CHAPTER

12

SERVICING

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CHAPTER 12 - SERVICING
LIST OF EFFECTIVE PAGES

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CHAPTER 12 - SERVICING
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SERVICING

1. General

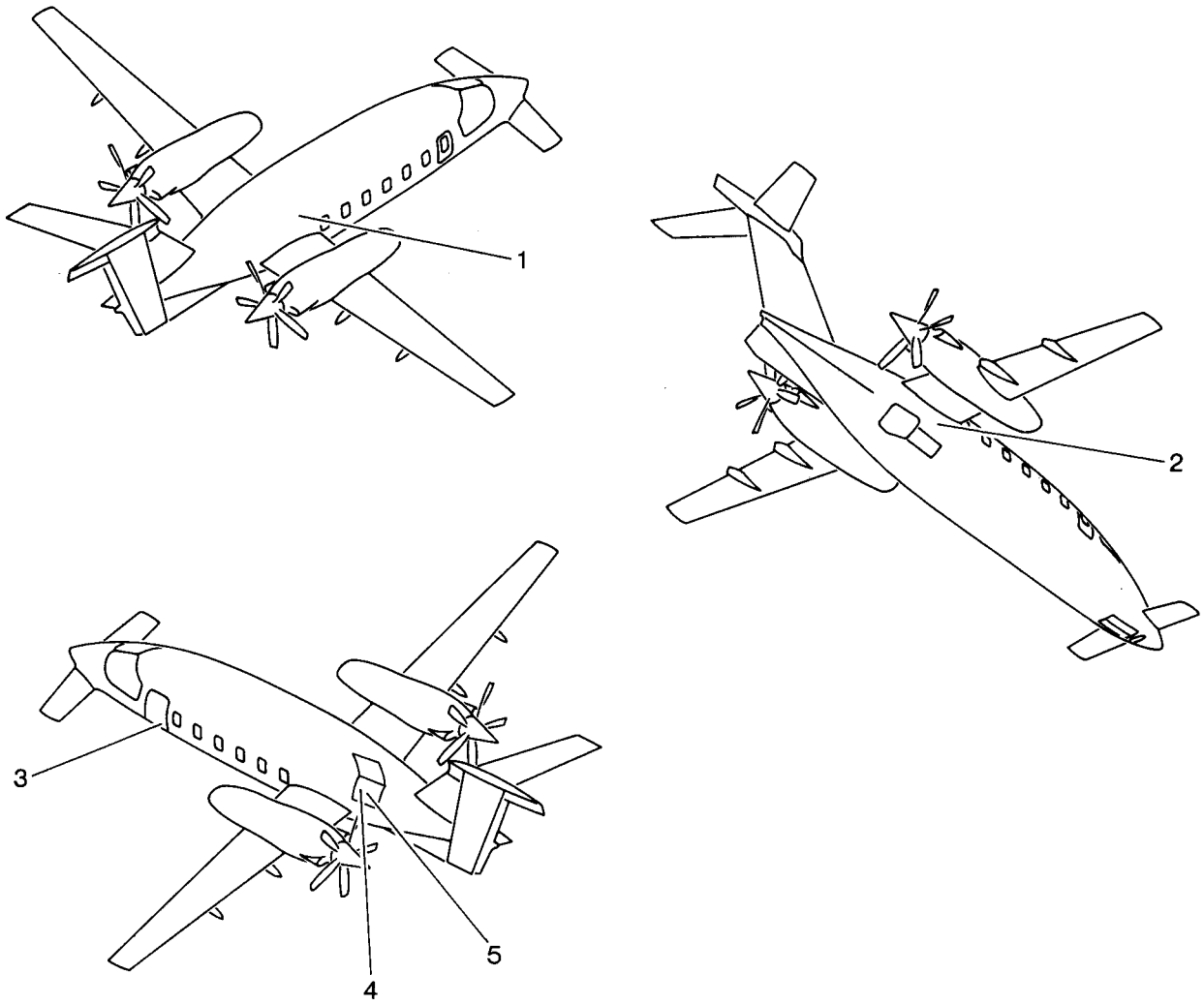
A. This chapter consists of the procedure necessary to locate and service systems and components on the airplane. The major service points, located on the airplane, are shown in Fig. 301. The information in the following sections pertains to general maintenance procedures. Detailed information on the engines or their systems will be found in the engine maintenance manual or in the chapter in this manual devoted to the system being serviced. The Chapter 12 includes the following procedures:

(1) 12-10-01 Hydraulic Package - Servicing
(2) 12-10-02 NLG Shock Strut - Servicing
(3) 12-10-03 MLG Shock Strut - Servicing
(4) 12-10-04 Tires - Servicing
(5) 12-10-06 Oxygen System - Servicing
(6) 12-10-07 Fuel System - Servicing
(7) 12-10-08 Engine Oil System - Servicing
(8) 12-20-00 Scheduled Servicing
(9) 12-30-30 Airplane De-Icing and Anti-Icing - Maintenance Practices
(10) 12-30-31 Airplane Cold Weather Operations.

Usable Fuel Tank Capacities

	LH		RH		Total	
	(US Gal)	(l)	(US Gal)	(l)	(US Gal)	(l)
Wing Tank	109.3	413.75	109.3	413.75	218.6	827.5
Fuselage Integral Tank	61.8	234	61.8	234	123.6	468
Collector Tank	19.55	71.5	19.55	71.5	39.1	148
Auxiliary Tank	5.6	21.25	5.6	21.25	11.2	42.5
					392.5	1486

Hydraulic Package Capacity 0.58 to 0.61 (US Gal) 2.2 to 2.3 (l)



1 Gravity Refueling

2 Pressure Refueling

3 Oxygen Filling

4 Hydraulic Fluid Filling

5 ACM Servicing

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Fig. 301 - Airplane Major Servicing Points

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SCHEDULED - SERVICING

1. General

This part consists of the procedures necessary to carry out servicing that may be scheduled. It includes instructions such as those for periodic lubrication of components, internal and external airplane cleaning etc. It doesn't include lubrication procedures required for the accomplishment of maintenance practices. The Section 12-10-00 includes the following procedures:

(1) 12-21-01 Landing Gear Lubrication - Servicing
(2) 12-22-00 Battery - Servicing
(3) 12-23-00 ELT - Servicing
(4) 12-24-00 Cleaning - Maintenance Practices
(5) 12-24-01 Interior Cleaning - Maintenance Practices
(6) 12-24-02 Exterior Cleaning - Maintenance Practices
(7) 12-24-03 Propeller Blades Cleaning - Maintenance Practices
(8) 12-25-00 Water/Waste - Servicing

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HYDRAULIC PACKAGE - SERVICING

1. Hydraulic Package Servicing

A. Fixtures, Test, Materials and Support Equipment

Nomenclature	Part Number	Manufacturer
Wing Lifting Jacks	02-7812-0100	Tronair
Fuselage Lifting Jack	02-0517-0132	Tronair
Wing Jack Pads	80-909101	Piaggio
Fuselage Jack Pad	80-909157	Piaggio
Hydraulic Fluid	MIL-H-5606 (Latest Revision)	
Funnel or	Not specified	
Servicing Unit	Not specified	
Pressure Air Unit	Not specified	

B. Referenced Information

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 07-10-00
Maintenance Manual Chapter 29-00-00
Maintenance Manual Chapter 91-00-00

C. Draining Procedure (Ref. to Fig. 301)

(1) Disconnect the hand pump suction line on hydraulic package.
(2) Fit to this port the draining tubing, drain hydraulic fluid in a suitable container.
(3) At the end of the drain operation, reconnect the hand pump line.

D. Ground Pressurization (Ref. to Fig. 302)

(1) Open the baggage door N° 840.
(2) Open the hydraulic package filling cap door (Unscrew the Dzus fastener).
(3) Unscrew the ground pressurization fitting cap.
(4) Connect the pressurizing tubing to the fitting, with pressure air at 30 to 40 Psig (207 to 276 kPa) (Ref. to Chapter 29).
(5) Switch on the electrical power to the hydraulic package.
(6) Perform the required maintenance operation.
(7) Switch off the electrical power.
(8) Disconnect the pressurizing tubing.
(9) Screw the ground pressurizing fitting cap.
(10) Close the hydraulic package filling cap door (Screw the Dzus fastener).
(11) Close the baggage door N° 840.

E. Filling Procedure (Ref. to Figs. 302, 303)

NOTE: Be care that no hydraulic fluid drops fall on baggage compartment carpet.

(1) Remove the inspection panel N° 251B.
(2) Cut filling valve cap lockwire, located in left MLG bay.
(3) Open the over-filling valve.
(4) Open the baggage door N° 840.
(5) Open the hydraulic package filling cap door (Unscrew the Dzus fastener).
(6) Unscrew the cap, which covers the integral funnel.
(7) Fill the hydraulic fluid (Ref. to Chapter 29).
(8) Screw the cap.
(9) Close the hydraulic package filling cap door (Screw the Dzus fastener).
(10) Lockwire filling valve cap.
(11) Close the baggage door.
(12) Close the inspection panel 251B.

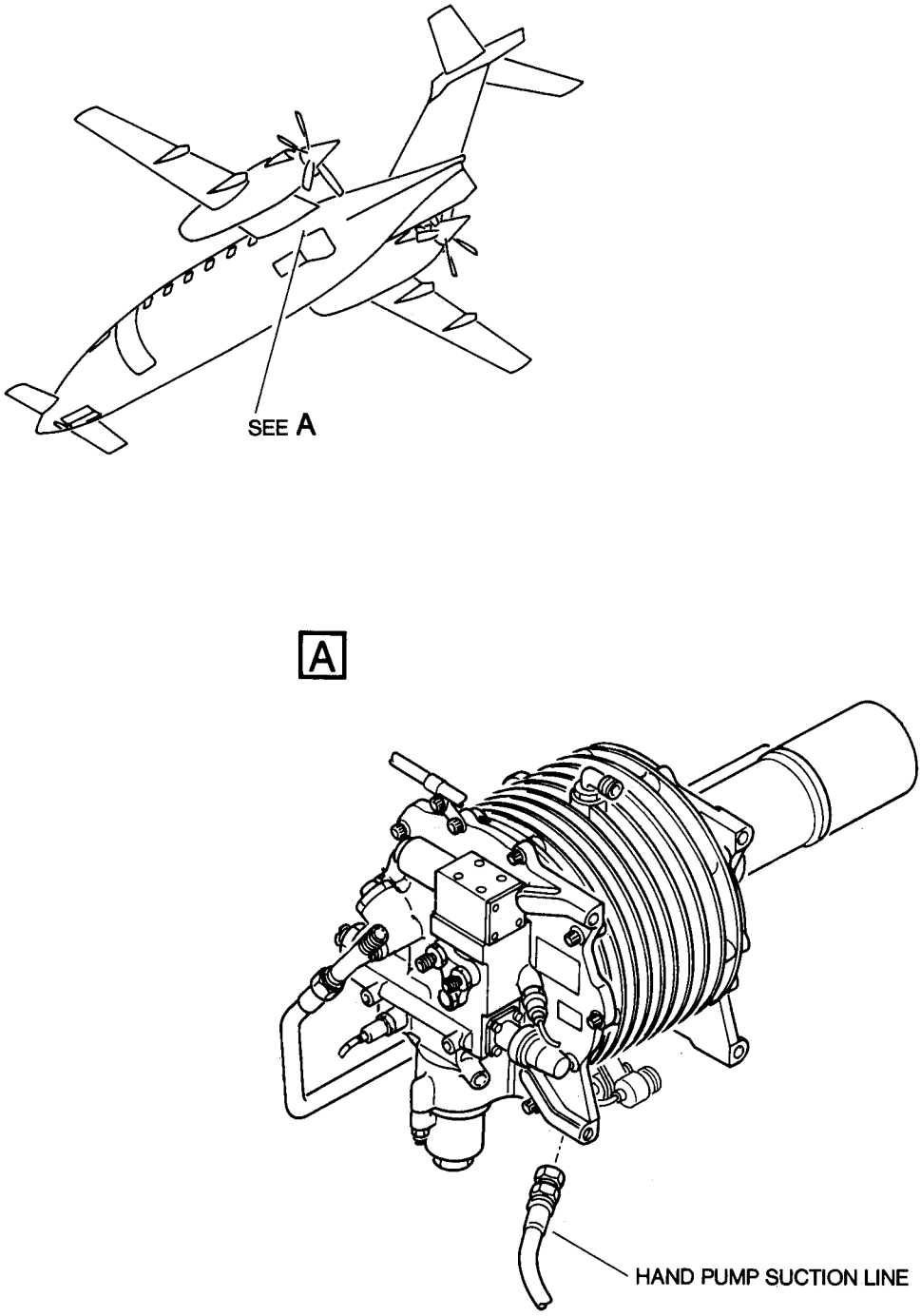

Fig. 301 - Hydraulic Package - Draining

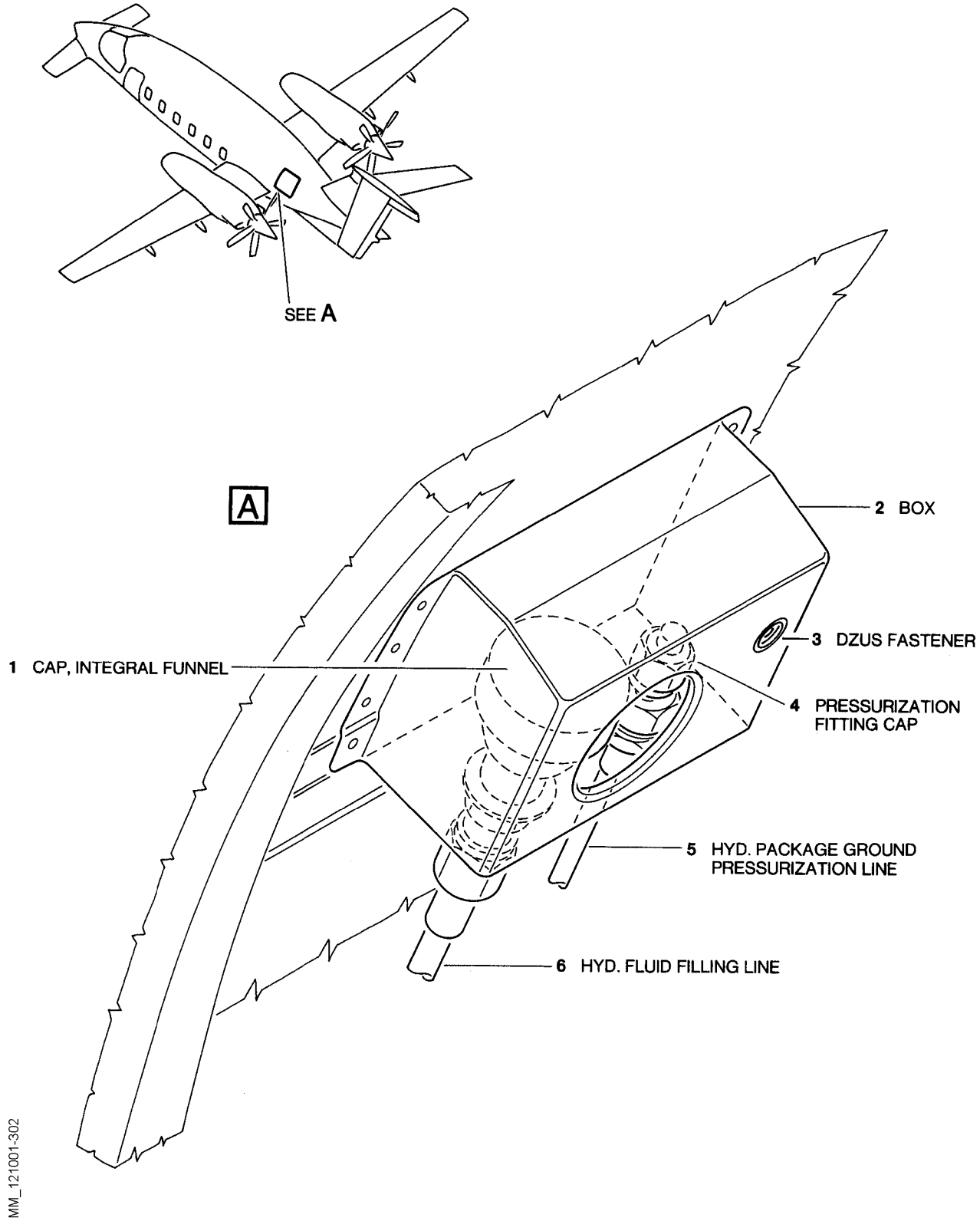

Fig. 302 - Hydraulic Package - Ground Pressurization

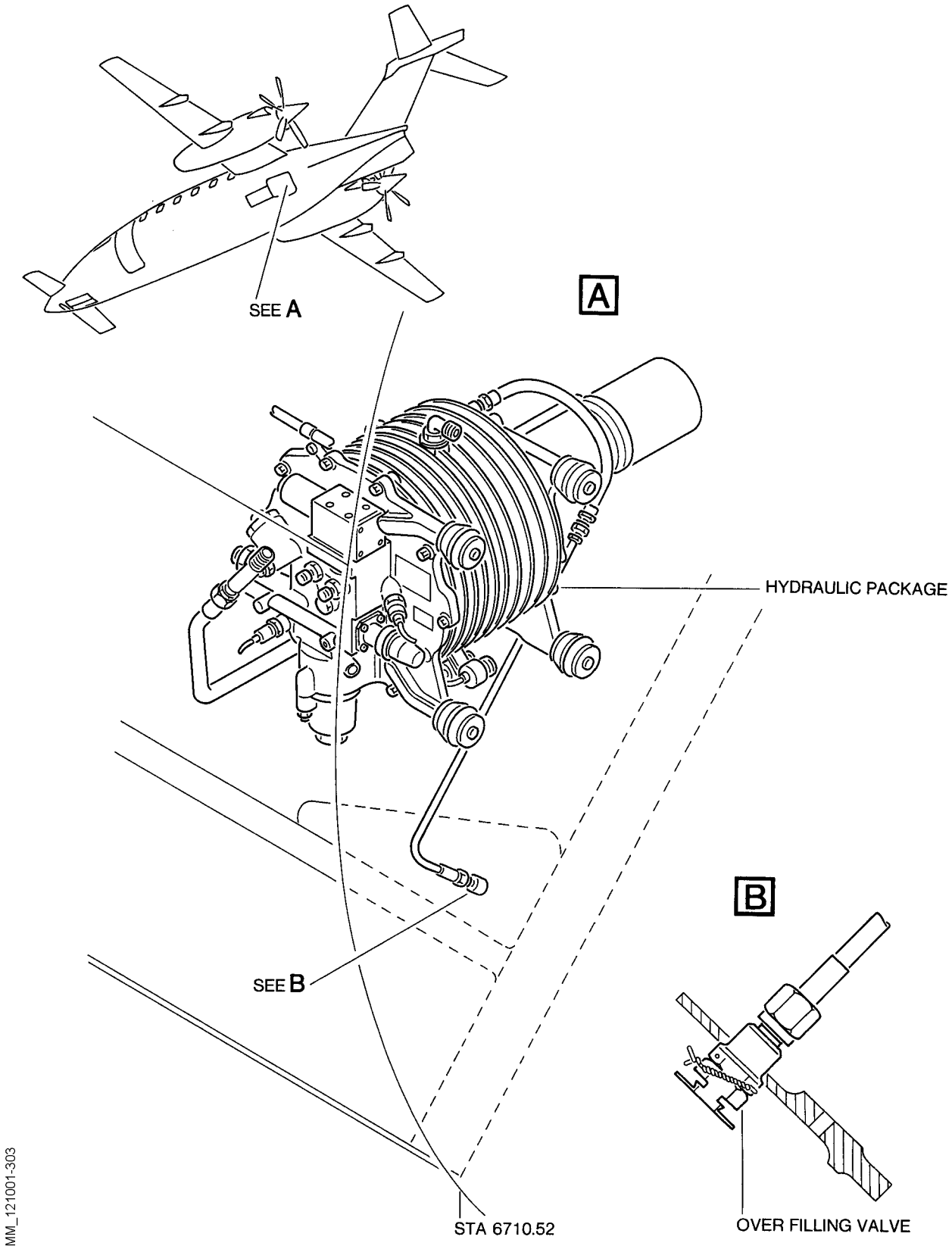

Fig. 303 - Hydraulic package - Filling

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NOSE GEAR SHOCK STRUT - SERVICING

1. Nose Gear Shock Strut - Servicing

A. Fixtures, Test, Materials and Support Equipment

Nomenclature	Part Number	Manufacturer
Wing Lifting Jacks	02-7812-0100	Tronair
Fuselage Lifting Jack	02-0517-0132	Tronair
Wing Jack Pads	80-909101	Piaggio
Fuselage Jack Pad	80-909157	Piaggio
Nitrogen	Not specified	
Charging Adapter	460002502	Dowty
Hydraulic Fluid	DEF STAN 91-48 MIL-H-5606 (Latest Revision)	
Replenishment Rig	Not specified	
Turner Inflation Kit	T14218	Turner

B. Referenced Information

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 07-10-00
Maintenance Manual Chapter 32-00-00
Dowty CMM 32-20-58

C. NLG Schock Strut Filling Procedure

(1) Jack the airplane (Ref. to Chapter 07-10-00).
(2) Connect the airplane to external power.
(3) Set to ON position the battery switch, located in the cabin switch panel.
(4) Set to OFF position the HYD SWITCH.
(5) Pull the Emergency Valve.
(6) Pull the Service Selector Valve.
(7) Positon UP the Landing Gear Control Knob.
(8) Act on Hand Pump until the landing gear is unlocked from Down Position and the doors 710AL and 710BL are OPEN.
(9) Verify that Nose Locked Down green light comes OFF.

WARNING: PROTECT EYES, SKIN AND RESPIRATORY TRACT FROM HYDRAULIC FLUID. AVOID REPEATED OR PROLONGED CONTACT. USE IN A WELL VENTILATED AREA. HYDRAULIC FLUID IS TOXIC.

CAUTION: THE AIRPLANE AND EQUIPMENT MUST BE SAFE AND IN THE CORRECT CONDITION BEFORE THE START OF THESE PROCEDURES.

(10) Position a suitable container to collect any spillage of hydraulic fluid.
(11) Remove the dust cap from the inflation valve. Carefully release the pressure from the shock strut through the inflation valve.
(12) Open the inflation valve.
(13) Fully compress the sliding tube sub-assembly.
(14) Connect the Charging Adapter 460002502 and the replenishment rig to the inflation valve.
(15) Pump in hydraulic fluid, until the sliding tube sub-assembly is fully extended and the pressure rises to 1034 kPA (150 lb/in^2).
(16) Release the hydraulic pressure.
(17) Fully compress the sliding tube sub-assembly to expel air/hydraulic fluid through the inflation valve.
(18) Repeat steps (14) (15) and (16) until air free hydraulic fluid is expelled.
(19) With the sliding tube sub-assembly fully compressed, close the inflation valve, remove the Charging Adapter 460002502 and disconnect the replenishment rig from the inflation valve.
(20) Charge the shock strut in accordance with Paragraph D.
(21) Reposition the airplane on ground.

D. NLG Shock Strut Charging Procedure

(1) Jack the airplane (Ref. to Chapter 07-10-00).
(2) Set to ON position the battery switch, located on the cockpit switch panel.
(3) Set to OFF position the HYD SWITCH.
(4) Pull the Emergency Valve.
(5) Pull the Service Selector Valve.
(6) Position UP the Landing Gear Control Knob.
(7) Act on Hand Pump until the landing gear is unlocked from Down Position and the doors 710AL and 710BL are OPEN.
(8) Verify that Nose Locked Down green light comes OFF.

WARNING: PROTECT EYES, SKIN AND RESPIRATORY TRACT FROM HYDRAULIC FLUID. AVOID REPEATED OR PROLONGED CONTACT. USE IN A WELL VENTILATED AREA. HYDRAULIC FLUID IS TOXIC.

CAUTION: THE AIRPLANE AND EQUIPMENT MUST BE SAFE AND IN THE CORRECT CONDITION BEFORE THE START OF THESE PROCEDURES.

(9) Remove the cap from the inflation valve, connect the Turner Inflation Kit T14218 and the Nitrogen supply. Open the inflation valve.
(10) Slowly increase the Nitrogen pressure to fully extend the sliding tube sub-assembly until the pressure reaches 120 ± 10 PSIG.

(11) Make sure that the sliding tube sub-assembly has fully extended. The distance between the centers of the pintle pin and the axle must be between 682.90 mm and 683.92 mm (26.886 and 26.926 in).

(12) Close the inflation valve and torque tighten the center nut to between 5.65 and 7.91 Nm (50 and 70 lb in).

(13) Disconnect the Nitrogen supply and remove the Turner Inflation kit T14218.

(14) Install the cap on the inflation valve.

(15) Reposition the airplane on ground.

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MAIN GEAR SHOCK STRUT - SERVICING

1. Main Gear Shock Strut - Servicing

A. Fixtures, Test, Materials and Support Equipment

Nomenclature	Part Number	Manufacturer
Wing Lifting Jacks	02-7812-0100	Tronair
Fuselage Lifting Jack	02-0517-0132	Tronair
Wing Jack Pads	80-909101	Piaggio
Fuselage Jack Pad	80-909157	Piaggio
Charging Adapter	460002502	Dowty
Hydraulic Fluid	DEF STAN 91-48 (MIL-H-5606 Latest Revision)	
Replenishment Rig	Not specified	
Turner Inflation Kit	T14218	Turner
Gage 0 to 27.5 MPa (0 to 4000 lb/in^2)	Not specified	
End Eye Alignment Tool	P/N DRT68755 or Equ.	Dowty

B. Referenced Information

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 07-10-00
Maintenance Manual Chapter 32-11-00
Dowty CMM 32-10-69
Dowty CMM 32-10-71

C. MLG Shock Strut Filling Procedure

(1) Jack the airplane (Ref. to Chapter 07-10-00).

(2) Perform the strut Oil and Nitrogen charge (Ref. to Dowty Component Maintenance Manual).

WARNING: PROTECT EYES, SKIN AND RESPIRATORY TRACT FROM HYDRAULIC FLUID. AVOID REPEATED OR PROLONGED CONTACT. USE IN A WELL VENTILATED AREA. HYDRAULIC FLUID IS TOXIC.

CAUTION: THE AIRPLANE AND EQUIPMENT MUST BE SAFE AND IN THE CORRECT CONDITION BEFORE THE START OF THESE PROCEDURES.

NOTE: The shock strut must be removed from the installed position to carry out the filling procedure.

(3) Remove the shock strut from the main landing gear (Ref. to Chapter 32-00-00).
(4) Fill the shock strut (Ref. to Dowty CMM 32-10-71).
(5) Reinstall the shock strut.
(6) Reposition the airplane on ground.

D. MLG Shock Strut Charging Procedure

(1) Jack the airplane (Ref. to Chapter 07-10-00).

WARNING: PROTECT EYES, SKIN AND RESPIRATORY TRACT FROM HYDRAULIC FLUID. AVOID REPEATED OR PROLONGED CONTACT. USE IN A WELL VENTILATED AREA. HYDRAULIC FLUID IS TOXIC.

CAUTION: THE AIRPLANE AND EQUIPMENT MUST BE SAFE AND IN THE CORRECT CONDITION BEFORE THE START OF THESE PROCEDURES.

(2) Check that the shock absorber eye ends are aligned. If are not aligned discharge completely the shock absorber, align the eye ends with the eye ends alignment tool P/N DRT68755 (or Equ.) and charge the shock absorber
(3) Remove the dust cap from the charging valve and connect the Turner Inflation Kit T14218 to the charging valve.
(4) Turn the nut of the charging valve counter clockwise two and one quarter turns. Slowly increase the Nitrogen pressure to fully extend the sliding member sub-assembly. Increase the pressure until the value of 1075 ± 20 PSIG.
(5) Make sure that the sliding member sub-assembly has fully extended.
(6) Close the charging valve nut and torque tighten to between 5.6 and 7.9 Nm (50 and 70 lb in), disconnect the Nitrogen supply and refit the dust cap on the charging valve.
(7) Reposition the airplane on ground and disconnect the Turner Inflation Kit T14218.

TIRES - SERVICING

1. Tires - Servicing

A. Fixtures, Test, Materials and Support Equipment

Nomenclature	Part Number	Manufacturer
Wing Lifting Jacks	02-7812-0100	Tronair
Fuselage Lifting Jack	02-0517-0132	Tronair
Wing Jack Pads	80-909101	Piaggio
Fuselage Jack Pad	80-909157	Piaggio
Nitrogen Bottle, Adapter and Pressure Regulating valve	Not specified	

NOTE: The inflation may be performed on wheels or on jacks

WARNING: USE A REGULATED PRESSURE SOURCE TO INFLATE EACH TIRE. AN UNREGULATED PRESSURE SOURCE CAN CAUSE AN EXPLOSION.

B. Referenced Information

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 32-00-00
BFGoodrich CMM

C. NLG Tire Inflation Procedure

(1) Unscrew the tire cap.
(2) Connect the adapter to the Nitrogen filling bottle.
(3) Fit the adapter to the tire fitting.
(4) Use a pressure regulator to make sure that the wheel does not receive the full pressure of the nitrogen source.
(5) Open the bottle valve, and increase the pressure until reaches the value of 64 ± 2 PSIG.

D. MLG Tyre Inflation Procedure

(1) Unscrew the tire cap.
(2) Connect the adapter to the Nitrogen filling bottle.
(3) Fit the adapter to the tire fitting.
(4) Use a pressure regulator to make sure that the wheel does not receive the full pressure of the nitrogen source.
(5) Open the bottle valve and increase the pressure until reaches the value of 118 ± 2 PSIG.

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OXYGEN SYSTEM - SERVICING

2. Oxygen System - Servicing

A. Fixtures, Test, Materials and Support Equipment

Nomenclature	Part Number	Manufacturer
Charging Oxygen Bottle, Breathing	Not Specified	
Adapter and Manometer	Not Specified	

B. Referenced Information

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 35-00-00

C. Filling Procedure (Ref. to Fig. 301)

WARNING: AVOID MAKING SPARKS AND KEEP ALL BURNING CIGARETTES OR FIRE AWAY FROM THE VICINITY OF THE AIRPLANE. INSPECT THE FILLER CONNECTION FOR CLEANLINESS BEFORE ATTACHING IT TO THE FILLER VALVE. MAKE SURE HANDS, TOOLS AND CLOTHING ARE CLEAN OF GREASE OR OIL; THESE CONTAMINANTS WILL IGNITE UPON CONTACT WITH PURE OXYGEN UNDER PRESSURE. AS A FURTHER PRECAUTION AGAINST FIRE OPEN AND CLOSE ALL OXYGEN VALVES SLOWLY.

CAUTION: ALWAYS GROUND THE SYSTEM TO BE SERVICED AND THE SERVICING EQUIPMENT BEFORE CONNECTING THE FILLER ADAPTER.

CAUTION: ENSURE THAT ALL AIRPLANE ELECTRICAL POWER IS OFF. DO NOT OPERATE ELECTRICAL SWITCHES OR CONNECT OR DISCONNECT GROUND POWER GENERATORS DURING THE OXYGEN CHARGING OPERATION.

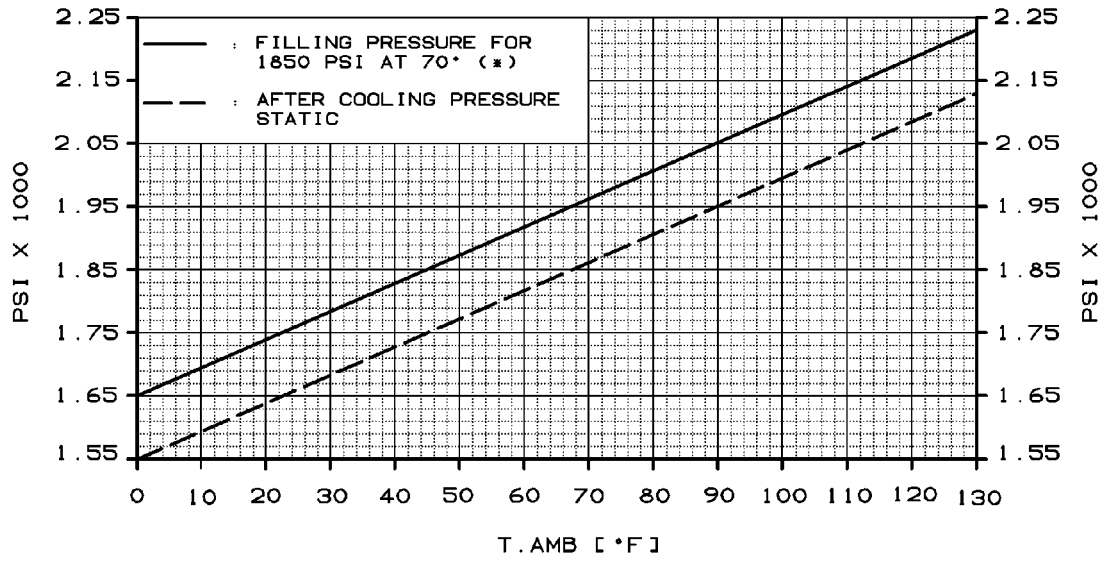
CAUTION: DO NOT SERVICE THE OXYGEN SYSTEM IF FUELING OR OTHER FLAMMABLE FLUID SERVICING IS IN PROCESS.

CAUTION: DO NOT CHARGE THE SYSTEM TOO FAST. RAPID CHARGING CAN CREATE A DANGEROUS OVERHEATING CONDITION.

(1) Open the airplane cabin door.
(2) Remove carpet cover on end of the cabin floor step (the carpet is attached by Velcro strips).
(3) Unscrew the charge valve cap.

(4) Connect the filling fitting to the charge valve port and open slowly the charging bottle valve.
(5) Continue this operation until the maximum pressure gaged (1850 Psig at 70 °F or 21 °C) is read in the pilot oxygen manometer.
(6) Disconnect the filling fitting from the charge valve port.
(7) Control that the discharging indicator green disc is installed. In other case reinstall it referring to Chapter 35.
(8) Screw the charge valve cap.
(9) Reinstall carpet cover on end of the cabin floor step.
(10) Close cabin door.

OXYGEN SYSTEM FILLING DIAGRAM



(*) NOTE :
THIS COLUMN ASSUMES ABOUT A 25 DEGREE RISE IN TEMPERATURE DUE TO HEAT OF COMPRESSION, AND IT ASSUMES THAT THE CYLINDERS ARE BEING FILLED AT THEIR MAXIMUM RATE.

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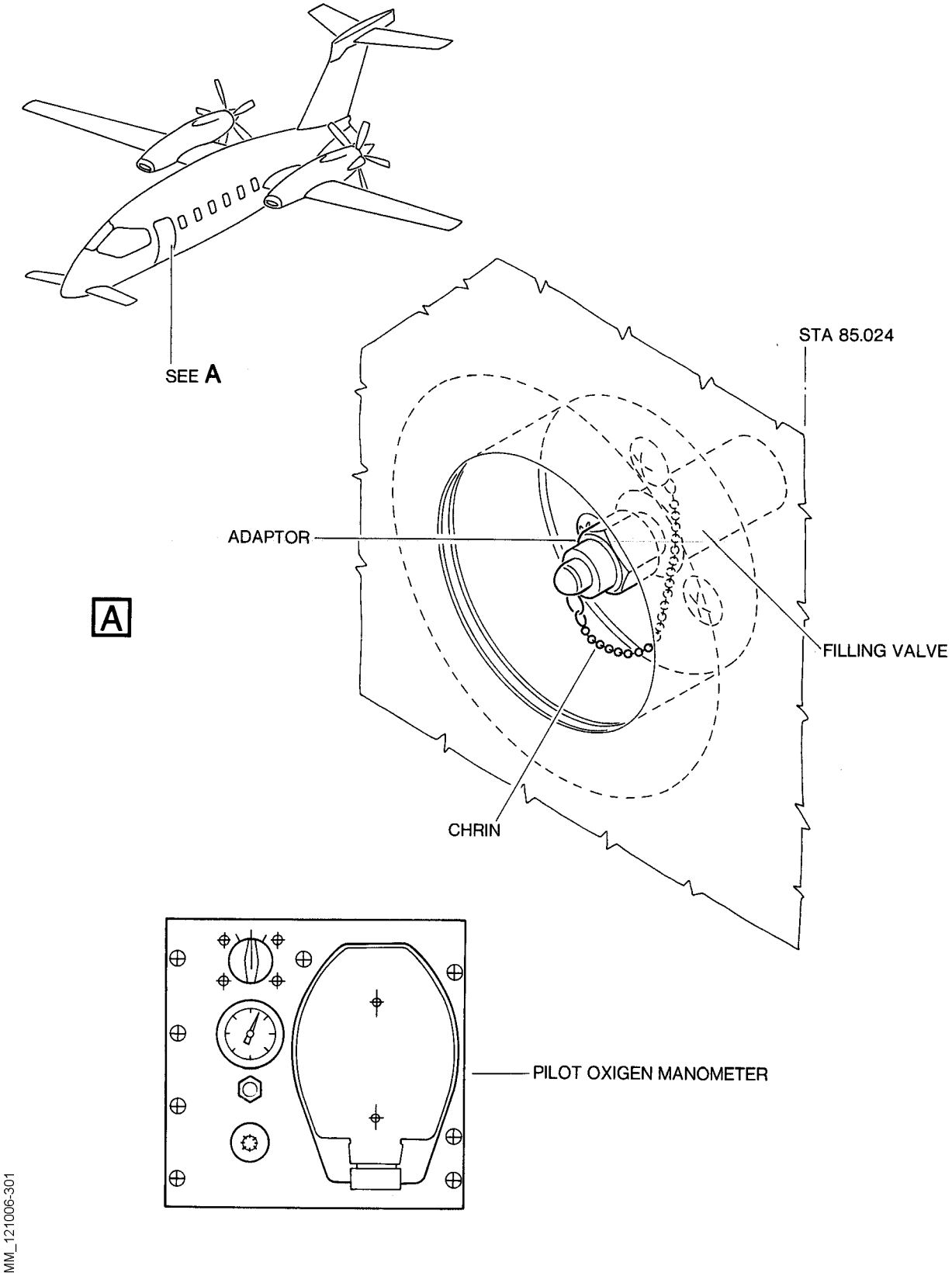

Fig. 301 - Oxygen System - Filling

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FUEL SYSTEM - SERVICING

1. Fuel System - Servicing

A. Fixtures, Test, Materials and Support Equipment

Nomenclature	Part Number	Manufacturer
Gravity Refueling System	Not Specified	
Pressure Refueling System	Not Specified	
Fuel	Ref. to P&WC S.B. 14004 (Latest Revision)	
Fuel Additives	Ref. to P&WC S.B. 14004 (Latest Revision)	
Blender	Not Specified	
Fuel Drain Tool (2)	TEM-121007-003	Piaggio
Ladder (Gravity Refuel.)	Not Specified	
Anti-Icing Additive Test Kit	HB-P-C TYPE B/2-1	Gammon Technical Products Inc.
Fuel-proof Container (1 pint or approximately 0.5 lt capacity)	Not Specified	

B. Referenced Information

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 10-30-00
Maintenance Manual Chapter 28-00-00
Maintenance Manual Chapter 28-11-00
Pratt & Whitney of Canada S.B. 14004 (latest Revision)

C. Approved Fuels and Additives

The following fuels are approved for use, when used in accordance with Fuel Limitations, as listed in the Airplane Flight Manual, Section 2.

(1) Classification of aviation fuel is by the following grades:

Issuing Authority Body	Spec.	Kerosene Type	Wide Cut Type	Nato Code
ASTM	D1655	JET A	----	----
	D1655	JET A 1	----	F-35
US MIL	MIL-T-5624	----	JP4 (*)	F-40 (*)
US MIL	MIL-T-83133	JP8 (*)	----	F-34 (*)
NOTE (*): Contains Anti-Icing Additive (AIA) also known as Fuel System Icing Inhibitor (FSII)				

(2) Approved Additives

The operation of the aircraft is approved with anti-icing additive in the fuel. For the anti-icing additive and related percentage of volume Ref. to P&WC S.B. 14004 (Latest Revision) and to anti-icing addictive specification.
The anti-icing additive must be uniformly blended with the fuel while refueling. A blender, supplied by the additive manufacturer, should be used.

WARNING: ANTI-ICING ADDITIVES CONTAINING ETHYLENE GLYCOL MONOMETHYL ETHER (EGMME) OR DIETHYLENE GLYCOL MONOMETHYL ETHER (DiEGMME) ARE HARMFUL IF INHALED, SWALLOWED OR ABSORBED THROUGH THE SKIN AND WILL CAUSE EYE IRRITATION. ALSO, THEY ARE COMBUSTIBLE. BEFORE USING THIS MATERIAL, REFER TO ALL INFORMATION ON THE CONTAINER AND OBEY ALL INSTRUCTIONS.

CAUTION: MAKE SURE THAT THE ADDITIVE IS DIRECTED INTO THE FLOWING FUEL STREAM. THE ADDITIVE FLOW SHOULD START AFTER AND STOP BEFORE THE FUEL FLOW. DO NOT PERMIT THE CONCENTRATED ADDITIVE TO COME IN CONTACT WITH THE AIRPLANE PAINTED SURFACES.

D. Anti-Icing Additive Concentration Check

CAUTION: CHECK THAT THE TEST EQUIPMENT IS CLEAN AND NOT CONTAMINATED BY ANY LIQUID.

NOTE: Refer to A. (Fixtures, Test, Materials and Support Equipment) for test kit.

NOTE: The test kit provides the necessary equipment for determining the percent volume (%V) of anti-icing additive (AIA), also known as Fuel System Icing Inhibitor (FSII), in turbine engine fuels.
The method and instrument can determine the %V of a fuel whose AIA is either Ethylene Glycol Monomethyl Ether (EGMME) or Diethylene Glycol Monomethyl Ether (DiEGMME). On the right hand of the instrument sight, you'll read the EGMME %V. On the left hand of the instrument sight, you'll read the DiEGMME %V.

