



Compressed Air System Settings and Adjustments

Section 05-01-05

Komatsu has made every effort to make this manual as accurate as possible based on the information available at the time of publication and printing. Continuous improvement and advancement of product design may cause changes to machines, which may not have been included in this publication. Komatsu reserves the right to make changes and improvements at any time. To ensure the most current information, please contact your service center.

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Scope of This Publication

This document provides general procedures/processes used when making some adjustments on the air system.

All local procedures and all appropriate rules and regulations shall be used when performing any procedures in this document. Follow all appropriate lawful procedures/rules/regulations (not covered in this document) to contain and, dispose of chemicals. Contact the manufacturer for MSDS sheets for chemicals. Always contain all chemicals as applicable.

Safety

This publication contains special instructions that pertain to safety, operation, maintenance, and repair of the machine. Listed below are the signal words and symbols that precede these instructions and their meanings:


DANGER

- The danger label indicates a hazardous situation, which if not avoided, will result in death or serious injury.

WARNING

- The warning label indicates a hazardous situation, which if not avoided, could result in death or serious injury.

CAUTION

- The caution label, used with the safety alert symbol indicates a hazardous situation, which, if not avoided could result in minor or moderate injury (includes the safety alert symbol .

CAUTION

- The caution label (without safety alert symbol) is used to address practices not related to personal injury – only equipment damage.

NOTICE

The NOTICE graphic is to indicate areas of importance to the reader that are not related to personal injury or machine damage.

Safety, Warnings, and Cautions



CRUSH HAZARD

- Crush hazards exist if the machine is started or moved while work processes are being performed on the machine. Place bucket flat and level on the ground. Place frame lock in the locked position and lock out the machine's starting capability before performing any work process. Follow all applicable lockout procedures and local rules and regulations for performing work processes. ANYONE performing inspections or service procedures to the machine should be familiar with ALL instructions and procedures contained in the machine's SERVICE MANUAL. Crush hazard could occur if the machine is started or moves while any type of work process is being conducted on the machine, resulting in serious injury or death.
- Crush hazards exist in machine pivot area and area between the tires. Do not enter these areas unless it is verified that the operator has control over the steering and that personnel locking the frame lock have good communication with the operator. Entering the pivot area and area between the tires while the machine is moving or pivoting (articulating) could cause crush hazards resulting in serious injury or death.
- Crush hazards exist if all personnel are not cleared from the bucket and lift arm area before using the hydraulic hoist and bucket hydraulic pressure bleed down valves to relieve pressure from the hoist and bucket circuit. Assembly must be used only when the engine is NOT running. Before using the Manual Bleed Valve Assembly, refer to "HYDRAULIC AND GREASE SYSTEMS", "MANUAL BLEED VALVE ASSEMBLY", in Section 04 of the Service Manual for additional operational and safety information. Operating the manual bleed valve may cause the lift arms and bucket to descend rapidly. All personnel around the bucket and lift arms area shall be removed from the area before operating hydraulic hoist and bucket hydraulic pressure bleed down valves. Using the hydraulic bleed down valves could result in movement of the lift arms and bucket which could cause a crush hazard resulting serious injury or death.

CRUSH, SHOCK, OR OTHER HAZARDS

- Crush, shock, or other hazards exist if stored energy is not removed or isolated prior to working on the machine. Stored energy (hydraulic, electrical, pneumatic, mechanical, etc.) may be present if not isolated or released prior to working on the machine. Do not work on the machine without removing this stored energy (suspended loads, electrical power, air pressure, etc.). Risk of crushing, shock, or other physical injury exists if stored energy is not removed or isolated prior to working on the machine which could result in serious injury or death.

EXPLOSION HAZARDS

- Explosion hazard exists if the air system is over pressurized when manually charging the system. Do NOT over pressurize the air system when manually charging it. Over pressurized components can explode. Over pressuring the system can cause explosion hazards resulting in serious injury or death.

STRUCK-BY HAZARDS

- Struck-by hazards exist when around hydraulic fluid, air, fuel, or grease that is under pressure. Hoses under pressure can blow out or come loose from connections, causing a struck-by hazard with deadly force. DO NOT tighten or loosen hydraulic, air, fuel, or grease lines without first relieving the pressure. DO NOT make adjustments to any fluid pressures while the machine is running. Shut down the machine, make the adjustment, then restart the machine to check the adjustment. Wear safety goggles for eye protection and wear all other locally required personal protective equipment (PPE) when working around possibly pressurized liquids or air. Failure to use proper PPE or to shut down the machine before making adjustments can cause a struck-by hazard resulting in serious injury or death.

BURN HAZARDS

- **Burn hazards exist when around hot hydraulic fluid that is under pressure. Hoses under pressure can blow out or come loose from connections, causing a burn hazard from leaks or spraying. DO NOT tighten or loosen hydraulic fluid hoses without first relieving the pressure. DO NOT make adjustments to any fluid pressures or flow while the machine is running. Shut down the machine, make the adjustment, then restart the machine to check the adjustment. Wear safety goggles for eye protection and wear all other locally required personal protective equipment (PPE) when working around possibly hot pressurized liquids. Failure to use proper PPE or to shut down the machine before making adjustments can cause a burn hazard resulting in serious injury or death.**

SKIN INJECTION HAZARD

- **Skin injection hazard exists when around diesel fuel, air, hydraulic fluid, or grease that is under pressure. Fluids under pressure can penetrate the skin and cause serious personal injury, blindness, or death. If any fluid is injected into the skin, it must be removed as soon as possible by a doctor familiar with treating this type of injury. Fluid or air leaks under pressure may not be visible. When searching for leaks, NEVER use your hand; use a piece of metal. Wear work gloves and keep your hand well away from the possible source of leakage. DO NOT tighten or loosen fuel, hydraulic, air, or grease lines without first relieving the pressure. Wear safety goggles for eye protection and wear all other locally required personal protective equipment (PPE) when working around possibly pressurized liquids or air. Failure to use proper PPE can cause a skin injection hazard resulting in serious injury or death.**

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Setting the Compressor Governor

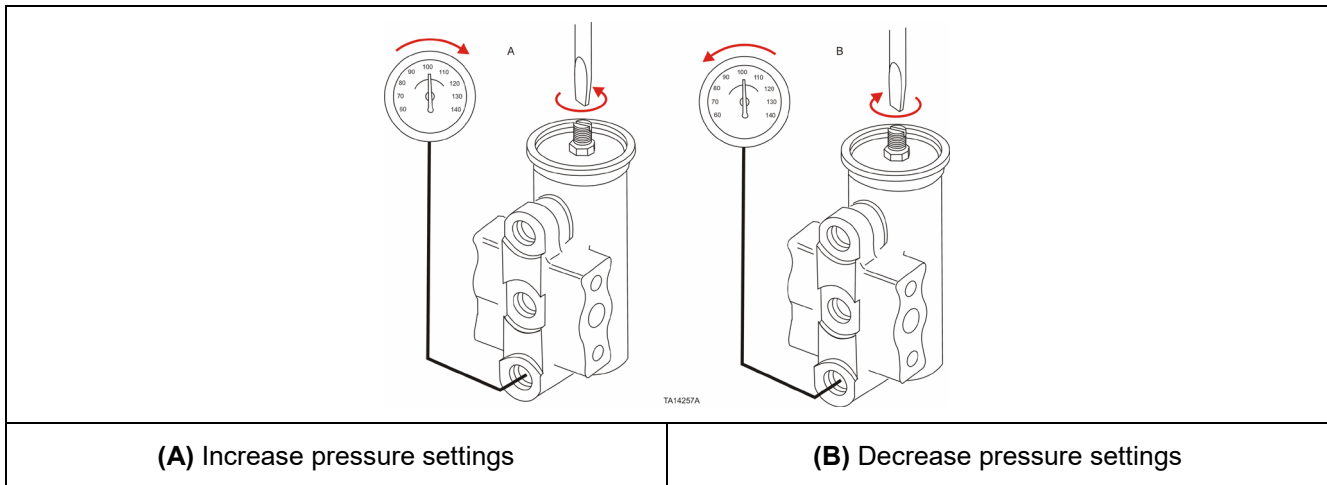


Figure 1. Governor settings

Follow all local safety prescribed measures. Use appropriate hearing protection. Follow risk assessment of this task.

Three people are needed for this task; one to remain in the operators cab during the procedure, one to monitor the distribution reservoir gauge and one to make the needed adjustment.

Safety Preparations

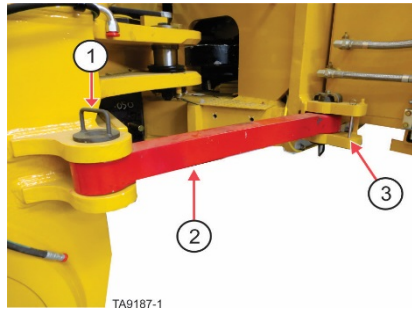
WARNING

Crush hazards exist if the machine is started or moved while work processes are being performed on the machine. Place bucket flat and level on the ground. Place frame lock in the locked position and lock out the machine's starting capability before performing any work process. Follow all applicable lockout procedures and local rules and regulations for performing work processes. ANYONE performing inspections or service procedures to the machine should be familiar with ALL instructions and procedures contained in the machine's SERVICE MANUAL. Crush hazard could occur if the machine is started or moves while any type of work process is being conducted on the machine, resulting in serious injury or death.

- a. Ensure the bucket is empty and clear of debris.
- b. Park the machine with the bucket flat on the ground.
- c. Move the frame lock to the locked position so that the frame cannot be steered.
- d. Place wheel chocks in front and behind each wheel.

WARNING

Crush hazards exist in machine pivot area and area between the tires. Do not enter these areas unless it is verified that the operator has control over the steering and that personnel locking the frame lock have good communication with the operator. Entering the pivot area and area between the tires while the machine is moving or pivoting (articulating) could cause crush hazards resulting in serious injury or death.



