

# CHAPTER 8

## AIRCRAFT HANDLING, SERVICING AND MAINTENANCE

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## **8. AIRCRAFT HANDLING, SERVICING AND MAINTENANCE**

### **8.1. GENERAL**

This Chapter contains important information on the handling, servicing and maintenance of the aircraft.

All owners of the Z 143 LSi aircraft are recommended to contact regularly authorized distributor or dealer and to have all maintenance inspections and/or repairs accomplished by the authorized stations.

In case of any contacts with the aircraft manufacturer, the distributor, the dealer or the service station, do not forget to mention the aircraft serial number. The aircraft Serial Number (S/N) is entered on the title page of this Flight Manual, stamped on the Production plate located on the floor of the upper baggage shelf and on the identification plate at the aft of the fuselage.

The manufacturer supplies the "Aircraft Flight Manual" and the "Maintenance Manual" with each aircraft. Optionally the customer can obtain the "Illustrated Parts Catalogue".

### **8.2. AIRCRAFT INSPECTIONS**

#### **8.2.1. Airframe**

- 1) Pre-flight check
- 2) Inspection after first 50 hours
- 3) Inspection after 50 hours
- 4) Inspection after 100 hours/1 year
- 5) Special works

#### **8.2.2. Engine**

- 1) Inspection
  - after first 25 hours of operation;
  - after each 50 hours of operation;
  - after each 100 hours of operation.
- 2) Check of the valves, cleanness of the crankcase front part
  - each 400 hours of operation.

**8.2.3. Propeller**

- 1) Inspection after each 100 hours of operation.

<b>CAUTION</b>
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THE AIRCRAFT OWNER IS RESPONSIBLE FOR CARRYING OUT THE SCHEDULED INSPECTIONS AND THE OTHER MANDATORY MAINTENANCE PROCEDURES.

**NOTE**

Detailed information on the content of scheduled inspections are provided in the "Maintenance Manual Z 143 L - Z 143 LSi".

**8.3. AIRCRAFT ALTERATIONS OR REPAIRS**

All repairs and alterations must be carried out by qualified personal in authorised service stations.

Whenever the aircraft owner intends to make any alteration of the aircraft (such as installation of another navigation equipment), he is obliged to contact the Civil Aviation Authority of the country of aircraft registration, which will reconsider the effects of the alteration on the aircraft airworthiness.

**8.4. GROUND HANDLING****8.4.1. Aircraft Towing**

Use steering bar inserted onto the nose wheel axle for steering and push the aircraft at the upper wing skin at ribs locations in case of moving it on short distance. Do not pull or push at the skin between the ribs, at wing tips and other parts provided with **DON'T PUSH HERE** placards.

For towing the aircraft by the motor vehicle, use the suitable rope, which delivered on the wish by aircraft manufacturer. Aircraft can be moved on the ground also by a tow-bar suspended in the nose wheel axle.

The instructed person steering and breaking the aircraft as necessary must be at cockpit controls during such towing.

### 8.4.2. Aircraft Anchoring

The aircraft is anchored when parking outside the hangar after operational day or as necessary.

Procedure:

- 1) Check the fuel valve and all circuit switches and the **"MASTER SWITCH"** are turned "OFF".
- 2) Lock the control stick.
- 3) Close and lock the canopy.
- 4) Anchor the aircraft using ropes or chains acc. to the Fig. 8-1 inserted into the rings provided on the bottom side of the wings and on the nose landing gear to the anchoring points. Use tow-hook on the fuselage rear part or tail skid as a complementary anchoring point if necessary.

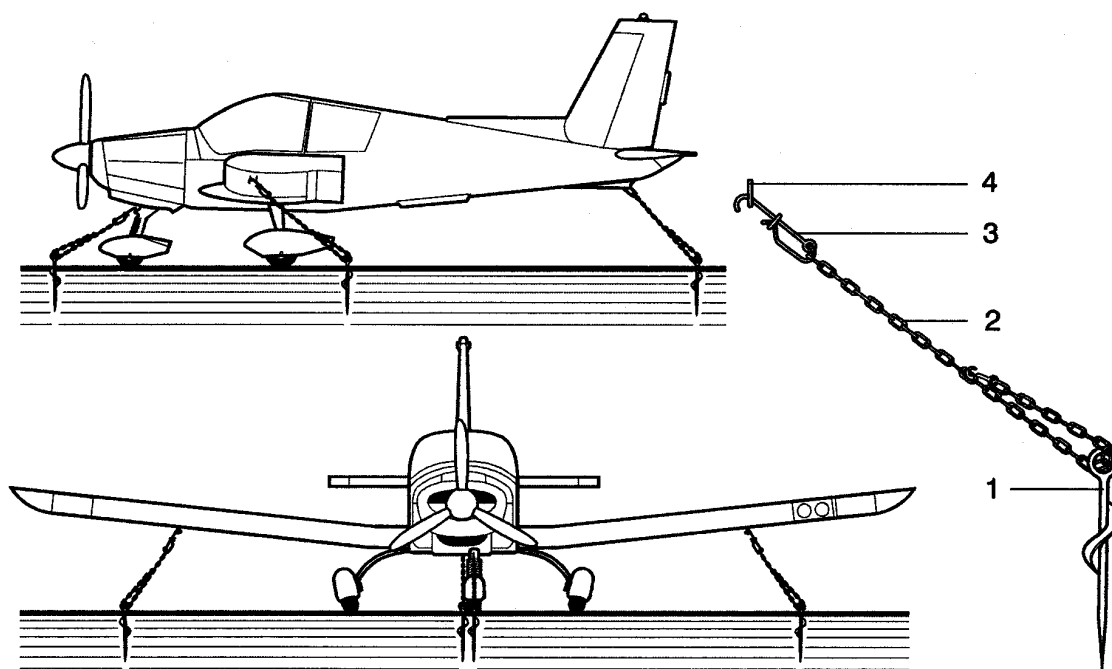


Fig. 8-1 Aircraft Anchoring

1 - Anchoring screw

2 - Anchoring chain

3 - Anchoring chain stretcher

4 - Anchoring ring on the aircraft

#### NOTE

Whenever long-term parking is anticipated or during the winter period, protection of the aircraft with canvas covers is recommended.

### 8.4.3. Aircraft Jacking

The aircraft is jacked at disassembly of the landing gear, at levelling etc. the front and rear lifting jacks are used. The front jack located below the first fuselage bulkhead so that the pans of the lifting bars lie below the spherical terminations welded to fuselage frame. The rear jack is placed below the fourth bulkhead of the rear part of the fuselage (in front of the lower fin) or at weighing under the lower fin (see figure in Chapter 6).

#### **NOTE**

The jacking points are marked by inscriptions **SUPPORT HERE** on the fuselage.

## 8.5. CLEANING AND SERVICING

### 8.5.1. Cleaning the Exterior Surfaces

The outer surface of the aluminium sheet and composite fairing parts is provided with durable painting, which under normal conditions keeps a good polish and requires no frequent treating. The aircraft should be washed after daily operation (e.g. flight day ending) with a mild soap or suitable shampoo and water. After washing, dry the surface.

It is recommended to performed the 2 times a year, e.g. before and after the winter season renew painted surface preservation. Use only suitable autowax to clean and the soft cloth.

<b>CAUTION</b>
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DO NO REMOVE THE STAIN AND DUST DRY - THE SURFACE PAINTING AND PROTECTION MAY BE SERIOUSLY DECAYED.

REPAIR DAMAGED PAINTING BY APPROPRIATE PAINT, REGRIND THE POLISH PASTE AND POLISH.

#### **NOTE**

Observe the instructions for use of different kinds of polish, shampoos, grinding and similar agents given by the manufacturer of these products.

**8.5.2. Cleaning Canopy Glass and Windows**

Rinse the dirt from exterior surfaces with a flow of clean water. Use special organic glass cleaner for polish the canopy glass. To apply cleaner, use a soft cloth and rub soiled surfaces with a light pressure until clean. After the cleaner dries, polish the whole glass surface with a clean cloth. Recommend the instruction of polish composition manufacturer.

CAUTION
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DO NOT USE GASOLINE, ALCOHOL, BENZENE, TETRACHLORIDE, FAMILIAR STAIN WINDOWS REMOVER AND OTHER ORGANIC SOLVENT - THESE CHEMICALS MAY CONSIDERABLY DAMAGE THE GLASS SURFACE.

DO NOT CLEAN THE GLASS BY DRY CLOTH - THE GLASS IS RELATIVELY WEAK AND THE GLASS IS SCRATCHED AT DRY WIPING.

PUT-ON AND REMOVE THE CANOPY CANVAS COVER CAREFULLY TO AVOID DAMAGE OF THE CANOPY GLASS. APPLY THE COVER ONLY IF NECESSARY, AT HARD WEATHER CONDITION (FREEZING RAIN, HAIL, SNOW ETC.).

**8.5.3. Cleaning the Cockpit Interior**

The regular care for the interior extends appearance and makes the stay in the cockpit more pleasant and comfortable.

- 1) Use preferably the vacuum cleaner to remove dust and garbage.
- 2) Brush the cloth parts and remove dust by vacuum cleaner.
- 3) Use the detergent agent with saponate for upholstery cleaning - wipe dry after the upholstery cleaning.
- 4) Stains that cannot be cleaned by common detergents should be removed with and appropriate textile detergent.
- 5) Leather covers, controllers and knobs should be cleaned with the cloth moistened in detergent.

## 8.6. FILLING THE AIRCRAFT WITH FUEL AND DRAINING

### 8.6.1. Filling the Aircraft with Fuel

The pilot is always responsible for filling the appropriate fuel grade and quantity. First refuel the main tanks. The auxiliary tanks may be filled only after the main tanks are full and their caps properly closed.

Observe the safety precautions during filling the aircraft with fuel:

- 1) Refuelling may be carried out only by duly instructed persons familiarized with safety precautions.
- 2) It is prohibited to fill the aircraft with fuel:
  - during heavy rain
  - during thunderstorm
  - inside the hangars and closed areas
  - during engine run and any electric system ON.
- 3) The aircraft must be connected by bonding cable with the mass of the filling gun.

#### **NOTE**

The extendable bonding pin is provided close to each filling hole to enable the proper connection of the filling gun bonding-clip.

- 4) The person, operating the filling gun should not wear a dress made of any electric cloth (nylon or similar materials).
- 5) Smoking and any operation with fire is **STRONGLY PROHIBITED** during aircraft refuelling.

The pilot is responsible for checking the fuel quantity after each refuelling. The fuel quantity in the tanks is measured by means of the four-pointer indicator on the instrument panel. The fuel rest in the left and right main tanks is signalled on the annunciator light panel.

### 8.6.2. Fuel Draining

Quick operation valves for fuel draining are provided in lowest point of the fuel tank. The master draining valve on the bottom part of the fuselage should ensure the general system drainage.

Fuel draining is performed by special transparent vessel with a central pin. The central pin after being inserted and slightly pressed in the drain valve hole, opens the valve and allows the fuel to flow into the vessel. The valve is automatically closed after the vessel is removed. Position of drainage vessel is illustrated in Fig. 8-2.



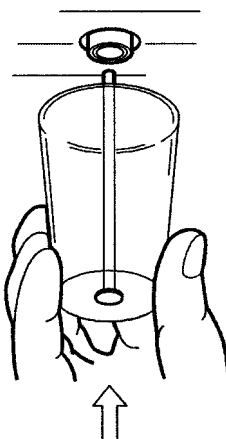


Fig. 8-2 Fuel Draining

The content of the vessel is checked on the presence of water or any other sediments, that could appear in the fuel tank sump. Repeat the draining until pure sample of fuel appears.

CAUTION
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IF WATER AND/OR SEDIMENTS ARE PRESENT AFTER REPEATED DRAINING, THE WHOLE FUEL CONTENT MUST BE DRAINED-OFF FROM THE SYSTEM AND THE AIRCRAFT REFILLED BY THE NEW, NON-CONTAMINED FUEL.

### 8.7. BRAKE SYSTEM SERVICING

The diagram of the hydraulic brake system filling is illustrated in Fig. 8-3.

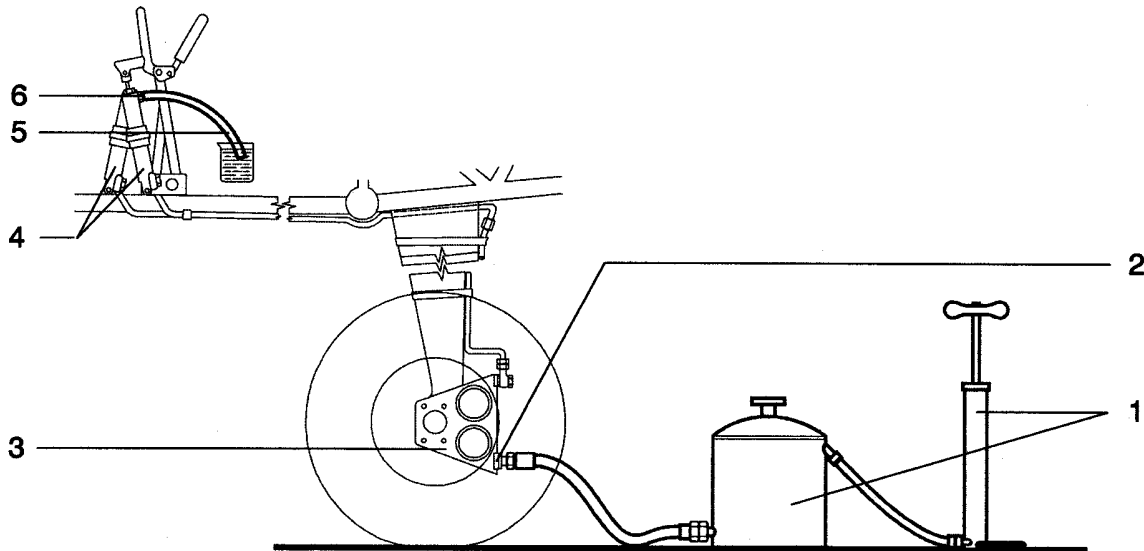


Fig. 8-3 Filling and Air-Bleeding the Brake System

- |                          |                        |
|--------------------------|------------------------|
| 1 - Brake Filling Device | 4 - Foot Pump          |
| 2 - Filling Valve        | 5 - Transparent Hose   |
| 3 - Brake Body           | 6 - Air-Bleeding Valve |

#### Hydraulic Fluid Filling Procedure:

- 1) Slide transparent hoses (5) on the air-bleeding valves of the hydraulic brake foot pump (6) put the ends of hoses into the vessel with hydraulic fluid.
- 2) Remove the covering nut from the filling valve (2) and connect the hose from the brake filling device (1).
- 3) Release the air-bleeding valve (6) and filling valve (2) by 1 to 2 turns.
- 4) Push and slowly release the brake toe pedals during the process to slowly pressure increase by means of air pump.
- 5) Continue in filling the clean fluid without air bubbles through the air-bleeding valve (6) close by tightening the air-bleeding valve.

- 6) The same procedure is repeat at second foot pump of filling circuit.
- 7) Tighten the filling valve (2), disconnect the hose of brake filling device (1) and on the filling valve screw-on the cover nut. Secure with the binding wire.
- 8) The travel of the brake foot piston rod must be 7 to 12 mm.
- 9) The same procedure is used at filling the other side of the brake system.

## **8.8. ENGINE AIR FILTER**

### **8.8.1. Filter cleanness check and filter cartridge replacement**

- 1) Check the clean of the filter at the latest of 100 operation hour. The filter cartridge manufacturer recommended check the filter cartridge cleans every day at the very dust condition.
- 2) Replace the filter cartridge:
  - a) after each 200 hours of operation,
  - b) at the latest each 12 months,
  - c) or when 50% covered with foreign materials.

**CAUTION**

BEFORE FILTER CARTRIDGE REPLACEMENT CLEAN THOROUGHLY THE FILTER SLEEVE.

#### **NOTE**

If the air filter BRACKET BA-105 is installed only filtering cartridge BA-10 must be replaced, not the whole filter body.

## **8.9. TIRES**

Observe thoroughly the proper tires inflation  $250 \pm 10$  kPa ( $36 \pm 2$  p.s.i.) during operation. The wear and safety is adversely affected by improper inflation. Further, check the possible slipping of the tire on the wheel rim observing the red mark on the tire and rim. Whenever the slip is detected interrupt the operation and remove the trouble according.

#### **NOTE**

Replace the tire by the new one after the first ply appears on the tread - max. permitted tire wear.

**8.10. G-246 BATTERY SERVICING**

The standard battery is the lead-acid GILL G-246 or CONCORDE RG 24-20.

The CONCORDE battery technical data and information are mentioned in Supplement No. 5 of AFM.

**G-246 Technical data:**

Nominal voltage	24 V
Unloaded battery voltage	25,5 to 25,8 V
Total capacity	19 Ah
Total weight battery with electrolyte	19 kg
Electrolyte density at full charge	1,285 to 1,295 g/cm <sup>3</sup>

It is necessary to carry out the mandatory scheduled maintenance of the battery to maintain the appropriate function and expected technical life.

**8.10.1. G-246 Battery Installation**

CAUTION
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INSTALL INTO THE AIRCRAFT ONLY THE BATTERY, WHICH HAD BEEN PROPERLY MAINTAINED, RECHARGED AND CHECKED.

**Procedure:**

- 1) Set and adjust the battery (3) onto the support (2) (Fig. 8-4).
- 2) Clean the contacts, remove the products of contacts etching and/or oxidation if any. Degrease the contact areas both on battery terminals and cable lugs thoroughly.
- 3) Connect the power supply conductors to appropriate battery terminals. Observe the correct polarity.
- 4) After tightening the nuts on contacts, grease the outer surface of connected parts with a thin layer of protective grease.
- 5) Set on the battery cover (1), adjust holders (4) and tighten the fly nuts. Secure the nuts after tightening with the binding wire.

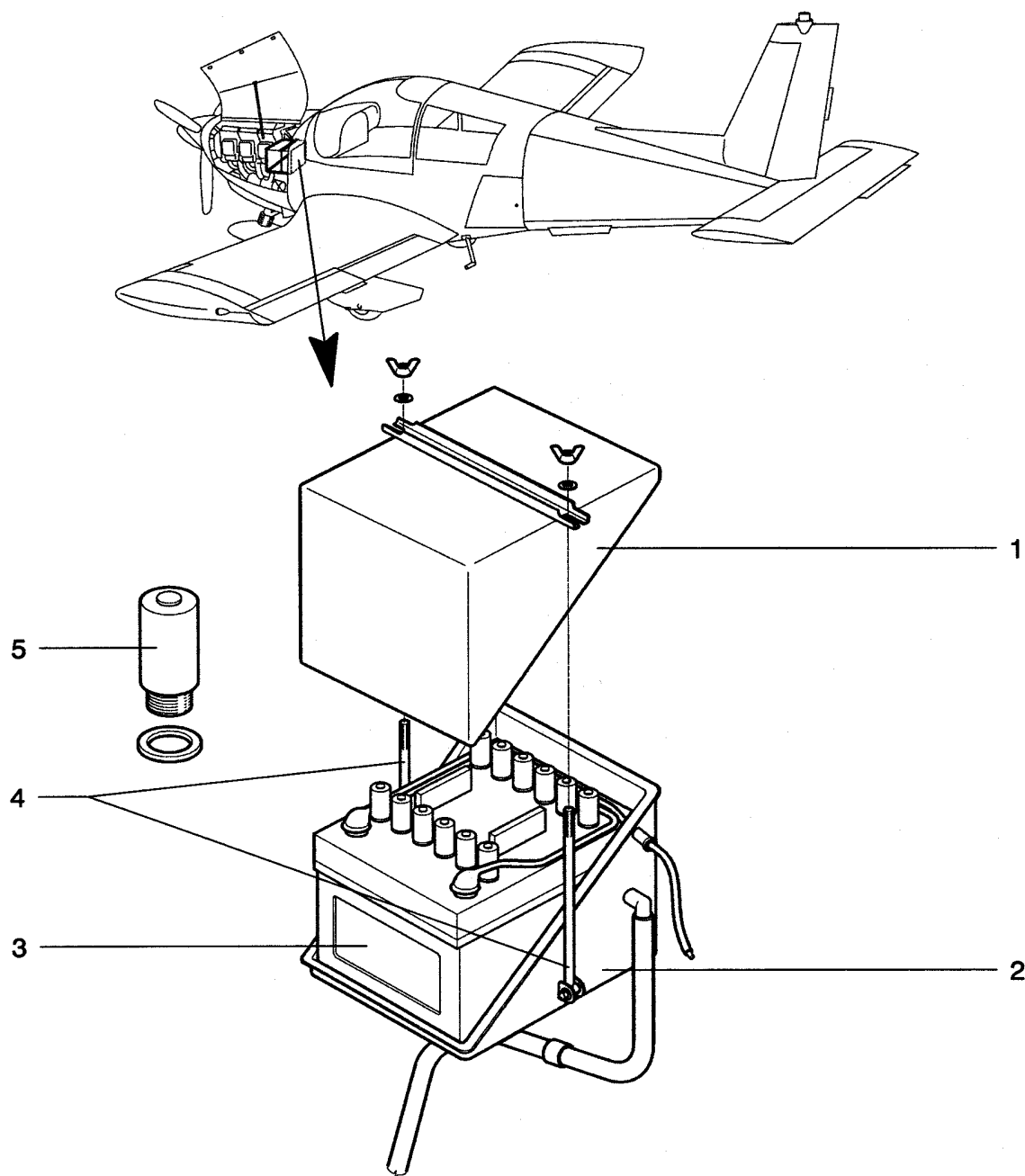


Fig. 8-4 G-246 Battery Installation

- 1 - Upper Cover
- 2 - Battery Support
- 3 - Battery

- 4 - Battery Holder
- 5 - Venting Plug

**8.10.2. G-246 Battery Capacity and Recharging Check**

- 1) Check the battery capacity by measuring the voltage on unloaded battery contacts and by measuring the electrolyte density. The minimum battery voltage must be 25,5 V at least, the electrolyte density in each cell 1,285 g/cm<sup>3</sup> at least.

The voltmeter with suppressed zero scale is used at battery check. Measure the voltage on main contacts of unloaded battery. Remove the "surface voltage" of just recharged battery by short discharging (e.g. 2 A for the period of 2 min.) or let the unloaded battery to "set" for about one hour period before capacity check.

- 2) Battery charging:
  - a) Recharge the battery with the current 3 A until the electrolyte density in each cell shows 1,285 to 1,295 g/cm<sup>3</sup>. The electrolyte density after recharging must range within these values in each battery cell. Unless the minimum density is reached in one single cell, the battery must be rejected from operation.
  - b) Check battery voltage according. Unless the battery voltage is 25,5 V or higher, reject the battery out of operation.
  - c) Only the battery, that have complied with the paragraphs a) and b) above may be provided by venting plugs and installed onto the aircraft.

**8.11. EMERGENCY SOURCE BATTERY SERVICING**

The emergency source of electrical power is comprised of two 12 V batteries Sonnenschein.

During the servicing (once in a year as minimum), the capacity test of the batteries is carried out. A detailed description of the capacity test of the batteries is contained in the "Maintenance Manual".

**8.12. PITOT-STATIC SYSTEM DRAINING**

Whenever the condensed water is detected in Pitot-static system draining sumps, remove the sumps and water inside wiping them dry.

<b>CAUTION</b>
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REMOVAL AND INSTALLATION OF THE DRAINING SUMPS SHOULD BE PERFORMED WITH AN INCREASED ATTENTION TO AVOID DAMAGE OR DISTORTION OF THE SEALING RING BETWEEN THE NUT AND THE SUMP BODY.

If the sealing ring is damaged, replace it. Secure the draining sumps against unprompted loosening with the binding wire.

Check the pitot-static system for leakage.

**8.13. COLD WEATHER ACCESSORIES**

The low temperature of the oil or of the cylinder heads may be increased by installing the screens into cooling air inlets in the front engine cowl.

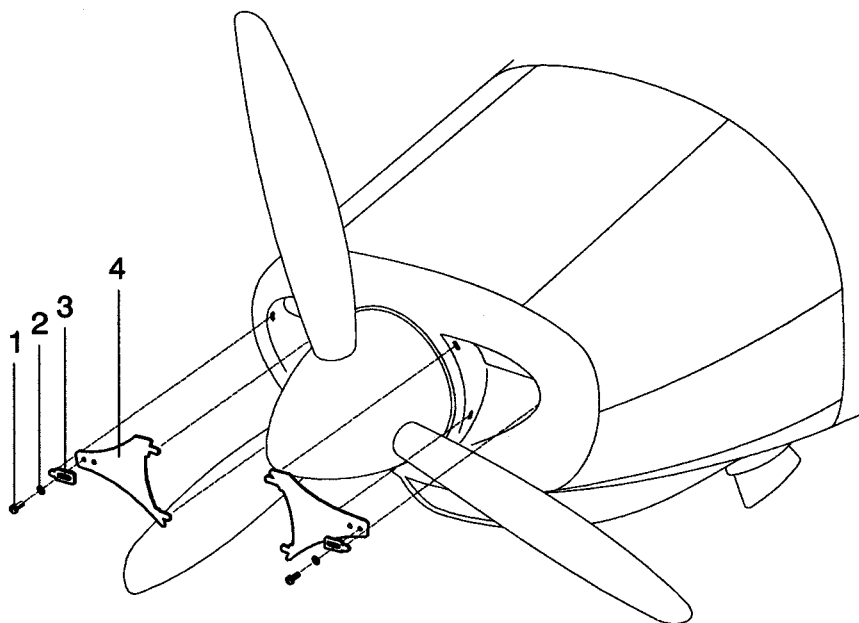


Fig. 8-5 Cold Weather Accessories

- |                     |            |
|---------------------|------------|
| 1 - Fastening Screw | 3 - Socket |
| 2 - Washer          | 4 - Screen |

Installing procedure:

- 1) Install screen (4) into inlet.
- 2) Insert adjustable socket (3) into opposite hole.
- 3) Eliminate screen play by adjusting the socket slot position.
- 4) Tighten the fastening screw (1).

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