TNV-CR Diagnosis and Falesafe List for Tier4/IT4 (Under 56kW V191R46V01)

Item 1	Item 2	Fault	Under 56kW	Prerequisite condition	Detection condition	Detection duration	Sensor default value	Engine Stop	Rotation Limit (1800 min^{-1})	Rotation Limit (1500 min^{-1})	Max. Injection Amount Limit (75%)	Max. Injection Amount Limit (50%)	Rail Pressure Limit	EGR Command Full-Close	Suction Air Throttle Full-Open	Rail Pressure Back-up Control	DPF Regeneration Stop	Deposit Amount Calculation Stop Depending on DPF	Engine stop 1 with delay time (2 hour)	Engine stop 2 with delay time (15 minutes)	Failure bank injection stop	Failure cylinder injection stop	Note	Recovery timing	Recovery condition	Recovery duration	DTC (HEX)	Failure Type	SPN (DEC)	FMI (DEC)	MIL	RSL	AWL
Sensor	Crank	Abnormal signal	X	-	ECU detects abnormal signal of 15 times	-	-		X	X													ECU keeps engine operation by only cam sensor.	ECU Power OFF	ECU detects normal signal of 15 times	-	P0336	1F	522400	2	X		X
Sensor	Crank	No signal	X	-	ECU does not detect crank pulse signal while cam make 10 rotations	-	-		X	X													ECU keeps engine operation by only cam sensor.	ECU Power OFF	ECU detects crank pulse signal while cam make 10 rotations	-	P0337	18	522400	5	X		X
Sensor	Cam	Abnormal signal	X	-	ECU detects abnormal cam signal pattern while crank make 2 rotations.	-	-		X		X												ECU keeps engine operation by only crank sensor.	ECU Power OFF	ECU detects normal cam signal pattern while crank make 2 rotations.	-	P0341	1F	522401	2	X		X
Sensor	Cam	No signal	X	-	ECU does not detect cam pulse signal while crank make 2.2 rotations	-	-		X		X												ECU keeps engine operation by only crank sensor.	ECU Power OFF	ECU detects cam pulse signal while crank make 2.2 rotations	-	P0342	18	522401	5	X		X
Sensor	Cam	Angle off-set fault	X	-	The phase difference with crank is more than 30 degrees. or ECU detects the condition that the phase difference is less than -20 degrees of 2 times.	-	-		X		X													ECU Power OFF	The phase difference with crank is less than 30 degrees. or ECU detects the condition that the phase difference is more than -20 degrees of 2 times.	-	P1341	71	522401	7	X		X
Sensor	Acceleration sensor 1	Voltage high	X	-	Voltage of sensor signal is more than 4.6 V	500[ms]	-		(Selectable)	(Selectable)													Fail safe action is applied to application menu.	ECU Power OFF	Voltage of sensor signal is less than 4.6 V	-	P0123	15	91	3	X		X
Sensor	Acceleration sensor 1	Voltage low	X	-	Voltage of sensor signal is less than 0.2 V	500[ms]	-		(Selectable)	(Selectable)													Fail safe action is applied to application menu	ECU Power OFF	Voltage of sensor signal is more than 0.2 V	-	P0122	14	91	4	X		X
Sensor	Suction air throttle opening sensor	Voltage high	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is more than 4.8 V	500[ms]	100[%]		X		X			X	X		X		X					ECU Power OFF	Voltage of sensor signal is less than 4.8 V	-	P02E9	15	51	3	X	X	
Sensor	Suction air throttle opening sensor	Voltage low	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is less than 0.2 V	500[ms]	100[%]		X		X			X	X		X		X					ECU Power OFF	Voltage of sensor signal is more than 0.2 V	-	P02E8	14	51	4	X	X	
Sensor	EGR low-pressure side sensor (Suction air pressure)	Voltage high	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is more than 4.8 V	500[ms]	25[hPa]		X		X			X			X			X				ECU Power OFF	Voltage of sensor signal is less than 4.8 V	-	P0238	15	102	3	X		X
Sensor	EGR low-pressure side sensor (Suction air pressure)	Voltage low	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is less than 0.2 V	500[ms]	25[hPa]		X		X			X			X			X				ECU Power OFF	Voltage of sensor signal is more than 0.2 V	-	P0237	14	102	4	X		X
Sensor	EGR high-pressure side sensor (exhaust gas pressure sensor)	Voltage high	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is more than 4.8 V	500[ms]	0[hPa]		X		X			X	X		X	X		X				ECU Power OFF	Voltage of sensor signal is less than 4.8 V	-	P0473	15	1209	3	X		X
Sensor	EGR high-pressure side sensor (exhaust gas pressure sensor)	Voltage low	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is less than 0.2 V	500[ms]	0[hPa]		X		X			X	X		X	X		X				ECU Power OFF	Voltage of sensor signal is more than 0.2 V	-	P0472	14	1209	4	X		X
Sensor	Water temperature sensor	Voltage high	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is more than 4.8 V	500[ms]	After cranking : 50[degC] On cranking : -15[degC]		X		X			X										ECU Power OFF	Voltage of sensor signal is less than 4.8 V	-	P0118	15	110	3	X		X
Sensor	Water temperature sensor	Voltage low	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is less than 0.2 V	500[ms]	After cranking : 50[degC] On cranking : -15[degC]		X		X			X										ECU Power OFF	Voltage of sensor signal is more than 0.2 V	-	P0117	14	110	4	X		X
Sensor	Water temperature sensor	Water temperature increase (overheat)	X	- Water temperature sensor is normal operation (No failure detection) - After 60 seconds from when engine cranking has been completed successful	Temperature is more than the threshold (threshold:110 degC)	20[s]	-	(Selectable)	(Selectable)	(Selectable)	(Selectable)	(Selectable)		X					(Selectable)	(Selectable)			Fail safe action is applied to application menu.	- When recovery condition consists or - ECU Power OFF	Temperature is more than the threshold (threshold:95 degC)	60[s]	P0217	16	110	0	X	(Selectable)	(Selectable)
Sensor	New air temperature sensor	Voltage high	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is more than 4.85 V	500[ms]	25 [deg C]		X		X													ECU Power OFF	Voltage of sensor signal is less than 4.85 V	-	P0113	15	105	3	X		X
Sensor	New air temperature sensor	Voltage low	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is less than 0.15 V	500[ms]	25 [deg C]		X		X													ECU Power OFF	Voltage of sensor signal is more than 0.15 V	-	P0112	14	105	4	X		X
Sensor	Fuel temperature sensor	Voltage high	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is more than 4.8 V	500[ms]	Water temperature is substituted.				X													ECU Power OFF	Voltage of sensor signal is less than 4.8 V	-	P0183	15	174	3	X		X
Sensor	Fuel temperature sensor	Voltage low	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is less than 0.2 V	500[ms]	Water temperature is substituted.				X													ECU Power OFF	Voltage of sensor signal is more than 0.2 V	-	P0182	14	174	4	X		X
Sensor	Fuel temperature sensor	High temperature	X	Fuel temperature sensor is normal operation (No failure detection)	Engine is running and Fuel temperature is more than the threshold (threshold:90 degC)	60[s]	-	(Selectable)	(Selectable)	(Selectable)	(Selectable)	(Selectable)							(Selectable)	(Selectable)			Fail safe action is applied to application menu.	- When recovery condition consists or - ECU Power OFF	Fuel temperature is below the threshold (threshold:80 degC)	60[s]	P0168	16	174	0	X	(Selectable)	(Selectable)
Sensor	Rail pressure sensor	Voltage high	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is more than 4.75 V	200[ms]		X	X	X			X	X										ECU Power OFF	Voltage of sensor signal is less than 4.75 V	-	P0193	15	157	3	X	X	

Fault diagnosis / failsafe table (Under 56kW)

Item 1	Item 2	Fault	Under 56kW	Prerequisite condition	Detection condition	Detection duration	Sensor default value	Engine Stop	Rotation Limit (1800 min^{-1})	Rotation Limit (1500 min^{-1})	Max. Inj. Amount Limit (75%)	Max. Inj. Amount Limit (50%)	Rail Pressure Limit	EGR Command Full-Close	Suction Air Throttle Full-Opx	Rail Pressure Back-up Control	DPF Regeneration Stop	Deposit Amount Calc. Stop Depending on DPF	Engine stop 1 w/ delay (2 hour)	Engine stop 2 w/ delay (15 min)	Failure bank injection stop	Failure cylinder injection stop	Note	Recovery timing	Recovery condition	Recovery duration	DTC (HEX)	Failure Type	SPN (DEC)	FMI (DEC)	MIL	RSL	AWL
Sensor	Rail pressure sensor	Voltage low	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is less than 0.24 V	200[ms]		X		X	X		X	X										ECU Power OFF	Voltage of sensor signal is more than 0.24 V	-	P0192	14	157	4	X	X	
Sensor	DPF differential pressure sensor	Voltage high	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is more than 4.8 V	500[ms]	0[hPa]	X		X				X			X	X		X				ECU Power OFF	Voltage of sensor signal is less than 4.8 V	-	P2455	15	3251	3	X	X	
Sensor	DPF differential pressure sensor	Voltage low	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is less than 0.2 V	500[ms]	0[hPa]	X		X				X			X	X		X				ECU Power OFF	Voltage of sensor signal is more than 0.2 V	-	P2454	14	3251	4	X	X	
Sensor	DPF high-pressure side sensor	Voltage high	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is more than 4.8 V	1.0[s]	0[hPa]	X		X				X			X			X				ECU Power OFF	Voltage of sensor signal is less than 4.8 V	-	P1455	15	3609	3	X	X	
Sensor	DPF high-pressure side sensor	Voltage low	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is less than 0.2 V	1.0[s]	0[hPa]	X		X				X			X			X				ECU Power OFF	Voltage of sensor signal is more than 0.2 V	-	P1454	14	3609	4	X	X	
Sensor	DPF inlet temperature sensor	Voltage high	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is more than 4.8 V	500[ms]	998.960[deg C]	X		X				X	X		X			X				ECU Power OFF	Voltage of sensor signal is less than 4.8 V	-	P1428	15	3242	3	X	X	
Sensor	DPF inlet temperature sensor	Voltage low	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is less than 0.2 V	500[ms]	998.960[deg C]	X		X				X	X		X			X				ECU Power OFF	Voltage of sensor signal is more than 0.2 V	-	P1427	14	3242	4	X	X	
Sensor	DPF intermediate temperature sensor	Voltage high	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is more than 4.8 V	500[ms]	998.960[deg C]	X		X				X	X		X			X				ECU Power OFF	Voltage of sensor signal is less than 4.8 V	-	P1434	15	3250	3	X	X	
Sensor	DPF intermediate temperature sensor	Voltage low	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is less than 0.2 V	500[ms]	998.960[deg C]	X		X				X	X		X			X				ECU Power OFF	Voltage of sensor signal is more than 0.2 V	-	P1435	14	3250	4	X	X	
Sensor	Atmospheric pressure sensor	Voltage high	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is more than 4.8 V	500[ms]	900[hPa]	X		X														ECU Power OFF	Voltage of sensor signal is less than 4.8 V	-	P2229	15	108	3	X		X
Sensor	Atmospheric pressure sensor	Voltage low	X	- ECU does not control starter - Sensor supply voltage is normal range - AD converter is normal operation	Voltage of sensor signal is less than 0.2 V	500[ms]	900[hPa]	X		X														ECU Power OFF	Voltage of sensor signal is more than 0.2 V	-	P2228	14	108	4	X		X
Sensor	Atmospheric pressure sensor	Abnormal atmospheric pressure	X	- Atmospheric pressure sensor is normal operation - EGR high-pressure side sensor is normal operation - EGR low-pressure side sensor is normal operation	- Absolute value of final offset value of intake manifold pressure >= 5 kPa and - Absolute value of final offset value of exhaust manifold pressure >= 5 kPa *"intake manifold pressure" means "EGR low-pressure side" *"Exhaust manifold pressure" means "EGR high-pressure side"	100[ms]	-	X		X				X										ECU Power OFF	ECU Power OFF	-	P1231	0	108	10	X		X
