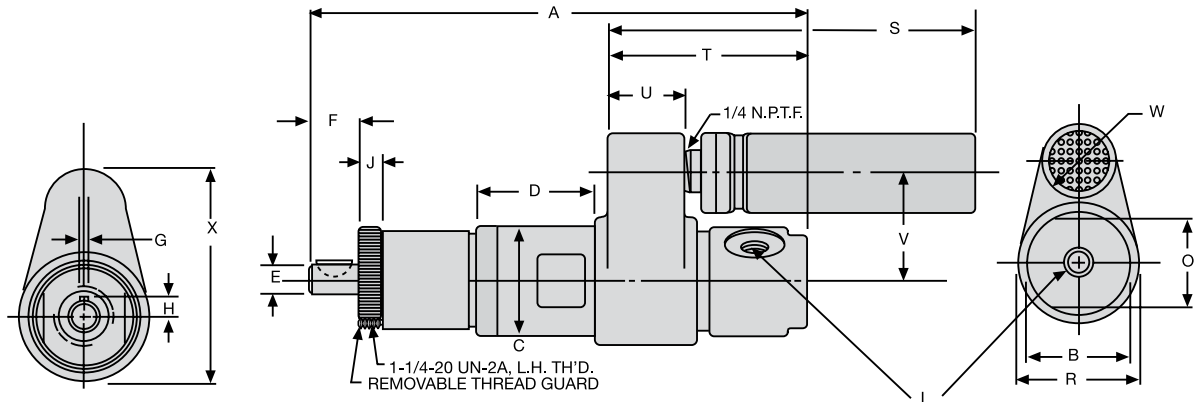


37899

### Options for Motors with Thread Spindles

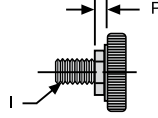
- 30384-5 3/8" (9.5 mm) Male Square-Drive Adapter
- 30384-9 1/2" (12.7 mm) Male Square-Drive Adapter
- 30712 1/4" (6.4 mm) Female Hex Ball-Lock Adapter for screwdriver bits
- 47340 1/4" (6.4 mm) Capacity Drill Chuck
- 42420 3/8" (9.5 mm) Arbor for rubber friction drive wheels up to 1" (25.4 mm) wide

## 000-Series Power Motors and Mounting Accessory Dimensions

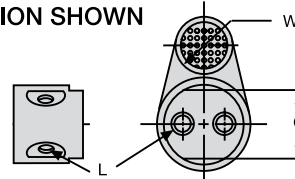


FORWARD ROTATION, DOUBLE REDUCTION SHOWN

| Gear Reduction | DIMENSION A    |
|----------------|----------------|
| Single         | 4-15/16 125 mm |
| Double         | 6 152 mm       |



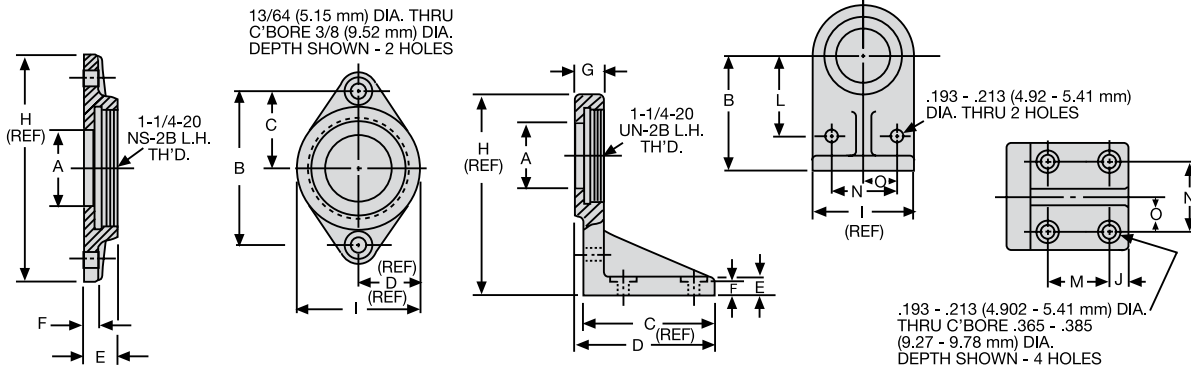
THREADED SPINDLE



AIR INLETS, REVERSIBLE MOTORS

| Scale  | B     | C              | D      | E              | F              | G              | H            | I                           | J            | L                      |
|--------|-------|----------------|--------|----------------|----------------|----------------|--------------|-----------------------------|--------------|------------------------|
| Inches | 1-3/8 | 1.373<br>1.375 | 1-9/32 | .3748<br>.3751 | .592<br>.643   | .0938<br>.0948 | .228<br>.238 | 3/8"-24<br>UNF-3A<br>Thread | .251<br>.276 | 1/8" NPTF<br>Air Inlet |
| mm     | 35    | 34.87<br>34.93 | 32     | 9.52<br>9.53   | 15.04<br>16.33 | 2.38<br>2.41   | 5.79<br>6.05 | 6.38<br>7.01                |              |                        |

| Scale  | O                    | P            | R     | S      | T       | U     | V     | W  | X       |
|--------|----------------------|--------------|-------|--------|---------|-------|-------|----|---------|
| Inches | 1-1/8<br>Rev. 1-3/16 | .086<br>.139 | 1-5/8 | 4-9/16 | 2-15/32 | 31/32 | 1-3/8 | 1  | 2-11/16 |
| mm     | 28<br>Rev. 30        | 2.18<br>3.53 | 41    | 116    | 63      | 25    | 35    | 25 | 68      |



37898 FLANGE MOUNTING BRACKET

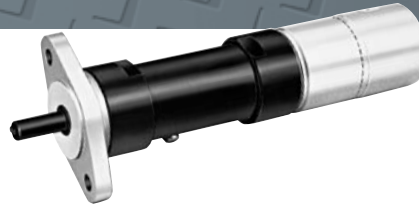
| Scale  | A              | B              | C              | D     |
|--------|----------------|----------------|----------------|-------|
| Inches | .865<br>.885   | 2.042<br>2.082 | 1.021<br>1.041 | 13/16 |
| mm     | 21.97<br>22.48 | 51.89<br>52.89 | 25.93<br>26.44 | 20.64 |

| Scale  | E             | F            | H      | I     |
|--------|---------------|--------------|--------|-------|
| Inches | .380<br>.400  | .177<br>.197 | 2-9/16 | 1-5/8 |
| mm     | 9.65<br>10.16 | 4.50<br>5.00 | 65.09  | 41.28 |

37899 FOOT MOUNTING BRACKET

| Scale  | A              | B              | C              | D     | E            | F            | G             |
|--------|----------------|----------------|----------------|-------|--------------|--------------|---------------|
| Inches | .865<br>.885   | 1.865<br>1.885 | 1.740<br>1.760 | 1-7/8 | 7/32<br>9/32 | .177<br>.197 | .380<br>.400  |
| mm     | 21.97<br>22.48 | 47.37<br>47.88 | 44.20<br>44.70 | 47.63 | 5.56<br>7.14 | 4.50<br>5.00 | 9.65<br>10.16 |

| Scale  | H       | I              | J            | L              | M              | N              | O              |
|--------|---------|----------------|--------------|----------------|----------------|----------------|----------------|
| Inches | 2-11/16 | 1-5/8          | .271<br>.291 | 1.302<br>1.322 | .927<br>.947   | 1.052<br>1.072 | .521<br>.541   |
| mm     | 68.26   | 41.27<br>41.28 | 6.88<br>7.39 | 33.07<br>33.56 | 23.55<br>24.05 | 26.27<br>27.23 | 13.23<br>13.74 |



## Series M004 Multi-Vane Air Motors

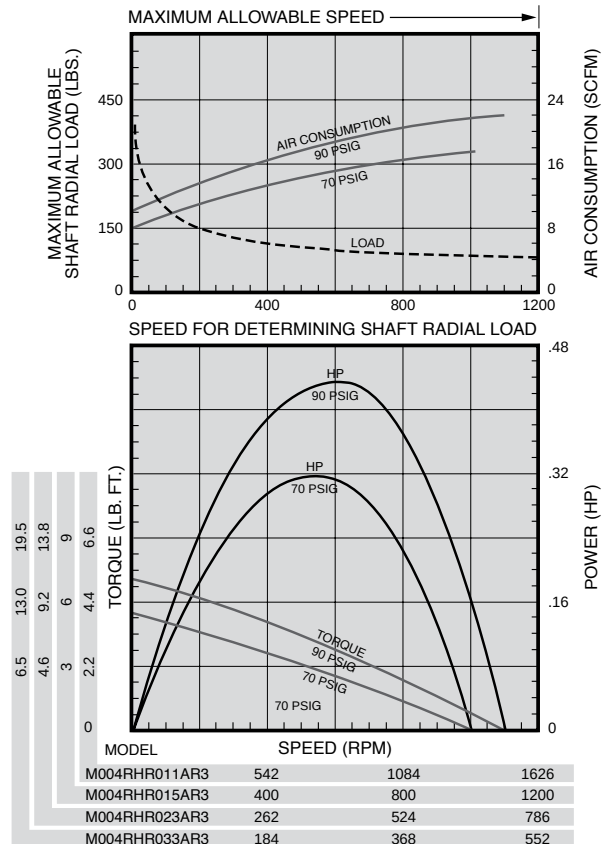
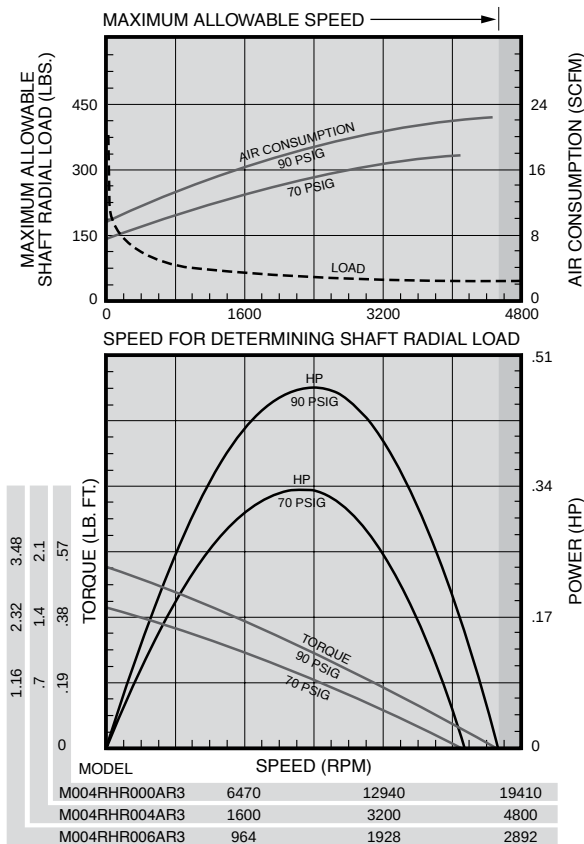
### Specifications

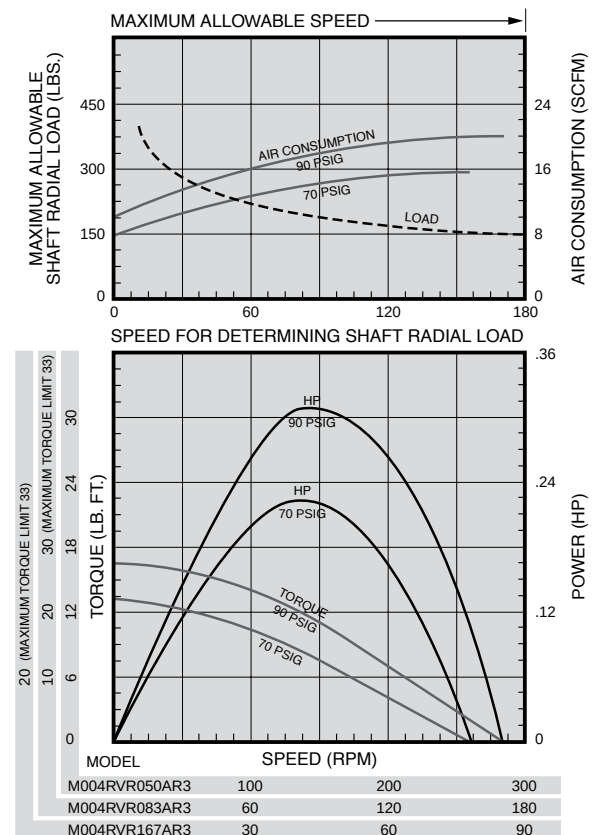
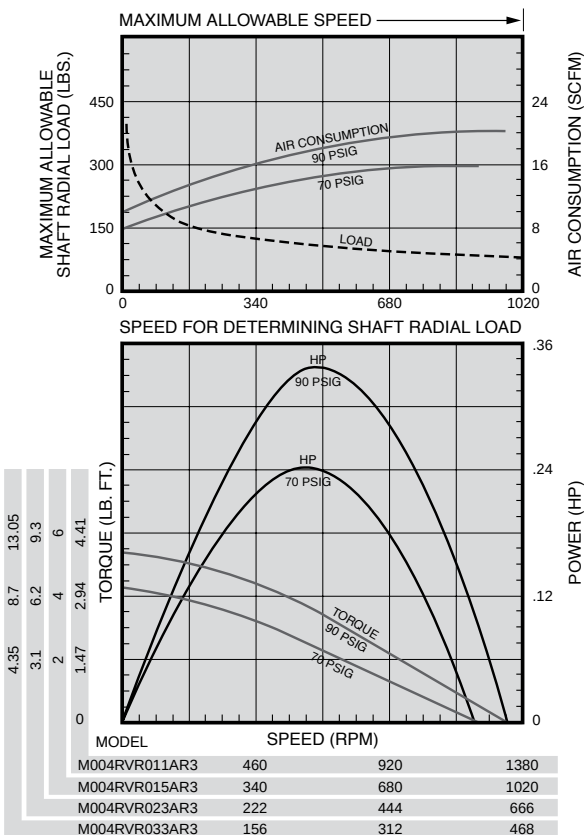
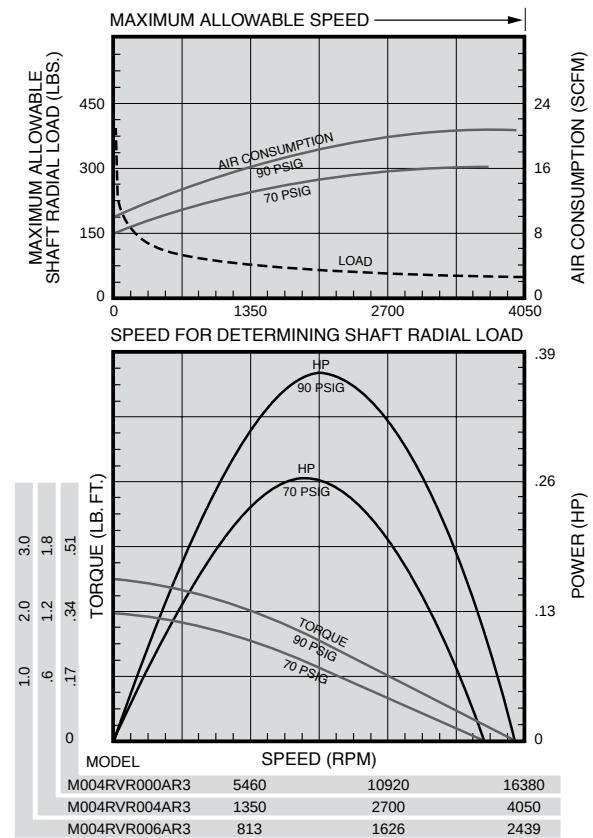
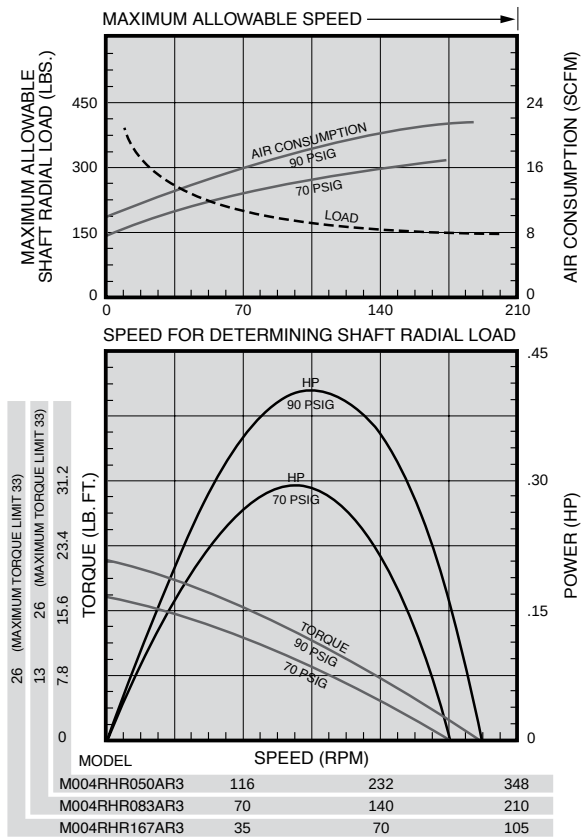
| Model                                                                                  | Max. Power |      | Speed at Max. Power | Free Speed ▲ | Starting Torque |       | Stall Torque |       | Air Consumption at Max. Power |      | Weight |      |
|----------------------------------------------------------------------------------------|------------|------|---------------------|--------------|-----------------|-------|--------------|-------|-------------------------------|------|--------|------|
|                                                                                        | hp         | kw   | rpm                 | rpm          | lb.-ft.         | Nm    | lb.-ft.      | Nm    | scfm                          | m³/m | lb.    | kg   |
| <b>Non-Reversible</b> Direction of rotation is counterclockwise when facing the shaft. |            |      |                     |              |                 |       |              |       |                               |      |        |      |
| M004RHR000AR3                                                                          | 0.50       | 0.37 | 10,000              | 18,000       | 0.40            | 0.54  | 0.53         | 0.72  | 20.0                          | 0.57 | 2 1/16 | 0.95 |
| M004RHR004AR3                                                                          | 0.47       | 0.35 | 2470                | 4450         | 1.46            | 1.98  | 1.94         | 2.63  | 19.5                          | 0.55 | 2 1/16 | 1.00 |
| M004RHR006AR3                                                                          | 0.47       | 0.35 | 1490                | 2680         | 2.42            | 3.28  | 3.22         | 4.37  | 19.5                          | 0.55 | 2 1/16 | 1.00 |
| M004RHR011AR3                                                                          | 0.44       | 0.33 | 825                 | 1490         | 3.92            | 5.32  | 5.22         | 7.08  | 19.0                          | 0.54 | 2 3/8  | 1.09 |
| M004RHR015AR3                                                                          | 0.44       | 0.33 | 610                 | 1095         | 5.32            | 7.21  | 7.10         | 9.63  | 19.0                          | 0.54 | 2 3/8  | 1.09 |
| M004RHR023AR3                                                                          | 0.44       | 0.33 | 395                 | 715          | 8.10            | 11.0  | 10.8         | 14.6  | 19.0                          | 0.54 | 2 3/8  | 1.09 |
| M004RHR033AR3                                                                          | 0.44       | 0.33 | 280                 | 505          | 11.5            | 15.6  | 15.4         | 20.8  | 19.0                          | 0.54 | 2 3/8  | 1.09 |
| M004RHR050AR3                                                                          | 0.41       | 0.31 | 175                 | 315          | *16.5           | *22.4 | *22.1        | *30.0 | 18.5                          | 0.52 | 2 1/16 | 1.22 |
| M004RHR083AR3                                                                          | 0.41       | 0.31 | 106                 | 190          | *27.5           | *37.3 | *36.7        | *49.7 | 18.5                          | 0.52 | 2 1/16 | 1.22 |
| M004RHR167AR3                                                                          | 0.41       | 0.31 | 53                  | 95           | *55.0           | *74.5 | *73.3        | *99.4 | 18.5                          | 0.52 | 2 1/16 | 1.22 |
| <b>Reversible</b>                                                                      |            |      |                     |              |                 |       |              |       |                               |      |        |      |
| M004RVR000AR3                                                                          | 0.40       | 0.30 | 8000                | 16,000       | 0.32            | 0.43  | 0.42         | 0.57  | 19.0                          | 0.54 | 2 1/16 | 0.95 |
| M004RVR004AR3                                                                          | 0.37       | 0.28 | 1975                | 3955         | 1.13            | 1.53  | 1.51         | 2.05  | 18.5                          | 0.52 | 2 3/8  | 1.00 |
| M004RVR006AR3                                                                          | 0.37       | 0.28 | 1190                | 2380         | 1.88            | 2.55  | 2.51         | 3.40  | 18.5                          | 0.52 | 2 3/8  | 1.00 |
| M004RVR011AR3                                                                          | 0.34       | 0.25 | 660                 | 1325         | 3.00            | 4.07  | 4.00         | 5.42  | 18.0                          | 0.51 | 2 3/8  | 1.09 |
| M004RVR015AR3                                                                          | 0.34       | 0.25 | 485                 | 975          | 4.07            | 5.52  | 5.43         | 7.36  | 18.0                          | 0.51 | 2 3/8  | 1.09 |
| M004RVR023AR3                                                                          | 0.34       | 0.25 | 315                 | 635          | 6.23            | 8.45  | 8.30         | 11.2  | 18.0                          | 0.51 | 2 3/8  | 1.09 |
| M004RVR033AR3                                                                          | 0.34       | 0.25 | 225                 | 450          | 8.85            | 12.0  | 11.8         | 16.0  | 18.0                          | 0.51 | 2 3/8  | 1.09 |
| M004RVR050AR3                                                                          | 0.31       | 0.23 | 140                 | 280          | *12.3           | *16.7 | *16.5        | *22.4 | 17.5                          | 0.50 | 2 1/16 | 1.22 |
| M004RVR083AR3                                                                          | 0.31       | 0.23 | 84                  | 169          | *20.6           | *27.9 | *27.5        | *37.3 | 17.5                          | 0.50 | 2 1/16 | 1.22 |
| M004RVR167AR3                                                                          | 0.31       | 0.23 | 42                  | 85           | *41.3           | *56.0 | *55.0        | *74.5 | 17.5                          | 0.50 | 2 1/16 | 1.22 |

▲ ALL models must be operated with sufficient load to prevent speed from exceeding maximum allowable speed shown on performance curve.

\* Applications with these models must be limited to 33 lb.-ft. (44.7 Nm) torque.

Performance figures are at 90 psig (620 kPa) air pressure.

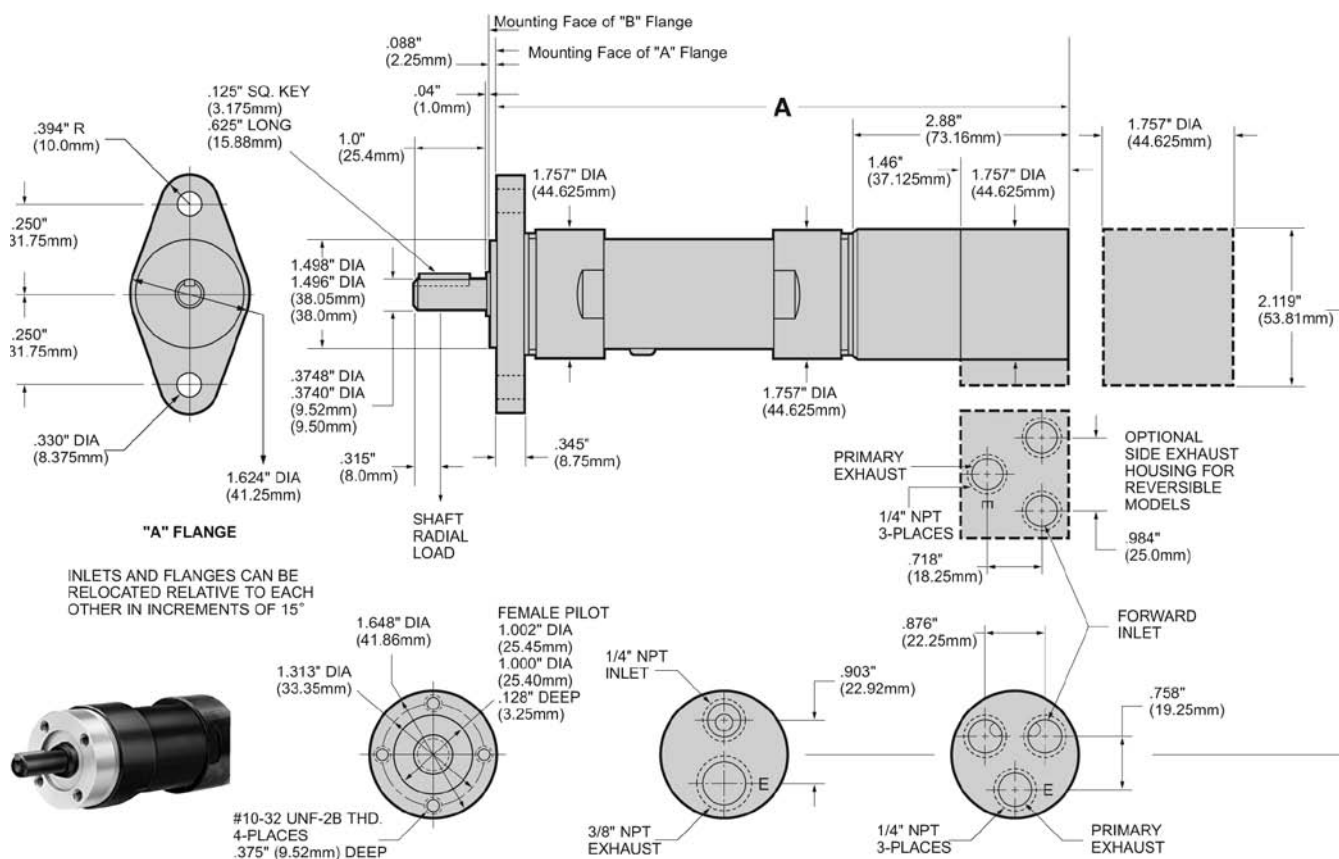






## Series M004 Multi-Vane Air Motors

### Dimensions



### Series M004 Model Number Symbolization

|       |     |          |                     |            |        |       |
|-------|-----|----------|---------------------|------------|--------|-------|
| M     | 004 | RV       | R                   | 023        | A      | R3    |
| Motor | HP  | Rotation | Air Inlet & Exhaust | Gear Ratio | Flange | Shaft |

HP = Approximate horsepower range (.31 to .50)

Rotation = RV Reversible

RH Non-Reversible, Right Hand from Rear of Motor (CCW facing shaft)

LH Non-Reversible, Left Hand from Rear of Motor (CW facing shaft)

Air Inlet & Exhaust = R Rear, S Side (Side Inlet and Exhaust available on Reversible Models only)

Gear Ratio = 023 is 1 to 23, 033 is 1 to 33, etc.

Flange = A 2 Hole Flange, B 4 Hole Face Mounting

Shaft = R3 3/8" Round Keyed

T3 3/8"-24 UNF-2A Threaded  
Threaded Shaft Extension is .512" (13 mm)  
Full Thread Length is .424" (10.75 mm)

S3 3/8" Square Drive  
Square Shaft Extension is 1.791" (45.5 mm)

### Dimensions

| Gear Ratios<br>(Refer to Model No.) | A     |        |
|-------------------------------------|-------|--------|
|                                     | in.   | mm     |
| 000, 004, 006                       | 6.248 | 158.69 |
| 011, 015, 023, 033                  | 6.984 | 177.38 |
| 050, 083, 167                       | 7.745 | 196.73 |

### Equipment Options

| Furnished with Cataloged Models | Standard Options                                            | Extra Options                                                                                                 |
|---------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| 2 Hole Flange Mounting          | 4 Hole Face Mounting                                        | R1440-212-1<br>3/8" Square Drive Adapter, 1" long with<br>3/8"-24 Female threads for use with Threaded Shaft. |
| 3/8" Round Keyed Shaft          | 3/8"-24 Threaded Shaft                                      |                                                                                                               |
|                                 | Side Inlet and Exhaust Housing (for Reversible Models only) | Required for 3/8" Adapter<br>(2) 4UA9-561 set screws                                                          |

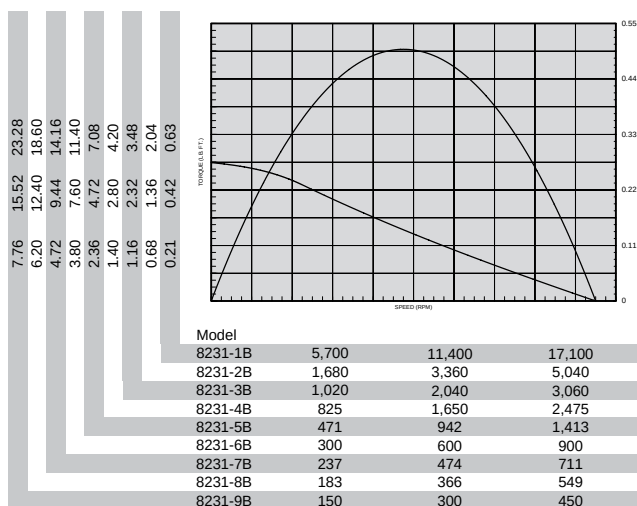
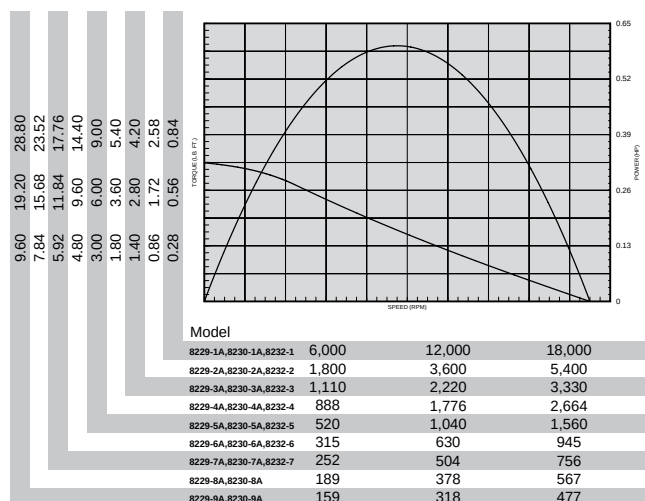
Note: On all Series M002, M004, and M007 Air Motors, performance is the same for both directions of rotation. On Non-Reversible models, direction of rotation may be easily changed without the need of additional parts by inverting cylinder. See Assembly Instruction form number listed in price sheet.

## O-Series Power Motors (with O-Series Gearing) Specifications



| MODEL                     | SPINDLE       | TORQUE        |                          |            |            | AIR        |                                        | SOUND LEVEL          |      | WEIGHT |        | GEAR<br>REDUCTION |
|---------------------------|---------------|---------------|--------------------------|------------|------------|------------|----------------------------------------|----------------------|------|--------|--------|-------------------|
|                           |               | R.P.M.        |                          | STALL      | OUTPUT     |            | CONSUMPTION<br>@FREE SPEED<br>SCFM L/s | @FREE SPEED<br>dB(A) | lbs. | kg.    |        |                   |
|                           |               | FREE<br>SPEED | LOAD SPEED<br>@MAX. H.P. |            | lb. ft. Nm | lb. ft. Nm |                                        |                      |      |        |        |                   |
| NON-REVERSIBLE - .60 H.P. |               |               |                          |            |            |            |                                        |                      |      |        |        |                   |
| 8230-1A                   | 3/8" Keyed    | 19,000        | 9,800                    | .70 .9     | .32 .4     | 41         | 19.3                                   | 80                   | 2.45 | 1.10   | Single |                   |
| 8230-2A                   | 3/8" Keyed    | 5,700         | 2,900                    | 2.5 2.9    | 1.10 1.5   | 41         | 19.3                                   | 80                   | 2.45 | 1.10   | Single |                   |
| 8230-3A                   | 3/8" Keyed    | 3,500         | 1,750                    | 3.50 4.7   | 1.80 2.4   | 41         | 19.3                                   | 80                   | 2.45 | 1.10   | Single |                   |
| 8230-4A                   | 3/8" Keyed    | 2,800         | 1,400                    | 4.50 6.1   | 2.20 3.0   | 41         | 19.3                                   | 80                   | 2.45 | 1.10   | Single |                   |
| 8230-5A                   | 3/8" Keyed    | 1,650         | 840                      | 7.50 10.2  | 3.80 5.1   | 41         | 19.3                                   | 80                   | 2.98 | 1.34   | Double |                   |
| 8230-6A                   | 3/8" Keyed    | 1,000         | 500                      | 12.00 16.3 | 6.20 8.4   | 41         | 19.3                                   | 80                   | 2.98 | 1.34   | Double |                   |
| 8230-7A                   | 3/8" Keyed    | 800           | 390                      | 14.80 20.0 | 8.00 10.8  | 41         | 19.3                                   | 80                   | 2.98 | 1.34   | Double |                   |
| 8230-8A                   | 3/8" Keyed    | 600           | 315                      | 19.60 26.5 | 10.00 13.5 | 41         | 19.3                                   | 80                   | 2.98 | 1.34   | Double |                   |
| 8230-9A                   | 3/8" Keyed    | 500           | 250                      | 24.00 32.5 | 12.50 16.9 | 41         | 19.3                                   | 80                   | 2.98 | 1.34   | Double |                   |
| 8229-1A                   | 3/8"-24 Th'd. | 19,000        | 9,800                    | .70 .9     | .32 .4     | 41         | 19.3                                   | 80                   | 2.45 | 1.10   | Single |                   |
| 8229-2A                   | 3/8"-24 Th'd. | 5,700         | 2,900                    | 2.15 2.9   | 1.10 1.5   | 41         | 19.3                                   | 80                   | 2.45 | 1.10   | Single |                   |
| 8229-3A                   | 3/8"-24 Th'd. | 3,500         | 1,750                    | 3.50 4.7   | 1.80 2.4   | 41         | 19.3                                   | 80                   | 2.45 | 1.10   | Single |                   |
| 8229-4A                   | 3/8"-24 Th'd. | 2,800         | 1,400                    | 4.50 6.1   | 2.20 3.0   | 41         | 19.3                                   | 80                   | 2.45 | 1.10   | Single |                   |
| 8229-5A                   | 3/8"-24 Th'd. | 1,650         | 840                      | 7.50 10.2  | 3.80 5.1   | 41         | 19.3                                   | 80                   | 2.98 | 1.34   | Double |                   |
| 8229-6A                   | 3/8"-24 Th'd. | 1,000         | 500                      | 12.00 16.3 | 6.20 8.4   | 41         | 19.3                                   | 80                   | 2.98 | 1.34   | Double |                   |
| 8229-7A                   | 3/8"-24 Th'd. | 800           | 390                      | 14.80 20.0 | 8.00 10.8  | 41         | 19.3                                   | 80                   | 2.98 | 1.34   | Double |                   |
| 8229-8A                   | 3/8"-24 Th'd. | 600           | 315                      | 19.60 26.5 | 10.00 13.5 | 41         | 19.3                                   | 80                   | 2.98 | 1.34   | Double |                   |
| 8229-9A                   | 3/8"-24 Th'd. | 500           | 250                      | 24.00 32.5 | 12.50 16.9 | 41         | 19.3                                   | 80                   | 2.98 | 1.34   | Double |                   |
| REVERSIBLE - .50 H.P.     |               |               |                          |            |            |            |                                        |                      |      |        |        |                   |
| 8231-1B                   | 3/8" Keyed    | 18,000        | 9,200                    | .52 .7     | .28 .4     | 32         | 15.1                                   | 80*                  | 2.45 | 1.10   | Single |                   |
| 8231-2B                   | 3/8" Keyed    | 5,300         | 2,600                    | 1.70 2.3   | 1.00 1.3   | 32         | 15.1                                   | 80*                  | 2.45 | 1.10   | Single |                   |
| 8231-3B                   | 3/8" Keyed    | 3,200         | 1,550                    | 2.90 3.9   | 1.70 2.3   | 32         | 15.1                                   | 80*                  | 2.45 | 1.10   | Single |                   |
| 8231-4B                   | 3/8" Keyed    | 2,600         | 1,300                    | 3.50 4.7   | 2.00 2.7   | 32         | 15.1                                   | 80*                  | 2.45 | 1.10   | Single |                   |
| 8231-5B                   | 3/8" Keyed    | 1,500         | 780                      | 5.90 8.0   | 3.50 4.7   | 32         | 15.1                                   | 80*                  | 2.98 | 1.34   | Double |                   |
| 8231-6B                   | 3/8" Keyed    | 950           | 480                      | 9.50 12.9  | 5.50 7.4   | 32         | 15.1                                   | 80*                  | 2.98 | 1.34   | Double |                   |
| 8231-7B                   | 3/8" Keyed    | 750           | 380                      | 11.80 16.0 | 7.00 9.5   | 32         | 15.1                                   | 80*                  | 2.98 | 1.34   | Double |                   |
| 8231-8B                   | 3/8" Keyed    | 575           | 290                      | 15.50 21.0 | 9.00 12.2  | 32         | 15.1                                   | 80*                  | 2.98 | 1.34   | Double |                   |
| 8231-9B                   | 3/8" Keyed    | 475           | 240                      | 19.40 26.2 | 11.00 14.9 | 32         | 15.1                                   | 80*                  | 2.98 | 1.34   | Double |                   |

\*Requires installation for reversible motors - shown on page 88.



### Equipment Options

37896 Flange Bracket

37897 Foot Bracket

37896



37897



### Standard Equipment

Steel motor housing, flush-type grease fittings at rotation points for gear and bearing lubrication, exhaust manifold rotatable within 360°, and muffler.

### Options for Motors with Thread Spindles

30384-5 3/8" (9.5 mm) Male Square-Drive Adapter

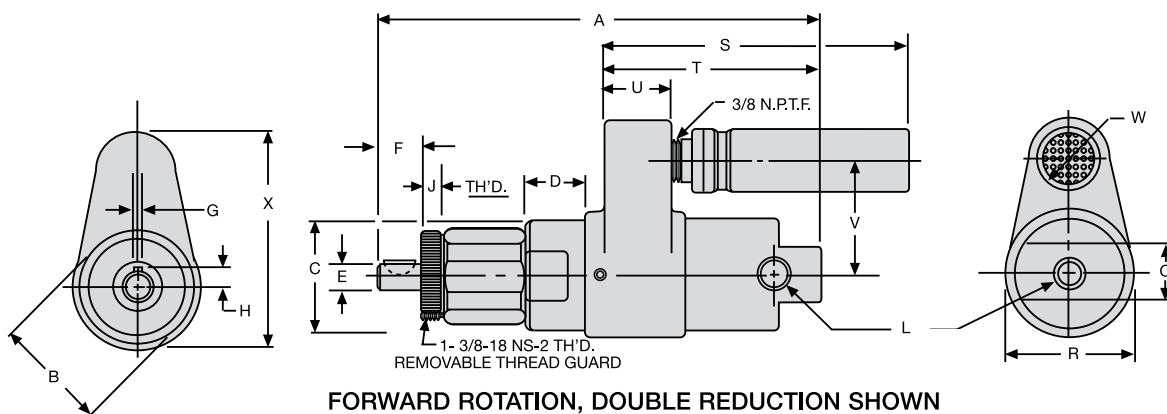
30384-9 1/2" (12.7 mm) Male Square-Drive Adapter

30712 1/4" (6.4 mm) Female Hex Ball-Lock Adapter for screwdriver bits

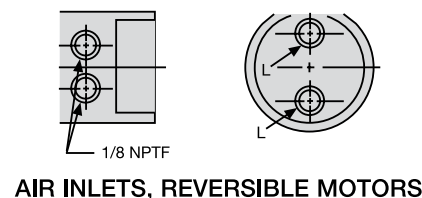
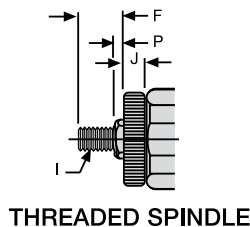
47341 5/16" (7.9 mm) Capacity Drill Chuck

47420 3/8" (9.5 mm) Arbor for rubber friction drive wheels up to 1" (25.4 mm) wide

## O-Series Power Motors and Mounting Accessory Dimensions

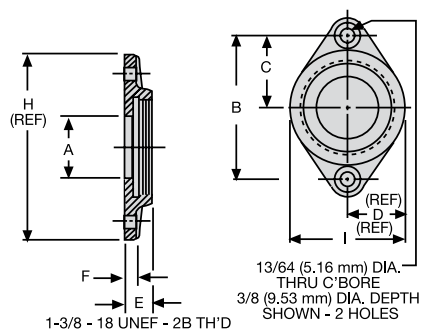


| DIMENSION A    |                   |                  |
|----------------|-------------------|------------------|
| Gear Reduction | Series 8231       | Series 8229-8230 |
| Single         | 5-5/8<br>143 mm   | 5-3/4<br>146 mm  |
| Double         | 6-15/16<br>176 mm | 7-1/16<br>179 mm |



| Scale  | B     | C              | D              | E              | F              | G              | H            | I                           | J            | L                                   |
|--------|-------|----------------|----------------|----------------|----------------|----------------|--------------|-----------------------------|--------------|-------------------------------------|
| Inches | 1-3/4 | 1.730<br>1.740 | .960<br>.980   | .3748<br>.3751 | .688<br>.740   | .0938<br>.0948 | .228<br>.238 | 3/8"-24<br>UNF-3A<br>Thread | .270<br>.292 | 1/4" Female<br>NPTF<br>Air<br>Inlet |
| mm     | 44    | 43.94<br>44.20 | 24.38<br>24.89 | 9.52<br>9.53   | 17.48<br>18.80 | 2.38<br>2.41   | 5.79<br>6.05 |                             | 6.86<br>7.42 |                                     |

| Scale  | O   | P            | R  | S     | T - Forw. | T      | U      | V       | W  | X      |
|--------|-----|--------------|----|-------|-----------|--------|--------|---------|----|--------|
| Inches | 7/8 | .163-.203    | 2  | 4-7/8 | 3-13/32   | 3-9/32 | 1-1/16 | 1-13/16 | 1  | 3-7/16 |
| mm     | 22  | 4.14<br>5.16 | 51 | 124   | 86        | 83     | 27     | 46      | 25 | 87     |

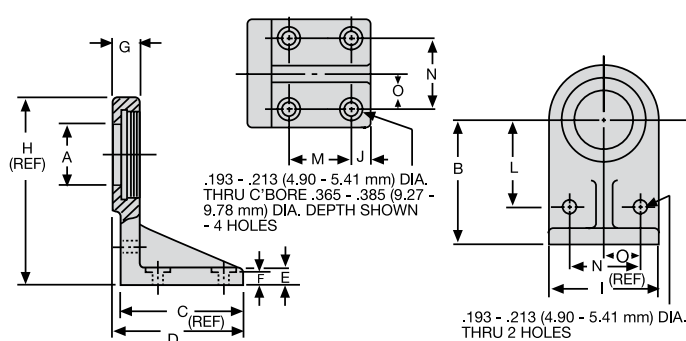


**37896 FLANGE MOUNTING BRACKET**

| Scale  | A              | B              | C              | D     |
|--------|----------------|----------------|----------------|-------|
| Inches | .865<br>.885   | 2.042<br>2.082 | 1.021<br>1.041 | 13/16 |
| mm     | 21.97<br>22.48 | 51.89<br>52.88 | 25.93<br>26.44 | 20.64 |

| Scale  | E             | F            | H      | I     |
|--------|---------------|--------------|--------|-------|
| Inches | .380<br>.400  | .177<br>.197 | 2-9/16 | 1-5/8 |
| mm     | 9.65<br>10.16 | 4.50<br>5.00 | 65.09  | 41.28 |



**37897 FOOT MOUNTING BRACKET**

| Scale  | A              | B              | C              | D     | E            | F            | G             |
|--------|----------------|----------------|----------------|-------|--------------|--------------|---------------|
| Inches | .865<br>.885   | 1.865<br>1.885 | 1.740<br>1.760 | 1-7/8 | 7/32<br>9/32 | .177<br>.197 | .380<br>.400  |
| mm     | 21.97<br>22.48 | 47.37<br>47.88 | 44.20<br>44.70 | 47.63 | 5.56<br>7.14 | 4.50<br>5.00 | 9.65<br>10.16 |

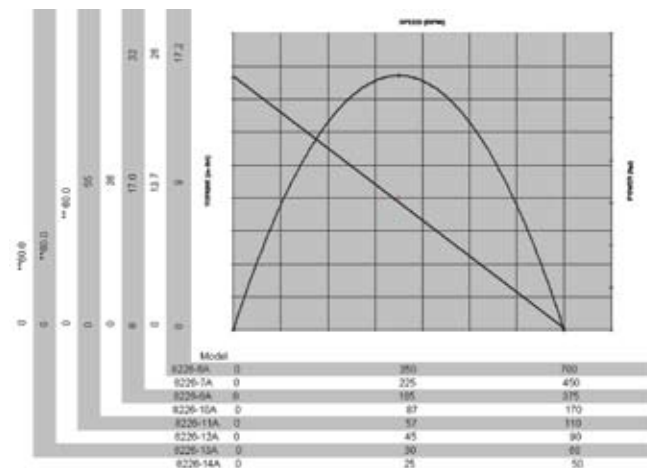
| Scale  | H       | I     | J            | L              | M              | N              | O              |
|--------|---------|-------|--------------|----------------|----------------|----------------|----------------|
| Inches | 2-11/16 | 1-5/8 | .271<br>.291 | 1.302<br>1.322 | .927<br>.947   | 1.052<br>1.072 | .521<br>.541   |
| mm     | 68.26   | 41.27 | 6.88<br>7.39 | 33.07<br>33.58 | 23.55<br>24.05 | 26.27<br>27.23 | 13.23<br>13.74 |

## O-Series Power Motors (with 2200 Series Gearing) Specifications

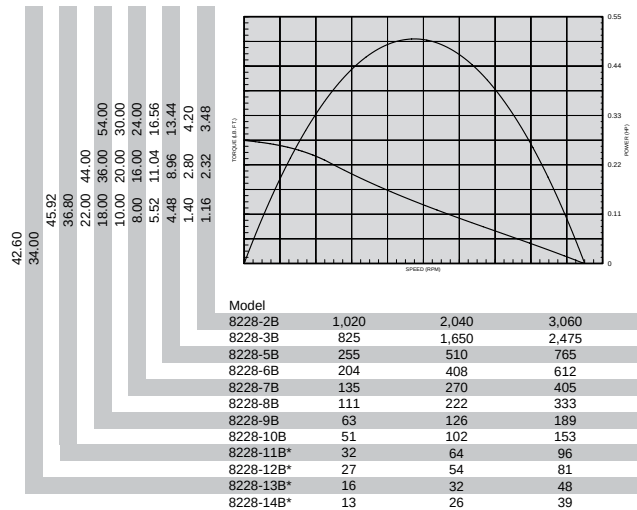
| MODEL                     | SPINDLE    | TORQUE        |                        |         |                      |                            |       | AIR  |           | SOUND LEVEL<br>@FREE SPEED<br>dB(A) | WEIGHT |         | GEAR<br>REDUCTION |
|---------------------------|------------|---------------|------------------------|---------|----------------------|----------------------------|-------|------|-----------|-------------------------------------|--------|---------|-------------------|
|                           |            | R.P.M.        |                        | STALL   | OUTPUT<br>@MAX. H.P. | CONSUMPTION<br>@FREE SPEED |       |      |           |                                     |        |         |                   |
|                           |            | FREE<br>SPEED | LOAD SPEED<br>@MAX H P |         |                      |                            |       |      | lbs<br>ft |                                     | Nm     | lb. ft. |                   |
| NON-REVERSIBLE - .60 H.P. |            |               |                        |         |                      |                            |       |      |           |                                     |        |         |                   |
| 8226-6A                   | 1/2" Keyed | 700           | 350                    | 17.20   | 23.3                 | 9.00                       | 12.2  | 40.5 | 19.1      | 80                                  | 4.25   | 1.91    | Double            |
| 8226-7A                   | 1/2" Keyed | 450           | 225                    | 26.00   | 35.2                 | 13.70                      | 18.6  | 40.5 | 19.1      | 80                                  | 4.25   | 1.91    | Double            |
| 8226-8A                   | 1/2" Keyed | 375           | 185                    | 32.00   | 43.4                 | 17.00                      | 23.0  | 40.5 | 19.1      | 80                                  | 4.25   | 1.91    | Double            |
| 8226-10A                  | 1/2" Keyed | 170           | 87                     | **60.00 | 88.1                 | 36.00                      | 48.8  | 40.5 | 19.1      | 80                                  | 5.56   | 2.50    | Triple            |
| 8226-11A**                | 1/2" Keyed | 110           | 57                     | **60.00 | 134.1                | 55.00                      | 74.5  | 40.5 | 19.1      | 80                                  | 5.56   | 2.50    | Triple            |
| 8226-12A**                | 1/2" Keyed | 90            | 45                     | **60.00 | 165.3                | **60.00                    | 94.8  | 40.5 | 19.1      | 80                                  | 5.56   | 2.50    | Triple            |
| 8226-13A**                | 1/2" Keyed | 60            | 30                     | **60.00 | 249.3                | **60.00                    | 139.6 | 40.5 | 19.1      | 80                                  | 5.56   | 2.50    | Triple            |
| 8226-14A**                | 1/2" Keyed | 50            | 25                     | **60.00 | 306.2                | **60.00                    | 169.4 | 40.5 | 19.1      | 80                                  | 5.56   | 2.50    | Triple            |
| REVERSIBLE - .50 H.P.     |            |               |                        |         |                      |                            |       |      |           |                                     |        |         |                   |
| 8228-2B                   | 1/2" Keyed | 3,200         | 1,550                  | 2.90    | 3.9                  | 1.70                       | 2.3   | 30   | 14        | 80*                                 | 4.25   | 1.91    | Double            |
| 8228-3B                   | 1/2" Keyed | 2,600         | 1,300                  | 3.50    | 4.7                  | 2.00                       | 2.7   | 30   | 14        | 80*                                 | 4.25   | 1.91    | Double            |
| 8228-5B                   | 1/2" Keyed | 800           | 420                    | 11.20   | 15.2                 | 6.30                       | 8.5   | 30   | 14        | 80*                                 | 4.25   | 1.91    | Double            |
| 8228-6B                   | 1/2" Keyed | 650           | 330                    | 13.80   | 18.7                 | 8.00                       | 10.8  | 30   | 14        | 80*                                 | 4.25   | 1.91    | Double            |
| 8228-7B                   | 1/2" Keyed | 425           | 220                    | 20.00   | 27.1                 | 12.00                      | 16.3  | 30   | 14        | 80*                                 | 4.25   | 1.91    | Double            |
| 8228-8B                   | 1/2" Keyed | 350           | 185                    | 25.00   | 33.9                 | 14.00                      | 19.0  | 30   | 14        | 80*                                 | 4.25   | 1.91    | Double            |
| 8228-9B                   | 1/2" Keyed | 200           | 105                    | 45.00   | 61.0                 | 25.00                      | 33.9  | 30   | 14        | 80*                                 | 5.56   | 2.50    | Triple            |
| 8228-10B                  | 1/2" Keyed | 160           | 80                     | 55.00   | 74.5                 | 33.00                      | 44.7  | 30   | 14        | 80*                                 | 5.56   | 2.50    | Triple            |
| 8228-11B**                | 1/2" Keyed | 100           | 54                     | **60.00 | 81.3                 | 48.00                      | 65.0  | 30   | 14        | 80*                                 | 5.56   | 2.50    | Triple            |
| 8228-12B**                | 1/2" Keyed | 85            | 43                     | **60.00 | 81.3                 | **60.00                    | 81.3  | 30   | 14        | 80*                                 | 5.56   | 2.50    | Triple            |
| 8228-13B**                | 1/2" Keyed | 50            | 28                     | **60.00 | 81.3                 | **60.00                    | 81.3  | 30   | 14        | 80*                                 | 5.56   | 2.50    | Triple            |
| 8228-14B**                | 1/2" Keyed | 40            | 22                     | **60.00 | 81.3                 | **60.00                    | 81.3  | 30   | 14        | 80*                                 | 5.56   | 2.50    | Triple            |

\*Requires installation for reversible motors - shown on page 88.

\*\*NOTE: Maximum torque recommended for planetary gear system on these models requires shear key with 60 ft./lbs. shear strength.



\*\*Note: Maximum torque recommended for planetary gear system on these models is 60 ft./lbs.



\*\*NOTE: Maximum torque recommended for planetary gear system on these models requires shear key with 60 ft./lbs. shear strength.

### Standard Equipment

Steel motor housing, flush-type grease fittings at rotation points for gear and bearing lubrication, exhaust manifold rotatable within 360°, and muffler.



### Equipment Options

37895-1 Flange Bracket  
Provision for flange mounting is standard on all models.

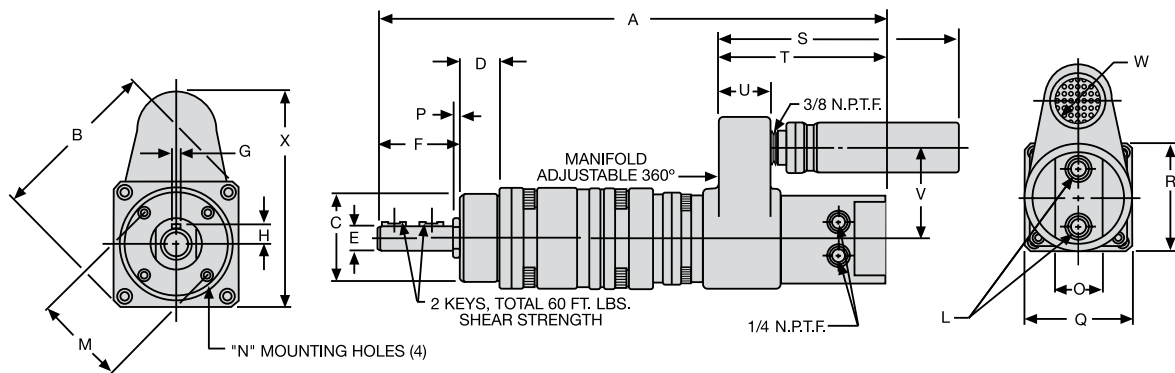


37895-1

### No-Cost Options Furnished When Specified on Original Order

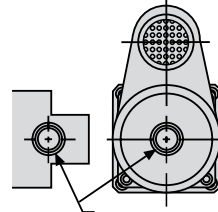
1/2"-20 Male Threaded Spindle on forward-rotation models

## 0/2200-Series Power Motors and Mounting Accessory Dimensions



### REVERSIBLE ROTATION, TRIPLE REDUCTION SHOWN

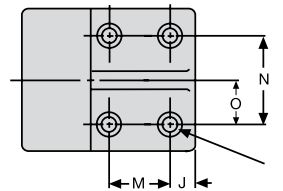
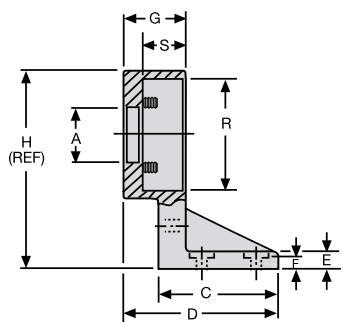
| DIMENSION A    |                   |                  |
|----------------|-------------------|------------------|
| Gear Reduction | Series 8226       | Series 8228      |
| Double         | 8-11/16<br>221 mm | 8-9/16<br>217 mm |
| Triple         | 10-1/2<br>267 mm  | 10-3/8<br>264 mm |



### AIR INLETS, SINGLE-DIRECTION MOTORS

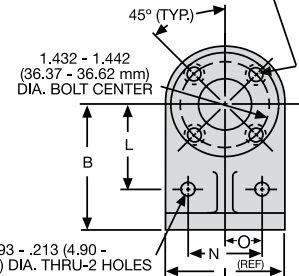
| Scale  | B       | C                | D              | E              | F              | G            | H            | L            | M              | N               |
|--------|---------|------------------|----------------|----------------|----------------|--------------|--------------|--------------|----------------|-----------------|
| Inches | 2-11/16 | 1.7490<br>1.7495 | .774<br>.818   | .4990<br>.4995 | 1.604<br>1.655 | .125<br>.126 | .299<br>.309 | 1/4<br>NPTF  | 1.432<br>1.442 | 10-24<br>UNC-2B |
| mm     | 68      | 44.42<br>44.44   | 19.66<br>20.78 | 12.67<br>12.69 | 40.74<br>42.04 | 3.18<br>3.20 | 7.72<br>7.98 | Air<br>Inlet | 36.37<br>36.63 | Thread          |

| Scale  | O   | P            | Q  | R  | S     | T - Forward Rotation | T Reversible | U      | V       | W  | X      |
|--------|-----|--------------|----|----|-------|----------------------|--------------|--------|---------|----|--------|
| Inches | 7/8 | .098<br>.164 | 2  | 2  | 4-7/8 | 3-13/32              | 3-9/32       | 1-1/16 | 1-13/16 | 1  | 3-7/16 |
| mm     | 22  | 2.49<br>4.17 | 51 | 51 | 124   | 86                   | 83           | 27     | 46      | 25 | 87     |



.193 - .213 (4.90 - 5.41 mm) DIA. THRU C'BORE .365 - .385 (9.27 - 9.78 mm) DIA. DEPTH SHOWN - 4 HOLES

.193 - .213 (4.90 - 5.41 mm) DIA. THRU C'BORE .365 - .385 (9.27 - 9.78 mm) DIA. X .193 - .213 DEEP (FOR Y154-51 SCREWS)



.193 - .213 (4.90 - 5.41 mm) DIA. THRU-2 HOLES

### 37895-1 FOOT MOUNTING BRACKET

| Scale  | A              | B              | C              | D              | E            | F            | G              | H     |
|--------|----------------|----------------|----------------|----------------|--------------|--------------|----------------|-------|
| Inches | .865<br>.886   | 2.115<br>2.135 | 1.843<br>1.875 | 2.421<br>2.453 | .281<br>.343 | .177<br>.197 | .958<br>.978   | 3-1/8 |
| mm     | 21.97<br>22.48 | 53.72<br>54.23 | 46.81<br>47.63 | 61.49<br>62.31 | 7.14<br>8.71 | 4.50<br>5.00 | 24.33<br>24.84 | 79.38 |

| Scale  | I     | J            | L              | M              | N              | O              | R              | S              |
|--------|-------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Inches | 2     | .333<br>.353 | 1.427<br>1.447 | .833<br>.853   | 1.240<br>1.260 | .615<br>.635   | 1.750<br>1.751 | .640<br>.687   |
| mm     | 50.80 | 8.46<br>8.97 | 36.25<br>36.75 | 21.16<br>21.67 | 31.50<br>32.00 | 15.62<br>16.13 | 44.45<br>44.48 | 16.26<br>17.45 |



## Series M007 Multi-Vane Air Motors

### Specifications



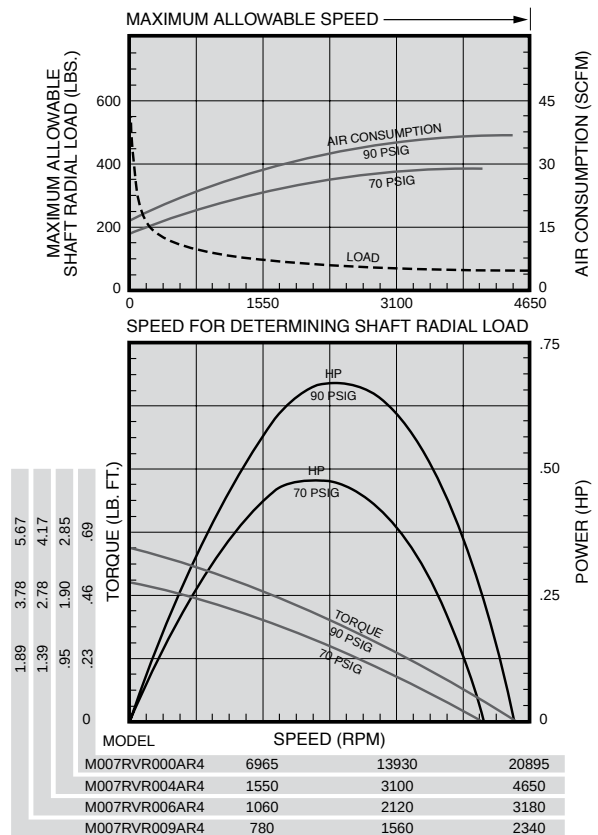
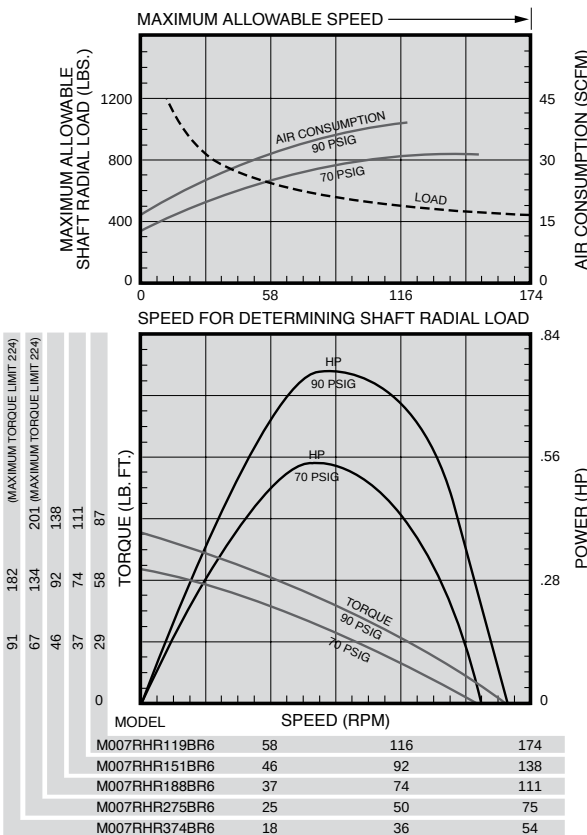
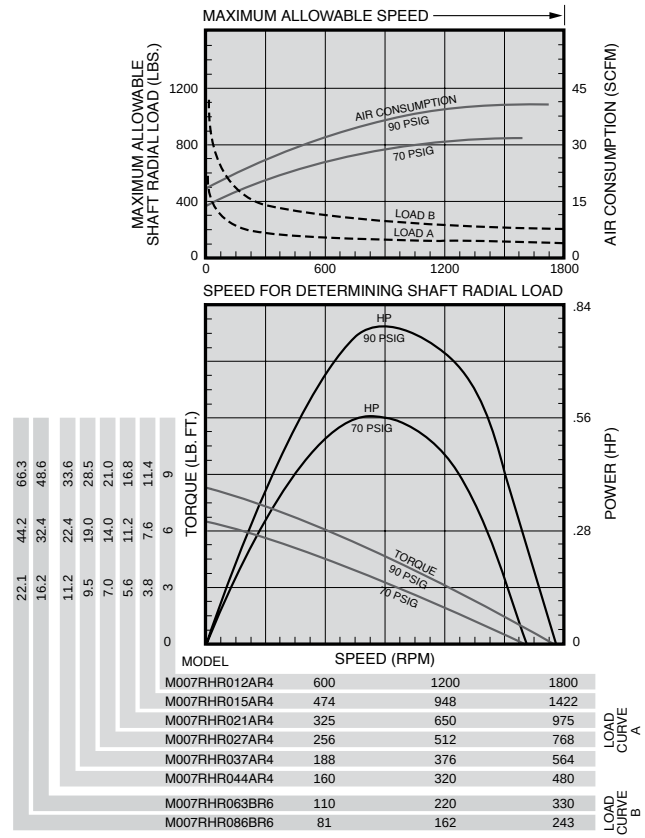
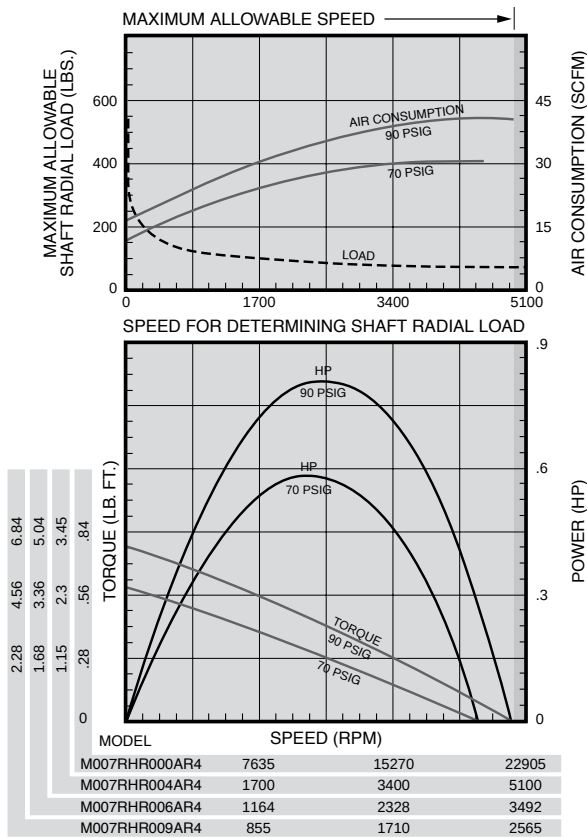
| Model                                                                                  | Max. Power |      | Speed at<br>Max. Power | Free Speed▲ | Starting Torque |        | Stall Torque |        | Air<br>Consumption<br>at Max. Power |      | Weight |     |
|----------------------------------------------------------------------------------------|------------|------|------------------------|-------------|-----------------|--------|--------------|--------|-------------------------------------|------|--------|-----|
|                                                                                        | hp         | kw   | rpm                    | rpm         | lb.-ft.         | Nm     | lb.-ft.      | Nm     | scfm                                | m³/m | lb.    | kg  |
| <b>Non-Reversible</b> Direction of rotation is counterclockwise when facing the shaft. |            |      |                        |             |                 |        |              |        |                                     |      |        |     |
| M007RHR000AR4                                                                          | 0.85       | 0.63 | 11,000                 | 22,000      | 0.58            | 0.79   | 0.77         | 1.04   | 36                                  | 1.02 | 3⅞     | 1.4 |
| M007RHR004AR4                                                                          | 0.82       | 0.61 | 2445                   | 4890        | 2.39            | 3.24   | 3.19         | 4.33   | 36                                  | 1.02 | 3⅞     | 1.4 |
| M007RHR006AR4                                                                          | 0.82       | 0.61 | 1675                   | 3350        | 3.50            | 4.75   | 4.66         | 6.32   | 36                                  | 1.02 | 3⅞     | 1.4 |
| M007RHR009AR4                                                                          | 0.82       | 0.61 | 1230                   | 2460        | 4.76            | 6.45   | 6.34         | 8.60   | 36                                  | 1.02 | 3⅞     | 1.4 |
| M007RHR012AR4                                                                          | 0.79       | 0.59 | 870                    | 1740        | 6.19            | 8.39   | 8.25         | 11.2   | 36                                  | 1.02 | 3½     | 1.6 |
| M007RHR015AR4                                                                          | 0.79       | 0.59 | 685                    | 1370        | 7.80            | 10.6   | 10.4         | 14.1   | 36                                  | 1.02 | 3½     | 1.6 |
| M007RHR021AR4                                                                          | 0.79       | 0.59 | 470                    | 940         | 11.5            | 15.6   | 15.3         | 20.7   | 36                                  | 1.02 | 3½     | 1.6 |
| M007RHR027AR4                                                                          | 0.79       | 0.59 | 370                    | 740         | 14.5            | 19.7   | 19.3         | 26.2   | 36                                  | 1.02 | 3½     | 1.6 |
| M007RHR037AR4                                                                          | 0.79       | 0.59 | 270                    | 540         | 19.7            | 26.7   | 26.3         | 35.7   | 36                                  | 1.02 | 3½     | 1.6 |
| M007RHR044AR4                                                                          | 0.79       | 0.59 | 232                    | 465         | 23.2            | 31.5   | 30.9         | 41.9   | 36                                  | 1.02 | 3½     | 1.6 |
| M007RHR063BR6                                                                          | 0.79       | 0.59 | 161                    | 321         | 33.5            | 45.4   | 44.7         | 60.6   | 36                                  | 1.02 | 7½     | 3.2 |
| M007RHR086BR6                                                                          | 0.79       | 0.59 | 118                    | 236         | 45.7            | 62.0   | 60.9         | 82.6   | 36                                  | 1.02 | 7½     | 3.2 |
| M007RHR119BR6                                                                          | 0.76       | 0.57 | 82                     | 163         | 60.5            | 82.0   | 80.7         | 109.0  | 36                                  | 1.02 | 7½     | 3.4 |
| M007RHR151BR6                                                                          | 0.76       | 0.57 | 65                     | 129         | 76.5            | 104.0  | 102.0        | 138.0  | 36                                  | 1.02 | 7½     | 3.4 |
| M007RHR188BR6                                                                          | 0.76       | 0.57 | 52                     | 103         | 96.0            | 130.0  | 128.0        | 174.0  | 36                                  | 1.02 | 7½     | 3.4 |
| M007RHR275BR6                                                                          | 0.76       | 0.57 | 35                     | 70          | *140.0          | *190.0 | *187.0       | *254.0 | 36                                  | 1.02 | 7½     | 3.4 |
| M007RHR374BR6                                                                          | 0.76       | 0.57 | 26                     | 52          | *191.0          | *259.0 | *254.0       | *344.0 | 36                                  | 1.02 | 7½     | 3.4 |
| <b>Reversible</b>                                                                      |            |      |                        |             |                 |        |              |        |                                     |      |        |     |
| M007RVR000AR4                                                                          | 0.70       | 0.52 | 10,000                 | 20,000      | 0.47            | 0.64   | 0.63         | 0.85   | 33                                  | 0.93 | 3⅞     | 1.4 |
| M007RVR004AR4                                                                          | 0.67       | 0.50 | 2225                   | 4450        | 1.94            | 2.63   | 2.59         | 3.51   | 33                                  | 0.93 | 3⅞     | 1.4 |
| M007RVR006AR4                                                                          | 0.67       | 0.50 | 1520                   | 3045        | 2.84            | 3.85   | 3.78         | 5.13   | 33                                  | 0.93 | 3⅞     | 1.4 |
| M007RVR009AR4                                                                          | 0.67       | 0.50 | 1120                   | 2240        | 3.86            | 5.23   | 5.14         | 6.97   | 33                                  | 0.93 | 3⅞     | 1.4 |
| M007RVR012AR4                                                                          | 0.64       | 0.48 | 790                    | 1580        | 4.97            | 6.74   | 6.63         | 8.99   | 33                                  | 0.93 | 3½     | 1.6 |
| M007RVR015AR4                                                                          | 0.64       | 0.48 | 625                    | 1250        | 6.29            | 8.53   | 8.38         | 11.4   | 33                                  | 0.93 | 3½     | 1.6 |
| M007RVR021AR4                                                                          | 0.64       | 0.48 | 425                    | 855         | 9.2             | 12.5   | 12.2         | 16.5   | 33                                  | 0.93 | 3½     | 1.6 |
| M007RVR027AR4                                                                          | 0.64       | 0.48 | 335                    | 675         | 11.6            | 15.7   | 15.5         | 20.1   | 33                                  | 0.93 | 3½     | 1.6 |
| M007RVR037AR4                                                                          | 0.64       | 0.48 | 245                    | 495         | 15.8            | 21.4   | 21.1         | 28.6   | 33                                  | 0.93 | 3½     | 1.6 |
| M007RVR044AR4                                                                          | 0.64       | 0.48 | 210                    | 420         | 18.6            | 25.2   | 24.8         | 33.6   | 33                                  | 0.93 | 3½     | 1.6 |
| M007RVR063BR6                                                                          | 0.64       | 0.48 | 146                    | 292         | 26.9            | 36.5   | 35.9         | 48.7   | 33                                  | 0.93 | 7½     | 3.2 |
| M007RVR086BR6                                                                          | 0.64       | 0.48 | 107                    | 215         | 36.7            | 49.8   | 48.9         | 66.3   | 33                                  | 0.93 | 7½     | 3.2 |
| M007RVR119BR6                                                                          | 0.61       | 0.46 | 74                     | 148         | 48.1            | 65.3   | 64.1         | 87.0   | 33                                  | 0.93 | 7½     | 3.4 |
| M007RVR151BR6                                                                          | 0.61       | 0.46 | 58                     | 117         | 61.0            | 82.7   | 81.3         | 110.0  | 33                                  | 0.93 | 7½     | 3.4 |
| M007RVR188BR6                                                                          | 0.61       | 0.46 | 47                     | 94          | 76.5            | 104.0  | 102.0        | 138.0  | 33                                  | 0.93 | 7½     | 3.4 |
| M007RVR275BR6                                                                          | 0.61       | 0.46 | 32                     | 64          | *111.0          | *151.0 | *148.0       | *201.0 | 33                                  | 0.93 | 7½     | 3.4 |
| M007RVR374BR6                                                                          | 0.61       | 0.46 | 23                     | 47          | *152.0          | *206.0 | *202.0       | *274.0 | 33                                  | 0.93 | 7½     | 3.4 |

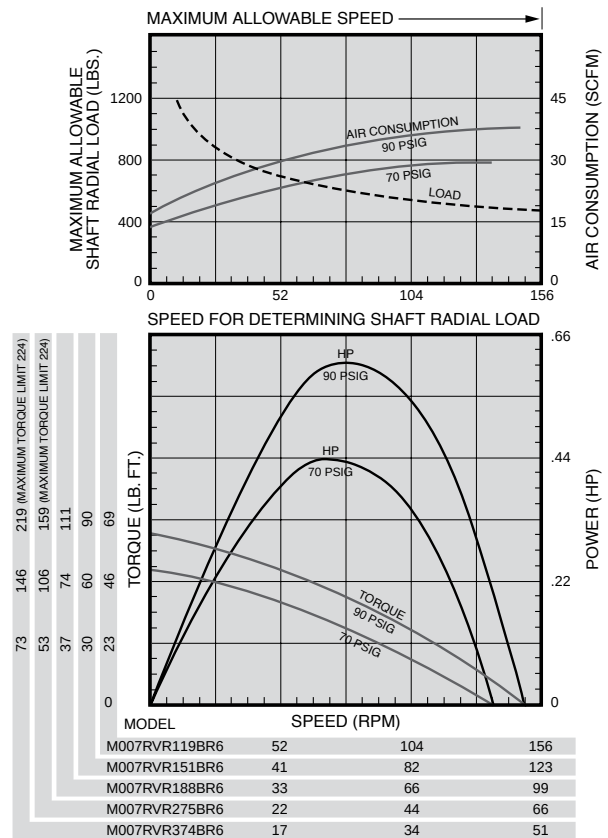
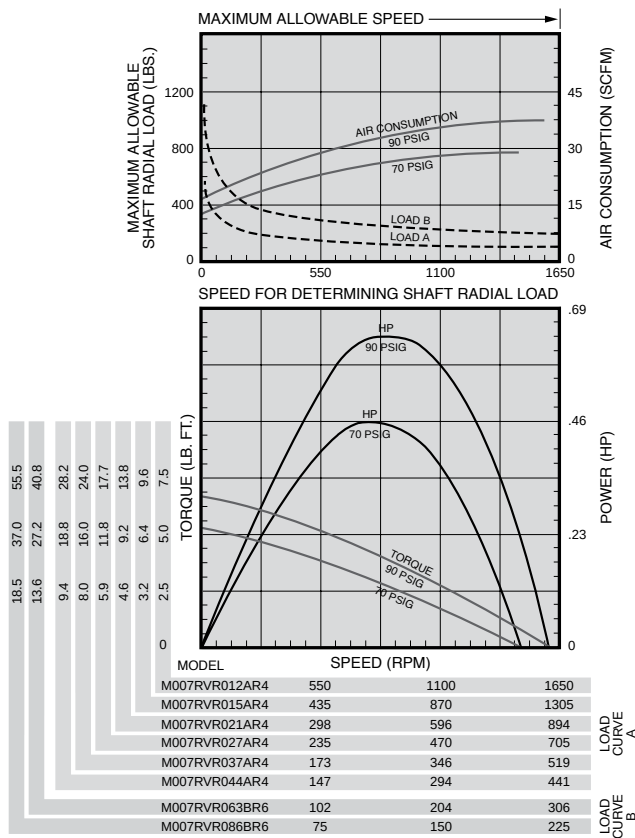
▲ ALL models must be operated with sufficient load to prevent speed from exceeding maximum allowable speed shown on performance curve.

\* Applications with these models must be limited to 224 lb.-ft. (304 Nm) torque.

Performance figures are at 90 psig (620 kPa) air pressure.

Note: On all Series M002, M004, and M007 Air Motors, performance is the same for both directions of rotation. On Non-Reversible models, direction of rotation may be easily changed without the need of additional parts by inverting cylinder. See Assembly Instruction form number listed in price sheet.



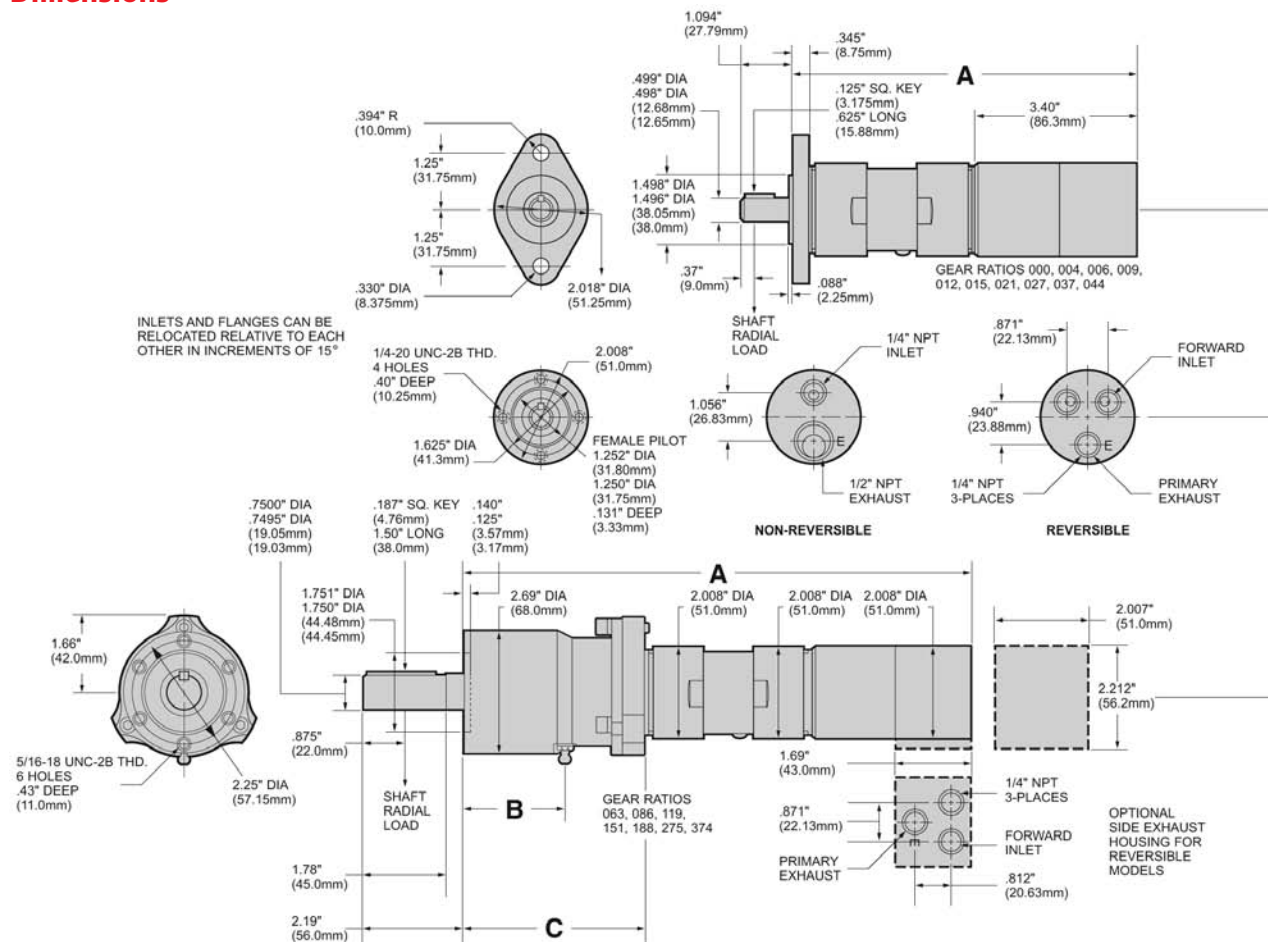


## Equipment Options

| Furnished with Cataloged Models                                                               | Standard Options                                                                                        | Extra Options                                                                                |
|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| 2 Hole Flange Mounting on Gear Ratios:<br>000, 004, 006, 009, 012,<br>015, 021, 027, 037, 044 | 4 Hole Flange Mounting on Gear Ratios:<br>000, 004, 006, 009, 012,<br>015, 021, 027, 037, 044           | ½" Square Drive Shaft on Gear Ratios:<br>000, 004, 006, 009, 012,<br>015, 021, 027, 037, 044 |
| 6 Hole Face Mounting on Gear Ratios:<br>063, 086, 119, 151, 188, 275, 374                     | Side Inlet and Exhaust Housing<br>(for Reversible Models only)                                          | ⅝" Square Drive Shaft on Gear Ratios:<br>063, 086, 119, 151, 188, 275, 374                   |
| ½" Round Keyed Shaft on Gear Ratios:<br>000, 004, 006, 009, 012,<br>015, 021, 027, 037, 044   | ⅜"—24 or ½"—20 Threaded Shaft on<br>Gear Ratios:<br>000, 004, 006, 009, 012,<br>015, 021, 027, 037, 044 |                                                                                              |
| ¾" Round Keyed Shaft on Gear Ratios:<br>063, 086, 119, 151, 188, 275, 374                     |                                                                                                         |                                                                                              |

## Series M007 Multi-Vane Air Motors

### Dimensions



### Series M007 Model Number Symbolization

|       |     |          |                     |            |        |       |
|-------|-----|----------|---------------------|------------|--------|-------|
| M     | 007 | RV       | R                   | 021        | A      | R4    |
| Motor | HP  | Rotation | Air Inlet & Exhaust | Gear Ratio | Flange | Shaft |

HP = Approximate horsepower range (.61 to .85)

Rotation = RV Reversible

RH Non-Reversible, Right Hand from Rear of Motor (CCW facing shaft)

LH Non-Reversible, Left Hand from Rear of Motor (CW facing shaft)

Air Inlet & Exhaust = R Rear, S Side (Side Inlet and Exhaust available on Reversible Models only)

Gear Ratio = 021 is 1 to 21, 027 is 1 to 27, etc.

Flange = A 2 Hole Flange, B 4 Hole Face Mounting (on 000, 004, 006, 009, 012, 015, 021, 027, 037, 044 gear ratios), B 6 Hole Face Mounting (on 063, 086, 119, 151, 188, 275, 374 gear ratios)

Shaft = R4 1/2" Round Keyed (on 000, 004, 006, 009, 012, 015, 021, 027, 037, 044 gear ratios)

R6 3/4" Round Keyed (on 063, 086, 119, 151, 188, 275, 374 gear ratios)

S4 1/2" Square Drive (on 000, 004, 006, 009, 012, 015, 021, 027, 037, 044 gear ratios) Shaft Extension 1.31" (33.27 mm)

S5 5/8" Square Drive (on 063, 086, 119, 151, 188, 275, 374 gear ratios) Shaft Extension 1.25" (31.75 mm)

T3 3/8"-24 UNF-2A Threaded (on 000, 004, 006, 009, 012, 015, 021, 027, 037, 044 gear ratios) Shaft Extension .512" (13 mm)

T4 1/2"-20 UNF-2A Threaded (on 000, 004, 006, 009, 012, 015, 021, 027, 037, 044 gear ratios) Shaft Extension .512" (13 mm)

### Dimensions

| Gear Ratios<br>(Refer to Model No.) | A      |        | B    |    | C   |      |
|-------------------------------------|--------|--------|------|----|-----|------|
|                                     | in.    | mm     | in.  | mm | in. | mm   |
| 000, 004, 006, 009                  | 7.362  | 187.0  |      |    |     |      |
| 012, 015, 021, 027, 037, 044        | 8.133  | 206.56 |      |    |     |      |
| 063, 086                            | 9.343  | 237.3  | .41  | 10 | 2.3 | 58.4 |
| 119, 188, 275, 374, 151             | 10.937 | 277.8  | 2.19 | 56 | 3.9 | 99.0 |



2 HOLE  
"A" FLANGE  
MOUNTING



4 HOLE  
"B" FACE  
MOUNTING



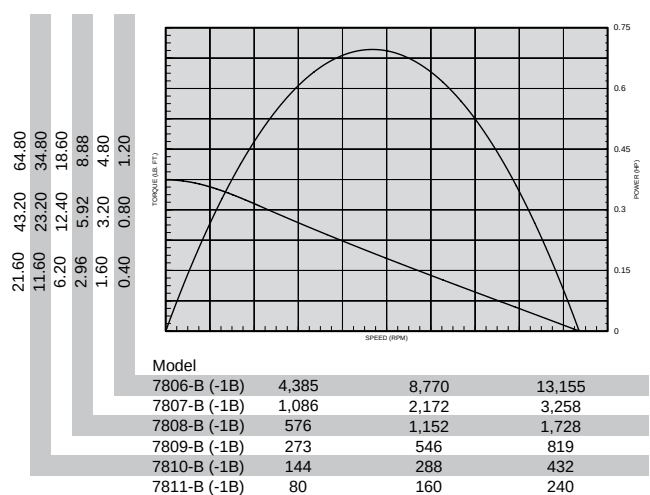
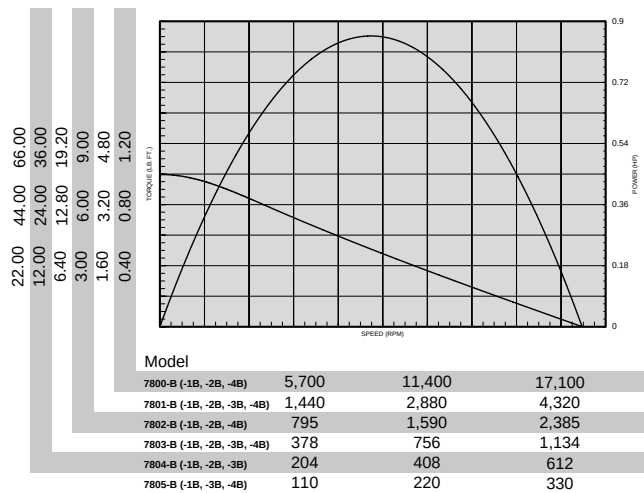
6 HOLE  
"B" FACE  
MOUNTING

## 2200-Series Power Motors (with Thread-On Gearing)

### Specifications

| MODEL                     | SPINDLE       | TORQUE                    |         |       |                      |         |                            | AIR  |      | SOUND LEVEL<br>@FREE SPEED<br>dB(A) | WEIGHT |      | GEAR<br>REDUCTION |
|---------------------------|---------------|---------------------------|---------|-------|----------------------|---------|----------------------------|------|------|-------------------------------------|--------|------|-------------------|
|                           |               | R.P.M.<br>FREE LOAD SPEED |         | STALL | OUTPUT<br>@MAX. H.P. |         | CONSUMPTION<br>@FREE SPEED |      | lbs. |                                     | kg.    |      |                   |
|                           |               | SPEED @MAX. H.P.          | lb. ft. |       | Nm                   | lb. ft. | Nm                         | SCFM |      |                                     |        | L/s  |                   |
| NON-REVERSIBLE - .85 H.P. |               |                           |         |       |                      |         |                            |      |      |                                     |        |      |                   |
| 7800-B                    | 1/2" Keyed    | 18,000                    | 9,000   | 1.00  | 1.4                  | .50     | .68                        | 41.7 | 19.7 | 78                                  | 4.24   | 1.91 | Single            |
| 7801-B                    | 1/2" Keyed    | 4,600                     | 2,400   | 4.00  | 5.5                  | 1.86    | 2.5                        | 41.7 | 19.7 | 78                                  | 4.24   | 1.91 | Single            |
| 7802-B                    | 1/2" Keyed    | 2,500                     | 1,300   | 7.50  | 10.3                 | 3.43    | 4.7                        | 41.7 | 19.7 | 78                                  | 4.24   | 1.91 | Single            |
| 7803-B                    | 1/2" Keyed    | 1,200                     | 600     | 16.00 | 21.9                 | 7.44    | 10.2                       | 41.7 | 19.7 | 78                                  | 5.17   | 2.33 | Double            |
| 7804-B                    | 1/2" Keyed    | 650                       | 320     | 30.00 | 41.2                 | 13.95   | 19.1                       | 41.7 | 19.7 | 78                                  | 5.17   | 2.33 | Double            |
| 7805-B                    | 1/2" Keyed    | 350                       | 170     | 55.00 | 75.5                 | 26.25   | 36.0                       | 41.7 | 19.7 | 78                                  | 5.17   | 2.33 | Double            |
| 7812-B                    | 1/2"-20 Th'd. | 350                       | 170     | 55.00 | 75.5                 | 26.25   | 36.0                       | 41.7 | 19.7 | 78                                  | 5.17   | 2.33 | Double            |
| 7813-B                    | 1/2"-20 Th'd. | 650                       | 320     | 30.00 | 41.2                 | 13.95   | 19.1                       | 41.7 | 19.7 | 78                                  | 5.17   | 2.33 | Double            |
| 7814-B                    | 1/2"-20 Th'd. | 18,000                    | 9,000   | 1.00  | 1.4                  | .50     | .68                        | 41.7 | 19.7 | 78                                  | 4.24   | 1.91 | Single            |
| 7815-B                    | 1/2"-20 Th'd. | 1,200                     | 600     | 16.00 | 21.9                 | 7.44    | 10.2                       | 41.7 | 19.7 | 78                                  | 5.17   | 2.33 | Double            |
| 7816-B                    | 1/2"-20 Th'd. | 4,600                     | 2,400   | 4.00  | 5.5                  | 1.86    | 2.5                        | 41.7 | 19.7 | 78                                  | 4.24   | 1.91 | Single            |
| 7817-B                    | 1/2"-20 Th'd. | 2,500                     | 1,300   | 7.50  | 10.3                 | 3.43    | 4.7                        | 41.7 | 19.7 | 78                                  | 4.24   | 1.91 | Single            |
| REVERSIBLE - .70 H.P.     |               |                           |         |       |                      |         |                            |      |      |                                     |        |      |                   |
| 7806-B                    | 1/2" Keyed    | 13,500                    | 7,000   | 1.00  | 1.4                  | .52     | .71                        | 37.3 | 17.6 | 85*                                 | 4.24   | 1.91 | Single            |
| 7807-B                    | 1/2" Keyed    | 3,400                     | 1,800   | 4.00  | 5.5                  | 2.04    | 2.8                        | 37.3 | 17.6 | 85*                                 | 4.24   | 1.91 | Single            |
| 7808-B                    | 1/2" Keyed    | 1,800                     | 1,000   | 7.40  | 10.2                 | 3.67    | 5.0                        | 37.3 | 17.6 | 85*                                 | 4.24   | 1.91 | Single            |
| 7809-B                    | 1/2" Keyed    | 850                       | 450     | 15.50 | 21.3                 | 8.16    | 11.2                       | 37.3 | 17.6 | 85*                                 | 5.17   | 2.33 | Double            |
| 7810-B                    | 1/2" Keyed    | 450                       | 240     | 29.00 | 39.8                 | 15.30   | 21.0                       | 37.3 | 17.6 | 85*                                 | 5.17   | 2.33 | Double            |
| 7811-B                    | 1/2" Keyed    | 250                       | 130     | 54.00 | 74.0                 | 28.20   | 38.7                       | 37.3 | 17.6 | 85*                                 | 5.17   | 2.33 | Double            |

\*Requires installation for reversible motors - shown on page 88.



### Standard Equipment

Steel motor housing, flush-type grease fittings at rotation points for gear and bearing lubrication, exhaust manifold rotatable within 360°, and muffler.



### Equipment Options

- 37893 Flange Bracket  
37894 Foot Bracket



37894

37893

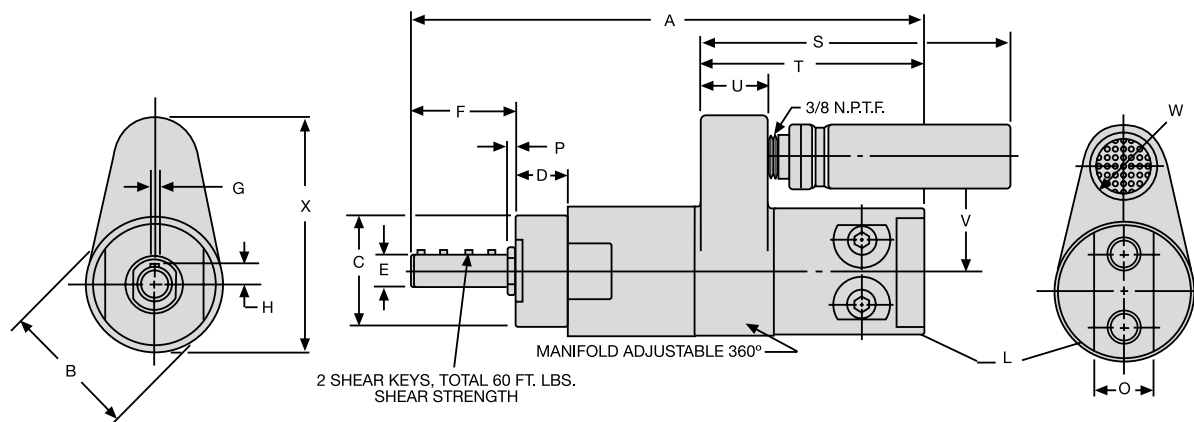


### Options for Forward-Rotation Models with Threaded Spindles

- 40768 1/2" (12.7 mm) Male Square-Drive Adapter  
31651 1/2" (12.7 mm) I.D. Female Stirring Rod Adapter, 3/8"-24 Thd.  
33907 3/8" (9.5 mm) Cap. Drill Chuck  
30018 1/2" (12.7 mm) Cap. Drill Chuck

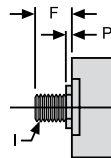


## 2200-Series Power Motors and Mounting Accessory Dimensions

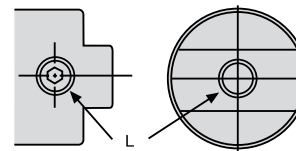


REVERSIBLE ROTATION, SINGLE REDUCTION SHOWN

| DIMENSION A    |                  |                 |
|----------------|------------------|-----------------|
| Gear Reduction | Threaded Spindle | Keyed Spindle   |
| Single         | 7<br>178 mm      | 8<br>203 mm     |
| Double         | 8-7/8<br>225 mm  | 9-3/4<br>248 mm |



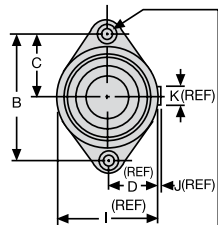
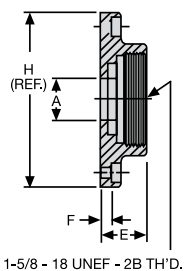
THREADED SPINDLE



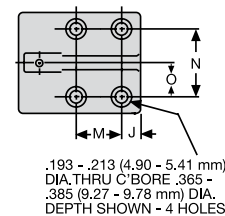
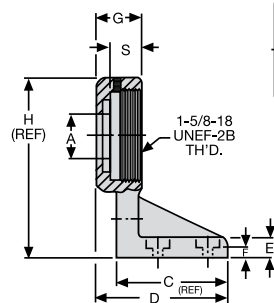
AIR INLETS,  
FORWARD-ROTATION MOTORS

| Scale  | B  | C              | D              | E              | F-Keyed Spindle | F-Th'd. Spindle | G            | H            | I                | L           |
|--------|----|----------------|----------------|----------------|-----------------|-----------------|--------------|--------------|------------------|-------------|
| Inches | 2  | 1.740<br>1.760 | .818<br>.838   | .4990<br>.4995 | 1.588<br>1.646  | .619<br>.677    | .125<br>.126 | .299<br>.309 | 1/2-20<br>UNF-2A | 1/4<br>NPTF |
| mm     | 51 | 44.20<br>44.70 | 20.78<br>21.29 | 12.67<br>12.69 | 40.34<br>41.81  | 15.72<br>17.20  | 3.18<br>3.20 | 7.59<br>7.85 | Thread           | Air Inlet   |

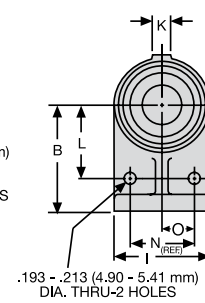
| Scale  | O   | P            | S     | T     | U      | V       | W-Fwd. Rotation | W Reversible | X-Fwd. Rotation | X Reversible |
|--------|-----|--------------|-------|-------|--------|---------|-----------------|--------------|-----------------|--------------|
| Inches | 7/8 | .046<br>.158 | 4-7/8 | 3-1/2 | 1-1/16 | 1-13/16 | 1-3/8           | 1            | 3-1/2           | 3-7/16       |
| mm     | 22  | 1.17<br>4.01 | 124   | 89    | 27     | 46      | 35              | 25           | 89              | 87           |



.193 - .213 (4.90 - 5.41 mm) DIA. THRU C'BORE .365 - .385 (9.27 - 9.78 mm) DIA. DEPTH SHOWN - 2 HOLES



.193 - .213 (4.90 - 5.41 mm) DIA. THRU C'BORE .365 - .385 (9.27 - 9.78 mm) DIA. DEPTH SHOWN - 4 HOLES



.193 - .213 (4.90 - 5.41 mm) DIA. THRU - 2 HOLES

37893 FLANGE MOUNTING BRACKET

| Scale  | A              | B              | C              | D              | E              |
|--------|----------------|----------------|----------------|----------------|----------------|
| Inches | .771<br>.791   | 2.480<br>2.520 | 1.240<br>1.260 | 31/32<br>.791  | .771<br>.791   |
| mm     | 19.58<br>20.09 | 62.99<br>64.00 | 31.50<br>32.00 | 24.61<br>20.09 | 19.58<br>20.09 |

| Scale  | F            | H     | I       | J    | K    |
|--------|--------------|-------|---------|------|------|
| Inches | .177<br>.197 | 3     | 1-15/16 | 1/16 | 3/8  |
| mm     | 4.50<br>5.00 | 76.20 | 49.21   | 1.59 | 9.53 |

37894 FOOT MOUNTING BRACKET

| Scale  | A              | B              | C              | D              | E            | F            | G              | H             |
|--------|----------------|----------------|----------------|----------------|--------------|--------------|----------------|---------------|
| Inches | .771<br>.791   | 2.115<br>2.135 | 1.843<br>1.906 | 2-7/32<br>.791 | .365<br>.385 | .177<br>.197 | .828<br>.859   | 3-1/6<br>.779 |
| mm     | 19.58<br>20.09 | 53.72<br>54.23 | 46.81<br>48.41 | 56.36<br>20.09 | 9.27<br>9.80 | 4.50<br>5.00 | 21.03<br>21.82 | 77.79         |

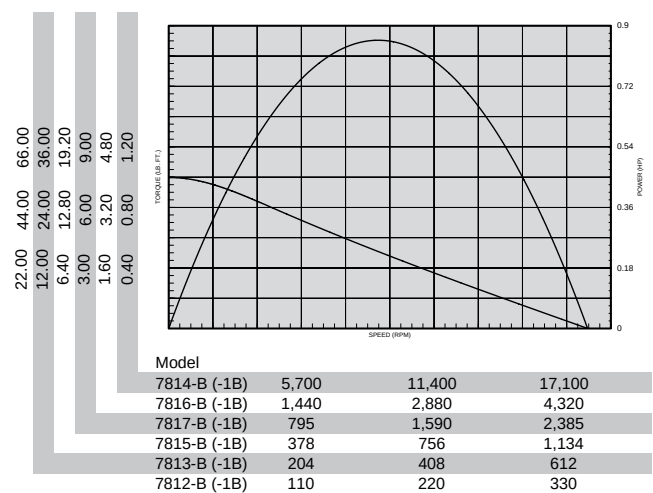
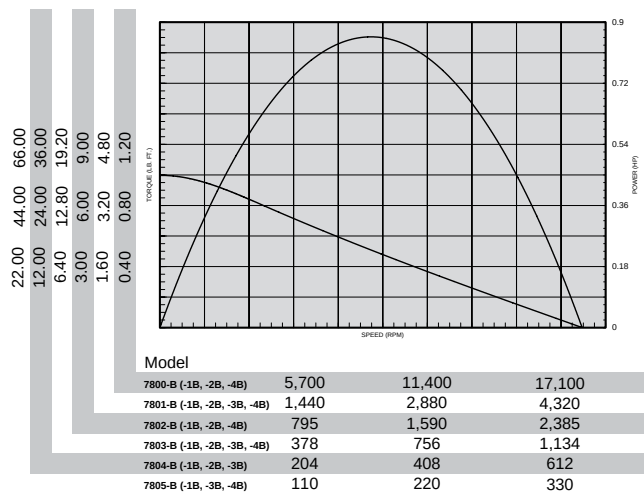
| Scale  | I                     | J            | K             | L              | M              | N              | O              | S              |
|--------|-----------------------|--------------|---------------|----------------|----------------|----------------|----------------|----------------|
| Inches | 1-7/8<br>.334<br>.354 | .334<br>.354 | .312<br>.437  | 1.427<br>1.447 | .834<br>.854   | 1.240<br>1.260 | .615<br>.635   | .511<br>.531   |
| mm     | 47.63<br>8.84<br>8.99 | 8.84<br>8.99 | 8.92<br>11.10 | 36.25<br>36.75 | 21.18<br>21.69 | 31.50<br>32.00 | 15.62<br>16.13 | 12.98<br>13.49 |

## 2200-Series Power Motors (with Bolt-On Gearing)

### Specifications

| MODEL                     | SPINDLE       | TORQUE          |                  |       |         |       |             | AIR  |      | SOUND LEVEL |      | WEIGHT     |             | GEAR<br>REDUCTION |
|---------------------------|---------------|-----------------|------------------|-------|---------|-------|-------------|------|------|-------------|------|------------|-------------|-------------------|
|                           |               | R.P.M.          |                  | STALL | OUTPUT  |       | CONSUMPTION |      |      |             |      |            |             |                   |
|                           |               | FREE LOAD SPEED | SPEED @MAX. H.P. |       | lb. ft. | Nm    |             |      |      |             |      | @MAX. H.P. | @FREE SPEED |                   |
| NON-REVERSIBLE - .85 H.P. |               |                 |                  |       |         |       |             |      |      |             |      |            |             |                   |
| 7800-1B                   | 1/2" Keyed    | 18,000          | 9,000            | 1.00  | 1.4     | .50   | .68         | 41.7 | 19.7 | 78          | 4.24 | 1.91       | Single      |                   |
| 7801-1B                   | 1/2" Keyed    | 4,600           | 2,400            | 4.00  | 5.5     | 1.86  | 2.5         | 41.7 | 19.7 | 78          | 4.24 | 1.91       | Single      |                   |
| 7802-1B                   | 1/2" Keyed    | 2,500           | 1,300            | 7.50  | 10.3    | 3.43  | 4.7         | 41.7 | 19.7 | 78          | 4.24 | 1.91       | Single      |                   |
| 7803-1B                   | 1/2" Keyed    | 1,200           | 600              | 16.00 | 21.9    | 7.44  | 10.2        | 41.7 | 19.7 | 78          | 5.17 | 2.33       | Double      |                   |
| 7804-1B                   | 1/2" Keyed    | 650             | 320              | 30.00 | 41.2    | 13.95 | 19.1        | 41.7 | 19.7 | 78          | 5.17 | 2.33       | Double      |                   |
| 7805-1B                   | 1/2" Keyed    | 350             | 170              | 55.00 | 75.5    | 26.25 | 36.0        | 41.7 | 19.7 | 78          | 5.17 | 2.33       | Double      |                   |
| 7812-1B                   | 1/2"-20 Th'd. | 350             | 170              | 55.00 | 75.5    | 26.25 | 36.0        | 41.7 | 19.7 | 78          | 5.17 | 2.33       | Double      |                   |
| 7813-1B                   | 1/2"-20 Th'd. | 650             | 320              | 30.00 | 41.2    | 13.95 | 19.1        | 41.7 | 19.7 | 78          | 5.17 | 2.33       | Double      |                   |
| 7814-1B                   | 1/2"-20 Th'd. | 18,000          | 9,000            | 1.00  | 1.4     | .50   | .68         | 41.7 | 19.7 | 78          | 4.24 | 1.91       | Single      |                   |
| 7815-1B                   | 1/2"-20 Th'd. | 1,200           | 600              | 16.00 | 21.9    | 7.44  | 10.2        | 41.7 | 19.7 | 78          | 5.17 | 2.33       | Double      |                   |
| 7816-1B                   | 1/2"-20 Th'd. | 4,600           | 2,400            | 4.00  | 5.5     | 1.86  | 2.5         | 41.7 | 19.7 | 78          | 4.24 | 1.91       | Single      |                   |
| 7817-1B                   | 1/2"-20 Th'd. | 2,500           | 1,300            | 7.50  | 10.3    | 3.43  | 4.7         | 41.7 | 19.7 | 78          | 4.24 | 1.91       | Single      |                   |
| REVERSIBLE - .70 H.P.     |               |                 |                  |       |         |       |             |      |      |             |      |            |             |                   |
| 7806-1B                   | 1/2" Keyed    | 13,500          | 7,000            | 1.00  | 1.4     | .52   | .71         | 37.3 | 17.6 | 85*         | 4.36 | 1.96       | Single      |                   |
| 7807-1B                   | 1/2" Keyed    | 3,400           | 1,800            | 4.00  | 5.5     | 2.04  | 2.8         | 37.3 | 17.6 | 85*         | 4.36 | 1.96       | Single      |                   |
| 7808-1B                   | 1/2" Keyed    | 1,800           | 1,000            | 7.40  | 10.2    | 3.67  | 5.0         | 37.3 | 17.6 | 85*         | 4.36 | 1.96       | Single      |                   |
| 7809-1B                   | 1/2" Keyed    | 850             | 450              | 15.50 | 21.3    | 8.16  | 11.2        | 37.3 | 17.6 | 85*         | 5.67 | 2.55       | Double      |                   |
| 7810-1B                   | 1/2" Keyed    | 450             | 240              | 29.00 | 39.8    | 15.30 | 21.0        | 37.3 | 17.6 | 85*         | 5.67 | 2.55       | Double      |                   |
| 7811-1B                   | 1/2" Keyed    | 250             | 130              | 54.00 | 74.0    | 28.20 | 38.7        | 37.3 | 17.6 | 85*         | 5.67 | 2.55       | Double      |                   |

\*Requires installation for reversible motors - shown on page 88.



