Cleveland® standard
worm gear sets

ISO-9001

DNV

CERTIFICATED FIRM

Cleveland

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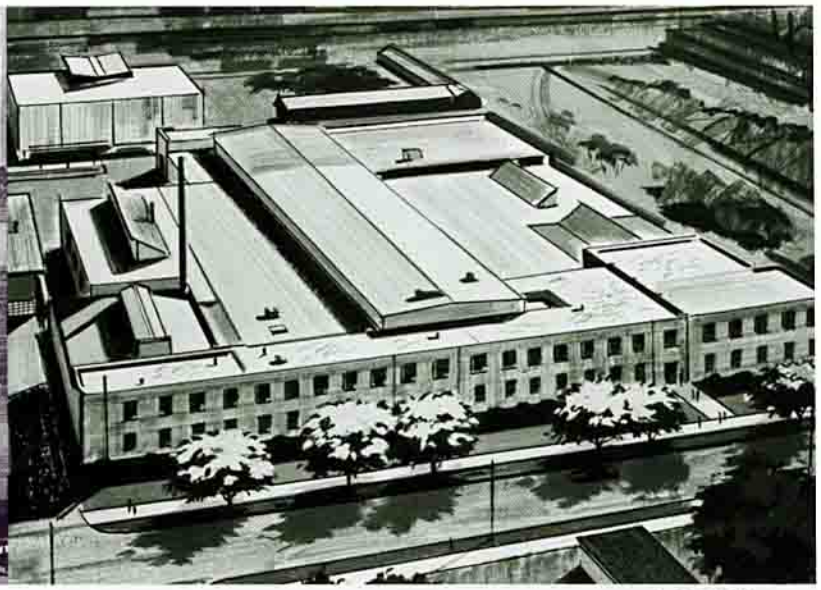
Cleveland® *worm gearing*

. . . SINCE 1912

Cleveland worm gearing was first manufactured in 1912. At that time worm gearing was used primarily by the automotive industry for rear axle drives. Within a few years its application for industrial needs assumed major importance, and in 1918 the country's first standardized line of worm gear speed reducers was introduced under the name of "Cleveland." Many units built during those early years are still in service.

1912



TODAY

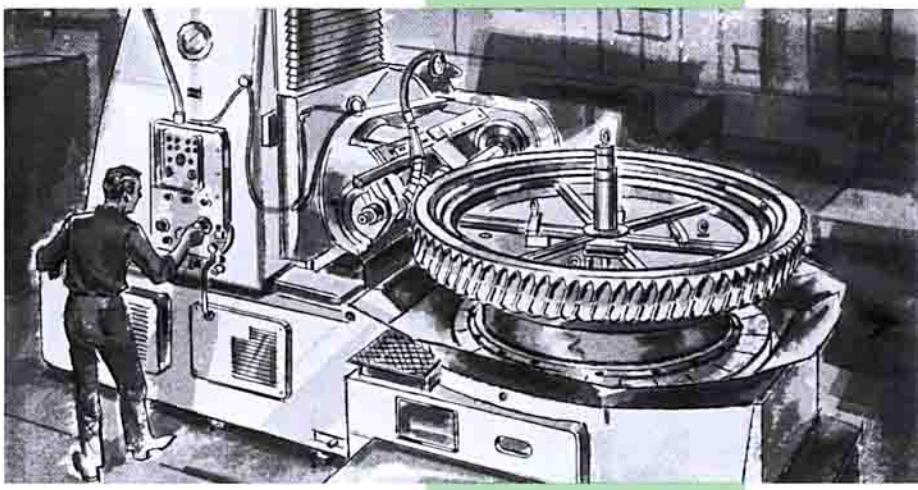
By specializing in the manufacture of worm gearing, and through a continuous program of research and development, the name "Cleveland" has steadily maintained leadership in industry. Because of this policy of specialization, many advances have been pioneered in mechanical power transmission that have been of fundamental value to industry.

In its manufacturing processes, Cleveland has recognized from the beginning that no one worm thread form is superior to all others. It began with a basic form that was and is the easiest and least costly to produce, and proceeded to refine it to provide the best possible tooth contact. True conjugate action between the worm thread and gear tooth is of prime importance in worm gearing, and efforts have therefore been to improve the contact by strict adherence to closer and closer manufacturing tolerances.

manufacture of worm gearing

From its beginning Cleveland has specialized in the manufacture of worm gearing. Its shop equipment has been designed exclusively for such manufacture, providing the means to produce industrial coarse pitch worm gearing of the highest quality. Here is a brief discussion of some of the more important techniques used in its manufacture.

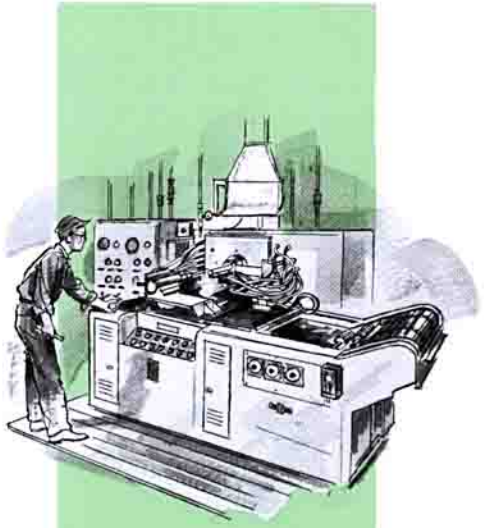
1920



TODAY

HEAT TREATING

Cleveland flame hardens all worms in its fan-cooled line and can flame harden worms up to 56.000" gear centers. After milling, worms are mounted on a spindle of the Flamatic machine and rotated in an oxy-acetylene flame, then automatically quenched in an oil bath. Time and heat conditions determined by worm size are rigidly controlled. Flame-hardened heat treatment gives the worm a high degree of hardness throughout the entire thread thickness (55-60 Rockwell "C" on the surface) to well below the root diameter, yet retains a core of medium hardness.

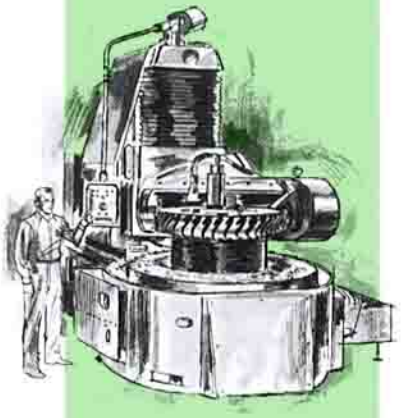


THREAD GRINDING

Cleveland worms are machined either from bar stock or forgings. After rough turning, milling and heat treating operations, both worm thread flanks are ground at the same time, thereby minimizing errors. Two grinding wheels are used; first—a rough grit type removes metal to within a few ten thousandths of the final desired dimension. A fine grit wheel is then used, giving threads the mirrored surface desirable in worm gearing. Because of the importance of this operation, specially designed precision thread grinders, are used that are constantly maintained at a high degree of accuracy.

HOBBING

Cleveland worm gears are hobbed by the "tangential feed" process on specially constructed machines designed to overcome certain shortcomings inherent in other methods, such as fly cutting and radial hobbing. The tangential feed hobbing process employs a hob made up of two elements called the "rougher" and "finisher". The roughing portion of the hob is fed radially into the gear blank first to remove metal from the gear tooth spaces. Next, the finishing portion moves tangentially through these spaces and generates the proper profile on the gear teeth. In this phase of the hobbing operation each rotation of the hob is accompanied by a slight feed movement tangential to the gear and has the effect of progressively creating a new series of cutting edges, by relocating them with respect to the gear. The gear tooth is therefore generated by an immense number of different cuts that result in an almost perfect contour in the finished tooth. This smooth tooth profile is an important factor in a gear's load carrying ability, smoothness of operation and efficiency.

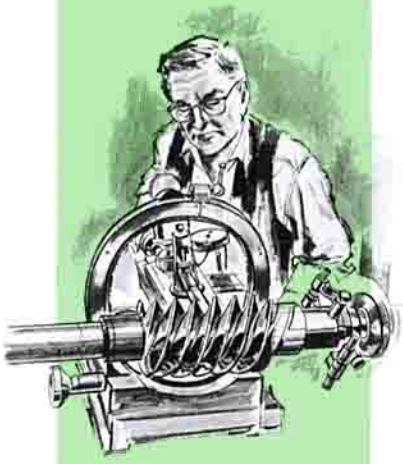


INSPECTION

Cleveland maintains an inventory of more than 1500 hobs and master worms. Master worms constitute a permanent job record, which assure an accurate duplication of every worm and gear ever manufactured by Cleveland.

Regular inspections of production worms are made in an air-conditioned inspection room. Here a production worm is checked against its corresponding master worm. Its thread contour is compared to the master's, and any deviation is recorded in tenths at specified intervals above and below the pitch line. The worm thread's lead, index and variation from uniformity are measured in tenths and recorded. This also provides a check on the thread grinder's performance. Slight deviations from perfection are recorded, and if they reoccur, it is possible to positively identify that part of the thread grinder responsible and correct it before the variation exceeds the permissible.

Special gear checking machines are employed to verify accuracy of the hobbing operation. A hobbed gear is mounted in the required dimensional relationship with a mating worm or master worm, so that contact can be verified, together with resulting backlash. All gear checking machine settings may be quickly and accurately checked by gauge bars which insure accuracy of the work and prevent deviation from standard size.



advantages and application of worm gearing

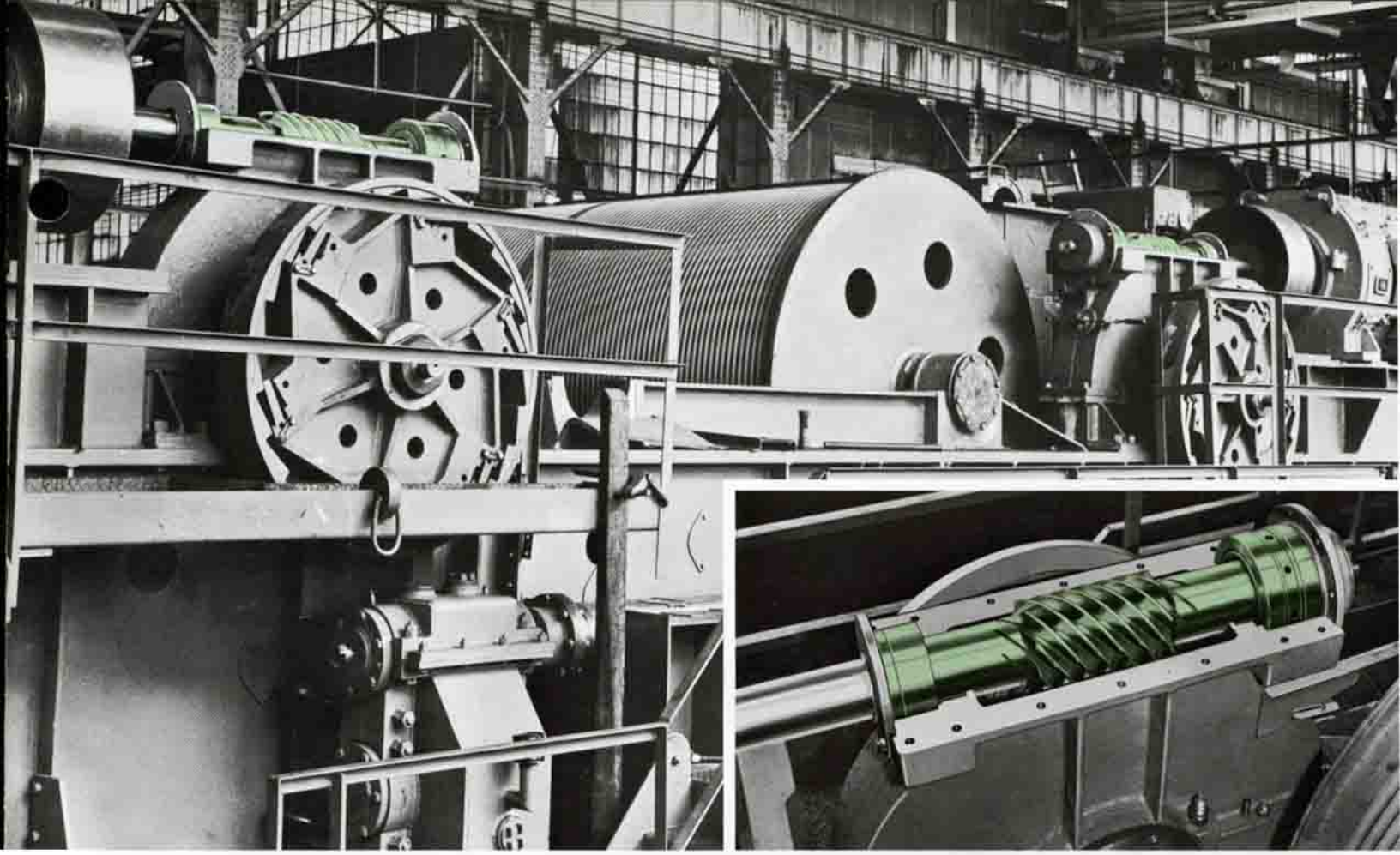
The many advantages of worm gearing, such as its reliability, compactness, and ability to withstand high momentary overloads make it particularly attractive to machine designers as a means for power transmission. Among these advantages, the following are sufficient to establish it as a superior type of drive:

1. Considering the ratio of reduction and power transmitted it is a very compact drive.
2. Its "one step" reduction feature implies a minimum number of moving parts, thereby reducing failure hazards, spare parts, and/or inventory for users and builders alike.
3. In most cases, its right-angled shaft arrangement is a space-saving advantage by virtue of placing the motor parallel to the frame of the driven machine.
4. By virtue of the predominately sliding action of the worm thread on the gear teeth the drive transmits power with a smooth, uninterrupted flow. Having constant angular velocity, it is an inherently quiet drive.
5. Rate of wear is slight, and is predominately restricted to the gear because of its softer material. The result is that the worm thread contour remains unchanged throughout the life of the drive, and the gear teeth are forced by the generating action of the worm to maintain their correct profile. The advantages of this kind of wear are twofold. One is that since the worm thread and gear tooth profiles do not change, the two items need not be replaced in sets. Secondly, the efficiency of the drive remains unchanged throughout the life of the drive; thus worm gearing "wears in" rather than "wears out".
6. The worm drive has an inherently high shock load capacity because the teeth are under a crushing load rather than a cantilevered load as in other forms of gearing. The load ratings are determined from consideration of tooth contact pressures and heat generated at the mesh, rather than from the physical strength of the teeth. Consequently, factors of safety inherent in worm gearing are much greater than those ordinarily obtainable in other forms of gearing. Even under severe overload conditions, the danger of sudden failure is remote.

These advantages are readily utilized by machinery builders in a number of ways. Machine tool builders rely heavily on worm gearing due to the large reduction ratios possible, its very low noise and vibration level characteristics, and their need for uniform angular velocity. These requirements and a need for a high degree of reliability are required by a large variety of other specialized applications such as escalator and elevator drives. Photographic film and magnetic tape processing machines, as well as multi-color printing press drives, demand the utmost uniformity in angular velocity to produce an acceptable product.

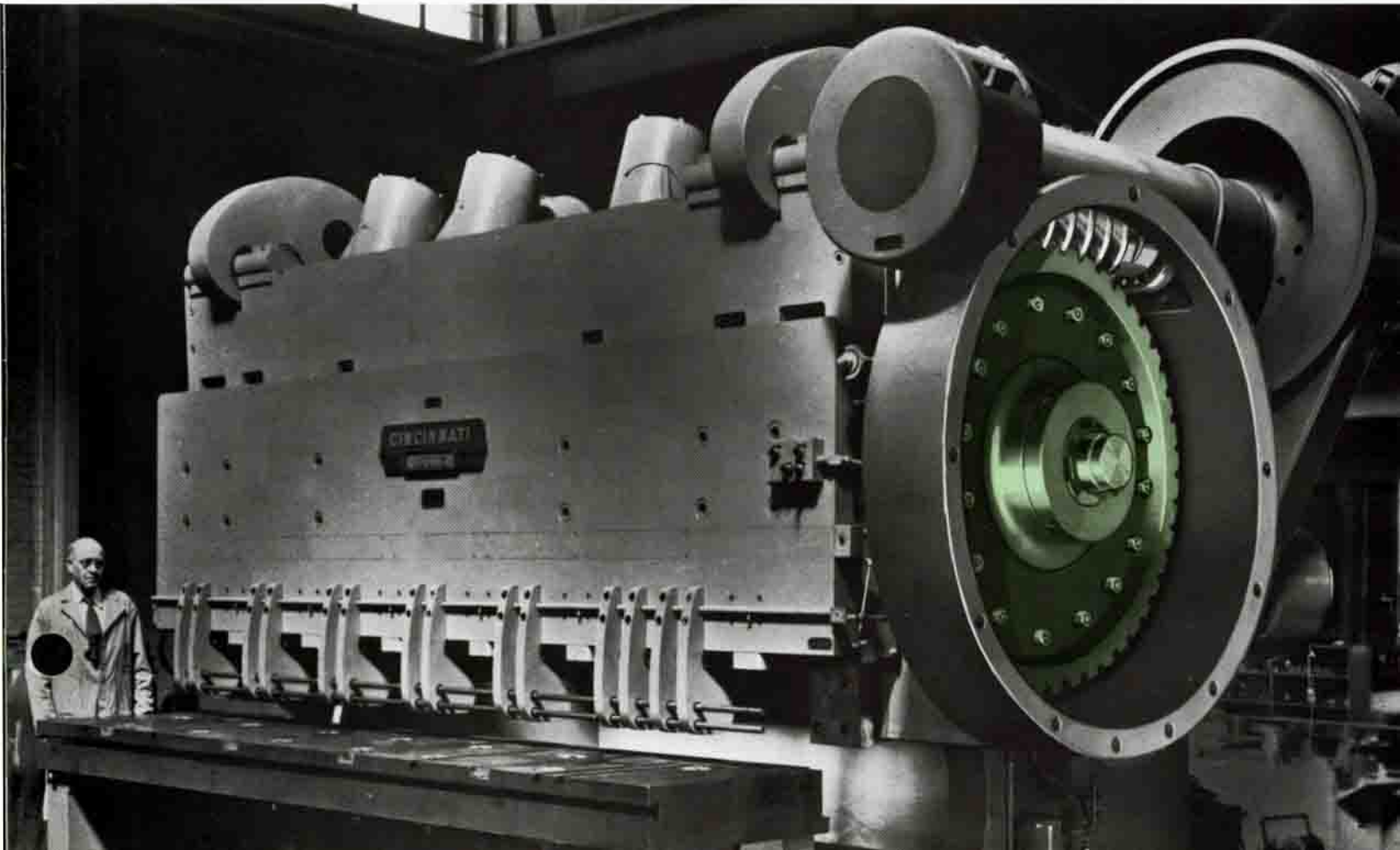
The reliability factor, as well as its ability to withstand repeated dynamic shock loading, dictates the selection of worm gearing in such equipment as power plant coal pulverizers, industrial truck axles, and overhead crane hoist and trolley drives. These same attributes of worm gearing find wide application in the primary metals industry where it is employed in a great variety of equipment such as pushers, up-enders, screwdowns, pinch rolls, furnace drives, manipulators, cooling bed transfers, wire drawing machinery, draw benches, and hot metal cars.

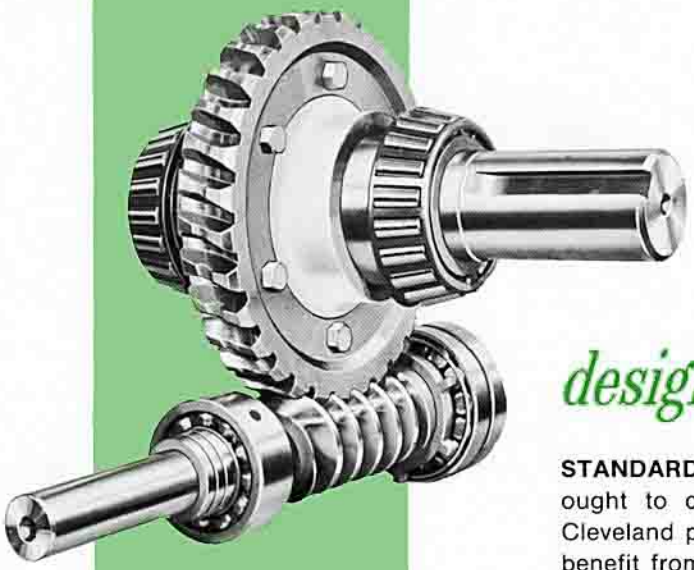
Often a right angle requirement and/or the ability to withstand a static load many times the normal running load dictates the selection of worm gearing. Marine deck machinery, anchor windlasses, and underground mining equipment, where space is at a premium, require compact gearing having these particular advantages.



30" center gearing is used for the hoist and trolley drive on this 500 ton ladle crane.

Giant Cleveland gearing drives this shear, capable of cutting steel plate 1½" thick by 12' wide.





design considerations

STANDARD PARTS—One of the first items a machinery builder ought to consider is the possibility of incorporating standard Cleveland production parts in his design. Doing so allows him to benefit from quantity production, savings on patterns and tooling. Moreover, the availability of different standard ratios, with perfectly interchangeable parts can prove to be an invaluable asset, particularly in cases where the exact speed requirements of a machine are not known ahead of time. By using standard production gearing a ratio change can be easily made, involving only replacement of the worm and gear. This benefit of ratio interchangeability within a given center distance has proved its value to wire machinery builders many times. More recently, in the rubber and plastics industry the change-over in extruder drives from working pure rubber to plastics, which require different speed characteristics, was readily accomplished.

The gear proportioning data and dimensions listed in this catalog are standard production items for complete Cleveland worm gear speed reducers. Recognizing that worm shaft extensions in particular may not be ideal for all applications, Cleveland is equipped with excellent facilities for short runs of "specials." Designers should keep in mind, however, that lowest cost parts can be produced from drawings whose dimensions do not exceed standard dimensions in any particular. This enables the part to be made in many instances from a finished worm or, at least, from a stock semifinished blank.

It should be noted that many designs are forced, for reasons beyond the designer's control, to adopt nonstandard center distances, which to a large extent preclude the use of standard items. To meet this situation, Cleveland maintains an inventory of well over 1500 hobs, and, if some latitude is allowed on ratio, a particular center distance can be accommodated; conversely, if some latitude can be permitted on center distance, almost any ratio is possible. It should also be noted that a special center distance does not necessarily preclude the use of all standard items. For example, if the required center distance happens to be 8.500", the possibility of employing a standard size 80 or size 90 worm mounting ought to be considered, requiring only a special gear design. As noted, from the standpoint of cost and delivery, it is preferable to employ standard design components where possible. Standard worms and gears are carried finished for stock ratios, and semi-finished for nonstock ratios. Cleveland has, however, excellent facilities for producing both large and small runs of special design gearing.

WORMS AND GEARS—Standard Cleveland worms are cut integral with the shaft and accurately ground to a high surface finish on both thread flanks. Shaft extension diameters are especially large to permit overhung load capacity sufficient to meet most requirements. Prior to thread grinding, the thread body is flame hardened. This method of heat treating permits a fully hardened worm thread supported by a tough core of medium hardness. Cleveland's flame hardening process also permits selective hardening of specific areas such as the shaft diameter on which the oil seal runs. The oil seals are of an improved lip type, employing a garter spring directly over the point where the synthetic rubber contacts the shaft. All standard Cleveland worms, sizes 30 through 50, are hardened at this point. Sizes 60 through 360 have an easily replaceable hardened and ground collar for the seal to run on. Particular care is taken to "plunge grind" the oil seal contact area so as to avoid leaving a minute spiral groove which would have a tendency to pump oil past the seal. The remaining areas on the worms are left soft and may be remachined as necessary to obtain maximum economy without sacrificing any of the desirable qualities built into them.

design considerations

WORMS & GEARS CON'T.

Cleveland's gear construction in the smaller sizes (30 through 60) is unique in that the bronze rim is centrifugally cast onto a ductile iron center having staggered lugs about its periphery. This approaches a one piece construction with an exceptionally strong mechanical keying between the two parts. A flanged rim in the smaller sizes is also available for bolting to the machinery builder's own center. In the larger sizes (70 through 360) a flanged rim construction is provided for bolting to either a standard Cleveland center or the builder's special center.

The choice of materials used in worm gearing is a most important consideration, particularly with respect to bronze gear rims. Worms, of course, must maintain a high surface hardness, yet have a tough ductile core to back it up. Materials and heat treatment are selected accordingly. The choice of bronze alloy for the gear rims is not so obvious and is based on three considerations—wear, heat generation, and strength. Of the three considerations, the first two are of primary importance because, presuming good design practice, the limiting factors in the rating of worm gearing, set by wear and heat generation, are reached long before the limits of strength occur. It is this fact combined with the nature of the tooth loading (i.e. predominantly crushing) that enables worm gearing to withstand such high momentary loads. The action of worm gearing is predominantly one of sliding and, as such, a gear material requires the characteristics of a good bearing bronze with a few unique features of its own.

Much research has gone into the development of a good worm gear bronze. The search has been for a bronze which, when running with a hardened steel worm, has a low coefficient of friction and a low rate of wear. Generally, the high tensile manganese and aluminum alloy bronzes yield poor frictional characteristics and for most applications are a poor choice.

A less obvious disadvantage of the high strength bronze materials is that they are much harder and do not yield sufficiently under load. The theoretical contact between a worm thread and its mating gear tooth is a line running across the width of the tooth. In practice, under load, the softer bronze material yields; thus the theoretical line contact broadens into a finite area contact which reduces the unit surface pressures. A hard gear material has this property to a much lesser degree, resulting in high unit pressures, very high localized temperatures and a susceptibility to scoring the worm threads.

Over the years two alloys have evolved as superior worm gear bronzes and have been adopted as standards by AGMA. Class A bronze is a straight copper-tin alloy, and Class B is approximately the same with the addition of a modest amount of nickel. Cleveland has adopted centrifugally cast AGMA Class A bronze as its standard.

HOUSING DESIGN—The prime prerequisite of a worm gear housing, or its mounting is rigidity. The housing must be dust and oil tight, and proper lubrication provided, to insure adequate life. If the mounting is not rigid, excessive deflections will occur and a very poor gear tooth contact will result. Good design should also provide for a means of axial gear adjustment in order to obtain the best possible gear tooth contact during assembly. (See page 10.)

Potential thermal problems are another aspect of good housing design. If the general configuration of the final housing design approximates the size of a conventional worm gear speed reducer, consideration must be given to its ability to dissipate the heat generated by the gearing under load where operation is continuous. In the majority of "built-in" drives, such considerations are unnecessary because the machine's physical size is considerably larger than a conventional speed reducer. The greater mass and exposed surface area in such cases will dissipate the modest amount of heat generated. Thermal requirements are also reduced by the application of service factors to the mechanical ratings, and are negligible where the duty cycle is intermittent.

design considerations

GEAR ADJUSTMENT—Two conditions are sought in adjusting worm gearing: First, that the gearing be set in such a way that a maximum area of contact will exist under full load, and second, that good lubricating conditions be maintained at all times. Under light loading the contact area will appear small, and should be near the "leaving side" of the gear tooth. Under full load, deflections in the gearing, bearings and housing tend to shift the contact pattern toward the "entering side". Standard Cleveland gearing is cut in a manner which anticipates these deflections and provides a good contact in spite of them. However, it is also essential that the design provide an adequate means for adjusting the gear axially so that it can be lined up properly with the worm.

Fig. 1 shows the location of the gear tooth contact that may be expected on each side of the tooth, when the set is operated under no load and the gear adjusted centrally with respect to the worm.

Fig. 2 shows the location of the gear tooth contact under full load. The no-load contact patterns tend to shift toward the entering side.

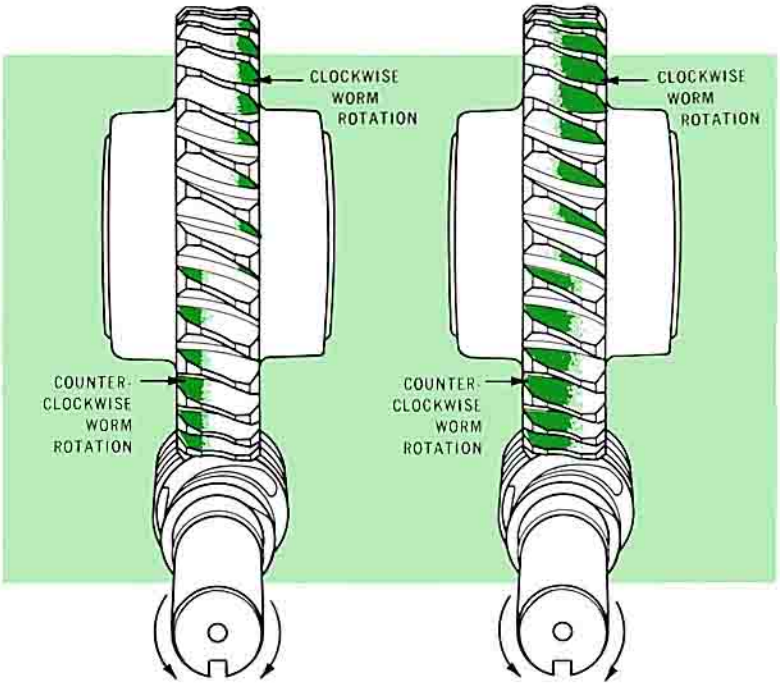


Fig. 1 Fig. 2

It is essential that the contact pattern be kept off the entering side of the gear tooth, as this would tend to scrape oil off the worm thread, thus having it pass through the mesh in a dry, unlubricated state. In determining the no-load contact pattern at assembly, Cleveland employs a paste, made by mixing powdered red lead and a small amount of lubricating oil, which is painted on the gear teeth. The worm threads are lightly coated with Prussian Blue, which transfers to the red lead on the gear teeth when the gearing is turned over by hand. To observe the tooth contact under loaded conditions, a coat of layout blue can be sprayed or painted on the gear teeth, which wears off, revealing the full load contact area.

In a standard Cleveland reducer axial gear adjustment is accomplished by means of a shim adjustment between the gear shaft bearing end caps and the housing. After the proper total shim stock has been determined for correct bearing preload, shims are transferred from one side to the other until an optimum condition of adjustment is obtained. This is perhaps the most common method used, but is by no means the only procedure available. For most applications, the following table may be used as a guide in allowing for axial gear adjustment, assuming a rigid housing construction:

Center Distance	Provision for Axial Gear Adjustment
3″ to 5″	.040″
5″ to 12″	.060″
12″ and Up	.080″

BACKLASH—It is customary to define backlash in gearing as the movement obtainable at the pitch circumference on one gear of a pair, when meshed on the correct center distance, and with the other gear locked against rotation. With worm gearing, backlash would be measured by this method by locking the worm against rotation, when meshed with the gear on exact centers, and measuring with a dial indicator the amount of shake at the gear pitch line. No attempt to measure backlash should be made until after the proper gear adjustment has been achieved. The following table gives the backlash range of standard Cleveland sets:

Size	Center Distance	Backlash		
		Minimum	Normal	Maximum
30	3.000″	.003	.005	.008
35	3.500″	.003	.005	.008
40	4.000″	.003	.005	.010
50	5.000″	.005	.007	.010
60	6.000″	.005	.007	.010
70	7.000″	.005	.008	.012
80	8.000″	.005	.008	.015
90	9.000″	.005	.008	.015
100	10.000″	.005	.010	.018
120	12.000″	.007	.012	.020
134	13.4365″	.007	.012	.020
150	15.000″	.010	.015	.020
180	18.000″	.010	.015	.020
195	19.518″	.010	.015	.020
218	21.837″	.010	.015	.020
240	24.000″	.015	.020	.025
270	27.000″	.015	.020	.030
300	30.000″	.015	.025	.035
360	36.000″	.015	.025	.040

It should be noted that in most cases backlash is not of particular importance, as few loads reverse on each revolution of the gear, and, of course, maintaining unnecessarily close backlash tolerances becomes expensive. In that regard standard Cleveland practice in gear hobbing dictates that obtaining a satisfactory gear tooth contact takes precedence over backlash considerations. There are, of course, many special drives requiring low limit backlash. Cleveland is equipped to meet these requirements in most instances, and can hob low limit backlash gearing on a special basis. Such requirements should be carefully worked out in cooperation with our local offices.

BRAKING ACTION OF WORM GEARING—Braking is required in some applications, such as inclined conveyors, where the load tends to run away with the drive. Overall efficiency of a worm gear reduction unit when acting as a speed reducer must be less than 50% to provide a self-locking drive capable of exerting positive braking action. Since the efficiency of a Cleveland worm gear unit can run as high as 95%, it cannot be depended upon to supply such braking action unassisted. Generally, ratios as high as 49 to 1 will overhaul rather freely under heavy reversing loads, and even with higher ratios, some added braking effort must be applied at the worm shaft to provide positive braking action.

design considerations

LUBRICATION—To as great, or greater extent than most machinery, worm gearing is dependent on good lubrication. A very small quantity of oil is adequate for maintaining a film between the moving surfaces, whereas a very copious amount is necessary to serve as a vehicle for transferring the heat to the cool side walls for dissipation.

The ideal worm gear lubricant is a straight mineral lubricant, of a highly refined stock, containing 5 to 10% acidless tallow and having a viscosity of 150 seconds at 210° F. The housing should be drained after 100 hours of running and oil replaced with new or carefully filtered oil if suitable filtering equipment is available. After this break-in period, oil changes twice a year are recommended.

SIZE SELECTION—Ratings published in this catalog are in accordance with American Gear Manufacturers Association standard practice for cylindrical worm gearing (AGMA 440.04), and as such are mechanical durability ratings. They presume a housing design that will limit the oil bath temperature rise to 100° F. above ambient, or a maximum bath temperature of 200° F., whichever is less. Input horsepower and output torque ratings listed are for uniform load, 10 hours per day maximum service, and must be modified by an appropriate service factor for other conditions of operation. Pages 14-15 list the various service factors applicable for different operating conditions, along with a chart classifying a wide variety of specific applications. Ratings for unlisted ratios and intermediate speeds may be safely interpolated.

AVERAGE WR^2 VALUES FOR STANDARD GEARING IN POUNDS-INCHES^2

Size	Complete worm assembly worm & bearings		Rim part number	Gear (rim only)	Complete Gear (rim & center)
	Single extended	double extended			
30	1.26	1.35	R3040AF	10.1	14.4
35	1.96	2.14	R3540AF	23.5	32.7
40	3.49	3.79	R4040AF	44.8	66.9
50	13.6	14.4	R5040AF	121	188
60	19.4	20.6	R6040AF	363	499
70	40.0	41.8	R7040AF	698	937
80	63.4	66.2	R8040AF	1340	1790
90	87.6	91.9	R9040AF	2400	3000
100	156	162	R1440CU	3620	4670
120	349	368	R1540CU	8800	12700
134	395	420	R1640CU	14800	20500
150	644	687	R1740CU	24200	34000
180	838	902	R1840CU	56900	79200
195	1060	1160	R1940CU	89200	123000
218	1610	1700	R10040CU	145000	302000
240	1990 2010		R24040AT-12 R24040AT-13	251000 315000	
270	5150 4100 4270		R27040AT-8 R27040AT-9 R27040AT-10	379000 296000 286000	
300	5770 6880		R30040AT-5 R30040AT-6	645000 545000	
360	10600 11900		R36040AT-9 R36040AT-10	1120000 1430000	

To convert to pounds-feet^2, divide by 144.

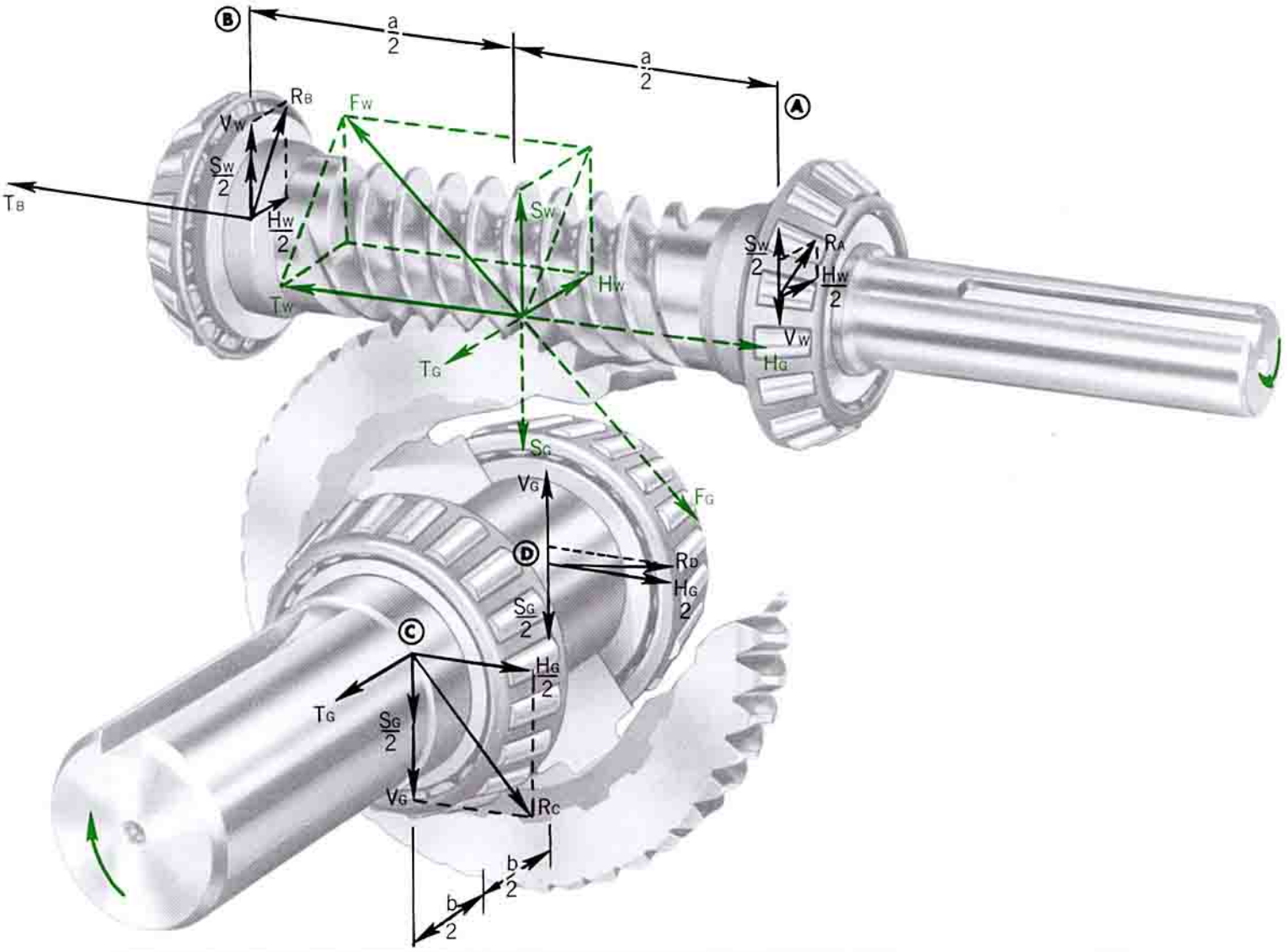
To obtain the WR^2 relative to the worm shaft, divide the WR^2 of the low speed assembly, including that of the driven mechanism, by the square of the gear ratio, and add the result to the WR^2 of the worm assembly.

* USEFUL FORMULAS

Code	Torque to Accelerate in a Given Time	Time to Accelerate with a Given Torque
T = in. lbs. WR^2 = lbs. ins.^{2} t = seconds $\triangle$ N = RPM change	$T = \frac{WR^2 \cdot \triangle N}{3{,}691t}$	$t = \frac{WR^2 \cdot \triangle N}{3{,}691T}$
T = ft. lbs. WR^2 = lbs. ft.^{2} t = seconds $\triangle$ N = RPM change	$T = \frac{WR^2 \cdot \triangle N}{307.6t}$	$t = \frac{WR^2 \cdot \triangle N}{307.6T}$

*Assuming uniform acceleration (or deceleration)

bearing load calculations



Symbols:		Symbols:		Symbols:	
W	— Worm	V	— Overturning (tipping) Force	λ	— Lead angle
G	— Gear	HP	— Input Horsepower	ø	— Normal pressure angle
F	— Normal Tooth Force	RPM	— Revolutions per minute	a	— Effective worm bearing span
T	— Thrust Force	d	— Worm pitch diameter	b	— Effective gear bearing span
H	— Tangential Force	D	— Gear pitch diameter	η	— Efficiency
S	— Separating Force			R	— Gear ratio

Gear Mesh Reaction Forces:

$$F_W = F_G = \sqrt{T^2+H^2+S^2}$$

$$T_W = \frac{126000\ HP \cdot \eta}{D \cdot RPM_G} = H_G$$

$$H_W = \frac{T_W \cdot \tan\lambda}{\eta} = T_G$$

$$S_W = \frac{(Hw \,.\, tano \,.\, n)}{Sin\lambda} = S_G$$

$$V_W = \frac{T_W \cdot d}{2a}$$

$$V_G = \frac{T_G \cdot D}{2b}$$

$$\eta = \frac{100 - R/2}{100} \text{ (approximate)}$$

Bearing Load Summation:

Worm-Bearing A-(Bearing B for reverse rotation)

Thrust = $T_A = O$

Radial = $R_A = \sqrt{\left(\frac{S_W}{2} - V_W\right)^2 + \left(\frac{H_W}{2}\right)^2}$

Bearing B-(Bearing A for reverse rotation)

Thrust = $T_B = T_W$

Radial = $R_B = \sqrt{\left(\frac{S_W}{2} + V_W\right)^2 + \left(\frac{H_W}{2}\right)^2}$

Gear-Bearing C-(Bearing D for reverse rotation

Thrust = $T_C = T_G$

Radial = $R_C = \sqrt{\left(\frac{S_G}{2} + V_G\right)^2 + \left(\frac{H_G}{2}\right)^2}$

Bearing D-(Bearing C for reverse rotation)

Thrust = $T_D = O$

Radial = $R_D = \sqrt{\left(\frac{S_G}{2} - V_G\right)^2 + \left(\frac{H_G}{2}\right)^2}$

application classifications and service factor tables

LOAD NATURE

DURATION OF SERVICE	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
PRIME MOVER — 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
PRIME MOVER — 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

APPLICATION		SUB - APPLICATION	
Agitators	Pure Liquids	Liquids and Solids Liquids, Variable Density	
Blowers	Centrifugal Vane	Lobe	
Brewing and Distilling	Bottling Machinery Brew Kettles, Continuous Duty Cookers, Continuous Duty Mash Tubs, Continuous Duty	Scale Hopper, Frequent Starts	
Can Filling Machines	Can Filling Machines		
Cane Knives		Cane Knives	
Car Dumpers			Car Dumpers
Car Pullers		Car Pullers	
Clarifiers	Clarifiers		
Classifiers		Classifiers	
Clay Working Machinery		Clay Working Machinery Pug Mill	Brick Press Briquette Machine
Compressors	Centrifugal	Lobe Reciprocating, Multi-Cylinder	Reciprocating, Single-Cylinder
Conveyors, Uniformly Loaded or Fed	Apron Assembly Belt Bucket Chain Flight Oven Screw		
Conveyors, Heavy Duty Not Uniformly Fed *Live Roll		Apron Assembly Belt Bucket Chain Flight Oven Screw	Reciprocating Shaker
Cranes *Bridge Travel *Trolley Travel	Main Hoists		
Crusher		**Sugar	Ore Stone
Dredges		Cable Reels Conveyors Maneuvering Winches Pumps Stackers Utility Winches	Cutter Head Drives Jig Drives Screen Drive
Elevators *Man Lifts *Passenger	Bucket, Uniform Load Bucket, Continuous Centrifugal Discharge Escalators Gravity Discharge	Bucket, Heavy Load Freight	
Fans Cooling Towers *Induced Draft *Forced Draft	Centrifugal Light (Small Diameter)	Induced Draft Large (Mine, Etc.) Large (Industrial)	
Feeders	Disc	Apron Screw Belt	Reciprocating
Food Industry	Cereal Cooker	Beet Slicer Meat Grinders Dough Mixer	
Generators, (Not Welding)	Generators, (Not Welding)		
Hammer Mills			Hammer Mills
Hoists		Medium Duty Skip Hoist	Heavy Duty
Laundry Washers		Reversing	
Laundry Tumblers		Laundry Tumblers	
Line Shafts	Light Other Line Shafts	Driving Processing Equipment	
Lumber Industry	Small Waste Conveyor, Belt	Barkers, Hydraulic, Mechanical Burner Conveyor Edger Feed Gang Feed Green Chain Off Bearing Rolls Planer Feed Chains Planer Floor Chains Planer Tilting Hoist Re-Saw Merry-Go-Round Conveyor Small Waste Conveyor, Chain Sorting Table	Chain Saw and Drag Saw Chain Transfer Craneway Transfer De-Barking Drum Live Rolls Log Deck Log Haul, Incline Log Haul, Well Type Log Turning Device Main Log Conveyor Roll Cases Slab Conveyor

*Refer to Factory.
**To be selected on basis of 24 hr. service only.

