

SCHEDULED SERVICING - MAINTENANCE PRACTICES

1. Scheduled Servicing

A. Servicing

Proper and periodic servicing of the airplane will prevent considerable wear and greatly lengthen the service life of parts and systems involved. For points of lubrication and the correct interval and materials, Refer to the [LUBRICATION SCHEDULE](#) and [SERVICING SCHEDULE](#).

B. Servicing Schedule

Table 201. Servicing Table

Item	Location	Service With	Interval
CHECK			
Engine Oil Level	Access door on upper cowling.	See Oil Grades Table (Refer to 12-10-00, 201, Table 202) or (79-00-00, Table 1).	Preflight.
Battery Electrolyte Level	Forward utility compartment under baggage floor.	Refer to 12-10-00, 201 , for detailed instructions.	100 hrs.
Autopilot Servo Air Filter (If installed)	Aft of baggage compartment partition.		100 hrs.
Propeller Accumulator (if installed)	Upper rear inboard side of engine compartment.	Dry air or nitrogen.	100 hrs.
Air Conditioner Compressor Oil Level	Refer to 12-10-00, 201 for location and special instructions.	Oil (35, Table 1, 20-40-00, 001).	As required.
Air Conditioner Refrigerant	Refer to 12-10-00, 201 for location and special instructions.	Refrigerant No. 12 (34, Table 1, 20-40-00, 001).	As required.
Air Conditioner Refrigerant	Refer to 12-10-00, 201 for location and special instructions.	Refrigerant R-134a (68, Table 1, 20-40-00, 001).	As required.
CHANGE			
Engine Oil	Access plate on lower nacelle.	See Oil Grades Table (Refer to 12-10-00, 201, Table 202) or (79-00-00, Table 1).	25 hrs. TC 100 hrs. TE and TH.
Engine Oil Filter	Access door on side of nacelle.		100 hrs. TE and TH.
CLEAN			
Engine Oil Screen (If installed)	Directly below starter.	Clean with solvent and blow dry with compressed air.	25 hrs. TC.
Fuel Strainers	In wheel wells.	Clean with solvent and blow dry with compressed air.	100 hrs.
Fuel Injection Control Valve Screen	Access door on side of the nacelle.	Clean with solvent and blow dry with compressed air.	100 hrs.
Heater Fuel Pump Strainer	In nose wheel well.	Clean with unleaded gas and blow dry with compressed air.	100 hrs.
Heater Fuel Filter (Prior to TC-1406; TE-847 TH-176)	In nose wheel well.	Clean with solvent and blow dry with compressed air.	100 hrs.

Induction Air Filter	At the base of the induction air intake.	Clean with solvent and blow dry with compressed air.	50 hrs.
Pressure Regulator Valve Screens	Forward of the instrument panel on each side.	Clean with solvent and blow dry with compressed air.	100 hrs.
Pressure System Filter (Foam) (TE-452 thru TE-936; TH-1 thru TH-372)	Forward of rear engine baffle.	Clean with soap and water solution.	100 hrs.
Evaporator Blower Filters	Aft of FS 190.00 and fwd of FS 49.00 (E55) fwd of 39.00 (58).	Backflow with compressed air.	Every 100 hrs.
DRAIN			
Main Fuel Cell Drains	Lower side of nacelle.		Preflight.
Auxiliary Fuel Cell Drains	Lower wing surface.		Preflight.
Fuel Strainer Drains	In wheel well.		Preflight.
Heater Fuel Filter (Prior to TC-1406; TE-847; TH-176)	In nose wheel well.		Preflight.
Static Drain	On upholstery panel beside pilot's subpanel.		100 hrs.
REPLACE			
Gyro Central Air Filter	Forward of instrument panel.		300 hrs. or annually, whichever occurs first.
Induction Air Filter	At the base of the induction air intake.		36 months, 5 cleanings or 500 hrs, whichever occurs first.
Autopilot Servo Air Filter(If installed)	Aft of the baggage compartment partition.		1,000 hrs.
Pressure System Filter (TE-937 and After; TH-373 and After; TC-2003 and After)	Forward of rear engine baffle.		Annually or 300 to 500 hrs. depending upon conditions.
SERVICE			
Brake Fluid Reservoir	Forward utility compartment.	MIL-H-5606 Hydraulic Fluid.	As Required.
Main and Nose Landing Gear Struts	Top of each strut.	MIL-H-5606 Hydraulic Fluid and Compressed Air.	100 hrs.
Shimmy Damper	Nose landing gear.	MIL-H-5606 Hydraulic Fluid.	100 hrs.
Oxygen Cylinder(TC-1 thru TC-954)	Behind the cabin aft bulkhead.	MIL-0-27210 Aviator's Oxygen.	As Required.
Oxygen Cylinder(TC-955 and After; TE-1 and After; TH-1 and After)	Forward utility compartment of the nose section.	MIL-0-27210 Aviator's Oxygen.	As Required.

C. Lubrication Schedule

Table 202. Lubrication Table

TC-1 and After; TE-1 and After (Refer to Figure 201)			
TH-1 and After (Refer to Figures 202 and 203)			
Item*	Location	Lubricant	Interval

1. Control column linkage (18) 10	Detail A	SAE 20 or SAE 10W30	100 hrs.
2. Control column head (6) ¹⁰	Detail A	SAE 20 or SAE 10W30	100 hrs.
3. Control column aileron link (3) ¹⁰	Detail A	SAE 20 or SAE 10W30	100 hrs.
1. Door handle (1)	Detail B	SAE 20 or SAE 10W30	100 hrs.
2. Door latch (2)	Detail B	SAE 20 or SAE 10W30	100 hrs.
3. Door latch (1) ²	Detail B	SAE 20 or SAE 10W30	100 hrs.
1. Rudder pedals (8)	Detail C	SAE 20 or SAE 10W30	100 hrs.
1. Landing gear motor gear box (1)	Detail D	MIL-G-81322 ⁹	600 hrs.
2. Landing gear actuator gear box (1) NOTE: Check oil level by engaging and turning the emergency hand crank 1/2 turn to determine that oil is being picked up on the worm gear. The oil level should be maintained no more than necessary to cover 1/2 of the diameter of the worm gear.	Detail D	Mobil Lube SHC 75W Oil (Preferred) MIL-PRF-2105 Grade 75	300 hrs.
3. Landing gear retract arms (14)	Detail D	SAE 10W30	100 hrs.
4. Nose landing gear retract arm (1) ⁷	Detail D	SAE 10W30	100 hrs.
1. Main landing gear door hinges (10)	Detail E	SAE 20 or SAE 10W30	100 hrs.
1. Door latch mechanism (3) 13	Detail F	Aeroshell 17	100 hrs.
2. Door handle (1) ¹³	Detail F	Aeroshell 17	100 hrs.
3. Door hinges (2)	Detail F	MIL-M-7866	100 hrs.
1. Rudder trim tab actuator (1)	Detail G	MIL-G-23827 ⁹	900 hrs. or 5 years
2. Rudder trim tab hinge (1)	Detail G	VV-L-800A (Preferred)LPS- 1CRC 3-36WD-40	100 hrs.
3. Rudder trim tab clevis (1)	Detail G	VV-L-800A (Preferred)LPS- 1CRC 3-36WD-40	100 hrs.
1. Elevator trim tab actuator (2)	Detail H	MIL-G-23827 ⁹	900 hrs. or 5 years
2. Elevator trim tab hinge (2)	Detail H	VV-L-800A (Preferred) LPS- 1CRC 3-36WD-40	100 hrs.
3. Elevator push-pull rod ends (4)	Detail H	SAE 10W30	100 hrs.

4. Elevator trim tab clevis (2)	Detail H	VV-L-800A (Preferred)LPS-1CRC 3-36WD-40	100 hrs.
1. Aileron trim tab actuator (1)	Detail I	MIL-G-23827 ⁹	900 hrs. or 5 years
2. Aileron trim tab hinge (1)	Detail I	VV-L-800A (Preferred)LPS-1CRC 3-36WD-40	100 hrs.
3. Aileron trim tab clevis (1)	Detail I	VV-L-800A (Preferred)LPS-1CRC 3-36WD-40	100 hrs.
1. Aileron bell cranks (6)	Detail J	SAE 20 or SAE 10W30	100 hrs.
2. Aileron push-pull rod ends (4) ¹²	Detail J	MIL-G-23827 ⁹ or SAE 20 or SAE 10W30	100 hrs.
1. Flap actuator (2)	Detail K	Mobil Lube SHC 75W Oil (Preferred) MIL-PRF-2105 Grade 75	900 hrs.
1. Main wheel bearings (4)	Detail L	Aeroshell 5 (Preferred) or MIL-G-81322 ¹¹	100 hrs.
2. Main shock struts (2)	Detail L	MIL-H-5606	100 hrs.
3. Up lock rollers (2) (Refer to LUBRICATION OF LANDING GEAR UPLOCK ROLLERS, 05-20-00, 601)	Detail L		
4. Main gear attach points(4) ¹	Detail L	Aeroshell 22 (Preferred) MIL-G-81322 ⁹	100 hrs.
5. Main gear retract points (8)	Detail L	Aeroshell 22 (Preferred) MIL-G-81322 ⁹	100 hrs.
6. Main gear torque knee (10)	Detail L	Aeroshell 22 (Preferred) MIL-G-81322 ⁹	100 hrs.
1. Flap motor gear box (1) ⁵	Detail M	MIL-G-23827 ⁹	600 hrs.
2. Flap flexible drive shaft (2) ⁶	Detail M	MIL-G-23827 ⁹	900 hrs.
1. Nose wheel door hinges (4)	Detail N	SAE 20 or SAE 10W30	100 hrs.
1. Nose wheel bearings (2)	Detail O	Aeroshell 5 (Preferred)or MIL-G-81322 ¹¹	100 hrs.
2. Shimmy damper (1)	Detail O	MIL-H-5606	100 hrs.
3. Nose shock strut (1)	Detail O	MIL-H-5606	100 hrs.
4. Nose gear torque knee (6) ⁴	Detail O	Aeroshell 22 (Preferred) MIL-G-81322 ⁹	100 hrs.
5. Nose gear swivel fittings (2) ⁸	Detail O	Aeroshell 22 (Preferred) MIL-G-81322 ⁹	100 hrs.
6. Nose gear attach points (2) ⁸	Detail O	Aeroshell 22 (Preferred) MIL-G-81322 ⁹	100 hrs.
7. Nose gear retract points (4)	Detail O	Aeroshell 22 (Preferred) MIL-G-81322 ⁹	100 hrs.
8. Rod end fitting (1)	Detail O	Aeroshell 22 (Preferred) MIL-G-81322 ⁹	100 hrs.

1. Nose steering mechanism (6)	Detail P	Aeroshell 22 (Preferred) MIL-G-81322 ⁹	100 hrs.
2. Rod end bearing	Detail P	SAE 20	As Required
1. Heater iris valve (1)	Detail Q	MIL-M-7866	As Required 14
			300 hrs. 15
NOTE: Any parts that rotate or slide (metal-to-metal) and have no other provision for lubrication must be lubricated with SAE 20 or SAE 10W30 oil.			
() Number in parenthesis indicates number of lubrication points.			
¹ No lubrication required TC-251, TC-344 and After; TE-1 and After.			
² Lubrication required TC-1093 and After; TE-560 and After.			
³ Flap track rollers (pre-lubed sealed bearings).			
⁴ No lubrication required TE-301 and After; TH-1 and After.			
⁵ The flap motor gear box cannot be lubricated on TC-2003 and After; TE-1084 and After; TH-773 and After.			
⁶ Lubricate the inner cable of the flexible drive shaft. Access is gained at the actuator end of the flexible drive shaft by removing the retaining ring from the actuator housing, then pulling the inner cable from the flexible housing.			
⁷ The nose gear retract arm is located beneath the gear box.			
⁸ Lubrication required TH-484 and After; TE-1 and After, except TE-301 thru TE-985.			
⁹ Precaution should be taken when using MIL-G-23827 and MIL-G-81322, since these greases contain chemicals harmful to painted surfaces.			
¹⁰ TH-1389, TH-1396 and After with dual control columns (Refer to Figure 203).			
¹¹ Aeroshell 5 and MIL-G-81322 are not compatible lubricants and must not be mixed.			
CAUTION: If the type of grease in the wheel bearings is changed, make certain that all affected areas are thoroughly cleaned before relubrication.			
¹² Lubricate the aileron push-pull rod ends in place at 100-hour intervals using SAE 20 or SAE 10W30 oil, or remove the aileron push-pull rod assembly, and clean and lubricate rod ends using MIL-G-23827 ⁹ grease. Rotate the rod end eye balls to check for adequate lubrication coverage. Check the aileron system rigging after reinstallation of the push-pull rod assembly.			
¹³ Lubricate between all moving parts and at all joints.			
¹⁴ Lubricate iris valve required TH-2339 and Prior.			
¹⁵ Lubricate iris valve required TH-2340 and After.			

D. Interior Cleaning

Frequently the seats, rug, upholstery panels and head lining should be vacuum-cleaned to remove as much surface dust as possible.

Experience has shown that commercial foam-type cleaners or shampoo can be used to condition the surface of rugs, carpets and upholstered materials. The upholstery is first vacuum-cleaned, stains removed, then a solution of the cleaner is prepared by mixing a small amount in a bucket of water, and beating the mixture until a heavy foam is formed. Apply the foam uniformly over the surface to be cleaned with a brush, then remove the suds with a vacuum cleaner, or by wiping off with a brush or cloth. Since there is very little moisture in this foam, wetting of the fabric or retention of moisture in the warp does not occur. Unlacquered metal fittings and furnishings within the airplane can be cleaned with most commercial metal polishes. Use a soft, clean rag for application; then polish to a brilliant gloss with a dry cloth. Protect the finish with a good grade of wax.

E. Leather Upholstery

Leather upholstery should be kept waxed for maximum protection. For cleaning, a nonabrasive, chemically neutral, nonreactive, emulsion type cleaner of cream-like consistency is recommended. Dilute the cleaner with water, and apply it over the dirty surface with a sponge or soft cloth (use a gentle wiping motion, do not scrub). The solution should not be allowed to stand, but should be wiped off before drying.

F. Exterior Cleaning

Prior to cleaning the exterior, install wheel covers, making certain that wheel brakes are covered; attach pitot covers securely; install plugs in, or mask off, all other openings. Be particularly careful to mask off both static air buttons before washing or waxing.

G. Unpainted Surfaces

Use a BON-AMI type mild abrasive for cleaning unpainted clad aluminum and stainless steel surfaces and for removing stains and embedded surface dirt. These cleaners, while they restore a bright metal finish to the surface, remove any wax that may be on the surface; rewaxing will be necessary. Use cleaner sparingly, applying directly to the surface with a clean damp cloth. Rub briskly so that cleaner will penetrate the dirt and oxide film. Remove excess cleaner and dissolved dirt with another clean damp cloth, and polish surface with a clean dry cloth. Rub to obtain a smooth polished finish.

H. Painted Surfaces

The materials for removing dirt, grease and bug juice from the painted surface are easily obtainable, such as a cellulose sponge, or mild soap - absolutely no synthetic detergents can be used - naphtha, a few clean white rags, a chamois and lots of cool water. When removing dust and dirt, use a cellulose sponge rubbing in a circular motion and adding water when needed. Dry with chamois to prevent water marks.

Oil and grease can be removed with a rag dampened with naphtha. For removing dust and bug juice which adhere to the leading edges and nose, use a mild soap solution and a cellulose sponge. Do not use a synthetic detergent or any harsh soaps. Do not use a hard scrubbing action with the sponge. Flush the entire surface with water to remove all traces of soap and dry with a chamois.

I. Final Wax Application

A thorough waxing protects painted and unpainted metal surfaces by preventing salt air, smoke, moisture and exhaust gas attacks; it retards adherence of sticky airborne dust and minimizes corrosion. The frequency of rewaxing is dependent upon frequency with which regular maintenance cleaning is performed. Apply wax with a soft damp cloth. Rub on surface with a light circular motion, covering an area of approximately 2 square feet at a time. Polish with a clean dry cloth.

CAUTION: At time of delivery, painted surfaces should not be polished or waxed until the finish has cured for at least 90 days. No hard rubbing, abrasive cleaners or wax seals detrimental to the proper curing of the finish should be used.

J. Propellers

Since propellers are subject to severe wear and atmospheric conditions, check blades and dome for oxidation and corrosion. Brush area with a phosphatizing agent to remove superficial corrosion. Smooth etched and pitted areas by buffing smooth with an aluminum polish. Take the following precautionary measures while cleaning the propellers:

- (1) Be sure ignition switches are OFF before cleaning propellers.
- (2) If a liquid cleaner is used, avoid using excessive amounts because it may spatter or run down the blade and enter the hub or engine accessories.
- (3) Check area around hub to be sure all compound is removed.

K. Cleaning Deicer Boots

The boots should be checked for engine oil after servicing and at the end of each flight, and any oil found should be removed. This can be accomplished, preferably, by the use of a neutral soap and water solution. If necessary, however, the oil may be removed by wiping the boot surface lightly with a rag moistened with toluol or uncontaminated unleaded aviation gasoline. When gasoline is used, the surface should be wiped dry immediately without allowing the gasoline to penetrate into the rubber. Also care should be exercised to avoid scrubbing the surface of the boot as this will tend to remove the thin coating of conductive cement.

NOTE: Since deicer boots are made of soft, flexible stock, care must be exercised against dragging gasoline hoses over them or resting ladders or platforms against the boot's surface.

L. Engine Cleaning

The engine may be cleaned with kerosene, Stoddard solvent, or any standard solvent recommended for cleaning engines. The cleaner may be sprayed or brushed on the engine. Wipe the engine dry; compressed air may be used to remove excessive oil.

M. Landing Gear and Tires

Emulsion type cleaners are recommended for cleaning landing gear. These solutions usually contain solvents which are injurious to rubber if allowed to remain in contact for any length of time. If these solvents come in contact with tires as a result of other cleaning operations, the solvent should be removed with a thorough water rinse.

N. Wheel Wells and Nacelles

Most compounds used for removing oil, grease, and surface dirt from wheel wells and nacelles are emulsifying agents. These compounds, when mixed with petroleum solvents, emulsify the oil, grease, and dirt. The emulsion is then removed by rinsing with water or by spraying with a petroleum solvent. Take the following precautionary measures while cleaning the wheels and nacelles:

- a) Cover openings and air scoops.
- b) During cold weather (if water rinse is used) remove any evidence of water by blowing out with an air gun. Any water that remains may freeze and lock the controls.

Figure 201 : Sheet 1 : Lubrication Diagram (TC-1 and After; TE-1 and After)

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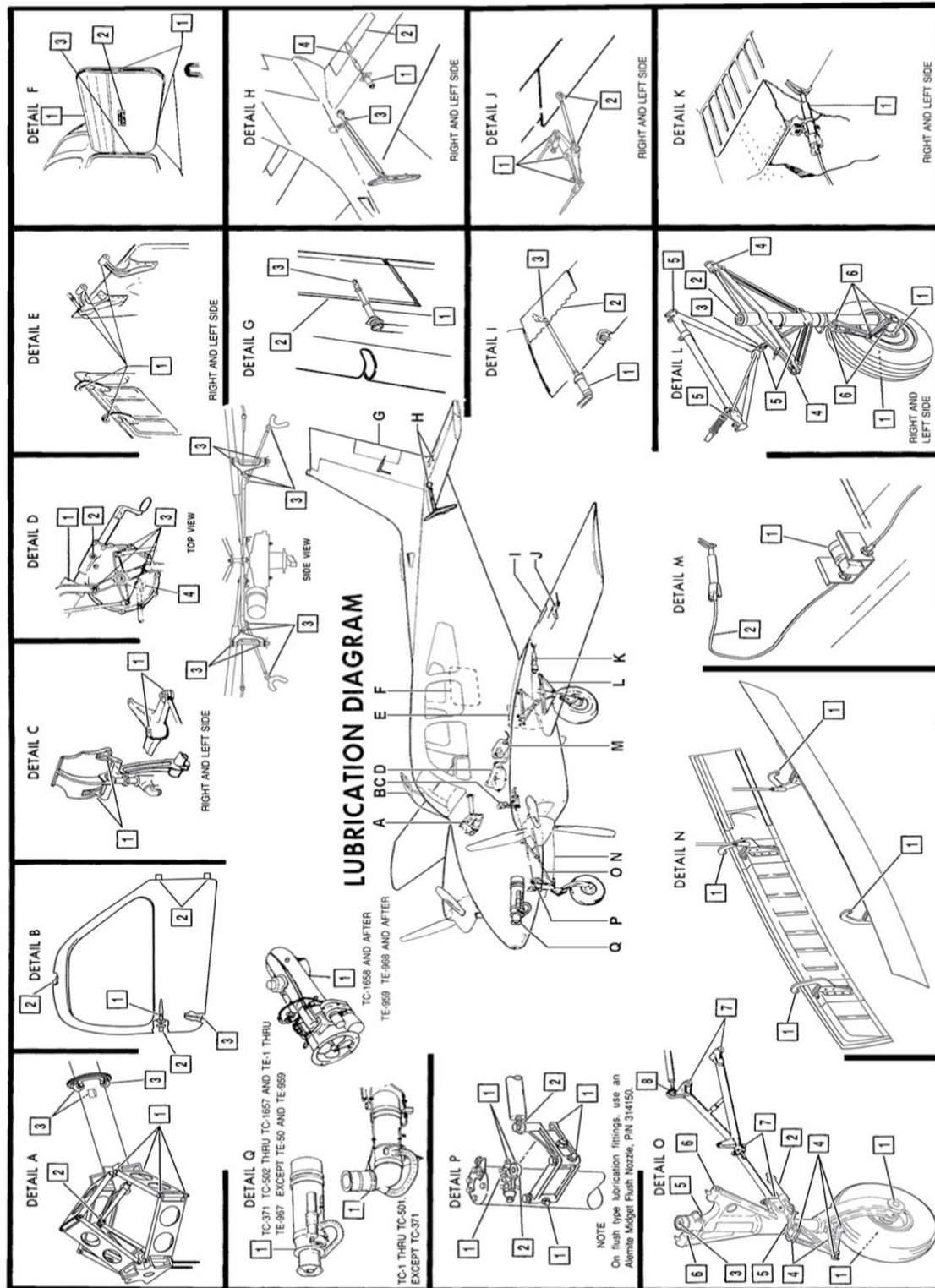
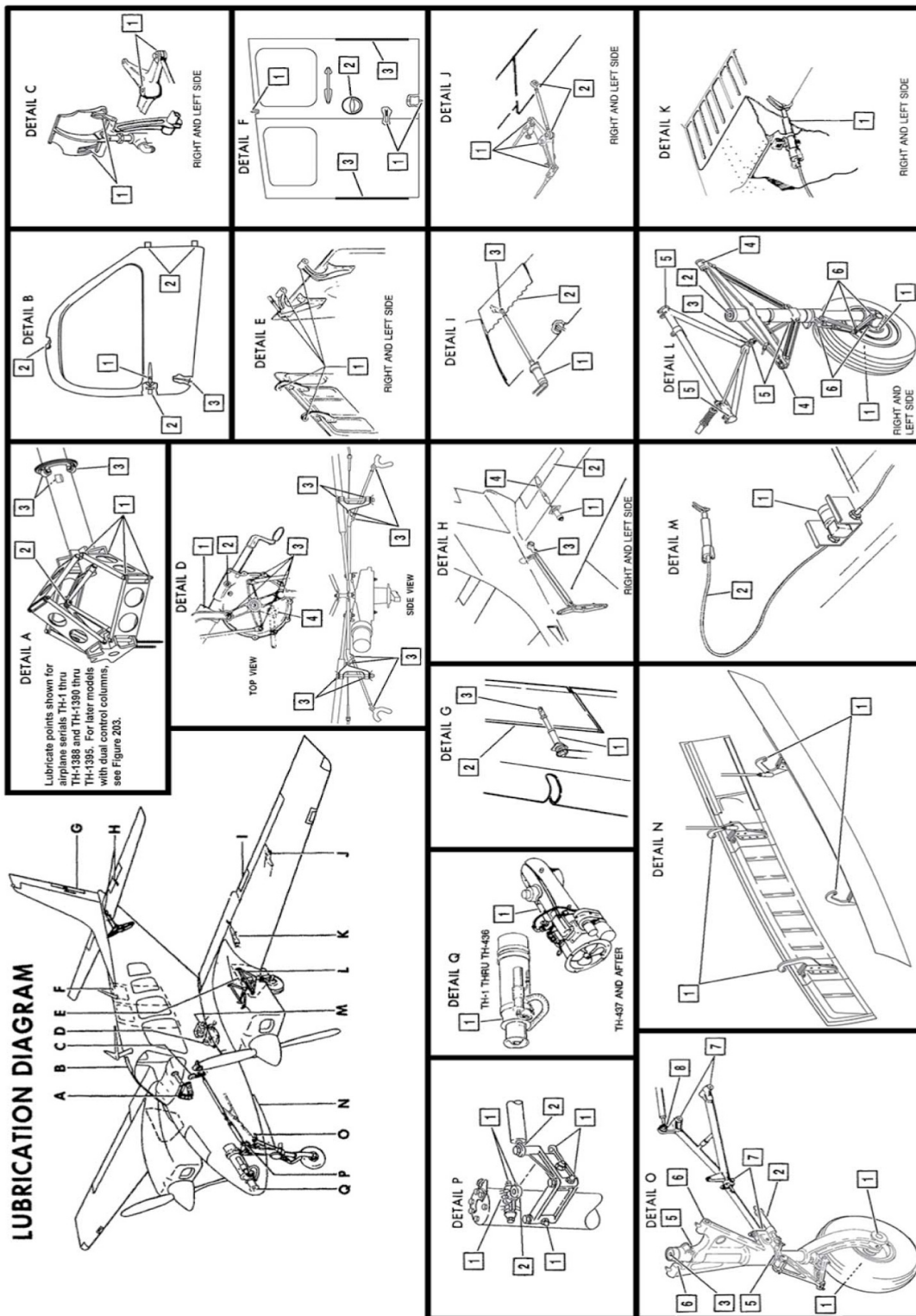


Figure 202 : Sheet 1 : Lubrication Diagram (TH-1 and After)

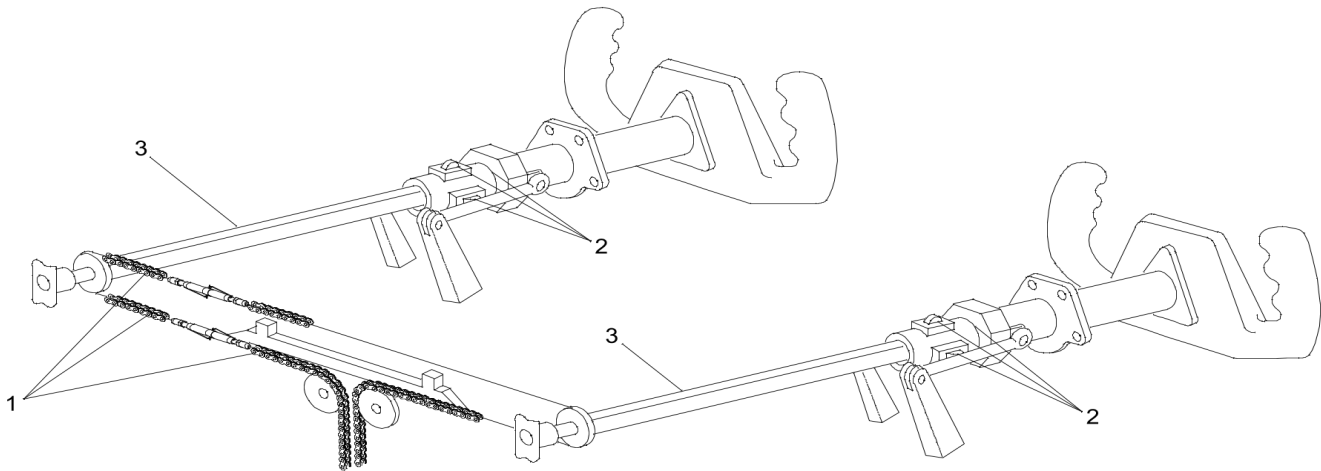
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Figure 203 : Sheet 1 : Dual Control Wheel Lubrication (TH-1389, TH-1396 and After)

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INDEX	LOCATION CONTROL COLUMN	POINTS	LUBRICANT	INTERVAL
1	CONTROL COLUMN CHAINS	(4)	SAE 20 OR 10W30 OIL	100 HRS.
2 **	BALL BEARINGS (WITHOUT SEALS)	(10)	MIL-L-7870 OIL	100 HRS. OR 1 YEAR, WHICHEVER OCCURS FIRST
3 *	TORQUE SHAFTS	(2)	MPK SOLVENT	100 HRS.

* WIPE FULL LENGTH OF SQUARE SHAFTS WITH MPK. THESE SURFACES TO REMAIN DRY AND FREE OF OIL.

** REMOVE ONE OF THE NONADJUSTABLE ROLLERS (CHAPTER 27). IF IT IS A SEALED ROLLER WITH THE SEALS INTACT, REINSTALL THE ROLLER AND MAKE A MAINTENANCE RECORD THAT THE ROLLERS ARE SEALED AND DO NOT NEED LUBRICATION. IF THE ROLLERS ARE NOT SEALED, OR THE SEALS ARE NOT INTACT, THEY MAY BE REPLACED WITH SEALED ROLLERS AND A MAINTENANCE RECORD MADE THAT THE ROLLERS DO NOT NEED LUBRICATION. IF THE ADJUSTABLE ROLLERS ARE REMOVED FOR LUBRICATION OR REPLACEMENT, REFER TO CHAPTER 27 FOR ADJUSTMENT.

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