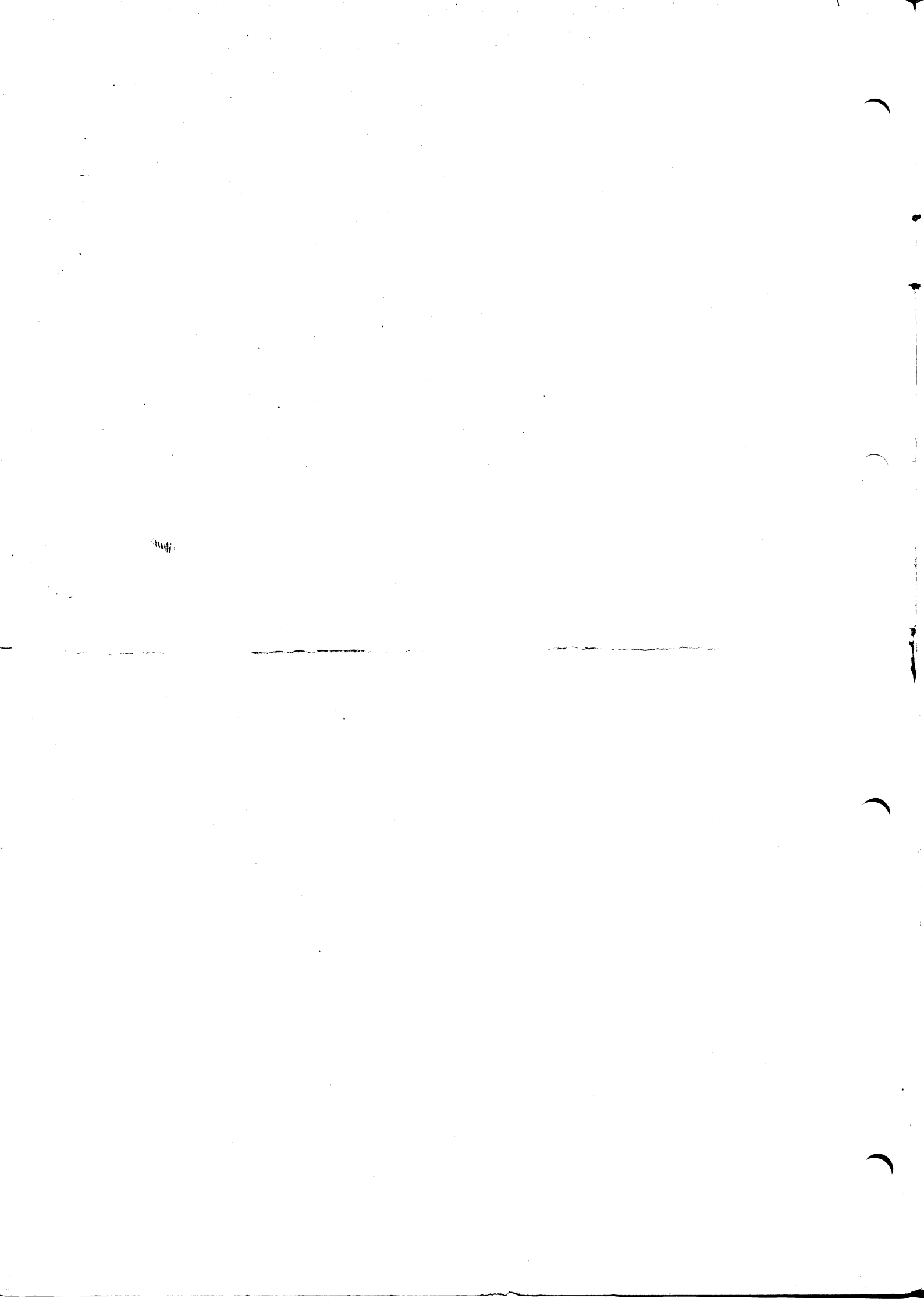


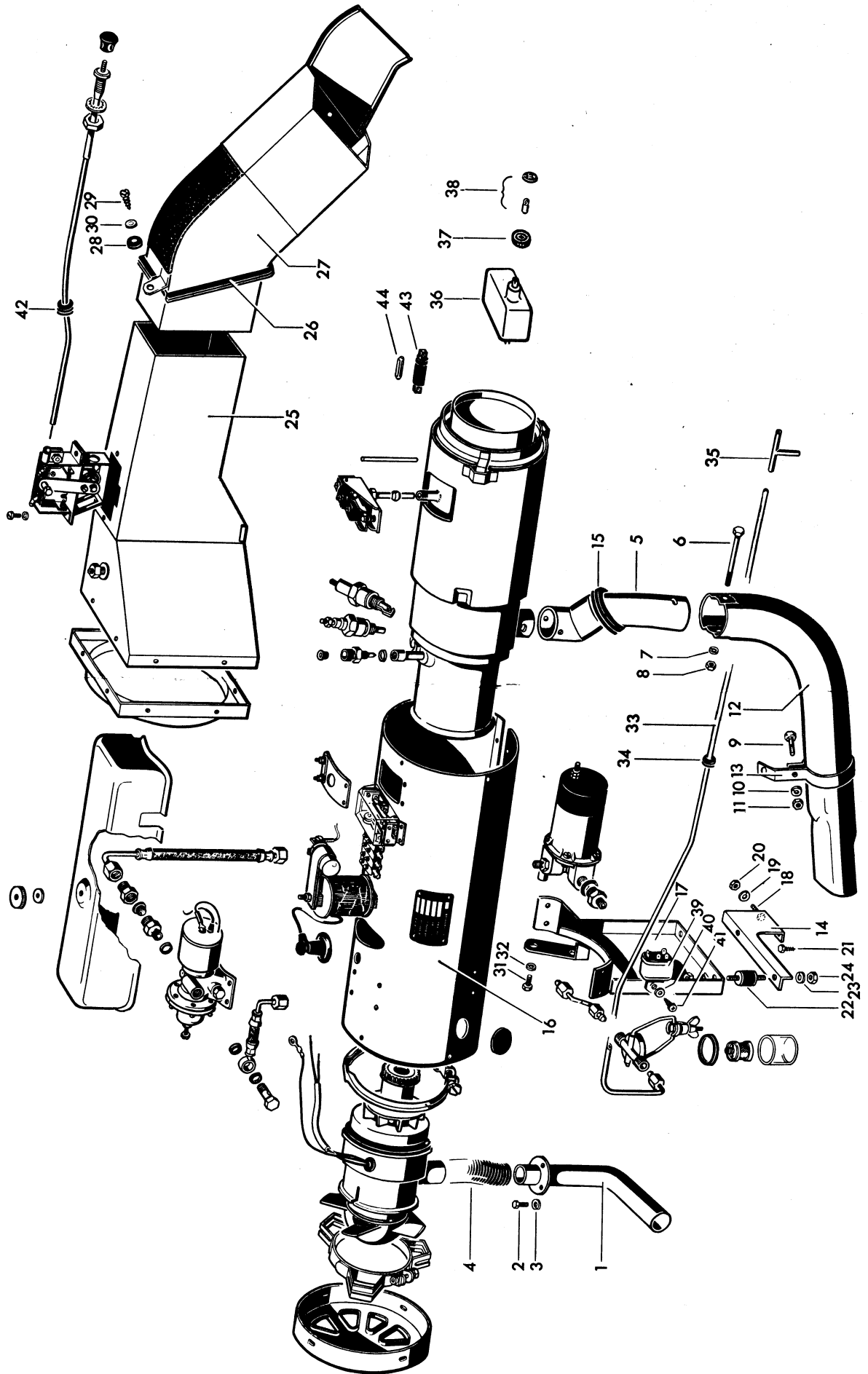
Type 2 Heater Installation

Instructions for USA

BN4 Heater

VOLKSWAGENWERK AKTIENGESELLSCHAFT · WOLFSBURG





F 3.20 Service Installation

The BN 4 heater is installed in the engine compartment on the left side (from driver's position looking forward).

The kit contains the following parts:

Qty.	Designation	Remarks	No.
1	Heater		16
1	Combustion air pipe		1
1	Hose	210 mm (8 ⁹ / ₃₂ "')	4
1	Exhaust		5
1	End pipe		12
1	Bracket	exhaust pipe	13
2	Bracket	heater	14, 17
1	Seal	exhaust pipe	15
2	Bonded rubber mounting		22
1	Seal	hot air outlet	—
1	Hot air outlet		25, 27
1	Seal	partition	26
1	Seal	side panel	—
1	Fuel line		33
1	Bowden cable	regulator switch	—
1	Sticker		—
1	Hose	500 mm long (19 ¹¹ / ₁₆ "')	—
1	T piece		35
2	Hose	80 mm long (3 ⁵ / ₃₂ "')	—
3	Grommet		34, 42
6	Retaining strap		—
1	Connector		—
1	Knob	bowden cable	—
1	Time switch		36
1	Escutcheon		—
1	Switch knob		37, 38
1	Relay		39
1	Plug		—
1	Cable	connector	—
1	Cable harness	heater	—
1	Cable harness	time switch	—
1	Cable adaptor		—
1	Fuse	16 Amp	44, 43
3	Bolt	M 4×10	2
2	Bolt	M 6×15	9, 18, 31
2	Bolt	BM 5×50	6
2	Nut	M 5	8
6	Nut	M 6	11, 24
1	Nut	M 10×1	—
2	Tapping screw	B 4.8×13	—
4	Washer	A 3.5	30
3	Spring washer	B 4	3
2	Spring washer	B 5	7
6	Spring washer	B 6	10, 19, 23, 32
1	Lock washer	J 10.5	—
1	Lock washer	A 5.1	—
1	Hex. head tapping screw	B 6.3×13	21
2	Tapping screw	B 4.8×13	29
1	Tapping screw	B 4.8×9.5	—
1	Bulb	JG 12 V 1.2 W	38
1	Union nut	M 12×1.5	33

Note

Templates made of thin cardboard are included with the installing instructions supplied with the kit and are intended for one time usage only.

Dealers who install numerous heaters are advised to cut templates out of more durable material. The drawing on page F 3.20/1-4 gives all the necessary measurements.

The edges of the templates are marked with a wide black border. These edges must be placed properly against the reference areas to ensure that the holes are located accurately.

Template 1

a = 115 mm ($4\frac{17}{32}$ "')	o = 80 mm ($3\frac{5}{32}$ "')
b = 95 mm ($3\frac{25}{32}$ "')	p = 10 mm ($1\frac{13}{32}$ "')
c = 73 mm ($2\frac{7}{8}$ "')	q = 5 mm ($\frac{7}{32}$ "')
e = 8.5 mm ($\frac{5}{16}$ "')	r = 41°
f = 12 mm ($1\frac{15}{32}$ "') dia.	s = 51 mm (2"')
g = 21 mm ($2\frac{7}{32}$ "')	t = 4°
h = 5°	u = 69 mm ($2\frac{23}{32}$ "')
i = 90 mm ($3\frac{9}{16}$ "')	v = 54 mm ($2\frac{1}{8}$ "')
j = 90 mm ($3\frac{9}{16}$ "')	w = 45 mm ($1\frac{25}{32}$ "')
k = 46 mm ($1\frac{13}{16}$ "')	x = 172 mm ($6\frac{25}{32}$ "')
l = 5 mm ($\frac{7}{32}$ "') dia.	y = 109 mm ($4\frac{5}{16}$ "')
m = 158 mm ($6\frac{7}{32}$ "')	z = 2°
n = 48 mm ($1\frac{29}{32}$ "')	

