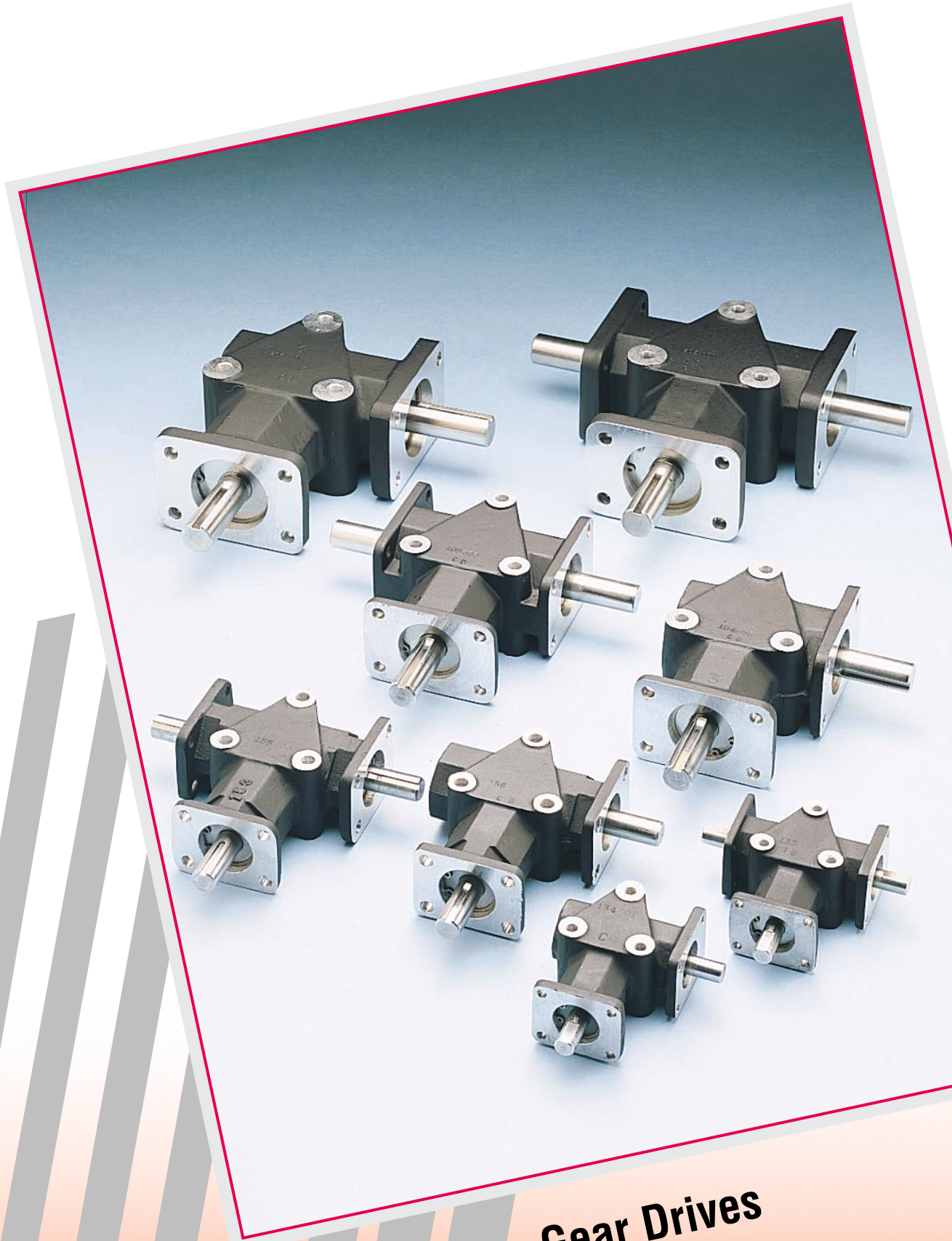


////// ZERO-MAX[®]



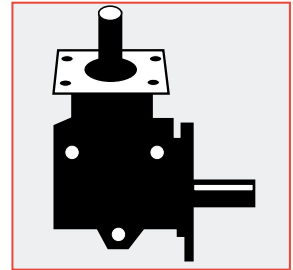
Gear Drives

Table of Contents

Crown Right Angle Gear Drives

Designed for dependable, economical transfer of speed or power, these drives are compact and feature efficient, quiet operating spiral bevel gears. Available in 1:1 and 2:1 speed ratios and two and three-way versions, Crown Right Angle Gear Drives are ideal for all machine applications. A wide variety of shaft styles is available as well as specially designed units to handle most applications.

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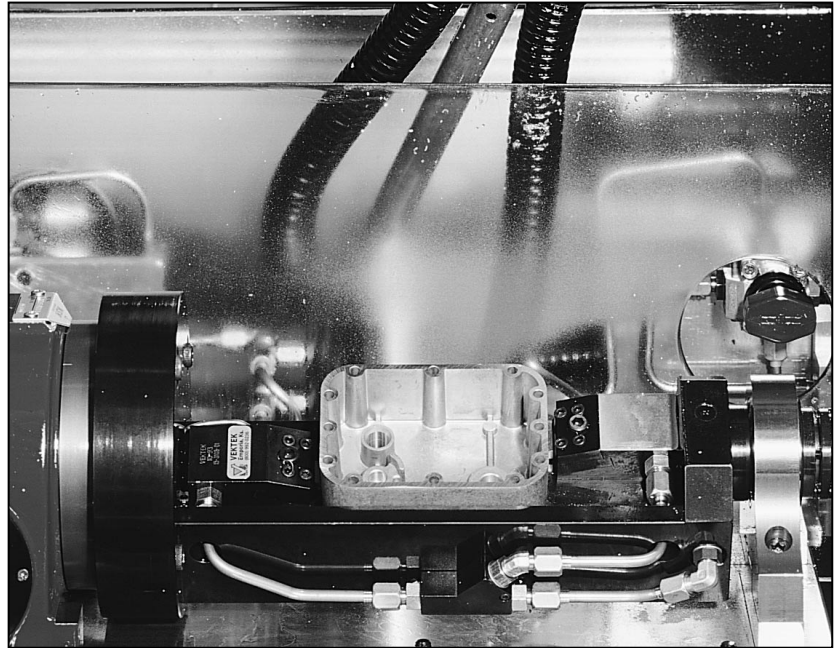
Phone Toll Free In The U.S. 1-800-533-1731 **or** 763-546-4300 **FAX** 763-546-8260

Thousands of Quality Zero-Max Products Are Used Every Second, Every Day, Somewhere In The World

For nearly half a century, Zero-Max has supplied industries around the world with millions of adjustable speed drives, right angle gear drives and linear actuators. These products are designed to accurately assist in controlling demanding machine processes.

From precise adjustable speed drives used in conveyors, to right angle gear drives used in large printing presses, to linear actuators used in special machines to make styrofoam--there are Zero-Max products working hard and dependably every second of every day.

Large and small companies in most manufacturing industries have learned to depend on and trust Zero-Max motion control products.



Crown Right Angle Gear Drives

set the standard for 1:1 and 2:1 spiral bevel gear drives. Every component is precision machined, inspected and then carefully assembled. Crown Gear Drives are quiet in operation due to the special care taken in manufacturing and assembly.



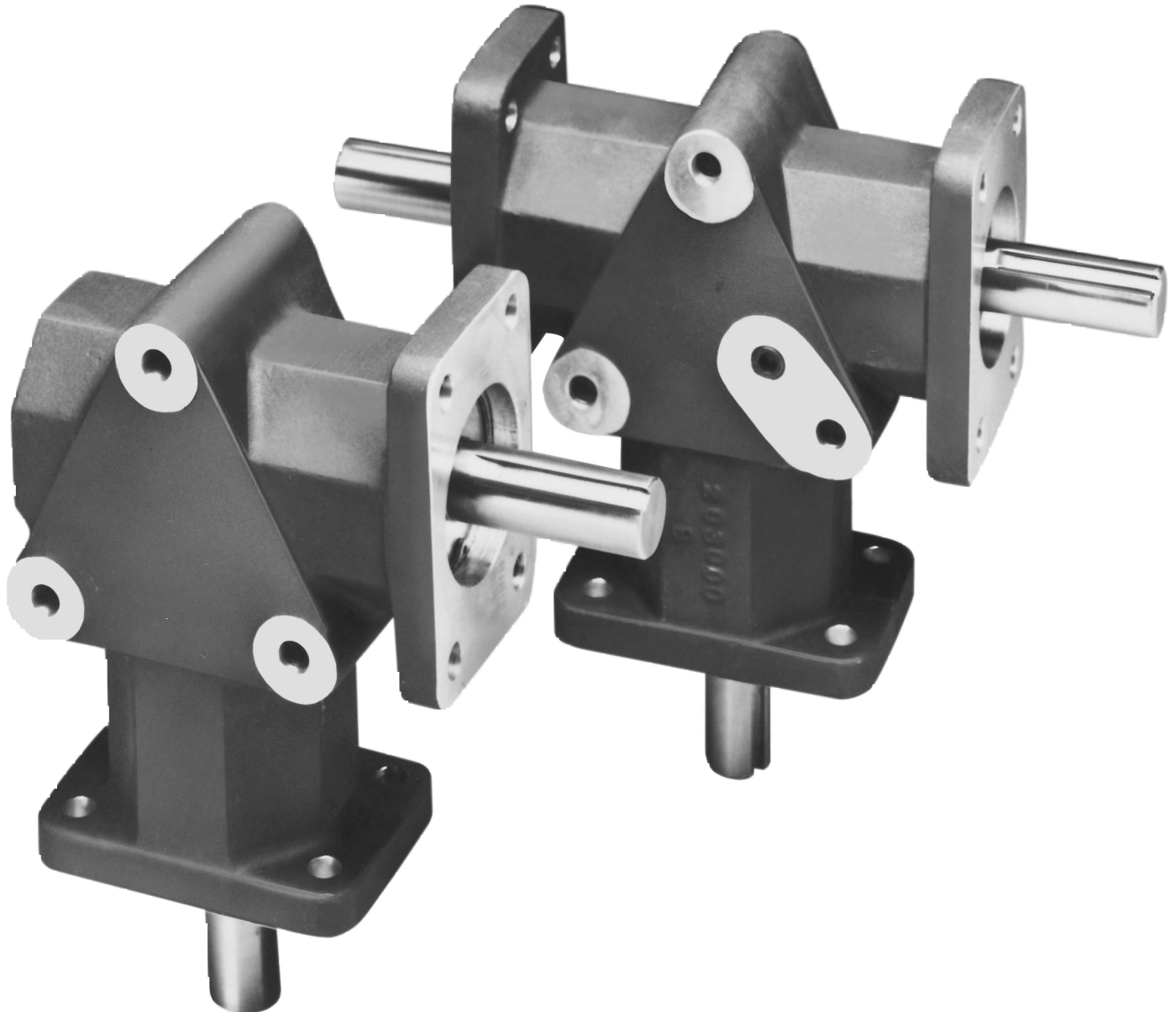
Crown Angle Gear Drives

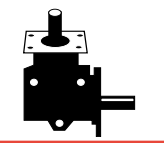
Crown right angle gear drives are compact, reliable spiral bevel gear drives designed for a dependable, economical transfer of speed or power.

