

NATIONAL HOMOLOGATION FORM KARTING ENGINE

<i>Manufacturer</i>	AUSTECH INDUSTRIES PTY. LTD.
<i>Make</i>	TORINI
<i>Model</i>	CLUBMAXX 210 (TC210)
<i>Validity of the homologation</i>	6 years
<i>Number of pages</i>	46

This Homologation Form reproduces descriptions, illustrations and dimensions of the engine at the time that Karting Australia conducted the homologation. The height of the complete engine on all photographs must be as a minimum 7 cm.

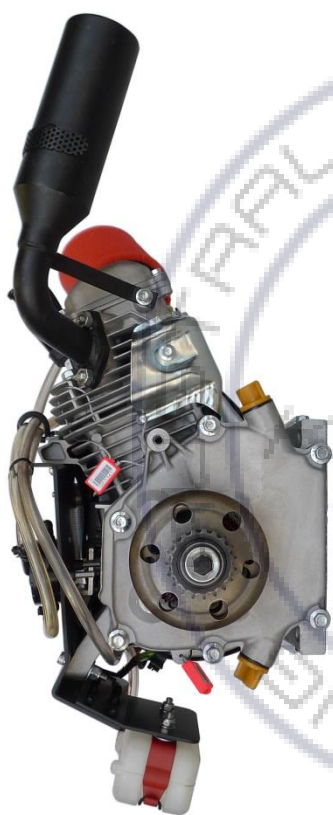


PHOTO OF DRIVE SIDE OF ENGINE



PHOTO OF OPPOSITE SIDE OF ENGINE

Signature and Stamp of Karting Australia

Homologated
14 November 2017

Updated 12 August 2021




Les Allen
National Technical Commissioner

Kelvin O'Reilly
Chief Executive Officer

PHOTO OF DRIVE SIDE OF THE COMPLETE ENGINE

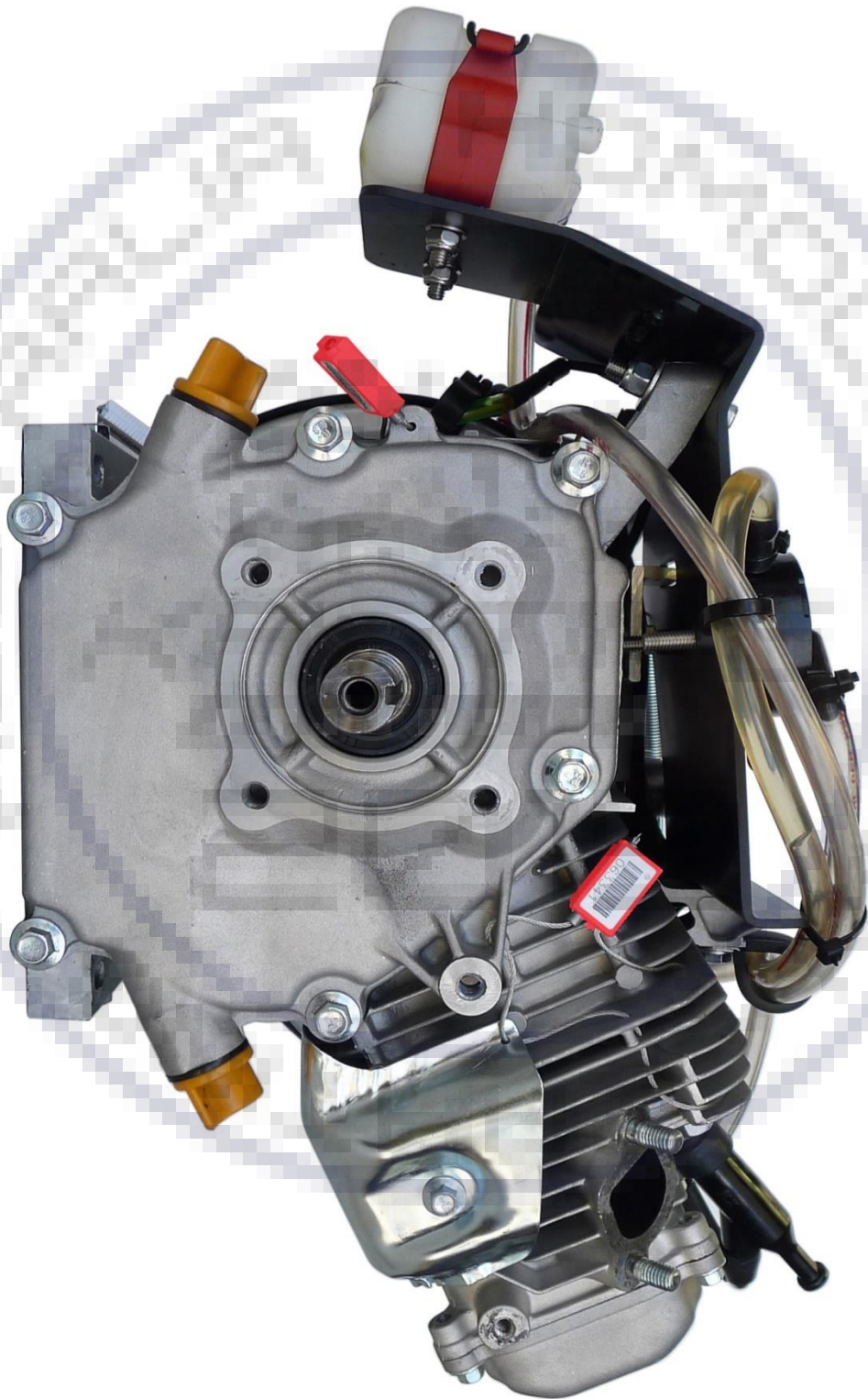


PHOTO OF OPPOSITE DRIVE SIDE OF THE COMPLETE ENGINE



PHOTO OF THE REAR OF THE COMPLETE ENGINE

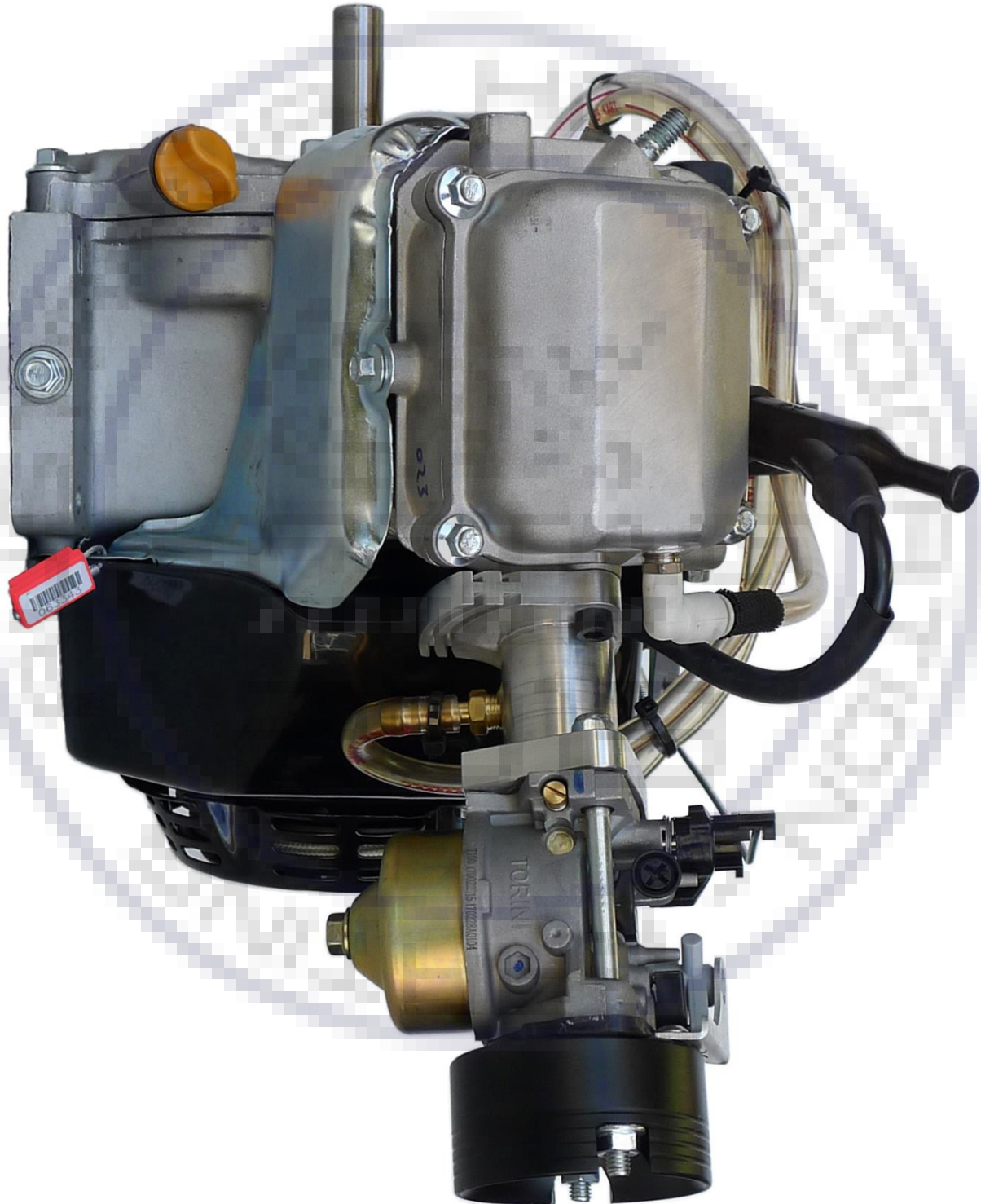
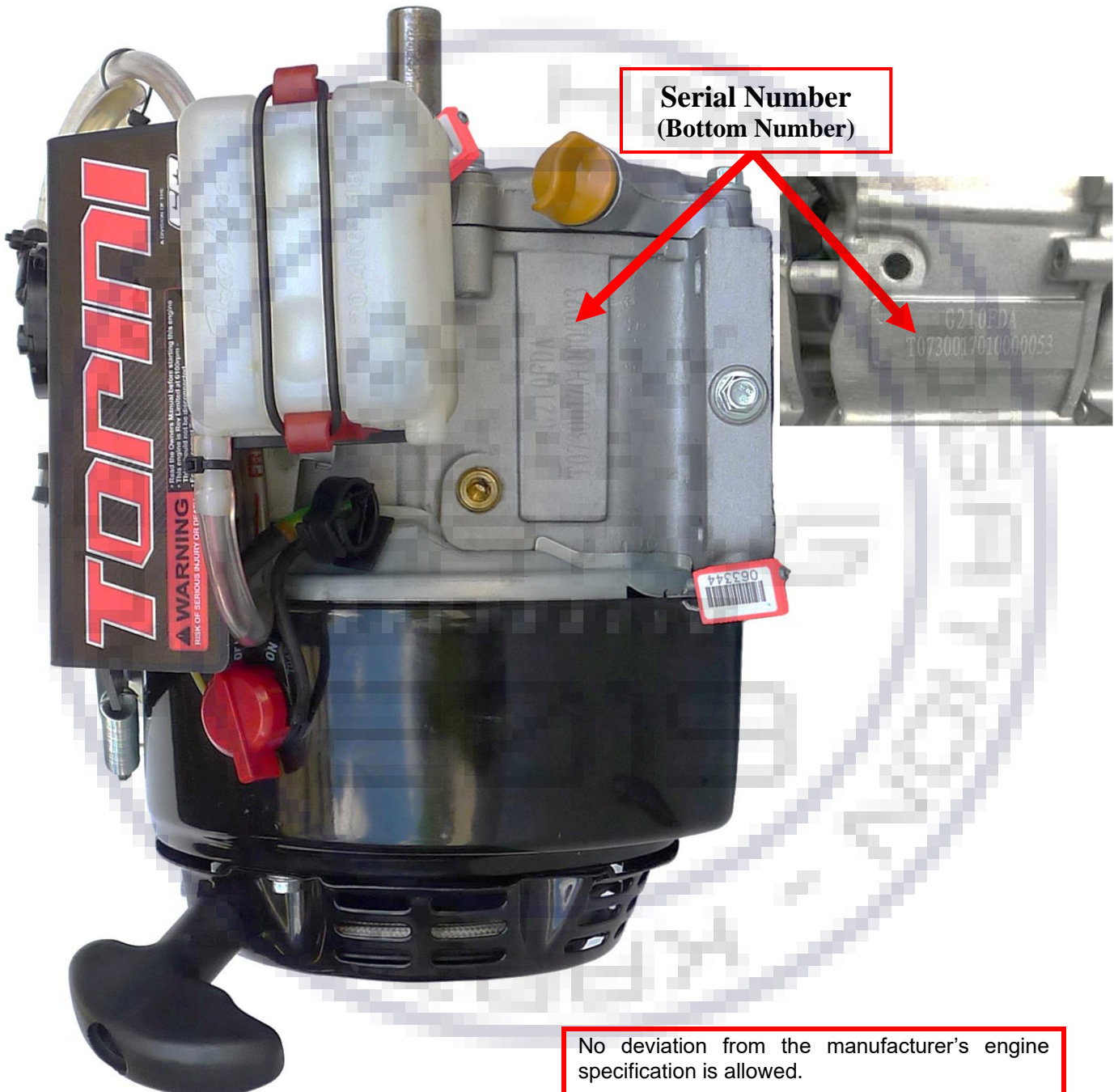


PHOTO OF THE FRONT OF THE COMPLETE ENGINE



No deviation from the manufacturer's engine specification is allowed.

