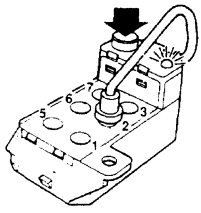
Diagnostics

General



Test function 4

3.1.1 Normal readout speed
3.1.2 Twice the normal readout speed
3.1.3 Ten times the normal readout speed (only for Diagnostic Key)

Position A1: Central locking with car alarm

Test function 1

1.1.1 No faults
1.1.4 Internal fault
2.1.1 Relay contacts (locking)
2.1.2 Relay contacts (unlocking)
2.2.1 Fuse or shorting to earth (locking)
2.2.2 Fuse or shorting to earth (unlocking)
2.2.3 Code 2.2.1 and 2.2.2
3.1.1 Serial transmission to siren
3.1.2 Internal fault in siren
3.1.3 Siren battery
3.2.1 Siren power feed
4.1.1 Serial transmission to ultrasonic alarm
4.1.2 Internal fault in ultrasonic alarm
4.1.3 Ultrasonic sensor fault(s)
5.1.1 Earth via key switch, locking (>10 sec)
5.1.2 Earth via key switch, unlocking (>10 sec)
5.1.3 Locking door with ignition switched on
5.1.4 Unlocking door with ignition switched on
5.2.1 Central locking system switch (closed for >10 sec)
5.2.2 Ultrasonic switch (closed for >20 sec)
5.3.1 Interior light

Test function 2

2.1.2 Open with the key
2.1.3 Operate the central locking switch on the dashboard
2.2.2 Open/close the door and/or boot lid/tailgate
2.2.4 Open the bonnet
2.2.7 Lock with the key
2.2.8 Spare
2.3.1 Start the engine (+50)
2.5.3 Operate the ultrasonic switch on the dashboard

Test function 4

3.4.4	Programming transmitter no. 1; press 'UNLOCK'
3.4.5	Programming transmitter no. 2; press 'UNLOCK'
3.4.6	Programming transmitter no. 3; press 'UNLOCK'
3.4.7	Programming transmitter no. 4; press 'UNLOCK'
4.1.3	LED control signal (0.5 sec high-0.5 sec low, etc. for 2 sec)
4.1.5	Interior light control signal (0.5 sec high-0.5 sec low, etc. for 2 sec)
4.2.2	Siren control signal (0.1 sec high-0.9 sec low, etc. for 2 sec)
4.3.2	Control signal for motors (locking)
4.3.3	Control signal for motors (unlocking)
4.4.2	Horn (0.1 sec high-0.9 sec low, etc. for 2 sec)
4.5.4	Hazard warning lights (0.5 sec high-0.5 sec low, etc. for 2 sec)
5.5.5	Erase all transmitter programs

Test function 5

Code	Description	Answer in coded form
3.2.1	A: Markets: Denmark, Finland, Norway, Sweden	2.6.1
	B: Markets: Austria, Germany, Switzerland	2.6.2
	C: Markets: Belgium, Luxembourg, Netherlands	2.6.3
	D: Markets: Greece, Italy, Portugal, Spain	2.6.4
	E: Markets: France	2.6.5
	F: Markets: Britain	2.6.6
3.2.2	Software issue date	
3.3.2	Product number **xxx**(yyy)	x.x.x
3.3.3	Product number (xxx)**yyy**	y.y.y
3.4.1	Remote control, central locking system with alarm function	3.6.1
	Remote control, central locking system without alarm function	3.6.2
3.3.4	Number of programmed transmitters	1.1.x

Test function 6

Code 1	Code 2	
3.2.1	2.6.1	A: Markets: Denmark, Finland, Norway, Sweden
	2.6.2	B: Markets: Austria, Germany, Switzerland
	2.6.3	C: Markets: Belgium, Luxembourg, Netherlands
	2.6.4	D: Markets: Greece, Italy, Portugal, Spain
	2.6.5	E: Markets: France
	2.6.6	F: Markets: Britain
3.4.1	3.6.1	Remote control, central locking system with alarm function
	3.6.2	Remote control, central locking system without alarm function

