OIL — ENGINE OIL TANK — MODIFIED OIL TANK OUTLET/BALANCE PIPE (MOD N763 AND N764)

1. PLANNING INFORMATION

A. Effectivity

(1) Aircraft affected:

(a) **N22 Series** line sequence numbers 1 to 9, 11 to 29, 31, 33, 35, 37, 39 to 41, 43, 45, 47 to 59, 61, 63, 65 to 70, 82 to 88, 90 to 95, 97, 100, 102 to 114, 116, 118, 125, 126, 131 to 134, 137, 138, 141, 143 to 170.

(b) **N24 Series** line sequence numbers 10, 30, 32, 34, 36, 38, 42, 44, 46, 60, 62, 64, 71 to 81, 89, 96, 98, 99, 101, 115, 117, 119 to 124, 127 to 130, 135, 136, 139, 140, 142.

(2) Spares affected:

None

B. Reason

The current engine oil tank balance pipe arrangement permits the entrainment of air into the engine inlet connection if the balance pipe connection is not covered by engine oil. **Mod N763** isolates the balance pipe from the tank outlet ensuring an air-free supply to the engine. **Mod N764** provides for those aircraft fitted with CO G240 (or G240-24), oil shut-off cock.

C. Description

Mod N763 requires the engine oil tank to be removed for rework to fit the new balance pipe connection. Associated with this, a number of new parts are introduced and result in changes to the routing of the hose to the engine inlet. This may require the rotation of the tachogenerator and repositioning of the oil pressure transmitter in some aircraft.

This modification increases the effective or useable oil tank capacity and therefore reduces the chance of an in-flight engine shutdown in the event of engine oil leakage or excessive oil consumption, and is potentially beneficial to engine life.

Mod N764 removes and blanks the old balance pipe connection on the oil shut-off cock (CO G240, or G240-24) when Mod N763 is fitted.

D. Compliance

The compliance requirements of this Service Bulletin are at the operators discretion but are strongly recommended for long duration flight operations.

E. Approval

The requirement detailed herein has been approved by a person authorised under Civil Aviation Regulation 35 and conforms to the type certification requirements.

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F. **Manpower**

Part 1 – 35 man hours.

Part 2 – 35 man hours.

G. **Materials, Price and Availability**

On request from Nomad Customer Support – Boeing Aerospace Support – ASTA.

H. **Tooling, Price and Availability**

None required.

I. **Weight and Balance**

Negligible effect on weight and balance.

J. **References**

Maintenance Manual	Chap 79-00-00, Chap 79-10-00, Chap 79-30-00
Illustrated Parts Catalogue	Chap 79-00-00, Chap 79-10-00, Chap 79-30-00
CO G240 or G240-24	Maintenance Practices, IPC

K. **Publications Affected**

Maintenance Manual

Illustrated Parts Catalogue

2. **ACCOMPLISHMENT INSTRUCTIONS**

A. **Part 1 - Aircraft without CO G240 (or G240-24)**

WARNING

INCORPORATION OF THESE INSTRUCTIONS REQUIRES WORKING IN THE VICINITY OF THE PROPELLERS. ENSURE THAT THE AIRCRAFT ELECTRICAL POWER SUPPLIES (BATTERY AND/OR EXTERNAL) ARE DISCONNECTED.

(1) Remove oil tank (Ref MM Chap 79-10-00 Para 1.A.).

(2) Remove from the tank and discard any remaining balance pipe fittings (Ref IPC Chap 79-10-00, items 1A to 9).

(3) Rework oil tank as follows:

(a) Blank off the open ports of the oil tank and partially fill with clean kerosene. Agitate the oil tank vigorously and drain.

(b) Allow the kerosene liquid and vapour to disperse.

(c) Cut, drill or machine one 11/16 in diameter hole and four 5.00 mm diameter holes as shown on Figure 1. Break sharp edges.

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(d) Blank off the open ports of the oil tank and partially fill with clean kerosene. Agitate the oil tank vigorously and drain.

(e) Repeat (d) until no evidence of swarf or other contamination is found.

(f) Flush the oil tank with turbine oil (Mil-L-23699) to remove residual kerosene and drain.

(4) Lubricate pre-formed packing (NAS617-10) sparingly with turbine oil (MIL-L-23699) and fit to straight adaptor (1/N-50-602) with special gasket (1/N-50-437). Ensure chamfer faces the flange of the adaptor.

(5) Together with swivel retaining flange (1/N-50-605) screw into tank RH boss (Ref Fig 2) and torque tighten to between 110 and 130 lb in.

(6) Lubricate pre-formed packing (M83248/1-118) sparingly with turbine oil and fit into the groove of the straight adaptor flange.

