



TYPE-APPROVAL CERTIFICATE

Communication concerning the:

- EC type-approval,
- ~~extension of EC type approval,~~
- ~~refusal of EC type approval,~~
- ~~withdrawal of EC type approval,~~

of an ~~engine type~~/ engine family ⁽¹⁾ with regard to gaseous and particulate pollutant emission pursuant to Regulation (EU) 2016/1628, as last amended by (Commission Delegated) ⁽¹⁾ Regulation 2017/656/EU ⁽¹⁾⁽²⁾ (of the European Parliament and of the Council) ⁽¹⁾

Type Approval No: **e24*2016/1628*2016/1628SYA1/P*0002*00**

Extension No: *N/A*

Reason for extension/refusal/withdrawal ⁽¹⁾:

- *N/A*

SECTION I

- | | | |
|-------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| 1.1. | Make (trade name(s) of manufacturer): | <i>RATO / YAMAHA</i> |
| 1.2. | Commercial name(s) (if applicable): | <i>N/A</i> |
| 1.3. | Company name and address of manufacturer: | <i>Chongqing Rato Technology Co., Ltd.
Zone B, Shuangfu Industry Park,
Jiangjin District, Chongqing 402247,
China</i> |
| 1.4. | Name and address of manufacturer's authorised representative (if any): | <i>Multipower S.r.l.
Via Don Minzoni 6 D/E CAP 42044
Gualtieri (RE) Italy</i> |
| 1.5. | Name(s) and address(es) of assembly/manufacture plant(s): | <i>See item 1.3 above.</i> |
| 1.7. | Category and sub-category of the engine type/engine family ⁽¹⁾⁽⁴⁾ : | <i>Category: NRS
Sub-category: NRS-vi-1a</i> |
| 1.8. | Emissions durability period category: | <i>Not Applicable/Cat 1/Cat 2/Cat 3</i> ⁽¹⁾ |
| 1.9. | Emissions stage: | <i>V/ SPE</i> |
| 1.10. | Engine for snow throwers ⁽⁵⁾ : | <i>Yes/No</i> ⁽¹⁾ |

SECTION II

1. Technical service responsible for carrying out the tests: **TÜV SÜD Auto Service GmbH,
Westendstraße 199,
D-80686 München,
Germany.**
2. Date(s) of test report(s): **12.10.2017**
3. Number(s) of test report(s): **17-01499-CX-SHA-00**

SECTION III

The undersigned hereby certifies the accuracy of the manufacturer's description in the attached information document of the ~~engine type~~/engine family ⁽¹⁾ described above, for which one or more representative samples, selected by the approval authority, have been submitted as prototypes and that the attached test results apply to the engine type/engine family ⁽¹⁾.

1. The ~~engine type~~/engine family ⁽¹⁾ meets/~~does not meet~~ ⁽¹⁾ the requirements laid down in Regulation (EU) 2016/1628.
2. The approval is: **~~granted/extended/refused/withdrawn~~ ⁽¹⁾**
3. The approval is granted in accordance with Article 35 of Regulation (EU) 2016/1628 and the validity of the approval is thus limited to dd/mm/yyyy ⁽³⁾ **N/A**
4. Restrictions to validity ^{(3) (6)}: **N/A**
5. Exemptions applied ^{(3) (6)}: **N/A**

Place:

Dublin.

Date:

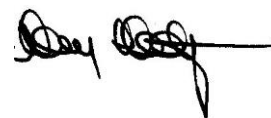
1st December, 2017

Name and signature

(or visual representation of an

'advanced electronic signature'

according to Regulation (EU) No 910/2014, including data for verification):




Attachments:

Information package

Test report(s)

Where applicable, the name(s) and specimen(s) of the signature(s) of the person(s) authorised to sign statement Of conformity and a statement of their position in the company Where applicable, a completed specimen of a statement of conformity

NB:

If this model is used for EU type-approval of an engine as an exemption for new technologies or new concepts, pursuant to Article 35(4) of Regulation (EU) 2016/1628, the heading of the certificate shall read 'PROVISIONAL EU TYPE-APPROVAL CERTIFICATE VALID ONLY ON THE TERRITORY OF ... ⁽⁷⁾'.

