
KARTING NSW

Engine Technical Specification

VORTEX MINI ROK



MINI ROK TECHNICAL SPECIFICATION

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MINI ROK TECHNICAL SPECIFICATION

1. PREAMBLE

The following are the Technical Specifications for the Vortex Mini Rok engine, as approved by Karting NSW.

This engine is approved for use in the following classes.

- Novice (with a **16.05mm** exhaust manifold restrictor as listed in Rule Book Sections C.2.3, S.7.3)
- Rookies

Attention: ALL THE ENGINE PARTS MUST BE ORIGINAL BY VORTEX ROK UNLESS LISTED BELOW

NON GENUINE PARTS PERMITTED ARE: **Bearings - Original Manufacturer Specification Ball style only (such as 6204 Tn9 C4) – No Ceramic allowed, Clutch Drum, Engine Sprockets (10 & 11 Tooth), Gaskets (Any thickness), Meteor Pistons (Listed sizes)**

(Any Needle roller bearings currently in use, only permitted at club level events until 31/12/2023)

NON TECH PARTS PERMITTED ARE:

Start and Stop Buttons or Key	Any similar switch will be acceptable providing it is in line with the OEM's intent and purpose
Starter Motor	Any starter will be acceptable providing it is in line with the OEM's intent and purpose
Wiring Loom	Repairs will be permitted however its length and design must be in line with the OEM's intent and purpose

Neither engines nor accessories can be modified. By this we mean any shape, content or function changes which may differ from what previously conceived. Furthermore this includes any addition and /or removal of material and /or parts from the engine set-up package unless provided by this Regulation.

Unless noted above, the engines must be original in all their components according to the attached drawings and diagrams.

- Any removal, addition or polishing of material is strictly forbidden.
- Sandblasting, glass bead blasting, peening, acid etching, spark eroding and/or any other method of metal removal or displacement is prohibited.

ANY ALTERATIONS / MODIFICATIONS ARE STRICTLY PROHIBITED EXCEPT AS SPECIFICALLY AUTHORISED WITHIN THESE SPECIFICATIONS.

IF THESE SPECIFICATIONS DO NOT SAY YOU CAN MAKE A MODIFICATION, THEN YOU CANNOT.

MINI ROK TECHNICAL SPECIFICATION

2. ENGINE IDENTIFICATION

This Identification Sheet reproduces descriptions, illustrations and dimensions of the MINI ROK engine.



FOTO DEL MOTORE LATO SUPERIORE
 PICTURE ENGINE UPPER SIDE

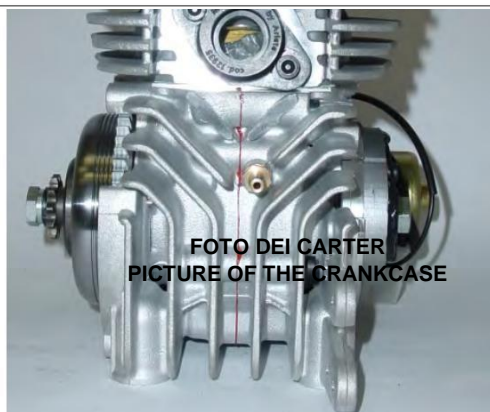
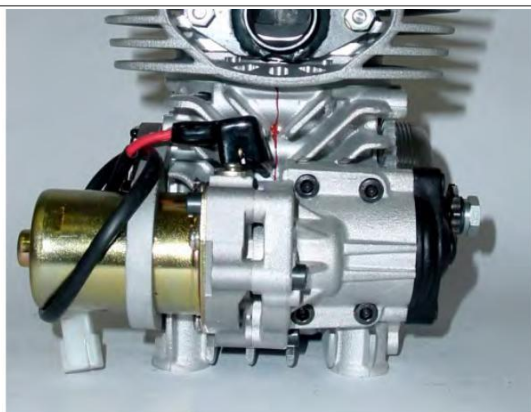


FOTO DEI CARTER
 PICTURE OF THE CRANKCASE

BASE CILINDRO
 CYLINDER BASE

MINI ROK TECHNICAL SPECIFICATION

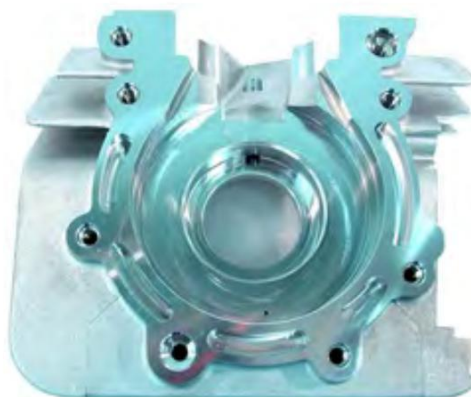
FOTO DEL MOTORE LATO INFERIORE
PICTURE ENGINE LOWER SIDE



TESTA E CAMERA DI COMBUSTIONE
CYLINDERHEAD AND COMBUSTION CHAMBER



FOTO INTERNA DEL CARTER
INTERIOR PICTURE OF THE CRANKCASE



MINI ROK TECHNICAL SPECIFICATION

3. GENERAL TECHNICAL SPECIFICATIONS

A - CHARACTERISTICS		
<i>The number of decimal places must be 2 or comply with the relevant tolerance.</i>		<i>Tolerances & remarks</i>
Cylinder		
Max displacement	60 cc.	
Max allowed bore	42.10mm	
Stroke	43.00 mm	±0.10mm
Admission system in the cylinder	Piston Port	
Cooling system	Air cooling	
Carburettor:	DELL'ORTO PHBG 18 BS	
Number of transfers	2	
Shape of exhaust transfer	At 4 angles	
<i>Cylinder head Volume with Vortex CC check tool WA050</i>	6.8 cc	Minimum
Crankshaft		
<i>Number of bearings</i>	2	--
<i>Diameter of bearings</i>	47mm	±0.05mm
<i>Weight of crankshaft with Conrod</i>	1311g	±10.0g
Crankpin (Big End)		
<i>Diameter</i>	18mm	±0.05mm
<i>Length</i>	40.6mm	±0.05mm
<i>I.D.</i>	6mm	±0.05mm
<i>Weight of crankpin</i>	71g	±1.0g
Connecting rod		
<i>Connecting rod centreline</i>	90mm	±0.20mm
<i>Diameter of big end</i>	24.02mm	±0.05mm
<i>Diameter of small end</i>	16mm	±0.05mm
<i>Weight of the connecting rod</i>	94g	±10.0g
Piston		
<i>Number of piston rings</i>	1	-
<i>Weight of the piston</i>	63g	±5.0g
<i>Squish minimum measurement (use 2.0 mm solder)</i>	0.8mm	Minimum

