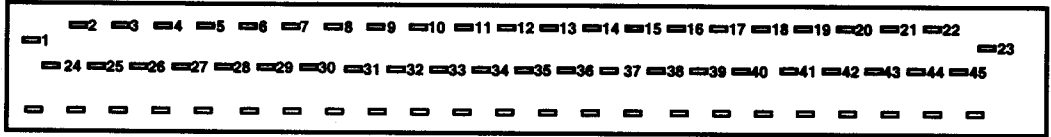


Model:	Engine code:	Year:
Polo 1,0	AER	1996-99
Polo 1,4	AEX/AKV	1995-99
Polo Classic 1,4	AEX/AKV	1995-99
Polo/Classic/Estate/Caddy 1,4	APQ/ANX	1998-99
Caddy 1,4	AEX/AKV	1995-99
Golf/Vento 1,4	AEX/APQ	1995-99

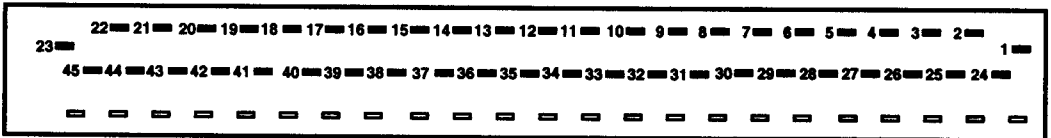
ECM harness multi-plug

Terminal side



AD81045

Wire side



AD42108

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	33			1
	35			1
Automatic transmission	12			1
Battery	21	←	Ignition OFF	11-14 V
Closed throttle position (CTP) switch	10	←	Ignition ON – throttle closed	0 V
	10	←	Ignition ON – throttle slightly open	9 V min.
	17	↔	Ignition ON	0 V
Crankshaft position (CKP) sensor	8	⇒	Ignition ON	9 V min.
	13	←	Ignition ON – engine turned	0 V or 9-14 V
	13	←	Engine idling	30 Hz
	13	←	3000 rpm	100 Hz
	13	←	Engine idling	AWW 4
	17	↔	Ignition ON	0 V
Earth	1		Ignition ON	0 V
Earth – some models	12		Ignition ON	0 V
Engine coolant temperature (ECT) sensor	17	↔	Ignition ON	0 V
	42	←	Ignition ON – coolant temp. 10°C	4,2 V
	42	←	Ignition ON – coolant temp. 80°C	1,7 V
Evaporative emission (EVAP) canister purge valve	3	↔	Ignition ON	11-14 V
	3	↔	Engine hot – valve operating	AWW 20
Exhaust gas recirculation (EGR) solenoid – if fitted	5	↔	Engine hot – valve operating	AWW 19
Fuel pump relay	25	↔	Ignition ON	0-1 V briefly then 11-14 V
	25	↔	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	15	↔	Engine idling	0 V
	38	←	Engine idling – engine hot	0-1 V fluctuating
	38	←	Engine idling – engine hot	AWW 21
Idle speed control (ISC) actuator	2	⇒	Engine idling – engine hot	16-24%
	2	⇒	Engine idling	AWW 23
	26	↔	Engine idling	0 V

Table continued on next page →

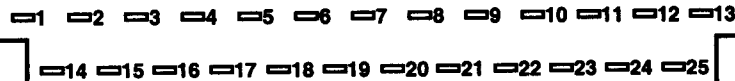
Component/circuit description	ECM pin	Signal	Condition	Typical value
Idle speed control (ISC) actuator position sensor	14	⇒	Ignition ON	4,5 V min.
	16	←	Engine idling – engine hot	3 V
	17	⇌	Ignition ON	0 V
Ignition amplifier	24	⇒	Engine idling	30 Hz
	24	⇒	3000 rpm	100 Hz
	24	⇒	Engine idling	Www 32
Ignition switch	23	←	Ignition OFF	0 V
	23	←	Ignition ON	11-14 V
Immobilizer control module	29	⇌	Ignition ON	11-14 V
Injector 1	7	⇌	Ignition ON	11-14 V briefly then 0 V
	7	⇌	Engine idling – engine hot	4,8 ms
	7	⇌	Engine idling	Www 35
Injector 2	6	⇌	Ignition ON	11-14 V briefly then 0 V
	6	⇌	Engine idling – engine hot	4,8 ms
	6	⇌	Engine idling	Www 35
Injector 3	28	⇌	Ignition ON	11-14 V briefly then 0 V
	28	⇌	Engine idling – engine hot	4,8 ms
	28	⇌	Engine idling	Www 35
Injector 4	4	⇌	Ignition ON	11-14 V briefly then 0 V
	4	⇌	Engine idling – engine hot	4,8 ms
	4	⇌	Engine idling	Www 35
Instrument panel	9		Engine idling – engine hot	30 Hz
	9		3000 rpm	100 Hz
	36			1
Instrument panel – some models	27			1
Intake air temperature (IAT) sensor	17	⇌	Ignition ON	0 V
	43	←	Ignition ON – air temp. 10°C	3,7 V
Knock sensor (KS)	19	⇌	Engine idling	0 V
	39	←	Engine idling – accelerate briefly	Www 38
Knock sensor (KS) – screened lead – Polo/Caddy	45	⇌	Engine idling	0 V
Manifold absolute pressure (MAP) sensor	18	←	Ignition ON	4 V
	18	←	Engine idling – engine hot	1 V
	18	←	3000 rpm	0,5 V
	37	⇒	Ignition ON	5 V
Power steering pressure (PSP) switch – AER	11			1
	17	⇌	Ignition ON	0 V
Throttle position (TP) sensor	14	⇒	Ignition ON	4,5 V min.
	17	⇌	Ignition ON	0 V
	41	←	Ignition ON – throttle closed	4,2 V
	41	←	Ignition ON – throttle fully open	0,7 V
Transmission control module (TCM)	30			1
	34			1

1 Connected pin - no test data available

Model:	Engine code:	Year:
Polo 1,05	AAK	1989-90
Golf/Jetta 1,8	RP	1987-92
Passat 1,6	1F	1988-90
Passat 1,8	RP	1988-90

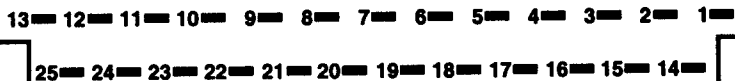
ECM harness multi-plug

Terminal side



AD64326

Wire side



AD42064

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	15			1
	16			1
Battery	4	←	Ignition OFF	11-14 V
Closed throttle position (CTP) switch	3	←	Ignition ON – throttle closed	0 V
	3	←	Ignition ON – throttle open	11-14 V
Data link connector (DLC) – if fitted	22			1
Earth	5		Ignition ON	0 V
	25		Ignition ON	0 V
Earth – some models	6		Ignition ON	0 V
	11		Ignition ON	0 V
Engine coolant temperature (ECT) sensor	2	←	Ignition ON – coolant temp. 15°C	2 V
	2	←	Ignition ON – coolant temp. 80°C	0,4 V
Evaporative emission (EVAP) canister purge valve – if fitted	12	↔	Engine hot – valve operating	AWW 20
Evaporative emission (EVAP) canister purge valve – if fitted -7/89	12	↔	Ignition ON	11-14 V
Evaporative emission (EVAP) canister purge valve – if fitted 8/89-	12	↔	Ignition OFF	11-14 V
Fuel pump relay	17	↔	Ignition ON	0-1 V briefly then 11-14 V
	17	↔	Engine cranking	0-1 V
Heated oxygen sensor (HO2S) – Passat	20	←	Engine idling – engine hot	0-1 V fluctuating
	20	←	Engine idling – engine hot	AWW 21
Idle speed control (ISC) actuator	23 (24)	⇒	Engine idling – engine hot	Intermittent AWW 27
	24 (23)	⇒	Engine idling – engine hot	Intermittent AWW 27
Ignition amplifier	1	←	Engine idling	30 Hz
	1	←	3000 rpm	100 Hz
	1	←	Engine idling	AWW 4
Ignition switch	9	←	Ignition OFF	0 V
	9	←	Ignition ON	11-14 V

Table continued on next page →

Component/circuit description	ECM pin	Signal	Condition	Typical value
Injector	13	↔	Ignition ON	11-14 V briefly then 0 V
	13	↔	Engine idling – engine hot	1,6 ms
	13	↔	Engine idling	35
Intake air temperature (IAT) sensor	14	←	Ignition ON – air temp. 10°C	3 V
Malfunction indicator lamp (MIL) – if fitted	22	↔		1
Oxygen sensor (O2S) – Polo/Golf/Jetta	20	←	Engine idling – engine hot	0-1 V fluctuating
	20	←	Engine idling – engine hot	21
Throttle position (TP) sensor	7	←	Ignition ON – throttle closed	2,2 V
	7	←	Ignition ON – throttle fully open	4,9 V
	8	→	Ignition ON	5 V
	18	←	Ignition ON – throttle closed	0 V
	18	←	Ignition ON – throttle fully open	4,4 V

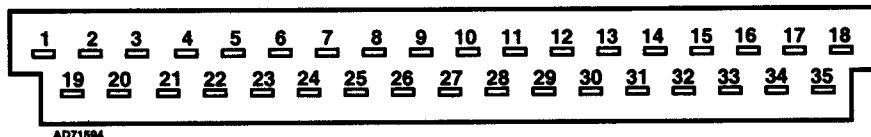
1 Connected pin - no test data available

Model:	Engine code:	Year:
Polo 1,05	AAU	1990-93
Polo 1,3	AAV	1990-93
Golf/Vento 1,8	AAM	1991
Passat 1,8	RP/AAM/ABS	1990-92

VOLKSWAGEN
Bosch Mono-Motronic
MA1.2/1.2.1 (35-pin)

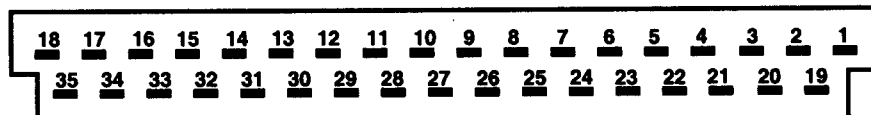
ECM harness multi-plug

Terminal side



AD71684





Wire side



AD42073

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	3			1
	4			1
Automatic transmission	20			1
Battery	2	←	Ignition OFF	11-14 V
Closed throttle position (CTP) switch	30	←	Ignition ON – throttle closed	0 V
	30	←	Ignition ON – throttle open	11-14 V
Crankshaft position (CKP) sensor	5	←	Ignition ON – engine turned	0 V or 9-14 V
	5	←	Engine idling	30 Hz
	5	←	3000 rpm	100 Hz
	5	←	Engine idling	AW 4
	6	⇒	Ignition OFF	0 V
	6	⇒	Ignition ON	9 V min.
Data link connector (DLC)	22	↔		1
	23	←		1
Earth	1		Ignition ON	0 V
	11		Ignition ON	0 V
	18		Ignition ON	0 V
Earth – Passat 1990-91	8		Ignition ON	0 V
Earth – some models	21		Ignition ON	0 V
Engine coolant temperature (ECT) sensor	8	↯	Ignition ON	0 V
	10	←	Ignition ON – coolant temp. 20°C	2 V
	10	←	Ignition ON – coolant temp. 80°C	0,2 V
Evaporative emission (EVAP) canister purge valve – if fitted	17	↯	Ignition OFF	11-14 V
	17	↯	Engine hot – valve operating	AW 20
Fuel pump relay	12	↯	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	28	←	Engine idling – engine hot	0-1 V fluctuating
	28	←	Engine idling – engine hot	AW 21
Idle speed control (ISC) actuator	16 (34)	⇒	Engine idling	Intermittent AW 27
	34 (16)	⇒	Engine idling	Intermittent AW 27

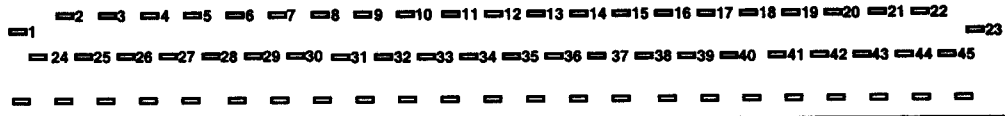
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Component/circuit description	ECM pin	Signal	Condition	Typical value
Ignition amplifier	13	⇨	Engine idling	30 Hz
	13	⇨	3000 rpm	100 Hz
	13	⇨	Engine idling	 32
Ignition switch	19	⇐	Ignition OFF	0 V
	19	⇐	Ignition ON	11-14 V
Ignition switch – AT	9	⇐	Ignition OFF	0 V
	9	⇐	Ignition ON	11-14 V
Injector	35	⇨⇨	Engine idling – engine hot	1,5 ms
	35	⇨⇨	Engine idling	 35
Instrument panel	31	⇨	Engine idling – engine hot	100 Hz
Intake air temperature (IAT) sensor	8	⇨	Ignition ON	0 V
	27	⇐	Ignition ON – air temp. 20°C	2,5 V
Intake manifold heater relay	15	⇨⇨	Ignition ON – engine cold	0-1 V
	15	⇨⇨	Ignition ON – engine hot	11-14 V
Oxygen sensor control module – some models	31	⇨	Engine idling – engine hot	100 Hz
Speedometer – some models	29			 1
Starter motor inhibitor switch relay	21			 1
Throttle position (TP) sensor	8	⇨	Ignition ON	0 V
	24	⇨	Ignition ON	5 V
	25	⇐	Ignition ON – throttle closed	1,9 V
	25	⇐	Ignition ON – throttle fully open	4,9 V
	26	⇐	Ignition ON – throttle closed	0,1 V
	26	⇐	Ignition ON – throttle fully open	4,5 V

 1 Connected pin - no test data available

Model:	Engine code:	Year:
Polo 1,05	AAU/AEV	1993-97
Polo 1,3	AAV/ADX	1993-95
Polo 1,6	AEA	1994-95
Polo Classic 1,6/1,8	1F/ADZ	1995-98
Caddy 1,6/1,8	1F/ADZ	1995-98

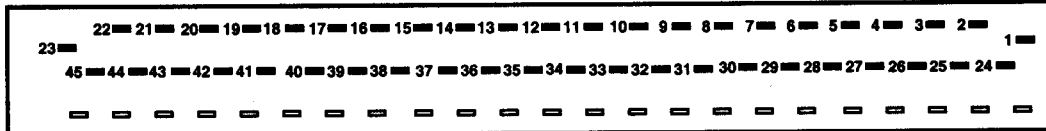
ECM harness multi-plug



AD81645

Terminal side

Wire side



AD42108

Component/circuit description	ECM pin	Signal	Condition	Typical value
Automatic transmission – Caddy/Polo Classic	34			1
	40			1
Battery	21	←	Ignition OFF	11-14 V
Closed throttle position (CTP) switch	10	←	Ignition ON – throttle closed	0 V
	10	←	Ignition ON – throttle open	11-14 V
Crankshaft position (CKP) sensor	8	⇒	Ignition OFF	0 V
	8	⇒	Ignition ON	10 V min.
	13	←	Ignition ON – engine turned	0 V or 10-14 V
	13	←	Engine idling	30 Hz
	13	←	3000 rpm	100 Hz
13	←	Engine idling	4	
Data link connector (DLC) – 1993-94	29	↔	Ignition ON	11-14 V
Earth	1		Ignition ON	0 V
	20		Ignition ON	0 V
Earth – 1993-94	15		Ignition ON	0 V
Earth – 1994-98	12		Ignition ON	0 V
Engine coolant temperature (ECT) sensor	17	↔	Ignition ON	0 V
	42	←	Ignition ON – coolant temp. 20°C	2 V
	42	←	Ignition ON – coolant temp. 80°C	0,2 V
Evaporative emission (EVAP) canister purge valve	3	↔	Ignition OFF	11-14 V
	3	↔	engine hot – valve operating	20
Fuel pump relay	25	↔	Ignition ON	0-1 V briefly then 11-14 V
	25	↔	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	38	←	Engine idling – engine hot	0-1 V fluctuating
	38	←	Engine idling – engine hot	21
Heated oxygen sensor (HO2S) – 1994-97	15	↔	Engine idling	0 V
Idle speed control (ISC) actuator	2 (26)	⇒	Engine idling	Intermittent 27
	26 (2)	⇒	Engine idling	Intermittent 27

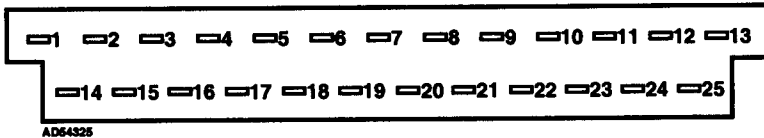
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Component/circuit description	ECM pin	Signal	Condition	Typical value
Idle speed control (ISC) actuator position sensor – except AAU/AAV	16	←	Engine idling – engine hot	3 V or 11-14 V – intermittent
	16	←	Engine idling – engine hot	Intermittent WAV 31
Ignition amplifier	24	⇒	Engine idling	30 Hz
	24	⇒	3000 rpm	100 Hz
	24	⇒	Engine idling	WAV 32
Ignition switch	23	←	Ignition OFF	0 V
	23	←	Ignition ON	11-14 V
Immobilizer control module – 1994-97	29		Ignition ON	11-14 V
Injector	7	↔	Ignition ON	11-14 V briefly then 0 V
	7	↔	Engine idling – engine hot	1,5 ms
	7	↔	Engine idling	WAV 35
Instrument panel	9	⇒		1
Instrument panel – 1994-98	36	←		1
Instrument panel – Caddy/Polo Classic	27			1
Intake air temperature (IAT) sensor	17	↔	Ignition ON	0 V
	43	←	Ignition ON – air temp. 20°C	2,5 V
Intake manifold heater relay	28	↔	Ignition ON – engine cold	0-1 V
	28	↔	Ignition ON – engine hot	11-14 V
Knock sensor (KS) – ADX/AEA	19	↔	Engine idling	0 V
	39	←	Engine idling – accelerate briefly	WAV 38
Knock sensor (KS) – screened lead – ADX/AEA	45		Engine idling	0 V
Throttle position (TP) sensor	14	⇒	Ignition ON	5 V
	17	↔	Ignition ON	0 V
	18	←	Ignition ON – throttle closed	0,1 V
	18	←	Ignition ON – throttle fully open	4,5 V
	41	←	Ignition ON – throttle closed	1,9 V
	41	←	Ignition ON – throttle fully open	4,9 V

1 Connected pin - no test data available

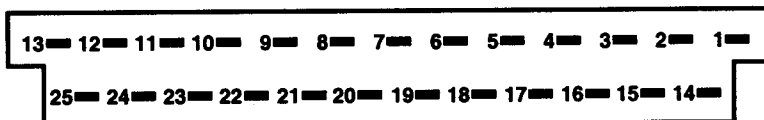
ECM harness multi-plug

Terminal side



AD64325

Wire side



AD42064

Component/circuit description	ECM pin	Signal	Condition	Typical value
Closed throttle position (CTP) switch – if fitted	4	←	Ignition ON – throttle closed	0 V
	4	←	Ignition ON – throttle slightly open	5 V
Earth	7		Ignition ON	0 V
	25		Ignition ON	0 V
Engine control relay – 1987-92	13	←	Ignition OFF	0 V
	13	←	Ignition ON	11-14 V
Engine coolant temperature (ECT) sensor	2	←	Ignition ON – coolant temp. 20°C	1,5 V
	2	←	Ignition ON – coolant temp. 80°C	0,2 V
Fuel pump relay – 1987-92	20	↔	Engine cranking	0-1 V
Heated oxygen sensor (HO2S) – 1987-92	5	←	Engine idling – engine hot	0-1 V fluctuating
	5	←	Engine idling – engine hot	21
Ignition amplifier	1	←	Engine idling	30 Hz
	1	←	Engine idling	32
Ignition switch	21	←	Engine cranking	9 V
Injector 1 – 1986	12	↔	Engine idling – engine hot	1,9 ms
	12	↔	Engine idling	35
Injector 2 – 1986	11	↔	Engine idling – engine hot	1,9 ms
	11	↔	Engine idling	35
Injector 3 – 1986	24	↔	Engine idling – engine hot	1,9 ms
	24	↔	Engine idling	35
Injector 4 – 1986	23	↔	Engine idling – engine hot	1,9 ms
	23	↔	Engine idling	35
Injectors – 1987-92	23	↔	Engine idling – engine hot	1,9 ms
	23	↔	Engine idling	35
Intake air temperature (IAT) sensor	14	←	Ignition ON – air temp. 20°C	1 V
Oxygen sensor (O2S) – 1986	5	←	Engine idling – engine hot	0-1 V fluctuating
	5	←	Engine idling – engine hot	21
Oxygen sensor (O2S) – screened lead – 1986	6	↔	Engine idling	0 V

Table continued on next page →

Component/circuit description	ECM pin	Signal	Condition	Typical value
Relay module – 1986	13	←	Ignition OFF	0 V
	13	←	Ignition ON	11-14 V
	20	↔	Engine cranking	0-1 V
Volume air flow (VAF) sensor	6	↔	Engine idling	0 V
	15	←	Ignition ON – flap closed	0,3 V
	15	←	Ignition ON – flap fully open	4,4 V
	15	←	Engine idling – engine hot	0,8 V
	19	→	Ignition ON	5 V
Wide open throttle (WOT) switch	4	←	Ignition ON – throttle slightly open	5 V
	4	←	Ignition ON – throttle fully open	0 V

1 Connected pin - no test data available

Model:
Polo 1,3

Engine code:
3F

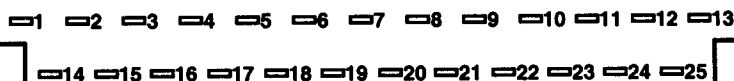
Year:
1989-94

VOLKSWAGEN

VAG Digifant ML5.4

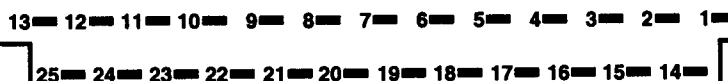
ECM harness multi-plug

Terminal side



AD64325










Wire side



AD42064

Component/circuit description	ECM pin	Signal	Condition	Typical value
Crankshaft position (CKP) sensor	6		Ignition ON	0 V
	8		Ignition OFF	0 V
	8		Ignition ON	10 V min.
	18		Ignition ON – engine turned	0 V or 10-14 V
	18		Engine idling	30 Hz
	18		Engine idling	3
Data link connector (DLC) – if fitted	20			
Earth	13		Ignition ON	0 V
Earth – some models	19		Ignition ON	0 V
Engine control relay	14		Ignition OFF	0 V
	14		Ignition ON	11-14 V
Engine coolant temperature (ECT) sensor	6		Ignition ON	0 V
	10		Ignition ON – coolant temp. 20°C	1,5 V
	10		Ignition ON – coolant temp. 80°C	0,2 V
Fuel pump relay	3		Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	2		Engine idling – engine hot	0-1 V fluctuating
	2		Engine idling – engine hot	21
Ignition amplifier	25		Engine idling	30 Hz
	25		3000 rpm	100 Hz
	25		Engine idling	32
Ignition switch	1		Engine cranking	8 V min.
Ignition switch – through engine control relay	23		Ignition OFF	0 V
	23		Ignition ON	11-14 V
Injectors	12		Engine idling – engine hot	2,4 ms
	12		Engine idling	13
Instrument panel	24			
Intake air temperature (IAT) sensor	6		Ignition ON	0 V
	9		Ignition ON – air temp. 20°C	1 V

Table continued on next page →

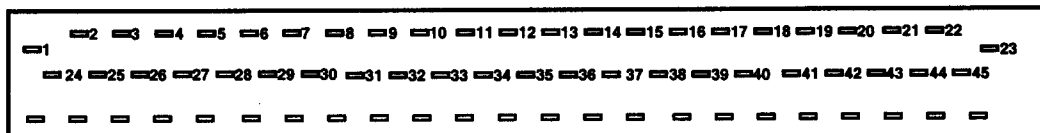
Component/circuit description	ECM pin	Signal	Condition	Typical value
Throttle position (TP) sensor	6		Ignition ON	0 V
	11		Ignition ON – throttle closed	0,5-1,5 V
	11		Ignition ON – throttle fully open	3-5 V
	17		Ignition ON	5 V
Volume air flow (VAF) sensor	6		Ignition ON	0 V
	17		Ignition ON	5 V
	21		Ignition ON – flap closed	0,3 V
	21		Ignition ON – flap fully open	4,4 V
	21		Engine idling – engine hot	0,8 V

1 Connected pin - no test data available

Model:	Engine code:	Year:
Polo 1,4	AFH	1995-99
Polo 1,6	AEE	1995-99
Golf/Vento 1,6	AEE	1995-97
Caddy Pickup 1,6	AEE	1997-99

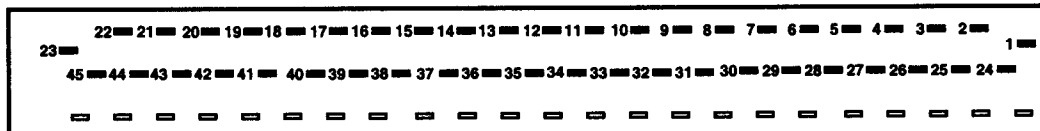
ECM harness multi-plug

Terminal side



AD61645

Wire side



AD42108

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	33			1
	35			1
Automatic transmission	12			1
Battery	21	←	Ignition OFF	11-14 V
Closed throttle position (CTP) switch	10	←	Ignition ON – throttle closed	0 V
	10	←	Ignition ON – throttle slightly open	9 V min.
Closed throttle position (CTP) switch – except Caddy Pickup	17	↔	Ignition ON	0 V
Crankshaft position (CKP) sensor	8	⇒	Ignition ON	9 V min.
	13	←	Ignition ON – engine turned	0 V or 5 V
	13	←	Engine idling	AWW 4
Crankshaft position (CKP) sensor – except Caddy Pickup	17	↔	Ignition ON	0 V
Earth	1		Ignition ON	0 V
Earth – Caddy Pickup	17		Ignition ON	0 V
Earth – some models	12		Ignition ON	0 V
Engine coolant temperature (ECT) sensor	42	←	Ignition ON – coolant temp. 10°C	3,2 V
	42	←	Ignition ON – coolant temp. 80°C	0,5 V
Engine coolant temperature (ECT) sensor – except Caddy Pickup	17	↔	Ignition ON	0 V
Evaporative emission (EVAP) canister purge valve	3	⇒	Ignition ON	11-14 V
	3	⇒	Engine hot – valve operating	AWW 20
Exhaust gas recirculation (EGR) solenoid – if fitted	5			1
Fuel pump relay	25	↔	Ignition ON	0-1 V briefly then 11-14 V
	25	↔	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	15	↔	Engine idling	0 V
	38	←	Engine idling – engine hot	0-1 V fluctuating
	38	←	Engine idling – engine hot	AWW 21

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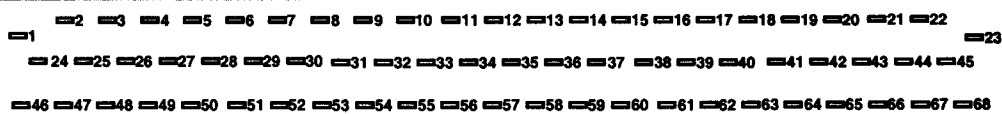
Component/circuit description	ECM pin	Signal	Condition	Typical value
Heated oxygen sensor (HO2S) – screened lead – Caddy Pickup	44		Engine idling	0 V
Idle speed control (ISC) actuator	2		Engine idling – engine hot	60-65%
	26		Engine idling – engine hot	35-40%
	26		Engine idling	33
Idle speed control (ISC) actuator position sensor	14		Ignition ON	4,5 V min.
	16		Engine idling – engine hot	3 V
Idle speed control (ISC) actuator position sensor – except Caddy Pickup	17		Ignition ON	0 V
Ignition amplifier	24		Engine idling	32
Ignition switch	23		Ignition OFF	0 V
	23		Ignition ON	11-14 V
Immobilizer control module	29		Ignition ON	11-14 V
Injector 1	7		Ignition ON	11-14 V briefly then 0 V
	7		Engine idling – engine hot	4 ms
	7		Engine idling	35
Injector 2	6		Ignition ON	11-14 V briefly then 0 V
	6		Engine idling – engine hot	4 ms
	6		Engine idling	35
Injector 3	28		Ignition ON	11-14 V briefly then 0 V
	28		Engine idling – engine hot	4 ms
	28		Engine idling	35
Injector 4	4		Ignition ON	11-14 V briefly then 0 V
	4		Engine idling – engine hot	4 ms
	4		Engine idling	35
Instrument panel	9		Engine idling – engine hot	25-30 Hz
Instrument panel – some models	36			1
Intake air temperature (IAT) sensor	43		Ignition ON – air temp. 10°C	3,2 V
Intake air temperature (IAT) sensor – except Caddy Pickup	17		Ignition ON	0 V
Knock sensor (KS)	19 (39)		Engine idling – accelerate briefly	38
	39 (19)		Engine idling – accelerate briefly	38
Knock sensor (KS) – screened lead – Polo/Caddy Pickup	45		Engine idling	0 V
Manifold absolute pressure (MAP) sensor	18		Ignition ON	4 V
	18		Engine idling – engine hot	1,3 V
	18		Engine idling – throttle fully depressed briefly	4,2 V
	37		Ignition ON	5 V
Throttle position (TP) sensor	14		Ignition ON	4,5 V min.
	41		Ignition ON – throttle closed	4 V
	41		Ignition ON – throttle fully open	0,8 V
Throttle position (TP) sensor – except Caddy Pickup	17		Ignition ON	0 V
Transmission control module (TCM)	30			1
	34			1

1 Connected pin - no test data available

Model:	Engine code:	Year:
Polo Classic 1,6	AFT/AKS	1995-99
Golf/Vento 1,6/2,0	AFT/AKS/ADY/AGG/AKR	1995-98
Passat 1,6	AFT/AKS	1995-97
Passat/Syncro 2,0	ADY/AGG/AKR	1994-97
Corrado 2,0	ADY	1994-95
Transporter 2,5	AET	1996-98

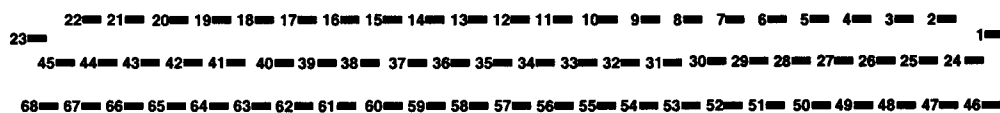
ECM harness multi-plug

Terminal side



AD61718

Wire side



AD42119

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	13			1
	39			1
Automatic transmission	5			1
	15			1
Camshaft position (CMP) sensor	35		Ignition ON	0 V
	44		Ignition ON – engine turned	0 V or 10-14 V
	44		Engine idling	30 Hz
	44		3000 rpm	100 Hz
	44		Engine idling	34
45		Ignition ON	10 V min.	
Closed throttle position (CTP) switch	18		Ignition ON – throttle closed	0 V
	18		Ignition ON – throttle slightly open	9 V min.
	35		Ignition ON	0 V
Crankshaft position (CKP) sensor	16		Engine idling	0 V
	67		Engine idling	19
	68		Ignition ON	11-14 V
Earth	1		Ignition ON	0 V
Engine control relay	23		Ignition OFF	0 V
	23		Ignition ON	11-14 V
Engine coolant temperature (ECT) sensor	12		Ignition ON – coolant temp. 10°C	2,8 V
	12		Ignition ON – coolant temp. 80°C	0,4 V
	35		Ignition ON	0 V
Evaporative emission (EVAP) canister purge valve	33		Ignition ON	11-14 V
	33		Engine hot – valve operating	20
Fuel pump relay	31		Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	17		Ignition ON	1,3-1,4 V
	17		Engine idling – engine hot	21
	20		Engine idling	0 V
	42		Engine idling	0 V
Heated oxygen sensor (HO2S) – 1,6	17		Engine idling – engine hot	0,2-1 V fluctuating
Heated oxygen sensor (HO2S) – 2,0/2,5	17		Engine idling – engine hot	0-1,1 V fluctuating

Table continued on next page →

Component/circuit description	ECM pin	Signal	Condition	Typical value
Heated oxygen sensor (HO2S) - screened lead	21	↔	Engine idling	0 V
Idle speed control (ISC) actuator	25 (30)	⇒	Engine idling	Intermittent AWM 27
	30 (25)	⇒	Engine idling	Intermittent AWM 27
Idle speed control (ISC) actuator position sensor	28	←	Engine idling - engine hot	3,7 V
	35	↔	Ignition ON	0 V
	41	⇒	Ignition ON	4-6 V
Ignition amplifier	7	⇒	Engine idling	AWM 32
Ignition switch	38	←	Ignition OFF	0 V
	38	←	Ignition ON	11-14 V
Ignition switch - some models	32	←	Engine cranking	9 V min.
Ignition switch - through engine control relay	8	⇒	Ignition OFF	0 V
	8	⇒	Ignition ON	11-14 V
Immobilizer control module	43	←	Ignition ON	11-14 V
Injector 1	2	↔	Engine idling - engine hot	3,8 ms
	2	↔	Engine idling	AWM 35
Injector 2	46	↔	Engine idling - engine hot	3,8 ms
	46	↔	Engine idling	AWM 35
Injector 3	47	↔	Engine idling - engine hot	3,8 ms
	47	↔	Engine idling	AWM 35
Injector 4	48	↔	Engine idling - engine hot	3,8 ms
	48	↔	Engine idling	AWM 35
Injector 5 - 2,5	49	↔	Engine idling - engine hot	3,8 ms
	49	↔	Engine idling	AWM 35
Instrument panel	11	←	Ignition ON - vehicle pushed	0 V or 11-14 V
	11	←	Vehicle moving	AWM 43
	19			1
Instrument panel - except 2,5	10			1
Intake air temperature (IAT) sensor	37	←	Ignition ON - air temp. 10°C	2 V
Intake air temperature (IAT) sensor - 1,6	35	↔	Ignition ON	0 V
Intake air temperature (IAT) sensor - 2,0/2,5	29	↔	Ignition ON	0 V
Intake manifold air control solenoid - 1,6	22	↔	Engine idling	11-14 V
	22	↔	Above 4000 rpm	0-1 V
Knock sensor (KS) 1	34	←	Engine idling - accelerate briefly	AWM 38
	36	↔	Engine idling	0 V
Knock sensor (KS) 1 - screened lead	9	↔	Engine idling	0 V
Knock sensor (KS) 2 - Transporter	56	←	Engine idling - accelerate briefly	AWM 38
	57	↔	Engine idling	0 V
Knock sensor (KS) 2 - screened lead - Transporter	55	↔	Engine idling	0 V
Mass air flow (MAF) sensor	14	←	Engine idling - engine hot	1,2 V
	14	←	3000 rpm	1,7 V
	26	↔	Ignition ON	0 V
Mass air flow (MAF) sensor - 2,5	35	↔	Ignition ON	0 V
Throttle position (TP) sensor	35	↔	Ignition ON	0 V
	40	←	Ignition ON - throttle closed	4,3 V
	40	←	Ignition ON - throttle fully open	0,7 V
	41	⇒	Ignition ON	4-6 V

1 Connected pin - no test data available

Model:
Polo G40

Engine code:
PY

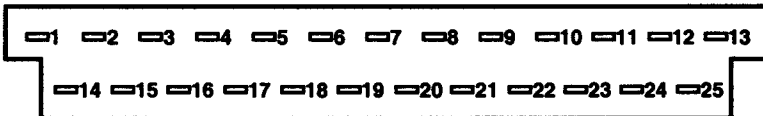
Year:
1987-94

VOLKSWAGEN

**VAG Digifant
ML5.1/5.2/MP4.2**

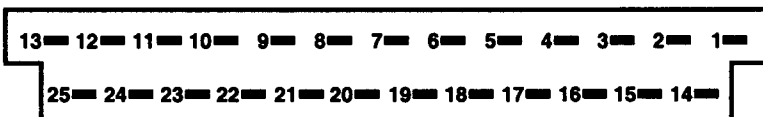
ECM harness multi-plug

Terminal side



AD64325

Wire side



AD42054

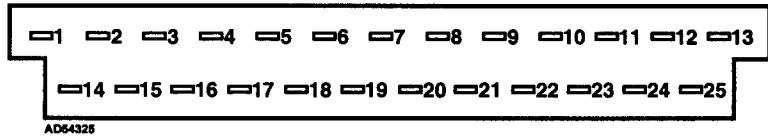
Component/circuit description	ECM pin	Signal	Condition	Typical value
Closed throttle position (CTP) switch	6		Ignition ON	0 V
	11		Ignition ON – throttle closed	0 V
	11		Ignition ON – throttle slightly open	5 V
CO adjustment resistor – 1990-94	5		Ignition ON	0,1-4,1 V – varies with CO level
	6		Ignition ON	0 V
Crankshaft position (CKP) sensor	6		Ignition ON	0 V
	8		Ignition ON	10 V min.
	18		Ignition ON – engine turned	0 V or 10-14 V
	18		Engine idling	30 Hz
	18		Engine idling	
Data link connector (DLC) – if fitted	20			
Earth	13		Ignition ON	0 V
Earth	19		Ignition ON	0 V
Engine control relay	14		Ignition OFF	0 V
	14		Ignition ON	11-14 V
	23		Ignition OFF	0 V
	23		Ignition ON	11-14 V
Engine coolant temperature (ECT) sensor	6		Ignition ON	0 V
	10		Ignition ON – coolant temp. 20°C	1,5 V
	10		Ignition ON – coolant temp. 80°C	0,2 V
Engine oil pressure warning module – some models	24			
Fuel pump relay	3		Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	2		Engine idling – engine hot	0-1 V fluctuating
	2		Engine idling – engine hot	
Heated oxygen sensor (HO2S) – screened lead – 1987-90	19		Engine idling	0 V
Ignition amplifier – 1990-94	25		Engine idling	
Ignition coil – 1987-90	25		Engine idling	
Ignition switch	1		Engine cranking	8 V min.

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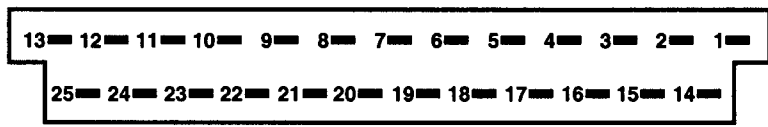
Component/circuit description	ECM pin	Signal	Condition	Typical value
Injectors	12	↔	Engine idling – engine hot	2,4 ms
	12	↔	Engine idling	AWW 35
Intake air temperature (IAT) sensor	6	↔	Ignition ON	0 V
	9	←	Ignition ON – air temp. 20°C	1 V
Knock sensor (KS)	4	←	Engine idling – accelerate briefly	AWW 38
	7	↔	Engine idling	0 V
Knock sensor (KS) – 1987-90	5	↔	Engine idling	0 V
Tachometer	24	⇒		1
Volume air flow (VAF) sensor – 1987-90	6	↔	Ignition ON	0 V
	17	⇒	Ignition ON	5 V
	21	←	Ignition ON – flap closed	0,3 V
	21	←	Ignition ON – flap fully open	4,4 V
	21	←	Engine idling – engine hot	0,8 V
Wide open throttle (WOT) switch	6	↔	Ignition ON	0 V
Wide open throttle (WOT) switch – 1987-90	11	←	Ignition ON – throttle slightly open	5 V
	11	←	Ignition ON – throttle fully open	0 V
Wide open throttle (WOT) switch – 1990-94	15	←	Ignition ON – throttle slightly open	5 V
	15	←	Ignition ON – throttle fully open	0 V

1 Connected pin - no test data available

Model:	Engine code:	Year:
Golf/Jetta 1,3	SC	1985-92
Golf/Jetta 1,3	NZ	1989-92

ECM harness multi-plug
Terminal side


AD64326

Wire side


AD42064

Component/circuit description	ECM pin	Signal	Condition	Typical value
Closed throttle position (CTP) switch – if fitted	4	←	Ignition ON – throttle closed	0 V
	4	←	Ignition ON – throttle slightly open	5 V
Earth	7		Ignition ON	0 V
	25		Ignition ON	0 V
Engine control relay	13	←	Ignition OFF	0 V
	13	←	Ignition ON	11-14 V
Engine coolant temperature (ECT) sensor	2	←	Ignition ON – coolant temp. 20°C	1,5 V
	2	←	Ignition ON – coolant temp. 80°C	0,2 V
Fuel pump relay	20	↔	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	5	←	Engine idling – engine hot	0-1 V fluctuating
	5	←	Engine idling – engine hot	AWW 21
Ignition amplifier	1	⇒	Engine idling	30 Hz
	1	⇒	Engine idling	AWW 32
Injectors	12	↔	Engine idling – engine hot	1,9 ms
	12	↔	Engine idling	AWW 35
Intake air temperature (IAT) sensor	14	←	Ignition ON – air temp. 20°C	1 V
Volume air flow (VAF) sensor	6	↔	Engine idling	0 V
	15	←	Ignition ON – flap closed	0,3 V
	15	←	Ignition ON – flap fully open	4,4 V
	15	←	Engine idling – engine hot	0,8 V
	19	⇒	Ignition ON	5 V
Wide open throttle (WOT) switch	4	←	Ignition ON – throttle slightly open	5 V
	4	←	Ignition ON – throttle fully open	0 V

1 Connected pin - no test data available

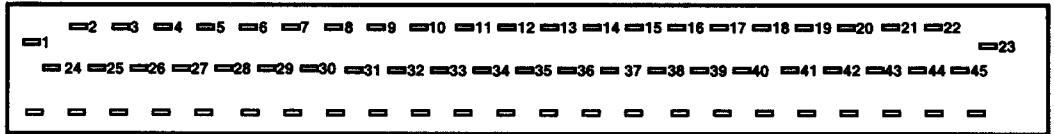
VOLKSWAGEN

Bosch Mono-Motronic MA1.2.2/1.2.3

Model:	Engine code:	Year:
Golf/Vento 1,4	ABD	1991-95
Golf/Vento 1,6	ABU/AEA	1992-95
Golf/Vento 1,8 (45 pin)	AAM	1991-98
Golf/Vento 1,8	ABS/ADZ	1991-98
Golf/Vento 1,8	ANN/ANP	1998

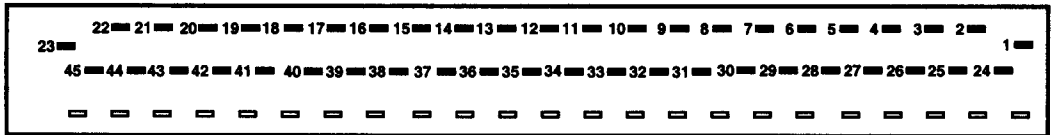
ECM harness multi-plug

Terminal side



AD61645

Wire side



AD42108

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning – 1,6/1,8	33			1
	35			1
Automatic transmission – 1,8	34		Ignition ON	11-14 V
Battery	21	←	Ignition OFF	11-14 V
Closed throttle position (CTP) switch	10	←	Ignition ON – throttle closed	0 V
	10	←	Ignition ON – throttle open	11-14 V
Crankshaft position (CKP) sensor	8	⇒	Ignition OFF	0 V
	8	⇒	Ignition ON	10 V min.
	13	←	Ignition ON – engine turned	0 V or 11-14 V
	13	←	Engine idling	30 Hz
	13	←	3000 rpm	100 Hz
	13	←	Engine idling	Www 4
Data link connector (DLC) – 1991-94	29	↔	Ignition ON	11-14 V
Data link connector (DLC) – some models	11	←	Ignition ON	8 V
Earth	1		Ignition ON	0 V
	20		Ignition ON	0 V
Earth – 1,8 1991-94	15		Ignition ON	0 V
Earth – 1997-98	32		Ignition ON	0 V
Earth – some models	12		Ignition ON	0 V
Engine coolant temperature (ECT) sensor	17	⊘	Ignition ON	0 V
	42	←	Ignition ON – coolant temp. 20°C	2 V
	42	←	Ignition ON – coolant temp. 80°C	0,2 V
Evaporative emission (EVAP) canister purge valve	3	↔	Ignition OFF	11-14 V
	3	↔	Engine hot – valve operating	Www 20
Fuel pump relay	25	↔	Ignition ON	0-1 V briefly then 11-14 V
	25	↔	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	38	←	Engine idling – engine hot	0-1 V fluctuating
	38	←	Engine idling – engine hot	Www 21

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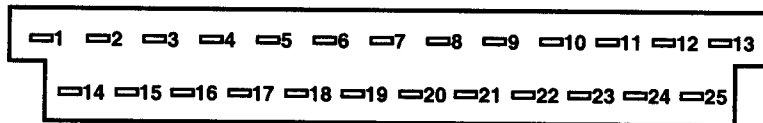
Component/circuit description	ECM pin	Signal	Condition	Typical value
Heated oxygen sensor (HO2S) – except 1,8 1991-94	15	↗	Engine idling	0 V
Heated oxygen sensor (HO2S) – screened lead – ABD/ABU	44	↗	Engine idling	0 V
Idle speed control (ISC) actuator	2 (26)	⇒	Engine idling	Intermittent AWW 27
	26 (2)	⇒	Engine idling	Intermittent AWW 27
Idle speed control (ISC) actuator position sensor – if fitted	16	←	Engine idling – engine hot	3 V or 11-14 V – intermittent
	16	←	Engine idling – engine hot	Intermittent AWW 31
Ignition amplifier	24	⇒	Engine idling	30 Hz
	24	⇒	3000 rpm	100 Hz
	24	⇒	Engine idling	AWW 32
Ignition switch	23	←	Ignition OFF	0 V
	23	←	Ignition ON	11-14 V
Ignition switch – AT 1,8 1994-98	40	←	Ignition OFF	0 V
	40	←	Ignition ON	11-14 V
Immobilizer control module – 1994-98	29		Ignition ON	11-14 V
Injector	7	↗	Ignition ON	11-14 V briefly then 0 V
	7	↗	Engine idling – engine hot	2 ms
	7	↗	Engine idling	AWW 13
Instrument panel	9	⇒		1
Instrument panel – 1,8	27			1
Instrument panel – except ABD	36	←	Ignition ON – vehicle pushed	0 V or 11-14 V
Intake air temperature (IAT) sensor	17	↗	Ignition ON	0 V
	43	←	Ignition ON – air temp. 20°C	2,3 V
Intake manifold heater relay	28	↗	Ignition ON – engine cold	0-1 V
	28	↗	Ignition ON – engine hot	11-14 V
Throttle position (TP) sensor	14	←	Ignition ON	5 V
	17	↗	Ignition ON	0 V
	18	←	Ignition ON – throttle closed	0,1 V
	18	←	Ignition ON – throttle fully open	4,5 V
	41	←	Ignition ON – throttle closed	1,9 V
	41	←	Ignition ON – throttle fully open	4,9 V

1 Connected pin - no test data available

Model:	Engine code:	Year:
Golf/Jetta GTi 1,8	PB	1987-92
Golf/Jetta 1,8	PF	1987-92
Golf/Jetta/Syncro 1,8	1P	1988-91
Golf Cabrio 1,8	2H	1989-93
Passat 1,8	PB/PF	1988-91

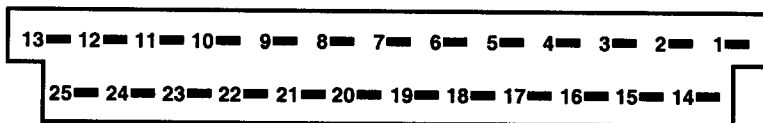
ECM harness multi-plug

Terminal side



AD54325

Wire side



AD42064

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	16			1
Automatic transmission – Passat	7			1
	24			1
Closed throttle position (CTP) switch	6	↗	Ignition ON	0 V
	11	←	Ignition ON – throttle closed	0 V
	11	←	Ignition ON – throttle slightly open	5 V
Crankshaft position (CKP) sensor	6	↗	Ignition ON	0 V
	8	⇒	Ignition ON	10 V min.
	18	←	Ignition ON – engine turned	0 V or 11-14 V
	18	←	Engine cranking	10 Hz
	18	←	Engine idling	30 Hz
	18	←	3000 rpm	100 Hz
	18	←	Engine idling	AWM 4
Earth	13		Ignition ON	0 V
	19		Ignition ON	0 V
Engine control relay	14	←	Ignition OFF	0 V
	14	←	Ignition ON	11-14 V
Engine coolant temperature (ECT) sensor	6	↗	Ignition ON	0 V
	10	←	Ignition ON – coolant temp. 10°C	1,6 V
	10	←	Ignition ON – coolant temp. 20°C	1 V
	10	←	Ignition ON – coolant temp. 80°C	0,2 V
Fuel pump relay	3	↗↘	Ignition ON	0-1 V briefly then 11-14 V
	3	↗↘	Engine cranking	0-1 V
Heated oxygen sensor (HO2S) – if fitted	2	←	Engine idling – engine hot	0-1 V fluctuating
	2	←	Engine idling – engine hot	AWM 21
Idle air control (IAC) valve	22	⇒	Engine idling – engine hot	25%
	22	⇒	Engine idling	AWM 24
	23	↗	Engine idling	0 V

Table continued on next page →

Component/circuit description	ECM pin	Signal	Condition	Typical value
Ignition amplifier	25	⇨	Engine cranking	10 Hz
	25	⇨	Engine idling	30 Hz
	25	⇨	3000 rpm	100 Hz
	25	⇨	Engine idling	AW 32
Ignition switch	1	⇦	Engine cranking	8 V min.
Injectors	12	⇨⇨	Ignition ON	11-14 V briefly then 0 V
	12	⇨⇨	Engine idling – engine hot	2,4 ms
	12	⇨⇨	Engine idling	AW 35
Intake air temperature (IAT) sensor	6	⇨	Ignition ON	0 V
	9	⇦	Ignition ON – air temp. 10°C	1,6 V
	9	⇦	Ignition ON – air temp. 20°C	1 V
Knock sensor (KS)	4	⇦	Full throttle briefly	AW 38
	5	⇨	Engine idling	0 V
Knock sensor (KS) – screened lead – Golf/Jetta	7	⇨	Engine idling	0 V
Spare cable – Passat	20			1
Volume air flow (VAF) sensor	6	⇨	Ignition ON	0 V
	17	⇨	Ignition ON	5 V
	21	⇦	Ignition ON – flap closed	0,3 V
	21	⇦	Ignition ON – flap fully open	4,6 V
	21	⇦	Engine idling – engine hot	1 V
	21	⇦	3000 rpm	1,7 V
Wide open throttle (WOT) switch	6	⇨	Ignition ON	0 V
	11	⇦	Ignition ON – throttle slightly open	5 V
	11	⇦	Ignition ON – throttle fully open	0 V

1 Connected pin - no test data available

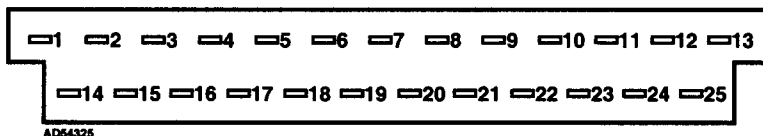
VOLKSWAGEN

VAG Digifant MP4.0 (25-pin)

Model:	Engine code:	Year:
Golf/Rallye G60	PG	1990-91
Golf Rallye	1H	1989
Passat/Syncro 1,8 G60	PG	1989-93
Corrado 1,8 G60	PG	1989-92

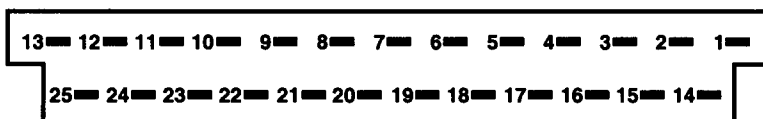
ECM harness multi-plug

Terminal side



AD64325

Wire side



AD42064

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	16			1
Closed throttle position (CTP) switch – 1989-92	6		Ignition ON	0 V
	11		Ignition ON – throttle closed	0 V
	11		Ignition ON – throttle slightly open	5 V
CO adjustment resistor	5		Ignition ON	0,1-4,1 V – varies with CO level
	6		Ignition ON	0 V
Crankshaft position (CKP) sensor	6		Ignition ON	0 V
	8		Ignition ON	10 V min.
	18		Ignition ON – engine turned	0 V or 10-14 V
	18		Engine idling	30 Hz
	18		Engine idling	4
Earth	13		Ignition ON	0 V
	19		Ignition ON	0 V
Engine control relay	14		Ignition OFF	0 V
	14		Ignition ON	11-14 V
Engine coolant temperature (ECT) sensor	6		Ignition ON	0 V
	10		Ignition ON – coolant temp. 20°C	1,5 V
	10		Ignition ON – coolant temp. 80°C	0,2 V
Fuel pump relay	3		Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	2		Engine idling – engine hot	0-1 V fluctuating
	2		Engine idling – engine hot	21
Idle air control (IAC) valve	22		Engine idling	24
Ignition coil	25		Engine idling	33
Ignition switch	1		Engine cranking	8 V min.
Ignition switch – through engine control relay – some models	23		Ignition OFF	0 V
	23		Ignition ON	11-14 V
Injectors	12		Engine idling – engine hot	2,4 ms
	12		Engine idling	35

Table continued on next page →

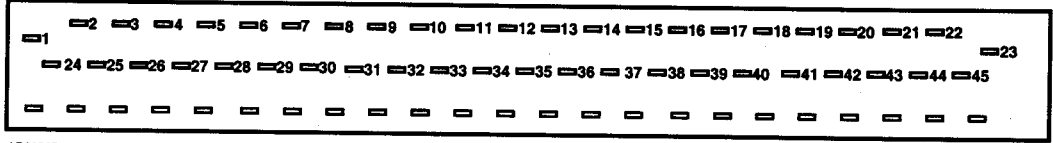
Component/circuit description	ECM pin	Signal	Condition	Typical value
Instrument panel – some models	24			1
Intake air temperature (IAT) sensor	6	↗	Ignition ON	0 V
	9	←	Ignition ON – air temp. 20°C	1 V
Knock sensor (KS)	4	←	Engine idling – accelerate briefly	38
	7	↗	Engine idling	0 V
Oxygen sensor control module – without cat	24			1
Spare cable	20			1
	21			1
Throttle position (TP) sensor – 1992-93	6	↗	Ignition ON	0 V
	11	←	Ignition ON – throttle closed	0,5-1,5 V
	11	←	Ignition ON – throttle fully open	3-5 V
	15	→	Ignition ON	5 V
Wide open throttle (WOT) switch – 1989-92	6	↗	Ignition ON	0 V
	15	←	Ignition ON – throttle slightly open	5 V
	15	←	Ignition ON – throttle fully open	0 V

1 Connected pin - no test data available

Model:	Engine code:	Year:
Golf/Vento 2,0	2E	1991-94
Corrado 2,0	2E	1993-94

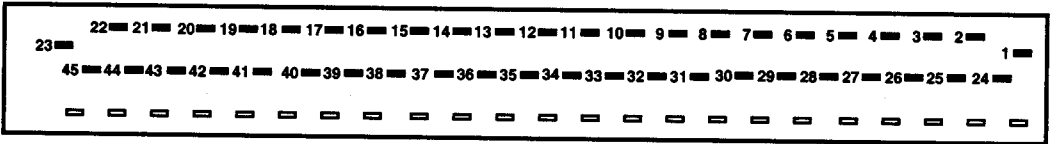
ECM harness multi-plug

Terminal side



AD81645

Wire side



AD42108

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	39			1
Automatic transmission	15			1
Cold start injector – Golf 1991-93	6	↗	Ignition ON	11-14 V
	6	↗	Engine cranking – engine cold	0 V briefly then 11-14 V
Crankshaft position (CKP) sensor	35	↗	Ignition ON	0 V
	44	←	Ignition ON – engine turned	0 V or 10-14 V
	44	←	Engine idling	30 Hz
	44	←	3000 rpm	100 Hz
	44	←	Engine idling	Ww 4
45	⇒	Ignition ON	10 V min.	
Data link connector (DLC)	43			1
Earth	1		Ignition ON	0 V
Engine control relay	23	←	Ignition OFF	0 V
	23	←	Ignition ON	11-14 V
Engine coolant temperature (ECT) sensor	12	←	Ignition ON – coolant temp. 20°C	1,5 V
	12	←	Ignition ON – coolant temp. 80°C	0,2 V
	35	↗	Ignition ON	0 V
Evaporative emission (EVAP) canister purge valve	33	↗	Ignition ON	11-14 V
	33	↗	Engine hot – valve operating	Ww 20
Fuel pump relay	31	↗	Ignition ON	0-1 V briefly then 11-14 V
	31	↗	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	17	←	Engine idling – engine hot	0-1 V fluctuating
	17	←	Engine idling – engine hot	Ww 21
	20	↗	Engine idling	0 V
	42	↗	Engine idling	0 V
Heated oxygen sensor (HO2S) – screened lead	21	↗	Engine idling	0 V
Idle air control (IAC) valve	30	↗	Engine idling	Ww 24

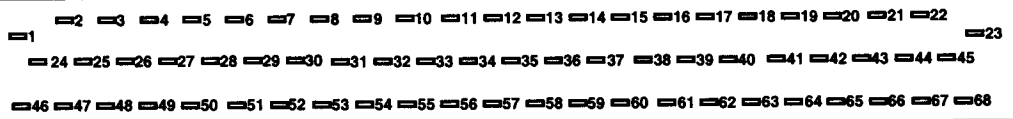
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Component/circuit description	ECM pin	Signal	Condition	Typical value
Ignition amplifier	7	⇨	Engine idling	30 Hz
	7	⇨	3000 rpm	100 Hz
	7	⇨	Engine idling	WVW 32
Ignition switch	32	⇐	Engine cranking	8 V min.
Ignition switch – through engine control relay	8	⇐	Ignition OFF	0 V
	8	⇐	Ignition ON	11-14 V
Injectors	2	⇨⇨	Ignition ON	11-14 V briefly then 0 V
	2	⇨⇨	Engine idling	2,3 ms
	2	⇨⇨	Engine idling	WVW 35
Instrument panel	10			1
	11			1
	19			1
Intake air temperature (IAT) sensor	35	⇨	Ignition ON	0 V
	37	⇐	Ignition ON – air temp. 20°C	1,4 V
Knock sensor (KS)	34 (36)	⇨	Engine idling – accelerate briefly	WVW 38
	36 (34)	⇨	Engine idling – accelerate briefly	WVW 38
	9	⇨	Engine idling	0 V
Throttle position (TP) sensor	35	⇨	Ignition ON	0 V
	40	⇐	Ignition ON – throttle closed	0,5-1,5 V
	40	⇐	Ignition ON – throttle fully open	3-5 V
	41	⇨	Ignition ON	5 V
Volume air flow (VAF) sensor	14	⇐	Ignition ON – flap closed	0,3 V
	14	⇐	Ignition ON – flap fully open	4,4 V
	14	⇐	Engine idling	0,8 V
	16	⇨	Ignition ON	5 V
	35	⇨	Ignition ON	0 V

