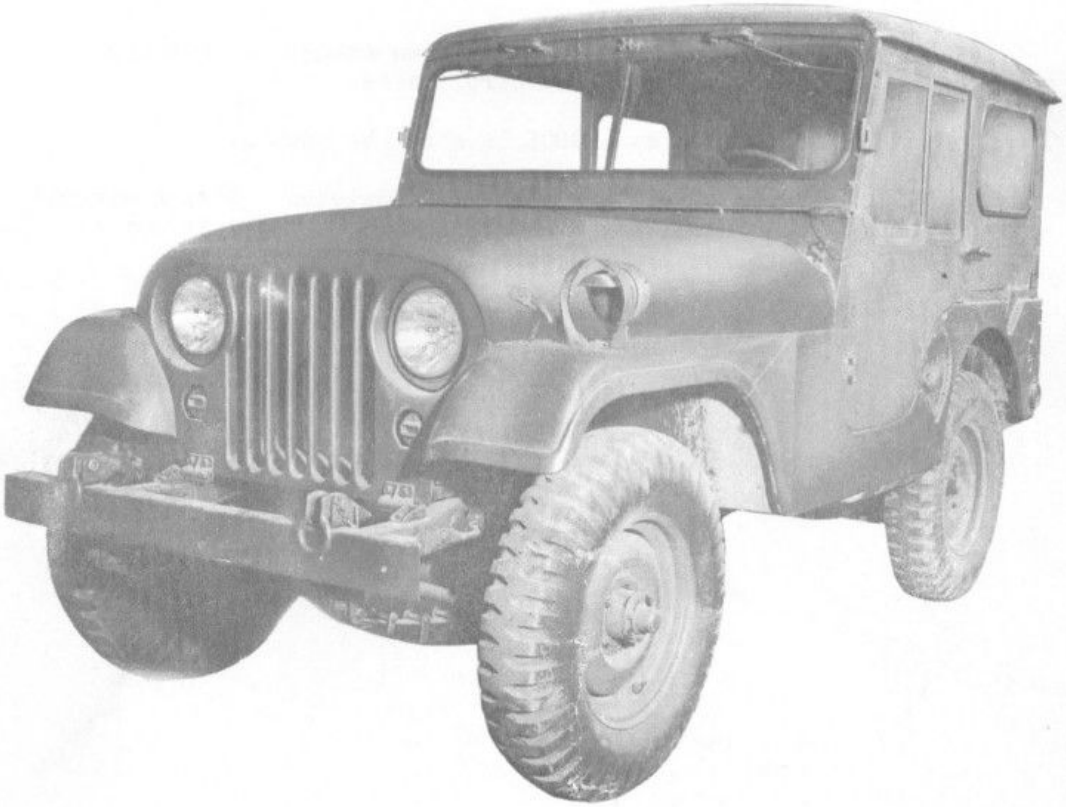
INSTALLATION INSTRUCTIONS

PERSONNEL HEATER SET

ORD. NO. 7358725

FOR



TRUCK, ¼-TON 4 x 4, M38A1 (24V)

KEEP MANUAL WITH VEHICLE

PM-1571 (Rev. 2-53)
Ord. No. 8359666

Printed in U. S. A.

PERSONNEL HEATER FSN 2540-039-7784 G249

The following changes are incorporated in subject kit:

1. Control Box G 486813 is substituted for Box G 488088

2. Cable 488600 is modified to include terminal ends on wires in lieu of connector.

3. Bracket, control box has been eliminated. Bolt box 486813 directly to dash. Move grommet to bottom of control box.

4. Plate assy, mounting has been changed to accomodate filter and safety control valve.

5. Hose, exhaust 488805 is straight tubing.

6. Plates 488617 and 488618 are deleted. Wiring diagram for control box G 486813 and operation instruction plate for heater control is furnished.

Section I

INSTALLING ENGINE PRIMER

NOTE: *Before starting heater installation, refer to the exploded parts view, Figure 17, on Page 8. This drawing, in conjunction with the numerical parts list on Page 9, will provide identification of the parts referred to in the following procedure.*

INTERFERENCE WITH VEHICLE

In some cases it may be found that, due to modification or damage to a vehicle, it is impossible to install the personnel heater set exactly as directed. In such cases, installation personnel, under the direction and at the discretion of a competent supervisor, should resort to a field expedient to overcome the interference with the particular vehicle and alter the installation procedure accordingly.

PRIMER INSTALLATION

1. Using the dimensions shown in Figure 1, drill a ¾-inch hole in the instrument panel for the engine primer pump. Be careful when drilling this hole not to damage wiring which is on the back of the instrument panel near this point.

2. Disconnect the engine fuel line at the inlet of the fuel pump on the left side of the engine and remove the elbow from the fuel pump. Install the ⅛-inch pipe nipple in the fuel pump and install the tee on the nipple. Turn the tee so that it is in a vertical position.

