

## Q-01: Check and Adjust Burners and Regulators

### SAFETY FIRST

- Follow all Caterpillar facility safety standards when performing this task.
- Heat hazard exists when working around the furnace. Wear gloves to avoid burning your skin.

### EQUIPMENT

- basic Maintenance Mechanic hand tools
- manometer
- Velcro filter replacement (for filter drum)

### RESOURCES

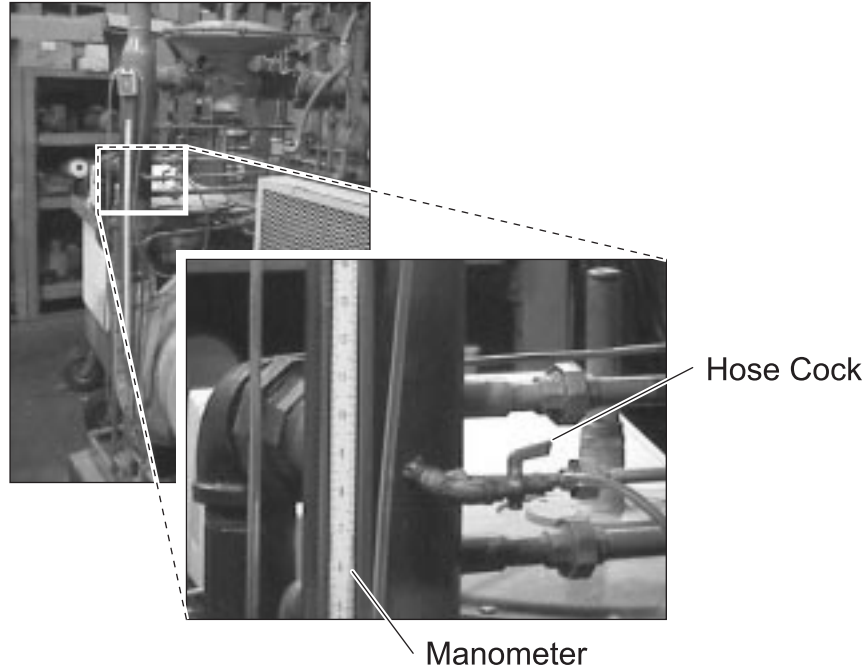
- engineering print
- Heat Treat Startup and Shutdown Procedures



## Check and Adjust Burners and Regulators

### 1. Read the combustion air pressure from the hose cock.

- Connect the right manometer hose to the hose cock.



### Combustion Air Pressure Measurement

- Open the hose cock.
  - Verify that the combustion air pressure is above 20 inches/water column.
- ### 2. Clean the combustion blower if the combustion air pressure is less than 20 inches/water column.
- Ask the Checker to shut down the generator.
  - Perform a lockout/tagout.

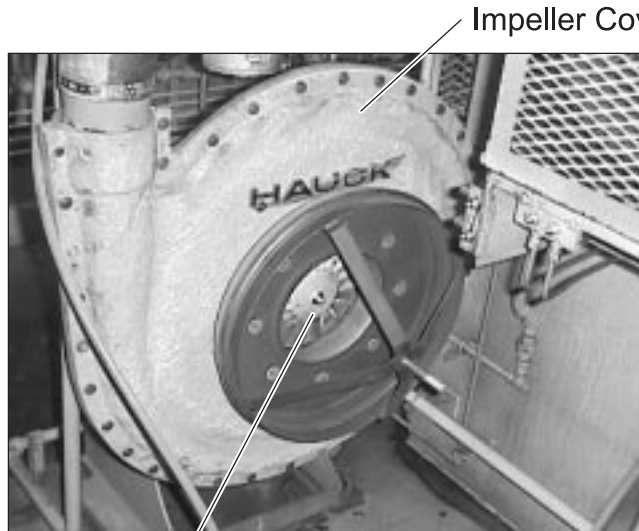
- ❑ Remove the blower filter drum and cover.



Filter Drum

Cover

- ❑ Use an air wrench or a socket wrench to remove the impeller cover.



Impeller Cover

Impeller

- ❑ Remove the motor coupling guard.

