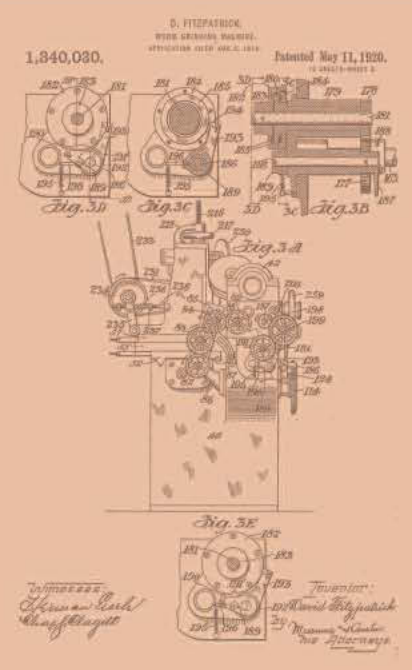
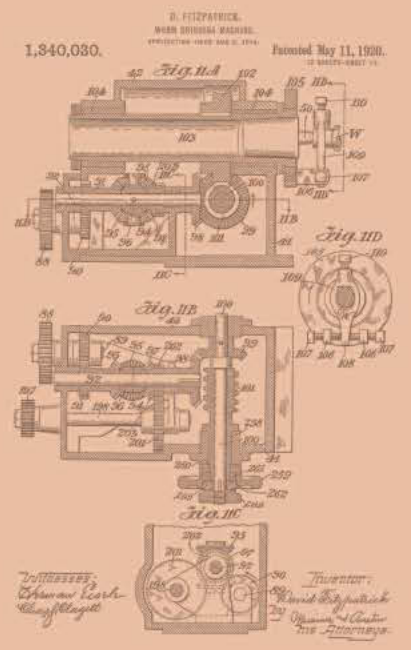
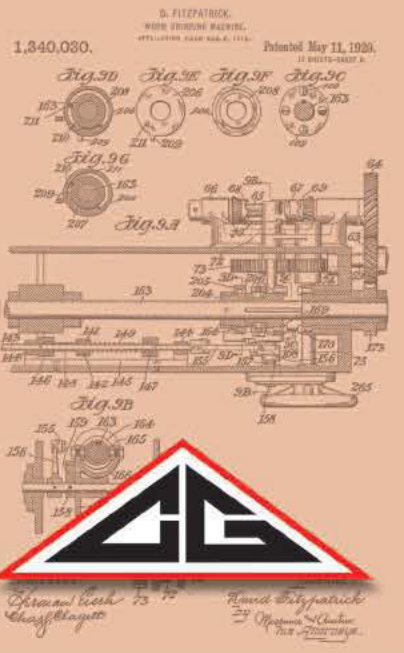






WG SPEED REDUCERS

Cleveland

CLEVELAND QUALITY FEATURES FOR A LONG LIFE.

Integral Worm and Input Shaft, precision cut, induction hardened, and then precision ground for smooth operation and long life.

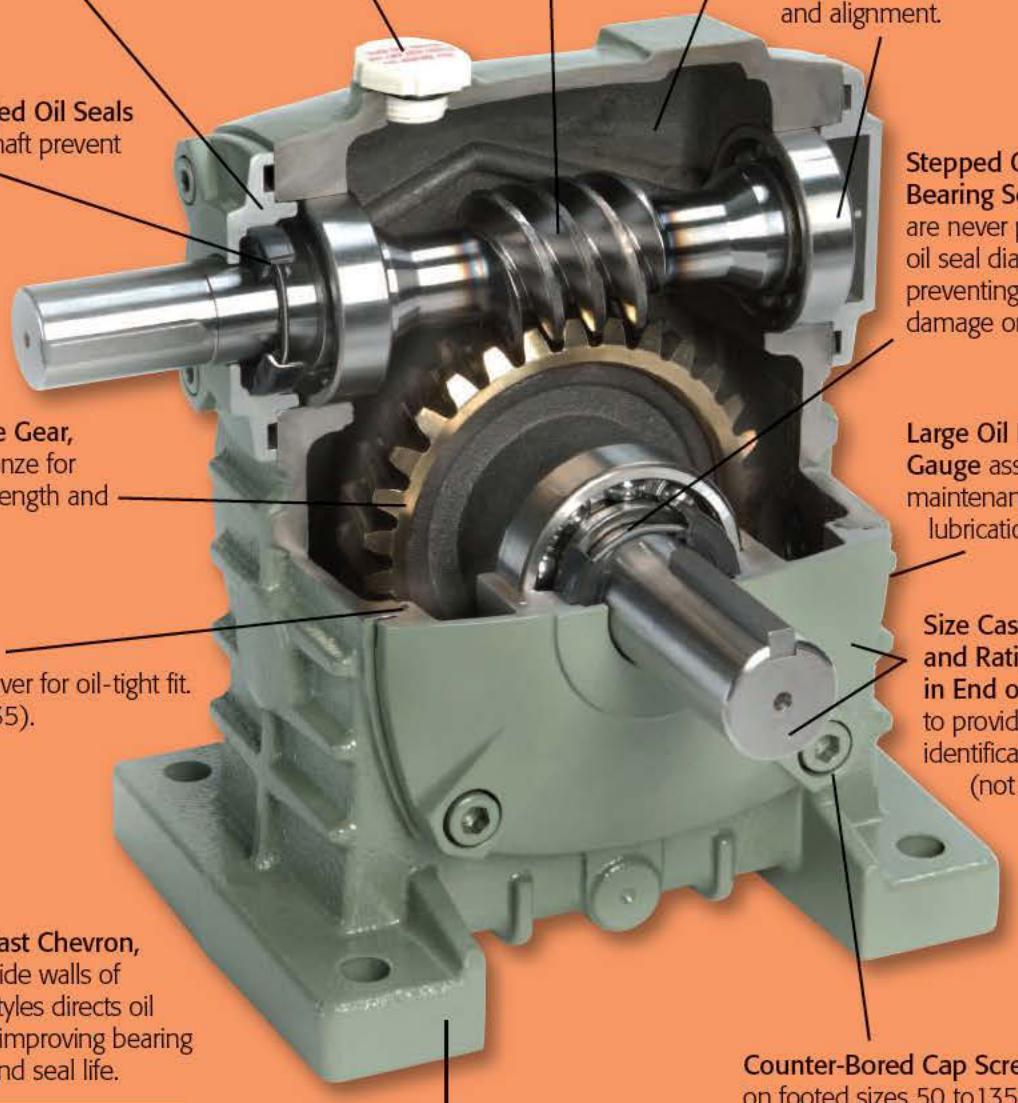
Painted Housing Interior seals against corrosion, prevents lubricant contamination from casting.

Internal Seal Installation prevents damage from outside sources (except Sizes 40 - 45).

Large Oil Fill Cap makes units easy to fill.

Four Bearing Design Standard (except some hollow shaft sizes) to maintain proper gear mesh and alignment.

Spring Loaded Oil Seals on ground shaft prevent oil leakage.



Stepped Oil Seal and Bearing Seats Bearings are never pressed over oil seal diameters, preventing possible damage or leakage.

Alloy Bronze Gear, Chill cast bronze for increased strength and durability.

Large Oil Level Sight Gauge assists in maintenance of proper lubrication levels.

O-ring Seal on output cover for oil-tight fit. (Sizes 50 -135).

Size Cast into Case and Ratio Stamped in End of Shaft to provide lifetime identification (not shown).

Internally Cast Chevron, (detail) on side walls of Worm Top styles directs oil to bearings, improving bearing lubrication and seal life.

Cast Iron Housing Body resists corrosion. The one-piece case is strong and compact.

Counter-Bored Cap Screws on footed sizes 50 to135 eliminate interference with accessory equipment. (Other sizes use metric cap screws).

ENGINEERING AND DESIGN CHARACTERISTICS.

Cleveland Gear WG Speed Reducers are designed for fixed ratio applications with a 90° shaft configuration. Compared to helical speed reducers, worm gear reducers offer three important advantages: lower cost, more compact dimensions and the ability to achieve higher ratios in a single reduction unit. Because of their differences in efficiency mechanical capacity, selection of worm gear reducers over helical gear units requires analysis of the application.

These units incorporate many Cleveland Gear engineering and manufacturing features not found in other worm gear reducers. The result is a competitively priced speed reducer that we are proud to compare with any in the world.

Cleveland Gear stocks various styles of the WG worm gear speed reducers. Available units include standard Worm Top and Worm Bottom designs, with or without C-face adapters. Ratios from 5:1 to 3600:1 and shaft center distances from 40mm (1 9/16") to 225mm (8 27/32") are ready for immediate shipment from our extensive inventories.

HOUSING: Standard one-piece main housing of close-grained cast iron is heavily ribbed in the bearing and gear areas. This provides rigid support to maintain proper gear mesh alignment. The gearbox size is cast into the housing (except on Universal units). The housing is painted with a primer and non-toxic styrene alkyd resin finish coat and units need no further painting. Housing for footed units have only single fill and drain plug openings, minimizing possible leakage points. All holes in the housing (except sizes 40 and 45) are blind drilled and tapped to eliminate avenues for oil leakage.

WORM SHAFT: The integral worm and input shafts are manufactured from solid bar stock and heat treated to achieve mechanical strength, toughness and shock resistance. The worm is precision cut, then induction hardened,and finally precision ground. Oil seal seats, bearing seats, shoulders and shaft extensions are ground. The stepped dimensions of the oil seal and bearing seats eliminate the pressing of bearings over the oil seal seat, thus preventing damage and possible leakage.

WORM SHAFT MATERIALS:

- Minimum tensile strength: 100,000 PSI
- Minimum yield point: 70,000 PSI
- Elongation (2 inch): 17% minimum
- Hardness: 210 BHN (Brinell Hardness Number)
- Worm induction surface hardened to 45-48 Rockwell C.

OIL SEALS: All seals are nitrile, spring loaded, single or double lip type. Nitrile is used because of it's good oil resistance and low temperature properties.

WORM GEAR (WHEEL): On sizes 40 to 50, the wheel is cut from a solid bronze alloy. On all other size units, the gear is a double chill cast bronze alloy on a high tensile strength cast iron central hub. Chill casting provides desirable mechanical properties to the gear related to wear resistance and strength not obtainable with a forged gear. The cast assembly is double locked—both rotationally and laterally—to ensure permanent joining. The gear's bronze alloy material is able to better withstand shock loads and efficiently transmit normal load with a minimum of friction loss.

WORM GEAR (WHEEL) MATERIAL:

- Solid Shaft Output Gears - sizes 40 to 80 are a Cast Iron Hub with an aluminum bronze gear ring; Sizes 100 to 225 are a ductile iron hub with and aluminum bronze gear ring.
- Hollow shaft output gears - sizes 40 to 50 are solid aluminum bronze gears; sizes 60 to 175 are a cast iron hub with an aluminum bronze gear ring.
- Minimum tensile strength of gear ring: 71,000 PSI.

SHAFTING: All shafts through size 250 are AISI 1045 steel. Oversized shafts help prevent deflection and the resulting misalignment at the gear mesh.

COVERS: Covers are close-grained cast iron, except for high speed covers in Sizes 40 to 120 and low speed covers in Sizes 40 to 120 which are of die cast aluminum. Output covers on sizes 50 to 135 are sealed with O-rings. Output covers on sizes 50 to 175 cover the seal. Smaller units and all hollow output style reducers use output covers which do not cover the seal.

C-FACE FLANGES: All motor flanges are close-grained cast iron. Quill hollow shaft style flanges have jacking screw holes at the 3 o'clock and 9 o'clock positions to assist motor removal. All C-face coupling style flanges have openings for set screw adjustment no larger than 1/2".

HANDING: The handing on all units is readily changed by reversing the worm shaft.

COUPLINGS: Couplings are two-pieced forged steel with an elastomeric cushioned locking system which provides some shock dampening. Couplings are included with all C-face bell flange units.

FILL CAP: The normal fill cap is vented to the atmosphere. We can also provide a special brass breather which will seal the gearbox and is set to relieve any internal pressure above 5 psi. If environmental conditions make this feature desirable, please request a special quotation for the brass fill cap.

SELECTION PROCEDURE

SELECTION PROCEDURE

1. Determine the service factor for the application from Table 1 below. A service factor is necessary to adapt the unit to the various operating conditions as shown in the list of common applications.

2. Calculate the ratio required by dividing the input speed by the output speed. Single reduction for ratios 5:1 to 70:1. Double reduction for ratios 50:1 to 3600:1.

3. Calculate the Equivalent Input HP by multiplying the specified or prime mover nameplate power by the service factor determined in step 1. In the event the unit selection is to be based on output torque, apply the service factor to the required torque. If an expected peak load is more than 2 times the equivalent HP/torque, then calculate a second equivalent HP/torque by dividing the peak power by 2 and use this value for size selection.

4. Refer to the rating tables and select a unit size that has an input HP or nominal torque rating equal to or greater than the equivalent rating calculated in step 2. Refer to the following tables for selections.

- Tables on pages 5 to 8 for mechanical ratings and size selection of single reduction units for ratio range from 5:1 to 70:1. Double reduction tables on pages 19 to 20.

Table 1: Service factors

PRIME MOVER	DURATION OF SERVICE PER DAY	DRIVEN MACHINE LOAD CLASS		
		UNIFORM	MEDIUM SHOCK	HEAVY SHOCK
Electric motor	Occasional 1/2 hr.	0.80	0.90	1.00
	Intermittent 2 hrs.	0.90	1.00	1.25
	10 hrs.	1.00	1.25	1.50
	24 hrs.	1.25	1.75	1.75
Electric motor with frequent starts & stops ≥ 10hrs.	Occasional 1/2 hr.	0.90	1.00	1.00
	Intermittent 2 hrs.	1.00	1.25	1.25
	10 hrs.	1.25	1.50	1.50
	24 hrs.	1.50	1.75	1.75
Multi-cylinder internal combustion engine	Occasional 1/2 hr.	0.90	1.00	1.00
	Intermittent 2 hrs.	1.00	1.25	1.25
	10 hrs.	1.25	1.50	1.50
	24 hrs.	1.50	1.75	1.75
Single cylinder internal combustion engine	Occasional 1/2 hr.	1.00	1.25	1.25
	Intermittent 2 hrs.	1.25	1.50	1.50
	10 hrs.	1.50	1.75	1.75
	24 hrs.	1.75	2.00	2.00

EXAMPLE

Driver: 1 HP @ 1750 RPM electric motor.
Driven machine: heavy duty not uniformly fed belt conveyor, operating 10 hours/day at pulley speed of 120 rpm.

1. Service factor = 1.50 from table 1.

2. Ratio = 1750 RPM ÷ 120 RPM = 14.58: 1
(Use 15:1 in rating tables)

3. **HP method:**
Equivalent input HP =
1 HP (motor) x 1.50 = 1.50 Design HP @ 1750 rpm
Output torque method:
Equivalent output torque =

$$\frac{\text{HP x S.F. x 63025}}{\text{Output speed}} =$$

$$\frac{\text{1 HP x 1.50 x 63025}}{\text{120 RPM}} = 787 \text{ in lbs.}$$

4. **HP method:**
Refer to tables on pages 5 to 8 for single reduction units. Unit size 60 with a ratio of 15:1 has a rating of 2.02 HP @ 1800 RPM which exceeds required 1.50 HP.

Output torque method:
Tables on pages 5 to 8 shows output torque rating for size 60 of 935 in-lbs. which exceeds required 787 in-lbs.

