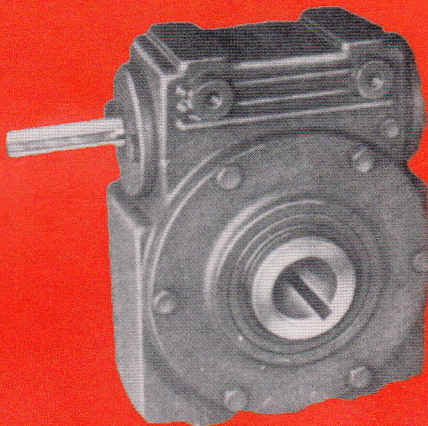
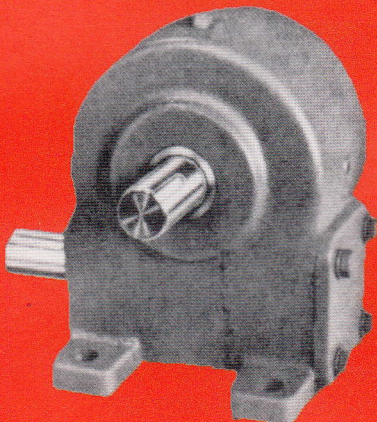
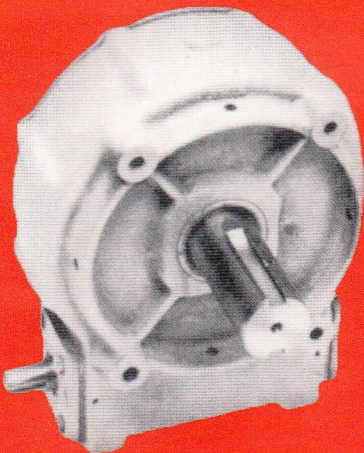


DALTON[®]

WORM GEAR REDUCERS



DALTON[®] gear company

212 COLFAX AVENUE N., MINNEAPOLIS, MINN. 55405 • 612-374-2150

DISTRIBUTED BY

the
DALTON  **®**
gear company

**dedicated to
precision manufacturing
of gears, sprockets, couplings,
torque limiters, speed reducers
and gearmotors**

Since 1955 Dalton has developed from a small shop with a few machines to a fully equipped plant covering over 50,000 square feet. This growth is the result of a combination of skill and know-how in production, plus the special attitude of Dalton personnel and management which focuses on one objective...complete customer satisfaction.

This Dalton attitude is reflected in every phase of operations. Dalton management, with 40 years of experience in serving industry, understands the needs and problems of both distributors and O.E.M. customers and what they expect from a manufacturer. Dalton engineering and production personnel take real pride in producing products of consistent high quality that adhere rigidly to specifications. Doing the job right the first time is the everyday objective of Dalton.

Whatever your needs...from a few stock sprockets to mass production of highly specialized gears...you can depend on Dalton for the quality you expect, the delivery you require, and the best possible price.

DALTON  **® gear company**

212 Colfax Avenue North
612-374-2150
www.daltongear.com

Minneapolis, Minnesota 55405
Toll Free No. 1-800-328-7485
FAX Number 612-374-2467

DALTON®

LUBRICATION

CAUTION

ALL WORM GEAR REDUCERS ARE SHIPPED DRY. OIL MUST BE ADDED PRIOR TO OPERATION.

CHANGING LUBRICANT — After the first 100 hours of operation, drain out initial oil, preferably while warm. Flush out the gear case with an approved non-flammable, non-toxic solvent and refill. Oil may be reused if properly filtered to remove metal particles. Thereafter, oil should be changed at least every 2500 operating hours or every 6 months — whichever occurs first. If unit is operating in extremely dirty or high or low temperature environments, change oil more often.

VARIATIONS FROM NORMAL CONDITIONS — Input speeds that exceed the maximum speeds recommended for a given ratio which are listed in the general catalog specifications may require an adjustment in the oil level. Consult for special lubricant recommendations when operating at higher speeds.

If either shaft is in a vertical position or inclined more than 15°, zerk fittings may be required to lubricate upper bearings. It may also be necessary to make some oil plug modification. Consult Dalton Service Department.

APPROVED LUBRICANTS

TEXACO	Multigear EP90
AMERICAN	Multipurpose Gear Lubricant
GULF	Transgear EP
EXXON (Humble)	Gear Oil GP
SHELL	Spirax EP
MOBIL	Mobilube EP
CHEVRON	RPM Multiservice
PHILLIPS	Philube All Purpose Gear Oil
CONOCO	Polar Start (For amb. Temp. below 15°F.)
Or any oil that meets MIL-L-2105B and GL5 specifications.	

IMPORTANT — Unit should not be operated when internal temperature exceeds 200° or below 40°F, with recommended lubricants. Reduced seal life or lubrication failure could be caused unless special duty lubricants are used.

ALL TEMPERATURE SYNTHETIC LUBRICANT

DALTON GEAR SYNTHETIC LUBRICANT is a premium gear box lubricant which is recommended for worm gear drives in most applications, especially those subject to low start up temperature and/or high operating temperatures. This lubricant is a synthesized hydrocarbon based material which provides longer lubrication intervals because of its increased resistance to thermal and oxidative degradation. This decreases maintenance costs. Further economy is realized because of the increased efficiency of units lubricated with DALTON GEAR SYNTHETIC LUBRICANTS. This lubricant can be operated at temperatures considerably above 225°F (107°C). However, the factory should always be contacted prior to operating at

SERVICE FACTORS

The ratings in this catalog are based on AGMA Class I service conditions. A 1.00 service factor is used when the application is free from recurrent shock loading and is continuous but does not exceed 10 hours per day. For other operating conditions the rated horsepower can be increased or decreased by dividing the rated horsepower by the proper service factor from the table below.

