

Section 2

PRESERVATION AND PREPARING FOR INSTALLATION

LIST OF CHAPTERS

- 1 Preservation and packing**
- 2 Unpacking and preparing for installation**

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Chapter 1.

PRESERVATION AND PACKING
(Completely revised)

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Introduction

1. This chapter describes the procedure to be adopted when removing the power plant from the aircraft, the installation of the power plant in the transit stand, the method of preservation against condensation and corrosion and the packing procedure.

Slings

2. Only the approved types of slings must be used when hoisting the power plant. When the power plant is installed in the transit stand under no circumstances should the lifting lug on power plant be used for hoisting, the appropriate sling must be used on lugs provided on the transit stand.

Removing the power plant from the aircraft

3. Instructions for removing the power plant from the aircraft are given in A.P.101B-1902-1A.

Safety precautions

4. Adequate precautions must be taken against fire risks and danger to personnel in the handling of flammable and toxic materials, for further details refer to A.P.119A-0509-1.

Installing the A.A.P.P. in the transit stand

5. (1) Attach a suitable lifting sling to the hoisting lug on the top rail of the power plant and take the strain on the hoist.

(2) Remove the main mounting cross-beam from the transit stand and secure it to the A.A.P.P. main support with the two bolts and nuts.

(3) Remove the third point mounting cross-beam from the transit stand and attach the reach bolt to the third point mounting rod on the power plant; securely tighten the locknut. Note that the rod has a left hand thread.

(4) Lower the power plant into the transit stand until the dowels on the stand locate in the cross-beams, ensuring that the unit does not swing and cause damage to the externally mounted components.

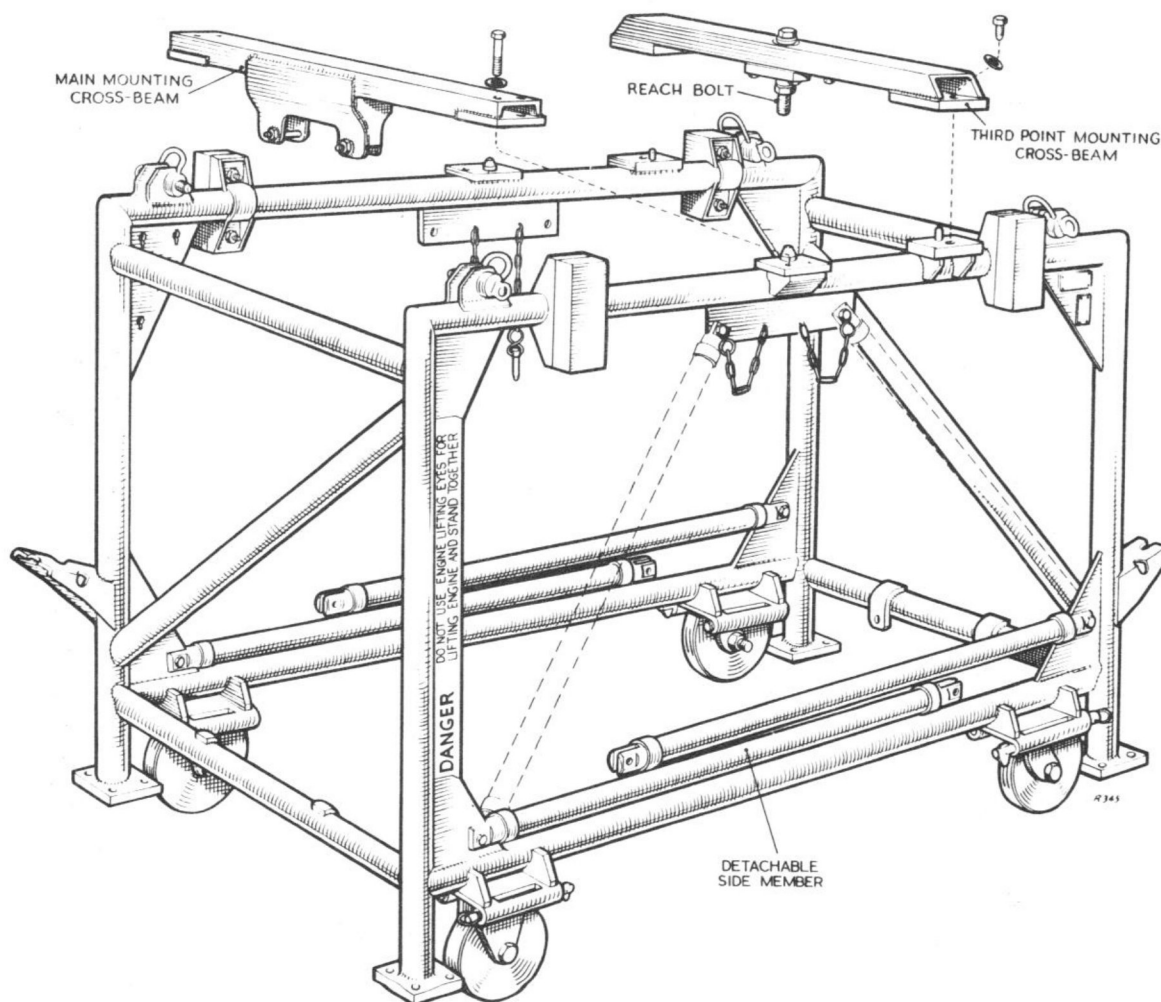


Fig. 1. Transit stand

(5) Secure the two cross-beams to the stand with the six bolts and washers. Remove the lifting sling.

(6) Using the adjustment provided in the third point mounting, adjust as necessary until the A.A.P.P. sits level in the transit stand.

CAUTION. . .

The purpose of the adjustment on the third point mounting is to ensure that the A.A.P.P. sits level in the transit stand. Under no circumstances should it be over adjusted so that the air bleed valve actuator is allowed to come into contact with the cross-beam, or damage to the actuator will occur.

SHORT TERM STORAGE

Engines that can be run

6. Ground run the engine for approximately five minutes and check that the accessories and fuel system components are functioning correctly. For details of the routine ground checks refer to the appropriate servicing schedule. This procedure is applicable only to an A.A.P.P. installed in an aircraft where it can be run at least once every seven days.

Engines that cannot be run

7. If it is not possible to run the engine or if the period of storage or stand-by is expected to exceed seven days, the engine must be inhibited and protected as described under long term storage.

Oil system

8. The use of synthetic lubricating oil OX-38 obviates the need to inhibit the oil system as this type of oil provides ample protection against corrosion.

LONG TERM STORAGE

Inhibiting the fuel system

9. The internal preservation procedure for long term storage requires the engine fuel system to be inhibited with protective O.M.11 and then completely blanked. The following equipment will be required.

(1) A hydraulic pump rig capable of delivering inhibiting oil at a pressure of 400 lbf/in². The pump should be supplied with oil from a tank of not less than two gallons capacity, the tank must be fitted with a low pressure filter.

(2) To the outlet from the rig pump, fit a flexible delivery hose, the end of the hose must be fitted with a $\frac{1}{8}$ in. BSP nut and nipple for attachment to the fuel system non-return inhibiting valve.

(3) To enable the pressure to be controlled a hand-operated cock must be incorporated in the delivery line, this cock will allow oil to be spilled back to the tank.

TABLE 1
Blanking Parts

Part No.	Ref. No.	Description	Location	No. off
423460	5X/1965	Cap	1.B.1.bulkhead plug	1
423640	5X/1965	Cap	1.B.2.bulkhead plug	1
423640	5X/1965	Cap	1.B.3.bulkhead plug	1
423640	5X/1965	Cap	1.B.4.bulkhead plug	1
423644	5X/1963	Cap	1.B.5.bulkhead plug	1
2Z139507	-	Cap	1.B.6.bulkhead plug	1
423643	28N/11415	Plug	Cartridge breech relief valve casing	2
423626	AGS .597E	Cap	Cartridge breech relief valve outlet	2
423644	5X/1963	Cap	Cartridge start electrical socket connector	2
226815	AGS .597C	Cap	Low pressure fuel filter	1
423641	36AF/746	Cap	Igniter plug lead bulkhead connector	1
422025	AGS .596A	Plug	Manifold drain pipe	1
422026	36AF/748	Plug	Pressure re-oiling valve overflow pipe	1
421247	36AF/674	Cap	Jet pipe	1
421246	36AF/675	Cap	Blower inlet	1
421279	36AF/665	Blank	Air intake	1
421248	36AF/673	Cap	Air bleed valve	1
A.359	27N/240	Blank	Fire extinguisher bottle	1

Note . . .

Whenever possible these parts must be retained for further use when removed from components.

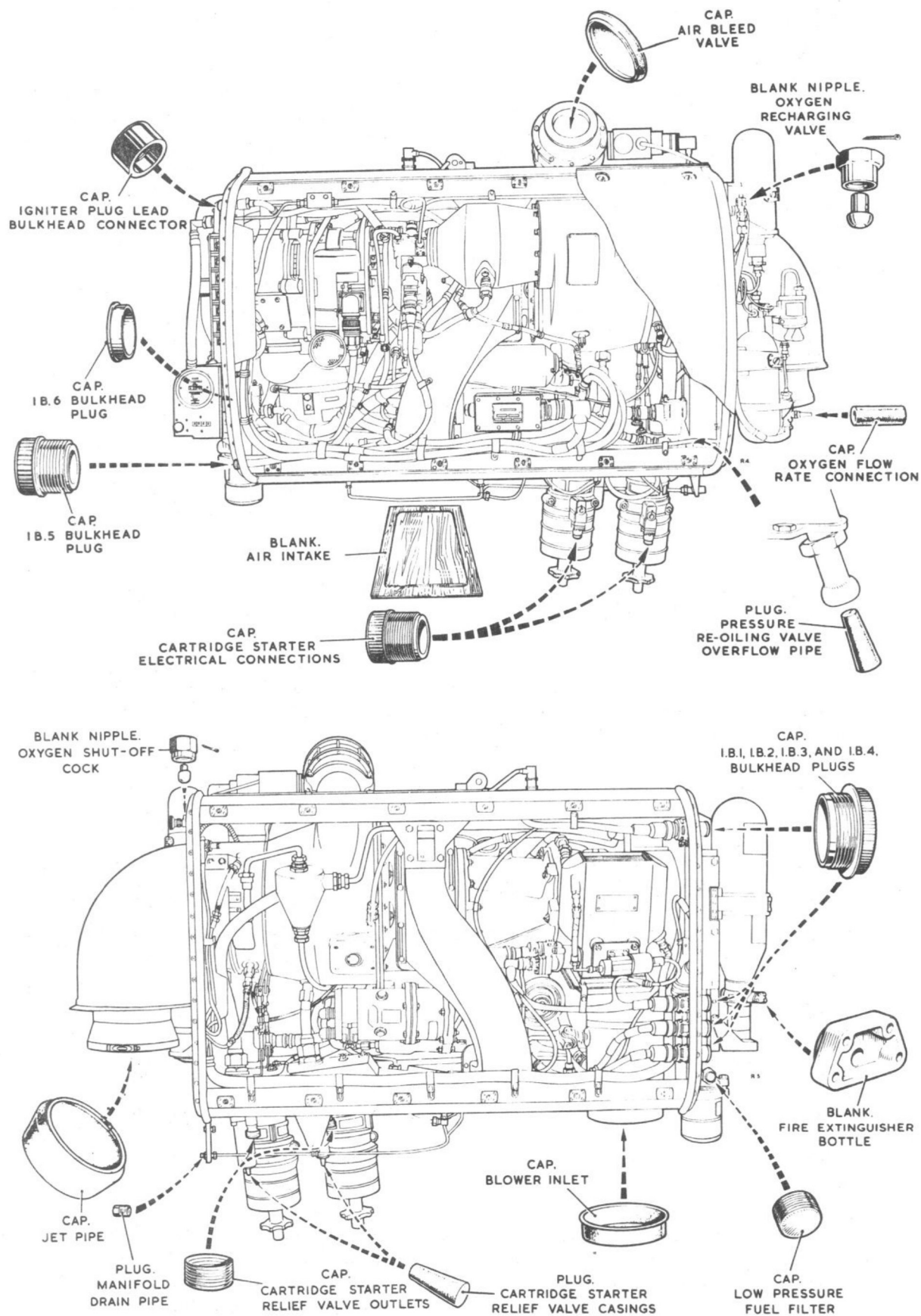


Fig. 2 Blanking Points

(4) A slave lead and a 24 v battery to open and close the burner during the inhibiting cycle.

WARNING. . .

During the inhibiting cycle there will be a continuous flow of oil from the high pressure side of the fuel system to the low pressure side, the excess of which must be permitted to escape through the fuel pump inlet union; any restriction of this flow could cause a pressure build up that could result in serious damage to the fuel system.

10. The inhibiting procedure is as follows :-

(1) Remove the fuel filter element (Sect.5, Chap.3) and examine it for serviceability and cleanliness. The element must be renewed if it is unserviceable or dirty.

(2) Refit the filter element and bowl, using new sealing rings, and securely wire lock.

(3) Cut the locking wire and release the wiring harness at the socket connection on the burner actuator. Using the slave lead and battery energize the terminal pins 'A' and 'B' in the socket to close the burner.

(4) Remove the pressure blank from the non-return inhibiting valve on the temperature control unit, then attach the rig delivery pipe to the exposed union.

(5) Cut the locking wire and remove the fuel inlet pipe at the fuel pump. Connect a suitable hose to the exposed union and insert the free end in a container.

(6) Check that the rig tank contains at least two gallons of inhibiting oil.

(7) Start the rig pump and gradually increase the pressure to 400 lbf/in². Run the rig for approximately one minute at this pressure, during this period the burner should be opened three times for five second periods by energizing pins 'A' and 'C' to open and pins 'A' and 'B' to close, using the slave lead and battery.

(8) Turn off the rig pump, disconnect the rig delivery and return pipes and immediately reconnect and wire-lock the fuel pump low pressure fuel inlet pipe to prevent any loss of inhibiting oil.

(9) Refit the pressure blank to the non-return inhibiting valve.

(10) Refit and wire-lock the harness to the burner actuator socket connection having ensured that the burner is closed.

(11) Slacken the bleed screw on the fuel pump, disconnect the inlet pipe to the low pressure filter and connect the delivery hose from the inhibiting rig. Pressurise the rig to 15 lbf/in² and inhibit the system until an air free flow of fluid issues from the bleed screws. Close the bleed screw, disconnect the inhibiting rig and wire lock the bleed screw.

- (12) The inhibiting oil flushed through the system will contain traces of fuel and should therefore be discarded.

EXTERNAL PRESERVATION

General

11. The M.V.P. bag (Ref. No. 40B/1306) is supplied for use with the Rover Airborne Auxiliary Power Plant MK. 10301 and must only be used in conjunction with transit stand (Ref. No. 40B/1268).

Preparation

12. (1) Commence by removing both access panels and ensure that the power plant conforms with the checking list and that the result is recorded on the appropriate form.
- (2) Refit the access panels and ensure that all the specified blanks and covers are fitted and sealed, where necessary, with adhesive tape to make them airtight.
- (3) Pad all sharp projections on the power plant, using cellulose wadding to Spec. DEF. 1248 (Ref. No. 32B/9432407) and secure with masking tape to Spec. B.S.J11 (Ref. No. 32B/9436999).

Installing the A.A.P.P. in the M.V.P. bag

13. (1) Attach a suitable sling to the lifting lug on the power plant and using a crane or hoist take up the slack in the sling.
- (2) Remove the six bolts and washers retaining two cross-beams to the stand and lift the power plant clear of the stand. Care should be taken to ensure that the power plant does not swing and damage the externally mounted components.
- (3) Open the M.V.P. bag and drape it inside the stand locating the reinforced holes over the dowels, located on the cross-beam mountings, also ensuring that the holes for the cross-beam retaining bolts are aligned.
- (4) Lower the power plant into the bag and stand allowing the cross-beams to come to rest on their respective mounting points. Ensure that the bag is sandwiched between the cross-beams and the stand and that the bolt holes are still aligned, then fit and secure the six retaining bolts and washers.

Dessicating and closing the bag

- 14 (1) Place suitable lengths of grease proof paper or P.V.C. on the A.A.P.P. top rail and end panels, to prevent the dessicant coming into contact with the power plant and secure with adhesive tape.
- (2) Ensure that the humidity indicator, history card and fitting instructions are enclosed in the appropriate pockets in the bag.

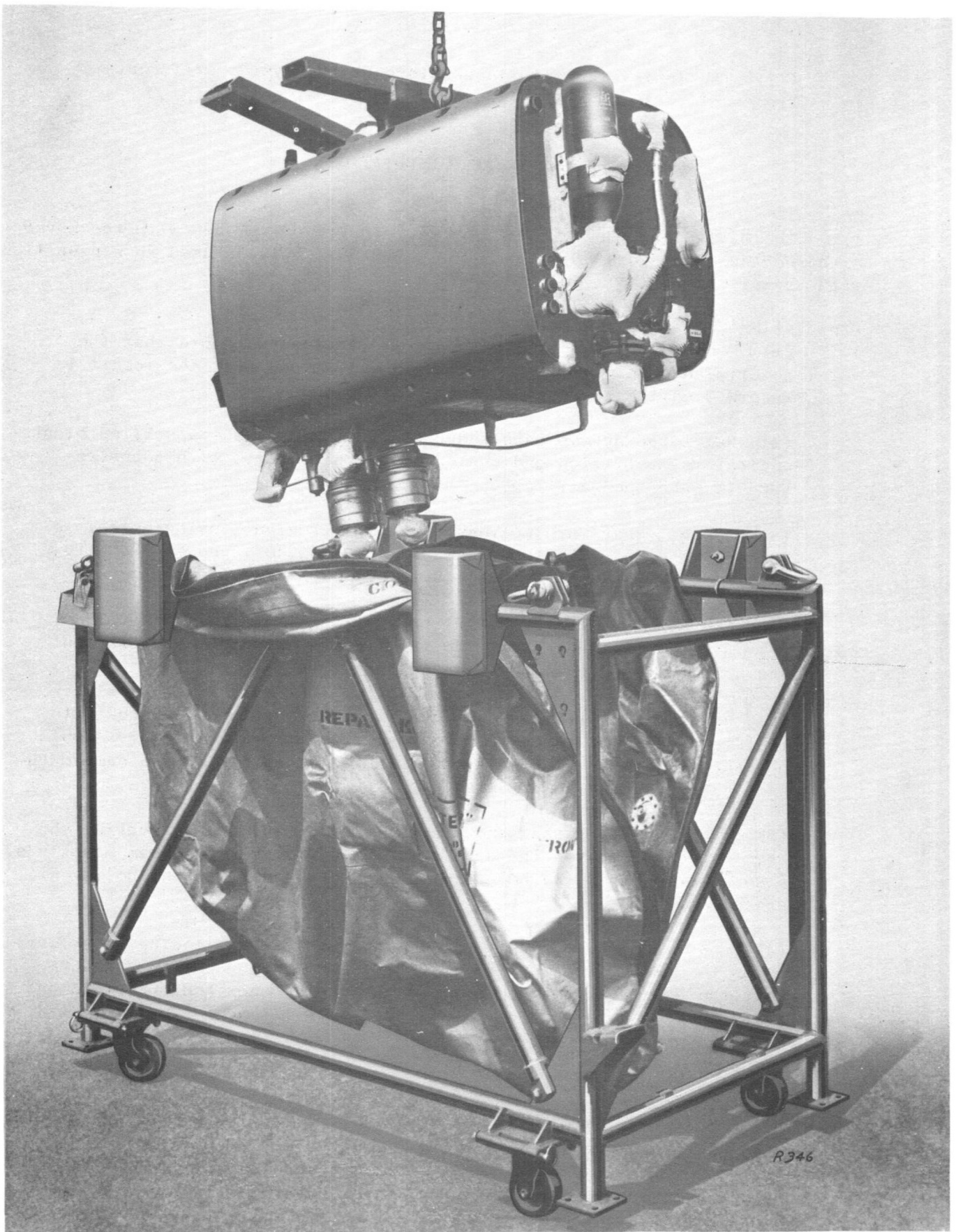


Fig. 3 Lowering the power plant into the m.v.p. bag

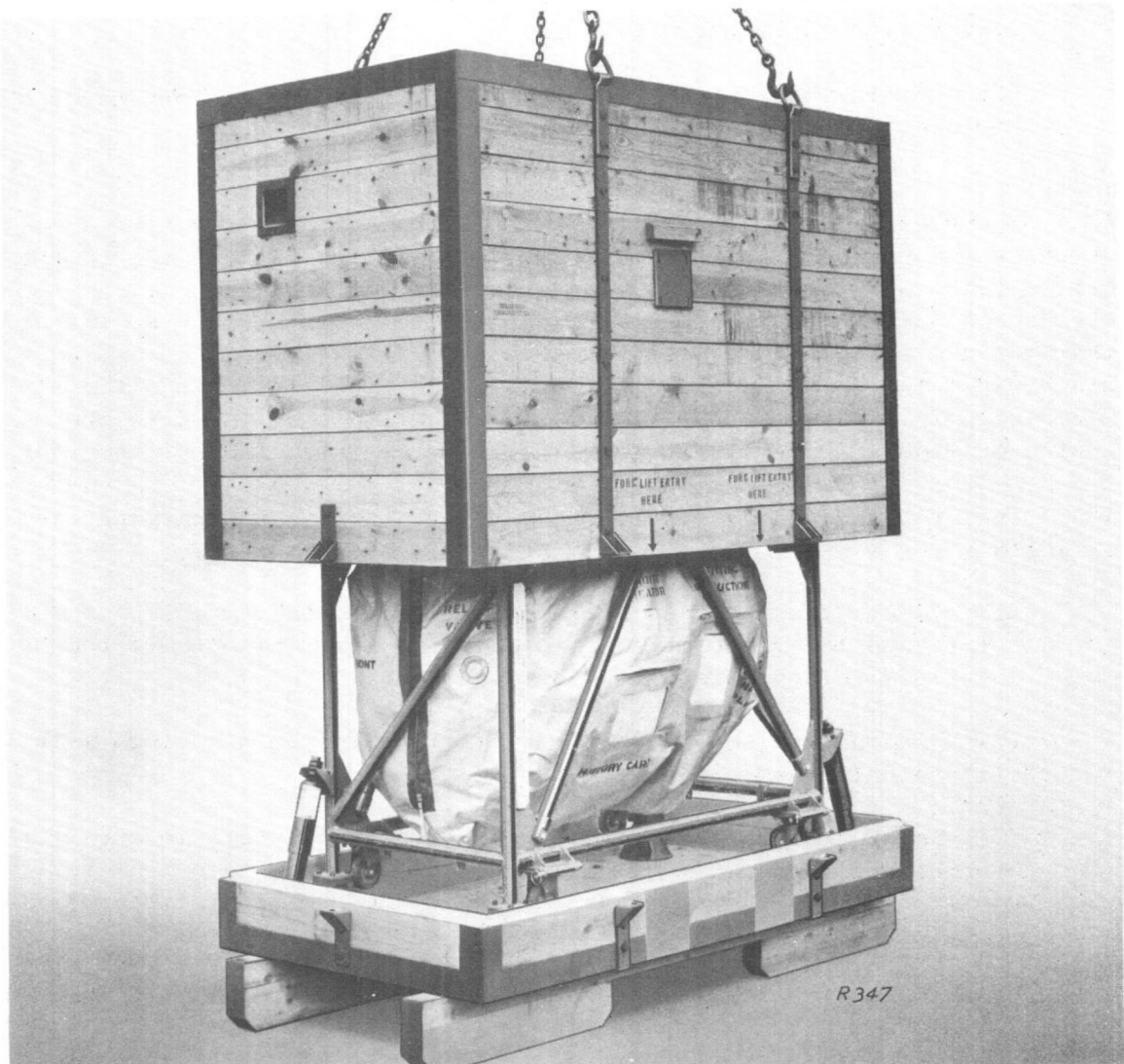


Fig. 4 Lowering the top section of the packing case on to the base

(3) Evenly distribute three bandoliers over the A.A.P.P. and load each bandolier with six one pound bags of dessicant.

Note. . .

Exposure to atmosphere of the Silica Gel for more than ten minutes will render it ineffective. Therefore the dessicant must remain in its sealed container until the last possible moment.

(4) Pull the bag up over the cross-beams and around the ends of the A.A.P.P.. Seal the bag by closing the zip fastener, taking care to ensure that it is pulled right to the end of its travel.

Note. . .

In order to avoid damage to the fastener, it is essential that the two edges of the bag are held together whilst the fastener is being closed.

(5) Raise the two detachable side members of the transit stand and secure with the captive pip pins.

(6) Record the fitting of the M.V.P. bag on the history card, then replace the card in the appropriate pocket.

Installing the power plant in the packing case

15. The packing case used for storage or transit consists of a wooden base on which the engine stand is mounted. The box type lid for the case is fitted with four metal straps, each strap has a lifting eye at the top end for use when lifting the assembled case. Metal straps are also fitted to the base and are bolted to the top straps when the case is assembled. Angle brackets at the joint between the lid and the base provide additional securing points. An inspection window in the lid, in line with the humidity indicator window in the M.V.P. bag, facilitates inspection of the indicator.

16. The procedure for installing the power plant in the packing case is as follows :-

(1) Secure the approved four point sling to the transit stand lifting points and lower the stand complete with power plant onto the Metalastik mountings in the base of the packing case.

(2) Secure the feet of the transit stand to the mountings with the sixteen bolts and plain washers.

(3) Secure the bottom eye of the Metalastik dampers to the respective brackets in the base and then with the dampers in a nearly vertical position extend and compress each unit three or four times until there is no lost motion at the change from extension and compression.

(4) Immediately the dampers have been primed they should be secured to the lugs on the transit stand, taking care to ensure that the rubber grommets are located one on either side of the lug. It is most important that there should be no delay between priming the dampers and securing them to the transit stand.

(5) Using a four point sling lower the top section of the packing case onto the base and secure with the six bolts, plain washers and nuts.

Chapter 2

UNPACKING AND PREPARING FOR INSTALLATION

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Introduction

1. This chapter describes the procedure to be adopted when removing the power plant from the packing case and the preparations to be taken immediately prior to installing the unit in the aircraft.

2. Only the approved types of sling should be used when handling the packing case or removing the power plant from the transit stand.

Unpacking the power plant

3. (1) Remove the six bolts, plain washers and nuts securing the top section of the packing case to the base.
- (2) Using a four point sling, lift the top section clear of the base and remove to a safe storage position.
- (3) Release the two shock absorbers at the anchorage on the transit stand.
- (4) Release the sixteen bolts and spring washers securing the transit stand to the rubber feet in the base of the packing case.
- (5) Secure the approved four point sling to the transit stand lifting points and lift the stand complete with the power plant clear of the base.

Note . . .

Do not attempt to lift the transit stand whilst it is still secured to the base of the packing case and do not attempt to lift the power plant and the transit stand by means of the hoisting lug on the power plant.

- (6) Open the zip-fastener sealing the power plant m.v.p. bag and draw the edges of the bag apart to allow access to the power plant.
- (7) Remove the desiccant bandoliers suspended round the power plant.
- (8) Release the four bolts securing the power plant main mounting cross-beam to the transit stand.
- (9) Release the two bolts securing the power plant third point mounting cross-beam to the transit stand.
- (10) Fit the correct sling to the power plant hoisting lug and, using a suitable hoist, carefully lift the power plant complete with the

mounting cross-beams clear of the transit stand and m.v.p. bag.

(11) Carefully remove the m.v.p. bag from the transit stand and if serviceable fold neatly and return to store (A.P.4471A, Vol. 1, Part 1).

Preparing the power plant for installation

4. Before installing the power plant, remove all blanking parts as stated in Table 1 of Chap. 1 of this section. To facilitate removal it will usually be found more convenient to re-install the power plant in the transit stand. Proceed as follows:—

- (1) Check that the power plant is in the correct relationship to the stand and carefully lower the unit until the mounting cross-beams locate on the respective dowels on the frame.

Note . . .

Great care must be exercised to prevent any swing developing whilst the power plant is being lowered into the stand otherwise the components fitted to the end panels may be damaged.

- (2) Re-secure the mounting cross-beams to the stand with the respective bolts.
- (3) Strip off the cellulose wadding and grease-proof paper taped to the power plant and, finally, remove the blanking parts.

Note . . .

The sleeve nut, nipple and split pin blanking the inhibiting non-return valve should not be removed unless it becomes necessary to statically inhibit the power plant.

De-inhibiting

5. Normally the power plant will not be de-inhibited until after it has been installed in the aircraft and is being prepared for use. If it is to be proof run before installation the de-inhibiting operations will be made on the test stand.

Removing the power plant from the transit stand

6. The following paragraphs describe the method of removing the power plant from the transit stand in preparation for installing in the aircraft.

- (1) Remove the four bolts securing the power plant main mounting cross-beam to the transit stand.

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- (2) Release the two bolts securing the power plant third point mounting cross-beam to the transit stand.
- (3) Fix the correct sling to the power plant hoisting lug and, with a suitable hoist, carefully take the weight of the power plant.
- (4) Release the two bolts and nuts securing the main mounting cross-beam to the power plant main support mounting and lift the cross-beam clear of the power plant.
- (5) Release the nut locking the reach bolt in the third point mounting beam. Unscrew the bolt and lift the cross-beam clear of the power plant. Note that the thread on the third point mounting rod is left-handed.
- (6) The power plant can now be hoisted clear

of the transit stand but great care must be taken to ensure that the unit does not swing during this operation otherwise the components mounted on the end panels may be severely damaged.

Note . . .

Once the mounting cross-beams have been removed, the power plant must not be lowered whilst in the transit stand, otherwise the cartridge barrels may strike the ground.

Installing the power plant in the aircraft

7. Instructions for installing the power plant in the aircraft will be found in A.P.4505B, Vol. 1.