L—Jetronic, Checking

IMPORTANT GENERAL INFORMATION

1. Never start engine without the battery being solidly connected.
2. Do not use a quick-charger unit to start the engine.
3. Never separate the battery from the on-board electrical system while the engine is running.
4. When quick-charging the battery, disconnect it from the vehicle's electrical system.
5. Before making any tests on the L—Jetronic, insure that the ignition system is in order i.e., timing and spark plugs must correspond to specifications.
6. At temperatures above 80°C (176°F) (paint drying kiln), remove the electronic control unit.
7. Insure that all cable harness plugs are connected solidly.
8. Never connect or disconnect cable harness plug at control unit when the ignition is switched on.
9. When making a compression check, the red power supply line between the battery and the combination relay near the battery is to be disconnected by separating the plug connection.

1. CHECKING THE L—JETRONIC WITH TEST LAMP AND OHMMETER

The following equipment is necessary for checking the L-Jetronic:

1. 12-volt, 2-watt test lamp with standard test probes.
2. Ohmmeter, measurement range 0 to 5000 ohms.
3. Tachometer.

The cable harness plug must be separated from the control unit in order to test the cable harness and the information transmitters.

The control unit need not be removed for this purpose.

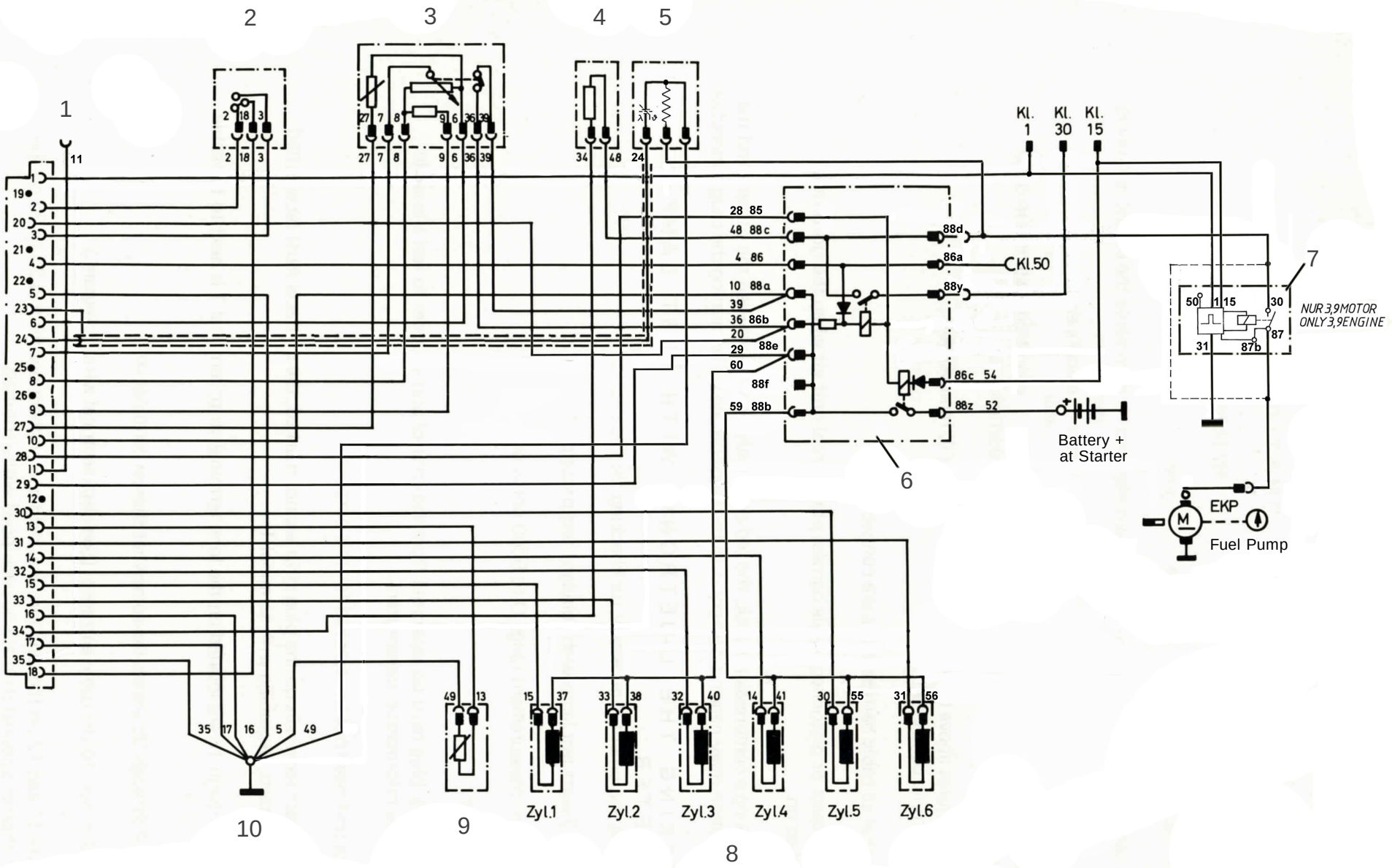
Since the contact terminals on the plug strip are not marked, the contacts must be counted for the various tests, beginning with terminal 1.

Terminals 1 through 18 are located on the long terminal strip; terminal 1 is next to the cable entrance.

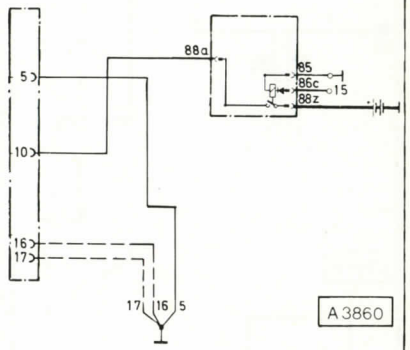
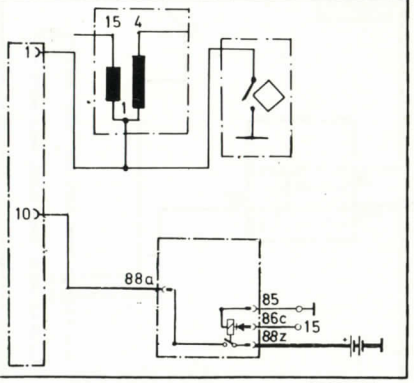
Terminals 19 through 35 are on the somewhat shorter terminal strip.

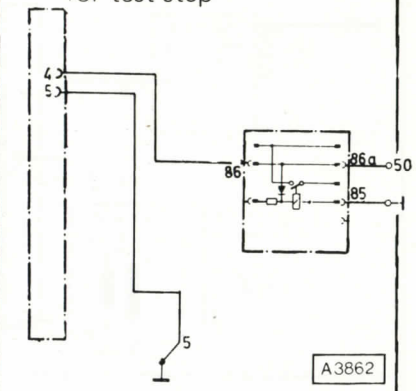
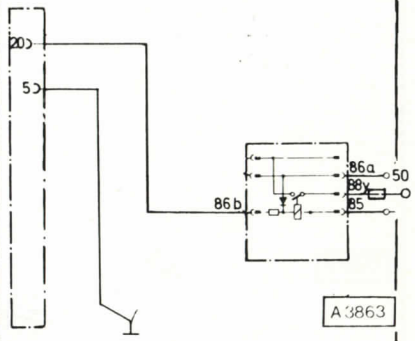
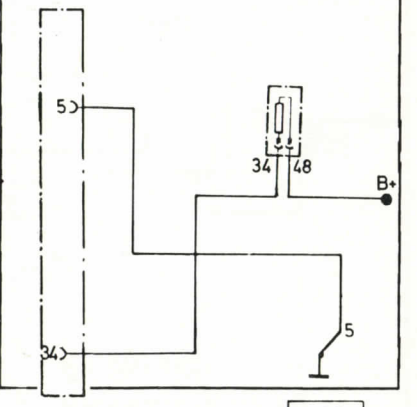
Terminal 19 is next to the cable entrance. (See also electrical wiring diagram.)

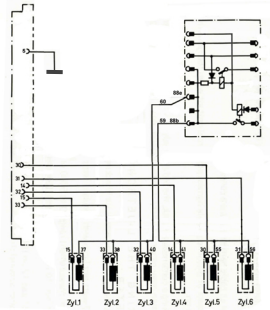
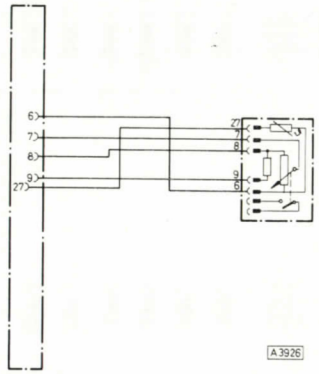
Connections 11 and 12 on the long terminal strip and connections 19 and 21 to 29 on the somewhat shorter terminal strip are not equipped with terminals.

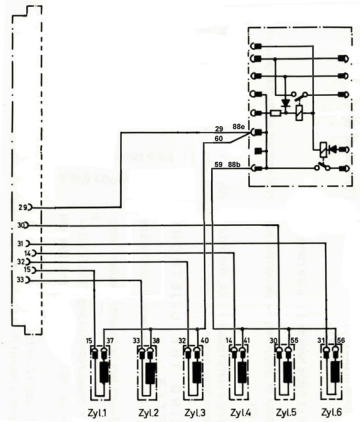


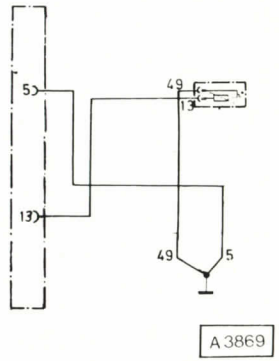
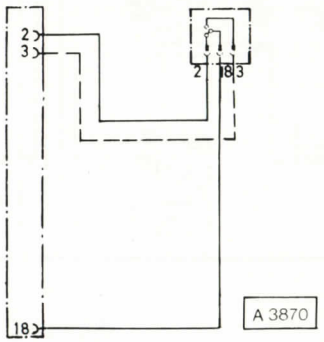
1 Testing port
2 Throttle valve switch
3 Air flow sensor
4 Auxiliary air valve
5 Oxygen sensor
6 Combination relay
7 Rev. limiter relay
8 Injection valves
9 Temperature sensor II
10 Central ground connection

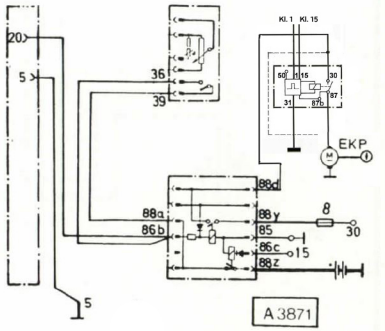
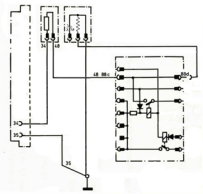
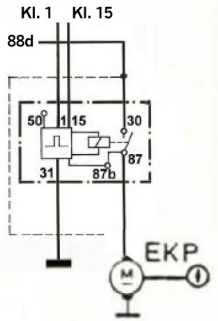
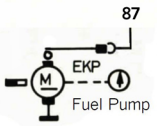
Function or component to be tested	Test with	Measurement between terminals:	Test status	Indication (correct)	If defective	Notes	Explanation, wiring for test step
Supply voltage	Test lamp	10(+) and ground at body	Ignition on	Test lamp lights	Double relay defective; double relay supply interrupted; break in lead 10; battery positive to double relay disconnected		
Ground, injection system	Test lamp	10(+) & 5 (–)	Ignition on	Test lamp lights	Central ground conn. open; break in leads 5 or 16 and/or 17.		
		10(+) & 16(–)					
		10(+) & 17(–)					
Initiation of injection impulse	Test lamp	10(+) & 1 (–)	Operate starter briefly	Test lamp flickers like breaker points	Break in cable harnesslead 1; ignition system; replace breaker points in distributor.		

Function or component to be tested	Test with	Measurement between terminals:	Test status	Indication (correct)	If defective	Notes	Explanation, wiring for test step
Start signal from starter for control unit	Test lamp	4(+) & 5(–)	Operate starter briefly	Test lamp burns	Break between T. 50 at starter and double relay – break in lead 4; double relay defective	Lamp may light only as long as starter runs. If lamp lights with ignition on, check why T. 86a has power.	
Combination relay (pump section)	Test lamp	20(+) & 5(–)	Operate starter briefly	Test lamp burns	Combination relay defective; not grounded; combination relay defective; pump fuse burned out.		
Aux. air valve	Test lamp	34(+) & 5(–)	Operate starter briefly	Test lamp lights weakly	Break in cable harness; supp. air valve defective.		

Function or component to be tested	Test with	Measurement between terminals:	Test status	Indication (correct)	If defective	Notes	Explanation, wiring for test step
Injection valves -1	Test lamp	14(+) & 5(–) 15(+) & 5(–) 30(+) & 5(–) 31(+) & 5(–) 32(+) & 5(–) 33(+) & 5(–)	Ignition on	Test lamp lights	Break in Cable harness; Injection valve defective		 A4988
Air flow sensor	Ohm-meter	6 and 7 6 and 8 6 and 9 8 and 9 7 and 8	Ignition off	80 to 600 Ω 260 to 520 Ω 400 to 800 Ω 140 to 280 Ω 200 to 1000 Ω	Break and/or short circuit in cable harness. Air flow sensor defective		 A3926

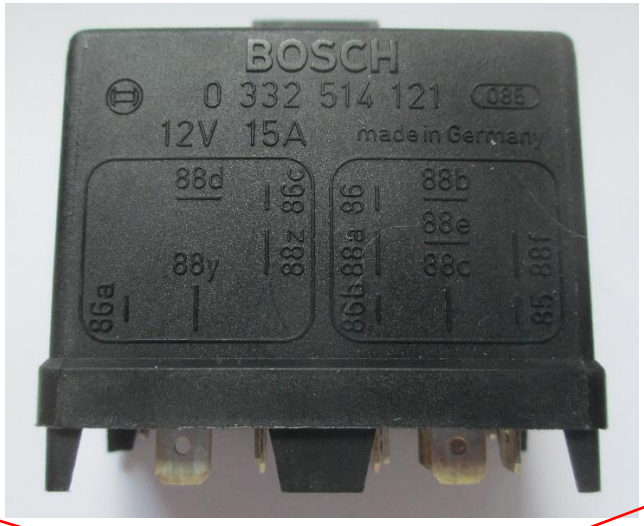
Function or component to be tested	Test with	Measurement between terminals:	Test status	Indication (correct)	If defective	Notes	Explanation, wiring for test step
Injection valves-2	Ohm-meter	29 and 15	Ignition off	2 to 3 Ohms	Look for break in cable harness.		
		29 and 33					
		29 and 32					
		29 and 14					
		29 and 30					
		29 and 31					

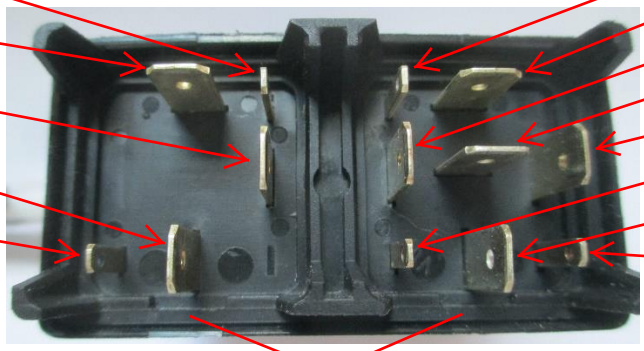
Function or component to be tested	Test with	Measurement between terminals:	Test status	Indication (correct)	If defective	Notes	Explanation, wiring for test step
Temperature sensor II	Ohmmeter	13 and 5	Ignition off	Temperature dependent: 0°C (32°F) = c. 5500 Ohms 20°C (68°F) = c. 2600 Ohms 80°C (176°F) = c. 300 Ohms 97°C (206°F) = c. 200 Ohms	Break in cable harness or replace temperature sensor		
Operation of idle contact in throttle valve switch	Ohmmeter	2 and 18	Ignition off Gas pedal in idle position	0 Ohms	Look for break in cable harness or replace throttle flap switch.		
			Depress gas pedal	∞ Ohms			
Initiation of full load enrichment in throttle valve switch	Ohmmeter	3 and 18	Ignition off Gas pedal in idle position	∞ Ohms			
		Floor gas	Floor gas pedal	0 Ohms			

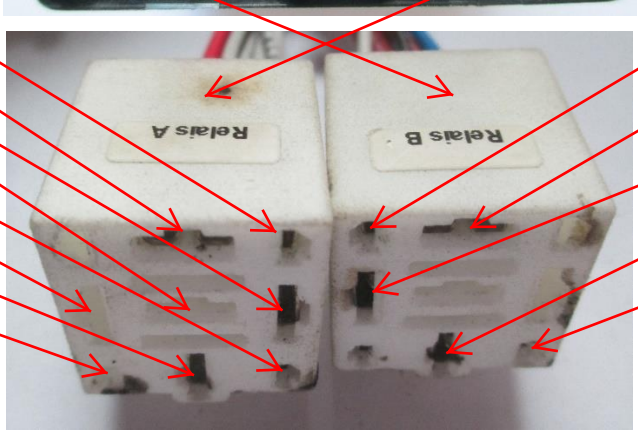
Function or component to be tested	Test with	Measurement between terminals:	Test status	Indication (correct)	If defective	Notes	Explanation, wiring for test step
Pump contact in air flow sensor.	Test lamp	20 and 5	Disconnect air hose at air, flow sensor ignition on. Move air sensor flap by hand	Test lamp lights	Look for break in cable harness volume gauge	Test lamp may not light with ignition on and engine not running. Otherwise replace air flow sensor.	
Oxygen sensor heater	Ohm-meter	34 and 35	Ignition off	30 - 100 Ohms	Look for break in cable harness oxygen sensor		
Rev. limiter relay	Touch	Touch rev. limiter relay	Operate starter briefly	Relay clicking felt	Look for bad relay ground to body Look for break in cable harness Kl. 1, Kl. 15, or 88d at relay to 30, or relay defective		
Fuel pump	12 V source	Relay terminal 87	Pull relay from socket, apply 12 V to terminal 87 at relay socket	Fuel pump runs (can be heard)	Look for break cable harness or bad fuel pump		