UNIFORM LOAD
Agitators and mixers - pure liquid constant density
Blowers and compressors - centrifugal vane type
Pumps - centrifugal, rotary, gear type
Elevators and conveyors - uniformly loaded or fed

MEDIUM AND OCCASIONAL SHOCK LOAD
Agitators and mixers - Variable density liquids
Compressors - reciprocating mult-cylinder
Elevators and conveyors - heavy duty not uniformly fed
Pumps - reciprocating

HEAVY CONSTANTLY RECURRING SHOCK LOAD
Compressors - reciprocating single cylinder
Conveyors, heavy-duty - heavy duty not uniformly fed
Crushers - ore, stone
Hammer mills - mills, rotary tube type, barrels

"WG" SERIES PART NOMENCLATURE BREAKDOWN

H 3 W X X Y Y

H = WG Series 3 = Metric W = Type [0=WT, 1=WTC, 2=WB, 3=U, 4=UC, 5=WTCHS, 6=UCHS]
Note: Contact factory for double reduction part number

X X = Center Distance [05=34 mm, 10=45 mm, 15=50 mm, 20=60 mm, 25=70 mm, 30=80 mm, 35=100 mm, 40=120 mm, 45=135 mm, 50=155 mm, 60=200 mm, 65=225 mm, 70=250 mm, 75=300 mm, 80=350 mm]

Y Y = Ratio & Assembly [Ratio – 05, 10, 15, 20, 25, 30, 40, 50, 60, 70*, 80*:1, *Contact factory for availability]
[Assembly – Right Hand = Ratio, Double = Ratio + 2, Left Hand = Ratio + 3]▲

Note: Oil- Synthetic, Mineral & Foodgrade (H1) are available; contact factory for pricing.
▲ Hand of assembly determined by looking at the reducer input shaft.

SINGLE REDUCTION REDUCERS
HORSEPOWER AND TORQUE RATINGS

The horsepower/torque rating values shown apply to all Single reduction series regardless of model. The values are all published at AGMA service factor 1.0, but may be modified from time to time by the use of a different service factor. Listed here are the maximum torque in inch-pounds and output horsepower values for all standard ratios at specified input speeds.

The effective service factor of any unit selected is the product of the rated gearbox input horsepower divided by the horsepower rating of the motor used.

The efficiency of the unit, is the output horsepower divided by the input horsepower. Other manufacturers do not derate this much, if at all, so use caution in comparisons.

The horsepower value of the electric motor used should never exceed the published input horsepower in the following tables unless a service factor less than 1.0 is appropriate (very light duty applications).

When table output torque ratings are the same for different input RPM's, the output shaft torque limitations have been reached. To stay within design limitations, torque becomes a constant and input horsepower must be reduced as RPM is lowered.

Size 40 U Single Reduction Models, 1 9/16 inch center distance. Torque in Inch-Pounds

RATIO	1800 RPM INPUT SPEED			1200 RPM INPUT SPEED			900 RPM INPUT SPEED			600 RPM INPUT SPEED			300 RPM INPUT SPEED			100 RPM INPUT SPEED		
	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE
5	1.24	1.17	204	1.00	.915	240	.836	.755	264	.649	.572	300	.341	.286	300	.121	.095	299
10	.91	.82	285	.74	.640	336	.616	.527	369	.473	.401	422	.253	.201	422	.088	.070	443
15	.77	.68	356	.39	.339	267	.308	.276	290	.264	.238	375	.143	.125	395	.066	.044	415
20	.42	.34	237	.33	.263	277	.286	.213	299	.220	.163	342	.143	.100	422	.055	.035	443
25	.47	.38	329	.30	.226	296	.242	.176	307	.176	.125	329	.099	.063	329	.033	.023	356
30	.47	.35	369	.37	.263	415	.297	.201	422	.220	.138	435	.110	.063	395	.033	.020	379
40	.29	.19	263	.23	.150	316	.198	.125	351	.154	.088	369	.099	.050	422	.033	.018	443
50	.28	.18	307	.22	.138	362	.187	.113	395	.143	.075	395	.077	.038	395	.033	.015	474
60	.22	.13	263	.18	.100	316	.154	.075	316	.121	.063	395	.077	.038	474	.033	.014	522

Size 45 U Single Reduction Models, 1 3/4 inch center distance. Torque in Inch-Pounds

RATIO	1800 RPM INPUT SPEED			1200 RPM INPUT SPEED			900 RPM INPUT SPEED			600 RPM INPUT SPEED			300 RPM INPUT SPEED			100 RPM INPUT SPEED		
	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE
5	1.77	1.54	269	1.49	1.27	334	1.17	.979	343	.77	.641	337	.44	.350	367	.17	.128	404
10	1.19	1.03	359	.96	.83	435	.74	.630	441	.48	.408	429	.25	.209	439	.12	.079	500
15	.89	.72	380	.68	.56	441	.54	.431	453	.35	.280	441	.19	.143	451	.09	.054	507
20	.66	.49	343	.52	.37	392	.44	.315	441	.33	.245	514	.17	.121	508	.10	.051	647
30	.56	.42	441	.43	.32	496	.31	.220	462	.23	.163	514	.13	.099	624	.08	.034	639
40	.36	.26	359	.30	.20	416	.23	.154	431	.15	.099	416	.10	.066	555	.07	.024	617
50	.33	.21	367	.26	.16	429	.21	.121	424	.14	.077	404	.08	.055	578	.06	.020	625
60	.25	.15	324	.20	.11	347	.18	.099	416	.12	.068	428	.07	.044	555	.04	.014	529

Size 50 All Single Reduction Models, 1 31/32 inch center distance. Torque in Inch-Pounds

RATIO	1800 RPM INPUT SPEED			1200 RPM INPUT SPEED			900 RPM INPUT SPEED			600 RPM INPUT SPEED			300 RPM INPUT SPEED			100 RPM INPUT SPEED		
	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE
5	2.20	2.10	367	1.77	1.64	432	1.36	1.24	433	.913	.816	429	.473	.420	441	.165	.121	382
10	1.63	1.49	522	1.33	1.18	621	1.03	.79	631	.702	.601	631	.365	.300	631	.129	.100	631
15	1.22	1.07	560	.96	.80	631	.73	.60	631	.502	.400	631	.264	.200	631	.095	.067	631
20	.73	.63	439	.58	.48	503	.48	.39	541	.343	.275	577	.195	.145	631	.072	.050	631
25	.84	.61	538	.69	.48	631	.54	.36	631	.378	.240	631	.208	.120	631	.079	.040	631
30	.77	.59	619	.56	.40	630	.43	.30	631	.304	.200	631	.165	.100	631	.062	.033	631
40	.50	.36	509	.41	.29	598	.33	.23	631	.233	.150	631	.127	.075	631	.047	.025	631
50	.44	.29	505	.37	.22	586	.34	.18	631	.224	.120	631	.124	.060	631	.048	.020	631
60	.36	.24	501	.30	.18	577	.25	.15	616	.177	.100	631	.097	.050	631	.036	.017	631
70	.25	.14	338	.22	.11	387	.20	.09	430	.163	.066	489	.102	.036	535	.044	.013	553

HORSEPOWER AND TORQUE RATINGS, Continued

Size 60 All Single Reduction Models, 2 3/8 inch center distance. Torque in Inch-Pounds

RATIO	1800 RPM INPUT SPEED			1200 RPM INPUT SPEED			900 RPM INPUT SPEED			600 RPM INPUT SPEED			300 RPM INPUT SPEED			100 RPM INPUT SPEED		
	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE
5	3.00	2.87	502	2.43	2.25	591	2.04	1.85	649	1.60	1.42	747	.858	.735	772	.407	.326	1029
10	2.71	2.48	869	2.27	2.03	1067	1.93	1.69	1186	1.46	1.27	1330	.795	.652	1370	.283	.217	1370
15	2.02	1.78	935	1.69	1.44	1136	1.45	1.20	1265	1.09	.87	1370	.574	.435	1370	.208	.145	1370
20	1.39	1.17	817	1.16	.93	975	1.00	.79	1106	.77	.59	1238	.451	.326	1370	.171	.109	1370
25	1.34	1.07	933	1.16	.88	1153	1.00	.73	1273	.76	.52	1370	.409	.261	1370	.154	.087	1370
30	1.27	.98	1027	1.08	.79	1245	.94	.65	1370	.65	.44	1370	.354	.217	1370	.133	.072	1370
40	.94	.68	948	.81	.54	1133	.70	.45	1265	.54	.33	1370	.300	.163	1370	.116	.054	1370
50	.85	.60	1054	.69	.46	1218	.58	.39	1361	.43	.26	1370	.232	.130	1370	.087	.043	1370
60	.72	.49	1027	.58	.38	1186	.50	.31	1317	.37	.22	1370	.206	.109	1370	.077	.036	1370
70	.36	.23	553	.31	.21	784	.28	.14	676	.21	.10	738	.128	.055	811	.053	.020	885

Size 70 All Single Reduction Models, 2 3/4 inch center distance. Torque in Inch-Pounds

RATIO	1800 RPM INPUT SPEED			1200 RPM INPUT SPEED			900 RPM INPUT SPEED			600 RPM INPUT SPEED			300 RPM INPUT SPEED			100 RPM INPUT SPEED		
	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE
5*	4.52	4.23	741	3.60	3.31	868	2.89	2.71	949	2.41	2.12	1112	1.56	1.32	1382	.627	.492	1550
10*	3.99	3.67	1284	3.40	3.06	1606	2.95	2.60	1819	2.28	1.98	2076	1.33	1.11	2335	.508	.397	2499
15	2.77	2.44	1280	2.38	2.04	1606	2.06	1.72	1802	1.60	1.31	2056	.95	.73	2307	.366	.261	2468
20	2.11	1.83	1280	1.78	1.48	1554	1.52	1.22	1706	1.16	.92	1932	.67	.51	2126	.260	.178	2241
25	2.00	1.58	1382	1.76	1.34	1763	1.56	1.13	1980	1.27	.87	2285	.78	.50	2624	.316	.178	2805
30	1.95	1.52	1593	1.69	1.26	1978	1.49	1.06	2220	1.18	.81	2546	.70	.45	2805	.267	.148	2805
40	1.41	1.06	1480	1.20	.85	1776	1.05	.71	1985	.81	.53	2246	.48	.29	2444	.196	.103	2601
50	1.22	.88	1545	1.03	.70	1828	.89	.58	2046	.69	.42	2220	.41	.23	2429	.165	.081	2546
60	1.06	.71	1488	.89	.56	1763	.77	.46	1932	.59	.34	2115	.35	.18	2272	.142	.063	2397
70	.79	.50	1219	.69	.40	1462	.62	.32	1584	.48	.25	1828	.30	.13	1974	.124	.047	2084

*WTC style not available for 182/184 TC.

Size 80 All Single Reduction Models, 3 5/32 inch center distance. Torque in Inch-Pounds

RATIO	1800 RPM INPUT SPEED			1200 RPM INPUT SPEED			900 RPM INPUT SPEED			600 RPM INPUT SPEED			300 RPM INPUT SPEED			100 RPM INPUT SPEED		
	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE
5	6.45	6.15	1076	5.08	4.78	1255	4.31	3.96	1388	3.43	3.09	1623	2.22	1.94	2033	.715	.571	1800
10	5.45	4.97	1738	4.66	4.20	2206	4.07	3.59	2511	3.22	2.78	2925	1.93	1.60	3365	.739	.577	3634
15	4.05	3.55	1864	3.49	2.99	2359	3.05	2.55	2679	2.42	1.96	3086	1.46	1.13	3572	.572	.408	3855
20	3.00	2.53	1769	2.61	2.14	2252	2.30	1.82	2554	1.84	1.40	2951	1.11	.80	3365	.443	.290	3649
25	2.85	2.37	2071	2.46	1.97	2588	2.15	1.66	2912	1.68	1.26	3300	1.01	.70	3688	.397	.251	3960
30	2.62	2.05	2148	2.29	1.73	2718	2.04	1.47	3080	1.65	1.13	3572	.99	.63	3960	.374	.209	3960
40	1.93	1.40	1967	1.71	1.18	2485	1.52	1.00	2795	1.24	.78	3261	.79	.44	3727	.322	.157	3960
50	1.76	1.24	2178	1.56	1.04	2718	1.38	.88	3063	1.11	.67	3494	.68	.37	3882	.268	.126	3960
60	1.43	.97	2045	1.25	.80	2524	1.10	.67	2795	.88	.51	3184	.54	.29	3605	.223	.099	3727
70	1.03	.65	1600	.94	.54	1993	.84	.46	2235	.68	.35	2536	.43	.20	2899	.183	.069	3044

NOMINAL RATIOS. Some ratios are nominal, consult Cleveland Gear for exact ratio.

All ratings per AGMA standards.
The values used in the table are at AGMA service factor 1.0
Gearbox sizes are the center distance between input and output shaft in millimeters

HORSEPOWER AND TORQUE RATINGS, Continued

Size 100 All Single Reduction Models, 3 15/16 inch center distance. Torque in Inch-Pounds

RATIO	1800 RPM INPUT SPEED			1200 RPM INPUT SPEED			900 RPM INPUT SPEED			600 RPM INPUT SPEED			300 RPM INPUT SPEED			100 RPM INPUT SPEED		
	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE
5	11.54	11.01	1927	9.16	8.58	2254	7.76	7.19	2519	6.18	5.60	2939	3.69	3.21	3368	1.43	1.17	3674
10	10.00	9.37	3280	8.28	7.64	4011	7.47	6.81	4768	6.13	5.44	5717	3.32	2.85	5980	1.18	.95	5980
15	7.04	6.38	3352	5.94	5.24	4129	5.34	4.64	4874	4.37	3.66	5769	2.38	1.90	5980	.86	.63	5980
20	5.73	5.13	3592	4.94	4.33	4544	4.32	3.67	5146	3.43	2.83	5954	1.86	1.42	5980	.66	.47	5980
25	4.41	3.85	3370	3.82	3.25	4265	3.34	2.76	4830	2.65	2.12	5565	1.51	1.14	5980	.55	.38	5980
30	4.76	3.89	4083	4.10	3.21	5058	3.73	2.85	5980	2.66	1.90	5980	1.44	.95	5980	.54	.32	5980
40	3.58	2.85	3987	3.12	2.41	5058	2.77	2.03	5690	2.05	1.42	5980	1.11	.71	5980	.42	.24	5980
50	2.71	2.06	3600	2.41	1.73	4544	2.10	1.46	5093	1.69	1.12	5862	.95	.57	5980	.36	.19	5980
60	2.26	1.67	3504	1.99	1.39	4386	1.75	1.17	4900	1.40	.89	5611	.83	.47	5980	.32	.16	5980
70	2.11	1.52	3719	1.86	1.27	4656	1.64	1.05	5164	1.32	.80	5901	.78	.41	5980	.30	.14	5980

Size 120 All Single Reduction Models, 4 23/32 inch center distance. Torque in Inch-Pounds

RATIO	1800 RPM INPUT SPEED			1200 RPM INPUT SPEED			900 RPM INPUT SPEED			600 RPM INPUT SPEED			300 RPM INPUT SPEED			100 RPM INPUT SPEED		
	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE
7.5*	18.30	17.47	4587	14.60	13.82	5443	12.44	11.57	6075	9.90	8.98	7073	6.16	5.38	8469	2.59	2.04	9645
10*	15.40	14.55	5093	12.76	11.90	6250	11.44	10.52	7368	9.58	8.64	9076	5.38	4.67	9800	1.91	1.56	9800
15	11.33	10.36	5440	9.53	8.36	6589	8.58	7.54	7917	7.18	6.11	9622	3.83	3.11	9800	1.39	1.04	9800
20	8.10	7.14	4997	6.80	5.82	6112	6.16	5.19	7271	5.20	4.20	8825	3.06	2.33	9800	1.13	.78	9800
25	7.37	6.77	5928	6.52	5.72	7508	5.72	4.87	8518	4.53	3.73	9800	2.38	1.87	9800	.86	.62	9800
30	7.59	6.27	6586	6.45	5.12	8061	5.86	4.54	9537	4.25	3.11	9800	2.30	1.56	9800	.87	.52	9800
40	5.06	3.94	5515	4.33	3.21	6744	4.00	2.87	8044	3.43	2.30	9642	1.91	1.17	9800	.74	.39	9800
50	4.50	3.57	6257	3.94	3.02	7936	3.50	2.53	8869	2.67	1.87	9800	1.45	.93	9800	.55	.31	9800
60	3.17	2.36	4953	2.78	1.98	6244	2.52	1.69	7113	2.09	1.32	8299	1.35	.72	9112	.52	.26	9800
70	3.11	2.31	5655	2.76	1.96	7192	2.46	1.64	8053	2.01	1.27	9313	1.21	.67	9800	.46	.22	9800

*WTC style not available for 254/256 TC.