1 Connected pin - no test data available

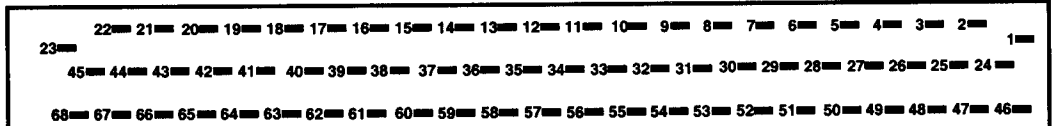
Model:	Engine code:	Year:
Golf/Vento 2,0 16V	ABF	1992-98
Passat 2,0 16V	ABF	1994-96

ECM harness multi-plug



AD81718

Terminal side



AD42119

Wire side

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	39			1
Automatic transmission	11			1
	18			1
Camshaft position (CMP) sensor	44	←	Engine idling	Www 34
	45	⇒	Ignition ON	11-14 V
Closed throttle position (CTP) switch	21	←	Ignition ON – throttle closed	0 V
	21	←	Ignition ON – throttle fully open	11-14 V
Crankshaft position (CKP) sensor	67	←	Engine idling	Www 19
	68	⇒	Ignition ON	11-14 V
Data link connector (DLC) – 1992-94	43	↔	Engine idling	11-14 V
Earth	1		Ignition ON	0 V
	33		Ignition ON	0 V
Engine control relay	23	←	Ignition OFF	0 V
	23	←	Ignition ON	11 V min.
Engine coolant temperature (ECT) sensor	14	←	Ignition ON – coolant temp. 10°C	1 V
	14	←	Ignition ON – coolant temp. 80°C	0,2 V
Evaporative emission (EVAP) canister purge valve	31	↔	Ignition ON	11-14 V
	31	↔	Engine hot – valve operating	Www 20
Fuel pump relay	6	↔	Ignition ON	0-1 V briefly then 11-14 V
	6	↔	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	20	←	Engine idling – engine hot	0-1 V fluctuating
	20	←	Engine idling – engine hot	Www 21
	42	↔	Engine idling	0 V
Heated oxygen sensor (HO2S) – screened lead	65	↔	Engine idling	0 V
Idle air control (IAC) valve	27	↔	Engine idling	Www 24
	27	↔	Engine idling – engine hot	50%

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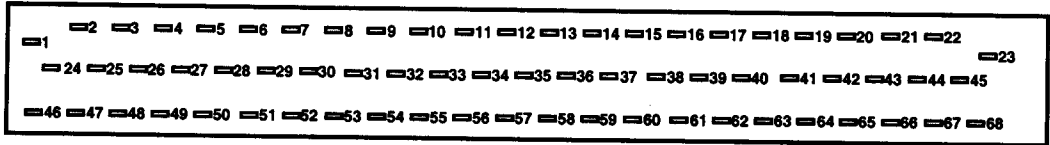
Component/circuit description	ECM pin	Signal	Condition	Typical value
Ignition amplifier	8	⇨	Engine idling	30 Hz
	8	⇨	3000 rpm	100 Hz
	8	⇨	Engine idling	32
Ignition switch	7	⇐	Engine cranking	8 V min.
	38	⇐	Ignition OFF	0 V
	38	⇐	Ignition ON	11 V min.
Ignition switch – through engine control relay	9	⇐	Ignition OFF	0 V
	9	⇐	Ignition ON	9 V min.
Immobilizer control module – 1994-98	43		Engine idling	11-14 V
Injector 1	24	⇨⇨	Ignition ON	11-14 V briefly then 0 V
	24	⇨⇨	Engine idling – engine hot	3,4 ms
	24	⇨⇨	Engine idling	35
Injector 2	25	⇨⇨	Ignition ON	11-14 V briefly then 0 V
	25	⇨⇨	Engine idling – engine hot	3,4 ms
	25	⇨⇨	Engine idling	35
Injector 3	26	⇨⇨	Ignition ON	11-14 V briefly then 0 V
	26	⇨⇨	Engine idling – engine hot	3,4 ms
	26	⇨⇨	Engine idling	35
Injector 4	2	⇨⇨	Ignition ON	11-14 V briefly then 0 V
	2	⇨⇨	Engine idling – engine hot	3,4 ms
	2	⇨⇨	Engine idling	35
Instrument panel	22			1
	35	⇐	Ignition ON – vehicle pushed	0 V or 7 V
	51			1
Intake air temperature (IAT) sensor	36	⇐	Ignition ON – air temp. 10°C	1,6 V
Knock sensor (KS) 1	32 (34)	⇐	Engine idling – accelerate briefly	38
	34 (32)	⇐	Engine idling – accelerate briefly	38
	10	⇨	Engine idling	0 V
Knock sensor (KS) 2	56 (57)	⇐	Engine idling – accelerate briefly	38
	57 (56)	⇐	Engine idling – accelerate briefly	38
	55	⇨	Engine idling	0 V
Oxygen sensor heater relay	28	⇨⇨	Ignition ON	0-1 V
Throttle position (TP) sensor	40	⇐	Ignition ON – throttle closed	0,5-1,5 V
	40	⇐	Ignition ON – throttle fully open	3-5 V
	41	⇨	Ignition ON	5 V

1 Connected pin - no test data available

Model:	Engine code:	Year:
Golf/Vento 2,8	AAA	1991-92
Passat 2,8	AAA	10/91-92
Corrado 2,9	ABV	1991-7/92

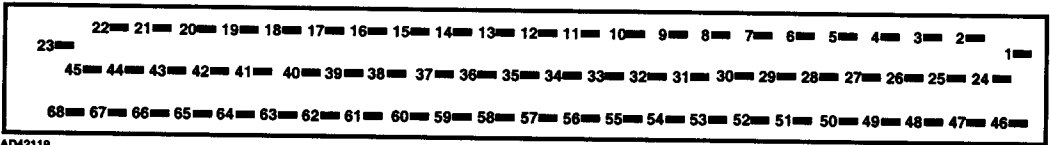
ECM harness multi-plug

Terminal side



AD61718














Wire side



AD42110

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	37			1
	39			1
Automatic transmission	18			1
	58			1
Battery	54	←	Ignition OFF	11-14 V
Camshaft position (CMP) sensor	44	←	Engine idling	Ww 34
Crankshaft position (CKP) sensor	67	←	Engine idling	Ww 2
	68	↔	Engine idling	0 V
Data link connector (DLC)	21			1
	43		Engine idling	11-14 V
Earth	1		Ignition ON	0 V
	55		Ignition ON	0 V
	56		Ignition ON	0 V
Earth – some models	7		Ignition ON	0 V
Engine control relay	9	↔	Ignition OFF	11-14 V
	9	↔	Ignition ON	0-1 V
	23	←	Ignition OFF	0 V
	23	←	Ignition ON	11-14 V
Engine coolant temperature (ECT) sensor	14	←	Ignition ON – coolant temp. 5°C	1,5 V
	14	←	Ignition ON – coolant temp. 80°C	0,3 V
	33	↔	Ignition ON	0 V
Evaporative emission (EVAP) canister purge valve	31	↔	Engine hot – valve operating	Ww 20
Fuel pump relay	6	↔	Ignition ON	0-1 V briefly then 11-14 V
	6	↔	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	20	←	Engine idling – engine hot	0-1 V fluctuating
	20	←	Engine idling – engine hot	Ww 21
	42	↔	Engine idling	0 V
Idle air control (IAC) valve	27 (53)	↔	Engine idling	Ww 28
	53 (27)	↔	Engine idling	Ww 28

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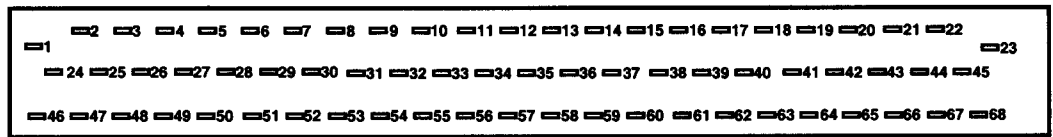
Component/circuit description	ECM pin	Signal	Condition	Typical value
Ignition amplifier	8	⇒	Engine idling	 32
Ignition switch	38	←	Ignition OFF	0 V
	38	←	Ignition ON	11-14 V
Injector 1	24	↔	Ignition ON	11-14 V
	24	↔	Engine idling – engine hot	3,3 ms
	24	↔	Engine idling	 35
Injector 2	3	↔	Ignition ON	11-14 V
	3	↔	Engine idling – engine hot	3,3 ms
	3	↔	Engine idling	 35
Injector 3	26	↔	Ignition ON	11-14 V
	26	↔	Engine idling – engine hot	3,3 ms
	26	↔	Engine idling	 35
Injector 4	4	↔	Ignition ON	11-14 V
	4	↔	Engine idling – engine hot	3,3 ms
	4	↔	Engine idling	 35
Injector 5	25	↔	Ignition ON	11-14 V
	25	↔	Engine idling – engine hot	3,3 ms
	25	↔	Engine idling	 35
Injector 6	2	↔	Ignition ON	11-14 V
	2	↔	Engine idling – engine hot	3,3 ms
	2	↔	Engine idling	 35
Instrument panel	22			 1
	65	←	Ignition ON – vehicle pushed	0 V or 11-14 V
Instrument panel – Golf/Vento	51			 1
Intake air temperature (IAT) sensor	33	↔	Ignition ON	0 V
	36	←	Ignition ON – air temp. 5°C	1,5 V
Knock sensor (KS) 1	33	↔	Engine idling	0 V
	34	←	Engine idling – accelerate briefly	 38
Knock sensor (KS) 2	33	↔	Engine idling	0 V
	57	←	Engine idling – accelerate briefly	 38
Mass air flow (MAF) sensor	16	↔	Engine idling	0 V
	17	←	Engine idling – engine hot	2,3 V
	17	←	3000 rpm	2,8 V
Mass air flow (MAF) sensor – filament burn-off	59	⇒	Engine idling – engine hot	0 V
	59	⇒	Engine hot – switch ignition OFF – wait 4 seconds	4 V briefly
Oxygen sensor heater relay	28	↔	Engine idling	0-1 V
Spare cable – Passat/Corrado	51			 1
Spare cable – some models	15			 1
Throttle position (TP) sensor	33	↔	Ignition ON	0 V
	40	←	Ignition ON – throttle closed	0,6 V
	40	←	Ignition ON – throttle fully open	4,6 V
	41	⇒	Ignition ON	5 V

 Connected pin - no test data available

Model:	Engine code:	Year:
Golf/Vento 2,8	AAA	1993-07/95
Golf Syncro 2,9	ABV	1994-07/95
Passat 2,8	AAA	1993-07/95
Passat Syncro 2,9	ABV	1994-07/95
Corrado 2,8	AAA	1992-94
Corrado 2,9	ABV	08/92-95

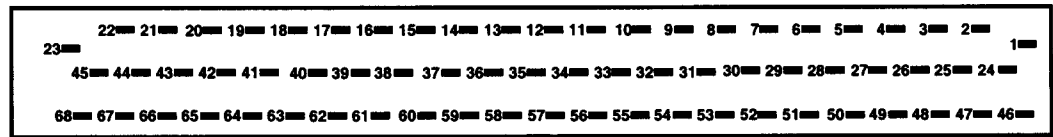
ECM harness multi-plug

Terminal side



AD61718

Wire side



AD42119

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	37			1
	39			1
Automatic transmission	11			1
	18			1
Battery	54	←	Ignition OFF	11-14 V
Camshaft position (CMP) sensor	44	←	Engine idling	AAW 34
	67	←	Engine idling	AAW 2
	68	∩	Engine idling	0 V
Data link connector (DLC) – 1992-94	43		Engine idling	11-14 V
Data link connector (DLC) – some models	21			1
Earth	1		Ignition ON	0 V
	7		Ignition ON	0 V
	55		Ignition ON	0 V
	56		Ignition ON	0 V
Earth – AT	58		Ignition ON	0 V
Engine control relay	9	∩→	Ignition OFF	11-14 V
	9	∩→	Ignition ON	0-1 V
	23	←	Ignition OFF	0 V
	23	←	Ignition ON	11-14 V
Engine coolant temperature (ECT) sensor	14	←	Ignition ON – coolant temp. 5°C	1,5 V
	14	←	Ignition ON – coolant temp. 80°C	0,3 V
	33	∩	Ignition ON	0 V
Evaporative emission (EVAP) canister purge valve	31	∩→	Engine hot – valve operating	AAW 20
Fuel pump relay	6	∩→	Ignition ON	0-1 V briefly then 11-14 V
	6	∩→	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	20	←	Engine idling – engine hot	0-1 V fluctuating
	20	←	Engine idling – engine hot	AAW 21
	42	∩	Engine idling	0 V
Idle air control (IAC) valve	27 (53)	⇨	Engine idling	AAW 23
	53 (27)	⇨	Engine idling	AAW 23

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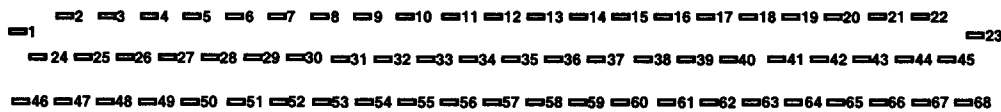
Component/circuit description	ECM pin	Signal	Condition	Typical value
Ignition amplifier	8	⇒	Engine idling	Www 32
	52	⇒	Engine idling	Www 32
	60	⇒	Engine idling	Www 32
Ignition switch	38	←	Ignition OFF	0 V
	38	←	Ignition ON	11-14 V
Immobilizer control module – 1994-95	43		Engine idling	11-14 V
Injector 1	24	↔	Ignition ON	11-14 V
	24	↔	Engine idling – engine hot	3,3 ms
	24	↔	Engine idling	Www 35
Injector 2	3	↔	Ignition ON	11-14 V
	3	↔	Engine idling – engine hot	3,3 ms
	3	↔	Engine idling	Www 35
Injector 3	26	↔	Ignition ON	11-14 V
	26	↔	Engine idling – engine hot	3,3 ms
	26	↔	Engine idling	Www 35
Injector 4	4	↔	Ignition ON	11-14 V
	4	↔	Engine idling – engine hot	3,3 ms
	4	↔	Engine idling	Www 35
Injector 5	25	↔	Ignition ON	11-14 V
	25	↔	Engine idling – engine hot	3,3 ms
	25	↔	Engine idling	Www 35
Injector 6	2	↔	Ignition ON	11-14 V
	2	↔	Engine idling – engine hot	3,3 ms
	2	↔	Engine idling	Www 35
Instrument panel	22			1
	65	←	Ignition ON – vehicle pushed	0 V or 11-14 V
Instrument panel – some models	51			1
Intake air temperature (IAT) sensor	33	↔	Ignition ON	0 V
	36	←	Ignition ON – air temp. 5°C	1,5 V
Knock sensor (KS) 1	33	↔	Engine idling	0 V
	34	←	Engine idling – accelerate briefly	Www 38
Knock sensor (KS) 2	33	↔	Engine idling	0 V
	57	←	Engine idling – accelerate briefly	Www 38
Mass air flow (MAF) sensor	16	↔	Engine idling	0 V
Mass air flow (MAF) sensor – 4-wire	17	←	Engine idling – engine hot	0,8 V
	17	←	3000 rpm	1,7 V
Mass air flow (MAF) sensor – 5-wire	17	←	Engine idling – engine hot	2,3 V
	17	←	3000 rpm	2,8 V
Mass air flow (MAF) sensor – filament burn-off – 5-wire	59	⇒	Engine idling – engine hot	0 V
	59	⇒	Engine hot – switch ignition OFF – wait 4 seconds	4 V briefly
Oxygen sensor heater relay	28	↔	Engine idling	0-1 V
Throttle position (TP) sensor	33	↔	Ignition ON	0 V
	40	←	Ignition ON – throttle closed	0,6 V
	40	←	Ignition ON – throttle fully open	4,6 V
	41	⇒	Ignition ON	5 V

1 Connected pin - no test data available

Model:	Engine code:	Year:
Golf/Vento 2,8	AAA	08/95-98
Golf Syncro 2,9	ABV	08/95-97
Passat 2,8	AAA	08/95-96
Passat Syncro 2,9	ABV	07/95-96
Sharan 2,8	AAA/AMY	1995-98

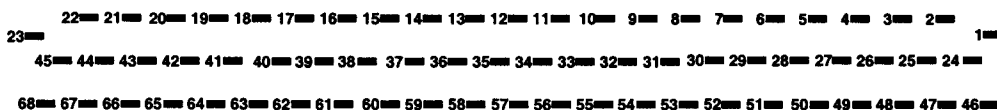
ECM harness multi-plug

Terminal side



Wire side

AD81718



AD42119

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	37			1
	39			1
Automatic transmission	11			1
	18			1
Automatic transmission – Sharan	7		Ignition ON	0 V
Battery	54	←	Ignition OFF	11-14 V
Camshaft position (CMP) sensor	44	←	Engine idling	Ww 34
Camshaft position (CMP) sensor – Golf/Vento	41	⇒	Ignition ON	5 V
Closed throttle position (CTP) switch	10	←	Ignition ON – throttle closed	0 V
	10	←	Ignition ON – throttle open	11-14 V
	33	↔	Ignition ON	0 V
Crankshaft position (CKP) sensor	67	←	Engine idling	Ww 2
	68	←	Engine idling	Ww 2
Data link connector (DLC) – Passat	21			1
Earth	1		Ignition ON	0 V
	56		Ignition ON	0 V
Earth – except Sharan AT	7		Ignition ON	0 V
Engine coolant temperature (ECT) sensor	14	←	Ignition ON – coolant temp. 10°C	2,8 V
	14	←	Ignition ON – coolant temp. 80°C	0,4 V
	33	↔	Ignition ON	0 V
Evaporative emission (EVAP) canister purge valve	31	↔	Engine hot – valve operating	Ww 20
Exhaust gas recirculation (EGR) solenoid – Sharan	30	↔		1
Exhaust gas recirculation temperature (EGRT) sensor – Sharan	15	←		1
	33	↔	Ignition ON	0 V
Fuel pump relay – except Sharan 1998-99	6	↔	Engine cranking	0-1 V
Fuel pump relay – through crash control module – Sharan 1998-99	6	↔	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	12	↔	Engine idling – engine cold	0-1 V
	20	←	Engine idling – engine hot	0-1 V fluctuating
	20	←	Engine idling – engine hot	Ww 21
	42	↔	Engine idling	0 V

Table continued on next page →

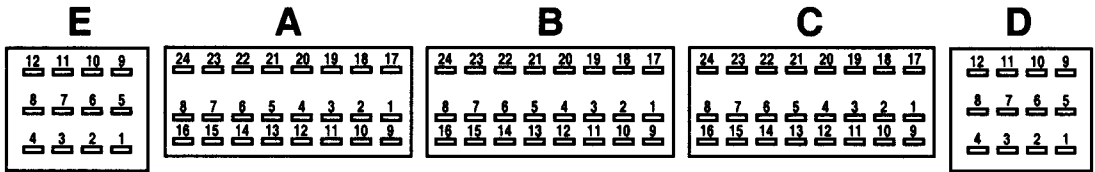
Component/circuit description	ECM pin	Signal	Condition	Typical value
Idle speed control (ISC) actuator	27 (53)	⇨	Engine idling	28
	53 (27)	⇨	Engine idling	28
Idle speed control (ISC) actuator position sensor	33	⇨	Ignition ON	0 V
	41	⇨	Ignition ON	5 V
	62	⇦	Engine idling – engine hot	3,7 V
Ignition amplifier	8	⇨	Engine idling	32
	52	⇨	Engine idling	32
	60	⇨	Engine idling	32
Ignition switch	23	⇦	Ignition OFF	0 V
	23	⇦	Ignition ON	11-14 V
Immobilizer control module	43	⇦	Engine idling	11-14 V
Injector 1	24	⇨⇨	Engine idling – engine hot	3,3 ms
	24	⇨⇨	Engine idling	35
Injector 2	25	⇨⇨	Engine idling – engine hot	3,3 ms
	25	⇨⇨	Engine idling	35
Injector 3	26	⇨⇨	Engine idling – engine hot	3,3 ms
	26	⇨⇨	Engine idling	35
Injector 4	2	⇨⇨	Engine idling – engine hot	3,3 ms
	2	⇨⇨	Engine idling	35
Injector 5	3	⇨⇨	Engine idling – engine hot	3,3 ms
	3	⇨⇨	Engine idling	35
Injector 6	4	⇨⇨	Engine idling – engine hot	3,3 ms
	4	⇨⇨	Engine idling	35
Instrument panel	22			[1]
	51	⇨	Engine idling	30 Hz
	51	⇨	3000 rpm	100 Hz
	65	⇦	Ignition ON – vehicle pushed	0 V or 11-14 V
Instrument panel – Passat	5			[1]
Intake air temperature (IAT) sensor	33	⇨	Ignition ON	0 V
	36	⇦	Ignition ON – air temp. 10°C	2,8 V
Knock sensor (KS) 1	33	⇨	Engine idling	0 V
	34	⇦	Engine idling – accelerate briefly	38
Knock sensor (KS) 2	33	⇨	Engine idling	0 V
	57	⇦	Engine idling – accelerate briefly	38
Mass air flow (MAF) sensor	16	⇨	Engine idling	0 V
	17	⇦	Engine idling – engine hot	0,8 V
	17	⇦	3000 rpm	1,6 V
Secondary air injection (AIR) pump relay – Sharan	49	⇨⇨	Engine idling – engine cold	0-1 V
	49	⇨⇨	Engine idling – engine hot	11-14 V
Secondary air injection (AIR) solenoid – Sharan	50	⇨⇨	Engine idling – engine cold	0-1 V
	50	⇨⇨	Engine idling – engine hot	11-14 V
Throttle position (TP) sensor	33	⇨	Ignition ON	0 V
	40	⇦	Ignition ON – throttle closed	4,3 V – after 20 seconds
	40	⇦	Ignition ON – throttle fully open	0,7 V
	41	⇨	Ignition ON	5 V

[1] Connected pin - no test data available

Bosch Motronic 3.2

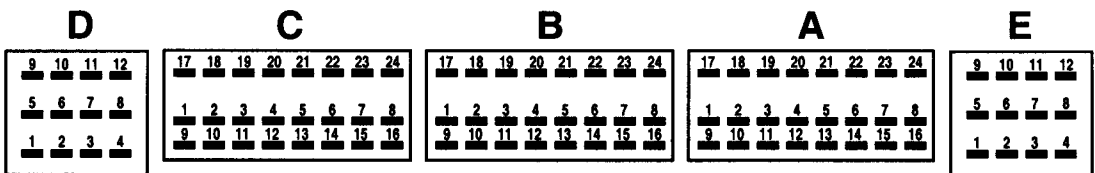
ECM harness multi-plug

Terminal side



AD42347







Wire side



AD42348

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	C14			1
Automatic transmission	B1			1
	B9			1
	B11			1
	D9	←	Ignition OFF	11-14 V
Camshaft position (CMP) sensor	A3	⇒	Ignition ON	5 V
	A15	↯	Ignition ON	0 V
	B2	←	Ignition ON – engine turned	0 V or 11-14 V
	B2	←	Engine idling	Www 34
Closed throttle position (CTP) switch	A15	↯	Ignition ON	0 V
	B4	←	Ignition ON – throttle closed	0 V
	B4	←	Ignition ON – throttle open	11-14 V
Crankshaft position (CKP) sensor	B15	↯	Engine idling	0 V
	B16	←	Engine idling	Www 2
Earth	D11		Ignition ON	0 V
	D12		Ignition ON	0 V
	E11		Ignition ON	0 V
	E12		Ignition ON	0 V
Engine coolant temperature (ECT) sensor	A5	←	Ignition ON – coolant temp. 10°C	2 V
	A5	←	Ignition ON – coolant temp. 80°C	0,4 V
	A15	↯	Ignition ON	0 V
Evaporative emission (EVAP) canister purge valve	D4	↯⇒	Engine hot – valve operating	Www 20
Fuel pump relay	D6	↯⇒	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	A10	↯	Engine idling	0 V
	A11	←	Engine idling – engine hot	0-1 V fluctuating
	A11	←	Engine idling – engine hot	Www 21
Idle speed control (ISC) actuator	D1 (D5)	⇒	Engine idling	Www 28
	D5 (D1)	⇒	Engine idling	Www 28

Table continued on next page →

Component/circuit description	ECM pin	Signal	Condition	Typical value
Idle speed control (ISC) actuator position sensor	A3	⇒	Ignition ON	5 V
	A13	←	Engine idling – engine hot	3,6 V
	A15	↔	Ignition ON	0 V
Ignition amplifier	B5	⇒	Engine idling	 32
Ignition switch	D10	←	Ignition OFF	0 V
	D10	←	Ignition ON	11-14 V
Injector 1	E1	↔	Engine idling – engine hot	2-3,5 ms
	E1	↔	Engine idling	 35
Injector 2	E6	↔	Engine idling – engine hot	2-3,5 ms
	E6	↔	Engine idling	 35
Injector 3	E5	↔	Engine idling – engine hot	2-3,5 ms
	E5	↔	Engine idling	 35
Injector 4	E2	↔	Engine idling – engine hot	2-3,5 ms
	E2	↔	Engine idling	 35
Instrumentation control module	A7	⇒	Ignition ON	11-14 V
	C10	⇒	Engine idling	30 Hz
	C10	⇒	3000 rpm	100 Hz
	C12			1
	C13	←	Ignition ON – vehicle pushed	0 V or 11-14 V
Knock sensor (KS)	A8	←	Engine idling – accelerate briefly	 38
	A15	↔	Engine idling	0 V
Mass air flow (MAF) sensor	A1	←	Engine idling	1,2 V
	A1	←	2000 rpm	1,6 V
	A1	←	4000 rpm	2,2 V
	A9	↔	Engine idling	0 V
Throttle position (TP) sensor	A3	⇒	Ignition ON	5 V
	A14	←	Ignition ON – throttle closed	4 V
	A14	←	Ignition ON – throttle fully open	0,6 V
	A15	↔	Ignition ON	0 V

1 Connected pin - no test data available

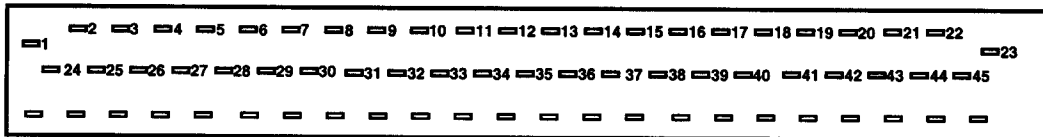
VOLKSWAGEN

Bosch Mono-Motronic MA1.2.2/3 (45-pin)

Model:	Engine code:	Year:
Passat 1,8	AAM	1992-96
Passat 1,8	ABS	1992-95
Passat 1,8	ADZ	1994-96

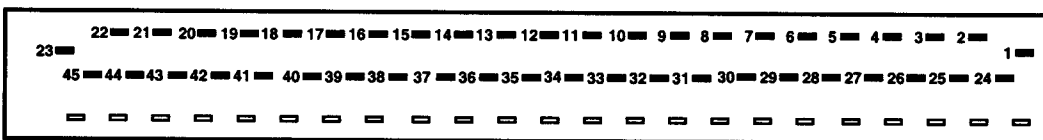
ECM harness multi-plug

Terminal side



AD81645









Wire side



AD42108

Component/Circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	33			1
	35			1
Automatic transmission	34			1
Automatic transmission – some models	12			1
Battery	21	←	Ignition OFF	11-14 V
Closed throttle position (CTP) switch	10	←	Ignition ON – throttle closed	0 V
	10	←	Ignition ON – throttle open	11-14 V
Crankshaft position (CKP) sensor	8	⇒	Ignition OFF	0 V
	8	⇒	Ignition ON	10 V min.
	13	←	Ignition ON – engine turned	0 V or 10-14 V
	13	←	Engine idling	30 Hz
	13	←	3000 rpm	100 Hz
13	←	Engine idling	AWM 4	
Data link connector (DLC) – 1992-94	29	↔	Ignition ON	11-14 V
Data link connector (DLC) – some models	11	←	Ignition ON	8 V
Earth	1		Ignition ON	0 V
	20		Ignition ON	0 V
Earth – 1992-94	15		Ignition ON	0 V
Earth – some models	12		Ignition ON	0 V
Engine coolant temperature (ECT) sensor	17	∩	Ignition ON	0 V
	42	←	Ignition ON – coolant temp. 20°C	2 V
	42	←	Ignition ON – coolant temp. 80°C	0,2 V
Evaporative emission (EVAP) canister purge valve	3	↗	Ignition OFF	11-14 V
	3	↗	Engine hot – valve operating	AWM 20
Fuel pump relay	25	↗	Ignition ON	0-1 V briefly then 11-14 V
	25	↗	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	38	←	Engine idling – engine hot	0-1 V fluctuating
	38	←	Engine idling – engine hot	AWM 21
Heated oxygen sensor (HO2S) – 1994-96	15	∩	Engine idling	0 V

