

Additional information and instructions by EU Stage V

The information and instructions to be provided to end-users were added by Regulation (EU)2016/1628 and Delegated regulation (EU)2017/654.

Engine operation and maintenance

You must comply with the following things when you operate an engine.

- The engine, including the emissions control system, shall be operated, used and maintained in accordance with the instructions provided to the end users in order to maintain the emissions performance of the engine within the requirements applicable to the engine's category.
- No deliberate tampering with or misuse of the engine emissions control system should take place; in particular with regard to deactivating or not maintaining an exhaust gas recirculation (EGR) or a reagent dosing system.
- When a warning lamp lights up, a trouble is happening to the engine and it may cause trouble to the emission control system. It is essential to take prompt action to rectify any incorrect operation, use or maintenance of the emissions control system in accordance with the rectification measures indicated in the 'TROUBLESHOOTING', or where applicable, 'OPERATOR WARNING AND INDUCEMENT'.
- For non-road mobile machinery with a NOx control diagnostic (NCD) operator inducement system, ignoring the operator warning signals will lead to the activation of the operator inducement system, resulting in an effective disablement of non-road mobile machinery operation.
- Where the engine is to be operated within the Union on diesel or non-road gas-oil, a fuel with sulfur content not greater than 10 mg/kg (20 mg/kg at point of final distribution) cetane number not less than 45 and an FAME content not greater than 7 % v/v shall be used.

Carbon dioxide (CO₂) emissions

The measurement result of CO₂ emissions in g/kWh is shown in the attached list. Please check the EU engine family name mentioned in the emission label affixed on the engine valve cover to find its CO₂ emission results which belongs to the engine family.

FAME: Fatty acid methyl ester

v/v : Volume per volume

The list of EU Stage V CO₂ emission results of each engine family

Please note that this CO₂ measurement results from testing over a fixed test cycle under laboratory conditions a(n) (parent) engine representative of the engine type (engine family) and shall not imply or express any guarantee of the performance of a particular engine.

Ignition	Power category	EU engine family name	Test cycle	CO ₂ emissions [g/kWh]
CI	0-19kW	JKBXL.276KCB	NRSC	1189
		JKBXL.276KCC	NRSC	1135
		JKBXL.325KCB	NRSC	929
		JKBXL.416KCB	NRSC	1255
		JKBXL.416KCC	NRSC	1102
		HKBXL.778KCB	NRSC	1019.8
		HKBXL.898KCB	NRSC	1047.4
		JKBXL.719KCC	NRSC	1024.5
		HKBXL02.23CB	NRSC	938.3
		HKBXL02.2ECB	NRSC	938.3
		JKBXL02.2FCC	NRSC	874.5
		HKBXL01.5BCB	NRSC	1018
		JKBXL01.5BCC	NRSC	869.7
		LKBXL.898KAB	NRSC	921
		PKBXL.898KFB	NRSC	1030
		19-37kW	KKBXL01.8E1D	NRTC
	NRSC			776.7
	KKBXL02.4G3D		NRTC	858.7
			NRSC	802.7
	KKBXL02.6G3D		NRTC	805.6
			NRSC	760
	LKBXL01.5A1D		NRTC	848
			NRSC	804.1
	LKBXL02.4E1C		NRSC	733.1

NRTC : Non-road transient test cycles

NRSC : Non-road steady-state test cycle

LSI-NRTC : Large spark-ignition engines non-road transient test cycles

Ignition	Power category	EU engine family name	Test cycle	CO ₂ emissions [g/kWh]
CI	37-56kW	KKBXL02.4E1D	NRTC	807.2
			NRSC	782.4
		KKBXL02.4E2D	NRTC	788.2
			NRSC	737.9
		KKBXL02.4E3D	NRTC	833
			NRSC	789.1
		KKBXL02.6E1D	NRTC	817.5
			NRSC	781
		KKBXL02.6E2D	NRTC	799.7
			NRSC	740.6
		KKBXL02.6E3D	NRTC	831.7
			NRSC	789.3
		KKBXL03.3E1D	NRTC	807.2
			NRSC	799.2
		KKBXL03.3E2D	NRTC	828.8
			NRSC	757.2
		KKBXL03.8C1D	NRTC	803.9
			NRSC	766.4
	LKBXL03.8A1C	NRSC	738.6	
		56-130kW	LKBXL03.8A5D	NRTC
	NRSC			732.4
	PKBXL03.8C5D		NRTC	757.8
			NRSC	722.7
	LKBXL06.1A5D	NRTC	748.6	
		NRSC	712.4	
	PKBXL06.1C5D	NRTC	724.6	
		NRSC	693	
	130-560kW	LKBXL05.0A5D	NRTC	741.8
			NRSC	698.9
		PKBXL05.0C5D	NRTC	735.6
NRSC			697.4	