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PHOTO OF THE COMPLETE ENGINE TAKEN FROM ABOVE

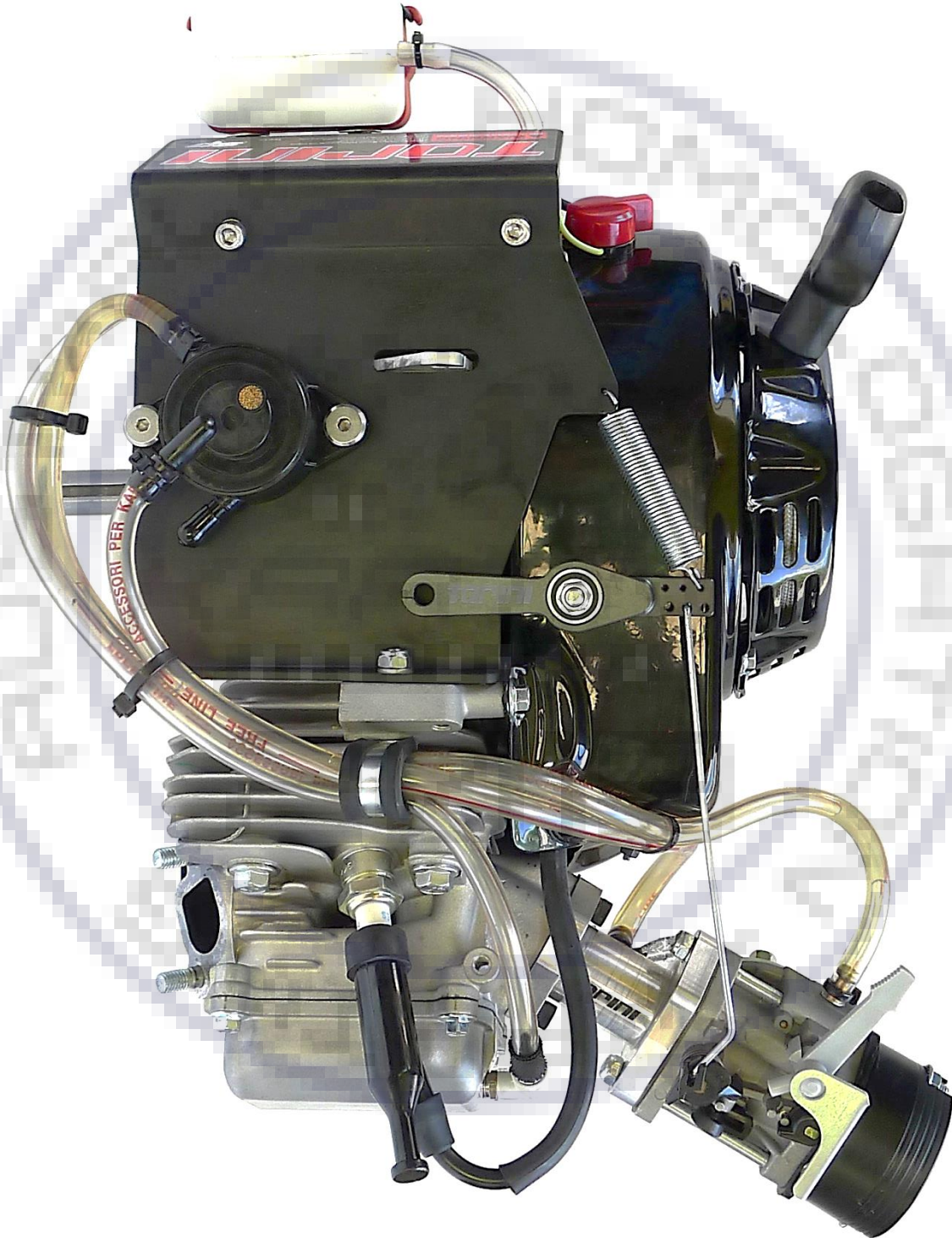


PHOTO OF THE COMPLETE ENGINE TAKEN FROM BELOW



Engine Seals

TAMPER-EVIDENT CABLE SEALS

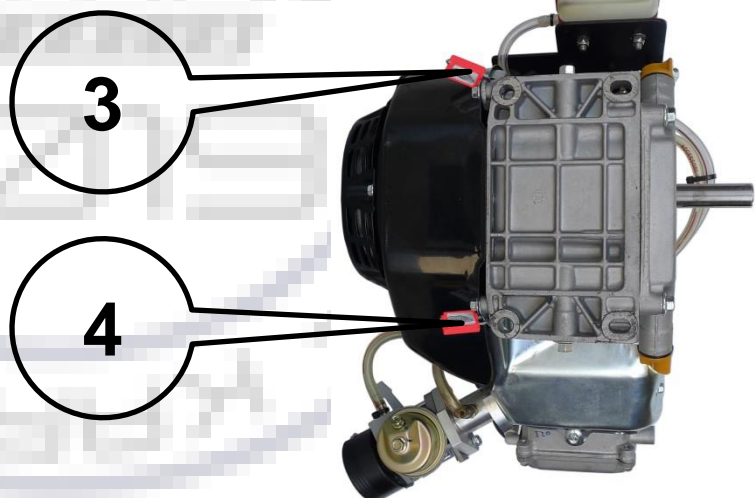
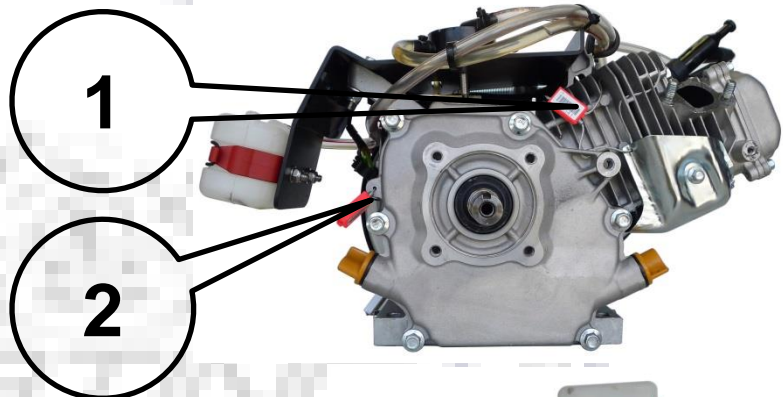
Engine Seals (Anti-Tamper)

Manufacturer: **TORINI** Part No: **TCSEAL** Description: **RACE ENGINE SEAL (Anti-tamper)**
Red / White 800mm

Engine Seals : **Qty 4**



1. Head to Crankcase
2. Side Cover to Crankcase
3. Cowel to Crankcase (front)
4. Cowel to Crankcase (rear)



Tampering with the seal/s is not permitted.

Should the seal/s be tampered with, or any of the seals be broken, the engine is no longer eligible for competition.

TECHNICAL INFORMATION

A	CHARACTERISTICS	
<i>The number of decimal places must be 2 or comply with the relevant tolerance.</i>		<i>Tolerances & remarks</i>
Cylinder		
<i>Volume of cylinder</i>	211.66CC	--
<i>Original bore</i>	70.000mm	--
<i>Theoretical maximum bore</i>	70.165mm	--
<i>Original Stroke</i>	55mm	--
<i>Number of transfer ducts, cylinder/sump</i>	n/a	--
<i>Number of exhaust ports / ducts</i>	n/a	--
<i>Volume of the combustion chamber</i>		minimum
<i>Volume of the combustion chamber in the cylinder head</i>		minimum
Crankshaft		
<i>Number of bearings</i>		
<i>Diameter of bearings</i>		
<i>Minimum weight of crankshaft</i>	1750g	minimum
<i>All parts represented on page 17 photo</i>		
Balance shaft		
<i>Minimum weight of balance shaft</i>	n/a	minimum
<i>Percentage of balancing</i>	n/a	minimum
Connecting rod		
<i>Connecting rod centreline</i>	84.5mm	±0.5mm
<i>Diameter of big end</i>	30.25mm	±0.02mm
<i>Diameter of small end</i>	18.002	
<i>Min. weight of the connecting rod & cap (with bolts)</i>	110g	minimum

Piston		
Number of piston rings	3	
Min. weight of the bare piston	145g	minimum
Gudgeon pin		
Diameter	18mm	
Length	54mm	±0.5mm
Minimum weight	45g	Minimum
Clutch		
Minimum weight	0.97Kg	minimum
Of all the parts represented on the page 18 technical drawing		

B	OPENING ANGLES	
Of the inlet (main transfer ports)	n/a	
Of the inlet (secondary transfer ports, for 5 transfer ducts engine)	n/a	
Of the exhaust	n/a	
Of the boosters	n/a	

C	MATERIAL	
Cylinder head	<u>YL113 GB/T15115-1994</u>	
Cylinder	<u>ADC12</u>	
Cylinder wall	<u>CAST IRON</u>	
Sump	<u>ADC12</u>	
Crankshaft	<u>40CR GB/T3077-199</u>	
Connecting rod	<u>BILLET 7075 T6</u>	
Piston	<u>ZL109 GBT/T 1173-1995</u>	

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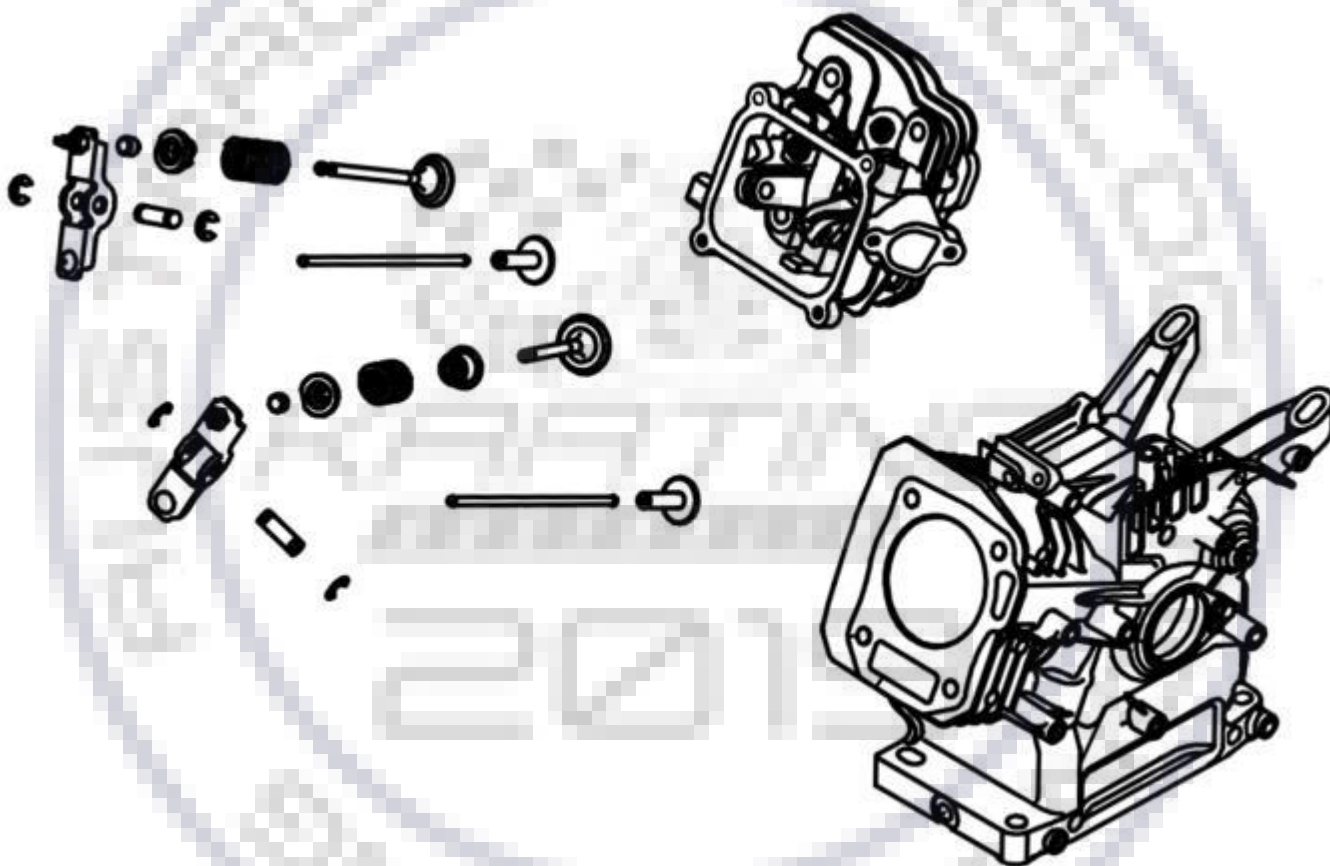
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D

PHOTOS, DRAWINGS & GRAPHS

D.1 CYLINDER UNIT

EXPLODED DRAWING OF THE CYLINDER, CYLINDER HEAD AND EXHAUST MANIFOLD UNIT

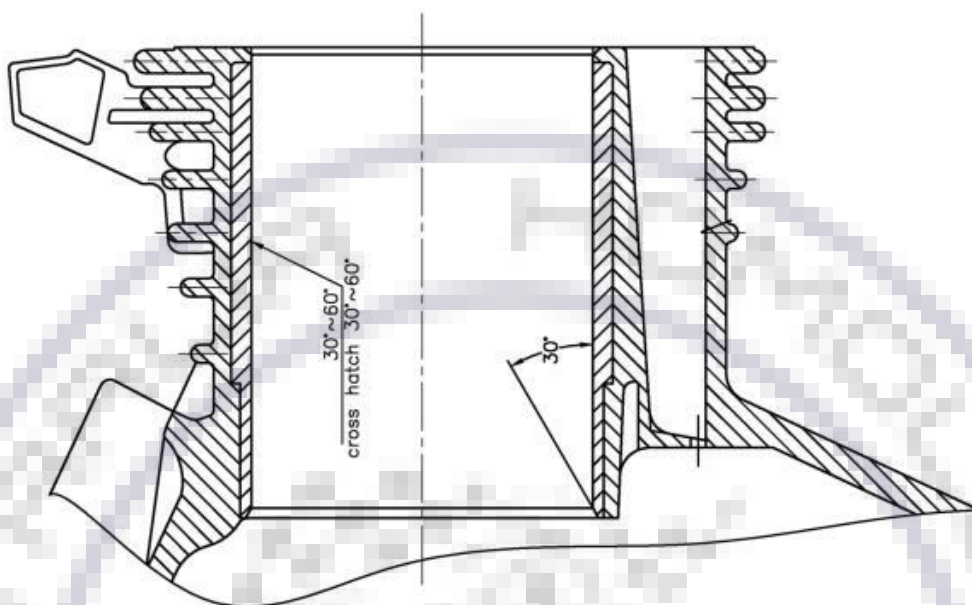


Without screws or gaskets.

The aim of the exploded drawings is to identify the principles, the functioning and the whole mechanical unit

... Section

DRAWING OF THE CYLINDER DEVELOPMENT



Indicate on the drawing:

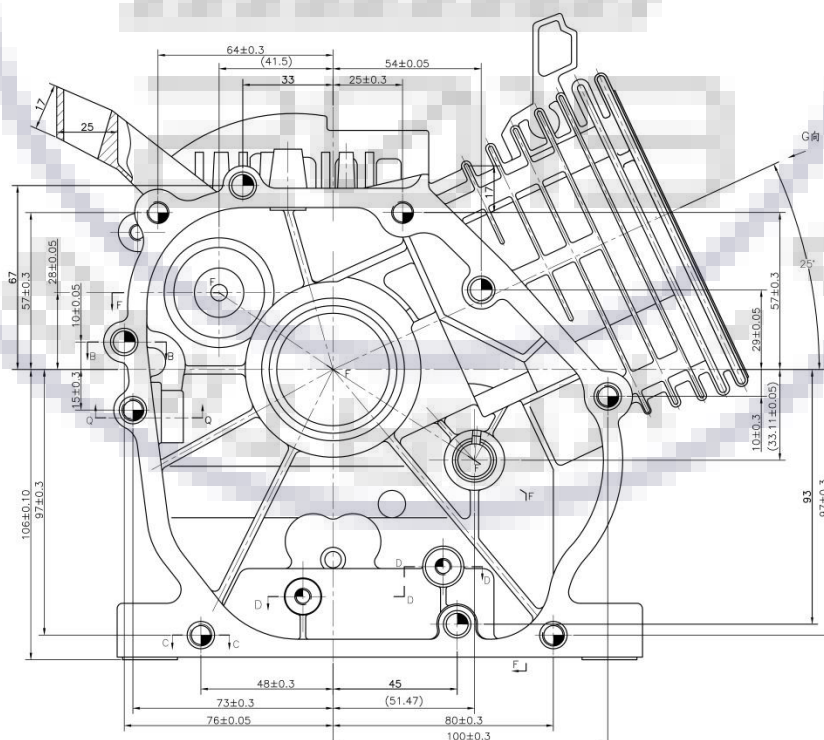
B1/B2 = minimum thickness of the inlet (transfers) ribs.

A1/A2/A... = maximum inlet width measured at the chord.

E1/E2 = minimum thickness of the exhaust rib (if existing).

C1/C2/C... = maximum exhaust width measured at the chord.

DRAWING OF THE CYLINDER BASE



... Section

DRAWING OF THE CYLINDER HEAD AND OF THE COMBUSTION CHAMBER without dimensions

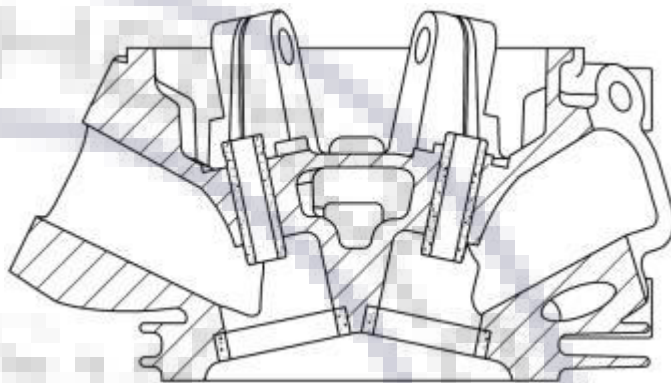
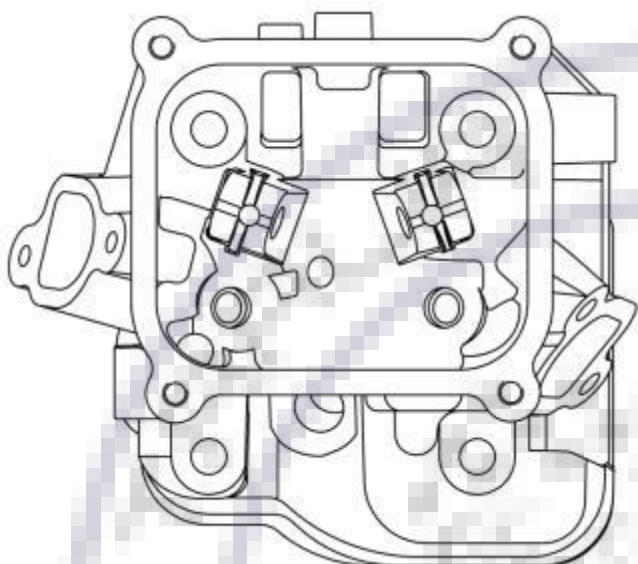
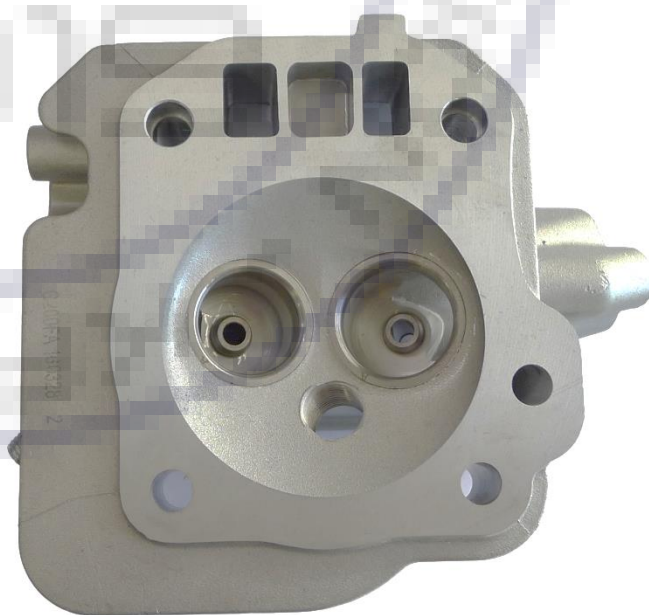
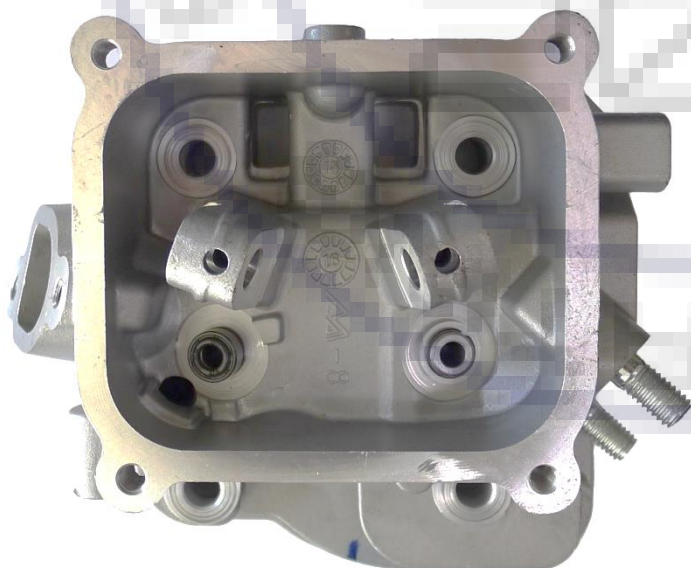


PHOTO OF THE CYLINDER HEAD

PHOTO OF THE COMBUSTION CHAMBER IN THE CYLINDER HEAD

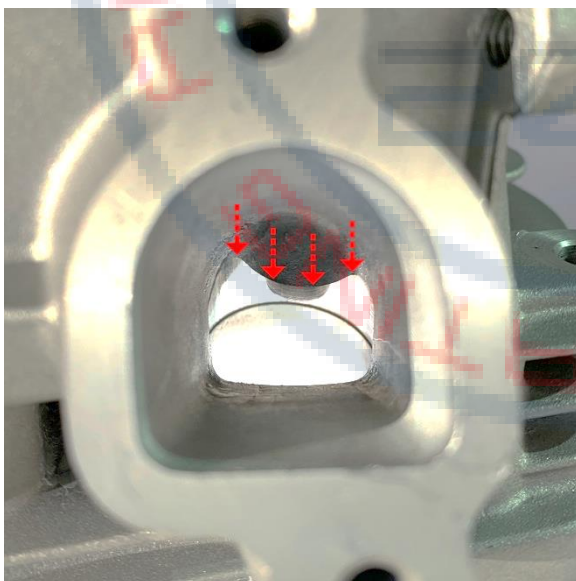
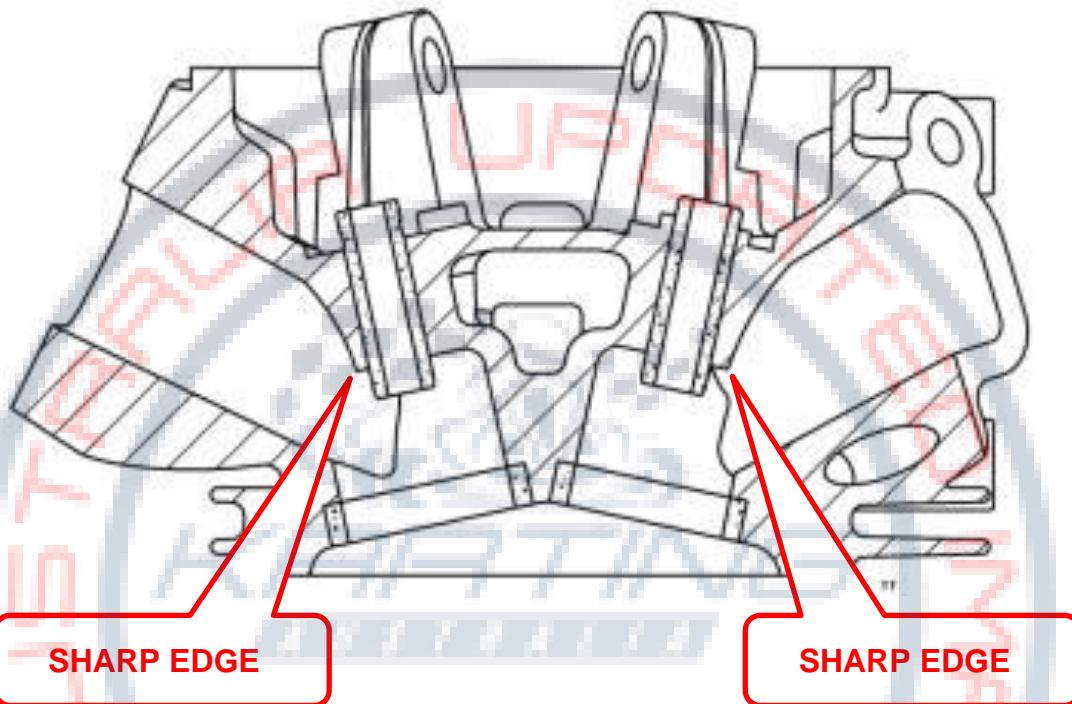


... Section

DRAWING OF THE CYLINDER HEAD AND OF THE COMBUSTION CHAMBER *without dimensions*

Scrutineer's Note: Head Port Checks – Visual Check

Both Inlet and Exhaust Ports are factory standard.
There should be no evidence of porting. Look for sharp edge.



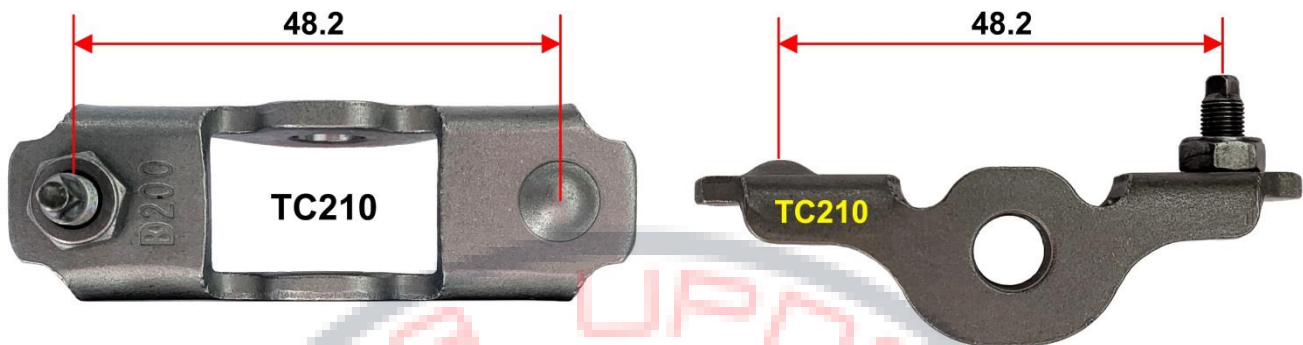
INLET SIDE



EXHAUST SIDET

... Section

PHOTO OF THE ROCKER ARM

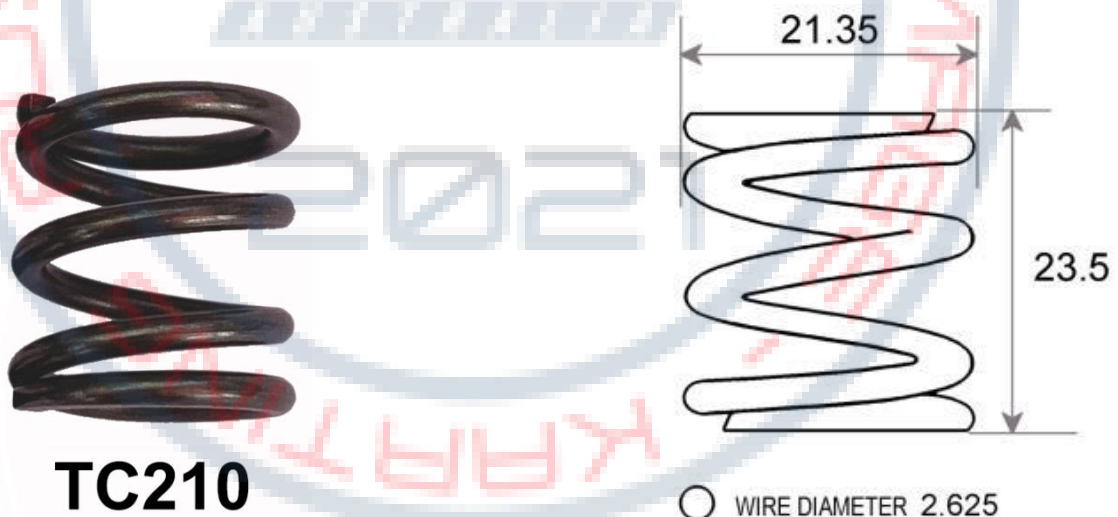


Scrutineer's Note: Rocker Arms – Measure

Both Inlet and Exhaust rocker arms at the same dimensions.
Rocker arms can be measured with valve cover removed.

PHOTO OF THE VALVE SPRING

Note: Both valve springs are the same dimensions



Scrutineer's Note: Valve Springs – Measure

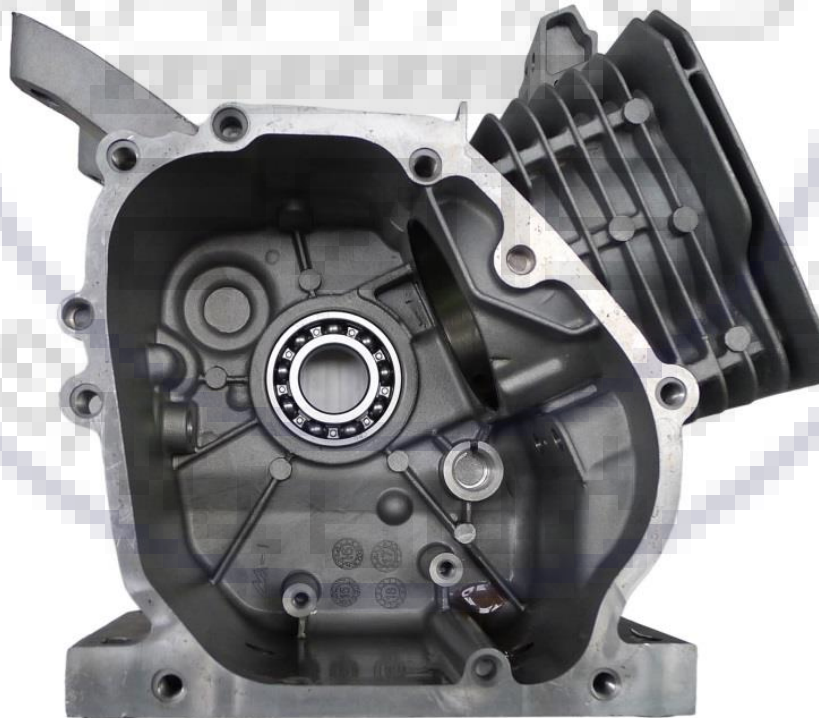
Both Inlet and Exhaust springs are the same dimensions.
Wire diameter can be measured with valve cover removed

... Section

PHOTO OF THE CYLINDER FROM ABOVE



PHOTO OF THE CYLINDER FROM RH SIDE



... Section

D.2 CONROD, CRANKCASE, CAMSHAFT, CRANKSHAFT & PISTON

EXPLODED DRAWING OF THE PISTON, CRANKSHAFT, CONNECTING ROD AND CRANKCASE



Without screws or gaskets.

The aim of the exploded drawings is to identify the principles, the functioning and the whole mechanical unit

... Section

PHOTO OF THE CAMSHAFT

Camshaft Description

Inlet Cam :

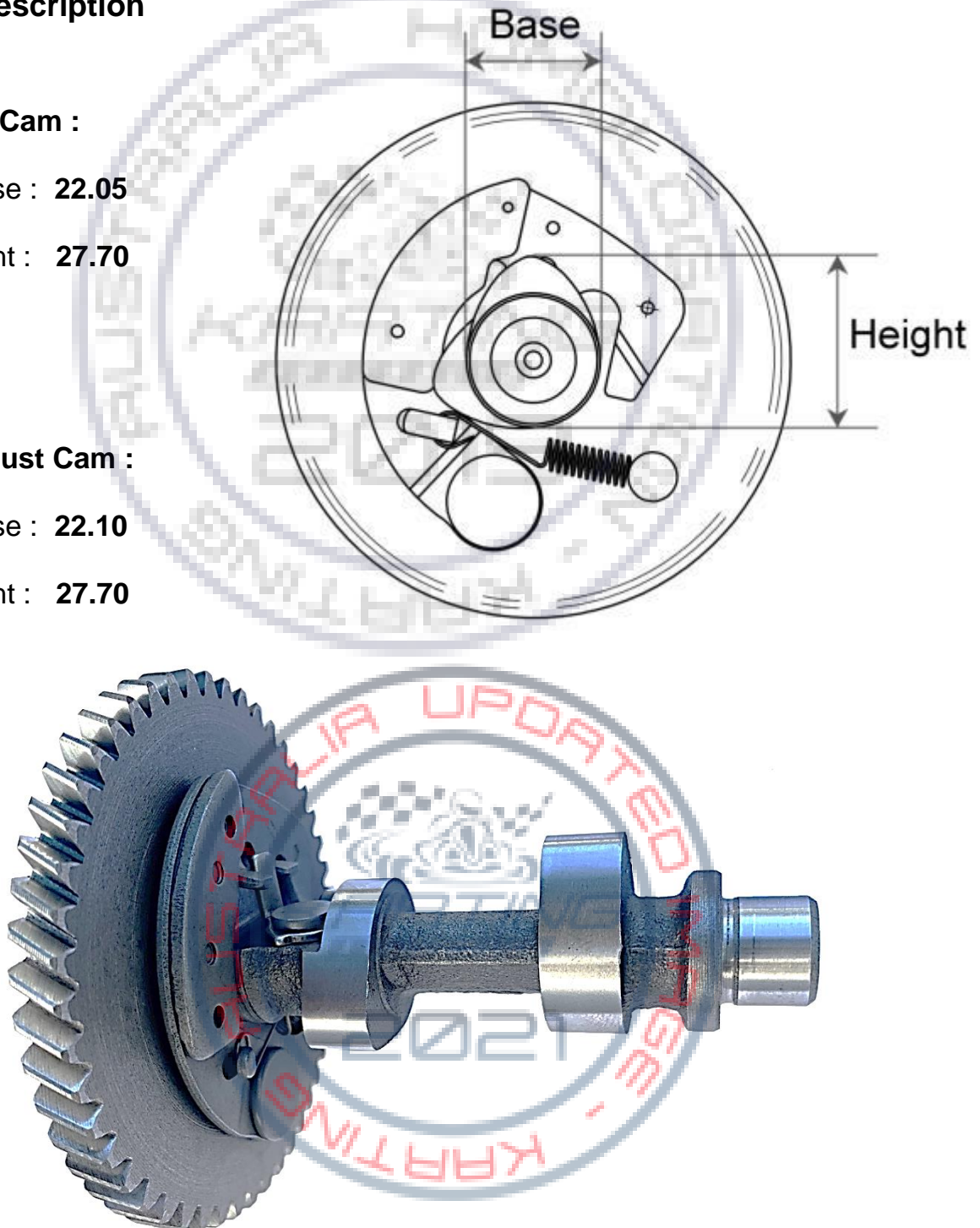
Base : **22.05**

Height : **27.70**

Exhaust Cam :

