INTRODUCTION TO AIRCRAFT

1. Introduction

The Vulcan is an all metal monoplane of delta configuration, powered by four Bristol Olympus mk. 201 engines each developing 17,000 lbs, static thrust, The aircraft is capable, of carrying a variety of conventional and special stores including the BLUE STEEL stand off rocket bomb. These stores are carried at high speed over long distances at high altitudes. Provision is made for in-flight refuelling.

2. Leading Particulars

Span	111 feet
Length	99 ft. 11 in
Height (Top of fin)	27 ft. 1 in.
Track	31 ft. 1 in.

3. Construction

The fuselage is manufactured in four separate sections, each of light alloy, pressed skin structure, of circular cross section and incorporating transverse formers braced by longitudinal stringers. The four sections are described briefly in the following paragraphs.

4. Nose Section

The upper portion of the nose section fairing is of orthodox metal construction and houses flight refuelling equipment, H2S Scanner, Scanner pneumatic system, and 12 gallon de-icing tank. Below metal fairing is a dielectric structure of fibre-glass, which constitutes the radome.

5. Front Section

The front section is circular in shape, and constitutes the pressurised crew cabin, and contains the controls for operating all the services. The floor structure is built on two levels, the forward higher level to accomodate the two pilots, the rear lower level to accommodate the other three crew members. The canopy is jettisonable, but the windscreen is integral with the structure.

On the under surface of the cabin is the entrance door. Two pressure heads are mounted externally on the fuselage, port and starboard sides.

6. Centre Section

The centre section extends from the rear pressure bulkhead of the crews compartment to a point aft of the rear spar. The structure between the rear pressure bulkhead and the front spar forms the nosewheel bay and No. 1 tank bay; and No. 2 tank bay. The area between the front and rear spars forms the bomb bay. From the rear spar to the termination of the centre section forms the power compart ent (electrical) On either side of the bomb bay the structure is divided into engine compartments, between the main ribs in the engine compartment area, aft of the front spar, the air brakes are mounted.

7. Rear Section

The rear section is constructed almost entirely of light alloy pressings, and circular formers, and houses the E.C.M. equipment. In the top of the rear section, aft of the rudder, is a light alloy box-shaped compartment housing the brake parachute installation.

8. Mainplanes.

Each wing is a two spar structure and is manufactured in three main sections:- inner portion, outer portion and wing tip. The main wheel units are housed in the root end of each mainplane. Between the first main rib and the third main rib are housed Nos. 3,4,5,6 and 7 fuel tanks.

Outboard of the third main rib and mounted on its outboard face are six fire bottles for mainplane fuel tank fire protection. Access to these bottles is through a panel 6 ft. inboard of the landing lamp support panel. To the rear of the rear spar are mounted the P.F.C.'s and the elevons.

Forward of the front spar is the leading edge skinning, in which provision is made for passing hot air along the inside of the leading edge for anti-icing.

9. Electrical System.

Power for the electrical consumer systems is provided by four intermediately engine driven alternators each developing 40 KVA at 200 volts 400 cycles .75 p.f. Two 7.5 KW Transformer Rectifier Units provide 28V D.C. power for controlling the 200 volts systems as well as 28V consumers. Instrument services are catered for by two 3 KVA transformers. Two frequency Changers supply 115V A.C. 1600 cycles to certain radar services.

Failure of the main alternators is compensated by the provisioning of a Rover gas turbine driving a 30/40 KVA alternator (A.A.P.P.), the complete assembly is installed in a compartment behind the starboard landing gear.

Further protection against failure is made by the Ram Air Turbine (R.A.T.) contained in a compartment between the Port Engines air intakes.

A type K2 Alkaline battery is provided for 28V emergency supply.

SAFETY PRECAUTIONS

1. All personnel are warned of the extreme dangers of interfering with the cartridge and detonator operated jettison equipment. Under no circumstances are tradesmen to commence work on items containing cartridge operated ejection equipment without first ascertaining from the Armament man that it is safe to do so.

2. All types of ejection cartridges and detonators are to be removed and fitted by the Armament man only. Ejection seat primary and drogue gun cartridges and canopy ejection cartridges are to be removed before the ejection seat is raised on the guide rails.

3. Before entering the cockpit to commence servicing on or near ejection seats ALL tradesmen are to report to the Airframe or Aircraft NCO in charge of the aircraft and request that all safety pins be correctly positioned to ensure safety to the tradesmen. This NCO is the only person allowed to transfer the safety pins. The tradesman is again to report to the NCO on completion of the servicing.

4. Before opening engine servicing doors ensure that the jury struts are fitted in the main undercarriage wheel bays.

5. Engine bay doors are to be closed and fastened before towing commences.

6. When the aircraft is on jacks, engine doors are not to be opened until nose support restle is in position.

7. Ensure the engine master start switch is off, and rapid start system made safe by removal of fuse 674 in 3P, before entering the intake funnel.

8. Before entering the intake, ALL loose items are to be removed from clothing and special care is to be taken to ensure that no loose objects roll into the engine.

9. Under no circumstances is the bomb door switch guard to be removed or the bomb door switches to be operated except under the direct supervision of the NCO in charge of the aircraft.

10. Before commencing any servicing in the bomb bay ensure that the bomb door selector switch guard is fitted.

11. The discharge from the high energy igniter units can be lethal, therefore, before commencing any servicing on the high energy plugs, or the H.T. wiring, the low tension supply lead to the input plug is to be diconnected and a period of one minute allowed to elapse. This allows the dissipation of the stored capacity energy and prevents inadvertant discharge. The high energy igniter is not tobe operated with the H.T. lead disconnected.

12. Voltages in excess of 100 volts either AC or DC can be dangerous under certain circumstances. Where it is essential that tests or adjustments be made with the electrical power switched on, the greatest care must be exercised.

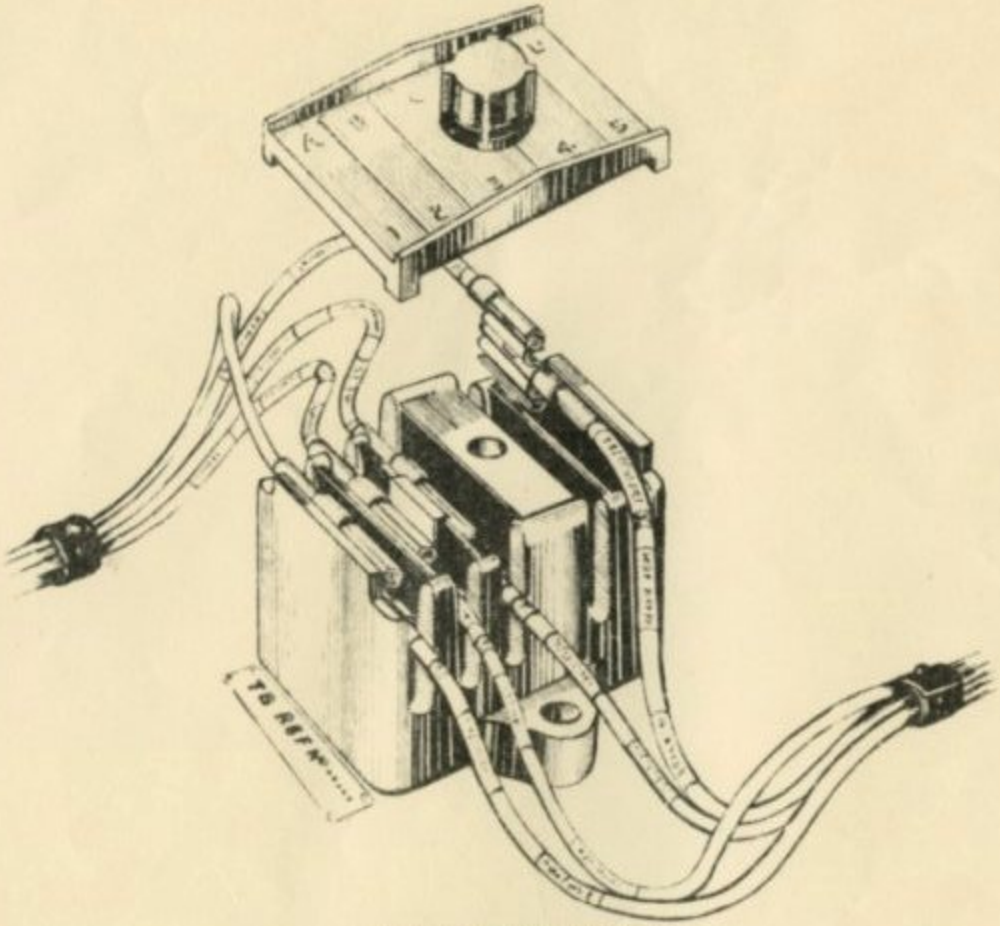
13. Before any servicing commences on the AAPP installation, ensure that live cartridges have been removed from the cartridge breeches and replaced with clean empty cases complete with sealing O rings.

14. Care is to be taken not to spill synthetic oil as it has an injurious effect on aircraft finishes and electrical leads. If any is spilled, it is to be cleaned off immediately. Synthetic oils are also injurious to the hands, therefore a prophlyactic ointment is to be applied to the hands before work commences with synthetic oils. Silicon grease - ensure it does not come into contact with the eyes.

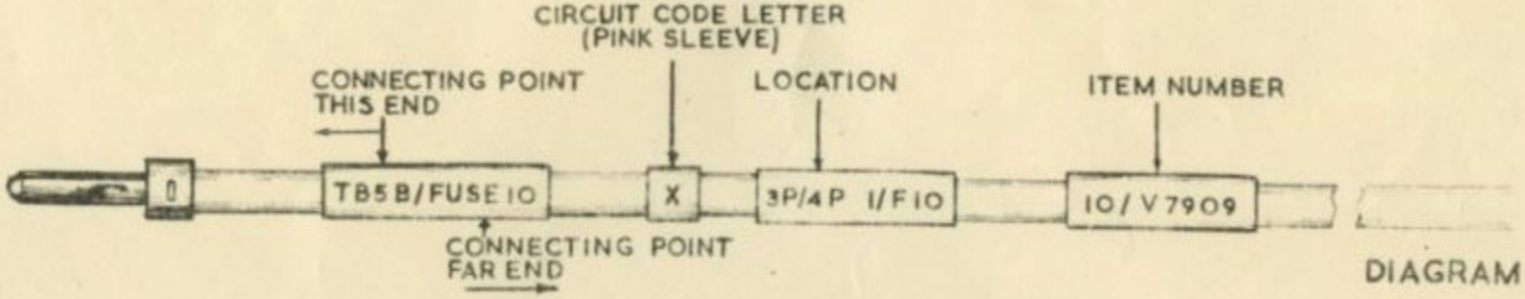
/Toxic Effects

15. Toxic Effects - Methyl-bromide. Attention is drawn to the danger of inhaling the highly toxic methyl bromide vapour. If methyl-bromide vapour is inhaled, medical attention is to be sought without delay.

16. ALL tradesmen are warned of the injurious effect that certain radar equipment can produce by radiation. Therefore when tests are in progress warning boards are to be displayed and all tradesmen are to keep clear of the radiation area.



TYPICAL ARRANGMENT OF AVRO TERMINAL BLOCK & CABLE IDENTIFICATION.



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