TRUCK UTILITY MEDIUM (TUM)(HS) HT W/ VPK BODY AND ASSOCIATED EQUIPMENT (SNATCH 2A AND 2B)

MODIFICATION INSTRUCTION NO. 21

Sponsor: Protected Mobility Team (PMT)
Project No.: NPA047
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AMENDMENT RECORD

Amdt No.	Incorporated By (Signature)	Date
1		
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Amdt No.	Incorporated By (Signature)	Date
4		
5		
6		

SUBJECT: Battery Isolator Switch (SNATCH 2A and 2B)

INTRODUCTION

1 To support the role of the TRUCK UTILITY MEDIUM (TUM)(HS) HT W/ VPK BODY AND ASSOCIATED EQUIPMENT (SNATCH 2A AND 2B), there has been safety requirement to fit a Vehicle and Auxiliary (AUX) battery isolator switch to the SNATCH 2A & 2B variants.

1.1 This Modification Instruction details the fitting procedure to be adopted together with instructions for the disposal of any components and sub-assemblies removed from the equipment.

1.2 Limitations on use of equipment. Nil.

APPLICABILITY

2 This Modification Instruction is to be carried out on all TRUCK UTILITY MEDIUM (TUM)(HS) HT W/ VPK BODY AND ASSOCIATED EQUIPMENT (SNATCH 2A AND 2B), held by user units. Vehicles held on account by JSCS Ashchurch (UIN CA005A) are not to be modified unless issued to a user unit, or on the authority of PMT Project Manager.

2.1 Fitted to the following subject Equipment Asset Code (EAC):

2.1.1 5005 3101.

2.1.2 5005 3100.

REASON FOR MODIFICATION

3 Code 3 – To improve safety.

PRIORITY

4 Army: Immediate.

ESTIMATED TIME REQUIRED

5 This Modification Instruction should take:

5.1	Dismantling:	1.5 man-hours.
5.2	Assembly:	1.5 man-hours.
5.3	Embodiment:	4.0 man-hours.
5.4	Testing:	1.0 man-hour.

MODIFICATION IMPLEMENTATION PLAN

6 This Modification Instruction is to be implemented by:

6.1 Units/ sections authorised to carry out Levels 2, 3 and 4 repairs.

6.2 Associated Modification Instructions. Nil.

6.3 Modification plate strike action: No.

Action required by

7 The following action is to be carried out:

7.1 Units and establishments holding equipment.

7.1.1 Examine the equipment documents, or check the equipment/ sub-unit serial numbers, to determine whether or not the modification is applicable.

7.1.2 Examine equipment or modification record plate to see if modification is embodied and where necessary Units with REME support demand the stores required.

7.1.3 Army – on receipt of stores, request the REME to modify equipment.

7.1.4 Army – record the modification subject and AESP number in the equipment documents.

7.2 Units authorised to carry out Unit, Field or Base repairs (Levels 2, 3 or 4).

7.2.1 Army – implement the modification when requested by the holding unit (or demand the stores required for equipment on charge to units without REME support) and carry out the modification immediately.

7.2.2 Record completion of the modification in the equipment document as applicable.

7.3 All recipients of the AESP. Add particulars to AESP 2320-D-132-811 Modification Instruction Index contained in the Preliminary pages, where applicable.

Stores, tools and equipment

8 The following stores, tools and equipment are required to carry out the modification:

8.1 Stores to be demanded.

8.1.1 The following items/ modification sets are/ is to be demanded quoting this instruction as authority for demand.

Item No.	DMC	NSN/ Part No.	Designation	Qty Per Eqpt
1	7NP	2590-99-241-7870	SNATCH 2A and 2B, battery isolator kit	1
			Comprising:	
2	7MF	5320-99-510-6818	Pop rivet, 3.2 x 12, stst	(8)
3	7NP	6160-99-213-9913	Dummy battery post (+)	(2)
4	7NP	6150-99-705-8982	Cable, battery isolator switch to vehicle battery (+ve)	(2)
5	7NP	6150-99-996-9309	Cable, battery isolator switch to dummy battery post	(2)
6	7NP	9905-99-836-5812	Label, VEHICLE BATTERY ISOLATOR	(1)
7	7NP	9905-99-667-4434	Label, AUX BATTERY ISOLATOR	(1)
8	7NP	7690-99-328-8874	Label, 24 V	(1)
9	7NP	5340-99-668-4643	Nylon pillar	(2)
10	7NP	5940-99-668-4639	Mod, rubber battery terminal cover	(1)
11	7NP	5930-98-207-3353	Battery isolator switch	(2)
12	7RBK	5306-99-551-9364	Bolt, M5 x 25, hex hd	(8)
13	7MF	5310-99-813-1640	Nut, M5, nyloc	(8)
14	7MF	5310-99-551-8265	Nut, M10, nyloc	(2)
15	7MF	5310-99-483-7619	Washer, M5, plain, form A	(8)
16	G1C	5310-99-624-5251	Washer, M10, plain, form A	(2)

8.2 Stores or suitable equivalent to be obtained locally.

Item No.	DMC	NSN/ Part No.	Designation	Qty Per Eqpt
17	POLPEP	9150-99-220-1149	Grease (general purpose) XG 279	A/ R
18	H1ATS	8030-99-225-0248	Loctite, Thread lock 242	A/ R
19	POLPEP	9150-99-910-0488	Light grease (PX7)	A/ R
20	G1C	5310-99-208-6458	Washer, M6, spring	4
21	-	-	Isopropyl Alcohol (IPA)	A/ R

8.3 Support and Test Equipment (S&TE) required.

Item No.	DMC	NSN/ Part No.	Designation	Qty Per Eqpt
22	7NP	3455-99-213-9791	Hole cutter, 52 mm diameter	1
23	F1A	3460-99-137-4928	Arbor Hole Saw	1
24	-	-	Drill bit, 3.5 mm	A/ R
25	-	-	Drill bit, 6 mm	A/ R
26	-	-	Drill bit, 11 mm	A/ R
27	-	-	Drill (Electric or Hand)	1
28	-	-	Pop rivet gun	1

ASSOCIATED PUBLICATIONS

9

Reference	Title
AESP 0200-A-090-013	DEME(A) Engineering Standards (DES)
AESP 0200-A-092-013	DEME(A) Engineering Health and Safety Guide
AESP 0200-A-093-013	Land Equipment User Maintenance Standards
AESP 2320-D-132-Octad	Truck Utility Medium (TUM)(HS) HT W/ VPK Body and Associated Equipment
DEF STAN 59-411 Part 5	Electromagnetic Compatibility, Part 5, Code of Practice for Tri-Service Design and Installation
JSP 375	Health and Safety Handbook
JSP(D) 543	Defence Technical Documentation Guidance
JSP 886	Defence Logistics Support Chain Manual

WARNINGS AND CAUTIONS

WARNINGS

(1) PERSONAL INJURY. WHEN WORKING ON THE EQUIPMENT, ENSURE ALL LOCAL STANDARD WORKSHOP AND HEALTH AND SAFETY PRACTICES ARE ADHERED TO. IF ANY OF THE INSTRUCTIONS IN THIS DOCUMENTATION CONTRAVENE THE LOCAL ORDERS SEEK CLARIFICATION BEFORE CONTINUING.

(2) PHYSICAL INJURY/ HEAVY WEIGHT. SOME ITEMS OF EQUIPMENT ARE HEAVY AND/ OR AWKWARD WEIGHTS. WHEN REMOVING AND REPLACING EQUIPMENT AT ALL TIMES ENSURE THE REGULATIONS AND PROCEDURES FOR THE LIFTING OF HEAVY/ AWKWARD WEIGHTS ARE STRICTLY ADHERED TO, IAW JSP 375.

(3) PERSONAL INJURY. ENSURE VEHICLE IS POSITIONED ON A LEVEL HARD STANDING AND THE PARK BRAKE APPLIED. CHOCK AT LEAST TWO WHEELS ON OPPOSITE SIDES OF THE VEHICLE BEFORE COMMENCING WORK.

(4) PERSONAL INJURY/ BURNS. OPERATING SURFACES MAY BE HOT. ALLOW SUFFICIENT TIME FOR COMPONENTS TO COOL PRIOR TO CARRYING OUT ANY REMOVAL AND REPLACEMENT OF COMPONENTS.

(5) BATTERY EXPLOSION. TO AVOID ANY POSSIBILITY OF BATTERY SHORT CIRCUIT WHEN DISCONNECTING A BATTERY. REMOVE THE TERMINAL FROM THE SUPPLY (POSITIVE) POST BEFORE REMOVING THE EARTH (NEGATIVE) POST.

(6) BATTERY EXPLOSION. TO AVOID ANY POSSIBILITY OF BATTERY SHORT CIRCUIT WHEN CONNECTING A BATTERY. CONNECT THE SUPPLY CABLE (POSITIVE) BEFORE CONNECTING THE EARTH CABLE (NEGATIVE)TO THE BATTERY TERMINALS.

(7) PERSONAL INJURY. EYE, HEARING AND HAND INJURY. WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) DURING DRILLING OPERATIONS. WEAR EYE, HEARING AND HAND PROTECTION AS APPROPRIATE. DE-BURR DRILLED HOLES AND TIDY UP SWARF DEBRIS AS NECESSARY. DISPOSE OF ALL WASTE AS DETAILED IN SOP AND LOCAL INSTRUCTIONS.

(8) PERSONNEL INJURY/ HAZARDOUS PRODUCTS. REFER TO LOCAL UNIT SAFETY PROCEDURES/ INSTRUCTIONS AND THE INDIVIDUAL MATERIAL SAFETY DATA SHEET (MSDS) WHEN USING HAZARDOUS PRODUCTS. MINIMUM PRECAUTION AFTER USE IS TO WASH THE AFFECTED SKIN AREAS WITH SOAP AND WATER. THE USE OF BARRIER CREAM IS RECOMMENDED.

CAUTIONS

(1) EQUIPMENT DAMAGE. To prevent premature failure of securing devices, before fitting ensure clean and apply a light coating of general purpose grease.

(2) BATTERY DAMAGE. To minimise the risk of sparking, ensure the equipment is switched off where possible during connection or disconnection of electrical cables.

(3) EQUIPMENT DAMAGE. When connecting vehicle battery cables to the battery terminals ensure they are not over tightened. Failure to do so will result in damage to the battery and render the battery unserviceable.

(4) EQUIPMENT DAMAGE. Do not hammer battery terminal connections on to the battery terminals. Failure to comply will result in damage to the battery.

(5) EQUIPMENT DAMAGE. Exercise caution when drilling holes; ensure adequate space is behind the proposed hole and clear of any cables or other equipment.

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GENERAL INFORMATION

10 When carrying out the Modification Instruction of the equipment ensure the following information is adhered to:

10.1 This Modification Instruction details the installation of the Vehicle and Auxiliary (AUX) battery isolator switches to the TRUCK UTILITY MEDIUM (TUM)(HS) HT W/ VPK BODY AND ASSOCIATED EQUIPMENT (SNATCH 2A AND 2B) vehicle platforms only.

10.2 Read the complete Modification Instruction before starting.

10.3 Observe all the **WARNINGS** and **CAUTIONS** detailed within this Modification Instruction.

10.4 Left Hand and Right Hand (LH and RH) denotes the left and right hand sides of the vehicle with respect to viewing the vehicle from the rear looking towards the front.

10.5 Because of the quantity of equipment this Modification Instruction is written with the methodology that all equipment will be fitted together in the following order:

10.5.1 Vehicle battery disconnection and removal.

10.5.2 Auxiliary (AUX) battery disconnection and removal.

10.5.3 LH seat base preparation.

10.5.4 RH seat base preparation.

10.5.5 Vehicle battery replacement and connection.

10.5.6 AUX replacement and connection.

10.5.7 VEHICLE BATTERY ISOLATOR switch installation.

10.5.8 AUX BATTERY ISOLATOR switch installation.

10.6 The item numbers of Para 8 (example: (Battery isolator switch (Item 11))) are used as reference throughout this Publication, as well as figure numbers.

10.7 When assembling securing devices, it will ease operation if a small amount of grease, (general purpose) XG 279 (Item 17) is first applied to the threads. Ensure all excess is removed once equipment is fully secured.

