Homologation N °

121H

UPDATED 3 AUGUST 2023

NATIONAL HOMOLOGATION FORM
ENGINE

Manufacturer	**AUSTECH INDUSTRIES PTY. LTD.**
Make	**TORINI**
Model	**TX250**
Validity of the homologation	*6 years*
Number of pages	**48**

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
30 January 2019

Ashley Woolner
National Technical Commissioner

Updated
3 August 2023

Kelvin O'Reilly
Chief Executive Officer

PHOTO OF DRIVE SIDE OF THE COMPLETE ENGINE

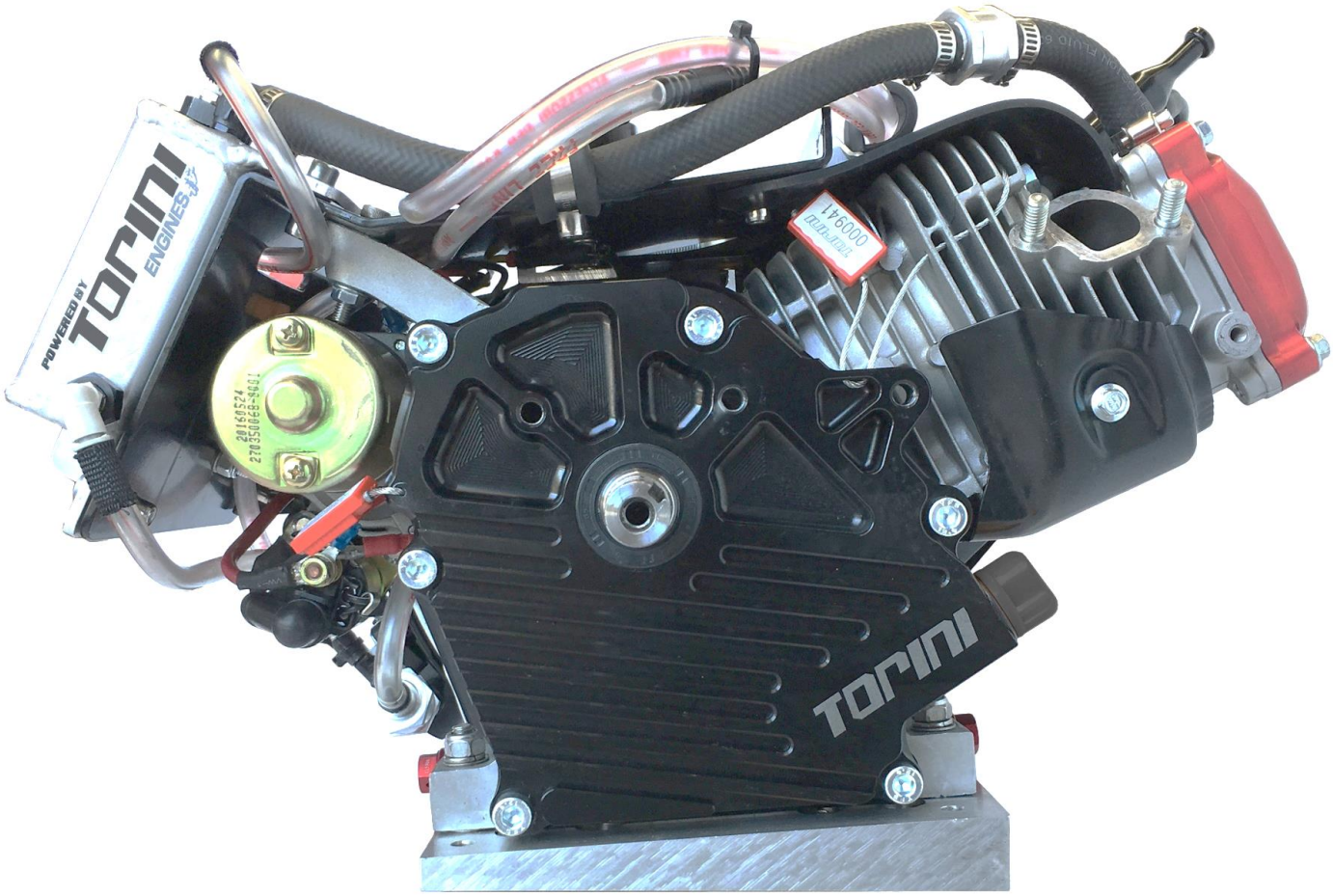
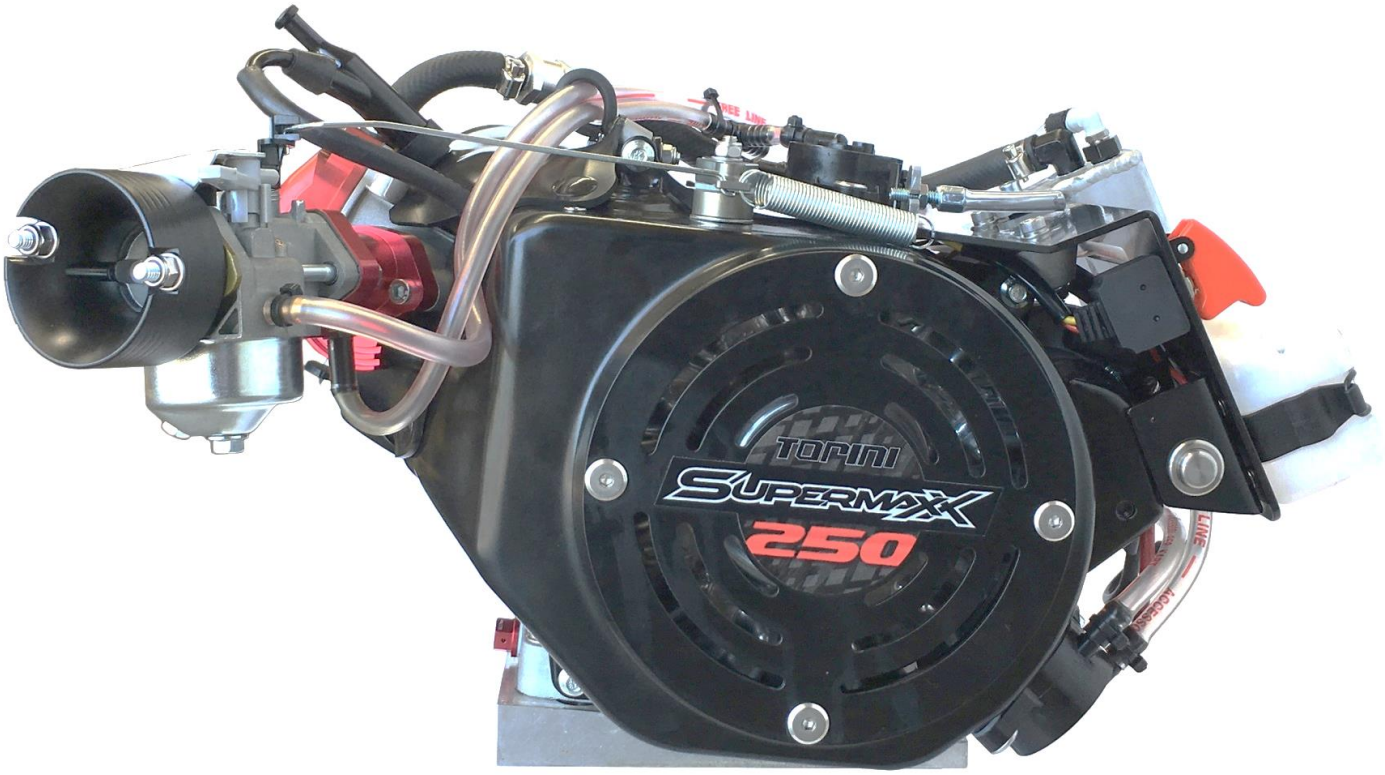
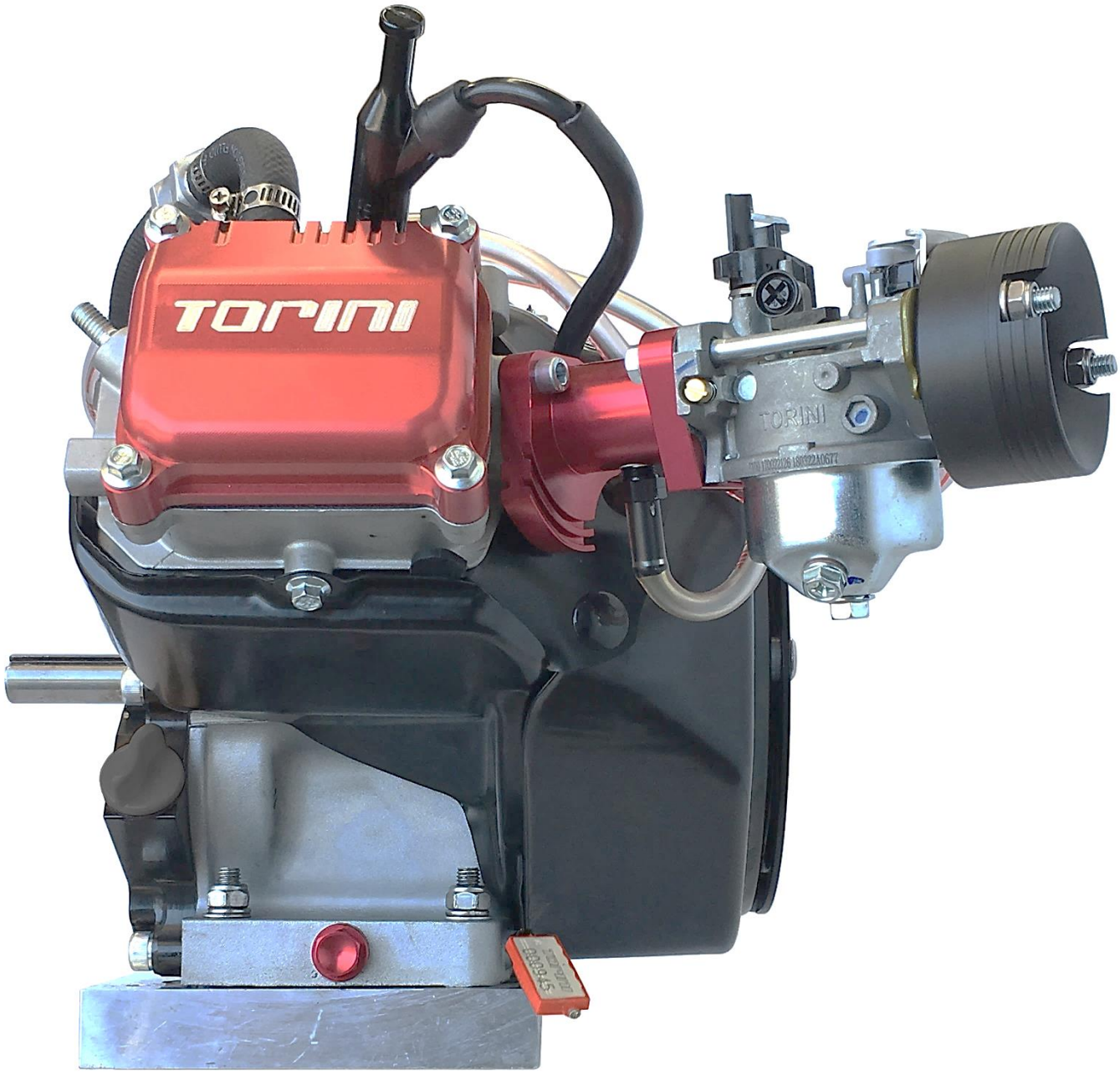


PHOTO OF OPPOSITE DRIVE SIDE OF THE COMPLETE ENGINE



The 2023 model of the Engine is now manufactured with an orange cowling.
Both the black and orange cowled engines are permitted for use.
There is no performance difference between them.

PHOTO OF THE REAR OF THE COMPLETE ENGINE

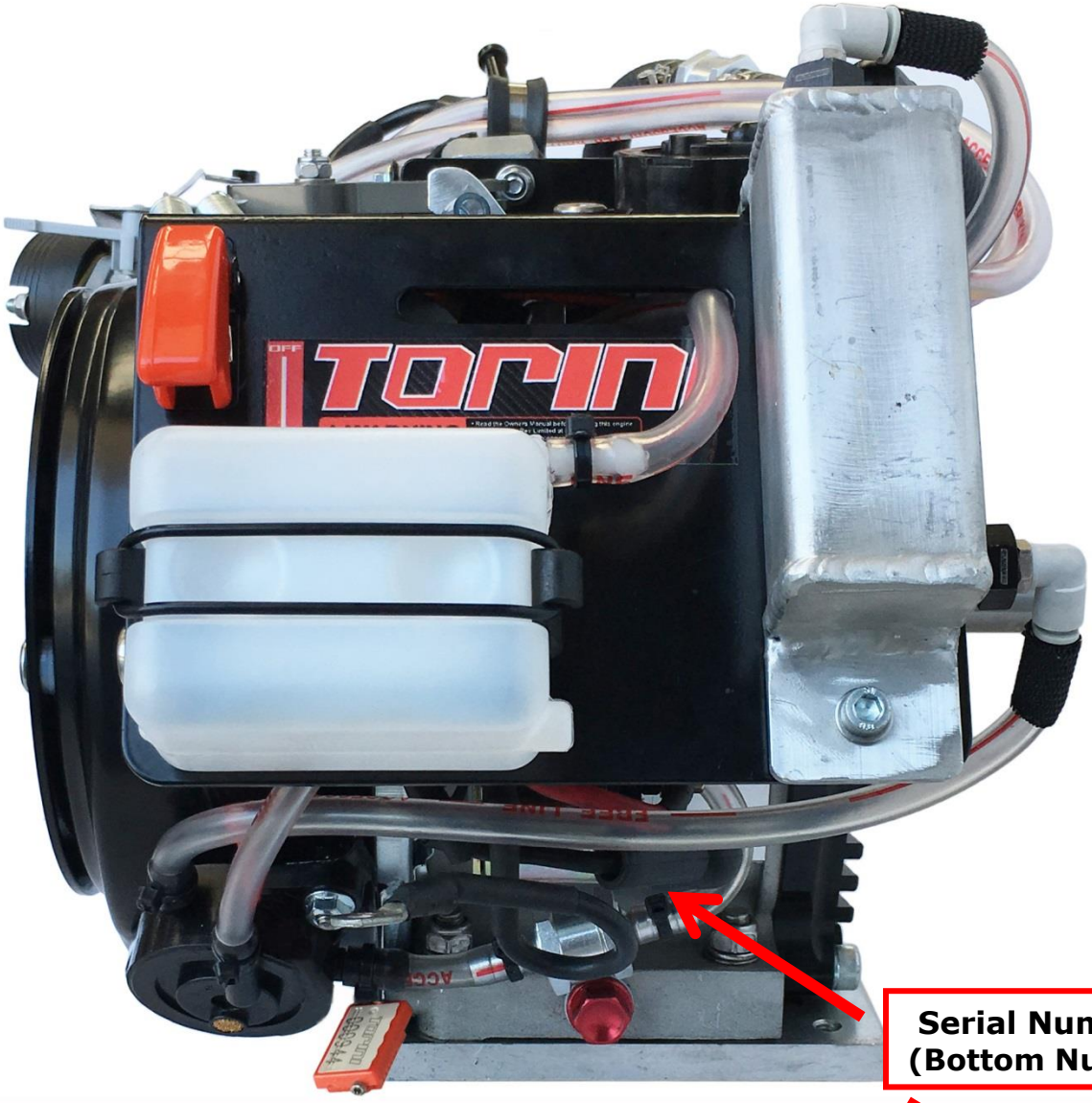


No deviation from the manufacturer's engine specification is allowed.

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.

PHOTO OF THE FRONT OF THE COMPLETE ENGINE



Serial Number (Bottom Number)

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

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The engine serial number must be visible at all times and must comply with the Australian Homologation records.

PHOTO OF THE COMPLETE ENGINE TAKEN FROM ABOVE

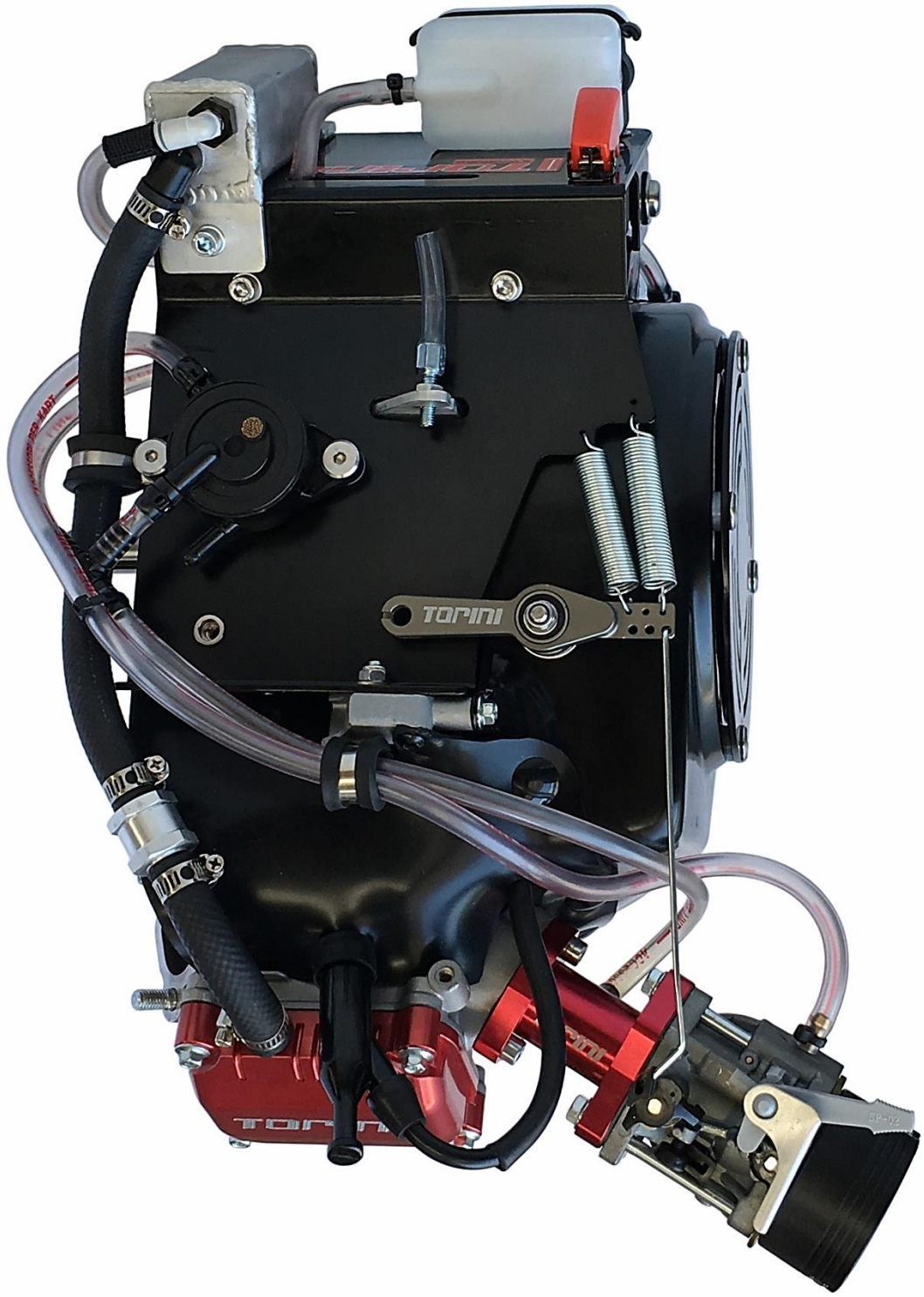
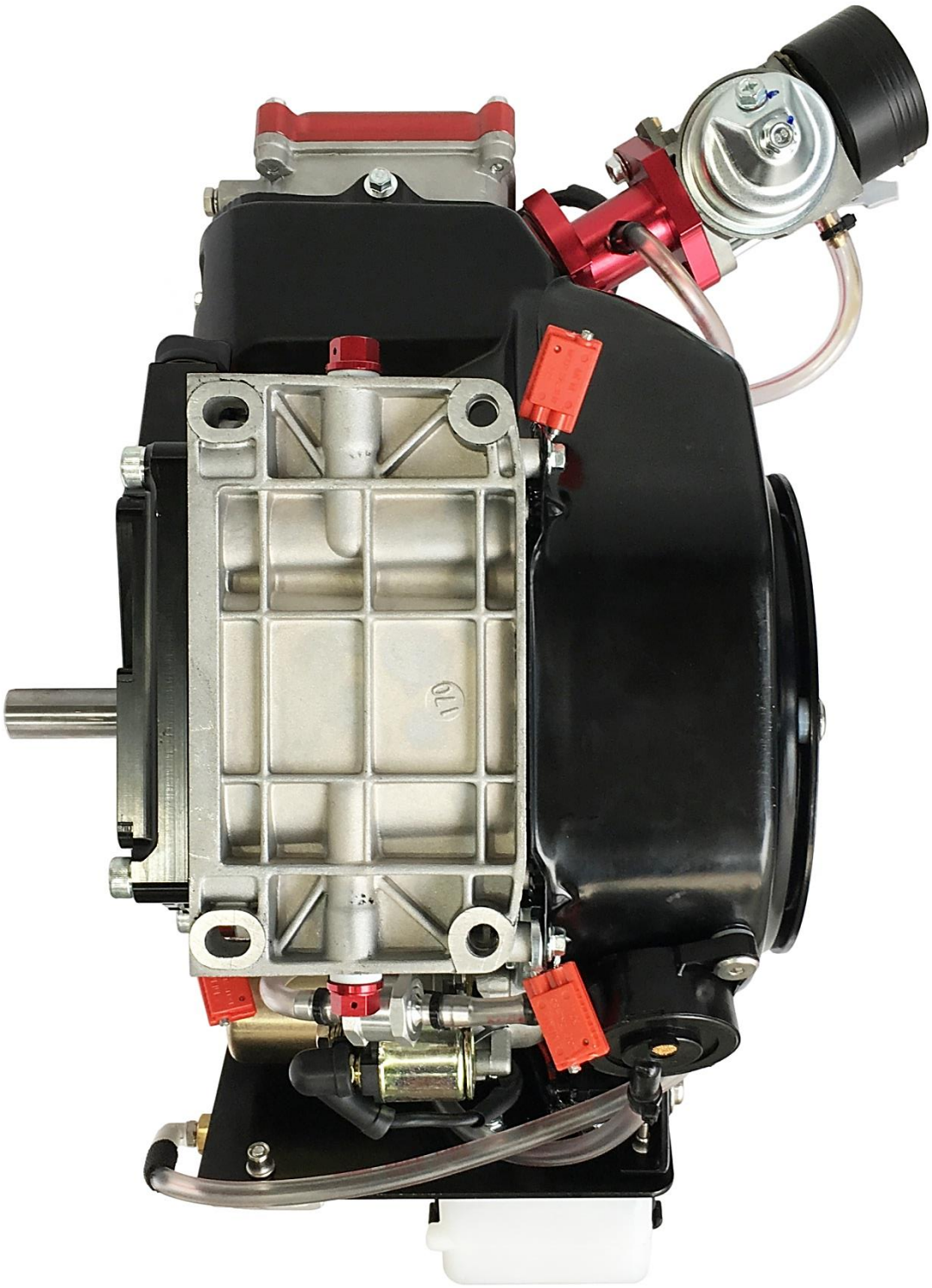


PHOTO OF THE COMPLETE ENGINE TAKEN FROM BELOW



ENGINE SEALS

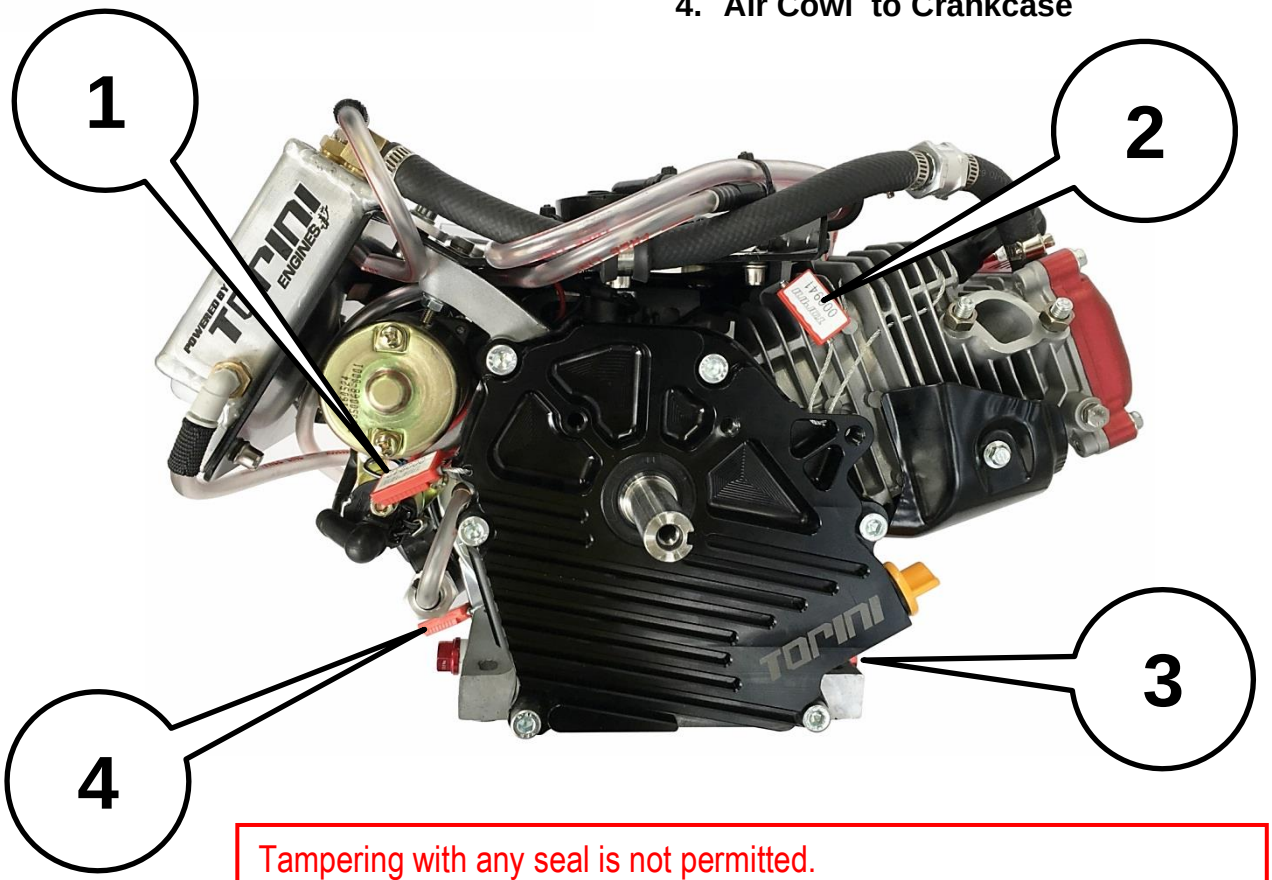
TAMPER-EVIDENT CABLE SEALS

Engine Seals (Anti-Tamper)

Manafacturer: **TORINI** Part No: **TCSEAL** Description: **RACE ENGINE SEAL (Anti-tamper)**

Engine Seals : ***Qty 4***

1. **Crankcase to Billet Side Cover**
2. **Head to Cylinder & Billet Side Cover**
3. **Air Cowl to Crankcase**
4. **Air Cowl to Crankcase**



Tampering with any seal is not permitted.

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

TECHNICAL INFORMATION

A	*CHARACTERISTICS*

The number of decimal places must be 2 or comply with the relevant tolerance.		*Tolerances & remarks*
Cylinder		
Volume of cylinder	**211.66CC**	--
Original bore	**70.000mm**	--
Theoritical maximum bore	**70.165mm**	--
Original Stroke	**55mm**	--
Number of transfer ducts, cylinder/sump	**n/a**	--
Number of exhaust ports / ducts	**n/a**	--
Volume of the combustion chamber		minimum
Volume of the combustion chamber in the cylinder head		minimum
Crankshaft		
Number of bearings		
Diameter of bearings		
Minimum weight of crankshaft	**1750g**	minimum
All parts represented on page 16 photo		
Balance shaft		
Minimum weight of balance shaft	**n/a**	minimum
Percentage of balancing	**n/a**	minimum
Connecting rod		
Connecting rod centreline	**84.5mm**	±0.5mm
Diameter of big end	**30.26mm**	~~±0.02mm~~ ±0.025mm
Diameter of small end	**18.02**	
Min. weight of the connecting rod & cap (with bolts)	**130g**	minimum

Piston		
Number of piston rings	**3**	
Min. weight of the bare piston	**140g**	minimum
Gudgeon pin		
Diameter	**18mm**	
Length	**54mm**	±0.5mm
Minimum weight	**45g**	minimum
Clutch		
Minimum weight	**n/a**	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	**YL113 GB/T15115-1994**
Cylinder	**ADC12**
Cylinder wall	**CAST IRON**
Sump	**ADC12**
Crankshaft	**40CR GB/T3077-199**
Connecting rod	**BILLET 7075 T6**
Piston	**ZL109 GBT/T 1173-1995**

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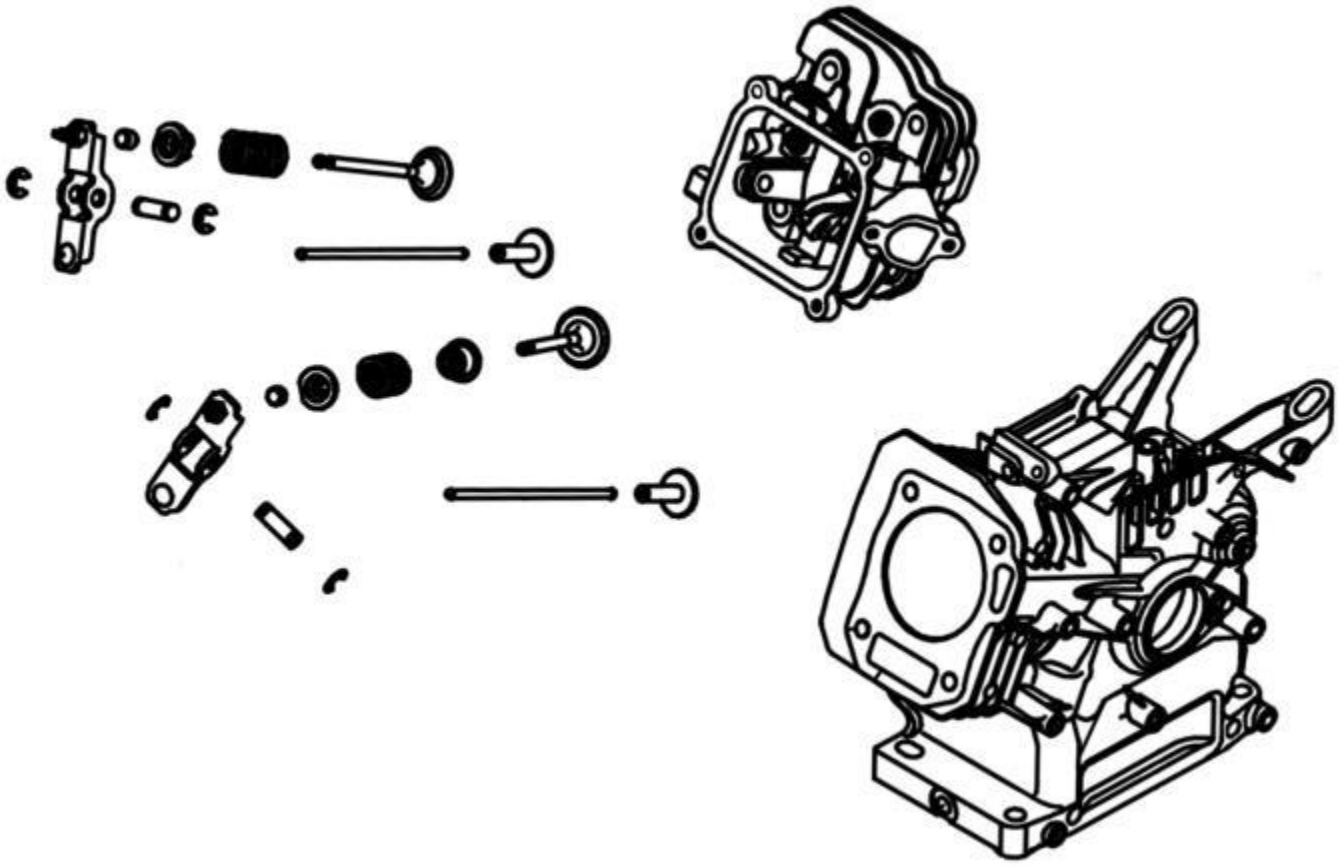
D	*PHOTOS, DRAWINGS & GRAPHS*

D.1 *CYLINDER UNIT*

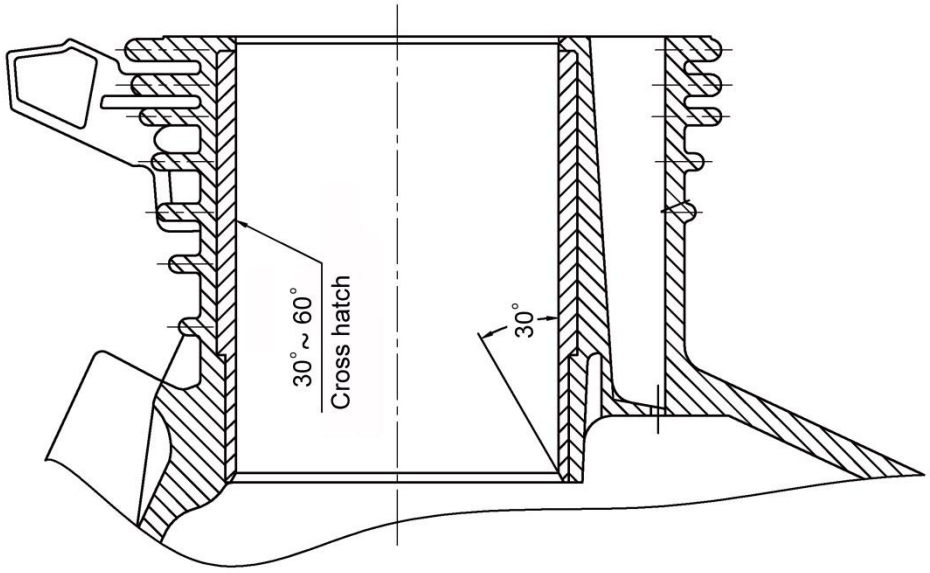
EXPLODED DRAWING OF THE CYLINDER, CYLINDER HEAD AND EXHAUST MANIFOLD UNIT



Without screws or gaskets.	***The aim of the exploded drawings is to identify the principles, the functioning and the whole mechanical unit***

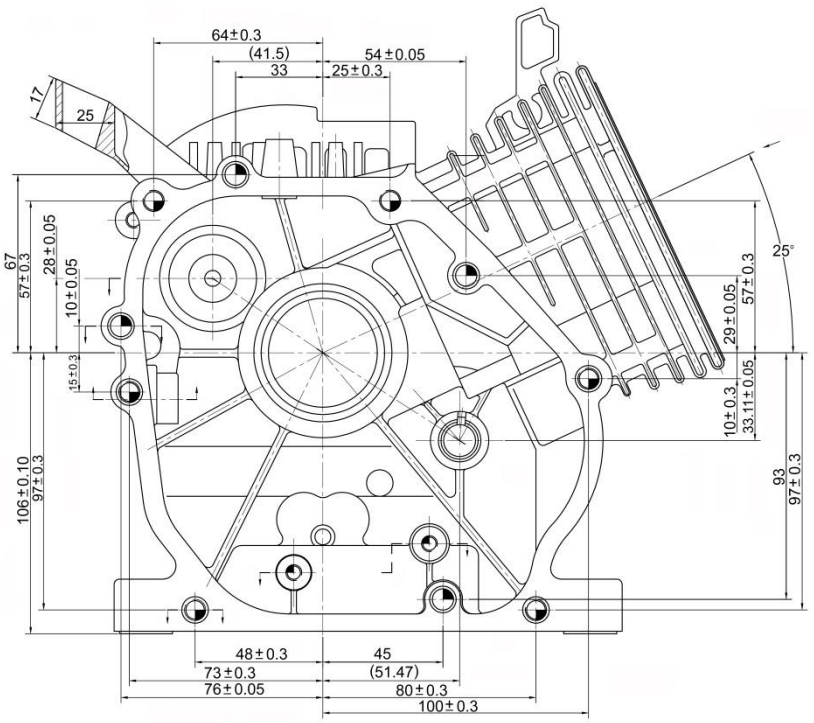
... Section D.1

DRAWING OF THE CYLINDER DEVELOPMENT



Indicate on the drawing:
B1/B2 = minimum thickness of the inlet (transferts) 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 D.1

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

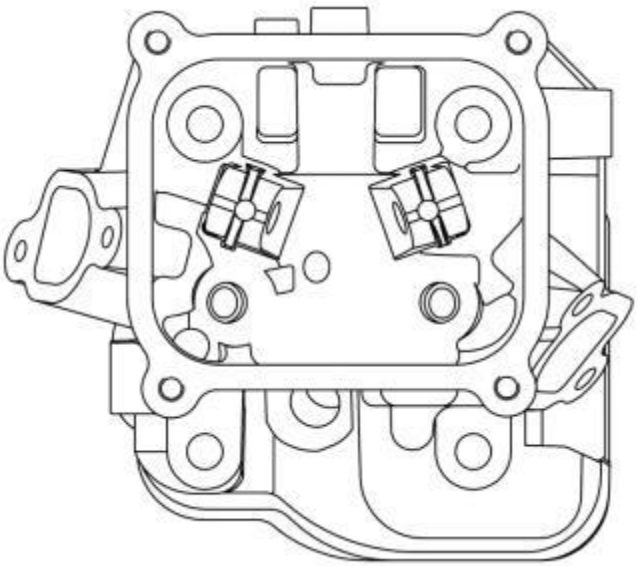
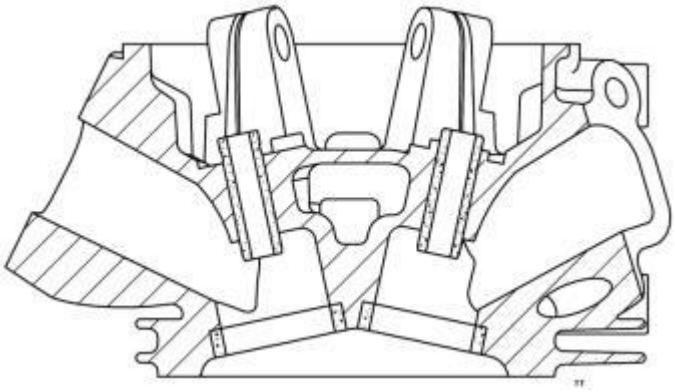
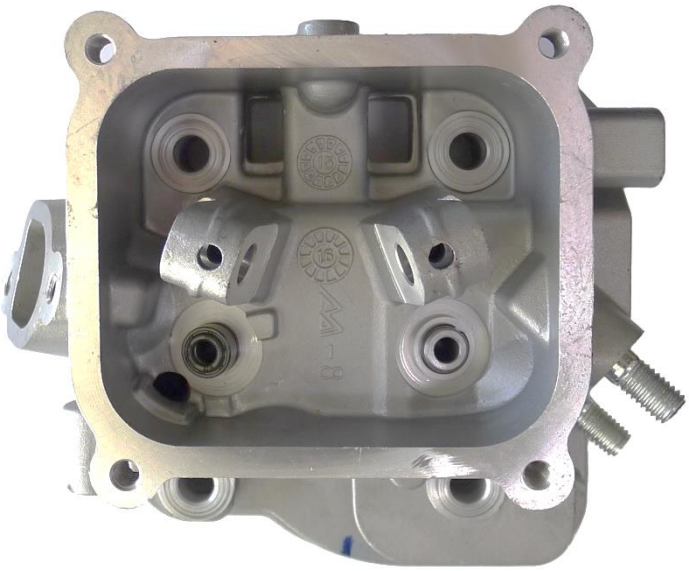
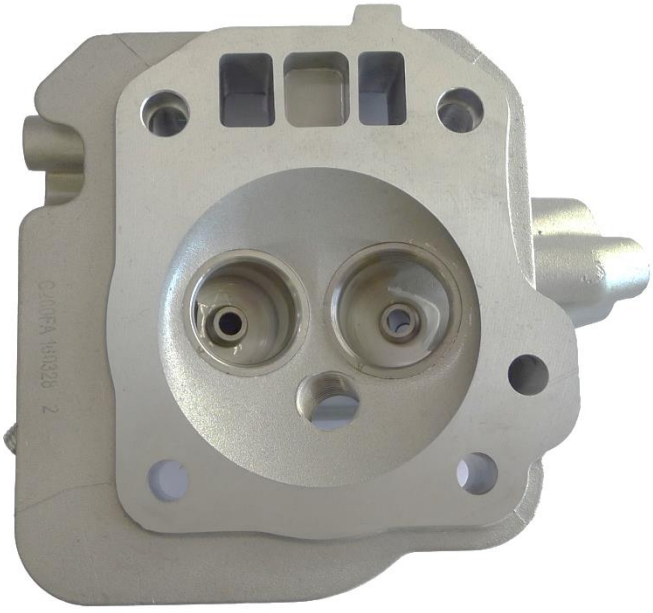
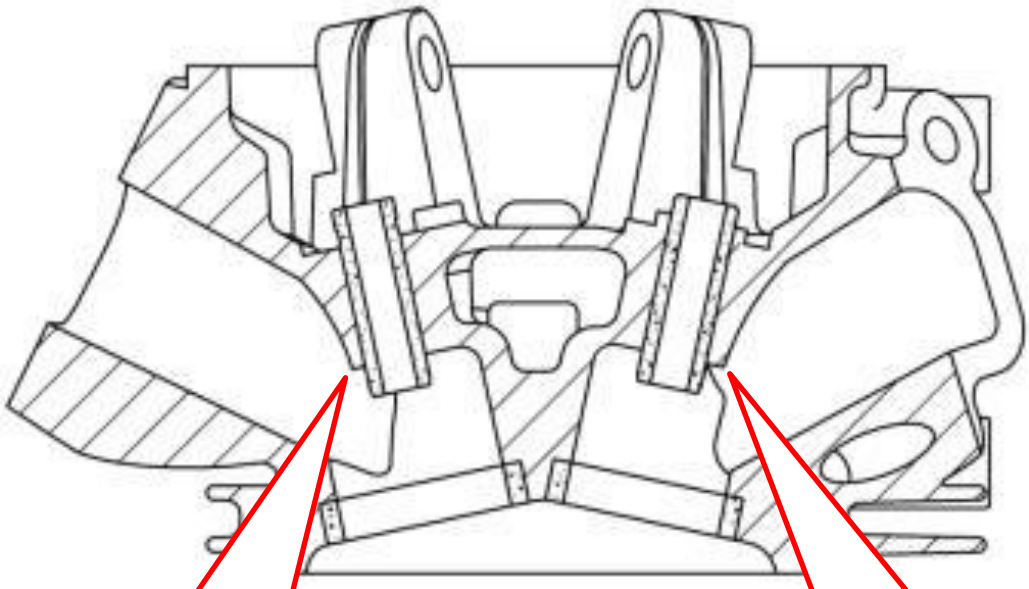

	

PHOTO OF THE CYLINDER HEAD	*PHOTO OF THE COMBUSTION CHAMBER IN THE CYLINDER HEAD*
	

... Section

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

Scrutineer's Note: Head Port Checks – **Visual Check**
Both Inlet and Exhaust Ports have been factory ported.



PORTED
Sharp edges removed

PORTED
Sharp edges removed

INLET SIDE

EXHAUST SIDE

... Section

PHOTO OF THE ROCKER ARM

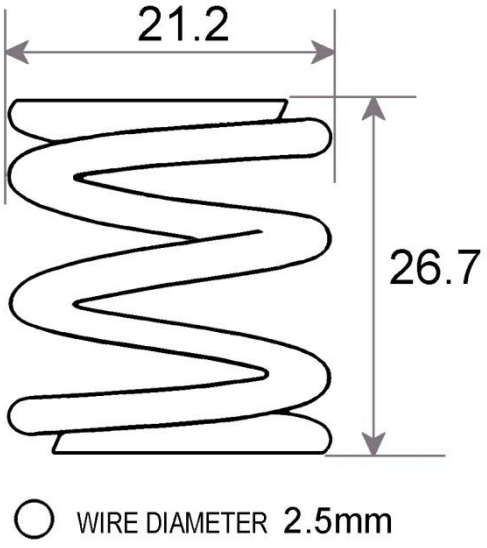
Note: *Both Inlet and Exhaust rocker arms are the same dimensions*

Scrutineer's Note: Rocker Arms – **Measure**

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

PHOTO OF THE VALVE SPRING

Note: *Both valve springs are the same dimentions*



Scrutineer's Note: Valve Springs – **Measure**

Both Inlet and Exhaust springs are the same dimentions.
Wire diameter can be measured with tappetcover removed

... Section D.1

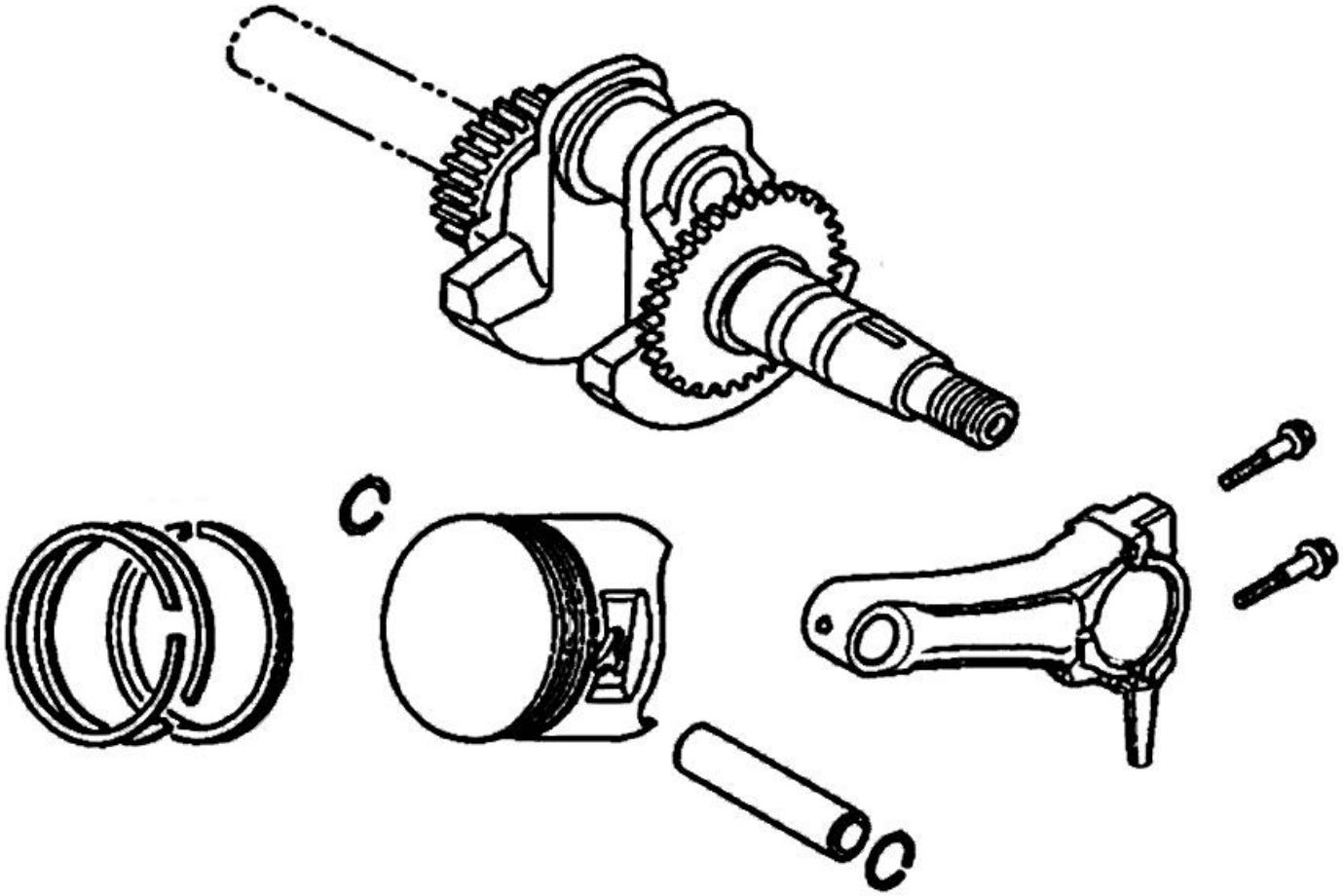
PHOTO OF THE CYLINDER FROM ABOVE

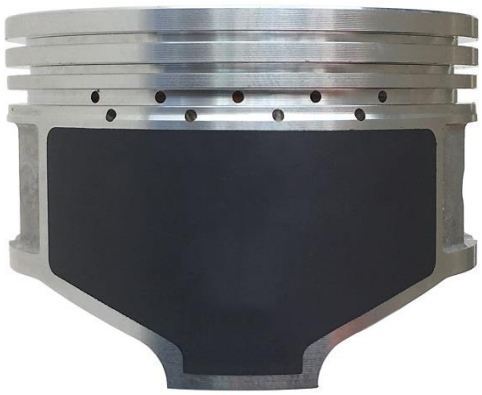
PHOTO OF THE CYLINDER FROM RH SIDE

... Section D.2

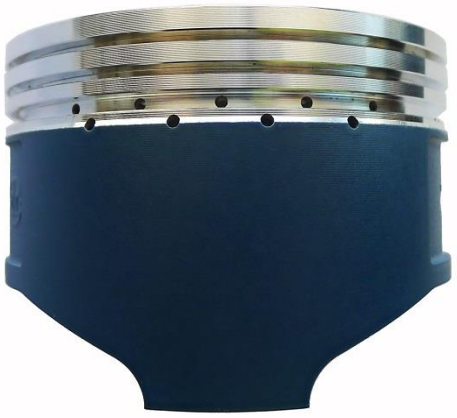
D.2 *CONROD, CRANKCASE, CRANKSHAFT & PISTON*

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





Type A



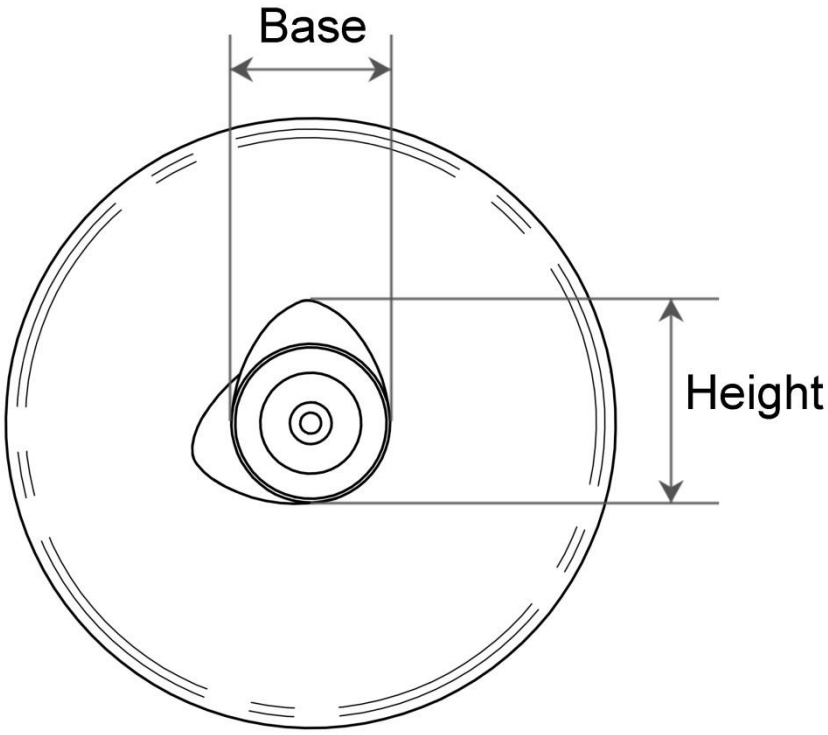
Type B

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 :

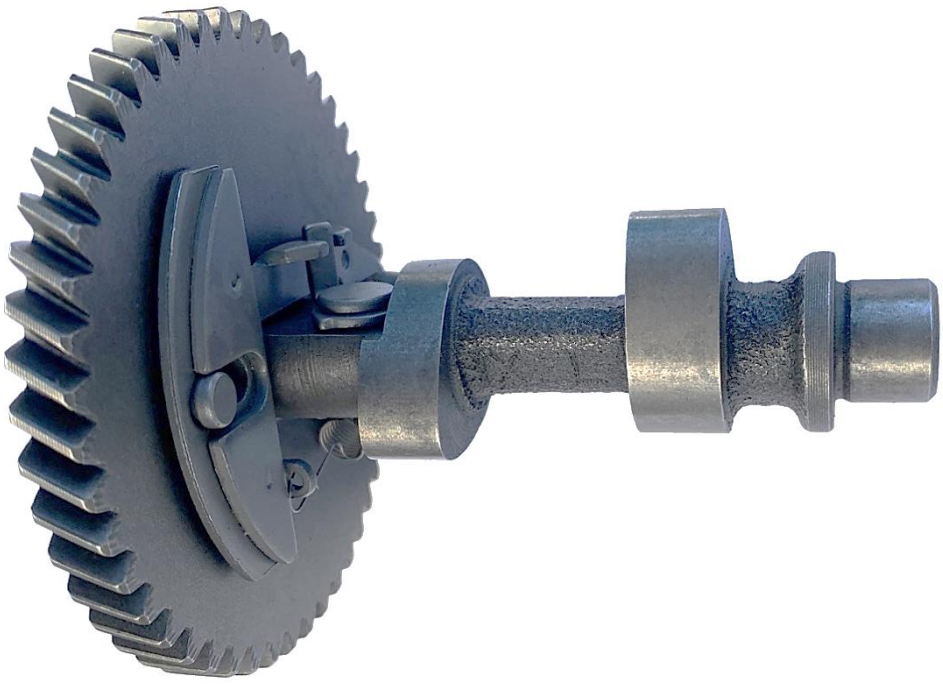
Base : **21.60**

Height : **27.80**

Exhaust Cam :

Base : **21.60**

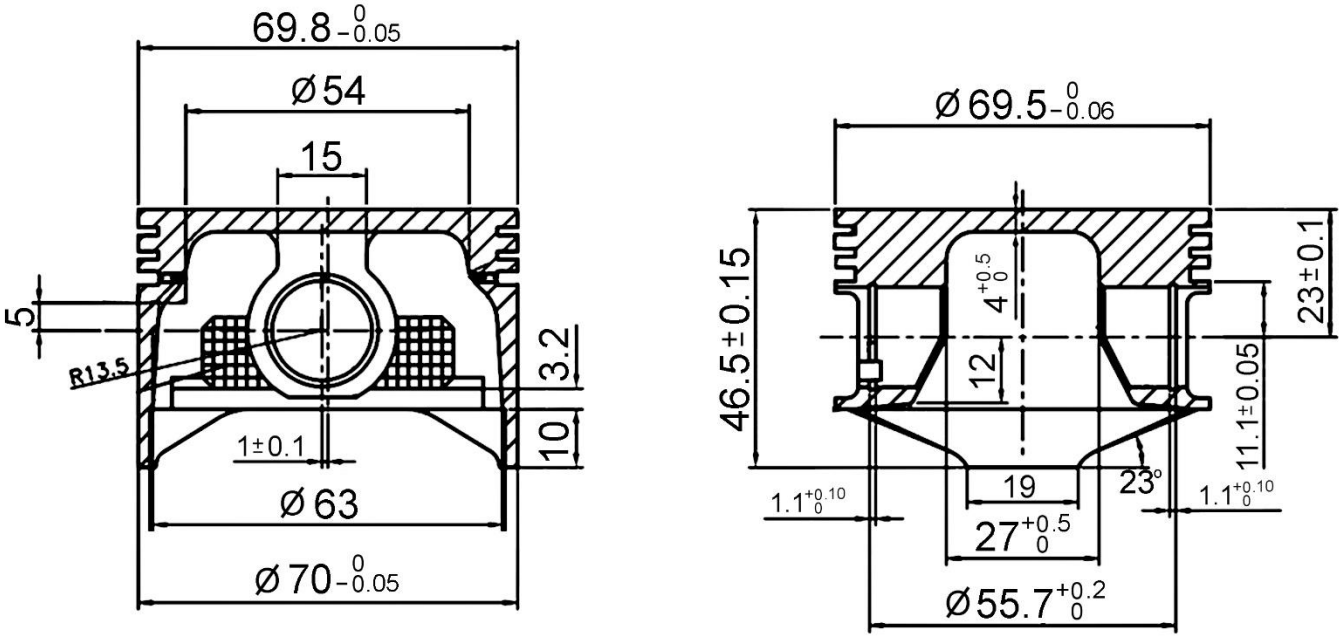
Height : **27.80**



...Section D.2

PHOTO OF THE CRANKSHAFT	*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 D.2

PHOTO OF THE INSIDE OF THE RH CRANKCASE	*PHOTO OF THE INSIDE OF THE LH CRANKCASE*

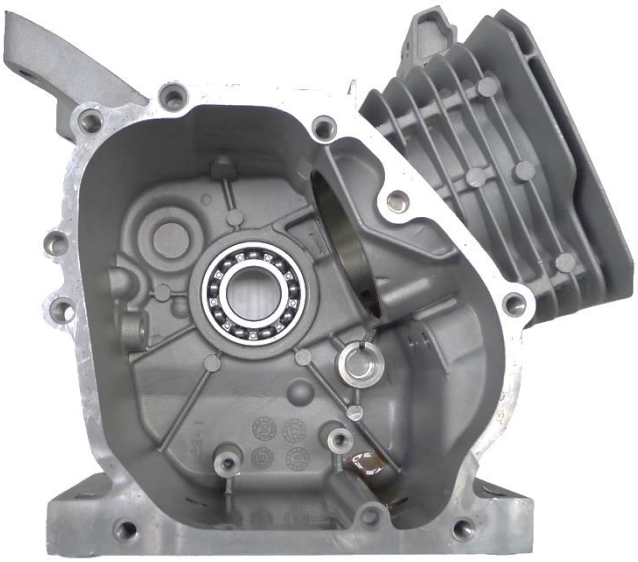
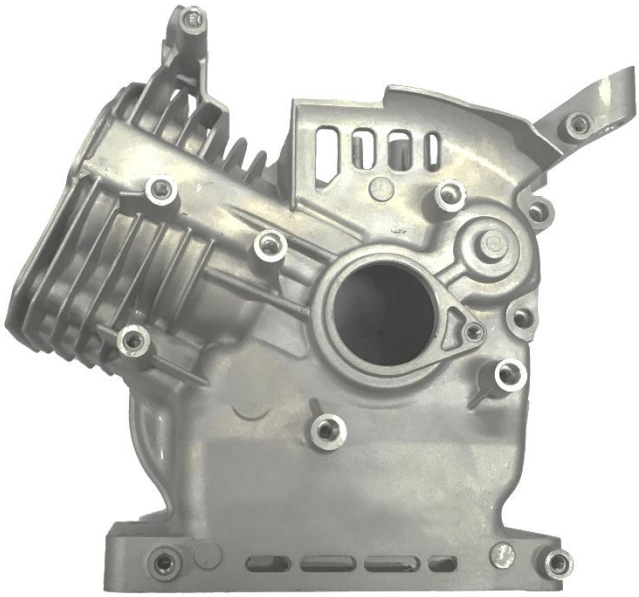



PHOTO OF THE OUTSIDE OF THE RH CRANKCASE	*PHOTO OF THE OUTSIDE OF THE LH CRANKCASE*
	

...Section D.2

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

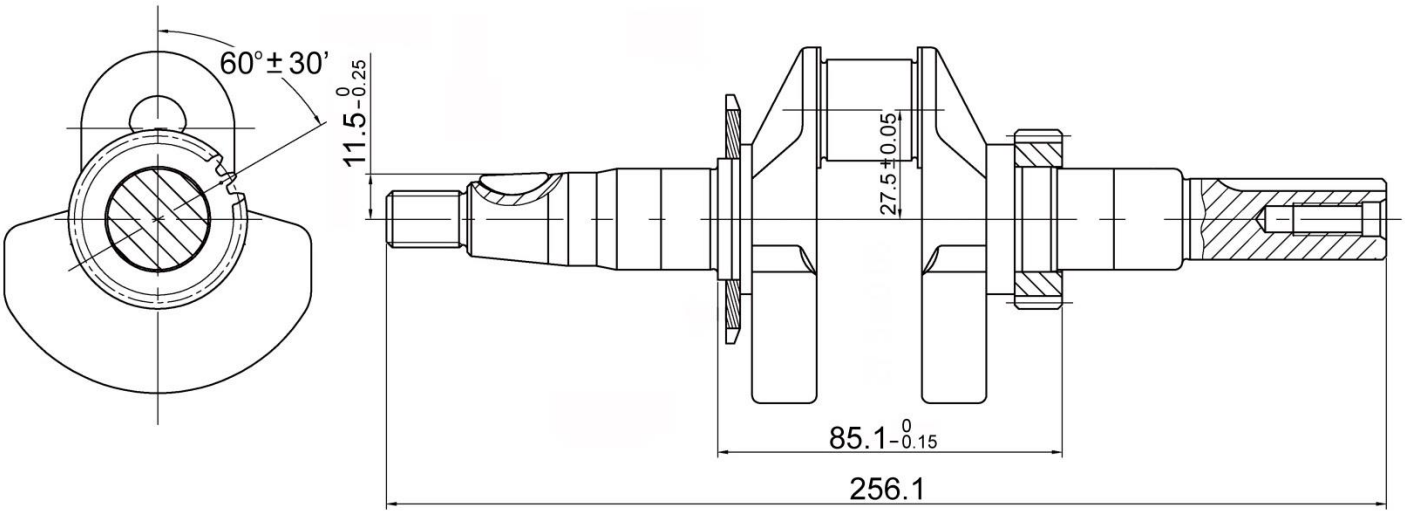
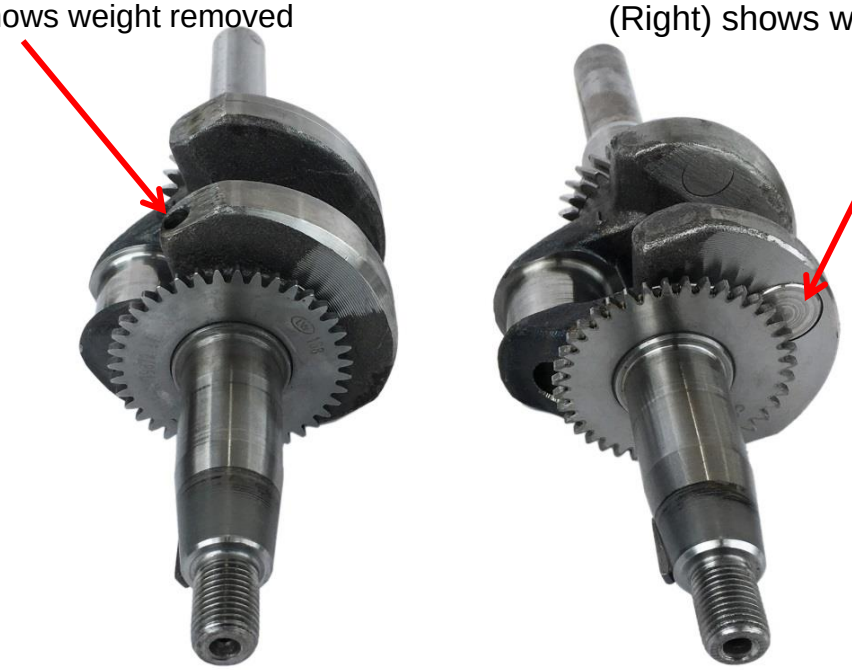


IMAGE OF THE CRANKSHAFT - UNIT SHOWING BALANCING VARIATIONS

Note: Crankshaft variation due to individual balancing requirement.

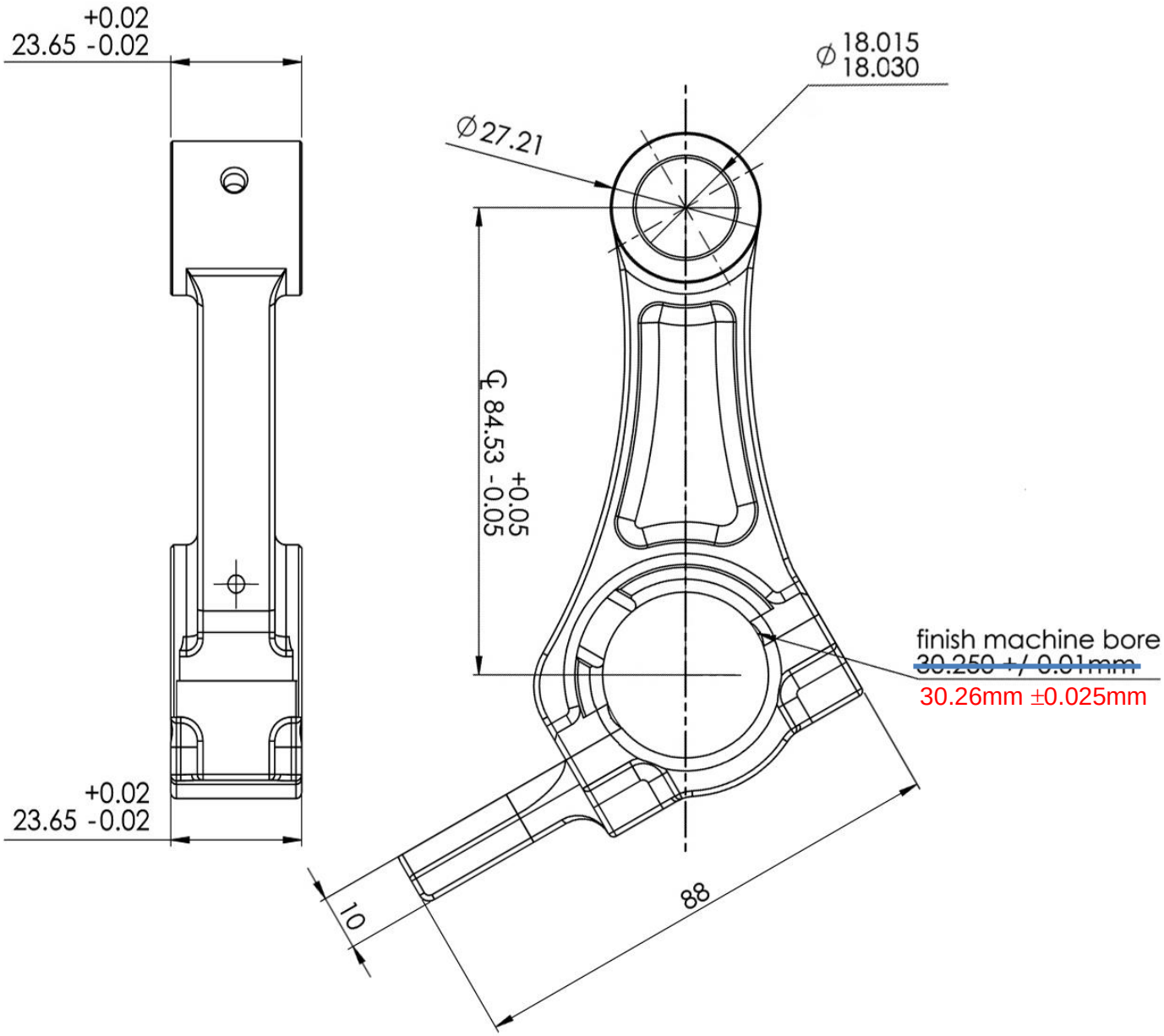
(Left) shows weight removed

(Right) shows weight added



...Section D.3

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

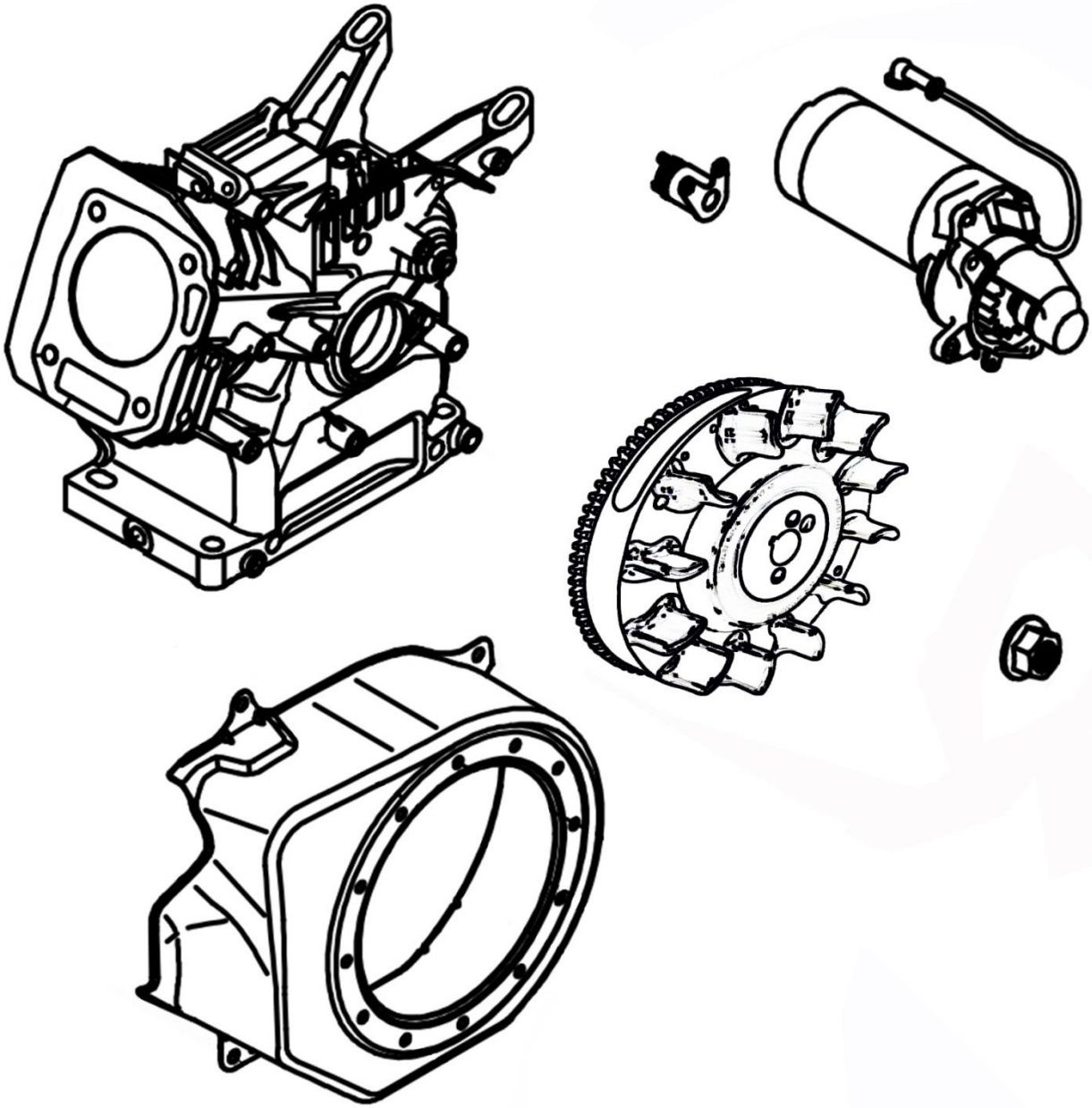


... Section D.6

D.6 *STARTER*

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

ELECTRIC START SYSTEM



Without screws or gaskets.	***The aim of the exploded drawings is to identify the principles, the functioning and the whole mechanical unit***

... Section D.7

D.7 *ELECTRICAL SYSTEM*

IGNITION SYSTEM

ADVANCE CURVE GRAPHS

- **Rev Limited 7200 rpm**
- **29° BTDC Fixed**

Part Number: TCRL7200 Coil Rev Limited 7200 rpm

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

... Section D.8

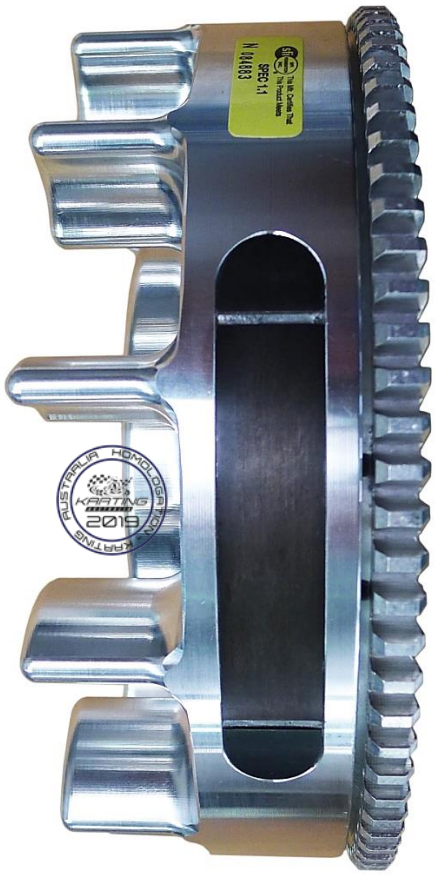
D.8 COOLING SYSTEM

FAN FORCED AIR COOLING

Either the Original or the Updated (2021) Fan are permitted for use

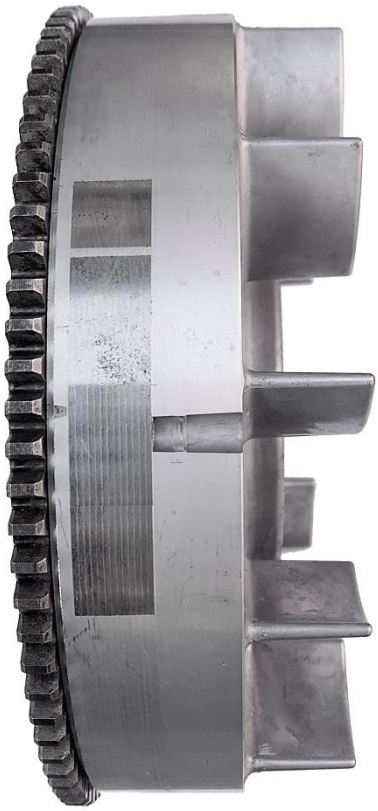
FAN DESCRIPTION – Option 1

- Number of fan blades: **12**
- Minimum weight flywheel: **1.75kg**
- TORINI Part Number: **TC6686**
- SFI Approved: **1.1 N084883**
- Outside Blade Diameter: **168mm**
- Outside Body Diameter: **169.6mm**
- Minimum blade height: **25mm**
- Max speed **12,000 rpm**



FAN DESCRIPTION – Option 2

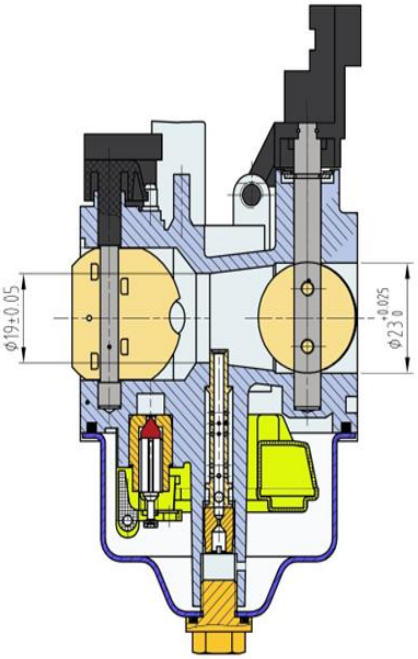
- Number of fan blades: **12**
- Minimum weight flywheel: **1.88kg**
- TORINI Part Number: **TX211900**
- Ring Gear: **Steel**
- Outside Blade Diameter: **165.5mm**
- Outside Body Diameter: **169.6mm**
- Minimum blade height: **21.5 mm**
- Max speed **10,000 rpm**



CARBURETOR DESCRIPTION

Manafacturer: **TORINI** Description: **Butterfly Carburettor, P23-19**

Part Number : **TC25SECK / TC25048**

NEW : Laser Etched Logo	Original : Cast Logo	Internal Illustration
		

The 2023 model carburettor is manufactured with a laser etched Torini Logo. Both the Original and the New Carburettors are permitted for use.
There is no performance difference between them, it is simply the external cast/laser etched markings.

