# Installation, Operation and Maintenance Manual

for the

**Quarter Turn Gearbox, model SJ-S008**

# Introduction

The gearbox of SJ, SGJ and S008 series is a quarter turn gearbox designed to use for the manual Installation, maintenance, and operation of valves (e.g. butterfly/ball/plug valves) in pipelines.

***Notes:***

*This manual is valid for the model SJ, SGJ and S008 gearboxes from MOGAS Industries, Inc. Some of the terms may also apply to other series of gearboxes, however, for special versions, specifications and model can differ.*

*MOGAS Industries, Inc. is not responsible for any damage caused by incorrect use of the gearbox.*

# Technical Data Specifications of SJ / SGJ / S008

## SJ Series

| SJ series | Connection Valve | Max. Manual operating Torque in (Nm) | | Completely open or close the valve | |
|---|---|---|---|---|---|
| Model | ISO5211 | Input | Output | Number of turns | Material |
| SJ24 | F05, F07, F10 | 30 | 170 | 6 | HT250/QT450 |
| | | 48 | 270 | 6 | |
| SJ30 | F07, F10, F12 | 90 | 100 | 7.5 | HT250/QT450 |
| SJ50 | F12, F14, F16 | 95 | 1200 | 12.5 | HT250/QT450 |
| SJ80 | F14, F16 | 95 | 2000 | 20 | HT250/QT450 |

## S008 Series

| SJ series | Connection Valve | Max. Manual operating Torque in (Nm) | | Completely open or close the valve | |
|---|---|---|---|---|---|
| Model | ISO5211 | Input | Output | Number of turns | Material |
| S007 | F10, F12 | 80 | 720 | 10.5 | HT250/QT450 |
| S008 | F12, F14, F16 | 110 | 1200 | 12.5 | HT250/QT450 |
| S108 | F14, F16 | 120 | 2000 | 18 | HT250/QT450 |
| S158 | F14, F16 | 150 | 2500 | 17.5 | HT250/QT450 |
| S208 | F16, F25 | 190 | 3200 | 17 | HT250/QT450 |
| S238 | F16, F25 | 170 | 6250 | 43.75 | HT250/QT450 |
| S308 | F25, F30 | 150 | 9800 | 68.75 | HT250/QT450 |
| S358 | F25, F30 | 170 | 18000 | 133 | HT250/QT450 |
| S408 | F30, F35 | 190 | 3200 | 175 | HT250/QT450 |
| S448 | F30, F35 | 170 | 42000 | 308.25 | HT250/QT450 |
| S508 | F35, F40 | 190 | 60000 | 313.5 | HT250/QT450 |
| S608 | F35, F40 | 200 | 80000 | 463.725 | HT250/QT450 |
| S708 | F48 | 200 | 100000 | 573 | HT250/QT450 |

For more specified information, you can contact our sales department at sales@mogas.com.

# Identify Gearboxes

## IDENTIFICATION

Each gearbox has a name plate. The nameplate is casted on the lid. On this nameplate you find the following information: Product model, speed ratio, rated output torque, production date and serial number

***Notes:***

*For more specified information nameplate, please indicate in the contract.*

## ORIENTATION OPTIONS OF GEARBOXES

1 When the gearbox was posited as standard position (Figure 1), hand wheel clockwise rotation turn off the valve. Hand wheel anticlockwise rotation turn on the valve.

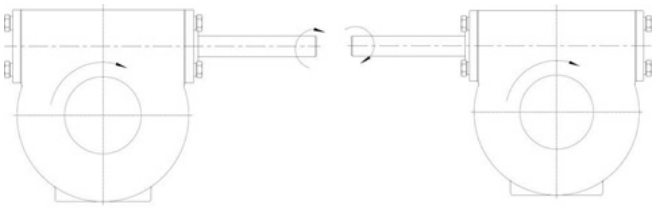


***Figure 1***

2 When the gearbox was posited as Figure 2 (generally refer to model S238, S308); hand wheel clockwise rotation turn off the valve. Hand wheel anticlockwise rotation turn on the valve.

