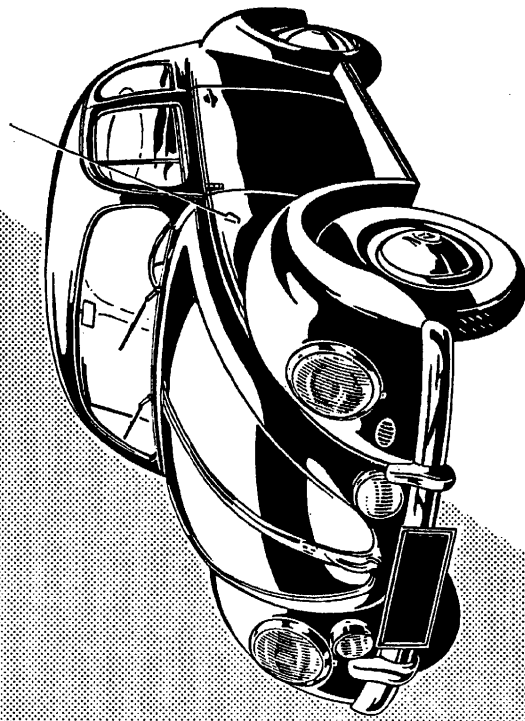




Installation Hints
for
BOSCH Products
MANUFACTURED IN GERMANY



Volkswagen

Printed in Germany
Imprimé en Allemagne

BVHB

VDT-LUBE 021.5 B-A (4-55)

ROBERT BOSCH GMBH STUTT GART

The VOLKSWAGEN

provides additional comfort and facility in starting through the subsequent installation of further BOSCH Products.

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All dimensions in mm

The wiring diagram has been placed at our disposal by courtesy of the Volkswagenwerk

Foglamp and Distance Beam Lamp

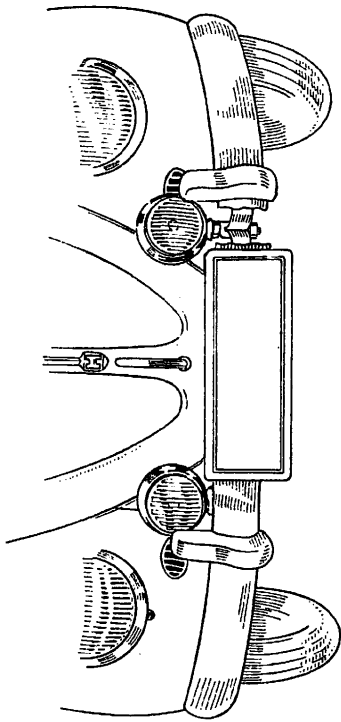


Fig. 1 Two foglamps LE/NE 105/... fixed by means of clamping holder LEBE 34 L 5 Z (low attachment)

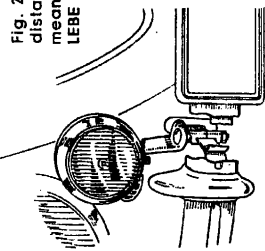


Fig. 2 One foglamp LE/NE 130/... and one distance beam lamp LE/EF 130/... fixed by means of clamping holder LEBE 34 L 1 Z (higher attachment)

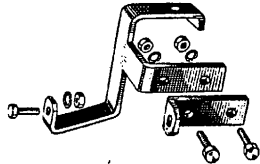


Fig. 4 Holder LEBE 113/2 Z for left side of vehicle (LEBE 113/1 Z for right side of vehicle)

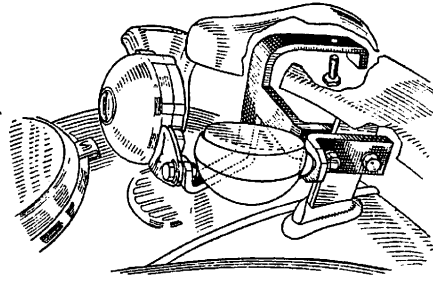


Fig. 5 Attachment of a holder as shown in Fig. 4 to the bumper bar

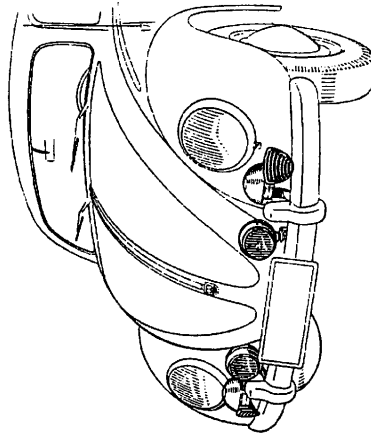


Fig. 3 Attachment of two foglamps LE/NE 105/... and of a lantern horn system 2 1/2 volts (aluminum coloured) by means of holders as shown in Fig. 4

Bosch Order Numbers

Headlamp LE/VE 180/2		Lens opening mm	Housing	Diffusing lens
Foglamps LE/NE 130 A 1 A 3 A 4 A 5	Bulb 6 V, 35 W NGL 175/1 Z Ostram No. 7315	130	black	clear glass
			chromium-plated	clear glass
			chromium-plated	yellow
			black	yellow
LE/NE 105/3 /4		105	chromium-plated chromium-plated	clear glass yellow
Distance beam lamp LE/EF 105/2 LE/EF 130/1 /2	Bulb 6 V, 35 W NGL 175/1 Z Ostram No. 7315	105 130 130	chromium-plated	clear glass
			black	yellow
			chromium-plated	yellow
Pull-type switch SH/TZ 1/1 Handle black or Relay SH/SE 21/1 if wired as per Fig. 6 a		Foglamp switch SH/LZE 1/1		
Clamping holder LEBE 34 L 1 Z for higher attachment of LE/NE 130/... LEBE 34 L 5 Z for low attachment of LE/NE 105/... Holder LEBE 113/1 Z for right side of vehicle LEBE 113/2 Z for left side of vehicle				