Sensor	EGR gas temperature sensor	Voltage high	X	- ECU does not control starter	Voltage of sensor signal is more than 4.8 V	500[ms]	999[°C]	X		X				X										ECU Power OFF	Voltage of sensor signal is less than 4.8 V	-	P041D	0	412	3	X		X
Sensor	EGR gas temperature sensor	Voltage low	X	- ECU does not control starter	Voltage of sensor signal is less than 0.2 V	500[ms]	999[°C]	X		X				X										ECU Power OFF	Voltage of sensor signal is more than 0.2 V	-	P041C	0	412	4	X		X
Sensor	Intake air temperature sensor	Voltage high	X	- ECU does not control starter	Voltage of sensor signal is more than 4.8 V	500[ms]	999[°C]	X		X				X	X		X	X		X				ECU Power OFF	Voltage of sensor signal is less than 4.8 V	-	P040D	0	105	3	X	X	
Sensor	Intake air temperature sensor	Voltage low	X	- ECU does not control starter	Voltage of sensor signal is less than 0.2 V	500[ms]	999[°C]	X		X				X	X		X	X		X				ECU Power OFF	Voltage of sensor signal is more than 0.2 V	-	P040C	0	105	4	X	X	
Sensor	Exhaust temperature sensor	Voltage high	X	- ECU does not control starter	Voltage of sensor signal is more than 4.8 V	500[ms]		X		X				X										ECU Power OFF	Voltage of sensor signal is less than 4.8 V	-	P0546	0	173	3	X		X
Sensor	Exhaust temperature sensor	Voltage low	X	- ECU does not control starter	Voltage of sensor signal is less than 0.2 V	500[ms]		X		X				X										ECU Power OFF	Voltage of sensor signal is more than 0.2 V	-	P0545	0	173	4	X		X
Digital Output	Main relay	Relay contact stuck	X	When ECU conducts shutdown sequence	Main relay is not opened after 150ms from when the ECU shutdown has been done	-			X			X												ECU Power OFF	Main relay is opened after 150ms from when the ECU shutdown has been done	-	P068B	71	1485	7	X		
Digital Output	Main relay	Power-off without self-hold	X	When ECU conducts initialization	ECU power-off without self-hold	-			X			X												ECU Power OFF	ECU power-off with self-hold	-	P068A	1F	1485	2	X		
Digital Output	Start assist relay	Disconnection	X	When ECU controls the relay OFF	Driver voltage that the ECU internal circuit detects is more than 3 V	-			X			X												ECU Power OFF	Driver voltage that the ECU internal circuit detects is less than 3 V when ECU controls the relay OFF	-	P0543	18	522243	5	X		
Digital Output	Start assist relay	GND short-circuit	X	When ECU controls the relay ON	Driver voltage that the ECU internal circuit detects is less than 2.8 V	-			X			X												ECU Power OFF	Driver voltage that the ECU internal circuit detects is less than 2.8 V when ECU controls the relay ON	-	P0541	19	522243	6	X		
CRS	Injector 1 4TNV : CylNo.4 3TNV : CylNo.3 Port : 4TNV : 1-2 3TNV : 1-3	Disconnection	X	(under confirmation)	Disconnection is detected by the drive circuit.	-		X		X				X						X		X		ECU Power OFF	Disconnection of low side or high side are not detected by the drive circuit.	-	P0204(4TNV) P0203(3TNV)	18	651(4TNV) 652(3TNV)	5	X	X	
CRS	Injector 1 4TNV : CylNo.4 3TNV : CylNo.3 Port : 4TNV : 1-2 3TNV : 1-3	Short circuit (inner coil)	X	(under confirmation)	Layer short-circuit in injector coil	-		X		X				X						X		X		ECU Power OFF	Layer short-circuit in injector coil does not occur	-	P0271(4TNV) P0268(3TNV)	19	651(4TNV) 652(3TNV)	6	X	X	

Item 1	Item 2	Fault	Application model Under 56kW	Failure decision Prerequisite condition (Under 56kW)	Detection condition (Under 56kW)	Detection duration (Under 56kW)	Sensor default value (Under 56kW)	Engine Stop	Rotation Limit (1800 min⁻¹)	Rotation Limit (1500 min⁻¹)	Max. Injection Amount Limit (75%)	Max. Injection Amount Limit (50%)	Rail Pressure Limit	EGR Command Full-Close	Suction Air Throttle Full-Opx	Rail Pressure Back-up Control	DPF Regeneration Stop	Deposit Amount Calculation Stop Depending on DPF	Engine stop 1 with delay time (2 hour)	Engine stop 2 with delay time (15 minutes)	Failure bank injection stop	Failure cylinder injection stop	Note	Recovery timing (Under 56kW)	Recovery condition (Under 56kW)	Recovery duration	DTC	Failure Type (HEX)	SPN (DEC)	FMI (DEC)	MIL	RSL	AWL
CRS	Injector 1 4TNV: CylNo.4 3TNV: CylNo.3 Port: 4TNV: 1-2 3TNV: 1-3	Short circuit	X	(under confirmation)	VB short-circuit of low side is detected by the drive circuit.	-			X		X			X					X			X		ECU Power OFF	VB short-circuit of low side is not detected by the drive circuit.	-	P1271(4TNV) P1262(3TNV)	15	651(4TNV) 652(3TNV)	3	X	X	
CRS	Injector 1 4TNV: CylNo.4 3TNV: CylNo.3 Port: 4TNV: 1-2 3TNV: 1-3	Unclassified	X	(under confirmation)	Multiple failure related to injector	-			X		X			X					X			X		ECU Power OFF	Multiple failure related to injector does not occur	-	P1272(4TNV) P1263(4TNV)	00	651(4TNV) 652(3TNV)	11	X	X	
CRS	Injector 2 4TNV: CylNo.2 3TNV: CylNo.2 Port: 4TNV: 2-1 3TNV: 1-2	Disconnection	X	(under confirmation)	Disconnection is detected by the drive circuit.	-			X		X			X					X			X		ECU Power OFF	Disconnection of low side or high side are not detected by the drive circuit.	-	P0202	18	653	5	X	X	
CRS	Injector 2 4TNV: CylNo.2 3TNV: CylNo.2 Port: 4TNV: 2-1 3TNV: 1-2	Short circuit (inner coil)	X	(under confirmation)	Layer short-circuit in injector coil	-			X		X			X					X			X		ECU Power OFF	Layer short-circuit in injector coil does not occur	-	P0265	19	653	6	X	X	
