Certification Summary Information Report

Manufacturer	LEHR LLC	**Manufacturer Code**	LHR
Engine Family	MLHRS.6032L1	**Engine Family Industry Category**	Small SI
Certificate Number	MLHRS.6032L1-001	**CARB Executive Order #**	N/A
Certificate Issue Date	01/20/2021	**Certificate Revision Date**	N/A
Certificate Effective Date	01/20/2021	**Conditional Certificate**	No
CSI Revision #	N/A	**CSI Submission/Revision Date**	11/25/2020
Model Year	2021		

Engine Family Information

Small Volume Manufacturer Indicator	Yes	**Engine Family Type**	Alternative Fuels Conversion
Small Volume Engine Family Indicator	Yes	**Carryover Indicator**	Yes
Carryover Engine Family	HLHRS.6032L1	**Carryover Original Certification Model Year**	2017
Applicable CFR Part(s)	Part 1054	**CFR Part Representing Numerical Standard**	Part 1054
Bond Required Indicator	Yes		
Bond Policy Number	100405499	**Company Issuing Bond Policy - National Association of Insurance Commissioners Number**	9012
Company Issuing Bond Policy - State	CA		
Participation in Transitional Program for Equipment Manufacturers (TPEM) Indicator	No	**Participation in Delegated Assembly Indicator**	No
Recipient of Partially Complete Engines Indicator	No	**Base Engine Manufacturer**	Kawasaki
Base Engine Family Name(s)	MKAXS.6032CD		
Alternative Trade Name(s) (on Label)	--	**Diagnostic Trouble Codes (DTC's) Indicator**	No
Service Class	Nonhandheld-Class II		
Nonhandheld Tied to Useful Life	Extended Life Residential	**Handheld Tied to Useful Life**	--
Marine Generator Indicator	No	**Handheld Applicability Based on Weight Limitations Indicator**	--
Handheld Applicability Justification	--		
Limited Application	--	**HC+NOx Indicator, if 'Wintertime'**	--
Generator Set Indicator	Yes	**Altitude Compensation Method**	No Compensation Required
Averaging, Banking, and Trading Program Indicator	No	**Averaging, Banking, and Trading Constituents**	--

Equipment Application Category	Specific Equipment Type (One Equipment Type per Box)
Pushed/Pulled Equipment	Other
	Lawn Mower
	Pressure Washer
	Burnisher
	Generator Set
	Power Trowell
	Compressor

Useful Life Period	500 Hours / 5 Years
Useful Life Period Justification	The Kawasaki engines used as the base engine for this model are from engine family KAXS.6032CD, which has a warranty period of 500 hours and two years. LEHR's warranty period is selected to be the same as the base Kawasaki engine.

Certification Summary Information Report

Engine Family	MLHRS.6032L1
Alternative Useful Life (Hours)	--
Alternative Useful Life Justification	--

Sales Information

Projected Sales (49 States)	1460	**Projected Sales (California)**	40
Total Projected Sales	1500	**Estimated Production Start Date**	01/01/2021
Estimated Production End Date	12/31/2021		

Engine Information

Engine Displacement Value	Engine Displacement Units
603	Cubic Centimeters (cc)

Maximum Engine Power (per 1045.140(d) (kW)	11.4	**Maximum Engine Test Speed (RPM)**	3600
Engine Type	4-Stroke	**Valve Location/Porting Configuration**	Overhead
Number Of Exhaust Valves Per Cylinder	1	**Number Of Intake Valves Per Cylinder**	1
Crankshaft Orientation	Vertical		
Method Of Aspiration	Naturally Aspirated	**O2 Sensor Indicator**	No
O2 Sensor Type	--	**Closed Loop Control of Air Fuel Ratio Indicator**	No
Engine Cooling Mediums	Air		

Number Of Cylinders / Rotors	Cylinder Arrangement
2	V

Engine Fuel Information

Engine Fuel #1

Engine Fuel Category Single Fuel

Fuel Type	Fuel Metering System	Electronic Control Indicator
LPG/Propane	Carburetor	No

