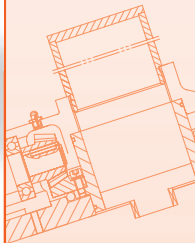
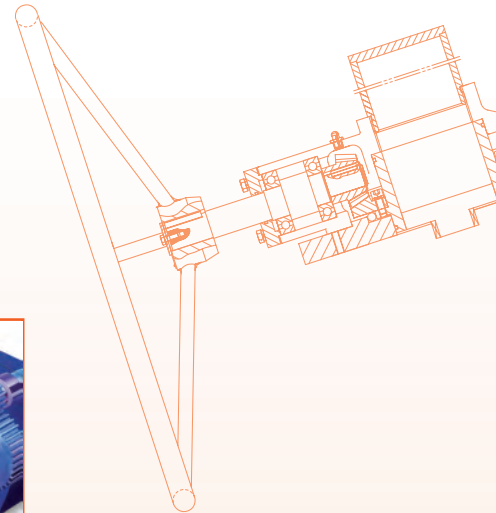
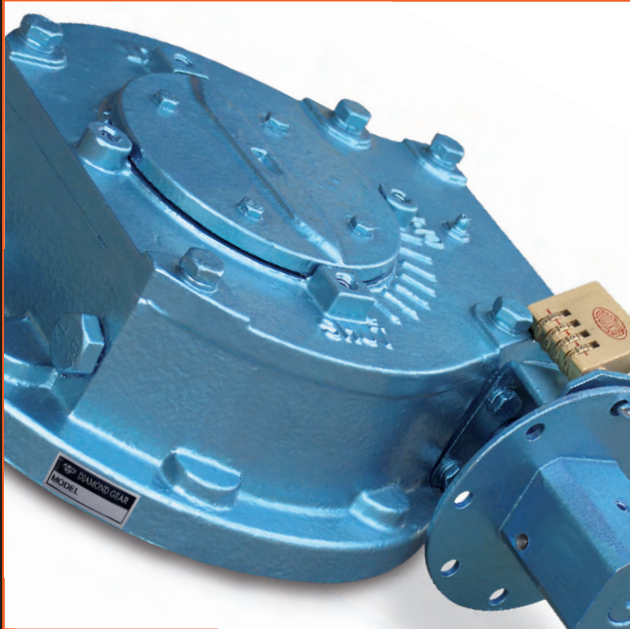


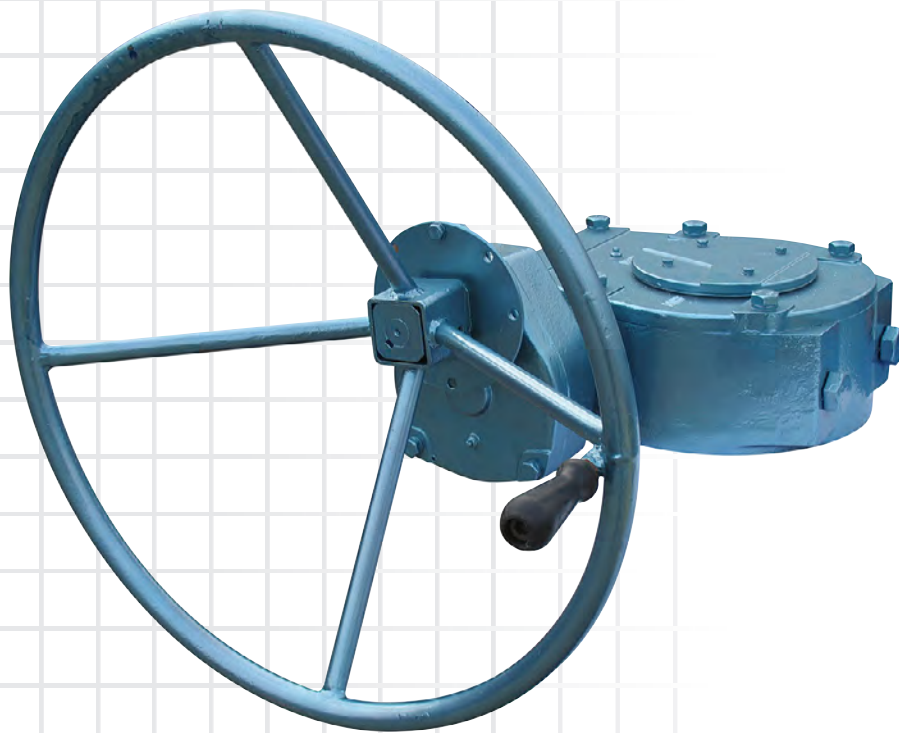
# MULTI-TURN & QUARTER TURN GEARBOXES



**AUSTRALIAN  
PIPELINE VALVE®**

[www.australianpipelinevalve.com.au](http://www.australianpipelinevalve.com.au)

# QUALITY MANUFACTURER



# Contents

|                                       |            |
|---------------------------------------|------------|
| Bevel Gear Operator                   | Page 4     |
| BA-0 Bevel Gear Operator              | Page 5-6   |
| S107B ~ S307B Bevel Gear Operator     | Page 7-10  |
| Worm Gear Operator                    | Page 11    |
| WG008W Worm Gear Operator             | Page 12-13 |
| WG108W Worm Gear Operator             | Page 14-15 |
| WG208W Worm Gear Operator             | Page 16-17 |
| WG308W Worm Gear Operator             | Page 18-19 |
| WG408W Worm Gear Operator             | Page 20-21 |
| WG508W Worm Gear Operator             | Page 22-23 |
| SH Series Worm Gear Operator          | Page 24    |
| MO Series Declutchable Gear Over-Ride | Page 25-28 |



# Bevel Gear Operator



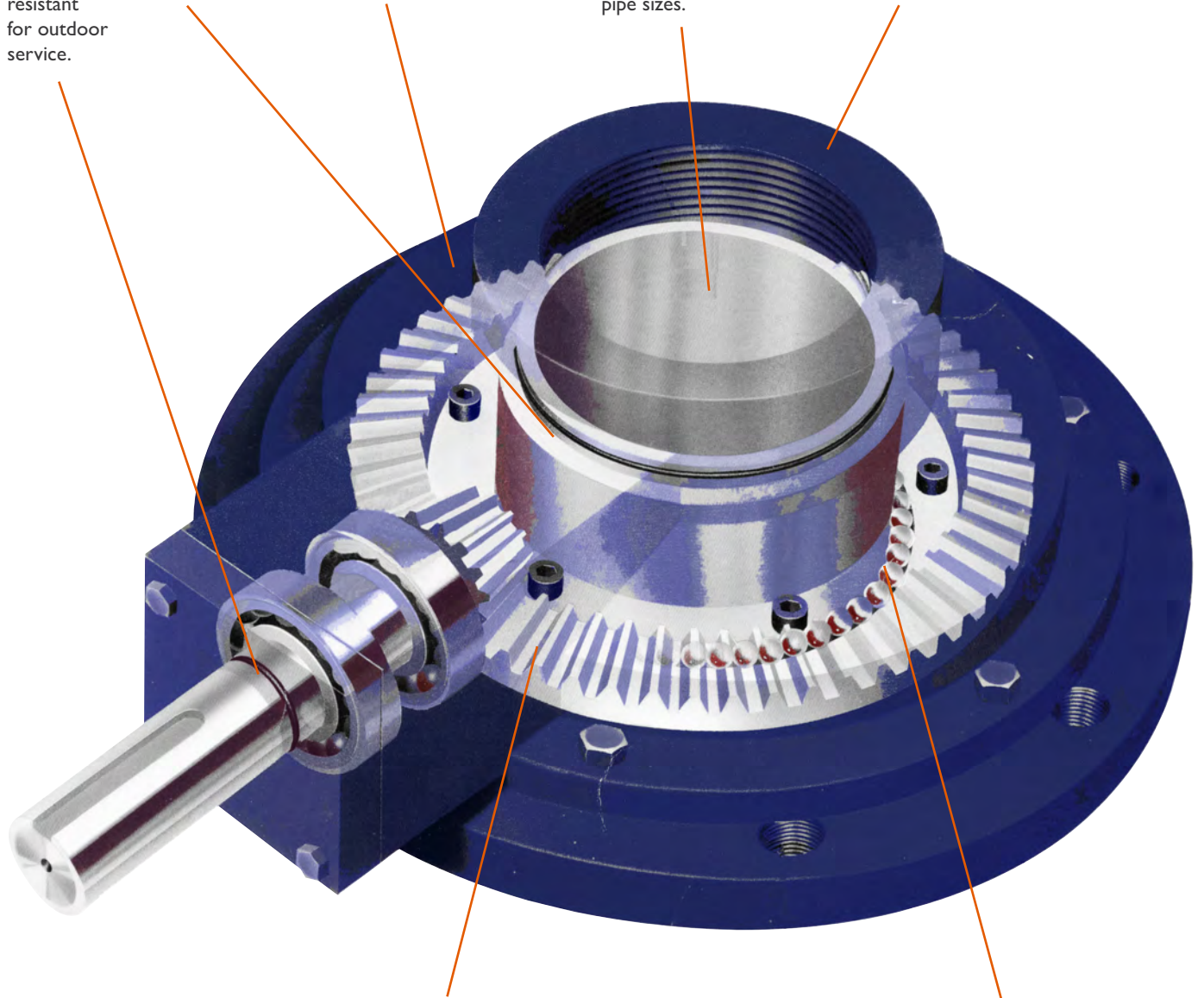
Fully weather resistant for outdoor service.

O-ring sealed and permanently lubricated.

High strength cast iron enclosure.

Accepts stem projection in standard NPT pipe sizes.

Comprehensive product line for torque capability.



Precision machined gearing assures minimum backlash and smooth operation.

Bevel pinion and bevel gear supported by anti-friction bearings.

## BEVEL GEAR

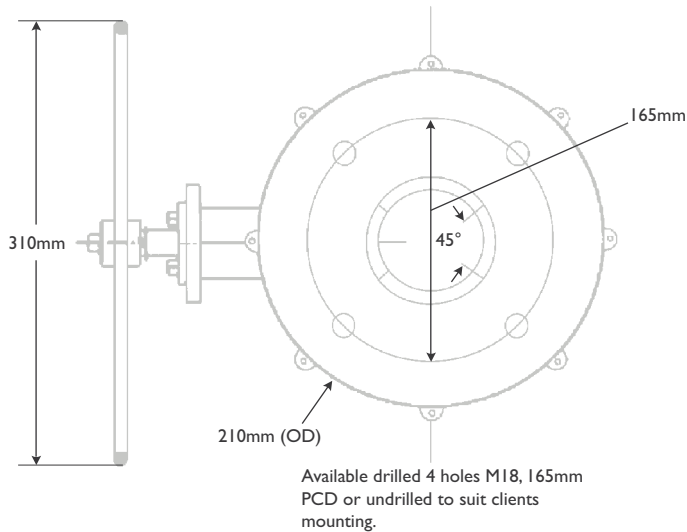
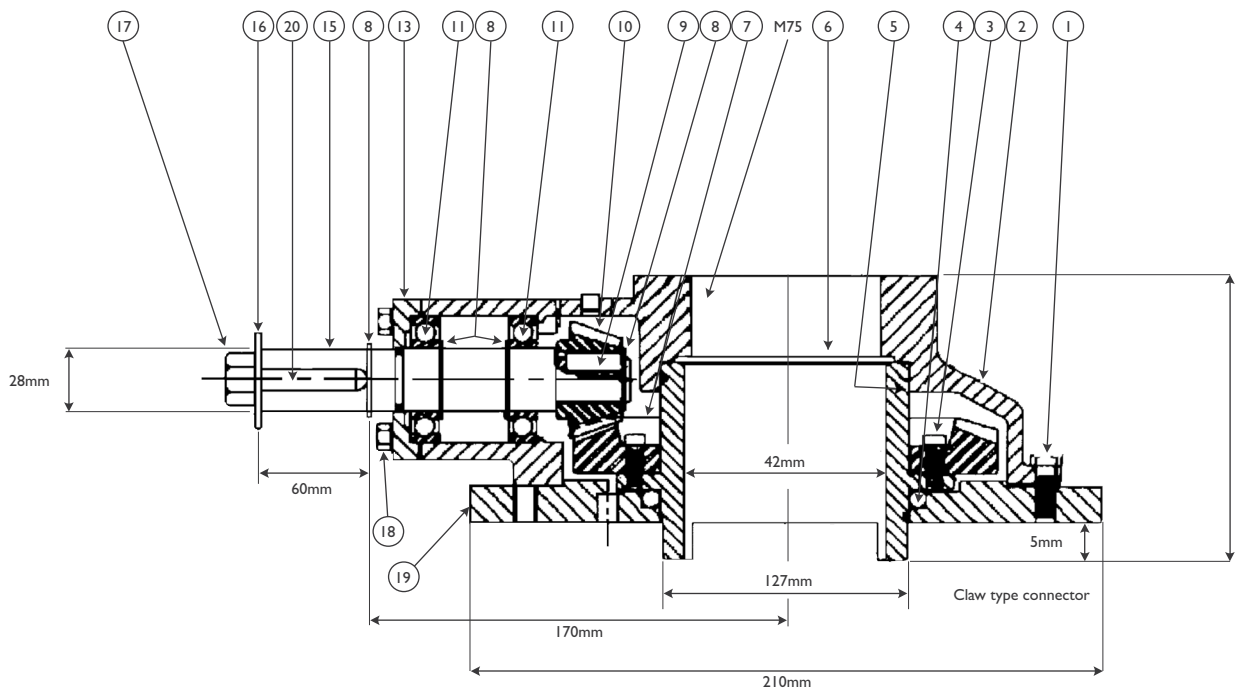
Rugged, dependable, precision performance for all multi-turn valve applications.



API 622 & ISO 15848-1, CL CO2  
Endurance Test Certified



# BA-0 Bevel Gear Operator



## HANDWHEEL & STEM PROTECTOR INCLUDED

## PARTS AND BILL OF MATERIALS

| NO | PART NAME            | QTY | MATERIAL          |
|----|----------------------|-----|-------------------|
| 1  | BOLT                 | 10  | CARBON STEEL      |
| 2  | HOUSING              | 1   | CARBON STEEL      |
| 3  | BEVEL GEAR CAPSCREW  | 6   | CARBON STEEL      |
| 4  | BEARING BALLS        | 47  | STEEL             |
| 5  | O-RING, DRIVE SLEEVE | 2   | RUBBER            |
| 6  | DRIVE SLEEVE         | 1   | DUCTILE IRON      |
| 7  | BEVEL GEAR           | 1   | 1041 CARBON STEEL |
| 8  | SNAP RING            | 3   | SPRING STEEL      |
| 9  | PINION KEY           | 1   | 1045 CARBON STEEL |
| 10 | PINION               | 1   | 1045 CARBON STEEL |
| 11 | BALL BEARING         | 2   | COMMERCIAL        |
| 13 | CAP                  | 1   | CARBON STEEL      |
| 15 | BOLT                 | 1   | 1045 CARBON STEEL |
| 16 | WASHER               | 1   | CARBON STEEL      |
| 17 | NUT                  | 1   | BRASS             |
| 18 | COVER                | 4   | CARBON STEEL      |
| 19 | HOUSING              | 1   | CARBON STEEL      |
| 20 | O-RING               | 1   | 1045 CARBON STEEL |

When fitting to gate/globe valve the existing top yoke can be adapted/coupled to gearbox claw type rotating lugs to make adaption easier. No couplings or brackets are supplied. The stem nut needs to be utilised from your existing valve (or made if not available) and a simple coupler then needs to be made to match gear box (not supplied, requires custom manufacture)

## QUICK REFERENCE

| UNIT TYPE | APPROXIMATE WEIGHT IN KG W/O WHEEL | MAXIMUM OUTPUT TORQUE NM | UNIT RATION | MAXIMUM STEM DIAMETER |
|-----------|------------------------------------|--------------------------|-------------|-----------------------|
| BA-0      | 28(Kg)                             | 735NM                    | 3:1         | 42mm                  |

**ROUGH REFERENCE SIZING CHART FOR BEVEL GEAR BOXES BA SERIES  
ON "TYPICAL" GATE/GLOBE VALVES BBOSY, API600/BS1873**

| TYPE | (GATE) |      |           |      |      |       | (GLOBE) |      |      |         |      |       |
|------|--------|------|-----------|------|------|-------|---------|------|------|---------|------|-------|
|      | NPS    | 150# | 300#      | 600# | 900# | 1500# | 2500#   | 150# | 300# | 600#    | 900# | 1500# |
| 2"   | BA0    | BA0  | BA0       | BA0  | BA0  | BA0   | BA0     | BA0  | BA0  | BA0     | BA0  | BA1   |
| 3"   | BA0    | BA0  | BA0       | BA0  | BA0  | BA0   | BA0     | BA0  | BA0  | BA0     | BA1  | BA2   |
| 4"   | BA0    | BA0  | BA0       | BA0  | BA1  | BA1   |         | BA0  | BA0  | BA0/BA1 | BA1  | BA3   |
| 5"   | BA0    | BA0  | BA0       | BA0  | BA1  |       |         | BA0  | BA0  | BA1     | BA2  | BA3   |
| 6"   | BA0    | BA0  | BA0       | BA1  | BA1  |       |         | BA1  | BA1  | BA2     | BA2  |       |
| 8"   | BA0    | BA0  | BA0 / BA1 | BA1  | BA2  |       |         | BA2  | BA2  | BA2     | BA3  |       |
| 10"  | BA1    | BA1  | BA1       | BA2  | BA3  |       |         | BA2  | BA2  | BA3     |      |       |
| 12"  | BA1    | BA2  | BA2       | BA2  | BA3  |       |         | BA2  | BA3  | BA3     |      |       |
| 14"  | BA1    | BA2  | BA2       | BA2  |      |       |         | BA2  |      |         |      |       |
| 16"  | BA1    | BA2  | BA3       | BA3  |      |       |         | BA2  |      |         |      |       |
| 18"  | BA2    | BA2  | BA3       | BA3  |      |       |         |      |      |         |      |       |
| 20"  | BA2    | BA3  | BA3       |      |      |       |         |      |      |         |      |       |
| 22"  | BA2    | BA3  | BA3       |      |      |       |         |      |      |         |      |       |
| 24"  | BA3    | BA3  | BA3       |      |      |       |         |      |      |         |      |       |
| 28"  | BA3    |      |           |      |      |       |         |      |      |         |      |       |
| 30"  | BA3    |      |           |      |      |       |         |      |      |         |      |       |

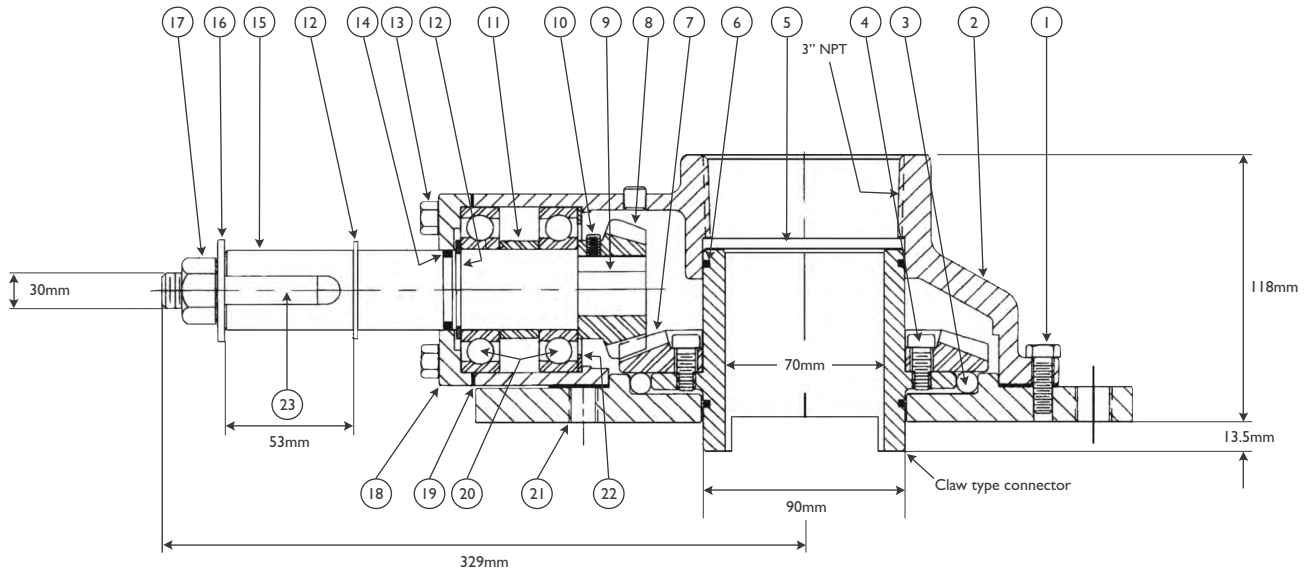
THIS IS ONLY A ROUGH READY RECKONER SIZING SHOULD BE CORRECTLY CALCULATED BY CLIENT

THIS ASSUMES MAXIMUM 'DELTA P' (MAXIMUM COLD WORKING PRESSURE) AND HAS BEEN CALCULATED USING THE HIGHEST TORQUE & LARGEST STEM SIZE AND TORQUES OF THE 3 MAJOR MANUFACTURERS EVALUATED AND INCLUDES A FURTHER 20% SAFETY FACTOR. HENCE, WHILST IT IS THE PURCHASE'S SOLE RESPONSIBILITY TO CORRECTLY CHOOSE THE RIGHT GEARBOX,

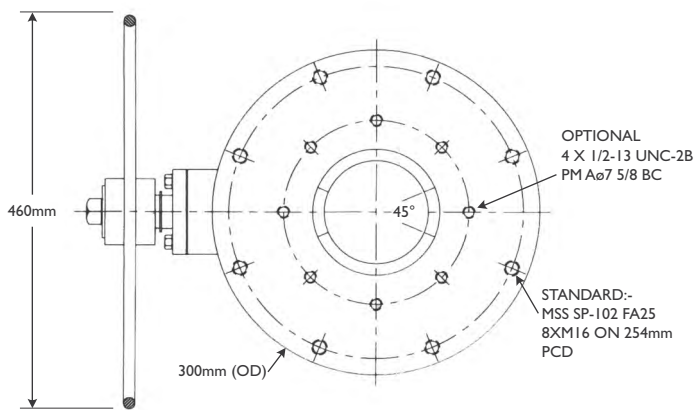
GEARBOX SIZING IS BASED ON BOLTED BONNET VALVES WITH GRAPHITE STEM PACKING. PTFE STEM PACKING WILL BE SIGNIFICANTLY LOWER TORQUE. 100NB TO 250NB 150 & 300 CLASS API603 GATE VALVES ARE LOWER TORQUE. GEARBOX SIZE CAN VARY STEM SIZE AND TORQUE SUCH AS: - BONNET TYPE, PACKING, HAND WHEEL SIZE, MOUNTING & STEM SIZE, DESIGN STANDARD, TRIM WEDGE/DISC TYPE, SERVICE MEDIA & TEMPERATURE, PACKING TYPE, ETC.

NOTE: - MANY VALVE MANUFACTURERS BASE THEIR TORQUE FIGURES ON ½ COLD WORKING PRESSURE.

# S107B Bevel Gear Operator



## MOUNTING PATTERN



**HANDWHEEL & STEM PROTECTOR INCLUDED**

## PARTS AND BILL OF MATERIALS

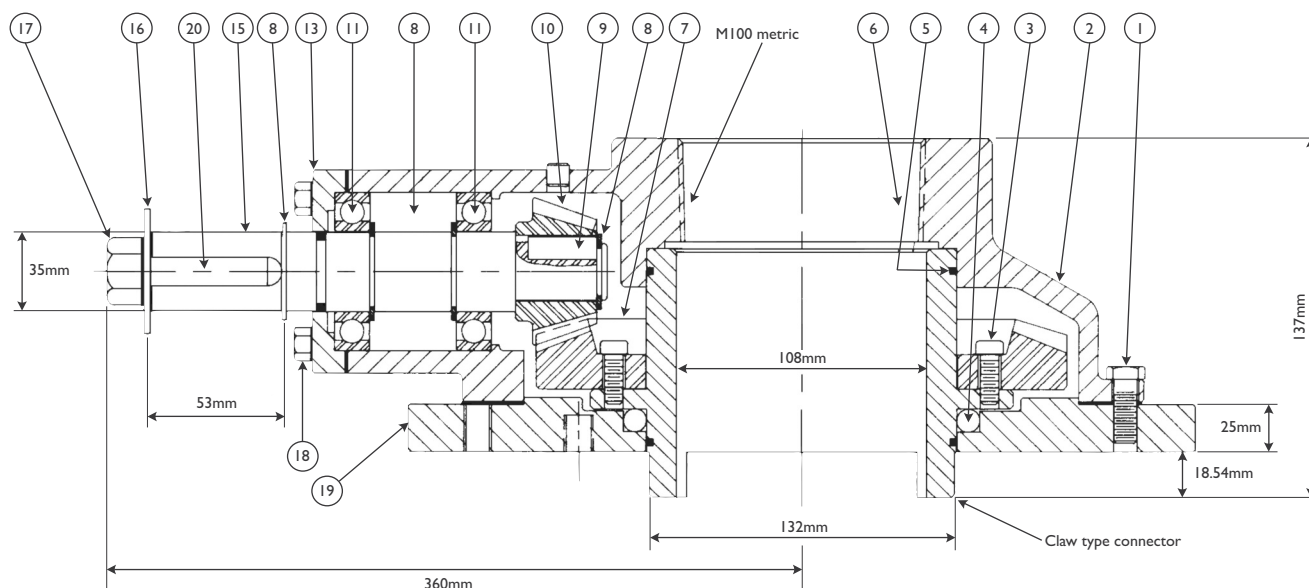
| NO | PART NAME            | QTY | MATERIAL          |
|----|----------------------|-----|-------------------|
| 1  | BOLT                 | 8   | CARBON STEEL      |
| 2  | HOUSING              | 1   | CAST IRON         |
| 3  | BEARING BALLS        | 46  | STEEL             |
| 4  | BEVEL GEAR CAPSCREW  | 4   | CARBON STEEL      |
| 5  | DRIVE SLEEVE         | 1   | DUCTILE IRON      |
| 6  | O-RING, DRIVE SLEEVE | 2   | RUBBER            |
| 7  | BEVEL GEAR           | 1   | 1045 CARBON STEEL |
| 8  | PINION               | 1   | 1045 CARBON STEEL |
| 9  | PINION KEY           | 1   | 1045 CARBON STEEL |
| 10 | SET SCREW            | 1   | CARBON STEEL      |
| 11 | SHAFT SLEEVE         | 1   | CARBON STEEL      |
| 12 | SNAP RING            | 2   | SPRING STEEL      |
| 13 | BOLT                 | 4   | CARBON STEEL      |
| 14 | O-RING, SHAFT        | 1   | RUBBER            |
| 15 | INPUT SHAFT          | 1   | 1045 CARBON STEEL |
| 16 | WASHER               | 1   | CARBON STEEL      |
| 17 | NUT                  | 1   | CARBON STEEL      |
| 18 | CAP                  | 1   | CARBON STEEL      |
| 19 | GASKET, CAP          | 2   | PLASTIC           |
| 20 | BALL BEARING         | 2   | COMMERCIAL        |
| 21 | BASE                 | 1   | CARBON STEEL      |
| 22 | BEARING RETAINER     | 1   | CARBON STEEL      |
| 23 | KEY                  | 1   | 1045 CARBON STEEL |

When fitting to gate/globe valve the existing top yoke can be adapted/coupled to gearbox rotating lugs to make adaption easier. No couplings, brackets, adaptors etc are supplied. Your existing drive bush nut should be utilised.

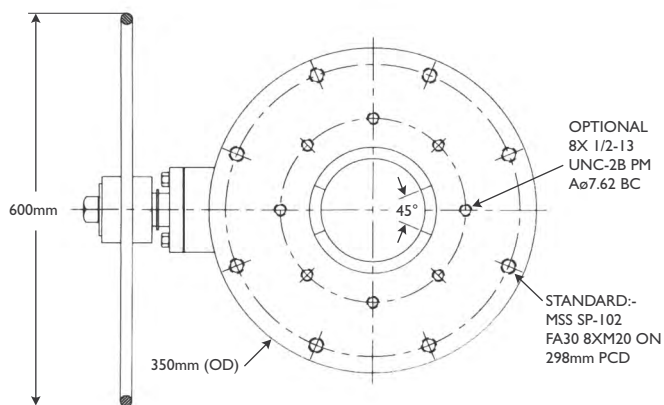
## QUICK REFERENCE

| UNIT TYPE | APPROXIMATE WEIGHT IN LBS W/O WHEEL | MAXIMUM OUTPUT TORQUE NM | UNIT RATIO | MAXIMUM STEM DIAMETER W/STEM PROTECTOR | MAXIMUM STEM DIAMETER W/O STEM PROTECTOR | PREDRILLED MOUNTING PATTERNS |                                    |
|-----------|-------------------------------------|--------------------------|------------|--|--|------------------------------|------------------------------------|
|           |                                     |                          |            |  |  | STANDARD MSS SP-102          | OPTIONAL                           |
| S107B     | 21                                  | 1350                     | 2.92:1     | 60mm                                   | 66mm                                     | FA25 (8) M16 254mm PCD       | (4) 1/2-13 UNC-2B ON A 7-5/8" B.C. |

# S207B Bevel Gear Operator



## MOUNTING PATTERN



**HANDWHEEL & 610MM STEM PROTECTOR INCLUDED**

## PARTS AND BILL OF MATERIALS

| NO | PART NAME            | QTY | MATERIAL          |
|----|----------------------|-----|-------------------|
| 1  | BOLT                 | 10  | CARBON STEEL      |
| 2  | HOUSING              | 1   | DUCTILE IRON      |
| 3  | BEVEL GEAR CAPSCREW  | 6   | CARBON STEEL      |
| 4  | BEARING BALLS        | 47  | STEEL             |
| 5  | O-RING, DRIVE SLEEVE | 2   | RUBBER            |
| 6  | DRIVE SLEEVE         | 1   | DUCTILE IRON      |
| 7  | BEVEL GEAR           | 1   | I041 CARBON STEEL |
| 8  | SNAP RING            | 3   | SPRING STEEL      |
| 9  | PINION KEY           | 1   | I045 CARBON STEEL |
| 10 | PINION               | 1   | I045 CARBON STEEL |
| 11 | BALL BEARING         | 2   | COMMERCIAL        |
| 13 | CAP                  | 1   | CARBON STEEL      |
| 15 | INPUT SHAFT          | 1   | I045 CARBON STEEL |
| 16 | WASHER               | 1   | CARBON STEEL      |
| 17 | NUT                  | 1   | CARBON STEEL      |
| 18 | BOLT                 | 4   | CARBON STEEL      |
| 19 | BASE                 | 1   | CARBON STEEL      |
| 20 | INPUT SHAFT KEY      | 1   | I045 CARBON STEEL |

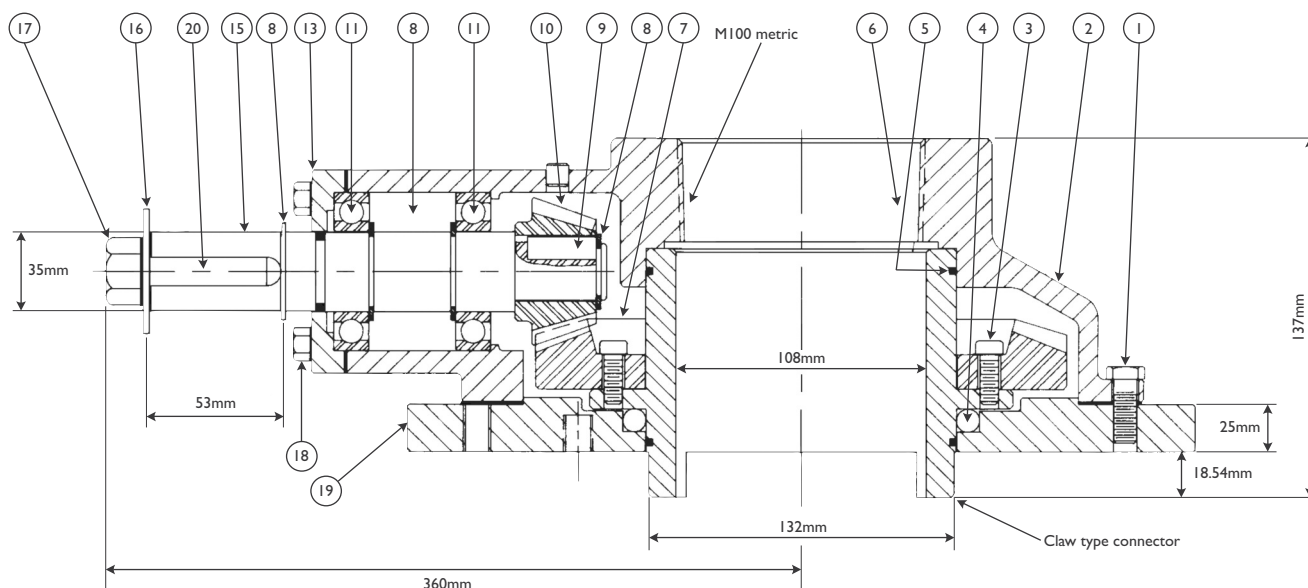
When fitting to gate/globe valve the existing top yoke can be adapted/coupled to gearbox rotating lugs to make adaption easier. No couplings, brackets, adaptors etc are supplied. Your existing drive bush nut should be utilised.