### Standard Equipment

Steel motor housing, flush-type grease fittings at rotation points for gear and bearing lubrication, exhaust manifold rotatable within 360°, and muffler.



### Equipment Options

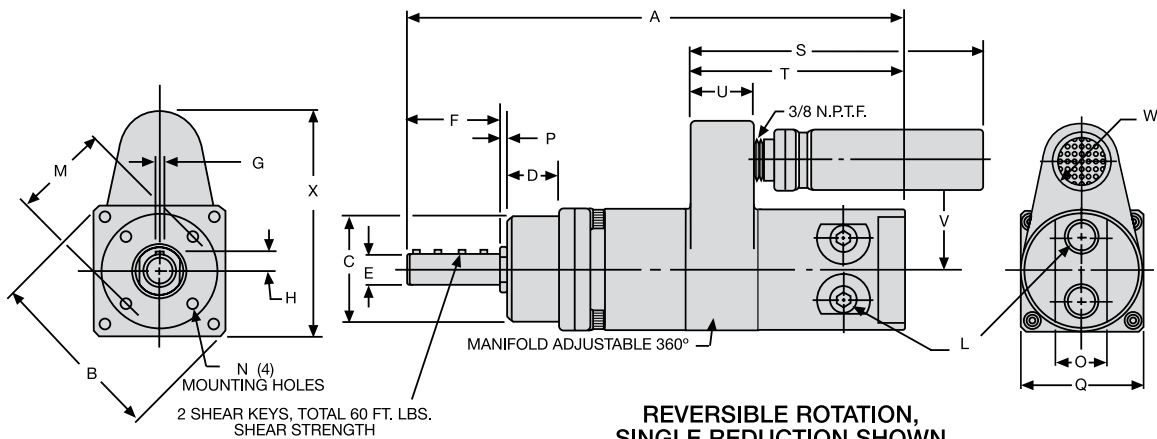
37895-1 Foot Bracket  
Provisions for flange mounting is standard on all models.



### Options for Forward-Rotation Models with Threaded Spindles

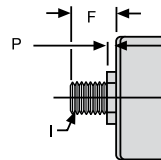
- 40768 1/2" (12.7 mm) Male Square-Drive Adapter
- 31651 1/2" (12.7 mm) I.D. Female Stirring Rod Adapter
- 33907 3/8" (9.5 mm) Cap. Drill Chuck
- 30018 1/2" (12.7 mm) Cap. Drill Chuck

## 2200-Series Power Motors and Mounting Accessory Dimensions

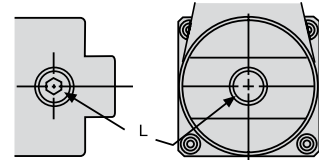


REVERSIBLE ROTATION,  
SINGLE REDUCTION SHOWN

| Models                  | Gear Reduction | DIMENSION A       |
|-------------------------|----------------|-------------------|
| 7800-1B 7801-1B 7802-1B | Single         | 8-1/8<br>206 mm   |
| 7806-1B 7807-1B 7808-1B | Double         | 9-29/32<br>252 mm |
| 7803-1B 7804-1B 7805-1B | Single         | 7-5/32<br>182 mm  |
| 7809-1B 7810-1B 7811-1B | Double         | 8-15/16<br>227 mm |



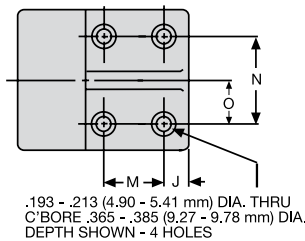
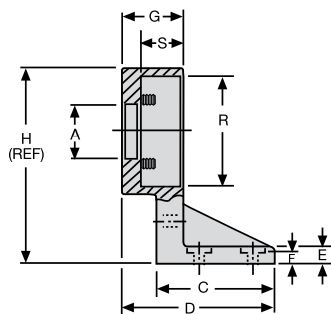
THREADED  
SPINDLE



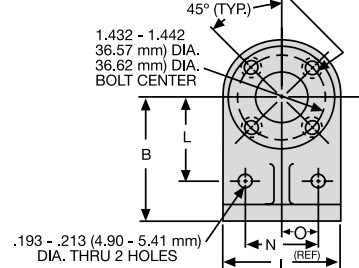
AIR INLETS,  
SINGLE DIRECTION MOTORS

| Scale  | B       | C                | D              | E              | F-Keyed Spindle | F-Th'd. Spindle | G            | H            | I                           | L                           | M              | N                         |
|--------|---------|------------------|----------------|----------------|-----------------|-----------------|--------------|--------------|-----------------------------|-----------------------------|----------------|---------------------------|
| Inches | 2-11/16 | 1.7490<br>1.7495 | .781<br>.812   | .4990<br>.4995 | 1.615<br>1.653  | .646<br>.684    | .125<br>.126 | .299<br>.309 | 1/2"-20<br>UNF-2A<br>Thread | 1/4<br>NPTF<br>Air<br>Inlet | 1.432<br>1.442 | 10-24<br>UNC-2B<br>Thread |
| mm     | 68      | 44.42<br>44.44   | 19.84<br>20.62 | 12.67<br>12.69 | 41.02<br>41.99  | 16.41<br>17.37  | 3.18<br>3.20 | 7.59<br>7.85 |                             | 36.37<br>36.63              |                |                           |

| Scale  | O   | P            | Q  | S     | T     | U      | V       | W-Fwd. Rotation | W ibl | X-Fwd. i | X ibl  |
|--------|-----|--------------|----|-------|-------|--------|---------|-----------------|-------|----------|--------|
| Inches | 7/8 | .113<br>.165 | 2  | 4-7/8 | 3-1/2 | 1-1/16 | 1-13/16 | 1-3/8           | 1     | 3-1/2    | 3-7/16 |
| mm     | 22  | 2.87<br>4.19 | 51 | 124   | 89    | 27     | 46      | 35              | 25    | 89       | 87     |



.193 - .213 (4.90 - 5.41 mm) DIA. THRU  
C'BORE .365 - .385 (9.27 - 9.78 mm) DIA. X  
.193 - .213 DEEP (FOR Y154-51 SCREWS)



### 37895-1 FOOT MOUNTING BRACKET

| Scale  | A              | B              | C              | D              | E            | F            | G              | H     |
|--------|----------------|----------------|----------------|----------------|--------------|--------------|----------------|-------|
| Inches | .865<br>.886   | 2.115<br>2.135 | 1.843<br>1.875 | 2.421<br>2.453 | .281<br>.343 | .177<br>.197 | .958<br>.978   | 3-1/8 |
| mm     | 21.97<br>22.48 | 53.72<br>54.23 | 46.81<br>47.63 | 61.49<br>62.31 | 7.14<br>8.71 | 4.50<br>5.00 | 24.33<br>24.84 | 79.38 |

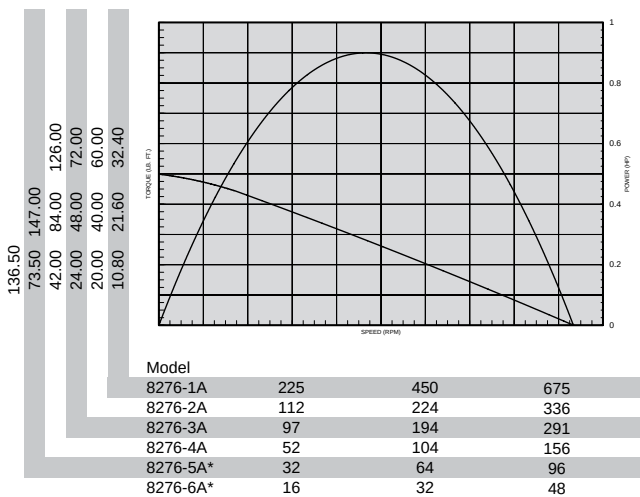
| Scale  | I     | J            | L              | M              | N              | O              | R              | S              |
|--------|-------|--------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Inches | 2     | .333<br>.353 | 1.427<br>1.447 | .833<br>.853   | 1.240<br>1.260 | .615<br>.635   | 1.750<br>1.751 | .640<br>.687   |
| mm     | 50.80 | 8.46<br>8.97 | 36.25<br>36.75 | 21.16<br>21.67 | 31.50<br>32.00 | 15.62<br>16.13 | 44.45<br>44.48 | 16.26<br>17.45 |

## 2200-Series Power Motors (with 44-Series Gearing) Specifications

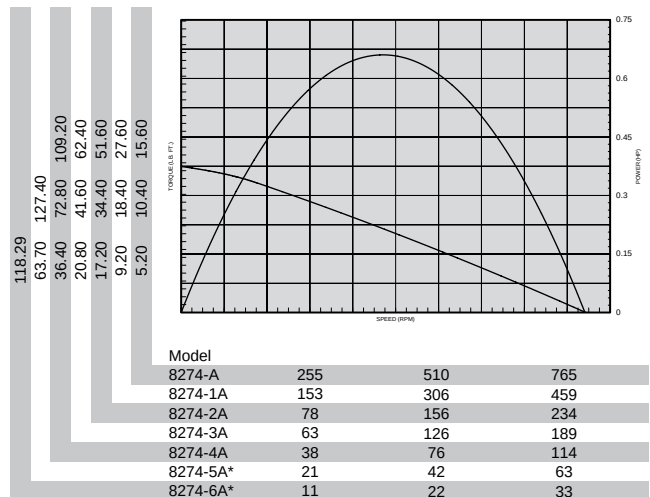
| TORQUE                    |            |            |                       |               |       |                    |       |                  |      |                   |             |      |           | AIR  |  |  |  |
|---------------------------|------------|------------|-----------------------|---------------|-------|--------------------|-------|------------------|------|-------------------|-------------|------|-----------|------|--|--|--|
|                           |            | R.P.M.     |                       |               |       | OUTPUT             |       | CONSUMPTION      |      | SOUND LEVEL       |             |      |           | GEAR |  |  |  |
| MODEL                     | SPINDLE    | FREE SPEED | LOAD SPEED @MAX. H.P. | STALL lb. ft. | Nm    | @MAX. H.P. lb. ft. | Nm    | @FREE SPEED SCFM | L/s  | @FREE SPEED dB(A) | WEIGHT lbs. | kg.  | REDUCTION |      |  |  |  |
| NON-REVERSIBLE - .90 H.P. |            |            |                       |               |       |                    |       |                  |      |                   |             |      |           |      |  |  |  |
| 8276-1A                   | 7/8" Keyed | 700        | 350                   | 27.0          | 37.0  | 13.5               | 18.5  | 41.6             | 19.6 | 78                | 10.10       | 4.55 | 2         |      |  |  |  |
| 8276-2A                   | 7/8" Keyed | 350        | 180                   | 50.0          | 68.0  | 26.0               | 36.0  | 41.6             | 19.6 | 78                | 10.10       | 4.55 | 2         |      |  |  |  |
| 8276-3A                   | 7/8" Keyed | 300        | 150                   | 60.0          | 82.0  | 32.0               | 43.0  | 41.6             | 19.6 | 78                | 14.50       | 6.52 | 3         |      |  |  |  |
| 8276-4A                   | 7/8" Keyed | 160        | 90                    | 105.0         | 143.0 | 53.0               | 72.0  | 41.6             | 19.6 | 78                | 14.50       | 6.52 | 3         |      |  |  |  |
| 8276-5A**                 | 7/8" Keyed | 100        | 50                    | **150.0       | 206.0 | 95.0               | 130.0 | 41.6             | 19.6 | 78                | 14.50       | 6.52 | 3         |      |  |  |  |
| 8276-6A**                 | 7/8" Keyed | 50         | 25                    | **150.0       | 206.0 | **150.0            | 206.0 | 41.6             | 19.6 | 78                | 14.50       | 6.52 | 3         |      |  |  |  |
| REVERSIBLE - .65 H.P.     |            |            |                       |               |       |                    |       |                  |      |                   |             |      |           |      |  |  |  |
| 8274-A                    | 7/8" Keyed | 800        | 450                   | 13.0          | 18.0  | 7.6                | 10.5  | 35.0             | 16.5 | 83*               | 10.10       | 4.55 | 2         |      |  |  |  |
| 8274-1A                   | 7/8" Keyed | 475        | 250                   | 23.0          | 32.0  | 14.0               | 19.0  | 35.0             | 16.5 | 83*               | 10.10       | 4.55 | 2         |      |  |  |  |
| 8274-2A                   | 7/8" Keyed | 250        | 130                   | 43.0          | 59.0  | 26.0               | 36.0  | 35.0             | 16.5 | 83*               | 10.10       | 4.55 | 2         |      |  |  |  |
| 8274-3A                   | 7/8" Keyed | 200        | 110                   | 52.0          | 71.0  | 31.0               | 42.0  | 35.0             | 16.5 | 83*               | 14.50       | 6.52 | 3         |      |  |  |  |
| 8274-4A                   | 7/8" Keyed | 120        | 60                    | 91.0          | 125.0 | 57.0               | 78.0  | 35.0             | 16.5 | 83*               | 14.50       | 6.52 | 3         |      |  |  |  |
| 8274-5A**                 | 7/8" Keyed | 65         | 35                    | **150.0       | 206.0 | 98.0               | 134.0 | 35.0             | 16.5 | 83*               | 14.50       | 6.52 | 3         |      |  |  |  |
| 8274-6A**                 | 7/8" Keyed | 35         | 18                    | **150.0       | 206.0 | **150.0            | 206.0 | 35.0             | 16.5 | 83*               | 14.50       | 6.52 | 3         |      |  |  |  |

\*Requires installation for reversible motors - shown on page 88.

\*\*NOTE: Maximum torque recommended for planetary gear system requires shear key with 150 ft./lbs. shear strength.



\*NOTE: Maximum torque recommended for planetary gear system on these models requires shear key with 150 ft./lbs. shear strength.



\*NOTE: Maximum torque recommended for planetary gear system on these models requires shear key with 150 ft./lbs. shear strength.

### Standard Equipment

Steel motor housing, flush-type grease fittings at rotation points for gear and bearing lubrication, exhaust manifold rotatable within 360°, and muffler.

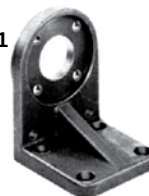


### Equipment Options

37892-1 Foot Bracket

NOTE: Gear housing has precision pilot diameter and four mounting holes (5/16"-24) for flange mounting.

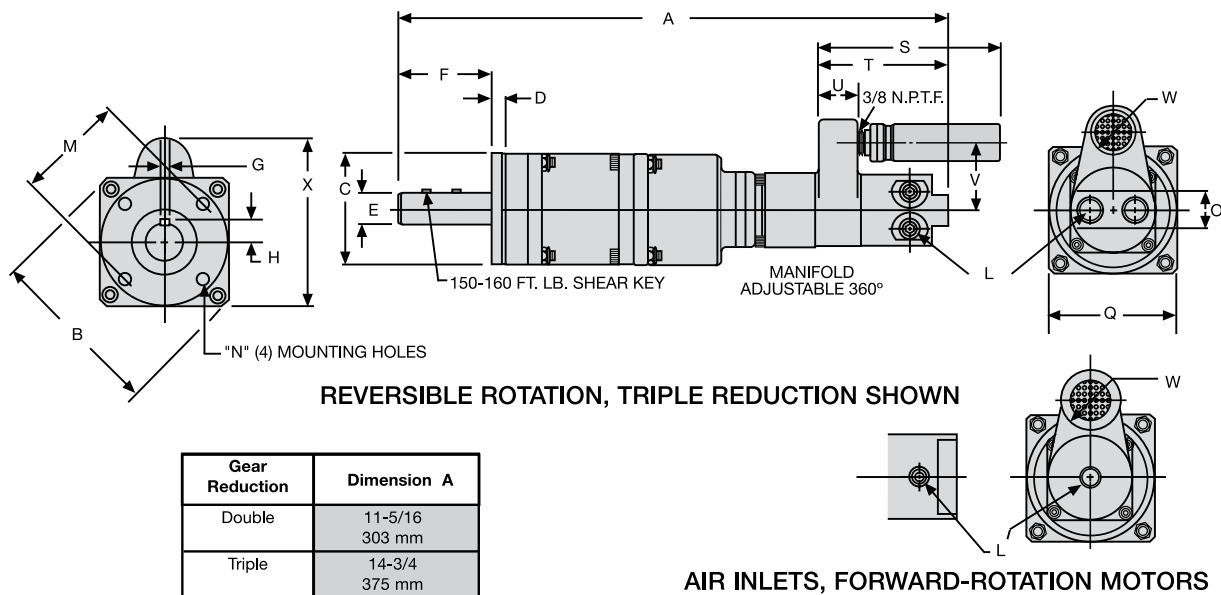
37892-1



### Options for Specified Models

- 41784 3/4" (19.2 mm) Male Square-Drive Adapter for 7/8" (22.23 mm) keyed spindle
- 41512 Throttle & Bracket Assembly for forward-rotation nutsetters.
- 41512-1 Throttle & Bracket Assembly for reversible nutsetters. Includes two 41511 throttles and two 43982-1 Quick-Dump Exhaust Valves.

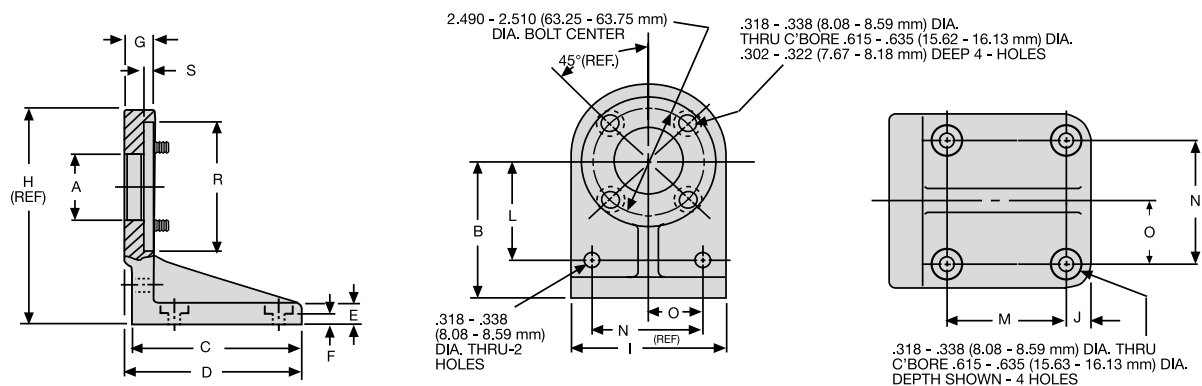
## 2200/44-Series Power Motors and Mounting Accessory Dimensions



| Scale  | B                | C              | D            | E              | F              | G              | H              | L            | M              | N                 |
|--------|------------------|----------------|--------------|----------------|----------------|----------------|----------------|--------------|----------------|-------------------|
| Inches | 4.090<br>4.110   | 2.996<br>2.998 | .369<br>.374 | .8743<br>.8748 | 2.483<br>2.559 | .1872<br>.1875 | .528<br>.531   | 1/4<br>NPTF  | 2.495<br>2.505 | 5/16-24<br>UNF-2B |
| mm     | 103.89<br>104.39 | 76.10<br>76.15 | 9.37<br>9.50 | 22.21<br>22.22 | 63.07<br>65.00 | 4.75<br>4.76   | 13.41<br>13.49 | Air<br>Inlet | 63.37<br>63.63 | Thread            |

| Scale  | O   | Q  | S     | T     | U     | V       | W-Fwd.<br>Rotation | W<br>Reversible | X<br>Reversible | X<br>Single |
|--------|-----|----|-------|-------|-------|---------|--------------------|-----------------|-----------------|-------------|
| Inches | 7/8 | 3  | 4-7/8 | 3-1/2 | 1-1/6 | 1-13/16 | 1-3/8              | 1               | 3-15/16         | 4           |
| mm     | 22  | 76 | 124   | 89    | 27    | 46      | 35                 | 25              | 100             | 102         |



37892-1 FOOT MOUNTING BRACKET

| Scale  | A              | B              | C              | D                | E              | F            | G              | H                |
|--------|----------------|----------------|----------------|------------------|----------------|--------------|----------------|------------------|
| Inches | 1.490<br>1.510 | 3.115<br>3.135 | 3.781<br>3.843 | 3.968<br>4.062   | .437<br>.562   | .240<br>.260 | .671<br>.718   | 4.812<br>4.937   |
| mm     | 37.85<br>38.35 | 79.12<br>79.63 | 96.04<br>97.61 | 100.79<br>103.17 | 11.10<br>14.27 | 6.10<br>6.60 | 17.04<br>18.24 | 122.22<br>125.40 |

| Scale  | I     | J              | L              | M              | N              | O              | R              | S            |
|--------|-------|----------------|----------------|----------------|----------------|----------------|----------------|--------------|
| Inches | 3-1/2 | .490<br>.510   | 2.240<br>2.260 | 2.365<br>2.385 | 2.490<br>2.510 | 1.240<br>1.260 | 2.999<br>3.000 | .240<br>.260 |
| mm     | 88.90 | 12.45<br>12.95 | 56.90<br>57.40 | 60.07<br>60.58 | 63.25<br>63.75 | 31.50<br>32.00 | 76.17<br>76.20 | 6.10<br>6.60 |



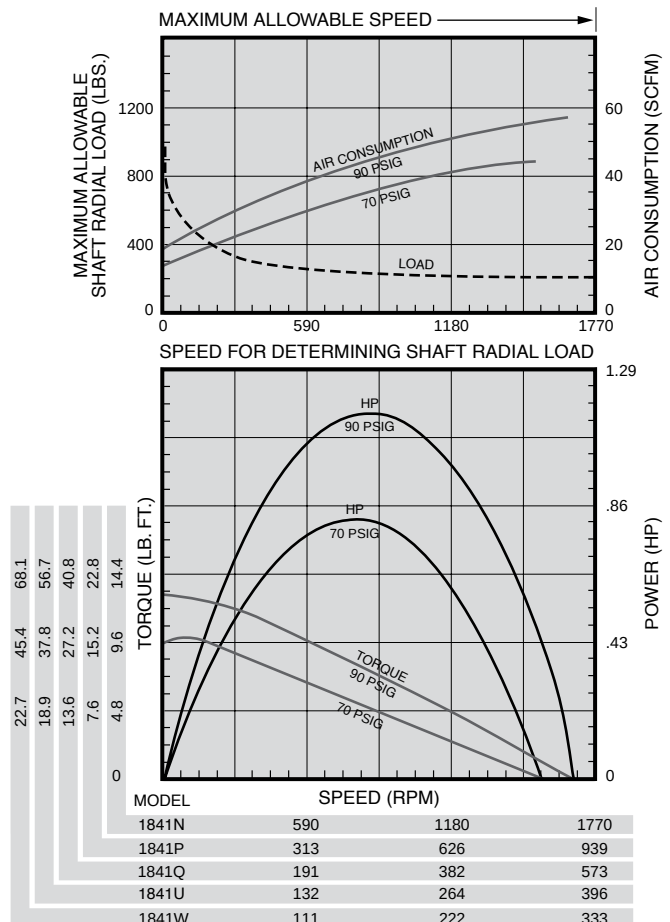
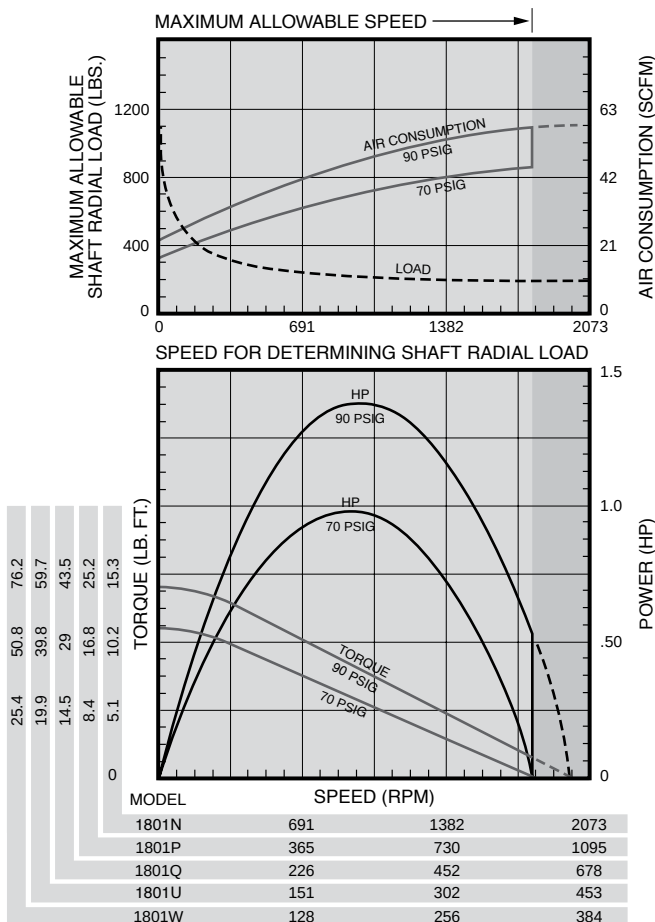
## Series 1801 and 1841 Multi-Vane Air Motors

### Specifications



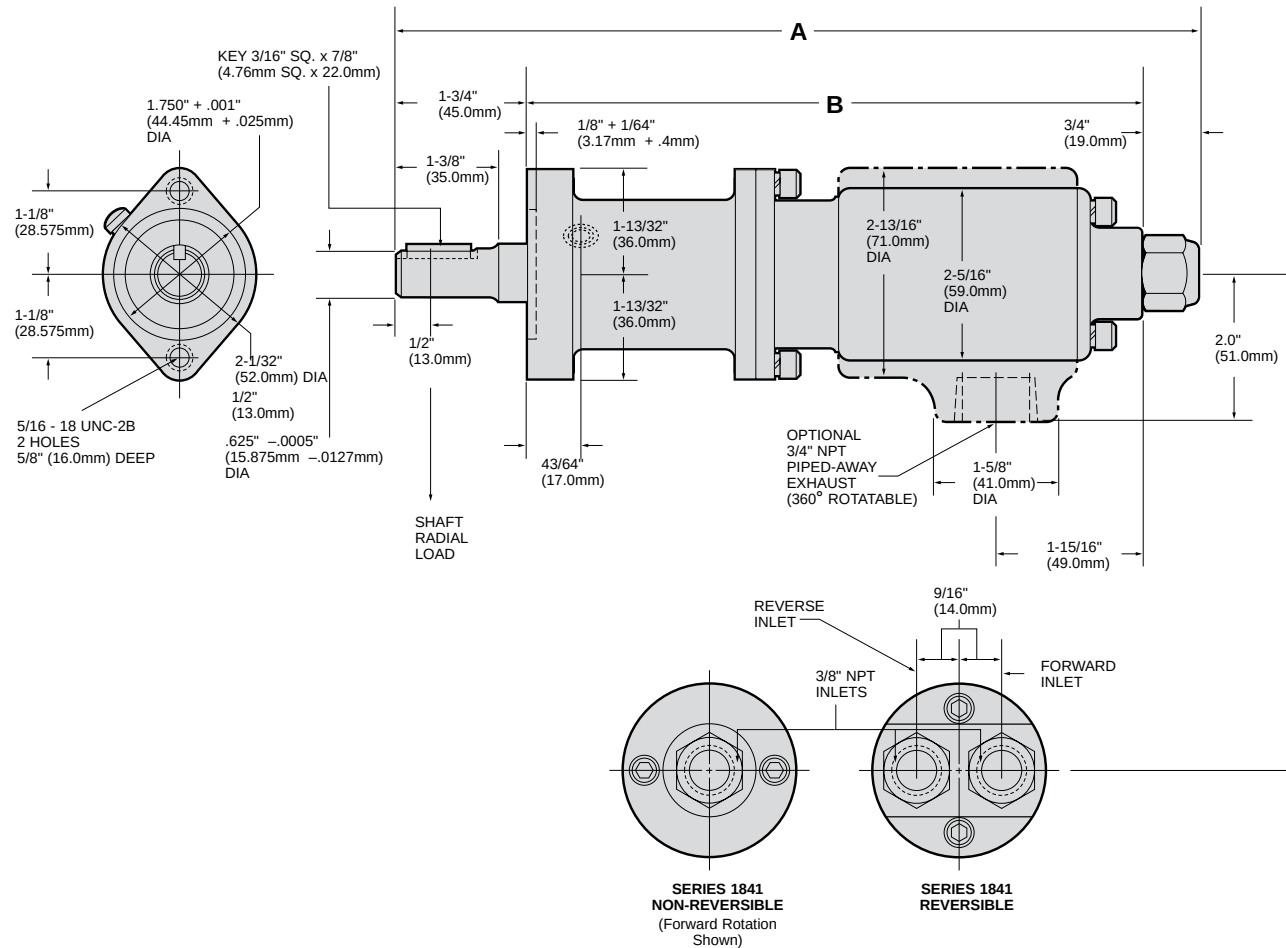
| Model                                                                                  | Max. Power |      | Speed at Max. Power | Free Speed▲ | Starting Torque |      | Stall Torque |      | Air Consumption at Max. Power |      | Weight |      |
|----------------------------------------------------------------------------------------|------------|------|---------------------|-------------|-----------------|------|--------------|------|-------------------------------|------|--------|------|
|                                                                                        | hp         | kw   | rpm                 | rpm         | lb.-ft.         | Nm   | lb.-ft.      | Nm   | scfm                          | m³/m | lb.    | kg   |
| <b>Non-Reversible</b> Direction of rotation is counterclockwise when facing the shaft. |            |      |                     |             |                 |      |              |      |                               |      |        |      |
| 1801N                                                                                  | 1.40       | 1.04 | 918                 | 1990        | 10.5            | 14.2 | 14           | 19.0 | 46                            | 1.3  | 5½     | 2.44 |
| 1801P                                                                                  | 1.35       | 1.01 | 500                 | 1050        | 17.2            | 23.3 | 23           | 31.2 | 46                            | 1.3  | 5½     | 2.61 |
| 1801Q                                                                                  | 1.35       | 1.01 | 300                 | 650         | 30.0            | 40.7 | 40           | 54.2 | 46                            | 1.3  | 5½     | 2.61 |
| 1801U                                                                                  | 1.35       | 1.01 | 205                 | 435         | 41.0            | 55.6 | 55           | 74.6 | 46                            | 1.3  | 5½     | 2.61 |
| 1801W                                                                                  | 1.35       | 1.01 | 175                 | 370         | 52.0            | 70.5 | 70           | 94.9 | 46                            | 1.3  | 5½     | 2.61 |
| <b>Reversible</b>                                                                      |            |      |                     |             |                 |      |              |      |                               |      |        |      |
| 1841N                                                                                  | 1.2        | .89  | 800                 | 1700        | 9.3             | 12.6 | 12.5         | 17.0 | 43                            | 1.22 | 5½     | 2.50 |
| 1841P                                                                                  | 1.1        | .82  | 430                 | 900         | 15.0            | 20.3 | 20.0         | 27.1 | 43                            | 1.22 | 5½     | 2.67 |
| 1841Q                                                                                  | 1.1        | .82  | 260                 | 550         | 27.0            | 36.6 | 36.0         | 48.8 | 43                            | 1.22 | 5½     | 2.67 |
| 1841U                                                                                  | 1.1        | .82  | 175                 | 380         | 37.0            | 50.2 | 50.0         | 67.8 | 43                            | 1.22 | 5½     | 2.67 |
| 1841W                                                                                  | 1.1        | .82  | 150                 | 320         | 45.0            | 61.0 | 60.0         | 81.4 | 43                            | 1.22 | 5½     | 2.67 |

▲ ALL models must be operated with sufficient load to prevent speed from exceeding maximum allowable speed shown on performance curve. Performance figures are at 90 psig (620 kPa) air pressure.



## Series 1801 and 1841 Multi-Vane Air Motors

### Dimensions



### Dimensions

| Models                                                       | A                               |     | B                               |     |
|--------------------------------------------------------------|---------------------------------|-----|---------------------------------|-----|
|                                                              | in.                             | mm  | in.                             | mm  |
| 1801N, 1841N                                                 | 9 <sup>7</sup> / <sub>16</sub>  | 240 | 6 <sup>15</sup> / <sub>16</sub> | 176 |
| 1801P, 1801Q, 1801U,<br>1801W, 1841P, 1841Q,<br>1841U, 1841W | 10 <sup>3</sup> / <sub>16</sub> | 275 | 8 <sup>7</sup> / <sub>16</sub>  | 211 |

### Equipment Options

| Furnished with Cataloged Models | Extra Options                                                                       |
|---------------------------------|-------------------------------------------------------------------------------------|
| 2 Hole Face Mounting            | R1801-A123 Exhaust Deflector Assembly with 3/8" Pipe Tap                            |
|                                 | *1/2" Square Drive Shaft on Gear Ratios: P, Q, U<br>Shaft Extension 1.19" (30.23mm) |

\*To order Motor with Square Drive Shaft, add the suffix "2" to the Model Number. Example: 1841Q2.

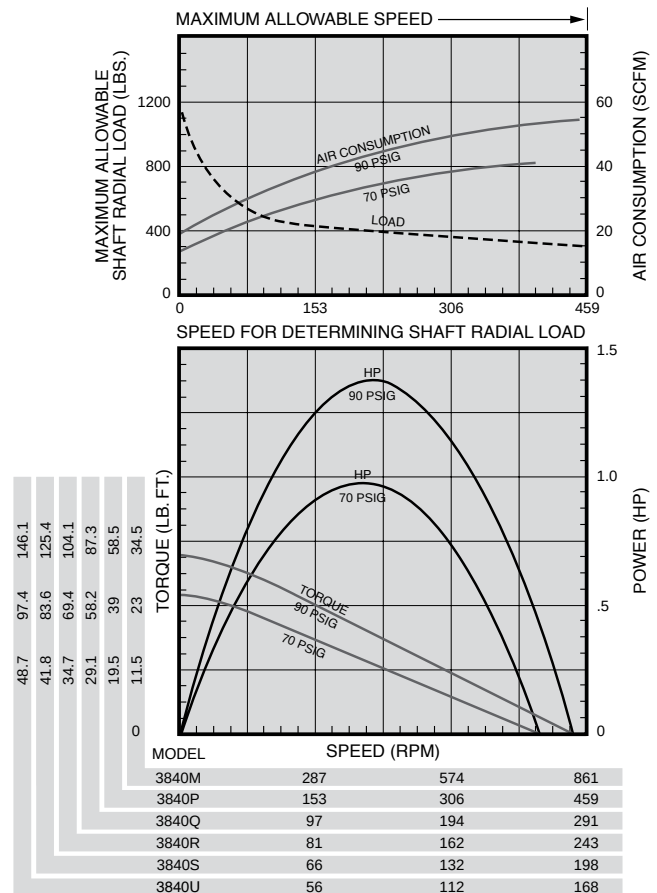
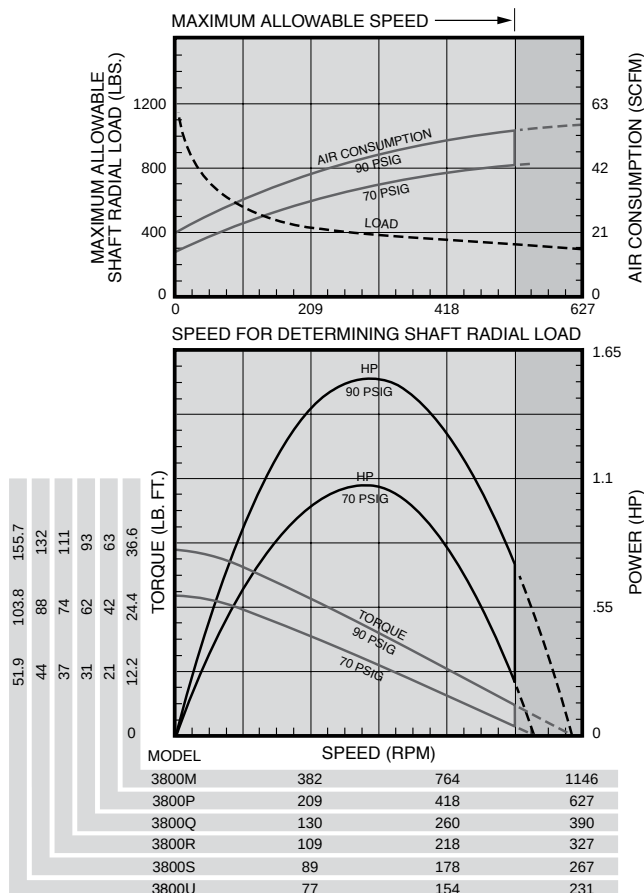
## Series 3800 and 3840 Multi-Vane Air Motors

### Specifications



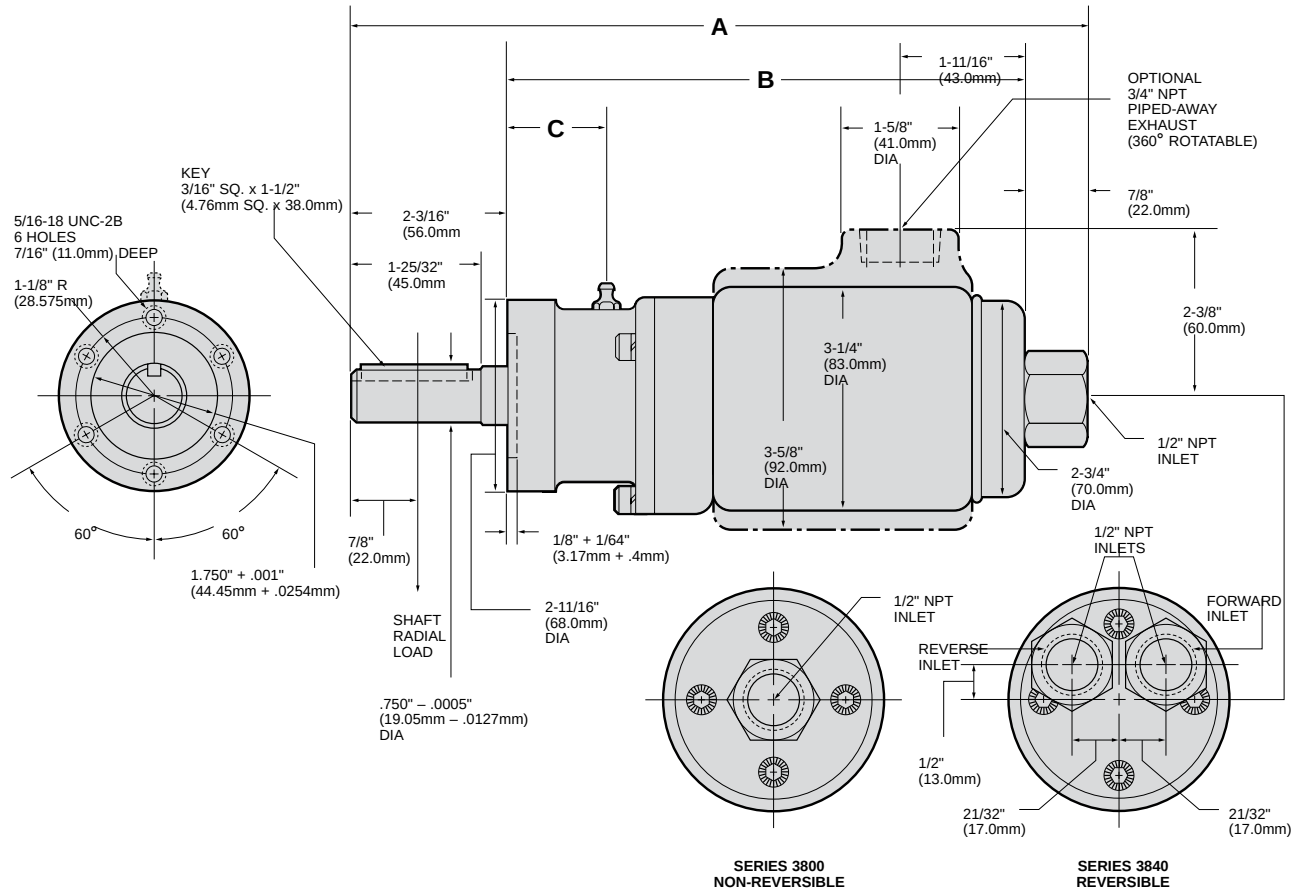
| Model                                                                                  | Max. Power |      | Speed at Max. Power | Free Speed▲ | Starting Torque |      | Stall Torque |      | Air Consumption at Max. Power |      | Weight |      |
|----------------------------------------------------------------------------------------|------------|------|---------------------|-------------|-----------------|------|--------------|------|-------------------------------|------|--------|------|
|                                                                                        | hp         | kw   | rpm                 | rpm         | lb.-ft.         | Nm   | lb.-ft.      | Nm   | scfm                          | m³/m | lb.    | kg   |
| <b>Non-Reversible</b> Direction of rotation is counterclockwise when facing the shaft. |            |      |                     |             |                 |      |              |      |                               |      |        |      |
| 3800M                                                                                  | 1.55       | 1.16 | 520                 | 1100        | 24              | 32.5 | 33           | 44.8 | 48                            | 1.36 | 7½     | 3.23 |
| 3800P                                                                                  | 1.45       | 1.08 | 285                 | 600         | 42              | 57   | 56.5         | 76.6 | 48                            | 1.36 | 8½     | 3.86 |
| 3800Q                                                                                  | 1.45       | 1.08 | 180                 | 375         | 62              | 84   | 83.5         | 113  | 48                            | 1.36 | 8½     | 3.86 |
| 3800R                                                                                  | 1.45       | 1.08 | 150                 | 320         | 72              | 98   | 96           | 130  | 48                            | 1.36 | 8½     | 3.86 |
| 3800S                                                                                  | 1.45       | 1.08 | 120                 | 255         | 88              | 119  | 118          | 160  | 48                            | 1.36 | 8½     | 3.86 |
| 3800U                                                                                  | 1.45       | 1.08 | 105                 | 220         | 105             | 142  | 140          | 189  | 48                            | 1.36 | 8½     | 3.86 |
| <b>Reversible</b>                                                                      |            |      |                     |             |                 |      |              |      |                               |      |        |      |
| 3840M                                                                                  | 1.40       | 1.04 | 390                 | 825         | 23              | 31.2 | 31.5         | 42.7 | 44                            | 1.25 | 7%     | 3.35 |
| 3840P                                                                                  | 1.35       | 1.01 | 215                 | 440         | 40              | 54.2 | 53.5         | 72.6 | 44                            | 1.25 | 8%     | 3.97 |
| 3840Q                                                                                  | 1.35       | 1.01 | 130                 | 280         | 60              | 81.4 | 80           | 106  | 44                            | 1.25 | 8%     | 3.97 |
| 3840R                                                                                  | 1.35       | 1.01 | 122                 | 238         | 69              | 93   | 92           | 125  | 44                            | 1.25 | 8%     | 3.97 |
| 3840S                                                                                  | 1.35       | 1.01 | 100                 | 190         | 86              | 116  | 115          | 156  | 44                            | 1.25 | 8%     | 3.97 |
| 3840U                                                                                  | 1.35       | 1.01 | 83                  | 162         | 100             | 135  | 134          | 181  | 44                            | 1.25 | 8%     | 3.97 |

▲ ALL models must be operated with sufficient load to prevent speed from exceeding maximum allowable speed shown on performance curve. Performance figures are at 90 psig (620 kPa) air pressure.



## Series 3800 and 3840 Multi-Vane Air Motors

### Dimensions



### Dimensions

| MODELS                               | A                               |     | B                              |     | C                              |    |
|--------------------------------------|---------------------------------|-----|--------------------------------|-----|--------------------------------|----|
|                                      | in.                             | mm  | in.                            | mm  | in.                            | mm |
| 3800M, 3840M                         | 10 <sup>1</sup> / <sub>16</sub> | 256 | 7                              | 178 | 1 <sup>1</sup> / <sub>16</sub> | 27 |
| 3800P, 3800Q, 3800R,<br>3800S, 3800U | 11 <sup>1</sup> / <sub>16</sub> | 299 | 8 <sup>1</sup> / <sub>16</sub> | 221 | 2 <sup>3</sup> / <sub>16</sub> | 56 |
| 3840P, 3840Q, 3840R,<br>3840S, 3840U |                                 |     |                                |     |                                |    |

### Equipment Options

| Furnished with Cataloged Models | Extra Options                                               |
|---------------------------------|-------------------------------------------------------------|
| 6 Hole Face Mounting            | R3800-A123 Exhaust Deflector Assembly with 3/4" Pipe Tap    |
|                                 | *5/8" Square Drive Shaft<br>Shaft Extension 1.25" (31.75mm) |

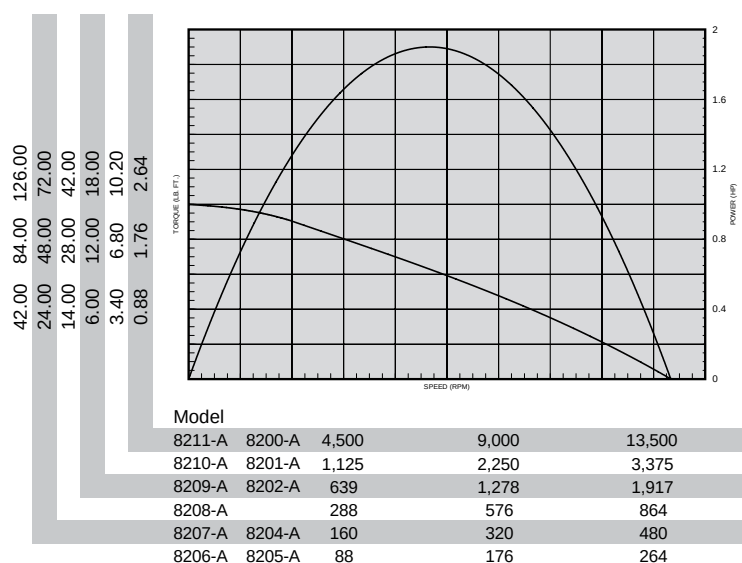
\*To order Motor with Square Drive Shaft, add the suffix "2" to the Model Number. Example: 3840Q2.

## 44-Series Power Motors

### Specifications

| TORQUE                    |            |        |            |         |       |            |       |             |      |             |       |        |           | AIR  |  |  |  |
|---------------------------|------------|--------|------------|---------|-------|------------|-------|-------------|------|-------------|-------|--------|-----------|------|--|--|--|
| MODEL                     | SPINDLE    | R.P.M. |            | STALL   |       | OUTPUT     |       | CONSUMPTION |      | SOUND LEVEL |       | WEIGHT |           | GEAR |  |  |  |
|                           |            | FREE   | LOAD SPEED |         |       | @MAX. H.P. |       | @FREE SPEED |      | @FREE SPEED |       | lbs.   | kg.       |      |  |  |  |
|                           |            | SPEED  | @MAX. H.P. | lb. ft. | Nm    | lb. ft.    | Nm    | SCFM        | L/s  | dB(A)       |       |        | REDUCTION |      |  |  |  |
| NON-REVERSIBLE - 2.0 H.P. |            |        |            |         |       |            |       |             |      |             |       |        |           |      |  |  |  |
| 8200-A                    | 7/8" Keyed | 275    | 140        | 124.00  | 168.0 | 75.00      | 101.6 | 95.0        | 44.8 | 80          | 18.24 | 8.20   | Double    |      |  |  |  |
| 8201-A                    | 7/8" Keyed | 500    | 255        | 70.50   | 95.5  | 41.00      | 55.5  | 95.0        | 44.8 | 80          | 18.24 | 8.20   | Double    |      |  |  |  |
| 8202-A                    | 7/8" Keyed | 900    | 445        | 40.50   | 54.9  | 24.00      | 32.5  | 95.0        | 44.8 | 80          | 18.24 | 8.20   | Double    |      |  |  |  |
| 8204-A                    | 7/8" Keyed | 3,500  | 1,740      | 10.20   | 13.8  | 6.00       | 8.1   | 95.0        | 44.8 | 80          | 13.82 | 5.21   | Single    |      |  |  |  |
| 8205-A                    | 7/8" Keyed | 14,000 | 7,000      | 2.85    | 3.9   | 1.50       | 2.0   | 95.0        | 44.8 | 80          | 13.82 | 5.21   | Single    |      |  |  |  |
| REVERSIBLE - 1.9 H.P.     |            |        |            |         |       |            |       |             |      |             |       |        |           |      |  |  |  |
| 8206-A                    | 7/8" Keyed | 275    | 150        | 105.00  | 142.3 | 66.5       | 90.1  | 93.5        | 44.1 | 95*         | 18.24 | 8.20   | Double    |      |  |  |  |
| 8207-A                    | 7/8" Keyed | 500    | 250        | 60.00   | 81.3  | 39.9       | 54.1  | 93.5        | 44.1 | 95*         | 18.24 | 8.20   | Double    |      |  |  |  |
| 8208-A                    | 7/8" Keyed | 900    | 450        | 35.00   | 47.4  | 22.2       | 30.1  | 93.5        | 44.1 | 95*         | 18.24 | 8.20   | Double    |      |  |  |  |
| 8209-A                    | 7/8" Keyed | 2,000  | 1,000      | 15.0    | 20.3  | 9.97       | 13.5  | 93.5        | 44.1 | 95*         | 13.82 | 5.21   | Single    |      |  |  |  |
| 8210-A                    | 7/8" Keyed | 3,500  | 1,800      | 8.5     | 11.5  | 5.54       | 7.5   | 93.5        | 44.1 | 95*         | 13.82 | 5.21   | Single    |      |  |  |  |
| 8211-A                    | 7/8" Keyed | 14,000 | 7,000      | 2.2     | 3.0   | 1.43       | 1.9   | 93.5        | 44.1 | 95*         | 13.82 | 5.21   | Single    |      |  |  |  |

\*Requires installation for reversible motors - shown on page 88.



### Standard Equipment

Steel motor housing, flush-type grease fittings at rotation points for gear and bearing lubrication, exhaust manifold rotatable within 360°, and muffler.



### Equipment Options

37892-1 Foot Bracket

NOTE: Gear housing has precision pilot diameter and four mounting holes (5/16"-24) for flange mounting.

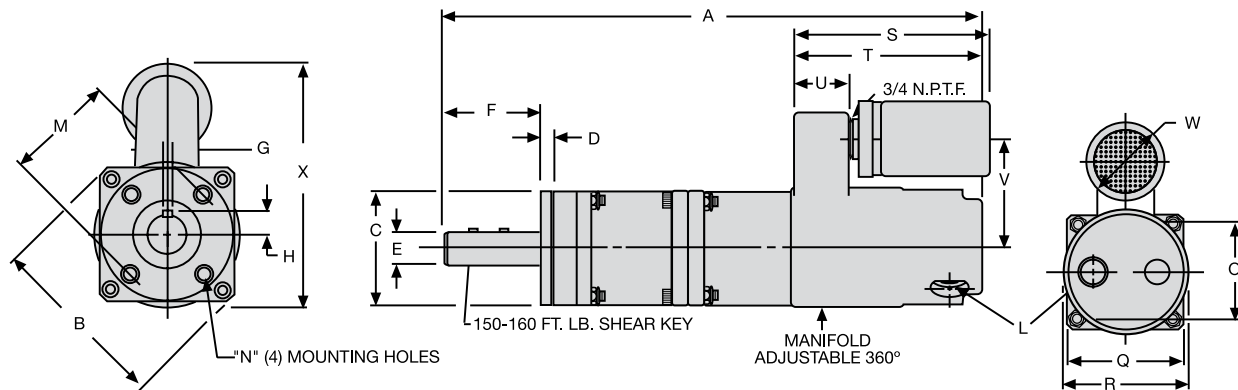


### Options for Specified Models

- 41784 3/4" (19.1 mm) Male Square-Drive Adapter for 7/8" (22.23 mm) keyed spindle
- 41512 Throttle & Bracket Assembly for forward-rotation nutsetters.
- 41512-1 Throttle & Bracket Assembly for reversible nutsetters. Includes two 41511 throttles and two 43982-1 Quick-Dump Exhaust Valves.



