

# rotork®

## Gears

### WGS Subsea Worm Gear Series



### Subsea WGS Gearboxes - Worm Gear Series

The WGS series quarter-turn worm gear operators are designed for heavy duty subsea applications at any depth with carefully chosen materials to offer the highest level of reliability required in this very harsh environment.

The operators are equipped with membrane or piston type pressure compensators to balance the pressure and allow them to work at any depth.

The WGS series has a good track record in the subsea industry.

Various options are available and can be engineered per application when required.

#### Application

The WGS series gear operators are quarter-turn devices for the operation of subsea ball, butterfly and any other quarter-turn valves at any depth below sea level. The WGS series are designed to be operated either manually by a diver or by ROV (Remotely Operated Vehicle).

#### Features

- Worm shaft supported on taper roller bearings
- High strength alloy steel worm screw hardened and ground
- Self locking
- Many ratios available
- Permanent lubrication with eco-compatible oil
- Relief valve
- High visibility position indicator
- Membrane type pressure compensator
- Finish painting for subsea environment
- Vertical or horizontal mounted carbon steel ROV input from class 1 to 7
- Duplex F51 input shaft
- Handwheel for operation by diver
- Custom designed to suit project specifications
- Torque range from 19471 lbf.in to 4425350 lbf.in
- Stroke 0 – 90° (± 5° adjustable)

#### Options


- Piston or open type pressure compensator
- Super Duplex material input shaft
- Tactile position indicators
- Telescopic ROV extension
- Carbon steel housing
- Aluminium Bronze worm gear
- Stainless Steel ROV bucket
- Finish painting according to customer specification
- Flexible Extensions
- SS. Duplex F55 input shaft.

## Redefining Flow Control

# rotork® Gears



## WGS Series Subsea sizing data

Gearbox Type	Manual Duty Output Torque Max. (lbf.in)	Ratio for Manual Duty	Mech. Adv. +/- 10%	R.O.V. Duty Output Torque Max. (lbf.in)	Max. R.O.V Class ISO 13628-8	Valve Flange	 Bore & Keyway Envelope Radius L. Max (in)	Stem Height Max (in)
WGS22	19471	62:1	15.5	22127	2	FA12-FA14-FA16-FA25	1.417	3.543
WGS30	26552	146:1	36.5	22127	2	FA14-FA16-FA25	1.417	3.543
WGS45	39828	169:1	42.2	30977	2	FA16-FA25	1.693	3.937
WGS100	88507	322:1	90.9	70806	2	FA25-FA30	2.283	4.646
WGS170	150462	570:1	126	123910	2	FA25-FA30-FA35	2.520	5.118
WGS300	265521	855:1	205	221268	4	FA30-FA35-FA40	3.465	6.693
WGS550	486789	855:1	240	398282	4	FA35-FA40-FA48	3.937	8.465
WGS1000	885070	3795:1	910	708056	4	FA35-FA40-FA48	4.409	9.843
WGS1700	1504619	4760:1	1190	1327605	5	FA40-FA48-FA60	5.315	11.417
WGS3000	2655210	5300:1	1325	2212675	6	FA48-FA60	6.693	13.386
WGS5000	4425350	7440:1	1945	4425350	7	FA60	7.480	15.748

Various ratios and MA are available for the ROV duty depending on the class and orientation.

Please contact Rotork Gears for the ROV sizing.

The published M.A. is achieved after a few cycles.

The output torque might change according to the selected ratio and project safety factor.

## WGS Series Material Specification

Components	Material	DIN	EN Standard	USA Standard
Housing	Ductile iron	GGG40	EN-GJS-400-18 UNI EN1563	ASTM A536 Grade 65-45-12
Worm Screw	Alloy Steel	17NiCrMo6 Pb	17NiCrMo6.4 Pb	AISI 4317
Worm gear	Ductile iron	GGG50	EN-GJS-500-7 UNI EN1563	ASTM A536 Grade 80-55-06
Input shaft	Duplex F51	14 462	14 462	ASTM A276 UNS S31803
Stop screw	Carbon Steel	12.9 DIN 6379	12.9 UNI 3740	ASTM 193 B7
Fasteners	Stainless steel	X2CrNiMo 17-12-2	X 2 CrNiMo 17 12 2 1.4404	AISI 316L
O-Rings	Buna-N			
Compensator	Membrane			

## Redefining Flow Control

# WGS Subsea

## Worm Gear Series



**rotork**<sup>®</sup>  
Fluid Systems

### Subsea series actuators

Complimenting our subsea gearboxes with diver or ROV operable over-rides is a range of subsea actuators. These are designed and engineered by the Rotork Fluid System division which has manufacturing facilities and centres of excellence around the world. The engineering groups of Rotork Fluid System and Rotork Gears share databases, engineering knowledge and test facilities to provide a comprehensive subsea solution.

For further information see publication F800 or visit the Rotork website [www.rotork.com](http://www.rotork.com)



*Position transducer assembly with electrical instrumentation connector.*



*ISO 13628-8 Class 4 ROV receptacle for rotary torque tool operation of the actuator mechanical over-ride.*

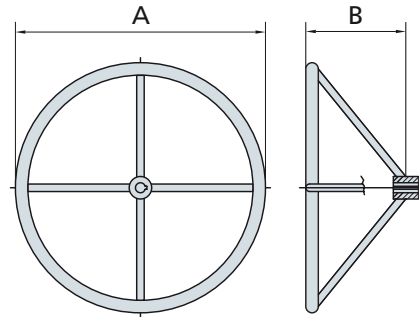
### Design Options

- ROV and diver operated actuator manual override via an ISO 13628-8 torque tool receptacle.
- ROV torque tool operated over-ride lock-out.
- Diver operated handwheel multiplier that inserts into the ISO receptacle for manual operation.
- Subsea gearbox for dedicated valve operation with ISO 13628-8 receptacle for ROV torque tool.
- Adjustable extensions to facilitate remote fixing of ISO receptacle.
- Remote ISO receptacle valve position indicators (showing true actuator/gearbox position via local gearbox at the remote receptacle).
- Actuator/gearbox quick release system.
- Actuator de-clutch system to allow independent operation of the actuator when on the valve.
- Actuator and gearbox declutch system to provide interchangeability between similar pipeline valves.
- Transition spool with end of stroke position stops, flushing facility, internal relief and stem cap protection.
- Double block & bleed control manifold.
- Position transducers and limit switch assemblies that allow fitting of subsea electrical connectors.
- Torque test equipment for actuator and override performance.
- ISO 4406 Class 6 (NAS 6) flushing capabilities with fluid sampling device.
- Subsea & splashzone trims.

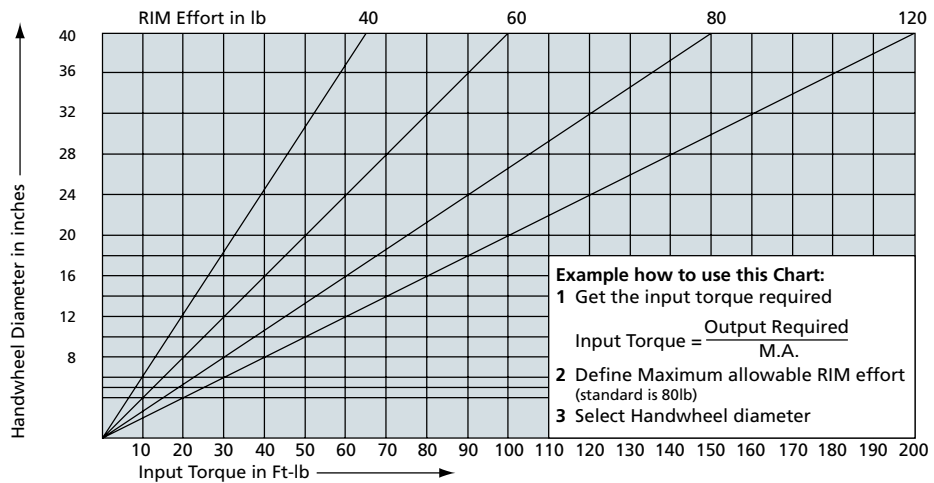
## Handwheel Selection Chart

### Dimensions

Type	A	B
S300	Ø12	8
S400	Ø16	8
S500	Ø20	8
S600	Ø24	8
S700	Ø28	12
S800	Ø32	12
S900	Ø35	12
S1000	Ø39	12



S series handwheel



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