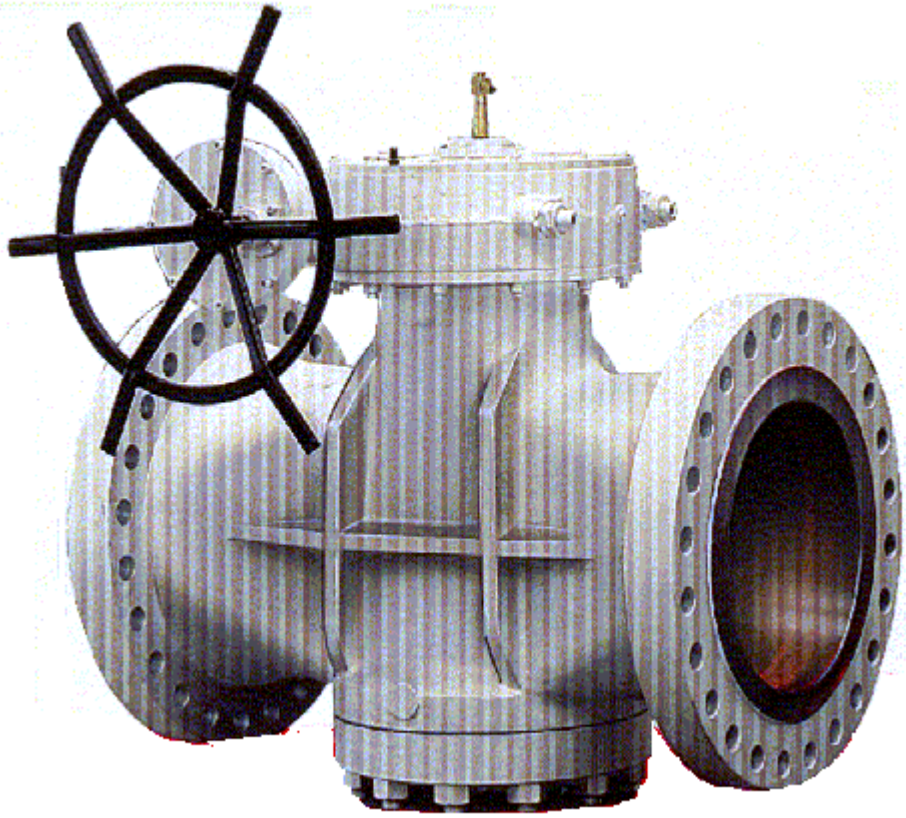


INSTALLATION, USE AND MAINTENANCE MANUAL FOR LUBRICATED TAPER PLUG VALVES

"PRESSURE BALANCED" TYPE

NOTE

During disassembly care must be taken to avoid damage to component surfaces. We recommend components are placed on wood or similar surface and to avoid sharp metal objects coming into contact with lapped surfaces of plug, stem and internal surface of valve body. Similar procedures should be taken with gasket contact areas of flanges and clamp connection areas.

1.0 DISASSEMBLY

1.1 Remove the valve from pipeline with plug in OPEN position, to avoid that any residual pressure could bleed off fluid situated between plug and body cavities.
1.2 Remove valve operator (gearbox or wrench).
1.3 Unscrew the grease injection(30) from the stem (04) and the check valve (44b).
1.4 Unscrew gland plate screws (09) and Remove gland plate (05), then the graphite packing (54).
1.5 Rotate the valve 180° to access the cover.
1.6 Remove screw cap (131) and remove plug loading screw (68) and nuts (08).
1.7 Remove thrust seat (128) from the cover (02a).
1.8 Remove the two diaphragms (134 & 135).
1.9 Remove the spherical bearing (127) from the plug (03a)
1.10 Lift the plug (03a) using an eyebolt.
1.11 Remove equalizer ring (67), and extract the stem (04) using an eyebolt.
1.12 Carefully remove the upper thrust washer (22) from stem (04)

2.0 MAINTENANCE

2.1 Degrease and clean all components of the valve.
Particular attention should be paid to the cleanliness of the sealant grooves in the plug (03a).
2.3 Clean and degrease the upper and lower chambers in the body (01) and visually check for signs of damage or wear.
2.4 Visually examine the plug surfaces (03a) and the contacting surfaces of the valve body for signs of damage or wear.
2.5 Visually examine the stem (04) and equalizer ring (67) for damage or wear and the contacting surfaces on valve body.

2.6 There should be no deformation or wear on cover (02a).
2.7 Replace any worn or damaged parts such as: o-rings (12 & 12a) packing (54) and the two diaphragms (134 & 135).

