EU TYPE-APPROVAL CERTIFICATE

Communication concerning the:

- EU type-approval,
- ~~extension of EU type-approval~~,
- ~~refusal of EU type-approval~~,
- ~~withdrawal of EU 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 (EU) 2018/989 (1) (2) (of the European Parliament and of the Council) (1)

EU Type Approval No:***e24*2016/1628*2018/989SHB1/P*0502*00***

Reason for ~~extension~~/~~refusal~~/~~withdrawal~~ (1): ***- N/A***

SECTION I

1.1.	Make (trade name(s) of manufacturer):	***ZOMAX***
1.2.	Commercial name(s) (if applicable):	***N/A***
1.3.	Company name and address of manufacturer:	***Zhejiang Zomax Garden Machinery Co.,Ltd.*** ***No. 48 Aodihu Road, Taiping District,*** ***Wenling City, Zhejiang, China, 317599***
1.4.	Name and address of manufacturer's authorised representative (if any):	***Brumar Garden Products S.r.l Loc. Valgera 110/B-14100 ASTI (AT),*** ***Italy***
1.5.	Name(s) and address(es) of assembly/manufacture plant(s):	***Same as above 1.3***
1.6.	Engine type designation/~~engine family designation/FT~~ (1):	***ZM1E46FC*** ***Commercial names: N/A***
1.7.	Category and sub-category of the ~~engine type~~/engine family (1) (4):	***Category: NRSh*** ***Sub-category: NRSh-v-1b***
1.8.	Emissions durability period category:	***~~Not Applicable~~/Cat 1/~~Cat 2/Cat 3~~ (1)***
1.9.	Emissions stage:	***V/ ~~SPE~~***
1.10.	Engine for snow throwers (5):	***~~Yes~~/No (1)***

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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):	***26.11.2021***
3.	Number(s) of test report(s):	***21-01915-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	The approval is:	***granted/~~extended/refused/withdrawn~~ (1)***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:	***21st December, 2021***

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)'.

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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):	***N/A***
2.8.4.	Lubricant added to fuel:	***Yes/~~No~~*** (1) ***10W/40*** ***40:1***
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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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):	***N/A***
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.	Other after-treatment devices (specify):	***N/A***
2.11.9.	Other devices or features that have a strong influence on emissions (specify):	***N/A***

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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:	***ZM1E46FC***	***N/A***
3.1.2.	Engine type designation shown on engine mark: Yes/No (1)	***Yes***	***N/A***
3.1.3.	Location of the manufacturer's statutory marking:	***Refer to drawing No. 001***	***N/A***
3.2.1.	Declared rated speed (rpm):	***8500***	***N/A***
3.2.1.2.	Declared rated net Power (kW):	***2.4***	***N/A***
3.2.2.	Maximum power speed (rpm):	***8500***	***N/A***
3.2.2.2.	Maximum net power (kW):	***2.4***	***N/A***
3.2.3.	Declared maximum torque speed (rpm):	***6500***	***N/A***
3.2.3.2.	Declared maximum torque (Nm):	***2.8***	***N/A***
3.6.3.	Number of Cylinders:	***1***	***N/A***
3.6.4.	Engine total swept volume (cm^3):	***54.5***	***N/A***
3.8.5.	Device for recycling crankcase gases: ~~Yes~~/ No (1)	***No***	***N/A***
3.11.3.12.	Consumable reagent: ~~Yes~~/No (1)	***No***	***N/A***
3.11.3.12.1.	Type and concentration of reagent needed for catalytic action:	***N/A***	***N/A***
3.11.3.13.	NOx sensor(s): ~~Yes~~/No (1)	***No***	***N/A***
3.11.3.14.	Oxygen sensor: ~~Yes~~/No (1)	***No***	***N/A***
3.11.4.7.	Fuel borne catalyst (FBC): ~~Yes~~/No (1)	***No***	***N/A***

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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:	***-2.0***	***N/A***
3.8.3.2.	Maximum charge air cooler outlet temperature at 100 % speed and 100 % load (deg. C):	***N/A***	***N/A***
3.8.3.3.	Maximum allowable pressure drop across charge cooler at 100 % engine speed and at 100 % load (kPa) (if applicable):	***N/A***	***N/A***
3.9.3.	Maximum permissible exhaust gas backpressure at 100 % engine speed and at 100 % load (kPa):	***4.7***	***N/A***
3.9.3.1	Location of measurement:	***Inlet of muffler***	***N/A***
3.11.1.2.	Maximum temperature drop from exhaust system or turbine outlet to first exhaust after-treatment system (deg. C) if stated:	***N/A***	***N/A***
3.11.1.2.1.	Test conditions for measurement:	***N/A***	***N/A***

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 × ECU torque: ***~~Yes~~/No*** [(1)]

3.8.2. ECU torque correction factor in case that dynamometer torque less than 0,93 × 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.	152.9	-*	-*	54.5	N/A	N/A	G3
NRTC Final test result with DF	-	-	-	-	-	-	-

(*) Optionally, as an alternative, any combination of values satisfying the equation (HC + NOx) × $CO^{0,784} \leq 8,57$ as well as the following conditions: CO ≤ 20,6 g/kWh and (HC + NOX) ≤ 2,7 g/kWh

11.2. CO_2 result: ***1103 g/kWh***

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11.3. In service monitoring reference values [9]

11.3.1. Reference work (kWh): ***N/A***

11.3.2. Reference CO_2 mass (g): ***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.

([9]) Only applicable to engines of sub-categories NRE-v-5 and NRE-v-6 tested on NRTC.

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Index to the Information Package

Date of issue:	***21st December, 2021***
Date of latest amendment:	***N/A***
Reason for extension/revision:	***N/A***

1. Additional conditions, and advisory notes on legal alternatives.

2. Test report(s)

- numbers(s):	***21-01915-CX-SHA-00***
- date of issue:	***26.11.2021***
- date of latest amendment:	***N/A***

3. Information document

- number(s):	***ZM1E46FC-ext.00***
- date of issue:	***15.10.2021***
- date of latest amendment:	***N/A***

Documentation: ***51 pages***

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EU Type Approval No: ***e24*2016/1628*2018/989SHB1/P*0502*00***

Appendix: **Additional conditions, and advisory notes on legal alternatives**

A: Additional conditions:

1. The attached technical report, with any of its attachments, forms part of this Type Approval certificate.
2. Each type from series production shall be to the measurements specified in the attached drawings, and shall be manufactured only from the materials specified in the Approval documents.
3. Changes in the type are permitted only with the explicit permission of NSAI. Breaches of this requirement will lead to a withdrawal of the Type Approval, and in addition may be subject to criminal prosecution.
4. At regular intervals, any tests or associated checks prescribed by the applicable legislation to verify continued conformity with the approved type shall be carried out. The manufacturer shall demonstrate compliance with this by submitting to NSAI evidence of adequate arrangements and documented control plans for each type approved.
5. Any set of samples or test pieces showing evidence of non-conformity shall give rise to further sampling and testing and all steps shall be taken to restore conformity of production.
6. This Type Approval will expire when it is surrendered by the holder, or withdrawn by NSAI, or when the approved type no longer conforms to legal requirements. The recall of the Type Approval can be issued by NSAI when the conditions required for the issuing or continuation of the Type Approval are no longer current, or when the Approval holder is in breach of the duties attached to the Type Approval, or when it is established that the approved type no longer meets the requirements of traffic safety.
7. Changes in the company name, address or manufacturing site, as well as in any of the sales or other agents specified in the issuing of the approval must immediately be notified to NSAI.
8. The duties imposed by the issuing of this certificate are not transferable. The legal protection of third parties is not affected by this certificate.
9. When the manufacture or sale of the system, component or separate technical unit has not been started within one year of the date of issue of this certificate, then NSAI is to be informed. This requirement also applies when the manufacture or sale has been halted for more than one year, or when it ought to have been halted for more than one year. The initial commencement of manufacture or sale, or the resumption of manufacture or sale, shall then be notified to NSAI within one month of commencement or resumption.

B: Legal Options:

Any objection to the requirements set out in this certificate shall be made within one month of the date of issue. The objection shall be made, in writing, to NSAI in Dublin.

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Auto Service

TECHNICAL REPORT

No.: 21-01915-CX-SHA-00

Test in accordance with the regulation of the European Parliament and the Council on requirements

relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery

Regulation (EU) 2016/1628	dated	**14.09.2016**

Including all amendments of Commission Delegated/Implementing up to

Regulation (EU) 2018/987	dated	**27.04.2018**
Regulation (EU) 2018/988	dated	**27.04.2018**
Regulation (EU) 2018/989	dated	**18.05.2018**

Approval status		
☑	Granting of a type approval	: ---
☐	Extension/correction to type approval no.	: ---

1. General information

1.1.	Make (trade name(s) of manufacturer)	:	ZOMAX
1.2.	Commercial name(s) (if applicable)	:	N/A
1.3.	Company name and address of manufacturer	:	ZHEJIANG ZOMAX GARDEN MACHINERY CO., LTD. No. 48 Aodihu Road, Taiping District, Wenling City, Zhejiang, China, 317599
1.4.	Name and address of manufacturer's authorised representative (if any)	:	Brumar Garden Products S.r.l Loc. Valgera 110/B-14100 ASTI (AT)-ITALY
1.5.	Name(s) and address(es) of assembly/manufacture plant(s)	:	Same as above 1.3.
1.6.	Name of technical service	:	TÜV SÜD Auto Service GmbH
1.7.	Address of technical service	:	Westendstraße 199 D-80686 München
1.8.	Location of test	:	Nanjing Depurate Catalyst Co., Ltd.
1.9.	Date of test	:	04.11.2021 - 18.11.2021
1.10.	Test report number	:	21-01915-CX-SHA-00
1.11.	Information document reference number (if available)	:	ZM1E46FC-ext.00
1.12.	Test report type	:	Primary test~~/additional test/supplementary test~~
1.12.1.	Description of the purpose of the test	:	New approval test

2. General engine information (test engine)

2.1.	Engine type designation~~/engine family designation/FT~~	:	ZM1E46FC
2.2.	Engine identification number	:	21100056
2.3.	Engine Category and subcategory	:	Category: NRSh Sub-category: NRSh-v-1b
2.4.	Worst Case Rationale	:	Test carried out on the single engine. Carburettor (Make: ZOMAX, Type: ZP152) with the highest fuel flow at maximum torque speed is selected for the tests.

3. Documentation and information Check list (primary test only)

3.1.	Engine mapping documentation reference	:	G3 cycle, tested at rated speed, manufacturer's declared rated power, rated speed checked before carrying out emission test, and the check results meet the relevant requirements in paragraph 5, annex VI, 2017/654/EU.
3.2.	Deterioration factor determination documentation reference	:	See Annex I
3.3.	Infrequent regeneration factors determination documentation reference, where applicable	:	N/A
3.4.	NO_x control diagnostic demonstration documentation reference, where applicable	:	N/A
3.5.	Particulate control diagnostic demonstration documentation reference, where applicable	:	N/A
3.6.	For engine types and engine families that use an Electronic Control Unit (ECU) as part of the emission control system anti-tampering declaration documentation reference	:	N/A

3.7.	For engine types and engine families that use mechanical devices as part of the emission control system anti-tampering and adjustable parameters declaration and demonstration documentation reference	:	Tamper-proof carburettor
3.8.	Manufacturer intends to use Electronic Control Unit (ECU) torque signal for in-service monitoring	:	~~Yes/~~No
3.8.1.	Dynamometer torque greater than or equal to 0.93 × Electronic Control Unit (ECU) torque	:	~~Yes/~~No
3.8.2.	Electronic Control Unit (ECU) torque correction factor in case that dynamometer torque less than 0.93x Electronic Control Unit (ECU) torque	:	N/A

4. Reference fuel(s) used for test (complete relevant subparagraph(s))

4.1. Liquid fuel for spark-ignition engines

4.1.1.	Make	:	Anhui Super Beauty Chemical Science Co., Ltd.
4.1.2.	Type	:	E10
4.1.3.	Octane number RON	:	96.2
4.1.4.	Octane number MON	:	85.6
4.1.5.	Ethanol content (%)	:	9.5
4.1.6.	Density at 15 Deg.C (kg/m^3)	:	753.1

4.2. Liquid fuel for compression-ignition engines

4.2.1.	Make	:	N/A
4.2.2.	Type	:	N/A
4.2.3.	Cetane number	:	N/A
4.2.4.	Fame content (%)	:	N/A
4.2.5.	Density at 15 Deg.C (kg/m^3)	:	N/A

4.3.	*Gaseous fuel – LPG*		
4.3.1.	Make	:	N/A
4.3.2.	Type	:	N/A
4.3.3.	Reference fuel type	:	~~Fuel A/Fuel B~~
4.3.4.	Octane number MON	:	N/A
4.4.	*Gaseous fuel- Methane/biomethane*		
4.4.1.	Reference fuel type: $G_R/G_{23}/G_{25}/G_{20}$	:	N/A
4.4.2.	Source of reference gas	:	~~specific reference fuel/pipeline gas with admixture~~
4.4.3.	For specific reference fuel		
4.4.3.1.	Make	:	N/A
4.4.3.2.	Type	:	N/A
4.4.4.	For pipeline gas with admixture		
4.4.4.1.	Admixture(s):	:	~~Carbon dioxide/Ethane/Methane/ Nitrogen/Propane~~
4.4.4.2.	The value of Sλ for the resulting fuel blend:	:	N/A
4.4.4.3.	The Methane Number (MN) of the resulting fuel blend	:	N/A
4.5.	*Dual fuel engine (in addition to relevant sections above)*		
4.5.1.	Gas energy ratio on test cycle	:	N/A

5.	**Lubricant**		
5.1.	Make(s)	:	Mobil
5.2.	Type(s)	:	2T
5.3.	SAE viscosity	:	10W/40
5.4.	Lubricant and fuel are mixed	:	yes~~/no~~
5.4.1.	Percentage of oil in mixture	:	1/40

6. Engine Speed

6.1.	100% speed (rpm)	:	8500
6.1.1.	100% speed determined by	:	Declared rated speed~~/Declared MTS/Measured MTS~~
6.1.2.	Adjusted MTS if applicable (rpm)	:	N/A
6.2.	Intermediate speed (rpm)	:	N/A
6.2.1.	Intermediate speed determined by	:	~~Declared intermediate speed/Measured intermediate speed/60% of 100% speed/75% of 100% speed /85% of 100% speed~~
6.3.	Idle speed (rpm)	:	3000

7. Engine Power

7.1. Engine driven equipment (if applicable)

~~7.1.1. Power absorbed at indicated engine speeds by necessary auxiliaries for engine operation that cannot be fitted for the test (as specified by the manufacturer) to be shown in Table 1:~~

~~Table 1~~

~~Auxiliary type and identifying details~~	~~Power absorbed at indicated speed (kW) (complete relevant columns)~~						
	~~Idle~~	~~63%~~	~~80%~~	~~91%~~	~~Inter-mediate~~	~~Max. power~~	~~100%~~
~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~
~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~
~~Total ($P_{f,i}$) (kW):~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~

~~7.1.2. Power absorbed at indicated engine speeds by auxiliaries linked with operation of the machine that cannot be removed for the test (as specified by the manufacturer) to be shown in Table 2:~~

~~**Table 2**~~

~~Auxiliary type and identifying details~~	~~Power absorbed at indicated speed (kW) (complete relevant columns)~~						
	~~Idle~~	~~63%~~	~~80%~~	~~91%~~	~~Inter-mediate~~	~~Max. power~~	~~100%~~
~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~
~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~
~~Total ($P_{r,i}$) (kW):~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~	~~-~~

7.2. Engine net power to be stated in Table 3

Table 3

Condition	Power setting at indicated engine speed (kW) (complete relevant columns)		
	Intermediate	Max. power	100%
Maximum power measured at specified test speed ($P_{m,i}$) (kW)	N/A	N/A	2.4
Total auxiliary power from table 1 ($P_{f,i}$)	N/A	N/A	0
Total auxiliary power from table 2 ($P_{r,i}$)	N/A	N/A	0
Net engine power (kW) $Pi = P_{m,i} - P_{f,i} + P_{r,i}$	N/A	N/A	2.4

8. Conditions at test

8.1. f_a within range 0.93 to 1.07 : Yes~~/No~~

8.1.1. If f_a is not within specified range state altitude of test facility and dry atmospheric pressure : N/A

8.2. Applicable intake air temperature range : : Yes
20 to 30~~/0 to -5(snow throwers only)/-5 to -15(snowmobiles only)/20 to 35(NRE greater than 560 kW only)~~

9. Information concerning the conduct of the NRSC test:

9.1 Cycle (mark cycle used with X)

Table 4

Cycle	C1	C2	D2	E2	E3	F	G1	G2	G3	H
Discrete mode	-	-	-	-	-	-	-	-	x	-
RMC	-	-	-	-	-	-	-	-	N/A	-

The length of each mode : 3 minutes

Sampling time for each mode : 2 minutes

9.2. Dynamometer setting (kW)

Table 5

% Load at point or % of rated power (as applicable)	Dynamometer setting (kW) at indicated engine speed after adjustment for auxiliary power (complete relevant columns)					
	Idle	63%	80%	91%	Inter-mediate	100%
5%	-	-	-	-	-	-
10%	-	-	-	-	-	-
25%	-	-	-	-	-	-
50%	-	-	-	-	-	-
75%	-	-	-	-	-	-
100%	-	-	-	-	-	2.4

9.3. NRSC Emission results

9.3.1. Deterioration Factor (DF): calculated~~/assigned~~

9.3.2. Specify the DF values and the cycle weighted emission results in the following table

Note: In the event that a discrete mode NRSC is run where the K_{ru} or K_{rd} factors have been established for individual modes then a table showing each mode and the applied K_{ru} or K_{rd} should replace the shown table

Table 6

DF mult/~~add~~	CO	HC	NO_x	$HC+NO_x$	PM	PN
	1.13	-*	-*	1.03	N/A	N/A
Emissions	CO (g/kWh)	HC (g/kWh)	NO_x (g/kWh)	$HC+NO_x$ (g/kWh)	PM (g/kWh)	PN #/kWh
Test result ~~with/~~without regeneration	135.72	50.84	2.25	53.09	N/A	N/A
k_{ru}/k_{rd} mult/~~add~~	N/A	N/A	N/A	N/A	N/A	N/A
test result with IRAFs	N/A	N/A	N/A	N/A	N/A	N/A
Final test result with DF	152.9	-*	-*	54.5	N/A	N/A

* Separate DF for HC and NOx are not required for engine categories and sub-categories NRSh and NRS, except for NRS-v-2b and NRS-v-3.

9.3.3. Cycle weighted CO_2 (g/kWh) : 1103

9.3.4. Cycle weighted NH_3 (ppm) : N/A

~~9.4. Additional control area test points (if applicable)~~

~~**Table 7**~~

~~Emissions at test point~~	~~Engine Speed~~	~~Load (%)~~	~~CO (g/kWh)~~	~~HC (g/kWh)~~	~~NO_x (g/kWh)~~	~~$HC+NO_x$ (g/kWh)~~	~~PM (g/kWh)~~	~~PN n/kWh~~
~~Test result 1~~	-	-	-	-	-	-	-	-
~~Test result 2~~	-	-	-	-	-	-	-	-
~~Test result 3~~	-	-	-	-	-	-	-	-

9.5. Sampling systems used for the NRSC test

9.5.1. Gaseous emissions : Sample system: HORIBA-CVS7100
Analyse system: MEXA-7200D
Dynamometer: HACD-3

9.5.2.	PM	:	N/A
9.5.2.1.	Method	:	~~single/multiple filter~~
9.5.3.	Particle number	:	N/A

10. Information concerning the conduct of the NRTC test (if applicable)

~~10.1. Cycle (mark cycle with X)~~

Table 8

~~NRTC~~	~~-~~
~~LSI-NRTC~~	~~-~~

~~10.2. NRTC deterioration factors~~

~~10.2.1. Deterioration Factor (DF) : calculated/fixed~~

~~10.2.2. DF values and the emissions results to be stated in Table 9 or in Table 10, as applicable (NRTC or LSI-NRTC):~~

10.3. NRTC emission results

Table 9: Table for NRTC

DF mult/add	CO	HC	NO_x	$HC+NO_x$	PM	PN
	-	-	-	-	-	-
Emissions	CO (g/kWh)	HC (g/kWh)	NO_x (g/kWh)	$HC+NO_x$ (g/kWh)	PM (g/kWh)	PN #/kWh
Cold start	-	-	-	-	-	-
Hot start test result with/without regeneration	-	-	-	-	-	-
Weighted test result	-	-	-	-	-	-
k_{ru}/k_{rd} mult/add	-	-	-	-	-	-
Weighted test result with IRAFs	-	-	-	-	-	-
Final test result with DF	-	-	-	-	-	-

10.3.1 Hot cycle CO_2 (g/kWh) :

10.3.2. Cycle weighted NH_3 (ppm) :

10.3.3. Cycle work for hot start test (kWh) :

10.3.4. Cycle CO_2 for hot start test (g) :

10.4. LSI-NRTC emission results

Table 10: Table for NRTC-LSI

DF mult/add	CO	HC	NO_x	$HC+NO_x$	PM	PN
	-	-	-	-	-	-
Emissions	CO (g/kWh)	HC (g/kWh)	NO_x (g/kWh)	$HC+NO_x$ (g/kWh)	PM (g/kWh)	PN #/kWh
test result with/without regeneration	-	-	-	-	-	-
k_{ru}/k_{rd} mult/add	-	-	-	-	-	-
Weighted test result with IRAFs	-	-	-	-	-	-
Final test result with DF	-	-	-	-	-	-

10.4.1. Cycle CO_2 (g/kWh) ÷

10.4.2. Cycle NH_3 (ppm) ÷

10.4.3. Cycle work (kWh) ÷

10.4.4. Cycle CO_2 (g) ÷

10.5. Sampling system used for the NRTC test ÷

10.5.1. Gaseous emissions ÷

10.5.2. PM ÷

10.5.3. Particle number ÷

11. Final emission result

11.1 Cycle emissions results

Table 11

Emissions	CO (g/kWh)	HC (g/kWh)	NO_x (g/kWh)	HC+NO_x (g/kWh)	PM (g/kWh)	PN #/kWh	Test Cycle(1)
NRSC final result with DF(2).	152.9	-*	-*	54.5	N/A	N/A	G3
NRTC Final test result with DF(3)	-	-	-	-	-	-	-

* Separate DF for HC and NOx are not required for engine categories and sub-categories NRSh and NRS, except for NRS-v-2b and NRS-v-3.

11.2 CO_2 result (g/kWh) (4) : 1103

11.3. In service monitoring reference values (5) : N/A

11.3.1. Reference work (kWh) (6) : N/A

11.3.2. Reference CO2 mass (g) (7) : N/A

Emission limits

	CO	HC	NOx	HC+NOx	PM	PN
NRSh-v-1a	805	-	-	50	-	-
NRSh-v-1b	603	-	-	72	-	-
NRS-vr-1a	610	-	-	10	-	-
NRS-vr-1b	610	-	-	8	-	-
NRS-vi-1a	610	-	-	10	-	-
NRS-vi-1b	610	-	-	8	-	-
NRS-v-2a	610	-	-	8	-	-
NRS-v-2b	4,40(*)	-	-	2,70(*)	-	-
NRS-v-3	4,40(*)	-	-	2,70(*)	-	-

(*) Optionally, as an alternative, any combination of values satisfying the equation $(HC + NO_x) \times CO^{0,784} \leq 8,57$ as well as the following conditions: CO ≤ 20,6 g/kWh and (HC + NOX) ≤ 2,7 g/kWh

12. Statement of conformity

The mentioned information folder and the type described therein are in accordance with the test basis mentioned above. The worst-case was selected in accordance with document "Requirements for Test Reports (AS-PB-T-02)".

The test report may be reproduced and published in full and by the client only. It can be reproduced partially with the written permission of the test laboratory only.

TÜV SÜD Auto Service GmbH is designated as Technical Service by:

Approval authority	Country	Registration number
Kraftfahrt-Bundesamt (KBA)	Germany	KBA-P 00100-10
Vehicle Certification Agency (VCA)	United Kingdom	VCA-TS-006
Approval Authority of the Netherlands (RDW)	The Netherlands	RDWT-082-xx
National Standards Authority of Ireland (NSAI)	Ireland	Technical Service Number: 49
Société Nationale de Certification et d'Homologation (SNCH)	Luxembourg	13/B(g)

Technischer Dienst Technical Service TÜV SÜD 193 TÜV SÜD Auto Service GmbH

München, 26.11.2021

Jianjun Lu

(1) For NRSC indicate the cycle noted in point 9.1 (Table 4); for transient test indicate cycle noted in point 10.1 (Table 8).
(2) Copy the “Final test result with DF” results from Table 6.
(3) Copy “Final test result with DF” results from Table 9 or 10, as applicable.
(4) For an engine type or engine family that is tested on both the NRSC and a transient cycle, indicate the hot cycle CO2 emissions values from the NRTC noted in point 10.3.4 or the CO2 emissions values from the LSI-NRTC noted in point 10.4.4. For an engine only tested on an NRSC indicate the CO2 emissions values given in that cycle noted in point 9.3.3.
(5) Only applicable to engines of sub-categories NRE-v-5 and NRE-v-6 tested on NRTC.
(6) Indicate the cycle work for hot start test value from the NRTC noted in point 10.3.3.
(7) Indicate the cycle CO2 for hot start test value from the NRTC noted in point 10.3.4.

Annex 1 Determination of deterioration factor

ZM1E46FC parent engine (engine No: 21100056)

	New stabilized engine	engine after 50 hours aging cycle	DF
CO	135.72 g/kWh	152.92 g/kWh	1.13
HC	50.84 g/kWh	52.59 g/kWh	-*
NO_x	2.25 g/kWh	1.90 g/kWh	-*
HC + NOx	53.09 g/kWh	54.49 g/kWh	1.03

* Separate DF for HC and NOx are not required for engine categories and sub-categories NRSh and NRS, except for NRS-v-2b and NRS-v-3.

Aging cycle (started at 07.11.2021)
[only as sample, the complete file is available]

Test Date	Durability Hours	Load Percent	Parameters								
	h	%	Engine Speed	Torque	Power	Oil Temperature	Spark Plug Temperature	Environment Temperature	Relative Humidity	Atmospheric Pressure	Time Record
			r/min	N·m	kW	℃	℃	℃	%	kPa	-
2021-11-07	1	100	8509	2.72	2.42	N.A	256	22	46	102	14:00
	2	100	8510	2.71	2.41	N.A	256	22	46	102	15:00
	3	100	8508	2.72	2.42	N.A	256	22	46	102	16:00
	4	100	8506	2.71	2.41	N.A	256	22	46	102	17:00
	5	100	8505	2.73	2.43	N.A	256	22	46	102	18:00
	6	100	8510	2.70	2.41	N.A	255	21	46	102	19:00
	7	100	8509	2.71	2.41	N.A	255	21	46	102	20:00
	8	100	8507	2.72	2.42	N.A	255	21	46	102	21:00
	9	100	8509	2.73	2.43	N.A	255	20	47	102	22:00
	10	100	8513	2.74	2.44	N.A	255	20	47	102	23:00
2021-11-08	11	100	8526	2.71	2.41	N.A	255	20	47	102	0:00
	12	100	8522	2.69	2.40	N.A	255	20	47	102	1:00
	13	100	8522	2.69	2.40	N.A	255	20	47	102	2:00
	14	100	8513	2.71	2.41	N.A	255	20	47	102	3:00
	15	100	8510	2.70	2.41	N.A	255	19	47	102	4:00
	16	100	8508	2.70	2.41	N.A	255	19	47	102	5:00
	17	100	8509	2.71	2.41	N.A	256	20	47	102	6:00
	18	100	8507	2.70	2.41	N.A	256	20	47	102	7:00
	19	100	8509	2.69	2.40	N.A	256	20	46	102	8:00
	20	100	8510	2.69	2.40	N.A	256	20	46	102	9:00
	21	100	8508	2.68	2.39	N.A	257	21	46	102	10:00
	22	100	8506	2.69	2.40	N.A	257	21	46	102	11:00
	23	100	8505	2.70	2.41	N.A	257	21	46	102	12:00
	24	100	8506	2.71	2.42	N.A	257	21	46	102	13:00
	25	100	8525	2.70	2.41	N.A	257	21	46	102	14:00
	26	100	8512	2.71	2.42	N.A	257	21	46	102	15:00
	27	100	8509	2.69	2.40	N.A	256	21	46	102	16:00
	28	100	8510	2.69	2.40	N.A	257	21	46	102	17:00

	29	100	8506	2.68	2.39	N.A	257	21	46	102	18:00
	30	100	8511	2.67	2.38	N.A	257	21	46	102	19:00
	31	100	8502	2.65	2.36	N.A	257	21	46	102	20:00
	32	100	8496	2.66	2.37	N.A	256	21	46	102	21:00
	33	100	8492	2.66	2.37	N.A	256	21	46	102	22:00
	34	100	8502	2.67	2.38	N.A	257	20	47	102	23:00
2021-11-09	35	100	8516	2.67	2.38	N.A	257	20	47	102	0:00
	36	100	8506	2.66	2.37	N.A	256	20	47	102	1:00
	37	100	8500	2.66	2.37	N.A	256	20	47	102	2:00
	38	100	8507	2.67	2.38	N.A	256	20	47	102	3:00
	39	100	8504	2.65	2.36	N.A	256	20	47	102	4:00
	40	100	8508	2.65	2.36	N.A	256	20	47	102	5:00
	41	100	8520	2.66	2.37	N.A	256	20	47	102	6:00
	42	100	8522	2.66	2.37	N.A	256	20	47	102	7:00
	43	100	8512	2.65	2.36	N.A	256	21	46	102	8:00
	44	100	8510	2.65	2.36	N.A	255	21	46	102	9:00
	45	100	8513	2.65	2.36	N.A	255	21	46	102	10:00
	46	100	8521	2.64	2.36	N.A	255	22	46	102	11:00
	47	100	8510	2.64	2.35	N.A	256	22	46	102	12:00
	48	100	8513	2.66	2.37	N.A	256	22	46	102	13:00
	49	100	8516	2.64	2.35	N.A	256	22	46	102	14:00
	50	100	8512	2.64	2.35	N.A	256	22	46	102	15:00

PARTIAL MODEL INFORMATION DOCUMENT

No.: ZM1E46FC-ext.00

ZOMAX

ZHEJIANG ZOMAX GARDEN MACHINERY CO.,LTD.

ENGINE TYPE : **ZM1E46FC**

SUBJECT : **NRMM EMISSION**

LEGAL BASIS : **2016/1628/EU**

Date : 2021-10-15[YYYY-MM-DD]

Approval : Huang Xinyue

AMENDMENT

Version	Approval No.	Modification / Correction	Date
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

CONTENT

Part A

1. General information

1.1.	Make (trade name(s) of manufacturer)	:	ZOMAX
1.2.	Commercial name(s) (if applicable)	:	N/A
1.3.	Company name and address of manufacturer	:	ZHEJIANG ZOMAX GARDEN MACHINERY CO.,LTD. No. 48 Aodihu Road, Taiping District, Wenling City, Zhejiang, China, 317599
1.4.	Name and address of manufacturer's authorised representative (if any)	:	Brumar Garden Products S.r.l Loc. Valgera 110/B-14100 ASTI (AT)-ITALY
1.5.	Name(s) and address(es) of assembly/manufacture plant(s)	:	Same as above 1.3
1.6.	Engine type designation~~/engine family designation/FT~~	:	ZM1E46FC
1.7.	Category and sub-category of the engine type/~~engine family~~	:	Category: NRSh Sub-category: NRSh-v-1b
1.8.	Emissions durability period category	:	Cat 1 (Consumer products)
1.9.	Emissions stage	:	V~~/Special Purpose Engine (SPE)~~
1.10.	In case of NRS <19 kW only, engine family consisting exclusively of engine types for snow throwers	:	~~Yes/~~No
1.11.	Reference power is	:	~~rated net power/~~maximum net power
1.12.	Primary NRSC test cycle	:	~~C1/C2/D2/E2/E3/F/G1/G2/~~G3~~/H~~
1.12.1.	In case of variable speed IWP category only, Additional propulsion test cycle	:	Not applicable~~/E2/E3~~
1.12.2.	In case of IWP category only, additional auxiliary NRSC test cycle	:	Not applicable~~/D2/C1~~
1.13.	Transient test cycle		Not applicable~~/NRTC/LSI-NRTC~~
1.14.	Restrictions on use (if applicable)	:	N/A

Part B

2.	**Common design parameters of engine family**		
2.1.	Combustion Cycle	:	~~four stroke cycle/~~two stroke cycle~~/rotary/other (specify)~~
2.2.	Ignition Type	:	~~Compression ignition/~~spark ignition
2.3.	**Configuration of the cylinders**		
2.3.1.	Position of the cylinders in the block	:	Single~~/V/in-line/opposed/radial/other(specify)~~
2.3.2.	Bore centre to centre dimension (mm)	:	N/A
2.4.	**Combustion chamber type/design**		
2.4.1.	Open chamber/divided chamber/other(specify)	:	Hemispheric chamber
2.4.2.	Valve and porting configuration	:	Refer to drawing No. 002
2.4.3.	Number of valves per cylinder	:	N/A
2.5.	Range of swept volume per cylinder (cm^3)	:	See item 3.6.4. in Part C
2.6.	Main Cooling medium	:	Air~~/Water/Oil~~
2.7.	Method of air aspiration	:	naturally aspirated~~/pressure charged/pressure charged with charge cooler~~
2.8.	**Fuel**		
2.8.1.	Fuel Type	:	~~Diesel (non-road gas-oil)/Ethanol for dedicated compression ignition engines (ED95)/~~Petrol (E10)~~/Ethanol (E85)/Natural gas/Biomethane/Liquid Petroleum Gas (LPG)~~
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~~
2.8.3.	list of additional fuels, fuel mixtures or emulsions suitable for use by the engine, as declared by the manufacturer in accordance with point 1.2.3 of Annex I to Delegated Regulation (EU) 2017/654 (provide reference to recognised standard or specification)	:	N/A
2.8.4.	Lubricant added to fuel	:	Yes~~/No~~
2.8.4.1.	Specification	:	10W/40
2.8.4.2.	Ratio of fuel to oil	:	40:1
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)~~ :
2.9.	Engine management systems	:	mechanical~~/electronic control strategy~~[(2)]

2.10.	**Miscellaneous devices**		
2.10.1.	Exhaust gas recirculation: Yes/No (if yes, complete section 3.10.1. and provide a schematic diagram of the location and order of the devices)	:	No
2.10.2.	Water injection: Yes/No (if yes, complete section 3.10.2. and provide a schematic diagram of the location and order of the devices)	:	No
2.10.3.	Air injection: Yes/No (if yes, complete section 3.10.3. and provide a schematic diagram of the location and order of the devices)	:	No
2.10.4.	Others: Yes/No (if yes, complete section 3.10.4 and provide a schematic diagram of the location and order of the devices)	:	No
2.11.	**Exhaust after-treatment system** (if yes provide a schematic diagram of the location and order of the devices)	:	**Yes~~/No~~**
2.11.1.	Oxidation catalyst (if yes, complete section 3.11.2.)	:	Yes/~~No~~
2.11.2.	DeNOx system with selective reduction of NOx (addition of reducing agent) (if yes, complete section 3.11.3.)	:	~~Yes/~~No
2.11.3.	Other DeNOx systems (if yes, complete section 3.11.3.)	:	~~Yes/~~No
2.11.4.	Three-way catalyst combining oxidation and NOx reduction (if yes, complete section 3.11.3.)	:	~~Yes/~~No
2.11.5.	Particulate after-treatment system with passive regeneration (if yes, complete section 3.11.4.)	:	~~Yes/~~No
2.11.5.1.	Wall-flow/non-wall-flow	:	N/A
2.11.6.	Particulate trap with active regeneration (if yes, complete section 3.11.4.)	:	~~Yes/~~No
2.11.6.1.	Wall-flow/non-wall-flow	:	N/A
2.11.7.	Other particulate after-treatment systems (if yes, complete section 3.11.4.)	:	~~Yes/~~No
2.11.8.	Other after-treatment devices (specify) (if yes, complete section 3.11.5.)	:	~~Yes/~~No
2.11.9.	Other devices or features that have a strong influence on emissions (if yes, complete section 3.11.7.)	:	~~Yes/~~No

Part C

3. Essential characteristics of the engine type(s)

Item Number	Item Description	Test	Installation	Homologation	Parent engine/ engine type	Engine types within the engine family (if applicable)
						Type 1
3.1	**Engine Identification**					
3.1.1.	Engine type designation			X	ZM1E46FC	
3.1.2.	Engine type designation shown on engine marking:			X	Yes	
3.1.3.	Location of the statutory marking:			X	Refer to drawing No. 001	
3.1.4.	Method of attachment of the statutory marking:			X	By engraving and/or labelling	
3.1.5.	Drawings of the location of the engine identification number (complete example with dimensions):			X	Refer to drawing No. 001	
3.2.	**Performance Parameters**					
3.2.1.	Declared rated speed (rpm):	X			8500	
3.2.1.1.	~~Fuel delivery/stroke (mm^3) for diesel engine,~~ fuel flow (g/h) for other engines, at rated net power:			X	1150	
3.2.1.2.	Declared rated net power (kW):	X			2.4	
3.2.2.	Maximum power speed(rpm):			X	8500	
3.2.2.1.	~~Fuel delivery/stroke (mm^3) for diesel engine,~~ fuel flow (g/h) for other engines, at maximum net power			X	1150	
3.2.2.2.	Maximum net power (kW):	X		X	2.4	
3.2.3.	Declared maximum torque speed (rpm):	X			6500	
3.2.3.1.	~~Fuel delivery/stroke (mm^3) for diesel engine,~~ fuel flow (g/h) for other engines, at maximum torque speed:			X	950	
3.2.3.2.	Declared maximum torque (Nm):	X			2.8	
3.2.4.	Declared 100% test speed:	X			8500	
3.2.5.	Declared Intermediate test speed:	X			N/A	
3.2.6.	Idle speed (rpm)	X			3000±300	
3.2.7.	Maximum no load speed (rpm):	X			13000	
3.2.8.	Declared minimum torque (Nm)	X			N/A	
3.3.	**Run-in procedure**					

Item Number	Item Description	Test	Installation	Homologation	Parent engine/ engine type	Engine types within the engine family (if applicable)
						Type 1
3.3.1.	Run in time:	X			2H	
3.3.2.	Run-in cycle:	X			G3	
3.4.	**Engine test**					
3.4.1.	Specific fixture required: Yes/No	X			No	
3.4.1.1.	Description, including photographs and/or drawings, of the system for mounting the engine on the test bench including the power transmission shaft for connection to the dynamometer:	X			N/A	
3.4.2.	Exhaust mixing chamber permitted by manufacturer: Yes/No	X			No	
3.4.2.1.	exhaust mixing chamber description, photograph and/or drawing:	X			N/A	
3.4.3.	Manufacturers chosen NRSC: RMC/Discrete mode	X			Discrete mode	
3.4.4.	Additional NRSC: E2/D2/C1	X			N/A	
3.4.5.	Number of pre-conditioning cycles prior to transient test	X			N/A	
3.4.6.	Pre-conditioning for RMC NRSC: Steady-state operation/RMC	X			N/A	
3.4.6.1.	In case of RMC, number of pre-conditioning RMC prior to RMC NRSC test	X			N/A	
3.5.	**Lubrication system**					
3.5.1.	*Lubricant temperature*					
3.5.1.1.	Minimum (deg. °C):	X			N/A	
3.5.1.2.	Maximum (deg. °C):	X			N/A	
3.6.	**Combustion Cylinder**					
3.6.1.	Bore(mm):			X	45.2	
3.6.2.	Stroke(mm):			X	34	
3.6.3.	Number of cylinders:			X	1	
3.6.4.	Engine total swept volume (cm^3):			X	54.5	
3.6.5.	Swept volume per cylinder as % of parent engine:			X	100%	
3.6.6.	Volumetric compression ratio:			X	8.5:1	
3.6.7.	Combustion system description:			X	Spark ignition	
3.6.8.	Drawings of combustion chamber and piston crown:			X	Refer to drawing no. 002 and 003	

Item Number	Item Description	Test	Installation	Homologation	Parent engine/ engine type	Engine types within the engine family (if applicable)
						Type 1
3.6.9.	Minimum cross sectional area of inlet and outlet ports (mm^2):			X	Inlet 300 mm^2, Outlet 264 mm^2	
3.6.10.	*Valve timing*					
3.6.10.1.	Maximum lift and angles of opening and closing in relation to dead centre or equivalent data:			X	Refer to drawing No. 005	
3.6.10.2.	Reference and/or setting range:			X	0.1~0.2mm	
3.6.10.3.	Variable valve timing system: Yes/No			X	No	
3.6.10.3.1.	Type: continuous/(on/off)			X	N/A	
3.6.10.3.2.	Cam phase shift angle:			X	N/A	
3.6.11.	Porting configuration					
3.6.11.1.	positon, size and number:			X	Refer to drawing No. 002	
3.7.	**Cooling system**					
3.7.1.	*Liquid cooling*				N/A	
3.7.1.1.	Nature of liquid:			X	No	
3.7.1.2.	Circulating pumps: Yes/No			X	N/A	
3.7.1.2.1.	type(s):			X	N/A	
3.7.1.2.2.	Drive ratio(s):			X	N/A	
3.7.1.3.	Minimum coolant temperature at outlet (deg. °C):	X			N/A	
3.7.1.4.	Maximum coolant temperature at outlet (deg. °C):	X				
3.7.2.	*Air cooling*					
3.7.2.1.	fan: Yes/No			X	No	
3.7.2.1.0.	Make:			X	N/A	
3.7.2.1.1.	type(s):			X	N/A	
3.7.2.1.2.	Drive ratio(s):			X	N/A	
3.7.2.2.	Maximum temperature at reference point (deg. °C):			X	270	
3.7.2.2.1.	Reference point location			X	Spark plug washer	
3.8.	**Aspiration**					
3.8.1.	Maximum allowable intake depression at 100% engine speed and at 100% load (kPa)					
3.8.1.1.	With clean air cleaner:	X	X		-2.0	
3.8.1.2.	With dirty air cleaner:	X	X		-2.0	

Item Number	Item Description	Test	Installation	Homologation	Parent engine/ engine type	Engine types within the engine family (if applicable)
						Type 1
3.8.1.3.	Location, of measurement:	X	X		Behind air filter	
3.8.2.	Pressure charger(s): Yes/No			X	No	
3.8.2.0.	Make:			X	N/A	
3.8.2.1.	Type(s):			X	N/A	
3.8.2.2.	Description and schematic diagram of the system (e.g. maximum charge pressure, waste gate, VGT, Twin turbo, etc.):			X	N/A	
3.8.3.	Charge air cooler: Yes/No	X	X		No	
3.8.3.1.	Type: air-air/air-water/other(specify)		X		N/A	
3.8.3.2.	Maximum charge air cooler outlet temperature at 100% speed and 100% load (deg. °C):	X	X		N/A	
3.8.3.3.	Maximum allowable pressure drop across charge cooler at 100% engine speed and at 100% load (kPa):	X	X		N/A	
3.8.4.	Intake throttle valve: Yes/No			X	Yes	
3.8.5.	Device for recycling crankcase gases: Yes/No			X	No	
3.8.5.1.	If yes, description and drawings:			X	N/A	
3.8.5.2.	If no, compliance with paragraph 6.10 of Annex VI to Delegated Regulation (EU) 2017/654: Yes/No	X			N/A	
3.8.6.	Inlet path					
3.8.6.1.	Description of inlet path, (with drawings, photographs and/or part numbers):			X	Refer to drawing No. 010	
3.8.7.	Air filter			X	Refer to drawing No. 008	
3.8.7.1.	Type:			X	4.005.0012.18 4.005.0053.03	
3.8.8.	Intake air-silencer				N/A	
3.8.8.1.	Type:			X	N/A	
3.9.	**Exhaust system**					
3.9.1.	Description of the exhaust system (with drawings, photos and/or part numbers as required):			X	Refer to drawing No. 007	
3.9.2.	Maximum exhaust temperature (deg. °C):	X			450	