- 1) Retaining pin for locked position, 2) Frame lock - shown in locked position,
3) Retaining pin bracket for un-locked position

Figure 2. Frame lock in locked position

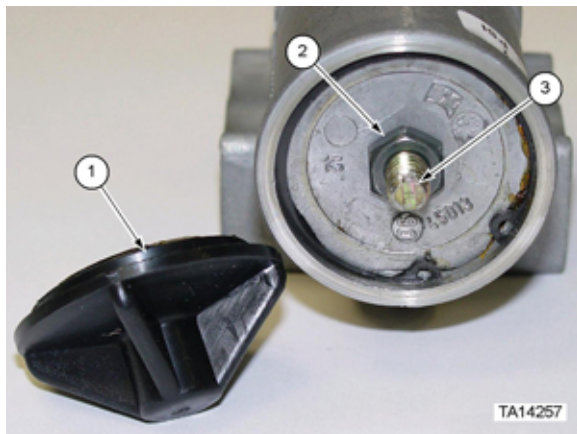
e. Set the parking brakes.

⚠ WARNING

Crush, shock, or other hazards exist if stored energy is not removed or isolated prior to working on the machine. Stored energy (hydraulic, electrical, pneumatic, mechanical, etc.) may be present if not isolated or released prior to working on the machine. Do not work on the machine without removing this stored energy (suspended loads, electrical power, air pressure, etc.). Risk of crushing, shock, or other physical injury exists if stored energy is not removed or isolated prior to working on the machine which could result in serious injury or death.

This governor is located behind (or in close proximity to) the air dryer.

For numbers in parenthesis, refer to illustration "Location of Compressor Governor Adjustment Screw".



1. Protective cap
2. Locking nut
3. Adjustment screw

Figure 3. Location of compressor governor adjusting screw

The machine must be running during this procedure.

 **WARNING**

Crush hazards exist if all personnel are not cleared from the bucket and lift arm area before using the hydraulic hoist and bucket hydraulic pressure bleed down valves to relieve pressure from the hoist and bucket circuit. Assembly must be used only when the engine is NOT running. Before using the Manual Bleed Valve Assembly, refer to “HYDRAULIC AND GREASE SYSTEMS”, “MANUAL BLEED VALVE ASSEMBLY”, in Section 04 of the Service Manual for additional operational and safety information. Operating the manual bleed valve may cause the lift arms and bucket to descend rapidly. All personnel around the bucket and lift arms area shall be removed from the area before operating hydraulic hoist and bucket hydraulic pressure bleed down valves. Using the hydraulic bleed down valves could result in movement of the lift arms and bucket which could cause a crush hazard resulting serious injury or death.

1. Remove the protective cap (1) from governor adjustment screw area.
2. Use a flat blade screwdriver to hold the adjusting screw.
3. Loosen the adjusting screw jam nut (2).
4. Adjust adjustment screw (3) to appropriate pressure setting (per your machine settings).
 - To increase the pressure settings, turn the adjusting screw counter-clockwise.
 - To decrease the pressure settings, turn the adjusting screw clockwise.
5. Tighten locking nut (2).
6. Reinstall protective cap (1) for governor adjustment screw.

Follow the procedure below to check for proper operation.

1. With the machine running, monitor the distribution reservoir's pressure gauge. You should observe the pressure build to the prescribed distribution reservoir pressure and the Discharge Line Unloader (DLU) should vent to atmosphere.
2. Open the manual drain valve until the distribution reservoir pressure reads 20 to 25 psi (1.38-1.7 bar), lower than the governor setting. Close the manual drain valve.
3. The DLU valve should stop venting to atmosphere and air pressure should again build to prescribed distribution reservoir pressure.



Figure 4. Location of compressor governor



Figure 5. Discharge line unloader (DLU) valve

Return the machine to service

- When completed, follow all lockout tag out rules, local rules, and local regulations to return the machine back to service.

CAUTION

Ensure the frame lock is unlocked before operating the machine. Serious equipment damage will occur if it is not unlocked.

Hydraulic Reservoir Air Adjustment

Use the following procedure to set the air pre-charge pressure of the hydraulic reservoir.

The machine must be running to perform this procedure.

WARNING

Explosion hazard exists if the air system is over pressured when manually charging the system. Do NOT over pressurize the air system when manually charging it. Over pressured components can explode. Over pressuring the system can cause explosion hazards resulting in serious injury or death.



Figure 6. Hydraulic reservoir sight glass

Safety Preparations

WARNING

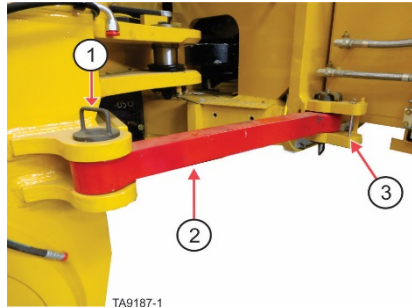
Crush hazards exist if the machine is started or moved while work processes are being performed on the machine. Place bucket flat and level on the ground. Place frame lock in the locked position and lock out the machine's starting capability before performing any work process. Follow all applicable lockout procedures and local rules and regulations for performing work processes. ANYONE performing inspections or service procedures to the machine should be familiar with ALL instructions and procedures contained in the machine's SERVICE MANUAL. Crush hazard could occur if the machine is started or moves while any type of work process is being conducted on the machine, resulting in serious injury or death.

