



PORTOLA RAILROAD MUSEUM

**ENGINEER' S, FIREMAN' S
AND
TRAINMEN' S**

**LOCOMOTIVE STARTING
CHECK LIST
AND
DAILY INSPECTION REPORT**

Note: This document is not a replacement for any other General Code of Operating Rules and/or Procedures; it is specifically intended to help the Engineer and Fireman with understanding the task of checking the locomotive before and after starting.

Rule 1204

E.M.D. diesel locomotives that have not operated for forty-eight (48) hours will be rotated several turns with the cylinder relief valves open in order to ensure against a hydraulic lock condition caused by water leakage in the cylinders.

Better know as "Flash cocking the Engine"

WATER:

The water in each locomotive must be checked to make sure there is sufficient water in the unit.

Check before starting, and check fifteen (15) minutes after starting the unit.

FUEL:

Check the fuel tank sight glass. Make sure there is sufficient fuel to run the unit. (see notes below on fuel while starting the unit)

ENGINE OIL:

The Engine Oil Level should not be below the LOW mark on the dipstick at any time. If the engine oil level is low, add oil (if you know the type of oil and where it is stored) Otherwise get mechanical help first.

Check before starting, and check after the unit is at operating temperature. Also, check the Oil Level **PRIOR** to shutting down the unit at the end of the day and report any low oil condition to the Mechanical Department on form M1001.

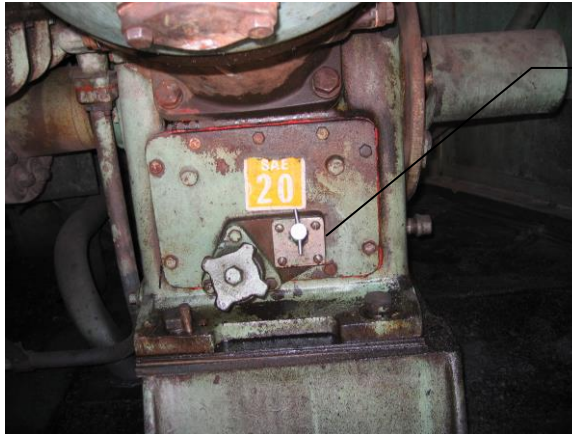
Make note on Mechanical Department white board and notify the Museum Manager of the condition.

“DO NOT RUN THE UNIT ON LOW ENGINE OIL”

Check the Engine Oil Level before you shut down the engine at the end of the day. Report low oil if necessary.

AIR COMPRESSOR:

Check the Air Compressor for proper oil level



Compressor Oil Dip Stick

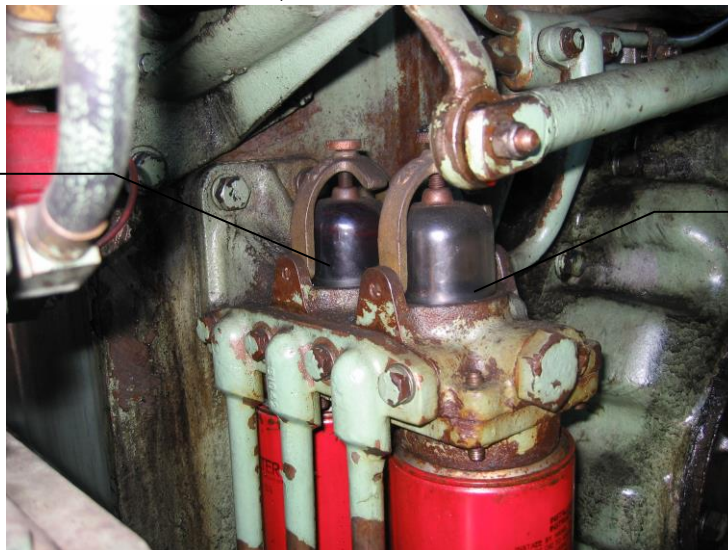
GOVERNOR OIL: (See Governor photo below)

Check the Governor for proper oil level.

After you have done the routine checklist provided by the mechanical department and you are ready to start the unit, you must check the following:

FUEL:

When ready to start the unit, once you have turned on the fuel pump, check the sight glass on the fuel filter. There are two (2) fuel sight glasses at the end of the engine block. The fuel sight glass nearest the engine block should be full and have no air bubbles before starting the engine. (If fuel is seen in the other fuel sight glass, report it on form M1001)



Normal Fuel sight glass

Bypass Fuel sight glass Report condition

Once you have started the unit, check the following:

ENGINE OIL PRESSURE:

Check the Engine Oil Pressure on the Oil Pressure Gauge, it should read approximately 60 lbs. (the location of the oil pressure gauge varies by locomotive)



Oil
Pressure
60 lbs

GOVERNOR: (see Governor photo)

It may take 45 seconds for the oil pressure to build up in the engine and some times the ENGINE LOW OIL PRESSURE reset button on the Governor will pop out and shut down the unit.

It will be necessary to reset the button and restart the unit.