Base : **22.10**

Height : **27.70**



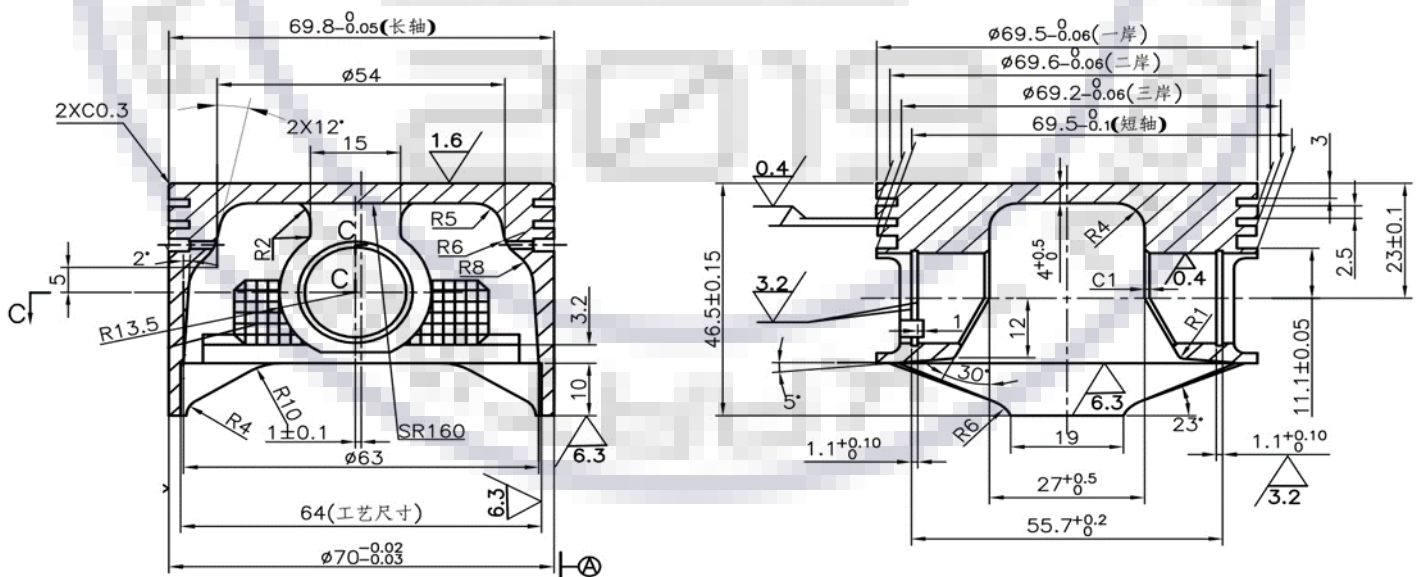
...Section

PHOTO OF THE CRANKSHAFT &
CONROD

PHOTO OF THE CONROD
Bare Rod Part Number: **TC2505**
Conrod assy. with cap & bolts, Part Number: **TC25005**



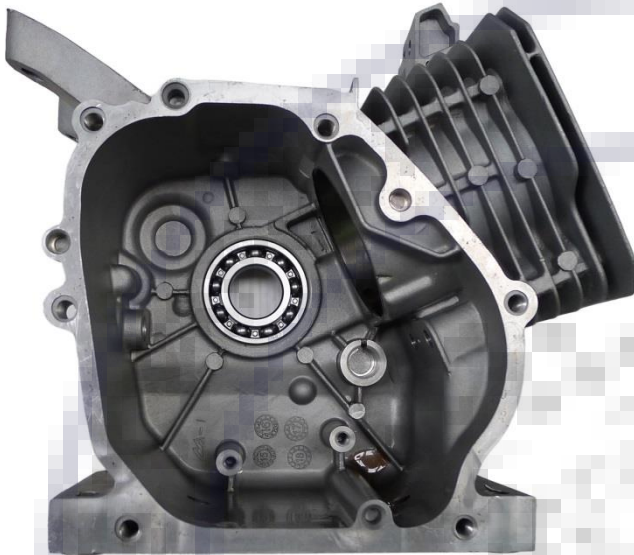
DRAWING OF THE PISTON (MAIN DIMENSIONS incl. tolerances)



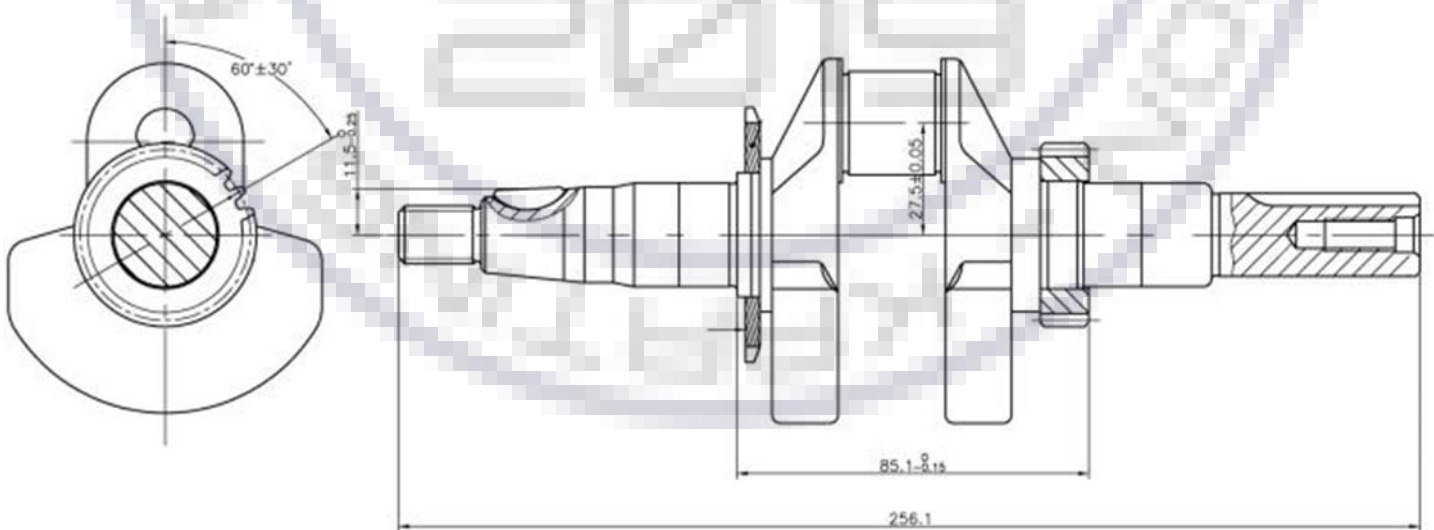
...Section

PHOTO OF THE INSIDE OF THE RH CRANKCASE

PHOTO OF THE INSIDE OF THE LH CRANKCASE

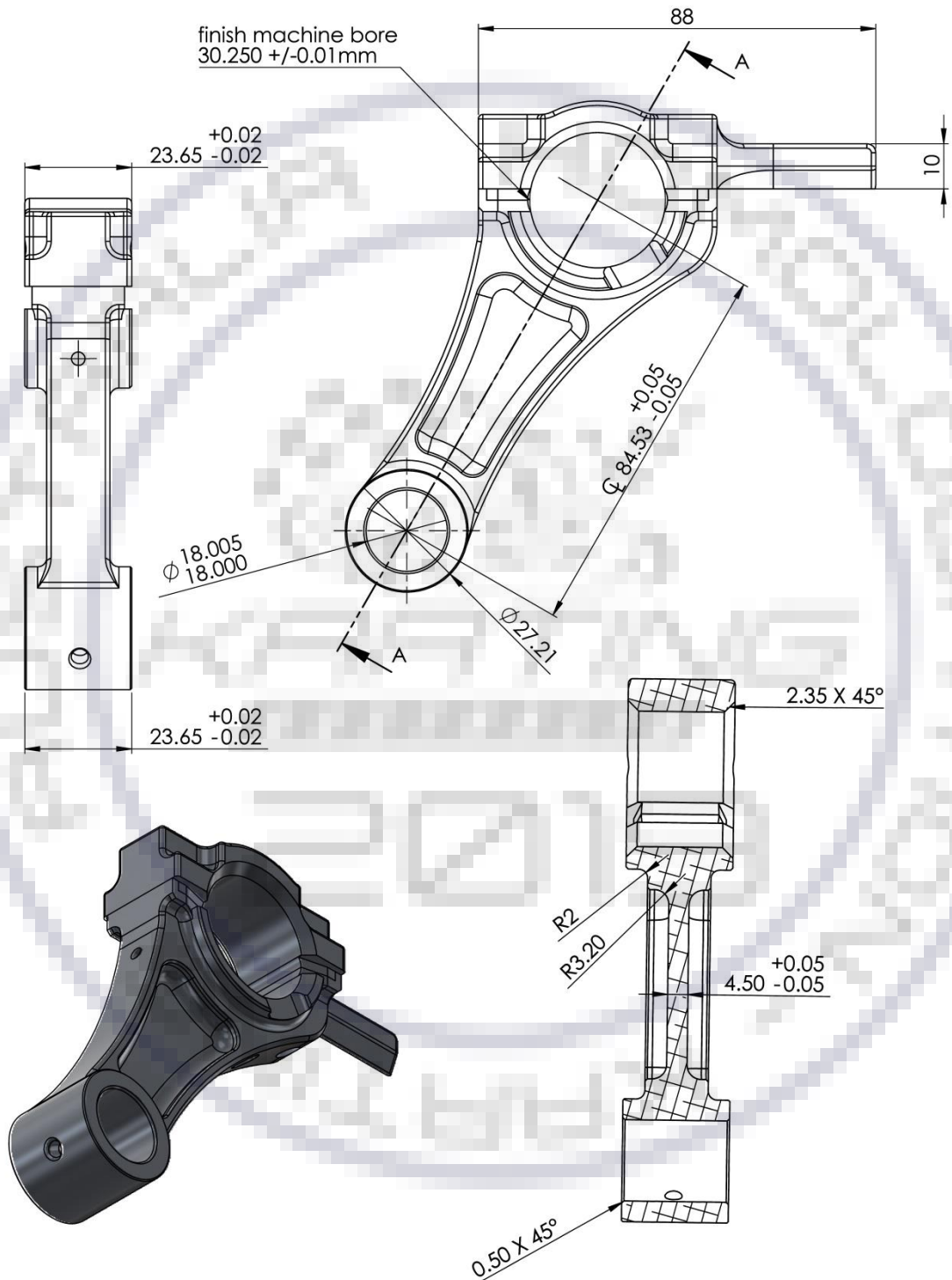


*DRAWING OF THE CRANKSHAFT - CON ROD UNIT
(DIMENSIONS incl. tolerances, big & small ends thickness, crank mass thickness & diameter)*



DRAWING OF CON ROD UNIT

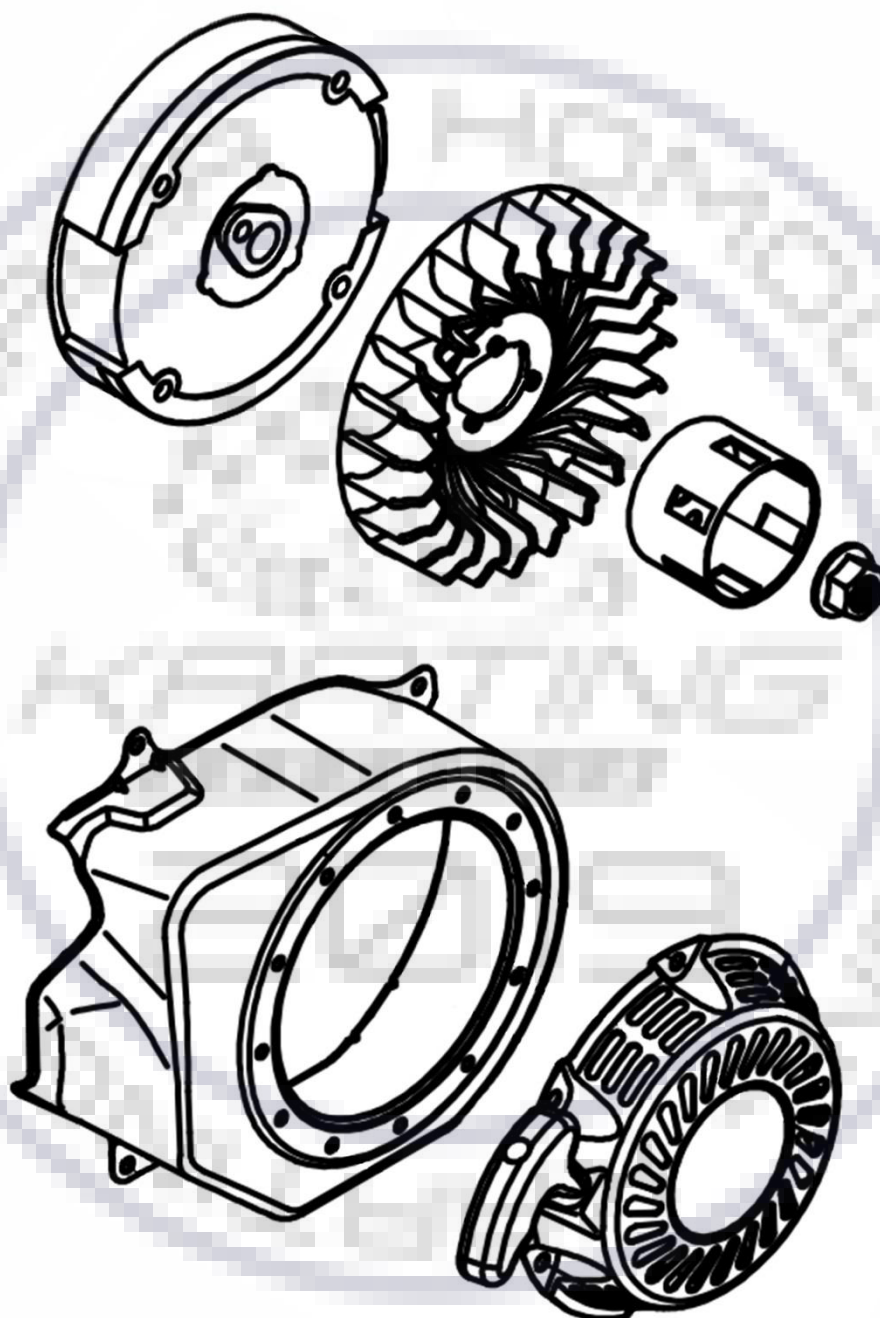
(DIMENSIONS incl. tolerances, big & small ends thickness, crank mass thickness & diameter)



STARTER

*EXPLODED DRAWING OF THE STARTING UNIT AND OF ITS HOUSING
(Recoil start only)*

RECOIL START SYSTEM



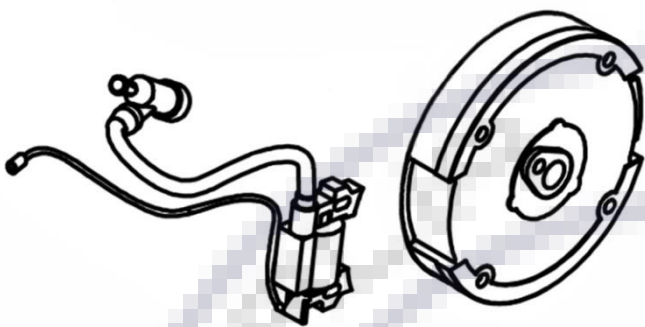
Without screws or gaskets.

