KARTING NSW

Engine Technical Specification

IAME 100 REEDJET

Technical Specification No: E.2.5
Revision: 1 31/1/2019

Table of Contents

1 PREAMBLE

This document provides the Technical Specification for the Iame 100 Reedjet engine, as approved by Karting NSW.

This engine is approved for use in the classes as defined in the KNSW Karting Manual.

Unless otherwise specified, the engine must be original in all components according to the Iame 100 Reedjet specifications. Neither the engine nor any of its ancillary components may be modified other than in accordance with the KNSW Rule Book and this Technical Specification.

The General Technical Specification contains the manufacturer's engine specification and must be read in conjunction with the Compliance Specification which defines additional specifications as approved by KNSW

The engine must always be presented and used in conformity with this Technical Specification and the KNSW Rule Book .

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2 ENGINE IDENTIFICATION

IAME 100 REEDJET

FEATURES

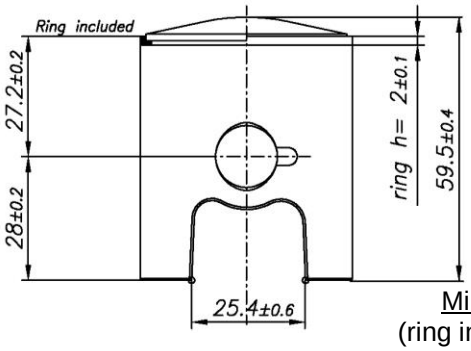
Cylinder Volume	100 cm³ max
Bore	48.20 mm
Max. theoretical bore	48.53 mm
Stroke	54.05 mm max
Cooling system	Air
Inlet system	Reed valve
Number of carbs	1

Tillotson Carburettor	HW-33A HL-398A	Cylinder / crankcase transfers n°	3 / 3
Number of piston rings	1	Transfers / exhaust ports number	3 / 3
Big end conr. ball-bearing diam.	20x26x15	Combustion chamber shape	Spherical
Crankshaft ball-bearing diam.	25x52x15	Selettra ignition (adjustable)	Analogue 2 Poles
Small end conr. ball-bearing diam.	14x18x18	Distance between Conrod centres	102 mm

3 GENERAL TECHNICAL SPECIFICATION

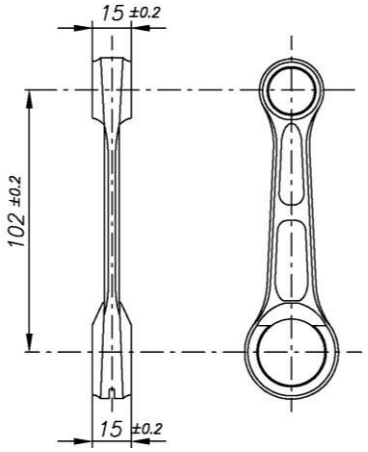
DESCRIPTION OF THE MATERIAL	
Conrod material	Steel
Crankshaft material	Steel
Head material	Aluminium
Cylinder material	Aluminium
Liner material	Cast Iron
Crankcase material	Aluminium
Piston material	Aluminium
Piston rings material	Cast Iron
Exhaust muffler material	Sheet-steel
Ball-bearings	6205 type

PISTON



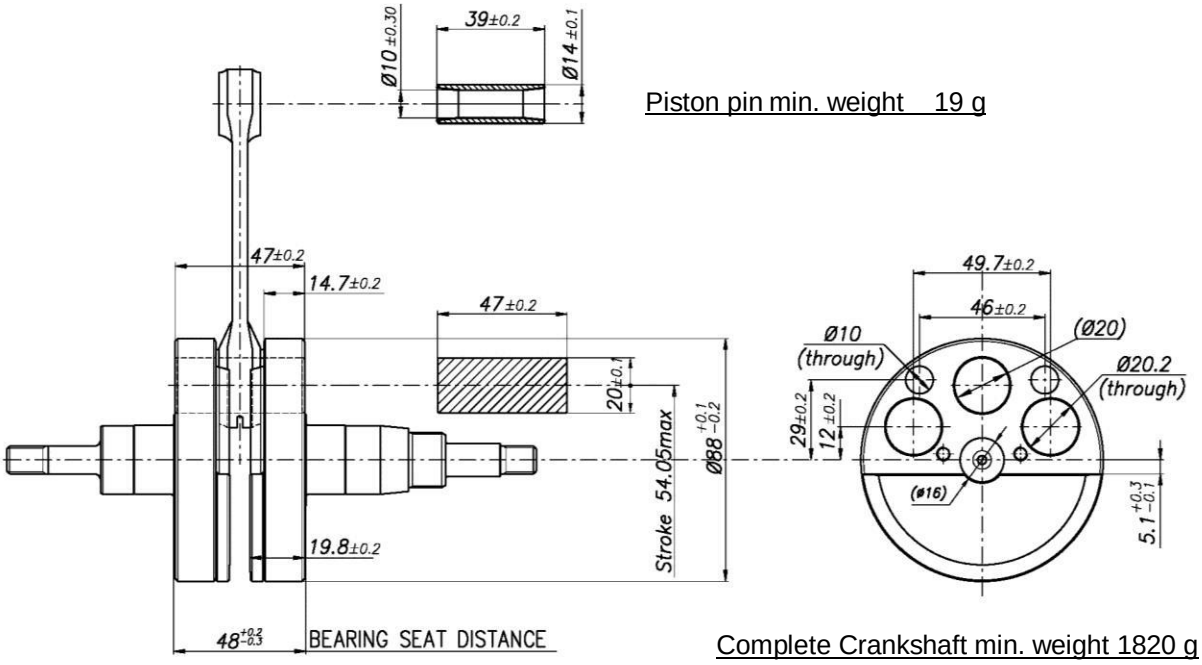
Min. Weight
(ring included) 95 g

DISTANCE BETWEEN CONROD CENTERS



Min. Weight 110 g

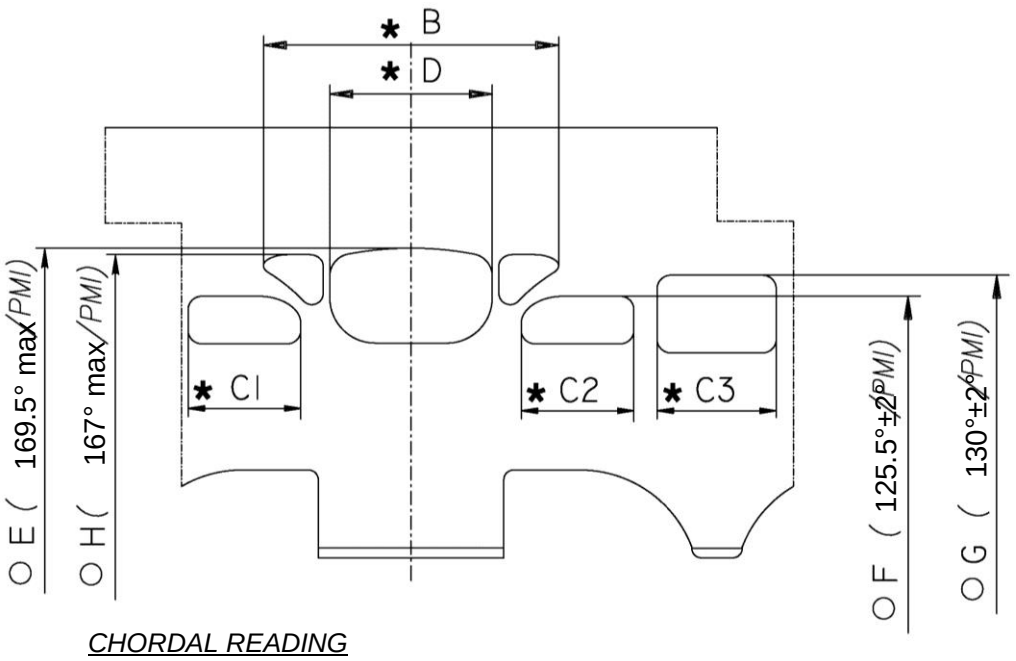
CRANKSHAFT



Piston pin min. weight 19 g

Complete Crankshaft min. weight 1820 g

CYLINDER DEVELOPMENT

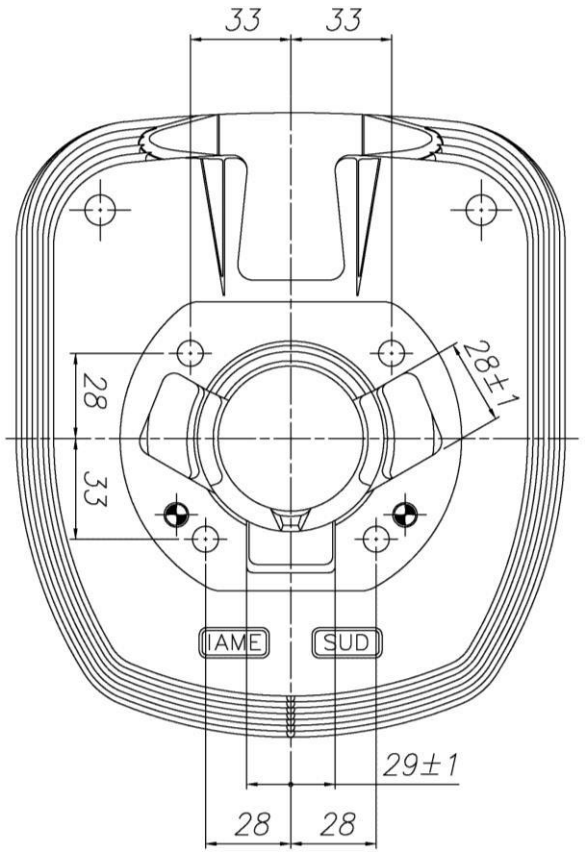


B	≤ 48.2 mm
C1 = C2	≤ 27.2 mm
C3	≤ 27 mm
D	≤ 34 mm
E	169.5° max
F	125.5° ±2°
G	130° ±2°
H	167° max

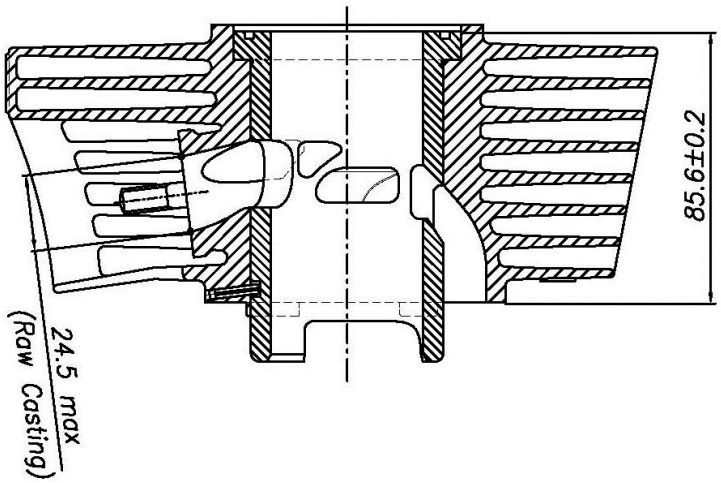
CHORDAL READING

O *ANGULAR READING BY INSERTING A 0.2x5 mm GAUGE*

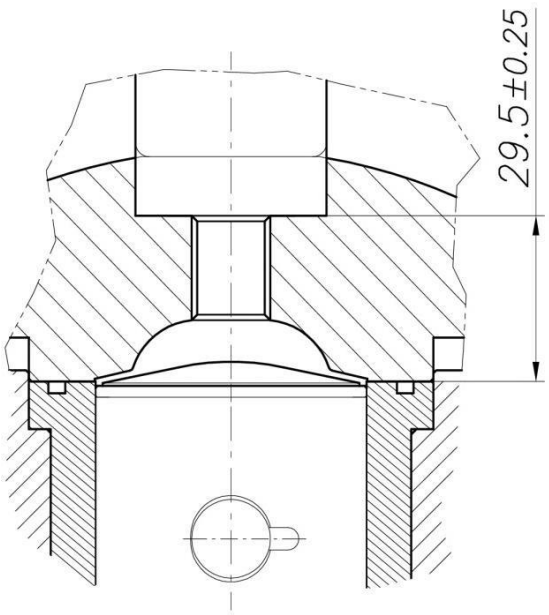
CYLINDER BASE VIEW



CYLINDER CROSS SECTION VIEW

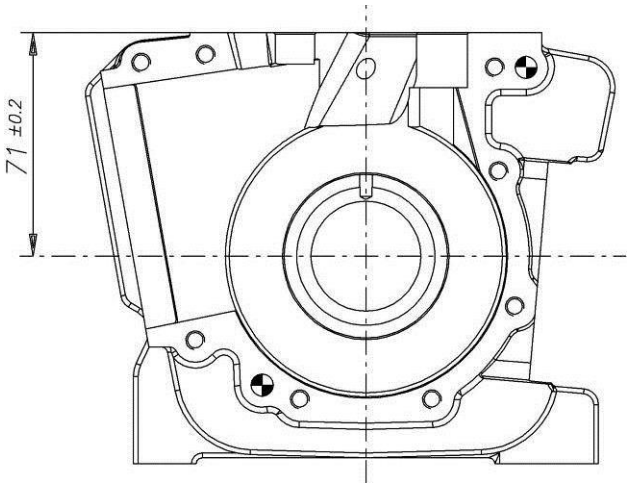


COMBUSTION CHAMBER VIEW

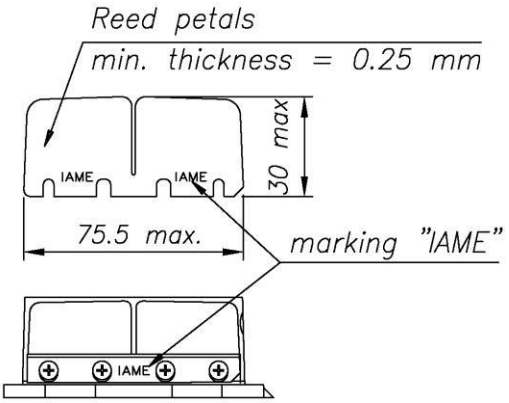


SQUISH MIN.= 0.0413" (1.05 mm)
(measured with Ø2mm solder)

CRANKCASE INSIDE VIEW

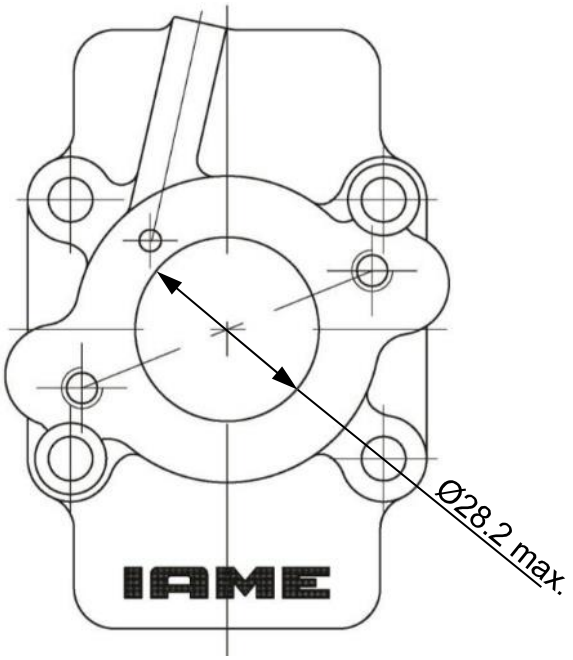


REEDS DIMENSIONS

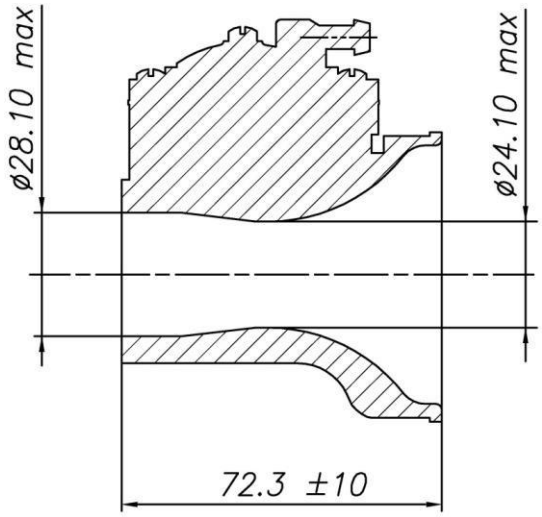


Material – Carbon Fibre

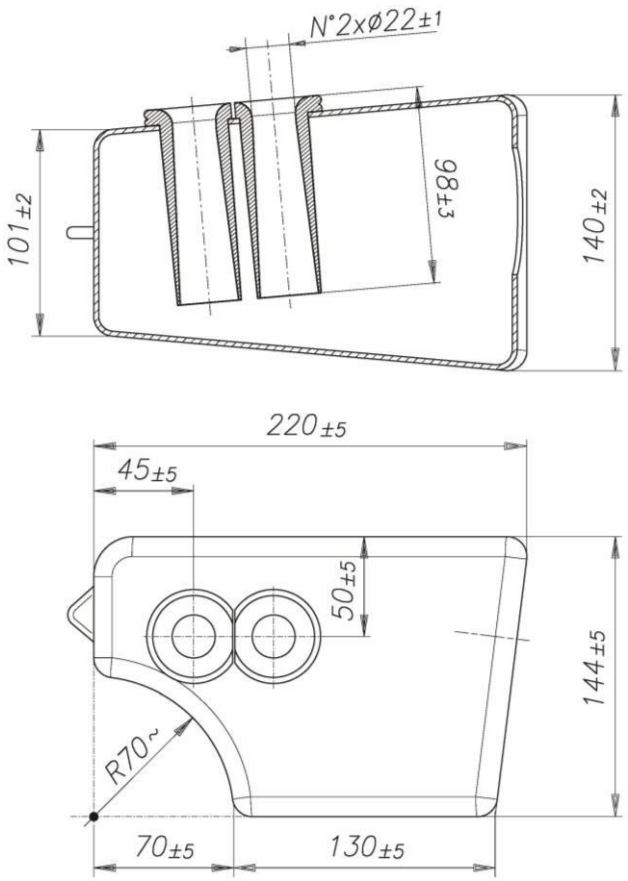
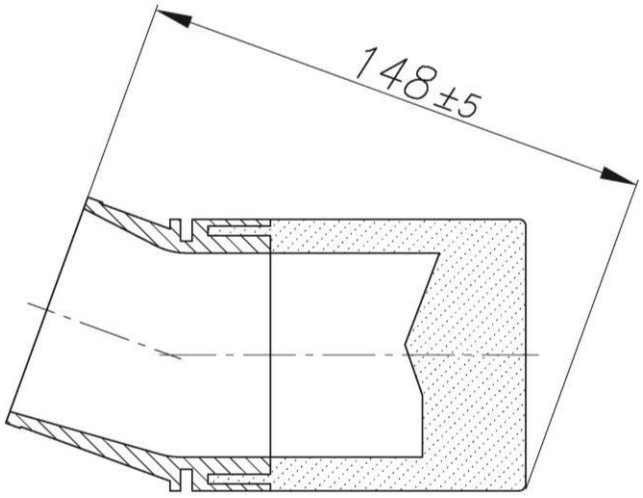
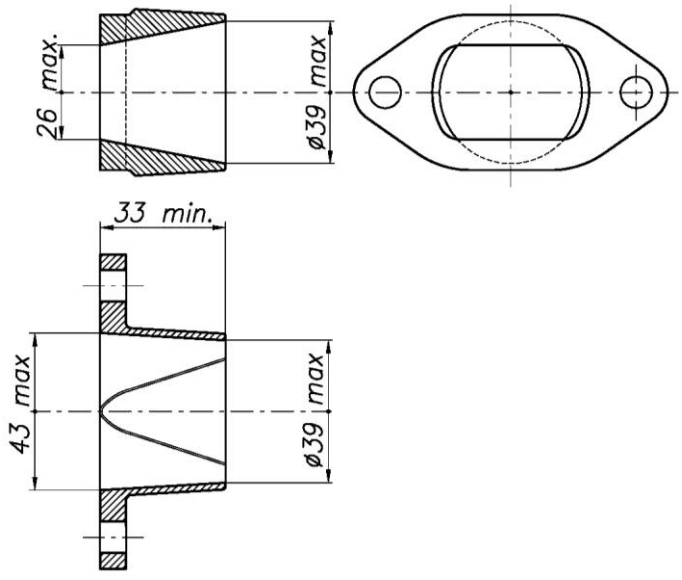
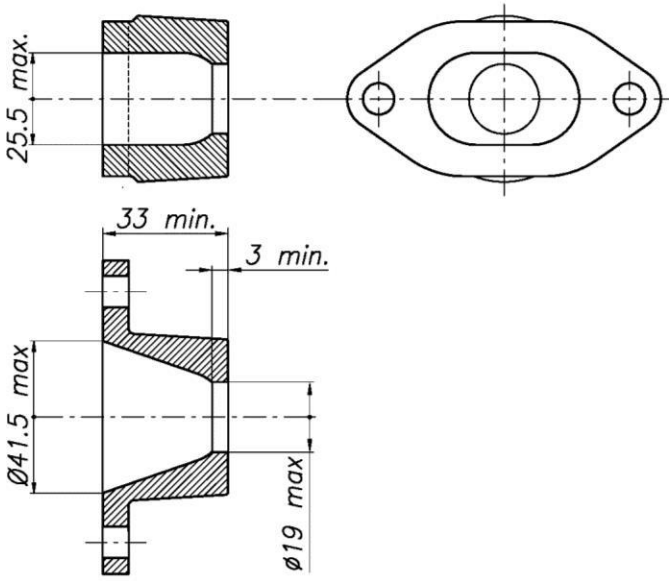
INLET CONVERYOR DIMENSIONS



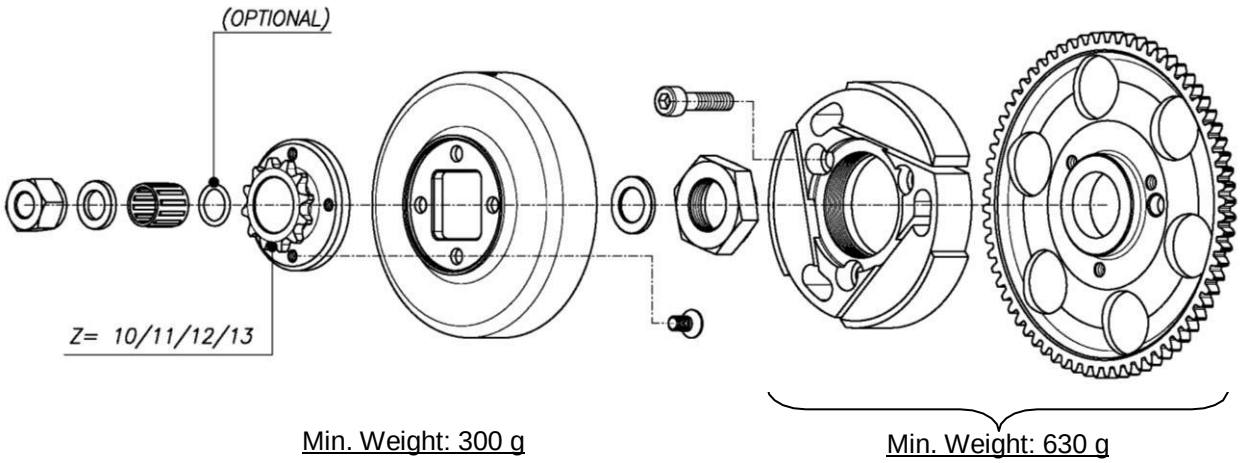
VENTURI CARB. DIMENSIONS



TILLOTSON MOD. HW-33A

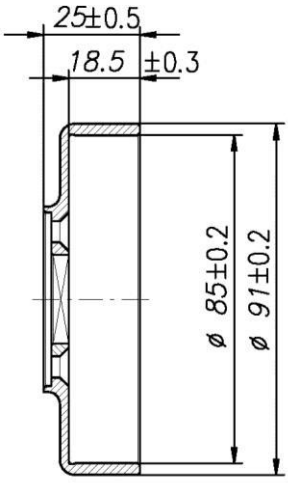
INLET SILENCER	SPONGE FILTER INLET SILENCER
	
EXHAUST MANIFOLD	**EXHAUST MANIFOLD RESTRICTED (Type 1)**
	

DESCRIPTION OF THE CLUTCH

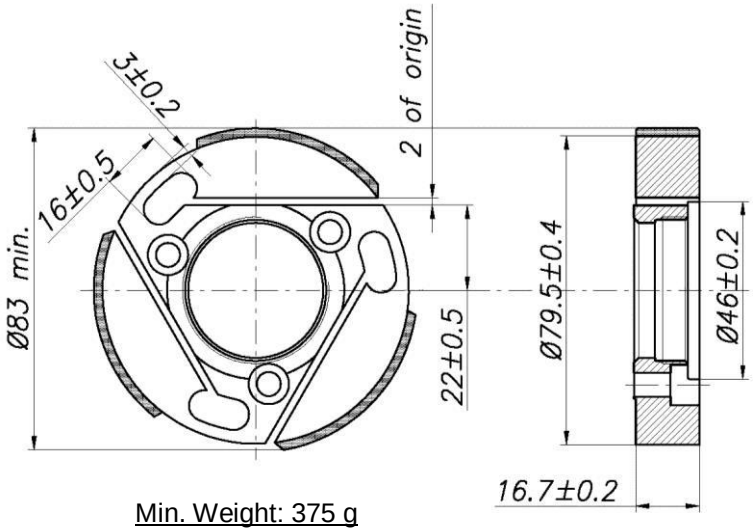


Min. Weight: 300 g

Min. Weight: 630 g

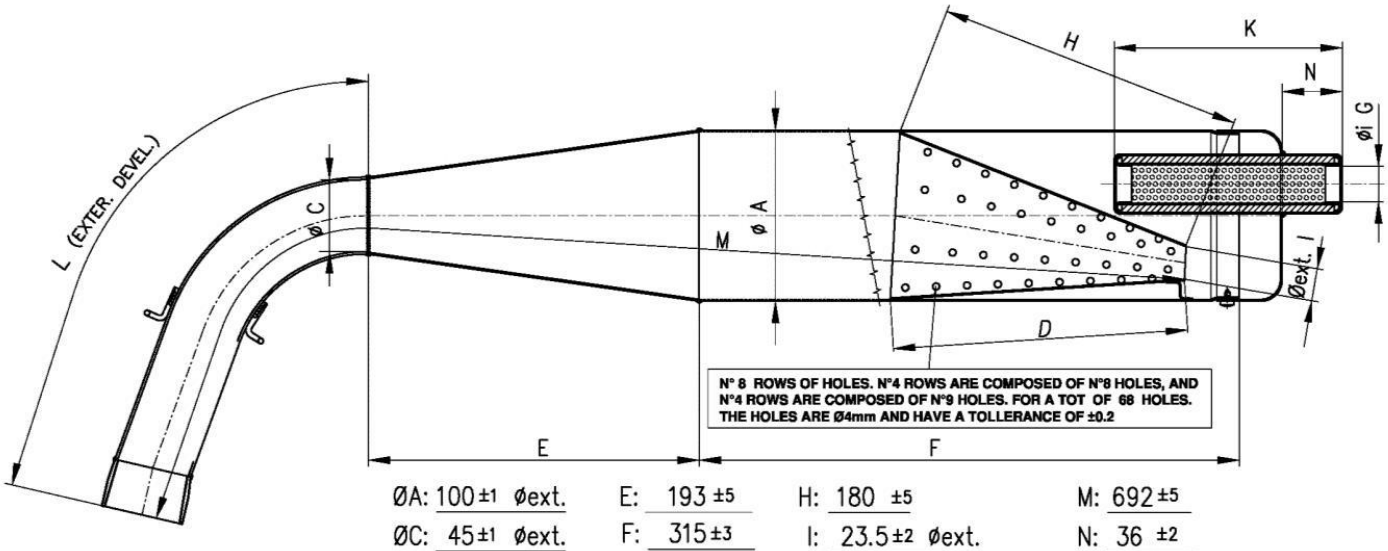


Min. Weight : 225g



Min. Weight: 375 g

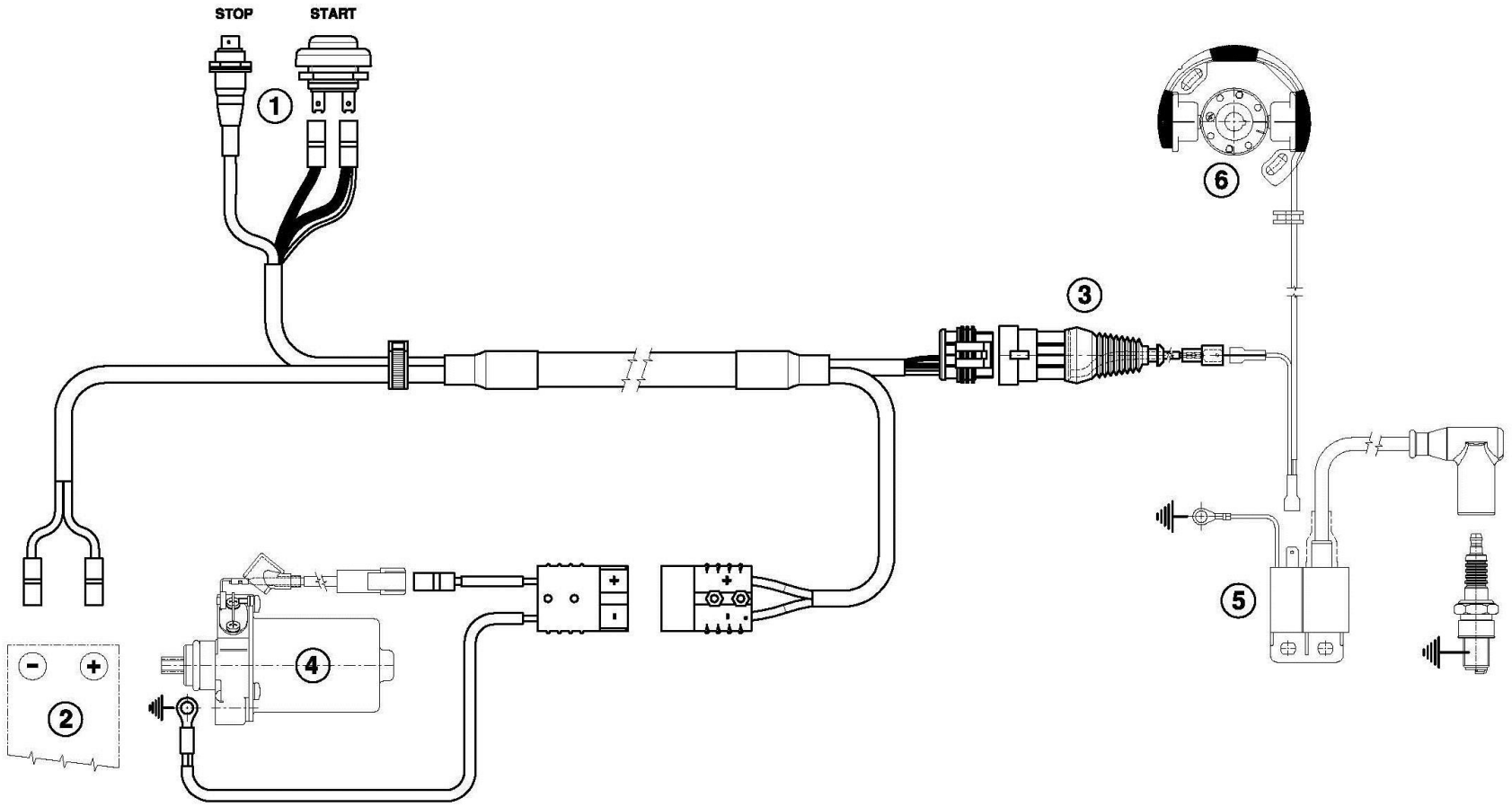
EXHAUST MUFFLER VIEW AND DIMENSIONS



ØA: 100 ±1 øext.	E: 193 ±5	H: 180 ±5	M: 692 ±5
ØC: 45 ±1 øext.	F: 315 ±3	I: 23.5 ±2 øext.	N: 36 ±2
D: 172 ±5	K: 131 ±3	L: 270 ±5 ext.	G: 21 ±1