Size 135 All Single Reduction Models, 5 5/16 inch center distance. Torque in Inch-Pounds

RATIO	1800 RPM INPUT SPEED			1200 RPM INPUT SPEED			900 RPM INPUT SPEED			600 RPM INPUT SPEED			300 RPM INPUT SPEED			100 RPM INPUT SPEED		
	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE
7.5*	26.50	25.28	6638	21.14	19.92	7845	17.80	16.70	8769	14.19	12.97	10215	9.20	8.12	12787	3.91	3.14	14826
10*	21.89	20.82	7289	18.15	17.05	8957	16.17	14.80	10362	13.53	12.34	12961	8.49	7.51	15767	3.00	2.50	15767
15*	16.06	14.92	7837	13.42	12.19	9603	11.99	10.78	11328	10.11	8.79	13851	6.00	5.00	15767	2.16	1.67	15767
20	12.43	11.37	7965	10.47	9.36	9826	9.43	8.31	11644	7.68	6.55	13752	4.62	3.76	15767	1.66	1.25	15767
25	10.07	9.05	7925	8.64	7.59	9961	7.65	6.57	11504	6.16	5.13	13469	3.80	3.01	15767	1.36	1.00	15767
30	10.60	9.00	9458	9.01	7.40	11657	8.17	6.56	13778	6.59	5.00	15767	3.52	2.51	15767	1.32	.83	15767
40	7.60	6.31	8834	6.53	5.22	10959	5.91	4.59	12856	4.88	3.59	15069	2.75	1.88	15767	1.02	.63	15767
50	5.67	4.57	7991	4.92	3.81	10011	4.41	3.11	10889	3.61	2.55	13370	2.30	1.49	15675	.87	.50	15767
60	4.20	3.24	6797	3.66	2.71	8536	3.30	2.33	9800	2.72	1.81	11381	1.75	1.07	13436	.73	.39	14700

*WTC style not available for 254/256 TC.

NOMINAL RATIOS. Some ratios are nominal, consult Cleveland Gear for exact ratio.

All ratings per AGMA standards.
The values used in the table are at AGMA service factor 1.0
Gearbox sizes are the center distance between input and output shaft in millimeters

HORSEPOWER AND TORQUE RATINGS, Continued

Size 155 All Single Reduction Models, 6 3/32 inch center distance. Torque in Inch-Pounds

RATIO	1800 RPM INPUT SPEED			1200 RPM INPUT SPEED			900 RPM INPUT SPEED			600 RPM INPUT SPEED			300 RPM INPUT SPEED			100 RPM INPUT SPEED		
	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE
7.5*	43.85	41.82	10983	35.18	33.24	13094	29.71	27.73	14563	23.72	21.91	17260	15.59	13.77	21697	6.69	5.41	25574
10*	36.19	34.23	11987	29.04	27.21	14292	24.53	22.70	15894	19.58	17.93	18836	12.87	11.27	23684	6.08	5.02	31613
15*	25.19	23.20	12184	19.91	10.06	14226	16.94	15.05	15807	13.31	11.68	18395	8.87	7.32	23078	4.20	3.20	30230
20	16.39	14.80	10362	13.09	11.65	12237	11.00	9.66	13523	8.81	7.45	15649	5.70	4.58	19231	2.70	1.98	24975
25	13.20	11.80	10329	10.49	9.13	11987	8.86	7.57	13260	7.03	5.78	15181	4.50	3.51	18441	2.12	1.51	23710
30	14.63	12.26	12882	11.44	9.47	14918	9.99	7.93	16650	7.96	6.11	19245	5.25	3.66	23078	2.59	1.58	29875
40	10.25	8.36	11714	8.14	6.41	13462	6.91	5.29	14823	5.52	4.00	16808	3.58	2.40	20127	1.76	1.02	25607
50	7.84	6.23	10911	6.34	4.82	12645	5.38	3.98	13919	4.29	2.97	15609	2.78	1.77	18573	1.35	.74	23315
60	6.44	5.00	10511	5.19	3.83	12053	4.33	3.11	13067	3.52	2.35	14779	2.31	1.40	17703	1.11	.58	21813

*WTC style not available for 284/286 TC.

Size 175 All Single Reduction Models, 6 7/8 inch center distance. Torque in Inch-Pounds

RATIO	1800 RPM INPUT SPEED			1200 RPM INPUT SPEED			900 RPM INPUT SPEED			600 RPM INPUT SPEED			300 RPM INPUT SPEED			100 RPM INPUT SPEED		
	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE
10*	51.48	49.03	17168	41.47	39.25	20615	34.87	32.60	22832	27.72	25.58	26871	18.26	16.18	33984	8.61	7.21	45444
15*	36.30	33.48	17585	28.49	26.08	20549	24.31	21.95	23051	19.03	16.80	26476	12.54	10.58	33352	5.98	4.64	43864
20	25.08	22.82	15982	19.80	17.81	18705	16.72	14.67	20549	13.31	11.47	24105	8.66	7.05	29611	4.08	3.05	38410
25	17.93	15.93	13941	14.08	12.40	16284	11.88	10.26	17958	9.53	7.91	20779	6.13	4.79	25159	2.90	2.06	32404
30	20.90	17.68	18573	16.50	13.79	21734	14.19	11.54	24237	11.22	8.83	27820	7.01	5.30	33431	3.63	2.31	43626
40	14.52	12.04	16860	11.44	9.23	19390	9.86	7.67	21497	7.81	5.83	24500	5.16	3.51	29506	2.52	1.49	37620
50	10.76	8.54	14950	8.78	6.73	17684	7.30	5.42	18968	5.81	4.08	21405	3.81	2.43	25554	1.87	1.03	32404
60	9.05	7.20	15122	7.28	5.53	17427	6.12	4.51	18968	4.90	3.39	21339	3.19	2.03	25607	1.54	.84	31771

*WTC style not available for 284/286 TC.

Size 200 All Single Reduction Models, 7 7/8 inch center distance. Torque in Inch-Pounds

RATIO	1800 RPM INPUT SPEED			1200 RPM INPUT SPEED			900 RPM INPUT SPEED			600 RPM INPUT SPEED			300 RPM INPUT SPEED			100 RPM INPUT SPEED		
	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE	In. HP	Out HP	OUTPUT TORQUE
10	57.86	55.18	19319	45.98	43.64	22920	39.16	36.74	25730	30.80	28.59	30033	20.35	18.06	37936	9.56	8.06	50818
15	43.45	40.25	21141	33.99	31.35	24698	28.93	26.33	27662	22.66	20.19	31811	14.96	12.54	39517	7.06	5.56	52518
20	33.22	30.47	21339	26.18	23.70	24896	22.11	19.69	27574	17.49	15.17	31877	11.33	9.38	39411	5.34	4.05	51056
25	25.63	23.20	20307	20.24	17.93	23545	17.05	14.92	26125	13.64	11.59	30428	8.77	7.01	36816	4.14	3.01	47420
30	27.61	23.58	24764	21.78	18.31	28847	18.59	15.17	31877	14.63	11.69	36830	9.66	7.02	44259	4.72	2.88	54350
40	20.02	16.68	23359	15.73	12.92	27135	13.53	10.81	30279	10.52	8.06	33879	7.08	4.94	41519	3.43	2.09	52794
50	15.18	12.34	21602	12.32	9.73	25554	10.22	7.79	27267	8.06	5.88	30889	5.31	3.51	36882	2.59	1.48	46630
60	12.65	10.05	21102	10.60	8.14	25646	8.54	6.33	26608	6.73	4.73	29796	4.43	2.83	35723	2.17	1.18	44575

Size 225, Consult Cleveland Gear for ratings.

NOMINAL RATIOS. Some ratios are nominal, consult Cleveland Gear for exact ratio.

All ratings per AGMA standards.
The values used in the table are at AGMA service factor 1.0
Gearbox sizes are the center distance between input and output shaft in millimeters

STANDARD WG STYLES

WT
Worm Top

WB
Worm Bottom

WTCHS
Worm Top, Quill hollow input shaft, C-face motor flange

WTC
Worm Top, C-face bell flange/Coupling

U
Universal Mount

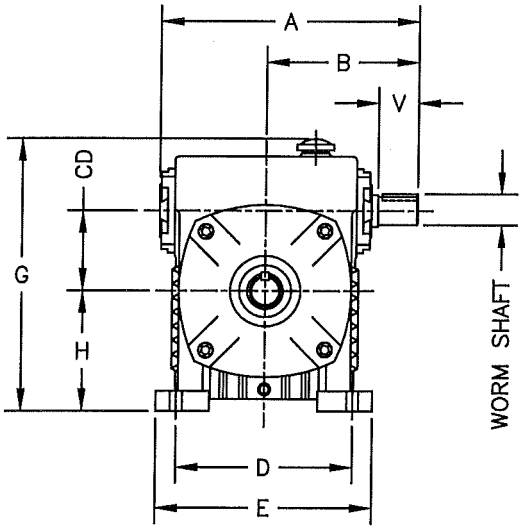
UCHS
Universal Mount, Quill hollow input shaft, C-face motor flange

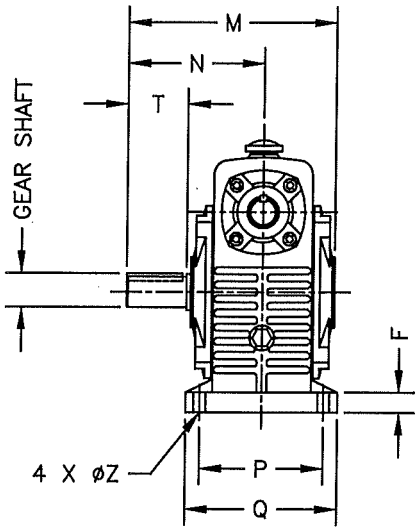
UC
Universal Mount,
C-face bell flange/Coupling

K
Vertical Output Shaft (consult factory)

DW
Double Reduction, Worm/worm

WT DIMENSIONS





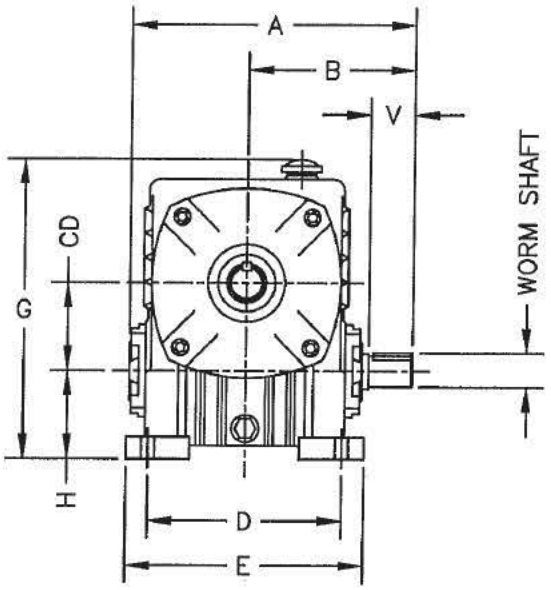
NOTE: Left Hand Assembly Shown

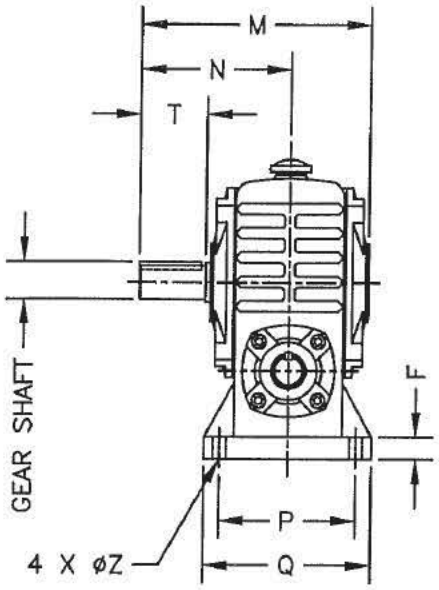
SIZE	CD	A	B	D	E	F	G	H	M	N	P	Q	T	V	Z
50	1.97	6.89	4.13	4.33	5.51	0.59	7.09	3.15	5.71	3.74	3.74	4.72	1.57	1.18	0.43
60	2.36	7.68	4.72	4.72	5.91	0.71	8.27	3.54	6.50	4.33	4.13	5.12	1.97	1.57	0.43
70	2.76	9.21	5.51	5.91	7.48	0.79	9.45	4.13	7.68	5.12	4.53	5.91	2.36	1.57	0.59
80	3.15	10.39	6.30	7.09	8.66	0.94	10.63	4.72	8.27	5.51	5.31	6.69	2.56	1.97	0.59
100	3.94	12.68	7.48	8.66	10.63	0.98	13.39	5.91	10.24	6.69	6.10	7.48	2.95	1.97	0.59
120	4.72	15.16	9.06	10.24	12.60	1.18	15.94	7.09	11.42	7.48	7.09	9.06	3.35	2.56	0.71
135	5.31	17.13	10.24	11.42	13.78	1.18	17.91	8.46	12.60	8.27	7.87	9.84	3.74	2.95	0.71
155	6.10	19.45	11.89	12.60	15.35	1.38	19.29	9.25	15.24	9.92	8.66	11.02	4.33	3.35	0.79
175	6.89	21.65	12.80	13.78	16.54	1.57	22.24	10.24	16.02	10.31	9.84	12.20	4.33	3.35	0.79

WORM SHAFT		
SIZE	DIAMETER	KEYWAY
50	0.6250/0.6246	3/16 X 3/32
60	0.7500/0.7495	3/16 X 3/32
70	0.8750/0.8745	3/16 X 3/32
80	1.1250/1.1245	1/4 X 1/8
100	1.3750/1.3744	5/16 X 5/32
120	1.3750/1.3744	5/16 X 5/32
135	1.6250/1.6244	3/8 X 3/16
155	1.6250/1.6244	3/8 X 3/16
175	1.8750/1.8744	1/2 X 1/4

GEAR SHAFT	
DIAMETER	KEYWAY
0.7500/0.7495	3/16 X 3/32
1.0000/0.9995	1/4 X 1/8
1.1250/1.1245	1/4 X 1/8
1.3750/1.3744	5/16 X 5/32
1.5000/1.4994	3/8 X 3/16
1.7500/1.7494	3/8 X 3/16
2.2500/2.2493	1/2 X 1/4
2.5000/2.4993	5/8 X 5/16
2.7500/2.7493	5/8 X 5/16

WB DIMENSIONS



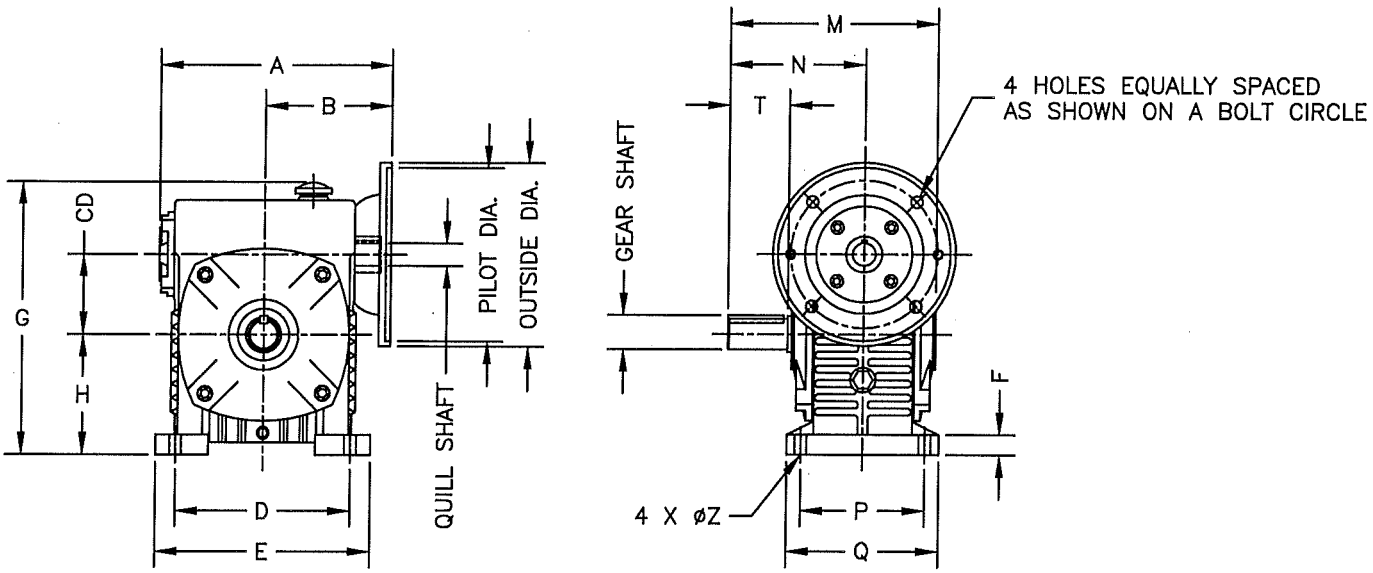


SIZE	CD	A	B	D	E	F	G	H	M	N	P	Q	T	V	Z
50	1.97	6.89	4.13	4.33	5.51	0.59	7.09	1.97	5.71	3.74	3.74	4.72	1.57	1.18	0.43
60	2.36	7.68	4.72	4.72	5.91	0.71	8.27	2.36	6.50	4.33	4.13	5.12	1.97	1.57	0.43
70	2.76	9.21	5.51	5.91	7.48	0.79	9.45	2.76	7.68	5.12	4.53	5.91	2.36	1.57	0.59
80	3.15	10.39	6.30	7.09	8.66	0.94	10.63	3.15	8.27	5.51	5.31	6.69	2.56	1.97	0.59
100	3.94	12.68	7.48	8.66	10.63	0.98	13.39	3.94	10.24	6.69	6.10	7.48	2.95	1.97	0.59
120	4.72	15.16	9.06	10.24	12.60	1.18	15.94	4.72	11.42	7.48	7.09	9.06	3.35	2.56	0.71
135	5.31	17.13	10.24	11.42	13.78	1.18	17.91	5.31	12.60	8.27	7.87	9.84	3.74	2.95	0.71
155	6.10	19.45	11.89	12.60	15.35	1.38	19.29	5.31	15.24	9.92	8.66	11.02	4.33	3.35	0.79
175	6.89	21.65	12.80	13.78	16.54	1.57	22.24	6.30	16.02	10.31	9.84	12.20	4.33	3.35	0.79
200	7.87	23.31	13.86	13.78	16.14	1.57	25.59	6.30	19.49	12.40	11.42	14.17	4.92	3.74	0.87
225	8.86	25.39	14.76	15.35	18.50	1.57	27.76	7.09	20.47	13.19	12.99	16.14	5.51	3.74	1.06

WORM SHAFT		
SIZE	DIAMETER	KEYWAY
50	0.6250/0.6246	3/16 X 3/32
60	0.7500/0.7495	3/16 X 3/32
70	0.8750/0.8745	3/16 X 3/32
80	1.1250/1.1245	1/4 X 1/8
100	1.3750/1.3744	5/16 X 5/32
120	1.3750/1.3744	5/16 X 5/32
135	1.6250/1.6244	3/8 X 3/16
155	1.6250/1.6244	3/8 X 3/16
175	1.8750/1.8744	1/2 X 1/4
200	1.8750/1.8744	1/2 X 1/4
225	2.1250/2.1243	1/2 X 1/4

GEAR SHAFT	
DIAMETER	KEYWAY
0.7500/0.7495	3/16 X 3/32
1.0000/0.9995	1/4 X 1/8
1.1250/1.1245	1/4 X 1/8
1.3750/1.3744	5/16 X 5/32
1.5000/1.4994	3/8 X 3/16
1.7500/1.7494	3/8 X 3/16
2.2500/2.2493	1/2 X 1/4
2.5000/2.4993	5/8 X 5/16
2.7500/2.7493	5/8 X 5/16
2.7500/2.7493	5/8 X 5/16
3.2500/3.2491	3/4 X 3/8

WTCHS DIMENSIONS



SIZE	CD	D	E	F	G	H	M	N	P	Q	T	Z
50	1.97	4.33	5.51	0.59	7.09	3.15	5.71	3.74	3.74	4.72	1.57	0.43
60	2.36	4.72	5.91	0.71	8.27	3.54	6.50	4.33	4.13	5.12	1.97	0.43
70	2.76	5.91	7.48	0.79	9.45	4.13	7.68	5.12	4.53	5.91	2.36	0.59
80	3.15	7.09	8.66	0.94	10.63	4.72	8.27	5.51	5.31	6.69	2.56	0.59
100	3.94	8.66	10.63	0.98	13.39	5.91	10.24	6.69	6.10	7.48	2.95	0.59
120	4.72	10.24	12.60	1.18	15.94	7.09	11.42	7.48	7.09	9.06	3.35	0.71
135	5.31	11.42	13.78	1.18	17.91	8.46	12.60	8.27	7.87	9.84	3.74	0.71
155	6.10	12.60	15.35	1.38	19.29	9.25	15.24	9.92	8.66	11.02	4.33	0.79

	56C		143TC/145TC		182TC/184TC		213TC/215TC	
SIZE	A	B	A	B	A	B	A	B
50	6.73	3.75						
60	6.69	3.70	6.97	3.70				
70	8.31	4.61	8.31	4.61	8.39	4.69		
80	9.13	5.08	9.02	5.08	8.98	5.04		
100			11.57	6.30	11.30	6.30		
120					13.23	7.09	13.23	7.09
135					14.80	8.03	14.80	8.03
155					16.41	8.82	16.41*	8.82*

GEAR SHAFT	
DIAMETER	KEYWAY
0.7500/0.7495	3/16 X 3/32
1.0000/0.9995	1/4 X 1/8
1.1250/1.1245	1/4 X 1/8
1.3750/1.3744	5/16 X 5/32
1.5000/1.4994	3/8 X 3/16
1.7500/1.7494	3/8 X 3/16
2.2500/2.2493	1/2 X 1/4
2.5000/2.4993	5/8 X 5/16

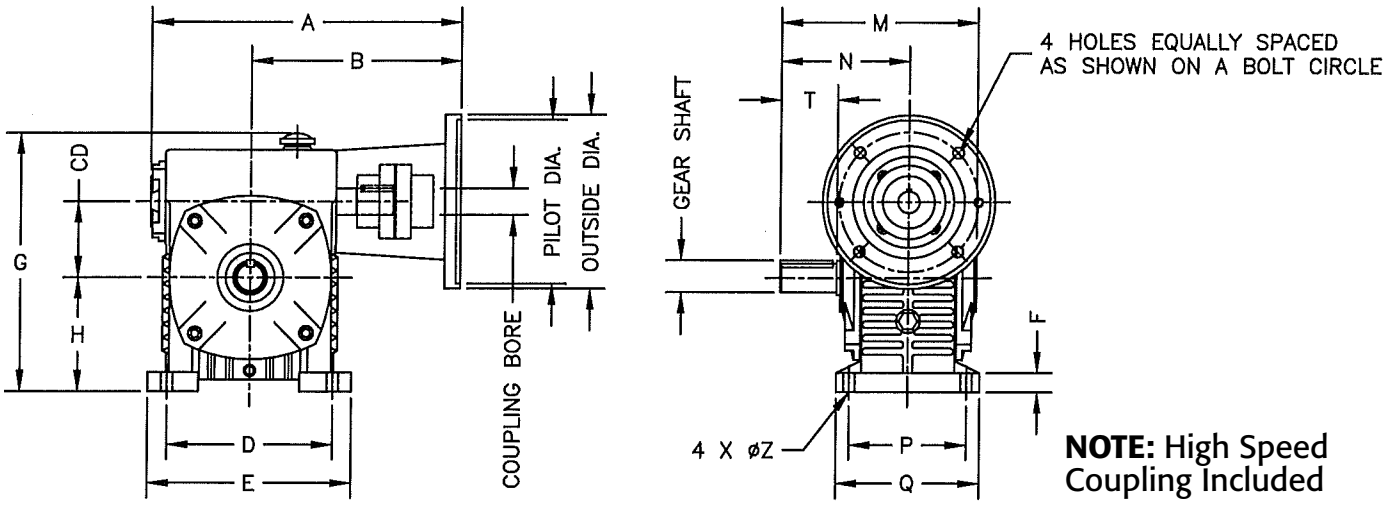
NEMA FRAME	OUTSIDE DIAMETER	PILOT DIAMETER	BOLT CIRCLE	HOLE SIZE
56C	6.50	4.5005/4.5019	5.875	0.413
143TC/145TC	6.50	4.5005/4.5019	5.875	0.413
182TC/184TC	9.00	8.5006/8.5024	7.250	0.591
213TC/215TC	9.00	8.5006/8.5024	7.250	0.591

QUILL SHAFT	
BORE DIA.	KEYWAY
0.6256/0.6267	3/16 X 3/32
0.8758/0.8771	3/16 X 3/32
1.1258/1.1271	1/4 X 1/8
1.3760/1.3775	5/16 X 5/32

*Consult Cleveland Gear for availability

Note: Quill input bushings to change 7/8" bore to 5/8" bore are stocked; must be ordered separately.

WTC DIMENSIONS



NOTE: High Speed Coupling Included

SIZE	CD	D	E	F	G	H	M	N	P	Q	T	Z
50	1.97	4.33	5.51	0.59	7.09	3.15	5.71	3.74	3.74	4.72	1.57	0.43
60	2.36	4.72	5.91	0.71	8.27	3.54	6.50	4.33	4.13	5.12	1.97	0.43
70	2.76	5.91	7.48	0.79	9.45	4.13	7.68	5.12	4.53	5.91	2.36	0.59
80	3.15	7.09	8.66	0.94	10.63	4.72	8.27	5.51	5.31	6.69	2.56	0.59
100	3.94	8.66	10.63	0.98	13.39	5.91	10.24	6.69	6.10	7.48	2.95	0.59
120	4.72	10.24	12.60	1.18	15.94	7.09	11.42	7.48	7.09	9.06	3.35	0.71
135	5.31	11.42	13.78	1.18	17.91	8.46	12.60	8.27	7.87	9.84	3.74	0.71
155	6.10	12.60	15.35	1.38	19.29	9.25	15.24	9.92	8.66	11.02	4.33	0.79
175	6.89	13.78	16.54	1.57	22.24	10.24	16.02	10.31	9.84	12.20	4.33	0.79

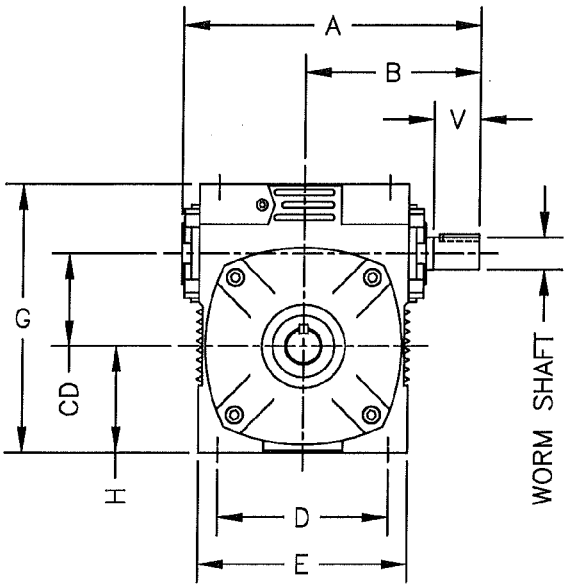
	56C		143TC/145TC		182TC/184TC		213TC/215TC		254TC/256TC	
SIZE	A	B	A	B	A	B	A	B	A	B
50	9.25	6.47								
60	10.04	7.05	10.04	7.05						
70	11.54	7.83	11.54	7.83						
80	12.68	8.62	12.68	8.62	13.82	9.88				
100			15.08	9.80	16.34	11.06	16.34	11.06		
120			17.52	11.38	18.78	12.64	18.78	12.64		
135					20.59	13.82	20.59	13.82		
155					23.06	15.47	23.06	15.47	23.06	15.47
175					24.80	16.30	24.80	16.30	24.80	16.30

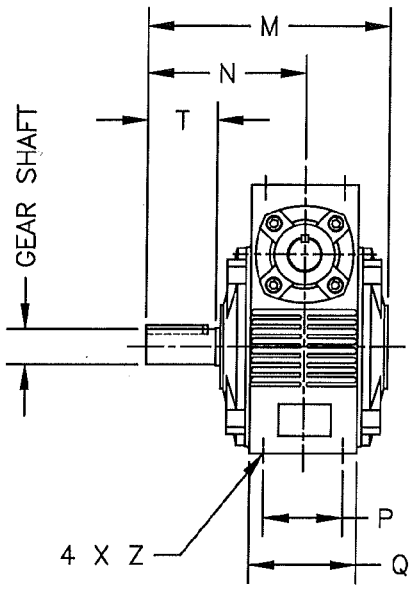
GEAR SHAFT	
DIAMETER	KEYWAY
0.7500/0.7495	3/16 X 3/32
1.0000/0.9995	1/4 X 1/8
1.1250/1.1245	1/4 X 1/8
1.3750/1.3744	5/16 X 5/32
1.5000/1.4994	3/8 X 3/16
1.7500/1.7494	3/8 X 3/16
2.2500/2.2493	1/2 X 1/4
2.5000/2.4993	5/8 X 5/16
2.7500/2.7493	5/8 X 5/16

NEMA FRAME	OUTSIDE DIAMETER	PILOT DIAMETER	BOLT CIRCLE	HOLE SIZE
56C	6.50	4.5005/4.5019	5.875	0.413
143TC/145TC	6.50	4.5005/4.5019	5.875	0.413
182TC/184TC	9.00	8.5006/8.5024	7.250	0.591
213TC/215TC	9.00	8.5006/8.5024	7.250	0.591
254TC/256TC	10.00	8.5006/8.5024	7.250	0.591

COUPLING - MOTOR SIDE	
BORE DIA.	KEYWAY
0.6256/0.6267	3/16 X 3/32
0.8758/0.8771	3/16 X 3/32
1.1258/1.1271	1/4 X 1/8
1.3760/1.3775	5/16 X 5/32
1.6260/1.6275	3/8 X 3/16