(1) In a clean and dry container take approximately a pint (0.5 liters) sample of the fuel to be tested.
(2) Fill one half full a supplied aluminum dish with clean water.
(3) Fill the graduated cylinder with exactly 160 ml of fuel.
(4) Make sure that the drain tap of the separatory funnel is closed.
(5) From the graduated cylinder transfer the 160 ml of fuel to the separatory funnel. (Some kits may have, instead of the graduated cylinder, a separatory funnel with a line marking the 160 ml capacity.
Fill to that line if the kit is so equipped).
(6) With one of the syringes, take water from the aluminum dish and add exactly 2 ml of water to the separatory funnel.
(7) Cap the funnel and shake it vigorously for 3 minutes.
(8) Place the funnel in the ring stand.
(9) Remove the plastic rod from the base of the refractometer; use the rod in the following steps, to transfer drops of water onto the window.
(10) Open the cover of the refractometer window, make certain it is cleanand apply several drops of water to it, from the aluminum dish supply.
(11) Close the refractometer window and, through the sight, observe the location of the shadow line in the viewer.
(12) Check that the shadow line intersects the zero line of the scale; if it does not, adjust the set screw (in the base) so that the shadow line intersects the zero line of the scale.
(13) Clean the cover and window of the remaining drops of water.
(14) Take, from the test kit case, another clean aluminum dish.
(15) Carefully open the separatory funnel drain tap so that a trickle of fluid can be taken in the clean aluminum dish.
Three or four drops of fluid will be sufficient.
(16) Open the cover of the refractometer window and transfer two drops of fluid from the aluminum dish to the refractometer window, then close the cover.
(17) Observe the position of the shadow line showing the value of %V (on the left of the sight the DiEGMME %V is shown and, on the right side of it, the EGMME %V).

(18) Record the results of the above test as the volume percent of anti-ice additive (%V) to the nearest 0.01 percent.

(19) If concentration is not between 0.06 and 0.15 percent, defuel the airplane and refuel it with properly mixed fuel.

(20) Properly empty the funnel and clean the equipment with water and mild soap.

E. Fuel Contamination Procedure

CAUTION: USE ONLY CLEAN FUEL SERVICING EQUIPMENT.

The primary means of fuel contamination control by the operator is "Good Housekeeping". This applies not only to the fuel supply but to keeping the airplane system clean. The fuel must be properly stored and filtered when it is pumped to the truck tank and when it is pumped from the truck tank to the airplane tanks.
It is recommended to perform filter inspections to determine if sludge is present and to maintain good housekeeping by periodically flushing the fuel tankage system. The frequency of flushing will be determined by the climate and presence of sludge.

F. Fuel Draining Procedure (Ref. to Fig. 301)

The collector tank draining is obtained by using the fuel drain tool TEM-121007-003. The procedure is in Chapter 28-11-00.
The wing vent draining is obtained by rounded ends rod (L = 200mm, max. dia. 6mm). Drain the wing fuel tank vents, inserting the rounded ends rod into the holes, located, respectively in the fuselage skin under the wing, Zone 251 (LH side) and 252 (RH side) and pushing the internal drain valve. The drained fuel flows out from the holes located in the lower skin part of Zone 171 (LH side) and 172 (RH side) and is collected in a generic container (cup). Wipe off drops of fuel from the fuselage skin.
The fuel filter draining is obtained by pushing, with the fuel drain tool TEM-121007-003, the tubes, located, respectively, in the nacelles, Zones 521 (LH side) and 621 (RH side) of the wing. The drained fuel flows out from the same tubes.

G. Defueling Procedure (Ref. to Fig. 302)

NOTE: Make sure that the discharge fuel can be collected, for each side of the airplane, in an appropriate volume not contaminated tank.

(1) Unscrew the collector tank defueling valve caps.

(2) Screw the defueling hose P/N 80-909102 adapters to the defueling valves.

(3) Defuel tanks.

(4) Unscrew the defueling hose P/N 80-909102 adapters from the defueling valves.

(5) Screw the collector tank defueling valve caps.

(6) If required, drain the collector tanks.

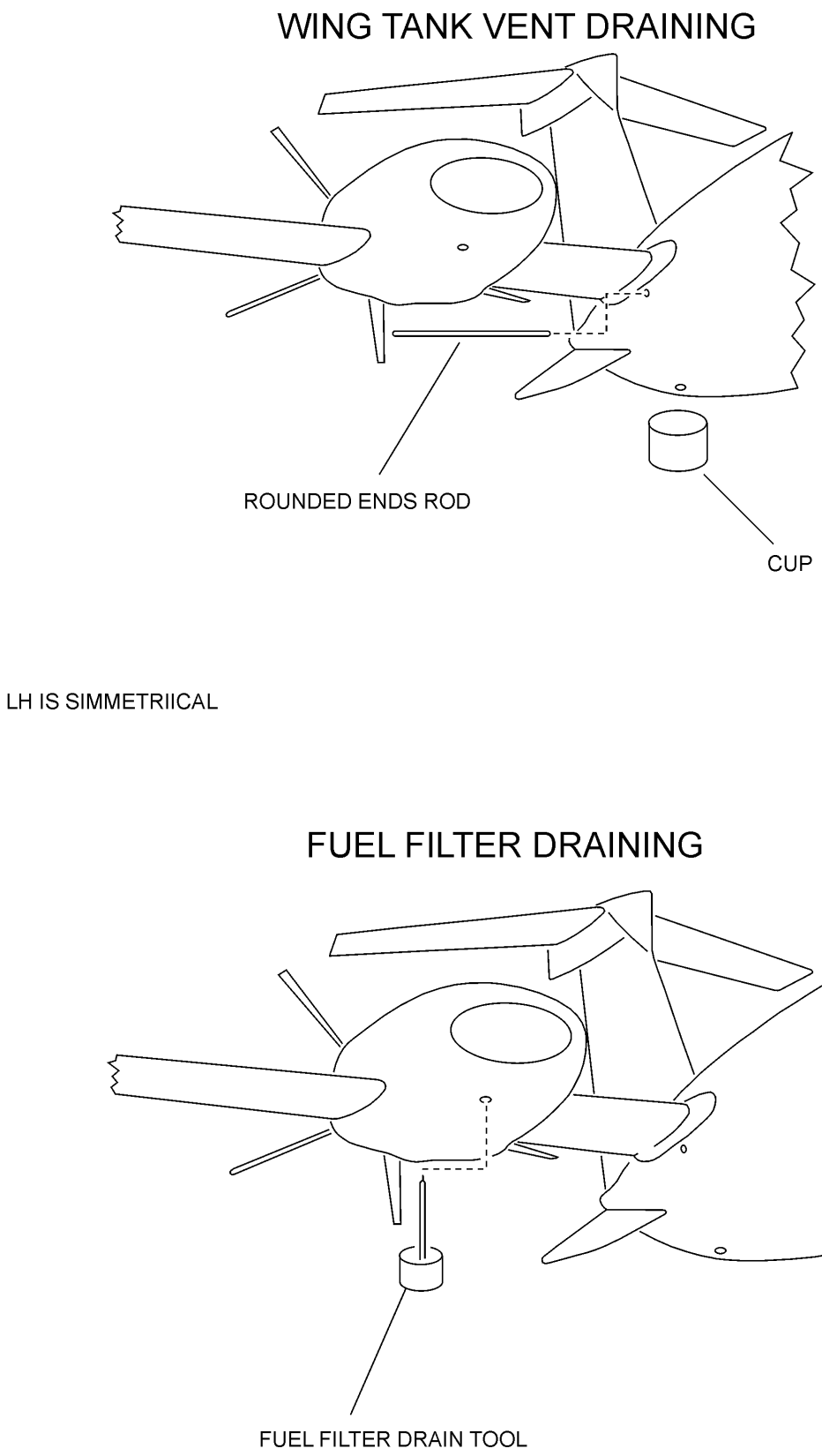

Fig. 301 - Fuel - Draining

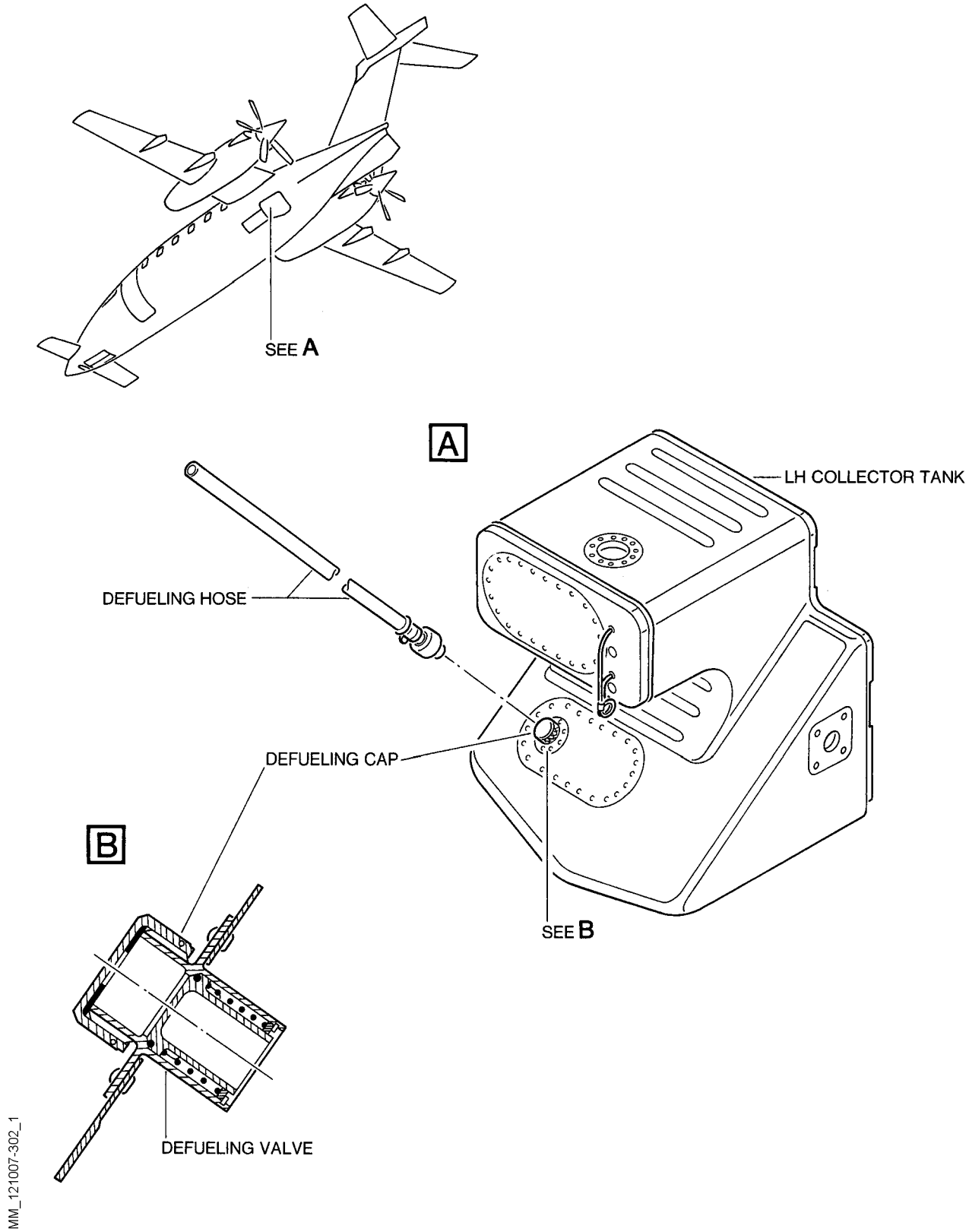

Fig. 302 (Sheet 1) - Fuel - Defueling (LH)

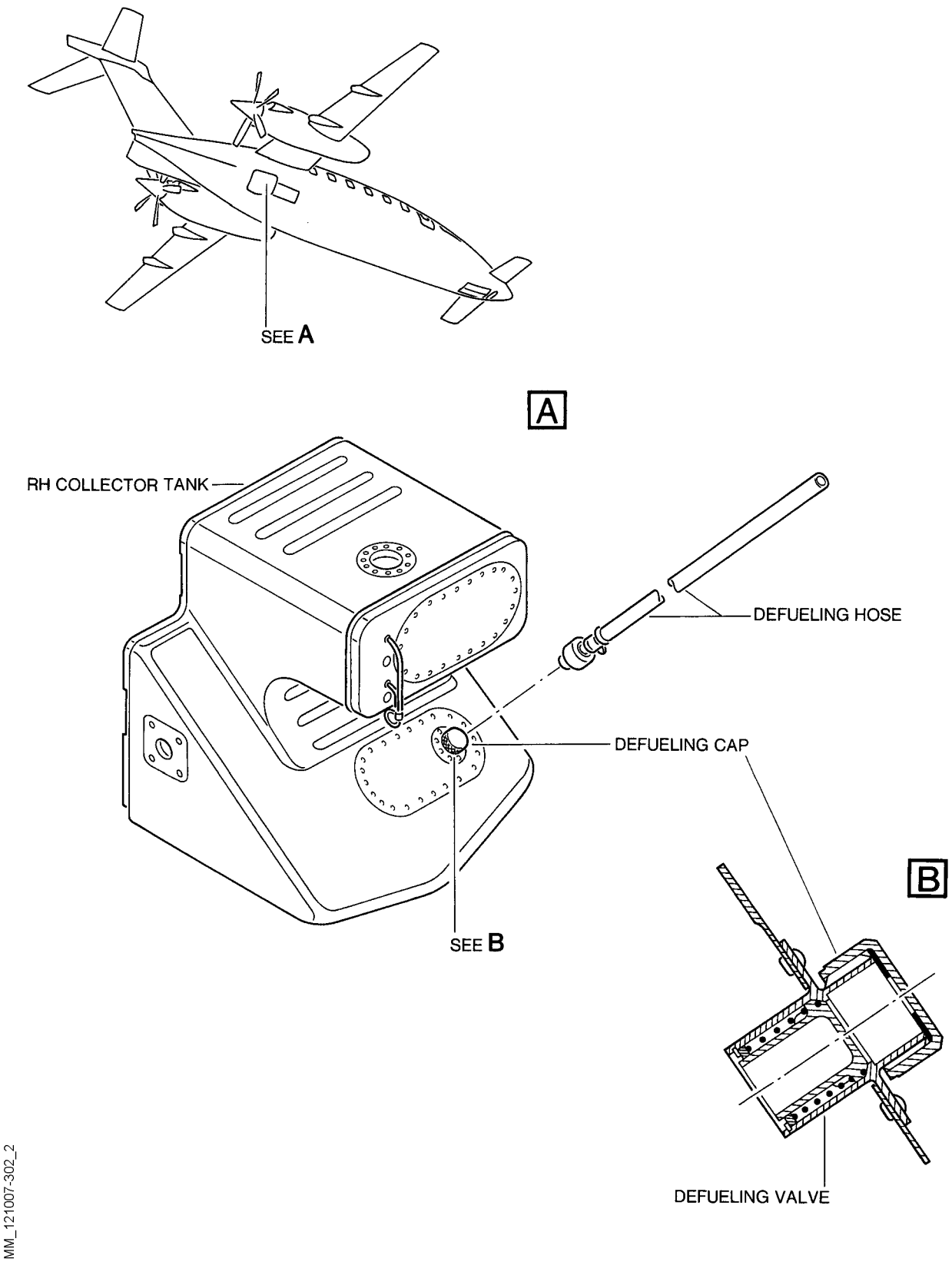

Fig. 302 (Sheet 2) - Fuel - Defueling (RH)

H. Gravity Refueling Procedure (Ref. to Fig. 303)

WARNING: TAKE CARE THAT NO FOREIGN OBJECTS ARE INADVERTENTLY INTRODUCED INTO THE GRAVITY FILLING PORT. NO PROTECTING GRID IS INSTALLED TO AVOID THE FALL OF FOD INTO THE TANK.

CAUTION: DO NOT STEP ON WING

CAUTION: MAKE SURE THAT ONLY AUTHORIZED PERSONNEL IS IN THE AREA AND NO FIRES OR OTHER DANGEROUS SOURCES (I.E. CIGARETTES) ARE LIGHTED.

CAUTION: STATICALLY GROUND THE AIRPLANE.

CAUTION: MAKE SURE THAT FUEL AND ADDITIVES ARE PERMITTED BY ENGINE MANUFACTURER AND ARE IN THE CORRECT PROPORTION. (REF. TO P&WC APPLICABLE DOCUMENTS).

NOTE: The total fuel capacity is 1516 liters (400 US Gals) and the maximum usable fuel is 1504 liters (397 US Gals).

(1) Chalk airplane.
(2) Perform fuel system draining.
(3) Open the gravity filling cap, located in the zone 611.
(4) Statically ground airplane to the servicing unit.
(5) Open the refuel/ground test panel 272A.
(6) Move to "OPEN" position the "REFUEL XFEED" switch.
(7) Verify that the "TK XFEED INT" annunciator is momentarely ON and that the "FUEL TKXFEED" annunciator is constantely ON.
(8) Begin the refueling operation, applying pressure to the servicing unit.
(9) Fill to total capacity.
(10) Unground the airplane from the servicing unit.
(11) Close the gravity filling cap and set the "REFUEL XFEED" switch to CLOSED position. Insure that TK INTCON INT and TANK INTCON annunciators are OFF.
(12) Close the refuel/ground test panel 272A.
(13) Clean up any fuel spilled.

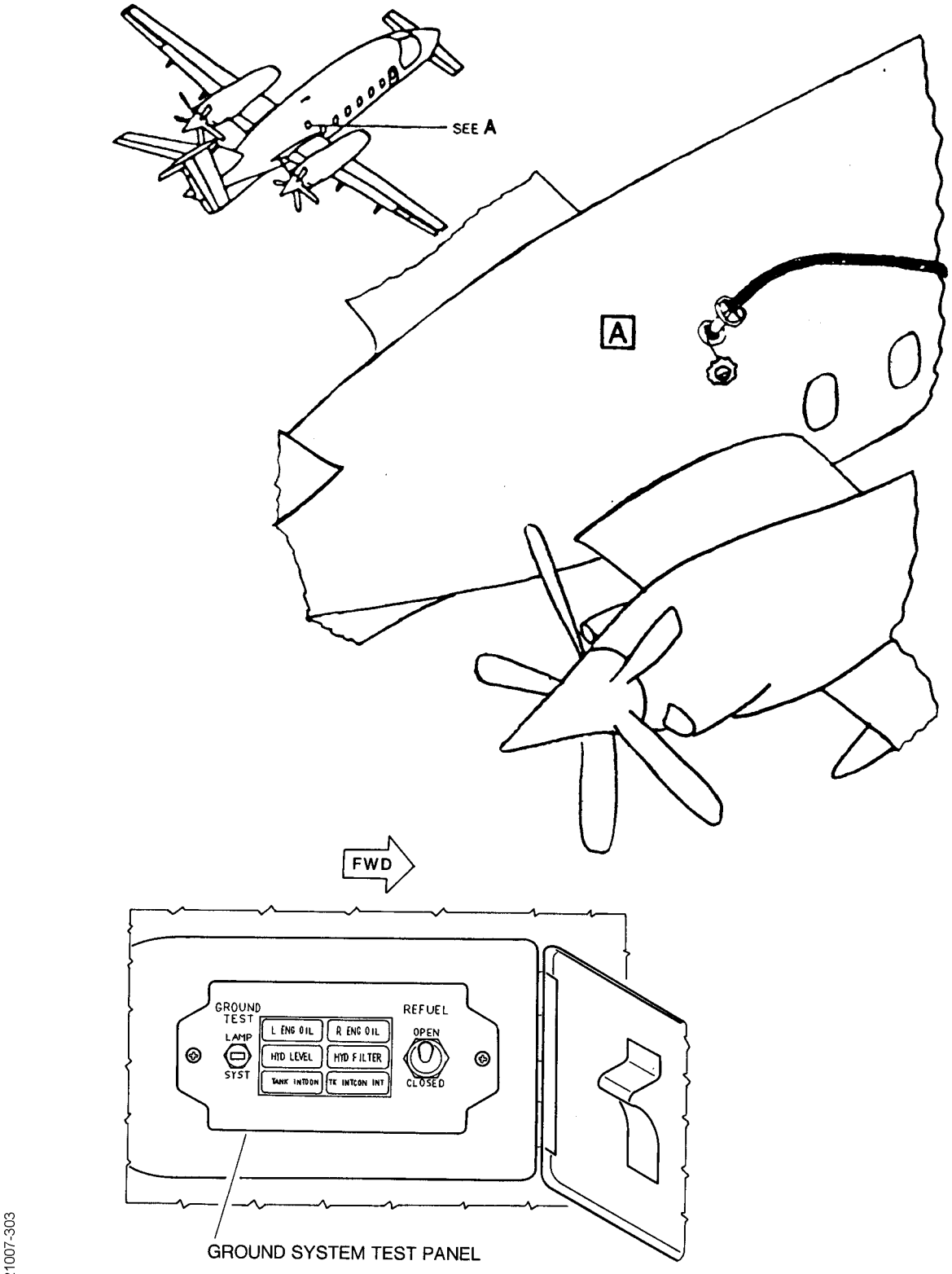

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Fig. 303 - Gravity - Refueling

I. Pressure Refueling Procedure (Ref. to Fig. 304)

CAUTION: MAKE SURE THAT ONLY AUTHORIZED PERSONNEL IS IN THE AREA AND NO FIRES OR OTHER DANGEROUS SOURCES (I.E. CIGARETTES) ARE LIGHTED.