Min. Weight: 1.905 g

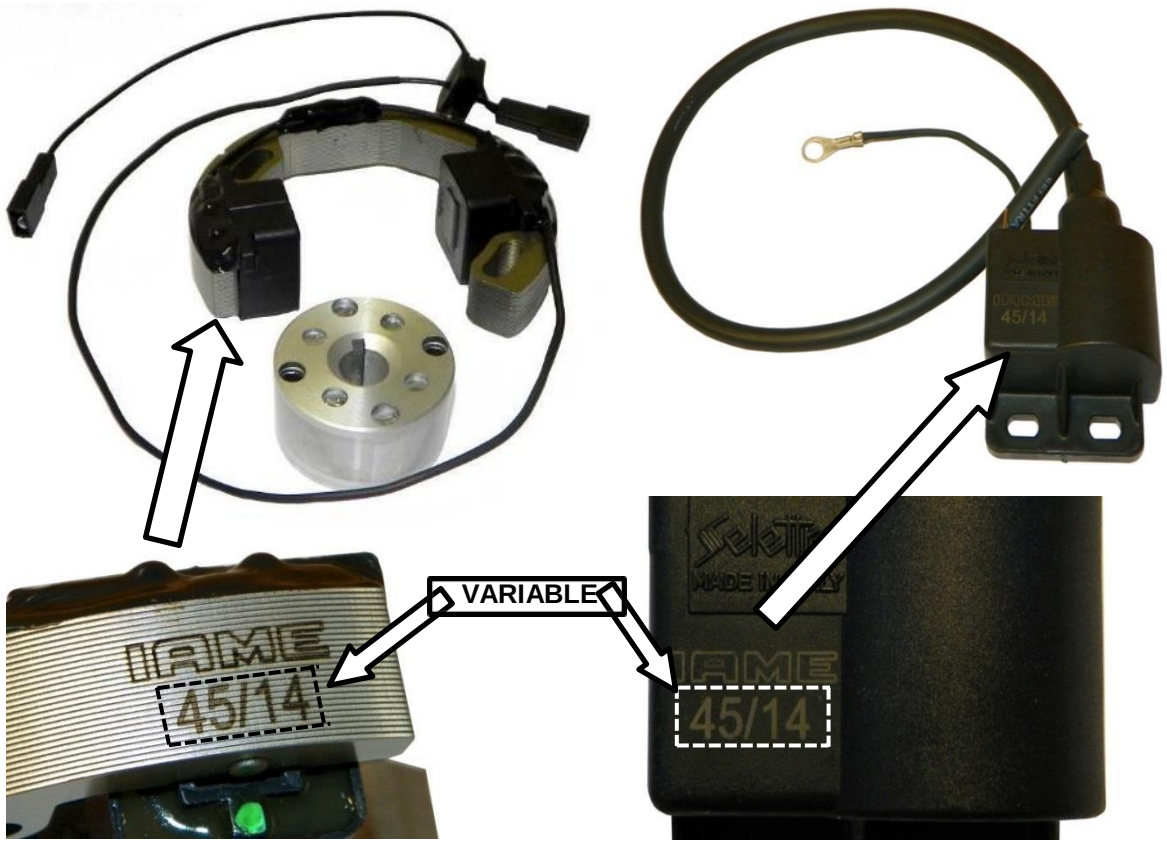
WIRING DIAGRAM



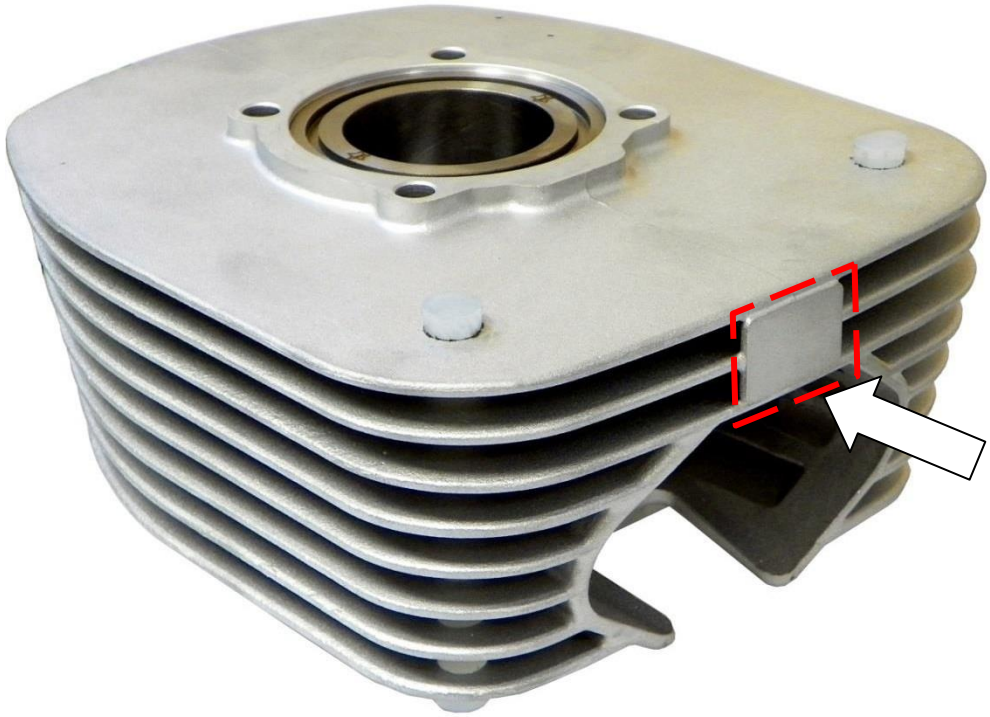
1- Push-Button Start & Stop
2- Battery
3- Ignition Cable Adapter
4- Starter
5- H.T. coil
6- Ignition

PHOTO COMPLETE WIRING

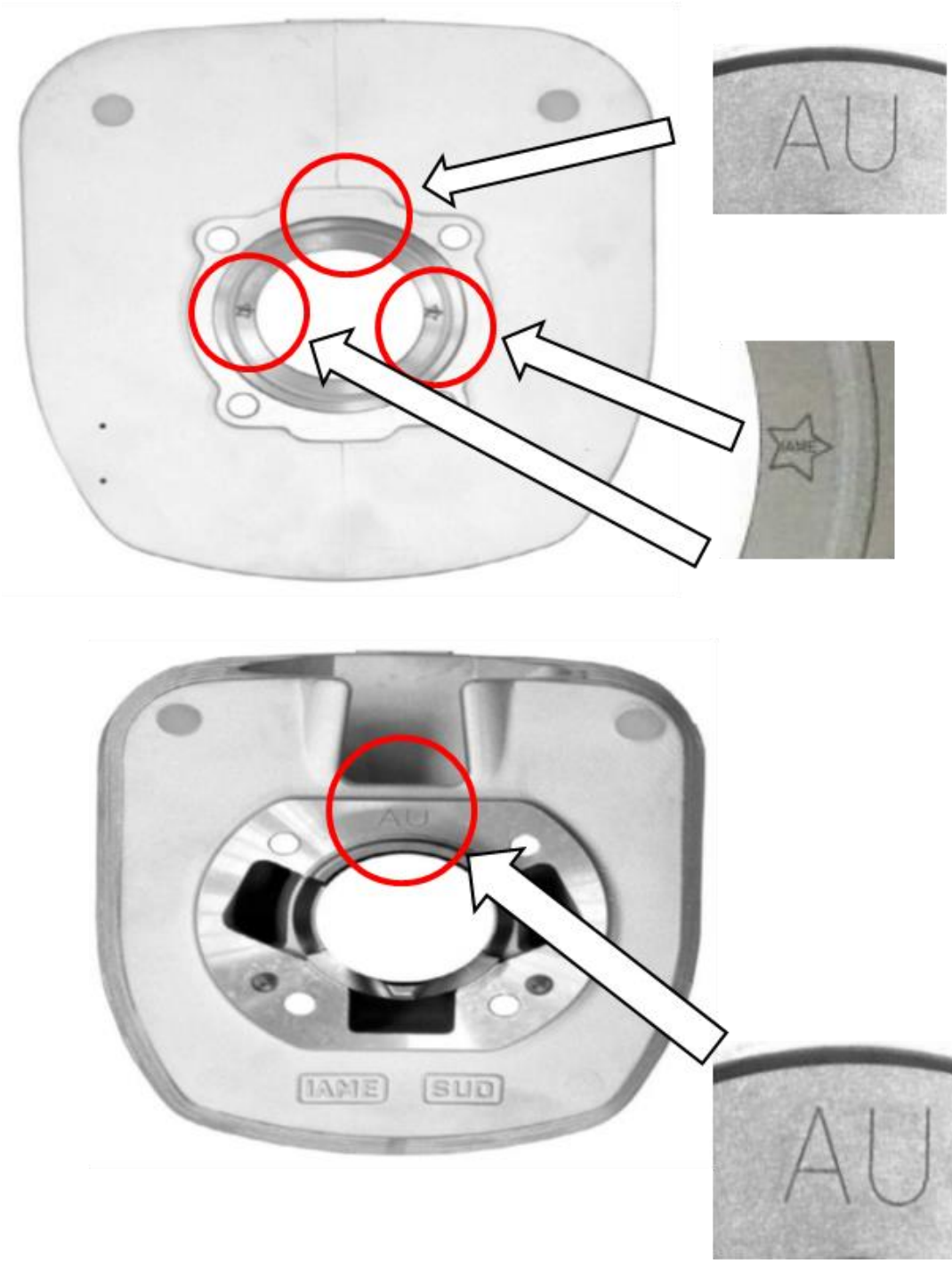
PHOTO OF IGNITION / PHOTO OF H.T. COIL (SELETTRA ANALOGUE 2 POLES)



STICKER APPLICATION AREA

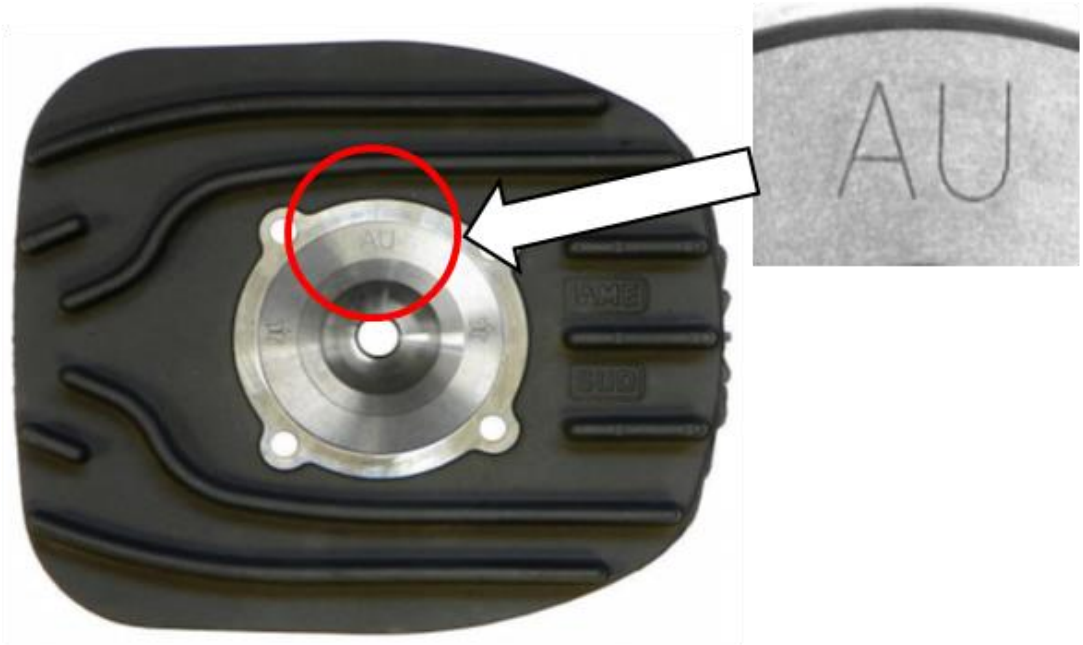


CYLINDER IDENTIFICATION MARKING



CRANKCASE IDENTIFICATION MARKING

HEAD IDENTIFICATION MARKING



INLET SILENCER - “IAME” IDENTIFICATION MARKING

PISTON IDENTIFICATION MARKING

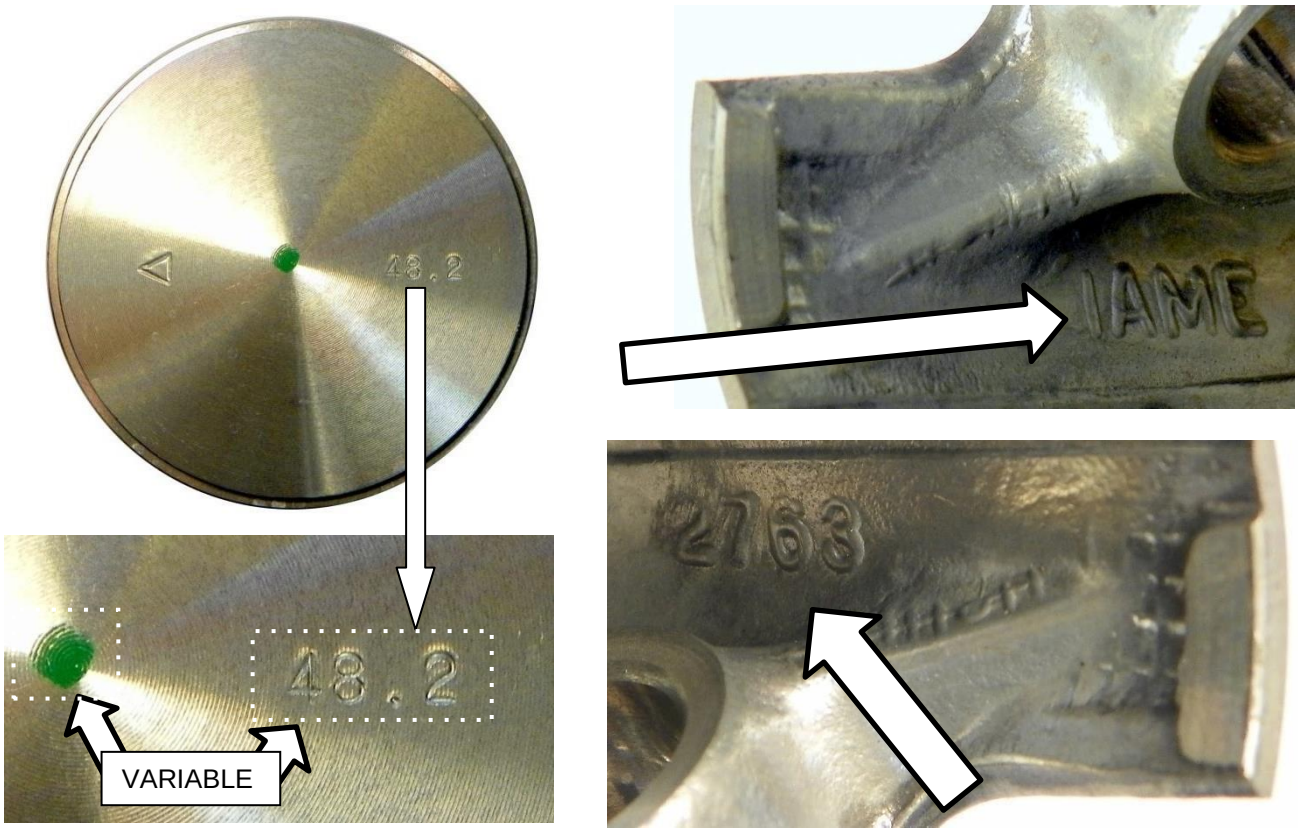
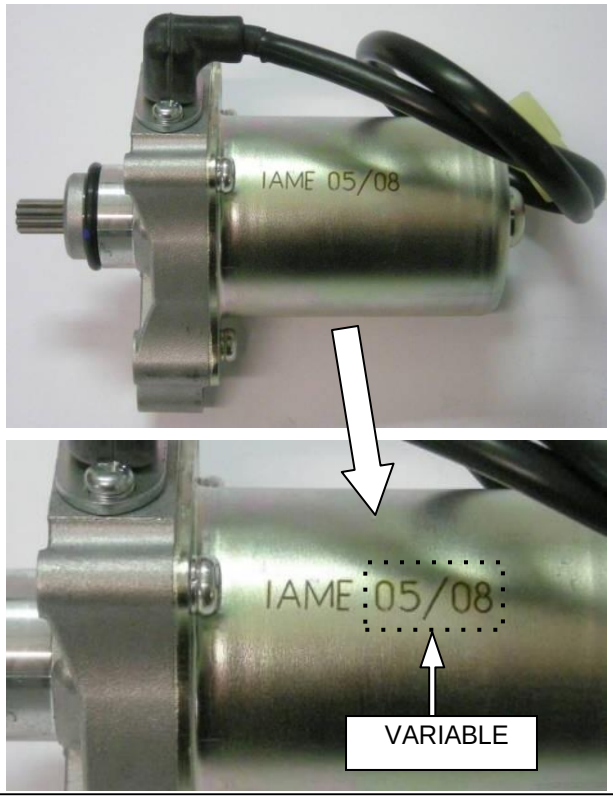
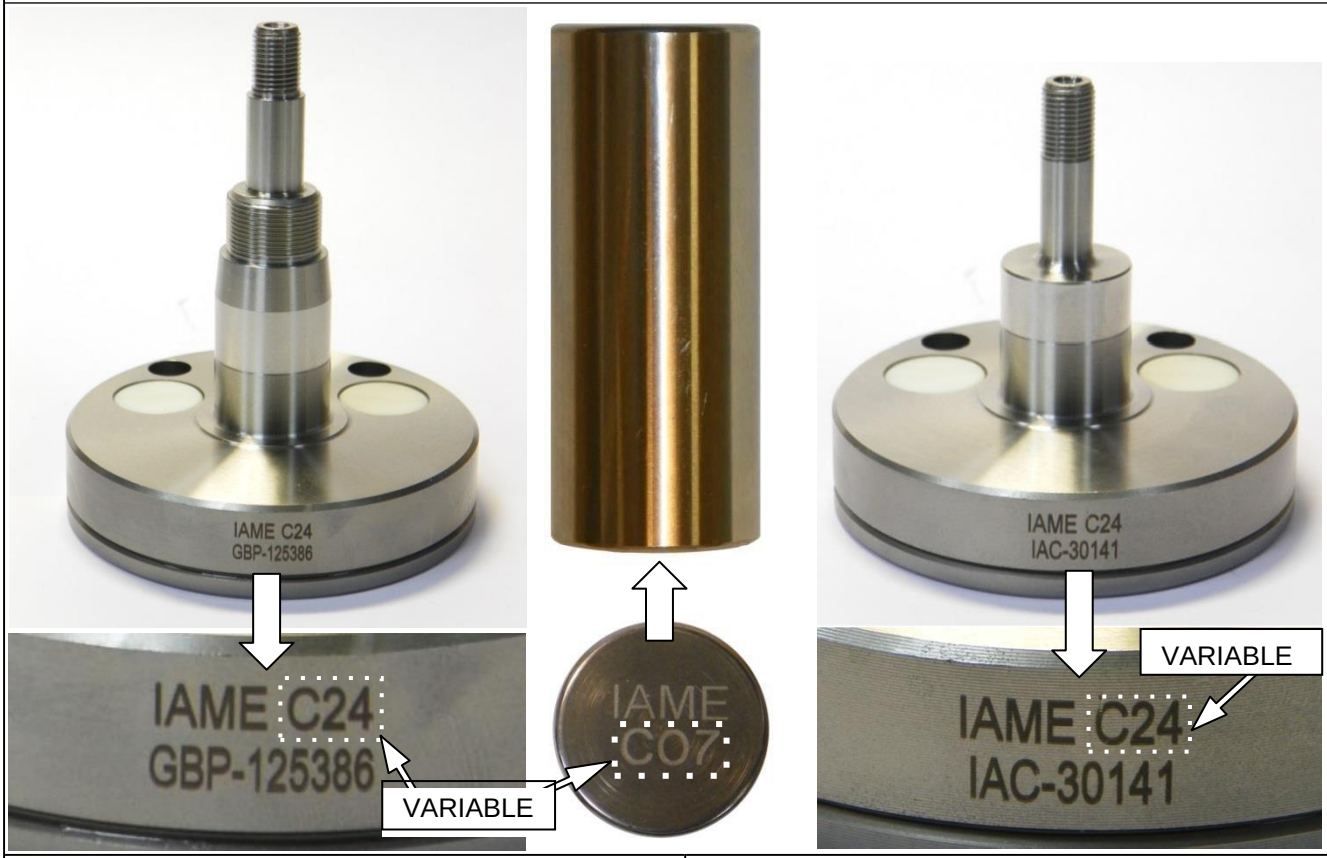


PHOTO IDENTIFICATION CONROD

STARTER IDENTIFICATION MARKING



CRANKSHAFT IDENTIFICATION MARKING

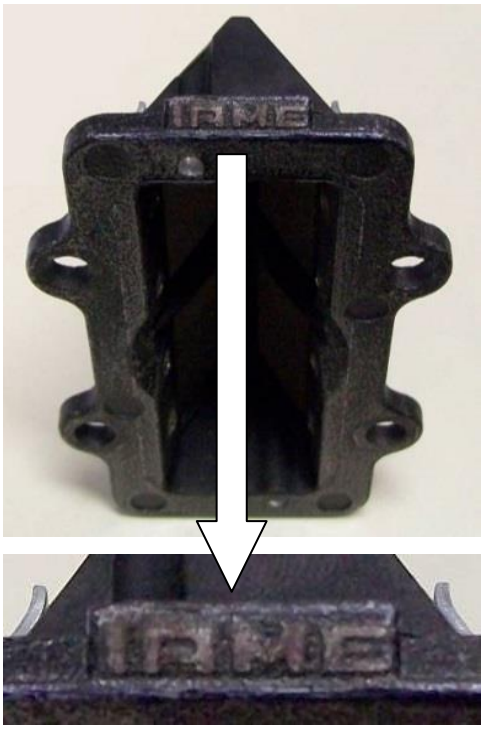


SPROCKET IDENTIFICATION MARKING

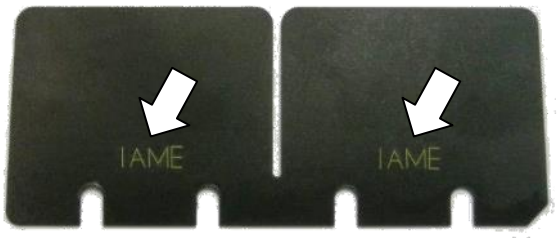
STARTER RING IDENTIFICATION MARKING

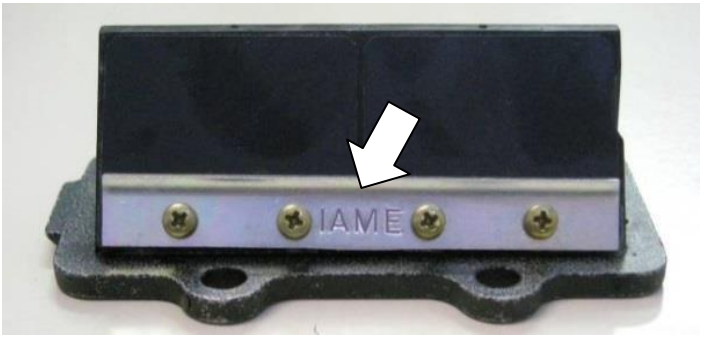
CLUTCH BODY IDENTIFICATION MARKING	CLUTCH DRUM IDENTIFICATION MARKING
 	
PHOTO IDENTIFICATION CARBURETTOR INLET CONVEYOR	BENDIX COVER IDENTIFICATION MARKING
	  REAR SIDE FRONT SIDE 

REED GROUP & PETALS IDENTIFICATION MARKING

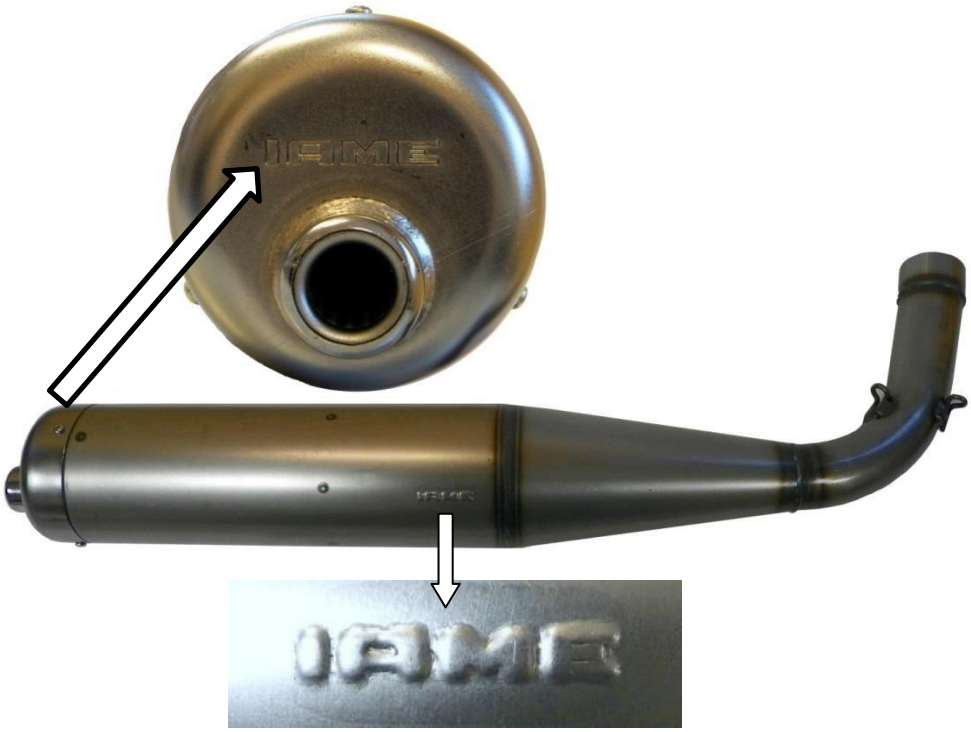


CARBON FIBRE



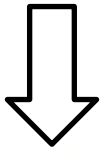
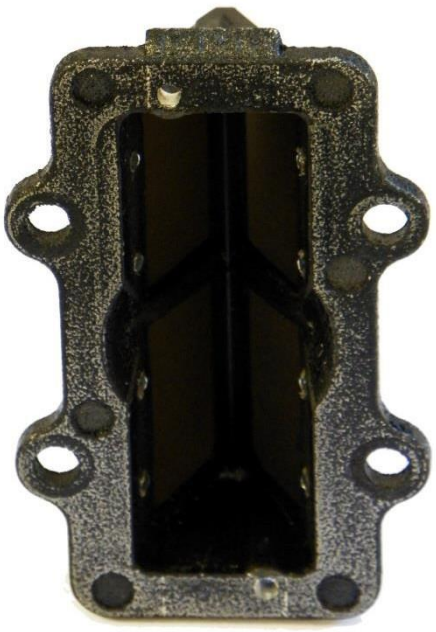
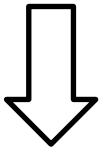