Contacts / Importers Information

Importers Names	Importer LEHR Inc.
Agent for Service in U.S. Names	David Kostka
Manufacturing Facility(s)	EnviroGard, 7781 South Little Egypt Rd., Stanley, United States-28164
U.S. Based Engine Testing Facility(s)	Automotive Testing and Development Services

US Port of Import Name	US Port of Import City	US Port of Import State
--	--	--

Manufacturer's Engine Family Comments	LEHR purchases complete engines from Kawasaki and modifies them to run on LPG fuel.The Kawasaki engine used as the base engine for this model is from engine family KAXS.6032CD.
Update/Correction Comments	--

Engine Family MLHRS.6032L1

Emission Controls

Non-Aftertreatment Device Information

Non-Aftertreatment Device Indicator (Emission Control Devices not Included in Exhaust Aftertreatment System) Yes

Non-Aftertreatment Device #1

Non-Aftertreatment Device Type	If Non-Aftertreatment Device Type Other
Engine Design Modification	--

Aftertreatment Device Information

Aftertreatment Device (ATD) Indicator (Emission Control Devices Included in Exhaust Aftertreatment System) Yes

Aftertreatment Device #1

Aftertreatment Device Type	If Aftertreatment Device Type Other
3-way (Oxidation and Reduction Catalyst)	--

Number of Catalytic Devices 1

Catalytic Location Details #1

Catalyst Substrate Material Ceramic

Catalyst Location (Distance From the Cylinder Head Exhaust Flange to the Catalyst Brick in millimeters) 386

Catalyst - Precious Metals	Catalyst - Precious Metal Loading	Catalyst - Precious Metal Loading Units
Rhodium	0.2	g/L
Palladium	1.2	g/L

Adjustable Parameter Information

Adjustable Parameters Indicator No

Auxiliary Emission Control Device Information

Auxiliary Emission Control Device Indicator No

Emission Control System - Comments --

Certification Summary Information Report

Engine Family MLHRS.6032L1

Standards, FELs & DFs

Deterioration Factor / Durability Information

Deterioration Factor - Determination Method Assigned by EPA

Engine Model Used for Deterioration Factor Determination --

Fuels Used for DF Determination - Service Accumulation --

Durability Engine ID

Durability Engine Service Accumulation (hours)

Standards, FELs & DFs Set #1

Deterioration Factor Constituent #1

Constituent Name HC + NOx

DF Fuel Type LPG/Propane

Deterioration Factor Type	Deterioration Factor Value
Steady-State Multiplicative	1.018

Deterioration Factor Constituent #2

Constituent Name CO

DF Fuel Type LPG/Propane

Deterioration Factor Type	Deterioration Factor Value
Steady-State Multiplicative	1.66

Constituent Name	Exhaust Emision Standard Value	Family Emission Limit Cap	Family Emission Limit	Constituent Units
CO	610	--	--	g/kW-hr
HC + NOx	8.0	12.1	--	g/kW-hr

Certification Summary Information Report

Engine Family	MLHRS.6032L1

Engine Configuration(s)/Model(s)

Engine Configuration #1

Engine Configuration Number	1		
Engine Model Name	FS600V-NET-L	**Engine Code**	FS600V-NET-L
Bore (mm)	73	**Stroke (mm)**	72
Engine Displacement Value	603	**Engine Displacement Units**	Cubic Centimeters (cc)
Cylinder Deactivation Indicator	No	**Variable Valve Timing Indicator**	No
Variable Valve Lift Indicator	No	**Maximum Power in Kilowatts (kW)**	11.44
Lower Limit of Maximum Power (kW) (Production Tolerances)	--	**Upper Limit of Maximum Power (kW) (Production Tolerances)**	--
Rated Speed in RPM (for Maximum Power)	3600	**Maximum Torque in Newton-meters (Nm)**	29.8
Rated Speed in RPM (for Maximum Torque)	3600	**Compression Ratio**	8.1:1
Sales Area	50 States		
Configuration Estimated Production Start Date	01/01/2021	**Configuration Estimated Production End Date**	12/31/2021

Part #1

General Part Name Ignition Component (Coil, Distributor, Spark Plug)

Part Name Description	Part Number	Part Quantity (Per Engine)
Spark Plug	K92070-7004	2
Coil	K21171-7047	2

Part #2

General Part Name Manifolds (intake, exhaust)

Part Name Description	Part Number	Part Quantity (Per Engine)
Intake Manifold	K59076-7020	1
Air Cleaner Element	K11013-7048	1

Part #3

General Part Name Aftertreatment Device (catalyst, air pump, LNT, SCR)

Part Name Description	Part Number	Part Quantity (Per Engine)
Catalytic Muffler	W3240	1

Part #4

General Part Name Fuel Delivery Component (injector, carburetor, mixer, pressure regulator, fuel Pump)

Part Name Description	Part Number	Part Quantity (Per Engine)
Fuel Lockoff	W2608	1
Carburetor/mixer	W2628-V-603-L	1

Engine Fuel Category	Single Fuel
Fuel Type	LPG/Propane
Engine Configuration Comments	Remaining parts are stock Kawasaki parts

Certification Summary Information Report

Engine Family	MLHRS.6032L1

Test Engine #1

Test Engine Number	1		
Manufacturer Assigned Test Engine ID Number (Serial Number of Test Engine)	FS600VA00026	**Corresponding Engine Configuration Number for this Engine Family**	1
Special Test Device Used Indicator	No	**Date of EPA Special Test Device Approval**	--
Special Test Device Description	--		
Hours of Service Accumulation	9	**Duty Cycle for Service Accumulation**	EPA A cycle 6 mode
Fuel to Oil Ratio (2-Stroke Engines Only)	--		
Unscheduled Maintenance Indicator	No		
Unscheduled Maintenance Record	--		
Reason for Selecting Test Engine (Worst Case Justification)	Engine representative of production model		

Certification Summary Information Report

Engine Family MLHRS.6032L1

Test Result(s)

Test #1

Test Incorporated by Reference Indicator (This Test Must Have Been Previously Submitted to Verify in a Different Engine Family Data Set) No

Test Engine Number 1

Manufacturer Assigned Test Number 1

Verify Assigned Certification Test Number MLHRSM0055687

Corresponding Engine Configuration Number (Engine Model Name, Engine Code) null (FS600V-NET-L, FS600V-NET-L)

Test Lab ID Automotive Testing and Development Services

Test Date 07/13/2016

Engine Hours Reading at Test Start 14

Emission Sampling Method Constant Volume Sampling (CVS)

Test Cycle Used G2 Cycle intermediate speed discrete modal (part 90 cycle A)

Test Engine Maximum Measured Power (kW) 11.44

Test Engine Speed (RPM) in Mode 1 of Test Cycle 3060

Test Engine Speed (RPM) at which Maximum Measured Power Occurs 3600

Test Engine Maximum Measured Torque (NM) 29.83

Test Engine Speed (RPM) at which Maximum Measured Torque Occurs 3600

Engine Model Rated Power (kW) 11.44

Certification Test Fuel LPG/Propane

Certification Test Fuel Justification --

Constituent Name	Constituent Units	Certification Test Result (before Deterioration Factor applied)	Calculated Certification Level	EPA Exhaust Emission Standard	Pass/Fail Indicator
CO2	g/kW-hr	935.73	--	--	--
HC (THC)	g/kW-hr	0.74	--	--	--
NOx	g/kW-hr	2.74	--	--	--
CO	g/kW-hr	4.18	7	610	Pass
HC + NOx	g/kW-hr	3.48	3.5	8.0	Pass

No data submission for CH4 or N2O Justification --

Testing Comments Base test engine Kawasaki FS600V from KAXS.6032CA