Prime Mover	Duration of Service	Driven Machine Load Classifications		
		Uniform	Moderate Shock	Heavy Shock
Electric Motor	Occasional ½ Hour per day	0.50	0.80	1.25
	Intermittent 3 Hours per day	0.80	1.00	1.50
	Up to 10 Hours per day	1.00	1.25	1.75
	24 Hours per day	1.25	1.50	2.00
Multi-Cylinder Internal Combustion Engine	Occasional ½ Hour per day	0.80	1.00	1.50
	Intermittent 3 Hours per day	1.00	1.25	1.75
	Up to 10 Hours per day	1.25	1.50	2.00
	24 Hours per day	1.50	1.75	2.25
Single Cylinder Internal Combustion Engine	Occasional ½ Hour per day	1.00	1.25	1.75
	Intermittent 3 Hours per day	1.25	1.50	2.00
	Up to 10 Hours per day	1.50	1.75	2.25
	24 Hours per day	1.75	2.00	2.50

high temperatures as damage may occur to seals or other components. Lubricant manufacturer and DALTON GEAR should be contacted when substituting a premium lubricant where DALTON GEAR SYNTHETIC LUBRICANT is recommended.

INSTALLATION

These drives have been designed to be mounted so that the pinion shaft and the cross shaft are in a horizontal position. If this is not possible, see Variations From Normal Conditions.

Because of varying requirements, mounting hardware is not supplied with these units. Good quality cap screws with lock washers should always be used. Base and fasteners for motor and Gear Drive must be rigid enough to maintain alignment between drive and motor and between drive and couplings.

COUPLINGS — Flexible couplings to pinion and cross shafts are recommended because they minimize bearing and gear wear caused by slight misalignment. Follow coupling manufacturer's installation directions.

SHEAVES AND SPROCKETS — When mounting sheaves or sprockets, the center of the load should be located as close to the Gear Drive as possible. Excessive overhung loading could result in early failures of bearings or shaft. Refer to the general catalog or contact your local distributor for overhung load ratings.

CAUTION

If any noticeable resistance is encountered when installing sheaves or sprockets on shafts, inspect bore for paint, weld burrs or imperfections and hone smooth. Force fitting can easily damage gears, shafts and bearings.

WARNING

All rotating shafts and couplings must be adequately shielded by the user for maximum safety.

PREVENTATIVE MAINTENANCE

Keep shafts and vent plug clean to prevent foreign particles from entering seals or gear case. Inspect periodically for oil leaks. Check coupling set screws and Gear Drive mounting bolts for tightness (loose fasteners can cause alignment problems and excessive wear). Check end play in shafts. Noticeable movement might indicate service or parts replacement.

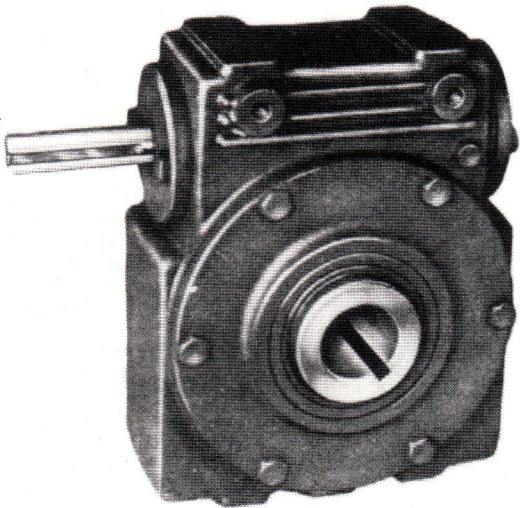
Note — When seals are new, a small amount of lubricant leakage is sometimes noted until seals seat on the shaft. This condition is normal but if leakage persists, it would indicate a damage seal and must be replaced.

STARTING TORQUE

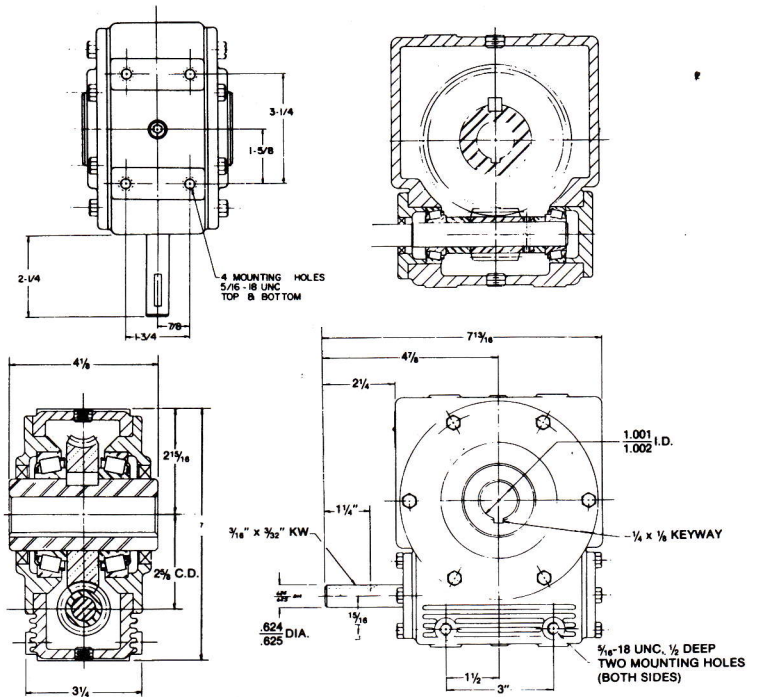
Momentary or starting torque should be limited to 200 percent of rated capacity for Dalton Worm gear drives.

MODEL 202 SHAFT-MOUNTED WORM GEAR REDUCER

Transmits up to 2.25 HP at 1750 RPM. Mounts directly on driven shaft; case has drilled and tapped holes for fixed mounting. Heat treated and ground shafts turn on Timken bearings. Bronze worm gear; alloy steel cut worm. Rotation may be clockwise or counter-clockwise. High alloy grey iron case. Ratios: 10:1, 20:1, 40:1, 50:1. Weight: Approx. 22#.