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the functioning and the whole mechanical unit***

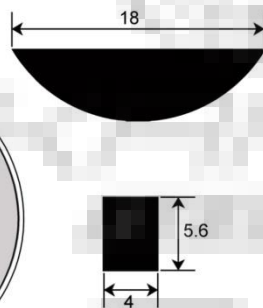
ELECTRICAL SYSTEM

IGNITION SYSTEM

ADVANCE CURVE GRAPHS



- **25° BTDC Fixed**
- **Rev Limited**
- **Max RPM 6100**



Rev Limited Coil Part Number : TCRL6100

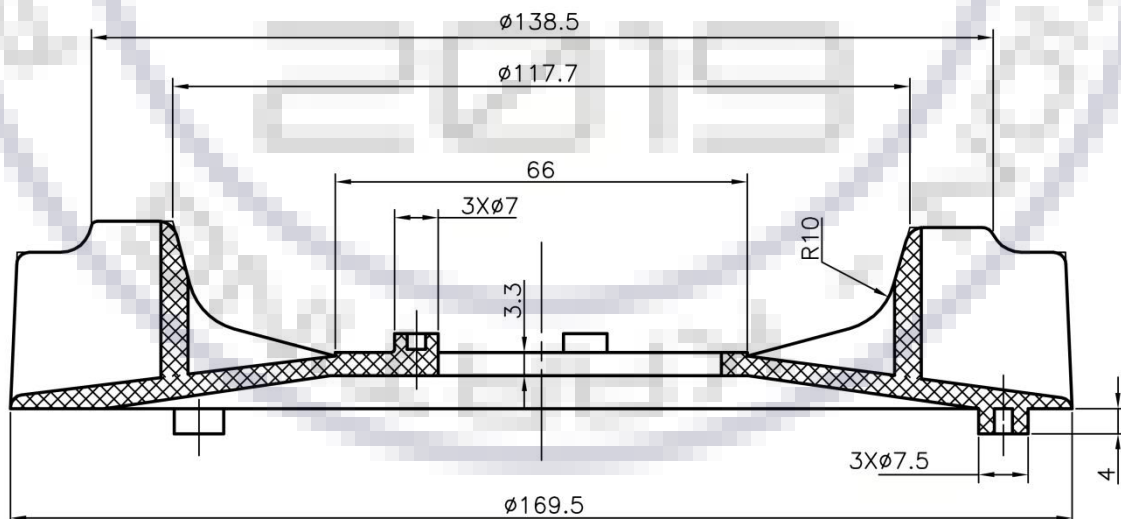
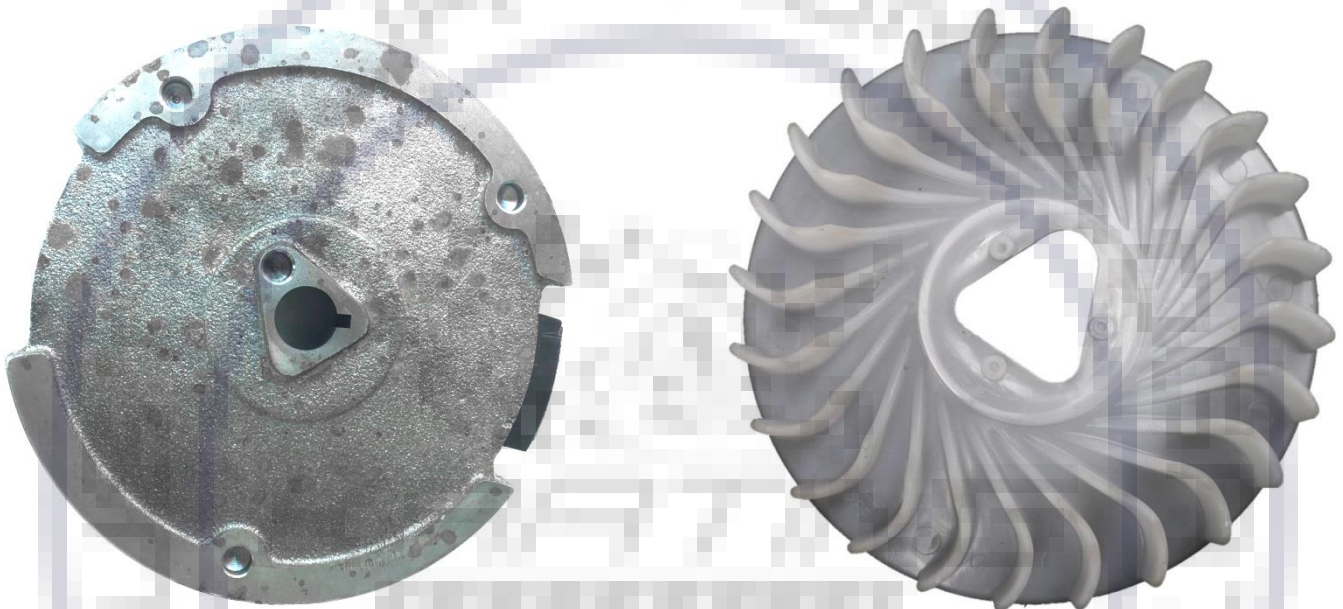
<i>Ignition homologation No.</i>														
<i>Ignition homologation No.</i>														
<i>Ignition homologation No.</i>														
<i>Ignition homologation No.</i>														
Code														
Tr/min	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	13000	14000
° adv														

COOLING SYSTEM

FAN FORCED AIR COOLING

FAN DESCRIPTION

- Number of fan blades: **24**
- Minimum fan wheel weight: **0.11kg**
- Minimum flywheel weight: **2.48kg**
- Outside Blade Diameter: **169.5mm**
- Outside Body Diameter: **170mm**
- Minimum blade height: **29mm**



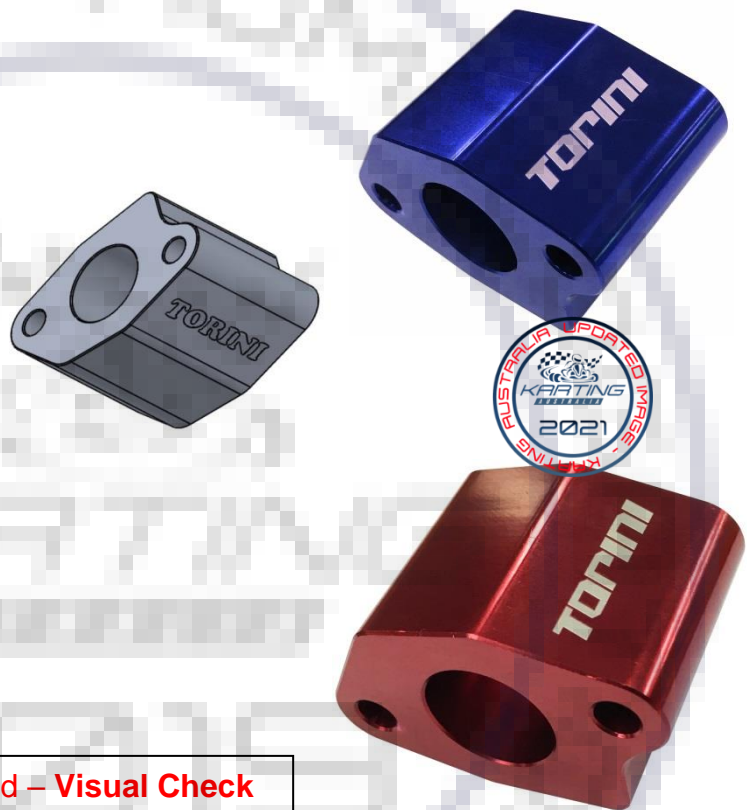
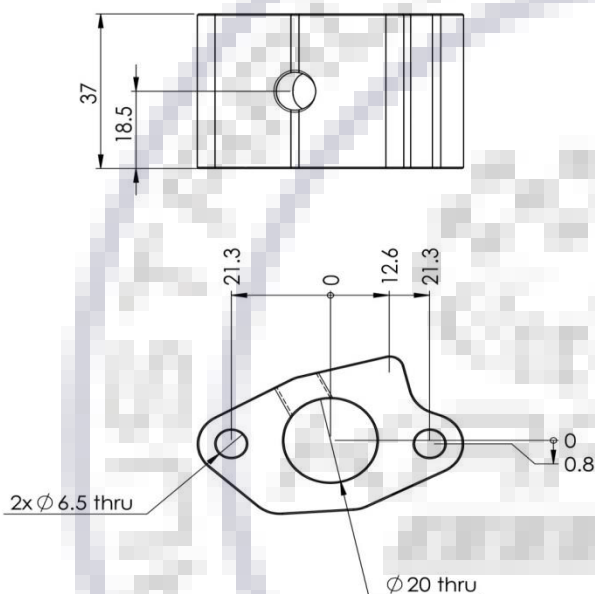
MANIFOLD

INLET MANIFOLD's

INLET MANIFOLD DESCRIPTION - Clubmaxx CADET

Manufacturer: **TORINI** Part Number: **TC21045** Description: **Inlet manifold**

Matching Carburettor : **TC25TECK**



Scrutineer's Note: ANNODISED Manifold – Visual Check

Any attempt to increase bore diameter will damage the annodising.
Some scratching around the pulse fitting thread is acceptable.

No deviation from the manufacturer's engine specification is allowed.

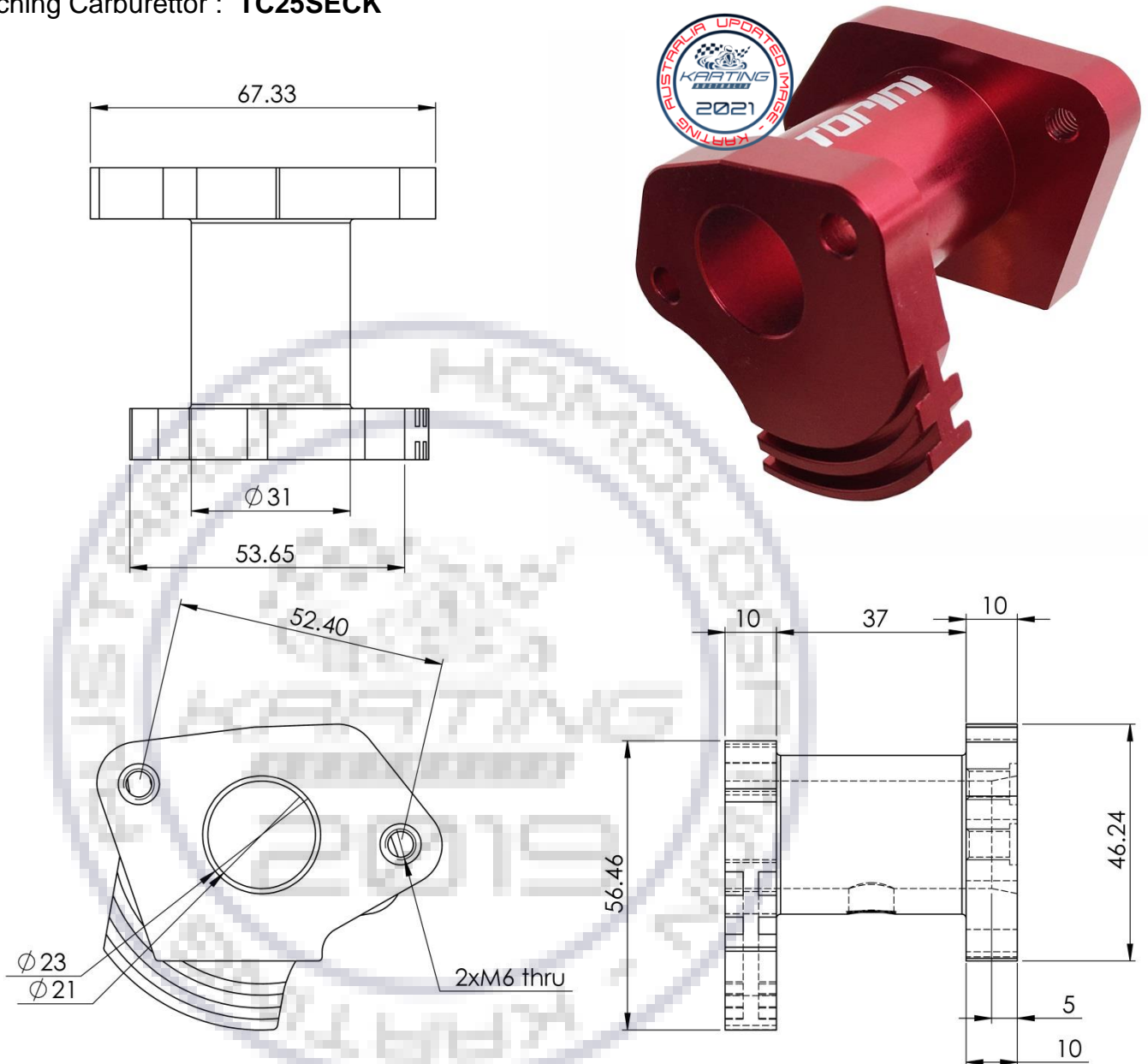
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MANIFOLD
INLET MANIFOLD DESCRIPTION - Clubmaxx JUNIOR / SENIOR

 Manufacturer: **TORINI** Part Number: **TC21046** Description: **Inlet manifold**

 Matching Carburettor : **TC25SECK**

Scrutineer's Note: ANNODISED Manifold – Visual Check

Modification to increase bore diameter will remove the annodising.
 Some scratching around the pulse fitting thread is acceptable.

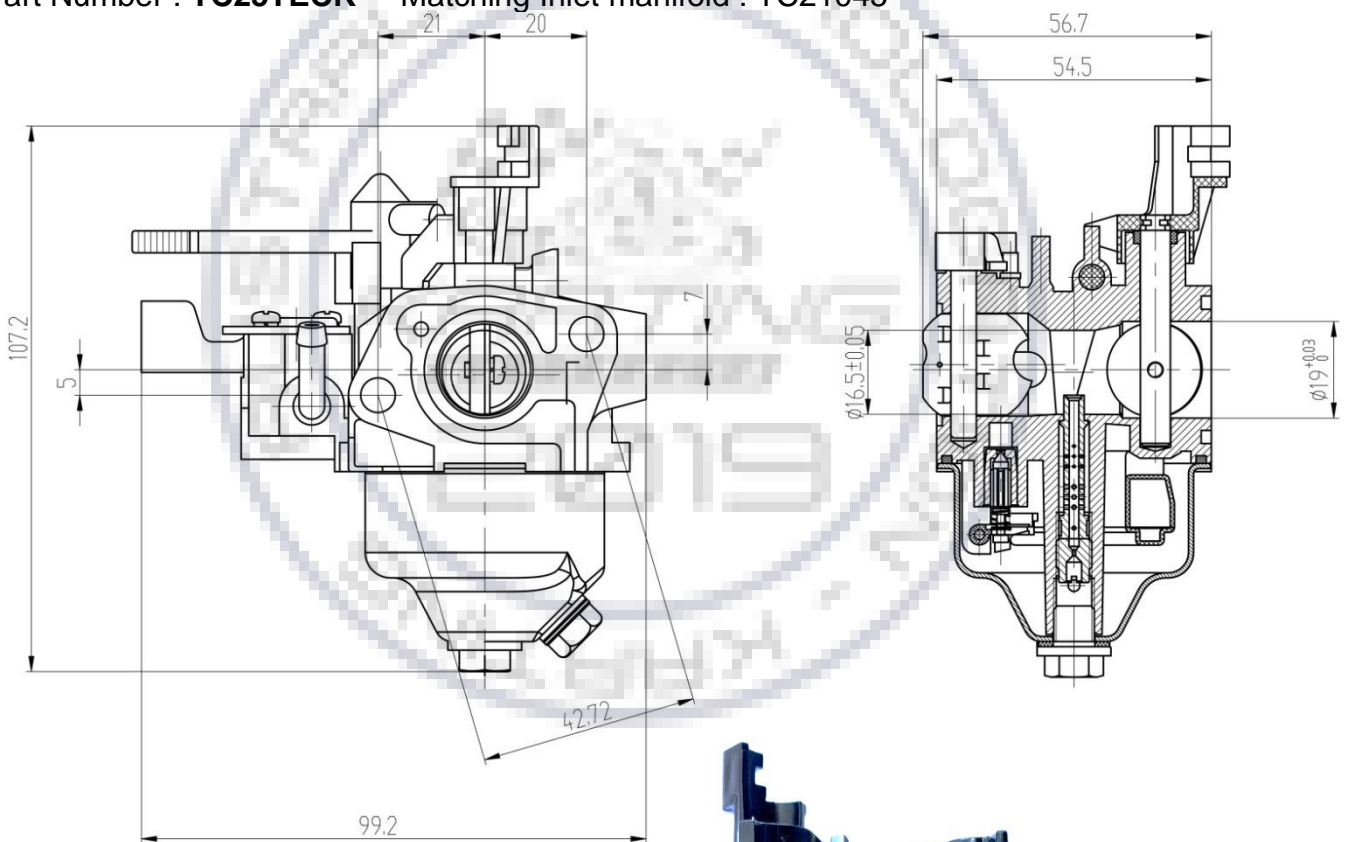
CARBURATION

CARBURATION

CARBURETOR DESCRIPTION – Clubmaxx CADET

Manufacturer: **TORINI** Description: **Butterfly Carburettor, 16.5mm Venturi**

Part Number : **TC25TECK** Matching Inlet manifold : **TC21045**



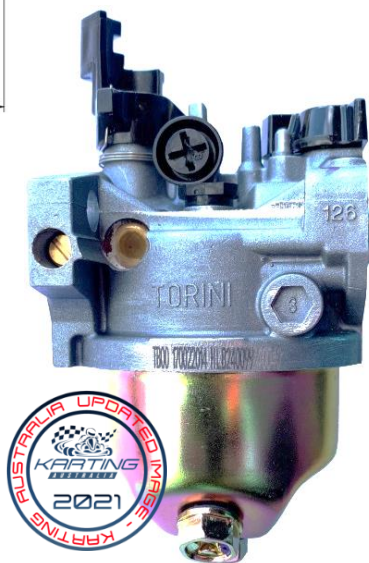
Jet Kit - Clubmaxx Cadet

Part No : **TC25079** (Supplied with below jet sizes)



Main Jet sizes :
88 > 97

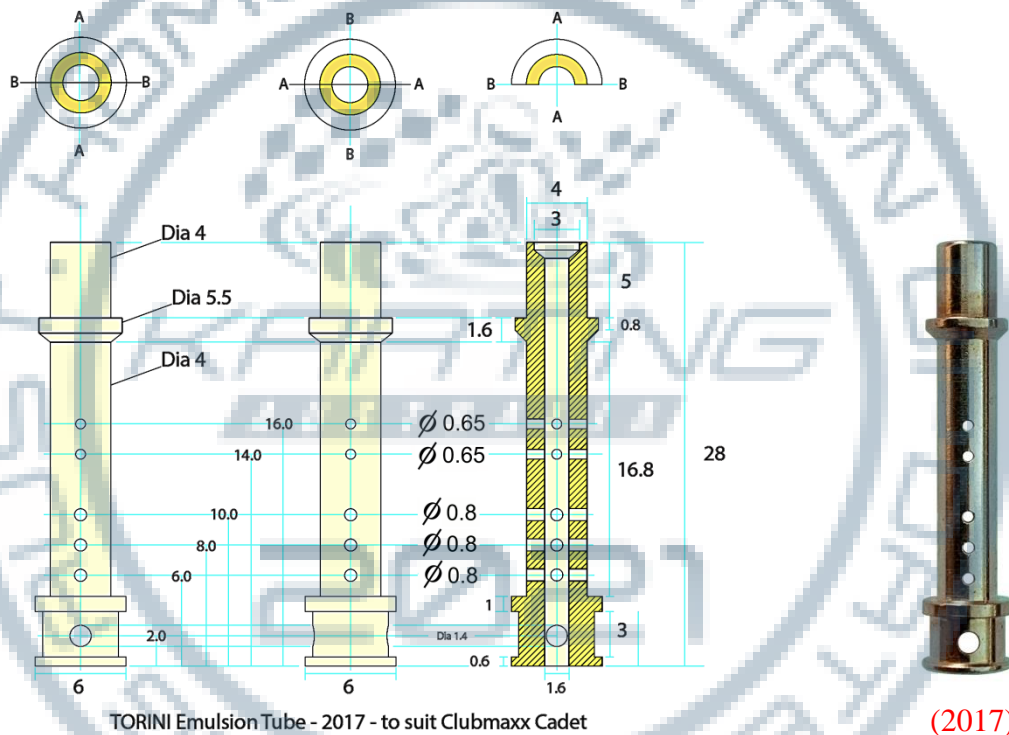
Pilot Jet sizes :
40, 43, 45



Emulsion Tube



(2017)

CARBURATION
TECHNICAL DRAWING of EMULSION TUBE for Clubmaxx CADET
Emulsion Tube - Clubmaxx CADET


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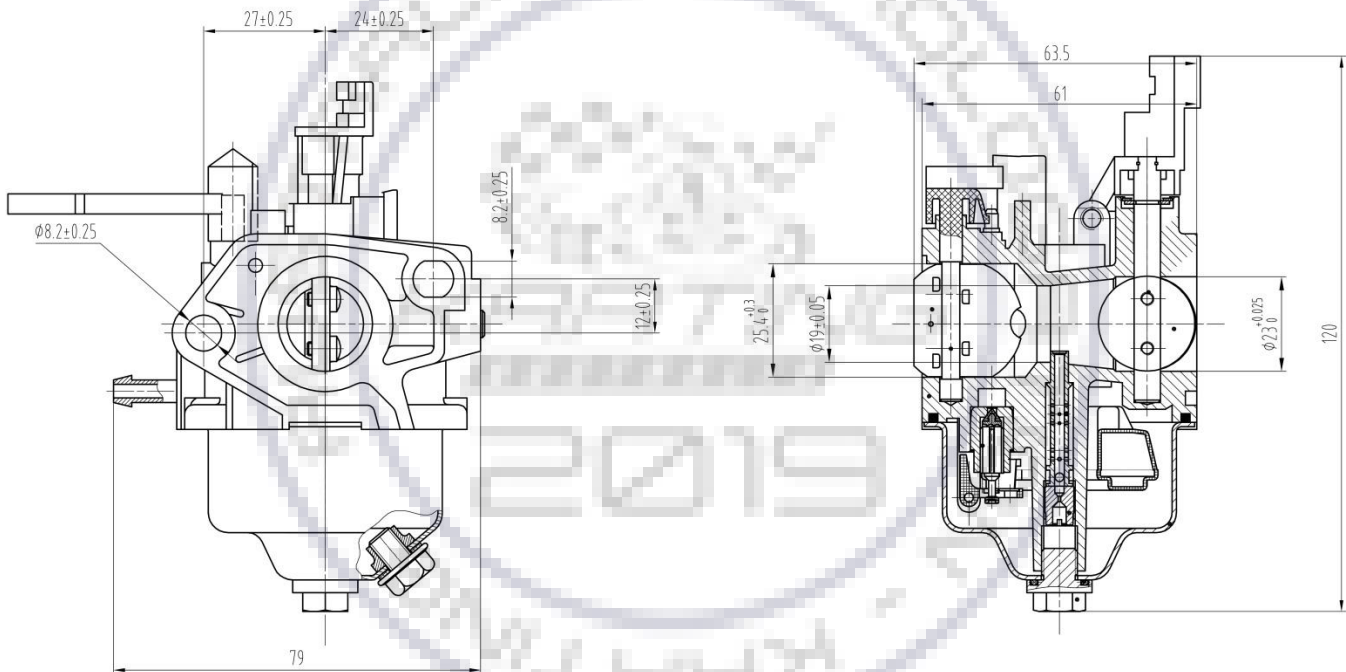
CARBURETOR DESCRIPTION - Clubmaxx JUNIOR / SENIOR

Manufacturer: **TORINI**

Description: **Butterfly Carburettor, 19mm Venturi**

Part Number : **TC25SECK / TC25048**

(Matching Inlet manifold : TC21046)



Jet Kit - Clubmaxx (Junior & Senior)
Part No : TC25079 (Supplied with below jet sizes)



Main Jet sizes :
88 > 97

Pilot Jet sizes :
40, 43, 45



**Emulsion Tubes
Clubmaxx
Junior / Senior**



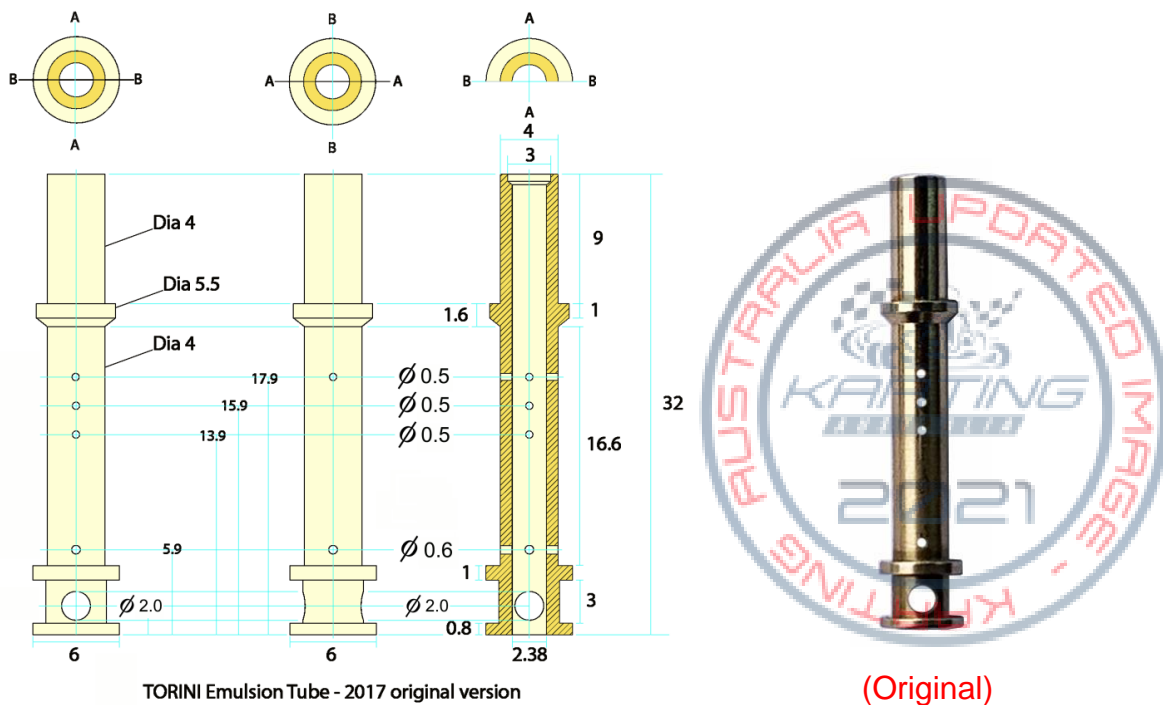
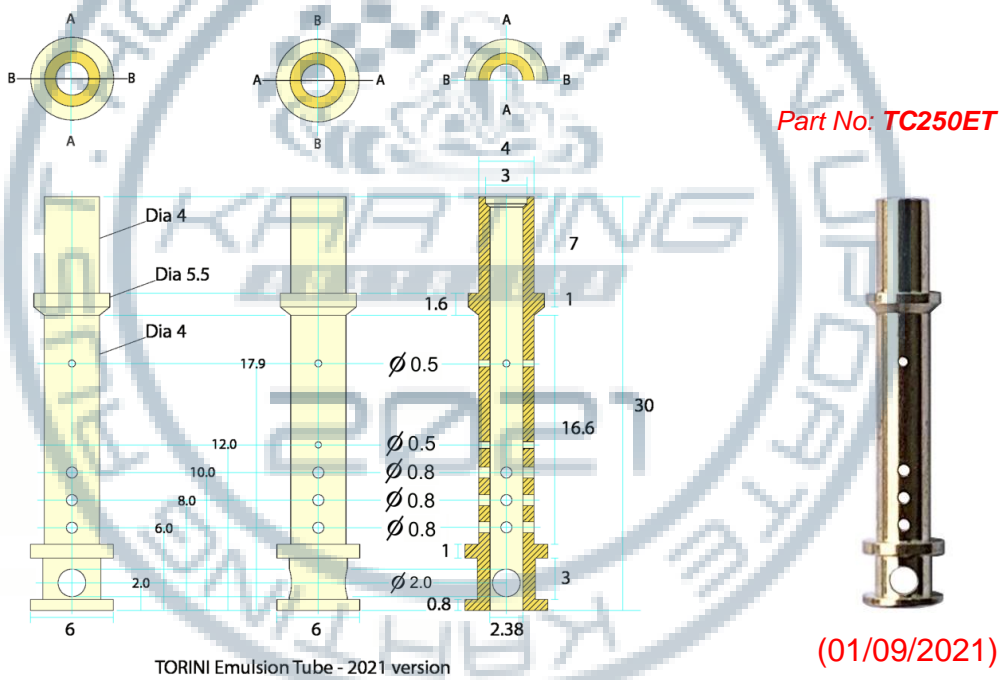
(2017)

(01/09/2021)

CARBURATION

TECHNICAL DRAWING of EMULSION TUBE - Clubmaxx JUNIOR / SENIOR

Emulsion Tube (Clubmaxx Junior / Senior)



AIR FILTRATION

AIR FILTER SYSTEM

Description: **RACE AIR FILTER**

Manufacturer: **TORINI** Part No: **TC25057**

Description: **FOAM PRE FILTER**

Manufacturer: **TORINI** Part No: **TC25058**



NOTE: Air Filter Oil must be applied to both the Main element and the pre filter. Failure to oil the filters will cause ingress of dirt, leading to engine failure.

Description: **RACE AIR FILTER**

Manufacturer: **TORINI** Part No: **NLA**

Description: **FOAM PRE FILTER**

Manufacturer: **TORINI** Part No: **NLA**



NOTE: Air Filter Oil must be applied to both the Main element and the pre filter. Failure to oil the filters will cause ingress of dirt, leading to engine failure.

AIR FILTRATION

Air Filter – Wet Weather Kit

Wet Weather Kit Part No: TC25050



KIT INCLUDES

- SNORKEL WITH BUILT IN FOAM FILTER ELEMENT
- WATER REPELLENT FILTER SOCK
- MOUNTING BRACKET
- HOSE CLAMP
- TIE STRAPS (2)

1) Remove the dry weather filter assembly



2) Fit snorkel adaptor to carburetor



3) IMPORTANT - Filter opening must be pointed towards rear of the kart



4) Thread tie straps through filter bracket



Note: Once mounted, the bracket itself can be left on the engine for use at a moment's notice.

5) Secure the filter assembly to the bracket using tie straps



Note: Ensure hose clamp is done up

*TECHNICAL DESCRIPTIONS
OF THE EXHAUST (Art. 8.9.3 of HR)*

Weight in g

620~660

Minimum

TECHNICAL DRAWING

It must include all the information necessary to build this exhaust.

