ELECTRO-MOTIVE

MAINTENANCE INSTRUCTION

M.I. 440
*Rev. C

PANEL TYPE OIL BATH AIR FILTERS

INTRODUCTION

Clean air for combustion is critical to engine service life. The panel type oil bath air filter, Fig. 1, provides an efficient means of supplying clean air to the engine.

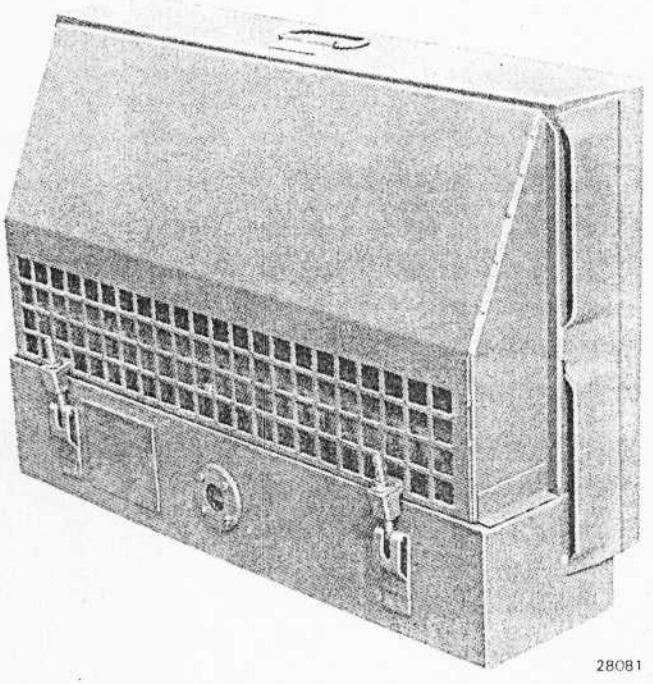


Fig.1 – Typical Panel Type Oil Bath Filter
(PN 8356190)

DESCRIPTION

The panel type filter, Fig. 2, draws air in through the guard screen (2), in the front cover of the panel. Upon entering this chamber, the air strikes a deflector (3), which diverts some of the air downward into the oil storage sump (4). The agitation created by the air entering the oil storage sump causes droplets to form, and an oil control baffle (5) redirects the oil-laden air upward from the sump towards the primary filtering media (7). The remaining incoming air supply passes through the oil-wetted media where airborne contaminants are impinged upon the filter. Oil droplet runoff carrying the particulate matter flows through the eliminator filtering media (8) to the return sump (6), where the sludge accumulates allowing the oil to return to the storage sump for recirculation.

MAINTENANCE

To ensure proper operation and efficiency, the panel type oil bath air filter assembly should be inspected, drained, and cleaned in accordance with the intervals recommended in the applicable Scheduled Maintenance Program.

