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

LUBRICATION

Valves equipped with button-head fittings are to be lubricated with a grease gun, equipped with pressure gage Valves equipped with lubricant screw are to be lubricated with stick lubricants Use only clean lubricant of the type specified

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.

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

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 gage 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 gage should read a minimum of 2000 psi for any valve, with pressure not to exceed 5000 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

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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 In this position, all four grease grooves are connected with the two circular grooves at the top and bottom of the plug and, also, the walls of the plug are mated to the walls of the body This assures a full and even spread of lubricant over all surfaces so that it can act as a bearing interface, as well as a sealant

This procedure, as applied to lubrication of regulating plug valves, will necessitate that control valves be taken out of service by switching the control function to the monitor valve

This will allow the regulating valve to be fully opened, lubricated, and stroked in the closing direction back to its control position The operating division should provide personnel for this lubricating procedure and have authorization to complete the changeover of control and perform the required valve lubrication

If the above procedure is not possible, fully closed is the second best position If the valve is stuck, lubricant should be injected to free it if possible After lubrication, the valve should be operated until it turns freely

During construction, inspection and lubrication should be performed on all plug valves and plastic stem packing added when necessary This is necessary to assure proper flow and distribution of lubricant throughout the valve body (and lube extension pipe if used) before installation This should be done by Gas Construction personnel in cooperation with the operating division personnel responsible for the station after construction All valves should be lubricated above ground, visually checking for excretion of lube around the plug port and valve body If a valve is found to be operating improperly, 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 and inspection shall be established by each Division, which will include

1 Lubrication and partial operation of main line valves at least once a year
2 Lubrication and partial operation of station valves at least twice a year
3 Motor operated valves on standby or overpressure protection, operated once a month and serviced if required, with lubrication at least twice a year
4 Lubrication of centrually regulated ball and plug valves at least once a week
5 Lubrication of other valves prior to use

In addition, regulating plug valves should be observed very closely during the first days of operation to determine the frequency of movement and subsequent lubrication needed If the valve is cycling often or if a new pipeline is feeding the station, full-open position lubrication should be performed as frequently as every other day

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

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

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 attention given to thoroughly lubricating the seat on the low pressure side of the valve (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, lubrication should be given to both seats of the valve before an attempt is made to pack the line against this normal direction of flow)

GROVE BALL VALVE

Routine lubrication of the Grove ball valve is not necessary When leakage occurs in the closed position of the valve and lubrication is necessary for shut off, use Rockwell No 555 or equal

TYPE OF LUBRICANT:

a. Rockwell No. 555, No. 555 W.G., 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. LPG systems.
3. Hydrocarbon liquids.
4. Glycols.
5. Water.

b. Standard sizes and packages are:

Size	Valve Size	Fitting Size	Sticks per Box	Code
A	1/2"	None	24	50-3078
B	3/4" - 1-1/4" - 2"	1/4"	24	50-3067
D	3" - 4" - 6"	1/2"	24	50-3069
J	For handgun use on valves fitted with button head fitting.		6	50-3071