ARO®

Pneumatic Motors

Ingersoll Rand®

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ARO Rotary-Vane Pneumatic Power Motors

ARO rotary-vane pneumatic power motors are designed to be used in a fixed position and remotely controlled. They provide all the safety, convenience and reliability of portable hand-held air tools. In proportion to their power output they are small and light, and can be installed in confined spaces which cannot accept conventional electric motors. They allow positive control at adjustable speeds. They are free from spark hazard and will not burn out from overloading. An overloaded motor will stall, but will return to normal operation when the overload condition is removed.

OPTIMUM DESIGN. Rotary-vane air motors produce high power-to-weight performance with a minimum number of moving parts. All rotors are ball-bearing mounted at each end.

CLOSED PLANETARY GEARING. Common to all motors, with needle bearing support on all planet gears. Planet cages have ball bearings at each end (except 0000-Series) to withstand moderate end thrust and radial load. The closed planetary gearing system provides vibration-free power and long service life.

LOW MAINTENANCE. Precision machining, all-steel construction, ball bearings and needle bearings at support points give trouble-free performance. For minimum maintenance it is also essential that motors be operated with clean, dry, lubricated air that systematic gear lubrication be maintained. Convenient flush-type grease fittings provide lubrication for rotating parts.

EASY, CONVENIENT AIR CONNECTIONS. Inlet ports are provided at side and rear to facilitate connecting of air hose to motor in confined spaces.

REVERSIBLE MOTORS. These operate equally well in either direction. They can be reversed on a continued-cycling basis without damage.

QUICK RESPONSE. Air motors come up to full speed within half a revolution under a no-load condition. When selecting air motors for applications requiring start-stop cycling, reversing of connected loads, or a combination of the two, use starting-torque values to determine the correct size of the air motor needed for the application. Under favorable operating conditions, starting torque is generally 75% of stall torque.

WIDE SELECTION OF SPEEDS AND TORQUES. ARO offers the widest selection of speeds, torques and spindles in the industry. See chart below for horsepower and speed range of each series. If you need a large quantity of motors and cannot find necessary specifications in these listings, ask us about the possibility of a standard motor with design modifications. Specify horsepower output required, torque to be developed at load or stall depending upon the application, speed required at peak horsepower or load torque, air pressure available, and CFM available.

ROTARY-VANE POWER MOTOR PERFORMANCE. There are two basic types of rotary-vane power motor applications.

1. Operation of motor at constant speed and torque.
2. Operation where torque increases to a stall condition.

In the first instance, load speed performance and load torque are listed at rated peak horsepower, based on an air inlet pressure of 90 p.s.i. (6.2 bar gauge). At its peak horsepower point, the motor operates at peak efficiency. This is the point at which the motor should be operated on continuous-run drive applications. Reduction of air inlet pressure allows infinite control of speed and torque. Power performance curves on specific models can be provided upon request. Air regulation below 50 p.s.i. (3.4 bar gauge) will affect consistent starting of air motors under constant load conditions. Generally, if a pressure of less than 50 p.s.i. is required to secure desired performance, the most suitable motor would be one with a lower spindle speed horsepower, or both.

In the second instance, steadily increasing torque applications are those in which the motor has inherent advantages. The motor may be stalled repeatedly without overheating or damage to the spindle. When the load condition exceeds the torque potential of the motor, the unit will stall. After the overload condition is removed, the motor will return to normal operation.

Note: Sudden, slam-type stalling should be avoided. Applications of this kind, which are beyond the expected normal performance of pneumatic power motors, will damage the power train due to the dynamic shock loads imposed.

EXAMPLES OF CONSTANT-TORQUE APPLICATIONS:

Tumbling barrels
Parts feeders
Shuttle racks
Rotary pumps
Cross-hole indexing
Index tables
Feed rollers

EXAMPLES OF STEADILY INCREASING TORQUE APPLICATIONS:

Raising and lowering dies in punch presses.
Rotating worm gears to compress paper or steel in a shearing press.
Opening and closing lathe chucks.
Opening and closing mold clamps.
Assembling nuts and bolts as a single-spindle or multiple-spindle nutsetter.

SERIES	Speed Range R.P.M.	Torque Range lb. ft.	SERIES	Speed R.P.M.	Torque Range lb. ft.
0000	1,000-25,000	.10-1.80	2200	250-18,000	1.0-55.0
000	550-20,000	.18-8.20	2200-44 Gearing	35-800	13.00-150.00**
0	475-19,000	.52-24.0	44	275-14,000	2.20-124.0
0-2200 Gearing	40-5,300	1.70-60.0*			

*Max. torque recommended for planetary gear system on these models requires shear key with 60 lb. ft. shear strength.

**Max. torque recommended for planetary gear system on these models requires shear key with 150 lb. ft. shear strength.

0000 - Series Power Motors

MODEL	SPINDLE	R.P.M. FREE SPEED	R.P.M. LOAD SPEED @MAX. H.P.	TORQUE STALL lb. ft.	TORQUE STALL Nm	TORQUE OUTPUT @MAX. H.P. lb. ft.	TORQUE OUTPUT @MAX. H.P. Nm	AIR CONSUMPTION @FREE SPEED CFM	AIR CONSUMPTION @FREE SPEED L/s	SOUND LEVEL @FREE SPEED dB(A)	WEIGHT lbs.	WEIGHT kg.	GEAR REDUCTION
FORWARD ROTATION - .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 30.

STANDARD EQUIPMENT

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

MOUNTING ACCESSORIES AT EXTRA COST

41058 Flange Bracket
41057 Foot Bracket

41058

41057

EXTRA-COST OPTIONS FOR MOTORS WITH THREADED SPINDLES

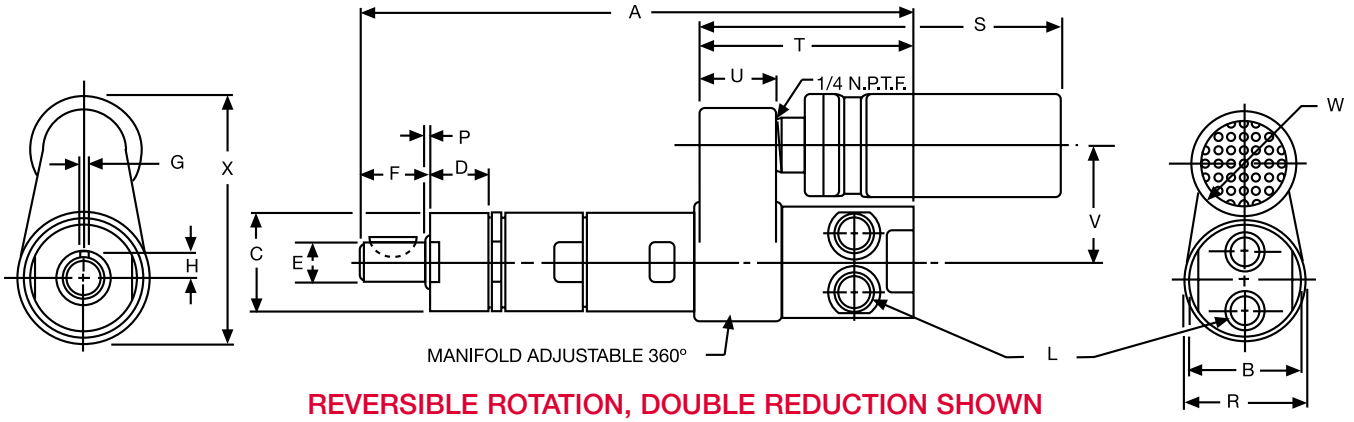
30384-5 3/8" (9.5 mm) Male Square-Drive Adapter.

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.

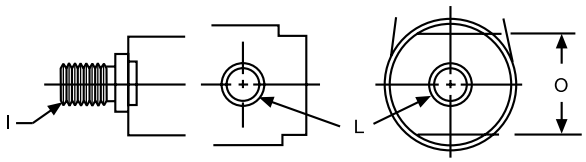
47340 1/4" (6.4 mm) Capacity Drill Chuck.

Dimensions – 0000-Series Power Motors & Mounts



REVERSIBLE ROTATION, DOUBLE REDUCTION SHOWN

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

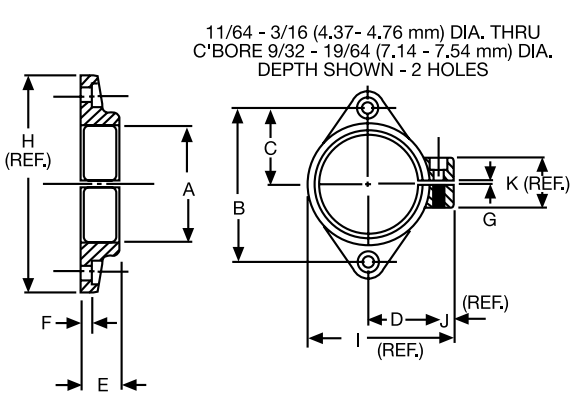


THREADED SPINDLE

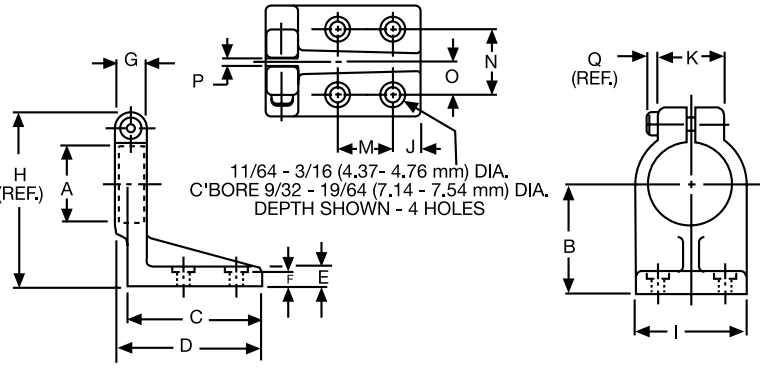
AIR INLETS FORWARD-ROTATION MOTORS

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

Scale	S P-Keyed Spindle	P-Th'd Spindle	R	Reversible Direction	Single Direction	T	U	V	W	X
Inches	.149 .186	.024 .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 4.72	.61 1.55	28	87 mm	113 mm	51	19	28	25	55



41058 FLANGE MOUNTING BRACKET



41057 FOOT MOUNTING BRACKET

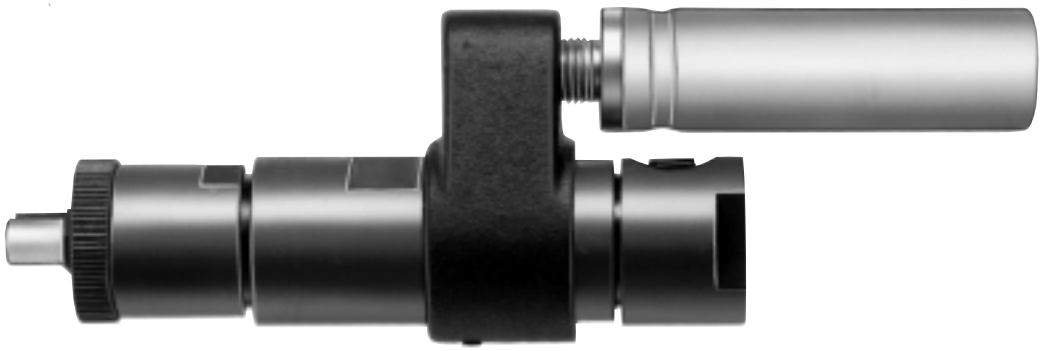
Scale	A	B	C	D	E	F
Inches	.937 .938	1.745 1.755	.870 .880	.677 .697	.365 .385	.177 .197
mm	23.80 23.83	44.32 44.58	22.10 22.35	17.20 17.45	9.27 9.78	4.50 5.00

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

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

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

000 - Series Power Motors



MODEL	SPINDLE	R.P.M. FREE SPEED	R.P.M. LOAD SPEED @MAX. H.P.	TORQUE STALL lb. ft.	TORQUE STALL Nm	TORQUE OUTPUT @MAX. H.P. lb. ft.	TORQUE OUTPUT @MAX. H.P. Nm	AIR CONSUMPTION @FREE SPEED CFM	AIR CONSUMPTION @FREE SPEED L/s	SOUND LEVEL @FREE SPEED dB(A)	WEIGHT lbs.	WEIGHT kg.	GEAR REDUCTION
FORWARD ROTATION - .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 30.