(7) Attach elbow fitting (1/N-50-604) to the the straight adaptor and swivel retaining flange with screws (NAS1351C3H8), hand tightened.

(8) Apply a light coating of turbine oil to the two circular grooves in the retaining flange assembly (1/N-50-609) and to the two pre-formed packing rings (M83248/1-020 and -030). Fit pre-formed packing rings into the grooves of the retaining flange (Ref Fig 2).

(9) Carefully insert into the tank through the oil filler aperture, and line up the four screws to pass through the corresponding holes in the LH bottom floor of the tank.

(10) Lubricate pre-formed packing (M83248/1-020) sparingly with turbine oil and fit to the the circular groove in the elbow assembly (1/N-50-611). Attach the elbow assembly to the four protruding screws with four nuts (MS21043-3) in the approximate position for accepting the balance pipe (1/N-50-623). Do not tighten at this stage.

(11) Assemble locking nut (AN924-10J) and bracket (1/N-50-622) on oil outlet/temp sensor adaptor (1/N-50-601) until upper face of bracket lines up with lower corner of seal groove in oil outlet/temp sensor adaptor.

(12) Lubricate pre-formed packing (MS29561-116) sparingly with turbine oil and place in groove with gasket (1/N-50-437), with the chamfer facing the pre-formed packing. Screw oil outlet/temp sensor adaptor into the boss of the oil tank until bracket and gasket contacts the boss; hand tighten the locking nut.

(13) Slacken locknut (AN924-8C) and reorientate the inlet spout assembly (1/N-50-234) so that the spout is at 30° to the left of top vertical when looking forward. Torque tighten locknut to between 90 and 110 lb in.

(14) Reinstall tank (Ref MM Chap 79-10-00, Para 1.B.(1) to (8)).

(15) Lubricate pre-formed packing (M83248/1-116) sparingly with turbine oil and fit on to the ferrule on pipe assembly (1/N-50-623).

(16) Fit pipe assembly into elbow fitting (1/N-50-604) and onto elbow assembly (1/N-50-611) and orient elbows for best fit. Hand tighten nuts (MS21043-3) and screws (NAS1351C3H8).

(17) Before finally torque tightening the locking nut on the oil outlet/temp sensor adaptor:

(a) Orient position of oil outlet/temp sensor adaptor by turning in to boss 3/4 turn or turning out 1/4 turn.

(b) Orient bracket by fitting the clamp (MS21919-CH-12) to the pipe assembly and secure with bolt (NAS6603-1), washer (NAS1149F0363P) and nut (MS21043-3).

(18) Torque tighten the locking nut (AN924-10J) to between 110 and 130 lb in; the balance pipe coupling nut onto the elbow fitting to between 150 and 180 lb in, and all other nuts and screws to between 25 and 30 lb in.

(19) Screw the oil temperature bulb complete with gasket (MS35769-8) into the oil outlet/temp sensor adaptor (Ref Fig 5) and torque tighten to between 80 and 100 lb in.

(20) Reposition the N1 tachogenerator and reorientate the oil scavenge hose (engine accessory gearbox to oil cooler) to the position shown in Figure 4. When refitting the tachogenerator in its new position, discard the existing gasket and fit a new gasket (MS9134-01). Torque tighten the tachogenerator attaching nuts to between 50 and 70 lb in.

NOTE

The repositioning of the N1 tachogenerator is necessary to provide clearance for the fitting of the oil inlet hose assembly and 45° flared elbow to the engine accessory gearbox. The reorientation of the oil scavenge hose becomes necessary to provide clearance between the hose and the N1 tachogenerator in its new position.

(21) Connect the angled end of the oil hose assembly to the oil outlet/temp sensor adaptor oil outlet port (Ref Fig 5). Torque tighten to between 200 and 350 lb in.

(22) Reconnect the electrical connector to the oil temperature bulb.

(23) Fill oil tank (Ref MM Chap 12) and check all pipe connections for leaks.

(24) Install lower front fairing (Ref MM Chap 71-10-00) ensuring fairing does not foul oil tank or balance pipe. Adjust tank position or locally relieve fibreglass inner surface of fairing in the vicinity of the balance pipe if required. Seal and finish re-worked area as per SRM Chap 51-20-00, Para 3.A.(8).

(25) Install upper front fairing (Ref MM Chap 71-10-00) ensuring oil tank does not foul fairing.

(26) Close and secure upper and lower cowls (Ref MM Chap 71-10-00).

(27) Check that ENGINE ANTI-ICE lever in the flight compartment moves freely from OFF to ON. Set lever to OFF.

(28) Repeat steps 2.A.(1) to (27) for other engine.

(29) Carry out a ground engine run (Ref MM Chap 71-00-00).

