Fitting instructions for headlight wiper kit 831552 SAAB 95/96.

These instructions are intended for cars of year model 1971 which are not equipped with headlight wipers but which are prepared for such an equipment.

1. Dismount the engine hood, the grill and the decor frames for headlights. Remove the plastic strips and plugs from the decor frames. Loose the minus cable from the battery. Dismount the washer container. Loose the expansion tank of the radiator.

2. Fitting and connection of electric cables.

a) Fit the cables to the control relay (marked R 500.403) as follows:
Black cable marked 85 to 85 on the control relay.
Blue cable marked 87a to 87a on the control relay.
Green cable marked 86 to 86 on the control relay.

b) Connect loose grey cable to 30/51 and to 85 on the wiper relay (marked R 601.032).
Yellow cable marked 87a to 87a on the wiper relay.
Red cable marked 86 to 86 on the wiper relay.
Brown cable marked 88a to 88a on the wiper relay.
Red cable marked 88 to 88 on the wiper relay.
Black double cable marked 87 to 87 on the wiper relay.

c) Fit the relays on the cowl. Loose the fuse box and draw the cable net between the fuse box and the plastic protection. Tighten the fuse box. Loose red cable marked 5 from the fuse box and connect it with red cable from the fuse box of the cable net. Remount these into the fuse box.

d) Approx. 25 cm into the cable net from the "relay end" two cables emanate from the net. Draw the cable with a single-pole jointing sleeve on the cowl beneath the fresh air channel to the corresponding jointing sleeve in the centre cable net situated quite to the left of the fresh air channel. Fasten the cable with 2 clips on the water pipe.

e) Draw the green cable with a flat neg, which emanates from the same place, through the cowl on the same place as the front cable net and in beneath the instrument panel to the eight-pole jointing sleeve. Loose the grey cable from connection No. 6 of the jointing sleeve (marked on the edge of the sleeve with very small figures). Then fit this grey cable to the single-pole jointing of the diode. The red cable of the diode shall then be fitted together with the green cable in the eight-pole jointing sleeve connection No. 6, where the grey cable was fitted before.

f) Fasten the cable net on RH wheel housing and front member together with the front cable net with electrotape. Fit the ground cable together with the minus cable of the battery on the grounding screw at the battery shelf.

3. Premount the wiper motor by fitting spring washer and nut loosely on the spindle. Fit shaft seal and sealing nut. Fit the crank arm as per figure. NOTE! The screw shall be tightened at 100 kp/cm and secured with Loctite. Connect the cables with the number of the cable to the corresponding number on the motor. Fit the motor in the bracket beneath LH headlight. Tighten with the spindle nut and the two screws with spring washer and nut.

4. Put the wiper mechanism in behind the grill recess of the front plate. Fasten the centre bushing on the back of the plate attachment with slot-headed screws, two star washers and nut. See to it that the bushing is perpendicular to the wiper arms. Apply SAAB Chassis Grease on the support plates on both sides of the grooves for the guide bushings. Fit the bushings and the springs. The fitting of the springs will be facilitated if you first fit the inner end in the attachment hole in the plate, and then in the bushing.
Fit the push rod to the crank arm of the wiper motor. Fasten the driving arm on the shaft pivot in the front plate and fix it with washer and clips.

5. Fit the new washer container with the two washer motors. Connect the brown cable of the front cable net with the yellow cable of the additional cable net and the black cable of the front net with the black cable of the additional net.

Fit the cables on the first pump with the connections downwards to avoid a short-circuit. Fit the cables to the second pump.

6. Fit the washer hoses and branch pipe from the front pump. Fasten the hoses with clips to the radiator. See sketch.

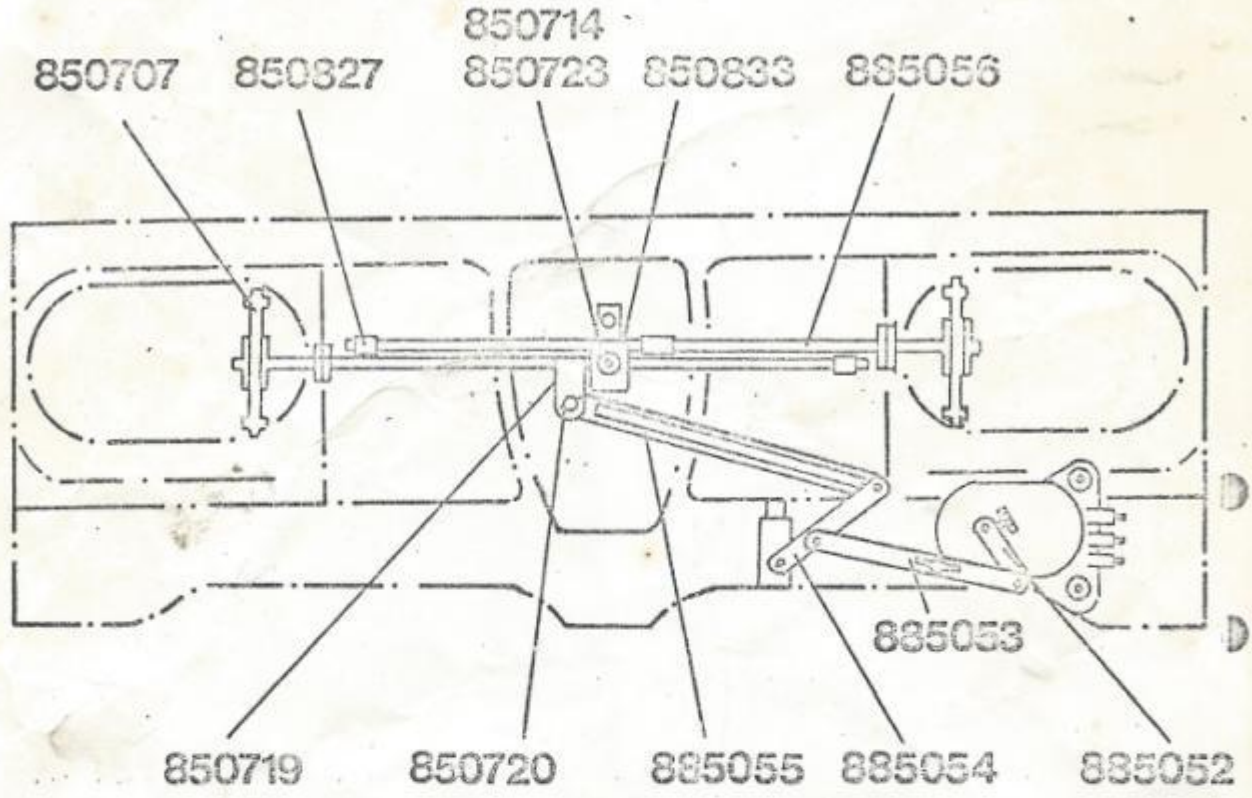
7. Fit the battery cable and check the parking position and the function of the wipers. The adjustment of the parking position shall be made on the push rod by changing the lenght of the rod. Check that the ropes are stretched so that the same stroke will be reached at both sides and so that a play will be eliminated. The stretching of the ropes can be adjusted by loosening their attachment bushings and by moving of these. Check that the guide bushings run easily in the fender plates and that the wiper blades have the right contact surface pressure against the headlight glasses.

NOTE!
If the headlight wipers are running without washer fluid the friction against the headlight glasses will release the fuse. At adjustment of the headlight wipers when decor frames and washer hoses are dismounted a 6 amp. fuse can be used temporarily at the test run of the device.