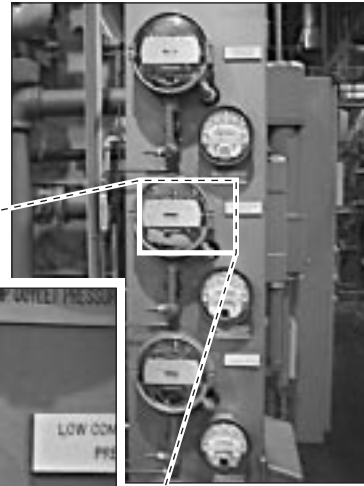


Motor Coupling Guard

- ❑ Loosen the two Allen head screws on the motor coupling.
- ❑ Remove the impeller.
- ❑ Steam clean the impeller.

- Reinstall the impeller and coupling.
- Install a new Velcro filter on the filter drum.
- Replace the filter drum and cover.
- Remove lockout/tagout.
- Ask the Checker to restart the generator.

**3. Check the pressure switch.**



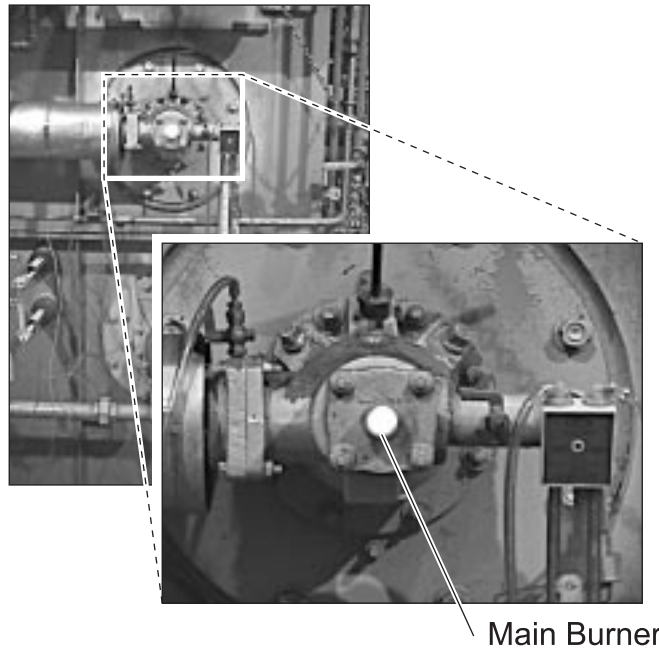
**Pressure Switch Display**

- Verify that the switch is set just lower than 20 inches/water column.

**4. Read the combustion pressure at the main burners.**

- Remove the guard to gain access to the main burners.
- The two main burners have yellow pipes and two back burners have orange pipes.

- Connect the manometer to the main burner combustion air hose cock.

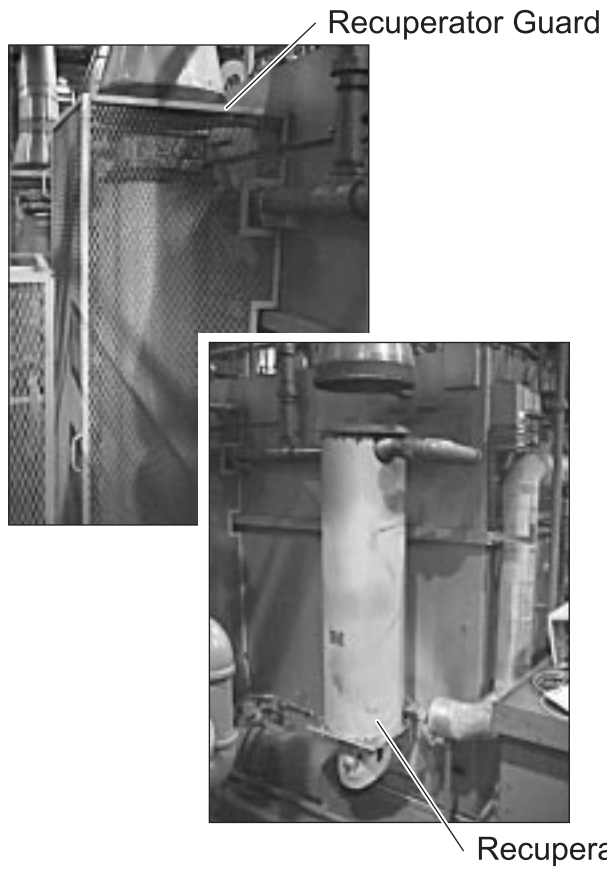


- Turn on the hose cock.
- The pressure reading should read approximately 15 inches/water column +/- 2 inches.
- A low pressure reading suggests that the recuperator is failing.
- Remember to read the pressure on the main heating burner at both sides of the generator.

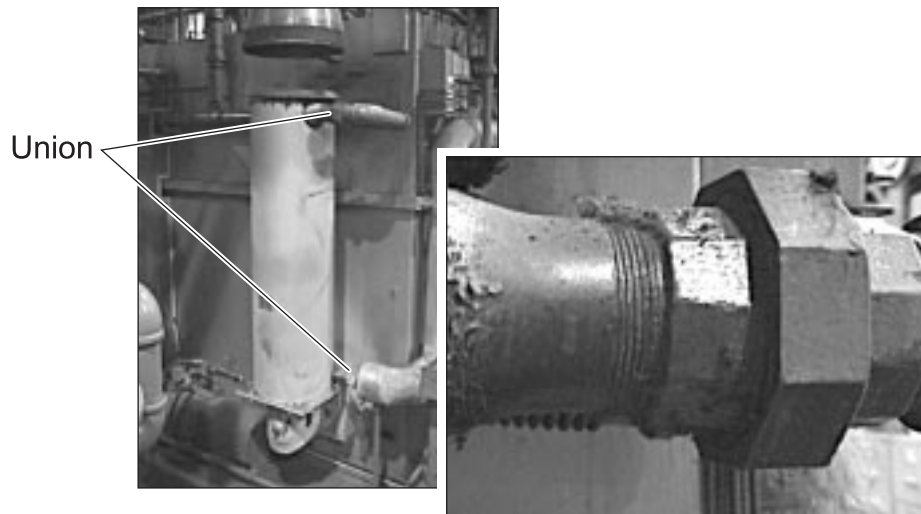
**5. Replace the recuperator, if necessary.**

- Obtain the replacement recuperators, if not in stock.
- Ask the Checker to shut off the generator to replace the recuperator.

- Remove the recuperator guard.

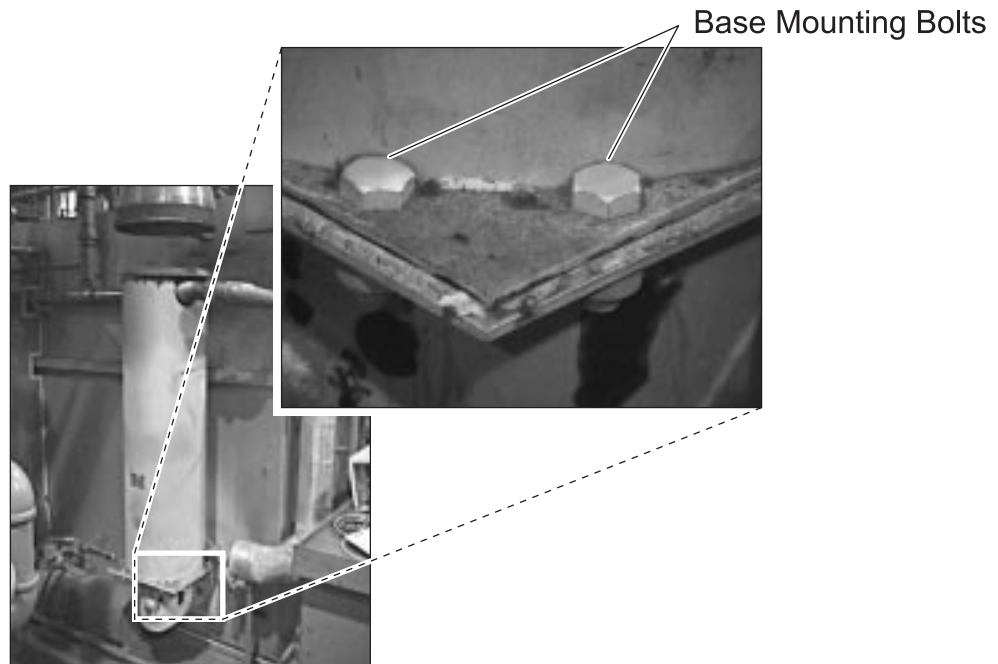


- Use two pipe wrenches to disconnect the recuperator at the unions.



### Recuperator Unions

- Remove the eight base mounting bolts using an air wrench.



- Remove the recuperator.
- Remove the union fittings from the old recuperator.
- Install the union fitting to the new recuperator.
- Mount the recuperator to the base with the mounting bolts left loose.
- Connect the recuperator to the unions wrench-tight.
- Tighten the recuperator mounting bolts with the air wrench.
- Replace the recuperator cover.
- Ask the Checker to restart the generator.
- Verify the pressure reads 15 inches/water column +/- 2 inches.

**6. Check the natural gas regulator valve.**

- Connect the manometer to the regulator hose cock.



Natural Gas Regulator Valve

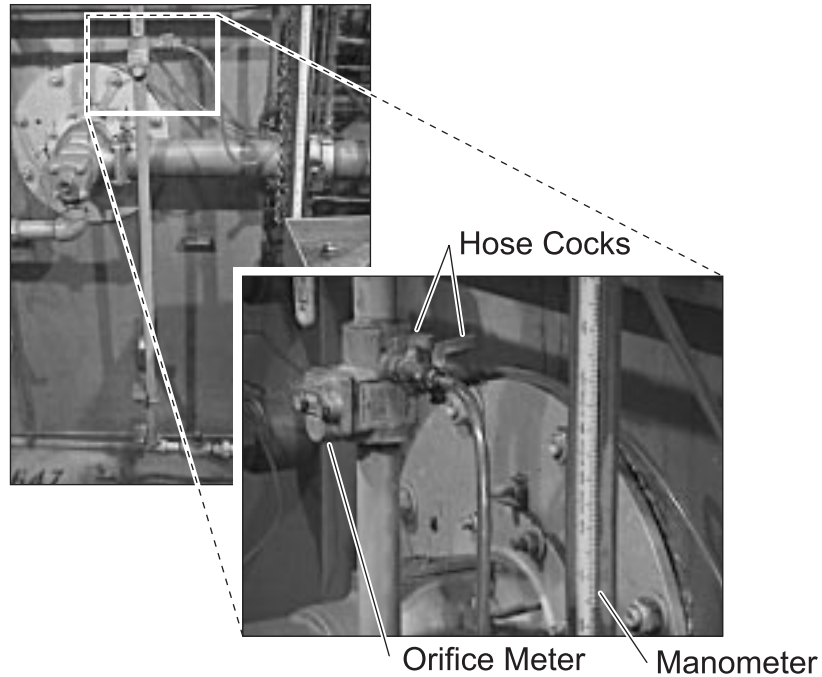
Manometer

- Turn on the hose cock.
  - Reading must be approximately 18 to 20 in./water column.
- 7. Verify air flow from the combustion air to the natural gas regulator.**
- Remove the air line to verify air presence.
  - Replace the line if a leak or clog is detected.
  - Replace the regulator valve according to Maintenance Mechanic procedures if the line is okay and the regulator still does not function.



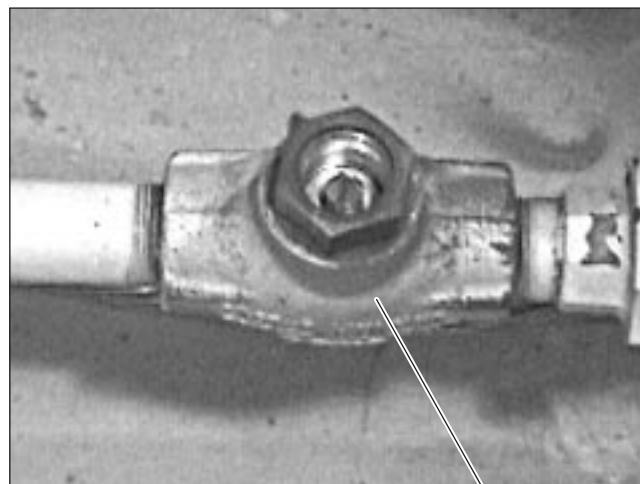
**8. Read the pressure on the orifice meters at both sides of the gas generator.**

- Connect the manometer to both of the orifice hose cocks.



- Readings must be 12 to 14 in./water column.

**9. Adjust the limiting orifice valve if the pressure reading in step 8 is not within specifications.**



Limiting Orifice Valve

- Turn the adjuster clockwise to close the valve (lower the pressure) if the readings from the orifice valve exceed specifications in step 8.
- Turn the adjuster counterclockwise to open the valve (increase pressure) if the readings are not as high as the specifications in step 8.

**10. Clean up the work area.**

- Return the manometer and hand tools to the work shop.

