INSTALLATION AND PREPARATION FOR USE

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ILLUSTRATIONS

Introduction

1. This chapter contains only a general description of the gun package, for a detailed description reference should be made to AP 4347A, Vol.1, Sect.7, Chap.3, or its coded successor, and to AD 5676.

General description of gun package (fig.1 and 2)

2. The gun package is a removable structure into which can be fitted four 30 mm Aden guns together with their ammunition. The package fits into a compartment in the underside of the front fuselage, the underside of the package continuing the fuselage line.

3. The package is supported in the fuselage by six spigots which are located three on each side of the package bay and project downwards to engage sockets in the sides of the package. The package is locked by bolts which pass through holes in the spigots. These bolts are engaged or disengaged by locking mechanisms situated one on each side of the package, at the forward end. The mechanism is operated by a special removable key. Two guide spigots, provided at the forward end of the package, enter brackets in the fuselage as the package is being installed, and so guide the package to its correct position.

4. The package contains front and rear gun mountings. Each front mounting consists of a spherical bush carried in a housing in the front of the package and retained by a screwed castellated ring which is locked to the housing by a locking plate. The trunnion at the forward end of the cradle is supported by the spherical bush and the cradle secured by the cradle nut, the nut being locked by a locking washer. The front mounting is adjusted and locked on assembly, so that the spherical bush may just move to allow for gun harmonization.

5. Each rear mounting embodies a traverse screw with a locking sleeve, and an eccentric assembly. The former is used for adjustment in azimuth and the latter for adjustment in elevation during gun harmonization. The inboard guns are also provided with adjustable tie-rods which are attached to the package, and to the rear mounting bracket on each gun cradle.

6. Ammunition tanks are carried on a platform at the top of the package. The feed chutes, one for each gun, extend from the ammunition tanks to attachments on each gun, and are curved and formed to prevent excessive belt drag.

7. The link ejection chutes extend from the link chute attachment fittings on the guns to detachable link chutes in the underside of the gun package. A belt disintergrating device is incorporated in each link chute and blisters are fitted one on each side of the package to collect the links.

8. The empty cartridge case chutes are curved steel tubes. The outboard gun tubes are attached to a section of the rear aircraft panel, and are connected to the ejection tubes on the feed casing when the panels are fitted. The inboard tubes are connected to the ejection tubes on the feed casings and extend aft where they are anchored to the brackets mounted in the fuselage.

9. The package is heated by air taken from the engine compressor, the supply being thermostatically controlled. The hot air supply hose is connected with a quick-release coupling on the rear cover of the package.

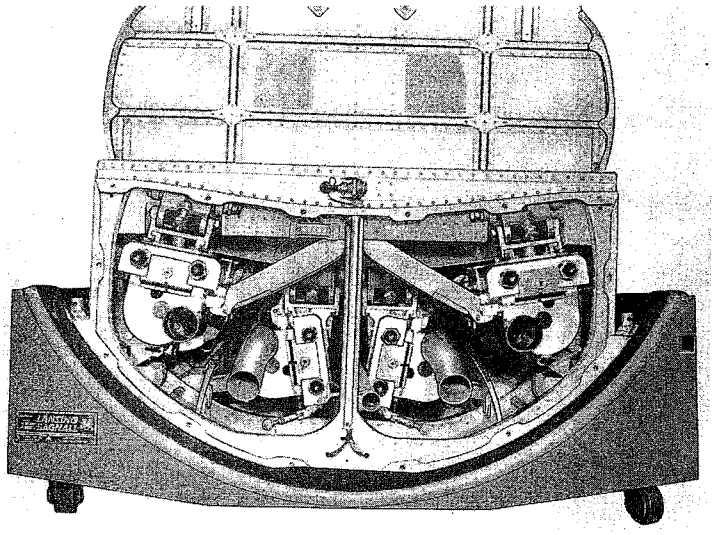

Fig.1. Gun package with four guns installed, rear view

10. The package is ventilated, when the guns are firing, by air passing through an air scoop duct, which extends between the forward end of the package and a shuttered aperture in the gun bay front starboard access panel. The scoop is operated by an electric actuator, also mounted on the access panel.

11. The gun barrels, which are detachable from the guns to allow for removal of the package, are supported in the fuselage, forward of the package, in

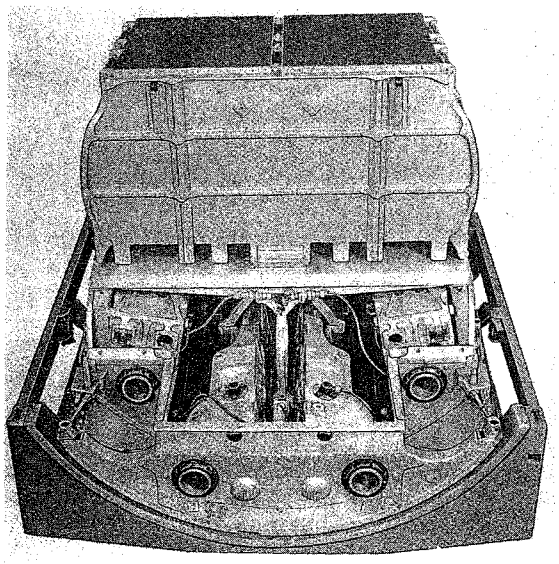

Fig.2. Gun package with four guns installed, front view

Fig.3. Rear strut, fitted

pedestal assemblies and barrel supports and project through blast tubes under the cockpit floor. The pedestal assemblies and barrel supports are adjustable to enable them to be centralised round the barrels to provide an all round clearance of 0·005 in and allow for recoil and run-out.

12. The guns are cocked pneumatically from a ground supply prior to hoisting the loaded gun package into the aircraft. Direct access to the cocking unit adapters is provided through the front of each gun cradle. Covers are fitted over the adapters of the inboard guns.

Removing a gun package and barrels from an aircraft (fig.3, 4, 5 and 6)

SAFETY PRECAUTIONS ...

(1) The aircraft is to be pointed in a safe direction, and a safety-man posted whose duty it is to prevent persons and vehicles passing in front of the aircraft, until the package has been removed.

(2) The gun firing control is to be set at SAFE, and the butt test switch in the cockpit set to OFF.

(3) If a gun stoppage has been reported, or is found by inspection, proceed as detailed in AP 1641S, Part 3, Chap.2, or its coded successor.

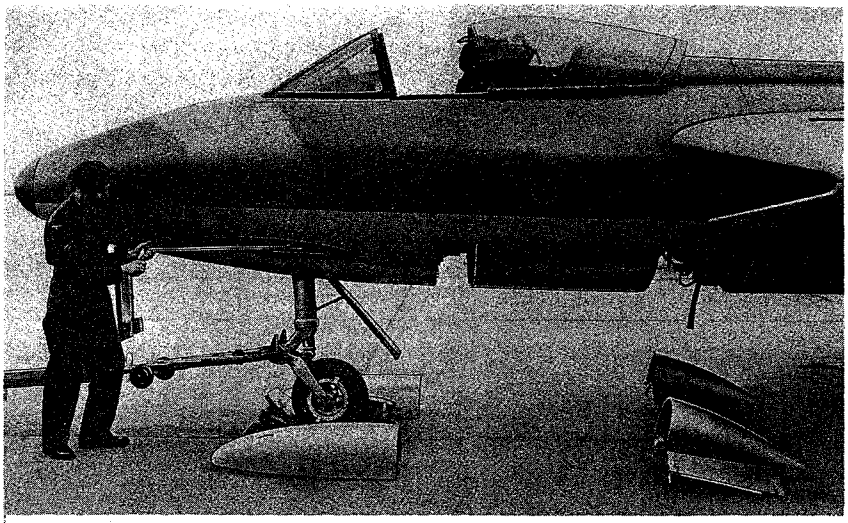

Fig.4. Removing a gun barrel

(4) The clutches of the C type hoists are to be set, as detailed in AP 110T-0104-1, to slip between 950 lb and 1075 lb.

13. The following operations require three men to handle the hoists. The lowering instructions are to be given by the man operating the front hoist.

(1) Fit a tail strut at the rear end of the aircraft at the trestle point.

(2) Remove the rear access panel and disconnect the power supply to the gun pack.

(3) Unlock the front access panel and, after disconnecting the power supply to the air scoop, remove the panel.

(4) Remove the front portion of the link collecting blister from the side of the gun pack and the two outboard ejection tubes from the rear of the gun pack.

(5) Disconnect the gun heating tube from the rear of the gun package.

(6) Unlock the barrels from the guns by screwing the barrel catch keys into the holes provided in the package skin, rotate and slide the barrels forward clear of the pack, using the barrel removing tool. Remove the barrel catch keys.

(7) Insert the lifting spigots in the side of the fuselage and attach a C type hoist to each spigot.

(8) Position a sling under the package, attach the hooks of the hoist cable to the sling, and winch up until the clutches of the hoists slip.

(9) Attach the front hoist to the bracket in the fuselage, hook the hoist cable to the stud at the front of the gun package, and winch up until the clutch of the hoist slips.

WARNING...