CRS	Injector 2 4TNV: CylNo.2 3TNV: CylNo.2 Port: 4TNV: 2-1 3TNV: 1-2	Short circuit	X	(under confirmation)	VB short-circuit of low side is detected by the drive circuit.	-			X		X			X					X			X		ECU Power OFF	VB short-circuit of low side is not detected by the drive circuit.	-	P1265	15	653	3	X	X	
CRS	Injector 2 4TNV: CylNo.2 3TNV: CylNo.2 Port: 4TNV: 2-1 3TNV: 1-2	Unclassified	X	(under confirmation)	Multiple failure related to injector	-			X		X			X					X			X		ECU Power OFF	Multiple failure related to injector does not occur	-	P1266	00	653	11	X	X	
CRS	Injector 3 4TNV: CylNo.1 3TNV: CylNo.1 Port: 4TNV: 2-2 3TNV: 1-1	Disconnection	X	(under confirmation)	Disconnection is detected by the drive circuit.	-			X		X			X					X			X		ECU Power OFF	Disconnection of low side or high side are not detected by the drive circuit.	-	P0201	18	654	5	X	X	
CRS	Injector 3 4TNV: CylNo.1 3TNV: CylNo.1 Port: 4TNV: 2-2 3TNV: 1-1	Short circuit (inner coil)	X	(under confirmation)	Layer short-circuit in injector coil	-			X		X			X					X			X		ECU Power OFF	Layer short-circuit in injector coil does not occur	-	P0262	19	654	6	X	X	
CRS	Injector 3 4TNV: CylNo.1 3TNV: CylNo.1 Port: 4TNV: 2-2 3TNV: 1-1	Short circuit	X	(under confirmation)	VB short-circuit of low side is detected by the drive circuit.	-			X		X			X					X			X		ECU Power OFF	VB short-circuit of low side is not detected by the drive circuit.	-	P1262	15	654	3	X	X	
CRS	Injector 3 4TNV: CylNo.1 3TNV: CylNo.1 Port: 4TNV: 2-2 3TNV: 1-1	Unclassified	X	(under confirmation)	Multiple failure related to injector	-			X		X			X					X			X		ECU Power OFF	Multiple failure related to injector does not occur	-	P1263	00	654	11	X	X	
CRS	Injector 4 4TNV: CylNo.3 Port: 4TNV: 1-1	Disconnection	X	(under confirmation)	Disconnection is detected by the drive circuit.	-			X		X			X					X			X		ECU Power OFF	Disconnection of low side or high side are not detected by the drive circuit.	-	P0203	18	652	5	X	X	
CRS	Injector 4 4TNV: CylNo.3 Port: 4TNV: 1-1	Short circuit (inner coil)	X	(under confirmation)	Layer short-circuit in injector coil	-			X		X			X					X			X		ECU Power OFF	Layer short-circuit in injector coil does not occur	-	P0268	19	652	6	X	X	
CRS	Injector 4 4TNV: CylNo.3 Port: 4TNV: 1-1	Short circuit	X	(under confirmation)	VB short-circuit of low side is detected by the drive circuit.	-			X		X			X					X			X		ECU Power OFF	VB short-circuit of low side is not detected by the drive circuit.	-	P1268	15	652	3	X	X	
CRS	Injector 4 4TNV: CylNo.3 Port: 4TNV: 1-1	Unclassified	X	(under confirmation)	Multiple failure related to injector	-			X		X			X					X			X		ECU Power OFF	Multiple failure related to injector does not occur	-	P1269	00	652	11	X	X	
CRS	Injector driver circuit	Injector driving IC error	X	-	Driving IC fault detected	-			X		X			X					X			X		ECU Power OFF	Driver IC is normal operation	-	P0611	92	4257	12	X	X	
CRS	Injector (common)	Driving circuit (Bank 1) short-circuit (4TN: No. 1, 4 and 3TN : all cylinders common circuit)	X	(under confirmation)	The following short-circuit is detected by the drive circuit - VB short-circuit of high side port or - GND short-circuit of high side port and low side port	-			X		X			X					X		X			ECU Power OFF	The following short-circuit is not detected by the drive circuit - VB short-circuit of high side port or - GND short-circuit of high side port and low side port	-	P1146	19	2797	6	X	X	
CRS	Injector (common)	Driving circuit (Bank 2) short-circuit (4TN: No. 2, 3 cylinder circuit)	X	(under confirmation)	The following short-circuit is detected by the drive circuit - VB short-circuit of high side port or - GND short-circuit of high side port and low side port	-			X		X			X					X		X			ECU Power OFF	The following short-circuit is not detected by the drive circuit - VB short-circuit of high side port or - GND short-circuit of high side port and low side port	-	P1149	19	2798	6	X	X	
CRS	SCV(MPROP)	Low side VB short-circuit	X	(under confirmation)	VB short-circuit on actuator low side is detected by the ECU internal IC.	300[ms]		X	X		X			X										ECU Power OFF	VB short-circuit is not detected by the ECU internal IC.	-	P1641	15	522571	3	X	X	

Item 1	Item 2	Fault	Application model Under 56kW	Prerequisite condition (Under 56kW)	Detection condition (Under 56kW)	Detection duration	Sensor default value (Under 56kW)	Engine Stop	Rotation Limit (1800 min^{-1})	Rotation Limit (1500 min^{-1})	Max. Injection Amount Limit (75%)	Max. Injection Amount Limit (50%)	Rail Pressure Limit	EGR Command Full-Close	Suction Air Throttle Full-Close	Rail Pressure Back-up Control	DPF Regeneration Stop	Deposit Amount Calculation Stop Depending on DPF	Engine stop 1 with delay time (2 hour)	Engine stop 2 with delay time (15 minutes)	Failure bank injection stop	Failure cylinder injection stop	Note	Recovery timing (Under 56kW)	Recovery condition (Under 56kW)	Recovery duration	DTC	Failure Type (HEX)	SPN (DEC)	FMI (DEC)	MIL	RSL	AWL
CRS	SCV(MPROP)	High side GND short-circuit	X	(under confirmation)	GND short-circuit on actuator high side is detected by the ECU internal IC.	300[ms]	-	X	X		X		X		X									ECU Power OFF	GND short-circuit is not detected by the ECU internal IC.	-	P1642	18	633	6	X	X	
CRS	SCV(MPROP)	Disconnection	X	(under confirmation)	Disconnection is detected by the ECU internal IC.	300[ms]	-	X	X		X		X		X									ECU Power OFF	Disconnection is not detected by the ECU internal IC.	-	P0627	18	633	5	X	X	