U DIMENSIONS

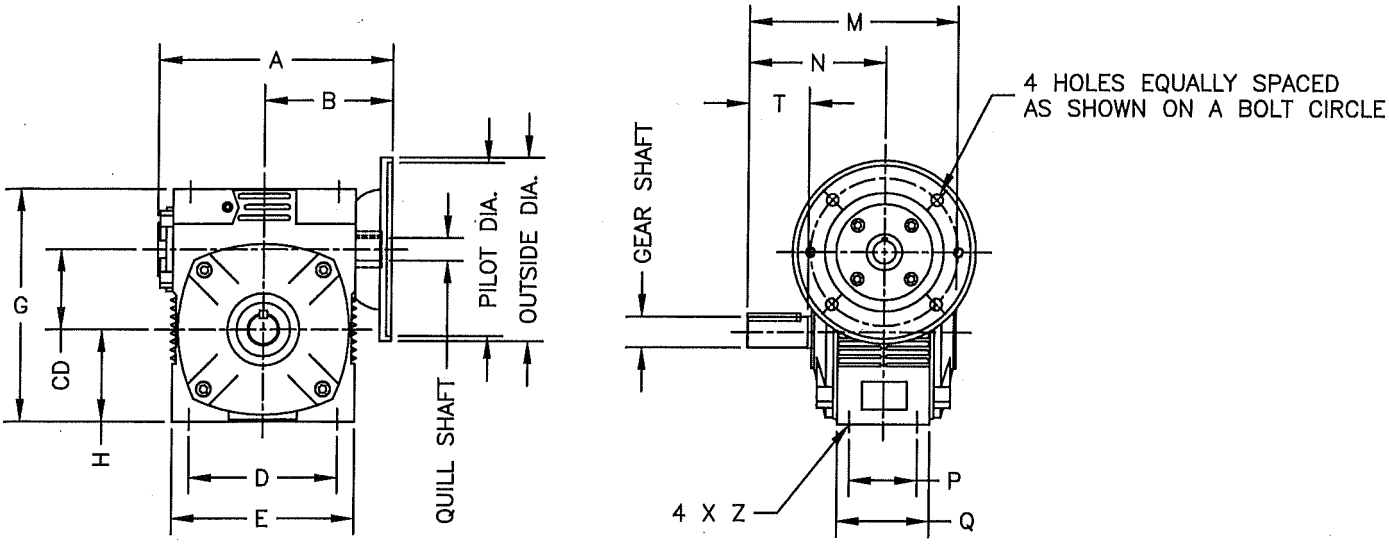




SIZE	CD	A	B	D	E	G	H	M	N	P	Q	T	V	Z
40	1.57	6.30	3.78	3.15	4.02	5.00	2.09	5.12	3.31	2.13	2.68	1.38	1.10	M8 X 0.63
45	1.75	7.35	4.44	4.19	4.86	5.75	2.06	6.13	3.94	2.75	3.39	1.57	1.18	5/16-18 X 0.63
50	1.97	6.89	4.13	3.54	4.53	5.91	2.56	5.71	3.74	1.97	2.68	1.57	1.18	M8 X 0.63
60	2.36	7.68	4.72	3.94	5.00	6.97	2.95	6.50	4.33	2.13	3.07	1.97	1.57	M10 X 0.79
70	2.76	9.21	5.51	4.92	6.14	8.07	3.35	7.68	5.12	2.60	3.46	2.36	1.57	M10 X 0.79
80	3.15	10.39	6.30	5.71	6.93	9.13	3.62	8.27	5.51	2.95	3.98	2.56	1.97	M10 X 0.79
100	3.94	12.68	7.48	7.28	8.94	11.42	4.53	10.24	6.69	3.35	4.41	2.95	1.97	M12 X 0.94
120	4.72	15.16	9.06	8.66	10.43	14.57	6.10	11.42	7.48	3.94	5.20	3.35	2.56	M14 X 1.10
135	5.31	17.13	10.24	10.24	11.73	16.73	7.28	12.60	8.27	4.33	5.67	3.74	2.95	M16 X 1.26
155	6.10	19.45	11.89	11.02	13.39	16.65	6.50	15.24	9.92	4.72	6.46	4.33	3.35	M16 X 1.38
175	6.89	21.30	12.80	12.20	14.57	18.90	8.07	15.91	10.31	4.72	6.69	4.33	3.35	M20 X 1.18
200	7.87	23.43	13.86	14.17	15.94	22.64	9.65	19.29	12.40	6.50	8.90	4.92	3.74	M18 X 1.34
250	9.84	29.21	16.73	17.32	21.26	26.77	11.81	21.77	14.17	7.09	9.84	6.10	4.33	M24 X 1.97

WORM SHAFT			GEAR SHAFT	
SIZE	DIAMETER	KEYWAY	DIAMETER	KEYWAY
40	0.5000/0.4996	1/8 X 1/16	0.6250/0.6246	3/16 X 3/32
45	0.6250/0.6246	3/16 X 3/32	0.8750/0.8745	3/16 X 3/32
50	0.6250/0.6246	3/16 X 3/32	0.7500/0.7495	3/16 X 3/32
60	0.7500/0.7495	3/16 X 3/32	1.0000/0.9995	1/4 X 1/8
70	0.8750/0.8745	3/16 X 3/32	1.1250/1.1245	1/4 X 1/8
80	1.1250/1.1245	1/4 X 1/8	1.3750/1.3744	5/16 X 5/32
100	1.3750/1.3744	5/16 X 5/32	1.5000/1.4994	3/8 X 3/16
120	1.3750/1.3744	5/16 X 5/32	1.7500/1.7494	3/8 X 3/16
135	1.6250/1.6244	3/8 X 3/16	2.2500/2.2493	1/2 X 1/4
155	1.6250/1.6244	3/8 X 3/16	2.5000/2.4993	5/8 X 5/16
175	1.8750/1.8744	1/2 X 1/4	2.7500/2.7493	5/8 X 5/16
200	1.8750/1.8744	1/2 X 1/4	2.7500/2.7493	5/8 X 5/16
250	2.2500/2.2493	1/2 X 1/4	3.5000/3.4991	7/8 X 7/16

UCHS DIMENSIONS



SIZE	CD	D	E	G	H	M	N	P	Q	T	Z
40	1.57	3.15	4.02	5.00	2.09	5.12	3.31	2.13	2.68	1.38	M8 X 0.63
45	1.75	4.19	4.86	5.75	2.06	6.13	3.94	2.75	3.39	1.57	5/16-18 X 0.63
50	1.97	3.54	4.53	5.91	2.56	5.71	3.74	1.97	2.68	1.57	M8 X 0.63
60	2.36	3.94	5.00	6.97	2.95	6.50	4.33	2.13	3.07	1.97	M10 X 0.79
70	2.76	4.92	6.14	8.07	3.35	7.68	5.12	2.60	3.46	2.36	M10 X 0.79
80	3.15	5.71	6.93	9.13	3.62	8.27	5.51	2.95	3.98	2.56	M10 X 0.79
100	3.94	7.28	8.94	11.42	4.53	10.24	6.69	3.35	4.41	2.95	M12 X 0.94
120	4.72	8.66	10.43	14.57	6.10	11.42	7.48	3.94	5.20	3.35	M14 X 1.10
135	5.31	10.24	11.73	16.73	7.28	12.60	8.27	4.33	5.67	3.74	M16 X 1.26
155	6.10	11.02	13.39	16.65	6.50	15.24	9.92	4.72	6.46	4.33	M16 X 1.38

	56C		143TC/145TC		182TC/184TC		213TC/215TC	
SIZE	A	B	A	B	A	B	A	B
40	6.16	3.49						
45	6.57	3.66						
50	6.73	3.75						
60	6.69	3.70	6.97	3.70				
70	8.31	4.61	8.31	4.61	8.39	4.69		
80	9.13	5.08	9.02	5.08	8.98	5.04		
100			11.57	6.30	11.30	6.30		
120					13.23	7.09	13.23	7.09
135					14.80	8.03	14.80	8.03
155					16.41	8.82	16.41*	8.82*

GEAR SHAFT	
DIAMETER	KEYWAY
0.6250/0.6246	3/16 X 3/32
0.8750/0.8745	3/16 X 3/32
0.7500/0.7495	3/16 X 3/32
1.0000/0.9995	1/4 X 1/8
1.1250/1.1245	1/4 X 1/8
1.3750/1.3744	5/16 X 5/32
1.5000/1.4994	3/8 X 3/16
1.7500/1.7494	3/8 X3/16
2.2500/2.2493	1/2 X 1/4
2.5000/2.4993	5/8 X 5/16

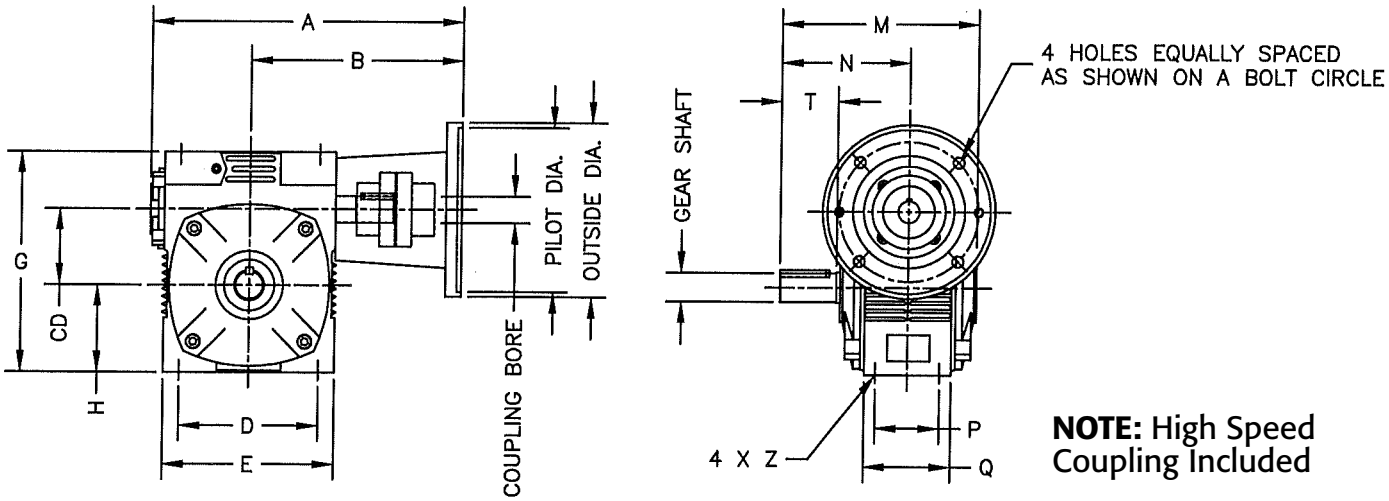
NEMA FRAME	OUTSIDE DIAMETER	PILOT DIAMETER	BOLT CIRCLE	HOLE SIZE
56C	6.50	4.5005/4.5019	5.875	0.413
143TC/145TC	6.50	4.5005/4.5019	5.875	0.413
182TC/184TC	9.00	8.5006/8.5024	7.250	0.591
213TC/215TC	9.00	8.5006/8.5024	7.250	0.591

QUILL SHAFT	
BORE DIA.	KEYWAY
0.6256/0.6267	3/16 X 3/32
0.8758/0.8771	3/16 X 3/32
1.1258/1.1271	1/4 X 1/8
1.3760/1.3775	5/16 X 5/32

*Consult Cleveland Gear for availability

Note: Quill input bushings to change 7/8" bore to 5/8" bore are stocked; must be ordered separately.

UC DIMENSIONS



NOTE: High Speed Coupling Included

SIZE	CD	D	E	G	H	M	N	P	Q	T	Z
45	1.75	4.19	4.86	5.75	2.06	6.13	3.94	2.75	3.39	1.57	5/16-18 X 0.63
50	1.97	3.54	4.53	5.91	2.56	5.71	3.74	1.97	2.68	1.57	M8 X 0.63
60	2.36	3.94	5.00	6.97	2.95	6.50	4.33	2.13	3.07	1.97	M10 X 0.79
70	2.76	4.92	6.14	8.07	3.35	7.68	5.12	2.60	3.46	2.36	M10 X 0.79
80	3.15	5.71	6.93	9.13	3.62	8.27	5.51	2.95	3.98	2.56	M10 X 0.79
100	3.94	7.28	8.94	11.42	4.53	10.24	6.69	3.35	4.41	2.95	M12 X 0.94
120	4.72	8.66	10.43	14.57	6.10	11.42	7.48	3.94	5.20	3.35	M14 X 1.10
135	5.31	10.24	11.73	16.73	7.28	12.60	8.27	4.33	5.67	3.74	M16 X 1.26
155	6.10	11.02	13.39	16.65	6.50	15.24	9.92	4.72	6.46	4.33	M16 X 1.38
175	6.89	12.20	14.57	18.90	8.07	15.91	10.31	4.72	6.69	4.33	M20 X 1.18

	56C		143TC/145TC		182TC/184TC		213TC/215TC		254TC/256TC	
SIZE	A	B	A	B	A	B	A	B	A	B
45	9.92	7.01								
50	9.25	6.47								
60	10.04	7.05	10.04	7.05						
70	11.54	7.83	11.54	7.83						
80	12.68	8.62	12.56	8.62	13.82	9.88				
100			15.08	9.80	16.34	11.06	16.34	11.06		
120			17.52	11.38	18.78	12.64	18.78	12.64		
135					20.59	13.82	20.59	13.82		
155					23.06	15.47	23.06	15.47	23.06	15.47
175					24.80	16.30	24.80	16.30	24.80	16.30

GEAR SHAFT	
DIAMETER	KEYWAY
0.8750/0.8745	3/16 X 3/32
0.7500/0.7495	3/16 X 3/32
1.0000/0.9995	1/4 X 1/8
1.1250/1.1245	1/4 X 1/8
1.3750/1.3744	5/16 X 5/32
1.5000/1.4994	3/8 X 3/16
1.7500/1.7494	3/8 X 3/16
2.2500/2.2493	1/2 X 1/4
2.5000/2.4993	5/8 X 5/16
2.7500/2.7493	5/8 X 5/16

NEMA FRAME	OUTSIDE DIAMETER	PILOT DIAMETER	BOLT CIRCLE	HOLE SIZE
56C	6.50	4.5005/4.5019	5.875	0.413
143TC/145TC	6.50	4.5005/4.5019	5.875	0.413
182TC/184TC	9.00	8.5006/8.5024	7.250	0.591
213TC/215TC	9.00	8.5006/8.5024	7.250	0.591
254TC/256TC	10.00	8.5006/8.5024	7.250	0.591

COUPLING - MOTOR SIDE	
BORE DIA.	KEYWAY
0.6256/0.6267	3/16 X 3/32
0.8758/0.8771	3/16 X 3/32
1.1258/1.1271	1/4 X 1/8
1.3760/1.3775	5/16 X 5/32
1.6260/1.6275	3/8 X 3/16

UNIVERSAL MOUNT UNIT AND ACCESSORIES

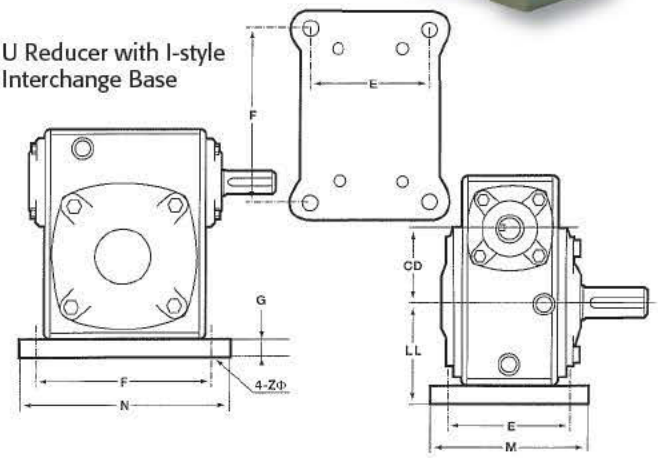
Universal mount units are footless and come with metric drilled and tapped dimension holes in their machined flat faces which can be used to directly mount units to machinery using cap screws, with optional mounting plates or rails.

MOUNTING OPTIONS.
These features provide maximum mounting flexibility from a single unit, including Worm Top, Worm Bottom. Sidewall and special mounting positions.

OIL SIGHT GAUGES.
Universal units from Cleveland stock have oil sight gauges in the correct position for WT mounting. In other mounting positions these sight gauges may not be functional. For OEM's who are ordering in quantity on blanket purchase orders, the oil sight gauge can be repositioned for the planned mounting position, or left out entirely.

INTERCHANGEABILITY.
With a special Interchangable style mounting plate (fasteners included), Universal units can be an effective direct replacement units for many other brands of worm gear reducers.