## QUICK REFERENCE

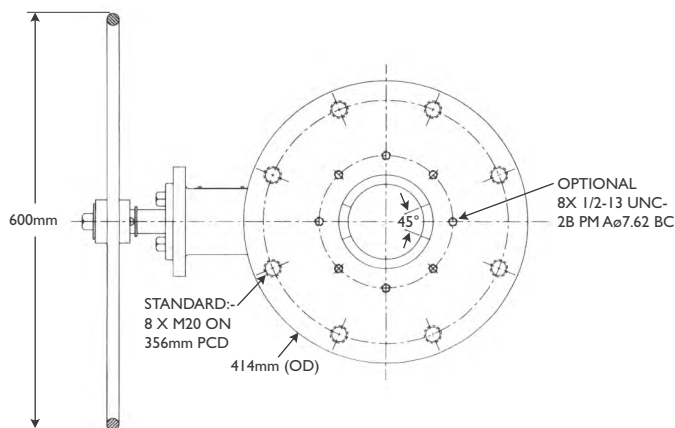
| UNIT TYPE | APPROXIMATE WEIGHT IN KG W/O WHEEL | MAXIMUM OUTPUT TORQUE NM | UNIT RATIO | MAXIMUM STEM DIAMETER W/STEM PROTECTOR | MAXIMUM STEM DIAMETER W/O STEM PROTECTOR | PREDRILLED MOUNTING PATTERNS |                                    |
|-----------|------------------------------------|--------------------------|------------|--|--|------------------------------|------------------------------------|
|           |                                    |                          |            |  |  | STANDARD MSS SP-102          | OPTIONAL                           |
| S207B     | 33                                 | 2700                     | 4.07:1     | 100mm                                  | 104mm                                    | FA30 (8) M20 ON 298mm PCD    | (8) 1/2-13 UNC-2B ON A 7-5/8" B.C. |



# S307B Bevel Gear Operator



## MOUNTING PATTERN



**INCLUDES HANDWHEEL & STEM PROTECTOR**

## PARTS AND BILL OF MATERIALS

| NO | PART NAME            | QTY | MATERIAL          |
|----|----------------------|-----|-------------------|
| 1  | BOLT                 | 10  | CARBON STEEL      |
| 2  | HOUSING              | 1   | DUCTILE IRON      |
| 3  | BEVEL GEAR CAPSCREW  | 6   | CARBON STEEL      |
| 4  | BEARING BALLS        | 47  | STEEL             |
| 5  | O-RING, DRIVE SLEEVE | 2   | RUBBER            |
| 6  | DRIVE SLEEVE         | 1   | DUCTILE IRON      |
| 7  | BEVEL GEAR           | 1   | 1041 CARBON STEEL |
| 8  | SNAP RING            | 3   | SPRING STEEL      |
| 9  | PINION KEY           | 1   | 1045 CARBON STEEL |
| 10 | PINION               | 1   | 1045 CARBON STEEL |
| 11 | BALL BEARING         | 2   | COMMERCIAL        |
| 13 | CAP                  | 1   | CARBON STEEL      |
| 15 | INPUT SHAFT          | 1   | 1045 CARBON STEEL |
| 16 | WASHER               | 1   | CARBON STEEL      |
| 17 | NUT                  | 1   | CARBON STEEL      |
| 18 | BOLT                 | 4   | CARBON STEEL      |
| 19 | BASE                 | 1   | CARBON STEEL      |
| 20 | INPUT SHAFT KEY      | 1   | 1045 CARBON STEEL |

When fitting to gate/globe valve the existing top yoke can be adapted/coupled to gearbox rotating lugs to make adaption easier. No couplings, brackets, adaptors etc are supplied. Your existing drive bush nut should be utilised.

## QUICK REFERENCE

| UNIT TYPE | APPROXIMATE WEIGHT IN KG W/O WHEEL | MAXIMUM OUTPUT TORQUE NM | UNIT RATIO | MAXIMUM STEM DIAMETER W/STEM PROTECTOR | MAXIMUM STEM DIAMETER W/O STEM PROTECTOR | PREDRILLED MOUNTING PATTERNS |                                    |
|-----------|------------------------------------|--------------------------|------------|--|--|------------------------------|------------------------------------|
|           |                                    |                          |            |  |  | STANDARD MSS SP-102          | OPTIONAL                           |
| S307B     | 79                                 | 5400                     | 6:1        | 100mm                                  | 104mm                                    | FA35 (8) M20 ON 356mm PCD    | (8) 1/2-13 UNC-2B ON A 7-5/8" B.C. |

**ROUGH REFERENCE SIZING CHART FOR BEVEL GEAR BOXES S107B ~ S307B  
ON "TYPICAL" GATE/GLOBE VALVES BBOSY, API600/BSI873**

| TYPE | (GATE)      |     |             |     |             |     | (GLOBE)     |     |             |     |             |  |             |             |             |             |             |     |             |             |             |
|------|-------------|-----|-------------|-----|-------------|-----|-------------|-----|-------------|-----|-------------|--|-------------|-------------|-------------|-------------|-------------|-----|-------------|-------------|-------------|
|      | 150#        |     | 300#        |     | 600#        |     | 900#        |     | 1500#       |     | 2500#       |  | 150#        |             | 300#        |             | 600#        |     | 900#        |             |             |
| NPS  | BG + HO (S) |     | BG + HO (S) |     | BG + HO (S) |     | BG + HO (S) |     | BG + HO (S) |     | BG + HO (S) |  | BG + HO (S) |             | BG + HO (S) |             | BG + HO (S) |     | BG + HO (S) |             |             |
| 3"   |             |     |             |     |             |     |             |     |             |     |             |  |             |             |             |             |             |     |             |             |             |
| 4"   |             |     |             |     | <b>107B</b> | 457 |             |     | <b>107B</b> | 457 |             |  |             |             |             |             |             |     |             |             |             |
| 5"   |             |     |             |     | <b>107B</b> | 457 |             |     | <b>107B</b> | 457 |             |  |             |             |             |             |             |     |             |             |             |
| 6"   |             |     |             |     | <b>107B</b> | 457 | <b>107B</b> | 457 | <b>107B</b> | 457 |             |  |             |             |             |             |             |     |             | <b>207B</b> | <b>307B</b> |
| 8"   | <b>107B</b> | 457 | <b>107B</b> | 457 | <b>107B</b> | 457 | <b>107B</b> | 457 | <b>307B</b> | 610 |             |  |             |             |             |             | <b>307B</b> | 610 | <b>307B</b> | 610         |             |
| 10"  | <b>107B</b> | 457 | <b>107B</b> | 457 | <b>107B</b> | 610 |             |     | <b>307B</b> | 762 |             |  |             | <b>207B</b> | 610         | <b>307B</b> | 610         |     |             |             |             |
| 12"  | <b>107B</b> | 457 | <b>107B</b> | 457 | <b>207B</b> | 610 |             |     |             |     |             |  | <b>207B</b> | 610         | <b>307B</b> | 610         |             |     |             |             |             |
| 14"  | <b>107B</b> | 457 | <b>107B</b> | 457 | <b>207B</b> | 610 |             |     |             |     |             |  | <b>207B</b> | 610         | <b>307B</b> | 610         |             |     |             |             |             |
| 16"  | <b>107B</b> | 457 | <b>107B</b> | 610 | <b>307B</b> | 610 |             |     |             |     |             |  |             |             |             |             |             |     |             |             |             |
| 18"  | <b>107B</b> | 457 | <b>207B</b> | 610 |             |     |             |     |             |     |             |  |             |             |             |             |             |     |             |             |             |
| 20"  | <b>107B</b> | 610 | <b>207B</b> | 610 |             |     |             |     |             |     |             |  |             |             |             |             |             |     |             |             |             |
| 24"  | <b>207B</b> | 610 | <b>307B</b> | 762 |             |     |             |     |             |     |             |  |             |             |             |             |             |     |             |             |             |
| 30"  | <b>207B</b> | 762 | <b>307B</b> | 762 |             |     |             |     |             |     |             |  |             |             |             |             |             |     |             |             |             |
| 36"  | <b>307B</b> |     |             |     |             |     |             |     |             |     |             |  |             |             |             |             |             |     |             |             |             |

**S = TYPICAL HANDWHEEL SIZE (ONLY USE AS A GUIDE)**

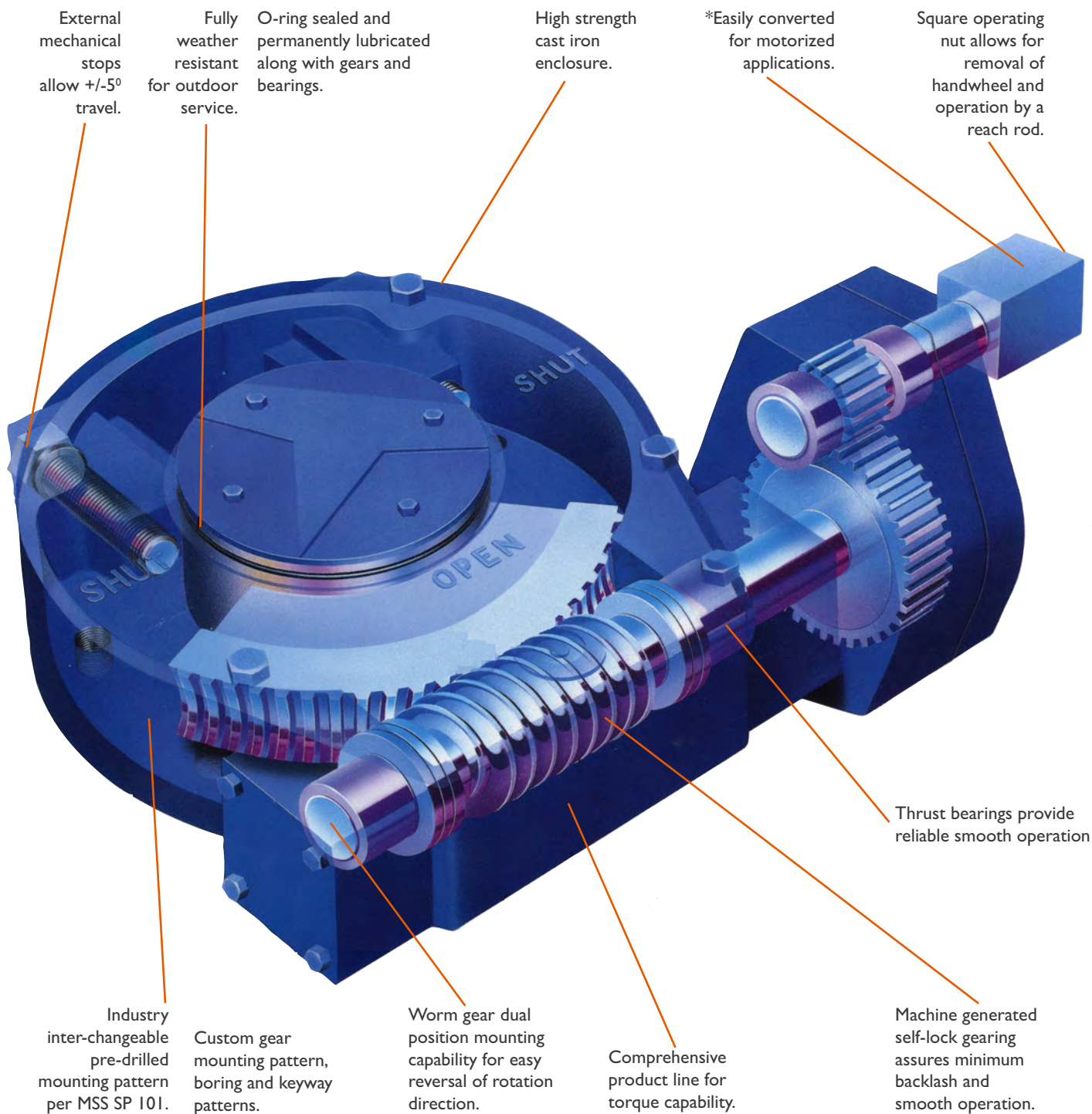
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THIS ASSUMES MAXIMUM 'DELTA P' (MAXIMUM COLD WORKING PRESSURE) AND HAS BEEN CALCULATED USING THE HIGHEST TORQUE & LARGEST STEM SIZE AND TORQUES OF THE 3 MAJOR MANUFACTURERS EVALUATED AND INCLUDES A FURTHER 20% SAFETY FACTOR. HENCE,WHILST IT IS THE PURCHASE'S SOLE RESPONSIBILITY TO CORRECTLY CHOOSE THE RIGHT GEARBOX,

GEARBOX SIZING IS BASED ON BOLTED BONNET VALVES WITH GRAPHITE STEM PACKING. PTFE STEM PACKING WILL BE SIGNIFICANTLY LOWER TORQUE. 100NB TO 250NB 150 & 300 CLASS API603 GATE VALVES ARE LOWER TORQUE. GEARBOX SIZE CAN VARY STEM SIZE AND TORQUE SUCH AS: - BONNET TYPE, PACKING, HAND WHEEL SIZE, MOUNTING & STEM SIZE, DESIGN STANDARD, TRIM WEDGE/DISC TYPE, SERVICE MEDIA & TEMPERATURE, PACKING TYPE, ETC.

NOTE: - MANY VALVE MANUFACTURERS BASE THEIR TORQUE FIGURES ON ½ COLD WORKING PRESSURE.

# Worm Gear Operator

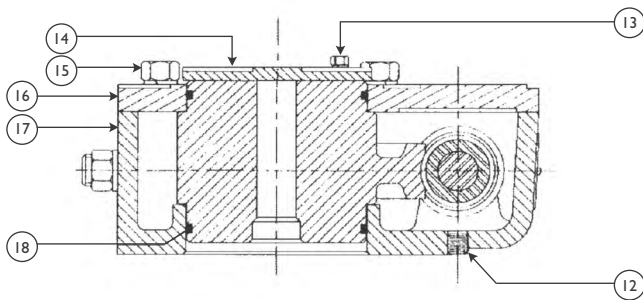
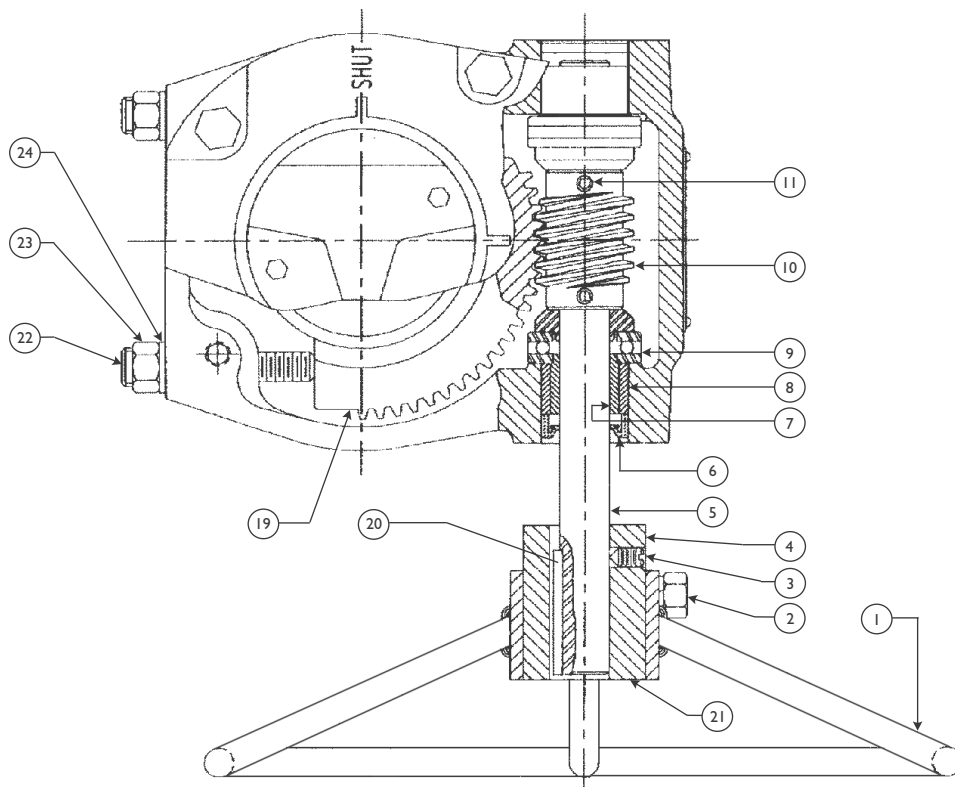


## 0-360° Worm Gearboxes

Can be manually set for any rotation from 0 to 360 degrees. Used in applications that require selectable 'partial stroke' adjustments where applications do not permit full 90, 180, 270 or 360 degree travel



# WG008W Worm Gear Operator



## PARTS AND BILL OF MATERIALS

| NO | PART NAME            | QTY | MATERIAL      |
|----|----------------------|-----|---------------|
| 1  | HANDWHEEL            | 1   | CARBON STEEL  |
| 2  | SET SCREW            | 1   | CARBON STEEL  |
| 3  | STEM KEY             | 1   | CARBON STEEL  |
| 4  | INPUT SHAFT          | 1   | AISI 1045     |
| 5  | OIL SEAL             | 1   | RUBBER        |
| 6  | BEARING              | 2   | CU-BASE ALLOY |
| 7  | OIL BEARING          | 2   | CU-BASE ALLOY |
| 8  | THRUST BEARING       | 2   | COMMERCIAL    |
| 10 | WORM                 | 1   | AISI 1045     |
| 12 | PIN                  | 2   | CARBON STEEL  |
| 15 | PLUG                 | 2   | CARBON STEEL  |
| 16 | BOLT                 | 2   | CARBON STEEL  |
| 17 | INDICATOR PLATE      | 1   | CAST IRON     |
| 18 | BOLT                 | 4   | CARBON STEEL  |
| 19 | COVER                | 1   | CAST IRON     |
| 20 | HOUSING              | 1   | CAST IRON     |
| 21 | O-RING               | 2   | RUBBER        |
| 23 | WORM GEAR            | 1   | DUCTILE IRON  |
| 24 | 2" SQ. OPERATING NUT | 1   | CARBON STEEL  |
| 25 | STOP SCREW           | 2   | CARBON STEEL  |
| 26 | HEX NUT              | 2   | CARBON STEEL  |
| 27 | LOCKWASHER           | 2   | CARBON STEEL  |

