MANUFACTURER : RUGGLES KLINGEMANN

TYPE : 3S - 4640 - 8

EQUIPMENT DEFINITION

DESIGNATION : GAS FUEL STOP VALVE SOLENOID VALVE

ITEM : 20FG-1

LOCATION : SEE GAS TURBINE DESCRIPTIVE DRAWINGS

INSTRUCTIONS

RKI – 533 (34)

The manufacturer of above defined equipment remains responsible for the documentation enclosed with this cover page.

Number of enclosed sheets : 4

I. Scope

This instructional guideline details the installation, operation, and maintenance of the Ruggles-Klingemann 3/4" Figure 533(34) Solenoid Operated Valve.

II. References

1. Ruggles-Klingemann Mfg. Co. Drawing No. 3S-4640-8
2. General Electric Co. Drawing No. 114A8218, Pt. 34

III. Description

The Ruggles-Klingemann 3/4" Figure 533(34) Solenoid Operated Valve is an on/off valve employed primarily in hydraulic systems with operating pressures reaching 200 psi. The Figure 533(34) is operated by a 110V DC explosion proof solenoid which is energized to close the valve. The explosion proof solenoid is Factory Mutual Approved for use in Class 1, Division 1, Group D locations. Additionally, the steel components of the solenoid assembly are emerlon coated to prevent corrosion.

It should be noted here that the Figure 533(34) is not designed to provide "dead tight" shut off. Specifically, at a pressure of 200 psig, a leak of 450 cc/m is considered acceptable for this valve.

IV. Installation (refer to ref. 1, R-K Dwg. No. 3S-4640-8)

Prior to installation, remove and discard the shipping protector (pt. 41). The valve must be installed with the solenoid in the upright, vertical position.

It should be noted that, using the two recessed holes provided in the valve adapter (pt. 37), the adapter can be mounted on the system separately from the valve body (pt. 1). The valve body can then be mounted on the adapter using the adapter capscrews (pt. 39).

For the purpose of electrical connection to the system, a 1/2" I.P.S. conduit connection is provided on the solenoid cover (pt. 42).

V. Operation (refer to ref. 1, R-K Dwg. No. 3S-4640-8)

The R-K Figure 533(34) Solenoid Operated Valve is normally open. Energizing the solenoid closes the valve. The 110V DC solenoid used to operate the valve is a push type solenoid. Shown on R-K Drawing No. 3S-4640-8, the valve is de-energized and open. In this position, the orifices on the piston (pt. 3) are aligned with the inlet port way, allowing flow to pass through the piston orifices to the outlet port. The piston is held in this position by the compression spring (pt. 4). When energized, the solenoid plunger forces the stem (pt. 2) and the bushing (pt. 6) downward. These, in turn, force the piston (pt. 3) downward, moving the piston orifices out of the inlet port way, thereby closing the valve. De-energizing the solenoid allows the compression spring (pt. 4) to return the piston to the open position.

VI. Maintenance (refer to ref. 1, R-K Dwg. No. 3S-4640-8)

Over the course of extended service, periodic inspection of the Figure 533(34) is recommended. To this end, the following disassembly and replacement instructions are provided.

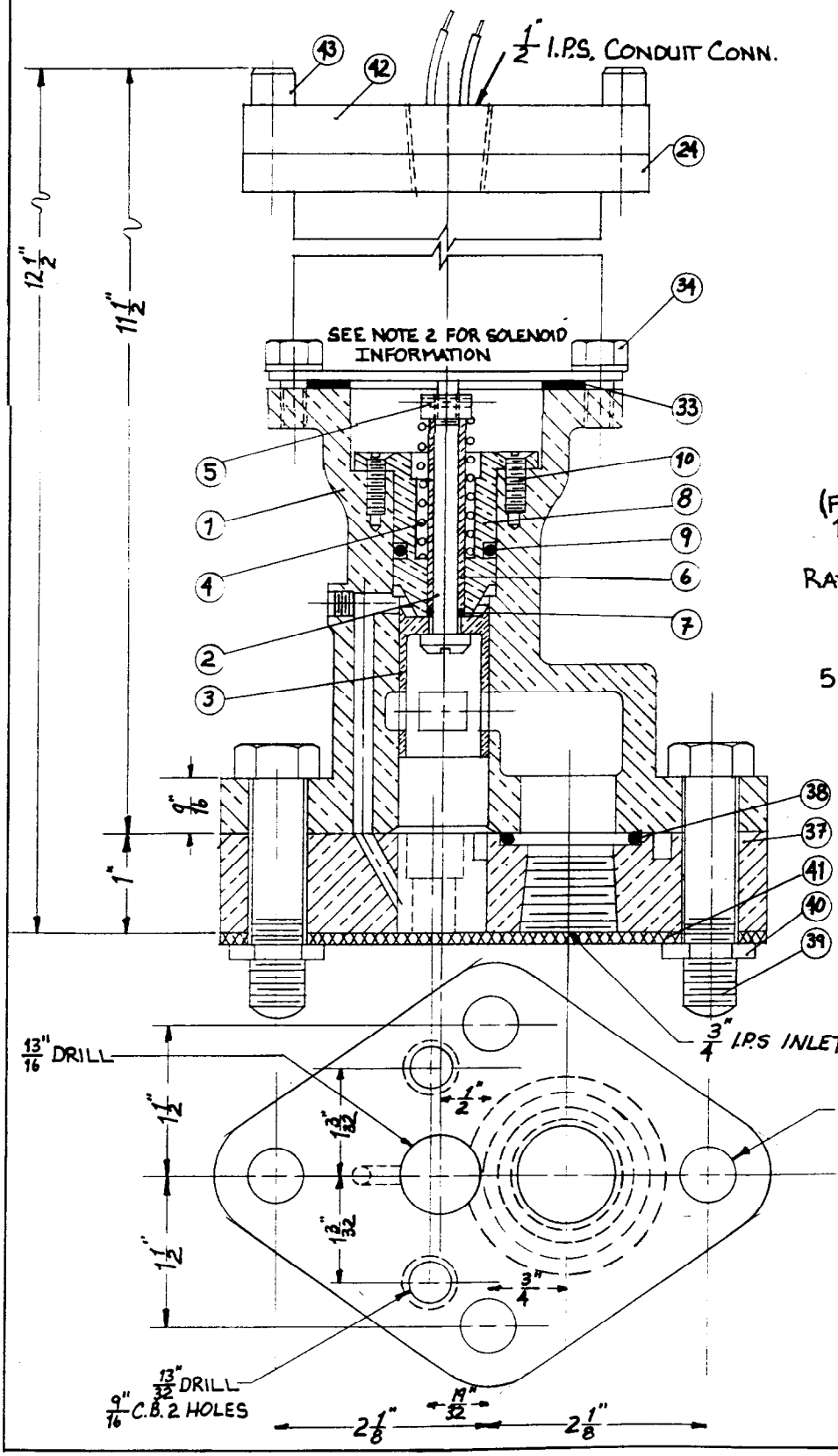
Extended service may warrant occasional replacement of the solenoid coil. Removal of the solenoid cover capscrews (pt. 43) and the solenoid cover (pt. 42) provides access to the solenoid coil.