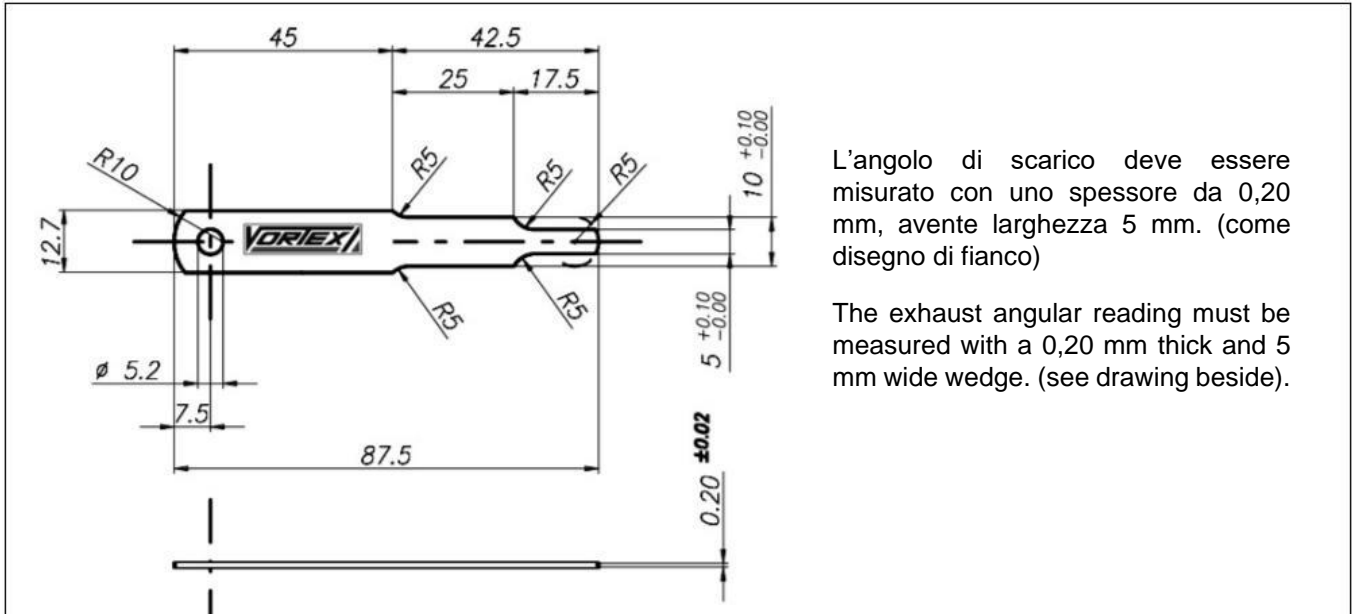
MINI ROK TECHNICAL SPECIFICATION

Gudgeon pin		
<i>Diameter</i>	12mm	±0.01mm
<i>Length</i>	34mm	±0.20mm
<i>Minimum weight</i>	15g	Minimum
<i>I.D.</i>	8mm	±0.10mm
Clutch		
<i>Minimum weight</i>	815g	±15.0g
<i>Engine Sprockets Option Only</i>	Z10-Z11	
B - OPENING ANGLES		
<i>Of the inlet</i>	142°	±2°
<i>Of the transfer ports</i>	116°	±2°
<i>Of the exhaust</i>	155°	Maximum
C - MATERIAL		
<i>Cylinder head</i>	AL-SI	
<i>Cylinder</i>	AL-SI/ CI	
<i>Cylinder wall</i>	CI	
<i>Sump</i>	AL/SI	
<i>Crankshaft</i>	ACIER NI-CR-MO	
<i>Connecting rod</i>	ACIER NI-CR-MO	
<i>Piston</i>	AL/SI	

MINI ROK TECHNICAL SPECIFICATION

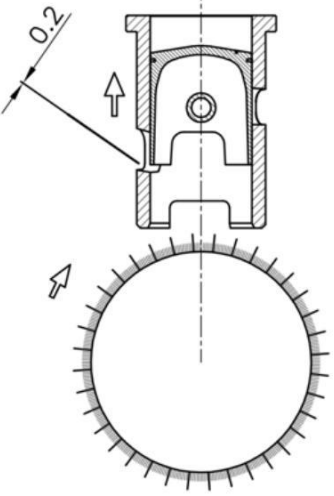
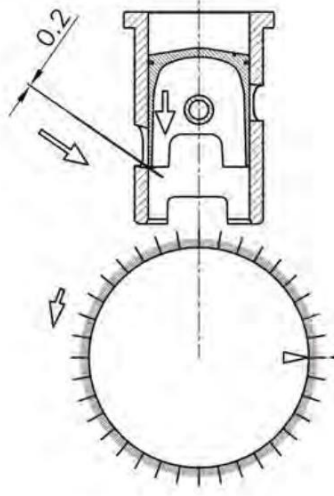
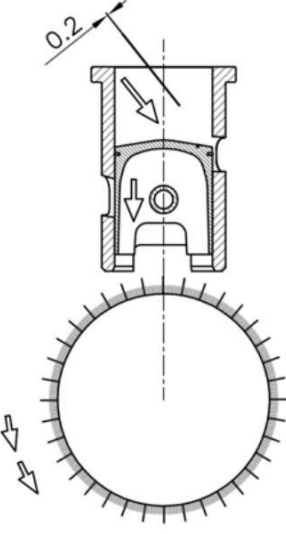
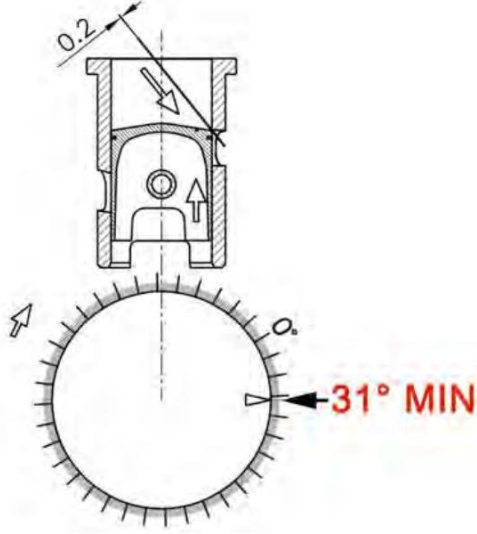
4. CYLINDER

OPENING ANGLES measured with a thickness gauge of 0,20 mm having width of 5 mm and degrees wheel with 200 mm diameter.



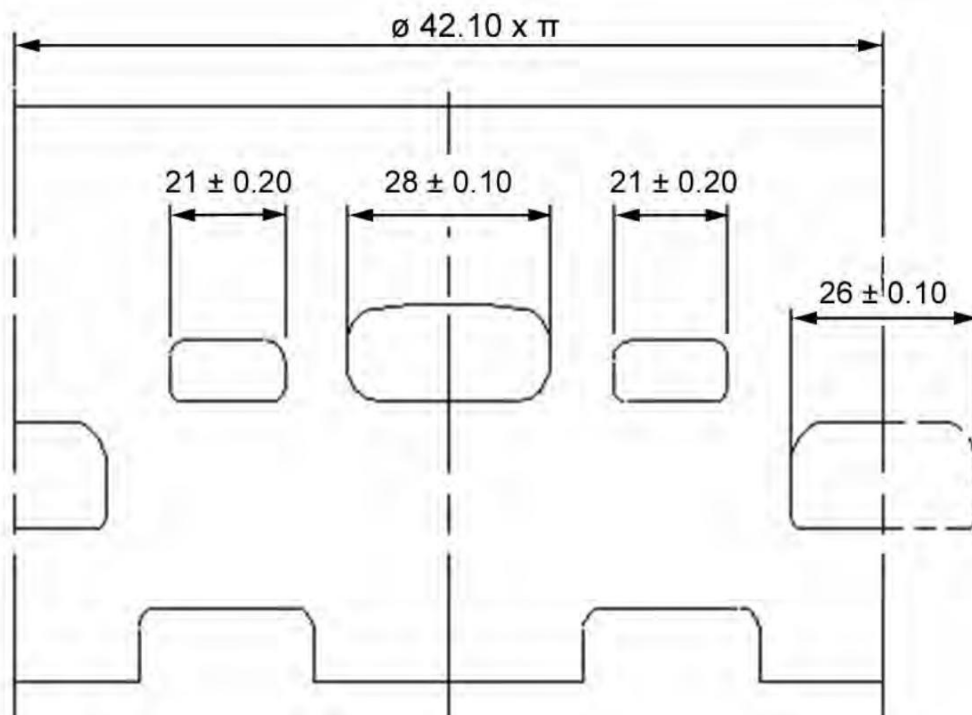
MINI ROK TECHNICAL SPECIFICATION

OPENING ANGLE ADMISSION / EXHAUST

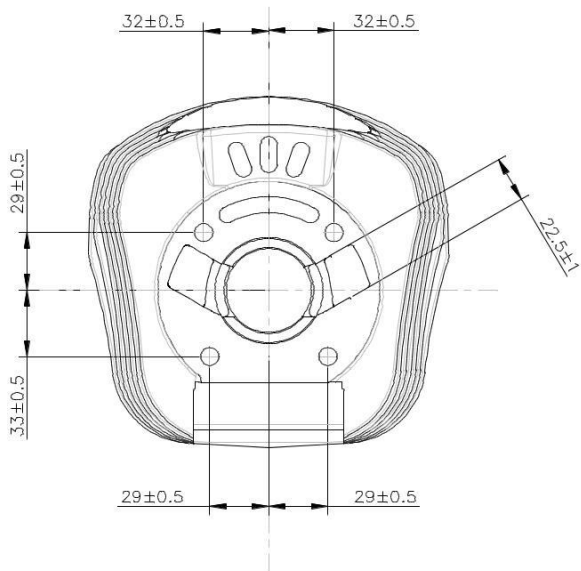
 <p>1</p>	 <p>2</p>
<p>RUOTARE IN SENSO ORARIO PER ALZARE IL PISTONE E PERMETTERE L'INSERIMENTO DELLO SPESSIMETRO CONTRO LO SPIGOLO INFERIORE DELL'ASPIRAZIONE</p> <p>TURN CLOCKWISE AND LIFT THE PISTON TO ALLOW THE INSERTION OF THE FEELER GAUGE AGAINST THE LOWER EXHAUST EDGE</p>	<p>RUOTARE IN SENSO ANTIORARIO PER ABBASSARE IL PISTONE FINO AD INCONTRARE LO SPESSIMETRO APPOGGIATO ALLO SPIGOLO DELL'ASPIRAZIONE IN QUESTA FASE SETTARE LA POSIZIONE DI 0°</p> <p>TURN COUNTERCLOCKWISE AND LOWER THE PISTON UNTIL IT MEETS THE GAUGE RESTING AT THE EXHAUST EDGE, AT THIS STAGE SET THE SCALE ON THE POSITION OF 0 DEGREES</p>
 <p>3</p>	 <p>4</p>
<p>LIBERARE LO SPESSIMETRO QUINDI RUOTANDO IN SENSO ANTIORARIO ABBASSARE IL PISTONE PER PERMETTERE L'INSERIMENTO DELLO SPESSIMETRO SOTTO LO SPIGOLO SUPERIORE DELLO SCARICO</p> <p>RELEASE THE FEELER GAUGE AND TURNING COUNTERCLOCKWISE LOWER THE PISTON TO ALLOW THE INSERTION OF THE FEELER UNDER THE UPPER EDGE OF THE EXHAUST</p>	<p>RUOTANDO IN SENSO CONTRARIO ALZARE IL PISTONE FINO AD INCONTRARE LO SPESSIMETRO APPOGGIATO ALLO SPIGOLO DELLO SCARICO E CONTROLLARE CHE L'ANGOLO DI SPOSTAMENTO NON SIA INFERIORE A 31°</p> <p>TURN COUNTERCLOCKWISE TO LIFT THE PISTON UNTIL IT MEETS THE FEELER GAUGE RESTING AT THE EXHAUST EDGE. AT THIS STAGE CHECK THAT THE EDGE OF DISPLACEMENTS OF THE VERNIER MATCH NOT LESS THAN 31 DEGREES</p>