## QUICK REFERENCE

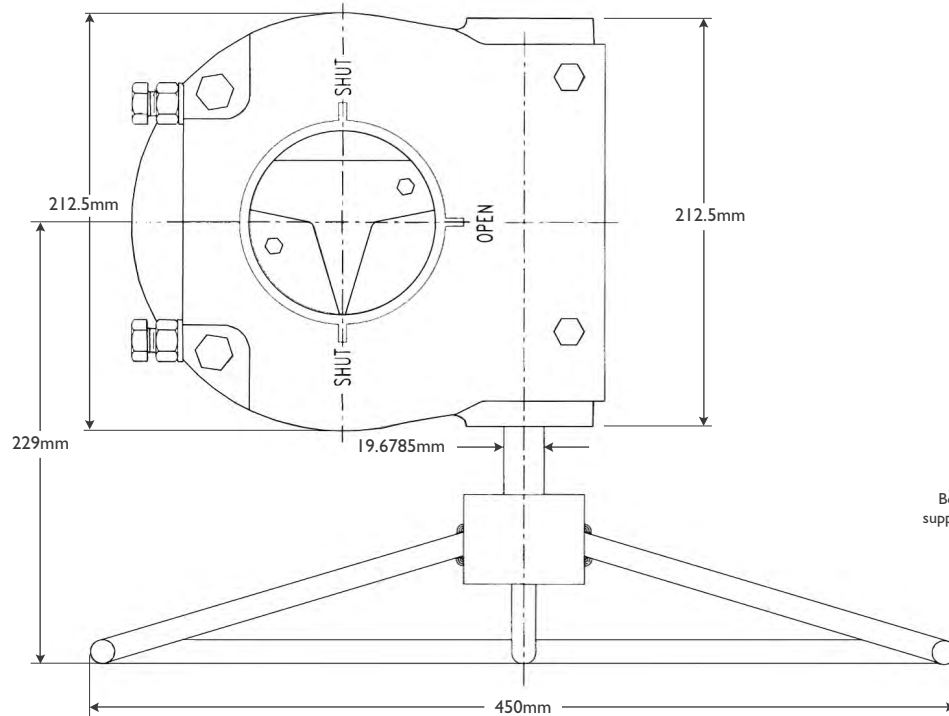
| UNIT TYPE | APPROXIMATE WEIGHT IN KG W/O WHEEL | MAXIMUM OUTPUT TORQUE NM | INPUT TORQUE NM | UNIT RATIO | MAXIMUM BORE SIZE SQUARE KEYWAY    | MAXIMUM BORE SIZE RECTANGULAR KEYWAY | MINIMUM BORE SIZE MM | MOUNTING PATTERN MSS SP-101    |
|-----------|------------------------------------|--------------------------|-----------------|------------|------------------------------------|--------------------------------------|----------------------|--------------------------------|
| WG008W    | 14                                 | 1219                     | 110             | 50:1       | 38.1mm WITH 12.7mm X 12.7mm KEYWAY | 39.88mm WITH 12.7mm x 9.53mm KEYWAY  | 15.88                | *(4) 5/8" UNC-2B ONA 165MM PCD |

\* Other drillings on request

# WG008W Worm Gear Operator



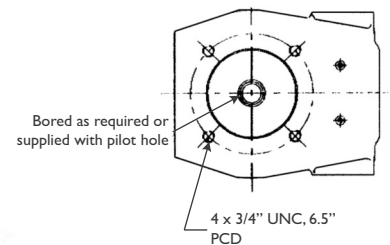
## DIMENSIONS



## WORM GEAR

Rugged, dependable, precision performance for valves requiring 90° rotation.

## MOUNTING PATTERN



- Reliable rugged worm gear boxes with position indicators and adjustable Travel/stop screws for 1/4 turn ball valves, plug valves etc.
- Weatherproof housing, manufactured from high strength ductile iron, seals at bottom of worm gear hub to protect and isolate internal operating parts from dirt and water.
- Carbon steel one-piece input shaft and worm gear are supported by ball or tapered roller bearings for increased efficiency. No sleeve bearings are used in any model.
- Durable ductile iron worm segments are standard.
- Adjusting screws allow a + or - 5° range at end of travel.
- Permanently lubricated with generous amounts of high quality grease. Grease fittings are standard on all models.

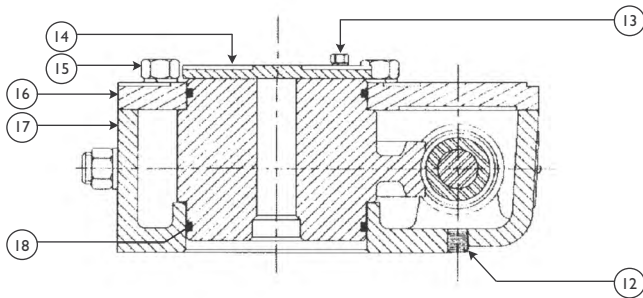
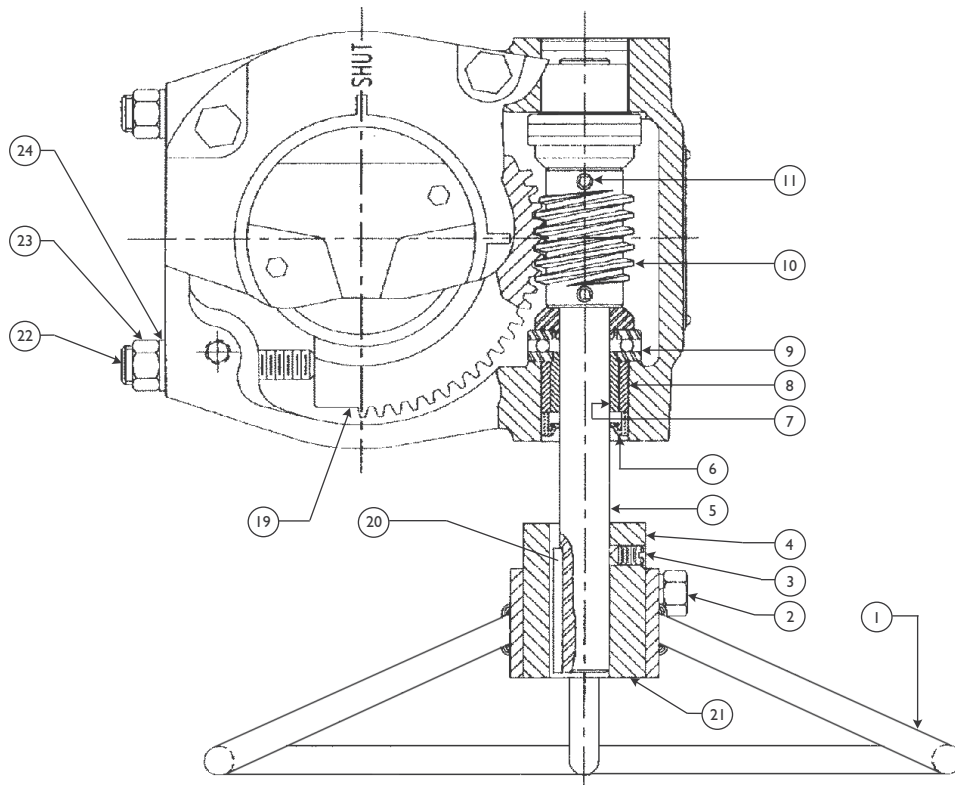
## QUICK REFERENCE

| UNIT TYPE | APPROXIMATE WEIGHT IN KG W/O WHEEL | MAXIMUM OUTPUT TORQUE NM | INPUT TORQUE NM | UNIT RATIO | MAXIMUM SQUARE KEYWAY              | MAXIMUM RECTANGULAR KEYWAY          | MINIMUM BORE SIZE MM | MOUNTING PATTERN MSS SP-101    |
|-----------|------------------------------------|--------------------------|-----------------|------------|------------------------------------|-------------------------------------|----------------------|--------------------------------|
| WG008W    | 14                                 | 1219                     | 110             | 50:1       | 38.1mm WITH 12.7mm X 12.7mm KEYWAY | 39.88mm WITH 12.7mm x 9.53mm KEYWAY | 15.88                | *(4) 5/8" UNC-2B ONA 165MM PCD |

\* Other drillings on request



# WG108W Worm Gear Operator



## PARTS AND BILL OF MATERIALS

| NO | PART NAME            | QTY | MATERIAL      |
|----|----------------------|-----|---------------|
| 1  | HANDWHEEL            | 1   | CARBON STEEL  |
| 2  | SET SCREW            | 1   | CARBON STEEL  |
| 3  | STEM KEY             | 1   | CARBON STEEL  |
| 4  | INPUT SHAFT          | 1   | AISI 1045     |
| 5  | OIL SEAL             | 1   | RUBBER        |
| 6  | BEARING              | 2   | CU-BASE ALLOY |
| 7  | OIL BEARING          | 2   | CU-BASE ALLOY |
| 8  | THRUST BEARING       | 2   | COMMERCIAL    |
| 10 | WORM                 | 1   | AISI 1045     |
| 12 | PIN                  | 2   | CARBON STEEL  |
| 15 | PLUG                 | 2   | CARBON STEEL  |
| 16 | BOLT                 | 2   | CARBON STEEL  |
| 17 | INDICATOR PLATE      | 1   | CAST IRON     |
| 18 | BOLT                 | 4   | CARBON STEEL  |
| 19 | COVER                | 1   | CAST IRON     |
| 20 | HOUSING              | 1   | CAST IRON     |
| 21 | O-RING               | 2   | RUBBER        |
| 23 | WORM GEAR            | 1   | DUCTILE IRON  |
| 24 | 2" SQ. OPERATING NUT | 1   | CARBON STEEL  |
| 25 | STOP SCREW           | 2   | CARBON STEEL  |
| 26 | HEX NUT              | 2   | CARBON STEEL  |
| 27 | LOCKWASHER           | 2   | CARBON STEEL  |

## QUICK REFERENCE

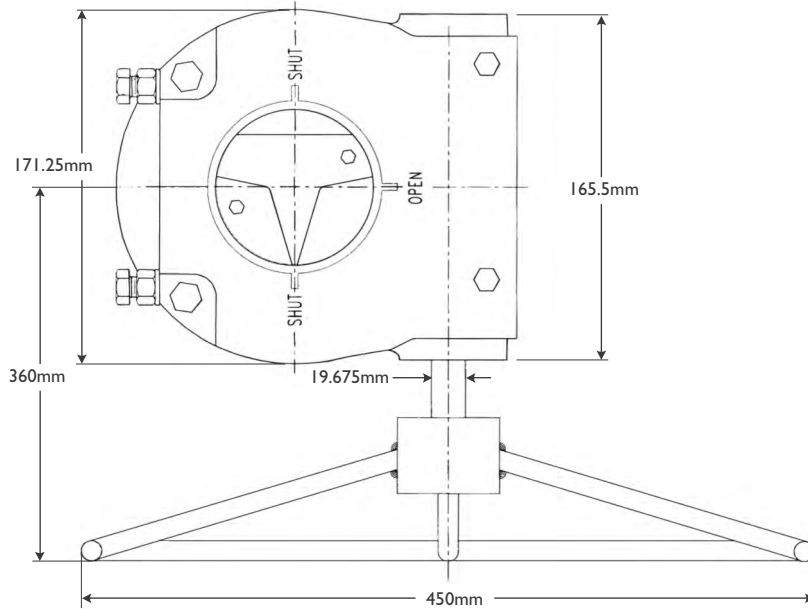
| UNIT TYPE | APPROXIMATE WEIGHT IN KG W/O WHEEL | MAXIMUM OUTPUT TORQUE NM | INPUT TORQUE NM | UNIT RATIO | MAXIMUM BORE SIZE SQUARE KEYWAY    | MAXIMUM BORE SIZE RECTANGULAR KEYWAY | MINIMUM BORE SIZE MM | MOUNTING PATTERN MSS SP-101                    |
|-----------|------------------------------------|--------------------------|-----------------|------------|------------------------------------|--------------------------------------|----------------------|--|
| WG108W    | 15.5                               | 2200                     | 120             | 72:1       | 47.8mm WITH 12.7mm X 12.7mm KEYWAY | 49.3mm WITH 12.7mm x 9.53mm KEYWAY   | 20                   | FA14<br>* (4) 5/8-11 UNC-2B<br>ONA 139.7MM PCD |

\* Other drillings on request

# WG108W Worm Gear Operator



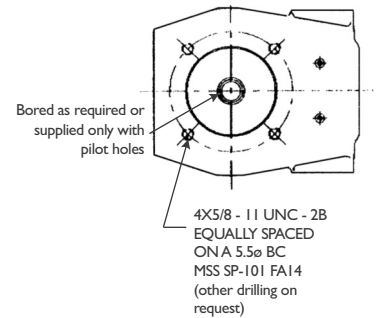
## DIMENSIONS



### WORM GEAR

Rugged, dependable, precision performance for valves requiring 90° rotation.

## MOUNTING PATTERN



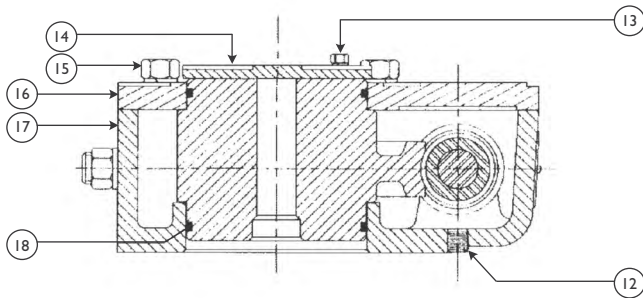
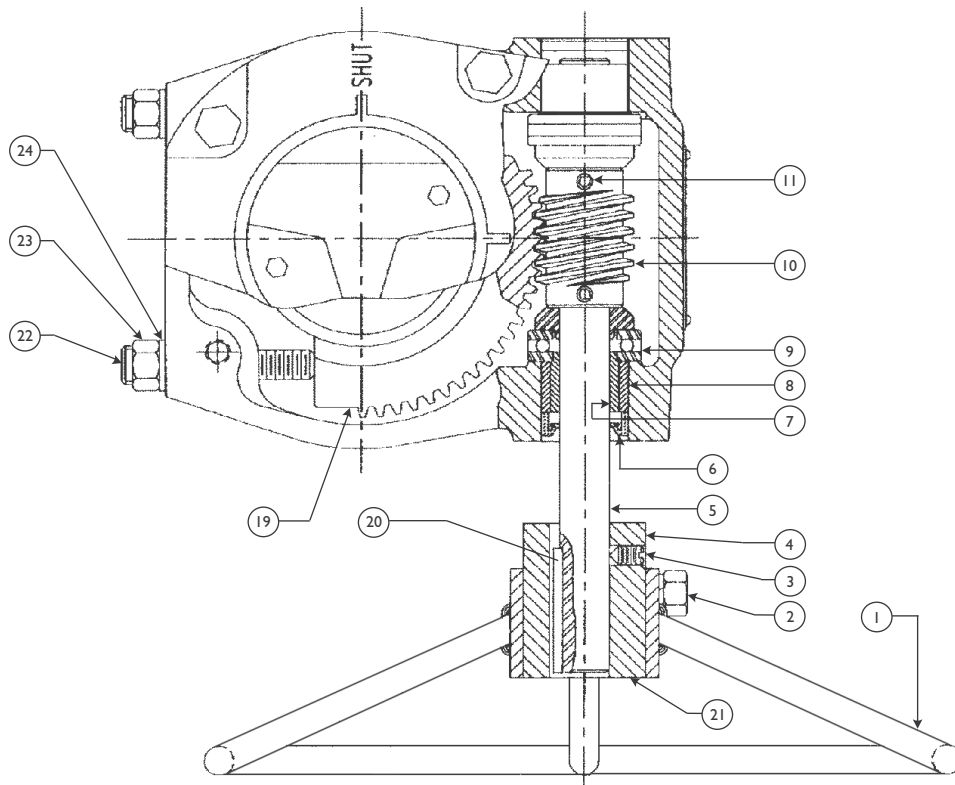
- Reliable rugged worm gear boxes with position indicators and adjustable Travel/stop screws for 1/4 turn ball valves, plug valves etc.
- Weatherproof housing, manufactured from high strength ductile iron, seals at bottom of worm gear hub to protect and isolate internal operating parts from dirt and water.
- Carbon steel one-piece input shaft and worm gear are supported by ball or tapered roller bearings for increased efficiency. No sleeve bearings are used.
- Durable ductile iron worm segments are standard.
- Adjusting screws allow a + or - 5° range at end of travel.
- Permanently lubricated with generous amounts of high quality grease. Grease fittings are standard on all models.

## QUICK REFERENCE

| UNIT TYPE | APPROXIMATE WEIGHT IN KG W/O WHEEL | MAXIMUM OUTPUT TORQUE NM | INPUT TORQUE NM | UNIT RATIO | MAXIMUM BORE SIZE SQUARE KEYWAY    | MAXIMUM BORE SIZE RECTANGULAR KEYWAY | MINIMUM BORE SIZE MM | MOUNTING PATTERN MSS SP-101                    |
|-----------|------------------------------------|--------------------------|-----------------|------------|------------------------------------|--------------------------------------|----------------------|--|
| WG108W    | 15.5                               | 2200                     | 120             | 72:1       | 47.8mm WITH 12.7mm X 12.7mm KEYWAY | 49.3mm WITH 12.7mm x 9.53mm KEYWAY   | 20                   | FA14<br>* (4) 5/8-11 UNC-2B<br>ONA 139.7MM PCD |

\* Other drillings on request

# WG208W Worm Gear Operator



## PARTS AND BILL OF MATERIALS

| NO | PART NAME            | QTY | MATERIAL      |
|----|----------------------|-----|---------------|
| 1  | HANDWHEEL            | 1   | CARBON STEEL  |
| 2  | SET SCREW            | 1   | CARBON STEEL  |
| 3  | STEM KEY             | 1   | CARBON STEEL  |
| 4  | INPUT SHAFT          | 1   | AISI 1045     |
| 5  | OIL SEAL             | 1   | RUBBER        |
| 6  | BEARING              | 2   | CU-BASE ALLOY |
| 7  | OIL BEARING          | 2   | CU-BASE ALLOY |
| 8  | THRUST BEARING       | 2   | COMMERCIAL    |
| 10 | WORM                 | 1   | AISI 1045     |
| 12 | PIN                  | 2   | CARBON STEEL  |
| 15 | PLUG                 | 2   | CARBON STEEL  |
| 16 | BOLT                 | 2   | CARBON STEEL  |
| 17 | INDICATOR PLATE      | 1   | CAST IRON     |
| 18 | BOLT                 | 4   | CARBON STEEL  |
| 19 | COVER                | 1   | CAST IRON     |
| 20 | HOUSING              | 1   | CAST IRON     |
| 21 | O-RING               | 2   | RUBBER        |
| 23 | WORM GEAR            | 1   | DUCTILE IRON  |
| 24 | 2" SQ. OPERATING NUT | 1   | CARBON STEEL  |
| 25 | STOP SCREW           | 2   | CARBON STEEL  |
| 26 | HEX NUT              | 2   | CARBON STEEL  |
| 27 | LOCKWASHER           | 2   | CARBON STEEL  |

## QUICK REFERENCE

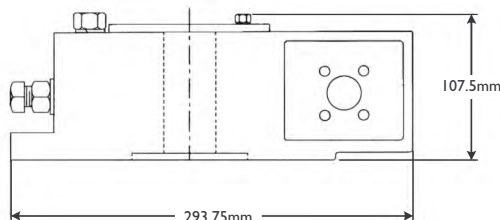
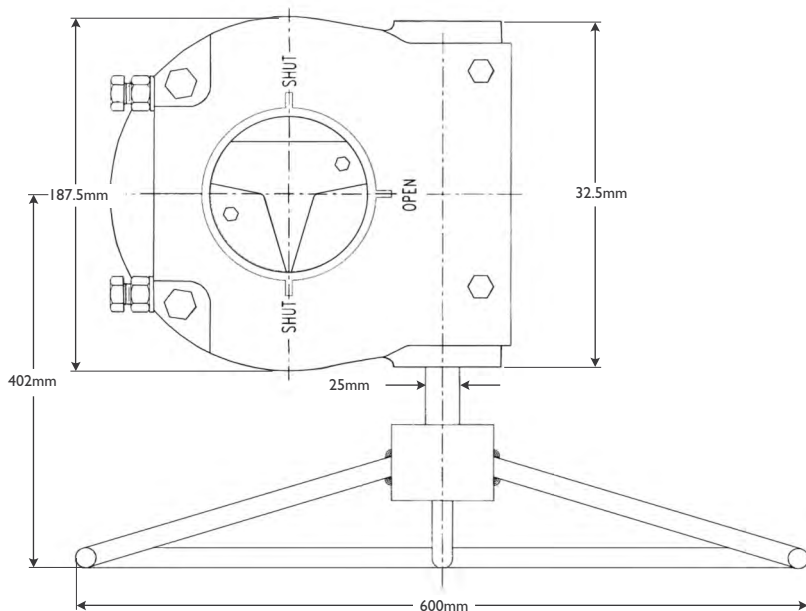
| UNIT TYPE | APPROXIMATE WEIGHT IN KG W/O WHEEL | MAXIMUM OUTPUT TORQUE NM | INPUT TORQUE NM | UNIT RATIO | MAXIMUM BORE SIZE SQUARE KEYWAY | MAXIMUM BORE SIZE RECTANGULAR KEYWAY | MINIMUM BORE SIZE MM | MOUNTING PATTERN MSS SP-101                     |
|-----------|------------------------------------|--------------------------|-----------------|------------|---------------------------------|--------------------------------------|----------------------|---|
| WG208W    | 32.73                              | 4475                     | 220             | 68:1       | 76.4mm WITH 22mm x 22mm KEYWAY  | 79.3mm WITH 15.88mm x 11.11mm KEYWAY | 38.1mm               | FA19<br>* (8) 5/8-11 UNC-2B<br>ONA 190.5 mm PCD |

\* Other drillings on request

# WG208W Worm Gear Operator



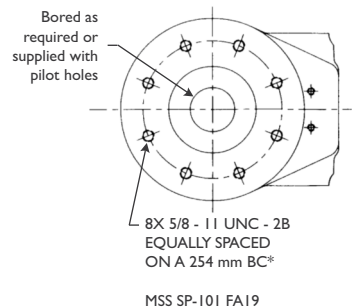
## DIMENSIONS



## WORM GEAR

Rugged, dependable, precision performance for valves requiring 90° rotation.

## MOUNTING PATTERN



- Reliable rugged worm gear boxes with position indicators and adjustable Travel/stop screws for 1/4 turn ball valves, plug valves etc.
- Weatherproof housing, manufactured from high strength ductile iron, seals at bottom of worm gear hub to protect and isolate internal operating parts from dirt and water.
- Carbon steel one-piece input shaft and worm gear are supported by ball or tapered roller bearings for increased efficiency. No sleeve bearings are used.
- Durable ductile iron worm segments are standard.
- Adjusting screws allow a + or - 5° range at end of travel.
- Permanently lubricated with generous amounts of high quality grease. Grease fittings are standard on all models.

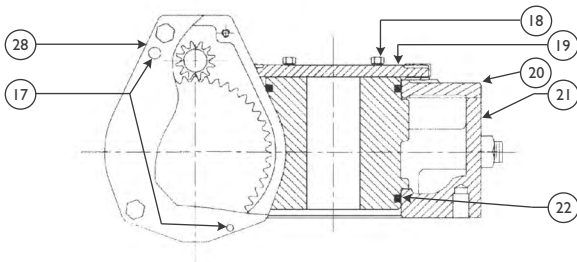
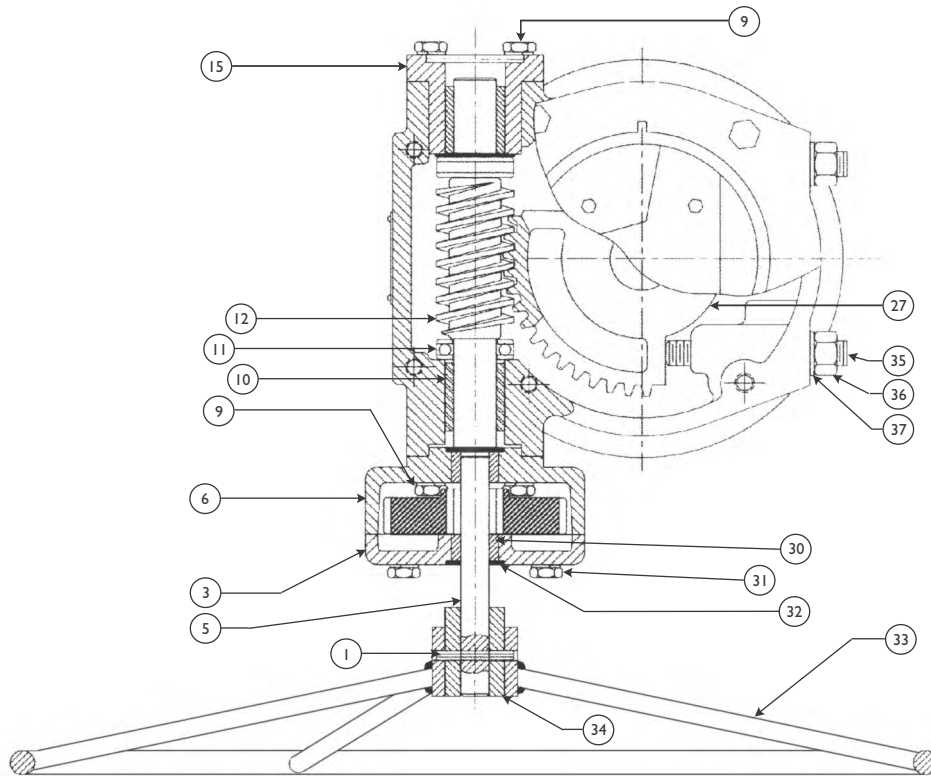
Also available in subsea (IP67) and low temperature configurations up to 320,000NM

## QUICK REFERENCE

| UNIT TYPE | APPROXIMATE WEIGHT IN KG W/O WHEEL | MAXIMUM OUTPUT TORQUE NM | INPUT TORQUE NM | UNIT RATIO | MAXIMUM BORE SIZE SQUARE KEYWAY | MAXIMUM BORE SIZE RECTANGULAR KEYWAY | MINIMUM BORE SIZE MM | MOUNTING PATTERN MSS SP-101                   |
|-----------|------------------------------------|--------------------------|-----------------|------------|---------------------------------|--------------------------------------|----------------------|---|
| WG208W    | 32.73                              | 4475                     | 220             | 68:1       | 76.4mm WITH 22mm x 22mm KEYWAY  | 79.3mm WITH 15.88mm x 11.11mm KEYWAY | 38.1mm               | FA19<br>* (8) 5/8-11 UNC-2B ON A 190.5 mm PCD |

\* Other drillings on request

# WG308W Worm Gear Operator



## PARTS AND BILL OF MATERIALS

| NO | PART NAME             | QTY | MATERIAL      |
|----|-----------------------|-----|---------------|
| 1  | SLOTTED SPRING PIN    | 1   | CARBON STEEL  |
| 3  | SPUR GEAR COVER       | 1   | CAST IRON     |
| 5  | INPUT SHAFT           | 1   | AISI 1045     |
| 6  | SPUR GEAR HOUSING     | 1   | CAST IRON     |
| 9  | BOLT                  | 4   | CARBON STEEL  |
| 10 | BEARING               | 1   | Cu-BASE ALLOY |
| 11 | THRUST BEARING        | 1   | COMMERCIAL    |
| 12 | WORM                  | 1   | AISI 1045     |
| 15 | BEARING BLOCK         | 1   | CARBON STEEL  |
| 17 | LOCATOR PINS          | 2   | CARBON STEEL  |
| 18 | BOLT                  | 4   | CARBON STEEL  |
| 19 | INDICATOR PLATE       | 1   | CAST IRON     |
| 20 | COVE                  | 1   | CAST IRON     |
| 21 | HOUSING               | 1   | CAST IRON     |
| 22 | O-RING                | 2   | RUBBER        |
| 27 | WORM GEAR             | 1   | DUCTILE IRON  |
| 28 | SPUR GEAR             | 1   | CARBON STEEL  |
| 30 | BEARING               | 1   | Cu-BASE ALLOY |
| 31 | BOLT                  | 4   | CARBON STEEL  |
| 32 | SEAL COVER            | 1   | RUBBER        |
| 33 | HANDWHEEL             | 1   | CARBON STEEL  |
| 34 | 2" SQ. OPERATING UNIT | 1   | CARBON STEEL  |
| 35 | STOPSCREW             | 2   | CARBON STEEL  |
| 36 | HEX NUT               | 2   | CARBON STEEL  |
| 37 | LOCKWASHER            | 2   | CARBON STEEL  |

## QUICK REFERENCE

| UNIT TYPE | APPROXIMATE WEIGHT IN KG W/O WHEEL | MAXIMUM OUTPUT TORQUE NM | INPUT TORQUE NM | UNIT RATIO | MAXIMUM BORE SIZE                     |                                      | MINIMUM BORE SIZE MM | MOUNTING PATTERN MSS SP-101                  |
|-----------|------------------------------------|--------------------------|-----------------|------------|---------------------------------------|--------------------------------------|----------------------|--|
|           |                                    |                          |                 |            | SQUARE KEYWAY                         | RECTANGULAR KEYWAY                   |                      |  |
| WG308W    | 93                                 | 10900                    | 150             | 275:1      | 95.25mm WITH 29.02mm x 29.02mm KEYWAY | 101.6mm WITH 25.4mm x 19.05mm KEYWAY | 57.15mm              | FA25<br>* (8) 5/8-11 UNC-2B ON A 254 mm B.C. |

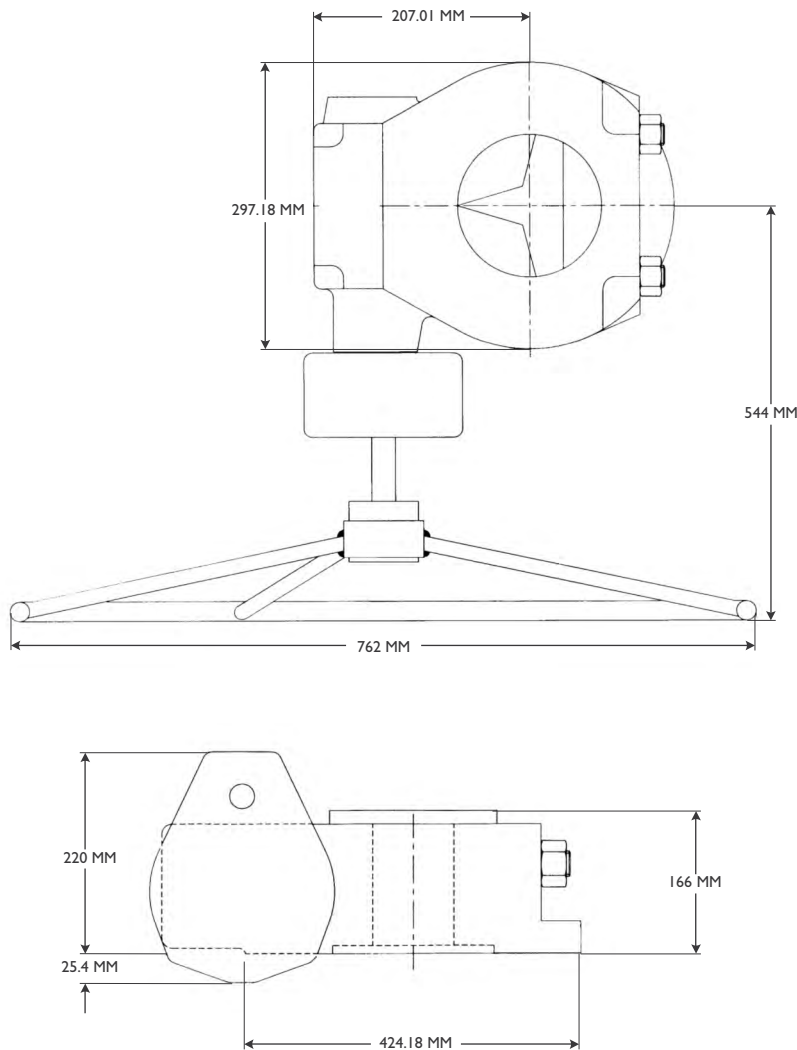
\* Other drillings on request



# WG308W Worm Gear Operator



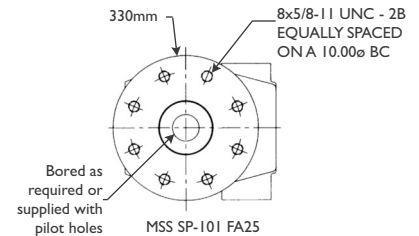
## DIMENSIONS



## WORM GEAR

Rugged, dependable, precision performance for valves requiring 90° rotation.

## MOUNTING PATTERN



- Reliable rugged worm gear boxes with position indicators and adjustable Travel/stop screws for 1/4 turn ball valves, plug valves etc.
- Weatherproof housing, manufactured from high strength ductile iron, seals at bottom of worm gear hub to protect and isolate internal operating parts from dirt and water.
- Carbon steel one-piece input shaft and worm gear are supported by ball or tapered roller bearings for increased efficiency. No sleeve bearings are used.
- Durable ductile iron worm segments are standard.
- Adjusting screws allow a + or - 5° range at end of travel.
- Permanently lubricated with generous amounts of high quality grease. Grease fittings are standard on all models.