Addendum

PART A — CHARACTERISTICS OF THE ~~ENGINE TYPE~~/ENGINE FAMILY ⁽¹⁾

2. Common design parameters of the ~~engine type~~/engine family ⁽¹⁾
- 2.1. Combustion Cycle: *four stroke cycle/two stroke cycle/rotary
other: (describe) ⁽¹⁾*
- 2.2. Ignition Type: *Compression ignition/spark ignition ⁽¹⁾*
- 2.3.1. Position of the cylinders in the block: *V/in-line/radial/other(Single) ⁽¹⁾*
- 2.6. Main Cooling medium: *Air/Water/Oil ⁽¹⁾*
- 2.7. Method of air aspiration: *naturally aspirated/pressurecharged/
pressure charged with charge cooler ⁽¹⁾*
- 2.8.1. Fuel Type(s): *Diesel (non-road gas-oil)/Ethanol for
dedicated compression ignition engines
(ED95)/Petrol (E10)/Ethanol(E85)/
(Natural gas/Biomethane)/Liquid
Petroleum Gas (LPG) ⁽¹⁾*
- 2.8.1.1. Sub Fuel type (Natural gas/Biomethane only): *Universal fuel—high calorific fuel (H-
gas) and low calorific fuel (L-gas)/
Restricted fuel—high calorific fuel (H
gas)/Restricted fuel—low calorific fuel
(L-gas)/Fuel specific (LNG);*
- 2.8.2. Fuelling arrangement: *Liquid-fuel only/Gaseous-fuel only/Dual-
fuel type 1A/Dual-fuel type 1B/Dual-fuel
type 2A/Dual-fuel type 2B/Dual-fuel
type 3B ⁽¹⁾*
- 2.8.3. List of additional fuels compatible with use by the engine declared by the manufacturer in accordance with point 1 of Annex I to Delegated Regulation (EU) 2017/654 (provide reference to recognised standard or specification):
- 2.8.4. Lubricant added to fuel: *Yes/No ⁽¹⁾*
- 2.8.5. Fuel supply type: *Pump (high pressure) line and injector/in
line pump or distributor pump/Unit
injector/Common rail/Carburettor/port
injector/direct injector/Mixing unit/
other(specify) ⁽¹⁾*
- 2.9. Engine management systems: *mechanical/electronic control strategy ⁽¹⁾*



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Extension No: *N/A*

2.10.	Miscellaneous devices:	
2.10.1.	Exhaust gas recirculation (EGR):	Yes /No ⁽¹⁾
2.10.2.	Water injection:	Yes /No ⁽¹⁾
2.10.3.	Air injection:	Yes /No ⁽¹⁾
2.10.4.	Others (specify):	<i>N/A</i>
2.11.	Exhaust after-treatment system:	Yes /No ⁽¹⁾
2.11.1.	Oxidation catalyst:	Yes /No ⁽¹⁾
2.11.2.	DeNOx system with selective reduction of NOx (addition of reducing agent):	Yes /No ⁽¹⁾
2.11.3.	Other DeNOx systems:	Yes /No ⁽¹⁾
2.11.4.	Three-way catalyst combining oxidation and NOx reduction:	Yes /No ⁽¹⁾
2.11.5.	Particulate after-treatment system with passive regeneration:	Yes /No ⁽¹⁾
2.11.6.	Particulate after-treatment system with active regeneration:	Yes /No ⁽¹⁾
2.11.7.	Other particulate after-treatment systems:	Yes /No ⁽¹⁾
2.11.8.	Three-way catalyst combining oxidation and NOx reduction:	Yes /No ⁽¹⁾
2.11.9.	Other after-treatment devices (specify):	<i>N/A</i>
2.11.10.	Other devices or features that have a strong influence on emissions (specify):	<i>N/A</i>