Testing Fuel Injection Relay - 3.9E

Pin designations on Fuel Injection Relay

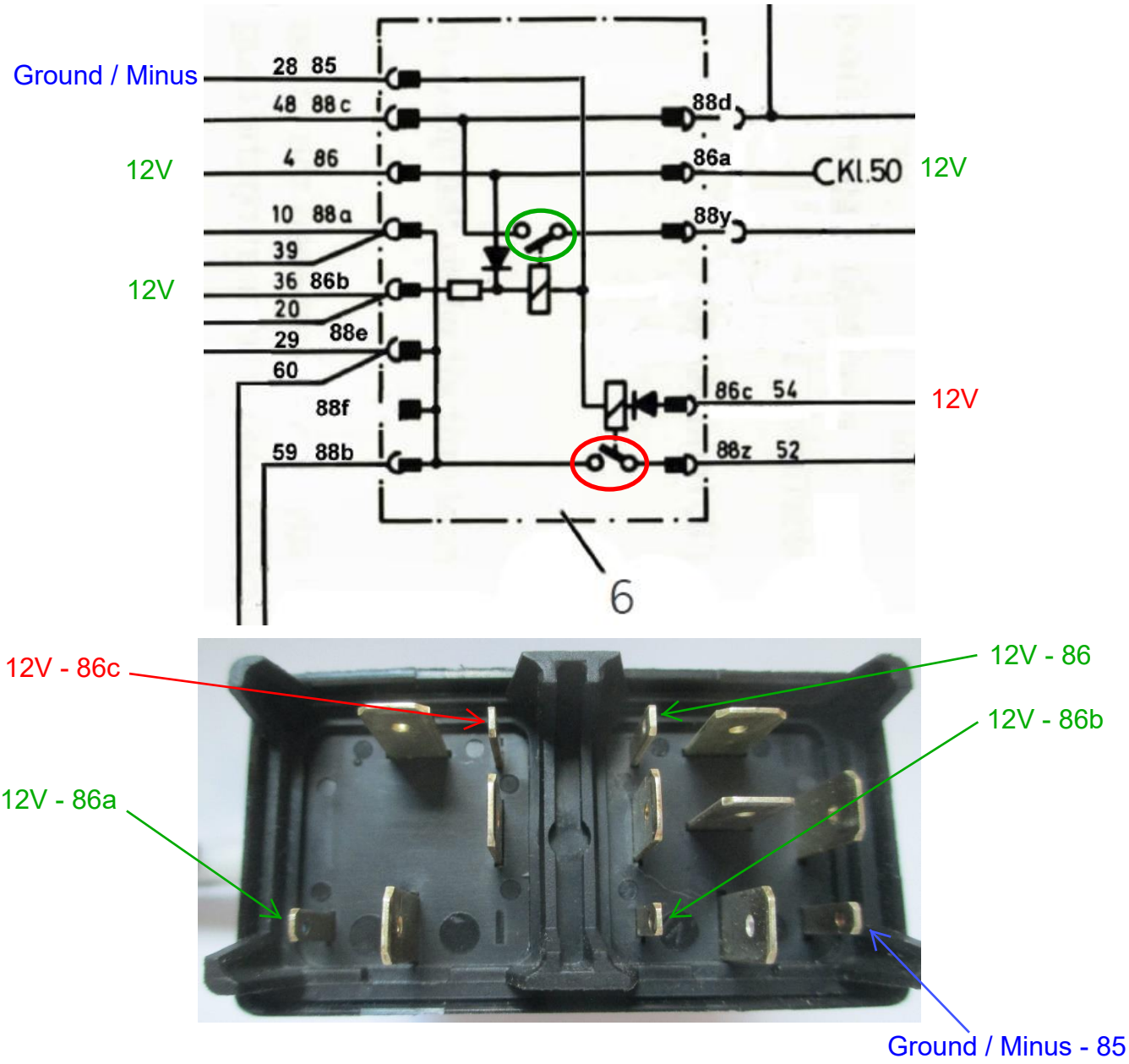






Please keep in mind that, when you look at the plugs, the positions of the connectors are a mirror image of the pins on the relay.

Testing if internal relays are operational



Use a voltage source that delivers 12V DC.

If you use a car battery please be aware that they can deliver extremely high currents. Do NOT use a car battery without an in-line fuse (2A) in the 12V wire you use for testing.

Connect Ground / Minus to pin 85

Touch pins 86, 86a and 86b, one after the other, with 12V to see if the relay clicks

Touch pin 86c with 12V to see if the other relay clicks

If you hear clicking noises the internal relays are operational

Testing internal Wiring for correct Function

Checking for continuity:

Please use an Ohm-meter, ideally with a "beep setting" for continuity which will make it easier.

Without voltage applied:

You should see continuity between the following pins:

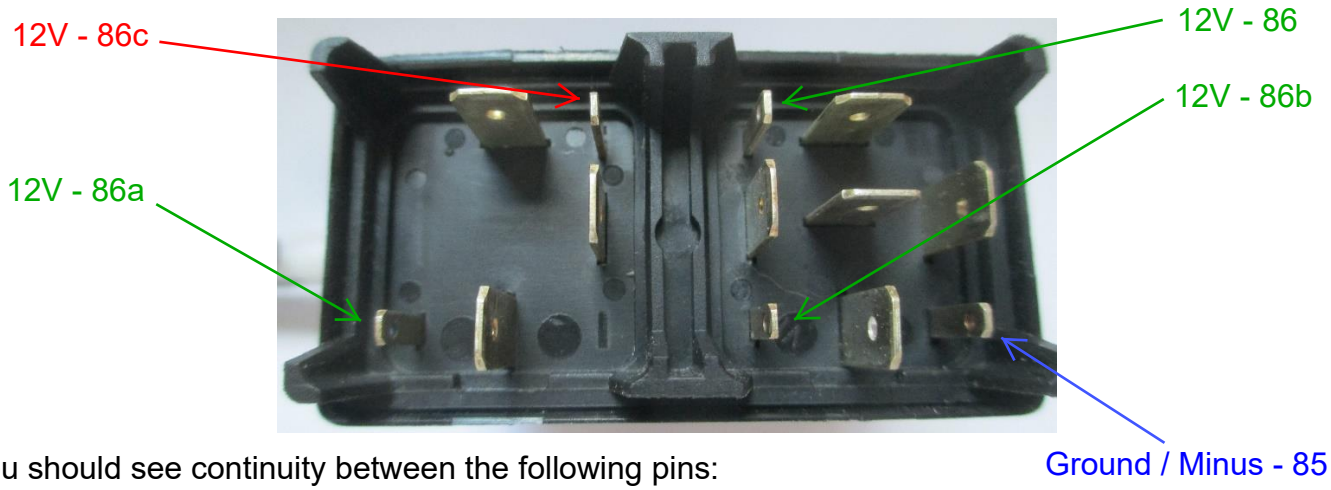
88c and 88d

86 and 86a

88a and 88b, 88e, 88f

With voltage applied ("green" relay in diagram):

Connect Ground / Minus of your voltage source to pin 85 and 12V to either 86, 86a or 86b.



You should see continuity between the following pins:

88c and 88d

88c and 88y

With voltage applied ("red" relay in diagram):

Connect Ground / Minus of your voltage source to pin 85 and 12V to 86c

You should see continuity between the following pins:

88b and 88z

Checking internal diodes:

In this test you want the internal relays NOT to click:

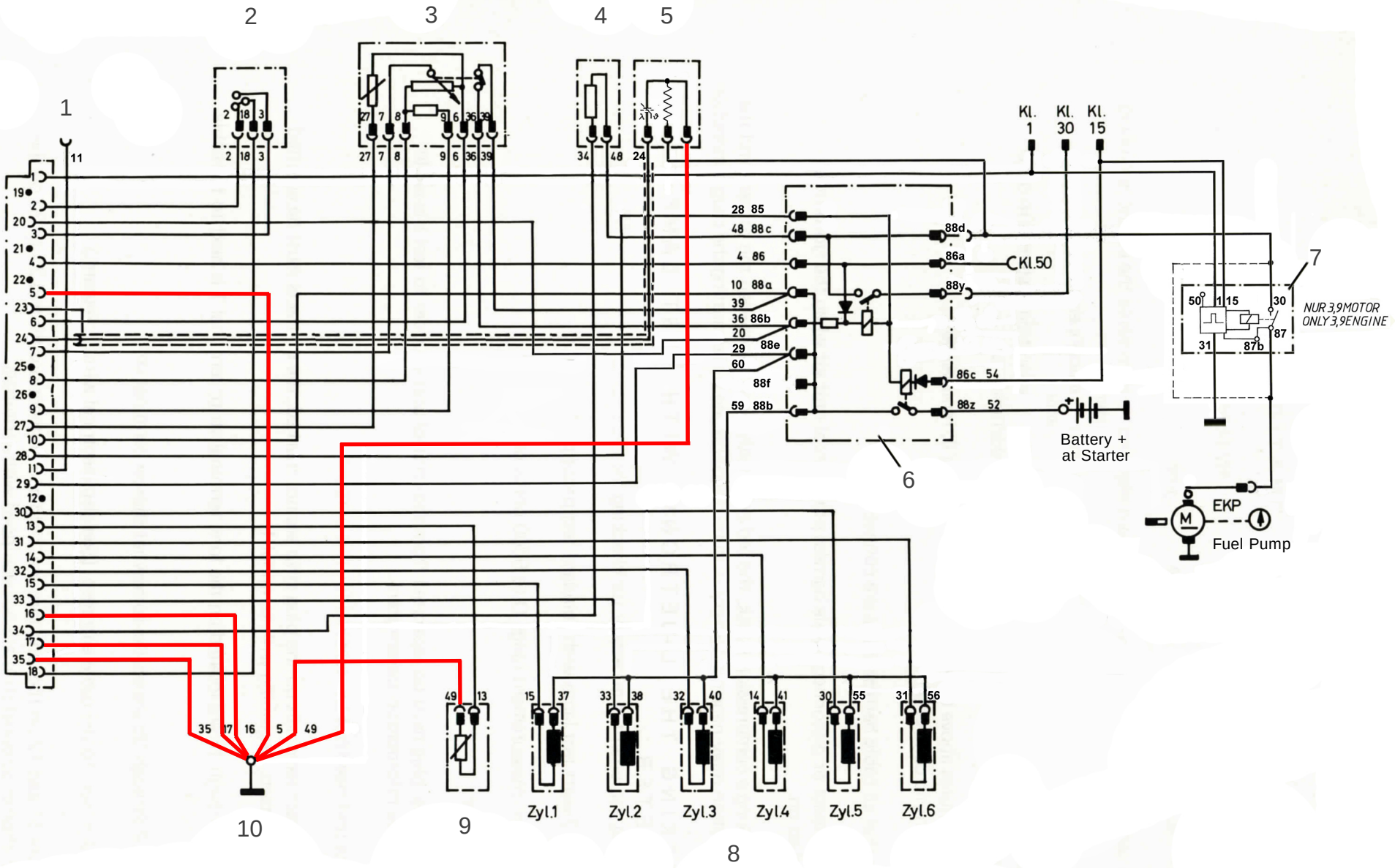
Connect 12V to pin 85

Touch pin 86 with Ground/Minus ("green" relay) - Result should be no clicking

Touch pin 86c with Ground/Minus ("red relay") - Result should be no clicking

If your relay passes all the above tests it is fully operational.

Testing with Harness removed from Car



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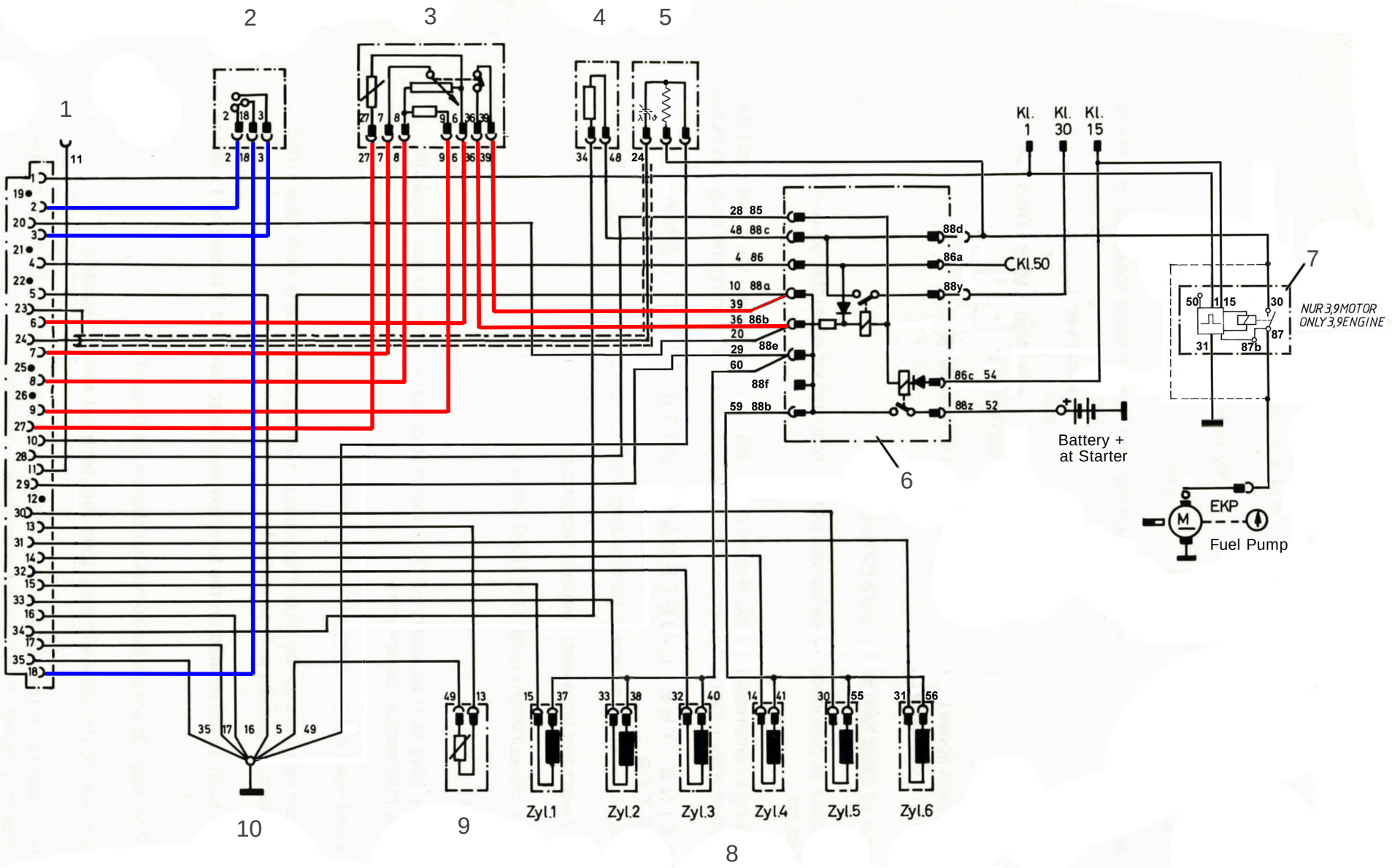
Testing Injection Ground



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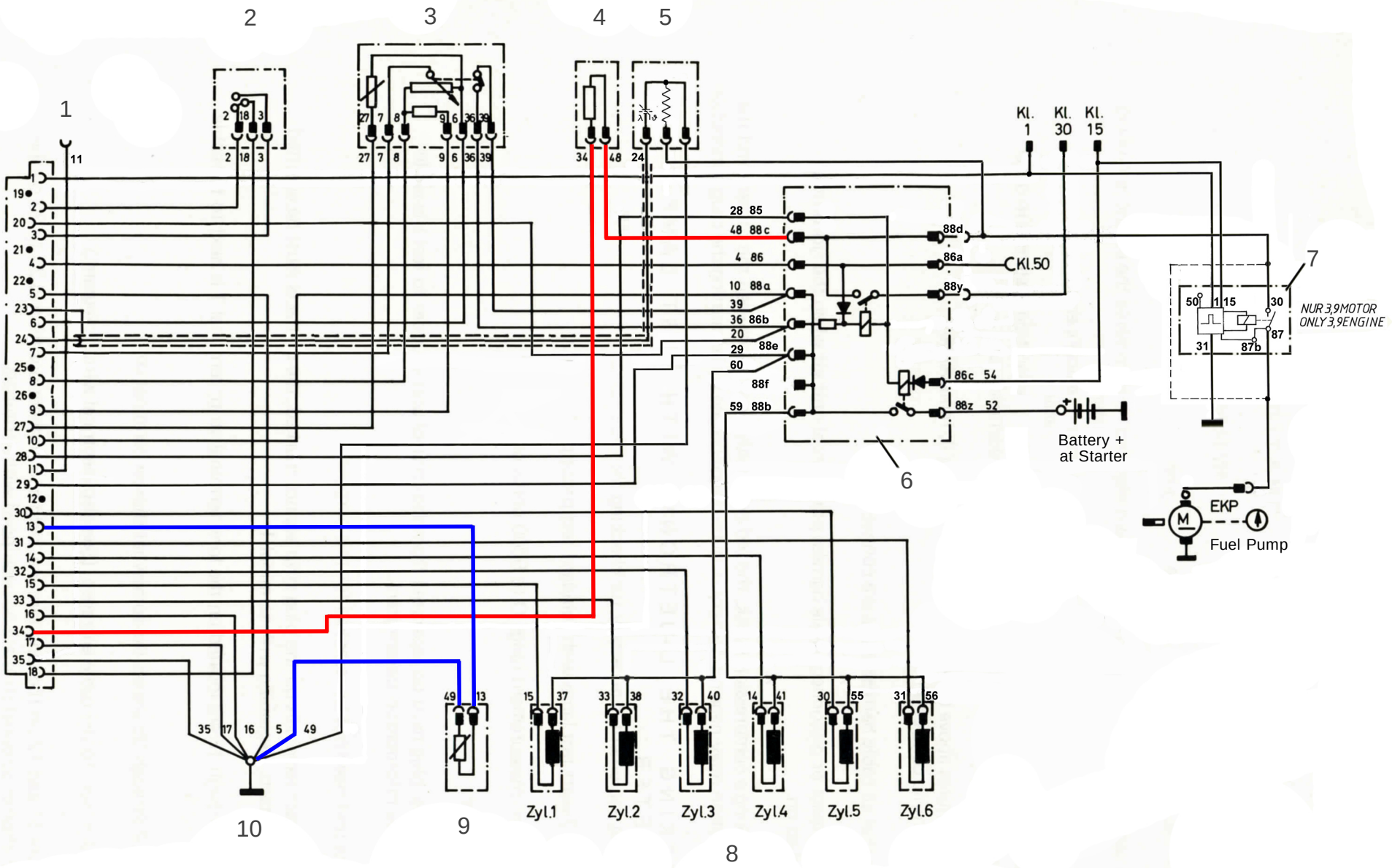
Testing Air Flow Meter and Throttle Position Sensor



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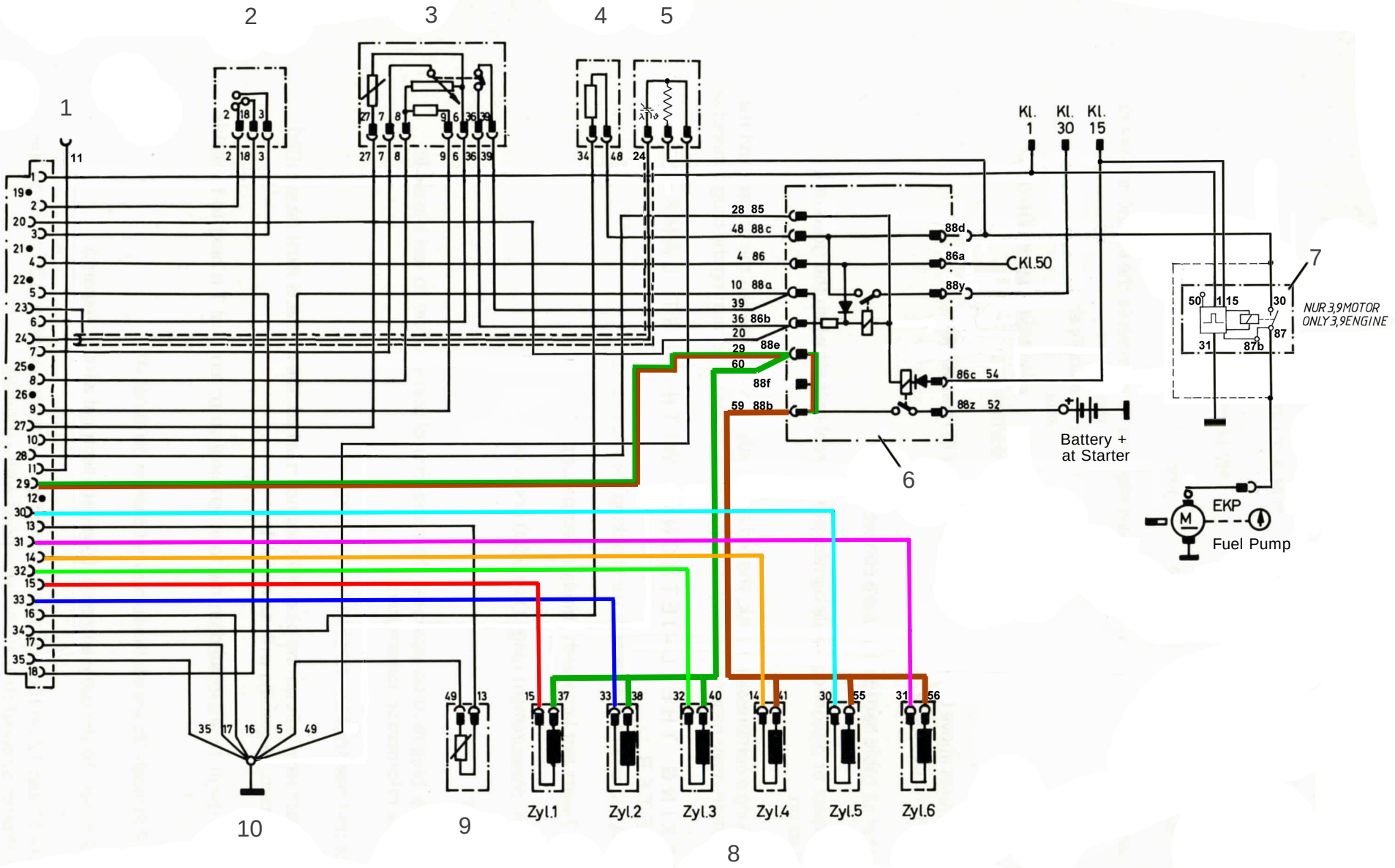
Testing Auxiliary Air Valve (4) and Temperature Sensor (9)



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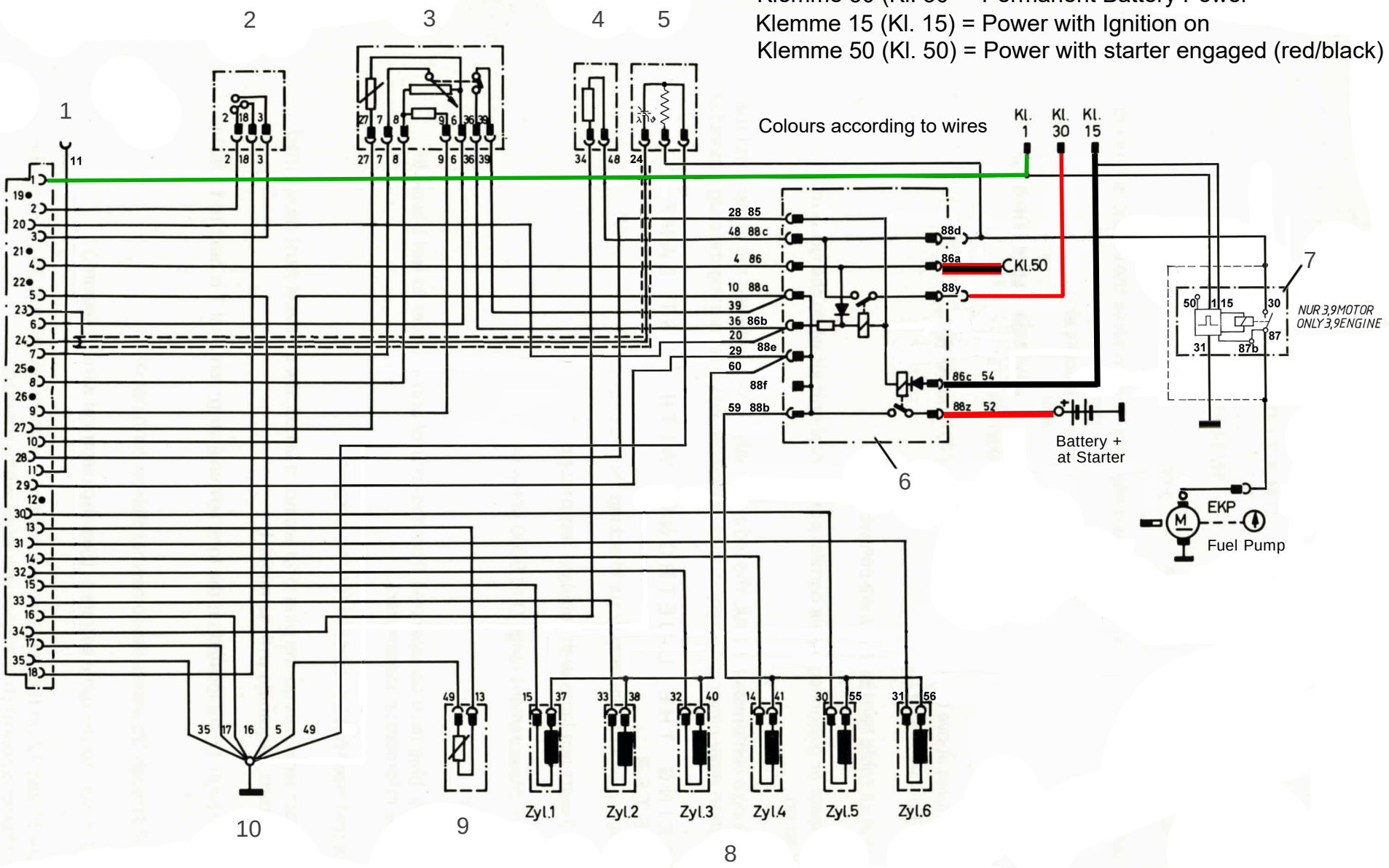
Testing Injection Valves

Klemme 1 (Kl. 1) = Low Voltage Distributor Connection
Klemme 30 (Kl. 30 = Permanent Battery Power
Klemme 15 (Kl. 15) = Power with Ignition on
Klemme 50 (Kl. 50) = Power with starter engaged (red/black)



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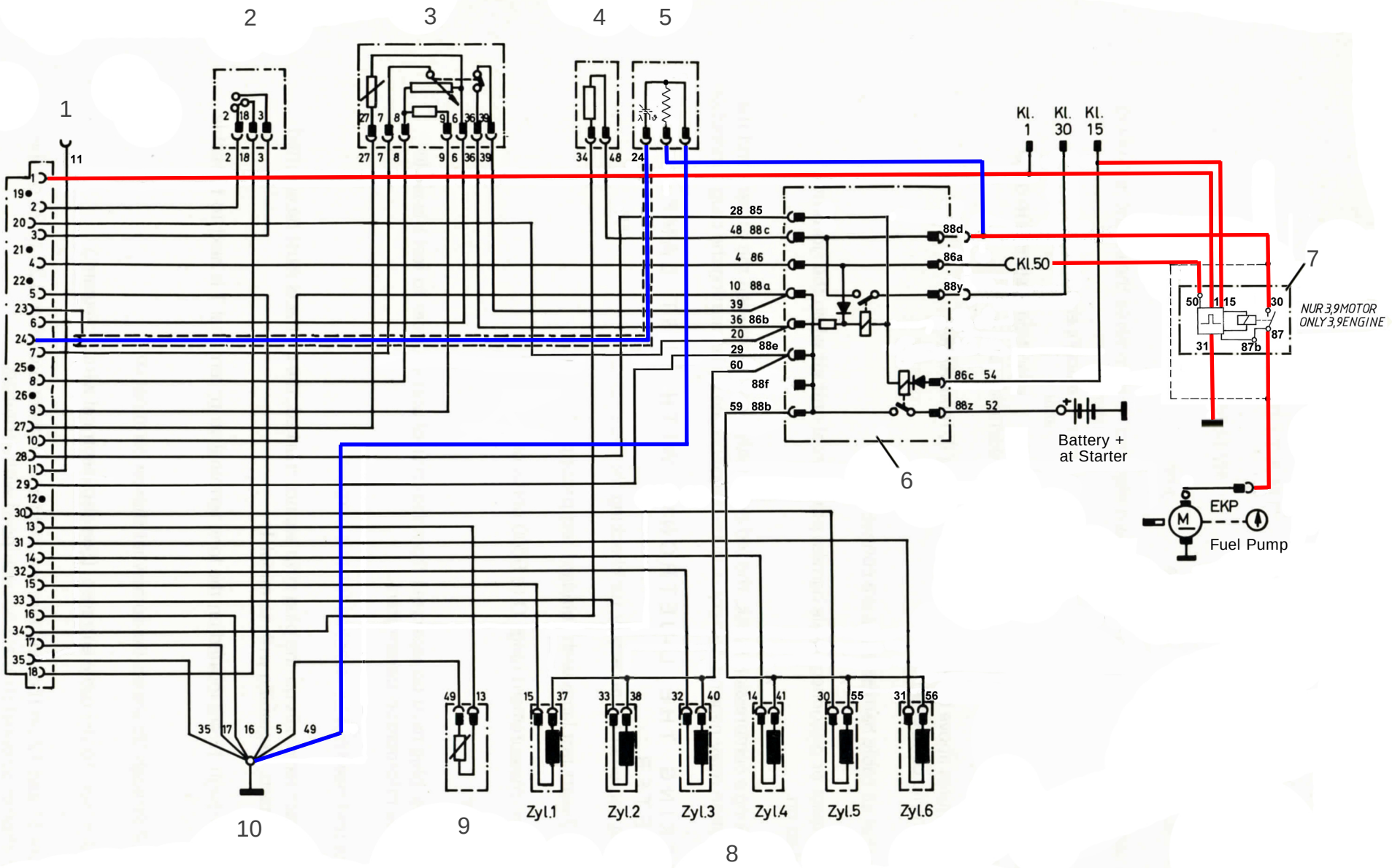
Testing Three Pin Connector at the Firewall and Connections at Starter



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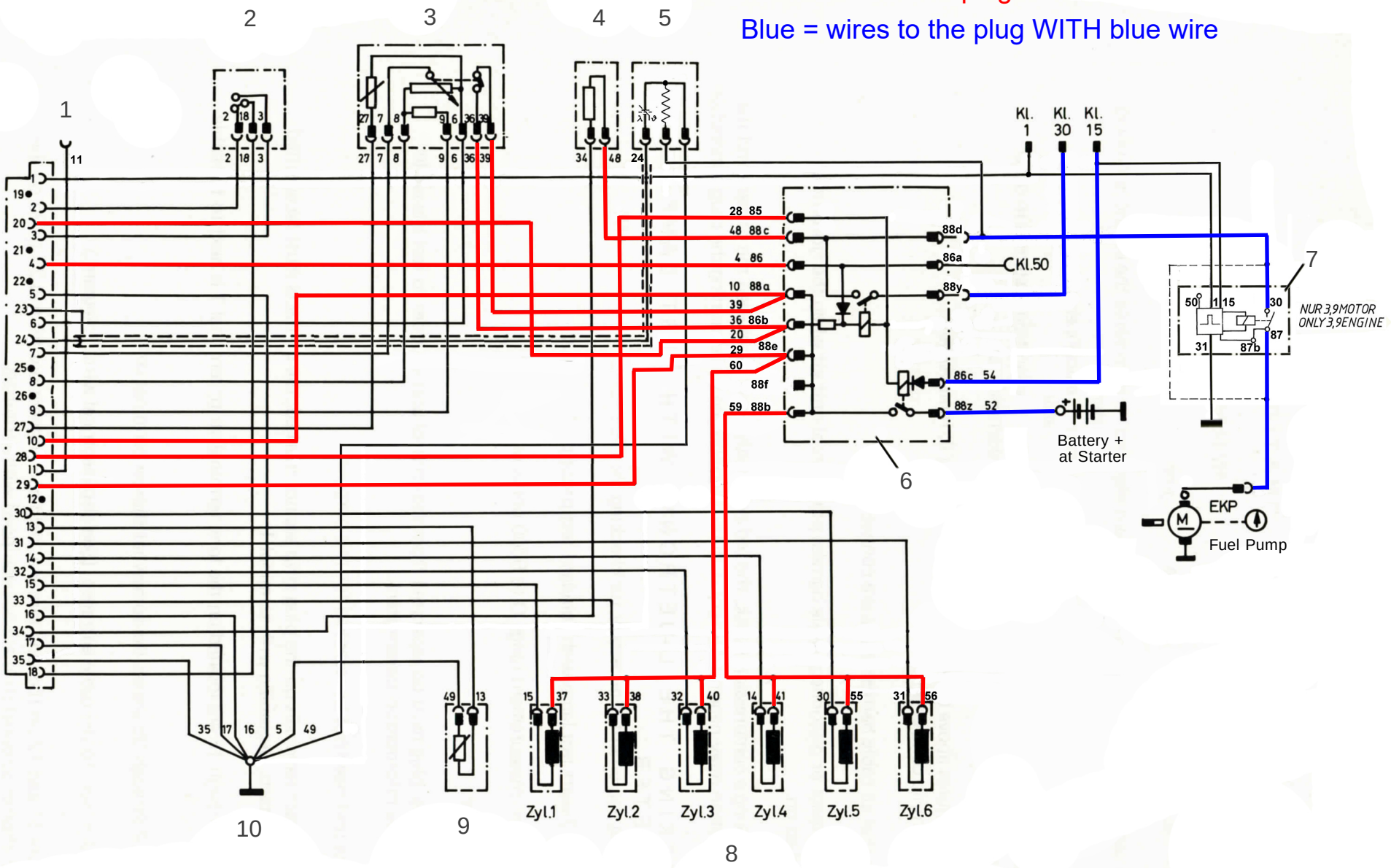
Testing Oxygen Sensor and Rev Limiter Relay

Red = wires o the plug WITHOUT blue wire

Blue = wires to the plug WITH blue wire



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Testing Connection to the Double Relay