NISSAN
FORKLIFT

SERVICE MANUAL & TECHNICAL BULLETIN

TB45 ENGINE

(GAS/LPG)

Model
F04 series
F05 series
1F4 series

SERVICE

PUBLICATION
SM08E-TB45G

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ENGINE GENERAL

SECTION EG

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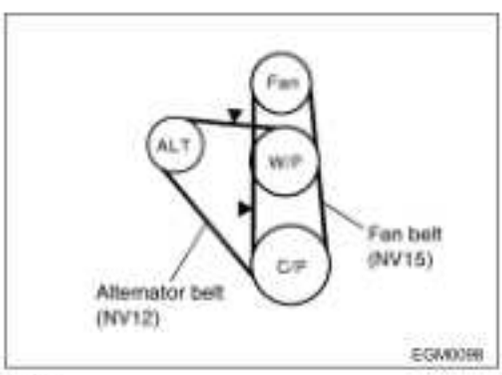
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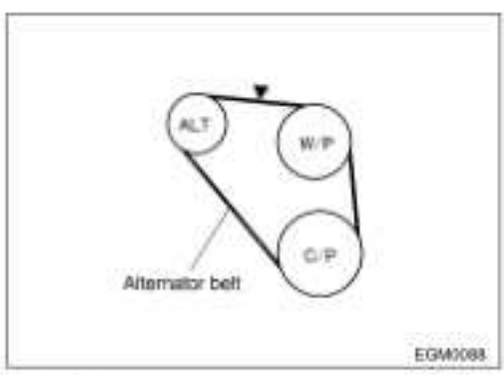
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Standard, Repair Limit

Fuel in use	Gasoline specification		Unleaded gasoline/octane rating 91 or more		
	LPG specification		20 - 100P		
Engine weight (without water, with oil) [kg (lb)]	LPG		Approx. 299 (659)		
	Combine		Approx. 300 (662)		
Firing order			1 - 5 - 3 - 6 - 2 - 4		
Compression pressure [kPa (bar, kgf/cm^2, psi)/rpm]	Standard		1,187 (11.87, 12.1, 172)/200		
	Repair limit		892 (8.92, 9.1, 129)/200		
	Difference limit among cylinders		98 (0.98, 1.0, 14)/200		
Distortion limit [mm (in)]	Intake manifold		0.2 (0.008)		
	Exhaust manifold		0.3 (0.012)		
	Cylinder head		0.2 (0.008)		
	Cylinder block		0.1 (0.004)		
Engine oil amount [l (US qt, Imp qt)] (SL class)	When replacing oil only		1F4: Approx. 8.3 (8-3/4, 7-1/4) F04/F05: Approx. 7.3 (6-3/8)		
	When replacing oil and filter		1F4: Approx. 8.6 (9-1/8, 7-5/8) F04/F05: Approx. 7.6 (6-3/4)		
Spark plug	Manufacturer/type/gap [mm (in)]		NGK/BPR4ES-D/0.8 - 0.9 (0.031 - 0.035)		
Resistance on high-tension cable (kΩ)			#1: Approx. 2.7 #2: Approx. 2.8 #3: Approx. 4 #4: Approx. 5 #5: Approx. 5.2 #6: Approx. 6.1		
Ignition advance device			Electronically controlled ignition advance		
Onboard idle speed (rpm)			700±50		
Onboard idling pace speed (When feedback control is stopped) (rpm)			700		
Density of CO at idle speed/Density of HC at idle speed (%/ppm)			0.1 or less/50 or less		
Ignition timing (When feedback control is stopped) (BTDC°/rpm)			10±2/700		
Valve clearance [mm (in)]	INT/EXH	Hot	0.35 (0.0138)/0.35 (0.0138)		
Thermostat opening valve temperature (Start - Full open) [°C (°F)]			82 - 95 (180 - 203)		
Engine drive belt deflection			New belt	After adjustment	Limit
[Measured by pressing with 98 N (10 kg, 22 lb)]	Alternator belt/Fan belt [mm (in)]		10 - 12 (0.39 - 0.47)	13 - 15 (0.51 - 0.59)	16 (0.63)



1F4



F04/F05

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Diagnosis Chart by Symptom

TB45 ENGINE RELATIONSHIP BETWEEN MALFUNCTIONING SYMPTOMS AND THE SENSOR CIRCUIT

The table below shows the possible symptoms caused by the malfunction of each sensor circuit.

