



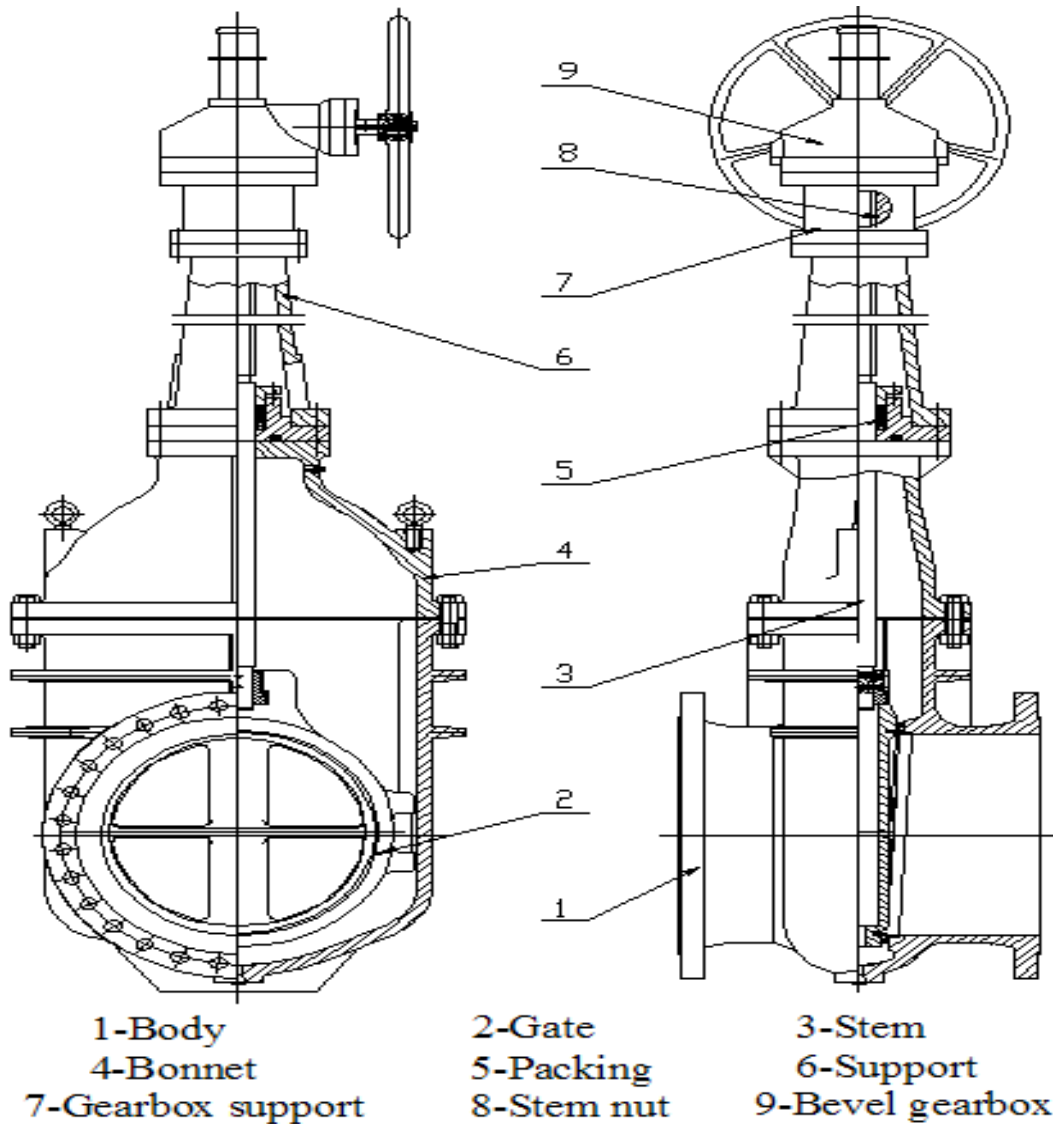
## **Metal Seated Gate Valve (OS & Y Type)**

### **Installation Operation & Maintenance Manual**

## 1. INTRODUCTION

These guidelines have been put together to help properly install and maintain the valves to ensure long service life. Face-to-Face dimensions are as per GA drawings approved. These gate valves can endure working pressure as high as PN 16; please check to ensure that pressure requirements on the pipeline and valve are matching. Both the Body and the bonnet are made ductile iron. To match our range of gate valves **VAHN-TECH** offers a selection of pneumatic and electric actuators. The actuators contribute to the efficient flow management and control.

