

AIR Tech Notes
#2004-004

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Subject: Screw Compressor Annual Inspections

It is recommended that your screw compressor is inspected each year to ensure that it is in top operational condition. Some maintenance items need attention more than once a year.

Complete inspections include:

1. Replacement of the **oil filter**. Use only approved oil cartridges for the type of refrigerant and oil you use.
2. **Clean strainers**. Strainers included are the suction, injection oil, coalescer oil return, thermosyphen or liquid injection. Pay close attention to what you are finding in these strainers. Metal may be an indication of compressor or oil pump wear. Be careful not to tip the suction strainer when removing it to prevent debris from falling into the compressor.
3. Check the **coalescer pressure drop** while the compressor is operating at full capacity. Pressure drop should be more than zero but less than 5 lbs.
4. **Oil analysis** should be performed to check for viscosity, high levels of water, wear or contaminate metals. Sample 1 to 2 times each year minimum.
5. **Grease motors** based on the manufacturers recommendations of interval hours, amount and grease type.
6. **Vibration analysis** of the compressor and motor. A good vibration analysis program can trend levels and detect a definite change in amplitude and frequency of the vibration. Take readings 1 to 2 times per year for an accurate trend.
7. **Calibrate** the pressure transducers and temperature probes so the panel provides accurate information. Also calibrate motor amperage, slide valve and slide stop (vi) position.
8. Verify the operation of the **capacity control system** (slide valve) and set it so it operates smoothly.
9. Verify operating **setpoints and safety control** setpoints to assure the compressor is operating properly within design conditions and will shut down if there is a problem.

10. Verify the **hour meter** is operational so all records are accurate.
11. Check **line voltage and motor amperage**. Check phase-to-phase to see that the voltage is correct and even. A volt check across the starter (l1 to t1) may show a starter problem, especially in the case of an SCR style starter (soft start). Check the amperage of each of the motors phases to see that they are even.
12. Check **motor starter contacts** and replace if contacts do not have a complete contact surface or are arcing.
13. Check **wiring terminals** to see that the connections are tight. Check wire insulation in motor terminal boxes and temperature probe boxes.
14. Verify operation of cabinet **cooling fans** and starter cooling fans.
15. Check the compressor **high level cutout**. Ensure that the compressor will fail in the event of a high level of each suction accumulator that the compressor is piped to.
16. Check the **motor alignment** of the compressor and oil pump. The alignment needs to be verified when the motor and compressor are at operating temperatures.
17. Check the **axial movement of the male compressor rotor** to check the condition of the thrust bearings. This is a very important check!
18. Check the condition of the **couplings** and make sure bolts and setscrews are torqued/tight.
19. Adjust the compressor oil pump regulator to the manufacturers **oil pressure** recommendation.
20. Check the **end clearance of the oil pump**.
21. Verify the operation of the **oil cooling system**.
22. Conduct a **visual inspection of compressor and related piping** to see that there are no oil or refrigerant leaks and repair if they are found.

All of the above checks should be performed by qualified, trained technicians using the appropriate tools.