09OBDG05 TRANS Diagnostics

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
TCM, Internal Fault	**P0605**	ROM checksum or RAM error	Calculated checksum differs from stored.	Number of failed calculations: 2			Immediately	Immediately
							Continuous	
Lost communication with ECM (Engine)	**U0100**	Frame missing from ECM	Detect no Status CAN frame from ECM		DS_Active_CAN[1]	TRUE	4 sec	Immediately
					Ignition	ON >3sec.	Continuous	
					Emergency mode	FALSE		
Invalid data from ECM	**P1895**	Engine Torque signal is indicated invalid	Invalid Torque data from ECM		DS_Active_CAN[1]	TRUE	4 sec	Immediately
					Ignition	ON >3sec.	Continuous	
					Emergency mode	FALSE		
					No DTC set	U0100		
Solenoid S1	**P0985**	Circuit continuity check	Short-cut ground		DS_Active[2]	TRUE	500 msec	Immediately
	P0986		Not connected or short-cut Ubatt		Emergency mode	FALSE	Continuous	
					Time after solenoid output change	> 25 ms		
Solenoid S2	**P0973**	Circuit continuity check	Short-cut ground		DS_Active[2]	TRUE	500 msec	Immediately
	P0974		Not connected or short-cut Ubatt		Emergency mode	FALSE	Continuous	
					Time after solenoid output change	> 25 ms		
Solenoid S3	**P0976**	Circuit continuity check	Short-cut ground		DS_Active[2]	TRUE	500 msec	Immediately
	P0977		Not connected or short-cut Ubatt		Emergency mode	FALSE	Continuous	
					Time after solenoid output change	> 25 ms		
Solenoid S4	**P0979**	Circuit continuity check	Short-cut ground		DS_Active[2]	TRUE	500 msec	Immediately
	P0980		Not connected or short-cut Ubatt		Emergency mode	FALSE	Continuous	
					Time after solenoid output change	> 25 ms		
Solenoid S5	**P0982**	Circuit continuity check	Short-cut ground		DS_Active[2]	TRUE	500 msec	Immediately
	P0983		Not connected or short-cut Ubatt		Emergency mode	FALSE	Continuous	
					Time after solenoid output change	> 25 ms		
Torque Converter Clutch Slips	**P0741**	Comparison of engine speed and transmission input speed	(Engine Speed - Transmission Input Speed)	> 100rpm	No Shifting Control[6]		12 sec	Immediately
					Throttle	> 20%	Continuous	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					abs(1-SpeedABS/Trans. Output Speed)	< 10%		
					abs(1-SpeedABS/Trans. Input Speed)	< 10%		
					Shift Position	RANGE_D, 4, 3, 2, M (defined)		
					Engine Speed	< 4000 rpm		
					SLU target current	>= 1000mA		
					Time after shifting	> 0,5 sec		
					Battery voltage	> 10,5 V		
					DS_Active[2]	TRUE		
					Emergency mode	FALSE		
					Lock-up	TRUE		
					No DTC set	P0501		
						P0705		
						P0711		
						P0712		
						P0713		
						P0716		
						P0717		
						P0721		
						P0722		
						P0725		
						P0786		
						P0787		
						P0788		
						P0961		
						P0962		
						P0963		
						P0973		
						P0974		
						P0976		
						P0977		
						P0979		
						P0980		
						P0982		
						P0983		
						P0985		
						P0986		
						P1820		
						P1895		
						P1896		
						P2159		
						P2762		
						P2763		
						P2764		
						U0001		
						U0100		
						U0121		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Torque Converter Clutch Stuck On	**P0742**	Comparison of engine speed and transmission input speed	(Engine Speed - Transmission Input speed)	< 50rpm	EngineTorque	>= Fgtrq_LUP_FailMap[5]	12 sec	Immediately
					EngineTorque	<= 240 Nm	Continuous	
					Trans. Input Speed	<= 3000rpm		
					Time after changing to Shift position == RANGE_D,4,3,2,M	>8.0 sec		
					Time after IG ON or a reset of the controller	>3 min		
					Time after shifting control	>0.5sec		
					Oil temperature	>= 20°C		
					No Shifting Control[6]			
					Not garage shifting control[7](N-D)			
					(Shift position	RANGE_D,M,L (defined) **or** >75 sec with over 5km/h and RANDE_D,L (undefined) fulfilled		
					Engine Speed	>= 400 rpm		
					IG voltage	>= 10.5 V		
					DS_Active[2]	TRUE		
					Emergency mode	FALSE		
					No DTC set	P0721		
						P0722		
						P0716		
						P0717		
						P0705		
						P0985		
						P0986		
						P0973		
						P0974		
						P0976		
						P0977		
						P0979		
						P0980		
						P0982		
						P0983		
						P0961		
						P0962		
						P0963		
						P0786		
						P0787		
						P0788		
						P2762		
						P2763		
						P2764		
						U0001		
						U0100		
						P1820		
						P0725		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
						P1895		
						P0711		
						P0712		
						P0713		
Pressure solenoid SLU	**P2764**	Circuit continuity check	Short-cut ground or open		DS_Active[2]	TRUE	12,5 sec	Immediately
			Current	<92 mA	Emergency mode	FALSE	Continuous	
			(AD	< 68)				
	P2762		Terminal short		Emergency mode	FALSE	2,75 sec	Immediately
			Error current	> 80 mA	Oil temperature	> 20°C	Continuous	
					System voltage	11 -18 V		
					System voltage change	< 0,2V		
					Output current target	> 853mA and not changed during detection		
					DS_Active[2]	TRUE		
					No DTC set	P0711		
						P0712		
						P0713		
	P2763		Short-cut Ubatt		DS_Active[2]	TRUE	2 sec	Immediately
			Measured Current	> 1356 mA	Emergency mode	FALSE	Continuous	
			(AD	> 1000)				
Pressure solenoid SLT	**P0962**	Circuit continuity check	Short-cut ground or open		DS_Active[2]	TRUE	12.5 sec	Immediately
			Current	<92 mA	Emergency mode	FALSE	Continuous	
			(AD	< 68)				
	P0961		Terminal short		Emergency mode	FALSE	2.75 sec	Immediately
			Error current	> 80 mA	Oil temp	> 20°C	Continuous	
					System voltage	11 -18 V		
					System voltage change	< 0,2V		
					Output current target	> 853mA and not changed during detection		
					DS_Active[2]	TRUE		
					No DTC set	P0711		
						P0712		
						P0713		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
	P0963		Short-cut Ubatt		DS_Active[2]	TRUE	2 sec	Immediately
			Measured Current	> 1356 mA	Emergency mode	FALSE	Continuous	
			(AD	> 1000)				
Timing solenoid SLS	**P0787**	Circuit continuity check	Short-cut ground or open		DS_Active[2]	TRUE	12.5 sec	Immediately
			Current	<92 mA	Emergency mode	FALSE	Continuous	
			(AD	< 68)				
	P0786		Terminal short	Error current > 80 mA	Emergency mode	FALSE	2.75 sec	Immediately
					Oil temp	> 20°C	Continuous	
					System voltage	11 -18 V		
					System voltage change	< 0,2V		
					Output current target	> 853mA and not changed during detection		
					DS_Active[2]	TRUE		
					No DTC set	P0711		
						P0712		
						P0713		
	P0788		Short-cut Ubatt		DS_Active[2]	TRUE	2 sec	Immediately
			Measured Current	> 1356 mA	Emergency mode	FALSE	Continuous	
			(AD	> 1000)				
Shift Malfunction	**P0780**	Shift time check	Shift time is too long, too short or “tie up” occurs		No Multiplex Shifting[8]		Detected 5 times during DCY	Immediately
					Oil temperature	> 60°C		
					Emergency mode	FALSE		
					DS_Active[2]	TRUE	Continuous	
					Shift position	D, 4, 3, L, or M		
					No DTC set	P0721		
						P0722		
						P0716		
						P0717		
						P0705		
						P0985		
						P0986		
						P0973		
						P0974		
						P0976		
						P0977		
						P0979		
						P0980		
						P0982		
						P0983		
						P0961		
						P0962		
						P0963		
						P0786		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
						P0787		
						P0788		
						P2762		
						P2763		
						P2764		
						U0001		
						U0100		
						P1820		
						P0725		
						P1895		
						P0711		
						P0712		
						P0713		
						P1896		
						P2159		
						P0501		
						U0121		
CAN Bus Off Counter Overrun	**U0001**	CAN controller continuity check	CAN controller Bus Off is detected		DS_Active_CAN[1]	TRUE	12,7sec (9-5)	Immediately
			Counter reaches	7	Time after Ignition ON or a reset of the controller	>3 sec	28sec (9-3)	
							Continuous	
Transmission input speed sensor	**P0717**	Circuit continuity check	Condition 1 (no pulse)		No Shifting Control[6]		Speed dependent (e.g 4 sec at 100 km/h)	Immediately
			No of pulses from input sensor	0	Not garage shifting control[7] (N-D)			
			No of pulses from output sensor	3000	B1 not released			
					outRpm * GearRatioExpected	> 600 rpm		
					Shifter position	D,4,3,2,M Range(defined)	Continuous	
			Condition 2 (no pulse)		CurrentGear	>= 2	30sec	
			Transmission Input Speed	0	Time since change from P, R or N to others if vehicle speed <= 66km/h and oiltemp. <= 20°C	>10 sec	Continuous	
			SpeedABS	>20km/h	Time since change from P, R or N to others if vehicle speed >66km/h or oiltemp. > 20°C	>2,5 sec		
					DS_Active[2]	TRUE		
					Emergency mode	FALSE		
					No DTC set	P0705		
						P0721 (only condition 1)		
						P0722 (only condition 1)		
			Condition 3 (no pulse)		DS_Active[2]	TRUE	30sec	
			NCIM-voltage (AD-value)	AD<45 or AD>545	Emergency mode	FALSE	Continuous	

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
	P0716 (only Saab 9-3)		Pulses incorrect		No Shifting Control[6]		10 sec	Immediately
					Not garage shifting control[7] (N-D)		Continuous	
			abs(1-SpeedABS/ Transmission Input Speed)	> 15%	B1 not released			
					LockUp	ON		
					abs(1-outRpmABS/ outRpmSP)	< 5%		
					abs(1-outRpmABS/ outRpmEG)	< 5%		
					Time after shifting control	>8 sec		
					Time after changing to GearSelector = RANGE_D,4,3,2	>8 sec		
					Gear	>= 2ND		
					Range	Other than P and N and R		
					EgRpm	> 400rpm		
					Spinning[11]	FALSE		
					DS_Active[2]	TRUE		
					Emergency mode	FALSE		
					SpeedABS	>30km/h		
					No DTC set	P0705		
						P0711		
						P0712		
						P0713		
						P0721		
						P0722		
						P0725		
						P0741		
						P0786		
						P0787		
						P0788		
						P0961		
						P0962		
						P0963		
						P0973		
						P0974		
						P0976		
						P0977		
						P0979		
						P0980		
						P0982		
						P0983		
						P0985		
						P0986		
						P1820		
						P1895		
						P2762		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
						P2763		
						P2764		
						U0121		
Invalid signal from ECM	**P1820**	Accelerator pedal position signal is invalid	Data from ECM indicated as invalid		DS_Active[2]	TRUE	4 sec	Immediately
					Time after Ignition ON or reset of CAN controller.	>3 sec	Continuous	
					Emergency mode	FALSE		
					No DTC set	U0100		
Trans. Output speed sensor	**P0722**	Circuit continuity check	Condition 1 (No pulse)		Not in Neutral control[9]		6000 pulses	Immediately
			No of pulses from output sensor	0	No Shifting Control[6]			
			No of pulses from input sensor	6000	Not garage shifting control[7] (N-D)		Continuous	
					DS_Active[2]	TRUE		
					Trans.Output Speed calculated from ABS	>300rpm (only Condition 1)		
			Condition 2 (No pulse)		Selected gear	D, 4, 3, 2, M	30 sec	Immediately
					Time since change from P, R or N to others if vehicle speed <= 66km/h and oiltemp. <= 20°C	>10 sec	Continuous	
					Time since change from P, R or N to others if vehicle speed >66km/h or oiltemp. > 20°C	>2,5 sec		
					Emergency mode	FALSE		
			Transmission Output Speed	0				
			SpeedABS	>20km/h	No DTC set	U0121		
						P0705		
						P0716 (only Condition 1)		
						P0717 (only Condition 1)		
			Short to Ubatt or GND		DS_Active[2]	TRUE	30sec	Immediately
					Emergency mode	FALSE	Continuous	
	P0721 (only Saab 9-3)		Incorrect rpm		B1 not released		10 sec	Immediately
			abs(1-SpeedABS/ Transmission Output Speed)	> 15 %	No Shifting Control[6]		Continuous	
					Not garage shifting control[7] (N-D)			
					abs(1-outRpmABS/ outRpmNC)	< 5 %		
					Time after shifting control[6]	>8 sec		
					Time after changing to GearSelector = RANGE_D,4,3,2	>8 sec		
					Gear	>= 2ND		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					Range	other than P and N and R		
					EgRpm	> 400rpm		
					Spinning[11]	FALSE		
					DS_Active[2]	TRUE		
					Emergency mode	FALSE		
					SpeedABS	> 30km/h		
					No DTC set	P0716		
						P0717		
						P0705		
						P0985		
						P0986		
						P0973		
						P0974		
						P0976		
						P0977		
						P0979		
						P0980		
						P0982		
						P0983		
						P0741		
						P0961		
						P0962		
						P0963		
						P0786		
						P0788		
						P2762		
						P2763		
						P2764		
						P1820		
						P0725		
						P1895		
						U0121		
						P0711		
						P0712		
						P0713		
Gear error, hydraulic fault	**P0730**	Rationality, (Calculation of actual gear ratio is not correct)	**Condition 1**		No Shifting Control[6]		12 sec	Immediately
					Not garage shifting control[7] (N-D)			
			Driving on 4th gear and abs(1-GRCurrent/GRExpected)		Transmission Output Speed	>= 500rpm		
				> 20%	Time after changing to Shift position == RANGE_D,4,3,2(defined)	>8.0 sec	Continuous	
					Time after shifting control	>0.5 sec		
					Oil temperature	>= 20°C		
					Shift position	RANGE_D,4,3,2(defined)		
					Engine speed	> 400 rpm		
					IG voltage	>= 10.5 V		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					brake	OFF		
					Spinning[11]	FALSE		
					DS_Active[2]	TRUE		
					Emergency mode	FALSE		
			Condition 2		abs(1 - SpeedABS / SpeedSP)	< 10 %		
					Throttle	> 10 %		
			Driving on 5th gear - gear ratio	1.504 ± 4%				
					No DTC set	P0721		
						P0722		
						P0716		
						P0717		
						P0705		
						P0985		
						P0986		
						P0973		
						P0974		
						P0976		
						P0977		
						P0979		
						P0980		
						P0982		
						P0983		
						P0961		
						P0962		
						P0963		
						P0786		
						P0787		
						P2762		
						P2763		
						P2764		
						U0001		
						U0100		
						P1820		
						P0725		
						P1895		
						P1896		
						P0711		
						P0712		
						P0713		
						P2159		
						P0501		
						U0121		
Transmission range switch	**P0705**	Check of switch output pattern	Failure combination of signals from Gear Selector range switch		DS_Active[2]	TRUE	5 sec Continuous	Immediately

