CLOW VALVE COMPANY

902 S. 2nd St.
Oskaloosa, Iowa 52577
515-673-8611

Installation, Operation & Maintenance Manual
Double Disc Gate Valve

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AWWA C500

General; *Inspect all valves at time of delivery for shipping damage and to confirm compliance with specifications. Valves are completely tested per the appropriate standards and specifications by the manufacturer. The valves should be stored in such a manner to protect them from weather and blowing dirt and debris. In cold climates, if water is allowed to freeze in the valve, severe damage to the valve components could result. Any packaging should be replaced if removed for inspection. Proper slinging and handling methods should be sued when moving valves. Do not place slings or other devices around operating stem or through the valve port opening.*

Installation;

1. *Check that valve and end joints are clean. Again check for damage to the valve. Open and close valve to insure proper operation. Close valve before placing valve in line.*

2. *Handle valve carefully. Do not drop into position. Do not sling through the port opening.*

3. *Prepare pipe ends according to manufacturer's instructions. Install valve per proper methods according to end joint type. All piping should be properly supported to avoid line stress on the valve. Do not use the valves as a jack to force a pipeline into position.*

4. *A valve box or vault should be provided for each valve used in buried service application. These should be installed such that no load is transferred to the valve.*

5. *Before pressurization of the pipeline and valve, all pressure containing bolting cover, follower plate, and connection) should be inspected for adequate tightness (usually 90 ft. lb.).*

6. *Buried valves should be pressurized before backfilling.*

7. *With valve in position, the entire system should be thoroughly flushed to clean the system. Debris in the valve could prevent valve from closing or possibly damage the seating surface on the gates or in the body.*

8. *Upon completion of the installation, gate valve location, size type, date of installation, number of turns to open, direction of opening, and any other special information should be entered on permanent records.*

OPERATION:

1. *Do not operate valves in systems that exceed the rated working pressure of the valve, 200 psi (sizes 2" through 12") and 150 psi (sizes 14" through 30").*

EXCEPTION: ***L16 HEAVY PRESSURE GATE VALVES(F5300/F5305***

DO NOT OPERATE VALVES IN SYSTEMS THAT EXCEED THE RATED WORKING PRESSURE OF VLAVE, 250 PSI (SIZES 4" THROUGH 12") AND 225 PSI (SIZES 14" THROUGH 36")

2. *System should be completely flushed before valve is operated in normal cycle.*

3. *The double disc gate valve opens and closes by turning the main valve stem with an operating nut or a handwheel. When closing the valve, the gates move freely downward, to a position opposite their seats. As the gates approach the bottom of the valve, the iron hooks come into contact with stops which prevent further downward movements of the hooks. The bronze wedges ridding in the hooks spread the gates apart and force them against their seats.*

   Turning the stem in the opposite (opening) direction releases the wedging pressure on the gates allowing them to move away from their seats before starting upward travel. Further turning of the stem raises the gates to the fully open position.

4. *If the valve should fail to seal after necessary number of turns, open the valve four or five turns and reseat.*

Emergency Operation:

Turn the handwheel or operating nut faster in the desired direction.

INSPECTION AND MAINTENANCE;

1. *Frequency of inspection should be based on frequency of operation. Semi annual inspections are minimum recommended. Valves should no be disassembled unless a breakdown has occurred.*

2. *During inspection, the valve should be opened and closed with pressure in the pipeline. The valve should function freely, with no binding or vibration. Count the number of turns to full closed, this will reveal an obstruction if correct number of turns are not achieved. See table;*

TURNS TO OPEN

3"	7	16"	52
4"	15	18"	58
6"	21	20"	64
8"	27	24"	76
10"	33	30"	63
12"	39	36"	75
14"	45	48"	100

3. *All gaskets and joints should be checked for leakage and tightness.*

4. *With the valve closed and pressure against the disc, a check for leakage is possible by "listening" to the valve for flow. A stethescope will help in the procedure.*

5. *Attached actuators should be inspected for manufacturer's recommendations provided with those units.*

6. *OS&Y valves should have the exposed stem lubricated at each inspection. Check stuffing box bolts for tightness.*

7. *A permanent inspection record should be kept for each valve.*

8. **IMPORTANT EFFECTS OF PROGRAM**

   a. *Dislodge sediment.*
   b. *Dislodge products of corrosion and maintain clearances. Because of dissimilar metals used in valve construction corrosion, or ion exchange, can be expected in the presence of water having very high, or low pH values. This can be especially troublesome if moving parts are not disturbed periodically.*
   c. *Disturb water that sometimes lies dormant in the bonnet and other cavities in valve.*

NOTE; *An effective procedure for clearing the inside of a valve, prior to closing and opening as in 2 and 3 above, is to close a valve downstream.*

Then open a hydrant downstream and adjacent to the valve being tested. This causes water to rush through the valve at high velocity while it is being closed and reopened. It creates maximum disturbance of unwanted sediment and etc.

In order to accomplish this in plant of pumping station, the pumping line would have to be discharged to open tank or atmosphere while opening and closing valve under a pumping flow.

RECORDS

1. Trouble can be anticipated with a good Inspection Program. Such a program can not exist without good records. Poor records are worse than none.

2. A printed 5 x 8 record card for each valve and hydrant in the system is most convenient.

   a. Identification of each valve and hydrant is essential. Setting up a numbering system is one of the first steps to take. A reasonably simple method is to assign a number to each street intersection, then identify each valve of hydrant numerically or alphabetically between intersection numbers.
   For instance; I9-I10, would be the number of second valve from street intersection number 9 in going toward street number 10.

   Another convenient device is to assign only odd numbers to existing hydrants. When hydrants are added later they can be giving numbers which will fit in the numerical sequence.

   b. Location should be recorded first. Measurements must be made from property lines or street center lines - not power poles fence lines – or the like.

VALVE RECORD

No._____

Location _____FT._____of_____Prop. Line of_____

And_____ FT._____of_____Prop. Line of_____

Size_____Make_____Type_____ Gearing_____Bypass_____

Opens_____Turns to Operate_____Depth of Nut_____

Remarks_____

_____

_____

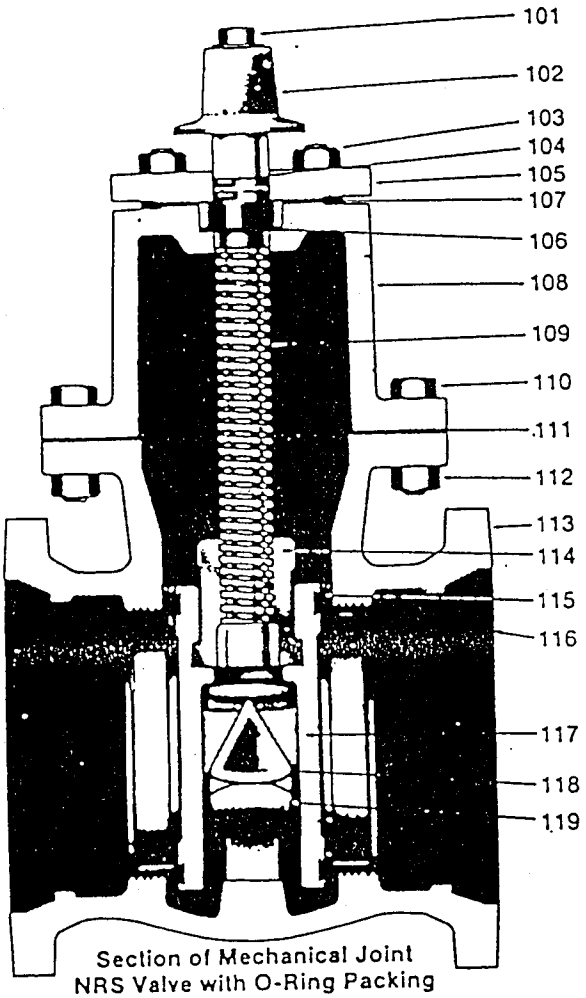
Maintenance & Inspection Record

Date	Work Done	O.K.	By	Date	Work Done	O.K.	By

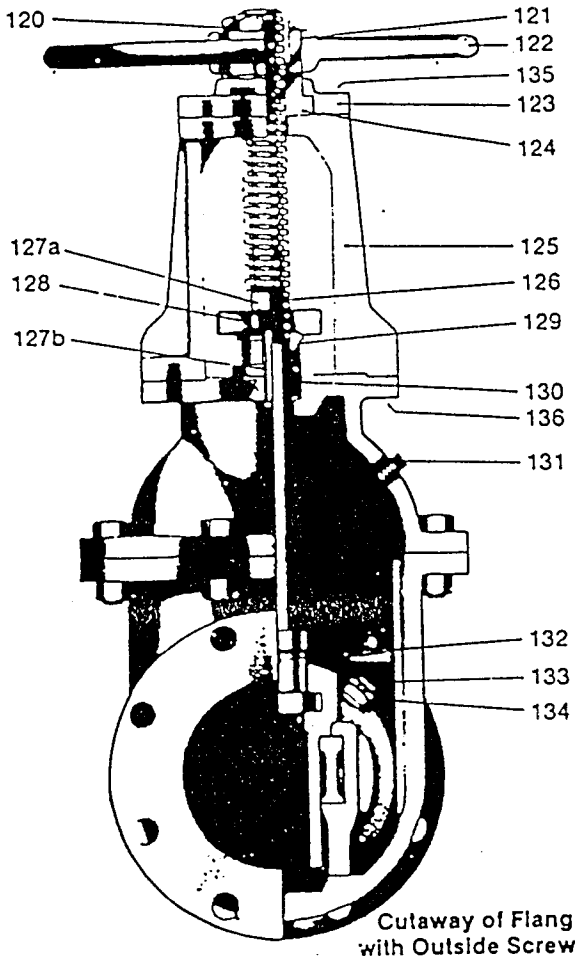
AWWA DOUBLE DISC GATE VALVES PARTS LIST

CLOW VALVE COMPANY

*Recommended Spare Parts



Section of Mechanical Joint
NRS Valve with O-Ring Packing



Cutaway of Flanged Valve
with Outside Screw and Yoke

DET	QTY	DESCRIPTION	MATERIAL
101	1	Cap Screw	Steel
102	1	Operating Nut	Cast Iron
103		O-Ring Plate Bolts & Nuts	Steel
*104	2	O-Rings	Rubber
105	1	O-Ring Plate	Cast Iron
106	1	Low Torque Bearing	
*107	1	Stuffing Box Gasket	
108	1	Cover	Cast Iron
109	1	Non-rising Stem	Bronze
110		Neck Flange Bolts	Steel - Rust-proofed
*111	1	Neck Flange Gasket	Composition
112		Neck Flange Bolt Nuts	Steel
113	1	Body	Cast Iron
114	1	Gate Nut	Bronze
115	2	Gate Ring	
116	2	Case Ring	Bronze
117	2	Gate	Cast Iron
118	2	Wedge	Bronze
119	2	Hook	Cast Iron

DET	QTY	DESCRIPTION	MATERIAL
120	1	Hold Down Nut	Bronze
121	1	Handwheel Key	Steel
122	1	Handwheel	Cast Iron
123	1	O.S.&Y. Retainer Plate	Cast Iron
124	1	O.S.&Y. Stem Nut	Bronze
125	1	O.S.&Y. Yoke	Cast Iron
126	1	Rising Stem	Bronze
127a	2	Follower Nuts	Bronze
127b	2	Follower Studs	Steel - Rust-proofed
128	1	Follower Plate	Cast Iron
129	1	Follower Gland	Bronze
*130		Packing	Acrylic Graphite
131	1	Test Plug	Teflon-coated Steel
132	1	Stem Nut Pin	Bronze
133	4	Pegs	Bronze
134	2	Straps	*Stainless or Bronze
135		O.S.&Y. Cap Screws	*Stainless 10"&12" only Steel - Rust-proofed
136		O.S.&Y. Yoke Bolts & Nuts	Steel - Rust-proofed

DISASSEMBLY INSTRUCTIONS FOR CLOW N.R.S. DOUBLE DISC GATE VALVES

1. Remove capscrew (101)
2. Remove handwheel (122) or operating nut (102)
3. Remove o-ring plate nuts (103)
4. Remove o-ring plate (105)
5. Remove stem (109) by turning the stem in the opposite direction for opening the valve
6. Remove neck flange bolts & nuts (112 & 110)
7. Lift off cover (108)
8. Grasp stem (114) & lift out gate assembly
9. Lay gate assembly on apiece of cloth or cardboard, so as not to damage the gate ring (115)
10. Lift off the top gate (117)
11. Gate nut (114), hooks (119), and wedges (118) are now accessible for easy removal
12. Reassembly in the reverse order replacing cover gasket and stem oring if necessary

TROUBLESHOOTING
GATE VALVES

POSSIBLE MALFUNCTION	*SYMPTOMS-CAUSES*	*CORRECTIVE ACTION*
Joint Leakge	Bolt Tension Relaxing	Tighten Bolts
Seat Leakage	Foreign material caught in seat	Operate valve to flush out debris
	Seats dirty/corroded	Flush or dis-assemble & clean
	Seats Damaged	Inspect-repair or replace
Leak Past Stem	Bolts loose	Tighten Bolts
	(NRS) o-rings worn/damged	Inspect / Replace
	(OS&Y) Packing worn/damaged	Inspect / Replace

*** Inspection for the above should be done semi/annually at the minimum.*
There are no lubrication requirements other than ;
*OS&Y valves should have exposed stem **lubricated at each inspection.*

***Mobile lube*

See Gate Valve Assembly (parts list) drawing for recommended spare parts.

Contact Mfg's Rep for pricing and ordering: