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When an engine is to be fitted to an aircraft, it is necessary to fit or change over the hydraulic pump, the $22\frac{1}{2}$ K.W. generator and the starter motor. The one exception being the E.C.U. for No.4 position which does not have a hydraulic pump.

ASSEMBLY OF HYDRAULIC PUMP TO ENGINE

(1) Fit the Inlet Suction, Outlet Pressure and spill pipes to their appropriate connections on the pump, securely fasten and wire-lock, leaving the other end of the pipes adequately blanked.

(2) Remove the cover plate (or hydraulic pump if it is to be replaced) from the front of the auxiliary scavenge pump and also the paper joint (if supplied) which is dispensed with.

(3) Fit the quill shaft to the auxiliary pump driving shaft,

(4) Apply Bristol Goodyear jointing compound to the hydraulic pump face and offer up to the engine, turning the H.P. Compressor by means of the provision on the engine starter in order to obtain engagement, and secure with the six $\frac{3}{16}$ dia. nuts, spring and pen steel washers.

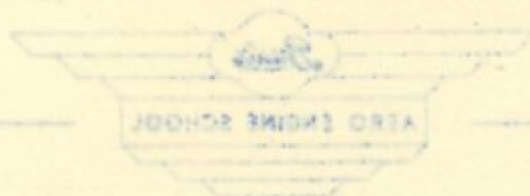
(5) For a pump fitted to an engine in No's 1 or 3 position the hydraulic pump spill pipe is positioned at approximately the 1 o'clock station whilst that for an engine in No.2 position is set at approximately the 7 o'clock station. (Note that the engine installation does not call for a pump to be fitted to the engine in No.4 position).

Remove the



ASSEMBLY OF GENERATOR TO ENGINE

- (1) Remove the blank from the face of the Generator and note that the rubber oil seal (Rotax supply) has been fitted to the generator drive bearing support housing.
- (2) Examine the splined drive for burrs or fret marks, lightly stone if necessary, and fit an oil seal in the recess provided at the rear of the splines.
- (3) Lightly smear the splines with Molykote grease and fit the serrated muff, using the $\frac{3}{8}$ B.S.F. bolt and tab washer provided.
- (4) Apply Molykote grease to the splined portion of the serrated muff, fit an oil seal to the recess provided at the rear of the quill shaft splines, and assemble the quill to the serrated muff ensuring that it is free to float.
- (5) Fit the two halves of the generator support brackets, locating each half with the dowel in the generator carcass, and position them so that the terminal block housing is at the approximate 1 o'clock position.
- (6) It will be noted that of the four $\frac{3}{16}$ B.S.F. bolts provided, two are eye bolts, one of each being fitted on either side of the generator support brackets nearest to the splined drive.
- (7) Remove the protective cover from the front of the engine and fit segment blanks in the L.P. compressor apertures.
- (8) Remove the nuts and tab washers from the nose bullet, place the nose bullet carefully on one side, remove the three 2 BA bolts and tab washer from the generator driving gear blanking plate and remove the plate.
- (9) Remove the blank from the generator casting breathers. (Rear of flange attachment).
- (10) Offer up the generator to the engine locating the generator clamping bracket on the four $\frac{3}{8}$ B.S.F. studs on the attachment face and if necessary, turn the L.P. Compressor by hand in order to obtain engagement.
- (11) Secure the generator with the four $\frac{3}{8}$ B.S.F. nuts and tab washers provided.
- (12) Undo the $\frac{3}{16}$ dia. bolts on the generator terminal block housing and on removal, four terminals numbered 1 to 4 will be seen. No's 1 & 2 terminals are $\frac{3}{8}$ B.S.F. and carry the main cables, No.4 (2 BA) is for the field connection, and No.3 (2 BA), is for the screened equalising circuit, all cables being appropriately marked in order to ensure correct assembly.



(13) Having made the connections, position the cables in the clamp blocks, re-fit the cover, secure with the two $3/16$ dia. bolts and wire-lock them together.

(14) Remove the blanking strap from the generator brush gear apertures.

(15) Fit the cable sheath securing clip and bonding strip to the appropriate generator bracket mounting stud, followed by the nose bullet, using new tab washers if necessary.



ASSEMBLY OF STARTER TO ENGINE

- (1) The Starter is received from Stores with a wooden blank fitted to the joint face.
- (2) Remove the blank and prime the bearing and oil seal with clean engine oil, any excess oil being drained off before the Starter is fitted.
- (3) Inspect the joint face, remove any burrs, and clean the face with trico-ethylene.
- (4) Remove the eight bolts securing the blank to the engine starter face, also the paper washer, and clean the starter face with trico-ethylene, the paper washer being dispensed with.
- (5) Apply wellseal jointing compound to the face of the Starter to be fitted and also to the joint face on the engine.
- (6) Fit the Starter with the two electrical leads at the 12 & 3 o'clock positions, operating the hand turning mechanism of the Starter in an anti-clockwise direction in order to obtain engagement of the splined shaft.
- (7) Using the special bolts supplied with the Starter (AI096) and the plain and spring washers supplied with the engine blank, secure the Starter to the engine.
- (8) The clip securing the low pressure fuel pipe is attached to one of the Starter bolts at a convenient point.
- (9) Starter leads are supplied with identification markings on them to ensure that the Starter leads for No.1 engine bay are fitted to No.1 engine and so on. Before fitting the leads ensure that the rubber insulating shoes have been fitted to the leads.
- (10) Fit the two Starter leads, the longest of the two being attached to the terminal at the 3 o'clock position i.e., furthest away from No.1 bulkhead.



(11) The leads are then passed from zone 2A where the starter is situated, through an aperture in No.1 bulkhead to zone 1 where they connect with the aircraft system on the port side of the engine bay.

(12) The two leads are fastened on the front of No.1 engine bulkhead by a clamp held in position by four 2 BA bolts.



PREPARATION OF JET PIPE ASSEMBLY

General

Normally jet pipes are supplied as complete units with nozzles and pyrometry already fitted, but should it be necessary to renew or replace any item, the following information will apply.

Nozzles are handed, outboard and inboard, and whereas the inboard nozzles have a straight efflux, the outboards are angled to direct the thrust in an outward direction.

To assist in fitting the nozzles correctly, those for Nos. 2 and 3 positions have a single dowel hole in the flange to match up with a dowel in the jet pipe flange, whilst the nozzles for Nos. 1 and 4 positions have two dowel holes in the flange and the efflux angle can be seen to be incorrect if the wrong dowel is chosen.

It should be noted that either inboard or outboard nozzles are interchangeable with each other i.e. 2 and 3 or 1 & 4, the two dowel holes in the latter making the selective position possible.

The fitment of the pyrometry call for a certain amount of care in handling the thermo-couples, and to the positioning of the cables to their correct terminals.

Preparation of jet pipe for Installation

(1) Fitment of Nozzle

- a. Position the jet pipe in the 'as installed' position with the rollers at 3, 9 and 12 o'clock positions, and remove any burrs from the flange face and also from that of the nozzle flange face.

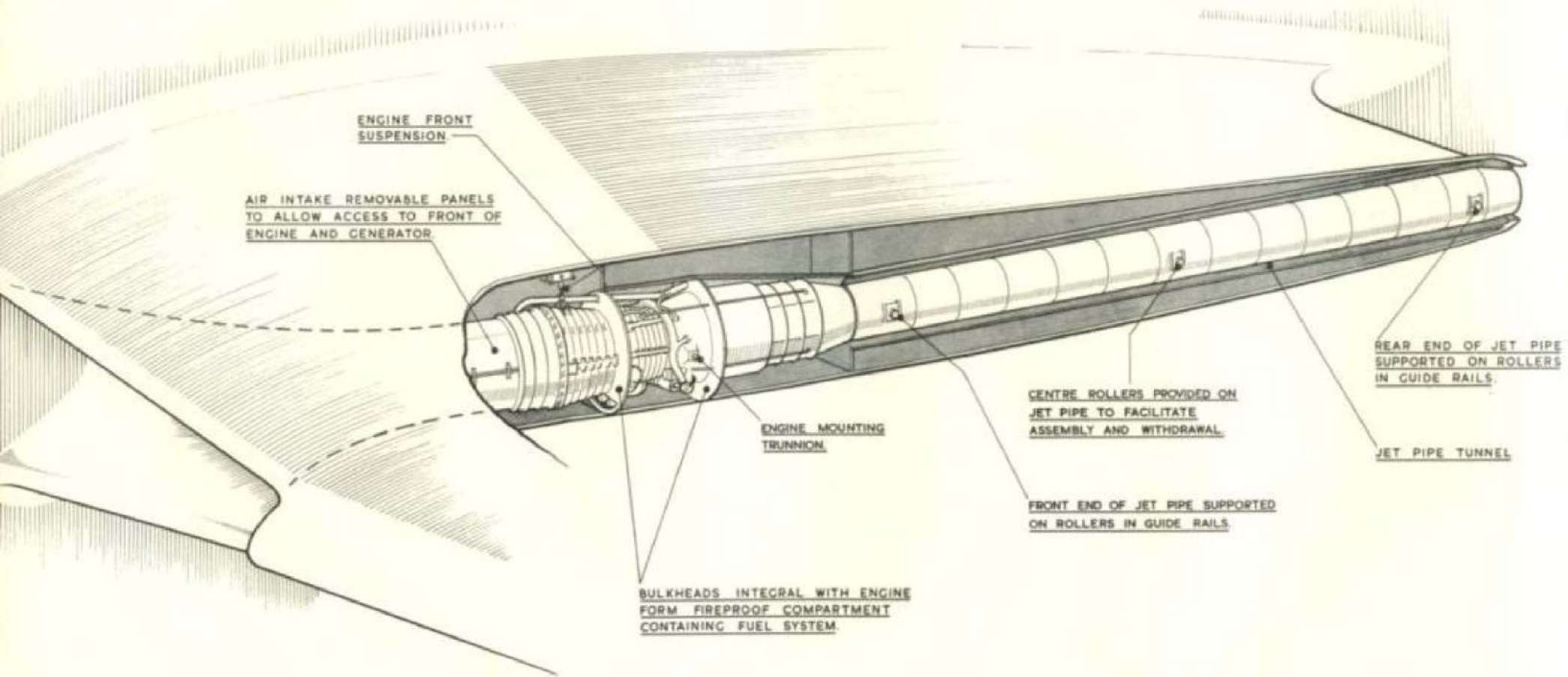
- b. Fit the sealing ring in the groove in the nozzle flange and after ensuring that the correct angle has been chosen for the particular jet pipe installation, offer up the nozzle to the jet pipe, locating the dowel.
- c. The nozzle must be held firmly in position otherwise there is a possibility of the sealing ring slipping out of its groove and becoming trapped between the two flange faces.
- d. The bolts securing the nozzle to the jet pipe are fitted with the heads of the bolts in front of the jet pipe flange. A pen steel washer is fitted underneath the head of each bolt and also underneath each nut, 'Dag' fluid should be applied to the threads before fitment as this will facilitate removal when it becomes necessary.
- e. Tighten and split-pin the bolts in the usual manner.
- f. Check the fit of the retaining channels at the jet pipe attachment end, the maximum side float must not exceed .020 inches, and the minimum not below .005 ins.
- g. Apply 'Dag' fluid to the jet pipe rollers.

(2) Fitment of Pyrometry

- a. Fit each pair of thermo-couples to the attachment points at approximately the 4 and 8 o'clock positions, after ensuring that the locating lug is engaged with the slot provided in the screwed adaptor, and tighten with a 7/16 inch spanner.
- b. Fit the conduits and cables either side of the jet pipe radiation shields using the six brackets and twelve 2 BA bolts provided, wire-locking them after tightening.
- c. Remove the three terminal block cover plates, and starting at the bottom thread each pair of cables through the Tufnol



- sleeves, attaching the cable ends to the terminals in the ceramic insulating block connecting the Blue covered cables to the front position and the red covered cables to the rear.
- d. Take the two pairs of cables at the top of the pipe to their respective terminals maintaining the correct colour sequence, and after ensuring that all terminal connections are tight, carry out a megger and insulation check.
 - e. Fit the covers to the respective terminal block housings positioning the Tufnol sleeves in the recesses provided, and tighten the securing screws.