Actuator malfunction ⊕ : Highly possible • : Possible		Symptoms	Im-possible to start		Im-possible to start		Poor idle					Poor driving control								Engine stall				Other				Description/notable characteristics of the symptom
			No initial combustion	Initial combustion	When engine is cold	When engine is warming up	Fast idle is not effective	High idle rpm	Low idle rpm	Inconsistent idle when engine is cold.	Inconstant idle when warming up	Poor power output	Poor acceleration	Engine rpm does not increase smoothly	During surge and acceleration	During surge and constant speed drive	Knocking	Backfire	After-burn	At idle	Driving	During deceleration	During a heavy load	Overheat	Poor fuel	Check that symptoms are classed with self-diagnosis	Check that symptoms are in fail-safe condition	
Crankshaft position sensor (POS, REF)		OPEN	⊕																	⊕	⊕	⊕	⊕			•		- An open circuit in either POS or REF signal makes it impossible for the vehicle to start. - Control signals for fuel system and ignition system are not output.
		Momentary open			•	•				•	•		•	•	•	•				⊕	•	•	•			•		- The symptom depends on the duration of momentary open circuit and the operating conditions. Slight shocks and surges may be sensed during driving, while engine stall may be caused during idle.
Mass air flow sensor	Signal	OPEN			•	•		⊕		•	•	•	•	•	•	•							•		•	•	•	- It will be fail-safe condition, and vehicle runs at an engine speed of 800 rpm or less.
		High output			•	•				•	•	•	•	•	•	•				•	•	•	•		•	•	•	- The air-fuel ratio becomes rich. Black smoke may accompany. Poor connection of grounding may be a possible cause.
		Low output			•	•				•	•	•	•	•	•	•	•	•		•	•	•	•		•	•	•	- The air-fuel ratio becomes lean. Contaminated hot wire or suction of air may be suspected.
	Ground	OPEN	⊕																	⊕	⊕	⊕	⊕		•			- It will be over-rich.
	Power supply	OPEN			•	•		⊕		•	•	•	•	•	•	•							•		•			- It will be fail-safe condition, and vehicle runs at an engine speed of 800 rpm or less.
Intake air temperature sensor		OPEN/ SHORT																							•	•		
Engine coolant temperature sensor		OPEN/ SHORT		•	•	•		•		•	•	•	•	•	•	•	•								•	•	•	- It will be fail-safe condition, and then MIL turns ON and perform STEP #1 overheat control. This malfunction tends to occur when engine is cold or when the engine coolant temperature is high.
		Resistance is large.		•	•	•		•			•	•	•	•	•	•				•	•	•	•	•	•			- The engine coolant temperature is judged as low. This malfunction tends to occur after warming up.
		Resistance is small.		•	•	•	•		•	•		•	•	•	•	•	•	•	•	•	•	•	•		•	•		- The engine coolant temperature is judged as high. This malfunction tends to occur when engine is cold.
Heated oxygen sensor		OPEN/ SHORT								•	•	•				•				•		•	•		•	•		- It will be base air-fuel ratio.
Vehicle speed sensor		OPEN/ SHORT																	•			•	•		•	•		- Duration of fuel cut becomes shorter or fuel may not be cut.

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SST Data Monitor Display

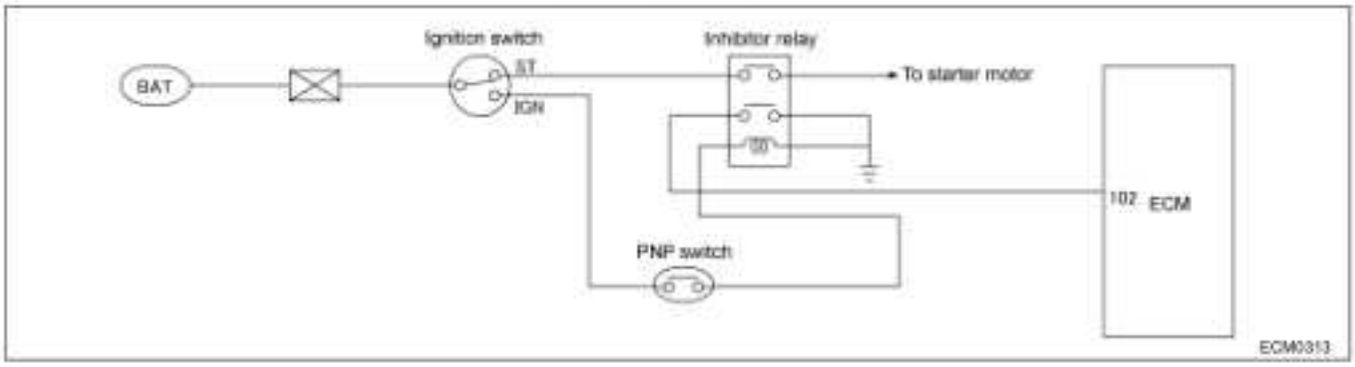
Monitor item	Neutral or N/P position	Other than the left
P/N POSI SW	ON	OFF

ECM Input/Output Signal Specifications

Measure voltage between terminals shown below and ground using a circuit tester.

Terminal	Signal name	Neutral or N/P position	Other than the left
102	PNP switch	Approx. 0V	Battery voltage (A/T models)

Circuit Diagram



Component Parts Inspection

INHIBITER SWITCH

Refer to "INHIBITER SWITCH".

NEUTRAL SWITCH

Refer to "POSITION SWITCH".

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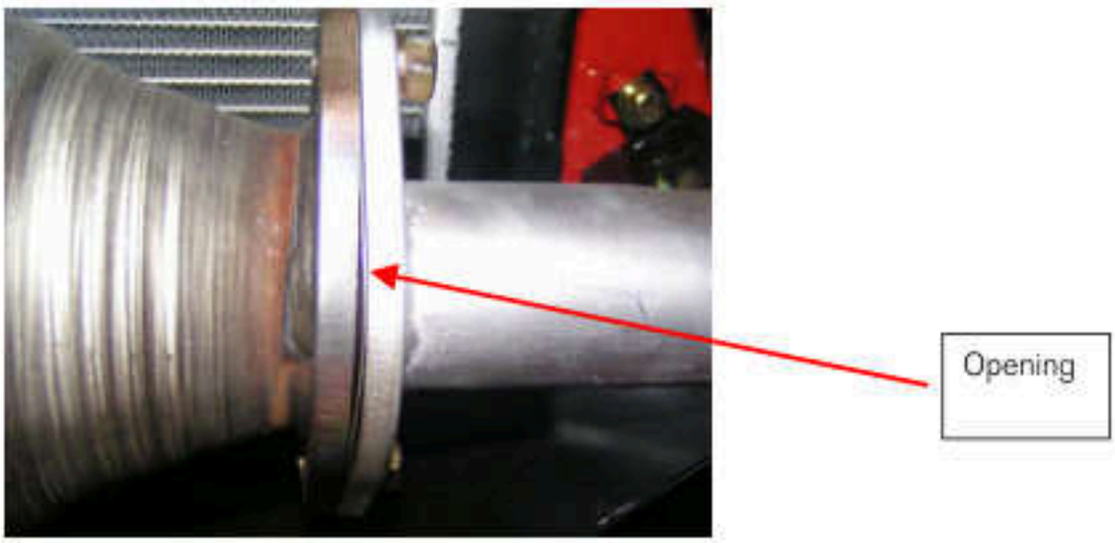
Service Bulletin

Issue : SB-0501
Date : May 2005

Model : F04 with TB45 Engine
Subject : Connection Catalytic converter leaking

1. Outline:

We received some reports that the exhaust emission could not be measured. Investigation showed that the connection between the exhaust pipe and the Catalytic converter is leaking.



2. Instruction:

At this moment our supplier is investigating the cause. As temporary solution we recommend to use special exhaust paste to close the gap and to measure the exhaust emission.

The following values are to be expected:

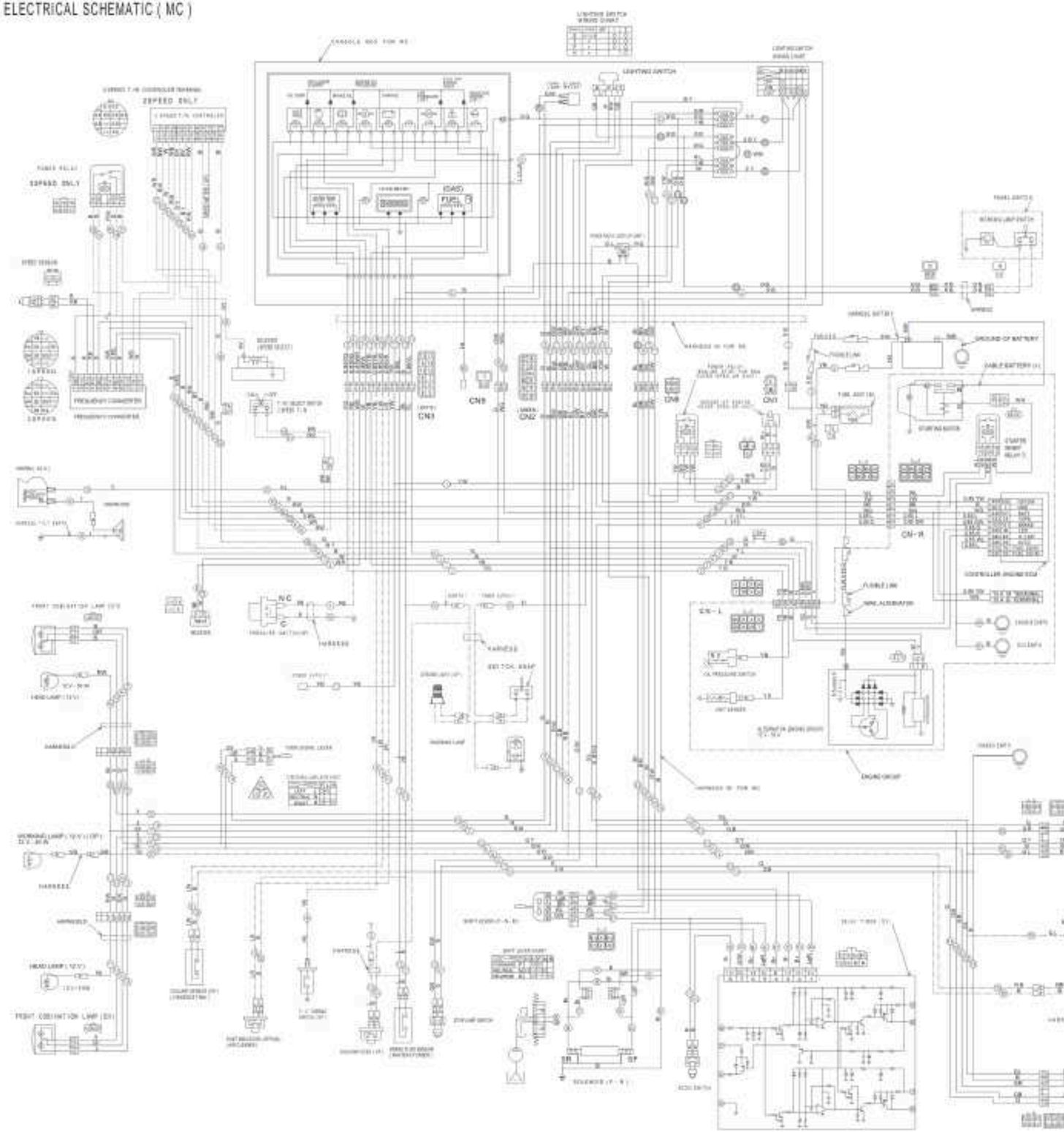
CO% idle	HC PPM idle	NOx PPM idle
0.1 or less	50 or less	250 or less

Service note: All readings must be taken when the operating Systems reach normal operating temperatures, as listed below.

The information in this bulletin should not be interpreted as basis for claims, unless so designated.
Whenever you order parts, refer to the parts bulletin, not to this Service Bulletin.

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ELECTRICAL SCHEMATIC (MC)



BLACK	WHITE	RED	GREEN	YELLOW	BLUE	BROWN	Light green	ORANGE	VIOLET
B	W	R	G	Y	L	Br	Lg	O	V

TB 45 engine

Schematic No.	Used for	Truck Model	Serial No.
E8000 – 55100	99728 – 55100	F640E	EF26C – 50011-up
		F640EL	EF29C – 50011-up
		F645E	EF29C – 50011-up
		F650E	EF32B – 50011-up

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