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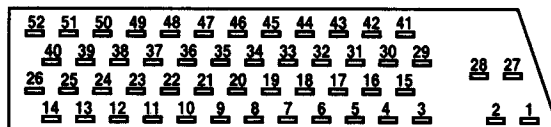
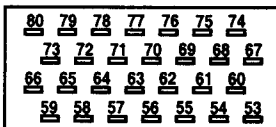
Component/circuit description	ECM pin	Signal	Condition	Typical value
Idle speed control (ISC) actuator	2 (26)	⇨	Engine idling	Intermittent  27
	26 (2)	⇨	Engine idling	Intermittent  27
Idle speed control (ISC) actuator position sensor – AAM/ADZ 1994-96	16	⇦	Engine idling – engine hot	3 V or 11-14 V – intermittent
	16	⇦	Engine idling – engine hot	Intermittent  31
Ignition amplifier	24	⇨	Engine idling	30 Hz
	24	⇨	3000 rpm	100 Hz
	24	⇨	Engine idling	 32
Ignition switch	23	⇦	Ignition OFF	0 V
	23	⇦	Ignition ON	11-14 V
Ignition switch – AT	40	⇦	Ignition ON	11-14 V
Immobilizer control module – 1994-96	29		Ignition ON	11-14 V
Injector	7	⇨⇨	Ignition ON	11-14 V briefly then 0 V
	7	⇨⇨	Engine idling – engine hot	2 ms
	7	⇨⇨	Engine idling	 35
Instrument panel	9	⇨		 1
	36	⇦		 1
Instrument panel – some models	27			 1
Intake air temperature (IAT) sensor	17	⇨	Ignition ON	0 V
	43	⇦	Ignition ON – air temp. 20°C	2,3 V
Intake manifold heater relay	28	⇨⇨	Ignition ON – engine cold	0-1 V
	28	⇨⇨	Ignition ON – engine hot	11-14 V
Throttle position (TP) sensor	14	⇨	Ignition ON	5 V
	17	⇨	Ignition ON	0 V
	18	⇦	Ignition ON – throttle closed	0,1 V
	18	⇦	Ignition ON – throttle fully open	4,5 V
	41	⇦	Ignition ON – throttle closed	1,9 V
	41	⇦	Ignition ON – throttle fully open	4,9 V

 Connected pin - no test data available

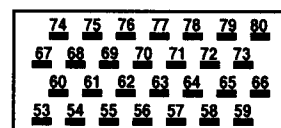
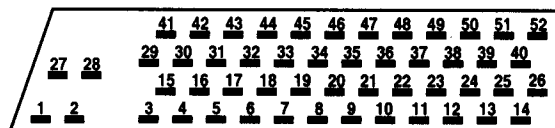
Model:	Engine code:	Year:
Passat 1,8	ADR	1996-99
Passat 1,8 Turbo	AEB	1996-99

ECM harness multi-plug

Terminal side



Wire side



Component/circuit description	ECM pin	Signal	Condition	Typical value
ABS control module – AT – Turbo	5			1
Air conditioning	8		Engine idling – AC OFF	0 V
	8		Engine idling – AC ON – AC compressor ON	11-14 V
Air conditioning – except Turbo 1997-99	10			1
Automatic transmission	7			1
	22			1
	23			1
Automatic transmission – Turbo	49			1
Barometric pressure (BARO) sensor – Turbo	61	←	Ignition ON – at sea level	4 V
	61	←	Ignition ON – 1000 m above sea level	3 V
	61	←	Ignition ON – 2000 m above sea level	2,1 V
	62	⇒	Ignition ON	5 V
	67	⌘	Ignition ON	0 V
Battery	3	←	Ignition OFF	11-14 V
Camshaft position (CMP) actuator – non-Turbo	55	↔	Engine idling	11-14 V
	55	↔	Accelerate – in first gear (MT) – in second gear (AT) – 1800-3200 rpm	0-1 V briefly
Camshaft position (CMP) sensor	67	⌘	Ignition ON	0 V
	76	←	Engine idling	Www 34
Camshaft position (CMP) sensor – non-Turbo	62	⇒	Ignition ON	5 V
Camshaft position (CMP) sensor – Turbo	11	⇒	Ignition ON	5 V
Closed throttle position (CTP) switch	67	⌘	Ignition ON	0 V
	69	←	Ignition ON – throttle closed	0 V
	69	←	Ignition ON – throttle open	11-14 V
Crankshaft position (CKP) sensor	56	←	Engine idling	Www 2
	63	←	Engine idling	Www 2
Earth	2		Ignition ON	0 V

Table continued on next page →

Component/circuit description	ECM pin	Signal	Condition	Typical value
Engine coolant temperature (ECT) sensor	53	←	Ignition ON – coolant temp. 10°C	2 V
	53	←	Ignition ON – coolant temp. 80°C	0,4 V
	67	↔	Ignition ON	0 V
Evaporative emission (EVAP) canister purge valve	15	↔	Engine hot – valve operating	20
Fuel pump relay	4	↔	Ignition ON	0 V briefly then 11-14 V
	4	↔	Engine idling	0-1 V
Heated oxygen sensor (HO2S)	25	↔	Engine idling	0 V
	26	←	Engine idling – engine hot	0-1 V fluctuating
	26	←	Engine idling – engine hot	21
	27	↔	Engine idling	0-1 V
Idle speed control (ISC) actuator	59 (66)	⇒	Engine idling	28
	66 (59)	⇒	Engine idling	28
Idle speed control (ISC) actuator position sensor	67	↔	Ignition ON	0 V
	74	←	Engine idling – engine hot	3,6-3,9 V
Idle speed control (ISC) actuator position sensor – non-Turbo	62	⇒	Ignition ON	5 V
Idle speed control (ISC) actuator position sensor – Turbo	11	⇒	Ignition ON	5 V
Ignition amplifier	71	⇒	Engine idling	32
	78	⇒	Engine idling	32
Ignition amplifier – Turbo	70	⇒	Engine idling	32
	77	⇒	Engine idling	32
Ignition switch	1	←	Ignition OFF	0 V
	1	←	Ignition ON	11-14 V
Injector 1	73	↔	Engine idling	35
Injector 1 – non-Turbo	73	↔	Engine idling – engine hot	2-5 ms
Injector 1 – Turbo	73	↔	Engine idling – engine hot	1-3 ms
Injector 2	80	↔	Engine idling	35
Injector 2 – non-Turbo	80	↔	Engine idling – engine hot	2-5 ms
Injector 2 – Turbo	80	↔	Engine idling – engine hot	1-3 ms
Injector 3	58	↔	Engine idling	35
Injector 3 – non-Turbo	58	↔	Engine idling – engine hot	2-5 ms
Injector 3 – Turbo	58	↔	Engine idling – engine hot	1-3 ms
Injector 4	65	↔	Engine idling	35
Injector 4 – non-Turbo	65	↔	Engine idling – engine hot	2-5 ms
Injector 4 – Turbo	65	↔	Engine idling – engine hot	1-3 ms
Instrumentation control module	6	⇒	Engine idling	30 Hz
	18			1
	19		Engine idling	11-14 V
	20	←	Ignition ON – vehicle pushed	0 V or 11-14 V
Intake air temperature (IAT) sensor	54	←	Ignition ON – air temp. 10°C	2 V
	67	↔	Ignition ON	0 V
Intake manifold air control solenoid – non-Turbo	64	↔	Engine idling	11-14 V
	64	↔	Engine idling – throttle fully open briefly	0-1 V briefly

Table continued on next page →

Component/circuit description	ECM pin	Signal	Condition	Typical value
Knock sensor (KS) 1	60	←	Engine idling – accelerate briefly	Www 38
	67	↔	Engine idling	0 V
Knock sensor (KS) 2	67	↔	Engine idling	0 V
	68	←	Engine idling – accelerate briefly	Www 38
Mass air flow (MAF) sensor	12	↔	Engine idling	0 V
	13	←	Engine idling – engine hot	0,8-1,1 V
	13	←	3000 rpm	1,7-2 V
Throttle position (TP) sensor	67	↔	Ignition ON	0 V
	75	←	Ignition ON – throttle closed	4,3 V after 20 seconds
	75	←	Ignition ON – throttle fully open	0,6 V
Throttle position (TP) sensor – non-Turbo	62	⇒	Ignition ON	5 V
Throttle position (TP) sensor – Turbo	11	⇒	Ignition ON	5 V
Turbocharger (TC) wastegate regulating valve	64	↔	Engine idling	11-14 V
	64	↔	Vehicle moving – accelerate – full load	1-99%

1 Connected pin - no test data available

Model:
Passat/Syncro 2,0

Engine code:
2E

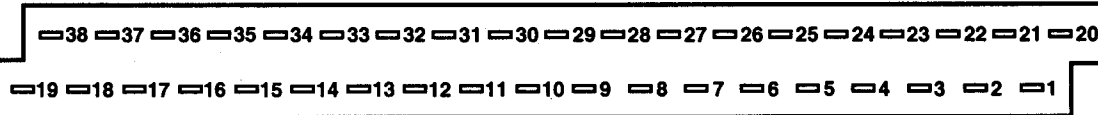
Year:
1990-95

VOLKSWAGEN

VAG Digifant ML5.5

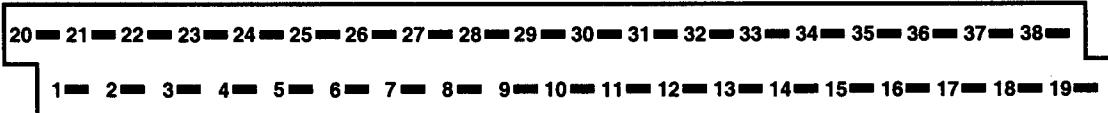
ECM harness multi-plug

Terminal side



AD73613

Wire side



AD42079

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	37			1
Alarm system control module – if fitted 1994-95	7			1
Automatic transmission – 1991-95	31			1
CO adjustment resistor	13	↗	Ignition ON	0 V
	35	←	Ignition ON	0-5 V – varies with CO level
Cold start injector – 1990-93	3	↗↘	Ignition ON	11-14 V
	3	↗↘	Engine cranking – engine cold	0-1 V briefly then 11-14 V
Crankshaft position (CKP) sensor	11	←	Ignition ON – engine turned	0 V or 10-14 V
	11	←	Engine idling	30 Hz
	11	←	3000 rpm	100 Hz
	11	←	Engine idling	Www 4
	13	↗	Ignition ON	0 V
	30	⇒	Ignition OFF	0 V
	30	⇒	Ignition ON	10 V min.
Data link connector (DLC) – 1992-95	32			1
Earth	20		Ignition ON	0 V
Earth – 1990-93	29		Ignition ON	0 V
Engine control relay	38	←	Ignition OFF	0 V
	38	←	Ignition ON	11-14 V
Engine coolant temperature (ECT) sensor	13	↗	Ignition ON	0 V
	14	←	Ignition ON – coolant temp. 20°C	1 V
	14	←	Ignition ON – coolant temp. 80°C	0,2 V
Fuel pump relay – without alarm	7	↗↘	Ignition ON	0-1 V briefly then 11-14 V
	7	↗↘	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	8	←	Engine idling – engine hot	0-1 V fluctuating
	8	←	Engine idling – engine hot	Www 21
Heated oxygen sensor (HO2S) – 1993-95	29	↗	Engine idling	0 V
Heated oxygen sensor (HO2S) – screened lead – 1993-95	33	↗	Engine idling	0 V

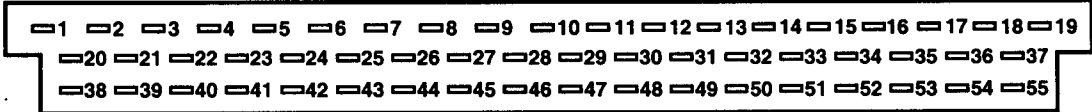
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Component/circuit description	ECM pin	Signal	Condition	Typical value
Idle air control (IAC) valve	25	↔	Engine idling	24
Ignition amplifier	27	⇒	Engine cranking	10 Hz
	27	⇒	Engine idling	30 Hz
	27	⇒	3000 rpm	100 Hz
	27	⇒	Engine idling	32
Ignition switch	26	←	Engine cranking	10 V
Ignition switch – through engine control relay	36	←	Ignition OFF	0 V
	36	←	Ignition ON	11-14 V
Injector	2	↔	Ignition ON	11-14 V briefly then 0 V
	2	↔	Engine idling – engine hot	2,3 ms
	2	↔	Engine idling	35
Instrument panel	10			1
Instrument panel – 1992-95	24			1
Intake air temperature (IAT) sensor	13	↔	Ignition ON	0 V
	15	←	Ignition ON – air temp. 20°C	1,4 V
Knock sensor (KS)	16	←	Engine running accelerate briefly	38
	17	↔	Engine running	0 V
Knock sensor (KS) – screened lead	34	↔	Engine running	0 V
Spare cable – 1993-95	6			1
Throttle position (TP) sensor	1	⇒	Ignition ON	5 V
	12	←	Ignition ON – throttle closed	0,5-1,5 V
	12	←	Ignition ON – throttle fully open	3-5 V
Volume air flow (VAF) sensor	13	↔	Ignition ON	0 V
	19	←	Ignition ON – flap closed	0,3 V
	19	←	Ignition ON – flap fully open	4,4 V
	19	←	Engine idling – engine hot	0,8 V
	28	⇒	Ignition ON	5 V