Extended service may result in the eventual wearing of the valve piston (pt. 3). Significant piston wear will result in excessive leakage through the closed valve. The piston can be removed for inspection as follows. Remove the solenoid capscrews (pt. 34) and the solenoid assembly (pt. 24). At this point observe that through the flange of the stem guide bushing (pt. 8) there are drilled two countersunk holes, in which the stem guide bushing screws sit, and two tapped holes. Remove the stem guide bushing screws from the countersunk holes, and insert them into the tapped holes. By screwing the stem guide bushing screws into the tapped holes, the stem guide bushing is jacked up, allowing parts 2 through 9 to be removed as an assembly. At this time, the piston (pt. 3), piston shaft tube "O" ring (pt. 7), and the stem guide bushing "O" ring (pt. 9) can be inspected for wear.

The stem bushing "O" ring (pt. 9) can be replaced without further disassembly. Replacement of the piston (pt. 3) or the piston shaft tube "O" ring (pt. 7) requires additional disassembly as follows. Drive the pin out of the spring retainer (pt. 5). Placing a screwdriver in the slot in the stem (pt. 2) to prevent stem rotation, remove the spring retainer, allowing complete disassembly of parts 2 through 9.

The adapter "O" ring (pt. 38) can be inspected and replaced by removing the adapter capscrews (pt. 9) and lifting the valve body.

With regard to the replacement of "O" rings in the Figure 533(34), the following should be noted. Use of lubricants to facilitate the installation of "O" rings should be limited to lubricants that will not deteriorate when exposed to the fluid which the Figure 533(34) is regulating. The loose particulate matter resuslting from such deterioration threatens the efficient operation of the valve. For most fuels, a fluorosilicone lubricant such as Dow Corning's Molykote FS-3451 Grease can be safely used.



PT. NO.	NAME OF PART	NO. OF PTS.
1	BODY	1
2	STEM	1
3	PISTON	1
4	SPRING	1
5	" RETAINER & PIN	1 EA.
6	PISTON SHAFT TUBE	1
7	" " "O" RING 1/16"x1/4" I.D. x 3/8" O.D.	1
8	STEM GUIDE BUSHING	1
9	" " "O" RING 1/8"x3/4" I.D. x 1" O.D.	1
10	" " " SCREWS	2
24	SOLENOID ASSEMBLY	1
33	" HOUSING GASKET	1
34	" " CAPSCREWS & L'WS	4 EA
37	ADAPTER	1
38	" "O" RING	1
39	" CAPSCREWS 1/2-13 x 2 1/4	4
40	" " NUTS	4
41	" PROTECTOR	1
42	SOLENOID COVER	1
43	SOLENOID COVER CAPSCREWS	8

NOTES:

1. THIS VALVE IS ENERGIZED TO CLOSE.
2. SOLENOID IS 110 VDC, EXPLOSION PROOF (FACTORY MUTUAL APPROVED FOR USE IN CLASS 1, DIVISION 1, GROUP D LOCATIONS).
3. VALVE PRESSURE AND TEMPERATURE RATING AS FOLLOWS
   PRESSURE (MAX) 200 PSIG
   TEMPERATURE (MAX) 140°F
4. FLOW RATE THROUGH VALVE AT 5 PSIG IS 15.0 GPM (MIN).

RUGGLES-KLINGEMANN MFG. CO. FIG. 533(54)
3/4" SOLENOID OPER. VALVE
(GENERAL ELECTRIC DWG. NO. 114A2818 PT. 34)

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RUGGLES-KLINGEMANN MFG. CO. SALEM MASS.	3S-4640-8