MINI ROK TECHNICAL SPECIFICATION

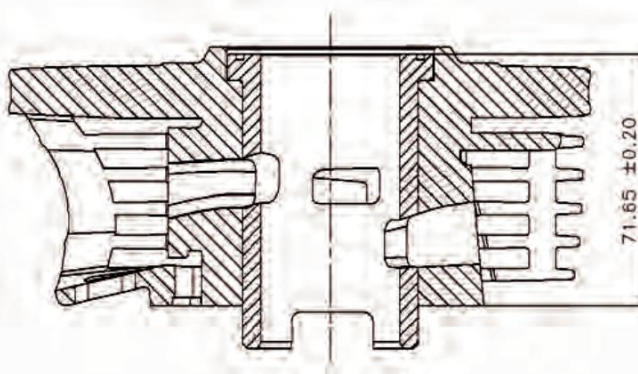
CYLINDER DEVELOPEMENT



DRAWING OF CYLINDER BASE



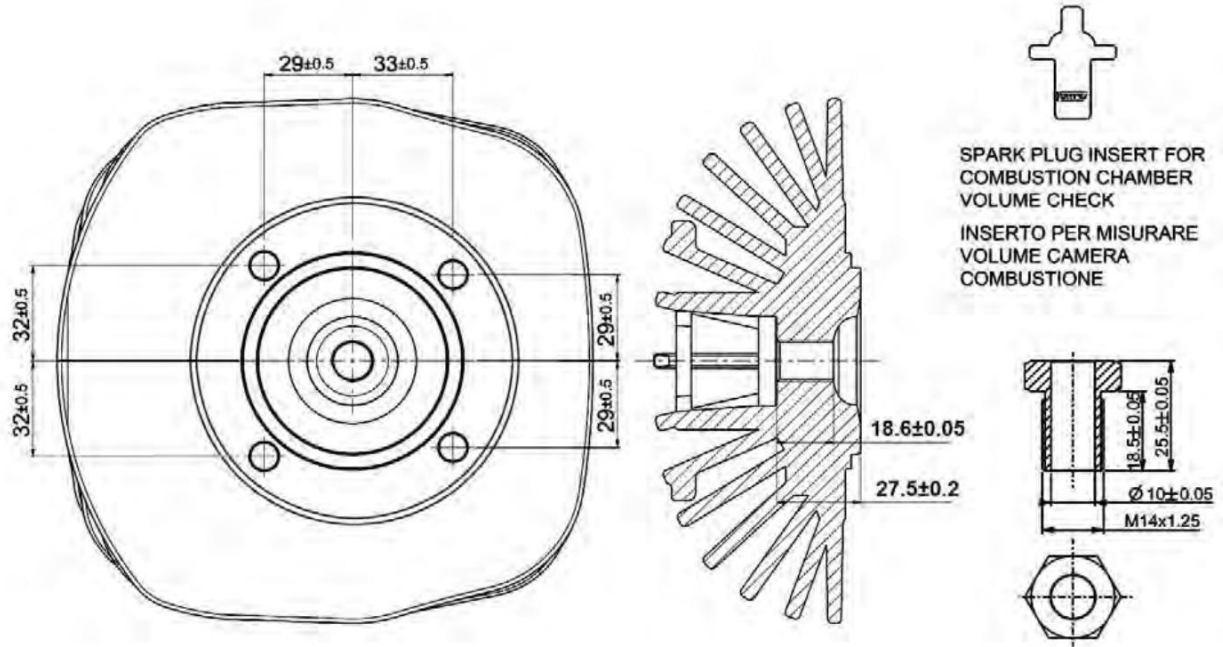
CYLINDER SECTION



MINI ROK TECHNICAL SPECIFICATION

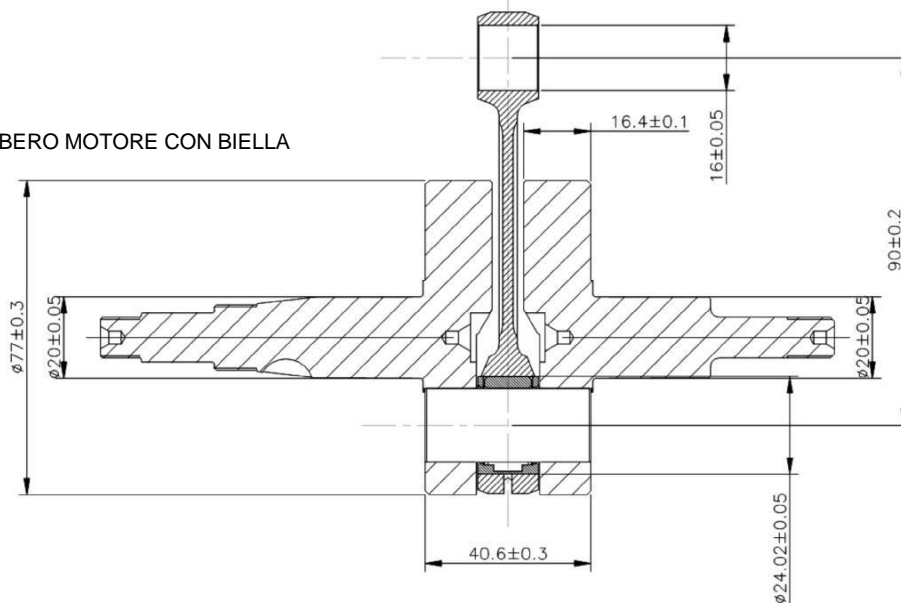
5. CYLINDER HEAD

DRAWING OF CYLINDER HEAD AND COMBUSTION CHAMBER



CRANKSHAFT

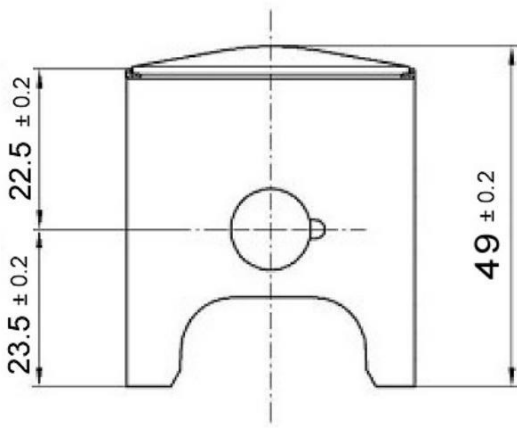
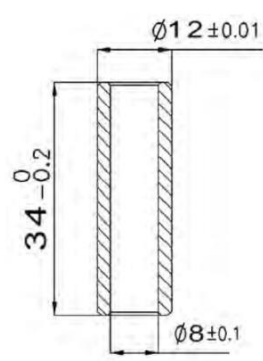
PESO ALBERO MOTORE CON BIELLA



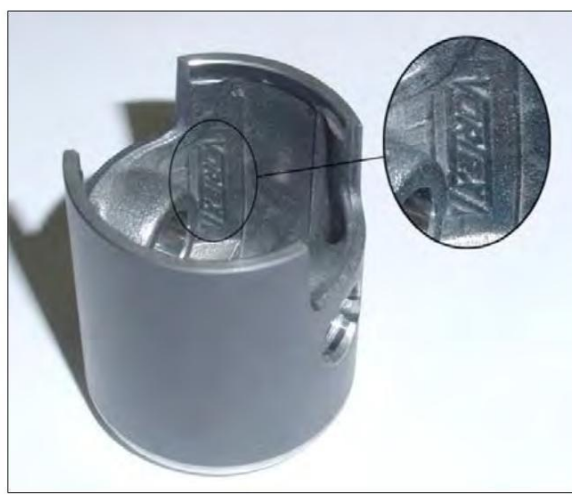
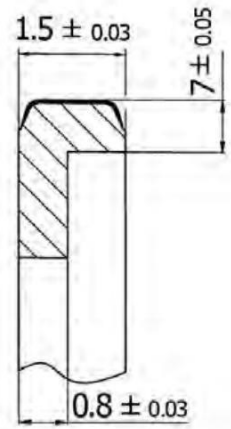
CRANKSHAFT
WEIGHT WITH
CONROD

1311 gr. ± 10gr

MINI ROK TECHNICAL SPECIFICATION

PISTON	PISTON PIN
 <p>PESO DEL PISTONE WEIGHT OF PISTON 63 gr +/- 5 gr</p>	 <p>PESO SPINOTTO PISTON PIN WEIGHT 15 gr Min</p>

Genuine pistons must have the brand name VORTEX cast as shown in the picture

	<p>Dettaglio segmento pistone Piston Ring detail</p> 
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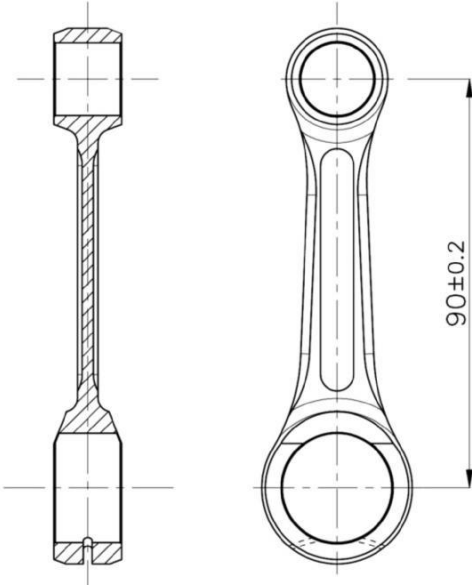
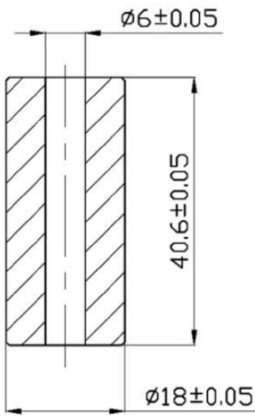


NON GENUINE METEOR PISTONS:

It is permissible to use non genuine Meteor pistons.

Only the following sizes may be used: 42.01, 42.03, 42.05.

The pistons must have the casting number 1904.1

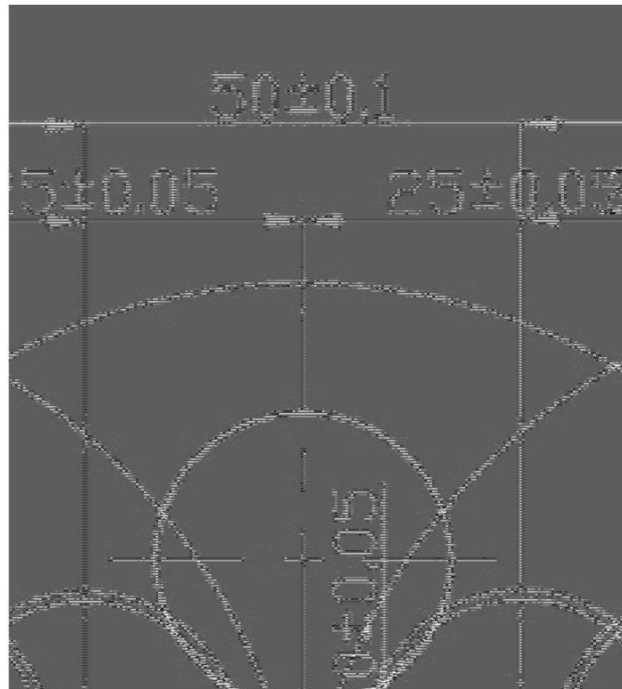
MINI ROK TECHNICAL SPECIFICATION

CONROD	CRANKSHFT PIN
 <p>PESO DELLA BIELLA WEIGHT OF CONROD 94gr. +/- 10gr</p>	 <p>PESO DELL'ASSE DI ACCOPPIAMENTO WEIGHT OF CRANKSHAFT CRANKPIN 71gr. +/- 1gr</p>
<p>FOTO DELLA BIELLA Lato DX PICTURE OF COROD Right Side</p>	<p>FOTO DELLA BIELLA Lato SX PICTURE OF CONROD Left Side</p>
	

MINI ROK TECHNICAL SPECIFICATION

6. CRANKCASE

PICTURE OF CRANKSHAFT WITH THE BALANCER

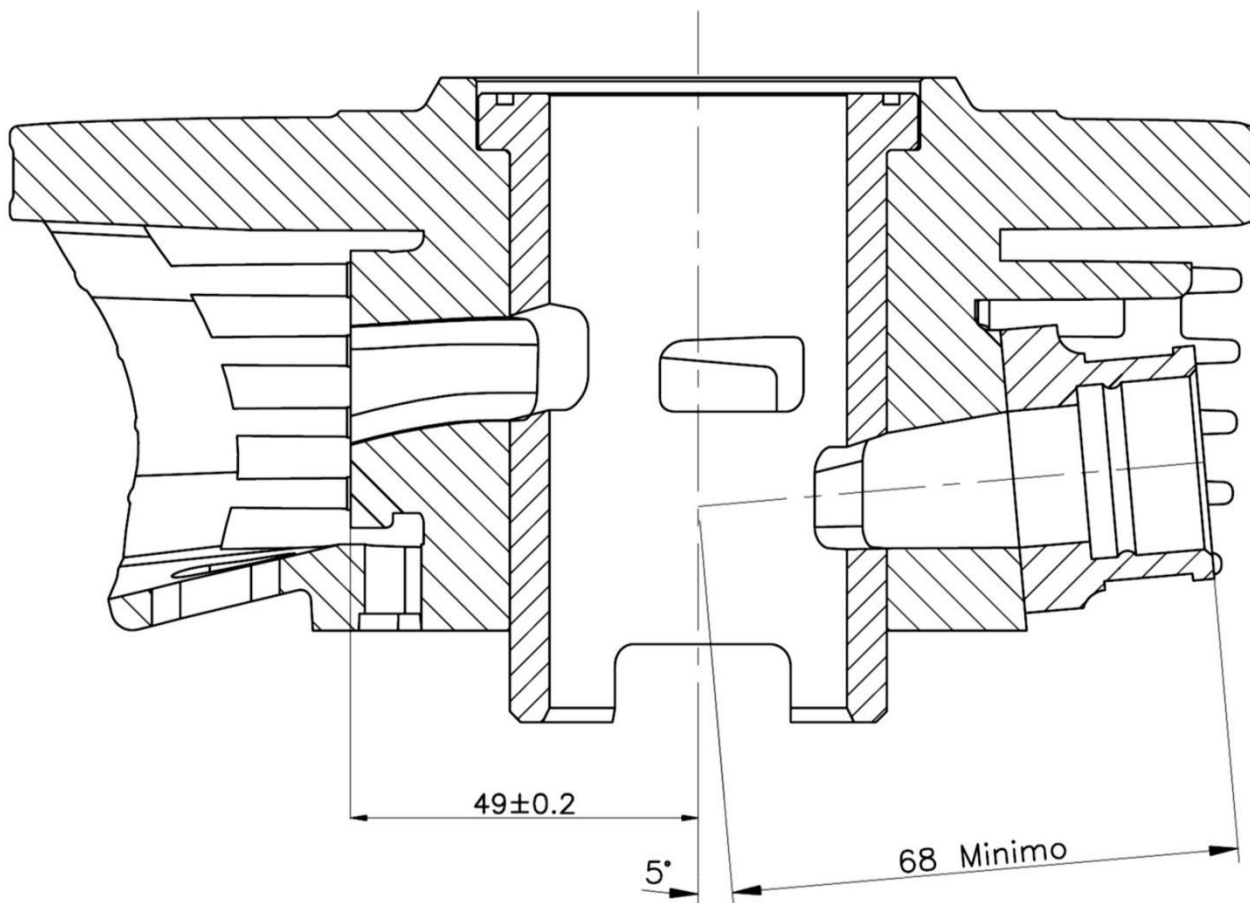


CRANKSHAFT REPAIR:

It is permissible to recondition the crankshaft bearing diameters by hard chroming.

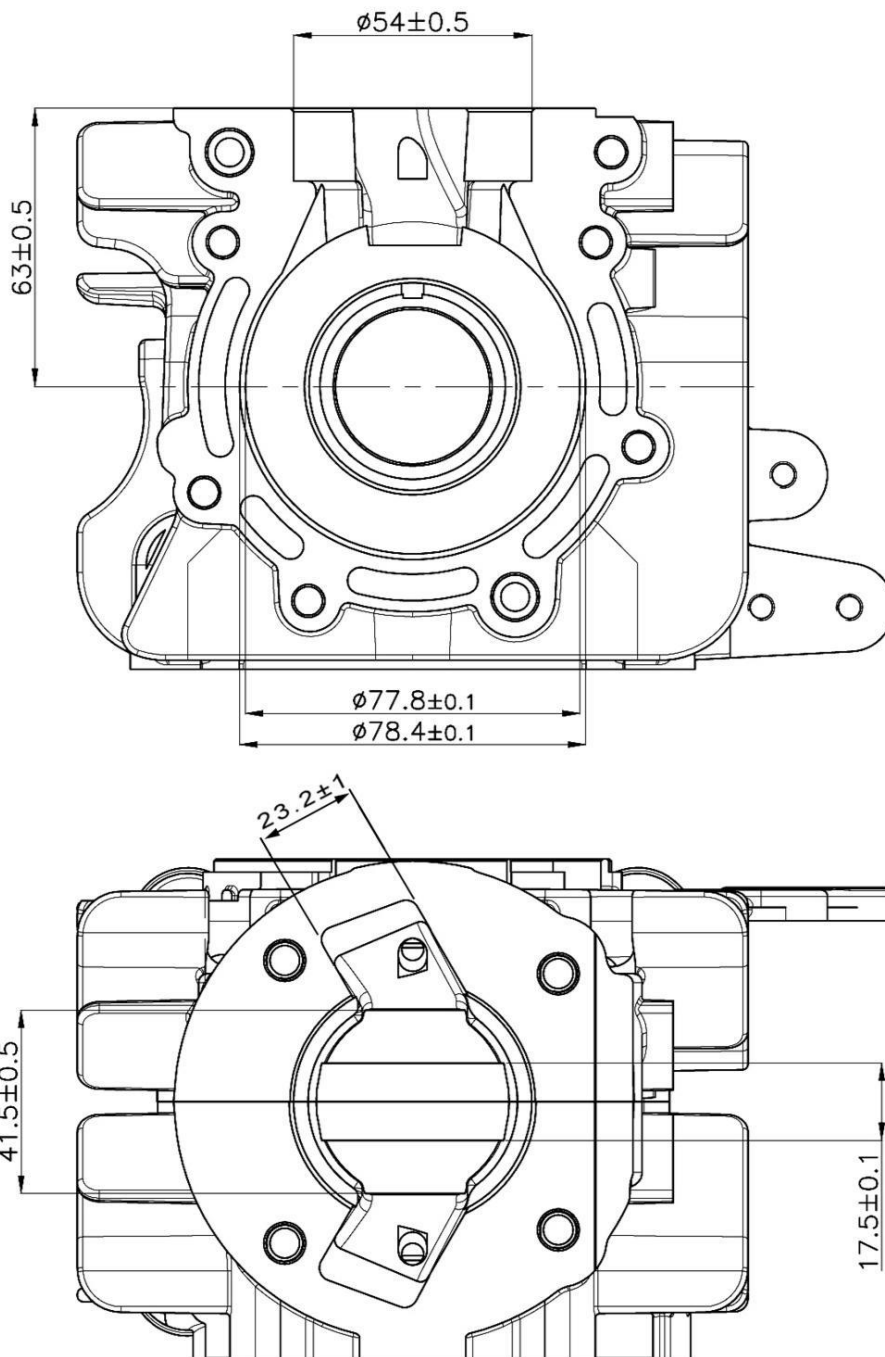
MINI ROK TECHNICAL SPECIFICATION

MINIMUM DISTANCE OF THE CARBURETTOR SUPPORTING PLATE FROM THE CYLINDER AXLE



MINI ROK TECHNICAL SPECIFICATION

VISTA INTERNA DEL CARTER
INTERIOR VIEW OF THE CRANKCASE



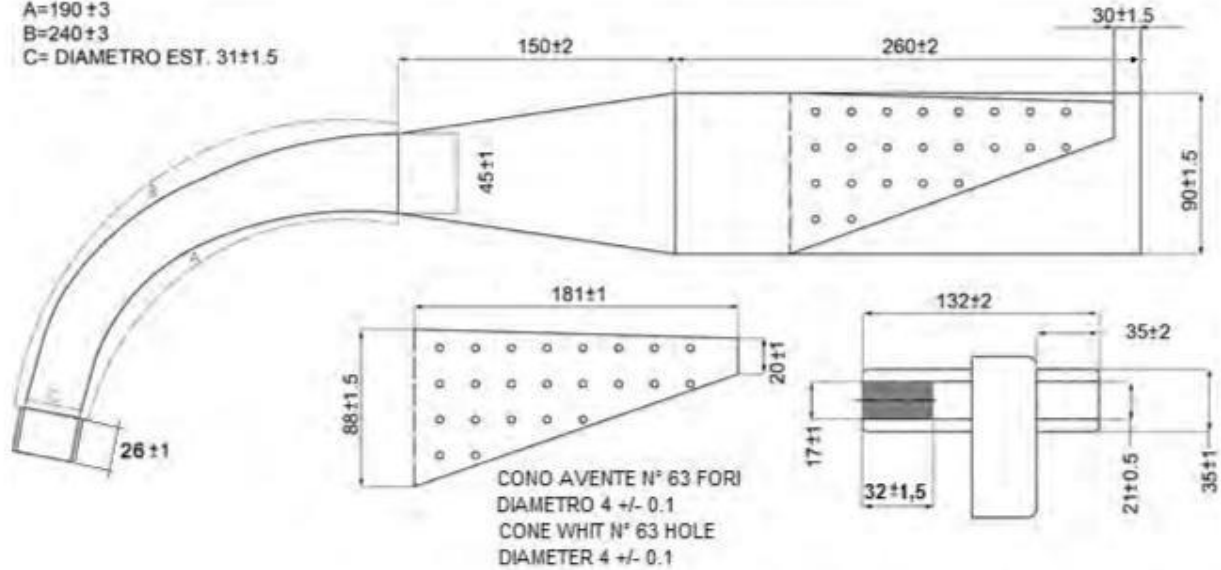
MINI ROK TECHNICAL SPECIFICATION

7. EXHAUST MUFFLER

MARMITTA EXHAUST MUFFLER

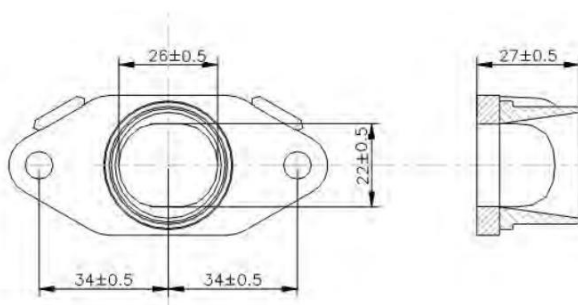
MISURA COLLETORE COMPRESA SALDATURA
DIMENSION OF COLLECTOR INCLUDING WELDING

A=190±3
B=240±3
C= DIAMETRO EST. 31±1.5



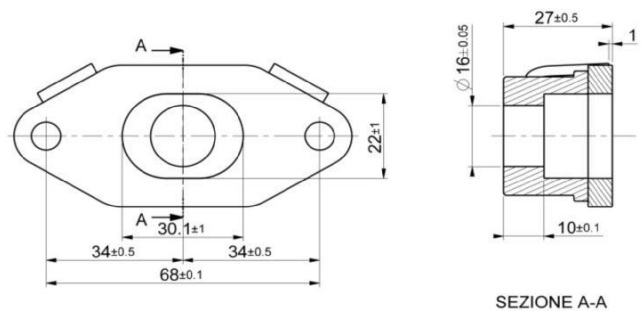
Peso Marmitta **1.372 g. +/- 5%**
Exhaust Weight

ROOKIE EXHAUST MANIFOLD



GUARNIZIONE SCARICO 1,5 +/- 0,5
EXHAUST GASKET 1,5 +/- 0,5

NOVICE EXHAUST MANIFOLD



GUARNIZIONE SCARICO 1,5 +/- 0,5
EXHAUST GASKET 1,5 +/- 0,5

MINI ROK TECHNICAL SPECIFICATION

8. IGNITION

FOTO ACCENSIONE SELETTRA
PICTURES OF SELETTRA IGNITION



IMPORTANTE – IMPORTANT

LA BATTERIA UTILIZZATA PER L'AVVIAMENTO DEL MOTORE DEVE ESSERE FISSATA SALDAMENTE SUL TELAIO.

FOR SECURITY REASONS, THE BATTERY SHOULD BE SECURELY MOUNTED TO THE CHASSIS FRAME WITH THE SPECIFIC BATTERY HOLDER.

9. IGNITION TIMING

The engine ignition timing is free. must be set to 3mm +/- 0.1mm from TDC.

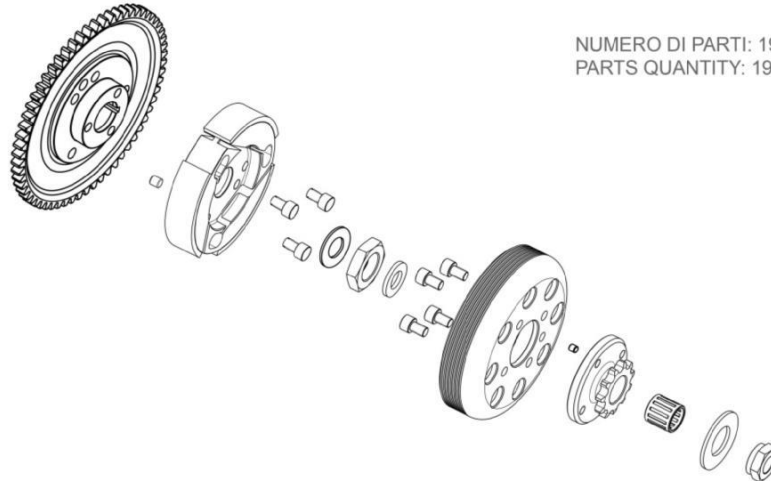
10. SPARK PLUG

Any spark plug may currently be used.
~~The only permitted spark plugs are the NGK-B9EG or NGK-B10EG.~~

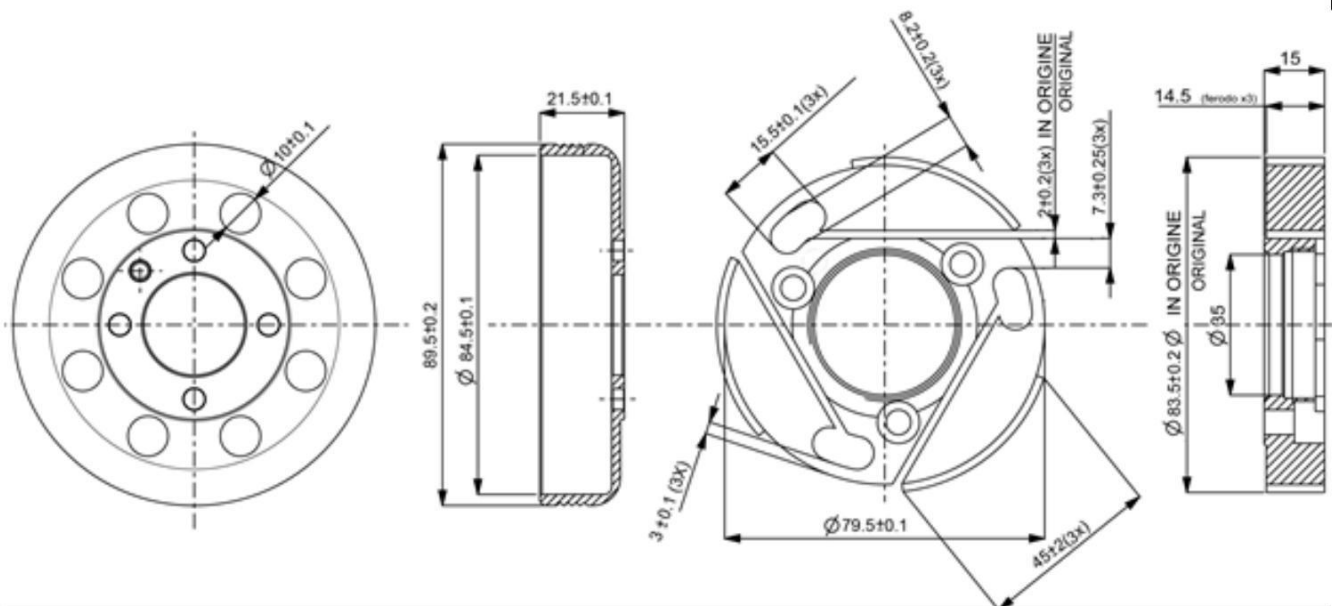
MINI ROK TECHNICAL SPECIFICATION

11. CLUTCH

ROTORE FRIZIONE COMPLETO CON INGRANAGGIO AVVIAMENTO COMPLETE CLUTCH ROTOR WITH STARTING GEAR



CAMPANA E ROTORE HOUSING AND ROTOR



PESO DEL ROTORE FRIZIONE COMPLETO CON INGRANAGGIO AVVIAMENTO
WEIGHT OF COMPL. CLUTCH ROTOR WITH STARTING GEAR:

815g +/- 15g

REGIME DI ATTACCO (MASSIMO) VERIFICABILE IN OGNI MOMENTO DELLA MANIFESTAZIONE
ENGAGEMENT SPEED (MAXIMUM) CAN BE VERIFIED IN EVERY MOMENT OF THE EVENT

4000RPM

PESO DEL ROTORE FRIZIONE
WEIGHT OF CLUTCH ROTOR

345 gr +/- 15gr

PESO DELLA CAMPANA
WEIGHT OF CLUTCH HOUSING

178 +/-10gr

PESO TOTALE DEL GRUPPO ROTORE E CAMPANA FRIZIONE
TOTAL WEIGHT OF CLUTCH ROTOR AND HOUSING

523 gr +/- 25gr

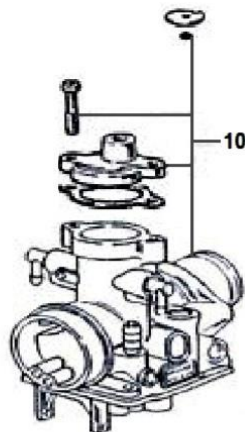
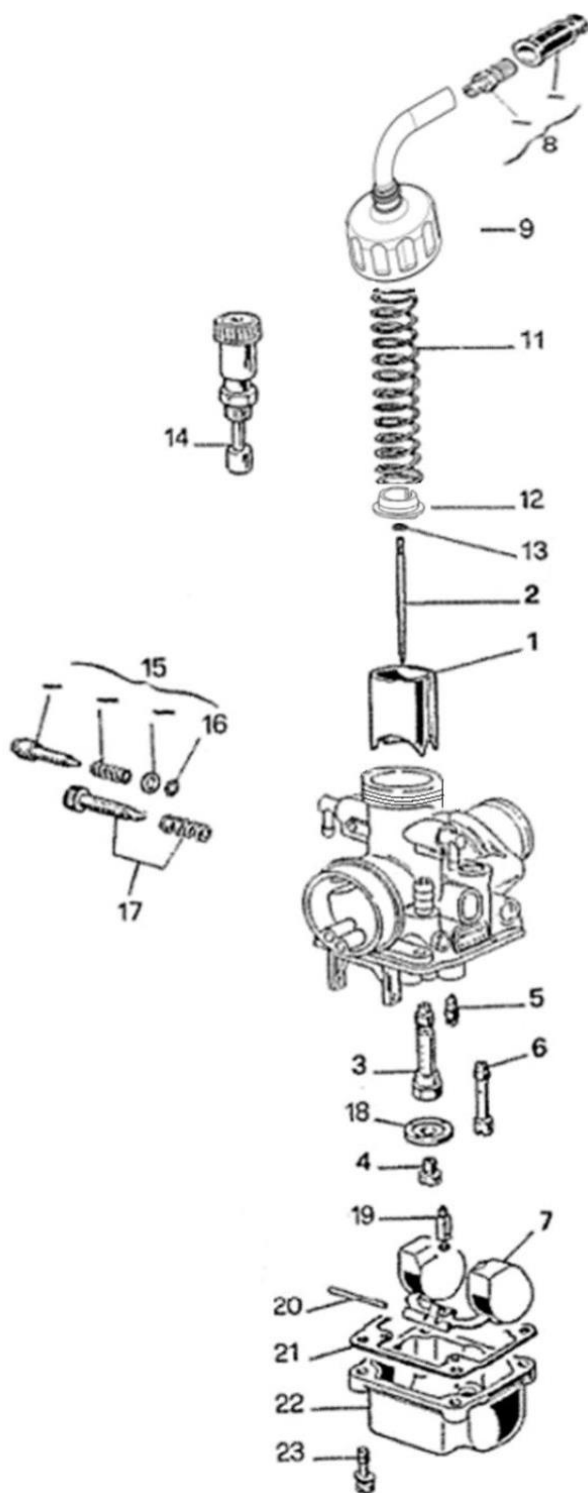
FRONT SPROCKET CLUTCH COVER:

It is permissible to have a maximum 32mm diameter hole to accommodate an external starter.