U Reducer with I-style Interchange Base

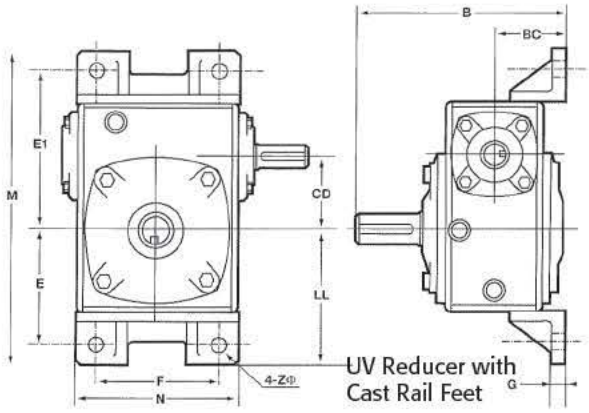


Note that interchange with other brands is approximate. While some dimensions are the same, others are not. Furthermore, torque and horsepower ratings may be higher or lower depending on actual distances between the input and output shaft centerlines, and rating criteria followed by the manufacturer. Check the relevant catalogs carefully. It is the specifier's responsibility to determine when an interchange is appropriate.

CAST RAIL FEET.
We can also supply Universal units with cast rail feet as shown below (fasteners included).

HOLLOW OUTPUT SHAFT AVAILABLE. (UHO)
Universal units are available with hollow output shafts, for OEM applications. Please consult factory.

STOCKED IN POPULAR SIZES.
Universal units are stocked in seven sizes from size 40 (1 19/16) to size 100 (3 15/16).



UV Reducer with Cast Rail Feet

Universal Dimensions with Interchange Base

SIZE	CD	E	F	G	LL	M	N	Z
45	1 3/4	4 1/2	5 3/4	11/16	2 3/4	5 11/16	7	13/32
50	1 31/32	4 11/16	6 3/8	7/16	3	5 15/16	7 3/4	15/32
60	2 3/8	4 7/8	7 1/16	11/16	3 5/8	6 3/16	8 1/2	15/32
70	2 3/4	5 1/4	8	3/4	4 3/32	6 21/32	9 5/8	17/32
80	3 3/32	6 1/8	9 1/2	25/32	4 13/32	7 21/32	11 3/16	17/32

Universal Dimensions with Cast Rail Feet

SIZE	B	BC	E	E1	F
45	6 7/16	2 1/2	3 1/8	4 3/4	3 15/16
50	5 23/32	1 31/32	3 17/32	4 11/32	3 17/32
60	6 1/2	2 3/16	4	5 1/16	3 15/16
70	7 25/32	2 9/16	4 23/32	6 3/32	4 23/32
80	8 11/32	2 27/32	5 3/16	7 3/32	5 1/2
100	10 1/4	3 9/16	6 1/8	8 15/32	7 11/32

SIZE	G	LL	M	N	Z
45	19/32	3 23/32	9	4 15/16	7/16
50	9/16	4 1/32	8 27/32	4 17/32	7/16
60	9/16	4 19/32	10 13/32	4 15/16	7/16
70	23/32	5 5/16	12	6 1/8	19/32
80	23/32	5 25/23	13 15/32	6 27/32	19/32
100	25/32	6 13/16	15 15/16	8 13/16	19/32

DOUBLE REDUCTION (DW) WORM/worm UNITS

Designed to provide high reduction ratios in an integral unit, Cleveland Gear DW series is based on standard gearing components from Cleveland single reduction units.

CONFIGURATIONS.
This design allows some flexibility in input/output shaft orientation. The handing of the high speed worm can easily be changed to allow opposite or same side input/output. The high speed (primary) gearcase can also be mounted shaft up, which requires a permanently sealed bearing to be installed on the top high speed bearing.

SECONDARY CASE OPTIONS.
The slow speed gearbox is usually based on a Worm Bottom (WB) style. A Worm Top (WT) unit can also be used. We can also produce units with a Universal secondary case mounted Worm Bottom or Worm Top.

MOUNTING POSITIONS.
There is a seal between the gearcases and each case has an independent oil supply, which allows some flexibility in mounting positions. When sidewall mounting with the output shaft up, is desired, the mounting position must be specified with the order so we can install a permanently sealed top bearing. Consult Cleveland Gear for information on other mounting positions.

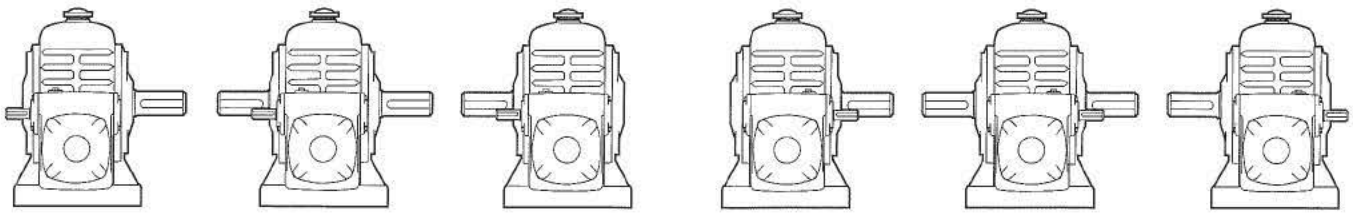
CASE SIZES.
The nominal size of DW units is based on the larger, secondary case. The primary case is always three sizes smaller than the secondary case (for example, 50/80). This fact allows you to easily find dimensional information from the appropriate single reduction section in this catalog.

DIRECTION OF ROTATION.
Using a worm bottom unit for the low speed gearcase, the direction of shaft rotation will be the same for both input and output shafts, when viewed facing the input shaft.

C-FACE AVAILABLE.
Double reduction units are available in C-face Quill hollow shaft and C-face Coupling styles. When ordering C-face styles LD, RD, LL and RR models, a spacer is required between the primary and secondary gearcase to provide adequate clearance between the input and output interfaces.

DOUBLE WORM STYLES

Standard Mounting Positions



Consult Cleveland Gear for information on other mounting positions.

DOUBLE REDUCTION HORSEPOWER AND TORQUE RATINGS

1800 RPM Input Speed DW Style Rating Table

	SIZE 60		SIZE 70		SIZE 80		SIZE 100		SIZE 120		SIZE 135	
	MAX. OUTPUT TORQUE 1010 IN-LB		MAX. OUTPUT TORQUE 2170 IN-LB		MAX. OUTPUT TORQUE 3040 IN-LB		MAX. OUTPUT TORQUE 4340 IN-LB		MAX. OUTPUT TORQUE 7290 IN-LB		MAX. OUTPUT TORQUE 12150 IN-LB	
RATIO	INPUT HP	OUTPUT HP	INPUT HP	OUTPUT HP	INPUT HP	OUTPUT HP	INPUT HP	OUTPUT HP	INPUT HP	OUTPUT HP	INPUT HP	OUTPUT HP
100	.54	.28	1.13	.62	1.50	.87	2.10	1.23	3.47	2.08	5.60	3.45
150	.39	.19	.81	.42	1.09	.58	1.51	.83	2.49	1.38	4.00	2.29
200	.32	.14	.63	.31	.90	.42	1.17	.62	2.04	1.05	3.13	1.75
225	.28	.13	.58	.28	.78	.39	1.09	.55	1.80	.92	2.85	1.54
250	.26	.12	.55	.24	.76	.35	1.03	.50	1.70	.83	2.61	1.38
300	.23	.09	.44	.20	.64	.29	.84	.41	1.47	.70	2.24	1.17
375	.20	.08	.42	.16	.56	.23	.75	.34	1.25	.55	1.88	.92
400	.19	.07	.37	.15	.54	.21	.67	.31	1.15	.52	1.77	.87
450	.17	.07	.35	.13	.47	.19	.66	.28	1.07	.46	1.69	.76
500	.17	.05	.31	.12	.44	.17	.58	.25	1.03	.42	1.47	.70
600	.14	.04	.26	.10	.39	.14	.50	.20	.88	.35	1.31	.88
625	.13	.04	.29	.09	.38	.13	.48	.20	.76	.35	1.21	.55
750	.12	.04	.25	.08	.34	.12	.48	.16	.79	.28	1.15	.46
800	.13	.03	.25	.07	.46	.10	.52	.15	.94	.26	1.35	.43
900	.11	.03	.22	.06	.30	.09	.42	.13	.69	.23	1.06	.39
1000	.09	.03	.21	.07	.28	.08	.36	.13	.66	.21	.88	.35
1200	.08	.03	.20	.05	.23	.07	.28	.11	.51	.17	.76	.29
1250	.08	.03	.19	.05	.23	.07	.31	.09	.48	.16	.72	.28
1500	.08	.01	.16	.04	.21	.05	.31	.08	.52	.13	.72	.23
1600	Consult CGC		Consult CGC		.21	.05	.27	.08	.47	.13	.68	.21
1800	Consult CGC		Consult CGC		.19	.05	.24	.07	.40	.12	.63	.19
2000	Consult CGC		Consult CGC		.19	.04	.24	.07	.44	.11	.56	.17
2400	Consult CGC		Consult CGC		.16	.04	.19	.05	.35	.08	.50	.15
2500	Consult CGC		Consult CGC		.16	.04	.20	.05	.32	.08	.47	.13
3000	Consult CGC		Consult CGC		.13	.03	.16	.04	.24	.07	.42	.12
3600	Consult CGC		Consult CGC		.12	.03	.15	.04	.24	.05	.38	.09

DW Unit Size	Primary Size
60	34
70	40
80	50
100	60
120	70
135	80

NOMINAL RATIOS. Some ratios are nominal, consult Cleveland Gear for exact ratio.

DOUBLE REDUCTION HORSEPOWER AND TORQUE RATINGS Cont.

1200 RPM Input Speed DW Style Rating Table

	SIZE 60		SIZE 70		SIZE 80		SIZE 100		SIZE 120		SIZE 135	
	MAX. OUTPUT TORQUE 1010 IN-LB		MAX. OUTPUT TORQUE 2170 IN-LB		MAX. OUTPUT TORQUE 3040 IN-LB		MAX. OUTPUT TORQUE 4340 IN-LB		MAX. OUTPUT TORQUE 7290 IN-LB		MAX. OUTPUT TORQUE 12150 IN-LB	
RATIO	INPUT HP	OUTPUT HP	INPUT HP	OUTPUT HP	INPUT HP	OUTPUT HP	INPUT HP	OUTPUT HP	INPUT HP	OUTPUT HP	INPUT HP	OUTPUT HP
100	.38	.19	.79	.42	1.05	.58	1.47	.83	2.41	1.38	3.88	2.29
150	.27	.13	.58	.28	.76	.39	1.07	.55	1.75	.92	2.77	1.54
200	.22	.09	.42	.20	.54	.29	.77	.41	1.44	.70	2.17	1.17
225	.20	.08	.40	.19	.56	.25	.77	.36	1.26	.62	2.00	1.03
250	.19	.08	.39	.16	.55	.23	.74	.34	1.21	.55	1.84	.92
300	.16	.06	.29	.13	.38	.19	.54	.27	1.02	.46	1.56	.78
375	.15	.05	.29	.11	.40	.15	.54	.21	.89	.38	1.34	.62
400	.13	.04	.25	.01	.29	.14	.41	.20	.82	.35	1.23	.58
450	.12	.04	.25	.09	.33	.13	.47	.19	.76	.31	1.19	.51
500	.12	.03	.21	.08	.24	.11	.35	.16	.73	.28	1.02	.46
600	.10	.03	.15	.06	.21	.09	.31	.13	.62	.23	.92	.39
625	.09	.03	.21	.07	.27	.09	.35	.13	.54	.23	.84	.38
750	.08	.03	.19	.05	.24	.08	.35	.11	.56	.19	.82	.31
800	.09	.02	.17	.05	.23	.07	.32	.10	.67	.07	.96	.29
900	.08	.02	.13	.04	.17	.06	.27	.09	.47	.15	.73	.25
1000	.07	.01	.16	.04	.20	.05	.27	.08	.47	.13	.63	.23
1200	.07	.01	.15	.04	.16	.05	.20	.07	.38	.12	.55	.19
1250	.07	.01	.13	.03	.17	.04	.23	.07	.35	.11	.52	.19
1500	.05	.01	.12	.03	.16	.04	.23	.05	.38	.09	.52	.15
1600	Consult CGC		Consult CGC		.15	.04	.19	.05	.35	.08	.48	.15
1800	.05	.01	.11	.03	.13	.03	.17	.04	.29	.08	.45	.13
2000	Consult CGC		Consult CGC		.15	.03	.17	.04	.32	.07	.40	.12
2400	Consult CGC		Consult CGC		.12	.03	.13	.04	.25	.05	.36	.09
2500	Consult CGC		Consult CGC		.12	.03	.15	.03	.23	.05	.34	.09
3000	Consult CGC		Consult CGC		.09	.01	.12	.03	.19	.04	.29	.08
3600	Consult CGC		Consult CGC		.07	.01	.11	.03	.17	.04	.28	.07

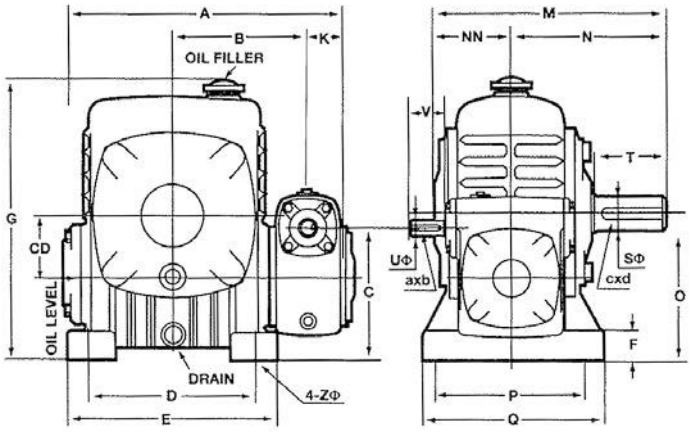
DW Unit Size	Primary Size
60	34
70	40
80	50
100	60
120	70
135	80

NOMINAL RATIOS. Some ratios are nominal, consult Cleveland Gear for exact ratio.

DW DOUBLE REDUCTION DIMENSIONS

DW units may also be specified with a WT or Universal secondary (low speed) case. Secondary case dimensions are the same as a Single Reduction unit of the same size. For dimensions, see pages 10,11 and 14.

For dimensions of C-face Coupling style and C-face Quill hollow shaft primary (high speed) cases, refer to pages 15 and 16. The primary case is three sizes smaller than the secondary case.



