USQ # Routine Maintenance

**CHANGE HISTORY (≤ LAST 5 REV-MODS)**

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
<th>Summary of Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-2</td>
<td>01/10/2019</td>
<td>Maintenance Request</td>
<td>edDarf to remove instructions to perform work per the vendor manuals and allow for Sections 5.5 through 5.9 to be performed concurrently with 5.1 through 5.4.</td>
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<tr>
<td>D-1</td>
<td>10/02/2017</td>
<td>Maintenance Requested Change</td>
<td>Modified Step 4.3.2, Added Signature to Step 4.3.3, Added Step 5.1.2, Changed Step 5.1.14, Changed Step 5.1.20, Added Step 5.2.9, Changed Step 5.12.3, Deleted Step 5.12.24, Changed Steps 5.12.25.2 through 5.12.25.6, Added Step 5.12.26, Deleted 5.12.26 through 5.12.55, Added Step 5.14.1, Record Section Change.</td>
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<td>D-0</td>
<td>03/29/2016</td>
<td>Periodic Review</td>
<td>PCA while Periodic Review is taking place. Added Step 5.5.15 &amp; Section 5.9</td>
</tr>
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<td>C-1</td>
<td>10/28/2014</td>
<td>CHAMPS Removal</td>
<td>CHAMPS removal, new records statement.</td>
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<tr>
<td>C-0</td>
<td>02/18/2014</td>
<td>Procedure divided into Monthly, Semiannual, and Annual Procedures.</td>
<td>Revision</td>
</tr>
</tbody>
</table>

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**Table of Contents**

1.0 PURPOSE AND SCOPE ........................................................................................................... 4
  1.1 Purpose ............................................................................................................................. 4
  1.2 Scope ............................................................................................................................... 4

2.0 INFORMATION ....................................................................................................................... 5
  2.1 General Information ......................................................................................................... 5

3.0 PRECAUTIONS AND LIMITATIONS ..................................................................................... 6
  3.1 Personnel Safety .............................................................................................................. 6
  3.2 Equipment Safety ............................................................................................................ 6
  3.3 Radiation and Contamination Control ............................................................................. 6
  3.4 Environmental ................................................................................................................ 6

4.0 PREREQUISITES .................................................................................................................... 7
  4.1 Special Tools, Equipment, and Supplies ......................................................................... 7
  4.2 Performance Documents ................................................................................................. 8
  4.3 Field Preparation ............................................................................................................ 8

Type: CONTINUOUS  
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Rev/Mod: D-2  
Release Date: 01/10/2019  
Page: 1 of 53
# 242-A Kaeser Air Compressor Annual Maintenance

## 5.0 PROCEDURE

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draining Oil Separator Tank Using External Air Source</td>
<td>9</td>
</tr>
<tr>
<td>Draining Oil Cooler Using Internal Pressure</td>
<td>13</td>
</tr>
<tr>
<td>Draining Oil from the Airend</td>
<td>14</td>
</tr>
<tr>
<td>Draining Oil from Heat Recovery System</td>
<td>15</td>
</tr>
<tr>
<td>Oil Separator Cartridge Change-Out and Add S-460 Oil</td>
<td>16</td>
</tr>
<tr>
<td>Refrigerant Dryer/Condenser Cleaning</td>
<td>21</td>
</tr>
<tr>
<td>Check the Motor Coupling to Rotary Screw</td>
<td>22</td>
</tr>
<tr>
<td>Change the Air Filter Element</td>
<td>23</td>
</tr>
<tr>
<td>Cleaning &amp; Inspection of Kaiser Electrical Compartment</td>
<td>23</td>
</tr>
<tr>
<td>Remove Lock &amp; Tag and Apply Power to Compressor</td>
<td>24</td>
</tr>
<tr>
<td>Resetting Maintenance Interval Counters</td>
<td>25</td>
</tr>
<tr>
<td>Start Compressor and Carry-Out Trial Run</td>
<td>27</td>
</tr>
<tr>
<td>Entering the Password for CP-E-1/CP-E-2</td>
<td>32</td>
</tr>
<tr>
<td>Restoration</td>
<td>33</td>
</tr>
<tr>
<td>Acceptance Criteria</td>
<td>33</td>
</tr>
<tr>
<td>Review</td>
<td>33</td>
</tr>
<tr>
<td>Records</td>
<td>33</td>
</tr>
</tbody>
</table>

Figure 1 – Oil Separator Tank Lay-Out .......................................................... 34
Figure 2 – Oil Cooler Lay-Out ............................................................................ 35
Figure 3 – Airend and Coupling Lay-Out ........................................................... 36
Figure 4 – Heat Recovery System Lay-Out ......................................................... 37
Figure 5 – Oil Filter Location ........................................................................... 38
Figure 6 – Oil Separator Cartridge Change-Out ............................................... 39
Figure 7 - Checking Oil Level Indication .......................................................... 40
Figure 8 – Refrigerant Dryer/Condenser Cleaning ............................................ 41
Figure 9 – Changing Air Filter Element ............................................................ 42
Figure 10 – Changing the Cooling Air Filter Mat .............................................. 43
Figure 11 – Replace Control Cabinet Filter Mats .............................................. 44
Figure 12 – SIGMA Control Display, Keys and Indications .................................. 45
242-A Kaeser Air Compressor Annual Maintenance

Figure 13 – Vent Valve (Electric Solenoid) and Dirt Trap Removal .............................................. 47
Figure 14 – Adding Cooling Oil to Airend after Prolonged Outage/Downtime ........................................ 48
Figure 15 – Bolt Torque Sequence for 8 bolt arrangement ................................................................. 49
Attachment 1 - Add Cooling Oil to Airend Prior to Re-Start after Prolonged Outage ............................. 50
Attachment 2 - Fill Oil Separator Tank with S-460 Oil Using Oil Fill Port ............................................. 51
Attachment 3 – Comments Page .............................................................................................................. 53
1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for performing annual maintenance, inspections, repairs, and parts replacement as necessary for Kaeser ASD-30 T Rotary Screw Compressor.

1.2 Scope

This procedure provides directions for the maintenance inspection, oil change out, minor repair and parts replacement for Kaeser ASD-30 T Direct Drive Rotary Screw Compressor installed at 242-A Evaporator.

This procedure will be performed in accordance with the vendor maintenance schedule, and in accordance with the Sigma Controller display “Service Messages”.

Calibration of compressor skid pressure relief valves and pressure switches are performed using other procedures and is not included in this procedure.
2.0 INFORMATION

2.1 General Information

2.1.1 Sections 5.1 thru 5.4 must be performed in sequence. The remaining Sections will be performed in accordance directions from the FWS with directions recorded on the Data Sheet comments section.

2.1.2 The “maintenance interval counter” will be reset in accordance with Section 5.11 after all maintenance activities have been completed.