MINI ROK TECHNICAL SPECIFICATION

12. CARBURETTOR

CARBURATORE DELL'ORTO PHBG 18 BS E COMPONENTI CARBURETTOR DELL'ORTO PHBG 18 BS AND COMPONENTS



- 1 - Slide, 40x64 (4.0)
- 2 - Needle. Part Number W23
- 3 - Emulsion Tube. Part Number AN266
- 4 - Main Jet. Allowed Range: Free
- 5 - Pilot Jet. Allowed Range: 50
- 6 - Starting Jet. Allowed Range: 60
- 7 - Float. Weight: 4gr
- 8 - Tube 90 degree Kit
- 9 - Top Cap
- 10 - Alternate Top Cap with gasket, Body, Conical Needle Fastener Fix plate and Conical Needle Fastener. (Replaces 9, 12 and 13)
- 11 - Gas Valve Spring
- 12 - Clamp Plate
- 13 - Clamp
- 14 - Starting Device
- 15 - Adjustment Minimum Screw Kit
- 16 - Adjustment Minimum Screw Gasket
- 17 - Adjustment Gas Valve Screw Kit
- 18 - Surge Plate
- 19 - Gas Needle Closing
- 20 - Float Peg
- 21 - Float Chamber Gasket
- 22 - Float Chamber
- 23 - Float Chamber Fixing Screw

*Maximum Venturi Size: 18mm +/-0.05mm

*The **ONLY** Permitted changes to the carburetor are:
- Needle Clip Position,
- Air screw Adjustment,
- Any main jet can be used.

ANY OTHER CHANGE OR MODIFICATION OTHER THAN LISTED ABOVE IS NOT PERMITTED.

MINI ROK TECHNICAL SPECIFICATION

CARBURETTOR BREATHER TUBE



The Carburettor breather tube must be installed as per the picture above, looping over the top of the Carburettor.

It must be a single piece of tube, a maximum of 130mm in length.

It is permitted to have a small scallop cut in the centre of the top half of the tube.

MINI ROK TECHNICAL SPECIFICATION

13. FUEL PUMP

POMPA BENZINA DELL'ORTO
DELL'ORTO FUEL PUMP

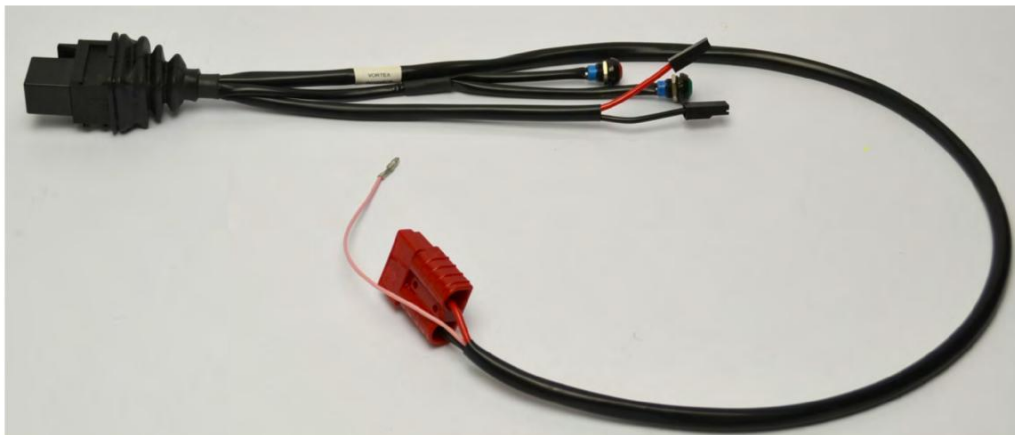


- a. Any mechanical, manual or electronic system as well as any other kind of device is forbidden. Concerning the fuel supply, the only system admitted includes atmospheric pressure. It means that it is allowed to employ 1 (one) pneumatic "fuel pump", located between tank and carburettor: the "pump" must always be **ORIGINAL**.
- b. It is forbidden to employ any other kind of spigot, calibrated junction or similar devices between the supply and the return/collection, on the fuel pipes.
- c. It is admitted to employ pipes only. A plastic "Y" can be installed in the fuel line between the fuel pump and fuel inlet to the carburettor to facilitate the installation of a return line to the fuel tank. The "Y" must have the same inside diameters for all 3 connections.
- d. Between tank and fuel pump it is allowed to mount **only 1 (one)** fuel filter.

MINI ROK TECHNICAL SPECIFICATION

14. STARTER WIRING

CABLAGGIO AVVIAMENTO STARTER WIRING



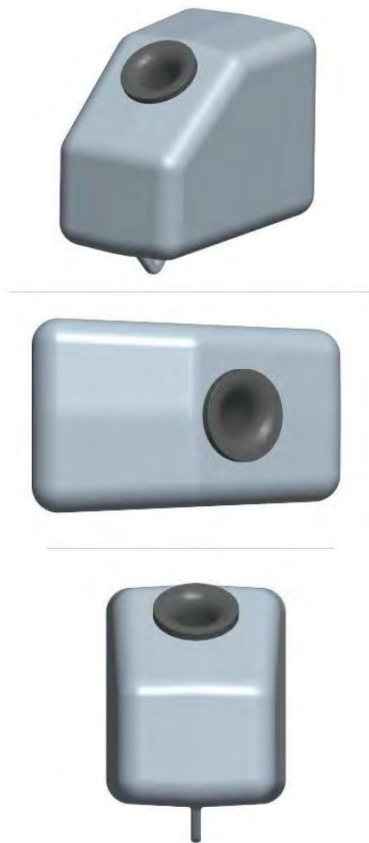
**E' obbligatorio che il motore si accenda e si spenga con il sistema di avviamento on board.
I commissari tecnici potranno verificare il sistema di accensione e spegnimento in qualsiasi momento.**

**Engines shall be mandatory switched on and off by means of on-board starting system.
Technical officials / stewards may check the on-off on-board system anytime.**

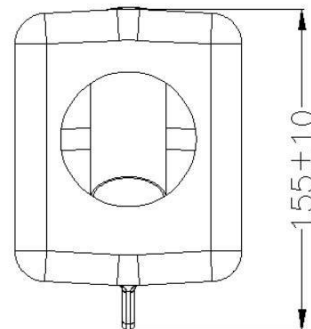
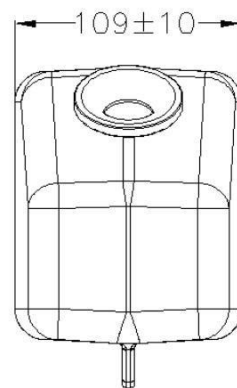
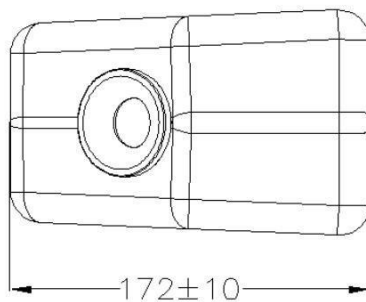
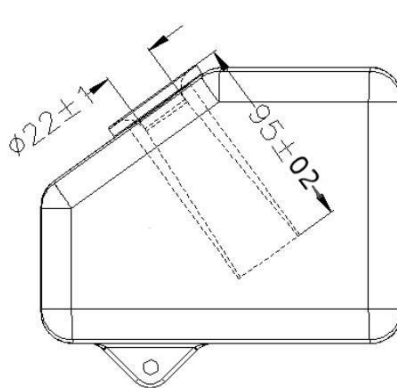
MINI ROK TECHNICAL SPECIFICATION

15. AIRBOX

**FILTRO D'ASPIRAZIONE
INLET SILENCER**



MARCHIATO "VORTEX"
"VORTEX" MARKED



**RACCORDO FISSAGGIO FILTRO-CARBURATORE
CONNECTOR FIXING FILTER-CARBURETOR**

IN MATERIALE PLASTICO - IN PLASTIC MATERIAL



MINI ROK TECHNICAL SPECIFICATION

16. TECHNICAL UPDATE 1

Carburettor Chamber Mixture Cover - Update January 2020

Either the cover with 2 screws or twist style cover may be distributed and in use



17. TECHNICAL UPDATE 2

Optional Clutch Cover Allowed - Update May 2023

The Clutch Cover shown may be added to reduce dirt ingress, as per the diagram.