DW Sizes 60 through 135

DW Dimensions

	HIGH SPEED SHAFT			LOW SPEED SHAFT		
SIZE	U	V	axb	S	T	cxd
60	1/2	1 1/8	1/8 x 1/16	1	1 31/32	1/4 x 1/8
70	1/2	1 1/8	1/8 x 1/16	1 1/8	2 3/8	1/4 x 1/8
80	5/8	1 3/16	3/16 x 3/32	1 3/8	2 9/16	5/16 x 5/32
100	3/4	1 19/32	3/16 x 3/32	1 1/2	2 31/32	3/8 x 3/16
120	7/8	1 19/32	3/16 x 3/32	1 3/4	3 11/32	3/8 x 3/16
135	1 1/8	1 31/32	1/4 x 1/8	2 1/4	3 9/16	1/2 x 1/4

DW Dimensions

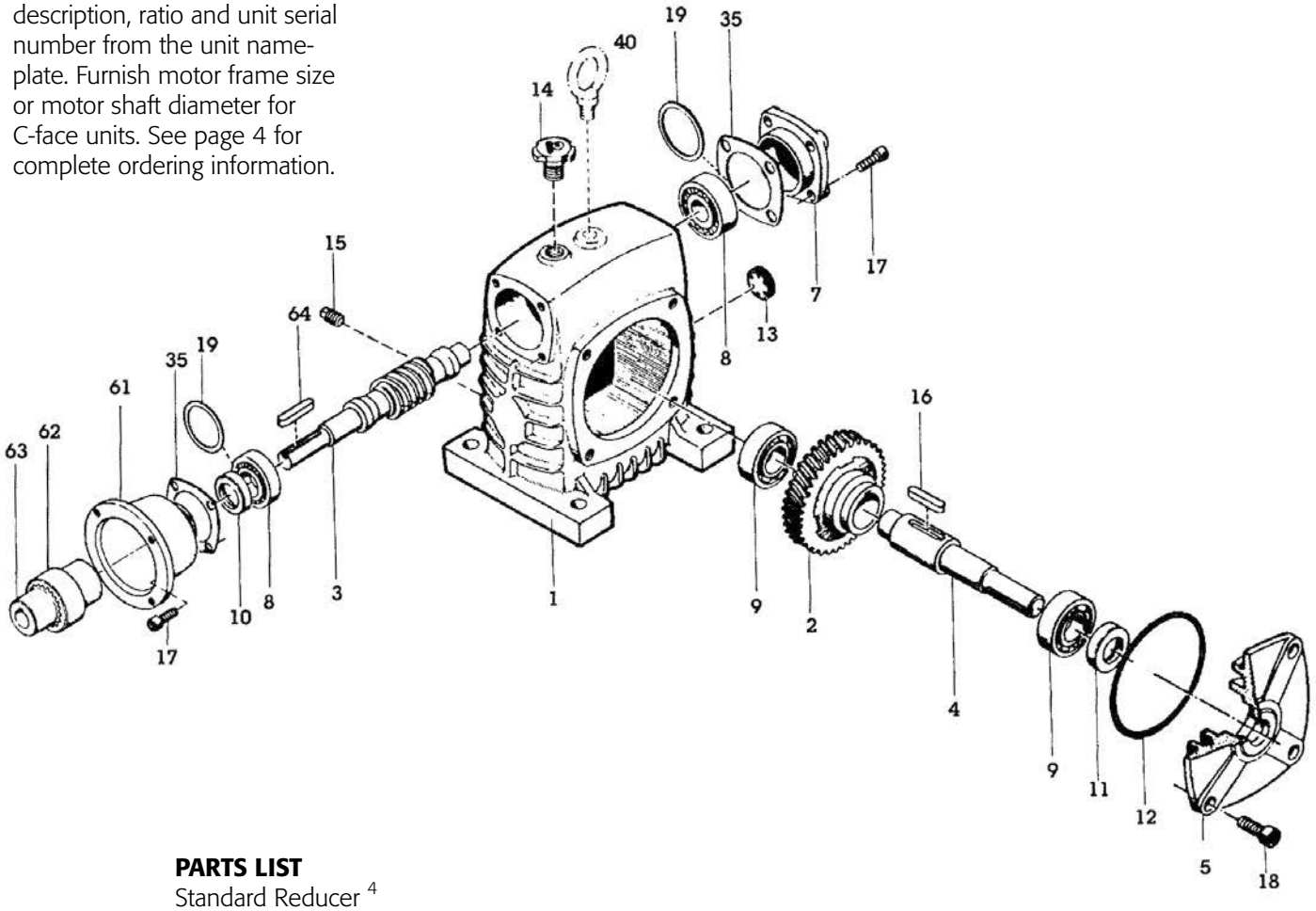
SIZE	CD	A	B	C	D	E	F	G	K	M	N	NN	O	P	Q	Z
60	2 3/8	8 19/32	3 15/16	3 23/32	4 22/32	5 29/32	23/32	8 9/32	1 11/16	7 13/16	4 11/32	3 15/32	4 3/4	4 1/8	5 1/8	7/16
70	2 3/4	10 9/32	4 25/32	4 5/16	5 7/8	7 1/2	25/32	9 15/32	1 13/16	8 29/32	5 1/8	3 25/32	5 1/2	4 1/2	5 29/32	19/32
80	3 5/32	11 3/16	5 1/8	5 1/8	7 1/16	8 21/32	15/16	10 5/8	1 31/32	9 21/32	5 17/32	4 1/8	6 5/16	5 5/16	6 11/16	19/32
100	3 15/16	13 7/8	6 1/2	6 5/16	8 11/16	10 5/8	1	13 13/32	2 5/32	11 7/16	6 11/16	4 23/32	7 7/8	6 1/8	7 1/2	19/32
120	4 22/32	16 11/32	7 11/16	7 1/2	10 1/4	12 19/32	1 3/16	15 15/16	2 3/16	13	7 1/2	5 17/32	9 7/16	7 1/16	9 1/16	23/32
135	5 5/16	18 5/16	8 21/32	8 15/32	11 7/16	13 25/32	1 3/16	17 29/32	2 3/4	14 9/16	8 9/32	6 5/16	10 5/8	7 7/8	9 27/32	23/32

PARTS LIST AND EXPLODED DRAWINGS

WORM TOP (WT & WTC/U & UC)

TO ORDER PARTS

Please furnish complete model description, ratio and unit serial number from the unit name-plate. Furnish motor frame size or motor shaft diameter for C-face units. See page 4 for complete ordering information.



PARTS LIST

Standard Reducer [4]

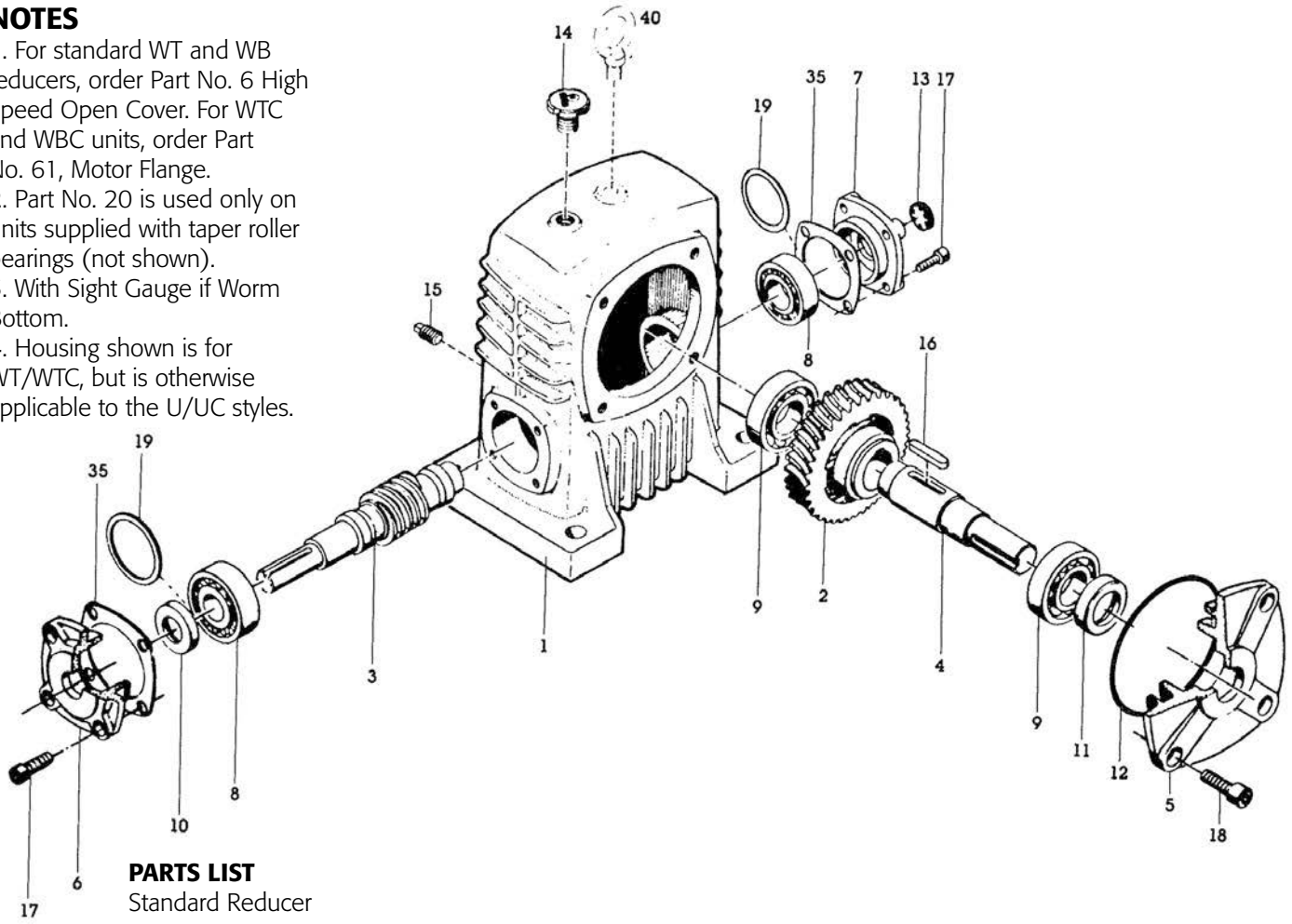
No.	PART DESCRIPTION	No.	PART DESCRIPTION
1.	Housing	15.	Plug, Drain
2.	Gear, Worm or Worm Wheel	16.	Key, Worm Gear & Shaft
3.	Wormshaft	17.	Cap Screw, High Speed Cover
4.	Shaft, Output	18.	Cap Screw, Low Speed Cover
5.	Cover, Low Speed	19.	Shim, High Speed Bearing
6.	Cover, High Speed, Open (not shown)[1]	20.	Shim, Low Speed Bearing (not shown)[2]
7.	Cover, High Speed, Closed	35.	Gasket, High Speed Cover
8.	Bearing, High Speed	40.	Eye Bolt (Sizes 100 to 225 only)
9.	Bearing, Low Speed	61.	Flange, Motor Mounting Adapter[1]
10.	Oil Seal, High Speed	62.	Reducer Coupling Half (WTC)
11.	Oil Seal, Low Speed	63.	Motor Coupling Half (WTC)
12.	O-ring	64.	Input Key
13.	Gauge, Oil Level	65.	Output Shaft Key (not shown)
14.	Plug, Oil Filter		

PARTS LIST AND EXPLODED DRAWINGS Cont.

WORM BOTTOM (WB & WBC)

NOTES

1. For standard WT and WB reducers, order Part No. 6 High Speed Open Cover. For WTC and WBC units, order Part No. 61, Motor Flange.
2. Part No. 20 is used only on units supplied with taper roller bearings (not shown).
3. With Sight Gauge if Worm Bottom.
4. Housing shown is for WT/WTC, but is otherwise applicable to the U/UC styles.



PARTS LIST
Standard Reducer

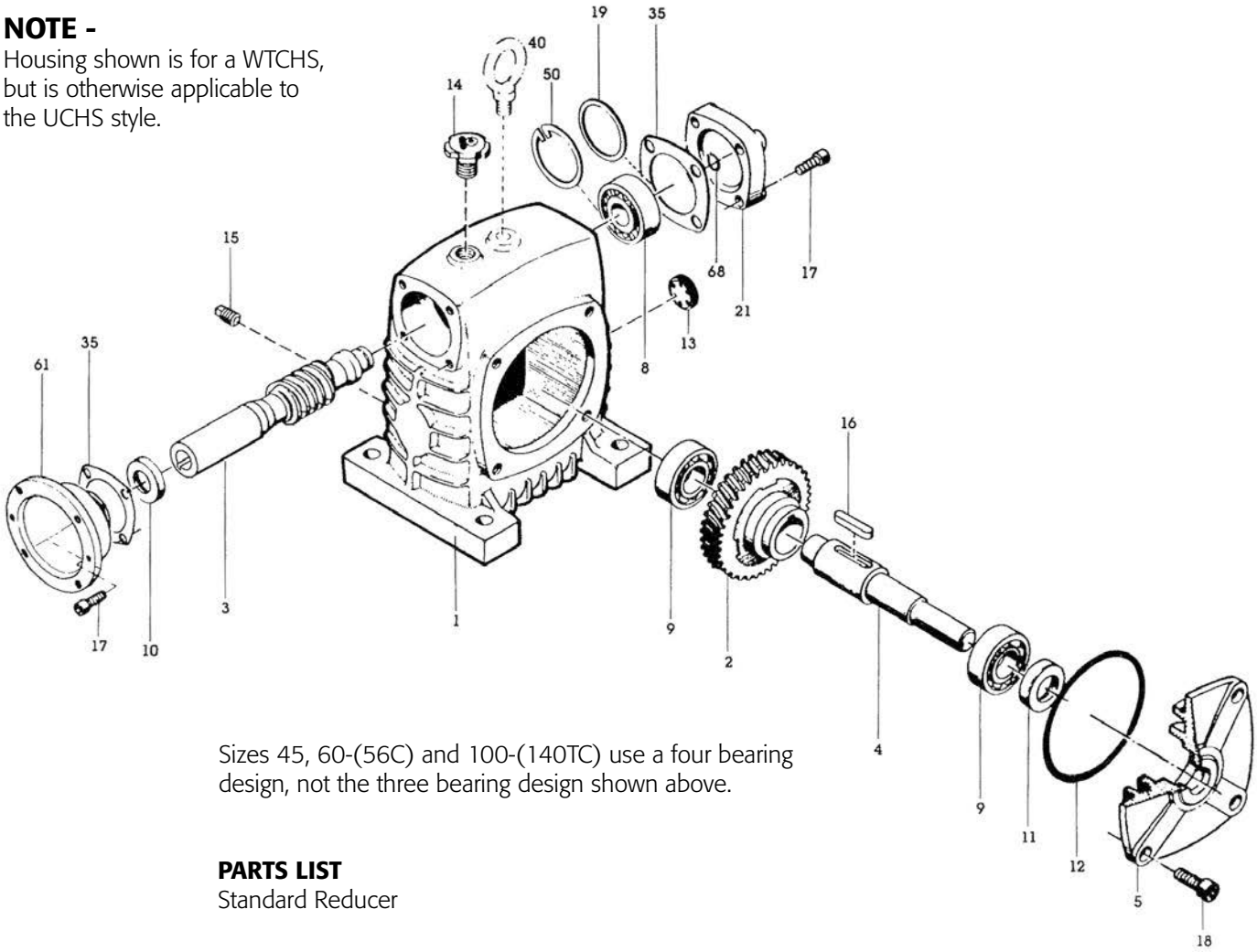
No.	PART DESCRIPTION	No.	PART DESCRIPTION
1.	Housing	15.	Plug, Drain
2.	Gear, Worm or Worm Wheel	16.	Key, Worm Gear & Shaft
3.	Wormshaft	17.	Cap Screw, High Speed Cover
4.	Shaft, Output	18.	Cap Screw, Low Speed Cover
5.	Cover, Low Speed	19.	Shim, High Speed Bearing
6.	Cover, High Speed, Open[1]	20.	Shim, Low Speed Bearing[2]
7.	Cover, High Speed, Closed[3]	35.	Gasket, High Speed Cover
8.	Bearing, High Speed	40.	Eye Bolt (Sizes 100 to 225 only)
9.	Bearing, Low Speed	61.	Flange, Motor Mounting Adapter (not shown)[1]
10.	Oil Seal, High Speed	62.	Reducer Coupling Half (WBC)
11.	Oil Seal, Low Speed	63.	Motor Coupling Half (WBC)
12.	O-ring	64.	Input Key
13.	Gauge, Oil Level	65.	Output Shaft Key (not shown)
14.	Plug, Oil Filter		

(Sizes 155 - 225 WB units are provided with grease fitting, not shown, for low speed bearings.)

PARTS LIST AND EXPLODED DRAWINGS Cont.

WORM TOP HOLLOW SHAFT (WTCHS & UCHS)

NOTE -
Housing shown is for a WTCHS, but is otherwise applicable to the UCHS style.



Sizes 45, 60-(56C) and 100-(140TC) use a four bearing design, not the three bearing design shown above.

