

BRAVO®  
Single Reduction Reducers

BRAVO® Worm - Worm  
Double Reduction

BRAVO® Helical - Worm  
Double Reduction

BRAVO® Accessory Kits

High Efficiency Helical - Inline  
Gear Reducers

High Efficiency Helical - Worm  
Gear Reducers

# Bravo! An Alternative For Machine

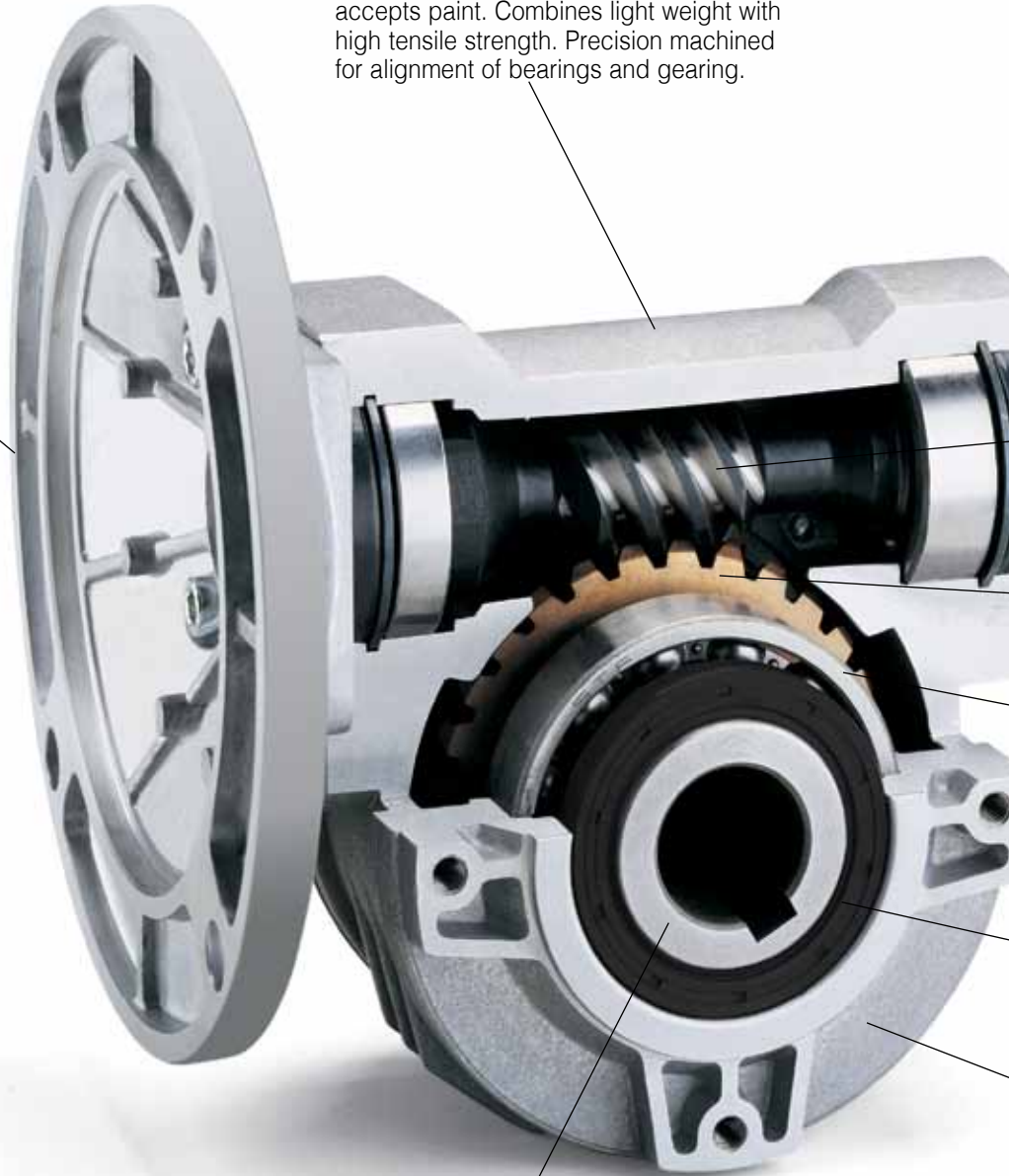
**Vent Free Design.\*\*** No breather or vents to leak! Factory lubricated for life with premium synthetic Mobil Glygoyle 460 (PAG) lubricant with an operation range of -25°F to +220°F (-32°C to +104°C).

**Single-piece aluminum alloy housing** is vacuum impregnated with Resinol RT (MIL-STD 276) for protection and sealing. No secondary finish required but readily accepts paint. Combines light weight with high tensile strength. Precision machined for alignment of bearings and gearing.

**NEMA C flange** with quill input accepts 56C, 143-5TC and 182-4TC motor frames.  
or  
**B5 & B14 IEC metric flange** options with quill input accepts D56, D63, D71, D80, D90, D100 and D112 motor frames.



**Bravo®, up to two-thirds lighter and one-third smaller than cast iron reducer of similar center distance!**



**Hollow output shaft mounting** is standard at no extra cost. Reduces total drive envelope size, weight and cost. Solid shaft single and double output is available.

# Designers



**Oversized bearings** support positively-retained, high speed shaft for higher shock load capacity — ideal for frequent starting and reversing applications. Premium, Nitrile® high temperature seals each end.

**Single-piece alloy steel input shaft and worm shaft.** High helix angle worm is case-hardened (Rc 58-60), ground, teeth are profiled and radiused, for noise reduction and enhanced efficiency.

**Bronze alloy worm gear** is centrifugally cast onto an iron hub for maximum strength, lubricity and superior life.

**Oversized bearings** for radial load capability and maximum hollow output shaft diameters.

**Premium, high-temperature Nitrile®** output seals.

**Impregnated and machined bearing caps** with exterior machined surfaces mate to a variety of mounting accessories. Extra-deep thread engagement provided for greater support strength. Zinc plated hardware. No need to remove bearing covers to mount/change accessory kits.

\*\* 512 Series is filled with synthetic oil or equivalent. Operating temperature range of 512 Series is +5°F to +220°F (-15°C to +104°C)

## Start with one of four basic units...

Motorized HMQ



Motorized BMQ



Non-Motorized H



Non-Motorized B



## and add mounting accessories...

Reaction Arm R



Horizontal T Base



FL Flange (Long)



F Flange (Short)

## To create thousands of gear and GEAR+MOTOR™ combinations



www.grovegear.com

**GROVE GEAR**

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BRAVO®

Double Reduction  
BRAVO® Worm - Worm

Double Reduction  
BRAVO® Helical - Worm

Accessory Kits  
BRAVO®

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## Hollow Output Shaft Mounted

MOTORIZED  
QUILL INPUT

**HMQ**



**RHMQ**



**FHMQ**



Ratings: Pages 306-310  
Dimensions: Page 312

Ratings: Pages 306-310  
Dimensions: Page 314

Ratings: Pages 306-310  
Dimensions: Page 316

NON-  
MOTORIZED  
SOLID INPUT  
SHAFT

**H**



**RH**



**FH**



Ratings: Pages 306-310  
Dimensions: Page 312

Ratings: Pages 306-310  
Dimensions: Page 314

Ratings: Pages 306-310  
Dimensions: Page 316

## SOLID OUTPUT SHAFT

MOTORIZED  
QUILL INPUT

**BMQ**



**RMQ**



**FMQ**



Ratings: Pages 306-310  
Dimensions: Page 313

(♣Non-Standard Option)  
Ratings: Pages 306-310  
Dimensions: Page 315

Ratings: Pages 306-310  
Dimensions: Page 317

NON-  
MOTORIZED  
SOLID INPUT  
SHAFT

**B**



**R**



**F**



Ratings: Pages 306-310  
Dimensions: Page 313

(♣Non-Standard Option)  
Ratings: Pages 306-310  
Dimensions: Page 315

Ratings: Pages 306-310  
Dimensions: Page 317

## MOUNTING ACCESSORIES

Select the appropriate mounting accessories from this wide variety of options.



**REACTION  
ARM R**



**F FLANGE  
(SHORT FLANGE)**

♣ Non-Standard Option assemblies may be useful in certain applications. Please contact Factory with application details.

**FLHMQ**



Ratings: Pages 306-310  
Dimensions: Page 318

**THMQ**



(⚡Non-Standard Option)  
Ratings: Pages 306-310  
Dimensions: Page 320

**UHMQ**



(⚡Non-Standard Option)  
Ratings: Pages 306-310  
Dimensions: Page 322

**JHMQ**



(⚡Non-Standard Option)  
Ratings: Pages 306-310  
Dimensions: Page 324

**FLH**



Ratings: Pages 306-310  
Dimensions: Page 318

**TH**



(⚡Non-Standard Option)  
Ratings: Pages 306-310  
Dimensions: Page 320

**UH**



(⚡Non-Standard Option)  
Ratings: Pages 306-310  
Dimensions: Page 322

**JH**



(⚡Non-Standard Option)  
Ratings: Pages 306-310  
Dimensions: Page 324

**FLMQ**



Ratings: Pages 306-310  
Dimensions: Page 319

**TMQ**



Ratings: Pages 306-310  
Dimensions: Page 321

**UMQ**



(⚡Non-Standard Option)  
Ratings: Pages 306-310  
Dimensions: Page 323

**JMQ**



Ratings: Pages 306-310  
Dimensions: Page 325

**FL**



Ratings: Pages 306-310  
Dimensions: Page 319

**T**



Ratings: Pages 306-310  
Dimensions: Page 321

**U**



(⚡Non-Standard Option)  
Ratings: Pages 306-310  
Dimensions: Page 323

**J**



Ratings: Pages 306-310  
Dimensions: Page 325



**FL FLANGE**  
(LONG FLANGE)



**HORIZONTAL BASE**  
(WORM OVER ASSEMBLY)



**HORIZONTAL BASE**  
(WORM UNDER ASSEMBLY)



**HORIZONTAL BASE**  
(VERTICAL INPUT SHAFT)

## Grove Gear 500 Series Gear Reducer Model Number Nomenclature

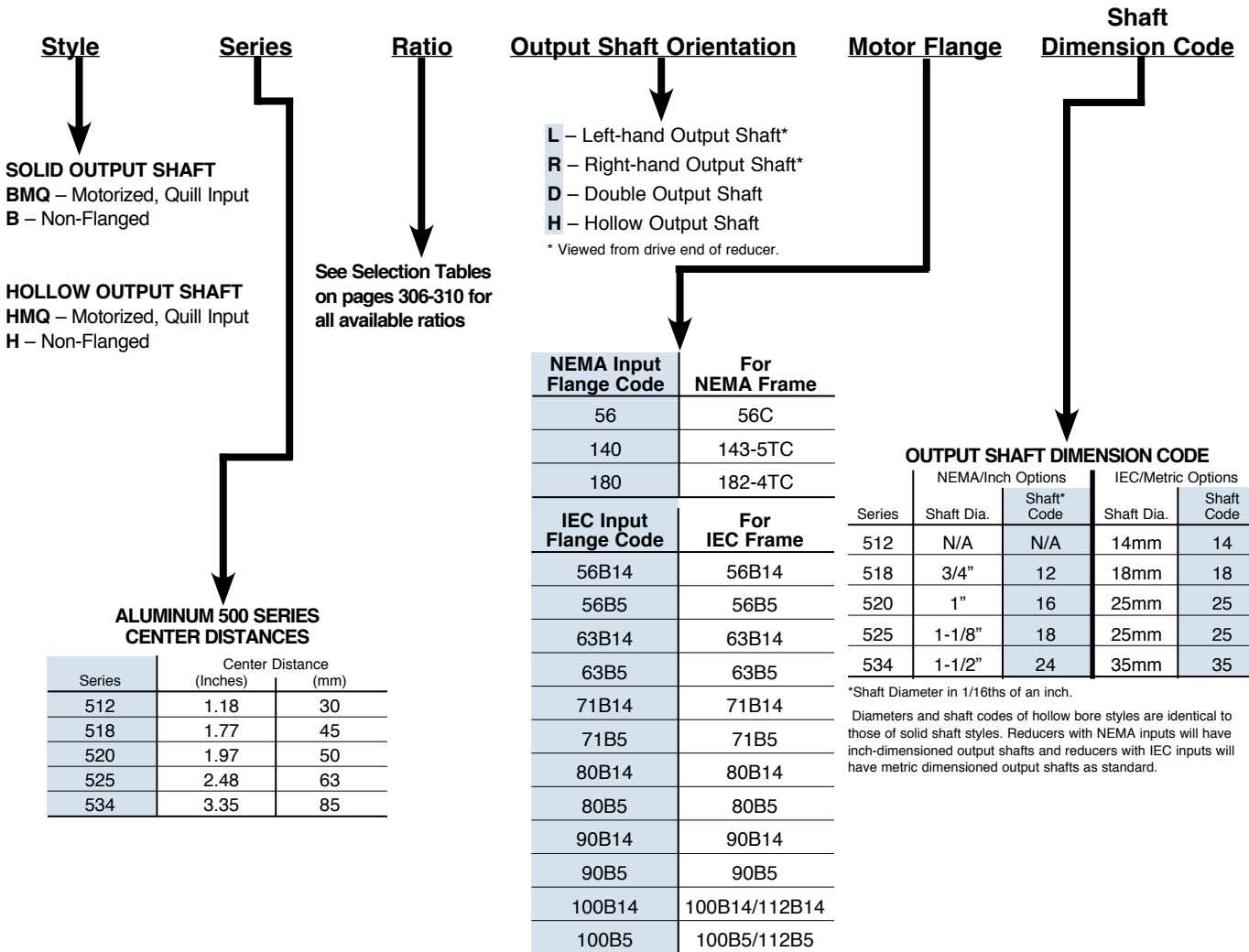
All stock and custom 500 series reducers are identified by a model number. The model number appears on the nameplate and describes pertinent features of the reducer. An example follows, along with a listing of the various letters and positions used.

NOTE: All reducers also have a catalog number—for example W5180001. Reducers and renewal parts should be ordered by catalog number. If a stock reducer has been factory modified by the addition of an optional base for example, the modification number T518, for example, is stamped in the blank column of the nameplate. Accessories that are field installed will not be noted on the nameplate.

Catalog numbers 5000 (for example, W5185000) and higher are custom reducers manufactured for a specific application. The machinery or equipment manufacturer should be contacted for replacement reducers. Renewal parts can be ordered from Grove Gear by catalog number.

## TYPICAL NAMEPLATE

GROVE GEAR			
MAX INPUT HP @ 1750 RPM	1.49	OUTPUT TORQUE (IN-LBS)	595
DESC.	HMQ52014H5616	RATIO	14:1
CATALOG NO.		DATE CODE	A04
GROVE GEAR UNION GROVE, WI 53182		MOD	



## Sample Model Number

### Solid Shaft

Motorized Quill Input, Single Reduction Reducer, 1.77" Center Distance, 14:1 Ratio, Left Hand Output Shaft, and 5/8" Input Bore with NEMA 56C Flange.

<b>BMQ</b>	<b>518</b>	<b>14</b>	<b>L</b>	<b>56</b>	<b>12</b>
Style	Series	Ratio	Mounting Assembly	Motor Input Flange	Shaft Code

### Hollow Shaft

Motorized Quill Input, Single Reduction Reducer, 1.77" Center Distance, 14:1 Ratio, 3/4" Hollow Output Shaft, and 5/8" Input Bore with NEMA 56C Flange.

<b>HMQ</b>	<b>518</b>	<b>14</b>	<b>H</b>	<b>56</b>	<b>12</b>
Style	Series	Ratio	Mounting Assembly	Motor Input Flange	Shaft Code