Коды неисправностей системы управления электронными тормозами от блока EBS3.

SPN	FMI	DTC / SPN-FMI (Failurecode)	Repair
158	4	Battery Potential (Voltage), Switched - voltage below normal or shorted low	- Check the electric supply line "terminal 15" (increased electric resistance ?) - Check the ignition switch (increased electric resistance ?) - Check the terminal 15 line for other voltage drops while ignition is switched on - Does the voltage at "terminal 15" decrease very slowly after ignition off ? (it is not permissable, if the voltage decrease lasts several seconds) - Replace the EBS-centralmodule
251	9	Time - abnormal update rate	- Check the failure memory of the ECU, that transmits the time & date message and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the relevant ECU
521	2	Brake Pedal Position - data erratric, intermittend or incorrect	- Check, whether the brake pedal is always slightly activated (cannot return to 0-position) - Check, whether the accelerator pedal is always slightly activated (cannot return to 0-position) - Replace the EBS brake-signal transmitter, if the other two items were faultless
620	3	5 Volts DC Supply - voltageabove normal or shorted high	Check the supply-line of the TCV pressure sensor (short circuit to +UB) Replace the EBS-centralmodule
620	4	5 Volts DC Supply - voltage below normal or shorted low	Check the supply-line of the TCV pressure sensor (short circuit to GND) - Check the pressure sensor in the TCV (supply current too high ? internal short circuit to GND ?) - Replace the EBS-centralmodule
627	0	Power Supply - data valid, but above normal operation range (most severe level)	Check the voltage supply of the vehicle (battery defect ?, voltage governer defect ?)
627	1	Power Supply - data valid, but below normal operation range (most severe level)	Check the voltage supply of the vehicle (battery defect ?, voltage governer defect ?)
629	12	Controller #1 - bad intelligent device or component	- Replace EBS centralmodule
630	12	Calibration Memory - bad intelligent device or component intelligent device or component	- Replace EBS centralmodule
639	2	J1939 Network #1, Primary Vehicle Network (previously SAE J1939 Data Link) - data erratric, intermittend or incorrect	Check the wiring of the chassis-CAN data connection and the relating electric connectors between the EBS-centralmodule and the other chassis-CAN ECUs.
639	9	J1939 Network #1, Primary Vehicle Network (previously SAE J1939 Data Link) - abnormal update rate	Check the wiring of the chassis-CAN data connection and the relating electric connectors between the EBS-centralmodule and the other chassis-CAN ECUs.
789	0	Wheel Sensor ABS Axle 1 Left - data valid, but above normal operation range (most severe level)	- Check, whether there are inadmissable oscillation-effects at the relevant foundation brake - Check, whether there are inadmissable oscillation-effects at the fixing of the relevant wheel speed sensor - Check the isolation of the wheel-speed sensor wiring (high frequencies might be induced) - replace the front axle-modulator (if the other effects were already checked)
789	1	Wheel Sensor ABS Axle 1 Left - data valid, but below normal operation range (most severe level)	- Check the relevant wheel speed sensor and its fixing. Is the distance between pole wheel and sensor (airgap) too wide ? - Check the wheel speed sensor for correct voltage output (is voltage output sufficient ?) - Replace the front axle-modulator, if sensor and airgap are correct
789	3	Wheel Sensor ABS Axle 1 Left - voltage above normal or shorted high	- Check the wiring and the relating electric connectors of the left wheel speed sensor at the front axle (short circuit to UB ?) - Replace the front-axle modulator, if the wiring of the relevant wheel speed sensor ist faultless
789	4	Wheel Sensor ABS Axle 1 Left-voltage below normal or shorted low.	- Check the wiring and the relating electric connectors of the left wheel speed sensor at the front axle (short circuit to GND ?) - Check the left wheel speed sensor at the front axle (internal short circuit to GND ?) - Replace the front-axle modulator, if the relevant wheel speed sensor and its wiring is faultless
789	5	Wheel Sensor ABS Axle 1 Left - current below normal or open circuit	- Check the wiring and the relating electric connectors of the left wheel speed sensor at the front axle (interruption ?) - Check the left wheel speed sensor at the front axle (internal interruption ?) - Replace the front-axle modulator, if the relevant wheel speed sensor and its wiring is faultless
789	6	Wheel Sensor ABS Axle 1 Left - current above normal or grounded circuit	- Check the wiring and the relating electric connectors of the left wheel speed sensor at the front axle (shorted coil ?) - Check the left wheel speed sensor at the front axle (internal shorted coil ?) - Replace the front-axle modulator, if the relevant wheel speed sensor and its wiring is faultless
789	7	Wheel Sensor ABS Axle 1 Left - mechanical system not responding properly or out of adjustment	- Check the relevant pole-wheel (Is it damaged ? dirty ?)

789	11	Wheel Sensor ABS Axle 1 Left - failure mode not identifiable / root cause not known	If the failure is not sporadic and occurs several times, then the following workshop activity is suitable: - Check the fixing and mounting of the relevant wheel speed sensor (Can vibrations cause chattering ?) - Check the relevant foundation brake for inadmissable vibrations (return spring defect ? brake linings loosened ?)
789	14	Wheel Sensor ABS Axle 1 Left - special instructions	- Check the relevant pole wheel (is it damaged ?) - Check the relevant wheel-bearing (is it loosened ?)
790	0	Wheel Sensor ABS Axle 1 Right - data valid, but above normal operation range (most severe level)	- Check, whether there are inadmissable oscillation-effects at the relevant foundation brake - Check, whether there are inadmissable oscillation-effects at the fixing of the relevant wheel speed sensor - Check the isolation of the wheel-speed sensor wiring (high frequencies might be induced) - replace the front axle-modulator (if the other effects were already checked)
790	1	Wheel Sensor ABS Axle 1 Right - data valid, but below normal operation range (most severe level)	- Check the relevant wheel speed sensor and its fixing. Is the distance between pole wheel and sensor (airgap) too wide ? - Check the wheel speed sensor for correct voltage output (is voltage output sufficient ?) - Replace the front axle-modulator, if sensor and airgap are correct
790	3	Wheel Sensor ABS Axle 1 Right - voltage above normal or shorted high	- Check the wiring and the relating electric connectors of the right wheel speed sensor at the front axle (short circuit to UB ?) - Replace the front-axle modulator, if the wiring of the relevant wheel speed sensor ist faultless
790	4	Wheel Sensor ABS Axle 1 Right - voltage below normal or shorted low	- Check the wiring and the relating electric connectors of the right wheel speed sensor at the front axle (short circuit to GND ?) - Check the right wheel speed sensor at the front axle (internal short circuit to GND ?) - Replace the front-axle modulator, if the relevant wheel speed sensor and its wiring is faultless
790	5	Wheel Sensor ABS Axle 1 Right - current below normal or open circuit	- Check the wiring and the relating electric connectors of the right wheel speed sensor at the front axle (interruption ?) - Check the right wheel speed sensor at the front axle (internal interruption ?) - Replace the front-axle modulator, if the relevant wheel speed sensor and its wiring is faultless
790	6	Wheel Sensor ABS Axle 1 Right - current above normal or grounded circuit	- Check the wiring and the relating electric connectors of the right wheel speed sensor at the front axle (shorted coil ?) - Check the right wheel speed sensor at the front axle (internal shorted coil ?) - Replace the front-axle modulator, if the relevant wheel speed sensor and its wiring is faultless
790	7	Wheel Sensor ABS Axle 1 Right - mechanical system not responding properly or out of adjustment	- Check the relevant pole-wheel (Is it damaged ? dirty ?)