STANDARD EQUIPMENT

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

MOUNTING ACCESSORIES AT EXTRA COST

37898 Flange Bracket
37899 Foot Bracket

37898

37899

EXTRA-COST OPTIONS FOR MOTORS WITH THREADED SPINDLES

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

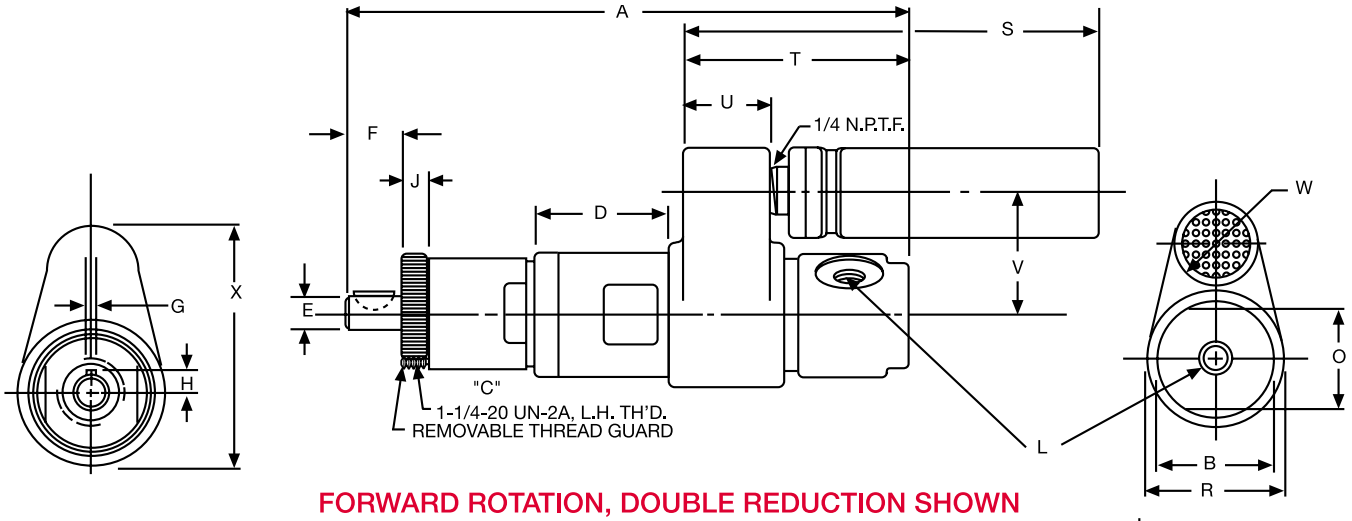
30384-9 1/2" (12.7 mm) Male Square-Drive Adapter.

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

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

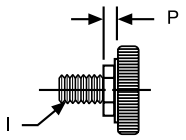
42420 3/8" (9.5 mm) Arbor for rubber friction drive wheels up to 1" (25.4 mm) wide.

Dimensions – 000-Series Power Motors & Mounts

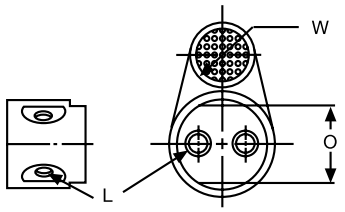


FORWARD ROTATION, DOUBLE REDUCTION SHOWN

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



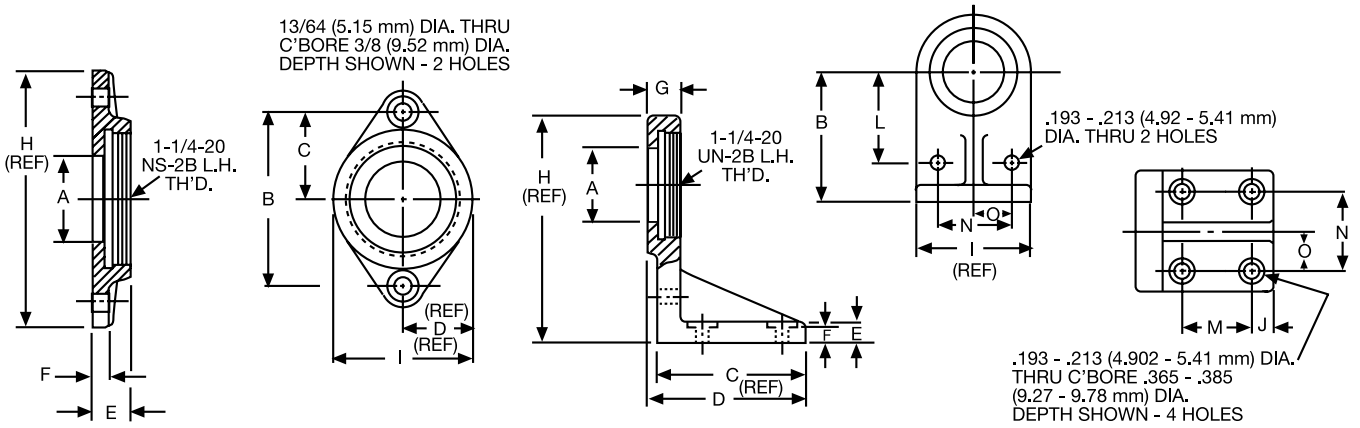
THREADED SPINDLE



AIR INLETS, REVERSIBLE MOTORS

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

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



37898 FLANGE MOUNTING BRACKET

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

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

37899 FOOT MOUNTING BRACKET

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

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

0 - Series Power Motors with 0 - Series Gearing

MODEL	SPINDLE	R.P.M. FREE SPEED	R.P.M. LOAD SPEED @MAX. H.P.	TORQUE STALL lb. ft.	TORQUE STALL Nm	TORQUE OUTPUT @MAX. H.P. lb. ft.	TORQUE OUTPUT @MAX. H.P. Nm	AIR CONSUMPTION @FREE SPEED CFM	AIR CONSUMPTION @FREE SPEED L/s	SOUND LEVEL @FREE SPEED dB(A)	WEIGHT lbs.	WEIGHT kg.	GEAR REDUCTION
FORWARD ROTATION - .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 30.

STANDARD EQUIPMENT

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

MOUNTING ACCESSORIES AT EXTRA COST

37896 Flange Bracket
37897 Foot Bracket

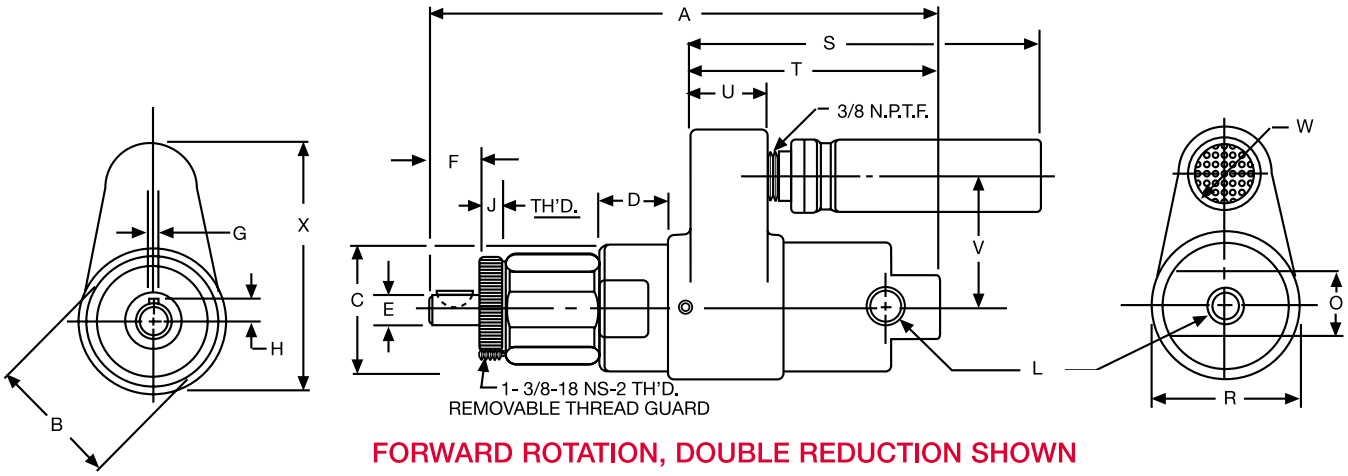
37896

37897

EXTRA-COST OPTIONS FOR MOTORS WITH THREADED SPINDLES

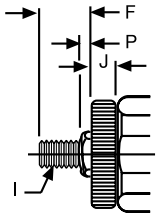
30384-5 3/8" (9.5 mm) Male Square-Drive Adapter.
30384-9 1/2" (12.7 mm) Male Square-Drive Adapter.
30712 1/4" (6.4 mm) Female Hex Ball-Lock Adapter for screwdriver bits.
47341 5/16" (7.9 mm) Capacity Drill Chuck.
42420 3/8" (9.5 mm) Arbor for rubber friction drive wheels up to 1" (25.4 mm) wide.

Dimensions – 0-Series Power Motors & Mounts

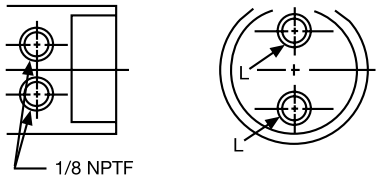


FORWARD ROTATION, DOUBLE REDUCTION SHOWN

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



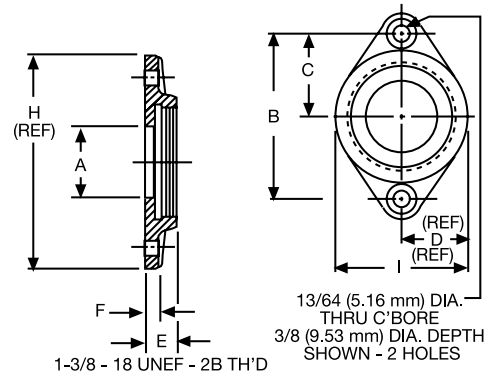
THREADED SPINDLE



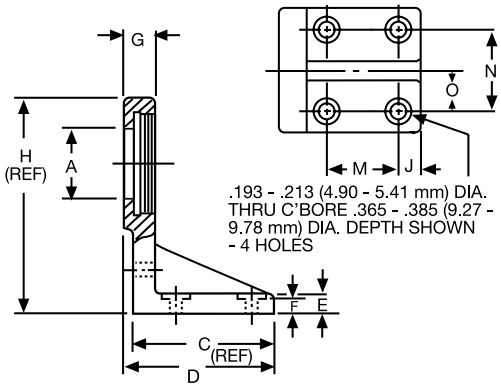
AIR INLETS, REVERSIBLE MOTORS

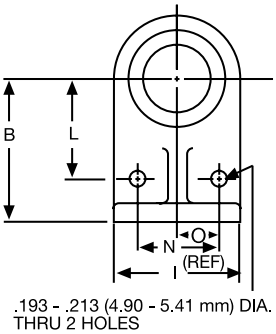
Scale	B	C	D	E	F	G	H	I	J	L
Inches	1-3/4	1.730 1.740	.960 .980	.3748 .3751	.688 .740	.0938 .0948	.228 .238	3/8"-24 UNF-3A Thread	.270 .292	1/4" Female NPTF
mm	44	43.94 44.20	24.38 24.89	9.52 9.53	17.48 18.80	2.38 2.41	5.79 6.05		6.86 7.42	Air Inlet

Scale	O	P	R	S	T - Forw. Rotation	T Reversible	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 5.16	51	124	86	83	27	46	25	87



37896 FLANGE MOUNTING BRACKET





37897 FOOT MOUNTING BRACKET

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

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

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

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

0 - Series Power Motors with 2200 Series Gearing

MODEL	SPINDLE	R.P.M. FREE SPEED	R.P.M. LOAD SPEED @MAX. H.P.	TORQUE STALL lb. ft.	TORQUE STALL Nm	TORQUE OUTPUT @MAX. H.P. lb. ft.	TORQUE OUTPUT @MAX. H.P. Nm	AIR CONSUMPTION @FREE SPEED CFM	AIR CONSUMPTION @FREE SPEED L/s	SOUND LEVEL @FREE SPEED dB(A)	WEIGHT lbs.	WEIGHT kg.	GEAR REDUCTION
FORWARD ROTATION - .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 30.

**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.

MOUNTING ACCESSORY AT EXTRA COST

37895-1 Flange Bracket

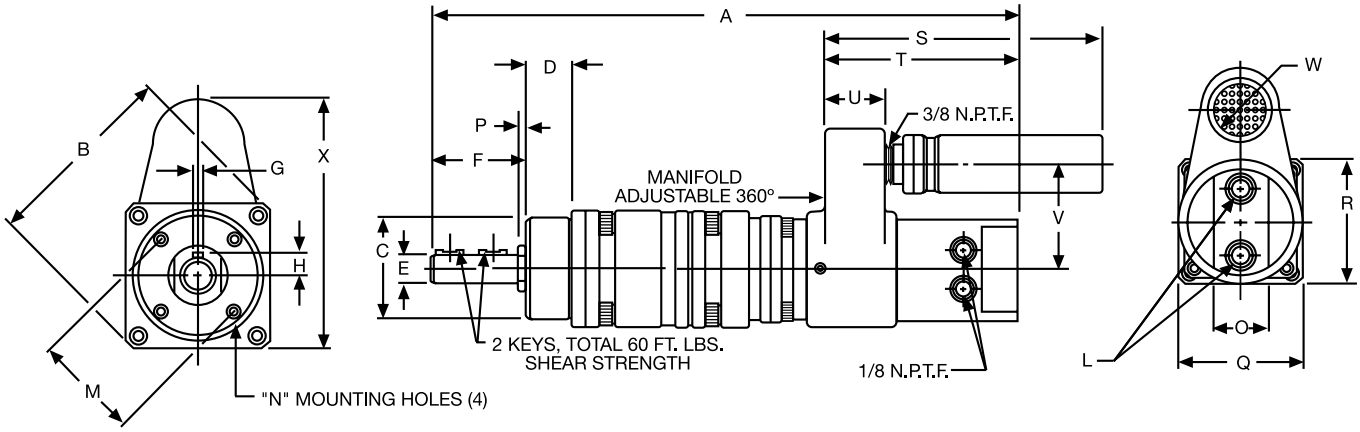
Provision for flange mounting is standard on all models.

37895-1

NO-COST OPTIONS FURNISHED WHEN SPECIFIED ON ORIGINAL ORDER

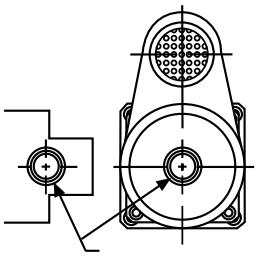
1/2" - 20 Male Threaded Spindle on forward-rotation models.

Dimensions – 0/2200-Series Power Motors & Mounts



REVERSIBLE ROTATION, TRIPLE REDUCTION SHOWN

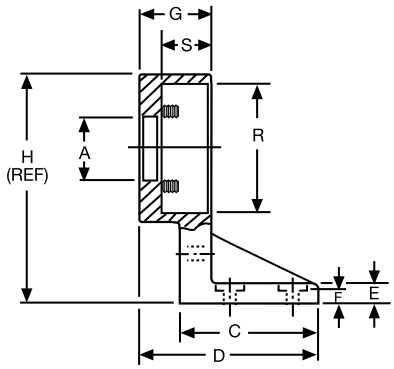
DIMENSION A		
Gear Reduction	Series 8226	Series 8228
Double	8-11/16 221 mm	8-9/16 217 mm
Triple	10-1/2 267 mm	10-3/8 264 mm

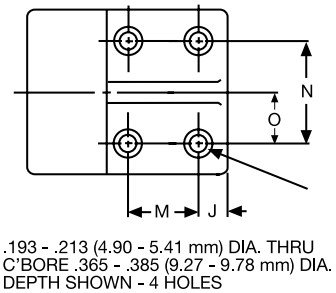


AIR INLETS, SINGLE-DIRECTION MOTORS

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

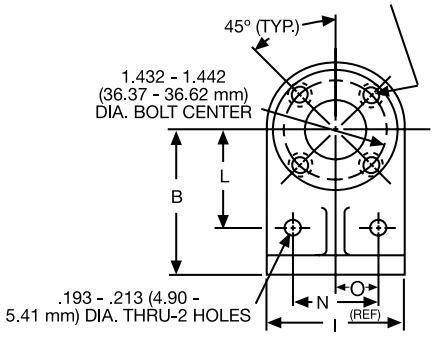
Scale	O	P	Q	R	S	T - Forward Rotation	T - Reversible	U	V	W	X
Inches	7/8	.098 .164	2	2	4-7/8	3-13/32	3-9/32	1-1/16	1-13/16	1	3-7/16
mm	22	2.49 4.17	51	51	124	86	83	27	46	25	87





.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)



37895-1 FOOT MOUNTING BRACKET

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

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

2200 - Series Power Motors with Thread - On Gearing

MODEL	SPINDLE	R.P.M. FREE SPEED	R.P.M. LOAD SPEED @MAX. H.P.	TORQUE STALL lb. ft.	TORQUE STALL Nm	TORQUE OUTPUT @MAX. H.P. lb. ft.	TORQUE OUTPUT @MAX. H.P. Nm	AIR CONSUMPTION @FREE SPEED CFM	AIR CONSUMPTION @FREE SPEED L/s	SOUND LEVEL @FREE SPEED dB(A)	WEIGHT lbs.	WEIGHT kg.	GEAR REDUCTION
FORWARD ROTATION - .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

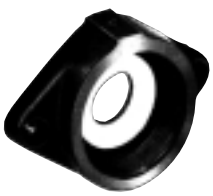
*Requires installation for reversible motors - shown on page 30.

STANDARD EQUIPMENT

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

MOUNTING ACCESSORIES AT EXTRA COST

37893 Flange Bracket
37894 Foot Bracket



37893

37894

EXTRA-COST OPTIONS FOR FORWARD-ROTATION MODELS WITH THREADED SPINDLES

40768 1/2" (12.7 mm) Male Square-Drive Adapter.

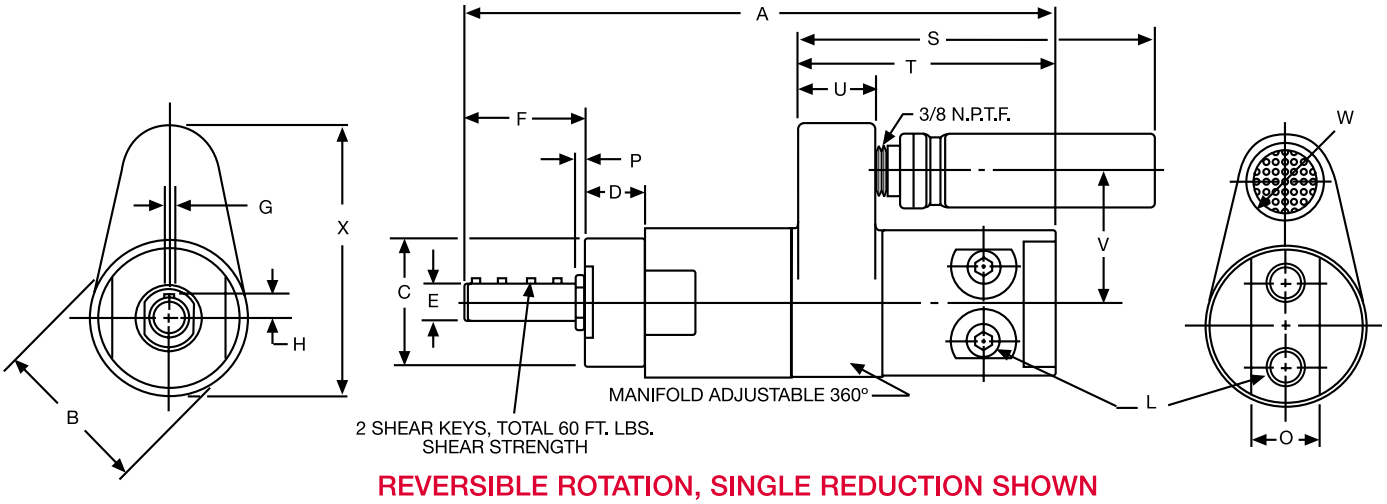
31367 7/16" (11.1 mm) Female Hex Ball-Lock Adapter for screwdriver bits.

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.

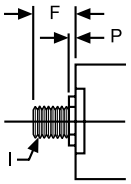
30018 1/2" (12.7 mm) cap. Drill Chuck.

Dimensions – 2200-Series Power Motors & Mounts

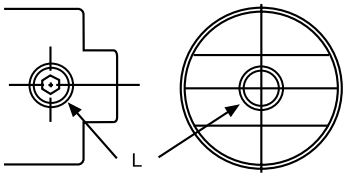


REVERSIBLE ROTATION, SINGLE REDUCTION SHOWN

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



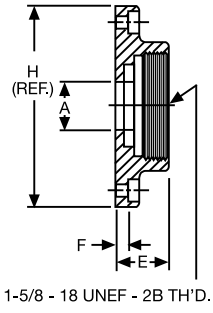
THREADED SPINDLE



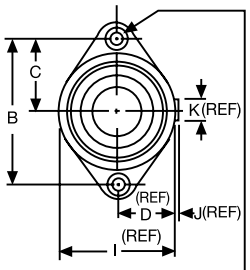
AIR INLETS, FORWARD-ROTATION MOTORS

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

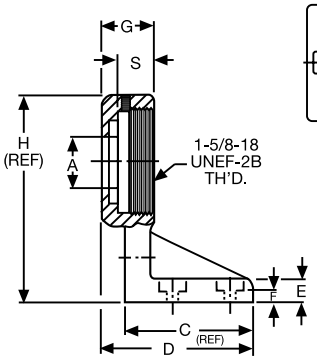
Scale	O	P	S	T	U	V	W-Fwd. Rotation	W Reversible	X-Fwd. Rotation	X Reversible
Inches	7/8	.046 .158	4-7/8	3-1/2	1-1/16	1-13/16	1-3/8	1	3-1/2	3-7/16
mm	22	1.17 4.01	124	89	27	46	35	25	89	87

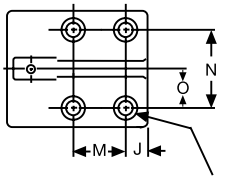


1-5/8 - 18 UNEF - 2B TH'D.

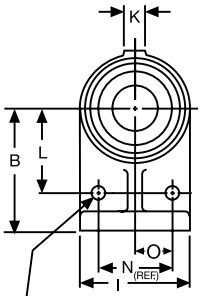


.193 - .213 (4.90 - 5.41 mm) DIA.THRU C'BORE .365 - .385 (9.27 - 9.78 mm) DIA. DEPTH SHOWN - 2 HOLES





.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 .791	2.480 2.520	1.240 1.260	31/32	.771 .791
mm	19.58 20.09	62.99 64.00	31.50 32.00	24.61	19.58 20.09

Scale	F	H	I	J	K
Inches	.177 .197	3	1-15/16	1/16	3/8
mm	4.50 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 .791	2.115 2.135	1.843 1.906	2-7/32	.365 .385	.177 .197	.828 .859	3-1/6
mm	19.58 20.09	53.72 54.23	46.81 48.41	56.36	9.27 9.80	4.50 5.00	21.03 21.82	77.79

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

2200 - Series Power Motors with Bolt - On Gearing

MODEL	SPINDLE	R.P.M. FREE SPEED	R.P.M. LOAD SPEED @MAX. H.P.	TORQUE STALL lb. ft.	TORQUE STALL Nm	TORQUE OUTPUT @MAX. H.P. lb. ft.	TORQUE OUTPUT @MAX. H.P. Nm	AIR CONSUMPTION @FREE SPEED CFM	AIR CONSUMPTION @FREE SPEED L/s	SOUND LEVEL @FREE SPEED dB(A)	WEIGHT lbs.	WEIGHT kg.	GEAR REDUCTION
FORWARD ROTATION - .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 30.

STANDARD EQUIPMENT

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

MOUNTING ACCESSORY AT EXTRA COST

37895-1 Foot Bracket

Provisions for flange mounting is standard on all models.

37895-1

EXTRA-COST OPTIONS FOR FORWARD-ROTATION MODELS WITH THREADED SPINDLES

40768 1/2" (12.7 mm) Male Square-Drive Adapter.

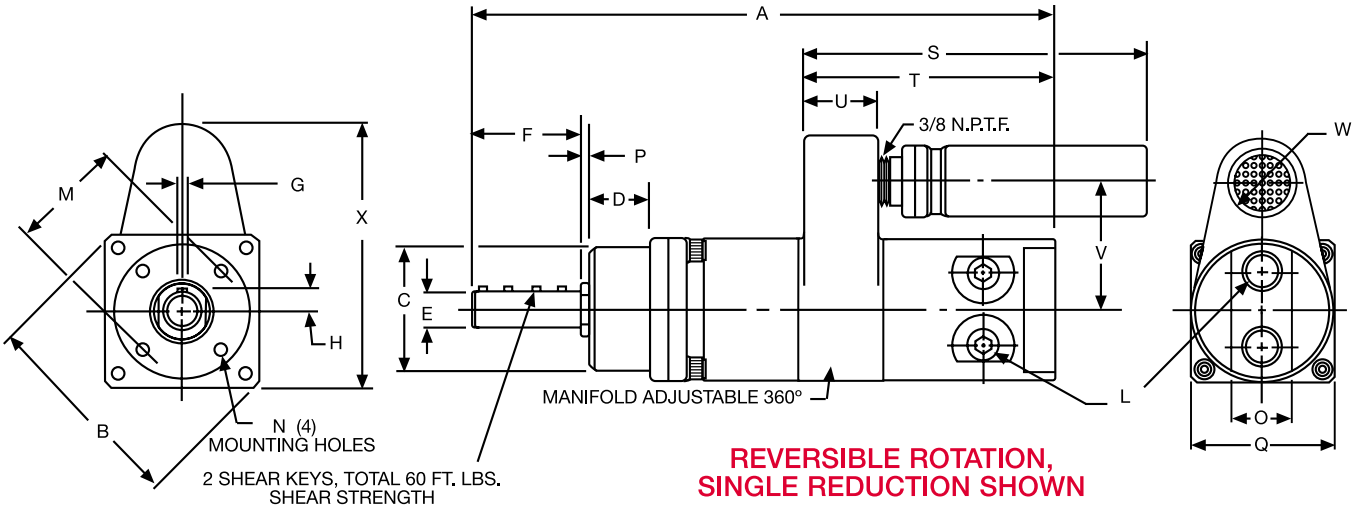
31367 7/16" (11.1 mm) Female Hex Ball-Lock Adapter for screwdriver bits.

31651 1/2" (12.7 mm) I.D. Female Stirring Rod Adapter.

33907 3/8" (9.5 mm) cap. Drill Chuck.

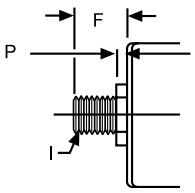
30018 1/2" (12.7 mm) cap. Drill Chuck.

Dimensions – 2200-Series Power Motors & Mounts

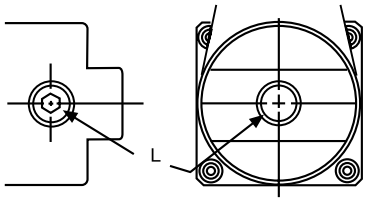


REVERSIBLE ROTATION,
SINGLE REDUCTION SHOWN

Models	Gear Reduction	DIMENSION A
7800-1B 7801-1B 7802-1B 7806-1B 7807-1B 7808-1B	Single	8-1/8 206 mm
7803-1B 7804-1B 7805-1B 7809-1B 7810-1B 7811-1B	Double	9-29/32 252 mm
7814-1B 7816-1B 7817-1B	Single	7-5/32 182 mm
7812-1B 7813-1B 7815-1B	Double	8-15/16 227 mm



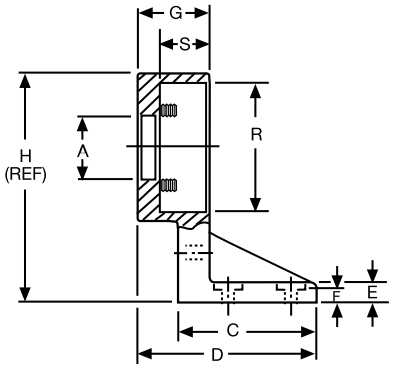
THREADED
SPINDLE

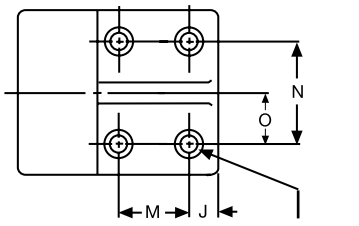


AIR INLETS,
SINGLE DIRECTION MOTORS

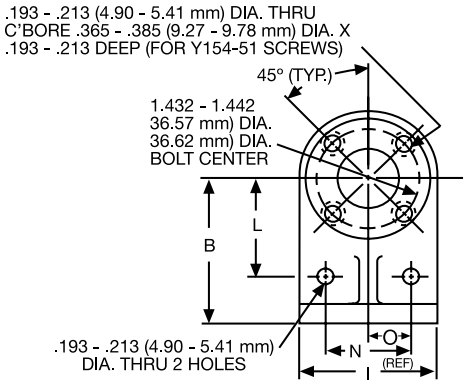
Scale	B	C	D	E	F-Keyed Spindle	F-Th'd. Spindle	G	H	I	L	M	N
Inches	2-11/16	1.7490 1.7495	.781 .812	.4990 .4995	1.615 1.653	.646 .684	.125 .126	.299 .309	1/2"-20 UNF-2A	1/4 NPTF	1.432 1.442	10-24 UNC-2B
mm	68	44.42 44.44	19.84 20.62	12.67 12.69	41.02 41.99	16.41 17.37	3.18 3.20	7.59 7.85	Thread	Air Inlet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

Scale	O	P	Q	S	T	U	V	W-Fwd. Rotation	W Reversible	X-Fwd. Rotation	X Reversible
Inches	7/8	.113 .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 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.
DEPTH SHOWN - 4 HOLES

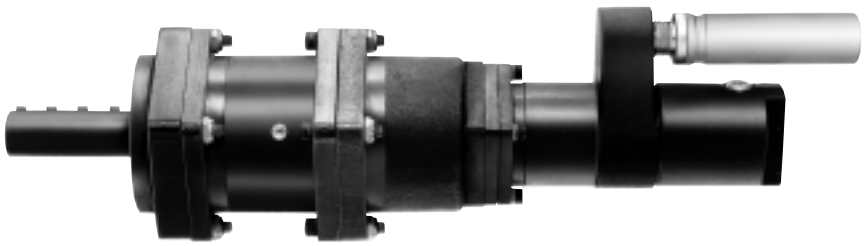


37895-1 FOOT MOUNTING BRACKET

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

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

2200 - Series Power Motors with 44 - Series Gearing



MODEL	SPINDLE	R.P.M. FREE SPEED	R.P.M. LOAD SPEED @MAX. H.P.	TORQUE STALL lb. ft.	TORQUE STALL Nm	TORQUE OUTPUT @MAX. H.P. lb. ft.	TORQUE OUTPUT @MAX. H.P. Nm	AIR CONSUMPTION @FREE SPEED CFM	AIR CONSUMPTION @FREE SPEED L/s	SOUND LEVEL @FREE SPEED dB(A)	WEIGHT lbs.	WEIGHT kg.	GEAR REDUCTION
FORWARD ROTATION - .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 30.

**NOTE: Maximum torque recommended for planetary gear system 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.

MOUNTING ACCESSORY AT EXTRA COST

37892-1 Foot Bracket

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

37892-1

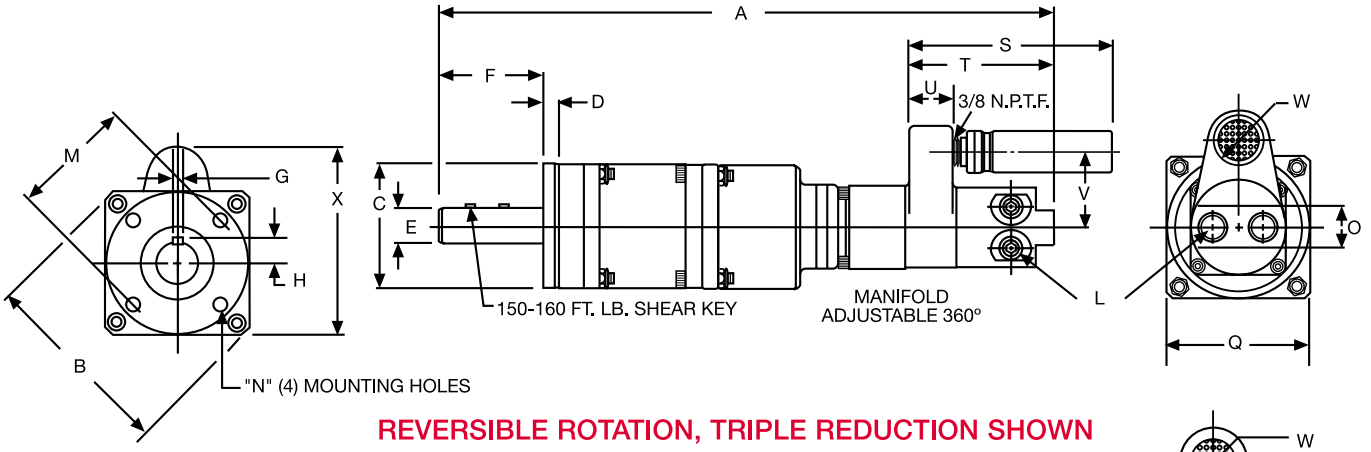
EXTRA-COST OPTIONS FOR SPECIFIED MODELS

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. See page 30.

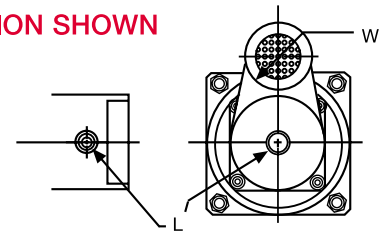
41512-1 Throttle & Bracket Assembly for reversible nutsetters. Includes two 41511 throttles and two 43982-1 Quick-Dump Exhaust Valves. See page 30.

