

SECTION 5, CHAPTER 9

PRESERVATION

List of Contents

	Para.		Para.
Introduction	1	Preliminary Operations	19
Storage	2	Interior Treatment	20
PRECAUTIONS		Exterior Treatment	21
General	14	Servicing of Stored Engines	22
INHIBITING			
Inhibitor Pistol	16		

List of Illustrations

	Fig.
Corrosion Inhibitor Pistol	1

Introduction

1. Internal combustion engines which are not in use are particularly prone to corrosion, both internal and external, therefore, at such times, protective precautions must be taken to prevent damage and deterioration. The extent of the work to be done will depend upon the particular circumstances. It may be sufficient for an engine that is temporarily out of use to be cleaned, turned periodically, and kept dry by means of a loosely fitting cover, but more extensive work is required if the engine is liable to be out of use for a period of one month or longer. The information given in the following paragraphs covers the work to be done on engines in the following categories:—

- (a) Serviceable engines in storage or forming part of stored equipment.
- (b) Repairable engines awaiting repair or disposal.
- (c) Engines installed in equipment awaiting repair or disposal.
- (d) Engines installed in equipment likely to be out of service for a period of one month or more.

Storage

2. Before being returned to the Equipment Section for return to the specialist storage depot, or before being placed in storage, or before transit, all engines whether they are

serviceable or unserviceable, must be protected both internally and externally as described later in this chapter. In addition, the following work must also be carried out.

3. Fuel and oil filters are to be cleaned, dried and refitted. Sparking plugs or injectors are to be removed, and blanking plugs, the threads of which should be lightly smeared with grease ZX-13, are to be fitted in their place. The coolant system must also be drained completely.

4. All ports, unions, open pipes and connections are to be plugged or covered with metal blanking caps, held in position and made airtight with self-adhesive tape so as to exclude dirt, moisture and extraneous objects. When metal plates or plugs cannot be provided, openings may be closed by panels of three-ply or other thin wood secured by nuts to the fixing studs; these also are to be sealed with self-adhesive tape. The closing of the apertures is to be so arranged that there is no danger of plugs or other blanking devices being left in position when, later on, the engine is installed for use.

5. Uncased engines are to be placed on suitable metal or wooden stands, protected by loose fitting Willesden Green covers and stored in a cool dry place. The weight of the engine is to be evenly supported on the

(A.L. 10, Apr. 61)

engine bearers, and the lowest part of the engine should not be less than six inches from the floor.

6. Engines are to be packed in special-to-contents cases. When these are not available they will have to be manufactured to the standard case manufacturing drawings, for details of which see A.P. 830, Vol. 2, Leaflet K3.

7. Before an engine is placed in its case, the oil is to be drained from the sump and a label showing "No oil in sump" is to be tied to the engine in a conspicuous position.

8. If the engine has not been inhibited within the previous twelve months, it should be so treated with the additional operations given in paras. 3 and 4. On defective engines being forwarded for investigation, fuel and oil filters are not to be cleaned.

9. The correct sling must be used for lifting the engine, and care must be taken to ensure that the engine does not sustain damage during lifting and positioning in the case. The engine must be evenly supported inside the case on the engine bearers, and secured firmly against movement.

10. Accessories not fitted to the engine are to be treated with the appropriate anti-corrosive, packed in waterproof material, and secured to the floor of the case so that they cannot move or be damaged. Alternatively, they may be packed securely in a separate container which should be secured to the floor of the case.

11. Any record cards or applicable paper work should be wrapped in waterproof paper, placed in a marked envelope and secured to the inside of the case. For transit both at home and overseas, cases should be lined or the engine wrapped in waterproofing material.

12. Before the engine case is closed, the packing must be inspected by a responsible technical officer or N.C.O., who should satisfy himself that under normal conditions of transit no damage to the engine or accessories will occur en route, and should then record the inspection on the packing note.

13. Before cased engines are placed in storage, the cases are to be marked on two

sides, using 1 inch stencilling on the bare timber or on a white background. The markings should give the engine type, engine number, and the date when the engine was inhibited. Engine cases are also to be labelled prominently "THIS SIDE UP" on the top surface.

PRECAUTIONS

General

14. The materials used for the preservation of engines and accessories are quite safe if used correctly and under proper conditions. Care must however be taken with certain products, as they may be toxic and/or highly inflammable. Where the material is toxic, adequate ventilation must be provided, but in such a manner as to avoid draughts which might blow the spray over the operator. Personnel must wear approved clothing, respirators if required, and must not commence spraying unless correctly clothed. When using toxic materials, care must be taken to avoid breathing the fumes, and to avoid leaning over a tank containing toxic materials emitting fumes. When working with solvents, or there is a liability of contact with them, the skin should be treated after work with an approved preparation for restoring the natural grease.

15. Highly inflammable materials must not be used unless fire fighting equipment is available, and under no circumstances may smoking be permitted in the vicinity of a spray booth or area in which spraying is taking place. Full details of the necessary fire fighting equipment will be found in Air Publication 957.

INHIBITING

Inhibitor Pistol

16. The corrosion inhibitor pistol (Fig. 1) is designed to spray measured quantities of corrosion inhibitor fluid in such a manner that an even film is deposited where required. The pistol is used for all spraying operations, but with a change of nozzle to suit individual requirements and the material being used.

17. The pistol is operated by compressed air from any supply which will provide a pressure of 60 to 70 lb. per sq. in. It normally provides a continuous spray using the standard nozzle for general inhibiting, but a

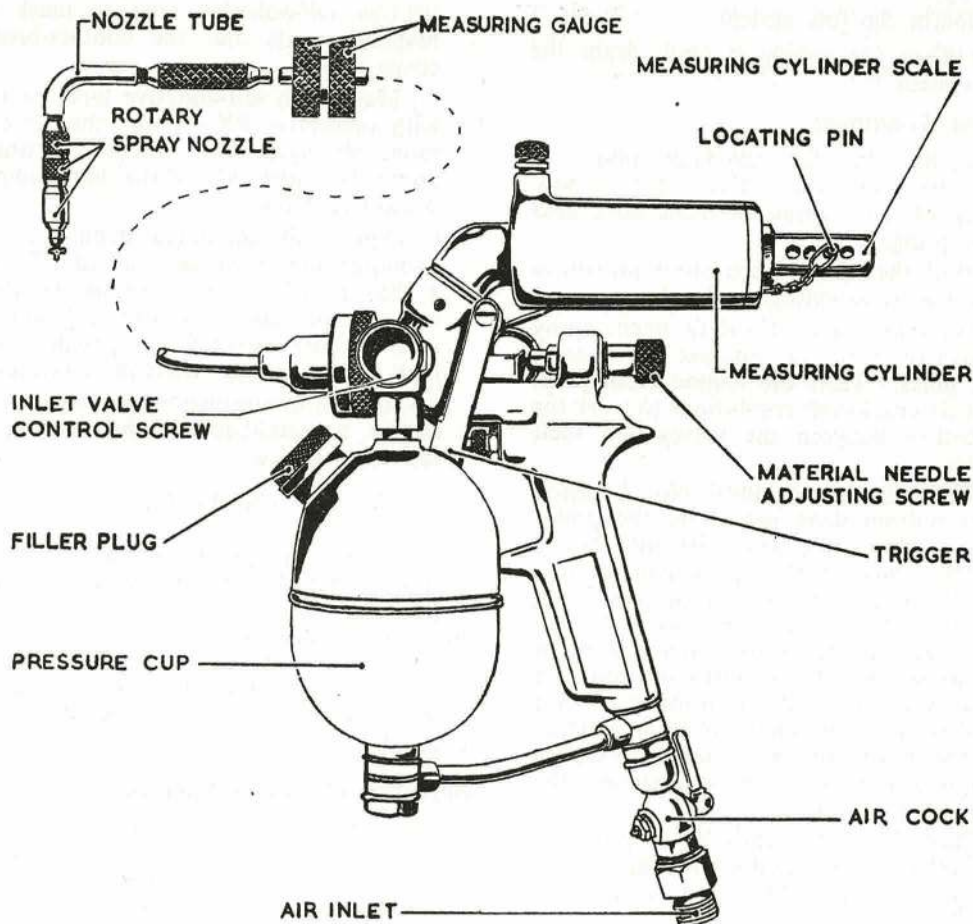


FIG. 1 CORROSION-INHIBITOR PISTOL

special rotary nozzle (Fig. 1) is provided for inhibiting piston engine cylinder bores. Thus, when correctly adjusted and using this type of nozzle, a definite amount of inhibitor can be injected into a cylinder to give an even film over the cylinder walls, combustion head and piston crown. This nozzle should not be used for general inhibiting.

18. For satisfactory operation the correct nozzle must be used, and spray guns, tubes and nozzles should be checked frequently to ensure:—

- (a) Freedom from clogging.
- (b) Correct atomization. Over atomization results in waste of material and unsatisfactory preservation.

(c) Constant delivery of the correct predetermined quantity of preservative.

(d) Moisture-free delivery from the air line.

Preliminary Operations

19. An installed engine should be treated as follows:—

- (a) Run the engine until it attains its normal running temperature.
- (b) Stop the engine, drain the fuel system, and refill with Gasoline (No Lead).
- (c) Drain the oil system, clean the oil filter, and refill the system with oil OX-275.
- (d) Run the engine for ten minutes at approximately 1,200 revs. per minute.

(A.L. 10, Apr. 61)

- (e) Drain the fuel system.
- (f) When the engine is cool, drain the oil system.

Interior Treatment

20. (a) Remove the sparking plugs or injectors and the valve gear covers. Clean off all surplus oil from valve gear and springs.

(b) With the valves closed, spray protective over the valve springs and valve stems.

(c) With the exhaust valves open, spray protective over the exhaust valve seats and ports. Turn the engine through at least six crankshaft revolutions to work the protective between the valves and their guides.

(d) Turn the engine until No. 1 piston is at bottom dead centre on the power stroke. Spray the protective into No. 1 cylinder, moving the spray gun so that the piston crown, the combustion head, and the whole of the area swept by the piston are covered with a thin coating of the protective. The quantity of protective to be used is one cubic centimetre per one hundred cubic centimetres of swept volume. Particular care should be taken to ensure adequate coverage of the area around the sparking plug hole.

(e) Turn the engine until No. 2 piston is at bottom dead centre on the power stroke, and repeat operation (d) for this cylinder.

(f) When all cylinders have been treated and without further turning the engine, spray approximately half the quantity of protective used previously for operation (d) into each cylinder. This further spraying of the cylinders is intended to replace any inhibitor which has been removed from the cylinder walls while turning the engine.

(g) Smear the threads of the blanking plugs with grease ZX-13, and screw them into the sparking plug or injector holes.

Exterior Treatment

21. (a) Blank off all orifices and seal with self-adhesive tape. Remove any detachable cowlings.

(b) Clean the engine, and remove all traces of corrosion. "Touch up" any exposed spots of painted surfaces.

(c) Brush grease XG-290 into all joints in the throttle and governor linkage so as to fill them completely.

(d) Use self-adhesive tape to mask any magneto vents and the contact-breaker cover joint.

(e) Mask with self-adhesive tape, or treat with protective PX-13, all other external moveable assemblies whose functioning might be impaired by the hardening of protective PX-9.

(f) Spray all unpainted metal surfaces, including the cowlings if unpainted, with a thin even coating of protective PX-9, taking care that no protective is sprayed onto rubber covered components, e.g., high tension leads. Refit the cowlings.

(g) Affix in a conspicuous position on the engine, a metal-backed label bearing the following notice:—

NOTICE

(date)

This engine was preserved on and must not be rotated or started until required for service, or until it is due for further preservation in one year from the above date. Before starting the engine, the dummy plugs must be removed and the engine rotated to expel possible excess protective.

Servicing of Stored Engines

22. Uncased engines are to be examined externally every six months. All traces of corrosion must be removed, and anti-corrosion preservative treatment renewed as necessary.

23. When an engine has been in storage for two years the following work is to be carried out, cased engines being unpacked to the extent necessary to permit the work to proceed:—

(a) Remove dummy sparking or injector plugs. Remove blanking from inlet and exhaust ports.

(b) Turn engine through at least ten revolutions.

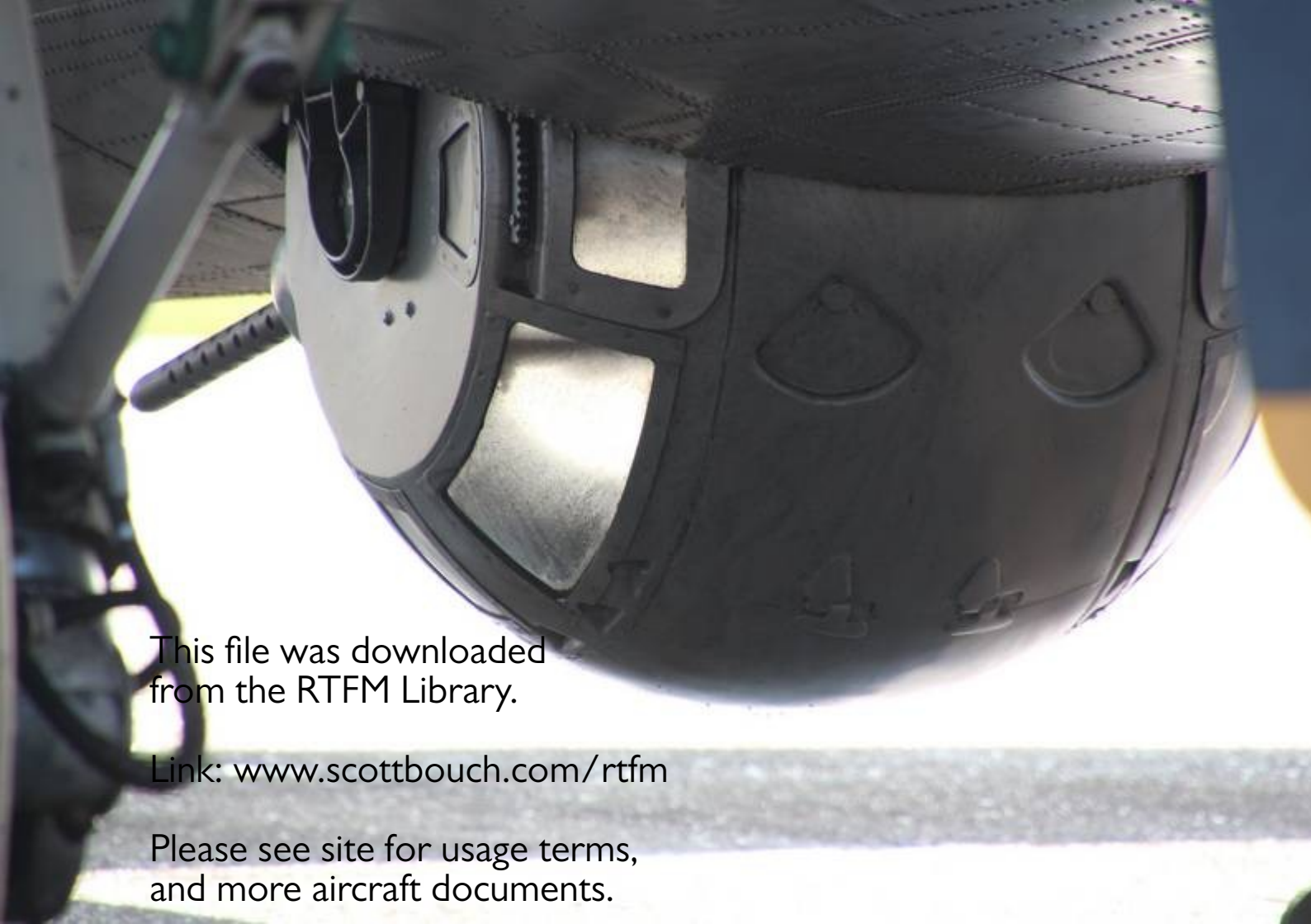
(c) Re-inhibit as described previously.

(d) Lightly smear the threads of the dummy plugs with grease ZX-13, and refit them in the cylinders.

(e) Re-seal the inlet and exhaust ports.

(f) Remove all traces of corrosion, and renew anti-corrosion preservative treatment as necessary.

(g) Enter the date of re-inhibiting on the label.



This file was downloaded
from the RTFM Library.

Link: www.scottbouch.com/rtfm

Please see site for usage terms,
and more aircraft documents.