## 44-Series Power Motors and Mounting Accessory Dimensions

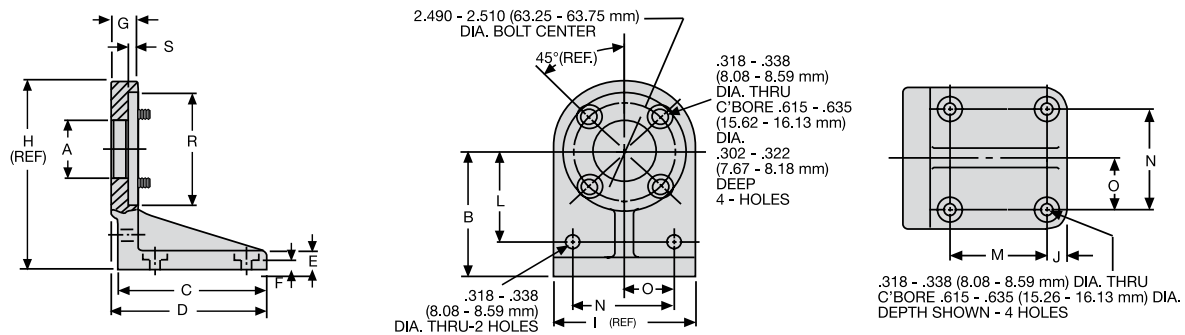


REVERSIBLE ROTATION, DOUBLE REDUCTION SHOWN

| Models |        |        | Gear Reduction | Dimension A |
|--------|--------|--------|----------------|-------------|
| 8203-A | 8204-A | 8205-A | Single         | 11-17/64    |
| 8209-A | 8210-A | 8211-A |                | 286 mm      |
| 8206-A | 8207-A | 8208-A | Double         | 14-1/16     |
| 8200-A | 8201-A | 8202-A |                | 373 mm      |

| Scale  | B                | C              | D            | E              | F              | G              | H              | L                           | M              | N                           |
|--------|------------------|----------------|--------------|----------------|----------------|----------------|----------------|-----------------------------|----------------|-----------------------------|
| Inches | 4.090<br>4.110   | 2.996<br>2.998 | .369<br>.374 | .8743<br>.8748 | 2.483<br>2.559 | .1872<br>.1875 | .528<br>.531   | 3/8<br>NPTF<br>Air<br>Inlet | 2.498<br>2.502 | 5/16-24<br>UNF-2B<br>Thread |
| mm     | 103.89<br>104.39 | 76.10<br>76.15 | 9.37<br>9.50 | 22.21<br>22.22 | 63.07<br>65.00 | 4.75<br>4.76   | 13.41<br>13.49 |                             | 63.45<br>63.55 |                             |

| Scale  | O     | Q  | R      | S      | T   | U      | V       | W  | X      |
|--------|-------|----|--------|--------|-----|--------|---------|----|--------|
| Inches | 2-1/2 | 3  | 3-3/16 | 5-3/16 | 5   | 1-7/16 | 2-27/32 | 2  | 5-7/16 |
| mm     | 63    | 76 | 81     | 132    | 127 | 36     | 72      | 51 | 138    |



37892-1 FOOT MOUNTING BRACKET

| Scale  | A              | B              | C              | D                | E              | F            | G              | H                |
|--------|----------------|----------------|----------------|------------------|----------------|--------------|----------------|------------------|
| Inches | 1.490<br>1.510 | 3.115<br>3.135 | 3.781<br>3.843 | 3.968<br>4.062   | .437<br>.562   | .240<br>.260 | .671<br>.718   | 4.812<br>4.937   |
| mm     | 37.85<br>38.35 | 79.12<br>79.63 | 96.04<br>97.61 | 100.79<br>103.17 | 11.10<br>14.27 | 6.10<br>6.60 | 17.04<br>18.24 | 122.22<br>125.40 |

| Scale  | I     | J              | L              | M              | N              | O              | R              | S            |
|--------|-------|----------------|----------------|----------------|----------------|----------------|----------------|--------------|
| Inches | 3-1/2 | .490<br>.510   | 2.240<br>2.260 | 2.365<br>2.385 | 2.490<br>2.510 | 1.240<br>1.260 | 2.999<br>3.000 | .240<br>.260 |
| mm     | 88.90 | 12.45<br>12.95 | 56.90<br>57.40 | 60.07<br>60.58 | 63.25<br>63.75 | 31.50<br>32.00 | 76.17<br>76.20 | 6.10<br>6.60 |

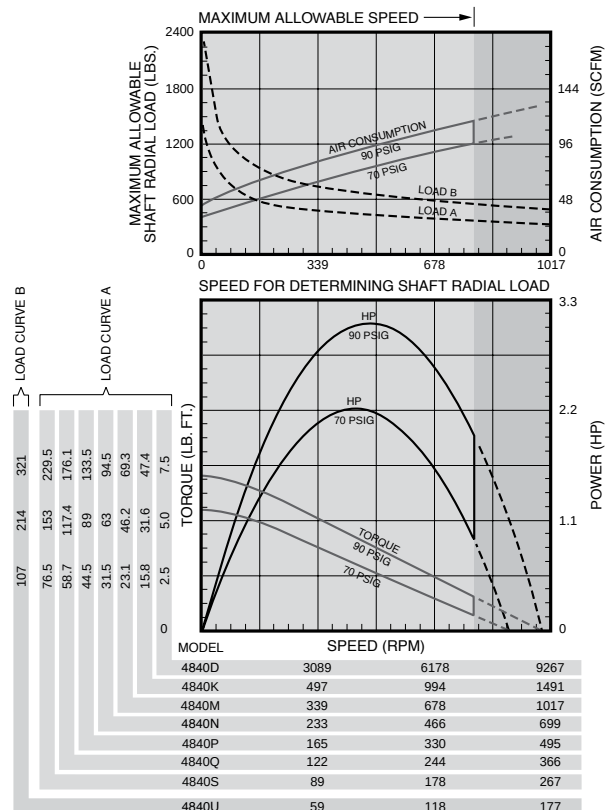
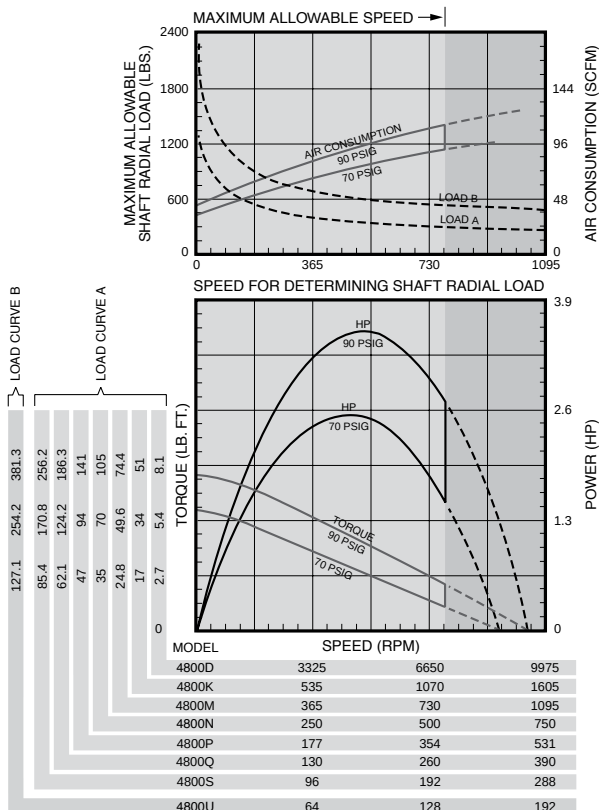
## Series 4800 and 4840 Multi-Vane Air Motors

### Specifications



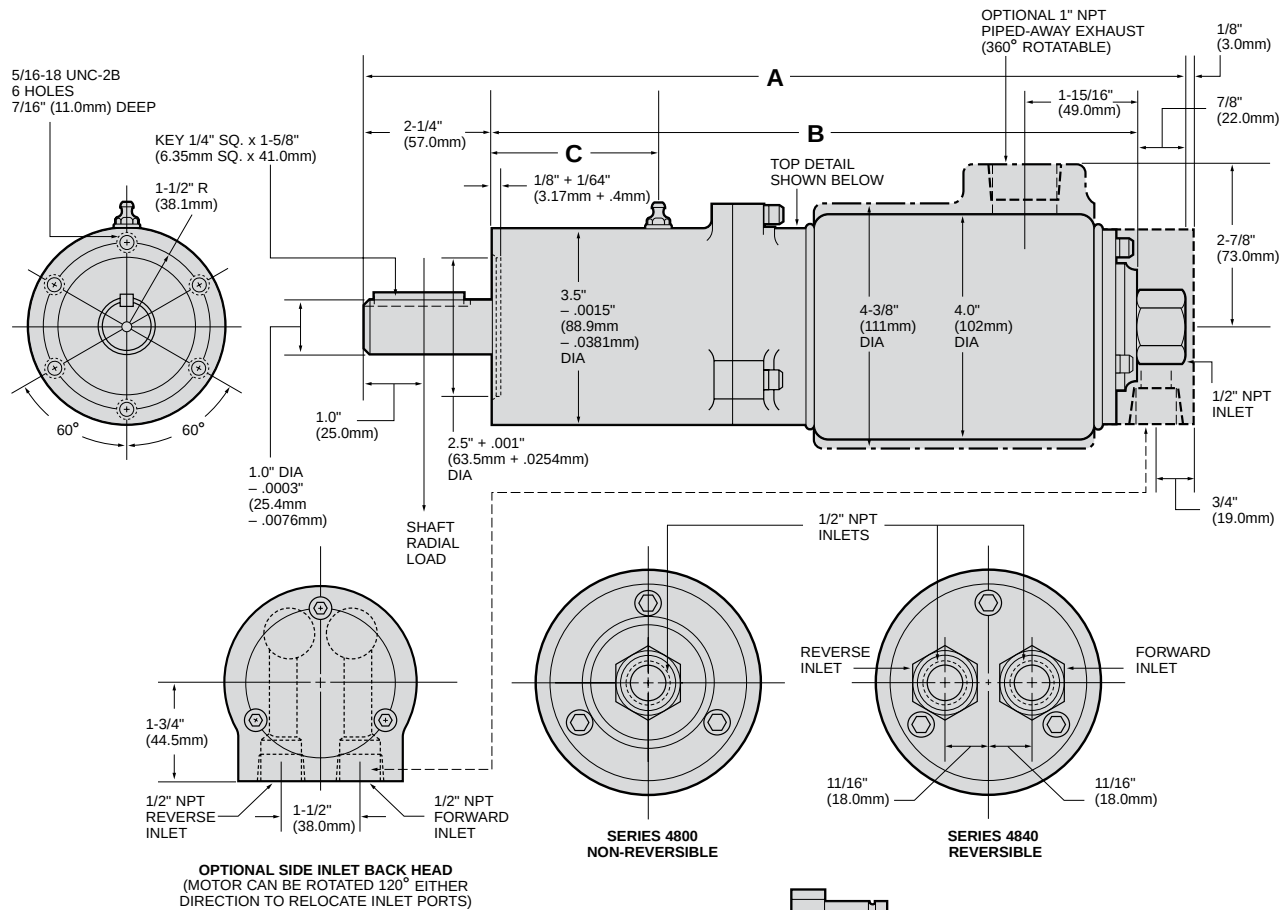
| Model                                                                                  | Max. Power |      | Speed at Max. Power | Free Speed▲ | Starting Torque |      | Stall Torque |      | Air Consumption at Max. Power |      | Weight |      |
|----------------------------------------------------------------------------------------|------------|------|---------------------|-------------|-----------------|------|--------------|------|-------------------------------|------|--------|------|
|                                                                                        | hp         | kw   | rpm                 | rpm         | lb.-ft.         | Nm   | lb.-ft.      | Nm   | scfm                          | m³/m | lb.    | kg   |
| <b>Non-Reversible</b> Direction of rotation is counterclockwise when facing the shaft. |            |      |                     |             |                 |      |              |      |                               |      |        |      |
| 4800D                                                                                  | 3.8        | 2.83 | 5250                | 9850        | 5.8             | 7.8  | 7.7          | 10.4 | 98                            | 2.77 | 15¼    | 6.92 |
| 4800K                                                                                  | 3.7        | 2.76 | 821                 | 1538        | 35.3            | 47.8 | 47           | 63.7 | 95                            | 2.69 | 15¼    | 6.92 |
| 4800M                                                                                  | 3.7        | 2.76 | 560                 | 1050        | 51              | 69.2 | 69           | 93.6 | 95                            | 2.69 | 15¼    | 6.92 |
| 4800N                                                                                  | 3.7        | 2.76 | 387                 | 726         | 75              | 102  | 100          | 136  | 95                            | 2.69 | 15¼    | 6.92 |
| 4800P                                                                                  | 3.5        | 2.61 | 260                 | 510         | 98              | 133  | 131          | 178  | 95                            | 2.69 | 19¾    | 8.96 |
| 4800Q                                                                                  | 3.5        | 2.61 | 194                 | 375         | 129             | 175  | 173          | 235  | 95                            | 2.69 | 19¾    | 8.96 |
| 4800S                                                                                  | 3.5        | 2.61 | 146                 | 275         | 178             | 241  | 238          | 323  | 95                            | 2.69 | 19¾    | 8.96 |
| 4800U                                                                                  | 3.5        | 2.61 | 97                  | 185         | 265             | 359  | 354          | 480  | 95                            | 2.69 | 19¾    | 8.96 |
| <b>Reversible</b>                                                                      |            |      |                     |             |                 |      |              |      |                               |      |        |      |
| 4840D                                                                                  | 3.3        | 2.46 | 4550                | 9100        | 5.2             | 7.0  | 6.9          | 9.4  | 95                            | 2.69 | 15¼    | 6.92 |
| 4840K                                                                                  | 3.2        | 2.39 | 711                 | 1429        | 32              | 43.4 | 42.7         | 57.9 | 95                            | 2.69 | 15¼    | 6.92 |
| 4840M                                                                                  | 3.2        | 2.39 | 485                 | 975         | 47.3            | 64.0 | 63.0         | 85.4 | 95                            | 2.69 | 15¼    | 6.92 |
| 4840N                                                                                  | 3.2        | 2.39 | 336                 | 675         | 67.7            | 91.7 | 90.2         | 122  | 95                            | 2.69 | 15¼    | 6.92 |
| 4840P                                                                                  | 3          | 2.24 | 228                 | 475         | 93              | 126  | 125          | 170  | 95                            | 2.69 | 20%    | 9.13 |
| 4840Q                                                                                  | 3          | 2.24 | 167                 | 350         | 123             | 167  | 165          | 224  | 95                            | 2.69 | 20%    | 9.13 |
| 4840S                                                                                  | 3          | 2.24 | 125                 | 255         | 161             | 218  | 215          | 292  | 95                            | 2.69 | 20%    | 9.13 |
| 4840U                                                                                  | 3          | 2.24 | 83                  | 170         | 225             | 305  | 300          | 407  | 95                            | 2.69 | 20%    | 9.13 |

▲ ALL models must be operated with sufficient load to prevent speed from exceeding maximum allowable speed shown on performance curve. Performance figures are at 90 psig (620 kPa) air pressure.



## Series 4800 and 4840 Multi-Vane Air Motors

### Dimensions



### Dimensions

| MODELS                                                   | A                |     | B                |     | C                |    |
|----------------------------------------------------------|------------------|-----|------------------|-----|------------------|----|
|                                                          | in.              | mm  | in.              | mm  | in.              | mm |
| 4800D, 4800K, 4800M, 4800N<br>4840D, 4840K, 4840M, 4840N | 12 $\frac{1}{2}$ | 308 | 9                | 229 | 2 $\frac{9}{32}$ | 23 |
| 4800P, 4800Q, 4800S, 4800U<br>4840P, 4840Q, 4840S, 4840U | 14 $\frac{1}{2}$ | 368 | 11 $\frac{1}{2}$ | 289 | 2 $\frac{1}{2}$  | 73 |

### Equipment Options

| Furnished with Cataloged Models | Extra Options                                                                                                                                                                                 |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6 Hole Face Mounting            | R4800-A123 Exhaust Deflector Assembly with 1" Pipe Tap<br>** R4901-102 Side Inlet Backhead Requires (3) 518-104 Screws                                                                        |
|                                 | * $\frac{5}{8}$ " Square Drive Shaft on Gear Ratio: M<br>Shaft Extension 1.38" (35.5mm)<br>* $\frac{3}{4}$ " Square Drive Shaft on Gear Ratios: P, Q, S, U<br>Shaft Extension 1.47" (37.44mm) |

\*To order Motor with Square Drive Shaft, add the suffix "2" to the Model Number. Example: 4840Q2.

\*\*Contact Ingersoll Rand for Model Number with these options.

# Spur Gear, Multi-Vane Motors

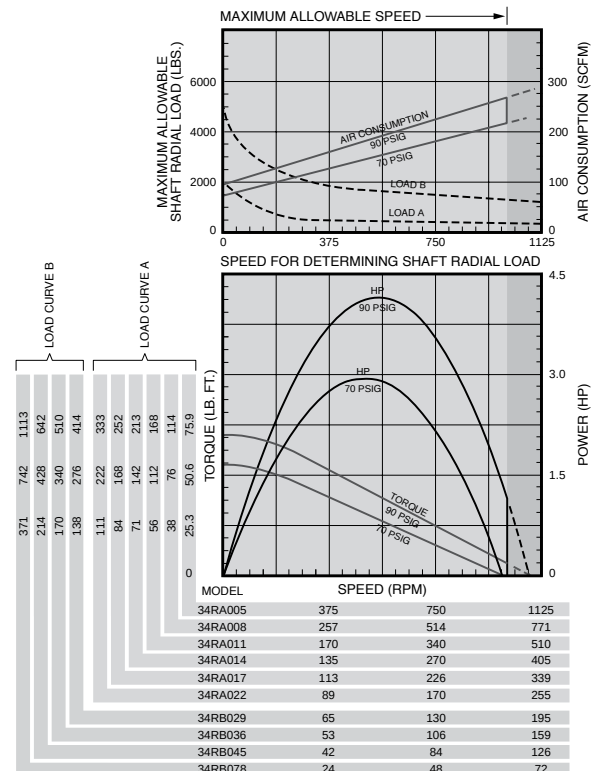
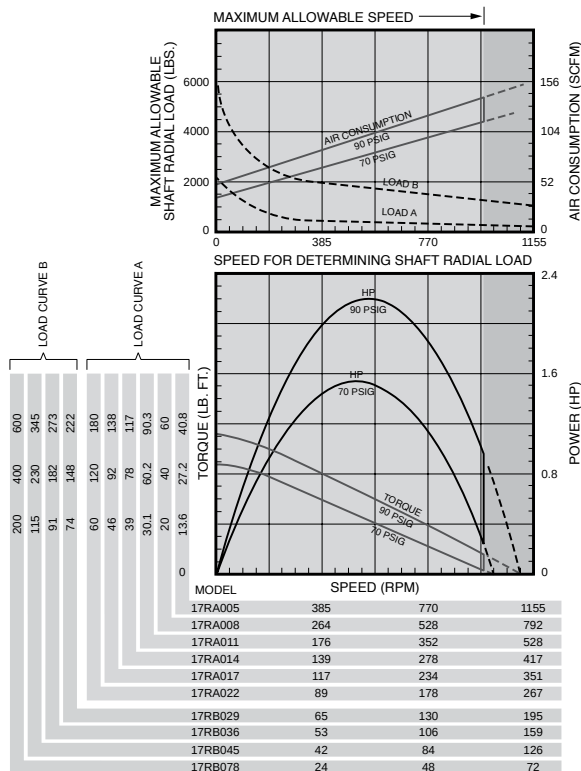
Series 17RA, 17RB, 34RA and 34RB

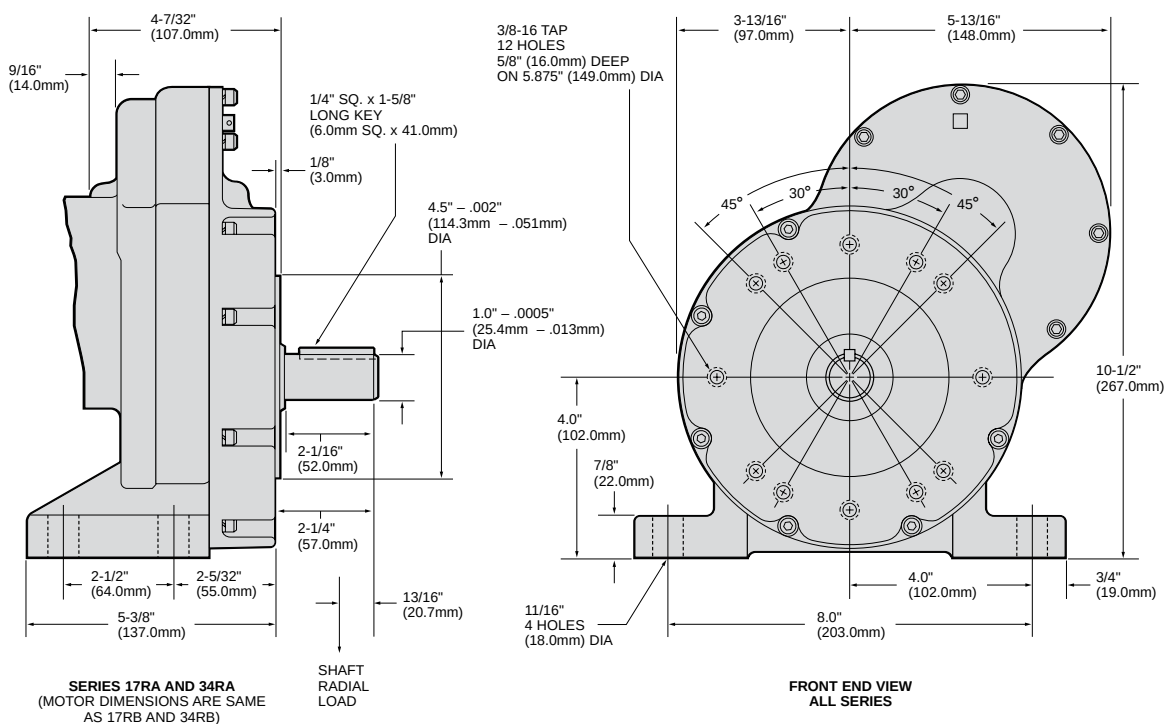
## Specifications



| Model      | Max. Power |      | Speed at Max. Power | Free Speed▲ | Starting Torque |      | Stall Torque |      | Air Consumption at Max. Power |      | Weight |      |
|------------|------------|------|---------------------|-------------|-----------------|------|--------------|------|-------------------------------|------|--------|------|
|            | hp         | kw   | rpm                 | rpm         | lb.-ft.         | Nm   | lb.-ft.      | Nm   | scfm                          | m³/m | lb.    | kg   |
| Reversible |            |      |                     |             |                 |      |              |      |                               |      |        |      |
| 17RA005    | 2.3        | 1.72 | 562                 | 1110        | 24              | 32.5 | 37           | 50.2 | 103                           | 2.92 | 40     | 18.1 |
| 17RA008    | 2.3        | 1.72 | 383                 | 760         | 35              | 47.5 | 54.5         | 73.9 | 103                           | 2.92 | 40     | 18.1 |
| 17RA011    | 2.3        | 1.72 | 254                 | 505         | 53              | 71.9 | 82           | 111  | 103                           | 2.92 | 40     | 18.1 |
| 17RA014    | 2.3        | 1.72 | 201                 | 400         | 67              | 91   | 104          | 141  | 103                           | 2.92 | 40     | 18.1 |
| 17RA017    | 2.3        | 1.72 | 169                 | 335         | 80              | 109  | 124          | 168  | 103                           | 2.92 | 40     | 18.1 |
| 17RA022    | 2.3        | 1.72 | 129                 | 255         | 105             | 142  | 163          | 221  | 103                           | 2.92 | 40     | 18.1 |
| 17RB029    | 2.2        | 1.64 | 97                  | 187         | 120             | 163  | 201          | 273  | 100                           | 2.83 | 72     | 32.7 |
| 17RB036    | 2.2        | 1.64 | 79                  | 152         | 148             | 201  | 248          | 336  | 100                           | 2.83 | 72     | 32.7 |
| 17RB045    | 2.2        | 1.64 | 62                  | 121         | 187             | 254  | 312          | 423  | 100                           | 2.83 | 72     | 32.7 |
| 17RB078    | 2.2        | 1.64 | 36                  | 69          | 327             | 443  | 545          | 739  | 100                           | 2.83 | 72     | 32.7 |
| 34RA005    | 4.1        | 3.06 | 560                 | 1080        | 41              | 60   | 69           | 93.6 | 183                           | 5.18 | 43     | 19.5 |
| 34RA008    | 4.1        | 3.06 | 385                 | 740         | 65              | 88   | 101          | 137  | 183                           | 5.18 | 43     | 19.5 |
| 34RA011    | 4.1        | 3.06 | 255                 | 490         | 98              | 133  | 152          | 206  | 183                           | 5.18 | 43     | 19.5 |
| 34RA014    | 4.1        | 3.06 | 201                 | 390         | 124             | 168  | 192          | 260  | 183                           | 5.18 | 43     | 19.5 |
| 34RA017    | 4.1        | 3.06 | 168                 | 325         | 148             | 201  | 229          | 311  | 183                           | 5.18 | 43     | 19.5 |
| 34RA022    | 4.1        | 3.06 | 128                 | 245         | 195             | 264  | 301          | 408  | 183                           | 5.18 | 43     | 19.5 |
| 34RB029    | 4          | 2.98 | 99                  | 187         | 224             | 304  | 374          | 507  | 180                           | 5.1  | 75     | 34   |
| 34RB036    | 4          | 2.98 | 80                  | 152         | 277             | 376  | 462          | 627  | 180                           | 5.1  | 75     | 34   |
| 34RB045    | 4          | 2.98 | 63                  | 121         | 348             | 472  | 581          | 788  | 180                           | 5.1  | 75     | 34   |
| 34RB078    | 4          | 2.98 | 36                  | 69          | 606             | 822  | 1010         | 1370 | 180                           | 5.1  | 75     | 34   |

▲ ALL models must be operated with sufficient load to prevent speed from exceeding maximum allowable speed shown on performance curve. Performance figures are at 90 psig (620 kPa) air pressure.





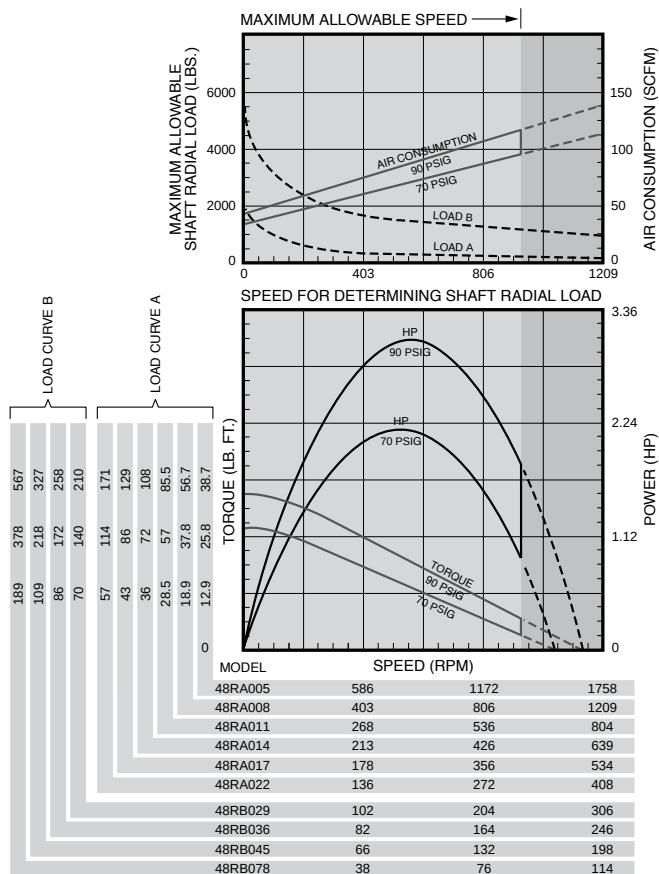


## Series 48RA and 48RB Multi-Vane Air Motors

### Specifications

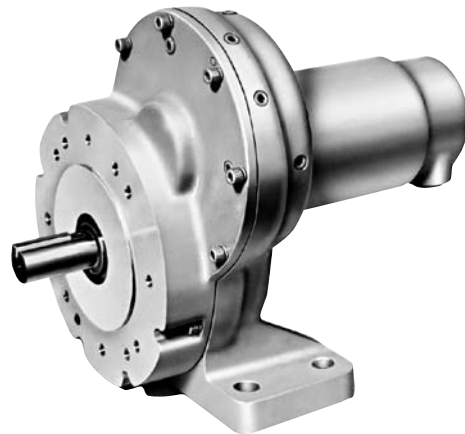
| Model      | Max. Power |      | Speed at<br>Max. Power | Free Speed ▲ | Starting Torque |      | Stall Torque |      | Air<br>Consumption<br>at Max. Power |      | Weight |    |
|------------|------------|------|------------------------|--------------|-----------------|------|--------------|------|-------------------------------------|------|--------|----|
|            | hp         | kw   | rpm                    | rpm          | lb.-ft.         | Nm   | lb.-ft.      | Nm   | scfm                                | m³/m | lb.    | kg |
| Reversible |            |      |                        |              |                 |      |              |      |                                     |      |        |    |
| 48RA005    | 3.1        | 2.31 | 930                    | 1690         | 26              | 35.3 | 35           | 47.5 | 95                                  | 2.69 | 44     | 20 |
| 48RA008    | 3.1        | 2.31 | 638                    | 1160         | 38              | 51.5 | 51.5         | 69.8 | 95                                  | 2.69 | 44     | 20 |
| 48RA011    | 3.1        | 2.31 | 423                    | 772          | 57              | 77.3 | 77.5         | 105  | 95                                  | 2.69 | 44     | 20 |
| 48RA014    | 3.1        | 2.31 | 332                    | 612          | 72              | 97.6 | 98           | 133  | 95                                  | 2.69 | 44     | 20 |
| 48RA017    | 3.1        | 2.31 | 278                    | 511          | 86              | 117  | 117          | 159  | 95                                  | 2.69 | 44     | 20 |
| 48RA022    | 3.1        | 2.31 | 213                    | 390          | 113             | 153  | 154          | 209  | 95                                  | 2.69 | 44     | 20 |
| 48RB029    | 3          | 2.24 | 162                    | 292          | 135             | 183  | 189          | 256  | 90                                  | 2.55 | 75     | 34 |
| 48RB036    | 3          | 2.24 | 131                    | 236          | 167             | 227  | 234          | 317  | 90                                  | 2.55 | 75     | 34 |
| 48RB045    | 3          | 2.24 | 105                    | 188          | 209             | 283  | 295          | 400  | 90                                  | 2.55 | 75     | 34 |
| 48RB078    | 3          | 2.24 | 60                     | 108          | 364             | 494  | 513          | 696  | 90                                  | 2.55 | 75     | 34 |

▲ ALL models must be operated with sufficient load to prevent speed from exceeding maximum allowable speed shown on performance curve. Performance figures are at 90 psig (620 kPa) air pressure.



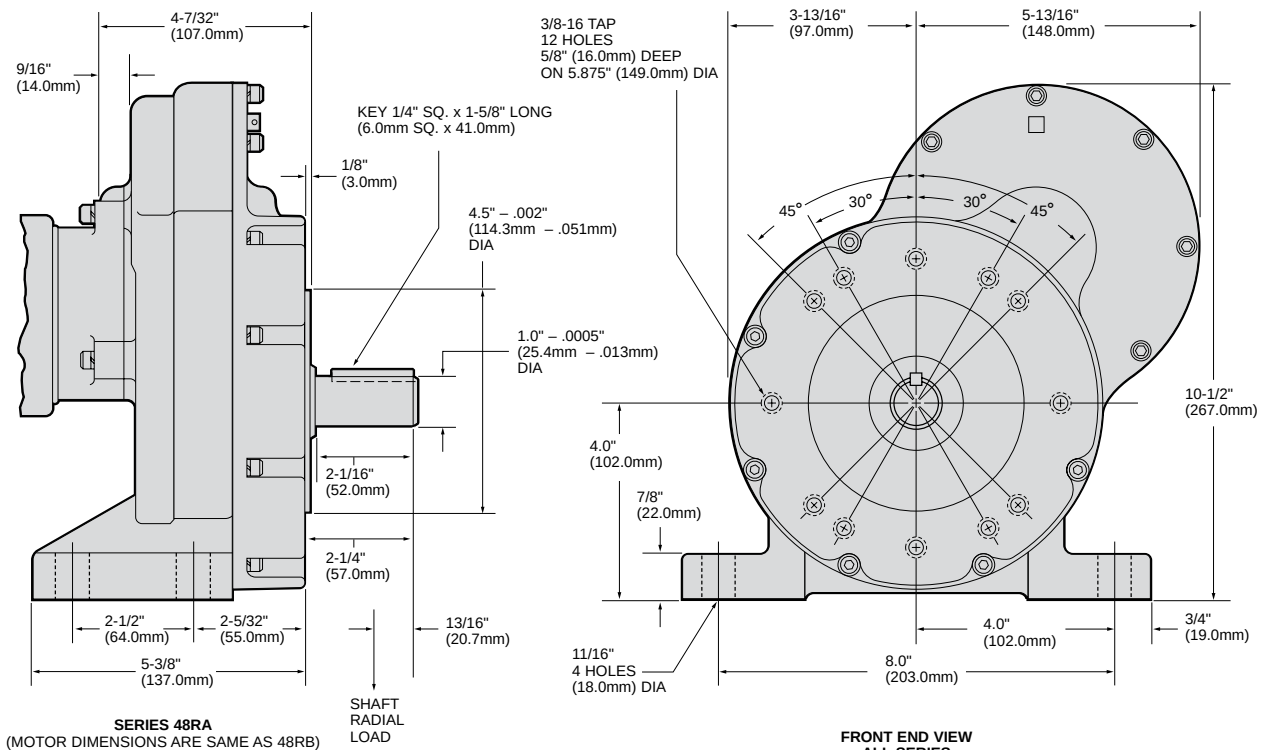
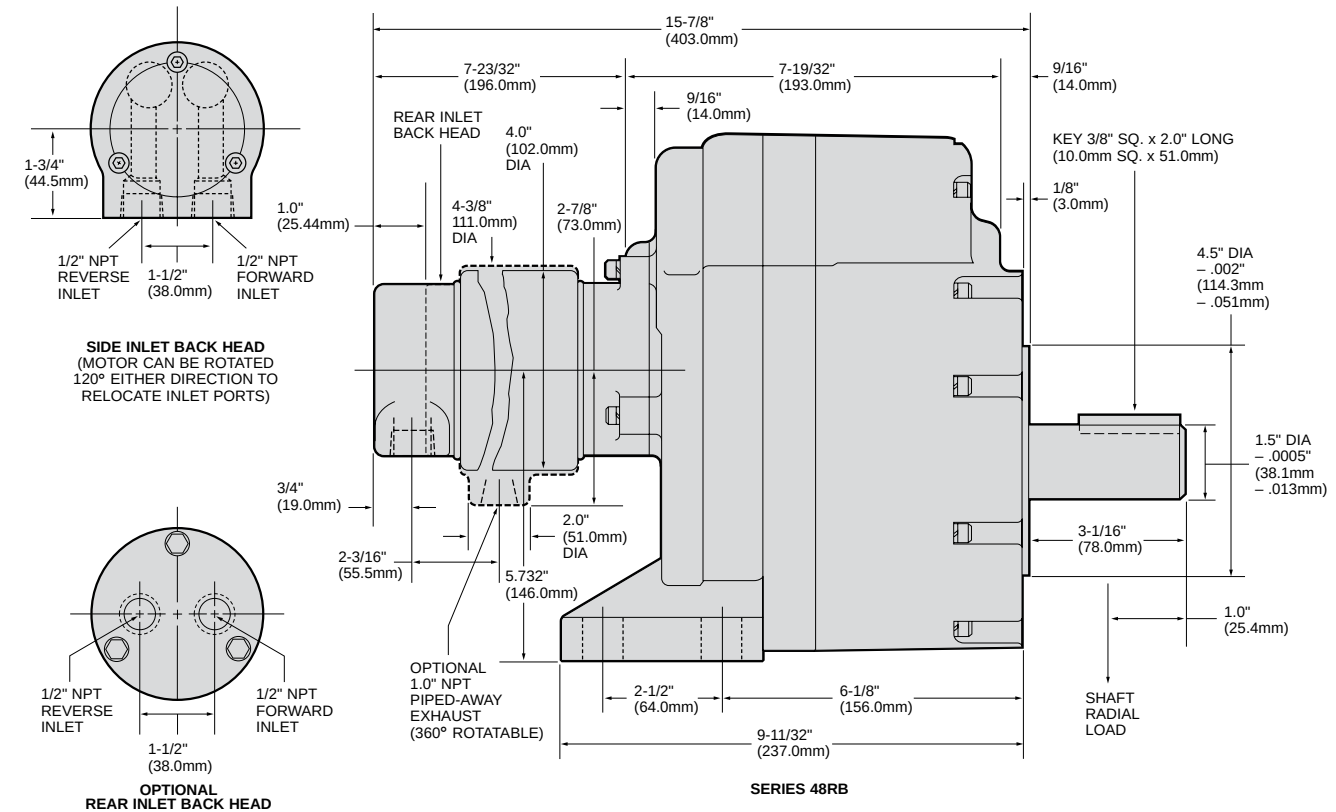
### Equipment Options

| Furnished with<br>Cataloged Models | Standard Options              |
|------------------------------------|-------------------------------|
| Side Inlet Backhead                | R4840-102 Rear Inlet Backhead |



## Series 48RA and 48RB Multi-Vane Air Motors

### Dimensions

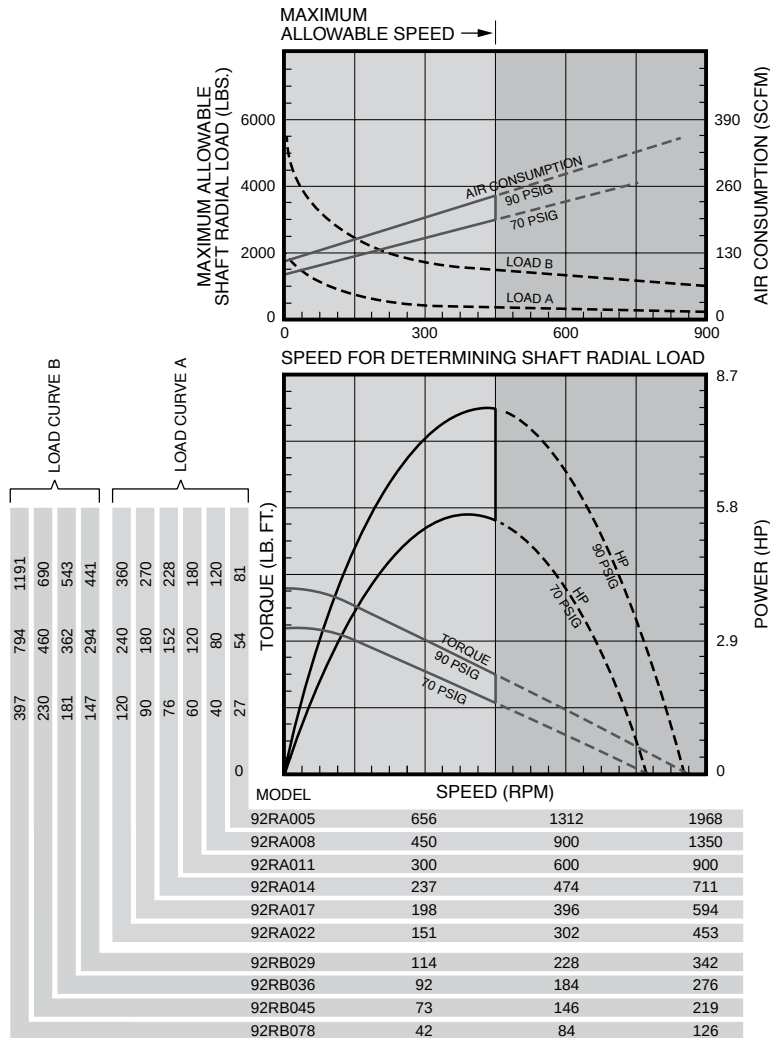


## Series 92RA and 92RB Multi-Vane Air Motors

### Specifications

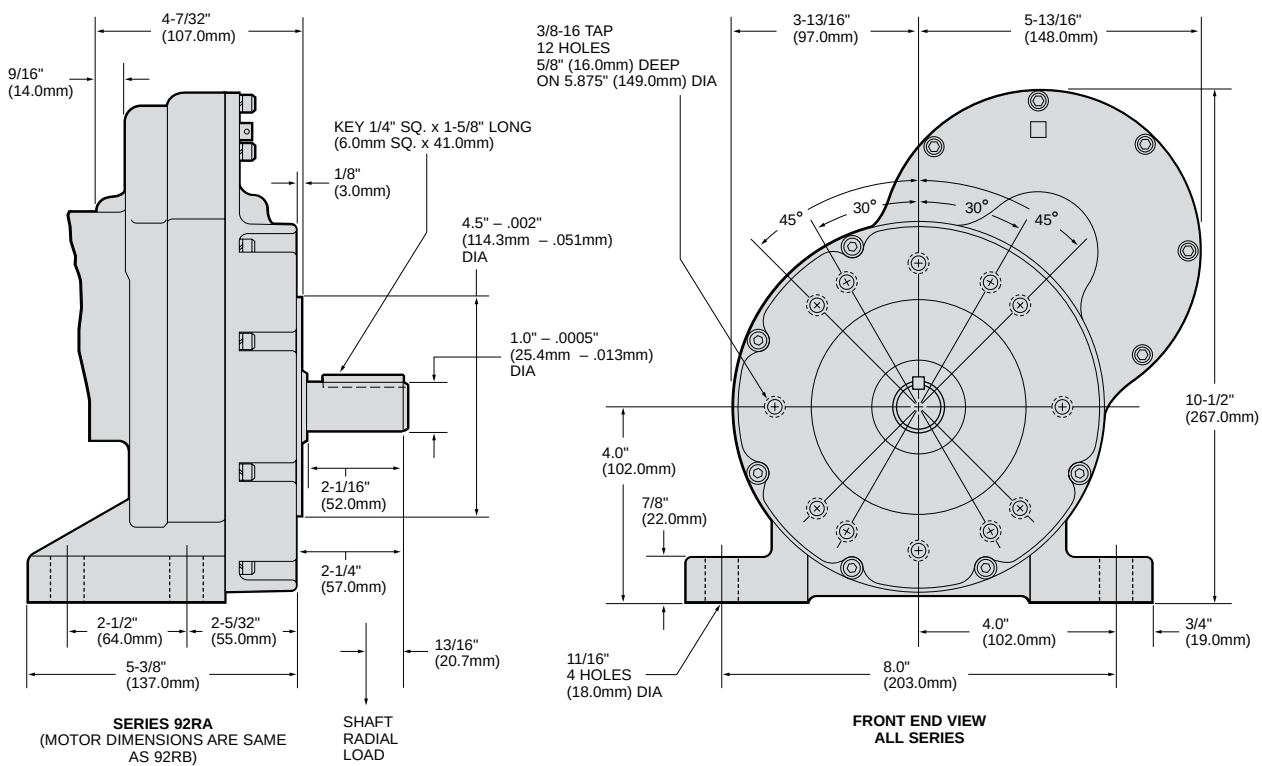
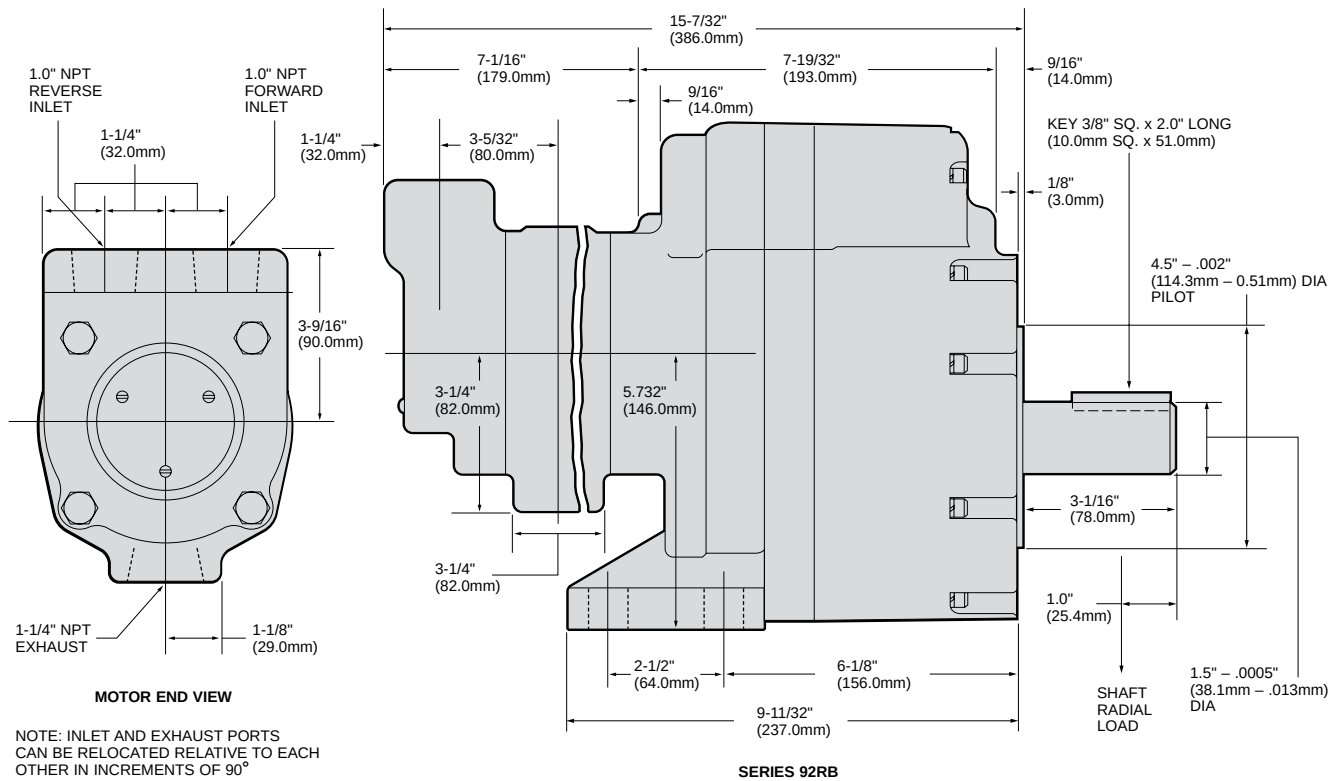
| Model      | Max. Power |      | Speed at Max. Power | Free Speed ▲ | Starting Torque |      | Stall Torque |      | Air Consumption at Max. Power |                   | Weight |      |
|------------|------------|------|---------------------|--------------|-----------------|------|--------------|------|-------------------------------|-------------------|--------|------|
|            | hp         | kw   | rpm                 | rpm          | lb.-ft.         | Nm   | lb.-ft.      | Nm   | scfm                          | m <sup>3</sup> /m | lb.    | kg   |
| Reversible |            |      |                     |              |                 |      |              |      |                               |                   |        |      |
| 92RA005    | 8.15       | 6.08 | 910                 | 1390         | 56              | 75.9 | 75           | 102  | 230                           | 6.51              | 46     | 20.9 |
| 92RA008    | 8.15       | 6.08 | 620                 | 1296         | 80              | 109  | 109          | 148  | 230                           | 6.51              | 46     | 20.9 |
| 92RA011    | 8.15       | 6.08 | 415                 | 852          | 120             | 163  | 164.5        | 223  | 230                           | 6.51              | 46     | 20.9 |
| 92RA014    | 8.15       | 6.08 | 327                 | 682          | 152             | 206  | 208          | 282  | 230                           | 6.51              | 46     | 20.9 |
| 92RA017    | 8.15       | 6.08 | 274                 | 571          | 180             | 244  | 248          | 336  | 230                           | 6.51              | 46     | 20.9 |
| 92RA022    | 8.15       | 6.08 | 209                 | 435          | 235             | 319  | 326          | 442  | 230                           | 6.51              | 46     | 20.9 |
| 92RB029    | 7.9        | 5.89 | 160                 | 327          | 280             | 380  | 402          | 545  | 225                           | 6.37              | 78     | 35.4 |
| 92RB036    | 7.9        | 5.89 | 130                 | 264          | 345             | 468  | 497          | 674  | 225                           | 6.37              | 78     | 35.4 |
| 92RB045    | 7.9        | 5.89 | 103                 | 210          | 440             | 597  | 626          | 849  | 225                           | 6.37              | 78     | 35.4 |
| 92RB078    | 7.9        | 5.89 | 59                  | 120          | 770             | 1044 | 1090         | 1478 | 225                           | 6.37              | 78     | 35.4 |

▲ ALL models must be operated with sufficient load to prevent speed from exceeding maximum allowable speed shown on performance curve. Performance figures are at 90 psig (620 kPa) air pressure.



## Series 92RA and 92RB Multi-Vane Air Motors

### Dimensions



## Series 92RM and 992RM Multi-Vane Air Motors

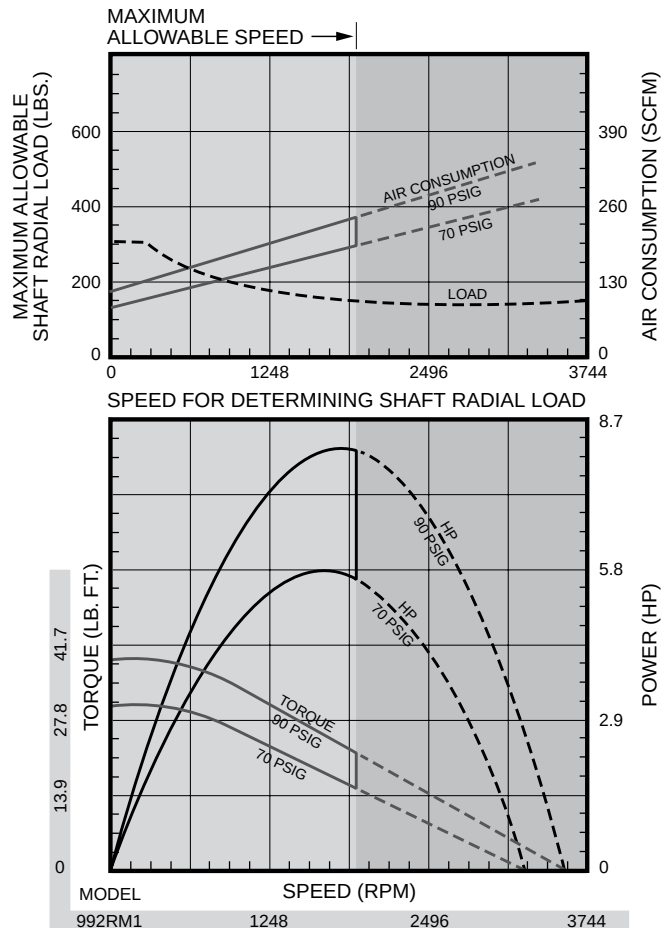
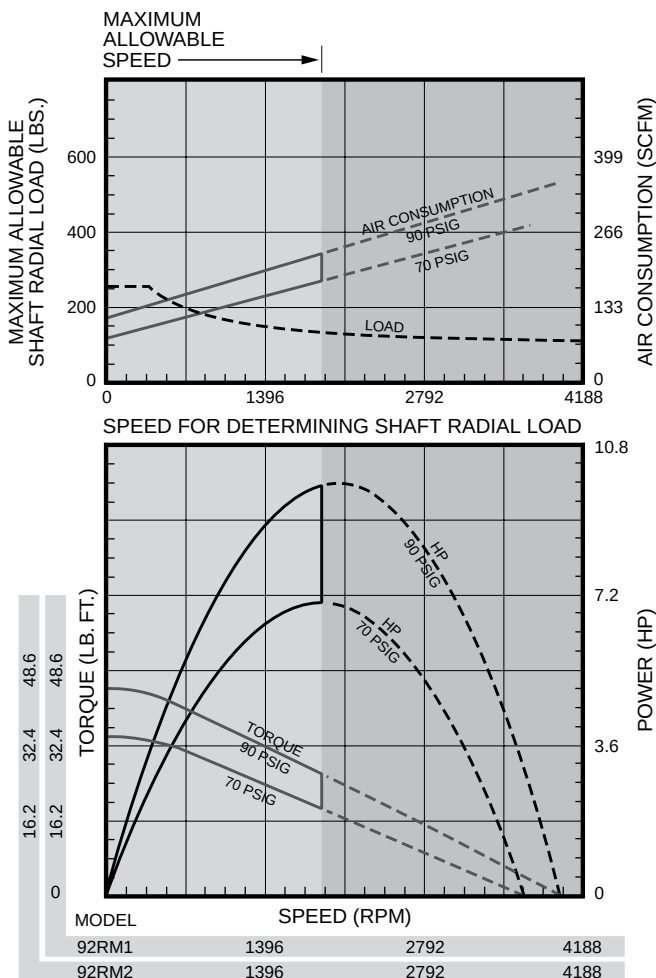
### Specifications



| Model                                                                                  | Max. Power |      | Speed at Max. Power | Free Speed▲ | Starting Torque |      | Stall Torque |      | Air Consumption at Max. Power |      | Weight |      |
|----------------------------------------------------------------------------------------|------------|------|---------------------|-------------|-----------------|------|--------------|------|-------------------------------|------|--------|------|
|                                                                                        | hp         | kw   | rpm                 | rpm         | lb.-ft.         | Nm   | lb.-ft.      | Nm   | scfm                          | m³/m | lb.    | kg   |
| <b>Non-Reversible</b> Direction of rotation is counterclockwise when facing the shaft. |            |      |                     |             |                 |      |              |      |                               |      |        |      |
| 92RM1                                                                                  | 9.9        | 7.38 | 2095                | 3980        | 33              | 44.7 | 45           | 61   | 240                           | 6.79 | 24¼    | 11   |
| 92RM2                                                                                  | 9.9        | 7.38 | 2095                | 3980        | 33              | 44.7 | 45           | 61   | 240                           | 6.79 | 24¼    | 11   |
| <b>Reversible</b>                                                                      |            |      |                     |             |                 |      |              |      |                               |      |        |      |
| 992RM1                                                                                 | 8.15       | 6.08 | 1730                | 3600        | 28.7            | 38.9 | 39           | 52.9 | 230                           | 6.51 | 25¼    | 11.3 |

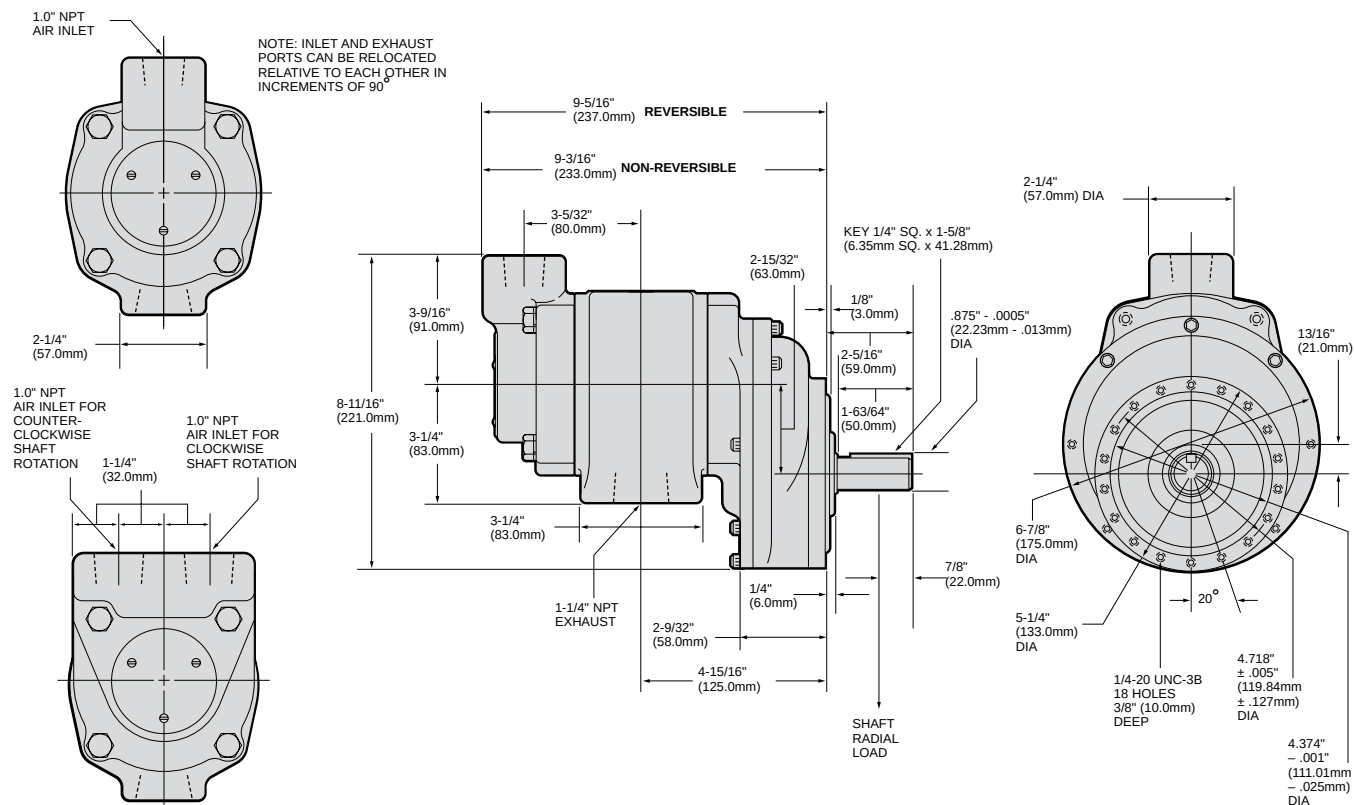
▲ ALL models must be operated with sufficient load to prevent speed from exceeding maximum allowable speed shown on performance curve. Performance figures are at 90 psig (620 kPa) air pressure.

Direction of rotation of Model 92RM1 is clockwise, and of Model 92RM2 is counter clockwise when facing the shaft end of the motor.



## Series 92RM and 992RM Multi-Vane Air Motors

### Dimensions





# Direct Drive Multi-Vane Motors

## Series MVA and MOV0

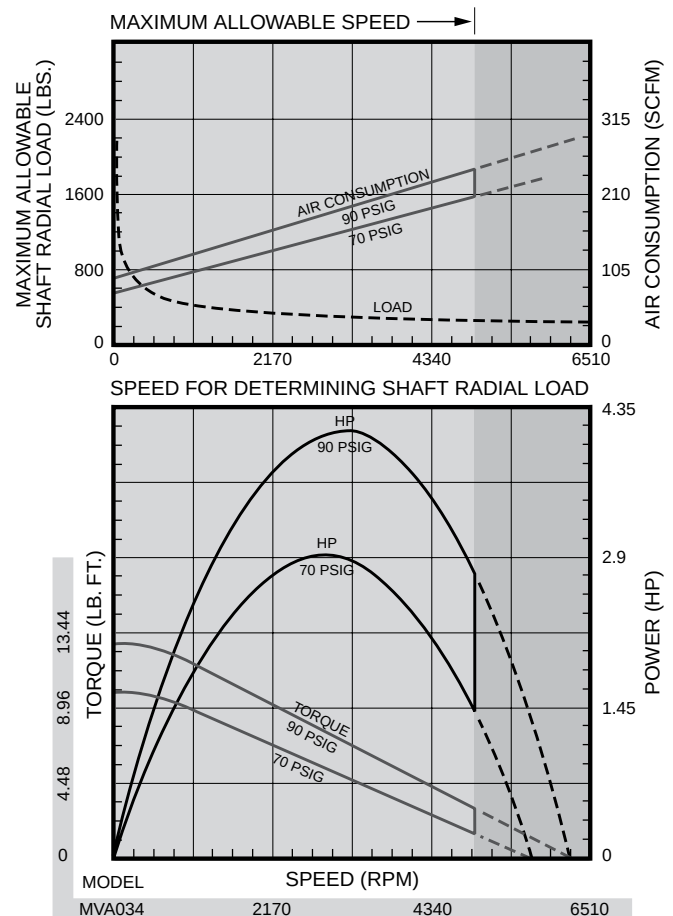
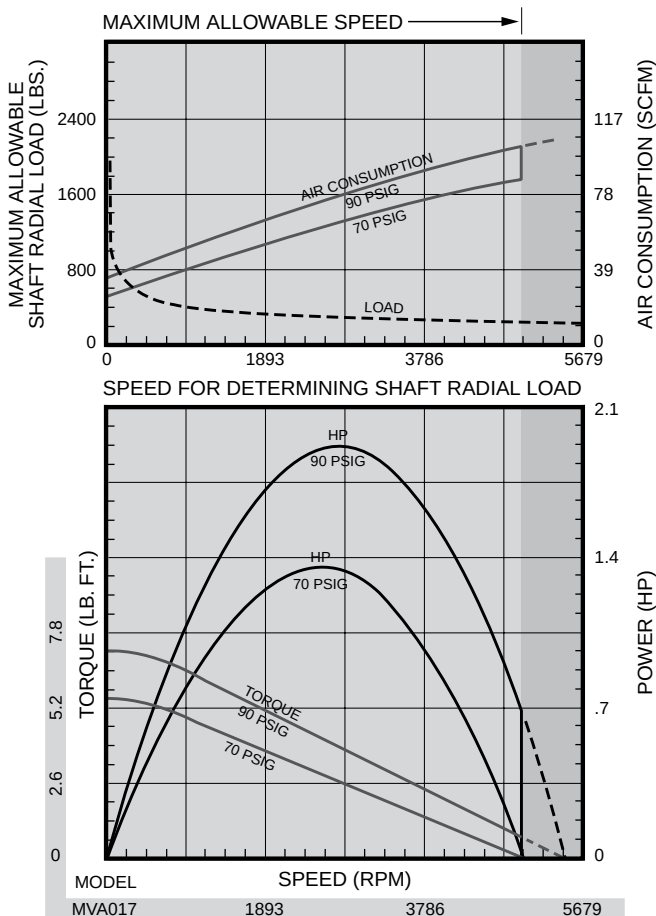
### Specifications

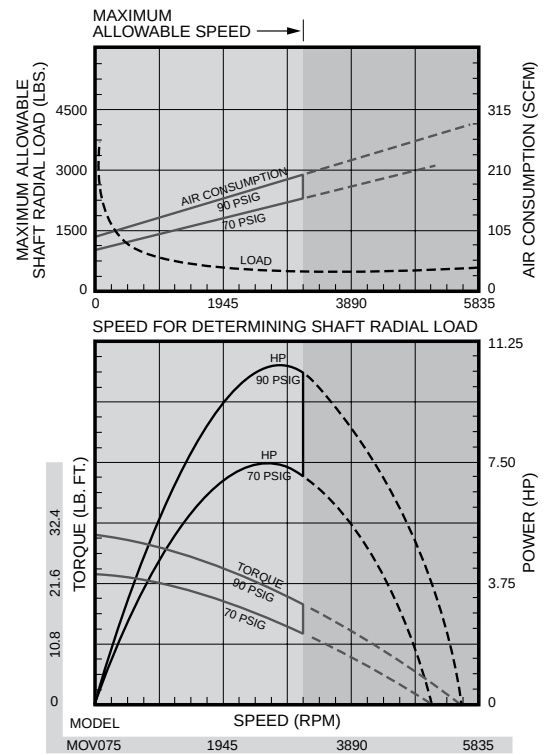
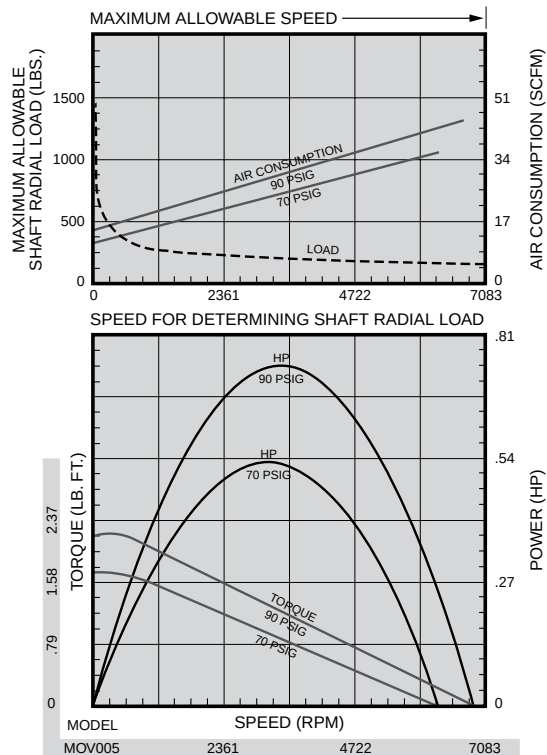


| Model*     | Max. Power |      | Speed at Max. Power | Free Speed▲ | Starting Torque |      | Stall Torque |      | Air Consumption at Max. Power |      | Weight |      |
|------------|------------|------|---------------------|-------------|-----------------|------|--------------|------|-------------------------------|------|--------|------|
|            | hp         | kw   | rpm                 | rpm         | lb.-ft.         | Nm   | lb.-ft.      | Nm   | scfm                          | m³/m | lb.    | kg   |
| Reversible |            |      |                     |             |                 |      |              |      |                               |      |        |      |
| MVA017A    | 1.93       | 1.44 | 2800                | 5450        | 4.5             | 6.1  | 7            | 9.5  | 76                            | 2.15 | 12½    | 5.67 |
| MVA017B    | 1.93       | 1.44 | 2800                | 5450        | 4.5             | 6.1  | 7            | 9.5  | 76                            | 2.15 | 12½    | 5.67 |
| MVA034A    | 4.15       | 3.09 | 3000                | 6250        | 8.3             | 11.3 | 12.8         | 17.4 | 181                           | 5.12 | 16½    | 7.48 |
| MVA034B    | 4.15       | 3.09 | 3000                | 6250        | 8.3             | 11.3 | 12.8         | 17.4 | 181                           | 5.12 | 16½    | 7.48 |
| MOV005AA   | .75        | .56  | 3300                | 6800        | 1.65            | 2.2  | 2.2          | 2.98 | 30                            | .84  | 6½     | 2.95 |
| MOV075AA   | 10.5       | 7.8  | 2600                | 5600        | 22.5            | 30.5 | 30           | 40.7 | 260                           | 7.36 | 64     | 29   |

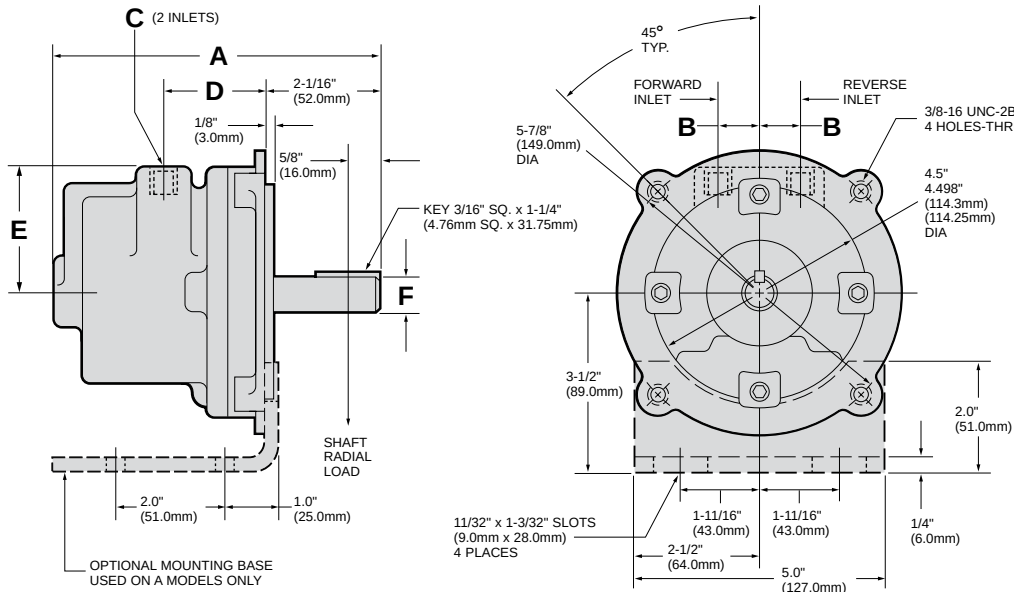
▲ ALL models must be operated with sufficient load to prevent speed from exceeding maximum allowable speed shown on performance curve. Performance figures are at 90 psig (620 kPa) air pressure.

\* "A" suffix denotes foot mount model, "B" suffix denotes flange mount models.





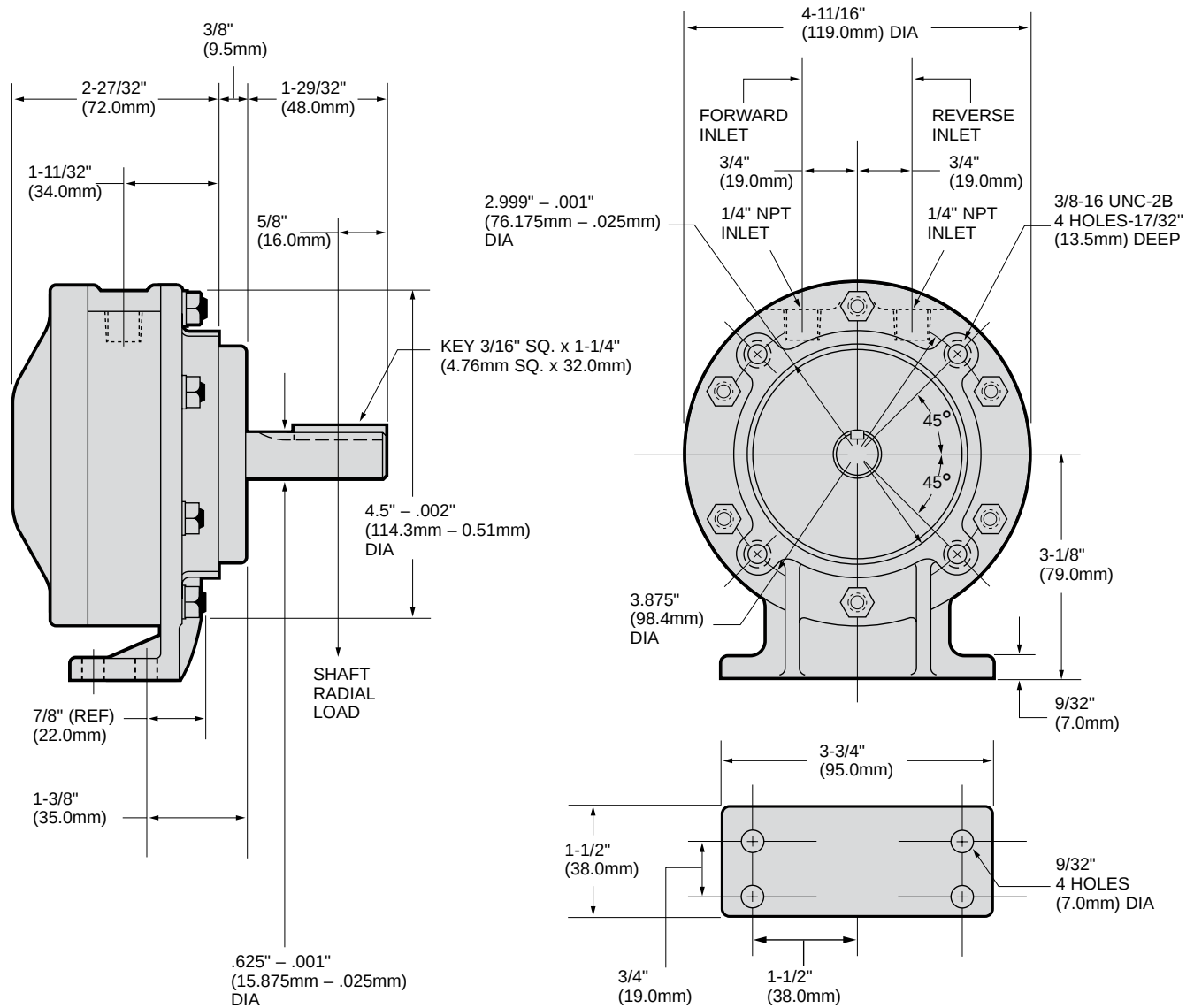
## Series MVA Dimensions



## Dimensions

| SERIES | A                              |     | B                              |    | C    | D                              |    | E                              |    | F DIA.         |                |
|--------|--------------------------------|-----|--------------------------------|----|------|--------------------------------|----|--------------------------------|----|----------------|----------------|
|        | in.                            | mm  | in.                            | mm | NPT  | in.                            | mm | in.                            | mm | in.            | mm             |
| MVA017 | 6 <sup>1</sup> / <sub>16</sub> | 170 | 7 <sup>1</sup> / <sub>16</sub> | 22 | 3/8" | 1 <sup>1</sup> / <sub>16</sub> | 48 | 2 <sup>1</sup> / <sub>16</sub> | 64 | .6250<br>.6245 | 15.88<br>15.86 |
| MVA034 | 8 <sup>1</sup> / <sub>16</sub> | 214 | 1 <sup>1</sup> / <sub>16</sub> | 30 | 1/2" | 2                              | 51 | 2 <sup>1</sup> / <sub>16</sub> | 67 | .8750<br>.8745 | 22.23<br>22.21 |

## Model MOV005AA Dimensions



\* Removal of Foot Mounting results in Motor having NEMA C Face Mounting, 56C Frame Size.  
 \*\* Removal of Foot Mounting results in Motor having NEMA C Face Mounting, 182C Frame Size.

## Series Select Lube Free Multi-Vane Air Motors

### Specifications



| Series     | Max Power |      | Speed at Max Power | Free Speed | Starting Torque |      | Stall Torque |      | Air Consumption at Max. Power |      | Weight |      |
|------------|-----------|------|--------------------|------------|-----------------|------|--------------|------|-------------------------------|------|--------|------|
|            | hp        | kw   | rpm                | rpm        | lb.-ft.         | Nm   | lb.-ft.      | Nm   | scfm                          | m³/m | lb.    | kg   |
| reversible |           |      |                    |            |                 |      |              |      |                               |      |        |      |
| SM1AMA     | 0.33      | 0.25 | 7600               | 15,200     | 0.29            | 0.39 | 0.38         | 0.52 | 17                            | 0.5  | 1.5    | 0.7  |
| SM1AMAL    | 0.33      | 0.25 | 7600               | 15,200     | 0.29            | 0.39 | 0.38         | 0.52 | 17                            | 0.5  | 1.5    | 0.7  |
| SM1UPC     | 0.60      | 0.37 | 6000               | 12,500     | 0.45            | 0.6  | 0.6          | 0.81 | 42                            | 1.2  | 1.75   | 0.8  |
| SM1UPCL    | 0.60      | 0.37 | 6000               | 12,500     | 0.45            | 0.6  | 0.6          | 0.81 | 42                            | 1.2  | 1.75   | 0.8  |
| SM1UPCR    | 0.60      | 0.37 | 6000               | 12,500     | 0.45            | 0.6  | 0.6          | 0.81 | 42                            | 1.2  | 1.75   | 0.8  |
| SM2AMAN    | 0.88      | 0.66 | 3000               | 8070       | 1.7             | 2.3  | 2.3          | 3.1  | 48                            | 1.4  | 7.5    | 3.4  |
| SM2AMC     | 0.88      | 0.66 | 3000               | 8070       | 1.7             | 2.3  | 2.3          | 3.1  | 48                            | 1.4  | 7.5    | 3.4  |
| SM4AMAN    | 1.5       | 1.1  | 3000               | 7900       | 2.6             | 3.5  | 4.1          | 5.6  | 67                            | 1.9  | 8.25   | 3.7  |
| SM4AMB     | 1.5       | 1.1  | 3000               | 7900       | 2.6             | 3.5  | 4.1          | 5.6  | 67                            | 1.9  | 8.25   | 3.7  |
| SM6AMA     | 3.6       | 2.7  | 3000               | 7900       | 5.3             | 7.2  | 8.7          | 11.8 | 120                           | 3.4  | 16.25  | 7.4  |
| SM6AMAN    | 3.6       | 2.7  | 3000               | 7900       | 5.3             | 7.2  | 8.7          | 11.8 | 120                           | 3.4  | 16.25  | 7.4  |
| SM8AMA     | 4.8       | 3.6  | 2500               | 7000       | 10              | 13.6 | 14           | 19   | 152                           | 4.3  | 22.5   | 10.2 |
| SM8AMAN    | 4.8       | 3.6  | 2500               | 7000       | 10              | 13.6 | 14           | 19   | 152                           | 4.3  | 22.5   | 10.2 |

### Model Designation Breakout

| Select Series Air Motor | Power Series                           | Shaft/Interface                                                                                                                                    | Rotation                                                                                    | Mounting                                                                        |
|-------------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| SM                      | 1AM<br>1UP<br>2AM<br>4AM<br>6AM<br>8AM | A = Round shaft w/ square key<br>(Round shaft on SM1AM series)<br>B = Round shaft with Woodruff Key (#3)<br>C = Round shaft with flat on the shaft | L=Left Hand Bias (CCW)*<br>R=Right Hand Bias (CW)*<br>None=Reversible<br>*when facing shaft | N=NEMA mount<br>None= Face or Footmount<br>(Footmount is an optional accessory) |

### Equipment Options

| Series | Furnished with Cataloged Models                                                           | Optional Accessories  |
|--------|-------------------------------------------------------------------------------------------|-----------------------|
| SM1AM  | Hub Mounting<br>Muffler                                                                   | SM1AM-AG587 Footmount |
| SM1UP  | Hub Mounting<br>Muffler                                                                   | SM1AM-AG587 Footmount |
| SM2AM  | 3 Hole Face Mounting<br>Muffler<br>NEMA 56C Flange with Model SM2AMAN                     | SM2AM-AH636 Footmount |
| SM4AM  | 3 Hole Face Mounting<br>Muffler<br>NEMA 56C Flange with Model SM4AMAN                     | SM4AM-AH634 Footmount |
| SM6AM  | 3 Hole Face Mounting<br>Muffler<br>NEMA 56C Flange with Model SM6AMAN                     | SM6AM-AH634 Footmount |
| SM8AM  | 4 Hole Face Mounting Muffler<br>NEMA 182C Flange, 184C Flange Mount<br>with Model SM8AMAN | SM8AM-AH640 Footmount |

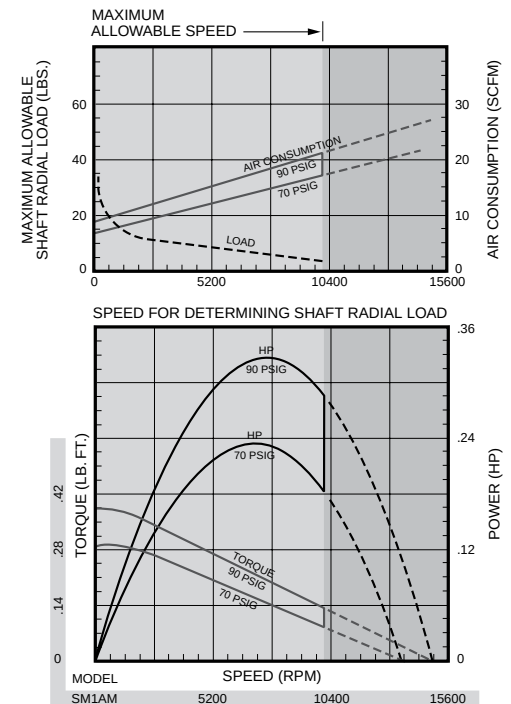
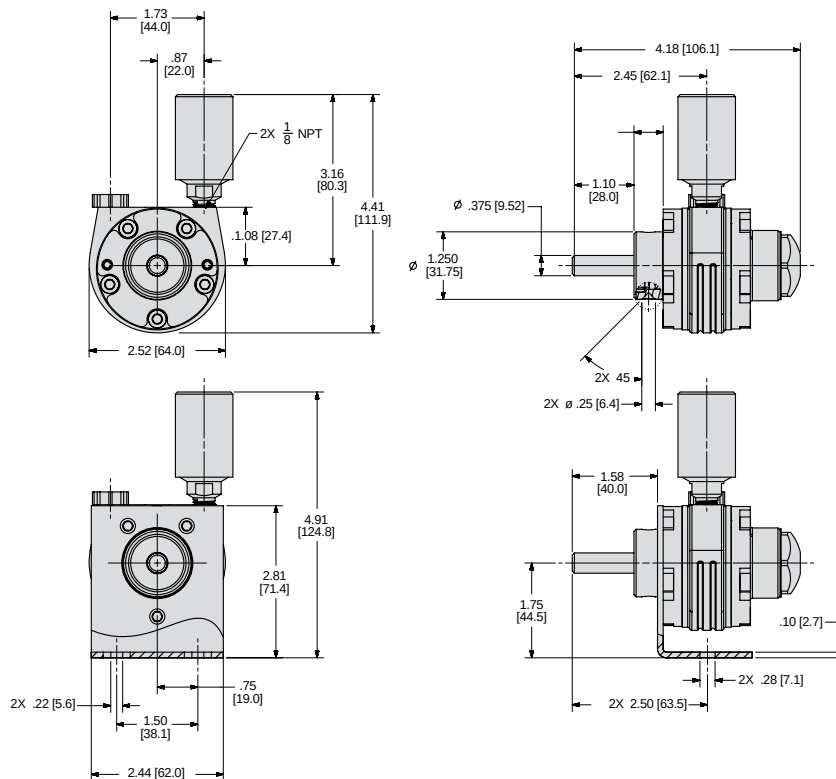
## Interchange Chart

| GAST Model Style | Rotation Bias          | FENNER Model Style | IR SELECT Series Model Style (w/ Foot Bracket) | Max. Power (hp) | Max. Free Speed (rpm) | Mounting Style    |
|------------------|------------------------|--------------------|------------------------------------------------|-----------------|-----------------------|-------------------|
| 1AM-NCC-12       | Left Hand (CCW)        |                    | SM1AMAL                                        | 0.33            | 15,200                | Hub Mount         |
| 1AM-NCW-14       | Right Hand (CW)        |                    | SM1AMA                                         | 0.33            | 15,200                | Hub Mount         |
| 1AM-NRV-39A      | Reversible             |                    | SM1AMA                                         | 0.33            | 15,200                | Hub Mount         |
| 1AM-NRV-63A      | Reversible             |                    | SM1AMA                                         | 0.33            | 15,200                | Hub Mount         |
| 1UP-NCC-1A       | Left Hand (CCW)        |                    | SM1UPCL                                        | 0.60            | 12,500                | Hub Mount         |
| 1UP-NCW-2A       | Right Hand (CW)        |                    | SM1UPCR                                        | 0.60            | 12,500                | Hub Mount         |
| 1UP-NRV-3A       | Reversible             | V1X                | SM1UPC                                         | 0.60            | 12,500                | Hub Mount         |
| 1UP-NRV-10       | Reversible             |                    | SM1UPC                                         | 0.60            | 12,500                | Hub Mount         |
| AG585            | 1AM Foot Mount Bracket |                    | (SM1AM-AG587)                                  |                 |                       |                   |
| 2AM-NCC-16       | Left Hand (CCW)        | 2VMX/CCW           | SM2AMC                                         | 0.88            | 8,070                 | Hub or Face Mount |
| 2AM-NCC-16F      | Left Hand (CCW)        |                    | SM2AMC                                         | 0.88            | 8,070                 | Hub or Face Mount |
| 2AM-NCW-7A       | Right Hand (CW)        | 2VMX/CW            | SM2AMC                                         | 0.88            | 8,070                 | Hub or Face Mount |
| 2AM-NCW-7B       | Right Hand (CW)        |                    | SM2AMC                                         | 0.88            | 8,070                 | Hub or Face Mount |
| 2AM-NRV-89       | Reversible             | VA2X               | SM2AMC                                         | 0.88            | 8,070                 | Hub or Face Mount |
| 2AM-FCC-1        | Left Hand (CCW)        | 2VMJ/CCW           | SM2AMC (w/ SM2AM-AH636)                        | 0.88            | 8,070                 | Foot Mount        |
| 2AM-FCW-13       | Right Hand (CW)        | 2VMJ/CW            | SM2AMC (w/ SM2AM-AH636)                        | 0.88            | 8,070                 | Foot Mount        |
| 2AM-FRV-501      | Reversible             | VA2J               | SM2AMC (w/ SM2AM-AH636)                        | 0.88            | 8,070                 | Foot Mount        |
| 2AM-NCC-43A      | Left Hand (CCW)        | 2VMC/CCW           | SM2AMAN                                        | 0.88            | 8,070                 | NEMA 56C Mount    |
|                  | Right Hand (CW)        | 2VMC/CW            | SM2AMAN                                        | 0.88            | 8,070                 | NEMA 56C Mount    |
| 2AM-NRV-90       | Reversible             | VA2C               | SM2AMAN                                        | 0.88            | 8,070                 | NEMA 56C Mount    |
|                  | Left Hand (CCW)        | 4VMX/CCW           | SM4AMB                                         | 1.5             | 7,900                 | Hub or Face Mount |
|                  | Right Hand (CW)        | 4VMX/CW            | SM4AMB                                         | 1.5             | 7,900                 | Hub or Face Mount |
| 4AM-NRV-22B      | Reversible             | VA4X               | SM4AMB                                         | 1.5             | 7,900                 | Hub or Face Mount |
| 4AM-NRV-22F      | Reversible             |                    | SM4AMB                                         | 1.5             | 7,900                 | Hub or Face Mount |
| 4AM-NRV-54A      | Reversible             |                    | SM4AMB                                         | 1.5             | 7,900                 | Hub or Face Mount |
|                  | Left Hand (CCW)        | 4VMJ/CCW           | SM4AMB (w/ SM4AM-AH634)                        | 1.5             | 7,900                 | Foot Mount        |
|                  | Right Hand (CW)        | 4VMJ/CW            | SM4AMB (w/ SM4AM-AH634)                        | 1.5             | 7,900                 | Foot Mount        |
| 4AM-FRV-13C      | Foot Mount             | VA4J               | SM4AMB (w/ SM4AM-AH634)                        | 1.5             | 7,900                 | Foot Mount        |
| 4AM-FRV-13H      | Foot Mount             |                    | SM4AMB (w/ SM4AM-AH634)                        | 1.5             | 7,900                 | Foot Mount        |
| 4AM-FRV-63A      | Foot Mount             |                    | SM4AMB (w/ SM4AM-AH634)                        | 1.5             | 7,900                 | Foot Mount        |
|                  | Left Hand (CCW)        | 4VMC/CCW           | SM4AMAN                                        | 1.5             | 7,900                 | NEMA 56C Mount    |
|                  | Right Hand (CW)        | 4VMC/CW            | SM4AMAN                                        | 1.5             | 7,900                 | NEMA 56C Mount    |
| 4AM-NRV-50C      | Reversible             | VA4C               | SM4AMAN                                        | 1.5             | 7,900                 | NEMA 56C Mount    |
| 4AM-NRV-70C      | Reversible             |                    | SM4AMAN                                        | 1.5             | 7,900                 | NEMA 56C Mount    |
| 6AM-NRV-7A       | Reversible             | VA6X               | SM6AMA                                         | 3.6             | 7,900                 | Face Mount        |
| 6AM-FRV-5A       | Reversible             | VA6J               | SM6AMA (w/ SM6AM-AH634)                        | 3.6             | 7,900                 | Foot Mount        |
| 6AM-FRV-23A      | Reversible             |                    | SM6AMA (w/ SM6AM-AH634)                        | 3.6             | 7,900                 | Foot Mount        |
| 6AM-NRV-11A      | Reversible             | VA6C               | SM6AMAN                                        | 3.6             | 7,900                 | NEMA 56C Mount    |
| 6AM-NRV-22A      | Reversible             |                    | SM6AMAN                                        | 3.6             | 7,900                 | NEMA 56C Mount    |
| 8AM-NRV-5B       | Reversible             | VA8X               | SM8AMA                                         | 4.8             | 7,000                 | Face Mount        |
| 8AM-NRV-42A      | Reversible             |                    | SM8AMA                                         | 4.8             | 7,000                 | Face Mount        |
| 8AM-FRV-2B       | Reversible             | VA8J               | SM8AMA (w/ SM8AM-AH640)                        | 4.8             | 7,000                 | Foot Mount        |
| 8AM-FRV-30A      | Reversible             |                    | SM8AMA (w/ SM8AM-AH640)                        | 4.8             | 7,000                 | Foot Mount        |
| 8AM-NRV-28A      | Reversible             | VA8C               | SM8AMAN                                        | 4.8             | 7,000                 | NEMA 145TC Mount  |
| 8AM-NRV-32A      | Reversible             |                    | SM8AMAN                                        | 4.8             | 7,000                 | NEMA 145TC Mount  |

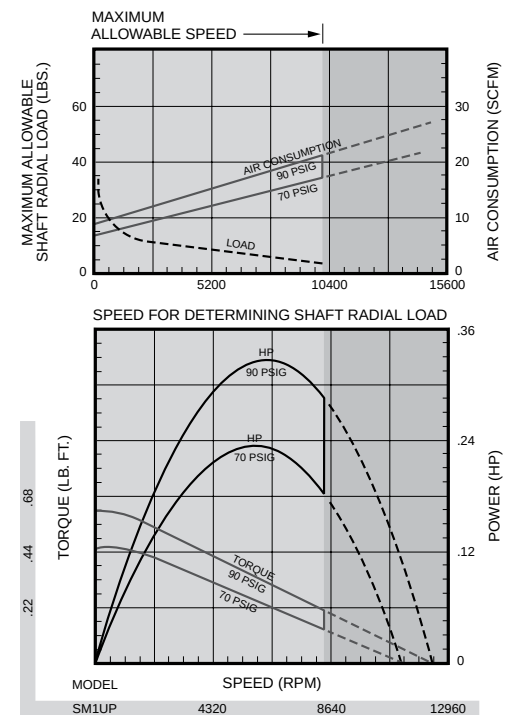
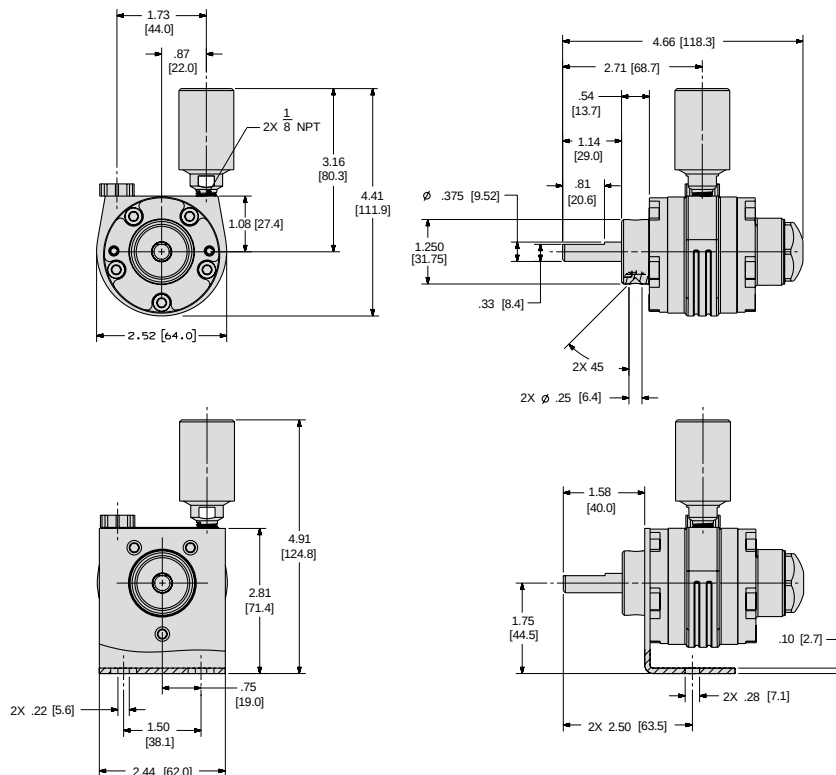
NOTE: All Select Series motors are provided in our Lube Free Four Vane design.



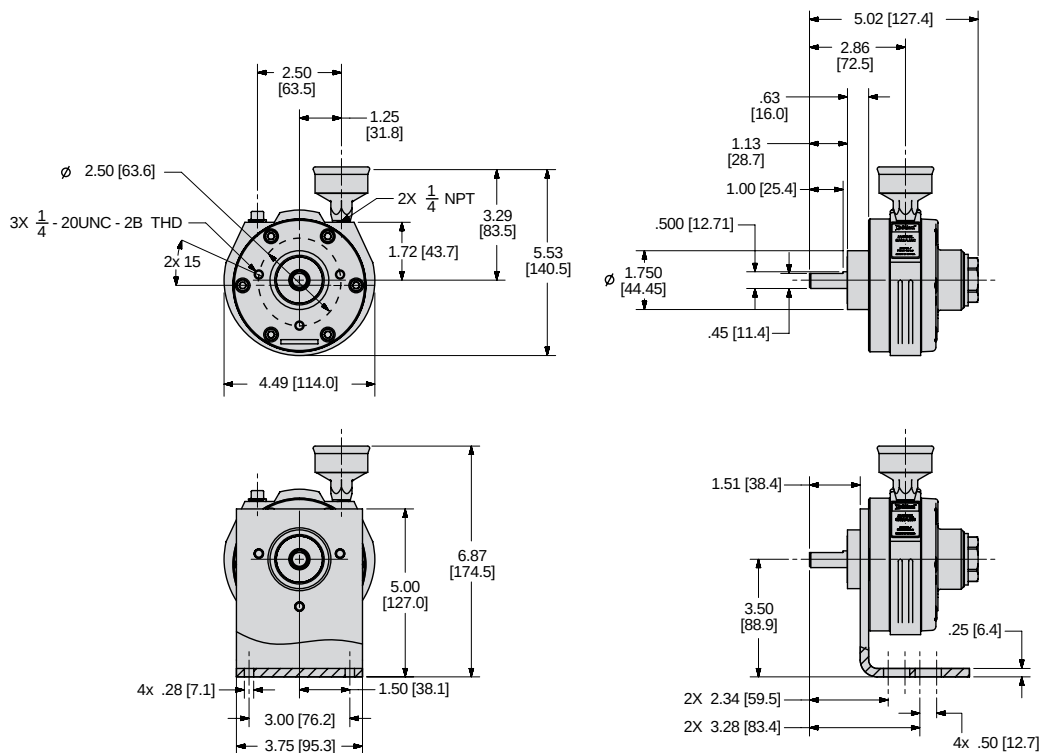
## SM1AM and SM1AM-AG587 Lube Free Multi-Vane Air Motors Footmount Dimensions



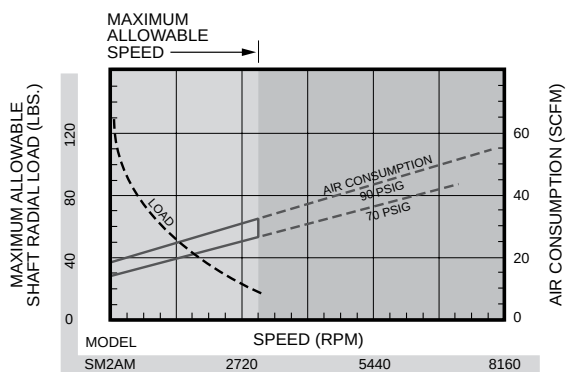
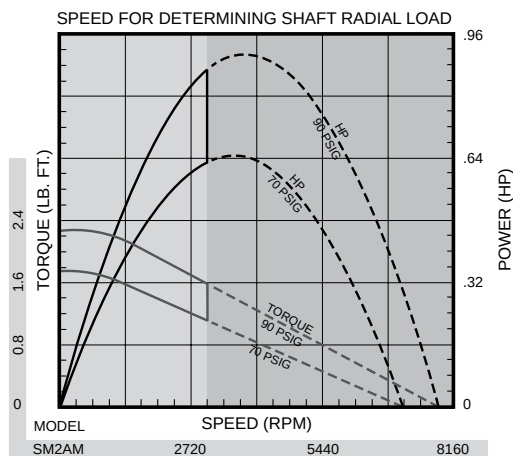
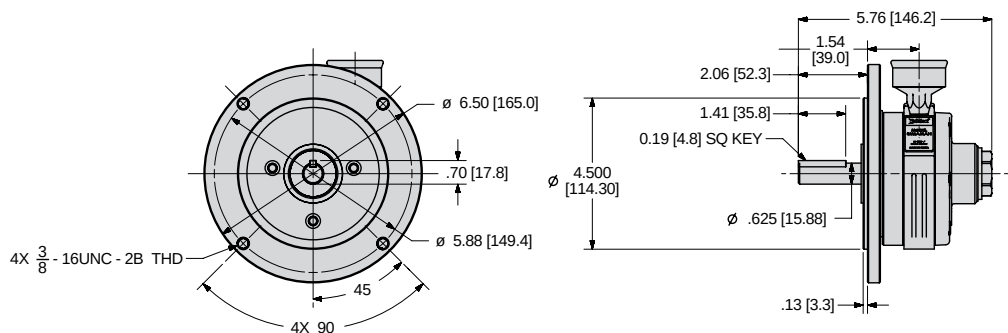
## SM1UP and SM1AM-AG587 Lube Free Multi-Vane Air Motors Footmount Dimensions



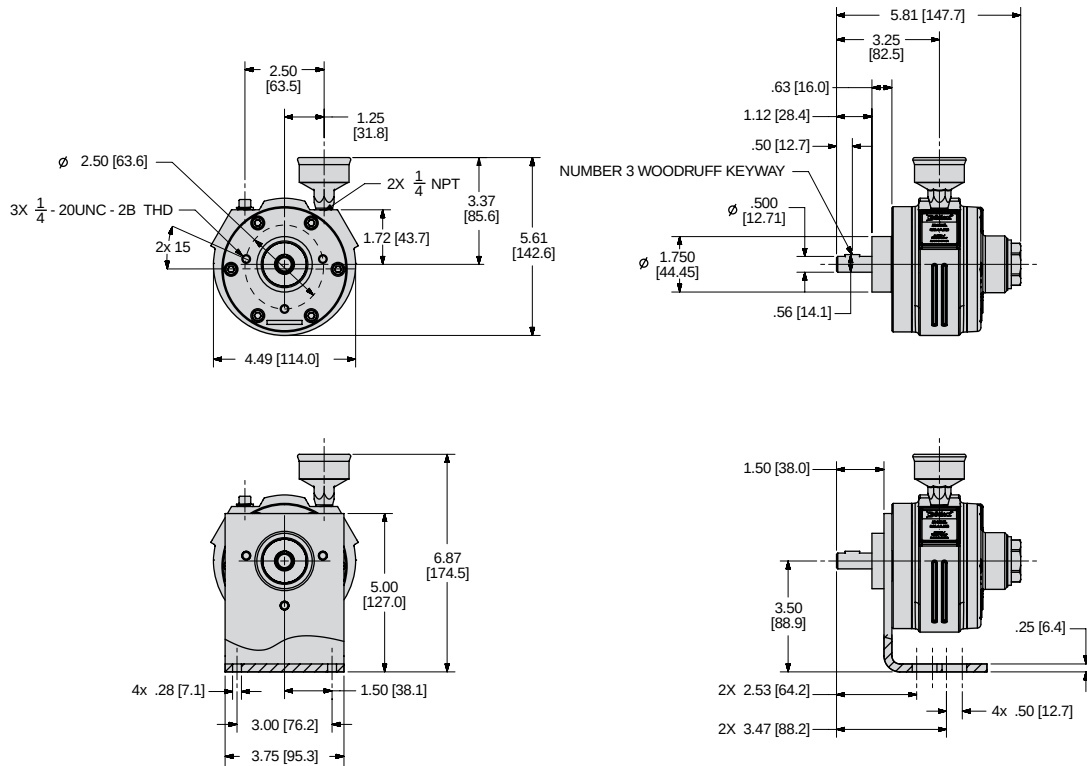
## SM2AMC and SM2AM-AH636 Lube Free Multi-Vane Air Motors Footmount Dimensions



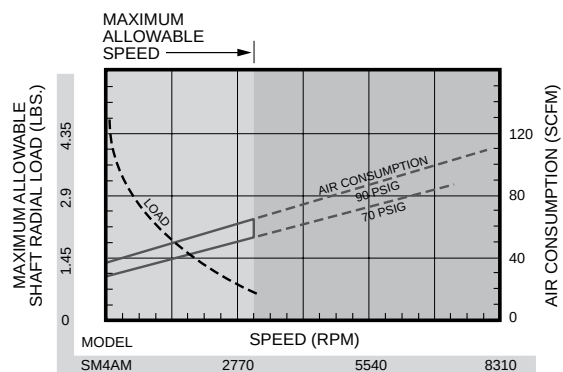
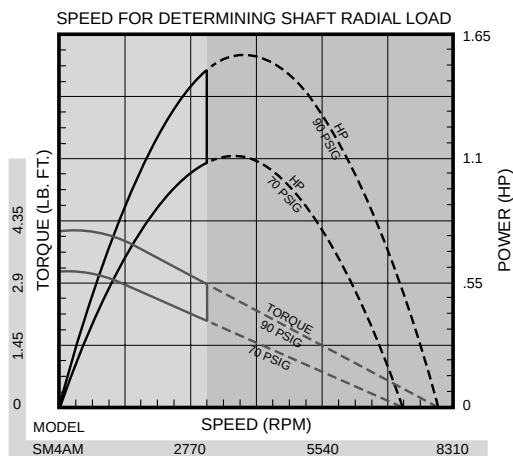
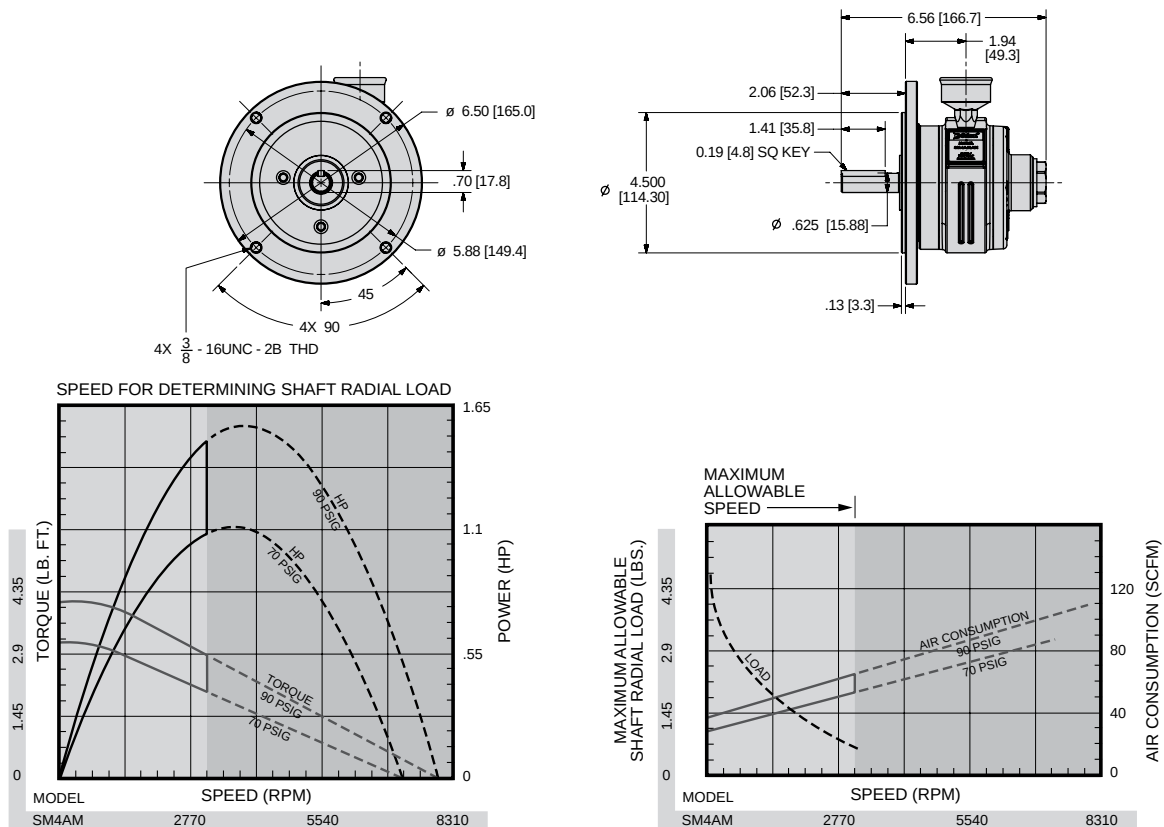
## SM2AMAN Lube Free Multi-Vane Air Motors NEMA Mount Dimensions

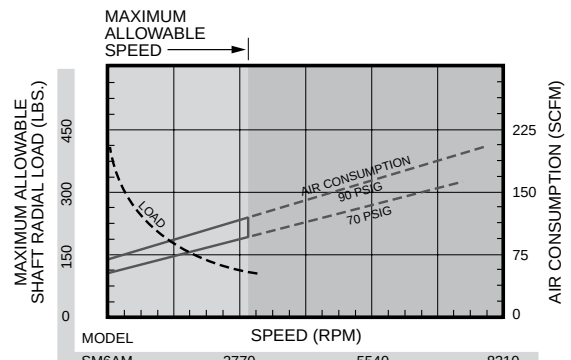


## SM4AMB and SM4AM-AH634 Lube Free Multi-Vane Air Motors Footmount Dimensions



## SM4AMAN Lube Free Multi-Vane Air Motors NEMA Mount Dimensions







## Rotary-Vane Pneumatic Milling and Sawing Motors



FIGURE 1

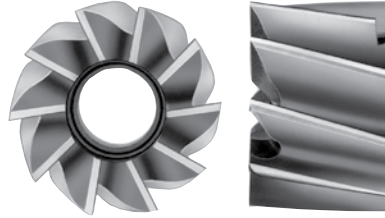


FIGURE 2



FIGURE 3



FIGURE 4

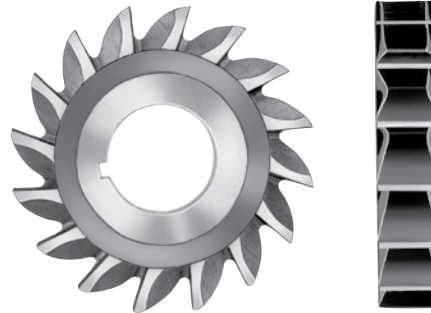


FIGURE 5

ARO milling and sawing motors have been used on such diverse applications as milling screw slots in molded fiberglass and straddle milling a 3/4" hex shape on round bar stock. For cost reduction in secondary machining, it is feasible to install a mill motor on the cross-slide of a machine to mill or spotface a slot or diameter on the outside diameter of a workpiece. ARO's mill motor range covers the majority of primary and secondary machining applications. Industrial milling cutters are available in a wide variety of kinds, sizes and shapes for specific applications. Certain basic types are normally used with ARO milling motors.