GREAT CARE IS NECESSARY WHEN ATTACHING THE HOIST AND REMOVING IT FROM THE BRACKET IN THE FUSELAGE OTHERWISE DAMAGE WILL BE CAUSED

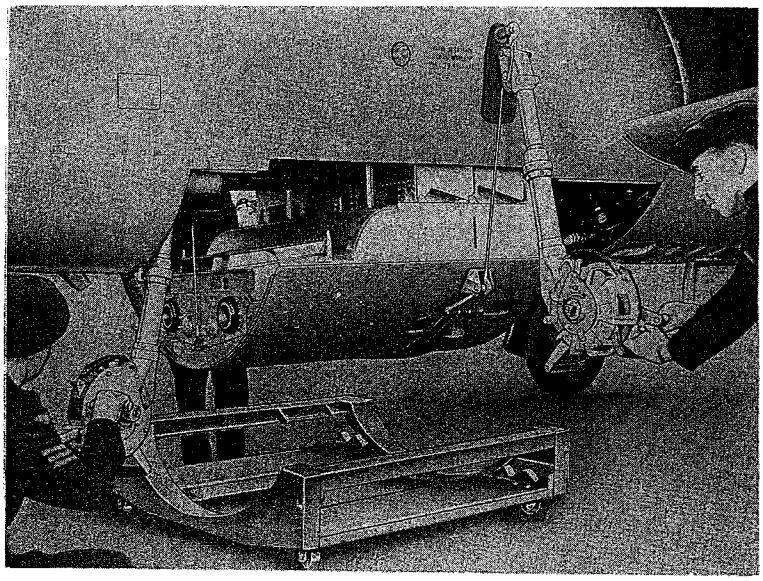

Fig.5. Lowering the gun package from an aircraft

TO THE AIRCRAFT CONTROL MECHANISM PART OF WHICH IS ATTACHED TO THE FRONT BULKHEAD OF THE PACKAGE BAY. THE RISK OF DAMAGE CAN BE MINIMISED IF THE AILERON CONTROL IS SET AT MANUAL PRIOR TO THE HOIST BEING ATTACHED OR REMOVED.

(10) Position a cradle under the gun package.

(11) Insert a package locking key into the key hole in the side of the package, press the key upwards against the action of the locking mechanism spring, and turn the key to disengage the locking bolts. Both sides of the package are to be unlocked.

(12) Lower the package on to the cradle, keeping the package steady and level while lowering.

(13) The cradle and package is now to be drawn out from under the aircraft and transported, as required, on a transporting trolley.

(14) If it is required to service the package, or to test the guns by firing, the package is to be lowered from the aircraft directly on to a gun package servicing trolley.

Note...

If a re-armed package is to be installed, the barrels should not be removed, but used with the new package.

Unloading the guns and removing ammunition

SAFETY PRECAUTIONS...

Ensure that the gun package electrical supply cable is not connected to any source of supply.

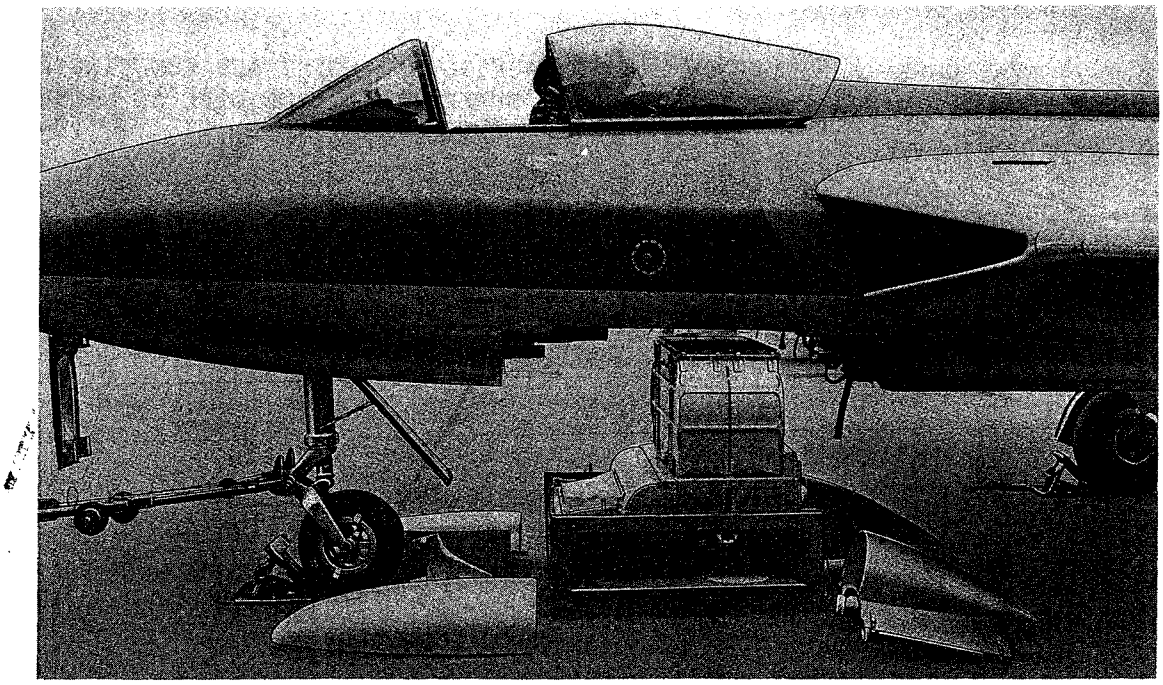

Fig.6. Gun package removed from aircraft, or positioned for installing

14. Transport the gun package to the special unloading bay. Disconnect the feed shaft of each feed mechanism and remove the unexpended portions of the belts from the ammunition tanks, using the belt tool if necessary. Unload each gun separately, as detailed in AP 1641S, Part 1, Chap.8 or its coded successor.

Removing the guns from the gun package (fig.7)

15. Both outboard guns can be removed from the gun package independently without removing the inboard guns. Slacken the gun cradle lock-nut and partially withdraw an inboard gun so that the rear mounting attachment bolt of the opposite inboard gun can be removed. The gun package must be supported in a gun package cradle, or on the servicing trolley while the guns are being removed.

Removing outboard gun

16. (1) Remove the package front and rear cowlings.

(2) Ensure that the guns are unloaded.

(3) Remove the extension ejection tubes from the inboard guns.

(4) Unplug the firing unit plug from the gun package socket.

(5) Disconnect and remove the feed chute.

(6) Disconnect and remove the link chutes.

17. (1) Unlock and remove the gun cradle nut.

(2) Insert the barrel to assist in the gun removal.

(3) Using the special tool, remove the return springs from the rear of the gun.

(4) Insert the gun lifting tool into the holes vacated by the return springs, and lock the tool in this position. Ensure that the handle of the tool is horizontal.

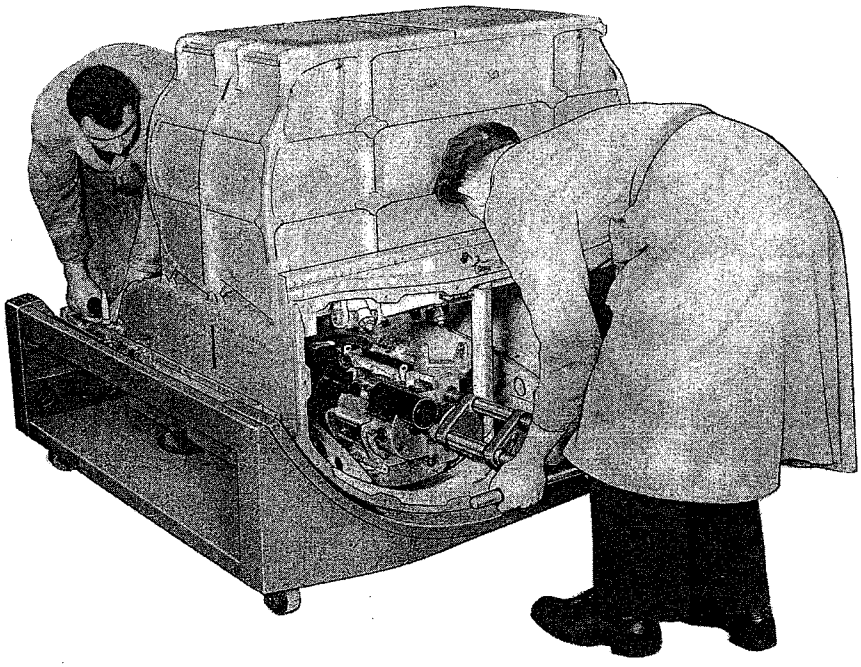

Fig.7. Removing an inboard gun

(5) Take the weight of the gun on the gun lifting tool, unlock and remove the rear mounting attachment bolt.

(6) Withdraw the gun, supporting it by the barrel and the gun lifting tool, taking care to prevent damage to the cradle trunnion threads and ensuring that the electrical supply lead and the cradle contact leads are clear. Ensure also that the 'Gun loaded' indicator does not strike the gun package ribs.

(7) Repeat for the other outboard gun.

