

VALVE LUBRICATION AND MAINTENANCE REQUIREMENTS

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VALVE LUBRICATION AND MAINTENANCE REQUIREMENTS

1 0 PURPOSE

This standard establishes frequencies and procedures for lubricating and maintaining plug, ball, and gate valves (herein after referred to as valves) installed in PG&E's gas systems

2 0 VALVE MAINTENANCE SCHEDULE

A schedule for valve lubrication and inspection shall be established by each region and Pipe Line Operations. The work required and the frequency with which this work must be performed are as follows

2 1 New Valves

All valves shall be inspected prior to installation. Valves which require lubrication shall be lubricated prior to installation. Some valves are designed to be operated without lubrication, but are provided with lubrication systems to facilitate obtaining a good seal if the valve is worn. These valves should not be lubricated unless it is determined in the field that lubrication is necessary for proper operation. Once these valves are lubricated, they must continue to be periodically lubricated to assure reliable operation

2 2 Pipeline Valves

Transmission line valves must be inspected, serviced and lubricated (unless exempted by Paragraph 2 1) and operated (see Paragraph 3 1 1 below) at least once each calendar year as specified in Paragraph 2 5, and more often where the conditions of Paragraph 3 2 2 apply

Each distribution system valve must be inspected, serviced, lubricated (unless exempted by Paragraph 2 1), and operated (see Paragraph 3 1 1 below) once each calendar year as specified in Paragraph 2 5 to assure reliable operation. All zone isolation valves and each block and bypass valve at district regulating stations are necessary for safe operation of the system as are most other system valves. If a decision is made to not lubricate a valve because it is not necessary for safe system operation, that decision should be documented and carefully reviewed. If a valve is not lubricated regularly, it may not work adequately if it is needed, and may not seal adequately

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\* 2 3 Station Valves

At pipeline stations, which include compressor station, measuring and regulating stations, mixer stations, dehydrator station, odorizer stations, or other stations with automatic equipment, valves shall normally be inspected, serviced, lubricated (unless exempted by Paragraph 2 1), and operated (see Paragraph 3 1 1 below) at least twice each calendar year as specified in Paragraph 2 5

Measuring and regulating stations include

- o All regulated and/or measured feeds from transmission lines, except farm taps and high pressure regulator sets, such as those shown on Gas Standard H 10, H 11 and H 12
- o Terminals (such as Brentwood, Milpitas and Antioch)
- o District regulator stations serving as a single source of supply to 21 or more customers
- o Underground storage facilities

See Paragraph 2 4 for exceptions

Power actuated valves on standby or used for overpressure protection (monitors) shall be partially operated and inspected once a month, and serviced and lubricated (unless exempted by Paragraph 2 1) at least twice each calendar year as specified in Section 2 5

Power actuated ball and plug valves used as regulators shall be lubricated and inspected at least once a week

2 4 Modification of Valve Maintenance Schedule

The valve maintenance schedule in Paragraphs 2 2 and 2 3 may be modified by the responsible supervisor under the following conditions

- 2 4 1 Where valves are operated frequently, additional inspection, servicing and lubrication may be required
- 2 4 2 The scheduled inspections specified in Paragraph 2 3 for station valves may be reduced to once a year for valves meeting all of the criteria outlined below
  - 2 4 2 1 The valve is known to be maintained in good condition

\*Paragraph Revised

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2 4 2 2 The valve is not critical to the emergency operation or reliability of the system

2 4 2 3 It has been determined locally that no special operating conditions exist which require more frequent maintenance

Note Should any of the above conditions change, the maintenance frequency shall be increased to twice each calendar year

2 5 Scheduling of Maintenance Anniversary Month

2 5 1 An annual "anniversary month" shall be established by each region or Pipe Line Operations for the inspection and maintenance of each valve covered by Section 2 0 The "anniversary month" is the calendar month in which the inspection and maintenance required in Section 2 0 is scheduled Except as permitted by Paragraph 2 5 4, the "anniversary month" shall be based on the month in which the valve was placed in service, or for valves installed prior to 1983 the month in which the last inspection and maintenance in 1983 was performed, and shall be the same month each subsequent year