790	11	Wheel Sensor ABS Axle 1 Right - failure mode not identifiable / root cause not known	If the failure is not sporadic and occurs several times, then the following workshop activity is suitable: - Check the fixing and mounting of the relevant wheel speed sensor (Can vibrations cause chattering ?) - Check the relevant foundation brake for inadmissable vibrations (return spring defect ? brake linings loosened ?)
790	14	Wheel Sensor ABS Axle 1 Right - special instructions	- Check the relevant pole wheel (is it damaged ?) - Check the relevant wheel-bearing (is it loosened ?)
791	0	Wheel Sensor ABS Axle 2 Left - data valid, but above normal operation range (most severe level)	- Check, whether there are inadmissable oscillation-effects at the relevant foundation brake - Check, whether there are inadmissable oscillation-effects at the fixing of the relevant wheel speed sensor - Check the isolation of the wheel-speed sensor wiring (high frequencies might be induced) - replace the rear axle-modulator (if the other effects were already checked)
791	1	Wheel Sensor ABS Axle 2 Left - data valid, but below normal operation range (most severe level)	- Check the relevant wheel speed sensor and its fixing. Is the distance between pole wheel and sensor (airgap) too wide ? - Check the wheel speed sensor for correct voltage output (is voltage output sufficient ?) - Replace the rear axle-modulator, if sensor and airgap are correct
791	3	Wheel Sensor ABS Axle 2 Left- voltage above normal or shorted high	- Check the wiring and the relating electric connectors of the left wheel speed sensor at the rear axle (short circuit to UB ?) - Replace the rear-axle modulator, if the wiring of the relevant wheel speed sensor ist faultless
791	4	Wheel Sensor ABS Axle 2 Left-voltage below normal or shorted low	- Check the wiring and the relating electric connectors of the left wheel speed sensor at the rear axle (short circuit to GND ?) - Check the left wheel speed sensor at the rear axle (internal short circuit to GND ?) - Replace the rear-axle modulator, if the relevant wheel speed sensor and its wiring is faultless
791	5	Wheel Sensor ABS Axle 2 Left - current below normal or open circuit	- Check the wiring and the relating electric connectors of the left wheel speed sensor at the rear axle (interruption ?) - Check the left wheel speed sensor at the rear axle (internal interruption ?) - Replace the rear-axle modulator, if the relevant wheel speed sensor and its wiring is faultless

791	6	Wheel Sensor ABS Axle 2 Left - current above normal or grounded circuit	- Check the wiring and the relating electric connectors of the left wheel speed sensor at the rear axle (shorted coil ?) - Check the left wheel speed sensor at the rear axle (internal shorted coil ?) - Replace the rear-axle modulator, if the relevant wheel speed sensor and its wiring is faultless
791	7	Wheel Sensor ABS Axle 2 Left - mechanical system not responding properly or out of adjustment	- Check the relevant pole-wheel (Is it damaged ? dirty ?)
791	11	Wheel Sensor ABS Axle 2 Left - failure mode not identifiable / root cause not known	If the failure is not sporadic and occurs several times, then the following workshop activity is suitable: - Check the fixing and mounting of the relevant wheel speed sensor (Can vibrations cause chattering ?) - Check the relevant foundation brake for inadmissable vibrations (return spring defect ? brake linings loosened ?)
791	14	Wheel Sensor ABS Axle 2 Left - special instructions	- Check the relevant pole wheel (is it damaged ?) - Check the relevant wheel-bearing (is it loosened ?)
792	0	Wheel Sensor ABS Axle 2 Right - data valid, but above normal operation range (most severe level)	- Check, whether there are inadmissable oscillation-effects at the relevant foundation brake - Check, whether there are inadmissable oscillation-effects at the fixing of the relevant wheel speed sensor - Check the isolation of the wheel-speed sensor wiring (high frequencies might be induced) - replace the rear axle-modulator (if the other effects were already checked)
792	1	Wheel Sensor ABS Axle 2 Right - data valid, but below normal operation range (most severe level)	- Check the relevant wheel speed sensor and its fixing. Is the distance between pole wheel and sensor (airgap) too wide ? - Check the wheel speed sensor for correct voltage output (is voltage output sufficient ?) - Replace the rear axle-modulator, if sensor and airgap are correct
792	3	Wheel Sensor ABS Axle 2 Right - voltage above normal or shorted high	- Check the wiring and the relating electric connectors of the right wheel speed sensor at the rear axle (short circuit to UB ?) - Replace the rear-axle modulator, if the wiring of the relevant wheel speed sensor ist faultless
792	4	Wheel Sensor ABS Axle 2 Right - voltage below normal or shorted low	- Check the wiring and the relating electric connectors of the right wheel speed sensor at the rear axle (short circuit to GND ?) - Check the right wheel speed sensor at the rear axle (internal short circuit to GND ?) - Replace the rear-axle modulator, if the relevant wheel speed sensor and its wiring is faultless
792	5	Wheel Sensor ABS Axle 2 Right - current below normal or open circuit	- Check the wiring and the relating electric connectors of the right wheel speed sensor at the rear axle (interruption ?) - Check the right wheel speed sensor at the rear axle (internal interruption ?) - Replace the rear-axle modulator, if the relevant wheel speed sensor and its wiring is faultless
792	6	Wheel Sensor ABS Axle 2 Right - current above normal or grounded circuit	- Check the wiring and the relating electric connectors of the right wheel speed sensor at the rear axle (shorted coil ?) - Check the right wheel speed sensor at the rear axle (internal shorted coil ?) - Replace the rear-axle modulator, if the relevant wheel speed sensor and its wiring is faultless
792	7	Wheel Sensor ABS Axle 2 Right - mechanical system not responding properly or out of adjustment	- Check the relevant pole-wheel (Is it damaged ? dirty ?) 226.54=.=
792	11	Wheel Sensor ABS Axle 2 Right - failure mode not identifiable / root cause not known	If the failure is not sporadic and occurs several times, then the following workshop activity is suitable: - Check the fixing and mounting of the relevant wheel speed sensor (Can vibrations cause chattering ?) - Check the relevant foundation brake for inadmissable vibrations (return spring defect ? brake linings loosened ?)
792	14	Wheel Sensor ABS Axle 2 Right - special instructions	- Check the relevant pole wheel (is it damaged ?) - Check the relevant wheel-bearing (is it loosened ?)
