

ALL TRADES
AL23

SAFETY PRECAUTIONS
HUNTER ALL MARKS

AP101B-1300-5A2
1st Edition
Section 1
Chap 2

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1. Toxic Effects - Methyl Bromide and/or Chlorobromomethane.
Highly toxic vapours are given off by methyl bromide and/or chlorobromomethane. If such a vapour is inhaled, medical attention is to be sought without delay.
2. Operation of Flying Controls and Hydraulically Operated Services. Personnel and ground equipment are to be clear of moving parts during operation of flying controls and hydraulically operated services. As a safety precaution a man (or men) is to be detailed to observe the flying control(s) or hydraulically operated service(s) being operated. Accumulator hydraulic pressure(s) is (are) to be released:
 - a. Before in situ servicing of hydraulically operated components.
 - b. Before servicing checks which specifically detail handpump operation.
3. Cartridge Operated Equipment. Personnel are warned of the danger of interfering with cartridge operated equipment fitted to this aircraft, eg fire extinguisher bottles. Under no circumstances are tradesmen to work on this equipment without ascertaining from the NCO IC Aircraft Servicing that it is safe to do so. Cartridge operated equipment when removed from aircraft is to be passed to the Weapons Section who are solely responsible for replacing cartridges.
4. Control of Power Supplies. The NCO IC Aircraft Servicing is to be informed whenever power is required.
5. Electrical Connections.
 - a. Disconnection or reconnection of electrically operated components or assemblies to facilitate other servicing is to be carried out only by the specialist tradesmen responsible for the component or assembly.
 - b. All electrical circuits affected by disconnection of plugs and sockets are to be functionally checked after plugs and sockets have been reconnected.
6. Earthing of Aircraft and Ground Equipment
 - a. The following information reflects the current instructions for Earthing of Aircraft and Ground Equipment when using a ground electrical power supply of lethal voltage, ie greater than 30 volts (r.m.s.) a.c. or 50 volts d.c. Mandatory requirements are detailed in AP 3158 Volume 2, 2nd Edition, Leaflet B14.

b.

Tables 1 and 2 specify the requirements for earthing of Refuellers and Ground Equipment. They also indicate the compatibility of an electrical power supply with the operation being carried out.

c. Table 1 for the following:

- (1) Electrically Driven GPU/ Without Negative/Neutral Strapped to Chassis
- (2) Engine Driven GPU
- (3) External Batteries
- (4) No External Power Supply Connected

OPERATION	IS POWER SUPPLY COMPATIBLE WITH OPERATION	EARTH CONNECTION REQ'D BETWEEN AIRCRAFT AND TRUE EARTH	SEPARATE EARTH CONNECTION BETWEEN	
			AIRCRAFT AND GPU	GPU AND TRUE EARTH
REFUELLING/ DEFUELLING	YES	YES	NO	NO
SERVICING	YES	YES	NO	NO
USE OF MAINS POWERED EQ'PT	YES	YES	NO	NO
SPECIAL WEAPON LOADING/ UNLOADING	YES	YES	NO	NO
HYDRANT REFUELLING	NO(Pre STI Ground Eq'pt /93A.	-	-	-
	YES(Post STI /Ground Eq'pt /93A.	YES	NO	NO

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6. Earthing of Aircraft and Ground Equipment (Contd)

d. Table 2 for: Electrically Driven GPU with Negative/Neutral Strapped to Chassis

NB: This GPU is to be marked with a warning notice 'DISCONNECT AIRCRAFT EARTH LEAD BEFORE POWER IS APPLIED TO AIRCRAFT'.

OPERATION	IS POWER SUPPLY COMPATABLE WITH OPERATION	EARTH CONNECTION REQ'D BETWEEN AIRCRAFT AND TRUE EARTH	SEPARATE EARTH CONNECTION BETWEEN	
			AIRCRAFT AND GPU	GPU AND TRUE EARTH
REFUELLING/DEFUELLING	YES	NO	NO	NO
SERVICING	YES	NO	NO	NO
USE OF MAINS POWERED EQ'T	NO	-	-	-
SPECIAL WEAPON LOADING/UNLOADING	NO	-	-	-
HYDRANT REFUELLING	NO (Pre STI/GE/93A)	-	-	-
	YES (Post STI/GE/93A)	NO	NO	NO

TABLE 2

e. Refuelling/Defuelling. No mains powered tools, equipment or test equipment is to be used during refuelling/defuelling. Only those aircraft electrical circuits essential to the operation are to be in use. Prior to transfer of fuel the bonding circuit is to be completed using the following sequence:

- (1) Ensure refueller trailing bond is touching the ground.

e. Refuelling/Defuelling. (Contd)

- (2) Bond refueller chassis to aircraft earth point using refueller bonding reel.
- (3) When using open line equipment:
 - (a) Bond hose to bonding socket.
 - (b) Remove filler cap and insert refueller nozzle.
- (4) When using pressure refuelling:
 - (a) Remove blanking caps.
 - (b) Fit refueller coupling.

7. Fuses.

- a. All unused fuse positions are to be fitted with Red dummy fuses.
- b. Before disconnecting components or plug/socket connections the appropriate circuit fuses are to be removed.
- c. Where circuit fuses are removed, Yellow dummy fuses are to be fitted.
- d. On completion of servicing, all Yellow dummy fuses are to be removed and correct rating live fuses fitted.
- e. All electrical circuits affected by disconnections of plugs and sockets are to be functionally tested after plugs and sockets have been reconnected.

8. Air Intakes and Jet Pipes. Personnel are to ensure that the following instructions are obeyed before entering air intake or jet pipes for servicing or any other purpose:

- a. The aircraft is to be placed nose or tail into the wind.
- b. A warning notice is to be displayed in the cockpit.
- c. Verbal contact is to be maintained with a Safety Man positioned at the entrance to the air intake or jet pipe.
- d. The engine is not to be turned except by the person in the air intake or jet pipe.
- e. All loose articles are to be removed from clothing and special care is to be taken to ensure no loose objects roll into the compressor.

9. Oxygen System Contamination. The oxygen system together with all tools and equipment used during its servicing are to be kept free from contamination by grease or oil. Whenever painting, doping or sealing operations are being carried out in the vicinity of low pressure oxygen hoses, the hoses are to be removed from the aircraft, and the regulator outlets temporarily sealed until the cockpit has been adequately ventilated and the paint, dope or sealing compound has dried.

10. High Pressure Gas/Air Systems

a. Before any work is carried out on any part of a high pressure gas/air system, other than in oxygen systems the system is to be depressurized completely. A certificate to this effect is to be made in the F700 and signed by the NOC IC Servicing before any work is authorized. Before system pressure testing, a detailed examination of system joints is to be carried out so as to eliminate the risk of high velocity leakages. When high pressure gas/air systems or components are replenished or tested, pressure is to be applied slowly or explosive combustion within the component or system may take place.

b. Oxygen systems are not to be completely depressurized—systems are to be isolated to prevent this. When an oxygen system has been depressurized below 34.5 bar (500 lbf/in²), purging will be necessary.

11. Dieselling. When the pressure is rapidly increased within a closed volume containing an inflammable substance such as hydraulic oil, a spontaneous combustion or "dieselling" may take place. A condition conducive to this occurrence is created when the closed volume is small as in a pressure gauge, and inflation is carried out quickly. To minimise the danger of "dieselling", it is essential that all equipment used when charging, or testing pressures in undercarriage shock absorbers etc, is to be free from contamination by oil and grease etc, any control cocks or screws are to be operated slowly to prevent a rapid rise in pressure.