Removing inboard guns

18. Inboard guns are removed similarly to the outboard guns with the following exceptions:-

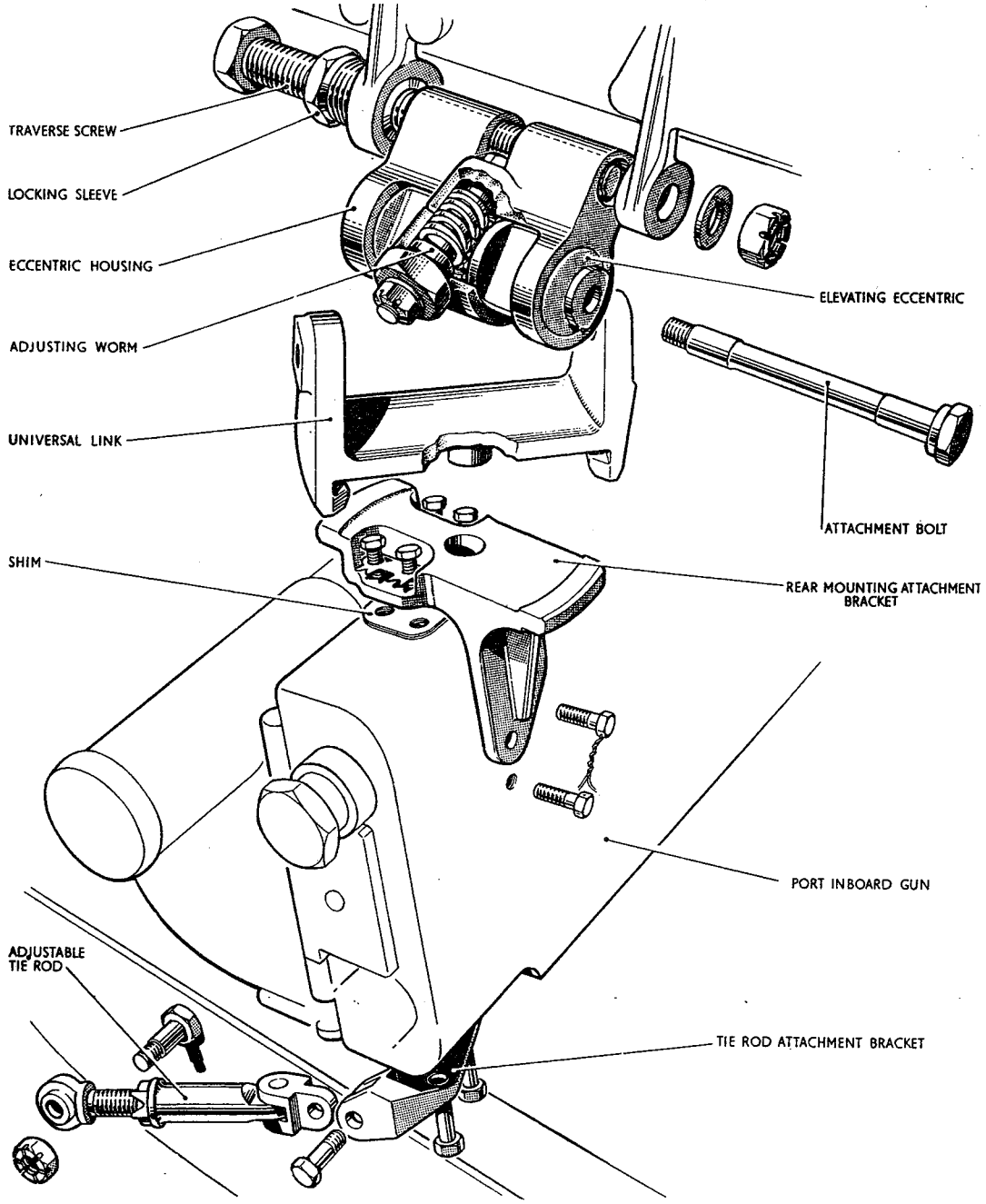

Fig.8. Rear gun-mounting, and mounting attachment fittings for port inboard gun, dismantled

(1) As previously mentioned, it may be necessary to disturb the other inboard gun so that the rear mounting bolt can be removed.

(2) It is only possible to move the link chute away from the gun and not to remove it completely. The chute cannot be removed until the gun is removed from the gun package.

(3) The rear of each inboard gun is connected to the gun package by tie-rods, and these must be disconnected before the guns can be withdrawn.

19. After a gun has been removed, the cradle lock nut is to be refitted to the cradle to prevent damage to the trunnion threads.

Installing the guns in the gun package (fig.8, 9, 10, 11, 12 and 13)

20. Before installing the guns, a number of special fittings are to be assembled to each gun. These fittings consist of rear mounting attachment brackets, feed and link chute attachments. The fittings should be examined to ensure that they are securely attached.

21. The rear mounting attachment bracket is bolted to the rear of the gun cradle; the bracket for an outboard gun being attached to the underside of the cradle, while for the inboard guns the bracket is attached on the port side of the starboard gun and on the starboard side of the port gun cradle. Each inboard gun is also fitted with a tie-rod attachment bracket positioned on the opposite side of the cradle to the mounting attachment bracket.

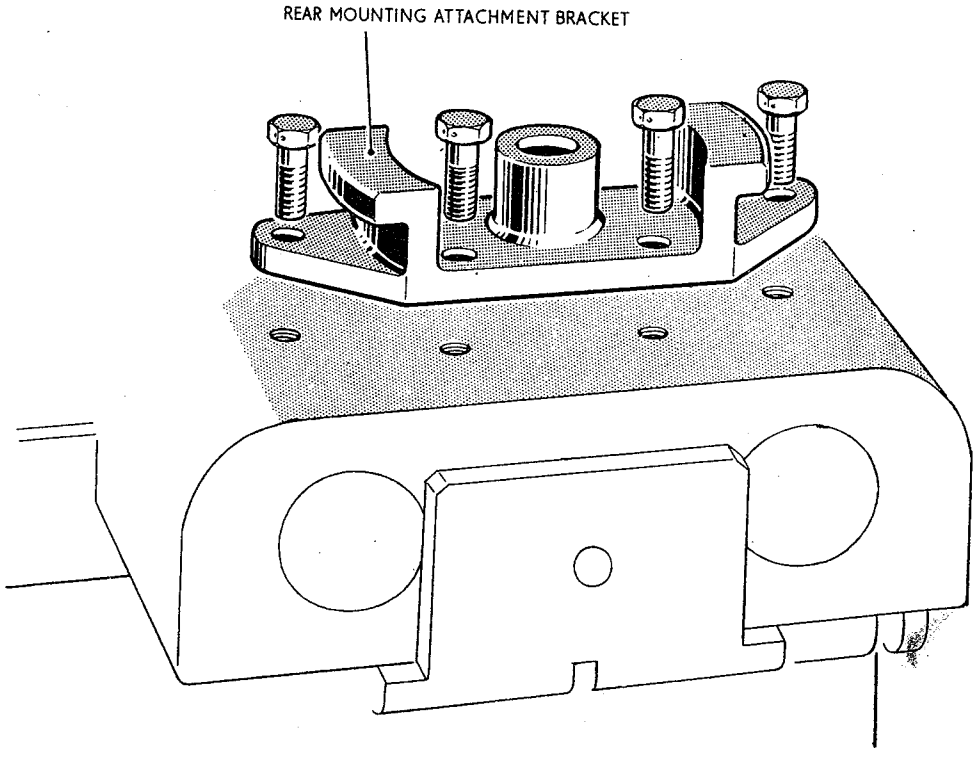

Fig.9. Mounting attachment for outboard gun, dismantled

22. Each feed chute attachment consists of two brackets positioned one on each side of the feed mouth in the feed casing. The feed chute from the ammunition tank is attached to one bracket by a special spring-loaded pin carried on the bracket, and to the other bracket by a pip-pin also carried on the bracket.

23. Each link chute attachment consists of a spring-loaded locking plate and lever assembly located on each side of the link chute aperture of the gun, and extends across the rear of the link chute to secure it in position.

24. A cocking unit adapter is fitted to each gun, and located on the front face of the cradle.

Inboard guns

25. With the barrel fitted, the return springs removed and the gun lifting tool in position and locked, proceed as follows:-

(1) Place the link chute in the link chute opening.

(2) Lift the gun and pass the barrel through the front mounting bearing until the gun cradle is correctly positioned in the front mounting bearing. Care must be taken not to damage the electrical leads or the gun loaded indicator during this operation.