795	3	Pressure Modulation Valve ABS Axle 1 Left - voltage above normal or shorted high	- Check the wiring and the relating electric connectors of the left ABS-valve (short circuit to UB ?) - Replace the EBS-centralmodule, if the wiring of the left ABS-valve is faultless
795	4	Pressure Modulation Valve ABS Axle 1 Left - voltage below normal or shorted low	- Check the wiring and the relating electric connectors of the left ABS-valve (short circuit to GND ?) - Check the left ABS-valve (internal short circuit to GND ?) - Replace the EBS-centralmodule, if the left ABS-valve and its wiring is faultless
795	5	Pressure Modulation Valve ABS Axle 1 Left - current below normal or open circuit	- Check the wiring and the relating electric connectors of the left ABS-valve (interruption ?) - Check the left ABS-valve (internal interruption ?) - Replace the EBS-centralmodule, if the left ABS-valve and its wiring is faultless
795	14	Pressure Modulation ValveABS Axle 1 Left - special instructions	- Check the wiring and the relating electric connectors of the left ABS-valve (short circuits to UB and/or GND ?) - Replace the EBS-centralmodule, if the left ABS-valve and its wiring is faultless
796	3	Pressure Modulation Valve ABS Axle 1 Right - voltage above normal or shorted high	- Check the wiring and the relating electric connectors of the right ABS-valve (short circuit to UB ?) - Replace the EBS-centralmodule, if the wiring of the right ABS-valve is faultless

796	4	Pressure Modulation Valve ABS Axle 1 Right - voltage below normal or shorted low	- Check the wiring and the relating electric connectors of the right ABS-valve (short circuit to GND ?) - Check the right ABS-valve (internal short circuit to GND ?) - Replace the EBS-centralmodule, if the right ABS-valve and its wiring is faultless
796	5	Pressure Modulation Valve ABS Axle 1 Right - current below normal or open circuit	- Check the wiring and the relating electric connectors of the right ABS-valve (interruption ?) - Check the right ABS-valve (internal interruption ?) - Replace the EBS-centralmodule, if the right ABS-valve and its wiring is faultless
796	14	Pressure Modulation Valve ABS Axle 1 Right - special instructions	##
801	3	Retarder Control Relay - voltage above normal or shorted high	##
801	4	Retarder Control Relay -voltage below normal or shorted low	- Check the wiring and the relating electric connectors of the retarder control relay (short circuit to GND ?) - Check the retarder control relay (Internal short circuit to GND ?) - Replace the EBS-centralmodule, if the retarder control relay and the relevant wiring is faultless
801	5	Retarder Control Relay -current below normal or open circuit	- Check the EOL configuration in the EBS-centralmodule (retarder control relay yes/no) - Check the wiring and the relating electric connectors of the retarder control relay (interruption ?) - Check the retarder control relay (internal interruption ?) - Replace the EBS-centralmodule, if the retarder control relay and the relevant wiring is faultless
801	13	Retarder Control Relay - out of calibration	- Check EBS-centralmodule for correct EOL-configuration (retarder control relay yes/no) - Is something connected to the relevant retarder control relay pins of the centralmodule ? - Replace the EBS-centralmodule
802	3	Relay Diagonal 1 - voltage above normal or shorted high	- Check the wiring and the relating electric connectors of the left and right ABS-valve (Lowline has short circuit to UB ?) - Replace the EBS-centralmodule, if the wiring of both ABS-valves is faultless
802	4	Relay Diagonal 1 - voltage below normal or shorted low	- Check the wiring and the relating electric connectors of the left and right ABS-valve (Lowline has short circuit to GND ?) - Check the left and right ABS-valve (internal short circuit to GND ?) - Replace the EBS-centralmodule, if both ABS-valves and its wiring are faultless
810	2	Speed Signal Input - data erratric, intermittend or incorrect	- Check the air gap of all wheel speed sensors (might be too wide) - Check the parameters "wheel diameter" and "pole wheel teeth numbers" (if applicable) - Is the speed signal of the tachograph ECU (on chassis CAN data link) correct ? - Is the speed signal of the tachograph ECU (on chassis CAN data link) not available ?
810	9	Speed Signal Input - abnormal update rate	- Check the failure memory of the tachograph-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the tachograph-ECU
810	13	Speed Signal Input - out of calibration	a) When tires were changed, the speedometer must be calibrated to the new tire dimensions. - Check the TCO-signal (function of speedometer) - Is the TCO-speed signal correctly calibrated ? - Check the vehicle-specific parameters of the speedometer b) The EBS-centralmodule must have correct parameters - Check the parameters in the EBS-centralmodule (speedometer signal source, tire dimensions) c) The ESC function requires a correct assembly of the ESC-module - Check the assembly position of the ESC-module (mechanical hardware-coding between ESC-module and vehicle-frame) - Check the correct electric connection of the ESC-module - Check the fixing of the ESC-module
917	9	High Resolution Total Vehicle Distance - abnormal update rate	- Check the failure memory of the ECU, that transmits the vehicle-distance message and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the relevant ECU
924	1	Auxiliary Output #1 - data valid, but below normal operation range (most severe level)	- Check the supply-line (+UB) of the front axle modulator (increased resistance ? Corroded contacts ?) - Check the supply-line (GND) of the front axle modulator (increased resistance ? Corroded contacts ?) - Replace the front axle modulator
924	3	Auxiliary Output #1 - voltage above normal or shorted high	- Check the supply-line of the front axle modulator (permanent short circuit to +UB ?) - Replace the EBS-centralmodule
924	6	Auxiliary Output #1 - current above normal or grounded circuit	- Check the supply-line of the front axle modulator (short circuit to GND ?) - Check the front axle modulator (supply current too high ? internal short circuit to GND ?) - Replace the EBS-centralmodule
925	1	Auxiliary Output #2 - data valid, but below normal operation range (most severe level)	- Check the supply-line (+UB) of the rear axle modulator (increased resistance ? Corroded contacts ?) - Check the supply-line (GND) of the rear axle modulator (increased resistance ? Corroded contacts ?) - Replace the rear axle modulator
925	3	Auxiliary Output #2 - voltage above normal or shorted high	- Check the supply-line of the rear axle modulator and the additional-axle modulator (permanent short circuit to +UB ?) - Replace the EBS-centralmodule

1042	1	Electronic Tractor/Trailer Interface (ISO 11992) - data valid, but below normal operation range (most severe level)	##
1042	9	Electronic Tractor/Trailer Interface (ISO 11992) - abnormal update rate	- Check wiring and relating connectors between EBS- centralmodule and trailer connector (ISO 11992) - Check wiring, connectors and ECU within trailer EBS system - Check EBS-centralmodule
1042	11	Electronic Tractor/Trailer Interface (ISO 11992) - failure mode not identifiable / root cause not known	- Check wiring and relating connectors between EBS-centralmodule and trailer connector (ISO 11992) - Check wiring, connectors and ECU within trailer EBS system - Check EBS-centralmodule
1042	12	Electronic Tractor/Trailer Interface (ISO 11992) - bad intelligent device or component	- Check the electronic brake system of the trailer (trailer has sent a failure message to the tractor)
1042	14	Electronic Tractor/Trailer Interface (ISO 11992) - special instructions	##
1043	3	Internal Sensor Voltage Supply - voltage above normal or shorted high	- Check the supply-line of the brake signal transmitter (permanent short circuit to +UB ?) - Replace the EBS-centralmodule
1043	4	Internal Sensor Voltage Supply - voltage below normal or shorted low	- Check the supply-line of the brake signal transmitter (short circuit to GND ?) - Check the brake signal transmitter (supply current too high ? internal short circuit to GND ?) - Replace the EBS-centralmodule
1045	4	Brake Light Switch 1 - voltage below normal or shorted low	- Check the wiring and the relating electric connectors of the EBS-BST (short to GND at first switch signal ?) - Check the EBS brake-signal transmitter for correct function of first brake-switch - Replace the centralmodule, if the BST and its wiring is faultless
1045	5	Brake Light Switch 1 - current below normal or open circuit	- Check the wiring and the relating electric connectors of the EBS-BST (interruption of first switch signal ?) - Check the EBS brake-signal transmitter for correct function of first brake-switch - Replace the centralmodule, if the BST and its wiring is faultless
1046	4	Brake Light Switch 2 - voltage below normal or shorted low	- Check the wiring and the relating electric connectors of the EBS-BST (short to GND at second switch signal ?) - Check the EBS brake-signal transmitter for correct function of second brake-switch - Replace the centralmodule, if the BST and its wiring is faultless
1046	5	Brake Light Switch 2 - current below normal or open circuit	- Check the wiring and the relating electric connectors of the EBS-BST (interruption of second switch signal ?) - Check the EBS brake-signal transmitter for correct function of second brake-switch - Replace the centralmodule, if the BST and its wiring is faultless
1047	2	Electronic Pressure Control Axle 1 - data erratric, intermittend or incorrect	- Check front axle modulator for correct CAN-data transmission (message checksums) - Check EBS-centralmodule for correct CAN-data transmission (message checksums)
1047	9	Electronic Pressure Control Axle 1 - abnormal update rate	- Check the wiring (voltage supply and CAN) and the relating electric connectors between EBS-centralmodule and front axle modulator (interruption ?, short circuit ?) - Replace front axle modulator - Replace EBS-centralmodule
1047	11	Electronic Pressure Control Axle 1 - failure mode not identifiable / root cause not known	- Replace front axle modulator - Replace EBS-centralmodule
1047	12	Electronic Pressure Control Axle 1 - bad intelligent device or component	- Replace front axle modulator
1047	13	Electronic Pressure Control Axle 1 - out of calibration	- check the correctness of the front axle-modulator version (right number ?) - check the front axle configuration-parameters in the EBS-centralmodule (pn. backup, lining-wear-sensors, etc.)