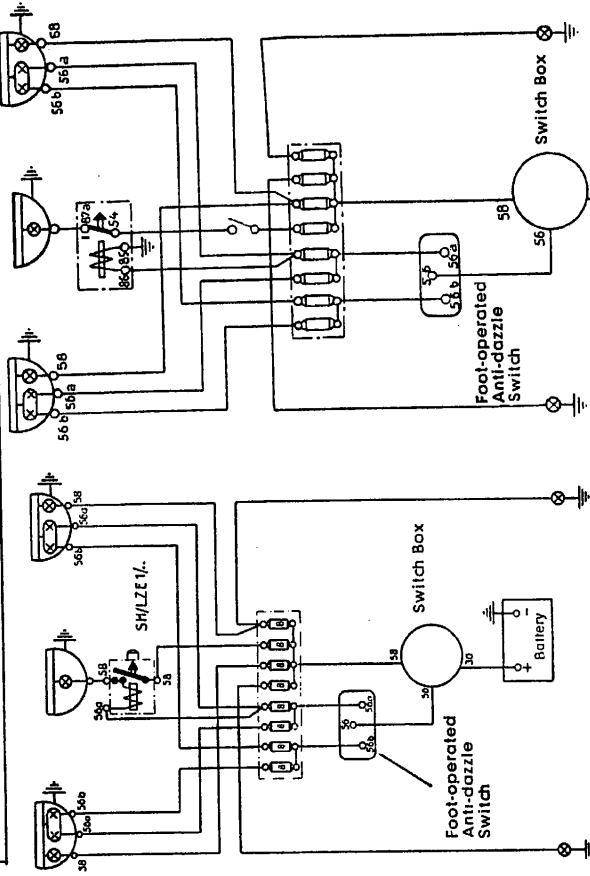


Fig. 6 Wiring of Foglamps

Fig. 6 a Wiring of Foglamps

Cross section of flexes from current source to headlamp:
 on 6-volt installations 2.5 mm²
 on 12-volt installations 1.5 mm²
 up to 3 m length of flex (otherwise take next higher cross section) and for load by one headlamp. For more than one headlamp, also select the next higher cross section.

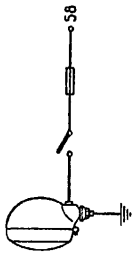


Fig. 7 Wiring diagram for connecting the distance beam lamp. For fixing see Fig. 2

Reversing Lamp

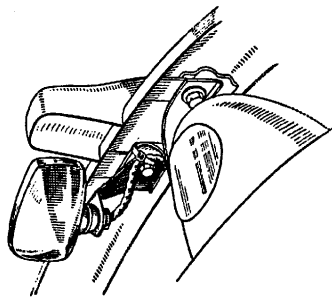


Fig. 8 Reversing lamp with holder LEBE 75 L 1 X for recent types of Volkswagen

To comply with the Road Traffic Act, the reversing lamp must not be switched on without the reverse gear being engaged.

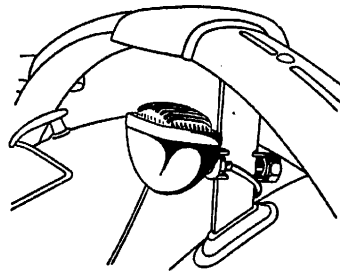


Fig. 9 Reversing lamp with clamping holder LEBE 34 L 5 Z for older types of Volkswagen

The reversing lamp switch SH/LG 2/1 is screwed with its fixing bracket on the centre tubular chassis underneath the rear seat by means of two self-tapping screws, as shown in Fig. 10. To actuate the switch, the operating lever SHHE 21 L 1 Z (must be ordered

separately) is clamped on the gear selector rod. Care must be taken that the reversing lamp switch is installed parallel to the gear selector rod. When the reverse gear has been engaged, the operating lever must come up against the switch push button in the centre but must on no account butt against the switch housing (provide for 2 mm spare control travel). For connection of reversing lamp switch see Figure 11.

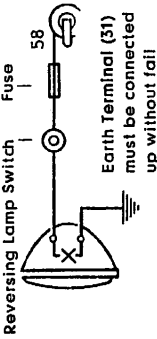
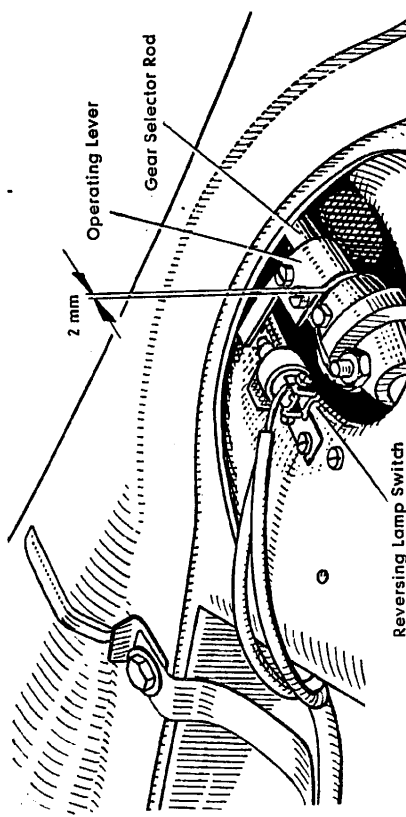


Fig. 10 Installation of Reversing Lamp Switch

Fig. 11 Wiring Scheme

Bosch Order Numbers

Reversing lamp	LE/RA 3/3 chromium-plated LE/RA 3/4 prime coat of dark grey
Bulb 6 volts 25 watts (to be ordered separately)	NGL 34Z/1 Z (Osram No. 7577)
Reversing lamp switch	SH/LG 2/1 or SH/LG 5/1
Operating lever	SHHE 21 L 1 Z
Clamping holder for reversing lamp (for older types of vehicles)	LEBE 34 L 5 Z
Mounting holder for reversing lamps (for recent types of vehicles)	LEBE 75 L 1 X

Adjusting the Headlamps

All headlamps can be adjusted in broad daylight with the BOSCH Headlamp Adjusting Device EFLE 8. and the accessories EFLE 8/1 (to be ordered separately), see Fig. 12. For full details refer to Bosch Leaflet WBF 116/2.

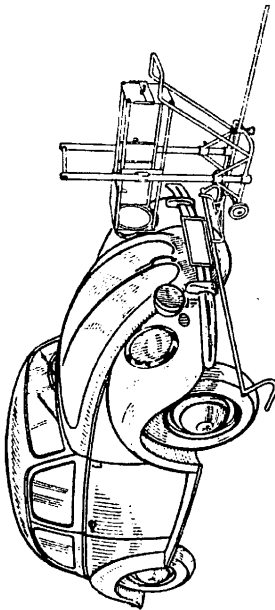


Fig. 12

Please note:

When adjusting headlamps, the car must be fully loaded!

If a BOSCH Headlamp Adjusting Device is not available, the vehicle should be placed on a level surface at a distance of 5 metres (5.5 yards) from a wall. The longitudinal axis of the vehicle must run vertically to the wall.

Preparing the adjusting wall for foglamps

Mark out an adjusting line on the wall whose distance from the ground is by the dimension n less than the level H of the foglamp (centre of lens opening).

$n = 24$ cm on LE/NE 105/...

$n = 18$ cm on LE/NE 130/...

(n is embossed on the cover ring of the foglamp)

For areas where thick fog is not uncommon, it is advisable to dip the foglamp more acutely

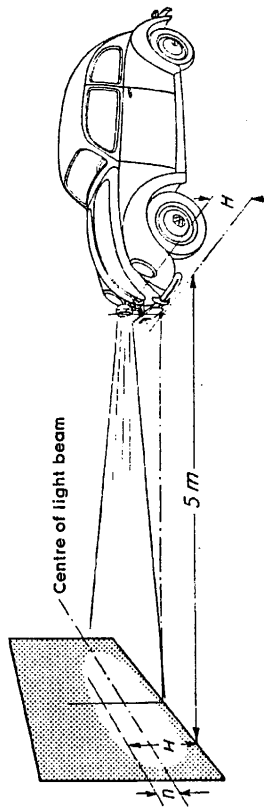


Fig. 13 Adjusting the foglamps

Adjusting the foglamps

After switching the foglamp on, it must be so aligned that the adjusting line runs through the centre of the most brightly irradiated area of the wall surface. Each foglamp should be tested individually and the second foglamp (where fitted) as well as the other lamps should be covered.

Preparing the adjusting wall for the reversing lamp

Mark out an adjusting line on the wall at the level $h = 0.5 H$. H here represents the level of the reversing lamp (centre of lens opening) above the ground.

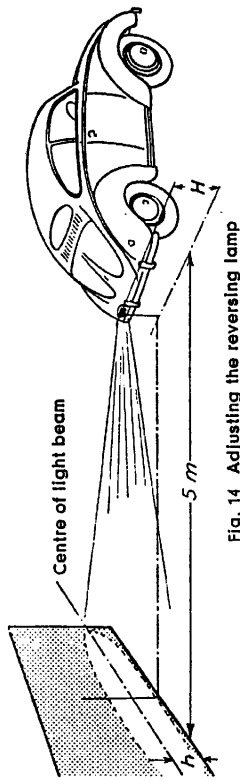


Fig. 14 Adjusting the reversing lamp

Adjusting the reversing lamp

After switching the reversing lamp on, it must be so aligned that the adjusting line runs through the centre of the most brightly irradiated area of the wall surface.

Horns

Attachment of an additional Supertone Horn to bumper-bar support by means of clamping holder LEBE 34 L 6 Z.

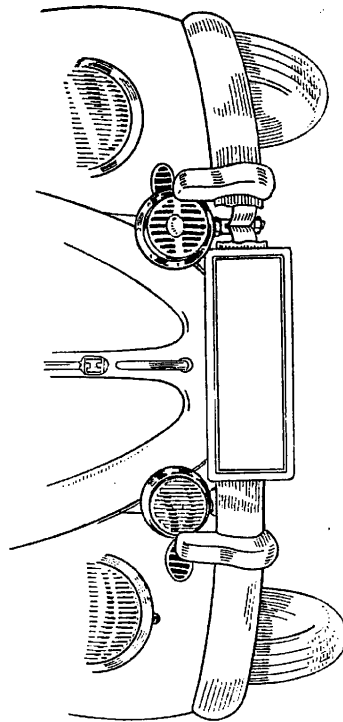


Fig. 15 Additional attachment of one Supertone Horn and one Foglamp

For fixing the Supertone Horn, clamping holder LEBE 34 L 6 Z is modified as shown in Fig. 16.

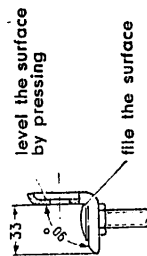


Fig. 16 Modification of the clamping holder LEBE 34 L 6 Z

Additional attachment of two horns (e. g. supertone two-tone system) and two foglamps with fixing brackets or clamping holders to bumper bar and bumper-bar support.

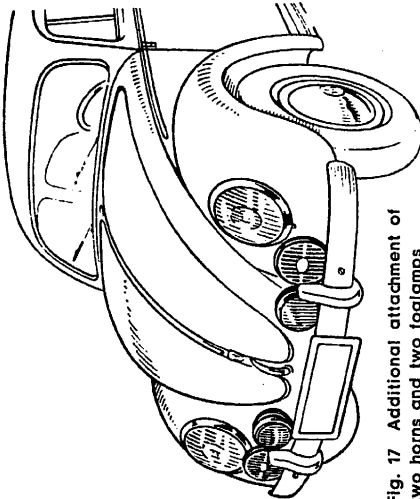
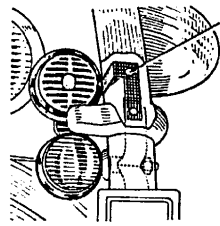


Fig. 17 Additional attachment of two horns and two foglamps



Use chromium-plated screw

Fig. 18 Horn attachment by means of angles as shown in Fig. 19

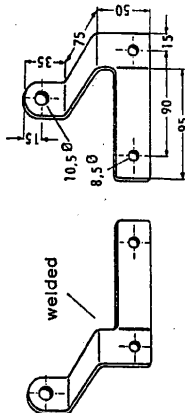


Fig. 19 Have fixing angle made of flat steel 6 by 30 mm.

Additional attachment of two horns (e. g. supertone two-tone system) and one foglamp by means of mounting holder to bumper bar and bumper-bar support.

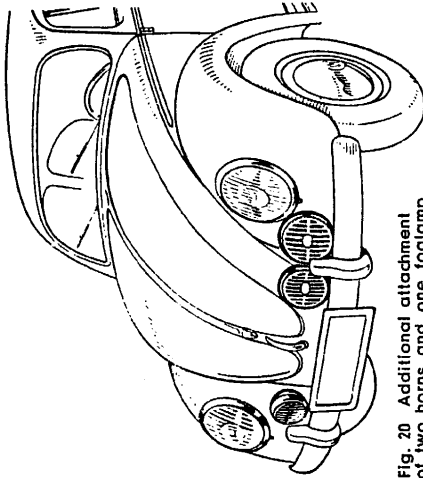


Fig. 20 Additional attachment of two horns and one foglamp

Conductor cross-sections from source of current to horn: 1.5 mm² up to a length of 3 m. With longer flexes, use the next higher cross section. The cross sections specified apply to load by one horn. Select correspondingly larger cross sections for conductors carrying current for more than one horn.

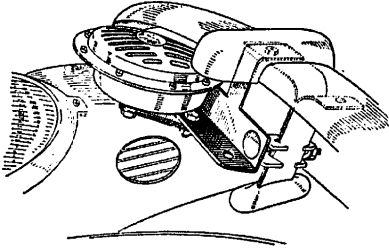


Fig. 21 Fixing a horn by means of holder as shown in Fig. 22 and clamping holder LEBE 54 L 6 Z

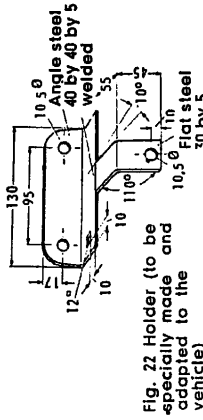


Fig. 22 Holder (to be specially made and adapted to the vehicle)

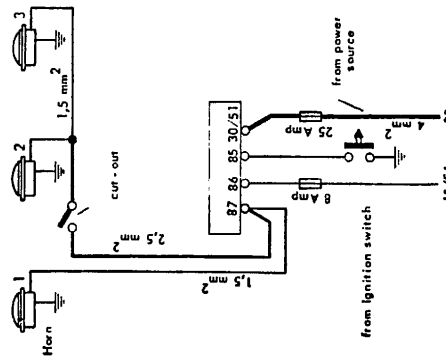


Fig. 23 Wiring scheme for two-tone and three-tone systems

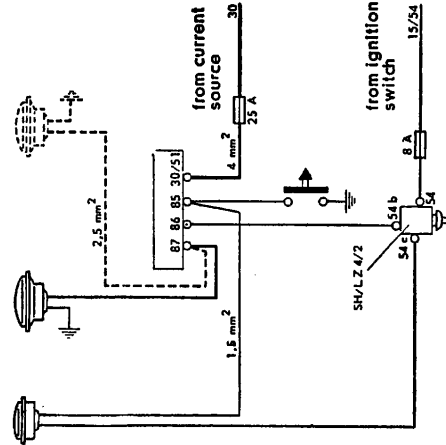


Fig. 24 Wiring scheme for standard horn with supertone horn or supertone two-tone system

Bosch Order Numbers

Three-tone system 1 horn each	HO/FDF 6/3 black or HO/FDF 6/33 chromium-plated /4 /54 /5 /35
Supertone two-tone system 1 horn each	HO/FSA 6/3 black or HO/FSA 6/6 chromium-plated /4 /7
Relay	SH/SE 16/2
Switch (cut-out)	SH/TZ 1/1 (on wiring shown in Fig. 23) or SH/TZ 1/5 (on wiring shown in Fig. 23) or SSH 507/1 Z (on wiring shown in Fig. 23)
Switch (change-over switch) or Horn change-over switch	SH/NH 1/1 (on wiring shown in Fig. 24) SH/LZ 4/2 (on wiring shown in Fig. 24)

Bosch Fanfare Horn

(see also page 4)

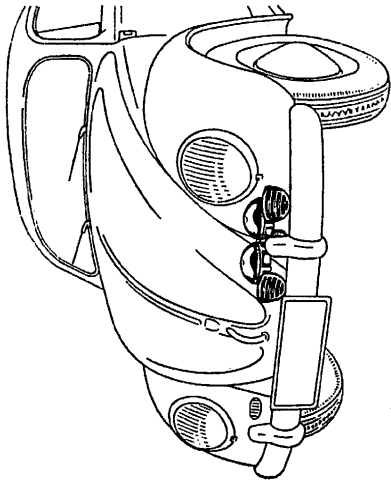


Fig. 25 Bosch Fanfare Horn attached to bumper bar

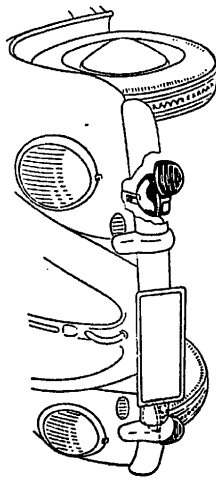


Fig. 28 Bosch Fanfare Horn mounted inside

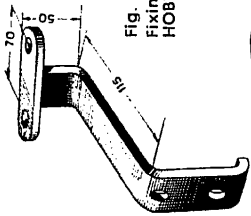


Fig. 26 Fixing Bracket HOBE 17 G 1 Z

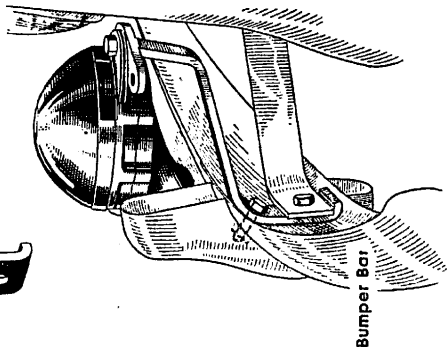


Fig. 27 Mounting of holder HOBE 17 G 1 Z

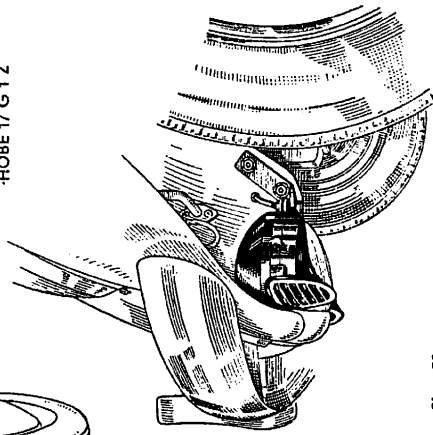


Fig. 30 View of vehicle obliquely from underneath. Second horn arranged inversely

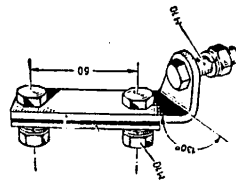


Fig. 29 Fixing Angles HOBE 13 G 1 Z for left attachment HOBE 13 G 2 Z for right attachment

Bosch Order Numbers

Fanfare System	1/6 volts	black
Fanfare System for mounting outside	2/6 volts	lacquered silver colour
Fixing angles for inside mounting	HOBE 13 G 1 Z HOBE 13 G 2 Z	for left side of vehicle for right side of vehicle
Fixing bracket	HOBE 17 G 1 Z	attachment to bumper bar

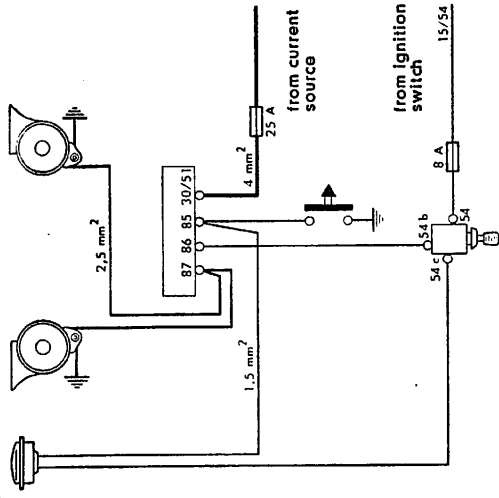


Fig. 31 Connection wiring scheme

Change-over switch SH/LZ 4/2 for optional changing
Position 1 Fanfare Horns
Position 2 Standard Horn

Battery Main Switch

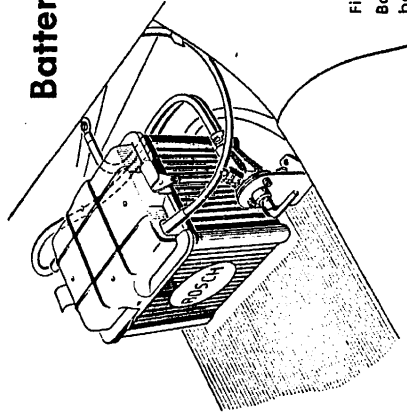


Fig. 32 Wiring scheme

The entire electrical system is switched off from the driver's seat.

Fig. 33 Battery main switch mounted next to the battery (for fixing angle see Fig. 35)

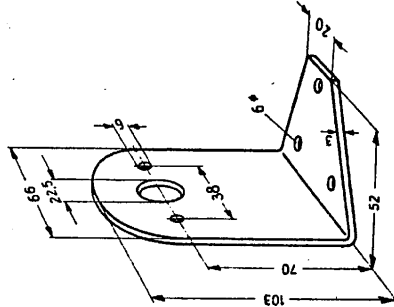


Fig. 35 Fixing angle of sheet steel to be specially made

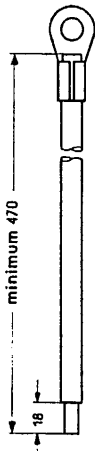


Fig. 34 Earth conductor 50 mm² for mounting the battery main switch

Connect flex of 50 mm² between negative terminal of battery and battery main switch (with battery terminal NEA 4/4 Z and a connecting lug). Connect flex of 50 mm² between battery main switch and earth (connecting lugs on both ends).

Bosch Order Numbers

1 battery main switch	SSH 15/10 Z
3 connecting lugs	NKS 116/1 X
1 battery terminal	NEA 4/4 Z

Automatic Return Switch for Direction Indicators

Mounting the automatic return switch SH/WR 1/2 (with pilot lamp)

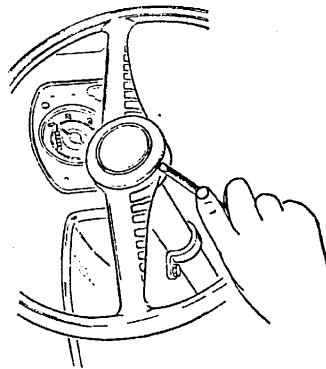


Fig. 36 Lifting the horn push-button off

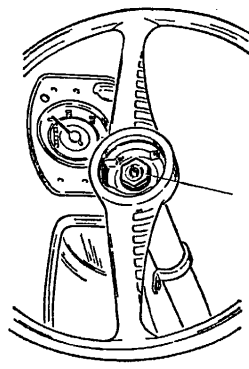


Fig. 37 Loosening the fixing nut for the steering wheel

1. Horn push-button to be carefully lifted off the steering column; to do so, insert screwdriver in recess provided (Fig. 36). Loosen clamp screw for horn cable.
2. Unscrew hexagon nut on steering shaft (Fig. 37).
3. Mark (with centre punch) position of steering wheel in relation to steering shaft; set steering wheel to "straight ahead" and remove.

4. Insert annular cam for the automatic return switch in the recess of the steering wheel from below in such a way that the protruding flap points in the direction provided for the automatic return switch (See Fig. 38).

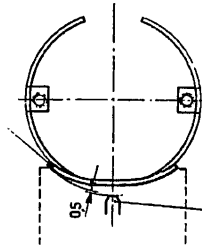
Tap steering wheel hub with core bit for M 3 (2.3 mm dia.) through the threaded holes of the fixing flaps of the annular cam; remove annular cam. Drill throughholes for M 3 in steering wheel and countersink on the upper side of the steering wheel for the head of the two countersunk head screws. Fasten annular cam with screws.

5. Fit fixing strap with lock on steering column (Fig. 39); fix automatic return switch (with cable) in turnbuckle though as yet not tightening it fully.
6. Mount steering wheel with annular cams, paying attention to the marking; tighten hexagon nut (see Fig. 37).

7. Fit automatic return switch in such a way that the driving lug with the switch disconnected is about 0.5 mm apart from the top of the cam (with steering wheel turned); moreover, the driving lug (or the housing) must be symmetrical in relation to the annular cam. Tighten fixing strap (Fig. 40).
8. Connect horn push-button and press it into the recess of the steering column.

9. Drill a hole for the connecting cable of the automatic return switch (approximately next to the already existing hole underneath the dashboard, immediately beside the steering column) and provide with rubber socket.

Annular Cam



With steering wheel straightened, driving lug (or housing) is symmetrical to cam

protruding flap of annular cam

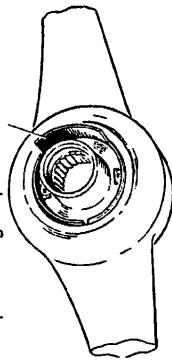


Fig. 38 Steering wheel with annular cam (view from below)

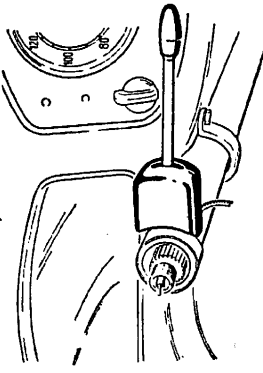


Fig. 39 Fix automatic return switch on the steering column

9. Drill a hole for the connecting cable of the automatic return switch (approximately next to the already existing hole underneath the dashboard, immediately beside the steering column) and provide with rubber socket.

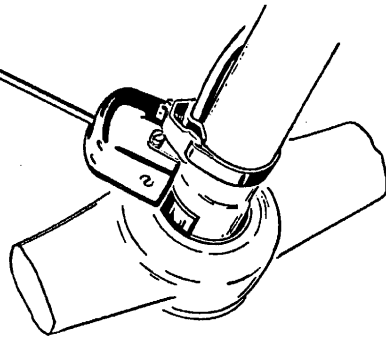


Fig. 40 Automatic return switch on steering column with steering wheel mounted (view from below)

10. Draw in cable and connect (see Fig. 41).

11. Check whether the switch is connected up correctly and functions satisfactorily. Fig. 42 shows the position of the switch when turning to the left.

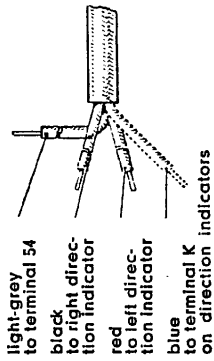


Fig. 41 Connection of leads

Direction Indicators and Wiper Motor

Fig. 43 Bosch direction indicators WK/EE 6/150 A 1 or flashing semaphore arm WK/EEB 6/150/1

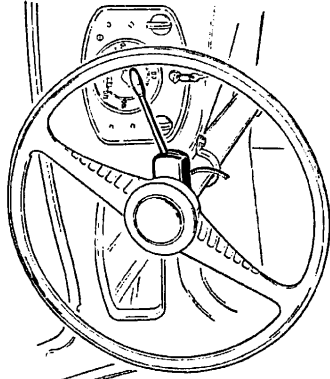
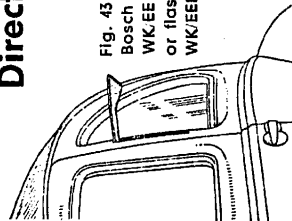


Fig. 42 Automatic return switch when "turning left"

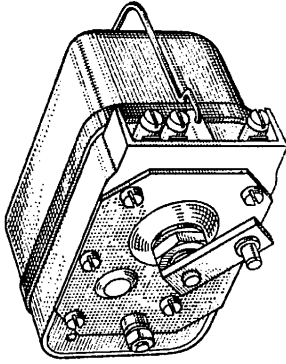
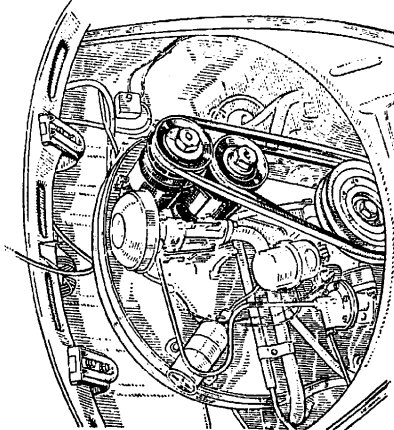


Fig. 44 Bosch wiper motor WS/EA 6/1

Installation of an Auxiliary Dynamo

Fig. 45 Auxiliary dynamo LJ/GEK 160/12/2600 R 1 installed for radio operation in Volkswagen

Installation instruction WEE 311/7 obtainable on request



Product of our Subsidiary Company EISEMANN GMBH Windscreen Washer "SP 2A for Volkswagen"

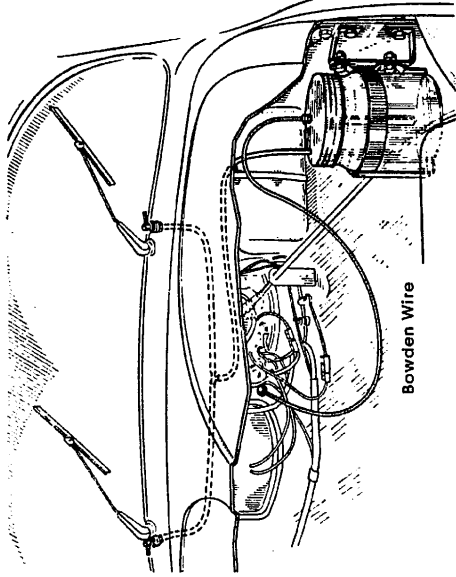


Fig. 46 Windscreen washer Water tank with holder installed as shown in Fig. 47

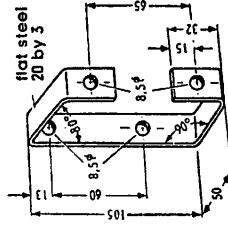


Fig. 47 Holder (to be specially made)

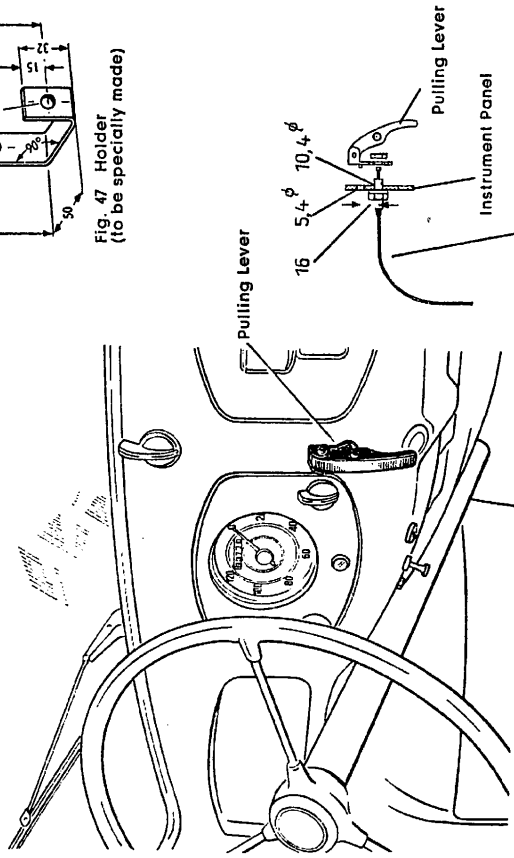


Fig. 48 Pulling lever attached to instrument panel

Superhet Car Radios

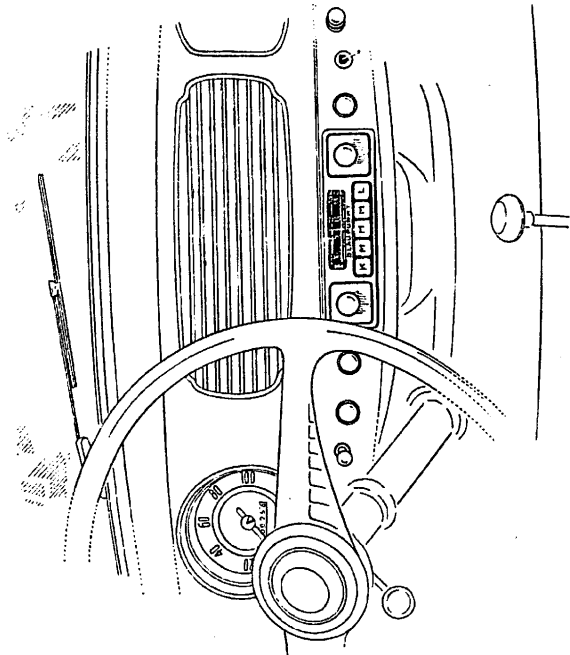


Fig. 49 Superhet installed in Volkswagen

Suitable for installation:

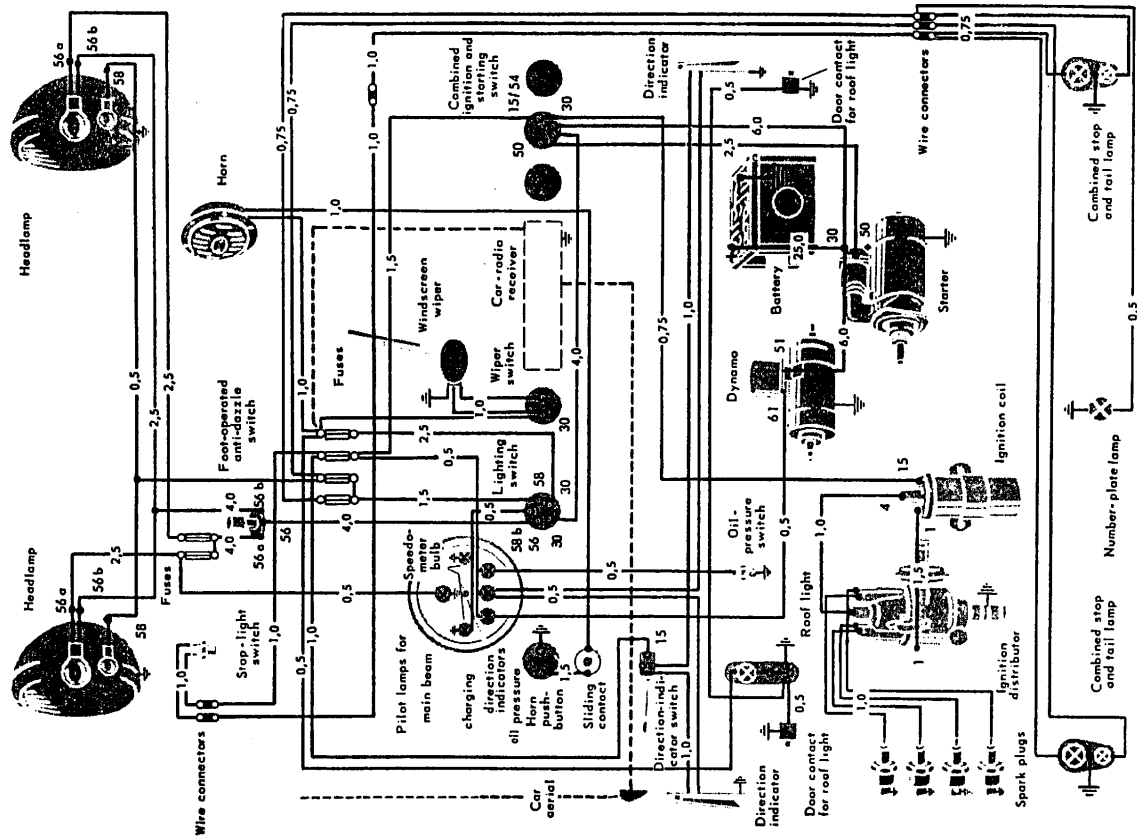
- Autosuper "Hamburg" for long, medium and short wave reception
- Autosuper "Stuttgart" for long, medium and short wave reception
- Autosuper "Frankfurt" for medium wave and V.H.F. reception
- De Luxe Autosuper "Köln" for medium wave and V.H.F. reception with Selectomat Station Finder

Detailed instructions for installation are supplied with the sets.

Essential Interference Suppression Parts

	Hamburg	Stuttgart, Frankfurt, Köln
Suppressor plug for spark plugs	4 EM/W 10/14	4 EM/W 10/14
Screening socket for ignition distributor	—	1 EM/W 5/12
Suppressor condenser for wiperscreen wiper	1 EMKO 19 Z 3 Z	1 EMKO 19 Z 3 Z
Suppressor condenser for ignition coil (terminal 15)	1 EMKO 9 Z 9 Z	1 EMKO 9 Z 9 Z
Suppressor condenser for dynamo (terminal 51)	1 EMKO 9 Z 9 Z	1 EMKO 9 Z 9 Z
Suppressor condenser for dynamo (terminal 61)	—	1 EMKO 15 Z 10 Z
Cable section	—	1 WEA 439 Z 1 Z
Distributor rotor for ignition distributor	1 ZVVT 5 Z 4 Z	1 ZVVT 5 Z 4 Z

Original Wiring Diagram



List of Wear and Tear Parts and Suggestions for Stocks Volkswagen Passenger Cars		ES-VOLK-P 1, 2, 1			
		Year of construction 1954			
Standard Model Export Model Sunshine Roof Standard Sunshine Roof Export Cabriolet Engine: 1.192 ltr. - 4-Cylinder, - Four-stroke - Petrol - 30 HP Air-cooled		111 113 115 117 151	112 114 116 118 152	Right-hand drive	
Designation of products and description of spare parts		Type Formula and Order Number	Quantity suggested for 10 20 50 100 Vehicles		
Ignition distributor	up to January 1954	VJU 4 BR 2	—	—	—
	since February 1954	VJU 4 BR 3	—	—	—
Contact support with contact Contact-breaker lever with contact Condenser	Export model dust-proof	VJU 4 BR 3 T	—	—	—
		VJU 4 BR 8	1	1	2
	since August 1954	ZKT 67/1 Z ZUH 9/8 Z ZKO 29/62 Z	2	4	6
Distributor rotor (distributor plug) for VJU 4 BR 2, R 3 for VJU 4 BR 3 T		ZVT 53 Z 9 Z	2	2	4
		ZVT 53 Z 10 Z	2	2	4
		ZVS 75 Z 6 Z	2	2	4
		NSK 2/1 Z ZSV 22 Z 91 Z ZSV 22 Z 16 Z	2	3	4
Carbon brush with spring for distributor cap Vacuum controller for . . . BR 2, 3, 3 T for . . . BR 8		TE 6 A 3	—	—	—
		W 175 T 1 electrode air gap 0.7 mm KEEA 4 J 1 Z	40	60	120
Ignition coil Spark plug		LJ/REF 160/6/2500 L 13 LJ/REF 160/6/2500 L 4	8	16	32
		DSK 2/38 Z LJSF 2 L 1 X LJAN 12 L 95 Z DWC 217 L 22 Z DWC 217 L 10 Z	1	2	3
Plug connector Dynamo			10	20	50
			—	—	—
Carbon brush Spring for carbon brush Armature with ball bearing Exciting winding			4	8	12
			1	1	2
			1	1	2
			1	1	2

Designation of products and description of spare parts	Type Formula and Order Number	Quantity suggested for 10 20 50 100 Vehicles		
		10	20	50
Regulator and cut-out for LJ/REF 160/6/2500 L 13 for LJ/REF 160/6/2500 L 4	RS/TA 160/6 A 3 RS/TA 160/6 A 1	3	5	10
Starter Carbon brush Spring for carbon brush Armature Gearing with pinion Number of teeth = 9, modulus = 2.5 Engaging magnetic switch Bearing bush for armature shaft in crankshaft housing Packing ring for end cap	EED 0,4/6 L 4 WSK 29 L 1 Z WBF 554/2 X DAN 127 L 3 Z	1	1	2
Headlamp Glass lens (diffusing lens) Packing ring for glass lens Reflector Rim Clip spring for reflector Bulb socket with terminal plate Clip spring for bulb socket Two-filament bulb (bilux) 6 V 35/35 W Bulb 6 V 2 W	DGT 15/2 Z SSM 120/2 Z WMB 651/52 X DNR 7 L 2 X LE/YE 180/1 spare LE/YE 180/2 LEFE 28 L 2 X LENR 1 L 4 X LERF 14 L 1 Z LEDE 15 L 1 Z LEBF 6 L 3 X 314 LEFA 13 L 11 Z LEBF 5 L 2 X 314 NGL 507/1 Z (Osram No. 7324) NGL 892/1 Z (Osram No. 3895)	2	4	6
Headlamps (special type for Holland) Glass lens (diffusing lens) * All other parts are identical as on LE/YE 180/2	* LE/YE 180 x 2/4 spare * LE/YE 180 x 2/5 LEFE 28 L 4 X	—	—	—
Bosch Horn Small-size motor for additional heating	HO/DFD 6/47 KM/PB 6/6/3200 L 1 or AL 1	1	2	3

Designation of products and description of spare parts	Type Formula and Order Number	Quantity suggested for Vehicles		
		10	20	50 100
Suggestions for Installation				
Foglamp Bulb 6 V 35 W	LE/NE 105/4 NGL 175/1 Z (Osram No. 7315)	2	2	4 6
or		2	4	6 10
Foglamp Bulb 6 V 35 W	LE/NE 130 A 1 NGL 175/1 Z (Osram No. 7315)	2	2	4 6
Reversing lamp Bulb 6 V 25 W	LE/RA 3/3 NGL 342/1 Z (Osram No. 7577)	2	2	4 6
Switch for reversing light	SH/LG 2/1	2	2	4 6
Fanfare horns	HO/ESA 6/1 HO/ESA 6/2	1	1	2 3
Supplementary parts for radio interference suppression				
Suppressor plug for spark plugs	EM/W 10/14	4	8	16 32
Distributor rotor with resistor suppressor	ZVVT 5 Z 4 Z	2	2	4 8
Suppressor condenser for ignition coil Terminal 15	EMKO 9 Z 9 Z	2	4	8 12
Suppressor condenser for dynamo Terminal 51	EMKO 9 Z 9 Z	2	4	8 12
Suppressor condenser for windshield wiper	EMKO 19 Z 3 Z	2	4	8 12
Outside Makes	Corresponding Bosch products			
Battery 6 V 70 Ah	BA/6/70/1	1	2	3 6
6 V 84 Ah	or BA/6/84/1	1	2	3 6
Light switch	SH/LZ 1/1	1	1	2 3
Switch for windshield wiper	SH/TZ 1/1	1	1	2 3
Foot-operated anti-dazzle switch	SH/NF 2/1	1	1	2 3
Stoptlight switch	SH/LO 2/1	1	1	2 3

Designation of products and description of spare parts	Type Formula and Order Number	Quantity suggested for Vehicles		
		10	20	50 100
Fuse box two-fold Fuse 8 amps.	VM/FSD 2/1 NSG 3/2 Z	2	2	4 6
Fuse box four-fold Fuse 8 amps.	SEA 17 L 1 Z NSG 3/2 Z	20	40	60 100
Windscreen wiper	WS/EA 6/1	2	2	4 6
Direction indicator Tubular lamp 6 V 3 W	WK/EE 6/150 A 1 NGL 981/1 Z (Osram No. 6427)	—	1	2 4
Flashing semaphore arm	WK/EEB 6/150/1	2	4	6 12