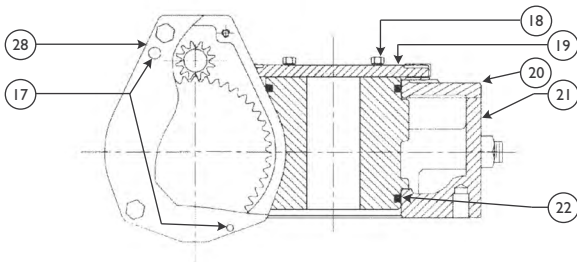
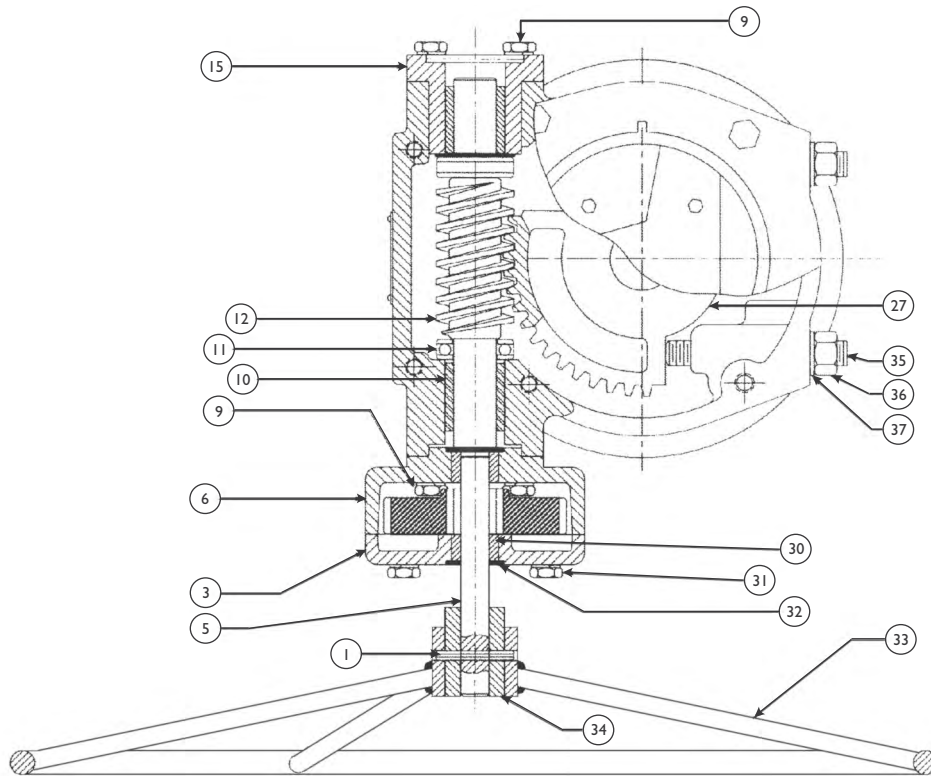
Also available in subsea (IP67) and low temperature configurations up to 320,000NM

## QUICK REFERENCE

| UNIT TYPE | APPROXIMATE WEIGHT IN KG W/O WHEEL | MAXIMUM OUTPUT TORQUE NM | INPUT TORQUE NM | UNIT RATIO | MAXIMUM SQUARE KEYWAY                 | MAXIMUM BORE SIZE RECTANGULAR KEYWAY | MINIMUM BORE SIZE MM | MOUNTING PATTERN MSS SP-101                  |
|-----------|------------------------------------|--------------------------|-----------------|------------|---------------------------------------|--------------------------------------|----------------------|--|
| WG308W    | 93                                 | 10900                    | 150             | 275:1      | 95.25mm WITH 29.02mm x 29.02mm KEYWAY | 101.6mm WITH 25.4mm x 19.05mm KEYWAY | 57.15mm              | FA25<br>* (8) 5/8-11 UNC-2B ON A 254 mm B.C. |

\* Other drillings on request

# WG408W Worm Gear Operator



## PARTS AND BILL OF MATERIALS

| NO | PART NAME             | QTY | MATERIAL      |
|----|-----------------------|-----|---------------|
| 1  | SLOTTED SPRING PIN    | 1   | CARBON STEEL  |
| 3  | SPUR GEAR COVER       | 1   | CAST IRON     |
| 5  | INPUT SHAFT           | 1   | AISI 1045     |
| 6  | SPUR GEAR HOUSING     | 1   | CAST IRON     |
| 9  | BOLT                  | 4   | CARBON STEEL  |
| 10 | BEARING               | 1   | CU-BASE ALLOY |
| 11 | THRUST BEARING        | 1   | COMMERCIAL    |
| 12 | WORM                  | 1   | AISI 1045     |
| 15 | BEARING BLOCK         | 1   | CARBON STEEL  |
| 17 | LOCATOR PINS          | 2   | CARBON STEEL  |
| 18 | BOLT                  | 4   | CARBON STEEL  |
| 19 | INDICATOR PLATE       | 1   | CAST IRON     |
| 20 | COVE                  | 1   | CAST IRON     |
| 21 | HOUSING               | 1   | CAST IRON     |
| 22 | O-RING                | 2   | RUBBER        |
| 27 | WORM GEAR             | 1   | DUCTILE IRON  |
| 28 | SPUR GEAR             | 1   | CARBON STEEL  |
| 30 | BEARING               | 1   | CU-BASE ALLOY |
| 31 | BOLT                  | 4   | CARBON STEEL  |
| 32 | SEAL COVER            | 1   | RUBBER        |
| 33 | HANDWHEEL             | 1   | CARBON STEEL  |
| 34 | 2" SQ. OPERATING UNIT | 1   | CARBON STEEL  |
| 35 | STOPSCREW             | 2   | CARBON STEEL  |
| 36 | HEX NUT               | 2   | CARBON STEEL  |
| 37 | LOCKWASHER            | 2   | CARBON STEEL  |

## QUICK REFERENCE

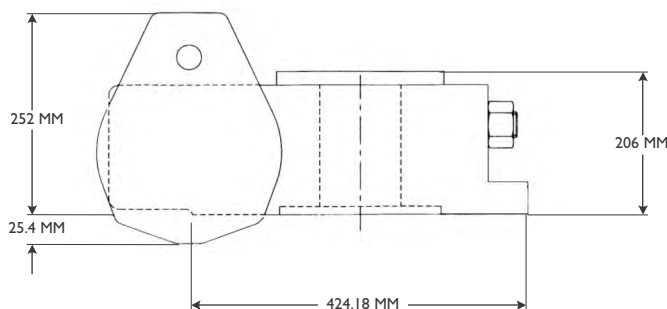
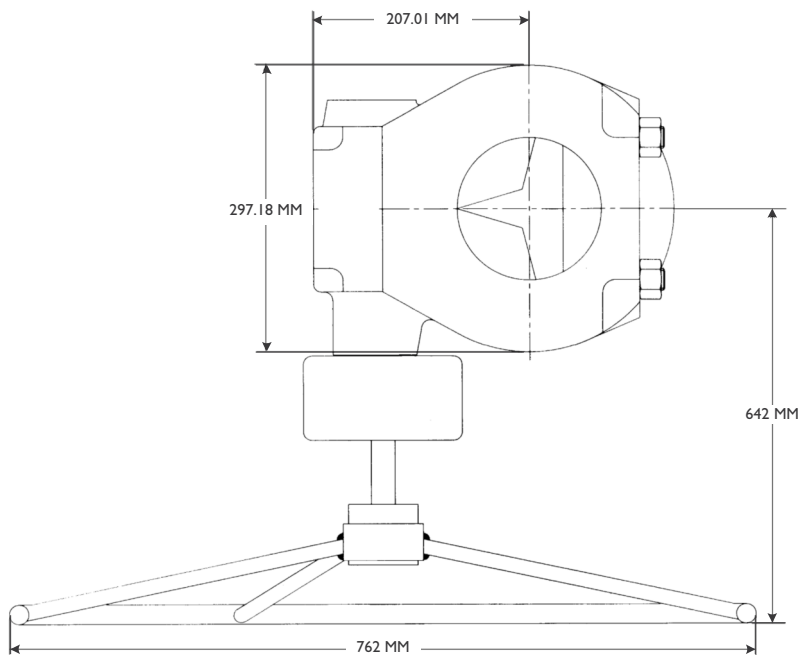
| UNIT TYPE | APPROXIMATE WEIGHT IN KG W/O WHEEL | MAXIMUM OUTPUT TORQUE NM | INPUT TORQUE NM | UNIT RATIO | MAXIMUM BORE SIZE SQUARE KEYWAY   | MAXIMUM BORE SIZE RECTANGULAR KEYWAY | MINIMUM BORE SIZE MM | MOUNTING PATTERN MSS SP-101                |
|-----------|------------------------------------|--------------------------|-----------------|------------|-----------------------------------|--------------------------------------|----------------------|--|
| WG408W    | 207                                | 33,000                   | 190             | 700:1      | 143mm WITH 38.1mm x 38.1mm KEYWAY | 155.45mm WITH 38.1mm x 25.4mm KEYWAY | 74.93mm              | FA35<br>* (8) 1 1/2 UNC-2B ON A 356mm B.C. |

\* Other drillings on request

# WG408W Worm Gear Operator



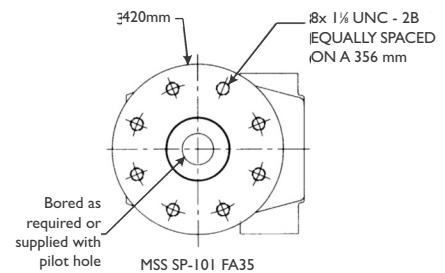
## DIMENSIONS



## WORM GEAR

Rugged, dependable, precision performance for valves requiring 90° rotation.

## MOUNTING PATTERN



- Reliable rugged worm gear boxes with position indicators and adjustable Travel/stop screws for 1/4 turn ball valves, plug valves etc.
- Weatherproof housing, manufactured from high strength ductile iron, seals at bottom of worm gear hub to protect and isolate internal operating parts from dirt and water.
- Carbon steel one-piece input shaft and worm gear are supported by ball or tapered roller bearings for increased efficiency. No sleeve bearings are used.
- Durable ductile iron worm segments are standard.
- Adjusting screws allow a + or - 5° range at end of travel.
- Permanently lubricated with generous amounts of high quality grease. Grease fittings are standard on all models.

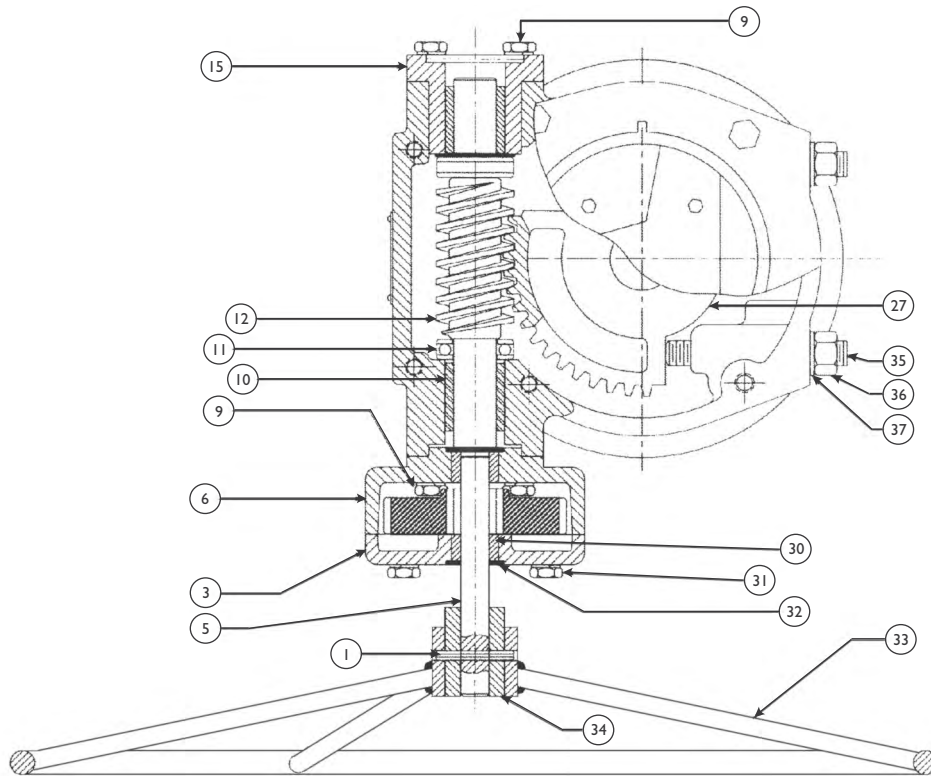
Also available in subsea (IP67) and low temperature configurations up to 320,000NM

## QUICK REFERENCE

| UNIT TYPE | APPROXIMATE WEIGHT IN KG W/O WHEEL | MAXIMUM OUTPUT TORQUE NM | INPUT TORQUE NM | UNIT RATIO | MAXIMUM SQUARE KEYWAY             | MAXIMUM BORE SIZE RECTANGULAR KEYWAY | MINIMUM BORE SIZE MM | MOUNTING PATTERN MSS SP-101              |
|-----------|------------------------------------|--------------------------|-----------------|------------|-----------------------------------|--------------------------------------|----------------------|--|
| WG408W    | 207                                | 33,000                   | 190             | 700:1      | 143mm WITH 38.1mm x 38.1mm KEYWAY | 155.45mm WITH 38.1mm x 25.4mm KEYWAY | 74.93mm              | FA35<br>* (8) 1/4 UNC-2B ON A 356mm B.C. |

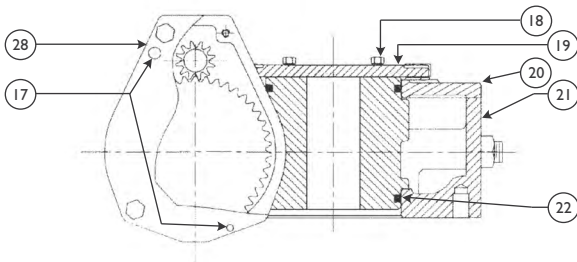
\* Other drillings on request

# WG508W Worm Gear Operator



## PARTS AND BILL OF MATERIALS

| NO | PART NAME             | QTY | MATERIAL      |
|----|-----------------------|-----|---------------|
| 1  | SLOTTED SPRING PIN    | 1   | CARBON STEEL  |
| 3  | SPUR GEAR COVER       | 1   | CAST IRON     |
| 5  | INPUT SHAFT           | 1   | AISI 1045     |
| 6  | SPUR GEAR HOUSING     | 1   | CAST IRON     |
| 9  | BOLT                  | 4   | CARBON STEEL  |
| 10 | BEARING               | 1   | CU-BASE ALLOY |
| 11 | THRUST BEARING        | 1   | COMMERCIAL    |
| 12 | WORM                  | 1   | AISI 1045     |
| 15 | BEARING BLOCK         | 1   | CARBON STEEL  |
| 17 | LOCATOR PINS          | 2   | CARBON STEEL  |
| 18 | BOLT                  | 4   | CARBON STEEL  |
| 19 | INDICATOR PLATE       | 1   | CAST IRON     |
| 20 | COVE                  | 1   | CAST IRON     |
| 21 | HOUSING               | 1   | CAST IRON     |
| 22 | O-RING                | 2   | RUBBER        |
| 27 | WORM GEAR             | 1   | DUCTILE IRON  |
| 28 | SPUR GEAR             | 1   | CARBON STEEL  |
| 30 | BEARING               | 1   | CU-BASE ALLOY |
| 31 | BOLT                  | 4   | CARBON STEEL  |
| 32 | SEAL COVER            | 1   | RUBBER        |
| 33 | HANDWHEEL             | 1   | CARBON STEEL  |
| 34 | 2" SQ. OPERATING UNIT | 1   | CARBON STEEL  |
| 35 | STOPSCREW             | 2   | CARBON STEEL  |
| 36 | HEX NUT               | 2   | CARBON STEEL  |
| 37 | LOCKWASHER            | 2   | CARBON STEEL  |



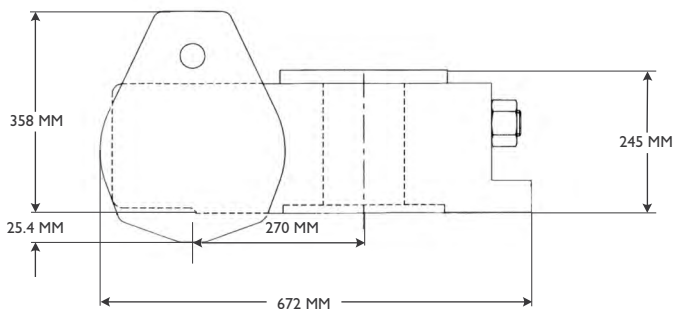
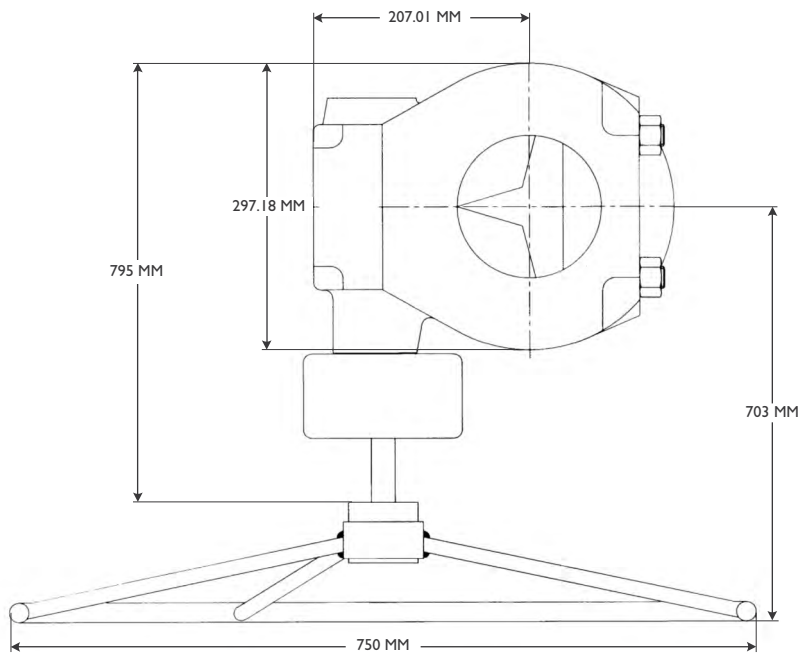
## QUICK REFERENCE

| UNIT TYPE | APPROXIMATE WEIGHT IN KG W/O WHEEL | MAXIMUM OUTPUT TORQUE NM | UNIT RATIO | MAXIMUM BORE SIZE SQUARE KEYWAY | MAXIMUM BORE SIZE RECTANGULAR KEYWAY | MINIMUM BORE SIZE MM | MOUNTING PATTERN MSS SP-101 |
|-----------|------------------------------------|--------------------------|------------|---------------------------------|--------------------------------------|----------------------|-----------------------------|
| WG508W    | 316                                | 60,000                   | 1254:1     | 218mm WITH 50mm x 50mm KEYWAY   | 230mm WITH 50mm x 38mm KEYWAY        | 89mm                 |                             |

# WG508W Worm Gear Operator



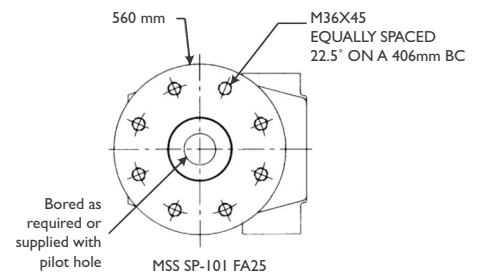
## DIMENSIONS



## WORM GEAR

Rugged, dependable, precision performance for valves requiring 90° rotation.