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Transmission oil temperature sensor	**P0711**	Rationality	Oil temperature change less than	10 (AD value)	Oil temp sensor	10< AD < 1000	10 min	Two DCY
					Oil temp	< 20 °C	Continuous	
					Gear Selector	≠ (P, R or N)		
					DS_Active[2]	TRUE		
					Emergency mode	FALSE		
					Vehicle speed	> 40 km/h once		
					No DTC set	P0705		
	P0712	Circuit continuity check	Short-cut ground		DS_Active[2]	TRUE	5 min	Two DCY
			Voltage	< 50 mV	Emergency mode	FALSE	Continuous	
			(AD	< 10)				
	P0713	Circuit continuity check	Short-cut Ubat or open circuit		DS_Active[2]	TRUE	12 sec	Two DCY
			AD	> 1000	Emergency mode	FALSE	Continuous	
					Driving time	>10 min		
Gear error, hydraulic fault	**P0731**	Rationality	(Transmission Input Speed - Transmission Output Speed X GRExpected)	>300rpm	Not garage shifting control[7] (N-D)		10 sec	Immediately
					IG voltage	>= 10.5V	Continuous	
					Engine speed	>(T/M input rev + 150)		
			(Transmission Input Speed - Transmission Output Speed X GRExpected(2nd))	<100rpm		for 150msec continuously.		
					lnTorqe_noACC[10]	30Nm <= lnTorq_noACC < 200Nm		
					T/M input rev	>Table1[4]		
					T/M output rev	>Table1[4]		
					current Gear	1		
					Time after changing to shift position == RANGE D,4,3,2	>8.0sec		
					Time after shifting control[7]	>0.5 sec		
					Oil temperature	>= 20°C		
					Engine speed	>400rpm		
					Shiftposition	RANGE_D,4,3,2(defined) or RANGE_D,4,3,2(undefined) for 75sec.		
					DS_Active[2]	TRUE		
					Emergency mode	FALSE		
					No DTC set	P0501		
						P0705		
						P0711		
						P0712		
						P0713		
						P0716		
						P0717		
						P0721		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
						P0722		
						P0725		
						P0786		
						P0787		
						P0788		
						P0961		
						P0962		
						P0963		
						P0973		
						P0974		
						P0976		
						P0977		
						P0979		
						P0980		
						P0982		
						P0983		
						P0985		
						P0986		
						P1820		
						P1895		
						P1896		
						P2159		
						P2762		
						P2763		
						P2764		
						U0001		
						U0100		
						U0121		
	P0732	Rationality	Calculated ratio for 2nd gear difference from expected	>20%	No Shifting Control[6]		12 sec	Immediately
					Not garage shifting control[7] (N-D)		Continuous	
					Throttle	> 10%		
					Current gear	2		
					Time after changing to Shift position == RANGE_D,4,3,2(defined)	>8.0 sec		
					Time after shifting control[7]	>0.5 sec		
					Oil temperature	>= 20°C		
					Shift position	RANGE_D,4,3,2(defined)		
					Engine speed	> 400 rpm		
					IG voltage	>= 10.5 V		
					Brake	OFF		
					Spinning[11]	FALSE		
					DS_Active[2]	TRUE		
					Emergency mode	FALSE		
					abs(1 - SpeedABS / Trans. Output Speed)	< 10 %		
					Transmission Output Speed	>= 500rpm		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					No DTC set	P0501		
						P0705		
						P0711		
						P0712		
						P0713		
						P0716		
						P0717		
						P0721		
						P0722		
						P0725		
						P0786		
						P0787		
						P0788		
						P0961		
						P0962		