CHECKING AND ADDING OIL TO THE SYSTEM

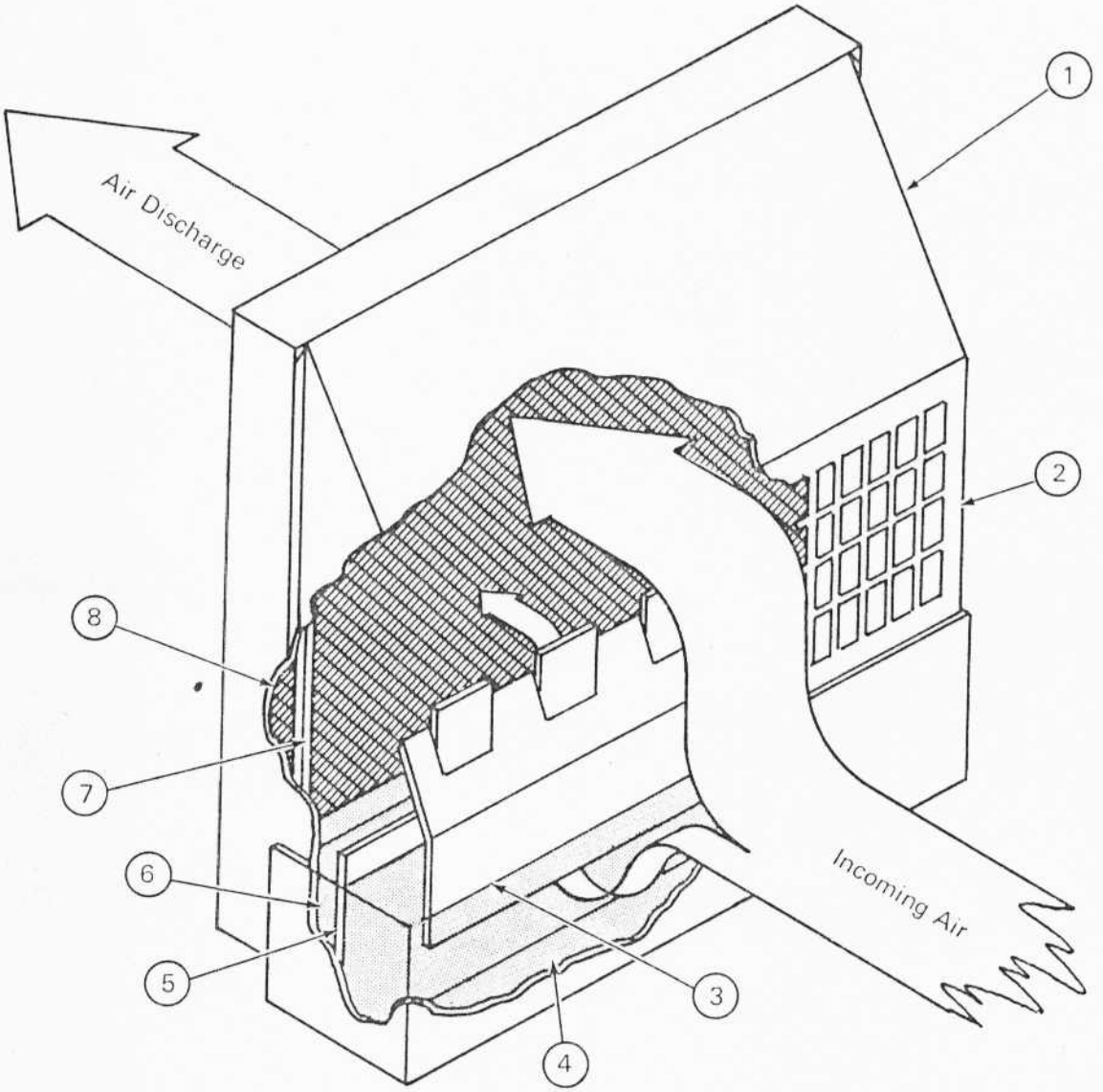
1. Prior to checking or adding oil, shut the engine down for 20 minutes to allow the oil to drain out of the filtering media,

2. Observe the oil level through the sight glass located at the lower portion of the filter assembly, Fig. 1. The oil level should be maintained at the midpoint between the FULL and ADD mark.

NOTE

To replace a damaged or discolored sight glass, refer to Sight Glass Modification section of this publication.

*This bulletin is revised and supersedes previous issues of this number.



1. Front Cover
2. Guard Screen
3. Air Deflector
4. Oil Storage Sump
5. Oil Control Baffle
6. Return Sump
7. Primary Filtering Media
8. Eliminator Filtering Media

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Fig.2 – Cutaway View Of Panel Type Filter

3. Oil can be added to the panel type filter by pouring the oil through the guard screen directly into the sump, or by removing the front cover and pouring directly into the sump.

OIL SUPPLY

Use only clean paraffin base non-additive type mineral oil of the proper viscosity as shown in the Service Data.

Oil containing dispersal agents are not recommended since these agents hinder the settling out of dirt in the return sump. Used engine crankcase oil should also be avoided since it generally contains small carbon particles which may plug the filter.

INSPECTION

The level and condition of the oil and sludge in the unit should be inspected at regular intervals to determine when cleaning is required. Routine inspections should be made at the intervals specified in the applicable Scheduled Maintenance Program.

As previously noted, the oil level cannot be checked while the unit is in operation. However, the

condition of the oil and sludge build-up in the botton of the sump can be inspected at anytime.

NOTE

A 19 mm (3/4") accumulation of sludge necessitates cleaning of the sump.

If lint is present in the incoming air, the oil may thicken preventing proper oil circulating in the unit. When this condition is observed, the oil should be changed even though the usual amount of sludge has not settled out in the bottom of the oil reservoir.

Water accumulation in the reservoir bottom can be checked and drained off by removing a drain plug or opening a petcock, if so provided. If the drain has been plugged by sludge, a small wire may be inserted into the drain to free the opening.