1047	19	Electronic Pressure Control Axle 1 - received network data in error	- Replace front axle modulator
1048	7	Pneumatic Back-up Pressure Control Axle 1 - mechanical system not responding properly or out of adjustment	##
1049	0	Brake Pressure Sensing Axle 1 - data valid, but above normal operation range (most severe level)	- Check left and right spring brake chambers at the front axle for internal leakage (check not necessary for normal brake chambers) - Replace the front axle-modulator
1049	2	Brake Pressure Sensing Axle 1 - data erratric, intermittend or incorrect	- Replace front axle-modulator
1049	7	Brake Pressure Sensing Axle 1 - mechanical system not responding properly or out of adjustment	##
1049	14	Brake Pressure Sensing Axle 1 - special instructions	- Check left and right spring brake chambers at the front axle for internal leakage (check not necessary for normal brake chambers) - Check the pneumatic backup brake lines of the front axle-modulator (kinked ? captured or residual brake pressure ?) - Replace front axle-modulator

1050	2	Electronic Pressure Control Axle 2 - data erratric, intermittend or incorrect	- Check rear axle modulator for correct CAN-data transmission (message checksums) - Check EBS-centralmodule for correct CAN-data transmission (message checksums)
1050	9	Electronic Pressure Control Axle 2 - abnormal update rate	- Check the wiring (voltage supply and CAN) and the relating electric connectors between EBS-centralmodule and rear axle modulator (interruption ?, short circuit ?) - Replace rear axle modulator - Replace EBS-centralmodule
1050	11	Electronic Pressure Control Axle 2 - failure mode not identifiable / root cause not known	- Replace rear axle modulator - Replace EBS-centralmodule
1050	12	Electronic Pressure Control Axle 2 - bad intelligent device or component	- Replace rear axle modulator
1050	13	Electronic Pressure Control Axle 2 - out of calibration	- check the correctness of the rear axle-modulator version (right number ?) - check the rear axle configuration-parameters in the EBS-centralmodule (pn. backup, lining-wear-sensors, etc.)
1050	19	Electronic Pressure Control Axle 2 - received network data in error	- Replace rear axle modulator
1051	7	Pneumatic Back-up Pressure Control Axle 2 - mechanical system not responding properly or out of adjustment	##########
1052	0	Brake Pressure Sensing Axle 2 - data valid, but above normal operation range (most severe level)	##########
1052	1	Brake Pressure Sensing Axle 2 - data valid, but below normal operation range (most severe level)	##########
1052	2	Brake Pressure Sensing Axle 2 - data erratric, intermittend or incorrect	- Replace rear axle-modulator
1052	7	Brake Pressure Sensing Axle 2 - mechanical system not responding properly or out of adjustment	##########
1052	14	Brake Pressure Sensing Axle 2 - special instructions	##########
1052	15	Brake Pressure Sensing Axle 2 - data valid, but above normal operation range (least severe level)	##########
1052	16	Brake Pressure Sensing Axle 2 - data valid, but above normal operation range (moderately severe level)	##########
1052	17	Brake Pressure Sensing Axle 2 - data valid, but below normal operation range (least severe level)	##########
1056	3	Electronic Pressure Control, Trailer Control - voltage above normal or shorted high	- Check the wiring and the relating electric connectors of the TCV solenoids (short circuit to UB ?) - Check the TCV solenoids (Internal short circuit to UB ?) - Replace the EBS-centralmodule, if the TCV solenoids and the relevant wiring is faultless
1056	4	Electronic Pressure Control, Trailer Control - voltage below normal or shorted low	- Check the wiring and the relating electric connectors of the TCV solenoids (short circuit to GND ?) - Check the TCV solenoids (Internal short circuit to GND ?) - Replace the EBS-centralmodule, if the TCV solenoids and the relevant wiring is faultless
1056	5	Electronic Pressure Control, Trailer Control - current below normal or open circuit	- Check the EOL configuration in the EBS-centralmodule (parameter TCV yes/no) - Check the wiring and the relating electric connectors of the TCV solenoids (interruption ?) - Check the TCV solenoids (internal interruption ?) - Replace the EBS-centralmodule, if the TCV solenoids and the relevant wiring is faultless
1056	7	Electronic Pressure Control, Trailer Control - mechanical system not responding properly or out of adjustment	- Check the supply pressure of the trailer-control (insufficient supply pressure during driving ?) - Check the pneumatic supply lines of the trailer-control (blocked ? kinked ?) - Check the pneumatic brake lines of the trailer-control (broken ? leaky ?) - Replace the trailer-control-valve
1056	13	Electronic Pressure Control, Trailer Control - out of calibration	- Check EBS-centralmodule for correct EOL-configuration (TCV yes/no) - Is something connected to the relevant TCV-pins of the centralmodule ? - Replace the EBS-centralmodule
1057	7	Pneumatic Back-up Pressure Control, Trailer Control - mechanical system not responding properly or out of adjustment	##########
1058	0	Brake Pressure Sensing, Trailer Control - data valid, but above normal operation range (most severe level)	##########
1058	3	Brake Pressure Sensing, Trailer Control - voltage above normal or shorted high	##########

1058	4	Brake Pressure Sensing, Trailer Control - voltage below normal or shorted low	- Check the EBS centralmodule for correct EOL configuration (parameter: TCV yes/no) - Check the wiring and the relating electric connectors of the TCV pressure sensor (interruption ? short circuits ?) - Check the TCV pressure sensor (correct electric function ? correct output signal ?) - Replace the EBS-centralmodule, if the TCV sensor and its wiring is faultless
1060	3	Lining Wear Sensor Axle 1 Left-voltage above normal or shorted high	- Check the wiring and the relating electric connectors of the left lining wear sensor at the front axle (interruption ?, short circuits ?) - Check the left lining wear sensor at the front axle (output voltage signal too high ?) - Replace the front axle-modulator, if the relevant lining wear sensor and its wiring is faultless
1060	4	Lining Wear Sensor Axle 1 Left voltage below normal or shorted low	- Check the wiring and the relating electric connectors of the left lining wear sensor at the front axle (interruption ?, short circuits ?) - Check the left lining wear sensor at the front axle (output voltage signal too low ?) - Replace the front axle-modulator, if the relevant lining wear sensor and its wiring is faultless
1061	3	Lining Wear Sensor Axle 1 Right - voltage above normal or shorted high	- Check the wiring and the relating electric connectors of the right lining wear sensor at the front axle (interruption ?, short circuits ?) - Check the right lining wear sensor at the front axle (output voltage signal too high ?) - Replace the front axle-modulator, if the relevant lining wear sensor and its wiring is faultless
1061	4	Lining Wear Sensor Axle 1 Right- voltage below normal or shorted low	- Check the wiring and the relating electric connectors of the right lining wear sensor at the front axle (interruption ?, short circuits ?) - Check the right lining wear sensor at the front axle (output voltage signal too low ?) - Replace the front axle-modulator, if the relevant lining wear sensor and its wiring is faultless
1062	3	Lining Wear Sensor Axle 2 Left - voltage above normal or shorted high	- Check the wiring and the relating electric connectors of the left lining wear sensor at the rear axle (interruption ?, short circuits ?) - Check the left lining wear sensor at the rear axle (output voltage signal too high ?) - Replace the rear axle-modulator, if the relevant lining wear sensor and its wiring is faultless
1062	4	Lining Wear Sensor Axle 2 Left - voltage below normal or shorted low	- Check the wiring and the relating electric connectors of the left lining wear sensor at the rear axle (interruption ?, short circuits ?) - Check the left lining wear sensor at the rear axle (output voltage signal too low ?) - Replace the rear axle-modulator, if the relevant lining wear sensor and its wiring is faultless