G: Petrol
L: LPG
N: Natural Gas

GLN: Petrol, LPG and Natural Gas
GL: Petrol and LPG
LN: LPG and Natural Gas

Ignition	Power category	EU engine family name	Test cycle	CO ₂ emissions [g/kWh]
SI	0-19kW	JKBXS.4562HD	NRSC	911
		LKBXS.51525D	NRSC	858.9
		JKBXS.7402HF	NRSC	906(Petrol) 760(LPG Fuel A) 815(LPG Fuel B)
	19-30kW	JKBXS.9622KD	NRSC	1065
		JKBXS.9622KH	NRSC	1031(Petrol) 996(LPG fuel A) 991(LPG fuel B)
		JKBXS.9622KT	NRSC	842(NG GR), 687(NG G25)
		JKBXS.9622KF	NRSC	939(Petrol) 791(LPG Fuel A) 844(LPG Fuel B)
	19-56kW	JKBXB01.5CFA	LSI-NRTC	1075(Petrol) 1026(LPG Fuel A) 994(LPG Fuel B) 905(NG GR) 724(NG G25)
			NRSC	1090(Petrol) 1044(LPG Fuel A) 1007(LPG Fuel B) 921(NG GR) 743(NG G25)
		JKBXB01.5PCA	LSI-NRTC	916(NG GR) 739(NG G25)
			NRSC	927(NG GR) 747(NG G25)
		JKBXB01.5PDA	LSI-NRTC	1082(Petrol) 1031(LPG Fuel A) 999(LPG Fuel B)
			NRSC	1088(Petrol) 1039(LPG Fuel A) 1008(LPG Fuel B)
		JKBXB01.9GDA	LSI-NRTC	1088(Petrol) 922(LPG Fuel A) 900(LPG Fuel B)
			NRSC	1092(Petrol) 934(LPG Fuel A) 917(LPG Fuel B)

Ignition	Power category	EU engine family name	Test cycle	CO ₂ emissions [g/kWh]
SI	19-56kW	JKBXB01.9GEA	LSI-NRTC	939(LPG Fuel A) 913(LPG Fuel B) 852(NG GR) 666(NG G25)
			NRSC	941(LPG Fuel A) 924(LPG Fuel B) 873(NG GR) 684(NG G25)
		LKBXB01.9HDA	LSI-NRTC	1093.9(Petrol) 1012.4(LPG Fuel A) 1016.5(LPG Fuel B)
			NRSC	1112.8(Petrol) 937.3(LPG Fuel A) 925.8(LPG Fuel B)
		JKBXB02.5GDA	LSI-NRTC	1072(Petrol) 942(LPG Fuel A) 920(LPG Fuel B)
			NRSC	1098(Petrol) 963(LPG Fuel A) 939(LPG Fuel B)
		JKBXB02.5GEA	LSI-NRTC	939(LPG Fuel A) 917(LPG Fuel B) 867(NG GR) 720(NG G25)
			NRSC	958(LPG Fuel A) 934(LPG Fuel B) 889(NG GR) 721(NG G25)
		JKBXB02.5HDA	LSI-NRTC	1086(Petrol) 957(LPG Fuel A) 932(LPG Fuel B)
			NRSC	1121(Petrol) 975(LPG Fuel A) 953(LPG Fuel B)
		JKBXB02.5HCA	LSI-NRTC	876(NG GR) 699(NG G25)
			NRSC	889(NG GR) 706(NG G25)
		JKBXB03.8CBA	LSI-NRTC	902(LPG Fuel A) 881(LPG Fuel B)
			NRSC	901(LPG Fuel A) 881(LPG Fuel B)

Ignition	Power category	EU engine family name	Test cycle	CO ₂ emissions [g/kWh]
SI	19-56kW	JKBXB03.8CDA	LSI-NRTC	1140(Petrol) 946(LPG Fuel A) 925(LPG Fuel B)
			NRSC	1179(Petrol) 956(LPG Fuel A) 934(LPG Fuel B)
		JKBXB03.8CEA	LSI-NRTC	907(LPG Fuel A) 882(LPG Fuel B) 815(NG GR) 631(NG G25)
			NRSC	905(LPG Fuel A) 882(LPG Fuel B) 823(NG GR) 640(NG G25)
	56-130kW	KKBXB03.8DBA	NRTC	850.5 (LPG Fuel A) 830.7 (LPG Fuel B)
			NRSC	782.3 (LPG Fuel A) 766.2 (LPG Fuel B)
		KKBXB03.8DCA	NRTC	742.5 (NG GR) 741.8 (NG G25)
			NRSC	681.6 (NG GR) 680.8 (NG G25)