DESCRIPTION AND MAINTENANCE INSTRUCTIONS

CLEANING & DECONTAMINATION ENGINE OIL SYSTEMS, ACCESSORIES AND METAL OIL TANKS

(This EO replaces EO 05-1-2AX dated 14 Mar 62)

PURPOSE

1 The purpose of this Engineering Order is to establish a procedure to be followed to remove contamination from an aircraft engine oil system. These instructions shall apply to all components and oil lines of the engine oil system.

INTERNAL ENGINE FAILURES

2 Where internal engine failure has occurred cleaning and decontamination of the complete oil system is to be accomplished as follows:

(a) Drain the oil from the complete oil system.

(b) Temperature regulators, diverter-segregator valves, propellor-feathering pump assemblies, propellor governors, distributor valves, oil cooler assemblies, oil temperature regulators, supercharger actuators, fuel injection pumps, fuel master control units (when oil heated boost venturi hanger is installed), and oil pressure transmitter are to be removed, cleaned, suitably tagged, marked "Repairable" and prepared for shipment for overhaul.

NOTE

Should any component within the oil system be suspected of being the cause of the engine failure, it is to be tagged with an L54 in accordance with EO 00-10-1. If the components are being returned for decontamination purposes only they will be tagged with a W5 "Repairable" tag.

(c) Remove external oil scavenge strainer stack assembly, dismantle, clean and inspect mesh elements and re-assemble. Clean and inspect filter housing cover plate and by-pass spring. Re-install stack assembly and check scavenge filter for leaks during engine run up.

NOTE

Component to be returned with engine in accordance with EO 10-1-2A.

(d) All accessory hoses and oil lines are to be dismantled, inspected for trapped foreign material (paying special attention to all quick disconnect fitting) and thoroughly cleaned and flushed with cleaner fluid to Spec. 3-GP-8A RCAF Ref. 33C/182 before re-installation on the aircraft.

(e) All accessory oil lines showing indications of fracture or deterioration are to be replaced.

(f) Removed oil coolers are to be tagged with the following minimum information.

(1) Aircraft registration. Engine serial. Reason for removal and number of hours installed.

NOTE

When preparing oil coolers for shipment, drain off oil and flush with cleaner fluid RCAF Ref. 33C/182, drain, dry and seal all parts. The cores are to be blanked off with suitable plywood coverings to prevent physical damage and prevent foreign matter from entering the cores during handling. It is recommended that the oil cooler and temperature regulating valve are cleaned as soon as possible after removal from the aircraft or the petroleum varnish, tar and carbon compounds in the oil will form a hard coating which is very difficult to remove. Use only recommended cleaning agents as many agents satisfactory for cleaning copper are highly corrosive to aluminum.

CAUTION

Oil coolers of the Clifford type are not to be flushed on removal, but drained of residual oil, blanked off and prepared for shipment.

(g) Hydromatic and counterweight propellers are to be removed, cleaned, sprayed with cleaner fluid RCAF Ref. 33C/182 and given a close visual inspection paying particular attention to the more highly stressed parts. The instructions of EO 15-30AB-2E are to be observed when servicing hydromatic propellers. Extreme care must be exercised while cleaning dome and barrel assemblies to ensure that no particles of foreign material remain, or are inadvertently introduced during re-assembly.

(h) Line surge valves, if installed are to be removed from the aircraft cleaned and re-installed.

(j) Non integral (removable) metal oil tanks are to be removed from the aircraft after an internal engine failure and cleaned as follows:

CAUTION

Diverter-segregator valve are not to be flushed or cleaned with cleaner RCAF Ref. 33C/182 or other solvents. A new or overhauled diverter-segregator valve will be installed at each engine change or when oil contamination is suspected.

(1) Using cleaner fluid RCAF Ref. 33G/182, slush, rock, roll, rotate or spray interior of tank until thoroughly clean, clean the exterior.

(2) Flush inside of tank with water, preferably with water under pressure.

(3) Clean all sections and areas of the tank with steam using a nozzle or hose, steam temperature should not exceed 102.7°C (215°F) and should not be used for periods longer than 30 minutes.

(4) Blow out tank with dry air to remove any steam condensate.

(5) Thoroughly inspect each tank for presence or any residual particles of foreign material and if any are found, repeat the cleaning steps (1) to (4).

(6) Tanks that cannot be thoroughly cleaned by the preceding process are to be placed unserviceable and returned to a Repair Depot for cleaning.

CAUTION

Do not use rags to wipe up residual fluid because of the danger that particles of the material may become detached and remain in the tank.

(k) Integral (non-removable) metal oil tanks are to be cleaned as follows:

(1) Drain contents of tank and remove all connections, inspection doors, flanges, fittings and pumps.

(2) Using cleaner fluid RCAF Ref. 33C/182 under air pressure spray interior of tank thoroughly. Special attention should be paid to all corners and recesses of the tank.

(3) If the engine is installed, disconnect all vent lines from tank to engine and flush with cleaner fluid. Blow out tank thoroughly with dry air.

(4) Inspect tank for foreign material and if such are found repeat cleaning process.

NOTE

The cleaning procedure for contaminated rubber oil tanks shall be accomplished in accordance with EO 05-1-2AY.

CAUTION

When carrying out cleaning operations, every precaution is to be taken against fires. The flash point of Spec. 3-GP-8 RCAF Ref. 33C/182 is 38°C (100°F).

NORMAL ENGINE CHANGE

3 Cleaning procedure at normal engine change shall be carried out as follows:

(a) If contamination is found in engine oil system prior to normal engine change (i.e. contamination which would have been sufficient to warrant an unscheduled removal). Cleaning procedures will be required as outlined in para. 2.

(b) Engine oil system free of contamination at normal engine change will require cleaning as outlined in paras. 2(a), (c), (d), (e), (g), (h), para 3(d) (e) and (f).

(c) Where engine oil systems are found free of contamination at normal engine change, integral and removable tanks shall be cleaned in accordance with para. 2(k), (1), (2), (3), (4).

CAUTION

Diverter-segregator valves shall not be flushed or cleaned with cleaner RCAF Ref. 33C/182 or other solvents. A new or overhauled diverter segregator valve will be installed at each engine change or when oil contamination is suspected.

(d) Oil coolers are to be drained of oil and flushed with cleaner RCAF Ref. 33C/182.

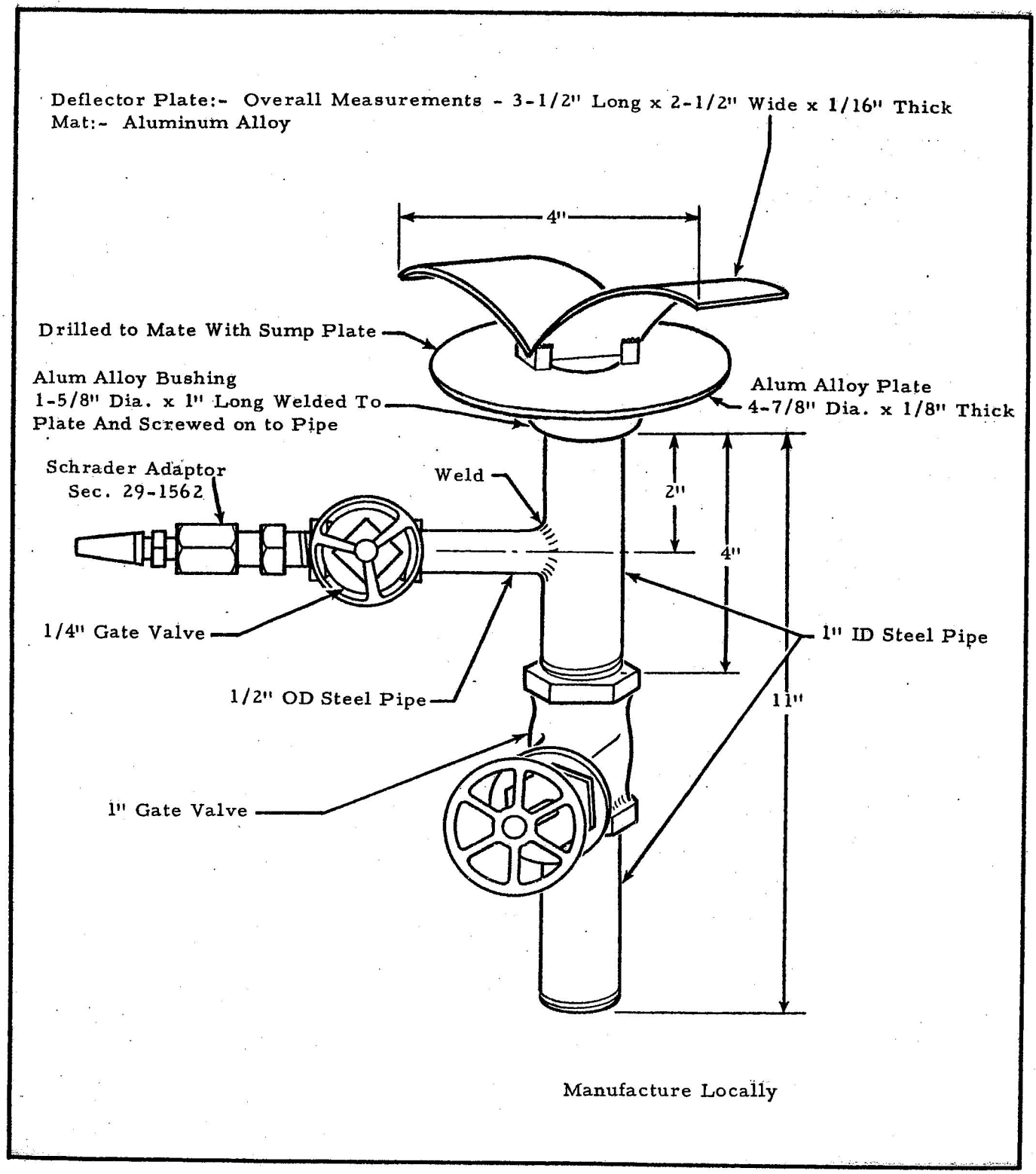
Deflector Plate:- Overall Measurements - 3-1/2" Long x 2-1/2" Wide x 1/16" Thick
Mat:- Aluminum Alloy
4"
Drilled to Mate With Sump Plate
Alum Alloy Bushing
1-5/8" Dia. x 1" Long Welded To
Plate And Screwed on to Pipe
Alum Alloy Plate
4-7/8" Dia. x 1/8" Thick
Schrader Adaptor
Sec. 29-1562
Weld
2"
4"
1/4" Gate Valve
1" ID Steel Pipe
1/2" OD Steel Pipe
11"
1" Gate Valve
Manufacture Locally

Figure 1

CAUTION

Oil coolers of the Clifford type are not to be flushed on removal, but drained of residual oil, blanked off and prepared for shipment.

(e) Propeller governors if not time expired are to be removed, cleaned, flushed with cleaner RCAF Ref. 33C/182.

(f) Propeller feathering pumps are to be drained and flushed with cleaner 33C/182.

INSPECTION FOLLOWING ENGINE CHANGE

4 The oil filters and magnetic drain plugs are to be examined for signs of foreign material after the first test flight following an engine(s) change(s).

CLEANING DURING OIL CHANGE

5 In order to facilitate the cleaning of oil tanks without removing the tank from the aircraft for reasons other than those outlined in paras. 1 to 4 an attachment was designed. See Figure 1 employing the principle of agitation of cleaning fluid RCAF Ref. 33C/182 in the tank.

6 The flushing attachment, see Figure 1, consists of a light alloy flange which is drilled to allow it to be detached to the oil tank by the sump cover plate studs. On the upper side of the flange two deflector plates of similar material are welded across the drain pipe orifice to which is welded a circular internally threaded boss. Into this screwed a 1" internal diameter steel pipe having a 1" gate valve at its lower end and a 1/2" inside diameter steel pipe welded into position at right angles over a 1/2" diameter hole drilled mid-way between the adaptor flange boss and the gate valve to which is fitted a standard schrader adapter for connecting the air pressure supply to the attachment. The method of operation is as follows:-

(a) Open tank filter cap and drain tank, disconnect tank from engine and oil cooler, blank off pipes.

(b) Remove sump cover plate and gasket.

(c) Bolt flushing attachment and gasket into position and close both gate valves.

(d) Partially fill tank with cleaner fluid RCAF Ref. 33C/182 (1/2 to 2/3).

(e) Connect air hose to adaptor, ensure tank is vented to atmosphere and open 1/4" gate valve (allow to flush 30 minutes to one hour).

(f) Close 1/4" gate valve and remove air hose.

(g) Drain tank by opening 1" gate valve, allow to drain, inspect tank.

(h) Replace gasket and sump cover plate and lock. Fill tank.

NOTE

This method of cleaning oil tanks is not recommended for large tanks having heavy baffling.

ISSUED ON AUTHORITY OF THE CHIEF OF THE AIR STAFF

Prepared By:
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