## MOUNTING PATTERN



- Reliable rugged worm gear boxes with position indicators and adjustable Travel/stop screws for 1/4 turn ball valves, plug valves etc.
- Weatherproof housing, manufactured from high strength ductile iron, seals at bottom of worm gear hub to protect and isolate internal operating parts from dirt and water.
- Carbon steel one-piece input shaft and worm gear are supported by ball or tapered roller bearings for increased efficiency. No sleeve bearings are used.
- Durable ductile iron worm segments are standard.
- Adjusting screws allow a + or - 5° range at end of travel.
- Permanently lubricated with generous amounts of high quality grease. Grease fittings are standard on all models.

Also available in subsea (IP67) and low temperature configurations up to 320,000NM

## QUICK REFERENCE

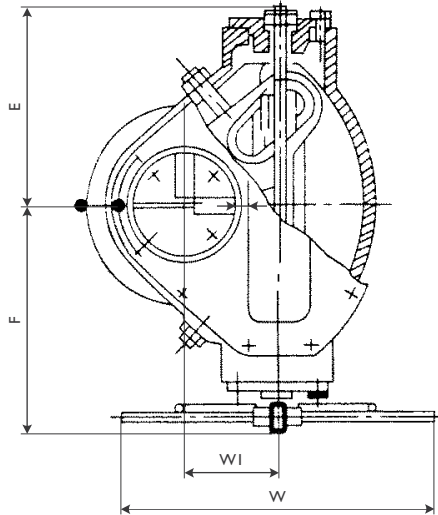
| UNIT TYPE | APPROXIMATE WEIGHT IN KG W/O WHEEL | MAXIMUM OUTPUT TORQUE NM | UNIT RATIO | MAXIMUM BORE SIZE SQUARE KEYWAY | MAXIMUM BORE SIZE RECTANGULAR KEYWAY | MINIMUM BORE SIZE MM | MOUNTING PATTERN MSS SP-101   |
|-----------|------------------------------------|--------------------------|------------|---------------------------------|--------------------------------------|----------------------|-------------------------------|
| WG508W    | 316                                | 60,000                   | 1254:1     | 218mm WITH 50mm x 50mm KEYWAY   | 230mm WITH 50mm x 38mm KEYWAY        | 89mm                 | F40<br>8XM36X45<br>406mm B.C. |



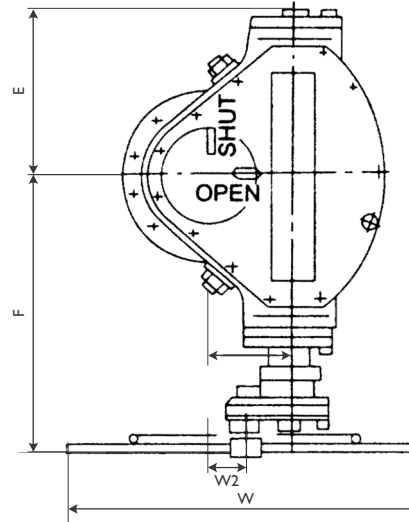
# SH Series Worm Gear Operator



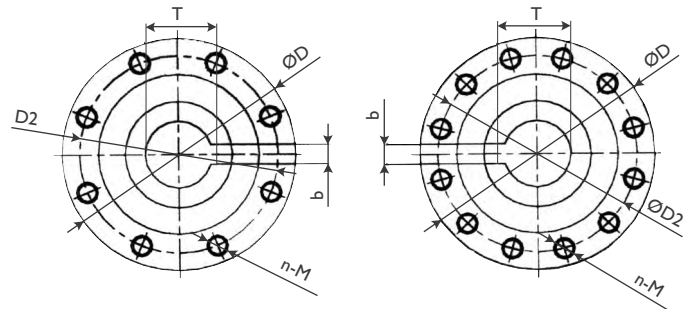
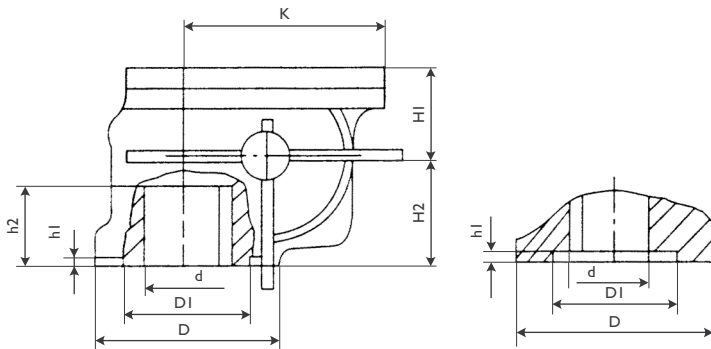
SCOTCH YOKE QUARTER-TURN, HIGH TORQUE FOR LARGE PIPELINE VALVES



SH1



SH2/SH3



MODEL SH1

MODEL SH2, SH3

## DIMENSIONS

| MODEL | E   | F   | W   | W1  | W2    | K   | H1  | H2  | D   | D1  | D2  | n-M    | h | h1 | h2  | d   | b  | t   |
|-------|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|--------|---|----|-----|-----|----|-----|
| SH1   | 340 | 410 | 800 | 150 | ---   | 335 | 130 | 135 | 350 | 200 | 300 | 8-M24  |   | 4  | 130 | 100 | 28 | 109 |
| SH2   | 390 | 650 | 800 | 180 | 82.5  | 395 | 150 | 150 | 400 | 280 | 350 | 12-M24 |   | 4  | 160 | 120 | 32 | 130 |
| SH3   | 475 | 735 | 800 | 220 | 122.5 | 478 | 180 | 189 | 500 | 360 | 450 | 12-M27 |   | 4  | 184 | 140 | 35 | 152 |

## PERFORMANCE

| MODEL | GEAR RATIO | TURNS TO CLOSE | HANDLE DIMENSIONS | MAXIMUM ALLOWABLE FORCE | REMARKS                    | TORQUE (NM) | WEIGHT (KG) |
|-------|------------|----------------|-------------------|-------------------------|----------------------------|-------------|-------------|
| SH1   | 200        | 50             | 800               | 80                      | 2.82 with second reduction | 18633       | 162         |
| SH2   | 678        | 170            | 800               | 54                      |                            | 32363       | 240         |
| SH3   | 828        | 207            | 800               | 64                      |                            | 47074       | 303         |

Note: Supplied unbored with 16mm pilot hole to allow any size keyway to be machined, or can be machined to customer specification.

Also available in subsea (IP67) and low temperature configurations up to 320,000NM

# MO Series Declutchable Gear Override



## HEAVY DUTY QUARTER TURN WORM TYPE GEAR OVER-RIDE

### FEATURES

- Compact and light weight
- There are two keyway 90° apart to allow mounting east-west or north-south
- Pull out the positioning pin and rotate the off-centre device 180° to engage the gearbox, disengage the opposite way.
- The gear operator is filled with a special lubricant. The gearbox is a sealed unit and is dust proof and waterproof and made to IP65
- The bottom of gear operator should be connected to the valve (bracket mounting), the top is connected to the actuator with the valve stem going through the inner hole of worm gear and the square on the end of stem then inserts into the square hole of actuator cylinder.
- The unit can be switched between manual gear and automatic actuator operation but does not allow engagement of both devices at the same time. The cylinder of the gear operator engages to the valve stem and disengages the actuator in one position, then in the other position this is reversed.

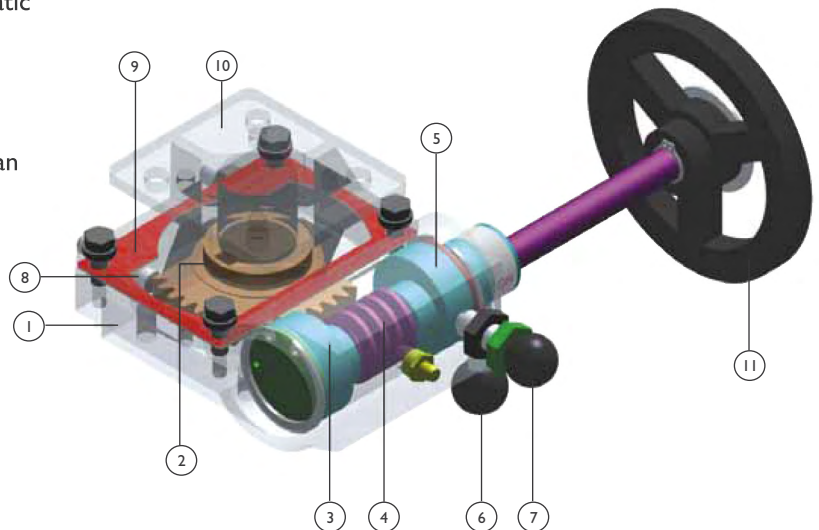


### APPLICABLE STANDARDS

Model: MO-1 / MO-2 / MO-3 / MO-4 / MO-5 / MO-7 / MO-8  
 Torque Range: 100 to 9800 Nm  
 Temperature: -20°C to +80°C  
 Stroke Adjustment: ±10  
 Movement: 0° to 90°

MO Series manual override is an emergency device for the opening and closing of a valve in case of a pneumatic actuator failure. It's self-locking worm gear design provides safe and easy operation for transferring between control and manual operation.

The MO Series declutchable gear operators provide an easy and reliable method of direct manual operation that can be utilised to over-ride the actuator as emergency control on air failure, or as a local control in the event of controller malfunction. When the hand wheel is clutched in, the valve is then under local manual control and the remote control is 'locked out'.



### MATERIALS

| NO. | PART NAME               | MATERIAL                 |
|-----|-------------------------|--------------------------|
| 1   | HOUSING                 | ALUMINIUM / DUCTILE IRON |
| 2   | WORM WHEEL              | IRON                     |
| 3   | ECCENTRIC BUSH BEAR     | ALUMINIUM                |
| 4   | WORM SHAFT              | ALUMINIUM                |
| 5   | ECCENTRIC BUSH H/W SIDE | ALUMINIUM                |
| 6   | SELECTOR                | STEEL                    |

| NO. | PART NAME    | MATERIAL                 |
|-----|--------------|--------------------------|
| 7   | ON/OFF LEVER | STEEL                    |
| 8   | LIMIT STOP   | STEEL                    |
| 9   | GASKET       | CNAF / VITON             |
| 10  | TOP COVER    | ALUMINIUM / DUCTILE IRON |
| 11  | HAND WHEEL   | ALUMINIUM                |

# MO Series Declutchable Gear



## OVERVIEW

MO declutchable gear box provides reliable manual positioning of valves, allowing existing pneumatic or hydraulic rotary actuators to be overridden. All Diamond Gear MO gearboxes are suitable for outdoor use. The self-locking rugged design allows easy and safe operation, positive manual positioning and long life.

## OPERATION

For manual operation, pull out the spring clutch lever and then rotate the clutch lever clockwise until fully engaged. Anticlockwise lever movement will disengage manual operation and the valve is recoupled direct to the automatic actuator. When under manual control, the valve remains locked in the last set position.

## STROKE ADJUSTMENT

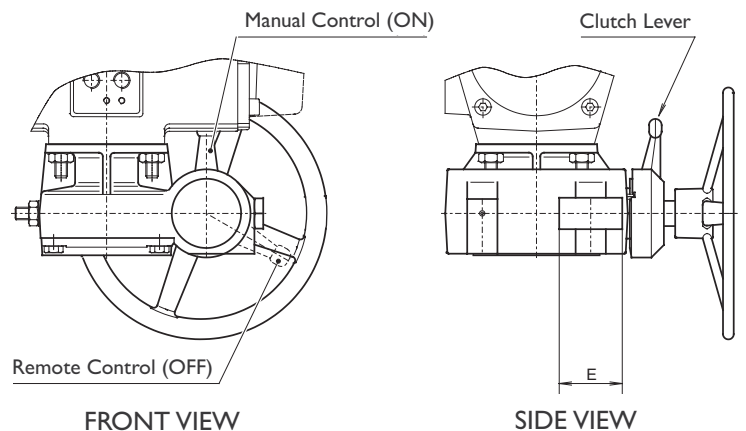
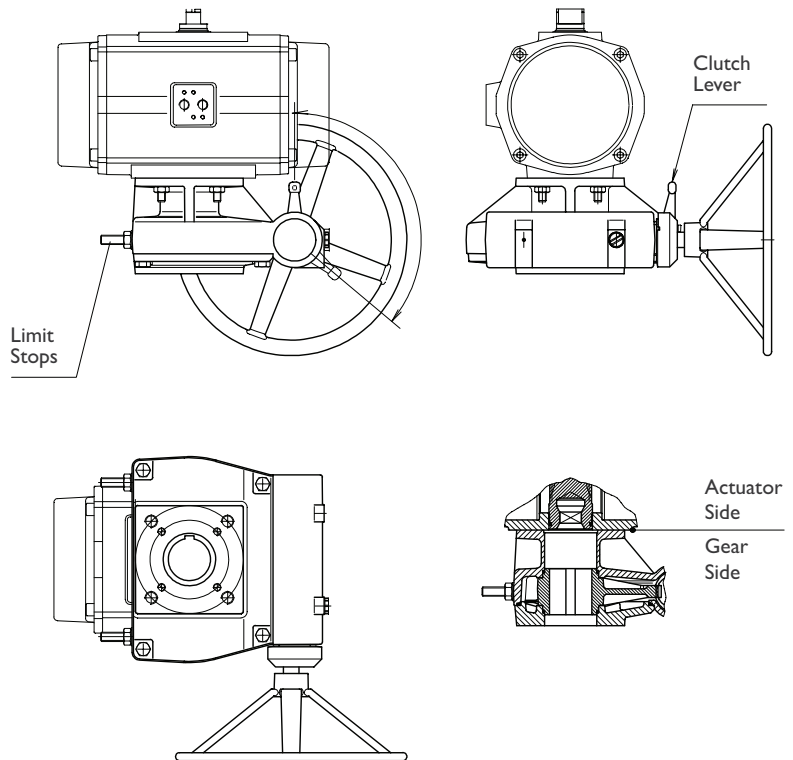
The MO gearbox is supplied with two stroke adjusting bolts. These bolts must be set for valve positioning and to avoid damage during manual operation. The limit stops on actuators are overridden when fitted with MO - Gearboxes. For stroke angle less than 80°, consult us.

## ASSEMBLY CODES:

- S - Standard
- R - Reversed operation: handwheel on the other side (factory option).

## SPECIFICATIONS:

|                   |   |
|-------------------|---|
| Body              | : Heavy Cast Aluminium or Ductile Iron.       |
| Gear Quadrant     | : Aluminium bronze or SGI 600/3.              |
| Worm shaft        | : Hard anodized, high grade aluminium or ENB. |
| Temperature       | : -20°C to +85°C. (Specials on request).      |
| Stroke Adjustment | : +5° and -5° at each end.                    |
| Movement          | : 0° - 90°.                                   |
| Coating           | : Polyurethane coating.                       |
| Fasteners         | : Stainless steel.                            |



# MO Series Declutchable Gear



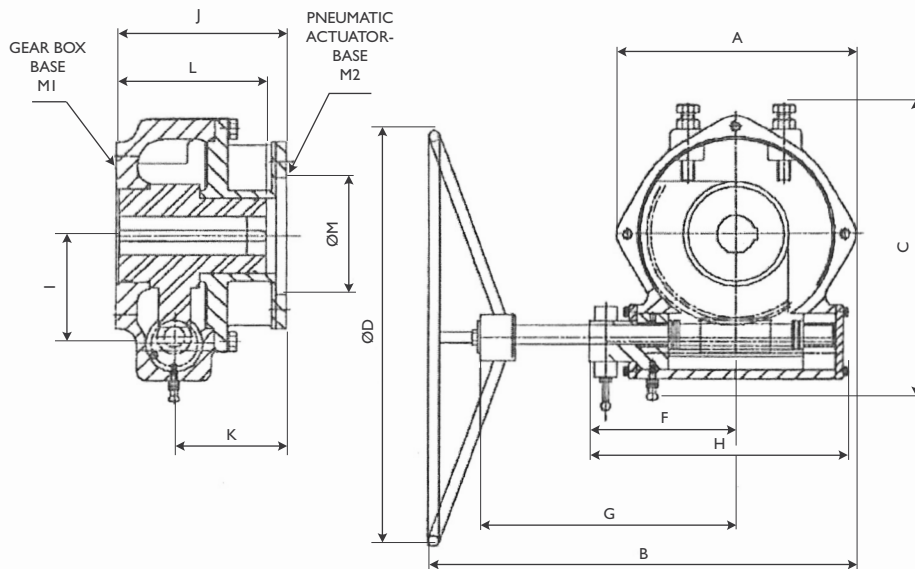
## MAIN SPECIFICATIONS

| MODEL  | RATIO | TURNS TO CLOSE 90° | PERFORMANCE FACTOR ±10% | OUTPUT TORQUE NM | INPUT TORQUE NM | GEAR BOX BASE M1 As per IS:5211 |      | PNEUMATIC ACTUATOR BASE M2 |      | STEM MAX | LENGTH OF STEM ACCEPTABLE | STANDARD HAND-WHEEL DIA. MM | PULL OR RIM EFFORT REQD. TO OPERATE ±10% N (Kg) | APPRO. WEIGHT WITH H/W (Kg) |
|--------|-------|--------------------|-------------------------|------------------|-----------------|---------------------------------|------|----------------------------|------|----------|---------------------------|-----------------------------|---|-----------------------------|
|        |       |                    |                         |                  |                 | Min.                            | Max. | Min.                       | Max. |          |                           |                             |   |                             |
| MO-01  | 40:1  | 10                 | 13                      | 100              | 8               | F05                             | F07  | F05                        | F07  | 25       | 26                        | 250                         | 64(7)   | 5.0                         |
| MO-02  | 35:1  | 8.75               | 11                      | 300              | 28              | F07                             | F10  | F07                        | F10  | 28       | 40                        | 250                         | 224(23)   | 8.0                         |
| MO-03  | 40:1  | 10                 | 13                      | 500              | 39              | F10                             | F12  | F10                        | F12  | 36       | 55                        | 300                         | 250(26)   | 11.0                        |
| MO-04  | 40:1  | 10                 | 13                      | 890              | 69              | F10                             | F12  | F10                        | F14  | 40       | 60                        | 450                         | 300(31)   | 16.0                        |
| MO-04A | 45:1  | 11.25              | 15                      | 1610             | 107             | F12                             | F14  | F12                        | F14  | 52       | 100                       | 500                         | 428(44)   | 16.0                        |
| MO-05  | 45:1  | 11.25              | 15                      | 1900             | 127             | F12                             | F15  | F12                        | F16  | 52       | 90                        | 500                         | 508(51)   | 30.0                        |
| MO-06  | 45:1  | 11.25              | 15                      | 3450             | 230             | F14                             | F16  | F12                        | F16  | 52       | 90                        | 500                         | 508(51)   | 30.0                        |
| MO-06A | 50:1  | 12.25              | 16                      | 4600             | 288             | F14                             | F25  | F14                        | F16  | 70       | 120                       | 700                         | 821(84)   | 48.0                        |
| MO-07  | 56:1  | 14                 | 19                      | 5800             | 306             | F16                             | F25  | F16                        | F25  | 90       | 140                       | 700                         | 874(89)   | 90.0                        |
| MO-08  | 56:1  | 14                 | 19                      | 9800             | 516             | F25                             | F30  | F25                        |      | 115      | 140                       | 700                         | 1479(150)                                       | 133.0                       |

IN CASE OF USING SPRING RETURN PNEUMATIC ACTUATOR ADD THE ACTUATOR TORQUE SPRING TO THE TORQUE OF VALVE TO CALCULATE TORQUE OF MANUAL OVER-RIDE.