### Assembly drawing



## 2.1 Shipment & Storage

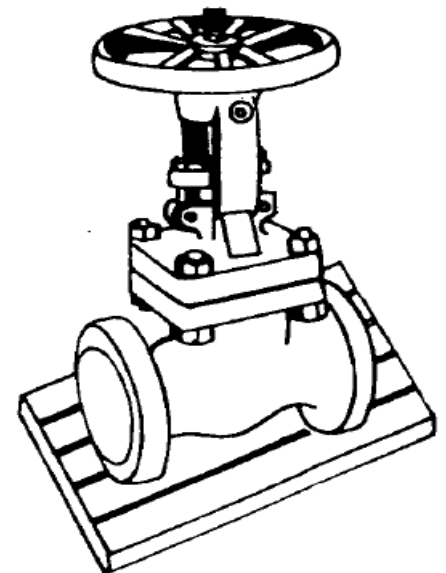
**VAHN-TECH** valves are delivered with end protectors on the inlet and outlet, to protect the disc from potential damage during transportation & handling. It is advisable to remove the end protectors at the time of installation.

Storage should be in clean and dry environment, with ideal temperatures of in between + 40°F to 85° F. When valves have been stored for more than 3 months, open and close the valves to ensure smooth operation. Repeat this exercise for every 3 months of storage. Store valves so that no heavy loads are applied to the valve body.

## 2.2 Handling

### 2.2.1 Packed Valves

Large valves and large quantities will be shipped on pallets (fig), Skids or in boxes, all of which require appropriate lifting equipment for moving. If a fork lift truck is used, appropriate fork hitches are required. The lifting and handling of packed valves in cases will be carried out at lifting points. The transportation of all packed materials should be carried out safely and according to the local safety regulations



### 2.2.2 Unpacked valves

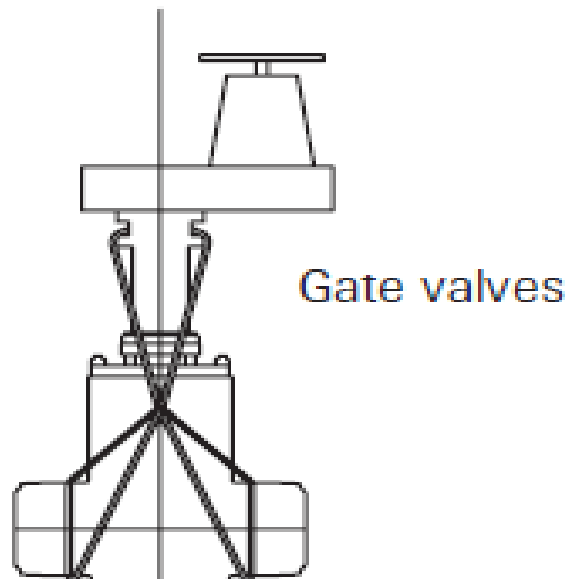
The lifting and the handling of these valves should be carried out by using appropriate means and by respecting the carrying limits. The handling must, preferably, be carried out on pallets, protecting the machined surfaces and seat to avoid damage. When lifting the large diameter valves, the sling and the hooking of the load must be carried out by using the appropriate tools (brackets, hook and fasteners) and load balancing tools in order to prevent the valves from falling or moving during the lifting and

handling. The valve may be lifted only by slings attached to the flange holes or valve body and **never with the actuator (operating mechanism/gear box) or the valve opening.**

### 3. Pre-Cautions:

For safety reasons, it is important to take the following precautions before undertaking installation activities.

1. Personnel making any adjustments to the valves should utilize suitable equipment. All required personal safety protection means should be worn.
2. The line must be depressurized before installing the valve.
3. Only personnel trained in all aspects of manual and mechanical handling techniques should be assigned to handle the valves.
4. Misuse of the valve, for example: the valve, handles, actuators or other parts may not be used as “climbing tools”.
5. Ensure the valve pressure/temperature limitations marked on the identification tags are within the service conditions. The trim number on the valve’s tag plate identifies the valve materials. See product manual.
6. Ensure that valve materials are compatible with the pipeline fluid.
7. While lifting the valve, use steel cable with hook to go through the body lifting hole (see Fig)



#### 4.1 PRE – INSTALLATION INSPECTION OF VALVES:

1. Carefully remove the valve from the shipping package (box or pallet) avoiding any damage to the valve or, in case of automated valves, to the electric pneumatic/hydraulic actuator or instrumentation.
2. Confirm that the materials of construction listed on the valve nameplate are appropriate for the service intended and are as specified.
3. It is not recommended to use third party spare parts. In case of third party spare parts, safe operation is not guaranteed.

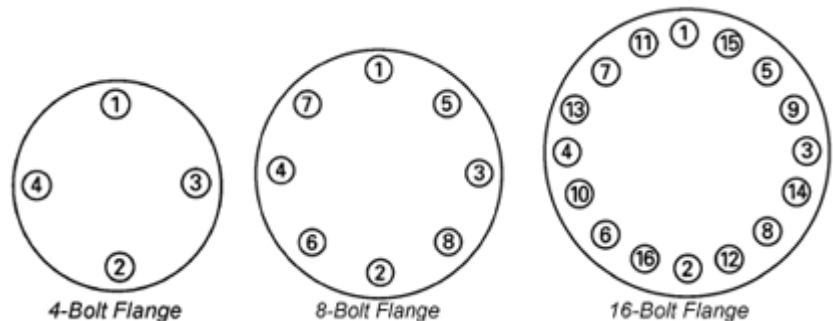
#### 4.2 VALVE INSTALLATION

Be sure to install the valve so that pressure enters the upstream side of the valve and flows downstream side of the valve. Install the valve so that the higher pressure is pushing the wedge against the seat. Failure to install the valve properly can lead to excessive seat leakage and/or damage the valve.

Although gate valves may be mounted in different orientations around the pipe line, the preferred orientation is with the stem placed vertical. Installation upside down is not recommended.

Proper mounting is essential to the performance of any valve. It is very important that you do not squeeze the valve between the two flanges because this could cause distortion in the valve body. Install the valve to the mating pipe flange using proper bolt size. It is very important to choose the proper length of the bolt for the bolt holes in the chest of the valve. These holes are bottom drilled and tapped holes in some cases contain less than a bolt diameter of the threads. If necessary, use washers to shorten the penetration of the bolt into the chest holes.

Use the cross torque pattern method for tightening of bolts (see fig). Depending on the type

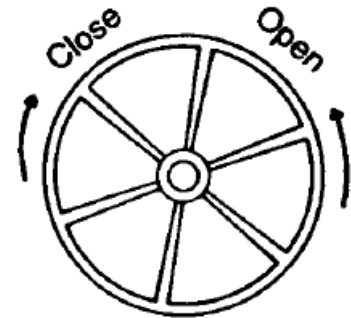


of gasket the bolts should be torque tight accordingly. Mating flanges must be parallel and true to each other and the valve. Do not use the valve to pull together or force apart the two mating pipes.

After installation, open and close the valve once to assure smooth operation.

## 5. Operation

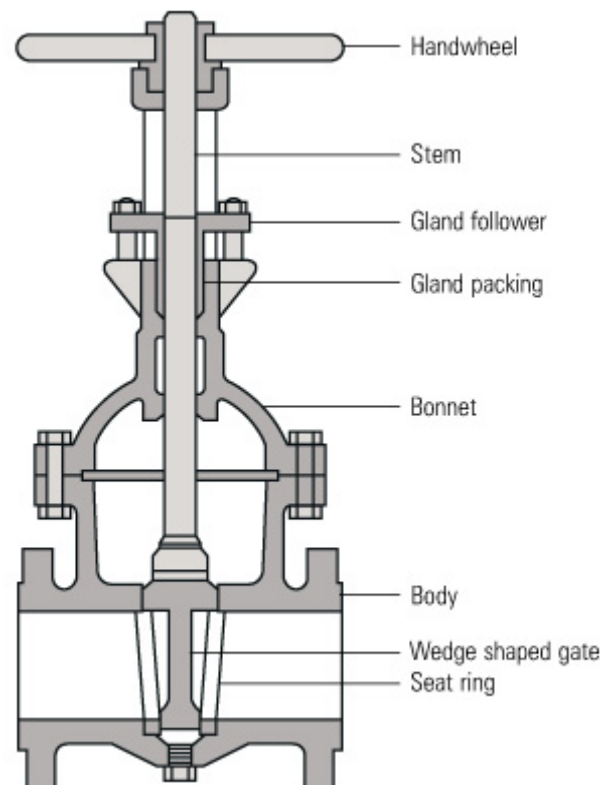
Gate valves are multi turn valves i.e., they require number of turns of rotation of handwheel for full closing or full opening of the valves. All gate valves should be used only in fully open or fully closed position. If used in slight or half open position, the gate may vibrate/chatter and also cause wire drawing at the seating area. Therefore gate valves should not be used for regulation.



Top view of the Valve

## 6. Maintenance

The only items requiring the maintenance on the gate valve are the packing and the lubrication of the stem. The packing gland (see fig) may require adjustment after installation, especially if the valve has been stored for a long time. When adjusting the packing on valves it is best to tighten the bolts on the side opposite to the seat side first. Normally just a small amount of tightening per bolt is required. Do not tighten the bolts more than necessary to stop the leakages. Try to adjust the packing gland down evenly to avoid possibility of the gland rubbing on the gate as it moves. Generally the more a valve is operated the more maintenance will be required to keep packing leaks under control.



Valves that are not operated frequently and which may remain open or closed for long periods of time should be worked (Even if partially) about once a month

Note: Excessive hand wheel effort can indicate the following.

- Improperly lubricated or damaged valve stem.
- Valve packing compression too tight.
- Faulty or damaged valve parts.
- Faulty installation (flange bolt torque)

## 7. Troubleshooting

Symptom	Possible Cause	Solution
Wedge will not move	Differential pressure too high, or Valve packed with debris	Lower pressure differential, Flush or clean to remove debris
Valve Leaking	Valve not fully closed, Debris trapped in the valve  Seat leakage Seat is damaged	Close valve  Cycle and flush (with valve open) to remove debris  Check seat for damage  If possible rework seat and re adjust
Jerky operation	Debris Trapped in valve  Air supply actuator inadequate	Cycle and flush (with valve open)to remove debris  Increase air supply pressure and/or volume