Position A2: Fenix 3B fuel system

Test function 1

1.1.1 No faults codes stored in memory
1.1.2 Electronic Control Unit
1.1.3 Fuel injector
1.2.1 Air pressure sensor
1.2.2 Air temperature sensor
1.2.3 Coolant temperature sensor
1.3.2 Battery voltage
1.4.3 Knock sensor
2.1.1 CO-potentiometer, B18EP
2.1.2 Oxygen sensor signal and λ-control
2.1.4 Flywheel sensor, 440/460: ch.n.-267000. 480: ch.n.-574671
2.2.2 System relay coil
2.2.3 Idle speed regulation
2.3.1 Oxygen sensor signal and λ-control
2.3.2 Oxygen sensor signal and λ-control
2.4.3 Throttle valve sensor, EP/FP
2.4.4 Knock sensor
3.1.1 Speedometer signal, B18U/B20F
3.1.3 Valve, charcoal absorption canister
3.2.4 Auxiliary water pump, EP/FP
3.4.2 Air-conditioning relay, B18U/B20F
3.4.3 Main relay coil
4.1.1 Throttle valve sensor, B18U/B20F
4.1.2 Full throttle signal, EP/FP, B20 (480)

Test function 2

1.1.4 Air-conditioning relay
1.2.4 Automatic gearbox
1.4.1 Flywheel sensor
3.3.2 Idle speed switch, B18U
Flashing: Throttle cable setting, B18U

Test function 3

	Fuel injectors	13Hz
	Idle speed regulating valve	1 Hz
	Valve, charcoal absorption canister	2 Hz
	Clutch, air-conditioning compressor	1 Hz
	System relay	1 Hz
	Idle speed regulation, B18U	13 Hz
	Main relay	0.5 Hz
	Relay, electrical (auxiliary) water pump	0.5 Hz

Test function 4 (B18U/B20F only)

1.1.3	Fuel injector	13 Hz
1.3.4	B18U: idle speed actuator	basic setting of cable
	B20F: idle speed regulating valve	basic setting of the regulating valve
2.2.2	System relay	1 Hz
2.2.3	B18U: idle speed actuator	oscillates between 3° and 21°
	B20F: idle speed regulating valve	1 Hz
3.1.4	EVAP	2 Hz
3.4.2	Air-conditioning relay	1 Hz
3.4.3	Master relay	0.5 Hz

Position A3: ABS Mk IV, fault codes

1.1.1	No faults detected by the diagnostic system
1.2.1	Front-left wheel sensor, faults in circuit at speeds below 40 km/h
1.2.2	Front-right wheel sensor, faults in circuit at speeds below 40 km/h
1.2.3	Rear-left wheel sensor, faults in circuit at speeds below 40 km/h
1.2.4	Rear-right wheel sensor, faults in circuit at speeds below 40 km/h
1.4.1	Brake pedal sensor, open circuit or short circuit
1.4.2	Brake light switch, open circuit or short circuit
1.4.3	Faults in Electronic Control Unit
2.1.1	Front-left wheel sensor, faulty signal during drive-away
2.1.2	Front-right wheel sensor, faulty signal during drive-away
2.1.3	Rear-left wheel sensor, faulty signal during drive-away
2.1.4	Rear-right wheel sensor, faulty signal during drive-away
2.2.1	Front-left wheel sensor, no signal
2.2.2	Front-right wheel sensor, no signal
2.2.3	Rear-left wheel sensor, no signal
2.2.4	Rear-right wheel sensor, no signal
3.1.1	Front-left wheel sensor, open circuit or short circuit
3.1.2	Front-right wheel sensor, open circuit or short circuit
3.1.3	Rear-left wheel sensor, open circuit or short circuit
3.1.4	Rear-right wheel sensor, open circuit or short circuit
3.2.1	Front-left wheel sensor, faults in circuit at speeds above 40 km/h
3.2.2	Front-right wheel sensor, faults in circuit at speeds above 40 km/h
3.2.3	Rear-left wheel sensor, faults in circuit at speeds above 40 km/h
3.2.4	Rear-right wheel sensor, faults in circuit at speeds above 40 km/h
4.1.1	Front-left inlet valve, open circuit or short circuit
4.1.2	Front-left outlet valve, open circuit or short circuit
4.1.3	Front-right inlet valve, open circuit or short circuit
4.1.4	Front-right outlet valve, open circuit or short circuit
4.2.1	Rear-left inlet valve, open circuit or short circuit
4.2.2	Rear-left outlet valve, open circuit or short circuit
4.2.3	TRACS valve 1, open circuit or short circuit
4.3.1	Rear-right inlet valve, open circuit or short circuit
4.3.2	Rear-right outlet valve, open circuit or short circuit
4.3.3	TRACS valve 2, open circuit or short circuit
4.4.1	Faults in the Electronic Control Unit
4.4.2	Pump pressure too low
4.4.3	Pump motor, electrical or mechanical fault
4.4.4	Interruption in valve circuit power supply

Position A5: CEM III

Test function 1
- faults stored in the memory

1.1.1 No faults stored
2.1.2 Car alarm, disarmed
2.1.3* Central locking system
2.1.5 Rear window heating, input
2.1.6 Driver's window open, input
2.2.7 Car alarm, armed
2.5.1 Driver's window closed
4.1.1 Seat belt warning
4.1.2* Status output (car alarm)
4.1.4 Door open, output
4.1.5 Interior light
4.3.2 Central locking system closed
4.3.3 Central locking system open
4.3.4 Windows + sun roof, operation
4.3.5 Driver's window open, output
4.4.1 Windows and sun roof closed
4.4.3 Rear window heating
4.4.4 Windscreen wiper, output
4.4.5 Headlight washer
4.5.1 Rear window wiper
4.5.2 Start interlock
4.5.3* LED, central locking system
4.5.4 Direction indicator switch
4.5.5 Auxiliary driving light, output

Test function 3 - testing cyclical outputs

4.1.1 Seat belt warning
4.1.2* Status - output (car alarm)
4.1.3 LED output
4.1.4 Door open
4.1.5 Interior light
4.3.2 Central locking system closed
4.3.3 Central locking system open
4.3.4 Windows + sun roof, operation
4.3.5 Driver's window open, output
4.4.1 Windows + sun roof closed
4.4.2 Horn
4.4.3 Rear window heating
4.4.4 Windscreen wiper
4.4.5 Headlight washer
4.5.1 Rear window wiper
4.5.3* LED, central locking system
4.5.4 Direction indicators
4.5.5 Auxiliary driving lights

* Market-dependent

Test function 2 - input signals

2.1.1 75 (accessories)
2.1.2 Car alarm, disarmed
2.1.3* Central locking
2.1.4 56a (lighting)
2.1.5 Rear window heating
2.1.6 Driver's window open, input
2.1.7 Hazard warning lights
2.2.1* Accessory protection
2.2.2 Driver's door
2.2.3 Passenger's door
2.2.4 Bonnet - tailgate
2.2.5* Code EUR/USA
2.2.6 15 (ignition on)
2.2.7 Car alarm, armed
2.3.1 50 (starting)
2.3.2 Alternator D+ (61)
2.3.3 58 (lighting)
2.3.4 56 (lighting)
2.3.5 Auxiliary driving lights, input
2.3.6 Rear window wiper, 18 sec
2.3.7 Rear window wiper, 6 sec
2.4.1 Reverse gear
2.4.3 Windscreen wiper, speed 1
2.4.4 Intermittent wipe
2.4.5 Windscreen washer
2.4.6 Rear window washer
2.4.7 Seat belt contact
2.5.1 Driver's window closed
2.5.2* Key in
2.5.3* IR (infra-red) input
2.5.4 Direction indicator switch
2.5.5 Full throttle switch, B18EP/FP

Test function 4 - testing outputs

4.1.1 Seat belt warning
4.1.2* Status output (car alarm)
4.1.3 LED output
4.1.4 Door open
4.1.5 Interior light
4.3.2 Central locking system closed
4.3.3 Central locking system open
4.3.4 Windows + sun roof, operation
4.3.5 Driver's window open, output
4.4.1 Windows + sun roof closed
4.4.2 Horn
4.4.3 Rear window wiper
4.4.4 Windscreen wiper
4.4.5 Headlight washer
4.5.1 Rear window heating
4.5.3* LED, central locking system
4.5.4 Direction indicators
4.5.5 Auxiliary driving lights

Position A6: Cruise Control

Test function 1

1.1.1 No faults. Speed was higher than 40 km/h
1.1.2 Forbidden speed signal
1.2.2 Speed was not higher than 40 km/h or there was no speed signal
2.1.1 Fault in supply voltage or ECU
2.1.2 Fault in vacuum pump or governor, or influence of a magnetic field

Test function 2

1.1.3 ON and OFF switch, brake and/or clutch air valve/switch
1.2.3 RESUME switch
1.3.1 SET SPEED switch
1.3.2 Brake light switch
2.2.3 Start interlock (AT only)
3.1.1 Several signals together

Test function 5

1.1.4 Safety critical switch-off
1.2.4 Brake light circuit disengaged
1.4.1 Start interlock disengaged
2.1.4 Not engaged or voltage too high
4.1.1 Brake or clutch pedal switch disengaged

Position A7: SRS ('94-)

Test function 1

1.1.1 No fault detected by the system
1.1.2 Fault in crash sensor
1.2.7 Fault in warning lamp circuit
2.1.1 Resistance of steering wheel module too low
2.1.2 Resistance of steering wheel module too high
2.1.3 Steering wheel module short-circuited to supply voltage

Other fault codes

ABS Mk II (read out fault codes via ABS warning lamp in instrument panel)

1.1	High tension
1.2	Electronic Control Unit
2.1	Main control valve
2.2	Inlet valve, front wheel brake, left
2.3	Outlet valve, front wheel brake, left
2.4	Inlet valve, front wheel brake, right
2.5	Outlet valve, front wheel brake, right
2.6	Inlet valve, rear wheel brakes
2.7	Outlet valve, rear wheel brakes
3.1	Wheel sensor, front-left
3.2	Wheel sensor, front-right
3.3	Wheel sensor, rear-right
3.4	Wheel sensor, rear-left
3.5	Wheel sensor, front-left
3.6	Wheel sensor, front-right
3.7	Wheel sensor, rear-right
3.8	Wheel sensor, rear-left
4.1	Wheel sensor, front-left
4.2	Wheel sensor, front-right
4.3	Wheel sensor, rear-right
4.4	Wheel sensor, rear-left
4.5	All wheel sensors
4.6	Wheel sensor, front-right, rear-right, rear-left
4.7	Wheel sensors, rear
4.8	Wheel sensor (3x)
5.1	Outlet valve, front wheel brake, left
5.2	Outlet valve, front wheel brake, right
5.3	Outlet valve, rear wheel brakes
5.4	Outlet valve, rear wheel brakes
5.5	Wheel sensor, front-left
5.6	Wheel sensor, rear-right
5.7	Wheel sensor, rear-right
5.8	Wheel sensor, rear-left
6.1	Hydraulic control system
7.1	Wheel sensor, front-left
7.2	Wheel sensor, front-right
7.3	Wheel sensor, rear-right
7.4	Wheel sensor, rear-left
7.5	Wheel sensor, front-left
7.6	Wheel sensor, front-right
7.7	Wheel sensor, rear-right
7.8	Wheel sensor, rear-left

Boost pressure control EZ210k, B18FT/FTM

Read out the fault codes
-'90: with special tool 999-5280
'91-: with special tool 981-3190, pin 3

2	Coolant temperature sensor and wiring
3	Throttle valve switch and wiring
4	Knock sensor and wiring
5	Boost pressure signal (when driving)
6	Boost pressure control valve

SRS (-'93): read out fault codes via SRS warning lamp in instrument panel

1	Fault in crash sensor
2	Fault in circuit of standby power unit
3	Fault in warning lamp circuit
4	Resistance of steering wheel module too low
5	Resistance of steering wheel module too high
6	Resistance in circuit of seat belt pre-tensioners too low
7	Resistance in circuit of seat belt pre-tensioners too high
8	Igniter circuit short-circuited to supply voltage
9	Igniter circuit short-circuited to earth
10	Fault in crash sensor The mercury switch is short-circuited to earth or short-circuited to supply voltage