

Pursuant to the authority vested in California Air Resources Board by the Health and Safety Code, Division 26, Part 5, Chapters 1 and 2; and

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

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

MODEL YEAR	ENGINE FAMILY NAME	ENGINE DISPLACEMENT (liters)	ENGINE CLASS	FUEL TYPE
2020	LYMXB.8242EK	0.824	≤ 825 cc	Gasoline
DURABILITY HOURS	SPECIAL FEATURES & EMISSION CONTROL SYSTEMS		TYPICAL EQUIPMENT USAGE	
1000	EM		Tractor/Tug	
ENGINE MODELS (rated power in kilowatt, kW)	See Attachment			

The following are the hydrocarbon plus oxides of nitrogen (HC+NOx) and carbon monoxide (CO) exhaust certification emission standards (Title 13, California Code of Regulations, (13 CCR) Section 2433(b)(1)) and certification emission levels for this engine family in grams per kilowatt-hour (g/kW-hr). Engines within this engine family shall have closed crankcases in conformance with 13 CCR Section 2433(b)(3).


(g/kW-hr)	HC+NOx	CO
<b>Standards</b>	8.0	549
<b>Certification Levels</b>	7.4	356

**BE IT FURTHER RESOLVED:** That for the listed engines for the aforementioned model-year, the manufacturer has submitted, and the Executive Officer hereby approves, the information and materials to demonstrate certification compliance with 13 CCR Section 2433(d) (certification and test procedures), 13 CCR Section 2404 (emission control labels), and 13 CCR Sections 2405 and 2406 (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 at El Monte, California on this 12<sup>TH</sup> day of December 2019.

  
 Allen Lyons, Chief  
 Emissions Certification and Compliance Division





**CERTIFICATION SUMMARY COMPLIANT ENGINES**

1. MODEL-YEAR 2020 MANUFACTURER YAMAHA MOTOR CO., LTD. E. O. NO.: U-L-024-0013

2. Engine Family(EF) Name: a. EPA-Standardized: LYMXB.8242EK b. EF Name on Engine Label: LYMXB.8242EK

c. Trade Name (e.g., Vortec): MX825V

Equipment Applications: A. G B. \_ C. \_ D. \_ E. \_ F. \_

3. All Engine Sales Codes within EF: 50S

4. Production Engine Assembly: A

5. All Engine Displacement in EF in Cubic Centimeters(cc): 1) 824 2)    3)    4)    5)   

6. EF Rated Power (in kW): Highest Model: 20.5 Lowest Model: 19.4

7. Engine Design: a. Combustion Cycle: four-stroke if 2-stroke, Oil/Fuel Ratio is   

b. Engine Type: Reciprocating c. Valvetrain: Overhead d. Total Number of Intake + Exhaust Valves/Ports per Cyl.: 3

e. Type of Engine Cooling: Air f. Number of Cylinders: 2 g. Cylinder Arrangement: V

h. Operating Fuel: (i) # of fuel system in EF: 1 (ii) Fuel system types: Dedicated (iii) Operating Fuel: GAS

8. Intake, Fuel and Emission Control Systems:

*	*	CARB	*	*	*	NAT	*	EM
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9. Deterioration Factors (DFs): a. New Durability Testing?: NO if Carryover, from Engine Family: KYMXB.8242EK

b. Dura. Eng. Model: MX825V DF Eng. ID: 7UCJ-1000763 Service Accumulation Hours: 1000

c. DF Type: multiplicative

d. Steady State DF Values: HC:    NOx:    HC+NOx: 1 CO: 1.1

e. Transient DF Values: HC:    NOx:    HC+NOx:    CO:   

10. Certification Test Engine Information: (EDE) Type: C/O if carryover, from Engine Family: KYMXB.8242EK

a. Test Engine (EDE) : Model: MX825V EDE ID: 7UCJ-010 CERT\_EDE\_kw:    @ 3060 rpm

Break-in/Stabilization Hours: 2 CERT\_Test Date: 2018-06-08

b. Test Fuel: California LEV III c. Test Procedure (TP): (i) RGM CERT\_TP\_CYCLE: G1

(iii) Special Test Equipment

11. HC+NOx Certification Emission Levels (in g/kW-hr): HC+NOx\_Hi:  CO\_Hi:

in compliance with Emission Standard of (g/kW-hr): HC+NOx\_std:  CO\_std:

Test No. Type, Fuel	Steady State Official Test Results, g/kW-hr				Deteriorated Certification Emissions, g/kW-hr			
	HC	NOx	HC+NOx	CO	HC	NOx	HC+NOx	CO
CTG	3.8	3.45	7.25	323.5			7.25	355.9
RTG	3.69	3.73	7.42	305.5			7.42	336.1

Test No. Type, Fuel	Transient Official Test Results, g/kW-hr				Deteriorated Certification Emissions, g/kW-hr			
	HC	NOx	HC+NOx	CO	HC	NOx	HC+NOx	CO

Quality Audit Procedure: CumSum Manufacturer's Issue Date: 6/8/2018 Revision Date:   

Remarks:

Models:

Processed By:  Date Processed:  Review By:  Date Reviewed: