Selection, Maintenance And Service Of Lubricated Plug Valves

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The selection of lubricated plug valves in the production field has been handled rather loosely over the years — more so than in many other branches of the oil industry. This can be easily understood because, ordinarily, these services and conditions are not too difficult to handle. This statement can be qualified to mean in the West Texas or Permian Basin operations. However, in order to obtain maximum efficiency of operation and maximum length of life from a lubricated plug valve, care should be exercised in its selection.

In the selection of the lubricated plug valve, first, you should be familiar with the installation. You should know the characteristics of the element to be handled—that is, whether the element is corrosive and/or abrasive and to what extent — and whether the valve will be operating in a cold service. atmospheric service or hot service. The temperature range should also be definitely established. Of course, the working pressure of the valve has to be determined; and you must establish whether the valve is to be semi-steel or steel, and whether a rectanguar port or full round opening port would be the more effective.

Another thing that should be remembered: ordinary lubricated "run of the mill" plug valves are not built for throttling services—a use to which they are too often put. If a valve is to be used in throttling service, you should select one that is built for that purpose. Then, of course, there are a number of elementary things that have a bearing on the selection of valves—such as the type of connection involved; flanged end, screwed end, weld ends, etc.; and be sure that the desired pressure rating is procured. Something else to remember, and that is the space and weight factor in many installations. The lubricated plug valve has many advantages to offer in this respect. The lubricated plug valve has a very compact body, no high projecting yokes or bonnets, no exposed threads and no under hanging body to require room below the pipe. In most cases the valve is not much larger than the pipe. This can prove to be economical as well as weight saving, which as stated sometimes, presents quite a problem. Bearing these suggestions in mind while you are selecting a valve or valves, will give you optimum operating efficiency and maximum length of life.

After you have selected and installed the proper valve, proper maintenance service must not be overlooked. This is a very important part of lubricated plug valve operation—although no longer a chore with present-day lubricating methods and equipment.

A recent survey of plug type lubricated plug valves extending over a period of twenty years has indicated that the ratio of repair and replacement parts is less than 1 to 100. Putting this another way, lubricated plug valve repair parts over a period of years are about a tenth of the cost of other types of valves. This favorable differential is due to the fact that there is little or no need for renewal of seating parts, packings, stems or re-welds.

In a great many plug valve installations in the production fields, it seems the valves are practically forgotten as far as maintenance and service are concerned. Of course, this can easily be explained, as there are certain parts of installations that are not visited frequently. Also, there is a tendency to believe that the lubricated plug valve needs no attention because it is such a rugged piece of equipment that it will continue to perform even without proper lubrication. That's true. However, bear in mind that the lubricated plug valve is certainly to be considered as a piece of equipment; and as far as I know, all mechanical equipment needs some maintenance and service to maintain maximum performance. The lubricated plug valve is no different in that respect—although it needs only minimum attention to successfully perform the operation that it is designed for—that is, to afford a quick positive shut off. The ability to do this is found only in the lubricated plug valve.

A common hazard to the life of valves is the abrasions caused by dust, dirt and debris in the lines, reacting against the seating surfaces of the valve. This hazard is entirely eliminated in the lubricated plug valve. Contributing to the elimination of this hazard is the principle medium of maintenance of the lubricated plug valve, in effect, and this is lubricant. If the lubricant in the lubricated plug valve is kept fresh, the critical seat areas are fully lubricant-sealed, and the lubricant is under pressure so that abrasive materials cannot intrude. If the lubricant channels are kept clean and the lubricant is refreshed intermittently, you will have an easy operating and perfect sealing plug valve. Remember this: each time you refresh the lubricant in the lubricated plug valve you are also renewing the seats and seating surface of the lubricated plug valve. This, in itself, is a remarkable feature and is found only in the lubricated plug valve. So, in effect, the lubricant provides preventative maintenance to the valve. The lubricated plug valve has a positive adjustment. This should be checked occasionally. However, this is required so seldom that it is not considered an important part of the maintenance program. It might also be mentioned here, that regardless of line pressure, the plug valve can be lubricated as effectively as with no pressure in either the open or closed position.

Should you have a lubricated plug valve that is not normally operated too often, it should be opened and shot occasionally in order to keep it in good operating order. The lubricant should be freshened occasionally to keep the valve in condition for either routine operations or an emergency operation.

Occasionally it is necessary to disassemble a lubricated plug valve for some reason or other, and when this is done, please remember that the plug taken from the particular body will not fit in another body of similar type valve. At least it is not recommended to exchange plugs from one body to another. The reason for this being that from the time the plug is machined into the body to a certain fit, the plug then never leaves the body of the valve in which it is placed. The plug is lapped to the body for better seating and better sealing characteristics. It is possible in the field, to remove the plug, and by using some very fine lapping compound, lap the plug back into the body, by hand. This will serve to clean the plug and the seating surfaces in the event that this is needed.

Something else to be borne in mind on the maintenance of lubricated plug valves, and that is, to be sure that you know what you are doing when you order replacement plugs for valves. A replacement plug will be shipped out oversize and it will be a machine shop job to install it in the body. All plugs are shipped oversize and will not fit the body as they come from the factory.

Another thing to remember in your maintenance and service schedule of lubricated plug valve is that in the event that the plug gets scored by some abrasion, you can remove the stop collar and reverse the plug and have, in effect, a new valve. This is a very important feature and is only possible in the lubricated plug valve.