2.1.3 Information on entering the password is given in Section 5.13.

2.1.4 Draining oil Separator Tank using “External” air source is the methodology used in this procedure.

2.1.5 The oil level is checked with the compressor running and under load.

2.1.6 After changing oil, the compressor must be run under load for approximately five (5) minutes to distribute the oil throughout the system. Then with the compressor running the Oil Level gauge will indicate the correct level.

2.1.7 Attachment 1 - Adds oil to the Airend inlet valve Figure 14 after a prolonged outage or down time (greater than 3 months) to prevent a dry startup of the compressor screw drive. This section is only performed at the direction of the Shift Manager/OE.

2.1.8 Attachment 2 - Replaces the oil using the Oil Filler Port (Figure 7) without performing any maintenance other than the oil change out. This section is only performed at the direction of the Shift Manager/OE.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

WARNING - Devices under air pressure or spring pressure can cause severe injury if the contained energy is released suddenly.

WARNING - To prevent possible burns, leather gloves and natural fiber long sleeve shirt or coveralls (cotton) should be worn throughout this procedure.

WARNING - To prevent possible injury during Vent Valve disassembly the All Thread tool must be used to relieve spring tension.

3.1.1 To prevent hearing injury, ear plugs or ear muffs should be worn while compressor is running.

3.1.2 Comply with the DOE-0336, Hanford Site Lockout/Tagout Procedure.

3.1.3 Compliance with DOE-0359, Hanford Site Electrical Safety Program is required when working with this procedure.

3.1.4 Review Material Data Safety Sheets for any oils or solvent being used.

3.2 Equipment Safety

CAUTION - Overfilling the oil separator tank can cause oil foaming, oil pump cavitation, and subsequent machine damage.

CAUTION - To avert damage to machine; take care to prevent debris from dropping into Oil Separation Tank when open for maintenance.

3.3 Radiation and Contamination Control

Work in radiological areas will be performed using a Radiological Work Permit following review by Radiological Control per the ALARA Work Planning procedure TFC-ESHQ-RP_RWP-C-03.

3.4 Environmental

3.4.1 Waste generated during the performance of this procedure such as oil, filters and clean-up rags shall be managed in accordance with TO-100-052, Perform Waste Generation, Segregation, Accumulation, and Clean-up.

3.4.2 Immediately report any information concerning spills or releases to Environmental per Environmental-On-Call list in accordance with TFC-ESHQ-ENV_FS-C-01.
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies may be needed to perform this procedure:

- Protective clothing (e.g., leather gloves, safety glasses, long sleeve, natural fiber shirt or cotton coveralls)
- Hearing Protection such as ear plugs/ear muff (while compressor is running)
- Two 5-gallon oil receptacles (see Note prior to step 5.3.5)
- Lint-free cloth rags to wipe up any oil spills
- 3/8 inch torque wrench (torque values of 16 and 25 foot-lbs.)
- 1/2 inch torque wrench (torque value of 92 foot-lbs.)
- Wire brush
- Vacuum cleaner
- Funnel
- Access key to Kaeser air compressor panels
- SIGMA Fluid Cooling Oil S-460
- GHS-SDS (MSDS) #066742 - SIGMA Fluid Cooling Oil S-460
- Kaeser Maintenance kit, Part #AN5YRKT-ASD contains the following:
  - Air filter - Kaeser part #6.4143.0
  - Oil filter - Kaeser part #6.3463.0
  - Oil separator cartridge Kit - Kaeser part #6.3669
- O-rings and strainer for Dirt Trap (part of separator Kit #6.3669)
- Motor Coupling to Rotary Screw – part # AN7300027M
- Inlet Valve maintenance kit – part # 400990.0
- Minimum Pressure Check Valve maintenance kit – part # 400992.1
- Aux/Vent Valve repair kit – part # 400707.0
- Lube Grease for valve repair kits – part # 9.5140.00010
- New self-locking nuts for Air Pipe (4 each 8 mm x 1.25)
- Maintenance hose w/hose coupling and shut-off valve (needed for venting and draining oil is stored inside the compressor beneath the oil separator tank)
- Other tools, equipment, and supplies as identified by Shift Manager/OE/FWS.
4.2 Performance Documents

The following documents may be needed to perform this procedure:
- Service Manual - Screw Compressor ASD T Tri-Voltage 9_5721 06 USE
- 2-MISC-049 – Bolt Torquing Guidelines
- TO-620-160 - Operate 242-A Evaporator Compressed Air System
- TO-100-052 - Perform Waste Generation, Segregation, Accumulation, and Clean-up
- Technical Information Bulletin #08-0613USA (Kaeser Tensioning Torques).

4.3 Field Preparation

4.3.1 **OBTAIN** compressor door (panel) key from Shift Manager/Operations.

4.3.2 **REQUEST** Shift Manager/OE to identify which compressor will be undergoing maintenance, identify its isolation valve **AND**

**PLACE** check (✓) marks in the appropriate box.

<table>
<thead>
<tr>
<th>COMPRESSOR</th>
<th>ISOLATION VALVE</th>
<th>VENT VALVES</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP-E-1</td>
<td>HV-CPE1-5 CLOSED</td>
<td>HV-CPE1-7 OPEN</td>
</tr>
<tr>
<td>CP-E-2</td>
<td>HV-CPE2-5 CLOSED</td>
<td>HV-CPE2-7 OPEN</td>
</tr>
</tbody>
</table>

4.3.3 **OBTAIN** Shift Manager's permission prior to performing this procedure.

**CP-E-1**

________________________________________/________________________________________/________________________
Signature                     Print (First and Last)                      Date
Shift Manager /OE

**CP-E-2**

________________________________________/________________________________________/________________________
Signature                     Print (First and Last)                      Date
Shift Manager /OE
5.0 PROCEDURE

5.1 Draining Oil Separator Tank Using External Air Source

Establish Internal Pressure for Draining Oil Separator (Steps 5.1.1 through 5.1.14)

NOTE - Sections 5.1 thru 5.4 must be performed in sequence.

NOTE - Sections 5.5 through 5.9 may be performed concurrently with Section 5.1 through 5.4 after LOTO is installed.

WARNING
To prevent possible burns, leather gloves and natural fiber long sleeve shirt or coveralls (cotton) should be worn throughout this procedure.

5.1.1 DON PPE in accordance with Section 3.1, Personnel Safety.

5.1.2 CONFIRM the machine identified in Step 4.3.2 has been running “under load” for a minimum of five (5) minutes, OTHERWISE REQUEST Operations to run machine “under load” for a minimum of five (5) minutes per TO-620-160.

5.1.3 AFTER ≥5 minute run, NOTIFY Operations to shut down the compressor identified in Step 4.3.2 per TO-620-160.

5.1.4 ENSURE Isolation and Vent Valves for the compressor undergoing maintenance are in the proper configuration as identified in Step 4.3.2.

5.1.5 PERFORM Lock and Tag in compliance with the DOE-0336, Hanford Site Lockout/Tagout.
5.1 Draining Oil Separator Tank Using External Air Source (Cont.)

NOTE - The oil separator tank vents automatically as soon as the machine is stopped.

5.1.6 REFER to Figure 1 for Oil Separator Tank lay-out for shut-off valves and valve coupling locations.

5.1.7 ALLOW the oil separator tank to fully vent by checking pressure gauge (Figure 1 Item 2) on tank reads Zero (± 1 psig).

5.1.7.1 IF the pressure gauge does not read Zero (0), ± 1 psig, RETRIEVE the maintenance hose (w/hose coupling and shut-off valve) from storage under the oil separator tank.

5.1.7.2 WITH the shut-off valve (Figure 1 Item B7) on the maintenance hose closed, INSERT the male hose fitting (Item B 6) into the oil separator tank vent coupling (Item 3).
5.1 Draining Oil Separator Tank Using External Air Source (Cont.)

5.1.7.3 POINT the hose end into an oil receptacle AND
SLOWLY OPEN shut-off valve (Figure 1 Item B7) on maintenance hose to relieve pressure.

5.1.7.4 AFTER tank has vented, CLOSE shut-off valve (Figure 1 Item B7) AND
REMOVE hose from vent coupling.

5.1.8 IF not already obtained, RETRIEVE the Maintenance hose (w/hose coupling and shut-off valve) from storage under the oil separator tank AND
ENSURE Maintenance hose shut-off valve (Figure 1 Item B7) is closed.

5.1.9 INSERT the male hose fitting (Figure 1 Item B6) into the hose coupling (Item 1) air cooling vent (for oil separator tank).

5.1.10 SLOWLY OPEN shut-off valve (Figure 1 Item B7) on maintenance hose to release air pressure from air cooler vent.

5.1.11 AFTER pressure release, CLOSE shutoff valve (Figure 1 Item B7) on maintenance hose.

5.1.12 REMOVE the male hose fitting, (Figure 1 Item B6) from the air cooling vent hose coupling.

5.1.13 CLOSE the shut-off valve, (Figure 1 Item 10) in the venting line.

5.1.14 CONNECT Test Manifold and external air supply to coupling (Figure 1 Item 3).

5.1.15 OPEN valve on external air supply AND
PRESSURIZE oil separator 40 to 70 psi as read on pressure gauge (Item 2).

Drain Oil from Oil Separator Tank (Steps 5.1.16 thru 5.1.21)

5.1.16 WITH the maintenance hose shut-off valve Closed, INSERT the male hose fitting (Figure 1 Item 6) into the hose coupling (Figure 1 Item 9) at bottom of the separator tank.

5.1.17 PLACE end of maintenance hose in five-gallon receptacle AND
SECURE hose.
5.1 Draining Oil Separator Tank Using External Air Source (Cont.)

5.1.18 OPEN the oil separator tank shut-off valve (Figure 1 Item 11).

5.1.19 SLOWLY OPEN shut-off valve (Figure 1 Item 7) on maintenance hose to release the oil AND

CLOSE shut-off valve (Item 7) immediately when air begins to escape.

5.1.20 CLOSE the oil separator tank shut-off valve (Figure 1 Item 11) AND

UNPLUG the male hose fitting.

5.1.21 CLOSE the valve on external air supply AND

REMOVE external air supply and manifold

5.1.22 RECORD the Oil Separator Tank drain completed on Data Sheet.
5.2 Draining Oil Cooler Using Internal Pressure

NOTE - Sections 5.1 thru 5.4 must be performed in sequence.

NOTE - Sections 5.5 through 5.9 may be performed concurrently with Section 5.1 through 5.4 after LOTO is installed.

5.2.1 CONFIRM Section 5.1 and has been completed prior to continuing.

5.2.2 REFER to Figure 2 for Oil Cooler lay-out.

5.2.3 WITH the shut-off valve (Figure 2 Item 3) closed, INSERT the male hose fitting (Item 6) of the maintenance hose into the hose coupling (Item 2).

5.2.4 PLACE end of maintenance hose in five (5) gallon oil receptacle AND SECURE.

5.2.5 ENSURE the maintenance hose shut-off valve (Figure 2 Item 7) is closed.

5.2.6 OPEN the oil cooler shut-off valve (Figure 2 Item 3).

NOTE - Step 5.2.7 is the final Step using the compressor’s internal pressure to drain oil.

5.2.7 SLOWLY OPEN shut-off valve (Figure 2 Item 7) on maintenance hose AND ALLOW cooling oil and the air to escape completely and the pressure gauge (Figure 1 Item 2) on the oil separator tank reads Zero (0) ± 1 psig.

5.2.8 CLOSE the Oil Cooler shut-off valve (Figure 2 Item 3) AND UNPLUG the male hose fitting.

5.2.9 RECORD the Oil Cooler Drain complete on Data Sheet.
5.3 Draining Oil from the Airend

NOTE - Sections 5.1 thru 5.4 must be performed in sequence.

NOTE - Sections 5.5 through 5.9 may be performed concurrently with Section 5.1 through 5.4 after LOTO is installed.

5.3.1 CONFIRM Sections 5.1 and 5.2 have been completed prior to continuing.

5.3.2 REFER to Figure 3 for Airend lay-out.

5.3.3 ENSURE the shut-off valve (Figure 3 Item 3) is closed.

5.3.4 WITH the oil cooler shut-off valve (Figure 3 Item 7) closed, INSERT the male hose fitting (Item 6) into the oil drainage hose coupling (Item 2).

NOTE - Due to the low mounted position of the airend it may not be possible to drain into the five-gallon container; therefore, the use of a smaller vessel may be required and the oil can then be emptied into the larger container.

5.3.5 PLACE the end of the maintenance hose into the five-gallon oil container or a suitable temporary container AND

SECURE/HOLD in-place.

5.3.6 OPEN the Airend shut-off valve (Figure 3 Item 3).

5.3.7 OPEN the maintenance hose shut-off valve (Figure 3 Item 7).

5.3.8 REMOVE the coupling safety screen (Figure 3 Item 4).

NOTE - Motor coupling is checked and replaced as necessary in Section 5.7.

5.3.9 TURN the coupling (Figure 3 Item 5) by hand a minimum of five revolutions (in the indicated direction of rotation) OR

UNTIL all the oil has run out.

5.3.10 CLOSE the airend shut-off valve (Figure 3 Item 3) AND

UNPLUG the male hose fitting.

5.3.11 REINSTALL the coupling safety screen (Figure 3 Item 4).

5.3.12 RECORD Airend Oil Drain complete on Data Sheet.
5.4 Draining Oil from Heat Recovery System

NOTE - Sections 5.1 thru 5.4 must be performed in sequence.

NOTE - Sections 5.5 through 5.9 may be performed concurrently with Section 5.1 through 5.4 after LOTO is installed.