MAX. STEM SIZE FOR F-05 MOUNTING BASE (M2) IS 19.0

MAX. STEM SIZE FOR F-07 MOUNTING BASE (M2) IS 25.0



## DIMENSIONS

| MODEL  | A   | B   | C   | ØD  | F   | G     | H   | I   | J   | K   | L   | ØM                             |
|--------|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|--------------------------------|
| MO-01  | 92  | 265 | 177 | 250 | 75  | 161   | 124 | 45  | 93  | 63  | 60  | COUNTER DIMS AREAS PER IS-5211 |
| MO-02  | 125 | 269 | 193 | 250 | 92  | 149   | 157 | 49  | 110 | 75  | 92  |                                |
| MO-03  | 153 | 324 | 220 | 300 | 105 | 174   | 184 | 56  | 115 | 77  | 98  |                                |
| MO-04  | 150 | 295 | 240 | 450 | 89  | 160   | 160 | 74  | 127 | 89  | 88  |                                |
| MO-04A | 178 | 390 | 280 | 500 | 123 | 216   | 230 | 84  | 161 | 113 | 143 |                                |
| MO-05  | 220 | 395 | 305 | 500 | 123 | 216   | 231 | 99  | 160 | 112 | 130 |                                |
| MO-06  | 247 | 450 | 390 | 500 | 152 | 256   | 280 | 116 | 188 | 117 | 153 |                                |
| MO-06A | 270 | 559 | 400 | 700 | 152 | 256   | 280 | 126 | 183 | 109 | 145 |                                |
| MO-07  | 337 | 576 | 470 | 700 | 187 | 305.5 | 350 | 153 | 212 | 132 | 174 |                                |
| MO-08  | 374 | 680 | 510 | 700 | 192 | 390   | 380 | 173 | 266 | 176 | 235 |                                |

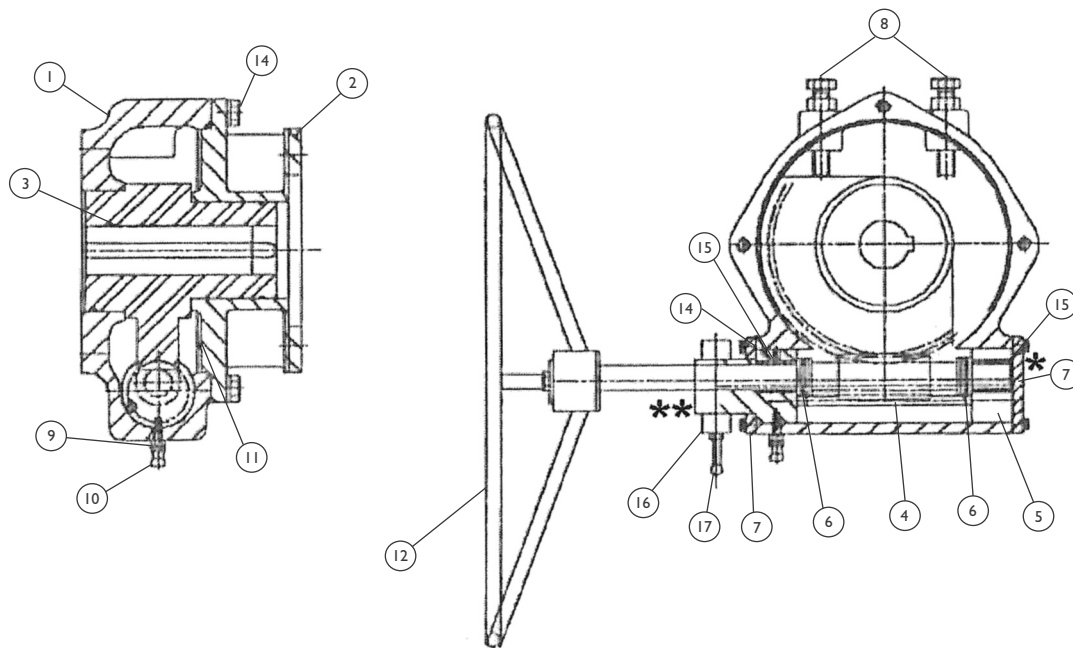
## NOTES:

- Stem bore and stem entry length is to be considered by customer.  
While calculating total stem entry deduct entry of adaptor / coupling length in length 'L' of worm wheel.
- Raised face (Spigot) as per std IS 521 can also be provided on Request.

# MO Series Declutchable Gear

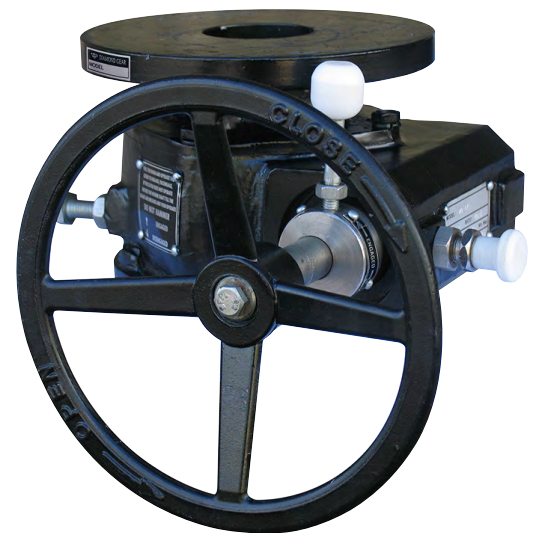


## MATERIALS OF CONSTRUCTION



## BILL OF MATERIALS

|    | DESCRIPTION                         | STANDARD                        |
|----|-------------------------------------|---------------------------------|
| 1  | Housing                             | CI (FG220)                      |
| 2  | Cover                               | CI (FG220)                      |
| 3  | Worm Wheel                          | SGI 600/3                       |
| 4  | Worm Shaft & Worm                   | ENB                             |
| 5  | Cams                                | SS 304                          |
| 6  | Thrust Spacer / Ball Thrust Bearing | GUN METAL / ALLOY STEEL         |
| 7  | Retainer Plates                     | MS                              |
| 8  | Stopper Bolts & Nuts                | STEEL 8.8Gr                     |
| 9  | Plunger Assembly                    | SS304                           |
| 10 | Plunger Knob                        | DELRIN                          |
| 11 | 'O' Rings                           | NITRILE                         |
| 12 | Hand Wheel                          | M.S. FABRICATED                 |
| 13 | Lubrication                         | MULTIPURPOSE GREASE (LEX 3)     |
| 14 | Fasteners                           | HT 8.8Gr.                       |
| 15 | Bush Bearing                        | GUN METAL                       |
| 16 | Collar Ring                         | EN-8                            |
| 17 | Cam Handle Assembly                 | EN-8                            |
| 18 | Surface Coating                     | Silver Ash Hammer tone (Enamel) |

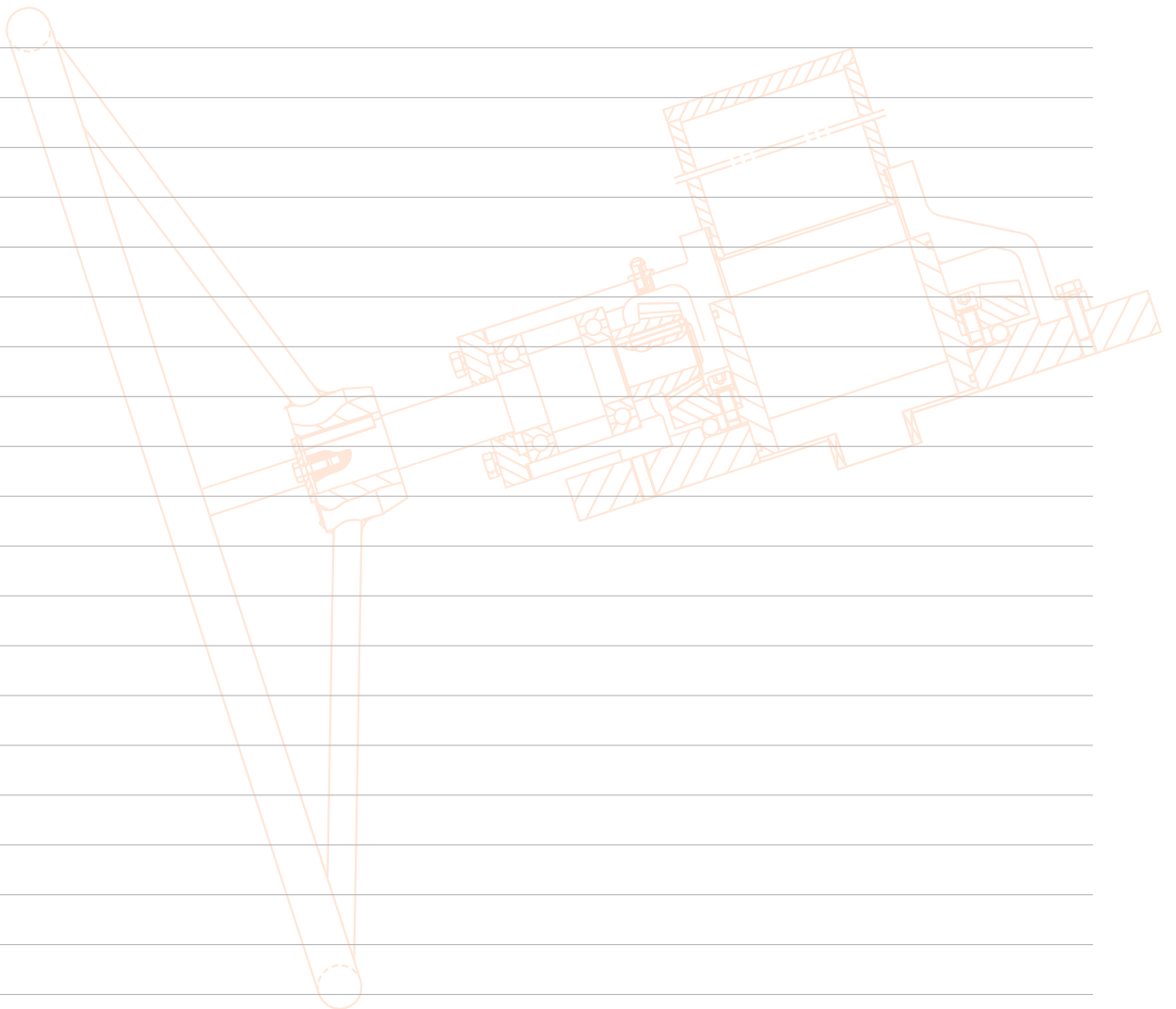


## NOTES:-

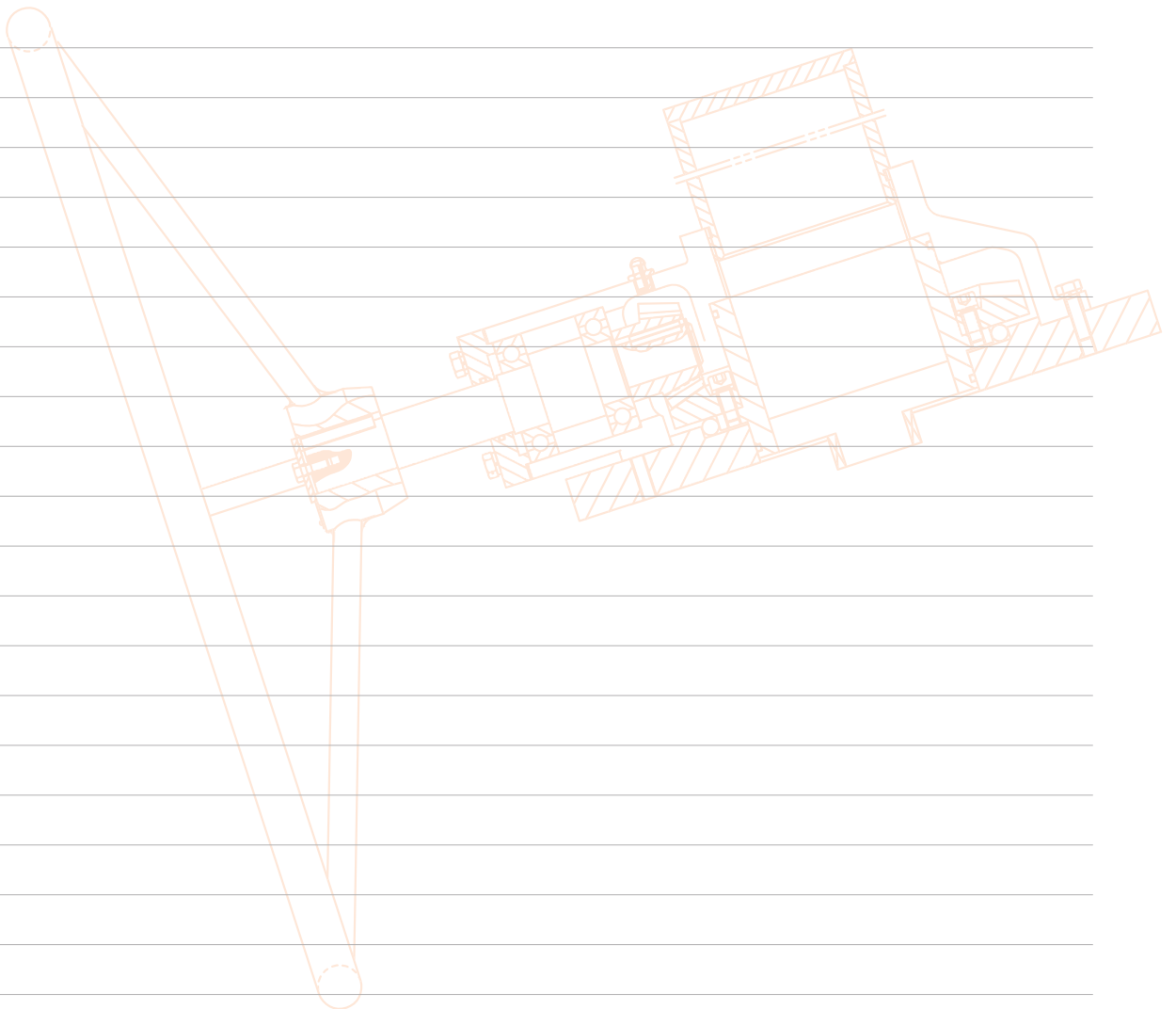
- A.** Thrust spacers (6) have been provided for MO-01 to MO-05 models, instead of ball thrust bearing.
- \*B.** MO-01 to MO-04 do not have retainer plate (7). The cams are retained by circlips.
- C.** Bushes (16) as per requirement only, depending on models.
- \*\*D.** MO-01 to MO-03 will have collar ring (17) assembly.



# Notes



# Notes





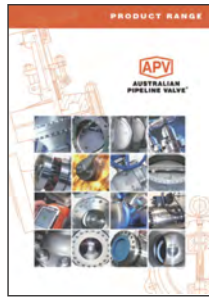
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**AUSTRALIAN PIPELINE VALVE BRAND RANGE - CATALOGUES**



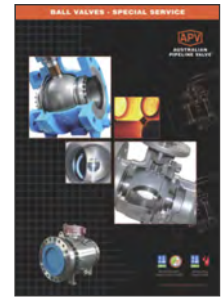
Product Brochure



Ball Valves Floating & Trunnion Mounted



Ball Valves Floating Small Bore



Ball Valves Special Service



Gate, Globe & Check Valves - Cast



Gate, Globe & Check Valves - Forged Steel



Plug Valves Lubricated, Sleeved & Lined



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Torqturn Actuators



TwinLok Tube Fittings



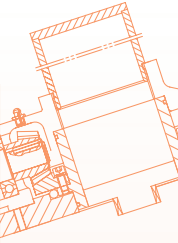
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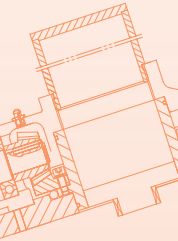
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