

# 16) ERROR Detection Chart

display	target	actual (1)	possible reason (5)	orange lamp	red lamp
SPEED	engine speed (~1500 ÷ 5800)	n = Ø	engine shut down	off	off
		n = Ø	faulty rev-pickup, gap of pickup too big	off	off
		n = Ø	circuit break (15)	off	off
		n = Ø	circuit break (27)	off	off
		n = Ø	short circuit (13 to 26)	off	off
		n = Ø	short circuit (15 to GND)	off	off
		n = Ø	short circuit (13 to GND)	off	off
LOAD	0 bis 115%	idling > 3%	defective potentiometer	off	off
		full load < 113%	misadjustment of throttle pos./new cal. required		
		0%	severed plug connection on pot.	flashing	off
		0%	circuit break (8)	flashing	off
		0%	circuit break (20)	flashing	off
		115%	circuit break (32)	off	off
		0%	short circuit (8 to GND)	flashing	off
		0%	short circuit (20 to 8)	flashing	off
AMBIENT PRESS	ambient pressure (~ 990 mbar)	1000 mbar	severed plug connector on sensor	flashing	off
		ca. 350 mbar	air box pressure sensor connected	off	off
		ambient pressure <sup>(5)</sup>	airbox pressure hose connected	off	off
		1000 mbar	circuit break (6)	flashing	off
		1000 mbar	circuit break (18)	flashing	off
		ca 1300 mbar	circuit break (30)	off	off
		1000 mbar	short circuit (6 to GND)	flashing	off
		1000 mbar	short circuit (6 to 18)	flashing	off
		I/O error <sup>(4)</sup>	short circuit (18 to GND)	off	off
AIRBOX PRESS.	airbox pressure (ambient pressure) <sup>(7)</sup>	1500 mbar	severed plug connection on sensor	flashing	off
		ca. 2100 mbar	ambient pressure sensor connected	off	off
		ambient pressure <sup>(5)</sup>	airbox pressure hose not connected/kinked	off	off
		1500 mbar	circuit break (9)	flashing	off
		1500 mbar	circuit break (21)	flashing	off
		ca. 2700 mbar	circuit break (33)	off	off
		1500 mbar	short circuit (9 to GND)	flashing	off
		1500 mbar	short circuit (9 to 21)	flashing	off
		I/O error <sup>(4)</sup>	short circuit (21 to GND)	off	off
AIRBOX TEMP.	air temp. in airbox	50°C	severed plug connection to sensor	flashing	off
		50°C	faulty temperature sensor	flashing	off
		50°C	conn. temp. sensor mistaken for solenoid valve	flashing	off
		50°C	circuit break (3)	flashing	off
		50°C	circuit break (4)	flashing	off
		50°C	short circuit (4 to GND)	flashing	off
SERVO POSITION	0% to 100%	< 0%	severed plug connection Servopoti. 3 pole	off	off
		restrained	severed plug connection Servomotor 2 pole	off	off
		restrained	circuit break (2)	off	off
		ca. -10%	circuit break (7)	off	off
		restrained	circuit break (14)	off	off
		< 0%	circuit break (19)	off	off
		cont. changing	circuit break (31)	off	off
		I/O error <sup>(4)</sup>	short circuit (7 to 31)	off	off
		> 100%	short circuit (7 und 19)	off	off
		restrained <sup>(4)</sup>	short circuit (19 to GND)	off	off
		restrained	short circuit (2 to 14)	off	off
		restrained	short circuit (2 to GND)	off	off
		undef./restrained	short circuit (14 to GND)	off	off

(1) possible default values

(2) at automatic re-activation of the TCU, auto test of servo motor and lamps is performed

(3) SETPOINT = target pressure input for airbox

(4) I/O error = circuit break TCU to computer or short circuit in voltage supply to TCU

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possible effect on TCU	possible effect on engine
none	no target pressure correction by excessive engine speed
none	no target pressure correction by excessive engine speed
none	no target pressure correction by excessive engine speed
none	no target pressure correction by excessive engine speed
none	no target pressure correction by excessive engine speed
none	no target pressure correction by excessive engine speed
none	no target pressure correction by excessive engine speed
confined target pressure range	performance loss
sudden target pres. changes, fixed target pres.	
setpoint 1500 mbar <sup>(3)</sup>	wastegate closes completely, no control possible
setpoint 1500 mbar <sup>(3)</sup>	wastegate closes completely, no control possible
setpoint 1500 mbar <sup>(3)</sup>	wastegate closes completely, no control possible
setpoint 1350 mbar <sup>(3)</sup>	engines runs with take-off performance, no control possible
setpoint 1500 mbar <sup>(3)</sup>	wastegate closes completely, no control possible
setpoint 1500 mbar <sup>(3)</sup>	wastegate closes completely, no control possible
TCU stops <sup>(2)</sup>	wastegate restrained, no control possible
incorrect setpoint of wastegate pos.	as of approx. 950 mbar wastegate is not closing enough, performance loss
incorrect setpoint of wastegate pos. <sup>(6)</sup>	wastegate closes too far - possible performance rise
incorrect setpoint of wastegate pos.	wastegate closes too far - pressure rise, no overboost warning
incorrect setpoint of wastegate pos.	wastegate is not closing enough - performance loss
incorrect setpoint of wastegate pos.	wastegate is not closing enough - performance loss
incorrect setpoint of wastegate pos.	wastegate is not closing enough - performance loss
incorrect setpoint of wastegate pos.	wastegate is not closing enough - performance loss
incorrect setpoint of wastegate pos.	wastegate is not closing enough - performance loss
incorrect setpoint of wastegate pos.	wastegate is not closing enough - performance loss
TCU stops <sup>(2)</sup>	wastegate restrained, no control possible
target pressure correction not possible	wastegate is not closing enough - performance loss
target pressure correction not possible <sup>(6)</sup>	wastegate closed too far - possible performance rise
incorrect setpoint of wastegate pos.	wastegate closed too far - pressure rise, no overboost warning
target pressure correction not possible	wastegate is not closing enough - performance loss
target pressure correction not possible	wastegate is not closing enough - performance loss
target pressure correction not possible	wastegate is not closing enough - performance loss
target pressure correction not possible	wastegate is not closing enough - performance loss
target pressure correction not possible	wastegate is not closing enough - performance loss
TCU stops <sup>(2)</sup>	wastegate restrained, no control possible
temp. correction of MAP impossible (const +5%)	neither temp. limitation nor power adaptability in regard to ambient conditions
temp. correction of MAP impossible (const +5%)	neither temp. limitation nor power adaptability in regard to ambient conditions
temp. correction of MAP impossible (const +5%)	neither fuel enrichening nor temperature limitation
temp. correction of MAP impossible (const +5%)	neither temp. limitation nor power adaptability in regard to ambient conditions
temp. correction of MAP impossible (const +5%)	neither temp. limitation nor power adaptability in regard to ambient conditions
temp. correction of MAP impossible (const +5%)	neither temp. limitation nor power adaptability in regard to ambient conditions
none	wastegate closes completely, no control possible
none	no control possible
none	no control possible
none	wastegate opens fully - performance loss
none	no control possible
none	wastegate closes completely, no control possible
none	wastegate opens fully - performance loss
TCU stops <sup>(2)</sup>	wastegate opens fully - performance loss
TCU stops <sup>(2)</sup>	wastegate opens fully - performance loss
TCU stops <sup>(2)</sup>	wastegate opens fully - performance loss
none	wastegate restrained, no control possible
none	no control possible
none	no control possible
none	no control possible

(5) relevant defective TCU component  
(6) shortcoming perceptible only at engine operation  
(7) at engine operation up to approx. 1350 mbar  
(8) MAP 100% ± (temp. corr.) - (20% setpoint corr.)