8. Fit the grill.
Fit the washer jets in the decor frames. Connect the hoses.
Fit the decor frames.

9. Fill the washer container with fluid. Check the washer and wiper device. Adjust any faults.

Fit the engine hood.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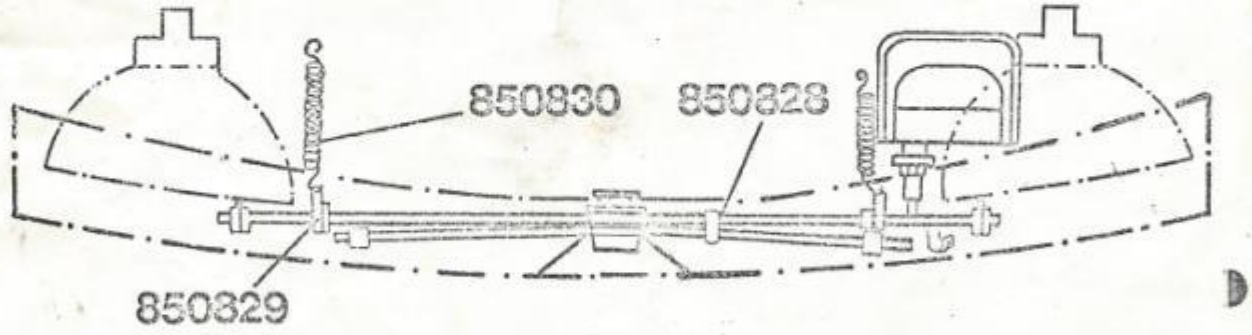
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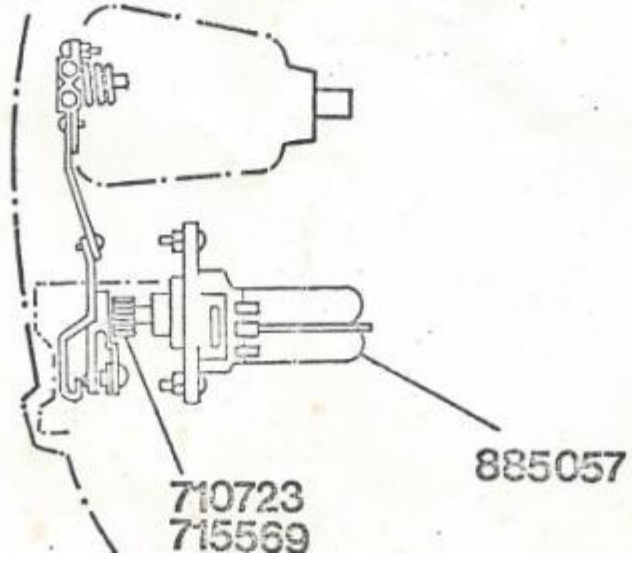
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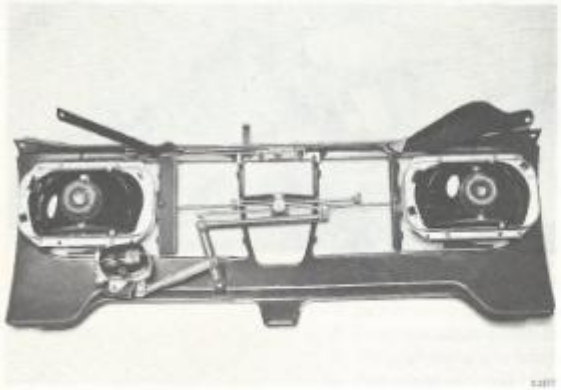
ELECTRICAL CONTROLS AND SWITCHES

As from model 1971, the Saab V4 is equipped for certain markets with a cleaning device for the headlights. The device consists of a wiper and washer unit driven by separate electric motors and started with the same switch as the windshield wipers and -washers. As from model 1972, the two washer systems has a common pump.



HEADLIGHT CLEANING DEVICE

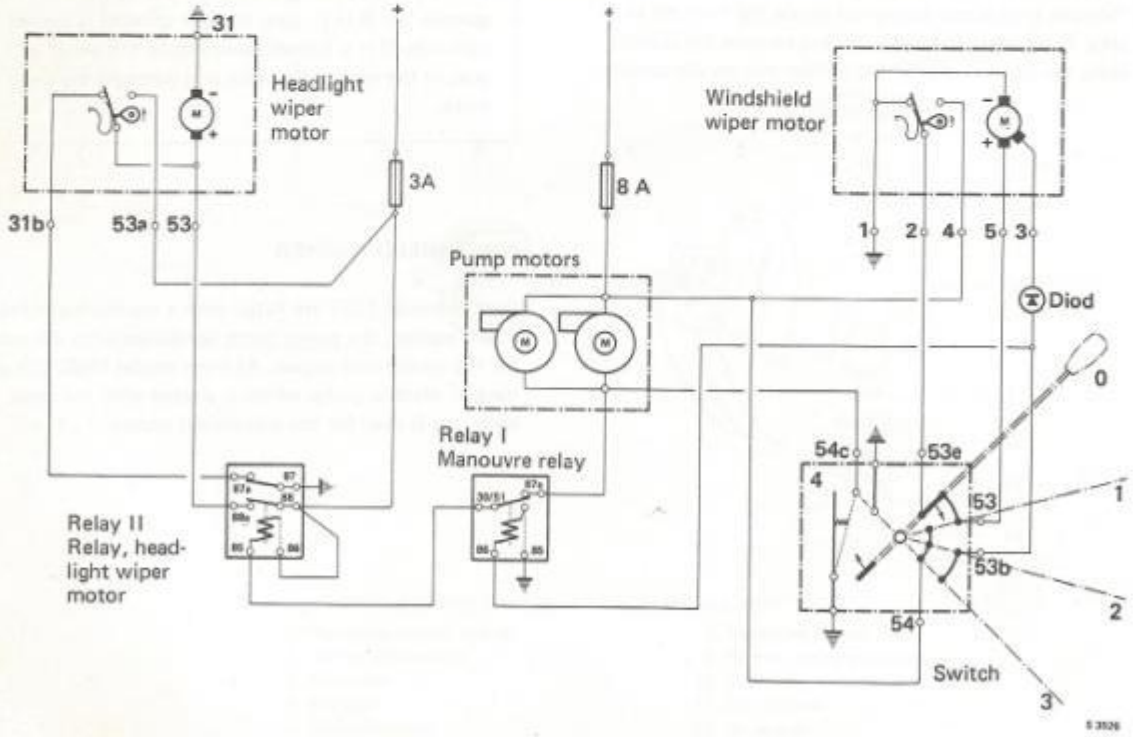
ELECTRICAL CONNECTION AND OPERATION, MODEL 1971

Switch in position 0

If the ignition lock is engaged, voltage is available at the wiper motor connections 4 and 53a respectively. The motors take up the parking position when a spring loaded contact in each motor has broken the connection between 4 and 2 in the windshield wiper motor and between 53a and 53 in the headlight wiper motor. The motors start very quickly when connections 1 and 31b respectively have been actuated by the contact device and thus shorted the rotor windings. This is necessary in order for the motor to have time to stop during the time the cam is actuating the contact. Otherwise, the motor would continue to rotate despite the switch being switched off, especially when the wipers move easily and the voltage across the motor is high.

Switch in position 1

Current goes only to the windshield wiper motor (low speed) via connections 54 and 53 on the switch.



WIRING DIAGRAM, HEADLIGHT WIPERS AND WASHERS, MODEL 1971

Switch in position 2

Current goes to the windshield wiper motor (high speed) and to relay 1 via connections 54 and 53b on the switch. The current goes through the coil in relay 1 and the coil attracts the relay contact to the lower position, whereupon the coil in relay 2 is actuated and both relay contacts are pulled downwards. Via the lower relay contact, current is provided to the motor for the windshield wipers, whereas the upper contact breaks the connection between terminals 87a and 87 to avoid short circuting when the contact device in the motor interconnects connections 53 and 31b. A diode is connected before connection 3 on the windshield wiper motor and serves to prevent current from going "backwards" through the extra winding in the wiper motor and thus switching on the headlight wipers when the windshield wipers are operating at low speed (position 1).

Switch in position 3

The same functions as in position 2, but the switch now connects connections 54c with earth and by this means both pump motors are engaged.

Switch in position 4

When the switch lever is moved towards the steering wheel, a spring loaded contact is activated and switches on both pump motors by earthing terminal 54c. At the same time, the headlight wipers are also switched on in that connection 85 on relay 2 is connected to earth via relay 1 (the contact in this relay in the upper position) and connection 54c.

Electrical connection and operation, as from model 1972

As from model 1972, the switch for wipers/washer has been changed. The manouvre relay (1) and the diode have been despensed with. Regarding the wiring, see group 371.

> NOTE
> For normal use of the wipers, a fuse for a maximum current of 3 amp. is to be fitted in order to avoid damage to the wiper motor if the wipers freeze onto the glass.
> While testing the assembly (dry headlight glass), an 8 amp. fuse may be temporarily fitted.

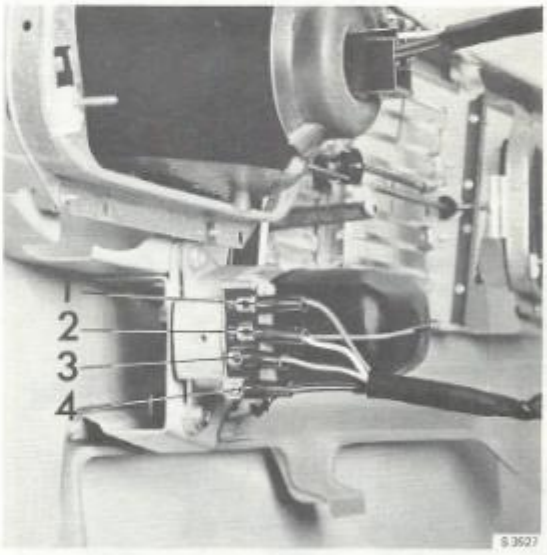
WIPER MOTOR

Removing

1. Remove the left grille plate (as from model 1974, the grille).
2. Unscrew the nut on the wiper motor spindle. Undo the push rod from the motor crank arm.
3. Disconnect the cable connections at the wiper motor and up to and incl. model 1973, remove the washer container.
4. Remove both motor retaining screws and lift out the motor.

Installing

1. Mount the crank arm to the motor, if it has been removed. Tighten the crank arm screw to a torque of 7.2 ft.-lb. (10 Nm, 1.0 kpm) and lock with Loctite.
2. Place the motor and mount the push rod to the crank arm. Refit the screws and tighten the spindle nut.
3. Connect the cables, see ill. and test the wipers.



CABLE CONNECTIONS AND CABLE COLORS, HEADLIGHT WIPER MOTOR

1. Brown to 53
2. Yellow to 31b
3. Red to 53a
4. Black to 31

4. Remount the grille and up to and incl. model 1973, the washer container.

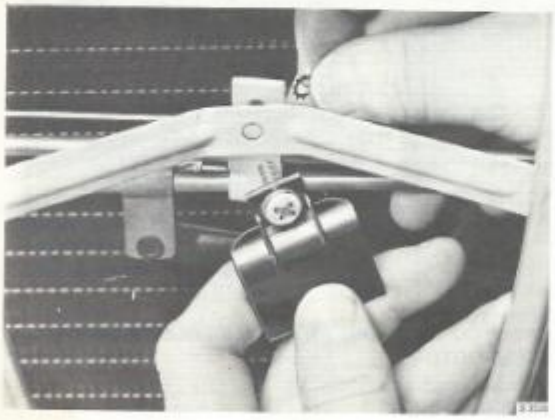
WIPER MECHANISM

Removal and installation, up to and incl. model 1973

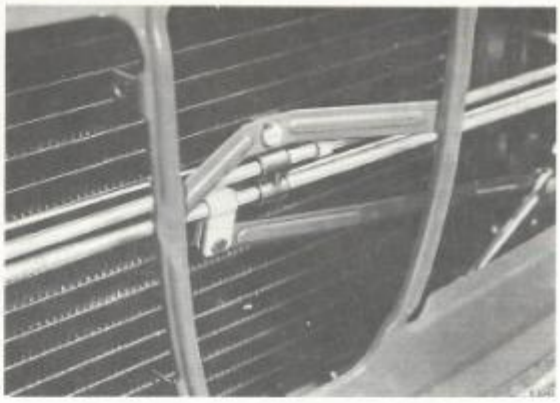
1. Remove the decor frames and the grille plates. Model 1973, remove the plastic cover in front of the wiper mechanism.

WIPER MECHANISM WITH PROTECTIVE COVER, MODEL 1973

2. Unhook the springs which hold the wiper shaft bushings, to the front sheet.
3. Remove the screw which holds the central bushing to the anchorage bracket. Model 1973, remove the tension pin.



FITTING THE CENTRAL BUSHING



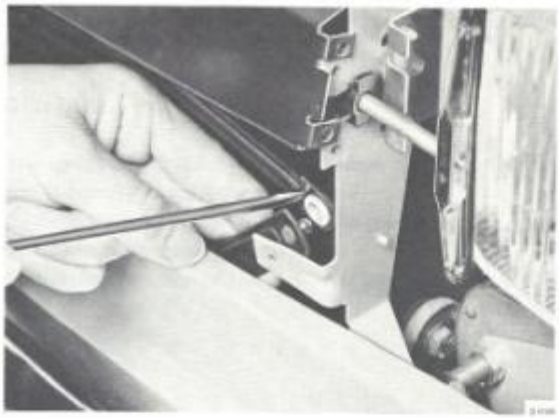
CENTRAL BUSHING FIXED WITH TENSION PIN, MODEL 1973

4. Prize apart the push rod from the crank arm, which is mounted in bearings to the front sheet and lift out the mechanism sideways. Remove the remaining links and crank arms.

Install in the reverse order. If the motor crank arm has been removed, tighten the screw to a torque of 7.2 ft.-lb. (10 Nm, 1.0 kpm) and lock with Loctite.
Before springs and bushings are fitted, the recesses in the front sheet must be greased on both sides.

Removal and installation, as from model 1974

1. Remove the grille.
2. Remove the wiper blade from the right wiper shaft.
3. Remove the four screws which hold the protective cover to the front sheet.
4. Unhook the springs which hold the wiper shaft bushings to the front sheet.
5. Prise apart the ball joint between the push rod and the connecting arm which is journaled in the front sheet.



REMOVING THE PUSH ROD FROM THE CONNECTING ARM

6. Remove the protective plate, including the central bushing and the wiper shafts, to the left.

REMOVING THE PROTECTIVE PLATE, AS FROM MODEL 1974

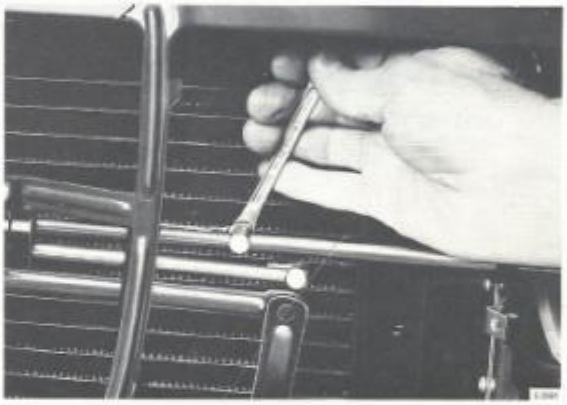
Reassemble in reverse order.

Adjustment

1. The parking position of the wipers is adjusted by altering the length of the short push rod.

ADJUSTING THE LENGTH OF THE SHORT PUSH ROD

2. Adjust the tension of the cords by slackening the locking screw in the retaining bushings for the cords and then moving these in order to stretch the cords.



ADJUSTMENT OF CORD LENGTH

3. Check the pressure of the wiper blades on the headlight glasses and make sure that the bushing does not stick in the recesses in the front sheet. The pressure of the wiper blades, measured in the parked position, must not exceed 11 oz. (3 N, 300 p).
   CRC 5.56 or similar is a suitable lubricant for the bushings.
4. Check that the wiper shafts are parallel (as seen from the front). If necessary, adjust by removing the grille plate and bending the bracket on the front sheet upwards or downwards.
5. Check that the central bushing is not loose and that it does not follow the movement of the wipers. Lubricate the central bushing with CRC 5.56 or similar.