98 Legacy ECU & Cruise Control Pinout and Wiring Notes (Chg 1)

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(pins as viewed from the wire-side of the blue connector]

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16 15    14 13       12 11       10  9          8  7        6  5        4  3     2  1
44 43 42 41 40 39 38 37 36 35 34 33 32 31    30 29 28 27 26 25 24 23 22 21 20 19 18 17
   70 69 68 67 66 65 64 63 62 61 60 59 58    57 56 55 54 53 52 51 50 49 48 47 46 45
   96 95 94 93 92 91 90 89 88 87 86 85 84    83 82 81 80 79 78 77 76 75 74 73 72 71
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PIN	COLOR	FUNCTION	NOTES
1	YL	Control Unit & VSS Power (+)	Also joins to pin 2. Tap into this wire for power to Smallcar Interface board "+" and power to the VSS
2	YL	Power supply	Joins to pin 1
3	W	Knock signal	
4	YL	Tank Sensor Press. Signal	Conn. to Interface Board "P". Note: there are only two connectors for "P" "T" & "L" on the interface board, two wires can go into one connector.
5	W	Mass Airflow Sensor Signal	
6	WB	Throttle Pos. Sensor Signal	
7	G	Cam Pos. Sensor Signal (+)	
8	W	Crank Pos. Sensor Signal (+)	
9		empty	
10	LgB	Tank press valve sensor	Conn. to Interface Board "V". There are three "V" positions on the board; only two are used
11		empty	
12		empty	
13	WY	Idle Air Control Valve, closed end	
14	B	Idle Air Control Valve, open end	
15	YW	Pressure sources solenoid	Not used with Man. Trans.
16	LB	Fuel Injector #4	
17	BR	Control System Ground	
18	BR	Control System Ground	
19	BW	Power Supply Ground	Pin also joins to 42, 46, 81
20	RY	Throttle Pos. Gnd.	Not: Tank Sensors Gnd not needed
21	R	Throttle Pos. & Tank Sensors Power	
22	BY	Coolant Temp. Signal	
23	B	Front O2 Sensor Signal	
24	B	Rear O2 Sensor Signal	
25	RL	Fuel Temp sensor OBDII	Conn. to Interface Board "T"
26	G	Atmos (boost) press sensor	Not used with Man. Trans.
27	BrW	Fuel Level sensor OBDII	Conn. to Interface Board "L"
28	R	Cam Pos. Sensor Signal (-)	
29	B	Crank Pos. Sensor Signal (-)	
30		empty	
31	LOr	A/C Relay Control	Not Used
32	V	Fuel Pump Relay Control	
33		empty	
34		empty	
35	BrY	Tank vent valve sensor	Conn. to Interface Board "V"
36		empty	
37	WL	Rear O2 Sensor Heater Signal	
38	W	Front O2 Sensor Heater Signal	
39	R	Batt (+)	Connect to hot Vanagon BATT post in black box using 25A fuse. Tap into wire downstream from 25A fuse near the ECU for a fuse block to power Cruise Control, Ck Engine Light & Check Connector (See Note 1 below)
40	YV	Ignition Control #3, #4	

41	YL	Ignition Control #1, #2	
42	BW	O2 Heater Ground	Pin also joins to 19, 46, 81
43		empty	
44	LR	Fuel Injector #3	
45		empty	
46	BW	VSS/Power Supply Ground	Pin joins to 19, 42, 81. Tap into for "-" to Interface Board and VSS ground
47	GOr	Mass airflow signal for A/T	Not used on manual transm.
48		empty	
49		empty	
50		empty	
51		empty	
52		empty	
53	P	Mass Airflow Sensor Gnd	
54	SB	Crank/Cam Pos. Sensor Shield	NOTE: Don't cut shields.
55		empty	
56	BG	Front/Rear O2 & Knock Sensor Shields	All join at Shield Joint Conn.
57	SB	Mass Airflow Sensor Shield	
58	RG	Check Engine Light	See note 2 below
59		empty	
60	BrY	A/C Switch	Wire to Vanagon
61		empty	
62		empty	
63	Lg	Self Shutoff Control	
64	BL	Tach	Conn. to Vanagon T7a #5 (G)
65		empty	
66		empty	
67		empty	
68		empty	
69	BY	Injectors	
70	Lg	Fuel Injector #2	
71	BP	EGR solenoid valve	
72	WL	Purge Control solenoid Valve	
73	GR	Fan Relay 2	Conn. to Interface Board "F"
74	RL	Fan Relay 1	Conn. to Interface Board "F"
75	BR	Control system Gnd.	
76		empty	
77		empty	
78		empty	
79	L	Torque Control	Not used MT
80	P	A/T Diagnosis output	Not used MT
81		empty	
82	LR/LgB	Neutral Sw A/T or M/T	Not used
83	GB	VSS output signal	Conn. to VSS output (See Note 3)
84	LG	Test Mode Connector	
85	Y	Ignition Power (+)	Wire with fused (10-15A) connection to Vanagon T1g (Y) ignition wire
86	RY	Starter Switch	Wire to Vanagon T7a #6 (RB) [tap for cruise control Start/reset (CC ECU 4)
87		empty	
88		empty	
89		empty	
90		empty	
91	LgR	OBDII Connector	
92	GW	OBDII Connector	
93	OrW	OBDII Connector	
94	B	Ignition System Gnd.	
95	BY	Injectors	
96	Br	Fuel Injector #1	

Note 1: FUSED SUB-CIRCUITS - The Check Connector, Cruise Control, & Check Engine Light require fused circuits. One way is to install an add-on fuse block near the ECU and take power off the power supply wire (ECU pin 39 (YL)) for the fuse block. The Check

Connector and Check Engine Light power may come off one 10A fuse. Cruise Control takes a 10A fuse. Alternatively, Check Engine Light and Cruise Control can be powered by tapping into the VW fuse panel and only one fuse is needed for the Check Connector at the ECU.

Note 2: Check Engine light requires fused power (10A) to a light on the dash and return circuit to ECU pin 58 (RG). There are two ways to do this. One way is to provide power from the VW fuse panel. For the return path to the ECU, cut the unused 1.8 bar oil pressure light wire going to instrument cluster (VW connector T14 #12, Yellow) which runs aft to VW connector T7 #7. Connect ECU pin 58 (RG) to T7a #7. Another way is to pull two wires forward (pull Criuse Control wires at same time) and provide power to the Ck Eng Lt with a wire from an add-on fuse block near the ECU and return back to ECU pin 58 (RG) with the second wire.

Note 3: VSS output runs to ECU pin 83 (GB) and Cruise Control ECM pin 19 (GB)

Note 4: Suby water temp sensor will read slightly off in the Vanagon. Solved by installing VW sensor in Suby manifold or adding 22 ohm resistor to circuit.

Note 5: Don't confuse red wires in the Cruise Control circuits with red wires in the Main ECU circuits. Red wires in both circuits go separately into the OBDII connector but the two red curcuits are otherwise independent. When wiring up the Main ECU, note how the following Cruise Control pins relate to the Main ECU

CC pin 8 (R) connects to OBDII Connector pin 6 (R), Data Link pin 4 (R), and Check Connector pin 11 (R) only.

CC pin 17 (LgR) connects to Main ECU 91 (LgR) circuit

CC pin 18 (GW) connects to Main ECU 92 (GW) circuit

SUBY WIRES NOT FROM THE ECU

G	Oil Pressure from eng. via plug B22	Conn. to Vanagon T7a #1 (LB)
V	Water Temp from eng. via plug B22	Conn. to Vanagon T7a #2 (YR) (note 4)
BR	Fuel Pump pwr from F.P. Relay	Conn. to Vanagon T2k (RW)

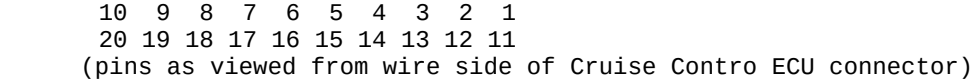
SUBY WIRES ON THE ALTERNATOR & A/C HARNESSES

W	(2 wires) Alternator B+	Wire to Vanagon BATT + (R) post & to Starter (R)
BW	Alternator Warning Lamp	Wire to Vanagon T1d (B wire/yellow connector)
Y	Alternator Power Supply	Wire to Vanagon
__	A/C Compressor switch power	Wire to Vanagon

WIRES THAT MAY NEED RECONNECTING AFTER STRIPPING HARNESS

1	B	Main Relay Ground
1	BR	Battery + to OBDII connector
12	BL	Ground to OBDII Connector

CRUISE CONTROL PINOUT and WIRING USING SUBY PARTS



(pins as viewed from wire side of Cruise Contro ECU connector)

PIN	COLOR	FUNCTION	NOTES
1	empty		
2	YW	Pwr to Clutch Switch & CC ON light	Run to clutch switch & ON light (if used)
3	GY	not used (Auto trans)	
4	LR/LgB	reset signal (start)	Run from ignition start (Vanagon T7a #6 (RB)) or Main ECU 86 (RY)

5	BG	Cruise control pump	
6	B	Ground to engine	
7	RL	Cruise control pump	
8	R	diagnostic	Wire to Check, OBDII, Data Link conns. (SEE NOTE 5)
9	GR	Resume/Coast signal	Wire to CC Sub Switch GR or WR
10	LgB	Set/Accel signal	Wire to CC Sub Switch LgB or YB
11		empty	
12	L	CC ECU Power	Run fused 10A circ. from fuse block
13	BY	Cruise Control pump	
14	BW	Cruise Control pump	
15	OrL	ON switch pwr	wire to ON/OFF switch
16	YB	Clutch switch	Conn. to other side of clutch switch (YL) in Suby diagrams
17	LgR	diagnostic	wire to Check and Data Link conns.
18	GW	diagnostic	wire to Check and Data Link conns.
19	GB	VSS output signal	Also connects to Main ECU 83 (GB)
20	WB	Brake activation	wire into Vanagon brake light circ.

Strategy for wiring Cruise Control:

Power the Cruise Control from a 10A fused circuit from the add-on fuse block near the ECU or alternatively, take power from the VW fuse panel.

Provide a "Start" (reset) signal path from Vanagon T7a #6 (RB) or main ECM pin 86 (RY) (they are connected) to CC ECU pin 4 (LR or LgB).

Connect CC ECU pin 20 (WB) to Vanagon stop light circuit. When stoplights are activated, the stoplight voltage disengages cruise control. No brake switch is used.

Provide an output signal from the VSS output to CC ECU pin 19 (GB)

Pull 6 or 5 wires forward to the instrument panel as follows.

- L [blue] provides power from the 10A subfuse to an illuminated ON/OFF switch (Radio Shack #275-712), and to Suby Cruise Control Sub Switch (RG) mounted as desired. Ground the GND side of the internal light in the ON/OFF switch at the instrument panel.
- OrL returns power back from the ON/OFF switch to the CC ECM pin 15 (OrL)
- GR returns signal from the "resume/coast" side of the CC Sub Switch (GR or WR) to CC ECM pin 9 (GR). [When "cancel" is selected a signal is sent to both "resume/coast" and "set/accel" sides of the switch.]
- LgB returns signal from the "set/accel" side of the CC Sub Switch pin 10 (LgB or YB) to CC ECM pin 10 (LgB)
- YW provides a signal from CC ECM pin 2 (YW) to a Clutch Switch (normally closed) [applies to Man Trans.]
- YL provides a return path from the Clutch Switch to to CC ECM pin 16 (YB).