10.8 The torque figures indicated in Table 1 must be adhered to. Any other fixings are to be tightened to the standard torque value for the particular size of fixing.

NOTE

Unless a torque figure/ locking method is specified all fixings are to be hand tight only.

TABLE 1 TORQUE DATA FOR METRIC STEEL FASTENERS

Ser	Thread Size	Grade	Recommended Torque (Nm)
(1)	(2)	(3)	(4)
1	M5	8.8	6
2	M6	-	6.8
3	M10	8.8	50

10.9 It may be necessary to unclip and reposition cables to allow easy connection to the equipment being fitted.

10.10 When removing and replacing equipment, always check and replace any unserviceable locking devices as necessary, this will ensure the correct and secure mounting of all the equipment.

SEQUENCE OF OPERATIONS

Preparation

11 To prepare the vehicle for this Modification Instruction proceed as follows:

WARNING

PERSONAL INJURY. ENSURE VEHICLE IS POSITIONED ON A LEVEL HARD STANDING AND THE PARK BRAKE APPLIED. CHOCK AT LEAST TWO WHEELS ON OPPOSITE SIDES OF THE VEHICLE BEFORE COMMENCING WORK.

11.1 Park the vehicle on firm level ground, fully apply park brake, chock two wheels on opposite sides of the vehicle then display a **DO NOT START** notice in a prominent position within the driver's compartment.

11.2 Observe all the **WARNINGS** and **CAUTIONS** detailed within this Modification Instruction.

11.3 Ensure that the working area around the vehicle is made safe and be aware of any hazardous conditions that may exist. If the engine is to be started inside an enclosed space ensure that the exhaust gases are properly vented.

BATTERY DISCONNECTION AND REMOVAL

Front seat removal

WARNING

PERSONAL INJURY/ BURNS. OPERATING SURFACES MAY BE HOT. ALLOW SUFFICIENT TIME FOR COMPONENTS TO COOL PRIOR TO CARRYING OUT ANY REMOVAL AND REPLACEMENT OF COMPONENTS.

12 To remove the LH seat assembly (Fig 1(1)) from the LH seat base (7) proceed as follows:

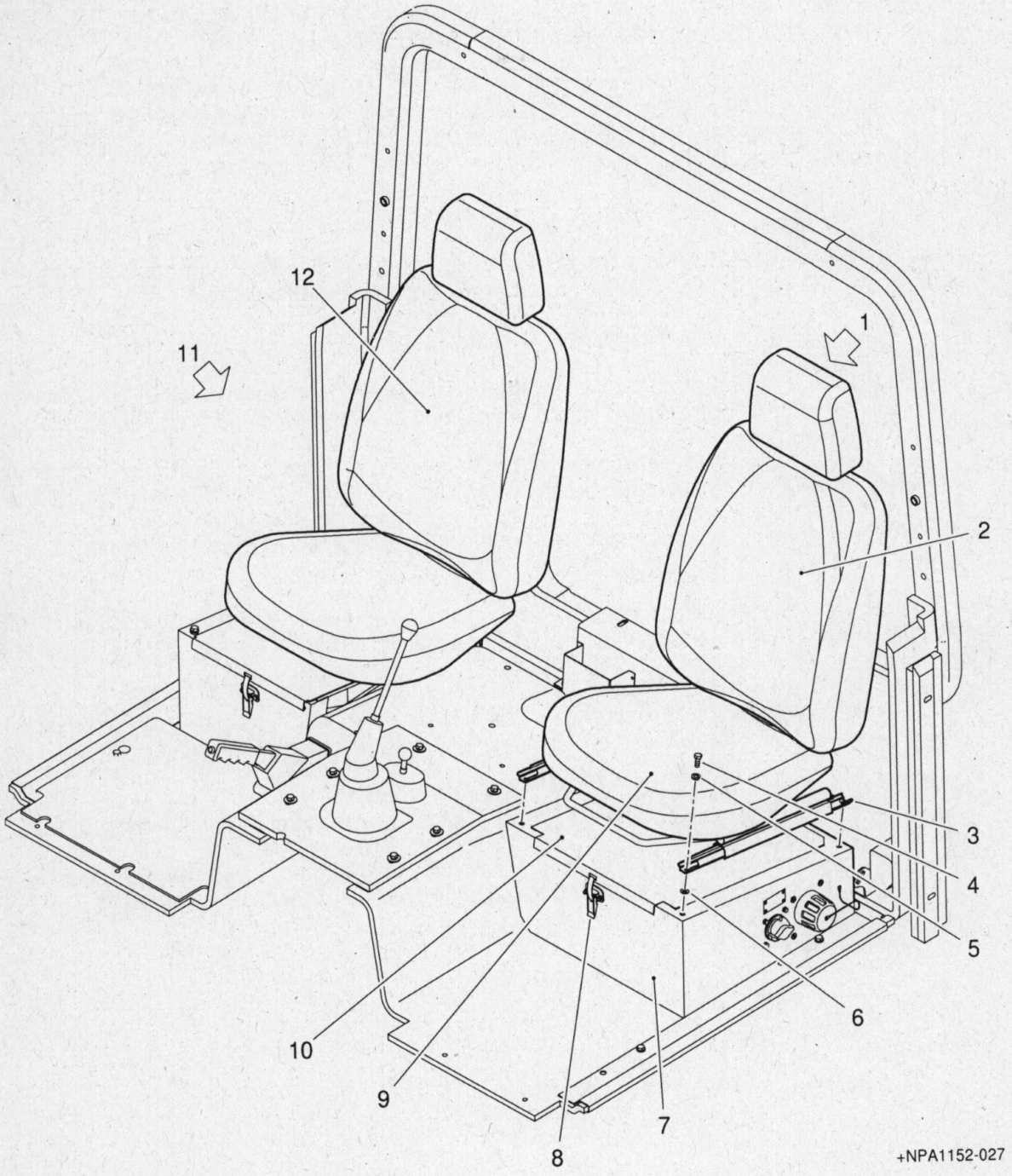
12.1 Remove and retain the seat cushion (9).

12.2 Loosen and remove the four mounting screws (4), spring washers (5) and seat spacer washers (6) from the LH seat base and seat rail (3). Discard the spring washers.

12.3 Lift the LH seat assembly up from the LH seat base and remove from the vehicle cab (11).

12.4 Release the LH seat base latch (8) and slide the seat base cover (10) forward, remove and retain the seat base cover.

13 The procedure to remove the RH seat assembly (12) from the RH seat base, carry out the same procedure as detailed above taking note of the previous **WARNING**.



1	LH seat assembly	5	Washer, spring	9	Seat cushion
2	Seat back	6	Seat spacer washer	10	Seat base cover
3	Seat rail	7	LH seat base	11	Vehicle cab
4	Mounting screws	8	Latch	12	RH seat assembly

Fig 1 LH and RH front seat assemblies

Vehicle battery removal

WARNINGS

(1) BATTERY EXPLOSION. TO AVOID ANY POSSIBILITY OF BATTERY SHORT CIRCUIT WHEN DISCONNECTING A BATTERY. REMOVE THE TERMINAL FROM THE SUPPLY (POSITIVE) POST BEFORE REMOVING THE EARTH (NEGATIVE) POST.

(2) PHYSICAL INJURY/ HEAVY WEIGHT. SOME ITEMS OF EQUIPMENT ARE HEAVY AND/ OR AWKWARD WEIGHTS. WHEN REMOVING AND REPLACING EQUIPMENT AT ALL TIMES ENSURE THE REGULATIONS AND PROCEDURES FOR THE LIFTING OF HEAVY/ AWKWARD WEIGHTS ARE STRICTLY ADHERED TO, IAW JSP 375.

CAUTION

BATTERY DAMAGE. To minimise the risk of sparking, ensure the equipment is switched off where possible during connection or disconnection of electrical cables.

14 The procedure to disconnect and remove the vehicle batteries (Fig 2(6)), is as follows:

14.1 Identify, tag and disconnect the vehicle battery +ve (charging cable)(1) from the battery terminal (+ve). Ensure all exposed cables are suitably blanked off to prevent damage.

14.2 Identify, tag and disconnect the vehicle battery -ve to chassis -ve (earth cable)(3) from the battery terminal (-ve). Ensure all exposed cables are suitably blanked off to prevent damage.

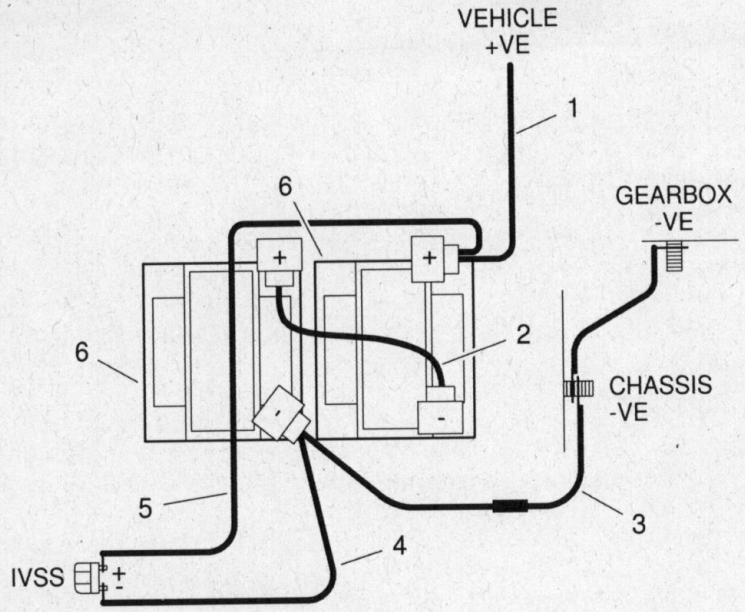
14.3 Identify, tag, disconnect and retain the battery link cable (2) from the battery terminals (+ve and -ve).

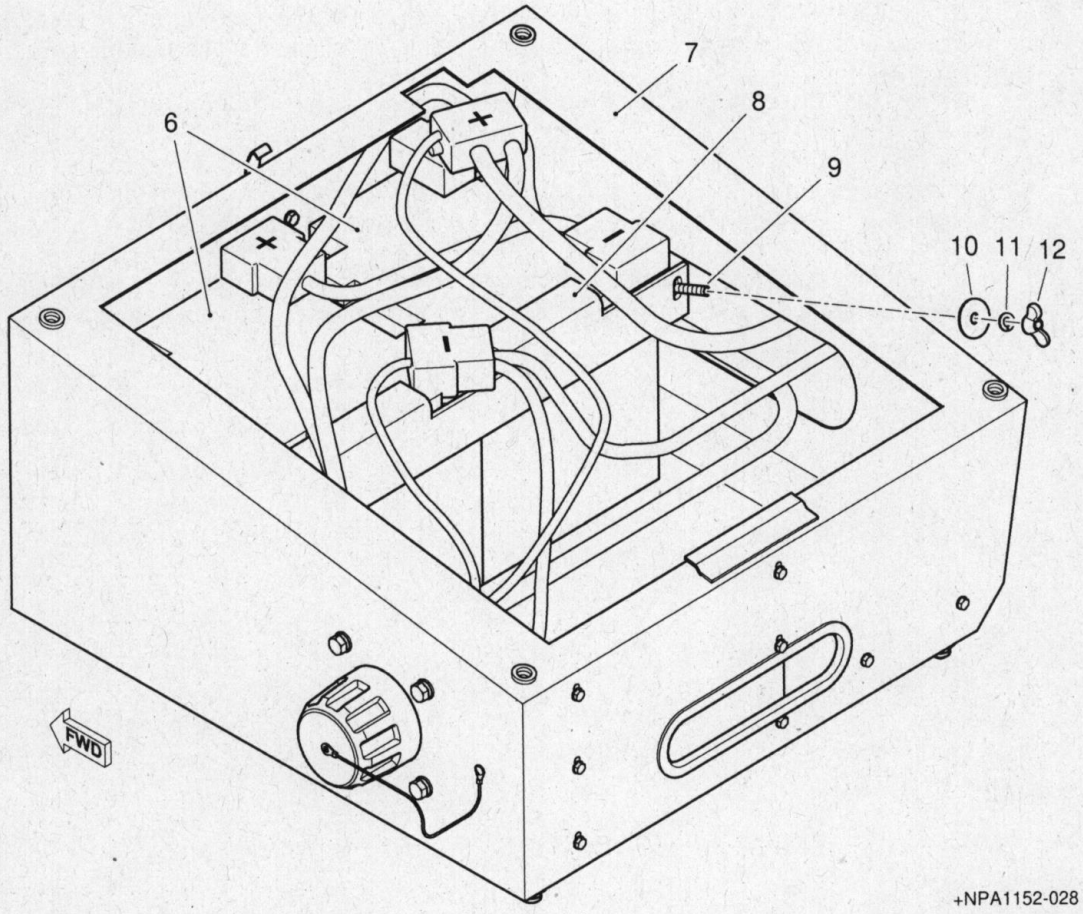
14.4 Identify, tag and disconnect the vehicle battery +ve to Inter-Vehicle Starting Socket (IVSS) +ve cable (5) from the battery terminal (+ve). Ensure all exposed cables are suitably blanked off to prevent damage.

14.5 Identify, tag and disconnect the vehicle battery -ve to IVSS -ve cable (4) from the battery terminal (-ve). Ensure all exposed cables are suitably blanked off to prevent damage.

14.6 Remove and retain the battery clamp (8) complete with both wing nuts (12) plain washers (10) spring washers (11) and battery hook bars (9). Discard the spring washers.

14.7 Noting their position for replacement, carefully lift and remove both vehicle batteries from the vehicle and store them in a suitable location to prevent the batteries been damaged.





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1 Vehicle battery +ve (charging cable)
2 Battery link cable
3 Vehicle battery -ve to chassis -ve (earth cable)
4 Vehicle battery -ve to IVSS -ve cable
5 Vehicle battery +ve to IVSS +ve cable
6 Vehicle batteries
7 LH seat base
8 Battery clamp
9 Battery hook bars
10 Washer, M6, plain
11 Washer, M6, spring
12 Nut, M6, wing

Fig 2 Vehicle battery removal

Aux battery removal

WARNINGS

(1) BATTERY EXPLOSION. TO AVOID ANY POSSIBILITY OF BATTERY SHORT CIRCUIT WHEN DISCONNECTING A BATTERY. REMOVE THE TERMINAL FROM THE SUPPLY (POSITIVE) POST BEFORE REMOVING THE EARTH (NEGATIVE) POST.

(2) PHYSICAL INJURY/ HEAVY WEIGHT. SOME ITEMS OF EQUIPMENT ARE HEAVY AND/ OR AWKWARD WEIGHTS. WHEN REMOVING AND REPLACING EQUIPMENT AT ALL TIMES ENSURE THE REGULATIONS AND PROCEDURES FOR THE LIFTING OF HEAVY/ AWKWARD WEIGHTS ARE STRICTLY ADHERED TO, IAW JSP 375.

CAUTION

BATTERY DAMAGE. To minimise the risk of sparking, ensure the equipment is switched off where possible during connection or disconnection of electrical cables.

15 The procedure to disconnect and remove the auxiliary (aux) batteries (Fig 3(3)), is as follows:

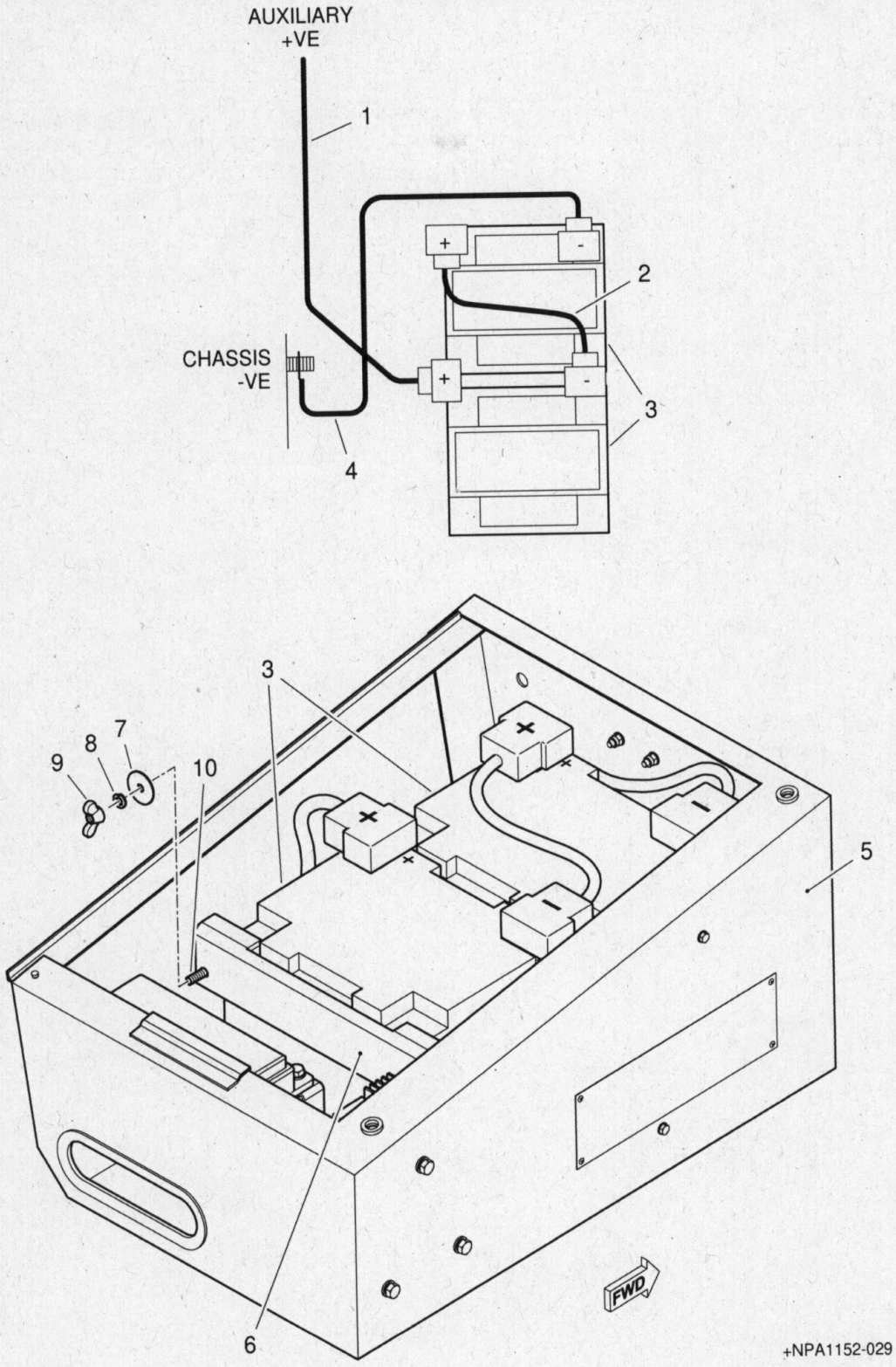
15.1 Identify, tag and disconnect the aux battery +ve (charging cable)(1) from the battery terminal (+ve). Ensure all exposed cables are suitably blanked off to prevent damage.

15.2 Identify, tag and disconnect the aux battery -ve to chassis -ve (earth cable)(4) from the battery terminal (-ve). Ensure all exposed cables are suitably blanked off to prevent damage.

15.3 Identify, tag, disconnect and retain the battery link cable (2) from the battery terminals (+ve and -ve).

15.4 Remove and retain the battery clamp (6) complete with both wing nuts (9) plain washers (7) spring washers (8) and battery hook bars (10). Discard the spring washers

15.5 Noting their position for replacement, carefully lift and remove both aux batteries from the vehicle and store them in a suitable location to prevent the batteries been damaged.



1 Aux battery +ve (charging cable)
2 Battery link cable
3 Aux batteries
4 Aux battery -ve to chassis -ve (earth cable)
5 RH seat base
6 Battery clamp
7 Washer, M6, plain
8 Washer, M6, spring
9 Nut, M6, wing
10 Battery hook bars

Fig 3 Aux battery removal

SEAT BASE PREPARATION

LH seat base

WARNING

PERSONAL INJURY. EYE, HEARING AND HAND INJURY. WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) DURING DRILLING OPERATIONS. WEAR EYE, HEARING AND HAND PROTECTION AS APPROPRIATE. DE-BURR DRILLED HOLES AND TIDY UP SWARF DEBRIS AS NECESSARY. DISPOSE OF ALL WASTE AS DETAILED IN SOP AND LOCAL INSTRUCTIONS.

16 To prepare the LH seat base (Fig 4(1)) for fitment of the VEHICLE BATTERY ISOLATOR switch, proceed as follows:

16.1 Fabricate a template as detailed in (Fig 4).

16.2 Position the template on the LH inboard side (2) of the LH seat base.

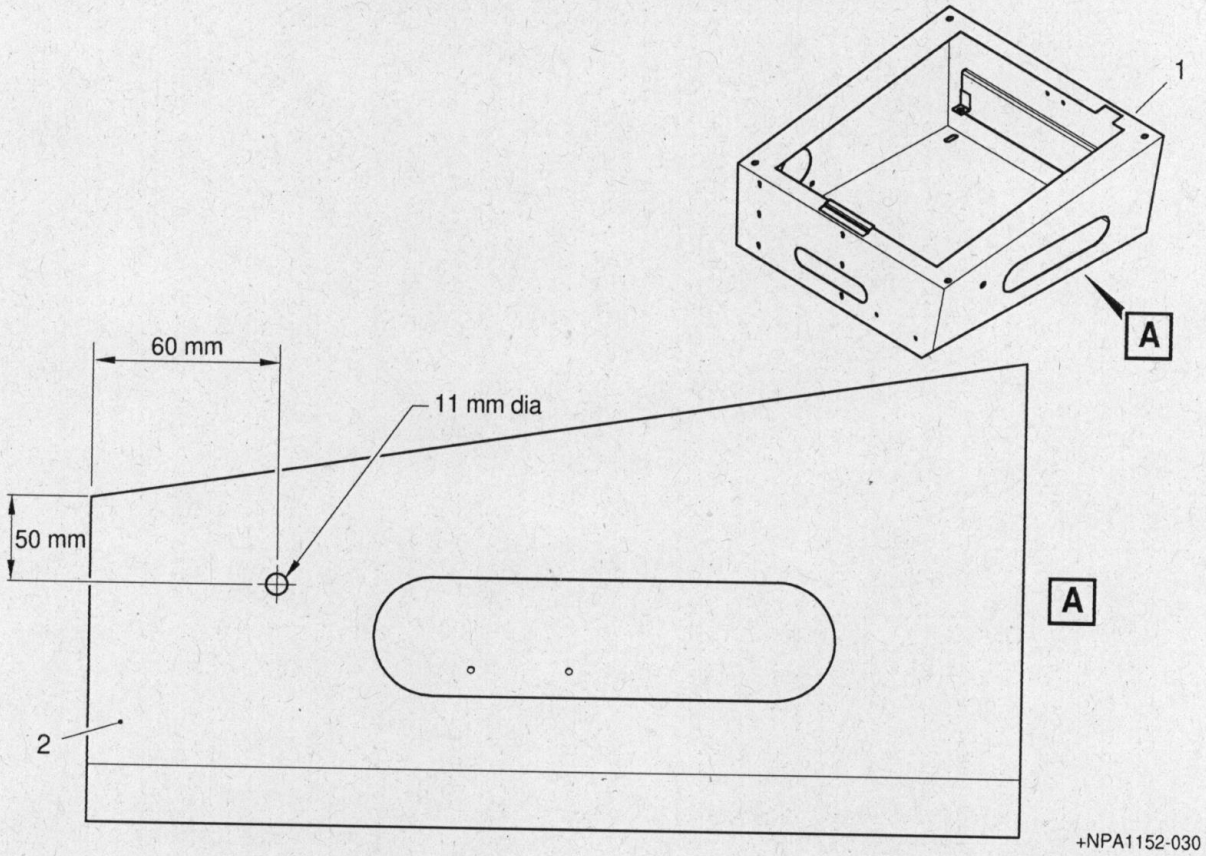
16.3 Spot mark the LH seat base using an 11 mm Ø drill bit (Item 26).

CAUTION

EQUIPMENT DAMAGE. Exercise caution when drilling holes; ensure adequate space is behind the proposed hole and clear of any cables or other equipment.

16.4 Remove the template and drill though the LH seat base using an 11 mm Ø drill bit.

16.5 Using suitable tools, remove all sharp edges and burrs from around the drilled hole.



1 LH seat base 2 LH inboard side

Fig 4 LH seat base preparation (dummy battery post)

16.6 Fabricate a template as detailed in (Fig 5).

16.7 Position the template on the LH side (Fig 5(2)) of the LH seat base (1).

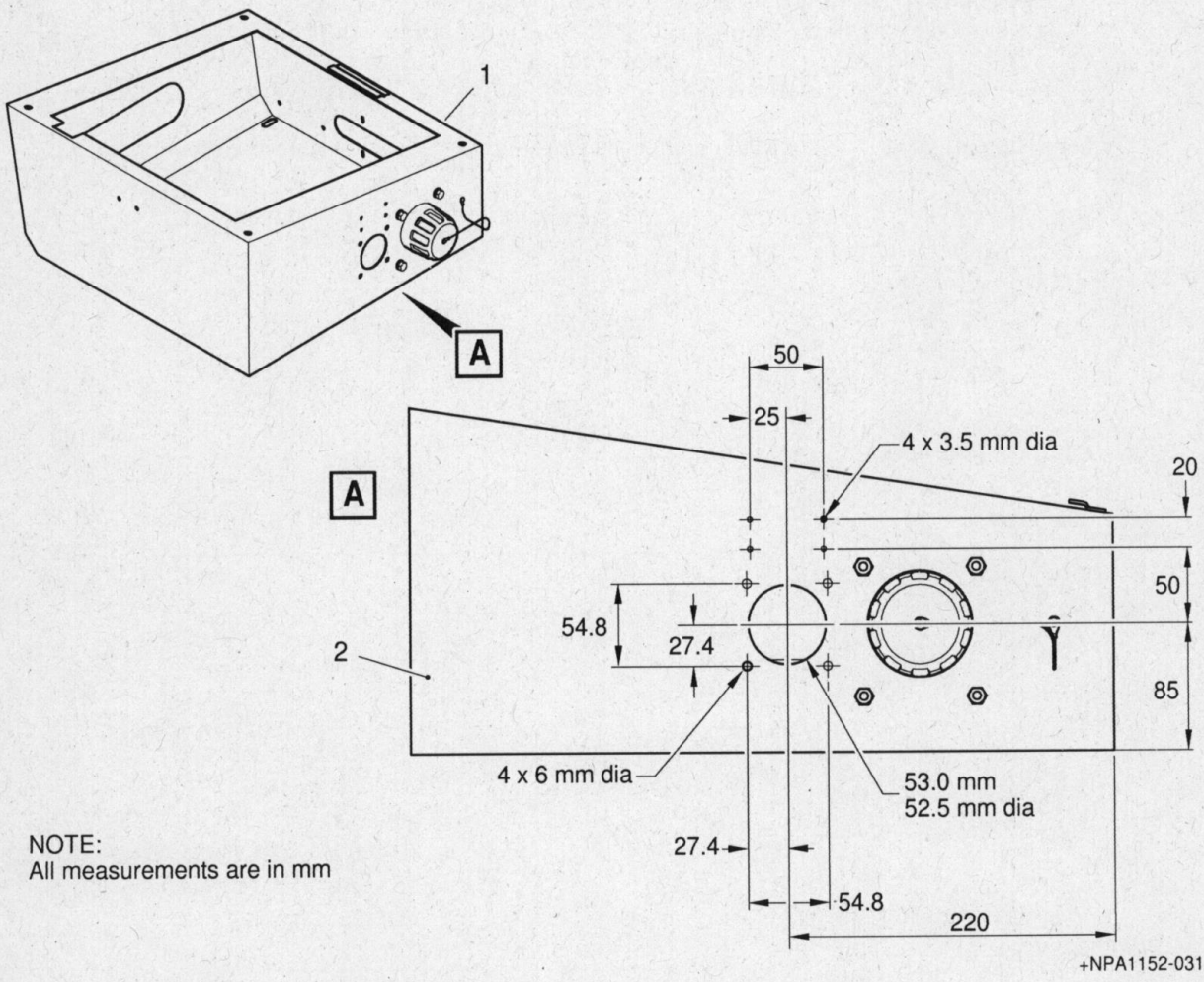
16.8 Spot mark the LH seat base using a 6 mm Ø drill bit (Item 25), 3.5 mm Ø drill bit (Item 24) and hole cutter 52 mm (Item 22) complete with arbor hole saw (Item 23).

CAUTION

EQUIPMENT DAMAGE. Exercise caution when drilling holes; ensure adequate space is behind the proposed hole and clear of any cables or other equipment.

16.9 Remove the template and drill though the LH seat base using the 6 mm Ø drill bit, 3.5 mm Ø drill bit and hole cutter 52 mm complete with arbor hole saw.

16.10 Using suitable tools, remove all sharp edges and burrs from around the drilled holes.



NOTE:
All measurements are in mm

1 LH seat base 2 LH side

Fig 5 LH seat base preparation
(VEHICLE BATTERY ISOLATOR switch)

RH seat base

WARNING

PERSONAL INJURY. EYE, HEARING AND HAND INJURY. WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT (PPE) DURING DRILLING OPERATIONS. WEAR EYE, HEARING AND HAND PROTECTION AS APPROPRIATE. DE-BURR DRILLED HOLES AND TIDY UP SWARF DEBRIS AS NECESSARY. DISPOSE OF ALL WASTE AS DETAILED IN SOP AND LOCAL INSTRUCTIONS.

17 To prepare the RH seat base (Fig 6(1)) for fitment of the AUX BATTERY ISOLATOR switch, proceed as follows:

17.1 Fabricate a template as detailed in (Fig 6).

17.2 Position the template on the front face (2) of the RH seat base.

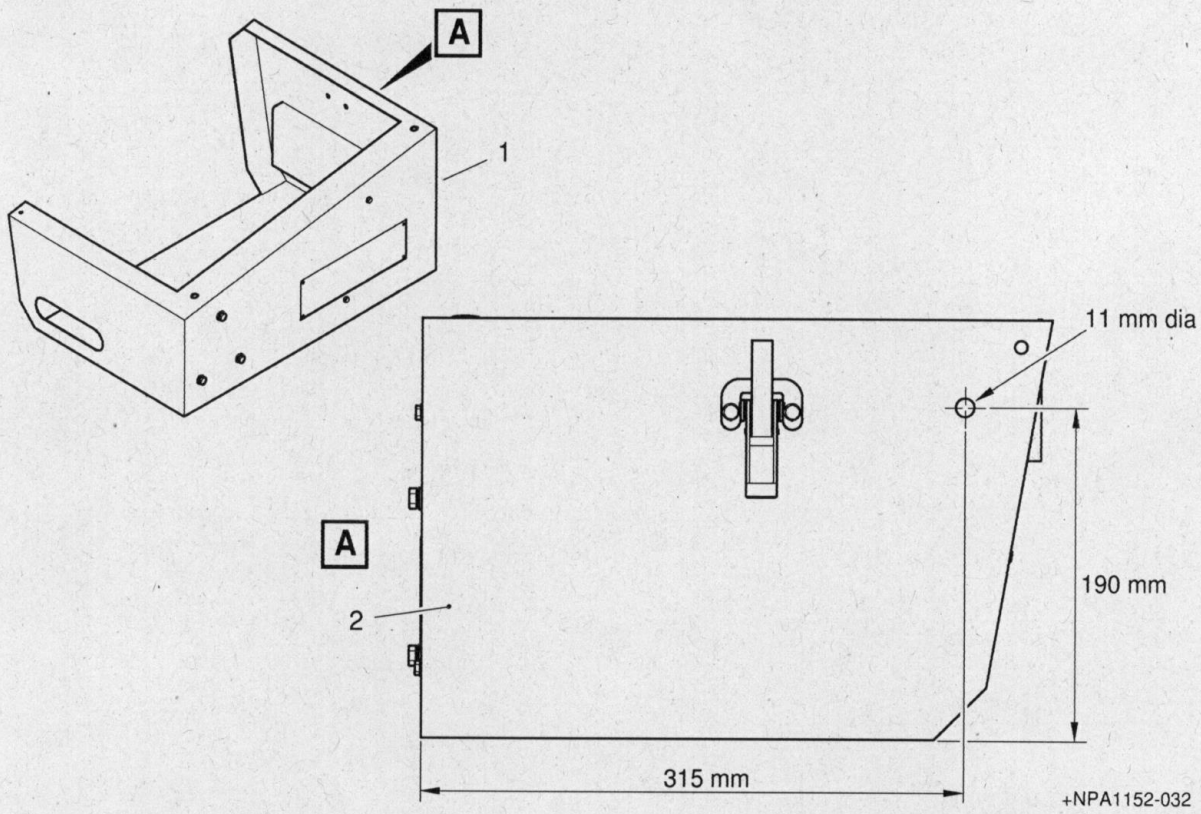
17.3 Spot mark the LH seat base using an 11 mm Ø drill bit (Item 26).

CAUTION

EQUIPMENT DAMAGE. Exercise caution when drilling holes; ensure adequate space is behind the proposed hole and clear of any cables or other equipment.

17.4 Remove the template and drill though the RH seat base using an 11 mm Ø drill bit.

17.5 Using suitable tools, remove all sharp edges and burrs from around the drilled hole.



1 RH seat base 2 Front face

Fig 6 RH seat base preparation (dummy battery post)

17.6 Fabricate a template as detailed in (Fig 7).

17.7 Position the template on the RH side (Fig 7(2)) of the RH seat base (1).

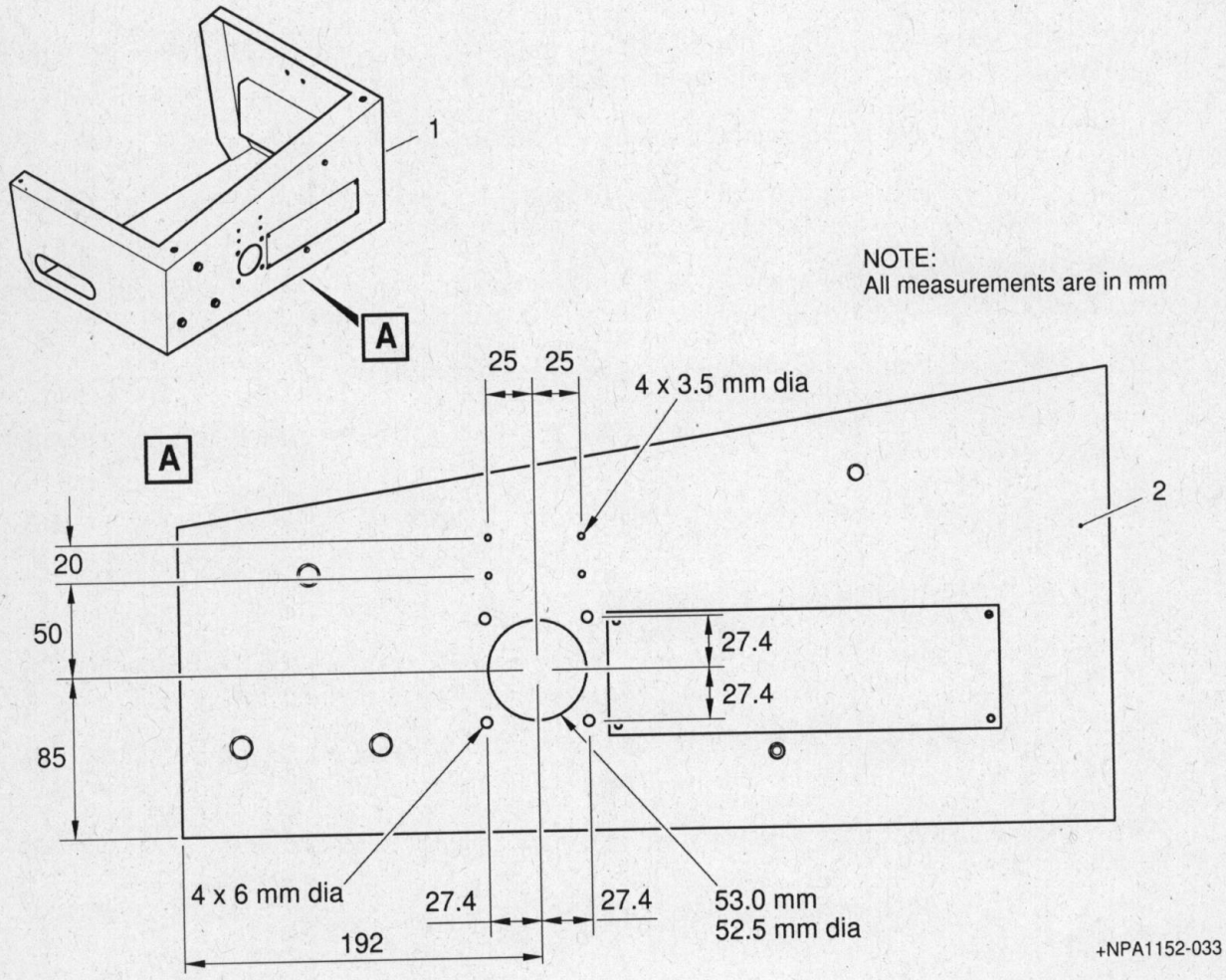
17.8 Spot mark the RH seat base using a 6 mm Ø drill bit (Item 25), 3.5 mm Ø drill bit (Item 24) and hole cutter 52 mm (Item 22) complete with arbor hole saw (Item 23).

CAUTION

EQUIPMENT DAMAGE. Exercise caution when drilling holes; ensure adequate space is behind the proposed hole and clear of any cables or other equipment.

17.9 Remove the template and drill though the RH seat base using the 6 mm Ø drill bit, 3.5 mm Ø drill bit and hole cutter 52 mm complete with arbor hole saw.

17.10 Using suitable tools, remove all sharp edges and burrs from around the drilled holes.



1 RH seat base 2 RH side

Fig 7 RH seat base preparation
(AUX BATTERY ISOLATOR switch)

BATTERY REPLACEMENT AND CONNECTION

Vehicle battery replacement

WARNINGS

(1) BATTERY EXPLOSION. TO AVOID ANY POSSIBILITY OF BATTERY SHORT CIRCUIT WHEN CONNECTING A BATTERY. CONNECT THE SUPPLY CABLE (POSITIVE) BEFORE CONNECTING THE EARTH CABLE (NEGATIVE)TO THE BATTERY TERMINALS.

(2) PHYSICAL INJURY/ HEAVY WEIGHT. SOME ITEMS OF EQUIPMENT ARE HEAVY AND/ OR AWKWARD WEIGHTS. WHEN REMOVING AND REPLACING EQUIPMENT AT ALL TIMES ENSURE THE REGULATIONS AND PROCEDURES FOR THE LIFTING OF HEAVY/ AWKWARD WEIGHTS ARE STRICTLY ADHERED TO, IAW JSP 375.

CAUTIONS

(1) EQUIPMENT DAMAGE. When connecting vehicle battery cables to the battery terminals ensure they are not over tightened. Failure to do so will result in damage to the battery and render the battery unserviceable.

(2) EQUIPMENT DAMAGE. Do not hammer battery terminal connections on to the battery terminals. Failure to comply will result in damage to the battery.

18 The procedure to replace and connect the vehicle batteries (Fig 8(6)), is as follows:

18.1 Carefully lift and replace both vehicle batteries and position them into the LH seat base (7) of the vehicle. Clean all the battery terminals with glass paper.

18.2 Replace the battery clamp (8) securing it in position using with both wing nuts (12) plain washers (10) replacement spring washers (Item 20)(11) and battery hook bars (9).

18.3 Identify and connect the battery link cable (2) to the battery terminals (+ve and -ve).

18.4 Identify and connect the vehicle battery +ve to IVSS +ve cable (5) to the battery terminal (+ve).

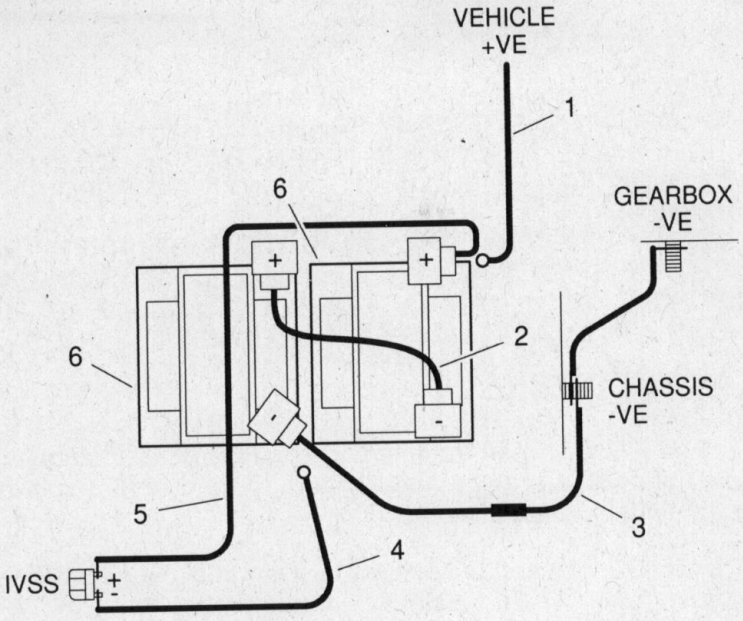
18.5 Identify and connect the vehicle battery -ve to Chassis -ve (earth cable)(3) to the battery terminal (-ve).

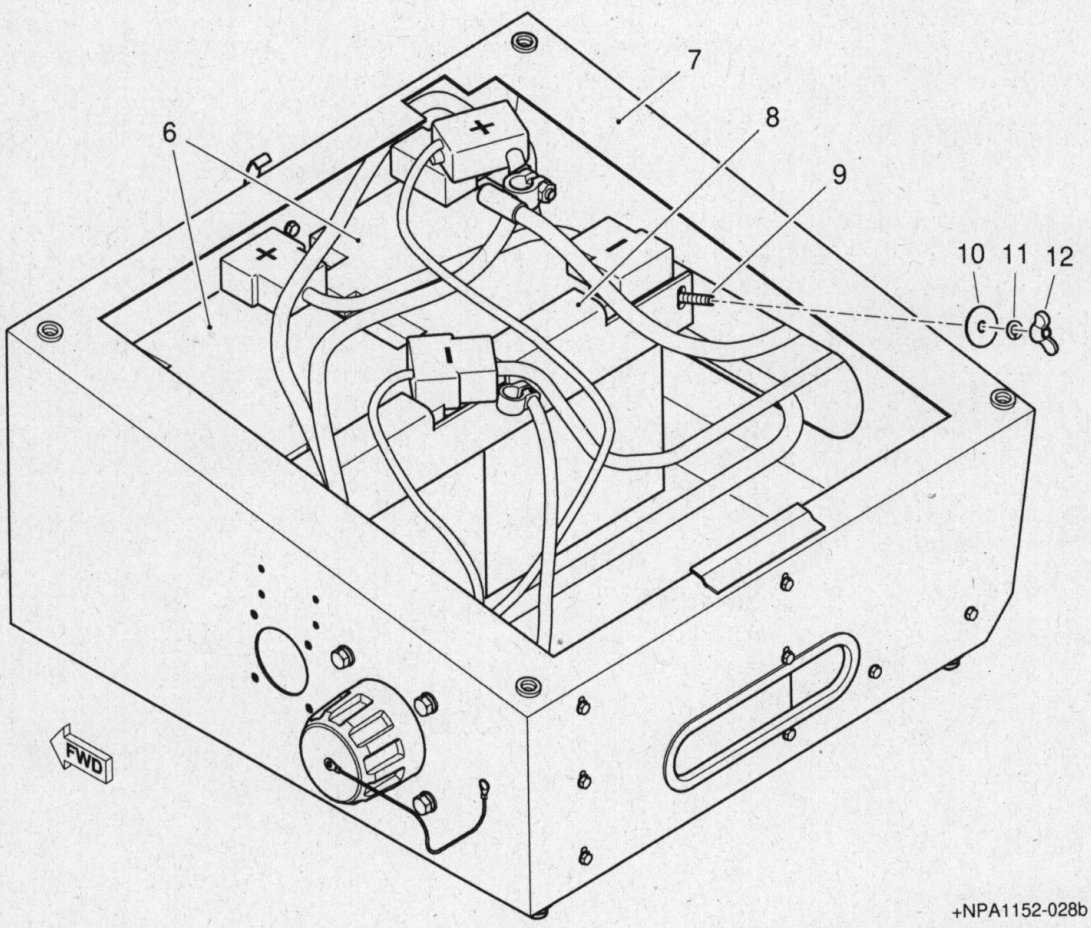
NOTE

When fitted into the vehicle, the battery cable terminals should be torque tightened to 6.8 Nm (Table 1, Ser 2) onto the battery terminals and then coated with light grease (Item 19).

18.6 Ensure that the vehicle battery -ve to IVSS -ve cable (4) and the vehicle battery +ve (charging cable)(1) is left loose for re-fitment at a later stage in this Modification Instruction.

19 A new vehicle and aux battery schematic is shown in (Fig 13) as an aid when reconnecting the vehicle batteries and cables.





+NPA1152-028b

1 Vehicle battery +ve (charging cable)
2 Battery link cable
3 Vehicle battery -ve to chassis -ve (earth cable)
4 Vehicle battery -ve to IVSS -ve cable
5 Vehicle battery +ve to IVSS +ve cable
6 Vehicle batteries
7 LH seat base
8 Battery clamp
9 Battery hook bars
10 Washer, M6, plain
11 Washer, M6, spring
12 Nut, M6, wing

Fig 8 Vehicle battery replacement

Aux battery replacement

WARNINGS

(1) BATTERY EXPLOSION. TO AVOID ANY POSSIBILITY OF BATTERY SHORT CIRCUIT WHEN CONNECTING A BATTERY. CONNECT THE SUPPLY CABLE (POSITIVE) BEFORE CONNECTING THE EARTH CABLE (NEGATIVE)TO THE BATTERY TERMINALS.

(2) PHYSICAL INJURY/ HEAVY WEIGHT. SOME ITEMS OF EQUIPMENT ARE HEAVY AND/ OR AWKWARD WEIGHTS. WHEN REMOVING AND REPLACING EQUIPMENT AT ALL TIMES ENSURE THE REGULATIONS AND PROCEDURES FOR THE LIFTING OF HEAVY/ AWKWARD WEIGHTS ARE STRICTLY ADHERED TO, IAW JSP 375.

CAUTIONS

(1) EQUIPMENT DAMAGE. When connecting vehicle battery cables to the battery terminals ensure they are not over tightened. Failure to do so will result in damage to the battery and render the battery unserviceable.

(2) EQUIPMENT DAMAGE. Do not hammer battery terminal connections on to the battery terminals. Failure to comply will result in damage to the battery.

20 The procedure to replace and connect the aux batteries (Fig 9(3)), is as follows:

20.1 Carefully lift and replace both aux batteries and position them into the RH seat base (5) of the vehicle. Clean all the battery terminals with glass paper.

20.2 Replace the battery clamp (6) securing it in position using with both wing nuts (9) plain washers (7) replacement spring washers (Item 20)(8) and battery hook bars (10).

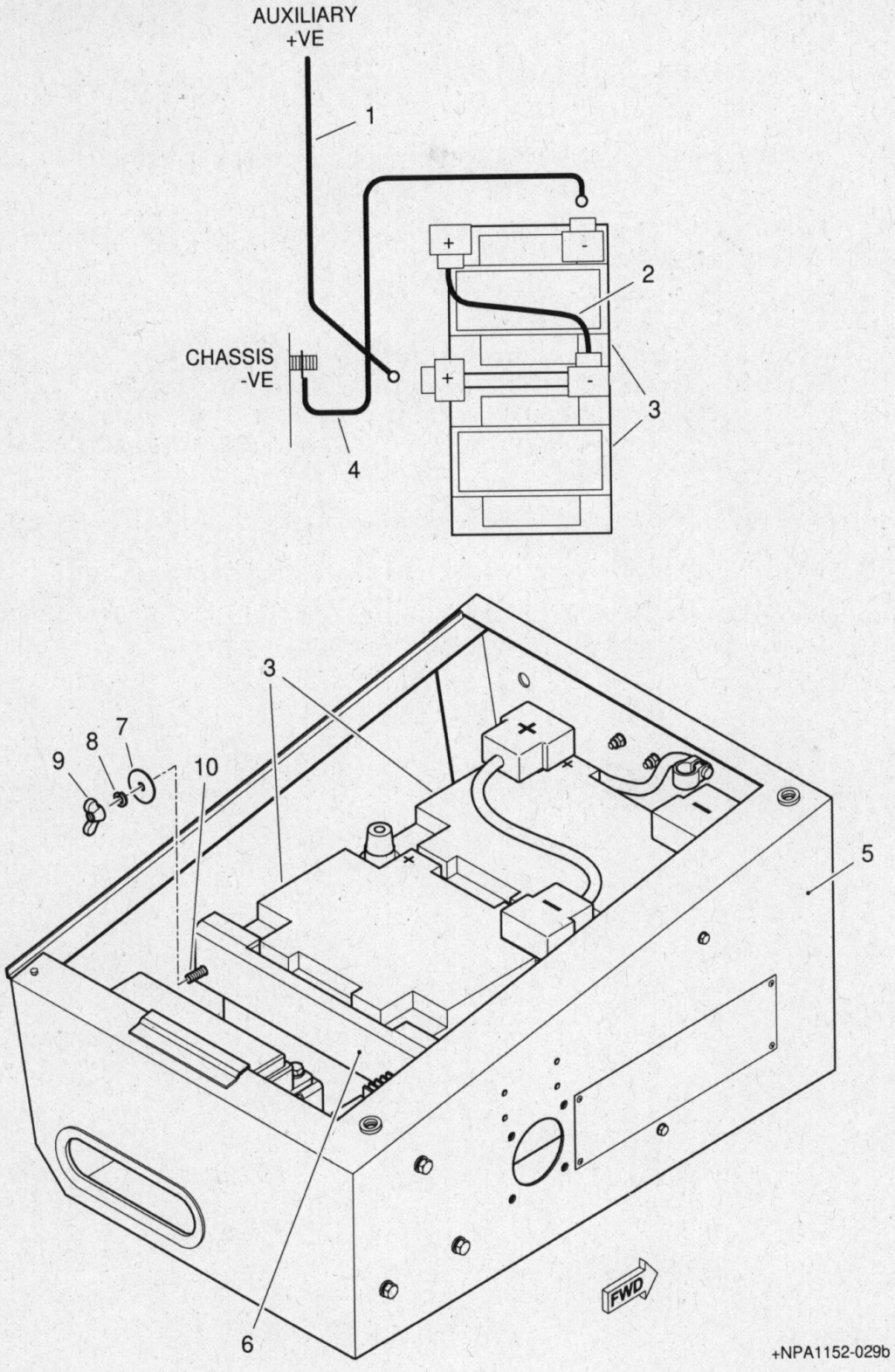
20.3 Identify and connect the battery link cable (2) to the battery terminals (+ve and -ve).

NOTE

When fitted into the vehicle, the battery cable terminals should be torque tightened to 6.8 Nm (Table 1, Ser 2) onto the battery terminals and then coated with light grease (Item 19).

20.4 Ensure that the aux battery -ve to chassis -ve (earth cable)(4) and the aux battery +ve (charging cable)(1) is left loose for re-fitment at a later stage in this Modification Instruction.

21 A new vehicle and aux battery schematic is shown in (Fig 13) as an aid when reconnecting the aux batteries and cables.



1 Aux battery +ve (charging cable)
2 Battery link cable
3 Aux batteries
4 Aux battery -ve to chassis -ve (earth cable)
5 RH seat base
6 Battery clamp
7 Washer, M6, plain
8 Washer, M6, spring
9 Nut, M6, wing
10 Battery hook bars

Fig 9 Aux battery replacement

BATTERY ISOLATOR SWITCH INSTALLATION

Dummy battery post

22 To install the dummy battery post (+)(Item 3)(Fig 10(1)) into the LH seat base (7), proceed as follows:

22.1 Position the nylon pillar (Item 9)(2) through the previously drilled 11 mm hole in the LH seat base.

22.2 Fit the washer (Item 16)(4) and nyloc nut (Item 14)(3) onto the nylon pillar and tighten securely. Do not over tighten.

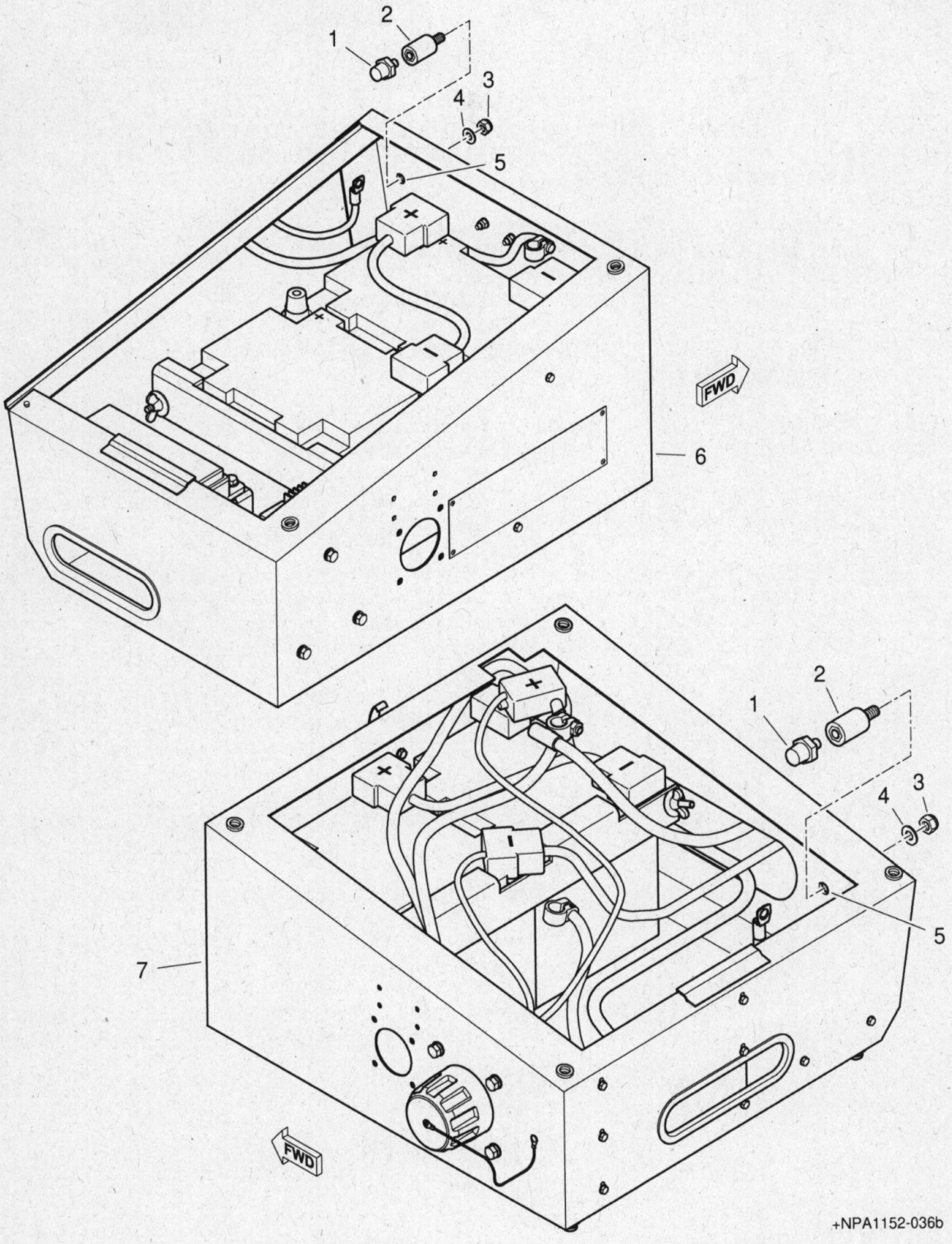
WARNING

PERSONNEL INJURY/ HAZARDOUS PRODUCTS. REFER TO LOCAL UNIT SAFETY PROCEDURES/ INSTRUCTIONS AND THE INDIVIDUAL MATERIAL SAFETY DATA SHEET (MSDS) WHEN USING HAZARDOUS PRODUCTS. MINIMUM PRECAUTION AFTER USE IS TO WASH THE AFFECTED SKIN AREAS WITH SOAP AND WATER. THE USE OF BARRIER CREAM IS RECOMMENDED.

22.3 Apply Loctite, Thread lock 242 (Item 18) to the thread of the dummy battery post.

22.4 Install the dummy battery post into the nylon pillar and tighten securely. Do not over tighten.

23 To install the dummy battery post (+)(Item 3)(Fig 10(1) into the RH seat base (6), carry out the same procedure as detailed above taking note of the previous **WARNING**.



1 Dummy battery post (+)
2 Nylon pillar
3 Nut, M10, nyloc
4 Washer, M10, plain
5 11 mm hole
6 RH seat base
7 LH seat base

Fig 10 Dummy battery post installation

Vehicle battery isolator switch

24 To install the VEHICLE BATTERY ISOLATOR switch (Item 11)(Fig 11(6)) into the LH seat base (10), proceed as follows:

24.1 Fit the four nuts (Item 13)(11) in the recesses on the rear of the VEHICLE BATTERY ISOLATOR switch.

24.2 From inside the LH seat base, position the VEHICLE BATTERY ISOLATOR switch through the previously cut hole. Ensure the VEHICLE BATTERY ISOLATOR switch is rotated to show the ON marker at the top as detailed in (Fig 11(A)).

24.3 Fit the four bolts (Item 12)(13) complete with plain washers (Item 15)(12) through the LH seat base and into the VEHICLE BATTERY ISOLATOR switch and tighten securely. Do not over tighten. Once secured in place rotate the VEHICLE BATTERY ISOLATOR switch counter-clockwise to the OFF position as detailed in (Fig 11(B)).

24.4 Position the VEHICLE BATTERY ISOLATOR label (Item 6)(13) onto the LH seat base and secure using four pop rivets (Item 2)(15).

24.5 Ensure the LH seat base (LH side) is cleaned using a proprietary cleaning agent (Isopropyl Alcohol (IPA)(Item 21) or similar) before the adhesive 24 V label (16) is applied.

24.6 Peel off the back of the adhesive 24 V label (Item 8) and position it to the LH side of the VEHICLE BATTERY ISOLATOR switch as shown in (Fig 11).

24.7 Remove and retain the nuts (8) and spring washers (7) from the rear of the VEHICLE BATTERY ISOLATOR switch, connect the cable – battery isolator switch to vehicle battery (+ve)(Item 4)(1) and cable – battery isolator switch to dummy battery post (Item 5)(5) to the rear of the VEHICLE BATTERY ISOLATOR switch, secure into position with the previously remove spring washers and nuts.

24.8 Secure the previously removed vehicle battery +ve (charging cable)(2) and the battery isolator switch to dummy battery post cable to the dummy battery post (3) using the battery clamp nut (9). Do not over tighten.

24.9 Secure the battery isolator switch to vehicle battery (+ve) cable, to the front battery terminal. Do not over tighten.

24.10 Identify and connect the vehicle battery -ve to IVSS -ve (4) cable to the battery terminal (-ve).

NOTE

When fitted into the vehicle, the battery cable terminals should be torque tightened to 6.8 Nm (Table 1, Ser 2) onto the battery terminals and then coated with light grease (Item 19).

25 A new vehicle and aux battery schematic is shown in (Fig 13) as an aid when connecting the VEHICLE BATTERY ISOLATOR switch and cables.

Key for Fig 11

1 Cable – battery isolator switch to vehicle battery (+ve)
2 Vehicle battery +ve (charging cable)
3 Dummy battery post
4 Vehicle battery -ve to IVSS –ve cable
5 Cable – battery isolator switch to dummy battery post
6 VEHICLE BATTERY ISOLATOR switch
7 Washer, M10, spring
8 Nut, M10, plain
9 Battery clamp nut
10 LH seat base
11 Nut, M5, nyloc
12 Washer, M5, plain, form A
13 Bolt, M5 x 25, hex hd
14 VEHICLE BATTERY ISOLATOR label
15 Pop rivet
16 24 V label

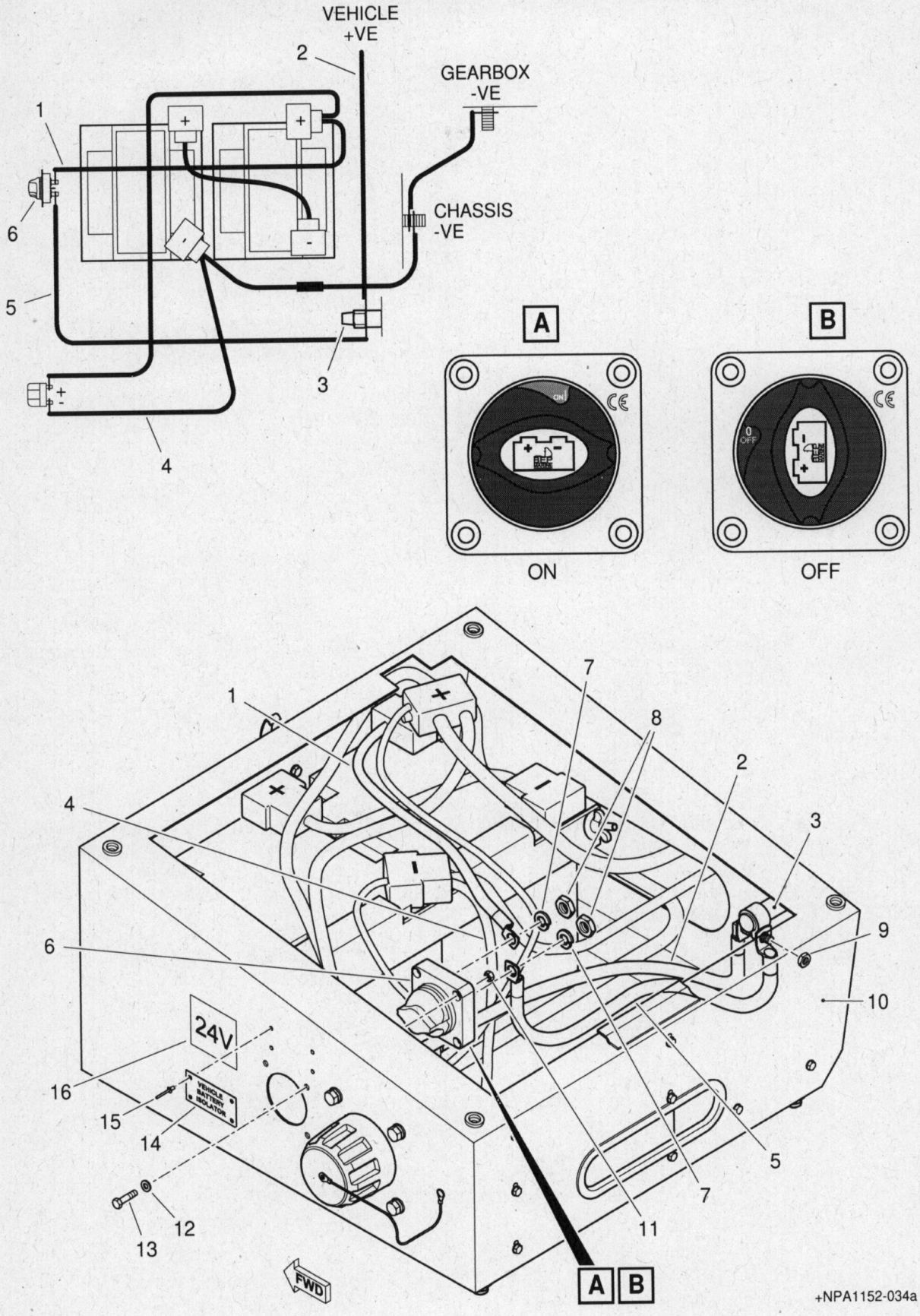


Fig 11 VEHICLE BATTERY ISOLATOR switch installation

Aux battery isolator switch

26 To install the AUX BATTERY ISOLATOR switch (Item 11)(Fig 12(4)) into the RH seat base (8), proceed as follows:

26.1 Fit the four nuts (Item 13)(13) in the recesses on the rear of the AUX BATTERY ISOLATOR switch.

26.2 From inside the RH seat base, position the AUX BATTERY ISOLATOR switch through the previously cut hole. Ensure the AUX BATTERY ISOLATOR switch is rotated to show the ON marker at the top as detailed in (Fig 12(A)).

26.3 Fit the four bolts (Item 12)(11) complete with plain washers (Item 15)(12) through the RH seat base and into the AUX BATTERY ISOLATOR switch and tighten securely. Do not over tighten. Once secured in place rotate the AUX BATTERY ISOLATOR switch counter-clockwise to the OFF position as detailed in (Fig 12(B)).

26.4 Position the AUX BATTERY ISOLATOR label (Item 6)(9) onto the RH seat base and secure using four pop rivets (Item 2)(9).

26.5 Remove and retain the nuts (15) and spring washers (14) from the rear of the AUX BATTERY ISOLATOR switch, connect the cable – battery isolator switch to aux battery (+ve) (Item 4)(5) and cable – battery isolator switch to dummy battery post (Item 5)(3) to the rear of the AUX BATTERY ISOLATOR switch, secure into position with the previously remove spring washers and nuts.

26.6 Secure the previously removed aux battery +ve (charging cable)(1) and the battery isolator switch to dummy battery post cable to the dummy battery post (6) using the battery clamp nut (6). Do not over tighten.

26.7 Secure the battery isolator switch to aux battery (+ve) cable to the rear RH battery terminal. Do not over tighten.

26.8 Identify and connect the aux battery -ve to chassis -ve (earth cable)(2) to the battery terminal (-ve).

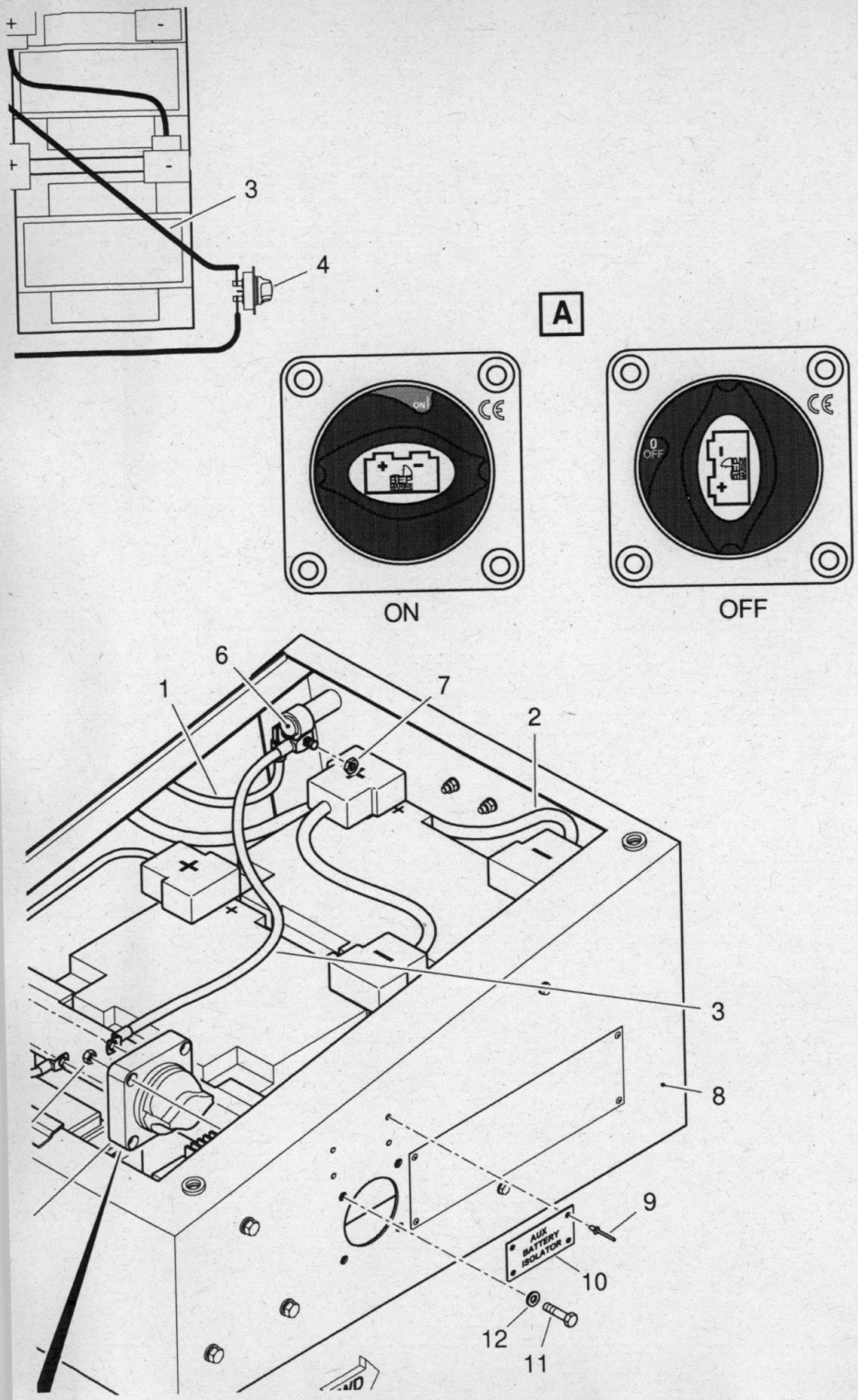
NOTE

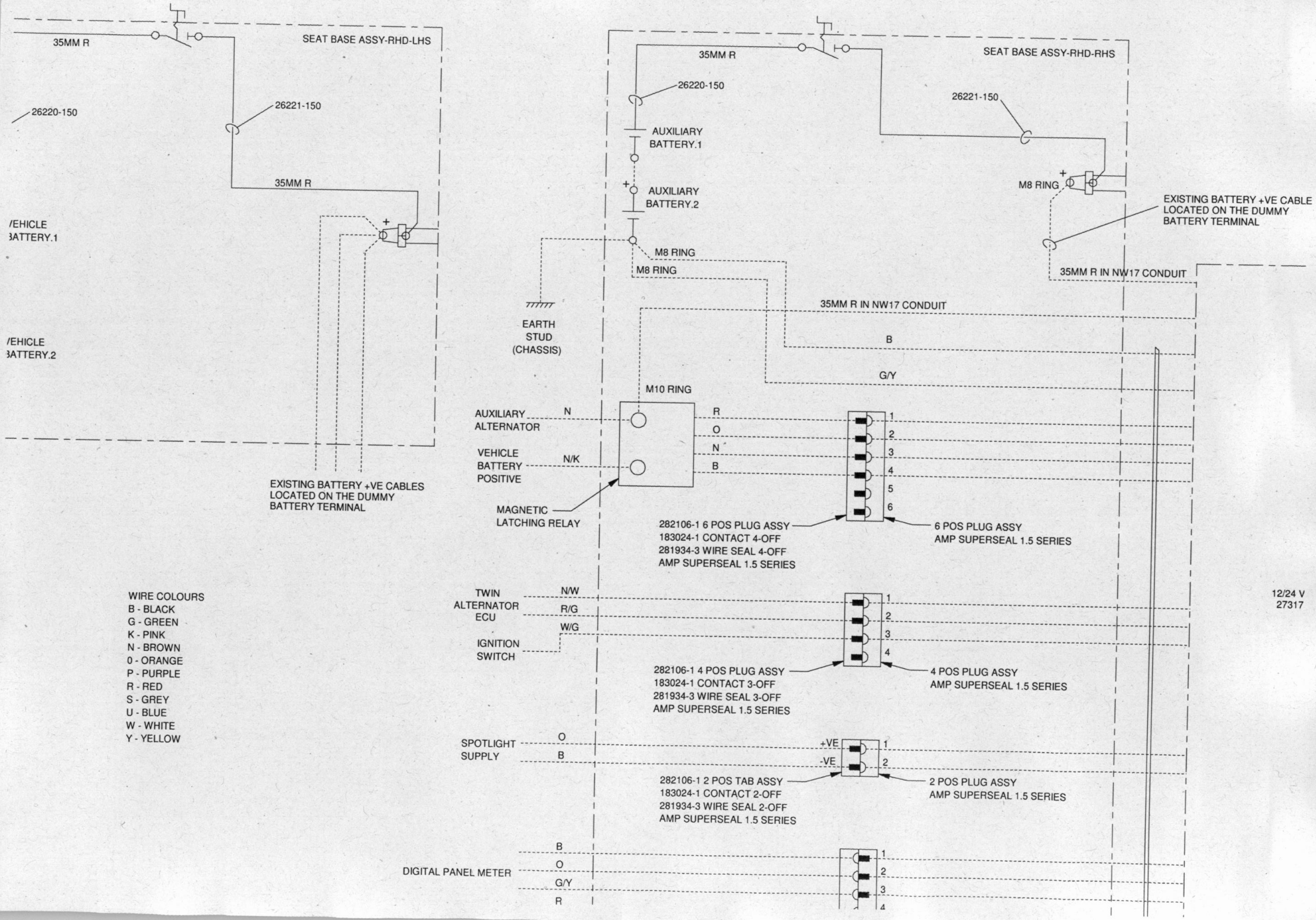
When fitted into the vehicle, the battery cable terminals should be torque tightened to 6.8 Nm (Table 1, Ser 2) onto the battery terminals and then coated with light grease (Item 19).

27 A new vehicle and aux battery schematic is shown in (Fig 13) as an aid when connecting the AUX BATTERY ISOLATOR switch and cables.

Key for Fig 12

1 Aux battery +ve (charging cable)
2 Aux battery -ve to chassis -ve (earth cable)
3 Cable – battery isolator switch to dummy battery post
4 AUX BATTERY ISOLATOR switch
5 Cable – battery isolator switch to aux battery (+ve)
6 Dummy battery post
7 Battery clamp nut
8 RH seat base
9 Pop rivet
10 AUX BATTERY ISOLATOR label
11 Bolt, M5 x 25, hex hd
12 Washer, M5, plain, form A
13 Nut, M5, nyloc
14 Washer, M10, spring
15 Nut, M10, plain


+
-
+
-
3
4
A
ON
OFF
ON
OFF
6
1
7
2
3
8
9
AUX
BATTERY
ISOLATOR
10
12
11


35MM R
SEAT BASE ASSY-RHD-LHS
26220-150
26221-150
35MM R
/EHICLE
3ATTERY.1
/EHICLE
3ATTERY.2
EXISTING BATTERY +VE CABLES
LOCATED ON THE DUMMY
BATTERY TERMINAL
35MM R
SEAT BASE ASSY-RHD-RHS
26220-150
26221-150
AUXILIARY
BATTERY.1
AUXILIARY
BATTERY.2
M8 RING
M8 RING
EXISTING BATTERY +VE CABLE
LOCATED ON THE DUMMY
BATTERY TERMINAL
35MM R IN NW17 CONDUIT
35MM R IN NW17 CONDUIT
EARTH
STUD
(CHASSIS)
B
G/Y
M10 RING
AUXILIARY
ALTERNATOR
N
VEHICLE
BATTERY
POSITIVE
N/K
MAGNETIC
LATCHING RELAY
R
O
N
B
1
2
3
4
5
6
282106-1 6 POS PLUG ASSY
183024-1 CONTACT 4-OFF
281934-3 WIRE SEAL 4-OFF
AMP SUPERSEAL 1.5 SERIES
6 POS PLUG ASSY
AMP SUPERSEAL 1.5 SERIES
WIRE COLOURS
B - BLACK
G - GREEN
K - PINK
N - BROWN
0 - ORANGE
P - PURPLE
R - RED
S - GREY
U - BLUE
W - WHITE
Y - YELLOW
TWIN
ALTERNATOR
ECU
IGNITION
SWITCH
N/W
R/G
W/G
1
2
3
4
282106-1 4 POS PLUG ASSY
183024-1 CONTACT 3-OFF
281934-3 WIRE SEAL 3-OFF
AMP SUPERSEAL 1.5 SERIES
4 POS PLUG ASSY
AMP SUPERSEAL 1.5 SERIES
12/24 V
27317
SPOTLIGHT
SUPPLY
O
B
+VE
-VE
1
2
282106-1 2 POS TAB ASSY
183024-1 CONTACT 2-OFF
281934-3 WIRE SEAL 2-OFF
AMP SUPERSEAL 1.5 SERIES
2 POS PLUG ASSY
AMP SUPERSEAL 1.5 SERIES
DIGITAL PANEL METER
B
O
G/Y
R
1
2
3
4

FRONT SEAT REPLACEMENT

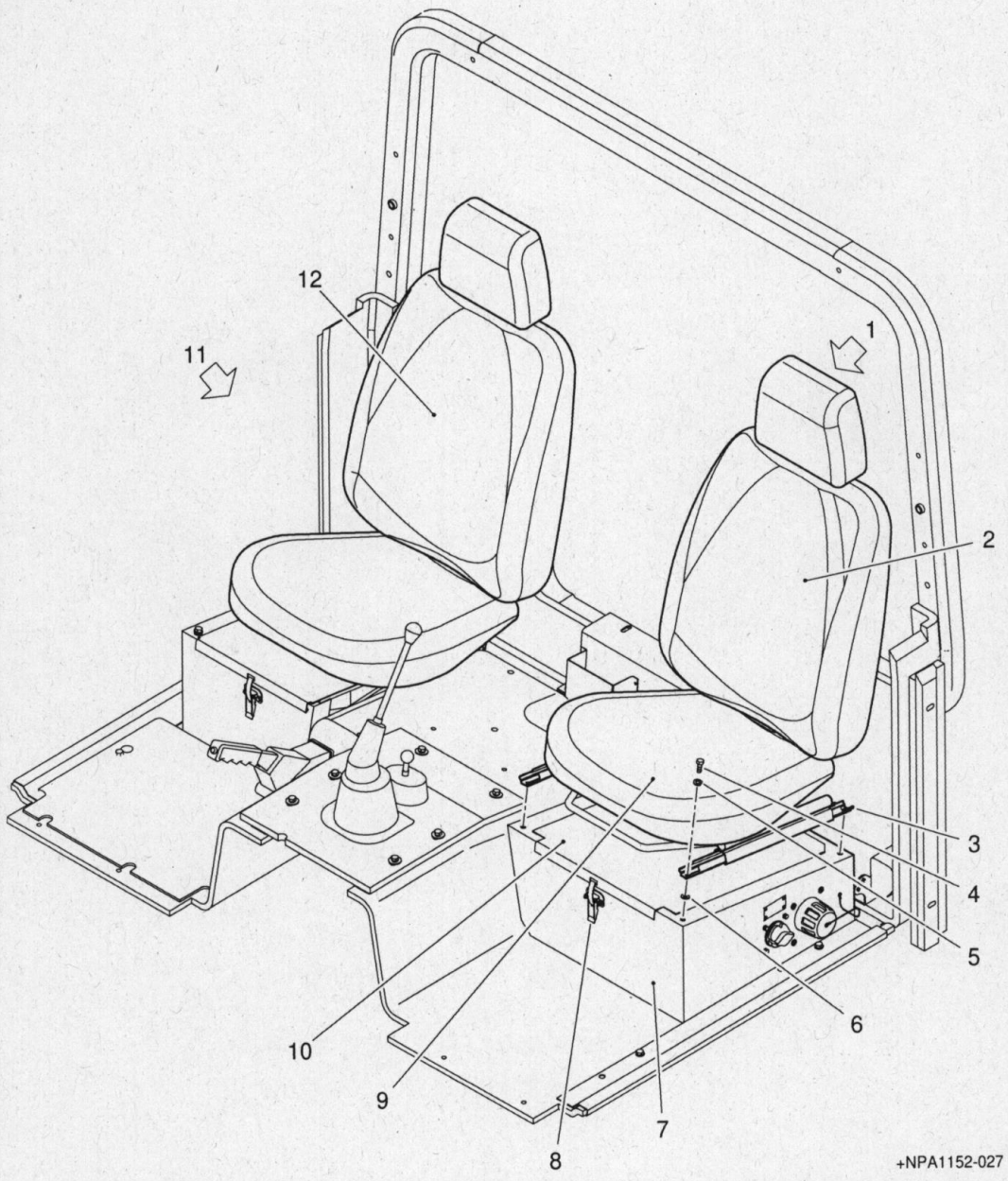
29 To refit the LH seat assembly (Fig 14(1)) onto the LH seat base (7) proceed as follows:

29.1 Slide the seat base cover (10) into position and secure using the LH seat base latch (8).

29.2 Lift the LH seat assembly onto the LH seat base and secure in position using the four mounting screws (4), replacement spring washers (5) and seat spacer washers (6) through the seat rail (3) and LH seat base.

29.3 Refit the seat cushion (8).

30 To refit the RH seat assembly (12) onto the RH seat base, carry out the same procedure as detailed above.



1	LH seat assembly	5	Spring washers	9	Seat cushion
2	Seat back	6	Seat spacer washer	10	Seat base cover
3	Seat rail	7	LH Seat base	11	Vehicle cab
4	Mounting screws	8	Latch	12	RH seat assembly

Fig 14 LH and RH front seat assemblies

TESTING AFTER EMBODIMENT

31 Carry out the following task:

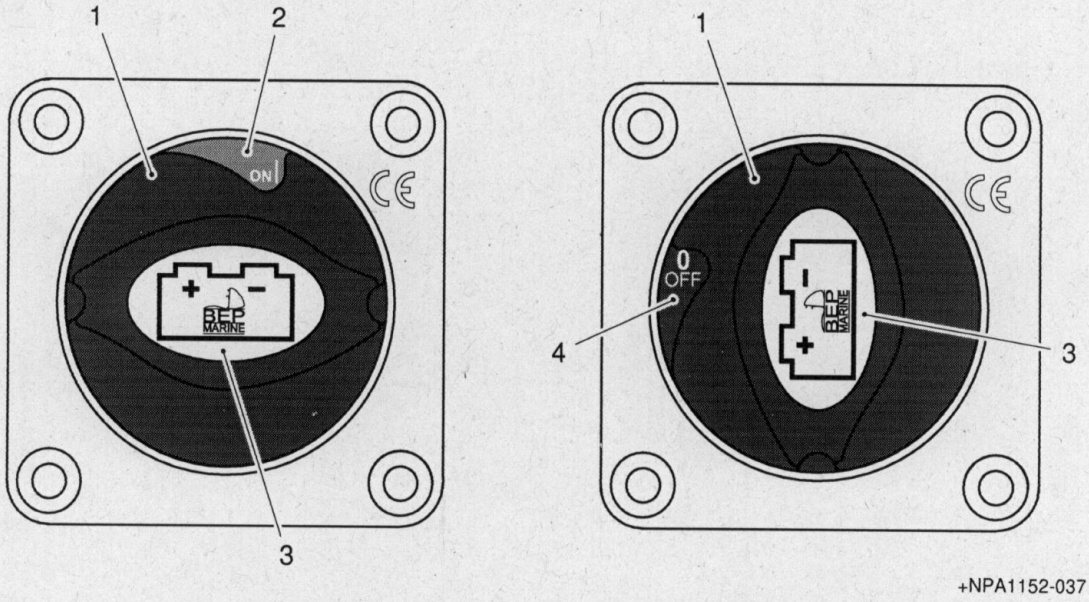
31.1 Check the seats are secure and free to adjust.

31.2 Check the correct operation of the battery isolator switch as follows:

31.2.1 Switching ON: To switch the battery isolator switch (Fig 15(1)), to the ON position (2), rotate the switch clockwise 90 degrees. A green marker becomes fully visible at the top of the battery isolator switch and the battery logo (3) lies horizontally.

31.2.2 Switching OFF: To switch the battery isolator switch (Fig 15(1)), to the OFF position (4), rotate the switch counter-clockwise 90 degrees. A red marker becomes fully visible to the left of the battery isolator switch and the battery logo (3) lies vertically.

31.2.3 Check correct operation of electrical system.



1 battery isolator switch
2 ON position
3 Battery logo
4 OFF position

Fig 15 VEHICLE and AUX BATTERY ISOLATOR switch

EFFECT ON WEIGHT

32 Negligible.

PUBLICATION AMENDMENTS

33 Necessary AESP publication amendments will be issued separately.