3. Essential characteristics of the engine type(s)

Item Number	Item Description	Parent Engine / Engine type	Engine types within the family (if applicable)		
3.1.1.	Engine Type Designation:	<i>RVC190 (MA190)</i>	<i>RVC175 (MA175)</i>		
3.1.2.	Engine type designation shown on engine mark: Yes/No ⁽¹⁾	<i>Yes</i>	<i>Yes</i>		
3.1.3.	Location of the manufacturer's statutory marking:	<i>Refer to drawing No. RVC190-01</i>	<i>Refer to drawing No. RVC175-01</i>		
3.2.1.	Declared rated speed (rpm):	<i>3600</i>	<i>3600</i>		
3.2.1.2.	Declared rated net Power (kW):	<i>3.72</i>	<i>3.40</i>		
3.2.2.	Maximum power speed (rpm):	<i>3600</i>	<i>3600</i>		
3.2.2.2.	Maximum net power (kW):	<i>3.72</i>	<i>3.40</i>		
3.2.3.	Declared maximum torque speed (rpm):	<i>2500</i>	<i>2500</i>		
3.2.3.2.	Declared maximum torque (Nm):	<i>11.2</i>	<i>10.0</i>		
3.6.3.	Number of Cylinders:	<i>1</i>	<i>1</i>		
3.6.4.	Engine Displacement (cm ³):	<i>189</i>	<i>174</i>		
3.8.5.	Device for recycling crankcase gases: Yes/No ⁽¹⁾	<i>No</i>	<i>No</i>		
3.11.3.12.	Consumable reagent: Yes/No ⁽¹⁾	<i>No</i>	<i>No</i>		
3.11.3.12.1.	Type and concentration of reagent needed for catalytic action:	<i>N/A</i>	<i>N/A</i>		
3.11.3.13.	NOx sensor(s): Yes/No ⁽¹⁾	<i>N/A</i>	<i>N/A</i>		
3.11.3.14.	Oxygen sensor: Yes/No ⁽¹⁾	<i>N/A</i>	<i>N/A</i>		
3.11.4.7.	Fuel borne catalyst (FBC): Yes/No ⁽¹⁾	<i>N/A</i>	<i>N/A</i>		

Particular conditions to be respected in the installation of the engine on non-road mobile machinery:

Item Number	Item Description	Parent Engine / Engine type	Engine types within the family (if applicable)		
3.8.1.1.	Maximum allowable intake depression at 100 % engine speed and at 100 % load (kPa) with clean air cleaner:	-4.5	-2.5		
3.8.3.2.	Maximum charge air cooler outlet temperature at 100 % speed and 100 % load (deg. C):	<i>N/A</i>	<i>N/A</i>		
3.8.3.3.	Maximum allowable pressure drop across charge cooler at 100 % engine speed and at 100 % load (kPa) (if applicable):	<i>N/A</i>	<i>N/A</i>		
3.9.3.	Maximum permissible exhaust gas backpressure at 100 % engine speed and at 100 % load (kPa):	6.5	5.5		
3.9.3.1	Location of measurement:	<i>Inlet of muffler</i>	<i>Inlet of muffler</i>		
3.11.1.2.	Maximum temperature drop from exhaust system or turbine outlet to first exhaust after-treatment system (deg. C) if stated:	<i>N/A</i>	<i>N/A</i>		
3.11.1.2.1.	Test conditions for measurement:	<i>N/A</i>	<i>N/A</i>		

PART B — TEST RESULTS

3.8. Manufacturer intends to use ECU torque signal for in-service monitoring: ***Yes/No*** ⁽¹⁾

3.8.1. Dynamometer torque greater than or equal to $0,93 \times$ ECU torque: ***Yes/No*** ⁽¹⁾

3.8.2. ECU torque correction factor in case that dynamometer torque less than $0,93 \times$ ECU torque: ***N/A***

11.1 Cycle emissions results

Emissions	CO (g/kWh)	HC (g/kWh)	NOx (g/kWh)	HC+NOx (g/kWh)	PM (g/kWh)	PN #/kWh	Test Cycle ⁽⁸⁾
NRSC final result with DF.	376.3	*	*	8.4	N/A	N/A	G1
NRTC Final test result with DF	-	-	-	-	-	-	-

11.2 CO₂ result: ***921.93 g/kWh***



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Extension No: N/A

Explanatory notes to Annex IV:

(Footnote markers, footnotes and explanatory notes not to be stated on the EU type-approval certificate)

- (¹) Strike out the unused options, or only show the used option(s).
- (²) Indicate only the latest amendment in case of an amendment of one or more Articles of Regulation (EU) 2016/1628, according to the amendment applied for the EU type-approval.
- (³) Delete this entry when not applicable.
- (⁴) Indicate the applicable option for the category and sub-category in accordance with entry 1.7 of the information document set out in Part A of Appendix 3 to Annex I.
- (⁵) Indicate whether the approval is for a NRS (< 19 kW) engine family consisting exclusively of engine types for snow throwers.
- (⁶) Applicable only for EU type-approval of an engine type or an engine family as an exemption for new technologies or new concepts, pursuant to Article 35 of Regulation (EU) 2016/1628.
- (⁷) Indicate the Member State.
- (⁸) Indicate the test cycle in accordance with the fifth column of the Tables set out in Annex IV to Regulation (EU) 2016/1628.