Connected pin - no test data available

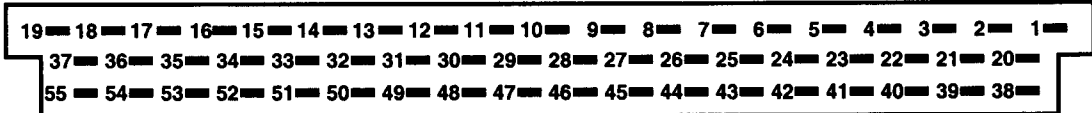
ECM harness multi-plug

Terminal side



AD65781

Wire side



AD42065

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	40			1
	41			1
Automatic transmission	51			1
Battery	18	←	Ignition OFF	11-14 V
Camshaft position (CMP) sensor	8	←	Engine idling	AWM 34
	12	→	Ignition ON	4,5 V min.
Crankshaft position (CKP) sensor	48	↔	Engine idling	0 V
	49	←	Engine idling	AWM 2
Data link connector (DLC)	13			1
	55			1
Earth	14		Ignition ON	0 V
	19		Ignition ON	0 V
	24		Ignition ON	0 V
	42		Ignition ON	0 V
Earth - AT	54		Ignition ON	0 V
Engine control relay	36	↔	Ignition OFF	11-14 V
	36	↔	Ignition ON	0-1 V
	37	←	Ignition OFF	0 V
	37	←	Ignition ON	11-14 V
Engine coolant temperature (ECT) sensor	30	↔	Ignition ON	0 V
	45	←	Ignition ON - coolant temp. 5°C	1,5 V
	45	←	Ignition ON - coolant temp. 80°C	0,3 V
Evaporative emission (EVAP) canister purge valve	5	↔	Engine hot - valve operating	AWM 20
Fuel pump relay	3	↔	Ignition ON	0-1 V briefly then 11-14 V
	3	↔	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	10	↔	Engine idling	0 V
	28	←	Engine idling - engine hot	0-1 V fluctuating
	28	←	Engine idling - engine hot	AWM 21

Table continued on next page →

Component/circuit description	ECM pin	Signal	Condition	Typical value
Idle air control (IAC) valve	4	↔	Engine idling	25
	22	↔	Engine idling	25
Ignition amplifier	1	⇒	Engine idling	32
Ignition switch	27	←	Ignition OFF	0 V
	27	←	Ignition ON	11-14 V
Injector 1	17	↔	Ignition ON	11-14 V
	17	↔	Engine idling – engine hot	3,3 ms
	17	↔	Engine idling	35
Injector 2	15	↔	Ignition ON	11-14 V
	15	↔	Engine idling – engine hot	3,3 ms
	15	↔	Engine idling	35
Injector 3	35	↔	Ignition ON	11-14 V
	35	↔	Engine idling – engine hot	3,3 ms
	35	↔	Engine idling	35
Injector 4	33	↔	Ignition ON	11-14 V
	33	↔	Engine idling – engine hot	3,3 ms
	33	↔	Engine idling	35
Injector 5	16	↔	Ignition ON	11-14 V
	16	↔	Engine idling – engine hot	3,3 ms
	16	↔	Engine idling	35
Injector 6	34	↔	Ignition ON	11-14 V
	34	↔	Engine idling – engine hot	3,3 ms
	34	↔	Engine idling	35
Instrument panel	6			1
	9	←	Ignition ON – vehicle pushed	0 V or 11-14 V
Knock sensor (KS) 1	11	←	Engine idling – accelerate briefly	38
	30	↔	Engine idling	0 V
Knock sensor (KS) 2	29	←	Engine idling – accelerate briefly	38
	30	↔	Engine idling	0 V
Mass air flow (MAF) sensor	7	←	Engine idling – engine hot	2,3 V
	7	←	3000 rpm	2,8 V
	26	↔	Engine idling	0 V
Mass air flow (MAF) sensor – filament burn-off	25	⇒	Engine idling – engine hot	0 V
	25	⇒	Engine hot – switch ignition OFF – wait 4 seconds	4 V briefly
Throttle position (TP) sensor	12	⇒	Ignition ON	4,5 V min.
	30	↔	Ignition ON	0 V
	53	←	Ignition ON – throttle closed	0,6 V
	53	←	Ignition ON – throttle fully open	4,6 V

1 Connected pin - no test data available

Model:
Corrado 1,8 G60

Engine code:
PG

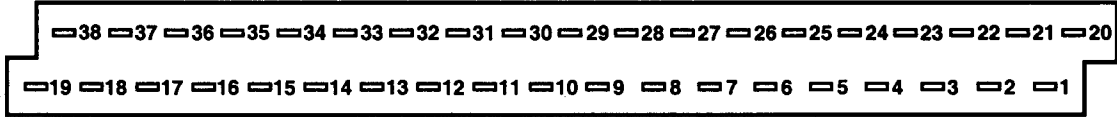
Year:
1992-93

VOLKSWAGEN

**VAG Digifant
MP4.3 (38-pin)**

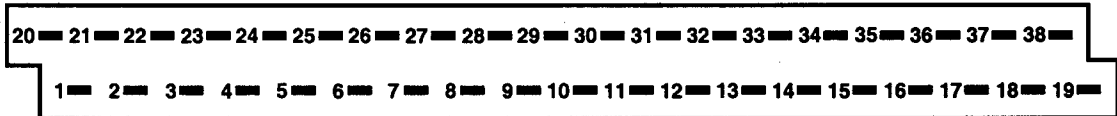
ECM harness multi-plug

Terminal side



AD73613

Wire side



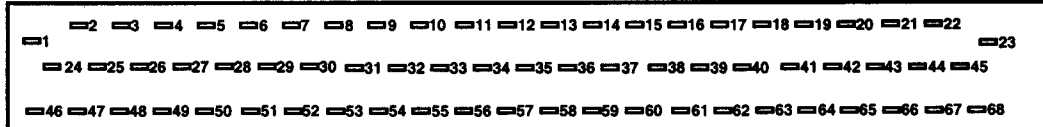
AD42079

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	32			1
Automatic transmission	14			1
CO adjustment resistor	10	←	Ignition ON	0-5 V – varies with CO level
	28	↔	Ignition ON	0 V
Crankshaft position (CKP) sensor	28	↔	Ignition ON	0 V
	37	←	Ignition ON – engine turned	0 V or 10-14 V
	37	←	Engine idling	Www 4
	38	⇒	Ignition ON	10 V min.
Data link connector (DLC)	4			1
	17			1
	36			1
Earth	1		Ignition ON	0 V
	35		Ignition ON	0 V
Engine control relay	19	←	Ignition OFF	0 V
	19	←	Ignition ON	11-14 V
Engine coolant temperature (ECT) sensor	11	←	Ignition ON – coolant temp. 20°C	1,5 V
	11	←	Ignition ON – coolant temp. 80°C	0,2 V
	28	↔	Ignition ON	0 V
Fuel pump relay	24	↔⇒	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	16	←	Engine idling – engine hot	0-1 V fluctuating
	16	←	Engine idling – engine hot	Www 21
Heated oxygen sensor (HO2S) – screened lead	9	↔	Engine idling	0 V
Idle air control (IAC) valve	23	↔⇒	Engine idling	Www 24
Ignition amplifier	6	⇒	Engine idling	Www 32
Ignition switch	25	←	Engine cranking	8 V min.
Ignition switch – through engine control relay	7	←	Ignition OFF	0 V
	7	←	Ignition ON	11-14 V
Injector 1	20	↔⇒	Engine idling – engine hot	2,3 ms
	20	↔⇒	Engine idling	Www 35

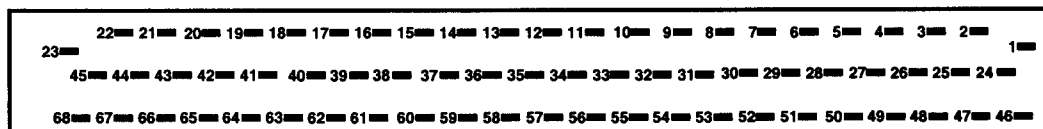
Table continued on next page →

Component/circuit description	ECM pin	Signal	Condition	Typical value
Injector 2	21	↔	Engine idling – engine hot	2,3 ms
	21	↔	Engine idling	35
Injector 3	3	↔	Engine idling – engine hot	2,3 ms
	3	↔	Engine idling	35
Injector 4	2	↔	Engine idling – engine hot	2,3 ms
	2	↔	Engine idling	35
Instrument panel	8			1
	18			1
Intake air temperature (IAT) sensor	28	↔	Ignition ON	0 V
	30	←	Ignition ON – air temp. 20°C	1 V
Knock sensor (KS)	27	↔	Engine idling	0 V
	29	←	Engine idling – accelerate briefly	38
Throttle position (TP) sensor	28	↔	Ignition ON	0 V
	33	←	Ignition ON – throttle closed	0,3-1,7 V
	33	←	Ignition ON – throttle fully open	3-5 V
	34	→	Ignition ON	5 V
1 Connected pin - no test data available				

Model:	Engine code:	Year:
Sharan 2,0	ADY	1995-99
Sharan 2,0	AKT	1995-99

VOLKSWAGEN
Simos
ECM harness multi-plug
Terminal side


AD61718

Wire side


AD42119

Component/circuit description	ECM pin	Signal	Condition	Typical value
Air conditioning	13			1
	39			1
Automatic transmission	5			1
	13			1
	15			1
Camshaft position (CMP) sensor	35	↗	Ignition ON	0 V
	44	←	Ignition ON – engine turned	0 V or 10-14 V
	44	←	Engine idling	30 Hz
	44	←	3000 rpm	100 Hz
	44	←	Engine idling	Aut 34
45	⇒	Ignition ON	10 V min.	
Closed throttle position (CTP) switch	18	←	Ignition ON – throttle closed	0 V
	18	←	Ignition ON – throttle slightly open	9 V min.
	35	↗	Ignition ON	0 V
Crankshaft position (CKP) sensor	16	↗	Engine idling	0 V
	67	←	Engine idling	Aut 19
	68	⇒	Ignition ON	11-14 V
Earth	1		Ignition ON	0 V
Engine control relay	23	←	Ignition OFF	0 V
	23	←	Ignition ON	11-14 V
Engine coolant temperature (ECT) sensor	12	←	Ignition ON – coolant temp. 10°C	2,8 V
	12	←	Ignition ON – coolant temp. 80°C	0,4 V
	35	↗	Ignition ON	0 V
Evaporative emission (EVAP) canister purge valve	33	↗↘	Ignition ON	11-14 V
	33	↗↘	Engine hot – valve operating	Aut 20
Exhaust gas recirculation (EGR) solenoid	22	↗↘	Ignition ON	11-14 V
	22	↗↘	Engine hot – valve operating	Aut 19
Fuel pump relay – 1995-98	31	↗↘	Engine cranking	0-1 V

Table continued on next page →

Component/circuit description	ECM pin	Signal	Condition	Typical value
Fuel pump relay – through crash control module – 1998	31	↔	Engine cranking	0-1 V
Heated oxygen sensor (HO2S)	17	←	Engine idling – engine hot	0-1,1 V fluctuating
	17	←	Engine idling – engine hot	AWW 21
	20	↔	Engine idling	0 V
	42	↔	Engine idling	0 V
Heated oxygen sensor (HO2S) – screened lead	21	↔	Engine idling	0 V
Idle speed control (ISC) actuator	25 (30)	⇒	Engine idling	Intermittent AWW 27
	30 (25)	⇒	Engine idling	Intermittent AWW 27
Idle speed control (ISC) actuator position sensor	28	←	Engine idling – engine hot	3,7 V
	35	↔	Ignition ON	0 V
	41	⇒	Ignition ON	4-6 V
Ignition amplifier	7	⇒	Engine idling	AWW 32
Ignition switch	32	←	Engine cranking	9 V min.
	38	←	Ignition OFF	0 V
	38	←	Ignition ON	11-14 V
Ignition switch – through engine control relay	8	⇒	Ignition OFF	0 V
	8	⇒	Ignition ON	11-14 V
Immobilizer control module	43	←		1
Injector 1	2	↔	Engine idling – engine hot	3,8 ms
	2	↔	Engine idling	AWW 35
Injector 2	46	↔	Engine idling – engine hot	3,8 ms
	46	↔	Engine idling	AWW 35
Injector 3	47	↔	Engine idling – engine hot	3,8 ms
	47	↔	Engine idling	AWW 35
Injector 4	48	↔	Engine idling – engine hot	3,8 ms
	48	↔	Engine idling	AWW 35
Instrument panel	10			1
	11	←		1
	19			1
Intake air temperature (IAT) sensor	37	←	Ignition ON – air temp. 10°C	2 V
	29	↔	Ignition ON	0 V
Knock sensor (KS)	34	←	Engine idling – accelerate briefly	AWW 38
	36	↔	Engine idling	0 V
Knock sensor (KS) – screened lead	9	↔	Engine idling	0 V
Mass air flow (MAF) sensor	14	←	Engine idling – engine hot	1,2 V
	14	←	3000 rpm	1,7 V
	26	↔	Ignition ON	0 V
Throttle position (TP) sensor	35	↔	Ignition ON	0 V
	40	←	Ignition ON – throttle closed	4,3 V
	40	←	Ignition ON – throttle fully open	0,7 V
	41	⇒	Ignition ON	4-6 V

1 Connected pin - no test data available

Model:
Transporter/Syncro 2,1

Engine code:
DJ

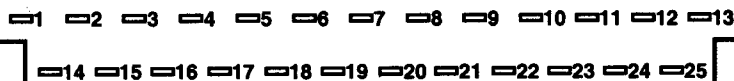
Year:
1985-92

VOLKSWAGEN

Bosch Digijet

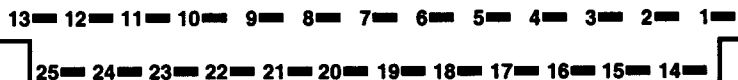
ECM harness multi-plug

Terminal side



AD64325

Wire side



AD42064

Component/circuit description	ECM pin	Signal	Condition	Typical value
Earth	7		Ignition ON	0 V
	25		Ignition ON	0 V
Engine control relay	13	←	Ignition OFF	0 V
	13	←	Ignition ON	11-14 V
Engine coolant temperature (ECT) sensor	2	←	Ignition ON – coolant temp. 20°C	1,5 V
	2	←	Ignition ON – coolant temp. 80°C	0,2 V
Fuel pump relay	20	↔	Engine cranking	0-1 V
Ignition amplifier	1	←	Engine idling	30 Hz
	1	←	Engine idling	32
Ignition switch	21	←	Engine cranking	9 V
Injector 1	12	↔	Engine idling – engine hot	1,9 ms
	12	↔	Engine idling	35
Injector 2	11	↔	Engine idling – engine hot	1,9 ms
	11	↔	Engine idling	35
Injector 3	24	↔	Engine idling – engine hot	1,9 ms
	24	↔	Engine idling	35
Injector 4	23	↔	Engine idling – engine hot	1,9 ms
	23	↔	Engine idling	35
Intake air temperature (IAT) sensor	14	←	Ignition ON – air temp. 20°C	1 V
Volume air flow (VAF) sensor	6	↔	Engine idling	0 V
	15	←	Ignition ON – flap closed	0,3 V
	15	←	Ignition ON – flap fully open	4,4 V
	15	←	Engine idling – engine hot	0,8 V
	19	→	Ignition ON	5 V
Wide open throttle (WOT) switch	4	←	Ignition ON – throttle slightly open	5 V
	4	←	Ignition ON – throttle fully open	0 V

1 Connected pin - no test data available