## **EXHAUST EMISSION DATA SHEET**

### **MQ POWER GENERATOR SET**





The engine used in this generator set is certified to comply with United States EPA Tier 4 and CARB Mobile Off-Highway emission regulations.

**ENGINE DATA** 

 Manufacturer:
 KUBOTA
 Bore:
 2.99 in.
 (76 mm)

 Model:
 D1005
 Stroke:
 2.90 in.
 (73.6 mm)

 Type:
 4-Cycle, In-Line, 3-Cylinder, Diesel
 Displacement: 61.08 cid (1.001 liters)

Aspiration: Naturally Aspirated, Indirect Injection Compression Ratio: 24:1

PERFORMANCE DATA

SAE Gross HP @ 3200 RPM (60 Hz) Rated 24.4
Load Fuel Consumption (gal/Hr) Rated 1.61
Load Exhaust Gas Flow (cfm) Rated Load N/A
Exhaust Gas Temperature (°F) N/A

United States EPA - Mobile Off-Highway Tier 4 Limits -

11 ≤ ~ < 25 BHP

Criteria Pollutant	Emis	ssion Requirements	Certified Engine Emissions		
NOx (Oxides of Nitrogen as NO2)	N/A	gr/bhp-hr	N/A	gr/bhp-hr	
HC (Total Unburned Hydrocarbons)	N/A	gr/bhp-hr	N/A	gr/bhp-hr	
NOx + HC (Combined)	N/A	gr/bhp-hr	N/A	gr/bhp-hr	
CO (Carbon Monoxide)	4.92	gr/bhp-hr	1.26	gr/bhp-hr	
PM (Particulate Matter)	0.29	gr/bhp-hr	0.18	gr/bhp-hr	
NMHC (Non-Methane Hydrocarbons)	N/A	gr/bhp-hr	N/A	gr/bhp-hr	
NMHC + NOx	5.59	gr/bhp-hr	4.92	gr/bhp-hr	

EPA Engine Family: MKBXL01.0BCB

EPA Certificate of Conformance: MKBXL01.0BCB-017

ARB Executive Order: U-R-025-0923

Effective Date: Model Year 2021

Note: Engine operation with excessive air intake or exhaust restriction beyond factory published maximum limits, or with improper service maintenance, may result in higher emission levels.

Data And Specifications Subject To Change Without Notice Date: 4/15/21



# UNITED STATES ENVIRONMENTAL PROTECTION AGENCY 2021 MODEL YEAR CERTIFICATE OF CONFORMITY WITH THE CLEAN AIR ACT

#### OFFICE OF TRANSPORTATION AND AIR QUALITY ANN ARBOR, MICHIGAN 48105

Certificate Issued To: Kubota Corporation

(U.S. Manufacturer or Importer)

Certificate Number: MKBXL01.0BCB-017

Effective Date: 10/20/2020

Expiration Date: 12/31/2021

| Issue Date: | 10/20/2020

Revision Date: N/A

Model Year: 2021

Manufacturer Type: Original Engine Manufacturer

Engine Family: MKBXL01.0BCB

Mobile/Stationary Indicator: Mobile Emissions Power Category: 8<=kW<19

Fuel Type: Diesel

After Treatment Devices: No After Treatment Devices Installed Non-after Treatment Devices: Engine Design Modification

Byron J. Bunker, Division Director

Compliance Division

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR Part 1039, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Part 1039 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 1039 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 1039.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 1039. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Part 1039.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.



#### **KUBOTA Corporation**

EXECUTIVE ORDER U-R-025-0923 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in California Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-19-095;

**IT IS ORDERED AND RESOLVED:** That the following compression-ignition engines and emission control systems produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)		
2021	MKBXL01.0BCB	1.002	Diesel	3000		
SPECIAL FEATURES & EMISSION CONTROL SYSTEMS			TYPICAL EQUIPMENT APPLICATION			
Indirect Diesel Injection			Tractor, Compressor, Generator Set, Auxiliary Power Unit, Garden Tractor, Light Tower, Mower, Roller, Skid Steer Loader, Nonroad Sweeper, Welder, Lift, Other Industrial Equipment			

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for non-methane hydrocarbon (NMHC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
POWER CLASS			NMHC	NOx	NMHC+NOx	СО	PM	ACCEL	LUG	PEAK
8 <u>&lt;</u> kW < 19	Tier 4 Final	STD	N/A	N/A	7.5	6.6	0.40	20	15	50
		CERT			6.6	1.7	0.25	3	3	5

**BE IT FURTHER RESOLVED:** That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed on this 14th day of October 2020.

Allen Lyons, Chief

**Emissions Certification and Compliance Division** 

# **Engine Model Summary Form**

Attachment Page 1 of 1

Manufacturer: **KUBOTA Corporation** 

Engine category: Nonroad CI EPA Engine Family: **MKBXL01.0BCB** 

Mfr Family Name: N/A

Process Code: **New Submission**  EO# U-R-025-0923 Date: 9/14/2020

1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
D1005-EF01	D1005-EF	24.4@3200	20.9	11.2	46.7@2400	22.9	9.2	EM, IFI
D1005-EF02	D1005-EF	24.4@3200	20.8	11.2	45.2@2400	22.4	9.0	EM, IFI
D1005-EF02e	D1005-EF	24.4@3200	20.8	11.2	45.2@2400	22.4	9.0	EM, IFI
D1005-EF03	D1005-EF	23.1@3000	20.7	10.4	45.7@2200	22.6	8.3	EM, IFI
D1005-EF04	D1005-EF	20.7@2800	19.7	9.2	44.9@2000	22.2	7.4	EM, IFI
D1005-EF05	D1005-EF	19.6@2700	19.3	8.7	43.8@1900	21.7	6.9	EM, IFI
D1005-EF06	D1005-EF	19.2@2600	19.3	8.4	44.9@1700	22.3	6.4	EM, IFI
D1005-EF07	D1005-EF	18.8@2500	19.8	8.3	40.2@2000	19.8	6.6	EM, IFI
D1005-EF08	D1005-EF	13.7@1800	19.8	6.0	40.1@1800	19.8	6.0	EM, IFI