***Figure 2***

# Identify Gearboxes

## KEYWAY AND DRIVE POSITION

### Gearbox drive parts connecting options and positions

**Figure 3**
Different options of key position (Keyway in closed position top view)

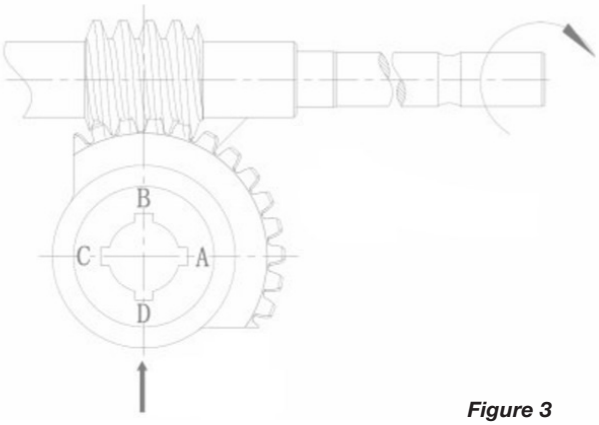



*Figure 3*

**Figure 4**
Parallel square bore

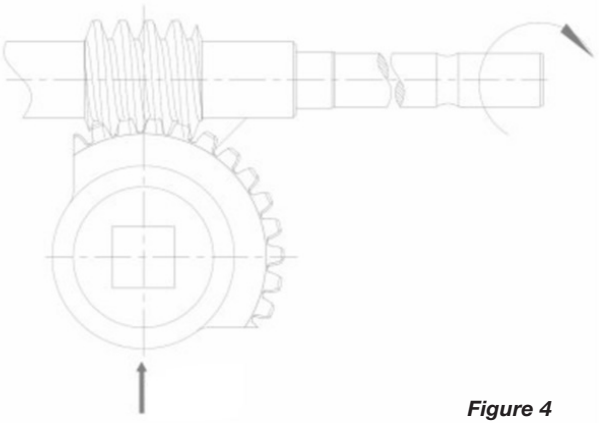


*Figure 4*

**Figure 5**
Diagonal square bore

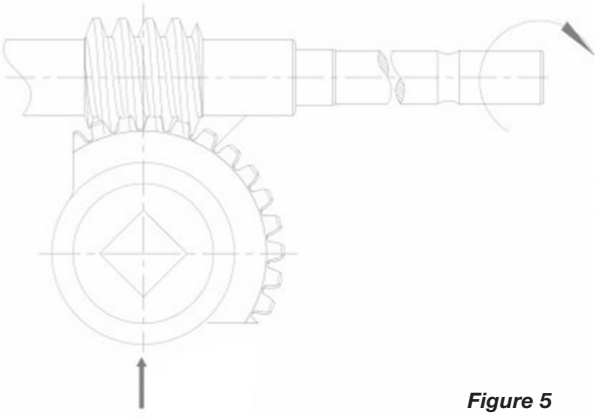


*Figure 5*

# Identify Gearboxes

**Figure 6**
Parallel flat bore

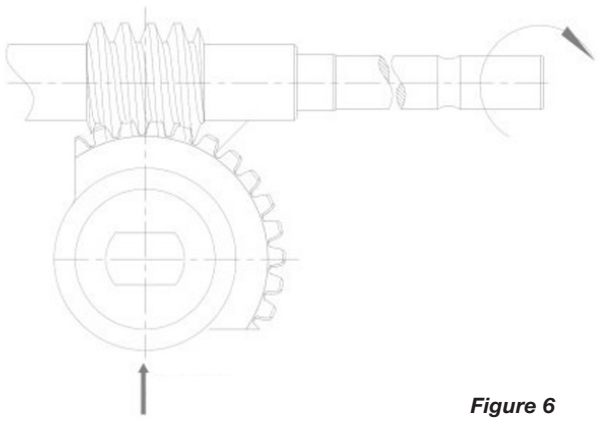


*Figure 6*

**Figure 7**
Vertical flat bore

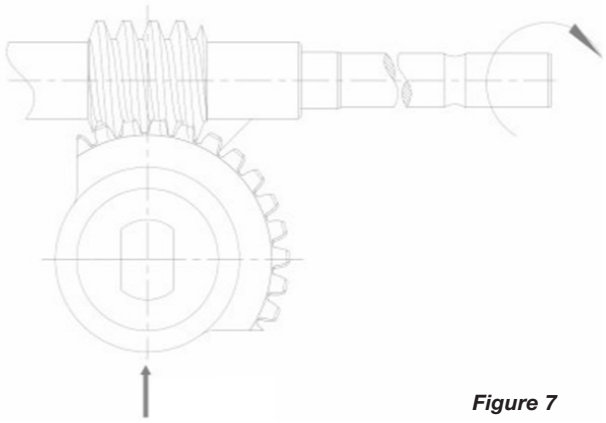


*Figure 7*

* *Special drive requirements can be provide on request*

▶ All above keyway in closed position top view.

If any other requirements needed, please contact our sales department at sales@mogas.com.

## GEARBOX LOCKING DEVICE (optional)

A locking device is installed on the input shaft (as show in figure 8) for the purpose of preventing misused or illegal operation. The locking device can be posited according to the working conditions. Please indicate specific working condition in the contract if necessary.
Be sure to read and understand

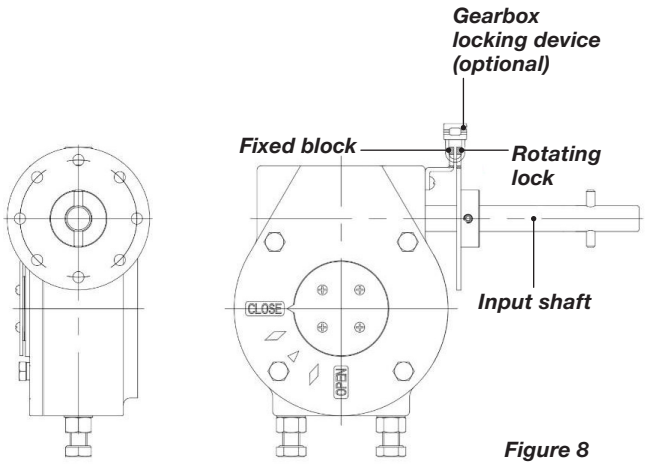



*Figure 8*