LOAD NATURE

DURATION OF SERVICE	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
PRIME MOVER **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
PRIME MOVER **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

APPLICATION	SUB - APPLICATION		
Lumber Industry Cont'd	Small Waste Conveyor—Belt	Tipple Hoist Conveyor Tipple Hoist Drive Transfer Conveyors Transfer Rolls Tray Drive Trimmer Feed Waste Conveyor	
Machine Tools *Notching Press, Belt Driven	Other Machine Tools, Auxiliary Drives	Bending Roll Other Machine Tools, Main Drives	Punch Press, Gear Driven Plate Planers Tapping Machine
Metal Mills *Pinch, Dryer and Scrubber Rolls, Reversing *Reversing		Draw Bench Carriage and Main Drive Slitters Table Conveyors, Non-Reversing, Group Drives Wire Drawing and Flattening Machine Wire Winding Machine	Table Conveyors, Non-Reversing, Individual Drives
Mills, Rotary Type		**Ball **Cement Kilns **Dryers and Coolers Kilns **Pebble **Rod, Plain and Wedge Bar	Tumbling Barrels
Mixers	Constant Density	Concrete Mixers, Continuous Concrete Mixers, Intermittent Variable Density	
Oil Industry *Oil Well Pumping		Chillers Paraffin Filter Press Rotary Kilns	
Paper Mills	Bleacher Conveyors Presses Suction Roll Winders	Agitators, (Mixers) Barker, Auxiliaries, Hydraulic Barker, Mechanical Beater and Pulper Calenders Converting Machine, Except Cutters, Platers Couch Cylinders Dryers Felt Stretcher Pulp Machine Reel Stock Chests Washers and Thickeners	Barking Drum Calenders, Super Cutters, Platers Felt Whipper Jordans Log Haul
***Printing Presses**			
Pullers			Barge Haul
Pumps Reciprocating *Single Acting, 1 or 2 cylinders *Double Acting, Single cylinders	Centrifugal Rotary, Gear Type Lobe, Vane	Proportioning Reciprocating Single Acting, 3 or more cylinders Double Acting, 2 or more cylinders	
Rubber and Plastic Industries *Tire Building Machines *Tire and Tube Press Openers	**Rubber Mill, (3 on line)	Laboratory Equipment **Refiners **Rubber Calenders **Rubber Mill, (2 on line) **Sheeter **Tubers and Strainers **Warming Mills	**Crackers **Mixing Mills
Sand Muller		Sand Muller	
Sewage Disposal Equipment	Bar Screens Chemical Feeders Collectors	Dewatering Screws Scum Breakers Slow or Rapid Mixers Thickeners Vacuum Filters	
Screens	Air Washing Traveling Water Intake	Rotary, Stone or Gravel	
Slab Pushers		Slab Pushers	
***Steering Gear**			
Stokers	Stokers		
Sugar Industry		**Cane Knives **Crushers	**Mills
Textile Industry *Knitting Machines *Range Drives		Batchers Calenders Cards Dry Cans Dryers Dyeing Machinery Looms Mangles Nappers Pads Slashers Soapers Spinners Tenter Frames Washers Winders	
***Windlass**			

***Refer to Factory.**
****To be selected on basis of 24 hr. service only.**

RATING TABLES
FOR UNITY SERVICE FACTOR

SIZE 30

These are durability ratings and presume a housing design that will limit the oil bath temperature rise to 100°F above ambient, or a maximum oil bath temperature of 200°F., whichever is less.

SIZE 35

3.000" CENTERS

Ratio	Hand of Thread		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
4 1/7	R	Input H. P.	9.03	7.65	6.70	6.01	5.24	3.18	2.25	1.21
		Output Torque	1229	1567	1800	1942	2085	2395	2514	2632
4 1/2	R	Input H. P.	8.70	7.39	6.46	5.78	5.04	3.05	2.16	1.16
		Output Torque	1282	1638	1877	2020	2165	2480	2599	2718
5	**R**	Input H. P.	8.37	7.10	6.19	5.51	4.79	2.88	2.03	1.09
	L	Output Torque	1369	1748	1995	2137	2286	2601	2719	2838
6	R	Input H. P.	7.47	6.30	5.48	4.87	4.23	2.54	1.79	0.96
	L	Output Torque	1456	1846	2102	2246	2397	2713	2832	2951
7	R	Input H. P.	6.99	5.86	5.07	4.51	3.90	2.33	1.64	0.88
	L	Output Torque	1580	1987	2253	2402	2553	2872	2991	3110
7 1/2	**R**	Input H. P.	6.67	5.59	4.83	4.29	3.71	2.21	1.56	0.83
		Output Torque	1612	2026	2292	2442	2593	2913	3031	3150
8	R	Input H. P.	6.37	5.34	4.62	4.10	3.55	2.12	1.49	0.80
	L	Output Torque	1633	2053	2322	2474	2626	2950	3071	3191
10	**R**	Input H. P.	5.57	4.68	4.01	3.57	3.08	1.83	1.29	0.69
	L	Output Torque	1764	2213	2483	2641	2793	3121	3242	3362
11	R	Input H. P.	5.20	4.36	3.72	3.31	2.84	1.69	1.19	0.64
		Output Torque	1801	2256	2516	2672	2820	3138	3255	3371
12 1/2	**R**	Input H. P.	4.74	3.98	3.41	3.04	2.62	1.56	1.10	0.59
	L	Output Torque	1849	2318	2593	2755	2911	3245	3368	3491
15	**R**	Input H. P.	4.15	3.50	3.00	2.67	2.30	1.38	0.98	0.53
		Output Torque	1901	2381	2658	2823	2980	3318	3442	3565
16	R	Input H. P.	3.92	3.30	2.82	2.51	2.16	1.29	0.92	0.49
	L	Output Torque	1913	2395	2665	2829	2982	3313	3434	3555
17	L	Input H. P.	3.74	3.17	2.72	2.43	2.10	1.26	0.90	0.49
		Output Torque	1916	2400	2679	2845	3003	3344	3469	3594
20	**R**	Input H. P.	3.28	2.74	2.34	2.08	1.79	1.07	0.76	0.41
	L	Output Torque	1958	2425	2683	2835	2978	3290	3402	3514
25	**R**	Input H. P.	2.76	2.36	2.03	1.82	1.58	0.96	0.69	0.38
		Output Torque	1967	2462	2741	2910	3068	3410	3534	3659
30	**R**	Input H. P.	2.38	2.05	1.76	1.59	1.38	0.85	0.61	0.34
	L	Output Torque	1970	2466	2745	2913	3070	3412	3536	3660
32	R	Input H. P.	2.27	1.94	1.68	1.51	1.31	0.80	0.58	0.32
		Output Torque	1973	2463	2734	2897	3050	3382	3502	3622
35	R	Input H. P.	2.08	1.79	1.55	1.40	1.22	0.75	0.54	0.30
		Output Torque	1953	2445	2722	2890	3047	3387	3511	3635
40	**R**	Input H. P.	1.88	1.61	1.39	1.25	1.09	0.67	0.48	0.27
	L	Output Torque	1956	2426	2686	2840	2984	3298	3412	3525
45	R	Input H. P.	1.70	1.47	1.27	1.15	1.00	0.62	0.45	0.25
		Output Torque	1924	2395	2655	2811	2956	3273	3388	3503
50	**R**	Input H. P.	1.52	1.30	1.13	1.02	0.89	0.55	0.40	0.22
		Output Torque	1894	2338	2583	2726	2861	3156	3262	3368
60	L	Input H. P.	1.26	1.07	0.93	0.83	0.72	0.45	0.32	0.18
		Output Torque	1798	2185	2396	2515	2630	2876	2964	3052

Bold face listing in hand of thread column indicates stock ratios. Stock ratios should be selected whenever possible for quickest delivery and lowest cost.

Additional ratios available: 4-1/4R, 5-1/5R 6-15L, 7-1/5R, 8-2/3R, 10-1/2R, 11-1/3R, 13-1/2R, 14R, 16-1/2R, 20-1/2L, 38R.

Output torque ratings given in inch pounds.

Refer to page 26 for worm and gear dimensions.
See page 14 for other service factors.

3.500" CENTERS

Ratio	Hand of Thread		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
*4 1/7	L	Input H. P.	12.63	10.56	9.38	8.56	7.50	4.66	3.33	1.79
		Output Torque	1725	2173	2531	2774	3001	3526	3730	3933
4 1/2	R	Input H. P.	12.22	10.27	9.08	8.24	7.21	4.45	3.17	1.70
		Output Torque	1809	2290	2654	2894	3124	3644	3845	4046
5	**R**	Input H. P.	11.70	9.88	8.69	7.84	6.84	4.20	2.98	1.60
	L	Output Torque	1920	2440	2814	3051	3284	3800	3998	4196
6	L	Input H. P.	10.61	9.01	7.89	7.07	6.16	3.74	2.65	1.42
		Output Torque	2081	2657	3047	3282	3521	4036	4232	4428
7 1/2	**R**	Input H. P.	9.28	7.88	6.88	6.13	5.34	3.22	2.28	1.22
		Output Torque	2257	2880	3287	3521	3766	4284	4479	4674
10	**R**	Input H. P.	7.75	6.55	5.70	5.07	4.41	2.65	1.88	1.01
	L	Output Torque	2478	3133	3564	3806	4056	4584	4782	4979
12	R	Input H. P.	6.81	5.73	4.97	4.42	3.83	2.30	1.63	0.87
		Output Torque	2584	3249	3677	3920	4162	4678	4869	5060
12 1/2	**R**	Input H. P.	6.61	5.57	4.85	4.32	3.75	2.26	1.60	0.86
		Output Torque	2608	3284	3730	3979	4232	4769	4968	5168
14	R	Input H. P.	6.07	5.12	4.46	3.97	3.45	2.08	1.48	0.80
		Output Torque	2660	3346	3795	4047	4302	4842	5043	5243
15	**R**	Input H. P.	5.78	4.89	4.25	3.79	3.30	1.99	1.42	0.77
	L	Output Torque	2686	3379	3829	4082	4337	4879	5080	5282
17	R	Input H. P.	5.24	4.43	3.85	3.44	2.99	1.81	1.29	0.70
	L	Output Torque	2724	3424	3871	4125	4378	4917	5116	5316
18	L	Input H. P.	4.94	4.17	3.58	3.19	2.75	1.65	1.17	0.63
		Output Torque	2731	3423	3827	4067	4296	4790	4970	5151
20	**R**	Input H. P.	4.56	3.86	3.32	2.97	2.56	1.55	1.10	0.60
	L	Output Torque	2754	3453	3863	4106	4339	4839	5023	5207
22 1/2	R	Input H. P.	4.15	3.53	3.06	2.74	2.38	1.45	1.03	0.56
		Output Torque	2778	3488	3929	4182	4432	4965	5162	5359
25	**R**	Input H. P.	3.85	3.30	2.90	2.60	2.28	1.41	1.01	0.56
	L	Output Torque	2783	3507	3985	4252	4525	5102	5318	5533
30	**R**	Input H. P.	3.30	2.83	2.48	2.23	1.95	1.21	0.87	0.48
	L	Output Torque	2795	3511	3962	4220	4475	5020	5221	5423
35	R	Input H. P.	2.84	2.43	2.09	1.88	1.63	1.00	0.72	0.40
		Output Torque	2778	3477	3870	4108	4331	4813	4988	5164
40	**R**	Input H. P.	2.56	2.21	1.91	1.73	1.51	0.93	0.67	0.37
	L	Output Torque	2757	3454	3855	4095	4322	4812	4992	5171
50	**R**	Input H. P.	2.08	1.80	1.56	1.42	1.24	0.77	0.56	0.31
		Output Torque	2660	3330	3706	3934	4147	4608	4776	4944
60	**R**	Input H. P.	1.75	1.53	1.35	1.23	1.08	0.69	0.50	0.28
	L	Output Torque	2530	3172	3552	3777	3992	4455	2625	4795

Bold face listing in hand of thread column indicates stock ratios. Stock ratios should be selected whenever possible for quickest delivery and lowest cost.

*Special ratios available at extra charge.

Additional ratios available: 5-1/5R/L, 8-1/2R, 10-1/3R, 29R.

Output torque ratings given in inch pounds.

Refer to page 28 for worm and gear dimensions.
See page 14 for other service factors.

SIZE 40

These are durability ratings and presume a housing design that will limit the oil bath temperature rise to 100°F above ambient, or a maximum oil bath temperature of 200°F., whichever is less.

SIZE 50

RATING TABLES
FOR UNITY SERVICE FACTOR

4.000″ CENTERS

Ratio	Hand of Thread		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
*3 1/8	R	Input H. P.	16.15	13.27	11.82	10.98	9.92	6.59	4.82	2.66
		Output Torque	1675	2077	2428	2712	3023	3804	4118	4450
*3 5/8	R	Input H. P.	16.08	13.19	11.83	10.95	9.87	6.42	4.67	2.56
	L	Output Torque	1929	2388	2810	3126	3473	4277	4603	4939
4 5/6	**R**	Input H. P.	16.08	13.41	11.96	10.93	9.65	6.06	4.34	2.35
	L	Output Torque	2561	3218	3765	4132	4504	5342	5675	6008
5 1/6	R	Input H. P.	15.26	12.78	11.35	10.35	9.07	5.65	4.03	2.18
	L	Output Torque	2588	3264	3798	4162	4503	5288	5592	5896
6	R	Input H. P.	14.36	12.06	10.69	9.74	8.53	5.30	3.78	2.04
	L	Output Torque	2825	3568	4146	4536	4903	5744	6069	6394
6 3/5	R	Input H. P.	13.20	11.18	9.81	8.81	7.69	4.69	3.32	1.78
	L	Output Torque	2848	3630	4172	4505	4838	5566	5844	6122
7 1/4	**R**	Input H. P.	12.88	10.86	9.60	8.70	7.61	4.71	3.35	1.81
		Output Torque	3042	3857	4462	4856	5236	6091	6420	6749
8	R	Input H. P.	12.05	10.19	8.99	8.12	7.10	4.37	3.11	1.68
	L	Output Torque	3127	3974	4584	4972	5352	6196	6520	6844
9	R	Input H. P.	11.10	9.43	8.29	7.45	6.50	3.98	2.83	1.52
		Output Torque	3230	4119	4731	5106	5482	6302	6614	6926
10	**R**	Input H. P.	10.42	8.84	7.81	7.06	6.18	3.83	2.73	1.48
	L	Output Torque	3338	4243	4893	5305	5709	6606	6949	7293
12	R	Input H. P.	9.07	7.75	6.81	6.10	5.33	3.26	2.32	1.25
	L	Output Torque	3460	4424	5065	5444	5834	6669	6985	7302
12 2/3	**R**	Input H. P.	8.72	7.46	6.55	5.87	3.13	3.14	2.23	1.21
		Output Torque	3498	4474	5121	5502	5895	6735	7053	7371
15 1/2	**R**	Input H. P.	7.47	6.37	5.58	4.99	4.36	2.66	1.89	1.03
	L	Output Torque	3609	4588	5231	5595	5977	6782	7084	7386
17 1/2	R	Input H. P.	6.82	5.86	5.18	4.66	4.09	2.54	1.82	0.99
		Output Torque	3662	4679	5362	5770	6186	7083	7423	7763
19 1/2	**R**	Input H. P.	6.23	5.37	4.73	4.25	3.73	2.31	1.65	0.91
	L	Output Torque	3681	4710	5382	5772	6178	7039	7364	7689
20 1/2	R	Input H. P.	5.97	5.15	4.55	4.08	3.59	2.23	1.60	0.88
		Output Torque	3690	4721	5395	5785	6192	7055	7381	7707
21 1/2	L	Input H. P.	5.71	4.91	4.33	3.88	3.41	2.11	1.51	0.83
		Output Torque	3710	4734	5404	5789	6192	7043	7364	7684
26	**R**	Input H. P.	4.90	4.24	3.79	3.43	3.03	1.92	1.39	0.77
		Output Torque	3701	4721	5420	5846	6275	7207	7562	7917
27	L	Input H. P.	4.70	4.07	3.63	3.29	2.91	1.85	1.33	0.74
		Output Torque	3682	4695	5392	5819	6247	7181	7537	7893
29	**R**	Input H. P.	4.50	3.91	3.49	3.15	2.78	1.76	1.27	0.71
		Output Torque	3741	4784	5476	5885	6306	7207	7548	7889
36	R	Input H. P.	3.74	3.26	2.90	2.61	2.31	1.46	1.06	0.59
		Output Torque	3731	4750	5419	5798	6198	7039	7355	7672
40	**R**	Input H. P.	3.43	3.02	2.71	2.45	2.18	1.40	1.02	0.57
	L	Output Torque	3689	4722	5399	5793	6202	7072	7401	7729
46	R	Input H. P.	3.00	2.63	2.34	2.12	1.88	1.20	0.87	0.49
		Output Torque	3642	4620	5263	5626	6005	6803	7102	7401
50	**R**	Input H. P.	2.78	2.44	2.18	1.97	1.75	1.12	0.82	0.46
	L	Output Torque	3586	4537	5163	5515	5878	6646	6933	7221
55	R	Input H. P.	2.49	2.17	1.91	1.73	1.53	0.96	0.70	0.40
		Output Torque	3505	4403	4968	5290	5610	6292	6544	6796
60	**R**	Input H. P.	2.27	1.99	1.76	1.59	1.41	0.89	0.65	0.37
	L	Output Torque	3405	4277	4824	5138	5448	6109	6354	6599

Bold face listing in hand of thread column indicates stock ratios. Stock ratios should be selected whenever possible for quickest delivery and lowest cost.
*Special ratios available at extra charge.
Additional ratios available: 4-3/7R, 4-4/7R, 5R, 5-4/5R, 8-3/4R, 25L.
Output torque ratings given in inch pounds.
Refer to page 30 for worm and gear dimensions.
See page14) for other service factdrs.

5.000″ CENTERS

Ratio	Hand of Thread		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
*3 3/8	R	Input H. P.	29.15	24.13	21.14	19.68	18.06	12.44	9.23	5.16
		Output Torque	3296	4094	4713	5278	5980	7804	8564	9393
4 1/6	R	Input H. P.	28.32	23.28	20.72	19.25	17.41	11.61	8.51	4.70
		Output Torque	3911	4851	5669	6331	7062	8916	9664	10453
4 3/7	R	Input H. P.	26.88	22.10	19.70	18.30	16.52	10.83	7.90	4.33
		Output Torque	3948	4894	5728	6402	7121	8841	9537	10260
4 5/6	**R**	Input H. P.	26.40	21.68	19.39	17.98	16.21	10.57	7.70	4.22
		Output Torque	4225	5234	6144	6850	7614	9406	10131	10882
5 1/2	R	Input H. P.	24.46	20.17	18.14	16.63	14.94	9.59	6.95	3.79
	L	Output Torque	4447	5529	6525	7186	7966	9671	10366	11069
7	R	Input H. P.	21.61	17.99	16.13	14.77	13.21	8.42	6.09	3.31
		Output Torque	4966	6225	7321	8047	8868	10665	11399	12133
7 2/5	**R**	Input H. P.	20.84	17.37	15.57	14.26	12.72	8.10	5.85	3.18
		Output Torque	5053	6340	7449	8186	9005	10805	11537	12270
8 1/2	R	Input H. P.	19.04	15.90	14.22	13.02	11.56	7.33	5.28	2.87
	L	Output Torque	5277	6628	7768	8529	9332	11122	11840	12558
10 2/3	**R**	Input H. P.	16.41	13.75	12.30	11.27	9.99	6.35	4.58	2.50
	L	Output Torque	5644	7092	8302	9112	9945	11817	12562	13307
12 2/3	**R**	Input H. P.	14.34	12.05	10.77	9.86	8.67	5.48	3.93	2.15
	L	Output Torque	5812	7313	8532	9353	10134	11926	12624	13322
14 1/3	**R**	Input H. P.	12.99	10.98	9.78	8.93	7.85	4.95	3.55	1.94
		Output Torque	5912	7468	8676	9491	10259	12017	12697	13377
17 1/2	R	Input H. P.	11.22	9.46	8.51	7.82	6.95	4.47	3.24	1.79
		Output Torque	6113	7683	8989	9864	10752	12754	13549	14343
20	**R**	Input H. P.	10.04	8.49	7.64	7.03	6.25	4.03	2.93	1.62
		Output Torque	6172	7759	9071	9952	10834	12828	13617	14405
21	R	Input H. P.	9.52	8.09	7.24	6.63	5.84	3.72	2.68	1.48
	L	Output Torque	6152	7776	9028	9869	10663	12477	13178	13879
25	**R**	Input H. P.	8.29	7.05	6.35	5.86	5.19	3.37	2.44	1.36
	L	Output Torque	6224	7830	9140	10021	10870	12813	13572	14331
30	**R**	Input H. P.	7.02	6.02	5.40	4.95	4.37	2.81	2.03	1.14
		Output Torque	6211	7869	9109	9924	10705	12467	13147	13826
34	R	Input H. P.	6.45	5.54	5.03	4.66	4.15	2.74	2.01	1.14
		Output Torque	6226	7832	9144	10027	10883	12838	13604	14370
37	R	Input H. P.	5.88	5.07	4.58	4.23	3.75	2.45	1.79	1.01
		Output Torque	6188	7821	9081	9927	10726	12551	13257	13962
40	**R**	Input H. P.	5.51	4.75	4.32	4.00	356	2.36	1.73	0.98
		Output Torque	6155	7746	9034	9903	10723	12610	13344	14077
45	R	Input H. P.	5.04	4.37	3.99	3.72	3.33	2.24	1.66	0.95
	L	Output Torque	6077	7643	8928	9792	10640	12569	13327	14085
48	**R**	Input H. P.	4.70	4.08	3.73	3.47	3.10	2.09	1.54	0.88
	L	Output Torque	6003	7552	8812	9661	10472	12332	13057	13782
56	**R**	Input H. P.	3.90	3.42	3.10	2.86	2.55	1.68	1.23	0.71
		Output Torque	5754	7306	8436	9161	9866	11441	12046	12650
64	R	Input H. P.	3.30	2.91	2.64	2.41	2.16	1.42	1.04	0.59
	L	Output Torque	5431	6922	7955	8589	9225	10613	11143	11672
70	R	Input H. P.	2.91	2.58	2.34	2.13	1.91	1.26	0.92	0.53
	L	Output Torque	5169	6594	7571	8165	8765	10059	10565	11061

Bold face listing in hand of thread column indicates stock ratios. Stock ratios should be selected whenever possible for quickest delivery and lowest cost.
*Special ratios available at extra charge. Additional ratios available: 4-5/7R, 14L, 33R.
Output torque ratings given in inch pounds.
Refer to page 32 for worm and gear dimensions.
See page 14 for other service factors.

RATING TABLES
FOR UNITY SERVICE FACTOR

SIZE 60

These are durability ratings and presume a housing design that will limit the oil bath temperature rise to 100°F above ambient, or a maximum oil bath temperature of 200°F., whichever is less.

SIZE 70

6.000″ CENTERS

Ratio	Hand of Thread		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
*3 5/8	R	Input H. P.	41.68	34.82	30.55	28.06	25.80	18.46	13.96	7.95
		Output Torque	5037	6357	7331	8101	9195	12488	13969	15575
4 3/8	R	Input H. P.	41.04	33.98	29.78	27.73	25.45	17.53	13.01	7.29
		Output Torque	5974	7465	8594	9624	10905	14231	15616	17129
4 5/6	**R**	Input H. P.	39.34	32.38	28.67	26.60	24.23	16.47	12.15	6.76
		Output Torque	6318	7849	9129	10184	11448	14739	16076	17516
5 1/3	R L	Input H. P.	37.93	31.18	27.72	25.73	23.31	15.74	11.58	6.42
		Output Torque	6710	8324	9716	10844	12120	15496	16852	18300
6 1/6	R L	Input H. P.	35.05	28.82	25.67	23.85	21.57	14.39	10.55	5.83
		Output Torque	7149	8868	10363	11574	12908	16282	17642	19077
7	R	Input H. P.	32.75	26.95	24.02	22.33	20.20	13.43	9.85	5.44
		Output Torque	7555	9370	10954	12236	13637	17124	18531	20010
7 2/5	**R**	Input H. P.	31.34	25.79	23.02	21.40	19.33	12.72	9.30	5.12
		Output Torque	7637	9469	11080	12384	13778	17121	18474	19880
8 1/4	R L	Input H. P.	29.22	24.07	21.50	20.00	18.07	11.88	8.69	4.79
		Output Torque	7906	9801	11474	12823	14260	17675	19057	20490
9	R L	Input H. P.	27.83	22.94	20.50	19.08	17.25	11.37	8.32	4.59
		Output Torque	8178	10139	11867	13264	14752	18289	19720	21206
11	**R**	Input H. P.	24.14	19.87	17.95	16.59	14.99	9.80	7.16	3.95
		Output Torque	8592	10616	12545	13909	15441	18926	20341	21791
12 2/3	**R**	Input H. P.	21.73	17.96	16.23	14.96	13.51	8.80	6.43	3.55
		Output Torque	8845	10964	12955	14304	15865	19332	20742	22176
13	R L	Input H. P.	21.45	17.70	15.98	14.81	13.40	8.82	6.47	3.59
		Output Torque	8930	11042	13022	14463	16062	19734	21225	22756
14 2/3	**R**	Input H. P.	19.42	16.12	14.58	13.43	12.13	7.92	5.80	3.20
		Output Torque	9055	11253	13282	14636	16225	19712	21132	22571
17	R L	Input H. P.	17.24	14.34	12.99	11.99	10.85	7.12	5.22	2.90
		Output Torque	9214	11443	13510	14895	16515	20079	21530	23002
20	**R**	Input H. P.	14.99	12.56	11.37	10.48	9.46	6.20	4.55	2.53
		Output Torque	9306	11627	13693	15057	16641	20093	21501	22917
20 1/2	R L	Input H. P.	14.59	12.28	11.09	10.22	9.18	5.98	4.37	2.42
		Output Torque	9287	11650	13691	15045	16554	19871	21220	22569
24 1/2	R L	Input H. P.	12.58	10.58	9.60	8.86	8.01	5.28	3.89	2.17
		Output Torque	9399	11749	13834	15211	16804	20277	21694	23118
27 1/2	R	Input H. P.	11.40	9.66	8.76	8.10	7.29	4.81	3.54	1.98
		Output Torque	9395	11788	13847	15214	16726	20054	21405	22756
30	**R**	Input H. P.	10.47	8.88	8.03	7.43	6.67	4.38	3.21	1.80
		Output Torque	9392	11792	13831	15188	16644	19876	21178	22479
32	R	Input H. P.	10.12	8.56	7.82	7.25	6.60	4.43	3.29	1.86
		Output Torque	9446	11781	13884	15271	16902	20449	21896	23354
35	R	Input H. P.	9.42	7.95	7.30	6.80	6.22	4.22	3.16	1.80
		Output Torque	9440	11709	13831	15263	16926	20608	22106	23628
40	R L	Input H. P.	8.17	6.97	6.37	5.93	5.38	3.62	2.69	1.53
		Output Torque	9306	11659	13715	15076	16623	20005	21387	22770
45	R L	Input H. P.	7.36	6.32	5.79	5.39	4.90	3.31	2.47	1.41
		Output Torque	9161	11494	13502	14835	16310	19557	20876	22194
50	R L	Input H. P.	6.68	5.73	5.28	4.93	4.51	3.09	2.32	1.34
		Output Torque	9008	11255	13254	14575	16107	19447	20810	22180
60	**R**	Input H. P.	5.37	4.65	4.26	3.99	3.61	2.46	1.84	1.06
		Output Torque	8510	10687	12529	13756	15058	17958	19122	20286
67	R	Input H. P.	4.66	4.06	3.73	3.48	3.13	2.13	1.58	0.92
		Output Torque	8020	10087	11782	12922	14039	16581	17580	18579

Bold face listing in hand of thread column indicates stock ratios. Stock ratios should be selected whenever possible for quickest delivery and lowest cost.

*Special ratios available at extra charge.

Additional ratios available: 4-2/7R, 4-4/7R, 6-3/5R.
Output torque ratings given in inch pounds.
Refer to page 34 for worm and gear dimensions.
See page 14 for other service factors.

7.000″ CENTERS

Ratio	Hand of Thread		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
*3 5/8	R L	Input H. P.	55.55	47.14	41.36	37.94	34.61	25.70	19.80	11.52
		Output Torque	6731	8632	9956	10993	12385	17449	19905	22644
*4 2/9	R	Input H. P.	59.29	49.62	43.51	39.90	36.68	26.37	19.97	11.39
		Output Torque	8356	10566	12179	13436	15252	20821	23326	26051
*4 1/3	R	Input H. P.	58.38	48.87	42.85	39.30	36.14	25.99	19.69	11.23
		Output Torque	8435	10667	12296	13564	15397	21019	23549	26300
4 4/7	R	Input H. P.	56.86	47.34	41.57	38.31	35.21	25.00	18.84	10.69
		Output Torque	8663	10894	12573	13939	15814	21308	23740	26392
4 5/6	R	Input H. P.	55.74	46.23	40.64	37.58	34.53	24.31	18.24	10.32
		Output Torque	8974	11241	12986	14446	16384	21884	24276	26900
5 1/3	R	Input H. P.	53.43	44.18	38.88	36.07	33.13	23.18	17.33	9.78
		Output Torque	9476	11830	13678	15260	17302	22936	25346	28003
5 2/3	R L	Input H. P.	51.70	42.78	37.55	34.93	32.08	22.31	16.63	9.36
		Output Torque	9735	12157	14019	15682	17775	23405	25782	28402
6 2/5	R	Input H. P.	48.06	39.73	34.97	32.44	29.78	20.45	15.16	8.48
		Output Torque	10191	12707	14686	16376	18551	24087	26372	28855
7	R	Input H. P.	45.90	37.92	33.44	31.02	28.44	19.50	14.45	8.08
		Output Torque	10629	13240	15328	17089	19324	25033	27380	29925
8 1/4	R	Input H. P.	41.54	34.31	30.37	28.20	25.80	17.69	13.11	7.34
		Output Torque	11259	14006	16253	18126	20435	26389	28822	31451
10 1/3	R	Input H. P.	35.82	29.53	26.31	24.47	22.26	15.20	11.25	6.30
		Output Torque	12066	14963	17458	19481	21814	27970	30452	33109
11	R L	Input H. P.	34.23	28.24	25.19	23.43	21.29	14.50	10.73	6.00
		Output Torque	12243	15188	17727	19786	22113	28261	30731	33368
12 2/3	R	Input H. P.	30.78	25.44	22.74	21.18	19.24	13..01	9.62	5.38
		Output Torque	12577	15601	18227	20354	22710	28730	31154	33720
15 1/2	R	Input H. P.	26.19	21.68	19.41	18.09	16.45	11.13	8.25	4.62
		Output Torque	12980	16100	18815	21013	23434	29557	32025	34630
19	R L	Input H. P.	22.18	18.42	16.54	15.45	14.08	9.55	7.10	3.99
		Output Torque	13229	16407	19182	21428	23878	29975	32435	35019
22	R	Input H. P.	19.56	16.29	14.66	13.71	12.50	8.46	6.30	3.55
		Output Torque	13319	16515	19321	21591	24032	29946	32336	34830
25	R	Input H. P.	17.40	14.49	13.13	12.25	11.16	7.49	5.56	3.13
		Output Torque	13334	16506	19411	21610	24011	29600	31866	34202
30	R	Input H. P.	14.71	12.26	11.17	10.40	9.48	6.36	4.73	2.67
		Output Torque	13349	16499	19482	21615	23999	29443	31653	33920
36	R	Input H. P.	12.79	10.77	9.77	9.19	8.45	5.87	4.43	2.55
		Output Torque	13395	16612	19427	21705	24174	30244	32695	35262
40	R	Input H. P.	11.64	9.83	8.94	8.42	7.76	5.41	4.10	2.37
		Output Torque	13281	16469	19264	21525	23965	29914	32318	34830
46	R	Input H. P.	10.10	8.55	7.82	7.37	6.79	4.71	3.57	2.06
		Output Torque	13001	16108	18897	21080	23434	28971	31214	33534
51	R	Input H. P.	8.95	7.56	6.96	6.53	6.01	4.14	3.13	1.80
		Output Torque	12702	15697	18539	20565	22833	28007	30107	32261
55	R L	Input H. P.	8.23	6.97	6.43	6.03	5.54	3.82	2.88	1.66
		Output Torque	12437	15384	18192	20121	22325	27267	29276	31325
61	R	Input H. P.	7.39	6.28	5.82	5.47	5.05	3.51	2.66	1.55
		Output Torque	12009	14843	17558	19432	21564	26362	28313	30305

Worms and gears are carried in semi-finished stock.

*Special ratios available at extra charge.

Additional ratios available: 10-1/4R/L
Output torque ratings given in inch pounds.
Refer to page 36 for worm and gear dimensions.
See page 14 for other service factors.

SIZE 80

These are durability ratings and presume a housing design that will limit the oil bath temperature rise to 100°F above ambient, or a maximum oil bath temperature of 200°F., whichever is less.

SIZE 90

RATING TABLES
FOR UNITY SERVICE FACTOR

8.000″ CENTERS

Ratio	Hand of Thread		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
*3 1/9	R	Input H. P.	73.12	62.54	55.58	50.74	45.98	34.75	27.67	16.68
		Output Torque	7628	9871	11541	12684	14208	20406	24103	28363
*3 1/2	R	Input H. P.	79.49	67.39	59.62	54.55	49.20	37.26	29.13	17.22
	L	Output Torque	9320	11953	13906	15318	17070	24550	28448	32869
*3 7/8	R	Input H. P.	80.26	68.20	59.86	54.89	49.88	37.37	28.95	16.94
	L	Output Torque	10409	13373	15459	17040	19126	27207	31220	35726
4 5/6	R	Input H. P.	74.13	62.22	54.58	49.90	45.89	33.36	25.40	14.57
		Output Torque	11961	15170	17494	19240	21846	30156	33960	38131
5 1/8	R	Input H. P.	70.96	59.28	52.00	47.77	43.91	31.41	23.75	13.52
	L	Output Torque	12133	15313	17659	19515	22148	30081	33648	37517
5 7/8	R	Input H. P.	66.45	55.17	48.49	44.82	41.18	29.06	21.82	12.36
	L	Output Torque	12995	16291	18816	20917	23725	31743	35243	39077
6 4/5	R	Input H. P.	62.92	52.28	45.97	42.49	39.06	27.62	20.77	11.79
	L	Output Torque	14198	17803	20562	22852	25920	34702	38540	42743
7 1/5	R	Input H. P.	60.91	50.64	44.54	41.18	37.87	26.81	20.18	11.46
		Output Torque	14520	18206	21028	23370	26508	35488	39412	43710
9 1/4	R	Input H. P.	51.60	42.79	37.61	35.04	32.21	22.50	16.82	9.51
		Output Torque	15695	19600	22597	25283	28657	37710	41529	45736
10 1/3	R	Input H. P.	47.75	39.61	34.84	32.44	29.82	20.64	15.38	8.66
		Output Torque	16171	20189	23282	26024	29484	38392	42086	46114
11	R	Input H. P.	45.35	37.50	33.20	30.84	28.25	19.42	14.42	8.09
		Output Torque	16320	20308	23553	26266	29632	38295	41840	45674
12 2/3	R	Input H. P.	41.35	34.41	30.24	28.28	26.03	18.21	13.65	7.74
		Output Torque	16974	21212	24393	27352	30994	40559	44558	48940
15 1/2	R	Input H. P.	35.12	29.18	25.84	24.04	22.13	15.38	11.50	6.51
		Output Torque	17498	21802	25231	28129	31822	41245	45121	49326
17	R	Input H. P.	32.31	26.75	23.92	22.29	20.29	13.98	10.32	5.80
	L	Output Torque	17566	21795	25446	28405	31731	40443	43946	47675
18	R	Input H. P.	31.21	26.07	23.04	21.54	19.89	13.99	10.53	6.01
	L	Output Torque	17787	22208	25608	28626	32432	42235	46302	50736
19 1/2	R	Input H. P.	29.16	24.33	21.59	20.14	18.60	13.05	9.82	5.61
		Output Torque	17901	22311	25805	28768	32568	42246	46232	50561
24	R	Input H. P.	24.28	20.20	18.13	16.95	15.52	10.82	8.12	4.63
	L	Output Torque	18068	22407	26145	29175	32656	41850	45553	49517
26 1/2	R	Input H. P.	22.05	18.37	16.51	15.44	14.11	9.73	7.28	4.13
		Output Torque	18061	22406	26173	29224	32616	41331	44839	48556
31	R	Input H. P.	19.44	16.29	14.61	13.70	12.65	8.97	6.80	3.92
		Output Torque	18177	22594	26253	29282	32958	42488	46371	50557
38	R	Input H. P.	16.42	13.93	12.47	11.75	10.96	7.97	6.13	3.61
		Output Torque	18033	22504	25972	29005	32859	42742	46834	51289
41	R	Input H. P.	15.18	12.79	11.58	10.90	10.09	7.24	5.53	3.23
		Output Torque	17914	22230	25904	28902	32414	41628	45356	49355
44	R	Input H. P.	14.16	11.97	10.83	10.21	9.46	6.82	5.23	3.06
		Output Torque	17759	22051	25669	28636	32159	41358	45090	49101
47	R	Input H. P.	13.17	11.12	10.10	9.52	8.81	6.33	4.85	2.84
	L	Output Torque	17568	21785	25417	28362	31759	40719	44331	48200
51	R	Input H. P.	12.11	10.26	9.34	8.82	8.16	5.85	4.48	2.63
		Output Torque	17237	21386	24971	27876	31135	39641	43061	46701
60	R	Input H. P.	10.09	8.59	7.86	7.44	6.90	4.94	3.79	2.22
		Output Torque	16386	20324	23753	26529	29582	37288	40394	43670
67	R	Input H. P.	8.79	7.51	6.89	6.53	6.07	4.38	3.37	1.99
		Output Torque	15538	19273	22524	25156	28051	35357	38302	41408

Worms and gears are carried in semi-finished stock.

*Special ratios available at extra charge.
Additional ratios available: * 4-1/4R/L, 6-2/5R, 13R/L.
Output torque ratings given in inch pounds.
Refer to page 38 for worm and gear dimensions.
See page 14 for other service factors.

9.000″ CENTERS

Ratio	Hand of Thread		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
*3 5/8	R	Input H. P.	91.73	78.57	69.93	63.92	57.85	43.71	34.91	21.13
	L	Output Torque	11148	14450	16919	18617	20827	29906	35441	41833
*4	R	Input H. P.	98.84	83.96	74.27	67.98	61.39	46.46	36.47	21.66
	L	Output Torque	13250	17027	19810	21827	24358	35020	40754	47282
4 5/6	R	Input H. P.	95.62	81.36	71.34	65.48	59.64	44.44	34.32	20.02
		Output Torque	15456	19879	22915	25321	28485	40287	46065	52528
5 1/8	R	Input H. P.	90.54	76.35	67.00	61.33	56.20	41.25	31.57	18.23
	L	Output Torque	15503	19755	22788	25108	28408	39576	44829	50636
6 2/5	R	Input H. P.	83.86	70.68	62.05	56.80	52.12	38.22	29.25	16.89
		Output Torque	17871	22745	26235	28892	32720	45477	51438	58015
7 2/5	R	Input H. P.	76.88	64.48	56.58	51.75	47.68	34.60	26.32	15.09
		Output Torque	18883	23906	27551	30295	34433	47319	53136	59485
9	R	Input H. P.	67.97	56.77	49.91	45.99	42.33	30.28	22.93	13.10
		Output Torque	20189	25423	29333	32478	36854	49810	55582	61862
10	R	Input H. P.	63.14	52.48	46.23	42.84	39.43	27.91	21.02	11.96
	L	Output Torque	20748	25973	30010	33401	37879	50524	56007	62026
11 2/3	R	Input H. P.	57.01	47.70	42.01	38.78	35.76	25.68	19.51	11.20
		Output Torque	21690	27295	31498	34897	39595	53436	59584	66280
12 2/3	R	Input H. P.	53.61	44.77	39.47	36.53	33.68	24.09	18.27	10.48
		Output Torque	22084	27722	32009	35540	40316	54107	60165	66787
15 1/2	R	Input H. P.	45.62	38.07	33.62	31.22	28.80	20.58	15.60	8.96
		Output Torque	22794	28543	32977	36694	41615	55543	61591	68228
17 1/2	R	Input H. P.	41.51	34.76	30.75	28.56	26.40	19.01	14.49	8.38
	L	Output Torque	23099	28955	33445	37180	42170	56419	62637	69449
18 1/2	R	Input H. P.	39.48	32.93	29.17	27.21	25.14	17.95	13.62	7.84
		Output Torque	23192	28946	33469	37347	42343	56104	61983	68470
20	R	Input H. P.	36.80	30.71	27.21	25.38	23.46	16.76	12.72	7.33
		Output Torque	23331	29119	33669	37572	42597	56435	62345	68867
24	R	Input H. P.	31.19	26.08	23.14	21.60	19.98	14.08	10.62	6.08
	L	Output Torque	23425	29214	33752	37650	42652	55403	60670	66396
31	R	Input H. P.	25.17	21.18	18.87	17.68	16.43	11.96	9.19	5.39
		Output Torque	23662	29542	34155	38103	43201	57281	63306	69949
35	R	Input H. P.	22.79	19.29	17.24	16.17	15.06	11.10	8.60	5.09
	L	Output Torque	23595	29507	34101	37987	43077	57331	63481	70245
40	R	Input H. P.	19.80	16.75	14.96	14.08	13.10	9.48	7.25	4.25
	L	Output Torque	23285	29062	33532	37459	42438	55220	60515	66283
44	R	Input H. P.	18.11	15.37	13.76	12.96	12.09	8.79	6.76	3.98
		Output Torque	23029	28738	33167	37040	41962	54583	59808	65498
46	R	Input H. P.	17.44	14.83	13.27	12.54	11.71	8.64	6.70	3.98
		Output Torque	22934	28644	33011	36947	41875	55059	60614	66727
51	R	Input H. P.	15.46	13.17	11.79	11.15	10.41	7.64	5.91	3.50
		Output Torque	22407	27993	32245	36086	40886	53317	58485	64127
62	R	Input H. P.	12.45	10.64	9.62	9.09	8.52	6.28	4.88	2.90
		Output Torque	21062	26238	30371	33861	38296	49621	54277	59327
65	R	Input H. P.	11.62	9.92	8.98	8.49	7.95	5.85	4.54	2.70
		Output Torque	20581	25620	29693	33110	37387	48364	52865	57736
80	R	Input H. P.	8.57	7.33	6.72	6.38	5.96	4.41	3.43	2.05
		Output Torque	17780	22055	25718	28697	32156	41258	44933	48872

Worms and gears are carried in semi-finished stock.

*Special ratios available at extra charge. Additional ratios available: 4-4/7R, 9-1/4R.
Output torque ratings given in inch pounds.
Refer to page 40 for worm and gear dimensions.
See page 14 for other service factors.

RATING TABLES
FOR UNITY SERVICE FACTOR

SIZE 100

These are durability ratings and presume a housing design that will limit the oil bath temperature rise to 100°F above ambient, or a maximum oil bath temperature of 200°F., whichever is less.

SIZE 120

10.000" CENTERS

Ratio	Hand of Thread		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
*3 5/9	R	Input H. P.	107.87	94.18	84.22	77.41	70.02	53.05	43.08	26.52
	L	Output Torque	12869	17014	20023	22161	24773	35717	42980	51658
*4	R	Input H. P.	106.05	91.62	81.89	75.11	67.82	51.41	41.42	25.29
		Output Torque	14229	18608	21886	24169	26976	38885	46455	55369
4 5/6	R	Input H. P.	117.92	100.09	88.57	81.07	73.17	55.45	43.45	25.76
	L	Output Torque	19062	24467	28466	31360	34967	50282	58369	67555
6 2/5	R	Input H. P.	104.14	88.48	77.64	71.25	64.98	48.35	37.31	21.76
	L	Output Torque	22235	28540	32911	36349	40931	57739	65914	75042
7 2/5	R	Input H. P.	95.70	80.66	70.82	64.83	59.50	43.65	33.41	19.30
		Output Torque	23566	29994	34597	38101	43148	59972	67832	76505
8	R	Input H. P.	91.54	77.15	67.76	62.03	56.97	41.79	32.00	18.43
	L	Output Torque	24317	30936	35682	39290	44508	61810	69875	78767
9	R	Input H. P.	85.32	71.84	63.12	57.78	53.15	38.93	29.78	17.21
		Output Torque	25409	32275	37222	40961	46457	64316	72564	81632
10	R	Input H. P.	77.96	65.74	57.79	52.94	48.71	35.79	27.45	15.91
	L	Output Torque	25687	32648	37654	41446	46985	65128	73538	82796
12 1/2	R	Input H. P.	67.51	56.59	49.79	45.85	42.26	30.47	23.20	13.34
	L	Output Torque	27603	34826	40164	44397	50387	68391	76475	85249
13 1/3	R	Input H. P.	64.49	54.22	47.70	43.87	40.47	29.41	22.46	12.96
		Output Torque	28008	35416	40823	45036	51123	69780	78174	87302
15	R	Input H. P.	58.70	49.22	43.38	40.04	36.95	26.67	20.33	11.72
	L	Output Torque	28533	35945	41470	45901	52086	70461	78659	87576
16 2/3	R	Input H. P.	53.85	45.12	39.81	36.83	34.01	24.51	18.68	10.78
		Output Torque	28915	36359	41965	46526	52786	71110	79220	88065
18	R	Input H. P.	50.64	42.64	37.63	34.72	32.10	23.40	17.95	10.43
	L	Output Torque	29162	36813	42450	46901	53232	72347	80943	90271
20	R	Input H. P.	46.19	38.68	34.22	31.79	29.39	21.16	16.13	9.33
	L	Output Torque	29367	36812	42520	47269	53613	71728	79633	88293
23 1/2	R	Input H. P.	40.25	33.78	29.94	27.86	25.80	18.67	14.28	8.30
	L	Output Torque	29575	37186	42955	47767	54176	72424	80374	89089
26 1/2	R	Input H. P.	36.05	30.21	26.82	25.05	23.20	16.73	12.78	7.43
		Output Torque	29752	37173	42970	47906	54319	72141	79794	88224
30 1/2	R	Input H. P.	31.74	26.66	23.70	22.15	20.54	14.90	11.42	6.67
		Output Torque	29816	37271	43078	48007	54436	72372	80093	88591
36	R	Input H. P.	27.66	23.51	20.94	19.50	18.18	13.52	10.54	6.27
	L	Output Torque	29748	37450	43212	47858	54304	73350	81824	91048
39	R	Input H. P.	25.56	21.62	19.31	18.10	16.86	12.41	9.61	5.69
	L	Output Torque	29569	36978	42735	47605	53982	71845	79553	88029
45	R	Input H. P.	22.19	18.83	16.85	15.83	14.77	10.94	8.51	5.06
		Output Torque	29072	36350	42012	46807	53077	70607	78164	86476
49	R	Input H. P.	20.23	17.20	15.41	14.48	13.53	10.05	7.83	4.67
		Output Torque	28635	35814	41389	46101	52278	69593	77068	85286
52	R	Input H. P.	18.91	16.08	14.39	13.60	12.70	9.37	7.26	4.31
		Output Torque	28147	35154	40514	45344	51393	67573	74390	81893
58	R	Input H. P.	16.79	14.32	12.85	12.16	11.38	8.46	6.59	3.94
		Output Torque	27300	34092	39312	43978	49847	65621	72280	79617
65	R	Input H. P.	14.56	12.48	11.20	10.64	9.97	7.43	5.80	3.48
		Output Torque	25930	32401	37274	41781	47347	62010	68150	74883
71	R	Input H. P.	12.71	10.87	9.83	9.29	8.71	6.42	4.99	2.97
		Output Torque	24580	30621	35445	39518	44693	57910	63345	69239
79	R	Input H. P.	10.83	9.33	8.42	8.01	7.53	5.64	4.41	2.65
	L	Output Torque	22655	28293	32610	36470	41320	53840	59039	64710
90	R	Input H. P.	8.50	7.27	6.67	6.33	5.91	4.37	3.40	2.03
		Output Torque	19880	24661	28756	32087	35955	46132	50242	54646
95	R	Input H. P.	7.72	6.63	6.09	5.79	5.41	4.02	3.13	1.88
		Output Torque	18722	23226	27079	30214	33863	43458	47333	51488

Worms and gears are carried in semi-finished stock.

*Special ratios available at extra charge.
Additional ratios available:* 4-1/8R/L, *4-1/4L, 5-1/4R, 7R, 7-3/5R, 8-2/5R, 9-1/4R, 9-1/2R, 10-3/4R, 11-1/4R, 12-1/3R, 12-2/3R, 14-1/3R, 14-2/3R, 16L, 18-1/2R, 24R.
Output torque ratings given in inch pounds.
Refer to page 42 for worm and gear dimensions.
See page 14 for other service factors.

12.000" CENTERS

Ratio	Hand of Thread		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
*3 5/9	R	Input H. P.	159.91	142.81	128.41	118.81	107.77	80.50	67.36	42.87
	L	Output Torque	19109	25882	30637	34151	38301	54502	67622	84255
*3 7/8	R	Input H. P.	159.18	140.78	126.83	117.17	106.05	79.70	66.22	41.82
	L	Output Torque	20711	27769	32931	36646	41003	58675	72262	89244
4 5/6	R	Input H. P.	174.83	150.41	134.50	123.28	111.27	84.38	67.83	41.34
	L	Output Torque	28324	36882	43390	47882	53419	76998	91783	109110
5 3/5	R	Input H. P.	164.83	140.89	125.13	114.19	103.57	78.35	62.29	37.52
		Output Torque	30906	39957	46679	51271	57466	82547	97309	114294
6 1/6	R	Input H. P.	157.22	133.92	118.55	108.50	98.16	74.32	58.66	35.06
	L	Output Torque	32454	41808	48679	53615	59938	86144	100776	117512
7 2/5	R	Input H. P.	141.99	120.45	106.62	97.60	88.07	66.82	52.30	30.99
		Output Torque	35062	44962	52309	57619	64202	92335	106964	123552
8	R	Input H. P.	136.15	115.57	102.33	93.70	84.59	64.26	50.35	29.89
	L	Output Torque	36260	46505	54103	59597	66413	95514	110683	127889
8 2/5	R	Input H. P.	130.89	111.20	98.12	89.79	81.37	61.49	47.88	28.23
		Output Torque	36594	46962	54437	59944	67039	95908	110433	126806
10	R	Input H. P.	117.17	99.78	87.81	80.52	73.32	55.16	42.85	25.22
		Output Torque	38806	49868	57615	63538	71350	101373	116237	132917
11 1/4	R	Input H. P.	107.73	91.65	80.57	74.01	67.64	50.55	39.13	22.94
	L	Output Torque	39986	51285	59148	65312	73578	103675	118272	134556
12 1/4	R	Input H. P.	101.16	86.36	75.93	69.81	63.75	47.89	37.18	21.90
		Output Torque	40734	52398	60405	66741	75097	106145	121323	138294
13 2/3	R	Input H. P.	92.98	78.68	69.24	63.51	58.37	43.21	33.28	19.41
		Output Torque	41658	53072	61220	67445	76325	106281	120353	135905
15 1/3	R	Input H. P.	85.17	72.28	63.67	58.48	53.71	40.02	30.95	18.16
	L	Output Torque	42555	54309	62655	69072	78064	109076	123784	140086
16 1/3	R	Input H. P.	80.74	68.36	60.23	55.28	50.90	37.75	29.13	17.04
		Output Torque	42865	54560	62933	69309	78486	109103	123415	139207
20	R	Input H. P.	68.41	58.33	51.52	47.43	43.61	32.87	25.61	15.19
	L	Output Torque	43814	56007	64621	71281	80466	112780	128236	145409
22 1/2	R	Input H. P.	61.83	52.62	46.52	42.82	39.53	29.68	23.09	13.68
		Output Torque	44150	56238	64872	71464	80882	112596	127482	143929
23 1/2	R	Input H. P.	59.34	50.45	44.60	41.03	37.92	28.40	22.07	13.06
	L	Output Torque	44228	56269	64903	71466	80956	112437	127114	143299
25	R	Input H. P.	56.29	47.98	42.46	39.10	36.13	27.22	21.23	12.62
		Output Torque	44363	56522	65201	71833	81285	113208	128211	144795
28 1/2	R	Input H. P.	50.01	42.58	37.73	34.76	32.21	24.23	18.90	11.23
		Output Torque	44472	56515	65181	71741	81337	112713	127245	143237
30	R	Input H. P.	47.81	40.77	36.15	33.33	30.90	23.33	18.23	10.87
		Output Torque	44505	56590	65270	71855	81431	112971	127628	143774
33 1/2	R	Input H. P.	43.18	36.77	32.64	30.11	28.01	21.09	16.47	9.82
		Output Torque	44373	56245	64859	71317	81010	111701	125701	141036
35 1/2	R	Input H. P.	40.42	34.36	30.46	28.16	26.17	19.52	15.18	8.99
		Output Torque	44141	55874	64388	70971	80571	110252	123609	138152
40	R	Input H. P.	36.79	31.69	28.25	26.16	24.29	18.74	14.85	9.04
	L	Output Torque	44031	56172	64803	71429	80751	112747	127891	144666
45	R	Input H. P.	32.75	28.19	25.17	23.32	21.75	16.76	13.28	8.08
		Output Torque	43403	55200	63668	70096	79426	110234	124569	140366
50	R	Input H. P.	29.29	25.26	22.58	20.95	19.57	15.14	12.03	7.35
	L	Output Torque	42556	54108	62407	68701	77861	108004	122007	137430
59	R	Input H. P.	24.06	20.72	18.54	17.26	16.18	12.41	9.84	5.98
		Output Torque	40450	51220	59021	65033	73833	101127	113410	126791
70	R	Input H. P.	19.28	16.63	14.95	14.00	13.16	10.08	8.02	4.90
		Output Torque	37264	47013	54220	59935	68022	92321	103231	115072
79	R	Input H. P.	15.79	13.58	12.24	11.55	10.86	8.26	6.53	3.97
		Output Torque	33825	42372	48950	54447	61752	82496	91521	101418

Worms and gears are carried in semi-finished stock.

*Special ratios available at extra charge.
Additional ratios available: *4R/L, 5-1/6R, 5-1/3R, 5-5/8R, 12R, 13R, 16-2/3R, 17-2/3R, 21R, 26R
Output torque ratings given in inch pounds.
Refer to page 44 for worm and gear dimensions.
See page 14 for other service factors.

SIZE 134

These are durability ratings and presume a housing design that will limit the oil bath temperature rise to 100° F above ambient, or a maximum oil bath temperature of 200° F., whichever is less.

SIZE 150

RATING TABLES
FOR UNITY SERVICE FACTOR

13.4365" CENTERS

Ratio	Hand of Thread		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
*3 5/9	R	Input H. P.	193.95	176.45	159.12	147.91	134.87	100.29	84.31	55.40
	L	Output Torque	23189	32018	38031	42587	48029	68082	84907	109209
*4 5/8	R	Input H. P.	202.30	178.28	160.74	148.43	134.24	101.13	83.82	52.78
	L	Output Torque	31396	41939	49768	55348	61875	88725	108974	134142
5 1/7	R	Input H. P.	213.05	186.13	166.50	153.49	138.70	105.09	85.66	52.95
		Output Torque	36759	48642	57258	63557	70977	102344	123604	149183
6 1/6	R	Input H. P.	197.31	169.39	151.07	138.32	124.96	94.62	75.83	46.06
		Output Torque	40787	52987	62175	68530	76528	110127	130896	155080
7 3/5	R	Input H. P.	176.77	150.90	133.83	122.34	110.85	83.97	66.56	39.99
		Output Torque	44897	57942	67579	74328	83202	119548	140396	164315
8	R	Input H. P.	172.13	146.97	130.37	119.19	108.01	81.87	64.92	39.03
	L	Output Torque	45965	59318	69183	76093	85177	122385	143722	168201
8 4/5	R	Input H. P.	161.84	137.71	121.91	111.67	100.96	76.64	60.35	36.02
		Output Torque	47453	61015	70992	78224	87330	125548	146285	169921
9 1/2	R	Input H. P.	152.54	130.49	115.94	105.98	96.17	73.08	58.17	35.18
	L	Output Torque	48113	62150	72550	79738	89319	128319	150997	177055
10	R	Input H. P.	150.14	127.84	113.24	103.78	93.88	71.41	56.31	33.70
		Output Torque	49828	64072	74549	82143	91709	131842	153634	178475
11 3/4	R	Input H. P.	133.38	113.28	100.43	92.02	83.12	63.40	49.72	29.60
	L	Output Torque	51769	66343	77180	85009	94675	136176	157524	181696
13 3/4	R	Input H. P.	116.80	99.70	87.64	80.57	73.57	55.23	42.87	25.23
		Output Torque	52847	67979	78368	86588	97429	137710	157402	179419
15	R	Input H. P.	109.50	93.51	82.28	75.65	69.08	52.04	40.49	23.91
	L	Output Torque	53819	69210	79818	88163	99147	140338	160547	183165
17 1/3	R	Input H. P.	97.87	83.63	73.83	67.81	61.90	47.02	36.77	21.88
		Output Torque	55122	70829	81849	90246	101326	144024	165185	188936
20	R	Input H. P.	87.25	74.57	66.15	60.75	55.29	42.51	33.48	20.14
	L	Output Torque	56113	72004	83486	91933	102768	147103	169436	194618
23 1/2	R	Input H. P.	75.81	64.97	57.66	53.00	48.44	37.34	29.47	17.80
		Output Torque	56597	72667	84137	92641	103814	148167	170362	195341
25 1/2	R	Input H. P.	69.68	59.53	52.62	48.48	44.59	33.74	26.36	15.70
		Output Torque	56580	72389	83527	92167	103974	145979	166162	188617
28 1/2	R	Input H. P.	63.03	53.72	47.54	43.78	40.44	30.47	23.76	14.12
	L	Output Torque	56652	72180	83263	91732	103803	144569	163728	184905
31 1/2	R	Input H. P.	57.55	49.23	43.61	40.22	37.13	28.19	22.08	13.21
		Output Torque	56774	72495	83639	92223	104187	145730	165489	187408
36	R	Input H. P.	51.00	43.70	38.80	35.82	33.16	25.28	19.87	11.95
	L	Output Torque	56576	72154	83239	91739	103735	144752	164134	185591
40	R	Input H. P.	46.40	40.12	35.77	33.06	30.44	23.84	19.02	11.70
	L	Output Torque	56262	72289	83550	92108	103403	147027	168664	192956
43	L	Input H. P.	43.49	37.68	33.68	31.15	28.72	22.66	18.15	11.25
		Output Torque	55858	71750	82984	91428	102582	146072	167718	192043
48	R	Input H. P.	38.63	33.60	29.99	27.85	25.75	20.28	16.24	10.05
		Output Torque	54720	70375	81145	89644	100829	142659	163159	186096
55	R	Input H. P.	32.91	28.43	25.41	23.56	21.95	17.04	13.55	8.30
		Output Torque	53074	67671	78066	86030	97297	135705	153830	173888
61	R	Input H. P.	29.24	25.42	22.78	21.18	19.72	15.53	12.45	7.72
		Output Torque	51244	65537	75619	83430	94144	132082	150276	170506
71	R	Input H. P.	23.71	20.62	18.51	17.23	16.13	12.69	10.18	6.31
		Output Torque	47310	60287	69544	76623	86695	120782	136817	154546
79	R	Input H. P.	19.84	17.20	15.46	14.40	13.54	10.58	8.48	5.23
		Output Torque	43407	55074	63513	69863	79301	109552	123433	138664
89	R	Input H. P.	16.17	14.08	12.70	11.85	11.16	8.81	7.09	4.41
		Output Torque	38845	49310	56867	62555	70991	98166	110671	124405
100	R	Input H. P.	13.02	11.39	10.31	9.65	9.12	7.27	5.89	3.70
		Output Torque	33892	43026	49621	54594	61943	85666	96588	108585

Worms and gears carried in semi-finished stock.
*Special ratios available at extra charge.
Additional ratios available: 5-5/8R, 9-1/5R/L, 10-1/2R, 14R, 15-2/3R, 21-1/2R, 47R, 70L.
Output torque ratings given in inch pounds.
Refer to page 46 for worm and gear dimensions.
See page 14 for other service factors.

15.000" CENTERS

Ratio	Hand of Thread		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
*3 5/9	R	Input H. P.	231.09	212.25	194.14	180.87	165.93	122.15	104.40	70.30
	L	Output Torque	27651	38547	46468	52165	59207	83146	105533	139103
*4 5/8	R	Input H. P.	257.79	231.89	208.22	192.88	175.25	130.78	109.70	70.27
		Output Torque	40056	54649	64605	72101	81000	115139	143189	179522
6	R	Input H. P.	245.48	214.33	191.66	176.24	159.38	120.72	98.09	60.40
	L	Output Torque	49439	65374	76937	85198	95221	137289	165315	198844
7	R	Input H. P.	229.88	198.37	177.33	162.62	146.83	111.36	89.68	54.76
		Output Torque	53921	70421	82822	91438	102043	147090	175591	209097
7 3/5	R	Input H. P.	221.47	191.39	171.15	157.01	141.83	107.67	86.83	53.13
		Output Torque	56289	73602	86569	95594	106696	153800	183726	218959
8	R	Input H. P.	215.65	186.11	166.43	152.66	137.89	104.71	84.38	51.61
		Output Torque	57661	75285	88543	97749	109083	157236	187675	223448
9 1/5	R	Input H. P.	195.81	167.19	148.32	135.60	122.89	93.16	73.88	44.43
	L	Output Torque	60114	77579	90480	99517	111397	160060	187965	219979
9 3/4	R	Input H. P.	191.93	164.99	147.31	135.00	122.07	92.80	74.56	45.54
	L	Output Torque	62247	80871	94898	104601	116805	168096	199810	236742
10 3/4	R	Input H. P.	179.66	153.68	136.54	124.80	113.25	86.04	68.47	41.40
	L	Output Torque	64150	82866	96732	106316	119090	171089	201326	236070
11 1/2	R	Input H. P.	169.42	144.28	127.80	117.13	105.96	80.61	63.57	38.05
		Output Torque	64644	83122	96715	106567	118977	171043	199314	231541
13	R	Input H. P.	156.36	133.39	118.24	108.44	98.22	74.91	59.27	35.67
		Output Torque	67096	86347	100470	110716	123683	177787	207541	241511
14 2/3	R	Input H. P.	142.66	121.85	108.09	99.20	89.93	68.75	54.53	32.95
		Output Torque	68720	88468	102947	113441	126759	182200	212852	247869
17 2/3	R	Input H. P.	121.40	103.43	91.71	84.13	76.22	58.41	45.89	27.46
		Output Torque	69909	89654	104105	114649	127827	183541	211802	243728
20	R	Input H. P.	110.39	94.58	84.10	77.28	70.22	54.07	43.11	26.31
		Output Torque	71447	92019	107123	118003	131899	189574	221675	258376
23	R	Input H. P.	95.80	82.04	72.41	66.65	60.98	46.36	36.29	21.64
	L	Output Torque	70985	91266	105311	116266	130694	185200	212014	242048
26 1/2	R	Input H. P.	85.24	73.04	64.81	59.57	54.43	41.94	33.09	19.97
		Output Torque	71825	92218	106774	117567	131745	188032	216198	247899
27 1/2	R	Input H. P.	82.38	70.64	62.68	57.63	52.72	40.63	32.07	19.37
		Output Torque	71813	92223	106724	117524	131800	187904	215907	247402
30	R	Input H. P.	75.88	65.10	57.78	53.14	48.63	37.53	29.64	17.93
		Output Torque	71958	92420	106957	117777	132079	188317	216394	247972
35	R	Input H. P.	65.86	56.71	50.37	46.47	42.66	33.04	26.17	15.91
		Output Torque	71690	92123	106441	117375	131799	187288	214771	245613
39	R	Input H. P.	60.36	52.28	46.88	43.36	39.69	31.42	25.49	16.08
		Output Torque	71522	92131	107270	118150	132079	189828	222050	258901
44	R	Input H. P.	53.40	46.10	41.37	38.26	34.98	27.76	22.39	14.01
		Output Torque	71005	91127	106020	116794	130213	187251	217295	251418
49	L	Input H. P.	47.26	40.94	36.60	33.85	31.21	24.62	19.72	12.22
		Output Torque	69183	88865	102779	113238	127052	180917	207727	237855
53	R	Input H. P.	43.35	37.64	33.67	31.18	28.79	22.78	18.28	11.36
	L	Output Torque	67939	87290	100895	111223	124854	177555	203704	233065
55	R	Input H. P.	41.31	35.93	32.07	29.78	27.56	21.70	17.38	10.76
		Output Torque	66996	86163	99349	109755	123449	174663	199762	227845
60	R	Input H. P.	37.31	32.46	29.08	26.97	24.94	19.82	15.95	9.96
		Output Torque	65328	83939	97011	106951	120069	170713	195830	224027
71	R	Input H. P.	29.51	25.82	23.14	21.55	20.03	15.95	12.86	8.05
		Output Torque	59682	76775	88511	97790	110044	155505	177717	202548
80	R	Input H. P.	24.68	21.66	19.49	18.20	16.98	13.64	11.06	6.98
	L	Output Torque	54409	69829	80525	88933	100152	141249	161229	183533
100	R	Input H. P.	16.34	14.46	13.09	12.25	11.46	9.39	7.70	4.94
		Output Torque	42950	55223	63715	70349	79085	112045	128252	146403

Worms and gears carried in semi-finished stock.
*Special ratios available at extra charge.
Output torque ratings given in inch pounds.
Refer to page 48 for worm and gear dimensions.
See page 14 for other service factors.

RATING TABLES
FOR UNITY SERVICE FACTOR

SIZE 180

These are durability ratings and presume a housing design that will limit the oil bath temperature rise to 100°F above ambient, or a maximum oil bath temperature of 200°F., whichever is less.

SIZE 195

18.000″ CENTERS

Ratio	Hand of Thread		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
*4 3/5	R	Input H. P.	352.66	324.66	294.70	275.51	252.28	186.23	158.47	106.11
	L	Output Torque	54577	76258	91222	102751	116396	163898	207050	271370
*5 5/6	R	Input H. P.	354.83	320.53	287.76	266.57	242.66	181.23	152.13	98.11
		Output Torque	69496	95223	112550	125620	141385	201071	250226	315688
7 3/5	R	Input H. P.	313.96	274.83	248.15	229.04	206.72	156.41	129.00	80.79
	L	Output Torque	80005	106119	126092	140144	156319	225039	274959	336320
8	R	Input H. P.	301.13	263.24	235.88	217.69	196.58	149.03	121.87	75.62
	L	Output Torque	80743	106919	126054	140062	156291	225378	272995	330587
9 3/4	R	Input H. P.	273.56	239.31	214.61	198.16	179.05	136.03	111.46	69.40
	L	Output Torque	88990	117847	138967	154412	172292	248454	301023	364630
11	R	Input H. P.	250.43	217.45	194.59	178.73	161.63	122.91	99.53	61.24
	L	Output Torque	91762	120501	141756	156654	174936	252182	301983	360912
12 1/4	R	Input H. P	231.66	199.30	178.07	163.27	147.60	112.35	90.38	55.30
	L	Output Torque	94264	122532	143855	158626	177059	254955	303257	359594
13 1/4	R	Input H. P.	219.14	188.82	169.01	155.09	140.17	106.95	86.26	52.98
	L	Output Torque	96149	125127	147104	162297	181040	260943	310833	369209
15	R	Input H. P.	200.66	172.75	154.43	141.66	128.21	97.87	78.85	48.43
	L	Output Torque	99329	129067	151475	166982	186441	268355	319046	378104
16 1/3	R	Input H. P.	186.64	160.22	142.81	130.69	118.69	90.57	72.59	44.38
	L	Output Torque	100284	129815	151828	166901	186905	268429	317262	373556
17 2/3	R	Input H. P.	175.82	151.17	134.94	123.63	112.25	85.80	68.98	42.38
		Output Torque	101786	131891	154399	169854	190061	272922	323250	381354
18 1/3	R	Input H. P.	170.54	146.83	131.24	120.36	109.19	83.57	67.35	41.51
	L	Output Torque	102300	132719	155540	171265	191456	275112	326436	385963
20	R	Input H. P.	158.68	137.48	123.41	113.53	102.89	79.19	64.37	40.09
		Output Torque	103162	134612	158313	174753	195002	281080	335375	399136
21 1/2	R	Input H. P.	149.33	129.06	115.77	106.47	96.55	74.47	60.42	37.64
	L	Output Torque	103828	134999	158530	174841	195118	281037	334391	396663
24 1/2	R	Input H. P.	132.67	114.49	102.53	94.18	85.59	65.96	53.37	33.20
		Output Torque	104822	135981	159353	175453	196150	281835	334382	395315
25 1/2	R	Input H. P.	128.30	110.56	98.54	90.67	82.63	63.81	51.46	31.92
		Output Torque	105006	135863	158834	174541	195533	280841	331605	390085
26 1/2	R	Input H. P.	123.84	106.66	95.30	87.41	79.71	61.63	49.64	30.75
	L	Output Torque	105115	135870	158698	174337	195373	280652	330695	388256
30	R	Input H. P.	110.36	95.20	85.16	78.17	71.32	55.28	44.65	27.79
		Output Torque	105449	136388	159395	175111	196227	281852	332552	390925
35	R	Input H. P.	95.13	81.87	73.06	67.31	61.35	47.79	38.39	23.77
		Output Torque	105057	135317	157540	173530	193976	278793	326059	380108
40	R	Input H. P.	82.08	70.61	62.70	57.79	53.02	41.01	32.45	19.70
		Output Torque	102600	131824	152366	167966	188554	268133	307616	351946
50	R	Input H. P.	67.00	58.47	52.84	48.88	44.74	35.51	29.27	18.89
		Output Torque	100974	131062	153666	169261	189146	271932	322858	382006
53	R	Input H. P.	62.77	54.60	49.13	45.43	41.70	33.18	27.11	17.30
		Output Torque	99730	128717	150136	165119	184844	265587	311956	365162
64	R	Input H. P.	50.03	43.74	39.52	36.61	33.72	27.12	22.32	14.45
		Output Torque	93300	120506	140653	154604	173163	248777	292662	343079
70	R	Input H. P.	43.80	38.25	34.52	32.05	29.50	23.78	19.53	12.60
	L	Output Torque	88890	114593	133521	146975	164396	236247	276815	323275
79	R	Input H. P.	35.61	30.99	28.01	26.03	23.93	19.38	15.81	10.10
		Output Torque	80533	103325	120210	132421	147605	212271	246176	284661
98	R	Input H. P.	24.04	21.06	19.12	17.82	16.47	13.54	11.11	7.15
		Output Torque	64228	82364	95653	105342	117421	168650	194652	224032

Worms and gears carried in semi-finished stock.
*Special ratios available at extra charge.
Additional ratios available: 7-1/16 R/L, 10R, 48 R/L.
Output torque ratings given in inch pounds.
Refer to page 50 for worm and gear dimensions
See page 14 for other service factors.

19.518″ CENTERS

Ratio	Hand of Thread		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
*6 5/6	R	Input H. P.	376.03	334.12	300.72	278.02	251.90	188.76	157.37	99.75
	L	Output Torque	86310	116280	137775	153439	171877	245297	303169	376007
8	R	Input H. P.	348.15	304.81	274.89	253.70	228.87	173.23	142.73	89.27
	L	Output Torque	93436	123964	147128	163520	182316	262626	320623	391784
8 2/5	L	Input H. P.	342.18	299.53	270.46	249.64	225.31	170.48	140.62	88.07
		Output Torque	96360	127813	151869	168794	188274	271043	331168	405073
9 1/2	R	Input H. P.	319.09	279.09	250.43	231.17	208.72	158.37	129.77	80.74
	L	Output Torque	101422	134346	158574	176204	196548	283441	343797	416970
10 1/5	L	Input H. P.	308.64	270.08	242.65	224.03	202.26	153.59	126.08	78.64
		Output Torque	105155	139332	164629	182940	203995	294190	357271	433910
10 3/4	R	Input H. P.	298.05	260.74	233.83	215.91	195.09	148.22	121.45	75.62
	L	Output Torque	106895	141558	166928	185480	206958	298444	361590	437995
11 2/5	R	Input H. P.	278.53	239.29	213.54	195.60	176.84	134.23	107.72	65.65
		Output Torque	105909	137572	161411	177892	198672	285863	339724	402419
12 1/5	R	Input H. P.	270.15	234.59	209.94	192.83	174.39	132.64	107.42	66.11
	L	Output Torque	109753	144127	169549	187369	209234	301626	361191	431675
13 1/4	R	Input H. P.	254.64	219.04	195.69	179.41	162.18	123.41	99.25	60.70
	L	Output Torque	112144	145773	171141	188714	210643	303314	360778	427800
15	R	Input H. P.	232.91	200.43	179.13	164.27	148.58	113.24	91.15	55.87
	L	Output Torque	115717	150392	176536	194637	217284	312819	372005	441002
16 1/2	R	Input H. P.	216.47	186.36	166.61	152.83	138.32	105.59	85.06	52.25
	L	Output Torque	117871	153160	179752	198153	221244	318450	378603	448686
17 2/3	R	Input H. P.	203.79	174.92	155.90	142.66	129.55	98.82	79.18	48.38
	L	Output Torque	118538	153444	179464	197280	220925	317289	375011	441551
20	R	Input H. P.	184.73	159.03	142.13	130.35	118.24	90.48	72.91	44.93
	L	Output Torque	120935	156895	183873	202462	226332	325227	385900	456271
23 1/2	R	Input H. P.	161.08	139.17	124.80	114.75	104.03	80.16	65.00	40.43
	L	Output Torque	122673	159502	187303	206574	230533	332046	395083	468658
26 1/2	R	Input H. P.	145.01	125.83	113.13	104.20	94.56	73.19	59.69	37.44
		Output Torque	123432	161004	189349	208999	233206	336146	400996	477120
29 1/2	R	Input H. P.	131.02	112.86	100.85	92.52	84.38	65.26	52.58	32.59
	L	Output Torque	123681	159868	186728	205130	229881	330223	389105	456833
30	R	Input H. P.	129.60	112.25	100.86	92.89	84.39	65.61	53.35	33.51
		Output Torque	123939	161111	189155	208582	232814	335252	398786	472895
43	R	Input H. P.	92.09	80.01	72.04	66.45	60.74	47.72	39.05	24.89
		Output Torque	122044	158231	185329	203966	228130	327560	388419	458738
53	R	Input H. P.	72.64	62.91	56.41	52.17	47.75	37.79	30.66	19.34
	L	Output Torque	117042	150766	175540	193345	216139	310642	363371	423675
59	R	Input H. P.	64.29	55.93	50.34	46.55	42.74	34.03	27.81	17.76
		Output Torque	113507	146498	170876	187929	210379	302275	355051	415607
60	R	Input H. P.	63.50	55.56	50.32	46.63	42.75	34.15	28.26	18.38
		Output Torque	112932	146601	171902	189365	211592	304241	361271	427532
70	R	Input H. P.	51.28	44.82	40.49	37.51	34.55	27.77	22.86	14.79
		Output Torque	104675	135197	157800	173452	194274	279106	328342	384905
77	R	Input H. P.	43.94	38.43	34.71	32.26	29.72	24.03	19.77	12.80
	L	Output Torque	97214	125324	146024	160738	179790	258369	302736	353546

Worms and gears carried in semi-finished stock.
*Special ratio available at extra charge.
Additional ratios available: 55R
Output torque ratings given in inch pounds.
Refer to page 52 for worm and gear dimensions
See page 14 for other service factors.

SIZE 218

These are durability ratings and presume a housing design that will limit the oil bath temperature rise to 100°F above ambient, or a maximum oil bath temperature of 200°F., whichever is less.

SIZE 240

RATING TABLES
FOR UNITY SERVICE FACTOR

21.837" CENTERS

Ratio	Hand of Thread		1750 RPM	1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
6	R	Input H. P.	498.74	458.26	415.71	388.14	355.12	262.58	223.00	148.95
	L	Output Torque	100608	140300	167706	188641	213490	301009	379388	495852
7 1/6	R	Input H. P.	465.41	423.43	381.86	354.96	323.70	240.82	202.50	133.10
	L	Output Torque	112060	154711	183756	205761	232051	328948	410230	527543
8	R	Input H. P.	440.86	399.97	360.16	334.34	304.77	227.25	191.06	124.78
	L	Output Torque	118282	162806	192996	215806	243209	345208	430146	548987
9 2/5	R	Input H. P.	401.93	362.45	325.49	301.72	274.40	205.21	172.40	110.93
	L	Output Torque	126427	172850	204264	228043	256312	364403	453266	569280
10 2/5	R	Input H. P.	380.08	343.48	308.57	286.07	260.52	195.19	164.23	106.29
	L	Output Torque	131876	180648	213481	238316	268122	381355	474547	598271
11 3/4	R	Input H. P.	350.38	311.79	280.93	259.96	235.83	177.40	148.42	94.67
	L	Output Torque	137097	184792	218933	243844	273175	389762	481890	597920
13 3/4	R	Input H. P.	313.56	279.85	252.22	233.61	212.20	159.84	134.23	86.10
	L	Output Torque	142753	192861	228398	254485	285249	406469	503393	625858
15	R	Input H. P.	293.58	259.25	234.21	216.61	196.30	148.93	124.13	78.97
		Output Torque	145548	194443	230739	256612	286880	411347	505264	622019
16	R	Input H. P.	278.67	245.82	222.23	205.53	186.27	141.61	118.02	75.12
	L	Output Torque	146962	196053	232709	258741	289164	414951	509156	626015
18	R	Input H. P.	252.64	222.39	201.29	186.22	168.74	128.79	107.29	68.35
	L	Output Torque	149141	198398	235613	261890	292438	420313	514659	631174
20	R	Input H. P.	231.76	203.81	184.64	170.89	154.55	118.55	98.79	63.03
		Output Torque	151323	200965	238735	265349	296113	425992	520968	637947
25	R	Input H. P.	190.77	167.87	152.13	140.97	127.80	98.56	92.29	52.76
	L	Output Torque	153764	203976	241977	268933	299761	431985	527093	643646
30	R	Input H. P.	161.86	142.62	129.33	120.00	108.90	84.51	70.56	45.64
	L	Output Torque	154585	205004	242948	270001	300790	433827	528705	644660
40	R	Input H. P.	122.13	107.71	97.22	89.97	82.11	64.18	53.28	34.22
		Output Torque	152773	201935	237623	262921	293840	423637	509278	611409
45	R	Input H. P.	109.65	97.12	88.61	82.53	75.30	59.33	50.34	33.19
	L	Output Torque	150939	200241	237599	264069	294379	424146	517662	632330
50	R	Input H. P.	97.78	86.65	78.87	73.53	67.18	53.16	45.03	29.69
	L	Output Torque	148193	196393	232188	258019	287660	414856	504168	612807
56	R	Input H. P.	85.78	76.13	69.46	64.81	59.26	47.09	40.06	26.58
		Output Torque	144038	190949	226014	251170	279920	403710	491292	598075
60	R	Input H. P.	79.30	70.49	64.39	60.16	55.10	44.01	37.54	25.05
	L	Output Torque	140665	186449	220566	245109	273214	394031	479202	582932
66	R	Input H. P.	70.00	62.34	57.09	53.41	48.99	39.34	33.72	22.67
	L	Output Torque	134516	178342	211157	234661	261497	377143	459127	559144
71	R	Input H. P.	62.47	55.62	50.69	47.43	43.59	35.00	29.82	19.93
	L	Output Torque	129135	170959	201387	223759	249753	360144	435802	527146
74	R	Input H. P.	58.32	51.97	47.34	44.25	40.71	32.73	27.85	18.60
		Output Torque	125133	165560	194880	216220	241501	348218	420319	506970
79	R	Input H. P.	52.70	47.05	42.94	40.15	37.02	29.93	25.53	17.14
		Output Torque	118762	157096	184904	204998	229024	330220	398218	479796
90	R	Input H. P.	41.55	36.80	33.61	31.34	28.85	23.50	19.81	13.23
		Output Torque	105339	137604	161839	178682	199411	287440	343180	408726
100	R	Input H. P.	34.21	30.70	28.22	26.56	24.58	20.19	17.49	12.00
	L	Output Torque	92748	122807	144747	160831	179482	258818	313402	379383

Worms and gears carried in semi-finished stock.
Output torque ratings given in inch pounds.
Refer to page 54 for worm and gear dimensions
See page 14 for other service factors.

24.000" CENTERS

Ratio	Hand of Thread		1150 RPM	870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
8	R	Input H. P.	468.68	422.67	392.88	358.29	266.54	224.13	147.32
	L	Output Torque	191150	227038	254226	286707	406428	506854	651798
8 1/6	R	Input H. P.	461.52	416.25	386.94	352.90	262.60	220.86	145.24
	L	Output Torque	192032	228085	255399	288030	408303	509193	654805
9	R	Input H. P.	442.38	398.36	369.81	337.12	251.39	211.38	138.06
	L	Output Torque	202533	240088	268465	302554	429442	535106	682944
10 3/5	R	Input H. P.	397.92	357.37	331.27	301.30	225.35	189.35	121.91
	L	Output Torque	213921	252799	282228	317214	450988	560965	704545
11 3/5	R	Input H. P.	379.75	341.15	316.28	288.02	215.79	181.55	117.49
	L	Output Torque	222793	263286	293916	330675	470325	585259	737847
13 1/4	R	Input H. P.	340.67	306.96	284.06	257.71	193.89	162.24	103.50
	L	Output Torque	227590	269638	300319	336444	480033	593497	736401
15 1/4	R	Input H. P.	308.70	278.21	257.68	234.05	176.27	148.01	94.92
	L	Output Torque	236045	279538	311466	349119	497481	616107	765993
16 3/4	R	Input H. P.	283.40	256.03	236.73	214.59	162.80	135.69	86.32
		Output Torque	237360	281667	313250	350200	502138	616784	759309
18	R	Input H. P.	265.96	240.55	222.41	201.42	153.35	127.54	81.00
	L	Output Torque	238644	283498	315006	351777	505543	619110	759406
20 1/3	R	Input H. P.	239.78	217.04	200.80	181.97	138.92	115.76	73.77
	L	Output Torque	241470	286765	318746	355927	511564	626393	768202
22 1/3	R	Input H. P.	221.73	200.87	185.91	168.46	128.96	107.47	68.56
		Output Torque	244142	290027	322359	359732	517517	632898	775009
27	R	Input H. P.	187.19	169.31	156.86	142.11	109.54	91.21	58.26
		Output Torque	246393	291840	324330	361377	521201	634781	773388
28	R	Input H. P.	181.51	164.49	152.44	138.20	106.58	88.99	57.06
	L	Output Torque	246969	292981	325617	362943	523037	638192	779312
33 1/2	R	Input H. P.	154.14	139.77	129.69	117.70	91.33	76.47	49.32
	L	Output Torque	247416	293210	325860	363019	523579	638086	778030
45	R	Input H. P.	113.91	102.83	95.16	86.86	67.91	56.40	36.23
		Output Torque	240026	282445	312515	349267	503547	605342	726738
50	R	Input H. P.	103.58	94.64	88.14	80.45	63.34	53.78	35.49
	L	Output Torque	237377	282080	313512	349627	503473	614924	751804
56	R	Input H. P.	90.95	82.79	77.18	70.52	55.81	47.28	31.18
	L	Output Torque	230791	272857	303212	338044	487519	592474	720142
63	R	Input H. P.	78.36	71.51	66.73	61.02	48.50	41.26	27.39
		Output Torque	220885	261448	290547	323805	467002	568315	691839
67	R	Input H. P.	72.40	66.14	61.79	56.60	45.20	38.56	25.73
	L	Output Torque	213873	253009	281162	313401	451989	549688	668675
74	R	Input H. P.	62.61	57.34	53.64	49.21	39.52	33.88	22.78
	L	Output Torque	200693	237620	264070	294269	424408	516666	629217
89	R	Input H. P.	45.20	41.26	38.58	35.58	28.78	24.56	16.50
		Output Torque	169698	199736	221442	247396	356710	430163	518285

Output torque ratings given in inch pounds.
Refer to page 56 for worm and gear dimensions
See page 14 for other service factors.

RATING TABLES
FOR UNITY SERVICE FACTOR

SIZE 270

These are durability ratings and presume a housing design that will limit the oil bath temperature rise to 100°F above ambient, or a maximum oil bath temperature of 200°F., whichever is less.

27.000" CENTERS

Ratio	Hand of Thread		870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
7 5/8	R	Input H. P.	573.35	533.31	489.92	363.06	309.11	212.17
	L	Output Torque	294032	329624	374566	529457	669089	898883
9 5/6	R/L	Input H. P.	487.74	453.76	417.71	310.57	264.57	183.07
		Output Torque	320397	359086	408579	578020	729416	984186
10 4/5	R	Input H. P.	458.42	428.03	391.63	290.50	246.83	165.18
		Output Torque	330808	371904	420647	593569	747061	974698
11 4/5	R	Input H. P.	431.62	402.62	367.92	273.72	232.03	154.85
		Output Torque	339490	381199	430499	608715	763663	992434
12 1/5	R	Input H. P.	428.43	399.92	367.14	271.77	232.81	157.70
		Output Torque	347420	390364	442830	622324	788890	1038265
13 1/2	R	Input H. P.	395.17	369.09	337.85	251.48	213.97	143.67
	L	Output Torque	353654	397453	449380	634436	797783	1039738
15	R	Input H. P.	368.50	344.00	316.20	234.74	201.76	137.53
		Output Torque	364043	408783	463892	651596	826725	1089215
19	R	Input H. P.	298.00	278.42	256.27	191.15	164.91	113.27
	L	Output Torque	367983	413125	468873	658489	835701	1101406
24	R	Input H. P.	244.92	228.42	209.18	158.11	134.55	90.42
		Output Torque	378265	423526	477617	677111	844377	1085323
30	R	Input H. P.	185.98	173.96	160.63	122.04	106.07	75.26
		Output Torque	349224	391611	444346	627493	794269	1061795
37 1/2	R	Input H. P.	162.06	151.18	138.78	106.35	91.20	61.57
		Output Torque	378088	422525	476034	676046	842086	1071272
45	R	Input H. P.	136.28	127.71	117.60	90.64	78.28	54.09
		Output Torque	372468	417141	470477	666832	831687	1070486
52	R	Input H. F.	117.26	110.58	102.36	79.13	69.39	49.32
		Output Torque	360388	405304	458604	646780	814808	1064327
62	R	Input H. P.	95.69	90.22	83.51	65.25	57.20	40.66
		Output Torque	342656	384467	434029	614124	768933	996855
68	R	Input H. P.	84.84	80.00	74.12	58.21	51.09	36.40
		Output Torque	328356	368145	415446	588237	735053	950580

Output torque ratings given in inch pounds.
Refer to page 58 for worm and gear dimensions
See page 14 for other service factors.
Additional ratios available, 6⅛R, 5⅔R-L.

30.000" CENTERS

Ratio	Hand of Thread		870 RPM	720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
8 5/8	R	Input H. P.	643.59	598.65	549.94	407.54	346.98	238.16
	L	Output Torque	373340	418532	475596	672265	849560	1141334
11 1/6	R/L	Input H. P.	568.46	528.85	486.85	362.00	308.37	213.41
		Output Torque	424055	475259	540783	765067	965417	1302769
12 2/5	R	Input H. P.	516.85	481.63	442.05	326.69	280.15	190.31
		Output Torque	427426	479610	544145	764424	971035	1284089
13 1/5	R	Input H. P.	501.14	466.80	428.34	318.45	272.62	187.11
		Output Torque	439739	493174	559235	789416	999917	1333906
13 4/5	R	Input H. P.	476.64	444.92	408.45	302.34	259.00	175.43
		Output Torque	437222	491266	557293	783184	992804	1306639
14 2/5	R	Input H. P.	461.10	430.83	395.39	293.03	250.85	169.80
		Output Torque	440702	495592	561930	790227	1000561	131494
15 1/4	R	Input H. P.	437.75	408.86	374.25	278.57	237.02	159.13
	L	Output Torque	442582	497394	562378	793968	998390	1301186
17	R	Input H. P.	407.05	380.01	349.28	259.31	222.87	151.91
		Output Torque	455753	511779	580763	815777	1034988	1363534
21 2/3	R	Input H. P.	332.63	310.79	286.06	213.40	184.13	126.50
	L	Output Torque	468221	525660	596593	837860	1063344	1401427
27	R	Input H. P.	269.25	251.10	229.95	173.78	147.87	99.35
		Output Torque	468013	524012	590936	837762	1044714	1342827
34	R	Input H. P.	221.74	207.79	191.77	144.73	125.82	87.78
		Output Torque	474374	532819	604555	849361	1077231	1418608
42 1/2	R	Input H. P.	174.38	162.67	149.33	114.45	98.15	66.27
		Output Torque	460965	515141	580380	824234	1026670	1306093
51	R	Input H. P.	145.12	135.99	125.23	96.52	83.37	57.61
		Output Torque	449414	503316	567669	804589	1003500	1291631
59	R	Input H. P.	124.22	117.15	108.44	83.84	73.53	52.26
		Output Torque	433136	487119	551179	777339	979286	1279172
70	R	Input H. P.	98.53	92.90	85.99	67.17	58.88	41.84
		Output Torque	398576	447211	504860	714346	894419	1159537
77	R	Input H. P.	84.50	79.68	73.82	57.97	50.88	36.25
		Output Torque	370324	415194	468537	663416	828966	1071981

Output torque ratings given in inch pounds.
Refer to page 60 for worm and gear dimensions
See page 14 for other service factors.
Additional ratios available, 7½R, 6⅛R & L.

SIZE 360

These are durability ratings and presume a housing design that will limit the oil bath temperature rise to 100°F above ambient, or a maximum oil bath temperature of 200°F., whichever is less.

36.000" CENTERS

Ratio	Hand of Thread		720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
10 5/8	R	Input H. P.	725.26	666.24	493.73	420.36	288.52
	L	Output Torque	624629	709793	1003307	1267907	1703359
13 5/6	R/L	Input H. P.	608.44	560.10	416.46	354.78	245.51
		Output Torque	677289	770640	1090230	1375784	1856318
15 1/5	R	Input H. P.	557.55	513.46	382.26	325.93	226.01
		Output Torque	679591	773311	1094055	1380511	1863104
16 1/5	R	Input H. P.	547.07	501.98	373.15	319.42	219.19
		Output Torque	709581	804629	1135815	1438685	1919228
17	R	Input H. P.	527.53	484.29	358.47	307.08	207.98
		Output Torque	717610	814058	1144024	1450223	1908653
21	R	Input H. P.	447.10	410.96	305.09	262.23	178.75
		Output Torque	743801	844074	1185611	1504266	1981879
26 2/3	R	Input H. P.	357.67	329.21	245.56	211.86	145 53
		Output Torque	744769	845269	1187102	1506574	1985579

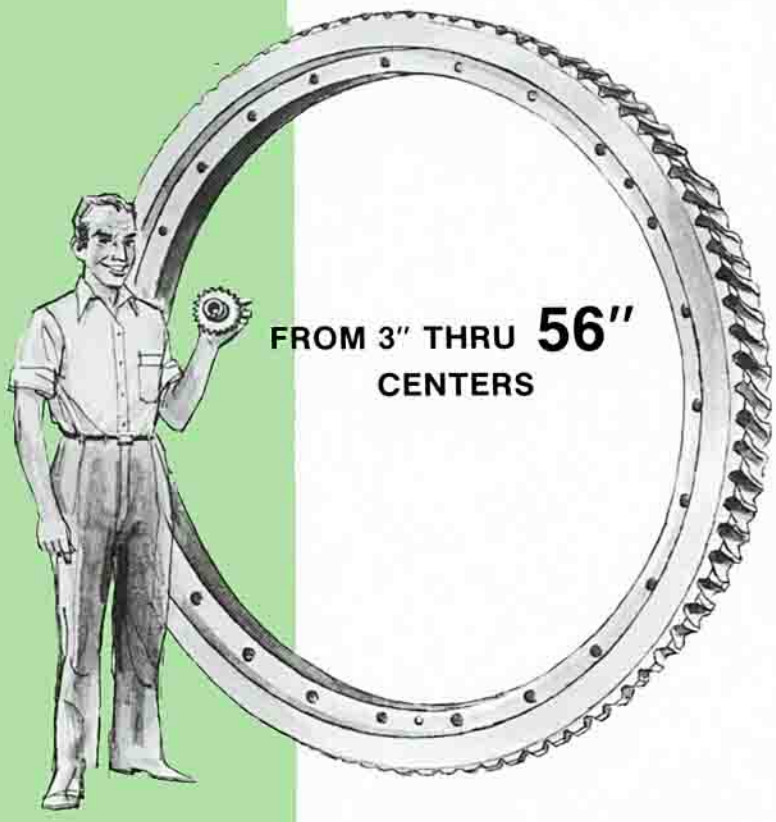
Output torque ratings given in inch pounds.
Refer to page 62 for worm and gear dimensions.
See page 14 for other service factors.
Additional ratios available, 9¼R, 7⅔R-L.

36.000" CENTERS

Ratio	Hand of Thread		720 RPM	580 RPM	300 RPM	200 RPM	100 RPM
33 1/3	R	Input H. P.	290.17	265.73	200.84	170.90	114.83
		Output Torque	747458	842920	1194997	1490197	1915429
42	R	Input H. P.	230.15	212.41	160.30	139.34	97.22
		Output Torque	729105	827268	1162257	1474074	1941211
52	R	Input H. P.	182.79	167.79	128.56	110.24	74.71
		Output Torque	708729	798484	1133978	1412489	1796917
63	R	Input H. P.	147.09	135.46	104.41	90.19	62.33
		Output Torque	672307	758268	1074735	1340432	1725305
73	R	Input H. P.	120.76	111.78	86.43	75.80	53.88
		Output Torque	621124	702805	991182	1248684	1631068
86	R	Input H. P.	91.48	84.67	66.12	57.95	41.17
		Output Torque	541474	611275	864917	1082946	1403946
95	R	Input H. P.	75.45	69.90	54.90	48.18	34.33
		Output Torque	485039	547359	775014	968447	1252408

specialized CLEVELAND® *drives...*

FOR CUSTOM DESIGN REQUIREMENTS



FROM 3" THRU 56" CENTERS

Cleveland has the production facilities to manufacture special worm gearing and gearing on special centers within the size range of this catalog and up to 56" center distances.

Should you need a special housing, our experience and engineering facilities are also at your disposal.

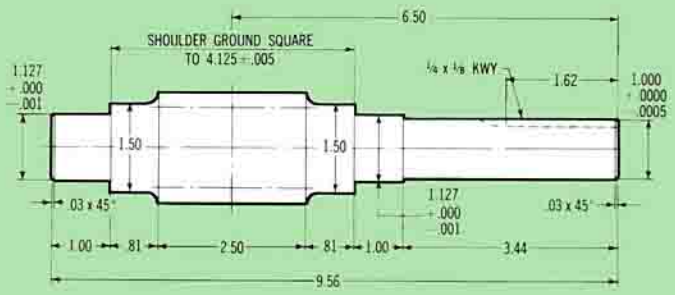
In either case, a call to us or our representative could answer your problem.

SIZE 30

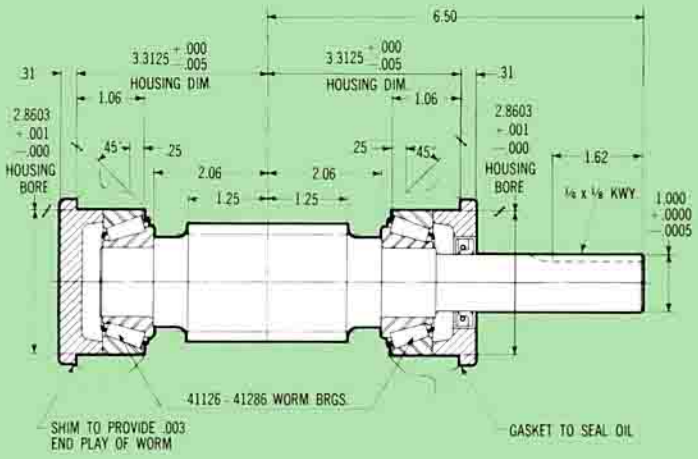
Dimensions subject to change. Use certified prints only for construction.

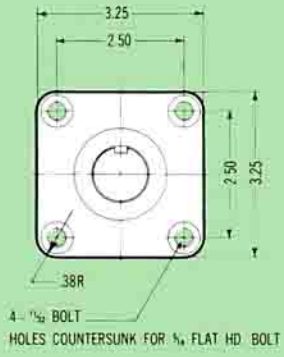
Dimensions in Inches

Worm — Series 25 (Single Extended)
Part No. 3003 AF



Worm Mounting — Series 25, Type AF
Assembly Part No. 3030 AF





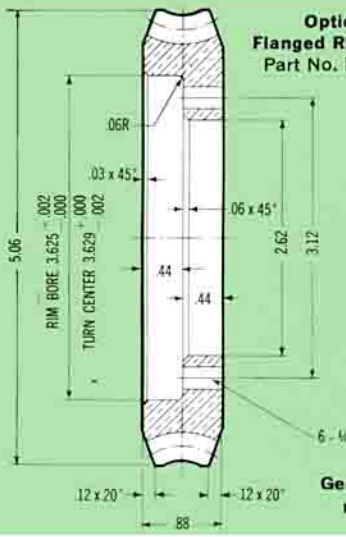
End plate view

WORMS — 3.000″ CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
4 1/7	R	1.311	1.579	.999	25°	40°48′	7
4 1/4	R	1.333	1.565	1.063	25°	39°29′	8
4 1/2	R	1.3125	1.604	.988	27½°	38°26′	6
5	**R**	1.3125	1.618	.938	25°	35°33′	5
5	L	1.3125	1.618	.938	25°	35°33′	5
5 1/5	R	1.209	1.618	.938	25°	35°33′	5
6	R	1.350	1.658	.962	26°	29°52′	5
6	L	1.350	1.658	.962	26°	29°52′	5
6 1/5	R	1.195	1.658	.962	26°	29°52′	5
7	R	1.321	1.651	.931	26½°	26°50′	4
7	L	1.321	1.651	.931	25½°	26°50′	4
7 1/5	R	1.273	1.535	.969	25°	27°17′	5
7 1/2	**R**	1.321	1.600	.928	25°	25°17′	4
7 1/2	L	1.321	1.600	.928	25°	25°17′	4
8	R	1.009	1.600	.928	25°	25°17′	4
8	L	1.009	1.600	.928	25°	25°17′	4
8 2/3	R	1.310	1.672	.892	25°	22°27′	3
10	**R**	1.3125	1.625	.963	26°	19°39′	3
10	L	1.3125	1.625	.962	25°	19°39′	3
10 1/2	R	1.254	1.480	.992	25°	19°49′	4
11	R	1.273	1.563	.923	26°	18°39′	3
11 1/3	R	1.130	1.563	.923	26°	18°39′	3
12 1/2	**R**	1.314	1.686	.882	20°	15°56′	2
12 1/2	L	1.314	1.686	.882	20°	15°56′	2
13 1/2	R	1.488	1.655	.935	20°	14°12′	2
14	R	1.321	1.655	.935	20°	14°12′	2
15	**R**	1.3125	1.625	.961	25°	13°24′	2
16	R	1.289	1.583	.957	20°	12°52′	2
16	L	1.289	1.583	.957	20°	12°52′	2
16 1/2	R	1.320	1.606	.974	26°	12°15′	2
17	L	1.216	1.600	.980	25½°	12°2′	2
20	**R**	1.225	1.463	.949	20°	11°2′	2
20	L	1.225	1.463	.949	20°	11°2′	2
20 1/2	L	1.215	1.449	.945	20°	10°53′	2
25	**R**	1.3125	1.659	.879	25°	8°8′	1
30	**R**	1.3125	1.625	.971	25°	6°47′	1
30	L	1.3125	1.625	.971	25°	6°47′	1
32	R	1.225	1.592	.948	27°	6°37′	1
35	R	1.321	1.589	1.011	20°	5°47′	1
38	R	1.275	1.500	.940	25°	5°41′	1
40	**R**	1.026	1.500	.940	25°	5°41′	1
40	L	1.026	1.500	.940	20°	5°41′	1
45	R	1.273	1.483	.997	25°	4°43′	1
50	**R**	1.225	1.415	.975	20°	4°28′	1
60	**R**	1.125	1.276	.930	27°	4°8′	1
60	L	1.066	1.394	.986	25°	3°50′	1

Bold face listings in hand of thread column indicate stock ratios.
Stock ratios should be selected whenever possible for quickest delivery and lowest cost.
Refer to Page 16 for Horsepower Rating Tables.

Optional Flanged Rim Blank
Part No. R3040 AF



Gear center & bolts not furnished

Bolt holes in rims are jig drilled 1/64″ under bolt hole size dimension shown—ream at assembly for body bound bolts.

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

Dimensions in Inches

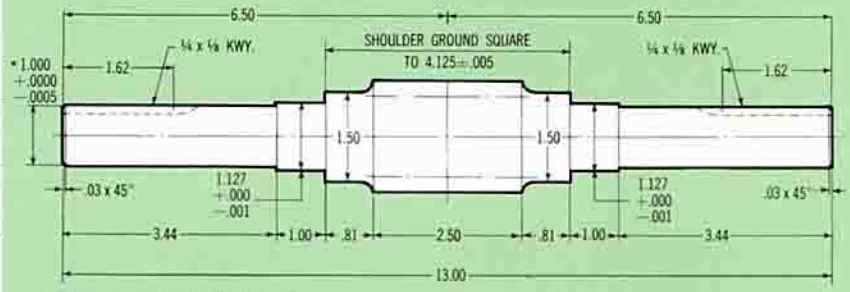
GEARS 3.000" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.
4 1/7	R	4.689	5 1/16	7/8	.50793	29	1317
4 1/4	R	4.667	5 1/16	7/8	.43125	34	1373
4 1/2	R	4.6875	5 1/16	7/8	.54537	27	678
5	**R**	4.6875	5 1/16	7/8	.58947	25	608
5	L	4.6875	5 1/16	7/8	.58947	25	897
5 1/5	R	4.791	5 1/16	7/8	.58947	26	608
6	R	4.650	5 1/16	7/8	.48696	30	1122
6	L	4.650	5 1/16	7/8	.48696	30	951
6 1/5	R	4.805	5 1/16	7/8	.48696	31	1122
7	R	4.679	5 1/16	7/8	.525	28	649
7	L	4.679	5 1/16	7/8	.525	28	855
7 1/5	R	4.727	5 1/16	7/8	.4125	36	1259
7 1/2	**R**	4.679	5 1/16	7/8	.490	30	833
7 1/2	L	4.679	5 1/16	7/8	.490	30	1323
8	R	4.991	5 1/16	7/8	.490	32	833
8	L	4.991	5 1/16	7/8	.490	32	1323
8 2/3	R	4.690	5 1/16	7/8	.56667	26	1394
10	**R**	4.6875	5 1/16	7/8	.49087	30	631
10	L	4.6875	5 1/16	7/8	.49087	30	775
10 1/2	R	4.746	5 1/16	7/8	.355	42	1298
11	R	4.727	5 1/16	7/8	.450	33	834
11 1/3	R	4.870	5 1/16	7/8	.450	34	834
12 1/2	**R**	4.686	5 1/16	7/8	.58888	25	1526
12 1/2	L	4.686	5 1/16	7/8	.58888	25	1116
13 1/2	R	4.512	5 1/16	7/8	.525	27	1404
14	R	4.679	5 1/16	7/8	.525	28	1404
15	**R**	4.6875	5 1/16	7/8	.49087	30	626
16	R	4.711	5 1/16	7/8	.4625	32	1312
16	L	4.711	5 1/16	7/8	.4625	32	1324
16 1/2	R	4.680	5 1/16	7/8	.450	33	787
17	L	4.784	5 1/16	7/8	.442	34	946
20	**R**	4.775	5 1/16	7/8	.375	40	1603
20	L	4.775	5 1/16	7/8	.375	40	1604
20 1/2	L	4.785	5 1/16	7/8	.36667	41	1475
25	**R**	4.6875	5 1/16	7/8	.589	25	662
30	**R**	4.6875	5 1/16	7/8	.49087	30	609
30	L	4.6875	5 1/16	7/8	.49087	30	1121
32	R	4.775	5 1/16	7/8	.46875	32	555
35	R	4.679	5 1/16	7/8	.420	35	1376
38	R	4.725	5 1/16	7/8	.390625	38	837
40	**R**	4.974	5 1/16	7/8	.390625	40	837
40	L	4.974	5 1/16	7/8	.390625	40	1417
45	R	4.727	5 1/16	7/8	.330	45	701
50	**R**	4.775	5 1/16	7/8	.300	50	1041
60	**R**	4.875	5 1/16	7/8	.255266	60	619
60	L	4.934	5 1/16	7/8	.25833	60	824

Bold face listings in hand of thread column indicate stock ratios.
Stock ratios should be selected whenever possible for quickest delivery and lowest cost.
Refer to Page 16 for Horsepower Rating Tables.

Worm – Series 27 (Double Extended)

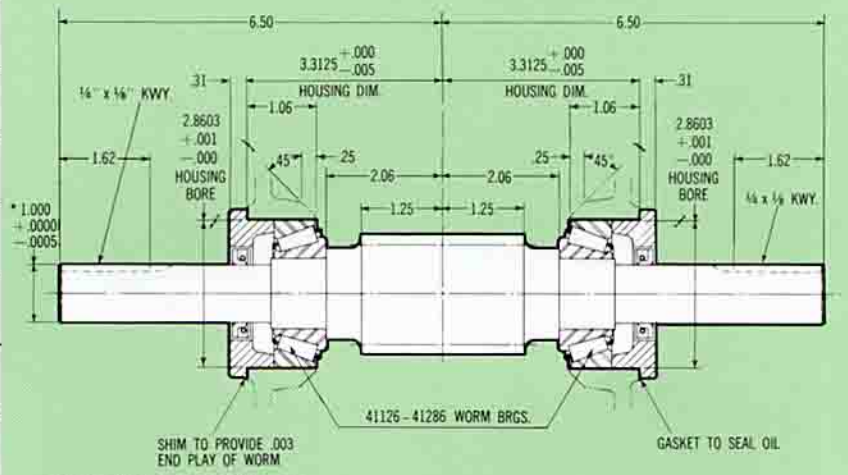
Part No. 3003 AF-27



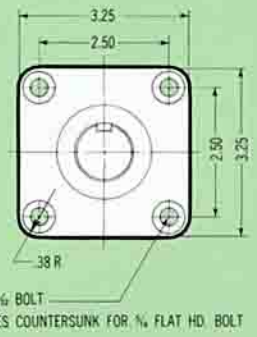
* Dimensions typical both ends.

Worm Mounting – Series 27, Type AF

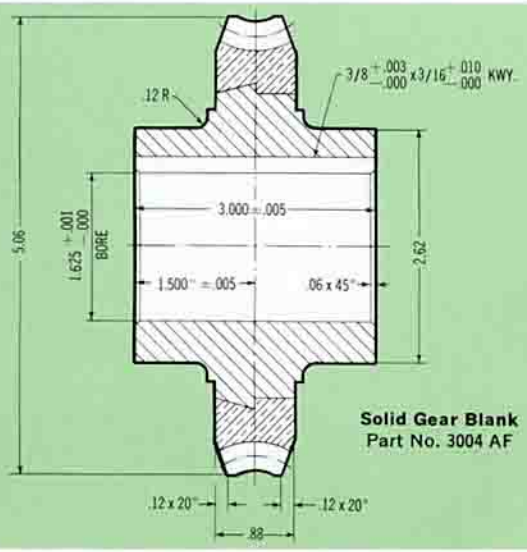
Assembly Part No. 3030 AF-27



* Dimensions typical both ends.



End plate view



Solid Gear Blank
Part No. 3004 AF

Machine housing bore center distance to 3.000 +.003 -.000

Bearing seat shoulders are filleted to suit bearings. For mounting worm below gear, oil level should be slightly above top of worm thread. For mounting worm above gear, oil level should be located so that gear will dip in oil one-third of its radius.

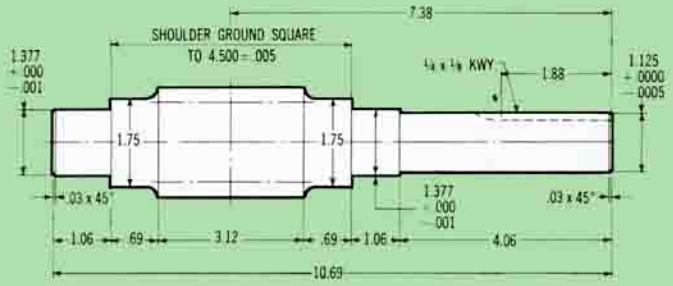
WORM & GEAR SETS

SIZE 35

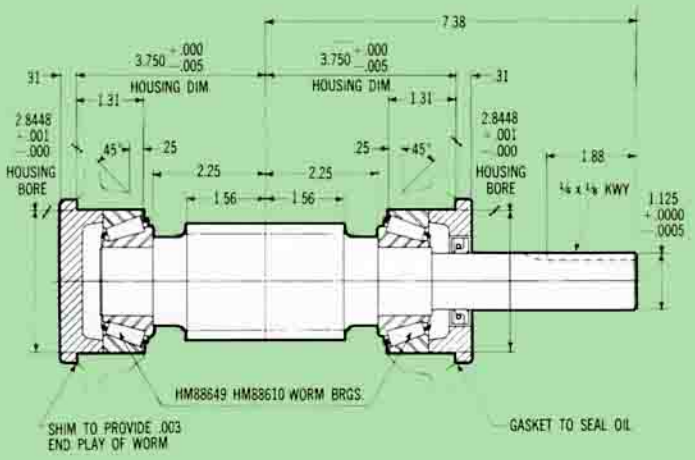
Dimensions subject to change. Use certified prints only for construction.

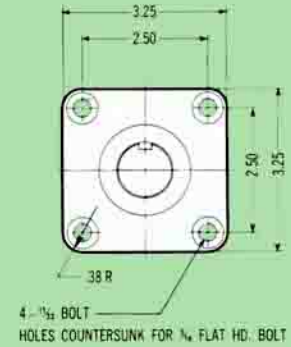
Dimensions in Inches

Worm – Series 25 (Single Extended)
Part No. 3503 AF



Worm Mounting – Series 25, Type AF
Assembly Part No. 3530 AF





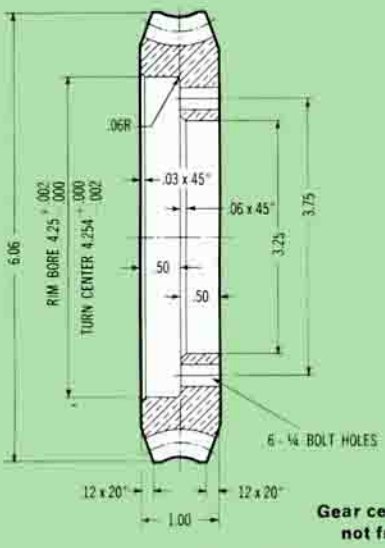
End plate view

WORMS — 3.500″ CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
4 1/2	**R**	1.449	1.787	1.057	26½°	40°24′	6
5	**R**	1.430	1.812	.972	27°	37°55′	5
5	**L**	1.430	1.812	.972	25½°	37°55′	5
5 1/5	**R**	1.207	1.812	.972	27°	37°55′	5
5 1/3	**L**	1.207	1.812	.972	25½°	37°55′	5
6	**L**	1.430	1.750	1.050	26°	33°0′	5
7 1/2	**R**	1.430	1.802	.998	26°	27°27′	4
8 1/2	**R**	1.318	1.651	.931	26½°	26°50′	4
10	**R**	1.430	1.8125	.972	25°	21°17′	3
10	**L**	1.330	1.763	.951	25½°	22°15′	3
10 1/3	**R**	1.408	1.768	.992	25°	21°1′	3
12	**R**	1.390	1.702	1.018	25°	18°35′	3
12 1/2	**R**	1.430	1.876	.914	20°	17°19′	2
14	**R**	1.430	1.828	.970	20°	15°33′	2
15	**R**	1.430	1.8125	.972	25½°	14°33′	2
15	**L**	1.430	1.8125	.972	25½°	14°33′	2
17	**R**	1.420	1.750	1.010	25°	13°1′	2
17	**L**	1.420	1.750	1.010	20°	13°1′	2
18	**L**	1.328	1.643	.963	20°	13°21′	2
20	**R**	1.296	1.625	.957	25°	12°0′	2
20	**L**	1.372	1.600	.980	25½°	12°2′	2
22 1/2	**R**	1.405	1.653	1.117	20°	10°2′	2
25	**R**	1.532	1.937	.957	25°	8°21′	1
25	**L**	1.532	1.937	.957	25°	8°21′	1
29	**R**	1.432	1.816	.988	20°	7°38′	1
30	**R**	1.430	1.813	.973	25°	7°24′	1
30	**L**	1.430	1.813	.973	25°	7°24′	1
35	**R**	1.314	1.638	.938	20°	7°3′	1
40	**R**	1.270	1.625	.957	25°	6°6′	1
40	**L**	1.270	1.625	1.009	20°	6°6′	1
50	**R**	1.318	1.548	1.008	25°	4°56′	1
60	**R**	1.375	1.565	1.125	25°	3°54′	1
60	**L**	1.375	1.565	1.125	25°	3°54′	1

Bold face listings in hand of thread column indicate stock ratios.
Stock ratios should be selected whenever possible for quickest delivery and lowest cost.
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 16 for Horsepower Rating Tables.

Optional Flanged Rim Blank
Part No. R3540 AF



Gear center & bolts not furnished

Bolt holes in rims are jig drilled 1/64″ under bolt hole size dimension shown—ream at assembly for body bound bolts.

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

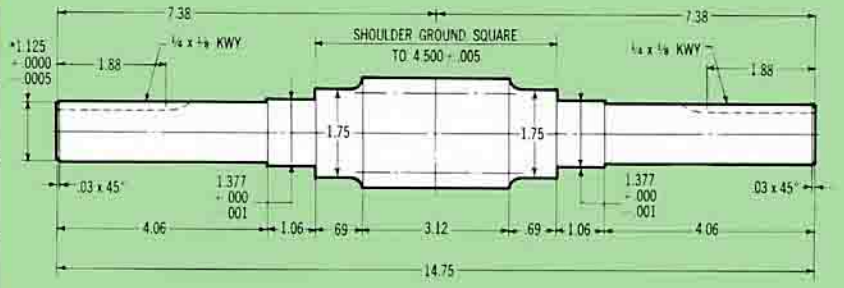
Dimensions in Inches

GEARS 3.500" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.
4 1/2	R	5.551	6 1/16	1	.645833	27	1445
5	**R**	5.570	6 1/16	1	.700	25	796
5	L	5.570	6 1/16	1	.700	25	898
5 1/5	R	5.793	6 1/16	1	.700	26	796
5 1/5	L	5.793	6 1/16	1	.700	26	898
6	L	5.570	6 1/16	1	.5833	30	984
7 1/2	**R**	5.570	6 1/16	1	.5833	30	1051
8 1/2	R	5.682	6 1/16	1	.525	34	649
10	**R**	5.570	6 1/16	1	.5833	30	804
10	L	5.670	6 1/16	1	.59375	30	551
10 1/3	R	5.592	6 1/16	1	.56667	31	1405
12	R	5.610	6 1/16	1	.48958	36	1085
12 1/2	**R**	5.570	6 1/16	1	.700	25	1391
14	R	5.570	6 1/16	1	.625	28	1392
15	**R**	5.570	6 1/16	1	.5833	30	805
15	L	5.570	6 1/16	1	.5833	30	1314
17	R	5.580	6 1/16	1	.515625	34	852
17	L	5.580	6 1/16	1	.515625	34	1012
18	L	5.672	6 1/16	1	.495	36	1465
20	**R**	5.704	6 1/16	1	.448	40	808
20	L	5.628	6 1/16	1	.442	40	946
22 1/2	R	5.595	6 1/16	1	.390625	45	1438
25	**R**	5.468	6 1/16	1	.68717	25	809
25	L	5.468	6 1/16	1	.68717	25	1347
29	R	5.568	6 1/16	1	.6032	29	1355
30	**R**	5.570	6 1/16	1	.5833	30	806
30	L	5.570	6 1/16	1	.5833	30	1078
35	R	5.686	6 1/16	1	.51042	35	1288
40	**R**	5.730	6 1/16	1	.450	40	807
40	L	5.730	6 1/16	1	.450	40	1426
50	**R**	5.682	6 1/16	1	.357	50	858
60	**R**	5.625	6 1/16	1	.2945	60	882
60	L	5.625	6 1/16	1	.2945	60	1505

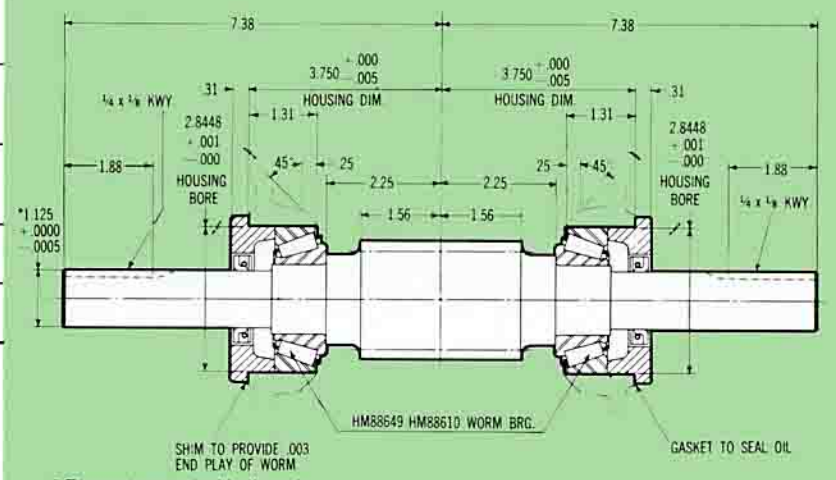
Bold face listings in hand of thread column indicate stock ratios.
Stock ratios should be selected whenever possible for quickest delivery and lowest cost.
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 16 for Horsepower Rating Tables.

Worm – Series 27 (Double Extended)
Part No. 3503 AF-27



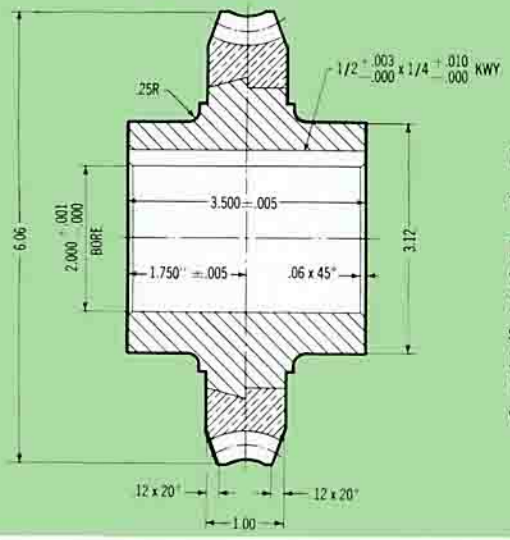
* Dimensions typical both ends.

Worm Mounting – Series 27, Type AF
Assembly Part No. 3530 AF-27



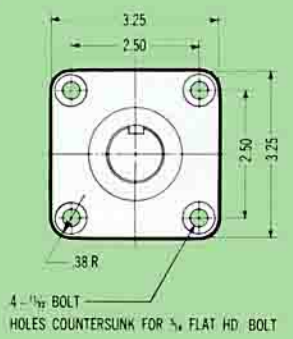
* Dimensions typical both ends.

Solid Gear Blank
Part No. 3504 AF



Machine housing bore center distance to 3.500 +.003 -.000

Bearing seat shoulders are filleted to suit bearings. For mounting worm below gear, oil level should be slightly above top of worm thread. For mounting worm above gear, oil level should be located so that gear will dip in oil one-third of its radius.



End plate view

SIZE 40

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

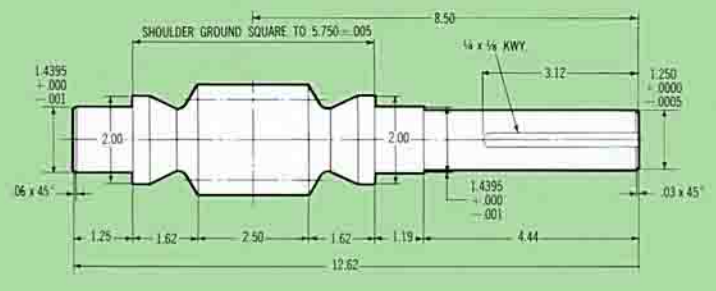
Dimensions In Inches

WORMS — 4.000" CENTERS

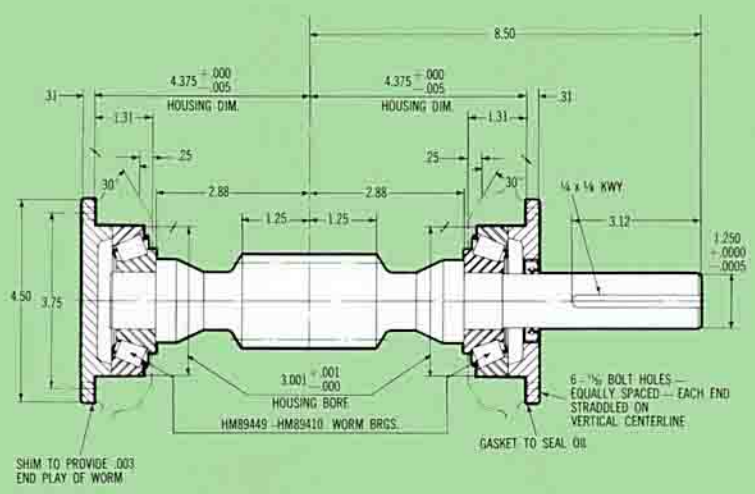
Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
4 3/7	R	1.657	1.989	1.273	25½°	40°51′	7
4 4/7	R	1.452	1.989	1.273	25½°	40°51′	7
4 5/6	**R**	1.654	1.996	1.238	26°	38°27′	6
4 5/6	L	1.654	1.996	1.258	27°	38°27′	6
5	R	1.435	1.996	1.238	26°	38°27′	6
5 1/6	R	1.525	1.853	1.203	31½°	39°25′	6
5 1/6	L	1.627	1.997	1.199	25°	37°10′	6
5 4/5	R	1.846	2.125	1.264	27°	33°0′	5
6	R	1.634	2.125	1.264	27°	33°0′	5
6	L	1.634	2.125	1.265	26°	33°0′	5
6 3/5	R	1.435	1.761	1.057	29°	34°44′	5
6 3/5	L	1.698	2.080	1.256	25°	29°21′	5
7 1/4	**R**	1.654	2.090	1.148	26°	27°53′	4
8	R	1.634	2.125	1.264	26½°	25°58′	4
8	L	1.634	2.125	1.265	26°	25°58′	4
8 3/4	R	1.594	1.960	1.170	25°	24°40′	4
9	R	1.583	1.940	1.168	25°	24°15′	4
10	**R**	1.698	2.125	1.212	26½°	20°22′	3
10	L	1.698	2.125	1.212	25°	20°22′	3
12	R	1.583	1.940	1.168	25°	18°40′	3
12	L	1.583	1.940	1.167	25½°	18°40′	3
12 2/3	**R**	1.586	1.924	1.196	25°	17°42′	3
15 1/2	**R**	1.525	1.941	1.043	27½°	15°20′	2
15 1/2	L	1.525	1.941	1.043	27½°	15°20′	2
17 1/2	R	1.650	2.000	1.244	25°	12°24′	2
19 1/2	**R**	1.599	1.927	1.219	27½°	11°36′	2
19 1/2	L	1.599	1.927	1.219	27½°	11°36′	2
20 1/2	R	1.271	1.927	1.219	27½°	11°36′	2
21 1/2	L	1.584	1.882	1.238	20°	10°40′	2
25	L	1.713	2.215	1.131	20°	8°21′	1
26	**R**	1.710	2.194	1.150	25°	8°3′	1
27	L	1.720	2.186	1.180	20°	7°42′	1
29	**R**	1.654	2.090	1.148	25°	7°32′	1
36	R	1.583	1.940	1.167	25°	6°25′	1
40	**R**	1.634	1.950	1.240	27½°	5°34′	1
40	L	1.634	1.950	1.240	25°	5°34′	1
46	R	1.557	1.837	1.197	25°	5°8′	1
50	**R**	1.534	1.792	1.236	28°	4°49′	1
50	L	1.534	1.792	1.236	20°	4°49′	1
55	R	1.435	1.675	1.115	25°	4°45′	1
60	**R**	1.435	1.650	1.183	26°	4°21′	1
60	L	1.435	1.650	1.183	26°	4°21′	1

Bold face listings in hand of thread column indicate stock ratios.
Stock ratios should be selected whenever possible for quickest delivery and lowest cost.
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 17 for Horsepower Rating Tables.

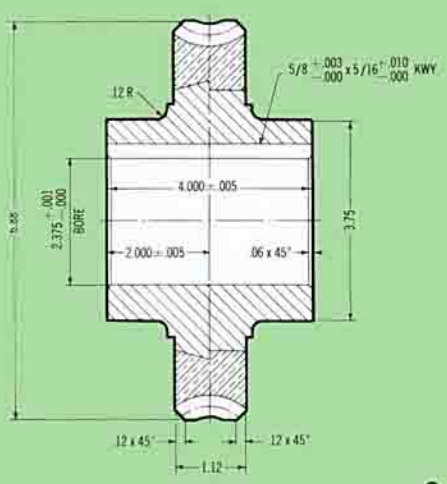
Worm — Series 25 (Single Extended)
Part No. A4003 AF



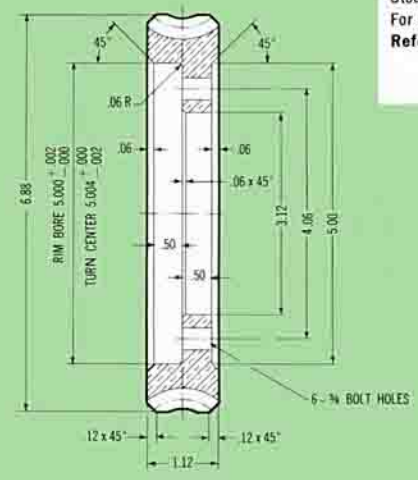
Worm Mounting — Series 25, Type AF
Assembly Part No. A4030 AF



Solid Gear Blank
Part No. 4004 AF



Optional Flanged Rim Blank
Part No. R4040 AF



Bolt holes in rims are jig drilled 1/64" under bolt hole size dimension shown — ream at assembly for body bound bolts.

Gear center & bolts not furnished.

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

Dimensions in Inches

GEARS 4.000" CENTERS

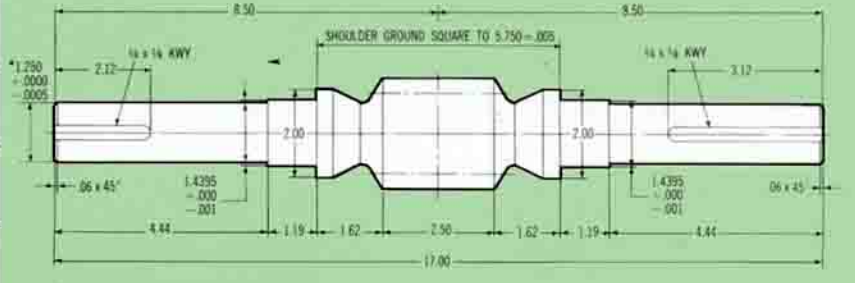
Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.
4 3/7	R	6.343	6⅞	1⅛	.642857	31	1406
4 4/7	R	6.548	6⅞	1⅛	.642857	32	1406
4 5/6	**R**	6.346	6⅞	1⅛	.6875	29	525
4 5/6	L	6.346	6⅞	1⅛	.6875	29	690
5	R	6.565	6⅞	1⅛	.6875	30	525
5 1/6	R	6.475	6⅞	1⅛	.65625	31	465
5 1/6	L	6.373	6⅞	1⅛	.645833	31	1371
5 4/5	R	6.154	6⅞	1⅛	.6667	29	647
6	R	6.366	6⅞	1⅛	.6667	30	647
6	L	6.366	6⅞	1⅛	.6667	30	972
6 3/5	R	6.565	6⅞	1⅛	.625	33	590
6 3/5	L	6.302	6⅞	1⅛	.600	33	1372
7 1/4	**R**	6.346	6⅞	1⅛	.6875	29	441
8	R	6.366	6⅞	1⅛	.625	32	793
8	L	6.366	6⅞	1⅛	.625	32	980
8 3/4	R	6.406	6⅞	1⅛	.575	35	1461
9	R	6.417	6⅞	1⅛	.560	36	883
10	**R**	6.302	6⅞	1⅛	.660	30	723
10	L	6.302	6⅞	1⅛	.660	30	1013
12	R	6.417	6⅞	1⅛	.560	36	884
12	L	6.417	6⅞	1⅛	.560	36	1040
12 2/3	**R**	6.414	6⅞	1⅛	.5303	38	1527
15 1/2	**R**	6.475	6⅞	1⅛	.65625	31	518
15 1/2	L	6.475	6⅞	1⅛	.65625	31	1067
17 1/2	R	6.350	6⅞	1⅛	.570	35	709
19 1/2	**R**	6.401	6⅞	1⅛	.515625	39	471
19 1/2	L	6.401	6⅞	1⅛	.515625	39	1075
20 1/2	R	6.729	6⅞	1⅛	.515625	41	471
21 1/2	L	6.416	6⅞	1⅛	.46875	43	1273
25	L	6.287	6⅞	1⅛	.790	25	1439
26	**R**	6.290	6⅞	1⅛	.760	26	885
27	L	6.280	6⅞	1⅛	.73077	27	1249
29	**R**	6.346	6⅞	1⅛	.6875	29	886
36	R	6.417	6⅞	1⅛	.560	36	887
40	**R**	6.366	6⅞	1⅛	.500	40	530
40	L	6.366	6⅞	1⅛	.500	40	934
46	R	6.443	6⅞	1⅛	.440	46	919
50	**R**	6.466	6⅞	1⅛	.40625	50	528
50	L	6.466	6⅞	1⅛	.40625	50	1250
55	R	6.565	6⅞	1⅛	.375	55	922
60	**R**	6.565	6⅞	1⅛	.34375	60	438
60	L	6.565	6⅞	1⅛	.34375	60	1095

Bold face listings in hand of thread column indicate stock ratios.
Stock ratios should be selected whenever possible for quickest delivery and lowest cost.
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 17 for Horsepower Rating Tables.

Machine housing bore center distance to 4.000 $^{+.003}_{-.000}$

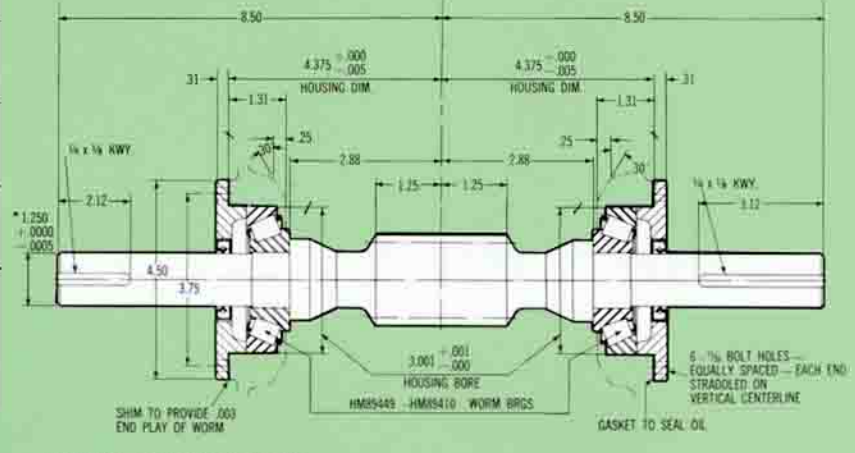
Bearing seat shoulders are filleted to suit bearings. For mounting worm below gear, oil level should be slightly above top of worm thread. For mounting worm above gear, oil level should be located so that gear will dip in oil one-third of its radius.

Worm — Series 27 (Double Extended)
Part No. A4003 AF-27



* Dimensions typical both ends.

Worm Mounting — Series 27, Type AF
Assembly Part No. A4030 AF-27



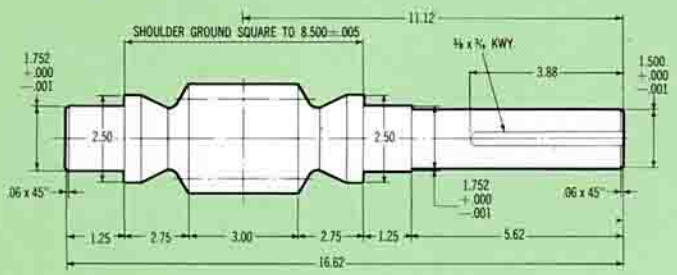
* Dimensions typical both ends.

SIZE 50

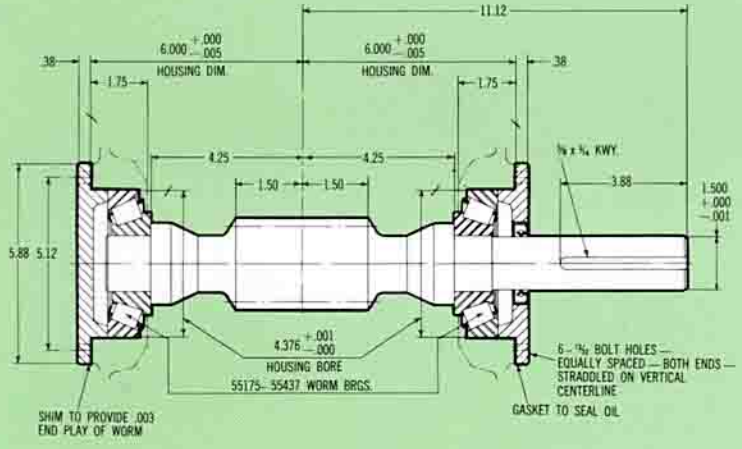
Dimensions subject to change. Use certified prints only for construction.

Dimensions in Inches

Worm – Series 25 (Single Extended)
Part No. 5003 AF



Worm Mounting – Series 25, Type AF
Assembly Part No. 5030 AF



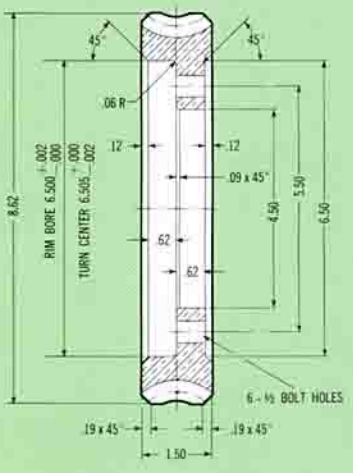
Bolt holes in rims are jig drilled 1/64″ under bolt hole size dimension shown—ream at assembly for body bound bolts.

WORMS — 5.000″ CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
4 1/6	R	2.042	2.566	1.514	28°	42°31′	6
4 3/7	R	1.894	2.303	1.471	25°	43°40′	7
4 5/7	R	1.893	2.284	1.460	25°	42°3′	7
4 5/6	**R**	2.000	2.466	1.460	25°	39°37′	6
5 1/2	R	1.912	2.294	1.430	24½°	37°43′	6
5 1/2	L	1.912	2.294	1.430	24½°	37°43′	6
7	R	1.979	2.371	1.547	25°	29°57′	6
7 2/5	**R**	1.991	2.423	1.491	25°	28°32′	5
8 1/2	R	1.991	2.434	1.410	25°	25°39′	4
8 1/2	L	1.991	2.434	1.410	25°	25°39′	4
10 2/3	**R**	2.042	2.496	1.424	25°	20°27′	3
10 2/3	L	2.042	2.496	1.424	25°	20°27′	3
12 2/3	**R**	1.936	2.324	1.396	25°	18°32′	3
12 2/3	L	1.936	2.324	1.396	25°	18°32′	3
14	L	1.733	2.336	1.512	25°	16°42′	3
14 1/3	**R**	1.788	2.243	1.419	25°	17°7′	3
17 1/2	R	2.063	2.515	1.539	20°	12°24′	2
20	**R**	2.000	2.450	1.586	20°	11°2′	2
21	R	1.811	2.286	1.426	20°	11°37′	2
21	L	1.811	2.286	1.426	20°	11°37′	2
25	**R**	2.042	2.318	1.622	20°	9°2′	2
25	L	2.042	2.318	1.622	20°	9°2′	2
30	**R**	1.865	2.137	1.551	20°	8°16′	2
33	R	2.122	2.498	1.476	27°	6°44′	1
34	R	1.883	2.498	1.476	27°	6°44′	1
37	R	1.991	2.356	1.412	20°	6°25′	1
40	**R**	1.983	2.383	1.519	20°	5°46′	1
45	R	1.943	2.406	1.634	27°	5°0′	1
45	L	1.943	2.406	1.634	27°	5°0′	1
48	**R**	2.055	2.325	1.625	25°	4°43′	1
48	L	2.055	2.325	1.625	25°	4°43′	1
56	**R**	1.830	2.122	1.494	20°	4°33′	1
64	R	1.724	2.001	1.401	20°	4°15′	1
64	L	1.724	2.001	1.401	20°	4°15′	1
70	R	1.644	1.962	1.404	15°	3°58′	1
70	L	1.644	1.962	1.404	15°	3°58′	1

Bold face listings in hand of thread column indicate stock ratios.
Stock ratios should be selected whenever possible for quickest delivery and lowest cost.
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 17 for Horsepower Rating Tables.

Optional Flanged Rim Blank
Part No. R5040 AF



Gear center & bolts not furnished.

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

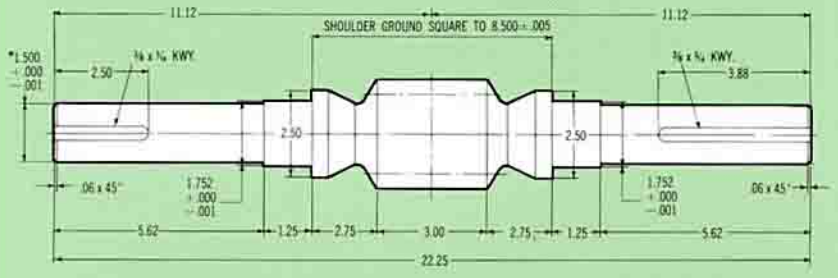
Dimensions in Inches

GEARS 5.000" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.
4 1/6	R	7.958	8⅛	1½	1.000	25	569
4 3/7	R	8.106	8⅛	1½	.82143	31	1442
4 5/7	R	8.107	8⅛	1½	.770	33	1359
4 5/6	**R**	8.000	8⅛	1½	.86667	29	1490
5 1/2	R	8.088	8⅛	1½	.770	33	960
5 1/2	L	8.088	8⅛	1½	.770	33	1052
7	R	8.021	8⅛	1½	.600	42	1119
7 2/5	**R**	8.009	8⅛	1½	.680	37	1528
8 1/2	R	8.009	8⅛	1½	.740	34	961
8 1/2	L	8.009	8⅛	1½	.740	34	1463
10 2/3	**R**	7.958	8⅛	1½	.78125	32	962
10 2/3	L	7.958	8⅛	1½	.78125	32	1108
12 2/3	**R**	8.064	8⅛	1½	.6667	38	963
12 2/3	L	8.064	8⅛	1½	.6667	38	1339
14	L	8.267	8⅛	1½	.6184	42	1482
14 1/3	**R**	8.212	8⅛	1½	.600	43	1416
17 1/2	R	7.937	8⅛	1½	.7125	35	1332
20	**R**	8.000	8⅛	1½	.62832	40	1384
21	R	8.189	8⅛	1½	.6125	42	965
21	L	8.189	8⅛	1½	.6125	42	1393
25	**R**	7.958	8⅛	1½	.500	50	1256
25	L	7.958	8⅛	1½	.500	50	1257
30	**R**	8.135	8⅛	1½	.42593	60	1491
33	R	7.878	8⅛	1½	.750	33	502
34	R	8.117	8⅛	1½	.750	34	502
37	R	8.009	8⅛	1½	.680	37	967
40	**R**	8.017	8⅛	1½	.62963	40	1492
45	R	8.057	8⅛	1½	.5625	45	531
45	L	8.057	8⅛	1½	.5625	45	1301
48	**R**	7.945	8⅛	1½	.520	48	814
48	L	7.945	8⅛	1½	.520	48	1313
56	**R**	8.170	8⅛	1½	.458333	56	1493
64	R	8.276	8⅛	1½	.40625	64	970
64	L	8.276	8⅛	1½	.40625	64	1280
70	R	8.356	8⅛	1½	.375	70	839
70	L	8.356	8⅛	1½	.375	70	840

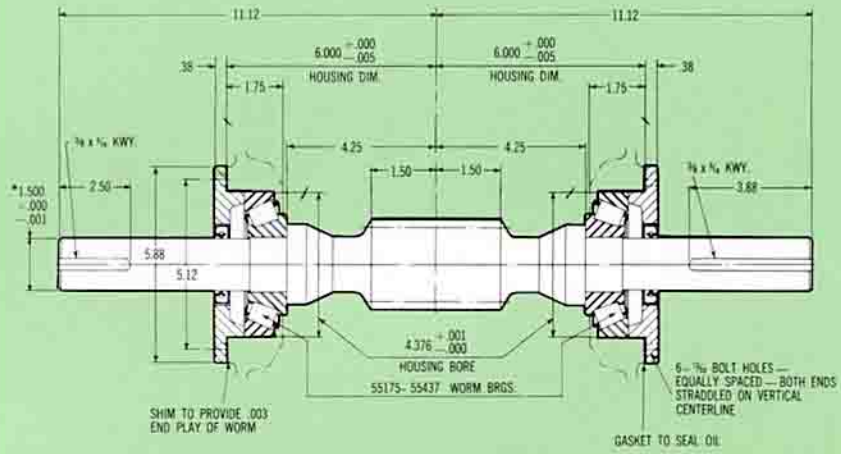
Bold face listings in hand of thread column indicate stock ratios.
Stock ratios should be selected whenever possible for quickest delivery and lowest cost.
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 17 for Horsepower Rating Tables.

Worm – Series 27 (Double Extended)
Part No. 5003 AF-27



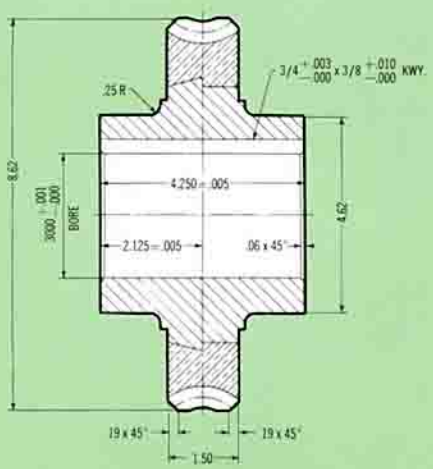
* Dimensions typical both ends.

Worm Mounting – Series 27, Type AF
Assembly Part No. 5030 AF-27



* Dimensions typical both ends.

Solid Gear Blank
Part No. 5004 AF



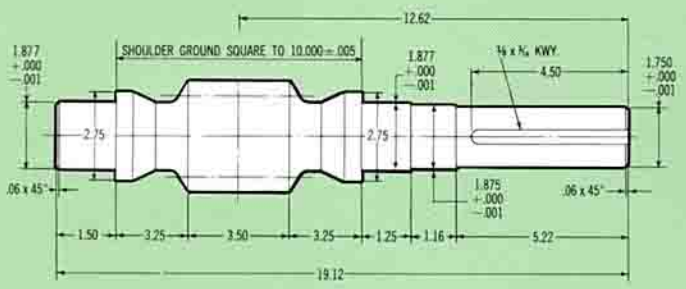
Machine housing bore center distance to 5.000 $^{+.003}_{-.000}$

Bearing seat shoulders are filleted to suit bearings. For mounting worm below gear, oil level should be slightly above top of worm thread. For mounting worm above gear, oil level should be located so that gear will dip in oil one-third of its radius.

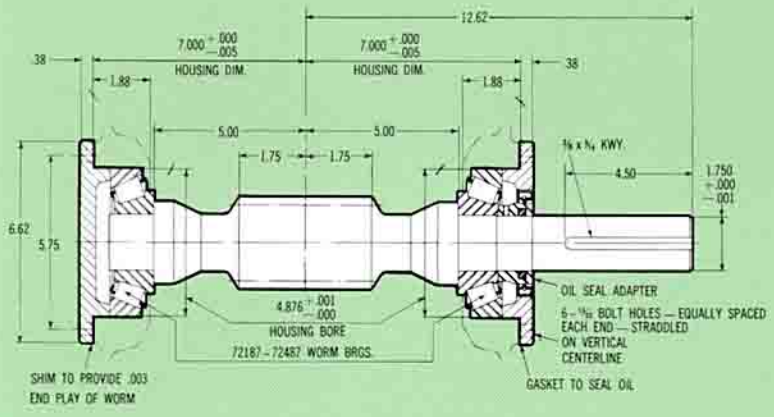
Dimensions in Inches

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

Worm – Series 25 (Single Extended)
Part No. 6003 AF



Worm Mounting – Series 25, Type AF
Assembly Part No. 6030 AF



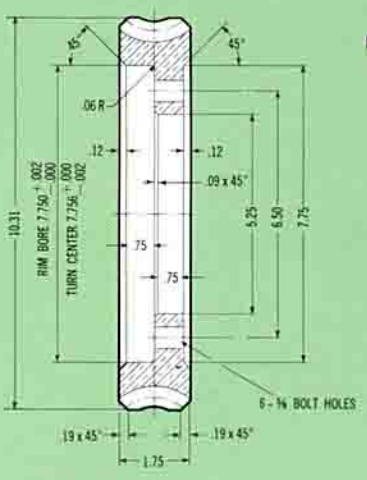
Bolt holes in rims are jig drilled 1/64" under bolt hole size dimension shown—ream at assembly for body bound bolts.

WORMS — 6.000" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
4 3/8	R	2.287	2.829	1.897	25°	42°48′	8
4 2/7	R	2.451	3.013	1.901	25°	41°45′	7
4 4/7	R	2.451	2.795	1.809	27°	41°41′	7
4 5/6	**R**	2.307	2.847	1.681	25°	41°0′	6
5 1/3	R	2.451	2.945	1.687	26°	37°21′	6
5 1/3	L	2.451	2.948	1.748	26°	37°21′	6
6 1/6	R	2.284	2.838	1.750	25°	34°1′	6
6 1/6	L	2.284	2.838	1.750	25°	34°1′	6
6 3/5	R	2.152	2.852	1.750	25½°	32°27′	5
7	R	2.287	2.953	1.755	25°	30°4′	5
7 2/5	**R**	2.316	2.840	1.712	25°	29°28′	5
8 1/4	R	2.152	2.945	1.655	25°	26°58′	4
8 1/4	L	2.152	2.945	1.655	25°	26°58′	4
9	R	2.331	3.000	1.860	26°	24°4′	4
9	L	2.331	3.000	1.860	26°	24°4′	4
11	**R**	2.152	2.960	1.670	26½°	20°53′	3
12 2/3	**R**	2.323	2.831	1.735	25°	18°12′	3
13	R	2.407	2.928	1.868	25°	16°54′	3
13	L	2.407	2.928	1.868	25°	16°54′	3
14 2/3	**R**	2.371	2.742	1.860	27°	15°48′	3
17	R	2.192	2.927	1.693	25½°	13°47′	2
17	L	2.192	2.927	1.613	27°	13°47′	2
20	**R**	2.323	2.775	1.731	25°	11°56′	2
20 1/2	R	2.271	2.694	1.672	25°	12°4′	2
20 1/2	L	2.271	2.694	1.672	20°	12°4′	2
24 1/2	**R**	2.200	2.700	1.836	20°	9°52′	2
24 1/2	L	2.200	2.700	1.836	20°	9°52′	2
27 1/2	R	2.152	2.585	1.810	27°	9°8′	2
30	**R**	2.185	2.511	1.807	20°	8°31′	2
32	R	2.451	2.956	1.668	27°	7°15′	1
35	R	2.252	2.978	1.808	27½°	6°36′	1
40	**R**	2.323	2.775	1.731	20°	6°2′	1
40	L	2.323	2.775	1.731	20°	6°2′	1
45	R	2.152	2.683	1.741	27°	5°34′	1
45	L	2.152	2.683	1.741	27°	5°34′	1
50	**R**	2.371	2.720	1.867	25°	4°43′	1
50	L	2.371	2.720	1.867	25°	4°43′	1
60	**R**	2.178	2.506	1.800	20°	4°18′	1
67	R	2.003	2.346	1.704	27°	4°10′	1

Bold face listings in hand of thread column indicate stock ratios.
Stock ratios should be selected whenever possible for quickest delivery and lowest cost.
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 18 for Horsepower Rating Tables.

Optional Flanged Rim Blank
Part No. R6040 AF



Gear center & bolts not furnished

SIZE 60

WORM & GEAR SETS

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

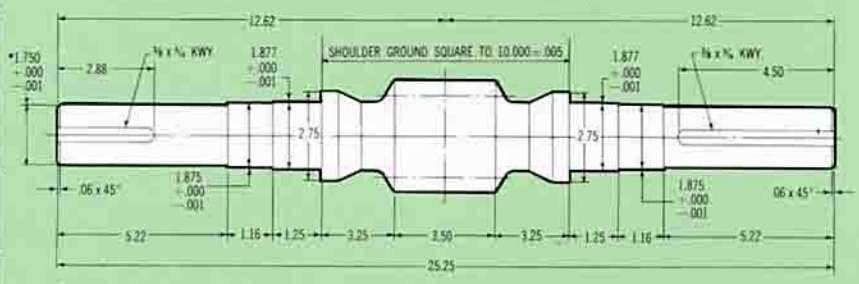
Dimensions in Inches

GEARS — 6.000" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.
4 3/8	R	9.713	10 5/16	1 3/4	.87188	35	1291
4 2/7	R	9.549	10 5/16	1 3/4	1.000	30	1294
4 4/7	R	9.549	10 5/16	1 3/4	.9375	32	537
4 5/6	**R**	9.693	10 5/16	1 3/4	1.050	29	1487
5 1/3	R	9.549	10 5/16	1 3/4	.9375	32	334
5 1/3	L	9.549	10 5/16	1 3/4	.9375	32	615
6 1/6	R	9.716	10 5/16	1 3/4	.825	37	1360
6 1/6	L	9.716	10 5/16	1 3/4	.825	37	1456
6 3/5	R	9.848	10 5/16	1 3/4	.9375	33	516
7	R	9.713	10 5/16	1 3/4	.87188	35	1292
7 2/5	**R**	9.684	10 5/16	1 3/4	.8222	37	1529
8 1/4	R	9.848	10 5/16	1 3/4	.9375	33	386
8 1/4	L	9.848	10 5/16	1 3/4	.9375	33	1334
9	R	9.669	10 5/16	1 3/4	.84375	36	1270
9	L	9.669	10 5/16	1 3/4	.84375	36	687
11	**R**	9.848	10 5/16	1 3/4	.9375	33	387
12 2/3	**R**	9.677	10 5/16	1 3/4	.800	38	1530
13	R	9.593	10 5/16	1 3/4	.77273	39	766
13	L	9.593	10 5/16	1 3/4	.77273	39	1352
14 2/3	**R**	9.629	10 5/16	1 3/4	.6875	44	440
17	R	9.808	10 5/16	1 3/4	.90625	34	351
17	L	9.808	10 5/16	1 3/4	.90625	34	800
20	**R**	9.677	10 5/16	1 3/4	.760	40	1435
20 1/2	R	9.729	10 5/16	1 3/4	.74545	41	890
20 1/2	L	9.729	10 5/16	1 3/4	.74545	41	992
24 1/2	**R**	9.800	10 5/16	1 3/4	.62832	49	1240
24 1/2	L	9.800	10 5/16	1 3/4	.62832	49	1241
27 1/2	R	9.848	10 5/16	1 3/4	.5625	55	506
30	**R**	9.815	10 5/16	1 3/4	.5139	60	1488
32	R	9.549	10 5/16	1 3/4	.9375	32	489
35	R	9.748	10 5/16	1 3/4	.875	35	534
40	**R**	9.677	10 5/16	1 3/4	.760	40	1222
40	L	9.677	10 5/16	1 3/4	.760	40	1223
45	R	9.848	10 5/16	1 3/4	.6875	45	428
45	L	9.848	10 5/16	1 3/4	.6875	45	1092
50	**R**	9.629	10 5/16	1 3/4	.605	50	866
50	L	9.629	10 5/16	1 3/4	.605	50	1101
60	**R**	9.822	10 5/16	1 3/4	.5143	60	1489
67	R	9.997	10 5/16	1 3/4	.46875	67	413

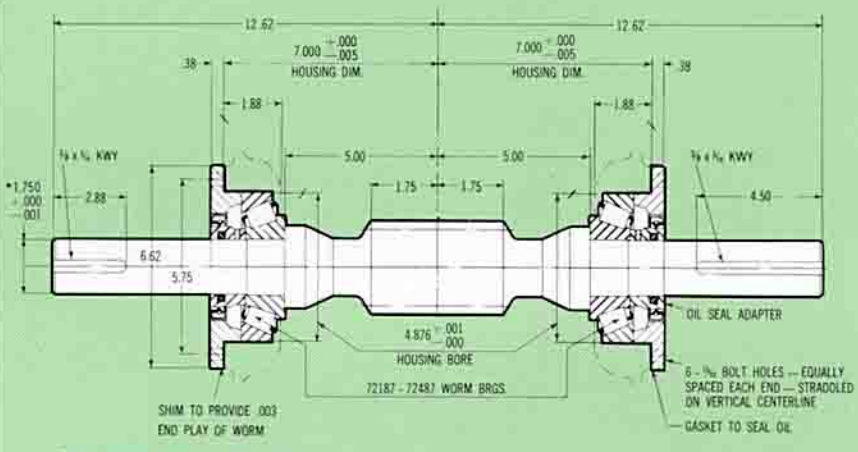
Bold face listings in hand of thread column indicate stock ratios.
Stock ratios should be selected whenever possible for quickest delivery and lowest cost.
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 18 for Horsepower Rating Tables.

Worm — Series 27 (Double Extended)
Part No. 6003 AF-27



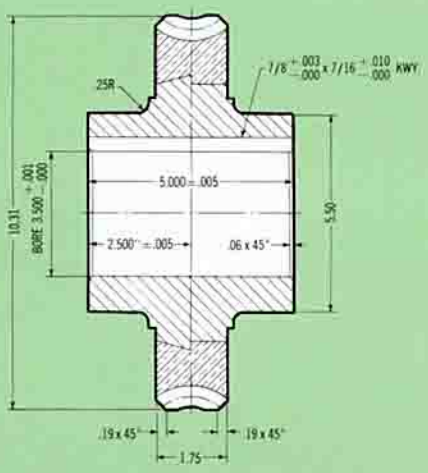
* Dimensions typical both ends.

Worm Mounting — Series 27, Type AF
Assembly Part No. 6030 AF-27



* Dimensions typical both ends.

Solid Gear Blank
Part No. 6004 AF



Machine housing bore center distance to 6.000 $^{+.003}_{-.000}$

Bearing seat shoulders are filleted to suit bearings. For mounting worm below gear, oil level should be slightly above top of worm thread. For mounting worm above gear, oil level should be located so that gear will dip in oil one-third of its radius.

SIZE 70

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

Dimensions in Inches

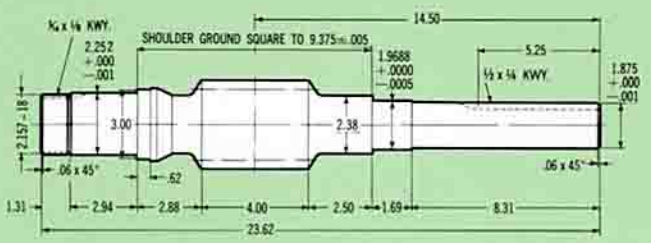
WORMS — 7.000″ CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
4 4/7	R	2.682	3.359	2.107	25°	41°42′	7
4 5/6	R	2.750	3.392	2.006	25°	40°15′	6
5 1/3	R	2.682	3.415	2.043	25°	37°22′	6
5 2/3	R	2.674	3.290	2.110	25°	36°0′	6
5 2/3	L	2.674	3.290	2.110	25°	36°0′	6
6 2/5	R	2.541	3.233	1.965	27°	34°9′	5
7	R	2.636	3.352	1.952	25°	30°59′	5
8 1/4	R	2.787	3.434	1.954	28°	26°16′	4
10 1/4	R	2.784	3.330	2.152	25°	21°27′	4
10 1/4	L	2.784	3.330	2.152	25°	21°27′	4
10 1/3	R	2.787	3.437	2.031	25°	21°16′	3
11	R	2.839	3.448	2.008	25°	20°8′	3
11	L	2.839	3.448	2.008	25°	20°8′	3
12 2/3	R	2.660	3.297	2.011	27½°	18°20′	3
15 1/2	R	2.719	3.375	1.959	20°	15°1′	2
19	R	2.660	3.297	2.011	25°	12°28′	2
19	L	2.660	3.297	2.011	25°	12°28′	2
22	R	2.620	3.155	2.067	27½°	11°5′	2
25	R	2.561	2.990	2.005	27°	10°14′	2
30	R	2.492	2.876	2.048	20°	8°45′	2
36	R	2.655	3.343	1.983	25°	6°38′	1
40	R	2.461	3.268	2.026	27°	6°7′	1
46	R	2.561	3.090	2.020	27°	5°28′	1
51	R	2.541	2.957	1.989	20°	5°7′	1
55	R	2.511	2.881	1.979	20°	4°51′	1
55	L	2.511	2.881	1.979	20°	4°51′	1
61	R	2.350	2.857	2.013	25°	4°25′	1

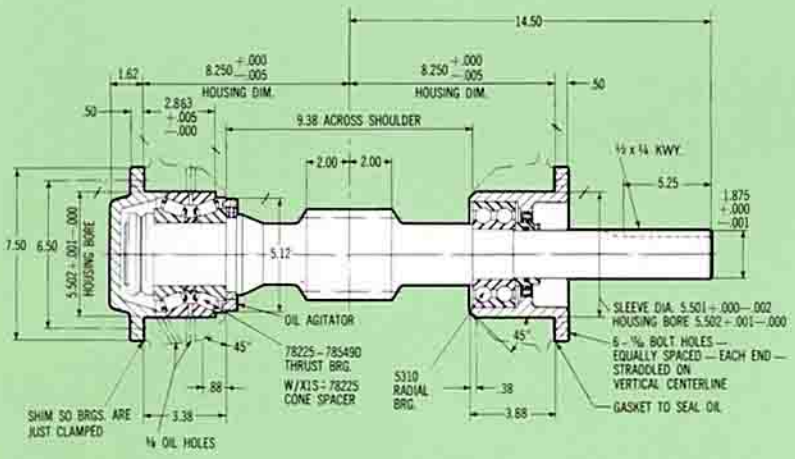
Worms and gears are carried in semi-finished stock.

For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 18 for Horsepower Rating Tables.

Worm — Series 25 (Single Extended)
Part No. 7003 AF

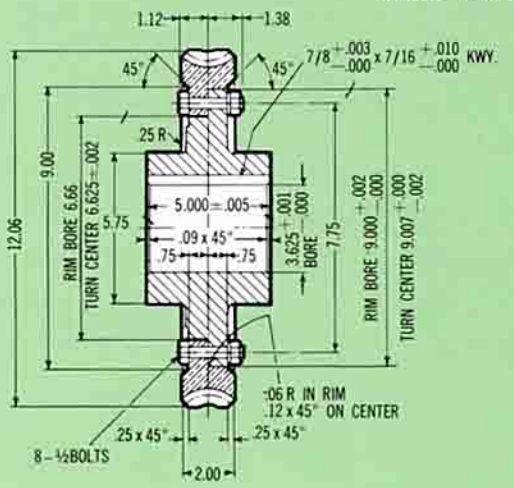


Worm Mountings — Series 25
Type AF — Worm Below Gear (as shown)
Assembly Part No. 7030 AF
Type RF — Worm Above Gear (as shown less oil agitator)
Assembly Part No. E7030 RF



Bolt holes in rims and centers are jig drilled 1/64″ under bolt size dimension shown—ream at assembly for body bound bolts.

Flanged Rim Blank and Center
Rim—Part No. R7040 AF
Center—Part No. C7040 AF



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

Dimensions in Inches

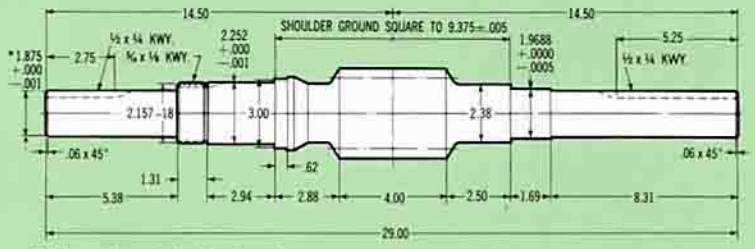
GEARS 7.000" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.
4 4/7	R	11.318	12 1/16	2	1.1111	32	1265
4 5/6	R	11.250	12 1/16	2	1.21875	29	1495
5 1/3	R	11.318	12 1/16	2	1.1111	32	1326
5 2/3	R	11.326	12 1/16	2	1.0465	34	1010
5 2/3	L	11.326	12 1/16	2	1.0465	34	622
6 2/5	R	11.459	12 1/16	2	1.125	32	473
7	R	11.364	12 1/16	2	1.020	35	1056
8 1/4	R	11.213	12 1/16	2	1.0675	33	621
10 1/4	R	11.216	12 1/16	2	.859375	41	1084
10 1/4	L	11.216	12 1/16	2	.859375	41	1457
10 1/3	R	11.213	12 1/16	2	1.13636	31	1500
11	R	11.161	12 1/16	2	1.0625	33	708
11	L	11.161	12 1/16	2	1.0625	33	1385
12 2/3	R	11.340	12 1/16	2	.9375	38	577
15 1/2	R	11.281	12 1/16	2	1.145833	31	1496
19	R	11.340	12 1/16	2	.9375	38	893
19	L	11.340	12 1/16	2	.9375	38	1114
22	R	11.380	12 1/16	2	.8125	44	571
25	R	11.439	12 1/16	2	.71875	50	507
30	R	11.508	12 1/16	2	.602564	60	1497
36	R	11.345	12 1/16	2	.990	36	894
40	R	11.539	12 1/16	2	.90625	40	536
46	R	11.439	12 1/16	2	.78125	46	446
51	R	11.459	12 1/16	2	.70588	51	1254
55	R	11.489	12 1/16	2	.65625	55	1155
55	L	11.489	12 1/16	2	.65625	55	1156
61	R	11.650	12 1/16	2	.600	61	895

Worms and gears are carried in semi-finished stock.

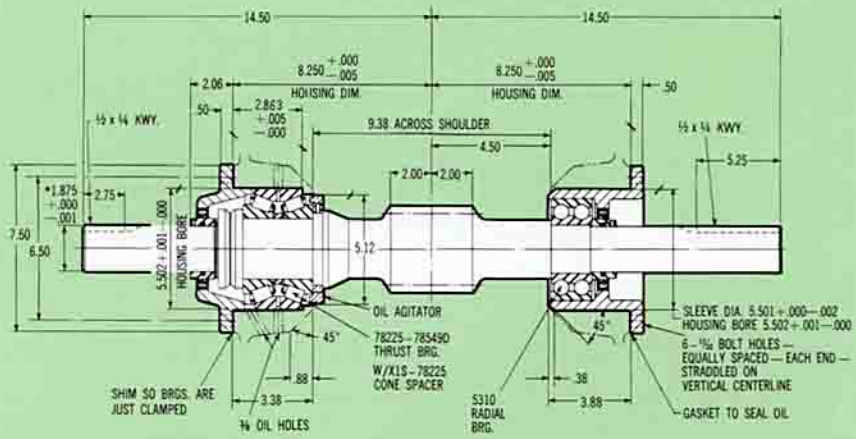
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 18 for Horsepower Rating Tables.

Worm — Series 27 (Double Extended)
Part No. 7003 AF-27



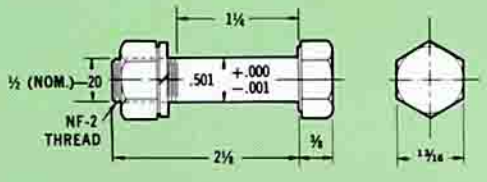
* Dimensions typical both ends.

Worm Mountings — Series 27
Type AF — Worm Below Gear (as shown)
Assembly Part No. 7030 AF-27
Type RF — Worm Above Gear (as shown less oil agitator)
Assembly Part No. E7030 RF-27



* Dimensions typical both ends.

Bound Body Gear Rim Bolt—Part No. Z1020H
Hex Nut—Part No. Z1025E
Lockwasher—Part No. Z1008C



Material Specification
SAE 1038 Steel
Heat Treated SAE Grade 5

Bearing locknut screw threads are National Form. Two bearing locknuts (Part No. N-11) and one lockwasher (Part No. W-11) furnished with each standard worm.

Machine housing bore center distance to 7.000 +.003 -.000

Bearing seat shoulders are filleted to suit bearings. On AF types, oil level should be slightly above top of worm thread. On RF types, gear should dip in oil one-third of its radius.

Dimensions in Inches

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

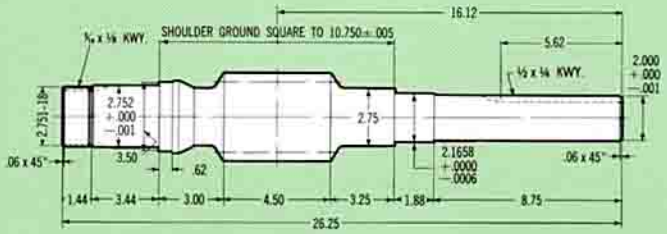
WORMS 8.000" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
4 5/6	R	3.077	3.797	2.243	25°	40°59′	6
5 1/8	R	2.949	3.361	2.277	25°	41°41′	8
5 1/8	L	2.949	3.361	2.277	25°	41°41′	8
5 7/8	R	2.781	3.284	2.322	25½°	38°21′	8
5 7/8	L	2.781	3.284	2.314	25½°	38°21′	8
6 2/5	R	3.166	3.847	2.259	25°	32°48′	5
6 4/5	R	3.137	3.750	2.358	25°	31°22′	5
6 4/5	L	3.137	3.750	2.358	26°	31°22′	5
7 1/5	R	3.108	3.883	2.349	26½°	29°31′	5
9 1/4	R	2.934	3.788	2.266	25°	24°37′	4
10 1/3	R	3.049	3.793	2.189	25°	22°21′	3
11	R	2.775	3.471	2.219	25½°	22°42′	4
12 2/3	R	3.148	3.824	2.366	25°	17°52′	3
13	R	3.058	3.625	2.197	25°	18°35′	3
13	L	3.058	3.625	2.197	25°	18°35′	3
15 1/2	R	3.049	3.793	2.189	20°	15°20′	2
17	R	2.810	3.331	2.215	25°	15°25′	3
17	L	2.810	3.331	2.215	25°	15°25′	3
18	R	3.166	3.867	2.329	25°	12°44′	2
18	L	3.166	3.867	2.329	25°	12°44′	2
19 1/2	R	3.089	3.766	2.338	25°	12°2′	2
24	R	2.860	3.478	2.300	25°	10°35′	2
24	L	2.860	3.478	2.300	25°	10°35′	2
26 1/2	R	2.722	3.318	2.238	20°	10°5′	2
31	R	3.049	3.793	2.189	20°	7°48′	1
38	R	3.148	3.882	2.424	27½°	6°2′	1
41	R	2.949	3.625	2.279	27°	6°5′	1
44	R	2.975	3.625	2.345	25°	5°35′	1
47	R	2.909	3.535	2.333	21°	5°21′	1
47	L	2.909	3.535	2.333	21°	5°21′	1
51	R	2.810	3.414	2.300	25°	5°6′	1
60	R	2.870	3.219	2.309	27°	4°28′	1
67	R	2.671	3.200	2.335	27°	4°4′	1

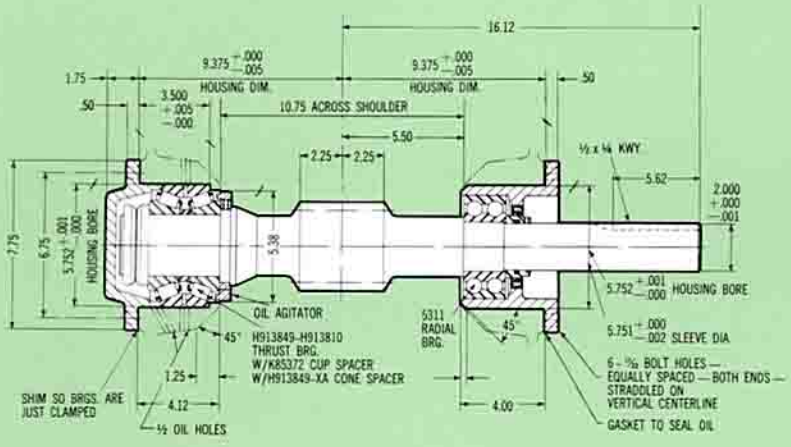
Worms and gears are carried in semi-finished stock.

For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 19 for Horsepower Rating Tables.

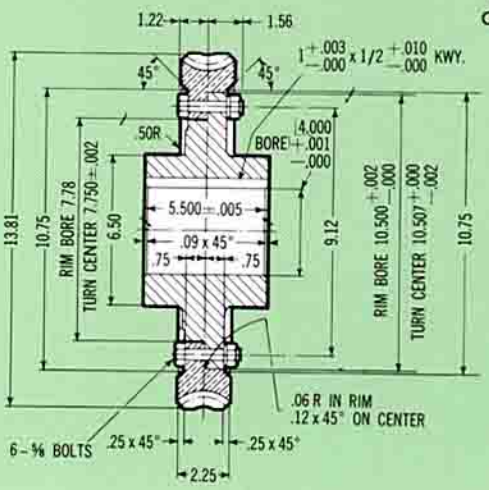
Worm — Series 25 (Single Extended)
Part No. 8003-AF



Worm Mountings — Series 25
Type AF — Worm Below Gear (as shown)
Assembly Part No. 8030 AF
Type RF — Worm Above Gear (as shown less oil agitator)
Assembly Part No. E8030 RF



Flanged Rim Blank and Center
Rim—Part No. R8040 AF
Center—Part No. C8040 AF



Bolt holes in rims and centers are jig drilled 1/64" under bolt size dimension shown—ream at assembly for body bound bolts.

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

Dimensions in Inches

GEARS 8.000" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.
4 5/6	R	12.923	13 3/16	2 1/4	1.400	29	1498
5 1/8	R	13.051	13 3/16	2 1/4	1.000	41	1414
5 1/8	L	13.051	13 3/16	2 1/4	1.000	41	1415
5 7/8	R	13.219	13 3/16	2 1/4	.88357	47	594
5 7/8	L	13.219	13 3/16	2 1/4	.88357	47	658
6 2/5	R	12.834	13 3/16	2 1/4	1.260	32	1320
6 4/5	R	12.863	13 3/16	2 1/4	1.1885	34	646
6 4/5	L	12.863	13 3/16	2 1/4	1.1885	34	1242
7 1/5	R	12.892	13 3/16	2 1/4	1.125	36	504
9 1/4	R	13.066	13 3/16	2 1/4	1.109375	37	327
10 1/3	R	12.951	13 3/16	2 1/4	1.3125	31	1499
11	R	13.225	13 3/16	2 1/4	.94426	44	727
12 2/3	R	12.852	13 3/16	2 1/4	1.0625	38	1531
13	R	12.942	13 3/16	2 1/4	1.0425	39	768
13	L	12.942	13 3/16	2 1/4	1.0425	39	1379
15 1/2	R	12.951	13 3/16	2 1/4	1.3125	31	1501
17	R	13.190	13 3/16	2 1/4	.8125	51	870
17	L	13.190	13 3/16	2 1/4	.8125	51	892
18	R	12.834	13 3/16	2 1/4	1.120	36	899
18	L	12.834	13 3/16	2 1/4	1.120	36	1190
19 1/2	R	12.911	13 3/16	2 1/4	1.040	39	900
24	R	13.140	13 3/16	2 1/4	.860	48	901
24	L	13.140	13 3/16	2 1/4	.860	48	1252
26 1/2	R	13.278	13 3/16	2 1/4	.78704	53	1278
31	R	12.951	13 3/16	2 1/4	1.3125	31	1502
38	R	12.852	13 3/16	2 1/4	1.0625	38	570
41	R	13.051	13 3/16	2 1/4	1.000	41	435
44	R	13.025	13 3/16	2 1/4	.930	44	755
47	R	13.091	13 3/16	2 1/4	.875	47	994
47	L	13.091	13 3/16	2 1/4	.875	47	1107
51	R	13.190	13 3/16	2 1/4	.8125	51	903
60	R	13.130	13 3/16	2 1/4	.6875	60	541
67	R	13.329	13 3/16	2 1/4	.625	67	592

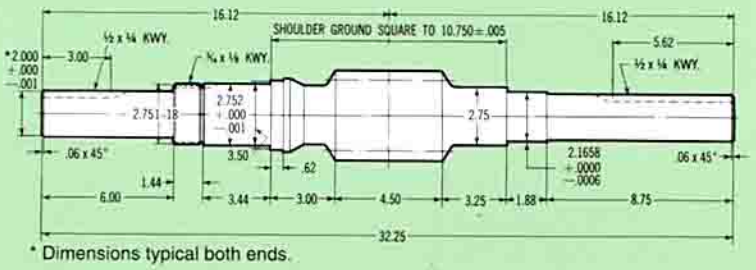
Worms and gears are carried in semi-finished stock.

For special ratios (see rating tables) consult factory for worm gear dimensions.

Refer to Page 19 for Horsepower Rating Tables.

Worm — Series 27 (Double Extended)

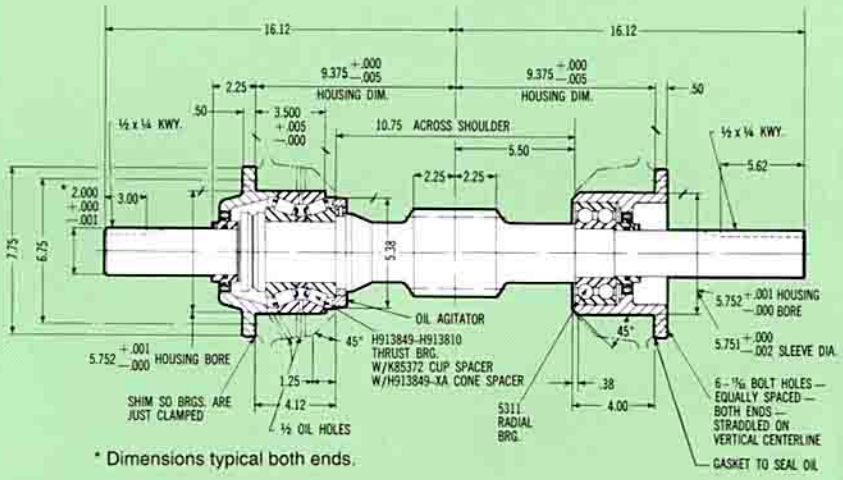
Part No. 8003 AF-27



* Dimensions typical both ends.

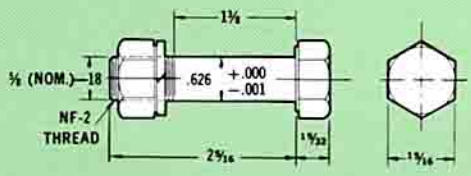
Worm Mountings — Series 27

Type AF — Worm Below Gear (as shown)
Assembly Part No. 8030 AF-27
Type RF — Worm Above Gear (as shown less oil agitator)
Assembly Part No. E8030 RF-27



* Dimensions typical both ends.

Bound Body Gear Rim Bolt—Part No. Z1020C
Hex Nut—Part No. Z1025F
Lockwasher—Part No. Z1008D



Material Specification
SAE 1038 Steel
Heat Treated SAE Grade 5

Bearing locknut screw threads are National Form. Two bearing locknuts (Part No. N-14) and one lockwasher (Part No. W-14) furnished with each standard worm.

Machine housing bore center distance to 8.000 $^{+.003}_{-.000}$

Bearing seat shoulders are filleted to suit bearings. On AF types, oil level should be slightly above top of worm thread, on RF types, gear should dip in oil one-third of its radius.

WORM & GEAR SETS

SIZE 90

Dimensions in Inches

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

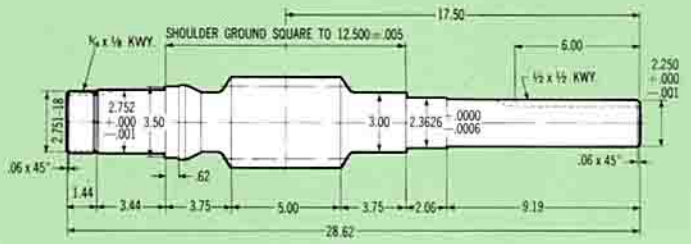
WORMS — 9.000" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
4 4/7	R	3.199	3.971	2.517	29½°	44°28′	7
4 5/6	R	3.494	4.314	2.544	25°	40°40′	6
5 1/8	R	2.992	3.669	2.501	25°	43°7′	8
5 1/8	L	2.992	3.669	2.501	25°	43°7′	8
6 2/5	R	3.821	4.446	2.634	25°	31°34′	5
7 2/5	R	3.451	4.237	2.541	25°	29°40′	5
9	R	3.413	4.195	2.463	25½°	25°30′	4
9 1/4	R	3.278	4.194	2.478	27°	25°6′	4
10	R	3.278	3.935	2.485	29°	24°20′	4
10	L	3.278	3.935	2.485	25°	24°20′	4
11 2/3	R	3.378	4.363	2.575	26½°	19°33′	3
12 2/3	R	3.485	4.249	2.601	25°	18°12′	3
15 1/2	R	3.468	4.372	2.422	20°	15°8′	2
17 1/2	R	3.378	4.370	2.574	27½°	13°19′	2
17 1/2	L	3.378	4.370	2.574	27½°	13°19′	2
18 1/2	R	3.278	4.190	2.500	27°	13°10′	2
20	R	3.411	4.139	2.569	20°	12°4′	2
24	R	3.254	3.750	2.420	25°	11°5′	2
24	L	3.254	3.750	2.426	25°	11°5′	2
31	R	3.468	4.372	2.422	20°	7°42′	1
35	R	3.378	4.363	2.559	27°	6°45′	1
35	L	3.378	4.363	2.559	25°	6°45′	1
40	R	2.976	4.000	2.420	25½°	6°42′	1
40	L	2.976	4.000	2.420	25½°	6°42′	1
44	R	3.119	3.882	2.424	27½°	6°2′	1
46	R	3.358	4.000	2.627	25°	5°24′	1
51	R	3.242	3.820	2.572	20°	5°6′	1
62	R	3.199	3.625	2.588	25°	4°20′	1
65	R	3.129	3.579	2.595	20°	4°12′	1
80	R	2.884	3.383	2.577	25°	3°37′	1

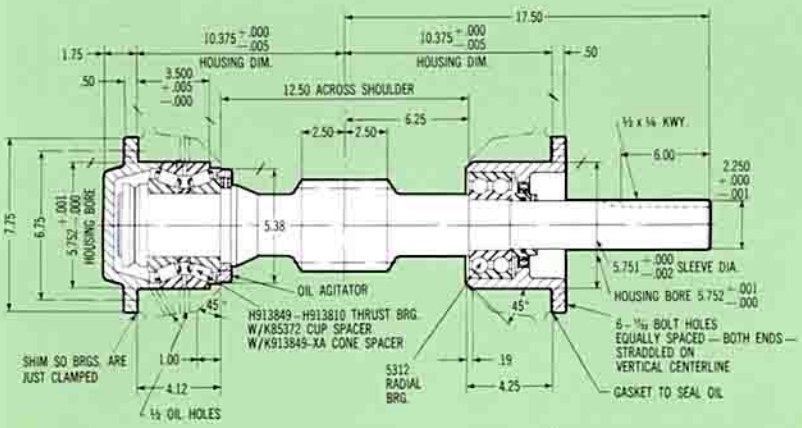
Worms and gears are carried in semi-finished stock.

For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 19 for Horsepower Rating Tables.

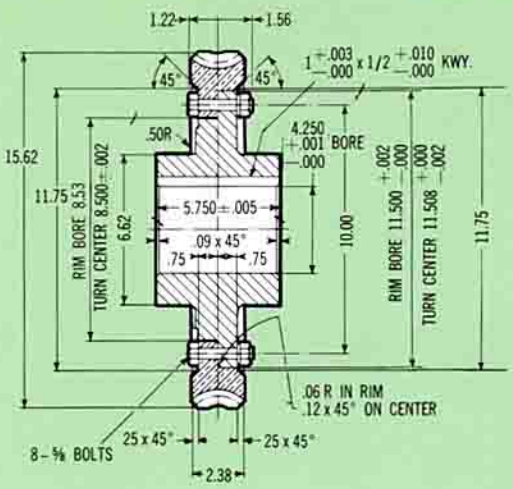
Worm — Series 25 (Single Extended)
Part No. 9003 AF



Worm Mountings — Series 25
Type AF — Worm Below Gear (as shown)
Assembly Part No. 9030 AF
Type RF — Worm Above Gear (as shown less oil agitator)
Assembly Part No. E9030 RF



Flanged Rim Blank and Center
Rim—Part No. R9040 AF
Center—Part No. C9040 AF



Bolt holes in rims and centers are jig drilled 1/64" under bolt size dimension shown—ream at assembly for body bound bolts.

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

Dimensions in Inches

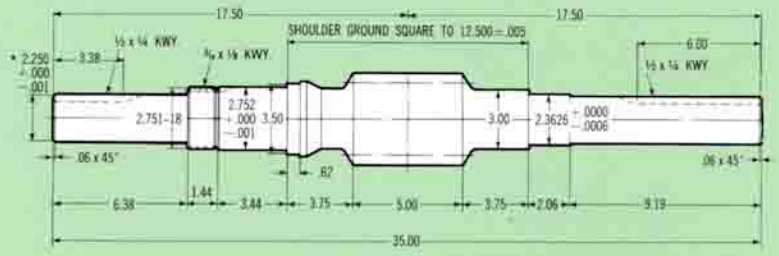
GEARS 9.000" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.
4 4/7	R	14.801	15⅝	2⅜	1.4531	32	483
4 5/6	R	14.506	15⅝	2⅜	1.57143	29	1555
5 1/8	R	15.008	15⅝	2⅜	1.150	41	1366
5 1/8	L	15.008	15⅝	2⅜	1.150	41	1367
6 2/5	R	14.179	15⅝	2⅜	1.392	32	1335
7 2/5	R	14.549	15⅝	2⅜	1.23529	37	1556
9	R	14.587	15⅝	2⅜	1.27294	36	682
9 1/4	R	14.722	15⅝	2⅜	1.250	37	468
10	R	14.722	15⅝	2⅜	1.15625	40	765
10	L	14.722	15⅝	2⅜	1.15625	40	1232
11 2/3	R	14.622	15⅝	2⅜	1.3125	35	332
12 2/3	R	14.515	15⅝	2⅜	1.200	38	1557
15 1/2	R	14.532	15⅝	2⅜	1.47272	31	1558
17 1/2	R	14.622	15⅝	2⅜	1.3125	35	456
17 1/2	L	14.622	15⅝	2⅜	1.3125	35	1106
18 1/2	R	14.722	15⅝	2⅜	1.250	37	494
20	R	14.589	15⅝	2⅜	1.145833	40	1559
24	R	14.746	15⅝	2⅜	.96512	48	712
24	L	14.746	15⅝	2⅜	.96512	48	802
31	R	14.532	15⅝	2⅜	1.47272	31	1560
35	R	14.622	15⅝	2⅜	1.3125	35	549
35	L	14.622	15⅝	2⅜	1.3125	35	1206
40	R	15.024	15⅝	2⅜	1.180	40	754
40	L	15.024	15⅝	2⅜	1.180	40	1134
44	R	14.881	15⅝	2⅜	1.0625	44	570
46	R	14.642	15⅝	2⅜	1.000	46	747
51	R	14.758	15⅝	2⅜	.90909	51	1561
62	R	14.801	15⅝	2⅜	.750	62	843
65	R	14.871	15⅝	2⅜	.71875	65	1356
80	R	15.116	15⅝	2⅜	.5936	80	627

Worms and gears are carried in semi-finished stock.

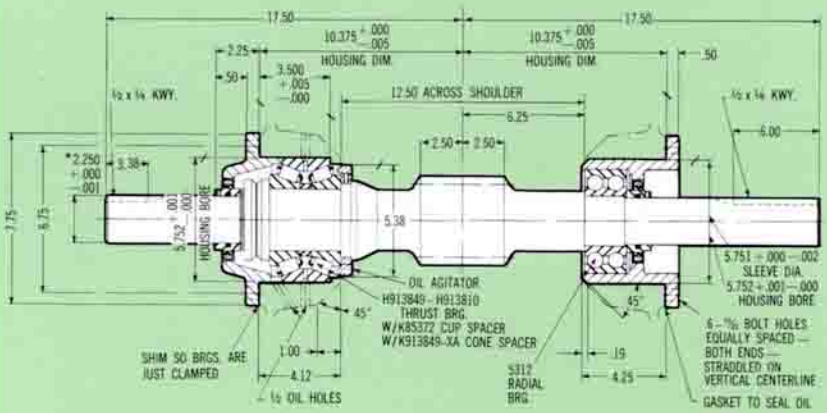
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 19 for Horsepower Rating Tables.

Worm — Series 27 (Double Extended)
Part No. 9003 AF-27



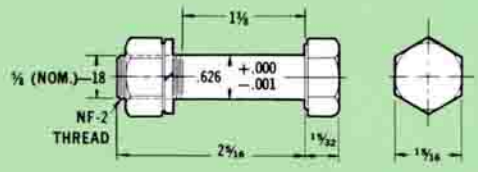
* Dimensions typical both ends.

Worm Mountings — Series 27
Type AF — Worm Below Gear (as shown)
Assembly Part No. 9030 AF-27
Type RF — Worm Above Gear (as shown less oil agitator)
Assembly Part No. E9030 RF-27



* Dimensions typical both ends.

Bound Body Gear Rim Bolt—Part No. Z1020C
Hex Nut—Part No. Z1025F
Lockwasher—Part No. Z1008D



Material Specification
SAE 1038 Steel
Heat Treated SAE Grade 5

Bearing locknut screw threads are National Form. Two bearing locknuts (Part No. N-14) and one lockwasher (Part No. W-14) furnished with each standard worm.

Machine housing bore center distance to 9.000 $^{+.003}_{-.000}$

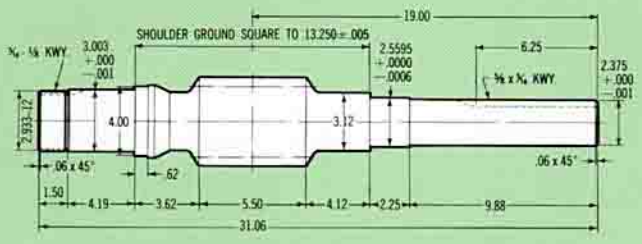
Bearing seat shoulders are filleted to suit bearings. On AF types, oil level should be slightly above top of worm thread, on RF types, gear should dip in oil one-third of its radius.

SIZE 100

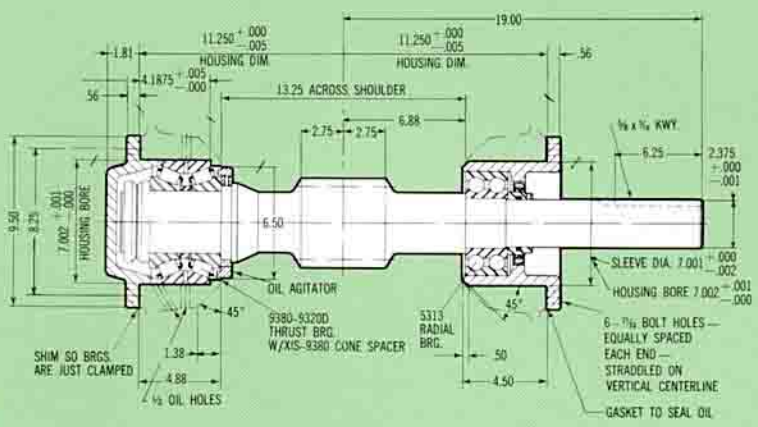
Dimensions subject to change. Use certified prints only for construction.

Dimensions in Inches

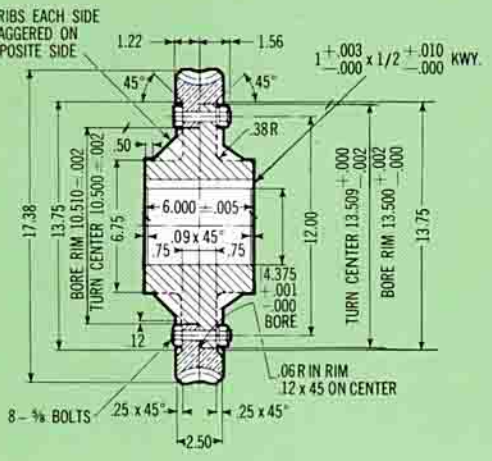
Worm — Series 25 (Single Extended)
Part No. 10003 AF



Worm Mountings — Series 25
Type AF — Worm Below Gear (as shown)
Assembly Part No. 10030 AF
Type RF — Worm Above Gear (as shown less oil agitator)
Assembly Part No. E10030 RF



Flanged Rim Blank and Center
Rim—Part No. R1440CU
Center—Part No. C10040AF



WORMS — 10.000″ CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
4 5/6	R	3.846	4.686	2.876	29°	40°59′	6
4 5/6	L	3.846	4.686	2.876	24½°	40°59′	6
5 1/4	R	3.623	4.259	2.887	25°	40°44′	8
6 2/5	R	3.766	4.625	2.705	25°	33°52′	5
6 2/5	L	3.766	4.625	2.786	25°	33°52′	5
7	R	3.702	4.500	2.780	25°	32°10′	5
7 2/5	R	3.606	4.446	2.634	25°	31°34′	5
7 3/5	R	3.162	4.446	2.634	25°	31°34′	5
8	R	3.687	4.500	2.747	25°	28°57′	5
8	L	3.687	4.500	2.747	25°	28°57′	5
8 2/5	R	3.660	4.438	2.760	25°	27°59′	5
9	R	3.728	4.630	2.684	25°	25°52′	4
9 1/4	R	3.737	4.617	2.721	25°	25°12′	4
9 1/2	R	3.634	4.500	2.646	25°	25°22′	4
10	R	3.846	4.750	2.776	25°	22°47′	4
10	L	3.846	4.750	2.770	25°	22°47′	4
10 3/4	R	3.746	4.502	2.872	25°	21°59′	4
11 1/4	R	3.662	4.386	2.822	25°	21°38′	4
12 1/3	R	3.806	4.550	2.710	28°	19°41′	3
12 1/2	R	3.587	4.243	2.827	25°	20°6′	4
12 1/2	L	3.587	4.243	2.827	25°	20°6′	4
12 2/3	R	3.368	4.550	2.710	28°	19°41′	3
13 1/3	R	3.687	4.500	2.746	25½°	18°22′	3
14 1/3	R	3.746	4.345	2.695	25½°	17°31′	3
14 2/3	R	3.368	4.345	2.695	25½°	17°31′	3
15	R	3.614	4.375	2.798	25°	16°49′	3
15	L	3.614	4.375	2.798	25°	16°49′	3
16	L	3.575	4.259	2.783	25°	16°1′	3
16 2/3	R	3.587	4.243	2.827	25°	15°21′	3
18	R	3.728	4.625	2.687	25°	13°38′	2
18	L	3.728	4.625	2.687	25°	13°38′	2
18 1/2	R	3.836	4.551	2.727	27°	13°24′	2
20	R	3.289	4.370	2.574	27½°	13°19′	2
20	L	3.289	4.370	2.574	27½°	13°19′	2
23 1/2	R	3.637	4.243	2.719	27½°	11°6′	2
23 1/2	L	3.637	4.243	2.719	27½°	11°6′	2
24	R	3.289	4.243	2.719	27½°	11°6′	2
26 1/2	R	3.467	4.087	2.741	25°	10°12′	2
30 1/2	R	3.496	4.036	2.870	20°	8°48′	2
36	R	3.728	4.625	2.687	25°	6°55′	1
36	L	3.728	4.625	2.687	25°	6°55′	1
39	R	3.707	4.363	2.559	27°	6°45′	1
39	L	3.707	4.363	2.559	25°	6°45′	1
45	R	3.527	4.259	2.679	25°	5°56′	1
49	R	3.623	4.208	2.768	20°	5°24′	1
52	R	3.448	4.000	2.627	25°	5°24′	1
58	R	3.384	3.956	2.722	25°	4°50′	1
65	R	3.189	3.826	2.732	27½°	4°28′	1
71	R	3.050	3.625	2.588	25°	4°20′	1
79	R	3.236	3.660	2.732	25°	3°45′	1
79	L	3.236	3.660	2.732	20°	3°45′	1
90	R	2.996	3.383	2.577	25°	3°37′	1
95	R	2.990	3.358	2.586	27°	3°25′	1

Worms and gears are carried in semi-finished stock.
Stock ratios should be selected whenever possible for quickest delivery and lowest cost.

Bolt holes in rims and centers are jig drilled 1/64″ under bolt size dimension shown—ream at assembly for body bound bolts.

GEARS 10.000" CENTERS

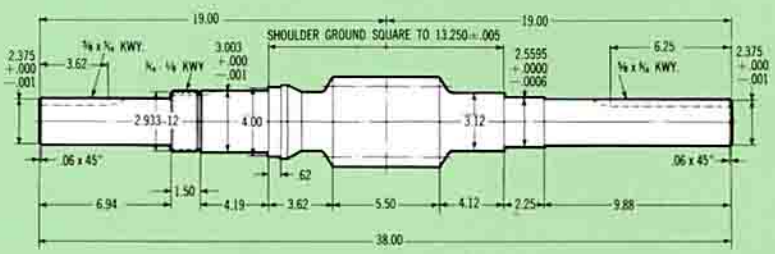
Dimensions subject to change. Use certified prints only for construction.

Dimensions in Inches

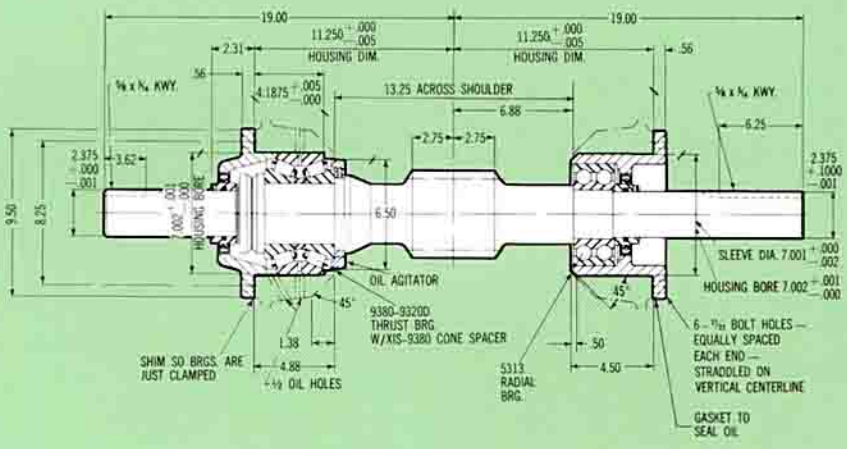
Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.
4 5/6	R	16.154	17⅜	2½	1.750	29	532
4 5/6	L	16.154	17⅜	2½	1.750	29	757
5 1/4	R	16.377	17⅜	2½	1.225	42	1409
6 2/5	R	16.234	17⅜	2½	1.5938	32	684
6 2/5	L	16.234	17⅜	2½	1.5938	32	981
7	R	16.298	17⅜	2½	1.4628	35	651
7 2/5	R	16.394	17⅜	2½	1.392	37	1335
7 3/5	R	16.838	17⅜	2½	1.392	38	1335
8	R	16.313	17⅜	2½	1.28125	40	669
8	L	16.313	17⅜	2½	1.28125	40	767
8 2/5	R	16.340	17⅜	2½	1.2222	42	1389
9	R	16.272	17⅜	2½	1.420	36	1316
9 1/4	R	16.263	17⅜	2½	1.3809	37	1319
9 1/2	R	16.306	17⅜	2½	1.353	38	850
10	R	16.154	17⅜	2½	1.26875	40	671
10	L	16.154	17⅜	2½	1.26875	40	762
10 3/4	R	16.254	17⅜	2½	1.1875	43	1552
11 1/4	R	16.338	17⅜	2½	1.1406	45	1296
12 1/3	R	16.194	17⅜	2½	1.375	37	511
12 1/2	R	16.413	17⅜	2½	1.03125	50	1458
12 1/2	L	16.413	17⅜	2½	1.03125	50	1459
12 2/3	R	16.632	17⅜	2½	1.375	38	511
13 1/3	R	16.313	17⅜	2½	1.28125	40	822
14 1/3	R	16.254	17⅜	2½	1.1875	43	420
14 2/3	R	16.632	17⅜	2½	1.1875	44	420
15	R	16.386	17⅜	2½	1.144	45	756
15	L	16.386	17⅜	2½	1.144	45	1211
16	L	16.425	17⅜	2½	1.075	48	1387
16 2/3	R	16.413	17⅜	2½	1.03125	50	1150
18	R	16.272	17⅜	2½	1.420	36	851
18	L	16.272	17⅜	2½	1.420	36	1304
18 1/2	R	16.194	17⅜	2½	1.375	37	454
20	R	16.711	17⅜	2½	1.3125	40	456
20	L	16.711	17⅜	2½	1.3125	40	1106
23 1/2	R	16.363	17⅜	2½	1.09375	47	591
23 1/2	L	16.363	17⅜	2½	1.09375	47	1104
24	R	16.711	17⅜	2½	1.09375	48	591
26 1/2	R	16.533	17⅜	2½	.980	53	906
30 1/2	R	16.504	17⅜	2½	.850	61	1437
36	R	16.272	17⅜	2½	1.420	36	907
36	L	16.272	17⅜	2½	1.420	36	1322
39	R	16.293	17⅜	2½	1.3125	39	549
39	L	16.293	17⅜	2½	1.3125	39	1206
45	R	16.473	17⅜	2½	1.150	45	908
49	R	16.377	17⅜	2½	1.050	49	1423
52	R	16.552	17⅜	2½	1.000	52	747
58	R	16.616	17⅜	2½	.900	58	909
65	R	16.811	17⅜	2½	.8125	65	564
71	R	16.950	17⅜	2½	.750	71	843
79	R	16.764	17⅜	2½	.66667	79	910
79	L	16.764	17⅜	2½	.66667	79	1258
90	R	17.004	17⅜	2½	.5936	90	627
95	R	17.010	17⅜	2½	.5625	95	539

Worms and gears are carried in semi-finished stock.
Stock ratios should be selected whenever possible for quickest delivery and lowest cost.

Worm — Series 27 (Double Extended)
Part No. 10003 AF-27



Worm Mountings — Series 27
Type AF — Worm Below Gear (as shown)
Assembly Part No. 10030 AF-27
Type RF — Worm Above Gear (as shown less oil agitator)
Assembly Part No. E10030 RF-27

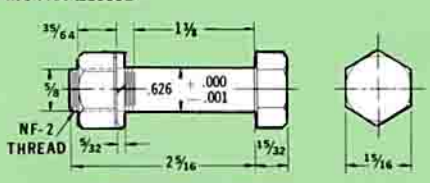


Bearing locknut screw threads are National Form. Two bearing locknuts (Part No. AN-15) and one lockwasher (Part No. W-15) furnished with each standard worm.

Machine housing bore center distance to $10.000^{+.003}_{-.000}$

Bearing seat shoulders are filleted to suit bearings. On AF types, oil level should be slightly above top of worm thread. On RF types, gear should dip in oil one-third of its radius.

Bound Body Gear Rim Bolt—Part No. Z1020C
Hex Nut—Part No. Z1025F
Lockwasher—Part No. Z1008D



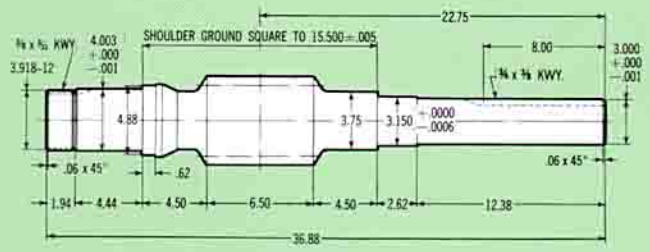
Material Specification
SAE 1038 Steel
Heat Treated SAE Grade 5

SIZE 120

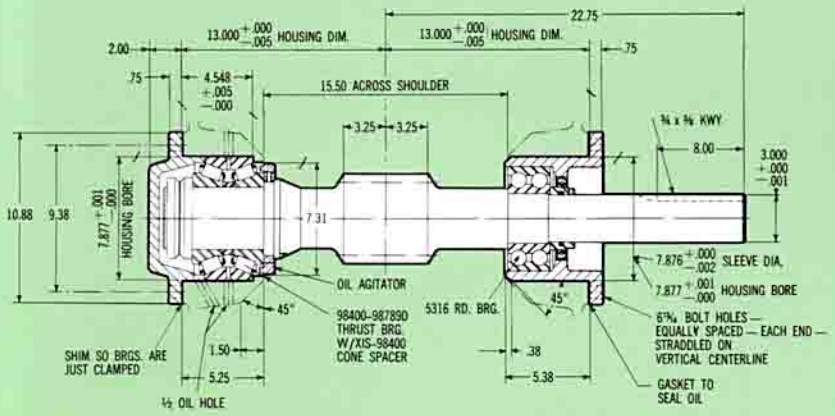
Dimensions subject to change. Use certified prints only for construction.

Dimensions in Inches

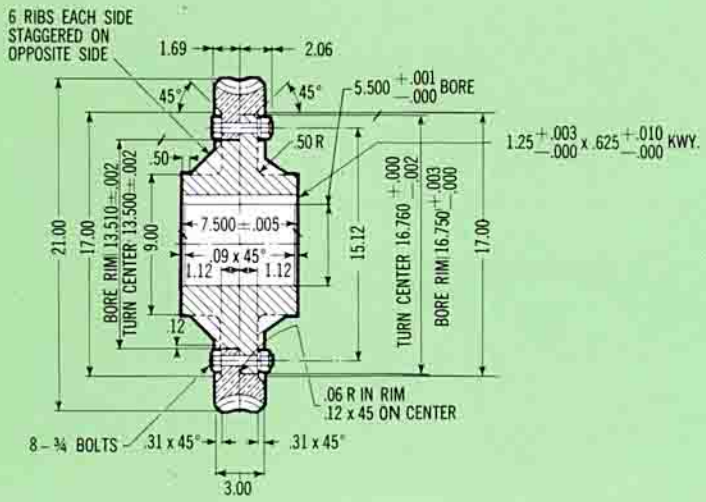
Worm — Series 25 (Single Extended)
Part No. 12003 AF



Worm Mountings — Series 25
Type AF — Worm Below Gear (as shown)
Assembly Part No. 12030 AF
Type RF — Worm Above Gear (as shown less oil agitator)
Assembly Part No. E12030 RF



Flanged Rim Blank and Center
Rim—Part No. R1540CU
Center—Part No. C12040 AF



WORMS — 12.000″ CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
4 5/6	R	4.384	5.376	3.232	28°	42°47′	6
4 5/6	L	4.384	5.376	3.236	30°	42°47′	6
5 1/6	R	4.265	5.250	3.209	25°	41°51′	6
5 1/3	R	4.265	5.250	3.210	25°	40°57′	6
5 3/5	R	4.303	5.287	3.163	28°	39°16′	5
5 5/8	R	4.305	5.093	3.393	25°	39°7′	8
6 1/6	R	4.265	5.125	3.205	25°	36°53′	6
6 1/6	L	4.265	5.125	3.205	25°	36°53′	6
7 2/5	R	4.265	5.277	3.095	25°	32°1′	5
8	R	4.405	5.375	3.281	26°	29°5′	5
8	L	4.405	5.375	3.281	25½°	29°5′	5
8 2/5	R	4.225	5.165	3.135	25°	29°8′	5
10	R	4.265	5.251	3.125	25°	24°50′	4
11 1/4	R	4.305	5.062	3.182	26½°	22°44′	4
11 1/4	L	4.305	5.062	3.182	25°	22°44′	4
12	R	4.290	5.125	3.341	25°	20°57′	4
12 1/4	R	3.880	5.125	3.341	25°	20°57′	4
13	R	4.379	5.375	3.219	25°	19°1′	3
13 2/3	R	4.016	4.990	2.888	26°	20°0′	3
15 1/3	R	4.152	5.012	3.152	25°	17°19′	3
15 1/3	L	4.152	5.012	3.152	25°	17°19′	3
16 1/3	R	4.016	4.871	3.111	25°	16°47′	3
16 2/3	R	3.608	4.871	3.111	25°	16°47′	3
17 2/3	R	3.966	4.722	3.092	25°	15°57′	3
20	R	4.305	5.289	3.165	25°	12°53′	2
20	L	4.305	5.289	3.165	25°	12°53′	2
21	R	4.298	5.232	3.216	20°	12°19′	2
22 1/2	R	4.305	5.052	3.166	28°	11°50′	2
23 1/2	R	4.130	4.976	3.150	25°	11°34′	2
23 1/2	L	4.130	4.976	3.150	25°	11°34′	2
25	R	4.106	5.000	3.283	25°	10°43′	2
26	R	3.999	4.767	3.109	20°	10°53′	2
28 1/2	R	4.106	4.806	3.296	25°	9°39′	2
30	R	4.138	4.750	3.330	25°	9°5′	2
33 1/2	R	4.006	4.602	3.334	27½°	8°28′	2
35 1/2	R	3.872	4.438	3.216	20°	8°20′	2
40	R	4.305	5.289	3.165	25°	6°31′	1
40	L	4.305	5.289	3.165	25°	6°31′	1
45	R	4.305	5.051	3.137	27°	5°59′	1
50	R	4.106	4.965	3.221	25°	5°24′	1
50	L	4.106	5.000	3.222	25°	5°24′	1
59	R	3.909	4.653	3.049	25°	4°59′	1
70	R	3.808	4.384	3.144	27°	4°20′	1
79	R	3.568	4.116	3.008	28°	4°7′	1

Worms and gears are carried in semi-finished stock.

For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 20 for Horsepower Rating Tables.

Bolt holes in rims and centers are jig drilled 1/64″ under bolt size dimension shown—ream at assembly for body bound bolts.

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

Dimensions In Inches

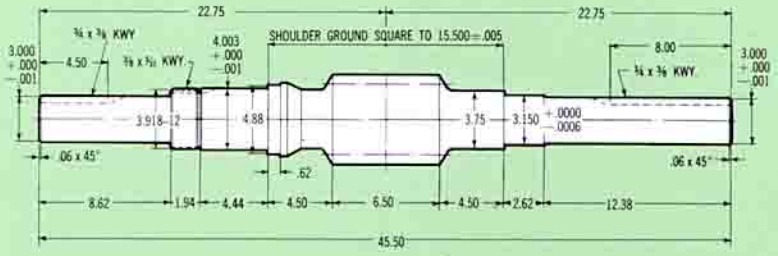
GEARS 12.000" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.
4 5/6	R	19.616	21	3	2.125	29	513
4 5/6	L	19.616	21	3	2.125	29	599
5 1/6	R	19.735	21	3	2.000	31	791X
5 1/3	R	19.735	21	3	1.9375	32	786
5 3/5	R	19.697	21	3	2.210	28	1336
5 5/8	R	19.695	21	3	1.375	45	1348
6 1/6	R	19.735	21	3	1.6757	37	1272
6 1/6	L	19.735	21	3	1.6757	37	653
7 2/5	R	19.735	21	3	1.6757	37	1532
8	R	19.595	21	3	1.539	40	663
8	L	19.595	21	3	1.539	40	664
8 2/5	R	19.775	21	3	1.47917	42	1120
10	R	19.735	21	3	1.550	40	1421
11 1/4	R	19.695	21	3	1.375	45	437
11 1/4	L	19.695	21	3	1.375	45	847
12	R	19.710	21	3	1.290	48	697
12 1/4	R	20.120	21	3	1.290	49	697
13	R	19.621	21	3	1.5805	39	728
13 2/3	R	19.984	21	3	1.53125	41	450
15 1/3	R	19.848	21	3	1.3555	46	914
15 1/3	L	19.848	21	3	1.3555	46	1099
16 1/3	R	19.984	21	3	1.28125	49	1005
16 2/3	R	20.392	21	3	1.28125	50	1005
17 2/3	R	20.034	21	3	1.1875	53	1572
20	R	19.695	21	3	1.546875	40	918
20	L	19.695	21	3	1.546875	40	1194
21	R	19.702	21	3	1.4737	42	1225
22 1/2	R	19.695	21	3	1.375	45	408
23 1/2	R	19.870	21	3	1.328125	47	915
23 1/2	L	19.870	21	3	1.328125	47	1205
25	R	19.894	21	3	1.250	50	1264
26	R	20.001	21	3	1.208333	52	1187
28 1/2	R	19.894	21	3	1.0965	57	724
30	R	19.862	21	3	1.040	60	643
33 1/2	R	19.994	21	3	.9375	67	519
35 1/2	R	20.128	21	3	.8906	71	1338
40	R	19.695	21	3	1.546875	40	916
40	L	19.695	21	3	1.546875	40	953
45	R	19.695	21	3	1.375	45	497
50	R	19.894	21	3	1.250	50	610
50	L	19.894	21	3	1.250	50	656
59	R	20.091	21	3	1.0698	59	917
70	R	20.192	21	3	.90625	70	593
79	R	20.432	21	3	.8125	79	472

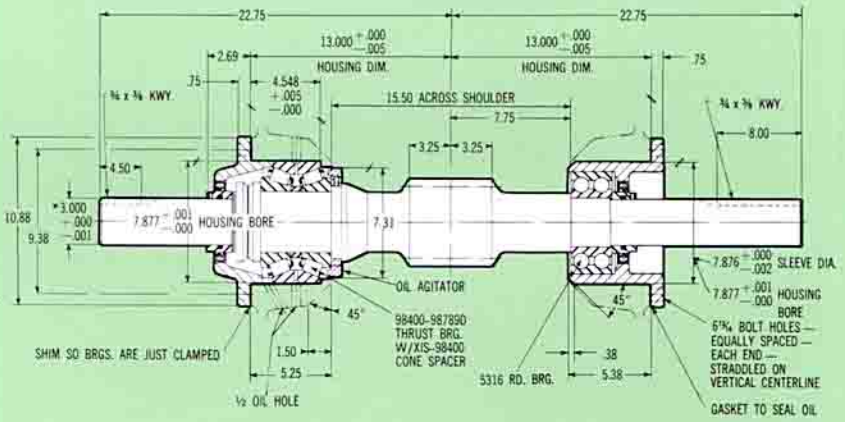
Worms and gears are carried in semi-finished stock.

For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 20 for Horsepower Rating Tables.

Worm — Series 27 (Double Extended)
Part No. 12003 AF-27

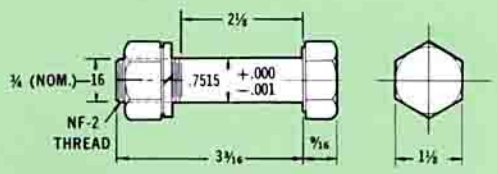


Worm Mountings — Series 27
Type AF — Worm Below Gear (as shown)
Assembly Part No. 12030 AF-27
Type RF — Worm Above Gar (as shown less oil agitator)
Assembly Part No. E12030 RF-27



* Dimensions typical both ends.

Bound Body Gear Rim Bolt—Part No. Z1020D
Hex Nut—Part No. Z1025G
Lockwasher—Part No. Z1008E



Material Specification
SAE 1038 Steel
Heat Treated SAE Grade 5

Bearing locknut screw threads are National Form. Two bearing locknuts (Part No. AN-20) and one lockwasher (Part No. W-20) furnished with each standard worm.

Machine housing bore center distance to $12.000^{+.003}_{-.000}$

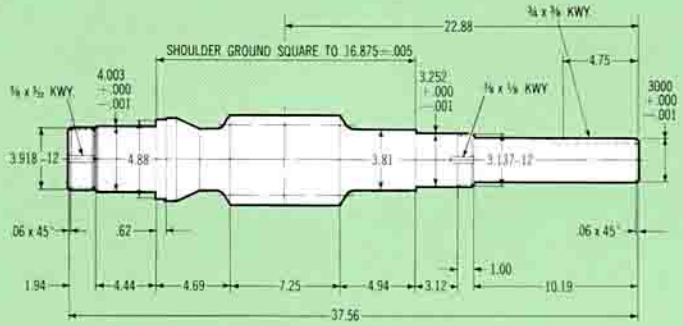
Bearing seat shoulders are filleted to suit bearings. On AF types, oil level should be slightly above top of worm thread, on RF types, gear should dip in oil one-third of its radius.

SIZE 134

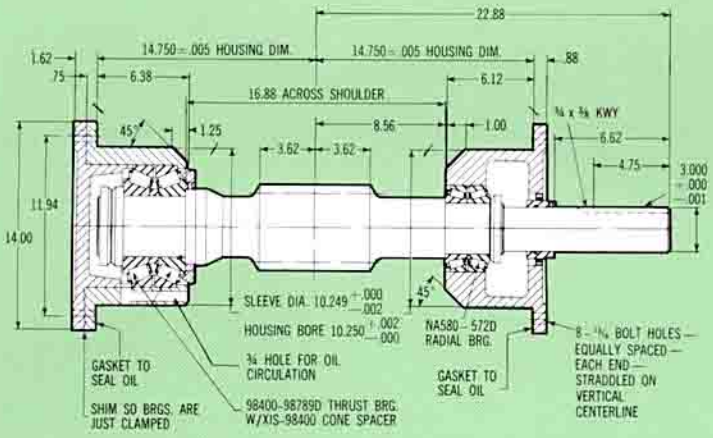
Dimensions subject to change. Use certified prints only for construction.

Dimensions in Inches

Worm — Series 25 (Single Extended)
Part No. C13403A



Worm Mounting — Series 25, Type A (Worm Below Gear)
Assembly Part No. C13430A

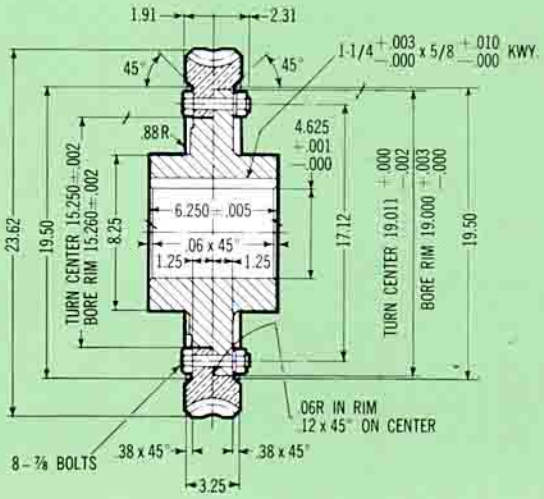


WORMS — 13.4365" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
5 1/7	R	4.273	5.748	3.778	25°	42°14′	7
5 5/8	R	4.364	5.114	3.516	25°	42°31′	8
6 1/6	R	4.591	5.561	3.471	24½°	38°13′	6
7 3/5	R	4.591	5.625	3.465	25°	32°34′	5
8	R	4.687	5.627	3.597	25°	30°37′	5
8	L	4.687	5.627	3.597	25°	30°37′	5
8 4/5	R	4.551	5.563	3.379	25°	29°8′	5
9 1/5	R	4.339	5.375	3.281	26°	29°5′	5
9 1/5	L	4.339	5.375	3.281	26°	29°5′	5
9 1/2	R	4.949	6.153	3.581	25°	24°47′	4
9 1/2	L	4.949	6.153	3.581	25°	24°47′	4
10	R	4.719	5.875	3.539	25°	25°9′	4
10 1/2	R	4.555	5.717	3.431	25°	24°30′	4
11 3/4	R	4.432	5.558	3.500	25°	22°32′	4
11 3/4	L	4.432	5.558	3.500	25°	22°32′	4
13 3/4	R	4.290	5.125	3.341	25°	20°57′	4
14	R	3.879	5.125	3.341	25°	20°57′	4
15	R	4.373	5.123	3.473	25°	18°56′	4
15	L	4.373	5.123	3.473	25°	18°56′	4
15 2/3	R	4.432	5.649	3.591	27½°	16°58′	3
17 1/3	R	4.528	5.398	3.522	25°	15°54′	3
20	R	4.719	5.875	3.547	25°	13°13′	2
20	L	4.719	5.875	3.547	25°	13°13′	2
21 1/2	R	4.631	5.750	3.520	25°	12°36′	2
23 1/2	R	4.432	5.648	3.590	26½°	11°30′	2
25 1/2	R	4.551	5.242	3.352	20°	11°20′	2
28 1/2	R	4.193	5.000	3.283	25°	10°43′	2
28 1/2	L	4.193	5.000	3.283	25°	10°43′	2
31 1/2	R	4.313	5.029	3.483	20°	9°25′	2
36	R	4.273	5.000	3.621	25°	8°27′	2
36	L	4.273	5.000	3.621	25°	8°27′	2
40	R	4.592	5.796	3.394	20°	6°47′	1
40	L	4.592	5.796	3.394	20°	6°47′	1
43	L	4.631	5.750	3.498	25°	6°16′	1
47	R	4.432	5.653	3.594	25°	5°48′	1
48	R	4.591	5.500	3.500	25°	5°46′	1
55	R	4.290	5.114	3.336	20°	5°28′	1
61	R	4.422	5.162	3.562	20°	4°46′	1
70	L	4.244	4.892	3.496	25°	4°21′	1
71	R	4.273	4.909	3.537	20°	4°16′	1
79	R	4.084	4.660	3.416	20°	4°2′	1
89	R	4.108	4.620	3.516	20°	3°34′	1
100	R	4.113	4.562	3.588	25°	3°10′	1

Worms and gears are carried in semi-finished stock.
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 21 for Horsepower Rating Tables.

Bolt holes in rims and centers are jig drilled 1/64" under bolt size dimension shown—ream at assembly for body bound bolts.



Flanged Rim Blank and Center
Rim - Part No. R1640CU
Center - Part No. C.13440A

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

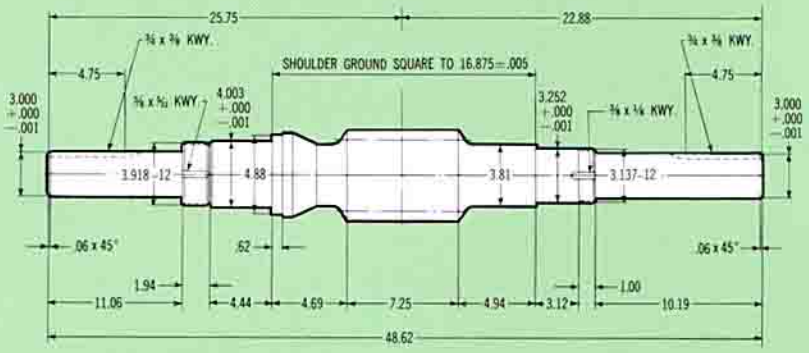
Dimensions in Inches

GEARS 13.4365" CENTERS

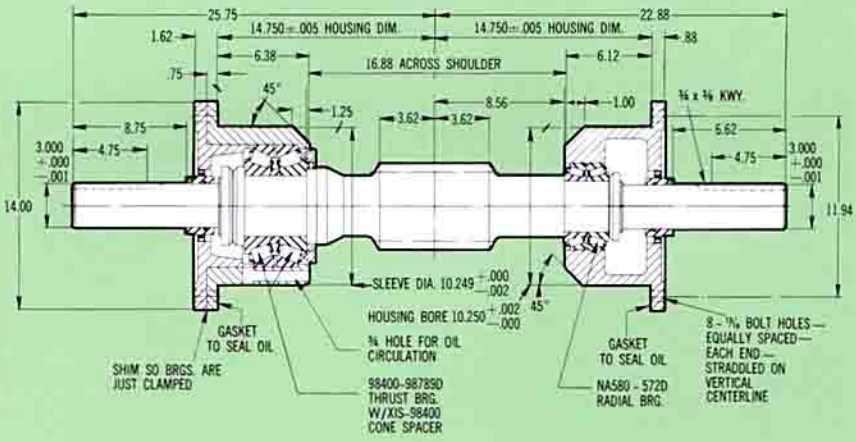
Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.
5 1/7	R	22.600	23¼	3¼	1.9722	36	811
5 5/8	R	22.509	23⅜	3¼	1.5714	45	1191
6 1/6	R	22.282	23⅜	3¼	1.8919	37	950
7 3/5	R	22.282	23⅜	3¼	1.8421	38	683
8	R	22.185	23⅜	3¼	1.7425	40	703
8	L	22.185	23⅜	3¼	1.7425	40	853
8 4/5	R	22.322	23⅜	3¼	1.59375	44	1327
9 1/5	R	22.534	23⅜	3¼	1.539	46	663
9 1/5	L	22.534	23⅜	3¼	1.539	46	664
9 1/2	R	21.924	23⅜	3¼	1.8125	38	385
9 1/2	L	21.924	23⅜	3¼	1.8125	38	606
10	R	22.154	23⅜	3¼	1.740	40	672
10 1/2	R	22.282	23⅜	3¼	1.667	42	1165
11 3/4	R	22.441	23⅜	3¼	1.500	47	942
11 3/4	L	22.441	23⅜	3¼	1.500	47	1285
13 3/4	R	22.584	23⅜	3¼	1.290	55	697
14	R	22.994	23⅜	3¼	1.290	56	697
15	R	22.500	23⅜	3¼	1.1781	60	620
15	L	22.500	23⅜	3¼	1.1781	60	923
15 2/3	R	22.441	23⅜	3¼	1.500	47	587
17 1/3	R	22.345	23⅜	3¼	1.350	52	971
20	R	22.154	23⅜	3¼	1.740	40	773
20	L	22.154	23⅜	3¼	1.740	40	1306
21 1/2	R	22.242	23⅜	3¼	1.625	43	638
23 1/2	R	22.441	23⅜	3¼	1.500	47	407
25 1/2	R	22.322	23⅜	3¼	1.375	51	1167
28 1/2	R	22.680	23⅜	3¼	1.250	57	1264
28 1/2	L	22.680	23⅜	3¼	1.250	57	726
31 1/2	R	22.560	23⅜	3¼	1.125	63	1097
36	R	22.600	23⅜	3¼	.98611	72	695
36	L	22.600	23⅜	3¼	.98611	72	1290
40	R	22.281	23⅜	3¼	1.750	40	985
40	L	22.281	23⅜	3¼	1.750	40	1399
43	L	22.242	23⅜	3¼	1.625	43	873
47	R	22.441	23⅜	3¼	1.500	47	596
48	R	22.282	23⅜	3¼	1.4583	48	803
55	R	22.584	23⅜	3¼	1.290	55	982
61	R	22.451	23⅜	3¼	1.15625	61	957
70	L	22.629	23⅜	3¼	1.015625	70	927
71	R	22.600	23⅜	3¼	1.000	71	1033
79	R	22.789	23⅜	3¼	.90625	79	1042
89	R	22.765	23⅜	3¼	.8037	89	990
100	R	22.760	23⅜	3¼	.715	100	725

Worms and gears are carried in semi-finished stock.
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 21 for Horsepower Rating Tables.

Worm – Series 27 (Double Extended)
Part No. C13403A-27



Worm Mounting – Series 27, Type A (Worm Below Gear)
Assembly Part No. C13430A-27

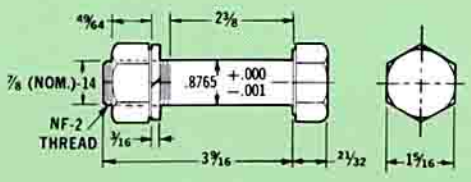


Bearing locknut screw threads are National Form. Two thrust bearing locknuts (AN-20) with one lockwasher (W-20), and one radial bearing locknut (AN-16) with one lockwasher (W-16) furnished with each standard worm.

Machine housing bore center distance to 13.4365 $^{+.005}_{-.000}$

Bearing seat shoulders are filleted to suit bearings. Bearing sleeves are .001 to .003 under housing bore dimension in diameter. Oil level should be slightly above top of worm thread. If worm is to be mounted above gear, consult factory for proper lubrication.

Bound Body Gear Rim Bolt—Part No. Z1020E
Hex Nut—Part No. Z1025-H
Lockwasher—Part No. Z1008-F



Material Specification
SAE 1038 Steel
Heat Treated SAE Grade 5

SIZE 150

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

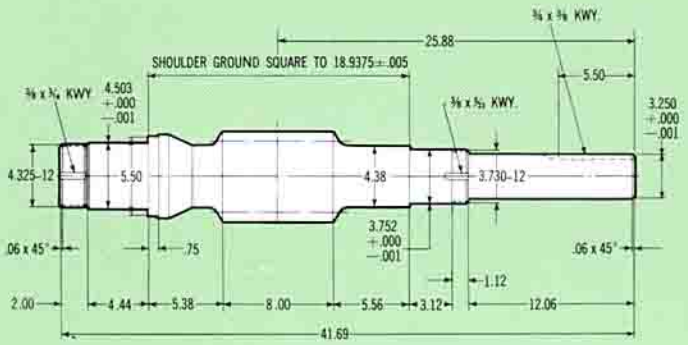
Dimensions in Inches

WORMS 15.000" CENTERS

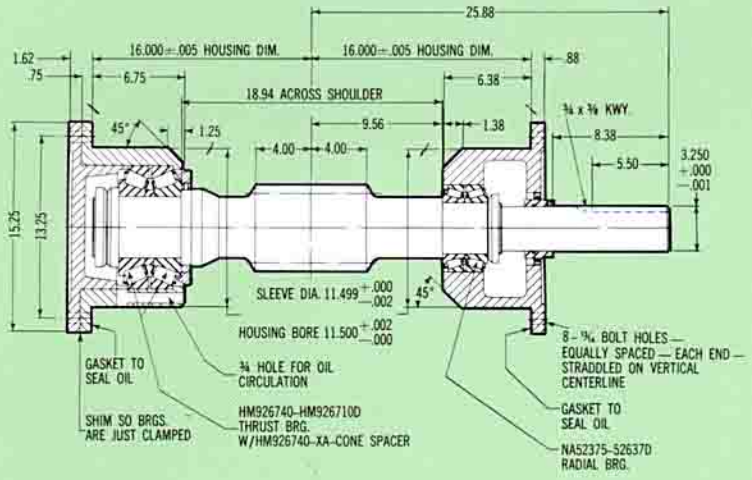
Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
6	R	4.854	5.875	3.805	24½°	40°48′	7
6	L	4.854	5.875	3.805	24½°	40°48′	7
7	R	4.854	5.810	3.746	25°	36°30′	6
7 3/5	R	5.002	6.250	3.770	26°	32°49′	5
8	R	5.172	6.375	3.775	24½°	30°58′	5
9 1/5	R	4.486	5.627	3.597	25°	30°37′	5
9 1/5	L	4.486	5.627	3.597	25°	30°37′	5
9 3/4	R	5.267	6.500	3.833	24½°	25°43′	4
9 3/4	L	5.267	6.500	3.833	24½°	25°43′	4
10 3/4	R	5.192	6.153	3.581	25°	24°47′	4
10 3/4	L	5.192	6.153	3.581	25°	24°47′	4
11 1/2	R	4.523	5.875	3.539	25°	25°9′	4
13	R	4.901	5.875	3.789	26°	21°30′	4
14 2/3	R	4.615	6.150	3.667	25°	19°6′	3
17 2/3	R	4.694	5.649	3.591	27½°	16°58′	3
20	R	5.172	6.414	3.736	20°	13°29′	2
23	R	4.523	5.875	3.547	25°	13°13′	2
23	L	4.523	5.875	3.547	25°	13°13′	2
26 1/2	R	4.694	5.648	3.590	26½°	11°30′	2
27 1/2	R	4.287	5.610	3.580	27°	11°18′	2
30	R	4.695	5.539	3.719	20°	10°11′	2
35	R	4.647	5.375	3.803	25°	8°50′	2
39	R	5.172	6.563	3.851	25½°	6°52′	1
44	R	5.053	6.187	3.743	20°	6°24′	1
49	L	4.655	5.750	3.498	25°	6°16′	1
53	R	4.694	5.653	3.594	25°	5°48′	1
53	L	4.694	5.653	3.594	25°	5°48′	1
55	R	4.470	5.500	3.500	25°	5°46′	1
60	R	4.695	5.539	3.719	20°	5°8′	1
71	R	4.575	5.291	3.745	20°	4°29′	1
80	R	4.537	5.179	3.779	28°	4°1′	1
80	L	4.537	5.179	3.779	28°	4°1′	1
100	R	4.635	5.140	4.070	25°	3°9′	1

Worms and gears are carried in semi-finished stock.
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 21 for Horsepower Rating Tables.

Worm—Series 25 (Single Extended)
Part No. C15003A

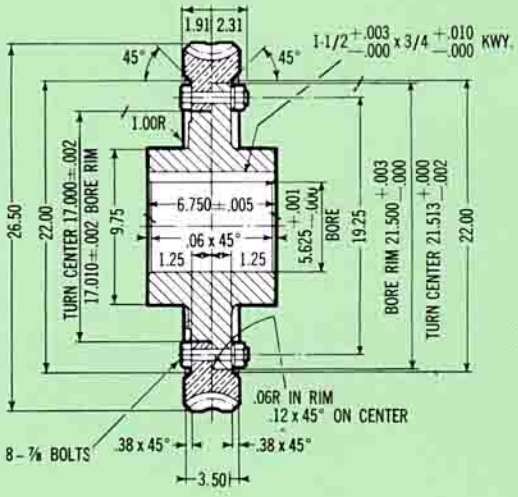


Worm Mounting—Series 25, Type A (Worm Below Gear)
Assembly Part No. C15030A



Bolt holes in rims and centers are jig drilled 1/64" under bolt size dimension shown—ream at assembly for body bound bolts.

Flanged Rim Blank and Center
Rim - Part No. R1740CU
Center - Part No. C15040A



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

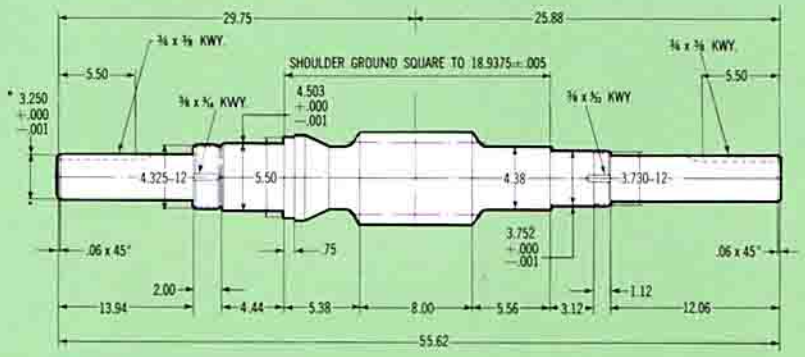
Dimensions in Inches

GEARS 15.000" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.
6	R	25.146	26½	3½	1.8809	42	640
6	L	25.146	26½	3½	1.8809	42	1455
7	R	25.146	26½	3½	1.8809	42	1286
7 3/5	R	24.998	26½	3½	2.0667	38	823
8	R	24.828	26½	3½	1.950	40	761
9 1/5	R	25.514	26½	3½	1.7425	46	703
9 1/5	L	25.514	26½	3½	1.7425	46	853
9 3/4	R	24.733	26½	3½	1.9923	39	722
9 3/4	L	24.733	26½	3½	1.9923	39	838
10 3/4	R	24.808	26½	3½	1.8125	43	385
10 3/4	L	24.808	26½	3½	1.8125	43	606
11 1/2	R	25.477	26½	3½	1.740	46	672
13	R	25.099	26½	3½	1.5163	52	659
14 2/3	R	25.385	26½	3½	1.8125	44	607
17 2/3	R	25.306	26½	3½	1.500	53	587
20	R	24.828	26½	3½	1.950	40	1066
23	R	25.477	26½	3½	1.740	46	773
23	L	25.477	26½	3½	1.740	46	1306
26 1/2	R	25.306	26½	3½	1.500	53	407
27 1/2	R	25.713	26½	3½	1.46875	55	412
30	R	25.305	26½	3½	1.325	60	1086
35	R	25.353	26½	3½	1.13785	70	733
39	R	24.828	26½	3½	2.000	39	617
44	R	24.947	26½	3½	1.78125	44	1024
49	L	25.345	26½	3½	1.625	49	873
53	R	25.305	26½	3½	1.500	53	596
53	L	25.305	26½	3½	1.500	53	1148
55	R	25.530	26½	3½	1.4583	55	803
60	R	25.305	26½	3½	1.325	60	1100
71	R	25.425	26½	3½	1.125	71	977
80	R	25.463	26½	3½	1.000	80	557
80	L	25.463	26½	3½	1.000	80	1118
100	R	25.365	26½	3½	.800	100	707

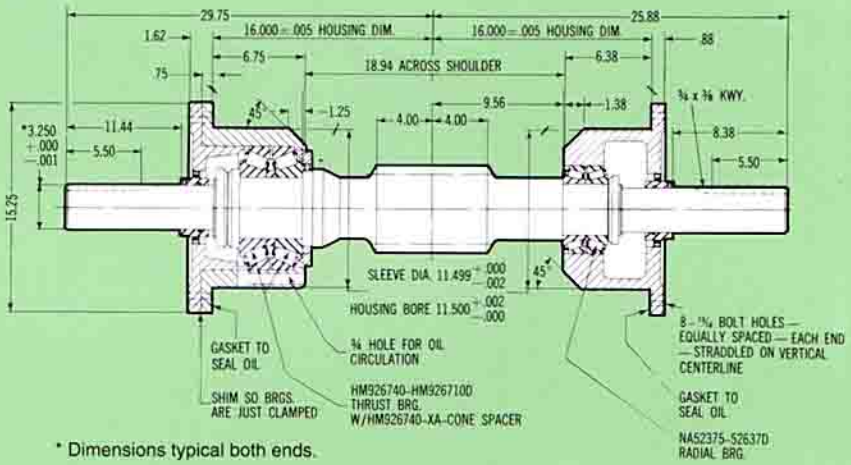
Worms and gears are carried in semi-finished stock.
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 21 for Horsepower Rating Tables.

Worm—Series 27 (Double Extended)
Part No. C15003A-27



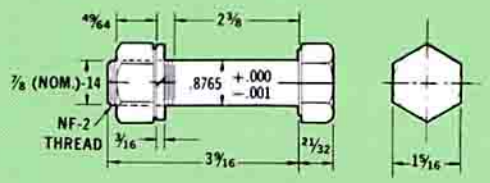
* Dimensions typical both ends.

Worm Mounting—Series 27, Type A (Worm Below Gear)
Assembly Part No. C15030A-27



* Dimensions typical both ends.

Bound Body Gear Rim Bolt—Part No. Z1020E
Hex Nut—Part No. Z1025-H
Lockwasher—Part No. Z1008-F



Material Specification
SAE 1038 Steel
Heat Treated SAE Grade 5

Bearing locknut screw threads are National Form. Two thrust bearing locknuts (AN-22) with one lockwasher (W-22), and one radial bearing locknut (AN-19) with one lockwasher (W-19) furnished with each standard worm.

Machine housing bore center distance to 15.000 $^{+.005}_{-.000}$

Bearing seat shoulders are filleted to suit bearings. Bearing sleeves are .001 to .003 under housing bore dimension in diameter. Oil level should be slightly above top of worm thread. If worm is to be mounted above gear, consult factory for proper lubrication.

SIZE 180

Dimensions in Inches

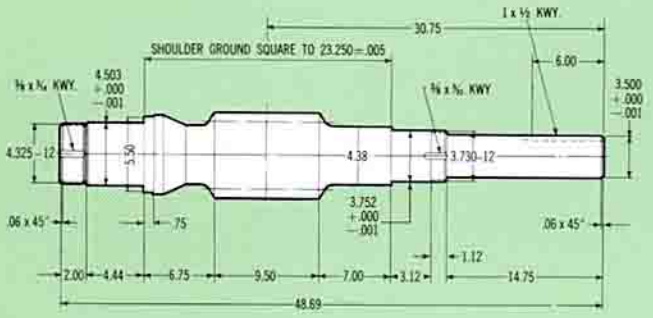
Dimensions subject to change. Use certified prints only for construction.

WORMS 18.000" CENTERS

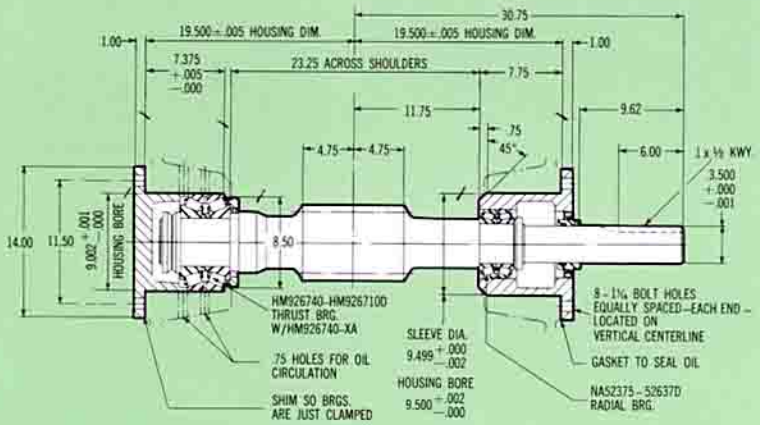
Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
7 1/6	R	6.025	6.685	4.285	25°	36°53′	6
7 1/6	L	6.025	6.685	4.285	25°	36°53′	6
7 3/5	R	5.761	7.351	4.119	24°	34°38′	5
7 3/5	L	5.761	7.069	4.255	24°	34°38′	5
8	R	5.442	6.500	4.242	25°	35°1′	6
8	L	5.452	6.500	4.242	25°	35°1′	6
9 3/4	R	5.958	7.453	4.133	25°	27°31′	4
9 3/4	L	5.958	7.453	4.133	25°	27°31′	4
10	R	5.188	7.453	4.133	25°	27°31′	4
11	R	5.518	6.625	4.233	25°	26°40′	5
11	L	5.518	6.625	4.233	25°	26°40′	5
12 1/4	R	4.806	6.567	3.931	27°	25°41′	4
12 1/4	L	4.806	6.567	3.931	27°	25°41′	4
13 1/4	R	5.424	6.576	4.140	26½°	24°6′	4
13 1/4	L	5.424	6.576	4.140	26½°	24°6′	4
15	R	5.490	6.500	4.320	25°	20°20′	4
15	L	5.490	6.500	4.320	25°	20°20′	4
16 1/3	R	4.806	6.556	3.916	27°	20°5′	3
16 1/3	L	4.806	6.565	3.817	25°	20°5′	3
17 2/3	R	5.424	6.574	4.072	27°	17°42′	3
18 1/3	R	5.273	6.634	4.226	25°	16°54′	3
18 1/3	L	5.273	6.634	4.226	25°	16°54′	3
20	R	5.824	7.354	4.094	24½°	14°31′	2
21 1/2	R	5.203	7.146	4.118	28°	14°04′	2
21 1/2	L	5.203	7.146	4.118	25°	14°04′	2
24 1/2	R	5.626	6.866	4.192	20°	12°25′	2
25 1/2	R	5.562	6.669	4.097	27°	12°17′	2
26 1/2	R	5.424	6.575	4.085	27°	12°0′	2
26 1/2	L	5.424	6.575	4.085	27°	12°0′	2
30	R	5.442	6.500	4.320	20°	10°31′	2
35	R	5.251	6.131	4.231	20°	9°30′	2
40	R	4.965	7.220	3.896	28½°	7°47′	1
48	R	5.442	6.563	3.851	25½°	6°52′	1
48	L	5.442	6.563	3.851	20°	6°52′	1
50	R	5.761	6.969	4.361	20°	6°0′	1
53	R	5.422	6.574	4.045	25½°	6°4′	1
64	R	5.452	6.431	4.371	25½°	5°0′	1
70	R	5.362	6.240	4.410	20°	4°40′	1
70	L	5.362	6.240	4.410	20°	4°40′	1
79	R	5.050	5.832	4.144	20°	4°26′	1
98	R	4.806	5.539	4.167	28°	3°43′	1

Worms and gears are carried in semi-finished stock.
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 22 for Horsepower Rating Tables.

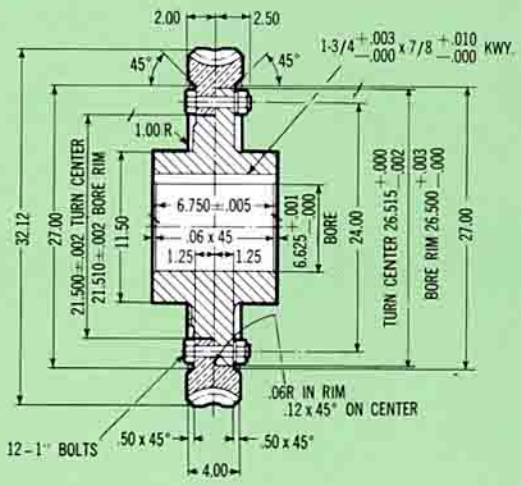
Worm—Series 25 (Single Extended)
Part No. C18003A



Worm Mounting—Series 25, Type A (Worm Below Gear)
Assembly Part No. C18030A



Flanged Rim Blank and Center
Rim—Part No. R1840CU
Center—Part No. C18040A



Bolt holes in rims and centers are jig drilled 1/64" under bolt size dimension shown—ream at assembly for body bound bolts.

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

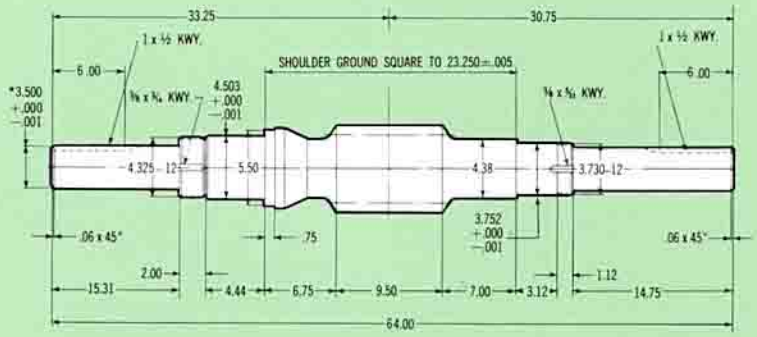
Dimensions in Inches

GEARS 18.000" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.
7 1/6	R	29.975	32 1/8	4	2.190	43	941
7 1/6	L	29.975	32 1/8	4	2.190	43	1411
7 3/5	R	30.239	32 1/8	4	2.500	38	346
7 3/5	L	30.239	32 1/8	4	2.500	38	616
8	R	30.558	32 1/8	4	2.000	48	692
8	L	30.548	32 1/8	4	2.000	48	1538
9 3/4	R	30.042	32 1/8	4	2.420	39	944
9 3/4	L	30.042	32 1/8	4	2.420	39	1283
10	R	30.812	32 1/8	4	2.420	40	944
11	R	30.482	32 1/8	4	1.7411	55	730
11	L	30.482	32 1/8	4	1.7411	55	888
12 1/4	R	31.194	32 1/8	4	2.000	49	524
12 1/4	L	31.194	32 1/8	4	2.000	49	1217
13 1/4	R	30.576	32 1/8	4	1.8125	53	402
13 1/4	L	30.576	32 1/8	4	1.8125	53	778
15	R	30.510	32 1/8	4	1.5975	60	675
15	L	30.510	32 1/8	4	1.5975	60	1125
16 1/3	R	31.194	32 1/8	4	2.000	49	529
16 1/3	L	31.194	32 1/8	4	2.000	49	863
17 2/3	R	30.576	32 1/8	4	1.8125	53	558
18 1/3	R	30.727	32 1/8	4	1.7551	55	948
18 1/3	L	30.727	32 1/8	4	1.7551	55	1401
20	R	30.176	32 1/8	4	2.370	40	954
21 1/2	R	30.797	32 1/8	4	2.250	43	563
21 1/2	L	30.797	32 1/8	4	2.250	43	1227
24 1/2	R	30.374	32 1/8	4	1.94737	49	1126
25 1/2	R	30.438	32 1/8	4	1.875	51	358
26 1/2	R	30.576	32 1/8	4	1.8125	53	338
26 1/2	L	30.576	32 1/8	4	1.8125	53	849
30	R	30.558	32 1/8	4	1.600	60	1023
35	R	30.749	32 1/8	4	1.380	70	974
40	R	31.035	32 1/8	4	2.4375	40	360
48	R	30.558	32 1/8	4	2.000	48	617
48	L	30.558	32 1/8	4	2.000	48	1520
50	R	30.239	32 1/8	4	1.900	50	1523
53	R	30.578	32 1/8	4	1.8125	53	618
64	R	30.548	32 1/8	4	1.500	64	603
70	R	30.638	32 1/8	4	1.375	70	589
70	L	30.638	32 1/8	4	1.375	70	1363
79	R	30.950	32 1/8	4	1.23077	79	1177
98	R	31.194	32 1/8	4	1.000	98	547

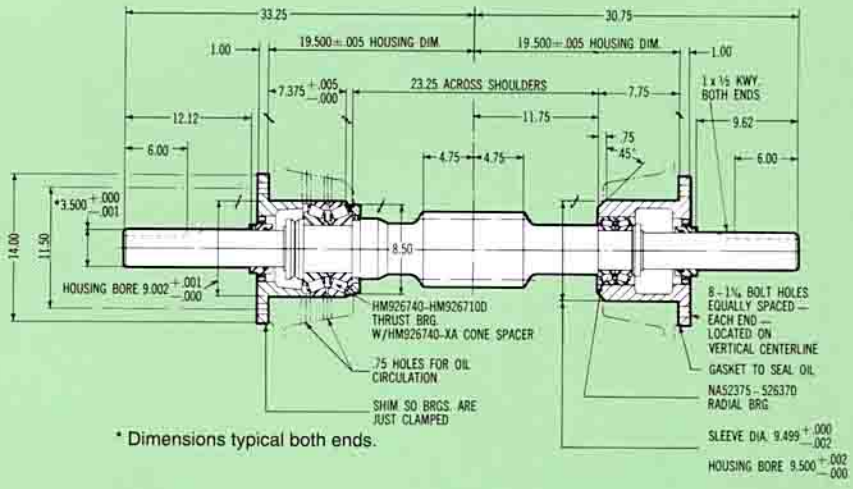
Worms and gears are carried in semi-finished stock.
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 22 for Horsepower Rating Tables.

Worm—Series 27 (Double Extended)
Part No. C18003A-27



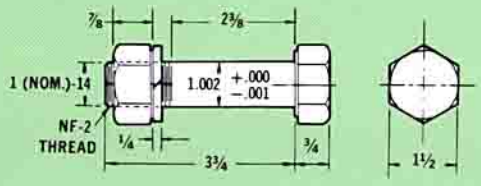
* Dimensions typical both ends.

Worm Mounting—Series 27. Type A (Worm Below Gear)
Assembly Part No. C18030A-27



* Dimensions typical both ends.

Bound Body Gear Rim Bolt—Part No. Z1020F
Hex Nut—Part No. Z1025-J
Lockwasher—Part No. Z1008-G



Material Specification
SAE 1038 Steel
Heat Treated SAE Grade 5

Bearing locknut screw threads are National Form. Two thrust bearing locknuts (AN-22) with one lockwasher (W-22), and one radial bearing locknut (AN-19) with one lockwasher (W-19) furnished with each standard worm.

Machine housing bore center distance to 18.000 $^{+.005}_{-.000}$

Bearing seat shoulders are filleted to suit bearings. Oil level should be slightly above top of worm thread. If worm is to be mounted above gear, consult factory for proper lubrication.

SIZE 195

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

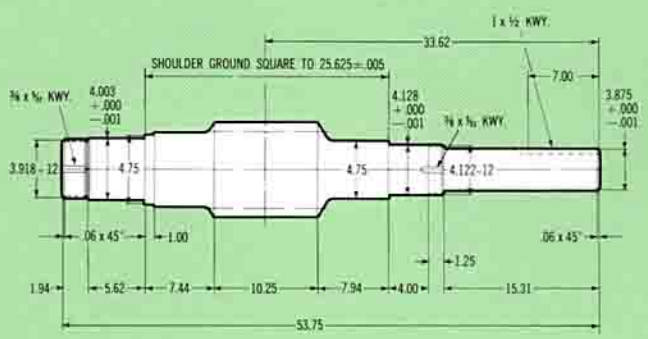
Dimensions in Inches

WORMS 19.518" CENTERS

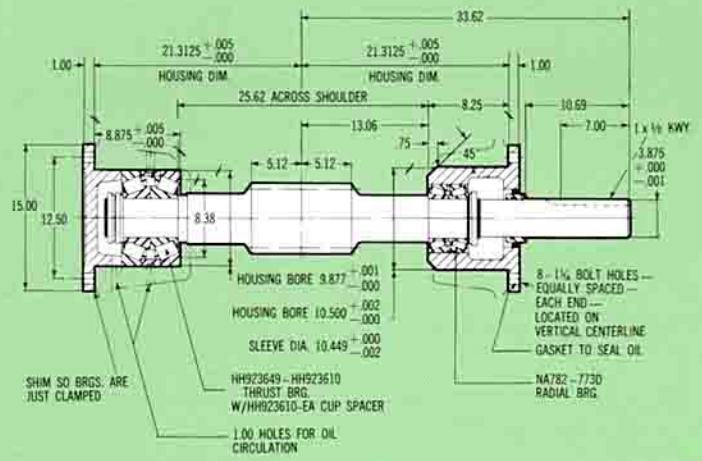
Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
8	R	5.575	6.685	4.285	25°	36°53′	6
8	L	5.575	6.685	4.285	25°	36°53′	6
8 2/5	L	5.613	7.069	4.255	24°	34°38′	5
9 1/2	R	5.470	6.787	4.457	25°	31°46′	6
9 1/2	L	5.470	6.787	4.457	25°	31°46′	6
10 1/5	L	5.932	7.250	4.450	24½°	28°41′	5
10 3/4	R	5.913	7.453	4.133	25°	27°31′	4
10 3/4	L	5.913	7.453	4.133	25°	27°31′	4
11 2/5	R	5.016	6.200	3.880	29½°	30°45′	5
12 1/5	R	5.229	6.625	4.233	25°	26°40′	5
12 1/5	L	5.229	6.625	4.233	25°	26°40′	5
13 1/4	R	5.295	6.567	3.931	27°	25°41′	4
13 1/4	L	5.295	6.567	3.931	27°	25°41′	4
15	R	5.422	6.542	4.128	25°	22°27′	4
15	L	5.422	6.542	4.128	25°	22°27′	4
16 1/2	R	5.475	6.500	4.320	25°	20°20′	4
16 1/2	L	5.475	6.500	4.320	25°	20°20′	4
17 2/3	R	5.291	6.556	3.916	27°	20°5′	3
17 2/3	L	5.291	6.565	3.817	25°	20°5′	3
20	R	5.516	6.634	4.226	25°	16°54′	3
20	L	5.516	6.634	4.226	25°	16°54′	3
23 1/2	R	5.375	7.146	4.118	28°	14°4′	2
23 1/2	L	5.375	7.146	4.118	25°	14°4′	2
26 1/2	R	5.823	7.125	4.425	25°	12°2′	2
29 1/2	R	4.997	6.575	4.085	27°	12°0′	2
29 1/2	L	4.997	6.575	4.085	27°	12°1′	2
30	R	5.773	6.875	4.445	25°	10°52′	2
43	R	5.674	7.220	3.896	28½°	7°47′	1
53	R	5.291	6.563	3.851	25½°	6°52′	1
53	L	5.291	6.563	3.851	20°	6°52′	1
55	R	5.773	6.969	4.361	20°	6°0′	1
59	R	4.997	6.574	4.045	25½°	6°4′	1
60	R	5.773	6.875	4.493	25°	5°29′	1
70	R	5.613	6.431	4.371	25½°	5°0′	1
77	R	5.335	6.240	4.410	27	4°40′	1
77	L	5.335	6.240	4.410	20°	4°40′	1

Worms and gears are carried in semi-finished stock.
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 22 for Horsepower Rating Tables.

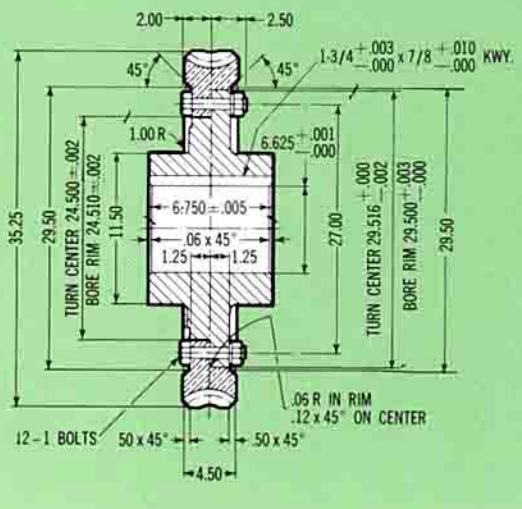
Worm—Series 25 (Single Extended)
Part No. C19503A



Worm Mounting—Series 25, Type A (Worm Below Gear)
Assembly Part No. C19530A



Flanged Rim Blank and Center
Rim—Part No. R1940CU
Center—Part No. C19540A



Bolt holes in rims and centers are jig drilled 1/64" under bolt size dimension shown—ream at assembly for body bound bolts.

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

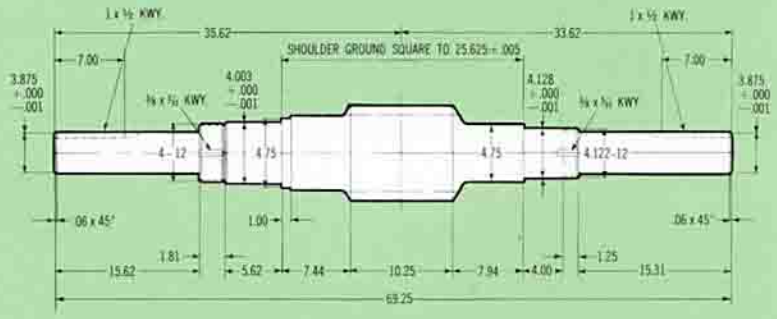
Dimensions in Inches

GEARS 19.518" CENTERS

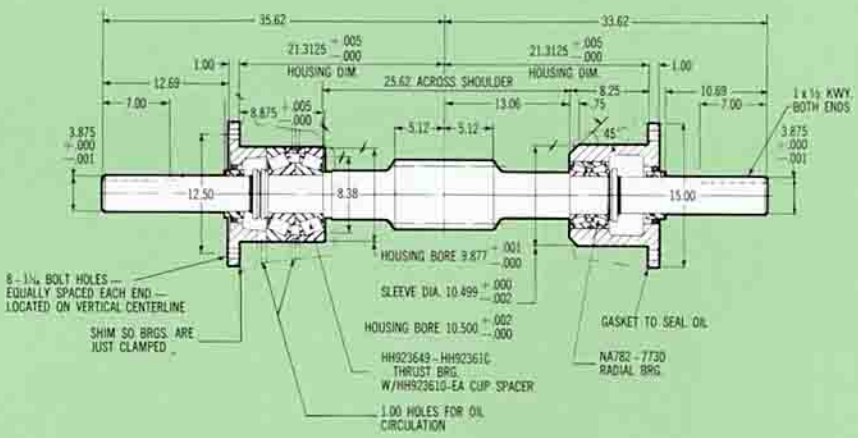
Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.
8	R	33.461	35¼	4½	2.190	48	941
8	L	33.461	35¼	4½	2.190	48	1411
8 2/5	L	33.423	35¼	4½	2.500	42	616
9 1/2	R	33.566	35¼	4½	1.850	57	875
9 1/2	L	33.566	35¼	4½	1.850	57	1059
10 1/5	L	33.104	35¼	4½	2.0392	51	789
10 3/4	R	33.123	35¼	4½	2.420	43	944
10 3/4	L	33.123	35¼	4½	2.420	43	1283
11 2/5	R	33.020	35¼	4½	1.875	57	193
12 1/5	R	33.807	35¼	4½	1.7411	61	730
12 1/5	L	33.807	35¼	4½	1.7411	61	888
13 1/4	R	33.741	35¼	4½	2.000	53	524
13 1/4	L	33.741	35¼	4½	2.000	53	1217
15	R	33.614	35¼	4½	1.760	60	1124
15	L	33.614	35¼	4½	1.760	60	1378
16 1/2	R	33.561	35¼	4½	1.5975	66	675
16 1/2	L	33.561	35¼	4½	1.5975	66	1125
17 2/3	R	33.745	35¼	4½	2.000	53	529
17 2/3	L	33.745	35¼	4½	2.000	53	863
20	R	33.520	35¼	4½	1.7551	60	948
20	L	33.520	35¼	4½	1.7551	60	1401
23 1/2	R	33.661	35¼	4½	2.250	47	563
23 1/2	L	33.661	35¼	4½	2.250	47	1227
26 1/2	R	33.213	35¼	4½	1.96875	53	860
29 1/2	R	34.039	35¼	4½	1.8125	59	338
29 1/2	L	34.039	35¼	4½	1.8125	59	849
30	R	33.263	35¼	4½	1.7416	60	686
43	R	33.362	35¼	4½	2.4375	43	360
53	R	33.741	35¼	4½	2.000	53	617
53	L	33.741	35¼	4½	2.000	53	1520
55	R	33.263	35¼	4½	1.900	55	1523
59	R	33.039	35¼	4½	1.8125	59	618
60	R	33.263	35¼	4½	1.7416	60	801
70	R	33.423	35¼	4½	1.500	70	603
77	R	33.701	35¼	4½	1.375	77	589
77	L	33.701	35¼	4½	1.375	77	1363

Worms and gears are carried in semi-finished stock.
For special ratios (see rating tables) consult factory for worm gear dimensions.
Refer to Page 22 for Horsepower Rating Tables.

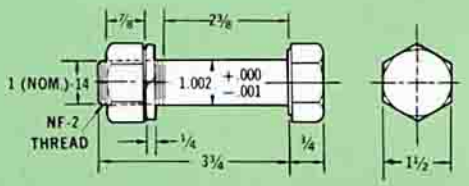
Worm—Series 27 (Double Extended)
Part No. C19503A-27



Worm Mounting—Series 27, Type A (Worm Below Gear)
Assembly Part No. C19530A-27



Bound Body Gear Rim Bolt—Part No. Z1020F
Hex Nut—Part No. Z1025-J
Lockwasher—Part No. Z1008-G



Material Specification
SAE 1038 Steel
Heat Treated SAE Grade 5

Bearing locknut screw threads are National Form. Two thrust bearing locknuts (AN21) and one lockwasher (W21) are used on Series 25 worms. A special thrust bearing locknut (Z162) and one lockwasher (W21) are used on Series 27 worms. One locknut (AN20) and one lockwasher (W20) are used on the radial end of both Series 25 and Series 27 worms.

Machine housing bore center distance to 19.518 $^{+.005}_{-.000}$

Bearing seat shoulders are filleted to suit bearings. Oil level should be slightly above top of worm thread. If worm is to be mounted above gear, consult factory for proper lubrication.

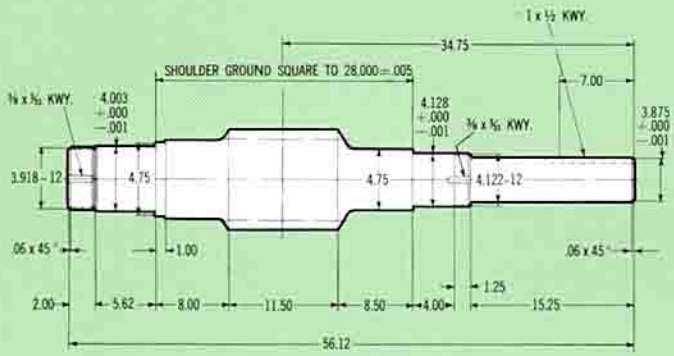
WORM & GEAR SETS

SIZE 218

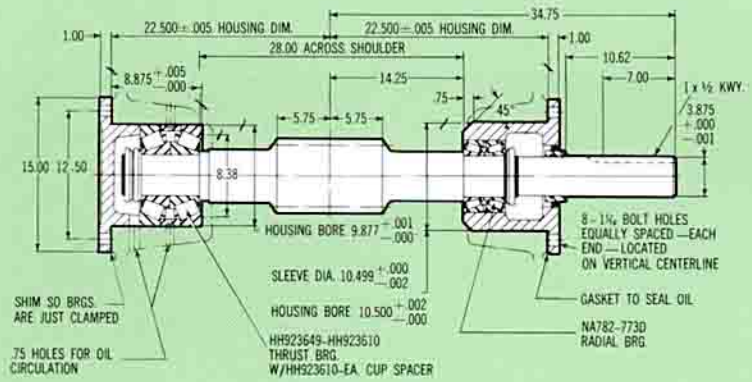
Dimensions subject to change. Use certified prints only for construction.

Dimensions in Inches

Worm—Series 25 (Single Extended)
Part No. C21803A



Worm Mounting—Series 25, Type A (Worm Below Gear)
Assembly Part No. C21830A



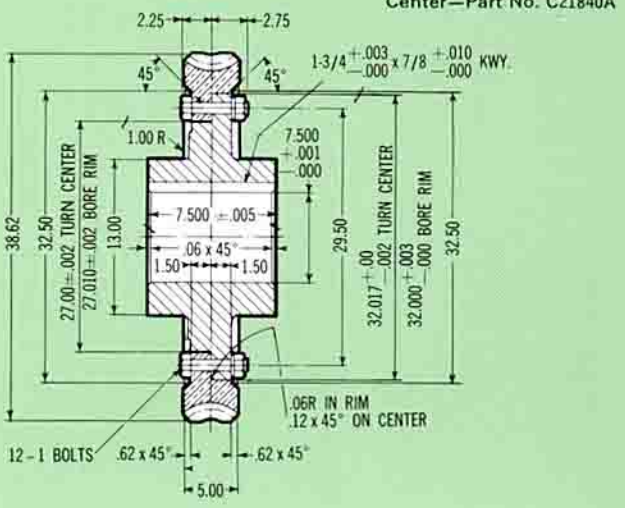
Bolt holes in rims and centers are jig drilled 1/64" under bolt size dimension shown—ream at assembly for body bound bolts.

WORMS — 21.837" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
6	R	6.750	7.875	5.401	27°	42°21′	8
6	L	6.750	7.875	5.401	25½°	42°21′	8
7 1/6	R	6.750	8.125	5.161	24½°	37°21′	6
7 1/6	L	6.750	8.125	5.161	24½°	37°21′	6
8	R	6.878	8.125	5.411	25½°	33°46′	6
8	L	6.878	8.125	5.411	25°	33°46′	6
9 2/5	R	6.750	8.125	5.160	25°	30°12′	5
9 2/5	L	6.750	8.125	5.160	25°	30°12′	5
10 2/5	R	6.928	8.376	5.456	25°	26°29′	5
10 2/5	L	6.928	8.376	5.456	25°	26°29′	5
11 3/4	R	6.750	8.250	5.050	25°	24°58′	4
11 3/4	L	6.750	8.250	5.050	25°	24°58′	4
13 3/4	R	6.715	8.353	5.455	25°	20°59′	4
13 3/4	L	6.715	8.353	5.455	25°	20°59′	4
15	R	6.791	8.000	5.331	25°	19°58′	4
16	R	6.546	8.250	4.882	25½°	19°6′	3
16	L	6.546	8.250	4.882	25½°	19°6′	3
18	R	6.750	8.125	5.167	25½°	16°54′	3
18	L	6.750	8.125	5.146	25°	16°54′	3
20	R	6.791	8.000	5.370	25°	15°12′	3
25	R	6.750	8.250	5.100	20°	12°16′	2
25	L	6.750	8.250	5.100	20°	12°16′	2
30	R	6.791	8.000	5.370	25°	10°16′	2
30	L	6.791	8.000	5.370	25°	10°16′	2
40	R	6.273	7.250	5.232	25°	8°29′	2
45	R	6.718	8.376	5.120	25½°	6°47′	1
45	L	6.718	8.376	5.120	25°	6°47′	1
50	R	6.750	8.250	5.240	25°	6°14′	1
50	L	6.750	8.250	5.240	25°	6°14′	1
56	R	6.909	8.125	5.293	20°	5°30′	1
60	R	6.791	8.000	5.370	25°	5°10′	1
60	L	6.791	8.000	5.370	25°	5°10′	1
66	R	6.909	7.950	5.546	25°	4°40′	1
66	L	6.909	7.950	5.546	25°	4°40′	1
71	R	6.596	7.638	5.388	20°	4°31′	1
71	L	6.596	7.638	5.388	20°	4°31′	1
74	R	6.494	7.498	5.330	20°	4°25′	1
79	R	6.457	7.397	5.367	25°	4°10′	1
90	R	5.477	6.875	5.049	25°	4°2′	1
100	R	6.641	7.374	5.778	25°	3°11′	1
100	L	6.641	7.374	5.778	25°	3°12′	1

Worms and gears are carried in semi-finished stock.
Refer to Page 23 for Horsepower Rating Tables.

Flanged Rim Blank and Center
Rim—Part No. R10040CU
Center—Part No. C21840A



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

Dimensions in Inches

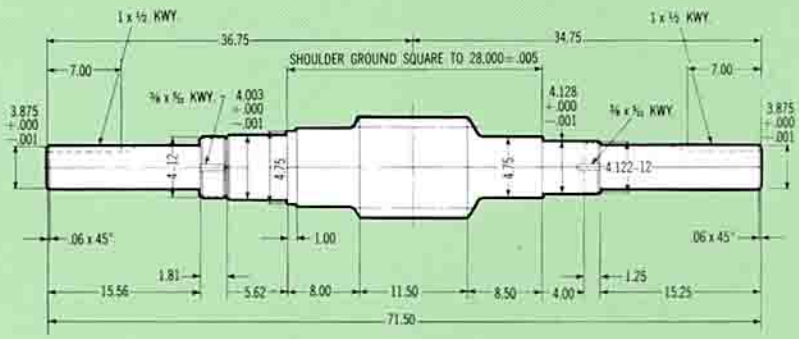
GEARS 21.837" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.
6	R	36.924	38⅝	5	2.416+	48	628
6	L	36.924	38⅝	5	2.416+	48	835
7 1/6	R	36.924	38⅝	5	2.6976	43	819
7 1/6	L	36.924	38⅝	5	2.6976	43	820
8	R	36.796	38⅝	5	2.4083	48	639
8	L	36.796	38⅝	5	2.4083	48	759
9 2/5	R	36.924	38⅝	5	2.468+	47	673
9 2/5	L	36.924	38⅝	5	2.468+	47	871
10 2/5	R	36.746	38⅝	5	2.220	52	1017
10 2/5	L	36.746	38⅝	5	2.220	52	1018
11 3/4	R	36.924	38⅝	5	2.4681	47	815
11 3/4	L	36.924	38⅝	5	2.4681	47	816
13 3/4	R	36.959	38⅝	5	2.1111	55	1049
13 3/4	L	36.959	38⅝	5	2.1111	55	1050
15	R	36.883	38⅝	5	1.9312	60	973
16	R	37.128	38⅝	5	2.430	48	872
16	L	37.128	38⅝	5	2.430	48	1276
18	R	36.924	38⅝	5	2.148+	54	674
18	L	36.924	38⅝	5	2.148+	54	817
20	R	36.883	38⅝	5	1.9312	60	660
25	R	36.924	38⅝	5	2.320	50	1021
25	L	36.924	38⅝	5	2.320	50	1189
30	R	36.883	38⅝	5	1.9312	60	706
30	L	36.883	38⅝	5	1.9312	60	698
40	R	37.401	38⅝	5	1.46875	80	818
45	R	36.956	38⅝	5	2.580	45	842
45	L	36.956	38⅝	5	2.580	45	1533
50	R	36.924	38⅝	5	2.320	50	777
50	L	36.924	38⅝	5	2.320	50	1201
56	R	36.765	38⅝	5	2.0625	56	1002
60	R	36.883	38⅝	5	1.9312	60	633
60	L	36.883	38⅝	5	1.9312	60	949
66	R	36.765	38⅝	5	1.750	66	1036
66	L	36.765	38⅝	5	1.75	66	831
71	R	37.078	38⅝	5	1.640625	71	1057
71	L	37.078	38⅝	5	1.640625	71	1058
74	R	36.956	38⅝	5	1.57844	74	1357
79	R	37.217	38⅝	5	1.480	79	939
90	R	38.197	38⅝	5	1.3333	90	813
100	R	37.033	38⅝	5	1.16343	100	1195
100	L	37.033	38⅝	5	1.16343	100	1571

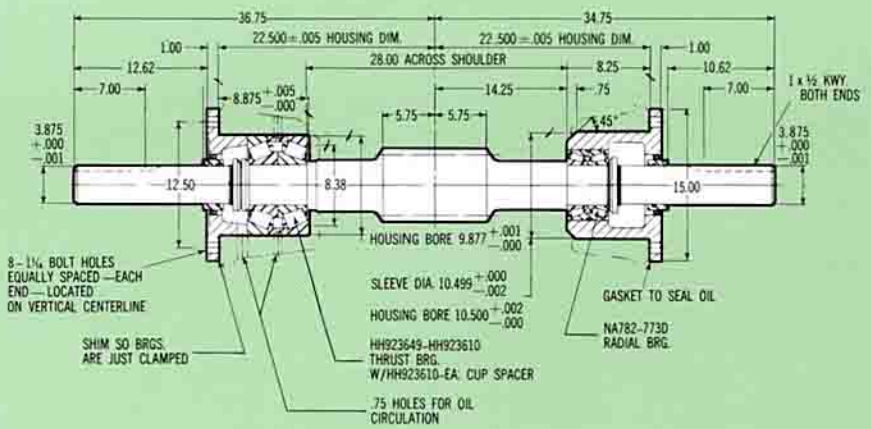
Worms and gears are carried in semi-finished stock.

Refer to Page 23 for Horsepower Rating Tables.

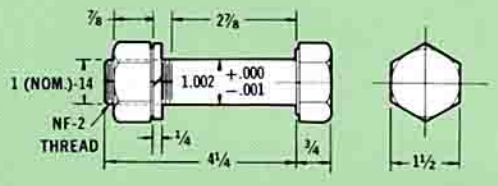
Worm—Series 27 (Double Extended)
Part No. C21803A-27



Worm Mounting—Series 27, Type A (Worm Below Gear)
Assembly Part No. C21830A-27



Bound Body Gear Rim Bolt—Part No. Z1020G
Hex Nut—Part No. Z1025-J
Lockwasher—Part No. Z1008-G



Material Specification
SAE 1038 Steel
Heat Treated SAE Grade 5

Bearing locknut screw threads are National Form. Two thrust bearing locknuts (AN21) and one lockwasher (W21) are used on Series 25 worms. A special thrust bearing locknut (Z162) and one lockwasher (W21) are used on Series 27 worms. One locknut (AN20) and one lockwasher (W20) are used on the radial end of both Series 25 and Series 27 worms.

Machine housing bore center distance to 21.837 $^{+.005}_{-.000}$

Bearing seat shoulders are filleted to suit bearings. Oil level should be slightly above top of worm thread. If worm is to be mounted above gear, consult factory for proper lubrication.

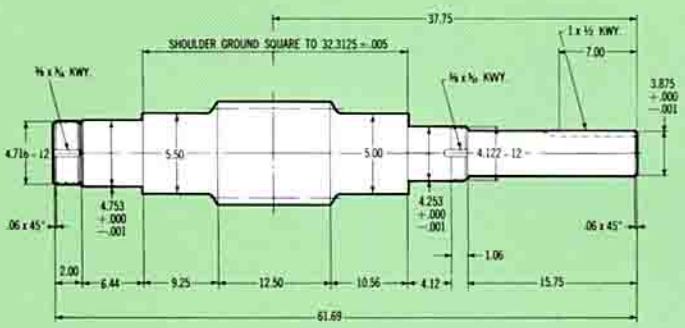
SIZE 240

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

Dimensions in Inches

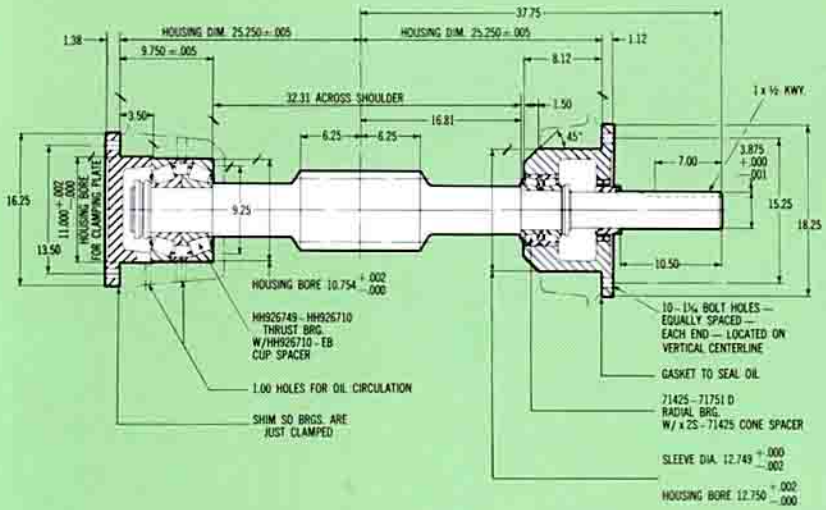
Worm—Series 25 (Single Extended)

Part No. 24003A



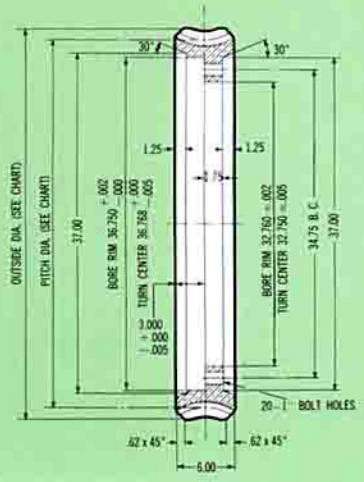
Worm Mounting—Series 25, Type A (Worm Below Gear)

Assembly Part No. 24030A



Flanged Rim Blank

Part No. R24040AT-12



Series 12

WORMS 24.000" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
8	R	6.784	8.125	5.161	24½°	37°21′	6
8	L	6.784	8.125	5.167	24½°	37°21′	6
8 1/6	R	5.925	8.125	5.161	24½°	37°21′	6
8 1/6	L	5.925	8.125	5.167	24½°	37°21′	6
9	R	6.604	8.125	5.411	25½°	33°46′	6
9	L	6.604	8.125	5.411	25°	33°46′	6
10 3/5	R	6.362	8.125	5.160	25°	30°12′	5
10 3/5	L	6.362	8.125	5.160	25°	30°12′	5
11 3/5	R	7.014	8.376	5.456	25°	26°29′	5
11 3/5	L	7.014	8.376	5.456	25°	26°29′	5
13 1/4	R	6.362	8.250	5.050	25°	24°58′	4
13 1/4	L	6.362	8.250	5.050	25°	24°58′	4
15 1/4	R	7.009	8.353	5.455	25°	20°59′	4
15 1/4	L	7.009	8.353	5.455	25°	20°59′	4
16 3/4	R	6.814	8.000	5.331	25°	19°58′	4
18	R	6.232	8.250	4.882	25½°	19°6′	3
18	L	6.232	8.250	4.910	25½°	19°6′	3
20 1/3	R	6.290	8.125	5.167	25½°	16°54′	3
20 1/3	L	6.290	8.125	5.146	25°	16°54′	3
22 1/3	R	6.814	8.000	5.370	25°	15°12′	3
27	R	6.231	8.250	4.910	25°	13°0′	2
28	R	6.645	8.250	5.100	20°	12°16′	2
28	L	6.645	8.250	5.100	20°	12°16′	2
33 1/2	R	6.814	8.000	5.371	25°	10°16′	2
33 1/2	L	6.814	8.000	5.370	25°	10°16′	2
45	R	5.923	7.250	5.232	25°	8°29′	2
50	R	6.938	8.500	5.120	25½°	6°47′	1
50	L	6.938	8.500	5.120	25°	6°47′	1
56	R	6.645	8.250	5.240	25°	6°14′	1
56	L	6.645	8.250	5.240	25°	6°14′	1
63	R	6.640	8.125	5.293	20°	5°30′	1
67	R	6.814	8.000	5.370	25°	5°10′	1
67	L	6.814	8.000	5.370	25°	5°10′	1
74	R	6.779	7.950	5.546	25°	4°40′	1
74	L	6.779	7.950	5.546	25°	4°40′	1
89	R	6.079	7.397	5.367	25°	4°10′	1

Refer to Page 23 for Horsepower Rating Tables.

Bolt holes in rims are jig drilled 1/64" under bolt size dimension shown—ream at assembly for body bound bolts.

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

SIZE 240

WORM & GEAR SETS

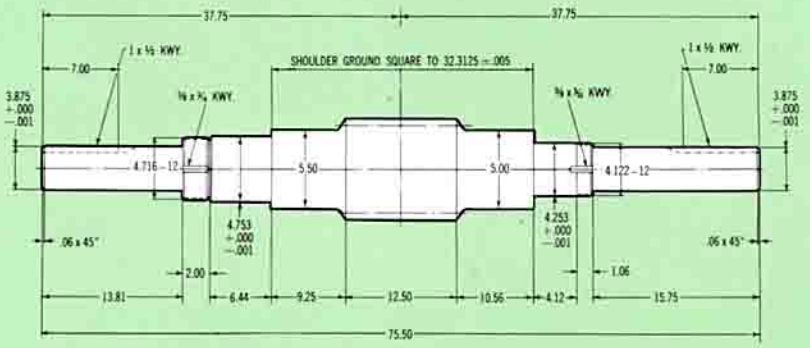
Dimensions in Inches

GEARS 24.000" CENTERS

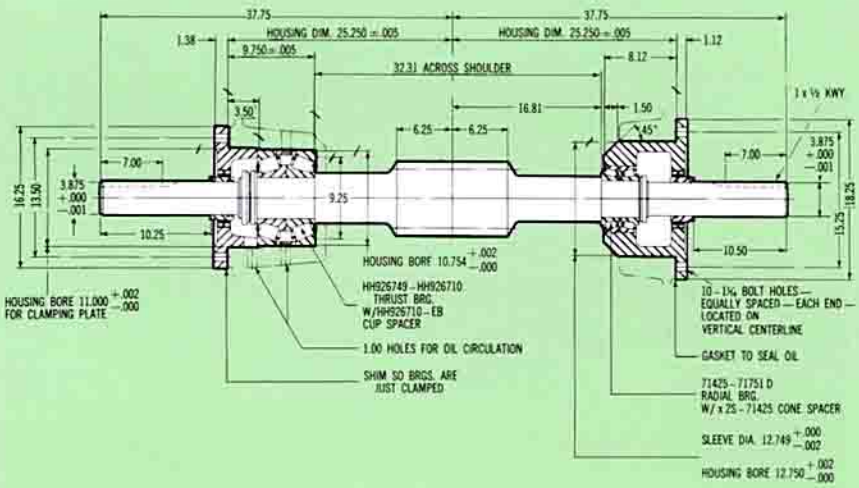
Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.	Rim Series No.
8	R	41.216	43	6	2.6976	48	819	13
8	L	41.216	43	6	2.6976	48	820	13
8 1/6	R	42.075	43	6	2.6976	49	819	13
8 1/6	L	42.075	43	6	2.6976	49	820	13
9	R	41.396	42¼	6	2.4083	54	639	13
9	L	41.396	42¼	6	2.4083	54	759	13
10 3/5	R	41.638	43¼	6	2.4681	53	673	13
10 3/5	L	41.638	43¼	6	2.4681	53	871	13
11 3/5	R	40.986	42¼	6	2.220	58	1017	13
11 3/5	L	40.986	42¼	6	2.220	58	1018	13
13 1/4	R	41.638	43¼	6	2.4681	53	815	13
13 1/4	L	41.638	43¼	6	2.4681	53	816	13
15 1/4	R	40.991	42¼	6	2.1111	61	1049	13
15 1/4	L	40.991	42¼	6	2.1111	61	1050	13
16 3/4	R	41.186	43	6	1.9312	67	973	12
18	R	41.768	43¼	6	2.430	54	872	13
18	L	41.768	43¼	6	2.430	54	1276	13
20 1/3	R	41.710	43	6	2.148	61	674	13
20 1/3	L	41.710	43	6	2.148	61	817	13
22 1/3	R	41.186	43	6	1.9312	67	660	12
27	R	41.769	43½	6	2.430	54	926	13
28	R	41.355	43	6	2.320	56	1021	13
28	L	41.355	43	6	2.320	56	1189	13
33 1/2	R	41.186	43	6	1.9312	67	706	12
33 1/2	L	41.186	43	6	1.9312	67	698	12
45	R	42.077	43¼	6	1.46875	90	818	12
50	R	41.062	43	6	2.580	50	842	13
50	L	41.062	43	6	2.580	50	1533	13
56	R	41.355	43¼	6	2.320	56	777	13
56	L	41.355	43¼	6	2.320	56	1201	13
63	R	41.360	43¼	6	2.0625	63	1002	13
67	R	41.186	43¼	6	1.9312	67	633	12
67	L	41.186	43¼	6	1.9312	67	949	12
74	R	41.221	43	6	1.750	74	1036	12
74	L	41.221	43	6	1.750	74	831	12
89	R	41.921	43¼	6	1.480	89	939	12

Refer to Page 23 for Horsepower Rating Tables.

Worm—Series 27 (Double Extended)
Part No. 24003A-27



Worm Mounting—Series 27, Type A (Worm Below Gear)
Assembly Part No. 24030A-27

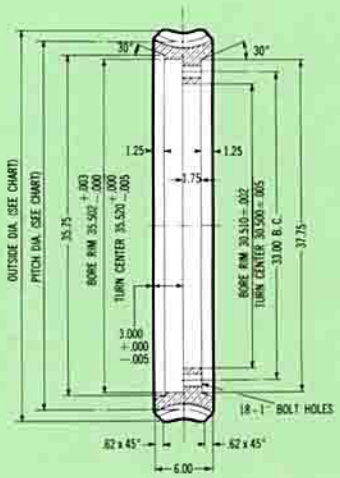


Bearing locknut screw threads are National Form. Two thrust bearing locknuts (AN-24) with one lockwasher (W-24), and one radial bearing locknut (AN-21) with one lockwasher (W-21) furnished with each standard worm.

Machine housing bore center distance to 24.000 $^{+.005}_{-.000}$

Bearing seat shoulders are filleted to suit bearings. Oil level should be slightly above top of worm thread. If worm is to be mounted above gear, consult factory for proper lubrication.

Flanged Rim Blank
Part No. R24040AT-13



Series 13

SIZE 270

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

Dimensions in Inches

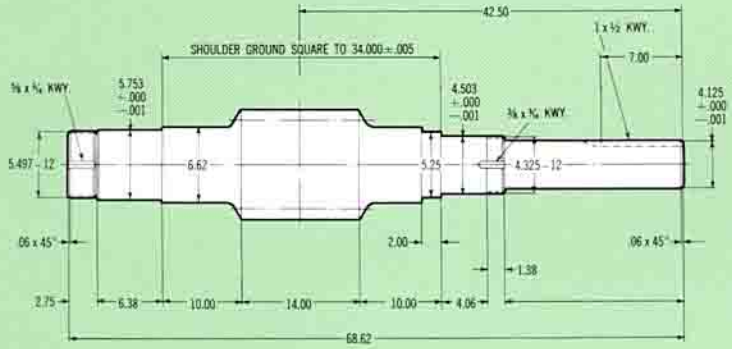
WORMS 27.000" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
7 5/8	R	8.079	9.686	6.692	25°	35°58′	8
7 5/8	L	8.079	9.686	6.692	25°	35°58′	8
9 5/6	R	9.491	*10.897	7.637	25°	25°45′	6
10 4/5	R	7.995	9.695	6.029	25°	28°3′	5
11 4/5	R	7.988	9.548	6.184	25°	26°1′	5
12 1/5	R	8.613	10.147	6.941	25°	23°15′	5
13 1/2	R	8.278	10.019	6.393	25°	22°5′	4
13 1/2	L	8.278	10.019	6.393	25°	22°5′	4
15	R	8.982	*10.482	7.248	25°	18°29′	4
19	R	9.246	*10.757	7.371	25°	14°23′	3
19	L	9.246	*10.757	7.371	25°	14°23′	3
24	R	8.162	9.526	6.782	25°	13°2′	3
30	R	9.238	*10.823	7.609	20°	9°5′	2
37 1/2	R	8.090	9.312	6.678	20°	8°36′	2
45	R	8.450	9.462	7.280	20°	6°50′	2
52	R	9.171	*10.790	7.076	20°	5°26′	1
62	R	8.609	10.214	7.060	20°	4°47′	1
68	R	8.648	9.980	7.106	20°	4°25′	1

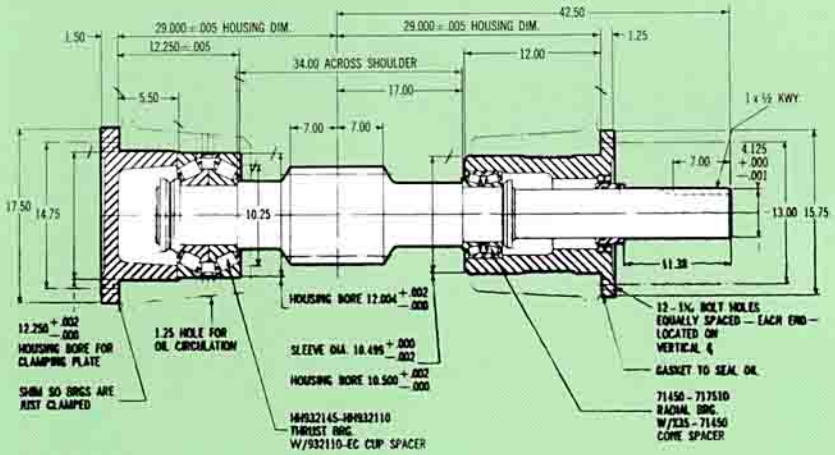
Refer to Page 24 for Horsepower Rating Tables.

* OD greater than 10.23 require "AS" assemblies.

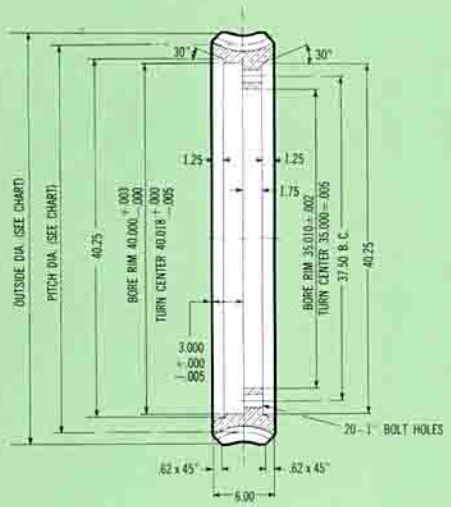
Worm—Series 25 (Single Extended)
Part No. 27003A



Worm Mounting—Series 25, Type A (Worm Below Gear)
Assembly Part No. 27030A



Flanged Rim Blank
Part No. R27040AT-8



Bolt holes in rims are jig drilled 1/64" under bolt size dimension shown—ream at assembly for body bound bolts.

Series 8

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

Dimensions in Inches

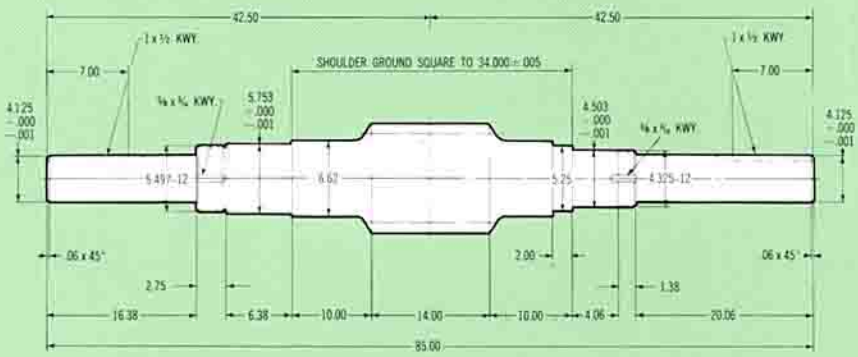
GEARS 27.000" CENTERS

Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.	Rim Series No.
7 5/8	R	45.921	47 3/4	6	2.365	61	1447	8
7 5/8	L	45.921	47 3/4	6	2.365	61	1525	8
9 5/6	R	44.509	46 1/8	6	2.370	59	1450	8
10 4/5	R	46.005	48 1/4	6	2.6765	54	1255	8
11 4/5	R	46.012	48 1/4	6	2.450	59	1375	8
12 1/5	R	45.387	47 1/2	6	2.3375	61	1476	8
13 1/2	R	45.722	48	6	2.660	54	1472	8
13 1/2	L	45.722	48	6	2.660	54	1473	8
15	R	45.018	47 1/4	6	2.357	60	1484	8
19	R	44.754	47	6	2.46667	57	1441	8
19	L	44.754	47	6	2.46667	57	1503	8
24	R	45.838	47 1/8	6	2.000	72	1412	9
30	R	44.762	46 1/8	6	2.34375	60	1432	8
37 1/2	R	45.910	47 1/8	6	1.923077	75	1451	9
45	R	45.550	47 1/4	6	1.590	90	1469	9
52	R	44.829	47 1/8	6	2.7083	52	1536	8
62	R	45.391	47 1/8	6	2.300	62	1448	8
68	R	45.352	47 1/8	6	2.09524	68	1478	9

Refer to Page 24 for Horsepower Rating Tables.

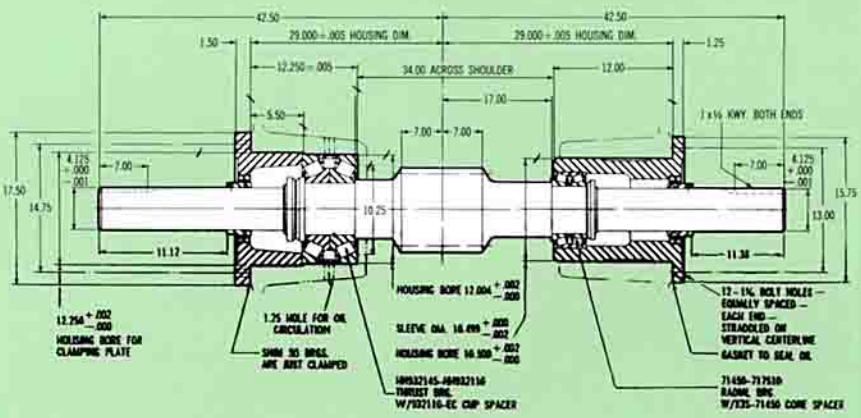
Worm—Series 27 (Double Extended)

Part No. 27003A-27



Worm Mounting—Series 27, Type A (Worm Below Gear)

Assembly Part No. 27030A-27 *



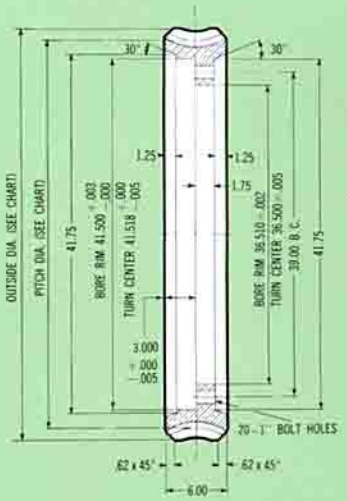
Bearing locknut screw threads are National Form. Two thrust bearing locknuts (AN-28) with one lockwasher (W-28), and one radial bearing locknut (AN-22) with one lockwasher (W-22) furnished with each standard worm.

Machine housing bore center distance to 27.000 $^{+.005}_{-.000}$

Bearing seat shoulders are filleted to suit bearings. Oil level should be slightly above top of worm thread. If worm is to be mounted above gear, consult factory for proper lubrication.

Flanged Rim Blank

Part No. R27040AT-9



Series 9

WORM & GEAR SETS

SIZE 300

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

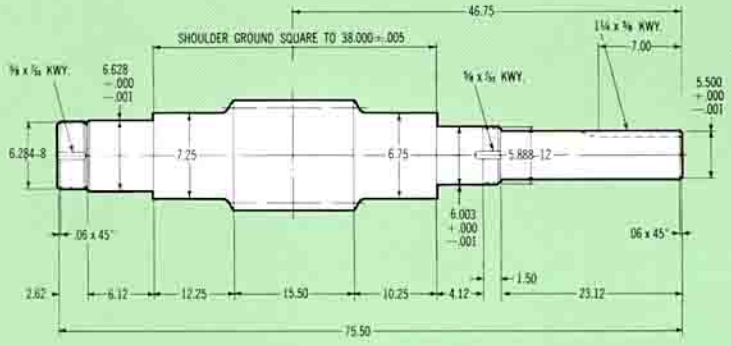
Dimensions in Inches

WORMS 30.000" CENTERS

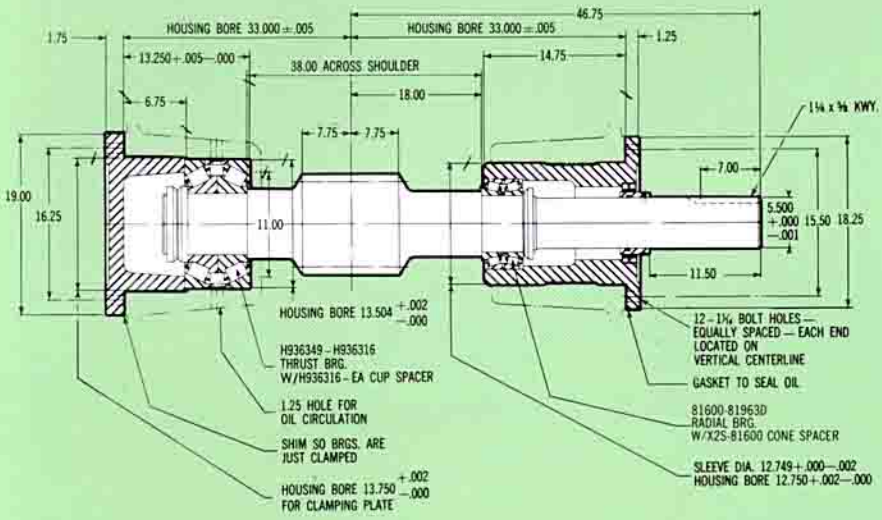
Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
8 5/8	R	8.057	9.686	6.692	25°	35°58′	8
8 5/8	L	8.057	9.686	6.692	25°	35°58′	8
11 1/6	R	9.456	10.897	7.637	25°	25°45′	6
12 2/5	R	8.688	10.340	6.776	25°	25°28′	5
13 1/5	R	8.823	10.740	7.402	25°	22°52′	5
13 4/5	R	8.661	10.147	6.941	25°	23°15′	5
14 2/5	R	8.663	10.089	7.013	25°	22°22′	5
15 1/4	R	8.351	10.019	6.393	25°	22°5′	4
15 1/4	L	8.351	10.019	6.393	25°	22°5′	4
17	R	8.980	10.482	7.248	25°	18°29′	4
21 2/3	R	8.965	10.757	7.371	25°	14°23′	3
21 2/3	L	8.965	10.757	7.371	25°	14°23′	3
27	R	8.434	9.526	6.782	25°	13°2′	3
34	R	9.269	10.823	7.609	20°	9°5′	2
42 1/2	R	7.969	9.312	6.678	20°	8°36′	2
51	R	8.377	9.462	7.280	20°	6°50′	2
59	R	9.137	10.790	7.076	20°	5°26′	1
70	R	8.752	10.214	7.060	20°	4°47′	1
77	R	8.646	9.980	7.106	20°	4°25′	1

Refer to Page 24 for Horsepower Rating Tables.

Worm—Series 25 (Single Extended)
Part No. 30003A

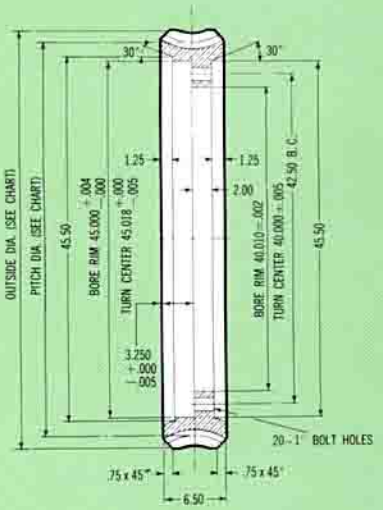


Worm Mounting—Series 25, Type A (Worm Below Gear)
Assembly Part No. 30030A



Bolt holes in rims are jig drilled 1/64" under bolt size dimension shown—ream at assembly for body bound bolts.

Flanged Rim Blank
Part No. R30040AT-5



Series 5

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

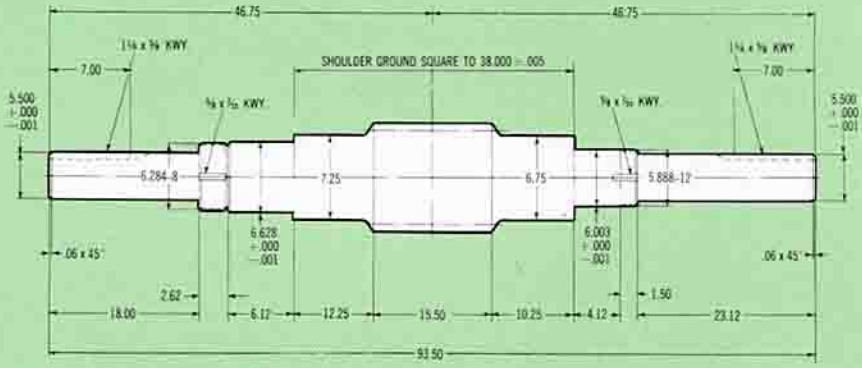
Dimensions in Inches

GEARS 30.000" CENTERS

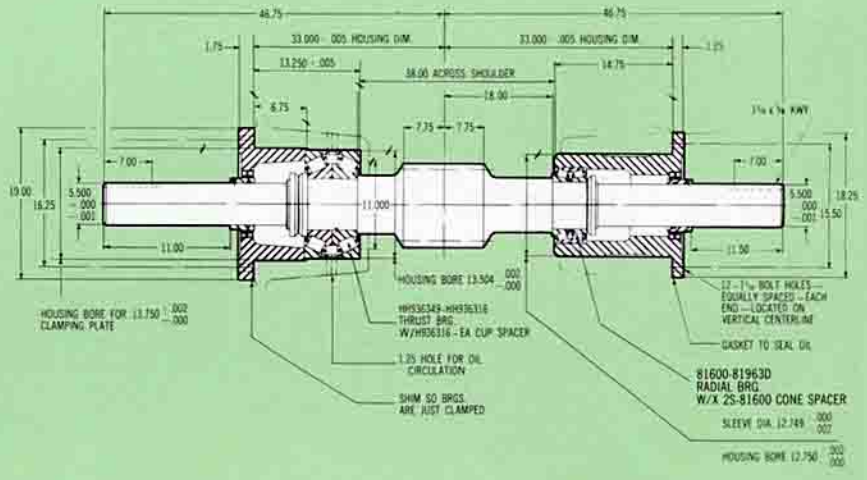
Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.	Rim Series No.
8 5/8	R	51.943	53 7/8	6 1/2	2.365	69	1447	6
8 5/8	L	51.943	53 7/8	6 1/2	2.365	69	1525	6
11 1/6	R	50.544	52 7/8	6 1/2	2.370	67	1450	5
12 2/5	R	51.312	53 1/2	6 1/2	2.600	62	1368	5
13 1/5	R	51.177	53 1/4	6 1/2	2.436	66	1477	5
13 4/5	R	51.339	53 1/2	6 1/2	2.3375	69	1476	5
14 2/5	R	51.337	53 1/2	6 1/2	2.240	72	1510	5
15 1/4	R	51.649	54	6 1/2	2.660	61	1472	5
15 1/4	L	51.649	54	6 1/2	2.660	61	1473	5
17	R	51.020	53 1/4	6 1/2	2.357	68	1484	5
21 2/3	R	51.035	53 1/8	6 1/2	2.46667	65	1441	5
21 2/3	L	51.035	53 1/8	6 1/2	2.46667	65	1503	5
27	R	51.566	53 1/2	6 1/2	2.000	81	1412	6
34	R	50.731	53	6 1/2	2.34375	68	1432	5
42 1/2	R	52.031	54	6 1/2	1.923077	85	1451	6
51	R	51.623	53 1/4	6 1/2	1.590	102	1469	6
59	R	50.863	53 1/2	6 1/2	2.7083	59	1536	5
70	R	51.248	53 1/2	6 1/2	2.300	70	1448	5
77	R	51.354	53 1/2	6 1/2	2.09524	77	1478	5

Refer to Page 24 for Horsepower Rating Tables.

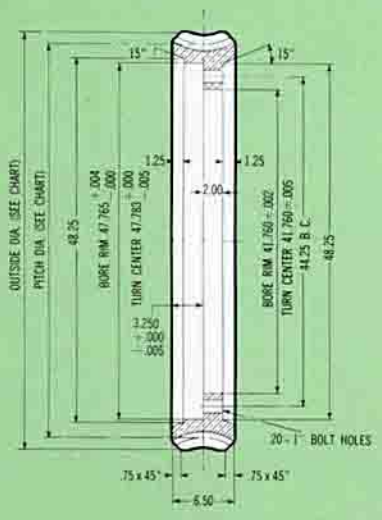
Worm—Series 27 (Double Extended)
Part No. 30003A-27



Worm Mounting—Series 27, Type A (Worm Below Gear)
Assembly Part No. 30030A-27



Flanged Rim Blank
Part No. R30040AT-6



Series 6

Bearing locknut screw threads are National Form. Two thrust bearing locknuts (AN-32) with one lockwasher (W-32), and one radial bearing locknut (AN-30) with one lockwasher (W-30) furnished with each standard worm.

Machine housing bore center distance to 30.000 $^{+.005}_{-.000}$

Bearing seat shoulders are filleted to suit bearings. Oil level should be slightly above top of worm thread. If worm is to be mounted above gear, consult factory for proper lubrication.

SIZE 360

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

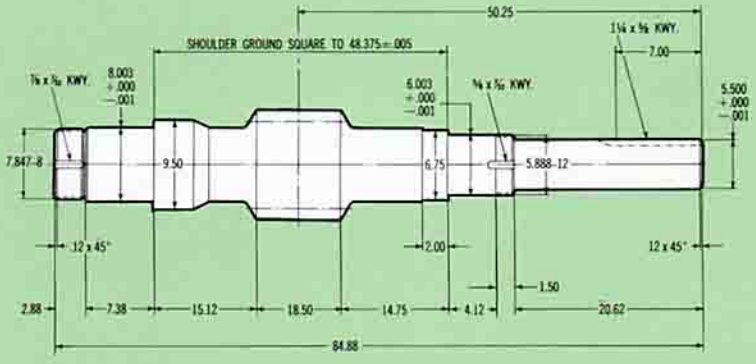
Dimensions in Inches

WORMS 36.000" CENTERS

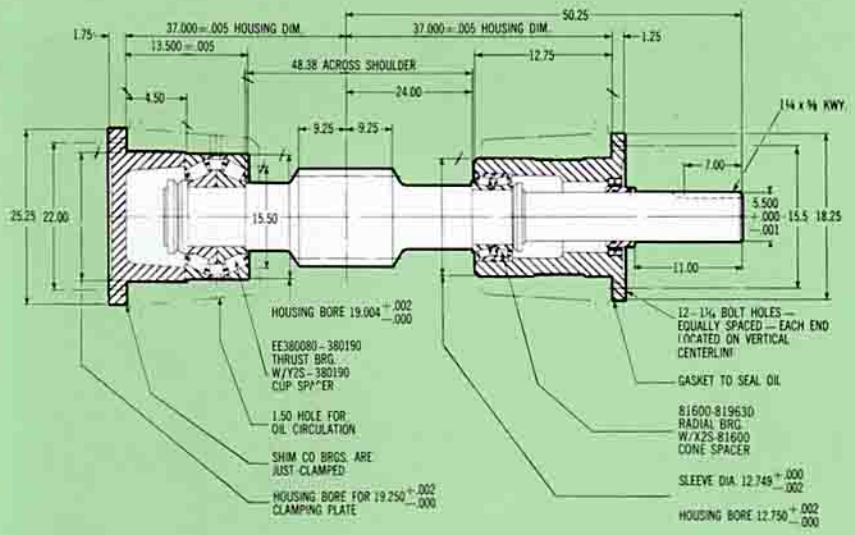
Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Root Dia.	Normal Pressure Angle	Lead Angle	No. Threads
10 5/8	R	8.012	9.686	6.692	25°	35°58′	8
10 5/8	L	8.012	9.686	6.692	25°	35°58′	8
13 5/6	R/L	9.385	10.897	7.637	25°	25°45′	6
15 1/5	R	9.586	11.228	7.686	25°	23°11′	5
16 1/5	R	9.192	10.740	7.402	25°	22°52′	5
17	R	8.756	10.147	6.941	25°	23°15′	5
21	R	8.975	10.482	7.248	25°	18°29′	4
26 2/3	R	9.187	10.757	7.371	25°	14°23′	3
26 2/3	L	9.187	10.757	7.371	25°	14°23′	3
33 1/3	R	8.338	9.526	6.782	25°	13°2′	3
42	R	9.333	10.823	7.609	20°	9°5′	2
52	R	8.338	9.312	6.678	20°	8°36′	2
63	R	8.230	9.462	7.280	20°	6°50′	2
73	R	9.068	10.790	7.076	20°	5°26′	1
86	R	9.038	10.214	7.060	20°	4°47′	1
95	R	8.641	9.980	7.106	20°	4°25′	1

Refer to Page 24 for Horsepower Rating Tables.

Worm—Series 25 (Single Extended)
Part No. 36003A

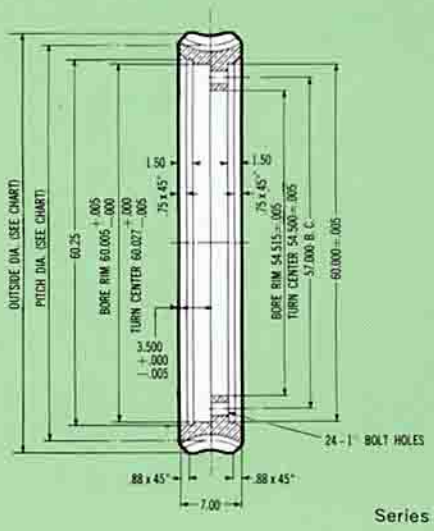


Worm Mounting—Series 25, Type A (Worm Below Gear)
Assembly Part No. 36030A



Bolt holes in rims are jig drilled 1/64" under bolt size dimension shown—ream at assembly for body bound bolts.

Flanged Rim Blank
Part No. R36040AT-9



Series 9

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

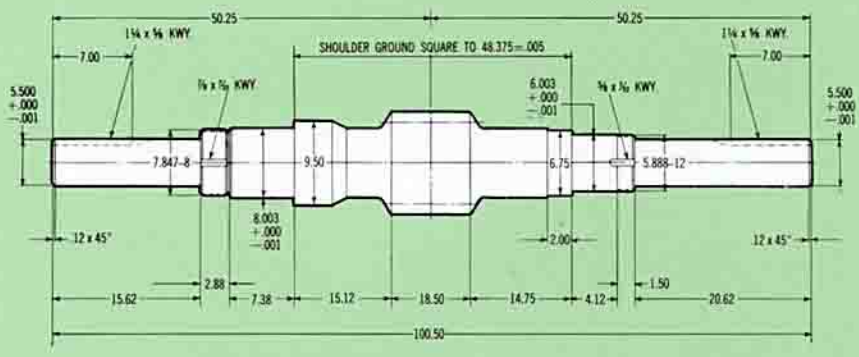
Dimensions in Inches

GEARS 36.000" CENTERS

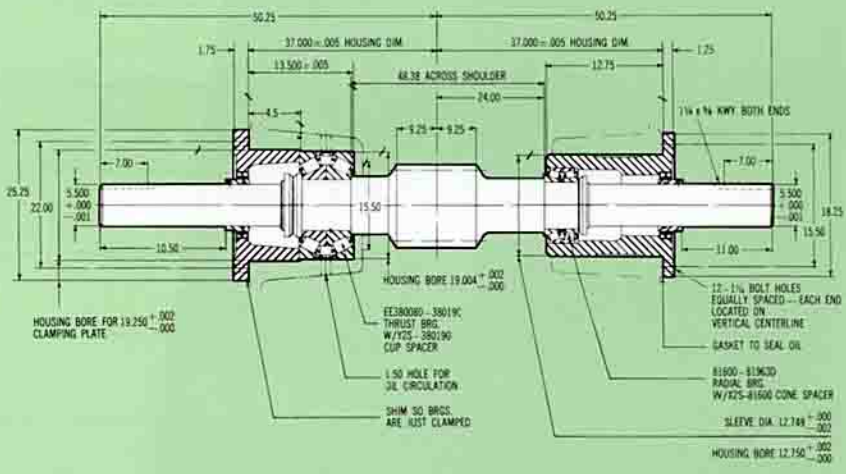
Ratio	Hand of Thread	Pitch Dia.	Outside Dia.	Face Width	Circular Pitch	No. Teeth	Hob No.	Rim Series No.
10 5/8	R	63.988	65¼	7	2.365	85	1447	10
10 5/8	L	63.988	65¼	7	2.365	85	1525	10
13 5/6	R/L	62.615	65⅛	7	2.370	83	1450	10
15 1/5	R	62.414	65⅛	7	2.580	76	1449	10
16 1/5	R	62.808	65⅜	7	2.436	81	1477	10
17	R	63.244	65⅜	7	2.3375	85	1476	10
21	R	63.025	65⅜	7	2.357	84	1484	10
26 2/3	R	62.813	65⅜	7	2.46667	80	1441	10
26 2/3	L	62.813	65⅜	7	2.46667	80	1503	10
33 1/3	R	63.662	66	7	2.000	100	1412	9
42	R	62.667	65⅜	7	2.34375	84	1432	10
52	R	63.662	66	7	1.923077	104	1451	9
63	R	63.770	65⅛	7	1.590	126	1469	9
73	R	62.932	65⅛	7	2.7083	73	1536	10
86	R	62.962	65¼	7	2.300	86	1448	10
95	R	63.359	65⅜	7	2.09524	95	1478	10

Refer to Page 24 for Horsepower Rating Tables.

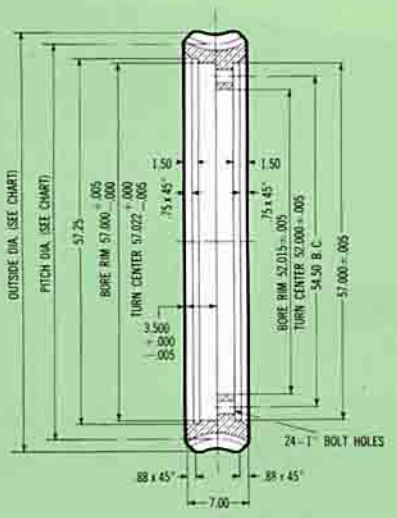
Worm—Series 27 (Double Extended)
Part No. 36003A-27



Worm Mounting—Series 27, Type A (Worm Below Gear)
Assembly Part No. 36030A-27



Flanged Rim Blank
Part No. R36040AT-10



Series 10

Bearing locknut screw threads are National Form. Two thrust bearing locknuts (AN-40) with one lockwasher (W-40), and one radial bearing locknut (AN-30) with one lockwasher (W-30) furnished with each standard worm.

Machine housing bore center distance to 36.000 $^{+.005}_{-.000}$

Bearing seat shoulders are filleted to suit bearings. Oil level should be slightly above top of worm thread. If worm is to be mounted above gear, consult factory for proper lubrication.

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