OLYMPUS 101 ENGINE - WING INSTALLATION

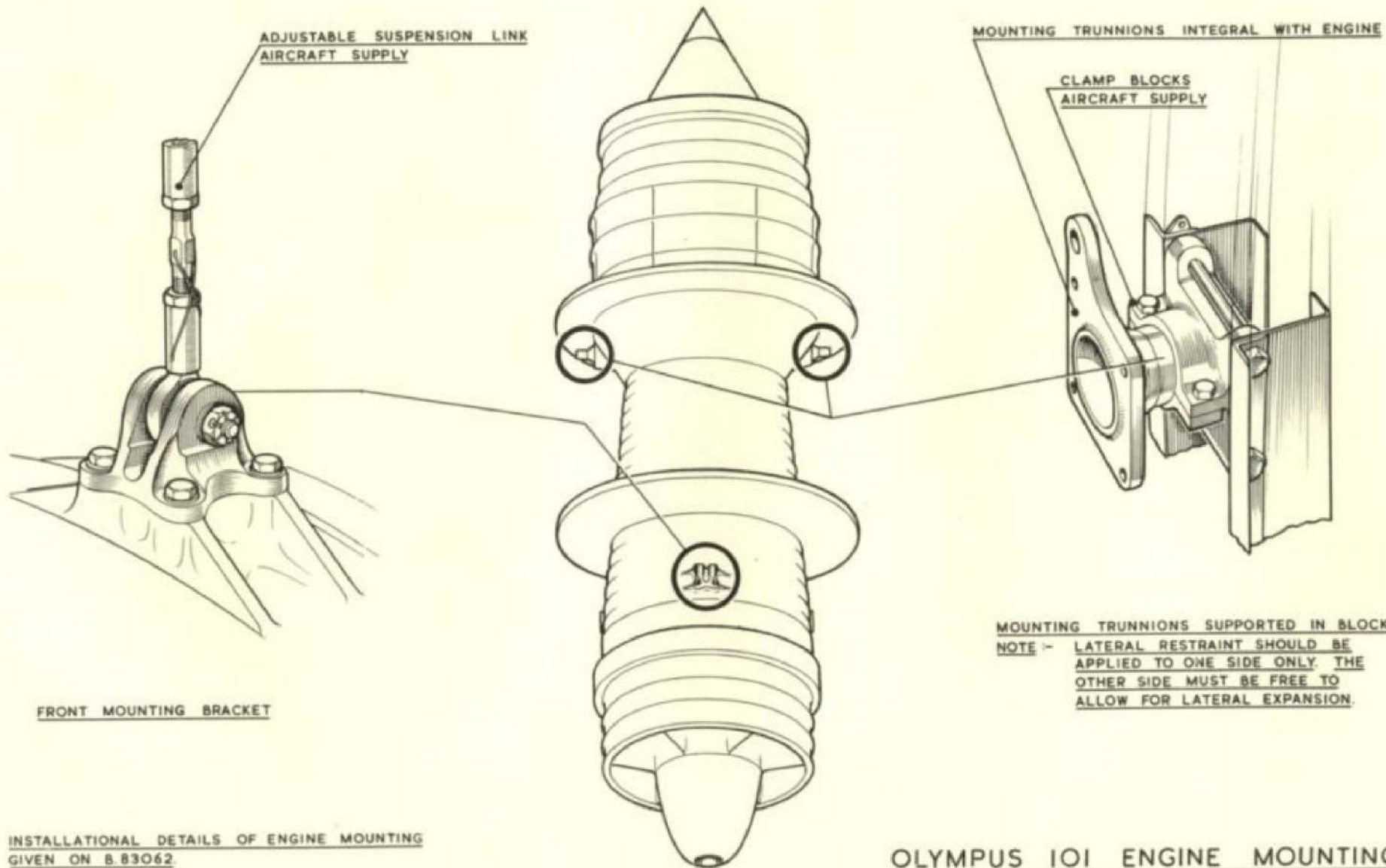
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PREPARATION OF ENGINE BAY

Before any attempt is made to instal the engine in the aircraft, a certain amount of engine bay preparation is required.

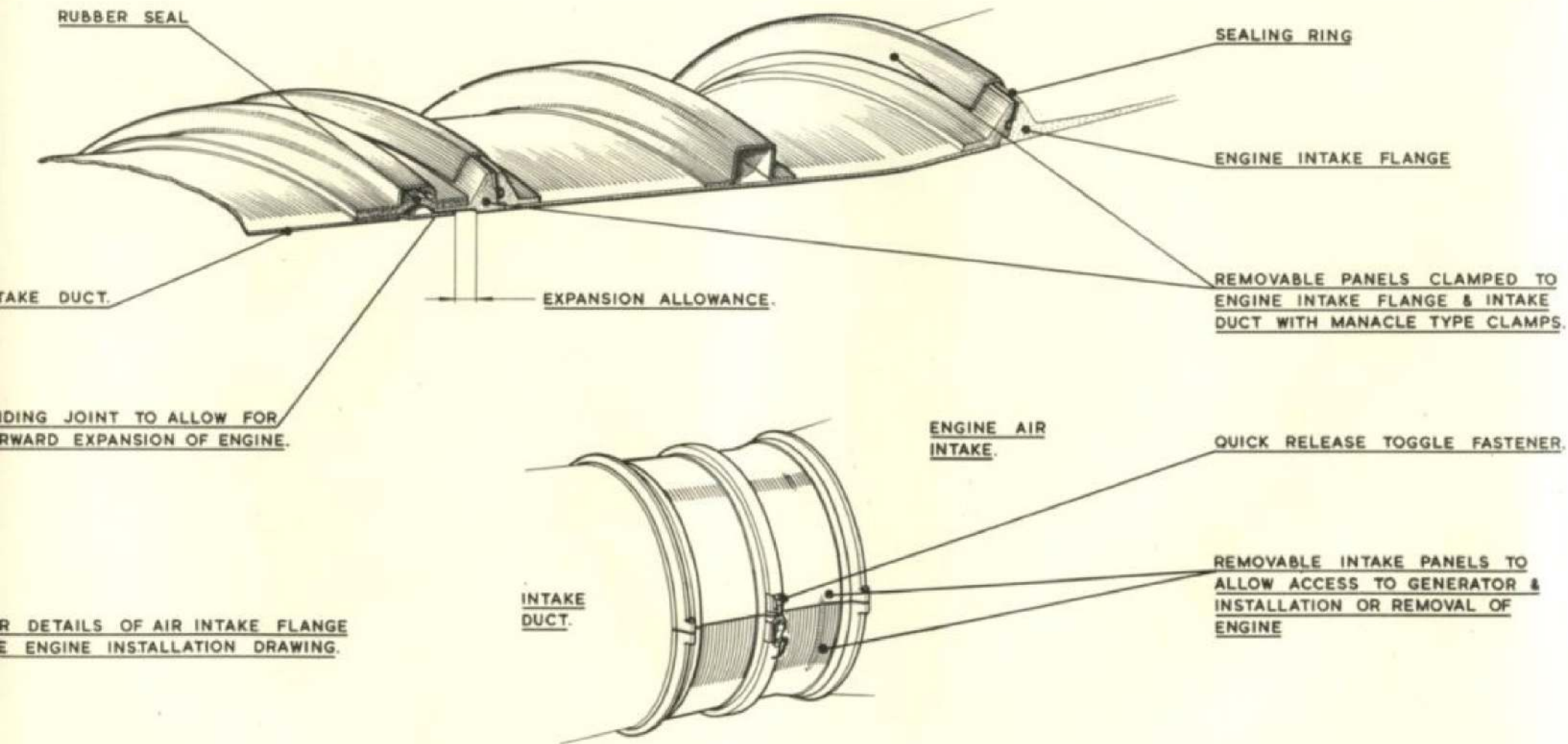
- (1) The jet pipe, if fitted, must be withdrawn into the tunnel so that there is no possibility of its fouling the engine rear cone assembly.
- (2) The flame switch fitted to the front face of the jet pipe tunnel must be disconnected and placed inside the tunnel.
- (3) The top halves of the engine trunnion bearing housings, which are readily accessible, must be removed.
- (4) The $\frac{1}{2}$ inch diameter bolt securing the bottom half of the bearing housings must be removed and the bearing housings pushed back into the engine bay bearer ribs.
- (5) Check the fitment of the front link mounting bolt (aircraft supply) in the engine mounting bracket bushes.



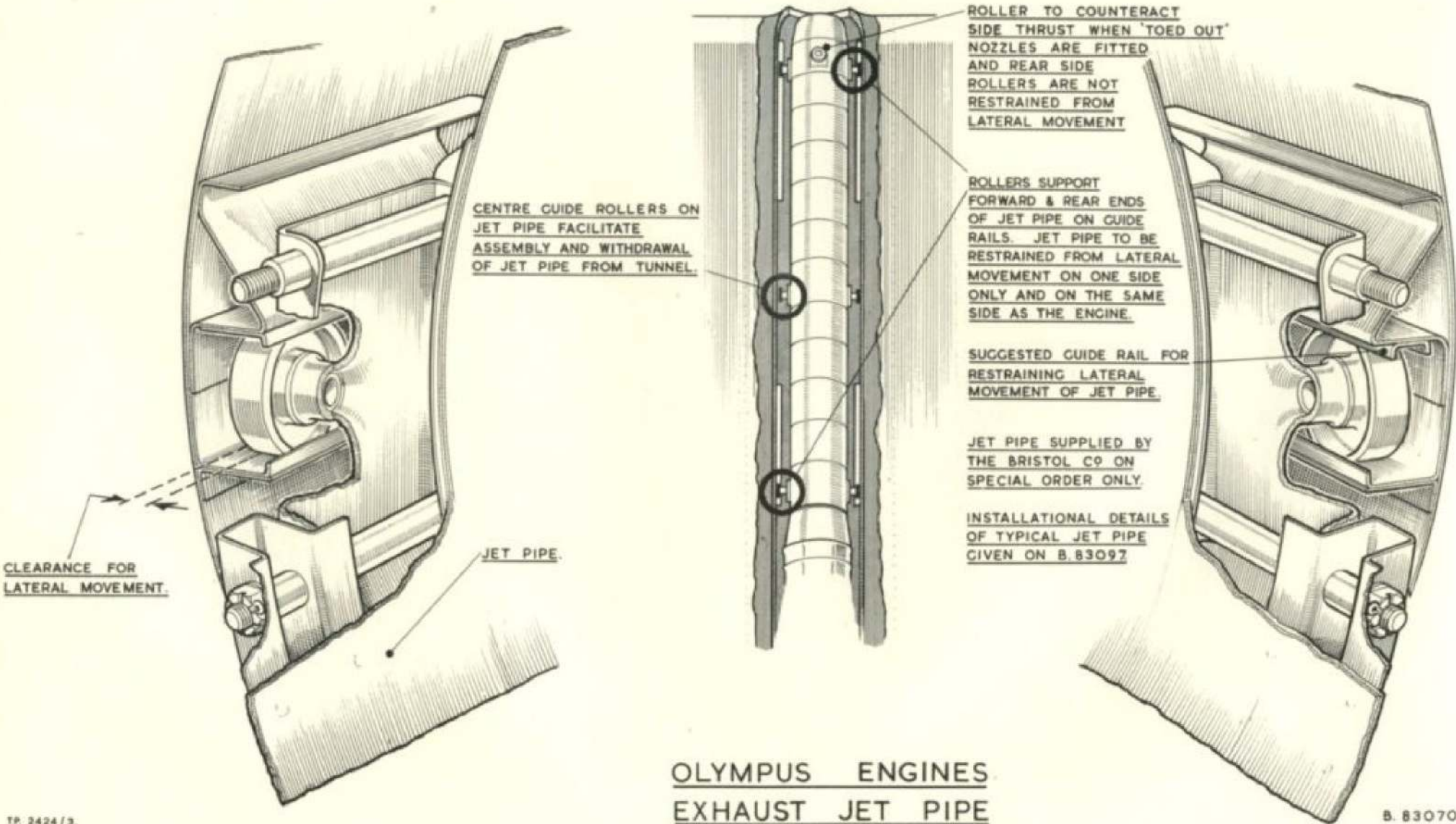
INSTALLATIONAL DETAILS OF ENGINE MOUNTING
GIVEN ON B.83062.

OLYMPUS 101 ENGINE MOUNTING

B.83065.



OLYMPUS ENGINES - SUGGESTED ATTACHMENT FOR DUCTED AIR INTAKE.



CENTRE GUIDE ROLLERS ON JET PIPE FACILITATE ASSEMBLY AND WITHDRAWAL OF JET PIPE FROM TUNNEL.

ROLLER TO COUNTERACT SIDE THRUST WHEN 'TOED OUT' NOZZLES ARE FITTED AND REAR SIDE ROLLERS ARE NOT RESTRAINED FROM LATERAL MOVEMENT

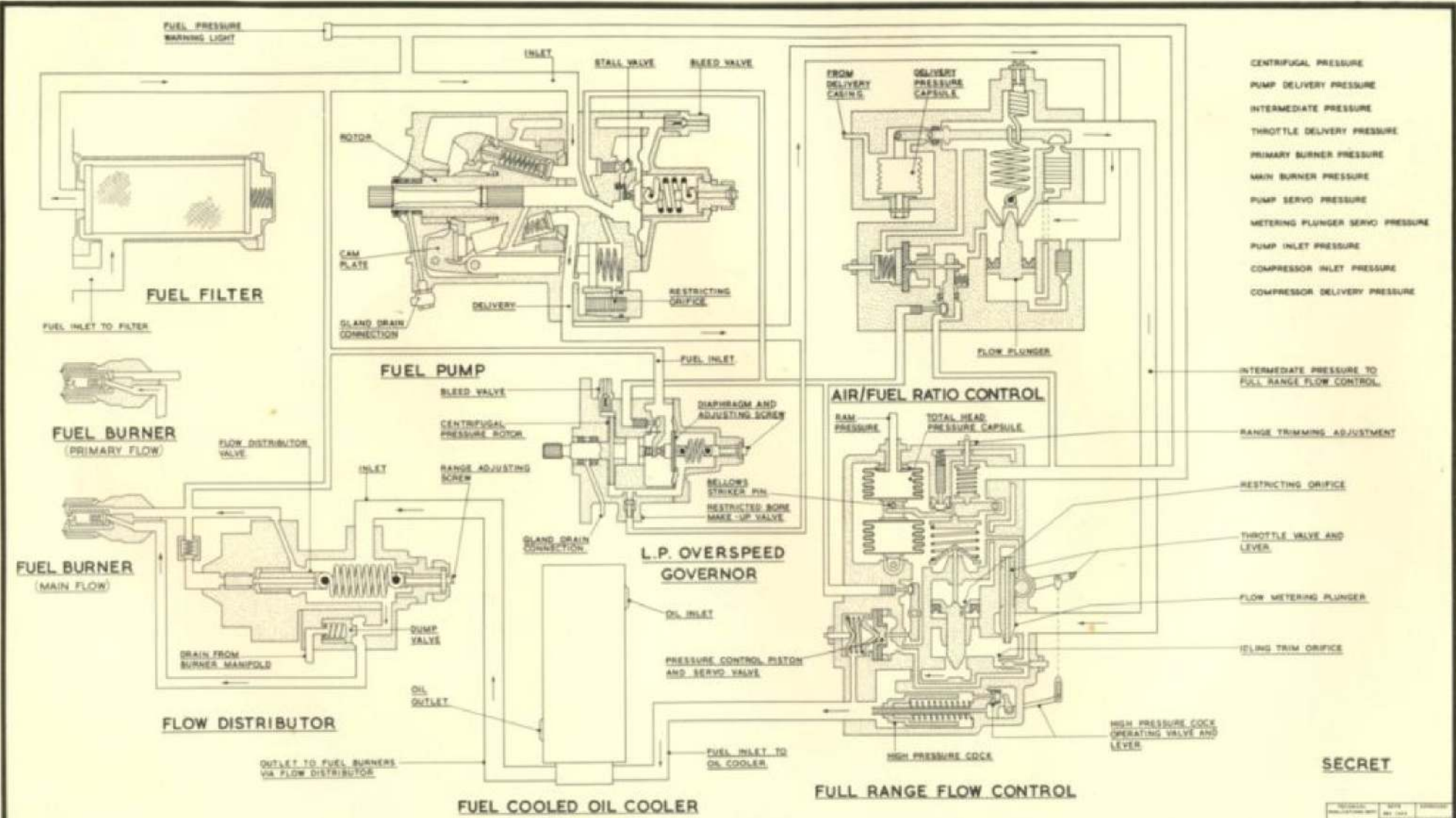
ROLLERS SUPPORT FORWARD & REAR ENDS OF JET PIPE ON GUIDE RAILS. JET PIPE TO BE RESTRAINED FROM LATERAL MOVEMENT ON ONE SIDE ONLY AND ON THE SAME SIDE AS THE ENGINE.

SUGGESTED GUIDE RAIL FOR RESTRAINING LATERAL MOVEMENT OF JET PIPE.

JET PIPE SUPPLIED BY THE BRISTOL CO ON SPECIAL ORDER ONLY.

INSTALLATIONAL DETAILS OF TYPICAL JET PIPE GIVEN ON B.83097

OLYMPUS ENGINES
EXHAUST JET PIPE



FUEL SYSTEM DIAGRAM *Bristol* **OLYMPUS TURBOJET MK.10101 E.C.U.**

SECRET

REVISED BY 1000	DATE 10/10/51
THE AIRCRAFT RESEARCH AND DEVELOPMENT ESTABLISHMENT	
TR 2746	



The P/Q Family

Why "P/Q"?

The P/Q family of Masks

MCA "Warning Connector"

P/Q 1

P/Q 2

P/Q 4

S-Type

V-Type

W-Type

T-Type

A-Type

V-Type

M-Type

A-Type

A-13A/1

A-13A/2

Quick Don

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