CRS	Rail pressure fault	Over-pressure rail error	X	Rail pressure sensor is normal operation (No failure detection)	Rail pressure is more then 170[MPa]	5(s)	-	X																ECU Power OFF	Rail pressure is less then 170[MPa]	-	P0088	17	157	0	X	X	
CRS	Rail pressure fault	Rail pressure deviation error when actual pressure is too low	X	Rail pressure sensor is normal operation (No failure detection)	Actual rail pressure is less than target rail pressure, the difference between those pressure is more than 20[MPa]	3(s)	-	X																ECU Power OFF	Actual rail pressure is less than target rail pressure, the difference between those pressure is less than 20[MPa]	-	P0094	17	157	18	X	X	
CRS	Rail pressure fault	Rail pressure deviation error when actual pressure is too high	X	Rail pressure sensor is normal operation (No failure detection)	Actual rail pressure is more than target rail pressure, the difference in those pressure is more than 20[MPa]	5(s)	-	X																ECU Power OFF	Actual rail pressure is more than target rail pressure, the difference between those pressure is less than 20[MPa]	-	P0093	16	157	15	X	X	
CRS	PLV	PLV open-valve	X	-	PLV (pressure control valve) open-valve detected	-	-	X																ECU Power OFF	PLV (pressure control valve) close-valve detected	-	P000F	92	157	16	X	X	
The others	Overspeed	Overrotation	X	-	When actual engine speed is more than Rated Speed + 300 min^{-1}	70[ms]	-	X																ECU Power OFF		-	P0219	17	190	16	X	X	
Actuator	Suction air throttle driven circuit	No-load of driving circuit	X	(under confirmation)	Detection of no-load (disconnection) of H bridge	2[s]	-		X	X			X				X			X			Throttle valve is full-opened by stopping energizing to the throttle	ECU Power OFF	No detection of no-load (disconnection) of H bridge	-	P0660	18	2950	5	X	X	
Actuator	Suction air throttle driven circuit	Power supply short-circuit of driving output 1	X	(under confirmation)	Detection of power supply short-circuit on output plug of H bridge 1	500[ms]	-		X	X			X	X			X			X				ECU Power OFF	No detection of power supply short-circuit on output plug of H bridge 1	-	P1658	15	2950	3	X	X	
Actuator	Suction air throttle driven circuit	Power supply short-circuit of driving output 2	X	(under confirmation)	Detection of power supply short-circuit on output plug of H bridge 2	500[ms]	-		X	X			X	X			X			X				ECU Power OFF	No detection of power supply short-circuit on output plug of H bridge 2	-	P1661	15	2951	3	X	X	
Actuator	Suction air throttle driven circuit	GND short-circuit of driving output 1	X	(under confirmation)	Detection of GND short-circuit on output plug of H bridge 1	500[ms]	-		X	X			X	X			X			X				ECU Power OFF	No detection of GND short-circuit on output plug of H bridge 1	-	P1659	14	2950	4	X	X	
Actuator	Suction air throttle driven circuit	GND short-circuit of driving output 2	X	(under confirmation)	Detection of GND short-circuit on output plug of H bridge 2	500[ms]	-		X	X			X	X			X			X				ECU Power OFF	No detection of GND short-circuit on output plug of H bridge 2	-	P1662	14	2951	4	X	X	
Communication	TSC1(CAN message)	Reception message time out error	X	- After 2 seconds from when key switch has been turned on - ECU does not control starter - Key switch is not turned off - ECU power supply is more than 10V	ECU does not receive the message for TSC1	50[ms]	-																Fail safe action is applied to application menu.	ECU Power OFF	Normal communication is conducted	-	U0292	82	522596	9	X		X
Communication	Y_ECR1(CAN message)	Reception message time out error	X	- After 2 seconds from when key switch has been turned on - ECU does not control starter - Key switch is not turned off - ECU power supply is more than 10V	ECU does not receive the message for Y_ECR1	250[ms]	-																Fail safe action is applied to application menu.	ECU Power OFF	Normal communication is conducted	-	U1292	82	522599	9	X		X
Communication	Y_EC(CAN message)	TBD																					Fail safe action application menu										
Communication	Y_RSS(CAN message)	TBD																					Fail safe action application menu										
Communication	VH(CAN message)	TBD																					Fail safe action application menu										
Communication	Y_ETCP1(CAN message)	TBD																					Fail safe action menu										
Communication	Y_DPFIF(CAN message)	TBD																					Fail safe action application menu										
Communication	EGR	CAN1(for EGR) : Time out error (received message)	X	After 2 seconds from when key switch has been turned on	ECU does not receive the message for EGR	500[ms]	-		X		X		X											ECU Power OFF	Normal communication with EGR is conducted	-	U010B	92	522610	9	X		X
Communication	EGR	CAN1(for EGR) : Data Length Code error (received message)	X	After 2 seconds from when key switch has been turned on	CAN packet length is not matched from EGR valve	1000[ms]	-		X		X		X											ECU Power OFF	Normal communication with EGR is conducted	-	U040C	92	522610	19	X		X
Actuator	EGR	Disconnection in motor coil	X	ECU judges by receiving data from EGR	Disconnection in motor is detected	0	-		X		X		X											ECU Power OFF	Disconnection in motor is not detected	-	P0403	92	2791	12	X		X
Actuator	EGR	Short-circuit in motor coil	X	ECU judges by receiving data from EGR	Overcurrent by short-circuit in motor coil is detected	0	-		X		X		X											ECU Power OFF	Overcurrent by short-circuit in motor coil is not detected	-	P1405	92	2791	12	X		X