1063	3	Lining Wear Sensor Axle 2 Right - voltage above normal or shorted high	- Check the wiring and the relating electric connectors of the right lining wear sensor at the rear axle (interruption ?, short circuits ?) - Check the right lining wear sensor at the rear axle (output voltage signal too high ?) - Replace the rear axle-modulator, if the relevant lining wear sensor and its wiring is faultless
1063	4	Lining Wear Sensor Axle 2 Right - voltage below normal or shorted low	- Check the wiring and the relating electric connectors of the right lining wear sensor at the rear axle (interruption ?, short circuits ?) - Check the right lining wear sensor at the rear axle (output voltage signal too low ?) - Replace the rear axle-modulator, if the relevant lining wear sensor and its wiring is faultless
1066	2	Brake Signal Transmitter -data erratric, intermittend or incorrect	- Check / replace the EBS brake-signal-transmitter (Are both sensor signals identical when applying the brake ?) - Replace the EBS-centralmodule, if both sensor-signals of BST are correct
1066	8	Brake Signal Transmitter -abnormal frequency, pulse width or period	- Check the wiring and the relating electric connectors of the EBS brake-signal transmitter (interruption ? short circuits ?) - Check the EBS brake-signal transmitter for correct function - Replace the EBS-centralmodule, if the BST and its wiring is faultless
1066	12	Brake Signal Transmitter - bad intelligent device or component	- Check / replace the EBS brake-signal-transmitter (Are both sensor signals identical when applying the brake ?) - Replace the EBS-centralmodule, if both sensor-signals of BST are correct
1067	0	Brake Signal Sensor 1 - data valid, but above normal operation range (most severe level)	- Check the EBS brake-signal transmitter for correct function of first sensor-signal (signal too high in unbraked condition ?) - Replace the centralmodule, if the BST is faultless
1067	2	Brake Signal Sensor 1 - data erratric, intermittend or incorrect	##########
1067	4	Brake Signal Sensor 1 - voltage below normal or shorted low	##########
1068	0	Brake Signal Sensor 2 - data valid, but above normal operation range (most severe level)	- Check the EBS brake-signal transmitter for correct function of second sensor-signal (signal too high in unbraked condition ?) - Replace the centralmodule, if the BST is faultless
1068	2	Brake Signal Sensor 2 - data erratric, intermittend or incorrect	##########
1068	4	Brake Signal Sensor 2 - voltage below normal or shorted low	##########
1069	11	Tire Dimension Supervision - failure mode not identifiable / root cause not known	- Check all tires of the vehicle concerning correct size - Check the EOL-parameters of the EBS-centralmodule (tire circumference, pole wheel teeth numbers)

1070	7	Vehicle Deceleration Control - mechanical system not responding properly or out of adjustment	##
1079	3	Sensor Supply Voltage 1 (+5V DC) - voltage above normal or shorted high	- Check the wiring and the relating electric connectors of the left and right lining wear sensor at the front axle (short circuits ?) - Replace the front axle-modulator, if the wiring of the relevant lining wear sensors is faultless
1079	4	Sensor Supply Voltage 1 (+5V DC) - voltage below normal or shorted low	##
1080	3	Sensor Supply Voltage 2 (+5V DC) - voltage above normal or shorted high	- Check the wiring and the relating electric connectors of the left and right lining wear sensor at the rear axle (short circuits ?) - Replace the rear axle-modulator, if the wiring of the relevant lining wear sensors is faultless
1080	4	Sensor Supply Voltage 2 (+5V DC) - voltage below normal or shorted low	##
1090	9	Air Suspension Supply Pressure - abnormal update rate	- Check the failure memory of the ECU, that transmits the AIR1 message and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the relevant ECU
1099	1	Brake Lining Remaining, Front Axle, Left Wheel - data valid, but below normal operation range (most severe level)	- The relevant brake lining might be worn out - Replace the relevant brake lining
1100	1	Brake Lining Remaining, Front Axle, Right Wheel - data valid, but below normal operation range (most severe level)	- The relevant brake lining might be worn out
1101	1	Brake Lining Remaining, Rear Axle #1, Left Wheel - data valid, but below normal operation range (most severe level)	- The relevant brake lining might be worn out - Replace the relevant brake lining
1102	1	Brake Lining Remaining, Rear Axle #1, Right Wheel - data valid, but below normal operation range (most severe level)	- The relevant brake lining might be worn out - Replace the relevant brake lining
1230	19	Current Data Link - received network data in error	- Check front axle modulator for correct CAN-data transmission (message checksums) - Check rear axle modulator for correct CAN-data transmission (message checksums)
1438	12	ABS/EBS Amber Warning Signal (Powered Vehicle) - bad intelligent device or component	##
1439	12	EBS Red Warning Signal - bad intelligent device or component	##
1482	8	Source Address of Controlling Device for Transmission width or period	- Check the failure memory of the transmission-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the transmission-ECU
1482	9	Source Address of Controlling Device for Transmission Control - abnormal update rate	- Check the failure memory of the transmission-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the transmission-ECU
1482	10	Source Address of Controlling Device for Transmission Control - abnormal rate of change	- Check the failure memory of the transmission-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the transmission-ECU
1482	19	Source Address of Controlling Device for Transmission Control - received network data in error	- Check the failure memory of the transmission-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the transmission-ECU
1483	8	Source Address of Controlling Device for Engine Control - abnormal frequency, pulse width or period	- Check the failure memory of the engine-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the engine-ECU
1483	9	Source Address of Controlling Device for Engine Control - abnormal update rate	- Check the failure memory of the engine-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the engine-ECU
1483	10	Source Address of Controlling Device for Engine Control - abnormal rate of change	- Check the failure memory of the engine-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the engine-ECU
1542	1	ECU Power Supply Voltage #2 - data valid, but below normal operation range (most severe level)	- Check the relevant fuse at terminal 30a (might be blown) - Check the electric supply line "terminal 30a" (broken ? increased electric resistance ?) - Check the terminal 30a line for other voltage drops - Replace EBS-centralmodule
1542	4	ECU Power Supply Voltage #2 - voltage below normal or shorted low	- Check the relevant fuse at terminal 30a (might be blown) - Check the electric supply line "terminal 30a" (broken ? increased electric resistance ?) - Check the terminal 30a line for other voltage drops - Replace EBS-centralmodule
1543	1	ECU Power Supply Voltage #3 - data valid, but below normal operation range (most severe level)	##

1543	4	ECU Power Supply Voltage #3 - voltage below normal or shorted low	- Check the relevant fuse at terminal 30b (might be blown) - Check the electric supply line "terminal 30b" (broken ? increased electric resistance ?) - Check the terminal 30b line for other voltage drops - Check the voltage supply lines to the rear axle-modulator and the additional-axle modulator (there might be short circuits to ground) - Check the rear axle-modulator and the additional-axle modulator (there might be internal short circuits of the voltage supply to ground potential) - Replace the EBS-centralmodule
1743	7	Lift Axle 1 Position-mechanical system not responding properly or out of adjustment	- Check, if airgap at wheelspeed sensors (additional axle) is too high - Check, that ECAS sends correct ASC1 liftaxle info
1743	8	Lift Axle 1 Position-abnormal frequency, pulse width or period	- Check the failure memory of the ECAS-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and ECAS-ECU
1743	9	Lift Axle 1 Position-abnormal update rate	- Check the failure memory of the ECAS-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and ECAS-ECU