# Installation

Be sure to read and understand this manual before installation and use of our gearboxes. All personnel working with this gearbox must be familiar with the instructions in this manual and observe the instructions given. Safety instructions must be observed to avoid personal injury or property damage.

Installation, commissioning, operation, and maintenance must be carried out by qualified personnel authorized by the end user. The end user must provide a safe operating environment and the necessary protective equipment to the operator. The operator have to read and understand the manual. Moreover, the operator must know and observe officially recognized rules regarding occupational health and safety.

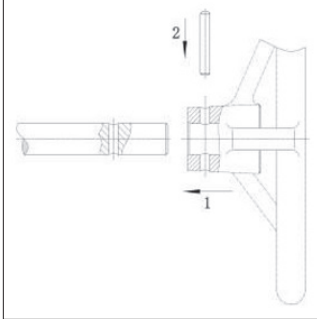
***Notes:***

*Work performed in specific environment, such as flammable and explosive and corrosion and high and low temperature, is subject to special regulations which have to be observed. The end user is responsible for respect and control of these regulations, standards, and laws.*

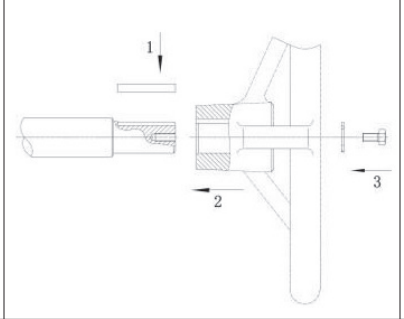
## Installation

1 Before installation, please carefully check the list of materials and the information of gearbox installed.

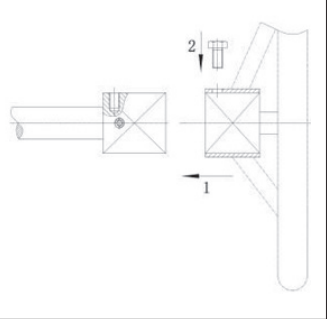
2 The gearbox is standard delivered in the closed position, limit screws are locked.




***Pin Connection***




***Key Connection***




***Square Hole Connection***

# Installation

3 It is recommended to mount the hand wheel on the input shaft (as figure show above) before assembling the gearbox to the valve.

4 Check if the gearbox flange matches the valve flange.

5 Check if the valve shaft mounting holes on the gearbox match the valve shaft dimensions.

6 Check if the valve is in the closed position. If not, close the valve before continuing.

7 After check all above process, if the flange connection is connected with double bolts, it is recommended to insert the stud bolts into the bottom flange hole of the gearbox as first step.

8 In order to prevent water or other impurities from entering and damaging the stem, it is recommended to use a gasket for sealing between the flange of the gearbox and the valve flange.

9 Gearboxes are delivered with eyebolts. Eyebolts should only be used to lift the gearbox. The input shaft or hand wheel cannot be used for lifting the gearbox. Do not lift the gearbox with eyebolts when it is assembled to the valve, input shaft or hand wheel.

The manufacturer is not responsible for any damage and safety issue caused by incorrect use of the eyebolt.

# Installation

## COMMISSIONING

1 After the installing the gearbox on the valve, turn the hand wheel clockwise to close the valve completely (The valve position is indicated by the position indicator on the gearbox).

2 Observe the actual closing position of the valve; if it is not completely closed, turn the retaining screw anticlockwise (release the lock nut), at the same time turn the hand wheel clockwise until the valve is fully closed.

3 After commissioning, tighten the setscrews clockwise and lock it with the locking screw (locking nut).

4 Turn the hand wheel anticlockwise to rotate the valve 90° to fully open position.

5 If the valve cannot be fully opened, follow the steps of 2 and 3 again.

6 After above steps are completed, repeat on/off action to confirm the position several times. The commissioning is completed.

***Notes:***

*Gearbox can be adjusted according to the valve ± 5 °.*

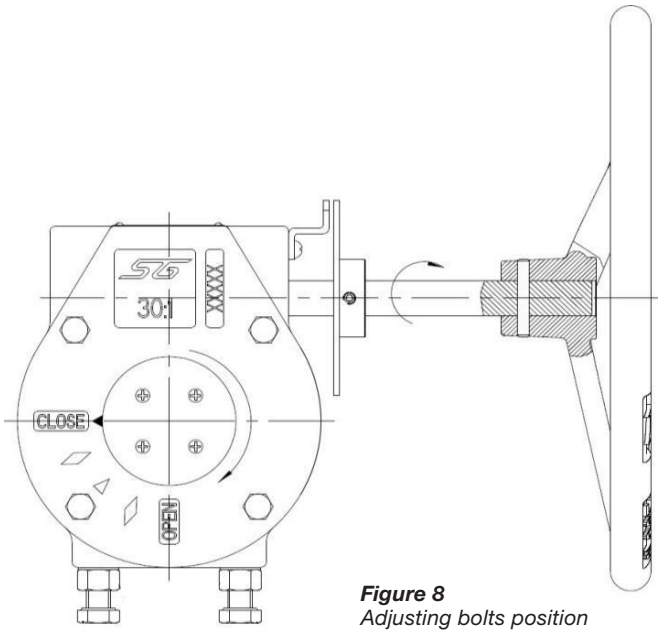



***Figure 8***
*Adjusting bolts position*

# Operation

1 This manual is only appropriate for the quarter turn gearbox.

2 The parameters of the gearbox (input / output / turns / material) are shown in Table 1, 2 and 3.

3 The position indication of the valve is indicated by the position indicator onthe gearbox.

4 Turn the hand wheel clockwise to close the valve and turn the valve anticlockwise to open the valve.

5 Be sure not to exceed the rated torque given by the parameters of the gearbox (see Table 1, 2 and 3) and only manual operation allowed. It is strictly forbidden to use illegal operating tools, such as torsion bar.