5.4.1 CONFIRM Sections 5.1, 5.2 and 5.3 have been completed prior to continuing.

5.4.2 REFER to Figure 4 for Heat Recovery System lay-out.

5.4.3 ENSURE Heat Recovery System shut-off valve (Figure 4 Item 3) is closed.

5.4.4 WITH the maintenance hose shut-off valve (Item 7) closed, INSERT the male hose fitting (Item 6) into the hose coupling (Figure 4 Item 1).

5.4.5 PLACE the end of the maintenance hose into the five (5) gallon oil receptacle AND
SECURE in-place.

5.4.6 OPEN the Heat Recovery System shut-off valve (Figure 4 Item 3).

5.4.7 OPEN shut-off valve (Item 7) on maintenance hose.

5.4.8 ALLOW the oil to drain completely, CLOSE the shut-off valve (Figure 4 Item 3) AND
UNPLUG the male hose fitting.

5.4.9 RECORD the Heat Recovery System oil drain complete on Data Sheet.
5.5 Oil Separator Cartridge Change-Out and Add S-460 Oil

5.5.1 REFER to Figure 6 for oil separator cartridge change-out.

5.5.2 CHECK Zero (0) pressure is indicated on Separator Tank pressure gauge (Figure 1 Item 2).

5.5.2.1 IF the pressure gauge does not read Zero (0), ± 1 psig, RETRIEVE the maintenance hose (w/hose coupling and shut-off valve) from storage under the oil separator tank.

5.5.2.2 WITH the shut-off valve (Figure 1 Item B7) on the maintenance hose closed, INSERT the male hose fitting (Item B6) into the oil separator tank vent coupling (Item 3).

5.5.2.3 POINT the hose end into an oil receptacle AND SLOWLY OPEN shut-off valve (Figure 1 Item B7) on maintenance hose to relieve pressure.

5.5.2.4 AFTER tank has vented, CLOSE shut-off valve (Figure 1 Item B7) AND REMOVE hose from coupling.

5.5.3 UNSCREW the four fittings (Figure 6 Item 20) AND PULL tubing and caps from their fitting bodies.

5.5.4 UNSCREW nuts (Figure 6 Item 19) at both ends of air-pipe (Item 16).

5.5.4.1 LIFT AND ROTATE/REPOSITION the pipe out of the way.

NOTE - A straight piece of copper tubing extends from the dirt trap down into the tank.

5.5.5 REMOVE dirt trap (Figure 6 Item 15) by placing a wrench on the body, unscrewing the top nut and lifting copper tubing straight up and out.

5.5.6 DISCONNECT solenoid (Vent Valve) AND REMOVE from oil separator tank (Figure 6 Item 1A and Figure 13).
5.5 Oil Separator Cartridge Change-Out and Add S-460 Oil (Cont.)

5.5.7 PERFORM the following actions to the Solenoid Vent Valve (Figure 6 Item 1A and Figure 13).

5.5.7.1 DISASSEMBLE AND CLEAN the valve.

5.5.7.2 LUBE valve, Kaeser part # - 9.5140.00010.

5.5.7.3 IF valve shows signs of wear or damage, REBUILD valve, Kaeser kit part # - 400707.0.

5.5.7.4 REASSEMBLE valve.

5.5.7.5 RECORD following actions that were performed on Data Sheet:
   - Disassemble and Clean Solenoid Vent Valve
   - Rebuild Solenoid Vent Valve.

5.5.8 PERFORM the following actions to the Minimum Pressure/Check Valve (Figure 6 Item 1B).

NOTE - After the spring cage tension has been relieved, there will be 4 to 5 turns left until complete removal.

5.5.8.1 SLOWLY UNSCREW spring cage UNTIL spring tension has been relieved THEN COMPLETE removal of spring cage (Figure 6 Item 25).

5.5.8.2 DISASSEMBLE AND CLEAN the valve.

5.5.8.3 LUBE valve, Kaeser part # - 9.5140.00010.

5.5.8.4 IF valve shows signs of wear or damage, REBUILD valve, Kaeser kit part # - 400992.1.

5.5.8.5 REASSEMBLE valve.

5.5.8.6 RECORD following actions that were performed on Data Sheet:
   - Disassemble and Clean Minimum Pressure/Check Valve
   - Rebuild Minimum Pressure/Check Valve.
5.5 Oil Separator Cartridge Change-Out and Add S-460 Oil (Cont.)

5.5.9 PERFORM the following actions to the Inlet Valve (Figure 14 Item 2).

**WARNING**
To prevent possible injury during Vent Valve disassembly the All Thread tool must be used to relieve spring tension.

5.5.9.1 USE the all-thread tool (from rebuild parts kit) AND RELIEVE spring tension on the Inlet Valve per kit directions.

5.5.9.2 DISASSEMBLE AND CLEAN the valve.

5.5.9.3 LUBE valve, Kaeser part # - 9.5140.00010.

5.5.9.4 IF valve shows signs of wear or damage, REBUILD valve, Kaeser kit part # - 400990.0.

5.5.9.5 REASSEMBLE valve.

5.5.9.6 RECORD following actions that were performed on Data Sheet:
- Disassemble and Clean Inlet Valve
- Rebuild Inlet Valve.

5.5.10 MARK the existing cover orientation on oil separator AND REMOVE the cover retaining bolts (Figure 6 Item 17).

5.5.11 CAREFULLY LIFT AND REMOVE the cover (Item 14).

5.5.12 LIFT out the old separator cartridge (Item 23) and both gaskets (Item 21).

**CAUTION**
To avert damage to machine, take care to prevent debris from dropping into Oil Separation Tank when open for maintenance.

5.5.13 CLEAN all sealing faces with lint-free rags.
5.5 Oil Separator Cartridge Change-Out and Add S-460 Oil (Cont.)

5.5.14 VISUALLY CHECK oil separator tank for foreign articles AND REMOVE any articles found.

Add Oil to Oil Separator Tank With Cover Removed

CAUTION
Overfilling the oil separator tank can cause oil foaming, oil pump cavitation, and subsequent machine damage.

NOTE - After changing oil, the compressor must be run under load for approximately five (5) minutes to distribute the oil throughout the system before the Oil Level Gauge will indicate the correct level.
- The oil level will be checked in Section 5.12 when the compressor is running under load during Trial Run.

5.5.15 REMOVE old oil filter AND REPLACE with new oil filter provided in maintenance service kit (Figure 5).

5.5.16 ADD the required amount of S-460 oil per Data Sheet from Kaeser Annual Maintenance Kit, part #AN5YRKT-ASD into the open separator tank AND RECORD S-460 oil addition complete on Data Sheet.

5.5.17 REMOVE screen from motor coupling (Figure 3 Item 4) AND TURN the coupling by hand in the direction of the arrow 6 to 8 times to disperse oil throughout the rotary screw mechanism.

5.5.18 INSERT new oil separator cartridge with gaskets (Figure 6 Items 21 and 23).

5.5.19 CAREFULLY REPLACE oil separator cover (Figure 6 Item 14) to as-marked orientation per Step 5.5.10.

5.5.20 REFERENCE the bolt torque sequence given in Figure 15.

5.5.21 INSTALL AND TORQUE cover bolts (Figure 6 Item 17) per torque value on Data Sheet AND RECORD torque cover bolts complete per Data Sheet.