These drives are constructed of high quality materials to help ensure maximum service life with a minimum of maintenance. They are compact and sealed from outside contaminants to provide smooth, quiet operation, even in harsh industrial environments.

Crown right angle gear drives are available in numerous standard models which include two and three-way versions and in 1:1 and 2:1 speed ratios. Standard Crown models are designed to meet a wide range of torque and shaft speed requirements.

Special units can be designed to your specifications with shaft extensions, special machining of shafts or case modifications.





How The Right Angle Gear Drive Works

Crown two and three-way right angle gear drives transmit power with quiet, dependable spiral bevel gears.

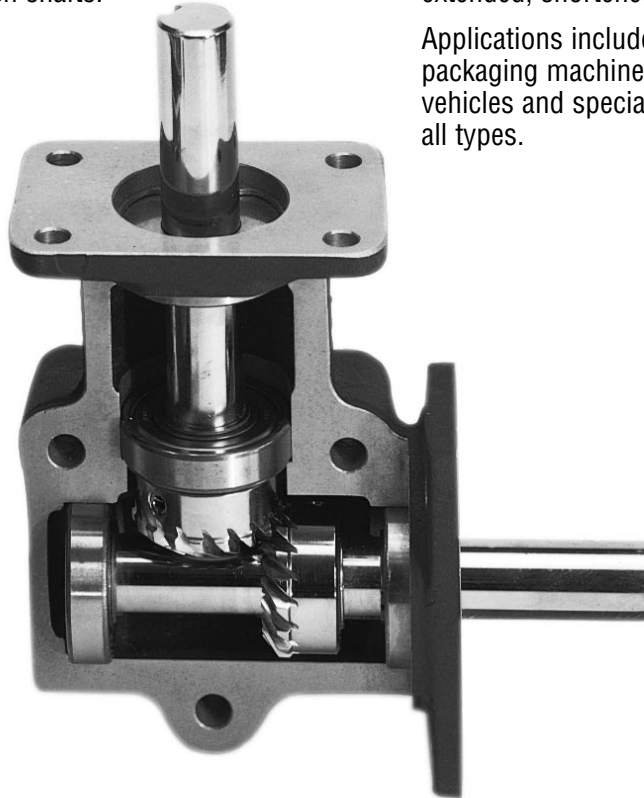
Crown right angle gear drives feature hardened spiral bevel gears and non-magnetic stainless steel shafts. They are compact and feature multiple mounting options. The fully enclosed design ensures that internal gears can't get out of alignment, jam up or become contaminated by debris.

The cast aluminum housing is designed for maximum strength and heat dissipation. The drives are available with shafts of 3/8, 1/2, 5/8 and 3/4 inch diameter in two and three-way units with both 1:1 and

2:1 ratios. Three-way units in 1:1 and 2:1 ratios are available with 1 inch shafts.

A wide variety of shafts are available including squared, splined, extended, shortened and stepped.

Applications include printing and packaging machines, off-highway vehicles and special machinery of all types.



Check These Crown Gear Drive Advantages

Features	Benefits
<ul style="list-style-type: none"> Double sealed bearings. Precision hardened and ground ball bearings. Non-magnetic stainless steel shafts. Aluminum alloy housing. Many standard types and sizes, plus special shafts. Multiple mounting positions. Proven design. 	<ul style="list-style-type: none"> Holds lubrication in, keeps dirt out. Smooth, quiet, long operating life. Corrosion resistant. Minimal maintenance. Light weight, maximum strength and heat dissipation. Get the exact model that fits your application needs. Simplifies design considerations. Proven in thousands of applications for over 40 years.

How To Select A Crown Right Angle Gear Drive

1. Determine Your Preferred Input/Output Ratio.

Standard ratios are 1:1 and 2:1. It is also possible to use a ratio of 1:2 by using shaft #2 as the input shaft. (See drawings on pages 22 and 23).

2. Designate Which Shafts Are To Be Input And Output Shafts.

This step is especially important to determine that no shaft will turn faster than 2000 RPM. If shaft #2 in the 2:1 ratio models is selected as the input shaft, it can turn at a maximum of 1000 RPM. In the 1:1 ratio models it makes no difference. However, the choice in either case will affect your mounting.

3. Be Certain That The Designated Output Shaft Has A Torque Capacity Greater Than Your Applications Load.

Consult the tables on the opposite page, and be sure to apply the service factors from the chart below.

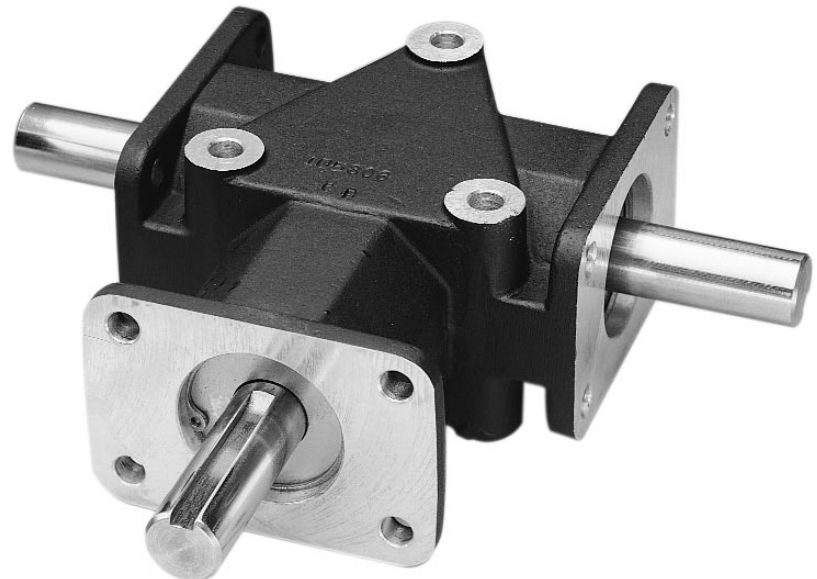
Service Factors				
The Service Factors listed below will cover most usual applications. Applications dealing with single and multi-cylinder internal combustion engines, extreme repetitive shock loads and high energy loads are not covered. For additional information, please contact the factory.				
Determine Prime Mover	Determine Duration of Service	Driven Machine Load Classifications		
		Uni-form	Mod. Shock	Heavy Shock
Electric Motor, Steam Turbine or Hydraulic Motor	Occasional 1/2 hr./day	.50	0.80	1.25
	Intermittent 3 hrs/day	0.80	1.00	1.50
	Over 3 hrs. up to 10 hrs/day	1.00	1.25	1.75
	Over 10 hrs/day	1.25	1.50	2.00

4. Choose Drive Type.

Use either 2-way or 3-way configuration.

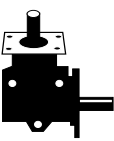
5. **Select The Correct Model Number.** On pages 22 and 23, select the correct model number; note that units with 3/8 inch shafts have flats and units with 1/2, 5/8, 3/4 and 1 inch shafts have standard keyways. Also note that 1 inch shaft models are available in 3-way type only.

6. **If modifications of shafts and/or housings are required for your application,** send a drawing and a description of the application to the factory.



Rated Horsepower And Torque Specifications

For Crown Gear Drives



1:1 Ratio Models

C138801—2-Way		C139801—3-Way	
Shaft RPM	Rated H.P.	Torque/In. Lbs.	
100	.04	25	
200	.08	25	
300	.12	25	
400	.16	25	
500	.20	25	
1000	.38	24	
2000	.67	21	

Ultimate static torque 160 in. lbs. calculated on 1,000 cycle basis.

C108806—2-Way		C109806—3-Way	
Shaft RPM	Rated H.P.	Torque/In. Lbs.	
100	.16	101	
200	.32	101	
300	.47	99	
400	.62	98	
500	.75	95	
1000	1.37	87	
2000	2.43	77	

Ultimate static torque 610 in. lbs. calculated on 1,000 cycle basis.

C803806—3-Way		
Shaft RPM	Rated H.P.	Torque/In. Lbs.
100	1.00	630
200	1.87	591
300	2.75	578
400	3.33	525
500	4.12	520
1000	7.75	488
2000	13.00	410

Ultimate static torque 5,100 in. lbs. calculated on 1,000 cycle basis.

C156806—2-Way		C157806—3-Way	
Shaft RPM	Rated H.P.	Torque/In. Lbs.	
100	.07	46	
200	.14	46	
300	.22	46	
400	.29	46	
500	.36	45	
1000	.71	45	
2000	1.27	40	

Ultimate static torque 275 in. lbs. calculated on 1,000 cycle basis.

C208806—2-Way		C209806—3-Way	
Shaft RPM	Rated H.P.	Torque/In. Lbs.	
100	.30	189	
200	.56	177	
300	.81	171	
400	1.06	167	
500	1.33	167	
1000	2.33	147	
2000	4.25	134	

Ultimate static torque 1,400 in. lbs. calculated on 1,000 cycle basis.

Models	Overhung Load Capacity (At mid-shaft)	Thrust Load Capacity
C134, C135, C138 & C139	25 Lbs.	50 Lbs.
C154, C155, C156 & C157	35 Lbs.	70 Lbs.
C104, C105, C108 & C109	50 Lbs.	100 Lbs.
C204, C205, C208 & C209	100 Lbs.	200 Lbs.
C803 & C805	160 Lbs.	320 Lbs.

2:1 Ratio Models

C134801—2-Way			C135801—3-Way	
Shaft 1 RPM	Shaft 2 RPM	Rated H.P.	Shaft 1 Rated Torque/ In. Lbs.	Shaft 2 Rated Torque/ In. Lbs.
100	50	.02	11	22
200	100	.04	11	22
300	150	.06	11	22
400	200	.07	11	22
500	250	.09	10	21
1000	500	.16	10	20
2000	1000	.30	9	18

Ultimate static torque 60 in. lbs. calculated on 1,000 cycle basis.

C204806—2-Way			C205806—3-Way	
Shaft 1 RPM	Shaft 2 RPM	Rated H.P.	Shaft 1 Rated Torque/ In. Lbs.	Shaft 2 Rated Torque/ In. Lbs.
100	50	.11	70	140
200	100	.22	70	140
300	150	.33	70	140
400	200	.44	70	140
500	250	.55	70	140
1000	500	.99	62	124
2000	1000	1.75	55	110

Ultimate static torque 540 in. lbs. calculated on 1,000 cycle basis.

C154806—2-Way			C155806—3-Way	
Shaft 1 RPM	Shaft 2 RPM	Rated H.P.	Shaft 1 Rated Torque/ Inch Lbs.	Shaft 2 Rated Torque/ Inch Lbs.
100	50	.03	20	39
200	100	.06	20	39
300	150	.09	20	39
400	200	.13	20	39
500	250	.16	20	39
1000	500	.30	19	37
2000	1000	.54	17	34

Ultimate static torque 130 in. lbs. calculated on 1,000 cycle basis.

C805806—3-Way				
Shaft 1 RPM	Shaft 2 RPM	Rated H.P.	Shaft 1 Rated Torque/ Inch Lbs.	Shaft 2 Rated Torque/ Inch Lbs.
100	50	.38	236	472
200	100	.75	236	472
300	150	1.00	210	420
400	200	1.33	210	420
500	250	1.67	210	420
1000	500	3.24	204	408
2000	1000	5.75	181	362

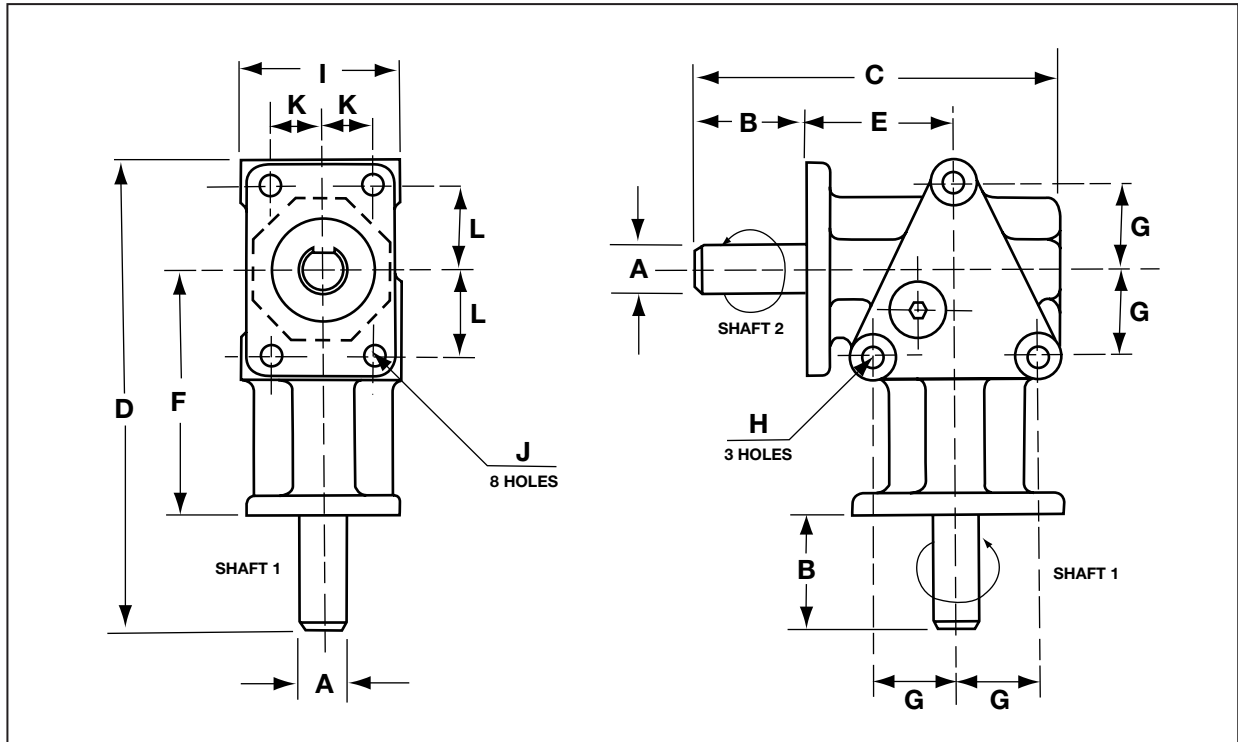
Ultimate static torque 2,170 in. lbs. calculated on 1,000 cycle basis.

C104806—2-Way			C105806—3-Way	
Shaft 1 RPM	Shaft 2 RPM	Rated H.P.	Shaft 1 Rated Torque/ Inch Lbs.	Shaft 2 Rated Torque/ Inch Lbs.
100	50	.06	34	68
200	100	.11	34	68
300	150	.16	34	68
400	200	.22	34	68
500	250	.27	34	68
1000	500	.51	32	64
2000	1000	.92	29	58

Ultimate static torque 210 inch lbs. calculated on 1,000 cycle basis.

Note: Maximum input or output shaft speed in 2,000 RPM at rated loads. For lighter duty higher speed applications, consult the factory. Input shaft may be driven in either direction.

Two-Way Crown Gear Drives



Dimensions

1:1 Ratio

Model	A	B	C	D	E	F	G	H	I	J	K	L
C138801	3/8	5/8	3-5/32	3-21/32	1.406	2.187	.656	.221 dia.	1.500	.166 dia.	.500	.656
C156806	1/2	1	4-3/8	4-15/16	1.875	2.875	.875	.281 dia.	1.750	.265 dia.	.562	.812
C108806	5/8	1-1/2	4-7/8	6-3/16	2.000	3.250	1.125	.281 dia.	2.125	.265 dia.	.687	1.125
C208806	3/4	1-3/4	6-3/8	7-15/16	2.875	4.375	1.375	.344 dia.	2.625	.328 dia.	.812	1.375