1743	10	Lift Axle 1 Position -abnormal rate of change	- Check the failure memory of the ECAS-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and ECAS-ECU
1793	12	ATC/ASR Information Signal - bad intelligent device or component	- Check the traction control lamp and its connectors and wiring - Check blinkcode tip-switch and its wiring (optional) - Was blinkcode tip-switch depressed, when vehicle was not in standstill ? (this is not permitted)
1807	0	Steering Wheel Angle - data valid, but above normal operation range (most severe level)	- Check the mechanical steering elements at the front axle (defect, twisted, faulty assembly, etc.) - Check the mounting position of the steering angle sensor on the steering shaft (cranky, faulty assembly, etc.) - Replace the steering angle sensor
1807	1	Steering Wheel Angle - data valid, but below normal operation range (most severe level)	- Check the wiring and connectors (voltage supply) to the steering wheel sensor
1807	2	Steering Wheel Angle - data erratric, intermittend or incorrect	- Check the EBS-centralmodule concerning correct EOL-parameter (steering ratio, wheelbase, wheel diameter, etc.) - Check, whether the SAS is correctly assembled - Replace the steering angle sensor
1807	7	Steering Wheel Angle -mechanical system not responding properly or out of adjustment	- Check the EBS-centralmodule concerning correct EOL-parameter (steering ratio, wheelbase, wheel diameter, etc.) - Check, whether the SAS is correctly assembled - Replace the steering angle sensor
1807	8	Steering Wheel Angle -abnormal frequency, pulse width or period	- Check the wiring (CAN) to the steering wheel sensor. Failure is detected by the steering wheel sensor. - Check / replace the steering wheel sensor
1807	9	Steering Wheel Angle -abnormal update rate	- Check centralmodule for correct EOL-configuration (steering wheel sensor yes/no) - Check the wiring between EBS-centralmodule and steering wheel sensor - Check the steering wheel sensor / replace the steering wheel sensor
1807	10	Steering Wheel Angle -abnormal rate of change	- Check, if SAS is mechanically connected to the steering-column (does is rotate ?) - Check and replace steering angle sensor
1807	11	Steering Wheel Angle -failure mode not identifiable / root cause not known	- Check, if the correct SAS-type is assembled
1807	12	Steering Wheel Angle - bad intelligent device or component	- Replace steering angle sensor
1807	13	Steering Wheel Angle - out of calibration	- Check the EBS-centralmodule concerning correct EOL-parameters of the steering wheel sensor - SAS assembled (yes/no) - SAS type
1807	14	Steering Wheel Angle - special instructions	##
1807	17	Steering Wheel Angle - data valid, but below normal operation range (least severe level)	##
1807	18	Steering Wheel Angle - data valid, but below normal operation range (moderately severe level)	- Check the mechanical connection between steering angle sensor and steering shaft (loosened ?) - Replace the steering angle sensor
1807	19	Steering Wheel Angle - received network data in error	- Check the steering wheel sensor / replace the steering wheel sensor
1807	21	Steering Wheel Angle - data drifted low	- Check SAE J 1939 CAN data connection to SAS - replace SAS
1807	31	Steering Wheel Angle - condition exists	- Perform calibration procedure of SAS - If SAS cannot be calibrated, replace SAS
1808	0	Yaw Rate - data valid, but above normal operation range (most severe level)	- Replace ESC-module
1808	1	Yaw Rate - data valid, but below normal operation range (most severe level)	- Replace ESC-module
1808	2	Yaw Rate - data erratric, intermittend or incorrect	- Replace ESC-module
1808	7	Yaw Rate - mechanical system not responding properly or out of adjustment	- Check correct mounting direction (assembly position) of ESC-module - Check correct mounting direction of steering angle sensor - Replace ESC-module
1808	11	Yaw Rate - failure mode not identifiable / root cause not known	- Check / replace ESC-module - Check / replace steering angle sensor

1808	12	Yaw Rate - bad intelligent device or component	- Replace ESC-module
1808	13	Yaw Rate - out of calibration	- Check correct mounting direction (assembly position) of ESC-module - Check and replace ESC-module - Check and replace steering angle sensor
1808	14	Yaw Rate - special instructions	- Check the EBS-centralmodule concerning correct EOL-parameter (steering ratio, wheelbase, wheel diameter, etc.) - Check, whether the ESC-module is assembled in correct position - Replace the ESC-module
1808	15	Yaw Rate - data valid, but above normal operation range (least severe level)	- Replace ESC-module
1808	16	Yaw Rate - data valid, but above normal operation range (moderately severe level)	- Replace ESC-module
1808	17	Yaw Rate - data valid, but below normal operation range (least severe level)	- Check correct mounting direction (assembly position) of ESC-module - Replace ESC-module
1808	19	Yaw Rate - received network data in error	- Check / replace ESC-module
1809	1	Lateral Acceleration - data valid, but below normal operation range (most severe level)	- Replace ESC-module
1809	2	Lateral Acceleration - data erratric, intermittend or incorrect	- Replace ESC-module
1809	7	Lateral Acceleration - mechanical system not responding properly or out of adjustment	- Check EOL-parameter for mounting-direction of ESC-module (if available) - Check correct mounting direction (assembly position) of ESC-module - Check correct mounting direction of steering angle sensor - Replace ESC-module
1809	12	Lateral Acceleration - bad intelligent device or component	- Replace ESC-module
1809	14	Lateral Acceleration - special instructions	- Check the EBS-centralmodule concerning correct EOL- parameter (steering ratio, wheelbase, wheel diameter, etc.) - Check, whether the ESC-module is assembled in correct position - Replace the ESC-module
1809	15	Lateral Acceleration - data valid, but above normal operation range (least severe level)	- Check correct mounting direction (assembly position) of ESC-module - Replace ESC-module
1809	16	Lateral Acceleration - data valid, but above normal operation range (moderately severe level)	- Check correct mounting direction (assembly position) of ESC-module - Replace ESC-module
1809	17	Lateral Acceleration - data valid, but below normal operation range (least severe level)	- Check correct mounting direction (assembly position) of ESC- module - Replace ESC-module
1811	7	Steering Wheel Turn Counter - mechanical system not responding properly or out of adjustment	- Check the mechanical steering elements at the front axle (defect, twisted, faulty assembly, etc.) - Check the mounting position of the steering angle sensor on the steering shaft (cranky, faulty assembly, etc.) - Replace the steering angle sensor
2000	8	Source Address 0 (engine #1 ?) - abnormal frequency, pulse width or period	- Check the failure memory of the CCVS-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the CCVS-ECU
2000	9	Source Address 0 (engine #1 ?) - abnormal update rate	- Check the failure memory of the engine-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the engine-ECU
2015	9	Source Address 15 (engine retarder ?) - abnormal update rate	- Check the failure memory of the engine-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the engine-ECU
2015	10	Source Address 15 (engine retarder ?) - abnormal rate of change	- Check the failure memory of the engine-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the engine-ECU
2016	9	Source Address 16 (driveline retarder ?) - abnormal update rate	- Check the failure memory of the driveline retarder ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the driveline retarder ECU
2016	10	Source Address 16 (driveline retarder ?) - abnormal rate of change	- Check the failure memory of the driveline retarder ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the driveline retarder ECU
2041	9	Source Address 41 (exhaust retarder ?) - abnormal update rate	- Check the failure memory of the exhaust retarder ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the exhaust retarder ECU
2041	10	ource Address 41 (exhaust retarder ?) - abnormal rate of change	- Check the failure memory of the exhaust retarder ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the exhaust retarder ECU
2047	9	Source Address 47 -abnormal update rate	- Check the failure memory of the ECU, that transmits the vehicle weight message and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the relevant ECU

2622	9	Hillholder system - abnormal update rate	- Check the failure memory of the haltbrake ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the haltbrake ECU
2927	2	Actual Inner wheel steering angle - data erratric, intermittend or incorrect	- Check EBS-system for correct parameters concerning steeraxle-function (3rd axle) - Check the sensing of the steering-system. Possible causes are: a) Failure of sensing by defect sensor or broken wiring etc. or b) De-adjustment of sensor by external influences or loosened screws - Check steering wheel angle sensing / replace SAS if necessary
2927	9	Actual Inner wheel steering angle - abnormal update rate	- Check the failure memory of the ESC-ECU (steering system, 3rd axle) and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the ESC-ECU (steering system, 3rd axle)
3509	3	Sensor supply voltage 1 -voltage above normal or shorted high	- Check the supply-line of the ESC-module (permanent short circuit to +UB ?) - Check the supply-line of the steering angle sensor (permanent short circuit to +UB ?) - Replace the EBS-centralmodule
3509	4	Sensor supply voltage 1 -voltage below normal or shorted low	- Check the supply-line of the ESC-module (short circuit to GND ?) - Check the supply-line of the steering angle sensor (short circuit to GND ?) - Check the ESC-module (supply current too high ? internal short circuit to GND ?) - Check the steering angle sensor (supply current too high ? internal short circuit to GND ?) - Replace the EBS-centralmodule
3510	3	Sensor supply voltage 2 -voltage above normal or shorted high	- Check the supply-line of the steering angle sensor (permanent short circuit to +UB ?) - Replace the EBS-centralmodule
3510	4	Sensor supply voltage 2 -voltage below normal or shorted low	- Check the supply-line of the steering angle sensor (short circuit to GND ?) - Check the steering angle sensor (supply current too high ? internal short circuit to GND ?) - Replace the EBS-centralmodule
3541	12	Brake Light Relay - bad intelligent device or component	- Check EBS-centralmodule for correct EOL-configuration (brake-light relay yes/no) - Check the wiring and the relating electric connectors of the brake-light relay (interruption, short circuits ?) - Check the brake-light relay (Internal interruption or short circuits ?) - Replace the EBS-centralmodule, if the brake-light relay and the relevant wiring is faultless
3541	13	3541 - 13 / Brake Light Relay - out of calibration	- Check EBS-centralmodule for correct EOL-configuration (brake light relay yes/no) - Is something connected to the relevant brake-light relay pins of the centralmodule ? - Replace the EBS-centralmodule
3839	0	Brake Temperature Warning - data valid, but above normal operation range (most severe level)	- was the vehicle operated on long distance slopes ? - unfavourable way of driving or an insufficient use of retarders ? - wrong parameters inside centralmodule (limit values, characteristics of foundation brake,...) ?
3839	15	Brake Temperature Warning - data valid, but above normal operation range (least severe level)	- was the vehicle operated on long distance slopes ? - unfavourable way of driving or an insufficient use of retarders ? - wrong parameters inside centralmodule (limit values, characteristics of foundation brake,...) ?
520205	13	EBS system/module compatibility (centralmodule) - out of calibration	##
520206	13	EBS system/module compatibility (front axle modulator) - out of calibration	- For a correct EBS-function, a right combination of EBS-centralmodule, front-axle modulator, rear-axle modulator, additional-axle modulator (optional) and ESC-module (optional) must be assembled in the vehicle. Please read the numbers of all these components and check them for compatibility against each other.
520207	13	EBS system/module compatibility (rear axle modulator) - out of calibration	- For a correct EBS-function, a right combination of EBS-centralmodule, front-axle modulator, rear-axle modulator, additional-axle modulator (optional) and ESC-module (optional) must be assembled in the vehicle. Please read the numbers of all these components and check them for compatibility against each other.
520210	2	ESC-module - data erratric, intermittend or incorrect	- Check ESC-module for correct CAN-data transmission (message checksums) - Check rear axle modulator for correct CAN-data transmission (message checksums)
520210	9	ESC-module - abnormal update rate	- Check centralmodule for correct EOL-configuration (ESC yes/no) - Check the wiring between EBS-centralmodule and ESC-module - Check the ESC-module / replace ESC-module (correct assembly position of ESP-module is important)
520210	10	ESC-module - abnormal rate of change	- Check and replace the ESC module (correct CAN data block counter ?)
520210	11	ESC-module - failure mode not identifiable / root cause not known	- Check / Replace ESC-module - Check / Replace EBS-centralmodule
520210	12	ESC-module - bad intelligent device or component	- Check the assembly position, the lateral inclination and correct fixing of the ESC-module - Check and replace the ESC module (correct assembly position is important)

520210	13	ESC-module - out of calibration	- Check the EBS-centralmodule concerning correct ESC specific EOL parameters
520210	19	ESC-module - received network data in error	- Check ESC-module for correct CAN-data transmission (message checksums) - Check EBS-centralmodule for correct CAN-data transmission (message checksums)
520211	13	EBS system/module compatibility (ESC module) - out of calibration	##
520213	31	ESC-Calibration Procedure - condition exists	##
520214	0	Steering Angle Ratio - data valid, but above normal operation range (most severe level)	- Check the assembly of the steering angle sensor (was the sensor rotated several times before connected to the steering shaft ?) - Check, if the steering ratio EOL parameters (if available) are correct
520214	2	Steering Angle Ratio - data erratric, intermittend or incorrect	- Has the driver executed normal driving-manoeuvres since the last ESC-calibration phase ? If not, the ESC calibration-phase must be repeated and the driver must drive in a normal way (not too aggressive) in the following period. Remark: If the way of driving is too aggressive, then the calibration-values are not determined within an admissable time. - Check the EBS-centralmodule concerning correct ESC specific EOL parameters (e.g. wheel base, pole-wheel teeth-numbers, tire-circumference, ...) - Is the vehicle damaged at the front axle ? - check / replace the ESC module - check / replace the steering wheel sensor
520215	31	ESC Function is Temporary Not Available - condition exists	- The ESC function was temporary not available (e.g. invalid or missing external CAN-data / engine, steeringsystem, trailer, etc.) - Repair EMAS system or EMAS signal line (if assembled at the vehicle) - Repair faulty external system Remark: It is not necessary to repair the EBS/ESC-System in the towing vehicle, if no other failures are stored in the EBS-failure memory
520235	3	ASR switch-off valve tag-axle - voltage above normal or shorted high	- Check the wiring and the relating electric connectors of the ASR/ATC solenoid (short circuit to UB ?) - Check the ASR/ATC solenoid (Internal short circuit to UB ?) - Replace the EBS-centralmodule, if the ASR/ATC solenoid and the relevant wiring is faultless
520235	4	ASR switch-off valve tag-axle - voltage below normal or shorted low	- Check the wiring and the relating electric connectors of the ASR/ATC solenoid (short circuit to GND ?) - Check the ASR/ATC solenoid (Internal short circuit to GND ?) - Replace the EBS-centralmodule, if the ASR/ATC solenoid and the relevant wiring is faultless
520235	5	ASR switch-off valve tag-axle - current below normal or open circuit	- Check the EOL configuration in the EBS-centralmodule (ASR/ATC valve yes/no) - Check the wiring and the relating electric connectors of the ASR/ATC solenoid (interruption ?) - Check the ASR/ATC solenoid (internal interruption ?) - Replace the EBS-centralmodule, if the ASR/ATC solenoid and the relevant wiring is faultless