Actuator	EGR	Position sensor fault	X	ECU judges by receiving data from EGR	Position sensor signal is over-voltage or under-voltage	0	-		X		X		X											ECU Power OFF	Position sensor signal is not over-voltage or under-voltage	-	P0488	92	2791	12	X		X
Actuator	EGR	Feedback fault	X	ECU judges by receiving data from EGR	Over-duty to motor driving is detected	0	-			X		X	X											ECU Power OFF	Over-duty to motor driving is not detected	-	P1409	71	2791	7	X		X
Actuator	EGR	Valve stuck open fault	X	ECU judges by receiving data from EGR	The number of step from all-open to all-close is abnormal when initializing (more than 45 steps)	0	-			X		X	X											ECU Power OFF	The number of step from all-open to all-close is normal when initializing (less than 45 steps)	-	P148A	71	2791	7	X		X
Actuator	EGR	Initialize fault	X	ECU judges by receiving data from EGR	Initializing process time is longer than specified	0	-		X		X		X											ECU Power OFF	Initializing process time is specified range	-	P049D	71	2791	7	X		X
Actuator	EGR	ECM data fault	X	ECU judges by receiving data from EGR	Instruction packet cut-off from ECU is detected	0	-		X		X		X											ECU Power OFF	Instruction packet from ECU is transmitted constantly	-	U0401	82	2791	9	X		X

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Item 1	Item 2	Fault	Under 56kW	Prerequisite condition (Under 56kW)	Detection condition (Under 56kW)	Detection duration	Sensor default value	Engine Stop	Rotation Limit (1800 min⁻¹)	Rotation Limit (1500 min⁻¹)	Max. Injection Amount Limit (75%)	Max. Injection Amount Limit (50%)	Rail Pressure Limit	EGR Command Full-Close	Suction Air Throttle Full-Opx	Rail Pressure Back-up Control	DPF Regeneration Stop	Deposit Amount Calculation Stop Depending on DPF	Engine stop 1 with delay time (2 hour)	Engine stop 2 with delay time (15 minutes)	Failure bank injection stop	Failure cylinder injection stop	Note	Recovery timing (Under 56kW)	Recovery condition (Under 56kW)	Recovery duration	DTC (HEX)	Failure Type (DEC)	SPN (DEC)	FMI (DEC)	MIL	RSL	AWL
Actuator	EGR	Out of target value range	X	ECU judges by receiving data from EGR	Out-of-range of the target position from ECU is detected	0	-		X	X				X										ECU Power OFF	Target position from ECU is normal range	-	U0401	92	2791	12	X		X
Actuator	EGR	Over-voltage fault	X	ECU judges by receiving data from EGR	Supply voltage to EGRV is more than 18 V for more than 5 seconds	0	-		X	X				X										ECU Power OFF	Supply voltage to EGRV is less than 18 V	-	P0404	17	2791	0	X		X
Actuator	EGR	Under-voltage fault	X	ECU judges by receiving data from EGR	Supply voltage to EGRV is less than 8 V for more than 13 seconds	0	-		X	X				X										ECU Power OFF	Supply voltage to EGRV is more than 8 V	-	P0404	16	2791	1	X		X
Actuator	EGR	High-temperature thermistor fault	X	ECU judges by receiving data from EGR	Internal high-temperature side of control unit thermistor voltage is less than 0.2 V	0	-		X	X				X										ECU Power OFF	Internal high-temperature side of control unit thermistor voltage is less than 0.2 V	-	P1410	16	2791	1	X		X
Actuator	EGR	Low-temperature thermistor fault	X	ECU judges by receiving data from EGR	Internal low-temperature side of control unit thermistor voltage is less than 0.2 V	0	-		X	X				X										ECU Power OFF	Internal low-temperature side of control unit thermistor voltage is more than 0.2 V	-	P1411	16	2791	1	X		X
ECU	EEPROM	EEPROM memory deletion error	X	-	(under confirmation)	-	-		X	X				X										ECU Power OFF		-	P0601	92	630	12	X	X	
ECU	EEPROM	EEPROM memory read error	X	-	(under confirmation)	-	-		X	X				X										ECU Power OFF		-	P160E	92	630	12	X	X	
ECU	EEPROM	EEPROM memory write error	X	-	(under confirmation)	-	-		X	X				X										ECU Power OFF		-	P160F	92	630	12	X	X	
ECU	ECU internal failure	WDA/ABE communication error	X	(under confirmation)	(under confirmation)	-	-	X																ECU Power OFF		-	P1607	92	522994	12	X	X	
ECU	ECU internal failure	CY146 SPI communication error	X	(under confirmation)	(under confirmation)	50[ms]	-	X																ECU Power OFF	(under confirmation)	0[ms]	P1613	92	522994	12	X	X	
ECU	ECU internal failure	CY320 SPI communication error	X	(under confirmation)	(under confirmation)	50[ms]	-	X																ECU Power OFF	(under confirmation)	0[ms]	P1615	92	522994	12	X	X	
ECU	ECU internal failure	R2S2 MSC communication error	X	(under confirmation)	(under confirmation)	50[ms]	-	X																ECU Power OFF	(under confirmation)	0[ms]	P1616	92	522994	12	X	X	
ECU	ECU internal failure	Sensor power supply 1 voltage : too high	X	(under confirmation)	(under confirmation)	50[ms]	-	X																ECU Power OFF	(under confirmation)	0[ms]	P1608	92	522994	12	X	X	
ECU	ECU internal failure	Sensor power supply 1 voltage : too low	X	(under confirmation)	(under confirmation)	50[ms]	-	X																ECU Power OFF	(under confirmation)	0[ms]	P1617	92	522994	12	X	X	
ECU	ECU internal failure	Sensor power supply 1 (5 V): Voltage error	X	(under confirmation)	(under confirmation)	50[ms]	-	X																ECU Power OFF	(under confirmation)	0[ms]	P1609	92	522994	12	X	X	
ECU	ECU internal failure	Sensor power supply 2 (5 V): Voltage error	X	(under confirmation)	(under confirmation)	50[ms]	-	X																ECU Power OFF	(under confirmation)	0[ms]	P1618	92	522994	12	X	X	
ECU	ECU internal failure	Sensor power supply 3 (5 V): Voltage error	X	(under confirmation)	(under confirmation)	50[ms]	-	X																ECU Power OFF	(under confirmation)	0[ms]	P1619	92	522994	12	X	X	