PARTS LIST
Standard Reducer

No.	PART DESCRIPTION	No.	PART DESCRIPTION
1.	Housing	15.	Plug, Drain
2.	Gear, Worm or Worm Wheel	16.	Key, Worm Gear & Shaft
3.	Wormshaft	17.	Cap Screw, High Speed Cover
4.	Shaft, Output	18.	Cap Screw, Low Speed Cover
5.	Cover, Low Speed	19.	Shim, High Speed Bearing
8.	Bearing, High Speed	20.	Shim, Low Speed Bearing[2]
9.	Bearing, Low Speed	21.	High Speed Cover, WTCHS
10.	Oil Seal, High Speed	35.	Gasket, High Speed Cover
11.	Oil Seal, Low Speed	40.	Eye Bolt (Sizes 100 to 225 only)
12.	O-ring	50.	Retaining Ring, Gearcase, WTCHS
13.	Gauge, Oil Level	61.	Flange, Motor Mounting Adapter
14.	Plug, Oil Filter	65.	Output Shaft Key (not shown)
		68.	Retaing Ring, Worm Shaft, WTCHS

Note: See page 23 for footnote references

INSTALLATION & OPERATING INSTRUCTIONS, UNIT WEIGHTS

ALL SIZES AND TYPES

Upon receipt of a unit it should be inspected for damage in shipment. Any damage found should be reported to the carrier and a claim made to them at once.

FOUNDATIONS

The importance of a solid foundation for a speed reducer to rest upon cannot be overemphasized. The alignment of both its high and low speed shaft is jeopardized if the unit does not have a firm foundation. The alignment of both high and low speed shafts should be checked after a few weeks operation to be sure the foundation has not settled and thrown them out of line.

Rigid cast iron or welded steel bedplates are of great help in maintaining good alignment. All four feet of the unit are machined at the same time to provide flatness, and the base they are bolted to must be flat also.

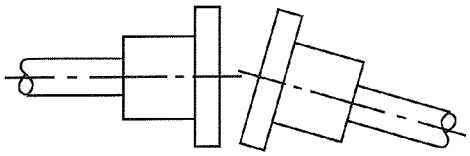
ALIGNMENT

Accurate alignment of both high and low speed shafts is a necessity. Lack of good alignment may cause excessive shaft stresses, overloaded bearings, noise and leaking oil seals. The initial setting of the reducer is, therefore, important and its alignment with the motor and connected machine must be checked **after** it is securely bolted down. Misalignment can be caused later by settled foundation or movement of the connected machine.

Two forms of misalignment, or a combination of them, are possible on each shaft. The effects resulting from the shaft misalignment are evident on the high speed shaft or coupling before they show up on the low speed end of the drive, but the need for good alignment on both shafts cannot be overemphasized.

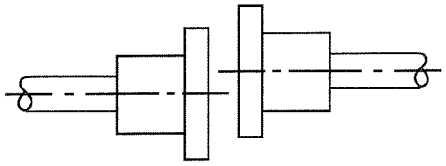
The figures shown illustrate each form of misalignment, greatly exaggerated, and a combination of both can exist as well.

ANGULAR MISALIGNMENT



When correcting coupling misalignment by placing metal shims under a reducer, the angular misalignment should be corrected first. It can be checked by inserting a tapered gauge at 90° positions. When a tapered gauge enters the space between the coupling halves an equal distance at four places 90° apart, the angular misalignment has been removed.

PARALLEL MIALIGNMENT



Parallel misalignment is corrected by placing a straight edge on the outside diameter of the coupling halves. Either the reducer, or the driven machine, must then be moved in a vertical and/or horizontal plane to correct this form of misalignment.

The necessity of good alignment cannot be overemphasized. When possible, dowels should be used to preserve alignment once it is obtained,

MOUNTING COUPLINGS OR SPROCKETS

Most installations can be made with a light driving fit. Any nicks or burrs present should be carefully removed, but no attempt to actually change a diameter by hand filing should be made. Installation of couplings with tighter fits for heavier loads can be obtained by heating the coupling half. The coupling must not be pounded into place without properly backing up the opposite end of the shaft. This can be done on a single shaft extension by removing the plate on the opposite side of the reducer. If this plate is not removed and the shaft properly backed up, the effect of the hammer blows are absorbed by the anti-friction bearing and damage to the rollers or the races will likely result. However, care must be used to reassemble the plate shims in exactly the same manner to avoid disturbing the setting of the gear and the adjustment of the bearing.

Shipping Weights in Pounds (WITHOUT OIL)

	SIZE												
STYLE	40	45	50	60	70	80	100	120	135	155	175	200	225
WT	—	—	13	20	31	47	82	124	168	287	365	—	—
WB	—	—	13	20	32	44	75	117	166	280	360	429	519
WTCHS	—	—	16	21	34	52	91	134	189	295	390	—	—
WTC	—	—	18	27	39	51	89	136	192	303	385	—	—
U	11	14	11	17	31	43	77	115	164	289	360	440	—
UCHS	14	16	13	18	34	49	90	125	171	298	390	—	—
UC	—	—	18	25	36	51	93	128	184	300	380	—	—
DWCHS	—	—	—	28	43	55	93	145	209	—	—	—	—

For weight-critical applications, contact Cleveland Gear for precise unit weights.

LUBRICANTS AND OIL CAPACITIES

CLEVELAND UNITS ARE SHIPPED DRY AS STANDARD. A mineral based oil, synthetic oil, or foodgrade oil (H1), is available upon customer request. When shipped dry, before starting the unit, it must be filled to the level indicated and with the grade of oil called for by the application. Any supplier of industrial oil can meet these specifications with a standard product.

Worm gearing has a high slide to roll ratio when compared with other types of gearing. With a high sliding component, it relies heavily on the generation of an oil wedge between the worm and gear.

For most worm gear applications, an AGMA 7 oil is satisfactory. For low speeds, a higher viscosity, AGMA 8 will provide better service. Synthetic lubricants provide a lower co-efficient of friction and better wear characteristics than a straight mineral oil.

NOTE: Viscosity ranges for AGMA Lubricant numbers are identical to those of ASTM 2422.

Extreme pressure oils, (EP oils) are another type of lubricant that uses a surface acting chemistry. Most EP oils use sulfur, phosphorus and/or chlorine additives. When these oils are used with bronze under conditions of high temperature and pressure, the surface acting chemistry can cause damage the surface of the bronze. EP oils should ***not*** be used with worm gears.

Synthetic lubricants are very common today. Synthetic lubricants provide adequate service over a broader temperature range. They normally have a longer life in service, thereby increasing the oil change interval. They also can reduce wear and friction, increasing the oil change interval, and increasing the life of the gear box.

With the use of synthetic oils, efficiency increases of 10% are often possible. Many companies have found that, due to the advantages of synthetic lubricants, it is actually more cost effective to buy the more expensive oil, even for normal applications.

IDLE TIME

Cleveland units which are to stand idle for a long period of time before being used should be completely filled with oil to prevent corrosion due to internal condensation. Units in intermittent service should be operated for brief periods of time at least once a month to redistribute the oil and thereby protect the bearings and ground parts from rusting.

SPEED

High speeds above 1800 RPM usually require a change in oil level. **Contact Cleveland Gear for information on input speeds in excess of 1800 RPM.**

The following tables are Cleveland Gear's recommendations for worm gear lubricants. A general table such as this cannot cover all possible applications. If your application seems out of the ordinary, please contact the factory.

WORM SPEED R.P.M.	AGMA LUBRICANT NUMBER AMBIENT TEMPERATURE 15° TO 50°F‡	50° TO 125°F
BELOW 600	#7	#8
ABOVE 600*	#7	#7
RECOMMENDED PRODUCT		
AGMA NUMBER	**MINERAL**	**SYNTHETIC**
#7	MOBIL 600W SUPER CYLINDER OIL	MOBIL SHC 634
#8	MOBIL 600W EXTRA HECLA SUPER CYLINDER OIL	MOBIL SHC 636
Viscosity Ranges for AGMA Lubricants[a]		
Rust and Oxidation Inhibited Gear Oils	Viscosity Range	Equivalent ISO Grade
AGMA Lubricant No.	mm^2/S (cSt) at 40° C	ISO Number
#7	414 to 506	460
#8	612 to 748	680

[a] Extracted from AGMA "Specification-Lubrication of Industrial Enclosed Gear Drives" with the permission of the publisher, The American Gear Manufacturers Association, 1001 N. Fairfax St., Ste 500 Arlington, Virginia 22314.

‡ For ease of start up, heaters or use of synthetic oil may be required at low temperatures.

* At rubbing speeds over 2,500 fpm, a spray lubrication system and/or synthetic lubricants may be required. Contact the factory for specific recommendations.

OIL LEVEL

The oil level in a reducer can be checked only when it is at rest. It must be maintained at the proper level. Overfilling is to be avoided, as it causes excessive churning losses and may result in overheating.

OIL CAPACITIES. When standard units with oil level sight gauges are installed in standard mounting positions, the user needs simply to add lubricant up to the center of the sight gauge before operation–while the unit is not rotating. These units must be operated with the vented filler caps provided.

Oil capacities will vary when units are placed in special mounting positions. For planning purposes, use the following table to find approximate capacities.

LUBRICATION Cont.

LUBRICATING PROCEDURES: We recommend the following procedures:

1. FILL. The unit should be filled with appropriate oil to the center of the sight gauge BEFORE OPERATING. DO NOT OVERFILL. Excessive oil levels are as undesirable as using too little oil. If a fitting is present, grease it before operation.

2. 100 HOUR FLUSH. After approximately 100 hours of operation, the reducer must be drained, flushed thoroughly with a light oil, and refilled with fresh recommended oil.

3. 2500 HOUR FLUSH. This flushing and refilling should be repeated every 2500 hours.

Extremely severe or dirty conditions, as well as high humidity, will require more frequent oil changes. The use of synthetics can extend the period. At least one filling of the grease fittings between oil changes is recommended on all units equipped with grease fittings. In general, grease fittings are found on units having a vertical shaft, and either one or two fittings are required, depending upon the internal construction.

Single Reduction Oil Capacities, Approximate, for Various Mounting Positions

SIZE	HORIZONTAL MOUNT							
	WT, WTCHS (& WB Ceiling Mount)		WB (& WT, WTCHS Ceiling Mount)		U & UCHS		K & KCHS	
40	3 oz	.10 ltr	—	—	7 oz	.20 ltr	7 oz	.20 ltr
45	—	—	—	—	8 oz	.25 ltr	—	—
50	11 oz	.33 ltr	6 oz	.17 ltr	8 oz	.25 ltr	10 oz	.30 ltr
60	14 oz	.41 ltr	9 oz	.27 ltr	14 oz	.41 ltr	15 oz	.43 ltr
70	1 pt 10 oz	.78 ltr	1 pt 3 oz	.55 ltr	1 pt 7 oz	.67 ltr	1 pt 9 oz	.75 ltr
80	2 pt 7 oz	1.15 ltr	1 pt 9 oz	.73 ltr	2 pt 2 oz	1.00 ltr	3 pt 3 oz	1.50 ltr
100	4 pt 15 oz	2.35 ltr	2 pt 10 oz	1.24 ltr	3 pt 8 oz	1.65 ltr	4 pt 9 oz	2.15 ltr
120	8 pt 13 oz	4.18 ltr	4 pt 6 oz	2.08 ltr	8pt 1 oz	3.82 ltr	8 pt 7 oz	4.00 ltr
135	11 pt 12 oz	5.56 ltr	5 pt 13 oz	2.75 ltr	11pt 4 oz	5.32 ltr	12 pt 1 oz	5.70 ltr
155	14 pt 11 oz	6.95 ltr	8 pt 4 oz	3.90 ltr	11pt 8 oz	5.45 ltr	15 pt 10 oz	7.40 ltr
175	20 pt 1 oz	9.50 ltr	8 pt 11 oz	4.10 ltr	—	—	29 pt 1 oz	13.75 ltr
200	—	—	13 pt 15 oz	6.60 ltr	—	—	35 pt 11 oz	16.88 ltr
225	—	—	20 pt 6 oz	9.63 ltr	—	—	35 pt 15 oz	17.00 ltr

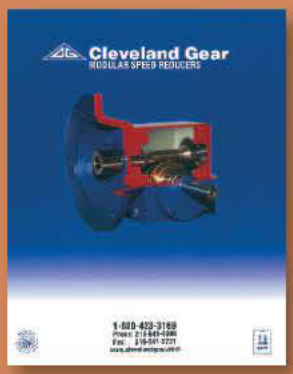
Double Reduction Oil Capacities, Approximate

SIZE	DW & DWCHS				DU & DUCHS			
	PRIMARY		SECONDARY		PRIMARY		SECONDARY	
60	4 oz	.12 ltr	9 oz	.27 ltr	4 oz	.12 ltr	1 pt 3 oz	.57 ltr
70	7 oz	.20 ltr	1 pt 3 oz	.55 ltr	7 oz	.20 ltr	2 pt	.95 ltr
80	8 oz	.25 ltr	1 pt 9 oz	.73 ltr	8 oz	.25 ltr	3 pt 3 oz	1.50 ltr
100	14 oz	.41 ltr	2 pt 10 oz	1.24 ltr	14 oz	.41 ltr	5 pt 11 oz	2.70 ltr
120	1 pt 7 oz	.67 ltr	4 pt 6 oz	2.08 ltr	1 pt 7 oz	.67 ltr	9 pt 14 oz	4.66 ltr
135	2 pt 2 oz	1.00 ltr	5 pt 13 oz	2.75 ltr	2 pt 2 oz	1.00 ltr	12 pt 14 oz	6.10 ltr
155	3 pt 8 oz	1.65 ltr	8 pt 4 oz	3.90 ltr	3 pt 8 oz	1.65 ltr	15 pt 11 oz	7.41 ltr
175	8 pt 1 oz	3.82 ltr	8 pt 11 oz	4.10 ltr	—	—	—	—
200	11 pt 4 oz	5.32 ltr	13 pt 15 oz	6.60 ltr	—	—	—	—
225	11 pt 4 oz	5.32 ltr	20 pt 6 oz	9.63 ltr	—	—	—	—

Recommended lubricants must meet or exceed these standards:			
Ambient Temperature	15° to 50° F (-9° to 10° C)	AGMA **7**	cSt@104F (40C): **414-506**
	50° to 125° F (10° to 52° C)	AGMA **8**	cSt@104F (40C): **612-748**

CLEVELAND GEAR'S LIBRARY OF INFORMATION

"MUSTS" FOR YOUR ENGINEERING DEPARTMENT

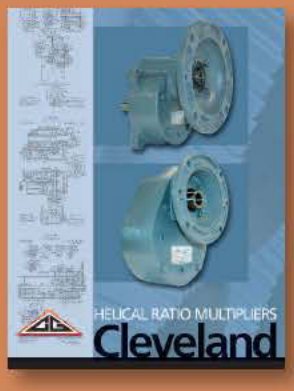


Catalog #400–
"M" Series Modular Speed Reducers

Rating and dimensional data for the 1.33"-4.25" center distance drives in solid, C-face quill worms, with solid and hollow shaft outputs. Part numbering and configuration data is provided.

Catalog #412–
Inline Helical Ratio Mulitpliers

Create Double reduction Helical Worm gear units from stock components. Available in three case sizes, NEMA flange sizes 56C to 210TC. Offered & stocked in 5 ratios.



Catalog #SMCG–
Helical Shaft Mount and Screw Conveyor Reducers

Shaft mount reducers available in sizes 2-9. Size 2-6 designed for Screw Conveyor applications with CEMA adapter kits/shafts. Suitable for AGMA Class I, II or III applications.

Catalog #700–
Millennium Gear Drives

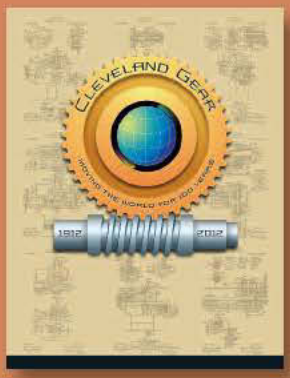
Catalog provides data on ratings, dimensions, and design configurations for 5"-12" C.D. drives. Universal mounting with motor adapters & helical attachments.

Catalog #900–
General Capabilities Brochure

Information on CGC history, current design services, production capabilities and products.

100th Anniversary Brochure

Provides a pictorial history of Cleveland Gear's first 100 years designing and producing worm gearing, worm gear reducers and the development of its design and production capabilities for helical gearing/custom drives.



MODULAR WORM REDUCER

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