"IF AT ANY TIME THE UNIT STOPS RUNNING AND YOU FIND THE LOW OIL PRESSURE BUTTON POPPED OUT (RED LINE ON BUTTON SHOWING) CHECK THE OIL LEVEL ON THE ENGINE"

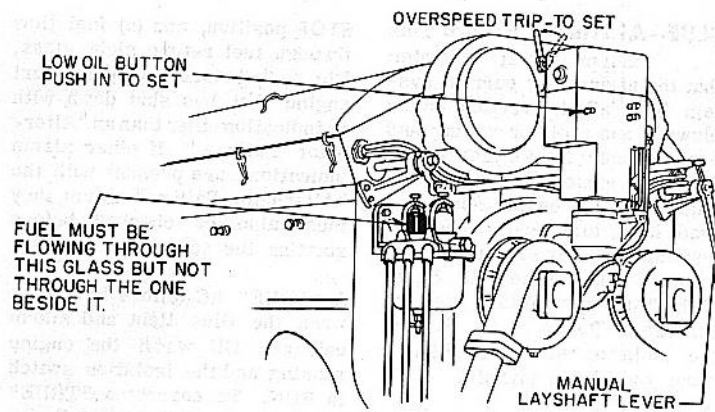
Note: Do not repeatedly start the engine if the LOW OIL Pressure button keeps shutting the engine down,

Get help if needed.



Low Oil Button

Governor Oil sight glass



Overspeed Trip And Fuel Flow Check

Location of; Overspeed Trip, Low Oil Button, Fuel sight glass and Manual Layshaft lever.

Daily Inspection Report (DIR)

In order to comply with these requirements the following procedures is suggested:

1. Preliminary Checks

Check Compressor Oil level. Note level on Daily Inspection Report (DIR) in 1/8 stick increments. Check coolant level, governor oil level and cold stick engine oil to assure safe level for start-up.

2. Charging Air System

Ensure that the Locomotive is secured (Hand Brake applied, wheel chocked). Start the engine and allow Air Pressure to build until the compressor shuts off (cut-out).

3. Independent Brake Test

Apply the Independent Brake in 10 PSI increments and check that the pressure holds at each setting. Set the Independent Brake Control to full application. Check the Brake Cylinder Pressure and note the result on the Daily Inspection Report. Release Independent Brake Pressure.

4. Brake Pipe Pressure Test

With Automatic Brake Control in Run Position, (not applied, no Brake Pipe Reduction) check the Brake Pipe Pressure reading and note your findings on the Daily Inspection Report.

5. Main Reservoir Regulator Cut-in Pressure

Now make several small Automatic Brake Applications until the Main Reservoir Pressure drops to the point that causes the Compressor to start pumping (cut-in). Note your finding on the Daily Inspection Report as the Main Reservoir: Low value.

6. Main Reservoir Regulator Cut-out Pressure

Watch carefully as the compressor refills the Main Reservoir and note the pressure at which the compressor shuts off once again. Note this reading on the Daily Inspection Report as the Main Reservoir: High value.

7. Brake Cylinder Travel Check

Now perform a 20 PSI Automatic Brake Pipe Reduction and check Brake Cylinder Travel from the ground. Release brake cylinder pressure (bail off) then check for a full release at each Cylinder Piston and inspect for Brake Shoe Clearance at each wheel:

8. Proceed with remainder of Daily Inspection.

Main Reservoir Pressure: High

The "Main Reservoir Pressure: High" reading is taken at the pressure at which the compressor stops running (cut-out) and before any "Main Reservoir Air" is used to charge the Brake Pipe.

Each railroad is responsible for establishing the "Maximum Main Reservoir Working Pressure" and is determined by the "Hydrostatic Test Pressure" that the reservoir is subject to during bi-annual inspection (the Maximum Main Reservoir Working Pressure must be less than 80% of the Hydrostatic Test Pressure).

Main Reservoir Pressure: Low

The "Main Reservoir Air" is then drawn down using Automatic Brake Applications to the point at which the compressor engages (cut-in or loading pressure) and begins again to re-supply the Main Reservoir. This reading is noted on the Daily Inspection Report as "Main Reservoir Pressure: Low".

This reading must be more than 15 PSI above the "Brake Pipe Pressure" reading. For our Operational purposes this pressure must be a minimum of 105 PSI (90 PSI Brake Pipe + 15 PSI minimum pressure differential).

Brake Pipe Pressure

This is the pressure established by regulation of the Main Reservoir supply and is adjustable at the control stand. The reading must be taken with the Automatic Brake Control in the release position and must be taken when the Main Reservoir is charged to between the High and Low readings (within the normal operating range of the compressor when controlled by the governor).

Independent Brake Cylinder Pressure

With Independent Brake fully applied the pressure in the Brake Cylinder should be set to 50 PSI. This pressure is adjustable on some Brake Controllers and should be adjusted within 2 PSI of this value.

Terminal Brake Test

The Brake Pipe Pressure is then used to determine if the End of Train Pressure is sufficient during the Terminal Brake Test.

During the Terminal Brake Test the End of Train Pressure Gauge must read within 15 PSI of Full Brake Pipe Pressure before you take your 20 Pound Reduction. Perform the 60 Second Leakage Test. Leakage must not to exceed 5 PSI / minute (with maintainer cut out if equipped).

Once the Daily Inspection Report is completed fill out the Monthly Inspection Card return it to the holder in the locomotive and place the Daily Inspection Report in the Mechanical Department mail box.