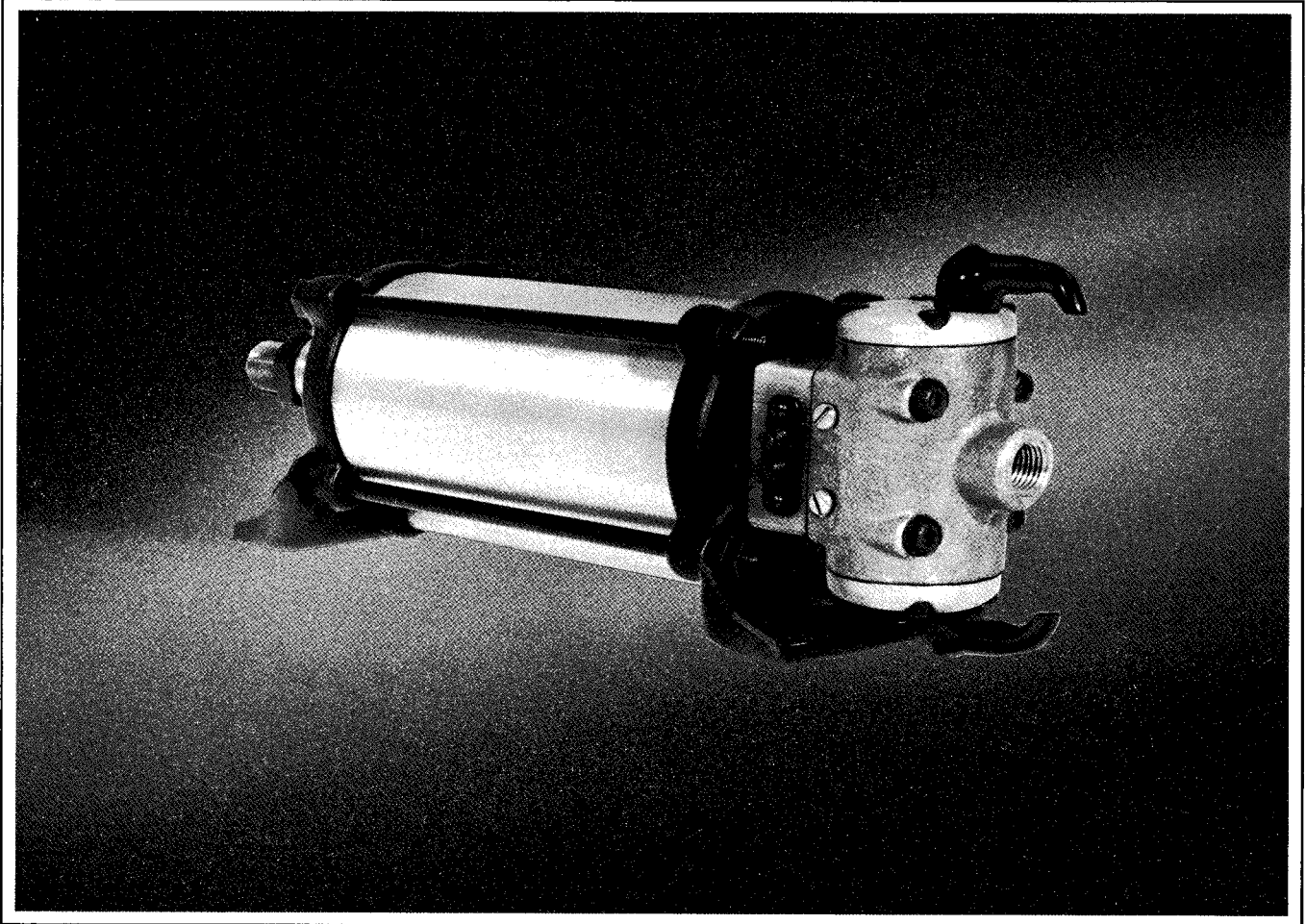


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**Schrader  
Bellows®**



**A**

# **Bellows Air Motor®**

## **Air Cylinder With Built-In Controls**

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For Cylinder Division Plant Locations – See Section B.

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Bellows®**

17

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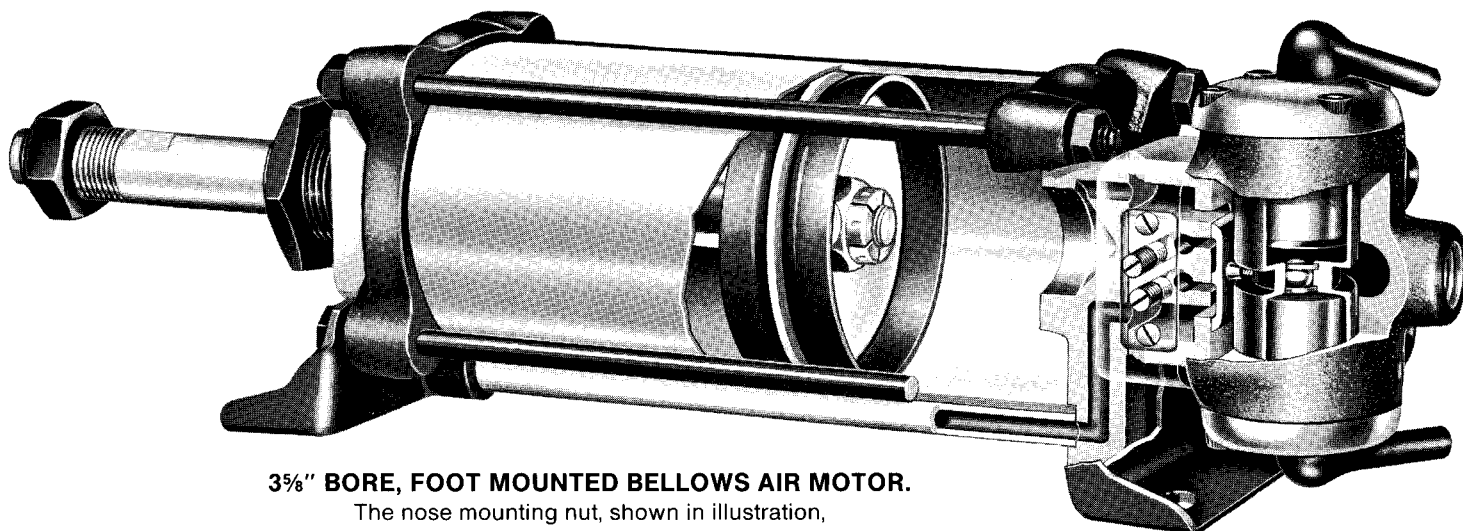
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\* Dimensions for Air Motors with valve options other than those listed can be obtained by using one of the Air Motor dimensional drawings in combination with the drawing of the desired control valve.

# THE BELLOWS AIR MOTOR® . . .

## the air cylinder with control built-in



**3 7/8" BORE, FOOT MOUNTED BELLOWS AIR MOTOR.**

The nose mounting nut, shown in illustration, is furnished on Nose Mounted Cylinders only.

The Bellows Air Motor is a "packaged power unit." It takes the conventional double-acting air cylinder with its two ports, its separate directional control valve, and its two separate speed regulating screws; and combines them into a single compact unit that requires only a single air connection.

The integral valving provides instantaneous piston response. There is no lag or hesitancy to complicate synchronization with

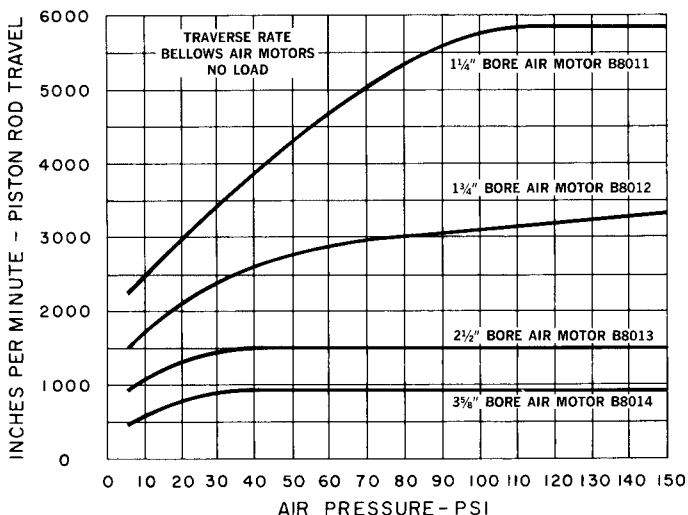
other equipment. The two speed control screws permit independent adjustment of advance and retract strokes to match application requirements.

The built-in controls on the Bellows Air Motor simplify machine design projects. Design and engineering time is reduced. Installation is faster, and less space is required allowing the equipment to be put into production faster.

**CAUTION:**

"If it is possible that the ambient temperature may fall below freezing, the medium must be moisture free to prevent internal damage or unpredictable behavior."

**PISTON ROD SPEEDS  
STANDARD BELLOWS AIR MOTORS**



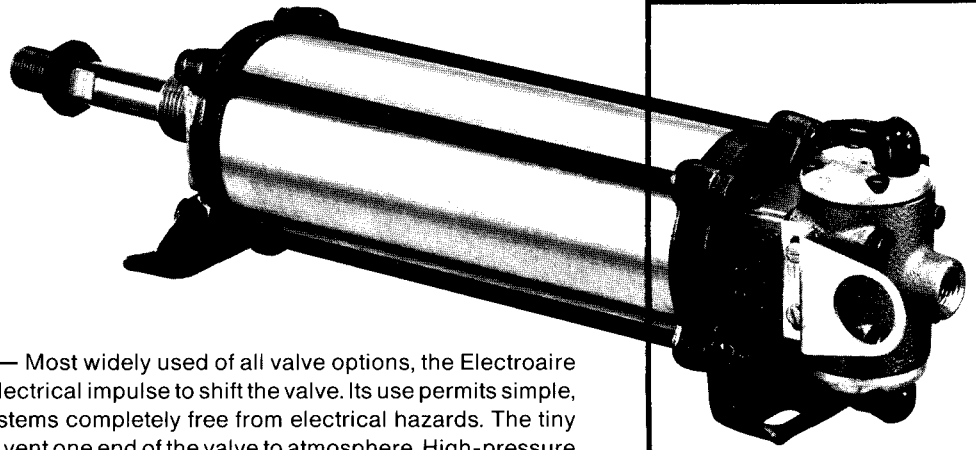
**THEORETICAL THRUST DEVELOPED  
BY STANDARD BELLOWS AIR MOTORS  
(ON ADVANCE STROKE)**

AIR MOTOR SERIES	B8011 Series	B8012 Series	B8013 Series	B8014 Series
BORE SIZE (inches)	1 1/4	1 3/4	2 1/2	3 7/8
PISTON AREA ADVANCE STROKE (Sq. in.)	1.227	2.405	4.908	10.321
PISTON AREA RETRACT STROKE (Sq. in.)	.921	2.099	4.602	9.880
<b>AIR PRESSURE</b>	<b>Theoretical Developed Thrust in Pounds</b>			
10 psi	12	24	50	103
20 psi	24	48	100	206
30 psi	37	72	150	310
40 psi	48	96	200	413
50 psi	61	120	249	516
60 psi	73	144	299	619
80 psi	98	192	399	826
100 psi	122	240	499	1032
120 psi	146	288	599	1239
150 psi	183	360	748	1548

For Cylinder Division Plant Locations – See Section B.

**Schrader  
Bellows®**

# CONTROL VALVE OPTIONS



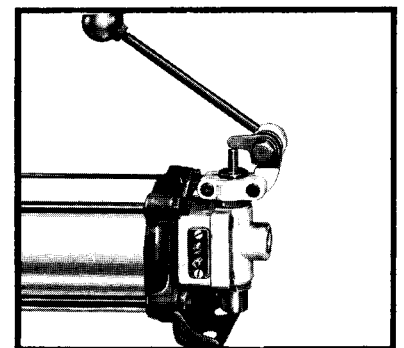
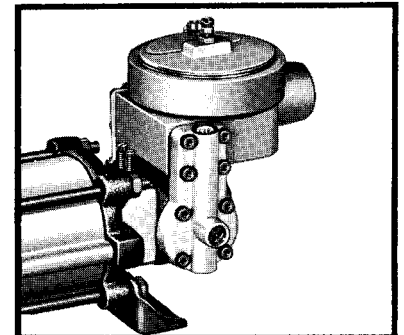
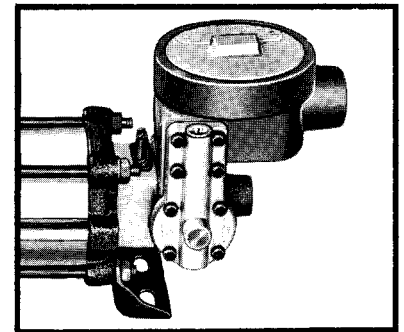
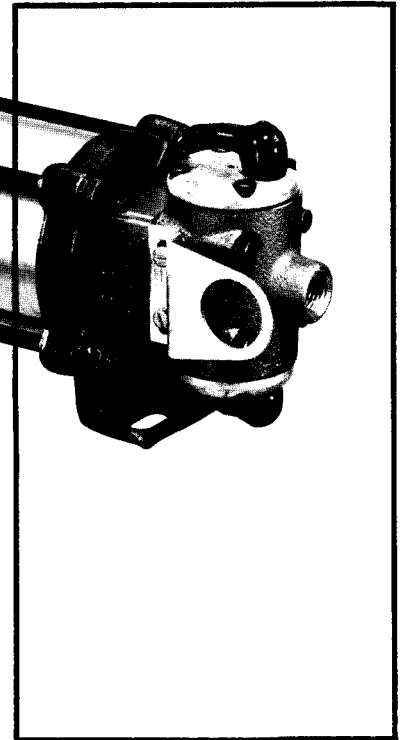
**THE ELECTROAIRE® VALVE** — Most widely used of all valve options, the Electroaire Valve requires only a momentary electrical impulse to shift the valve. Its use permits simple, low voltage electrical interlock systems completely free from electrical hazards. The tiny solenoids, when energized, simply vent one end of the valve to atmosphere. High-pressure air against the opposite end of the valve piston causes the valve to shift.

The Electroaire valve is fast, quiet and shock free, and it will operate submerged, flooded with coolant or piled high with chips. A step-down transformer is available for Air Motors equipped with a 12 V 60 Hz Electroaire Valve. Transformers may be ordered from Accessory Catalog ACC-F please specify your line voltage-115,230 or 460 volts, 60 Hz. For Air Line Pressures and Specifications see Page 334.

**THE ELECTROAIRE VALVE WITH JUNCTION BOX** — Incorporates the design features of the Electroaire Valve described above. This valve is completely enclosed in a bronze housing to permit its use in applications designed for NEMA class 1, 2, 3, 4 and 12. The junction box is sealed by a threaded closure which seats against a gasket in the housing. The electrical conduit inlet is threaded and the entire unit is dustproof. End caps on the valve are tapped  $\frac{1}{8}$ " NPT to permit piping away the air that is exhausted when the valve is shifted. For Air Line Pressures and Specifications see Page 335.

**THE ELECTROAIRE VALVE WITH JUNCTION BOX AND MANUAL OVERRIDE** — This Valve is identical in operation and interchangeable with the Electroaire. As an added feature, this valve includes manual overrides on each side of the unit and may be used to shift the valve during machine set-up. For Air Line Pressures and Specifications see Page 335.

**THE MANUAL VALVE** — The manual valve is lever operated and equipped with spring-return to automatically return the valve to its normal position when pressure on the operating lever is relieved. The lever is fitted with a ball which may be replaced with an optional clevis for mechanical operation. The lever is designed to adjust to eight vertical positions, and the lever assembly may be swung around to operate in any vertical plane. If Manual Lever return is desired, the Valve is available with a Non-Spring Return Lever. For Air Line Pressures and specifications see Page 336.

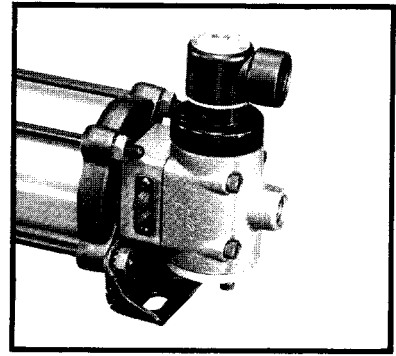


For additional information – call your local  
Schrader Bellows Distributor.

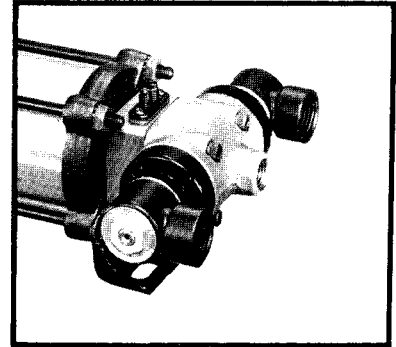
**Schrader  
Bellows®**



**SINGLE-SOLENOID OPERATED AIR PILOT VALVE — “MAINTAINED CIRCUITS”** — This Air Motor employs a single solenoid pilot valve. The Air Motor control valve is shifted when solenoid is energized and it remains in its shifted position only as long as the solenoid is continuously energized. When the circuit is broken, the control valve returns to its normal position. For Air Line Pressures and specifications see Page 337.

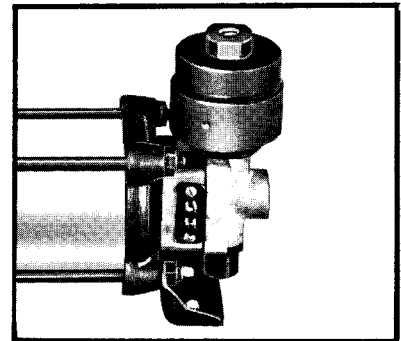


**DOUBLE-SOLENOID OPERATED AIR PILOT VALVE — “MOMENTARY CIRCUITS”** — Two solenoid pilots are used to actuate the Air Motor control valve. A momentary signal to one of the solenoids causes the main control valve to shift. The Air Motor control valve remains in the shifted position until a signal is received by the opposite solenoid. For Air Line Pressures and specifications see Page 337.

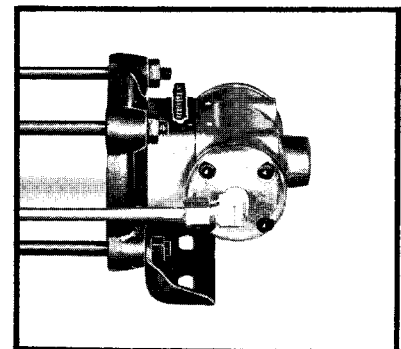


**PNEUMATIC PILOT OPERATED** — This option provides all-pneumatic control. Maintained air pressure to the air pilot holds the control valve in its shifted position. When air pressure to the air pilot is released, the control valve reverses. Pneumatic pressure to the pilot valve may be controlled by a small 3-way pneumatic valve.

Double air pilots are available, to provide all-pneumatic control using momentary signals. With the double air pilot, momentary signals are applied alternately to the air pilots to shift the control valve. For Air Line Pressures and specifications see Page 338.



**PNEUMATIC POPPET VALVE** — This valve is identical in design to the Electroaire Valve except the solenoids are replaced with air-control end caps that are tapped for 1/8" NPT pipe connections. Two small, normally-closed, 2-way valves may be connected to the end caps to provide control. Momentary actuation of one of the small, valves will permit sufficient air to escape from one of the ends of the Air Motor control valve creating the pressure differential which causes the control valve to shift. Operating range: 10 to 175 psi.



A

# THE HYDRO-CHECK®

## gives the Air Motor the precision and smoothness of hydraulic control

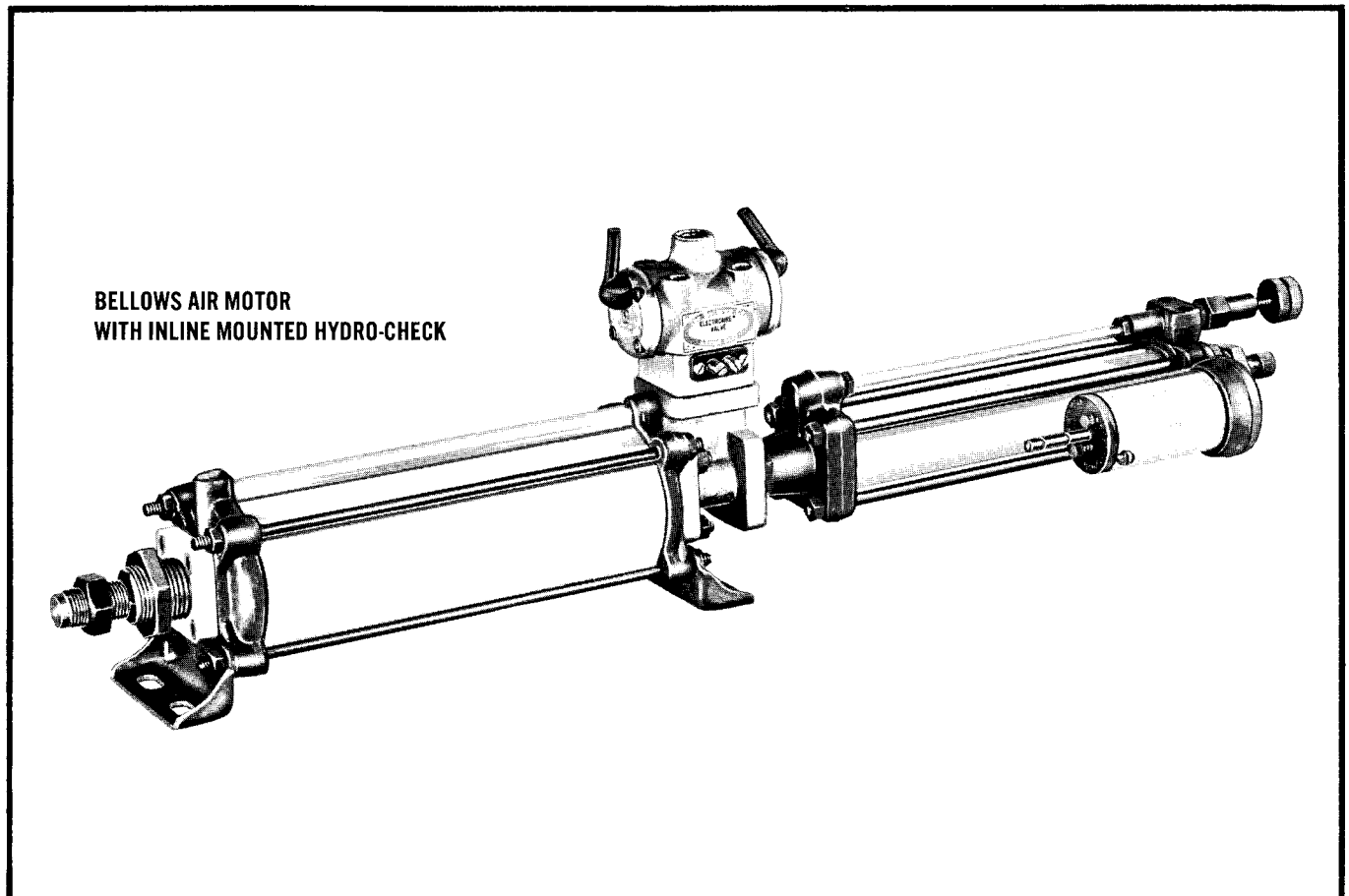
The Hydro-Check® — a compact, self-contained hydraulic unit can be used with the Bellows Air Motors and many other Schrader Bellows Pneumatic devices. The Hydro-Check gives hydraulic precision to the operation of Air Motors and provides hydraulically controlled feed rates for accurate tool or work feeding.

Two basic Hydro-Checks are available: a series that is designed to check thrust loads up to 1200 pounds on either the forward or reverse stroke, and a series that will check thrust up to 3000 pounds on forward or reverse or both.

Hydro-Checks are available that permit rapid advance to the work, controlled feeding through the work and rapid return. The 3000 pound series is also available with "skip-check" or "stop-check" controls. Skip-check models permit checking action, once begun, to be interrupted at any number of points. Stop-check models permit the piston rod to be stopped at any point or points in its travel, dwell for a desired time, and then continue.

With stop and skip controls, the Bellows Air Motor/Hydro-Check unit becomes a variable-speed, variable-stroke cylinder that can provide nearly any pattern of linear motion.

A compact Air Motor/Hydro-Check Unit is available with choice of 1200 pound or 3000 pound Hydro-Check integrally mounted inline as shown in the illustration. The 1200 pound Hydro-Check provides checking action throughout the entire stroke length on either advance or retract stroke (depending upon which unit was ordered). The 3000 pound series Hydro-Check is available with other features such as stop-check, skip-check and precision valving which are not available in the lighter duty model. See Catalog HC-1 for complete information on Hydro-Checks.



**BELLOWS AIR MOTOR  
WITH INLINE MOUNTED HYDRO-CHECK**

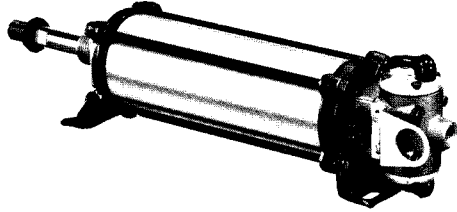
For additional information – call your local  
Schrader Bellows Distributor.  
[www.comoso.com](http://www.comoso.com)

**Schrader  
Bellows®**

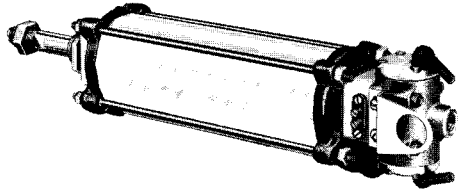
# MOUNTING STYLES

## INTEGRAL VALVING

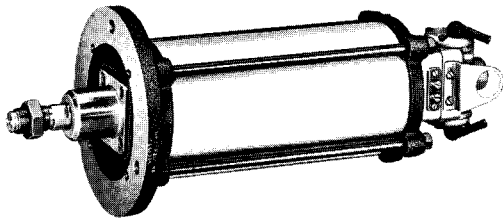
FOOT MOUNTED AIR MOTOR



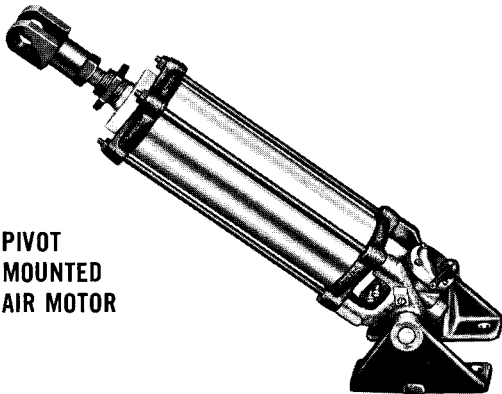
NOSE MOUNTED AIR MOTOR



FRONT FLANGE MOUNTED  
AIR MOTOR

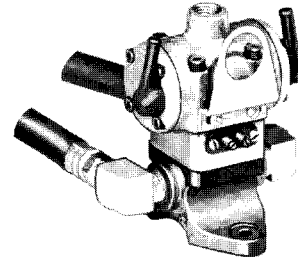


PIVOT  
MOUNTED  
AIR MOTOR

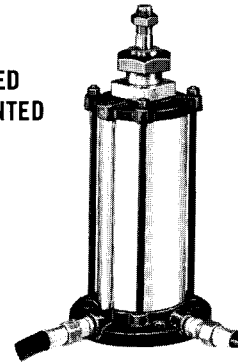


## REMOTE VALVING

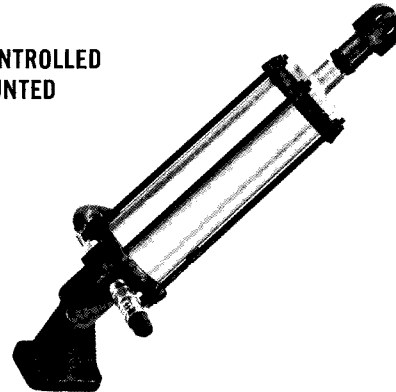
REMOTE  
ELECTROAIRE  
CONTROL VALVE



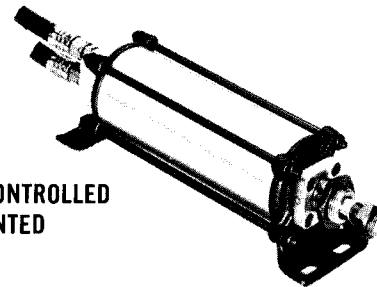
REMOTE CONTROLLED  
REAR FLANGE MOUNTED  
AIR MOTOR



REMOTE CONTROLLED  
CLEVIS MOUNTED  
AIR MOTOR



REMOTE CONTROLLED  
FOOT MOUNTED  
AIR MOTOR



**A**

# HOW TO ORDER

Please order Bellows Air Motors by model number from the table below. From the section of the table describing the desired control valve option, select the model number for the mounting style and bore size required. The model numbers shown in the table designate non-cushioned Air Motors with "standard" seals. Following the model number, **SPECIFY STROKE LENGTH AND VOLTAGE.**

**FOR EXAMPLE** — Order: "Model B8011-2005 with 4½ inch stroke and 12 v 60 Hz.

For available voltage for Electroaire® Valves see pages 334 and 335.

**WHEN ORDERING UNITS CONTROLLED BY SINGLE OR DOUBLE SOLENOID OPERATED AIR PILOTS,** specify the operating voltage and cycle for AC, or voltage for DC, so that the correct solenoid coils are used.

**FOR EXAMPLE** — Order: "Model B8011-2027 with 5 inch stroke. Solenoid 115 volt, 60 cycle AC."

For available voltage for Pilot Operated Valves see page 337.

## MODEL NUMBER DESIGNATIONS OF BELLOWS AIR MOTORS (NON-CUSHIONED UNITS)

VALVE ARRANGEMENT	1¼" Bore	1¾" Bore	2½" Bore	3¾" Bore
<b>AIR MOTOR ONLY (NO VALVE; NO ADAPT. BLOCK)</b>				
Foot Mounting .....	B8011-2000	B8012-2000	B8013-2000	B8014-2000
Nose Mounting .....	B8011-1000	B8012-1000	B8013-1000	B8014-1000
Pivot Mounting .....	B8011-5000	B8012-5000	B8013-5000	B8014-5000
Pivot Mounting (For Electroaire Valves w JCT Box) .....	B8011-5099	B8012-5099	B8013-5099	B8014-5099
Front Flange Mounting .....	.....	B8012-3000	B8013-3000	B8014-3000
Clevis Mounting .....	B8011-6000	B8012-6000	B8013-6000	B8014-6000
Rear Flange Mounting .....	.....	B8012-4000	B8013-4000	B8014-4000
<b>ELECTROAIRE® VALVE</b>				
Foot Mounting .....	B8011-2005	B8012-2005	B8013-2005	B8014-2005
Nose Mounting .....	B8011-1005	B8012-1005	B8013-1005	B8014-1005
Pivot Mounting .....	B8011-5005	B8012-5005	B8013-5005	B8014-5005
Front Flange Mounting .....	.....	B8012-3005	B8013-3005	B8014-3005
Remote Control Foot Mounting .....	B8011-2405	B8012-2405	B8013-2405	B8014-2405
Remote Control Clevis Mounting .....	B8011-6405	B8012-6405	B8013-6405	B8014-6405
Remote Control Rear Flange Mounting .....	.....	B8012-4405	B8013-4405	B8014-4405
<b>ELECTROAIRE VALVE WITH JUNCTION BOX</b>				
Foot Mounting .....	B8011-2010	B8012-2010	B8013-2010	B8014-2010
Nose Mounting .....	B8011-1010	B8012-1010	B8013-1010	B8014-1010
Pivot Mounting .....	B8011-5010	B8012-5010	B8013-5010	B8014-5010
Front Flange Mounting .....	.....	B8012-3010	B8013-3010	B8014-3010
Remote Control Foot Mounting .....	B8011-2410	B8012-2410	B8013-2410	B8014-2410
Remote Control Clevis Mounting .....	B8011-6410	B8012-6410	B8013-6410	B8014-6410
Remote Control Rear Flange Mounting .....	.....	B8012-4410	B8013-4410	B8014-4410
<b>ELECTROAIRE VALVE WITH JUNCTION BOX and OVERRIDES</b>				
Foot Mounting .....	B8011-2016	B8012-2016	B8013-2016	B8014-2016
Nose Mounting .....	B8011-1016	B8012-1016	B8013-1016	B8014-1016
Pivot Mounting .....	B8011-5016	B8012-5016	B8013-5016	B8014-5016
Front Flange Mounting .....	.....	B8012-3016	B8013-3016	B8014-3016
Remote Control Foot Mounting .....	B8011-2416	B8012-2416	B8013-2416	B8014-2416
Remote Control Clevis Mounting .....	B8011-6416	B8012-6416	B8013-6416	B8014-6416
Remote Control Rear Flange Mounting .....	.....	B8012-4416	B8013-4416	B8014-4416
<b>MANUALLY OPERATED CONTROL VALVE</b>				
Foot Mounting .....	B8011-2002	B8012-2002	B8013-2002	B8014-2002
Nose Mounting .....	B8011-1002	B8012-1002	B8013-1002	B8014-1002
Pivot Mounting .....	B8011-5002	B8012-5002	B8013-5002	B8014-5002
Front Flange Mounting .....	.....	B8012-3002	B8013-3002	B8014-3002
Remote Control Foot Mounting .....	B8011-2402	B8012-2402	B8013-2402	B8014-2402
Remote Control Clevis Mounting .....	B8011-6402	B8012-6402	B8013-6402	B8014-6402
Remote Control Rear Flange Mounting .....	.....	B8012-4402	B8013-4402	B8014-4402
<b>SINGLE SOLENOID OPERATED AIR-PILOT VALVE</b>				
Foot Mounting .....	B8011-2043	B8012-2043	B8013-2043	B8014-2043
Nose Mounting .....	B8011-1043	B8012-1043	B8013-1043	B8014-1043
Pivot Mounting .....	B8011-5043	B8012-5043	B8013-5043	B8014-5043
Front Flange Mounting .....	.....	B8012-3043	B8013-3043	B8014-3043
Remote Control Foot Mounting .....	B8011-2443	B8012-2443	B8013-2443	B8014-2443
Remote Control Clevis Mounting .....	B8011-6443	B8012-6443	B8013-6443	B8014-6443
Remote Control Rear Flange Mounting .....	.....	B8012-4443	B8013-4443	B8014-4443