Item Number	Item Description	Test	Installation	Homologation	Parent engine/ engine type	Engine types within the engine family (if applicable)
						Type 1
3.9.3.	Maximum permissible exhaust backpressure at 100% engine speed and at 100% load (kPa):	X	X		4.7	
3.9.3.1.	Location of measurement:	X	X		Inlet of muffler	
3.9.4.	Exhaust backpressure at loading level specified by manufacturer for variable restriction after-treatment at start of test (kPa):	X			N/A	
3.9.4.1.	Location and speed/load conditions:	X			N/A	
3.9.5.	Exhaust throttle valve: Yes/No			X	No	
3.10.	**Miscellaneous devices: Yes/No**				No	
3.10.1.	*Exhaust gas recirculation (EGR)*				N/A	
3.10.1.1.	Characteristics: cooled/uncooled, high pressure/low pressure/other (specify):			X	N/A	
3.10.2.	*Water injection*				N/A	
3.10.2.1.	Operation principle:			X	N/A	
3.10.3.	Air injection				N/A	
3.10.3.1.	Operation principle:			X	N/A	
3.10.4.	Other(s)				N/A	
3.10.4.1.	Type(s):			X	N/A	
3.11.	**Exhaust after-treatment system**					
3.11.1.	*Location*		X		Inside the muffler	
3.11.1.1.	Place(s) and maximum/minimum distance(s) from engine to first after-treatment device:		X		≥30mm	
3.11.1.2.	Maximum temperature drop from exhaust or turbine outlet to first after-treatment device (deg. °C) if stated:	X	X		N/A	
3.11.1.2.1.	Test conditions for measurement:	X	X		N/A	
3.11.1.3.	Minimum temperature at inlet to first after-treatment device (deg. C), if stated:	X	X		N/A	
3.11.1.3.1.	Test conditions for measurement:	X	X		N/A	
3.11.2.	Oxidation catalyst					
3.11.2.1.	Number of catalytic converters and elements:			X	1	
3.11.2.2.	Dimensions and volume of the catalytic converter(s):			X	40*20*18mm; 14.40 cm^3	
3.11.2.3.	Total charge of precious metals:			X	20.34mg	
3.11.2.4.	Relative concentration of each compound:			X	Pt/Pd/Rh=1/1/0	

Item Number	Item Description	Test	Installation	Homologation	Parent engine/ engine type	Engine types within the engine family (if applicable)
						Type 1
3.11.2.5.	Substrate (structure and material):			X	0Cr25Al5	
3.11.2.6.	Cell density:			X	40g/ft3	
3.11.2.7.	Type of casing for the catalytic converter(s):			X	Wire mesh	
3.11.3.	*Catalytic exhaust gas after treatment system for ~~NO_x or~~ three way catalyst*					
3.11.3.0.	Make:			X	N/A	
3.11.3.1.	Type:			X	N/A	
3.11.3.2.	Number of catalytic converters and elements:			X	N/A	
3.11.3.3.	Type of catalytic action:			X	N/A	
3.11.3.4.	Dimensions and volume of the catalytic converter(s):			X	N/A	
3.11.3.5.	Total charge of precious metals:			X	N/A	
3.11.3.6.	Relative concentration of each compound:			X	N/A	
3.11.3.7.	Substrate (structure and material):			X	N/A	
3.11.3.8.	Cell density:			X	N/A	
3.11.3.9.	Type of casing for the catalytic converter(s):			X	N/A	
3.11.3.10.	Method of regeneration:	X		X	N/A	
3.11.3.10.1.	Infrequent regeneration: Yes/No:	X			No	
3.11.3.11.	Normal operating temperature range (deg. °C):	X	X		N/A	
3.11.3.12.	Consumable reagent: Yes/No			X	No	
3.11.3.12.1.	Type and concentration of reagent needed for catalytic action:			X	N/A	
3.11.3.12.2.	Lowest concentration of the active ingredient present in the reagent that does not activate warning system (CD_{min}) (%vol):			X	N/A	
3.11.3.12.3.	Normal operational temperature range of reagent:		X		N/A	
3.11.3.12.4.	International standard:		X	X	N/A	
3.11.3.13.	NO_x sensor(s): Yes/No			X	No	
3.11.3.13.0.	Make:			X	N/A	
3.11.3.13.1.	Type:			X	N/A	
3.11.3.13.2.	Location(s)			X	N/A	
3.11.3.14.	Oxygen sensor(s): Yes/No			X	No	
3.11.3.14.0.	Make:			X	N/A	
3.11.3.14.1.	Type:			X	N/A	
3.11.3.14.2.	Location(s):			X	N/A	

Item Number	Item Description	Test	Installation	Homologation	Parent engine/ engine type	Engine types within the engine family (if applicable)
						Type 1
3.11.4.	*Particulate trap*				N/A	
3.11.4.1.	Type of filtration: through flow/partial flow/wall flow/other (specify)			X	N/A	
3.11.4.2'.	Make:			X	N/A	
3.11.4.2.	Type:			X	N/A	
3.11.4.3.	Dimensions and capacity of the particulate trap:			X	N/A	
3.11.4.4.	Location place(s) and maximum and minimum distance(s) from engine:		X		N/A	
3.11.4.5.	Method or system of regeneration, description and/or drawing:			X	N/A	
3.11.4.5.1.	Infrequent regeneration: Yes/No			X	No	
3.11.4.5.2.	Minimum exhaust gas temperature for initiating regeneration procedure (deg. °C):			X	N/A	
3.11.4.6.	Catalytic coating: Yes/No			X	No	
3.11.4.6.1.	Type of catalytic action:			X	N/A	
3.11.4.7.	Fuel borne catalyst (FBC): Yes/No			X	No	
3.11.4.8.	Normal operating temperature range (deg. °C):			X	N/A	
3.11.4.9.	Normal operating pressure range (kPa)			X	N/A	
3.11.4.10.	Storage capacity soot/ash [g]:			X	N/A	
3.11.4.11.	Oxygen sensor(s): Yes/No			X	N/A	
3.11.4.11.1.	Type:			X	N/A	
3.11.4.11.2.	Location(s):			X	N/A	
3.11.5.	*Other systems*				N/A	
3.11.5.1.	Description and operation:			X	N/A	
3.11.6.	Infrequent Regeneration				N/A	
3.11.6.1.	Number of cycles with regeneration	X			N/A	
3.11.6.2.	Number of cycles without regeneration	X			N/A	
3.11.7.	Other device(s) or feature(s)				N/A	
3.11.7.1.	Type(s):			X	N/A	
3.12.	**Fuel feed for liquid-fuelled CI or, where applicable, dual-fuel engines**					
3.12.1.	*Feed pump*				N/A	
3.12.1.1.	Pressure (kPa) or characteristic diagram:			X	N/A	
3.12.2.	*Injection system*				N/A	
3.12.2.1.	Pump				N/A	

Item Number	Item Description	Test	Installation	Homologation	Parent engine/ engine type	Engine types within the engine family (if applicable)
						Type 1
3.12.2.1.0.	Make:			X	N/A	
3.12.2.1.1.	Type(s):			X	N/A	
3.12.2.1.2.	Rated pump speed (rpm):			X	N/A	
3.12.2.1.3.	mm^3 per stroke or cycle at full injection at rated pump speed:			X	N/A	
3.12.2.1.4.	Torque peak pump speed (rpm):			X	N/A	
3.12.2.1.5.	mm^3 per stroke or cycle at full injection at torque peak pump speed			X	N/A	
3.12.2.1.6.	Characteristic diagram:			X	N/A	
3.12.2.1.7.	Method used: on engine/on pump bench			X	N/A	
3.12.2.2.	Injection timing				N/A	
3.12.2.2.1.	Injection timing curve:			X	N/A	
3.12.2.2.2.	Static Timing:			X	N/A	
3.12.2.3.	Injection piping				N/A	
3.12.2.3.1.	Length(s) (mm):			X	N/A	
3.12.2.3.2.	Internal diameter (mm):			X	N/A	
3.12.2.4.	Common rail: Yes/No			X	No	
3.12.2.4.0.	Make:			X	N/A	
3.12.2.4.1.	Type:			X	N/A	
3.12.3.	*Injector(s)*				N/A	
3.12.2.0.	Make:			X	N/A	
3.12.3.1.	Type(s):			X	N/A	
3.12.3.2.	Opening pressure (kPa):			X	N/A	
3.12.4.	*Electronic control unit (ECU): Yes/No*			X	No	
3.12.4.0.	Make:			X	N/A	
3.12.4.1.	Type(s):			X	N/A	
3.12.4.2.	Software calibration number(s):			X	N/A	
3.12.4.3.	Communication standard(s) for access to data stream information: ISO 27145 with ISO 15765-4 (CAN-based)/ISO 27145 with ISO 13400 (TCP/IP-based)/SAE J1939-73	X		X	N/A	
3.12.5.	*Governor*				N/A	
3.12.5.0.	Make:			X	N/A	
3.12.5.1.	Type(s):			X	N/A	
3.12.5.2.	Speed at which cut-off starts under full load:			X	N/A	
3.12.5.3.	Maximum no-load speed:			X	N/A	
3.12.5.4.	Idle speed:			X	N/A	

Item Number	Item Description	Test	Installation	Homologation	Parent engine/ engine type	Engine types within the engine family (if applicable)
						Type 1
3.12.6.	*Cold-start system: Yes/No*			X	No	
3.12.6.0.	Make:			X	N/A	
3.12.6.1.	Type(s):			X	N/A	
3.12.6.2.	Description:			X	N/A	
3.12.7.	Fuel temperature at the inlet to the fuel injection pump				N/A	
3.12.7.1.	Minimum (deg. °C):	X			N/A	
3.12.7.2.	Maximum (deg. °C):	X			N/A	
3.13.	**Fuel feed for liquid fuel spark ignition engine**					
3.13.1.	*Carburettor*				Refer to drawing No. 004	
3.13.1.0.	Make:			X	ZOMAX WALBRO	
3.13.1.1.	Type(s):			X	MP16B58 (ZOMAX) MP16BZ58 (ZOMAX) ZP152 (ZOMAX) WT1025 (WALBRO) WT1047 (WALBRO) WT1196 (WALBRO)	
3.13.2.	*Port fuel injection:*					
3.13.2.1.	single-point / multi-point			X	N/A	
3.13.2.2'.	Make:			X	N/A	
3.13.2.2.	Type(s):			X	N/A	
3.13.3.	*Direct injection:*					
3.13.3.0.	Make:			X	N/A	
3.13.3.1.	Type(s):			X	N/A	
3.13.4.	*Fuel temperature at location specified by manufacturer*					
3.13.4.1.	Location:	X			N/A	
3.13.4.2.	Minimum (deg. °C)	X			N/A	
3.13.4.3.	Maximum (deg. °C)	X			N/A	
3.14.	**Fuel feed for gaseous fuel engines or where applicable, dual fuel engines (in the case of systems laid out in a different manner, supply equivalent information)**					

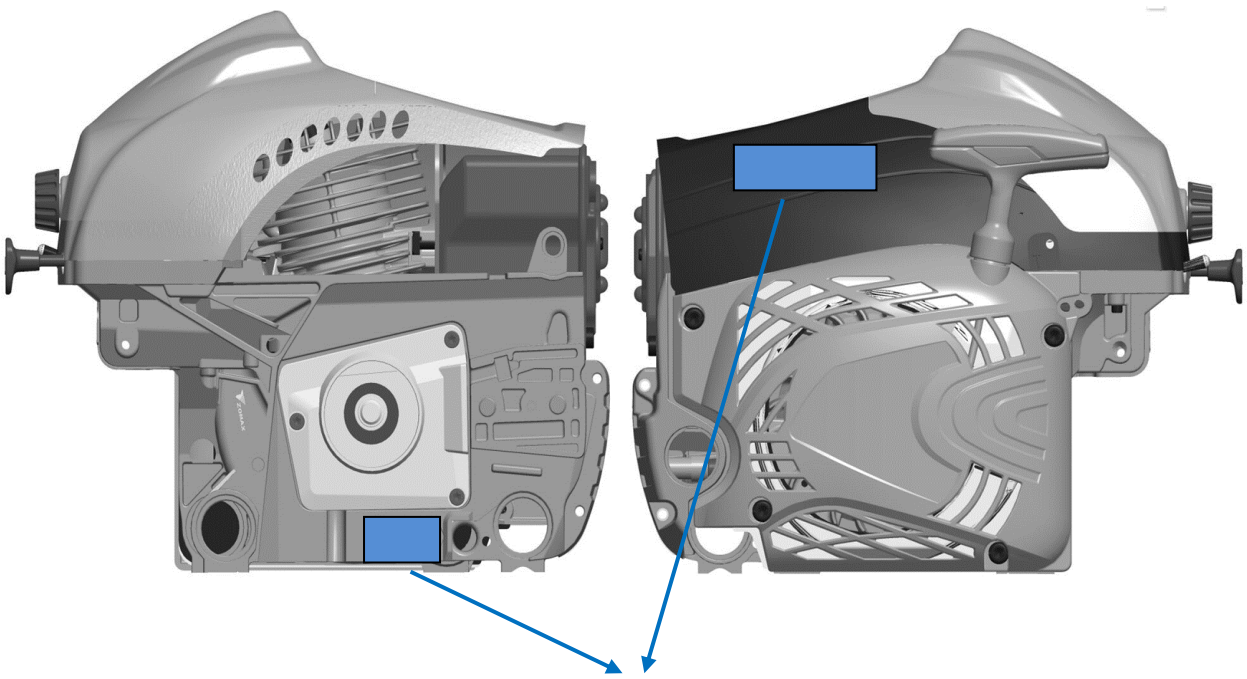
Item Number	Item Description	Test	Installation	Homologation	Parent engine/ engine type	Engine types within the engine family (if applicable)
						Type 1
3.14.1.	*Fuel: LPG /NG-H/NG-L /NG-HL/LNG/Fuel specific LNG*	X		X	N/A	
3.14.2.	*Pressure regulator(s)/vaporiser(s)*					
3.14.2.0.	Make:			X	N/A	
3.14.2.1.	Type(s)			X	N/A	
3.14.2.2.	Number of pressure reduction stages			X	N/A	
3.14.2.3.	Pressure in final stage minimum and maximum. (kPa)			X	N/A	
3.14.2.4.	Number of main adjustment points:			X	N/A	
3.14.2.5.	Number of idle adjustment points:			X	N/A	
3.14.3.	*Fuelling system: mixing unit/gas injection/liquid injection/direct injection*			X	N/A	
3.14.3.1.	Mixture strength regulation					
3.14.3.1.1.	System description and/or diagram and drawings:			X	N/A	
3.14.4.	*Mixing unit*					
3.14.4.1.	Number:			X	N/A	
3.14.4.2'.	Make:			X	N/A	
3.14.4.2.	Type(s):			X	N/A	
3.14.4.3.	Location:			X	N/A	
3.14.4.4.	Adjustment possibilities:			X	N/A	
3.14.5.	*Inlet manifold injection*					
3.14.5.1.	Injection: single-point/multi-point			X	N/A	
3.14.5.2.	Injection: continuous/simultaneously timed/ sequentially timed			X	N/A	
3.14.5.3.	Injection equipment					
3.14.5.3.0.	Make:			X	N/A	
3.14.5.3.1.	Type(s):			X	N/A	
3.14.5.3.2.	Adjustment possibilities:			X	N/A	
3.14.5.4.	Supply pump					
3.14.5.4.0.	Make:			X	N/A	
3.14.5.4.1.	Type(s):			X	N/A	
3.14.5.5.	Injector(s)					
3.14.5.5.0.	Make:			X	N/A	
3.14.5.5.1.	Type(s):			X	N/A	
3.14.6.	*Direct injection*					
3.14.6.1.	Injection pump/pressure regulator			X	N/A	

Item Number	Item Description	Test	Installation	Homologation	Parent engine/ engine type	Engine types within the engine family (if applicable)
						Type 1
3.14.6.1.0.	Make:			X	N/A	
3.14.6.1.1.	Type(s):			X	N/A	
3.14.6.1.2.	Injection timing (specify):			X	N/A	
3.14.6.2.	Injector(s)					
3.14.6.2.0.	Make:			X	N/A	
3.14.6.2.1.	Type(s):			X	N/A	
3.14.6.2.2.	Opening pressure or characteristic diagram :			X	N/A	
3.14.7.	*Electronic Control Unit (ECU)*					
3.14.7.0.	Make:			X	N/A	
3.14.7.1.	Type(s):			X	N/A	
3.14.7.2.	Adjustment possibilities:			X	N/A	
3.14.7.3.	Software calibration number(s):			X	N/A	
3.14.8.	*Approvals of engines for several fuel compositions*					
3.14.8.1.	Self-adaptive feature: Yes/No	X	X	X	No	
3.14.8.2.	Calibration for a specific gas composition: NG-H/NG-L/NG-HL/ LNG/Fuel specific LNG	X	X	X	N/A	
3.14.8.3.	Transformation for a specific gas composition: NG-HT/NG-LT/NG-HLT	X	X	X	N/A	
3.14.9.	*Fuel temperature pressure regulator final stage*					
3.14.9.1.	Minimum (deg. °C):	X			N/A	
3.14.9.2.	Maximum (deg. °C):	X			N/A	
3.15.	**Ignition system**					
3.15.1.	*Ignition coil(s)*					
3.15.1.0.	Make:			X	ZOMAX	
3.15.1.1.	Type(s):			X	4.009.0023.09	
3.15.1.2.	Number:			X	1	
3.15.2.	*Spark plug(s)*					
3.15.2.0.	Make:			X	CHAMPION BOSCH TORCH DENSO	
3.15.2.1.	Type(s):			X	RCJ6Y L8RTF W22MPR	
3.15.2.2.	Gap setting:			X	0.6mm-0.8 mm	

Item Number	Item Description	Test	Installation	Homologation	Parent engine/ engine type	Engine types within the engine family (if applicable)
						Type 1
3.15.3.	*Magneto*			X		
3.15.3.0.	Make:			X	ZOMAX	
3.15.3.1.	Type(s):			X	4.009.0012.06	
3.15.4.	*Ignition timing control: Yes/No*			X	Yes	
3.15.4.1.	Static advance with respect to top dead centre (crank angle degrees):			X	28±1°	
3.15.4.2.	Advance curve or map:			X	Refer to drawing No. 006	
3.15.4.3.	Electronic control: Yes/No			X	No	

Attachment 1 Photographs of the engines

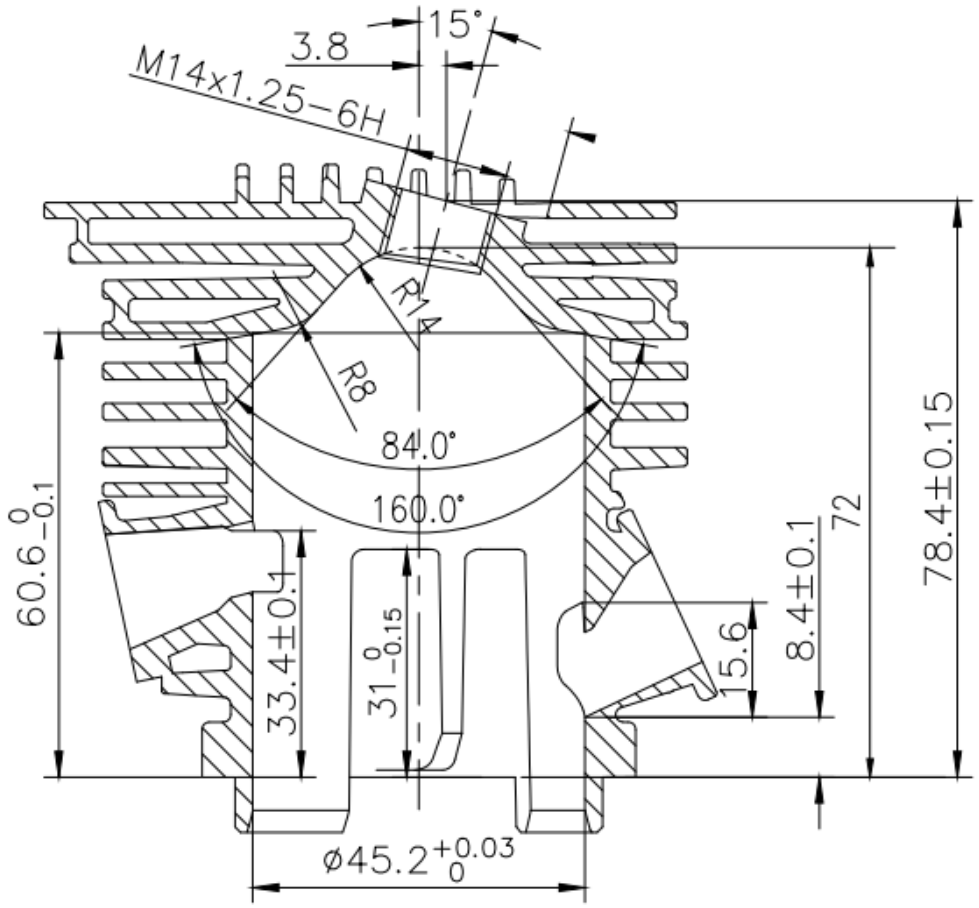
Attachment 2 Drawings of the engines



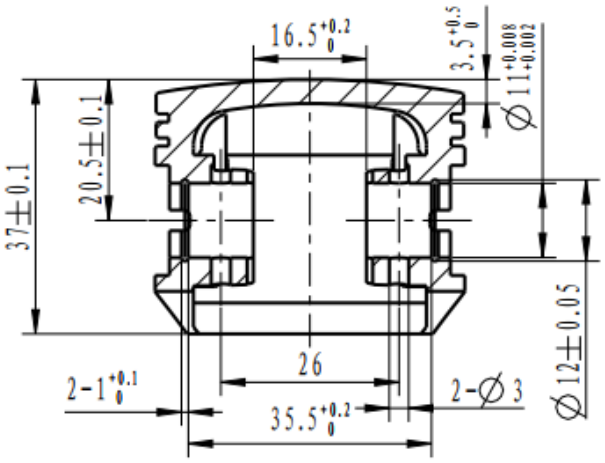
Trade name/Trade mark/Manufacturer name
Engine type designation
Engine identification number (production date inc.)
Approval No./Approval mark: e24*2016/1628*XXXXXXX*XXXX*00 or
e24 XXX/P V-XXX

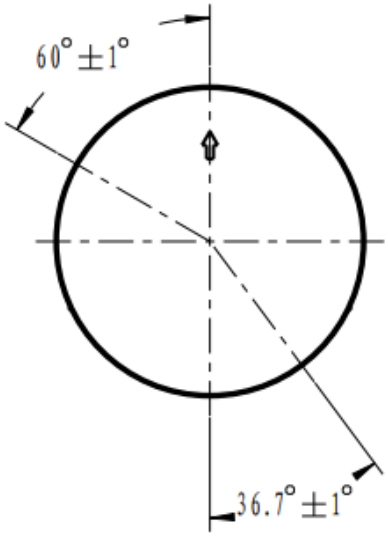
Remarks: this sample only shows the contents that need to be included on the engine marking, the actual layout may adjust according manufacturer's requirement.

Engine type	ZM1E46FC
Position of statutory marking Position of engine identification number.	
Drawing No.	001

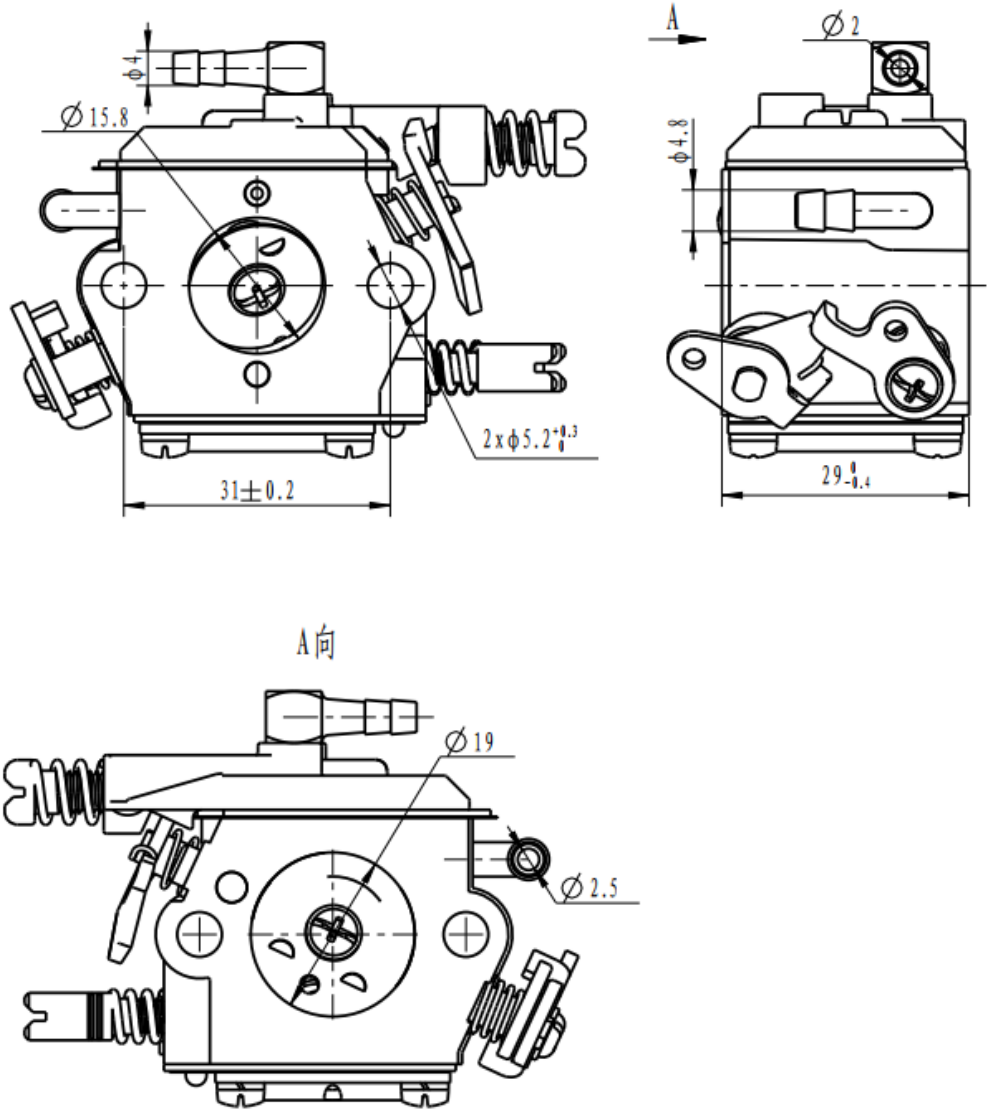


Engine type	ZM1E46FC
Combustion chamber Valve and port configuration	
Drawing No.	002

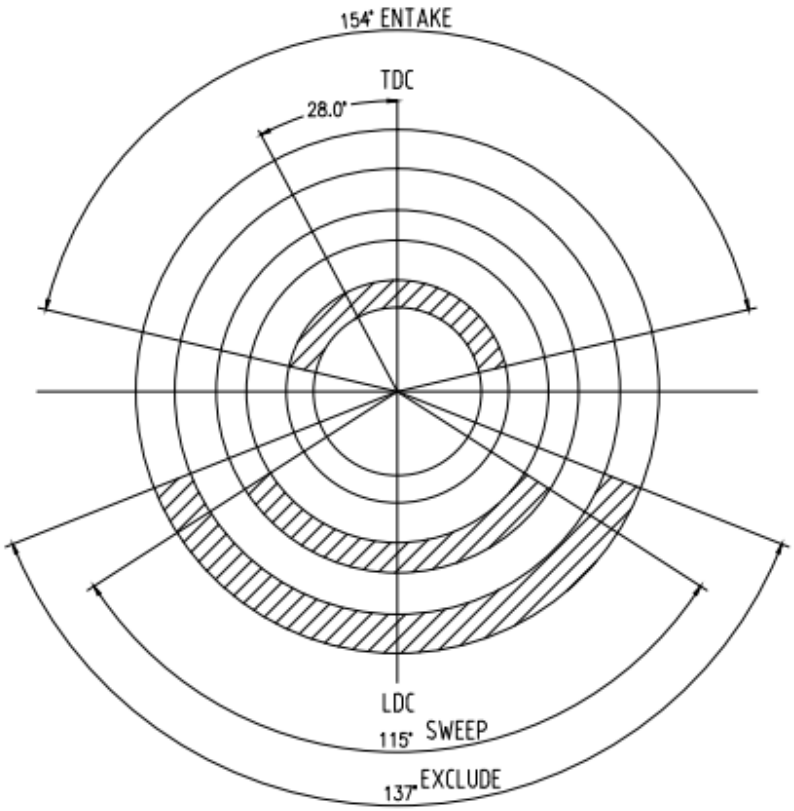




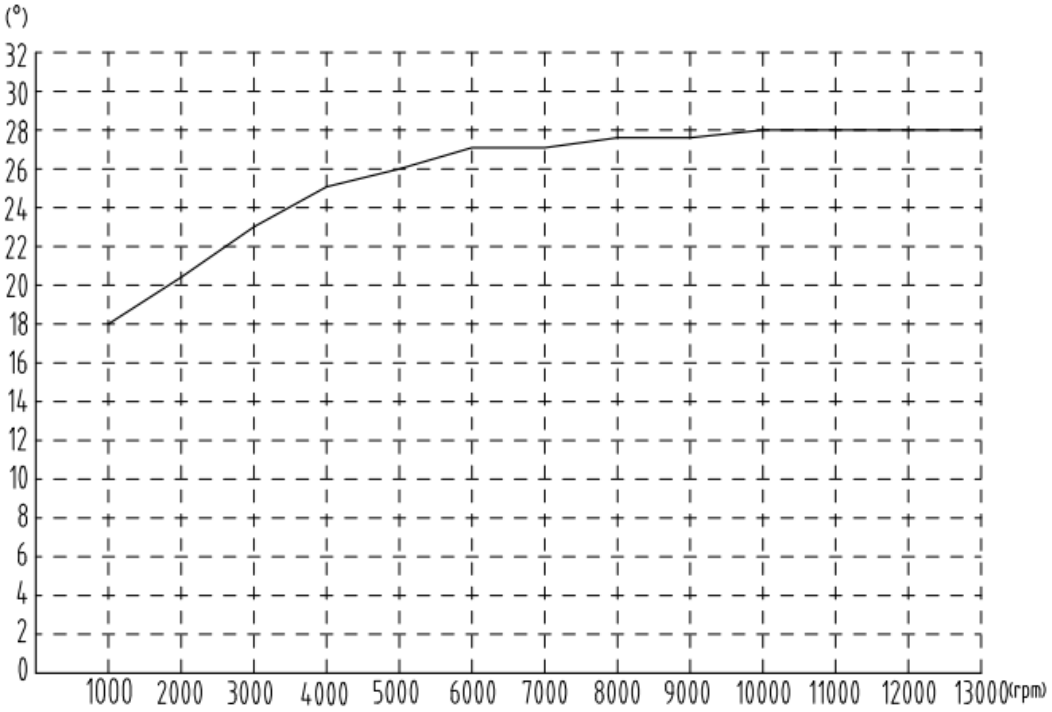
Engine type	ZM1E46FC
Piston	
Drawing No.	003



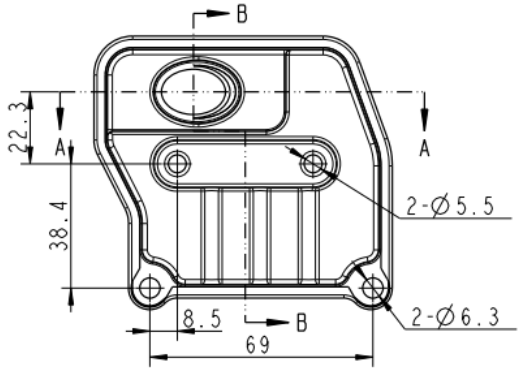
Engine type	ZM1E46FC
Carburetor	
Drawing No.	004

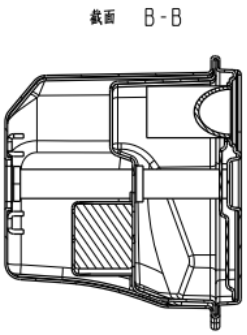


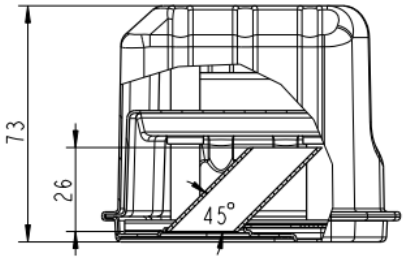
Engine type	ZM1E46FC
Valve timing	
Drawing No.	005



Engine type	ZM1E46FC
Ignition advance curve	
Drawing No.	006

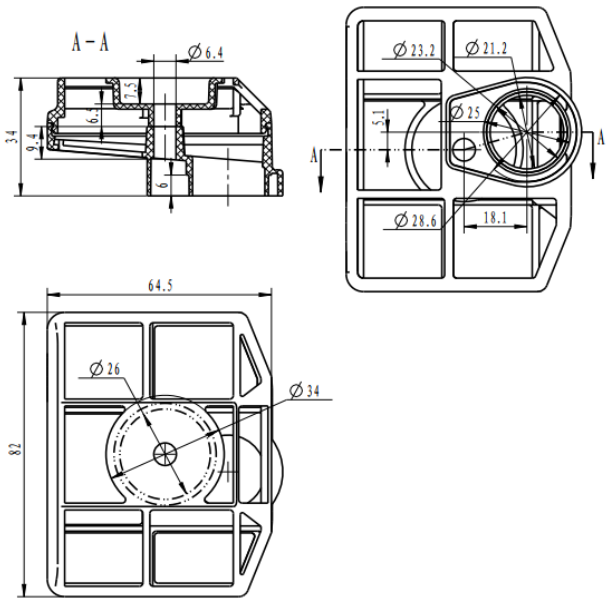




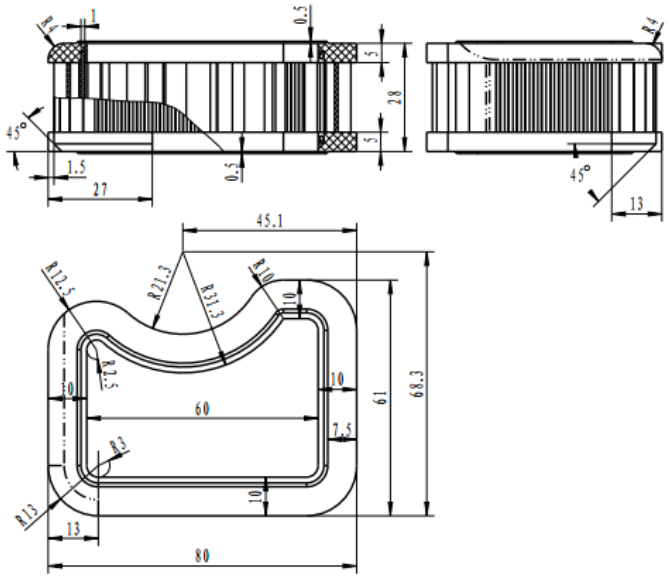


Engine type	ZM1E46FC
Muffler	
Drawing No.	007

4.005.0012.18

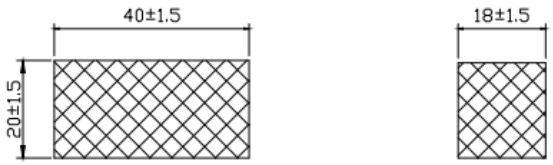


4.005.0053.03



Engine type	ZM1E46FC
Air filter	
Drawing No.	008

技术规格 Technical Specification		
催化器体积 Catalyst Volume (cm³)	14.40	
催化器重量 Catalyst Substrate Weight (g)	15.5±1	
贵金属含量 Noble Metals Contents	元素 Element	标准值 Nominal
	Pt(mg)	10.17
	Pd(mg)	10.17
	Rh(mg)	0
贵金属组成 Noble Metals Composition	Pt:Pd:Rh	1:1:0
贵金属总量 Noble Metals Density	标称值(g/ft³) Nominal	40
	最小值(g/ft³) Minimum	36
载体材料 Substrate Material	0Cr25Al5	
载体丝径 Substrate Wire Diameter (mm)	ø0.35±0.01	
产品编码 DP Code	/	



