

# QUICK REFERENCE

## Stock Sub-FHP Gearmotors

	AC Single & Three Phase	DC SCR & Low Voltage
 <p><b>Right-Angle Worm Type 10 &amp; 13 Series Gearmotors</b></p>	<p>Single Phase 115/230V 14-113 In-Lbs Output Torque <b>Page 155</b></p> <p><b>BODINE/DAYTON</b> DIRECT INTERCHANGE</p>	<p>DC SCR 90 &amp; 180V 5-135 In-Lbs Output Torque Low Voltage (12V) 25-135 In-Lbs torque <b>Page 150</b></p>
 <p><b>Parallel Shaft PZ Series Gearmotors</b></p>	<p>Single Phase 115V 12-100 In-Lbs Output Torque <b>Page 151</b></p> <p><b>BODINE/BISON/DAYTON</b> DIRECT INTERCHANGE</p>	<p>DC SCR 90 &amp; 180V 10-100 In-Lbs Output Torque Low Voltage (12V) 36-100 In-Lbs torque <b>Page 146</b></p>
 <p><b>P240 &amp; P300 Series Gearmotors</b></p>	<p>Single Phase 115/230V 43-391 In-Lbs Output Torque <b>Page 152</b></p> <p><b>BISON/DAYTON</b> DIRECT INTERCHANGE</p>	<p>DC SCR 90 &amp; 180V 27-353 In-Lbs Output Torque Low Voltage (12V) 113-353 In-Lbs torque <b>Page 147</b></p>
 <p><b>PE350 Series Gearmotors</b></p>	<p>Single Phase 115/230V 25-341 In-Lbs Output Torque Three Phase 230/460V 55-320 In-Lbs Output Torque <b>Page 153</b></p> <p><b>BODINE</b> DIRECT INTERCHANGE</p>	<p>DC SCR 90 &amp; 180V 25-371 In-Lbs Output Torque Low Voltage (12V) 155-341 In-Lbs torque <b>Page 148</b></p>
 <p><b>P1100 Series Gearmotors</b></p>	<p>Single Phase 115/230V 70-1105 In-Lbs Output Torque Three Phase 230/460V 70-1105 In-Lbs Output Torque <b>Page 154</b></p> <p><b>BISON/DAYTON</b> DIRECT INTERCHANGE</p>	<p>DC SCR 90V 105-1112 In-Lbs Output Torque Low Voltage (12V) 320-1087 In-Lbs torque <b>Page 149</b></p>
 <p><b>Custom Sub-FHP Gearmotors</b></p>	<p>LEESON is a leading manufacturer of <b>custom sub-FHP motors and gearmotors</b>. In-house gear design, technical support and manufacturing facilities are well suited to the modification of an existing design or the design of a 100% tailored solution to your specific application. See <b>page 157</b> for more information.</p>	



# SUB-FHP DC GEARMOTORS

## PARALLEL SHAFT GEARMOTORS

**SCR RATED:  
10-100 In-Lbs Torque**

**LOW VOLTAGE:  
36-100 In-Lbs Torque**

**Electrical Specifications:**

**SCR Rated Gearmotors**

Totally enclosed, permanent magnet DC gearmotors, performance matched for continuous duty service over a 60:1 speed range. All have constant torque throughout the range when powered by a full-wave unfiltered SCR-type adjustable speed control having a typical form factor of 1.3 to 1.4.



**Low Voltage Gearmotors**

Totally enclosed, permanent magnet DC gearmotors, performance matched for continuous duty. Motors are designed for battery power or can be used with a low voltage controller with form factor up to 1.05.

**Mechanical Specifications:**

Precision machined in-line steel gears, with a first stage steel helical gear followed by spur-type gears. Lubrication is permanent semi-fluid grease, reducing possibility of leakage. Output shafts have needle bearings for high load capacities. Shafts are hardened steel.

**Conduit box not included with motor.** Optional conduit box and PZ gearmotor mounting bracket shown on page 156.

**Application Notes:**

These gearmotors are designed for mounting at any angle, but motor below the reducer should be avoided to prevent leakage of lubricant into the motor should the motor shaft seal fail.

The motor's stall torque could exceed recommended full load torques. If this service is anticipated, a current limiting device should be used. This issue is even more critical for low voltage motors, typically no controller is used since motor connected directly to battery, so some type of current limit or fusing should be considered.

Overhung load capacities shown are at center of output shaft.

Model PZ gearmotors have the same mounting dimensions as Bodine model D and Z, Baldor/Boehm, Bison 100 gearmotors, and a number of Dayton gearmotors.

For additional information, see Bulletin 1830.

**BODINE/BISON/DAYTON  
DIRECT INTERCHANGE**

### PZ SERIES DC • SCR RATED PARALLEL SHAFT • TENV • 1.0 SERVICE FACTOR

Output RPM	F.L. Torque (Lb.In.)	Input HP	Catalog Number	List Price▲	Gearmotor Type & Frame	Ratio to 1	Arm. Volts DC	F.L. Amps DC	Overhung Load (Lb.)	DIMENSIONS			
										P	X	XL	XH
4	40	1/40	M1115002	\$311	PZ5-30A	450	90	0.46	155	3.00	3.25	9.28	7.72
4	40	1/40	M1125046	311	PZ5-30A	450	180	0.19	155	3.00	3.25	9.30	7.74
10	100	1/20	M1115001	311	PZ4-30E	180	90	0.54	155	3.00	3.25	9.28	7.72
10	100	1/20	M1125047	311	PZ4-30A	180	180	0.31	155	3.00	3.25	9.30	7.74
20	100	1/20	M1115000	311	PZ4-30E	90	90	0.54	155	3.00	3.25	9.28	7.72
20	100	1/20	M1125048	311	PZ4-30A	90	180	0.31	155	3.00	3.25	9.30	7.74
30	100	1/17	M1125002	339	PZ3-30B	60	90	0.80	155	3.00	2.68	8.74	7.18
30	100	1/17	M1125037	339	PZ3-30B	60	180	0.36	155	3.00	2.68	8.74	7.18
60	56	1/17	M1125003	339	PZ3-30B	30	90	0.80	171	3.00	2.68	8.74	7.18
60	56	1/17	M1125036	339	PZ3-30B	30	180	0.36	171	3.00	2.68	8.74	7.18
100	36	1/17	M1125004	339	PZ3-30B	18	90	0.80	171	3.00	2.68	8.74	7.18
100	36	1/17	M1125035	339	PZ3-30B	18	180	0.36	171	3.00	2.68	8.74	7.18
150	24	1/17	M1125005	322	PZ2-30B	12	90	0.80	180	3.00	2.40	8.46	6.90
150	24	1/17	M1125034	322	PZ2-30B	12	180	0.36	180	3.00	2.40	8.46	6.90
300	10	1/17	M1125006	322	PZ2-30B	6	90	0.80	180	3.00	2.40	8.46	6.90
300	10	1/17	M1125033	322	PZ2-30B	6	180	0.36	180	3.00	2.40	8.46	6.90

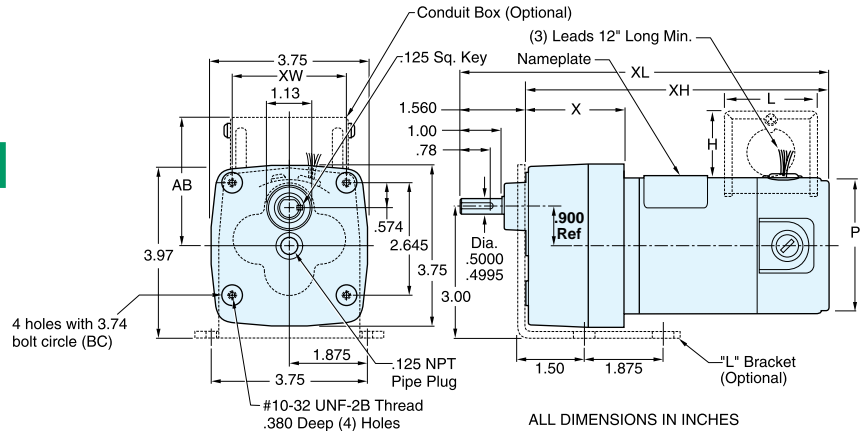
▲ Use "S" discount symbol.

### PZ SERIES DC • LOW VOLTAGE (12V) PARALLEL SHAFT • TENV • 1.0 SERVICE FACTOR

Output RPM	F.L. Torque (Lb.In.)	Input HP	Catalog Number	List Price▲	Gearmotor Type & Frame	Ratio to 1	Arm. Volts DC	F.L. Amps DC	Overhung Load (Lb.)	DIMENSIONS			
										P	X	XL	XH
10	100	1/20	M1125213	\$344	PZ4-30	180	12	2.7	155	3.00	3.25	9.28	7.72
30	100	1/17	M1125214	366	PZ3-30	60	12	5.2	155	3.00	2.68	8.74	7.18
55	56	1/17	M1125215	366	PZ3-30	30	12	5.6	171	3.00	2.68	8.74	7.18
90	36	1/17	M1125216	366	PZ3-30	18	12	5.8	171	3.00	2.68	8.74	7.18

▲ Use "S" discount symbol.

**PZ SERIES - DC**



ALL DIMENSIONS IN INCHES

**QUICK REFERENCE**

- GEARMOTOR CROSS REFERENCE . . . . . Page 182
- "L" BRACKET AND CONDUIT BOX . . . . . 156
- SPEEDMASTER® CONTROLS . . . . . 87

**CONDUIT BOX DIMENSIONS (IN.)**

FRAME	XW	AB	H	L
30/31	2.63	3.47	1.90	3.13

**SCR RATED:**  
**27-353 In-Lbs Torque**

**LOW VOLTAGE:**  
**113-353 In-Lbs Torque**

**Electrical Specifications:**

**SCR Rated Gearmotors**

Totally enclosed, permanent magnet DC gearmotors, performance matched for continuous duty service over a 60:1 speed range. All have constant torque throughout the range when powered by a full-wave unfiltered SCR-type adjustable speed control having a typical form factor of 1.3 to 1.4.



**Low Voltage Gearmotors**

Totally enclosed, permanent magnet DC gearmotors, performance matched for continuous duty. Motors are designed for battery power or can be used with a low voltage controller with form factor up to 1.05.

**Mechanical Specifications:**

Precision machined in-line steel gears, with a first stage steel helical gear followed by spur-type gears. Lubrication is permanent semi-fluid grease, reducing possibility of leakage. Output shafts have needle bearings for high load capacities. Shafts are hardened steel.

**Conduit box not included with motor.** Optional conduit box shown on page 156.

**Application Notes:**

These gearmotors are designed for mounting at any angle, but shaft up with motor below should be avoided to prevent leakage of lubricant into the motor should the motor's shaft seal fail.

Overhung load capacities shown are at center of output shaft.

The motor's stall torque exceeds recommended full load torques. A current limiting device such as an SCR control should be used to prevent damage. Model 300 gearmotors have the same mounting dimensions as Bison's 300 and many Dayton gearmotors.

For additional information, see Bulletin 1830.

**P300 SERIES DC • SCR RATED**  
**PARALLEL SHAFT • TENV • 1.0 SERVICE FACTOR**

Output RPM	F.L. Torque (Lb.In.)	Input HP	Catalog Number	List Price▲	Gearmotor Type & Frame	Ratio to 1	Arm. Volts DC	F.L. Amps. DC	Over-hung Load (Lb.)	DIMENSIONS			
										P	X	XL	XH
5	353	1/20	M1115024	\$446	P303-30E	336	90	0.54	565	3.00	3.54	10.07	8.57
9	268	1/20	M1115025	446	P303-30E	216	90	0.54	474	3.00	3.54	10.07	8.57
18	150	1/20	M1115026	446	P303-30E	103	90	0.54	385	3.00	3.54	10.07	8.57
20	140	1/20	M1125092	457	P303-31E	90	180	0.31	370	3.11	3.54	10.07	8.57
24	280	1/8	M1125069	457	P303-30E	76	90	1.30	353	3.00	3.54	11.54	10.04
31	220	1/8	M1125070	457	P303-30E	58	90	1.30	327	3.00	3.54	11.54	10.04
31	220	1/8	M1125038	457	P303-30E	58	180	0.66	327	3.00	3.54	11.54	10.04
34	82	1/20	M1115027	446	P303-30E	52	90	0.54	318	3.00	3.54	10.07	8.57
51	130	1/8	M1125071	420	P302-30E	35	90	1.30	277	3.00	3.54	11.54	10.04
51	130	1/8	M1125039	420	P302-30E	35	180	0.66	277	3.00	3.54	11.54	10.04
51	55	1/20	M1115028	411	P302-30E	35	90	0.54	281	3.00	3.54	10.07	8.57
61	113	1/8	M1125072	420	P302-30E	29	90	1.30	267	3.11	3.54	11.54	10.04
60	45	1/20	M1125093	420	P302-31E	29	180	0.31	267	3.00	3.54	10.07	8.57
94	77	1/8	M1125073	420	P302-30E	19	90	1.30	236	3.00	3.54	11.54	10.04
94	77	1/8	M1125040	420	P302-30E	19	180	0.66	236	3.00	3.54	11.54	10.04
109	27	1/20	M1115029	411	P302-30E	16	90	0.54	224	3.00	3.54	10.07	8.57
106	26	1/20	M1125094	411	P302-31E	16	180	0.31	222	3.11	3.54	10.07	8.57
167	43	1/8	M1125074	420	P302-30E	11	90	1.30	197	3.00	3.54	11.54	10.04
170	43	1/8	M1125041	420	P302-30E	11	180	0.66	196	3.00	3.54	11.54	10.04

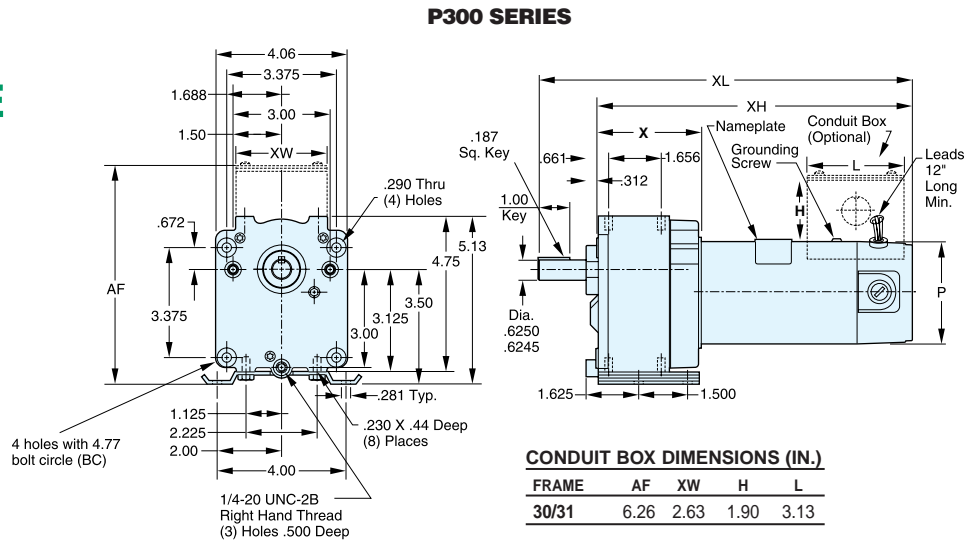
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**P300 SERIES DC • LOW VOLTAGE (12V)**  
**PARALLEL SHAFT • TENV • 1.0 SERVICE FACTOR**

Output RPM	F.L. Torque (Lb.In.)	Input HP	Catalog Number	List Price▲	Gearmotor Type & Frame	Ratio to 1	Arm. Volts DC	F.L. Amps. DC	Over-hung Load (Lb.)	DIMENSIONS			
										P	X	XL	XH
5	353	1/20	M1125217	\$457	P303-30	336	12	5.6	565	3.00	3.85	10.07	8.57
31	220	1/8	M1125218	468	P303-30	58	12	10.6	327	3.00	3.54	11.54	10.04
51	130	1/8	M1125219	430	P302-30	35	12	10.3	277	3.00	3.23	11.54	10.04
61	113	1/8	M1125220	430	P302-30	29	12	10.4	267	3.00	3.23	11.54	10.04

▲ Use "S" discount symbol.

**BISON/DAYTON**  
**DIRECT INTERCHANGE**



DC Gearmotors



**SCR RATED:  
105-1112 In-Lbs Torque**

**LOW VOLTAGE:  
320-1087 In-Lbs Torque**

**Electrical Specifications:**

**SCR Rated Gearmotors**

SCR rated, permanent magnet DC gearmotors. Totally enclosed for continuous duty, general purpose applications. All have constant torque throughout the 60:1 speed range, when powered by a full-wave, unfiltered SCR-type adjustable speed control having a typical form factor of 1.3 to 1.4.



**Low Voltage Gearmotors**

Totally enclosed, permanent magnet DC gearmotors, performance matched for continuous duty. Motors are designed for battery power or can be used with a low voltage controller with form factor up to 1.05.

**Mechanical Specifications:**

Gearbox has rugged aluminum die cast housing, for maximum gear and bearing support. Precision machined gearing, hardened for maximum load capability. All gearing designed and rated to AGMA Class 9 standards and to withstand momentary shock overload of 200%. Oversized output bearings for greater overhung load capacity and longer life. High-carbon alloy output shaft provides maximum strength and rigidity. All needle bearing journals are precision-ground after heat treating, to provide maximum finish and fit. Heavy-duty industrial oil seals help keep lubricant in and dirt out. Gears and bearings are splash lubricated with permanent, heavy-duty gear oil. **Conduit box is included as standard.**

**Application Notes:**

These gearmotors are designed for mounting at any angle, but shaft-up with motor below gearhead is not recommended. Overhung load capacities shown are at center of output shaft. P1100 DC gearmotors have the same mounting dimensions as Bison 483 gearmotors and many Dayton gearmotors. The motor's stall torque exceeds recommended full load torques. A current limiting device such as an SCR control should be used to prevent damage. For additional information, see Bulletin 1830.

**P1100 SERIES DC • SCR RATED  
FRACTIONAL HP • PARALLEL SHAFT • TOTALLY ENCLOSED  
1.0 SERVICE FACTOR**

Output RPM	F.L. Torque (Lb.In.)	Input HP	Catalog Number	List Price▲	Type & Frame	Ratio to 1	Arm Volts DC	F.L. Amps DC	Overhung Load (Lbs.)	DIMENSIONS	
										XL Inches	XH Inches
8	1087	¼	<b>108700</b>	\$768	P1103-48	212	90	2.7	700	14.24	12.74
12	1030	¼	<b>108701</b>	768	P1103-48	143	90	2.7	700	14.24	12.74
18	750	¼	<b>108702</b>	768	P1103-48	95	90	2.7	700	14.24	12.74
42	353	¼	<b>108703</b>	749	P1102-48	42	90	2.7	650	14.24	12.74
60	238	¼	<b>108704</b>	749	P1102-48	29	90	2.7	625	14.24	12.74
92	160	¼	<b>108705</b>	749	P1102-48	19	90	2.7	575	14.24	12.74
135	105	¼	<b>108706</b>	749	P1102-48	13	90	2.7	525	14.24	12.74
18	1112	½	<b>108707**</b>	831	P1103-48	95	90	5.0	700	16.49	14.99
33	822	½	<b>108708**</b>	831	P1103-48	53	90	5.0	650	16.49	14.99
42	705	½	<b>108709**</b>	814	P1102-48	42	90	5.0	650	16.49	14.99
60	476	½	<b>108710**</b>	814	P1102-48	29	90	5.0	625	16.49	14.99
92	320	½	<b>108711**</b>	814	P1102-48	19	90	5.0	575	16.49	14.99
135	210	½	<b>108712**</b>	814	P1102-48	13	90	5.0	525	16.49	14.99

▲ Use "S" discount symbol.  
\*\* TEFC enclosure.

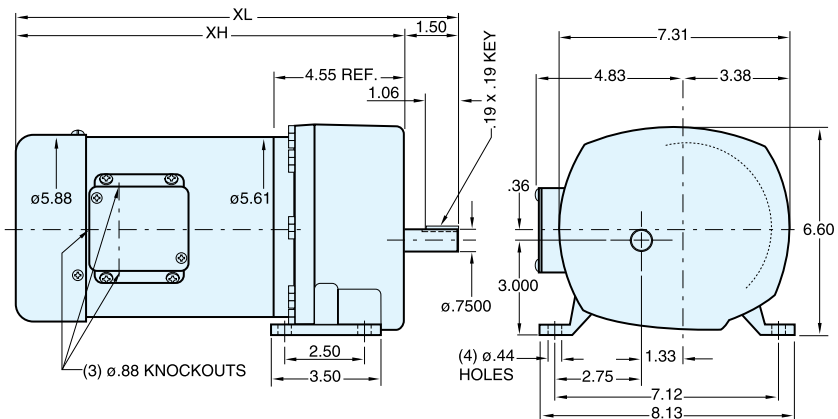
**P1100 SERIES DC • LOW VOLTAGE (12V)  
FRACTIONAL HP • PARALLEL SHAFT • TOTALLY ENCLOSED  
1.0 SERVICE FACTOR**

Output RPM	F.L. Torque (Lb.In.)	Input HP	Catalog Number	List Price▲	Type & Frame	Ratio to 1	Arm Volts DC	F.L. Amps DC	Overhung Load (Lbs.)	DIMENSIONS	
										XL Inches	XH Inches
8	1087	¼	<b>108729</b>	\$783	P1103-48	212	12	21.0	700	13.74	12.24
60	238	¼	<b>108730</b>	767	P1102-48	29	12	21.0	625	13.74	12.24
42	705	½	<b>108731**</b>	831	P1102-48	42	12	40.0	650	15.99	14.49
92	320	½	<b>108732**</b>	831	P1102-48	19	12	40.0	575	15.99	14.49

▲ Use "S" discount symbol.  
\*\* TEFC enclosure.

**BISON/DAYTON  
DIRECT INTERCHANGE**

**P1100 SERIES - DC**



ALL DIMENSIONS IN INCHES

### SCR RATED: 5-135 In-Lbs Torque

### LOW VOLTAGE: 25-135 In-Lbs Torque

#### Electrical Specifications:

##### SCR Rated Gearmotors

Totally enclosed right-angle gearmotors, performance matched for continuous service over a 60:1 speed range. All have constant torque throughout the range when powered by a full-wave, unfiltered SCR-type 115 volt input adjustable speed control having a typical form factor of 1.3 to 1.4. Also available as factory options are motors for low voltage input and with double output shafts.



##### Low Voltage Gearmotors

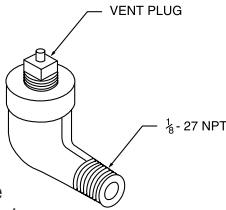
Totally enclosed, permanent magnet DC gearmotors, performance matched for continuous duty. Motors are designed for battery power or can be used with a low voltage controller with form factor up to 1.05.

#### Mechanical Specifications:

This worm-type right-angle gearing features hardened, steel worm with bronze worm wheel for long life and quiet operation. Precision machined aluminum housings are used. Gearbox has all ball bearings. The housing is sealed and lubrication is permanent with an oil bath. The output shaft is field interchangeable from left hand style to right hand style by reassembly.

#### Application Notes:

For optimum seal life, these right-angle gearmotors have a lubrication breather positioned for horizontal mounting. For other mountings, the breather-plug must be reoriented by using a 90° NPT taper pipe elbow (see drawing). Elbow not available from LEESON. Vent plug is available (Part #M1900177\_01). However, the motor portion of the gearmotor should never be mounted below the gearhead.



Overhung load capacities shown are at center of output shaft. **Conduit box not supplied with motor.** See page 156 for optional conduit box and optional base kit.

See page 170 for cross reference data between LEESON and other gearmotors.

For additional information on LEESON gearmotors, see Bulletin 1830.

### RIGHT-ANGLE DC • SCR RATED TENV • 1.0 SERVICE FACTOR

Output RPM	FL. Torque (In.-Lbs.)	Input HP	Catalog Number	List Price▲	Gearmotor Type & Frame	Ratio to 1	Arm Volts DC	Full Load Amps. DC	Over-hung Load (Lbs.)	DIMENSIONS				
										P	PB	X Inches	XL	XH
42	22	1/17	M1115018	\$349	10F60-25D	60	90	0.68	185	2.50	3.00	3.60	8.79	5.19
62	19	1/17	M1115019	349	10F40-25D	40	90	0.68	185	2.50	3.00	3.60	8.79	5.19
125	16	1/17	M1115020	349	10F20-25D	20	90	0.68	185	2.50	3.00	3.60	8.79	5.19
250	10	1/17	M1115021	349	10F10-25D	10	90	0.68	185	2.50	3.00	3.60	8.79	5.19
500	5	1/17	M1115022	349	10F05-25D	5	90	0.68	185	2.50	3.00	3.60	8.79	5.19
42	30	1/12	M1135053	349	13F60-34A	60	180	0.53	235	3.38	4.00	4.50	9.64	5.14
62	35	1/12	M1135054	349	13F40-34A	40	180	0.53	235	3.38	4.00	4.50	9.64	5.14
125	18	1/12	M1135055	349	13F20-34A	20	180	0.53	235	3.38	4.00	4.50	9.64	5.14
250	10	1/12	M1135056	349	13F10-34A	10	180	0.53	235	3.38	4.00	4.50	9.64	5.14
500	5	1/12	M1135057	349	13F05-34A	5	180	0.53	235	3.38	4.00	4.50	9.64	5.14
42	80	1/8	M1135069	403	13F60-34C	60	90	1.40	235	3.38	4.00	4.50	10.64	6.14
62	70	1/8	M1135038	403	13F40-34C	40	90	1.40	235	3.38	4.00	4.50	10.64	6.14
62	70	1/8	M1135058	403	13F40-34C	40	180	0.70	235	3.38	4.00	4.50	10.64	6.14
125	45	1/8	M1135039	403	13F20-34C	20	90	1.40	235	3.38	4.00	4.50	10.64	6.14
125	45	1/8	M1135059	403	13F20-34C	20	180	0.70	235	3.38	4.00	4.50	10.64	6.14
250	25	1/8	M1135040	403	13F10-34C	10	90	1.40	235	3.38	4.00	4.50	10.64	6.14
250	25	1/8	M1135060	403	13F10-34C	10	180	0.70	235	3.38	4.00	4.50	10.64	6.14
500	13	1/8	M1135041	403	13F05-34C	5	90	1.40	235	3.38	4.00	4.50	10.64	6.14
500	13	1/8	M1135061	403	13F05-34C	5	180	0.70	235	3.38	4.00	4.50	10.64	6.14
62	135	1/4	M1135042	432	13F40-34G	40	90	2.30	235	3.38	4.00	4.50	12.64	8.14
62	135	1/4	M1135062	432	13F40-34G	40	180	1.30	235	3.38	4.00	4.50	12.64	8.14
83	125	1/4	M1135043	432	13F30-34G	30	90	2.30	235	3.38	4.00	4.50	12.64	8.14
83	125	1/4	M1135063	432	13F30-34G	30	180	1.30	235	3.38	4.00	4.50	12.64	8.14
125	90	1/4	M1135044	432	13F20-34G	20	90	2.30	235	3.38	4.00	4.50	12.64	8.14
125	90	1/4	M1135064	432	13F20-34G	20	180	1.30	235	3.38	4.00	4.50	12.64	8.14
250	50	1/4	M1135045	432	13F10-34G	10	90	2.30	235	3.38	4.00	4.50	12.64	8.14
250	50	1/4	M1135065	432	13F10-34G	10	180	1.30	235	3.38	4.00	4.50	12.64	8.14
500	30	1/4	M1135046	432	13F05-34G	5	90	2.30	235	3.38	4.00	4.50	12.64	8.14
500	30	1/4	M1135066	432	13F05-34G	5	180	1.30	235	3.38	4.00	4.50	12.64	8.14

▲ Use "S" discount symbol.

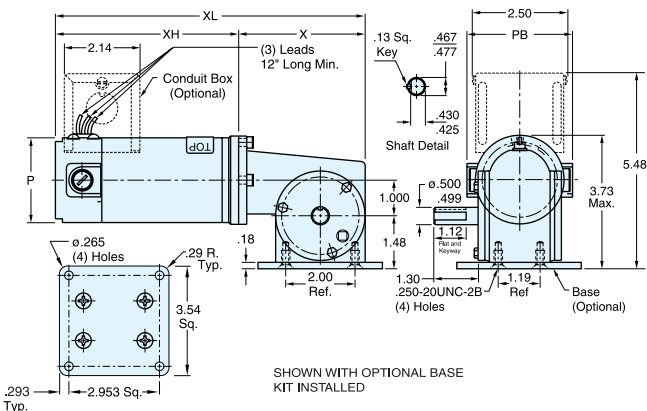
### RIGHT-ANGLE DC • LOW VOLTAGE (12V) TENV • 1.0 SERVICE FACTOR

Output RPM	FL. Torque (In.-Lbs.)	Input HP	Catalog Number	List Price▲	Gearmotor Type & Frame	Ratio to 1	Arm Volts DC	Full Load Amps. DC	Over-hung Load (Lbs.)	DIMENSIONS				
										P	PB	X Inches	XL	XH
42	80	1/8	M1135249	\$411	13F60-34	60	12	11.0	235	3.38	4.21	4.50	10.39	5.89
250	25	1/8	M1135250	411	13F10-34	10	12	11.0	235	3.38	4.21	4.50	10.39	5.89
62	135	1/4	M1135251	440	13F40-34	40	12	21.0	235	3.38	4.21	4.50	12.64	8.14
125	90	1/4	M1135252	440	13F20-34	20	12	21.0	235	3.38	4.21	4.50	12.64	8.14

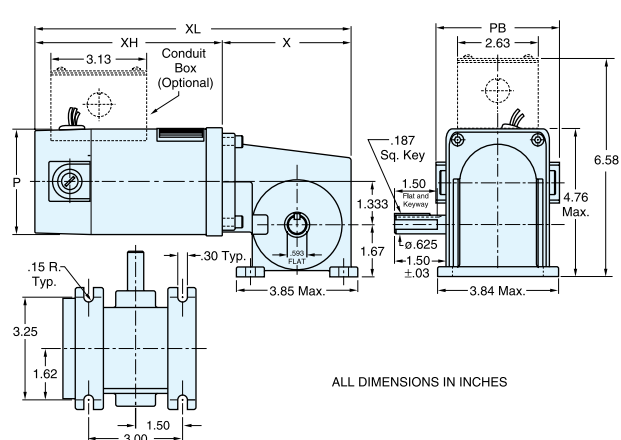
▲ Use "S" discount symbol.

## BODINE/DAYTON DIRECT INTERCHANGE

#### 10 SERIES - DC



#### 13 SERIES - DC



ALL DIMENSIONS IN INCHES



### 12-100 In-Lbs Output Torque



#### Design Specifications:

Single phase gearmotors, totally enclosed for continuous duty, general purpose applications. Permanent split capacitor designs are rated for 115 VAC 60 hertz input, and have starting torques equal to the running torques. The inline gearing is of precision machined steel, with first stage steel helical gear followed by spur type gears. Lubrication is by semi-fluid grease, reducing possibility of leakage and providing permanent lubrication. Output shafts have needle bearings for high load capacities. Shafts are hardened steel.

#### Application Notes:

These gearmotors are designed for mounting at any angle, but shaft up with motor below should be avoided to prevent leakage of lubricant into the motor should the motor's shaft seal fail. If these gearmotors are stalled, gearhead damage may result, especially in the ratios of 60:1 and higher. Provisions to limit the torque are recommended. The torque values listed are the recommended full load torque values for reasonable gear life.

Overhung load capacities shown are at center of output shaft. All PZ Series gearmotors are supplied with continuous duty "run" capacitor. **Conduit box not supplied with motor.** See page 156 for optional conduit box.

Model PZ gearmotors have the same mounting dimensions as Bodine model D and Z gearmotors, Bison 100 gearmotors, and Baldor/Boehm PSS, plus many of the Dayton gearmotors.

For additional information, see Bulletin 1830.

## BODINE/BISON/DAYTON DIRECT INTERCHANGE

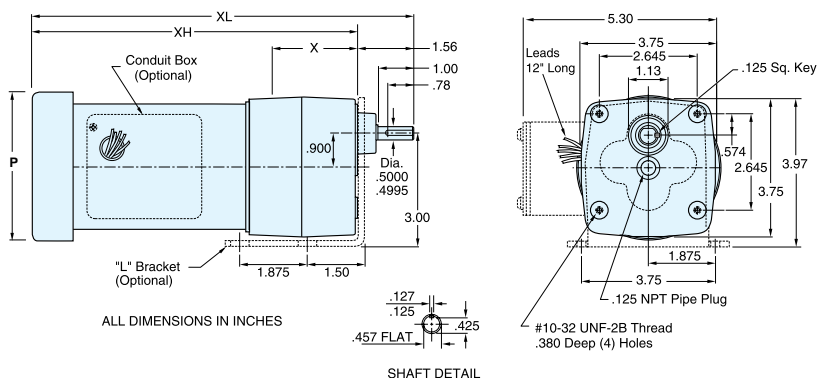
### PZ SERIES AC GEARMOTORS

PARALLEL SHAFT • TEFC • 115V • SINGLE PHASE  
40°C AMBIENT • 1.0 SERVICE FACTOR

Output RPM	F.L. Torque (Lb.In.)	Input HP	Catalog Number	List Price▲	Gearmotor Type & Frame	Ratio to 1	F.L. Amps 115 VAC	Over-hung Load (Lb.)	DIMENSIONS				Capacitor Mfd. 240 VAC
									P	X	XL	XH	
2	100	1/150	<b>M1125050#</b>	\$324	PZ5-31	900	0.4	155	3.07	3.23	8.71	7.15	3.0
9	100	1/15	<b>M1125127</b>	324	PZ4-31	180	0.9	155	3.88	3.23	10.42	8.86	10.0
19	100	1/15	<b>M1125128</b>	324	PZ4-31	90	0.9	155	3.88	3.23	10.42	8.86	10.0
28	100	1/15	<b>M1125129</b>	324	PZ3-31	60	0.9	155	3.88	2.43	9.62	8.06	10.0
57	56	1/15	<b>M1125130</b>	312	PZ3-31	30	0.9	171	3.88	2.43	9.62	8.06	10.0
94	36	1/15	<b>M1125131</b>	312	PZ3-31	18	0.9	171	3.88	2.43	9.62	8.06	10.0
142	24	1/15	<b>M1125132</b>	302	PZ2-31	12	0.9	180	3.88	2.13	9.32	7.76	10.0
283	12	1/15	<b>M1125133</b>	302	PZ2-31	6	0.9	180	3.88	2.13	9.32	7.76	10.0

# TENV enclosure  
▲ Use "S" discount symbol.

#### PZ SERIES - AC



ALL DIMENSIONS IN INCHES

SHAFT DETAIL

#### QUICK REFERENCE

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FRACTIONAL AND INTEGRAL GEAR+MOTORS™ . . . . .	125



# SUB-FHP AC GEARMOTORS

## PARALLEL SHAFT GEARMOTORS

### 43-391 In-Lbs Output Torque

#### Design Specifications:

Single phase gearmotors, totally enclosed for continuous duty, general purpose applications.

Permanent split capacitor designs are rated for 115/230VAC, 60/50 Hertz input, and have starting torques equal to the running torques. The in-line gearing is of precision machined steel, with first stage steel helical gear followed by spur type gears. Lubrication is by semi-fluid grease, reducing possibility of leakage and providing permanent lubrication. Output shafts have needle bearings for high load capacities. Shafts are hardened steel.

#### Application Notes:

These gearmotors are designed for mounting at any angle, but shaft up with motor below should be avoided to prevent leakage of lubricant into the motor should the motor's shaft seal fail. If these gearmotors are stalled, gearhead damage may result, especially in the ratios of 60:1 and higher. Provisions to limit the torque are recommended. The torque values listed are the recommended full load torque values for reasonable gear life. Overhung load capacities shown are at center of output shaft. All P240 gearmotors are supplied with continuous duty "run" capacitor. **Conduit box not supplied with motor.** See page 156 for optional conduit box.

Model P240 gearmotors have the same mounting dimensions as Bison's 224 and 242 gearmotors and many Dayton gearmotors.

For additional information, see Bulletin 1830.

Please contact LEESON for output speeds not listed.



### P240 SERIES AC GEARMOTORS

#### PARALLEL SHAFT • TOTALLY ENCLOSED • 115/230V SINGLE PHASE • 40°C AMBIENT • 1.0 SERVICE FACTOR

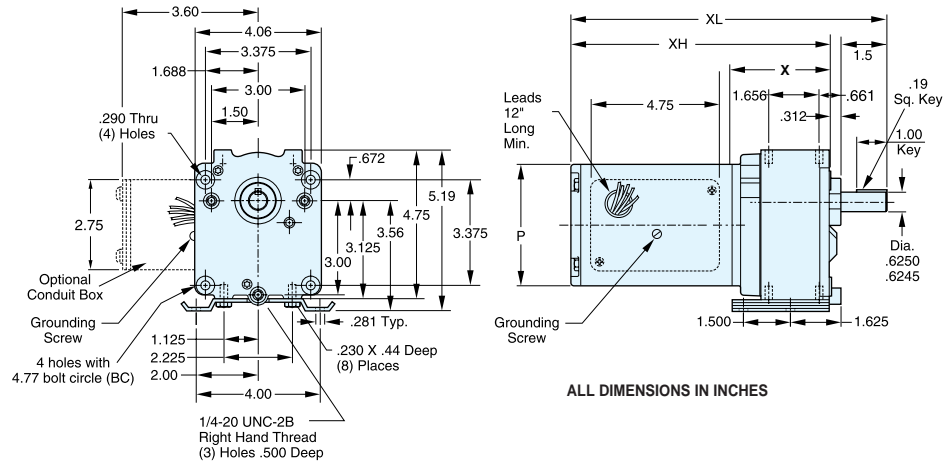
60 Hz Output RPM	F.L. Torque (Lb.In.)	Input HP	Catalog Number	List Price▲	Gearmotor Type & Frame	Ratio to 1	F.L. Amps 115V AC	Overhung Load (Lb.)	DIMENSIONS				Capacitor Mfd. 240 VAC
									P	X	XL	XH	
8	345	1/15	M1145029	\$486	P243-38D	216	1.0	491	3.85	3.50	10.46	8.96	7.5
15	250	1/15	M1145023	486	P243-38D	114	1.0	407	3.85	3.50	10.46	8.96	7.5
16	391	1/6	M1145030**	526	P243-38F	103	2.1	399	4.43	3.50	12.13	10.63	15.0
30	135	1/15	M1145024	441	P242-38D	52	1.0	330	3.85	3.50	10.46	8.96	7.5
30	295	1/6	M1145031**	526	P243-38F	58	2.1	330	4.43	3.50	12.13	10.63	15.0
40	219	1/6	M1145032**	526	P243-38F	43	2.1	303	4.43	3.50	12.13	10.63	15.0
45	92	1/15	M1145025	441	P242-38D	35	1.0	292	3.85	3.50	10.46	8.96	7.5
60	157	1/6	M1145033**	483	P242-38D	29	2.1	268	4.43	3.50	12.13	10.63	15.0
70	61	1/15	M1145026	441	P242-38D	23	1.0	256	3.85	3.50	10.46	8.96	7.5
90	103	1/6	M1145034**	483	P242-38D	19	2.1	237	4.43	3.50	12.13	10.63	15.0
97	43	1/15	M1145027	441	P242-38D	16.5	1.0	232	3.85	3.50	10.46	8.96	7.5
139	30	1/15	M1145028	441	P242-38D	11.5	1.0	208	3.85	3.50	10.46	8.96	7.5
156	60	1/6	M1145035**	483	P242-38D	10.6	2.1	201	4.43	3.50	12.13	10.63	15.0

▲ Use "S" discount symbol.

\*\* TEFC enclosure.

## BISON/DAYTON DIRECT INTERCHANGE

### P240 SERIES



AC Gearmotors



# SUB-FHP AC GEARMOTORS

## PARALLEL SHAFT GEARMOTORS



### 25-341 In-Lbs Output Torque

#### Design Specifications:

Sub-FHP AC gearmotors. Totally enclosed for continuous duty, general purpose applications. All rated for 60/50 Hz operation except hi-torque single-phase which are 60 Hz only.



Gearbox has rugged aluminum die cast housing, for maximum gear and bearing support. Precision machined gearing, hardened for maximum load capability. All gearing designed and rated to AGMA Class 9 standards and to withstand momentary shock overload of 200%. Oversized output bearings for greater overhung load capacity and longer life. High-carbon alloy output shaft provides maximum strength and rigidity. All needle bearing journals are precision-ground after heat treating, to provide maximum finish and fit. Single lip, spring loaded, heavy-duty industrial oil seals help keep lubricant in and dirt out. Gears and bearings are splash lubricated with permanent, heavy-duty gear oil.

#### Application Notes:

These gearmotors are designed for mounting at any angle, but shaft-up with motor below gearhead is not recommended.

Run capacitor supplied with gearmotor at no additional cost. **Three phase and hi-torque single-phase models include conduit box, other single-phase models do not.** See page 156 for optional conduit box.

Overhung load capacities shown are at center of output shaft.

Model PE350 gearmotors have the same mounting dimensions as Bodine's "E" box and many Baldor/Boehm gearmotors.

BODINE  
DIRECT  
INTERCHANGE

### PE350 SERIES AC GEARMOTORS

#### SINGLE PHASE • PARALLEL SHAFT • TEFC • 115/230V

60 Hz Output RPM	F.L. Torque (Lb.In.)	Input HP	Catalog Number	List Price▲	Type & Frame	Ratio to 1	F.L. Amps 115V AC	Overhung Load Lbs.	DIMENSIONS XL XH Inches		Capacitor Mfd. 240VAC
5	310	1/2	096000#	\$461	PE353-42	336	1.3	565	11.36	9.36	10.0
9	341	1/2	096001#	461	PE353-42	180	1.3	491	11.36	9.36	10.0
14	330	1/2	096002#	461	PE353-42	124	1.3	459	11.36	9.36	10.0
19	250	1/2	096003#	461	PE353-42	91	1.3	374	11.36	9.36	10.0
29	270	1/6	096004	486	PE353-42	58	3.2	327	13.32	11.32	15.0
34	250	1/6	096005	486	PE353-42	50	3.2	330	13.32	11.32	15.0
40	180	1/6	096006	486	PE353-42	43	3.2	303	13.32	11.32	15.0
59	135	1/6	096007	458	PE352-42	29	3.2	267	13.32	11.32	15.0
75	90	1/6	096008	458	PE352-42	23	3.2	256	13.32	11.32	15.0
113	68	1/6	096009	458	PE352-42	15	3.2	222	13.32	11.32	15.0
160	45	1/6	096010	458	PE352-42	10	3.2	196	13.32	11.32	15.0
340	25	1/6	096011	458	PE352-42	5	3.2	190	13.32	11.32	15.0

#### Hi-Torque Single Phase PE350 Gearmotors With Capacitor Start Motors

58	320	1/3	096049	537	PE353-42	30	7.2	300	14.56	12.56	...
85	218	1/3	096050	504	PE353-42	20	7.2	300	14.56	12.56	...
173	109	1/3	096051	504	PE353-42	10	7.2	300	14.56	12.56	...
345	55	1/3	096052	504	PE353-42	5	7.2	300	14.56	12.56	...

# TENV enclosure

▲ Use "S" discount symbol.

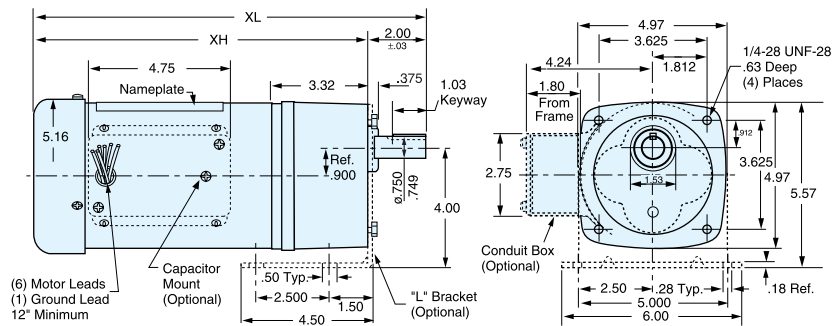
### PE350 SERIES AC GEARMOTORS

#### THREE PHASE • PARALLEL SHAFT • TEFC • 230/460V

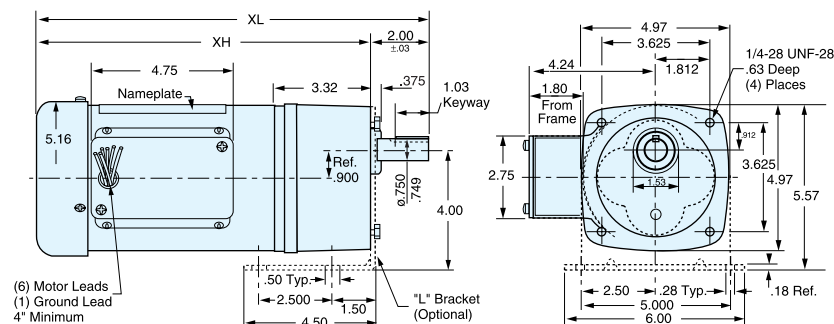
Output RPM	F.L. Torque (Lb.In.)	Input HP	Catalog Number	List Price▲	Type & Frame	Ratio to 1	F.L. Amps 230V AC	Overhung Load Lbs.	DIMENSIONS XL XH Inches	
58	320	1/3	096013	\$532	PE353-42	30	1.6	300	13.81	11.81
85	218	1/3	096014	501	PE352-42	20	1.6	300	13.81	11.81
173	109	1/3	096015	501	PE352-42	10	1.6	300	13.81	11.81
345	55	1/3	096016	501	PE352-42	5	1.6	300	13.81	11.81

▲ Use "S" discount symbol.

#### PE350 SINGLE PHASE



#### PE350 THREE PHASE



ALL DIMENSIONS IN INCHES



# FHP AC GEARMOTORS

## PARALLEL SHAFT GEARMOTORS

### 70-1105 In-Lbs Output Torque

#### Design Specifications:

Fractional horsepower AC gearmotors. Totally enclosed for continuous duty, general purpose applications. Rated for 60 Hz input.



Gearbox has rugged aluminum die cast housing, for maximum gear and bearing support. Precision machined gearing, hardened for maximum load capability. All gearing designed and rated to AGMA Class 9 standards and to withstand momentary shock overload of 200%. Oversized output bearings for greater overhung load capacity and longer life. High-carbon alloy output shaft provides maximum strength and rigidity. All needle bearing journals are precision-ground after heat treating, to provide maximum finish and fit. Heavy-duty industrial oil seals help keep lubricant in and dirt out. Gears and bearings are splash lubricated with permanent, heavy-duty gear oil.

#### Application Notes:

These gearmotors are designed for mounting at any angle, but shaft-up with motor below gearhead is not recommended. P1100 AC gearmotors have the same mounting dimensions as Bison 482 gearmotors and many Dayton gearmotors. Three phase units suitable for inverter duty.

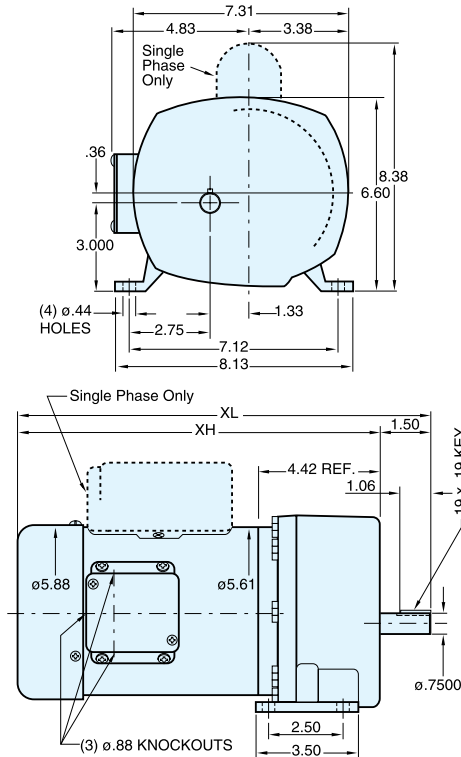
**Both single and three phase models include conduit box.** For additional information, see Bulletin 1830.

### P1100 SERIES AC GEARMOTORS

#### SINGLE PHASE • FRACTIONAL HP • TEFC • 115/230V

Output RPM	F.L. Torque (Lb.In.)	Input HP	Catalog Number	List Price▲	Type & Frame	Ratio to 1	F.L. Amps 115V AC	Overhung Load Lbs.	DIMENSIONS	
									XL Inches	XH Inches
8	975	1/4	107000	\$650	P1103-48	212	5.4	700	13.80	12.30
12	1030	1/4	107004	650	P1103-48	143	5.4	700	13.80	12.30
18	800	1/4	107003	650	P1103-48	95	5.4	700	13.80	12.30
26	569	1/4	107002	650	P1103-48	66	5.4	650	13.80	12.30
59	248	1/4	107005	636	P1102-48	29	5.4	625	13.80	12.30
133	114	1/4	107001	636	P1102-48	13	5.4	525	13.80	12.30
18	1089	1/3	107006	659	P1103-48	95	6.2	700	13.80	12.30
26	752	1/3	107012	659	P1103-48	66	6.2	650	13.80	12.30
41	461	1/3	107011	645	P1102-48	42	6.2	650	13.80	12.30
59	330	1/3	107010	645	P1102-48	29	6.2	625	13.80	12.30
91	224	1/3	107009	645	P1102-48	19	6.2	575	13.80	12.30
157	125	1/3	107008	645	P1102-48	11	6.2	500	13.80	12.30
288	70	1/3	107007	645	P1102-48	6	6.2	400	13.80	12.30
22	1105	1/2	107013	717	P1103-48	79	8.8	700	14.30	12.80
41	700	1/2	107017	703	P1102-48	42	8.8	650	14.30	12.80
59	496	1/2	107016	703	P1102-48	29	8.8	625	14.30	12.80
91	336	1/2	107015	703	P1102-48	19	8.8	575	14.30	12.80
133	229	1/2	107014	703	P1102-48	13	8.8	525	14.30	12.80

## BISON/DAYTON DIRECT INTERCHANGE



ALL DIMENSIONS IN INCHES

### P1100 SERIES AC GEARMOTORS

#### THREE PHASE • FRACTIONAL HP • TEFC • 230/460V

Output RPM	F.L. Torque (Lb.In.)	Input HP	Catalog Number	List Price▲	Type & Frame	Ratio to 1	F.L. Amps 230V AC	Overhung Load Lbs.	DIMENSIONS	
									XL Inches	XH Inches
18	1089	1/3	107025	\$701	P1103-48	95	1.6	700	13.30	11.80
26	752	1/3	107026	701	P1103-48	66	1.6	650	13.30	11.80
41	461	1/3	107027	686	P1102-48	42	1.6	650	13.30	11.80
59	330	1/3	107028	686	P1102-48	29	1.6	625	13.30	11.80
91	224	1/3	107029	686	P1102-48	19	1.6	575	13.30	11.80
157	125	1/3	107030	686	P1102-48	11	1.6	500	13.30	11.80
288	70	1/3	107031	686	P1102-48	6	1.6	400	13.30	11.80
22	1105	1/2	107032	739	P1103-48	79	2.0	700	13.80	12.30
41	700	1/2	107033	727	P1102-48	42	2.0	650	13.80	12.30
59	496	1/2	107034	727	P1102-48	29	2.0	625	13.80	12.30
91	336	1/2	107035	727	P1102-48	19	2.0	575	13.80	12.30
133	229	1/2	107036	727	P1102-48	13	2.0	500	13.80	12.30
288	100	1/2	107037	727	P1102-48	6	2.0	400	13.80	12.30

▲ Use "S" discount symbol.

#### QUICK REFERENCE

GEARMOTOR CROSS REFERENCE	Page 182
"L" BRACKET AND CONDUIT BOX	156
FRACTIONAL AND INTEGRAL GEAR+MOTORS™	125

# SUB-FHP AC GEARMOTORS

## RIGHT-ANGLE SHAFT GEARMOTORS



### 14-113 In-Lbs Output Torque



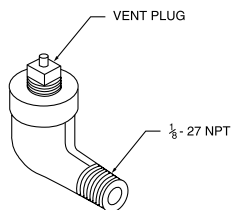
#### Design Specifications:

Single phase gearmotors, totally enclosed for continuous duty, general purpose applications. Permanent split capacitor motors rated 115/230 VAC 60/50 hertz input, and have starting torque equal to the running torque. This worm-type right-angle gearing features hardened, steel worm with bronze worm wheel for long life and quiet operation. Precision machined aluminum housings are used. Gearbox has all ball bearings. The housing is sealed and lubrication is permanent with an oil bath. The output shaft is field interchangeable from left hand style to right hand style.

#### Application Notes:

For optimum seal life, these right angle gearmotors have a lubrication breather positioned for horizontal mounting. For other mountings, the breather-plug must be reoriented by using a 90° NPT taper pipe elbow (see drawing). However, the motor portion of the gearmotor should never be mounted below the gearhead.

Overhung load capacities shown are at center of output shaft. These motors are supplied with continuous duty "run" capacity. **Conduit box not supplied with motor.** See page 156 for optional conduit box and base kit.



Please contact LEESON for output speeds not listed. For additional information, see Bulletin 1830.

**BODINE/DAYTON**  
DIRECT INTERCHANGE

### RIGHT-ANGLE AC GEARMOTORS

#### TOTALLY ENCLOSED • 115/230 V • SINGLE PHASE

60 Hz Output RPM	F.L. Torque (Lb.In.)	Input HP	Catalog Number	List Price▲	Gearmotor Type & Frame	Ratio to 1	F.L. Amps 115V AC	Overhung Load (Lb.)	DIMENSIONS				Capacitor Mfd.
									P Dia.	X	XL	XH	
28	37	1/15	M1125080	\$399	10F60-31C	60	0.9	185	3.07	3.63	8.94	5.31	10.0+
43	34	1/15	M1125081	399	10F40-31C	40	0.9	185	3.07	3.63	8.94	5.31	10.0+
58	40	1/15	M1125082	399	10F30-31C	30	0.9	185	3.07	3.63	8.94	5.31	10.0+
85	24	1/15	M1125083	399	10F20-31C	20	0.9	185	3.07	3.63	8.94	5.31	10.0+
173	14	1/15	M1125084	399	10F10-31C	10	0.9	185	3.07	3.63	8.94	5.31	10.0+
29	110	1/6	M1145037**	541	13F60-38F	60	2.0	235	3.85	4.50	12.31	7.81	15.0*
43	113	1/6	M1145038**	541	13F40-38F	40	2.0	235	3.85	4.50	12.31	7.81	15.0*
57	95	1/6	M1145082**	541	13F30-38F	30	2.0	235	3.85	4.50	12.31	7.81	15.0*
83	75	1/6	M1145039**	541	13F20-38F	20	2.0	235	3.85	4.50	12.31	7.81	15.0*
170	43	1/6	M1145040**	541	13F10-38F	10	2.0	235	3.85	4.50	12.31	7.81	15.0*
340	23	1/6	M1145041**	541	13F05-38F	5	2.0	235	3.85	4.50	12.31	7.81	15.0*

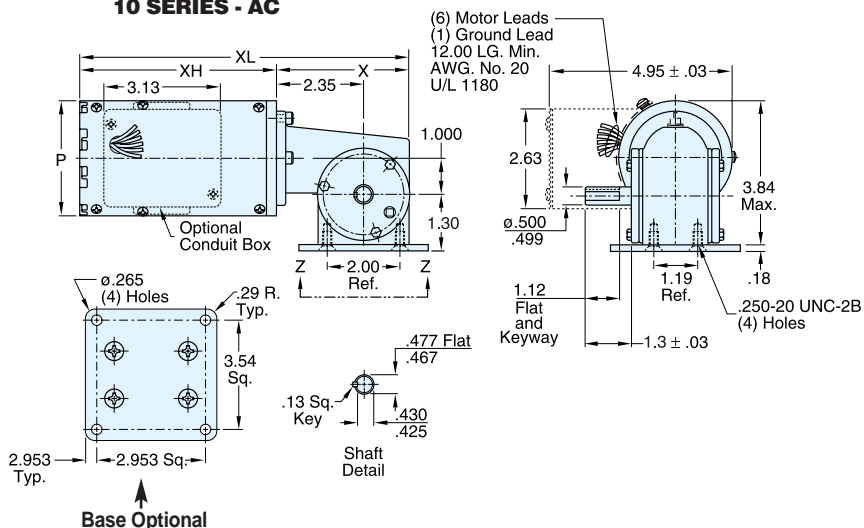
▲ Use "S" discount symbol.

\*\* TEFC enclosure.

+ 250 VAC

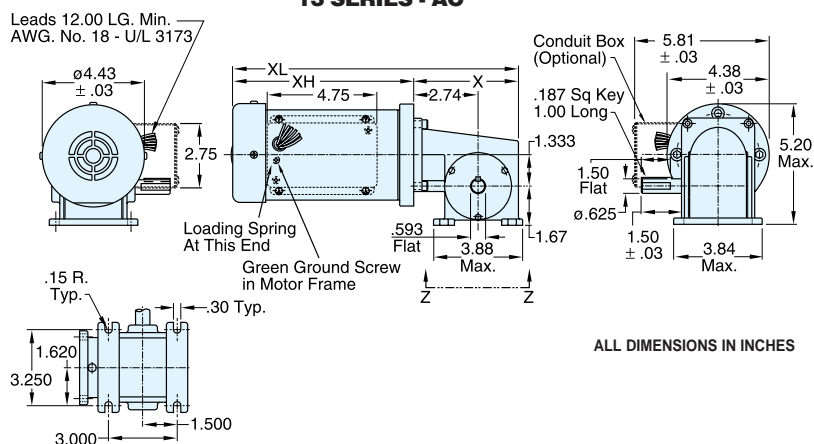
\* 300 VAC

#### 10 SERIES - AC



Base Optional

#### 13 SERIES - AC



ALL DIMENSIONS IN INCHES



# SUB-FHP ACCESSORIES

## FIELD INSTALLED



### SUB-FHP GEARMOTOR CONDUIT BOXES

Optional steel conduit or junction boxes are available. The boxes are painted and mount in holes using screws provided with all stock gearmotors.

Catalog Number	For Motor Frames	DIMENSIONS (Inches)				List Price	Disc. Sym.
		A	B	C	K		
M176000*	24	2.09	2.45	2.23	0.875	\$17	S
M1760021	30/31	3.13	2.63	2.28	0.875	17	S
M1760007	34	3.13	2.63	2.28	0.875	17	S
M1760012Δ	38	4.75	2.75	2.00	1.125	19	S
175893Δ♣	42	4.75	2.75	2.00	1.125	19	S

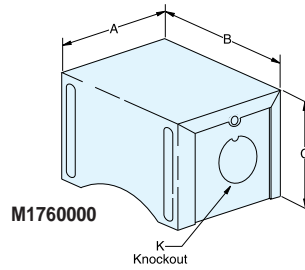
\* **Note:** For any gearmotor catalog number beginning with M1115XXX, must clarify from gearmotor nameplate which model is listed. For model number beginning with 985XXX, can not use 24 frame conduit box kit. Must use conduit box kit number M1760021. If model number begins with CMXXXXXX, then okay to use 24 frame kit number M176000.

Δ To be discontinued when present stock is depleted.

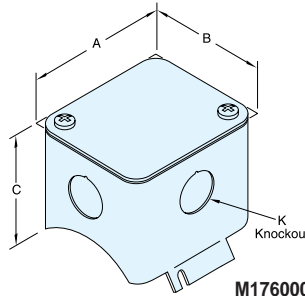
Δ Kits M1760012 & 175893 have the same physical dimensions. The mounting tab's center line dimensions are different from M1760008 & 175709.

\* Use with motors having date code D00 and earlier.

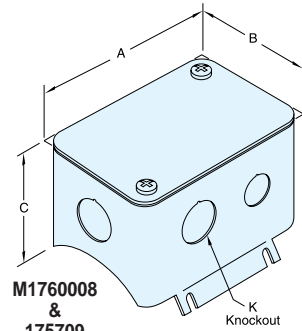
♣ Use with motors having date code E00 and later.



M1760000



M1760007 & M1760021



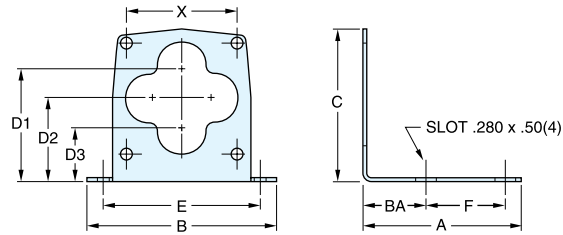
M1760008 & 175709

M1760012 & 175893



### SUB-FHP GEARMOTOR "L" MOUNTING BRACKET

Optional "L" brackets can be used to mount parallel shaft type PZ or PE350 gearmotors. Of steel construction, they are painted and include screws for mounting to the motor, but not the application.



Catalog Number	For Motors	DIMENSIONS (Inches)								List Price	Disc. Sym.		
		A	B	C	D <sup>1</sup>	D <sup>2</sup>	D <sup>3</sup>	X	BA			F	E
M1760003*	PZ Gearmotors	3.75	4.50	3.935	3.00	2.25	1.50	2.645	1.50	1.875	3.75	\$28	S
M1760011**	PE350 Gearmotors	4.50	6.00	5.520	4.00	3.10	2.20	3.625	1.50	2.500	5.00	33	S

\* Maximum radial load no greater than 50 lbs. This bracket can also be used on DC motors in the 34 frame having the style C mounting.

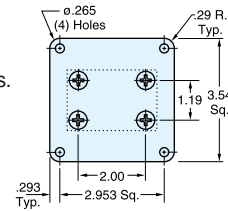
\*\* Maximum radial load no greater than 200 lbs.



### SUB-FHP GEARMOTOR RIGHT-ANGLE BASE KIT

This Optional Base Kit can be used with the 10 Series right-angle gearmotors. (Includes screws for mounting to gearbox, but not the application.)

Catalog Number	List Price	Disc. Sym.
M1760006	\$29	S



### CAPACITORS FOR SUB-FHP RIGHT-ANGLE AC GEARMOTORS

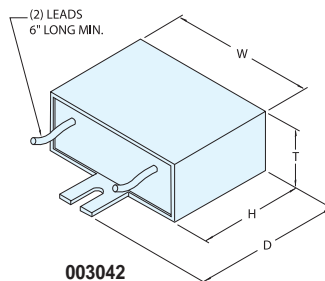
MFD Rating	Voltage Rating	Catalog Number	List Price	Disc. Sym.	DIMENSIONS (Inches)			
					W	H	T	D
10.0	250	003043.05	\$25	S	1.89	1.14	0.75	1.14
15.0	300	003042.05	29	S	2.28	1.61	1.14	2.48

### CAPACITORS FOR SUB-FHP AC PZ SERIES GEARMOTORS

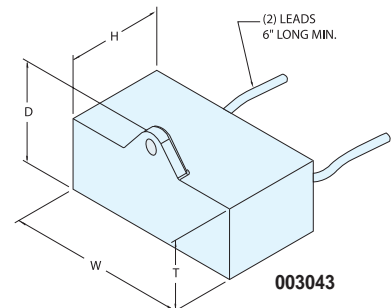
MFD Rating	Voltage Rating	Catalog Number	List Price	Disc. Sym.	DIMENSIONS (Inches)			
					W	H	T	D
3.0	250	003043.01	\$29	S	1.22	0.93	0.57	0.97
10.0	250	003043.05	25	S	1.89	1.14	0.75	1.14

### CAPACITORS FOR SUB-FHP P240 & PE350 AC GEARMOTORS

Gearmotor Type	MFD Rating	Voltage Rating	Catalog Number	List Price	Disc. Sym.	DIMENSIONS (Inches)			
						W	H	T	D
P240	7.5	250	003042.02	\$29	S	1.89	1.14	0.75	2.01
PE350	10.0	250	003042.06	25	S	1.89	1.24	0.89	2.11
P240	15.0	300	003042.05	29	S	2.28	1.61	1.14	2.48
PE350	15.0	250	003042.04	33	S	2.28	1.46	0.93	2.33



003042



003043