SERVICE BULLETIN

Title: 17/19EX Sticking Float Valves
Models Affected: 17/19EX

Number: C9724
Date: 8/8/97
Supersedes: New

Background:

There have been several reports from the field of low cooler pressure alarms on 17/19EX machines. In most cases, this phenomenon has been traced to a stuck float valve in the economizer. The problem can be attributed to the steel plate that the float valve mounts to in the economizer warping during the welding process (See Figures 5 and 6). This causes the float's mounting plate to twist slightly, and the bearings to bind.

File: Cooler-Condenser-Economizer

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Information:

A number of inquiries as to the size of the float openings have also been received. The dimensions of the float openings and clearances are included with this bulletin.

Float Valve	09EX44007501	09EX54001301
Float Size	1	2
Plate opening (See Figure 4)	2.24 in. (56.9 mm)	2.24 in. (56.9 mm)
Shimmed opening (See Figure 4)	1.90 in. (48.3 mm)	1.90 in. (48.3 mm)
“A” Dimension (See Figure 2)	7.025/6.995 in. (178.4/177.7 mm)	8.595/8.565 in. (218.3/217.5 mm)
Approximate Full Open, shimmed “B” Dimension (See Figure 4)	1.25 in. (31.8 mm)	1.51 in. (38.4 mm)
Approximate Full Angular Travel	45°	55°
Knife Edge Clearance (See Figure 3)	0.020 ± 0.005 in. (0.508 ± 0.127 mm)	
Blunt End Clearance (See Figure 3)	0.060 ± 0.005 in. (1.524 ± 0.127 mm)	
Shim/Block Clearance* (See Figure 2)	0.008 −0.000/+0.005 in. (0.203 −0.000/+0.127 mm)	
Float Ball	EC28HZ243	
Ball Diameter	8.0 in. (203.2 mm)	
Ball Weight	41 ± 2.5 oz (1.16 ± 0.07 kg)	
Ball Displacement	268 $in.^3$ (4.4 L)	

Note: * — The clearance between the shims and the bearing housings must not be less than 0.016 in. (0.406 mm) total for the two ends.

Procedure:

Before pursuing the stuck economizer valve, be sure that the machine's refrigerant charge and water flow are correct, and all transducers have been calibrated. After pumping the refrigerant to the heat exchanger side, obtain access to the economizer float chambers. Before removing access covers, be sure all refrigerant pressure has been removed and all refrigerant reclaimed.

When lifted by hand, the float ball should move freely throughout its range of motion. If the float ball does not move freely, check to be sure that the float's shim plates are not binding against the float's swing plate. The recommended factory clearances are shown in Figures 2 and 3. Once assembled, the valve should rotate throughout its range of motion with a minimum clearance between the swing plate and the shim plate of 0.060 ± 0.005 inches (1.5 ± 0.1 mm). It is easier to check the clearances from the under side of the float assembly.

If this did not remedy the problem, loosen slightly one of the four mounting bolts, and re-check the operation of the float ball. If loosening one bolt did not correct the problem, re-tighten it and loosen another bolt. Repeat the procedure until the float moves freely. If the plate is warped, loosening one bolt will rectify the problem. The deformation caused by the warped mounting plate will not be transmitted to the valve's bearing blocks with three bolts anchoring the valve plate. It is recommended that the loosened bolt be re-installed with Loctite 54 to prevent it from backing out. The loosened bolt should not be tightened to the original torque. Once the bolt has been reinstalled with the Loctite, re-check the operation of the float ball.

The factory has implemented a practice to check the valves for free valve travel after assembly.

If the float ball is not allowing the valve to open, check for a leak in the float ball. If a leak in the float ball is suspected, it can be checked by submerging the float ball in a bath of hot water. Heating the ball in the hot water bath will cause the trapped refrigerant inside of the ball to expand and escape through the leak path. If a leak is found, replace the ball.

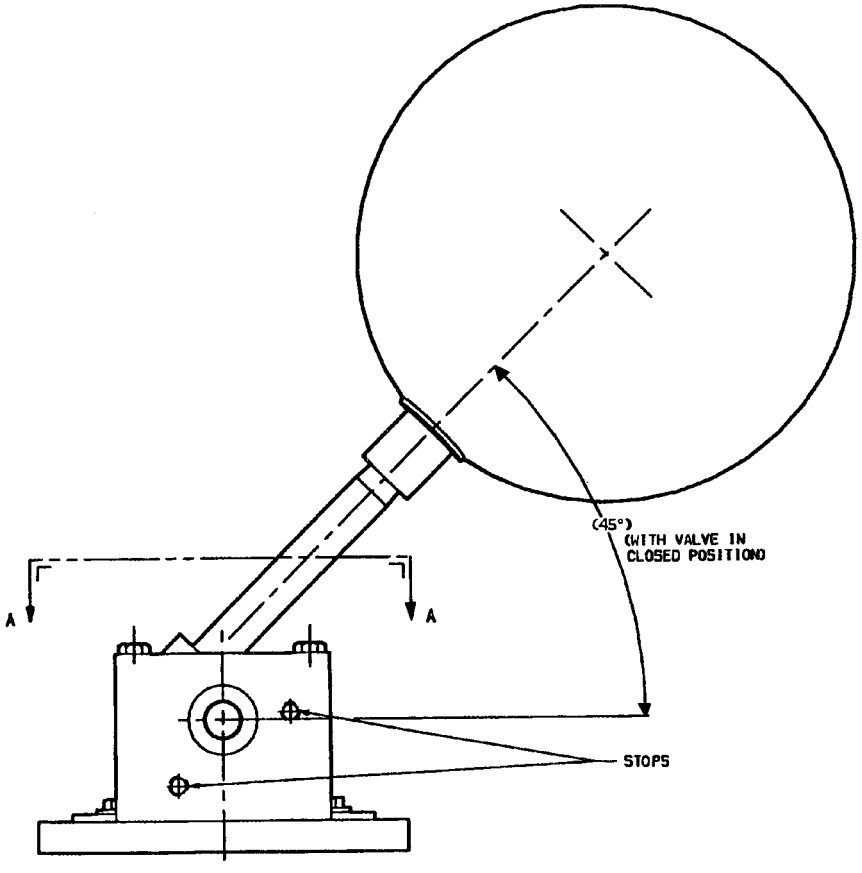

Figure 1
Float Assembly

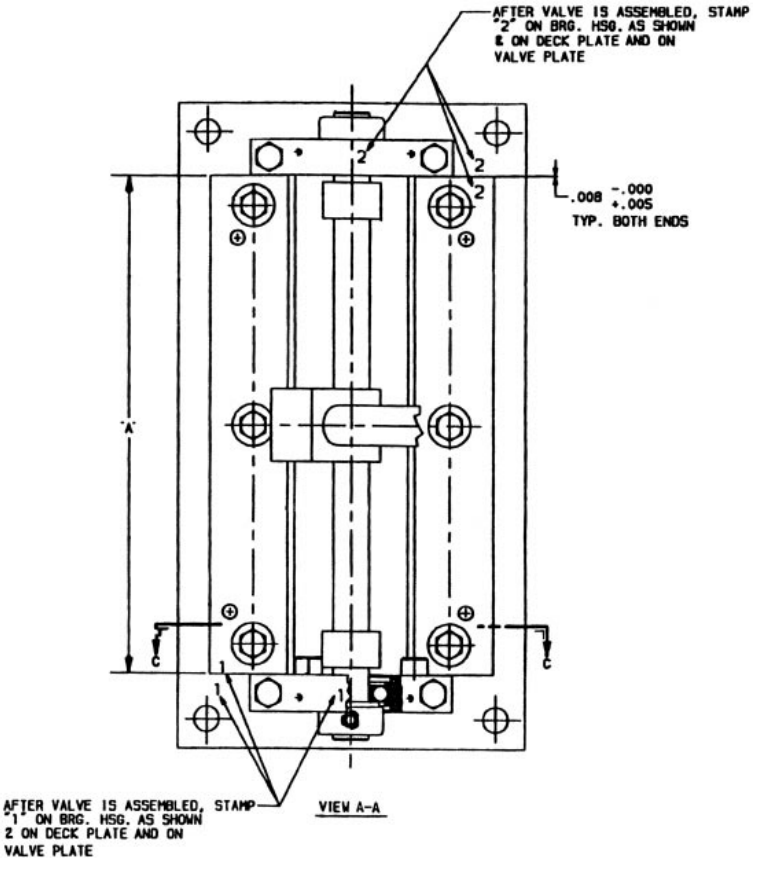

Figure 2
Float Assembly Width and End Clearance

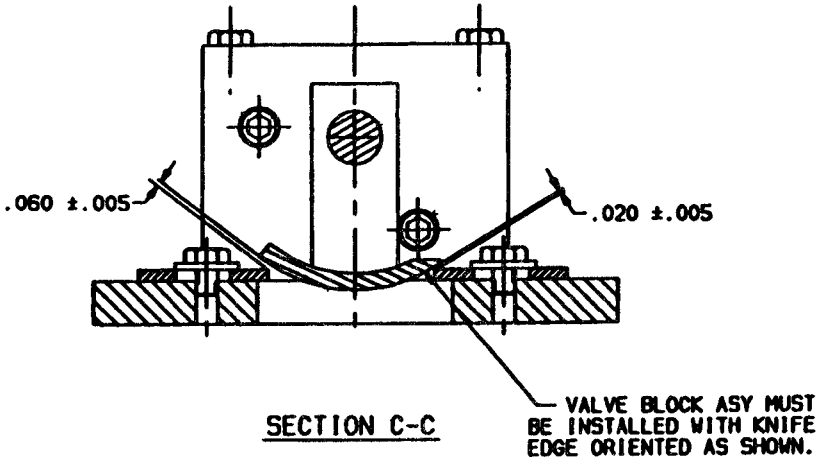

Figure 3
Closed Valve Clearance

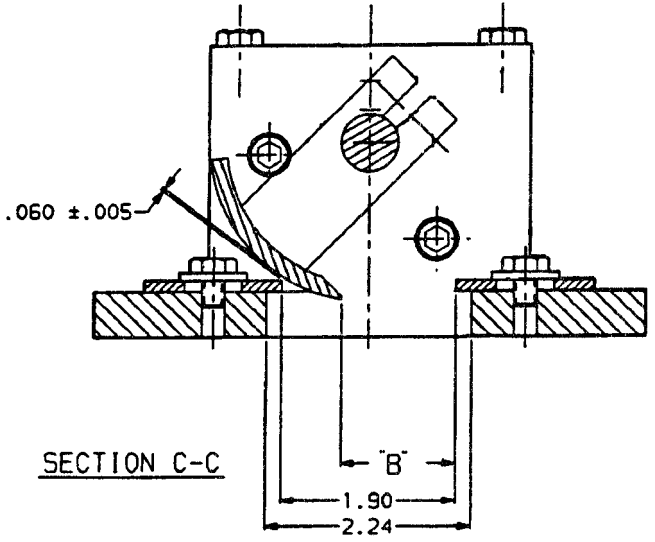

Figure 4
Open Valve Clearance