Template 2

a = 143 mm ($5\frac{5}{8}$ "')	g = 120°
b = 183 mm ($7\frac{7}{32}$ "')	h = 20 mm ($\frac{25}{32}$ "')
c = 102 mm (4"')	i = 30 mm ($1\frac{3}{16}$ "')
d = 30 mm ($1\frac{3}{16}$ "') dia.	k = 20 mm ($\frac{25}{32}$ "')
e = 5 mm ($\frac{7}{32}$ "') dia.	l = 28 mm ($1\frac{1}{8}$ "')
f = 71 mm ($2\frac{13}{16}$ "')	

Template 3

a = 110 mm ($4\frac{5}{16}$ "')	f = 10 mm ($\frac{13}{32}$ "')
b = 53 mm ($2\frac{3}{32}$ "')	g = 176 mm ($6\frac{15}{16}$ "')
c = 9 mm ($\frac{3}{8}$ "')	h = 65 mm ($2\frac{9}{16}$ "')
d = 4 mm ($\frac{5}{32}$ "') dia.	i = 7 mm ($\frac{9}{32}$ "')
e = 213 mm ($8\frac{3}{8}$ "')	

F 3.20 Service Installation

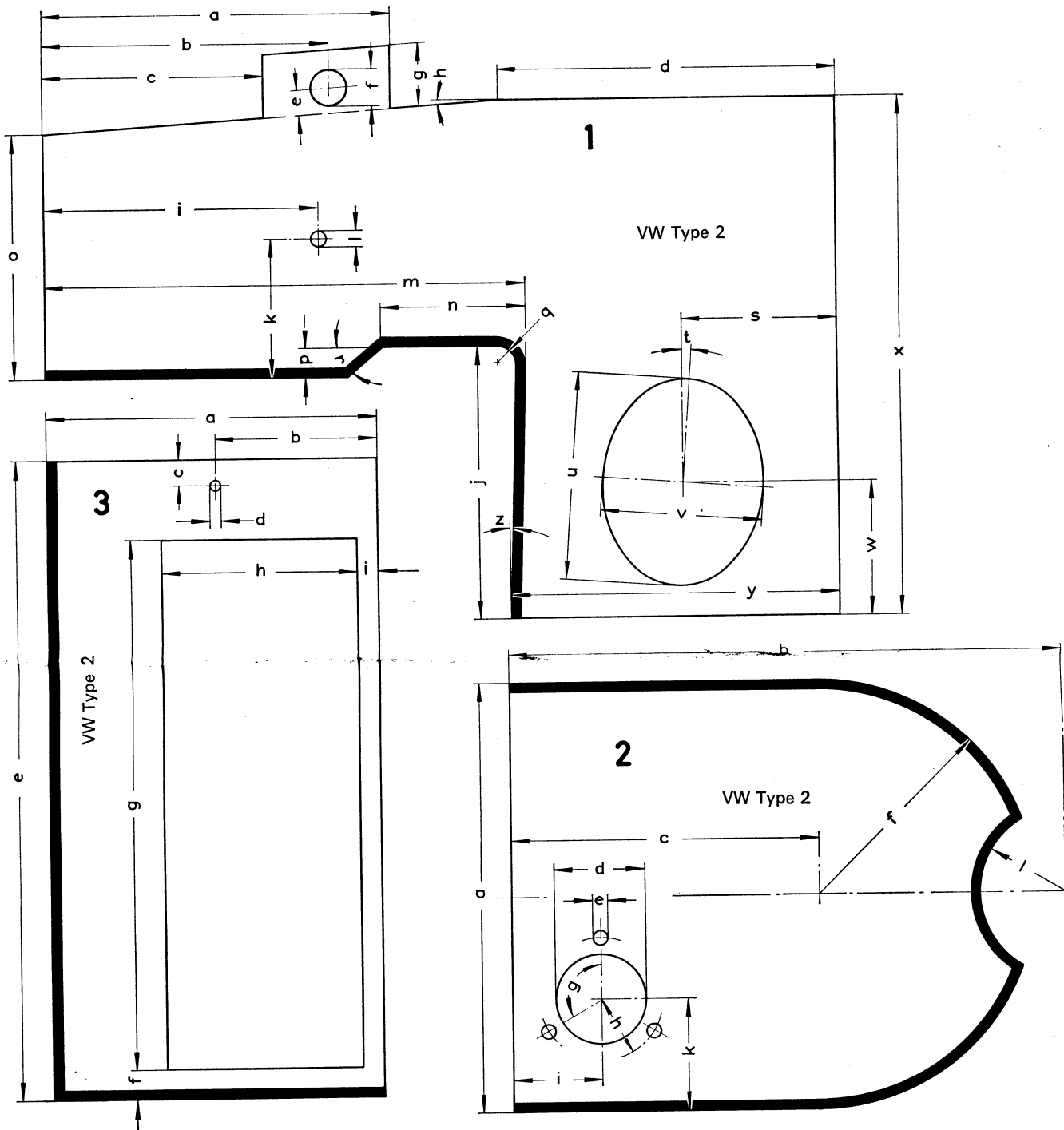


Figure 2

- 1 – Remove engine.
- 2 – Remove and cut off the rear cross panel.
Reshape cut off part as shown in Figure 4.

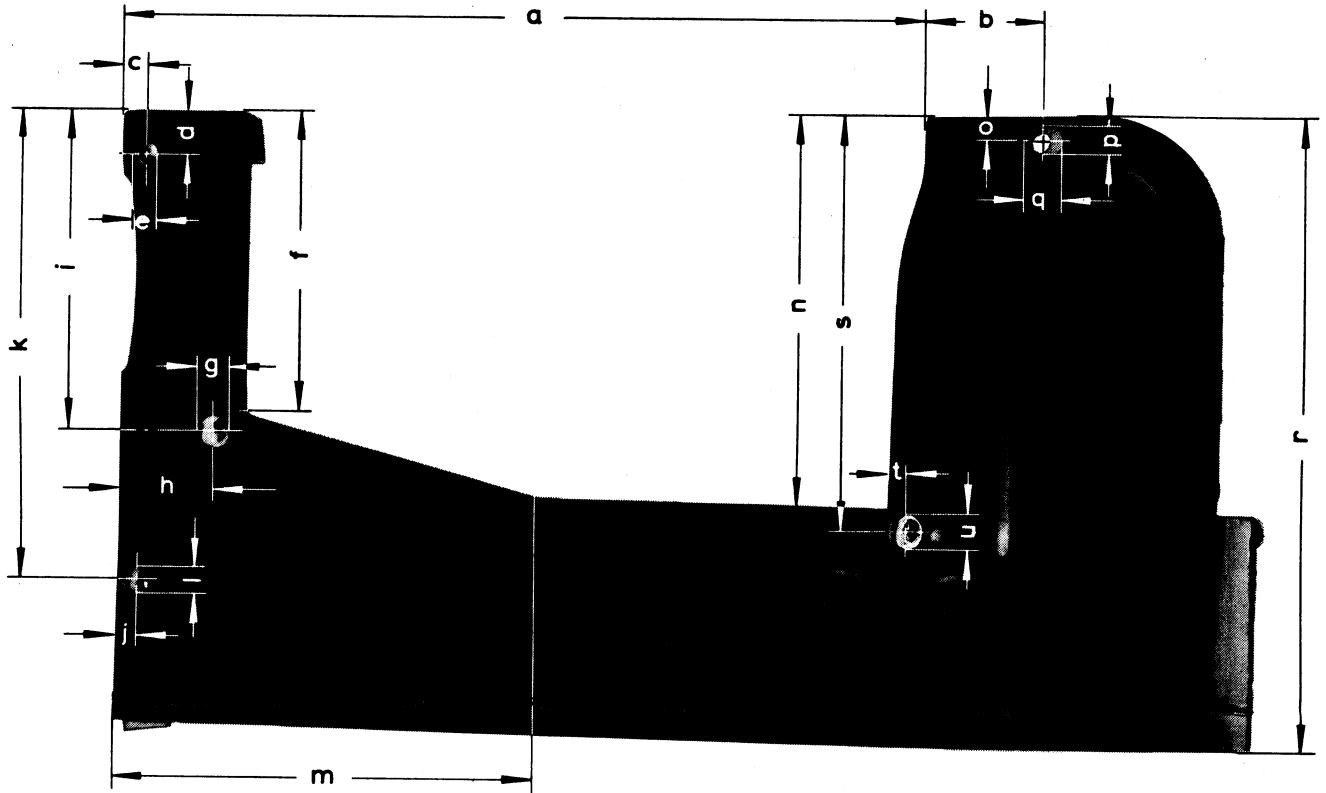


Figure 3

a = 227 mm (8 ¹⁵ / ₁₆ "')	g = 10 mm (13/32"')	m = 130 mm (5 ¹ / ₈ "')	r = 165 mm (6 ¹ / ₂ "')
b = 32 mm (1 ¹ / ₄ "')	h = 27 mm (1 ¹ / ₁₀ "')	n = 105 mm (4 ¹ / ₈ "')	s = 115 mm (4 ¹⁷ / ₃₂ "')
c = 7 mm (9/32"')	i = 85 mm (3 ¹ / ₃₂ "')	o = 7 mm (9/32"')	t = 7 mm (9/32"')
d = 10 mm (13/32"')	j = 7 mm (9/32"')	p = 7 mm (9/32"')	u = 10 mm (13/32"')
e = 8 mm (5/16"')	k = 127 mm (5"')	q = 10 mm (13/32"')	
f = 80 mm (3 ⁵ / ₃₂ "')	l = 8 mm (5/16"')		

- 3 – Apply VW Plastic sealing compound to panel as shown in Figure 4.

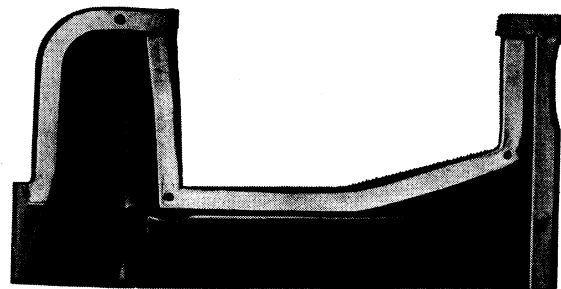
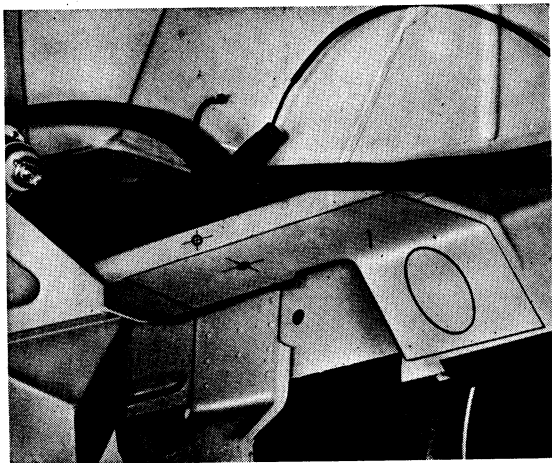


Figure 4

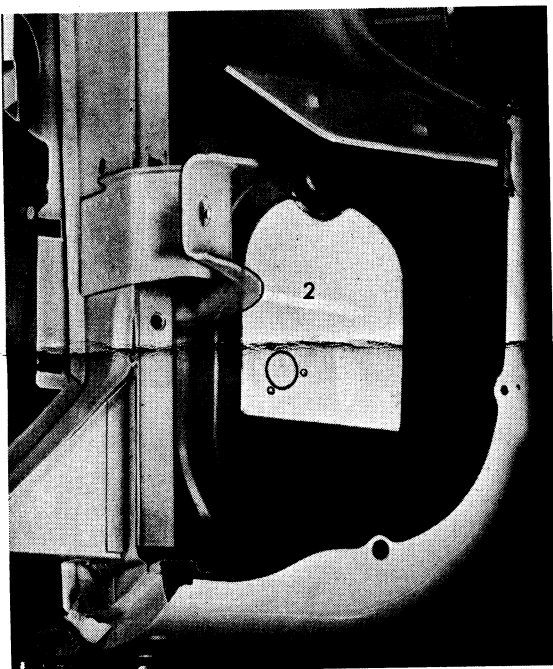
F 3.20 Service Installation



4 – Cut the following holes in the engine compartment:

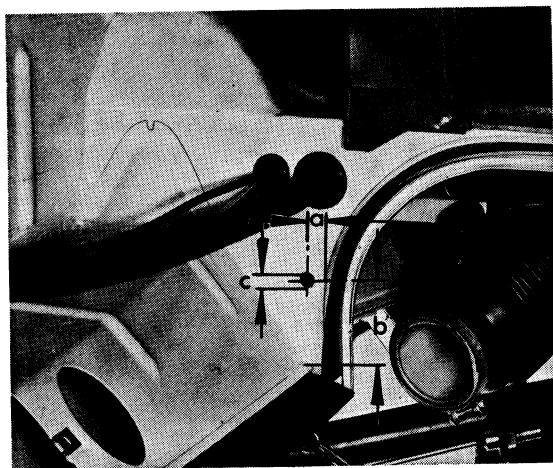
Holes for heater brackets
Hole for exhaust pipe
(use template 1)

Figure 5



Holes for combustion air pipe and securing screws.
(use template 2)

Figure 6



5 – Drill hole for fuel line.

a = 13 mm ($\frac{1}{2}$ "')
b = 65 mm ($2\frac{9}{16}$ "')
c = 10 mm ($\frac{13}{32}$ "') dia.

Figure 7

6 – Shorten bracket for engine cover plate left (see illustration).

- a = remove
- b = 20 mm ($\frac{25}{32}$ ")

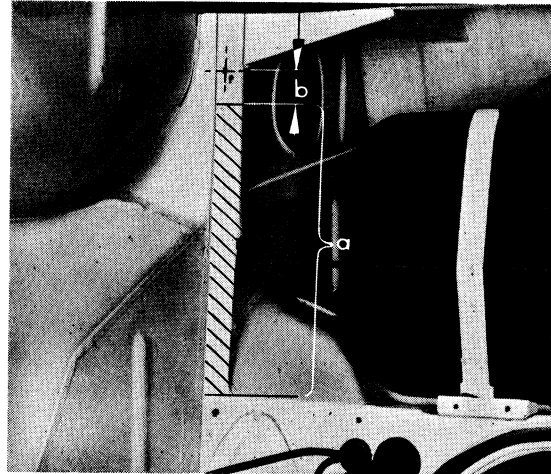


Figure 8

7 – Take rear seat out and remove carpet if installed.

8 – Mark off and cut hole for hot air outlet from inside body.

(use template 3)

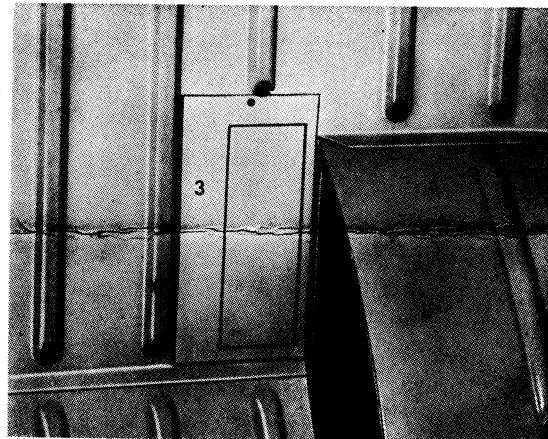


Figure 9

9 – Drill second hole for hot air outlet securing screws.

- a = 28 mm ($1\frac{1}{8}$ ")
- b = 63 mm ($2\frac{1}{2}$ ")

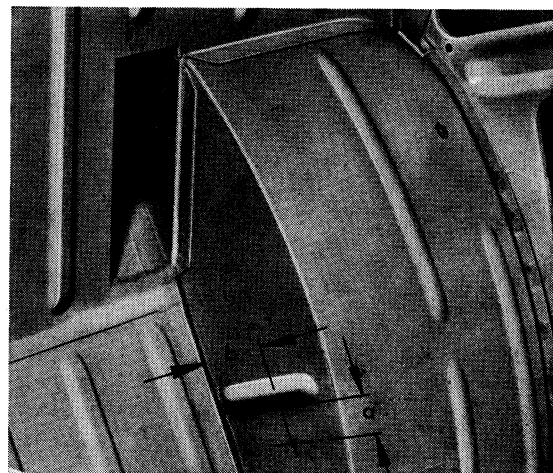
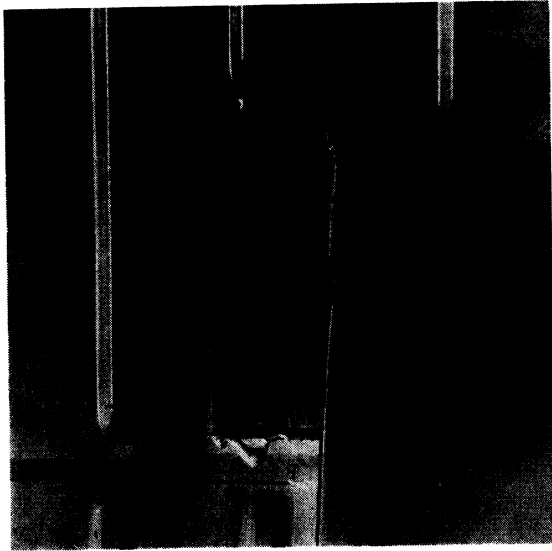


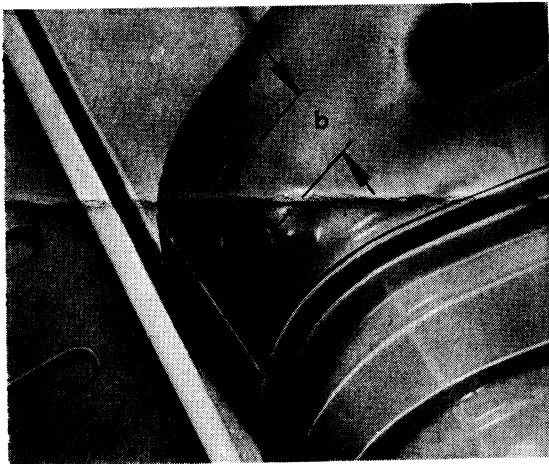
Figure 10

F 3.20 Service Installation



10 – Drill hole for bowden cable (with an angle drill). The hole is drilled 12 mm ($1/2''$) dia. to left and rear of the left edge of the hot air outlet. The Figure 11 shows the location of this hole.

Figure 11

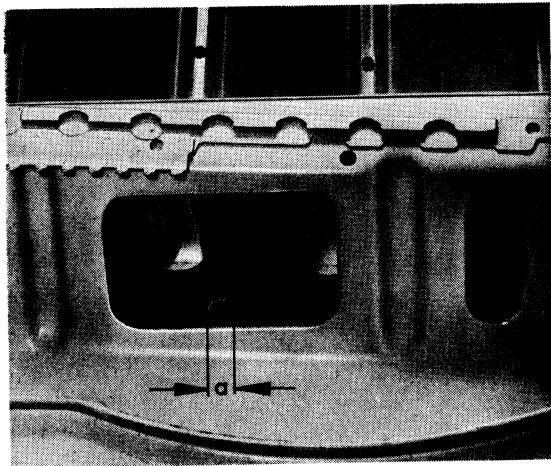


11 – Take driver's seat out.

12 – Drill hole for bowden cable.

a = 10 mm ($13/32''$) dia.
b = 45 mm ($125/32''$)

Figure 12



13 – Drill hole for bowden cable under the seat box.

a = 17 mm ($11/16''$) dia.

Warning

Components of the brake system are below this location so do not drill deeper than 30 mm ($13/16''$)

Figure 13

Installing

- 1 – Install bowden cable.

Insert grommet and route the bowden cable through the hole under the driver's seat first. Secure bowden cable and install knob.

A = bowden cable

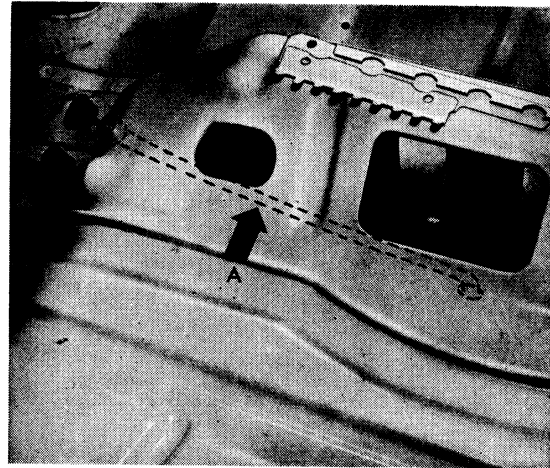


Figure 14

- 2 – Pass the bowden cable through the holes in the frame cross members.

Note

Vehicles with a sliding roof have reinforcement plates welded in between the cross members but the holes mentioned above are still accessible. To facilitate the routing of the cable through the holes it is advisable to pass a thin copper tube through the holes first and then attach the cable to the tube and pull it through.

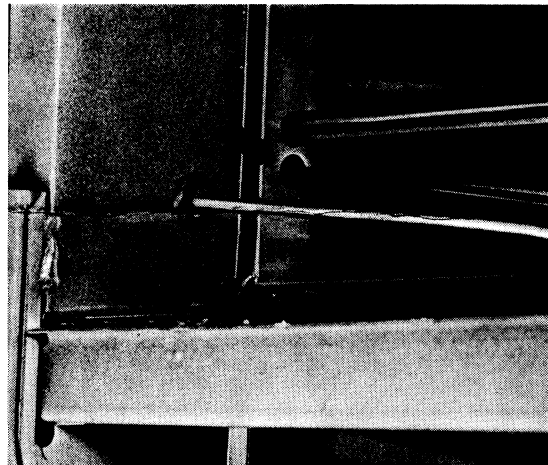


Figure 15

- 3 – Pass cable through the hole near the hot air outlet into the engine compartment.

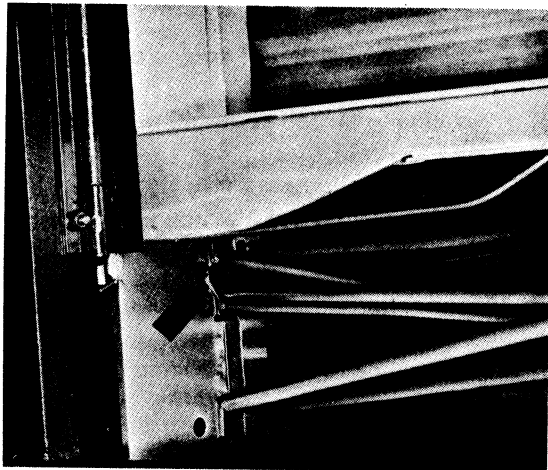
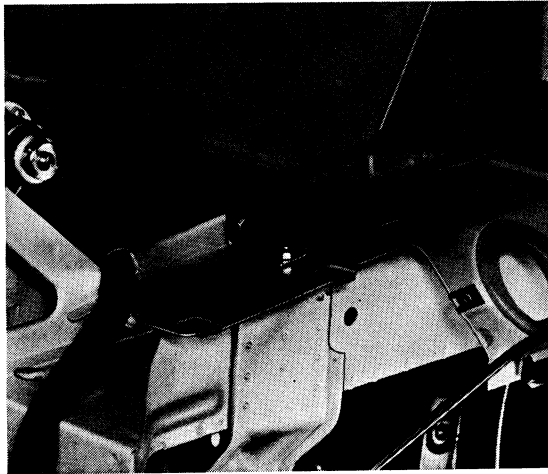
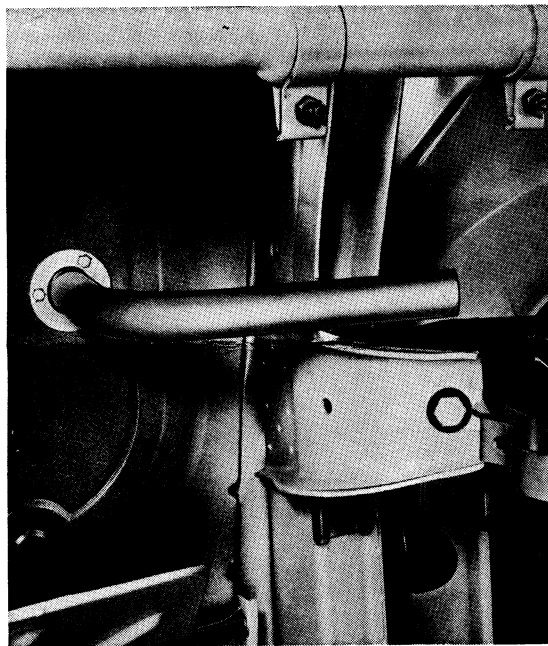


Figure 16



4 – Install heater brackets in engine compartment.

Figure 17



5 – Install the combustion air intake pipe. The intake opening in the pipe must be towards the engine.

Figure 18

6 – Install right portion of engine compartment cover plate.

7 – Install time switch about 45 mm ($1\frac{25}{32}$ "') to left of ashtray.

8 – Install cable harness for heater.

The cable from time switch to heater is routed parallel with the main harness as far as the engine compartment and then parallel with the engine harness to the heater.

Install a 2.5 mm² (12 gauge) red cable in insulation sleeving from starter terminal 30 to heater (connector with fuse) parallel to engine harness.

9 – Cut fuel line to engine 120 mm ($4\frac{23}{32}$ "') from the end and install a T-piece. Do not forget hose clamps.

10 – Install silicon sealing ring for exhaust pipe.

- 11 – Insert grommet and install fuel line to heater.

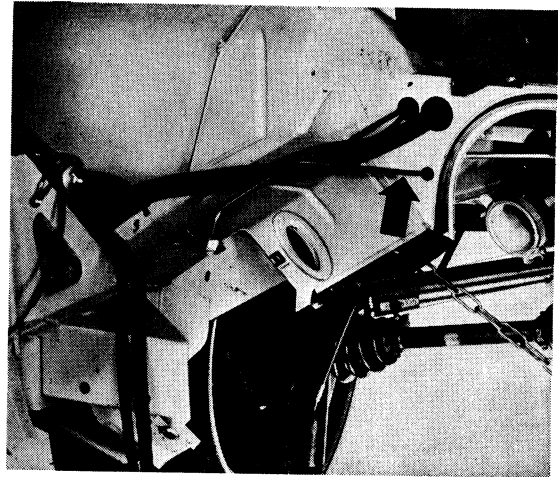


Figure 19

- 12 – Install heater provisionally but leave it back far enough so that the temperature regulating lever is easily accessible.
- 13 – Push bowden cable right in (at knob on cable under driver's seat).
- 14 – Press temperature regulating lever on to stop on heater and install bowden cable free of tension.
- 15 – Push heater assembly in to its stop and engage the lower pins through the two bonded rubber mountings into the holes in the heater brackets.
- 16 – Install the left, cut-out portion of the engine compartment plate (3 tapping screws). Seal the joint between the two parts of the partition.
- 17 – Install hot air outlet from inside of vehicle but do not secure it.
- 18 – Insert two heater securing screws (tapping screws with washers) from the engine compartment through the cut-off portion of the plate.
- 19 – Secure the hot air outlet.
- 20 – Connect the heater fuel line. Connect cables according to wiring diagram (Figure 20).
- 21 – Connect hose for combustion air intake pipe.
- 22 – Install engine.

Wiring diagram BN4 heater

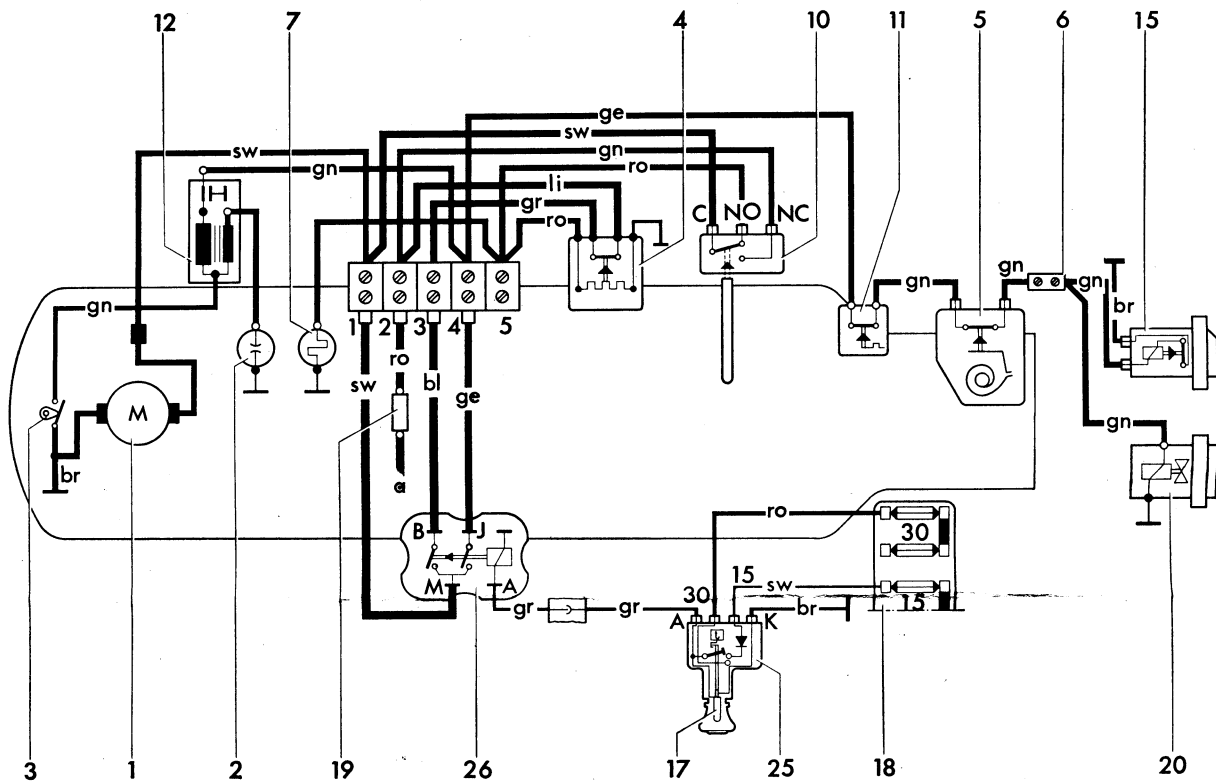


Figure 20

- 1 - Motor
- 2 - Spark plug
- 3 - Breaker contacts
- 4 - Safety switch
- 5 - Regulating switch
- 7 - Glow plug
- 10 - Thermoswitch
- 11 - Overheating switch
- 12 - Coil

- 14 - Fuel pump
 - 17 - Warning lamp
 - 18 - Fuse box
 - 19 - Fuse 18 amp.
 - 20 - Fuel solenoid valve
 - 25 - Time switch
 - 26 - Relay
- a = to starter terminal 30

- 23 – Attach bracket for exhaust pipe to the left engine mounting bolt in engine carrier.
- 24 – Install exhaust pipe from below and secure it.

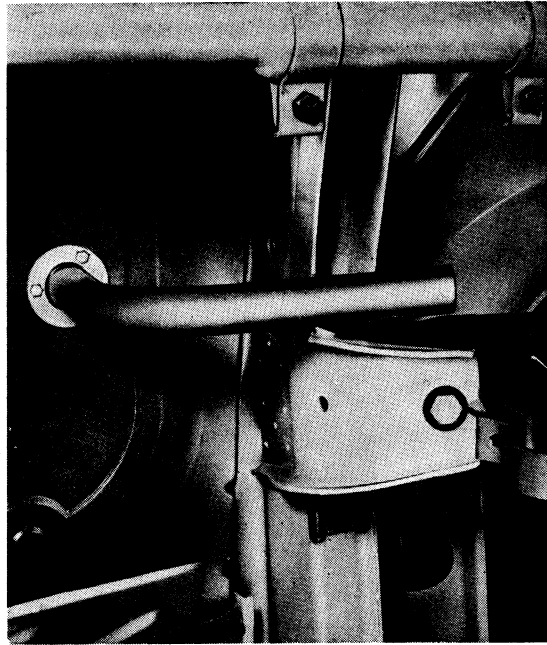


Figure 21

- 25 – Connect battery and check operation of heater.

Note

It may be necessary to switch "on" the safety switch if it has moved to the "off" position during handling.

- 26 – Install driver's seat and rear bench seat.

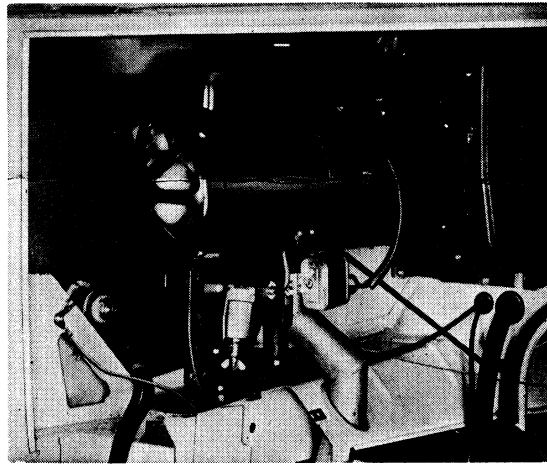


Figure 22

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