3.0 ASSEMBLY

3.1 Place the upper thrust washer (22) and the o-ring (12 & 12a) on the stem.
3.2 Carefully position the stem (04) in valve body and assemble the equalizer (67) onto the stem.
3.3 Position the plug (03a) carefully into the valve body taking care not to damage the contacting surfaces, and making sure the plug and equalizer ring (67) are correctly aligned.
3.4 Position the thrust seats (128) into the plug (03a).
3.5 Position the two diaphragms (134 & 135) in the body (01).
3.6 Position the thrust seat (128) into the cover (02a).
3.7 Screw stud bolts (07) into body (01) and place the cover (02a) over valve assembly tightening down the nuts (08).
3.8 Thread plug loading screw (68) and the screw cap (134) onto the cover (02a).
3.9 Rotate the valve of 180°. To access the stem.
3.10 Install the graphite packing (54).
3.11 Place gland flange (05), and tighten down using the gland flange screws (09).
3.12 Install the check valve (44b) as far down the stem (04) as possible.
3.13 Screw the lubricant screw (30) into the stem (04).
3.14 position the valve operator (gearbox or wrench).

3.2 LUBRICATION PROCEDURES

The valve must be fully OPEN or fully CLOSED
VALVITALIA valves lubricated plug valves are designed to be lubricated using two different methods

- via built-in lubricant screw
- with hydraulic lever gun

- via built-in lubricant screw

3.2.1 remove lubricant screw and introduce grease stick into the stem reservoir. The check valve in the reservoir eliminates the danger of any loss of grease during loading.
3.2.2 Replace the lubricant screw and tighten down to pressurize the grease which is forced past the check valve into the upper chamber and then into the lower chamber via groove machined into the plug. The grooves are positioned so that they are never exposed cannot be entrained by the process fluid.
3.2.3 Rotate plug to evenly distribute lubricant.
3.2.4 In necessary repeat procedure until lubricant is visible in inside valve.

- with hydraulic lever gun

3.3.1 Charge the lever gun following manufacturers instructions

3.3.2 Connect coupler of the lever gun to the universal button head of the grease injection (26)

3.3.3 Inject the grease by means of handgrip pumping.

3.3.4 Turn the plug for even distribution of lubricant.

3.3.5 Continue lubrication until lubricant is visible inside valve body.

4.0 LUBRICATION

The functions of lubrication are 3:
-To protect the surface seal of the valve form corrosion and abrasion.
-To contribute to a good seal
-To contribute to an easy action.

The frequency of re-lubrication depends upon the operating conditions from the required mode of sealing.

The following table gives the frequency of re-lubrication according to the temperature range:

1

TEMPERATURE RANGE	TIME INTERVAL
-50°C to 0°C	24 months
0°C to 100°C	16 months
100°C to 150°C	10 months
150°C to 180°C	5 months
> 180°C	2 months

The quantity of grease for re-lubrication also depends on the operating conditions; however, the usual amount is about 2 gr./mm of passage.
The choice its lubricant should be according with the process medium and the service temperature range (see lubrication table).

5.0 GEAR UNIT RE-LUBRICATION

The gear unit is factory dry-lubricated and does not require lubrication during the first year of operation. The gear bearings are lubricated through the grease nipples once every 12 months; some types of gear operator do not need any lubrication for their entire life.
The gear teeth racks on worms and wheels do not normally require re lubrication. However, if operation becomes difficult or noisy, this indicates a lack of lubrication. In this case, re-lubrication is recommended.
The procedure is as follows:
remove the gear cover to access gearbox internals
The lubricant is applied to all tooth racks in a layer of about 1-mm.