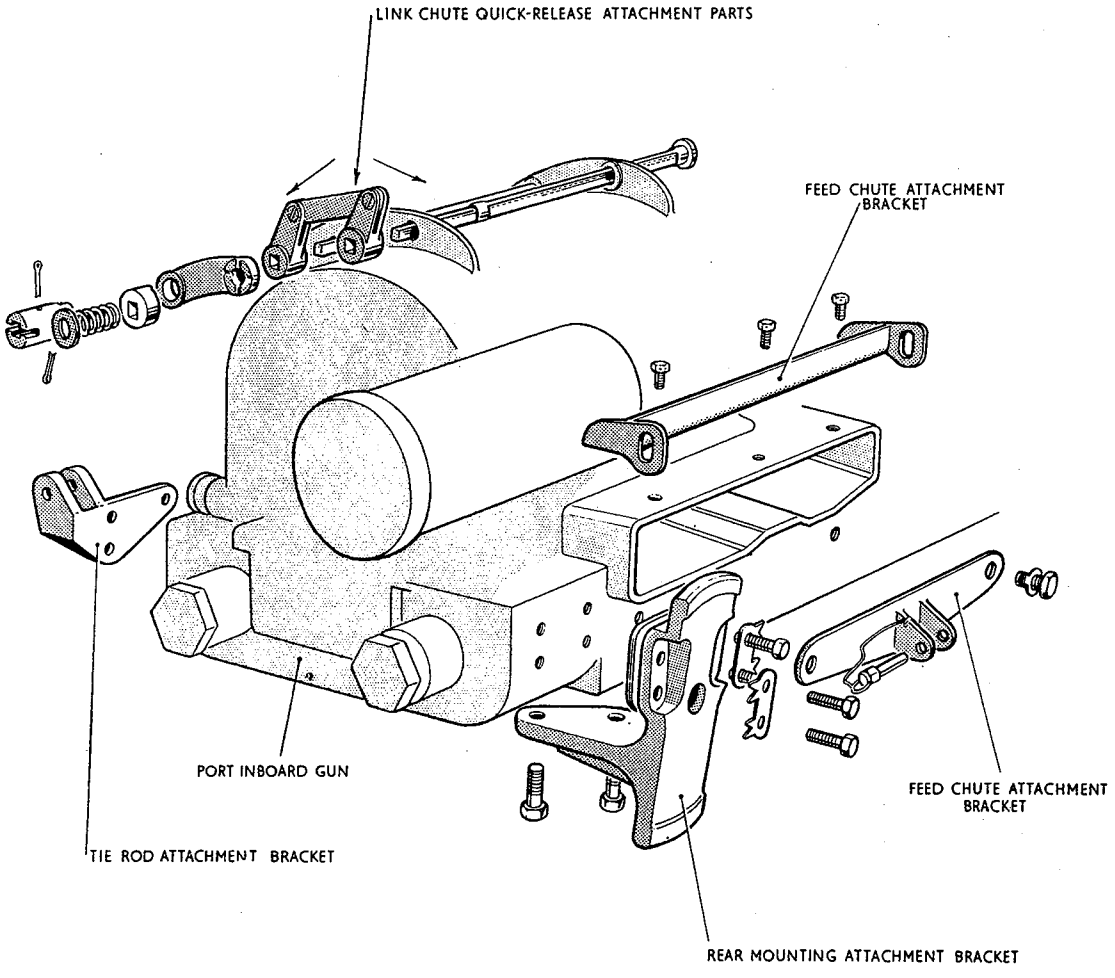

Fig.10. Feed and link chute attachments, and mounting attachments for port inboard gun, dismantled

(3) Lift the rear of the gun until the rear mounting bracket is correctly aligned, and then assemble the rear mounting bolt.

(4) Remove the barrel.

(5) Engage two or three threads of the cradle lock-nut.

(6) Tighten the cradle lock-nut, and secure it with the locking washer.

(7) Tighten and wire-lock the rear mounting bolt.

(8) Connect the link and feed chutes.

(9) Remove the gun lifting tool, and insert and secure the return springs.

(10) Fit the extension ejection tubes for the inboard guns.

(11) Connect, adjust and lock the tie-rods.

Outboard guns

26. Outboard guns are installed similarly to the inboard guns except that there are no tie-rods on the outboard guns.

After installing the guns

27. (1) Connect the firing unit lead of each gun to its socket on the gun package.

(2) Attach the gun heater pipe extension.

(3) Fit the front and rear gun package cowlings.

Harmonization of the guns;

28. The following equipment is required:-

(1) Universal gun harmonization equipment (AP 110T-0801-1).

(2) Instrument, gun aligning, 30 mm (AP 110T-0804-1).

(3) Tool, alignment, gun and barrel support (Ref. No.26FX/95516). (Short title - Barrel centralizing tool).

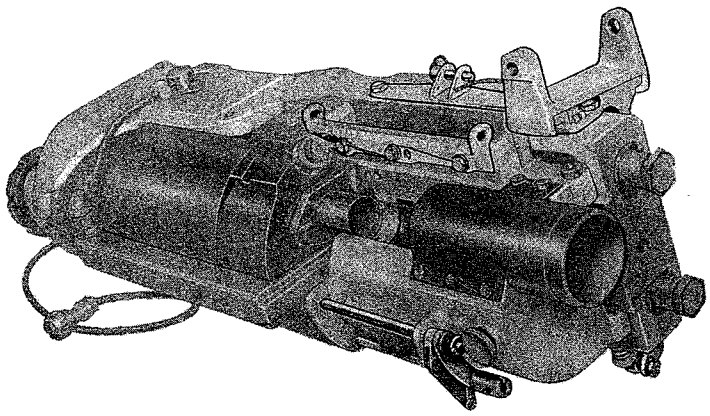

Fig.11. Special fittings attached to a port inboard gun

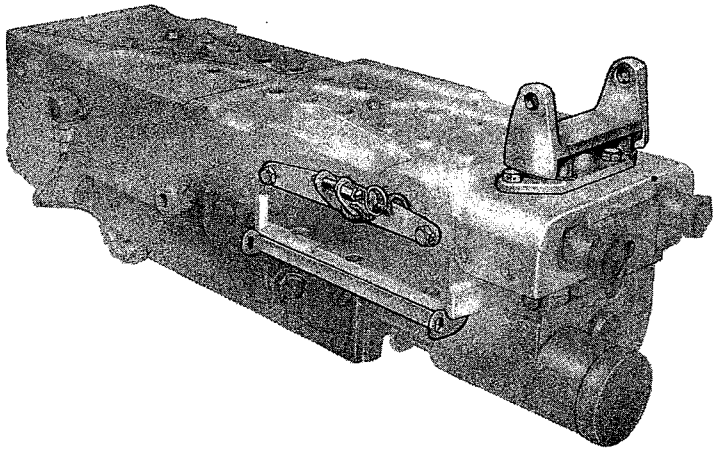

Fig.12. Special fittings attached to a starboard outboard gun

29. The harmonization board and the sighting discs are to be arranged according to Command Armament Staff Instructions.

30. The harmonization of the guns is done in three stages as follows:-

(1) Alignment of the guns in the gun package.

(2) Alignment of the gun sight.

(3) Centralizing the gun barrel supports.

Preparation

31. Before the harmonization of the guns is started, the accuracy of the gun aligning instrument, together with a barrel centralizing tool is to be tested as follows:-

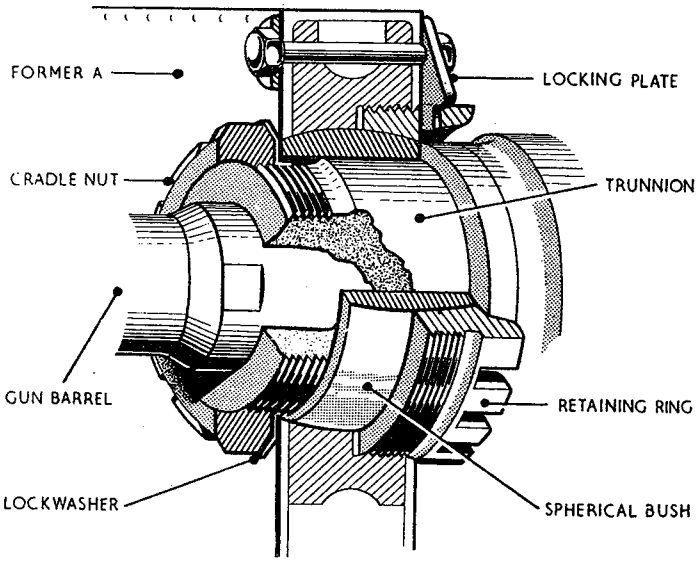

Fig.13. Front gun-mounting

(1) Place the gun aligning instrument in a pair of V blocks on a flat surface, and erect a target at a 1000 inches range from the eyepiece of the instrument.

(2) Carefully sight through the instrument and record the point of aim on the target. Without disturbing the V-blocks, rotate the instrument through 360 deg taking sightings at every 90 deg and recording the points of aim on the target.

(3) Find the mean of the four points of aim. If the distance between this and the target point exceeds 0·25 in the gun aligning instrument is to be corrected as detailed in AP 110T-0804-1. After correcting, a check is to be made by repeating the test.

(4) Slide the gun aligning instrument into the mandrel of the barrel centralizing tool as far as it will go and lock by operating the expander screw at the rear of the instrument.

(5) Assemble the barrel centralizing tool in a rigidly mounted gun so that the collet of the tool is locked by the barrel catch of the gun engaging any one of the locating holes. The mandrel is to be hand tightened only.