2 5 2 Where Section 2 0 requires maintenance at least twice each calendar year, a second anniversary month shall be established as the sixth month after the first annual anniversary month established in Paragraph 2 5 1

2 5 3 The inspection and maintenance required by Section 2 0 shall be scheduled for the anniversary month(s) However, depending on the circumstances, the scheduled maintenance work may be performed in the month preceding or following the anniversary month, provided that the annual or semi annual requirements of Section 2 0 are met Performing the work during the month prior to or the month following the anniversary month does not require changing the anniversary month

2 5 4 A new anniversary month(s) for scheduled maintenance may be established by performing the required inspection and maintenance during a month which is earlier than the anniversary month A new anniversary month may not be established by performing the scheduled maintenance during a month following the established anniversary month

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3 0 LUBRICATION PROCEDURE

3 1 General

3 1 1 When servicing a valve as required in Section 2 0, the valve shall be operated (or stroked) through its complete range when operating conditions permit. When operating conditions do not permit full operation of the valve, it shall be operated through at least half of its operating range.

3 1 2 Any problem experienced with the operation of any of the above valves, either during scheduled maintenance or at any other time, shall be reported on a Material Failure Report (S P 460 21 7)

\* 3 1 3 Valves equipped with buttonhead lubricating fittings are to be lubricated, when required, with a high pressure grease gun equipped with the appropriate pressure gauge. Valves equipped with lubricant screws are to be lubricated with stick type lubricants. All lubricants must be clean and be specific lubricants specified by the valve manufacturer. Use of lubricants not recommended by each manufacturer voids their warranty and leaves PG&E vulnerable in any potential lawsuit involving third party damages considered caused by valve leakage. Refer to the manufacturer's lubrication instructions for proper use of lubricants. Note: Resun and Walworth plug valve manufacturers have permitted the use of Rockwell lubricant 1033 (See Paragraph 3 2 16). Each valve requiring lubrication for normal maintenance shall be lubricated as required by Section 2 5. Service conditions may require more frequent lubrication of some valves (See Paragraph 2 4)

3 1 4 Optional A tag may be attached to the valve to indicate if lubrication is required. If the valve does require lubrication, the tag shall state the type of lubricant, frequency of application, and the last date work was performed.

3 1 5 When block and bleed type valves are exposed to water, condensates, or other foreign matter, the valve body should be drained to prevent damage to the valve, especially after hydrotests.

\* 3 1 6 If a valve is difficult to operate, then flushing out the old lubricant may be necessary. On plug valves, it may be necessary to make a plug adjustment per the manufacturer's recommended procedure, in order to get the valve to operate properly. See Section 4 0 for valve flushing procedures and approved valve flushes.

\*Paragraph Revised

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**\*\* 3 1 7** If the steps mentioned in Paragraph 3 1 6 are not successful in fixing a "difficult to operate" valve, then the injection of limited amounts of Sealweld 5050 is acceptable. Also, valves requiring the use of Sealweld 5050 to operate satisfactorily, should be scheduled for replacement as soon as economically feasible.

**3 1 8** As part of the maintenance program on valve operator combinations, a continuing record should be maintained of the torque or the time required to close and open the valve. Plotting this information over a period of time will show change in torque or time required to open and close the valve which can indicate wear or binding in the operator or problems with the valve.

**3 2 Plug Valves**

**3 2 1** Plug valves should always be lubricated in the fully open or fully closed position. In either of these positions, all grease grooves in the body are connected with the circular grooves at the top and bottom of the plug, and the surface of the plug is 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. Multiport valves have special lubrication systems and should only be lubricated in one of the 90° positions. Where operating conditions permit, the valve should be turned through its complete range or half of its range, as described in Paragraph 3 1 1.

Plug valves used as regulators, which are backed up by monitor valves, should be put in the fully open position for lubrication, permitting the monitor valve to take over the control function. Plug valve monitors should be lubricated in their normal fully open position.

**3 2 2** During the first days of operation, a plug valve used as a regulator should be observed very closely. If the valve is cycling often, or if a new pipeline is feeding the station, lubrication should be performed as frequently as every other day. (See Paragraph 2 3 for normal maintenance.)

**\* 3 2 3** If a valve plug is stuck, lubricant should be injected to free it if possible. After lubrication, the valve should be operated until it turns freely. If lubricating the valve fails to get it to turn freely, the valve must be flushed as specified in Section 4 0. It may be necessary to make a plug adjustment per the manufacturer's recommended procedure, in order to get the valve to operate properly.

\*Paragraph Revised  
 \*\*Paragraph Added

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- 3 2 4 Proper lubrication is indicated when the pressure gauge shows steadily increasing pressure with each stroke of the lubricant gun until the pressure gauge reading no longer rises but begins to drop and the pumping effort decreases. At this point the valve has been sufficiently filled and lubricant injection should be stopped.
- 3 2 5 Lubricant pressure on the gauge should read a minimum of 2,000 psi for any plug valve, with pressures not to exceed 5,000 psi when lubricating semi steel valves, and 12,000 psi when lubricating steel valves. Very low pressure or no static pressure on the gauge indicates one of the following troubles:
  - a The gun is empty
  - b The valve plug is loose
  - c 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.
- 3 2 6 If a high pressure is immediately built up, it may indicate a defective lubricant fitting, which would prevent lubricant from getting into the valve. Caution Coupler should not be attached or detached while gun is under pressure. Gun pressure should be relieved by opening the by pass valve.
- 3 2 7 If excessive clearance exists between the plug and the body due to the adjustment gland or adjustment screw being backed off too far, the lubricant migrates into the pipeline, and the lubricant pressure will not build up properly.
- 3 2 8 The practice of loosening adjustments to obtain a temporarily free turning plug will invariably result in undesirable secondary effects. The secondary effects of improper plug adjustment are as follows:
  - a Leakage
  - b Entrance of foreign or abrasive materials between the plug and the seat, resulting in damaged sealing surfaces
  - c Higher torque characteristics as damage occurs
  - d Possible gear and operator damage as torque becomes excessive
  - e Ultimate need for valve replacement
- 3 2 9 The adjustment of the valve gland on fixed adjustment gland valves are generally not necessary and should not be made except as specified by the manufacturer.

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- 3 2 10 When the valve plug is not properly seated or when lubrication is not effective in loosening a tight valve, and an approved valve flush has been used, 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. The tightening will seal off lubricant leakage and will help develop the proper hydraulic pressure in the system during lubrication. The tightening operation should not be attempted without consulting the manufacturer unless the operator is experienced with this particular adjustment. (Never loosen the packing gland prior to lubrication.)
- 3 2 11 Valves of the Rockwell Hypreseal 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.
- 3 2 12 The lubrication screw must not be left in the plug stem beyond complete engagement of the threads, otherwise a pocket will be provided where water, dirt, or corrosion products could collect and make the lubricant screw difficult to remove.
- 3 2 13 When specified adjustments to adjustable valves are unsuccessful and proper lubrication cannot be obtained, or when an inoperable plug valve requires adjustment, a Material Failure Report shall be filed with the Gas System Design Department. (S P 460 21 7)
- 3 2 14 Prior to installing any lubricated plug valve, it must be inspected and lubricated. This is 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 construction personnel in cooperation with the region or Pipe Line Operations operating personnel responsible for the station after construction. If a valve is found to be operating improperly, a Material Failure Report shall be submitted to the Gas System Design Department.
- \* 3 2 15 The specified types of general purpose lubricant for plug valves are listed in Table 1. Use only the manufacturer's recommended lubricant, as shown in the table, for each valve. Standard sizes and packages of approved lubricants are available by specifying the code numbers shown.

**Caution:** Use of Teflon bearing lubricants in plug valves must be avoided. Teflon particles can clog orifices in the Company's pneumatic control equipment and customers' appliances, resulting in serious problems.

\*Paragraph Revised

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\*\* 3 2 16 Rockwell sealant 1033 has been added to the list of recommended lubricants for Resun and Walworth plug valves  
Such use will not void the manufacturer's warranty

\*\*Paragraph Added

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**ROCKWELL VALVES**

Lubricants No 386 Color Cream  
 No 1033 Color Green  
 (See Note 8 for a comparison of Rockwell lubricants )

Lubricant Fitting Type	Thread Size	Lubricant Form Designation (Units per Box)	Code Numbers for Specified Lubricants	
			386	1033
Threaded	1/2	B (24) Stick	50 3072	Not Available
	3/8	C (24) Stick	50 3073	Not Available
	1/2	D (24) Stick	50 3074	Not Available
	3/4	G (24) Stick	01 5596	Not Available
Button Head Fitting (See Note 1)		K (12) Stick	01 5597	01 5585
		GP (6) Gun Pak (See Note 2)	01 5594	01 5593
		GP (6) Gun Pak	01 5594	01 5593
		J (6) Stick	50 3076	01 5540
		Cartridge (4) (See Note 3)	01 5579	01 5564
		Bulk (1 2 or 4) 5 quart can (See Note 4)	50 3100	02 6396

**WALWORTH VALVES**

Lubricants Walseal No 1 Color Light Brown  
 Walseal No 2 Color Black  
 Rockwell No 1033 Color Green

Lubricant Fitting Type	Thread Size	Valve Size	Stick or Cartridge Designation (Units per Box)	Code Numbers for Specified Lubricants		
				Walseal		Rockwell
				1	2	1033
Threaded	1/4	1/2 2	B (24) Stick	01 5555	01 5561	See Rockwell Valve Table Above
	3/8	2 1/2 3	C (24) Stick	01 5556	01 5562	
	1/2	4	D (24) Stick	01 5557	01 5563	
	3/4	6 and Up	G (24) Stick	01 5558	50 3109	
Button Head Fitting (see Note 1)			Jumbo Stick (6) (See Note 5)	01 5559	01 5573	
			Cartridge (1) (See Note 6)	01 5560	01 5574	

**TABLE 1**  
 Recommended Lubricants for Plug Valve

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**RESUN VALVES**

Lubricant Resun No 62 (Stick) Color Black  
 Resun No 62G (Cartridge) Color Black  
 Rockwell No 1033 Color Green

Lubricant Fitting Type	Thread Size	Valve Size	Stick or Cartridge Designation (Units per Box)	Code Numbers for Specified Lubricants		
				Resun 62	Resun 62G	Rockwell 1033
Threaded	1/2	1 3	62 or 62G (24)	01 5575	-	See Rockwell Valve Table on Previous Page
	3/4	4 and Up	62 or 62G (24)	01 5576	-	
Button Head Fitting (See Note 1)			1 1/4 x 9 (4) Gun Stick (See Note 7)	01 5577	-	
			1 1/2 x 8 (1) Gun Cartridge (See Note 7)		01 5578	

**Notes**

- 1 Require lubricant hand gun
- 2 Use with No 400A hand gun
- 3 Use with No 400D hand gun
- 4 Use with Hypregun
- 5 Use with No 1699 hand gun
- 6 Use with No 101 hand gun
- 7 For use with No 138047 hand gun
- 8 Comparison of Rockwell lubricants

Rockwell lubricants 1033 and 386 are quite different in chemical formulation but for natural gas both perform very similarly. The 1033 is slightly more viscous providing a better seal in a worn or poorly adjusted valve and less loss of sealant during operation. However it is slightly harder to pump. Also the 1033 is much more resistant to being dissolved by organic solvents and would therefore be preferred if hydrocarbon condensates in the pipeline are known to be a problem. On the other hand 386 is much more resistant to inorganic chemical attack (acids bases and other chemicals). This is not likely to be an issue for gas pipelines. The 1033 lube has a higher temperature rating than the 386 but the 386 is stable up to at least 250 degrees F so this is not a significant issue for gas pipelines.

Rockwell lubricant 555 is no longer recommended by the manufacturer since its clay base composition may cause hardness over time.

TABLE 1 Recommended Lubricants for Plug Valves	PG&E CO	DRAWING NUMBER	REV
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3 3 Ball Valves

3 3 1 All pipeline ball valves 2" and larger shall have a body cavity drain fitting and lubricant injection fittings For buried service, these fittings shall be extended above ground using Grade B schedule 80 seamless steel pipe

3 3 2 Rockwell Hypresphere Ball Valves (Old Model Floating Ball Manufacture Ended in 1973)

3 3 2 1 Lubrication of the Hypresphere valve must be done when the valve is fully open or fully closed Three lubricant fittings will be found on certain sizes, one for each seat and one for the stem All valves should be kept lubricated for satisfactory operation, with attention given to thoroughly lubricating the seat on the low pressure side of the valve, especially if the valve is difficult to operate (Caution When a valve is closed and the line is blown down on what is normally the upstream side of the valve, seat reversal occurs Before the line is pressurized and returned to service, lubricate both valve seats )

\* 3 3 2 2 Rockwell's specified lubricant for Hypresphere valves is Rockwell No 386 or No 1033 Do not use any other lubricant on Rockwell valves

3 3 3 Rockwell TM Hypresphere Ball Valves (New Model, Trunnion Mounted Ball Manufactured Since 1972)

3 3 3 1 The Rockwell TM Hypresphere ball valve is designed to require no lubrication for tight shutoff However, as noted below, periodic maintenance should be performed according to a schedule that is designed to keep the valve in good working order Longer seat life and easier operation can be obtained if lubricant is injected periodically

3 3 3 2 The valve has a lubricant injection system to provide a backup seat seal should the seats become damaged and tight shutoff cannot be obtained Both valve seats have lubricant injection fittings on the sides of the valve body In addition, there is a lubricant injection fitting at the base of the valve stem to provide a secondary stem seal Valves smaller than 20" have three buttonhead fittings and valves 20" and larger have five

\*Paragraph Revised

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3 3 3 3 Although lubricant injection is not necessary for shutoff, Rockwell states that "periodic lubricant injection with approved Rockwell lubricants helps maintain good operating conditions and minimizes wear and abrasion on the seats and ball " Depending on the severity of the service environment, it is recommended that lubricant be injected on six month or less intervals

3 3 3 4 Rockwell TM Hypresphere ball valves should be lubricated prior to installation This should be done by construction personnel in cooperation with the region or Pipe Line Operations operating personnel responsible for the station after construction The valves should be visually checked for excretion of lubricant around the ball port and valve body This is to assure proper flow and distribution of lubricant throughout the valve body (and lube extension pipe if used) before installation Lubrication should be performed as often as necessary to ensure smooth operation when the valve is being throttled The valves should be lubricated in the closed position if possible Any problem experienced with the operation of these valves, either during scheduled maintenance or at any other time, shall be reported on a Material Failure Report (S P 410 21 7)

3 3 4 TK and Grove Ball Valves

\* 3 3 4 1 TK and Grove Model B 4 and B 5 ball valves are designed to require no lubrication for bubble tight shutoff Valves not used as monitors or standby regulators should be lubricated, using the fittings provided, only if positive shutoff cannot otherwise be obtained Valves which do not provide positive shutoff should be checked for possible valve seat or ball damage Once the valve is lubricated, lubrication must be performed to obtain positive shutoff