EXHAUST SILENCER IDENTIFICATION MARKING



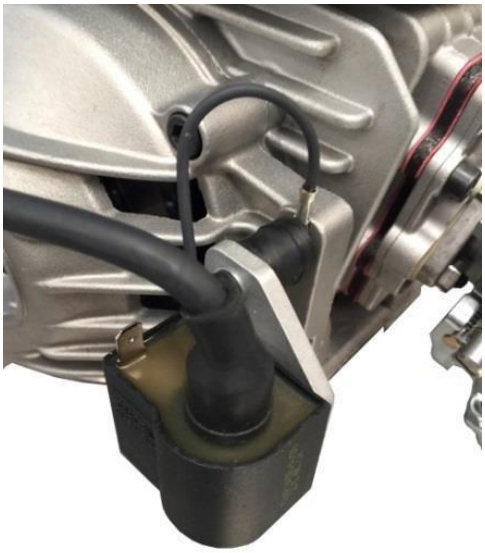
CLUTCH COVER - ALTERNATIVE SHAPE AND SURFACE FINISHING

ALTERNATIVE

PHOTO IDENTIFICATION REED GROUP	
CURRENT VERSION	ALTERNATIVE VERSION
   	   

ALTERNATIVE INSTALLATION OF EARTH CABLE ON THE CRANKCASE

STANDARD INSTALLATION



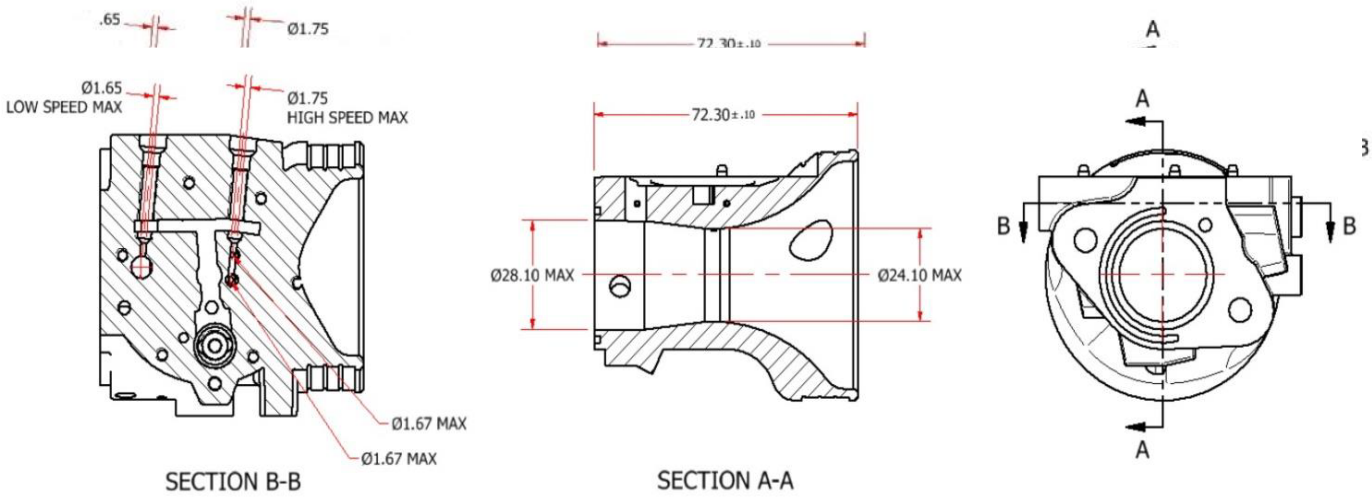
ALTERNATIVE INSTALLATION

CARBURETTOR
Tillotson HW-33A

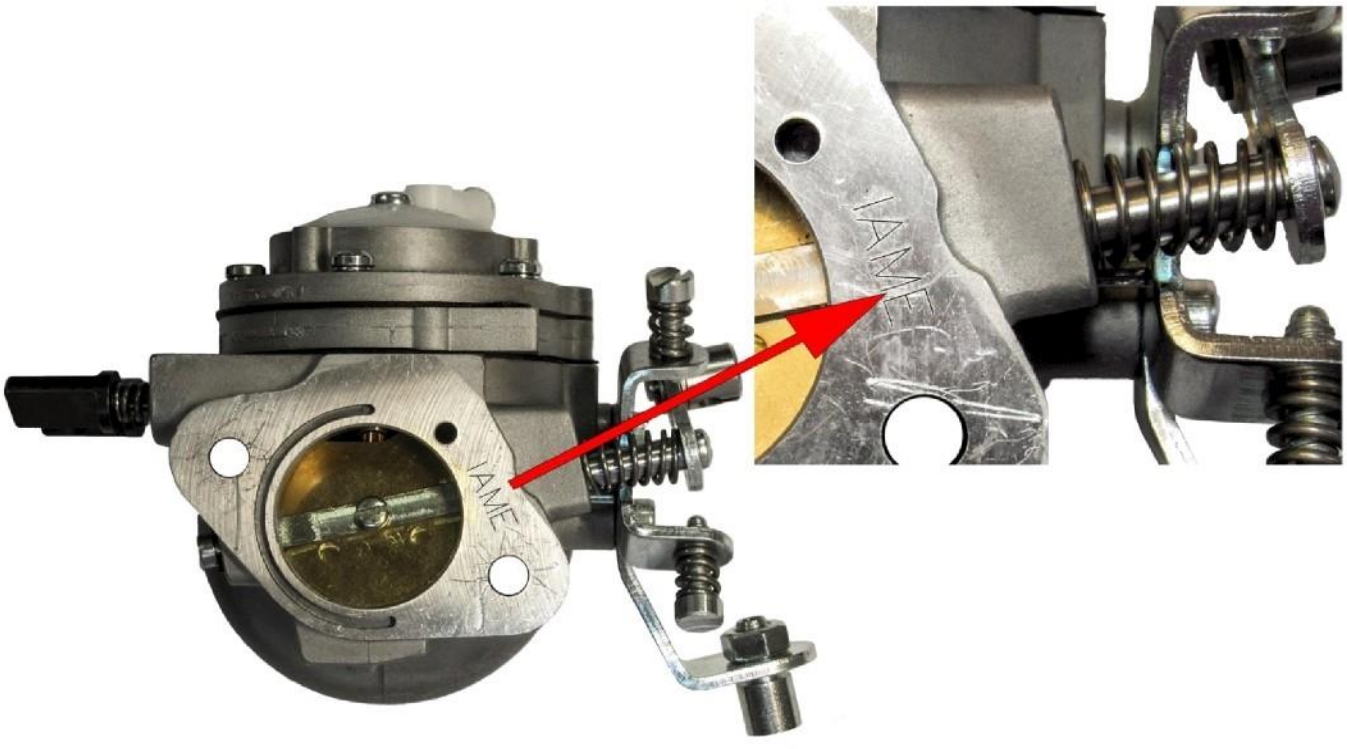
	
PHOTO OF ADJUSTING SIDE	PHOTO OF INLET SIDE

Manufacturer	**TILLOTSON LTD.**
Make	**TILLOTSON**
Model	**HW-33A**

SECTION VIEW

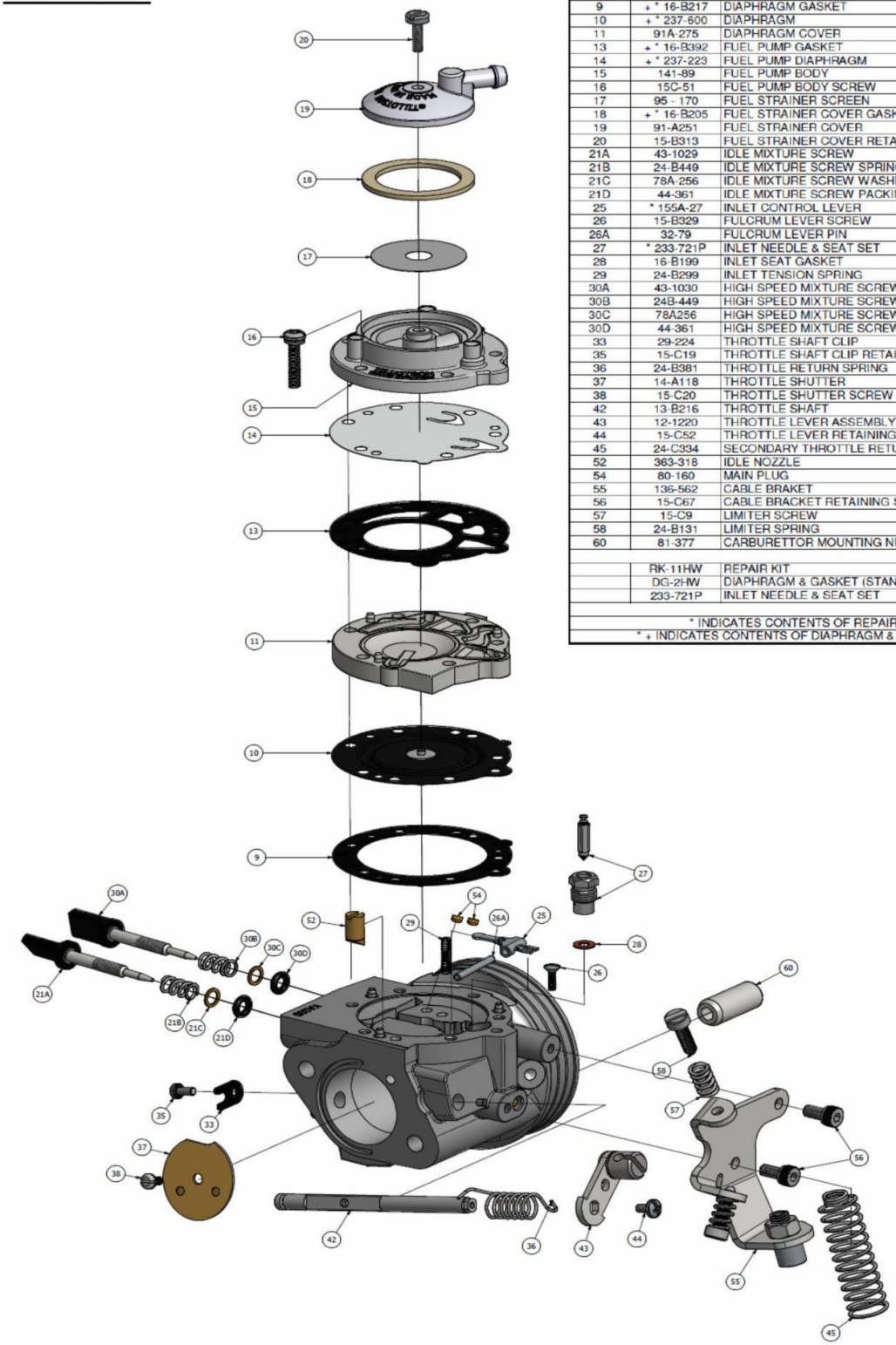


IAME IDENTIFICATION MARKING



CARBURETTOR DESCRIPTION AND SKETCH OF PARTS

HW-33A



ITEM	PART NO.	DESCRIPTION	QTY
9	+ * 16-B217	DIAPHRAGM GASKET	1
10	+ * 237-600	DIAPHRAGM	1
11	91A-275	DIAPHRAGM COVER	1
13	+ * 16-B392	FUEL PUMP GASKET	1
14	+ * 237-223	FUEL PUMP DIAPHRAGM	1
15	141-89	FUEL PUMP BODY	1
16	15C-51	FUEL PUMP BODY SCREW	6
17	95 - 170	FUEL STRAINER SCREEN	1
18	+ * 16-B205	FUEL STRAINER COVER GASKET	1
19	91-A251	FUEL STRAINER COVER	1
20	15-B313	FUEL STRAINER COVER RETAINING SCREW	1
21A	43-1029	IDLE MIXTURE SCREW	1
21B	24-B449	IDLE MIXTURE SCREW SPRING	1
21C	78A-256	IDLE MIXTURE SCREW WASHER	1
21D	44-361	IDLE MIXTURE SCREW PACKING	1
25	* 155A-27	INLET CONTROL LEVER	1
26	15-B329	FULCRUM LEVER SCREW	1
26A	32-79	FULCRUM LEVER PIN	1
27	* 233-721P	INLET NEEDLE & SEAT SET	1
28	16-B199	INLET SEAT GASKET	1
29	24-B299	INLET TENSION SPRING	1
30A	43-1030	HIGH SPEED MIXTURE SCREW	1
30B	24B-449	HIGH SPEED MIXTURE SCREW SPRING	1
30C	78A256	HIGH SPEED MIXTURE SCREW WASHER	1
30D	44-361	HIGH SPEED MIXTURE SCREW PACKING	1
33	29-224	THROTTLE SHAFT CLIP	1
35	15-C19	THROTTLE SHAFT CLIP RETAINING SCREW	1
36	24-B381	THROTTLE RETURN SPRING	1
37	14-A118	THROTTLE SHUTTER	1
38	15-C20	THROTTLE SHUTTER SCREW	1
42	13-B216	THROTTLE SHAFT	1
43	12-1220	THROTTLE LEVER ASSEMBLY	1
44	15-C52	THROTTLE LEVER RETAINING SCREW	1
45	24-C334	SECONDARY THROTTLE RETURN SPRING	1
52	363-318	IDLE NOZZLE	1
54	80-160	MAIN PLUG	2
55	136-562	CABLE BRAKET	1
56	15-C67	CABLE BRACKET RETAINING SCREW	2
57	15-C9	LIMITER SCREW	2
58	24-B131	LIMITER SPRING	2
60	81-377	CARBURETTOR MOUNTING NUT	2
	RK-11HW	REPAIR KIT	
	DG-2HW	DIAPHRAGM & GASKET (STANDARD)	
	233-721P	INLET NEEDLE & SEAT SET	

* INDICATES CONTENTS OF REPAIR KIT
* + INDICATES CONTENTS OF DIAPHRAGM & GASKET SET

Tillotson RACING
Clash Industrial Estate - Tralee - Ireland
www.tillotson-racing.com

PARTS OF CARBURETTORS HW-33A & HL-398A (Photographs for Reference Only)