1. **End Mills.** These are designed for milling slots, keyways and pockets where arbor-type cutters cannot be applied. The cutting edges, as the name implies, are at the end of the mill rather than on the circumference.
2. **Shell End Mills.** Similar in application to standard end mills, except that they are mounted to an arbor and used whenever the diameter of a standard end mill is too small for the application.
3. **Woodruff Keyslot Cutters.** Used for cutting keyslots in arbors or shafts for standard Woodruff keys. Available in arbor-type or shank-type.
4. **Plain Metal-Slitting Saws.** These cutters are designed with teeth around the entire circumference. Sides are concave to provide clearance in cutoff operations and for slotting heads of screws and shafts.
5. **Side Milling Cutters.** Used for milling plain and flat surfaces.



Proper motor selection should be governed by the fact that motor load speed, or the point at which peak horsepower is reached, occurs at approximately one-half the catalogued free speed. Feed rate should be controlled to load the motor to peak horsepower for maximum efficiency. The load-speed column on each catalog page should be used for motor selection. Feed rate and cutting speed will determine the amount of horsepower required for a specific application.

Three factors determine correct milling motor selection:

1. Horsepower-Formula given below.
2. RPM-Refer to chart for correct speed according to type of material.
3. Feed rate on face mills, or per-tooth rate on slotting, side mills or end mills.

### FORMULA FOR MODEL SELECTION

$$HP = \frac{\text{Width of cut} \times \text{depth of cut} \times \text{feed rate per min.}}{K \text{ Factor}}$$

F, feed rate = f, feed per tooth x t, number of teeth x n,  
RPM of cutter. Alternately, see reference chart.

$$RPM = \frac{4 \times \text{SFM or surface feet per minute}}{D, \text{ diameter of cutter in inches}}$$

### K Factors for Common Materials

| Material       | K   | Material  | K   | Material               | K   | Material                | K  |
|----------------|-----|-----------|-----|------------------------|-----|-------------------------|----|
| Magnesium      | 4.0 | Cast Iron | 1.5 | To 400                 | .5  | 220,000-260,000 p.s.i.  | .4 |
| Aluminum       | 4.0 | Ferritic  | 1.0 | To 500                 | .4  | 260,000-300,000 p.s.i.  | .3 |
| Copper         | 2.0 | Pearlitic | .6  | Stainless Steel        | 1.0 | High Temperature Alloys | .4 |
| Brass          | 2.5 | Chilled   | 1.0 | Free Machining         | .6  | Nickel Base             | .4 |
| Bronze         | 2.0 | Steel     | 1.0 | Other                  | .5  | Cobalt Base             | .4 |
| Malleable Iron | 1.0 | To 150    | .8  | High-Tensile Alloys    | .5  | Austenitic              | .4 |
|                |     | To 300    |     | 180,000-220,000 p.s.i. |     |                         |    |

### REFERENCE CHART

| Work Material                                                                        | Hardness BHN       | Speed R.P.M.       | Feed Per Minute Face Mills | Feed Per Tooth         |                        | Work Material          | Hardness BHN          | Speed R.P.M.                | Feed Per Minute Face Mills | Feed Per Tooth         |                        |
|--------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------|------------------------|------------------------|------------------------|-----------------------|-----------------------------|----------------------------|------------------------|------------------------|
|                                                                                      |                    |                    |                            | Slotting & Side Mills  | End Mills              |                        |                       |                             |                            | Slotting & Side Mills  | End Mills              |
| Free Machining Steels, Plain Carbon Steels, Alloy Steels, Series 400 & 500 Stainless | 150                | 500-900            | .010-.014                  | .008-.010              | .002-.004              | Magnesium Alloys       | —                     | 900-1600                    | .012-.018                  | .010-.014              | .003-.005              |
|                                                                                      | 200                | 450-800            | .010-.014                  | .008-.010              | .002-.004              |                        | Aluminum Alloys       | Low Silicon<br>High Silicon | 1200-1800<br>900-1200      | .012-.018<br>.008-.012 | .010-.014<br>.008-.010 |
|                                                                                      | 250                | 400-700            | .008-.010                  | .006-.008              | .001-.003              |                        |                       |                             |                            |                        |                        |
|                                                                                      | 300                | 350-600            | .008-.010                  | .006-.008              | .001-.003              |                        |                       |                             |                            |                        |                        |
|                                                                                      | 350                | 300-450            | .006-.008                  | .004-.006              | .001-.003              |                        |                       |                             |                            |                        |                        |
| Series 200-300 Stainless Sheets                                                      | 150-250            | 250-450            | .006-.010                  | .006-.008              | .001-.003              | Titanium Pure          | 100-275               | 250-350                     | .004-.006                  | .004-.006              | .002-.003              |
| Hot Work Tool Steels                                                                 | 150-250<br>200-250 | 350-450<br>250-350 | .010-.012<br>.008-.010     | .006-.010<br>.005-.008 | .001-.003<br>.001-.002 | Copper Alloys          | 20-70 RB<br>60-100 RB | 900-1300<br>800-1000        | .012-.016<br>.008-.012     | .008-.012<br>.007-.010 | .003-.004<br>.002-.004 |
| Cold Work Tool Steels                                                                | 200-250            | 250-350            | .007-.010                  | .005-.008              | .001-.003              | Brass & Bronze         | To 200                | 600-900                     | .010-.012                  | .008-.010              | .003-.004              |
| High-Manganese Steel                                                                 | 170-220            | 100-200            | .007-.010                  | .005-.008              | .002-.003              | Zinc Alloys            | Cast                  | 800-1100                    | .006-.009                  | .005-.008              | .002-.003              |
| Gray Cast Iron                                                                       | 110-220<br>220-320 | 300-400<br>125-250 | .012-.016<br>.008-.012     | .008-.012<br>.006-.010 | .002-.004<br>.002-.003 | Manganese              | 140-220               | 150-200                     | .005-.008                  | .004-.006              | .002-.004              |
| Nodular Iron                                                                         | 140-250<br>250-400 | 325-450<br>225-300 | .012-.016<br>.008-.012     | .008-.012<br>.006-.010 | .002-.004<br>.002-.003 | Thermoplastics         | —                     | 500-1100                    | .006-.010                  | .005-.008              | .003-.005              |
| Malleable Iron                                                                       | 110-220<br>200-280 | 250-350<br>200-300 | .012-.016<br>.008-.012     | .008-.012<br>.006-.010 | .002-.004<br>.002-.003 | Thermosetting Plastics | —                     | 500-1100                    | .006-.010                  | .005-.008              | .003-.005              |

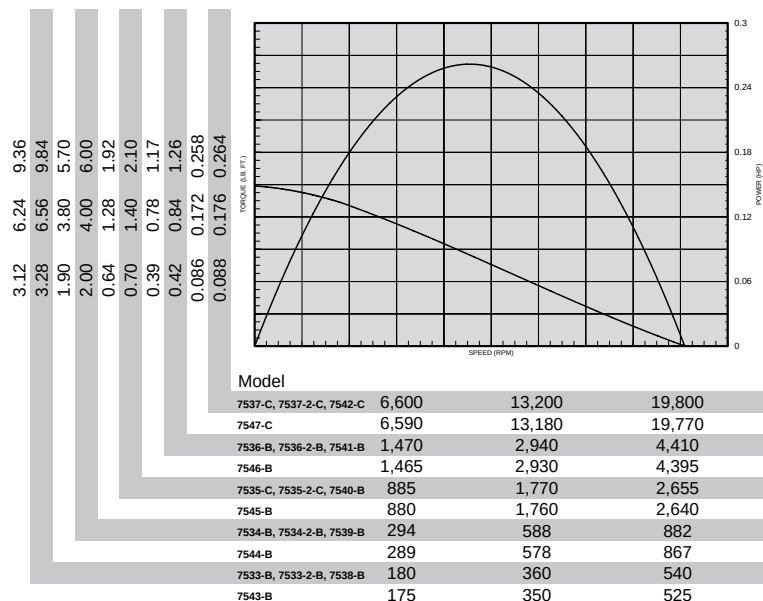
## 000-Series Forward-Rotation Milling Motors (1/4" Capacity)

### Specifications

| TORQUE                    |                                       |        |        |       |       |      |         |        |      |             |       |             |        | AIR    |         |      |    |
|---------------------------|---------------------------------------|--------|--------|-------|-------|------|---------|--------|------|-------------|-------|-------------|--------|--------|---------|------|----|
|                           |                                       | R.P.M. |        |       |       |      |         | OUTPUT |      | CONSUMPTION |       | SOUND LEVEL |        |        |         | GEAR |    |
| MODEL                     | SPINDLE                               | FREE   | LOAD   | SPEED | STALL |      |         | @MAX.  | H.P. | @FREE       | SPEED | @FREE       | SPEED  | WEIGHT |         | GEAR |    |
|                           |                                       | SPEED  | @MAX.  |       |       | H.P. | lb. ft. |        |      |             |       |             |        | Nm     | lb. ft. |      | Nm |
| NON-REVERSIBLE - .25 H.P. |                                       |        |        |       |       |      |         |        |      |             |       |             |        |        |         |      |    |
| 7533-2-B                  | 1/4"<br>Maximum<br>Collet<br>Capacity | 550    | 325    | 8.2   | 10.6  | 4.0  | 5.1     | 18.1   | 8.5  | 75          | 2.07  | .93         | Double |        |         |      |    |
| 7534-2-B                  |                                       | 900    | 550    | 5.0   | 6.4   | 2.4  | 3.2     | 18.1   | 8.5  | 75          | 2.07  | .93         | Double |        |         |      |    |
| 7535-2-C                  |                                       | 2,700  | 1,600  | 1.75  | 2.2   | .82  | 1.1     | 18.1   | 8.5  | 75          | 1.77  | .80         | Single |        |         |      |    |
| 7536-2-B                  |                                       | 4,500  | 2,700  | 1.05  | 1.3   | .49  | .6      | 18.1   | 8.5  | 75          | 1.77  | .80         | Single |        |         |      |    |
| 7537-2-C                  |                                       | 20,000 | 12,000 | .22   | .30   | .11  | .1      | 18.1   | 8.5  | 75          | 1.77  | .80         | Single |        |         |      |    |

| Collet<br>Insert No. | Size  | Minimum Capacity |      | Maximum Capacity |      |
|----------------------|-------|------------------|------|------------------|------|
|                      |       | Inches           | mm   | Inches           | mm   |
| 31812-1              | 3/64" | 1/64"            | .40  | 3/64"            | 1.19 |
| 31812-2              | 5/64" | 3/64"            | 1.19 | 5/64"            | 1.98 |
| 31812-3              | 3/32" | 1/16"            | 1.59 | 3/32"            | 2.38 |
| 31812-4              | 1/8"  | 3/32"            | 2.38 | 1/8"             | 3.18 |
| 31812-5              | 5/32" | 1/8"             | 3.18 | 5/32"            | 3.97 |
| 31812-6              | 3/16" | 5/32"            | 3.97 | 3/16"            | 4.76 |
| 31812-7              | 7/32" | 3/16"            | 4.76 | 7/32"            | 5.56 |
| 31812-8              | 1/4"  | 7/32"            | 5.56 | 1/4"             | 6.35 |

Approx. Tooling Penetration - 1 1/8" (28.6mm)



### Standard Equipment

Steel motor housing, flush-type grease fittings at rotation points for gear and bearing lubrication, exhaust manifold rotatable within 360°, muffler, integral collet spindle with 31812-8 1/4" capacity collet for end mills and Woodruff key slot cutters, duplex bearing on drive spindle for maximum radial support.



### No Cost Option

Another size collet insert may be substituted for the standard 1/4" capacity insert. Specify collet insert 31812-( ) in the desired size from the chart above.

### Equipment Options

- 41563 Flange Bracket
- 45088 Foot Bracket

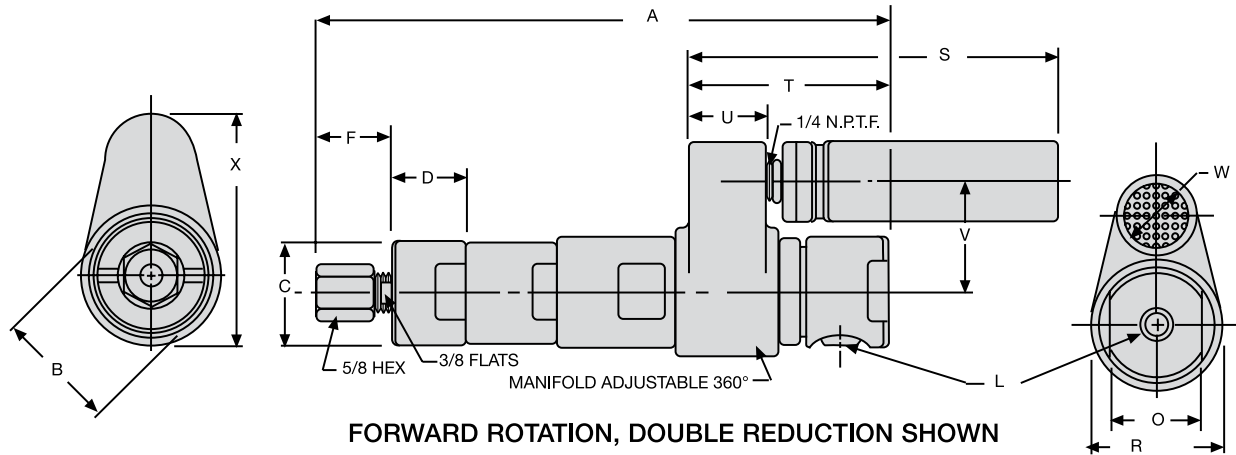


45088 FOOT  
MOUNTING  
BRACKET



41563 FLANGE  
MOUNTING  
BRACKET

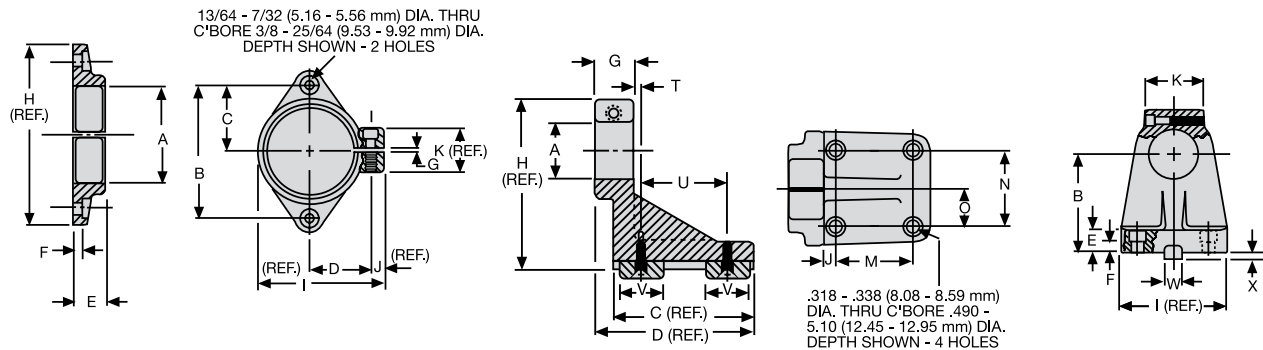
## 000-Series Milling Motors and Mounting Accessory Dimensions



| Models                         | Gear Reduction | Dimension A       |
|--------------------------------|----------------|-------------------|
| 7535-2-C, 7536-2-B<br>7537-2-C | Single         | 5-15/16<br>151 mm |
| 7533-2-B, 7534-2-B             | Double         | 7<br>178 mm       |

| Scale  | B     | C              | D              | F                  | L            | O     | R     |
|--------|-------|----------------|----------------|--------------------|--------------|-------|-------|
| Inches | 1-3/8 | 1.311<br>1.312 | .870<br>.890   | 15/16<br>(Approx.) | 1/8<br>NPTF  | 1-1/8 | 1-5/8 |
| mm     | 35    | 33.30<br>33.32 | 22.10<br>22.61 | 24<br>(Approx.)    | Air<br>Inlet | 28    | 41    |

| Scale  | S      | T       | U     | V     | W  | X       |
|--------|--------|---------|-------|-------|----|---------|
| Inches | 4-9/16 | 2-15/32 | 31/32 | 1-3/8 | 1  | 2-11/16 |
| mm     | 116    | 63      | 25    | 35    | 25 | 68      |



### 41563 FLANGE MOUNTING BRACKET

| Scale  | A              | B              | C              | D              | E              | F            |
|--------|----------------|----------------|----------------|----------------|----------------|--------------|
| Inches | 1.312<br>1.314 | 2.745<br>2.755 | 1.370<br>1.380 | 1.240<br>1.260 | .490<br>.510   | .146<br>.166 |
| mm     | 33.32<br>33.38 | 69.72<br>69.98 | 34.80<br>35.05 | 31.50<br>32.00 | 12.45<br>12.95 | 3.71<br>4.22 |

| Scale  | G            | H     | I      | J    | K     |
|--------|--------------|-------|--------|------|-------|
| Inches | 1/64<br>3/64 | 3-3/8 | 2-9/16 | 1/4  | 1     |
| mm     | 0.40<br>1.19 | 85.73 | 65.09  | 6.35 | 25.40 |

### 45088 FOOT MOUNTING BRACKET

| Scale  | A              | B              | C     | D       | E              | F            | G              | H      | I     | J            |
|--------|----------------|----------------|-------|---------|----------------|--------------|----------------|--------|-------|--------------|
| Inches | 1.312<br>1.313 | 2.749<br>2.751 | 3-1/4 | 3-11/16 | .609<br>.640   | .296<br>.328 | .875<br>.973   | 4      | 3     | .343<br>.375 |
| mm     | 33.32<br>33.35 | 69.82<br>69.88 | 82.55 | 93.66   | 15.47<br>16.26 | 7.52<br>8.33 | 22.23<br>23.80 | 101.60 | 76.20 | 8.71<br>9.53 |

| Scale  | K              | M              | N              | O              | T            | U              | V              | W              | X            |
|--------|----------------|----------------|----------------|----------------|--------------|----------------|----------------|----------------|--------------|
| Inches | 1.542<br>1.582 | 1.995<br>2.005 | 1.995<br>2.005 | .995<br>1.005  | .140<br>.156 | 1.984<br>2.015 | .985<br>1.015  | .499<br>.500   | .173<br>.198 |
| mm     | 39.17<br>40.18 | 50.67<br>50.93 | 50.67<br>50.93 | 25.27<br>25.53 | 3.56<br>3.96 | 50.39<br>51.18 | 25.02<br>25.78 | 12.67<br>12.70 | 4.39<br>5.03 |

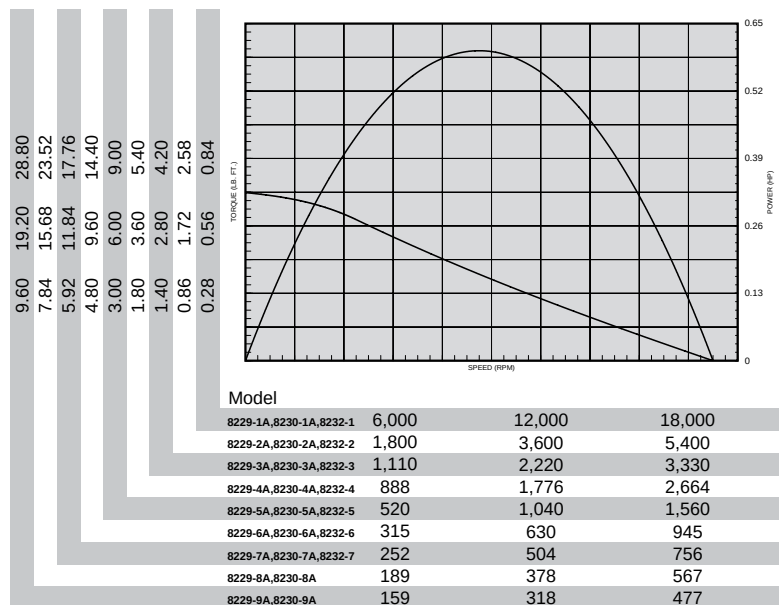
## O-Series Forward-Rotation Milling Motors

### Specifications

| TORQUE                    |                              |            |                 |               |      |                       |      |            |      |             |                 |             |           | AIR |  |      |  |
|---------------------------|------------------------------|------------|-----------------|---------------|------|-----------------------|------|------------|------|-------------|-----------------|-------------|-----------|-----|--|------|--|
|                           |                              | R.P.M.     |                 |               |      |                       |      | OUTPUT     |      | CONSUMPTION |                 | SOUND LEVEL |           |     |  | GEAR |  |
| MODEL                     | SPINDLE                      | FREE SPEED | LOAD @MAX. H.P. | STALL lb. ft. | Nm   | @MAX. H.P. lb. ft. Nm |      | @FREE SCFM | L/s  | @FREE dB(A) | WEIGHT lbs. kg. |             | REDUCTION |     |  |      |  |
| NON-REVERSIBLE - .60 H.P. |                              |            |                 |               |      |                       |      |            |      |             |                 |             |           |     |  |      |  |
| 8232-1                    | 1/4" Maximum Collet Capacity | 19,000     | 9,800           | .70           | .9   | .32                   | .4   | 41.0       | 19.4 | 80          | 2.87            | 1.29        | Single    |     |  |      |  |
| 8232-2                    |                              | 5,700      | 2,900           | 2.15          | 2.9  | 1.10                  | 1.5  | 41.0       | 19.4 | 80          | 2.87            | 1.29        | Single    |     |  |      |  |
| 8232-3                    |                              | 3,500      | 1,750           | 3.50          | 4.7  | 1.80                  | 2.4  | 41.0       | 19.4 | 80          | 2.87            | 1.29        | Single    |     |  |      |  |
| 8232-4                    |                              | 2,800      | 1,400           | 4.50          | 6.1  | 2.20                  | 3.0  | 41.0       | 19.4 | 80          | 2.87            | 1.29        | Single    |     |  |      |  |
| 8232-5                    |                              | 1,650      | 840             | 7.50          | 10.2 | 3.80                  | 5.1  | 41.0       | 19.4 | 80          | 3.62            | 1.63        | Double    |     |  |      |  |
| 8232-6                    |                              | 1,000      | 500             | 12.00         | 16.3 | 6.20                  | 8.4  | 41.0       | 19.4 | 80          | 3.62            | 1.63        | Double    |     |  |      |  |
| 8232-7                    |                              | 800        | 390             | 14.80         | 20.0 | 8.00                  | 10.8 | 41.0       | 19.4 | 80          | 3.62            | 1.63        | Double    |     |  |      |  |

| Collet Insert No. | Size  | Minimum Capacity |      | Maximum Capacity |      |
|-------------------|-------|------------------|------|------------------|------|
|                   |       | Inches           | mm   | Inches           | mm   |
| 31812-1           | 3/64" | 1/64"            | .40  | 3/64"            | 1.19 |
| 31812-2           | 5/64" | 3/64"            | 1.19 | 5/64"            | 1.98 |
| 31812-3           | 3/32" | 1/16"            | 1.59 | 3/32"            | 2.38 |
| 31812-4           | 1/8"  | 3/32"            | 2.38 | 1/8"             | 3.18 |
| 31812-5           | 5/32" | 1/8"             | 3.18 | 5/32"            | 3.97 |
| 31812-6           | 3/16" | 5/32"            | 3.97 | 3/16"            | 4.76 |
| 31812-7           | 7/32" | 3/16"            | 4.76 | 7/32"            | 5.56 |
| 31812-8           | 1/4"  | 7/32"            | 5.56 | 1/4"             | 6.35 |

Approx. Tooling Penetration - 1 1/4" (31.8mm)



### Standard Equipment

Steel motor housing, flush-type grease fittings at rotation points for gear and bearing lubrication, exhaust manifold rotatable within 360°, muffler, integral collet spindle with 31812-8 1/4" capacity collet for end mills and Woodruff key slot cutters, duplex bearing on drive spindle for maximum radial support.



### No Cost Option

Another size collet insert may be substituted for the standard 1/4" capacity insert. Specify collet insert 31812-( ) in the desired size from the chart above.

### Equipment Options

45057 Foot Bracket

41561 Flange Bracket

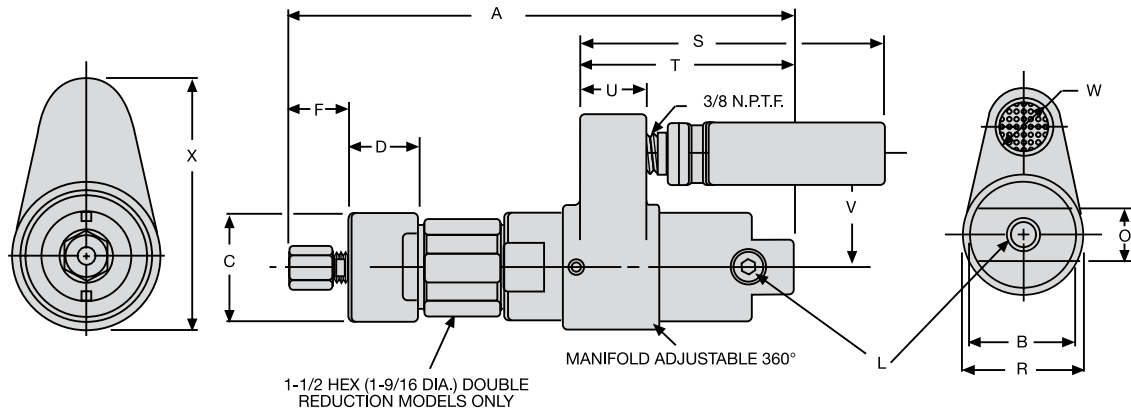


45057 FOOT MOUNTING BRACKET



41561 FLANGE MOUNTING BRACKET

## O-Series Milling Motors and Mounting Accessory Dimensions

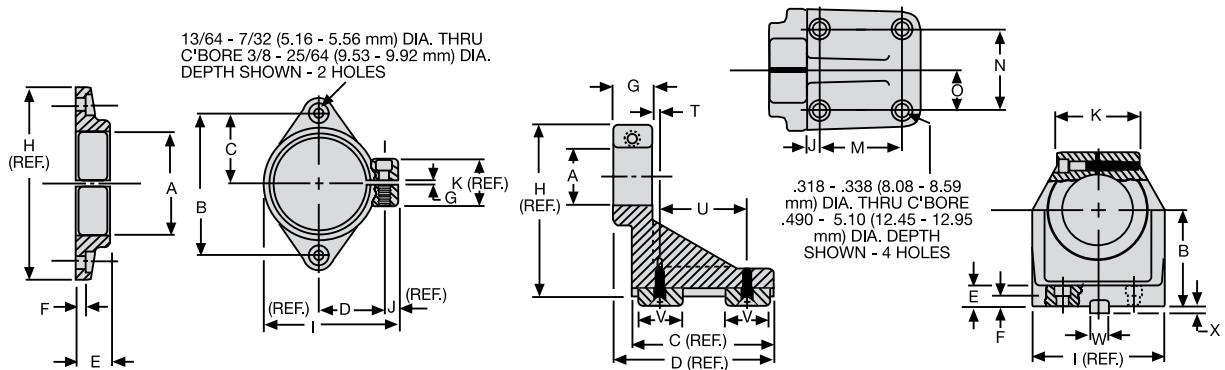


FORWARD ROTATION, DOUBLE REDUCTION SHOWN

| Models   | Gear Reduction | Dimension A      |
|----------|----------------|------------------|
| 8232-( ) | Single         | 6-7/8<br>175 mm  |
|          | Double         | 8-3/16<br>208 mm |

| Scale  | B     | C              | D      | F                  | L            | O   | R  |
|--------|-------|----------------|--------|--------------------|--------------|-----|----|
| Inches | 1-3/4 | 1.740<br>1.739 | 1-5/32 | 15/16<br>(Approx.) | 1/4<br>NPTF  | 7/8 | 2  |
| mm     | 44    | 44.20<br>44.17 | 29     | 24<br>(Approx.)    | Air<br>Inlet | 22  | 51 |

| Scale  | S     | T       | U      | V       | W  | X      |
|--------|-------|---------|--------|---------|----|--------|
| Inches | 4-7/8 | 3-13/32 | 1-1/16 | 1-13/16 | 1  | 3-7/16 |
| mm     | 124   | 86      | 27     | 46      | 25 | 87     |



41561 FLANGE MOUNTING BRACKET

| Scale  | A              | B              | C              | D              | E              | F            |
|--------|----------------|----------------|----------------|----------------|----------------|--------------|
| Inches | 1.741<br>1.740 | 2.745<br>2.755 | 1.370<br>1.380 | 1.240<br>1.260 | .490<br>.510   | .146<br>.166 |
| mm     | 44.22<br>44.20 | 69.72<br>69.98 | 34.80<br>35.05 | 31.50<br>32.00 | 12.45<br>12.95 | 3.71<br>4.22 |

| Scale  | G            | H     | I      | J    | K     |
|--------|--------------|-------|--------|------|-------|
| Inches | 1/64<br>3/64 | 3-3/8 | 2-9/16 | 1/4  | 1     |
| mm     | 0.40<br>1.19 | 85.73 | 65.09  | 6.35 | 25.40 |

45057 FOOT MOUNTING BRACKET

| Scale  | A              | B              | C      | D     | E              | F            | G     | H      | I     | J            |
|--------|----------------|----------------|--------|-------|----------------|--------------|-------|--------|-------|--------------|
| Inches | 1.741<br>1.740 | 2.749<br>2.751 | 3-9/16 | 3-3/4 | .609<br>.640   | .296<br>.328 | 1"    | 4-3/8  | 3-3/4 | .296<br>.328 |
| mm     | 44.22<br>44.20 | 69.82<br>69.88 | 90.49  | 95.25 | 15.47<br>16.26 | 7.52<br>8.33 | 25.40 | 111.13 | 95.25 | 7.52<br>8.33 |

| Scale  | K              | M              | N              | O              | T            | U              | V              | W              | X            |
|--------|----------------|----------------|----------------|----------------|--------------|----------------|----------------|----------------|--------------|
| Inches | 2.343<br>2.406 | 1.995<br>2.005 | 1.995<br>2.005 | .995<br>1.005  | .109<br>.140 | 1.984<br>2.015 | .985<br>1.015  | .499<br>.500   | .173<br>.198 |
| mm     | 59.41<br>61.11 | 50.67<br>50.93 | 50.67<br>50.93 | 25.27<br>25.53 | 2.77<br>3.56 | 50.39<br>51.18 | 25.02<br>25.78 | 12.67<br>12.70 | 4.39<br>5.03 |

## 2200-Series Forward-Rotation Milling Motors

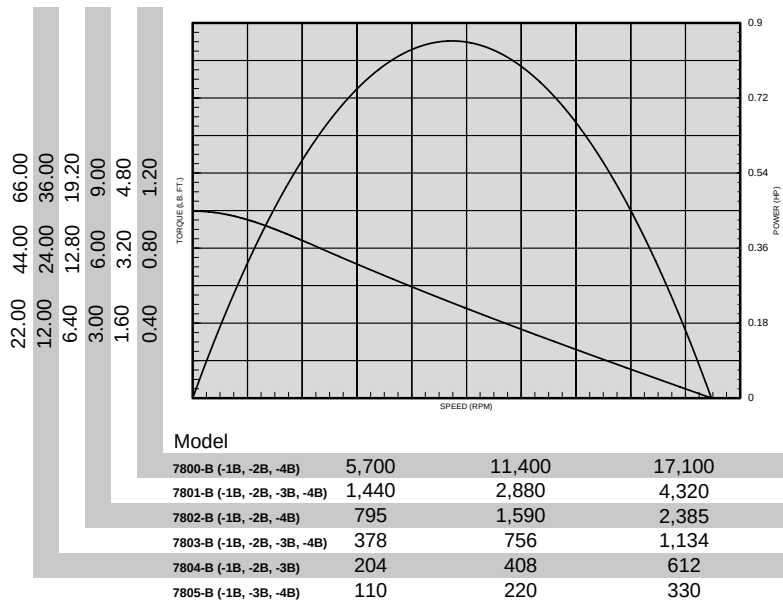
### Specifications

| TORQUE                    |                                       |            |               |       |       |       |      |        |            |             |      |             |             |     | AIR         |       |        |     |    |           |
|---------------------------|---------------------------------------|------------|---------------|-------|-------|-------|------|--------|------------|-------------|------|-------------|-------------|-----|-------------|-------|--------|-----|----|-----------|
|                           |                                       | R.P.M.     |               |       |       |       |      | OUTPUT |            | CONSUMPTION |      | SOUND LEVEL |             |     |             | GEAR  |        |     |    |           |
| MODEL                     | SPINDLE                               | FREE SPEED | LOAD @MAX H P | SPEED | STALL | lb    | ft   | Nm     | @MAX. H.P. | lb          | ft   | Nm          | @FREE SPEED | L/s | @FREE SPEED | dB(A) | WEIGHT | lbs | kg | REDUCTION |
| NON-REVERSIBLE - .85 H.P. |                                       |            |               |       |       |       |      |        |            |             |      |             |             |     |             |       |        |     |    |           |
| 7800-2B                   | 3/8"<br>Maximum<br>Collet<br>Capacity | 18,000     | 9,000         | 1.00  | 1.4   | .50   | .68  | 41.7   | 19.7       | 78          | 4.89 | 2.20        | Single      |     |             |       |        |     |    |           |
| 7801-2B                   |                                       | 4,600      | 2,400         | 4.00  | 5.5   | 1.86  | 2.5  | 41.7   | 19.7       | 78          | 4.89 | 2.20        | Single      |     |             |       |        |     |    |           |
| 7802-2B                   |                                       | 2,500      | 1,300         | 7.50  | 10.3  | 3.43  | 4.7  | 41.7   | 19.7       | 78          | 4.89 | 2.20        | Single      |     |             |       |        |     |    |           |
| 7803-2B                   |                                       | 1,200      | 600           | 16.00 | 21.9  | 7.44  | 10.2 | 41.7   | 19.7       | 78          | 6.39 | 2.86        | Double      |     |             |       |        |     |    |           |
| 7804-2B                   |                                       | 650        | 320           | 30.00 | 41.2  | 13.95 | 19.1 | 41.7   | 19.7       | 78          | 6.39 | 2.86        | Double      |     |             |       |        |     |    |           |

### COLLET SLEEVES

| Collet Insert No. | Size   | Minimum Capacity |      | Maximum Capacity |      |
|-------------------|--------|------------------|------|------------------|------|
|                   |        | Inches           | mm   | Inches           | mm   |
| 32968-1           | 1/8"   | 3/32"            | 2.38 | 1/8"             | 3.18 |
| 32968-2           | 5/32"  | 1/8"             | 3.18 | 5/32"            | 3.97 |
| 32968-3           | 3/16"  | 5/32"            | 3.97 | 3/16"            | 4.76 |
| 32968-4           | 7/32"  | 3/16"            | 4.76 | 7/32"            | 5.56 |
| 32968-5           | 1/4"   | 7/32"            | 5.56 | 1/4"             | 6.35 |
| 32968-6           | 9/32"  | 1/4"             | 6.35 | 9/32"            | 7.14 |
| 32968-7           | 5/16"  | 9/32"            | 7.14 | 5/16"            | 7.94 |
| 32968-8           | 11/32" | 5/16"            | 7.94 | 11/32"           | 8.73 |
| 32968-9           | 3/8"   | 11/32"           | 8.73 | 3/8"             | 9.53 |

### Approx. Tooling Penetration - 2" (51 mm)



### Standard Equipment

Steel motor housing, flush-type grease fittings at rotation points for gear and bearing lubrication, exhaust manifold rotatable within 360°, muffler, integral collet spindle with 32968-9 3/8" capacity collet for end mills and Woodruff key slot cutters, duplex bearing support on drive spindle for maximum radial support.



### No Cost Option

Another size collet insert may be substituted for the standard 3/8" capacity insert. Specify collet insert 32968-() in the desired size from the chart above.

### Equipment Options

- 45058 Foot Bracket
- 41559 Flange Bracket



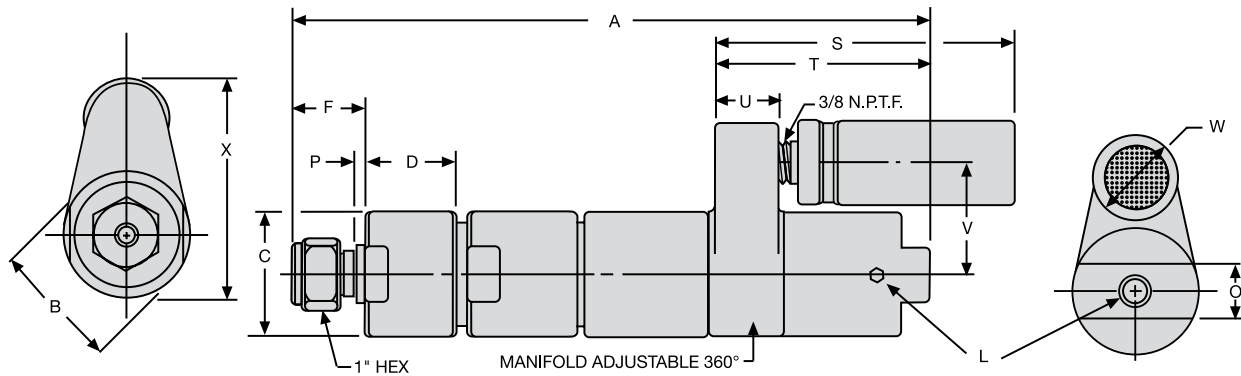
**45058 FOOT MOUNTING BRACKET**



**41559 FLANGE MOUNTING BRACKET**



## 2200-Series Milling Motors and Mounting Accessory Dimensions

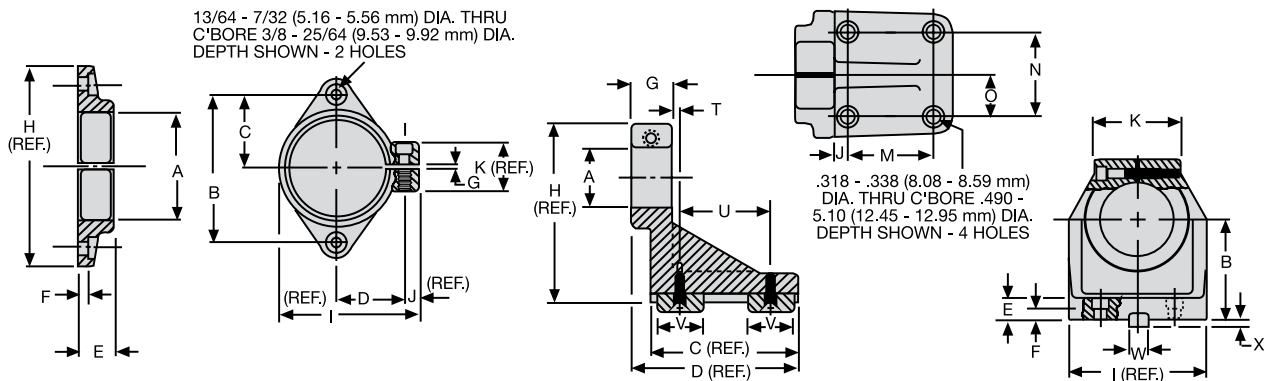


FORWARD ROTATION, DOUBLE REDUCTION SHOWN

| Models                    | Gear Reduction | Dimension A       |
|---------------------------|----------------|-------------------|
| 7800-2B, 7801-2B, 7802-2B | Single         | 8-11/32<br>212 mm |
| 7803-2B, 7804-2B, 7805-2B | Double         | 10-1/16<br>255 mm |

| Scale  | B  | C              | D              | F                   | L                           | O   |
|--------|----|----------------|----------------|---------------------|-----------------------------|-----|
| Inches | 2  | 2.001<br>2.000 | 1.422<br>1.452 | 1-5/32<br>(Approx.) | 1/4<br>NPTF<br>Air<br>Inlet | 7/8 |
| mm     | 51 | 50.80<br>50.83 | 36.12<br>36.88 | 29<br>(Approx.)     |                             | 22  |

| Scale  | P            | S     | T     | U      | V       | W     | X     |
|--------|--------------|-------|-------|--------|---------|-------|-------|
| Inches | .097<br>.157 | 4-7/8 | 3-1/2 | 1-1/16 | 1-13/16 | 1-3/8 | 3-1/2 |
| mm     | 2.46<br>3.99 | 124   | 89    | 27     | 46      | 35    | 89    |



41559 FLANGE MOUNTING BRACKET

45058 FOOT MOUNTING BRACKET

| Scale  | A              | B              | C              | D              | E              | F            |
|--------|----------------|----------------|----------------|----------------|----------------|--------------|
| Inches | 2.000<br>2.002 | 2.990<br>3.010 | 1.490<br>1.510 | 1.365<br>1.385 | .661<br>.681   | .177<br>.197 |
| mm     | 50.80<br>50.85 | 75.95<br>76.45 | 37.85<br>38.35 | 34.67<br>35.18 | 16.79<br>17.30 | 4.50<br>5.00 |

| Scale  | A              | B              | C      | D     | E              | F            | G     | H      | I     | J            |
|--------|----------------|----------------|--------|-------|----------------|--------------|-------|--------|-------|--------------|
| Inches | 2.000<br>2.001 | 2.749<br>2.751 | 3-9/16 | 3-3/4 | .609<br>.640   | .296<br>.328 | 1"    | 4-3/8  | 3-3/4 | .296<br>.328 |
| mm     | 50.80<br>50.83 | 69.82<br>69.88 | 90.49  | 95.25 | 15.47<br>16.26 | 7.52<br>8.33 | 25.40 | 111.13 | 95.25 | 7.52<br>8.33 |

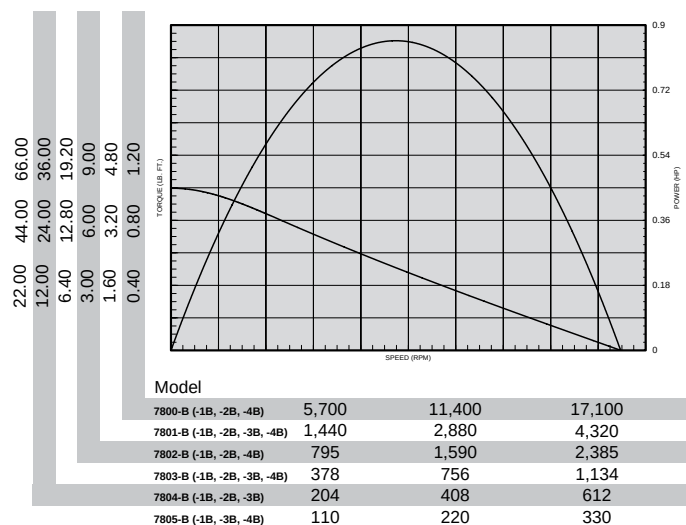
| Scale  | G            | H     | I     | J    | K     |
|--------|--------------|-------|-------|------|-------|
| Inches | 1/64<br>3/64 | 3-5/8 | 2-7/8 | 5/16 | 1     |
| mm     | 0.40<br>1.19 | 92.08 | 73.03 | 7.94 | 25.40 |

| Scale  | K              | M              | N              | O              | T            | U              | V              | W              | X            |
|--------|----------------|----------------|----------------|----------------|--------------|----------------|----------------|----------------|--------------|
| Inches | 2.343<br>2.406 | 1.995<br>2.005 | 1.995<br>2.005 | .995<br>1.005  | .109<br>.140 | 1.984<br>2.015 | .985<br>1.015  | .499<br>.500   | .173<br>.198 |
| mm     | 59.41<br>61.11 | 50.67<br>50.93 | 50.67<br>50.93 | 25.27<br>25.53 | 2.77<br>3.56 | 50.39<br>51.18 | 25.02<br>25.78 | 12.67<br>12.70 | 4.39<br>5.03 |

## 2200-Series Forward-Rotation Straddle Mount Milling Motors

### Specifications

| NON-REVERSIBLE - .85 H.P. |                            |        |       |         |      |               |      |                 |       |             |        |      |        |           |
|---------------------------|----------------------------|--------|-------|---------|------|---------------|------|-----------------|-------|-------------|--------|------|--------|-----------|
| MODEL                     | SPINDLE                    | R.P.M. |       | TORQUE  |      | TORQUE OUTPUT |      | AIR CONSUMPTION |       | SOUND LEVEL | WEIGHT |      | GEAR   |           |
|                           |                            | FREE   | LOAD  | STALL   |      | @MAX.         | H.P. | @FREE           | SPEED | @FREE       | SPEED  | lbs. | kg.    | REDUCTION |
|                           |                            | SPEED  | @MAX. | lb. ft. | Nm   | lb. ft.       | Nm   | SCFM            | L/s   | dB(A)       |        |      |        |           |
| 7801-3B                   | 7/16"-20                   | 4,600  | 2,400 | 4.00    | 5.5  | 1.86          | 2.5  | 41.7            | 19.7  | 78          | 4.89   | 2.20 | Single |           |
| 7803-3B                   | UNF-3A                     | 1,200  | 600   | 16.00   | 21.9 | 7.44          | 10.2 | 41.7            | 19.7  | 78          | 6.39   | 2.86 | Double |           |
| 7804-3B                   | Threaded,                  | 650    | 320   | 30.00   | 41.2 | 13.95         | 19.1 | 41.7            | 19.7  | 78          | 6.39   | 2.86 | Double |           |
| 7805-3B                   | Plus 1/8" Sq.<br>Key Drive | 350    | 170   | 55.00   | 75.5 | 26.25         | 36.0 | 41.7            | 19.7  | 78          | 6.39   | 2.86 | Double |           |



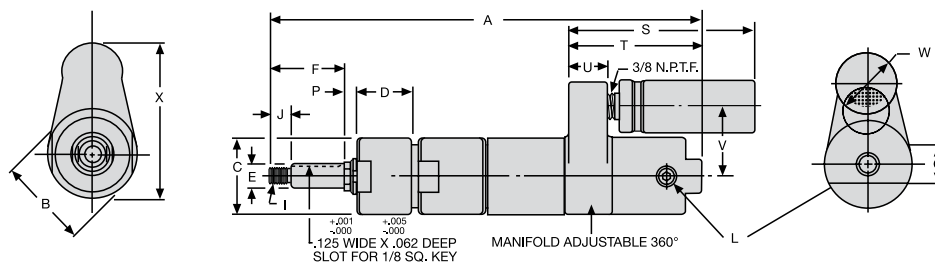
### Standard Equipment

Keyed and threaded spindle for shell end mills, metal-slitting saws and side-mill cutters, duplex bearing on drive spindle to provide maximum radial support. Also steel motor housing, flush-type grease fittings, exhaust manifold and muffler.

**NOTE:** Key not furnished.



### 2200-Series and Mounting Accessory Dimensions



FORWARD ROTATION, DOUBLE REDUCTION SHOWN

| Models                  | Gear Reduction | Dimension A    |
|-------------------------|----------------|----------------|
| 7800-3B 7801-3B 7802-3B | Single         | 9-1/2 241 mm   |
| 7803-3B 7804-3B 7805-3B | Double         | 11-9/32 286 mm |

| Scale  | B  | C              | D              | E              | F              | I                 | J              | L            |
|--------|----|----------------|----------------|----------------|----------------|-------------------|----------------|--------------|
| Inches | 2  | 2.000<br>2.001 | 1.422<br>1.452 | .6240<br>.6245 | 1.932<br>1.942 | 7/16-20<br>UNF-3A | .552<br>.557   | 1/4<br>NPTF  |
| mm     | 51 | 50.80<br>50.83 | 36.12<br>36.88 | 15.85<br>15.86 | 40.07<br>49.33 | Thread            | 14.02<br>14.53 | Air<br>Inlet |

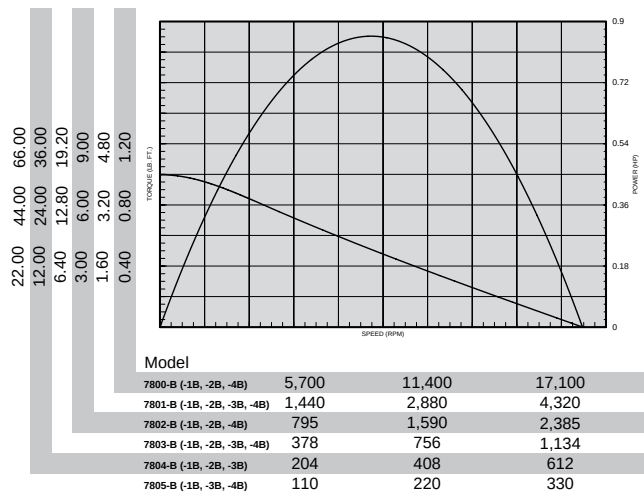
  

| Scale  | O   | P            | S     | T     | U      | V       | W     | X     |
|--------|-----|--------------|-------|-------|--------|---------|-------|-------|
| Inches | 7/8 | .270<br>.380 | 4-7/8 | 3-1/2 | 1-1/16 | 1-13/16 | 1-3/8 | 3-1/2 |
| mm     | 22  | 6.86<br>9.65 | 124   | 89    | 27     | 46      | 35    | 89    |

## 2200-Series Forward-Rotation Side Mount Milling Motors

### Specifications

| TORQUE                    |          |            |                       |               |      |                       |      |                  |      |                   |      |      |           |      | AIR |  |  |  |  |
|---------------------------|----------|------------|-----------------------|---------------|------|-----------------------|------|------------------|------|-------------------|------|------|-----------|------|-----|--|--|--|--|
|                           |          | R.P.M.     |                       |               |      | OUTPUT                |      | CONSUMPTION      |      | SOUND LEVEL       |      |      |           | GEAR |     |  |  |  |  |
| MODEL                     | SPINDLE  | FREE SPEED | LOAD SPEED @MAX. H.P. | STALL lb. ft. | Nm   | @MAX. H.P. lb. ft. Nm |      | @FREE SPEED SCFM | L/s  | @FREE SPEED dB(A) | lbs. | kg.  | REDUCTION |      |     |  |  |  |  |
| NON-REVERSIBLE - .85 H.P. |          |            |                       |               |      |                       |      |                  |      |                   |      |      |           |      |     |  |  |  |  |
| 7800-4B                   | 3/8"     | 18,000     | 9,000                 | 1.00          | 1.4  | .50                   | .68  | 41.7             | 19.7 | 78                | 4.89 | 2.20 | Single    |      |     |  |  |  |  |
| 7801-4B                   | Maximum  | 4,600      | 2,400                 | 4.00          | 5.5  | 1.86                  | 2.5  | 41.7             | 19.7 | 78                | 4.89 | 2.20 | Single    |      |     |  |  |  |  |
| 7802-4B                   | Collet   | 2,500      | 1,300                 | 7.50          | 10.3 | 3.43                  | 4.7  | 41.7             | 19.7 | 78                | 4.89 | 2.20 | Single    |      |     |  |  |  |  |
| 7803-4B                   | Capacity | 1,200      | 600                   | 16.00         | 21.9 | 7.44                  | 10.2 | 41.7             | 19.7 | 78                | 6.39 | 2.86 | Double    |      |     |  |  |  |  |
| 7805-4B                   |          | 350        | 170                   | 55.00         | 75.5 | 26.25                 | 36.0 | 41.7             | 19.7 | 78                | 6.39 | 2.86 | Double    |      |     |  |  |  |  |



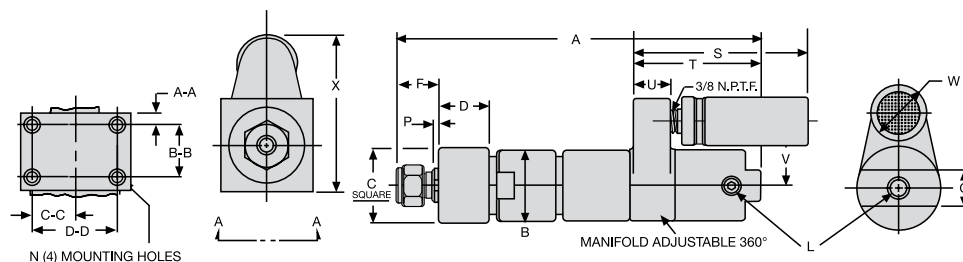
### Standard Equipment

Integral collet spindle and mounting head with 4 tapped holes for close-quarter mounting. Other standard equipment same as for motors on page 66.

