

POWER WINDOWS

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GENERAL DESCRIPTION

The movement of the left electric window (driver's side) is automatic, controlled by a control unit which operates it according to the following logic:

- keeping the pushbutton pressed (over 300 ms), the window opens or closes normally until the pushbutton is released;
- a short pulse (below appr. 300 ms.) operates the motor which automatically stops when the stop limit is reached (window open or closed completely);
- an even shorter pulse (less than appr. 50 ms.) is considered by the control unit as an accidental shock and no action will result.

This operating logic takes place through the "key-operated" supply".

The electrical mechanism that operates the right front window is of the conventional type: when the button is pressed the window rises or drops; it is fitted with two control switches: one on the right-hand door and one on the left-hand door; operation is only possible with the ignition key engaged.

FUNCTIONAL DESCRIPTION

Fusebox "A" or "C":

The power window control unit **38** is supplied at pin 2 of connector B by the battery voltage through fuse **F22** of fusebox **G1**.

The key-operated enable signal reaches pin 1 of connector A via fuse **F17** (box "A") or fuse **F15** (box "C") still of **G1**.

The control signals for the upward and downward stroke respectively reach pins 4 and 3 of connector A from the left-hand window control switch **B53**.

In fact, this double switch sends an earth to the control unit from the part in which the contact has been closed (pin 1 = up; pin 2 = down).

The operating signals (up or down) leave pins 3 and 4 of connector B of **N38** for the left-hand window motor **P15** 12 V and earth are inverted to change the direction of rotation

Pin 1 of connector B of **N38** is connected to earth.

Conversely, the operation of the right-hand motor is controlled directly by one of the two switches **B21** (**B21a** located on the right-hand door, **B21b** on the left) which are connected in series.

The "key-operated" supply passes through relay **I12**, supplied by direct voltage through the line of fuse **G310**. The relay is energised with the key-operated supply, via fuse **F17** (box "A") or fuse **F15** (box "C") still of **G1** the righthand window motor **P14** is operated by one of the two switches **B21** in one direction or the other depending on the origin of the 12V or earth signal.

Fusebox "B"

The power window control unit **N38** receives the key-operated supply at pin 2 of connector B via wander fuse **G311** and relay **I12**.

The key-operated consensus reaches at pin 1 of connector A via fuse **F17** still of **G1**.

The control signals respectively for raising and lowering the window reach pins 4 and 3 of connector A leading from the control switch of the left-hand window **B53**.

This double switch sends an earth from the control unit from the part in which the contact has been closed (pin 1 = up; pin 2 = down).

The operating signals (up or down) for the left-hand window motor **P15** leave from pins 3 and 4 of connector B of **N38** 12 V and earth are inverted to change the direction of rotation

Pin 1 of connector B of **N38** is connected to earth.

Operation of the right-hand window is controlled directly by one of the two switches **B21** (**B21a** located on the right-hand door, **B21b** on the left) which are connected in series

The "key-operated" supply leads through relay **I12**, energized through the line of fuse **F17** of **G1**, and wander fuse **G310**. The motor for the right-hand window **P14** is operated by one of the two switches **B21** in one direction or in the other depending on the origin of the 12V and earth signals.

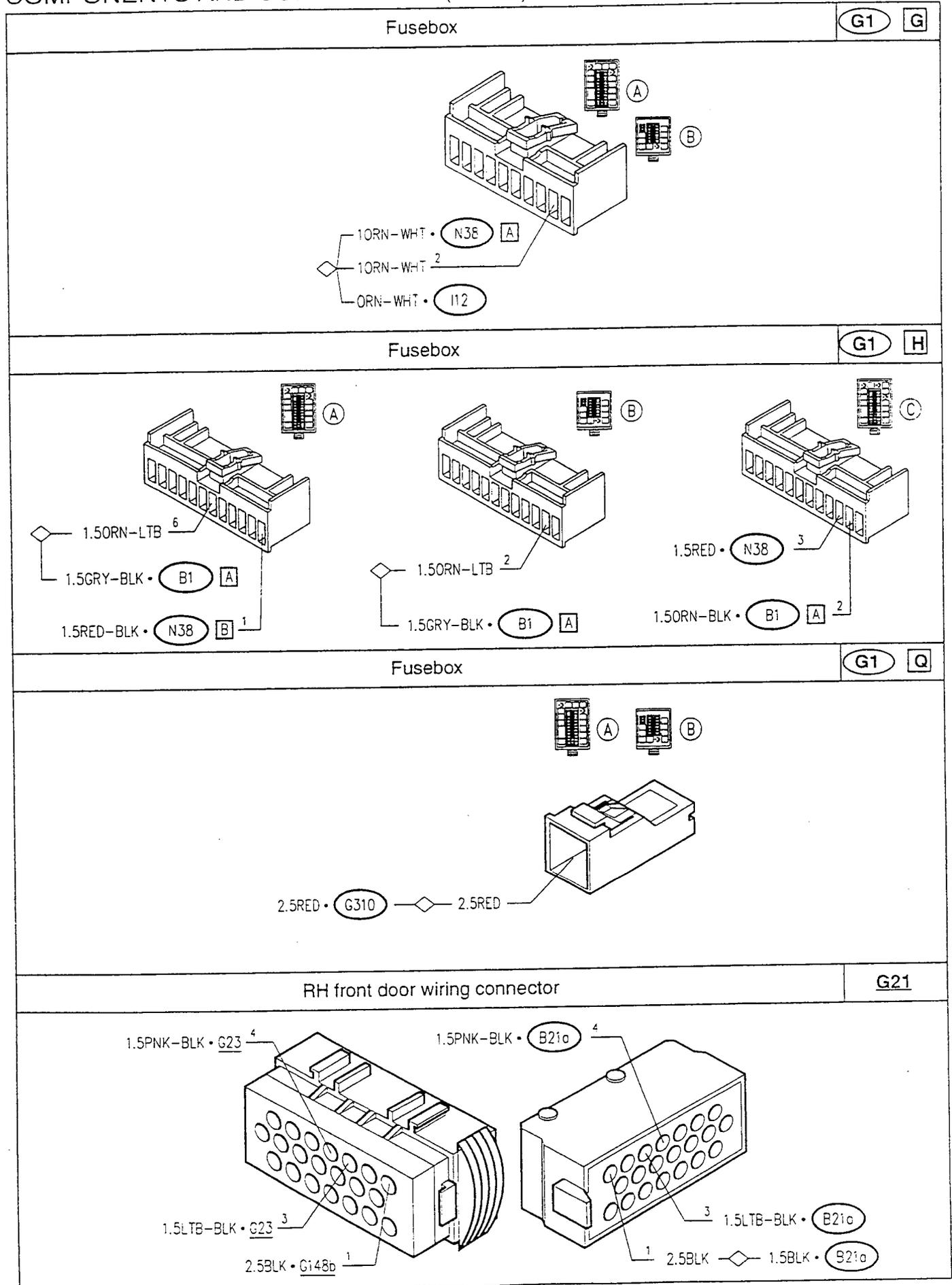
COMPONENTS AND CONNECTORS

RH front power window control switch (on RH door) (*)	B21a	RH front power window control switch (on LH door) (*)	B21b
RH front power window control switch (on RH door) (•)	B21a	RH front power window control switch (on LH door) (•)	B21b
Front power window switch with automatic device (*)	B53	Front power window switch with automatic device (•)	B53
Fusebox	G1	Fusebox	G1 A
			C

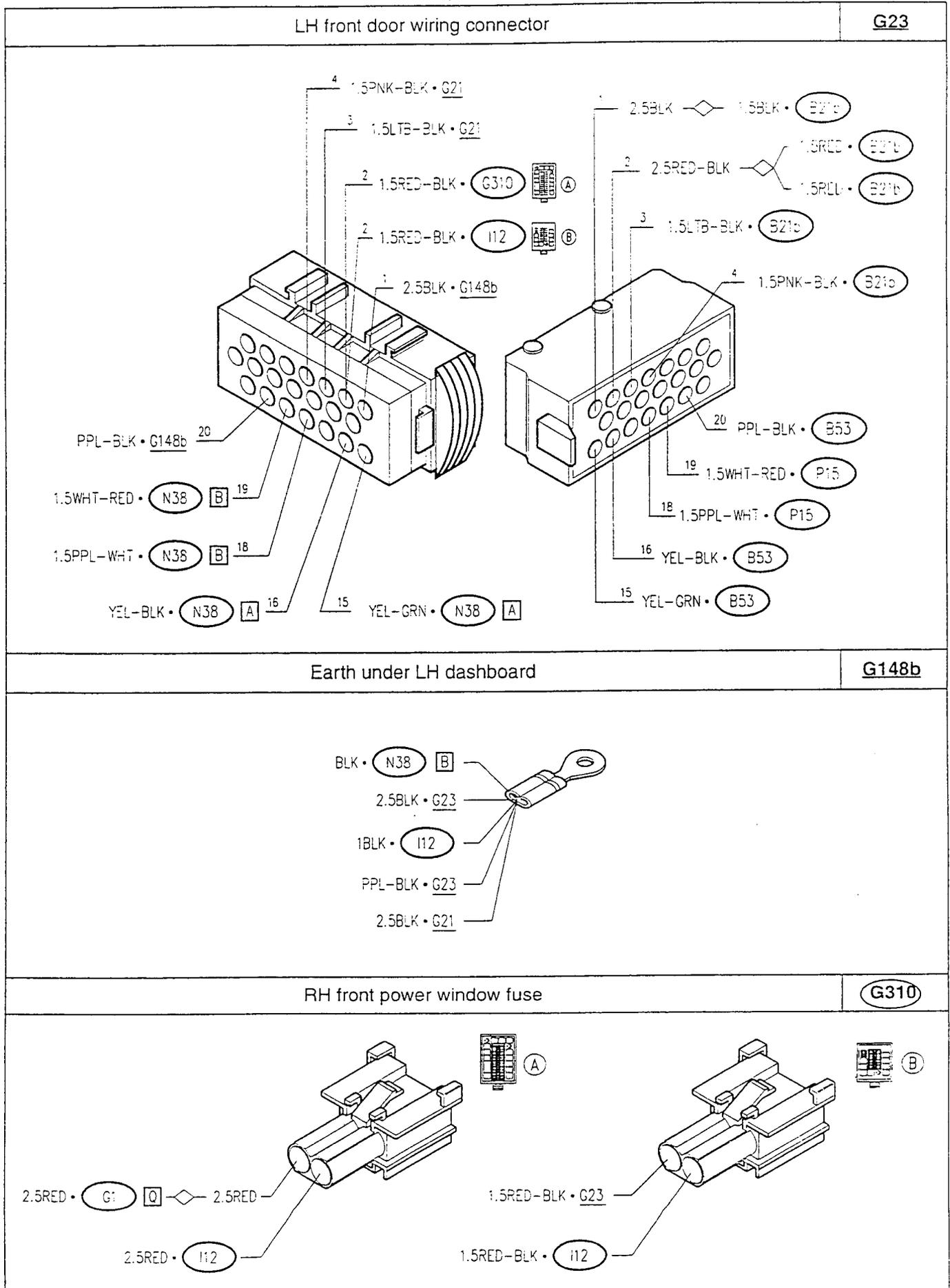
(*) up to chassis no....

(•) from chassis no....

COMPONENTS AND CONNECTORS (cont.d)



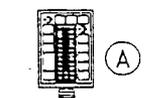
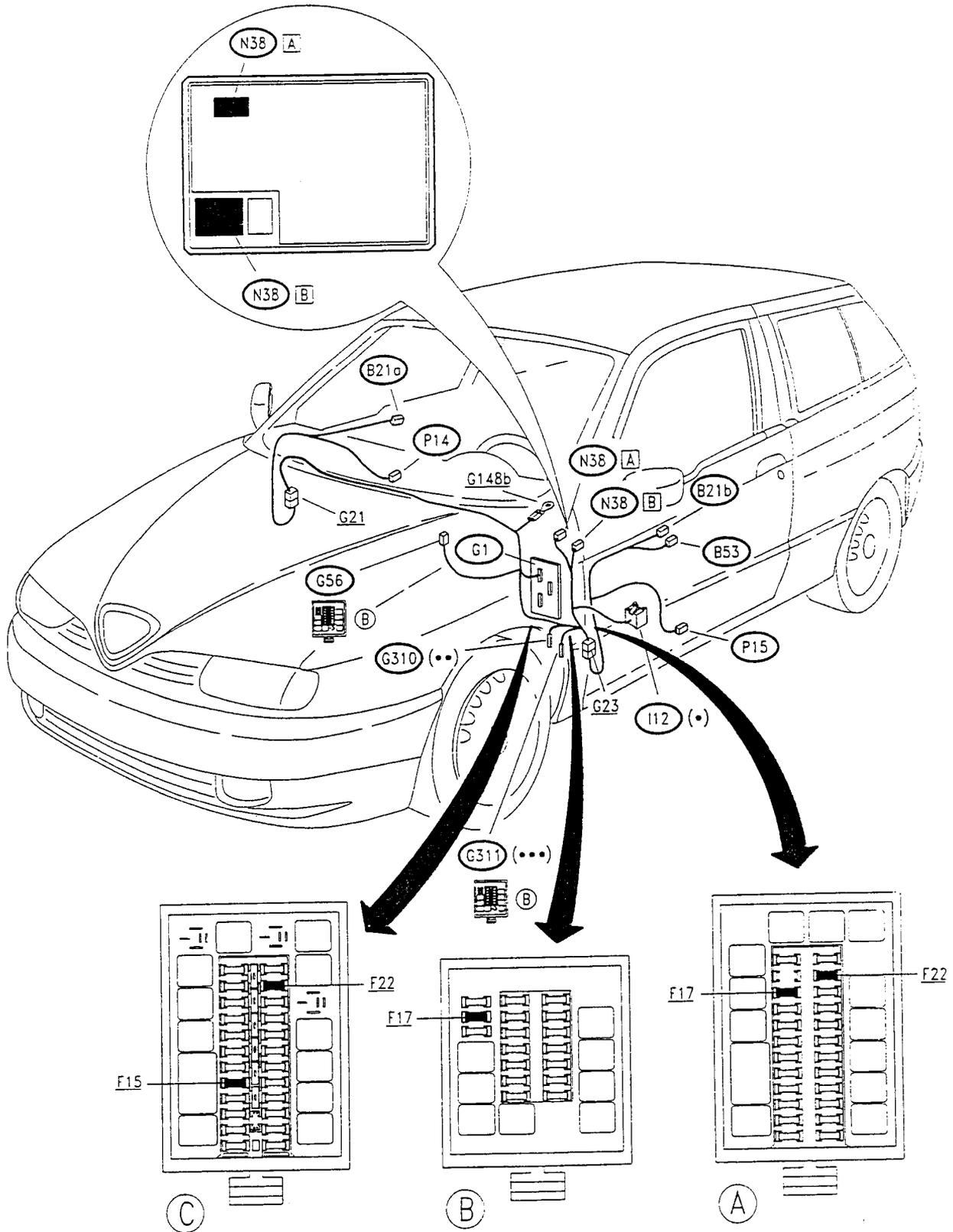
COMPONENTS AND CONNECTORS (cont.d)



COMPONENTS AND CONNECTORS (cont.d)

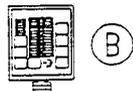
LH front power window fuse		G311
<p>1.5RED-BLK • N38 [B] 1.5RED-BLK • I12</p>		
Front power window relay		I12
<p>1BLK • G148b 85 1.5RED-BLK • G23 87 10RN-WHT • G1 [A] ORN-WHT 86 10RN-WHT • G1 [G] 10RN-WHT • N38 [A] 2.5RED • G310 30 10RN-WHT • G1 [G] 10RN-WHT • N38 [A] 4RED • G56 2.5RED 30</p>		
Power window control unit	N38 [A]	Power window control unit
<p>YEL-GRN • G23 3 YEL-BLK • G23 4 10RN-WHT • G1 [G] 10RN-WHT 1 ORN-WHT • I12 10RN-WHT • G1 [A]</p>		<p>1.5PPL-WHT • G23 4 1.5WHT-RED • G23 3 1.5RED-BLK • G1 [H] 2 1.5RED-BLK • G311 2 BLK • G148b 1</p>
RH front power window motor	P14	LH front power window motor
<p>1.5YEL-BLK • B21a A 1.5YEL • B21b B</p>		<p>1.5PPL-WHT • G23 A 1.5WHT-RED • G23 B</p>

LOCATION OF COMPONENTS



(A)

(•) black base
(••) green fuseholder



(B)

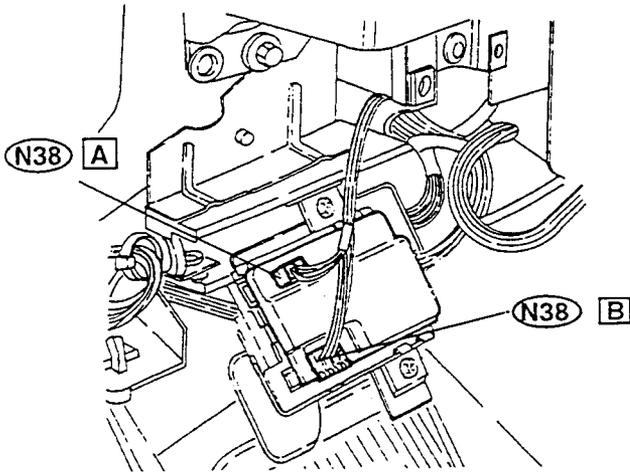
(•) yellow base
(••) white fuseholder
(•••) white fuseholder

FAULT-FINDING TABLE

Fault	Component to be checked									
	G310	F17	F22	P14	P15	N38	B21a	B21b	I12	B53
LH power window, under all circumstances		•		•	•				•	
LH power window		•	•			•				
RH power window	•	•		•			•		•	

CHECKING COMPONENTS

Power window control unit **N38**

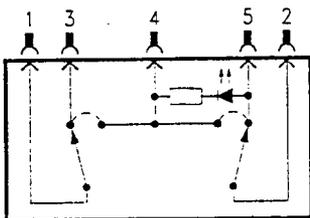


Checking the device:

test A (for fusebox "A")

test B (for fusebox "B")

Power window switches **B21a** **B21b** **B53**



SPECIFICATIONS

Checking operation:

at rest : continuity between pin 3 and 1 and between pins 2 and 5, a.c. between the other pins

operating **up** button: continuity between pins 4 and 1; a.c. between the other pins

operation **down** button: continuity between pins 4 and 2; a.c. between the other pins

CHECK POWER WINDOW CONTROL UNIT (N38) (version for fusebox "A")	TEST A
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Work with the component fitted on its connector, from the cable inlet side

TEST PROCEDURE		RESULT	CORRECTIVE ACTION
A1	CHECK VOLTAGE	OK ►	Carry out step A2
	– Check for 12V between pins 2 and 1 of connector B of N38	OK ►	Check fuse F22 of fusebox G1. Restore the wiring between N38 B and G1 and between N38 B and earth G148b
A2	CHECK VOLTAGE	OK ►	Carry out step A3
	– With the key turned to MARCIA, check for 12V between pin 1 of connector B and pin 1 of connector A of N38	OK ►	Check fuse F17 of G1. Restore the wiring between N38 A and G1
A3	CHECK MANUAL OPERATION	OK ►	Carry out step A5
	– Operating the switch of the driver's side front window B53, check for 12V between pins 3 and 4 of connector B of N38; this voltage ceases as the action of the pushbutton ceases	OK ►	Carry out step A4
A4	CHECK MANUAL OPERATION	OK ►	Change device N38
	– Operating switch B53, check for a voltage of 12V between pins 3 and 4 of connector A of N38	OK ►	Restore the wiring between N38 A and switch B53, or change the latter
A5	CHECK AUTOMATIC OPERATION	OK ►	DEVICE N38 NOT WORKING PROPERLY. Check the connections with the other components
	– With the key turned to MARCIA, operating switch B53 check for: <ul style="list-style-type: none"> • continuous 12V between pins 3 and 4 of connector B if the button is pressed for less then 300 ms • no voltage if the button is pressed for less than 50 ms • continuous 12V between pins 3 and 4 of connector B keeping the button pressed 	OK ►	Change device N38

CHECK POWER WINDOW CONTROL UNIT (N38) (version for fusebox "B")	TEST B
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Work with the component fitted on its connector, working from the cable inlet side

TEST PROCEDURE		RESULT	CORRECTIVE ACTION
B1	CHECK VOLTAGE	OK ▶	Carry out step B2
	– With the key turned to MARCIA, check for 12V between pins 2 and 1 of connector B of N38	OK ▶	Check fuse G311. Restore the wiring between N38 B and G311 and between N38 B and earth G148b
B2	CHECK VOLTAGE	OK ▶	Carry out step B3
	– With the key turned to MARCIA, check for 12V between pin 1 of connector B and pin 1 of connector A of N38	OK ▶	Check fuse F17 of G1. Restore the wiring between N38 A and G1
B3	CHECK MANUAL OPERATION	OK ▶	Carry out step B5
	– Operating the front driver's side window switch B53, check for 12V between pins 3 and 4 of connector B of N38; this voltage ceases as the action on the button ceases	OK ▶	Carry out step B4
B4	CHECK MANUAL OPERATION	OK ▶	Change device N38
	– Operating switch B53, check for 12V between pins 3 and 4 of connector A of N38	OK ▶	Restore the wiring between N38 A and switch B53, or change the latter
B5	CHECK AUTOMATIC OPERATION	OK ▶	DEVICE N38 NOT WORKING PROPERLY. Check the connections with the other components
	– With the key turned to MARCIA, operating switch B53 check for: <ul style="list-style-type: none"> • continuous 12V between pins 3 and 4 of connector B if the button is pressed for less than 300 ms • no voltage if the button is pressed for less than 50 ms • continuous 12V between pins 3 and 4 of connector B keeping the button pressed 	OK ▶	Change the device N38