# MODEL NUMBER DESIGNATIONS OF BELLOWS AIR MOTORS (NON-CUSHIONED UNITS)

VALVE ARRANGEMENT	1¼" Bore	1¾" Bore	2½" Bore	3⅝" Bore
<b>DOUBLE SOLENOID OPERATED AIR-PILOT VALVE</b>				
Foot Mounting	B8011-2044	B8012-2044	B8013-2044	B8014-2044
Nose Mounting	B8011-1044	B8012-1044	B8013-1044	B8014-1044
Front Flange Mounting		B8012-3044	B8013-3044	B8014-3044
Remote Control Foot Mounting	B8011-2444	B8012-2444	B8013-2444	B8014-2444
Remote Control Clevis Mounting	B8011-6444	B8012-6444	B8013-6444	B8014-6444
Remote Control Rear Flange Mounting		B8012-4444	B8013-4444	B8014-4444
<b>PNEUMATIC PILOT OPERATED</b>				
Foot Mounting	B8011-2023	B8012-2023	B8013-2023	B8014-2023
Nose Mounting	B8011-1023	B8012-1023	B8013-1023	B8014-1023
Pivot Mounting	B8011-5023	B8012-5023	B8013-5023	B8014-5023
Front Flange Mounting		B8012-3023	B8013-3023	B8014-3023
Remote Control Foot Mounting	B8011-2423	B8012-2423	B8013-2423	B8014-2423
Remote Control Clevis Mounting	B8011-6423	B8012-6423	B8013-6423	B8014-6423
Remote Control Rear Flange Mounting		B8012-4423	B8013-4423	B8014-4423
<b>DOUBLE PNEUMATIC PILOT OPERATED</b> —Use model numbers above for PNEUMATIC PILOT OPERATED UNITS and change final two digits from "23" to "24".				
<b>PNEUMATIC POPPET VALVE</b>				
Foot Mounting	B8011-2006	B8012-2006	B8013-2006	B8014-2006
Nose Mounting	B8011-1006	B8012-1006	B8013-1006	B8014-1006
Pivot Mounting	B8011-5006	B8012-5006	B8013-5006	B8014-5006
Front Flange Mounting		B8012-3006	B8013-3006	B8014-3006
Remote Control Foot Mounting	B8011-2406	B8012-2406	B8013-2406	B8014-2406
Remote Control Clevis Mounting	B8011-6406	B8012-6406	B8013-6406	B8014-6406
Remote Control Rear Flange Mounting		B8012-4406	B8013-4406	B8014-4406
<b>CONTINUOUS-CYCLING AIR MOTORS (Non Cushion only)</b>				
ALL PNEUMATIC, Foot Mounted	B5311-2018	B5312-2018	B5313-2018	—
ELECTRICALLY CONTROLLED, Foot Mounted (12 v 60 Hz. only)	B5311-2020	B5312-2020	B5313-2020	—
<b>SINGLE-CYCLING AIR MOTORS (Non Cushion only)</b>				
ALL PNEUMATIC, Foot Mounted	B5311-2021	B5312-2021	B5313-2021	—
ELECTRICALLY CONTROLLED, Foot Mounted (12 v 60 Hz. only)	B5311-2019	B5312-2019	B5313-2019	—

**A**

## HOW TO ORDER CUSHIONING AND HI-TEMP SEAL OPTIONS

**HIGH-TEMP SEALS** To order Hi-Temp Seals, change the first digit before the hyphen in the model number as follows.

**NOTE: HI-TEMP SEALS ARE NOT AVAILABLE ON CUSHIONED AIR MOTORS.**

- CHANGE 1 to 6 (1¼" Bore)
- CHANGE 2 to 7 (1¾" Bore)
- CHANGE 3 to 8 (2½" Bore)
- CHANGE 4 to 9 (3⅝" Bore)

**FOR EXAMPLE** — Model B8011-2005 becomes B8016-2005.

**CUSHIONING** — Cushioning is not available on: 1¼" bore Air Motors; continuous or Single Cycle Air Motors. Cushioning not recommended for units with 2" stroke or less. Other Air Motors may be ordered cushioned front, cushioned rear or cushioned both ends.

**TO ORDER CUSHIONING** — Select the model number for the desired **non-cushioned** Air Motor. Change the two digits following the hyphen by substituting the two digits that describe the desired cushioning in the table below.

**FOR EXAMPLE** — Model B8012-2005 becomes B8012-2105 when cushioned front or B8012-2305 when cushioned both ends.

AIR MOTOR MOUNTING TYPE	CUSHIONED FRONT	CUSHIONED REAR	CUSHIONED BOTH ENDS
FOOT MOUNTING	21	22	23
NOSE MOUNTING	11	12	13
PIVOT MOUNTING	51	52	53
FRONT FLANGE MOUNTING	31	32	33
REMOTE CONTROL FOOT MTG.	25	26	27
REMOTE CONTROL CLEVIS MTG.	65	66	67
REMOTE CONTROL REAR FLANGE MOUNTING	45	NOT AVAILABLE	

## STANDARD STROKE LENGTHS

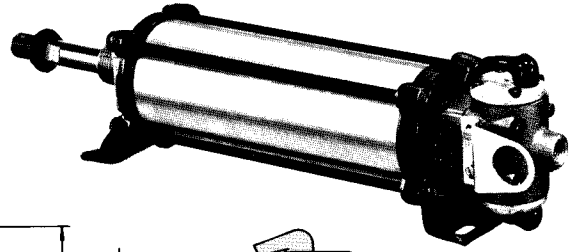
Stroke lengths up to 24 inches are considered standard for 1¼", 1¾", and 2½" bore Air Motors; and up to 30 inches for 3⅝" bore units. With adequate rod support — and in mounting positions which do not impose side load on the piston rod — longer stroke lengths are regularly used.

## FOOT MOUNTED BELLOWS AIR MOTOR® with ELECTROAIRE® VALVE

(Operating range: 20 to 150 psi)

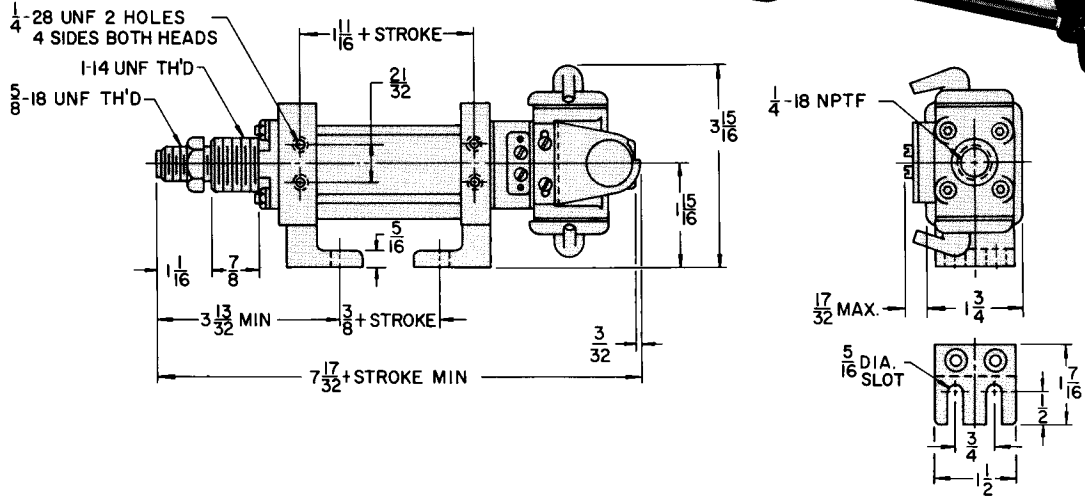
For Remote Foot Mounted Air Motor see page 331.  
FOR NOSE MOUNTED AIR MOTORS use these dimensional drawings less mounting feet.

Nose mounting nut on 1¼", 1¾", and 2½" Air Motors is ¼" thick. On 3⅝" bore, nut is ⅝" thick.



### 1¼" BORE—MODEL B8011-2005

Not available in cushioned models.



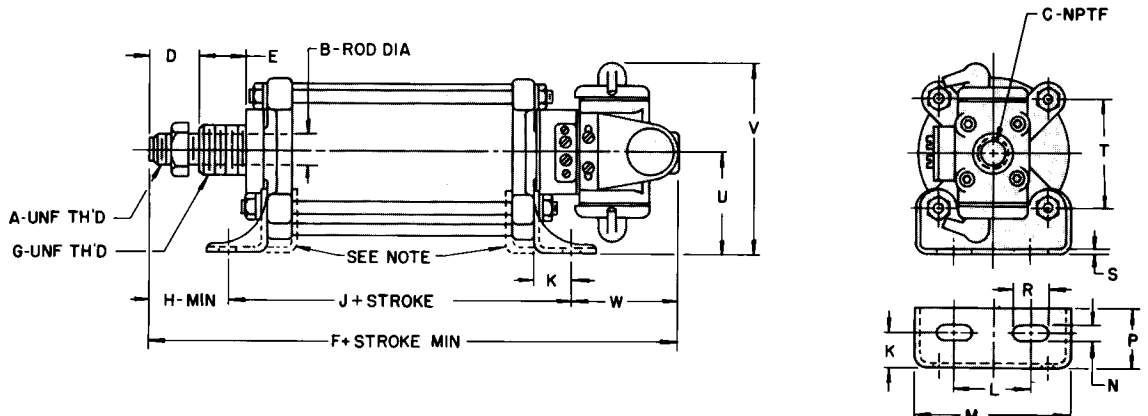
### 1¾" BORE — MODEL B8012- 2■05

### 2½" BORE — MODEL B8013- 2■05

### 3⅝" BORE — MODEL B8014- 2■05

■ To complete the Model Number replace the square with one of the following digits to indicate the desired cushioning:  
0—non-cushioned      2—cushioned rear  
1—cushioned front      3—cushioned both ends

MINIMUM Stroke for cushioning, 2 inches.



Dimensions in this table are shown for both cushioned and non-cushioned units. Before ordering, see pages 320 and 321 for model number information on cushioning and optional features.

BORE SIZE	A	B	C	D	E	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	G	H	J <sub>0</sub>	J <sub>1</sub>	J <sub>2</sub>	K	L	M	N	P	R	S	T	U	V	W
1 3/4	5/8	5/8	1/4-18	3/32	7/8	7 1/2	8 15/16	10 11/32	-14	2 11/32	2 3/8	3 13/16	5 7/32	11/16	1 1/2	2 3/4	9/32	1 1/8	5/8	7/64	1 1/16	15/16	3 15/16	2 25/32
2 1/2	5/8	5/8	1/4-18	3/32	7/8	7 17/32	8 9/32	9 15/32	-14	1 21/32	3 25/32	4 3/4	5 23/32	11/16	1 1/2	3 1/16	11/32	3/16	23/32	7/64	2 1/8	1 15/16	3 15/16	2 3/32
3 5/8	3/4	3/4	3/8-18	1/4	1 1/8	10 1/2	11 1/4	12 1/2	3 1/2	4 17/32	5 55/64	7 11/64	11/16	1 3/4	4	7/16	3/16	15/16	11/64	2 31/64	2 47/64	4 49/64	2 7/16	

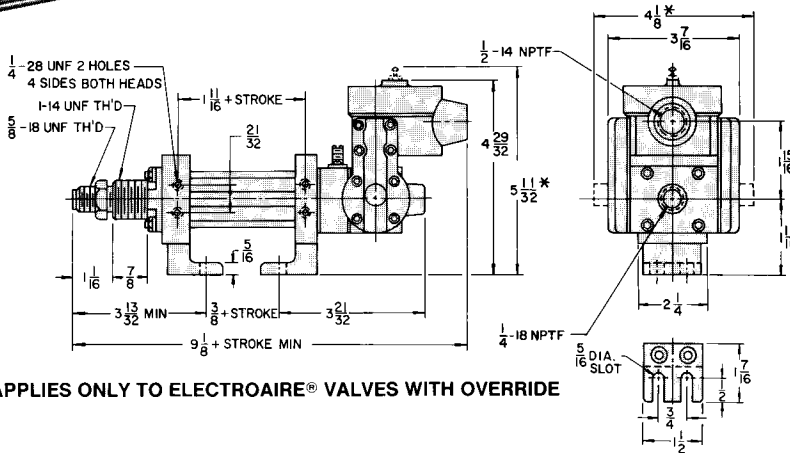
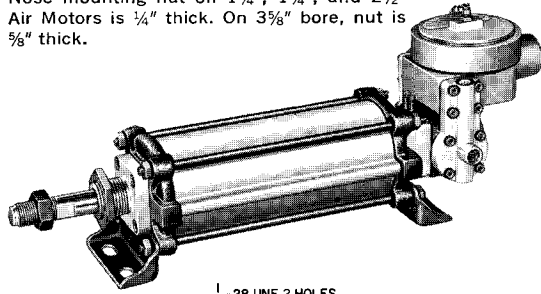
DOTTED LINES INDICATE LOCATION OF MOUNTING BRACKETS ON 1¼" BORE AIR MOTOR.

F<sub>0</sub>, J<sub>0</sub>—INDICATES DIMENSION OF NON-CUSHIONED AIR MOTOR.  
F<sub>1</sub>, J<sub>1</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED ONE END.  
F<sub>2</sub>, J<sub>2</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED BOTH ENDS.

For Remote Foot Mounted Air Motor see page 331.

FOR NOSE MOUNTED AIR MOTORS use these dimensional drawings less mounting feet.

Nose mounting nut on 1¼", 1¾", and 2½" Air Motors is ¼" thick. On 3⅝" bore, nut is ⅝" thick.



\*APPLIES ONLY TO ELECTROAIRE® VALVES WITH OVERRIDE

## FOOT MOUNTED BELLOWS AIR MOTOR® with ELECTROAIRE® VALVE with JUNCTION BOX or JUNCTION BOX and MANUAL OVERRIDE

(Operating range: 20 to 150 psi)

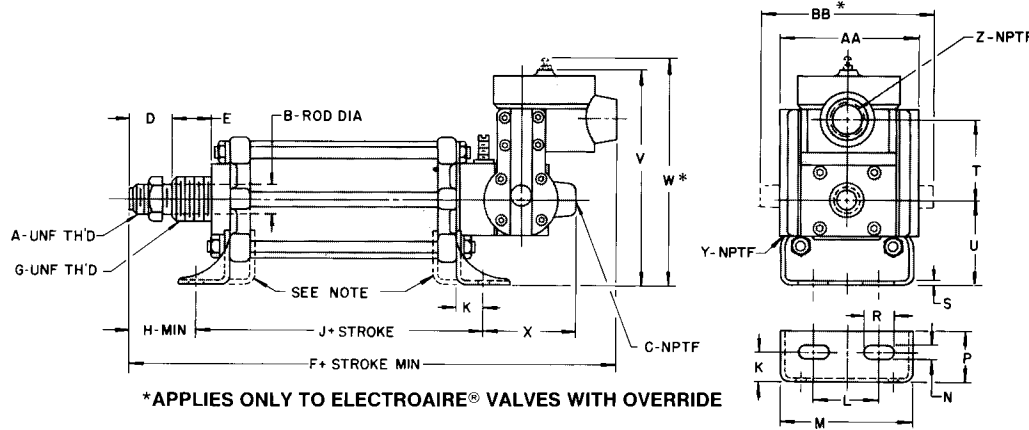
**1¼" BORE** MODEL B8011-2010 (with Junction Box)  
MODEL B8011-2016 (with Override)

Not available in cushioned models.

■ ■ ■ The first square in the Model Number indicates cushioning. Replace it with one of the following digits to indicate the desired cushioning:  
0—non-cushioned                      2—cushioned rear  
1—cushioned front                     3—cushioned both ends  
Replace the last two squares with one of the following two digit suffixes to indicate the type control valve:  
10— Electroaire® Valve with Junction Box                      16—Electroaire® with Override

**1¾" BORE — MODEL B8012- 2 ■ ■ ■**  
**2½" BORE — MODEL B8013- 2 ■ ■ ■**  
**3⅝" BORE — MODEL B8014- 2 ■ ■ ■**

MINIMUM Stroke for cushioning, 2 inches.



\*APPLIES ONLY TO ELECTROAIRE® VALVES WITH OVERRIDE

BORE SIZE	A	B	C	D	E	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	G	H	J <sub>0</sub>	J <sub>1</sub>	J <sub>2</sub>	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z	AA	BB	
1 3/4	5-18	5/8	1/4	1-18	3/32	7/8	9/32	10/32	11/16	1-14	2 1/2	2 3/8	3 13/16	5 7/32	11/16	1 1/2	2 3/4	9/32	1/8	5/8	7/4	15/16	15/16	5 5/32	5 3/32	2 1/8	1-27	1-14	3 7/16	4 1/8
2 1/2	5-18	5/8	1/4	1-18	3/32	7/8	9/32	10/32	11/16	1-14	2 1/2	2 3/8	3 13/16	5 7/32	11/16	1 1/2	3 1/16	11/32	3/16	23/64	7/4	15/16	15/16	5 3/32	5 3/32	2 1/8	1-27	1-14	3 7/16	4 1/8
3 5/8	3-16	3/4	3/8	3-18	25/32	1 1/8	17/32	2 55/64	1 1/4	1-12	3 1/2	4 17/32	5 55/64	11/16	1 7/8	4	7/16	3/16	15/16	11/64	15/16	15/16	2 47/64	5 61/64	6 25/64	2 7/16	1-27	1-14	3 1/2	4 3/16

DOTTED LINES INDICATE LOCATION OF MOUNTING BRACKETS ON 1¼" BORE AIR MOTOR.

F<sub>0</sub> J<sub>0</sub>—INDICATES DIMENSION OF NON-CUSHIONED AIR MOTOR.  
F<sub>1</sub> J<sub>1</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED ONE END.  
F<sub>2</sub> J<sub>2</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED BOTH ENDS.

