WSM

WORKSHOP MANUAL
DIESEL ENGINE
MANUAL D'ATELIER
MOTEUR DIESEL
WERKSTATTANLEITUNG
DIESELMOTOR

70mm STROKE SERIES
MOTEUR DE 70mm DE COURSE
SERIENMOTOR MIT 70mm HUB

Kubota

Cummins Power Generation

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[4] TROUBLESHOOTING

Symptom	Probable Cause	Solution	Reference Page
Engine does not start	• No fuel	Replenish fuel	
	• Air in the fuel system	Vent air	S-37
	• Water in the fuel system	Change fuel and repair or replace fuel system	
	• Fuel pipe clogged	Clean	
	• Fuel filter clogged	Clean or change	S-41
	• Excessively high viscosity of fuel or engine oil at low temperature	Use the specified fuel or engine oil	S-39
	• Fuel with low cetane number	Use the specified fuel	
	• Fuel leak due to loose injection pipe retaining nut	Tighten nut	
	• Incorrect injection timing	Adjust	S-113
	• Fuel cam shaft worn	Replace	
	• Injection nozzle clogged	Clean	
	• Injection pump malfunctioning	Repair or replace	
	• Seizure of crankshaft, camshaft, piston, cylinder liner or bearing	Repair or replace	
	• Compression leak from cylinder	Replace head gasket, tighten cylinder head bolt, glow plug and nozzle holder	S-55
	• Improper valve timing	Correct or replace timing gear	
	• Piston ring and liner worn	Replace	S-103
	• Excessive valve clearance	Adjust	S-43
Starter does not run	• Battery discharged	Charge	
	• Starter malfunctioning	Repair or replace	
	• Key switch malfunctioning	Repair or replace	
	• Wiring disconnected	Connect	
Engine revolution is not smooth	• Fuel filter clogged or dirty	Clean or change	S-37
	• Air cleaner clogged	Clean or change	S-41
	• Fuel leak due to loose injection pipe retaining nut	Tighten nut	
	• Injection pump malfunctioning	Repair or replace	
	• Incorrect nozzle opening pressure	Adjust	S-115
	• Injection nozzle stuck or clogged	Repair or replace	
	• Fuel over flow pipe clogged	Clean	
	• Governor malfunctioning	Repair	
Either white or blue exhaust gas is observed	• Excessive engine oil	Reduce to the specified level	
	• Piston ring and liner worn or stuck	Repair or replace	S-91
	• Incorrect injection timing	Adjust	S-113
	• Deficient compression	Adjust top clearance	S-55,
Either black or dark gray exhaust gas is observed	• Overload	Lessen the load	
	• Low grade fuel used	Use the specified fuel	
	• Fuel filter clogged	Clean or change	
	• Air cleaner clogged	Clean or change	
Deficient output	• Incorrect injection timing	Adjust	S-113
	• Engine's moving parts seem to be seizing	Repair or replace	
	• Uneven fuel injection	Repair or replace the injection pump	
	• Deficient nozzle injection	Repair or replace the nozzle	S-55
	• Compression leak	Replace head gasket, tighten cylinder head bolt, glow plug and nozzle holder	

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[5] SERVICING SPECIFICATIONS

(1) ENGINE BODY

Cylinder Head

Item		Factory Specification	Allowable Limit
Cylinder head surface flatness		–	0.05 mm 0.0019 in.
Top clearance		0.6 to 0.8 mm 0.0237 to 0.0315 in.	–
Cylinder head gasket shim thickness		0.2 mm 0.0079 in.	–
Cylinder head gasket thickness (Grommet section)	Free	1.15 to 1.30 mm 0.0453 to 0.0512 in.	–
	Tightened	1.05 to 1.15 mm 0.0413 to 0.0453 in.	–
Compression pressure		31.5 kgf/cm² 3.09 MPa, 448 psi	23.7 kgf/cm² 2.32 MPa, 337 psi
Variance among cylinders			10% or less

Valves

Valve clearance (Cold)			0.145 to 0.185 mm 0.0057 to 0.0072 in.	–
Valve seat width	IN.		2.12 mm 0.0835 in.	–
		VH1100-B only	1.74 mm 0.0685 in.	–
	EX.		2.12 mm 0.0835 in.	–
Valve seat angle	IN.		45° 0.785 rad.	–
		VH1100-B only	60° 1.047 rad.	–
	EX.		45° 0.785 rad.	–
Valve face angle	IN.		45.5° 0.794 rad.	–
		VH1100-B only	60°15' 1.051 rad.	–
	EX.		45.5° 0.794 rad.	–
Valve recessing			0.9 to 1.1 mm 0.036 to 0.043 in.	1.3 mm 0.051 in.
Clearance between valve stem and valve guide			0.035 to 0.065 mm 0.0014 to 0.0025 in.	0.1 mm 0.0039 in.
Valve stem O.D.			6.960 to 6.975 mm 0.2741 to 0.2746 in.	–
Valve guide I.D.			7.010 to 7.025 mm 0.2760 to 0.2765 in.	–

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