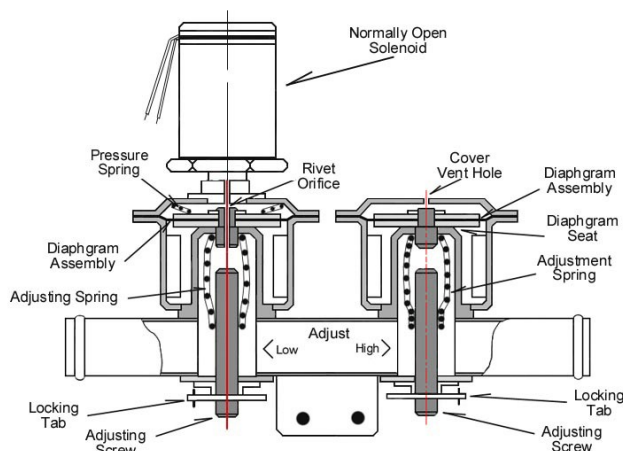


"A Clear View"

Into Construction & Operation

2H22-[] Deice Control Valve



Description

The 2H22-[] deice control valve is a combination 2H48 deice valve and 2H30 pressure regulator.

All 2H22 valves operate in the same basic manner, with model number variations (-[]) denoting connecting tube diameter, pressure adjustment range and/or solenoid voltage. The model 2H22-11 valve is illustrated above.

The 2H22 valve regulates pneumatic system air pressure at two levels. The first stage maintains 7.5 +/- .5 psi for autopilot and gyro instrument operation along with input to the system ejector for deice boot hold-down.

To increase system pressure for "deice mode" the solenoid is energized to over-ride first stage regulation. System pressure then rises to be regulated by the second stage, providing high system boot pressure, normally 18-23 psi.

Operation

Normal Mode

During normal flight operations, air pump pressure enters the first "low stage" of the regulator. Low pressure is adjusted by the spring controlled diaphragm assembly.

System pressure is applied to the lower side of the diaphragm and the rivet assembly. This pressure also moves through the rivet orifice into the normally open

solenoid where it is vented overboard. Pressure does not build on top of the diaphragm and it is allowed to rise up and discharge excess air pressure to the atmosphere.

Turning the adjusting screw will increase or decrease spring tension on the rivet and diaphragm assembly, thereby increasing or decreasing the pressure required to raise the diaphragm.

Increasing spring tension will result in higher system pressure in the valve body with higher backpressure on the air pump. The result will be shorter pump life.

NOTE:

The gyro instrument pressure gage does not indicate air pump or system pressure !

Deice Mode

To obtain "boot pressure", the solenoid mounted to the first regulator stage is energized, closing the pilot air vent to atmosphere. Air flowing through the rivet orifice causes pressure to build on top of the diaphragm assembly. The diaphragm is held on its seat, preventing the normal discharge of air causing system pressure to rise.

2H22-[] Deice Control Valve

Construction
& Operation

De-ice Mode (continued)

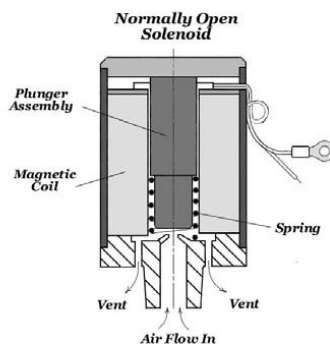
System pressure continues to increase to a level established by the second stage regulator valve. With the spring tension in this valve preset for 18-23 psi, the diaphragm will then lift to allow any excess pressure to vent overboard. A vent hole is provided in the second stage valve cover to allow air, normally above the diaphragm, to vent to atmosphere when the diaphragm rises.

Troubleshooting:

Diaphragm rupture, leakage at the cover rivets, a blocked rivet orifice or failure of the solenoid valve to electrically activate, would prevent pressure from building to deice system values.

A blocked rivet orifice in the diaphragm assembly may be cleared with a 0.010 in. wire after removing the solenoid from the valve.

The most common failure of the 2H22-[] valve is carbon contamination of the solenoid air passage, spring and plunger assembly.



In the event of a blocked air passage, air pump pressure that has traveled through the valve rivet orifice, builds pressure on top of the diaphragm. In this condition, even though the deice system has not been activated, the diaphragm will close and system pressure will increase

Clean the vent passage with a solvent not harmful to electrical insulation and blow dry with shop air. The plunger should be free to move if the solenoid is shaken in a vertical position.

Higher "back pressure" against the air pump will cause internal pump temperatures to rise with increased amounts of carbon dust being discharged.

This increase in exhaust contamination will further restrict airflow through the solenoid vent passage resulting in higher and higher system pressure.

NOTE:

On Beech, Cessna and Piper twin engine aircraft, the system inline filter is on the "DOWN-STREAM" side of the deice valve.

A dirty filter means a dirty deice valve !

Installation of the CV1J4 "Clear View" inline air filter will allow the pilot, owner or mechanic to visually witness any increase in the amount of carbon being discharged from the air pump. Proper action can then be taken to repair the system prior to another air pump failure.

REMEMBER !

Monitoring air pump carbon discharge will help identify system problems

BEFORE the air pump fails !!



CV1J4 "Clear View"
The Only Filter Guaranteed
For the Life of The Air Pump

Have a troubling or particular problem with your aircraft's pneumatic system?

**For Technical Expertise
In Pneumatic System Maintenance**

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