TRUCK, SURVEILLANCE RECONNAISSANCE VEHICLE (SRV-SF), LIGHTWEIGHT, FFR, W/WINCH, MC2, LAND ROVER 110, 4X4, ISUZU DIESEL ENGINE

FITTING INSTRUCTION FOR THE ARB CKMA12 AIR COMPRESSOR

MODIFICATION INSTRUCTION

This instruction is authorised for use by command of the Chief of Army. It provides direction, mandatory controls and procedures for the operation, maintenance and support of equipment. Personnel are to carry out any action required by this instruction in accordance with EMEI General A 001.

INTRODUCTION

1. This instruction details the replacement of the current in-Service air compressor (ARB RDCKA).

2. Associated Publications. Reference may be necessary to the latest issue of the following documents:

a. Technical Regulation of Army Materiel Manual - Land (TRAMM - L) (available from DTR-A website http://intranet.defence.gov.au/armyweb/Sites/DTRA);

b. TRAMM, Volume 3, Section 2, Chapter 2, Fleet Engineering Change Management Process;

c. Electronic Supply Chain Manual (ESCM), Volume 4, Section 3 – Supply Management Processes, Stores Accounting General;

d. ESCM, Volume 6 – Manage Repairable Items;

e. EMEI Vehicle G 17 Decade – Truck, Surveillance Reconnaissance Vehicle (SRV-SF), Lightweight, FFR, W/Winch, MC2, Land Rover 110, 4X4, Isuzu Diesel Engine; and

f. Repair Parts Scale 02256 - Truck, Surveillance Reconnaissance Vehicle (SRV), Special Forces (SF), Lightweight, W/Winch, MC2, Land Rover 110, 4X4, Isuzu Diesel Engine, Low Profile Heavy Weapon Mounting System.

3. Authority. EC-003509 is the authority to carry out this modification.

4. Standard Job. MMM Standard Job Number 006551 has been raised for the implementation of this modification.

GENERAL

5. Modification Application. This modification is to be applied to stock on issue to units and stock held in depot or pool stock.

6. Items Affected. This modification will alter the air compressor electrical wiring loom including fuses and switches.

7. Priority – Group 2. All applicable equipment is to be modified:

a. when next in a workshop for Light, Medium or Heavy Repair; or

b. prior to issue from depot or pool stock.

NOTE

Where modification would delay priority issues of depot or pool stock, equipment may be issued unmodified providing the equipment record book is endorsed appropriately.

8. Action Required. Actions detailed in this instruction are to be performed by technical maintenance organisations authorised to carry out Light, Medium or Heavy Grade Repairs by the following:

a. Vehicle Mechanic ECN 229,

b. Technician Electrical ECN 418, or

c. civilian equivalent.

NOTE

On receipt of this instruction, enter all relevant information other than date completed in the modifications section of the GM 120 – Record Book for Service Equipment.

9. Task Recording. The incorporation of this modification is to be recorded in an SDSS Work Order using MMM Standard Job Number 006551.

10. Estimated Work Hours. For initial planning purposes only, it is estimated that this modification will take 3.0 work hours to perform.

11. Stores Required. The stores required are supplied as a kit catalogued as NSN 4310-66-157-3537. The contents of the kit are listed in Table 1. Any stores not supplied in the kit are to be demanded through normal supply channels.

Table 1 Kit Contents – NSN 4310-66-157-3537

Item	NIIN	Mfr Part No	Designation or Description	Qty Per Equip
1	66-156-7527	171301	Pump up extension kit	1
2	66-156-7528	180209	Isolating switch (12 V)	1
3	66-156-7529	180212	Switch cover (compressor)	1
4	66-156-7530	CKMA12	High output on-board air compressor (C/W CKMA12 mounting bracket)	1
5	66-156-7532	CO35	Pressure switch (1/4 in NPT)	1
6	66-156-7533	CO42	Relay (12 V 40 A)	1
7		#LV TEFLON TAPE	Teflon tape	1
8		IHCWM010-16	10-16 mm mild steel worm drive clamp solid band	2
9		IHCWM08-12	8-12 mm mild steel worm drive clamp solid band	2
10		Z02027-04	Nipple 1/4 in NPT male / male	1
11		Z02035-04	Tee piece 1/4 in NPT female	1
12		Z06010-0504	Female 1/4 in NPT X 5⁄16 in tailpiece	1
13		Z06103-0504	1/4 in NPT male X 5⁄16 in barb	1
14		Z06103-0604	1/4 in NPT male X 3/8 in barb	1
15	66-161-2748	DE253080003	Upgraded Wiring Loom (Version 2) CKMA12 air compressor	1
16	66-128-4515	MYH5295	Hose, Nonmetallic, Rubber, 8 mm Id, 18 mm od 500 lg	1
17		MAX 30	Fuse (30 A) Spaded – MAXI FUSE	1
18	99-122-5295		Nut, Plain, Hexagon, Steel, 6 mm, Zinc Plt	11
19	99-122-5360		Screw, Cap, Hexagon Head, ISO M, 8g Steel, Galv Finish, M6, 16 mm lg	3
20	99-122-5361		Screw, Cap, Hexagon Head, ISO Metric, Steel, Zinc Coated, 6 mm Dia, 20 mm lg	8
21	99-122-6474		Washer, Flat, Steel, Rd, Steel, Zinc Plated, 6 mm nom Bolt Size, 12.50 mm od, 1.60 mm thk	18
22	99-208-6458		Washer, Lock, Steel, Single Turn, Zinc Coated, 6 mm Bolt Size, 11.7 mm od, 1.7 mm thk	11
23		10006503-01	Socket, male, threaded, BSPT, 025 in	1
24		15011113	Bracket, air compressor, steel, 2 mm thk	1

12. Items to be Removed. Items to be removed are listed in Table 2. All items removed are to be processed in accordance with ESCM.

Table 2 Items to be Removed

Item	Mfr Part No	Designation or Description	Qty per Equip
1	RDCKA	Air compressor modified	1

DETAIL

Compressor Removal

13. Remove the compressor as follows:

a. Disconnect both the 12 V vehicle batteries on the passenger side tool box of the SRV.

b. Disconnect all hoses and electrical connections (plugs and sockets) from the compressor and mounting bracket.

c. Remove the existing ARB RDCKA air compressor from the bracket which is mounted in the engine bay on the right-hand side wheel well.

d. Remove the ARB RDCKA air compressor outlet hose and replace it with a high-temperature hose (Item 1, Table 1). This is due to the high airflow output from the ARB CKMA12 air compressor creating large amounts of heat.

e. Discard the stores no longer required in accordance with Para 2.c.

Compressor Installation

14. Install the replacement air compressor (ARB CKMA12) as follows:

a. Remove the mounting bracket (Figure 1) from the ARB CKMA12 air compressor.

b. Fasten the mounting bracket to the engine bay bracket (Figure 1) using the same mounting points as the ARB RDCKA air compressor with four M6 x 20 mm bolts with a flat washer either side and a spring washer on the nut side.

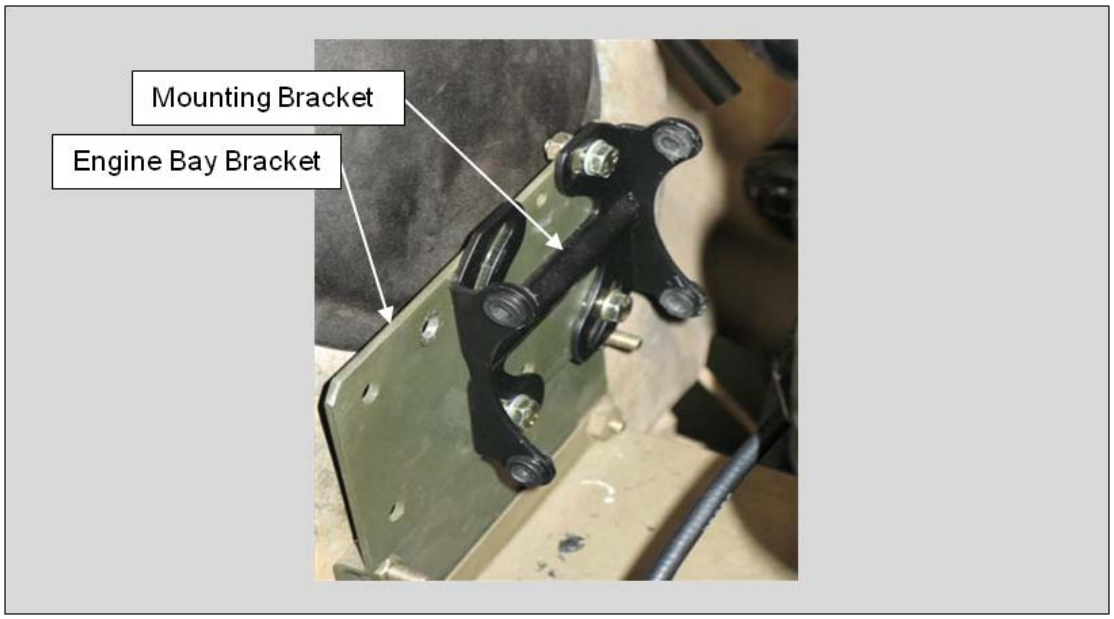

Figure 1 Engine Bay Bracket and ARB CKMA12 Air Compressor Mounting Bracket

NOTE

Use thread sealant on brass fittings or Teflon tape as supplied.

c. Install all the brass fittings to the compressor before fastening it to the mounting bracket as follows (Figure 2):

(1) Attach the 3/8 inch brass barb fitting to the ARB CKMA12 air compressor in the inlet port.

(2) Attach the brass 1/4 inch NPT nipple into the bottom of the brass T piece.

NOTE

Do not over-tighten the nipple into the compressor as it could crack the housing.

(3) Attach the T piece with a nipple into the outlet port on the compressor. Ensure that the T piece is positioned horizontally to the length of the compressor.

(4) Attach the 5/16 inch brass barb fitting into the T piece facing towards the piston end of the compressor.

(5) Attach the pressure switch into the remaining end of the T piece.

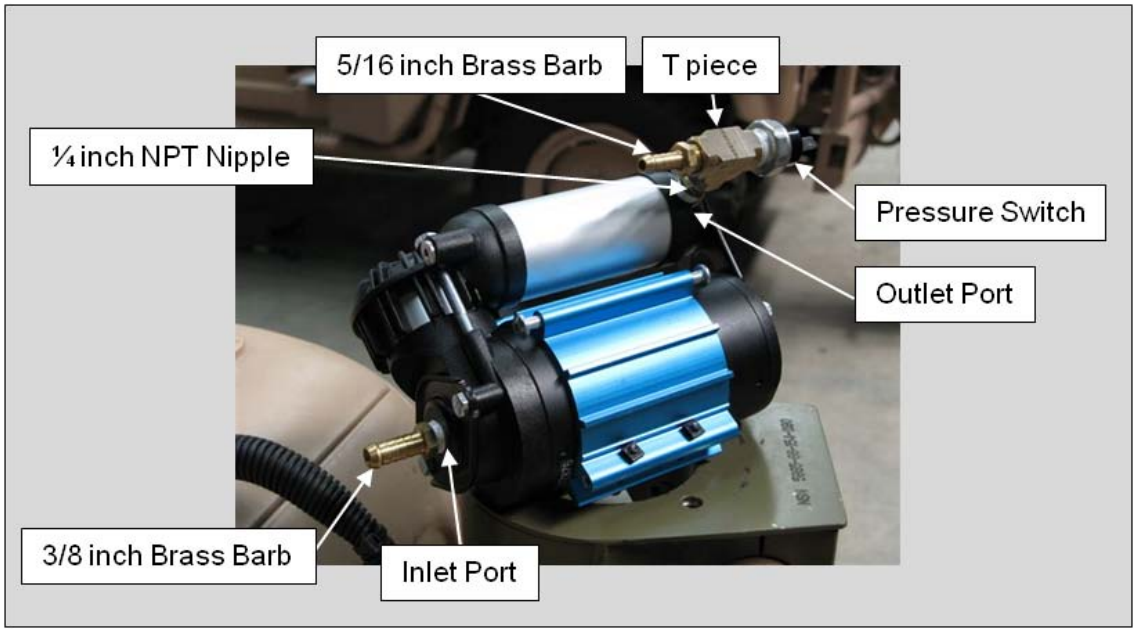

Figure 2 ARB CKMA12 Compressor with Brass Fittings

15. Loosen the two cap-screws used to clamp the compressor mount (Figure 3).

Figure 3 Compressor Clamp Bolts

16. Mount the compressor onto the mounting bracket, by attaching the bottom bolts first with the compressor leaning towards the centre of the vehicle (Figure 4).