Dimensions – 2200/44-Series Power Motors & Mounts



REVERSIBLE ROTATION, TRIPLE REDUCTION SHOWN

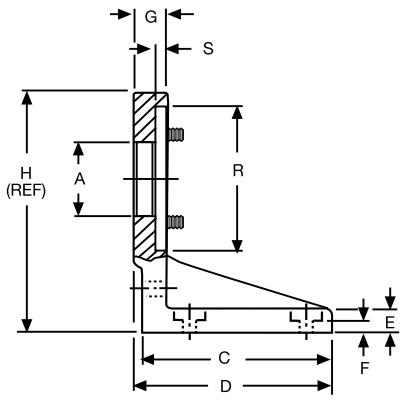
Gear Reduction	Dimension A
Double	11-5/16 303 mm
Triple	14-3/4 375 mm

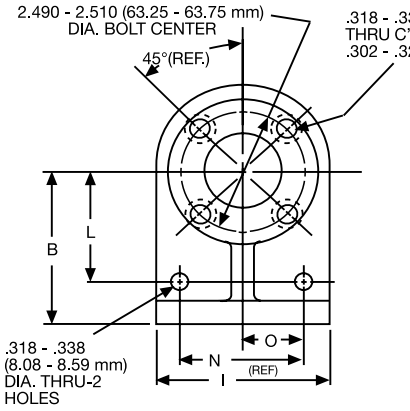


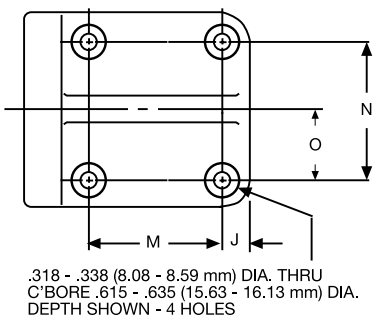
AIR INLETS, FORWARD-ROTATION MOTORS

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

Scale	O	Q	S	T	U	V	W-Fwd. Rotation	W Reversible	X Reversible	X 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 1.510	3.115 3.135	3.781 3.843	3.968 4.062	.437 .562	.240 .260	.671 .718	4.812 4.937
mm	37.85 38.35	79.12 79.63	96.04 97.61	100.79 103.17	11.10 14.27	6.10 6.60	17.04 18.24	122.22 125.40

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

44 - Series Power Motors

MODEL	SPINDLE	R.P.M. FREE SPEED	R.P.M. LOAD SPEED @MAX. H.P.	TORQUE STALL lb. ft.	TORQUE STALL Nm	TORQUE OUTPUT @MAX. H.P. lb. ft.	TORQUE OUTPUT @MAX. H.P. Nm	AIR CONSUMPTION @FREE SPEED CFM	AIR CONSUMPTION @FREE SPEED L/s	SOUND LEVEL @FREE SPEED dB(A)	WEIGHT lbs.	WEIGHT kg.	GEAR REDUCTION
FORWARD ROTATION - 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 30.

STANDARD EQUIPMENT

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

MOUNTING ACCESSORY AT EXTRA COST

37892-1 Foot Bracket

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

37892-1
FOOT
BRACKET

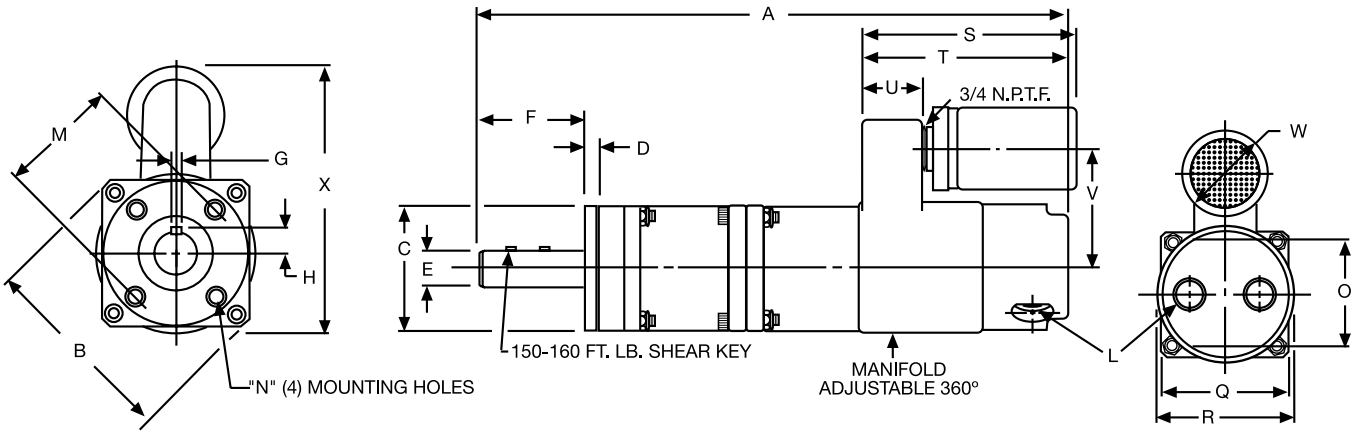
EXTRA-COST OPTIONS FOR SPECIFIED MODELS

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. See page 30.

41512-1 Throttle & Bracket Assembly for reversible nutsetters. Includes two 41511 throttles and two 43982-1 Quick-Dump Exhaust Valves. See page 30.

Dimensions – 44-Series Power Motors & Mounts

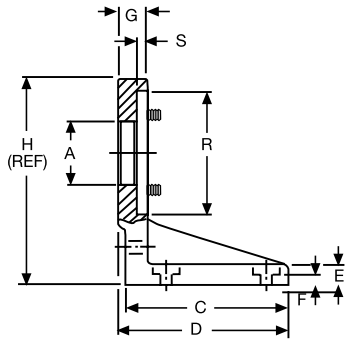


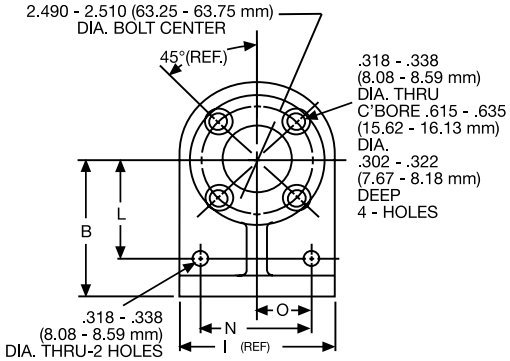
REVERSIBLE ROTATION, DOUBLE REDUCTION SHOWN

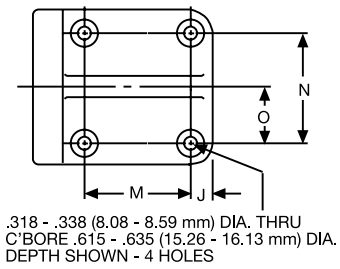
Models	Gear Reduction	Dimension A
8203-A 8204-A 8205-A 8209-A 8210-A 8211-A	Single	11-17/64 286 mm
8206-A 8207-A 8208-A 8200-A 8201-A 8202-A	Double	14-1/16 373 mm

Scale	B	C	D	E	F	G	H	L	M	N
Inches	4.090 4.110	2.996 2.998	.369 .374	.8743 .8748	2.483 2.559	.1872 .1875	.528 .531	3/8 NPTF Air Inlet	2.498 2.502	5/16-24 UNF-2B Thread
mm	103.89 104.39	76.10 76.15	9.37 9.50	22.21 22.22	63.07 65.00	4.75 4.76	13.41 13.49		63.45 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 1.510	3.115 3.135	3.781 3.843	3.968 4.062	.437 .562	.240 .260	.671 .718	4.812 4.937
mm	37.85 38.35	79.12 79.63	96.04 97.61	100.79 103.17	11.10 14.27	6.10 6.60	17.04 18.24	122.22 125.40

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

Rotary - Vane Pneumatic Milling & Sawing Motors

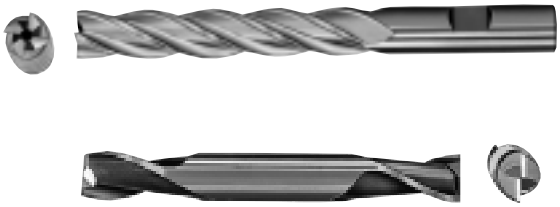


FIGURE 1

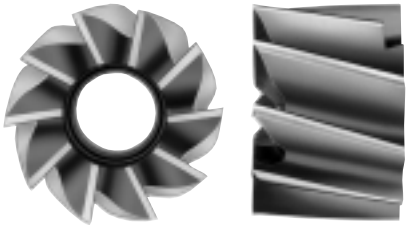


FIGURE 2

FIGURE 3

FIGURE 4

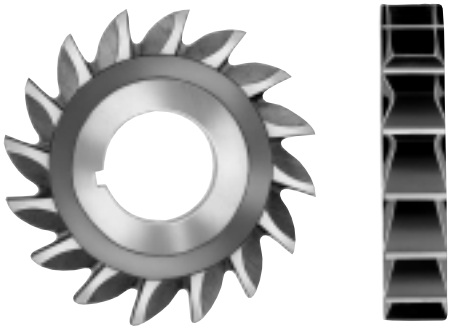


FIGURE 5

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.

For more detailed information, write to company for Form 5899, **MILL MOTOR APPLICATION INFORMATION.**

Three factors determine correct milling motor selection:

1. Horsepower. Formula given below.
2. R.P.M. 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.

FORMULAE FOR MODEL SELECTION

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

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

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

K Factors for Common Materials

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

REFERENCE CHART

Work Material	Hardness BHN	Speed R.P.M.	Feed Per Minute Face Mills	Feed Per Tooth Slotting & Side Mills	Feed Per Tooth End Mills	Work Material	Hardness BHN	Speed R.P.M.	Feed Per Minute Face Mills	Feed Per Tooth Slotting & Side Mills	Feed Per Tooth End Mills
Free Machining Steels, Plain Carbon Steels, Alloy Steels, Series 400 & 500 Stainless	150 200 250 300 350	500-900 450-800 400-700 350-600 300-450	.010-.014 .010-.014 .008-.010 .008-.010 .006-.008	.008-.010 .008-.010 .006-.008 .006-.008 .004-.006	.002-.004 .002-.004 .001-.003 .001-.003 .001-.003	Magnesium Alloys	–	900-1600	.012-.018	.010-.014	.003-.005
						Aluminum Alloys	Low Silicon High Silicon	1200-1800 900-1200	.012-.018 .008-.012	.010-.014 .008-.010	.003-.006 .003-.005
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	150-250 200-250	350-450 250-350	.010-.012 .008-.010	.006-.010 .005-.008	.001-.003 .001-.002	Copper Alloys	20-70 RB 60-100 RB	900-1300 800-1000	.012-.016 .008-.012	.008-.012 .007-.010	.003-.004 .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	110-220 220-320	300-400 125-250	.012-.016 .008-.012	.008-.012 .006-.010	.002-.004 .002-.003	Manganese	140-220	150-200	.005-.008	.004-.006	.002-.004
Nodular Iron	140-250 250-400	325-450 225-300	.012-.016 .008-.012	.008-.012 .006-.010	.002-.004 .002-.003	Thermoplastics	–	500-1100	.006-.010	.005-.008	.003-.005
Malleable Iron	110-220 200-280	250-350 200-300	.012-.016 .008-.012	.008-.012 .006-.010	.002-.004 .002-.003	Thermosetting Plastics	–	500-1100	.006-.010	.005-.008	.003-.005

000 - Series Forward - Rotation Milling Motors,1/4" Capacity

MODEL	SPINDLE	R.P.M. FREE SPEED	R.P.M. LOAD SPEED @MAX. H.P.	TORQUE STALL lb. ft.	TORQUE STALL Nm	TORQUE OUTPUT @MAX. H.P. lb. ft.	TORQUE OUTPUT @MAX. H.P. Nm	AIR CONSUMPTION @FREE SPEED CFM	AIR CONSUMPTION @FREE SPEED L/s	SOUND LEVEL @FREE SPEED dB(A)	WEIGHT lbs.	WEIGHT kg.	GEAR REDUCTION
FORWARD ROTATION - 0.25 H.P.													
7533-2-B	1/4" Maximum Collet 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

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 below.