3. Reinstall the engine fuel line elbow in the top of the tee and connect the engine fuel line to the elbow.

4. Install the ⅛-inch pipe x 3/16-inch tube connector in the bottom of the tee and connect one end

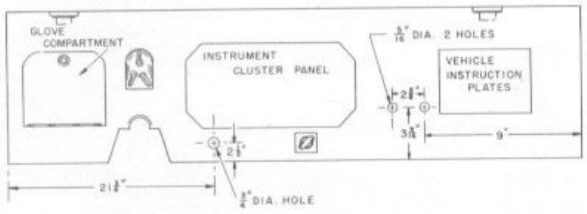


Figure 1

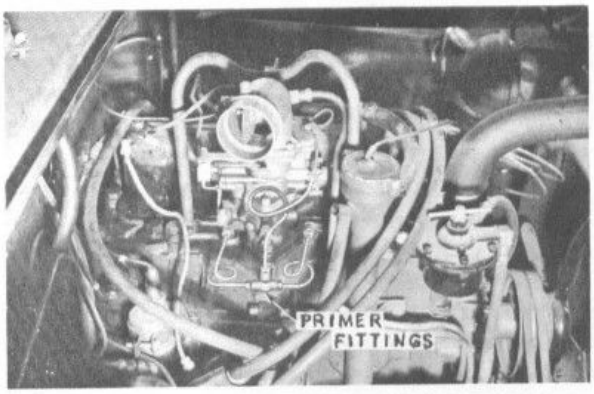


Figure 2

of the 66-inch length of copper fuel line to the connector using the compression collar and nut provided. Form a vibration loop in the line near the fuel pump.

5. Run this line back along the bottom edge of the left fender splash shield and up the firewall. Pass the line through an existing hole in the firewall near the top and toward the center. Attach the tube to the firewall with the clamp provided, using one of the screws already in place.

6. Attach the tube to the inlet of the primer pump on the instrument panel.

7. Attach the 40-inch length of ⅛-inch copper line to the outlet of the pump and pass it through the same hole in the firewall which was used for the other fuel line.

8. Remove the carburetor and carburetor air intake tube. This will uncover two pipe plugs at the sides of the carburetor. Remove and discard these plugs.

9. Install the two elbow primer nozzles in the tapped holes, turning the compression fittings away from the engine (Figure 2) and then reinstall the carburetor and carburetor air intake tube.

10. Connect the two short lengths of ⅛-inch tubing to the nozzles and form vibration loops as shown in Figure 2, then install the compression tee between the loops.

11. Form the ⅛-inch line from the primer pump so that it passes behind the carburetor and around to the tee. Form a vibration loop in this line and connect it to the tee (Figure 2).

Section II

INSTALLING PERSONNEL HEATER

INSTALLING HEATER MOUNTING PLATE

1. Attach the heater mounting plate support bracket to the side of the plate, using the screws which are installed finger tight in the bracket.

2. Using the dimensions shown in Figure 3, locate and drill two 5/16-inch holes, one at the extreme right, and one at left center of the vehicle's splash shield. Locate these holes carefully from the dimensions shown and then place the heater mounting plate in position as shown in Figure 5. Temporarily attach the plate and use it as a template to locate the remaining four holes in the splash shield. (Figure 4.)

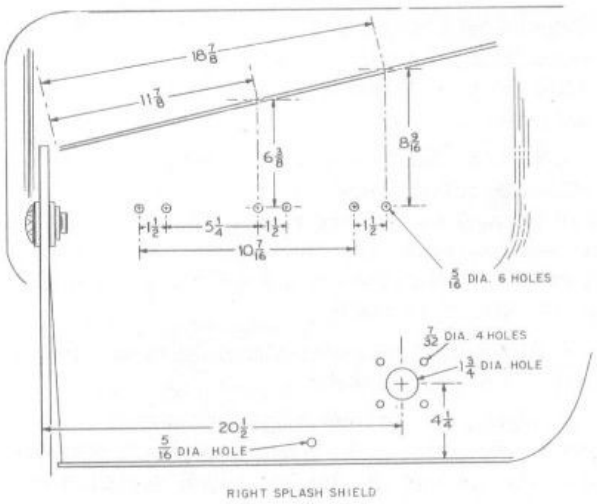


Figure 3

3. While the mounting plate is in place, mark through the hole in the support bracket at the bottom to locate the additional mounting screw hole. This hole must be drilled through the brace on the other side of the fender.

4. Remove the mounting plate and drill four holes at the top and one at the bottom, using a 5/16-inch drill (Figure 4).

5. Before installing the heater mounting plate, locate and drill a 1¾-inch hole for the heater exhaust elbow, using the dimensions shown in Figure 3, and then use the elbow as a template to drill four holes for the elbow mounting screws (7/32 in. dia.).

6. Attach the exhaust elbow to the inside of the splash shield so that it faces upward, using four No. 10-32 x 1½ fillister head screws, lockwashers and nuts.

7. After installing the exhaust elbow, attach the heater mounting plate firmly to the splash shield, using six ¼-20 x ¾ Hex. Hd. cap screws, lock-

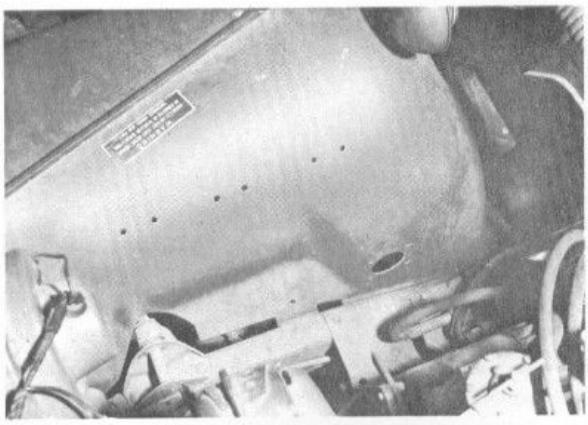


Figure 4

washers and nuts at the top and one ¼-20 x 1¾ cap screw through the support bracket at the bottom (Figure 5). Place the two reinforcing plates on the outside of the splash shield when installing the screws at the edge of the mounting plate to provide the additional strength required to support the weight of the heater.

Note: When making this installation, place the ground wire of the heater wiring harness under one of the mounting screws near the heater outlet end of the plate.

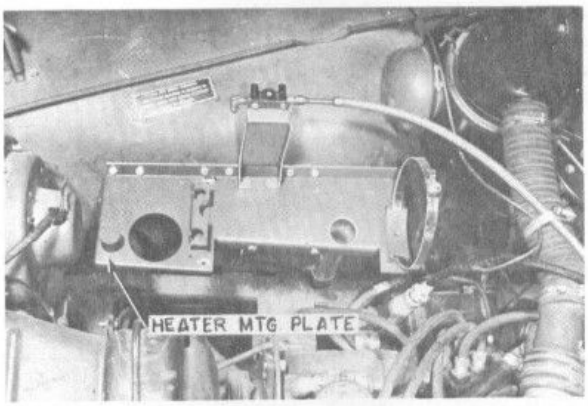


Figure 5

INSTALLING AIR INLET ADAPTER

1. Remove the rectangular cover plate which is on the engine side of the firewall behind, and to the left of, the heater mounting plate. This will uncover the opening which is provided for the heater air inlet adapter. Place the flange of the tapered transition adapter over the opening with the outlet collar toward the heater mounting bracket. Check the size of the firewall opening and, if it is not the same size as the adapter, cut the opening to size.

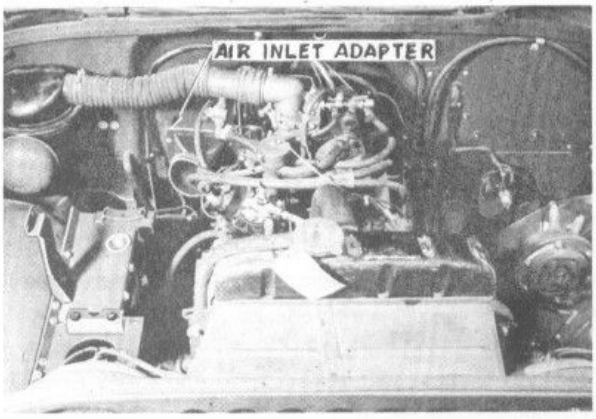


Figure 6

2. Use the tapered adapter as a template to locate and drill four holes with a No. 7 drill (.201 dia.) and attach the tapered adapter to the engine side of the firewall and the straight adapter to the passenger's side at the same time, using four No. 10-32 x ½ Fil. Hd. machine screws, lockwashers and nuts (See Figure 6).

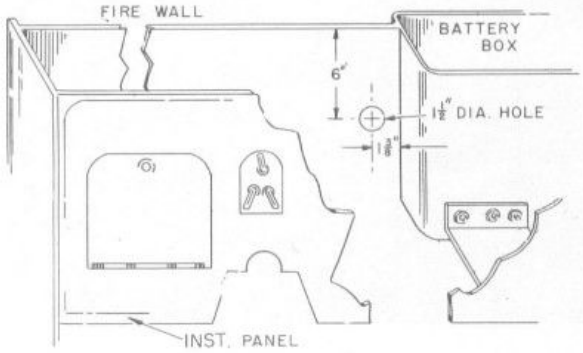


Figure 7

INSTALLING DEFROSTER

1. Remove the instrument cluster from the instrument panel by releasing the four dzus fasteners at the corners. Disconnect the speedometer cable and then pull the cluster back without disconnecting wires.

Figure 8

2. Using the dimensions shown in Figure 7, locate and drill a 1½-inch hole in the firewall for the heater wiring harness. Be careful not to damage wiring on the engine side of the firewall when drilling the hole (See Figure 8).

3. Release the windshield fasteners and lay the windshield down over the hood. This will uncover the air inlet openings of the built-in defroster chamber in the bottom of the windshield.

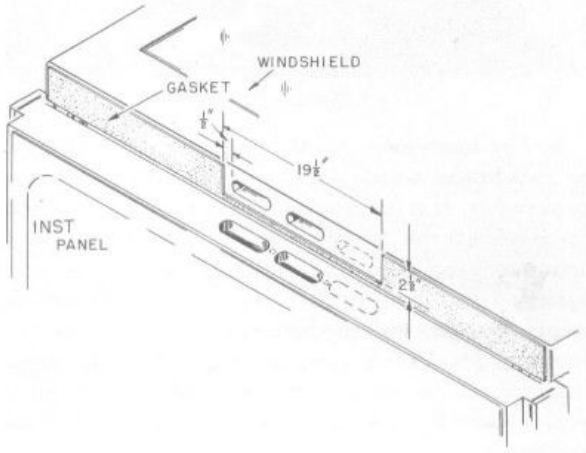


Figure 9

4. To insure an adequate flow of air to the right windshield, it will be necessary to cut an additional opening, similar to those already in the windshield frame, and a mating hole must also be cut in the body of the vehicle. Cut away the rubber gasket using the dimensions shown in Figure 9, and then mark the holes as shown in Figure 10. Mark the windshield the same as the body. Cut away the metal of the windshield frame and the body. Also drill the two 5/16-inch holes for the defroster mounting screws (Figure 11).

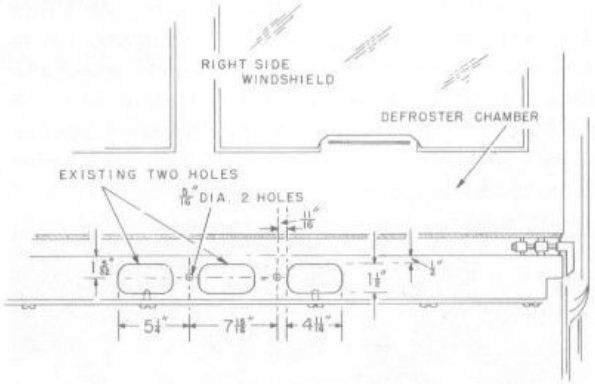


Figure 10

5. After cutting the air holes, loosen all the screws which secure the instrument panel to the body. Back the screws off but do not completely remove them. This will allow sufficient movement of the panel to permit the defroster to be placed in position.

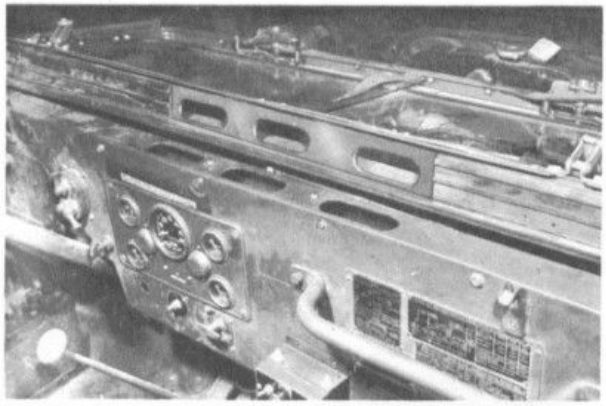


Figure 11

6. The instrument panel is supported at the back by two braces which are attached to the panel and battery box. It is necessary to remove and discard the brace nearest the driver's side. To remove the brace, disconnect and remove the inboard battery from the battery box. Then remove the four screws which secure the brace and the battery pan. Remove the instrument panel screws and discard the bracket. Reinstall the screws which previously held the battery pan, using the nuts and washers supplied in the heater kit.

7. Fit the defroster assembly up behind the instrument panel and place the defroster gasket over the air holes at the top of the instrument panel. Secure the defroster loosely by installing the two ¼-20 x ¾ pan hd Sems fasteners through the gasket and the 5/16-inch holes previously drilled in the body at the base of the windshield. The defroster is equipped with weld nuts for the screws.

INSTALLING DIVERTER ASSEMBLY

1. Fit the diverter assembly over the inlet of the defroster and also over the air inlet adapter previously attached to the firewall (Figure 12). Place the metal back-up strip, which has the two speed nuts, on the lower lip of the instrument panel and slide it into position so that the nuts are in line with the holes which were used for the discarded bracket. Install the two 5/16-18 x ¾ Hex. Hd. cap screws through the flange of the diverter and into the speed nuts. Tighten these screws securely and the mounting screws at the top, then tighten all instrument panel screws which were previously loosened.

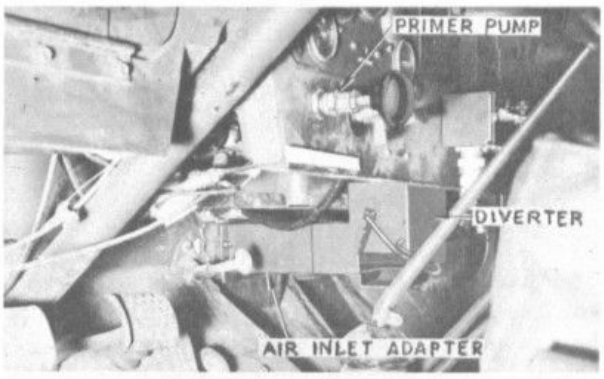


Figure 12

INSTALLING HEATER ASSEMBLY

1. Place the exhaust extension tube through the exhaust hole in the heater mounting plate and fit the short section of flexible exhaust hose between the extension and the exhaust elbow previously installed.

2. Place the heater on the mounting plate, making sure the washer and "O" ring are in place around the exhaust outlet, and install the heater clamping band and bracket (Figure 13).

3. Connect the short section of copper fuel line between the elbow in the filter on the heater mounting plate and the fuel inlet fitting the heater (Figure 13).

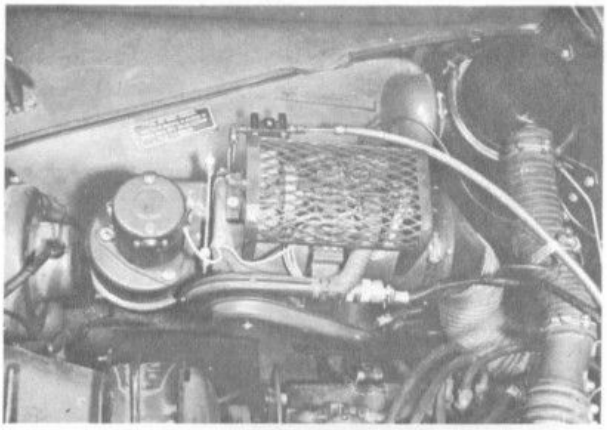


Figure 13

4. Using the two duct clamps provided, connect the section of 4-inch flexible ducting between the heater outlet adapter and the air inlet adapter on the firewall (Figure 13).

5. Plug the wiring harness into the connector on the heater and pass it through the 1½-inch hole previously drilled in the firewall. Fit the split grommet into the hole around the harness.

INSTALLING CONTROL BOX

1. Remove the connector and bracket from the back of the heater control box and reinstall it on the bottom, using the holes already in the box, also remove the control box mounting bracket.

2. Using the dimensions shown in Figure 1, drill two 5/16-inch holes in the instrument panel of the vehicle. Attach the mounting bracket to the control box, using the screws which were installed fingertight in the side of the bracket, and then attach this assembly to the instrument panel, using the screws which originally held the mounting bracket to the

control box. This will permit use of the longer screws through the instrument panel (See Figure 14).

3. Connect the plug at the end of the wiring harness to the receptacle on the bottom of the control box.

4. A hot wire, numbered 11, is used to make the connection for the heater hot lead. Locate this wire, which connects the ignition switch to the light switch, and break the Douglas connector. Insert the Douglas "Y" connector which is supplied with the heater kit in this line and then connect the "Y" to the 6-inch hot lead which is already connected to the heater control box.

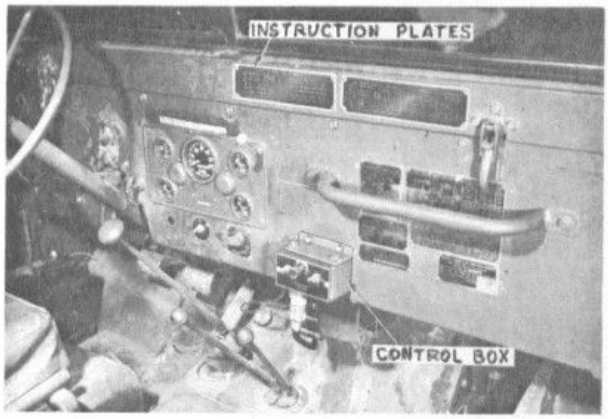


Figure 14

FUEL CONNECTIONS

1. Disconnect the engine fuel line at the carburetor inlet and remove the elbow and bushing from the carburetor. Install the service tee from the personnel heater set in the carburetor inlet and install the engine fuel line bushing in the side of the tee. Reconnect the engine fuel line to the bushing.

2. Install the heater fuel shut-off cock in the end of the service tee and install the elbow, which was previously used for the engine fuel line, in the shut-off cock. Connect the heater fuel line to the elbow.

3. Run the heater fuel line behind the carburetor and over the carburetor air intake to the fuel filter on the heater mounting plate. Connect the fuel line to the filter and also secure it to the carburetor air intake with the hose clamp provided (Figure 13).

INSTRUCTION PLATES

1. Mount the heater operating instruction plate and wiring diagram at the base of the windshield. Use the plates as a template to locate and drill eight holes with a No. 21 drill and attach the plates with the eight No. 10-32 x ⅜ thread cutting screws provided (Figure 14).

Section III

OPERATING CHECK

INITIAL STARTING OF HEATER

1. Before starting heater for the first time, loosen the heater fuel line at the heater fuel inlet and start the engine. Let run until fuel comes out of the fuel line and then tighten the fitting.

2. Start the heater as follows:
   a. Start engine, and let run on fast idle.
   b. Turn Hi-Lo switch to high position.
   c. Hold Run-Off-Start switch in Start position until pilot on control box lights.
   d. Turn heater switch to Run.

3. Within two minutes the ventilating air fan of the heater should start and warm air should be felt at the diverter outlet.

4. After the heater has been in full operation for three or four minutes, turn the heater switch off. Burning in the heater should stop within 45 seconds, but the fans should continue to run for about two minutes to cool and purge the heater.

OPERATION OF HEATER

1. After the heater has been started and checked the first time, as described above, it is only necessary to start the engine and turn the heater switch on as directed in paragraph 2 in normal usage. If the heater fails to start in this manner, repeat the initial starting procedure.

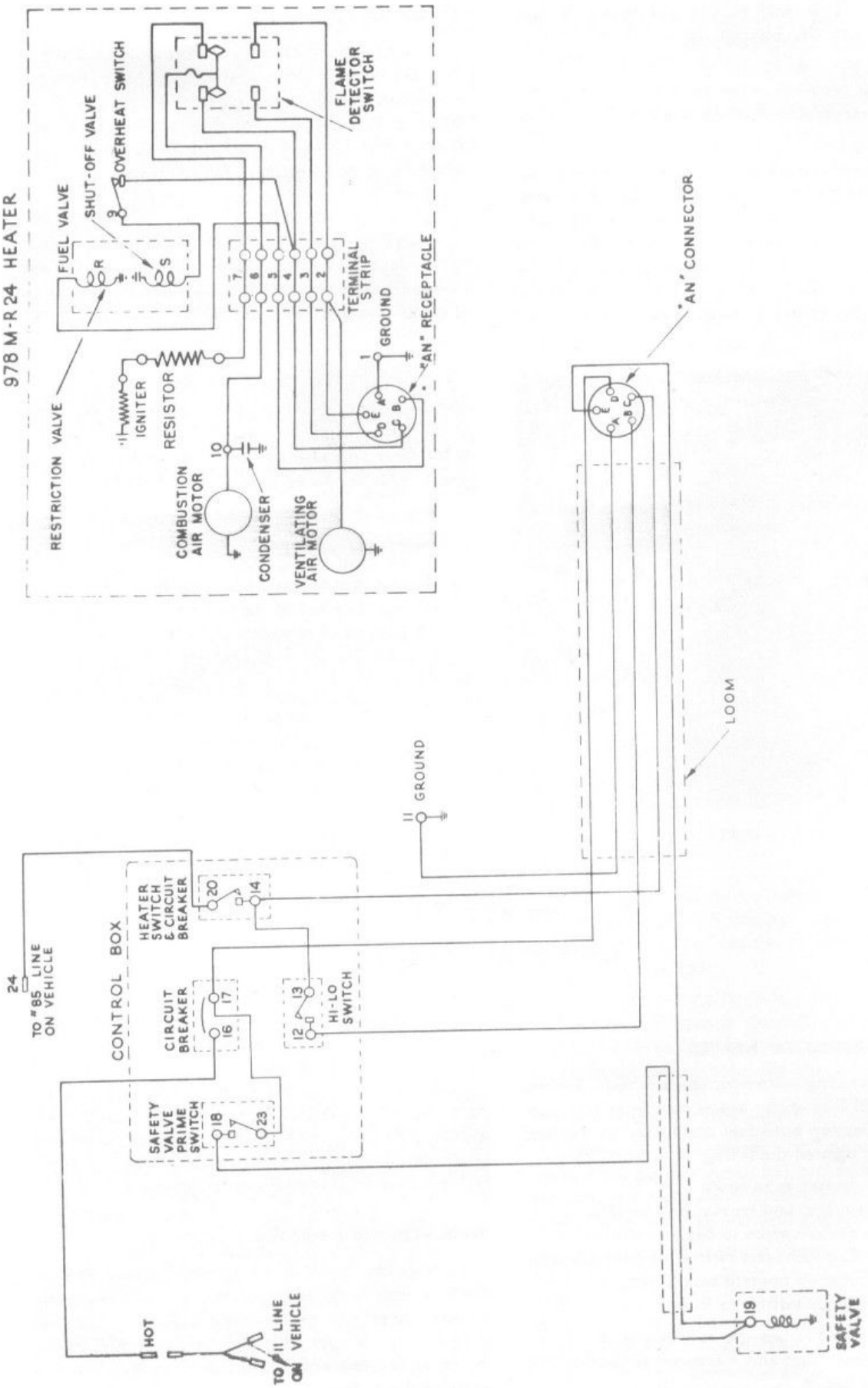


Figure 15 — Wiring Diagram

Section IV

INSTALLING RADIATOR COVER

1. Place the radiator cover over the radiator grille and use the grommets in the cover as a tamplete to mark location of loops. Remove the cover and drill with a No. 27 drill to install loops. Attach the loops around the edges of the grille with the sheet-metal screws provided (Figure 16). Place the cover over the radiator and lace the tie strips through the loops to secure the cover, then pull the cover back under the grille and install the spring and hook assemblies to hold the bottom. Drill two ⅛-inch holes at convenient locations to hook the springs.

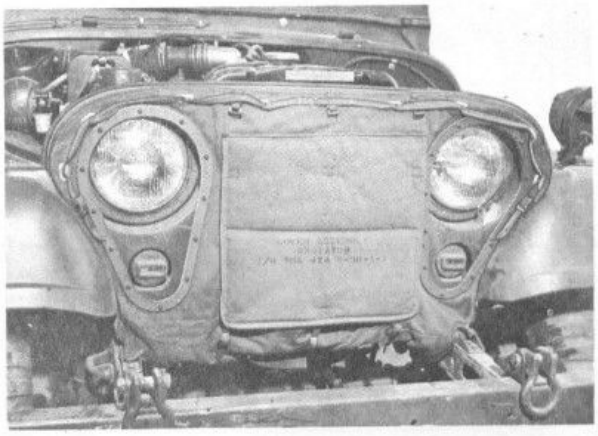


Figure 16

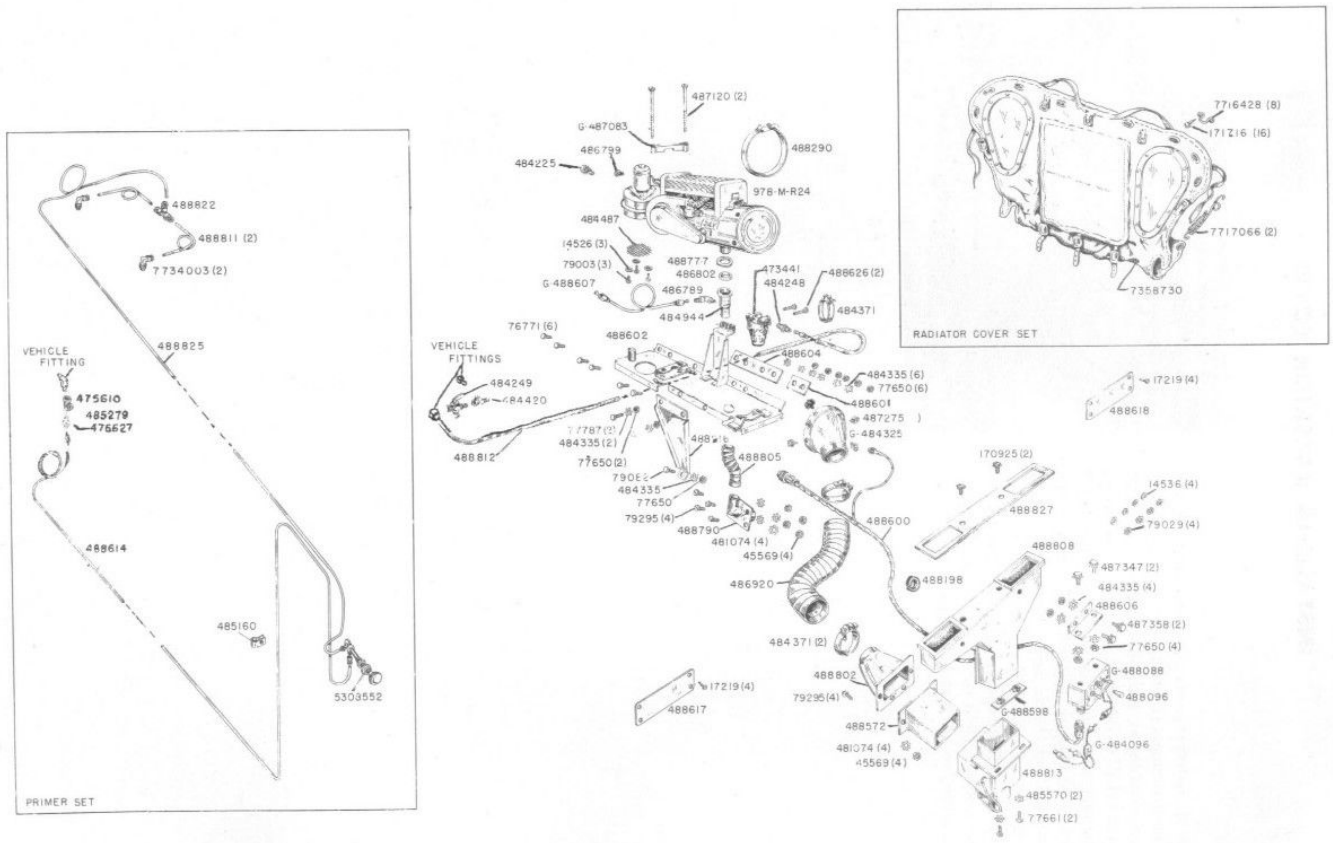
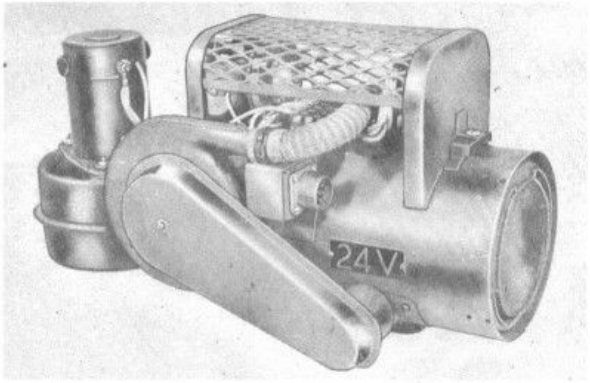


Figure 17—Exploded Parts View

Section V

PARTS LIST



PERSONNEL HEATER SET

Part No.	Description	Quantity Per Kit
978-M-R24	Personnel Heater	1
14526	Washer—No. 8 Plain Flat	3
14536	Washer	4
17219	Screw—No. 10-32 x 3/8 Rd. Hd. Thd. Cutting	8
45569	Nut—No. 10-32 Hex. M. S.	8
76771	Screw—1/4-20 x 3/4 H. H. Cap	6
77650	Nut—1/4-20 Hex.	13
77661	Screw—5/16-18 x 3/4 H. H. Cap	2
77787	Screw—1/4-20 x 5/8 H. Hd. Cap	2
79003	Screw—No. 8-32 x 5/16 Fil. Hd. M.	3
79029	Nut—5/16-18 Hex.	4
79082	Screw—1/4-20 x 1 3/4 H. Hd. Cap	1
79295	Screw—No. 10-32 x 1/2 Fil. Hd. Mach.	8
170925	Screw—1/4-20 x 3/4 Pan. Hd. "Sems".	2
473441	Filter—Gasoline	1
481074	Lockwasher—No. 10 Int. Ext. Tooth.	8
484225	Elbow—1/8 I.P.S.	1
484248	Nipple	1
484249	Cock—Snut Off	1
484335	Lockwasher—1/4 Int.-Ext. Tooth	13
484371	Clamp—4" O.D. Hose	3
484420	Tee—1/8 N.P.T.	1
484487	Screen—Inlet	1
484944	Extension—Exhaust	1
485570	Lockwasher—5/16 Int. Ext. Tooth	2
486789	Elbow—3/16 Tube 1/8 N.P.T. 45°	1
486799	Adapter—1/8 N.P.T.	1
486802	Ring—"O"	1
486920	Ducting—4" I.D. Flex. (13" long)	1
487120	Screw—5/16-18 x 6 1/2 H. Hd. Cap	2
487275	Screw—No. 8-32 x 5/16 Pan Hd. "Sems"	4
487347	Screw—1/4-20 x 7/16 H. Hd. "Sems"	2
487358	Screw—1/4-20 x 3/4 Hex. Hd. "Sems".	2
488096	Bulb—Light (24 V.)	1
488198	Grommet	1
488290	Clamp—6" Dia. Hose	1
488572	Adapter	1
488600	Harness Assy.—Wiring	1
488601	Plate—Backing	1
488602	Plate Assy.—Mtg.	1
488604	Plate—Backing	1
488606	Bracket—Control Box	1
488617	Plate—Instruction	1
488618	Plate—Wiring Dia.	1
488626	Screw—No. 10 x 1 1/2 Pan Hd. Type "Z"	2
488777	Washer—Exhaust	1
488790	Elbow Assy.—Exhaust	1
488802	Adapter Assy.	1
488805	Hose—Exhaust (5 1/4" Long)	1
488808	Duct. Assy.—Defroster	1
488812	Tube—Fuel (37" Long)	1
488813	Box Assy.—Diverter	1
488816	Bracket—Support	1
488827	Gasket	1
G-484096	Wire Assy.—Connectors and	1
G-484325	Adapter Assy.—45° Outlet	1
G-487083	Clamp Assy.—Hold Down	1
G-488088	Box Assy.—Control	1
G-488598	Plate Assy.—Back Up	1
G-488607	Tube Assy.—Fuel	1

ENGINE PRIMER SET

475610	Tee—1/8 St. Pipe	1
476627	Connector—1/8 P. to 3/16 T.	1
485160	Clamp—Support	1
485279	Nipple	11
488614	Tube Assy.—Fuel (66" Long)	1
488811	Tube—Fuel (10" Long)	2
488822	Tee—Union 1/8 O.D. Tube	1
488825	Tube—Fuel (40" Long)	1
*5308552	Primer—Engine (9 c.c.)	1
*7734003	Elbow Assy.—Primer Nozzles and	2

RADIATOR COVER SET

*171716	Screw	16
*7358730	Cover Assembly	1
*7716428	Loop	8
*7717066	Spring and Hook Assy.	2

*Ordnance numbers

GPO 996512

INSTALLATION INSTRUCTIONS

Personnel Heater Set
Ord. No. 7358725

for

TRUCK, ¼ TON 4 x 4, M38A1 (24V)

SECTION III
OPERATING CHECK

INITIAL STARTING OF HEATER

Page 5, paragraph 2 - Delete in its entirety and insert the following:

OPERATING INSTRUCTIONS

PERSONNEL HEATER STEWART-WARNER MODEL 978

TO START HEATER
1. Snap "Hi-Lo" switch to High Position.
2. Snap heater switch to "On" position. (Ventilating air blower will start automatically in 1 to 3 minutes).

TO SELECT TEMPERATURE
1. Snap "Hi-Lo" switch to desired level.

TO DEFROST (If Applicable)
1. Close damper.

IF HEATER FAILS TO START -
1. Snap heater switch to "Off" position.
2. Hold safety valve prime lever in closed position for 1/2 minute.
3. Re-start heater by pushing heater switch lever to "On".
4. If heater does not ignite after third attempted start, service is required. See service manual.

NOTE - Clean fuel filter frequently to prevent ice formation.

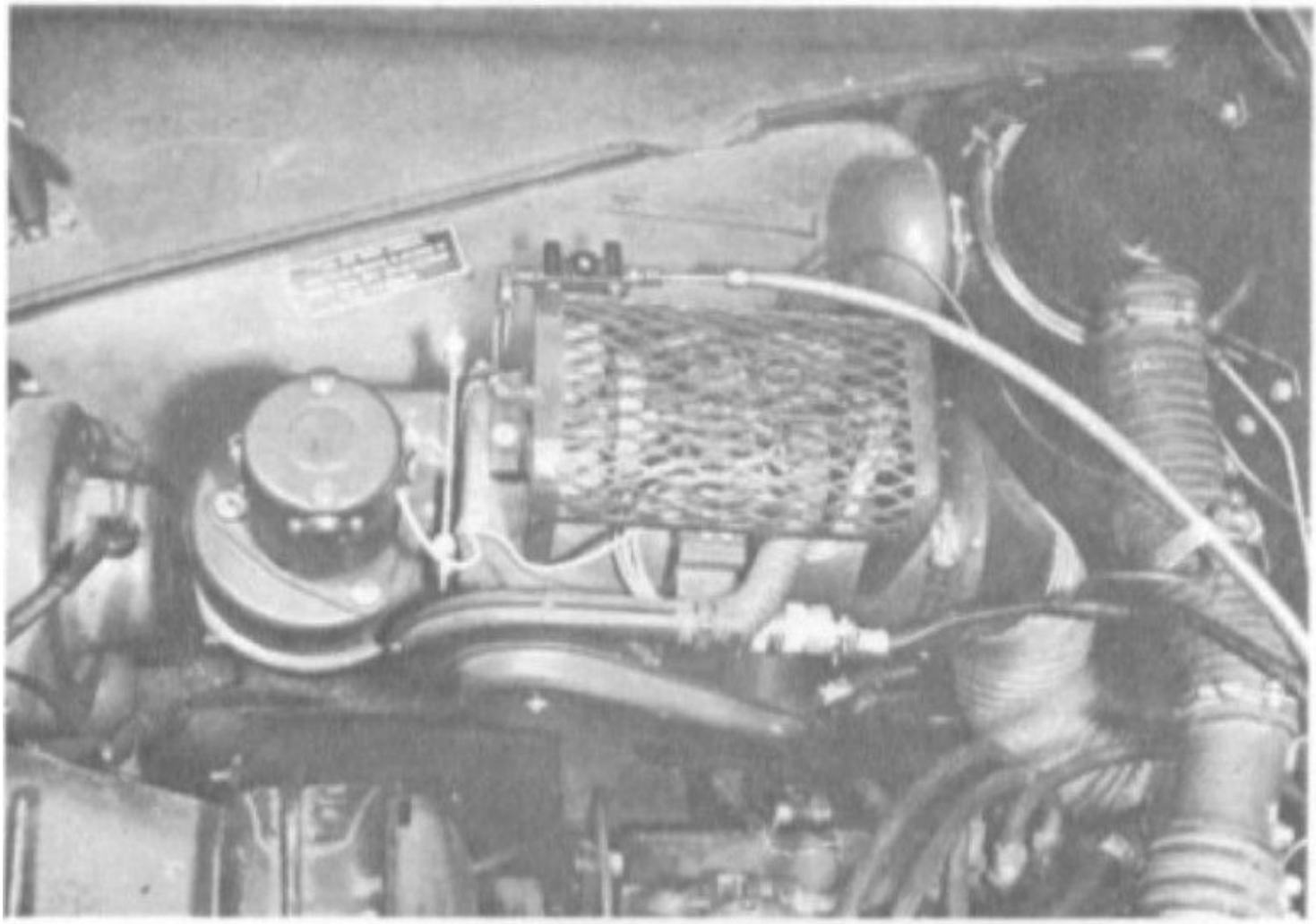


Figure 13

PM1571 M38A1
Gas Heater Kit

Edited By Wes Knettle