FORMERLY WG100



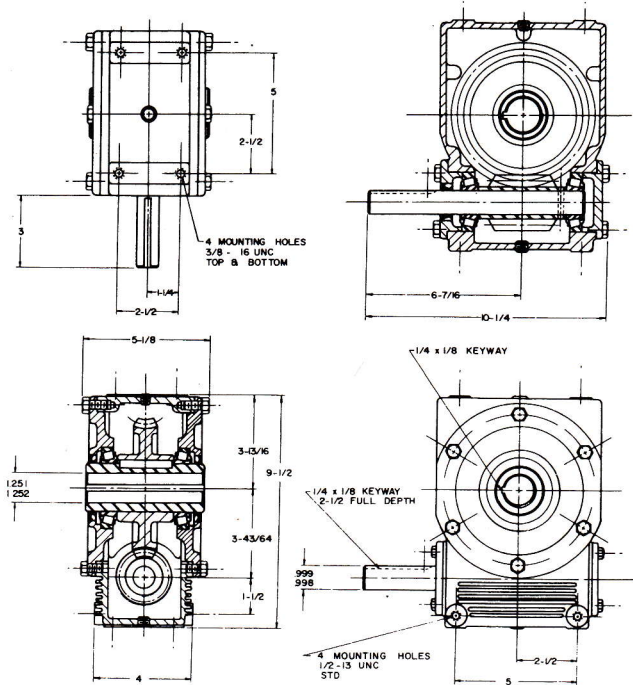
HORSEPOWER AND TORQUE RATINGS

SERVICE FACTOR=1.00 (Uniform Load, 8 Hours per Day)

RATIO	INPUT SPEED R.P.M.									
	1750	1450	1150	870	720	580	300	200	100	
10 to 1 QUAD/40	Input H.P.	2.25	2.18	2.00	1.70	1.45	1.20	.80	.56	.26
	Output Torque	810	947	1095	1231	1268	1304	1680	1764	1638
	Output R.P.M.	175	145	115	87	72	58	30	20	10
20 to 1 DOUBLE/40	Input H.P.	1.30	1.27	1.15	.91	.83	.72	.45	.31	.21
	Output Torque	941	1096	1271	1333	1452	1564	1890	1953	2646
	Output R.P.M.	87	73	57	43	36	29	15	10	5
40 to 1 SINGLE/40	Input H.P.	.68	.65	.58	.48	.42	.36	.23	.15	.09
	Output Torque	973	1137	1260	1374	1470	1620	1932	1890	2268
	Output R.P.M.	44	36	29	22	18	14	7.5	5	2.5
50 to 1 SINGLE/50	Input H.P.	.54	.50	.45	.39	.34	.28	.18	.12	.08
	Output Torque	972	1086	1232	1445	1530	1603	1890	1890	2520
	Output R.P.M.	35	29	23	17	14	11	6	4	2

Torque Shown in Inch Lbs.

RATIO	MODEL NUMBER
10:1	20200
20:1	20201
40:1	20202
50:1	20203



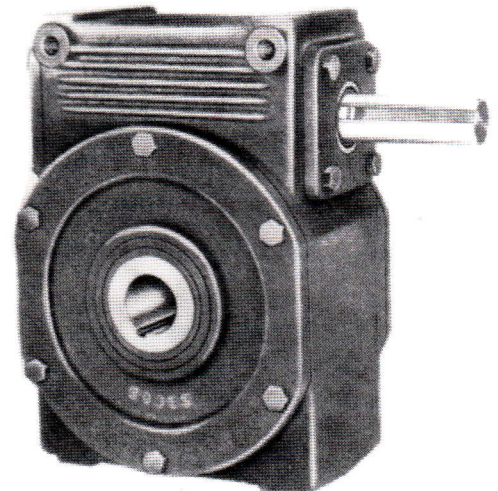
MODEL 303 SHAFT-MOUNTED WORM GEAR REDUCER

Transmits up to 6 HP at 1750 RPM. Mounts directly on driven shaft; case has drilled and tapped holes for fixed mounting. Ground shafts turn on Timken roller bearings; roller thrust bearings on both shafts minimize friction. Meehanite or equivalent worm gear; alloy steel cut worm. Rotation may be clockwise or counter-clockwise. High-alloy grey iron case for rugged service.

Ratios: 8:1, 16:1 and 32:1.

Weight: Approximately 40 pounds.

Bronze gear and harden and ground worm also available.



FORMERLY WG150

HORSEPOWER AND TORQUE RATINGS

SERVICE FACTOR=1.00 (Uniform Load, 8 Hours per Day)

RATIO	INPUT SPEED R.P.M.									
	1750	1450	1150	870	720	580	300	200	100	
8 to 1 QUAD/32	Input H.P.	6.0	5.6	5.1	4.3	3.9	3.3	2.2	1.5	.90
	Output Torque	1728	1945	2236	2492	2730	2867	3696	3780	4536
	Output R.P.M.	218.7	181.3	143.7	108.7	90	72.5	37.5	25	12.5
16 to 1 DOUBLE/32	Input H.P.	3.26	3.15	2.75	2.4	2:2	1.8	1.25	.8	.5
	Output Torque	1879	2190	2412	2779	3080	3132	4200	4032	5080
	Output R.P.M.	109.3	90.6	71.8	54.4	45	36.2	18.75	12.5	6.2
32 to 1 SINGLE/32	Input H.P.	1.9	1.75	1.5	1.3	1.2	1.0	.7	.5	.3
	Output Torque	2188	2433	2632	3011	3360	3480	4691	5040	6096
	Output R.P.M.	54.7	45.3	35.9	27.2	22.5	18.1	9.4	6.25	3.1

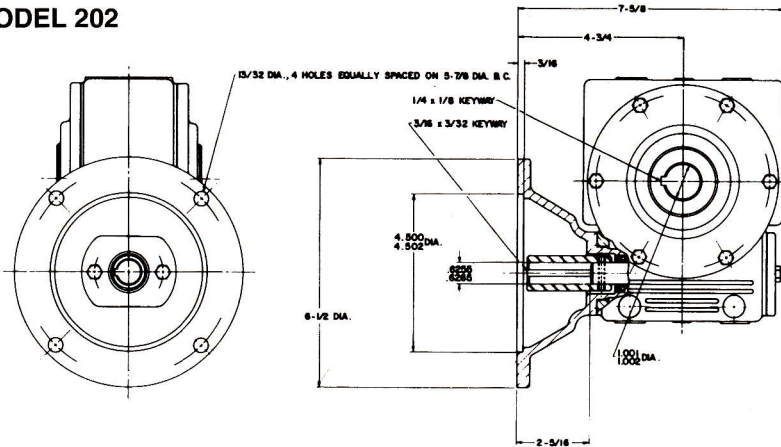
Torque Shown in Inch Lbs.

RATIO	MODEL NUMBER
8:1	30301
16:1	30302
32:1	30303

ADAPTER FLANGES FOR WORM GEAR REDUCERS

Available for Models 202 and 303

MODEL 202

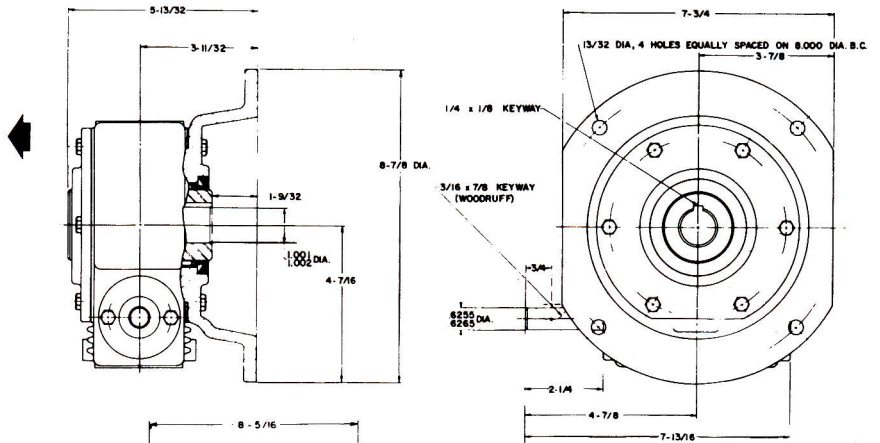


MODEL 202 W/ELECTRIC MOTOR FLANGE

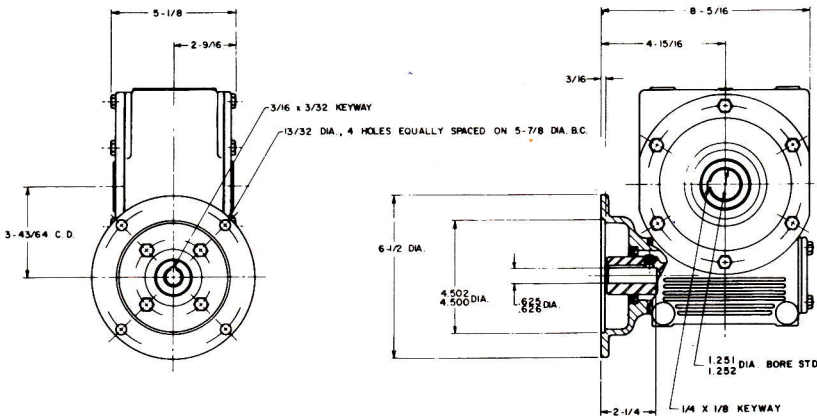
RATIO	MODEL NUMBER
10:1	20204
20:1	20205
40:1	20206
50:1	20207

MODEL 202 W/ADAPTER PLATE FLANGE

RATIO	MODEL NUMBER
10:1	20209
20:1	20210
40:1	20211
50:1	20212



MODEL 303

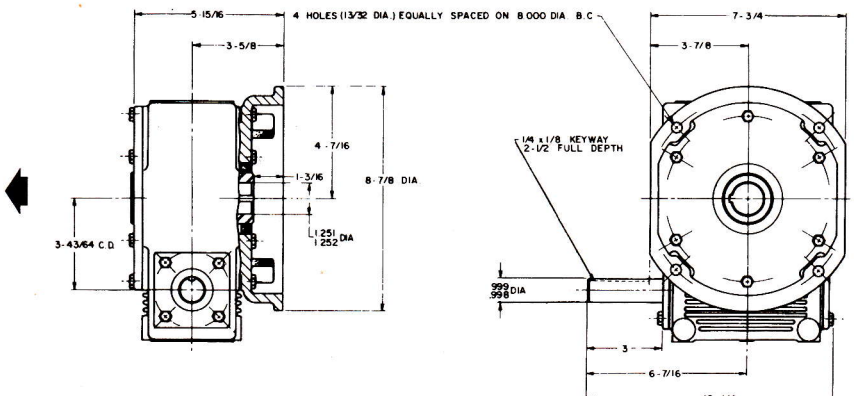


MODEL 303 W/ELECTRIC MOTOR FLANGE

RATIO	MODEL NUMBER
8:1	30305
16:1	30306
32:1	30307

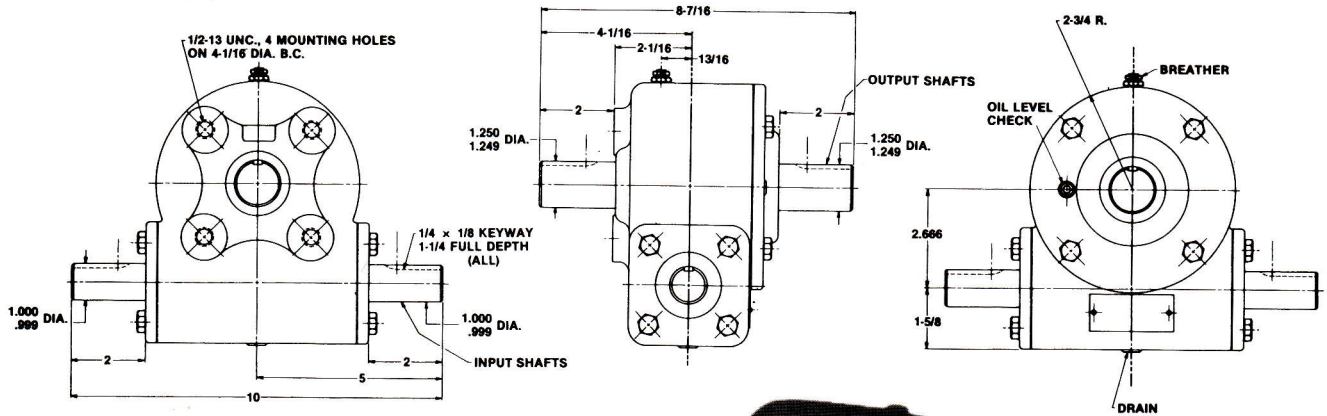
MODEL 303 W/ADAPTER PLATE FLANGE

RATIO	MODEL NUMBER
8:1	30309
16:1	30310
32:1	30311

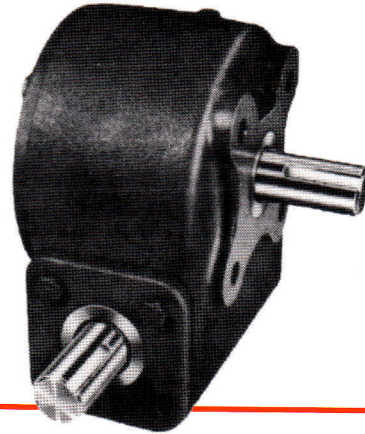


Rugged Cast Iron Housing

FLANGE MOUNTED



A hardened, ground worm drives the centrifugally cast bronze gear for high efficiency and long life. Output torque from 918 to 2,868 inch pounds. Weight: 30 pounds.



Cast Iron Gear Also Available.

INPUT RPM	5:1 RATIO							10:1 RATIO							20:1 RATIO							
	25	50	100	350	540	1125	1725	25	50	100	350	540	1125	1725	25	50	100	350	540	1125	1725	
Output Torque (inch-pounds)	2256	2224	2161	1865	1654	1161	918	2658	2625	2555	2210	1966	1368	1094	2868	2828	2747	2363	2094	1459	1154	
Input H.P.	.23	.45	.84	2.40	3.21	4.55	5.49	.17	.31	.58	1.60	2.10	2.89	3.50	.13	.23	.41	1.05	1.35	1.79	2.09	
Output H.P.	.18	.35	.69	2.07	2.84	4.15	5.10	.11	.21	.41	1.23	1.68	2.44	3.04	.06	.11	.22	.66	.90	1.30	1.60	
Efficiency %	76	79	81	86	88	91	92	63	66	69	76	80	84	86	45	49	53	62	66	72	76	
Input O.H.L. (pounds at center of keyway)	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	
Input Axial Thrust (pounds)	2309	1846	1474	988	869	713	633	2361	1898	1524	1032	908	741	655	2393	1931	1558	1062	936	760	671	
Output O.H.L. (pounds at center of keyway)	750	750	750	750	703	579	515	750	750	750	750	744	608	537	750	750	750	750	750	750	627	553
Output Axial Thrust (pounds)	2307	1844	1472	987	868	712	632	2359	1896	1523	1031	907	741	654	2392	1929	1557	1062	935	760	670	

All ratings based on Class I Service factor.

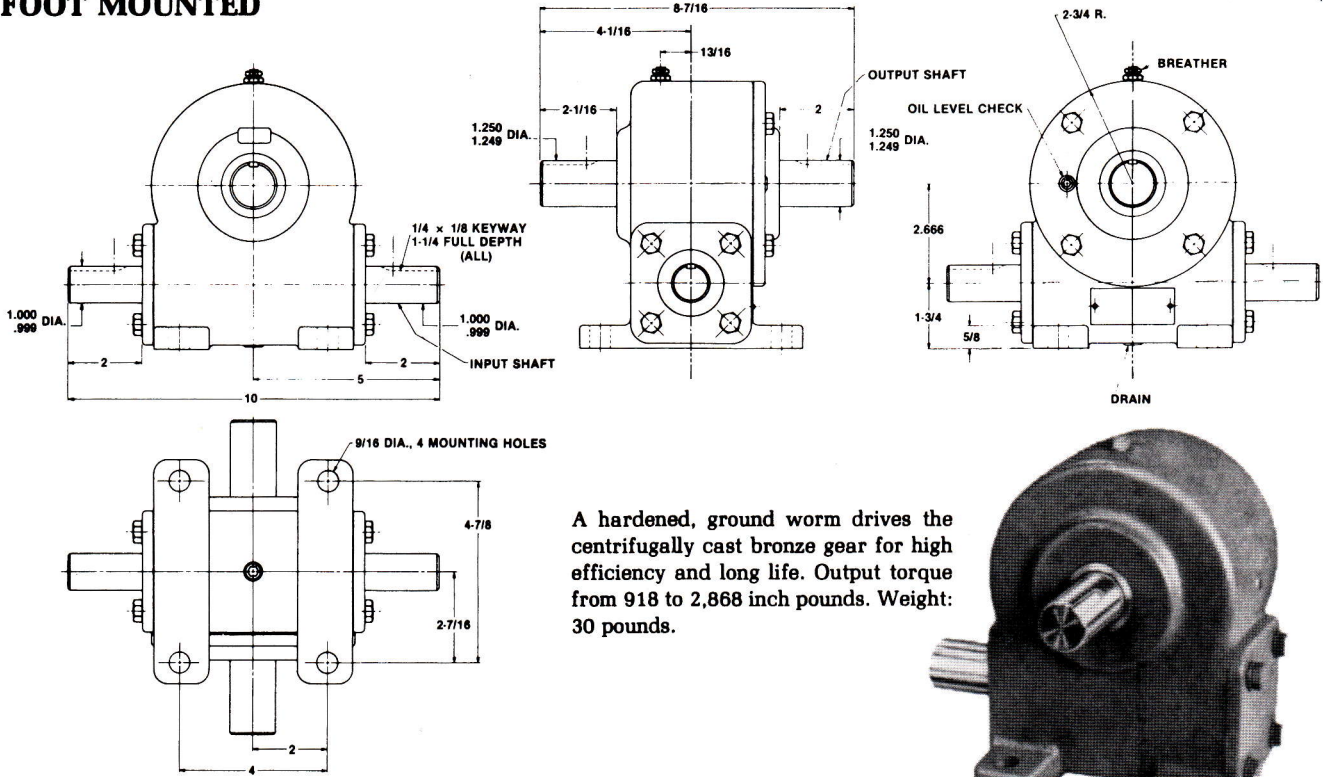
MODEL NUMBERS

GEAR RATIO	SHAFT ARRANGEMENT AND ROTATION									
	TYPE AR	TYPE BR	TYPE CR	TYPE DR	TYPE ER	TYPE FR	TYPE GR	TYPE HR	TYPE JR	
5:1	412-1	412-2	412-3	412-4	412-5	412-6	412-7	412-8	412-9	
10:1	412-19	412-20	412-21	412-22	412-23	412-24	412-25	412-26	412-27	
20:1	412-37	412-38	412-39	412-40	412-41	412-42	412-43	412-44	412-45	

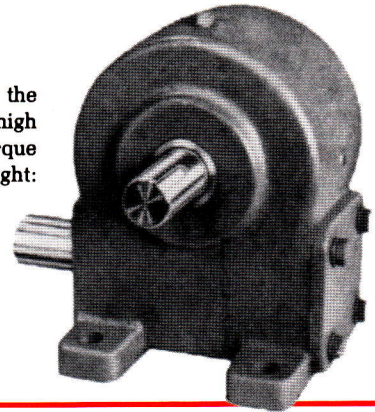
* Looking at cover side

Rugged Cast Iron Housing

FOOT MOUNTED



A hardened, ground worm drives the centrifugally cast bronze gear for high efficiency and long life. Output torque from 918 to 2,868 inch pounds. Weight: 30 pounds.



Cast Iron Gear Also Available..

INPUT RPM	5:1 RATIO							10:1 RATIO							20:1 RATIO						
	25	50	100	350	540	1125	1725	25	50	100	350	540	1125	1725	25	50	100	350	540	1125	1725
Output Torque (inch-pounds)	2256	2224	2161	1865	1654	1161	918	2658	2625	2555	2210	1966	1368	1094	2868	2828	2747	2363	2094	1459	1154
Input H.P.	.23	.45	.84	2.40	3.21	4.55	5.49	.17	.31	.58	1.60	2.10	2.89	3.50	.13	.23	.41	1.05	1.35	1.79	2.09
Output H.P.	.18	.35	.69	2.07	2.84	4.15	5.10	.11	.21	.41	1.23	1.68	2.44	3.04	.06	.11	.22	.66	.90	1.30	1.60
Efficiency %	76	79	81	86	88	91	92	63	66	69	76	80	84	86	45	49	53	62	66	72	76
Input O.H.L. (pounds at center of keyway)	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450	450
Input Axial Thrust (pounds)	2309	1846	1474	988	869	713	633	2361	1898	1524	1032	908	741	655	2393	1931	1558	1062	936	760	671
Output O.H.L. (pounds at center of keyway)	750	750	750	750	703	579	515	750	750	750	750	744	608	537	750	750	750	750	750	627	553
Output Axial Thrust (pounds)	2307	1844	1472	987	868	712	632	2359	1896	1523	1031	907	741	654	2392	1929	1557	1062	935	760	670

All ratings based on Class I Service factor.

MODEL NUMBERS

GEAR RATIO	SHAFT ARRANGEMENT AND ROTATION									
	TYPE AR	TYPE BR	TYPE CR	TYPE DR	TYPE ER	TYPE FR	TYPE GR	TYPE HR	TYPE JR	
5:1	418-1	418-2	418-3	418-4	418-5	418-6	418-7	418-8	418-9	
10:1	418-19	418-20	418-21	418-22	418-23	418-24	418-25	418-26	418-27	
20:1	418-37	418-38	418-39	418-40	418-41	418-42	418-43	418-44	418-45	

* Looking at cover side

Rugged Cast Iron Housing

A hardened, ground worm drives the centrifugally cast bronze gear for high efficiency and long life. Output torque from 5,431 to 14,183 inch pounds. Weight: 65 pounds.

Cast Iron Gear Also Available.

*Other Shaft Diameters Available.

INPUT RPM	25:1 RATIO							50:1 RATIO						
	25	50	100	350	540	1125	1725	25	50	100	350	540	1125	1725
Output Torque (inch-pounds)	14183	14006	13629	11892	10487	7301	5841	13494	13305	12926	11115	9853	6863	5431
Input H.P.	.36	.67	1.24	3.43	4.49	6.17	7.46	.24	.43	.77	1.99	2.55	3.37	3.94
Output H.P.	.23	.44	.86	2.64	3.59	5.21	6.49	.10	.21	.41	1.23	1.69	2.45	3.02
Efficiency %	63	66	69	77	80	84	86	45	49	53	62	66	72	76
Input O.H.L. (pounds at center of keyway)	375	375	375	375	375	375	375	375	375	375	375	375	375	375
Input Axial Thrust (pounds)	2191	1737	1375	912	806	673	602	2289	1835	1471	997	880	725	643
Output O.H.L. (pounds at center of keyway)	900	900	900	900	900	900	900	900	900	900	900	900	900	900
Output Axial Thrust (pounds)	3396	3510	3641	2562	2287	1992	1816	4030	4144	4260	3998	3546	2950	2633

All ratings based on Class I Service factor.

MODEL NUMBERS

GEAR RATIO	SHAFT ARRANGEMENT AND ROTATION									
	TYPE AR	TYPE BR	TYPE CR	TYPE DR	TYPE ER	TYPE FR	TYPE GR	TYPE HR	TYPE JR	
25:1	460-47	460-48	460-49	460-50	460-51	460-52	460-53	460-54	460-55	
50:1	460-65	460-66	460-67	460-68	460-69	460-70	460-71	460-72	460-73	

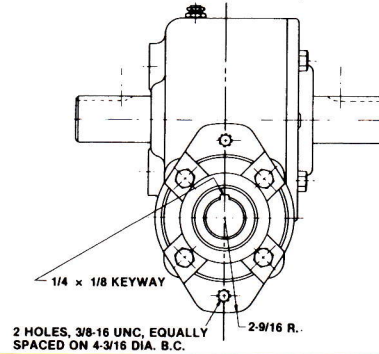
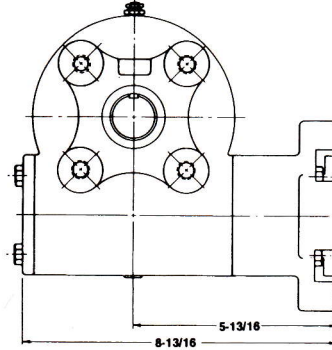
* Looking at cover side

WORM GEAR REDUCERS HYDRAULIC MOTOR DRIVEN

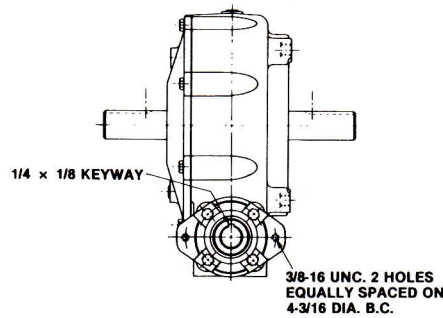
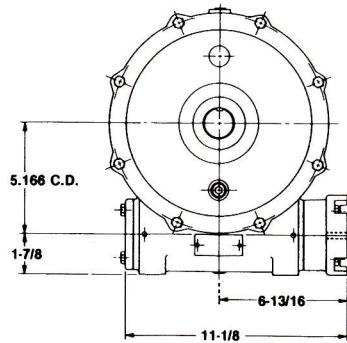
Note: Performance data and installation dimensions are on previous pages.

Two Bolt Type S.A.E. Input Flange

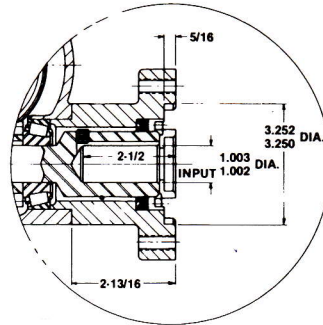
MODELS 412 and 418 SAE 2 Bolt "A" Flange



MODEL 460



Typical Input Flange Dimensions All Models SAE 2 Bolt "A" Flange



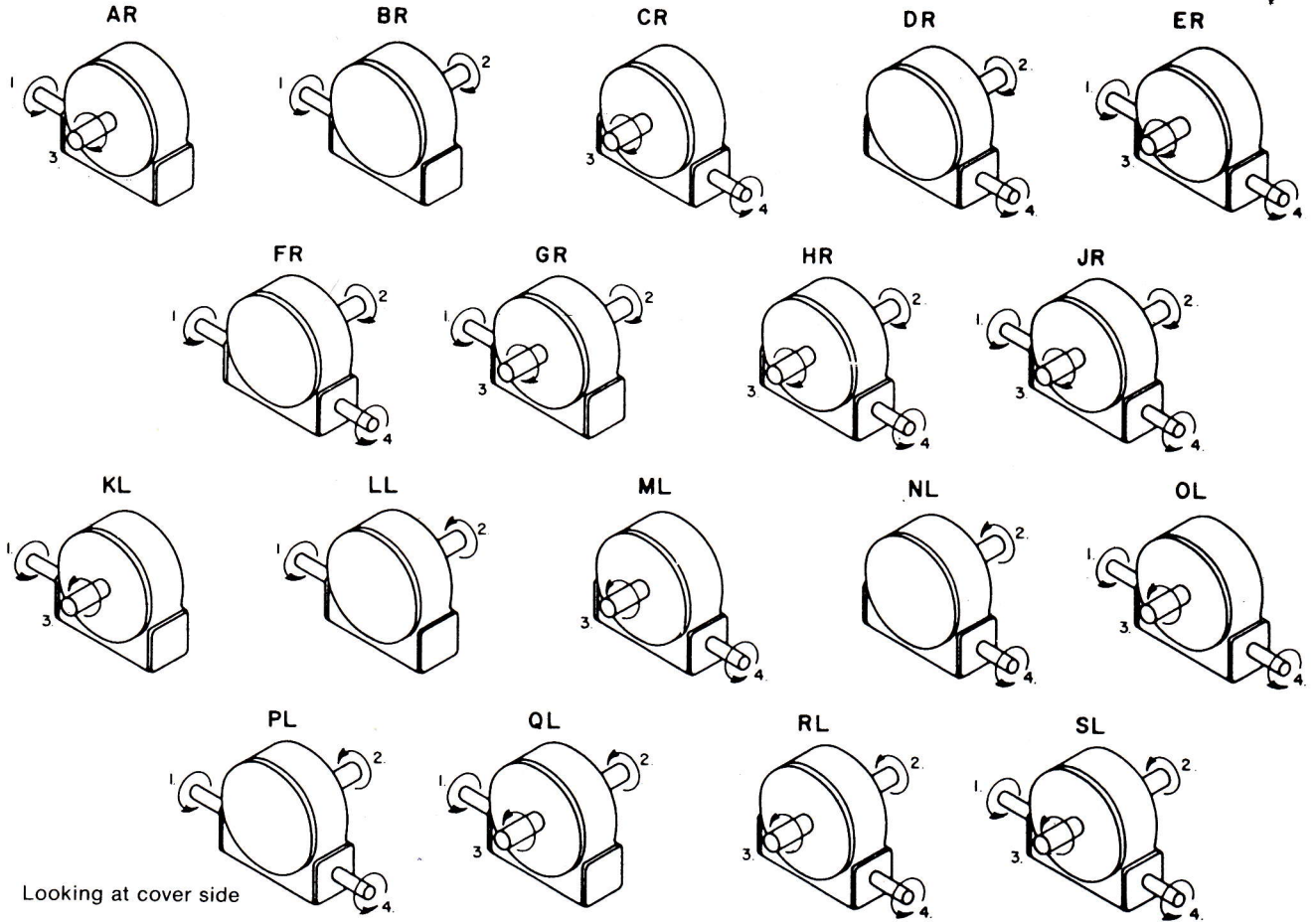
Other input flanges available in quantity on a special order basis.

MODEL NUMBERS		SHAFT ARRANGEMENT AND ROTATION					
		TYPE AR *	TYPE BR *	TYPE CR *	TYPE DR *	TYPE GR *	TYPE HR *
GEAR TYPE	GEAR RATIO						
412	5:1 10:1 20:1	412-142 412-148 412-149	412-147 412-154 412-118	412-140 412-138 412-150	412-133 412-129 412-132	412-143 412-151 412-152	412-131 412-153 412-128
418	5:1 10:1 20:1	418-136 418-133 418-110	418-140 418-112 418-111	418-141 418-142 418-128	418-143 418-126 418-115	418-144 418-145 418-109	418-116 418-118 418-146
460	25:1 50:1	460-84 460-102	460-85 460-103	460-86 460-104	460-87 460-152	460-88 460-106	460-91 460-109

* Looking at cover side

WORM GEAR SHAFT ROTATION

Choice of Shaft Arrangements and Rotations



Looking at cover side

WHEN ORDERING, please furnish our Sales Engineering Department with the following information: (1) Model Number, (2) Bronze or Cast Iron Gear, (3) Ratio, (4) Type of Shaft Arrangement, (5) Flange or Foot Mount.

Mounting position of unit for proper location of breather, oil level check and drain plugs. Op-

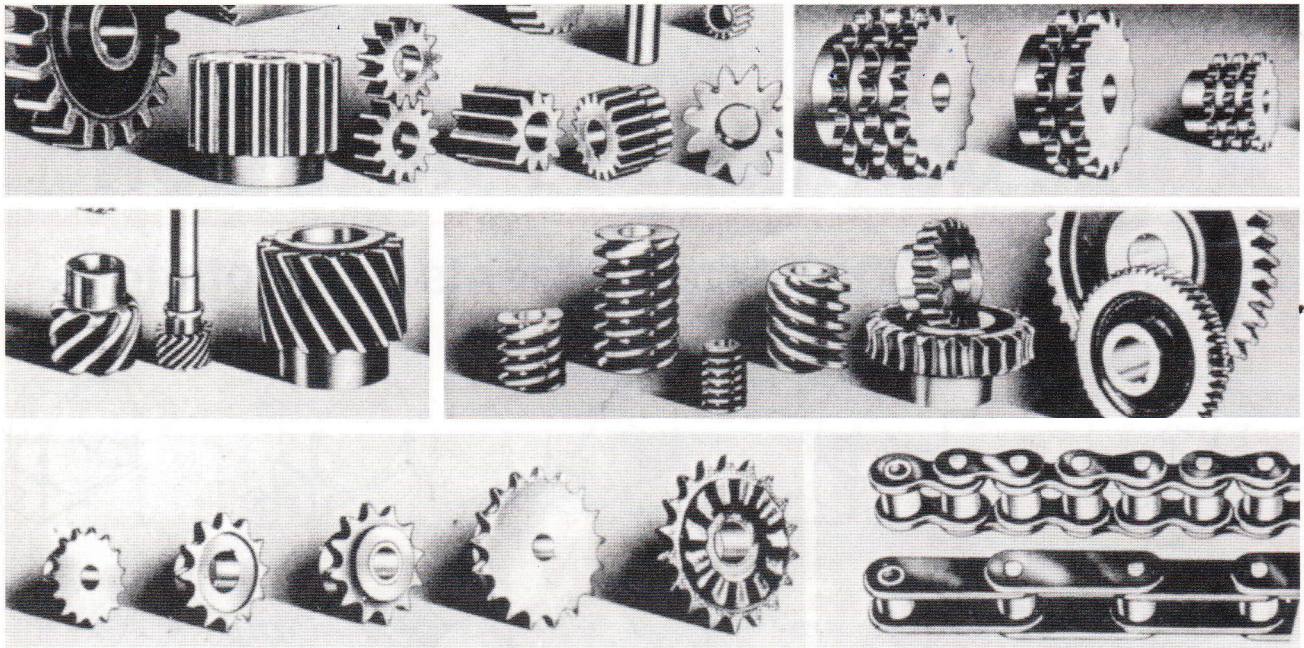
tional grease fittings may be required for proper lubrication.

For special modifications and recommendations to meet your design, contact Sales Engineer Department.

All inquiries will be given immediate attention.

WARRANTY

Dalton Gear Co. warrants products to be free from defects in material and workmanship for one year from date of shipment. The Company will, at its discretion, repair, replace, or issue credit for, any item found to be defective upon inspection at the Dalton Gear factory in Minneapolis, with transportation charges prepaid by the buyer, if such item is returned within one year of date of shipment, provided further, any attempt by buyer to repair products furnished by Dalton Gear shall void any and all warranties. If inspection by Dalton Gear does not disclose any defects within the above warranties, Dalton Gear regular repair charges will apply. No person, agent or representative, is authorized to give any warranty or make any representation contrary to the foregoing. Under no circumstances will the Company be liable for any loss, damage, expense or consequential damage at any time arising in connection with the use, inability to use, mis-use or mis-application of Dalton Gear products. DALTON GEAR MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, WHETHER STATUTORY OR OTHERWISE, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

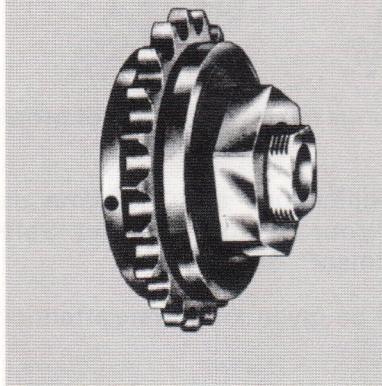


*Other quality **DALTON**® products*

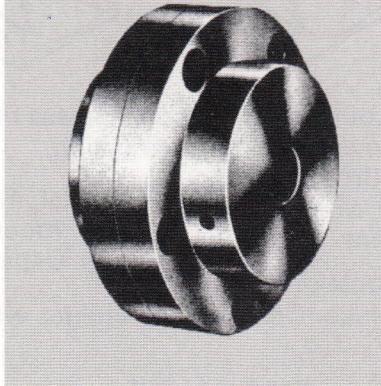
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OSD (torque limiter)



RIGID STEEL COUPLING



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