The manufacturer does not be held liable for any consequential damage. Such risk lies entirely with the user.

6 The gearbox drive mechanism include self-locking function and does not require additional fasteners to hold the valve position.

# Grease

1. When the gearbox is delivered, grease is filled in the closed cavity. The grease used is ZL-3 lithium (room temperature).

2. Applicable temperature is -20° ~ 120°. Other grease are provides on customer request.

3. Different greases can be provided depend on the environmental conditions, such as high temperature grease and low temperature grease.

4. If you need to install the oil cup on the gear box, please indicate in the order.

# Seal and Working Environment

1 The working condition need to be clear in the pre-contract requirements. IP protection according to EN60529 / IEC529 according to GB / T4208. Our products are certified by IP67. IP68 products can be provide in required. Specific working environment need to be stated during the order process.

2 The standard seal is NBR or liquid sealant which can be used from -20° to 120°. The high/low temperature resistant type seals are required by the high/low temperature work conditions. During the order process it should be mentioned when gearboxes will be exposed to high, low temperatures or other special circumstance.

3 Do not disassemble the gearbox lid or other parts after received by the end user. Disassemble any parts of the gearbox may break the seal resulting to leakage.

4 If there is any damage of NBR O-ring, caused by commissioning, please contact our sales department in order to get a new seal as soon as possible.

# Paint Specification

The gearboxes are delivered in primer. The primer is Epoxy zinc-rich coating.

If the customer requires spray paint, please specify in the contract.

# Packing

Our products are protected and packed by special packaging. The packaging consists of environmentally friendly materials which can easily be separated and recycled.

Packaging material include wood, cardboard and PE foil.

# Maintenance

To ensure reliable gearbox operation, the maintenance instructions included in this manual must be observed.

1. After the commissioning is completed, it is recommended that to perform a test run every six months;

2. Check the gearbox operation record for this cycle to see if there is any abnormality record.

3. Check the gearbox for leaks.

4. Check the bolts of the gearbox to the flange on the valve.

5. Check all fastening bolts on the gearbox.

6. Check the accuracy of the gearbox position indicator and tightening of limit adjustment bolt (If the gearbox used in frequent vibration circumstance, it is recommended that checking the condition in shorter term)

# Storage

## SHORT-TERM STORAGE
## (Less than 6 months)

The gearboxes need to be stored in dry place. Please avoid storage in areas subjected to high temperature or areas subjected to large amounts of humidity and dust. The gearbox should be stored in a wooden pallet or wooden box. Suitable corrosion protection agent must be applied to gearbox input shaft, mounting flange, valve shaft mounting hole and hand wheel hole.

## LONG-TERM STORAGE
## (More than 6 months)

The storage conditions are required same as the short-term storage. And more notably, it is important to check storage regularly. If any signs of corrosion are found, the protection process must be carried out immediately for all stock products. For example, apply new corrosion protection to products.

# Certificates

1 The gearbox models SJ, SGJ, S008 series supplied conforms in all respects to our specifications.

2 The gearbox models SJ, SGJ, S008 series supplied have got the authorization and the audit of ISO9001 Quality System.

3 For other certificates, please contact our sales department.

***Note:***

*For any other matters not included in this manual, please consult with the sales department.*

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# Service

## MAINTENANCE

When our gearbox is properly assembled and used, it will be maintenance free. It has been lubricated to last a normal working life under normal working conditions.

Should it become necessary to replace its seals, consult MOGAS Service.

## RETURN MERCHANDISE AUTHORIZATIONS

All actuators that are **returned** require a Return Merchandise Authorization (RMA).

The RMA request is submitted online by accessing the **Service** page of our website (**www.mogas.com**).

## SERVICE CONTACT

MOGAS Service may be reached
24 hours per day / 7 days per week.

Telephone: **+1 281.449.0291**

Email: **service@mogas.com**

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**To locate a sales and service center in your area, visit us online at www.mogas.com.**