MAINTENANCE TECHNICAL SUPPORT CENTER
HEADQUARTERS MAINTENANCE OPERATIONS
UNITED STATES POSTAL SERVICE

Maintenance Management Order

SUBJECT: Operational and Preventive Maintenance (PM) Guidelines for Kaeser Air Compressors

TO: All COMP_BA Sites

DATE: September 25, 2024

PUB NO: MMO-124-23
FILE CODE: C6K
FILE ID: mm23126
REV LEVEL: ak

This Maintenance Management Order (MMO) provides Operational and Preventive Maintenance Guidelines for the Kaeser Air Tower 3C system. This bulletin applies to Acronym COMP and Class Code BA.

The workhours indicated in the workload estimate (Attachment 1) are based on a 20-hour operations window and reflect the maximum annual workhours required to maintain each system. This operational window is determined from the Small Delivery Unit Sorter (SDUS) due to the Kaeser Air Tower 3C system providing the compressed air necessary to operate the SDUS. This Preventative Maintenance instruction would need to be performed in conjunction with the SDUS Preventative Maintenance instruction and provides the means to bring this equipment to the zero-energy state necessary to perform the power off tasks. Once power is applied to the SDUS, power can be enabled to perform the power on tasks for this system. The frequency of the tasks in this instruction are calendar based. Management may modify task frequencies to address local conditions.

The minimum maintenance skill level required to perform each task is included in the Minimum Skill Level column of each checklist. This does not preclude higher level employees from performing any of this work.

WARNING

Various products requiring Safety Data Sheets (SDS) may be utilized during the performance of the procedures in this bulletin. Ensure the current SDS for each product used is on file and available to all employees. When reordering such a product, it is suggested that current SDS be requested. Refer to SDS for appropriate personal protective equipment.

WARNING

The use of compressed or blown air is prohibited. An alternative cleaning method such as a HEPA filtered vacuum cleaner, a damp rag, lint-free cloth, or brush must be used in place of compressed or blown air.

WARNING

Steps contained in this bulletin may require the use of Electrical Work Plan (EWP) Personal Protective Equipment (PPE). Refer to the current EWP MMO for appropriate EWP PPE and barricade requirements.

For questions or comments concerning this bulletin contact the MTSC HelpDesk, either online at **MTSC**>**HELPDESK**>**Create/Update Tickets** or call (800) 366-4123.

Frederick L. Jackson III
Executive Manager
Maintenance Technical Support Center
Asset Maintenance Planning, Performance, and Support

Attachments
1. Summary of Workload Estimate for Kaeser Air Compressor System
2. Kaeser Air Compressor Preventive Maintenance (PM) Master Checklist

ATTACHMENT 1

SUMMARY WORKLOAD ESTIMATE

FOR KAESER AIR COMPRESSOR SYSTEM

Operation Days	Routine Servicing per Machine (Hrs/Yr)	Repair Time per Machine (Hrs/yr) *	Routine Servicing + Repair Time (Hrs/Yr)	Non-Productive Time per Machine (Hrs/yr) **	Total Servicing per Machine (Hrs/Yr)
5 Days	49.68	14.90	64.58	6.46	71.04
6 Days	49.68	14.90	64.58	6.46	71.04
7 Days	49.68	14.90	64.58	6.46	71.04
*** Repair maintenance estimates based on 30% of preventive maintenance.**					
**** Based on 10% of total PM and repair.**					

THIS PAGE BLANK

ATTACHMENT 2

KAESER AIR COMPRESSOR

PREVENTIVE MAINTENANCE (PM) MASTER CHECKLIST

Time Total: (294) minutes

U.S. Postal Service Maintenance Checklist	IDENTIFICATION															
	WORK CODE		EQUIPMENT ACRONYM								CLASS CODE		NUMBER			TYPE
	0	3	C	O	M	P					B	A	0	0	1	M
Equipment Nomenclature Air Compressor	Equipment Model Kaeser								Bulletin Filename mm23126				Occurrence Daily			

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq
SAFETY STATEMENT	1	**COMPLY WITH ALL SAFETY PRECAUTIONS.** Disconnect power and apply lockouts when required by this instruction. Refer to current local lockout procedures to properly shut down and lock out this machine. Check for suspicious dust or unusual debris. If any unusual substance is found, notify supervisor prior to proceeding with any further action on the equipment. **THE USE OF COMPRESSED OR BLOWN AIR IS PROHIBITED.** When cleaning is required, an alternative cleaning method such as a HEPA filtered vacuum cleaner or a damp rag must be used in place of compressed or blown air. A lint-free cloth or brush may be used on optical equipment only when other cleaning methods cannot be used. Report safety deficiencies to your supervisor immediately upon detection. **WARNING FOR EWP/PPE:** Steps contained in this bulletin may require the use of Electrical Work Plan (EWP) Personal Protective Equipment (PPE). Refer to the current EWP MMO or appropriate EWP PPE and barricade requirements. **WARNING FOR SDS:** Various products requiring Safety Data Sheets (SDS) may be utilized during the performance of the procedures in this bulletin. Ensure the current SDS for each product used is on file and available to all employees. When reordering such a product, it is suggested that current SDS be requested. Refer to SDS for appropriate personal protective equipment.	1	All			

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq
RECEIVER: DRAIN	2	**Drain Air Receiver. (Power Off)** **CAUTION: Discard all hazardous materials (both regulated and non-regulated waste), in accordance with all local and national environmental policies.** 1. Ensure valve is closed on maintenance hose. 2. Don splash negating protective eyewear. 3. Close shut-off valve on the open-ended maintenance hose. 4. Insert maintenance hose into the quick release fitting at bottom of air receiver tank. 5. Place the open end of the hose into a "Used Oil" receptacle. 6. Slowly open maintenance hose valve to drain air receiver of condensate. 7. Close maintenance hose valve. 8. Remove maintenance hose from the quick release fitting. 9. Check valve for leaks. 10. Doff protective eyewear. 11. Discard condensate as “Used Oil” using local procedures. 12. Note any deficiencies, generate a work order, and report them to the supervisor.	5	07			W
PRE-FILTER: CLEAN/CHANGE	3	**Change Filter Mat. (Power Off)** 1. Carefully remove the filter mat from the retaining frame. 2. Use a HEPA vacuum cleaner to clean the retaining frame and the filter mat. 3. If the filter mat becomes damaged, replace the filter mat. (Included in Annual Maintenance Kit; PSN: 4910-19-000-3922, Individual PSN: 2940-19-000-3275). 4. Carefully insert the filter mat in the retaining frame. 5. Note any deficiencies, generate a work order, and report them to the supervisor.	2	07			M
CONDENSER: CLEAN	4	**Clean Condenser. (Power Off)** 1. Using a HEPA Vacuum cleaner and brush to remove any dust from the condenser fins. 2. Note any deficiencies, generate a work order, and report them to the supervisor.	10	07			Q

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq
SCAVENGE SCREEN: CLEAN	5	**Clean Scavenge Screen. (Power Off)** 1. Using an adjustable wrench and channel-locks, unscrew small black air line from dirt trap body. 2. Using an adjustable wrench and channel-locks, remove the collar from the dirt trap body. 3. Using a 17mm wrench and channel-locks, remove the screw-plug from the dirt trap. 4. Remove scavenge screen and rinse dirt trap, screw-plug and scavenge screen using hot water. 5. Replace scavenge screen and screw-plug. Screw-plug should be firmly tightened. 6. Replace copper crush washer (Included in Annual Maintenance Kit; PSN: 4910-19-000-3922) and tighten collar to dirt trap body. 7. Tighten small black airline to dirt trap body. 8. Note any deficiencies, generate a work order, and report them to the supervisor.	30	07			M
DRIVE BELT: TENSION AND CONDITION	6	**Check Drive Belt Tension and Condition (Power Off)** 1. Remove yellow cover from compressor. 2. Remove belt guard. 3. Belt should be centered and tight on the pulleys with no noticeable sag. 4. Ensure proper alignment of markings on belt tensioning device. 5. Check belts for cracking, fraying and signs of damage. Spin pulleys to view entire belt. 6. Replace the belt guard. 7. Replace the yellow cover on compressor. 8. Note any deficiencies, generate a work order, and report them to the supervisor.	15	09			A
AIR FILTER: CHANGE	7	**Change the Air Filter. (Power Off)** 1. Remove yellow cover from compressor. 2. Release the spring clips and remove the filter element. 3. Using a HEPA vacuum cleaner clean all parts and sealing surfaces. 4. Insert the new filter element in the housing. (Included in Annual Maintenance Kit; (PSN: 4910-19-000-3922). 5. Clip the air filter housing onto the inlet valve. 6. Replace the yellow cover on compressor. 7. Note any deficiencies, generate a work order, and report them to the supervisor.	15	09			A

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq
DRIVE BELT: CHANGE	8	**Change Drive Belt. (Power Off)** 1. Remove yellow noise suppressing shroud. 2. Remove belt guarding. 3. Loosen the tensioning nut on the lower right side of the pulley chassis by approximately 0.4 in. 4. Loosen the tension locking/motor securing screws that allow the motor to pivot. 5. Loosen the pivot point fixing screw only sufficiently to allow the motor to shift to the side. 6. Move the motor to the side and fix it in position with one of the motor securing screws. 7. Remove old Belt. 8. While belt is removed inspect pulleys for wear and signs of misalignment. 9. Place the new belt (PSN: 3030-19-000-3280) over the pulleys. 10. Tighten all motor securing screws and loosen 1/2 turn to keep motor justified while tensioning. 11. Swing motor by hand to tension belting. 12. Spin belt and pulleys by hand to make sure the belt and pulley teeth are engaged. 13. Tighten the belts by means of the tensioning nut until the markings on bracket coincide. 14. Tighten all motor securing screws. 15. Replace belt guarding. 16. Replace yellow noise suppressing shroud. 17. Note any deficiencies, generate a work order, and report them to the supervisor.	45	09			K
OIL/FILTER: REPLACE	9	**Replace Oil and Filters (Power Off)** **CAUTION: Discard all hazardous materials (both regulated and non-regulated waste), in accordance with all local and national environmental policies.** **Drain Oil** 1. Don splash negating protective eyewear. 2. Close the shut off valve on the open-ended maintenance hose. 3. Insert the maintenance hose onto the upper oil separator quick release. (Located on the right face of the manifold block when facing the compressor controller.) 4. Slowly open the shut off valve on the maintenance hose until all pressure in the oil separator tank is released. 5. Close the shutoff valve and remove the maintenance hose from the quick release connector.	40	07			A

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq
		6. Connect the maintenance hose attached to the fluid evacuator, to the fitting at the bottom of the oil separator tank drain(PSN: 4910-14-000-1806). 7. Open valve on separator tank drain. 8. Set the fluid evacuator to evacuate. 9. Pump the fluid evacuator handle to remove the oil. 10. When all the oil is removed, close the oil separator shut off valve. 11. Remove the maintenance hose male fitting from the oil separator coupling. 12. Switch the valve on the fluid evacuator to dispense. 13. Pump the oil into the used oil container. **Change Oil Filter** 1. Loosen filter with strap wrench (PSN: 5120-09-000-4913). 2. Remove the filter from the housing. 3. Place the old filter in a sealed bag and dispose of in accordance with local procedures. 4. Clean the mating face of the filter housing taking care to avoid any particles entering the machine. 5. Remove the new Kaeser replacement filter from the protective package. (Included in Filter Annual Maintenance Kit; (PSN: 4910-19-000-3922). 6. Apply a small amount of used oil to the filter seal. 7. Screw the new filter down until the seal contacts the housing, then hand tighten an additional half turn. **Change Oil/Air Separator** 1. Loosen separator element with strap wrench. 2. Remove the separator element from the housing. 3. Place it in a sealed bag and dispose of in accordance with local procedures. 4. Clean the mating face of the housing. 5. Remove the new Oil/Air Separator element from its protective package. (Included in Annual Maintenance Kit; PSN: 4910-19-000-3922) 6. Apply a small amount of used oil n6hyyyyyyyyyyyy5H to the element seal. 7. Screw the new element down until the seal contacts the housing, then hand tighten an additional half turn. **Replace Air Receiver Safety Relief Valve**					

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq
		1. Remove Safety Relief Valve and Copper Gasket by turning the valve counterclockwise. 2. Place it in a sealed bag and dispose of in accordance with local procedures. 3. Install new Safety Relief Valve and Copper Gasket (Included in Annual Maintenance Kit; PSN: 4910-19-000-3922). **Replace the Separator Safety Valve** 1. Remove the safety valve by turning the valve counterclockwise. 2. Place it in a sealed bag and dispose of in accordance with local procedures. 3. Install new Separator safety valve (Included in Annual Maintenance Kit; PSN: 4910-19-000-3922). **Refill Oil** **CAUTION: Ensure that KAESER M-460 Semi-Synthetic or KAESER S-460 Synthetic is used. Failure to do so will void manufacturer's warranty.** 1. Pour the new oil (Included in Annual Maintenance Kit; PSN: 4910-19-000-3922) into the empty fluid evacuator. 2. Seal the rubber stopper on the top of the fluid evacuator. 3. Slowly unscrew the oil fill cap. 4. Place the fluid evacuators hose inside of the oil fill spout. 5. Set the fluid evacuator to dispense. 6. Slowly pump the handle on the fluid evacuator to dispense. 7. Fill oil revisor until the spout almost overflows. 8. Replace and tighten oil fill cap. 9. Doff splash negating protective eyewear. 10. Note any deficiencies, generate a work order, and report them to the supervisor.					
SAFTEY DEVICE: TEST	10	**Emergency-Stop Push Button Functionality Test** **NOTE:** It is important to stop the compressor before the system reaches pressures greater than ~5psi to avoid damage to the internal gaskets. 1. With all pressure released from the system, start the compressor.	1	07			M

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq
		2. Wait approximately 1 to 2 seconds before pressing the E-stop pushbutton. 3. Note any deficiencies, generate a work order, and report them to the supervisor.					
DRIVE BELT: TENSION AND CONDITION	11	**Drive Belt Maintenance Timer Reset (Power On)** This task is to be performed in conjunction with the task titled Check Drive Belt Tension and Condition. 1. Remove the yellow compressor cover. 2. Remove maintenance RFID card from compressor electrical panel. 3. Scan RFID card on the designated reader located underneath the Sigma 2 Controller screen. 4. If the maintenance timer message is still displayed, press the button that has two half circles on the upper left of the controller. 5. Press any arrow key to enter main menu. 6. Scroll to **Maintenance** and press **enter.** 7. Scroll down to **Belt/Coupling Inspection Timer.** 8. Press the **right arrow** to highlight reset box and press **enter**. Then press the **up arrow** to change box to an X and press **enter.** 9. Press **esc** to exit to the main menu. 10. Scroll to user and logout of maintenance mode. 11. Return RFID card to electrical panel. 12. Replace yellow compressor cover. 13. Note any deficiencies, generate a work order, and report them to the supervisor**.**	5	09			A
AIR FILTER: CHANGE	12	**Air Filter Maintenance Timer Reset (Power On)** This task is to be performed in conjunction with the task titled Change the Air Filter. 1. Remove the yellow compressor cover. 2. Remove maintenance RFID card from compressor electrical panel. 3. Scan RFID card on the designated reader located underneath the Sigma 2 Controller screen. 4. Press any arrow key to enter main menu. 5. Scroll to "**Maintenance**" and press **enter**. 6. Scroll to "**Air Filter**" timer. 7. Press the **right arrow** to highlight reset box and press **enter**. Then press the **up arrow** to change box to an X and press **enter**. 8. Press **esc** to exit to the main menu. 9. Scroll to user and logout of maintenance mode. 10. Return RFID card to electrical panel. 11. Replace yellow compressor cover.	5	09			A

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq
		12. Note any deficiencies, generate a work order, and report them to the supervisor**.**					
COOLANT/FILTER: REPLACE	13	**Replace Oil and Maintenance Timer Reset (Power On)** This task is to be performed in conjunction with the task titled Replace Oil and Filters. **Checking Oil Level** 1. Start unit for about 10 seconds (until coolant drains out the bottom of the sight glass). 2. Stop compressor with red pushbutton. (Not the E-Stop.) 3. Don splash negating protective eyewear. 4. Press **E-Stop.** 5. Close the shut off valve on the open-ended maintenance hose. 6. Insert the maintenance hose into the oil separator quick release. (Located on the right face of the manifold block when facing the compressor controller.) 7. Slowly open the shut off valve on the maintenance hose until all pressure in the oil separator tank is released. 8. Close the shutoff valve and remove the maintenance hose from then quick release connector. 9. Slowly remove fill cap on the compressor's oil reservoir. 10. Place the end of the fluid evacuator hose into the oil fill spout. 11. Set the fluid evacuator to dispense. 12. Slowly pump the handle on the fluid evacuator. 13. Dispense oil until spout almost overflows. 14. Remove the fluid evacuator hose. 15. Replace and tighten oil fill cap. 16. Disengage the E-stop pushbutton. 17. Start unit for about 3 minutes (until oil level stabilizes). 18. Check oil level in site glass. **NOTE:** After initial fill purge any airlocks. The machine should be run for a few minutes cycling between load and no load, before checking to ensure the level is correct. 1. Stop compressor with red pushbutton. (Not the E-Stop.) 2. Press **E-Stop.** 3. Repeat Step 4 through Step 18 until oil is up to proper level when the compressor is running and	30	09			A

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq
		at full operating temperature (approximately half full in site glass). 4. Once system has correct oil level while running, clean around and check drain plug, filters, and fill cap for leaks. 5. Stop compressor with red pushbutton. (Not the E-Stop.) 6. Doff splash negating protective eyewear. 7. Note any deficiencies, generate a work order, and report them to the supervisor. **Maintenance Timer Reset** 1. Stop compressor with red pushbutton. (Not the E-Stop.) 2. Remove maintenance RFID card from compressor electrical panel. 3. Scan RFID card on the designated reader located underneath the Sigma 2 Controller screen. 4. Press any arrow key to enter main menu. 5. Scroll to "**Maintenance**" and press **enter.** 6. Scroll to the respective maintenance timer. 7. Press the **right arrow** to highlight reset box and press **enter**. Then press the **up arrow** to change box to an X and press **enter.** 8. Repeat Step 6 and Step 7. for the "**Oil Filter**", "**Oil Separator**", "**Oil Change**", and "**Valve**, **Inspection**" timers. 9. Press **esc** to exit to the main menu. 10. Scroll to user and logout of maintenance mode. 11. Return RFID card to electrical panel. 12. Replace yellow compressor cover. 13. Note any deficiencies, generate a work order, and report them to the supervisor.					
OIL COMPRESSOR: VISUAL	14	**Visual Check of Compressor (Power On)** 1. Check Compressor for any leaks, dust build up or unusual noise or vibration. 2. Note any deficiencies, generate a work order, and report them to the supervisor**.**	5	07			Q
COMPRESSOR: CONDENSATE DRAIN	15	**Check Condensate Drain. (Power On)** 1. Remove clear plastic electric drain valve view window on the lower front side of compressor. 2. Press the test button on top of the electric drain valve unit and watch drain hose for fluid to verify correct operation. 3. Replace clear plastic electric drain valve view window on the lower front side of compressor. 4. Note any deficiencies, generate a work order, and report them to the supervisor.	5	09			W

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq
COMPRESSOR: OIL LEVEL	16	**Check the Oil Level and Replenish if Necessary (Power On)** **NOTE:** Oil level is correct when a unit is showing oil at or above the bottom quarter and less than three quarters full in the sight glass, at normal operating temperature (ten minutes running loaded). Oil level must be checked with the compressor running**.** **Check oil level with unit running.** **To add fluid if needed:** 1. Stop compressor with red pushbutton. (Not the E-Stop.) 2. Don splash negating protective eyewear. 3. Pour oil into the fluid evacuator. 4. Seal the rubber stopper on the fluid evacuator. 5. Press **E-Stop**. 6. Close the shut off valve on the open-ended maintenance hose. 7. Insert the maintenance hose into the oil separator quick release. (Located on the right face of the manifold block when facing the compressor controller.) 8. Slowly open the shut off valve on the maintenance hose until all pressure in the oil separator tank is released. 9. Close the shut off valve and remove the maintenance hose from then quick release connector. 10. Slowly remove the compressor's oil fill cap. 11. Place the fluid evacuator hose inside of the fill spout. 12. Set the fluid evacuator to dispense. 13. Slowly pump the fluid evacuator to dispense oil. 14. Fill until the oil fill spout almost overflows. 15. Replace and tighten fill cap. 16. Disengage the E-stop pushbutton. 17. Start unit for about 5 minutes (until oil level stabilizes). 18. Check level. 19. Stop compressor with red pushbutton. (Not the E-Stop.) 20. Press **E-Stop**. 21. Repeat step 6 through step 20 as needed until oil level is correct. 22. Doff splash negating protective eyewear. 23. Note any deficiencies, generate a work order, and report them to the supervisor.	20	09			W

Part or Component	Item No	Task Statement and Instruction (Comply with all current safety precautions)	Est. Time Req (min)	Min. Skill Lev	Thresholds		
					Run Hours	Pieces Fed (000)	Freq
FINAL-CLEANUP	17	**Clean Up** 1. Ensure all tools, lubricants, rags, etc., are removed from the work area. 2. Note any deficiencies, generate a work order, and report them to the supervisor.	15	All			