						P0963		
						P0973		
						P0974		
						P0976		
						P0977		
						P0979		
						P0980		
						P0982		
						P0983		
						P0985		
						P0986		
						P1820		
						P1895		
						P1896		
						P2159		
						P2762		
						P2763		
						P2764		
						U0001		
						U0100		
						U0121		
	P0733	Rationality	Calculated ratio for 3rd gear difference from expected	>20%	No Shifting Control[6]		12 sec	Immediately
					Not garage shifting control[7] (N-D)		Continuous	
					Throttle	> 10%		
					Current gear	3		
					Time after changing to Shift position == RANGE_D,4,3,2(defined)	>8.0 sec		
					Time after shifting control[7]	>0.5 sec		
					Oil temperature	>= 20°C		
					Shift position	RANGE_D,4,3,2(defined)		
					Engine speed	> 400 rpm		
					IG voltage	>= 10.5 V		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					Brake	OFF		
					Spinning[11]	FALSE		
					DS_Active[2]	TRUE		
					Emergency mode	FALSE		
					abs(1 - SpeedABS / Trans. Output Speed)	< 10 %		
					Transmission Output Speed	>= 500rpm		
					No DTC set	P0501		
						P0705		
						P0711		
						P0712		
						P0713		
						P0716		
						P0717		
						P0721		
						P0722		
						P0725		
						P0786		
						P0787		
						P0788		
						P0961		
						P0962		
						P0963		
						P0973		
						P0974		
						P0976		
						P0977		
						P0979		
						P0980		
						P0982		
						P0983		
						P0985		
						P0986		
						P1820		
						P1895		
						P1896		
						P2159		
						P2762		
						P2763		
						P2764		
						U0001		
						U0100		
						U0121		
	P0734	Rationality	Calculated ratio for 4th gear differendes from expected.	>20%	No Shifting Control[6]		12 sec	Immediately
					Not garage shifting control[7] (N-D)		Continuous	
					Throttle	> 10%		
					Current gear	4		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
					Time after changing to Shift position == RANGE_D,4,3,2(defined)	>8.0 sec		
					Time after shifting control[7]	>0.5 sec		
					Oil temperature	>= 20°C		
					Shift position	RANGE_D,4,3,2(defined)		
					Engine speed	> 400 rpm		
					IG voltage	>= 10.5 V		
					Brake	OFF		
					Spinning[11]	FALSE		
					DS_Active[2]	TRUE		
					Emergency mode	FALSE		
					abs(1 - SpeedABS / Trans. Output Speed)	< 10 %		
					Transmission Output Speed	>= 500rpm		
					No DTC set	P0501		
						P0705		
						P0711		
						P0712		
						P0713		
						P0716		
						P0717		
						P0721		
						P0722		
						P0725		
						P0786		
						P0787		
						P0788		
						P0961		
						P0962		
						P0963		
						P0973		
						P0974		
						P0976		
						P0977		
						P0979		
						P0980		
						P0982		
						P0983		
						P0985		
						P0986		
						P1820		
						P1895		
						P1896		
						P2159		
						P2762		
						P2763		
						P2764		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
						U0001		
						U0100		
						U0121		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
	P0735	Rationality	Calculated ratio for 5th gear difference from expected	>20%	No Shifting Control[6]		12 sec	Immediately
					Not garage shifting control[7] (N-D)		Continuous	