ECU	ECU internal failure	Internal sensor power supply: Voltage-low	X	(under confirmation)	(under confirmation)	50[ms]	-	X																ECU Power OFF	(under confirmation)	0[ms]	P1624	92	522994	12	X	X	
ECU	ECU internal failure	Actuator driver circuit 1VB short	X	(under confirmation)	(under confirmation)	-	-																	ECU Power OFF		-	P160A	15	522994	3	X	X	
ECU	ECU internal failure	Actuator driver circuit 2VB short	X	(under confirmation)	(under confirmation)	-	-																	ECU Power OFF		-	P1625	15	522994	3	X	X	
ECU	ECU internal failure	Actuator driver circuit 1GND short	X	(under confirmation)	(under confirmation)	-	-																	ECU Power OFF		-	P1626	14	522994	4	X	X	
ECU	ECU internal failure	Actuator driver circuit 2GND short	X	(under confirmation)	(under confirmation)	-	-																	ECU Power OFF		-	P1633	14	522994	4	X	X	
ECU	ECU internal failure	ECU soft reset 1	X	(under confirmation)	(under confirmation)	-	-																	ECU Power OFF		-	P160B	00	522994	11	X	X	
ECU	ECU internal failure	ECU soft reset 2	X	(under confirmation)	(under confirmation)	-	-																	ECU Power OFF		-	P1636	00	522994	11	X	X	
ECU	ECU internal failure	ECU soft reset 3	X	(under confirmation)	(under confirmation)	-	-																	ECU Power OFF		-	P1637	00	522994	11	X	X	
ECU	ECU internal failure	WDA/ABE shut off (Too low voltage)	X	(under confirmation)	(under confirmation)	-	-	X																ECU Power OFF		-	P160D	92	522994	12	X	X	
ECU	ECU internal failure	WDA/ABE shut off (Too high voltage)	X	(under confirmation)	(under confirmation)	-	-	X																ECU Power OFF		-	P1639	92	522994	12	X	X	
ECU	ECU internal failure	WDA/ABE shut off (Operation malfunction)	X	(under confirmation)	(under confirmation)	-	-	X																ECU Power OFF		-	P1640	92	522994	12	X	X	
Digital Input	Air cleaner switch	Air cleaner blockage alarm	X	- Key switch is turned on - Battery voltage is more then 9 V	Air cleaner switch is turned on	10[s]	-	(Selectable)	(Selectable)	(Selectable)	(Selectable)	(Selectable)							(Selectable)	(Selectable)			Fail safe action is applied to application	ECU Power OFF	Air cleaner switch is turned off	-	P1101	17	522323	0	X	(Selectable)	(Selectable)
Digital Input	Oily water separator switch	Oily water separator alarm	X	- Key switch is turned on - Battery voltage is more then 9 V	Oily water separator switch is turned on	10[s]	-	(Selectable)	(Selectable)	(Selectable)	(Selectable)	(Selectable)							(Selectable)	(Selectable)			Fail safe action is applied to application menu.	ECU Power OFF	Oily water separator switch is turned off	-	P1151	17	522329	0	X	(Selectable)	(Selectable)
Digital Input	Charge switch	Disconnection	X	- Key switch is turned on - Judgement finish condition is not satisfied *Judgement finish condition : Judgement finishes when starter relay ON or engine speed is more than 45 rpm	Charge switch is turned off	1[s]	-	(Selectable)	(Selectable)	(Selectable)	(Selectable)	(Selectable)							(Selectable)	(Selectable)			Fail safe action is applied to application menu.	- When recovery condition consists - ECU Power OFF	Charge switch is turned off	0[s]	P1562	0	167	5	X	(Selectable)	(Selectable)
Digital Input	Charge switch	Charge failure	X	- Key switch is turned on - After engine cranking has been completed successful	Charge switch is turned on	10[s]	-	(Selectable)	(Selectable)	(Selectable)	(Selectable)	(Selectable)							(Selectable)	(Selectable)			Fail safe action is applied to application menu.	When recovery condition consists	Charge switch is turned off	0[s]	P1568	16	167	1	X	(Selectable)	(Selectable)
Digital Input	Oil pressure switch	Disconnection	X	- Engine speed is not reached to 45 rpm after key switch ON. Or starter is not energized after key switch ON. - Key switch is turned on - Battery voltage is more then 9 V	Oil pressure switch is turned off	1[s]	-	(Selectable)	(Selectable)	(Selectable)	(Selectable)	(Selectable)							(Selectable)	(Selectable)			Fail safe action is applied to application menu.	- When recovery condition consists - ECU Power OFF	Oil pressure switch is turned on	0[s]	P1192	14	100	4	X	(Selectable)	(Selectable)

Table (6/6) — Yanmar fault code / failsafe action list (Under 56kW)

Item 1	Item 2	Fault	Under 56kW	Prerequisite condition	Detection condition	Detection duration	Sensor default value	Engine Stop	Rotation Limit (1800 min^{-1})	Rotation Limit (1500 min^{-1})	Max. Injection Amount Limit (75%)	Max. Injection Amount Limit (50%)	Rail Pressure Limit	EGR Command Full-Close	Suction Air Throttle Full-Opx	Rail Pressure Back-up Control	DPF Regeneration Stop	Deposit Amount Calculation Stop Depending on DPF	Engine stop 1 with delay time (2 hour)	Engine stop 2 with delay time (15 minutes)	Failure bank injection stop	Failure cylinder injection stop	Note	Recovery timing	Recovery condition	Recovery duration	DTC (HEX)	Failure Type	SPN (DEC)	FMI (DEC)	MIL	RSL	AWL
Digital Input	Oil pressure switch	Oil pressure too low	X	- Key switch is turned on / - After engine cranking has been completed successful / - Battery voltage is more then 9 V / - After "delay time of oil pressure failure detection start" *) "delay time of oil pressure failure detection start" is calculated based on water temperature	Oil pressure switch is turned on	1[s]	-	(Selectable)	(Selectable)	(Selectable)	(Selectable)	(Selectable)							(Selectable)	(Selectable)			Fail safe action is applied to application menu.	ECU Power OFF		-	P1198	16	100	1	X	(Selectable)	(Selectable)