(30) Check oil quantity immediately after engine shutdown (before oil has had time to drain into gearbox), and replenish as required.

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B. **Part 2 - Aircraft with CO G240 (or G240-24)**

WARNING

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(1) Remove oil tank (Ref MM Chap 79-10-00, Para 1.A.).

NOTE

It will be necessary to disconnect the control cable from the oil shut-off cock.

(2) Remove from the tank and discard any remaining balance pipe fittings. (Ref N22 and N24 Option G240/G240-24 IPC items 77 to 85).

(3) Remove oil shut-off cock (1/N-50-432).

(4) Rework tank as per Paras 2.A.(3) to (10).

(5) Rework oil shut-off cock as follows:

(a) Remove lockwire from screws holding oil shut-off cock end cover/inlet PN 1/N-50-435, and remove screws.

(b) Remove and discard end cover and pre-formed packing (O-ring).

(c) Lubricate new pre-formed packing, MS29561-023 with turbine oil (Mil-L-23699), fit to new end cover PN 1/N-50-603 and assemble to oil shut-off cock with screws from (a) above (Ref Fig 3). Lockwire with MS20995-NC3.

(d) Re-identify oil shut-off cock as PN 3/N-50-432F/M (F/M denotes field modified).

(6) Assemble locking nut (AN924-10J) and bracket (1/N-50-622) on oil shut-off cock until upper face of bracket lines up with lower corner of seal groove in oil shut-off cock.

(7) Lubricate pre-formed packing (MS29561-116) sparingly with turbine oil and place in groove with gasket (1/N-50-437), with the chamfer facing the pre-formed packing. Screw oil shut-off cock into the boss of the oil tank until bracket and gasket contacts the boss; hand tighten the locking nut.

(8) Slacken locknut (AN924-8C) and reorientate the inlet spout assembly (1/N-50-234) so that the spout is at 30° to the left of top vertical when looking forward. Torque tighten locknut to between 90 and 110 lb in.

(9) Reinstall tank (Ref MM Chap 79-10-00 Para 1.B.(1) to (8)).

(10) Lubricate pre-formed packing (M83248/1-116) sparingly with turbine oil and fit on to the ferrule on pipe assembly (1/N-50-623). Fit pipe assembly into elbow fitting (1/N-50-604) and onto elbow assembly (1/N-50-611) and orient elbows for best fit. Hand tighten nuts (MS21043-3) and screws (NAS1351C3H8).

(11) Before finally torque tightening the locking nut on the oil shut-off cock:

(a) Orient position of oil shut-off cock by turning in to boss 3/4 turn or turning out 1/4 turn.

(b) Orient bracket by fitting the clamp (MS21919-CH-12) to the pipe assembly and secure with bolt (NAS6603-1), washer (NAS1149F0363P) and nut (MS21043-3).

(12) Torque tighten the locking nut to between 110 and 130 lb in; the balance pipe coupling nut onto the elbow fitting to between 150 and 180 lb in, and all other nuts and screws to between 25 and 30 lb in.

(13) Connect the angled end of the oil hose assembly to the oil outlet/temp sensor adaptor oil outlet port (Ref Fig 5). Torque tighten to between 200 and 350 lb in.

(14) Reconnect the electrical connector to the oil temperature bulb.

(15) Set the oil shut-off cock lever and the associated oil shut-off control lever on the overhead console to OFF. Connect the flexible control cable rod end to the oil shut-off cock lever. Check control operates freely, and set to ON.

(16) Fill oil tank (Ref MM Chap 12) and check all pipe connections for leaks.

(17) Install lower front fairing (Ref MM Chap 71-10-00) ensuring fairing does not foul oil tank or balance pipe. Adjust tank position or locally relieve fibreglass inner surface of fairing in the vicinity of the balance pipe if required. Seal and finish re-worked area as per SRM Chap 51-20-00, Para 3.A.(8).

(18) Install upper front fairing (Ref MM Chap 71-10-00) ensuring oil tank does not foul fairing.

(19) Close and secure upper and lower cowls (Ref MM Chap 71-10-00).

(20) Check that ENGINE ANTI-ICE lever in the flight compartment moves freely from OFF to ON. Set lever to OFF.

(21) Repeat steps 2.B.(1) to (20) for other engine.

(22) Carry out a ground engine run (Ref MM Chap 71-00-00).

(23) Check oil quantity immediately after engine shutdown (before oil has had time to drain into gearbox), and replenish as required.