Figure 4 Compressor Mounting

17. Position the compressor as shown in Figure 5 and then retighten the clamp bolts.

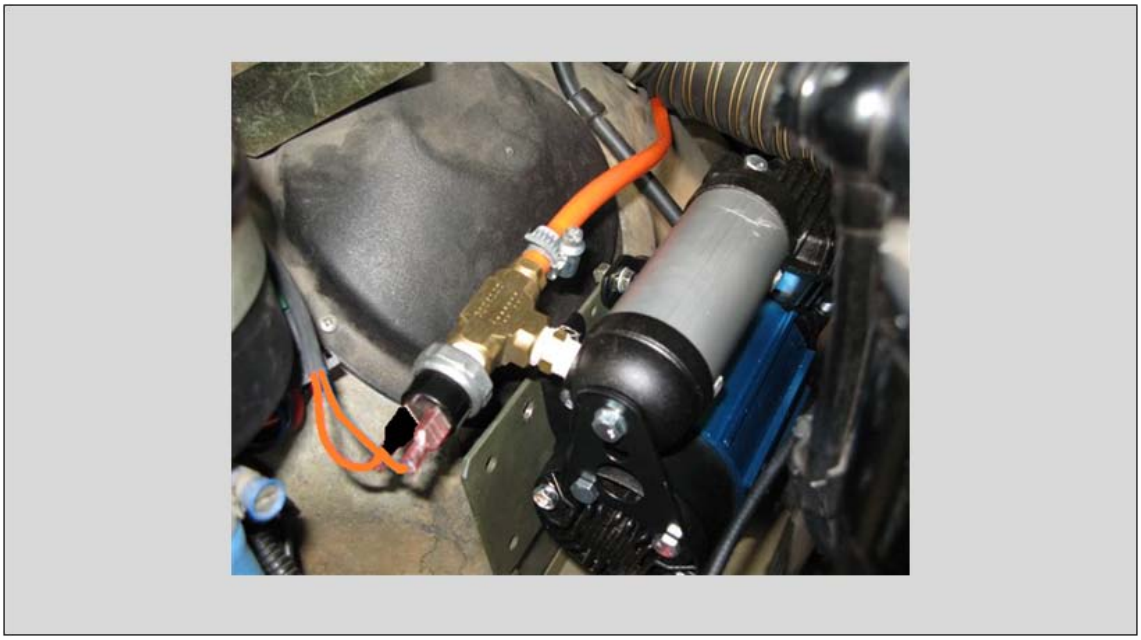

Figure 5 Compressor Positioning

NOTE

If experiencing difficulty heat the hose in hot water before attaching onto the 3/8 inch brass barb. Ensure that a 10 to 16 mm hose clamp is put onto the hose before attaching to the brass barb.

18. Attach the inlet hose to the 3/8 inch brass barb fitting on the air compressor (Figure 2).

19. Route the high temperature hose around the engine bay as shown in Figure 6.

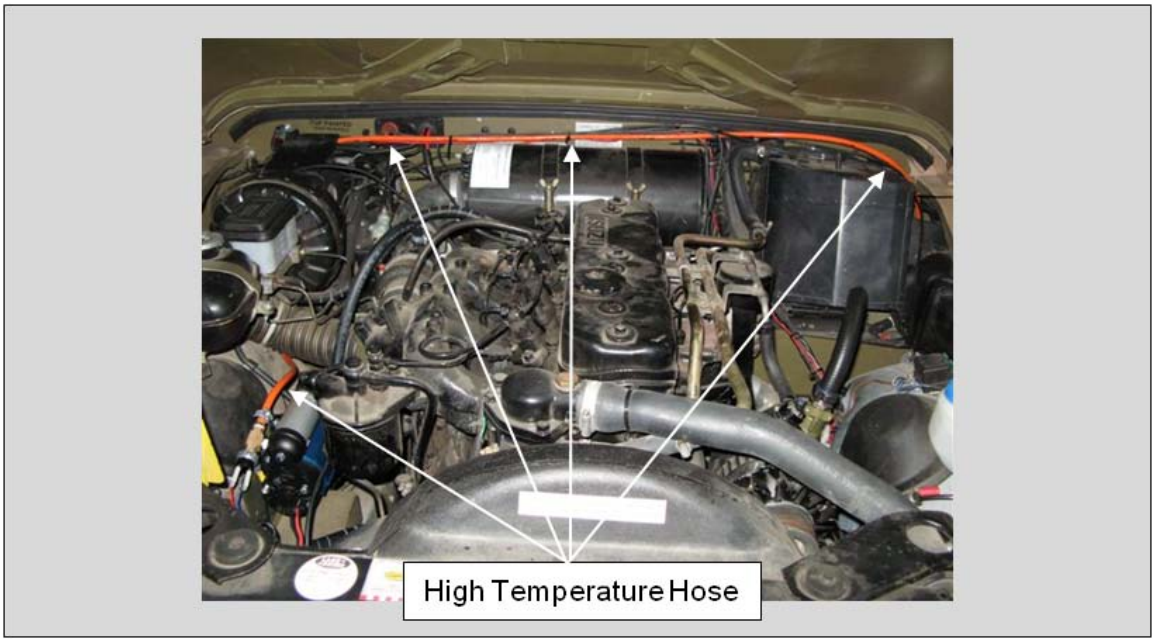

Figure 6 High Temperature Hose Routing Configuration

NOTE

If experiencing difficulty, heat the hose in hot water before attaching onto the 5/16 inch brass barb. Ensure that a 8 to 12 mm hose clamp is positioned on the hose before attaching the hose onto the brass barb.

20. Attach the high temperature hose to the compressor outlet port (Figure 2).

NOTE

Ensure that a 8 to 12 mm hose clamp is positioned on the hose before attaching the hose onto the brass barb.

21. Attach a 5/16 inch brass barb with a 1/4 inch BSPT female fitting to the remaining end of the high-temperature hose (Figure 7).

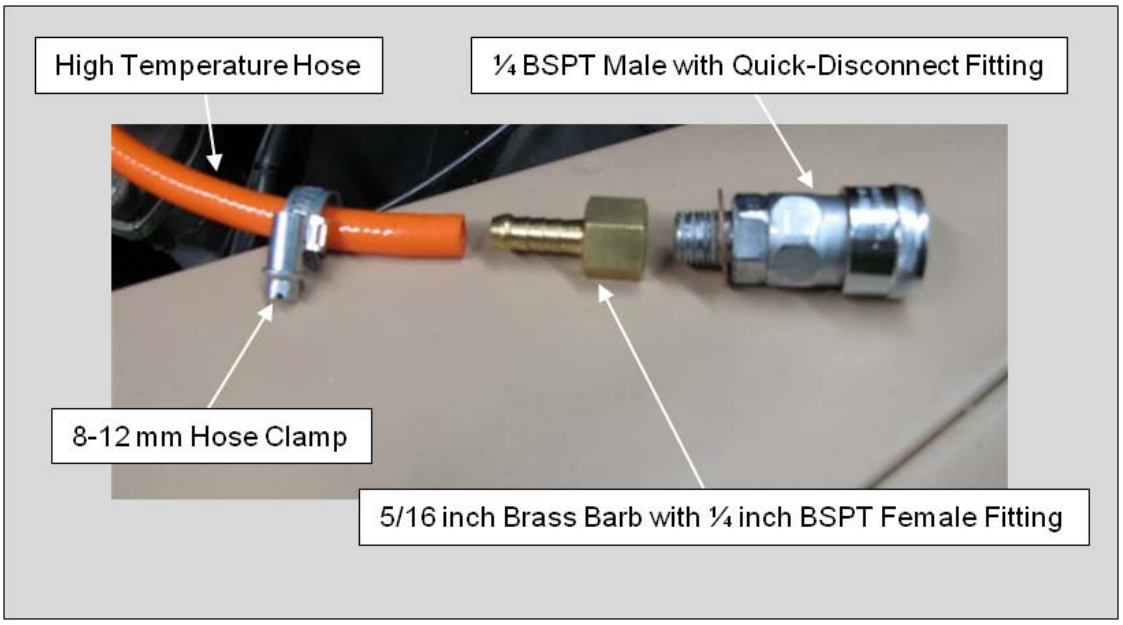

Figure 7 5/16 Inch Brass Barb with a 1/4 Inch BSPT Female Fitting

NOTE

Ensure that the high-temperature hose is not twisted or damaged during the following process.

22. Screw the existing quick-disconnect fitting on the firewall passenger side (Figure 8), to the 1/4 inch BSPT female end of the high-temperature hose (Figure 7).

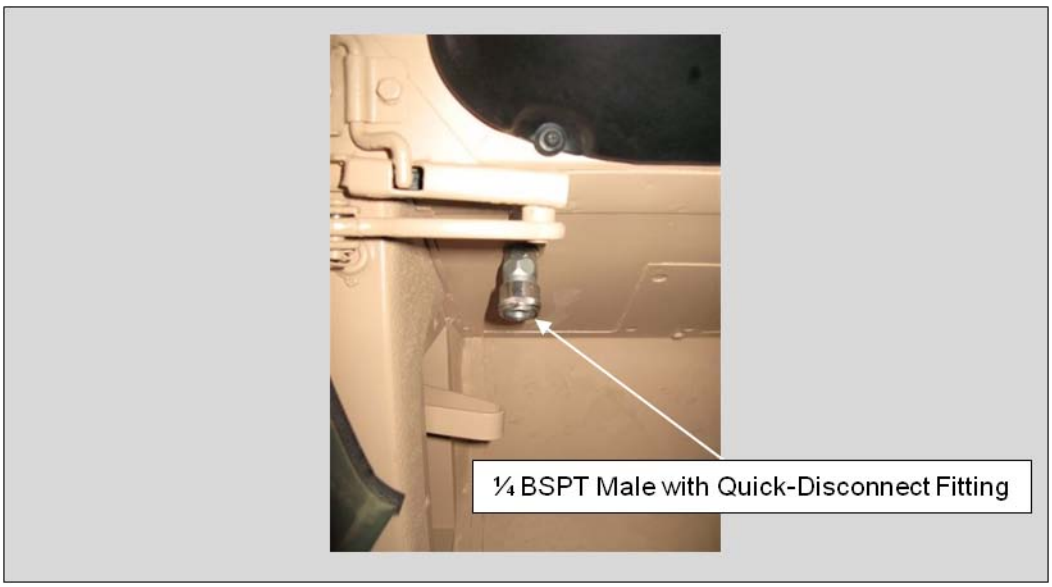

Figure 8 Quick-disconnect Fitting

WIRING LOOM REPLACEMENT

ARB RDCKA Wiring Loom Removal

23. Remove the existing ARB RDCKA air compressor wiring loom as follows:

a. Disconnect all 12 V vehicle batteries.

b. Locate the loom positive terminal (battery/starter motor).

c. Disconnect the cable at the terminal.

d. Disconnect the speedometer cable at the transponder (Figure 9).