Aftertreatment control	DPF intermediate temperature sensor	Low temperature	X	- Exhaust temperature sensor is normal operation / - DPF inlet temperature sensor is normal operation / - DPF intermediate temperature sensor is normal operation	DPF regeneration defect timer 3 >= 1200s	1200[s]	-		X		X			X			X								ECU Power OFF	ECU power-off with self-hold	-	P0420	0	3250	1	X		X
Aftertreatment control	DPF	Over PM accumulation (C method)	X	- After engine cranking has been completed successful / - PM accumulation (C method) failure correction is not operated	PM accumulation by C method is more than 12g/L, then Stationary Regeneration Request Flag is "3"	300[ms]	-																		When recovery condition consists	Stationary Regeneration Request Flag is not "3"	0[s]	P2463	0	522573	0			
Aftertreatment control	DPF	Over PM accumulation (P method)	X	- After engine cranking has been completed successful / - PM accumulation (P method) calculation stop is not operated	PM accumulation by P method is more than 12g/L, then Stationary Regeneration Request Flag is "3"	300[ms]	-																		When recovery condition consists	Stationary Regeneration Request Flag is not "3"	0[s]	P1463	0	522574	0			
Aftertreatment control	DPF	Regeneration defect (Stationary regeneration failed)	X	-	Stationary regeneration is not completed within the regular time, then Stationary Regeneration Request Flag is "3"	0[s]	-																		When recovery condition consists	Stationary Regeneration Request Flag is not "3"	0[s]	P2458	0	522575	7			
Aftertreatment control	DPF	Regeneration defect (Stationary regeneration not operated)	X	-	Stationary regeneration is not operated within the regular time though stationary regeneration is requested, then Stationary Regeneration Request Flag is "3"	0[s]	-																		When recovery condition consists	Stationary Regeneration Request Flag is not "3"	0[s]	P2459	0	522577	11			
Aftertreatment control	DPF	Maintenance (Maintenance is not conducted during the regular time)	X	All of the following sensor is normal operation - DPF differential pressure sensor / - DPF high-pressure side sensor / - Ambient pressure sensor / - Fuel temperature sensor / - EGR low-pressure side sensor / - EGR high-pressure side sensor / - Intake air temperature sensor / - Fresh air temperature sensor / - EGR gas temperature sensor / - Exhaust temperature sensor / - Water temperature sensor / - DPF intermediate temperature sensor / - DPF inlet temperature sensor	All of the following condition is satisfied - After engine cranking has been completed successful / - Engine speed is more then 1800 min-1 / - After 300 seconds from when PM reset condition consists / - Before 900 seconds from when PM reset condition consists / - DPF differential pressure is more than the threshold A *the threshold A is calculated by MAP	30[s]	-		X		X			X					X					ECU Power OFF	ECU Power OFF	-	P1437	0	3251	16	X	X	
Aftertreatment control	DPF operator interface	Ash cleaning request 1	X		Ash accumulation is more than 50 g/L, then Ash Cleaning Request Flag is "1"	0[s]																		When recovery condition consists	Ash Cleaning Request Flag is not "1"	0[s]	P242F	0	3720	16	X		X
Aftertreatment control	DPF operator interface	Ash cleaning request 2	X		Ash accumulation is more than 60 g/L, then Ash Cleaning Request Flag is "2"	0[s]			X											X					When recovery condition consists	Ash Cleaning Request Flag is not "2"	0[s]	P1420	0	3720	0	X	X	
Aftertreatment control	DPF operator interface	Stationary regeneration standby	X	-	- Stationary regeneration mode is requested by except SW or CAN operation, then Stationary Regeneration Request Flag is "2" and - Stationary regeneration is not operated	0[s]	-																		When recovery condition consists	- Stationary Regeneration Request Flag is not "2" or - Stationary regeneration is operated	0[s]	P1421	0	3719	16	X		X
Aftertreatment control	DPF operator interface	BackUp mode	X	-	- BackUp mode is operated, then Stationary Regeneration Request Flag is "3"	0[s]	-		X			X		X					X					When recovery condition consists	- Stationary Regeneration Request Flag is not "3" or - Stationary regeneration is operated	0[s]	P1424	0	3719	0	X	X	
Aftertreatment control	DPF operator interface	Reset regeneration inhibit	X	-	- Reset regeneration is operated, then DPF Regeneration Mode Flag is "2" and - DPF regeneration inhibit switch is turned off (Disable)	0[s]	-																		When recovery condition consists	- DPF Regeneration Mode Flag is not "2" or - DPF regeneration inhibit switch is not turned off (Enable)	0[s]	-	-	-	-			
Aftertreatment control	DPF inlet temperature sensor	High temperature	X	DPF inlet temperature sensor is normal operation	DPF inlet temperature is more then 700 degC	15[s]	-					X													ECU Power OFF	DPF inlet temperature is less then 680 degC	-	P1436	0	3242	0	X		X
Aftertreatment control	DPF differential pressure sensor	High differential pressure	X	- DPF differential pressure sensor is normal operation / - After engine cranking has been completed successful	DPF differential pressure is more than 50 kPa	15[s]	-		X		X			X			X		X					ECU Power OFF	ECU Power OFF	-	P2452	0	3251	0	X	X	
Aftertreatment control	DPF intermediate temperature sensor	High temperature	X	- Regeneration(Post injection) is operated / - DPF intermediate temperature sensor is normal operation	DPF intermediate temperature is more than 700 degC	15[s]	-		X		X			X			X		X					ECU Power OFF	DPF intermediate temperature is less than 650 degC	-	P1426	0	3250	0	X	X	