5.5.22 INSTALL a new O-ring and strainer in the dirt trap (Figure 6 Item 15 and Figure 13).
5.5 Oil Separator Cartridge Change-Out and Add S-460 Oil (Cont.)

5.5.23 RE-INSTALL tubing down through the body AND TIGHTEN nut snug.

5.5.24 RE-INSTALL Solenoid Vent Valve (Figure 6 Item 1A and Figure 13)

5.5.25 RE-INSTALL Air-Pipe (Figure 6 Item 16) AND ATTACH with self-locking nuts.

5.5.26 TORQUE the air-pipe locking nuts (Figure 6 Item 19) to torque value on Data Sheet AND RECORD torque Air-Pipe lock nuts complete per Data Sheet.

5.5.27 REPLACE AND TIGHTEN all fittings.

5.5.28 RECORD Oil Separator Cartridge change-out and addition of S-460 Oil complete on Data Sheet.
5.6 Refrigerant Dryer/Condenser Cleaning

5.6.1 REFER to Figure 8 for “Refrigertaion Dryer/Condenser” lay-out.

5.6.2 REMOVE the securing screws AND DETACH panel.

5.6.3 USE the wire brush to loosen debris from condenser AND VACUUM to remove loose particles, OR

IF unable to reach and remove the debris with a wire brush, USE compressed air (less than 70 psig) to blow the condenser (Item 4) through (from outside to inside) and then vacuum up the dirt.

5.6.4 REPLACE panel AND BOLT securing screws in place.

5.6.5 RECORD the Dryer/Condenser cleaning complete on Data Sheet.
5.7 Check the Motor Coupling to Rotary Screw

5.7.1 REMOVE front middle panel door and coupling screen (Figure 3 Item 4) to gain access to motor coupling.

NOTE - A defective coupling is recognizable by the following:
- Excessive slack/slop in motor coupling
- Surface cracks
- Color change
- Noisy running.

5.7.2 VISUALLY CHECK the motor coupling for color change and/or surface cracks (Figure 3 Item 5).

5.7.3 TURN the coupling by hand in the direction of the arrow several times and continue visual check for damage and for excessive slack/slop in motor coupling.

5.7.4 IF the coupling is defective, OBTAIN AND REPLACE new coupling, Kaeser part # AN7300027M (Figure 3 Item 5).

5.7.4.1 TORQUE motor coupling bolts to value per Data Sheet AND RECORD torque completed on Data Sheet.

5.7.5 REPLACE the coupling safety screen (Figure 3 Item 4).

5.7.6 RECORD Motor Coupling check/replacement on Data Sheet as follows:
- Motor Coupling check complete
- Motor Coupling replaced
- Motor Coupling bolt torque complete.
5.8 Change the Air Filter Element

5.8.1 REFER to Figure 9 for air filter replacement.

5.8.2 IF not already removed REMOVE the front middle panel door.

5.8.3 LOOSEN AND REMOVE wing-nuts (Figure 9 Item 1) holding cover (Figure 9 Item 5) to side panel AND

REMOVE the filter element.

5.8.4 UNSCREW wing-nut (Figure 9 Item 2) AND

REMOVE back-plate (Figure 9 Item 3).

5.8.5 DISCARD used filter element per TO-100-052 Perform Waste Generation, Segregation, Accumulation, and Clean-up.

5.8.6 CLEAN all parts of the filter housing sealing surfaces.

5.8.7 INSTALL new air filter element P/N 6.4143.0 into housing AND

FASTEN housing to side panel.

5.8.8 CLOSE access doors and restore access panels.

5.8.9 RECORD the Air-Filter Element replacement complete on Data Sheet.

5.9 Cleaning & Inspection of Kaiser Electrical Compartment

5.9.1 OPEN the door AND

INSPECT for the following:

- All connections are tightened
- Signs of moisture, corrosion and pitting.
- Signs of overheating
- Condition of insulation
- Condition of grounding conductors/straps
- Wiring and components for damage or deterioration

5.9.2 RECORD any discrepancies on Attachment 3 – Comments Page

5.9.3 CLOSE enclosure door AND SECURE.
5.10 Remove Lock & Tag and Apply Power to Compressor

5.10.1 **PERFORM** a visual check to confirm the following:
- All tools, rags, and any testing equipment have been removed from compressor cabinet
- All removed connections, jumpers or pipes have been correctly installed.

5.10.2 **REMOVE** the Lock and Tag in accordance with the DOE-0336, Hanford Site Lockout/Tagout Procedure.

5.10.3 **AFTER** power is applied, **ALLOW** SIGMA Controller to carry out the self-test.

5.10.4 **CHECK** the green LED “Controller Power” is illuminated.

5.10.5 **RECORD** Lock And Tag Removed and Power Applied to compressor on Data Sheet.
5.11 Resetting Maintenance Interval Counters

NOTE - Interval counters monitor the operational state of major components and necessary maintenance tasks are indicated by the SIGMA CONTROL Display.

- Maintenance interval counters count-down the operating hours to the next maintenance task. The counter should be reset to the original value once the maintenance task has been carried out.

5.11.1 NOTIFY authorized personnel to perform Steps 5.11.2 thru 5.11.12.

5.11.2 REFER to Figure 12 when performing this Section.

5.11.3 ENTER Level 4 PASSWORD by referring to Section 5.13.

5.11.4 FROM the main menu PRESS the DOWN key repeatedly until “maintenance” appears in the third (3rd) line of the display (see Figure 12).

5.11.5 PRESS the “Enter” key.

NOTE - The following is an example of a maintenance interval hours counter (e.g., oil filter) as it appears.

```
88 psi     180°F
Oil filter
6000h | 0150h ←
reset: n
```

5.11.6 PRESS the Up or Down key repeatedly until the maintenance activity performed (e.g., oil filter) appears in the second line of the display.

Reset Maintenance Interval Hours Counters

5.11.7 PRESS the DOWN key.

NOTE - Line up with the information to be changed with the left-hand arrow in the third (3rd) line of the display.

5.11.8 PRESS the “Enter” key to select “reset” AND PRESS the UP key to select “y”.

5.11.9 PRESS “Enter” to confirm.
5.11 Resetting Maintenance Interval Counters (Cont.)

NOTE - The interval hours remaining now change to the (original) total hours of the maintenance interval, the reset parameter changes from “y” to “n”.

5.11.10 RESET the remaining interval hour counters for the maintenance activities performed with this procedure.

5.11.11 PRESS the Escape key repeatedly to return to the main menu.

5.11.12 RECORD reset of Maintenance Interval Counters for each of the maintenance activities completed on Data Sheet.
5.12 Start Compressor and Carry-Out Trial Run

5.12.1 NOTIFY Operations to perform Steps 5.12.2 through 5.12.5.7.

5.12.2 IF another air compressor has been connected to the air network, NOTIFY Operations to turn off that air compressor until maintenance is complete.