EXHAUST SYSTEM

PHOTO OF THE EXHAUST MANIFOLD

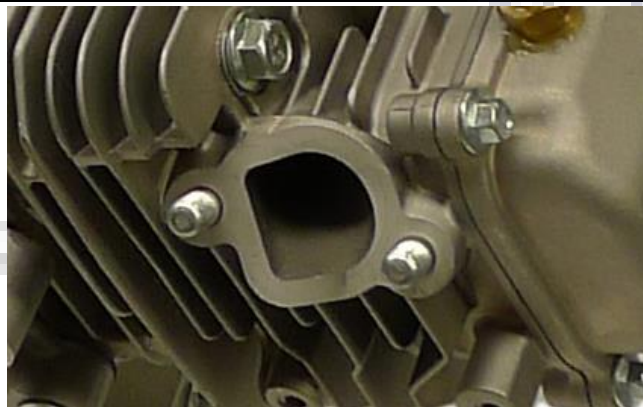


PHOTO OF THE EXHAUST

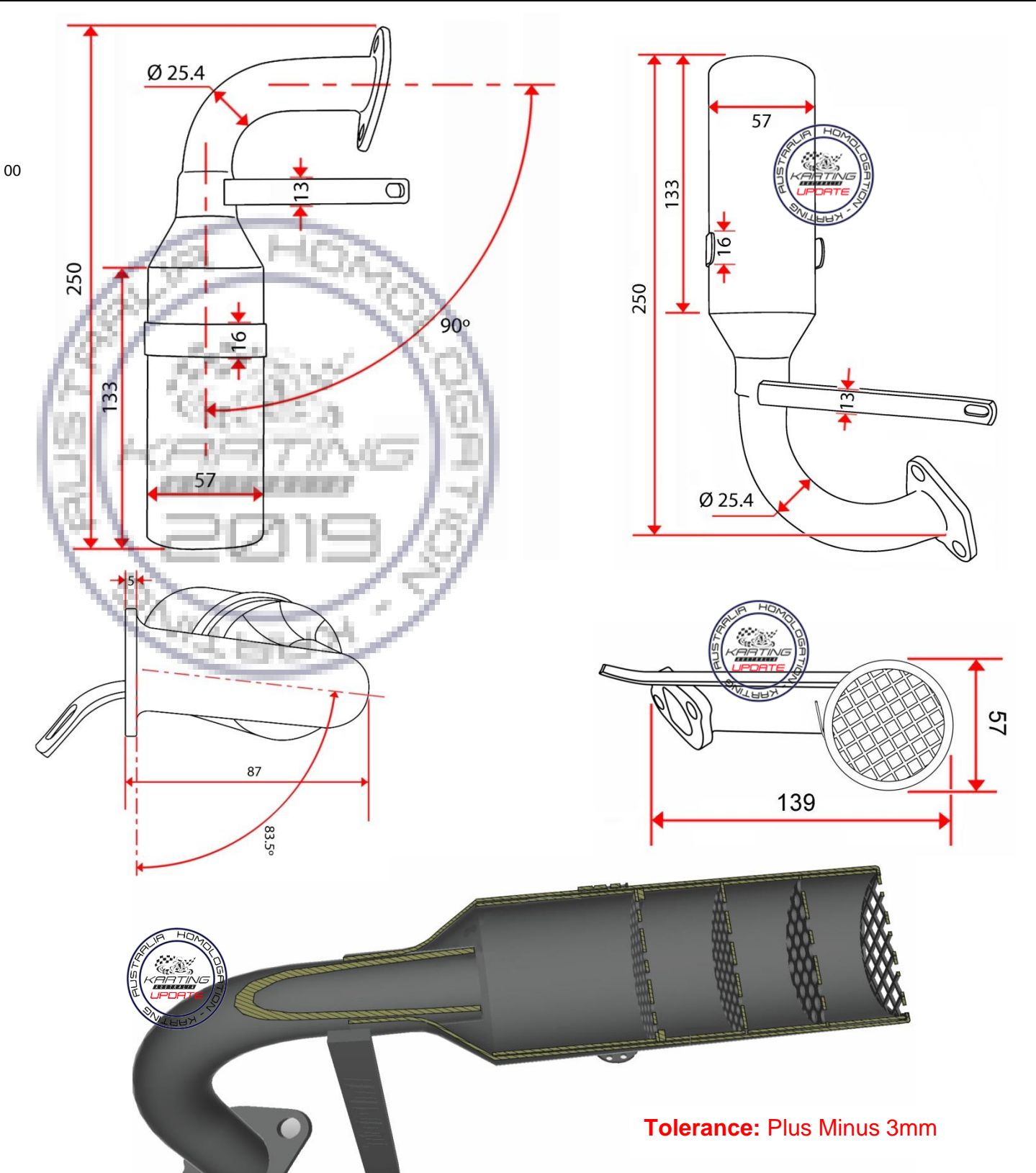


For surface protection, this muffer is has been coated with high temprature paint. Over time it will burn off.

To prevent corrosion damage, periodic reapplication using a similar high temprature paint (commonly available at most auto stores) is highly reccomended.

EXHAUST SYSTEM

TECHNICAL DRAWING



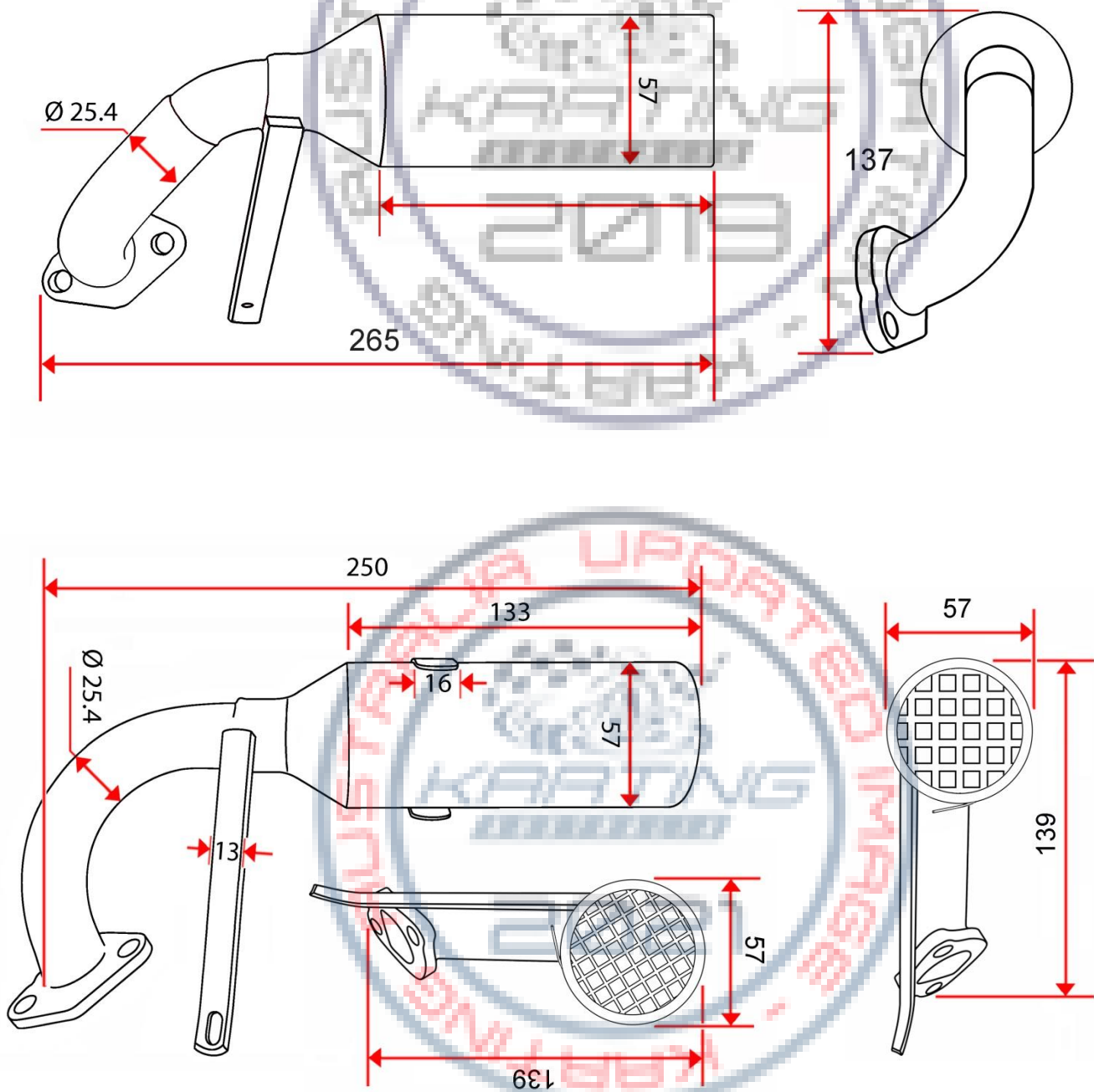
Tolerance: Plus Minus 3mm

EXHAUST SYSTEM

The exhaust system is designed to:

- Direct hot gas away from the vehicle and its operator
- Attenuate the noise output from the engine

Tolerance: Plus Minus 3mm



CLUTCH

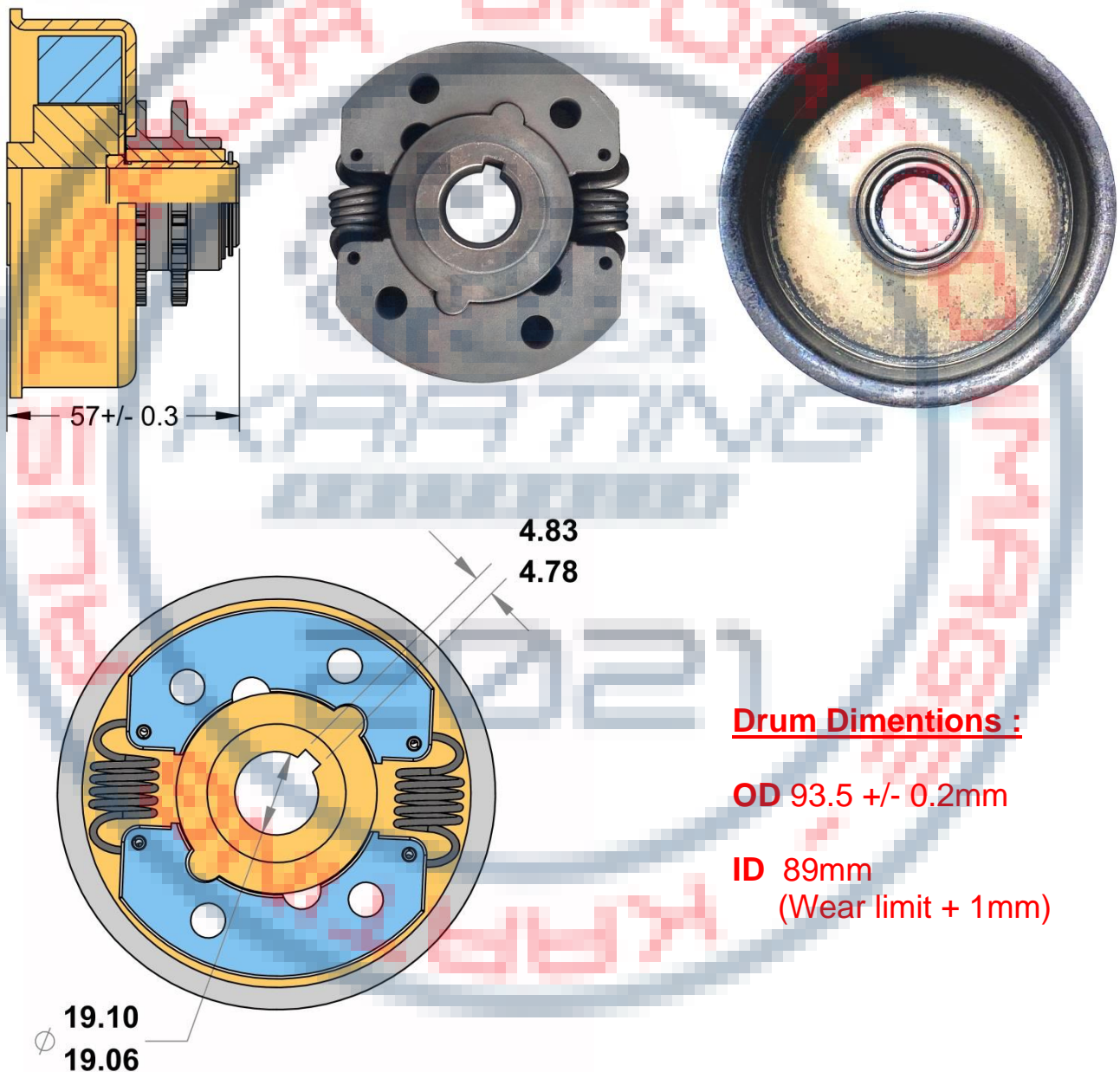
CLUTCH SELECTION

Identification Page		Description
 <p style="text-align: center;">Inboard Mount Outboard Mount</p>	<p>Type: Centrifical Clutch Full metal shoe (2)</p> <p>Manufacturer: NORAM</p> <p>Part Number: TC-GE20219</p> <p>Scope</p> <ul style="list-style-type: none"> • Clubmaxx Cadet • Clubmaxx Jnr. & Snr. 	
 <p style="text-align: center;">Inboard Mount Outboard Mount</p>	<p>Type: Centrifical Clutch Friction shoe (2)</p> <p>Manufacturer: NORAM</p> <p>Part Number: TC-GEL19219</p> <p>Scope</p> <ul style="list-style-type: none"> • Clubmaxx Cadet • Clubmaxx Jnr. & Snr. 	
 <p style="text-align: center;">Inboard Mount Outboard Mount</p>	<p>Type: Centrifical Clutch Full metal, shoe (6)</p> <p>Manufacturer: TORINI</p> <p>Part Number: TC2300</p> <p>Scope</p> <ul style="list-style-type: none"> • Clubmaxx Cadet • Clubmaxx Jnr. & Snr. 	

CLUTCH

TECHNICAL DRAWING (exploded view) OF THE CLUTCH ASSEMBLY

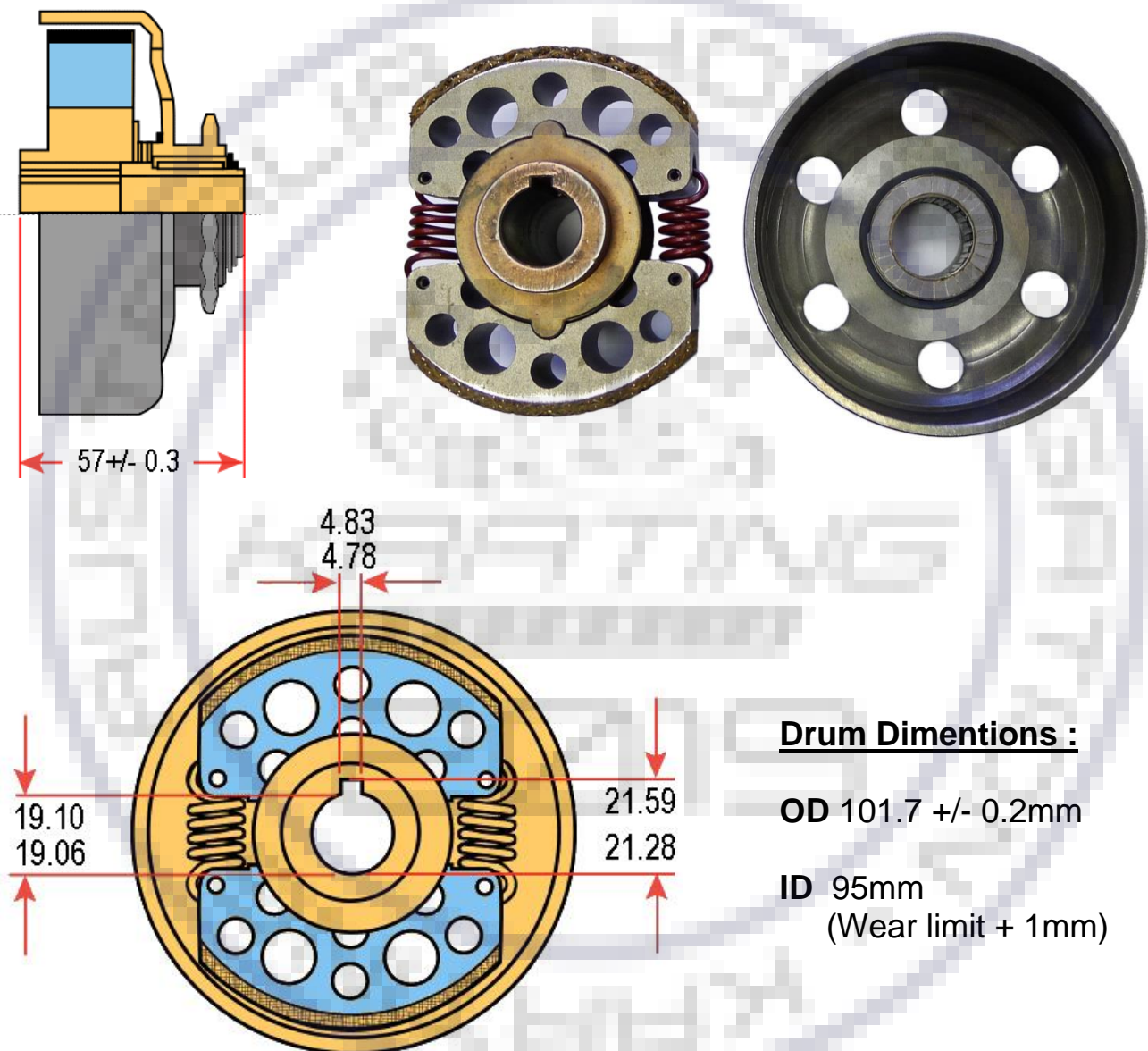
TCGE20219 NORAM Clutch



The aim of the exploded drawings is to identify the principles, the functioning and the whole mechanical unit

CLUTCH

TECHNICAL DRAWING (exploded view) OF THE CLUTCH ASSEMBLY

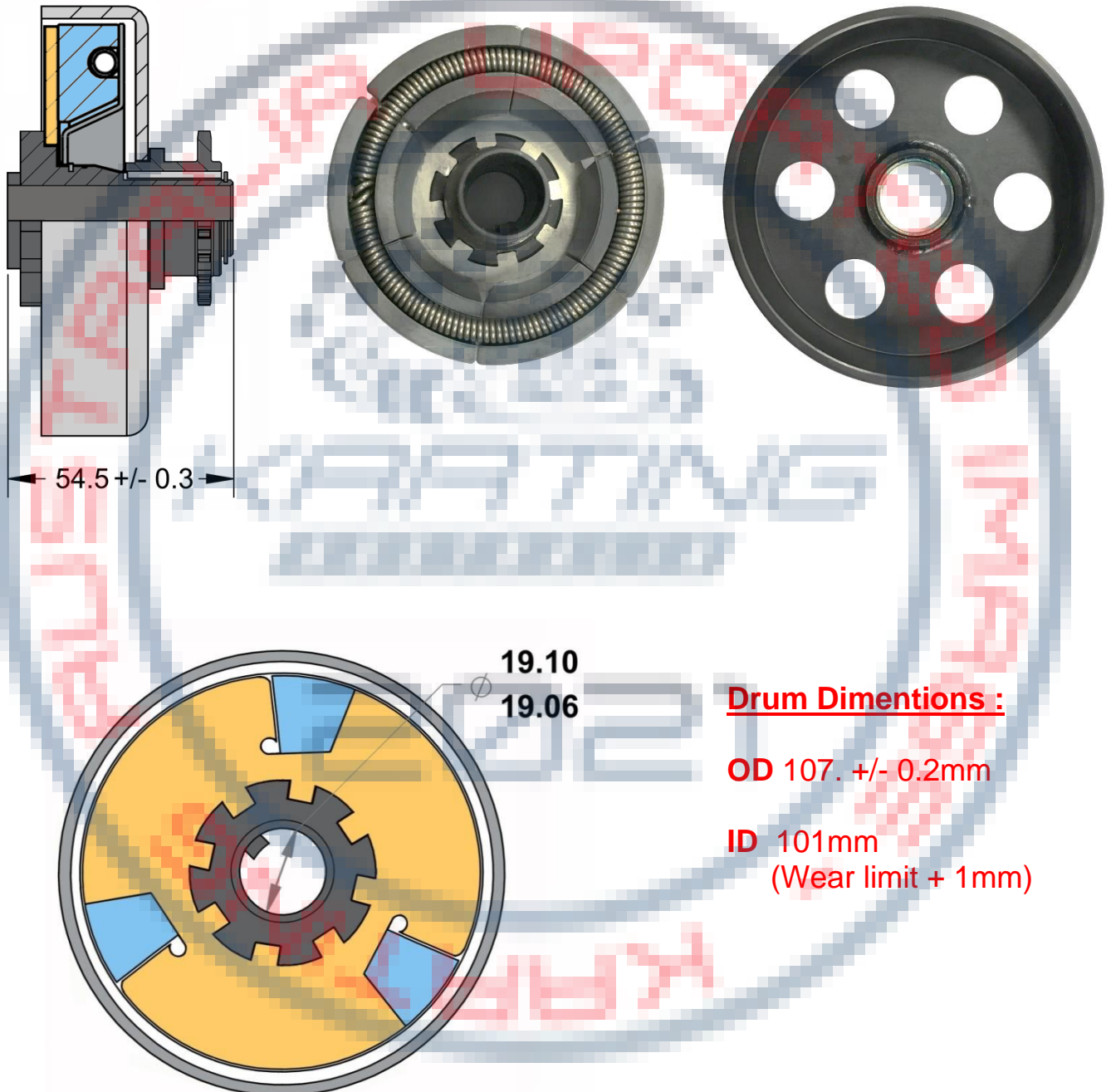
TC-GEL19219 NORAM Clutch


The aim of the exploded drawings is to identify the principles, the functioning and the whole mechanical unit

CLUTCH

TECHNICAL DRAWING (exploded view) OF THE CLUTCH ASSEMBLY

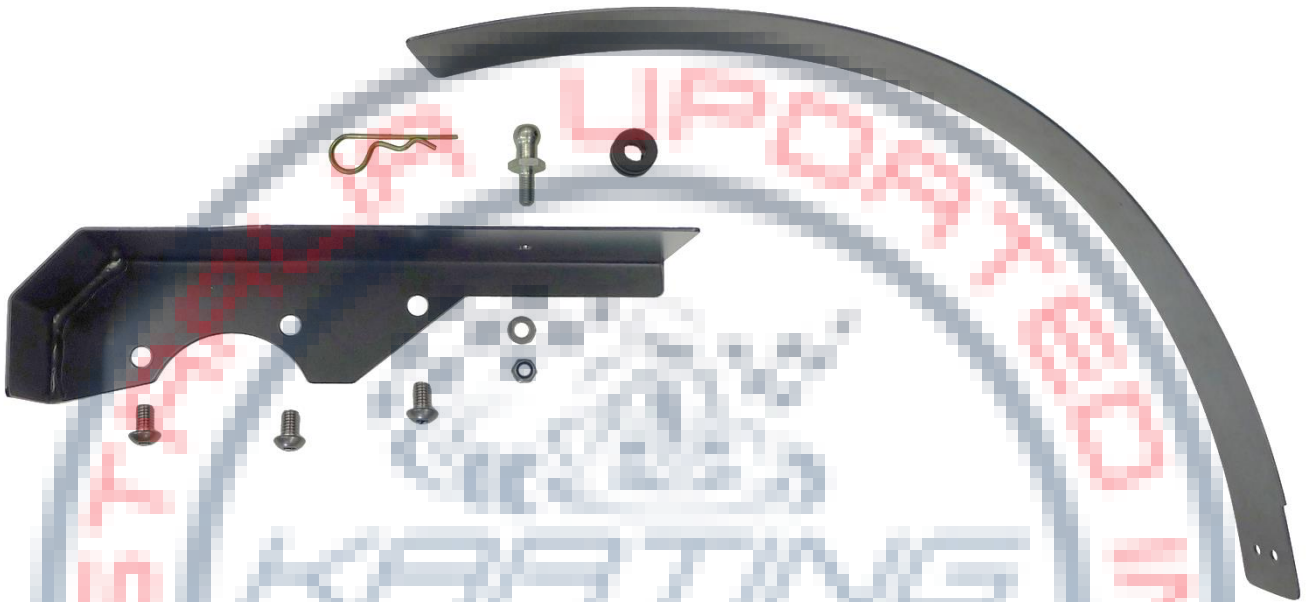
TC2300 TORINI Clutch



CHAIN GUARD

PHOTOS OF THE CHAIN GUARD ASSEMBLY

TC25080 Chain Guard - TC210 Jnior / Seior



TC22582 Cadet Class – Safety Guard

Polycarbonate Safety Guard



NOTE: for use where the manner of engine mounting leaves unrestricted access to the the clutch & drive sprocket.

ENGINE BASE PLATE

ENGINE MOUNTING

Engine Adaptor Plate

Manufacturer: **TORINI** Part No: **TC25000** Description: **ENGINE MOUNT ADAPTOR PLATE**

Function: The Engine Mount Adaptor Plate is provided pre-drilled to suit multiple kart and engine mounts. The plate is part of the engine assembly, it provides structural integrity to the crankcase under high load conditions. The plate also maintains a forward angle on the motor to ensure adequate lubrication is maintained under race conditions.



ENGINE BASE PLATE
Additional Hole Positions

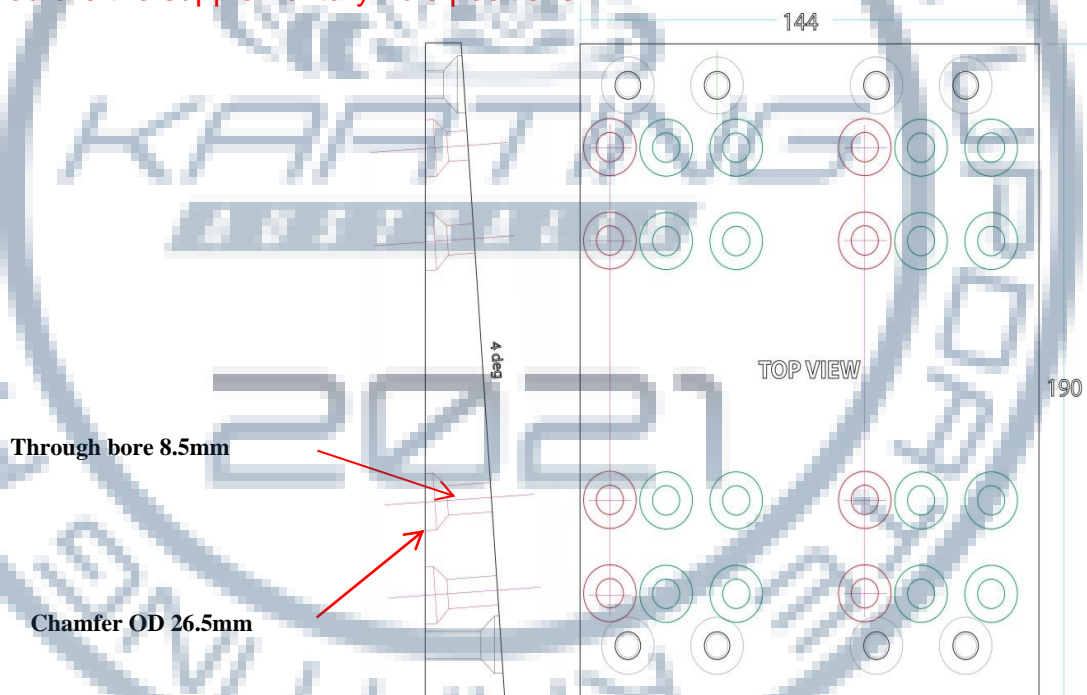
Manufacturer: **TORINI** Part No: **TC25000** Description: **ADDITIONAL HOLE POSITIONS**

Rational: Allows for additional holes to be machined in order to mount an engine to frame

- Provides additional mounting option, (which would otherwise be unmanageable).
- **Caution :** The possible negative effects of increased engine off set are : Reduced performance, Higher vibration, Increased risk of metal fatigue.

Where no other mounting solution exists, additional mounting holes can be machined in the engine base plate as shown below.

- This should only be done as a last resort due to the risk of increased vibration.
- Shown in **red** are the supplementary hole positions.


Note:

Ensure holes are machined at the correct angle.

Scrutineer's Note: Engine Base Plate – Visual Check

Additional holes are permitted, as highlighted below in **red**.

ENGING BASE PLATE

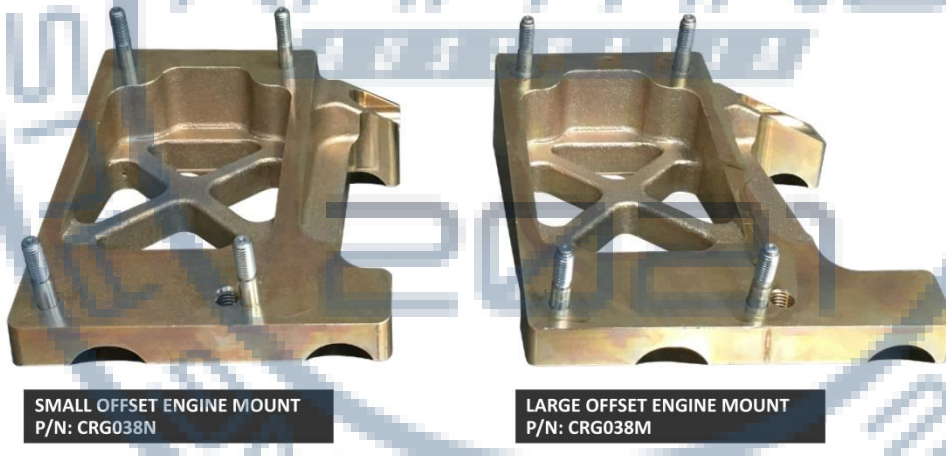
PHOTO OF APPROVED ENGING MOUNTS

Scrutineer's Note: Factory Approved Third Party Engine Mounts
 These Engine Mounts are approved for use without the TC25000 Adaptor Plate.

a) The Odenthal 8 degree 4-cycle EZ Set slider mount



b) The CRG038N Small Offset Mount & CRG038M Large Offset Mount



Engine Lubrication

ENGINE OIL

At all times, no less than 400ml of Torini 4s Racing Engine Oil must be retained in the Engine and be capable of being drained from the Engine for the purpose of determining compliance with the homologation.

Engine Oil Types

TORINI 4s RUN-IN ENGINE OIL 1L

1 Litre Part No: TRO1031



Attention:

Run-In Period = 3 hours

The initial start up of a new engine is critical to its performance and life expectancy.

How well the rings seal can make all the difference in engine performance.

Warning: Torini Race Oil must not be used to run engines in.

TORINI 4s RACING ENGINE OIL

500ml Part No: TRO500

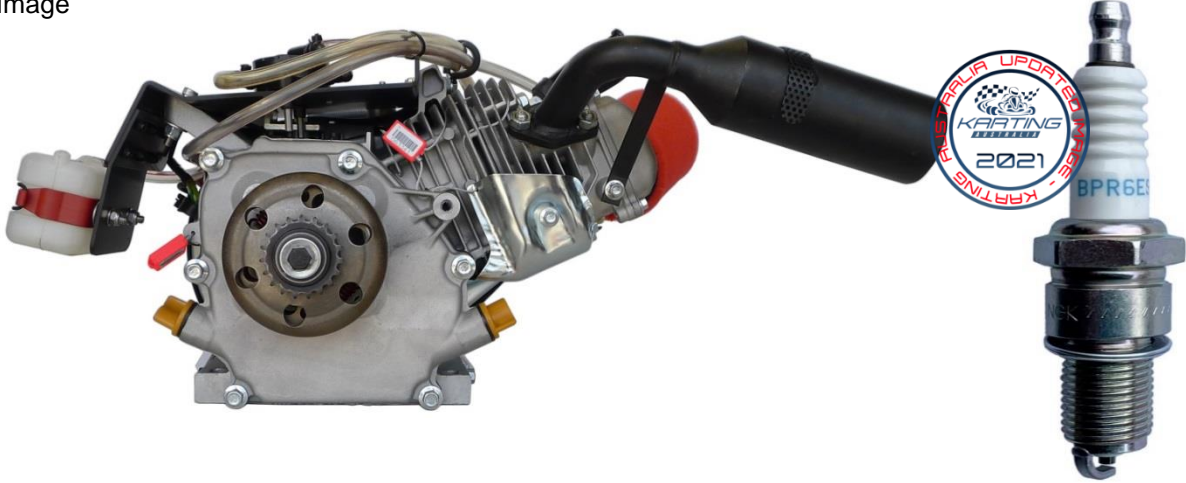
4L Part No: TRO4000

Designed for:

- Air cooled
- High performance
- Splash lubricated
- 4 Stroke engines
- ✓ Friction modified
- ✓ Anti foam



Only Torini Engine Oils must be used in the Engine.

1-1 Product Specifications	TC210 Clubmaxx
Engine model	
Image	
Spark Plug	NGK – BPR6ES
Engine type	Single cylinder, 4-Stroke, Forced Air Cooling, OHV25°
Head Gasket	1.28 +/- .25 Uncompressed (Compressed 1.1 +/-0.1)
Bore x stroke (mm)	70 x 55
Displacement (cc)	211.66
Engine oil capacity (L)	0.5
Idle speed (r/min)	1800±150
Max permissible engine speed	6100 RPM
Starting mode	Recoil
Lubrication mode	Splash
Cooling system	Forced air cooling
Stopping mode	Grounding
Fuel	Premium Unleaded
PTO shaft rotation	Counterclockwise (seen from the end of output shaft)
Ignition system	T.C.I. Rev Limited 6100 RPM
Carburetor (Option 1)	P23
Carburetor (Option 2)	P19 (Cadet)

No deviation from the manufacturer's engine specification is allowed.

All components must remain OEM. The engine serial number must be visible at all times and must comply with the Australian Homologation.

Attention: ALL THE ENGINE PARTS MUST BE ORIGINAL BY TORINI MOTOR CO., LTD.

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. No ceramic component coatings.



Homologation N °

109H
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