### Equipment Options

For filter-regulator-lubricator, see listing on page 86.

### 2200-Series and Mounting Accessory Dimensions



FORWARD ROTATION, DOUBLE REDUCTION SHOWN

| Models                  | Gear Reduction | Dimension A    |
|-------------------------|----------------|----------------|
| 7800-4B 7801-4B 7802-4B | Single         | 8-3/8 213 mm   |
| 7803-4B 7804-4B 7805-4B | Double         | 10-3/16 259 mm |

| Scale  | B  | C              | D              | F                   | L            | N                   | O   | P            | S     |
|--------|----|----------------|----------------|---------------------|--------------|---------------------|-----|--------------|-------|
| Inches | 2  | 2.115<br>2.135 | 1.422<br>1.452 | 1-5/32<br>(Approx.) | 1/4<br>NPTF  | 1/4-28<br>UNF-2B    | 7/8 | .097<br>.157 | 4-7/8 |
| mm     | 51 | 53.72<br>54.23 | 36.12<br>36.88 | 29<br>(Approx.)     | Air<br>Inlet | Thread<br>3/8" Deep | 22  | 2.46<br>3.99 | 124   |

| Scale  | T     | U      | V       | W     | X      | A-A          | B-B            | C-C            | D-D            |
|--------|-------|--------|---------|-------|--------|--------------|----------------|----------------|----------------|
| Inches | 3-1/2 | 1-1/16 | 1-13/16 | 1-3/8 | 3-9/16 | .213<br>.223 | 1.000<br>1.005 | .807<br>.817   | 1.62<br>1.63   |
| mm     | 89    | 27     | 46      | 35    | 90     | 5.41<br>5.66 | 25.40<br>25.53 | 20.50<br>20.75 | 41.15<br>41.40 |

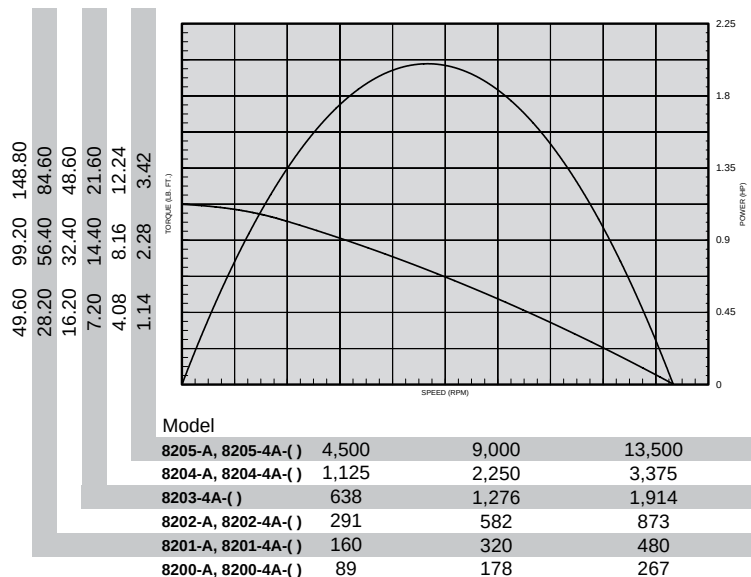
## 44-Series Forward-Rotation Milling Motors

### Specifications

| TORQUE                    |                              |            |                       |               |       |                    |       |                  |      |                   |       |        |           | AIR  |  |  |  |
|---------------------------|------------------------------|------------|-----------------------|---------------|-------|--------------------|-------|------------------|------|-------------------|-------|--------|-----------|------|--|--|--|
|                           |                              | R.P.M.     |                       | OUTPUT        |       |                    |       | CONSUMPTION      |      | SOUND LEVEL       |       | WEIGHT |           | GEAR |  |  |  |
| MODEL                     | SPINDLE                      | FREE SPEED | LOAD SPEED @MAX. H.P. | STALL lb. ft. | Nm    | @MAX. H.P. lb. ft. | Nm    | @FREE SPEED SCFM | L/s  | @FREE SPEED dB(A) | lbs.  | kg.    | REDUCTION |      |  |  |  |
| NON-REVERSIBLE - 2.0 H.P. |                              |            |                       |               |       |                    |       |                  |      |                   |       |        |           |      |  |  |  |
| 8200-4A-( )               | 3/4" Maximum Collet Capacity | 275        | 140                   | 124.00        | 168.0 | 75.00              | 101.6 | 95.0             | 44.8 | 80                | 18.24 | 8.20   | Double    |      |  |  |  |
| 8201-4A-( )               |                              | 500        | 255                   | 70.50         | 95.5  | 41.00              | 55.5  | 95.0             | 44.8 | 80                | 18.24 | 8.20   | Double    |      |  |  |  |
| 8202-4A-( )               |                              | 900        | 445                   | 40.50         | 54.9  | 24.00              | 32.5  | 95.0             | 44.8 | 80                | 18.24 | 8.20   | Double    |      |  |  |  |
| 8203-4A-( )               |                              | 2,000      | 1,050                 | 18.00         | 24.4  | 10.00              | 13.5  | 95.0             | 44.8 | 80                | 13.82 | 5.21   | Single    |      |  |  |  |
| 8204-4A-( )               |                              | 3,500      | 1,740                 | 10.20         | 13.8  | 6.00               | 8.1   | 95.0             | 44.8 | 80                | 13.82 | 5.21   | Single    |      |  |  |  |
| 8205-4A-( )               |                              | 14,000     | 7,000                 | 2.85          | 3.9   | 1.50               | 2.0   | 95.0             | 44.8 | 80                | 13.82 | 5.21   | Single    |      |  |  |  |

| Collet Insert No. | Dash No. | Size   | Minimum Capacity |       | Maximum Capacity |       | Collet Insert No. | Dash No. | Size   | Minimum Capacity |       | Maximum Capacity |       |
|-------------------|----------|--------|------------------|-------|------------------|-------|-------------------|----------|--------|------------------|-------|------------------|-------|
|                   |          |        | Inches           | mm    | Inches           | mm    |                   |          |        | Inches           | mm    | Inches           | mm    |
| 35264-1           | -A       | 1/4"   | .2187            | 5.56  | .2500            | 6.35  | 35264-10          | -K       | 17/32" | .5000            | 12.70 | .5312            | 13.49 |
| 35264-2           | -B       | 9/32"  | .2500            | 6.35  | .2812            | 7.14  | 35264-11          | -L       | 9/16"  | .5312            | 13.49 | .5625            | 14.29 |
| 35264-3           | -C       | 5/16"  | .2812            | 7.14  | .3125            | 7.94  | 35264-12          | -M       | 19/32" | .5625            | 14.29 | .5937            | 15.08 |
| 35264-4           | -D       | 11/32" | .3125            | 7.94  | .3437            | 8.73  | 35264-13          | -N       | 5/8"   | .5937            | 15.08 | .6250            | 15.88 |
| 35264-5           | -E       | 3/8"   | .3437            | 8.73  | .3750            | 9.53  | 35264-14          | -P       | 21/32" | .6250            | 15.88 | .6562            | 16.67 |
| 35264-6           | -F       | 13/32" | .3750            | 9.53  | .4062            | 10.32 | 35264-15          | -Q       | 11/16" | .6562            | 16.67 | .6875            | 17.46 |
| 35264-7           | -G       | 7/16"  | .4062            | 10.32 | .4375            | 11.11 | 35264-16          | -R       | 23/32" | .6875            | 17.46 | .7187            | 18.26 |
| 35264-8           | -H       | 15/32" | .4375            | 11.11 | .4687            | 11.91 | 35264-17          | -S       | 3/4"   | .7187            | 18.26 | .7500            | 19.05 |
| 35264-9           | -J       | 1/2"   | .4687            | 11.91 | .5000            | 12.70 |                   |          |        |                  |       |                  |       |

Approx. Tooling Penetration - 2 7/16" (62 mm)



### Standard Equipment

Steel motor housing, flush-type grease fittings at rotation points for gear and bearing lubrication, exhaust manifold rotatable within 360°, muffler, integral collet spindle with 35264-17 3/4" capacity for end mills and Woodruff key slot cutters, duplex bearing on drive spindle for maximum radial support.



### No Cost Option

Another size collet insert may be substituted for the standard 3/4" capacity insert. Specify collet insert 35264-( ) in the desired size from the chart above.

### Equipment Options

45090 Foot Bracket

41557 Flange Bracket

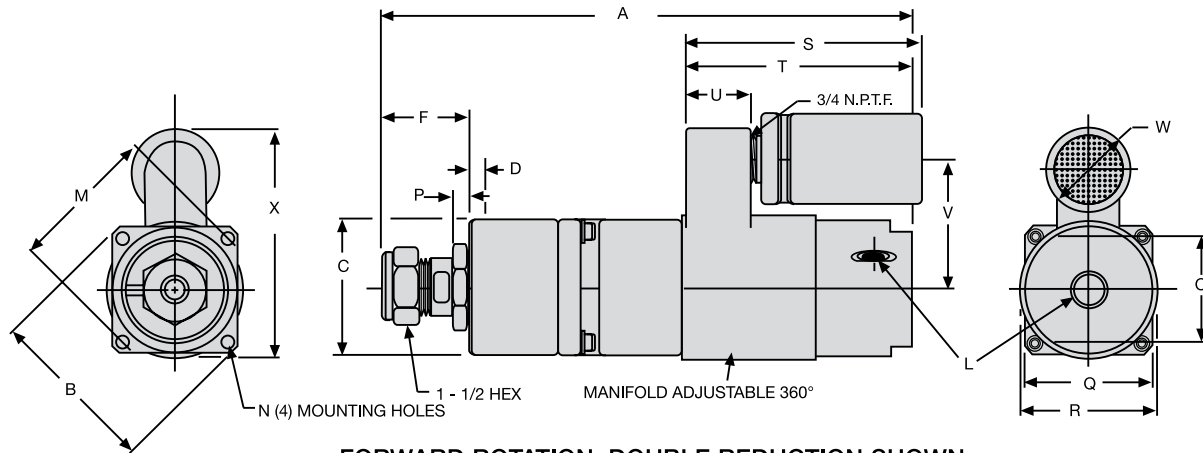


45090 FOOT MOUNTING BRACKET



41557 FLANGE MOUNTING BRACKET

## 44-Series Milling Motors and Mounting Accessory Dimensions

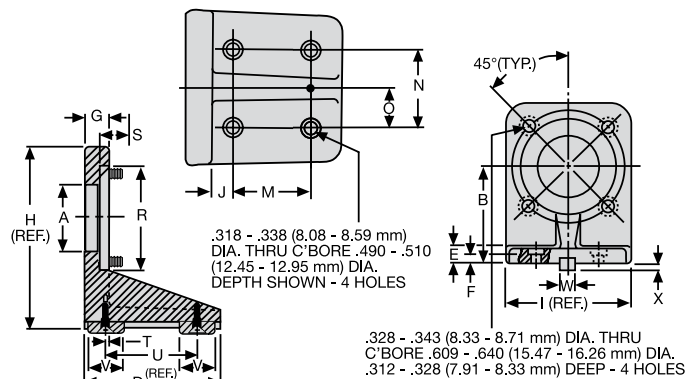
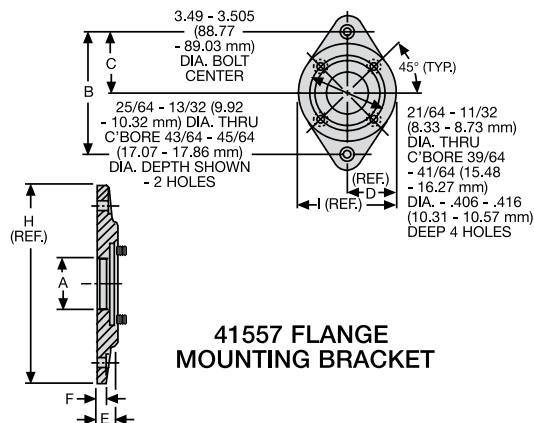


FORWARD ROTATION, DOUBLE REDUCTION SHOWN

| Models                  | Gear Reduction | Dimension A        |
|-------------------------|----------------|--------------------|
| 8203-4A 8204-4A 8205-4A | Single         | 11-11/16<br>297 mm |
| 8200-4A 8201-4A 8202-4A | Double         | 14-1/2<br>368 mm   |

| Scale  | B                | C              | D            | F                    | L            | M              | N                 | O     | P            |
|--------|------------------|----------------|--------------|----------------------|--------------|----------------|-------------------|-------|--------------|
| Inches | 4.090<br>4.110   | 2.996<br>2.998 | .302<br>.322 | 1-15/16<br>(Approx.) | 3/8<br>NPTF  | 3.498<br>3.502 | 5/16-24<br>UNF-2B | 2-1/2 | .335<br>.364 |
| mm     | 103.89<br>104.39 | 76.10<br>76.15 | 7.67<br>8.18 | 49<br>(Approx.)      | Air<br>Inlet | 86.56<br>88.95 | Thread            | 63    | 8.51<br>9.25 |

| Scale  | Q  | R      | S      | T   | U      | V       | W  | X      |
|--------|----|--------|--------|-----|--------|---------|----|--------|
| Inches | 3  | 3-3/16 | 5-3/16 | 5   | 1-7/16 | 2-27/32 | 2  | 5-7/16 |
| mm     | 76 | 81     | 132    | 127 | 36     | 72      | 51 | 138    |



| Scale  | A              | B                | C              | D     |
|--------|----------------|------------------|----------------|-------|
| Inches | 1.927<br>1.947 | 5.745<br>5.755   | 2.870<br>2.880 | 2-1/4 |
| mm     | 48.95<br>49.45 | 145.92<br>146.18 | 72.90<br>73.15 | 57.15 |

| Scale  | E              | F            | H      | I     |
|--------|----------------|--------------|--------|-------|
| Inches | .708<br>.728   | .365<br>.385 | 7-1/4  | 4-1/2 |
| mm     | 17.98<br>18.49 | 9.27<br>9.78 | 184.15 | 114.3 |

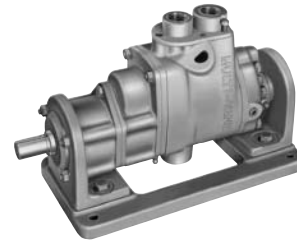
| Scale  | A              | B              | D     | E              | F            | G              | H      | I     | J              | M              |
|--------|----------------|----------------|-------|----------------|--------------|----------------|--------|-------|----------------|----------------|
| Inches | 1.927<br>1.947 | 3.124<br>3.126 | 4     | .468<br>.531   | .296<br>.328 | .671<br>.703   | 5-1/8  | 4     | .546<br>.578   | 1.995<br>2.005 |
| mm     | 55.12<br>60.20 | 79.35<br>79.40 | 101.6 | 11.89<br>13.49 | 7.52<br>8.33 | 17.04<br>17.78 | 130.18 | 101.6 | 13.87<br>14.68 | 50.67<br>50.93 |

| Scale  | N              | O              | R              | S              | T            | U              | V              | W                | X            |
|--------|----------------|----------------|----------------|----------------|--------------|----------------|----------------|------------------|--------------|
| Inches | 1.995<br>2.005 | .995<br>1.005  | 2.999<br>3.000 | .833<br>.853   | .046<br>.078 | 2.609<br>2.640 | .985<br>1.015  | .499<br>.500     | .173<br>.198 |
| mm     | 50.67<br>50.93 | 25.27<br>25.53 | 76.17<br>76.20 | 21.16<br>21.67 | 1.17<br>1.98 | 66.27<br>67.06 | 25.02<br>25.78 | 12.674<br>12.700 | 4.39<br>5.03 |

## Specially Governed Motors

### Model 22N51-W/RC Multi-Vane Air Motors

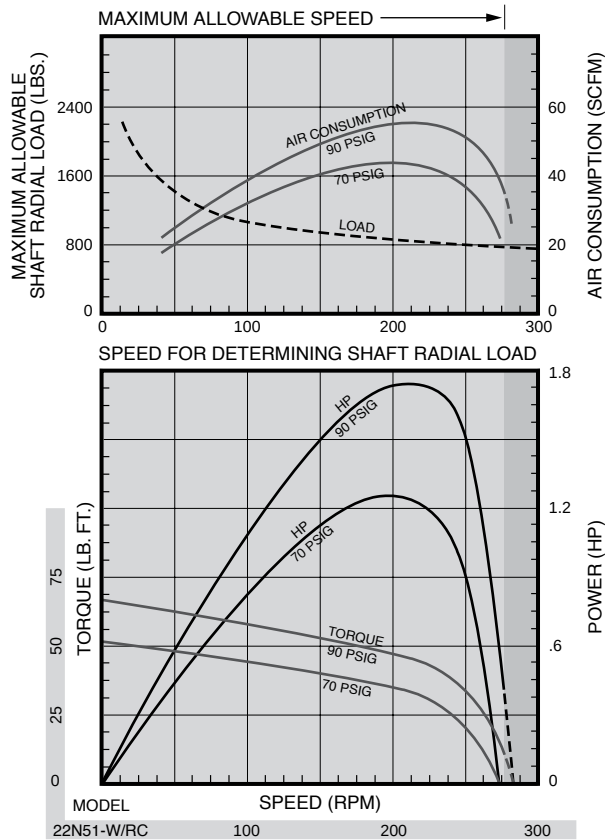
#### Specifications



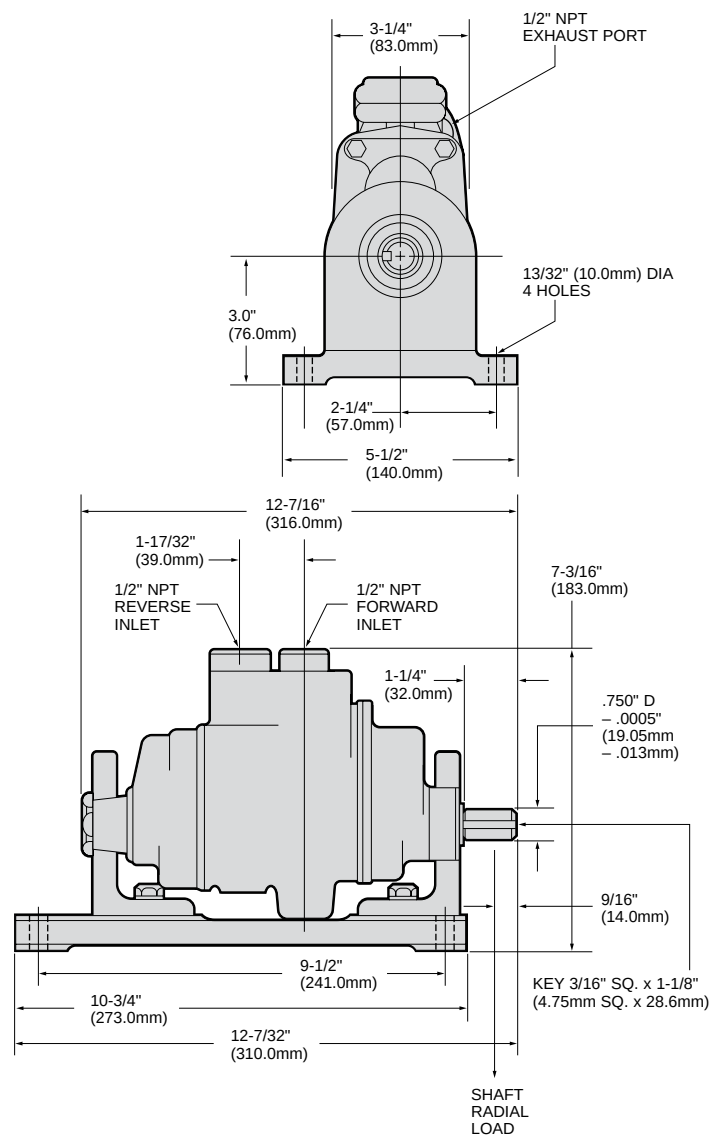
| Model      | Max. Power |      | Speed at Max. Power | Free Speed | Starting Torque |      | Stall Torque |      | Air Consumption at Max. Power |                   | Weight |     |
|------------|------------|------|---------------------|------------|-----------------|------|--------------|------|-------------------------------|-------------------|--------|-----|
|            | hp         | kw   | rpm                 | rpm        | lb.-ft.         | Nm   | lb.-ft.      | Nm   | scfm                          | m <sup>3</sup> /m | lb.    | kg  |
| Reversible |            |      |                     |            |                 |      |              |      |                               |                   |        |     |
| 22N51-W/RC | 1.75       | 1.31 | 208                 | 280        | 49              | 66.4 | 66           | 89.5 | 55                            | 1.6               | 21     | 9.5 |

Performance figures are at 90 psig (620 kPa) air pressure.

#### Specifications



#### Dimensions





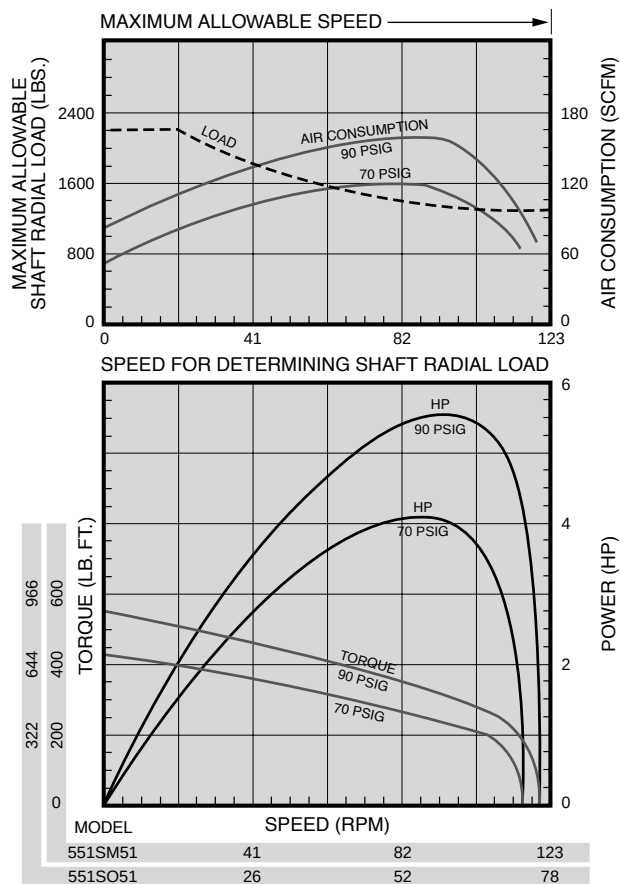
## Series 551 Multi-Vane Air Motors

### Specifications

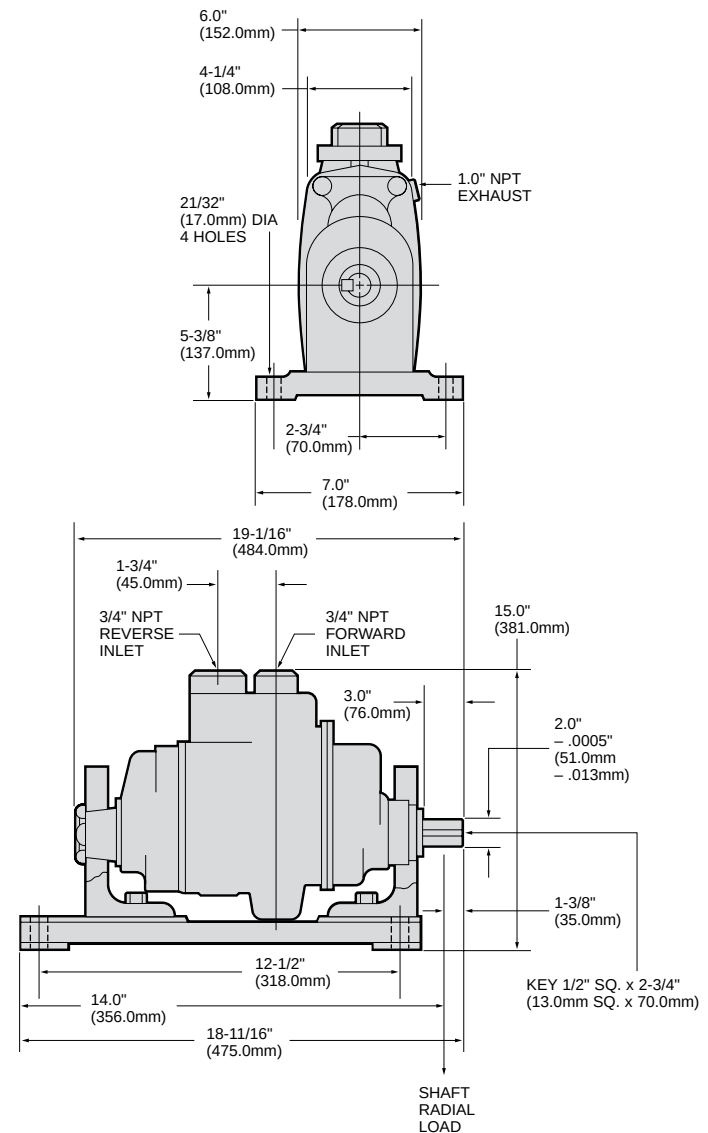
| Model        | Max. Power |      | Speed at Max. Power | Free Speed▲ | Starting Torque |     | Stall Torque |      | Air Consumption at Max. Power |      | Weight |      |
|--------------|------------|------|---------------------|-------------|-----------------|-----|--------------|------|-------------------------------|------|--------|------|
|              | hp         | kw   | rpm                 | rpm         | lb.-ft.         | Nm  | lb.-ft.      | Nm   | scfm                          | m³/m | lb.    | kg   |
| Reversible   |            |      |                     |             |                 |     |              |      |                               |      |        |      |
| 551SM51-W/RC | 5.6        | 4.18 | 95                  | 120         | 400             | 542 | 545          | 739  | 160                           | 4.53 | 93     | 42.2 |
| 551SO51-W/RC | 5.6        | 4.18 | 59                  | 77          | 650             | 881 | 885          | 1200 | 160                           | 4.53 | 93     | 42.2 |

▲ ALL models must be operated with sufficient load to prevent speed from exceeding maximum allowable speed shown on performance curve. Performance figures are at 90 psig (620 kPa) air pressure.

### Specifications



### Dimensions



## Direct and Geared Drive Piston Air Motors

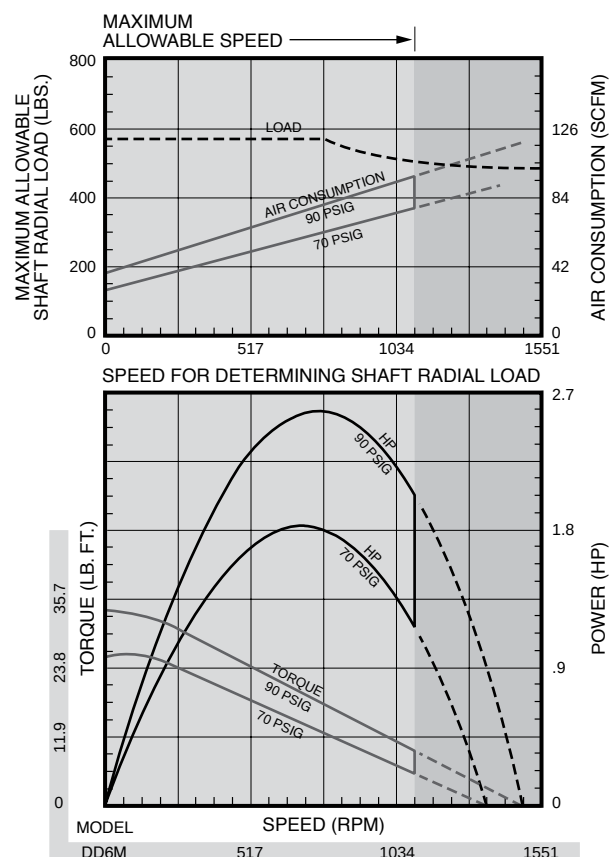
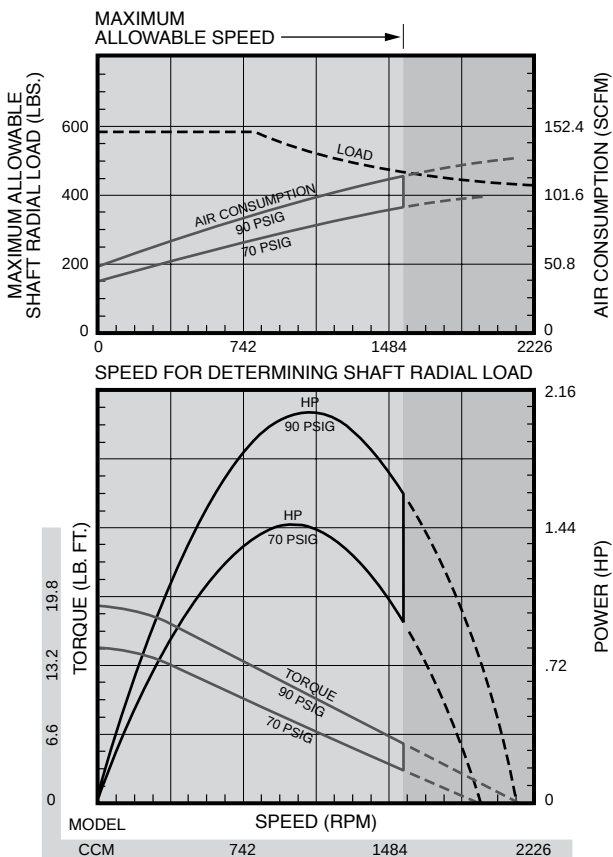
### Specifications

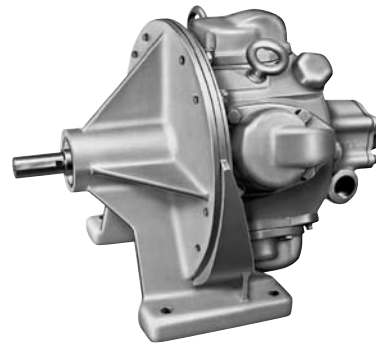
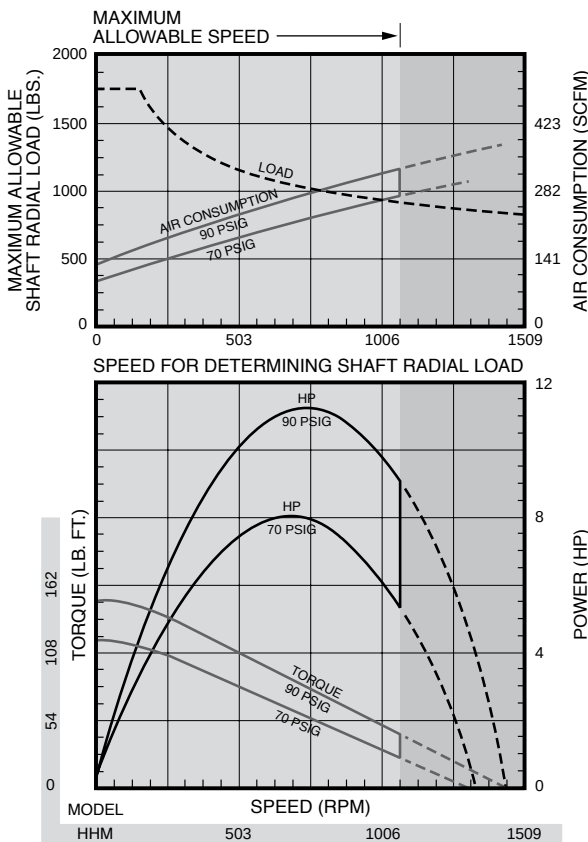
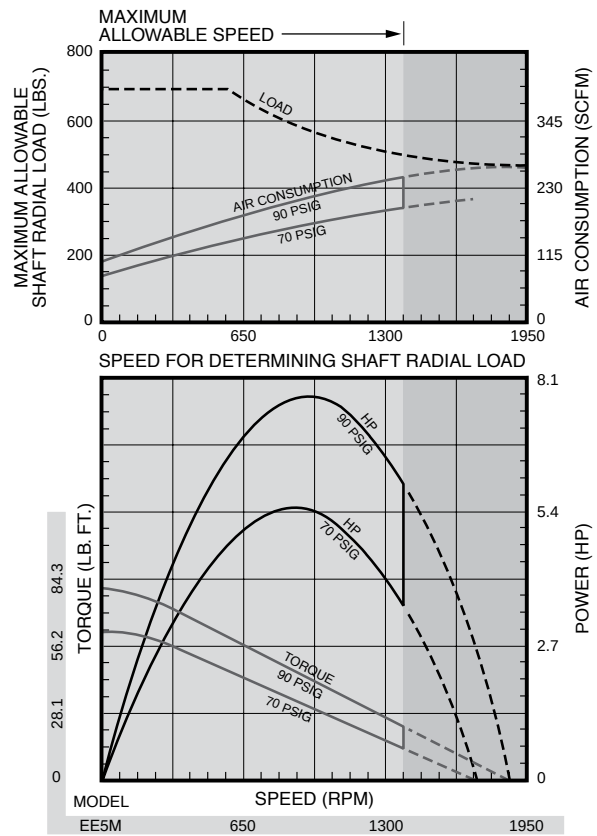
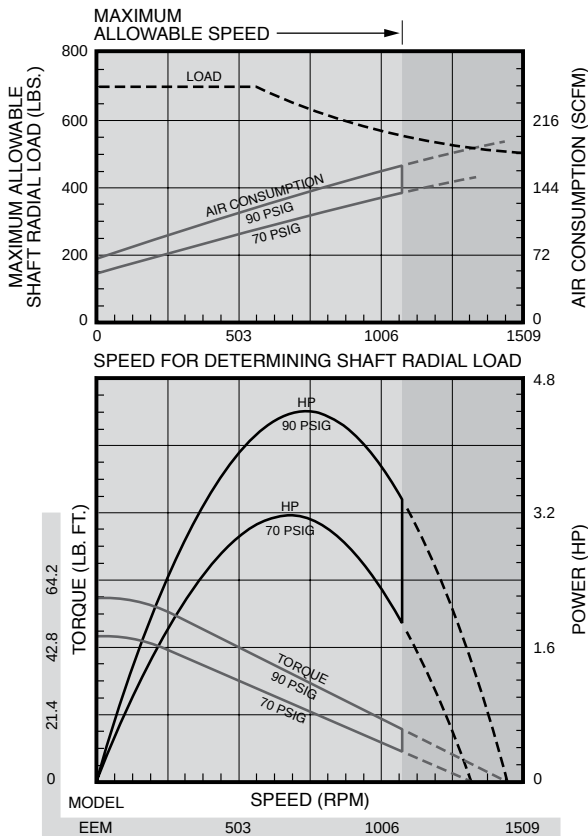
| Model                          | Max. Power |       | Speed at<br>Max. Power | Free Speed▲ | Starting Torque |      | Stall Torque |       | Air<br>Consumption<br>at Max. Power |                   | Weight |      |
|--------------------------------|------------|-------|------------------------|-------------|-----------------|------|--------------|-------|-------------------------------------|-------------------|--------|------|
|                                | hp         | kw    | rpm                    | rpm         | lb.-ft.         | Nm   | lb.-ft.      | Nm    | scfm                                | m <sup>3</sup> /m | lb.    | kg   |
| <b>Direct Drive Reversible</b> |            |       |                        |             |                 |      |              |       |                                     |                   |        |      |
| CCM                            | 2.05       | 1.53  | 1075                   | 2140        | 13.2            | 17.9 | 18.8         | 25.5  | 97                                  | 2.7               | 135    | 61.2 |
| DD6M                           | 2.6        | 1.94  | 750                    | 1490        | 24              | 32.5 | 34.2         | 46.4  | 79                                  | 2.2               | 135    | 61.2 |
| EEM                            | 4.4        | 3.28  | 735                    | 1450        | 41              | 55.6 | 59           | 80    | 137                                 | 3.9               | 200    | 90.7 |
| EE5M                           | 7.8        | 5.82  | 950                    | 1875        | 60              | 81.4 | 80.5         | 109.2 | 220                                 | 6.2               | 210    | 95.3 |
| HHM                            | 11.3       | 8.43  | 730                    | 1450        | 106             | 144  | 152          | 206   | 270                                 | 7.6               | 235    | 107  |
| HH5M                           | 15.2       | 11.33 | 750                    | 1500        | 146             | 198  | 195          | 264   | 400                                 | 11.3              | 250    | 113  |
| KK6M                           | 25         | 18.64 | 755                    | 1500        | 260             | 353  | 325          | 441   | 680                                 | 19.3              | 475    | 216  |
| <b>Geared Drive Reversible</b> |            |       |                        |             |                 |      |              |       |                                     |                   |        |      |
| EE3G                           | 5          | 3.73  | 275                    | 560         | 122             | 165  | 175          | 237   | 155                                 | 4.4               | 200    | 90.7 |
| EE53G                          | 6.8        | 5.07  | 305                    | 600         | 154             | 209  | 205          | 278   | 220                                 | 6.2               | 220    | 99.8 |
| EE9G                           | 4.7        | 3.51  | 92                     | 190         | 357             | 484  | 510          | 692   | 155                                 | 4.4               | 210    | 95.3 |
| EE59G                          | 6.5        | 4.85  | 100                    | 200         | 450             | 610  | 600          | 814   | 220                                 | 6.2               | 230    | 104  |

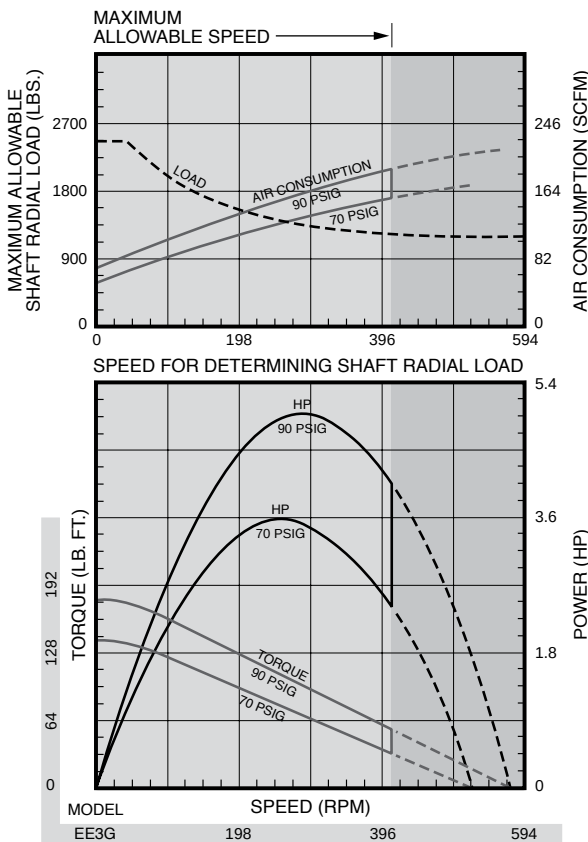
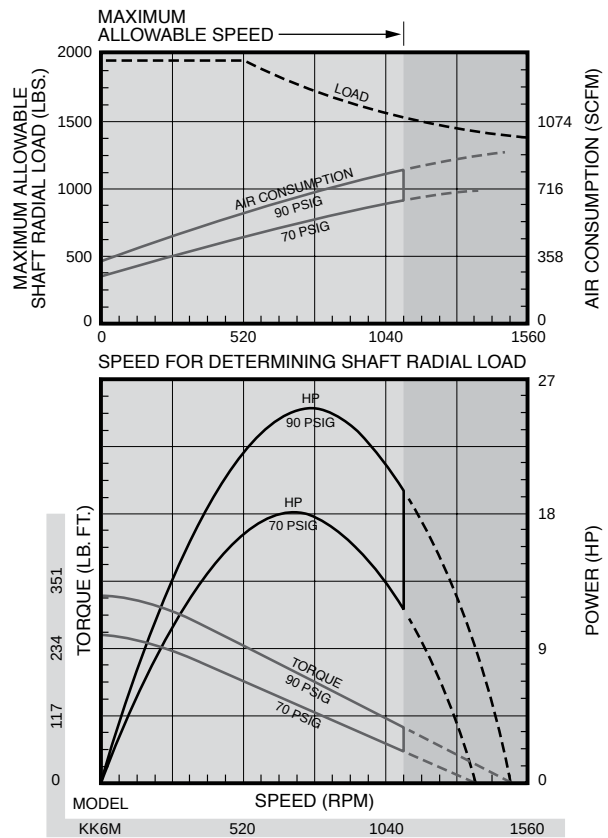
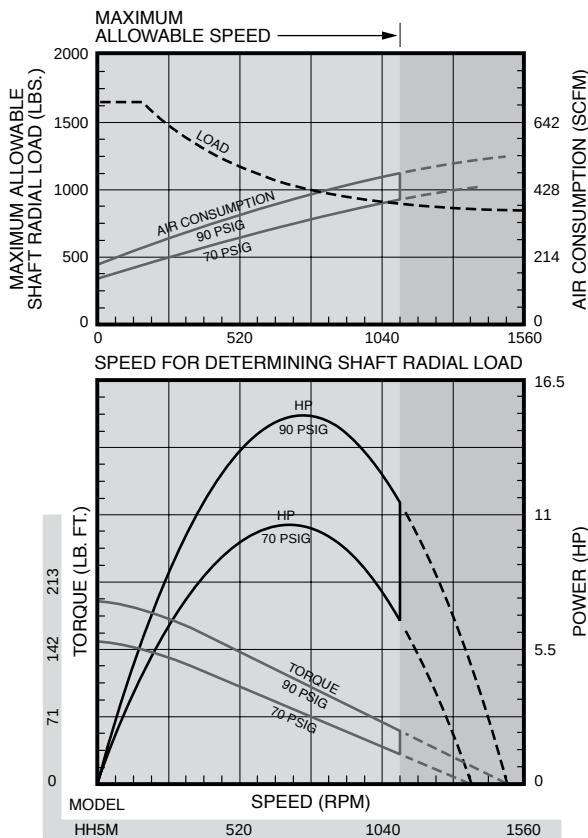
▲ ALL models must be operated with sufficient load to prevent speed from exceeding maximum allowable speed shown on performance curve.

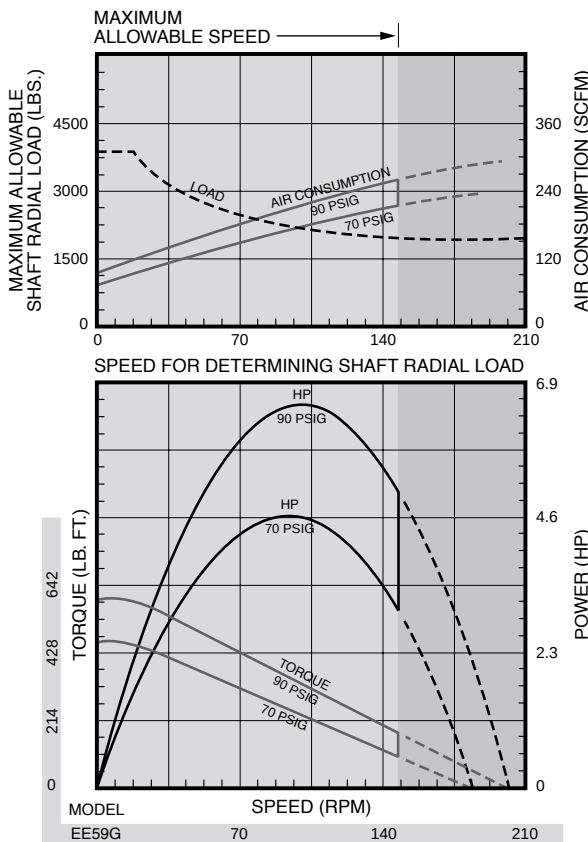
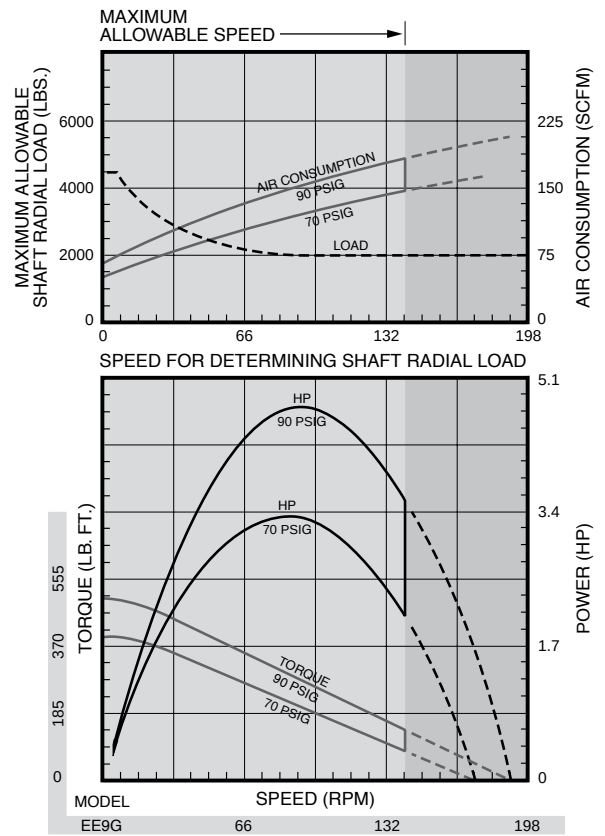
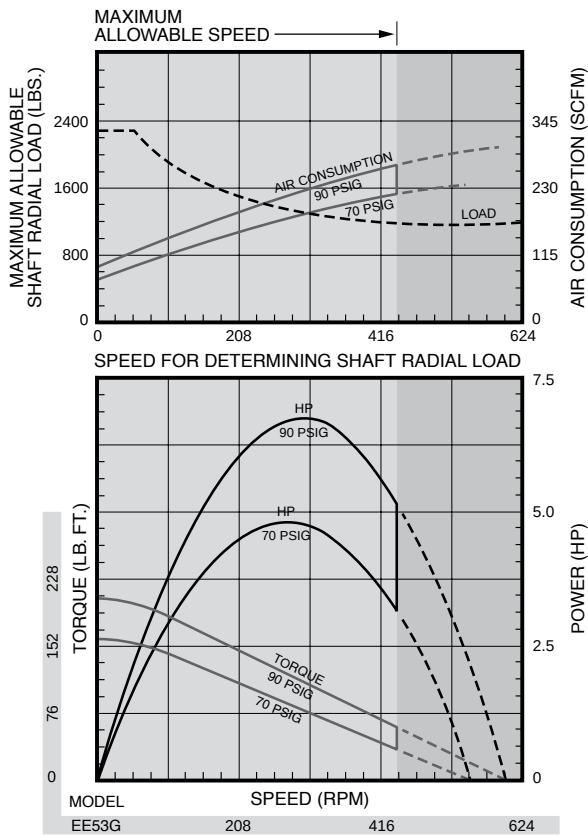
All of the above motors are furnished less valve and piping as standard.

Performance figures are at 90 psig (620 kPa) air pressure.



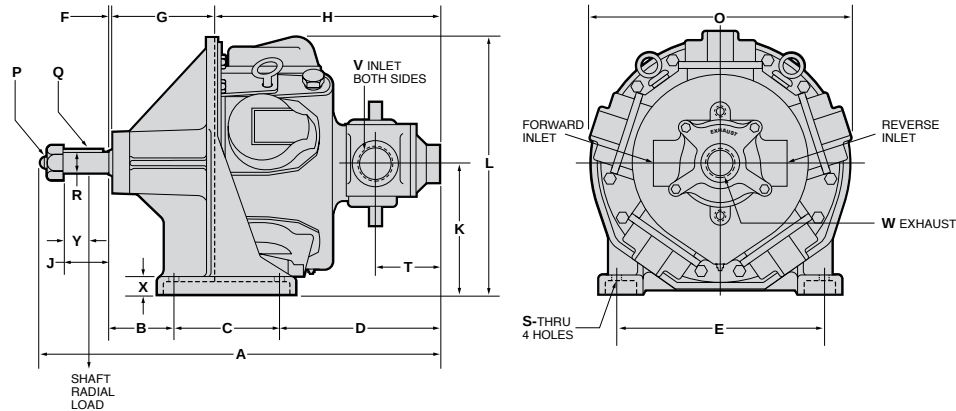






## Direct Drive Piston Air Motors

### Dimensions



### Dimensions in Inches

| Model     | A                               | B                              | C                              | D                               | E                               | F                              | G                              | H                               | J                              | K                               | L                               | O                               | P** Thd. | Q Key | R*    | S Dia.                         | T                              | V NPT                          | W NPT                          | X                              | Y                              |
|-----------|---------------------------------|--------------------------------|--------------------------------|---------------------------------|---------------------------------|--------------------------------|--------------------------------|---------------------------------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|----------|-------|-------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| CCM, DD6M | 23 <sup>3</sup> / <sub>16</sub> | 3 <sup>3</sup> / <sub>16</sub> | 7 <sup>3</sup> / <sub>16</sub> | 7 <sup>7</sup> / <sub>16</sub>  | 10 <sup>1</sup> / <sub>16</sub> | 2 <sup>5</sup> / <sub>32</sub> | 7 <sup>1</sup> / <sub>32</sub> | 11 <sup>1</sup> / <sub>16</sub> | 3                              | 8 <sup>3</sup> / <sub>16</sub>  | 15 <sup>3</sup> / <sub>16</sub> | 13 <sup>3</sup> / <sub>16</sub> | 1"-8     | ¼ x ¼ | 1.125 | 2 <sup>5</sup> / <sub>32</sub> | 2 <sup>1</sup> / <sub>16</sub> | ¾                              | 1                              | ¾                              | 2 <sup>1</sup> / <sub>16</sub> |
| EEM, EE5M | 27                              | 3 <sup>1</sup> / <sub>16</sub> | 9 <sup>3</sup> / <sub>16</sub> | 9 <sup>9</sup> / <sub>32</sub>  | 12 <sup>1</sup> / <sub>16</sub> | 2 <sup>5</sup> / <sub>32</sub> | 9 <sup>1</sup> / <sub>32</sub> | 12 <sup>1</sup> / <sub>32</sub> | 3                              | 9 <sup>9</sup> / <sub>16</sub>  | 16 <sup>1</sup> / <sub>16</sub> | 15                              | 1"-8     | ¼ x ¼ | 1.125 | 2 <sup>5</sup> / <sub>32</sub> | 2 <sup>1</sup> / <sub>16</sub> | 1                              | 1                              | ¾                              | 2 <sup>1</sup> / <sub>16</sub> |
| HHM       | 24 <sup>3</sup> / <sub>16</sub> | 4 <sup>3</sup> / <sub>16</sub> | 7                              | 9 <sup>3</sup> / <sub>16</sub>  | 13 <sup>3</sup> / <sub>16</sub> | ¾                              | 7                              | 14                              | 3                              | 8 <sup>3</sup> / <sub>16</sub>  | 17 <sup>3</sup> / <sub>16</sub> | 17 <sup>3</sup> / <sub>16</sub> | +        | ¾ x ¾ | 1.375 | 2 <sup>5</sup> / <sub>32</sub> | 3 <sup>3</sup> / <sub>16</sub> | 1                              | 1 <sup>1</sup> / <sub>16</sub> | 1 <sup>1</sup> / <sub>16</sub> | 1 <sup>1</sup> / <sub>16</sub> |
| HH5M      | 24 <sup>3</sup> / <sub>16</sub> | 4 <sup>3</sup> / <sub>16</sub> | 7                              | 9 <sup>3</sup> / <sub>16</sub>  | 13 <sup>3</sup> / <sub>16</sub> | ¾                              | 7                              | 14                              | 3                              | 8 <sup>3</sup> / <sub>16</sub>  | 17 <sup>3</sup> / <sub>16</sub> | 17 <sup>3</sup> / <sub>16</sub> | +        | ¾ x ¾ | 1.375 | 2 <sup>5</sup> / <sub>32</sub> | 3 <sup>3</sup> / <sub>16</sub> | 1                              | 1 <sup>1</sup> / <sub>16</sub> | 1 <sup>1</sup> / <sub>16</sub> | 1 <sup>1</sup> / <sub>16</sub> |
| KK6M      | 30 <sup>3</sup> / <sub>16</sub> | 4 <sup>3</sup> / <sub>16</sub> | 8 <sup>3</sup> / <sub>16</sub> | 12 <sup>3</sup> / <sub>16</sub> | 13 <sup>3</sup> / <sub>16</sub> | ¾                              | 7 <sup>1</sup> / <sub>16</sub> | 18 <sup>3</sup> / <sub>16</sub> | 4 <sup>3</sup> / <sub>16</sub> | 12 <sup>3</sup> / <sub>16</sub> | 22 <sup>3</sup> / <sub>16</sub> | 22                              | +        | ¾ x ¾ | 1.625 | 2 <sup>5</sup> / <sub>32</sub> | 4 <sup>3</sup> / <sub>16</sub> | 1 <sup>1</sup> / <sub>16</sub> | 1 <sup>1</sup> / <sub>16</sub> | 1 <sup>1</sup> / <sub>16</sub> | 1 <sup>1</sup> / <sub>16</sub> |

+ The end of the shaft is not threaded on these Motors and no nut is used. \*Tolerance: +0 -.0005" \*\*Thd.-UNC2A.