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3. **MATERIALS INFORMATION**

A. **Parts Required per Aircraft**

(1) For Part 1 and Part 2 (except as noted)

New Parts				
Part No	Qty	Description	Old Part No	Instruction/Disposition
1/N-50-437	4	Gasket, Special		
1/N-50-601	2	Oil Outlet/Temp Sensor Adaptor		Required for Part 1 only
1/N-50-602	2	Straight Adaptor		
1/N-50-603	2	Oil Cock End Cover		Required for Part 2 only
1/N-50-604	2	Fitting-Elbow		
1/N-50-605	2	Flange-Swivel-Retaining		
1/N-50-609	2	Flange Assy-Retaining		
1/N-50-622	2	Bracket		
1/N-50-623	2	Balance Pipe		
AN924-10J	2	Nut		Required for Part 1 only
AN924-10K or 10S	2	Nut, Alt		Required for Part 1 only
M83248/1-116	2	Packing-Pre-formed		
2-116V747-75	2	Packing-Pre-formed, Alt (02697)		
M83248/1-118	2	Packing-Pre-formed		
2-118V747-75	2	Packing-Pre-formed, Alt (02697)		
M83248/1-020	4	Packing-Pre-formed		
2-020V747-75	4	Packing-Pre-formed, Alt (02697)		
M83248/1-030	2	Packing-Pre-formed		
2-030V747-75	2	Packing-Pre-formed, Alt (02697)		
MS20995NC32	A/R	Lockwire		
MS21043-3	10	Nut		
MS21919-CH-12	2	Clamp		
MS29561-023	2	Packing-Pre-formed		Required for Part 2 only
M83248/1-023	2	Packing-Pre-formed, Alt		Required for Part 2 only
2-023V747-75	2	Packing-Pre-formed, Alt (02697)		Required for Part 2 only
MS29561-116	2	Packing-Pre-formed		
M83248/1-116	2	Packing-Pre-formed, Alt		
2-116V747-75	2	Packing-Pre-formed, Alt (02697)		
NAS1149F0363P	2	Washer		
NAS1351C3H8	8	Screw, Cap, Socket Head		
NAS6603-1	2	Bolt		

(2) Parts not required for Part 1

Parts removed				
Part No	Qty	Description	Old Part No	Instruction/Disposition
1/N-50-85	2	Pipe Assy (Balance)		Discard
1/N-50-87	2	Elbow, Universal		Discard
1/N-50-88	2	Elbow-Tee-Universal		Discard
1/N-50-91	2	Bolt		Discard
1/N-50-92	2	Bolt		Discard
AN901-10A	8	Gasket		Discard
MS24391-J6	2	Drain Plug		Discard
MS29561-114	4	Packing-Pre-formed		Discard
NAS617-6	2	Packing-Pre-formed		Discard

(3) Parts not required for Part 2

Parts removed				
Part No	Qty	Description	Old Part No	Instruction/Disposition
1/N-50-87	2	Elbow, Universal		Discard
1/N-50-92	2	Bolt		Discard
1/N-50-435	2	End Cover		Discard
1/N-50-437	2	Gasket, Special		Discard
1/N-50-439	2	Pipe Assembly		Discard
AN901-10A	4	Gasket		Discard
MS24391-J6	2	Drain Plug		Discard
MS29561-114	4	Packing-Pre-formed		Discard
NAS617-6	2	Packing-Pre-formed		Discard
NAS617-10	2	Packing-Pre-formed		Discard

B. **Materials Required for Corrosion and Protection Treatments**

None

4. **SPECIAL TOOLS AND EQUIPMENT**

None required

5. **RECORDING ACTION**

Record compliance with Service Bulletin NMD-79-8 in the Airframe Log Book.

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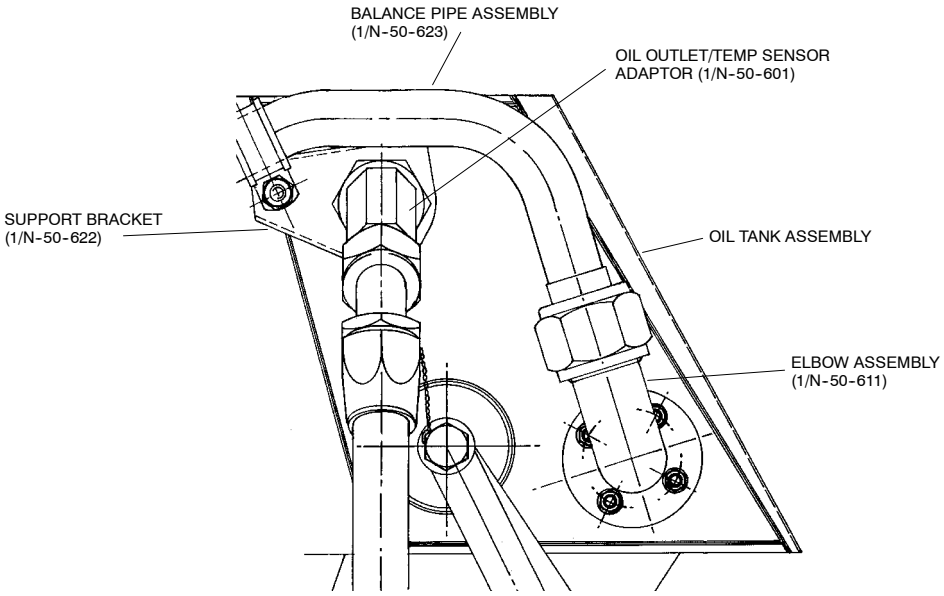

View on LH Bottom Plate of Oil Tank

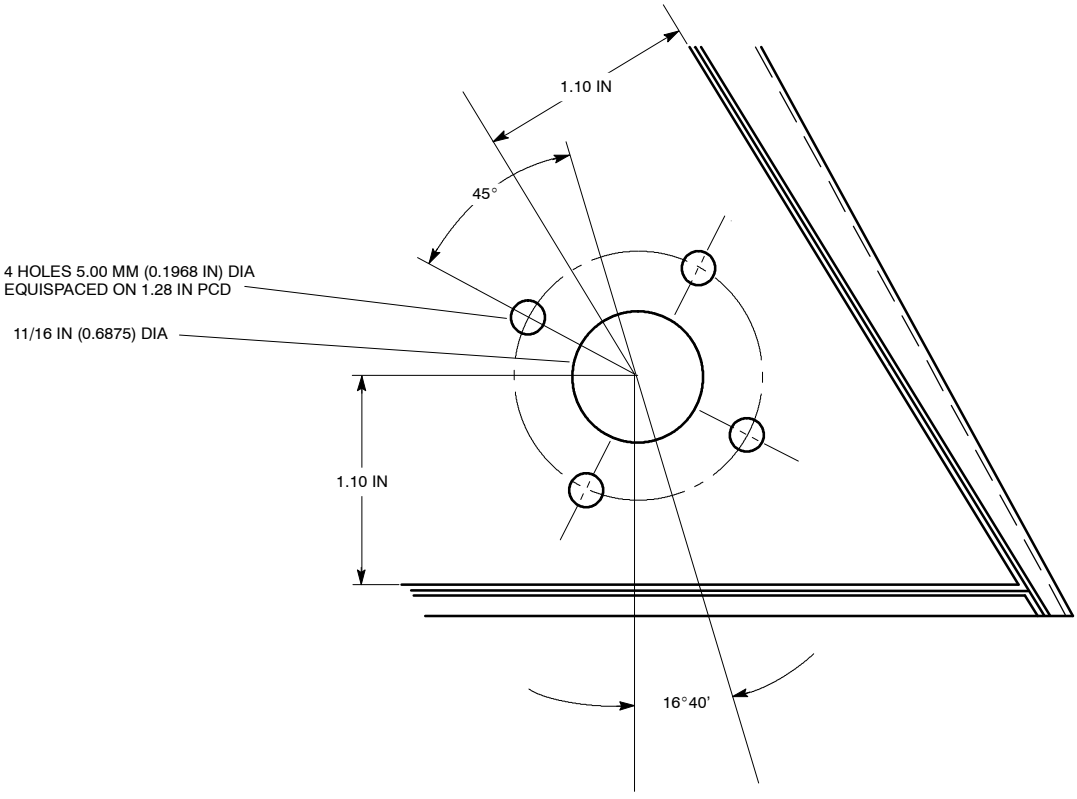

Figure 1 Detail of Rework to LH Bottom Plate of Oil Tank

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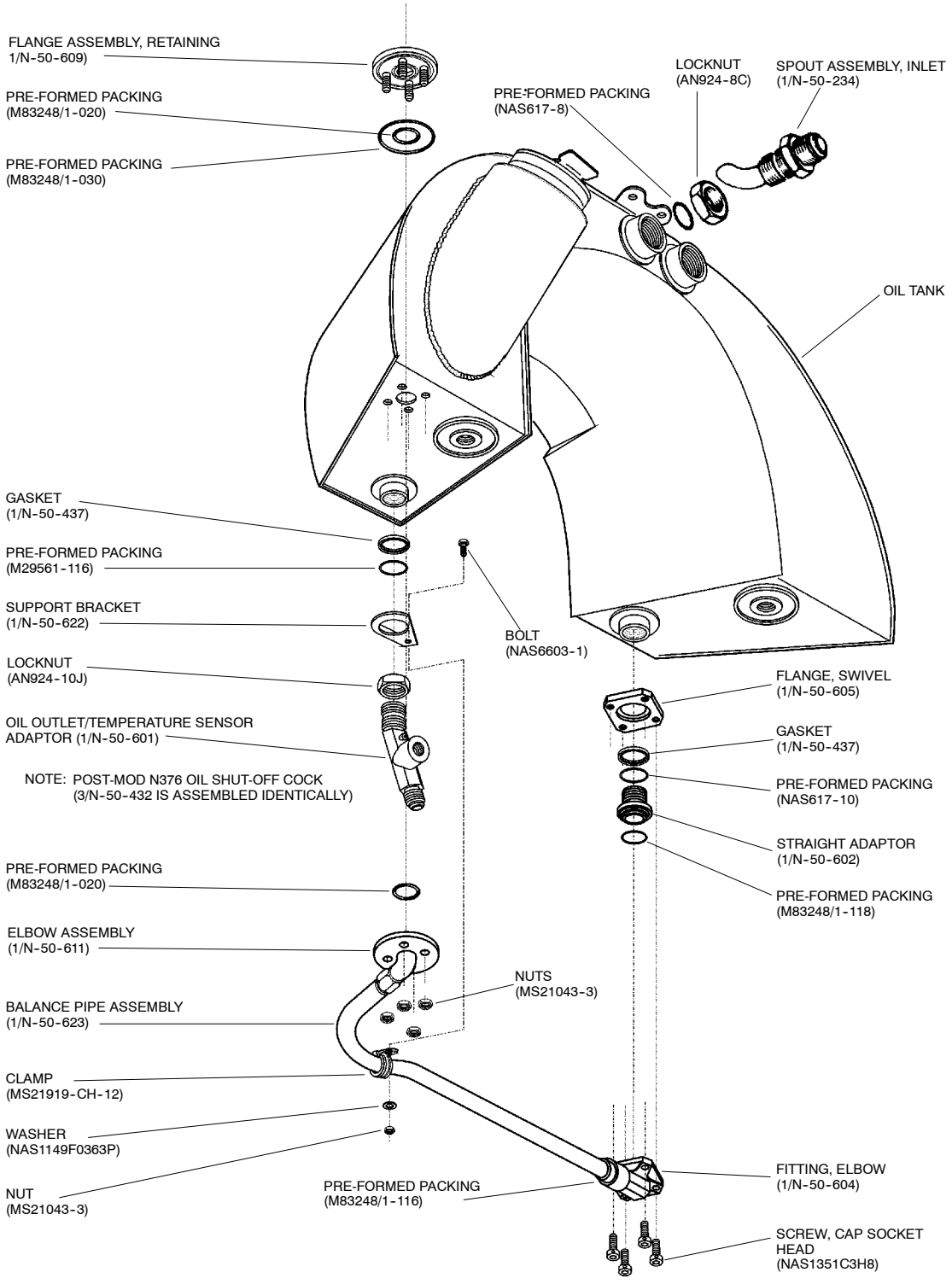

Figure 2 Assembly of Balance Pipe (Mod N763)

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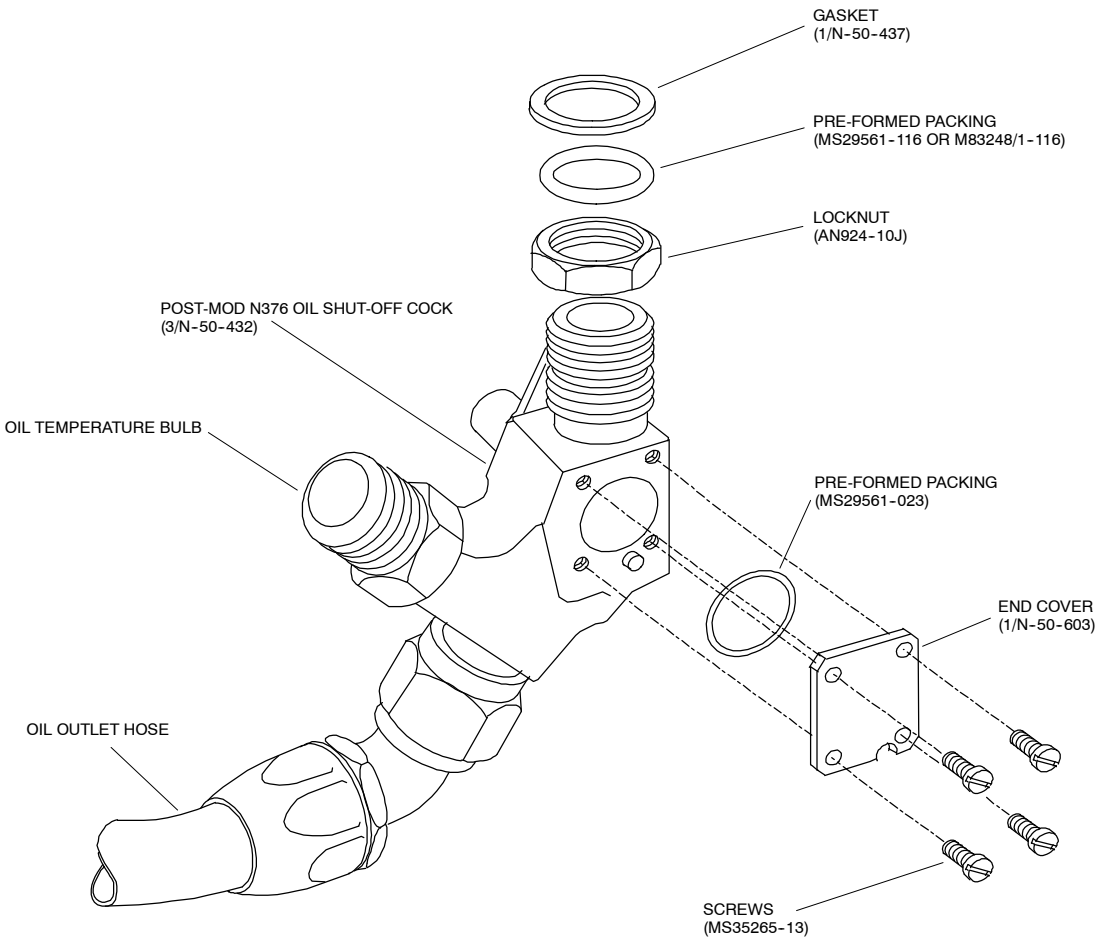

Figure 3 Oil Shut-off Cock with Mod N764 (3/N-50-432F/M)

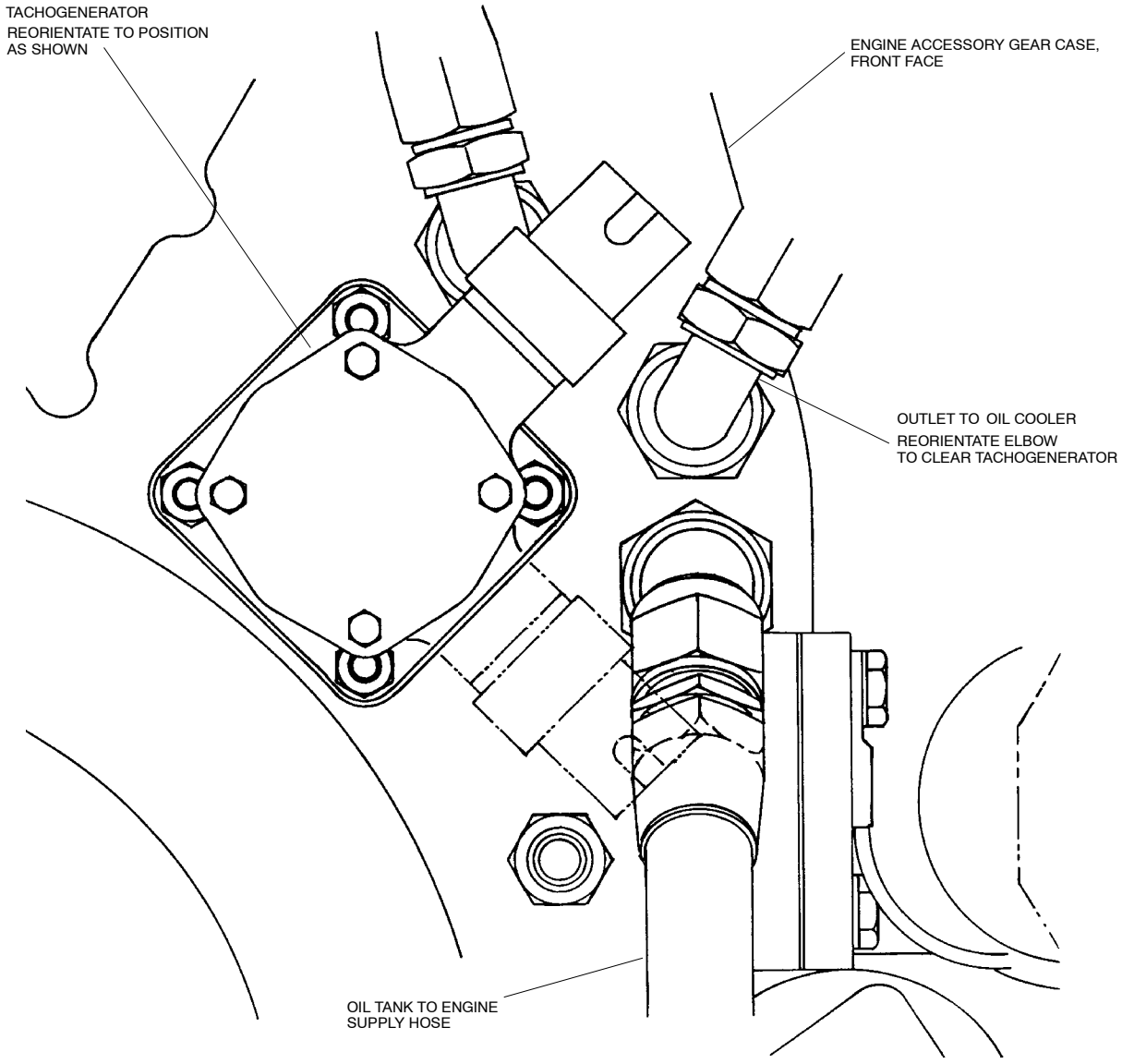

Figure 4 Repositioning of Tachogenerator

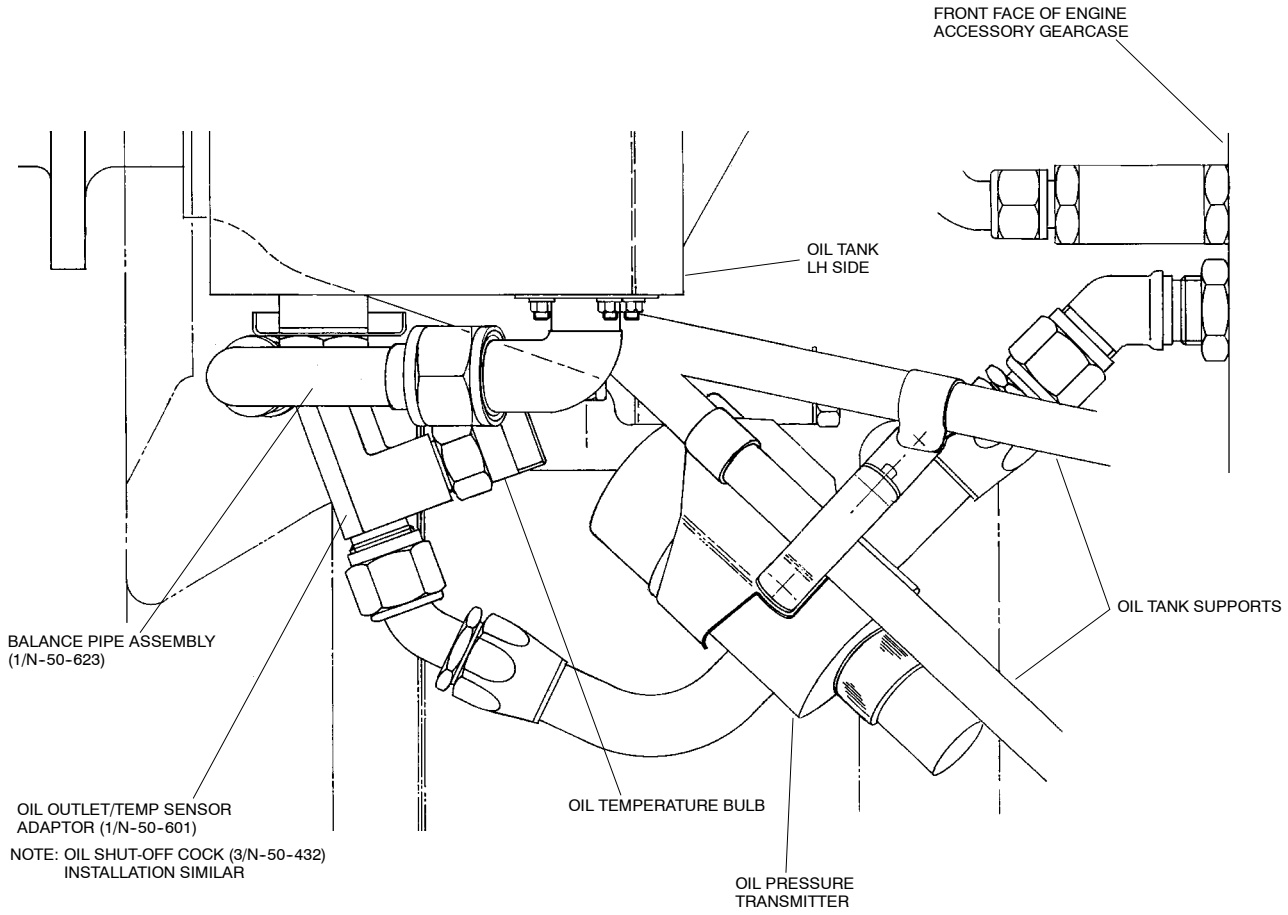

Figure 5 General relationship of parts

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