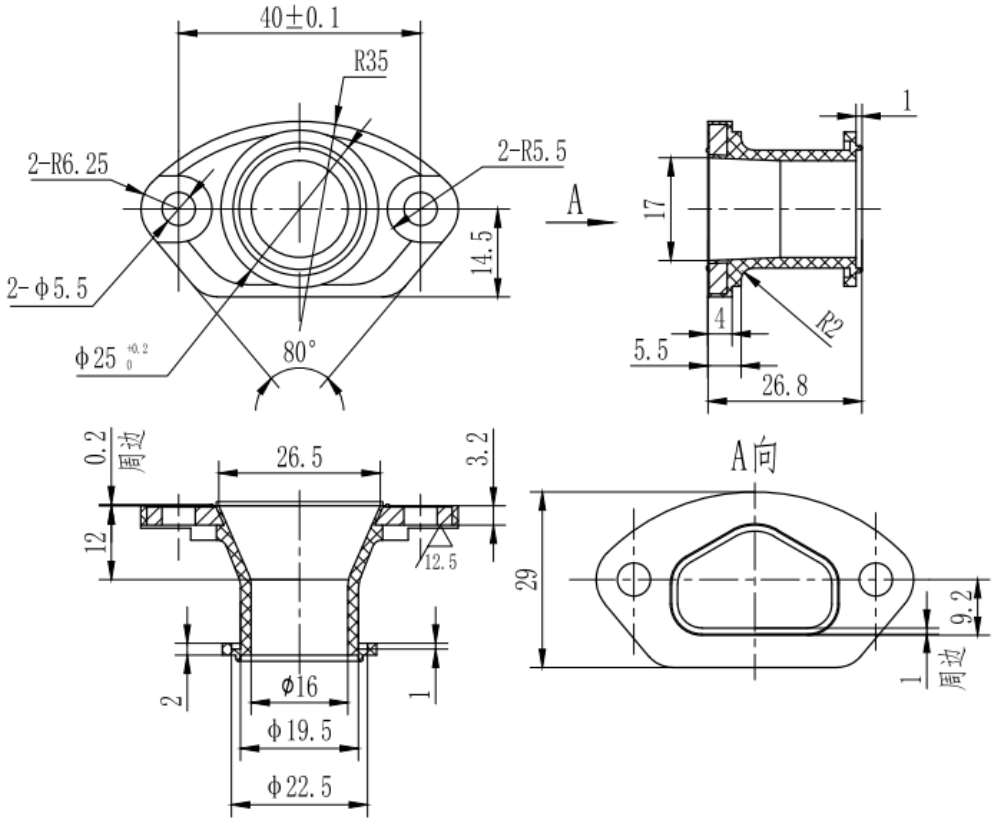
技术要求
1、催化器性能应符合公司Q/DPRK002-2016标准；

Technical Requirement
1、The performance of catalyst should be meet the Q/DPRK002-2016 Standard;

客户确认栏		
技术部（经理）		
采购部（经理）		

标记	处数	分区	更改文件号	签字	日期	金属丝网催化器 Catalyst	图样标记	数量	重量	比例
										1:1
设计			标准化			浙江中马	共 张		第 张	
校对			审定				南京德普瑞克催化器有限公司 Nanjing Depurate Catalyst Co.,Ltd.			
审核			批准			机型 1E46FC油锯	标准 欧5			
工艺										

Engine type	ZM1E46FC
Catalyst	
Drawing No.	009



Engine type	ZM1E46FC
Inlet Path	
Drawing No.	010

Attachment 3 Manufacturer's declaration on compliance with Regulation (EU) 2016/1628

We, ZHEJIANG ZOMAX GARDEN MACHINERY CO.,LTD., Hereby declares that the following engine type/~~engine family~~ complies in all respects with the requirements of Regulation (EU) 2016/1628 of the European Parliament and of the Council, Commission Delegated Regulation (EU) 2017/654, Commission Delegated Regulation (EU) 2017/655 and Commission Implementing Regulation (EU) 2017/656 and does not use any defeat strategy. All emission control strategies comply, where applicable, with the requirements for Base Emission Control Strategy (BECS) and Auxiliary Emission Control Strategy (AECS) set-out in section 2 of Annex IV to Delegated Regulation (EU) 2017/654, and have been disclosed in accordance with that Annex and with Annex I to Implementing Regulation (EU) 2017/656.

1.1.	Make (trade name(s) of manufacturer)	:	ZOMAX
1.2.	Commercial name(s) (if applicable)	:	N/A
1.3.	Company name and address of manufacturer	:	ZHEJIANG ZOMAX GARDEN MACHINERY CO.,LTD. No. 48 Aodihu Road, Taiping District, Wenling City, Zhejiang, China, 317599
1.4.	Name and address of manufacturer's authorised representative (if any)	:	Brumar Garden Products S.r.l Loc. Valgera 110/B-14100 ASTI(AT)- ITALY
1.6.	Engine type designation~~/engine family designation/FT~~	:	ZM1E46FC

Place : Zhejiang, China

Date : 2021-10-15

Signature:

Attachment 4 **Manufacturer's statement on compliance with the exhaust emission limits when use fuels other than the reference fuels**

N/A

Attachment 5 **Overview of the emission control strategy for electronically controlled engines**

N/A

Attachment 6 **The functional operational characteristics of the NOx control measures and inducement system**

N/A

Attachment 7 **The functional operational characteristics of the particulate control measures**

N/A

Attachment 8 Manufacturer's declaration, and supporting test reports or data, on deterioration factors

We, ZHEJIANG ZOMAX GARDEN MACHINERY CO.,LTD., hereby declare that the EDP we chosen is most closely approximates the expected useful lives of the equipment into which the engines are expected to be installed. This conclusion is based on the surveys of the life spans of the equipment in which the subject engines are installed.

1.1.	Make (trade name(s) of manufacturer)	:	ZOMAX
1.2.	Commercial name(s) (if applicable)	:	N/A
1.3.	Company name and address of manufacturer	:	ZHEJIANG ZOMAX GARDEN MACHINERY CO.,LTD. No. 48 Aodihu Road, Taiping District, Wenling City, Zhejiang, China, 317599
1.4.	Name and address of manufacturer's authorised representative (if any)	:	Brumar Garden Products S.r.lLoc. Valgera 110/B-14100 ASTI (AT)-ITALY
1.6.	Engine type designation~~/engine family designation/FT~~	:	ZM1E46FC
1.7.	Category and sub-category of the engine type/~~engine family~~	:	Category: NRSh Sub-category: NRSh-v-1b
1.8.	EDP hours	:	50h (Cat 1 (Consumer products))

The EDP is carried out on parent engine, please refer TÜV SÜD's test report for details.

Place : Zhejiang, China

Date : 2021-10-15

Signature:

Attachment 9 **Manufacturer's declaration, and supporting test reports or data, of the infrequent regeneration adjustment factors**

N/A

Attachment 10 **The physical connector required to receive the torque signal from the engine Electronic control Unit (ECU) during the in-service monitoring test**

N/A

Attachment 11 Manufacturer's declaration and supporting data on tampering prevention for emission control systems

We, ZHEJIANG ZOMAX GARDEN MACHINERY CO.,LTD., Hereby declares that the emission control strategies of the following engine type/~~engine family~~ fitted are designed in such a way as to prevent tampering to the extent possible, as referred to in Article 18(4) of Regulation (EU) 2016/1628 of the European Parliament and of the Council and Annex X of Commission Implementing Regulation (EU) 2017/656.

1.1.	Make (trade name(s) of manufacturer)	:	ZOMAX
1.2.	Commercial name(s) (if applicable)	:	N/A
1.3.	Company name and address of manufacturer	:	ZHEJIANG ZOMAX GARDEN MACHINERY CO.,LTD. No. 48 Aodihu Road, Taiping District, Wenling City, Zhejiang, China, 317599
1.4.	Name and address of manufacturer's authorised representative (if any)	:	Brumar Garden Products S.r.l Loc. Valgera 110/B-14100 ASTI (AT)-ITALY
1.6.	Engine type designation~~/engine family designation/FT~~	:	ZM1E46FC

Technical details

The Air-fuel flow mixture screw is specially shaped, only can be adjusted by special tool.

Place : Zhejiang, China

Date : 2021-10-15

Signature:

Attachment 12 List of scheduled for emission-related maintenance requirements

Proper maintenance is essential for safe, economical and trouble-free operation. It also helps reduce air pollution. In order to keep your gasoline engine in good working condition, it must be periodically serviced. The following maintenance schedule and routine inspection procedures must be carefully followed.

Items \ Frequency		Every time	First month or 10 hrs of operation	Thereafter, every 3 months or 30hrs of operation	Every 6 months or 50 hrs of operation	Every year or 100 hrs of operation
Air filter element	Check	√				
	Clean			√		
	Change				√	
Spark plug	Clean-adjust				√ *	
Spark arrester	Clean				√	
Valve clearance**	Check-adjust			√		
Fuel hose	Check	Every 2 years (change if necessary)				
Cylinder head, Piston**	Remove carbon deposits	Every 50 hours				

* These items should be replaced by new ones if necessary.

** These items should be serviced by a mechanically proficient person or by our authorized servicing dealer.

Attachment 13 Declaration of carburettor

Declaration

According to test the fuel delivery with several Carburettor models, we used the higher fuel delivery one to emission test. The following are the fuel delivery data. Please check.

Engine type: ZM1E46FC

Carburetor Make/ Model	Max Torque	Fuel Flow (g/h)
ZOMAX/ ZP152 Note: ZP152, MP16B58 and MP16BZ58 are same carburettor, just different models for different customers.	2.8N.m/6500rpm	950
WALBRO/ WT1025 Note: WT1025, WT1047 and WT1196 are same carburettor, just different models for different customers.		940

We conform that the design, raw material, manufacturing, assembling and quality control are completely identical and operating procedures are the same for all Carburettors.

Place : Zhejiang, China

Date : 2021-10-15

Signature: