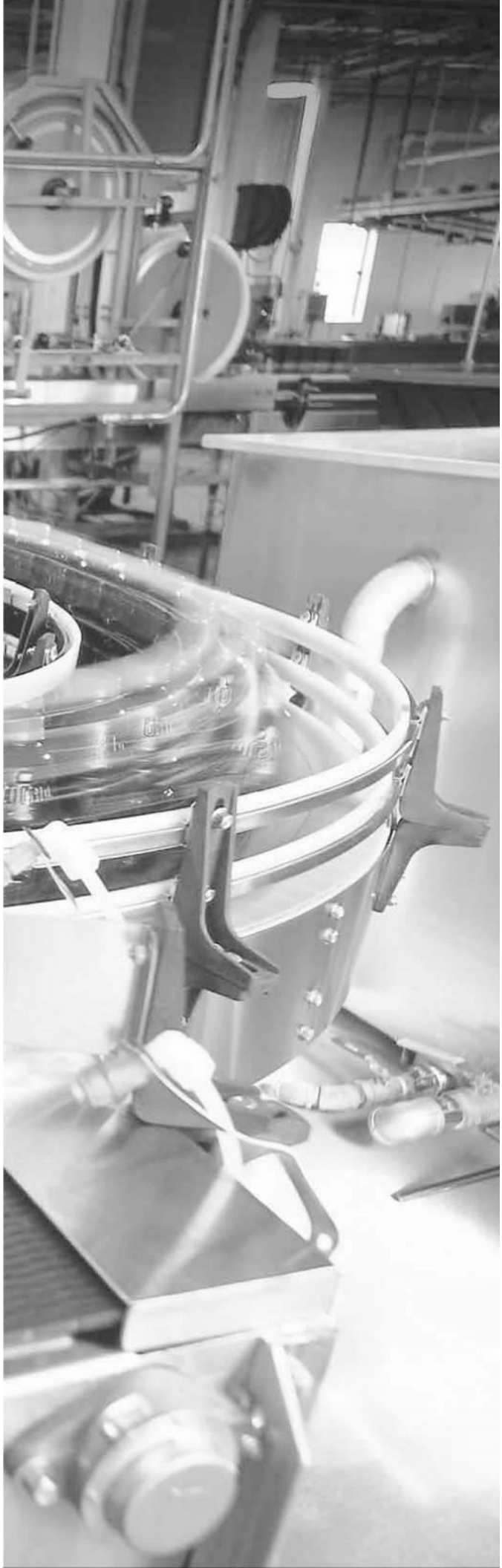


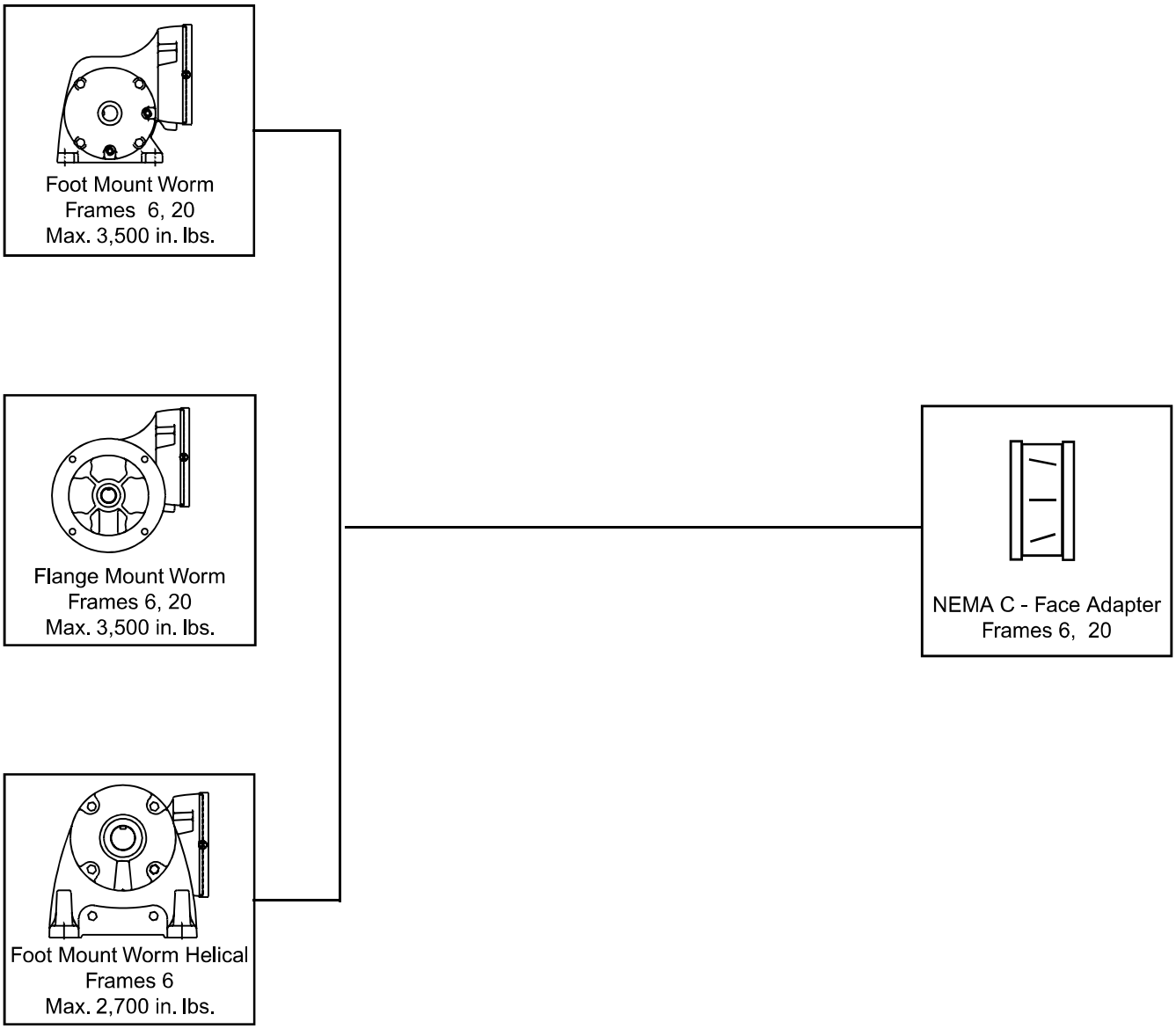
Browning®

IRA Worm and Helical Reducers

These right-angle gear reducers offer a standard NEMA C-Face alternative to the IRA gearmotor products. Where an application requires a DC or another type motor not available as an IRA gearmotor, this C-Face reducer may be used with the same mounting. The flexible IRA gear reducers are available in a foot mount configuration with worm or worm-helical gearing or as a flange mount worm gear.

- Forged "LMS" bronze worm wheel provides extra strength and life.
- Roller bearings on output shaft provide ample rating for high overhung load.
- Factory filled with oil.
- Two double lipped oil seals at input and output shafts.

IRA Reducers



Type IRA

"C" Face Input Worm Gear

"C" Face Input
Worm - Helical Gear

Selection and Ordering Information

Selection Information

1. Required Output Torque
- Based on application data.

2. Speed / Ratio
- Obtain either desired output speed (rpm) or gearbox ratio based on application.

3. Service Factor
- Determine the required service factor using either the AGMA Application Classification chart (pages 439 - 441), or the duration of operation, load type, and motor type with the table below.

Prime Mover	Duration Of Service	Nature of Load From Driven Machine		
		Uniform	Mod. Shock	Heavy Shock
Electric Motor	Occasional 1/2 hour per day	0.80	0.90	1.00
	Intermittent 2 hours per day	0.90	1.00	1.25
	10 hours per day	1.00	1.25	1.50
	24 hours per day	1.25	1.50	1.75

The following service factors apply to applications involving frequent starts and stops.

Electric Motor	Occasional 1/2 hour per day	0.90	1.00	1.25
	Intermittent 2 hours per day	1.00	1.25	1.50
	10 hours per day	1.25	1.50	1.75
	24 hours per day	1.50	1.75	2.00

Size Selection

Step 1
- Locate speed reducer selection tables (pages 444 - 447) based on input speed to gearbox.

Step 2
- Choose the nominal ratio appropriate for the speeds required.

Step 3 Calculate Equivalent Load
- Determine the service factored horsepower or output torque needed to drive the load.
(equivalent brake horsepower)

Brake Horsepower (Horsepower at load) x service factor = Equivalent BHP

Output torque x service factor = Equivalent output torque

Step 4 Size Reducer from Rating Tables
- Size reducer or gearmotor from rating tables using the equivalent BHP or output torque and output speed.

Step 5 Selecting the Motor
- To select the proper motor horsepower, the reducer efficiency needs to be calculated for the reducer at the rating selected.

$$\text{HP motor} = \frac{\text{Torque output x rpm output}}{\text{63025 x efficiency}} \quad \text{or hp motor} = \frac{\text{hp output}}{\text{efficiency}}$$

$$\text{Efficiency} = \frac{\text{Max. Output Torque x Output rpm}}{\text{Max. Input hp x 63025}} \text{ x100\%}$$

Step 6
- Verify thermal limitations.

Step 7
- Verify overhung load ratings where required (see page 438).

Example

1. Application Data:

Uniformly loaded conveyor, 24 hrs./ day operation. Right angle hollow base speed reducer directly coupled to head pulley. Customer prefers C-Face motors.

Motor Rating: TEFC, 230/460V 1 hp, 1750 rpm, 143TC frame footless

Output Speed: 56 rpm

2. Size Selection

56 RPM REQUIRED OUTPUT

EQUALS 31.5:1 RATIO

PM • SF = P

1 HP • 1.25 = 1.25 HP

6 GW (1.3 HP) ^{3} 1.25

SELECT IRA 6 GW (1.3 HP) ^{3} 1.25

31.0	6 GW(V)
EXAMPLE	
1.3	1244

3. Catalog Designation (see "Ordering" page 437)

IRA • 6 • GW • F1 • 25 • U • 143TC

Catalog Designation

IRA • 6 • GW • F1 • 25 • U • 143TC • ___

Based on Selection — Choose one of each — Based on Application

Type	Gear Frame	Mounting Configuration	Mounting Positions	Ratio	Input	Motor Frame	Modification Code(s)
IRA	6 20	GW = Foot Mounted GWV = Flanged Worm GWB = Footed Worm-Helical (Frame 6 Only)	See page 442	Use Nominal Ratio Selected	U* = C-Face *Must specify NEMA Frame Size	Req'd on U	Number of Modification(s) From Page 449

Overhung Load

Type IRA

Overhung Load

When a sprocket, sheave, pulley, or pinion is mounted on the take-off shaft of a reducer, it is necessary to calculate the overhung load. This calculated load must be compared with the gearbox capacity listed to make sure the gearbox will not be overloaded. To calculate the overhung load you need to know the torque or horsepower at the take-off shaft and the location along the shaft at which the load is applied.

A. If torque is known:

$$OHL = \frac{T \times K \times LLF}{r}$$

B. If horsepower is known:

$$OHL = \frac{63025 \times hp \times K \times LLF}{rpm \times r}$$

Where:

OHL = Overhung load (pounds)
T = Torque (in. lbs.)
r = Radius of driving member (in.)
hp = Horsepower
K = Drive type factor
LLF = Load location factor

Driving Member	Value of K
Chain Drive	1.00
Pinion	1.25
Gearbelt	1.25
V-Belt	1.50
Flat Belt	2.50

Load Location	Value of LLF
End of shaft extension	1.20
Center of shaft extension	1.00
Shaft extension shoulder	0.80

Output Speed rpm	Overhung Load (In Pounds) by Frame and Type		
	6 GW, GWV	6 GWB	20 GW, GWV
230	696	-	-
190	738	-	2743
155	804	-	2800
125	832	-	2850
100	942	745	2850
84	980	753	2850
68	980	827	2850
56	980	816	2850
45	980	894	2850
37	980	913	2850
30	980	883	2850
25	980	1097	2850
20	980	1228	2850
16.5	980	1234	2850
11	980	1234	2850
9	980	1234	2850
7.5	980	1234	2850

AGMA Application Classification

Application	Recommended Service Factors		
	Up to 3 hrs/day	3-10 hrs/day	Over 10 hrs/day
AGITATORS (Mixers)			
Pure Liquids	- - -	1.00	1.25
Liquids & Solids	1.00	1.25	1.50
Liquids - Variable Density	1.00	1.25	1.50
BLOWERS			
Centrifugal	1.00	1.25	- - -
Lobe	1.00	1.25	1.50
Vane	- - -	1.00	1.25
BREWING & DISTILLING			
Bottling Machinery	- - -	1.00	1.25
Brew Kettles (Continuous Duty)	- - -	1.00	1.25
Cookers (Continuous Duty)	- - -	1.00	1.25
Mush Tubs (Continuous Duty)	- - -	1.00	1.25
Scale Hopper (Frequent Starts)	1.00	1.25	1.50
CAN FILLING MACHINES	- - -	1.00	1.25
CAR DUMPERS	1.25	1.50	1.75
CAR PULLERS	1.00	1.25	1.50
CLARIFIERS	- - -	1.00	1.25
CLASSIFIERS	1.00	1.25	1.50
CLAY WORKING MACHINERY			
Brick Press	1.25	1.50	1.75
Briquette Machine	1.25	1.50	1.75
Pug Mill	1.00	1.25	1.50
COMPACTORS	1.50	1.75	2.00
COMPRESSORS			
Centrifugal	- - -	1.00	1.25
Lobe	1.00	1.25	1.50
Reciprocating, Multi - Cylinder	1.00	1.25	1.50
Reciprocating, Single - Cylinder	1.25	1.50	1.75
CONVEYORS - GENERAL PURPOSE			
Uniformly loaded or fed	- - -	1.00	1.25
Not uniformly fed	1.00	1.25	1.50
Reciprocating or Shaker	1.25	1.50	1.75
CRANES			
Dry Dock			
Main Hoist	1.25	1.50	1.75
Auxiliary Hoist	1.25	1.50	1.75
Boom Hoist	1.25	1.50	1.75
Slewing Drive	1.25	1.50	1.75
Traction Drive	1.50	1.50	1.50
Container			
Main Hoist	◆	◆	◆
Boom Hoist	◆	◆	◆
Trolley Travel			
Gantry Drive	◆	◆	◆
Traction Drive	◆	◆	◆
Mill Duty			
Main Hoist	◆	◆	◆
Auxiliary	◆	◆	◆
Bridge and Trolley Travel	◆	◆	◆

Application	Recommended Service Factors		
	Up to 3 hrs/day	3-10 hrs/day	Over 10 hrs/day
CRANES (cont.)			
Industrial Duty			
Main	1.00	1.25	1.50
Auxiliary	◆	◆	◆
Bridge and Trolley Travel	◆	◆	◆
CRUSHER			
Stone or Ore	1.50	1.75	2.00
DREDGES			
Cable Reels	1.00	1.25	1.50
Conveyors	1.00	1.25	1.50
Cutter Head Drives	1.25	1.50	1.75
Pumps	1.00	1.25	1.50
Screen Drives	1.25	1.50	1.75
Stackers	1.00	1.25	1.50
Winches	1.00	1.25	1.50
ELEVATORS			
Bucket	1.00	1.25	1.50
Centrifugal Discharge	- - -	1.00	1.25
Escalators	◆	◆	◆
Freight	◆	◆	◆
Gravity Discharge	- - -	1.00	1.25
EXTRUDERS			
General	1.25	1.25	1.25
Plastics			
(a) Variable Speed Drive	1.50	1.50	1.50
(b) Fixed Speed Drive	1.75	1.75	1.75
Rubber			
(a) Continuous Screw Operation	1.50	1.50	1.50
(b) Intermittent Screw Operation	1.75	1.75	1.75
FANS			
Centrifugal	- - -	1.00	1.25
Cooling Towers	◆	◆	◆
Forced Draft	1.25	1.25	1.25
Induced Draft	1.00	1.25	1.50
Industrial & Mine	1.00	1.25	1.50
FEEDERS			
Apron	- - -	1.25	1.50
Belt	1.00	1.25	1.50
Disc	- - -	1.00	1.25
Reciprocating	1.25	1.50	1.75
Screw	1.00	1.25	1.50
FOOD INDUSTRY			
Cereal Cooker	- - -	1.00	1.25
Dough Mixer	1.00	1.25	1.50
Meat Grinders	1.00	1.25	1.50
Slicers	1.00	1.25	1.50
GENERATORS & EXCITERS	- - -	1.00	1.25
HAMMER MILLS	1.50	1.50	1.75
HOISTS			
Heavy Duty	1.25	1.50	1.75
Medium Duty	1.00	1.25	1.50
Skip Hoist	1.00	1.25	1.50

◆ Refer to Application Engineering (1 800 626 2093).

Application	Recommended Service Factors		
	Up to 3 hrs/day	3-10 hrs/day	Over 10 hrs/day
LAUNDRY TUMBLERS	1.00	1.25	1.50
LAUNDRY WASHERS	1.25	1.25	1.50
LUMBER INDUSTRY			
Barkers - Spindle Feed	1.25	1.25	1.50
- Main Drive	1.50	1.50	1.50
Conveyors - Burner	1.25	1.25	1.50
- Main or Heavy Duty	1.50	1.50	1.50
- Main Log	1.50	1.50	1.75
- Re-Saw, Merry-Go-Round	1.25	1.25	1.50
- Slab	1.50	1.50	1.75
- Transfer	1.25	1.25	1.50
Chains - Floor	1.50	1.50	1.50
- Green	1.50	1.50	1.50
Cut-Off Saws - Chain	1.50	1.50	1.50
- Drag	1.50	1.50	1.50
Debarking Drums	1.50	1.50	1.75
Feeds - Edger	1.25	1.25	1.50
- Gang	1.50	1.50	1.50
- Trimmer	1.25	1.25	1.50
Log Deck	1.50	1.50	1.50
Log Hauls - Incline - Well Type	1.50	1.50	1.50
Log Turning Devices	1.50	1.50	1.50
Planer Feed	1.25	1.25	1.50
Planer Tilting Hoist	1.50	1.50	1.50
Rolls - Live, Off Brg., Roll Cases	1.50	1.50	1.50
Sorting Table	1.25	1.25	1.50
Tipple Hoist	1.25	1.25	1.50
Transfers - Chain	1.50	1.50	1.50
- Craneway	1.50	1.50	1.50
Tray Drives	1.25	1.25	1.50
Veneer Lathe Drives	◆	◆	◆
METAL MILLS			
Draw Bench Carriage & Main Drive	1.00	1.25	1.50
Run Out Tables			
Non-Reversing			
Group Drives	1.00	1.25	1.50
Individual Drives	1.50	1.50	1.75
Reversing	1.50	1.50	1.75
Slab Pushers	1.25	1.25	1.50
Shears	1.50	1.50	1.75
Wire Drawing	1.00	1.25	1.50
Wire Winding Machine	1.00	1.25	1.50
METAL STRIP PROCESSING MACHINERY			
Bridles	1.25	1.25	1.50
Coilers & Uncoilers	1.00	1.00	1.25
Edge Trimmers	1.00	1.25	1.50
Flatteners	1.00	1.25	1.50
Loopers (Accumulators)	1.00	1.00	1.00
Pinch Rolls	1.00	1.25	1.50
Scrap Choppers	1.00	1.25	1.50
Shears	1.50	1.50	1.75
Slitters	1.00	1.25	1.50
MILLS, ROTARY TYPE			
Bell & Rod			
Spur Ring Gear	1.50	1.50	1.75
Helical Ring Gear	1.50	1.50	1.50
Direct Connected	1.50	1.50	1.75
Cement Kilns	1.50	1.50	1.50
Dryers & Coolers	1.50	1.50	1.50
MIXERS, CONCRETE	1.00	1.25	1.50

Application	Recommended Service Factors		
	Up to 3 hrs/day	3-10 hrs/day	Over 10 hrs/day
PAPER MILLS			
Agitator (Mixer)	1.50	1.50	1.50
Agitator for Pure Liquids	1.25	1.25	1.25
Barker Drums	1.75	1.75	1.75
Barker - Mechanical	1.75	1.75	1.75
Beater	1.50	1.50	1.50
Breaker Stack	1.25	1.25	1.25
Calender (Anti-Friction Bearings Only)	1.25	1.25	1.25
Chipper	1.75	1.75	1.75
Chip Feeder	1.50	1.50	1.50
Coating Rolls	1.25	1.25	1.25
Conveyors			
Chip, Bark, Chemical	1.25	1.25	1.25
Log (Including Slab)	1.75	1.75	1.75
Couch Rolls	1.25	1.25	1.25
Cutter	1.75	1.75	1.75
Cylinders Molds	1.25	1.25	1.25
Dryers (Anti-Friction Bearings Only)			
Paper Machine	1.25	1.25	1.25
Conveyor Type	1.25	1.25	1.25
Embosser	1.25	1.25	1.25
Extruder	1.50	1.50	1.50
Fourdrinier Rolls (Includes			
Lump Breaker, Dandy Roll,			
Wire Turning & Return Rolls)	1.25	1.25	1.25
Jordan	1.25	1.25	1.25
Kiln Drive	1.50	1.50	1.50
Mt. Hope Rolls	1.25	1.25	1.25
Paper Rolls	1.25	1.25	1.25
Platter	1.50	1.50	1.50
Pressers - Felt & Suction	1.25	1.25	1.25
Pulper	1.50	1.50	1.75
Pumps - Vacuum	1.50	1.50	1.50
Reel (Surface Type)	1.25	1.25	1.50
Screens			
Chip	1.50	1.50	1.50
Rotary	1.50	1.50	1.50
Vibrating	1.75	1.75	1.75
Size Press	1.25	1.25	1.25
Super Calender	1.25	1.25	1.25
Thickener (AC Motor)	1.50	1.50	1.50
(DC Motor)	1.25	1.25	1.25
Washer (AC Motor)	1.50	1.50	1.50
(DC Motor)	1.25	1.25	1.25
Wind & Unwind Stand	1.00	1.00	1.00
Winders (Surface Type)	1.25	1.25	1.25
Yankee Dryers (Anti-Friction			
Bearings Only)	1.25	1.25	1.25
PLASTICS INDUSTRY-PRIMARY PROCESSING			
Intensive Internal Mixers			
(a) Batch Mixers	1.75	1.75	1.75
(b) continuous Mixers	1.50	1.50	1.50
Batch Drop Mill - 2 Smooth Rolls	1.25	1.25	1.25
Continuous Feed, Holding &			
Blend Mill	1.25	1.25	1.25
Compounding Mills	1.25	1.25	1.25
Calenders	1.50	1.50	1.50
PLASTICS INDUSTRY - SECONDARY PROCESSING			
Blow Molders	1.50	1.50	1.50
Coating	1.25	1.25	1.25
Film	1.25	1.25	1.25
Pipe	1.25	1.25	1.25

◆ Refer to Application Engineering (1 800 626 2093).

AGMA Application Classification

Application	Recommended Service Factors		
	Up to 3 hrs/day	3-10 hrs/day	Over 10 hrs/day
PLASTICS INDUSTRY - SECONDARY PROCESSING (Cont.)			
Pre-Plasticizers	1.50	1.50	1.50
Rods	1.25	1.25	1.25
Sheets	1.25	1.25	1.25
Tubing	1.25	1.25	1.50
PULLERS - BARGE HAUL	1.00	1.50	1.75
PUMPS			
Centrifugal	---	1.00	1.25
Proportioning	1.00	1.25	1.50
Reciprocating			
Single Acting, 3 or more cylinders	1.00	1.25	1.50
Double Acting, 2 or more cylinders	1.00	1.25	1.50
Rotary - Gear Type	---	1.00	1.50
- Lobe Type	---	1.00	1.25
- Vane	---	1.00	1.25
RUBBER INDUSTRY			
Intensive Internal Mixers			
(a) Batch Mixers	1.50	1.75	1.75
(b) Continuous Mixers	1.25	1.50	1.50
Mixing Mill - 2 Smooth Rolls (if corrugated rolls are used, than the same service factors that are used for a Cracker Warmer)	1.50	1.50	1.50
Batch Drop Mill - 2 Smooth Rolls	1.50	1.50	1.50
Cracker Warmer - 2 Rolls; 1 corrugated roll	1.75	1.75	1.75
Cracker - 2 corrugated rolls	1.75	1.75	1.75
Holding, Feed & Blend Mill - 2 Rolls	1.25	1.25	1.25
Refiner - 2 Rolls	1.50	1.50	1.50
Calenders	1.50	1.50	1.50
SAND MILLER	1.00	1.25	1.50

Application	Recommended Service Factors		
	Up to 3 hrs/day	3-10 hrs/day	Over 10 hrs/day
SEWAGE DISPOSAL EQUIPMENT			
Bar Screens	---	1.00	1.25
Chemical Feeders	---	1.00	1.25
Dewatering Screens	1.00	1.25	1.50
Scum Breakers	1.00	1.25	1.50
Slow or Rapid Mixers	1.00	1.25	1.50
Sludge Collectors	1.00	1.00	1.25
Thickeners	1.00	1.25	1.50
Vacuum Filters	1.00	1.25	1.50
SCREENS			
Air Washing	---	1.00	1.25
Rotary - Stone or Gravel	1.00	1.25	1.50
Traveling Water Intake	---	1.00	1.25
SUGAR INDUSTRY			
Beet Slicer	1.50	1.50	1.75
Cane Knives	1.50	1.50	1.50
Crushers	1.50	1.50	1.50
Mills (Low Speed End)	1.50	1.50	1.50
TEXTILE INDUSTRY			
Batchers	1.00	1.25	1.50
Calenders	1.00	1.25	1.50
Cards	1.00	1.25	1.50
Dry Cans	1.00	1.25	1.50
Dryers	1.00	1.25	1.50
Dyeing Machinery	1.00	1.25	1.50
Looms	1.00	1.25	1.50
Mangles	1.00	1.25	1.50
Nappers	1.00	1.25	1.50
Pads	1.00	1.25	1.50
Slashers	1.00	1.25	1.50
Soapers	1.00	1.25	1.50
Spinners	1.00	1.25	1.50
Tenter Frames	1.00	1.25	1.50
Washers	1.00	1.25	1.50
Winders	1.00	1.25	1.50

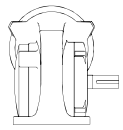
Applications not listed in this table or where the user has data indicating the severity of his usage to be greater than average should be referred to Application Engineering (1 800 626 2093).

Type IRA

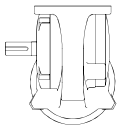
Foot Mount Worm and Worm - Helical

Universal No. 1

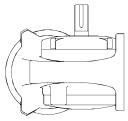
F1



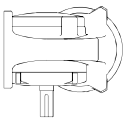
C1



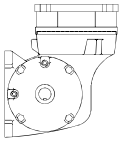
U3



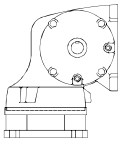
D1



W8

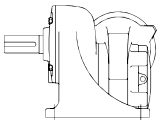


W1

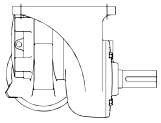


Universal No. 2

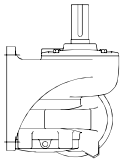
F2



C4



U1



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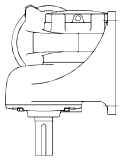

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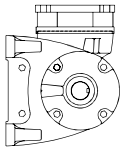

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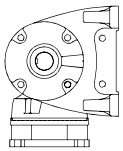
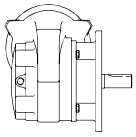


Flange Mount Worm

Universal No. 1

W3



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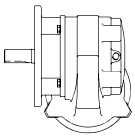

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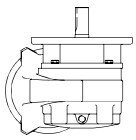

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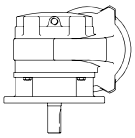

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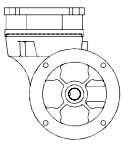

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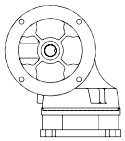


Type IRA

Availability

Gear Frame	Footed		Flanged
	Universal #1	Universal #2	Universal #1
6 GW (worm)	●	◊	●
6 GWB (worm helical)	●	●	✷
20 GW (worm)	●	◊	●

● Normally Stocked
◊ Available thru conversion of stock unit
✷ Refer application to Type HWN product

The IRA gearbox is filled at the factory with oil according to the mounting position specified when ordered. The oil used depends on the order description at entry. Non¬washdown units are filled with an AGMA 8 mineral oil. Washdown units will be filled with a synthetic 460 series lubricant classified as a Polyglycol (PAG) oil.

In the event that a gearbox needs to be refilled, see the appropriate maintenance manual for the proper procedure and correct quantity of oil. If synthetic oil is used, the gearbox must be refilled with the same lubricant or must be completely drained and flushed.

Mineral Oils

Ambient Temperature	15 to 60 F	50 to 125 F
ISO Grade	460	680
AGMA	7	8

Synthetic Oils

Ambient Temperature	-30 to 200 F	-30 to 200 F
ISO Grade	460	680
AGMA	7	8

Type IRA

Motor rpm 1750

Exact ratio rpm, hp and Torque: IRA reducers

Output speed (rpm)	Reduction ratio	6 GW(V)		6 GWB		20 GW(V)	
230	**7.1**	7.5 3.63	**6 GW(V)** 888				
190	**9**	9.0 3.42	**6 GW(V)** 996			10.0 9.4	**20 GW(V)** 3082
155	**11.2**	11.25 2.79	**6 GW(V)** 994				
125	**14**	14.0 2.37	**6 GW(V)** 1026			15.0 7.0	**20 GW(V)** 3316
100	**18**	17.6 1.99	**6 GW(V)** 1056	17.0 3.63	**6 GWB** 1969	18.0 6.0	**20 GW(V)** 3418
84	**20**	21.0 1.77	**6 GW(V)** 1083	20.3 3.42	**6 GWB** 2212	20.0 5.6	**20 GW(V)** 3459
68	**25**	26.0 1.50	**6 GW(V)** 1076	25.4 2.79	**6GWB** 2199	25.0 4.6	**20 GW(V)** 3411
56	**31.5**	31.0 1.30	**6 GW(V)** 1244	31.0 2.36	**6GWB** 2317	30.0 4.0	**20 GW(V)** 3469
45	**40**	39.0 1.09	**6 GW(V)** 1067	36.6 2.01	**6GWB** 2332	40.0 3.1	**20 GW(V)** 3368
37	**45**	47.0 0.94	**6 GW(V)** 1041	45.8 1.65	**6GWB** 2297	50.0 2.5	**20 GW(V)** 3232
30	**56**	58.0 0.78	**6 GW(V)** 981	57.0 1.38	**6GWB** 2307	60.0 2.1	**20 GW(V)** 3112
25	**71**	70.0 0.64	**6 GW(V)** 889	71.9 1.14	**6GWB** 2316		
20	**90**	87.0 0.50	**6 GW(V)** 726	85.5 1.00	**6GWB** 2365		
16.5	**112**			106.0 0.84	**6GWB** 2360		
13.5	**125**			126.0 0.74	**6GWB** 2358		
11.0	**160**			159.0 0.64	**6GWB** 2342		
9.0	**200**			191.0 0.57	**6GWB** 2407		
7.5	**250**			236.0 0.50	**6GWB** 2378		
6.0	**280**			285.0 0.50	**6GWB** 2684		
5.0	**355**			354.0 0.41	**6GWB** 2416		
4.0	**450**						
3.25	**560**						

If shaded, mechanical hp may exceed thermal hp limit.
Refer to page 448.

Exact ratio	Size
Max Input hp	Max. Output Torque (in.lbs.)

Type IRA

Motor rpm 1450

Exact ratio rpm, hp and Torque: IRA reducers

Output speed (rpm)	Reduction ratio	6 GW(V)		6GWB		20 GW(V)	
193	**7.1**	7.5	**6 GW(V)**				
		3.33	979				
161	**9**	9.0	**6 GW(V)**			10.0	**20 GW(V)**
		3.14	1098			8.68	3414
132	**11.2**	11.25	**6 GW(V)**				
		2.56	1093				
104	**14**	14.0	**6 GW(V)**			15.0	**20 GW(V)**
		2.17	1128			6.44	3674
81	**18**	17.6	**6 GW(V)**	17.0	**6GWB**	18.0	**20 GW(V)**
		1.83	1156	3.33	2168	5.63	3781
69	**20**	21.0	**6 GW(V)**	20.3	**6GWB**	20.0	**20 GW(V)**
		1.63	1190	3.14	2431	5.22	3832
56	**25**	26.0	**6 GW(V)**	25.4	**6GWB**	25.0	**20 GW(V)**
		1.36	1182	2.56	2422	4.25	3773
47	**31.5**	31.0	**6 GW(V)**	31.0	**6GWB**	30.0	**20 GW(V)**
		1.20	1184	2.00	2327	3.72	3838
37	**40**	39.0	**6 GW(V)**	36.6	**6GWB**	40.0	**20 GW(V)**
		1.00	1173	1.74	2338	2.88	3723
31	**45**	47.0	**6 GW(V)**	45.8	**6GWB**	50.0	**20 GW(V)**
		0.87	1144	1.39	2305	2.43	3710
25	**56**	58 .0	**6 GW(V)**	57.0	**6GWB**	60.0	**20 GW(V)**
		0.72	1079	1.16	2314	1.98	3439
21	**71**	70.0	**6 GW(V)**	71.9	**6GWB**		
		0.59	993	0.96	2323		
17	**90**	87.0	**6 GW(V)**	85.5	**6GWB**		
		0.44	798	0.85	2365		
14	**112**			106.0	**6GWB**		
				0.73	2386		
12	**125**			126.0	**6GWB**		
				0.66	2378		
9	**160**			159.0	**6GWB**		
				0.54	2347		
8	**200**			191.0	**6GWB**		
				0.49	2396		
6	**250**			236.0	**6GWB**		
				0.43	2405		
5	**280**			285.0	**6GWB**		
				0.38	2359		
4	**355**			354.0	**6GWB**		
				0.37	2457		
3	**450**						
1	**560**						

If shaded, mechanical hp may exceed thermal hp limit.
Refer to page 448.

Exact ratio	Size
Max Input hp	Max. Output Torque (in.lbs.)

Type IRA

Motor rpm 1160

Exact ratio rpm, hp and Torque: IRA reducers

Output speed (rpm)	Reduction ratio	6 GW(V)		6GWB		20 GW(V)	
155	**7.1**	7.5	**6 GW(V)**				
		2.98	1090				
129	**9**	9.0	**6 GW(V)**			10.0	**20 GW(V)**
		2.81	1220			7.9	3845
105	**11.2**	11.25	**6 GW(V)**				
		2.29	1212				
83	**14**	14.0	**6 GW(V)**			15.0	**20 GW(V)**
		1.94	1249			5.8	4128
64	**18**	17.6	**6 GW(V)**	17.0	**6GWB**	18.0	**20 GW(V)**
		1.64	1283	2.98	2420	5.0	4244
55	**20**	21.0	**6 GW(V)**	20.3	**6GWB**	20.0	**20 GW(V)**
		1.46	1315	2.81	2698	4.7	4302
45	**25**	26.0	**6 GW(V)**	25.4	**6GWB**	25.0	**20 GW(V)**
		1.22	1306	2.29	2681	3.9	4228
37	**31.5**	31.0	**6 GW(V)**	31.0	**6GWB**	30.0	**20 GW(V)**
		1.07	1308	1.60	2336	3.4	4301
30	**40**	39.0	**6 GW(V)**	36.6	**6GWB**	40.0	**20 GW(V)**
		0.90	1294	1.36	2344	2.6	4165
25	**45**	47.0	**6 GW(V)**	45.8	**6GWB**	50.0	**20 GW(V)**
		0.78	1263	1.13	2315	2.2	4006
20	**56**	58.0	**6 GW(V)**	57.0	**6GWB**	60.0	**20 GW(V)**
		0.65	1190	0.94	2323	1.8	3848
17	**71**	70.0	**6 GW(V)**	71.9	**6GWB**		
		0.53	1078	0.78	2330		
13	**90**	87.0	**6 GW(V)**	85.5	**6GWB**		
		0.40	880	0.68	2364		
11	**112**			106.0	**6GWB**		
				0.59	2411		
9	**125**			126.0	**6GWB**		
				0.51	2397		
7	**160**			159.0	**6GWB**		
				0.44	2352		
6	**200**			191.0	**6GWB**		
				0.40	2385		
5	**250**			236.0	**6GWB**		
				0.35	2431		
4	**280**			285.0	**6GWB**		
				0.32	2363		
3.2	**355**			354.0	**6GWB**		
				0.30	2497		
2.6	**450**						
2	**560**						

If shaded, mechanical hp may exceed thermal hp limit.
Refer to page 448.

Exact ratio	Size
Max Input hp	Max. Output Torque (in.lbs.)

Type IRA

Motor rpm 870

Exact ratio rpm, hp and Torque: IRA reducers

Output speed (rpm)	Reduction ratio	6 GW(V)		6GWB		20 GW(V)	
117	**7.1**	7.5 2.52	**6 GW(V)** 1212				
97	**9**	9.0 2.37	**6 GW(V)** 1352			10.0 6.9	**20 GW(V)** 4413
80	**11.2**	11.25 1.92	**6 GW(V)** 1337				
62	**14**	14.0 1.63	**6 GW(V)** 1374			15.0 5.1	**20 GW(V)** 4725
49	**18**	17.6 .38	**6 GW(V)** 1409	17.0 2.52	**6GWB** 2693	18.0 4.4	**20 GW(V)** 4842
42	**20**	21.0 1.23	**6 GW(V)** 1433	20.3 2.17	**6GWB** 2793	20.0 4.2	**20 GW(V)** 4919
34	**25**	26.0 1.03	**6 GW(V)** 1432	25.4 1.79	**6GWB** 2805	25.0 3.4	**20 GW(V)** 4808
28	**31.5**	31.0 0.91	**6 GW(V)** 1433	31.0 1.23	**6GWB** 2351	30.0 3.0	**20 GW(V)** 4893
22	**40**	39.0 0.77	**6 GW(V)** 1418	36.6 1.05	**6GWB** 2370	40.0 2.3	**20 GW(V)** 4714
19	**45**	47.0 0.67	**6 GW(V)** 1382	45.8 0.87	**6GWB** 2325	50.0 1.9	**20 GW(V)** 4554
15	**56**	58.0 0.56	**6 GW(V)** 1303	57.0 0.72	**6GWB** 2332	60.0 1.6	**20 GW0I)** 4352
12	**71**	70.0 0.46	**6 GW(V)** 1180	71.9 0.60	**6GWB** 2339		
10	**90**	87.0 0.34	**6 GW(V)** 964	85.5 0.53	**6GWB** 2394		
8	**112**			106.0 0.44	**6GWB** 2364		
7	**125**			126.0 0.39	**6GWB** 2359		
6	**160**			159.0 0.34	**6GWB** 2358		
5	**200**			191.0 0.32	**6GWB** 2478		
4	**250**			236.0 0.27	**6GWB** 2374		
3	**280**			285.0 0.25	**6GWB** 2367		
2.4	**355**			354.0 0.22	**6GWB** 2295		
1.9	**450**						
1.6	**560**						

If shaded, mechanical hp may exceed thermal hp limit.
Refer to page 448.

Exact ratio	Size
Max Input hp	Max. Output Torque (in.lbs.)

Type IRA

Thermal Power Ratings (hp)

Motor rpm 1750

Output (RPM)	Reduction Ratio	6 GW(V)	6 GWB	20 GW(V)
230	7.1	2.67	-	-
190	9	2.46	-	9.0
155	11.2	2.08	-	-
125	14	2.00	-	6.7
100	18	1.51	2.67	5.0
84	20	1.50	2.46	5.0
68	25	1.50	2.08	3.1
56	31.5	1.00	-	-
45	40	1.00	-	2.1
37	45	0.76	-	-
30	56	0.68	-	-
25	71	0.61	-	-
20	90	-	-	-

Motor rpm 1450

Output (RPM)	Reduction Ratio	6 GW(V)	6 GWB	20 GW(V)
193	7.1	2.66	-	-
161	9	2.45	-	8.68
132	11.2	2.07	-	-
104	14	1.78	-	-
81	18	1.50	2.66	-
69	20	1.32	2.45	-
56	25	1.13	2.07	-
47	31.5	1.00	-	-
37	40	0.85	-	-
31	45	0.76	-	-
25	56	0.67	-	-

Motor rpm 1160

Output (RPM)	Reduction Ratio	6 GW(V)	6 GWB	20 GW(V)
155	7.1	2.61	-	-
129	9	2.39	-	-
105	11.2	2.02	-	-
83	14	1.90	-	-
64	18	1.46	2.61	-
55	20	1.40	2.39	-
45	25	-	2.02	-
37	31.5	0.97	-	-
30	40	-	-	-
25	45	0.74	-	-

Motor rpm 870

Output (RPM)	Reduction Ratio	6 GW(V)	6 GWB	20 GW(V)
117	7.1	2.49	-	-
97	9	2.28	-	-
80	11.2	1.93	-	-
49	18	-	2.49	-

Modifications

Gear Modifications

G1 Food Grade Lubricant

When this modification is specified, the IRA gear sump will be filled with the required volume of a synthetic lubricant classified as a Polyglycol (PAG), 460 series that is approved for USDA H-1 food grade use.

G2 Normally Closed Breather

For applications involving very dusty environments specify this breather design. The breather has a protected spring loaded valve construction opening only to relieve any pressure built up greater that 3 PSI and then closing..

G3 Double Extended Output Shafts

Double end output shafts are available on single reduction type GW worm-only units.

G4 Special Output Shafts

Special output shafts are available on all units. Refer applications to Gear Estimating office for pricing.

G5 Special Nameplates

Units can be provided with limited additional special information on the standard product nameplate. When requested, a special nameplate may be provided, stamped with custom markings.

G6 Low Ambient Temperature

Gearmotors can be supplied for low ambient down to -20F. Refer complete details of the applications to the Applications Department for review.

G7 Washdown Duty Reducer

This reducer design combines special features required for washdown duty. These include: special “protected” gearcase breather design, tandem double lipped oil seals at any shaft extension, exterior surfaces of the reducer receive Corroduty Stainless Steel paint (option for epoxy white at no added cost).

If it is required that food grade lubricant be supplied, specify G1

G8 Export Boxing

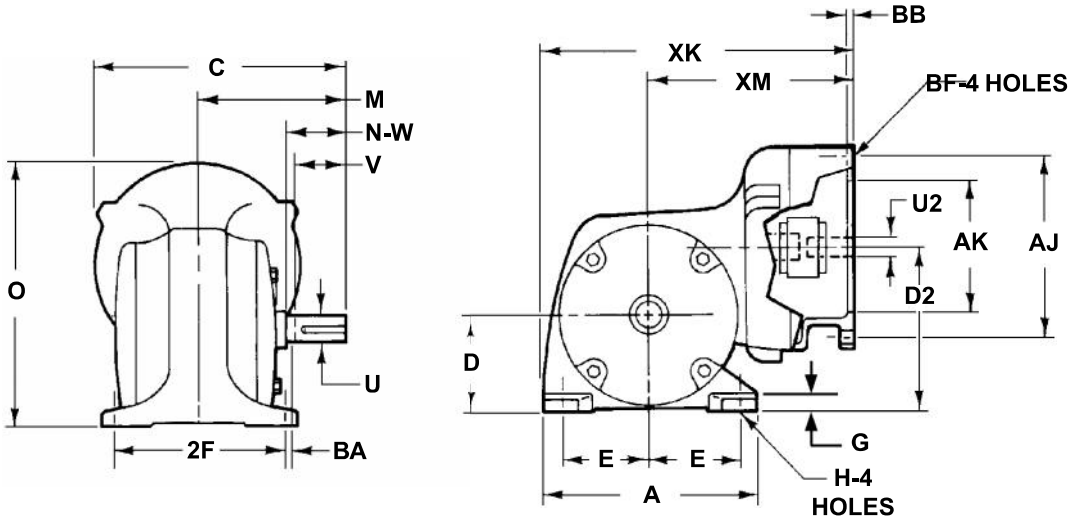
Export boxing can be provided for "underdeck" transport. When the quantity of IRA gearmotors exceeds five(5) units, refer to the International Sales department for most economical accommodations

Type IRA

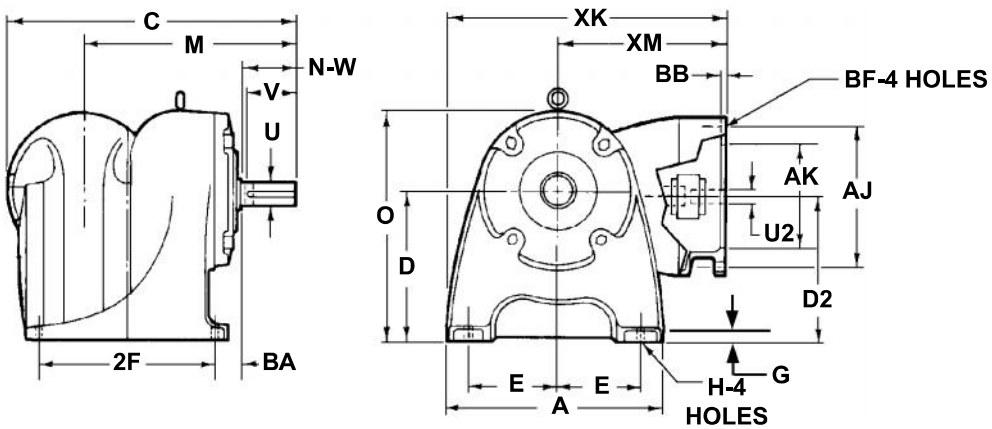
Overall dimensions

Standard F-1 Assembly

Worm (GW)



Worm-Helical (GWB)



GEAR FRAME	A	C	D	D2	E	2F	G	H	M	N-W	O	U	V MIN	BA	SQ. KEY
6 GW	7	8-7/32	3-1/4	5-13/32	3	5	5/8	13/32	5	2	9-3/32	1	1-15/16	7/16	1/4
6 GWB	9-3/8	13-11/32	6-5/16	5-7/8	3-3/4	7-1/2	3/4	9/16	10-1/32	3	9-11/16	1-1/2	2-7/8	1-3/8	3/8
20 GW	10-1/2	12-7/8	4-1/2	8-1/4	4-3/8	8	1	11/16	8-1/8	3-1/4	12-3/4	1-5/8	2-15/16	7/8	3/8

GEAR FRAME	MOTOR FRAME	XK	XM
6 GW	56C	12-13/16	9-5/16
6 GW	143TC-145TC	12-13/16	9-5/16
6 GWB	56C	14	9-5/16
6 GWB	143TC-145TC	14	9-5/16
20 GW	182TC-184TC	17-15/32	12-7/32

MOTOR FRAME	U2 +.001	AJ	AK	BB	BF	SQ KEY 2
56C	5/8	5-7/8	4-1/2	7/32	7/16	3/16
143TC-145TC	7/8	5 7/8	4 1/2	7/32	7/16	3/16
182TC-184TC	1 1/8	7 1/4	8 1/2	7/32	7/16	1/4

Dimension "D" is the maximum value, but may be less than values shown. When exact dimensions are required, shims up to 1/16" may be necessary.

All rough casting dimensions may vary by 1/4" due to casting variations.

Shaft diameter tolerances: .0000"; -.0005" up to 1-1/2" diameter inclusive. Larger diameters: +.000"; -.001.