5.12.3 IF not already open, OPEN the compressor air outlet isolation valve AND CLOSE vent valve identified in Step 4.3.2.

5.12.4 IF power supply is not already on, SWITCH “ON” the main power breaker.

5.12.4.1 ALLOW the unit to carry out a self-test (the green LED “power on” lights).

5.12.5 PERFORM the following on SIGMA Controller (Figure 12):

5.12.5.1 PRESS the “LOAD/IDLE” toggle key AND CONFIRM the green LED “IDLE” is illuminated.

5.12.5.2 IF compressor is in Alarm, CLEAR the Alarm by pressing reset button.

5.12.5.3 IF the Alarm does not clear, NOTIFY Shift Manager.

5.12.5.4 AFTER green LED “IDLE” is illuminated PRESS “ON” key.

5.12.5.5 CONFIRM the “Machine ON” green LED illuminates and the compressor(s) runs at idle.

NOTE - Allowing the compressor to idle for ≥ 5 minutes ensures cooling oil is distributed throughout the machine.

5.12.5.6 AFTER allowing the compressor to idle for a minimum of five minutes, PRESS the “LOAD IDLE” key.

5.12.5.7 CONFIRM compressor switches to “LOAD” and delivers compressed air.

5.12.6 ALLOW compressor to run under load approximately five (5) minutes.

5.12.7 CHECK the oil level indicator (Figure 7) on the Oil Separator Tank AND NOTE level for reference use.
5.12 Start Compressor and Carry-Out Trial Run (Cont.)

NOTE - Satisfactory oil level refers to the level being reasonably close to the “Optimum Level” as given on Figure 7 Oil Level Indicator.

5.12.8 IF oil level is satisfactory (Figure 7) RECORD on Data Sheet AND GO TO Step 5.12.26.

5.12.9 IF oil level is high, GO TO Step 5.12.24 to drain excess oil.

Top-Off Oil Level

5.12.10 IF oil level is low and needs to be Topped Off, NOTIFY operations to perform the following:

5.12.10.1 PRESS the “LOAD IDLE” key AND CONFIRM machine switches to “IDLE” and IDLE LED flashes.

5.12.10.2 ALLOW the compressor to idle for at least five (5) minutes, PRESS the “OFF” key AND CONFIRM “ON” LED is off and the compressor shuts down.

5.12.11 PERFORM Lock and Tag in accordance with the DOE-0336, Hanford Site Lockout/Tagout Procedure.

5.12.12 ENSURE the machine has fully vented by checking pressure gauge on the oil separator tank reads Zero (0) ± 1 psig.

5.12.12.1 IF the pressure gauge does not read Zero (0), ± 1 psig RETRIEVE the maintenance hose (w/hose coupling and shut-off valve) from storage under the oil separator tank.

5.12.12.2 WITH the shut-off valve (Figure 1 Item B7) on the maintenance hose closed, INSERT the male hose fitting (Item B6) into the oil separator tank coupling (Item 3).

5.12.12.3 POINT the hose end into an oil receptacle AND SLOWLY OPEN shut-off valve (Figure 1 Item B7) on maintenance hose to relieve pressure.

5.12.12.4 AFTER tank has vented, CLOSE shut-off valve (Figure 1 Item B7) AND REMOVE hose from coupling.
5.12 Start Compressor and Carry-Out Trial Run (Cont.)

Top-Off Oil Level (Cont.)

WARNING
Compressed air and devices under pressure can cause severe injury if the contained energy is released suddenly.

5.12.13 IF the oil separator tank pressure gauge reads Zero (0) ± 1 psig, SLOWLY REMOVE the oil filler cap from the Oil Separator Tank body.

NOTE - Topping off the oil level refers to bringing the oil level reasonably close to the “Optimum Level” as given on Figure 7 Oil Level Indicator.

5.12.14 ADD the amount of oil as estimated from the previous level check (Step 5.12.7) to raise the oil to a satisfactory level (top off).

5.12.15 SCREW the oil filler cap (with ring seal) back on hand tight.

5.12.16 REMOVE Lock and Tag in accordance with the DOE-0336, Hanford Site Lockout/Tagout Procedure.

5.12.17 NOTIFY operations to perform Steps 5.12.18 through 5.12.19.7.

5.12.18 IF power supply is not on, SWITCH “ON” the main power breaker AND ALLOW the unit to carry out a self-test (the green LED “power on” lights).

5.12.19 PERFORM the following on SIGMA Controller (Figure 12):

5.12.19.1 PRESS the “LOAD/IDLE” toggle key AND CONFIRM the green LED “IDLE” is illuminated.

5.12.19.2 IF compressor is in Alarm, CLEAR the Alarm by pressing reset button.

5.12.19.3 IF the Alarm does not clear, NOTIFY Shift Manager.

5.12.19.4 AFTER green LED “IDLE” is illuminated PRESS “ON” key.

5.12.19.5 CONFIRM the “Machine ON” green LED illuminates and the compressor(s) runs at idle.
5.12 Start Compressor and Carry-Out Trial Run (Cont.)

**Top-Off Oil Level** (Cont.)

NOTE - Allowing the compressor to idle for ≥ 5 minutes ensures cooling oil is distributed throughout the machine.

5.12.19.6 **AFTER** allowing the compressor to idle for a minimum of five minutes, **PRESS** the “LOAD IDLE” key.

5.12.19.7 **CONFIRM** compressor switches to “LOAD” and delivers compressed air.

5.12.20 **ALLOW** compressor to run under load approximately five (5) minutes.

5.12.21 **CHECK** the oil level indicator (Figure 7) on the Oil Separator Tank.

5.12.22 **IF** oil level is low **REPEAT** Steps 5.12.10 through 5.12.22.

5.12.23 **IF** oil level is satisfactory, **RECORD** “Oil Topped Off” per Section 5.12 complete on Data Sheet **AND**

**GO TO** Step 5.12.26.

**Drain Excess Oil Due to Overfill**

5.12.24 **IF** the oil level is at or above the high mark, **NOTIFY** Operations to perform the following:

5.12.24.1 **PRESS** the “LOAD IDLE” key **AND**

**CONFIRM** machine switches to “IDLE” and IDLE LED flashes.

5.12.24.2 **ALLOW** the compressor to idle for at least five (5) minutes.
5.12 Start Compressor and Carry-Out Trial Run (Cont.)

Drain Excess Oil Due to Overfill (Cont.)

5.12.24.3 WITH the shut-off valve (Figure 1 Item B7) on the maintenance hose closed, INSERT the male hose fitting (Item B6) into the oil cooler hose coupling (Figure 2, Item 2).

5.12.24.4 POINT the hose end into an oil receptacle AND OPEN shut off valve (Figure 2 Item 3) on oil cooler coupling.

5.12.24.5 SLOWLY OPEN shut-off valve (Figure 1 Item B7) on maintenance hose to drain excess oil to optimum level on oil level indicator.

5.12.24.6 CLOSE shut-off valve (Figure 1 Item B7) AND CLOSE Shut off valve (Figure 2, Item 3).

5.12.24.7 REMOVE hose from coupling.

5.12.25 GOTO Section 5.14 Restoration.

5.12.26 VISUALLY CHECK for oil leaks.

5.12.27 IF oil leaks are found, TIGHTEN bolts and connections to stop leaks as necessary.

5.12.27.1 CLEAN-UP oil leaks with rags AND DISPOSE of rags per TO-100-052.

5.12.28 CLOSE AND LATCH all access doors/panels on Compressor(s) unless directed otherwise by Shift Manager/OE.

5.12.29 RECORD “Compressor Trial Run” complete on Data Sheet.
5.13 Entering the Password for CP-E-1/CP-E-2

NOTE - The following passwords have been entered in the controller at the factory:
- Password for Level Zero (0): 00000
- Password for Level Four (4): 12EXP.

5.13.1 AT the Main Menu, PRESS the “Up” key repeatedly until “PASSWORD” appears in the third (3rd) line of display AND

PRESS the “Enter” key.

<table>
<thead>
<tr>
<th>88 psi</th>
<th>180 ° F</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Password</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>XXXXX L0 &lt;</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>XXXXX L0</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

5.13.2 PRESS the “Enter” key and the cursor appears under the first character of the password (e.g. XXXXX).

5.13.3 PRESS the “Down” key or the “Up” key repeatedly until the required character appears.

5.13.4 PRESS the “Enter” key and the cursor jumps to the next character of the password.

NOTE - After entering the last character the activated “password level” is displayed (in this case Level Four (4+).

5.13.5 SET the remaining characters of the password until password is complete.

5.13.6 PRESS the “Escape” key repeatedly to return to the Main Menu.
5.14 Restoration

5.14.1 **ENSURE** Isolation and Vent Valves configured in Step 4.3.2 to the following:
- Isolation Valve – **OPEN**
- Vent Valve - **CLOSED**

5.14.2 **IF** any problems were encountered with maintenance, **INFORM** Shift Manager/OE.

5.14.3 **NOTIFY** Shift Manager/OE that maintenance is complete and compressor may be restarted per the applicable section in procedure TO-620-160.

5.15 Acceptance Criteria

Acceptance Criteria has been met when Steps in this procedure have been satisfactorily performed and As-Left values meet the specifications and tolerance(s) per the Data Sheet.

5.16 Review

5.16.1 **INFORM** FWS test is complete.

5.16.2 FWS **REVIEW AND ENSURE** the following:
- Completed Data Sheets meet the acceptance criteria.
- Comments sections are filled out appropriately.
- Work requests needed as a result of this procedure are identified and generated.
- Work request number(s) of any work documents generated as a result of this procedure, are recorded in the Comments/Remarks section of the Data Sheet.

5.17 Records

This procedure is performed within a work package, as such, the procedure in its entirety will be maintained as a record per the Work Control process.

5.17.1 **SUBMIT** the completed records/work package to the supervisor for record retention.
- Step 4.3.2
- Step 4.3.3.

The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.
Figure 1 – Oil Separator Tank Lay-Out

Changing the cooling oil, oil separator tank

1. Hose coupling (air cooler venting)
2. Pressure gauge
3. Hose coupling (oil separator tank venting)
4. Oil filler port with plug
5. Cooling oil level indicator
6. Male hose fitting
7. Shut-off valve
8. Maintenance hose (≈ four feet long)
9. Hose coupling (oil drain)
10. Shut-off valve (venting line)
11. Shut-off valve (oil drain)
Figure 2 – Oil Cooler Lay-Out

Changing the cooling oil, oil cooler

1. Oil cooler
2. Hose coupling (oil drainage)
3. Shut-off valve

6. Male hose fitting
7. Shut-off valve
Figure 3 – Airend and Coupling Lay-Out

Changing the cooling oil, airend
1. Compressed air outlet on airend
2. Hose coupling (oil drainage)
3. Shut-off valve
4. Safety screen
5. Coupling
6. Male hose fitting
7. Shut-off valve
Figure 4 – Heat Recovery System Lay-Out

Changing the cooling oil, heat recovery system

1. Hose coupling
2. Thermostatic valve
3. Shut-off valve

6. Male hose fitting
7. Shut-off valve
Figure 5 – Oil Filter Location

Changing the oil filter

1. Oil filter
2. Direction to unscrew
Figure 6 – Oil Separator Cartridge Change-Out

Changing the Oil Separator Cartridge

1A – Vent Valve (solenoid)
1B – Minimum Pressure Check Valve

25 Spring Cage – Minimum Pressure Check Valve

14 Cover
15 Dirt trap
16 Air pipe
17 Retaining screw
19 Nut (self locking)
20 Fitting
21 Gasket
23 Oil separator cartridge
Figure 7 - Checking Oil Level Indication

The level gauge is composed of a clear plastic outer shell marked with a level indicating line and a rotating, color coded inner dial. The actual level when read is directly beneath the indicating line.

Red = Minimum level  Green = Optimum level  Orange = Maximum level
Figure 8 – Refrigerant Dryer/Condenser Cleaning

Refrigeration dryer

1. Access panel
2. Refrigerant condenser
3. Screws
Figure 9 – Changing Air Filter Element

Air filter maintenance

1. Nut
2. Nut
3. Backplate
4. Air filter element
5. Cover
Figure 10 – Changing the Cooling Air Filter Mat

Filter mat for the air and oil cooler

1. Filter mat
Figure 11 – Replace Control Cabinet Filter Mats

Control cabinet ventilation grill

1. Ventilation grill
2. Filter mat
### Figure 12 – SIGMA Control Display, Keys and Indications

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>«ON»</td>
<td>Switches on the machine. The programmed operating mode is active.</td>
</tr>
<tr>
<td>2</td>
<td>«OFF»</td>
<td>Switches the machine off.</td>
</tr>
<tr>
<td>3</td>
<td>«Clock»</td>
<td>Switches clock control on and off.</td>
</tr>
<tr>
<td>4</td>
<td>«Remote control»</td>
<td>Switches remote control on and off.</td>
</tr>
<tr>
<td>5</td>
<td>«LOAD/IDLE»</td>
<td>Toggles compressor between LOAD and IDLE operating modes.</td>
</tr>
<tr>
<td>6</td>
<td>«DOWN»</td>
<td>Scrolls down the menu options. Reduces a parameter value.</td>
</tr>
<tr>
<td>7</td>
<td>«UP»</td>
<td>Scrolls up the menu options. Increases a parameter value.</td>
</tr>
<tr>
<td>8</td>
<td>«escape»</td>
<td>Returns to the next higher menu option level. Exits the edit mode without Saving. Returns to the main menu when held down at least 10 seconds.</td>
</tr>
<tr>
<td>9</td>
<td>«enter»</td>
<td>Only affects the value in the third line of the display. Enters the selected menu option. Exits the edit mode and saves.</td>
</tr>
<tr>
<td>10</td>
<td>«Events &amp; Information»</td>
<td>Displays the event memory. Selection is possible from every menu. Return with “esc” key.</td>
</tr>
</tbody>
</table>

Figure 12 Continued on next page.
### Figure 12 – SIGMA Control Display, Keys and Indications (Cont.)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>«Reset»</td>
<td>Signifies recognition of alarms and warning messages.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Resets the event memory (When Permitted).</td>
</tr>
<tr>
<td>12</td>
<td>Display field</td>
<td>Alphanumeric display with 4 lines.</td>
</tr>
<tr>
<td>13</td>
<td>Alarm</td>
<td>Flashes red when an alarm occurs. Lights continuously when acknowledged.</td>
</tr>
<tr>
<td>14</td>
<td>Communication</td>
<td>Lights red if communication via the profibus interface is interrupted.</td>
</tr>
<tr>
<td>15</td>
<td>Warning</td>
<td>Flashes yellow for:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- maintenance work due,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- warning messages,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lights continuously when acknowledged.</td>
</tr>
<tr>
<td>16</td>
<td>Controller power</td>
<td>Lights green when the power supply to the controller is switched on.</td>
</tr>
<tr>
<td>17</td>
<td>LOAD</td>
<td>Lights green when the compressor is running under LOAD.</td>
</tr>
<tr>
<td>18</td>
<td>IDLE</td>
<td>Lights green when the compressor is running in IDLE.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flashes when the «LOAD/IDLE» toggle key is pressed.</td>
</tr>
<tr>
<td>19</td>
<td>Machine ON</td>
<td>Lights green when the machine switched on.</td>
</tr>
<tr>
<td>20</td>
<td>Clock</td>
<td>The LED lights when the machine is in clock control.</td>
</tr>
<tr>
<td>21</td>
<td>Remote control</td>
<td>The LED lights when the machine is in remote control.</td>
</tr>
</tbody>
</table>
Figure 13 – Vent Valve (Electric Solenoid) and Dirt Trap Removal
Figure 14 – Adding Cooling Oil to Airend after Prolonged Outage/Downtime

1. Screw Plug
2. Inlet Valve Body

Motor-to-Screw-Drive Coupling Located Under Shroud
Figure 15 – Bolt Torque Sequence for 8 bolt arrangement

EIGHT BOLT ARRANGEMENT

SEQUENTIAL ORDER

1 - 2
3 - 4
5 - 6
7 - 8
Attachment 1 - Add Cooling Oil to Airend Prior to Re-Start after Prolonged Outage

NOTE - This Section adds oil to the airend inlet valve after a prolonged outage, or down time greater than 3 months to prevent a dry startup of the compressor screw drive.

1. **PERFORM** Attachment 1 per direction of Shift Manager/OE only.

2. **ENSURE** Lockout/Tagout in accordance with the DOE-0336, Hanford Site Lockout/Tagout Procedure.

3. **IF** this is not a compressor re-start after a prolonged outage (greater than 3 months), **DO NOT PERFORM** this section without direction from Shift Manager/OE.

4. **REFER** to Figure 14 when performing this Section.

5. **ENSURE** Lockout/Tagout in accordance with the DOE-0336, Hanford Site Lockout/Tagout Procedure.

   a. **REMOVE** motor-to-screw-drive coupling shroud (Figure 14).

   b. **REMOVE** the Filler Plug (Figure 14 Item 1) from the air inlet valve.

   NOTE - A medium-size funnel is required during oil fill to prevent spillage

   c. **ADD** approximately 1/4 quart of SIGMA Fluid cooling oil into the inlet valve filling port and **ROTATE** coupling by hand several times in the direction indicated by the arrow to disperse oil in screw-drive.

   d. **ADD** an “additional” 1/4 quart of SIGMA Fluid cooling oil into the inlet valve filling port and **ROTATE** coupling by hand several times in the direction indicated by the arrow to disperse the oil.

   e. **REPLACE** the Filler Plug (Figure 14) and **TIGHTEN** snug.

   f. **REPLACE** the motor-to-screw-drive coupling shroud Figure 14.

6. **RECORD** addition of cooling oil to Airend Inlet Valve per Attachment 1 complete on Data Sheet.

7. **REMOVE** Lockout/Tagout in accordance with the DOE-0336, Hanford Site Lockout/Tagout Procedure.

8. **CLOSE AND LATCH** all access doors on Compressor(s) unless directed otherwise by Shift Manager/OE.
Attachment 2 - Fill Oil Separator Tank with S-460 Oil Using Oil Fill Port

NOTE - This Section is used to replace oil without performing any Annual Maintenance.
- This Section is only performed at the direction of the Shift Manager/OE.

1. **PERFORM** Attachment 2 per direction of Shift Manager/OE only.

2. **ENSURE** Lockout/Tagout in accordance with the DOE-0336, Hanford Site Lockout/Tagout Procedure.

3. **REFER** to Figure 7 for oil fill port.

4. **CHECK** there is Zero (0) pressure indicated on Oil Separator Tank pressure gauge (Item 2 Figure 1).
   
   a. **IF** the pressure gauge does not read Zero (0), ± 1 psig **RETRIEVE** the maintenance hose (w/hose coupling and shut-off valve) from storage under the oil separator tank.
   
   b. **WITH** the shut-off valve (Figure 1 Item B7) on the maintenance hose closed, **INSERT** the male hose fitting (Figure 1 Item B6) into the oil separator tank coupling (Figure 1 Item 3).

   c. **POINT** the hose end into an oil receptacle **AND**

   **SLOWLY OPEN** shut-off valve (Figure 1 Item B7) on maintenance hose to relieve pressure.

   d. **AFTER** tank has vented, **CLOSE** shut-off valve (Figure 1 Item B7) **AND**

   **REMOVE** hose from coupling.

5. **REMOVE** oil filler cap from the Separator Tank body oil fill port.

Attachment 2 Continued on next page
NOTE - After changing oil, the compressor must be run under load for approximately five (5) minutes to distribute the oil throughout the system before the Oil Level Gauge will indicate the correct level.

- The oil level will be checked with compressor “Running Under Load” and topped off as necessary in Section 5.12.

6. **FILL** the tank with 4.2 gallons of S-460 oil from Kaeser Annual Maintenance Kit, part #AN5YRKT-ASD.

7. **INSPECT** the filler cap and ring seal for defects **AND**

   **IF** found to be defective, **REPLACE** the filler cap and/or ring seal.

8. **SCREW** the cap (with ring seal) back on hand tight.

9. **PERFORM** Section 5.12 Start Compressor and Carry-Out Trial Run to ensure oil level is satisfactory.

10. **RECORD** the Oil-Fill using Oil Fill Port Attachment 2 Complete on Data Sheet.