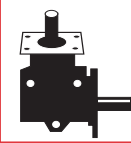
2:1 Ratio

C134801	3/8	5/8	3-5/32	3-21/32	1.406	2.187	.656	.221 dia.	1.500	.166 dia.	.500	.656
C154806	1/2	1	4-3/8	4-15/16	1.875	2.875	.875	.281 dia.	1.750	.265 dia.	.562	.812
C104806	5/8	1-1/2	4-7/8	6-3/16	2.000	3.250	1.125	.281 dia.	2.125	.265 dia.	.687	1.125
C204806	3/4	1-3/4	6-3/8	7-15/16	2.875	4.375	1.375	.344 dia.	2.625	.328 dia.	.812	1.375

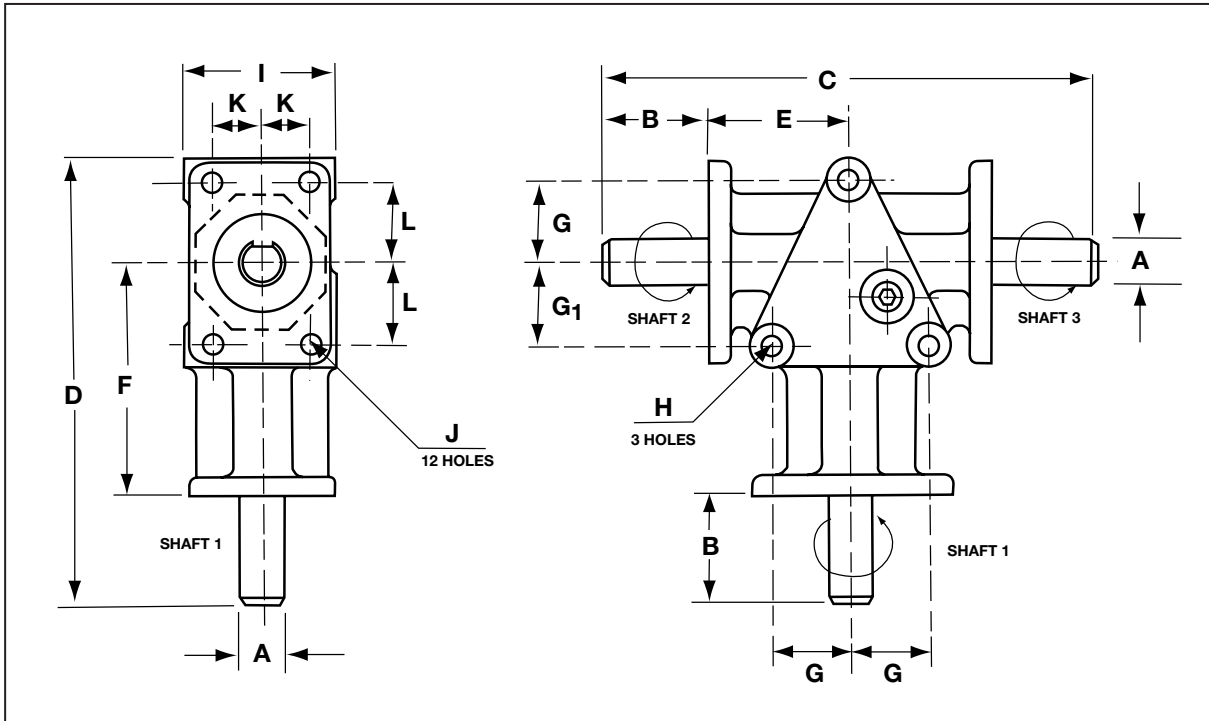
Keyway Dimensions

Units with 3/8 inch dia. shafts	1/32 Flat x 1/2 long	Units with 3/4 inch dia. shafts	3/16 x 3/32 x 1-1/2
Units with 1/2 inch dia. shafts	1/8 x 1/16 x 7/8	Units with 1 inch dia. shafts.....	1/4 x 1/8 x 2
Units with 5/8 inch dia. shafts	3/16 x 3/32 x 1-3/8		

The right to make engineering refinements on all products is reserved. Dimensions and other details subject to change. When dimensions are critical, detailed drawings should be obtained from the factory. Dimensions are in inches.



Three-Way Crown Gear Drives



Three-Way Crown Gear Drives Only

To obtain opposite shaft rotation for shafts 2 & 3 as shown, install (invert) Crown Drive with grease plug down.

Dimensions

1:1 Ratio

Model	A	B	C	D	E	F	G	G ₁	H	I	J	K	L
C139801	3/8	5/8	4-1/16	3-21/32	1.406	2.187	.656	.656	.221 dia.	1.500	.166 dia.	.500	.656
C157806	1/2	1	5-3/4	4-15/16	1.875	2.875	.875	.875	.281 dia.	1.750	.265 dia.	.562	.812
C109806	5/8	1-1/2	7	6-3/16	2.000	3.250	1.125	1.125	.281 dia.	2.125	.265 dia.	.687	1.125
C209806	3/4	1-3/4	9-1/4	7-15/16	2.875	4.375	1.375	1.375	.344 dia.	2.625	.328 dia.	.812	1.375
C803806	1	2-3/4	12	11	3.250	6.000	1.750	2.750	.406 dia.	4.000	3/8-16**	1.500	1.500

