

Valve Actuators and Accessories: Worm Gear Actuators

Custom



- Designed for quarter-turn valves, dampers, & other applications requiring a self-locking mechanism.
- Standard units available with mounting dimensions per the unit specification sheets provided in your catalog.
- Custom machining for specific mounting patterns, stem configurations, input shaft lengths, materials of construction, and input drive options.
- Many units available in 180 and 360° options.

DELIVERING SERVICES USING LEADING TECHNOLOGIES.

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Worm Gear Actuators

Sizing a Worm Gear Actuator

To properly size a worm gear actuator, the following information is required:

- Maximum torque the actuator will be required to produce (normally referred to as “break torque”)
- Valve stem configuration (dimensions such as diameter, drive type – i.e. keyway, flatted shaft, square, etc.)
- Keyway positions and/or drive orientation (see keyway orientation drawing on each specification sheet)
- Mounting bolt size, number of holes, and diameter of bolt circle
- Actuator grade or type of construction
- Input shaft orientation (Position I or Position II - see catalog specification sheets)
- Degrees of rotation (90, 180, 360)

Output Torques

DynaTorque worm gear operators are available with rated output torques from 1,500 to 140,000 inch lbs. and gear ratios from 30:1 to 360:1.

Exacting Quality

DynaTorque’s manufacturing philosophy is “Superior Quality” in every phase of the production process.

DynaTorque sources all material to a rigorous set of approval standards. All of our vendors must meet demanding quality specifications and delivery guarantees. Several pre-production and production process inspections guarantee the absolute quality and reliability of every part in a DynaTorque actuator.

Only a limited number of specialty firms throughout the world design and manufacture valve actuators. The quality of actuators varies substantially. Valve manufacturers today require higher quality, more innovative design, better materials, increased reliability, and timely delivery from their actuator suppliers.

DynaTorque manufactures valve actuators that rank among the world’s finest—carefully designed, tested, custom-manufactured to exacting tolerances, and delivered when promised.

Service Specifications

DynaTorque manufactures actuators to seven different service specifications that match the performance and application needs of valve users.

Commercial Grade: Features include iron housing, covers, and indicators; steel input shafts and worms; and hardened thrust washers.

AWWA Construction: These units have all the features of the commercial-grade units but are manufactured per the American Water Works Association specification.

Construction is suitable for aboveground or buried service applications. (For buried service, the unit indicator is removed and a non-moveable closure plate is attached.)

Industrial Construction: Generally for motorized service, this construction features a hardened worm wheel for increased cycle life. There is a mounting pattern at the unit-input face for attachment of DynaTorque’s motor flange. The unit-input shaft can be modified to adapt to motor output drives.

High Temperature: For units routinely subjected to high temperature, this construction features high-temperature/extreme-pressure grease and Viton™ seals.

Low Temperature: For units routinely subjected to low temperature, this construction features low-temperature grease and Nitrile seals.

Marinized Construction: This specification is for units frequently subjected to water or corrosive environments. It is appropriate for units submerged to a depth of 20 feet (6 meters) or less. The worm wheel is manganese bronze; the unit-input shaft and hardware are stainless steel. Unit stop bolts are sealed and the unit is coated with one shop coat of DynaTorque standard epoxy paint.

Subsea Construction: This construction is used for units to be submerged underwater to a depth of 400 feet (118 meters). For applications up to 5,000 feet, consult the factory. Seals are changed to accommodate the higher pressures associated with applications at these depths. Other modifications are made according to specific application requirements.

Worm Gear Actuators

Worm Gear Actuator Components

Housing/Cover: The actuator housing and cover provide a heavy-duty, durable, weatherproof enclosure to protect the unit gearing. Standard construction materials are aluminum or iron with optional stainless steel on some models (for stainless steel construction, see the back cover of this brochure).

Input Shafts: The input shaft provides torque transmission from the unit handwheel or 2" square nut to the worm. Standard input shafts are made of carbon steel with yellow zinc plating rated for 72-hour salt spray. Optional materials include stress-proof, high-carbon steel and various grades of stainless steel.

Worms: The unit worm transmits torque from the input shaft to the worm segment (output gear). Standard material is high-carbon steel heat-treated.

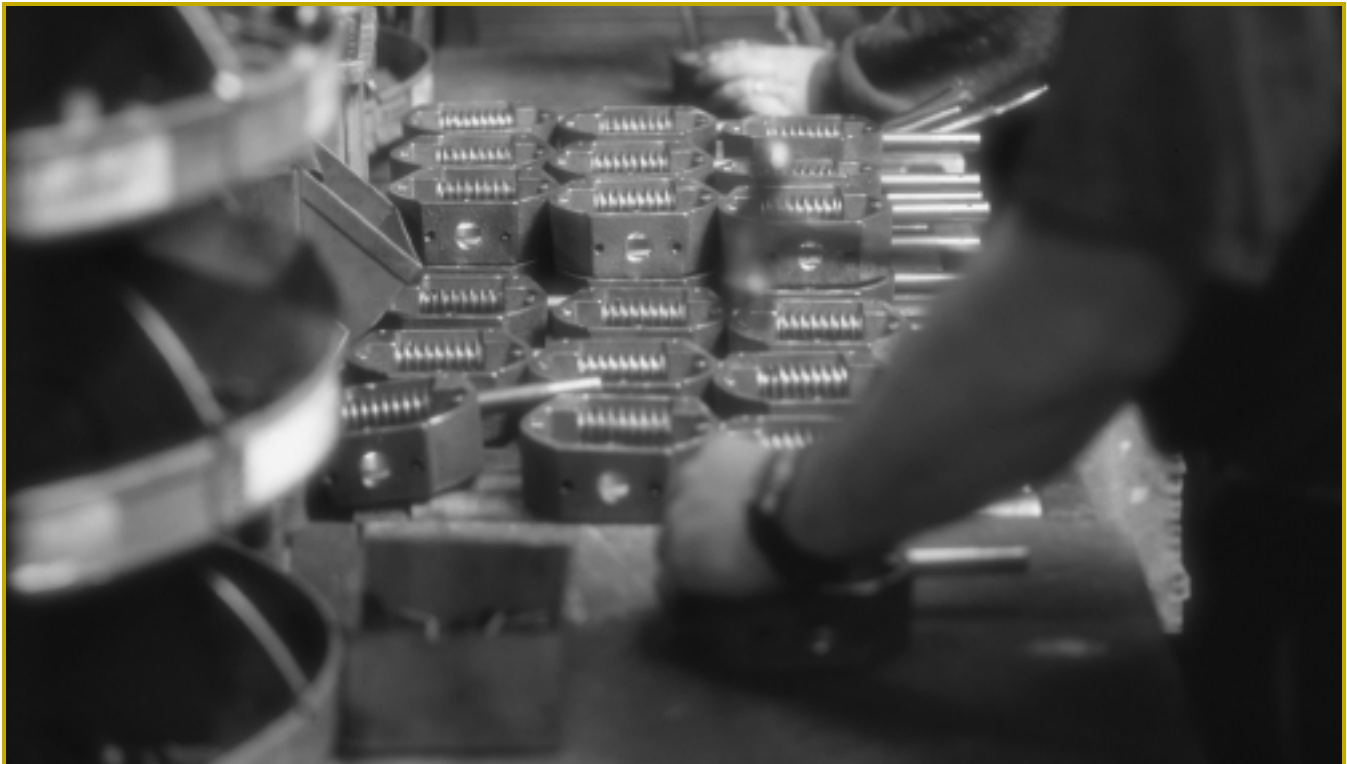
Worm Segment: The worm segment transmits torque to the valve stem. The gear ratio between the worm and the segment creates the mechanical advantage used to

operate the valve. The standard material of construction is heated-treated, high-carbon steel. Optional material is manganese bronze.

Bushings: Bushings are provided at the unit-input shaft ensuring extended wear life. Standard materials of construction are bronze or bronze and oil-impregnated powdered metal.

Thrust Bearings: Thrust bearings are provided between the housing and the worm to minimize unit backlash and to absorb normal thrust-loading caused by the gear-separating forces. Standard material of construction is heat-treated, high-carbon steel ground to a smooth finish.

Seals: Seals provide weather-tight protection and serve to retain lubrication. Standard seal material at the input and output is Buna-N. Standard options are Nitrile or Viton™. Unit gaskets are hybrid fiber. Other materials are available upon request.



DynaTorque manufactures actuators that are among the world's finest. Our actuators are carefully designed, tested, and custom-manufactured to exacting standards. A rigorous set of approval processes also require all vendors to meet demanding quality specifications as well as on-time delivery guarantees—meaning your product is delivered when promised, not just when convenient.

Stainless Steel Actuators

DynaTorque also manufactures actuators with CF8M (316 stainless steel) enclosures. The unit construction includes CF8M housing, cover, and indicator. Gear segments are available in our standard ductile iron or with optional manganese bronze. Unit hardware and input shafts are manufactured in stainless steel. These units are completely sealed and are ideal for applications such as leaching operations, offshore platforms, pulp plants, and other highly corrosive environments.

DynaTorque is proud to offer the gear operator selection and accessories you need. Our high standard of quality and large selection is unparalleled. DynaTorque offers the following:



Gear Operators

Bevel Gear Actuators

DynaTorque's "BG Series" bevel gear operators provide smooth, even torque transmission for thrust and non-thrust applications such as gate, sluice gate, or globe valves. This operator can also be used in almost any multi-turn, right-angle application requiring mechanical advantage.

Manual Overrides

DynaTorque manufactures a complete line of overrides for pneumatic and hydraulic double-acting or spring-return actuators, or back-driveable electric actuators. Available in torque ratings through 90,000 inch lbs. for double-acting and 140,000 inch lbs. for spring-return. See DynaTorque's "PA Series" brochure for details.

Partial-Stroke Testing Devices/Lockouts

DynaTorque manufactures partial-stroke testing devices and lockouts for systems that are required to meet ISA S84, OSHA 1910, and most other emergency shutdown applications. If you have a critical service valve that needs to be periodically tested but cannot be fully opened or closed because of process issues, the DynaTorque D-Stop will meet your requirements. See DynaTorque's "PA Series" brochure for details.

Accessories

Not only do we have gear actuators in all sizes for every job; we also have a complete line of accessories. Our high-quality cast and fabricated handwheels are available in flat and recessed designs. Other accessories include limit switches, potentiometers, ground-level position indicators, locking devices, and operating levers. Call DynaTorque with your specific requirements or e-mail us at sales@dynatorque.com.



DynaTorque's handwheels are built from 1" diameter material with non-crimped spokes that provide longer, stronger welds.

DYNATORQUE

VALVE ACTUATORS AND ACCESSORIES