Jet Kit - TX250*Supermaxx*
Part No : TX25050 (Supplied withthe following jet sizes)


Main Jet sizes :
91 > 100


Pilot Jet sizes :
40 > 43

Emulsion Tubes
Supermaxx


(2019)

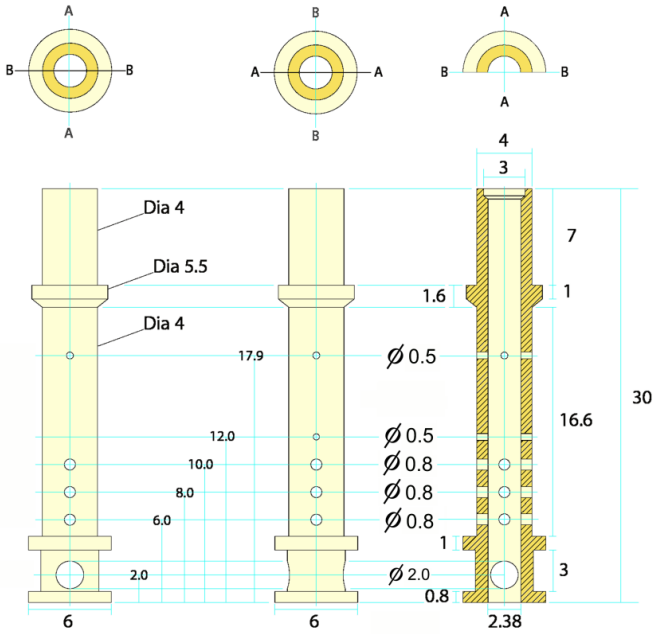

(01/09/2021)

CARBURATION

*TECHNICAL DRAWING of EMULSION TUBE – **TX250 Supermaxx***

Emulsion Tube *(Supermaxx)*

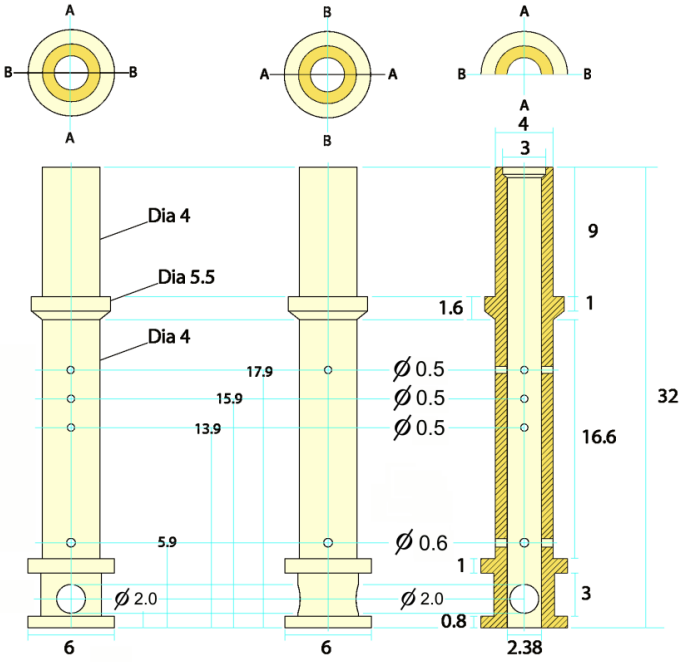
Either the Original (2017) or the Updated (2021) Emulsion Tube are permitted for use.



TORINI Emulsion Tube - 2021 version

*Part No: **TC250ET***

(01/09/2021)



TORINI Emulsion Tube - 2017 original version

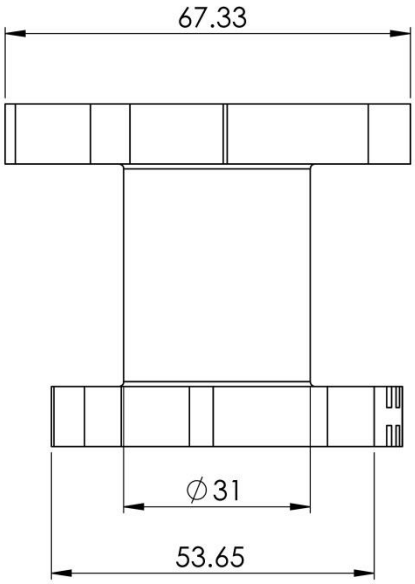
(Original)

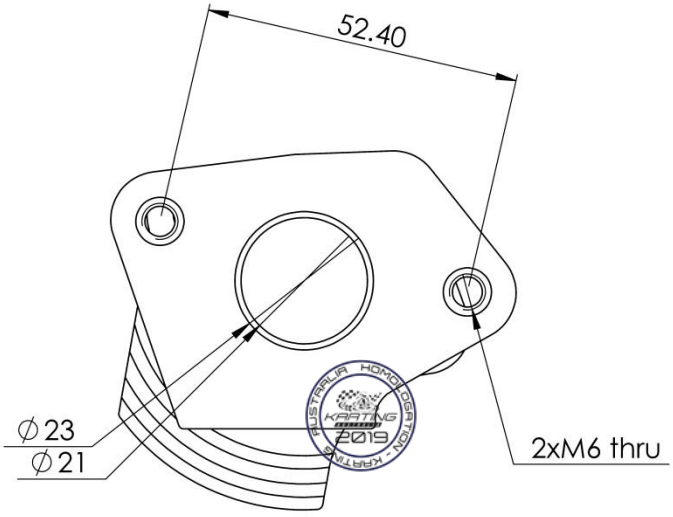
MANIFOLD

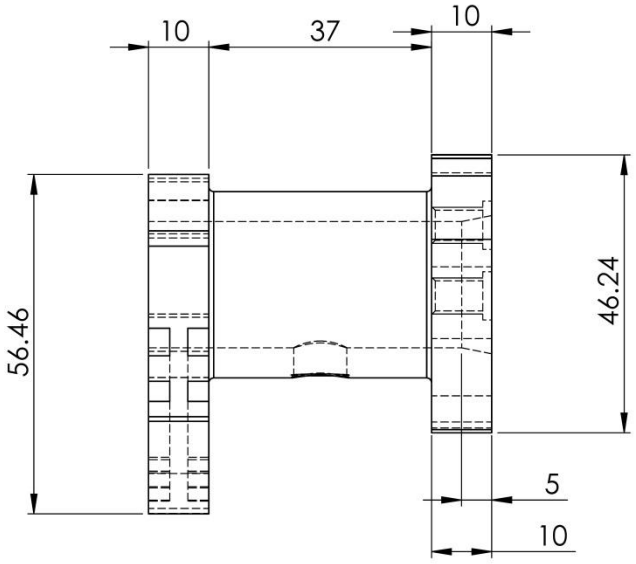
INLET MANIFOLD

INLET MANIFOLD DESCRIPTION

Manafacturer: **TORINI** Part Number: **TC25046** Description: **Inlet manifold**







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.

AIR FILTRATION

AIR FILTER SYSTEM

Description: **RACE AIR FILTER**

Manafacturer: **TORINI** Part No: **TC25057**

Description: **FOAM PRE FILTER**

Manafacturer: **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**

Manafacturer: **TORINI** Part No: **NLA**

Description: **FOAM PRE FILTER**

Manafacturer: **TORINI** Part No: **NLA**

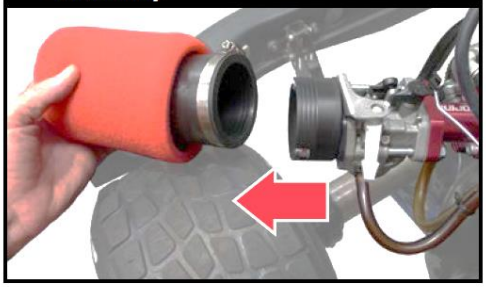
*Air Filter – **Wet Weather Kit***

Description: **Wet Weather Kit** Part No: **TC25050**

KIT INCLUDES

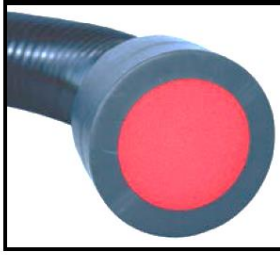
- SNORKEL WITH BUILT IN FOAM FILTER ELEMENT
- WATER REPELLENT FILTER SOCK
- MOUNTING BRACKET
- HOSE CLAMP
- TIE STRAPS (2)

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

...Section D.5

D.5 *EXHAUST SYSTEM*

PHOTO OF THE EXHAUST MANIFOLD

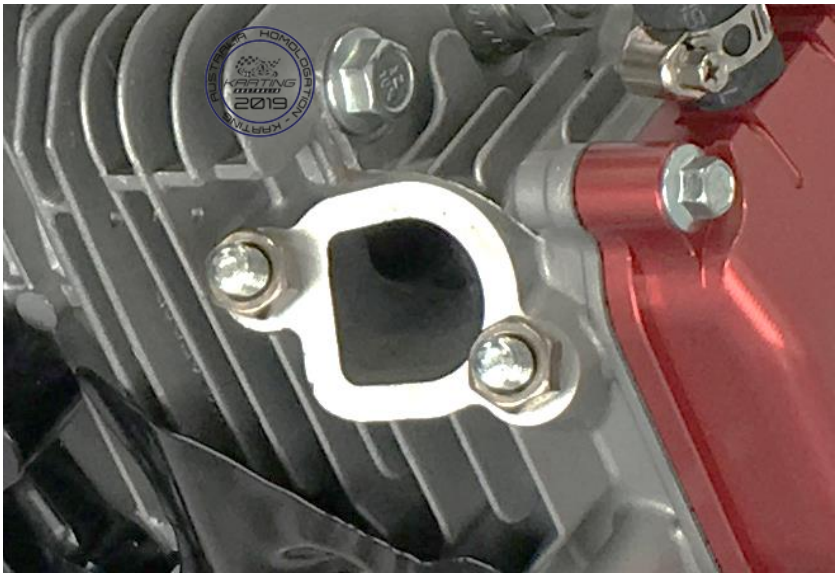


PHOTO OF THE EXHAUST

For surface protection, this muffler 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.

