

Chapter Seven

REMOVAL

This Chapter is complementary to Chapter Six.

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The procedure detailed in Chapter 6 for installing an engine can, by reversing the procedure and corresponding sequence of operations and by reading the word "connect" as "disconnect", be generally applied to removing the engine. Similarly, the list of blanks and transport spares to be removed during installation, given in that chapter, is the same as those that will require fitting.

There may be occasions when the engine is removed temporarily for certain work to be done on it, or an engine may be transferred from an unserviceable aircraft. In these circumstances, not as much work will be involved as would be the case when an engine is removed for reconditioning.

PREVENTION OF CORROSION

If the engine is not being re-installed immediately, the engine and its fuel system must be inhibited as described in Chapter 20, before any connections are broken.

PREPARING TO REMOVE THE ENGINE FROM AIRFRAME

To remove the engine from the airframe a portable crane able to extend over the engine bay at the rear of the fuselage and capable of lifting the engine above the aircraft is required. The approved lifting sling must be used. A transport stand should be ready to receive the engine and a complete set of blanks and transport spares as listed in Chapter 6 should be available. In order to obtain access to the top, central, engine mounting, the turbo-starter must be removed in accordance with the instructions given in Chapter 19.

DISCONNECTIONS

Reference should be made to Chapter 6, the sequence of operations in each paragraph being read in the reverse order; i.e. read the word "connect" as "disconnect", and "remove the blanking cap" as "fit the blanking cap".

If, after removal, the engine is to be placed on a transport stand having a rigid rear support, it will be necessary to remove the exhaust cone. As it is inadvisable to carry out work on the engine whilst it is suspended from the crane, removal of the exhaust cone should be advanced as far as possible whilst the engine is still installed. Remove the four turbine

disc cooling pipes and thirty of the nuts and bolts which secure the exhaust cone. The exhaust cone should be left secured to the engine by four equidistant nuts and bolts to enable the man stationed at the rear to guide the engine out of the airframe.

DISCONNECTION (TEMPORARY REMOVAL OF ENGINE)

The paragraph under this heading describes operations which can be applied with advantage when an engine is being removed temporarily; the instructions given in the preceding paragraphs still being applicable.

It will normally be necessary to disconnect flexible pipes at the aircraft end only. Rigid pipes between the engine and aircraft, which are connected by a short hose at each end, should be disconnected at both ends because the short hose is not sufficiently flexible to keep the pipe clear of obstructions. The top cowl support rail need not be removed but the bottom cowl rail must be removed completely otherwise the engine cannot be accommodated in the stand.

WITHDRAWING THE ENGINE

Ensure that all connections have been disconnected. Check also that all pipes, wires, control rods, etc., are securely stowed out of the way so that they will not foul as the engine is withdrawn; the instructions regarding these points, contained in Chapter 6 are equally applicable for the removal of the engine.

Attach the engine lifting sling to the lifting eyes and just take the weight of the engine. Station one man each side of the engine beneath the fuselage, one each side of the engine on the main planes and one man at the rear of the engine to guide the exhaust cone. Remove the engine bearer bolts, first from the two pick-up brackets on the air-intake casing, then from the lower main eye-bolts and lastly from the upper eye-bolts.

Make a final check that all connections have been broken and that nothing is liable to hinder the withdrawal of the engine. Carefully move the engine backwards to the cut-away portion of the engine bay, and slowly raise the engine clear of the airframe. The fire extinguisher pipe must be drawn downwards from between the combustion chambers as the engine is raised. Avoid letting the engine swing, otherwise damage may be caused through contact with the airframe parts.

Lower the engine to a convenient working height to prepare it for the transport stand. All the following operations may not be necessary in the case of engines which have been temporarily removed. If work other than that prescribed here is to be carried out, the transport stand may be unsuitable, in which circumstances the engine must be lowered into a dismantling-and-assembly stand or a suitable alternative stand. Work must not be carried out while the engine is suspended from the crane.

SETTING ON TRANSPORT STAND

If the transport stand is of the type with the rigid support behind the engine, the exhaust cone must be removed. Remove the four remaining bolts and nuts securing the exhaust cone, remove the latter and fit the turbine blanking cover, Part No. 46758.

Secure with six bolts each, the three flanged support trunnions to the recessed faces on each side and below the engine. Assemble a brass bearing bush to each of the two side trunnions and lower the engine on to the transport stand. Secure the three bearing caps.

REMOVAL OF ACCESSORIES

Remove the aircraft engine driven accessories and components fitted during the "preparation of engine" in Chapter 6. The two front central pick-up brackets secured to the air-intake are

jig-fitted during manufacture of the engine to ensure correct positioning in relation to the four principal mounting eyes on the front of the diffuser casing. On no account should these two brackets be removed.

BLANKS AND TRANSPORT SPARES

It is advisable to fit blanks and aperture covers immediately the relevant component is removed from the engine or a connection is "broken", and the airframe portion of the connection should be blanked off at the same time. If this policy is followed, the majority of blanks and transport spares will have been fitted at this stage, but a careful check must be made to ensure that all items listed in Chapter 6 have been correctly dealt with.

COMPLETION OF ANTI-CORROSION TREATMENT

Carry out the remainder of the anti-corrosion treatment as specified in Chapter 20. If the engine is damaged and the mainshaft cannot be rotated, inhibit the engine internally as far as possible.

PACKING THE ENGINE

The engine should be installed in the wooden box type of transit case, and the exhaust cone and fireguard should be packed in the separate wooden exhaust cone transit case.

Hoist the engine from the transport stand, ensure that the three flanged support trunnions are secure, assemble rubber bushes to the transverse trunnions then lower the engine on to the base stand of the case. Remove the lifting tackle. Secure the caps to the transverse trunnion bushes. Ensure that the air pipes, and other loose equipment specified in the engine checking list together with the log book and any other relevant engine documents are securely tied to a convenient part of the base stand. Hoist the lid of the transit case, lower it into position in the guides of the base and secure it with the nuts and bolts.

Before the exhaust cone and fireguard can be placed in the case they must be assembled together. Remove the four blanking plates from the heater muff; all four heater muff blanking plates are permanent flight parts. Insert the exhaust cone into the fireguard so that the two drains are on the same side. Re-assemble the four blanking plates and washers to the heater muff flanges and secure each with four set bolts and spring washers; these bolts will secure the fireguard to the exhaust cone. Place the exhaust cone and fireguard assembly in the wooden transit case, resting it upon the supports. Strap the assembly in place and screw down the lid of the case.

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