AIR TECH NOTE
#2005-002

Date: 12-19-05
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Subject: Thrust Bearings and Oil Controls for FES Screws

During normal operation of a twin-screw compressor, gas is being compressed between the two screws (rotors). As this gas is compressed, the rotors develop an axial opposing force. Thrust bearings are used to keep these rotors in position or they will make contact with the discharge and suction head. When the compressor is not operating in its design conditions (high suction/discharge pressure), there will be additional stress placed on these thrust bearings.

To combat this added stress, the HE Kobe high-stage compressors use additional oil pressure to minimize the thrust bearing stress. Compressor oil is routed through a balance piston solenoid and into the compressor bearings. The balance piston solenoid is controlled by the Micro panel, and is turned on and off when the panel calculates the compressor is not running in its design conditions.

Newer versions of the HE compressors have an additional pressure transducer and an updated program to identify if this balance-piston solenoid is operating properly. If the Micro panel identifies the balance-piston to be on, it must verify the oil pressure at the additional oil port or a compressor failure will be issued. This is an available option that can be retrofitted to earlier versions.

If you do not have the balance piston transducer, the solenoid coil and fuse should be checked periodically to assure they are fine. There is a surge suppressor wired in parallel with this coil and it will have to be removed before checking the ohm reading of the coil. Normal coil ohm reading should be about 13 ohms.

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