MOUNTING ACCESSORIES AT EXTRA COST

41563 Flange Bracket

45088 Foot Bracket

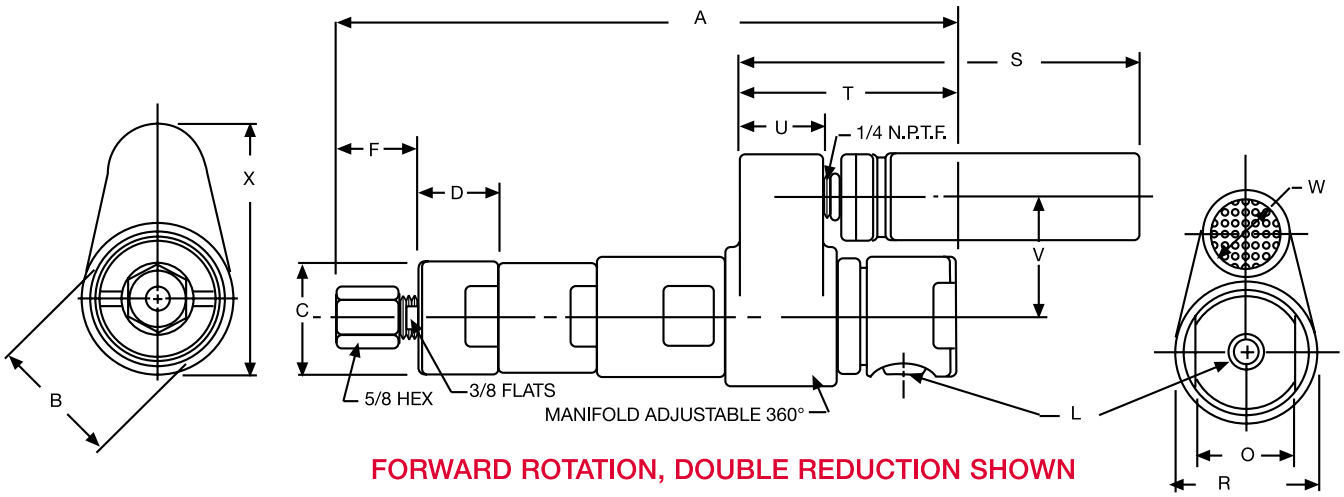
41563 FLANGE MOUNTING BRACKET

45088 FOOT MOUNTING BRACKET

Collet Insert No.	Size	Minimum Capacity Inches	Minimum Capacity mm	Maximum Capacity Inches	Maximum Capacity 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)

Dimensions – 000-Series Milling Motors & Mounts

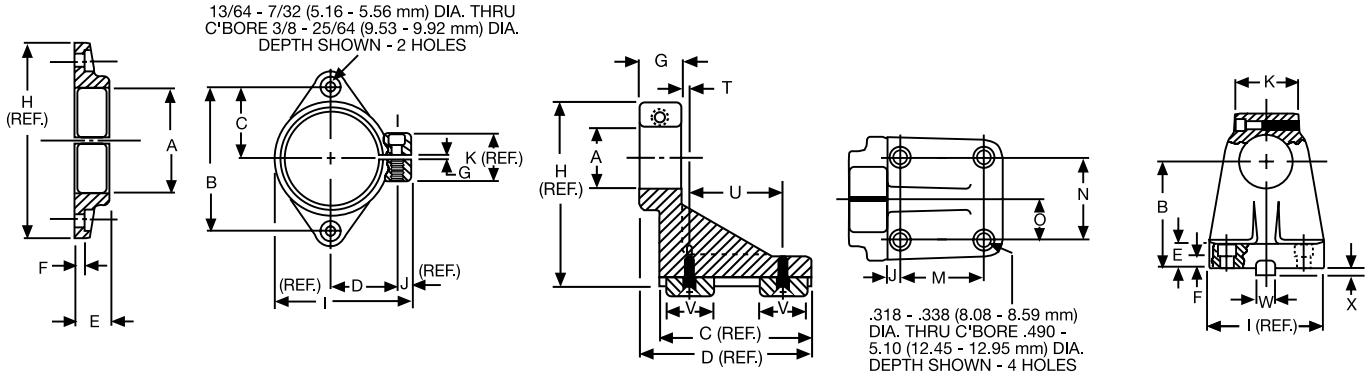


FORWARD ROTATION, DOUBLE REDUCTION SHOWN

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

Scale	B	C	D	F	L	O	R
Inches	1-3/8	1.311 1.312	.870 .890	15/16 (Approx.)	1/8 NPTF	1-1/8	1-5/8
mm	35	33.30 33.32	22.10 22.61	24 (Approx.)	Air 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 1.314	2.745 2.755	1.370 1.380	1.240 1.260	.490 .510	.146 .166
mm	33.32 33.38	69.72 69.98	34.80 35.05	31.50 32.00	12.45 12.95	3.71 4.22

Scale	G	H	I	J	K
Inches	1/64 3/64	3-3/8	2-9/16	1/4	1
mm	0.40 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 1.313	2.749 2.751	3-1/4	3-11/16	.609 .640	.296 .328	.875 .973	4	3	.343 .375
mm	33.32 33.35	69.82 69.88	82.55	93.66	15.47 16.26	7.52 8.33	22.23 23.80	101.60	76.20	8.71 9.53

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

0 - Series Forward - Rotation Milling Motors

MODEL	SPINDLE	R.P.M. FREE SPEED	R.P.M. LOAD SPEED @MAX. H.P.	TORQUE STALL lb. ft.	TORQUE STALL Nm	TORQUE OUTPUT @MAX. H.P. lb. ft.	TORQUE OUTPUT @MAX. H.P. Nm	AIR CONSUMPTION @FREE SPEED CFM	AIR CONSUMPTION @FREE SPEED L/s	SOUND LEVEL @FREE SPEED dB(A)	WEIGHT lbs.	WEIGHT kg.	GEAR REDUCTION
FORWARD ROTATION - .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

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 below.

MOUNTING ACCESSORIES AT EXTRA COST

45057 Foot Bracket

41561 Flange Bracket

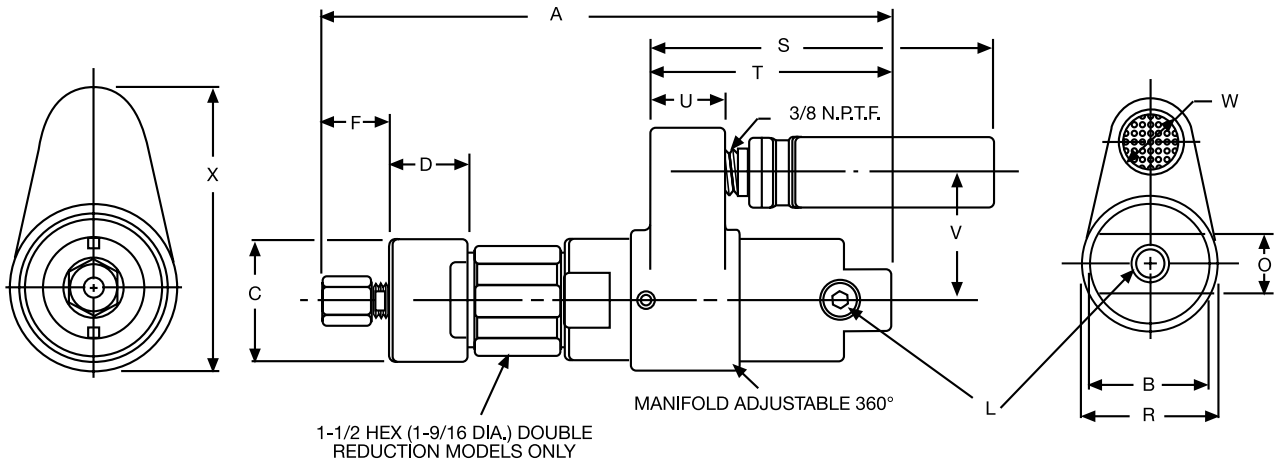
45057 FOOT MOUNTING BRACKET

41561 FLANGE MOUNTING BRACKET

Collet Insert No.	Size	Minimum Capacity Inches	Minimum Capacity mm	Maximum Capacity Inches	Maximum Capacity 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)

Dimensions – 0-Series Milling Motors & Mounts

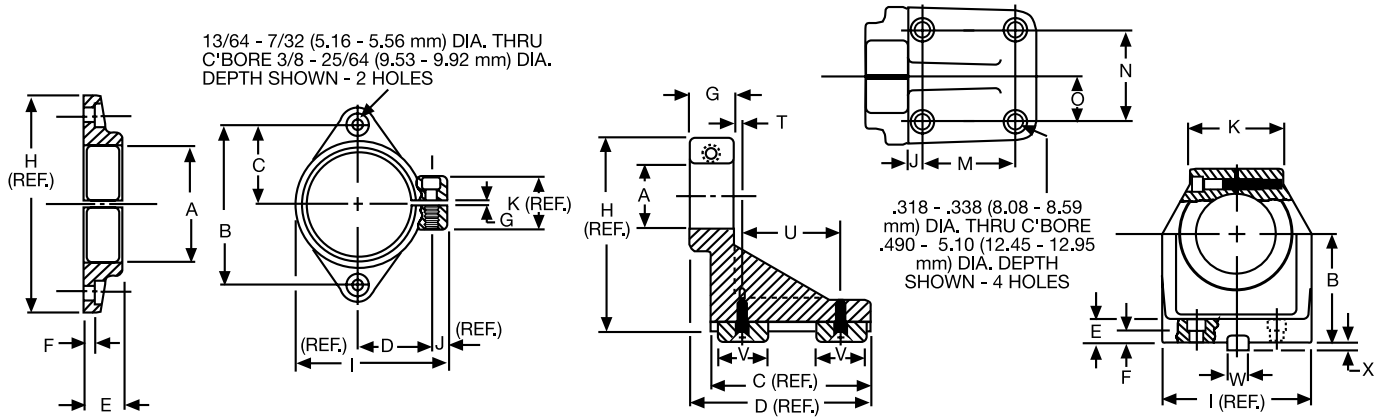


FORWARD ROTATION, DOUBLE REDUCTION SHOWN

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

Scale	B	C	D	F	L	O	R
Inches	1-3/4	1.740 1.739	1-5/32	15/16 (Approx.)	1/4 NPTF	7/8	2
mm	44	44.20 44.17	29	24 (Approx.)	Air 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 1.740	2.745 2.755	1.370 1.380	1.240 1.260	.490 .510	.146 .166
mm	44.22 44.20	69.72 69.98	34.80 35.05	31.50 32.00	12.45 12.95	3.71 4.22

Scale	G	H	I	J	K
Inches	1/64 3/64	3-3/8	2-9/16	1/4	1
mm	0.40 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 1.740	2.749 2.751	3-9/16	3-3/4	.609 .640	.296 .328	1”	4-3/8	3-3/4	.296 .328
mm	44.22 44.20	69.82 69.88	90.49	95.25	15.47 16.26	7.52 8.33	25.40	111.13	95.25	7.52 8.33

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

2200 - Series Forward - Rotation Milling Motors

MODEL	SPINDLE	R.P.M. FREE SPEED	R.P.M. LOAD SPEED @MAX. H.P.	TORQUE STALL lb. ft.	TORQUE STALL Nm	TORQUE OUTPUT @MAX. H.P. lb. ft.	TORQUE OUTPUT @MAX. H.P. Nm	AIR CONSUMPTION @FREE SPEED CFM	AIR CONSUMPTION @FREE SPEED L/s	SOUND LEVEL @FREE SPEED dB(A)	WEIGHT lbs.	WEIGHT kg.	GEAR REDUCTION
FORWARD ROTATION - .85 H.P.													
7800-2B	3/8" Maximum Collet 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

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 for end mills and Woodruff key slot cutters, duplex bearing support on drive spindle to provide 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 below.

MOUNTING ACCESSORIES AT EXTRA COST

45058 Foot Bracket

41559 Flange Bracket

45058 FOOT MOUNTING BRACKET

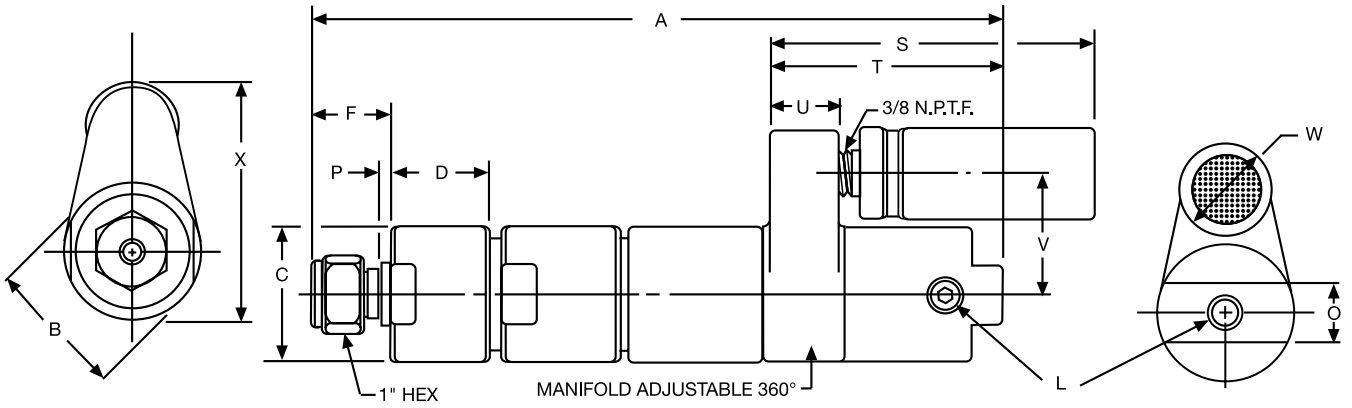
41559 FLANGE MOUNTING BRACKET

COLLET SLEEVES

Collet Insert No.	Size	Minimum Capacity Inches	Minimum Capacity mm	Maximum Capacity Inches	Maximum Capacity 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)

Dimensions – 2200-Series Milling Motors & Mounts

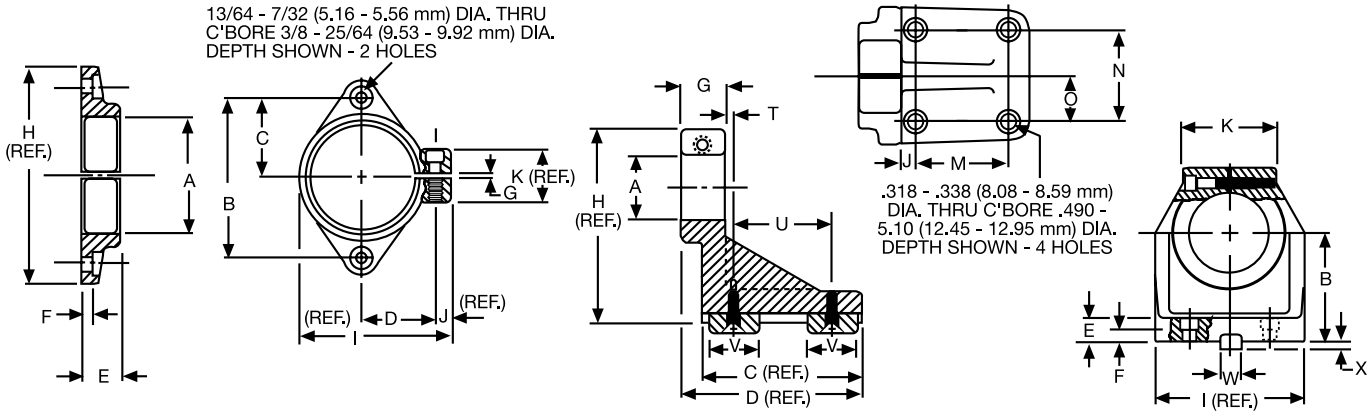


FORWARD ROTATION, DOUBLE REDUCTION SHOWN

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

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

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



41559 FLANGE MOUNTING BRACKET

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

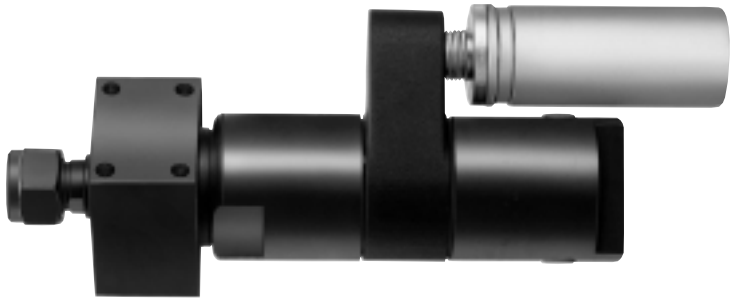
Scale	G	H	I	J	K
Inches	1/64 3/64	3-5/8	2-7/8	5/16	1
mm	0.40 1.19	92.08	73.03	7.94	25.40

45058 FOOT MOUNTING BRACKET

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

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

2200 - Series Forward - Rotation Side Mount Milling Motors



MODEL	SPINDLE	R.P.M. FREE SPEED	R.P.M. LOAD SPEED @MAX. H.P.	TORQUE STALL lb. ft.	TORQUE STALL Nm	TORQUE OUTPUT @MAX. H.P. lb. ft.	TORQUE OUTPUT @MAX. H.P. Nm	AIR CONSUMPTION @FREE SPEED CFM	AIR CONSUMPTION @FREE SPEED L/s	SOUND LEVEL @FREE SPEED dB(A)	WEIGHT lbs.	WEIGHT kg.	GEAR REDUCTION
FORWARD ROTATION - .85 H.P.													
7800-4B	3/8" Maximum Collet Capacity	18,000	9,000	1.00	1.4	.50	.68	41.7	19.7	78	4.89	2.20	Single
7801-4B		4,600	2,400	4.00	5.5	1.86	2.5	41.7	19.7	78	4.89	2.20	Single
7802-4B		2,500	1,300	7.50	10.3	3.43	4.7	41.7	19.7	78	4.89	2.20	Single
7803-4B		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

Square-drive gearing with 4 tapped holes for close-quarter mounting. Other standard equipment same as for motors on page 24.

NO-COST AND EXTRA-COST OPTIONS

For other collet sleeves, filter-regulator-lubricator and recommended air hose, see listing on page 24.

2200 - Series Forward - Rotation Straddle Milling Motors

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

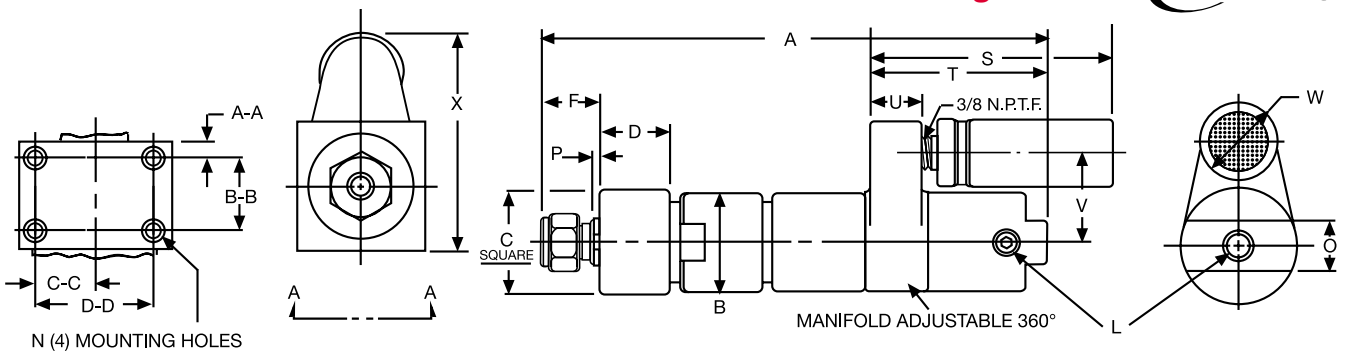
STANDARD EQUIPMENT

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.

NO-COST AND EXTRA-COST OPTIONS

For mounting bracket and recommended hose, see listing on page 24.

Dimensions – 2200-Series Forward-Rotation Side-Mount Milling Motors



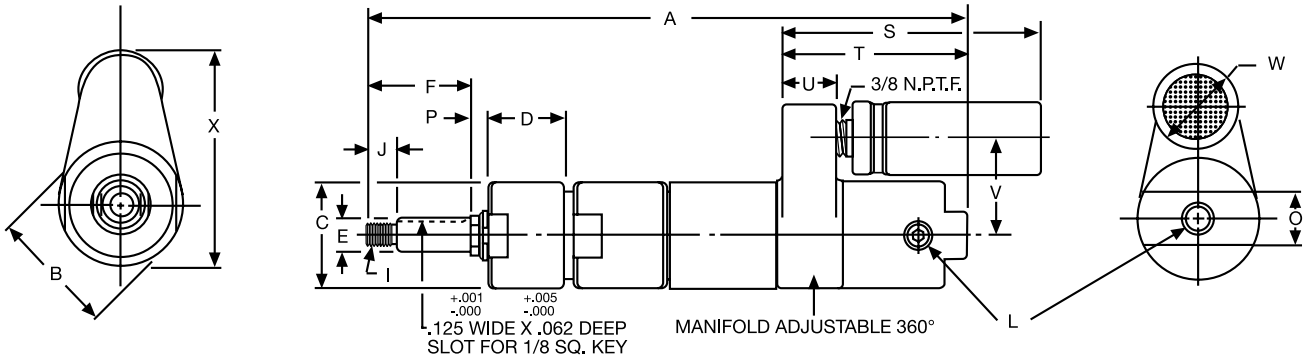
FORWARD ROTATION, DOUBLE REDUCTION SHOWN

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 2.135	1.422 1.452	1-5/32 (Approx.)	1/4 NPTF	1/4-28 UNF-2B	7/8	.097 .157	4-7/8
mm	51	53.72 54.23	36.12 36.88	29 (Approx.)	Air Inlet	Thread 3/8" Deep	22	2.46 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 .223	1.000 1.005	.807 .817	1.62 1.63
mm	89	27	46	35	90	5.41 5.66	25.40 25.53	20.50 20.75	41.15 41.40

Dimensions – 2200-Series Forward-Rotation Straddle- Milling Motors



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 2.001	1.422 1.452	.6240 .6245	1.932 1.942	7/16-20 UNF-3A	.552 .557	1/4 NPTF
mm	51	50.80 50.83	36.12 36.88	15.85 15.86	40.07 49.33	Thread	14.02 14.53	Air Inlet

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

44 - Series Forward - Rotation Milling Motors

MODEL	SPINDLE	R.P.M. FREE SPEED	R.P.M. LOAD SPEED @MAX. H.P.	TORQUE STALL lb. ft.	TORQUE STALL Nm	TORQUE OUTPUT @MAX. H.P. lb. ft.	TORQUE OUTPUT @MAX. H.P. Nm	AIR CONSUMPTION @FREE SPEED CFM	AIR CONSUMPTION @FREE SPEED L/s	SOUND LEVEL @FREE SPEED dB(A)	WEIGHT lbs.	WEIGHT kg.	GEAR REDUCTION
FORWARD ROTATION - 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

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 OPTIONS

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 below.

MOUNTING ACCESSORIES AT EXTRA COST

45090 Foot Bracket
41557 Flange Bracket

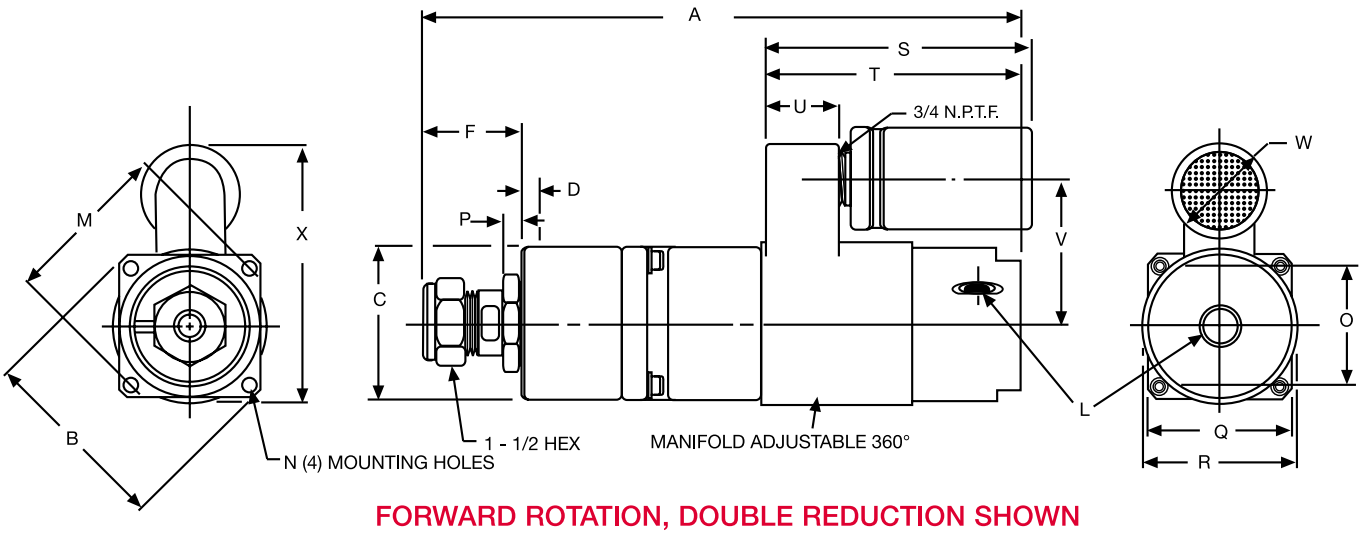
45090 FOOT MOUNTING BRACKET

41557 FLANGE MOUNTING BRACKET

Collet Insert No.	Dash No.	Size	Minimum Capacity Inches	Minimum Capacity mm	Maximum Capacity Inches	Maximum Capacity mm	Collet Insert No.	Dash No.	Size	Minimum Capacity Inches	Minimum Capacity mm	Maximum Capacity Inches	Maximum Capacity 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)

Dimensions – 44-Series Milling Motors & Mounts

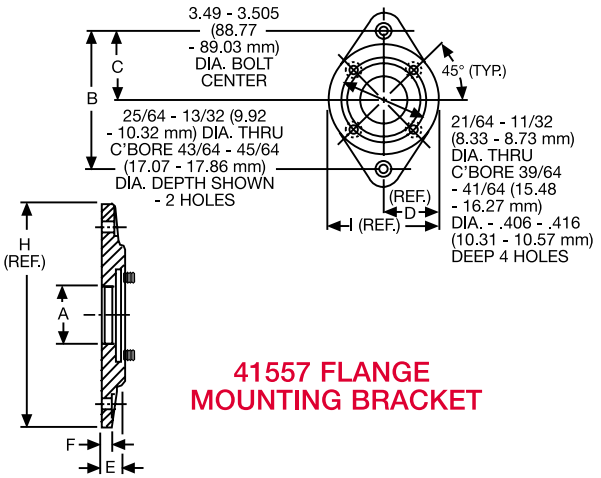


FORWARD ROTATION, DOUBLE REDUCTION SHOWN

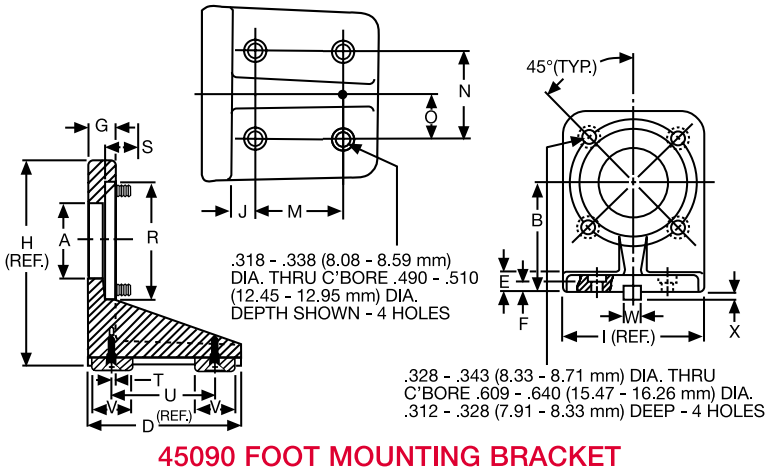
Models	Gear Reduction	Dimension A
8203-4A 8204-4A 8205-4A	Single	11-11/16 297 mm
8200-4A 8201-4A 8202-4A	Double	14-1/2 368 mm

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



41557 FLANGE MOUNTING BRACKET



45090 FOOT MOUNTING BRACKET

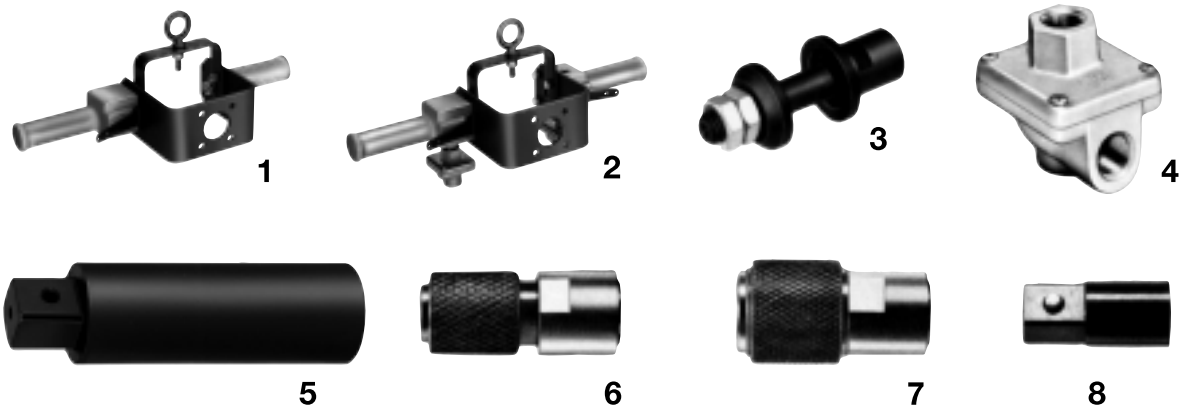
Scale	A	B	C	D
Inches	1.927 1.947	5.745 5.755	2.870 2.880	2-1/4
mm	48.95 49.45	145.92 146.18	72.90 73.15	57.15

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

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

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

Accessories - Installation of Reversible Models



1. 41512 Throttle & Bracket Assembly for forward-rotation nutsetting. See motors on pages 14 and 16.

2. 41512-1 Throttle & Bracket Assembly for reversible nutsetting. Has 2 throttle levers and 2 quick-dump exhaust valves. See motors on pages 14 and 16.

3. 42420 3/8" (9.53 mm) diameter Arbor for friction-drive wheels up to 1" (25.40 mm) diameter. See motors on pages 4 and 6.

4. Series 43982 Quick-Exhaust Valves for reversible motors.

5. 41784 Square-Drive Adapter. Has 3/4" (19.05 mm) male square drive and fits 7/8" (22.23 mm), length 4-9/16", keyed spindle. See motors on pages 14 and 16.

6. 30712 Hex Ball Lock Adapter. 3/8"-24 mounting thread, 1/4" (6.35 mm) hex drive size. See motors on pages 2, 4 and 6.

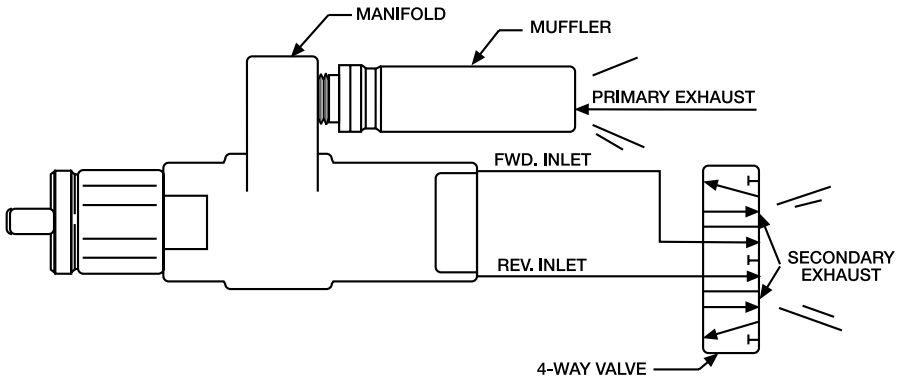
7. 31367 Hex Ball Lock Adapter. 1/2"-20 mounting thread, 7/16" (11.11 mm) hex drive size. See motors on pages 10 and 12.

8. Square-Drive Adapter.

Valve No.	Port Size, N.P.T.F.			Valve No.	Port Size, N.P.T.F.		
	Inlet	Cyl.	Exhaust		Inlet	Cyl.	Exhaust
-1	1/8	1/4	1/4	-4	1/2	1/2	3/4
-2	1/4	1/4	3/8	-5	3/4	3/4	3/4
-3	3/8	3/8	3/8				

Part No.	Mtg. 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.

Pneumatic Power & Milling Motors
Numerical Model Index

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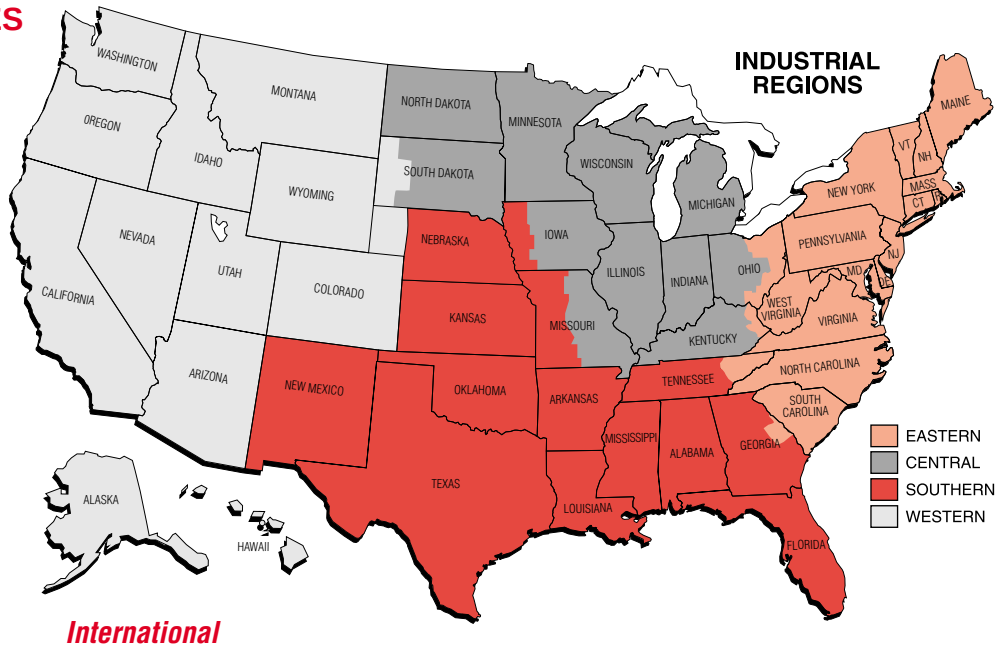

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Ingersoll-Rand Company (I-R) warrants to the original user its air motors (Motors) to be free of defects in material and workmanship for a period of one year from the date of purchase. I-R will repair, without cost, any Motor found to be defective,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

If any Motor proves defective within its original one year warranty period, it should be returned to any Authorized Power Tool Service Distributor, transportation prepaid with proof of purchase or warranty card.

This warranty does not apply to Motors which I-R has determined to have been misused or abused, improperly maintained by the user, or where the malfunction or defect can be attributed to the use of non-genuine I-R repair parts.

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