TYPES OF LUBRICANT AND SOLVENTS

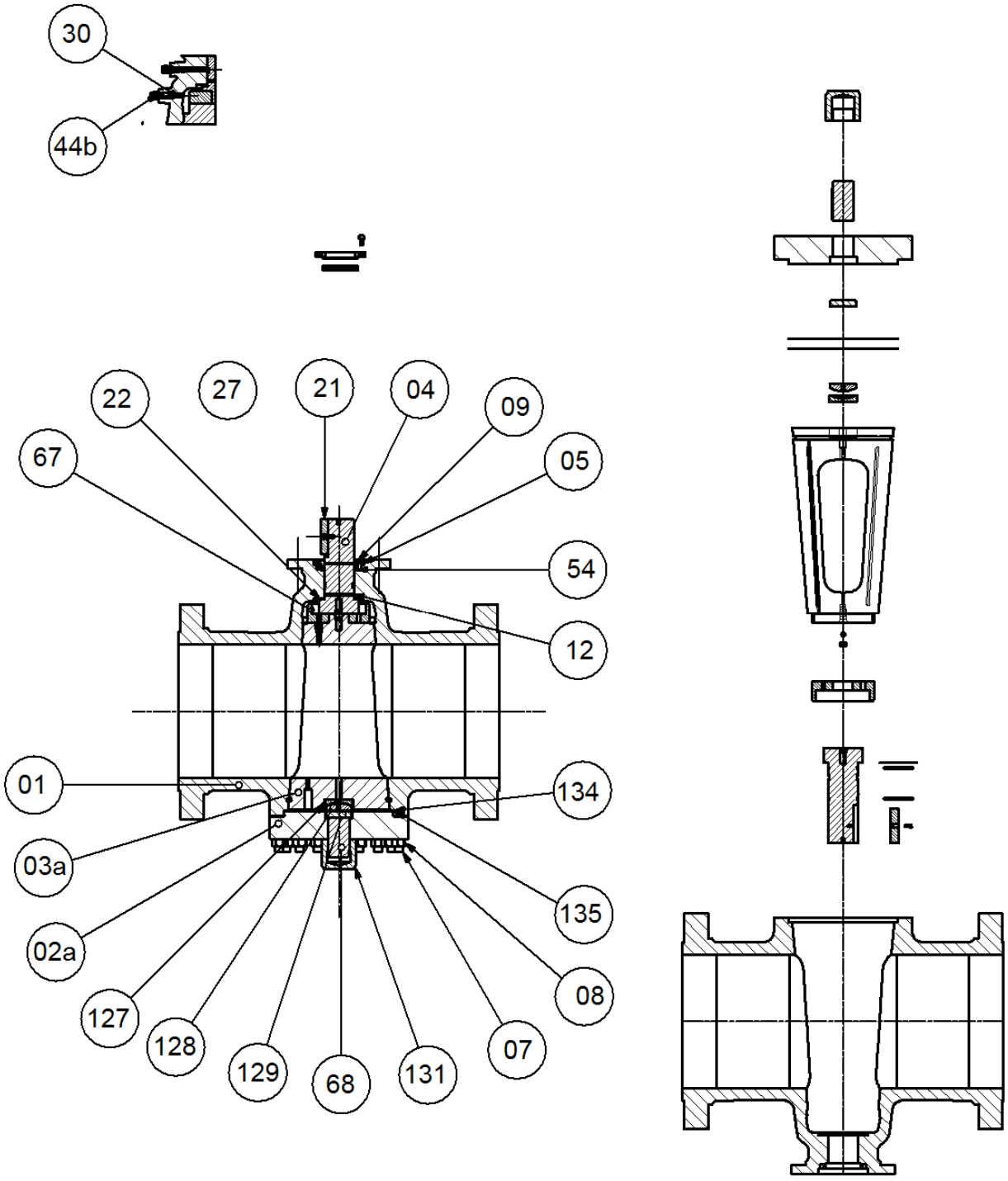
PRODUCTS			TEMPERATURE	RECOMMENDED FOR	DO NOT USE
AUDCO	**ROCKWELL**	**DL**			
733	-	DL 33	-10°C ÷275°C	Butane, Propane, gas oil, kerosene, Oils, fuel-oil, hydrocarbons, solvents, high pressure hot water, steam, sulphuric acid, petroleum products, gasoline, gases (max. 170°C)	Strong alkalis, aromatic solvents
731	421	DL 71	-15°C ÷ 325°C	General chemical services compressed air/water, Watery solutions diluted acid alkaline solution tar and bitumen. Also suitable for gases (max. 150°C)	Strong acids, petroleum products, solvents
147	147	DL 41	-10°C ÷ 70°C	Strong acids (incl. (Nitrating) and alkalis, sulphuric acid, acetone and alcohols, chemical products	Aromatic and most aliphatic solvents
-	555	DL 55	-30°C ÷ 370°C	Liquid and gaseous hydrocarbons, natural gas condense, natural gas aggressive, sour gas, petroleum products, chemical products, most hydrocarbon solvents, diluted acid or alkaline solution, watery solutions	Aromatic solvents, strong alkalis, aggressive chemical products, warm air
563	755	DL 61	-10°C ÷ 120°C	Aromatic and chlorinated hydrocarbon	Aqueous solutions
-	-	DL 80	-15°C ÷ 220°C	hot and high pressure water applications	Strong acids, petroleum products, solvents
735	234	DL 955	-10°C ÷ 325°C	Hot hydrocarbon gases and high temperature services. Also hot air to max. temperature of 220°C	Food - pharmaceutical applications, solvents
-	-	DL 21	0°C ÷ 343°C	Acid, alkalis, alcohol, glycerine, soap, water, hot gases, hot hydrocarbon vapours and gases	Light hydrocarbons aromatic solvent.

-	-	DL 62	-60°C ÷ 120°C	Natural gas transmission at subzero temperature	Liquid hydrocarbon solvent.
Stem Packing: **Audco** Type H **Rockwell** Type 909 **DL** Type -			/	A non-asbestos plastic composition containing graphitic filler for use in sealing the stems of Hyperseal valves. Designed for injection through the packing injection fittings on valve bodies. Colour: black **Caution:** for stem packing only.	

Condition of the above table is only indicative; it is made in accordance with the actual service temperature. The operating conditions must be specified at the enquiry stage.

LUBRICANT STICKS All stick lubricants are suitable for lubrication of plug valve

Stick diam. (mm)	Box size	No. of sticks per box
6	A	90
10	B	50
13	C	40
16	D	24
19	E	24
24	F	12
30	G	6
35	H	12
35	I	12


30
44b
22
27
21
04
09
67
05
54
12
01
134
03a
135
02a
08
127
128
129
68
131
07