2:1 Ratio

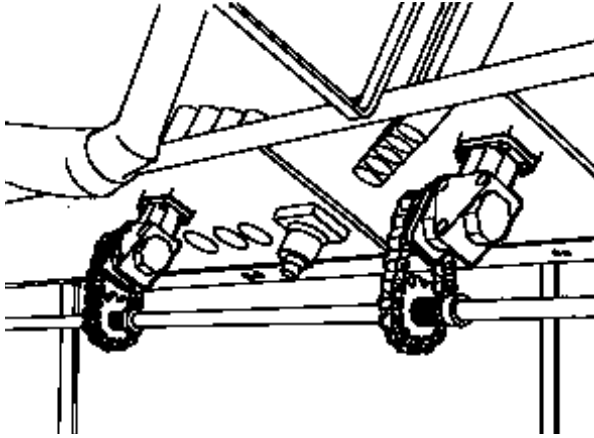
C135801	3/8	5/8	4-1/16	3-21/32	1.406	2.187	.656	.656	.221 dia.	1.500	.166 dia.	.500	.656
C155806	1/2	1	5-3/4	4-15/16	1.875	2.875	.875	.875	.281 dia.	1.750	.265 dia.	.562	.812
C105806	5/8	1-1/2	7	6-3/16	2.000	3.250	1.125	1.125	.281 dia.	2.125	.265 dia.	.687	1.125
C205806	3/4	1-3/4	9-1/4	7-15/16	2.875	4.375	1.375	1.375	.344 dia.	2.625	.328 dia.	.812	1.375
C805806	1	2-3/4	12	11	3.250	6.000	1.750	2.750	.406 dia.	4.000	3/8-16**	1.500	1.500

**Tapped hole, .81" deep.

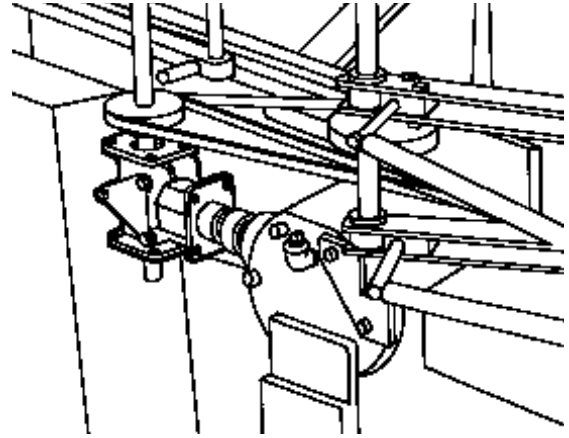
Keyway Dimensions

Units with 3/8 inch dia. shafts	1/32 Flat x 1/2 long	Units with 3/4 inch dia. shafts	3/16 x 3/32 x 1-1/2
Units with 1/2 inch dia. shafts.....	1/8 x 1/16 x 7/8	Units with 1 inch dia. shafts.....	1/4 x 1/8 x 2
Units with 5/8 inch dia. shafts	3/16 x 3/32 x 1-3/8		

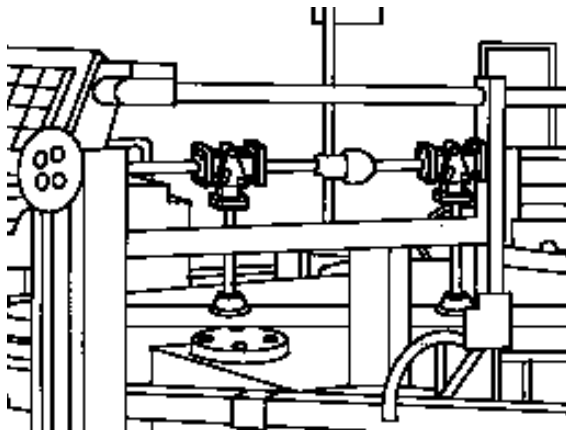
Crown Gear Applications



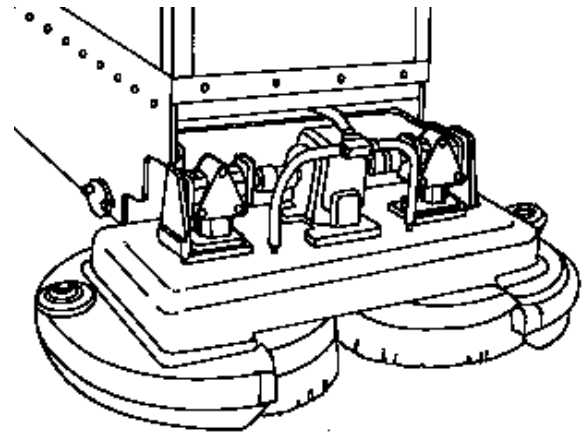
Agricultural Machinery



Labeling Machines



Packaging Machines

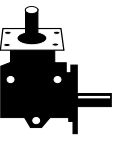


Industrial Sweepers

Blowers and Fans, Bottle and Can Unloaders and Unscramblers, Bottle Capping, Electroplating Machinery, Folding Machines, Food Processing Equipment, Foundry Machines, Fuel and Lubricant Test Equipment, Furnace Conveyors, Ground Radar Systems, Heat Treating Machinery, Case Openers, Packers, Sealers, Chemical Mixers, Control Devices, Conveyors, Damper Controls, Dielectric Heating, Door Operators, Industrial Dryers, Industrial Scrubbers, Sound Projectors, Speed Controls, Stokers, Test Equipment, Training Devices, Transfer Machines, Tumbling Barrels, Woodworking Machines, Broaching Machines and

Fixtures, Brushing Machinery, Buffing Machines, Ovens and Dryers, Packaging Machinery, Paper Mill Equipment, Paper Rewinders, Paper Wrapping Machines, Paper and Textile Finishing Machines, Photographic Processing Machines, Plastics Machinery, Knitting Machines, Lifting Doors, Marine Applications, Materials Handling and Processing Equipment, Milling Machines, Mixing Machinery, Power Transmission Equipment, Printing Machines, Pumps, Recording Equipment, Register Controls, Rotary Dyeing Machines, Rubber Machinery, Screening Machinery.

Crown Right Angle Gear Drive Specials



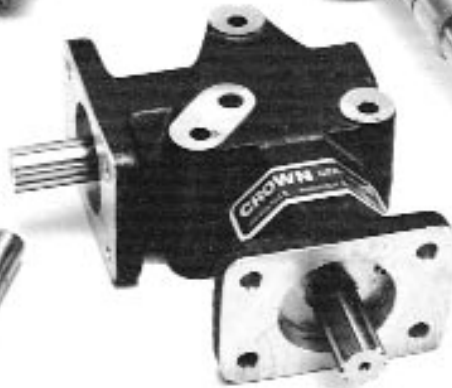
**Extended shaft
with splines.**



Squared shaft.



**Two-way Crown Gear Drive
with splined shafts.**



**Extended, stepped shaft
with keyway
and threaded end.**



**Extended shaft with
special keyway.**

Pictured are representative examples of special shaft modifications. If you have a system requiring a modified design for speed or power transfer, Zero-Max can help you. We welcome inquiries regarding special applications.

Additional Zero-Max® Motion Control Products



CD® Couplings

New patented open arm coupling design uses composite material in disc packs.



ServoClass® Couplings

Zero backlash, torsionally stiff, high misalignment servomotor couplings. 8 sizes, from 8 to 885 inch pound of torque.



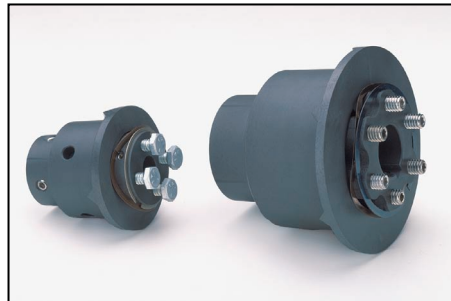
Schmidt Couplings

In-line, Offset and Elastomeric couplings suitable for shaft to shaft applications.



Torq-Tender® Couplings

Torque limiting couplings up to 3000 inch pounds with limit switch actuators.



H-TLC Torque Limiters

Corrosion resistant. Bores from .250" to 1.000". Torques from 4 to 500 in. lbs.



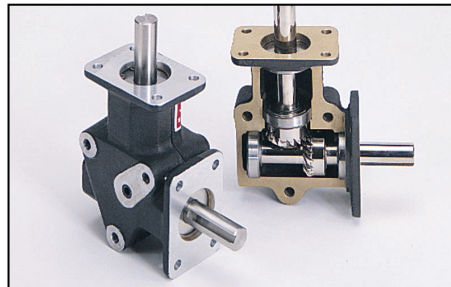
ETP® Shaft Bushings

Hydraulic principle for precise and fast installation. 26 sizes from 3/4" to 4".



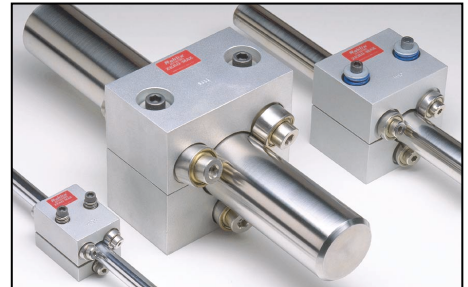
Posi-Lok® Shaft Bushings

Inch and Metric sizes to 35 mm. Nickel plating offers corrosion protection.



Crown Right Angle Gear Drives

Two and three way models with 1:1 and 2:1 ratios. Precise spiral bevel gears.



Roh'lix® Linear Actuators

Convert rotary motion into linear motion. Five models with 3/8" to 2" dia. shafts.

WARRANTY

Zero-Max, Inc. the manufacturer, warrants that for a period of 12 months from date of shipment it will repair, or at its option, replace any new apparatus which proves defective in material or workmanship, or which does not conform to applicable drawings and specifications approved by the manufacturer. All repairs and replacements shall be F.O.B. factory. All claims must be made in writing to the manufacturer.

In no event and under no circumstances shall manufacturer be liable for (a) damages in shipment; (b) failures or damages due to misuse, abuse, improper installation or abnormal conditions of temperature, dirt, water or corrosives; (c) failures due to operation, intentional or otherwise, above rated capacities, and (d) non-authorized expenses for removal, inspection, transportation, repair or rework. Nor shall manufacturer ever be liable for consequential and incidental damages, or in any amount greater than the purchase price of the apparatus.

Zero Max, Inc. reserves the right to discontinue models or to change specifications at any time without notice. No discontinuance or change shall create any liability on the part of Zero-Max, Inc. in respect to its products in the hands of customers or products on order not incorporating such changes even though delivered after any such change.

This warranty is in LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING (BUT NOT LIMITED TO) ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE TERMS OF THIS WARRANTY CONSTITUTE ALL BUYER'S OR USER'S SOLE AND EXCLUSIVE REMEDY, AND ARE IN LIEU OF ANY RIGHT TO RECOVER FOR NEGLIGENCE, BREACH OF WARRANTY, STRICT TORT LIABILITY OR UPON ANY OTHER THEORY. Any legal proceedings arising out of the sale or use of this apparatus must be commenced within 18 months of the date of purchase.

CAUTION: Rotating equipment must be guarded. Also refer to OSHA specifications and recommendations.

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