- a. Ensure the bucket is empty and clear of debris.
- b. Park the machine with the bucket flat on the ground.

- c. Move the frame lock to the locked position so that the frame cannot be steered.

⚠ WARNING

Crush hazards exist in machine pivot area and area between the tires. Do not enter these areas unless it is verified that the operator has control over the steering and that personnel locking the frame lock have good communication with the operator. Entering the pivot area and area between the tires while the machine is moving or pivoting (articulating) could cause crush hazards resulting in serious injury or death.



- 1) Retaining pin for locked position, 2) Frame lock - shown in locked position,
3) Retaining pin bracket for un-locked position

Figure 7. Frame lock in locked position

- d. Set the parking brakes.
e. Place wheel chocks in front and behind each wheel.

⚠ WARNING

Crush, shock, or other hazards exist if stored energy is not removed or isolated prior to working on the machine. Stored energy (hydraulic, electrical, pneumatic, mechanical, etc.) may be present if not isolated or released prior to working on the machine. Do not work on the machine without removing this stored energy (suspended loads, electrical power, air pressure, etc.). Risk of crushing, shock, or other physical injury exists if stored energy is not removed or isolated prior to working on the machine which could result in serious injury or death.

Step 1

- With the bucket set flat and level on the ground, check the oil level in the hydraulic reservoir.
 - The level should be approximately 2" inches above the center of the sight glass.
 - If the oil level is too high, hydraulic reservoir air pressure nuisance alarms will occur.

Step 2

- Remove the air pressure from the hydraulic reservoir by opening the air supply cutoff valve and Automatic Hydraulic Reservoir Air Pressure dump valve.
 - Air supply cutoff: Handle in “up” position vents the air.
 - Automatic Hydraulic Reservoir Air Pressure dump valve: Black button pulled out.
 - Leave open until all air has emptied from the hydraulic reservoir.

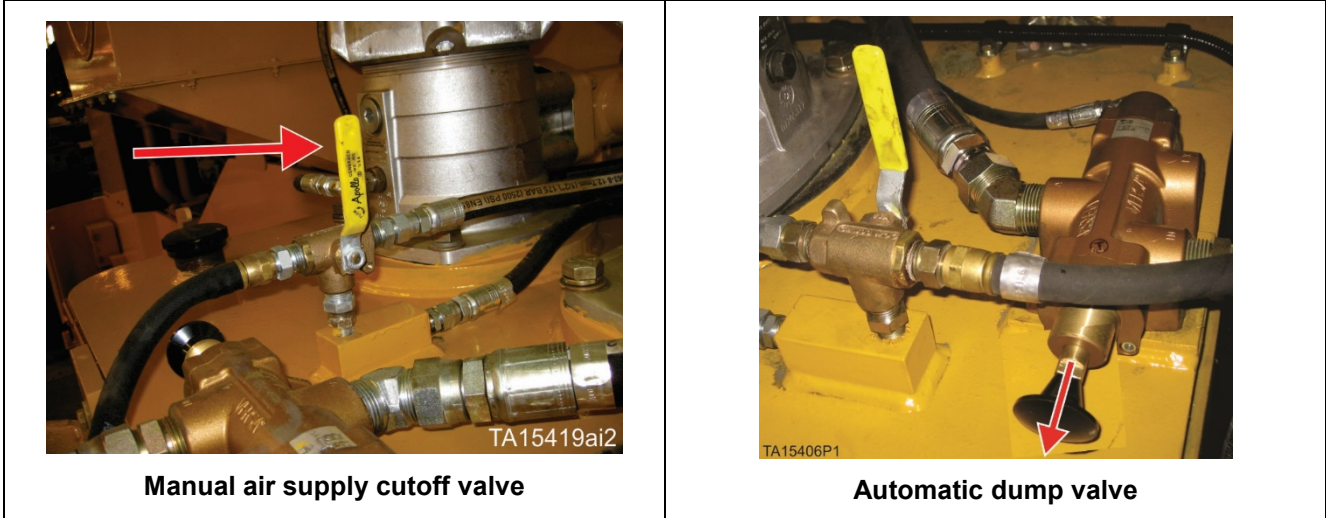


Figure 8. Manual air supply cut-off in position to vent hydraulic reservoir and hydraulic reservoir automatic air pressure dump valve vented to atmosphere

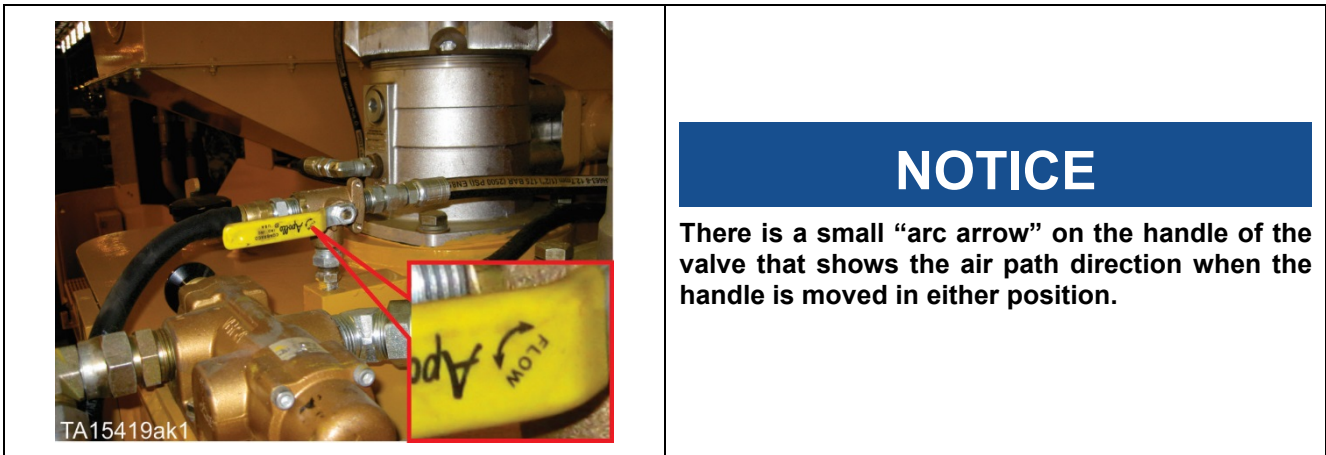


Figure 9. “arc arrow” showing direction of air path

Step 3

- When all of the air is evacuated, close the air supply cutoff and air release valve.
 - Air supply cutoff: handle in “down” position closes the vent and air goes into the reservoir.
 - Hydraulic Reservoir Air Pressure dump valve: The black button should be pushed all the way towards the valve.

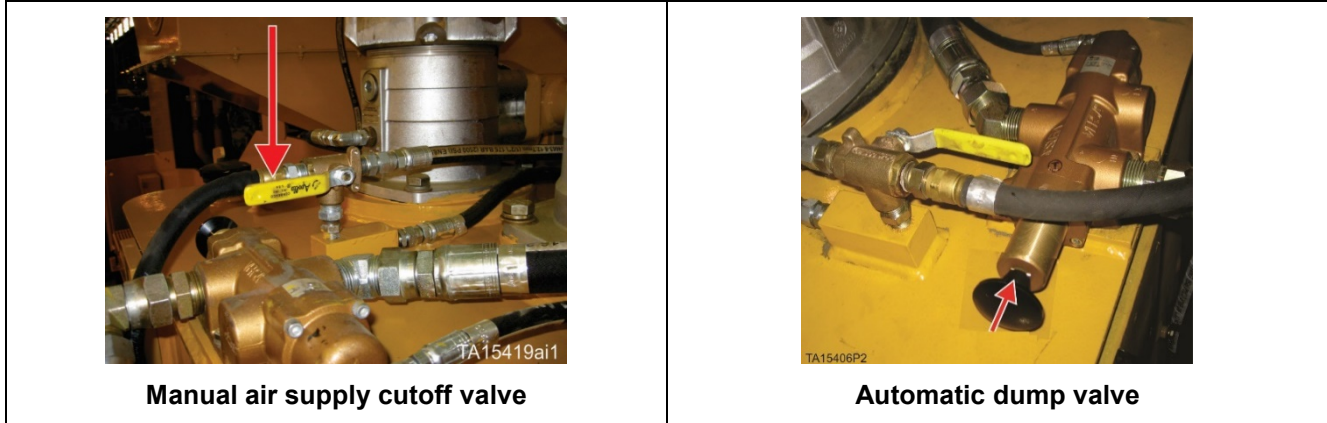


Figure 10. Manual air supply cut-off in position to pressurize hydraulic reservoir and hydraulic reservoir automatic air pressure dump valve closed

Step 4

Adjust the regulator, while looking at the attached gauge, to 4 to 6 psi (0.41 0.55 bar).

- Pull the end cap on the regulator adjustment down firmly, to unlock the regulator for adjustment.

NOTICE

The end cap may be either black or yellow colored.

- Rotate the cap clockwise to increase pressure, counter-clockwise to decrease pressure.
- Turn the cap slightly in the desired direction and allow the pressure to stabilize.
- Once the desired pressure is maintained, push the adjustor cap upward to lock.

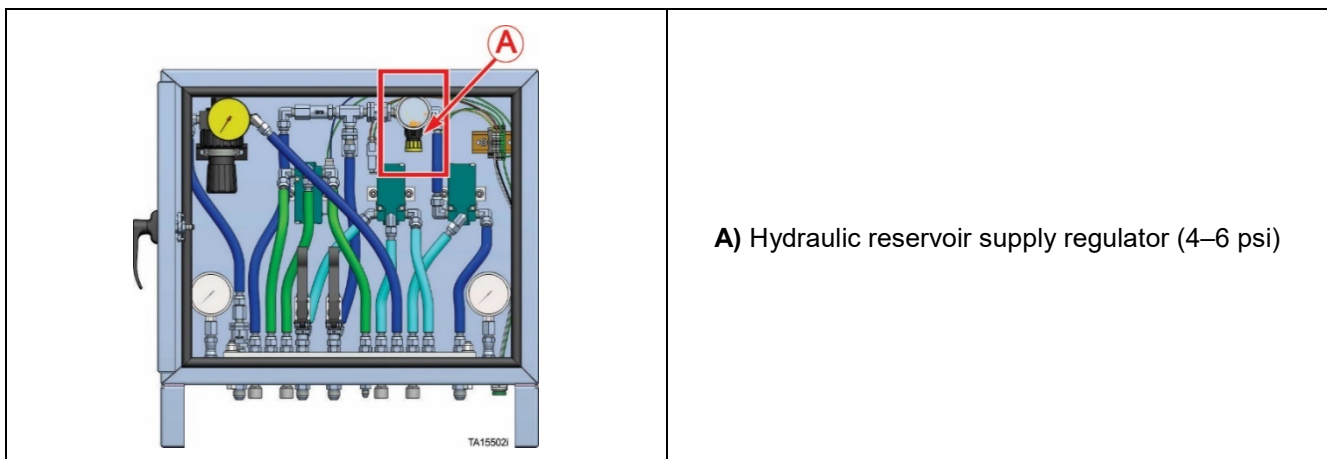


Figure 11. Adjusting the regulator

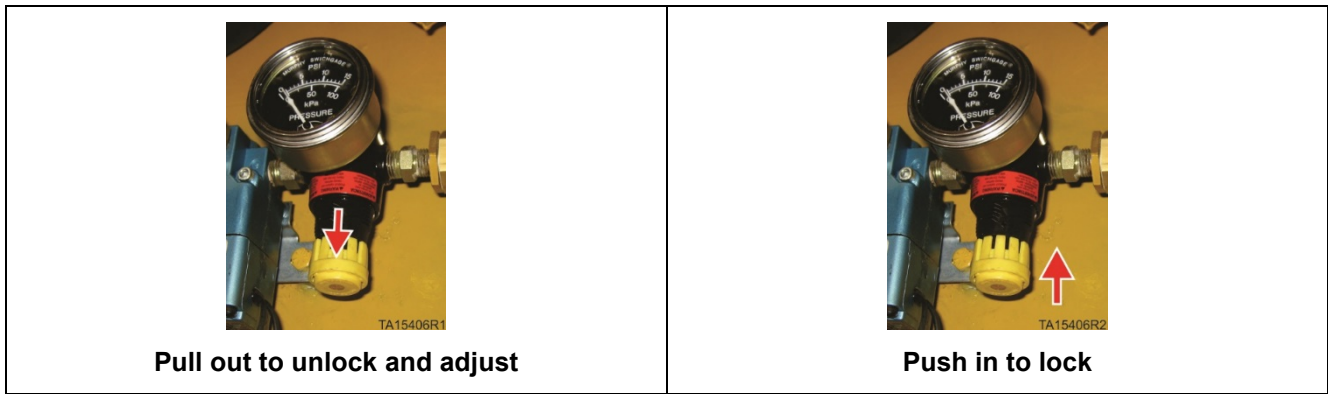


Figure 12. Air regulator end cap

Step 5

- Stabilize the air pressure. After setting the air regulator for the first time, raise the lift arms and leave them in the UP position for two minutes to allow air to fill the larger area of reservoir exposed as oil level was reduced to fill the hoist cylinders.

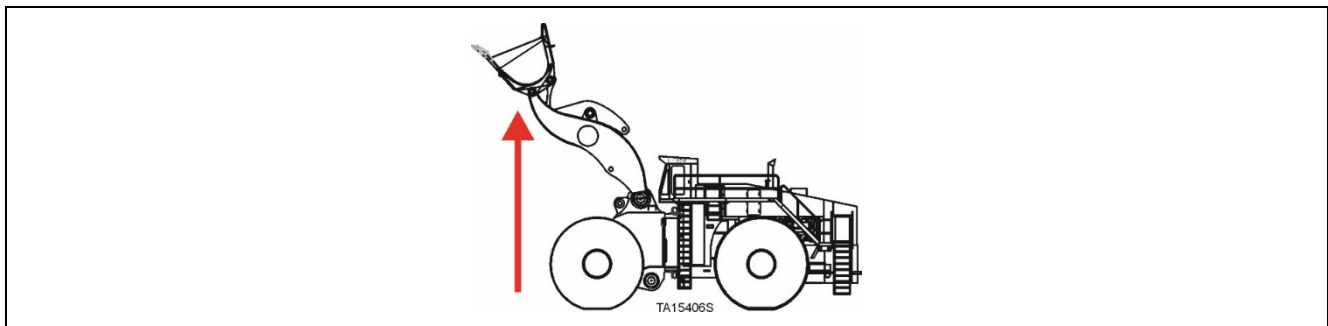


Figure 13. Raise the lift arms

Step 6

- After the lift arms are lowered back down, the 12 psi (0.83 bar) relief (check valve) needs to be checked for proper operation. The air should only increase from about 2-4 psi if the regulator is set properly.
- Air will escape out of the relief (check valve) after the lift arms are lowered.
- A continual release of air would indicate improper operation of the relief valve or that the air pressure regulator is not set or functioning correctly.

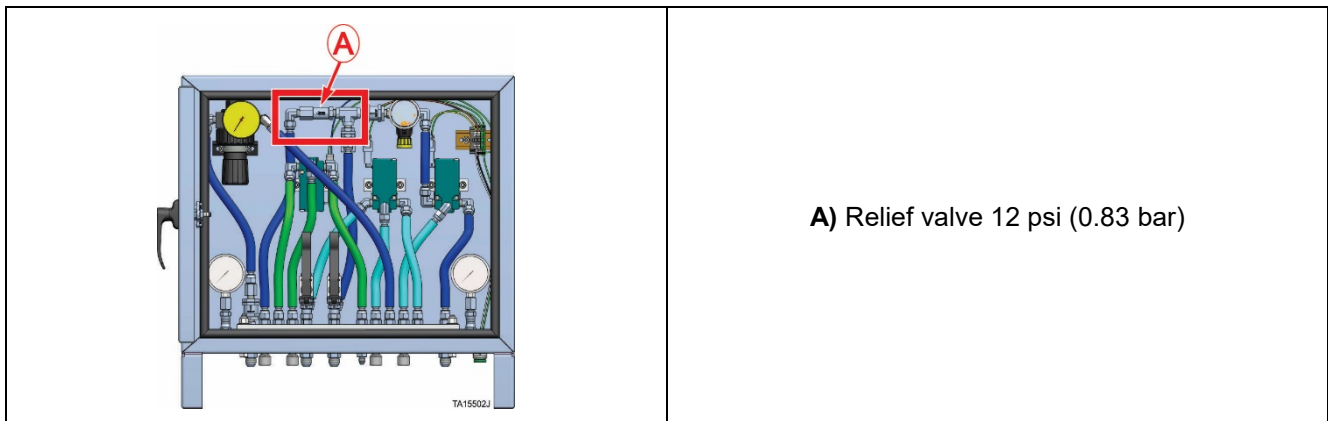


Figure 14. 12 psi (0.83 bar) relief valve

Step 7

After the lift arms are lowered back down, the relief on the top of the surge reservoir needs to be checked for proper operation. Air should not escape out of the relief valve as the lift arms are lowered. A continual release of air would indicate improper operation of the relief valve.

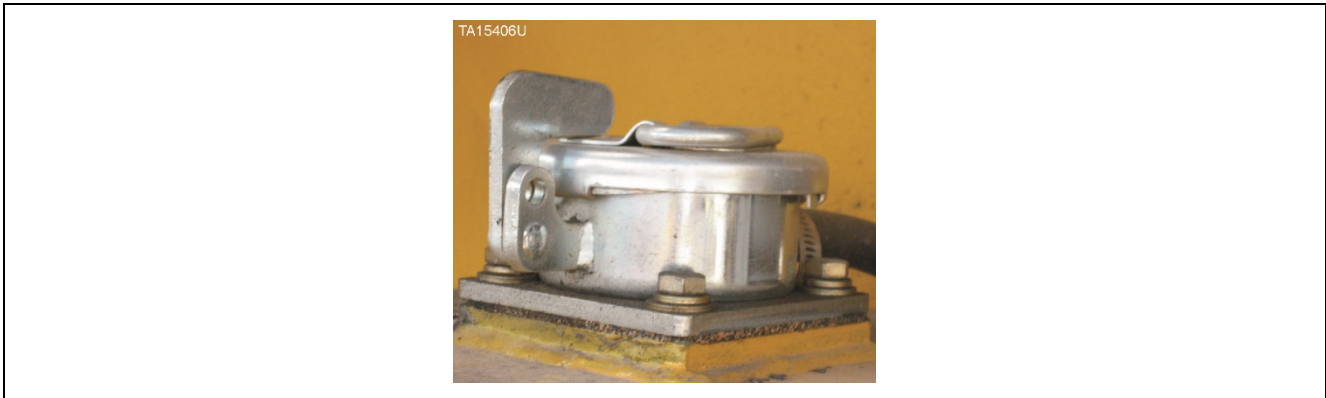


Figure 15. Relief on the top of the surge tank

If the pressure cannot be set, the following items need to be inspected and repaired and or replaced.

- Main air system pressure is between 125 and 140 psi (8.6-9.6 bar)
- Solenoid #15 (air supply to the air pressure regulator) is operating properly
- Hydraulic reservoir air pressure regulator is operating properly
- 12 psi (0.83 bar) check valve operating properly
- Automatic dump valve is closed
- Relief valve is operating properly
- Emergency stop button (s) are not pressed (automatic air dump valve will not reset to closed position)
- Fill cap seal
- Hydraulic oil level is correct

Return the machine to service

When completed, follow all lockout tag out rules, local rules, and local regulations to return the machine back to service.

CAUTION

Ensure the frame lock is unlocked before operating the machine. Serious equipment damage will occur if it is not unlocked.

Adjusting an Air Regulator

When performing a procedure that requires adjusting an air regulator and after all safety precautions for that procedure are met, the following procedure can be used to adjust an air regulator.

- Pull the end cap on the regulator adjustment out firmly to unlock the regulator for adjustment.

NOTICE

The end cap may be either black or yellow colored.

- Rotate the cap clockwise to increase, counter-clockwise to decrease.
- Turn the cap slightly in the desired direction and allow the pressure to stabilize.
- Once the desired pressure is maintained, push the adjustor cap inward to lock.

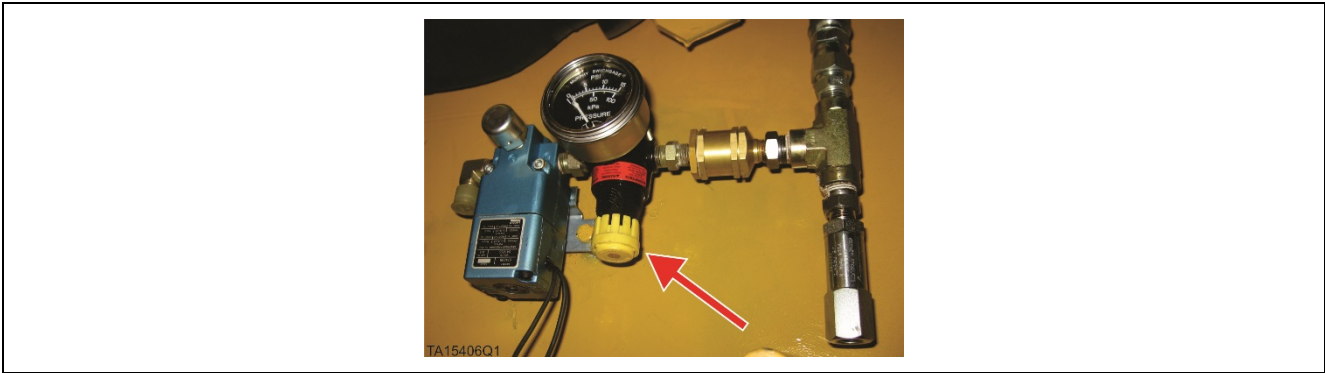


Figure 16. Adjusting the regulator

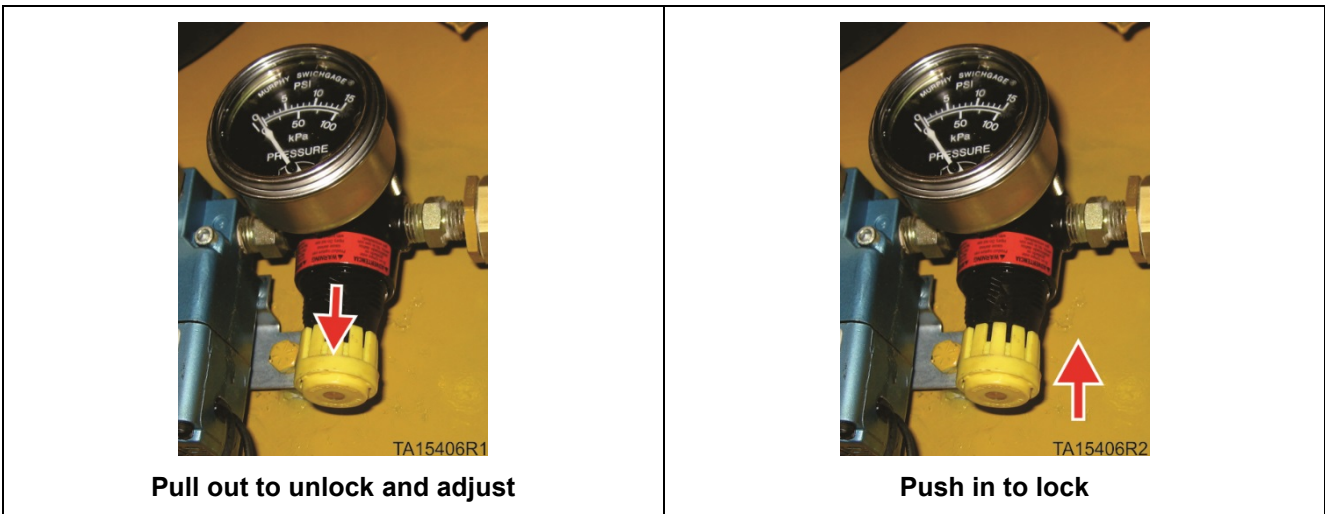


Figure 17. Air regulator end cap

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