	Installation, Operation and Maintenance Manual For Gate valve			Configuration # DQ3-TD-01
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1. General

- 1.1 Thanks for using our gate valve. as pressure equipment, valves have potential pressure hazards. This manual provides safety guidance for you in selection, storage, installation, use and maintenance.
- 1.2 Instructions to Users
- 1.2.1 Personal safety should be guaranteed first in any situation;
- 1.2.2 Pressure temperature rating should be considered when using valves;
- 1.2.3 When choosing valve material, the corrosion resistance and wear resistance of the material should be considered;
- 1.2.4 Limit the working temperature when the working medium is flammable and explosive;;
- 1.2.5 In the process of repair and maintenance, it should be ensured that the valve is always in the state of venting, depressurizing and draining;
- 1.2.6 Smoking is prohibited during repair and maintenance, and open flame is prohibited without permission to prevent fire;
- 1.2.7 For electric, nigt and pneumatic valves, make sure that the circuit is disconnected before use;
- 1.2.8 Regular inspection of valves is required.

2. Technical Specification

2.1 Purpose

This valve is widely used in pipelines in chemical, petroleum, natural gas and other industries as an opening and closing device for connecting or cutting off the medium。

2.2 Technical Parameters

Nominal Sizes: 1/2”~52”

Pressure Class: 150~2500LB

Pressure Tests: API 598

Design Standard: API 600 / API 602

Applicable Media: Water, Oil, Steam and other media

Temperature: -196℃~700℃

3. Structure and working principle

3.1 The product structure is shown in Figure.1 and Figure.2.

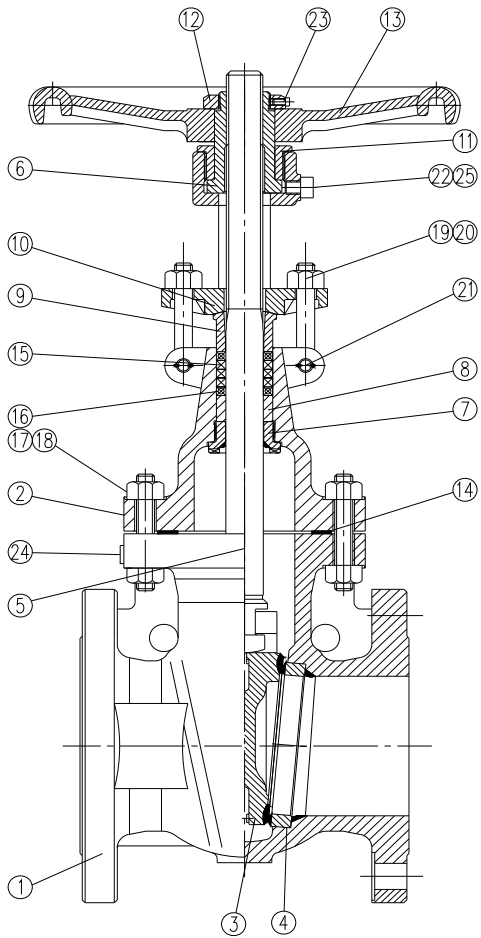
3.1.1 Both ends of the valve shall be connected in flanged end or butt welding end, as specified in the

order。

3.1.2 The valve stem is packing sealing structure. The packing material is flexible graphite.

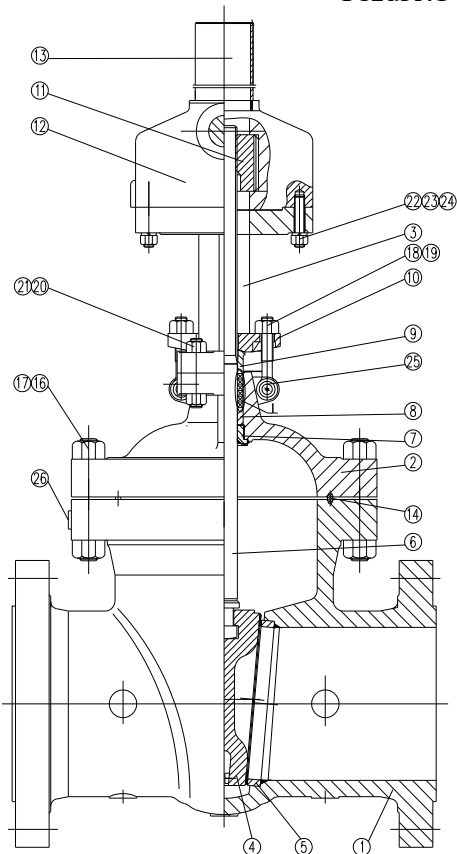
3.1.3 Bolted flange sealing: 150LB with metal backup graphite gasket, 300LB with spiral wound gasket, 600LB and above with ring type joint.

3.1.4 The general driving mode is handwheel or gearbox, and the customer can also specify the driving mode.



No.	Part Name.	No.	Part Name.
1	Body	14	Gasket
2	Bonnet	15	Packing
3	Disc	16	Packing
4	Seat	17	Bolt
5	Stem	18	Nut
6	Stem Nut	19	Bolt
7	Backseat	20	Nut
8	Packing Ring	21	Pin
9	Packing Gland	22	Oil Cup
10	Gland Flange	23	Screw
11	Gland	24	Nameplate
12	Handwheel Nut	25	OIL CUP DUST CAP
13	Handwheel		

Figure.1 Gate valve—Hand wheel Operation



No.	Part Name.	No.	Part Name.
1	Body	14	RTJ ring
2	Bonnet	15	Packing
3	Yoke	16	Bolt
4	Disc	17	Nut
5	Seat	18	Bolt
6	Stem	19	Nut
7	Backseat	20	Bolt
8	Packing Ring	21	Nut
9	Packing Gland	22	Bolt
10	Gland	23	Nut
11	Nut	24	Spring washer
12	Gearbox	25	Pin
13	DUSTPROOF COVER	26	Oil Cup

Figure.2 Gate valve—Gearbox Operation

3.2 Working principle

This valve is generally not used for adjustment and throttling. The drive device drives the stem nut to move clockwise to make the valve stem move downward. When the disc goes down and the sealing surface of the ram and the sealing ring coincides, the valve is closed and the medium is cut off; on the contrary, the valve rod nut moves anticlockwise, and the disc goes up until the upper sealing surface coincides, which means opening and connecting the medium.

4. Transport, Storage, Installation and use

4.1 Transport

- ①The valve should be fully-closed during transportation, and each valve and each packing box must be fixed to prevent damage during transportation;
- ②When the valve is lifted, the lifting equipment and transportation tools should be prepared in advance. The rope should be tied to the bracket, and it is strictly prohibited to tie it to the handwheel or valve stem. The valve should be lifted gently, don't hit other objects, and placed flat;
- ③The paint, nameplate and flange sealing surface of the valve should be taken care of during transportation; It is not allowed to drag the valve on the ground, let alone move the sealing surface at both ends of the valve;
- ④Valves that are not installed at the construction site should not be unpacked. They should be placed in a safe place and protected from rain and dust.。

4.2 Storage

- ①The valve should be stored in a dry and ventilated room, and the valve channel and flange water line should be closed with a protective cover;
- ②Valves cannot be stacked and stored, so that the valve is severely deformed and affects the performance of the valve;
- ③Valves should remain closed for the duration of storage;
- ④Valves stored for a long time should be re-inspected before use, and dirt should be removed. Special attention should be paid to the cleaning of the sealing surface to prevent damage to the sealing surface. The valve should be used after passing the pressure test again.

4.3 Installation

- ①Before installation, check carefully whether the valve model, specification, applicable medium, and applicable temperature are consistent with the pipeline design;
- ②Before installation, the protective cover should be removed, and the valve channel and sealing surface should be carefully checked. If there is dirt, it should be wiped off with a clean soft cloth;
- ③Check whether the packing is compacted before installation to ensure packing tightness;

- ④ Before installation, check whether the manual device is flexible in operation and whether it has stuck or not.

4.4 Operation and Maintenance

Valve operation and maintenance personnel need to be trained in accordance with the corresponding procedures before they can operate and maintain the valve.

- 1) After installation, the valve should be in an open state during pressure testing of the system or piping;
- 2) In use, it is required to fully open or close the ram, and it is not allowed to open the partial gate for regulating the flow rate. Otherwise, when the medium flow rate is high, the sealing surface will be easily damaged, and the manufacturer will not be responsible for the damage caused by such use;
- 3) Generally, the gate valve has no insulation part. When the fluid is in high or low temperature, do not contact the surface of the valve to prevent burns / frostbite.
- 4) The cavity wall thickness of the valve should be measured every three months.
- 5) The surface and moving parts of the valve, such as valve stem, sliding part of support and gear, are easy to deposit dust, oil and medium residue, which is easy to cause wear and corrosion of the valve, and even produce friction heat, which is very dangerous to combustible gas, and should be cleaned regularly according to the working conditions; in use, the trapezoidal thread part of the valve rod should be often added with copper containing lubricant;
- 6) After the valve is used, regular in-service inspections should be carried out, and the sealing and wear of the sealing surface should be checked frequently; Whether the packing is aging or invalid; whether the valve body is corroded, if the above-mentioned situation is found, it should be repaired or replaced in time. It is recommended to check and repair every three months for water and oil media, and to check and repair every other month for corrosive media.
- 7) After maintenance, the valve should be reassembled and adjusted according to the torque recommended in Table.1. After assembly, pressure test should be carried out.

Table.1

Stud size	Bolt Torque (N.m)						
	B7M/L7M	B7/L7	B8(I)/ B8M (I)	B8M (II)	B8 (II)	B8MLCuN	B16
5/16-18UNC	15	20	5	17	18	6	19
3/8-16UNC	23	30	9	30	31	11	32
1/2-13UNC	55	73	22	70	73	25	77
9/16-12UNC	83	110	31	100	104	36	109
5/8-11UNC	110	147	42	137	142	50	149

3/4-10UNC	184	244	74	238	247	86	259
7/8-9UNC	293	391	117	313	-	137	412
1-8UNC	453	599	174	465	-	203	614
1-1/8-8UN	651	867	251	552	-	294	888
1-1/4-8UN	916	1221	349	766	-	409	1234
1-3/8-8UN	1246	1661	469	789	-	549	1660
1-1/2-8UN	1465	1954	614	1033	-	719	2172
1-5/8-8UN	2015	2687	787	-	-	921	2780
1-3/4-8UN	2748	3663	987	-	-	1157	3493
1-7/8-8UN	3663	4884	1220	-	-	1429	4316
2-8UN	4029	5373	1488	-	-	1742	5261
2-1/4-8UN	5972	7968	2133	-	-	2497	7542
2-1/2-8UN	8242	10989	2941	-	-	3443	10401
2-3/4-8UN	11039	14713	3931	-	-	4603	12562
3-8UN	14356	19231	5123	-	-	5997	16367

8) When repairing and maintaining valves, users should use packing bolts and nuts of the same size and material as the original. Valve packing and gaskets can also be ordered as spare parts when ordering for replacement during maintenance. It is not allowed for the valve to open the bonnet under pressure or to replace bolts, nuts or packing under pressure. After replacing the packing, gasket, bolts and nuts, the valve should be used after passing the pressure test.

9) The valve sealing surface can be repaired by the user, but the sealing performance should be ensured and used after the pressure test is qualified. It is not recommended to repair the pressure parts of the valve. If the pressure parts are found to have defects that affect safety due to the long service time, the user should replace the new valve in time.

10) Welding repair of on-line valve body is not allowed. It is not allowed to knock, stand or support heavy objects on the valve in operation.

11) Non-metal parts such as gaskets and packing that have been replaced by the valve should be recycled in time to prevent environmental pollution. The replaced metal parts that cannot be used should be discarded in time.

12) The service life of valve body is generally 30 years. If the measured wall thickness is less than the minimum thickness specified in ASME B16.34, the valve shall be replaced in time.

4.5 Troubleshooting

Failure	Cause	Remedy
Leakage between sealing face	1. Dirt between sealing surface 2. Sealing surface damaged	1. Clean sealing surface 2. Repair or replace disc and seat

Leakage between Bonnet and Body Flange	<ol style="list-style-type: none"> 1. Bonnet bolts loose or uneven tightened 2. Flange sealing face damaged 3. Broken gasket 	<ol style="list-style-type: none"> 1. Proper tighten bonnet nuts 2. Repair flange 3. Replace gasket
Packing leak	<ol style="list-style-type: none"> 1. Gland flange nuts lose 2. Packing rings not enough 3. Old damaged packing 	<ol style="list-style-type: none"> 1. Equally tighten eyebolt nuts 2. Add packing 3. Replace packing
Gate will not operate normally	<ol style="list-style-type: none"> 1. Packing compressed too tight 2. The packing plate and packing gland are tilted 3. Stem nut damaged 4. The thread of the valve stem nut is seriously worn or broken 5. Stem maybe deformed and jammed 	<ol style="list-style-type: none"> 1. Adjust eyebolt torque 2. Calibration of packing plate and packing gland 3. Disassemble and repair threads and remove dirt 4. Replace stem nut 5. Replace stem

5. Quality Assurance

5.1 The manufacturer is responsible for the warranty within one year after the valve is put into use, but the delivery period shall not exceed 18 months. During the warranty period, the parts can be repaired or replaced free of charge due to product quality.

5.2 The user shall inform the manufacturer after finding the quality problems, and the manufacturer reserves the right to investigate these problems.

5.3 The manufacturer is not responsible for damages beyond the defects of the valve itself caused by unexpected natural disasters such as earthquakes and typhoons.

5.4 Other guarantees beyond the scope of this limit shall be negotiated between the user and the manufacturer.

6. Service

6.1 If the contract stipulates that the manufacturer can provide on-site installation and commissioning.

6.2 The manufacturer will track the quality of the valves provided and provide various services according to the requirements of users, and provide training to users' technicians.

6.3 If you have any questions during use, please contact the manufacturer as follows,

Company: DHV Valve & Foundry CO., LTD.

Address: Ganquan West Road, Wujiang Economic Technology Development Zone, Wujiang, Suzhou, Jiangsu, 215200, China

Tell: 0512-82079288

E-mail: sales@dhvfoundry.com

Website: www.dhvfoundry.com