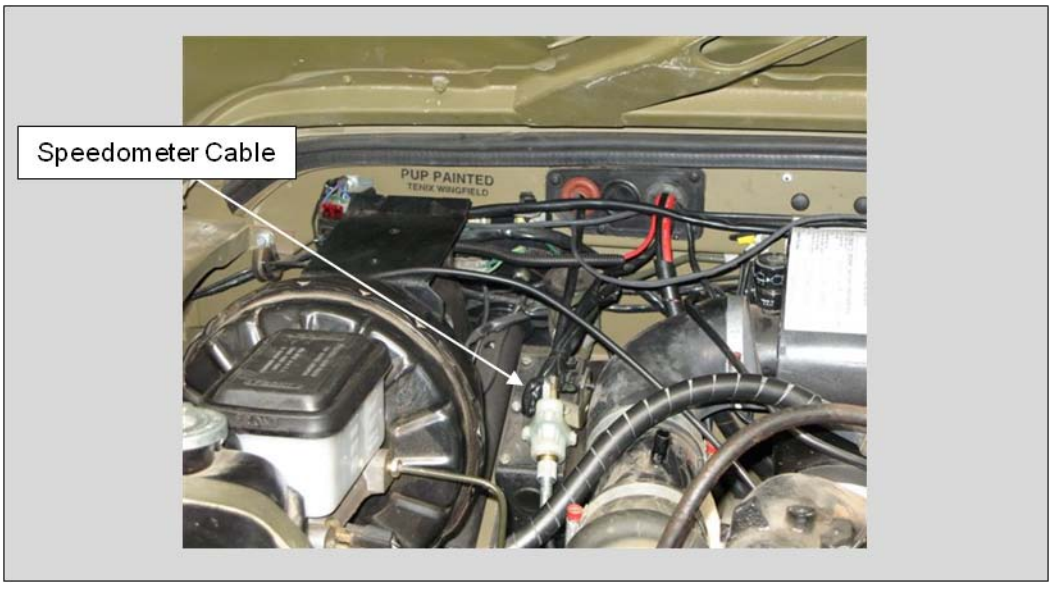

Figure 9 Speedometer Cable

NOTE

There may be a requirement to partially remove the compass to gain access to the dash fasteners.

e. Partially remove the dash instrument panel by removing the four dash screws, two either side of the dash (Figure 10).

Figure 10 Partially Removed Dash

f. Partially remove the compressor switch panel (Figure 11).

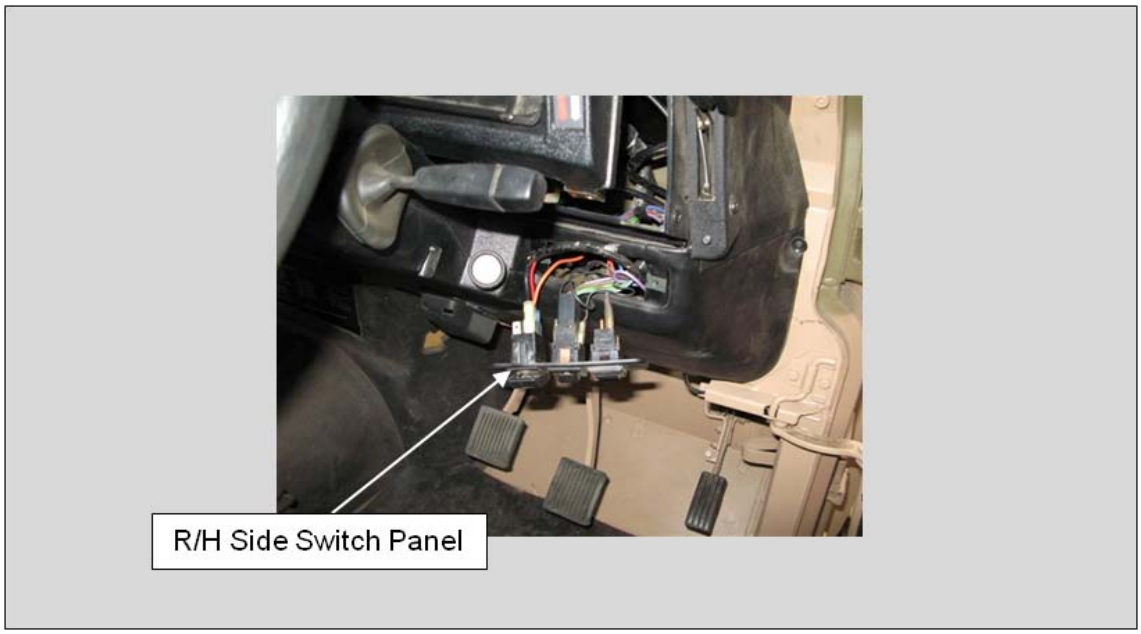

Figure 11 Compressor Switch Panel

g. Remove the two quick connects from the ARB compressor switch.

NOTE

It may be necessary to remove fitted cable ties or tape which secure the loom in place before withdrawing the wiring loom from the vehicle.

h. Withdraw the compressor wiring loom through the fire wall being careful not to damage other electrical wiring in the vicinity.

i. Withdraw the loom from the engine bay.

j. Discard the stores no longer required in accordance with Para 2.c.

Drawings Required

24. A CKMA12 air compressor wiring diagram is shown in Figure 12.

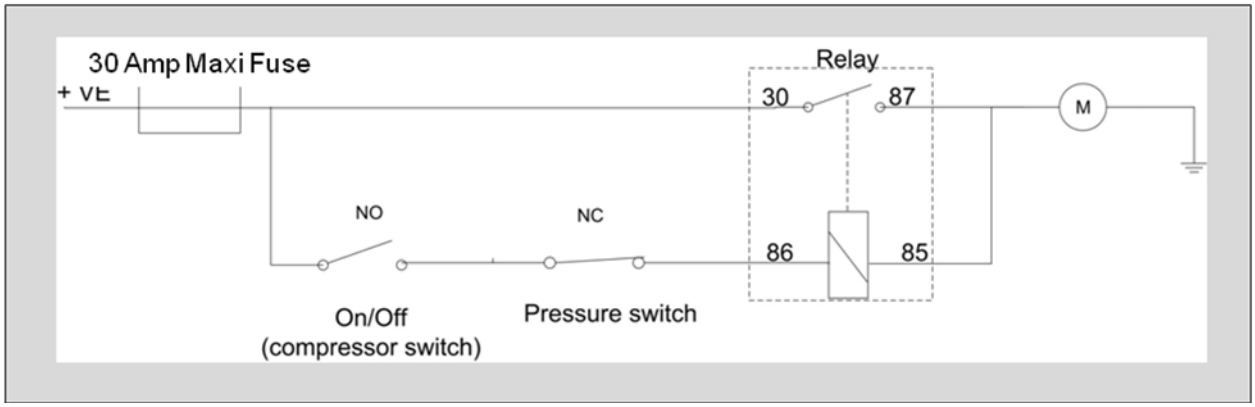

Figure 12 Ckma12 Air Compressor Wiring Diagram.

CKMA12 Wiring Loom Installation

25. Install the new wiring loom as follows:

a. Route the compressor wiring loom in the engine bay as shown in Figure 13.

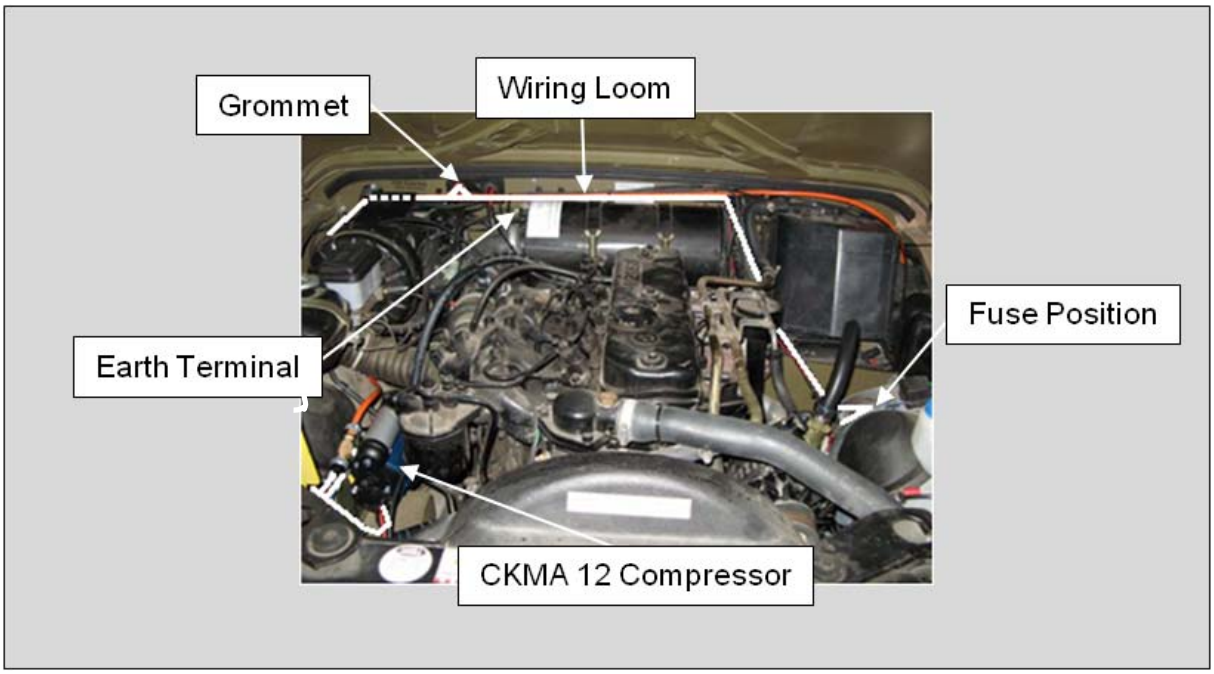

Figure 13 Engine Bay Wiring Loom

b. Attach the red power terminal to the starter motor as shown in Figure 14.

Figure 14 Starter Motor Terminal

c. Fuse Holder. Install the fuse holder as follows:

(1) Using the 30 Amp Maxi Fuse holder mounting plate as a guide, mark two holes on the passenger side wheel well in the locations shown in Figure 15.

(2) Drill the two holes using a 6 mm drill.

(3) Attach the fuse holder mounting plate with M6 x 15 mm bolts with a flat washer either side of the wheel well and spring washer on the nut side (the nut will be on the outside of the vehicle).

(4) Secure the 30 Amp Maxi Fuse holder to the mounting plate.

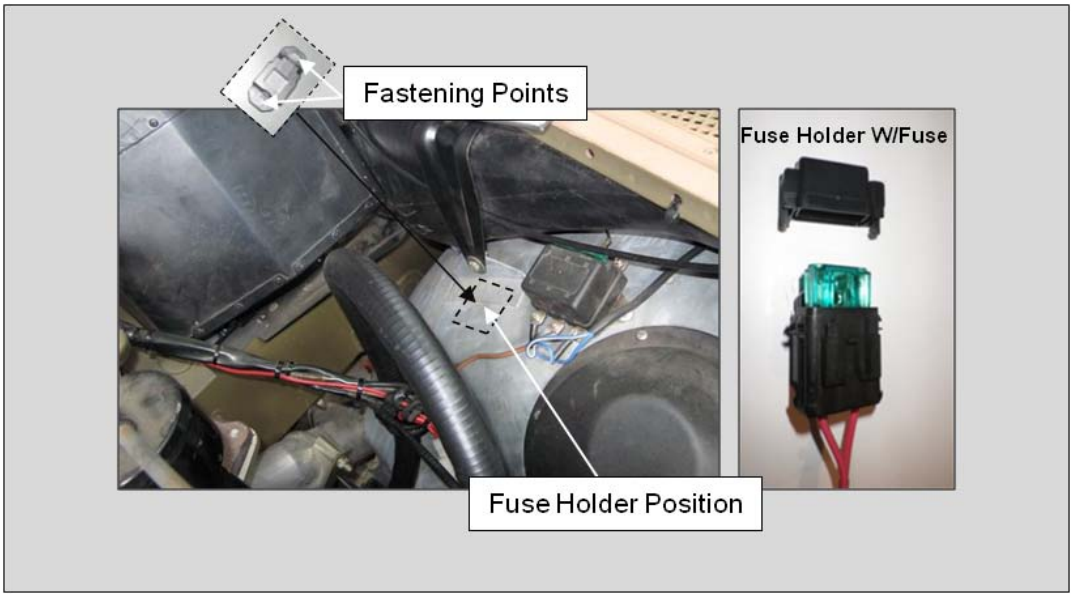

Figure 15 Fuse Holder Position

d. Earth Connector. Trace the loom back to the earth connector and terminate the earth wire at the position on the fire wall shown in Figure16.

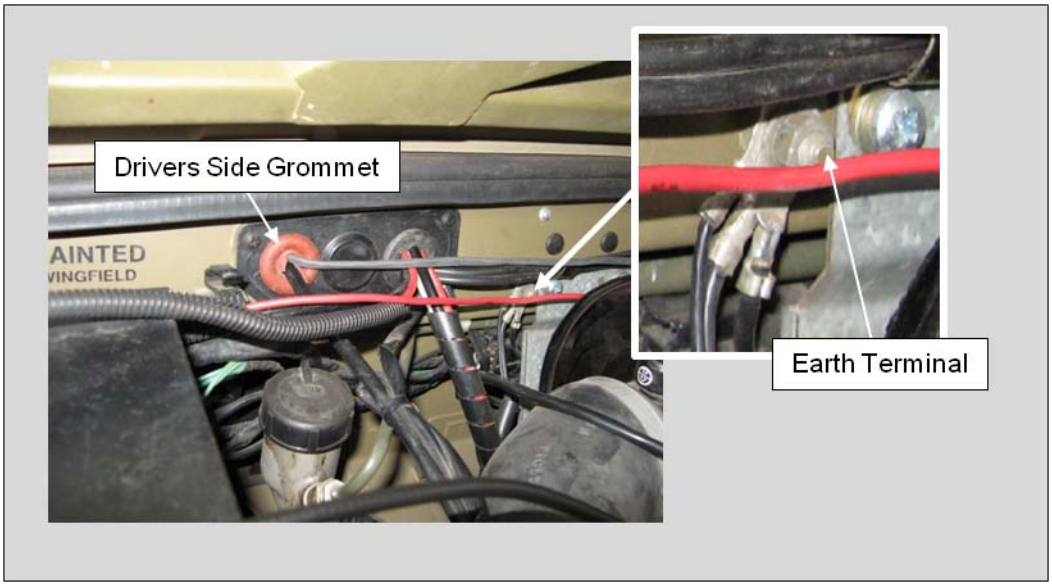

Figure 16 Earth Termination

e. Relay. Install the relay as follows:

(1) Drill a hole using a 6 mm drill in the driver's side wheel well as shown in Figure17.

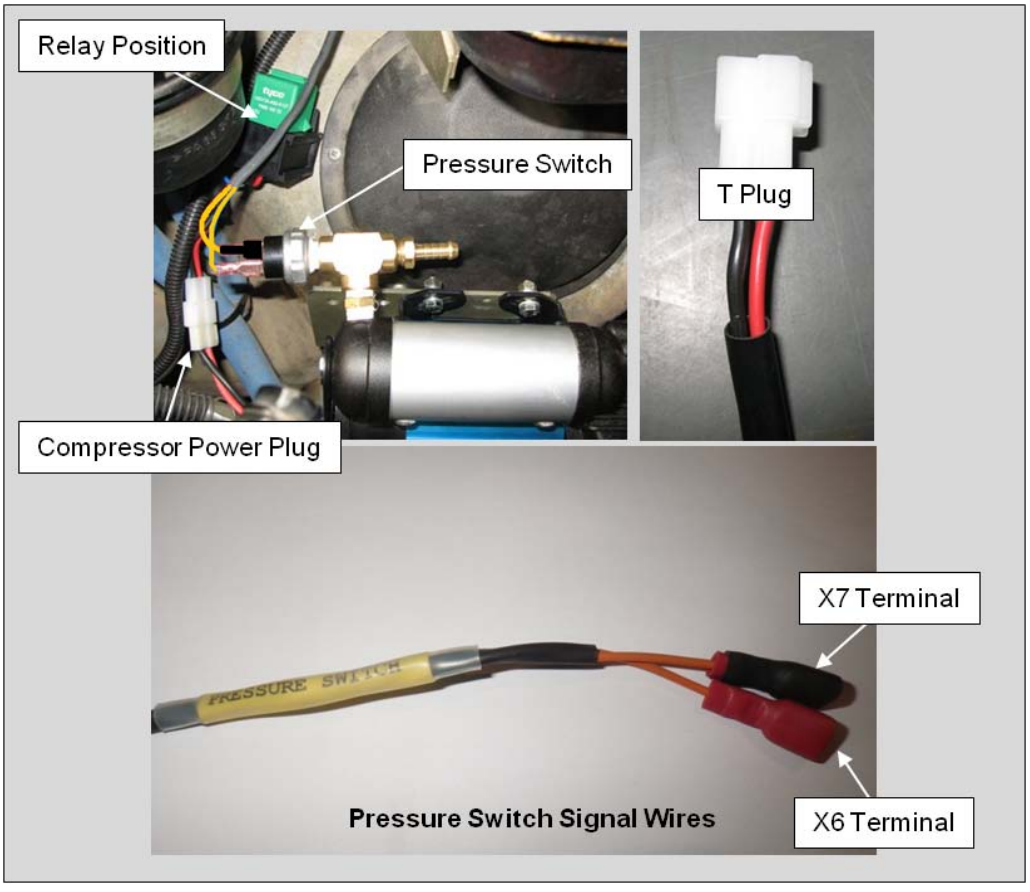

Figure 17 Compressor Electrical Connections

(2) Attach and secure the relay with an M6 x 15 mm bolt with a flat washer either side of the wheel well and a spring washer on the nut side (the nut will be on the outside of the vehicle).

(3) Attach the T plug (male) to the compressor power plug.

NOTE

The X7 and X6 terminal signal wires can go on either spade connection on the pressure switch.

(4) Attach the X7 and X6 terminal signal wires to the pressure switch (Figure 17).

f. Compressor Dash Switch. Route the On/Off (X1 and X2 terminals) signal wires through the firewall driver's side grommet (Figure 18).

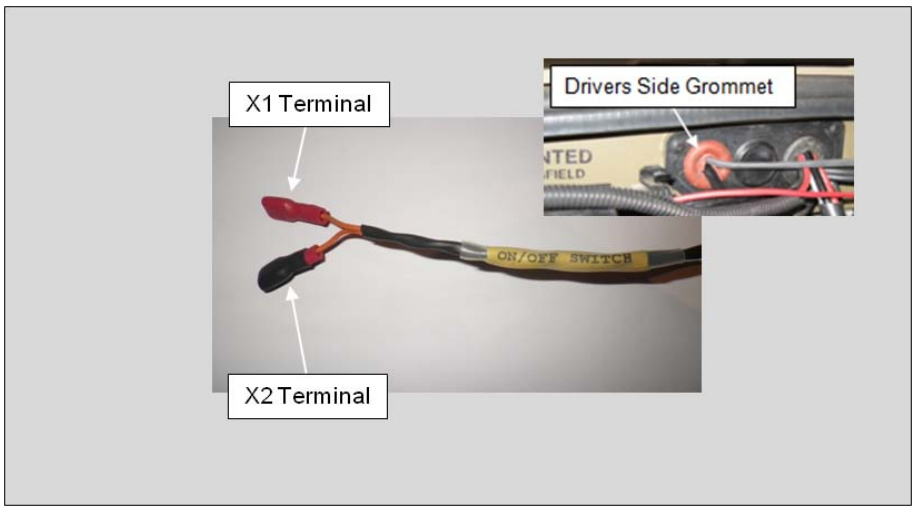

Figure 18 On/Off Signal Wires

NOTE

Ensure that the On/Off signal wires are routed underneath the cross bar (Figure19).

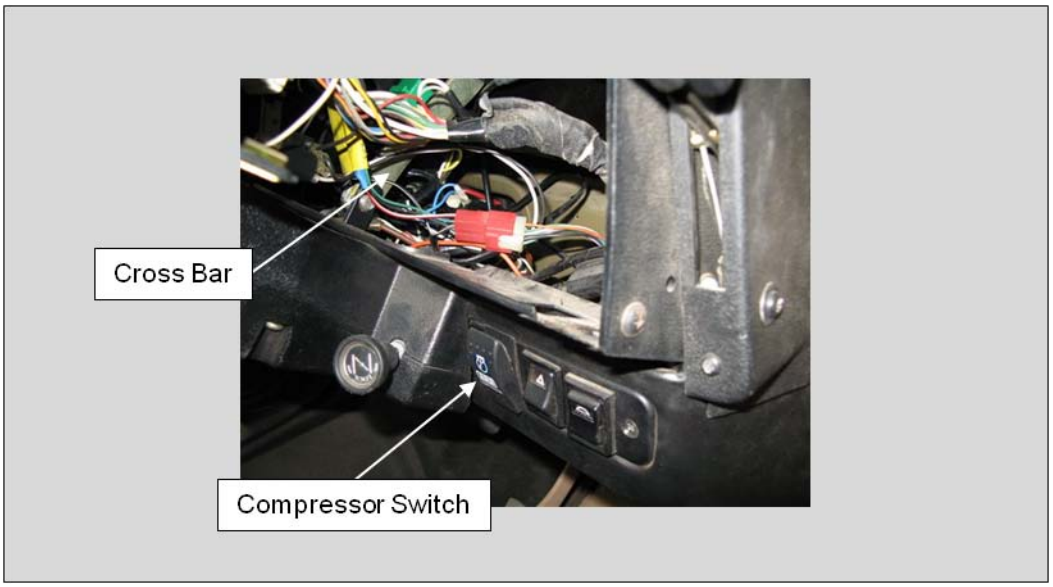

Figure 19 Dash Wiring

NOTE

If an ignition wire exists on the air compressor switch, isolate it by connecting it to the top connection (A) opposite the X2 terminal on the air compressor switch, as shown in Figure 20.

This is the preferred method to isolate this wire as the terminal on the air compressor switch is an open circuit. This removes the possibility of wire strikes with other electrical wires or the chassis.

g. Connect the On/Off signal wires to the compressor switch, as shown in Figure 20.

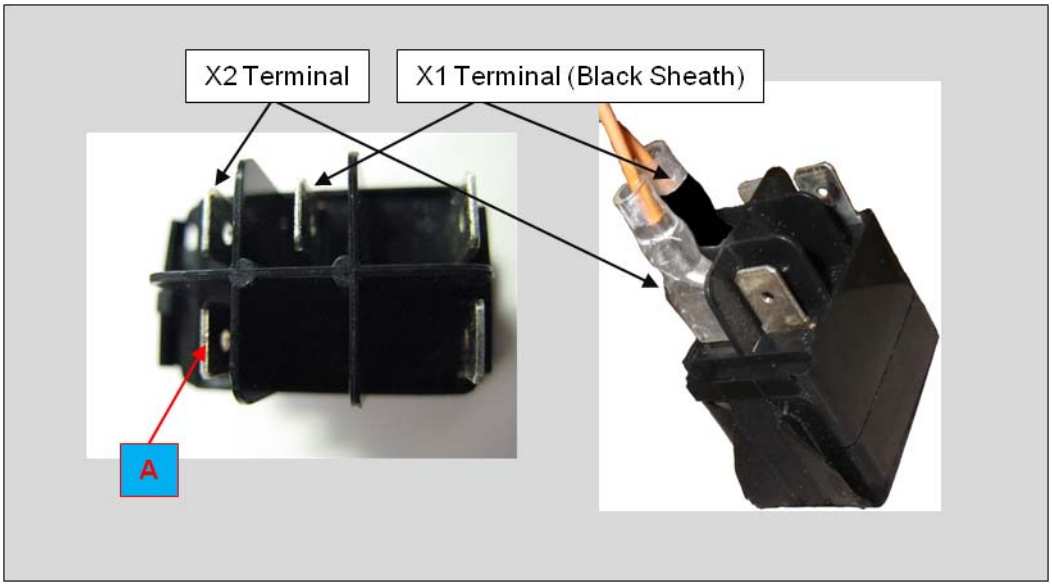

Figure 20 Compressor On/Off Switch on Dash

h. Reconnect the dash instrument panel (and compass if removed).

i. Reconnect the speedometer cable to the transponder.

j. Secure the wiring loom, hoses and electrical connections into position using cable ties or suitable fasteners.

26. Reconnect the vehicle batteries in the engine bay.

System Test

27. Test the compressor system by turning on the compressor switch. The compressor should turn off within 10 seconds when it reaches the pressure switch limits.

28. Ensure that there are no leaks in the system.

29. Turn off the compressor switch.

Recording Action

30. On completion of the modification, the following action is to be taken in accordance with The TRAMM, Volume 3, Section 2, Chapter 2 Annex D:

a. Deface the numbers 40 and 34 on the equipment modification record plate.

b. Complete the modification details in the GM 120 – Record Book for Service Equipment.

c. Record the modification in an SDSS Work Order using MMM Standard Job Number 006551.

d. Enter the modification details (for modification strike record No) in MILIS MSE600 via the Reference Codes Tab.

END

(Sponsor: CGSVSPO, Lt B Veh)
(Authority: CGSVSPO EC-003509)