CAUTION: STATICALLY GROUND THE AIRPLANE.

CAUTION: THE MAXIMUM FUEL REFUELING PRESSURE IS 60 PSIG. THE MINIMUM FUEL REFUELING PRESSURE IS 20 PSIG.

CAUTION: MAKE SURE THAT FUEL AND ADDITIVES ARE PERMITTED BY ENGINE MANUFACTURER AND ARE IN THE CORRECT PROPORTION. (REF. TO P&WC APPLICABLE DOCUMENTS).

NOTE: The total fuel capacity is 1516 liters (400 US Gals) and the maximum usable fuel is 1504 liters (397 US Gals).

(1) Chalk airplane.
(2) Statically ground the airplane to the servicing unit.
(3) Perform fuel system draining.
(4) Open the pressure refueling door 252B.
(5) Remove the refueling adapter cap and connect the refueling nozzle to the refueling adapter.
(6) Open the refuel/ground test panel 272A.
(7) Set the "LAMP-SYST" switch to lamp position. Verify TANK INTCON and TK INTCON INT annunciators are ON. Release "LAMP-SYST" switch.
(8) Move the "REFUEL XFEED" switch to the "OPEN" position.
(9) Verify that the "TK XFEED INT" annunciator is momentarily on and that the "FUEL TKXFEED" annunciator is constantly on.
(10) Begin the refueling operation, applying pressure to the servicing unit.
(11) On the refuel/ground test panel set the "LAMP SYST" switch to SYST position and verify a fuel flow stop. Release "LAMP-SYST" switch: normal refuel flow is restored and it continues to flow till to have system full.
(12) Complete the refueling operation.
(13) Disconnect the servicing unit unground the airplane from the servicing unit.
(14) Move the REFUEL XFEED SWITCH to the "CLOSED POSITION".
(15) Install refueling adapter cap and close the door 252B.
(16) Set the "REFUEL XFEED" switch to CLOSED position. Insure that TK INTCON INT and TANK INTCON annunciators are OFF.
(17) Close the refuel/ground test panel 272A.
(18) Clean up any fuel spilled.

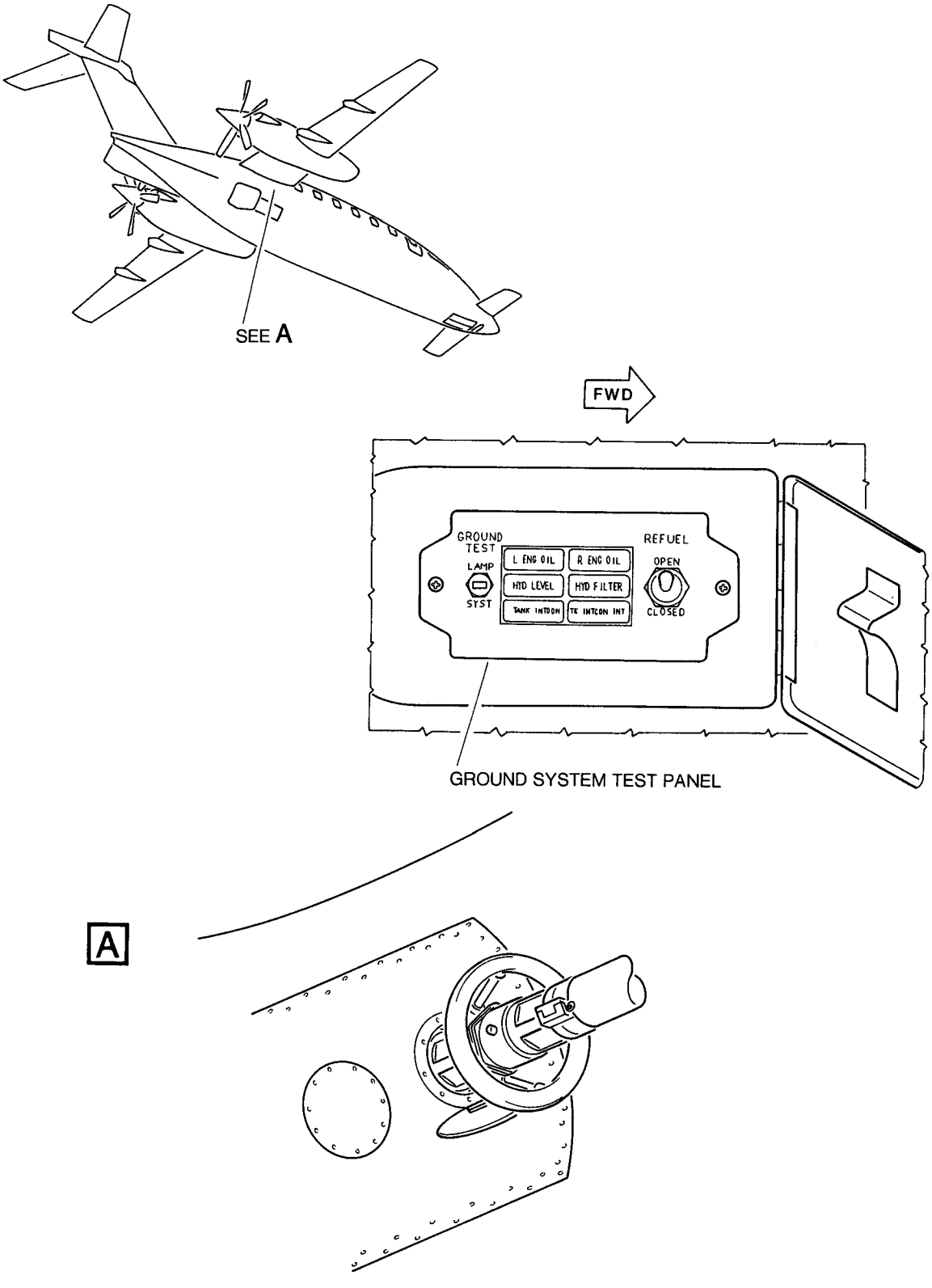

Fig. 304 - Pressure - Refueling

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ENGINE OIL SYSTEM - SERVICING

1. Engine Oil System - Servicing

A. Fixtures, Test, Materials and Support Equipment

Nomenclature	Part Number	Manufacturer
Approved Oil	Refer to Chapter 91-00-00	
Funnel or	Not Specified	
Servicing Unit	Not Specified	

B. Referenced Information

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 21-00-00
Maintenance Manual Chapter 54-10-00

C. Engine Oil Level Checking (Ref. to Fig. 301).

CAUTION: THE OIL LEVEL MUST BE CHECKED WITHIN 15 TO 20 MINUTES FROM THE ENGINE SHUTDOWN.

(1) Open refuel/ground test panel 272A.
(2) Check if either or both of the oil level annunciators are on.
(3) If either or both annunciators are on service the oil tank as detailed in Paragraph D following.
(4) If both annunciators are off check that the monitoring system are serviceable by pressing the System Test Switch.
(5) Close the refuel/ground test panel 272A.

D. Engine Oil Level - Visual Check

CAUTION: THE OIL LEVEL MUST BE CHECKED WITHIN 15 TO 20 MINUTES FROM THE ENGINE SHUTDOWN.

(1) Remove the LH/RH oil filler access panel 410BT/420BT.
(2) For the Oil Level Check refer to Pratt & Whitney Maintenance Manual Part N°.3036122, 72-00-00 (Servicing).

E. Engine Oil Filling Procedure (Ref. to Fig. 301)

CAUTION: THE OIL LEVEL MUST BE CHECKED WITHIN 15 TO 20 MINUTES FROM THE ENGINE SHUTDOWN.

NOTE: The oil tank capacity (each engine) is 3.35 US Gals (12.7 l) and the usable oil is 1.5 US Gal (5.7 l).

(1) Remove the LH/RH oil filler access panel 410BT/420BT.

(2) Disconnect the electrical connector installed on the dipstick.
(3) Open the dipstick cap.

NOTE: Filling the oil to the maximum level may result in high consumption rate, with the oil existing through the AGB breather. On some engines, this may occur with the oil level at one or two US quarts below the maximum level. In such cases, operators are advised to service the oil to the level that results in acceptable consumption, down to 3 quarts below the maximum, if necessary. For engines with an oil sight gauge, keep the level within the green band. This practice is acceptable, due to the large usable oil quantity, and providing the oil level is monitored using the engine maintenance manual, making sure the consumption allowance and operation are within the recommended oil temperature and pressure.

(4) Replenish the oil tank and check that the level reach a "MAX HOT" on the dip stick as required in the MM Pratt & Whitney; use a funnel to prevent spillage.

CAUTION: INSERT CAREFULLY THE DIPSTICK TO AVOID DAMAGES OF THE SEAL. SEVERE OIL SPEWAGE MAY OCCUR IF SEAL IS BROKEN.

(5) Close the dipstick cap.
(6) Clean up any spilled oil.
(7) Connect the electrical connector.
(8) If the oil level is too low to register on distick due to possible excessive consumpion, or if low or fluctuating pressures have been recorded, refer to P&WC CMM Fault Isolation, Engine Lubrication sections, for action to be taken, then proceed as follows:
   (a) Fill oil tank to normal level and record quantity of oil added.

CAUTION: INSERT CAREFULLY THE DIPSTICK TO AVOID DAMAGES OF THE SEAL. SEVERE OIL SPEWAGE MAY OCCUR IF SEAL IS BROKEN.

   (b) Install dipstick, making sure that the cap is locked.
(9) Clean up any spilled oil.
(10) Connect the electrical connector.

CAUTION: WHEN FILLER CAP ASSEMBLY IS INSTALLED AND LOCKED, NO MOVEMENT IS ALLOWED.

   (a) Run engine at ground-idle for approximately five minutes.
(11) Shut down the engine.
(12) Open the refuel/ground test panel 272A.
(13) Do an oil level check. (Ref. to Paragraph C).
(14) Close the refuel/ground test panel 272A.
(15) If required repeat the filling procedure steps 1 thru 14.
(16) Install the oil filler access panel (410BT/420BT).

2. Engine Oil System - Servicing and Chip Detection Check

A. Referenced Information

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 21-00-00
Maintenance Manual Chapter 54-10-00

B. Engine Oil Level and Chip Detection Checking Procedure (Ref. to Fig. 301)

CAUTION: THE OIL LEVEL MUST BE CHECKED WITHIN 15 TO 20 MINUTES FROM THE ENGINE SHUTDOWN.

(1) Open refuel/ground test panel 272A.
(2) Set and hold the momentary GROUND TEST switch to the LAMP position checking the following:
  (a) All the four red and the two amber annunciator lights will come on: burnt bulbs shall be replaced and re-tested before flight.
  (b) On the Ground test / refuel panel, the L and R ENG OIL annunciator lights should flash with a rate of 3 Hz. (60% on and 40% off) showing the proper operation of the panel chip detection monitoring circuitry: a simulated chip detection condition is generated allowing the warning system test.
(3) Set and hold the momentary GROUND TEST switch to the SYS position checking the following:
  (a) The L and R ENG OIL, HYD FILTER and after a few seconds HYD LEVEL red lights should illuminate and then extinguish releasing the switch.

WARNING: ON THE GROUND TEST/REFUEL PANEL, IF THE L OR R ENG OIL ANNUNCIATOR LIGHT IS FLASHING WHILE THE GROUND TEST SWITCH IS HELD IN THE SYS POSITION, A REAL CHIP DETECTION CONDITION OCCURS IN THE RELATED ENGINE OIL. HAVE AN IMMEDIATE ENGINE MAINTENANCE CHECK AS PER THE APPLICABLE ENGINE MANUAL. FOR MORE INFORMATION REFR TO CHAPTER 79-30-00.

NOTE: While a "Low Engine Oil Level Condition" is automatically displayed by the steady illumination of the related L/R ENG OIL light, a "Chip Detection Condition", if any, is control displayed by flashing of the related L/R ENG OIL light only after moving and holding the GROUND TEST switch to the SYS position.

(4) Close the refuel/ground test panel 272A.
(5) If the Low Engine Oil Level Condition is detected follow the procedure of Para. 1 Step D of this section

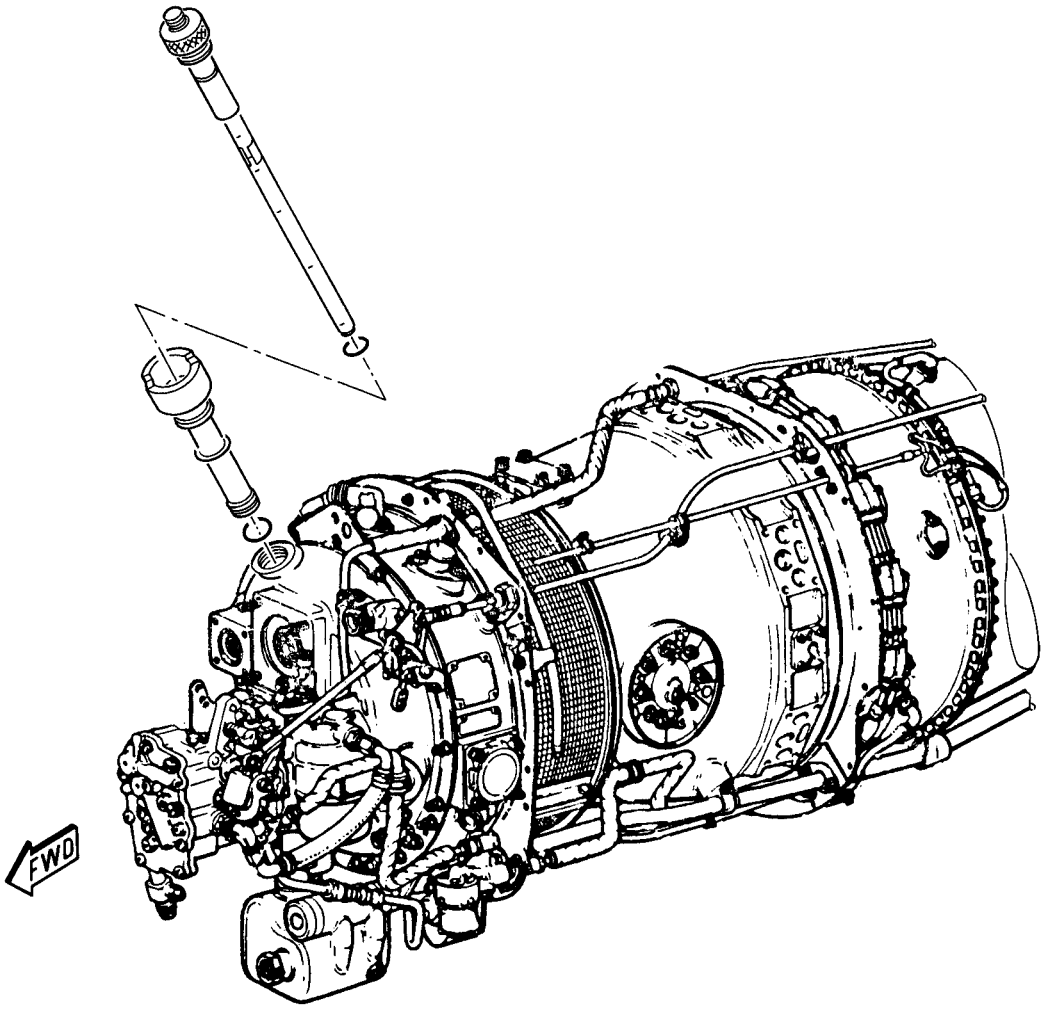

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Fig. 301 - Engine Oil - Filling

SCHEDULED - SERVICING

1. General

This part consists of the procedures necessary to carry out servicing that may be scheduled. It includes instructions such as those for periodic lubrication of components, internal and external airplane cleaning etc. It doesn't include lubrication procedures required for the accomplishment of maintenance practices. The Section 12-20-00 includes the following procedures:

(1) 12-21-01 Landing Gear Lubrication - Servicing
(2) 12-22-00 Battery - Servicing
(3) 12-23-00 ELT - Servicing
(4) 12-24-00 Cleaning - Maintenance Practices
(5) 12-24-01 Interior Cleaning - Maintenance Practices
(6) 12-24-02 Exterior Cleaning - Maintenance Practices
(7) 12-24-03 Propeller Blades Cleaning - Maintenance Practices
(8) 12-25-00 Water/Waste - Servicing

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200 FH AIRPLANE INSPECTION - MAINTENANCE PRACTICES

1. 200 FH aircraft light inspection and servicing

A. Fixture, Test and Support Equipment

Methyl-Ethyl-Ketone	02-009
Solvent	0-T-620
Lint-free Cloth	04-013
Cam Switch Test Set	TEM-761000-002

B. Referenced Information

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 07-00-00
Maintenance Manual Chapter 07-10-00
Maintenance Manual Chapter 12-10-01
Maintenance Manual Chapter 12-10-02
Maintenance Manual Chapter 12-10-03
Maintenance Manual Chapter 12-10-08
Maintenance Manual Chapter 12-21-01
Maintenance Manual Chapter 22-10-00
Maintenance Manual Chapter 24-31-00
Maintenance Manual Chapter 24-40-00
Maintenance Manual Chapter 27-10-00
Maintenance Manual Chapter 27-20-00
Maintenance Manual Chapter 27-31-00
Maintenance Manual Chapter 27-40-00
Maintenance Manual Chapter 29-11-00
Maintenance Manual Chapter 30-11-00
Maintenance Manual Chapter 30-30-00
Maintenance Manual Chapter 32-00-00
Maintenance Manual Chapter 32-20-00
Maintenance Manual Chapter 32-41-00
Maintenance Manual Chapter 32-50-00
Maintenance Manual Chapter 51-23-00
Maintenance Manual Chapter 52-11-00
Maintenance Manual Chapter 52-12-00
Maintenance Manual Chapter 52-18-00
Maintenance Manual Chapter 52-30-00
Maintenance Manual Chapter 52-81-00
Maintenance Manual Chapter 52-82-00
Maintenance Manual Chapter 53-00-00
Maintenance Manual Chapter 55-10-00
Maintenance Manual Chapter 55-20-00
Maintenance Manual Chapter 55-40-00
Maintenance Manual Chapter 56-10-00
Maintenance Manual Chapter 56-20-00
Maintenance Manual Chapter 57-10-00
Maintenance Manual Chapter 57-20-00
Maintenance Manual Chapter 57-50-00
Maintenance Manual Chapter 71-00-00
Maintenance Manual Chapter 76-11-00

C. Procedure

WARNING: BE CAREFUL WHEN YOU USE SOLVENTS. OBEY THE HEALTH AND SAFETY INFORMATION GIVEN IN CHAPTER 20-00-00.

CAUTION: IN ORDER NOT TO DAMAGE OR DIRTY THEM, PROTECT THE INTERIORS OF THE AIRPLANE.

(1) If the ADAS system is embodied, pull out the two breakers, on the Main Junction Box (MJB) and on the copilot CB panel.
(2) Connect external electrical power as per AMM chapter 24-40-00.
(3) Extract the flaps to the DOWN position.
(4) Perform a DCU Aural Warning Check in accordance with AMM Chapter 22-10-00.
(5) Perform an Aileron Trim Tab Functional Test in accordance with AMM chapter 27-10-00. During the excursion, verify there is no interference between aileron and trim tab and between the aileron and flap. Visually inspect the aileron trim tab for signs of interference with other surfaces.
(6) Perform a Rudder Trim Tab Functional Test in accordance with AMM chapter 27-20-00. During the excursion, verify there is no interference between rudder and trim tab. Visually inspect the rudder trim tab for signs of interference with other surfaces.
(7) Perform a Horizontal Stabilizer Trim operational test in accordance with AMM chapter 27-40-00.
(8) Perform a Stall Warning System Operational Test as per AMM chapter 27-31-00.
(9) Perform a Pitot & Static ports and AOA and TAT operational check as per AMM chapter 30-00-00.
(10) Clean and inspect the flight compartment windshields (and lateral windows on MSN 1002) in accordance with the AMM chapter 56-10-00.
(11) Perform a visual inspection of the portable fire extinguisher. Check nozzle for obstruction. Check pressure gage. Check lockpin and wireseal for proper installation. Check fullness by hefting.
(12) If test set TEM-761000-002 is available, perform the "Power Control Cam Switches - Cleaning" procedure in accordance with the AMM chapter 76-11-00.
(13) Drain the cabin door seal inflating system as follows:
    (a) Remove the accumulator drain line cap and allow the air to come out of the system.
    (b) Run the right engine as per AMM chapter 71-00-00.
    (c) Allow the air to come out of the system. At least 3 minutes are required for the condensed water to flow out.
    (d) Cap the accumulator drain line.
(14) Perform a Main Wing Anti-ice system operational check as per AMM chapter 30-11-00
(15) Run the left engine as per AMM chapter 71-00-00.
(16) Only for airplanes up to MSN 1199 and not modified in accordance with the SB 80-0315, perform the "Power Control Cam Switches - Test" procedure in accordance with the AMM chapter 76-11-00.

(17) If not already done, shut down both engines and perform the oil level check as per AMM 12-10-08.

(18) Inspect each passenger seat and related belts as follows:

(a) Verify, forcing the backrest, that it remains fixed in the up (Take-off and Landing) position.

(b) Inspect the seat installation hardware (fixing the seat on the fuselage rails) for security of installation. Verify the absence of any play.

(c) Check the seat belts for condition and security of installation. No scratches or damages are allowed.

(19) Clean and inspect the cabin windows in accordance with AMM chapter 56-20-00.

(20) Check the fuselage external drain points as per AMM chapter 53-00-00 and drain the belly.

(21) Inspect the forward wing assy and forward wing flaps in accordance with AMM chapter 57-20-00. The removal of the nose cone is not required to comply with this instruction.

(22) Jack the airplane in accordance with AMM chapter 07-10-00.

(23) Disengage the Nose and Main Landing Gear Doors as per AMM chapters 52-81-00 and 52-82-00 (Refer to doors inspection paragraphs).

(24) Perform a complete fuselage external inspection in accordance with AMM 53-00-00.

NOTE: The following instructions may be done during the accomplishment of the external fuselage inspection.

(25) In the Nose Landing Gear area, perform the following tasks:

(a) Inspect the nose landing gear doors as per AMM chapter 52-81-00. Leave the door disengaged after the accomplishment of this task.

(b) Inspect the nose landing gear and related door mechanism in accordance with AMM chapter 32-20-00. Verify the wiring and the electrical bonding are properly installed and without signs of damage.

(c) Check Nose Landing Gear Shock Strut Nitrogen Pressure in accordance with AMM chapter 12-10-02.

(d) Inspect the accessible parts of the steering system as per AMM chapter 32-50-00.

(e) Inspect the Nose Landing Gear wheels and tires as described in the AMM chapter 32-41-00.

(f) Lubricate the Nose Landing Gear and related hardware as per AMM chapter 12-10-01.

(26) Inspect the main entrance door seal with reference to AMM chapter 52-18-00.

(27) Perform an external inspection of the upper and lower cabin doors. Check the lockpins extension. Refer to the applicable section of AMM chapters 52-11-00 and 52-12-00.

(28) In the left wing area, perform the following tasks:
- (a) Inspect the external surfaces as per AMM chapter 57-10-00.
- (b) Inspect the aileron external surfaces as per AMM chapter 57-10-00.
- (c) Open the access panel 542AT and inspect the aileron stop for condition and effectiveness. Close the access panel.
- (d) On the outboard flap:
  - -1– Perform a visual inspection as per AMM chapter 57-10-00.
  - -2– Check the grounding tracks as per AMM chapter 57-50-00.
  - -3– Check the grounding springs for wear.
  - -4– Check the bonding spring strips for wear and cuts. Refer to AMM chapter 57-50-00.
  - -5– Inspect the roller bearing for general condition and integrity.
- (e) On the inboard flap:
  - -1– Perform a visual inspection as per AMM 57-10-00.
  - -2– Check the grounding tracks as per AMM chapter 57-50-00.
  - -3– Check the grounding springs for wear.
  - -4– Check the bonding spring strips for wear and cuts. Refer to AMM chapter 57-50-00.
  - -5– Inspect the roller bearing for general condition and integrity.

(29) In the Left Main Landing Gear area, do what follows:
- (a) Inspect the main landing gear doors as per AMM chapter 52-82-00. Leave the door disengaged after the accomplishment of this task.
- (b) Through the hole on the roof of the wheel bay, inspect the aileron sectors. Verify the absence of any crack or corrosion; check the visible section of the cables for condition.
- (c) Check the area for any sign of fuel leakage.
- (d) Regarding the hydraulic system Relief Valve, do what follows:
  - -1– Remove the relief valve in accordance with the AMM chapter 29-11-00.
  - -2– Clean the relief valve in accordance with the AMM chapter 29-11-00.
  - -3– Install the relief valve in accordance with the AMM chapter 29-11-00.
- (e) Regarding the hydraulic system 4-way connector and the orifice inside, do what follows:
  - -1– Locate the 4-way connector through the hole in the roof of the left main landing gear wheel bay; mark its position.
  - -2– Disconnect the 4 tubes and remove the filter.
  - -3– Clean the 4-way connector and the filter by dipping them in the MEK.
  - -4– Blow the 4-way connector and the filter with pressurized air (30 psi maximum).
  - -5– Dry the 4-way connector and the filter; wipe off any trace of MEK with a soft and clean mop.
  - -6– Re-install the 4-way connector and connect the 4 tubes.

(f) Inspect the main landing gear and related door mechanism as follows (for a better access to the involved area, partial retraction of the landing gear may be required - AMM chapter 32-00-00):

-1– Clean the landing gear and door control assembly with solvent (0-T-620) and a lint-free cloth.

-2– Dry the assembly with a stream of clean, dry compressed air.

-3– Visually examine the assembly for signs of damage, corrosion and security of attachment.

-4– Examine the main gear and the associated components for hydraulic leakage.

-5– Visually examine the paint finish for cracks, flaking or damage. If necessary, restore the finish as per AMM chapter 51-23-00.

-6– Verify the wiring and the electrical bonding are properly installed and without signs of damage and corrosion.

(g) Check Main Landing Gear Shock Strut Nitrogen Pressure in accordance with AMM chapter 12-10-03.

(h) Inspect the Main Landing Gear wheel and tire as described in the AMM chapter 32-41-00.

(i) Inspect the brake as follows (wheel removal is not required):

-1– Check the flange for condition, damages and cracks.

-2– Check the installing bolts for security of installation. No loosen bolts are allowed.

-3– Check the wear indicator.

-4– Check the body of the brake for damage and leakage.

-5– Check the hydraulic lines, the adapter and the shuttle valve for damage and leakage.

(j) Lubricate the Main Landing Gear and related hardware as per AMM chapter 12-21-01.

(30) Open the baggage compartment door and do what follows:

(a) Inspect the baggage compartment door as per AMM chapter 52-30-00.

(b) Remove the battery as per AMM chapter 24-31-00 and perform the following actions:

-1– Inspect the plate and bay for corrosion.

-2– Inspect the electrical connectors (grounding, the temp. system and battery quick disconnect), for condition and corrosion.

-3– Perform a capacity test in accordance with AMM chapter 24-31-00. If necessary basing on the capacity test results, perform a deep cycle in accordance with the AMM chapter 24-31-00.

(c) Inspect the synchrophaser control box verifying it is correctly fixed on the shock absorber and the electrical connections are properly installed.

(d) Regarding the Hydraulic System check valve, do what follows:
-1– Locate the valve through the hole under the battery.
-2– Disconnect the tube and remove the filter.
-3– Remove the check valve from the manifold.
-4– Submerge the check valve into a pot with a sufficient amount of MEK.
-5– Actuate several times the valve mechanism with the nylon rod.
-6– Leave the valve in the MEK for approximately 5 minutes.
-7– Blow compressed air through the valve in direction of the operating air flow at a pressure within 30 to 50 PSI.
-8– Dry the valve and wipe off any trace of MEK with the soft and clean mop.
-9– Clean the filter by dipping it in the MEK.
-10–Blow the filter with pressurized air (30 psi maximum).
-11–Dry the filter; wipe off any trace of MEK with a soft and clean mop.
-12–Re-install valve on the manifold using a new seal, install the filter and connect the tube.
(e) Check the Hydraulic Pressurization Line cap for security of installation.
(f) Re-install the battery as per AMM chapter 24-31-00.

(31) Inspect the rudder in accordance with the AMM chapter 55-40-00.
(32) Check the rudder trim tab for excessive play.
(33) Verify the rotation of the surfaces is free and smooth
(34) Open the access panel 320AL and 320AR and inspect:
-1– The torque tube attachment to the rudder assembly for condition, corrosion and security of installation.
-2– The rudder stops for condition and effectiveness.
(35) Only for airplanes not modified in accordance with the Piaggio Aero Ind. SB 80-0262:
-1– Inspect the horizontal stabilizer as per AMM chapter 55-10-00. Inspect the electrical bonding for condition and corrosion.
-2– Inspect the elevator as per AMM chapter 55-20-00.
(36) In the right wing area, perform the following tasks:
(a) Inspect the external surfaces as per AMM chapter 57-10-00.
(b) Inspect the aileron external surfaces as per AMM chapter 57-10-00.
(c) Inspect the trim tab for cracks, nicks dents and FOD.
(d) Open the access panel 642AT and inspect the aileron stop for condition and effectiveness.
(e) Check the aileron trim tab for excessive play.
(f) Close the access panel 642AT.
(g) On the outboard flap:
-1– Perform a visual inspection as per AMM chapter 57-10-00.
-2– Check the grounding tracks as per AMM chapter 57-50-00.
-3– Check the grounding springs for wear.
-4– Check the bonding spring strips for wear and cuts. Refer to AMM chapter 57-50-00.
-5– Inspect the roller bearing for general condition and integrity.

(h) On the inboard flap:

-1– Perform a visual inspection as per AMM 57-10-00.

-2– Check the grounding tracks as per AMM chapter 57-50-00.

-3– Check the grounding springs for wear.

-4– Check the bonding spring strips for wear and cuts. Refer to AMM chapter 57-50-00.

-5– Inspect the roller bearing for general condition and integrity.

(37) In the Right Main Landing Gear area, do what follows:

(a) Inspect the main landing gear doors as per AMM chapter 52-82-00. Leave the door disengaged after the accomplishment of this task.

(b) Through the hole on the roof of the wheel bay, inspect the aileron sectors. Verify the absence of any crack or corrosion; check the visible section of the cables for condition.

(c) Check the area for any sign of fuel leakage.

(d) Inspect the main landing gear and related door mechanism as follows (for a better access to the involved area, partial retraction of the landing gear may be required - AMM 32-00-00):

-1– Clean the landing gear and door control assembly with solvent (0-T-620) and a lint-free cloth.

-2– Dry the assembly with a stream of clean, dry compressed air.

-3– Visually examine the assembly for signs of damage, corrosion and security of attachment.

-4– Examine the main gear and the associated components for hydraulic leakage.

-5– Visually examine the paint finish for cracks, flaking or damage. If necessary, restore the finish as per AMM chapter 51-23-00.

-6– Verify the wiring and the electrical bonding are properly installed and without signs of damage and corrosion.

(e) Check Main Landing Gear Shock Strut Nitrogen Pressure in accordance with AMM chapter 12-10-03.

(f) Inspect the Main Landing Gear wheel and tire as described in the AMM chapter 32-41-00.

(g) Inspect the brake as follows (wheel removal is not required):

-1– Check the flange for condition, damages and cracks.

-2– Check the installing bolts for security of installation. No loosen bolts are allowed.

-3– Check the wear indicator.

-4– Check the body of the brake for damage and leakage.

-5– Check the hydraulic lines, the adapter and the shuttle valve for damage and leakage.

(h) Lubricate the Main Landing Gear and related hardware as per AMM chapter 12-21-01.

(38) Remove external electrical power as per AMM chapter 24-40-00.

(39) Engage the nose and main landing gear doors AMM chapters 52-81-00 and 52-82-00 (refer to doors inspection paragraphs).

(40) Make sure the landing gear is down and locked before lowering the aiplane.

(41) Lower the airplane in accordance with AMM chapter 07-10-00.

(42) If the ADAS system is embodied, push in the two related circuit breaker on the MJB and on the co-pilot CB panel.

(43) Remove the protective covers from the interiors (if installed).

200 FH ENGINE INSPECTION - MAINTENANCE PRACTICES

1. 200 Flight Hours Engine - Inspection

A. Referenced Information

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 24-30-00
Maintenance Manual Chapter 30-22-00
Maintenance Manual Chapter 54-10-00
Maintenance Manual Chapter 61-22-00
Maintenance Manual Chapter 71-20-00

Illustrated Parts Catalog Chapter 28-21-00
Illustrated Parts Catalog Chapter 71-50-00
Illustrated Parts Catalog Chapter 71-70-00

B. Procedure

(1) Remove the upper nacelle panel 410AT (420AT) and the rear nacelle panels 430AL/430AR (440AL/440AR). Refer to AMM chapter 54-10-00.

(2) Inspect all the engine nacelle panels in accordance with the applicable procedure of AMM chapter 54-10-00.

(3) If the tool p/n TEM-540000-001 is available, inspect the Inertial Separator System as follows:

(a) Inspect the Inertial Separator System as per the applicable procedure of the AMM chapter 30-22-00.

(b) Install the tool in order to link the removed nacelle panel and the airplane.

(c) Open the ice vane inspection panel.

(d) Perform an operational test in accordance with the AMM chapter 30-22-00. Check the proper working of the system by inspecting the movement of the vanes.

(4) Inspect the following components for leakage, evidence of damage, deterioration and security of installation. Refer to IPC chapter 28-21-00 for component location.

- Fuel shut/off valve;
- Fuel cross-feed valve (only on the left side);
- Fuel low pressure filter;
- Fuel flow meter;
- The following fuel lines: fuel delivery line to the shut/off valve, fuel cross-feeding line (only on the left side), fuel delivery line from the shut/off valve to the low pressure filter, fuel pressure reference line from the filter to the fuel pressure switch and to the draining point, fuel delivery line from the filter to the fuel heater.

(5) Check the accessory area draining tube for obstruction. Refer to IPC chapter 28-21-00 for component location.

(6) Inspect the starter generator as follows:
  (a) Perform a visual inspection of the starter generator air cooling duct:
    – verify the absence of any damage;
    – verify the absence of any kink;
    – verify the absence of any obstruction;
    – verify correct installation (Refer to AMM chapter 24-30-00).
  (b) Perform a general cable routing inspection as per AMM chapter 24-30-00.
(7) Inspect the following items, verifying their proper installation and the absence of any leakage:
    – Oil pressure transducer
    – Oil pressure switch
    – Oil temperature bulb
(8) Inspect the sliding cam and the FCU linkages as follows:
  (a) Use a clean cloth, softly dampened with some engine oil, to clean all the linkages; no grease is allowed;
  (b) Inspect the power and condition control cables for security of installation; check proper installation of the cable seal;
  (c) In the flight cabin, move the levers and check the linkages move accordingly and freely.

    Allowed strokes: Power Levers ' from IDLE to MAX PWR and viceversa;

    Condition Levers ' from CUT OFF to MAX RPM and viceversa
(9) Inspect the engine mounts cradle and the vibration isolators in accordance with the AMM chapter 71-20-00.
(10) Inspect the engine mount electrical bonding for damage, security of installation and absence of corrosion.
(11) Inspect the engine firewalls for damage, security of installation and proper sealing.
(12) If the airplane has been operated on unpaved/dirty runways, remove the engine air inlet screen and check the compressor for FOD.
(13) Check the engine drains for obstruction. Refer to IPC chapter 71-70-00 for drain tubes location and do what follows:
  (a) Using a suitable probe, verify that the drain point of the starter/generator and fuel pump drain tubes is free.
  (b) Check the combustion chamber drain tube as follows:
    – Remove the lockwire
    – Untighten the nut and remove the tube
    – Blow the tube to verify it is free and check for general conditions.
    – Install the tube and lockwire.
  (c) Check the propeller seal drain tube as follows:
    – Disconnect the propeller seal drain tube end from the propeller shaft.
    – Rotate and blow it to verify it is free.
    – Put the tube in the right position and connect it.
(14) Remove the exhaust duct drain cap on the engine exhaust case; check the draining fitting for obstruction.

(15) Inspect the engine electrical harness as follows:
- Verify the proper installation referring to the IPC 71-50-00.
- Check the condition of the wiring (absence of any chafing and/or damage).
- Check the electrical connections for absence of corrosion and traces of humidity; if installed, check the condition of the thermal shrink sleeves.

(16) Check the fuel purge system for cracks.

(17) Inspect the exhaust stacks for corrosion and damages. Check for cracks the area around the mounting bolts.

(18) Inspect the following components for security of installation and oil leakage:
- Torque transducer
- Autofeather high pressure switch
- Autofeather low pressure switch
- Manifold and related oil and air reference lines

(19) Inspect the RGB accessories (Propeller Governor, Overspeed Governor and Propeller Speed Transmitter) as follows:
- Verify the correct installation and tightening
- Inspect the mating surface for absence of oil traces

(20) Check the propeller synchrophaser target and pick-up for security installation and proper adjustment. Refer to AMM chapter 61-22-00.

(21) Re-install the upper nacelle panel 410AT (420AT) and the rear nacelle panels 430AL/430AR (440AL/440AR). Refer to AMM chapter 54-10-00.

(22) In case the tool p/n TM-540000-001 is not available, inspect the Inertial Separator System as per the applicable procedure of the AMM chapter 30-22-00.

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LANDING GEAR LUBRICATION - SERVICING

1. Landing Gear Lubrication

A. Fixtures, Test, Materials and Support Equipment

Nomenclature	Part Number	Manufacturer
Grease	DEF STAN 91-53 (MIL-G-23827 Latest Revision)	
Grease Gun	Not Specified	

B. Referenced Information

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 32-00-00
Dowty MLG Drag Brace CMM 32-10-70
Dowty NLG Drag Brace CMM 32-20-59
Dowty MLG Assy CMM 32-10-69
Dowty NLG Assy CMM 32-20-58
Dowty NLG Actuator CMM 32-31-73
Dowty MLG Actuator CMM 32-31-74

C. NLG Lubrication Procedure (Ref. to Fig. 301)

CAUTION: THE AIRPLANE AND EQUIPMENT MUST BE SAFE AND IN THE CORRECT CONDITION BEFORE THE START OF THESE PROCEDURES.

(1) Jacking the airplane (Refer to 07-00-00).
(2) Refer to relevant data for lubrication periods.
(3) Charge each lubrication fitting with grease, Ref. to Paragraph A, until grease exudes from the associated bearings.
(4) Remove the surplus grease.
(5) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

D. NLG Drag Brace Lubrication Procedure (Ref. to Fig. 302)

CAUTION: THE AIRPLANE AND EQUIPMENT MUST BE SAFE AND IN THE CORRECT CONDITION BEFORE THE START OF THESE PROCEDURES.

(1) Jacking the airplane (Refer to 07-00-00).
(2) Refer to relevant data for lubrication periods.
(3) Charge each lubrication fitting with grease, Ref. to Paragraph A, until grease exudes from the associated bearings.
(4) Remove the surplus grease.
(5) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

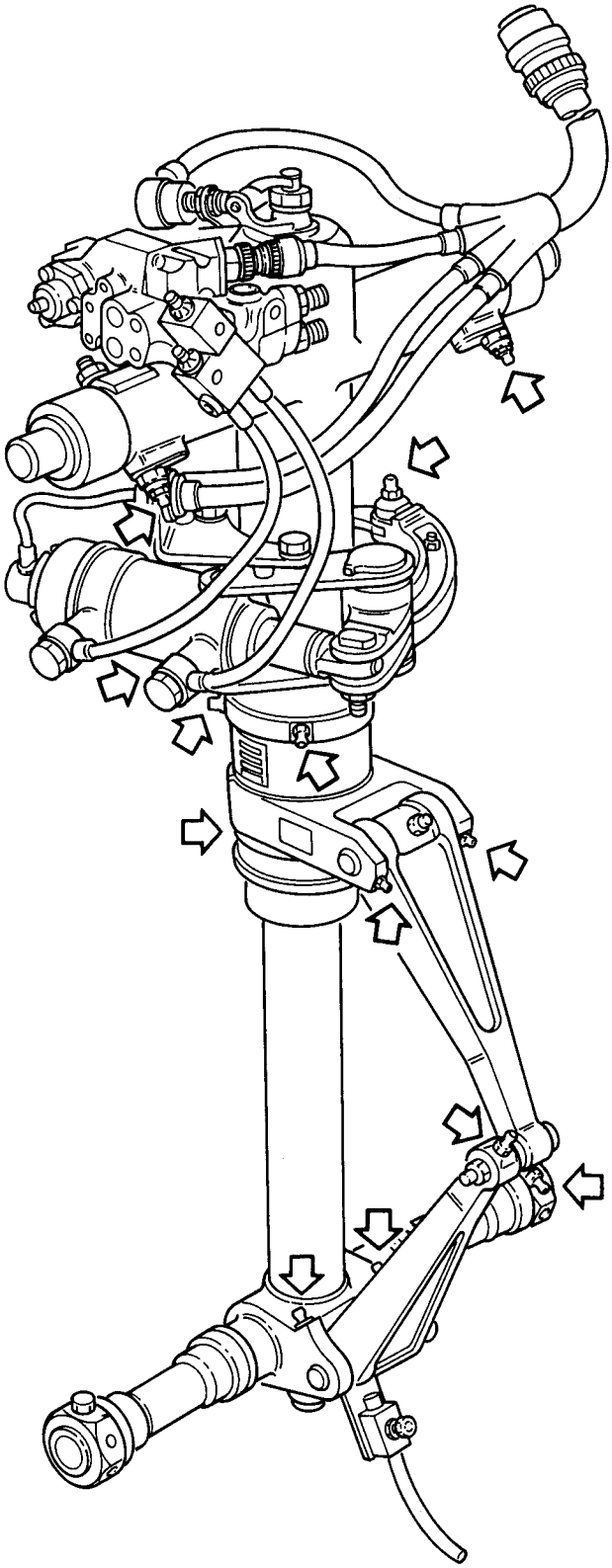

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Fig. 301 - NLG Location of Lubrication Fittings

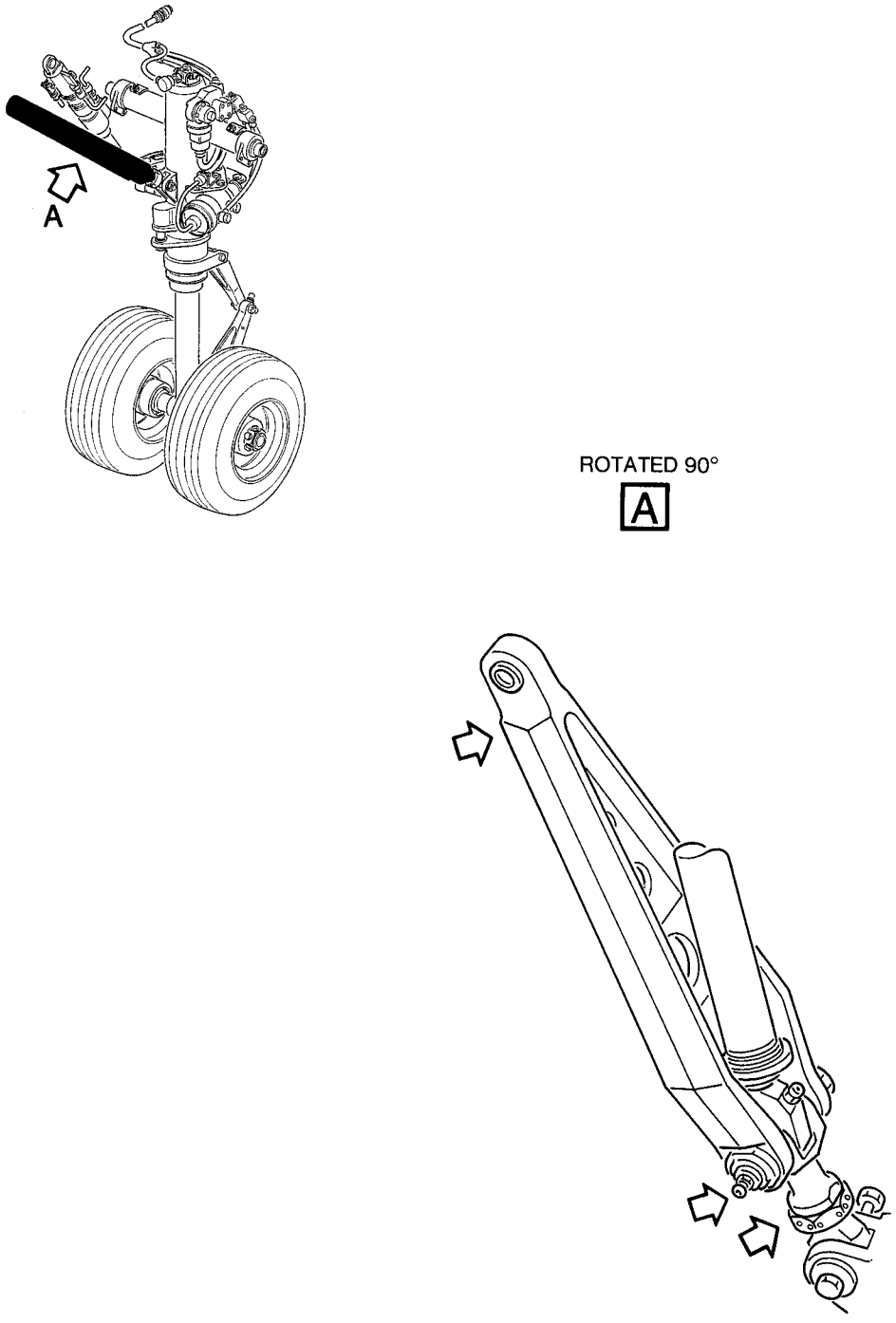

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Fig. 302 - NLG Drag Brace Location of Lubrication Fittings

E. NLG Actuator Lubrication (Ref. to Fig. 303)

CAUTION: THE AIRPLANE AND EQUIPMENT MUST BE SAFE AND IN THE CORRECT CONDITION BEFORE THE START OF THESE PROCEDURES.

(1) Jacking the airplane (Refer to 07-00-00).
  (a) Refer to relevant data for lubrication periods.
  (b) Charge each lubrication fitting with grease, Ref. to Paragraph A, until grease exudes from the associated bearing.
  (c) Remove the surplus grease.
(2) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

F. MLG Lubrication Procedure (Ref. to Fig. 304)

CAUTION: THE AIRPLANE AND EQUIPMENT MUST BE SAFE AND IN THE CORRECT CONDITION BEFORE THE START OF THESE PROCEDURES.

(1) Jacking the airplane (Refer to 07-00-00).
(2) Refer to relevant data for lubrication periods.
(3) Charge each lubrication fitting with grease, Ref. to Paragraph A, until grease exudes from the associated bearings.
(4) Remove the surplus grease.
(5) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

G. MLG Drag Brace Lubrication Procedure (Ref. to Fig. 305)

CAUTION: THE AIRPLANE AND EQUIPMENT MUST BE SAFE AND IN CORRECT CONDITION BEFORE THE START OF THESE PROCEDURES.

(1) Jacking the airplane (Refer to 07-00-00).
(2) Refer to relevant data for lubrication periods.
(3) Charge each lubrication fitting with grease, Ref. to Paragraph A, until grease exudes from the associated bearings.
(4) Remove the surplus grease.
(5) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

H. MLG Actuator Lubrication Procedure (Ref. to Fig. 306)

CAUTION: THE AIRPLANE AND EQUIPMENT MUST BE SAFE AND IN THE CORRECT CONDITION BEFORE THE START OF THESE PROCEDURES.

(1) Jacking the airplane (Refer to 07-00-00).
(2) Refer to relevant data for lubrication periods.
(3) Charge each lubrication fitting with grease, Ref. to Paragraph A, until grease exudes from the associated bearing.
(4) Remove the surplus grease.
(5) Lower the airplane to the ground and remove the jacks (Refer to 07-00-00).

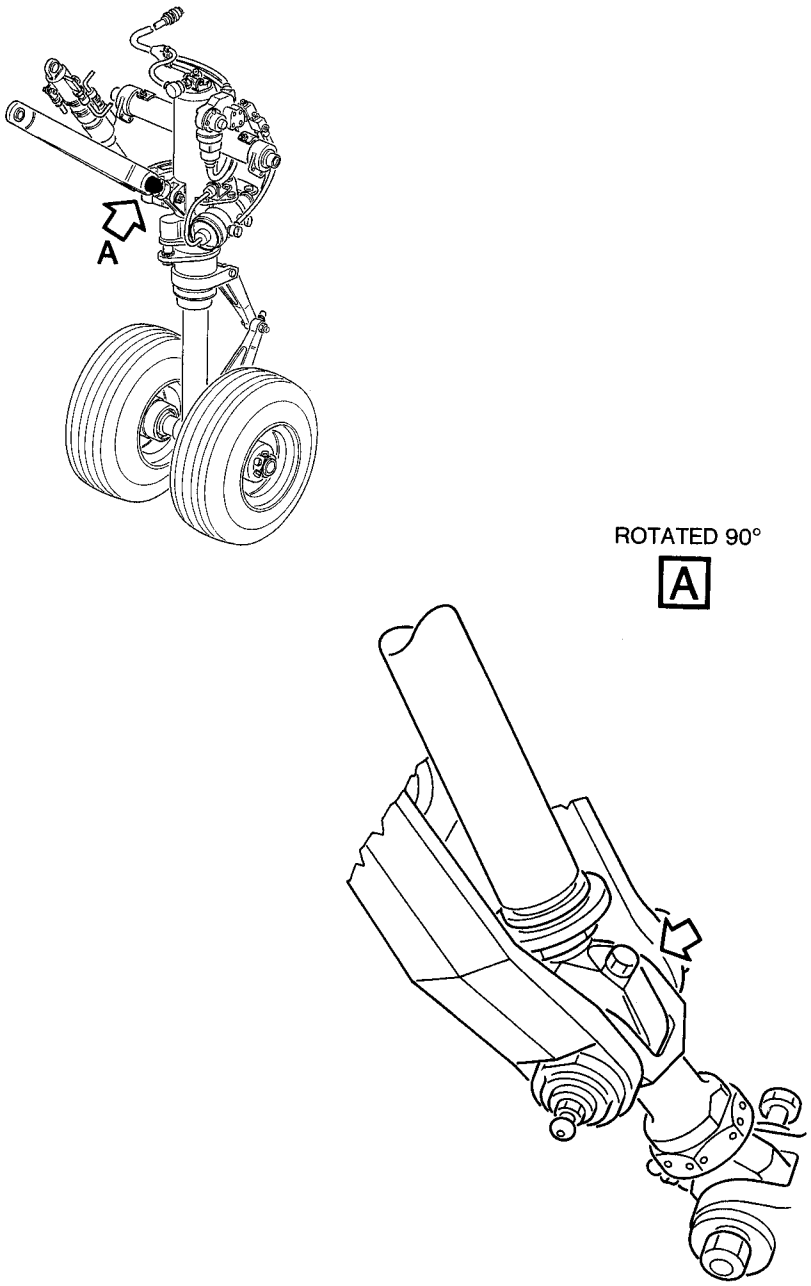

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Fig. 303 - NLG Actuator - Location of Lubrication Fittings

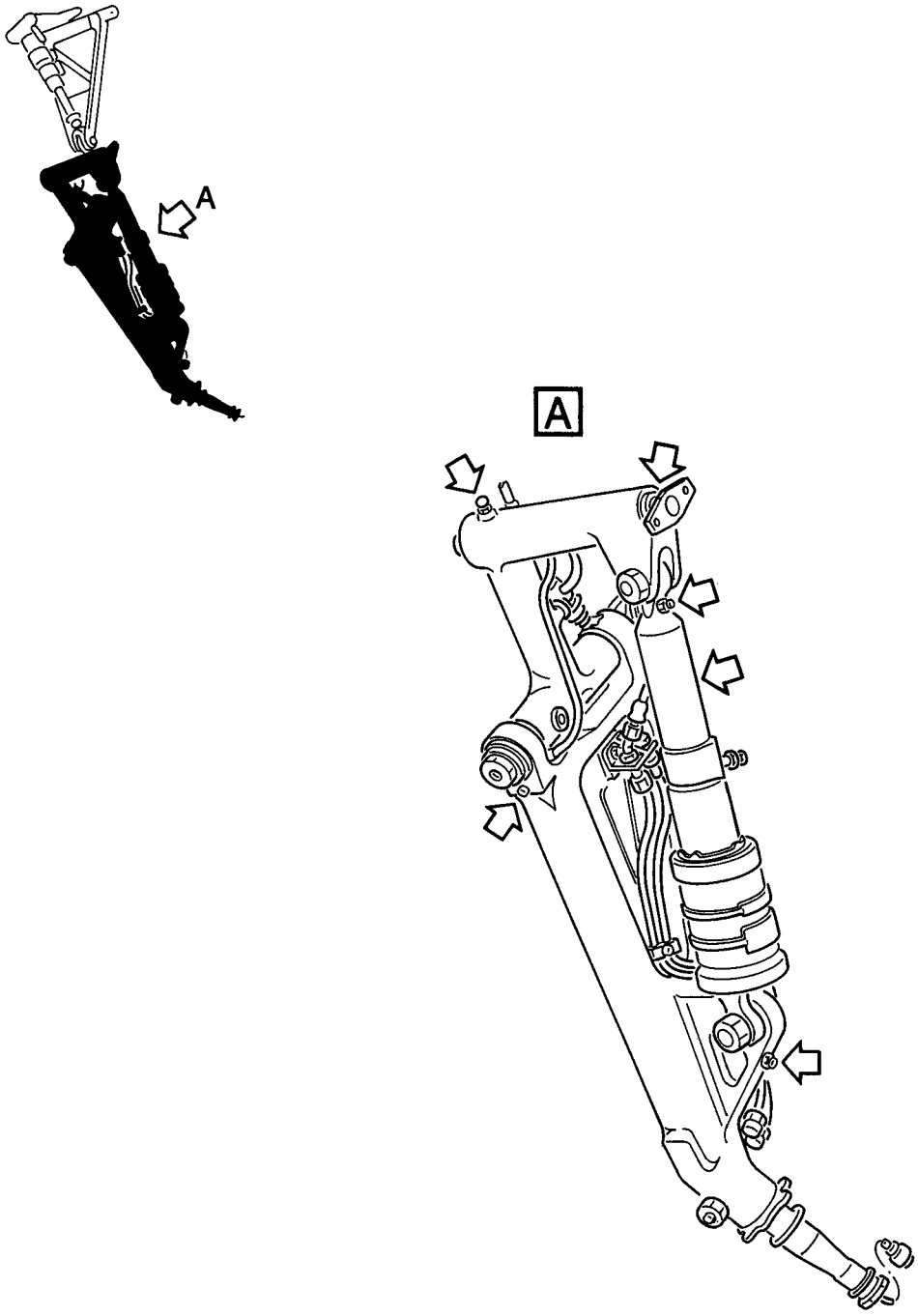

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Fig. 304 - MLG - Location of Lubrication Fittings

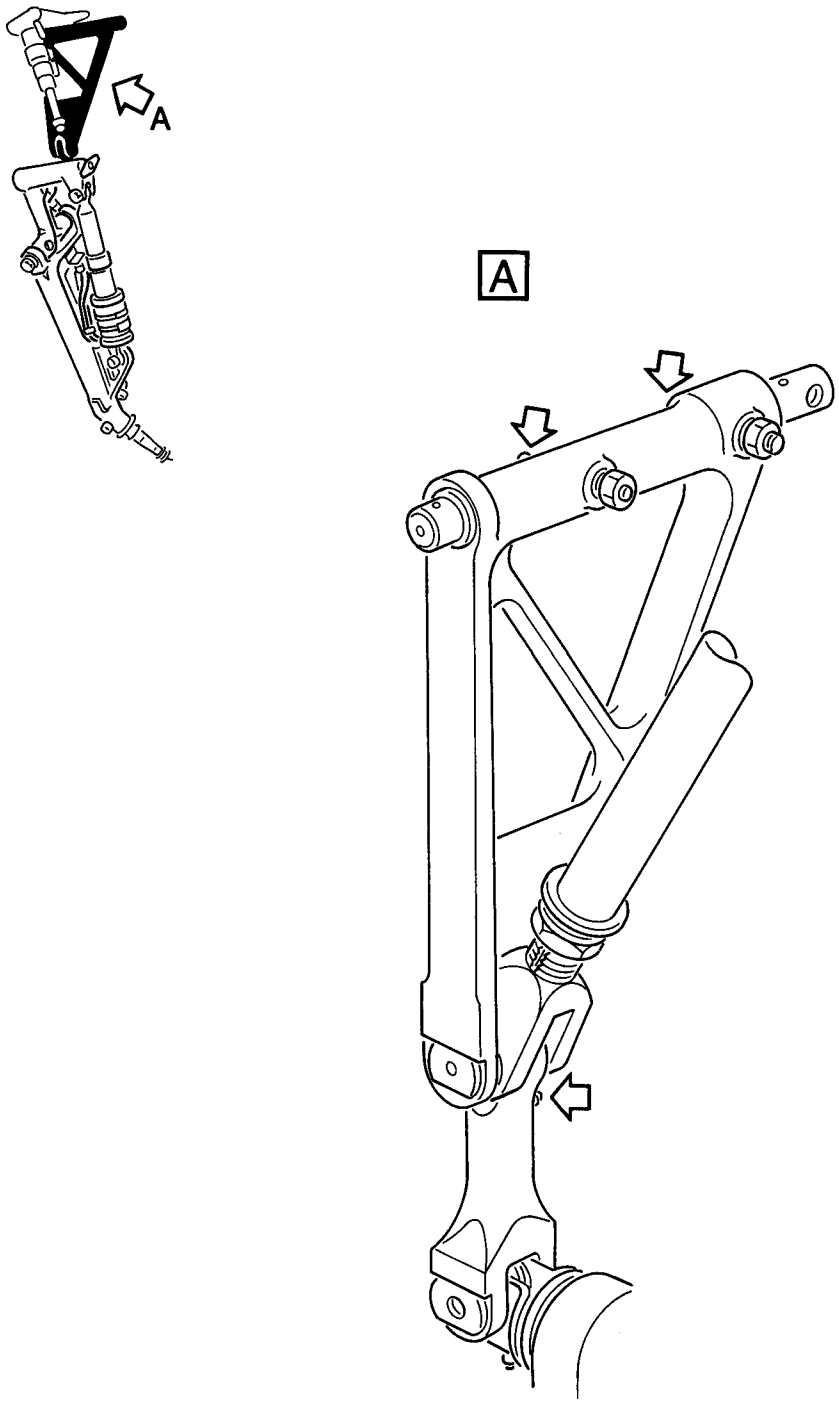

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Fig. 305 - MLG Drag Brace - Location of Lubrication Fittings

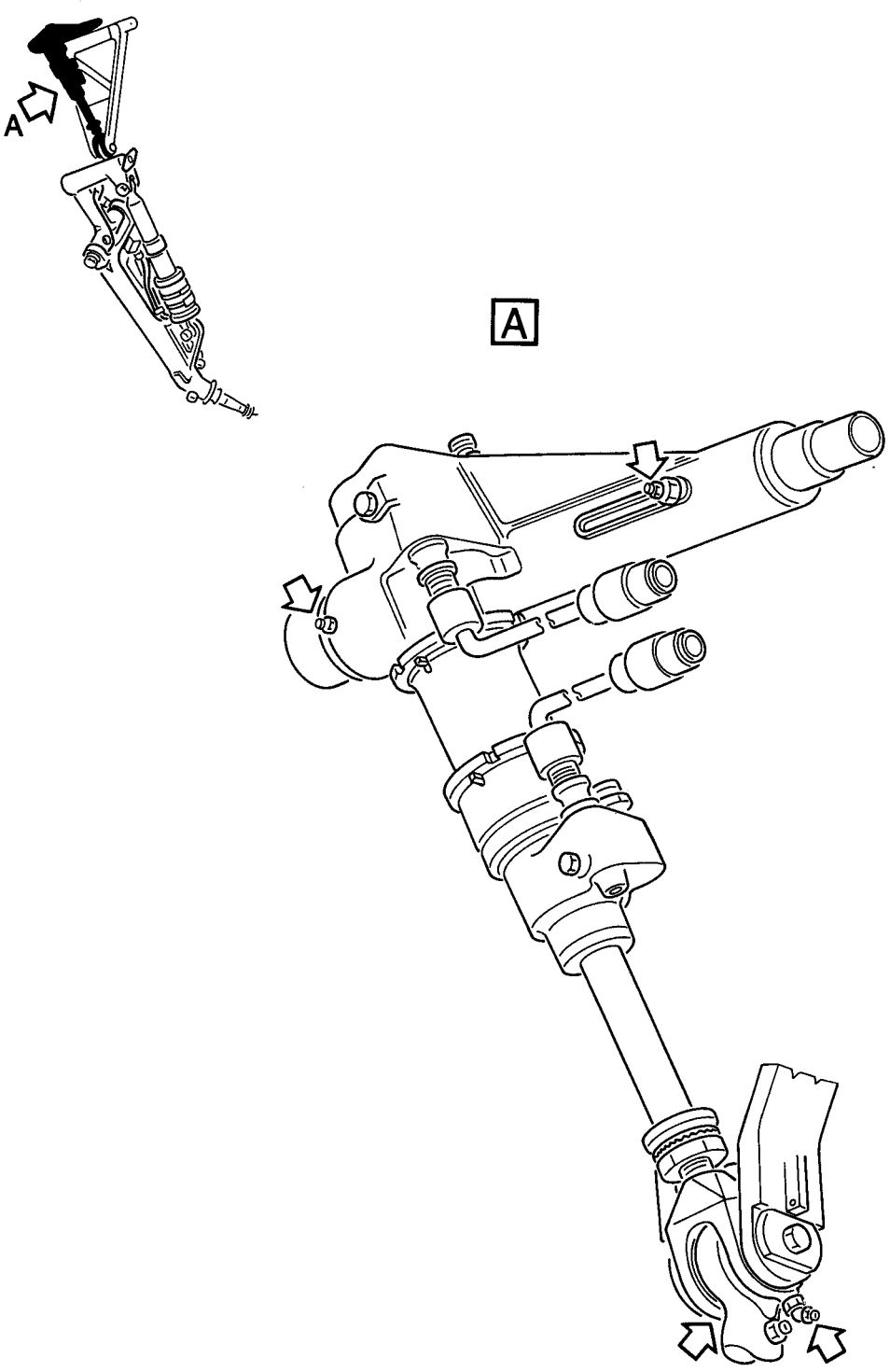

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Fig. 306 - MLG Actuator - Location of Lubrication Fittings

BATTERY - SERVICING

1. Battery - Servicing

A. Fixtures, Test, Materials and Support Equipment

Nomenclature	Part Number	Note	Use
Electrolyte Level Checker	Polystyrene tube 6 inches (152 mm) long 1/8 inch (3 mm) inside diameter	Marathon Battery	To aid in checking electrolyte level in individual cells
Syringe	Not Specified	Marathon Battery	To add liquid
Wrench (Nylon)	Not Specified	Marathon Battery	To remove filler cap plugs
Rubber Gloves	Not Specified	Marathon Battery	To handle electrolyte

B. Referenced Information

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 24-00-00
Marathon Instruction Manual - Marathon Battery

C. Battery Servicing Procedure

WARNING: THE ELECTROLYTE USED IN NICKEL-CADMIUM BATTERIES IS A CAUSTIC SOLUTION OF POTASSIUM HYDROXIDE. SERIOUS BURNS WILL RESULT IF IT COMES IN CONTACT WITH ANY PART OF THE HUMAN BODY. IF ELECTROLYTE GETS ON THE SKIN, WASH THE AFFECTED AREAS WITH LARGE QUANTITIES OF WATER, NEUTRALIZE WITH THREE PERCENT ACETIC ACID, VINEGAR OR LEMON JUICE. IF ELECTROLYTE GETS INTO THE EYES, FLUSH WITH WATER AND GET IMMEDIATE MEDICAL ATTENTION.

CAUTION: THE USE OF RUBBER SURGICAL GLOVES IS SUGGESTED FOR THE OPERATION OF BATTERY SERVICING.

CAUTION:

(1) MAKE ELECTROLYTE ADJUSTMENT WITH DISTILLED, DEIONIZED OR DEMINERALIZED WATER ONLY.
(2) DO NOT OVERFILL.
(3) DO NOT ADD WATER WHEN BATTERY IS IN A DISCHARGED STATE UNLESS AN ABNORMALLY HIGH CELL VOLTAGE READING (GREATER THAN 1.5 VOLTS) IS ENCOUNTERED IMMEDIATELY AFTER REPLACING THE BATTERY ON CHARGE.
(4) DO NOT ADD ELECTROLYTE.
(5) DO NOT OVERFILL.
(6) DO NOT USE ACID OR TOOLS WHICH HAVE ACID ON THEM. PERSONAL INJURY AND/OR EQUIPMENT DAMAGE MAY RESULT.

(1) Battery Electrolyte Level Check Procedure and Adjustment (Ref. to Fig. 301) - Marathon Battery
  (a) Remove the battery from the airplane (Ref. to Chapter 24-00-00, Removal Installation and Chapter 06-00-00).
  (b) Remove the battery cover.

  NOTE: Cap should be removed using nylon filler cap plug wrench.

  (c) Remove the cell cap.
  (d) Liquid level may be determined by looking down into the vent well after cap is removed.
  (e) If it is not possible to determine the liquid level in above manner, use a clear polystyrene tube which is open at both ends, about six inches (152 mm) long with approximately 1/8 inch (3 mm) inside diameter.
  (f) Insert into the filler opening deeply enough to touch the top of the plates or plastic insert.
  (g) Hold the tube between the tumb and the fingers of the hand; place the index finger over the top end of the tube and remove the tube from the filler well.
  (h) The electrolyte level should be 1/8 inch (3 mm) above the visible insert after allowing the battery to stand 2 to 4 hours following a charge. If time does not permit the 2 to 4 hour waiting period, an approximate level would be about 1/4 inch (6 mm) above the visible insert immediately after charge.
  (i) If no liquid is withdrawn, add distilled or demineralized water until the proper level is reached in the polystyrene tube.

  NOTE: Use a syringe to add liquid.

  (j) Reinstall filler cap using nylon wrench.
  (k) Repeat the steps (c) through (j) for all the battery cells.
  (l) Install the battery cover.
  (m) Install the battery into the airplane (Ref. to Chapter 24-00-00 Removal/ Installation).

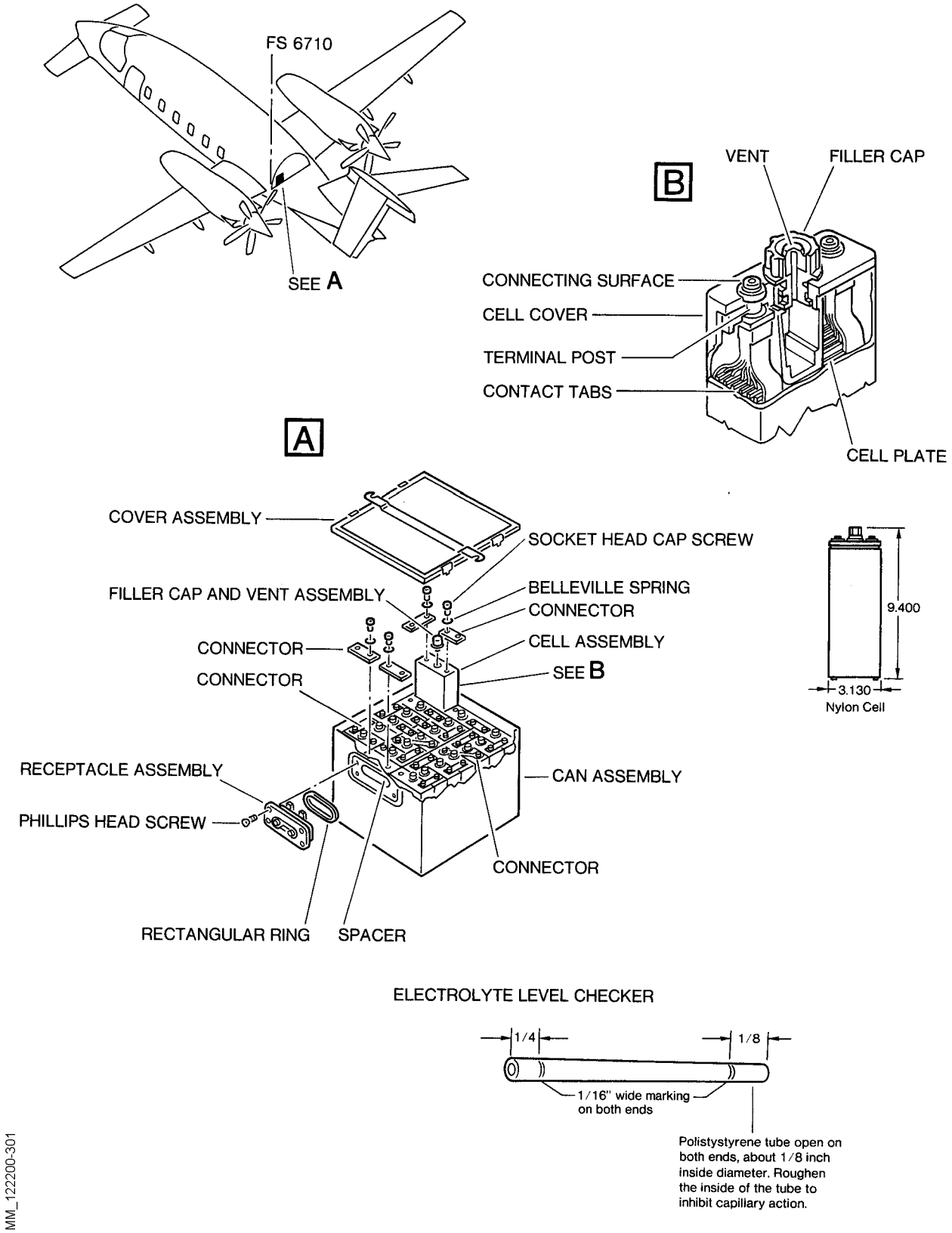

Fig. 301 - MARATHON Battery Servicing

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STARTER / GENERATOR - SERVICING

1. Brush Holders and Spring - Evaluation of Expected Remaining Life

A. Procedure

(a) To evaluate the expected brushes remaining life, apply the following formula:

$$T_{RES} = \frac{T_{OP}(100 - Wear)}{Wear} * 0,8$$

Where:

- Tres: Expected Brushes Life remaining (in Flight Hours)
- Top: Brushes accrued flight hours since installation
- Wear: Percentage of brushes already used (use higher value in the set)

After first check, subsequent check are requested within Tres / 400 FH (whichever occurs first).

NOTE: When the check is performed during a 200 FH nacelle light inspection and servicing, or during an aircraft B/C/D check, and Tres is less than 400 FH, it is suggested to perform subsequent check at the next 200 FH nacelle light inspection and servicing, or aircraft B/C/D check.

If Tres is less than 250 FH, replace the brushes.

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ELT - SERVICING

1. ELT - Servicing

A. Fixtures, Test, Materials and Support Equipment

Nomenclature	Part Number	Manufacturer
Battery Pack	U158-1	Dorne & Margolin

B. Referenced Information

Maintenance Manual Chapter 25-60-00
Maintenance Manual Chapter 55-00-00

C. Battery Pack Replacement Procedure

CAUTION: DO NOT DAMAGE THE ELECTRICAL CONNECTIONS DURING THE BATTERY REPLACEMENT.

(1) Remove the vertical stabilizer fairings (Ref. to Chapter 55-00-00).
(2) Place the AUTO-OFF-ON switch located on the transmitter in the OFF position.
(3) Remove the screws which hold the cover on the transmitter and remove the cover.
(4) Disconnect the electrical connector and remove the old battery.
(5) Connect a new battery and install it in the compartment.
(6) Reinstall the transmitter cover with the screws.
(7) Set the AUTO-OFF-ON switch, located on the transmitter, in the AUTO position.
(8) A new replacement date must be marked on the outside of the transmitter. This date is 50% of the useful life of the battery as defined by the battery manufacturer.
(9) Perform an operational test as described in Chapter 25-60-00.
(10) Install the vertical stabilizer fairings (Ref. to Chapter 55-00-00).

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CLEANING - MAINTENANCE PRACTICES

1. General

The airplane cleaning is required because the aircraft flies at a higher speed with lower fuel consumption, when the exterior surfaces are cleaned and a clean airplane makes easier to spot problems. Also, cleaning the external surfaces is the most effective way of controlling corrosion.

CAUTION: AVOID ENTRY OF SOLUTIONS AND FLOODING OF SOAP OR WATER INTO AIRPLANE OPENINGS SUCH AS SCOOPS AND STATIC VENTS. IT IS RECOMMENDED THAT SCOOPS BE PLUGGED AND VENTS BE TAPED OVER AS A PRECAUTION. ALSO, INSTALL CAPS ON PITOT, STATIC PORTS, ANGLE-OF-ATTACH SENSOR AND OTHER OPENINGS SUCH AS ENGINE INLETS AND EXHAUST STACKS.

NOTE: How often an airplane should be cleaned depends on the environment in which it has been operating. It is important that the airplane be kept in a clean condition and repeated cleaning should be accomplished as often as necessary. The necessity for cleaning is indicated whenever there is any appreciable amount of soil accumulation within exhaust stack areas, by the presence of salt deposits or other contaminants such as stack gases, by evidence of paint surface deterioration such as softening, flaking or peeling and by the presence of excessive oil or exhaust deposits or spilled electrolyte and deposits around battery area. Cleaning is requested immediately after exposure to fire extinguisher materials, adverse weather conditions, salt spray, after having parked near seawalls during high wind conditons and after repairs or service which left stains, smudges or other gross evidence of maintenance.
Cleaning is required whenever wing and fwd wing leading edges have an accumulation of dirt and dead insects.

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INTERIOR CLEANING - MAINTENANCE PRACTICES

1. Interior Cleaning

A. Fixtures, Test, Materials and Support Equipment

Nomenclature	P/N	Manufacturer	Use
Yosemite	Y999	Yosemite Chemical Corporation	For cleaning vinyl coated fabric, Mylar, scotchcal, murals, polyèlastex, leather, finished flexwood or paitned surfaces
Glisten		Cheamsearch	For cleaning leather
Text		Arexons	For cleaning leather
Aliphatic Naphta		TT-N-95 TYPE II	
Host Dry Cleaning Compound		Host of California	For cleaning drapes, curtains, upholstery, fabrics and carpet
Wet rug shampoo		Not Specified	Carpeting
Perchloro-Ethylene		Not Specified	Spot clean carpet
Stoddard Solvent		Federal Spec.	For cleaning nylon safety belts
Mild soap detergent		Not Specified	For cleaning nylon safety belt and plastics
Hot water sprayer solution		Not specified	For spraying cleaning and rinsing

Nomenclature	P/N	Manufacturer	Use
Chamois Cloth and Sponge		Not specified	For hand cleaning
Vacuum cleaner		Not Specified	For vacuum cleaning
Optical Glass Cleaner		CPN 001-0012-000	For LCD
Watchcraft Lens Tissue		CPN 056-0004-000	For LCD

B. Referenced Information

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 25-00-00
Maintenance Manual Chapter 51-00-00
Maintenance Manual Chapter 56-00-00

C. Preparation for cleaning procedure

(1) Ground the airplane to prevent static electricity.
(2) Mask or otherwise cover all equipment or components that can be damaged by the cleaning moisture. use barrier material and masking tape.

D. Interior Decorative Material Cleaning Procedure, Water Soluble Compounds.

WARNING: CLEANING OPERATIONS USING SOLVENTS SHOULD BE PERFORMED IN A WELL VENTILATED ATMOSPHERE. EXERCISE NORMAL SAFETY PRECAUTIONS DURING USE.

(1) Spray or wipe the compound on over the solid surface.
(2) Wipe off with a chamois clean cloth dampened in water.

E. Interior Decorative Material Cleaning Procedure, Aliphatic Naphta.

(1) Wipe with a clean cloth dampened with naphta and wipe dry with a clean cloth.

NOTE: When removing tar, asphalt or chewing gum, remove as much as possible (carefully) with a knife.
Apply naphta to the residue and then wipe dry with a clean cloth; this has a buffing effect that eliminates the possibility of stain from the solution.

F. Interior Rug, Drape, Curtain and Upholstery Cleaning Procedure, Dry clean commercially.

(1) Self explanatory.

G. Interior Rug, Drape, Curtain and Upholstery Cleaning Procedure, Host dry cleaning compound.

(1) Sprinkle the compound liberally on the soiled area.
(2) Rub the compound into the solid area.
(3) Remove the compound with a vacuum cleaner.

H. Interior Rug, Drape, Curtain and Upholstery Cleaning Procedure, Wet Shampoo

(1) Remove carpet or upholstery from the airplane. If at all possible use the spot-cleaning method.
(2) Vacuum the carpet and upholstery, removing as much dirt and dust as possible.
(3) Place a tablespoon of shampoo in a pot and direct a jet of water into the shampoo to produce abundant foam.
(4) Apply the foam uniformly over the surface to be cleaned.
(5) Remove the suds by wiping with a brush or clean cotton cloth, since there is very little moisture in the foam, wetting of the fabric or retention of moisture will not occur.

CAUTION: USE OF A MECHANICAL SHAMPOONER MAY DISTORT THE CARPET.

(6) If tar, asphalt or chewing gum is present, remove as much as possible by mechanical means: then perform steps from 1 to 4.

I. Spot Cleaning Procedure

(1) Spot-clean tufted carpet in the airplane, if at all possible, rather than completely removing the carpet for shampooing.
(2) Saturate a clean white or colorless cloth with Perchloroethylene solution.

CAUTION: DO NOT POUR PERCHLOROETHYLENE SOLUTION ON THE CARPET.

(3) Hand-rub the Perchloroethylene-saturated cloth in a circular motion on the solid spot.

CAUTION: DO NOT USE A MECHANICAL SHAMPOONER; IT WILL DISTORT THE CARPET.

(4) An upholstery hand shampooner may be utilized on difficult-to-clean areas.

J. Glass Windshield Internal Cleaning Procedure

(1) Refer to Chapter 56-00-00.

K. Acrylic Window Internal Cleaning Procedure

CAUTION: DO NOT USE THE FOLLOWING MATERIALS ON ACRYLIC PLASTICS: GASOLINE, ALCOHOL, BENZENE, HEXANE, XYLENE, ACETONE, CARBON TETRACHLORIDE, FIRE EXTINGUISHING AGENTS, DE-ICING FLUIDS, LACQUER THINNERS OR WINDOW CLEANING SPRAYS, AS THEY SOFTEN THE PLASTIC/OR CAUSE CRAZING.

CAUTION: RUBBING THE PLASTIC SURFACE WITH A DRY CLOTH WILL CAUSE SCRATCHES AND BUILD UP AN ELECTROSTATIC CHARGE WHICH ATTRACTS DUST PARTICLES. ALL RUBBING OPERATIONS AN ACRYLIC PLASTICS SHALL BE DONE WITH AS LIGHT A PRESSURE AS POSSIBLE.

(1) Remove loosely adhering dirt and grit from the window by flushing with water filtered free of dirt and abrasive materials.

(2) Wash with non-abrasive soap and water. A soft, thoroughly clean cloth, sponge or chamois may be used in washing, but only as a means of carrying the soapy water to the plastic. Go over the surface only with the bare hand so that any abrasive can be quickly detected and removed before it scratches the plastic surface.

(3) Dry the window with a clean, damp chamois. A clean, soft cloth or tissue may be used if care is taken not to rub the plastic after it is dry.

(4) Remove oil and grease by rubbing lightly with a cloth wetted with aliphatic naphta.

L. LCD Cleaning

The EFIS contains several panel-mounted units which have glass LCD displays.These displays should be routinely cleaned. Use the cleaning materials (or equivalent substitutes) as follows:

•Gliss'n optical glass cleaner (CPN 001-0012-000).
•Watchcraft Lens tissue (CPN 056-0004-000) or a soft, low-lint cloth.

CAUTION: DO NO USED SOLVENT TO CLEAN THE OPTIC FILTER (FACE) OF THE LCD. THE GLASS IS COATED WITH AN ANTIREFLECTIVE COATING THAT MAY BE DAMAGED USING SOLVENTS.

CAUTION: USE CARE AT ALL TIME WHEN CLEANING THE LCD TO PREVENT DAMAGE TO THE ANTIREFLECTIVE COATING. MAKE SURE THAT THE CLEANING TISSUE IS FLAT AND NOT CREASED WHEN USED. DOING THIS REDUCES PRESSURE POINTS THAT COULD CAUSE STREAKING OR DAMAGE TO THE LCD FILTER COATING.
MAKE SURE THAT THE CLEANING CLOTH (IF USED) IS SOFT AND PRATICALLY LINT FREE. SOME CLOTH MATERIALS COULD DAMAGE THE LCD FILTER COATING.

(a) Clean dust and light fingerprints from the LCD face as follows. Wipe the LCD with a nonabrasive, lint-free lens tissue that is available in most

photography stores.

(b) Remove oily fingerprints or any residue from the LCD face as follows. Apply gass cleaner to the lens tissue (or to the soft cloth); do not apply the liquid directly to the LCD. This prevents the liquid from running between the filter and bezel. Use several layers of the tissue as necessary for strength. Rub the wet tissue around the display face to remove any residue of fingerprints. After the display face is clean, use a clean, dry tissue to remove excess liquid and any streaks.

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EXTERIOR CLEANING - MAINTENANCE PRACTICES

1. Exterior Cleaning

A. Fixture, Test and Support Equipment

Nomenclature	P/N	Manufacturer	Use
Low PressureSprayer (garden sprayer)		Not Specified	Exterior spraying
Mild Soap Shampoo		Not Specified	Cleaning
Chamois Cloth and Sponge		Not Specified	Hand Cleaning

B. Referenced Information

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 25-00-00
Maintenance Manual Chapter 51-00-00
Maintenance Manual Chapter 56-00-00

C. Preparation for Cleaning Procedure

(1) Ground the airplane to prevent static electricity.
(2) Mask or otherwise cover all equipment or components that can be damaged by the cleaning moisture. Use barrier material and masking tape.

D. Airplane Exterior Cleaning Procedure (Ref. to Fig. 201)

(1) All airplane exterior cleaning operations are performed with detergent cleaning.
(2) Prepare a solution of soap in water and apply it with a circular motion on the airplane exterior surfaces.
Spray the solution with a low pressure sprayer (garden type) may be used. Airplane must be cleaned starting at the lower surfaces and worked upward and out.
Heavily soiled or difficult to clean are as well cleaned repeatedly.

CAUTION: DO NOT BRUSH WINDSHIELDS AND WINDOWS. THIS IS TO AVOID ANY DAMAGE TO THEIR SURFACES. THIS COULD BE VERY DANGEROUS FOR THEIR RESISTANCE TO STRESS.

CAUTION: DO NOT USE HIGH-PRESSURE WATER ON BEARINGS, ELECTRICAL OR ELECTRONIC EQUIPMENT.

NOTE: Do not apply cleaner to excessively large areas which cannot be adequately brushed and thoroughly rinsed before the cleaner dries on the surface.

(3) Allow cleaner to soak for 5 to 10 minutes.

CAUTION: CHECK THAT THE FUSELAGE DRAIN HOLES ARE FREE FROM VARIOUS OBSTRUCTIONS.

CAUTION: MAINTENANCE PERSONNEL ARE REMINDED TO PROTECT AIRPLANE WHEELS AND BRAKES FROM DIRECT WASHING SPRAY AND INFORM THE FLIGHT CREW IF THE AIRPLANE OR LANDING GEAR HAS BEEN WASHED RECENTLY.

NOTE: Do not allow cleaner to dry on the surface before rinsing, as staining can result.

(4) Reapply the solution with a brush and scrub where necessary.

(5) Pressure wash all surfaces contacted by the cleaner thoroughly with fresh water, preferably warm (120 °F to 140 °F, or 50 °C to 60 °C).

E. Stained Area Cleaning Procedure

(1) Apply cleaner with a mop or nonatomizing spray.

(2) Allow cleaner to soak for 5 to 10 minutes.

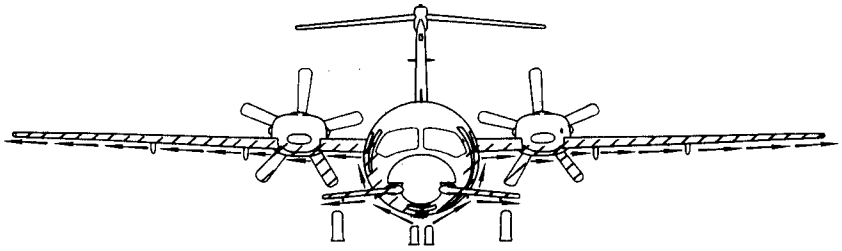
(3) Flush thoroughly with a pressure water rinse.

F. Glass Windshield External Cleaning Procedure

(1) Refer to Chapter 56-00-00.

G. Acrylic Window External Cleaning Procedure

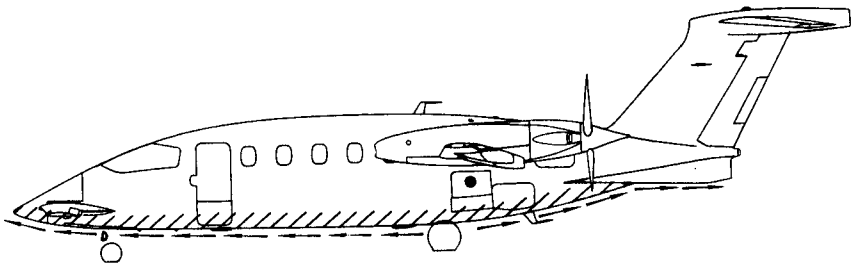
(1) Refer to Chapter 56-00-00.



Step 1

WASH THE LOWER SURFACE OF WING, SPRAYING FROM THE CENTER SECTION TOWARD THE FWD WING TIPS AND THE WING TIPS

NOTE: EXTEND FLAPS TO PERMIT CLEANING OF HIDDEN AREAS



Step 2

WASH THE LOWER SURFACE OF FUSELAGE AND TAIL SECTIONS FROM MAIN LANDING GEAR TOWARD BOTH ENDS AND SPRAYING IN DIRECTION OF MOVEMENT

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Fig. 201 (Sheet 1) - Airplane Exterior - Cleaning

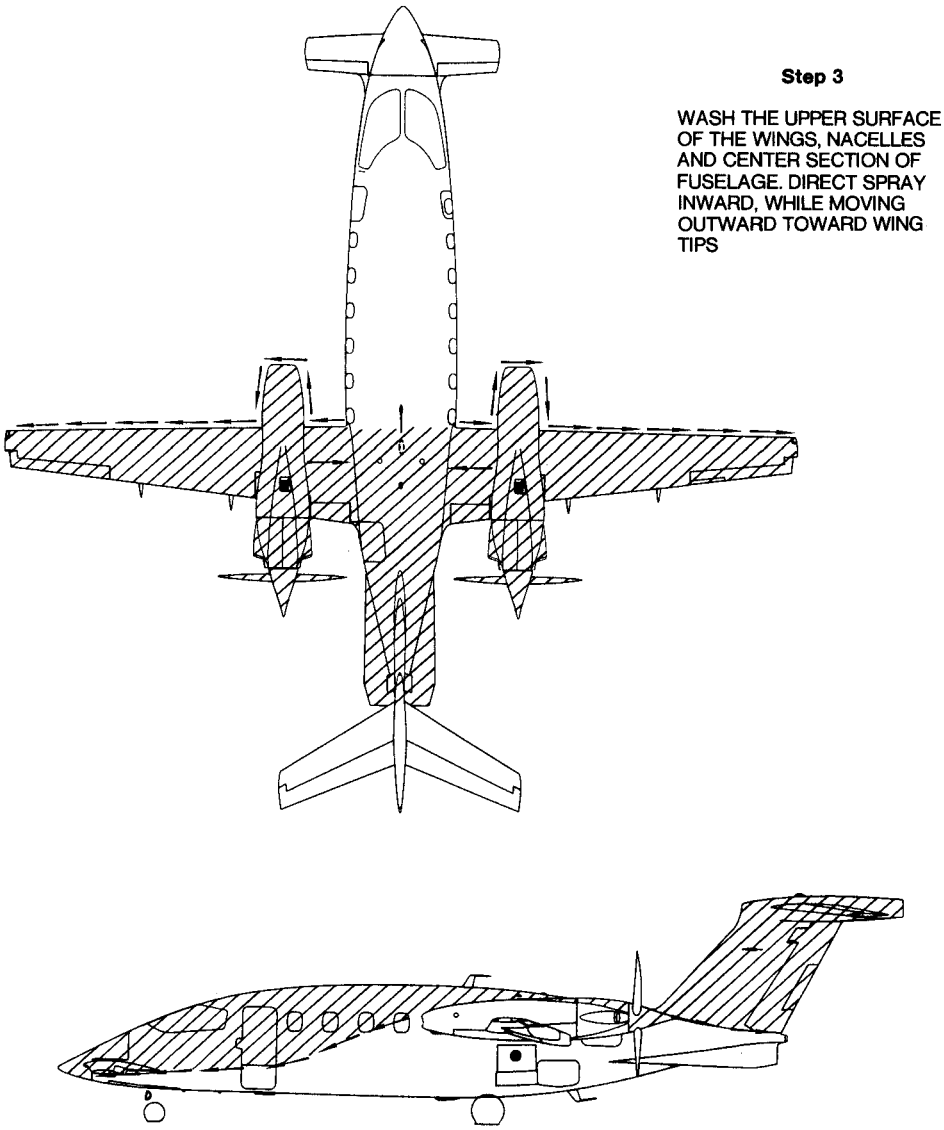

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Fig. 201 (Sheet 1) - Airplane Exterior - Cleaning

PROPELLER - MAINTENANCE PRACTICES

1. Blade Surface - Cleaning Procedure

A. Fixture, Test and Support Equipment

Kerosene	04-025
Methyl-Ethyl-Ketone	02-009
Acetone	04-001
Lint-free Cloth	04-013

B. Referenced Information

Maintenance Manual Chapter 05-00-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB Panel
L ENG START
R ENG START

WARNING: BE CAREFUL WHEN YOU USE SOLVENTS. OBEY THE HEALTH AND SAFETY INFORMATION GIVEN IN CHAPTER 20-00-00.

CAUTION: MAKE SURE THAT THE CLEANER DOES NOT RUN BACK INTO THE PROPELLER HUB.

(2) Apply the solvent (Kerosene or MEK or Acetone) to a clean, white lint-free cloth until the cloth is well saturated but not dripping.
(3) Wipe the blade surface with the saturated cloth as required to dissolve or loosen the contamination.
(4) Dry the surface with a clean, white lint-free cloth while the surface is still wet.
(5) Remove the safety tags and close these circuit breakers:

Pilot CB Panel
L ENG START
R ENG START

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WATER/WASTE - SERVICING

1. Water/Waste - Servicing

A. Fixture, Test, Materials and Support Equipment

Nomenclature	P/N	Manufacturer	Use
Chemical Deodorant, Toilet	Not Specified		For servicing toilet
Disinfectant	Lysol or Equiv.	Commercially Available	For cleaning toilet
Germicidal	DG-19	Monogram	For sterilization
Mild Soap	Not Specified		For cleaning
Thrichloroethylene	Fed.Spec.O-T-634		For cleaning
Water Hose	Not Specified		For flushing
Cleaning Cloth	Not Specified		For cleaning
Cleaning Brush	Not Specified		For cleaning
Rubber Gloves	Not Specified		For flushing
Warm Air Fan	Not Specified		For drying

B. Referenced Information

Maintenance Manual Chapter 06-00-00
Maintenance Manual Chapter 25-00-00
Maintenance Manual Chapter 51-00-00
Monogram CMM MM-170

C. Toilet Fluid Discharged

WARNING: FOR SANITARY REASONS, ALWAYS WEAR RUBBER GLOVES (ELBOW LENGTH) WHILE SERVICING OR WHEN HANDLING PARTS WHICH HAVE BEEN IN CONTACT WITH THE FLUSHING FLUID.

NOTE: To avoid spillage, do not remove tank when fluid level is above the knife valve.

(1) Remove the toilet seat from the cabin.
(2) Remove the toilet from the seat.
(3) Hold a small paper of plastic cup against the bowl interior (preferably at the bowl flush ring outlet).
(4) Depress the "Push to Flush" button to circulate flushing fluid.
(5) Pour the flushing fluid into a bucket until the fluid level is below the knife valve.
(6) Install the toilet seat in the cabin.

D. Initial Precharge (Ref. to Fig. 301)

NOTE: The removable tank is to be precharged with a mixture of 2 quarts (1.89 l) of water and 1 dissolvable package of germicidal deodorant, Monogram's ChemKare.

E. Toilet Cleaning Before-Disassembly Procedure (Ref. to Fig. 301)

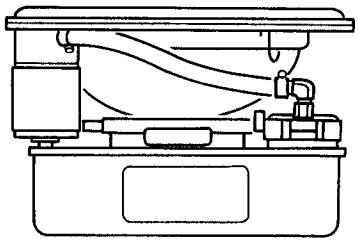
The following methods should be used for cleaning the toilet before disassembly and also for cleaning the disassembled components.

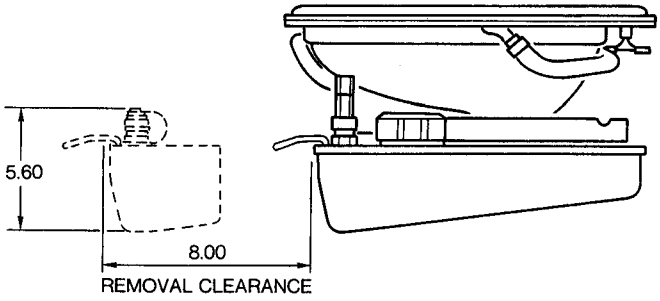
WARNING: WHEN USING TRICHLOROETHYLENE, WEAR SUITABLE PROTECTIVE GLOVES. TRICHLOROETHYLENE ABSORBS MOISTURE READILY AND CAN CAUSE SERIOUS BURNS WHEN IN PROLONGED CONTACT WITH THE SKIN.

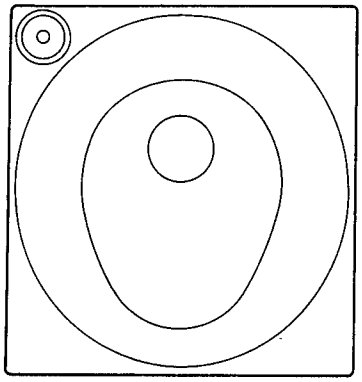
(1) Remove the toilet seat from the cabin.
(2) Open front access to the toilet.
(3) Remove the toilet from the seat.
(4) Back flush the toilet tank to clean the strainer inside the tank by connecting a water hose to the quick disconnect coupling on the tank top.
(5) The toilet should be cleaned manually using a strong solution of hot soapy water and disinfectant. Rinse thoroughly with clean water and dry completely with a cloth and warm dry air.
(6) Wash all mechanical parts in a strong solution of hot soapy water and disinfectant.
(7) Clean electrical parts manually, using cloth moistened sparingly with trichloroethylene.
(8) Clean the tank and bowl manually, using a strong solution of disinfectant, hot soapy water and bristle brush. Scrub the flush channel in the upper rim of the bowl to remove buildup of deposits. Rinse thoroughly with clean hot water and dry completely.
(9) Install the toilet in the seat.
(10) Install the toilet seat in the cabin.

F. Toilet Servicing (Ref. to Fig. 301)

(1) Tank Removal Procedure
  (a) Remove the toilet seat from the cabin.
  (b) Open front access to the toilet to remove the toilet tank.
  (c) Depress the lock ring of the flush hose quick disconnect coupling located on the right side at the front of the tank top.
  (d) Drain any residue of flush fluid in the hose by partially disengaging the plug from the quick disconnect and manipulating the hose to assist drainage.
  (e) Remove the flush hose from the quick disconnect and place hose in the retaining clip located on the underside of the toilet mounting plate
  (f) Install the plug attached top the quick disconnect to seal the coupling.
  (g) Close the knife valve at the bottom of the toilet bowl by pushing the actuator handle until the valve is fully closed.







MM_122500-301

Fig. 301 - Toilet - Servicing

(h) Press the two Pres-Loc fasteners on each side of the knife valve actuator to unlock the tank.

(i) Remove the tank by pulling the recessed carrying handle on the tank top.

(2) Tank Cleaning Procedure

(a) Remove cap from the pour spout to dispose of tank contents in a sewer or toilet.

(b) Rinse the tank by filling one-half full with water. Close the knife valve and shake vigorously. Drain tank as in previous step (a).

(c) Rinse and drain the tank several times to ensure that the tank is thoroughly clean.

(d) Wipe the exterior surfaces of the tank using a cloth moistened with clear water and disinfectant.

(3) Tank Precharge

CAUTION: COMMERCIAL DETERGENTS AND DISINFECTANTS CAN BE INCLUDED IN THE RINSE WATER IF DESIRED. HOWEVER, DO NOT INCLUDE THESE MATERIALS IN THE TANK PRECHARGE.

NOTE: To assure toilet recirculation system operation during freezing weather, an ethylene glycol base anti-freeze containing anti-foam agent may be added to the flush fluid.

(a) Charge the tank with a mixture of 2 quarts (1.89 l) of water and 1 dissolvable package of Monogram's ChemKare Chemical.

(4) Tank Installation

(a) Re-install the tank by inserting the slides located on each side of the knife valve into the slide plate assembly on the bottom of the toilet bowl and slide tank into place.

(b) Press the two Pres-Loc fasteners to the first detent to secure the tank.

(c) Remove the plug in the flush hose quick disconnect, lock the disconnect lock ring.

(d) Pull the knife valve actuator to fully open the valve.

(e) Lift the toilet seat and shroud assy from the top of the toilet and wipe with cloth moistened with clear water and disinfectant. Wipe the bowl and surrounding area.

(f) Check flushing operation of the toilet and check for leaks.

(g) Close access to the toilet.

(h) Re-install the toilet in the seat and the toilet seat in the cabin.

AIRPLANE DE-ICING AND ANTI-ICING - MAINTENANCE PRACTICES

1. General

A. Snow and ice on the airplane will seriously affect performance. Even a smooth covering of thin ice on a lifting surface will cause a change to the aerodynamic profile that will increase drag and reduce lift.

B. Frost or frozen snow is an even greater hazard as the surface texture is rough and will seriously disrupt the airflow over the surface.

C. Any accretion of ice, frost or frozen snow must be removed from the airplane before flight.

D. If flights are not scheduled and snow or freezing conditions are forecast it is advisable to put the airplane into a hangar to avoid damage due to bad weather.

2. De-icing/Anti-Icing

NOTE: Before use De-Icing or Anti-Icing fluid read the manufacturer specifications.

A. Fixtures, Test and Support Equipment

De-icing fluid application equipment	Not specified
Soft brush for snow removal	Not specified
Mop squeeze for snow removal	Not specified
Soft cloths for frost removal	Not specified

B. Materials

De-icing fluid	04-024
Anti-icing fluid	04-026

C. Referenced Information

Maintenance Manual Chapter 20-00-00

D. Procedure

WARNING: BE CAREFUL WHEN YOU USE DE-ICING FLUID. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(1) Remove any loose snow from the airplane.

CAUTION: BE CAREFUL WHEN YOU BRUSH SNOW FROM THE AIRPLANE. CARELESS BRUSHING CAN CAUSE DAMAGE TO WINDSHIELDS, WINDOWS, SENSORS, ANTENNAS, PITOT TUBES, STATIC WICKS AND OTHER FRAGILE COMPONENTS.

(a) Use the brush, mop, or squeegee to brush snow from the airplane. Do not chip or break frozen snow.

(2) Remove any heavy frost from the airplane by wiping with a gloved hand or soft cloth. Leave any frost that can not be removed easily.

(3) Apply de-icing fluid to the airplane.

CAUTION: DO NOT ATTEMPT TO REMOVE ICE DEPOSITS OR BREAK AN ICE BOND BY FORCE. DAMAGE CAN OCCUR.

NOTE: If spray equipment is not available the de-icing fluid can be applied using a paint brush. The following procedure is for spray application.

(a) Prepare the de-icing fluid in accordance with the manufacturer's instructions.

(b) Use spray equipment operated at approximately 60-80 psi.

(c) Adjust the spray nozzle to give a fan shaped pattern.

(d) Adjust the flow. The flow should be as fine as possible but sufficient to float away pieces of ice.

CAUTION: DO NOT DIRECT THE SPRAY TOWARDS THE FOLLOWING AREAS:

– GAPS AROUND DOORS
– BEARINGS
– INLET AND OUTLET AIR DUCTS
– WINDSHIELDS AND WINDOWS.

DAMAGE OR THE INGRESS OF TOXIC FUMES INTO THE AIRPLANE CAN RESULT.

(e) Apply the de-icing fluid working from high points to low. If possible, stay upwind of the spray.

(f) Continue to apply the fluid until all frozen snow, frost and ice is removed.

(4) Airplane anti-icing (if necessary)

NOTE: If the airplane is to be left standing after de-icing it is recommended that a coat of undiluted de-icing fluid is applied to prevent re-freezing.

(a) Apply a coat of de-icing fluid using a paint brush or spray equipment.

(5) Examine the following areas of the airplane for residual snow, ice or damage caused by de-icing:

– control surface gaps and hinges
– pitot tubes, make sure the tubes are clear
– antennas, static wicks, AOA transducer and ice detector
– landing gear actuators, struts and microswitches
– wheel wells and landing gear doors.

(6) Make sure the windshields are clean.

AIRPLANE COLD WEATHER OPERATIONS

NOTE: Operation of the airplane has been demonstrated after prolonged exposure to a ground ambient temperature of -22 °F (-30 °C) (with take-off at -11 °F (-24 °C)): this was the minimum value achieved during cold weather testing and it is not considered limiting.

1. Preflight

Check the brakes and tires to the ground contact for freeze lock-up. No anti-ice solution which contains a lubricant, such as oil, should be used on the brakes. it will decrease the effectiveness of the brake friction areas. In addition to the normal preflight exterior inspection, special attention should be given to all vents, openings, control surfaces, hinge points and wing, tail, and fuselage surfaces for accumulation of ice or snow. Removal of these accumulations is necessary prior to take-off.
Snow and ice accretions on the airplane will seriously affect its performance. The wing contour may be sufficiently altered by the ice and snow, so that its lift qualities are seriously affected. Snow may be removed with a soft brush or mop. Chipping or mechanical removal of frozen deposits is not recommended. The use of glycol based de-icing fluids is recommended (refer to Section 12-30-30). Inspect the propeller blades and hubs for ice and snow: the propellers should be turned by hand, in the direction of normal rotation, to be sure that they are free to rotate prior to starting the engines. The force required to rotate the propeller may increase at low temperature. Operation of some equipment installed in the flight compartment (as, for example, the digital data instruments, the stall warning computer, etc.) may be sluggish at very low temperature (typically after a cold soak). For this reason, it is recommended to perform the various preflight tests and checks, and to take-off after approximately fifteen minutes from the environmental control system actuation.

2. Engine Run Up

NOTE: Even if the battery installed on the airplane (nickel- cadmium, sintered plate type) gives excellent performance over a wide temperature range, in order to prevent a heavy discharge and to increase the battery life time, it is recommended to use a ground power unit, to start the engines, if the ambient temperature is lower than 5 °F (-15 °C).

To facilitate the engine start, at 13% NG advance the condition lever to the flight idle position, as long as necessary, monitoring the ITT during the engine run up.

NOTE: During the engine start, the oil pressure may increase at a rate slower than normal.

After the engine start, exercise the propellers through low and high pitch, beta range, ground fine range and into reverse range to flush any congealed oil through the system.

3. After shut-down

If the airplane is expected to be soaked at temperature below freezing, remove water and other freazable fluids from the airplane.

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