12. Deleted by AL17

13. Fuel Tank Servicing.

a. A flame proof torch or lamp is the only illumination permitted during the servicing of fuel tanks.

b. A safety man or men are to be employed to maintain contact between the man in the tank and the outside of the aircraft. One man is to be in such a position as to be able to go to the immediate assistance of the man in the tank, if required.

c. When physical contact between the man in the tank and the safety man is rendered difficult by the design of the tank, a safety line is to be used.

d. Before entering a tank, the NCO IC Servicing is to ensure that the man is wearing sufficient protective clothing consistent with the state of the tank and work to be done.

e. Before entering a tank, the man is to ensure that it has been purged. He is also to ensure that there is an adequate and continuous supply of fresh air within the tank.

14. Radio Equipment Operation. Radio installations are to be operated by specialist tradesmen only, except when other tradesmen are specifically authorized.

15. Cabin Pressure Test

a. All personnel engaged inside the aircraft during pressure tests are to be approved by the Medical Officer as being physically fit for this work.

b. When it is essential that personnel occupy the cabin during pressure tests, communication is to be constantly maintained with personnel outside the aircraft.

16. Deleted by AL 9.

17. PX-24 (NATO C-634) Application. PX-24 provides temporary protection to metals against corrosion, although normally quite safe to use it can be dangerous if misused. The dangers are:-

a. Aircraft surfaces are extremely slippery where PX-24 has been used.

b. PX-24 can interfere with the safe operation of certain systems. It is not to be applied to:

- (1) Oxygen system components.
- (2) Brake assemblies.
- (3) Firewire couplings.
- (4) Commutators, slip rings and brush gear of electrical machines.
- (5) Clear vision panels.
- (6) Non-metallic structural materials.
- (7) 'Black boxes' of all kinds.
- (8) Cabin and cockpit equipment and furnishings eg:
 - (a) Safety harness.
 - (b) Seat fabrics.
 - (c) Instrument faces.
 - (d) Rudder pedals.
 - (e) Soundproofing.
 - (f) Dinghy packs.

17. PX-24 Application (Contd)

c. PX-24 also has an adverse effect on rubbers and plastics if prolonged contact is allowed. The carrier fluid and not the residual fluid, causes the deterioration after heavy application or immersion. After such applications the items are to be rapidly and thoroughly cleaned. Experience shows however that after light accidental overspray the rapid evaporation of the carrier prevents significant damage.

d. PX-24 is not to be deliberately sprayed onto bearing surfaces, but provided that it is applied as a thin film accidental overspray of normal aircraft bearings is acceptable. However, following the application of PX-24 to adjacent structure, recirculating ballscrew jacks are to be cleaned with white spirit, dried and lubricated.

e. Liquid PX-24 contains white spirit a volatile petroleum based solvent which evaporates from spray or drying liquid. This solvent is highly inflammable. Use PX-24 only where ventilation is good.

f. When using PX-24 the following precautions are to be observed:

- (1) Ensure good ventilation of working area.
- (2) Avoid inhaling spray.
- (3) Do not swallow PX-24. (If swallowed summon medical aid. Do not induce vomiting).
- (4) Wash skin with soap and water immediately after use.

g. PX-24 is not normally to be applied extensively to a matt external paint finish because it will impart a sheen which will nullify the non-reflective property of the matt finish.

18. ERU Circuits

a. Before any ERU circuit is functionally tested all ERU supply leads are to be disconnected at the breech caps.

b. Before reconnection of ERU supply leads a 'No Volts' test is to be carried out in accordance with the relevant Loading Procedure.

19. Ejector Release Units. Under no circumstances are tradesmen to work on ejector release units without first ascertaining from the Weapons NCO that it is safe to do so.

20. Deleted by AL16

21. Trichloroethane (Inhibisol). Trichloroethane (33D/2203782) also known as Inhibisol, has a strong degreasing action on the skin. The following health precautions are to be observed:

- a. All unnecessary exposure to the vapour is to be avoided.
- b. The work area is to be adequately ventilated. Suitable respirators are to be worn if Trichloroethane (Inhibisol) is used in an enclosed space.
- c. Smoking, eating and drinking in the work area are prohibited.
- d. Care is to be taken to prevent splashing when handling the fluid. If necessary, goggles or eye shields are to be worn. If any of the liquid does enter the eyes, they are to be flushed immediately with clean running water and the Station Medical Centre informed.
- e. Rubber gloves are to be worn and any portion of the skin liable to come into contact with the fluid is to be protected by a barrier cream. If the skin is splashed the affected parts are to be thoroughly washed with soap and clean water as soon as possible.

22. Deleted by AL16

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▶ 23. Deleted by AL16

24. Deleted by AL16

25. Deleted by AL16

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26. Deleted by AL 14.

27. IFF/SSR

a. Before carrying out functional checks on the IFF/SSR installation it is essential to ensure that aerial switch unit Type 16951 is connected correctly to the upper and lower aerials otherwise a failure of the internal switching diode will result.

b. To avoid damage to TR16928 or TR16910, only lamp filament 28V, 0.04 amp. 5L/9959118 or lamp filament 28V, 1.1 watt, 5L/9959182 is to be fitted when replacing Installation Failure Warning lamp filament.

28. Oil, OX-38(NATO O-149). Avoid prolonged contact with skin as toxic effects can be caused by absorption.

29. Noise Hazard. Personnel are warned of the potential danger of damage to the ears when working near aircraft with engine(s) running. When working on or near aircraft with engines running, personnel are to wear Fluid Seal Type ear defenders.

30. Aircraft Cleaning Compounds. Compound Cleaning Aircraft (33D/2204399) and Compound Cleaning Aircraft Heavy Duty (33D/2240455) are non-toxic, non-inflammable cleaning agents used for the removal of oil, grease, dirt and other contaminants from aircraft surfaces.

The strong degreasing action of these agents may cause actual damage to the skin, or remove the natural oils which can lead to dermatitis. The following safety precautions are to be observed during their use :

a. Make available adequate supplies of clean water for rinsing purposes.

b. Wear appropriate protective clothing.

c. Apply Barrier Cream No.1 (33D/2241945) to hands and forearms before work.

d. Dilute the compound to suit the state of contamination.

- (4) Ensure drains are free from obstruction
- (5) Ensure gaskets and caps or covers are free from damage.
- (6) Refit caps or covers.
- (7) Fit locking devices as necessary.
- h. Fit Correctly attach one item to another.
- j. Refit Fit an item which has been previously removed.
- k. Replace Remove an item and fit new or serviced item.
- l. Disconnect Uncouple or detach cables, pipelines or controls.
- m. Reconnect Reverse of Sub-para 1.
- n. Verify Ascertain that the conditions are correct. No remedial action is to be taken but the appropriate authority is to be informed. Authors Note: Only to be used where there is a specific need.
- p. Ensure Ascertain that the conditions are correct. If remedial action is required it is only to be carried out if it is within the capability of the individual by virtue of his rank, trade, physical ability and where appropriate, certification. if it is not within his capability, the appropriate authority is to be informed.
- q. NB: A mandatory instruction.
- r. Note An advisory instruction.

2. Brush Wear Checks. Examination for excessive brush wear in this schedule means:

- a. A visual examination in situ of at least two brushes to ascertain that they have not reached the known position in the brush holder which indicates that the brushes have reached their minimum permissible length. Do not lift the brushes.
- b. An examination for signs of heavy carbon deposits.
- c. An examination for signs of bad commutation, ie scores or burn marks, where part of the commutator is visible.

3. Additional Servicing. The instructions contained in all parts of this schedule do not absolve personnel from responsibility for acting upon circumstances which may come to their notice indicating the need for additional servicing.

4. Cleanliness of Servicing Areas and Components. All areas in which servicing is carried out are to be clean. All components (other than filter elements) are to be cleaned before examination or lubrication. Lubrication is to be adequate but not excessive and all excess oil or grease is to be removed.

26. Deleted by AL 14.

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