

LUBRICATION OF PLUG VALVES ON GAS TRANSMISSION AND DISTRIBUTION SYSTEMS

GENERAL

This standard is to establish a procedure for lubricating and maintaining plug valves on gas transmission and distribution systems. It also rescinds Gas Department Letter No 179, February 8, 1950, Hypermatic Lubricant for Nordstrom Plug Valves and Gas Operations General Information Bulletin, June 25, 1959, Nordstrom Fixed Adjustment Glands for 1-1/4" through 4" Screwed Gland Type Valves

Satisfactory performance of lubricated plug valves for gas service depends on proper selection and insertion of lubricants together with proper adjustments of valves

LUBRICATION

New and existing valves equipped with button-head fittings are to be lubricated with hand gun, bucket pump or hypergun, equipped with pressure gauge. Valves equipped with lubricant screw are to be lubricated with proper size stick lubricants. Be sure to use only clean lubricant of the type specified for the service conditions.

To insure proper distribution of lubricant throughout lubricant grooves and sealing surface, it is mandatory that the plug be seated firmly in the body. When the plug is properly seated, it is possible to "jack" the plug from its seat when the lubricant grooves and lubricant reservoir are filled. This facilitates free turning of the plug and speeds up distribution of lubricant film over sealing surface, in addition to providing a positive leak seal.

If excessive clearance exists between the plug and the body, due to adjustment gland or adjustment screw being backed off, the lubricant "short circuits" into the pipeline.

Secondary effects of improper plug adjustment are as follows

- 1 Leakage
- 2 Entrance of foreign or abrasive materials between plug and seat, resulting in a damaged sealing surface
- 3 Higher torque characteristics as damage occurs
- 4 Possible gear and operator damage as torque becomes excessive
- 5 Ultimate valve replacement

Proper lubricating procedure is being followed when the pressure gauge shows increasing pressure on each stroke of the lubricant gun following which the pressure drops back towards zero. As the system fills the pressure will drop back more slowly, and when full the pressure will hold at the maximum.

Lubricant pressure on the gauge should read a minimum of 2,000 psi for any valve, with pressure not to exceed 5,000 psi when lubricating semi-steel valves, and 12,000 psi when lubricating steel valves. Generally speaking,

small valves can be expected to require higher pressures for lubrication than larger valves. Very low pressure or no static pressure indicates one of the following troubles

- 1 The gun is empty
- 2 The valve plug is loose
- 3 The gun is malfunctioning and should be checked. No repairs are to be made to the hydraulic system. If the gun is unsatisfactory, an order shall be issued for its reconditioning

If an especially high pressure is immediately built up, it may indicate a defective lubricant fitting, which would prevent lubricant from getting into the valve

Valves should be lubricated in the fully open position, however, if this is not possible, fully closed is the second best position. If the valve is stuck, it can be lubricated in any position. After lubrication, the valve should be operated until it turns freely

During construction, if a hyperseal valve is found to be operating improperly and it is judged that a plug adjustment is necessary, a request shall be made to the Gas System Design Department for instructions. For hyperseal valves that are in operation and have become inoperable and it is necessary to adjust the plug in order to operate, the necessity shall be reported to the Gas Distribution Department

PERIOD OF LUBRICATION

A frequency program for valve lubrication shall be established by each Division which will include lubrication of

- 1 Main line valves at least once a year
- 2 Station valves at least twice a year
- 3 Buried valves at time of use
- 4 Other valves as operating conditions require
- 5 Motor operated valves at least once a week

ADJUSTMENTS

Adjustments of valve gland nuts on standard valves are generally not required and are not to be made except as specified

When the valve plug is not properly seated, or when lubrication is not effective in loosening a tight valve, the gland adjustment nuts should be tightened. This tightening will seal off lubricant leakage and will help develop the proper hydraulic pressure in the system during lubrication. Never loosen the packing gland prior to lubrication

Certain valves (since January 1959) are being provided with a slotted adjustment

gland which has been preset in the factory Adjustment is not normally to be made on this type valve gland

Valves of the hyperseal type have an adjustment screw in the bottom cover This screw is adjusted at the factory to strict specifications To prevent tampering, a cover is welded over this screw It should not be necessary to adjust the screw position in the field

The practice of loosening adjustments to obtain a temporarily free turning plug will invariably result in the secondary results previously outlined

Lubrication screw is not to be screwed into the plug stem beyond complete engagement of threads, otherwise water will collect in plug stem and make lubricant screw difficult to remove

When adjustments to adjustable valves as specified are unsuccessful, and proper lubrication cannot be obtained, the difficulty is to be referred to the manufacturer's representative or to the Gas Distribution Department

HYPRESPHERE

To obtain proper lubrication of the Hypresphere valve, it is necessary to have a differential pressure across the valve Lubrication is most effective in the closed position, if this is not possible, the full open is the next best position Three lubricant fittings will be found on certain models, one for each seat and one neck fitting All fittings should be kept lubricated for satisfactory operation, with special attention given to thoroughly lubricating the downstream seat (Caution When a valve is closed and a line blown down on what is normally the upstream side of the valve, seat reversal occurs Before the line is returned to service, special lubrication attention should be given to both valve seats before an attempt is made to pack the line against this normal direction of flow)

TYPE OF LUBRICANT

- a Rockwell No 555 or approved equivalent is to be used for a general purpose lubricant on all plug valves in the following service
 - 1 Natural and manufactured gases with water or organic condensates
 - 2 Liquid petroleum gases
 - 3 Hydrocarbon liquids
 - 4 Glycols
 - 5 Water

- b Rockwell No 386 or approved equivalent may be used for an alternate general purpose lubricant on all plug valves (except the hypresphere) in the following service
 - 1 General natural gas
 - 2 Water

- c Other lubricants are to be used only when specified or approved by the Gas System Design Department

d Standard sizes and packages are

<u>Size</u>	<u>Valve Size</u>	<u>Fitting Size</u>	<u>Sticks per Box</u>
A	1/2"	None	24
B	3/4"-1-1/4"-2"	1/4"	24
C	2"	3/8"	24
D	3"-4"-6"	1/2"	24
G	6"-8"-10"-12"	3/4"	24
J	1-3/8" diameter, suitable for approved hand gun use		6

5 qt can suitable for approved bucket pump

SUPPLY

Except for supply required for current use (one month's requirement), all stocks of lubricant are to be maintained by the Stores Division in warehouse stock. Since fresh lubricant is necessary for proper lubrication of valves, lubricants more than 20 months old are not to be used.

PACKING

Walworth high pressure valves are to have plastic packing (Walworth No 630) added to the valve, through the stem packing chamber, when the valve is being installed.

APPROVED



Vice President in Charge of
Gas Operations

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