(6) Erect a target at 1000 in range from the eyepiece of the instrument, and record the point of aim of the instrument.

(7) Without disturbing the gun, unscrew the mandrel sufficiently to allow the collet to be turned through 120 deg, i.e. until the barrel catch engages the next location hole. Hand tighten the mandrel, and record the point of aim.

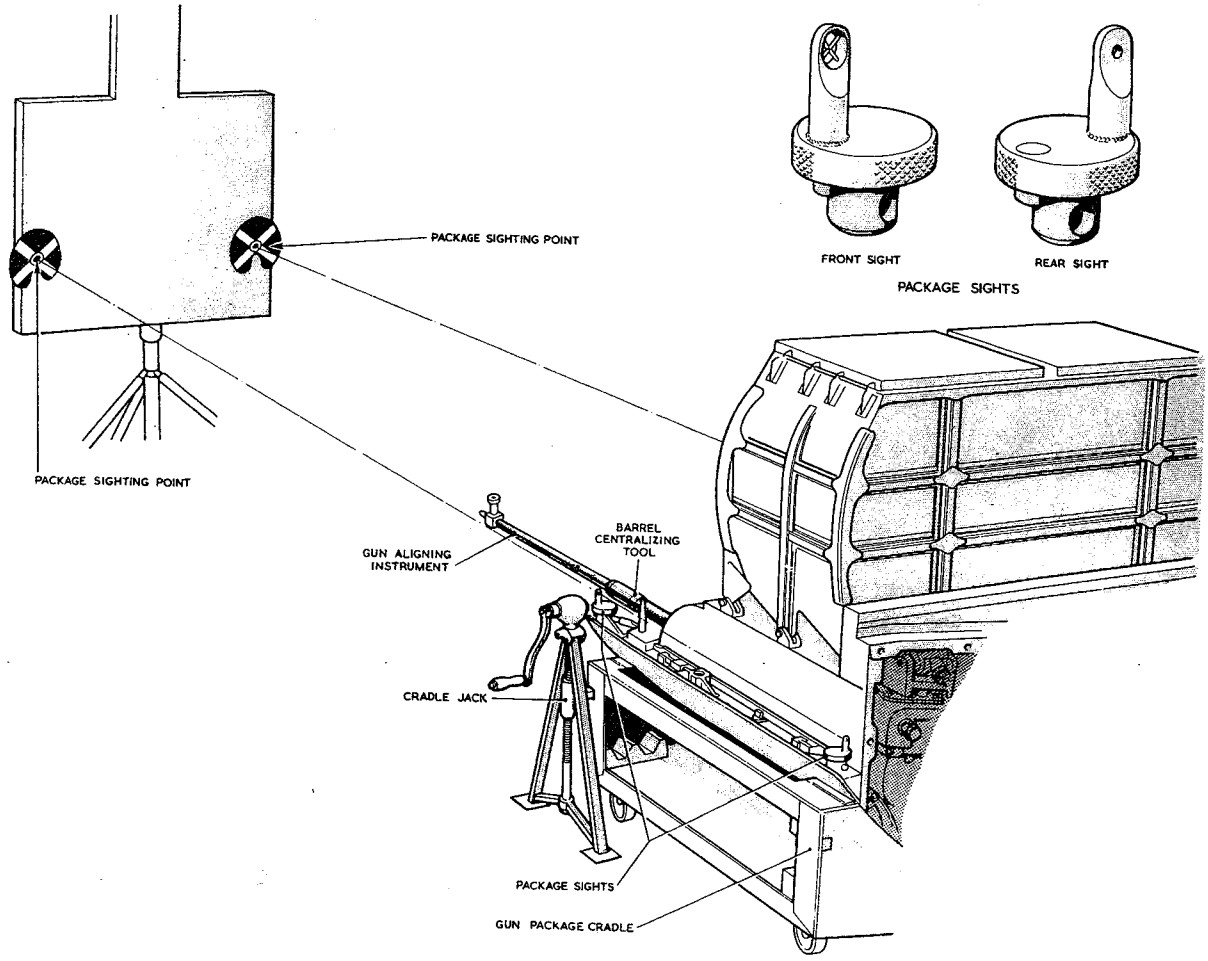

Fig.14. Aligning the gun package

(8) Repeat (7), and record the error of the three sightings.

(9) Repeat (5), (6) and (7) four times, using a different gun selected at random each time. If the mean errors recorded are below 0·34 in the assembly is serviceable, and may be used for harmonization.

(10) If the mean error is consistently greater than 0·34 in the gun aligning instrument should be fitted in a different position in the mandrel and operations (7) to (9) repeated. If, despite this, the error is still too great, both the gun aligning instrument and the barrel centralizing tool are to be examined for serviceability.

(11) Once a gun aligning instrument and a barrel centralizing tool have been married, and zeroed, the assembly is not to be dismantled except for accuracy checking, which is to be done at intervals of three months.

Alignment of the guns in the gun package (fig.14)

32. This operation is done with the gun package on a cradle, the cradle being positioned on firm ground preferably concrete. Screw jacks are fitted to the cradle to enable it to be levelled or adjusted for height. If a softer ground must be used, the jacks should be supported on wooden planks to prevent them sinking.

(1) Fit the lifting jacks and adjust the cradle to a suitable working height.

(2) Insert the four package sights, two on each side of the cradle, in the package locking sockets, and lock them in position, using the sight locking key.

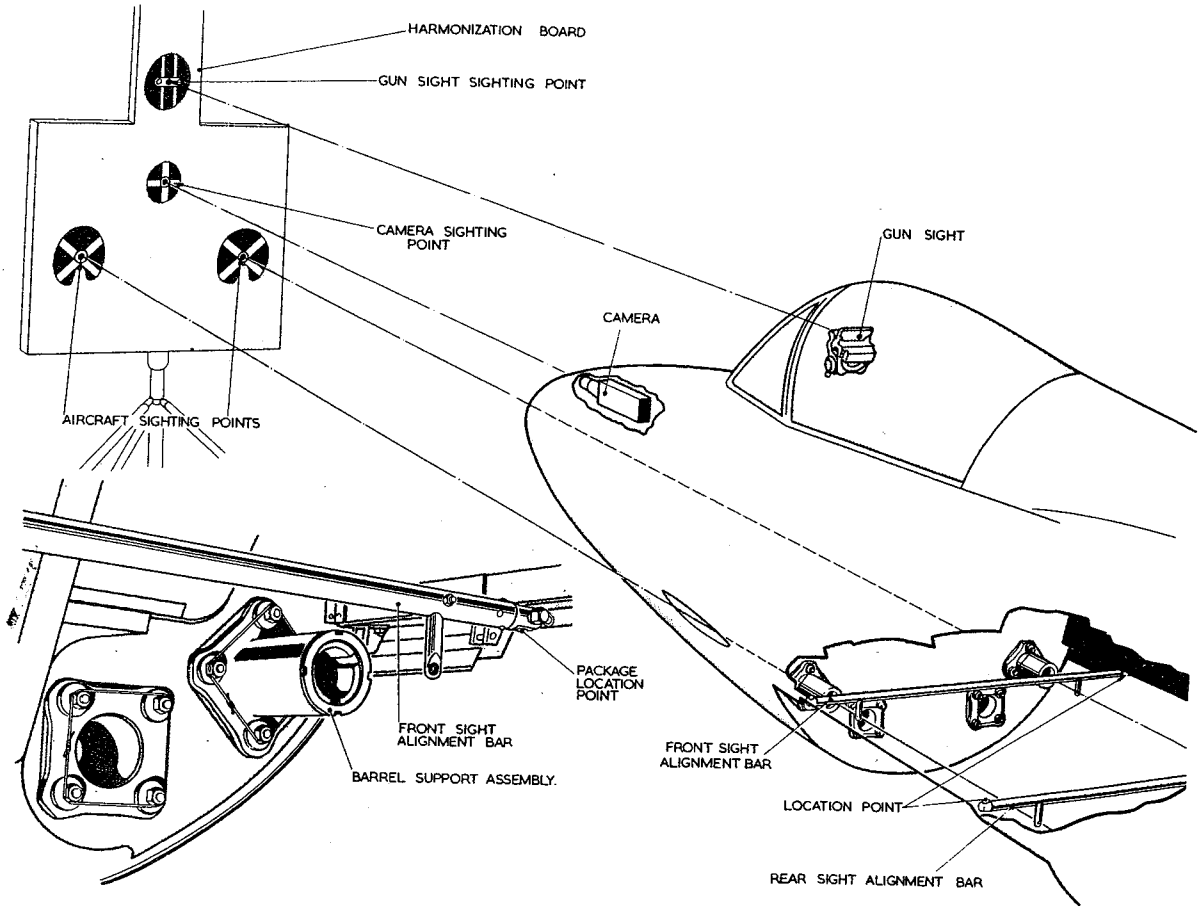

Fig.15. Alignment of gun sight and camera

(3) Set the harmonization board at the correct distance in front of the package, and adjust the board or package until the package sights are correctly aligned with the sighting points on the board.

(4) Position the gun sighting discs on the harmonization board.

(5) Insert an assembly of gun aligning instrument and barrel centralizing tool, prepared as detailed in para.31(4) to (10), into one of the guns, and by adjusting the gun rear mounting bracket, bring the gun to bear on the relative sighting disc on the harmonization board.

Note...

(1) The bolt which passes through the eccentric adjusting worm is to be slackened before traversing adjustments are made to the rear mounting.

(2) The tie-rods are to be disconnected from the inboard guns before adjustments are made, and connected on completion of harmonization.

(6) When this is done, carefully lock the traverse screw with the locking sleeve and the adjusting worm with the lock nut, and check the alignment. Repeat (5) as necessary. Wire lock the locking sleeve. The locking wire is to be passed through the two small holes in the package adjacent to the sleeve.

(7) After the first gun has been harmonized, repeat the procedure in each of the other guns.

(8) Provided the harmonization pattern is the same for each aircraft in which the gun package is to be fitted, the package is interchangeable without further adjustment.

Alignment of gun-sight (fig.15)

33. The aircraft should be jacked at three points (AP 4347, Sect.2, Chap.1, or its coded successor) to prevent rocking, and then proceed as follows:-

(1) Fit the aircraft sighting bars across the gun package bay.

(2) Set up the harmonization board at the correct distance in front of the aircraft.

(3) Adjust the harmonization board until the sighting points on the board coincide with the sights on the sighting bars.

(4) Adjust the gun-sight until it is sighted on the sighting point on the board.

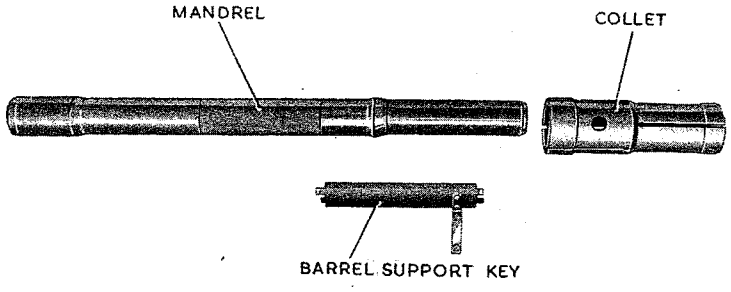

Fig.16. Tool, alignment, gun and barrel support
(Short title - Barrel centralizing tool)

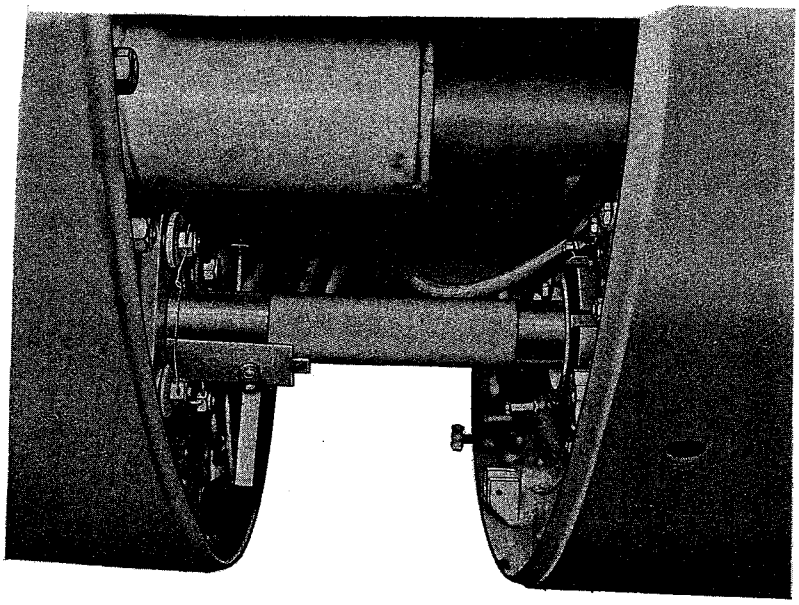

Fig.17. Barrel centralizing tool, inserted

(5) Adjust the camera to bear on the camera sighting point on the board.

(6) Remove the sighting bars from the aircraft.

Centralizing the gun barrel supports, using a barrel centralizing tool (fig.16 and 17)

34. (1) The barrel bearings are to be cleaned and examined for security of attachment and freedom from damage.

(2) Unlock and slacken the nuts of the gun barrel support pedestals.

(3) Install the gun package.

(4) Separate the two parts of the barrel centralizing tool and insert the collet into a barrel housing.

(5) Using the barrel removing tool, pass the mandrel through the corresponding blast tube, smaller end leading, until the end enters the collet; then with a twisting movement, tighten the mandrel in the collet.

(6) Engage the tongues of the barrel support key with the recesses in the barrel support. Rotate the key to ensure that the barrel support is free and also to ensure that there is an all-round clearance of 0·005 in between the support and the mandrel.

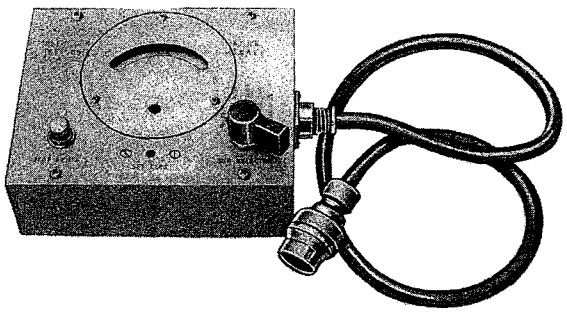

Fig.18. Electrical testing unit

(7) Tighten the nuts of the barrel support pedestal, and wire lock each nut. Check that the barrel bearing is free to rotate.

(8) Loosen the mandrel and slide it into the blast tube sufficiently to allow the collet to be removed from the barrel housing.

(9) Repeat (3) to (7) to centralize the other barrel supports.

(10) Lower the pack, and insert the barrels into the barrel supports.

(11) Install the package; locate and lock the barrels to the guns. Using the barrel support key, check that the barrel bearings are free to rotate.

Electrical continuity test of the gun package (fig.18)

▶ 35. After the guns have been loaded, the electrical circuit of each gun may be tested as follows, provided that the test is carried out in a location which is outside the Safety Distances specified for the test on the airfield RF radiation hazard map. ◀

(1) Turn the GUN SELECTOR of the unit to ZERO, and press the test switch. If the pointer does not indicate ZERO on the scale, adjust the pointer to that position by turning the screw marked SET ZERO.

(2) Insert and lock a barrel into each gun.

(3) Insert the plug of the test unit into the package supply socket.

(4) Position the GUN SELECTOR so that the pointer points to PORT OUTER.

(5) Press the test switch. The meter should read not less than 20 ohms. If the meter reads less than 20 ohms, cock the gun and repeat the test. If the reading is now correct, the ejected round is faulty. If the reading is still incorrect, the gun firing circuit is faulty.

(6) Repeat (4) and (5) positioning the GUN SELECTOR as necessary to test the remaining circuits.

(7) Remove gun barrels.

Filling ammunition tanks and loading guns (fig.19)

Note...

The operation is to be done in a special loading bay.

36. Not more than 540 rounds are to be loaded into the gun package, otherwise the capacity of the empty link containers will be exceeded and gun stoppages will result. Four belts of 135 rounds each are to be made up, two for right-hand feed and two for left-hand feed.

37. The initial filling of the tanks is done, after the guns have been harmonized, as follows:-

(1) Ensure that the gun package is fully serviceable.

(2) Remove the front and rear access panels from the gun package.

(3) Flake the belts into the ammunition tanks as shown on the instruction plate attached to each tank. The bottom five rounds for the inner guns are to be placed so that the ribs on the links are uppermost, and the trailing end of the belt is towards the tank chute. The bottom five rounds for the outer guns are to be placed so that the ribs on the links are resting on the bottom of the tank, and the trailing end of the belt is towards the tank chute.

(4) When the tanks have been filled, the leading end of the belt, i.e. the end with the loop, is to be inserted into and down the chute until it enters the mouth of the feed mechanism and is positioned against the sprockets.

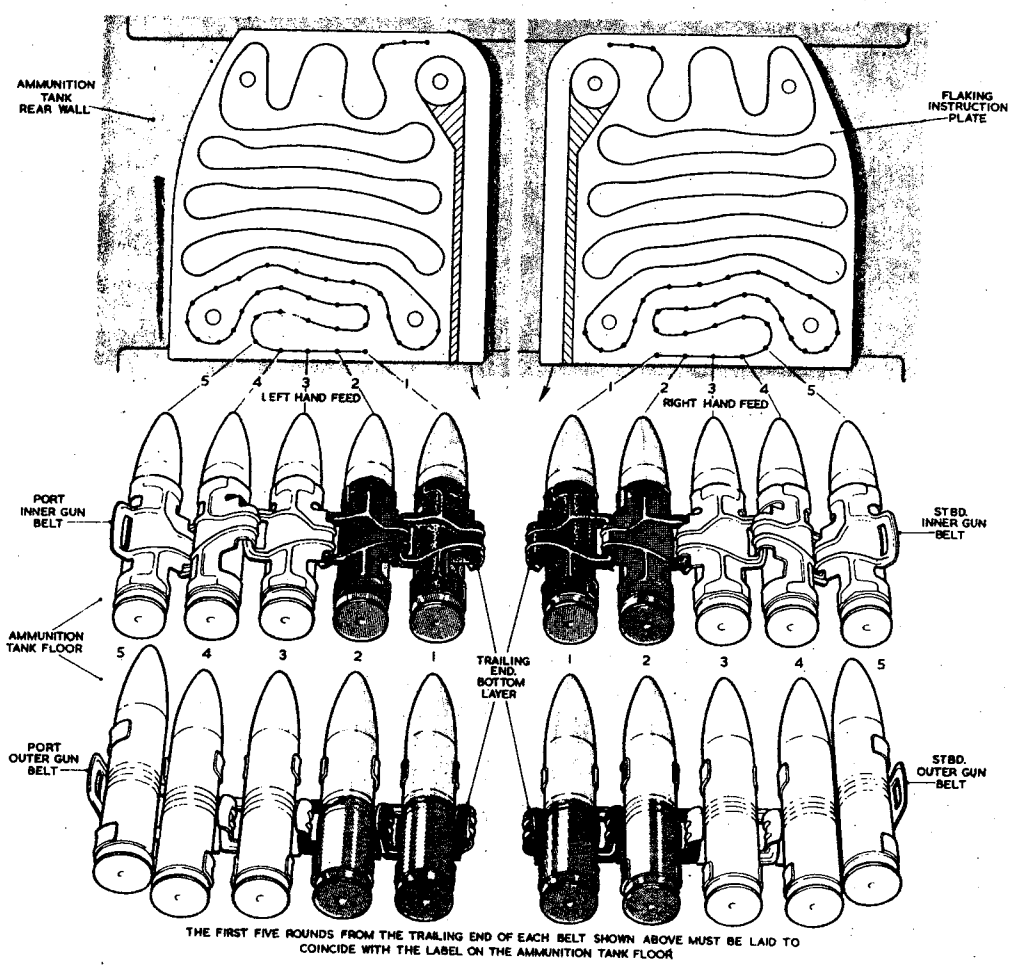

Fig.19. Filling ammunition tanks

(5) The top layer of ammunition is to be positioned so that the lid of the tank when closed, does not foul the ammunition.

(6) Put back the front and rear access panels, and ensure that the ammunition tanks lids are securely locked.

Topping up ammunition tanks

38. When a tank, which is partially emptied, is to be replenished, and the number of rounds fired is known, a belt or belts of ammunition may be connected to the belt remaining in the tank without dis-engaging the ammunition from the gun. Or if the number of rounds remaining in the tank can be ascertained, then the same procedure may be followed. Provided in each instance that the trailing end of the remaining ammunition is not below the tank rollers.

39. If the trailing end of the belt is below the tank rollers, the gun must be unloaded as described in para.14, and the tank filled as described in para.38.

Electrical tests of aircraft circuits

40. Before the gun package is installed, the aircraft electrical circuits to the gun package are to be tested, using an Aden gun aircraft test unit (AP 120G-0802-1) as follows:-

(9) Repeat (3) to (7) to centralize the other barrel supports.

(10) Lower the pack, and insert the barrels into the barrel supports.

(11) Install the package; locate and lock the barrels to the guns. Using the barrel support key, check that the barrel bearings are free to rotate.

Electrical continuity test of the gun package (fig.18)

35. After the guns have been loaded, the electrical circuit to each gun including the test of the first loaded round is to be tested, using a test unit, as follows:-

(1) Turn the GUN SELECTOR of the unit to ZERO, and press the test switch. If the pointer does not indicate ZERO on the scale, adjust the pointer to that position by turning the screw marked SET ZERO.

(2) Insert and lock a barrel into each gun.

(3) Insert the plug of the test unit into the package supply socket.

(4) Position the GUN SELECTOR so that the pointer points to PORT OUTER.

(5) Press the test switch. The meter should read not less than 20 ohms. If the meter reads less than 20 ohms, cock the gun and repeat the test. If the reading is now correct, the ejected round is faulty. If the reading is still incorrect, the gun firing circuit is faulty.

(6) Repeat (4) and (5) positioning the GUN SELECTOR as necessary to test the remaining circuits.

Filling ammunition tanks and loading guns (fig.19)

Note...

The operation is to be done in a special loading bay.

36. Not more than 540 rounds are to be loaded into the gun package, otherwise the capacity of the empty link containers will be exceeded and gun stoppages will result. Four belts of 135 rounds each are to be made up, two for right-hand feed and two for left-hand feed.

37. The initial filling of the tanks is done, after the guns have been harmonized, as follows:-

(1) Ensure that the gun package is fully serviceable.

(2) Remove the front and rear access panels from the gun package.

(3) Flake the belts into the ammunition tanks as shown on the instruction plate attached to each tank. The bottom five rounds for the inner guns are to be placed so that the ribs on the links are uppermost, and the trailing end of the belt is towards the tank chute. The bottom five rounds for the outer guns are to be placed so that the ribs on the links are resting on the bottom of the tank, and the trailing end of the belt is towards the tank chute.

(4) When the tanks have been filled, the leading end of the belt, i.e. the end with the loop, is to be inserted into and down the chute until it enters the mouth of the feed mechanism and is positioned against the sprockets.

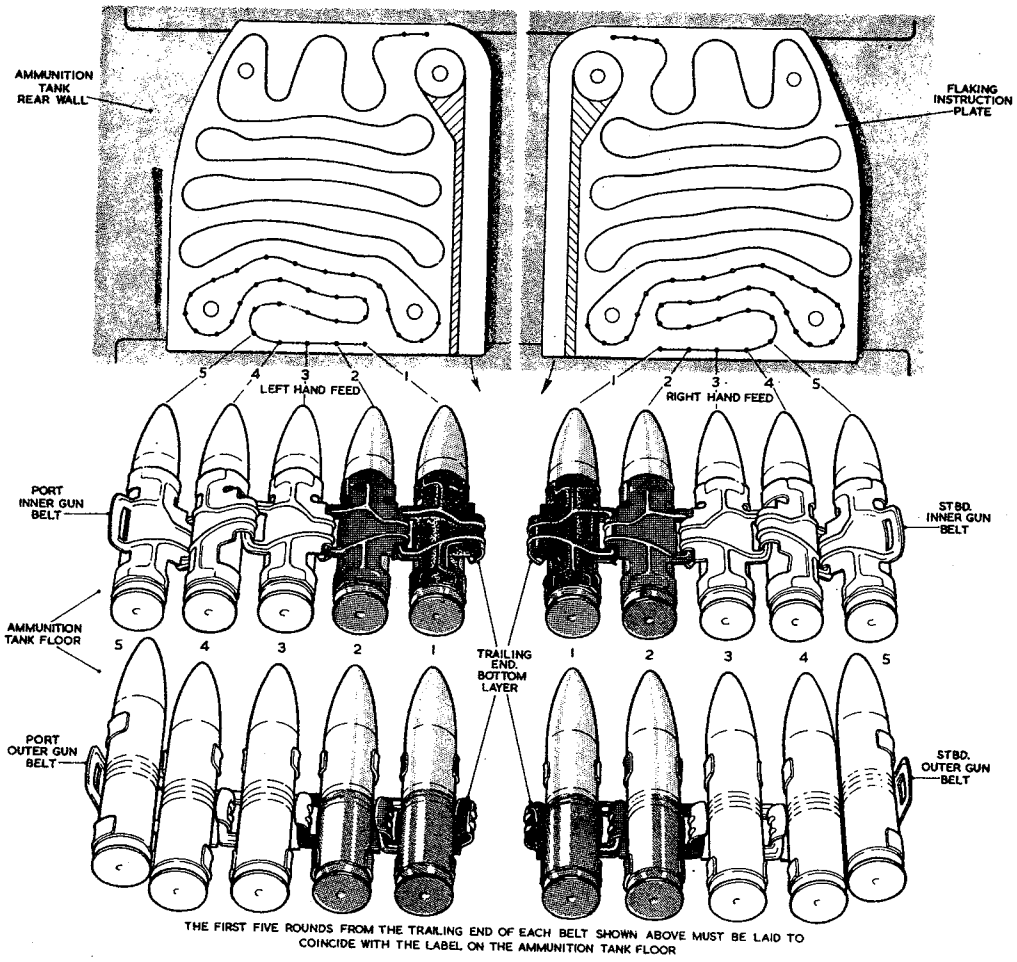

Fig.19. Filling ammunition tanks

(5) The top layer of ammunition is to be positioned so that the lid of the tank when closed, does not foul the ammunition.

(6) Put back the front and rear access panels, and ensure that the ammunition tanks lids are securely locked.

Topping up ammunition tanks

38. When a tank, which is partially emptied, is to be replenished, and the number of rounds fired is known, a belt or belts of ammunition may be connected to the belt remaining in the tank without dis-engaging the ammunition from the gun. Or if the number of rounds remaining in the tank can be ascertained, then the same procedure may be followed. Provided in each instance that the trailing end of the remaining ammunition is not below the tank rollers.

39. If the trailing end of the belt is below the tank rollers, the gun must be unloaded as described in para.14, and the tank filled as described in para.38.

Electrical tests of aircraft circuits

40. Before the gun package is installed, the aircraft electrical circuits to the gun package are to be tested, using an Aden gun aircraft test unit (AP 120G-0802-1) as follows:-

(1) Connect a 24-volt external supply.

(2) Put ON the butt test switch, and the SAFE/FIRE switch to FIRE.

(3) Connect the lead from the aircraft which is normally connected to the gun package, to the test unit.

(4) Press the firing switch, and the lamps of the test unit should show a bright flash followed by a continuous illumination at a lower brilliance. The lamps should go out when the firing switch is released.

Installing the barrels and gun package in an aircraft (fig.20 and 21)

SAFETY PRECAUTIONS...

(1) The aircraft is to be parked so that the nose is pointing in a safe direction.

(2) Ensure that the firing control is set at SAFE, and that the butt test switch, in the cockpit, is OFF.

(3) Post a safety-man to prevent persons or vehicles passing in front of the aircraft during the installing operations.

(4) The clutches of the C type hoists are to be set, as detailed in AP 110T-0104-1, to slip between 950 lb and 1075 lb.

41. (1) Insert the barrels, as far as they will go, into their respective barrel support pedestals.

(2) Using the pneumatic ground supply, load and cock all guns in the package. Each gun must be cocked three times, and the gun loaded indicator pressed to check that each gun is loaded.

(3) Test for continuity of the electrical circuits, as detailed in para.35.

(4) Move the cradle bearing the gun package under the package bay, and align the vertical line on the package with the vertical line on the fuselage.

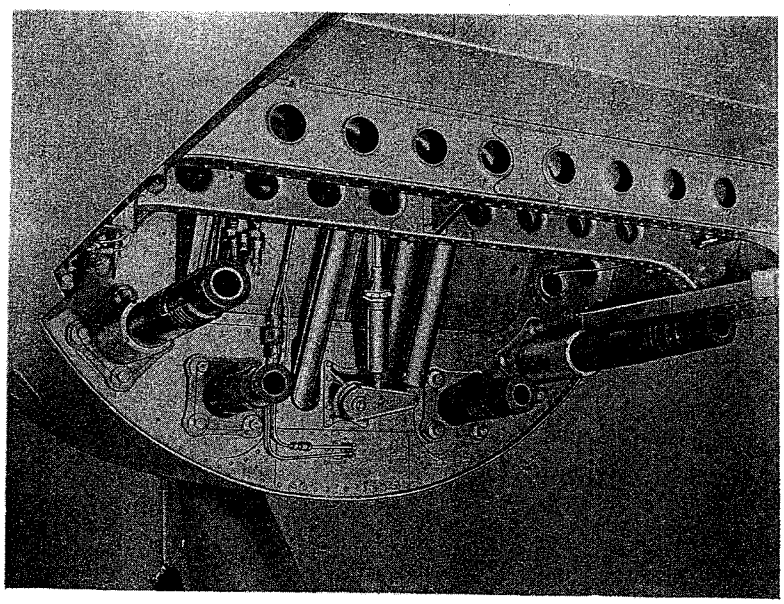

Fig.20. Barrels inserted prior to installing the gun package

(5) Insert the two lifting spigots, one on each side of the fuselage.

(6) Attach one hoist to each spigot, and one to the attachment point at the front end of the package bay.

(7) Attach the cables of the side hoists to the gun package sling and the cable of the front hoist to the attachment point on the front of the gun package.

WARNING...

GREAT CARE IS NECESSARY, WHEN ATTACHING THE HOIST TO, OR WHEN REMOVING IT FROM, THE BRACKET IN THE FUSELAGE OTHERWISE DAMAGE WILL BE CAUSED TO THE AIRCRAFT CONTROL MECHANISM PART OF WHICH IS ATTACHED TO THE FRONT BULKHEAD OF THE PACKAGE BAY. THE RISK OF DAMAGE CAN BE MINIMISED IF THE AILERON CONTROL IS SET AT MANUAL PRIOR TO THE HOIST BEING ATTACHED OR REMOVED.

(8) Hoist the gun package, under control from the operator of the front hoist, and carefully guide the package into the package bay, ensure that the guide spigots on the package enter the brackets in the fuselage and, when in position and the clutches of the winches slip, lock the package from both port and starboard sides, using the package locking keys. Check visually and also by feeling with the finger that the locking bolts have passed into the holes in the spigots, and are fully home.

(9) Remove the hoists, sling, cradle and hoisting spigots.

(10) Insert the barrels into the breech cylinder housings. When inserting the barrels, the long thin slot on the outside of each barrel should be on top in relation to the gun itself. This slot facilitates the assembly of the barrels in the dark. Rotate the barrels, and ensure that they are securely locked, using the barrel removing tool to rotate the barrels, if necessary.

(11) Insert the two outboard cartridge case ejection tubes into the rear of the package and secure them to the airframe structure.

(12) Attach the flexible gun-heating tube to the rear of the package.

(13) Attach the front portion of the link collecting blister to the gun package.

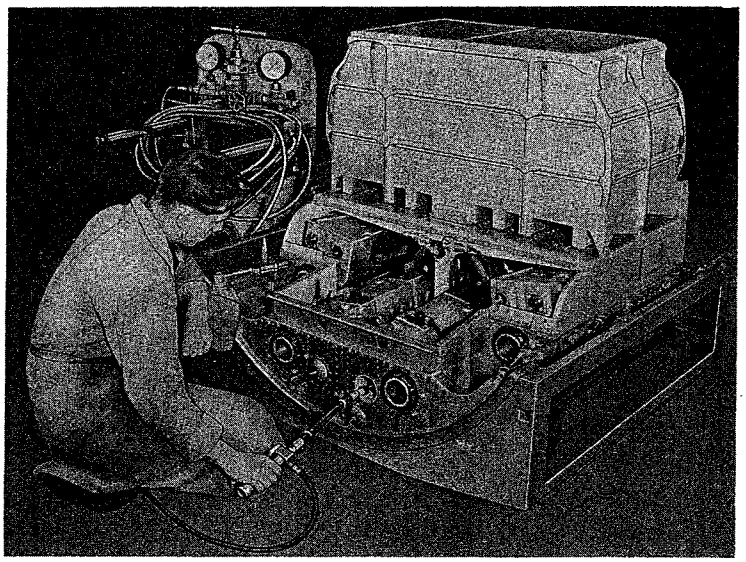

Fig.21. Cocking an inboard gun

(14) Offer up the front access panel and, after connecting the power supply to the air scoop, secure the panel.

(15) Offer up and secure the rear access panels, together with the rear sections of the link collecting blisters, and the inboard cartridge case ejection tubes.

(16) Connect the power supply to the rear of the gun package.

TABLE 1

Special airframe tools and servicing equipment

Ref. No.	Equipment	Ref. No.	Equipment
26FX/95037	Sling, gun package		
26FX/95036	Spigot, lifting		
26FX/95157	Sight, front, package, LH		
26FX/95158	Sight, front, package, RH		
26FX/95159	Sight, rear, package (2)	26FX/95229	Kit, gun sight, aligning
26FX/95152	Tool, sight, package, locking		
26FX/95230	Case, transit		
26FX/95161	Bar, sight, alignment, front		
26FX/95161	Bar, sight, alignment, rear		
26FX/95234	Strut, tail		
26FX/95293	Jack, cradle		
26FX/95038	Trolley, servicing, Mk. 1		
26FX/95167	Cradle, gun package, Mk. 1	or 4G/5584	Cradle, gun package, Mk. 2
26FX/95054	Trolley, transporting, Mk. 1	or 4G/5561	Trolley, transporting, Mk. 2
26FX/95516	Tool, alignment, gun and barrel support		
26FX/95557	Tool, gun bearing, rotation		
26FX/95043	Key, barrel catch		
26FX/95044	Key, package locking		
26FX/95201	Tool, gun lifting		
26FX/95153	Spanner, gun front support		
26FX/95154	Tool, belt removing		
27Y/5000	Spanner, front mounting retaining ring		
27Y/2373	Spanner, support retaining ring		
► 7R/9640803	Tool, removing barrel ◄		
27D/2917	Cover, gun package		
► 1C/9106002	Spanner, DE, 9/16 in. x 5/8 in. ◄		

TABLE 1 (cont.)

Ref. No.	Equipment	Ref. No.	Equipment
1L/9106329	Handle, ratchet, 3/8 in. square drive		
1L/4661037	Socket, bi-hex 7/16 in. 3/8 in. square drive		
1C/9105973	Spanner, ring, DE, bi-hex, 15/16 in. x 1 in. AF		
4G/2066069	Plant Spraying Defrosting		
4G/2066000	Bag, accessories		
NIV	Lance Adapter (Local Manufacture)		
7R/9639512	Rod Cleaning 20mm Handle Mk. 3		
7R/9641993	Rod Cleaning 20mm Section Mk. 3		
7R/9641470	Mop Barrel Cleaning