

MAXTORQUE Worm Gear Products

High-performance manual, motorized, and subsea valve solutions

APPLICATIONS

Valve operations

BENEFITS

- 75% less work required
- Reduced turns, handwheel size, and rim pull
- Reduced stroke time
- Improved HSE profile
- Reduced need for actuators
- Smaller motor-operated ball valve (MOV) packages that reduce cost and weight
- Quick stroke times where required
- Near-zero backlash for process control
- Ingress protection (IP) rating of 68
- Increased durability

FEATURES

- Efficiency that is 2 to 2.5 times that of commodity gears
- Self-locking design
- Double-enveloping gear set
- Unique tooth design that reduces microscopic stresses
- Superior sealing system
- Torque handling capability 7,200,000 in-lbf

The Cameron portfolio of MAXTORQUE* high-performance valve products includes worm gears that feature patented autolocking technology. These high-performance worm gear solutions include the self-locking characteristics of conventional gearboxes, which means that less work is required to actuate valves, leading to an improved HSE profile and worker efficiency on manual valves and smaller actuators on motorized valves.

High efficiency

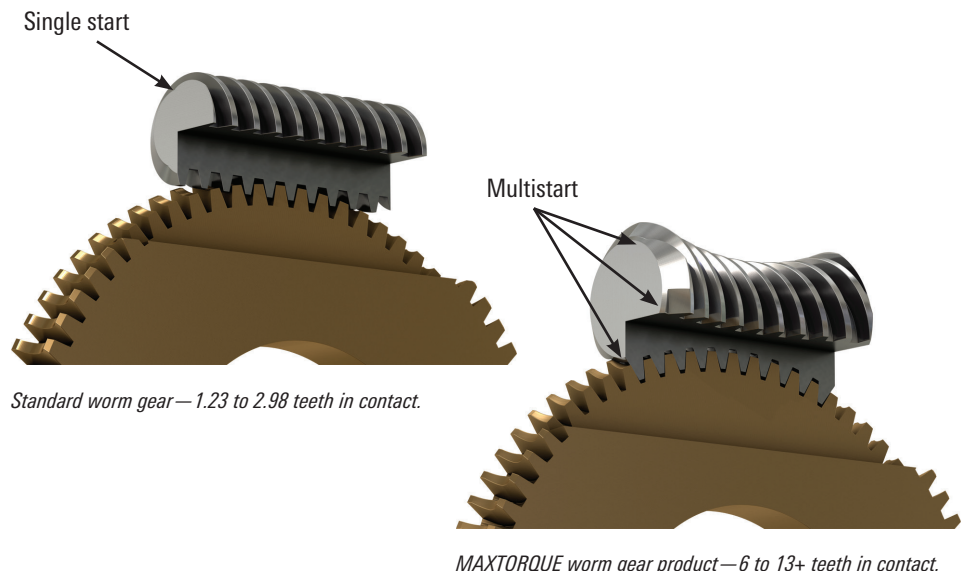
Featuring a double-enveloping worm design, MAXTORQUE worm gear products

- reduce turns to close by up to 75%, increasing operational efficiency
- reduce rim pull, improving worker HSE profile
- increase closing speed by up to 75%, improving process control
- reduce required input torque, minimizing cost of actuation packages
- reduce weight and piping loads with smaller actuation packages
- reduce backlash, minimizing seepage around the ball or disc and reducing fluttering.