520235	13	ASR switch-off valve tag-axle - out of calibration	- Check EBS-centralmodule for correct EOL-configuration (ASR/ATC valve yes/no) - Is something connected to the relevant ASR/ATC-valve pins of the centralmodule ? - Replace the EBS-centralmodule
520237	12	Additional Display (ATC2 / Brake Lining) - bad intelligent device or component	- Check EBS-centralmodule for correct EOL configuration (parameter "lamp D" yes/no) - Check the wiring and the relating electric connectors of lamp D (interruption ? short circuits ?) - Check the lamp D (faulty ?) - Replace the EBS-centralmodule, if the lamp D and the wiring is faultless
520241	2	External Brake Demand System (XBR, Source 3, Customer Specific System) - data erratric, intermittend or incorrect	- Check the XBR-electronic device (Customer specific system) and replace it, if necessary - Check the EBS-Centralmodule and replace it, if necessary
520241	9	External Brake Demand System (XBR, Source 3, Customer Specific System) - abnormal update rate	- Check the failure memory of the XBR-ECU (Customer specific system) and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the XBR-ECU
520241	10	External Brake Demand System (XBR, Source 3, Customer Specific System) - abnormal rate of change	- Check the failure memory of the XBR-ECU (Customer specific system) and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the XBR-ECU
520242	2	External Brake Demand System (XBR, Source 1, ACC, etc.) - data erratric, intermittend or incorrect	- Check the XBR-electronic device (ACC system) and replace it, if necessary - Check the EBS-Centralmodule and replace it, if necessary
520242	9	External Brake Demand System (XBR, Source 1, ACC, etc.) - abnormal update rate	- Check the failure memory of the XBR-ECU (ACC) and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the XBR-ECU
520242	10	External Brake Demand System (XBR, Source 1, ACC, etc.) - abnormal rate of change	- Check the failure memory of the XBR-ECU (ACC) and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the XBR-ECU

520243	2	External Brake Demand System (XBR, Source 2, EPH, AEBS, etc.) - data erratric, intermittend or incorrect	- Check the XBR-electronic device (EPH / AEBS) and replace it, if necessary - Check the EBS-Centralmodule and replace it, if necessary
520243	9	External Brake Demand System (XBR, Source 2, EPH, AEBS, etc.) - abnormal update rate	- Check the failure memory of the XBR-ECU (EPH / AEBS) and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the XBR-ECU
520243	10	External Brake Demand System (XBR, Source 2, EPH, AEBS, etc.) - abnormal rate of change	- Check the failure memory of the XBR-ECU (EPH / AEBS) and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the XBR-ECU
520245	31	Failure Memory Bit (Yellow) - condition exists	- Check and repair all failures stored in failure-memory - After repair clear the failure memory and reset the failure-memorybit Remark: Memorybit can be resetted e.g. by diagnostic command.
520246	31	Failure Memory Bit (Red) - condition exists	- Check and repair all failures stored in failure-memory - After repair clear the failure memory and reset the failure-memorybit Remark: Memorybit can be resetted e.g. by diagnostic command.
520247	31	Failure Memory Bit (ESC) - condition exists	##
520261	13	EOL Parameter STOP-Function - out of calibration	- Check the correct EOL parameter setting for STOP function (stability optimization) - If these EOL-parameters are correct, replace EBS centralmodule
520262	13	EOL Parameter ARB-Function - out of calibration	- Check the correct EOL parameter setting for ARB function (halt brake, anti roll brake) - If these EOL-parameters are correct, replace EBS centralmodule
520263	13	EOL Parameter RAG-Function - out of calibration	- Check the correct EOL parameter setting for RAG function (wheel speed calibration function) - If these EOL-parameters are correct, replace EBS centralmodule
520264	13	EOL Parameter ZC3F - Function - out of calibration	- Check the correct EOL parameter setting for speedometer-adjustment function - If these EOL-parameters are correct, replace EBS centralmodule
520265	13	EOL Parameter KENN-Function - out of calibration	- Check the correct EOL parameter setting for KENN function (brake feeling curve) - If these EOL-parameters are correct, replace EBS centralmodule
520266	13	EOL Parameter SPGV-Function - out of calibration	- Check the correct EOL parameter setting for SPGV function (voltage supply) - If these EOL-parameters are correct, replace EBS centralmodule
520267	13	EOL Parameter END-Function - out of calibration	- Check the correct EOL parameter setting for END function (valve activation) - If these EOL-parameters are correct, replace EBS centralmodule
520268	13	EOL Parameter EEFU-Function - out of calibration	- Check the correct EOL parameter setting for EEFU function (general configuration) - If these EOL-parameters are correct, replace EBS centralmodule
520269	13	EOL Parameter XBR-Function - out of calibration	- Check the correct EOL parameter setting for XBR function (external brake function) - If these EOL-parameters are correct, replace EBS centralmodule
520270	13	EOL Parameter ESC-Function (Group 1 / General Configuration Parameters) - out of calibration	Check the correct EOL parameter setting for ESC function (Group 1 / General Configuration Parameters): - EBS vehicle model - ESC config - Vehicle Type - All Wheel Drive - SAS type - RSC limitation - RSC/YC control speed limitation
520271	13	EOL Parameter ESC-Function (Group 2 / Axle Parameters - Geometry, Configuration) - out of calibration	##
520272	13	EOL Parameter ESC-Function (Group 3 / Steering Ratio Parameters) - out of calibration	Check the correct EOL parameter setting for ESC function (Group 3 / Steering Ratio Parameters): - Steering angle inner/outer left/right - Steering ratio inner/outer left/right - Mode of Steering ratio Determination
520273	13	EOL Parameter ESC-Function (Group 4 / Roll Stability Control Parameters) - out of calibration	Check the correct EOL parameter setting for ESC function (Group 4 / Roll Stability Control Parameters): - RSC characteristic - RSC Speed characteristic
520274	13	EOL Parameter ESC- Function (Group 5 / Additional Geometry Parameters) - out of calibration	Check the correct EOL parameter setting for ESC function (Group 5 / Additional Geometry Parameters): - track width front/drive axle - Wheelbase between AM-FA/AM-RA/AM-AA - Sensor distance to reference axle
520279	13	EOL Parameter AEBS-Function - out of calibration	- Check the correct EOL parameter setting for AEBS function (autonomous emergency brake system) - If these EOL-parameters are correct, replace EBS centralmodule
520281	31	PowerOff Delay Circuit Cannot be Switched On - condition exists	- Replace EBS centralmodule
520282	31	PowerOff Delay Circuit Cannot be Switched Off - condition exists	- Replace EBS centralmodule
520291	2	EHS (Easy Hill Start) - data erratric, intermittend or incorrect	- Check, whether the EHS-demand signal is active during driving because of a failure (e.g. defect EHS-ECU, faulty EHS-wiring, ...)
520291	9	EHS (Easy Hill Start) -abnormal update rate	- Check the failure memory of the EHS-ECU and repair all failures - Check the wiring of the SAE J 1939 data connection and the relating electric connectors between EBS-centralmodule and the EHS-ECU

520292	9	SAE J 1939 Datalink (EBC4_X-message) - abnormal update rate	- Check the failure memory of the ECU (which transmits EBC4_X message) and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the ECU (which transmits EBC4_X message)
520293	9	SAE J 1939 Datalink (AEBS-messages) - abnormal update rate	- Check the failure memory of the AEBS-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the AEBS-ECU
520293	10	SAE J 1939 Datalink (AEBS-messages) - abnormal rate of change	- Check the failure memory of the AEBS-ECU and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the AEBS-ECU
520294	9	SAE J 1939 Datalink (MSF-message) - abnormal update rate	- Check the failure memory of the ECU (which transmits MSF message) and repair all failures - Check the wiring of the chassis-CAN data connection and the relating electric connectors between EBS-centralmodule and the ECU (which transmits MSF message)