\*Paragraph Revised

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\* 3 3 4 2 The manufacturer's specified lubricant for shutoff on TK and Grove Model B 4 and B 5 ball valves and for Grove BVR 4 and BVR 5 ball valve regulators is Sealweld No 911, (Cartridge Code No 01 5571) Do not use any other lubricant on Grove ball valve regulators

3 3 4 3 Grove Model BVR 4 and BVR 5 ball valve regulators should be lubricated prior to installation. Lubrication should be performed by construction personnel in cooperation with the region or Pipe Line Operations operating personnel responsible for the station after construction. The valves should be visually checked for excretion of lubricant around the ball port and valve body. This is to assure proper flow and distribution of lubricant throughout the valve body (and lubricant extension pipe if used) before installation.

After release to operation, lubrication should be performed as often as necessary to ensure smooth operation when the valve is throttling. The valves should be lubricated in the closed position if possible. Any problem experienced with the operation of these valves, either during scheduled maintenance or at any other time, shall be reported on a Material Failure Report (S P 410 21 7)

\* 3 3 4 4 Grove regulating valves with retractable seats (commonly known as Arcron Model) must not be lubricated, as this would destroy the retractable seat feature. The valve has no lubrication fittings to lubricate the valve seats. It does, however, have Zerk fittings under the Arcron cover for lubricating the operator. Sealweld No 911 lubricant should be used to grease these fittings.

3 3 4 5 Prior to installing any TK or Grove ball valve, all body relief should be removed and plugged. These are only necessary for valves in liquid service. Use a steel plug with a pressure rating at least equal to that of the valve. Also, the shipping tabs and lifting eyes should be removed and all body bolts tightened.

\*Paragraph Revised

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3 3 5 WKM Dynaseal Ball Valves

\* 3 3 5 1 The WKM Dynaseal ball valves are designed to require no lubrication for bubble tight shutoff. However, it may be necessary to inject lubricant (Emergency Seat Renewal), if the seats become damaged. The recommended lubricant for shutoff is WKM Lubricant No 103, or approved equivalent, such as Rockwell No 386 or No 1033. Close the valve and inject lubricant at both seats under block and bleed conditions.

3 3 5 2 Should a leak develop around the stem, it can be stopped under pressure by injecting WKM plastic stem packing No 107.

3 3 6 Cameron Ball Valves

3 3 6 1 The Cameron all welded ball valve does not require lubrication or any maintenance. The valve is sealed for life. Seals and stem bearings are self-lubricating and are designed for the life of the valve. Although lubricant injection is not normally necessary, periodic injection of lubricant helps maintain the valve in good operating condition and minimizes wear and abrasion on the seats and ball.

\* 3 3 6 2 The valve has lubrication injection ports with check valves to provide a backup seat seal should the sealing surfaces become damaged and tight shut off cannot be obtained. Note: 2" to 4" valves have a smaller button head fitting requiring a 5/8" coupling on the hand gun.

3 3 6 3 The injection system can also be used for flushing of the seat ring area when this may be required.

\* 3 3 6 4 If the primary seats become damaged, it may be necessary to inject lubricant through the lubricant injection fittings. The recommended lubricant for Cameron ball valves is Sealweld 911 (Cartridge Code No 01 5571).

\*\* 3 3 6 5 For Cameron valves 14" and larger, the rotating seat design creates an increased torque for the last 15° of operation.