REF.9 - P. N°16-B406
DIAPHRAGM GASKET

Thickness = 0.5 +/- 0.1 mm

PUMP DIAPHRAGM GASKET
REF.13 - P. N° 16-B407

Thickness = 0.8 +/- 0.1 mm

REF.10 - P. N°237-600
DIAPHRAGM

Thickness = 0.13 +/- 0.07 mm

REF.14 - P. N°237-162
PUMP DIAPHRAGM

Thickness = 0.10 +/- 0.07mm

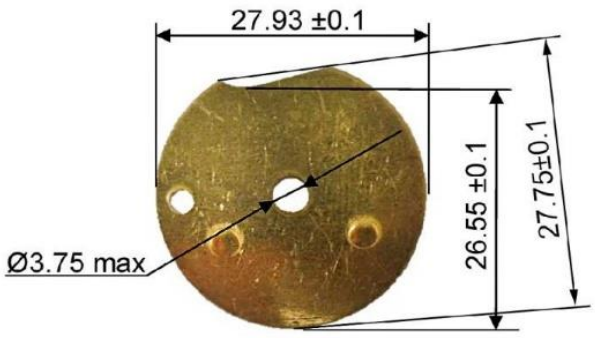
REF.11 - P. N° 91-A275
DIAPHRAGM COVER

Thickness = 6.75 +/- 0.15 mm

REF.15 - P. N° 141-89
PUMP COVER

Thickness = 12.5 +/- 0.15 mm

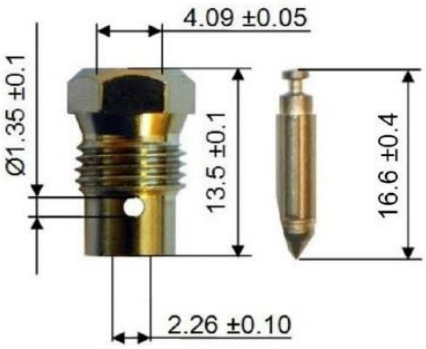
REF.37 - P. N° 14-A118
THROTTLE SHUTTER



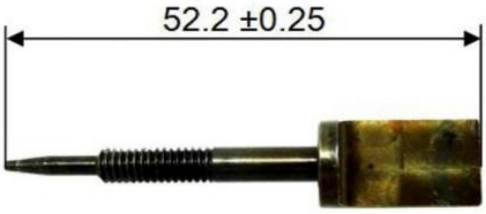
ALTERNATIVE SHAPE

Thickness = 0.84 ±0.1 mm

REF.27 - P. N° 233-721P
SEAT + NEEDLE



REF.21A - P. N° 43-1029
NEEDLE LOW SPEED



REF.30A - P. N° 43-1030
NEEDLE HIGH SPEED

ALTERNATIVE FUEL NEEDLE

CARBURETTOR

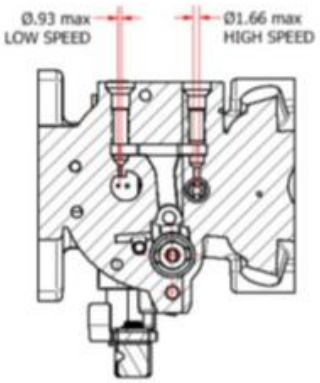
Tillotson HL-398A

PHOTO OF ADJUSTING SIDE

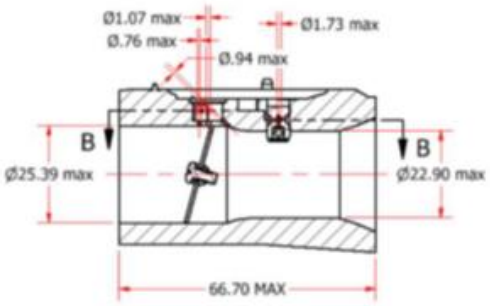
PHOTO OF INLET SIDE

Manufacturer	**TILLOTSON LTD.**
Make	**TILLOTSON**
Model	**HL-398A**

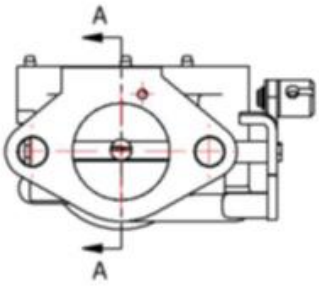
SECTION VIEW



SECTION B-B



SECTION A-A

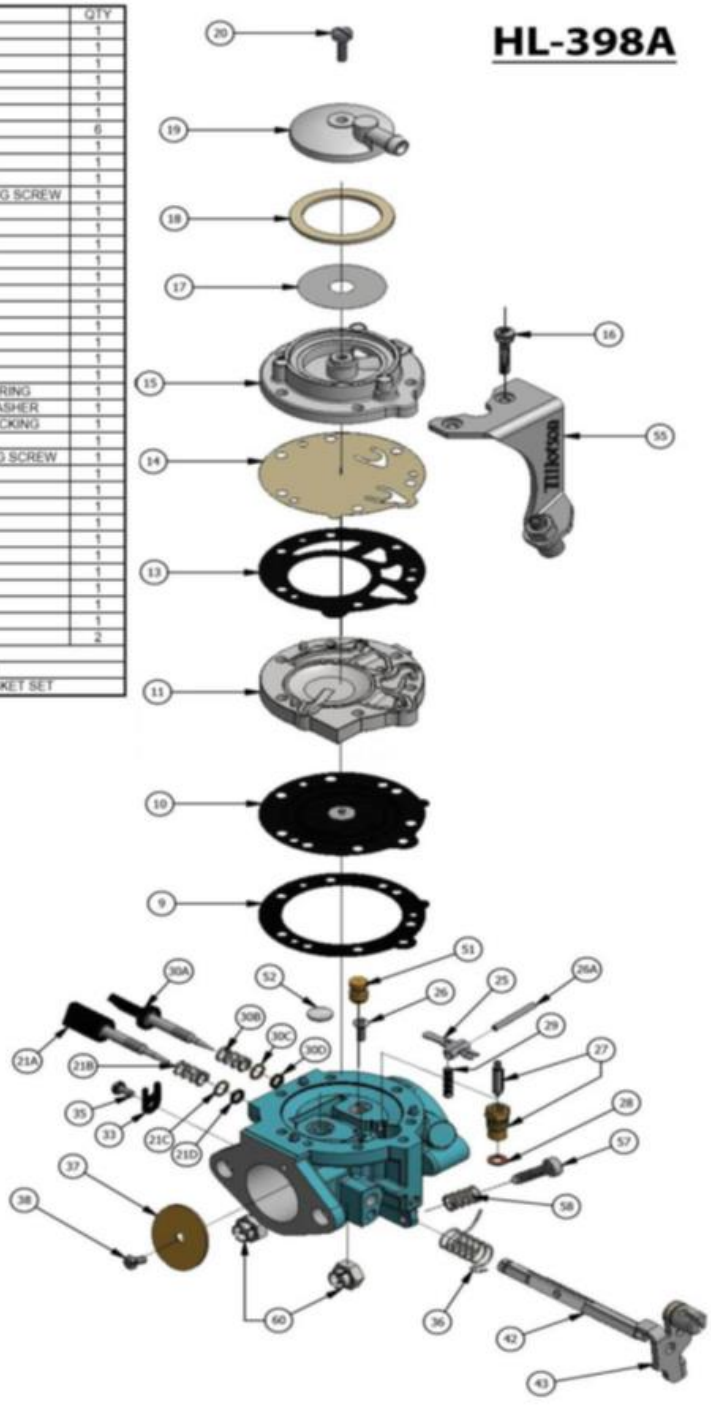


CABLE BRACKET

CARBURETTOR DESCRIPTION AND SKETCH OF PARTS

ITEM	PART NO:	DESCRIPTION	QTY
9	+ * 16-B217	DIAPHRAGM GASKET	1
10	+ * 237-600	DIAPHRAGM	1
11	91-A275	DIAPHRAGM COVER	1
13	+ * 16-B223	FUEL PUMP GASKET	1
14	+ * 237-223	FUEL PUMP DIAPHRAGM	1
15	141-89	FUEL PUMP BODY	1
16	15C-51	FUEL PUMP BODY SCREW	6
17	95 - 170	FUEL STRAINER SCREEN	1
18	+ * 16-B205	FUEL STRAINER COVER GASKET	1
19	91-A251	FUEL STRAINER COVER	1
20	15-B313	FUEL STRAINER COVER RETAINING SCREW	1
21A	43-1039	IDLE MIXTURE SCREW	1
21B	24-B449	IDLE MIXTURE SCREW SPRING	1
21C	78A-256	IDLE MIXTURE SCREW WASHER	1
21D	44-270	IDLE MIXTURE SCREW PACKING	1
25	* 155A-27	INLET CONTROL LEVER	1
26	15-B329	FULCRUM LEVER SCREW	1
26A	32-79	FULCRUM LEVER PIN	1
27		INLET NEEDLE & SEAT SET	1
28	16-B199	INLET SEAT GASKET	1
29	24-B299	INLET TENSION SPRING	1
30A	43-1038	HIGH SPEED MIXTURE SCREW	1
30B	24B-449	HIGH SPEED MIXTURE SCREW SPRING	1
30C	78A256	HIGH SPEED MIXTURE SCREW WASHER	1
30D	44-270	HIGH SPEED MIXTURE SCREW PACKING	1
33	29-224	THROTTLE SHAFT CLIP	1
35	15-C19	THROTTLE SHAFT CLIP RETAINING SCREW	1
36	24-B381	THROTTLE RETURN SPRING	1
37	14-407	THROTTLE SHUTTER	1
38	15-C29	THROTTLE SHUTTER SCREW	1
42	13-B76	THROTTLE SHAFT	1
43	12-1224	THROTTLE LEVER ASSEMBLY	1
51	363-503	MAIN NOZZLE	1
52	179-55	WELCH PLUG	1
55	136-565	CABLE BRAKET	1
57	15-C19	LIMITER SCREW	1
58	24-B131	LIMITER SPRING	1
60	81-380	CARBURETTOR MOUNTING NUT	2

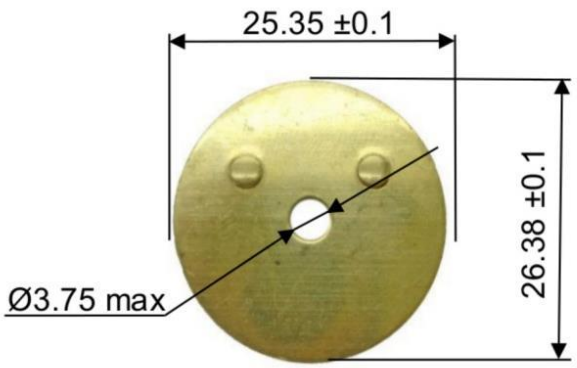
* INDICATES CONTENTS OF REPAIR KIT
* + INDICATES CONTENTS OF DIAPHRAGM & GASKET SET



Tillotson RACING
Clash Industrial Estate - Tralee - Ireland
www.tillotson-racing.com

N.B. Refer HL33-A for carburettor gasket specifications

REF.37 - P. N° 14-407
THROTTLE SHUTTER



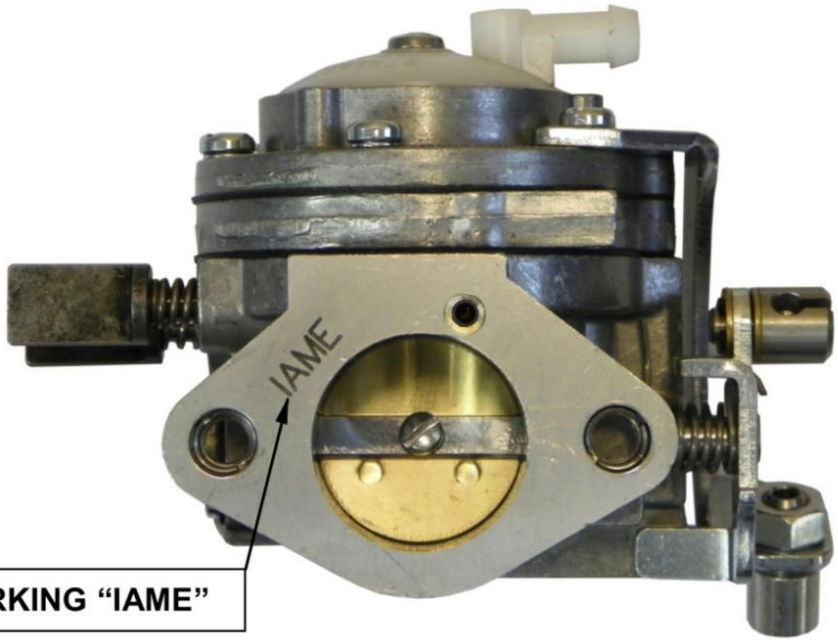
Thickness = 0.81 ±0.1 mm

REF.27
SEAT + NEEDLE

REF.21A - P. N° 43-1038
NEEDLE LOW SPEED

REF.30A - P. N° 43-1039
NEEDLE HIGH SPEED

MARKING



LASER MARKING "IAME"

4 COMPLIANCE SPECIFICATION

4.1 Fuel System / Carburettor

- Either Tillotson carburettors HW–33AL22 or HL-398A may be used in accordance with the specifications in this document.
- All spare parts for the Tillotson carburettor are to be genuine Tillotson parts.
- The entry point to the pulse hole on the back of the carburettor is a non-tech item. The pulse hole must be maintained in the original position and to the original diameter. The entry point may be modified to allow better alignment.
- It is permissible to mount the carburettor upside down to allow better access to the tuning needles.
- The Tillotson DG-3HW and RK-6HW carburettor kits are the only kits permitted for use with the HW-33A and HL-398A carburettors.
- It is permissible to install a second O-Ring on the mixture needle(s) to reduce the possibility of the needle(s) rotating during use by increasing the spring tension
- Fuel pump or pressurised fuel systems are forbidden. Squeeze type pump between fuel tank and carburettor is permitted.
- The carburettor cannot be actuated by electro mechanical means.

4.2 Induction System

- The Induction Silencer may be of any colour.
- The only permissible rain/dust/dirt guard allowed to be attached to the induction silencer is the genuine IAME rain/dust/dirt guard.
- It is permissible to drill a maximum 5mm water drain hole in the bottom of the IAME induction silencer.
- Only green or red genuine IAME sponge filters are permitted to be used.
- It is permissible to notch the rubber of the Induction Silencer to allow it to better fit to the carburettor. Alternatively, the protruding casting on the carburettor top plate may be removed.

4.3 Engine

- All factory markings as shown in the General Technical Specification on all surfaces must remain in place, removal of these markings will deem the engine ineligible
- No material is to be added to any engine part except for the purpose of spark plug thread repair
- The distance from the spark plug sealing face to combustion chamber ceiling face: 29.5mm+/- 0.25mm.
- The combustion chamber volume shall be a minimum of 11.3-cm³ using the procedure described in the KNSW General Engine Compliance Checks Manual
- The cylinder head squish clearance must be a minimum of 1.05mm when averaged across both sides in line with the piston pin. It shall be measured using the procedure described in the KNSW General Engine Compliance Checks Manual.
- If cylinder head gasket/gaskets are fitted, the maximum thickness of any gasket or combination of gaskets is 0.25mm.
- Cylinder base gasket/s must have a combined thickness of between 0.25mm minimum and 0.45mm maximum.
- Multiple cylinder base gaskets may be used.
- Only genuine Iame base gaskets are permissible
- It is permitted to place a small notch into the crank shaft oil seal to allow a more direct oil flow from the orifice in the crankcase.
- It is permissible to recondition the crankshaft main shaft bearing/seal journals by hard chrome plating.

4.4 Ignition System

- Repair of the wiring loom is permitted to restore components to original condition.
- The plastic fittings homologated as components of the electrical loom for the ignition and starter assembly may be replaced with non-genuine fittings.
- Spark plug cap must be of original manufacturer.
- High tension lead retaining spring attached to the cylinder may be removed.
- The maximum allowable timing advance is 3.2mm from top dead center. The timing marks on the rotor and the stator must fully align using a straight edge across the stator timing marks on either side of the rotor.

4.5 Exhaust System

- A maximum of two (2) exhaust gaskets are permitted to be fitted
- Only IAME OEM exhaust gaskets are permitted to be used
- In classes designated in the KNSW rule book where the engine is used in restricted format either the Type 1 or Type 2 D19 genuine IAME 19.0mm exhaust restrictor as specified in the General Technical Specification of this document is permitted. The specification of the Type 2 D19 is to be provided by the supplier.

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4.6 Item Supply / Non-Tech Items

- Unless otherwise expressly permitted by KNSW, only IAME OEM original parts as specified for the Iame 100 Reedjet are permitted to be used.
- The following components are specified as Non-tech items:
    - spark plug
    - carburettor gasket between the carburettor and manifold
    - plastic fittings on the electrical looms for the ignition and starter assembly
    - battery
    - stop/start switches
    - carburettor locating sleeve and fastening nuts
    - carburettor inlet spring
    - high tension lead retaining spring.
- Unless specified, non-tech items are to be of the same type and style as the original.
- No alteration from the original manufacturer's specifications is permitted to fit a non-tech item

4.7 Legal Additions

Legal additions shall be limited to the following:

- chain guard
- motor mount
- extension of carburettor jet needles
- carburettor return springs

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4.8 Internal Additions

- No additional material may be added except in the case of spark plug thread repair which shall only restore component to original specifications.
- The cylinder may NOT be repaired in any of the port or passage as cast areas.

5 REFERENCES

For all measurement specifications, techniques & procedures refer to KNSW General Engine Compliance Checks Manual

6 DOCUMENT REVISION SCHEDULE

Revision Number	Revision Description	Revised By	Revision Date
1	Original Document		31/1/2019