



MAINTENANCE INSTRUCTION

MODERNIZATION RECOMMENDATION DIFFERENTIAL PRESSURE ENGINE PROTECTOR APPLICATION

- PURPOSE:** To provide installation instructions for the replacement of engine protectors 8428395 and 8464678 with differential pressure engine protectors 9320130 and 9505867 respectively.
- APPLICATION:** All engines equipped with engine protectors 8428395 or 8464678.
- REFERENCE:** Applicable illustrations in this publication.
- DISCUSSION:** Differential pressure engine protectors are currently being applied to nearly all EMD engines. This modification is being provided to upgrade existing locomotive engines having the standard engine protector.
- MATERIAL REQUIRED:** Existing locomotive engines can be modified to install the new differential pressure engine protector. The following is a list of material required for modification:

TURBOCHARGED LOCOMOTIVE ENGINES

<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>
9320130	Engine Protector	1
9320120	Hose Assembly (Pump Inlet)	1
9320121	Hose Assembly (Pump Discharge)	1
9320122	Hose Assembly (Air Box)	1
9320124	Tube Assembly (Oil)	1
118750	Connector	1

ROOTS BLOWN LOCOMOTIVE ENGINES

<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>
9505867	Engine Protector	1
9320121	Hose Assembly (Pump Discharge)	1
9320122	Hose Assembly (Air Box)	1
9320124	Tube Assembly (Oil)	1
118750	Connector	1
9501974	Tube Assembly (Pump Inlet)	1
3306485	Tube Clip	1

NOTE

When applying detector to an engine equipped with two water pumps, hose assembly 9320120 will be used in place of tube assembly 9501974, and tube clip 3306485 will not be needed.

PROCEDURE

1. Disconnect all hose and tube assemblies from the engine protector.
2. Remove engine protector from accessory drive housing.
3. Remove hose assembly 8477002 from cut-off valve and install hose assembly 9320121.
4. Remove hose assembly 8491460 from air box connection and install hose assembly 9320122.
5. Remove tube assembly 8369366 from oil supply line. Remove tube clip from 8369366 and apply to tube assembly 9320124. Apply tube assembly 9320124 to oil supply line.
6. Apply differential pressure engine protector to accessory drive housing, Fig. 1.
7. Connect hose 9320121 and 9320122 and tube assembly 9320124 to differential pressure engine protector.

For Application To Engines Equipped With Two Water Pumps

8. Modify left bank water pump as follows:

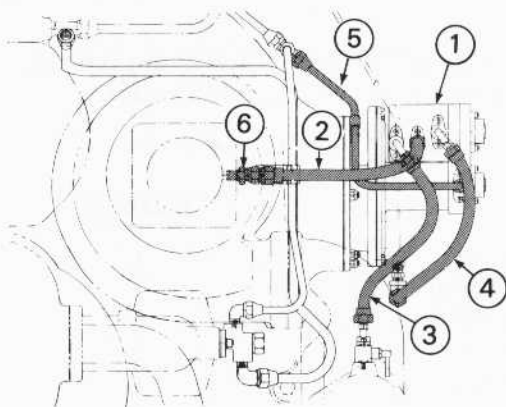
Drill 7/16" through hole and tap a 1/4"-18 dry seal N.P.T.F. hole in the outboard side of the pump inlet flange, Fig. 2.

9. Attach connector 118750 to tapped hole of the left bank water pump.
10. Connect hose assembly 9320120 to differential pressure engine protector and connector installed in left bank water pump.

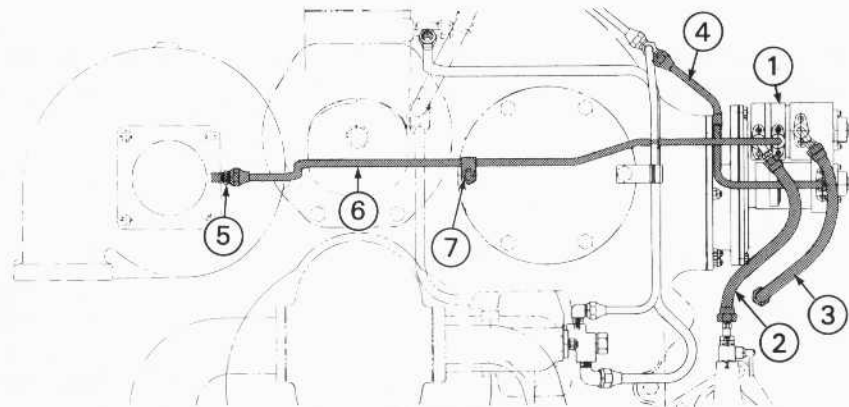
For Single Water Pump Application

8. Modify the right bank water pump as follows:

Drill 7/16" through hole and tap to 1/4"-18 dry seal N.P.T.F. hole in the inboard side of the pump inlet flange, as shown in Fig. 2.



Two Pump Configuration



Single Pump Configuration

TURBOCHARGED LOCOMOTIVE ENGINES

Item	Part No.	Description	Quantity
1	9320130	Engine Protector	1
2	9320120	Hose Assembly (Pump Inlet)	1
3	9320121	Hose Assembly (Pump Discharge)	1
4	9320122	Hose Assembly (Air Box)	1
5	9320124	Tube Assembly (Oil)	1
6	118750	Connector	1

ROOTS BLOWN LOCOMOTIVE ENGINES

Item	Part No.	Description	Quantity
1	9505867	Engine Protector	1
2	9320121	Hose Assembly (Pump Discharge)	1
3	9320122	Hose Assembly (Air Box)	1
4	9320124	Tube Assembly (Oil)	1
5	118750	Connector	1
6	9501974	Tube Assembly (Pump Inlet)	1
7	3306485	Tube Clip	1

24155

Fig.1 – Differential Engine Protector Application

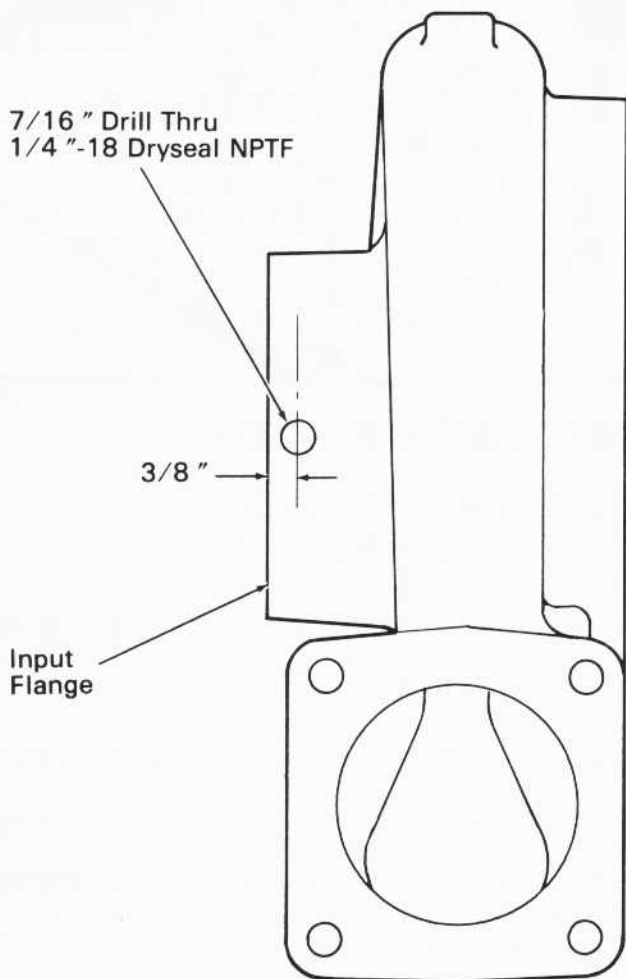


Fig.2 - Water Pump Modification

9. Attach connector 118750, to tapped hole of the right bank water pump.
10. Connect tube assembly 9501974 to differential pressure engine protector and connector installed in right bank water pump.
11. Attach tube clip 3306485 to tube assembly 9501974. Secure tube clip to specified mounting bolt on blank plate.

NOTE

Step 8 in both applications can be eliminated if customer prefers to use pump assembly 9320244 for engines equipped with two water pumps, or 9501979 for single pump applications. These pumps already contain the tapped hole in the pump flange.

Locomotives being used in tunnel operation and equipped with a 12 psi cooling system pressure cap with engine protector 8428395, must be fitted with a 20 psi cap when equipped with the differential engine protector. The 20 psi cap is required with the differential pressure engine protector to achieve the same shutdown water temperature as the 12 psi cap with protector 8428395.

Remove 12 psi cap, filler neck, and gasket, and replace with gasket 8424925, filler neck 9338781, and 20 psi cap 9338780.