

SERVICE

9285

DIAGNOSIS OF THE INSTRUMENT CLUSTER



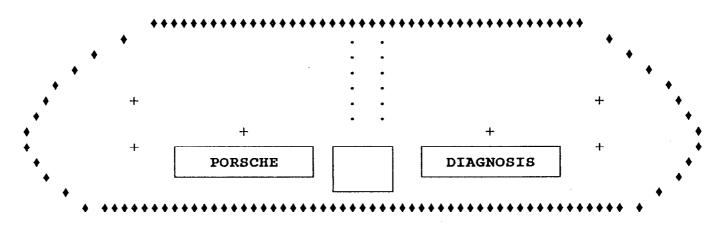
'89

INFORMATION

TECHNIK

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ON BOARD DIAGNOSIS



DIAGNOSIS OF THE INSTRUMENT CLUSTER

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PORSCHE Service, November 1988

O N B O A R D DIAGNOSIS

The correct functioning of the INSTRUMENT CLUSTER itself, as well as diverse switches and sensors in the vehicle can be checked by means of the ON BOARD DIAGNOSIS. During diagnosis of the instrument cluster, the instrument's three display boxes are used to indicate:

- a.) the individual steps in the diagnosis,
- b.) the software status,
- c.) the duration and/or journey during which warnings were issued,
- d.) the ACTUAL values of sensors and switches.

The current diagnosis step is indicated in the left and right display boxes and the central display box indicates the control unit code.

e.g. display:

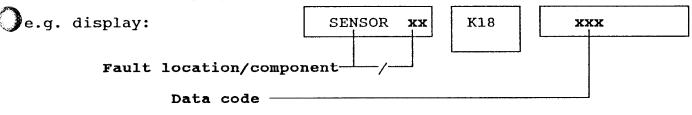
ACTUATORS

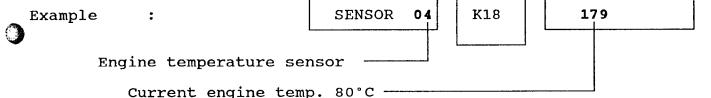
K18

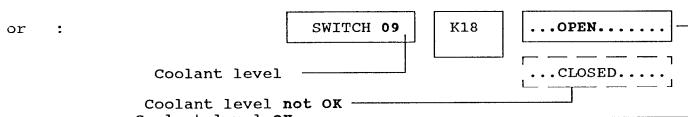
DRIVE?

The control unit code contains a letter (K = instrument cluster) which is assigned an identification figure when diagnosis is activated, indicating the respective software status (e.g. K18) of the control unit.

The corresponding data values for each diagnosis step are indicated in the right-hand display box as either a code number or in plain text. Switches, sensors or actuators are also assigned a code number in the left-hand display box which identifies the respective component.







Coolant level OK -

OPERATING LEVER functions

The operating lever - to the left of the steering column - can be used to start the diagnosis as well as to select and activate the individual steps.

The operating lever can operate in 4 planes.

- to the FRONT = start DIAGNOSIS

- to the REAR = execution desired - YES

- UPWARDS = execution desired - NO

- DOWNWARDS = execution desired - YES (clear memory only)

RULE

If a question appears on the display during diagnosis, such as

e.g.

ACTUATORS

Kxx

DRIVE?

this question must be answered with YES or NO by moving the operating lever in order to continue in the diagnosis program.

NOTE: Operating lever UPWARDS = NO - Do not execute

display.

Jump to next

diagnosis step

Operating lever to the REAR = YES - Execute the display.

Exception: There is one exception to this rule:

Display :

MEMORY

Kxx

CLEAR?

If you wish to clear the error memory (YES), the operating lever must be pressed DOWNWARDS - for approx. 1 s.

If the answer is NO move the operating lever UPWARDS.

The contact bridge 9293 is required to start diagnosis. The contact bridge 9293 must be plugged into the diagnosis-plug connector in the vehicle for this.

NOTE:

All other code letters shown in the central display box cannot be called at this time, or checked with the PORSCHE System Tester 9268 (Off Board Diagnosis).