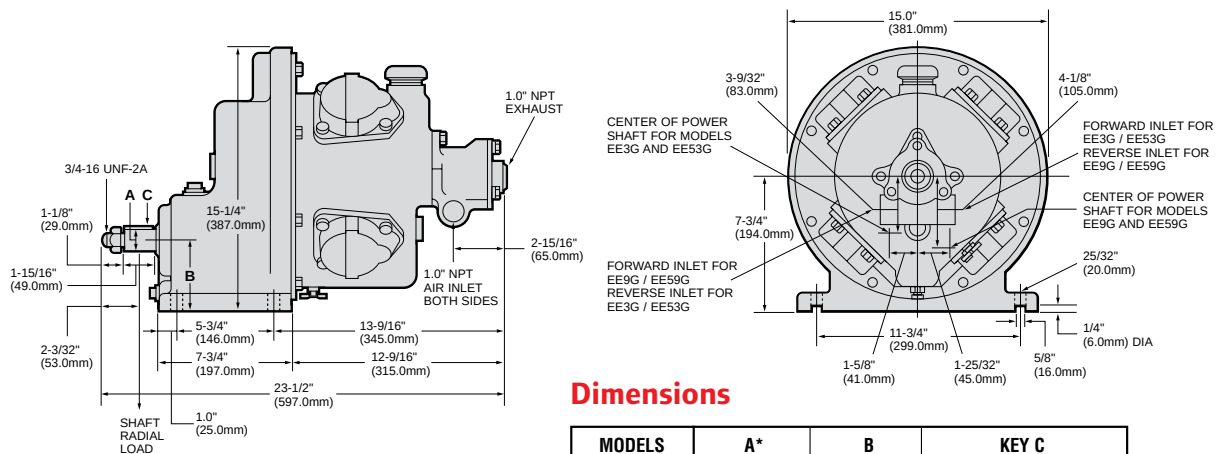
### Dimensions in Millimeters

| Model     | A   | B   | C   | D   | E   | F  | G   | H   | J   | K   | L   | O   | P Thd. | Q Key   | R* | S Dia. | T   | X  | Y  |
|-----------|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|--------|---------|----|--------|-----|----|----|
| CCM, DD6M | 599 | 95  | 197 | 200 | 267 | 20 | 188 | 284 | 76  | 222 | 397 | 349 | 1"-8   | 6 x 6   | 28 | 20     | 68  | 22 | 68 |
| EEM, EE5M | 686 | 97  | 248 | 236 | 318 | 20 | 242 | 318 | 76  | 237 | 427 | 381 | 1"-8   | 6 x 6   | 28 | 20     | 75  | 22 | 68 |
| HHM       | 614 | 110 | 178 | 251 | 343 | 5  | 178 | 356 | 76  | 225 | 438 | 438 | +      | 10 x 10 | 35 | 17     | 97  | 32 | 33 |
| HH5M      | 614 | 110 | 178 | 251 | 343 | 5  | 178 | 356 | 76  | 225 | 438 | 438 | +      | 10 x 10 | 35 | 17     | 97  | 32 | 33 |
| KK6M      | 768 | 121 | 219 | 321 | 343 | 3  | 195 | 462 | 108 | 308 | 565 | 559 | +      | 10 x 10 | 41 | 17     | 110 | 35 | 48 |

+ The end of the shaft is not threaded on these Motors and no nut is used. \*Tolerance: +0 -0.13mm

## Geared Drive Piston Air Motors

### Dimensions



### Dimensions

| MODELS      | A*    |       | B                             |     | KEY C                                   |              |
|-------------|-------|-------|-------------------------------|-----|-----------------------------------------|--------------|
|             | in.   | mm    | in.                           | mm  | in.                                     | mm           |
| EE3G, EE53G | 1.251 | 31.78 | 4 <sup>1</sup> / <sub>2</sub> | 114 | ¼ x ¼ x 1 <sup>25</sup> / <sub>32</sub> | 6 x 6 x 45   |
| EE9G, EE59G | 1.501 | 38.13 | 3 <sup>3</sup> / <sub>4</sub> | 92  | ¾ x ¾ x 1 <sup>1</sup> / <sub>16</sub>  | 10 x 10 x 43 |

\*Tolerance: +0 -.0005" (0.13mm)



## MMP150 Air Motors

### Model Code Explanation

Example: MMP150-A-0-B-2-A

Series: **MMP150 Air Motor**

Interface/Shaft Options:

A = **Standard Spline**

D = **Keyed Shaft (Fenner RM410)**

Mounting Options:

0 = **Standard**

1 = **Base Mount**

Control Options:

A = **None**

B = **Manual Valve**

C = **Panel Mount Valve**

D = **Pendant**

E = **Accu-Trol™**

Rotary Valve Bias Options:

1 = **CCW (counter-clockwise), Standard Bias Rotation\***

2 = **CW (clockwise), Reverse Bias Rotation\***

Power Options:

A = **Air**

B = **Natural Gas**

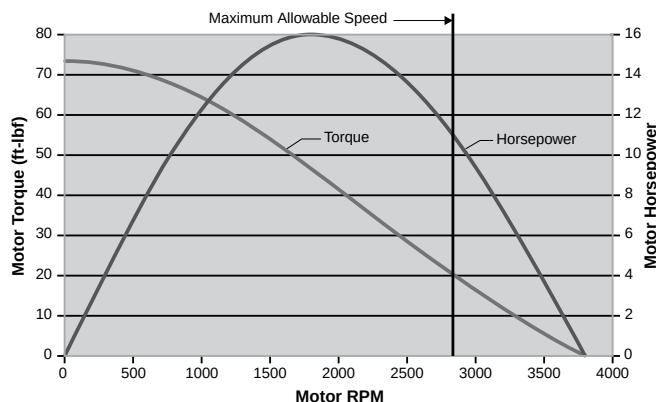
\*As viewed from crankshaft end of motor.

### Performance

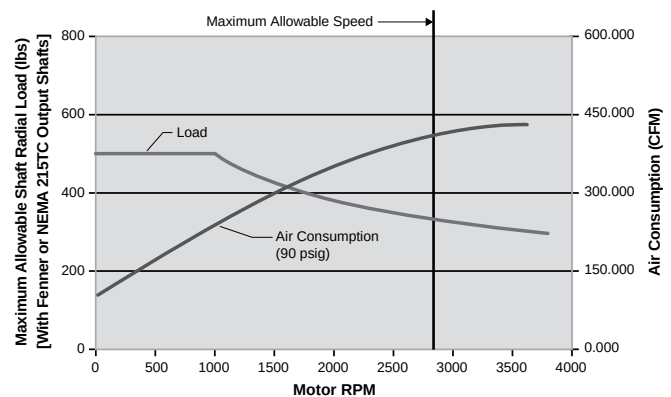
| Model   | Max. Power |      | Speed at Max. Power | Free Speed | Starting Torque |      | Stall Torque |       | Air Consumption at Max. Power |      |
|---------|------------|------|---------------------|------------|-----------------|------|--------------|-------|-------------------------------|------|
|         | hp         | kw   | rpm                 | rpm        | lb.-ft.         | Nm   | lb.-ft.      | Nm    | scfm                          | m³/m |
| MMP 150 | 16.0       | 11.9 | 1800                | 3800       | 61.0            | 82.7 | 78.0         | 105.8 | 425                           | 12.0 |

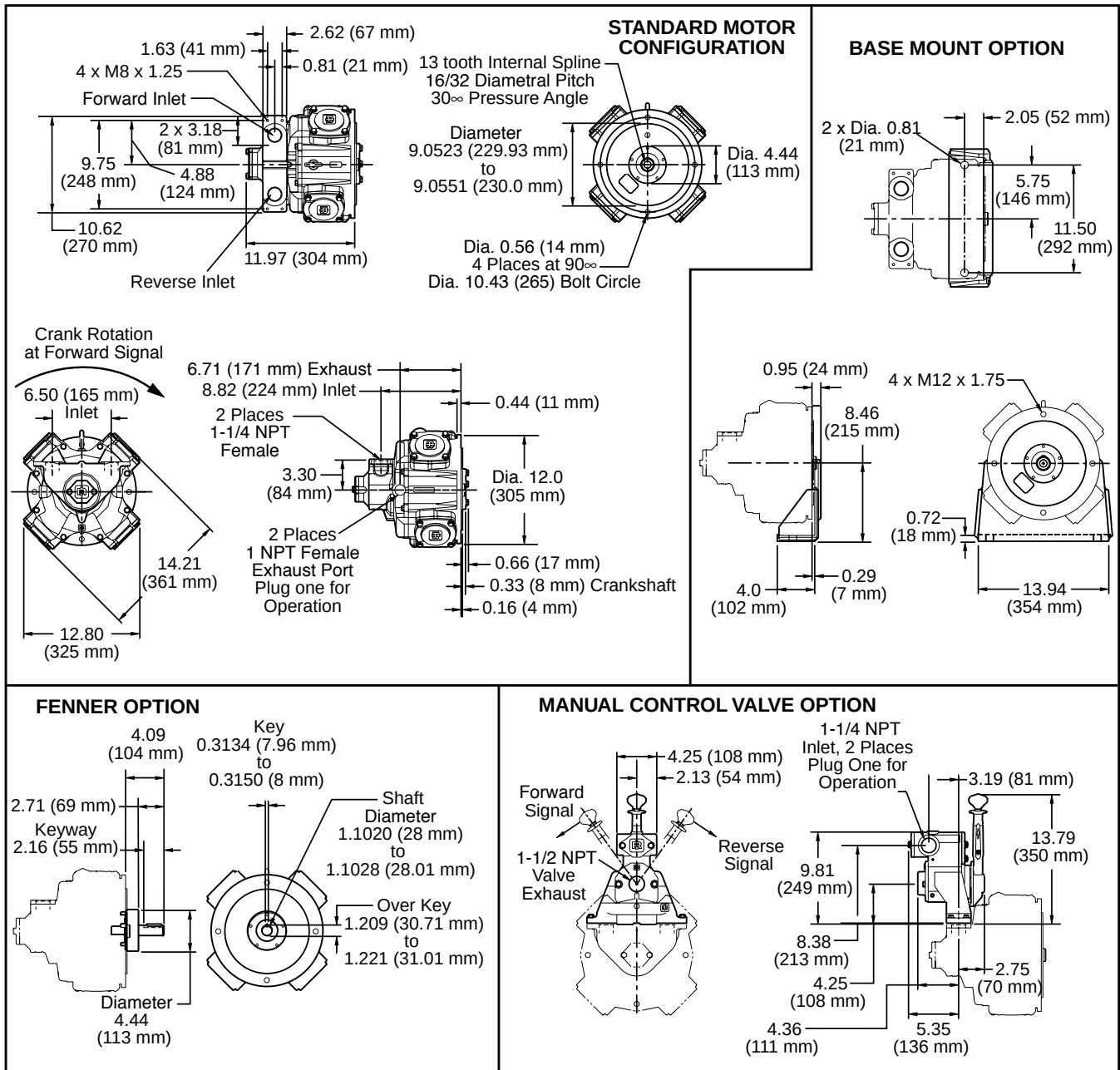
Performance figures are at 90 psig (6.2 Bar) air pressure.

**Figure 1: MMP150 Air Motor Performance**  
425 cfm Air Supply at 90 psi



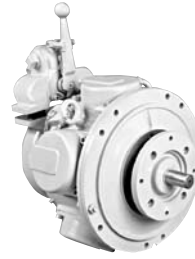
**Figure 2: MMP150 Air Motor Performance**





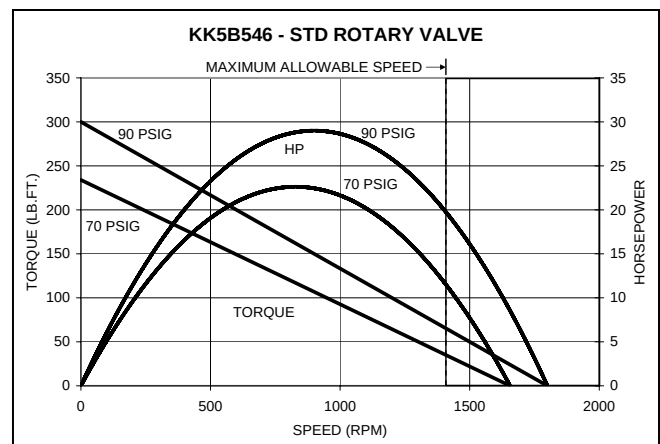
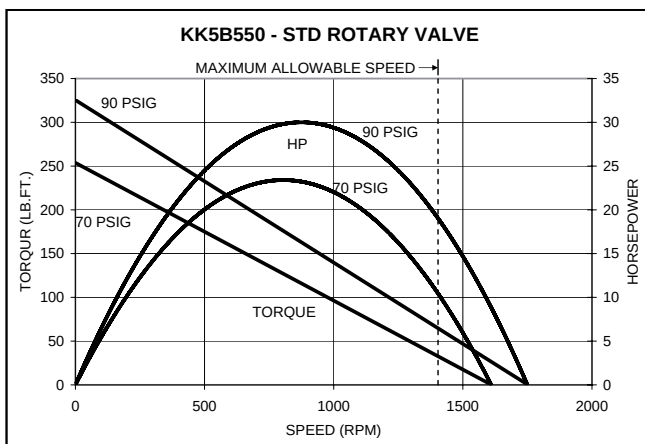
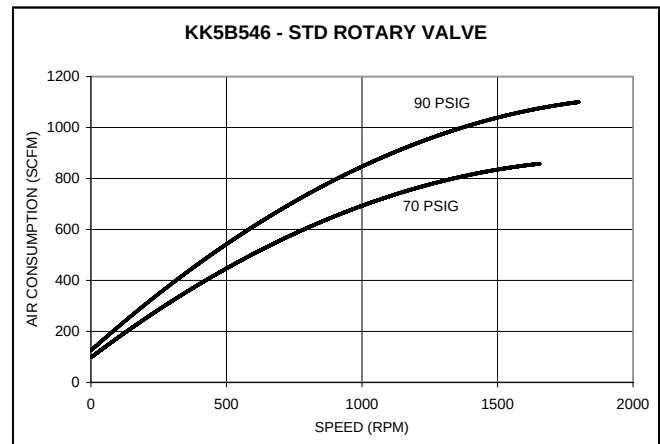
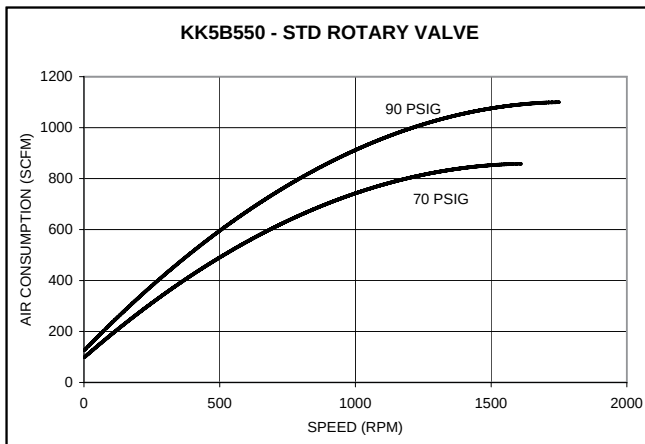
## KK5B Piston Air Motors

### Specifications



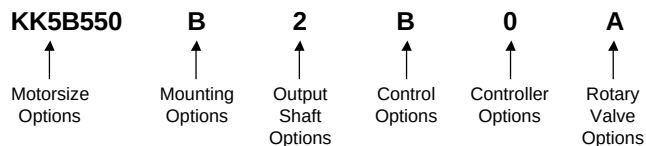
| Model      | Max. Power |      | Speed at Max. Power | Free Speed▲ | Starting Torque |     | Stall Torque |     | Air Consumption at Max. Power |      | Weight |    |
|------------|------------|------|---------------------|-------------|-----------------|-----|--------------|-----|-------------------------------|------|--------|----|
|            | hp         | kw   | rpm                 | rpm         | lb.-ft.         | Nm  | lb.-ft.      | Nm  | scfm                          | m³/m | lb.    | kg |
| Reversible |            |      |                     |             |                 |     |              |     |                               |      |        |    |
| KK5B546    | 29         | 21.6 | 900                 | 1800        | 183             | 248 | 300          | 407 | 795                           | 22.5 | —      | —  |
| KK5B550    | 30         | 22.3 | 880                 | 1750        | 202             | 274 | 325          | 441 | 850                           | 24.1 | —      | —  |

▲ ALL models must be operated with sufficient load to prevent speed from exceeding maximum allowable speed shown on performance curve. Performance figures are at 90 psig (620 kPa) air pressure.

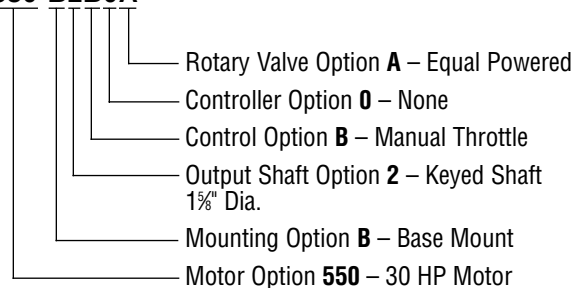


## KK5B Piston Air Motors

## Model Number Symbolization



## Example

**KK5B550-B2B0A**

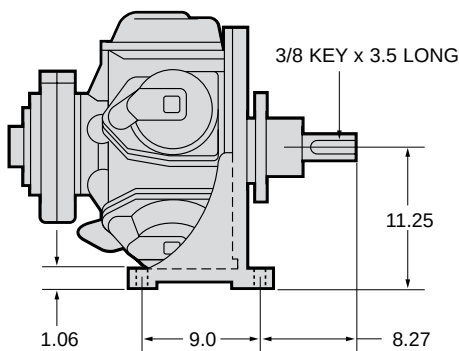
| Option               | Code | Description                                                   | Weight |     | Part Number         |
|----------------------|------|---------------------------------------------------------------|--------|-----|---------------------|
|                      |      |                                                               | lb.    | kg  |                     |
| Motor Options        | 546  | 29 Horsepower Motor                                           | 251    | 113 | KK5B546             |
|                      | 550  | 30 Horsepower Motor                                           | 251    | 113 | KK5B550             |
| Mounting Options     | A    | Flange Mount, STD with SAE C 2 & 4 Bolt Mount                 | 45     | 20  | Standard            |
|                      | B    | Base Mount, Stationary Mounting                               |        |     | K5B - Foot          |
| Output Shaft Options | 0    | *SAE C, STD with SAE C 14 Tooth Female Spline Input           | 13     | 6   | Standard            |
|                      | 1    | **NEMA 213TC and 215TC, Keyed Shaft 1 $\frac{1}{8}$ " dia.    |        |     | K5B - NEMA - 213    |
|                      | 2    | ***Keyed Shaft 1 $\frac{1}{8}$ " dia.                         |        |     | K5B - Shaft - 1.625 |
| Control Options      | A    | None                                                          | 19     | 19  | Standard            |
|                      | B    | Manual Throttle, Control Mounted Directly on Motor            |        |     | K5B - Manual        |
|                      | C    | Pilot Air Control, Required for Remote Controller Options     |        |     | K5B - Pilot         |
| Controller Options   | 0    | None                                                          |        |     | Standard            |
|                      | 1    | Pendant Control, STD 2 Button Pendant                         |        |     | MLK-K269C           |
|                      | 2    | Panel Control, Required for Remote Stationary Mounted Control |        |     | UWD - A686          |
| Rotary Valve Options | A    | Equal Powered                                                 |        |     | Standard            |
|                      | B    | Biased Powered CCW                                            |        |     | POA                 |
|                      | C    | Biased Powered CW                                             |        |     | POA                 |

\*Flange Gasket Required

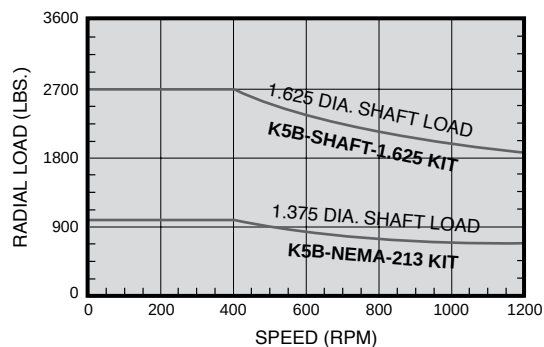
**\*\*Single Bearing Mount**

### \*\*\*Double Bearing Mount

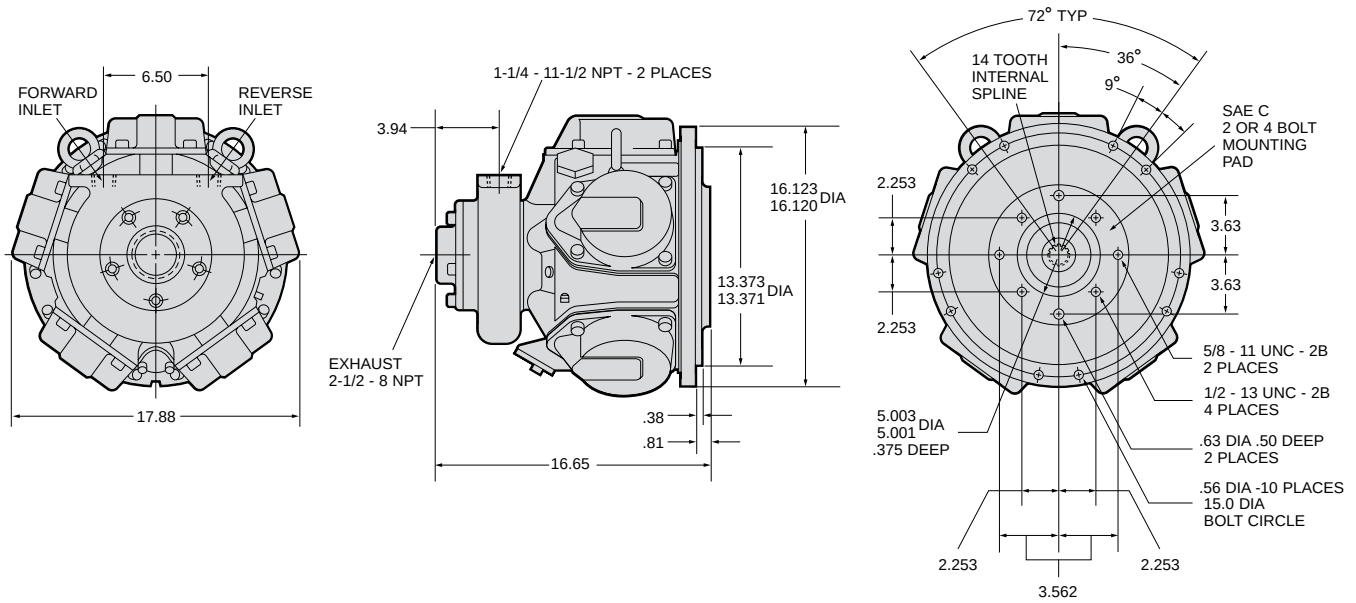
### Example KK5B550 - B2A0A Arrangement



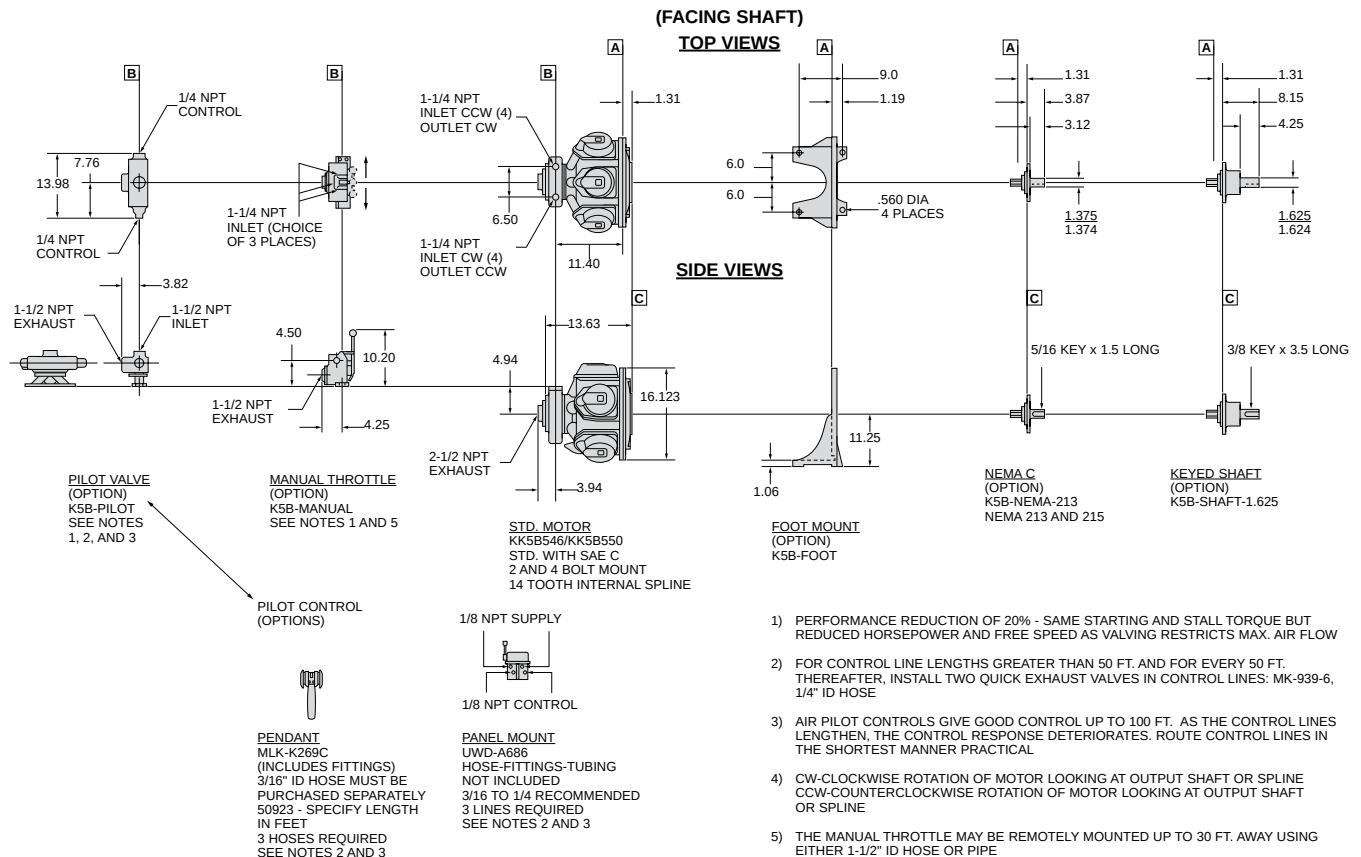
## KK5B Motor



## KK5B Piston Air Motor



## Top and Side Views



- 1) PERFORMANCE REDUCTION OF 20% - SAME STARTING AND STALL TORQUE BUT REDUCED HORSEPOWER AND FREE SPEED AS VALVING RESTRICTS MAX. AIR FLOW
- 2) FOR CONTROL LINE LENGTHS GREATER THAN 50 FT. AND FOR EVERY 50 FT. THEREAFTER, INSTALL TWO QUICK EXHAUST VALVES IN CONTROL LINES: MK-939-6, 1/4" ID HOSE
- 3) AIR PILOT CONTROLS GIVE GOOD CONTROL UP TO 100 FT. AS THE CONTROL LINES LENGTHEN, THE CONTROL RESPONSE DETERIORATES. ROUTE CONTROL LINES IN THE SHORTEST MANNER PRACTICAL
- 4) CW-CLOCKWISE ROTATION OF MOTOR LOOKING AT OUTPUT SHAFT OR SPLINE CCW-COUNTERCLOCKWISE ROTATION OF MOTOR LOOKING AT OUTPUT SHAFT OR SPLINE
- 5) THE MANUAL THROTTLE MAY BE REMOTELY MOUNTED UP TO 30 FT. AWAY USING EITHER 1-1/2" ID HOSE OR PIPE

## Components, Equipment and Accessories

### Filters, Regulators and Lubricators

Ingersoll Rand and ARO filters, regulators and lubricators give increased motor performance, reduce repair costs and extend motor life.

#### Filters

| Motor Series                                                      | Motor Inlet Size | Part No.   | NPT Size | Flow Rate scfm | Bowl Capacity oz. | Height in. | Width in. | Depth in. |
|-------------------------------------------------------------------|------------------|------------|----------|----------------|-------------------|------------|-----------|-----------|
| M002, SM1AM, SM1UP                                                | 1/8"             | F35121-420 | 1/4"     | 49             | 0.7               | 4.30       | 2.00      | 2.00      |
| 0, 2200, M004, M007, MOV005AA, SM2AM                              | 1/4"             | F35221-410 | 1/4"     | 73             | 1.20              | 6.00       | 2.30      | 2.30      |
| SM4AM                                                             | 1/4"             | F35231-410 | 3/8"     | 107            | 1.20              | 6.00       | 2.30      | 2.30      |
| 1801, 1841                                                        | 3/8"             | F35331-410 | 3/8"     | 150            | 2.40              | 7.00       | 2.80      | 2.80      |
| 17RA, 17RB, MVA017                                                | 3/8"             | F35341-410 | 1/2"     | 190            | 2.40              | 7.00       | 2.80      | 2.80      |
| 3800, 3840, 4800, 4840, 48RA, 48RB, 22N51-W/RC, SM6AM             | 1/2"             | F35341-410 | 1/2"     | 190            | 2.40              | 7.00       | 2.80      | 2.80      |
| SM8AM                                                             | 1/2"             | F35351-410 | 3/4"     | 211            | 2.40              | 7.00       | 2.80      | 2.80      |
| 34RA, 34RB, MVA034                                                | 1/2"             | F35461-410 | 1"       | 297            | 5.30              | 10.75      | 3.60      | 3.90      |
| 551, CCM, DD6M                                                    | 3/4"             | F35451-410 | 3/4"     | 273            | 5.30              | 10.75      | 3.60      | 3.90      |
| 92RA, 92RB, 92RM, 992RM, EEM, EE5M, HHM, EE3G, EE9G, EE53G, EE59G | 1"               | F35461-410 | 1"       | 297            | 5.30              | 10.75      | 3.60      | 3.90      |
| HH5M                                                              | 1"               | F42-0A-000 | 1-1/4"   | 860            | 13.00             | 14.90      | 8.50      | 8.50      |
| KK6M, MMP150, MOV075AA                                            | 1-1/4"           | F42-0A-000 | 1-1/4"   | 860            | 13.00             | 14.90      | 8.50      | 8.50      |
| KK5B546, KK5B550                                                  | 1-1/4"           | F35-0B-C28 | 1-1/2"   | 1280           | 12.50             | 19.00      | 7.80      | 7.80      |



#### Regulators

| Motor Series                                                      | Motor Inlet Size | Part No.   | NPT Size | Flow Rate scfm | Adj. Pressure Range psi | Height in. | Width in. | Depth in. |
|-------------------------------------------------------------------|------------------|------------|----------|----------------|-------------------------|------------|-----------|-----------|
| M002, SM1AM, SM1UP                                                | 1/8"             | R37121-600 | 1/4"     | 55             | 5 - 250                 | 3.50       | 2.90      | 2.00      |
| M004, M007, MOV005AA, SM2AM                                       | 1/4"             | R37221-600 | 1/4"     | 73             | 5 - 250                 | 4.75       | 2.20      | 2.70      |
| SM4AM                                                             | 1/4"             | R37231-600 | 3/8"     | 84             | 5 - 250                 | 4.75       | 2.20      | 2.70      |
| 1801, 1841                                                        | 3/8"             | R37331-600 | 3/8"     | 167            | 5 - 250                 | 5.50       | 3.20      | 2.80      |
| 17RA, 17RB, MVA017                                                | 3/8"             | R37341-600 | 1/2"     | 198            | 5 - 250                 | 5.50       | 3.20      | 2.80      |
| 3800, 3840, 4800, 4840, 48RA, 48RB, 22N51-W/RC, SM6AM             | 1/2"             | R37341-600 | 1/2"     | 198            | 5 - 250                 | 5.50       | 3.20      | 2.80      |
| 34RA, 34RB, MVA034, SM8AM                                         | 1/2"             | R37351-600 | 3/4"     | 200            | 5 - 250                 | 5.50       | 3.20      | 2.80      |
| 551, CCM, DD6M                                                    | 3/4"             | R37451-600 | 3/4"     | 290            | 5 - 250                 | 7.00       | 3.50      | 4.00      |
| 92RA, 92RB, 92RM, 992RM, EEM, EE5M, HHM, EE3G, EE9G, EE53G, EE59G | 1"               | R37461-600 | 1"       | 290            | 5 - 250                 | 7.00       | 3.50      | 4.00      |
| HH5M                                                              | 1"               | R30-0A-C00 | 1-1/4"   | 800            | 5 - 125                 | 10.30      | 4.30      | 4.30      |
| KK6M, MMP150, MOV075AA                                            | 1-1/4"           | R30-0A-C01 | 1-1/4"   | 1200           | 5 - 125                 | 10.30      | 4.30      | 4.30      |
| KK5B546, KK5B550                                                  | 1-1/4"           | R40-0B-C00 | 1-1/2"   | 1200           | 5 - 125                 | 11.90      | 5.30      | 5.30      |



#### Lubricators

| Motor Series                                                      | Motor Inlet Size | Part No.   | NPT Size | Flow Rate scfm | Bowl Capacity oz. | Height in. | Width in. | Depth in. |
|-------------------------------------------------------------------|------------------|------------|----------|----------------|-------------------|------------|-----------|-----------|
| M002, SM1AM, SM1UP                                                | 1/8"             | L36121-110 | 1/4"     | 57             | 0.50              | 5.00       | 2.00      | 2.00      |
| M004, M007, MOV005AA, SM2AM                                       | 1/4"             | L36221-110 | 1/4"     | 51             | 1.50              | 6.00       | 2.25      | 2.25      |
| SM4AM                                                             | 1/4"             | L36231-110 | 3/8"     | 105            | 1.50              | 6.00       | 2.25      | 2.25      |
| 1801, 1841                                                        | 3/8"             | L36331-110 | 3/8"     | 85             | 4.00              | 7.70       | 2.75      | 2.90      |
| 17RA, 17RB, MVA017                                                | 3/8"             | L36341-110 | 1/2"     | 156            | 4.00              | 7.70       | 2.75      | 2.90      |
| 3800, 3840, 4800, 4840, 48RA, 48RB, SM6AM, 22N51-W/RC             | 1/2"             | L36341-110 | 1/2"     | 156            | 4.00              | 7.70       | 2.75      | 2.90      |
| SM8AM                                                             | 1/2"             | L36351-110 | 3/4"     | 222            | 4.00              | 7.70       | 2.75      | 2.90      |
| 34RA, 34RB, MVA034                                                | 1/2"             | L36461-110 | 1"       | 332            | 4.00              | 10.00      | 3.60      | 3.90      |
| 551, CCM, DD6M                                                    | 3/4"             | L36451-110 | 3/4"     | 368            | 4.00              | 10.00      | 3.60      | 3.90      |
| 92RA, 92RB, 92RM, 992RM, EEM, EE5M, HHM, EE3G, EE9G, EE53G, EE59G | 1"               | L36461-110 | 1"       | 332            | 4.00              | 10.00      | 3.60      | 3.90      |
| HH5M                                                              | 1"               | L40-0A-000 | 1-1/4"   | 927            | 26.00             | 11.61      | 5.50      | 5.00      |
| KK6M, MMP150, MOV075AA                                            | 1-1/4"           | L40-0A-000 | 1-1/4"   | 927            | 26.00             | 11.61      | 5.50      | 5.00      |
| KK5B546, KK5B550                                                  | 1-1/4"           | L40-0B-000 | 1-1/2"   | 927            | 26.00             | 11.61      | 5.50      | 5.00      |





## IR and ARO Combination FRLs (Filter / Regulator / Lubricator)

| Motor Series                                                      | Motor Inlet Size | Part No.                  | NPT Size | Flow Rate scfm | Adj. Pressure Range psi | Bowl Capacity oz.                | Height in. | Width in. | Depth in. |
|-------------------------------------------------------------------|------------------|---------------------------|----------|----------------|-------------------------|----------------------------------|------------|-----------|-----------|
| M002, SM1AM, SM1UP                                                | 1/8"             | C38121-820                | 1/4"     | 46             | 5 - 250                 | FILTER = 0.4<br>LUBRICATOR = 0.4 | 5.20       | 4.75      | 3.20      |
| M004, M007, MOV005AA, SM2AM                                       | 1/4"             | C38221-810                | 1/4"     | 51             | 5 - 250                 | FILTER = 1.2<br>LUBRICATOR = 1.5 | 6.60       | 6.60      | 3.20      |
| SM4AM                                                             | 1/4"             | C38231-810                | 3/8"     | 63             | 5 - 250                 | FILTER = 1.2<br>LUBRICATOR = 1.5 | 6.60       | 6.60      | 3.20      |
| 1801, 1841                                                        | 3/8"             | C38331-810                | 3/8"     | 99             | 5 - 250                 | FILTER = 2.4<br>LUBRICATOR = 3.7 | 7.70       | 8.70      | 3.60      |
| 17RA, 17RB, MVA017                                                | 3/8"             | C38341-810                | 1/2"     | 150            | 5 - 250                 | FILTER = 2.4<br>LUBRICATOR = 3.7 | 7.70       | 8.70      | 3.60      |
| 3800, 3840, 22N51-W/RC                                            | 1/2"             | C38341-810                | 1/2"     | 150            | 5 - 250                 | FILTER = 2.4<br>LUBRICATOR = 3.7 | 7.70       | 8.70      | 3.60      |
| 4800, 4840, 48RA, 48RB, SM6AM                                     | 1/2"             | C38341-810                | 1/2"     | 150            | 5 - 250                 | FILTER = 2.4<br>LUBRICATOR = 3.7 | 7.70       | 8.70      | 3.60      |
| SM8AM                                                             | 1/2"             | C38351-810                | 3/4"     | 155            | 5 - 250                 | FILTER = 2.4<br>LUBRICATOR = 3.7 | 7.70       | 8.70      | 3.60      |
| 34RA, 34RB, MVA034                                                | 1/2"             | C38461-810                | 1"       | 215            | 5 - 250                 | FILTER = 5.3<br>LUBRICATOR = 3.2 | 10.75      | 11.10     | 4.30      |
| 551, CCM, DD6M                                                    | 3/4"             | C38451-810                | 3/4"     | 199            | 5 - 250                 | FILTER = 5.3<br>LUBRICATOR = 3.2 | 10.75      | 11.10     | 4.30      |
| 92RA, 92RB, 92RM, 992RM, EEM, EE5M, HHM, EE3G, EE9G, EE53G, EE59G | 1"               | C38461-810                | 1"       | 215            | 5 - 250                 | FILTER = 5.3<br>LUBRICATOR = 3.2 | 10.75      | 11.10     | 4.30      |
| HH5M                                                              | 1"               | Must use individual units |          |                |                         |                                  |            |           |           |
| KK5B546, KK5B550, KK6M, MMP150, MOV075AA                          | 1/4"             | Must use individual units |          |                |                         |                                  |            |           |           |

## Liquidator Filters

You can depend on Ingersoll Rand and ARO Liquidator Filters™ when you need clean, dry air and your regulator filter can't handle high volumes of liquid contaminants. Note that a lubricator should be installed between the air motor and the liquidator.

### Features

Two stage filtration cartridges remove 99% of liquid contaminants. One micron filter element removes 99% of all dirt particles 1 micron or larger. Quick release bowls enable easy cartridge replacement. Automatic float drain with manual override. Clear polycarbonate bowl with metal guard provides for quick inspection.

### Benefits

- Reduces liquid contaminants
- Increases air motor life
- Cuts maintenance costs

## Lubrication

Proper lubrication of air motors is a must to prevent excessive wear of moving parts; to prevent possible rust and corrosion of bare, unprotected surfaces. Ingersoll Rand oils and greases have been tested thoroughly and are recommended without reservation. Refer to Operation Manuals and Parts Lists for lubrication instructions.

### Liquidator Filters

| Female NPT | IR Part Number | Flow Rate scfm | Female NPT | ARO Part Number | Flow Rate scfm |
|------------|----------------|----------------|------------|-----------------|----------------|
| 1/4"       | 8842-W1-035    | 35             | 1/4"       | F25221-300      | 40             |
| 3/8"       | 8843-W1-035    | 35             | 3/8"       | F25231-300      | 51             |
| 1/2"       | 8844-W1-090    | 90             | 1/2"       | F25241-300      | 53             |
| 3/4"       | 8846-W1-090    | 90             | 3/4"       | F25452-310      | 50             |
| 1"         | 8828-W2-000*   | 175            | 1"         | F25462-310      | 150            |
| 1 1/4"     | 8830-W1-000    | 400            | 1 1/4"     | F25472-310      | 150            |
| 2"         | 8834-W1-000    | 700            | —          | —               | —              |

\*Two separate canisters

### Filters

### Oils

| Part Number | Oil Number | Quantity      | Recommended Use                      |
|-------------|------------|---------------|--------------------------------------|
| 10P<br>10G  | 10<br>10   | 1 pt<br>1 gal | Fractional horsepower Air Motors     |
| 50P<br>50G  | 50<br>50   | 1 pt<br>1 gal | One horsepower and larger Air Motors |

### Greases

| Part Number        | Grease Number | Quantity lb. | Recommended Use            |
|--------------------|---------------|--------------|----------------------------|
| 28 1 LB<br>28 8 LB | 28<br>28      | 1<br>8       | Motor gearing and bearings |

## Air System Components for Pneumatic Motors

### Filters

| Motor Series | Motor Inlet Size | Part No.   | NPT Size | Flow Rate scfm | Bowl Capacity oz. | Height in. | Width in. | Depth in. |
|--------------|------------------|------------|----------|----------------|-------------------|------------|-----------|-----------|
| 0000         | 1/8"             | F35111-420 | 1/8"     | 38             | 0.70              | 4.30       | 2.00      | 2.00      |
| 0            | 1/8"             | F35121-420 | 1/4"     | 49             | 0.70              | 4.30       | 2.00      | 2.00      |
| 0, 2200      | 1/4"             | F35221-410 | 1/4"     | 73             | 1.20              | 6.00       | 2.30      | 2.30      |
| 44           | 3/8"             | F35331-410 | 3/8"     | 150            | 2.40              | 7.00       | 2.80      | 2.80      |



### Regulators

| Motor Series | Motor Inlet Size | Part No.   | NPT Size | Flow Rate scfm | Adj. Pressure Range psi | Height in. | Width in. | Depth in. |
|--------------|------------------|------------|----------|----------------|-------------------------|------------|-----------|-----------|
| 0000         | 1/8"             | R37111-600 | 1/8"     | 43             | 5 - 250                 | 3.50       | 2.90      | 2.00      |
| 0            | 1/8"             | R37121-600 | 1/4"     | 55             | 5 - 250                 | 3.50       | 2.90      | 2.00      |
| 0, 2200      | 1/4"             | R37221-600 | 1/4"     | 73             | 5 - 250                 | 4.75       | 2.20      | 2.70      |
| SM4AM        | 1/4"             | R37231-600 | 3/8"     | 84             | 5 - 250                 | 4.75       | 2.20      | 2.70      |
| 44           | 3/8"             | R37331-600 | 3/8"     | 167            | 5 - 250                 | 5.50       | 3.20      | 2.80      |



### Lubricators

| Motor Series | Motor Inlet Size | Part No.   | NPT Size | Flow Rate scfm | Bowl Capacity oz. | Height in. | Width in. | Depth in. |
|--------------|------------------|------------|----------|----------------|-------------------|------------|-----------|-----------|
| 0000         | 1/8"             | L36111-120 | 1/8"     | 32             | 0.50              | 5.00       | 2.00      | 2.00      |
| 0            | 1/8"             | L36121-120 | 1/4"     | 57             | 0.50              | 5.00       | 2.00      | 2.00      |
| 0, 2200      | 1/4"             | L36221-110 | 1/4"     | 51             | 1.50              | 6.00       | 2.25      | 2.25      |
| SM4AM        | 1/4"             | L36231-110 | 3/8"     | 105            | 1.50              | 6.00       | 2.25      | 2.25      |
| 44           | 3/8"             | L36331-110 | 3/8"     | 85             | 4.00              | 7.70       | 2.75      | 2.90      |



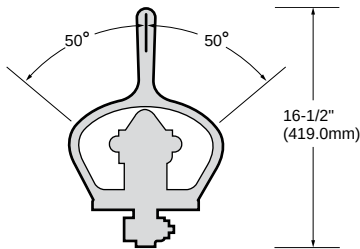
### IR and ARO Combination FRLs (Filter / Regulator / Lubricator)

| Motor Series | Motor Inlet Size | Part No.   | NPT Size | Flow Rate scfm | Adj. Pressure Range psi | Bowl Capacity oz.                | Height in. | Width in. | Depth in. |
|--------------|------------------|------------|----------|----------------|-------------------------|----------------------------------|------------|-----------|-----------|
| 0000         | 1/8"             | C38111-820 | 1/8"     | 34             | 5 - 250                 | FILTER = 0.4<br>LUBRICATOR = 0.4 | 5.20       | 4.75      | 3.20      |
| 0            | 1/8"             | C38121-820 | 1/4"     | 46             | 5 - 250                 | FILTER = 0.4<br>LUBRICATOR = 0.4 | 5.20       | 4.75      | 3.20      |
| 0, 2200      | 1/4"             | C38221-810 | 1/4"     | 51             | 5 - 250                 | FILTER = 1.2<br>LUBRICATOR = 1.5 | 6.60       | 6.60      | 3.20      |
| 44           | 3/8"             | C38331-810 | 3/8"     | 99             | 5 - 250                 | FILTER = 2.4<br>LUBRICATOR = 3.7 | 7.70       | 8.70      | 3.60      |



## Accessories

### Self-Closing Valves



### No. EU-A685

Self-Closing 4-Way Valve. Air inlet pipe tap 3/4" NPT, Motor connection pipe tap 1" NPT, exhaust pipe tap 3/4" NPT.

### Mufflers

| Part Number      | MALE NPT Size |
|------------------|---------------|
| MRV003A-AF350**  | 1/8"          |
| MRV015A-AC980*   | 1/4"          |
| SRA010A1-A212*** | 3/8"          |
| MRV040A-AC990**  | 1/2"          |
| MOV010AA-674*    | 1/2"          |
| 3BM-WM07         | 3/4"          |
| 3BM-A674*        | 1"            |
| 150BM-A674*      | 1 1/4"        |
| SS350-A674*      | 1 1/2"        |
| ST500-674        | 2"            |
| SS800-A674*      | 2 1/2"        |

\* High scfm Capacity

\*\* Medium scfm Capacity

\*\*\* Low scfm Capacity

### 3/8" Square Drive Adapters

These 3/8" Square Drive Adapters have a 3/8"-24 female thread, for use with Series M002 and M004 Motors equipped with threaded shafts.

| Part Number | Description                |
|-------------|----------------------------|
| R1440-212-1 | 3/8" square drive, 1" long |
| R1440-212-3 | 3/8" square drive, 3" long |

## Valves

| Part Number | Female NPT Size | Flow Rate | Description                                   |
|-------------|-----------------|-----------|-----------------------------------------------|
| E252LM      | 1/4"            | 26 scfm   | 3-Way Hand Lever/Manual Return                |
| E212LM      | 1/4"            | 26 scfm   | 4-Way Hand Lever/Manual Return                |
| E312LS      | 1/4"            | 26 scfm   | 4-Way, 3-Position Hand Lever, Spring Return   |
| K214LM      | 1/2"            | 90 scfm   | 4-Way Hand Lever/Manual Return                |
| K314LS      | 1/2"            | 90 scfm   | 4-Way, 3-Position Hand Lever, Spring Return   |
| M512LR      | 1/4"            | 41 scfm   | 4-Way, 3-Position Rotary Lever, Manual Return |
| M513LR      | 3/8"            | 65 scfm   | 4-Way, 3-Position Rotary Lever, Manual Return |
| M514LR      | 1/2"            | 85 scfm   | 4-Way, 3-Position Rotary Lever, Manual Return |

### No. K5B-REMOTE

Self-closing 4-Way Valve. Air inlet pipe tap 1 1/2" NPT, Motor connection pipe tap 1 1/2" NPT, exhaust pipe tap 1 1/2" NPT.

### One-Stop Replacement Component Shopping?



ARO® motion control and air preparation components include the Alpha® valve, Economair® cylinder and Module Air® air prep lines. Routinely used throughout industry, these lines have made their own name for their precision, durability and overall efficiency.

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### Tapped Exhaust Deflectors for Piped Away Exhaust

| Motor Series | Part Name                  | Part Number | Pipe Tap NPT |
|--------------|----------------------------|-------------|--------------|
| 1801<br>1841 | Exhaust Deflector Assembly | R1801-A123  | 3/4"         |
| 3800<br>3840 | Exhaust Deflector Assembly | R3800-A123  | 3/4"         |
| 4800<br>4840 | Exhaust Deflector Assembly | R4800-A123  | 1"           |

## "Special" Air Motors

While there are over 300 standard Air Motors in the complete Ingersoll Rand line, we realize that even this broad selection won't fill every need, every time. Virtually all components of our motors, from output shafts and housings to gear ratios, can be modified. Therefore we welcome the opportunity to design and build Air Motors to our customers' specifications when required.

Generally, yearly quantities of 100 plus are cost-effective. However, the opportunity to quote on lower volumes is always welcomed.

Frequently custom designed Air Motors can reduce OEM costs by easing product assembly, increasing performance, and avoiding the need to make special parts to incorporate the Air Motor in a product. We have the engineering capabilities to provide you with truly "turnkey" power units.

## Installation of Reversible Models



1

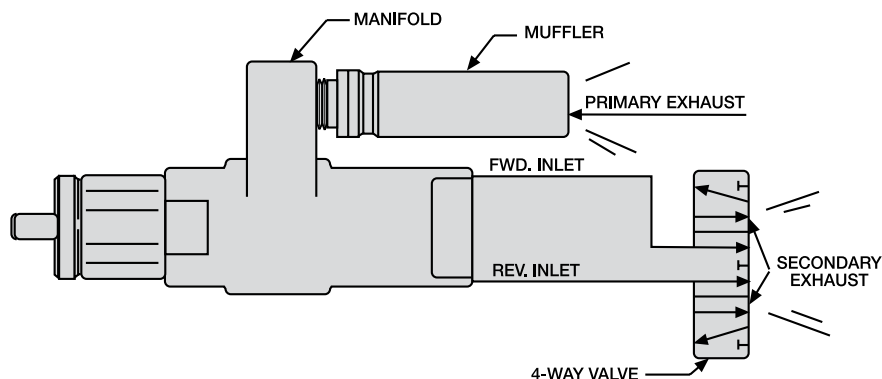


2

1. 30712 Hex Ball Lock Adapter. 3/8"-24 mounting thread, 1/4" (6.35 mm) hex drive size. See motors on pages 9, 11, 14, 16, and 19.
2. Square-Drive Adapter. See chart below.

| Part No. | Mfg. Thd. | Drive Size |
|----------|-----------|------------|
| 30384-5  | 3/8" 24   | 3/8"       |
| 30384-9  | 3/8"-24   | 1/2"       |
| 40768    | 1/2"-20   | 1/2"       |

## Recommended Installation for Reversible Models



On reversible air motors there are two exhausts. The primary exhaust exhausts air out through the manifold and muffler as in the forward rotation motors. Depending on which direction the motor is running, the opposite inlet port becomes the secondary exhaust and must be opened to atmosphere. A four-way valve, 3-position, spring-centered is recommended for all reversible air motors. An exhaust muffler must be threaded into the exhaust port of each valve to comply with the second level regulations as outlined in the Occupational Safety and Health Act of 1970.

## Warranty

### WARRANTY

#### AIR MOTORS

Ingersoll Rand warrants to the original user its air motors products to be free of defects in material and workmanship for a period of one year from the date of purchase. IR will repair, without cost, any Product found to be defective, including parts and labor charges, or at its option, will replace such Products or refund the purchase price less a reasonable allowance for depreciation, in exchange for the Product. Repairs or replacements are warranted for the remainder of the original warranty period.

If any product proves defective within its original one year warranty period, it should be returned to an appropriate Ingersoll Rand Service Distributor, transportation prepaid with proof of purchase or warranty card.

This warranty does not apply to Products which IR has determined to have been misused or abused, improperly maintained by the purchaser: or where the malfunction or defect can be attributed to the use of non-genuine IR parts.

IR makes no other warranty, and all implied warranties including any warranty of merchantability or fitness for a particular purpose are limited to the duration of the expressed warranty period as set for the above. IR's maximum liability is limited to the purchase price of the Product and in no event shall IR be liable for any consequential, indirect, incidental, or special damages of any nature arising from the sale or use of the Product, whether based on contract, tort, or otherwise.

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