\*Paragraph Revised  
 \*\*Paragraph Added

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3 3 7 Ball Valve Lubricants

\*\* 3 3 7 1 The recommended types of general purpose lubricant for ball valves are summarized in Table 2 Use only the manufacturer's recommended lubricant, as stated in paragraphs 3 3 2 through 3 3 6 and summarized in Table 2, for each valve Standard sizes and packages of approved lubricants are available by specifying the code numbers shown

\*\* 3 3 7 2 The specified lubricant for TK, Grove and Cameron ball valves is Sealweld No 911 Sealweld No 911 contains micro fine Teflon particles which can cause serious problems if used in plug valves and other valves requiring more frequent lubrication or larger quantities of lubricant However, the limited amount of Teflon bearing lubricant used in the TK, Grove and Cameron ball valves should not cause a problem

\*\*Paragraph Added

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**WKM DYNASEAL VALVES**  
**ROCKWELL HYPRESPHERE VALVES**

Lubricants No 386 Color Cream  
 No 1033 Color Green  
 (See Note 7 for a comparison of Rockwell lubricants )

Lubricant Fitting Type	Thread Size	Lubricant Form Designation (Units per Box)	Code Numbers for Specified Lubricants	
			386	1033
Threaded	1/2	B (24) Stick	50 3072	Not Available
	3/8	C (24) Stick	50 3073	Not Available
	1/2	D (24) Stick	50 3074	Not Available
	3/4	G (24) Stick	01 5596	Not Available
Button Head Fitting (See Note 1)		K (12) Stick	01 5597	01 5585
		GP (6) Gun Pak (See Note 2)	01 5594	01 5593
		GP (6) Gun Pak	01 5594	01 5593
		J (6) Stick	50 3076	01 5540
		Cartridge (4) (See Note 3)	01 5579	01 5564
		Bulk (1 2 4) 5 quart can (See Note 4)	50 3100	02 6396

**GROVE BVR 4 AND BVR 5 VALVE REGULATORS**  
**TK AND GROVE MODEL B 4 AND B 5 VALVES**  
**CAMERON VALVES**

Lubricant Sealweld Total Lube #911 (See Note 5)  
 Color White

Cartridge Designation (Units per Case)	Code Number
#1 Gun Cartridge (16) 12 ounce (See Note 6)	01 5571

TABLE 2

Recommended Lubricants for Ball Valves

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Notes

- 1 Require lubricant hand gun
- 2 Use with No 400A handgun
- 3 Use with No 400D hand gun
- 4 Use with Hypregun
- 5 Sealweld #911 contains micro fine Teflon particles (40 microns or smaller) and must only be used on approved ball valves
- 6 Can be used with Rockwell 400D hand gun
- 7 Comparison of Rockwell lubricants

Rockwell lubricants 1033 and 386 are quite different in chemical formulation but for natural gas both perform very similarly. The 1033 is slightly more viscous providing a better seal in a worn or poorly adjusted valve and less loss of sealant during operation. However it is slightly harder to pump. Also the 1033 is much more resistant to being dissolved by organic solvents and would therefore be preferred if hydrocarbon condensates in the pipeline are known to be a problem. On the other hand 386 is much more resistant to inorganic chemical attack (acids bases and other chemicals). This is not likely to be an issue for gas pipelines. The 1033 lube has a higher temperature rating than the 386 but the 386 is stable up to at least 250 degrees F so this is not a significant issue for gas pipelines.

Rockwell lubricant 555 is no longer recommended by the manufacturer since its clay base composition may cause hardness over time.

TABLE 2

Recommended Lubricants for Ball Valves

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3 4 Gate Valves

3 4 1 Kerotest M-1 Gate Valves

3 4 1 1 The Kerotest M 1 gate valve does not require lubrication or gland tightening. A stem leak requires replacement of the packing seals and gland gasket. Repack valve and lubricate as described in Kerotest's procedure for "Primary or Secondary" repacking. The primary repacking procedures may be done with the line pressurized. See Kerotest M 1 Gate Valve Operations Manual.

3 4 1 2 If the bonnet gasket leaks, the bonnet screws should be retightened per torque specifications found in the Kerotest operations manual. If leakage persists, remove the valve from service, disassemble, and inspect for damage to the gasket or sealing area. Replace the gasket and/or polish sealing area with very fine emery cloth. Coat the bonnet gasket with a light film of multipurpose grease, and reassemble.

3 4 1 3 Caution should be taken if the valves are in the open position in a pipeline for a period of time. Sediment or dirt can collect inside the valve and block the wedge from fully closing. When these valves are to be closed, it should be done slowly. The valve should not be closed completely, but "throttled" for a short period of time in order that the turbulence created will flush away any sediment or dirt that might have settled in the valve. In the event of an emergency, the valve should be closed as quickly as possible.

3 4 1 4 If complete shutoff is not obtained, the valve may be reseated using the following procedure. Throttle to flush out loose sediment. Close valve with moderate effort. This will force the wedge partially into the seat and loosen accumulated sediment. Open the valve one or two turns to retract the wedge from the seat. Repeat procedure if necessary.

\* 3 4 2 Kerotest Model EV 11 "Stirrup" Gate Valve

3 4 2 1 The EV 11 gate valve requires no lubrication for a bubble tight seal. Lubrication is required only during cleaning and inspection, as specified in Kerotest's maintenance procedures.

\*Paragraph Revised

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3 4 2 2 If a leak develops in the bonnet, the capscrews should be retightened to Kerotest's torque specifications. If leakage persists, replacement of the bonnet O Ring will be necessary.

3 4 2 3 A stem leak will require replacement of the stem seal and gland bushing O Rings. The replacement of the stem seal and gland bushing O Rings can be done under pressure if Kerotest's repair procedure is followed.

3 4 2 4 If complete shutoff cannot be obtained, it may be necessary to disassemble the valve and clean or replace the wedge seals.

3 4 2 5 Refer to EV 11 gate valve maintenance instructions for repair procedures and torque requirement when repairs are necessary.

**\*\* 3 4 3 RMI Weld Patent Gate Valve**

**\*\* 3 4 3 1** The Weld Patent gate valve requires no lubrication for a bubble tight seal.

**\*\* 3 4 3 2** A stem leak will require replacement of the stem o rings. The replacement of the stem o-rings can be done under pressure if WPV's repair procedure is followed.

**\*\* 3 4 3 3** The WPV gate valve is an all welded design, therefore, the valve cannot be disassembled to replace the stem or wedge.

**4 0 FLUSHING PROCEDURES**

4 1 Plug valves that are seized or difficult to turn and leaking ball valves and gate valves should be injected with an approved cleaning solvent to soften old lubricants and to purge grease grooves. The valve should then be lubricated with the manufacturer's recommended lubricant to provide proper lubrication on the mating surfaces when the valve is operated.

4 2 The valve flush manufacturers' procedures shall be followed when performing any valve cleaning operation.

**\*\*Paragraph Added**

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4 3 The following valve flushes can be used on any brand of valve and with existing valve lubrication equipment, and are approved for use

4 3 1 Rockwell Valve Purge VPX  
Gun Pak (6 per box) Code No 01 5565  
Cartridges (4 per box) Code No 01 5566  
Can (5 Quarts) - Code No 01 5567

4 3 2 Sealweld Valve Cleaner  
16 oz cartridge Code No 01-5568  
Can (5 Quarts) Code No 01 5569

4 3 3 Val Tex Valve Flush  
1 Quart Bottle (4 per box) Code No 01 5570  
Can (5 Quarts) Code No 01 5602

4 4 Caution Valve flush materials can have a deleterious effect on elastomers if left in contact for extended periods of time. Minimize contact time with rubber sealant gun components by cleaning valve flush out of the gun by pumping sealant through the hand gun. When the softening process is completed, always inject fresh lubricant (as recommended by the valve manufacturer) into the valve.

Note A Material Safety Data Sheet should be on file in each division and Pipe Line Operations District for each valve flush and lubricant being used

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