Durability in design

MAXTORQUE worm gear products are engineered with

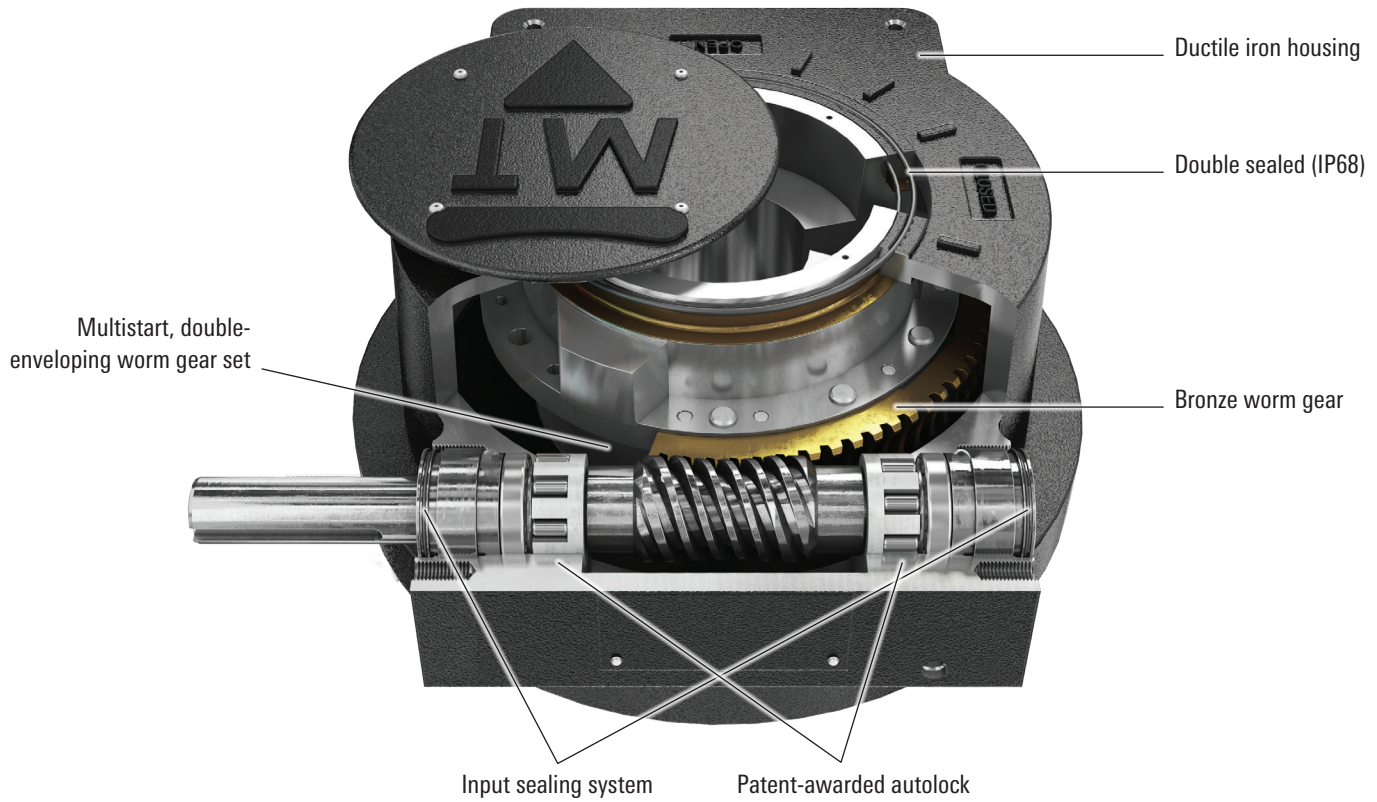
- 6 to 13+ teeth in contact compared with 1.23 to 2.98 for standard gears, which produces higher torque capability and significantly less backlash
- novel tooth shape and high-contact ratio that produce low contact and bending stress
- bronze alloy gear for increased lubricity, strength, and corrosion resistance
- variety of housing material options
- high-graphite-based grease for smooth operation
- roller bearings versus traditional needle bearings
- bronze bearing on output
- double-sealing O-ring system that reduces fluid and particulate ingress into the gear.



Standard worm gear—1.23 to 2.98 teeth in contact.

MAXTORQUE worm gear product—6 to 13+ teeth in contact.

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| Valve Size, in | Rated Torque, in.lbf | Handwheel Diameter, in | Ratio | Mechanical Advantage | Break Rim Pull, lbf | Turns to Close | | Total Turn Reduction |
|----------------|----------------------|------------------------|-------|----------------------|---------------------|------------------------------|-----------------------|----------------------|
| | | | | | | MAXTORQUE Worm Gear Products | Conventional Products | |
| 16 | 75,000 | 24 | 150 | 82 | 55 | 38 | 112.5 | 75 |
| 18 | 100,000 | 24 | 152 | 82 | 75 | 38 | 112.5 | 75 |
| 20 | 200,000 | 24 | 156 | 106 | 76 | 39 | 190 | 151 |
| 24 | 200,000 | 36 | 156 | 106 | 76 | 39 | 190 | 151 |
| 30 | 400,000 | 36 | 312 | 190 | 77 | 78 | 297 | 219 |
| 36 | 700,000 | 36 | 470 | 285 | 75 | 118 | 297 | 180 |
| 40 | 700,000 | 36 | 730 | 444 | 76 | 183 | 428 | 246 |

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