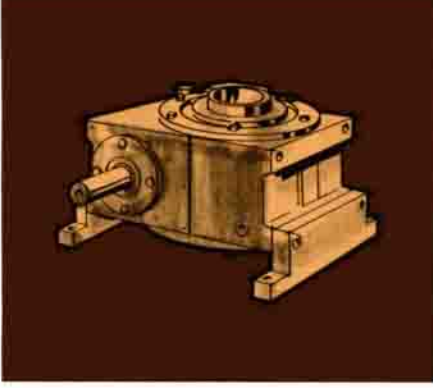
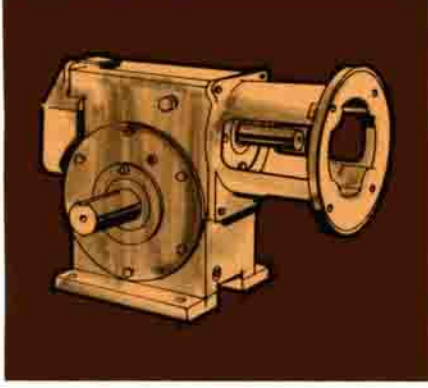
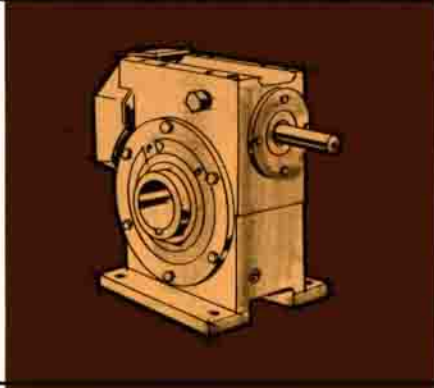
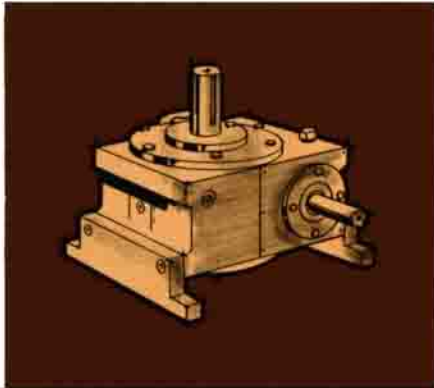
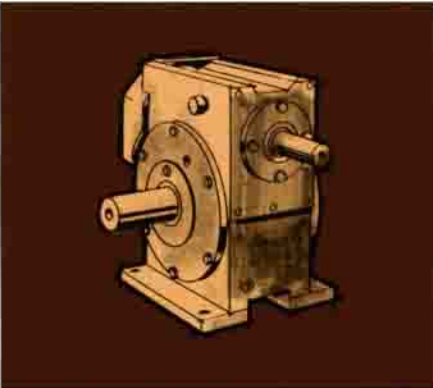
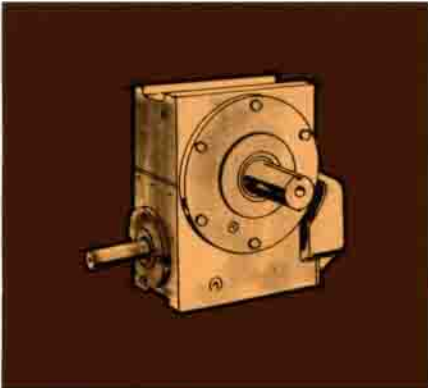


Cleveland Modular Fan-cooled  
Speed Reducers

# Cleveland



# Cleveland<sup>®</sup> Modular Speed Reducers . . .

are available in solid or hollow shaft models from 3" through 7" centers. Standard ratios range between 5 x 1 and 60 x 1. Horsepower ratings up to 55.4 with output torque ratings up to 36,200 inch pounds.

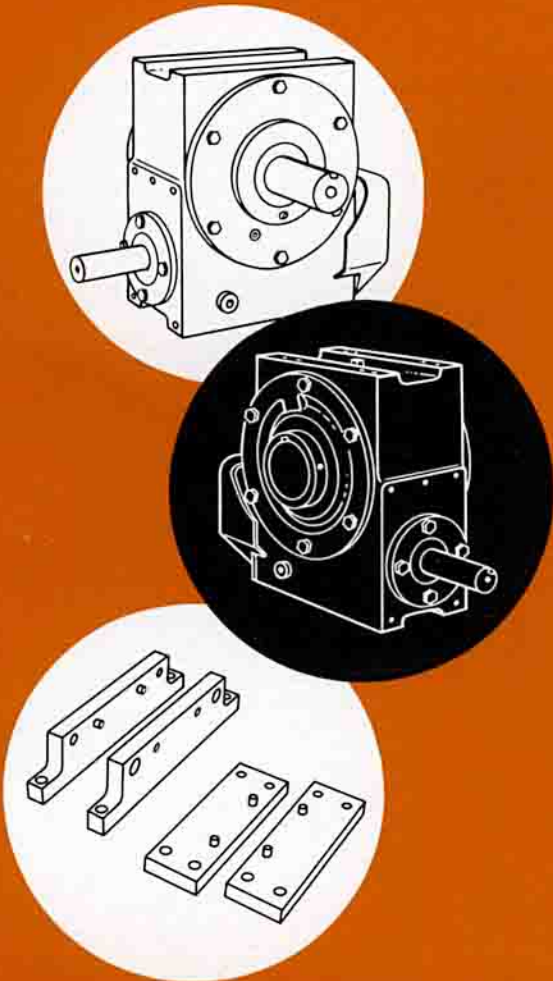
Because all models are constructed from one basic housing and feature adaptable mounting bases, units can be stocked to meet almost any application requirement quickly.

## Why Cleveland?

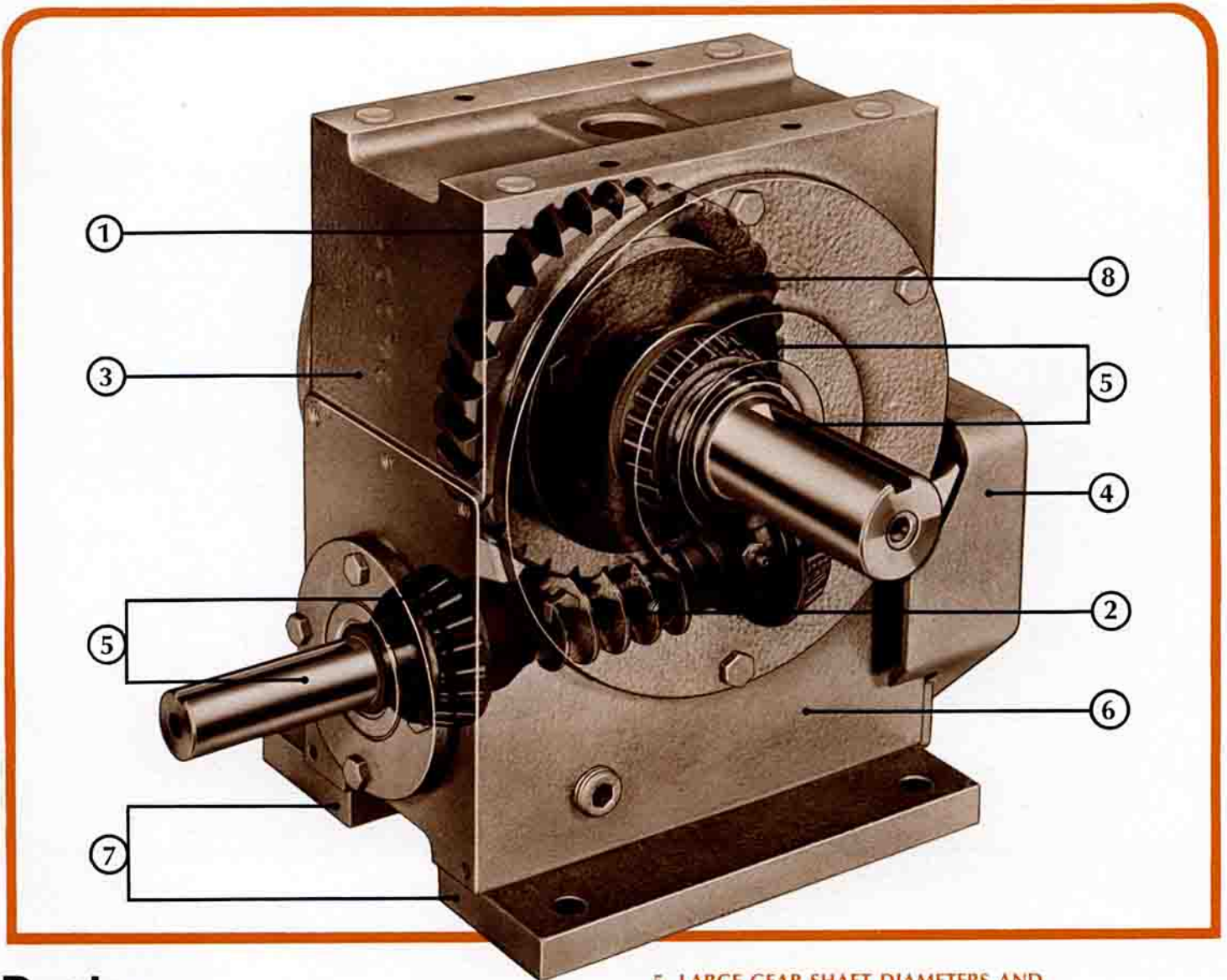
Cleveland Modular worm gear speed reducers were developed to meet the demand for a compact, quality produced universal mount speed reducer. Produced in an atmosphere of thoroughness and accuracy in each step of design and production, Cleveland Modular speed reducers offer industry unmatched dependability. The many thousands of Cleveland drives providing faithful service throughout the world bear witness to the sound approach to worm gear engineering found in every Cleveland Modular speed reducer.

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## Design Features

### 1. CENTRIFUGALLY-CAST BRONZE GEARS

Gear rims are cut from high tin content bronze centrifugally cast. This copper-tin alloy offers a relatively high hardness yet is ductile enough to avoid excessively high contact pressure and resist fatigue pitting. It affords a low coefficient of friction while running against a hardened steel worm, insuring increased resistance to wear and maximum efficiency.

### 2. FLAME-HARDENED WORMS

Cleveland worms possess a high degree of hardness throughout the entire thread thickness and well below the worm's root diameter. This hardness pattern gives maximum thread strength and resistance to wear without sacrificing the advantages of a medium hard core.

### 3. RUGGED HOUSINGS

Housings of highest quality cast iron provide maximum strength and heat dissipation. Cast iron housings also maintain accurate gear alignment.

### 4. FAN COOLING

A light, specially designed fan, provides a smooth, effective flow of air beneath, above and around all sides of the reducer.

### 5. LARGE GEAR SHAFT DIAMETERS AND GENEROUSLY SIZED BEARINGS

Worm and gear shafts are designed to withstand torsional and overhung loads. Generously sized bearings provide greater rigidity and are designed to accommodate radial, thrust and overhung loads.

### 6. BUILT-IN LUBRICATION SYSTEM

Cleveland Modular units provide an engineered built-in lubrication system with an oil capacity more than adequate to lubricate the worm and gear. This additional oil capacity carries away heat from working contact surfaces and dissipates it through housing walls—provides optimum cooling efficiency. As a result, oil oxidation rate is decreased—lubricant life increased.

Proper oil level for the various mounting arrangements is achieved by a system of rotating the position of the oil level plug, breather-filler, and oil drain plug. A grease fitting is provided for the output shaft bearing to insure adequate lubrication in any mounting position.

### 7. ADAPTABLE MOUNTING FEET

Adaptable mounting feet permit one basic housing to satisfy virtually any application requirement.

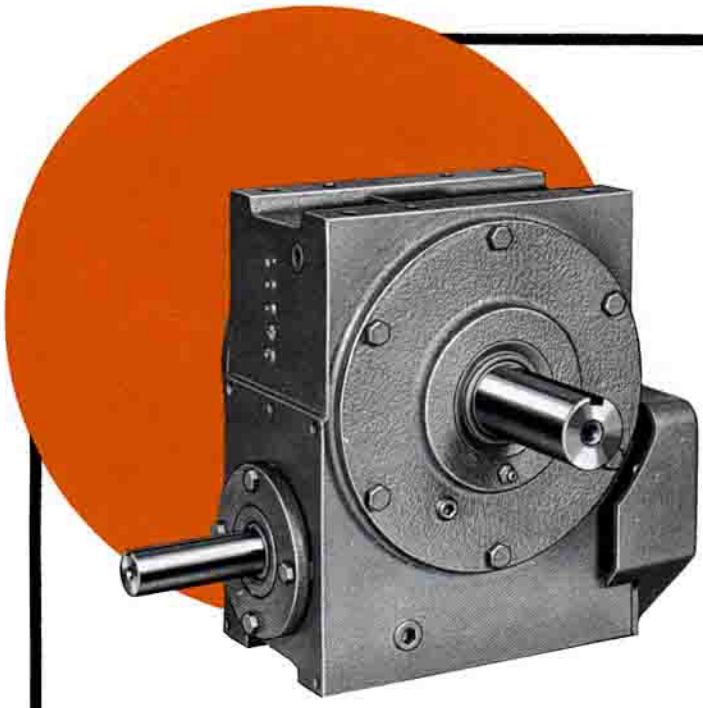
### 8. UNIQUE GEAR RIM and CENTER FUSION BOND CONSTRUCTION

The ductile iron gear center and bronze rim in both solid and hollow shaft units are joined together by a fusion casting process. This method results in a rugged one piece construction.

# Basic Units

Cleveland Modular speed reducers are available in two basic units in all sizes. Type E for solid shaft arrangements and type ES for hollow shaft arrangements.

Adaptable mounting feet, made from heavy steel plate, can be used on either basic assembly. Both assemblies are stocked in selected ratios\* and are available for immediate delivery.



## Type E

TYPE E basic assembly is available in four horizontal mounting arrangements and four vertical mounting arrangements from stock. Any of these arrangements may be used for side or wall mounting. Arrangements requiring extended shafts are considered special and are made to order.

The TYPE E design is also available with motor flange adaptors to accept NEMA C motors. Ring mount units, designed for vertical or side mounting directly on the machine or other structures, are also available in all sizes.



Mounting feet for vertical mounting arrangements.

Mounting feet for horizontal mounting arrangements.

## Type ES

TYPE ES units are hollow shaft. The design may be used as shaft mounts or shaft supports. They are available in the four basic mounting arrangements. Any of these basic arrangements may be used for side or wall mounting. They are also available with motor flange adaptors to accept NEMA C motors.

In addition, the unit is available with a torque arm assembly. Complete details are given on page 14. Ring mount units, designed for vertical or side mounting directly on the machine or other structures, are also available.

Sizes and dimensions for a complete line of bushings are found on page 15.



Mounting feet for vertical mounting arrangements.

Mounting feet for horizontal mounting arrangements.

\*See rating tables on pages 8 and 9 for stocked ratios.



# Reducer Selection Procedure

1. Determine service factor from table below.
2. Calculate ratio required by dividing input shaft speed by output shaft speed.
3. Refer to rating tables. Select input or output rating which, when divided by the service factor, is equal to or greater than the load.
4. If either input or output shaft is connected by other than a flexible coupling, the overhung load must be calculated. Use the following formulas.

(b) Calculate actual overhung load (O.H.L.) for output (or input):

$$O.H.L. = \frac{2 \times T \times F}{D}$$

Where;

- T = actual output (or input) torque (in.—lbs.)
- D = sprocket, sheave, etc., pitch diameter (inches)
- F = O.H.L. factor

For overhung load capacities see table below and rating tables on pages 8 and 9. If actual O.H.L. exceeds rated O.H.L. capacity, refer to the next larger size unit. Relationship between torque and horsepower is shown by the two formulas below. For input speeds of 100 RPM or less units are selected and rated on a torque basis.

$$\frac{\text{Actual output torque}}{\text{Rated output torque}} \times \text{Actual input H.P.} = \frac{\text{Rated input H.P.}}{\text{Rated output torque}} \times \text{Actual output torque}$$

$$H.P. = \frac{\text{Torque} \times \text{RPM}}{63,025} \quad \text{Torque} = \frac{63,025 \times \text{HP}}{\text{RPM}}$$

## Application Data

**GEAR SHAFT THRUST LOAD CAPACITY \*(UP or DOWN) IN POUNDS FOR VERTICAL MOUNTING ARRANGEMENTS OF TYPE "E" UNITS ONLY**

GEAR RPM	UNIT SIZE					
	30	35	40	50	60	70
10	1700	3000	3000	5000	6000	9000
25	1200	2400	2400	3800	4800	7500
50	800	1800	1800	3000	4000	4500
75	600	1200	1200	2500	3200	4000
100	500	900	900	2100	2800	3600
150	400	700	700	1800	2200	3300
250	300	600	600	1700	2000	2700
350	200	400	400	1400	1600	2000

\*Assumes no overhung load

## OVERHUNG LOAD FACTORS

Depending on the type of overhung load, the published overhung load figure should be divided by one of the following factors:

OVERHUNG MEMBER	FACTORS
Chain Sprocket	1.00
Spur Pinion	1.25
V-Belt Pulley	1.50
Flat Belt Pulley	2.50

## INPUT SHAFT OVERHUNG LOAD CAPACITY

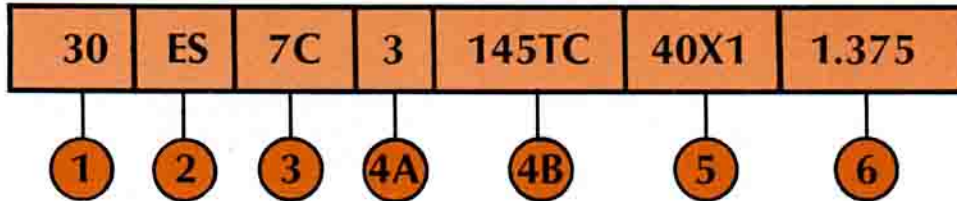
UNIT SIZE	WORM SHAFT CAPACITY
30	250
35	250
40	300
50	400
60	500
70	600

Overhung load given in pounds at center of input shaft keyway.

## APPLICATION SERVICE FACTOR TABLE

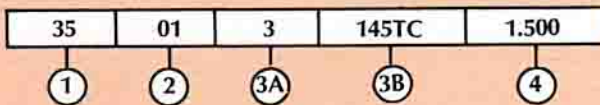
DURATION OF SERVICE		LOAD NATURE											
		UNIFORM				MODERATE SHOCK				HEAVY SHOCK			
		Occasional ½ hour day	Intermittent 2 hours day	10 hours day	24 hours day	Occasional ½ hour day	Intermittent 2 hours day	10 hours day	24 hours day	Occasional ½ hour day	Intermittent 2 hours day	10 hours day	24 hours day
PRIME MOVER	Electric Motor (Normal Service)	0.80	0.90	1.00	1.25	0.90	1.00	1.25	1.50	1.00	1.25	1.50	1.75
	Multi-cylinder Internal Combustion Engine or Electric Motor (more than 10 starts per hour)	0.90	1.00	1.25	1.50	1.00	1.25	1.50	1.75	1.25	1.50	1.75	2.00
	Single Cylinder Internal Combustion Engine	1.00	1.25	1.50	1.75	1.25	1.50	1.75	2.00	1.50	1.75	2.00	2.25

# Ordering Code



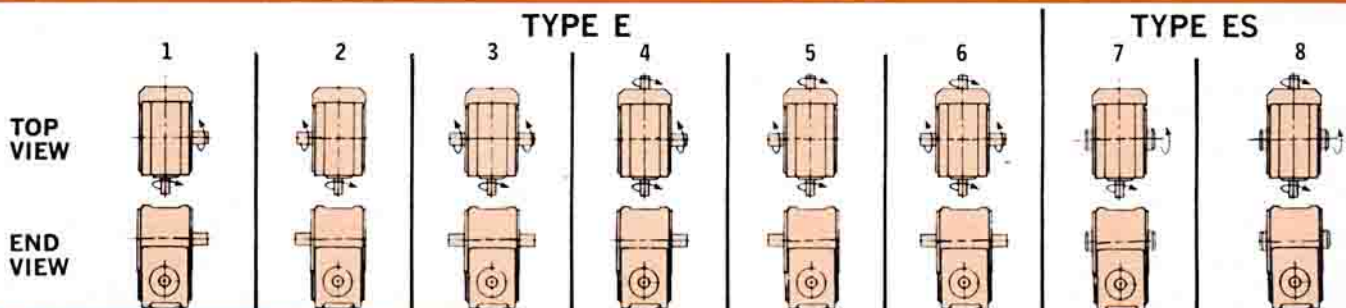
- ① Reducer Size—Gear Size  
 30—3.000" center distance  
 35—3.500" center distance  
 40—4.000" center distance  
 50—5.000" center distance  
 60—6.000" center distance  
 70—7.000" center distance
- ② Reducer Type  
 E —solid output shaft  
 ES —hollow output shaft  
 EX —solid output shaft—no fan or fan guard  
 ESX—hollow output shaft—no fan or fan guard  
 EC —solid output shaft—no fan or fan guard—  
 closed end worm plate  
 ESC—hollow output shaft—no fan or fan guard—  
 closed end worm plate
- ③ Reducer Mounting and Shaft Arrangements  
 (see Page 7)
- ④ Motor Data—NEMA "C" Face Mounting (see page 14)
  - ④A Motor, motor adaptor, coupling  
 0 —no motor, adaptor, or coupling  
 1 —coupling only  
 2 —adaptor only  
 3 —coupling and adaptor  
 4 —coupling, adaptor and motor
  - ④B Motor frame size (see page 14)  
 NOTE: When ordering motor include horsepower, speed, type enclosure, NEMA design, voltage, phase and frequency, also state required special mechanical, thermal and electrical features.
- ⑤ Gear Ratio
- ⑥ Required hollow shaft bore diameter in inches for ES unit only (Refer to Page 15)

## ACCESSORY ORDERING CODE (when ordered separately)



- ① Reducer Size  
 30, 35, 40, 50, 60 or 70
- ② Mounting Accessories  
 01—horizontal feet, for B and C mountings.  
 02—vertical feet, for D, E, F and G mountings  
 03—torque arm, for H and J mountings  
 04—ring base for K mounting  
 05—ring base for L, M and N mountings  
 06—ring base for P and Q mountings
- ③ Motor Data—NEMA "C" Mounting  
 (See Page 14)
  - ③A Motor, motor adaptor, coupling  
 1 —coupling only  
 2 —adaptor only  
 3 —coupling and adaptor  
 4 —coupling, adaptor and motor
  - ③B Motor frame size (See Page 14)  
 NOTE: When ordering motor include horsepower, speed, type enclosure, NEMA design, voltage, phase and frequency, also state required special mechanical, thermal and electrical features.
- ④ Bushings for Type ES Units  
 Bushing Bore (Refer to Page 15)  
 ACCESSORIES INCLUDE HARDWARE FOR MOUNTING ON REDUCER

## RELATIVE ROTATIONS All shaft rotations are for right hand thread worms.



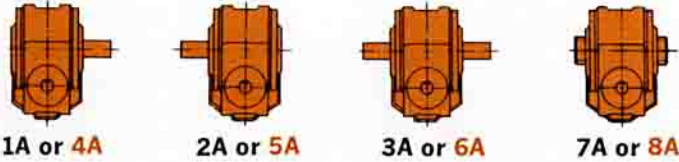


# Mounting and Shaft Arrangements

Arrangements below are shown from the input side (opposite fan). Consult factory if unit is to be mounted in a position other than shown.

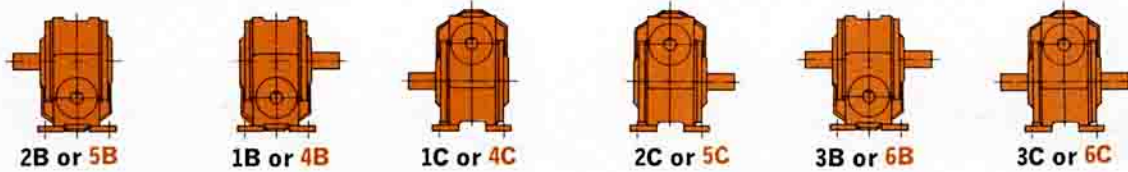
## TYPE E and ES

Basic unit with no mounting accessories (end view)

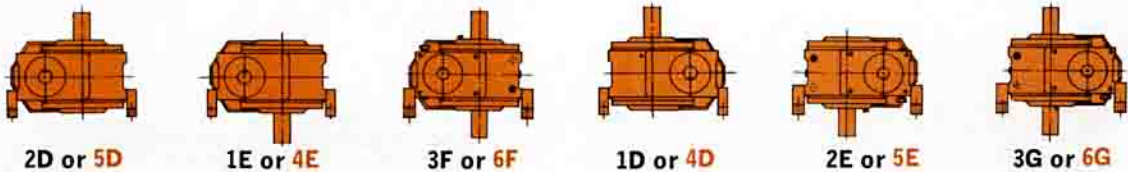


**NOTE:**  
Those arrangements numbers shown in color are for double extended input shafts. Those shown in black are for single input shafts arrangements.

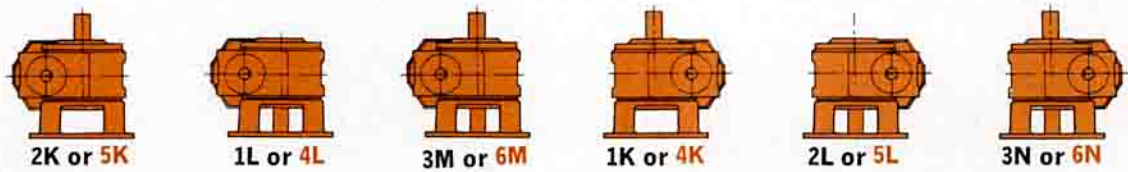
TYPE E with mounting accessories  
horizontal mounting (end view)



vertical mounting (end view)

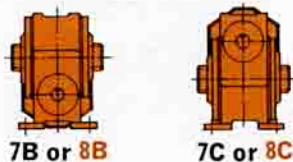


ring base mounting (end view)

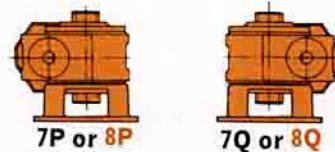


TYPE ES with mounting accessories

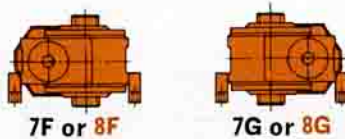
horizontal mounting (end view)



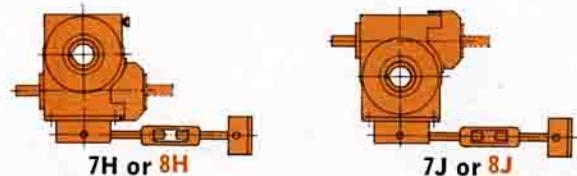
ring base mounting (end view)



vertical mounting (end view)



torque arm mounting (side view)





# Rating Tables

All ratings shown are based on A.G.M.A. standard 440.03 for a unity service factor. Stock ratios are listed in boldface type and should be ordered whenever possible for quickest delivery. Units with other ratios will be built to order from stocked components.

Output torque ratings shown, are given in inch pounds. Overhung loads shown are given in pounds at center of output shaft keyway.

**SIZE 30**

**SINGLE REDUCTION WORM GEAR**

**3.000" CENTERS**

Ratio		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
<b>5</b>	Input H.P.	8.10	6.89	5.98	5.36	4.62	2.78	1.96	1.04
	Output H.P.	7.55	6.34	5.48	4.89	4.20	2.48	1.73	.90
	Output Torque	1360	1745	1985	2140	2280	2600	2720	2840
	Output R.P.M.	350	230	174	144	116	60.0	40.0	20.0
	Overhung Load	250	250	250	250	250	300	400	600
<b>7 1/2</b>	Input H.P.	6.39	5.38	4.63	4.12	3.55	2.10	1.48	.79
	Output H.P.	5.87	4.89	4.16	3.67	3.14	1.83	1.27	.66
	Output Torque	1580	2000	2260	2410	2560	2880	2990	3110
	Output R.P.M.	234	154	116	96.0	77.4	40.0	26.7	13.3
	Overhung Load	600	600	600	600	650	800	860	840
<b>10</b>	Input H.P.	5.30	4.47	3.85	3.49	3.03	1.77	1.24	.66
	Output H.P.	4.75	3.94	3.35	3.02	2.58	1.49	1.02	.53
	Output Torque	1710	2160	2430	2640	2800	3120	3230	3360
	Output R.P.M.	175	115	87.0	72.0	58.0	30.0	20.0	10.0
	Overhung Load	800	800	800	820	850	840	820	800
<b>15</b>	Input H.P.	4.22	3.54	2.95	2.63	2.25	1.33	.94	.51
	Output H.P.	3.67	3.01	2.46	2.16	1.83	1.05	.73	.38
	Output Torque	1975	2470	2670	2830	2980	3320	3450	3580
	Output R.P.M.	117	76.7	58.0	48.0	38.7	20.0	13.3	6.67
	Overhung Load	1000	950	910	880	860	800	780	750
<b>20</b>	Input H.P.	3.34	2.81	2.45	2.18	1.87	1.11	.80	.43
	Output H.P.	2.78	2.28	1.95	1.70	1.44	.83	.57	.30
	Output Torque	2000	2500	2820	2980	3140	3480	3620	3740
	Output R.P.M.	87.5	57.5	43.5	36.0	29.0	15.0	10.0	5.0
	Overhung Load	995	920	885	860	835	775	750	720

**SINGLE REDUCTION WORM GEAR**

**3.000" CENTERS**

Ratio		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
<b>25</b>	Input H.P.	2.75	2.33	2.00	1.76	1.52	.93	.66	.36
	Output H.P.	2.18	1.80	1.51	1.33	1.14	.65	.45	.23
	Output Torque	1960	2460	2740	2920	3090	3420	3540	3650
	Output R.P.M.	70.0	46.0	34.8	28.8	23.2	12.0	8.0	4.0
	Overhung Load	1000	940	900	870	850	785	760	740
<b>30</b>	Input H.P.	2.39	2.02	1.74	1.58	1.35	.81	.58	.32
	Output H.P.	1.82	1.49	1.26	1.11	.94	.54	.37	.19
	Output Torque	1970	2460	2740	2920	3060	3420	3540	3650
	Output R.P.M.	58.3	38.3	29.0	24.0	19.3	10.0	6.67	3.33
	Overhung Load	1000	940	900	870	850	785	760	740
<b>40</b>	Input H.P.	2.13	1.72	1.49	1.34	1.15	.69	.49	.27
	Output H.P.	1.47	1.20	1.01	.88	.75	.43	.29	.15
	Output Torque	2120	2630	2930	3080	3250	3580	3710	3820
	Output R.P.M.	43.8	28.8	21.8	18.0	14.5	7.5	5.0	2.5
	Overhung Load	990	910	880	850	820	760	740	720
<b>50</b>	Input H.P.	1.57	1.32	1.14	1.02	.88	.53	.38	.22
	Output H.P.	1.04	.85	.72	.62	.53	.30	.21	.11
	Output Torque	1880	2320	2590	2720	2860	3140	3260	3360
	Output R.P.M.	35.0	23.0	17.4	14.4	11.6	6.0	4.0	2.0
	Overhung Load	1000	940	900	850	830	800	760	750
<b>60</b>	Input H.P.	1.31	1.10	.94	.85	.72	.43	.31	.17
	Output H.P.	.83	.66	.55	.48	.40	.23	.16	.08
	Output Torque	1800	2180	2400	2520	2620	2880	2950	3060
	Output R.P.M.	29.2	19.2	14.5	12.0	9.70	5.00	3.33	1.67
	Overhung Load	1015	970	950	935	920	880	870	850

**SIZE 35**

**SINGLE REDUCTION WORM GEAR**

**3.500" CENTERS**

Ratio		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
<b>5</b>	Input H.P.	11.5	9.64	8.44	7.62	6.64	4.07	2.86	1.54
	Output H.P.	10.7	8.90	7.73	6.95	6.04	3.63	2.54	1.33
	Output Torque	1920	2440	2800	3040	3280	3810	4000	4200
	Output R.P.M.	350	230	174	144	116	60.0	40.0	20.0
	Overhung Load	1370	1370	1370	1400	1460	1520	1500	1470
<b>7 1/2</b>	Input H.P.	9.12	7.72	6.69	6.03	5.20	3.12	2.20	1.17
	Output H.P.	8.39	7.04	6.04	5.36	4.64	2.72	1.90	.99
	Output Torque	2260	2880	3280	3520	3780	4290	4490	4680
	Output R.P.M.	234	154	116	96.0	77.4	40.0	26.7	13.3
	Overhung Load	1670	1610	1580	1550	1520	1460	1430	1405
<b>10</b>	Input H.P.	7.61	6.44	5.58	4.98	4.30	2.58	1.81	.97
	Output H.P.	6.83	5.73	4.91	4.35	3.74	2.19	1.52	.79
	Output Torque	2460	3140	3560	3810	4060	4600	4780	4980
	Output R.P.M.	175	115	87.0	72.0	58.0	30.0	20.0	10.0
	Overhung Load	1660	1600	1550	1510	1490	1420	1390	1355
<b>15</b>	Input H.P.	5.72	4.86	4.18	3.75	3.22	1.94	1.36	.74
	Output H.P.	4.96	4.11	3.52	3.11	2.67	1.55	1.07	.56
	Output Torque	2670	3380	3825	4090	4350	4880	5090	5300
	Output R.P.M.	117	76.7	58.0	48.0	38.7	20.0	13.3	6.67
	Overhung Load	1640	1560	1520	1480	1450	1375	1340	1305
<b>20</b>	Input H.P.	4.62	3.90	3.34	2.99	2.55	1.53	1.07	.58
	Output H.P.	3.86	3.18	2.71	2.38	2.03	1.17	.81	.42
	Output Torque	2780	3490	3920	4160	4410	4900	5100	5290
	Output R.P.M.	87.5	57.5	43.5	36.0	29.0	15.0	10.0	5.0
	Overhung Load	1630	1550	1510	1470	1440	1370	1340	1305

**SINGLE REDUCTION WORM GEAR**

**3.500" CENTERS**

Ratio		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
<b>25</b>	Input H.P.	3.84	3.27	2.86	2.58	2.23	1.36	.96	.53
	Output H.P.	3.03	2.53	2.17	1.92	1.65	.96	.67	.35
	Output Torque	2730	3460	3930	4200	4480	5050	5250	5460
	Output R.P.M.	70.0	46.0	34.8	28.8	23.2	12.0	8.0	4.0
	Overhung Load	1630	1550	1500	1470	1440	1360	1330	1300
<b>30</b>	Input H.P.	3.35	2.87	2.48	2.25	1.93	1.18	.84	.46
	Output H.P.	2.57	2.13	1.82	1.61	1.37	.80	.55	.29
	Output Torque	2780	3500	3960	4220	4480	5020	5210	5420
	Output R.P.M.	58.3	38.3	29.0	24.0	19.3	10.0	6.67	3.33
	Overhung Load	1630	1550	1500	1470	1440	1360	1330	1300
<b>40</b>	Input H.P.	2.71	2.31	1.98	1.80	1.53	.93	.66	.37
	Output H.P.	1.96	1.61	1.37	1.20	1.02	.59	.41	.21
	Output Torque	2820	3520	3960	4200	4430	4930	5110	5300
	Output R.P.M.	43.8	28.8	21.8	18.0	14.5	7.5	5.0	2.5
	Overhung Load	1630	1550	1500	1470	1440	1365	1335	1305
<b>50</b>	Input H.P.	2.19	1.88	1.60	1.48	1.24	.76	.54	.30
	Output H.P.	1.48	1.21	1.02	.90	.76	.44	.30	.16
	Output Torque	2660	3320	3710	3940	4150	4600	4780	4940
	Output R.P.M.	35.0	23.0	17.4	14.4	11.6	6.0	4.0	2.0
	Overhung Load	1630	1550	1520	1500	1470	1400	1360	1340
<b>60</b>	Input H.P.	1.87	1.62	1.40	1.28	1.09	.69	.48	.27
	Output H.P.	1.17	.96	.82	.72	.61	.35	.24	.13
	Output Torque	2520	3160	3560	3780	3990	4450	4630	4800
	Output R.P.M.	29.2	19.2	14.5	12.0	9.70	5.00	3.33	1.67
	Overhung Load	1650	1580	1550	1520	1500	1440	1410	1380

**SIZE 40**

**SINGLE REDUCTION WORM GEAR**

**4.000" CENTERS**

Ratio		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
<b>4 5/6</b>	Input H.P.	15.0	12.2	10.9	9.87	8.73	5.48	3.99	2.12
	Output H.P.	13.8	11.3	10.1	9.13	8.02	4.92	3.52	1.85
	Output Torque	2400	3000	3520	3860	4210	5000	5360	5635
	Output R.P.M.	362	238	180	149	120	62.1	41.4	20.7
	Overhung Load	800	800	800	900	900	950	950	1200
<b>7 1/4</b>	Input H.P.	12.9	10.6	9.34	8.41	7.36	4.54	3.22	1.74
	Output H.P.	11.6	9.69	8.49	7.63	6.64	4.00	2.81	1.48
	Output Torque	3040	3840	4460	4840	5230	6090	6410	6750
	Output R.P.M.	241	159	120	99.3	80	41.4	27.6	13.8
	Overhung Load	1200	1200	1300	1300	1400	1400	2000	2000
<b>10</b>	Input H.P.	10.5	8.71	7.62	6.88	6.01	3.70	2.62	1.42
	Output H.P.	9.27	7.74	6.75	6.10	5.26	3.15	2.21	1.16
	Output Torque	3							



**SIZE**  
**50**

**SINGLE REDUCTION WORM GEAR**

**5.000" CENTERS**

Ratio		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
4 5/6	Input H.P.	26.2	20.4	18.9	17.3	15.7	10.2	7.43	4.06
	Output H.P.	24.4	19.8	17.6	16.2	14.5	9.30	6.67	3.58
	Output Torque	4240	5250	6150	6840	7600	9440	10150	10900
	Output R.P.M.	362	238	180	149	120	62.1	41.4	20.7
	Overhung Load	1100	1100	1100	1200	1200	1300	1500	2070
7 2/5	Input H.P.	20.7	17.0	15.2	13.7	12.3	7.76	5.63	3.06
	Output H.P.	19.0	15.6	13.9	12.5	11.2	6.94	4.93	2.61
	Output Torque	5080	6310	7440	8120	9000	10800	11500	12200
	Output R.P.M.	236	156	118	97.4	78.4	40.5	27.0	13.5
	Overhung Load	2070	2070	2070	2100	2100	2100	2100	2100
10 2/3	Input H.P.	16.1	13.3	11.8	10.8	9.57	6.05	4.38	2.38
	Output H.P.	14.4	12.0	10.6	9.64	8.50	5.22	3.71	1.96
	Output Torque	5540	6990	8220	9000	9850	11700	12450	13180
	Output R.P.M.	164	108	81.6	67.5	54.4	28.1	18.8	9.38
	Overhung Load	2100	2100	2100	2100	2100	2100	2100	2100
14 1/3	Input H.P.	13.5	11.0	9.69	8.75	7.73	4.84	3.46	1.89
	Output H.P.	11.7	9.66	8.49	7.65	6.72	4.06	2.87	1.51
	Output Torque	6030	7590	8820	9600	10450	12230	12900	13600
	Output R.P.M.	122	80.2	60.7	50.2	40.5	20.9	14.0	6.98
	Overhung Load	2100	2100	2100	2100	2100	2100	2100	2100
20	Input H.P.	10.2	8.37	7.44	6.79	6.01	3.85	2.78	1.53
	Output H.P.	8.57	7.06	6.25	5.67	4.97	3.03	2.14	1.13
	Output Torque	6170	7740	9060	9920	10800	12750	13500	14250
	Output R.P.M.	87.5	57.5	43.5	36.0	29.0	15.0	10.0	5.0
	Overhung Load	2100	2100	2100	2100	2100	2100	2100	2100

**SINGLE REDUCTION WORM GEAR**

**5.000" CENTERS**

Ratio		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
25	Input H.P.	8.47	6.94	6.17	5.61	4.99	3.22	2.32	1.30
	Output H.P.	6.83	5.66	4.99	4.51	3.96	2.42	1.70	.90
	Output Torque	6150	7750	9040	9870	10750	12700	13400	14180
	Output R.P.M.	70.0	46.0	34.8	28.8	23.2	12.0	8.00	4.00
	Overhung Load	2100	2100	2100	2100	2100	2100	2100	2100
30	Input H.P.	7.26	6.06	5.32	4.79	4.23	2.71	1.96	1.18
	Output H.P.	5.72	4.77	4.17	3.76	3.28	1.98	1.39	.73
	Output Torque	6180	7850	9060	9880	10700	12450	13100	13800
	Output R.P.M.	58.3	38.3	29.0	24.0	19.3	10.0	6.67	3.33
	Overhung Load	2100	2100	2100	2100	2100	2100	2100	2100
40	Input H.P.	5.83	4.76	4.20	3.89	3.47	2.29	1.66	.94
	Output H.P.	4.30	3.55	3.13	2.83	2.48	1.50	1.06	.56
	Output Torque	6190	7760	9050	9900	10800	12600	13400	14100
	Output R.P.M.	43.8	28.8	21.8	18.0	14.5	7.50	5.00	2.50
	Overhung Load	2100	2100	2100	2100	2100	2100	2100	2100
48	Input H.P.	4.94	4.04	3.60	3.33	2.97	2.00	1.46	.84
	Output H.P.	3.44	2.84	2.50	2.27	1.99	1.21	.85	.45
	Output Torque	5940	7460	8710	9530	10350	12200	12900	13650
	Output R.P.M.	36.5	24.0	18.1	15.0	12.1	6.25	4.17	2.08
	Overhung Load	2100	2100	2100	2100	2100	2100	2100	2100
56	Input H.P.	4.18	3.40	3.00	2.77	2.44	1.62	1.18	.68
	Output H.P.	2.85	2.36	2.07	1.86	1.60	.97	.68	.36
	Output Torque	5750	7260	8410	9150	9860	11450	12000	12600
	Output R.P.M.	31.2	20.5	15.5	12.8	10.2	5.35	3.58	1.79
	Overhung Load	2100	2100	2100	2100	2100	2100	2100	2100

**SIZE**  
**60**

**SINGLE REDUCTION WORM GEAR**

**6.000" CENTERS**

Ratio		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
4 5/6	Input H.P.	39.6	31.8	27.8	25.9	23.5	16.0	11.8	6.52
	Output H.P.	37.0	29.7	26.0	24.2	21.8	14.6	10.6	5.76
	Output Torque	6450	7870	9100	10220	11430	14800	16100	17550
	Output R.P.M.	362	238	180	149	120	62.1	41.4	20.7
	Overhung Load	1200	1200	1200	1300	1300	1300	1400	1400
7 2/5	Input H.P.	30.1	25.3	22.3	20.8	18.7	12.4	8.98	4.97
	Output H.P.	28.5	23.4	20.6	19.2	17.0	11.0	7.88	4.24
	Output Torque	7600	9440	11000	12400	13700	17100	18400	19800
	Output R.P.M.	236	156	118	97.4	78.4	40.5	27.0	13.5
	Overhung Load	2400	2400	2500	2500	2500	2600	3000	3200
11	Input H.P.	24.9	20.3	18.2	16.7	15.0	9.84	7.17	3.94
	Output H.P.	22.5	18.4	16.3	15.0	13.3	8.51	6.08	3.26
	Output Torque	8910	11030	13000	14400	15950	19650	21050	22600
	Output R.P.M.	159	105	79.1	65.5	52.7	27.3	18.2	9.09
	Overhung Load	3250	3250	3250	3250	3250	3250	3120	2990
14 2/3	Input H.P.	19.4	15.9	14.2	13.0	11.7	7.64	5.59	3.08
	Output H.P.	17.0	13.9	12.4	4.39	10.1	6.37	4.53	2.42
	Output Torque	8980	11150	13170	14500	16050	19570	21000	22400
	Output R.P.M.	119	78.4	59.3	49.1	39.5	20.5	13.6	6.82
	Overhung Load	3250	3250	3250	3250	3250	3250	3130	3000
20	Input H.P.	15.2	12.5	11.3	10.2	9.16	6.14	4.41	2.44
	Output H.P.	12.9	10.5	9.39	8.57	7.62	4.78	3.40	1.81
	Output Torque	9260	11550	13600	15000	16550	20100	21400	22850
	Output R.P.M.	87.5	57.5	43.5	36.0	29.0	15.0	10.0	5.0
	Overhung Load	3250	3250	3250	3250	3250	3200	3100	2960

**SINGLE REDUCTION WORM GEAR**

**6.000" CENTERS**

Ratio		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
24 1/2	Input H.P.	13.1	10.7	9.55	8.88	7.96	5.14	3.83	2.15
	Output H.P.	10.9	8.86	7.93	7.23	6.43	4.00	2.87	1.53
	Output Torque	9600	11900	14070	15500	17100	20700	22150	23600
	Output R.P.M.	71.4	46.9	35.5	29.4	23.7	12.2	8.16	4.08
	Overhung Load	3250	3250	3250	3250	3250	3160	3030	2900
30	Input H.P.	10.8	8.87	7.94	7.33	6.54	4.27	3.13	1.74
	Output H.P.	8.68	7.11	6.33	5.77	5.08	3.14	2.23	1.18
	Output Torque	9380	11700	13750	15150	16600	19800	21300	22400
	Output R.P.M.	58.3	38.3	29.0	24.0	19.3	10.0	6.67	3.33
	Overhung Load	3250	3250	3250	3250	3250	3250	3120	3000
40	Input H.P.	8.48	7.01	6.43	5.86	5.28	3.53	2.61	1.48
	Output H.P.	6.46	5.30	4.83	4.30	3.81	2.38	1.69	.90
	Output Torque	9300	11590	13950	15050	16550	19980	21300	22700
	Output R.P.M.	43.8	28.8	21.8	18.0	14.5	7.50	5.00	2.50
	Overhung Load	3250	3250	3250	3250	3250	3220	3110	3000
50	Input H.P.	6.87	5.67	5.17	4.80	4.35	2.96	2.23	1.29
	Output H.P.	4.94	4.04	3.61	3.30	2.93	1.83	1.31	.69
	Output Torque	8900	11080	13070	14450	15900	19250	20600	21900
	Output R.P.M.	35.0	23.0	17.4	14.4	11.6	6.0	4.0	2.0
	Overhung Load	3250	3250	3250	3250	3250	3250	3160	3050
60	Input H.P.	5.54	4.62	4.16	3.85	3.49	2.33	1.73	1.00
	Output H.P.	3.94	3.23	2.85	2.61	2.32	1.42	1.01	.54
	Output Torque	8510	10600	12400	13700	15050	17950	19200	20250
	Output R.P.M.	29.2	19.2	14.5	12.0	9.70	5.00	3.33	1.67
	Overhung Load	3250	3250	3250	3250	3250	3250	3250	3200

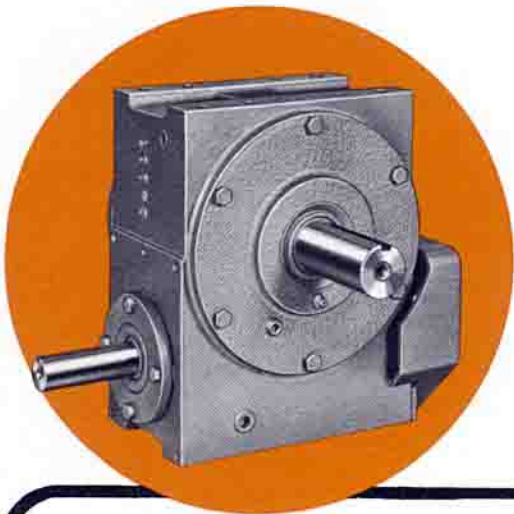
**SIZE**  
**70**

**SINGLE REDUCTION WORM GEAR**

**7.000" CENTERS**

Ratio		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
4 5/6	Input H.P.	55.4	45.2	39.6	36.2	33.2	23.4	17.6	9.90
	Output H.P.	51.3	42.3	37.1	33.8	30.8	21.5	15.9	8.80
	Output Torque	8940	11200	13000	14300	16200	21800	24200	26800
	Output R.P.M.	362	238	180	149	120	62.1	41.4	20.7
	Overhung Load	3000	3000	3000	3000	3100	3100	3100	3130
7	Input H.P.	46.4	37.8	32.9	30.5	27.8	19.0	14.0	7.84
	Output H.P.	42.4	34.9	30.3	28.3	25.8	17.2	12.5	6.85
	Output Torque	10700	13400	15400	17300	19600	25300	27600	30200
	Output R.P.M.	250	164	124	103	82.9	42.9	28.6	14.3
	Overhung Load	3250	3250	3250	3250	3250	3250	3250	3250
10 1/3	Input H.P.	36.0	29.2	25.6					



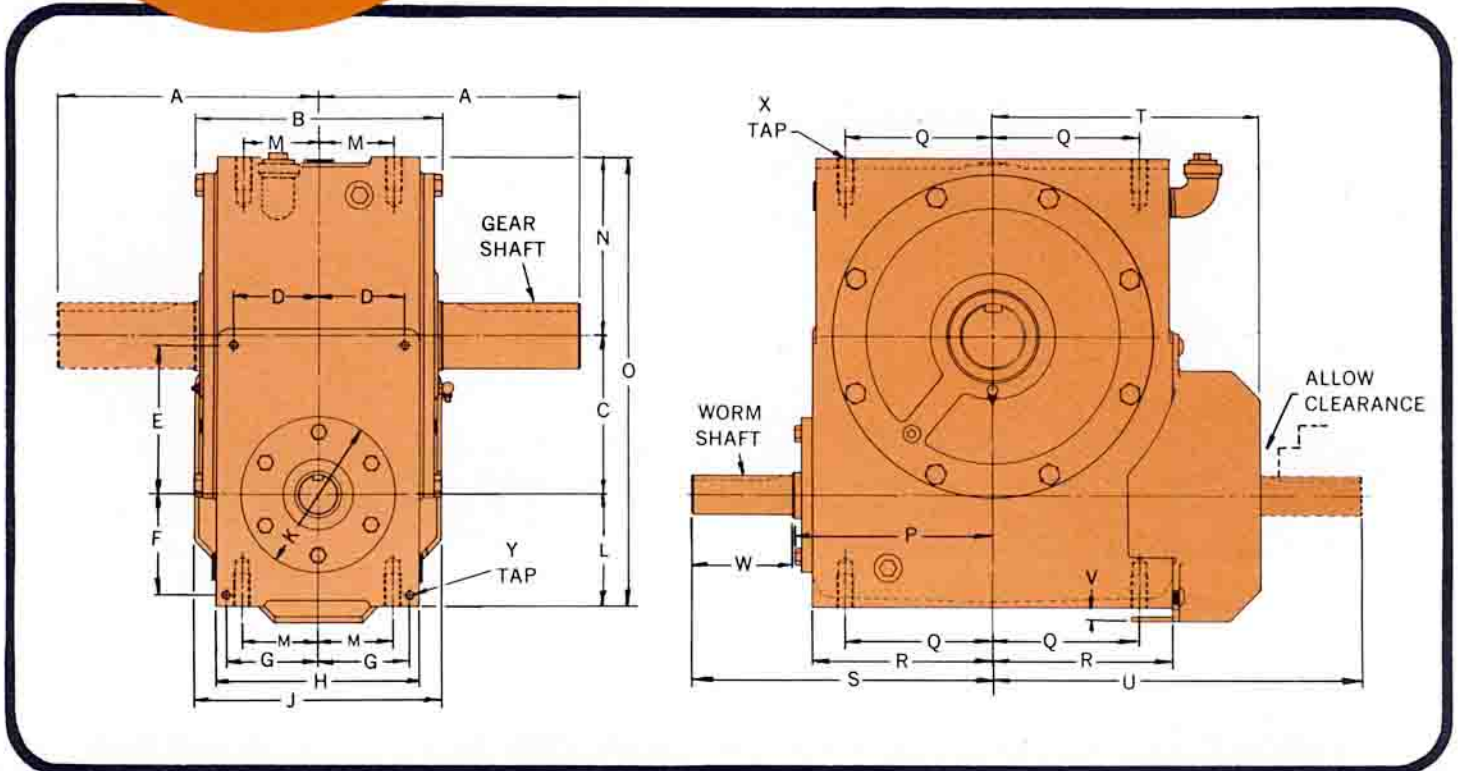


# Dimensions/Type E

## Basic Unit

### Sizes 30-70

Dimensions subject to change. Use certified prints only for construction.



Unit Size	A	B	C +0.003 -0.000	D	E	F	G	H	J	K +0.000 -0.002	L +0.00 -0.03	M	N +0.00 -0.03	D	P	Q	R	S
30E	5.75	6.38	3.000	2.00	3.31	2.31	2.19	5.00	6.62	4.000	2.62	1.81	3.62	9.25	4.31	2.75	3.75	6.62
35E	6.25	6.50	3.500	2.00	3.31	2.31	2.19	5.00	6.62	4.000	2.62	1.94	4.12	10.25	4.69	3.00	4.12	7.00
40E	7.25	7.00	4.000	2.25	3.88	2.81	2.56	5.75	6.88	4.625	3.12	2.06	4.75	11.88	5.31	3.56	4.62	7.75
50E	7.50	7.00	5.000	2.25	3.88	2.81	2.56	5.75	6.88	4.625	3.38	2.19	5.75	14.12	6.31	4.38	5.62	8.75
60E	10.00	9.50	6.000	3.25	5.62	3.81	3.50	7.75	9.50	5.875	4.25	2.88	6.75	17.00	7.56	5.62	6.88	11.50
70E	11.00	10.25	7.000	3.25	5.62	3.81	3.50	8.00	9.50	5.875	4.50	3.00	8.50	20.00	8.56	6.50	7.88	12.50

Unit Size	T	U	V	W	X Tap	Y Tap	Worm Shaft		Gear Shaft		Net Weight (lbs.)
							Dia.	Key Size	Dia.	Key Size	
30E	6.00	8.25	.25	2.38	1/16-16 x 3/4	1/16-18 x 3/8	1.000 <sup>+0.000</sup> <sub>-0.0005</sub>	1/4 x 1/4 x 1 1/4	1.250 <sup>+0.000</sup> <sub>-0.0005</sub>	1/4 x 1/4 x 2	60
35E	6.38	8.62	.25	2.38	1/16-13 x 1	1/16-18 x 3/8	1.000 <sup>+0.000</sup> <sub>-0.0005</sub>	1/4 x 1/4 x 1 1/4	1.500 <sup>+0.000</sup> <sub>-0.001</sub>	3/8 x 3/8 x 2	78
40E	7.25	9.75	.38	2.62	1/16-13 x 1	3/16-16 x 1 1/16	1.125 <sup>+0.000</sup> <sub>-0.0005</sub>	3/4 x 3/4 x 1 1/4	1.750 <sup>+0.000</sup> <sub>-0.001</sub>	3/8 x 3/8 x 2 1/4	102
50E	8.25	10.75	.12	2.62	1/16-13 x 1	3/16-16 x 1 1/16	1.375 <sup>+0.000</sup> <sub>-0.001</sub>	1/2 x 1/2 x 1 1/2	2.000 <sup>+0.000</sup> <sub>-0.001</sub>	1/2 x 1/2 x 2 1/4	152
60E	10.25	14.12	.12	3.88	3/16-11 x 1 1/4	3/16-16 x 3/8	1.500 <sup>+0.000</sup> <sub>-0.001</sub>	3/8 x 3/8 x 2 1/4	2.500 <sup>+0.000</sup> <sub>-0.001</sub>	3/8 x 3/8 x 3 1/4	288
70E	11.25	15.12	.25	3.88	3/16-11 x 1 1/4	3/16-16 x 3/8	1.625 <sup>+0.000</sup> <sub>-0.001</sub>	3/8 x 3/8 x 2 1/4	2.750 <sup>+0.000</sup> <sub>-0.001</sub>	3/8 x 3/8 x 4	395

NOTE: worm & gear shaft keys are furnished with unit.

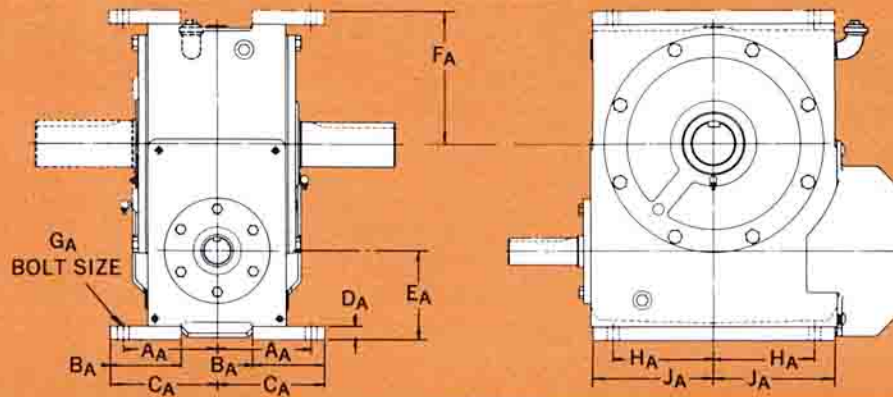




## Dimensions/Type E Horizontal Mounting Arrangements



Dimensions subject to change.  
Use certified prints only for  
construction.



Unit Size	A <sub>A</sub>	B <sub>A</sub>	C <sub>A</sub>	D <sub>A</sub>	E <sub>A</sub> +.00 -.03	F <sub>A</sub> +.00 -.03	G <sub>A</sub> Bolt Size	H <sub>A</sub>	J <sub>A</sub>
30E	3.25	2.50	3.75	.50	3.12	4.12	3/8	2.75	3.62
35E	3.25	2.50	3.75	.62	3.25	4.75	1/2	3.00	4.00
40E	3.75	3.00	4.38	.62	3.75	5.38	1/2	3.56	4.50
50E	3.88	3.00	4.38	.62	4.00	6.38	1/2	4.38	5.50
60E	5.25	4.00	6.00	.75	5.00	7.50	3/4	5.62	6.75
70E	5.75	4.50	6.50	.75	5.25	9.25	3/4	6.50	7.75

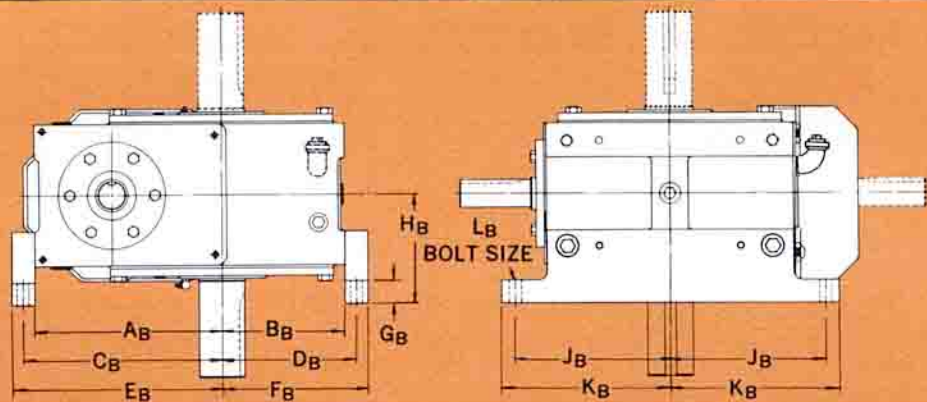
For dimensions not shown see Basic E Unit on Page 10.



## Dimensions/Type E Vertical Mounting Arrangements

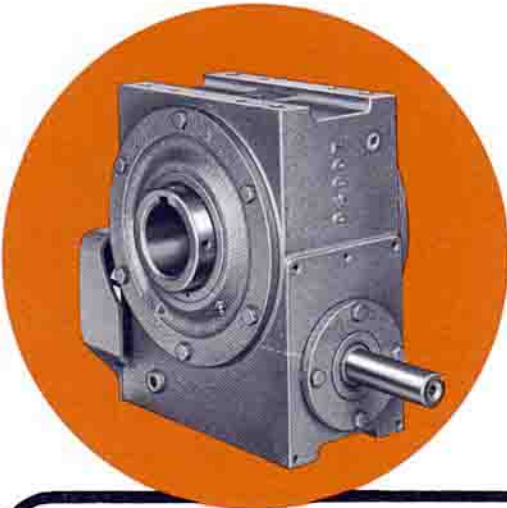


Dimensions subject to change.  
Use certified prints only for  
construction.



Unit Size	A <sub>B</sub>	B <sub>B</sub>	C <sub>B</sub>	D <sub>B</sub>	E <sub>B</sub>	F <sub>B</sub>	G <sub>B</sub>	H <sub>B</sub> +.00 -.03	J <sub>B</sub>	K <sub>B</sub>	L <sub>B</sub> Bolt Size
30E	5.62	3.62	6.00	4.00	6.38	4.38	.62	3.75	4.38	4.88	3/8
35E	6.12	4.12	6.62	4.62	7.12	5.12	.75	3.75	5.00	5.50	1/2
40E	7.12	4.75	7.62	5.25	8.12	5.75	1.00	4.38	5.50	6.00	1/2
50E	8.38	5.75	8.88	6.25	9.38	6.75	1.00	4.38	6.88	7.50	1/2
60E	10.25	6.75	10.88	7.38	11.50	8.00	1.25	6.00	8.50	9.25	3/4
70E	11.50	8.50	12.12	9.12	12.75	9.75	1.25	6.50	9.50	10.25	3/4

For dimensions not shown see Basic E Unit on Page 10.

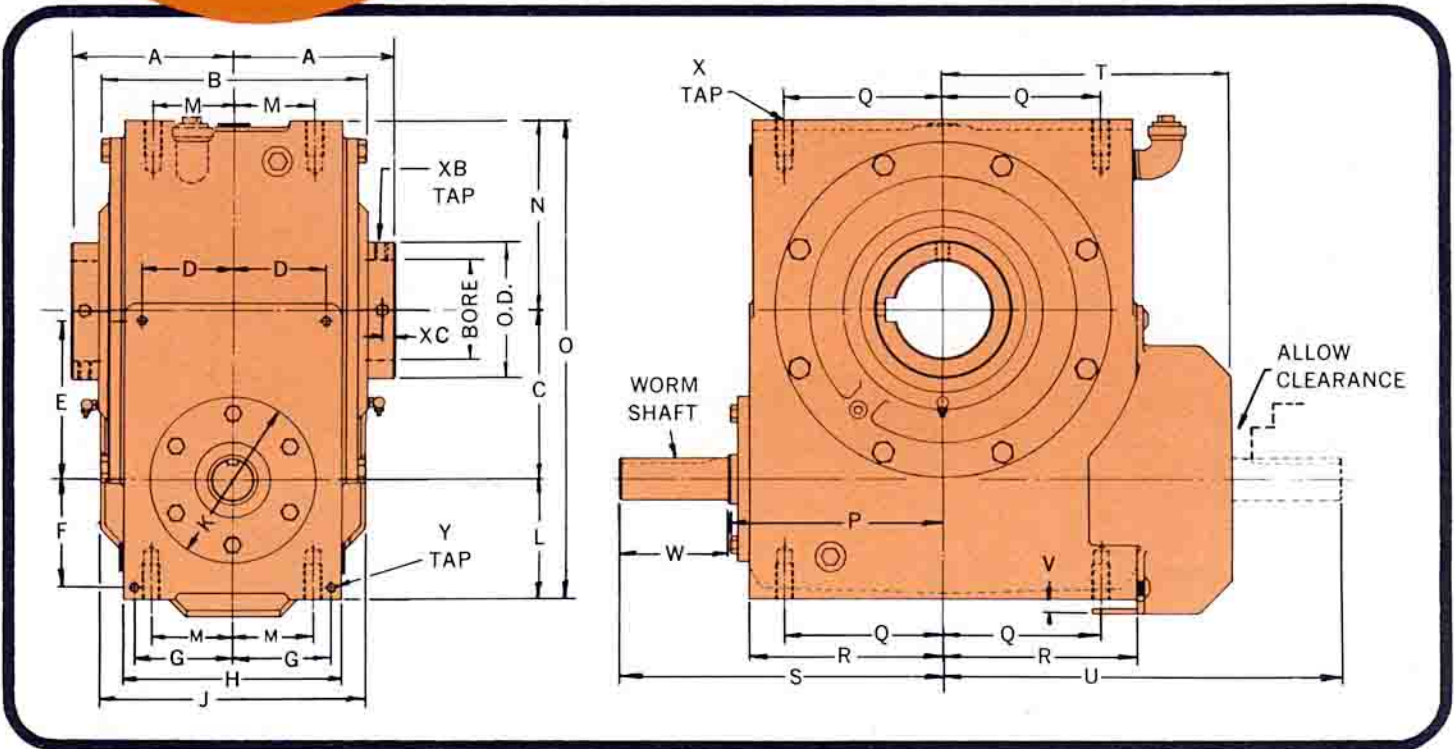


# Dimensions/Type ES

## Basic Unit

### Sizes 30-70

Dimensions subject to change. Use certified prints only for construction.



Unit Size	A	B	C +0.003 -0.000	D	E	F	G	H	J	K +0.000 -0.002	L +0.00 -0.03	M	N +0.00 -0.03	O	P	Q	R	S	T	U
30ES	3.38	6.38	3.000	2.00	3.31	2.31	2.19	5.00	6.62	4.000	2.62	1.81	3.62	9.25	4.31	2.75	3.75	6.62	6.00	8.25
35ES	3.75	6.50	3.500	2.00	3.31	2.31	2.19	5.00	6.62	4.000	2.62	1.94	4.12	10.25	4.69	3.00	4.12	7.00	6.38	8.62
40ES	4.00	7.00	4.000	2.25	3.88	2.81	2.56	5.75	6.88	4.625	3.12	2.06	4.75	11.88	5.31	3.56	4.62	7.75	7.25	9.75
50ES	4.25	7.00	5.000	2.25	3.88	2.81	2.56	5.75	6.88	4.625	3.38	2.19	5.75	14.12	6.31	4.38	5.62	8.75	8.25	10.75
60ES	5.75	9.50	6.000	3.25	5.62	3.81	3.50	7.75	9.50	5.875	4.25	2.88	6.75	17.00	7.56	5.62	6.88	11.50	10.25	14.12
70ES	6.00	10.25	7.000	3.25	5.62	3.81	3.50	8.00	9.50	5.875	4.50	3.00	8.50	20.00	8.56	6.50	7.88	12.50	11.25	15.12

Unit Size	V	W	X Tap	Y Tap	Worm Shaft		XB Tap	XC	Hollow Gear Shaft			Net Weight (lbs.)
					Dia.	Key Size			Bore +.002 -.000	O.D.	Shaft Keyseat Required	
30ES	.25	2.38	5/16-16 x 3/4	5/16-18 x 5/8	1.000 <sup>+0.0000</sup> -0.0005	1/4 x 1/4 x 1 1/2	5/16-18	.31	1.750	2.50	3/8 x 3/16 x 1 3/8	60
35ES	.25	2.38	1/2-13 x 1	5/16-18 x 5/8	1.000 <sup>+0.0000</sup> -0.0005	1/4 x 1/4 x 1 1/2	5/16-16	.38	2.250	3.25	1/2 x 1/4 x 2	78
40ES	.38	2.62	1/2-13 x 1	3/8-16 x 1 1/16	1.125 <sup>+0.0000</sup> -0.0005	1/4 x 1/4 x 1 1/4	5/16-16	.38	2.500	3.50	5/8 x 3/16 x 2 1/4	102
50ES	.12	2.62	1/2-13 x 1	3/8-16 x 1 1/16	1.375 <sup>+0.0000</sup> -0.0001	5/16 x 5/16 x 1 3/8	5/16-16	.38	3.000	4.25	3/4 x 3/8 x 2 3/4	152
60ES	.12	3.88	5/8-11 x 1 1/4	3/8-16 x 3/4	1.500 <sup>+0.0000</sup> -0.0001	3/8 x 3/8 x 2 3/4	1/2-13	.50	3.500	5.00	7/8 x 7/16 x 3 1/2	288
70ES	.25	3.88	5/8-11 x 1 1/4	3/8-16 x 3/4	1.625 <sup>+0.0000</sup> -0.0001	3/8 x 3/8 x 2 3/4	1/2-13	.50	4.000	5.75	1" x 1/2 x 4	395



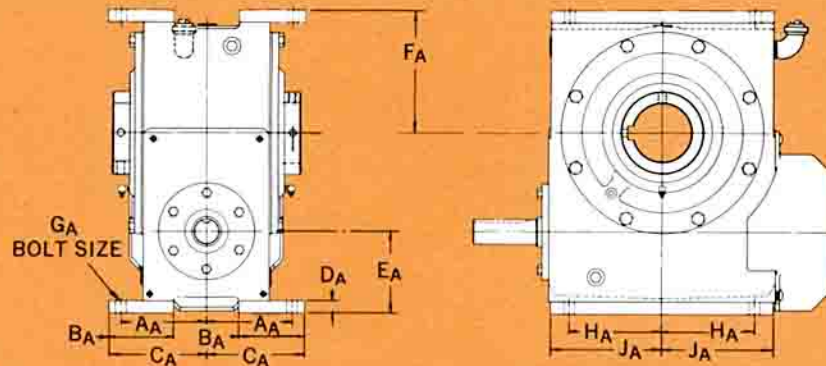


## Dimensions/Type ES

### Horizontal Mounting Arrangements



Dimensions subject to change.  
Use certified prints only for  
construction.



Unit Size	A <sub>A</sub>	B <sub>A</sub>	C <sub>A</sub>	D <sub>A</sub>	E <sub>A</sub> + .00 - .03	F <sub>A</sub> + .00 - .03	G <sub>A</sub> Bolt Size	H <sub>A</sub>	J <sub>A</sub>
30ES	3.25	2.50	3.75	.50	3.12	4.12	3/8	2.75	3.62
35ES	3.25	2.50	3.75	.62	3.25	4.75	1/2	3.00	4.00
40ES	3.75	3.00	4.38	.62	3.75	5.38	1/2	3.56	4.50
50ES	3.88	3.00	4.38	.62	4.00	6.38	1/2	4.38	5.50
60ES	5.25	4.00	6.00	.75	5.00	7.50	3/4	5.62	6.75
70ES	5.75	4.50	6.50	.75	5.25	9.25	3/4	6.50	7.75

For dimensions not shown see Basic ES Unit on Page 12.

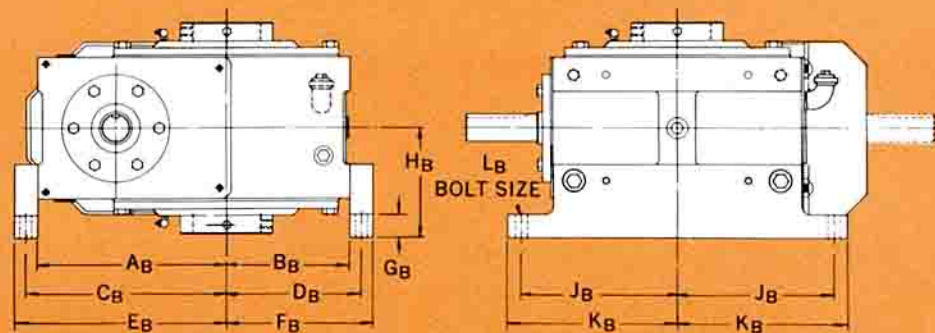


## Dimensions/Type ES

### Vertical Mounting Arrangements

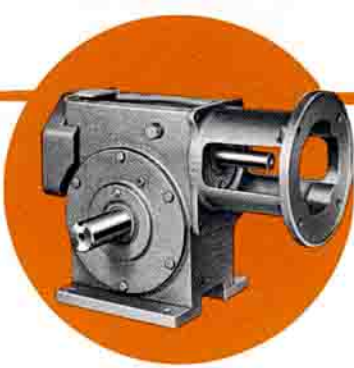


Dimensions subject to change.  
Use certified prints only for  
construction.



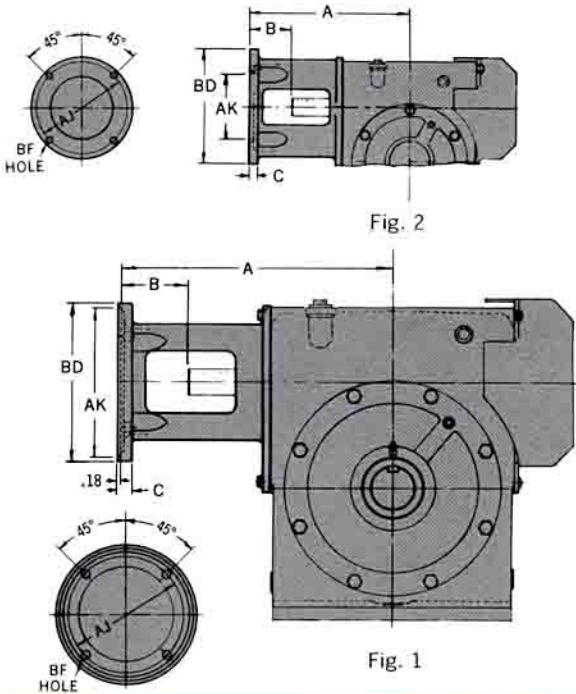
Unit Size	A <sub>B</sub>	B <sub>B</sub>	C <sub>B</sub>	D <sub>B</sub>	E <sub>B</sub>	F <sub>B</sub>	G <sub>B</sub>	H <sub>B</sub> + .00 - .03	J <sub>B</sub>	K <sub>B</sub>	L <sub>B</sub> Bolt Size
30ES	5.62	3.62	6.00	4.00	6.38	4.38	.62	3.75	4.38	4.88	3/8
35ES	6.12	4.12	6.62	4.62	7.12	5.12	.75	3.75	5.00	5.50	1/2
40ES	7.12	4.75	7.62	5.25	8.12	5.75	1.00	4.38	5.50	6.00	1/2
50ES	8.38	5.75	8.88	6.25	9.38	6.75	1.00	4.38	6.88	7.50	1/2
60ES	10.25	6.75	10.88	7.38	11.50	8.00	1.25	6.00	8.50	9.25	3/4
70ES	11.50	8.50	12.12	9.12	12.75	9.75	1.25	6.50	9.50	10.25	3/4

For dimensions not shown see Basic ES Unit on Page 12.



# Dimensions/Type E & ES

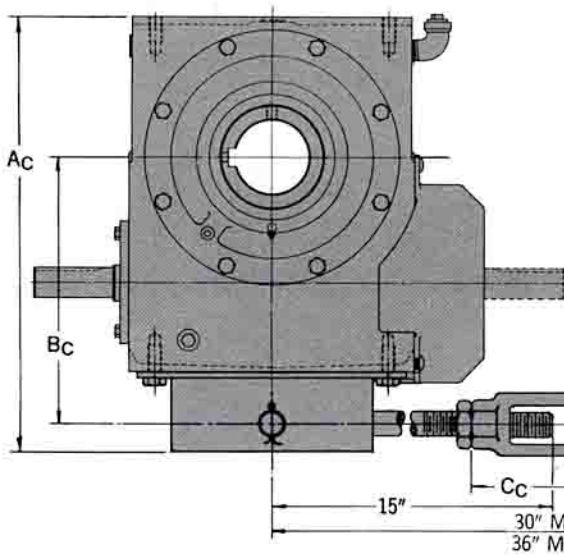
## Motor Adapter



Unit Size	Motor Frame NEMA C Face Mounting		Mounting Face				A	B	C	Cplg. Max. O.D.
	Fig. 1	Fig. 2	AJ	AK +.002 - .000	BD	BF				
30E 30ES		56C 143TC 145TC	5.88	4.501	6.62	1 1/2	8.97	2.34	.50	4.00
	182TC 184TC 213TC 215TC		7.25	8.501	9.00	1 1/2	9.81	3.19	.94	4.50
35E 35ES		56C 143TC 145TC	5.88	4.501	6.62	1 1/2	9.34	2.34	.50	4.00
	182TC 184TC 213TC 215TC		7.25	8.501	9.00	1 1/2	10.19	3.19	.94	4.50
40E 40ES		56C 143TC 145TC	5.88	4.501	6.62	1 1/2	10.00	2.25	.50	4.45
	182TC 184TC 213TC 215TC 254TC 256TC		7.25	8.501	9.00	1 1/2	11.56	3.81	.94	5.00
50E 50ES		143TC 145TC	5.88	4.501	6.62	1 1/2	11.00	2.25	.50	4.45
	182TC 184TC 213TC 215TC 254TC 256TC		7.25	8.501	9.00	1 1/2	12.56	3.81	.94	5.00
60E 60ES		182TC 184TC 213TC 215TC 254TC 256TC	7.25	8.501	9.00	1 1/2	15.31	3.81	.81	5.45
		284TC 286TC	9.00	10.501	11.25	1 1/2	16.00	4.50	1.06	6.35
		324TC 326TC	11.00	12.501	13.25	2 1/2	16.62	5.12	1.12	7.50
70E 70ES		182TC 184TC 213TC 215TC 254TC 256TC	7.25	8.501	9.00	1 1/2	16.31	3.81	.81	5.45
		284TC 286TC	9.00	10.501	11.25	1 1/2	17.00	4.50	1.06	6.35
		324TC 326TC	11.00	12.501	13.25	2 1/2	17.62	5.12	1.12	7.50

# Dimensions/Type ES

## Torque Arm Arrangement



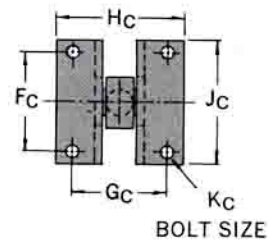
Unit Size	A <sub>C</sub>	B <sub>C</sub>	C <sub>C</sub>	D <sub>C</sub> Dia.	E <sub>C</sub>	F <sub>C</sub>	G <sub>C</sub>	H <sub>C</sub>	J <sub>C</sub>	K <sub>C</sub> Bolt
30ES	12.25	7.62	8.75	1.00	2.00	3.75	3.12	4.12	4.75	1/2
35ES	13.25	8.12	8.75	1.00	2.00	3.75	3.12	4.12	4.75	1/2
40ES	14.88	9.12	8.75	1.00	2.00	3.75	3.12	4.12	4.75	1/2
50ES	17.12	10.38	8.75	1.00	2.00	3.75	3.12	4.12	4.75	1/2
60ES	20.75	12.75	9.50	1.25	2.50	4.75	4.12	5.38	6.00	3/8
70ES	23.75	14.00	9.50	1.25	2.50	4.75	4.12	5.38	6.00	3/8

Torque arm may be located at 180° from position shown. Maximum variation 35° from these positions.

For dimensions not shown see basic ES unit on page 12.

5/16" FOR SIZES 30, 35, 40 & 50

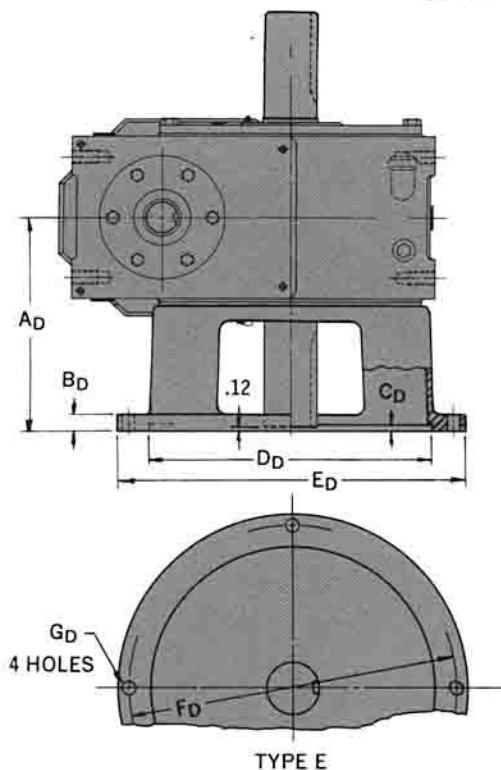
3/8" FOR SIZES 60 & 70





# Dimensions/Type E & ES

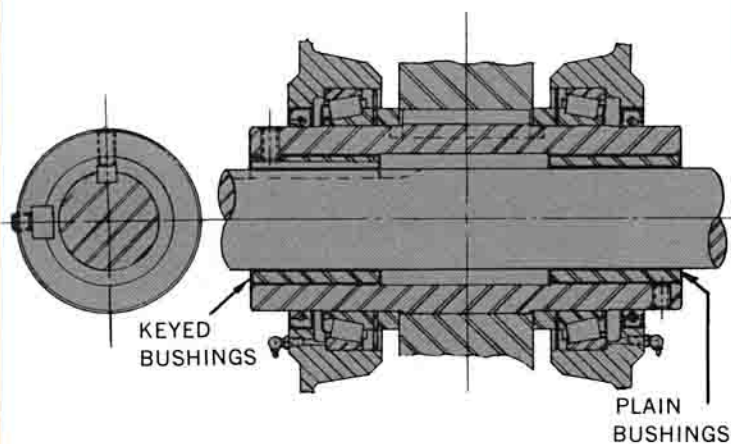
## Ring Base Mount



Unit Size	A <sub>D</sub> +.00 -.03	B <sub>D</sub>	C <sub>D</sub>	D <sub>D</sub> +.002 -.000	E <sub>D</sub>	F <sub>D</sub>	G <sub>D</sub> Hole
30E/30ES	5.88	.62	.19	7.251	10.00	9.00	17/32
35E/35ES	6.38	.62	.19	8.251	11.00	10.00	17/32
40E/40ES	7.38	.75	.25	9.501	12.75	11.62	21/32
50E/50ES	7.62	.88	.25	11.251	14.50	13.38	21/32
60E/60ES	10.12	1.00	.31	13.501	17.50	16.00	13/16
70E/70ES	11.12	1.12	.31	16.001	20.25	18.62	13/16

NOTE:—For dimensions not shown see basic E unit on page 10 or basic ES unit on page 12.

# Bushings for Type ES units



Unit Size	Gear Shaft Bore (No Bushings Required*)	Stocked Bushings	Shaft Keyseat Required
		Bore*	
30ES	1.750	—	3/8 x 3/16 x 1 3/8 5/16 x 3/32 x 1 3/8 3/4 x 1/8 x 1 3/8
		1.375 1.250, 1.1875, 1.125	
35ES	2.250	—	1/2 x 1/4 x 2 1/2 x 1/4 x 2 3/8 x 3/16 x 2 3/16 x 3/32 x 2
		1.875 1.750, 1.6875, 1.625, 1.500, 1.4375 1.375	
40ES	2.500	—	5/8 x 3/16 x 2 1/4 1/2 x 1/4 x 2 1/4 3/8 x 3/16 x 2 1/4
		2.125, 2.000, 1.9375, 1.875 1.750, 1.6875, 1.625	
50ES	3.000	—	3/4 x 3/8 x 2 3/4 3/8 x 3/16 x 2 3/4 1/2 x 1/4 x 2 3/4
		2.625, 2.500, 2.4375, 2.375 2.250, 2.1875, 2.125, 2.000	
60ES	3.500	—	3/8 x 3/16 x 3 1/2 3/4 x 3/8 x 3 1/2 3/8 x 3/16 x 3 1/2
		3.000, 2.9375, 2.875 2.750, 2.6875, 2.625, 2.500, 2.4375, 2.375	
70ES	4.000	—	1" x 1/2 x 4 3/8 x 3/16 x 4 3/4 x 3/8 x 4 3/8 x 3/16 x 4
		3.375 3.250, 3.1875, 3.125, 3.000, 2.9375, 2.875 2.750	

Shaft key is furnished. Key may be located at either end of bore. Set screws are furnished.

\*Bore tolerance +.002-.000.



**Cleveland Gear**

3249 East 80th Street  
Cleveland, Ohio 44104

Cable "Gearing"  
Telex: 980368

Catalog 520D  
3M1/82GL  
Printed in U.S.A

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