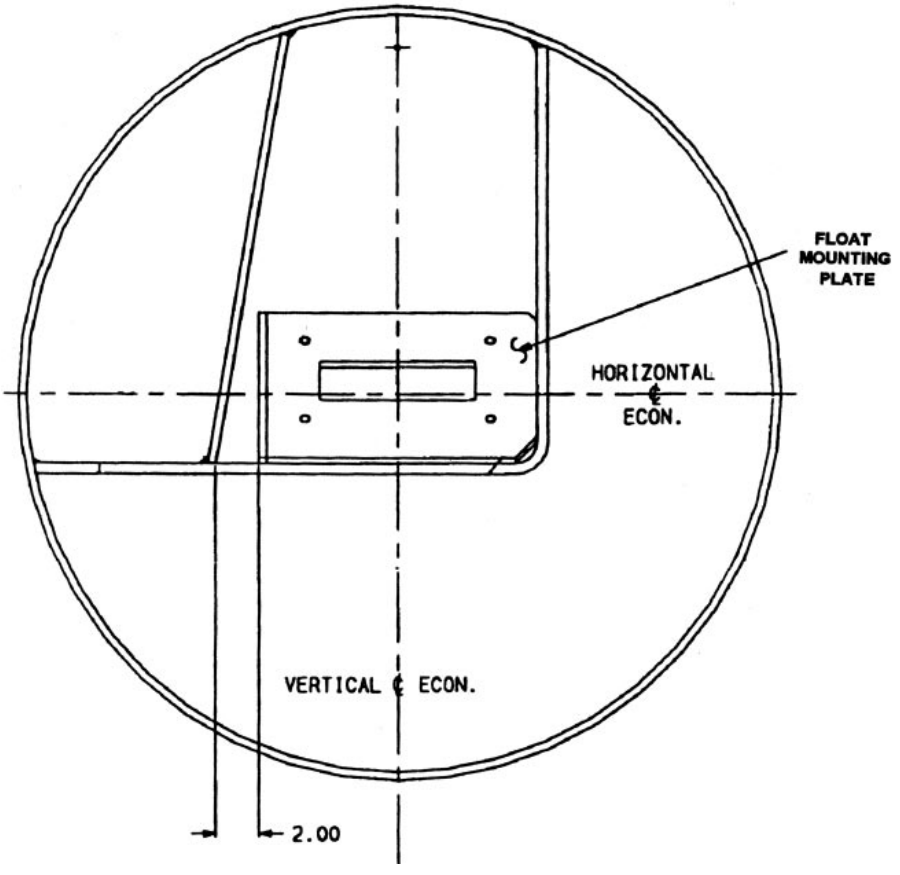

Figure 5
High Side Float Chamber

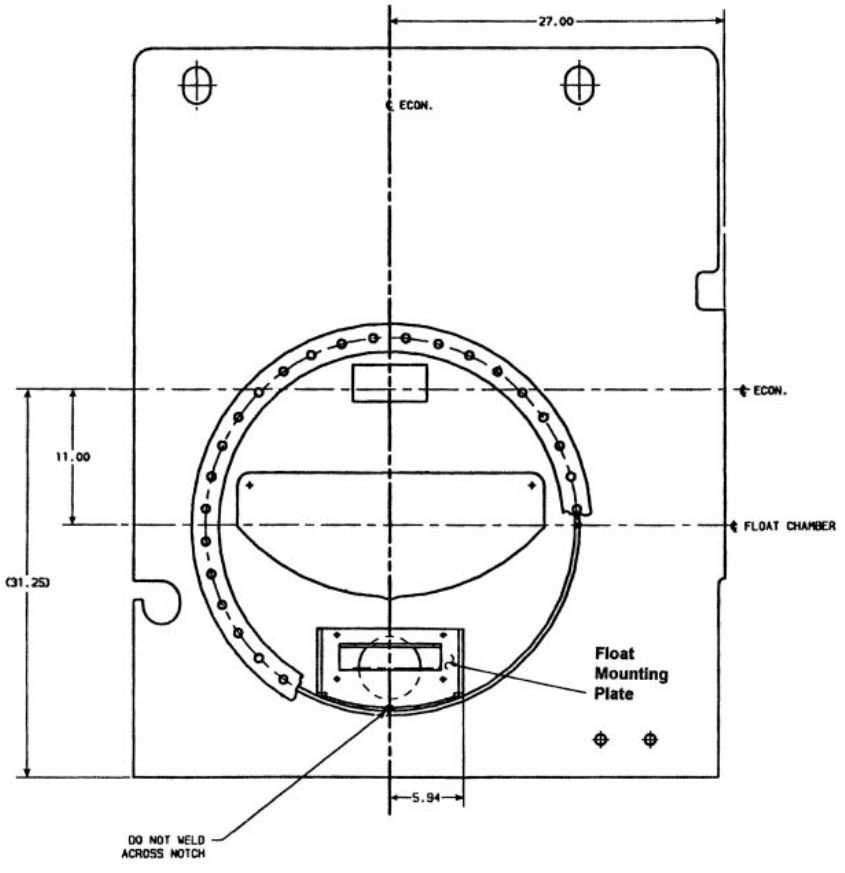

Figure 6
Low Side Float Chamber