		······································		
1.) AC	TIVATING DIAGNOSIS			
		DISPLAY (exampl	.e)	
la.) T	urn on ignition :	3510 KM	+22.0 * °C	185.5 KM I
	connect contact cridge 9293 :	3510 KM	+22.0 * °C	185.5 KM I
t	ove operating lever to the FRONT for pprox. 3 s	OUTSIDE	+22.0 * °C	TEMPERATURE
f	followed by :	PORSCHE		DIAGNOSIS
Press repeat DOWNWA	the operating lever cedly UPWARDS or RDS until the fication code K	PORSCHE	к	DIAGNOSIS
If a n	on-assigned code lette ating lever to the REA	r is called, e. R, the followir	g. ' A' ng displa	y appears:
			A	
	a short waiting I the display es :	PORSCHE		DIAGNOSIS

K.) INSTRUMENT CLUSTER DIAGNOS	BI	1
--------------------------------	----	---

At the beginning of model year '89, the software status code K18 was fitted for the instrument cluster. The software was modified during this model year. The subsequent new software status has been assigned the code K21.

NOTE: In order to read out all diagnosis steps without maloperation and with the correct values, we recommend that the instrument cluster diagnosis be carried out with the engine running (at idle).

PORSCHE K DIAGNOSIS

START THE ENGINE

Operating lever to the REAR

Display

CLUSTER

K18 (K21)

DIAGNOSIS

K1.) READING THE FAULT MEMORY

NOTE:

The instrument cluster software status K18 contains a fault data memory, the content of which is of no significance to the Service. Once the last, existing fault has been read out, the display indicates any existing FAULT WARNING (diagnosis step K1.1), or jumps to the next diagnosis step K2.

The instrument cluster software status K21 has no fault data memory. Any existing FAULT WARNINGS (diagnosis step K1.1) are indicated, otherwise the system jumps to the next diagnosis step K2.

Operating lever to the REAR:

MEMORY

Кжж

READ?

If NO, operating lever UPWARDS - Jump to the next diagnosis step K1.2.

If 'YES' operating lever to the REAR:

NO

Kxx

FAULTS

To continue: operating lever to the REAR.

K1.1) Fault warning display

If a warning is given in the display while driving, the duration and/or the journey is stored with this fault and issued on the display during diagnosis.

The following warnings are stored:

OIL PRESSURE

: in h/min

OIL LEVEL

: in km

BRAKE FLUID LEVEL

: in h/min

ENGINE TEMPERATURE

: in h/min

COOLANT LEVEL

: in km

TOOTHED BELT TENSION

: in h/min

Example:

Display

OIL PRESSURE

Kxx

_01:12_H_

Operating lever to the REAR

Display

:

COOLANT LEV.

Kxx

_127.3_KM_

etc.

Fault warning display TERMINATED - To continue: operating lever to the REAR.

Note: The fault warning display is cleared if the battery cable is disconnected or if the plug connections of the instrument cluster have been separated.

	K1.2.) CLEARING THE FAULT MEM	ORY		
)	Display :	MEMORY	Кжж	CLEAR?
	If NO, operating lever UPWARD	OS - Jump to the	next dia	gnosis step K2.
	If 'YES' operating lever DOWNWARDS for approx. 1 s :	MEMORY	Кхх	CLEARED
	To continue: operating lever	to the REAR.	• • • • • • • •	• • • • • • • • • • • • • • • • • • • •
	K2.) DRIVING INSTRUMENT-CLUST	ER ACTUATORS		
	Display :	ACTUATORS	Кжж	DRIVE?
	If NO, operating lever UPWARD	os, jump to the	next diag	nosis step K3.
	Operating lever to the REAR: TANK DISPLAY. The tank display must indicate 40 1.	ACTUATOR 01	Kxx	DRIVEN
	Operating lever to the REAR: TANK DISPLAY: The tank display must indicate 80 1.	ACTUATOR 02	Кхх	DRIVEN
	Operating lever to the REAR: The checkered DISPLAY changes inversely.	ACTUATOR 03		DRIVEN

Drive actuators TERMINATED - To continue: operating lever to the REAR

Operating lever to the REAR: ACTUATOR 04

Only for vehicles with

warning buzzer sounds.

M 215 (Saudi Arabia): speed

DRIVEN

Attention: code number without () = software status K18 + K21 code number in () = software status K21 only

K3.) SENSORS

SENSORS

K18 (K21)

CHECK?

If NO - operating lever UPWARDS, jump to the next diagnosis step K3.1

Operating lever to the REAR:

SENSOR

01

K18 (K21)

XXX

Each movement of the operating lever to the REAR - jump to the next sensor.

SENSOR CODE

COMPONENT

NOMINAL VALUES

01

PHOTOTRANSISTOR

د النات اختلا شده شده شده هجه بيبرد ميه وي د كانت ادادا شده الساد هده سده است سده سده سد

00 - 255

If the phototransistor is covered with your hand and/or the sidelight terminal 58d is switched on, the displayed value (code) must be smaller. The displayed value must be higher if the phototransistor is illuminated externally.

02 INSTRUMENT LIGHTING, Terminal 58d

Voltage on Terminal 58d

00 = switched off

34 - 255 = switched on

Code No. = Voltage
16

When the instrument-potentiometer is adjusted, the indicated value (code) must be reduced or increased accordingly.

03	OUTSIDE TEMPERATURE (°C)	(Sensor value(Ω))
25	60°	750
34	50°	1 K
48	40°	1.6 K
66	30°	2.5 K
90	20°	3.8 K
120	10°	6 K
136	5°	7.6 K
150	0°	9.8 K
169	- 5°	12.6 K
185	- 10°	16.5 K
213	- 20°	29 K
234	- 30°	53 K
248	- 40°	100 K

	(3.)	<u>sensors</u>		SENSOR	жж	K18 (K21)	жжж	
0	BENSO	R CODE		COMPONEN	rs 		NOMINA	L VALUES
	04		ENGINE	TEMPERAT	URE (°	C)	(Sensor v	value(Ω))
	0-	(97) (100) 106 108 114 134 156 179 201 222 242		(120°) (118°) 115° 113.5° 110.5° 100° 90° 80° 70° 60° 50° 40°			(23 25 26 29 38 50 70 97	3.5 L.5) 7 7 3.5
		255 		ANK LEVEL			(Sensor va	
0	 06	96(81) 174(161) 227(218) 240(232) 245(238) 96 112 128 144	VOLT	63 L 42 L 21 L 15 L(ca 12.5L AGE, Term		ion valu 5	42 69 72 79	9.1 (15.5) 2.3 (37.8) 5.7 (61.2) 2.7 (68.4) 5.6 (71.7)
•	a	166 176 129 208 224 240 255					16 1	= Voltage 5 V 6 V
	The are		the ins	re INDICA trument 0.0 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 dications the anal	* or * * * * * * * *	1 the dis 0.0 0.6 1.0 1.6 2.0 2.4 (2.6 2.8 (3.6 3.2 (3.7 4.5 (5.6 astrument	splay 1 2 4 6 8 5) 9 0) 11 7) 13 2) 15 0) 18 t and disp	9.6 8 5.3 2 9 6 3.6 1

K3.) SEN	BORB			SEN	ISOR	38	ж	Į.	18 21)	xxx		
SENSOR	CODE			СОМІ	ONE	NTS				NOMIN	AL VALUE	s
08		خنه سب من هبه بينج ر	OIL	PRESSURE	SEN	sor	(b	ar)		(Sensor	value(f	2))
				I	IDIC.	ATIC	on:					
		on	the	instrumer	nt	*	on	the	disp.	lay		
	29			0.	. 0	*	0	.0			10	
	70			1.	. 0	*	0	. 6			29.6	
	97			1.	. 5	*	1	.0			48	
	116			2 .	. 0	*	1	.6			65.3	
	131			2 .	. 5	*	2	.0			82	
	143			3 .	. 0	*	2	. 4	(2.6)		99	
	153			3 .	. 5	*	2	.8	(3.0)		116	
	162			4	. 0	*	3	. 2	(3.7)		133.6	
	169			4.	. 5	*	3	.7	(4.2)		151	
	180			5	. 0	*	4	.5	(5.0)		184	

The reasons for different indications on instrument and display are due to the tolerances of the analog instrument.

	·		
9	6	6	V
11	.2	7	V
12	8	•	
14	.4	•	
16		<u>) </u>	Voltage
17	16	•	
19	2	•	
20	08	•	
22	2.4	-	
24	.0	15	V

ALTERNATOR, Terminal 61

TO CONTINUE - operating lever to the REAR.

K3.1) INPUT VARIABLES

255

Specific dynamic input variables of the instrument cluster may be shown with the correct unit. The display follows automatically after diagnosis step K3 'SENSORS CHECK?'.

Operating lever to the REAR:

OIL PRESSURE

K18 (K21)

x.x BAR

Operating lever to the REAR:

ENG. SPEED

K18 (K21) xxxx RPM

At the present time, only the OIL PRESSURE and ENGINE SPEED can be called up. Differing indications between the analog and digital display are OK as long as the analog display deviations are not greater than +0.7 bar or \pm 1.5 % of the full-scale value at 400 - 2500 rpm.

Sensor diagnosis TERMINATED - To continue: operating lever to the REAR

09

K	4.)	8	W.	ľ	T	C.	HE	8

SWITCH

K18 (K21) CHECK?

If NO - operating lever UPWARDS, jump to the next diagnosis step K5.

Operating lever to the REAR:

SWITCH 01

K18 (K21)

Each movement of the operating lever to the REAR - Jump to the next switch.

SWITCH	COMPONENTS	SWITCH	DISPLAY	_
01	PARK BRAKE	Not operated Operated (-)	OPEN CLOSED	
02	No functi	on	OPEN	
03	ABS	System OK Not OK (-)	OPEN CLOSED	
04	No functi	on	OPEN	
05	RDK	Not installed Installed (-)	OPEN CLOSED	
0 6	CAT. MONITOR	System OK Not OK (-)	OPEN CLOSED	
07	No functi	on	OPEN	
08	WASHER WATER LEV.	Level OK Not OK (-)	OPEN CLOSED	
09	COOLANT LEVEL	Level OK Not OK (-)	OPEN CLOSED	
10	COOLANT PRESSURE	OK ≤ 0.1 bar ≥ 0.1 bar (-)	OPEN CLOSED	

K4.) SWITCHES

SWITCH XX

K18 (K21)

SWITCH	COMPONENTS	SWITCH	DISPLAY
11		OK > 6 1	OPEN CLOSED
12	TOOTHED BELT TENS.	Tension OK Not OK (+)	OPEN CLOSED
13	BRAKE PADS	Not OK (-)	OPEN CLOSED
14	BRAKE FLUID	Level OK Not OK (-)	OPEN CLOSED
15	BRAKE-LIGHT SWITCH	Not operated Operated (+)	
16	BRAKE LIGHT	OK Not OK (-)	OPEN CLOSED
17	CENTRAL LOCKING	Not operated Operated (-)	OPEN CLOSED
18	No function	n	OPEN
19	No function	n	OPEN
20	TACHOMETER SIGNAL Output	Rear wheels turn	OPEN CLOSED
21	No function	n	OPEN
22	OIL-PRESSURE SWITCH	OK > 2.5 bar Not OK (-) < 0.25 bar	OPEN CLOSED
23	SAFETY BELT	Not closed Closed	OPEN CLOSED
24	TAIL LAMP	OK Not OK (-)	OPEN CLOSED
25	TACHO RESET	Not operated Operated (-)	OPEN CLOSED

K5.) SPECIFIC FUNCTIONS

The operating time of the vehicle can be interrogated with this program without a tachometer signal (driving without tachometer connected).

EXECUTE? If 'NO', operating lever SF K18 (K21)UPWARDS. If 'YES', operating lever to the REAR for approx. SF K18 xxx/xx/xxx (K21) 6 s. 200/08/165 SF K18 Example: (K21) SF code Value 1 Value 2

Calculation from the display:

Failure time in minutes = (value 1 x 256) + value 2

Failure period in hours = $(value\ 1\ x\ 256)$ + $value\ 2$

Specific functions TERMINATED Instrument cluster diagnosis TERMINATED - Operating lever to the

Display:

REAR

PORSCHE

K

DIAGNOSIS

operating lever to the REAR - repeat To continue diagnosis instrument cluster diagnosis.

- switch off ignition, remove contact bridge. Interrupt diagnosis

If you forget to move the contact bridge, the following display appears when the ignition is switched on again:

DIAGNOSIS

PLUG

*********** TERMINATED

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