EU TYPE-APPROVAL CERTIFICATE

COMMUNICATION CONCERNING THE EU TYPE-APPROVAL OF AN ENGINE TYPE/ENGINE FAMILY WITH REGARD TO GASEOUS AND PARTICULATE POLLUTANT EMISSION PURSUANT TO REGULATION (EU) 2016/1628, AS LAST AMENDED BY (COMMISSION DELEGATED) REGULATION 2016/1628 (OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL)

EU type-approval No: e5*2016/1628*2016/1628*SVA3/P*1018*00

Reason(s) for extension/refusal/withdrawal: Not Applicable

SECTION I

1.1. Make (trade name(s) of manufacturer): Briggs & Stratton Corporation

1.2. Commercial name(s) (if applicable): Not applicable

1.3. Company name and address of manufacturer:

Briggs & Stratton Corporation
PO Box 702
Milwaukee, WI 53201-0702
USA

1.4. Name and address of manufacturer's authorised representative (if any):

Briggs & Stratton Germany GmbH.
Max-Born-Straße 2, 68519
Viernheim, Germany

1.5. Name(s) and address(es) of assembly/manufacture plant(s):

Briggs & Stratton Corporation
150 Technology Parkway
Auburn, AL 36830
USA

1.6. Engine type designation/engine family designation/FT : 49T7 / JBSXS.8102VW

SWEDISH APPROVAL AUTHORITY TRANSPORT STYRELSEN SVENSK GODKÄNNANDEMYNDIGHET

1.7. Category and sub-category of the engine type/engine family : NRS-v-2a

1.8. Emissions durability period category: Cat 3

1.9. Emissions stage: V

1.10. Engine for snow throwers No

SECTION II

1. Technical service responsible for carrying out the test(s): Vehicle Certification Agency

2. Date(s) of the test report(s): 11 December 2018

3. Number(s) of the test report(s): TR2016_1628 0309 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 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. The engine type/engine family meets the requirements laid down in Regulation (EU) 2016/1628.

2. The approval is granted

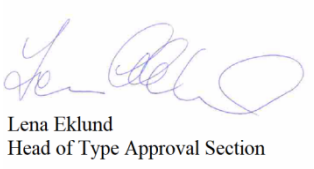
3. The approval is granted in accordance with Article 35 of Regulation (EU) 2016/1628 and the validity of the approval is thus limited to dd/mm/yyyy : Not applicable

4. Restrictions to validity: None

5. Exemptions applied : None

SWEDISH APPROVAL AUTHORITY TRANSPORT STYRELSEN SVENSK GODKÄNNANDEMYNDIGHET

Place: BORLÄNGE

Signature: 

Lena Eklund
Head of Type Approval Section

Date: 01 MARCH 2019

Name and signature (or visual representation of an 'advanced electronic signature' according to Regulation (EU) No 910/2014, including data for verification):

e5*2016/1628*2016/1628*SVA3/P*1018*00 previously type-approved and marked as e11*2016/1628*2016/1628*SVA3/P*0309*00 on 11 DECEMBER 2018 (up to and including revision 00)

Attachments:

Information package

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 …

ADDENDUM

EU type-approval number: e5*2016/1628*2016/1628*SVA3/P*1018*00

PART A — CHARACTERISTICS OF THE ENGINE TYPE/ENGINE FAMILY

2. Common design parameters of the engine type/engine family

2.1. Combustion Cycle: Four Stroke Cycle

2.2. Ignition Type: Spark Ignition

2.3.1. Position of the cylinders in the block: V

2.6. Main Cooling medium: Air

2.7. Method of air aspiration: Naturally Aspirated

2.8.1. Fuel Type(s): Petrol (E10)

2.8.1.1. Sub Fuel type (Natural gas/Biomethane only): Not applicable

2.8.2. Fuelling arrangement: Not applicable

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): Not applicable

2.8.4. Lubricant added to fuel: No

2.8.5. Fuel supply type: Carburettor

2.9. Engine management systems: Mechanical

2.10. Miscellaneous devices: No

2.10.1. Exhaust gas recirculation (EGR): No

2.10.2. Water injection: No

2.10.3. Air injection: No

2.10.4. Others (specify): Not applicable

2.11. Exhaust after-treatment system: No

2.11.1. Oxidation catalyst: No

2.11.2. DeNOx system with selective reduction of NOx (addition of reducing agent): No

2.11.3. Other DeNOx systems: No

2.11.4. Three-way catalyst combining oxidation and NOx reduction: No

2.11.5. Particulate after-treatment system with passive regeneration: No

2.11.6. Particulate after-treatment system with active regeneration: No

2.11.7. Other particulate after-treatment systems: No

2.11.8. Three-way catalyst combining oxidation and NOx reduction: No

2.11.9. Other after-treatment devices (specify): Not applicable

2.11.10. Other devices or features that have a strong influence on emissions (specify): Not applicable

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:	49T7	49S7	49S8	49T8
3.1.2.	Engine type designation shown on engine mark: Yes/No	Yes	Yes	Yes	Yes
3.1.3.	Location of the manufacturer's statutory marking:	Engine Labeling	Engine Labeling	Engine Labeling	Engine Labeling
3.2.1.	Declared rated speed (rpm):	3600	3600	3600	3600
3.2.1.2.	Declared rated net Power (kW):	17.3	17.3	18.4	18.4
3.2.2.	Maximum power speed (rpm):	3600	3600	3600	3600
3.2.2.2.	Maximum net power (kW):	17.3	17.3	18.4	18.4
3.2.3.	Declared maximum torque speed (rpm):	2800	2800	2800	2800
3.2.3.2.	Declared maximum torque (Nm):	57	57	55.3	55.3
3.6.3.	Number of Cylinders:	2	2	2	2
3.6.4.	Engine Displacement (cm^3):	810	810	810	810
3.8.5.	Device for recycling crankcase gases: Yes/ No	No	No	No	No
3.11.3.12.	Consumable reagent: Yes/No	No	No	No	No
3.11.3.12.1.	Type and concentration of reagent needed for catalytic action:	Not applicable	Not applicable	Not applicable	Not applicable
3.11.3.13.	NOx sensor(s): Yes/No	No	No	No	No
3.11.3.14.	Oxygen sensor: Yes/No	Not applicable	Not applicable	Not applicable	Not applicable
3.11.4.7.	Fuel borne catalyst (FBC): Yes/No	No	No	No	No

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:	12.45	12.45	12.45	12.45
3.8.3.2.	Maximum charge air cooler outlet temperature at 100 % speed and 100 % load (deg. C):	No	No	No	No
3.8.3.3.	Maximum allowable pressure drop across charge cooler at 100 % engine speed and at 100 % load (kPa) (if applicable):	Not applicable	Not applicable	Not applicable	Not applicable
3.9.3.	Maximum permissible exhaust gas back- pressure at 100 % engine speed and at 100 % load (kPa):	12.45	12.45	12.45	12.45
3.9.3.1.	Location of measurement:	Exhaust Port	Exhaust Port	Exhaust Port	Exhaust Port
3.11.1.2.	Maximum temperature drop from exhaust system or turbine outlet to first exhaust after-treatment system (deg. C) if stated:	Not applicable	Not applicable	Not applicable	Not applicable
3.11.1.2.1.	Test conditions for measurement:	Not applicable	Not applicable	Not applicable	Not applicable

Item Number	Item Description	Parent Engine / Engine type	Engine types within the family (if applicable)		
3.1.1.	Engine Type Designation:	49T7	49R9	4997	
3.1.2.	Engine type designation shown on engine mark: Yes/No	Yes	Yes	Yes	
3.1.3.	Location of the manufacturer's statutory marking:	Engine Labeling	Engine Labeling	Engine Labeling	
3.2.1.	Declared rated speed (rpm):	3600	3600	3600	
3.2.1.2.	Declared rated net Power (kW):	17.3	17.3	17.3	
3.2.2.	Maximum power speed (rpm):	3600	3600	3600	
3.2.2.2.	Maximum net power (kW):	17.3	17.3	17.3	
3.2.3.	Declared maximum torque speed (rpm):	2800	2800	2800	
3.2.3.2.	Declared maximum torque (Nm):	57	55	57	
3.6.3.	Number of Cylinders:	2	2	2	
3.6.4.	Engine Displacement (cm^3):	810	810	810	
3.8.5.	Device for recycling crankcase gases: Yes/ No	No	No	No	
3.11.3.12.	Consumable reagent: Yes/No	No	No	No	
3.11.3.12.1.	Type and concentration of reagent needed for catalytic action:	Not applicable	Not applicable	Not applicable	
3.11.3.13.	NOx sensor(s): Yes/No	No	No	No	
3.11.3.14.	Oxygen sensor: Yes/No	Not applicable	Not applicable	Not applicable	
3.11.4.7.	Fuel borne catalyst (FBC): Yes/No	No	No	No	

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:	12.45	12.45	12.45	
3.8.3.2.	Maximum charge air cooler outlet temperature at 100 % speed and 100 % load (deg. C):	No	No	No	
3.8.3.3.	Maximum allowable pressure drop across charge cooler at 100 % engine speed and at 100 % load (kPa) (if applicable):	Not applicable	Not applicable	Not applicable	
3.9.3.	Maximum permissible exhaust gas back- pressure at 100 % engine speed and at 100 % load (kPa):	12.45	12.45	12.45	
3.9.3.1.	Location of measurement:	Exhaust Port	Exhaust Port	Exhaust Port	
3.11.1.2.	Maximum temperature drop from exhaust system or turbine outlet to first exhaust after-treatment system (deg. C) if stated:	Not applicable	Not applicable	Not applicable	
3.11.1.2.1.	Test conditions for measurement:	Not applicable	Not applicable	Not applicable	

PART B — TEST RESULTS

3.8. Manufacturer intends to use ECU torque signal for in-service monitoring: No

3.8.1. Dynamometer torque greater than or equal to 0,93 × ECU torque: Not applicable

3.8.2. ECU torque correction factor in case that dynamometer torque less than 0,93 × ECU torque: Not applicable

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
NRSC final result with DF.	376.760	2.981	3.116	6.097	N/A	N/A	G1
NRTC Final test result with DF	N/A	N/A	N/A	N/A	N/A	N/A	N/A

11.2. CO_2 result: 858.38

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SWEDISH TRANSPORT AGENCY

Reference

TSV 2018-

APPROVAL NUMBER: e5*2016/1628*2016/1628*SVA3/P*1018*00

INFORMATION PACKAGE CONTENTS

INDEX REVISION NUMBER: Not applicable

Total number of sheets: 04 (four)

Reasons for Revision: Not applicable / ~~See manufacturer's documentation / See approval certificate~~

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vag@transportstyrelsen.se

BRIGGS & STRATTON CORPORATION

3/1/2019

Mr. Stephen Krause
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41000 West 7 Mile Rd.
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Northville, MI 48167-2664

Ms. Ann Holt
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Type Approval Documentation: e5*20161628*20161628SVA3/P*1018*00*00 effective from 01 March 2019 previously type approved and marked as e11*20161628*20161628SVA3/P*0309*00*00 on 11 December 2018 (up to and including revision 00)

I. Declaration by manufacturer on compliance with Regulation (EU) 2016/1628

The undersigned: Dan St. Martin, Product Safety and Compliance Manager for Briggs & Stratton Corporation, 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 (1), Commission Delegated Regulation (EU) 2017/654 (2), Commission Delegated Regulation (EU) 2017/655 (3) and Commission Implementing Regulation (EU) 2017/656 (4) 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):

Briggs & Stratton Corporation

1.2. Commercial name(s) (if applicable):

N/A.

1.3. Company name and address of manufacturer:

Briggs & Stratton Corporation
P.O. Box 702
Milwaukee, WI 53201-0702

1.4. Name and address of manufacturer's authorized representative (if any):

Briggs & Stratton Germany GmbH.
Max-Born-Straße 2, 68519 Viernheim, Germany

1.6 Engine type designation/ engine family designation/ FT (*):

JBSXS.8102VW

Dan St. Martin
Product Safety and Compliance Manager
Briggs & Stratton Corporation

3-1-19
Date

SWEDISH APPROVAL AUTHORITY
TRANSPORT STYRELSEN
SVENSK GODKÄNNANDEMYNDIGHET

II. Information Document

8102VW Stage V Application (e5 20161628 20161628SVA3P 1018 00 00)

III. Emissions Test Data (Files)

a. Zero Hour Emission Data: *Zero Hour Data – 49T777-18-002 (e5 20161628 20161628SVA3P 1018 00 00)*
b. DF Emission Data: *Test Data DF – 49R977-18-003, 49R977-18-006 (e5 20161628 20161628SVA3P 1018 00 00)*
c. DF Calculation: *DF Calculation – 49R977-18-003, 49R977-18-006 (e5 20161628 20161628SVA3P 1018 00 00)*

IV. Test Bench Installation

Test Bench Installation 2018 2016 1628 3.4

V. AECD Document (File) – 2017/656 Appendix 2 (Proprietary)

Carbureted Engine AECD 2018 2017 656 Appendix 2

VI. Endurance Test Cycle/ Break-In

Endurance Test Cycle: *Endurance Test Cycle 2018 2016 1628*
Break-In: *Break In 2 Hr 2018 2016 1628*

VII. Emission Labels

Statutory Markings 2018 2016 1628 3.1

VIII. Facility Appraisal Report

Completed by Briggs & Stratton and AVL North America and provided via email to VCA on February 16th 2018.

IX. Engine Picture

Engine (e5 20161628 20161628SVA3P 1018 00 00)

X. Engine Combustion Chamber / Piston

Combustion Chamber & Piston (e5 20161628 20161628SVA3P 1018 00 00)

XI. Label Placement

Engine Labeling (e5 20161628 20161628SVA3P 1018 00 00)

XII. SAE Power Ratings

Power Certification Spreadsheet

Commission Implementing Regulation (EU) 2017/656

Appendix 3 Part A

1. General Information

1.1 Make (trade name(s) of manufacturer):	Briggs & Stratton Corporation
1.2. Commercial name(s) (if applicable):	N/A
1.3. Company name and address of manufacturer:	Briggs & Stratton Corporation P.O. Box 702 Milwaukee WI 53201-0702
1.4. Name and address of manufacturer's authorised representative (if any):	Briggs & Stratton Germany GmbH. Max-Born-Straße 2, 68519 Viernheim, Germany
1.5. Name(s) and address(es) of assembly/manufacture plant(s):	Briggs & Stratton Corporation 150 Technology Parkway Auburn, AL 36830
1.6. Engine type designation/engine family designation/FT:	49T7 / JBSXS.8102VW
1.7. Category and sub-category of the engine type/engine family:	NRS-v-2a
1.7. Category and sub-category of the engine type/engine family: (additional)	N/A
1.8. Emissions durability period category:	Cat 3 (Professional Product "Commercial")
1.9. Emissions stage:	Stage V
1.10. In case of NRS < 19 kW only, engine family consisting exclusively of engine types for snow throwers:	No

1.11. Reference power is:	Rated Net Power
1.12. Primary NRSC test cycle:	G1
1.12.1. In case of variable speed IWP category only, Additional propulsion test cycle:	Not Applied
1.12.2. In case of IWP category only, additional auxiliary NRSC test cycle:	Not Applied
1.13. Transient test cycle:	Not Applicable
1.14. Restrictions on use (if applicable):	N/A