DRAINING AND CLEANING FILTER ASSEMBLY

The oil should be changed and the filter assembly cleaned at the intervals specified in the applicable Scheduled Maintenance Program. These intervals may vary depending on the operating schedule and amount of contaminants in the air. Operation in extremely dusty or dirty environments will require cleaning at more frequent intervals.

DRAINING FILTER

At prescribed intervals, the drain plugs located on the bottom of the sump should be removed, and the filter sump drained of all oil and sludge.

After draining, replace the plugs, and refill with recommended oil to mid-point of sight glass between the FULL and ADD mark.

REMOVAL AND CLEANING OF FILTER ASSEMBLY AND ELEMENT

The filter element itself is self-cleaning through oil scrubbing action, but if proper oil levels are not maintained, it will become plugged and must be removed.

1. Disconnect the filter assembly and remove from the adapter, Fig. 3.

2. Open the two latches on the front of the assembly, Fig. 3, and remove the cover assembly to expose the filter media.

3. Using a nozzle-equipped hose, direct a 207-276 kPa (30-40 psi) spray of hot water at the impingement (dirty) side of the filter.

NOTE

After thorough washing, allow filter to drain before proceeding with the next step.

4. Immerse the filter in an approved alkaline or solvent type cleaner only long enough to loosen imbedded dirt from the media and oil sump. (See the Service Data for recommended cleaners.)

5. Remove filter from the cleaning bath and rinse well with hot water to remove all traces of cleaning solution.

6. Inspect filter element media for cleanliness by placing a strong light inside the assembly. Dark spots indicate the presence of foreign material. Repeat cleaning cycle if necessary.

7. Dry entire assembly with air, and reinstall using a new filter-to-adapter gasket, Fig. 3.

NOTE

When reinstalling front cover assembly, be sure that the lips, Fig. 3, at the top and bottom of cover are properly interlocked to ensure filter operation at peak efficiency.

8. Refill filter assembly with proper grade and amount of oil. (Refer to Step 3 under Checking And Adding Oil To The System, and to the Service Data.)

SIGHT GLASS MODIFICATION FOR AIR MAZE PANEL TYPE OIL BATH AIR FILTERS

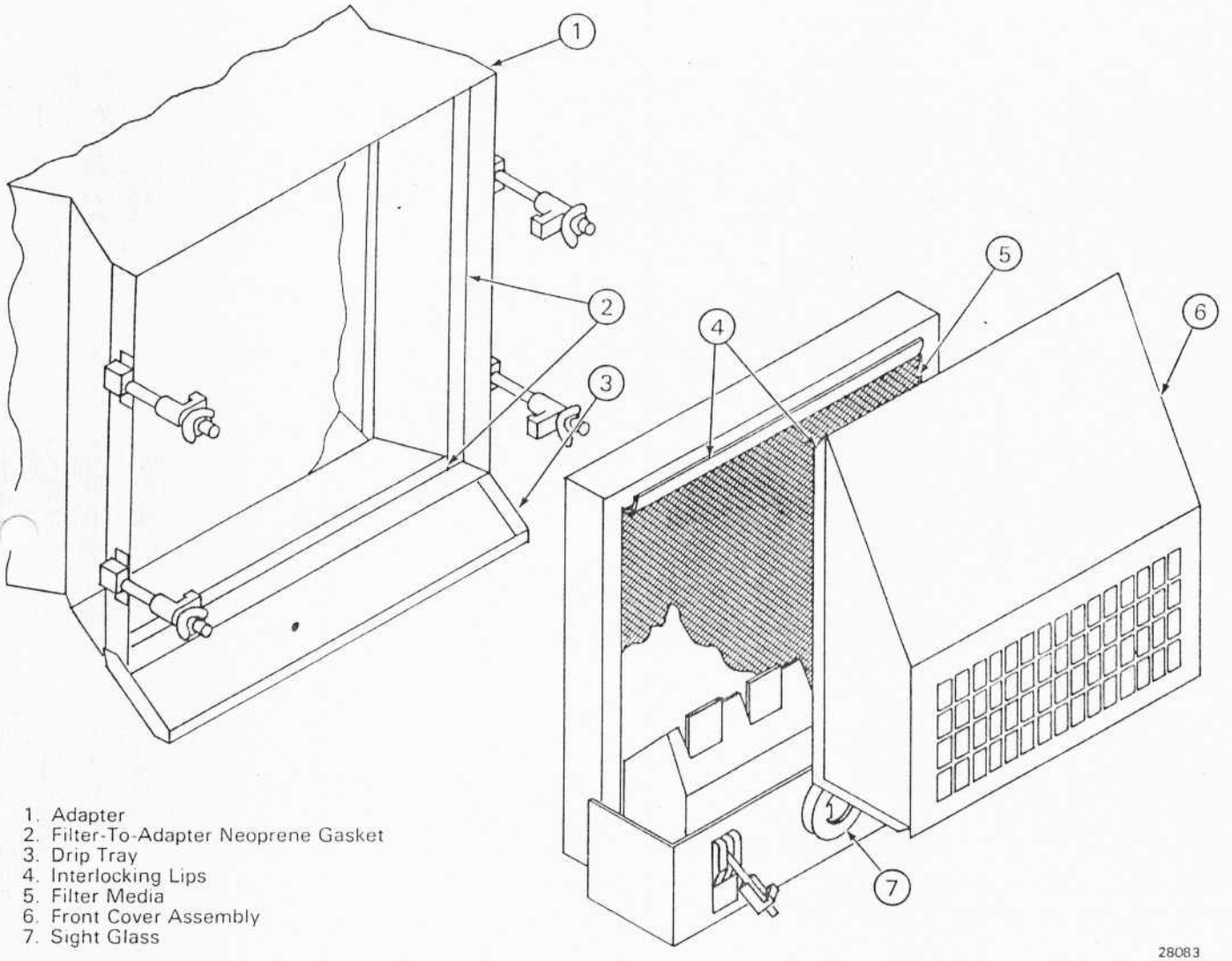
To changeout a discolored or damaged sight glass, perform the following steps. (See Service Data for conversion kit part number.)

1. Remove the old sight glass assembly, Fig. 4, by bending back the indentations on the retaining flange and removing the cork neoprene gasket, steel washer, neoprene gasket, and sight glass lens.

NOTE

Retain the steel washer for reassembly.

2. Using a hack saw, cut off the retaining flange flush with the front surface of the sump. File off any burrs.



1. Adapter
2. Filter-To-Adapter Neoprene Gasket
3. Drip Tray
4. Interlocking Lips
5. Filter Media
6. Front Cover Assembly
7. Sight Glass

Fig.3 – Air Filter And Adapter Assembly, Exploded View

3. Drill four 9/32" holes in the front surface of the sump, Fig. 4, using the sight glass retainer in the kit as a pattern.

4. Install the following components in this order: The cork neoprene gasket, the salvaged steel washer, the neoprene gasket, the new sight glass lens, and the sight glass retainer.

5. Bolt in place as shown in Fig. 4. To avoid distorting the retainer, use care not to overtighten the bolts.

NOTE

Ensure installation of the four 1/4" copper washers between the bolt heads and the *inside* wall of the sump.

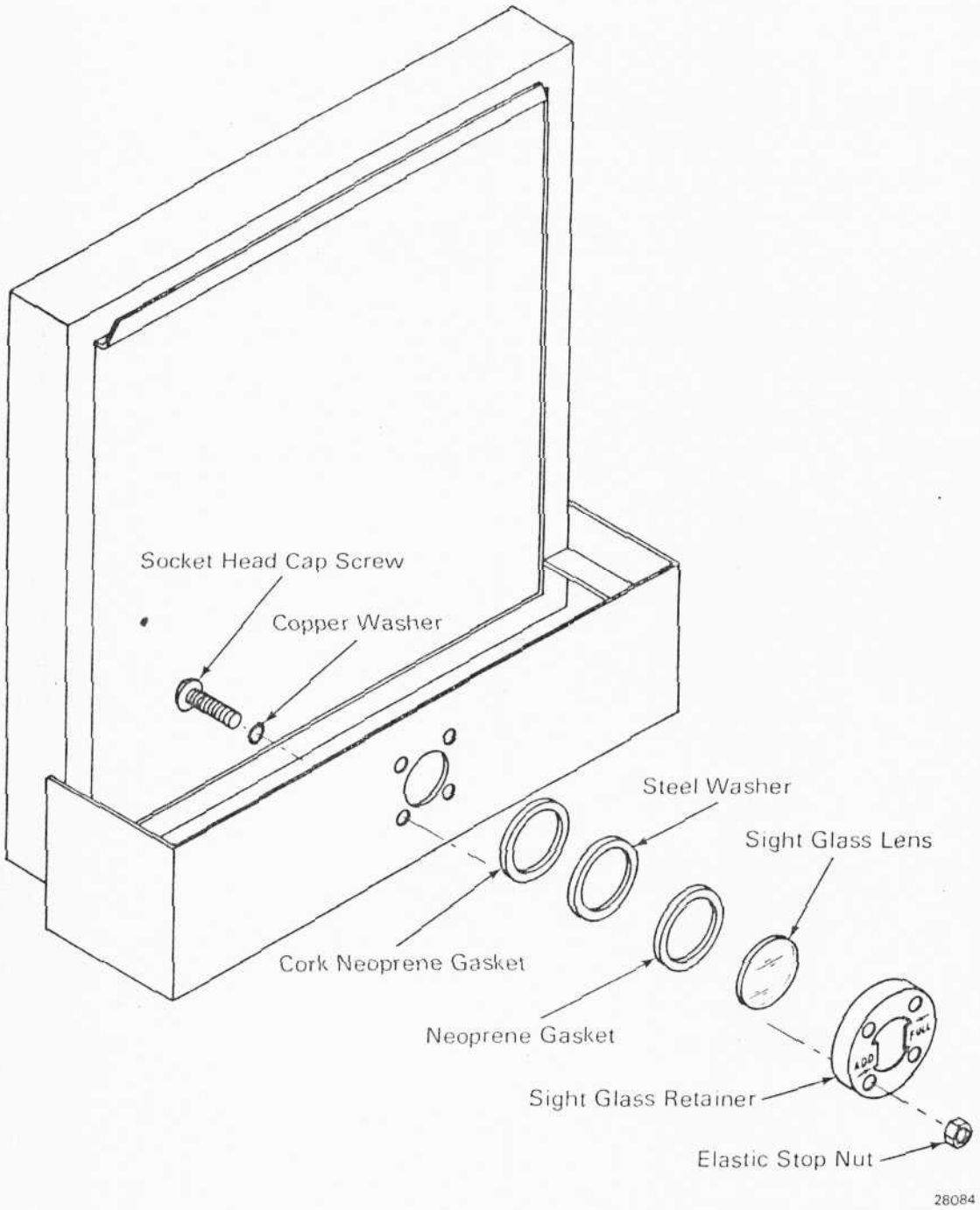


Fig.4 – Sight Glass Modification

SERVICE DATA

SPECIFICATIONS

The following oil is recommended for use in the panel type oil bath air filters at varying ambient temperatures:

FARR FILTER

Temperature		Oil
Below -17.7° C	(Below 0° F)	2/3 SAE #10 + 1/3 Diesel Fuel
-17.7° - +21.1° C	(0° - 70° F)	SAE #10-20
21.1° - 43.3° C	(70° - 110° F)	SAE #20-30
43.3° - 60° C	(110° - 140° F)	SAE #30-40
Over 60° C	(Over 140° F)	SAE #50

AIR MAZE

Above - 12.2° C	(Above 10° F)	SAE #40
Below - 12.2° C	(Below 10° F)	SAE #10-20

The following lists the approximate quantities of oil each size filter holds:

FARR AND AIR MAZE

Filter Size		Oil Quantity
495 mm x 749 mm	(19-1/2" x 29-1/2")	- 7.6 liters (8 qts.) per filter
395 mm x 622 mm	(15-1/2" x 24-1/2")	- 5.7 liters (6 qts.) per filter
495 mm x 864 mm	(19-1/2" x 34")	- 8.5 liters (9 qts.) per filter
495 mm x 622 mm	(19-1/2" x 24-1/2")	- 5.7 liters (6 qts.) per filter
495 mm x 495 mm	(19-1/2" x 19-1/2")	- 5.7 liters (6 qts.) per filter
336 mm x 495 mm	(13-1/4" x 19-1/2")	- 5.7 liters (6 qts.) per filter
394 mm x 749 mm	(15-1/2" x 29-1/2")	- 7.6 liters (8 qts.) per filter

PN 8356190 (8306896)

LEANERS

The following cleaners in general railroad use are recommended:

Fine Organics No. 106
Fine Organics No. 167
Lix No. 300
Takite No. 202
Turco Plandit
Tysol 827 HD
Tysol 196

Dearsol No. 45
Dearsol No. 104
Wyandotte No. 468
Magnus Super N2L
Magnus 1005-B
Magnus 1200
Pennsolt MC79

Sight Glass Modification Kit (Air Maze Filters) . . . . . Part No. 8335415