					Throttle	> 10%		
					Current gear	5		
					Time after changing to Shift position == RANGE D,4,3,2(defined)	>8.0 sec		
					Time after shifting control[7]	>0.5 sec		
					Oil temperature	>= 20°C		
					Shift position	RANGE_D,4,3,2(defined)		
					Engine speed	> 400 rpm		
					IG voltage	>= 10.5 V		
					Brake	OFF		
					Spinning[11]	FALSE		
					DS Active[2]	TRUE		
					Emergency mode	FALSE		
					abs(1 - SpeedABS / Trans. Output Speed)	< 10 %		
					Transmission Output Speed	>= 500rpm		
					No DTC set	P0501		
						P0705		
						P0711		
						P0712		
						P0713		
						P0716		
						P0717		
						P0721		
						P0722		
						P0725		
						P0786		
						P0787		
						P0788		
						P0961		
						P0962		
						P0963		
						P0973		
						P0974		
						P0976		
						P0977		
						P0979		
						P0980		
						P0982		
						P0983		
						P0985		
						P0986		
						P1820		
						P1895		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
						P1896		
						P2159		
						P2762		
						P2763		
						P2764		
						U0001		
						U0100		
						U0121		
	P0736	Rationality	Calculated ratio for Reverse gear difference from expected	>20%	No Shifting Control[6]		6 sec	Immediately
					Not garage shifting control[7] (N-R)		Continuous	
					abs(1 - SpeedABS / Trans. Output Speed)	< 10 %		
					Selected gear	R		
					A/T oil temp.	> 20°C		
					Throttle	> 10%		
					Engine speed	> 400 rpm		
					Time after N-R shift	8 sec		
					IG voltage	> 10,5 V		
					Transmission Output Speed	>= 500rpm		
					Brake	OFF		
					DS_Active[2]	TRUE		
					Emergency mode	FALSE		
					No DTC set	P0501		
						P0705		
						P0711		
						P0712		
						P0713		
						P0716		
						P0717		
						P0721		
						P0722		
						P0725		
						P0786		
						P0787		
						P0788		
						P0961		
						P0962		
						P0963		
						P0973		
						P0974		
						P0976		
						P0977		
						P0979		
						P0980		
						P0982		
						P0983		
						P0985		
						P0986		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
						P1820		
						P1895		
						P1896		
						P2159		
						P2762		
						P2763		
						P2764		
						U0001		
						U0100		
						U0121		
	P1731	Rationality	Calculated ratio for Reverse gear difference from expected	>20%	No Shifting Control[6]		12 sec	Immediately
					Mode Selector	Triptronic mode **or** Shift position Range_L	Continuous	
					Shift position	RANGE_D(defined)		
					A/T oil temp.	> 20°C		
					Throttle	0%		
					Engine speed	> 400 rpm		
					Time after shift to D.4.3.2(defined)	8 sec		
					IG voltage	> 10,5 V		
					Transmission Output Speed	1260rpm >= outRpm >= 500rpm		
					Brake	OFF		
					DS_Active[2]	TRUE		
					Time after shifting control	>0,5sec		
					Current gear	1st engine brake		
					No DTC set	P0501		
						P0705		
						P0711		
						P0712		
						P0713		
						P0716		
						P0717		
						P0721		
						P0722		
						P0725		
						P0786		
						P0787		
						P0788		
						P0961		
						P0962		
						P0963		
						P0973		
						P0974		
						P0976		
						P0977		
						P0979		
						P0980		

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
						P0982		
						P0983		
						P0985		
						P0986		
						P1820		
						P1895		
						P1896		
						P2159		
						P2762		
						P2763		
						P2764		
						U0001		
						U0100		
						U0121		
Engine speed signal	**P0725**	Signal from ECM stated as unreliable	Engine Speed Validity	Invalid	Not lost communication with ECM		4 sec	Immediately
					Ignition	ON > 3 sec		
					DS_Active_CAN[1]	TRUE	Continuous	
					Transmission input speed	>500rpm (only Saab 9-5)		
					Emergency mode	FALSE		
					Battery voltage	> 10,2 V		

Note: All components/system (DTCs) have a test frequency of 30~60ms

[1)] DS_Active_CAN

DS_Active_CAN = TRUE when the start condition for CAN failure detection is fulfilled for 2.0 sec continuously.

DS_Active_CAN = FALSE when the permission condition for CAN failure detection is not fulfilled.

Start Condition for CAN failure detection:

Ignition ON and
10.2V < Battery Voltage < 18V and
Not in service mode and
Reading EEPROM finish

Permission condition for CAN failure detection:

Ignition ON and
9.0V < Battery Voltage < 18V and
Not in service mode

[2)] DS_Active

DS_Active = TRUE when the start condition for failure detection is fulfilled for 2.0 sec continuously.

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
DS_Active = FALSE when the permission condition for failure detection is not fulfilled.								
Start Condition for failure detection:								
Ignition ON and								
10.2V < Battery Voltage < 18V and								
Not in service mode and								
Reading EEPROM finish and								
Egrpm > 400rpm								
Permission condition for failure detection:								
Ignition ON and								
9.0V < Battery Voltage < 18V and								
Not in service mode and								
Egrpm > 400rpm								
[4] Table1:								
InTorque(Nm)	**<=190**	230						
InRpm(Rpm)	**400**	600						
OutRpm(Rpm)	**200**	300						
[5] Egtrq_LUP_FailMap (Nm)								
Trans. In. Speed	**1000rpm**	1500rpm		2500rpm	3000rpm			
TrqConv.(217KII)	**41**	49		80	106			
TrqConv.(206KII)	**46**	56		91	121			
[6] Shifting Control								
"Shifting Control" is activated when the transmission is in between two gears (undefined gear ratio), until applied pressure has reached to full								
[7] "Garage Shifting"								
"Garage Shifting Control" is activated when the range selector changes from N to D or R until appropriate Gear Ratio is detected.								
[8] "Multiplex Shifting"								
If "BestGear" changes in shift control, that shift control is stopped and a new shift control is started.								
For example: If "BestGear" changes to 3rd in a 3-4 shift control, the 3-4 shift control is stopped and a 4-3 shift control is started.								
[9] "Neutral Control"								

COMPONENT/ SYSTEM	FAULT CODE	MONITOR STRATEGY DESCRIPTION	MALFUNCTION CRITERIA	THRESHOLD VALUE	SECONDARY PARAMETERS	ENABLE CONDITIONS	TIME REQUIRED	MIL ILLUM.
Neutral Control is activated if the vehicle is at stand still and in range D with the brake pressed for 2 seconds until the brake is released.								
[10)] "InTorque_noACC"								
Engine output torque, acceleration inertia torque not included.								
[11)] Spinning								
Spinning = 1 if Transversal acceleration > 0.7G (input from ABS signal)								
Spinning = 0 if Transversal acceleration parameter < 0.7G for 2sec. Continuously. (input from ABS signal)								