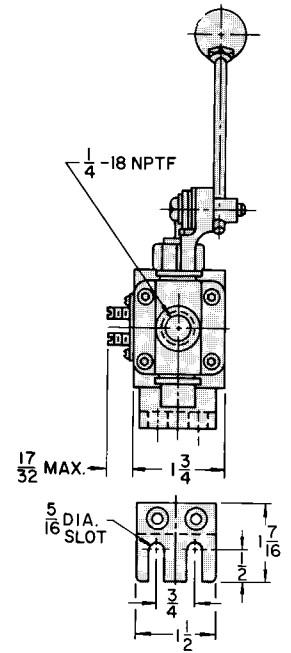
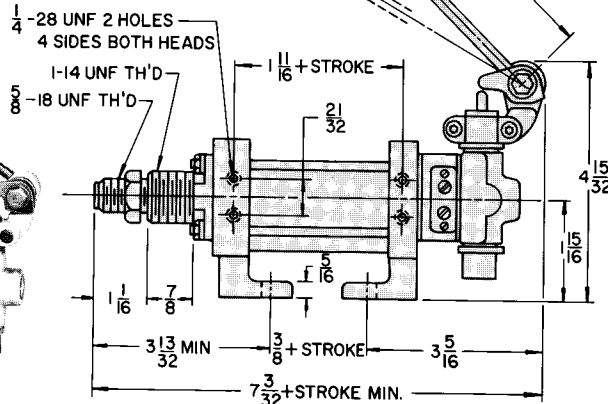
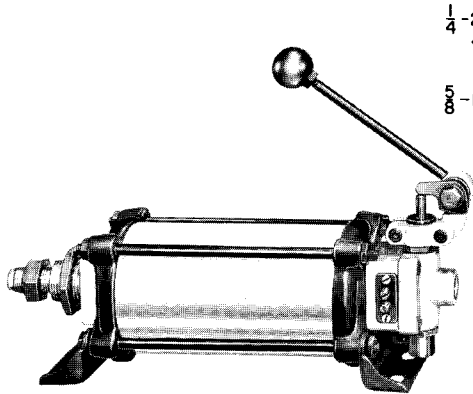
Dimensions in this table are shown for both cushioned and non-cushioned units. Before ordering, see pages 320 and 321 for model number information on cushioning and optional features.

## FOOT MOUNTED BELLOWS AIR MOTOR® with MANUAL CONTROL VALVE

(Operating range: 20 to 175 psi)

### 1 1/4" BORE—MODEL B8011-2002

Not available in cushioned models.



### 1 3/4" BORE — MODEL B8012-2■02

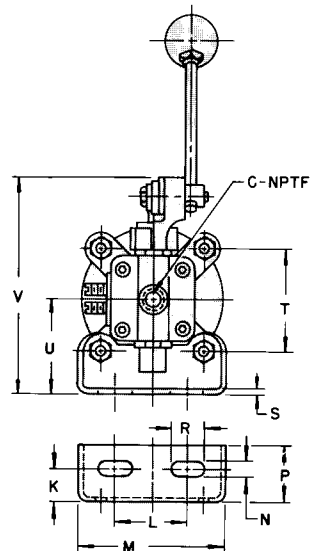
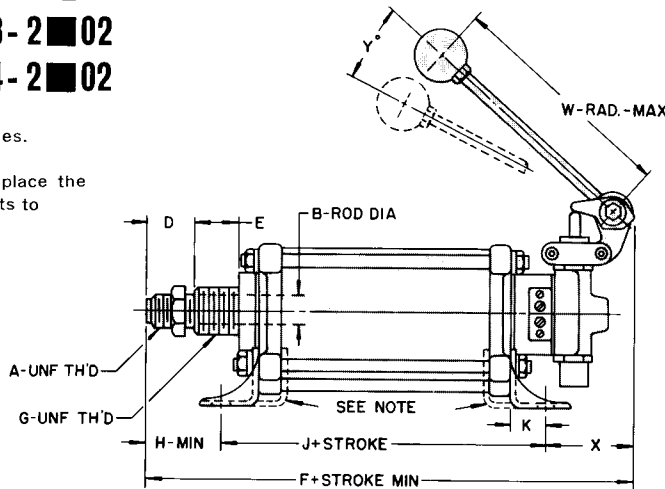
### 2 1/2" BORE — MODEL B8013-2■02

### 3 5/8" BORE — MODEL B8014-2■02

MINIMUM Stroke for cushioning, 2 inches.

■ To complete the Model Number replace the square with one of the following digits to indicate the desired cushioning:

- 0—non-cushioned
- 1—cushioned front
- 2—cushioned rear
- 3—cushioned both ends



BORE SIZE	A	B	C	D	E	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	G	H	J <sub>0</sub>	J <sub>1</sub>	J <sub>2</sub>	K	L	M	N	P	R	S	T	U	V	W	X	Y
1 3/4	9/8	5/8	1/4	1/32	7/8	7/16	8/2	9/32	1-14	2 11/32	2 3/8	3 13/16	5 7/16	11/16	1/2	2 3/4	9/32	1/8	5/8	7/64	1 11/16	1 15/16	4 15/32	4 3/4	2 11/32	15"
2 1/2	9/8	5/8	1/4	1/32	7/8	7 3/32	8 1/16	9 1/32	1-14	2 1/2	3 25/32	4 3/4	5 23/32	11/16	1/2	3 1/16	11/32	3/16	23/32	7/64	2 1/8	1 15/16	4 15/32	4 3/4	1 21/32	15"
3 5/8	3/4	3/8	3/8	1 25/32	1 3/8	9 7/16	10 49/64	12 5/64	1 1/2	3 1/2	4 17/32	5 55/64	7 11/64	11/16	1 7/8	4	7/16	3/16	15/16	11/64	2 31/32	2 47/64	5 35/64	4 3/4	1 7/8	20"

DOTTED LINES INDICATE LOCATION OF MOUNTING BRACKETS ON 1 3/4" BORE AIR MOTOR.

F<sub>0</sub>, J<sub>0</sub>—INDICATES DIMENSION OF NON-CUSHIONED AIR MOTOR.  
 F<sub>1</sub>, J<sub>1</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED ONE END.  
 F<sub>2</sub>, J<sub>2</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED BOTH ENDS.

Dimensions in this table are shown for both cushioned and non-cushioned units. Before ordering, see pages 320 and 321 for model number information on cushioning and optional features.

For additional information – call your local Schrader Bellows Distributor.

**Schrader Bellows®**



For Remote Foot Mounted Air Motor see page 331.

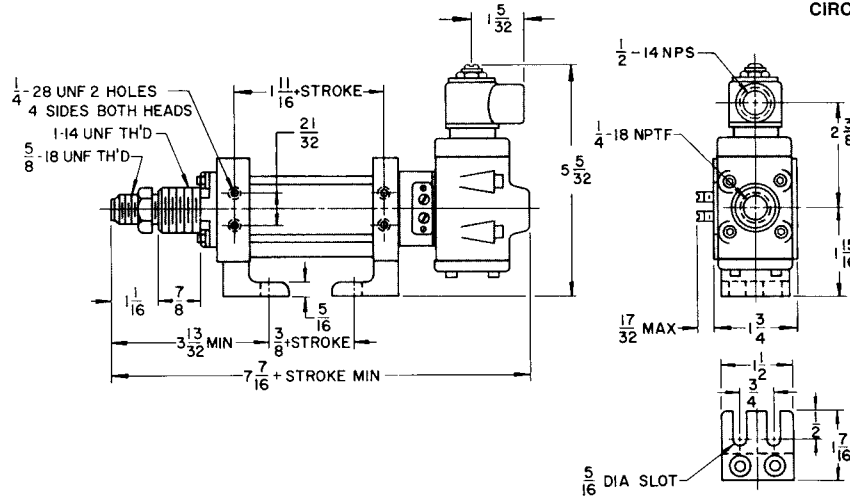
FOR NOSE MOUNTED AIR MOTORS use these dimensional drawings less mounting feet.

Nose mounting nut on 1 1/4", 1 3/4", and 2 1/2" Air Motors is 1/4" thick. On 3 5/8" bore, nut is 5/8" thick.

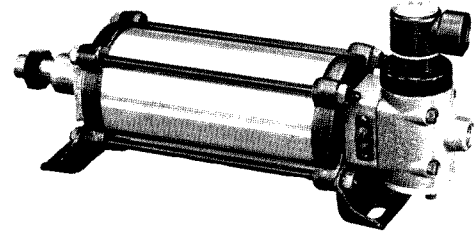
## FOOT MOUNTED BELLOWS AIR MOTOR® with SOLENOID OPERATED AIR-PILOT VALVE

Maintained contact—(energize to advance, de-energize to retract)  
(Operating range: 20 to 150 psi)

NOTE: AIR MOTORS WITH DOUBLE SOLENOID OPERATED AIR PILOTS ARE ALSO AVAILABLE TO PERMIT THE USE OF "MOMENTARY CIRCUITS." SEE PAGES 246, 247 FOR ORDERING INFORMATION.

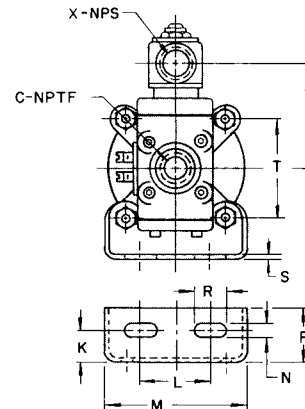
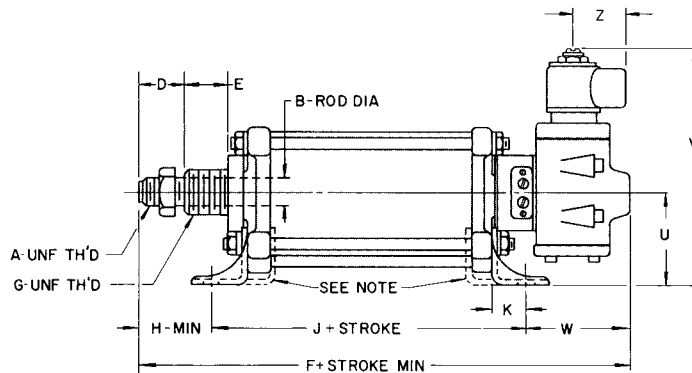


**1 1/4" BORE - MODEL B8011-2043**  
Not available in cushioned models.



■ To complete the Model Number replace the square with one of the following digits to indicate the desired cushioning:  
0—non-cushioned      2—cushioned rear  
1—cushioned front      3—cushioned both ends

**1 3/4" BORE - MODEL B8012-2■43**  
**2 1/2" BORE - MODEL B8013-2■43**  
**3 5/8" BORE - MODEL B8014-2■43**  
MINIMUM Stroke for cushioning, 2 inches.



BORE SIZE	A	B	C	D	E	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	G	H	J <sub>0</sub>	J <sub>1</sub>	J <sub>2</sub>	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
1 3/4	5/8-18	5/8	1/4-18	1 3/32	7/8	7 13/32	6 27/32	0 1/4	1-14	2 11/32	2 3/8	3 13/16	5 7/32	1 1/16	1 1/2	2 3/4	9 3/32	1 1/8	5/8	7/64	1 11/16	1 15/16	5 5/32	2 11/16	1 1/2-14	2 3/8	1 5/32
2 1/2	5/8-18	5/8	1/4-18	1 3/32	7/8	7 7/16	8 13/32	9 3/8	1-14	2 11/32	3 25/32	4 3/4	5 23/32	1 1/16	1 1/2	3 1/8	11 3/32	1 3/16	23 3/32	7/64	2 1/8	1 15/16	5 5/32	2 1/2-14	2 3/8	1 5/32	
3 5/8	3/4-16	3/4	3/8-18	1 25/32	1 3/8	10	11 21/64	12 1/2	1 1/2-12	3 1/32	4 17/32	5 55/64	7 11/64	1 1/8	4	7 1/16	1 3/16	15 1/16	11 1/64	2 31/32	2 47/64	5 63/64	2 7/16-14	2 13/32	1 5/32		

NOTE: DOTTED LINES INDICATE LOCATION OF MOUNTING BRACKETS ON 1 3/4 BORE AIR MOTOR

F <sub>0</sub>	J <sub>0</sub>	NON CUSHIONED
F <sub>1</sub>	J <sub>1</sub>	CUSHIONED ONE END
F <sub>2</sub>	J <sub>2</sub>	CUSHIONED BOTH ENDS

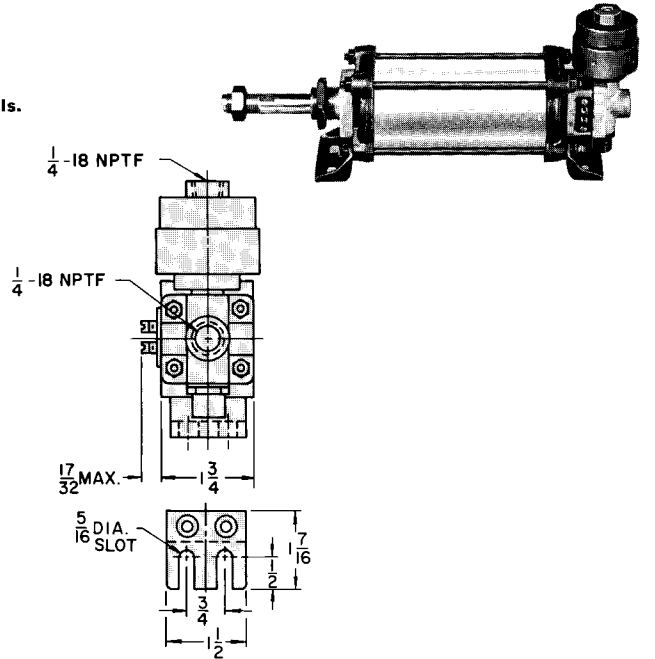
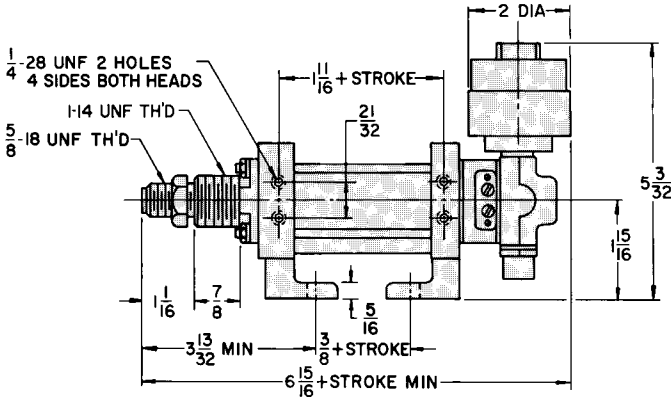
MINIMUM STROKE OF CUSHIONED MODEL TO BE 2"

Dimensions in this table are shown for both cushioned and non-cushioned units. Before ordering, see pages 320 and 321 for model number information on cushioning and optional features.

## FOOT MOUNTED BELLOWS AIR MOTOR® with PNEUMATIC PILOT VALVE

(Operating range: 30 to 175 psi)

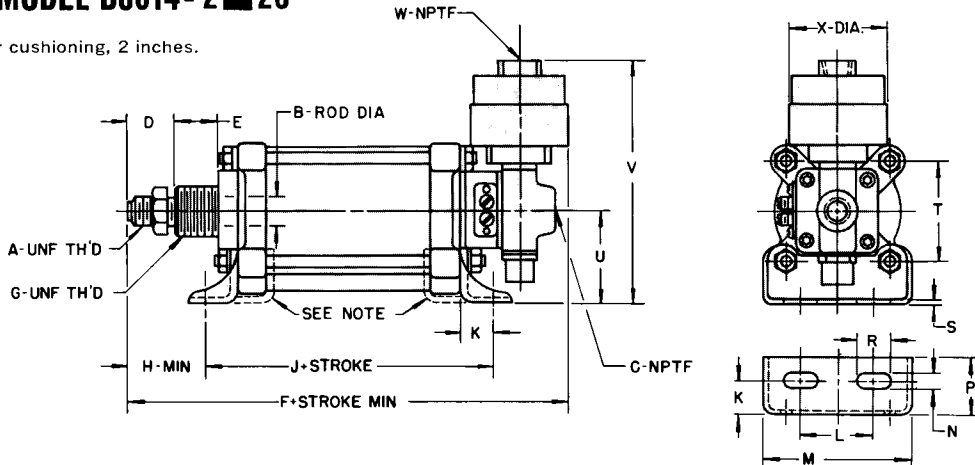
**1 1/4" BORE—MODEL B8011-2023** Not available in cushioned models.



**1 3/4" BORE — MODEL B8012- 2 23**  
**2 1/2" BORE — MODEL B8013- 2 23**  
**3 5/8" BORE — MODEL B8014- 2 23**

■ To complete the Model Number replace the square with one of the following digits to indicate the desired cushioning:  
 0—non-cushioned                      2—cushioned rear  
 1—cushioned front                      3—cushioned both ends

MINIMUM Stroke for cushioning, 2 inches.

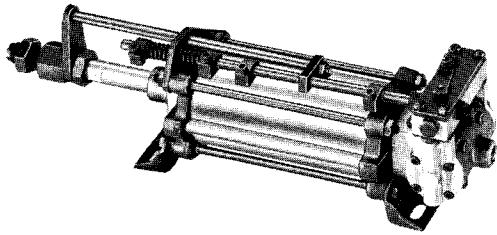


BORE SIZE	A	B	C	D	E	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	G	H	J <sub>0</sub>	J <sub>1</sub>	J <sub>2</sub>	K	L	M	N	P	R	S	T	U	V	W	X
1 3/4	5/8-18	5/8	1/4-18	3/32	7/8	6 29/32	8 11/32	9 3/4	1-14	2 11/32	2 3/8	3 13/16	5 7/32	11/16	1 1/2	2 3/4	9/32	1 1/8	5/8	7/64	1 11/16	1 15/16	5 3/32	1-18	2
2 1/2	5/8-18	5/8	1/4-18	3/32	7/8	6 15/16	7 29/32	8 7/8	1-14	2 11/32	3 25/32	4 3/4	5 23/32	11/16	1 1/2	3 1/16	11/32	1 3/16	23/32	7/64	2 1/8	1 15/16	5 3/32	1-18	2
3 5/8	3/4-16	3/4	3/8-18	25/32	3/8	9 3/8	10 45/64	12 1/64	1-12	3 1/32	4 17/32	5 55/64	7 11/64	11/16	1 7/8	4	7/16	1 3/16	15/16	11/64	2 31/32	2 47/64	6 9/64	1-18	2

Dimensions in this table are shown for both cushioned and non-cushioned units. Before ordering, see pages 320 and 321 for model number information on cushioning and optional features.

DOTTED LINES INDICATE LOCATION OF MOUNTING BRACKETS ON 1 3/4" BORE AIR MOTOR.

F<sub>0</sub>, J<sub>0</sub>—INDICATES DIMENSION OF NON-CUSHIONED AIR MOTOR.  
 F<sub>1</sub>, J<sub>1</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED ONE END.  
 F<sub>2</sub>, J<sub>2</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED BOTH ENDS.

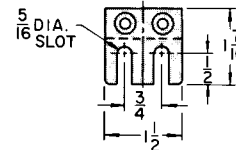
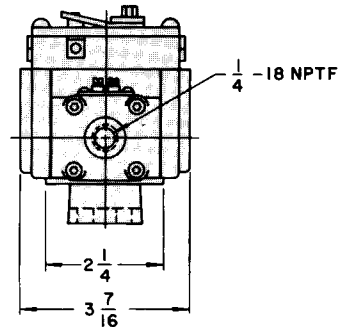
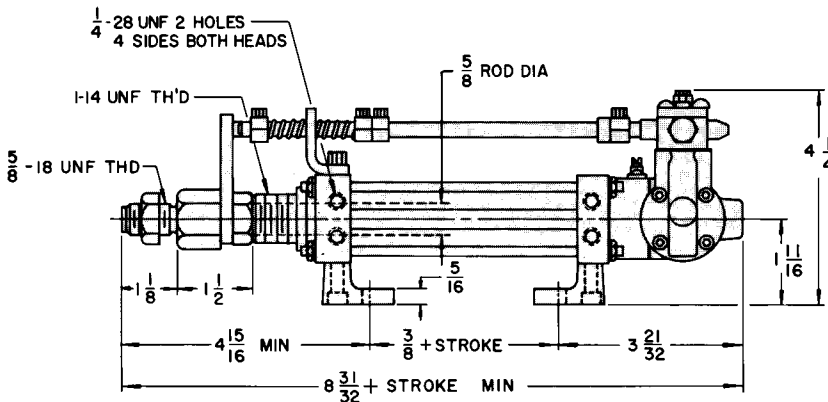


## CONTINUOUS CYCLING BELLOWS AIR MOTOR® ALL PNEUMATIC CONTROL

(Operating range: 20 to 150 psi)

### 1 1/4" BORE—MODEL B5311-2018

Not available in cushioned models.



"All-pneumatic controlled" continuous-cycling Air Motors utilize poppet valves that are tripped mechanically by control rods on the Air Motor. Adjustable trip-clamps on the control rod permit adjustment of piston rod reversal point on both advance and retract strokes. The Air Motor cycles continuously as long as air is applied.

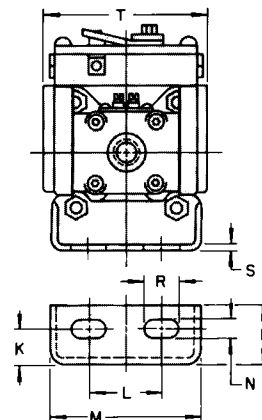
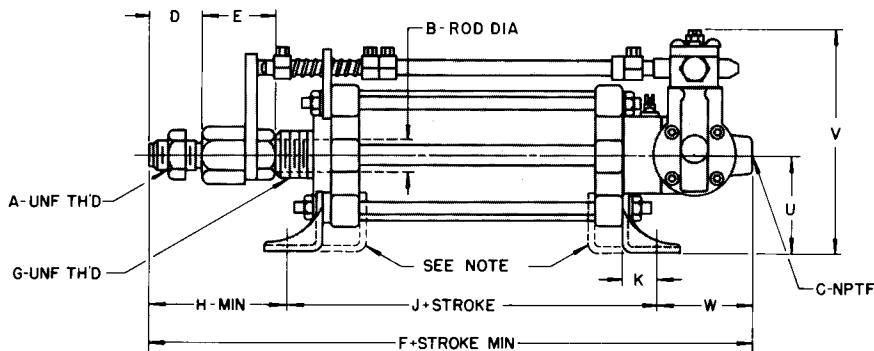
A 3-way valve is recommended in the air supply to stop the Air Motor when desired and to immediately exhaust pressurized air from the cylinder.

**A**

### 1 3/4" BORE — MODEL B5312-2018

### 2 1/2" BORE — MODEL B5313-2018

Not available in cushioned models.



BORE SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U	V	W
1 3/4	5/8-18	5/8	1/4-18	1/8	1/2	8 29/32	1-14	3 7/8	2 11/32	11/16	1/2	2 3/4	9/32	1/8	5/8	7/64	3 7/16	1 15/16	4 1/2	2 11/16
2 1/2	5/8-18	5/8	1/4-18	1/8	1/2	8 31/32	1-14	3	3 31/32	11/16	1/2	3 1/16	11/32	3/16	23/32	7/64	3 7/16	1 15/16	4 1/2	2

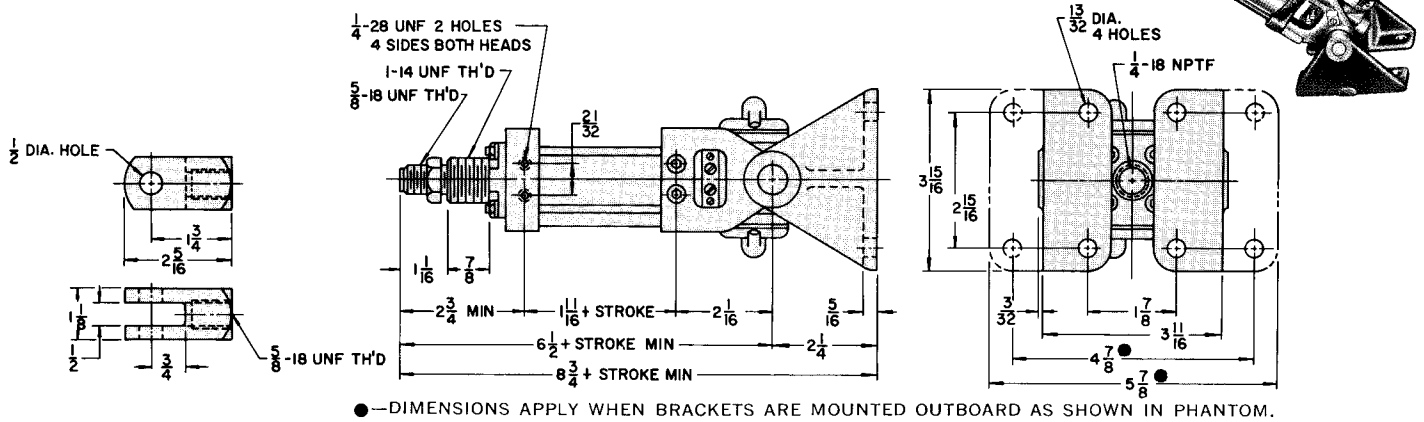
NOTE: DOTTED LINES INDICATE LOCATION OF MOUNTING BRACKET ON 1 3/4" BORE AIR MOTOR.

## PIVOT MOUNTED BELLOWS AIR MOTOR® with ELECTROAIRE® VALVE

(Operating range: 20 to 150 psi)

Dimensions for PIVOT MOUNTED AIR MOTORS WITH VALVE OPTIONS NOT SHOWN can be obtained by using these dimensional drawings in combination with the control valve drawings on page 334 to 338. Other valve options do not change the overall length, width or mounting dimensions.

### 1 1/4" BORE—MODEL B8011-5005 Not available in cushioned models.



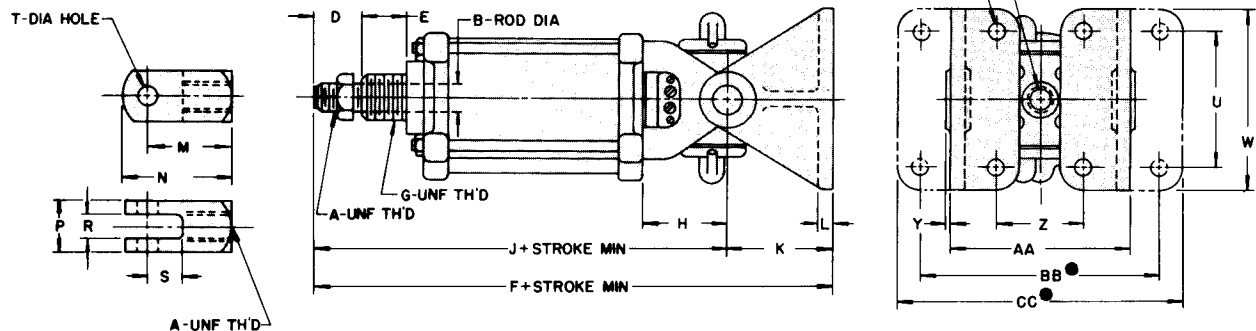
### 1 3/4" BORE — MODEL B8012-5 05

### 2 1/2" BORE — MODEL B8013-5 05

### 3 5/8" BORE — MODEL B8014-5 05

■ To complete the Model Number replace the square with one of the following digits to indicate the desired cushioning:  
 0—non-cushioned      2—cushioned rear  
 1—cushioned front      3—cushioned both ends

MINIMUM Stroke for cushioning, 2 inches.



BORE SIZE	A	B	C	D	E	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	G	H	J <sub>0</sub>	J <sub>1</sub>	J <sub>2</sub>	K	L	M	N	P	R	S	T	U	V	W	Y	Z	AA	BB	CC
1 3/4	5/8	5/8	1/4	1 3/32	7/8	8 25/32	10 7/32	11 5/8	1-14	1 13/16	6 17/32	7 31/32	9 3/8	2 1/4	5/16	1 3/4	2 5/16	1 1/8	1/2	3/4	1/2	2 15/16	1 3/32	3 15/16	3/32	7/8	3 11/16	4 7/8	5 7/8
2 1/2	5/8	5/8	1/4	1 3/32	7/8	8 13/16	9 25/32	10 3/4	1-14	1 13/16	6 9/16	7 17/32	8 1/2	2 1/4	5/16	1 3/4	2 5/16	1 1/8	1/2	3/4	1/2	2 15/16	1 3/32	3 15/16	3/32	7/8	3 11/16	4 7/8	5 7/8
3 5/8	3/4	3/4	3/8	1 25/32	1 3/8	12 7/8	14 13/64	15 33/64	1-12	2 1/2	9 3/8	10 45/64	12 1/4	3 1/2	7/16	3 3/4	2 5/16	1 1/8	1/2	3/4	1/2	3	13/32	4 9/32	3/32	31/32	4 21/32	6 15/32	7 15/32

Dimensions in this table are shown for both cushioned and non-cushioned units. Before ordering, see pages 320 and 321 for model number information on cushioning and optional features.

●—DIMENSIONS APPLY WHEN BRACKETS ARE MOUNTED OUTBOARD AS SHOWN IN PHANTOM.

F<sub>0</sub>, J<sub>0</sub>—INDICATES DIMENSION OF NON-CUSHIONED AIR MOTOR.  
 F<sub>1</sub>, J<sub>1</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED ONE END.  
 F<sub>2</sub>, J<sub>2</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED BOTH ENDS.

For additional information – call your local  
 Schrader Bellows Distributor.

[www.comoso.com](http://www.comoso.com)

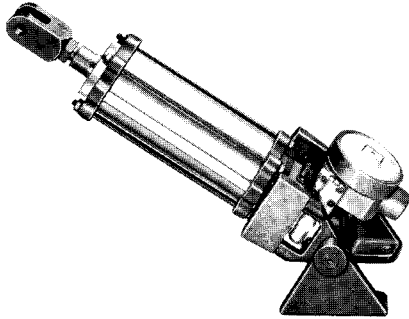
**Schrader  
 Bellows®**



NOTE: These Pivot Mounted Air Motor drawings should be used only with valving shown. For Pivot Mounted Air Motors with other valve options, use the drawings on page 328.

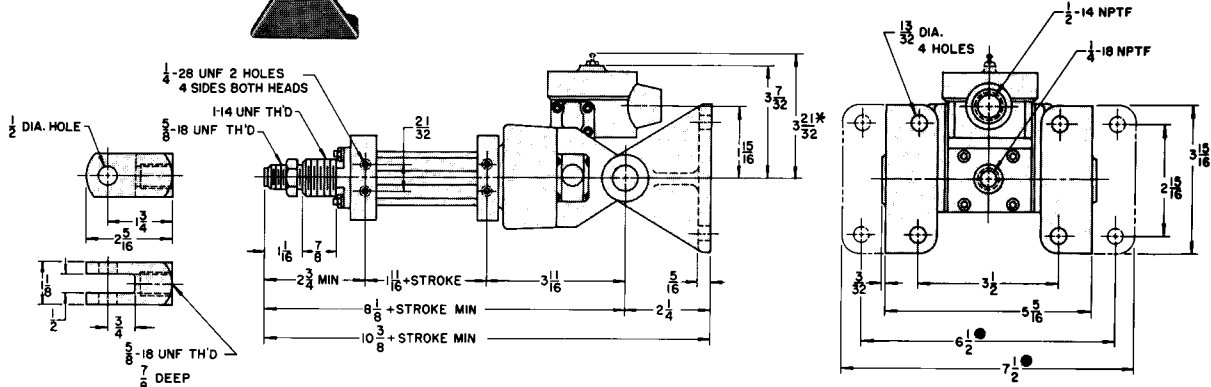
## PIVOT MOUNTED BELLOWS AIR MOTOR® with ELECTROAIRE® VALVE with JUNCTION BOX or JUNCTION BOX AND MANUAL OVERRIDE

(Operating range: 20 to 150 psi)



**1 1/4" BORE** MODEL B8011-5010 (with Junction Box)  
MODEL B8011-5016 (with Override)

Not available in cushioned models



\*APPLIES ONLY TO ELECTROAIRE® VALVES WITH OVERRIDE

• - DIMENSIONS APPLY WHEN BRACKETS ARE MOUNTED OUTBOARD AS SHOWN IN PHANTOM.

■ ■ ■ The first square in the Model Number indicates cushioning. Replace it with one of the following digits to indicate the desired cushioning:  
0—non-cushioned      2—cushioned rear  
1—cushioned front      3—cushioned both ends  
Replace the last two squares with one of the following two digit suffixes to indicate the type control valve:

10— Electroaire® Valve with Junction Box

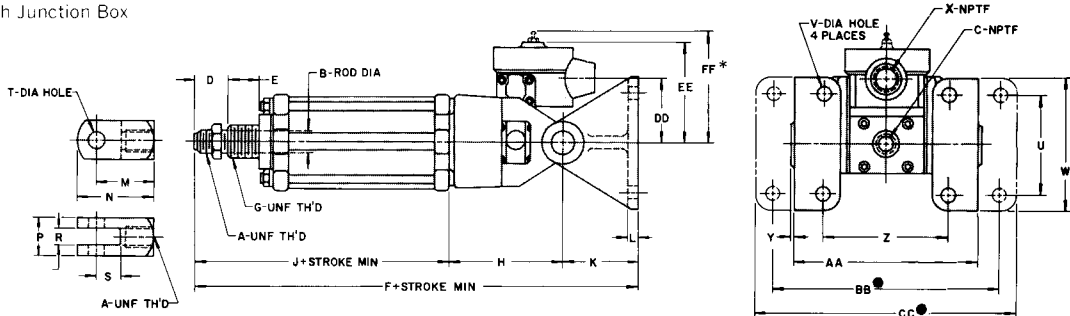
16—Electroaire® with Override

**1 3/4" BORE — MODEL B8012 - 5 ■ ■ ■ ■**

**2 1/2" BORE — MODEL B8013 - 5 ■ ■ ■ ■**

**3 5/8" BORE — MODEL B8014 - 5 ■ ■ ■ ■**

MINIMUM Stroke for cushioning, 2 inches.



\*APPLIES ONLY TO ELECTROAIRE® VALVES WITH OVERRIDE

BORE SIZE	A	B	C	D	E	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	G	H	J <sub>0</sub>	J <sub>1</sub>	J <sub>2</sub>	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF
1 3/4	5/8-18	5/8	1/4-18	1 3/32	7/8	10 5/16	11 3/4	13 5/32	1-14	3 11/32	4 23/32	6 5/32	7 9/16	2 1/4	5/16	1 3/4	2 5/16	1 1/8	1/2	3/4	1/2	2 15/16	13/32	3 15/16	1-14	3 23/32	3 1/2	5 5/16	6 1/2	7 1/2	1 15/16	3 7/32	3 21/32
2 1/2	5/8-18	5/8	1/4-18	1 3/32	7/8	10 11/32	11 5/16	12 9/32	1-14	3 11/32	4 3/4	5 23/32	6 11/16	2 1/4	5/16	1 3/4	2 5/16	1 1/8	1/2	3/4	1/2	2 15/16	13/32	3 15/16	1-14	3 23/32	3 1/2	5 5/16	6 1/2	7 1/2	1 15/16	3 7/32	3 21/32
3 5/8	3/4-16	3/4	3/8-16	1 5/32	1 3/8	12 27/32	14 11/64	15 31/64	1-12	3 23/32	6 7/8	8 13/64	9 33/64	2 1/4	5/16	1 3/4	2 5/16	1 1/8	1/2	3/4	1/2	2 15/16	13/32	3 15/16	1-14	3 23/32	3 1/2	5 5/16	6 1/2	7 1/2	1 15/16	3 7/32	3 21/32

•—DIMENSIONS APPLY WHEN BRACKETS ARE MOUNTED OUTBOARD AS SHOWN IN PHANTOM.

F<sub>0</sub>, J<sub>0</sub>—INDICATES DIMENSION OF NON-CUSHIONED AIR MOTOR.  
F<sub>1</sub>, J<sub>1</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED ONE END.  
F<sub>2</sub>, J<sub>2</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED BOTH ENDS.

Dimensions in this table are shown for both cushioned and non-cushioned units. Before ordering, see pages 320 and 321 for model number information on cushioning and optional features.

**FRONT FLANGE MOUNTED  
BELLOWS AIR MOTOR® with  
ELECTROAIRE® VALVE**

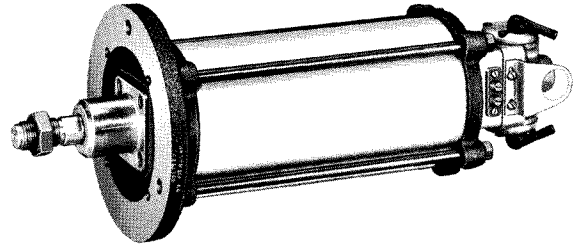
(Operating range: 20 to 150 psi)

(Not available in 1¼" bore)

Dimensions for FRONT FLANGE MOUNTED AIR MOTORS WITH OTHER VALVE OPTIONS can be obtained by using these dimensional drawings in combination with the control valve drawings on pages 334 to 338.

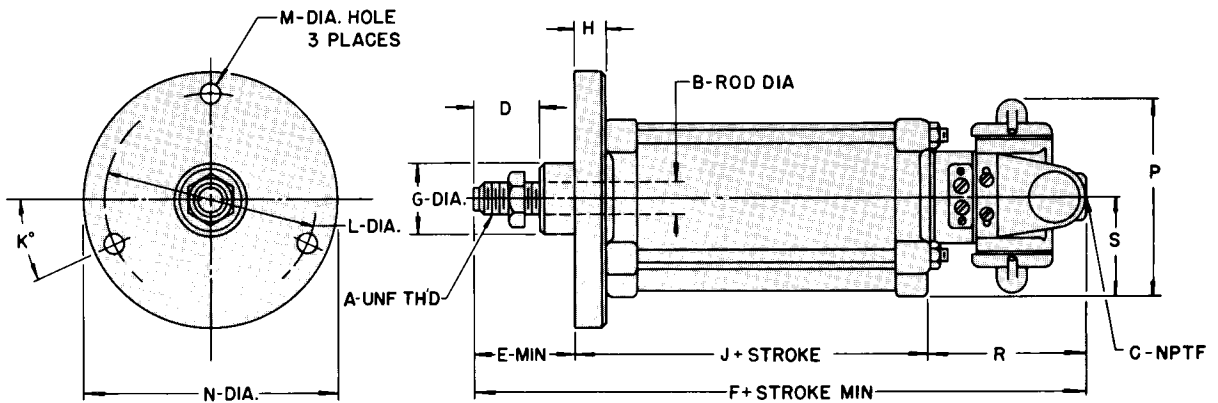
- 1¾" BORE – MODEL B8012-3■05**
- 2½" BORE – MODEL B8013-3■05**
- 3⅝" BORE – MODEL B8014-3■05**

MINIMUM Stroke for cushioning, 2 inches.



■ To complete the Model Number replace the square with one of the following digits to indicate the desired cushioning:

- 0—non-cushioned
- 1—cushioned front
- 2—cushioned rear
- 3—cushioned both ends



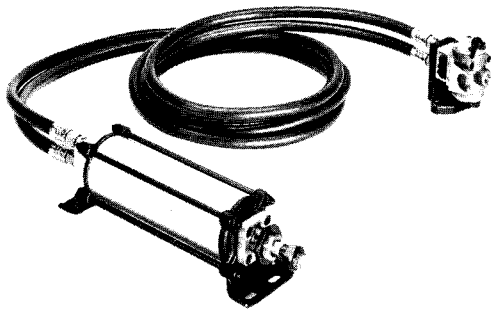
BORE SIZE	A	B	C	D	E	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	G	H	J <sub>0</sub>	J <sub>1</sub>	J <sub>2</sub>	K	L	M	N	P	R	S
1 ¾	5/8-18	5/8	1/4-18	1 3/32	1 25/32	7 1/2	8 15/16	10 11/32	1	9/16	2 15/16	4 3/8	5 25/32	24 1/2	3 1/8	17/64	3 7/8	3 1/2	2 25/32	1 1/2
2 ½	5/8-18	5/8	1/4-18	1 3/32	1 55/64	7 17/32	8 1/2	9 15/32	1	31/64	2 57/64	3 55/64	4 53/64	24 1/2	3 13/16	2 1/64	4 5/8	3 13/16	2 25/32	1 13/16
3 ⅝	3/4-16	3/4	3/8-18	1 25/32	3	10 1/2	12 1/2	12 41/64	1 1/2	23/32	3 7/8	5 13/64	6 33/64	24 1/2	5	25/64	6	4 15/32	3 1/8	2 7/16

Dimensions in this table are shown for both cushioned and non-cushioned units. Before ordering, see pages 320 and 321 for model number information on cushioning and optional features.

F<sub>0</sub>, J<sub>0</sub>—INDICATES DIMENSION OF NON-CUSHIONED AIR MOTOR.  
 F<sub>1</sub>, J<sub>1</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED ONE END.  
 F<sub>2</sub>, J<sub>2</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED BOTH ENDS.

SEE PAGES 334 TO 338 FOR REMOTE VALVE OPTIONS. With Remote-Controlled Air Motors, the normally integral valve is mounted separately and connected to the adaptor block on the remote Air Motor by two lengths of flexible air hose.

■ ■ To complete the Model Number, replace the two squares with the two digits describing the desired control valve. See pages 320, 321 for complete Model Number information.

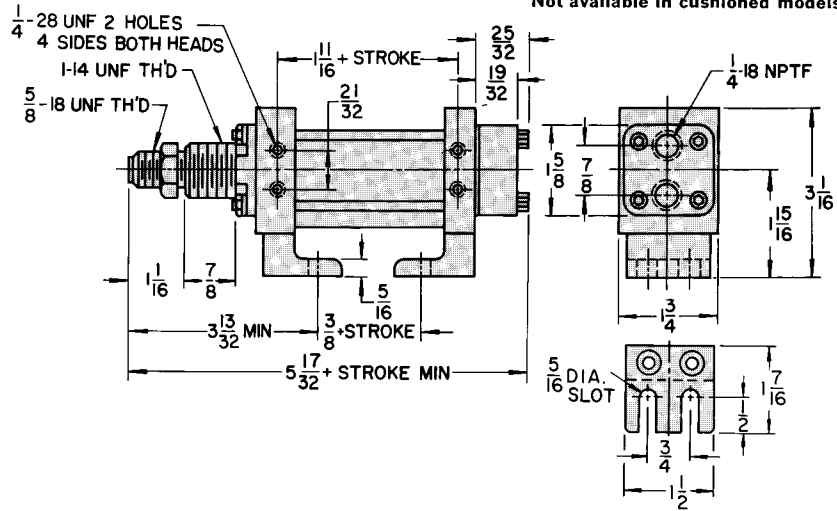


## REMOTE CONTROLLED BELLOWS AIR MOTOR® FOOT MOUNTED

(Operating range: 20 to 175 psi)

### 1 1/4" BORE - MODEL B8011-24 ■ ■

Not available in cushioned models.



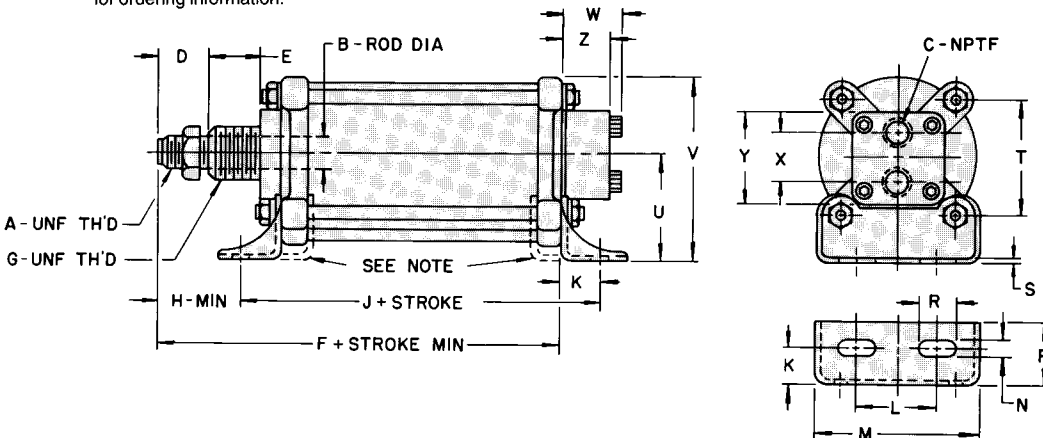
■ ■ ■ The first square in the Model Number indicates cushioning. Replace it with one of the following digits to indicate the desired cushioning:  
 4—non-cushioned                      6—cushioned rear  
 5—cushioned front                      7—cushioned both ends  
 Replace the last two squares with the two digit suffix that describes the desired control valve. See pages 320, 321 for ordering information.

### 1 3/4" BORE - MODEL B8012-2 ■ ■ ■

### 2 1/2" BORE - MODEL B8013-2 ■ ■ ■

### 3 5/8" BORE - MODEL B8014-2 ■ ■ ■

MINIMUM Stroke for cushioning, 2 inches.



BORE SIZE	A	B	C	D	E	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	G	H	J <sub>0</sub>	J <sub>1</sub>	J <sub>2</sub>	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
1 3/4	5/8-18	5/8	1/4-18	3/32	7/8	4 23/32	6 5/32	7 9/16	1-14	2 11/32	2 3/8	3 13/16	5 7/32	11/16	1/2	2 3/4	9/32	1 1/8	5/8	7/64	1 1/16	15/16	3 1/32	25/32	7/8	5/8	19/32
2 1/2	5/8-18	5/8	1/4-18	3/32	7/8	4 3/4	5 23/32	6 11/16	1-14	2 1/32	3 25/32	4 3/4	5 23/32	11/16	1/2	3 1/16	11/32	3/16	23/64	7/64	2 1/8	1 15/16	3 3/8	25/32	7/8	5/8	19/32
3 5/8	3/4-16	3/4	3/8-18	25/32	1 3/8	6 7/8	8 13/64	9 33/64	1-12	3 1/32	4 17/32	5 55/64	7 11/64	11/16	7/8	4	7/16	3/16	15/16	11/64	2 31/32	2 47/64	4 49/64	25/32	1 3/32	2 1/8	1 17/32

Dimensions in this table are shown for both cushioned and non-cushioned units. Before ordering, see pages 320 and 321 for model number information on cushioning and optional features.

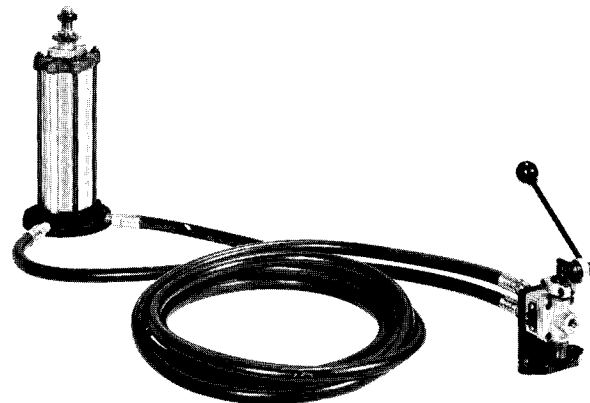
DOTTED LINES INDICATE LOCATION OF MOUNTING BRACKETS ON 1 3/4" BORE AIR MOTOR.

F<sub>0</sub>, J<sub>0</sub>—INDICATES DIMENSION OF NON-CUSHIONED AIR MOTOR.  
 F<sub>1</sub>, J<sub>1</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED ONE END.  
 F<sub>2</sub>, J<sub>2</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED BOTH ENDS.

**REMOTE CONTROLLED  
BELLOWS AIR MOTOR®  
REAR FLANGE MOUNTED**

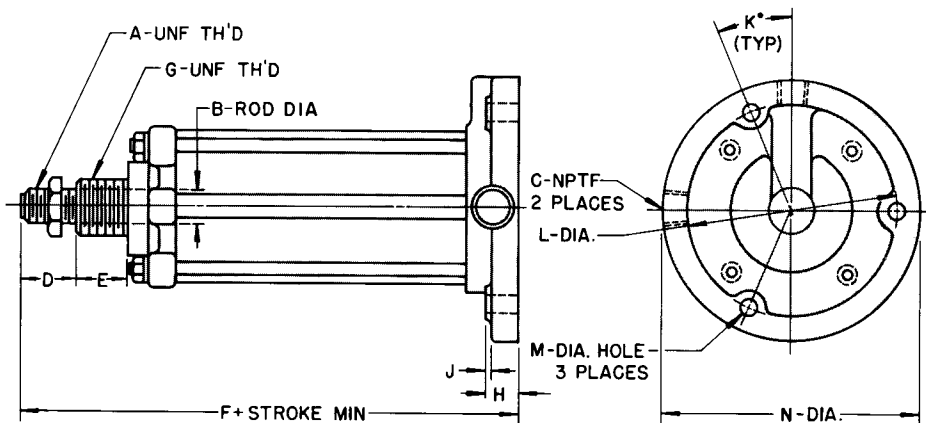
(Not available in 1 1/4" bore)  
(Operating range: 20 to 175 psi)

- 1 3/4" BORE – MODEL B8012- 4■■■■
- 2 1/2" BORE – MODEL B8013- 4■■■■
- 3 5/8" BORE – MODEL B8014- 4■■■■



■■■ The first square in the Model Number indicates cushioning. Replace it with one of the following digits to indicate the desired cushioning:  
 4—non-cushioned  
 5—cushioned front  
 Replace the last two squares with the two digit suffix that describes the desired control valve. See pages 320, 321 for ordering information.

ALL REAR FLANGE MOUNTED AIR MOTORS require remote control valves. This mounting does not permit integral valving. See pages 334 to 338 or remote valve options. The remote valve is mounted separate from the Air Motor and connected to the rear head of the Air Motor by two lengths of flexible air hose.



BORE SIZE	A	B	C	D	E	F <sub>0</sub>	F <sub>1</sub>	G	H	J	K	L	M	N
1 3/4	5/8-18	5/8	1/4-18	3/32	7/8	5 1/16	6 1/2	1-14	9/16	1/16	24 1/2	3 1/8	17/64	3 7/8
2 1/2	5/8-18	5/8	1/4-18	3/32	7/8	5 1/16	6 1/2	1-14	9/16	1/16	24 1/2	3 13/16	21/64	4 5/8
3 5/8	3/4-16	3/4	3/8-18	25/32	1 3/8	7 11/32	8 11/16	1 1/2-12	3/4	1/16	24 1/2	5	25/64	6

Dimensions in this table are shown for both cushioned and non-cushioned units. Before ordering, see pages 320 and 321 for model number information on cushioning and optional features.

F<sub>0</sub> —INDICATES DIMENSION OF NON-CUSHIONED AIR MOTOR.  
 F<sub>1</sub> —INDICATES DIMENSION OF AIR MOTOR CUSHIONED ONE END.





SEE PAGES 334 to 338 FOR REMOTE VALVE OPTIONS. With Remote-Controlled Air Motors, the normally integral valve is mounted separately and connected to the adaptor block on the remote Air Motor by two lengths of flexible air hose.

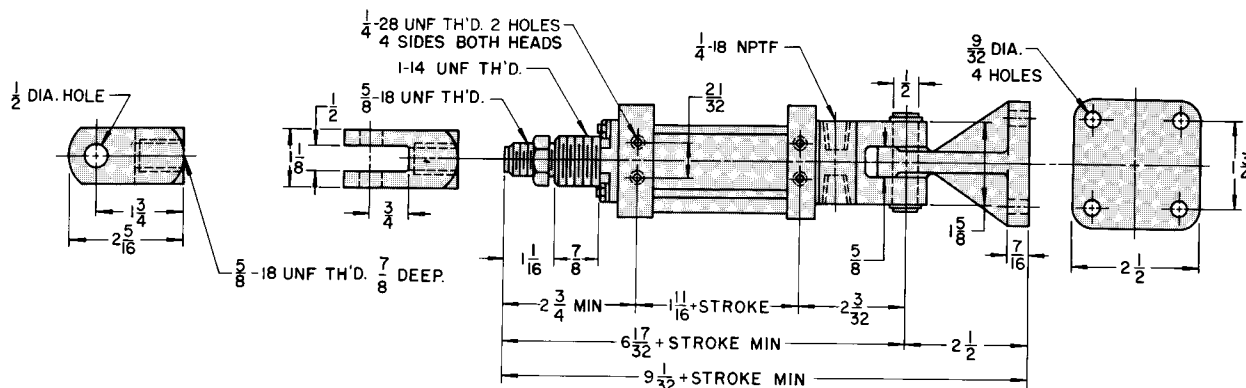
## REMOTE CONTROLLED BELLOWS AIR MOTOR® CLEVIS MOUNTED

(Operating range: 20 to 175 psi)

### 1 1/4" BORE – MODEL B8011-64

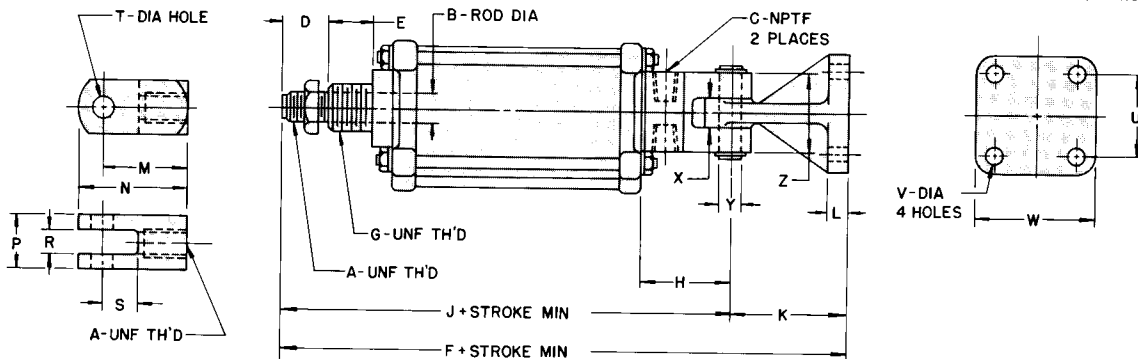
Not available in cushioned models.

■ ■ To complete the Model Number, replace the two squares with the two digits describing the desired control valve. See pages 320-321 for complete Model Number information.



■ ■ ■ The first square in the Model Number indicates cushioning. Replace it with one of the following digits to indicate the desired cushioning:  
 4—non-cushioned                      6—cushioned rear  
 5—cushioned front                      7—cushioned both ends  
 Replace the last two square with the two digit suffix that describes the desired control valve. See pages 246, 247 for ordering information.

- 1 3/4" BORE – MODEL B8012- 6 ■ ■ ■
- 2 1/2" BORE – MODEL B8013- 6 ■ ■ ■
- 3 5/8" BORE – MODEL B8014- 6 ■ ■ ■



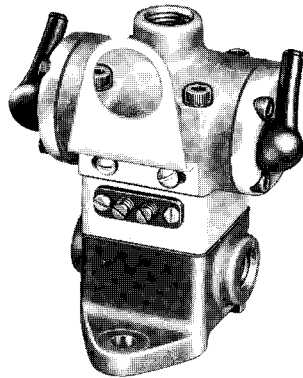
MINIMUM Stroke for cushioning, 2 inches.

BORE SIZE	A	B	C	D	E	F <sub>0</sub>	F <sub>1</sub>	F <sub>2</sub>	G	H	J <sub>0</sub>	J <sub>1</sub>	J <sub>2</sub>	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
1 3/4	5/8	5/8	1/4	1/8	7/8	9	10 7/16	11 27/32	1-14	1 25/32	6 1/2	7 15/16	9 11/32	2 1/2	7/16	3/4	2 5/16	1/8	1/2	3/4	1/2	3/4	9/32	2 1/2	5/8	1/2	1 5/8
2 1/2	5/8	5/8	1/4	1/8	7/8	9 1/32	10 10 31/32	1-14	1 25/32	6 17/32	7 1/2	8 15/32	2 1/2	7/16	3/4	2 5/16	1/8	1/2	3/4	1/2	3/4	9/32	2 1/2	5/8	1/2	1 5/8	
3 5/8	3/4	3/4	3/8	1/8	1 1/8	11 17/32	12 55/64	1 1/2	2 5/32	9 1/32	10 23/64	11 43/64	2 1/2	7/16	3/4	2 5/16	1/8	1/2	3/4	1/2	3/4	9/32	2 1/2	5/8	1/2	1 7/8	

Dimensions in this table are shown for both cushioned and non-cushioned units. Before ordering, see pages 320 and 321 for model number information on cushioning and optional features.

F<sub>0</sub>, J<sub>0</sub>—INDICATES DIMENSION OF NON-CUSHIONED AIR MOTOR.  
 F<sub>1</sub>, J<sub>1</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED ONE END.  
 F<sub>2</sub>, J<sub>2</sub>—INDICATES DIMENSION OF AIR MOTOR CUSHIONED BOTH ENDS.

**ELECTROAIRE® VALVE**



The Electroaire Valve is a compact, air-operated, electrically-controlled 4-way valve complete with built-in speed controls for adjusting the air cylinder piston rod speed in either or both directions. Electroaire Valves are available for remote control of air cylinders and other air powered devices in addition to the Air Motor. Electroaire Valves for remote mounting are shipped with mounting bracket. A step-down transformer is necessary to operate Air Motors equipped with the 12 v 60 Hz Electroaire Valve. Transformers may be ordered from Accessory Catalog ACC-F; please specify your line voltage — 115, 230 or 460 volts, 60 Hz.

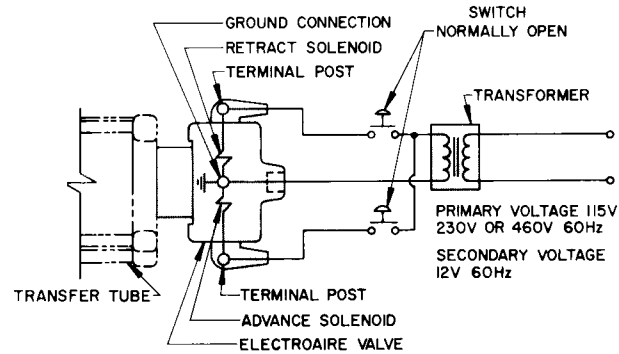
THE MODEL NUMBERS SHOWN ON THIS PAGE ARE VALVE MODEL NUMBERS FOR USE IN ORDERING VALVES FOR REMOTE CONTROL OF CYLINDERS AND OTHER DEVICES.

WHEN ORDERING AN AIR MOTOR, EITHER WITH REMOTE OR INTEGRAL ELECTROAIRE CONTROL VALVE, SIMPLY ORDER BY THE AIR MOTOR MODEL NUMBER AND VOLTAGE. The valve and (if remote-controlled) mounting, hose and connections will be included.

**VALVE SPECIFICATIONS AND MODEL NO.**

PORT SIZE*(NPTF)	1/4"	3/8"
VALVE WITH PANEL MOUNT	B385-2004	B385-3004
VALVE LESS BRACKET	B962-2001	B962-3001
PANEL BRACKET	B082-091	B082-090
MIN. AIR LINE PRESSURE	10 psi	10 psi
MAX. AIR LINE PRESSURE	150 psi	150 psi

\*NOTE: 1/4" Valve is used on 1 1/4", 1 3/4" and 2 1/2" bore Air Motors; 3/8" on 3 3/8" bore units.

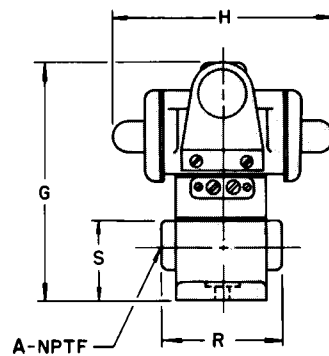
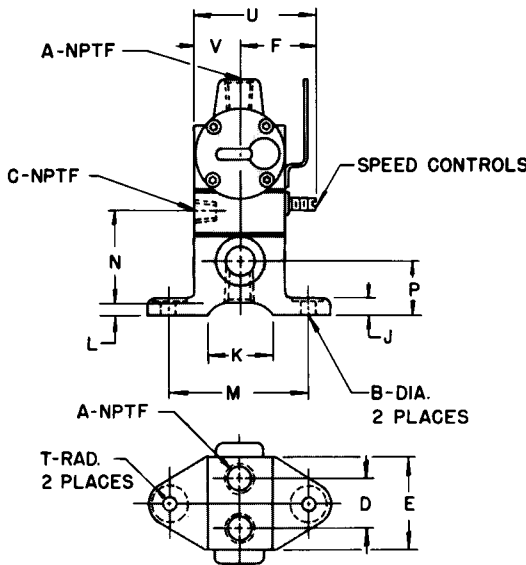


**WIRING DIAGRAM —**

The wiring diagram illustrates the basic method of wiring the 12 v 60 Hz Electroaire Valve.

**Voltage options**

- 12 V 60 Hz
- 12 V DC
- 24 V DC



PORT SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U	V
1/4	1-18/4	9/32	1-27/8	7/8	1 1/16	1 23/64	4 5/32	4	5/16	1/8	1/4	2 1/2	1 21/32	15/16	2 1/8	7/16	3/8	2 3/16	53/64
3/8	3-18/8	21/64	1-27/8	1 1/8	2 1/8	1 27/32	4 25/32	4 1/16	3/8	1/2	9/32	3	1 31/32	3/32	2 5/8	1 21/32	7/16	2 29/32	1 1/16

The ELECTROAIRE VALVE W/ JUNCTION BOX is designed for NEMA Class 1 — General purpose, Class 2 — Driptight, Class 3 — Weather resistant, Class 4 — Watertight, and Class 12 — Dusttight service.

The Electroaire Valve with Junction Box has all the features of the standard Electroaire, but has closed construction. All wire leads are carried through heavy conduit to the valve housing. The access opening is sealed with a threaded closure which seats against a gasket in the housing. Valves are shipped complete with remote mounting bracket. A step-down transformer is necessary to operate Air Motors equipped with the 12V 60Hz Electroaire Valve. Transformers may be ordered from Accessory Catalog ACC-F; please specify your line voltage — 115, 230 or 460 volts 60 Hz.

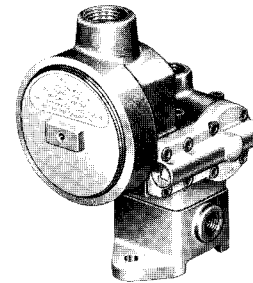
The ELECTROAIRE VALVE WITH OVERRIDE is dimensionally identical to the Electroaire Valve with Junction Box model. Both valves have built-in speed controls for adjusting the air cylinder piston rod speed in either or both directions. The conduit cover on this valve is equipped with a cover retaining chain.

THE MODEL NUMBERS SHOWN ON THIS PAGE ARE VALVE MODEL NUMBERS FOR USE IN ORDERING VALVES FOR REMOTE CONTROL OF CYLINDERS AND OTHER DEVICES.

WHEN ORDERING AN AIR MOTOR, EITHER WITH REMOTE OR INTEGRAL CONTROL VALVE, SIMPLY ORDER BY THE AIR MOTOR MODEL NUMBER AND VOLTAGE. The valve, and (if remote controlled) mounting, hose and connections will be included.

## ELECTROAIRE® VALVE with JUNCTION BOX

### or JUNCTION BOX AND MANUAL OVERRIDE

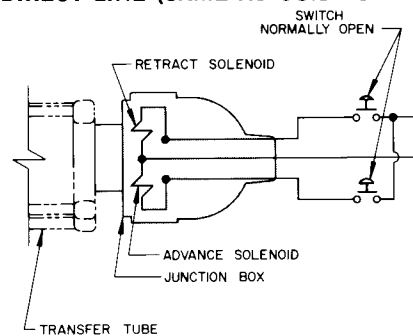


PORT SIZE*(NPTF)	1/4"	3/8"
ELECTROAIRE W/JCT. BOX PANEL MOUNT	B435-2004	B435-3004
ELECTROAIRE W/JCT. BOX LESS BRACKET	B972-2005	B972-3005
ELECTROAIRE W/OVERRIDE PANEL MOUNT	B425-2004	B425-3004
ELECTROAIRE W/OVERRIDE LESS BRACKET	B972-2002	B972-3002
PANEL BRACKET	B082-091	B082-090
MIN. AIR LINE PRESSURE	10 psi	10 psi
MAX. AIR LINE PRESSURE	150 psi	150 psi

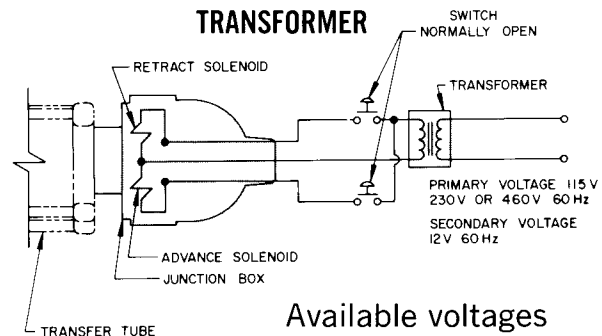
\* NOTE: 1/4" Valve used on 1 1/4", 1 3/4" and 2 1/2" bore Air Motors; 3/8" on 3 3/8" bore units.

### WIRING DIAGRAMS

#### DIRECT LINE (SAME AS COIL VOLTAGE)

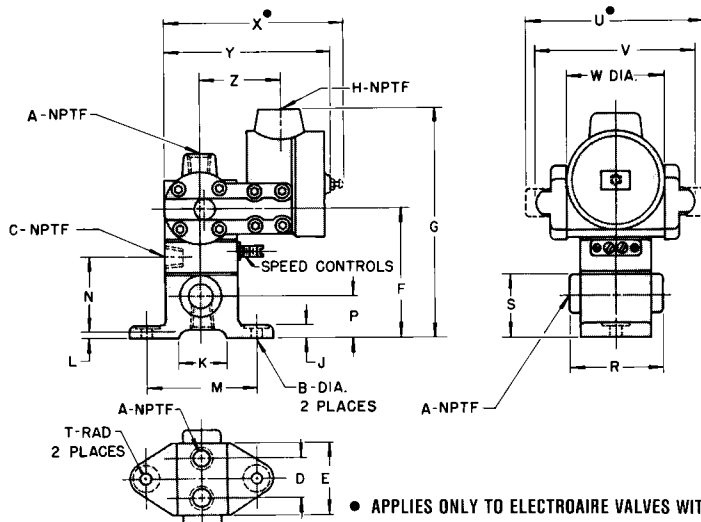


#### TRANSFORMER



#### Available voltages

- 12 V 60 Hz
- 115 V 60 Hz
- 12 V DC
- 24 V DC
- 48 V DC



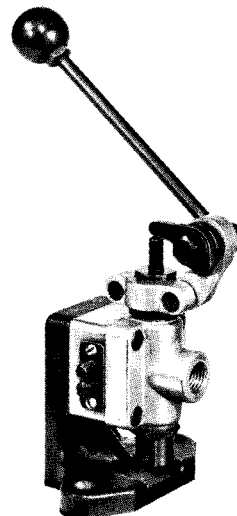
PORT SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z	
1/4	1/4	10/32	9/32	1-27/8	7/8	11/16	2 7/8	5 13/16	1/2	1/4	5/16	1/8	1/4	2 1/2	15/16	2 1/8	1 7/16	3/8	4 1/8	3 7/16	3	4 1/2	4 1/16	1 15/16
3/8	3/8	18/64	21/64	1-27/8	1 1/8	2 1/8	3 3/8	6 5/16	1 1/2	3/8	1 1/2	9/32	3	3 1/32	1 3/32	2 5/8	1 21/32	7/16	4 3/16	3 1/2	3	4 23/32	4 9/32	1 15/16

## LEVER OPERATED MANUAL VALVE

The Manual Valve is a 4-way valve with built-in speed controls for regulating the speed of the air cylinder piston rod in either or both directions.

On standard Manual Valves, the spring loaded valve stem returns to normal position the instant pressure on the operating lever is released. In cases where spring return is not desired, the valve can be supplied without spring-return and with the valve stem linked to the operating lever.

THE MODEL NUMBERS SHOWN ON THIS PAGE ARE VALVE MODEL NUMBERS FOR USE IN ORDERING VALVES FOR REMOTE CONTROL OF CYLINDERS AND OTHER DEVICES.

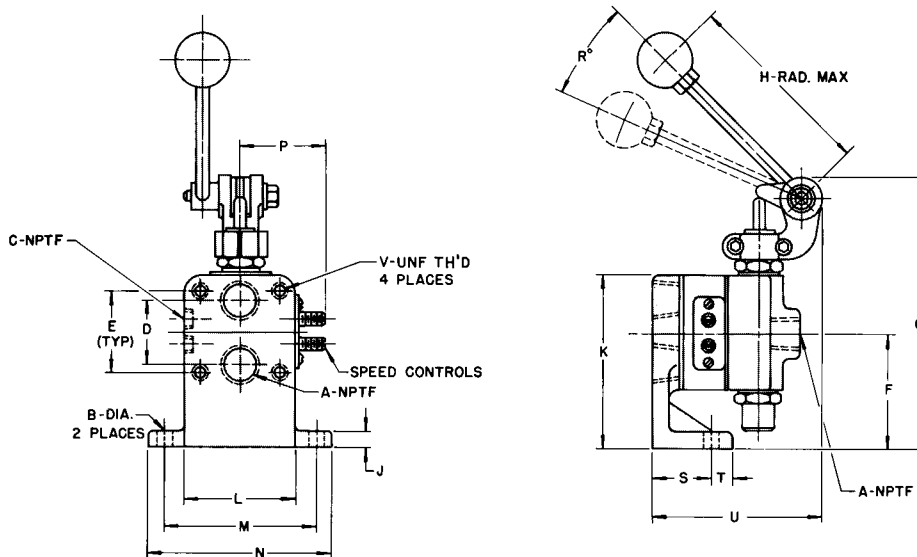


WHEN ORDERING AN AIR MOTOR EITHER WITH REMOTE OR INTEGRAL CONTROL VALVE, SIMPLY ORDER BY THE AIR MOTOR MODEL NUMBER. The valve, and (if remote controlled) mounting, hose and connections will be furnished.

## VALVE SPECIFICATIONS AND MODEL NO.

PORT SIZE*(NPTF)	1/4"	3/8"
MANUAL (Sprg. Return) W/FOOT MT.	B454-2001	B454-3001
MANUAL (Sprg. Return) LESS BRKT.	F012-2001	F012-3001
MANUAL (Linked) W/FOOT MT.	B454-2002	B454-3002
MANUAL (Linked) LESS BRKT.	F012-2002	F012-3002
FOOT BRACKET	B183-128	B183-129
MIN. AIR LINE PRESSURE	10 psi	10 psi
MAX. AIR LINE PRESSURE	175 psi	175 psi

\* NOTE: 1/4" Valve is used on 1/4", 1 3/4" and 2 1/2" bore Air Motors; 3/8" on 3 5/8" bore units



PORT SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U	V
1/4	1 1/4	1 1/8	1 1/8	1 1/8	1 1/4	2 1/8	4 1/4	3 3/8	2 7/8	1 5/8	2 5/8	3 3/8	11 1/32	15°	1 3/16	1 1/8	2 27/32	10-32	
3/8	3 1/8	3 1/8	3 1/8	3 1/8	1 1/2	2 5/8	5 1/4	3 3/8	3 3/8	2 1/8	2 7/8	3 5/8	27/32	20°	1 3/16	1 1/8	3 1/16	1 1/4	2-28



## SINGLE SOLENOID OPERATED AIR PILOT CONTROL VALVE

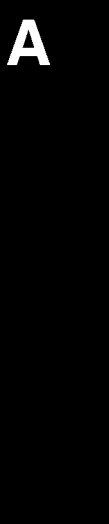
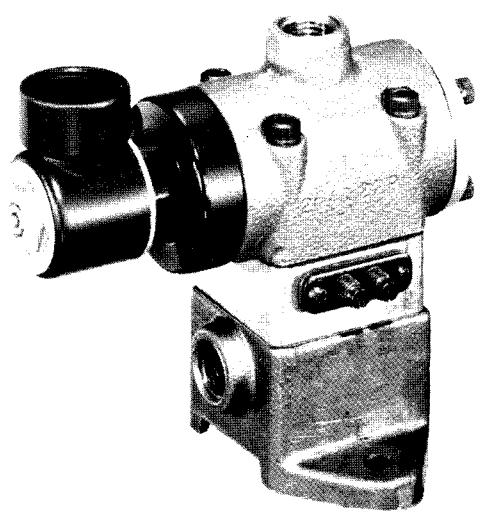
For Maintained Electrical Contact

Employing a solenoid Pilot to actuate the control valve permits electrical control by most common AC or DC voltages. SPECIFY VOLTAGE WHEN ORDERING. Solenoids for 115 or 230 volt, 60 Hz and 6, 12, 24, 115 or 230 volt DC are standard. Solenoids are guaranteed against burn-out when valve is properly installed and wired.

This valving is designed for maintained circuits. When the solenoid is energized, the control valve is shifted and it remains in its shifted position only as long as the solenoid is continuously energized. When the circuit is broken the control valve returns to its normal position. The valve incorporates built-in speed controls that permit regulation of the air cylinder piston rod speed in either or both directions.

DOUBLE SOLENOID OPERATED AIR PILOT VALVES are also available to permit the use of momentary circuits. With this valve a momentary electrical impulse shifts the control valve which remains in its shifted position until an energizing signal is received by the opposite solenoid.

THE MODEL NUMBERS SHOWN ON THIS PAGE ARE VALVE MODEL NUMBERS FOR USE IN ORDERING VALVES FOR REMOTE CONTROL OF CYLINDERS AND OTHER DEVICES.

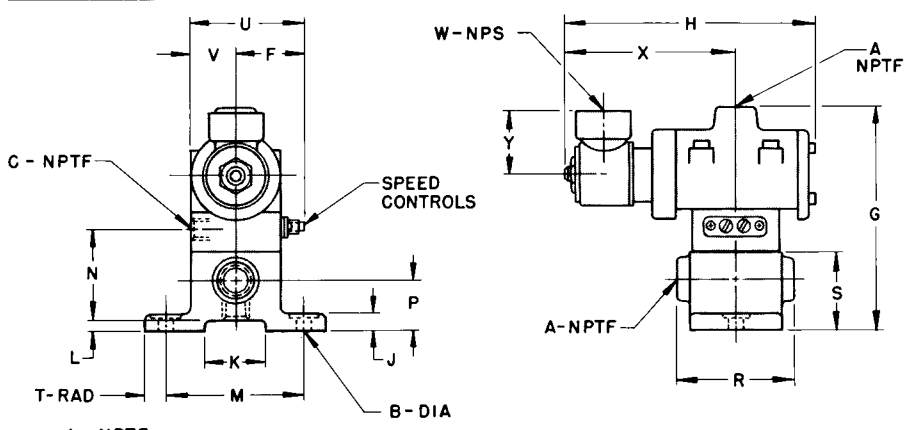


WHEN ORDERING AN AIR MOTOR EITHER WITH REMOTE OR INTEGRAL CONTROL VALVE, SIMPLY ORDER BY THE AIR MOTOR MODEL NUMBER. The valve, and (if remote controlled) mounting, hose and connections will be furnished.

### VALVE SPECIFICATIONS & MODEL NO.

PORT SIZE*(NPTF)	1/4"	3/8"
VALVE W/PANEL MOUNT	B415-2007	B415-3007
VALVE LESS BRACKET	B902-2020	B902-3023
PANEL BRACKET	B082-091	B082-090
MIN. AIR LINE PRESSURE	20 psi	20 psi
MAX. AIR LINE PRESSURE	150 psi	150 psi

\*NOTE: 1/4" valve used on 1 1/4", 1 3/4" and 2 1/2" bore Air Motors; 3/8" on 3 3/8" bore units.



PORT SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y
1/4"	1/4-18	9/32	1/8-27	7/8	1 1/16	1 23/64	4 3/8	4 39/64	5/16	1 1/8	1/4	2 1/2	1 21/32	1 5/16	2 1/8	1 7/16	3/8	2 1/16	4 5/64	1/2-14	3 1/32	1 7/32
3/8"	3/8-18	21/64	1/8-27	1 1/8	2 1/8	1 27/32	4 25/32	4 39/64	3/8	1 1/2	9/32	3	1 31/32	1 7/32	2 1/8	1 21/32	1/16	3 3/32	1 1/4	1/2-14	3 1/4	1 3/32

For Cylinder Division Plant Locations – See Section B.

[www.comoso.com](http://www.comoso.com)

## SINGLE SOLENOID OPERATED AIR PILOT CONTROL VALVE

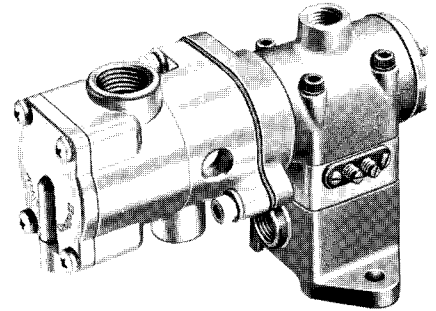
For Maintained Electrical Contact

Employing a Speed King L-type solenoid Pilot to actuate the control valve permits electrical control by most common AC or DC voltages. SPECIFY VOLTAGE WHEN ORDERING. Solenoids for 115 or 230 volt, 60 cycle; and 6, 12, 24, 115 or 230 volt DC are standard. Solenoids are guaranteed against burn-out when valve is properly installed and wired.

This valving is designed for maintained circuits. When the solenoid is energized, the control valve is shifted and it remains in its shifted position only as long as the solenoid is continuously energized. When the circuit is broken the control valve returns to its normal position. The valve incorporates built-in speed controls that permit regulation of the air cylinder piston rod speed in either or both directions.

Standard valves are furnished as shown in the drawing, however, they are available with integral junction box and manual over-ride if required.

DOUBLE SOLENOID OPERATED AIR PILOT VALVES are also available to permit the use of momentary circuits. With this valve a momentary electrical impulse shifts the control valve which remains in its shifted position until an energizing signal is received by the opposite solenoid. Contact your local sales representative.



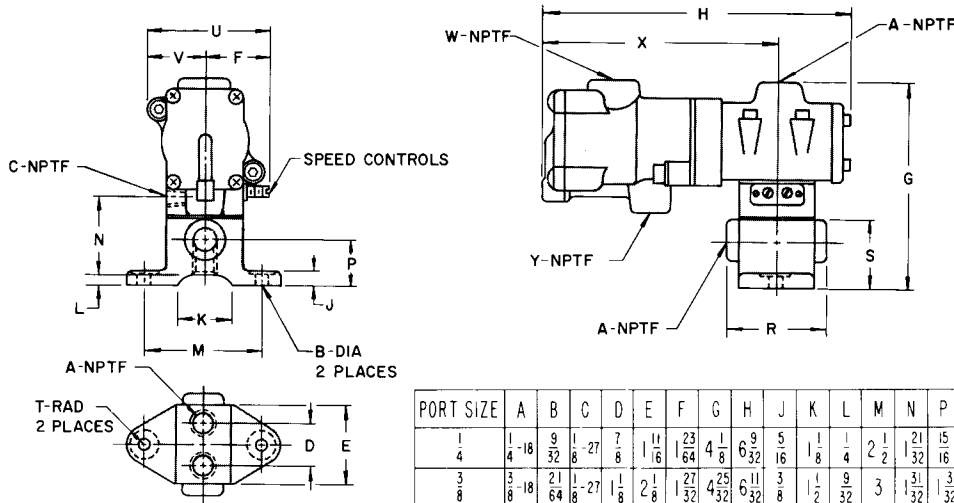
THE MODEL NUMBERS SHOWN ON THIS PAGE ARE VALVE MODEL NUMBERS FOR USE IN ORDERING VALVES FOR REMOTE CONTROL OF CYLINDERS AND OTHER DEVICES.

WHEN ORDERING AN AIR MOTOR EITHER WITH REMOTE OR INTEGRAL CONTROL VALVE, SIMPLY ORDER BY THE AIR MOTOR MODEL NUMBER. The valve, and (if remote controlled) mounting, hose and connections will be furnished.

## VALVE SPECIFICATIONS & MODEL NO.

\*NOTE: 1/4" valve used on 1 1/4", 1 3/4" and 2 1/2" bore Air Motors; 3/8" on 3 3/8" bore units.

PORT SIZE*(NPTF)	1/4"	3/8"
VALVE W/PANEL MOUNT	B405-2101	B405-3101
VALVE LESS BRACKET	B902-2101	B902-3101
PANEL BRACKET	B082-091	B082-090
MIN. AIR LINE PRESSURE	20 psi	20 psi
MAX. AIR LINE PRESSURE	140 psi	140 psi



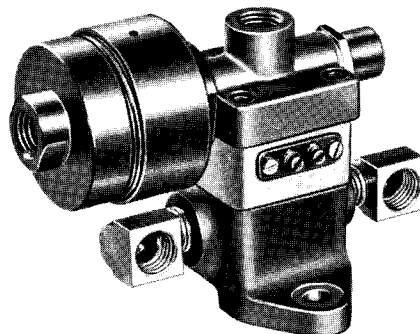
This is a pneumatic pilot operated 4-way air valve complete with built-in speed controls for adjusting cylinder piston rod speed in either or both directions. In most installations a small, normally-closed 3-way valve is connected between the pilot port and a "tee" or "y" in the incoming air line. Opening the 3-way valve electrically, manually or mechanically shifts the Air Pilot Valve. The moment this 3-way valve is allowed to close, internal pressure returns the control valve to its normal position.

The Pneumatic Pilot Valve is also available with double pilots which provide all-pneumatic control using momentary signals. With the double air pilot, momentary signals can be applied alternately to the air pilots to shift the control valve. Contact your local sales representative.

THE MODEL NUMBERS SHOWN ON THIS PAGE ARE VALVE MODEL NUMBERS FOR USE IN ORDERING VALVES FOR REMOTE CONTROL OF CYLINDERS AND OTHER DEVICES.

WHEN ORDERING AN AIR MOTOR EITHER WITH REMOTE OR INTEGRAL CONTROL VALVE, SIMPLY ORDER BY THE AIR MOTOR MODEL NUMBER. The valve, and (if remote controlled) mounting, hose and connections will be furnished.

## PNEUMATIC PILOT-OPERATED CONTROL VALVE



A

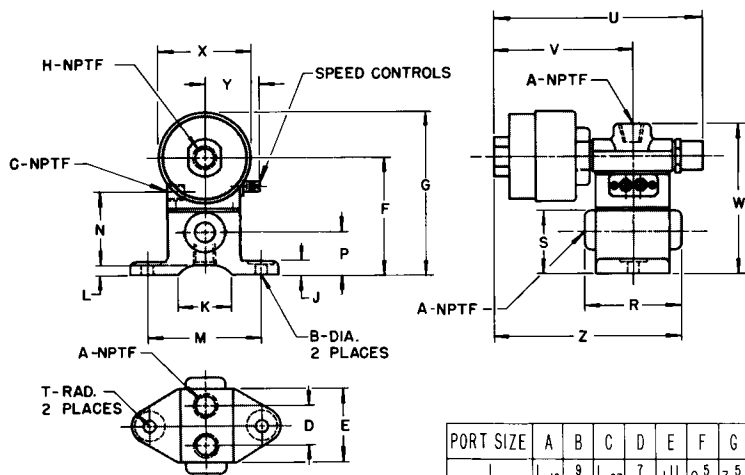
### VALVE SPECIFICATIONS & MODEL NO.

PORT SIZE* (NPTF)	1/4"	3/8"
VALVE W/PANEL MOUNT	B414-2004	B414-3004
VALVE LESS BRACKET	B882-2001	B882-3001
PANEL BRACKET	B082-091	B082-090
MIN. AIR LINE PRESSURE	30 psi ▲	30 psi ▲
MAX. AIR LINE PRESSURE	175 psi	175 psi

\*NOTE: 1/4" Valve is used on 1 1/4", 1 3/4" and 2 1/2" bore Air Motors; 3/8" on 3 3/8" bore units.

▲If less than 30 psi is required to operate the Air Motor or cylinder, a separate line of at least 30 psi should be piped to the pilot valve air inlet.

On Remote installations, the valve should be mounted as close as possible to the air cylinder to prevent lag between valve action and cylinder response.



PORT SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z
1/4	1 1/8	9 3/32	1 27/8	7 7/8	1 11/16	2 5/8	3 5/8	1 1/4	5 1/16	1 1/8	1 1/4	2 1/2	1 21/32	15 1/16	2 1/8	1 7/16	3 3/8	4 11/16	3 5/32	3 11/32	2	1 11/32	4 7/32
3/8	3 3/8	21 1/64	1 1/8	2 1/8	2 1/8	3 1/16	4 1/16	1 1/4	3 3/8	1 1/2	9 3/32	3	1 31/32	1 3/32	2 5/8	1 21/32	7 1/16	5 3/16	3 13/32	4 5/32	2	1 27/32	4 23/32



# Air Motor and Hydro-Check<sup>®</sup>

**A smooth, fast, cost effective linear control system.**

**Profile:** Designed to provide accurate, controlled linear motion for unlimited production applications.

The Bellows Air Motor/Hydro-Check assembly features a double-acting air cylinder with an integral quick response directional control valve coupled to a self-contained hydraulic resistance unit. Designed to provide smooth, controlled feed rates that are not possible to obtain with a conventional pneumatic system. The Hydro-Check also provides a means to "stop," "speed up," or "slow down" the Air Motor at any point in its travel.

There are seven mounting styles, five bore sizes and valve options to satisfy your most stringent needs.

**Pressure:** Up to 175 psi (varies by valve type)

**Temperature:** -30°F to 180°F (varies by valve type)

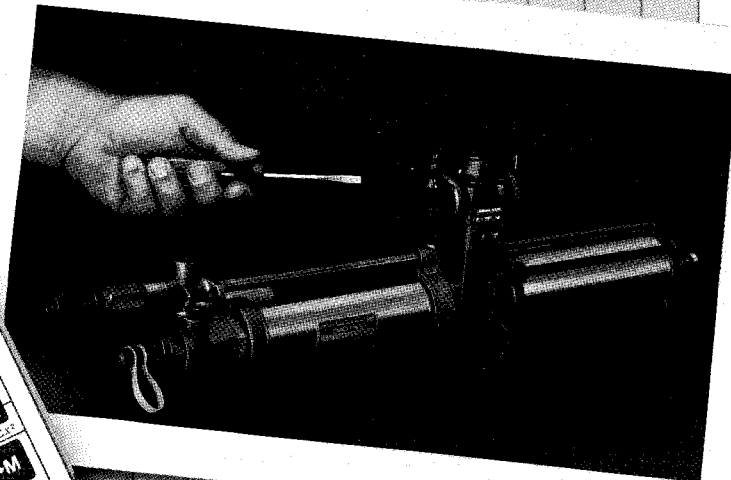
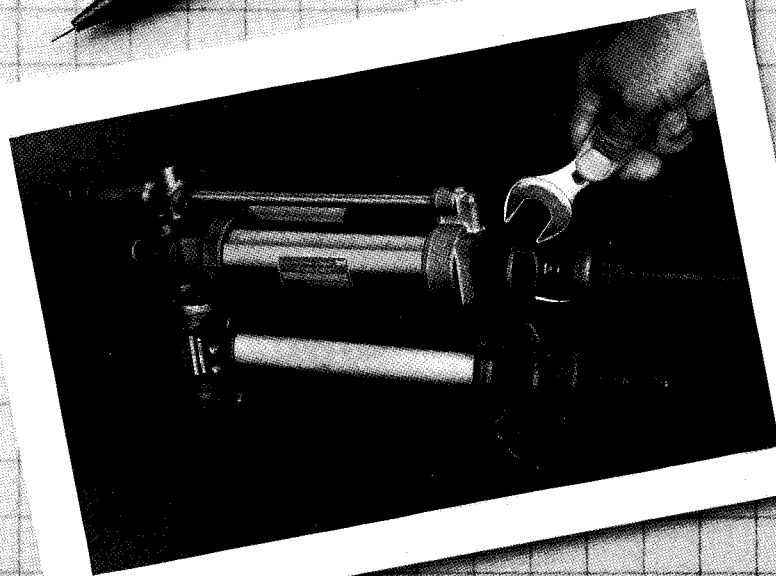
**Bore Sizes:** 1/4", 1/4", 2 1/2", 3 5/8"

**Piston Rods:** 5/8", 3/4"

**Rod Thread:** Full size

**Head and Caps:** High-strength forgings

**Piston Seals:** Self-Adjusting Buna N Cup Seals



## Schrader Bellows<sup>®</sup>

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