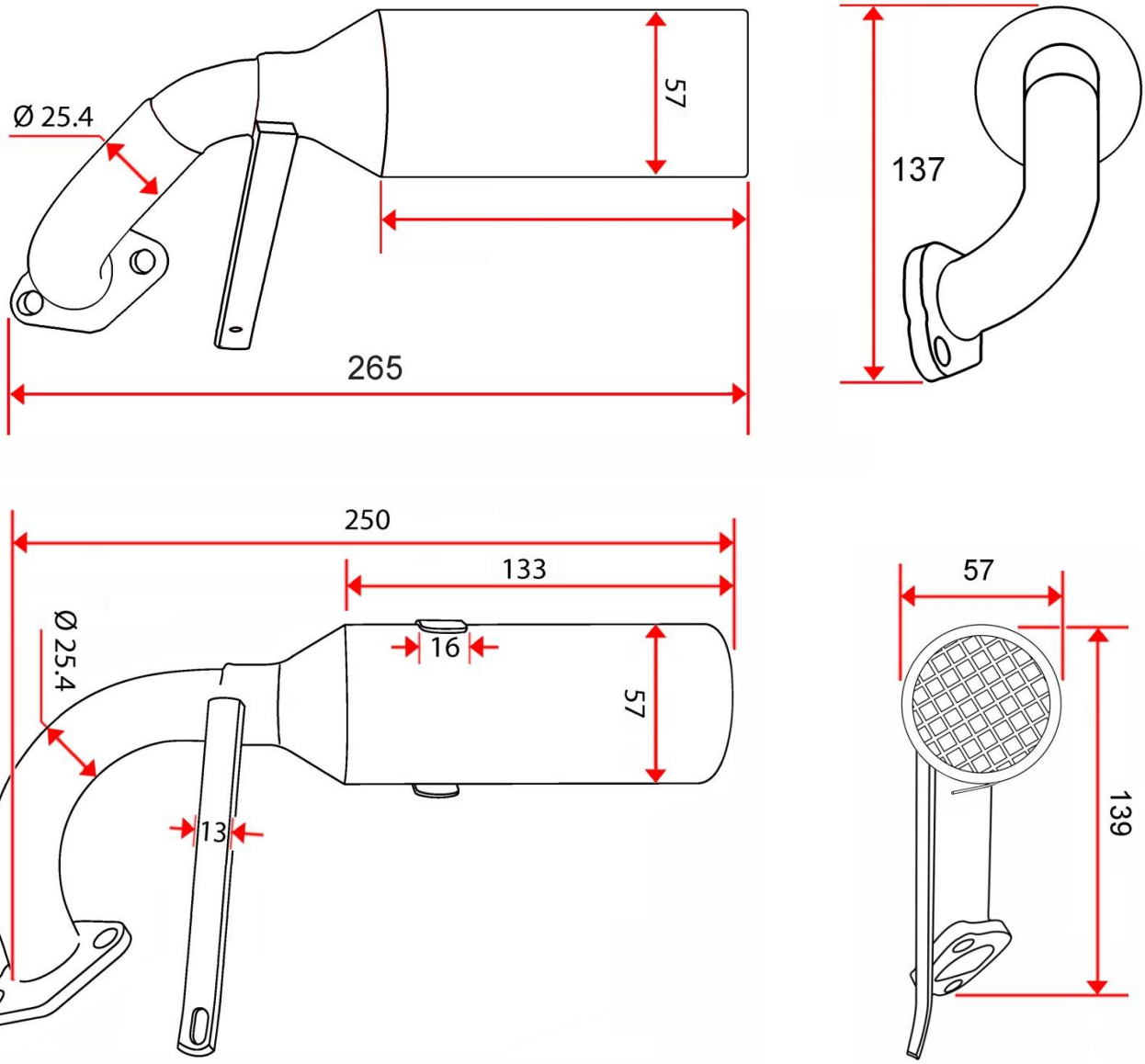
TECHNICAL DESCRIPTION OF THE EXHAUST SYSTEM		
Weight in grams	**640~660**	*Minimum*

TECHNICAL DRAWING

Either the Original or the Updated (2021) Exhaust are permitted for use

The exhaust system is designed to:

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



EXHAUST SYSTEM

TECHNICAL DRAWING

Either the Original or the Updated (2021) Exhaust are permitted for use

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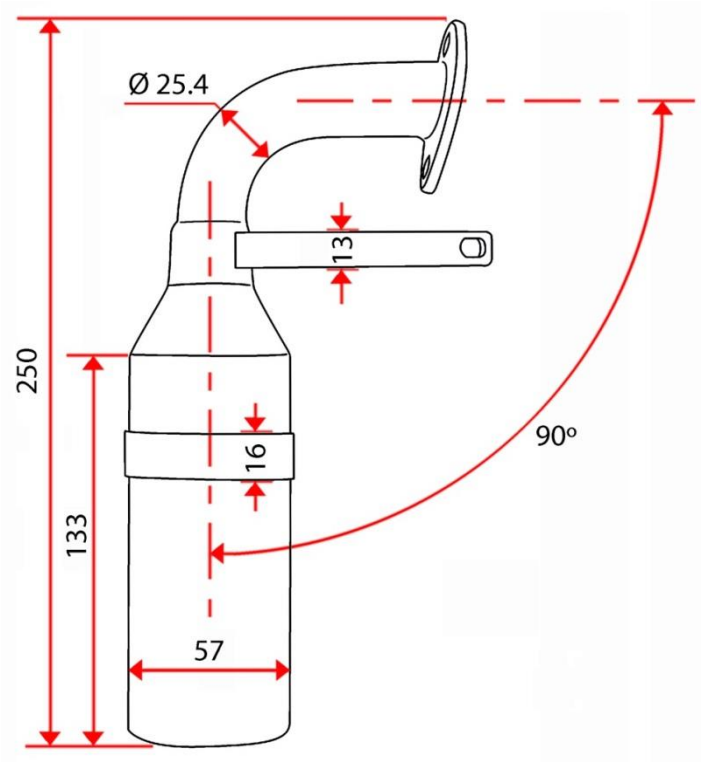
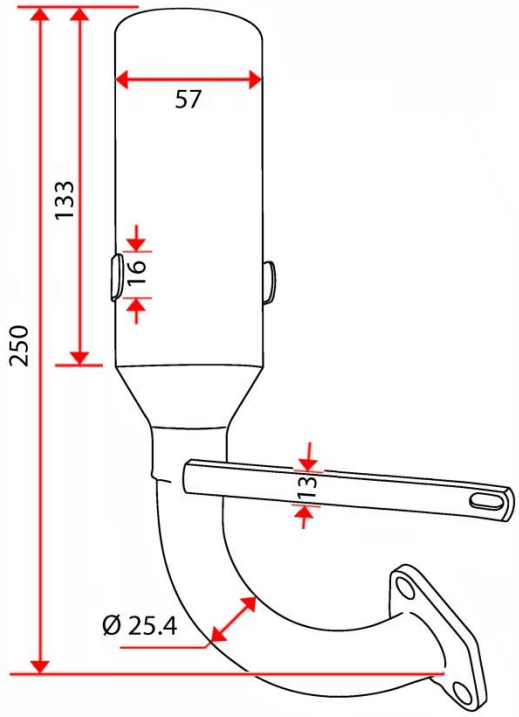
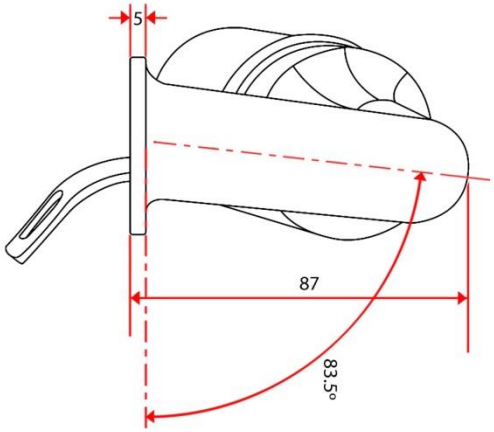
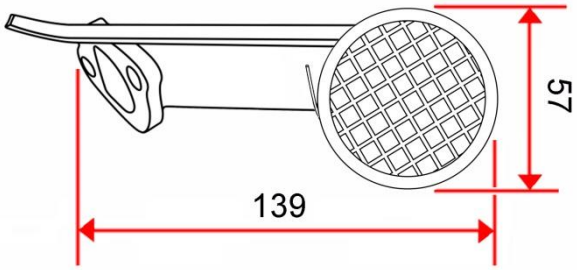
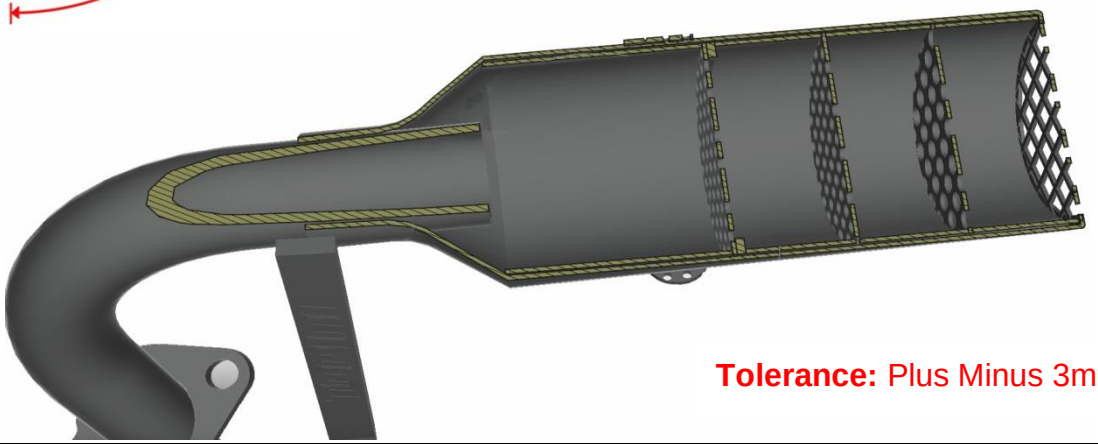










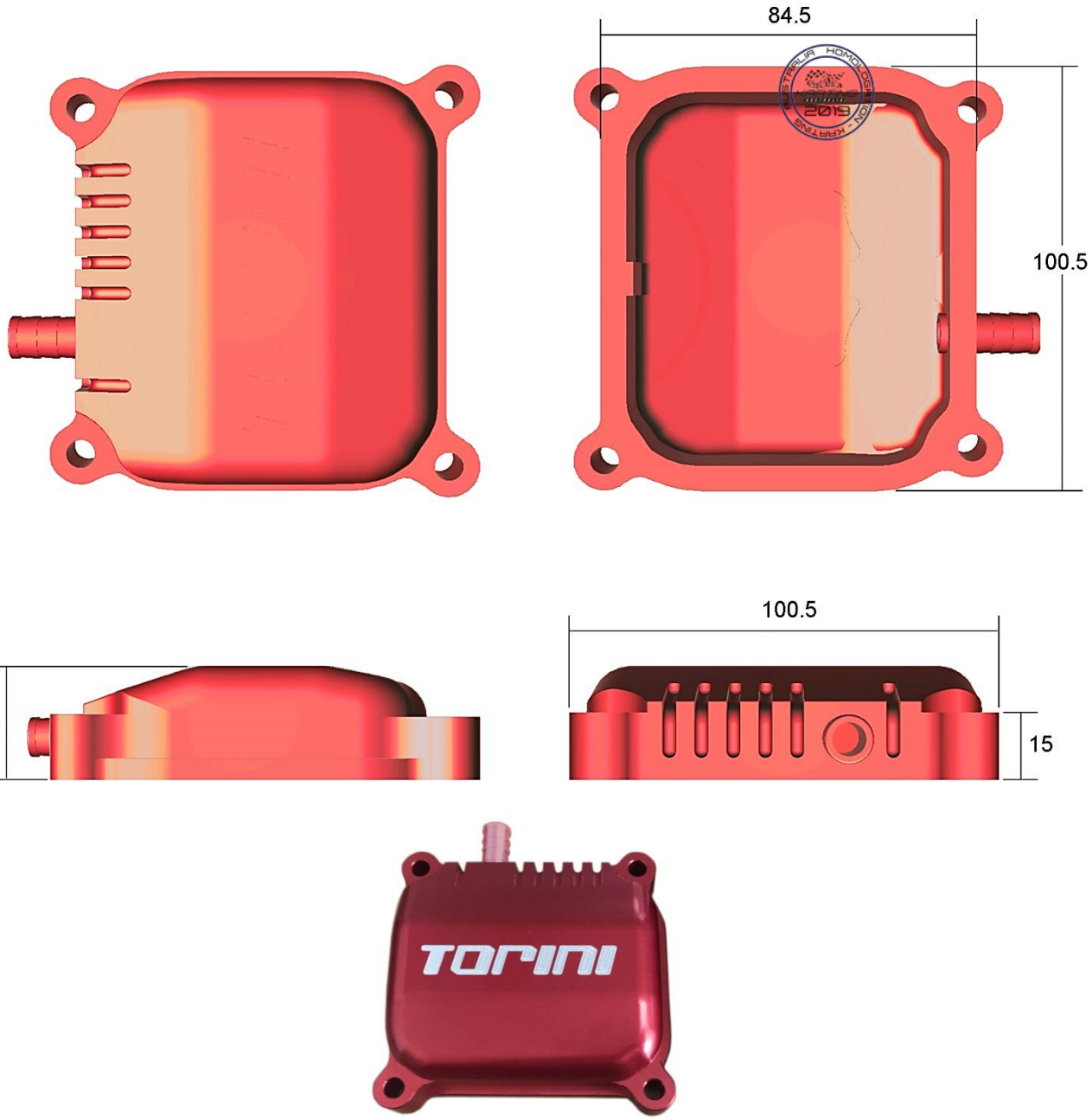
Tolerance: Plus Minus 3mm

HEAD COVER

BILLET HEAD COVER

COVER DESCRIPTION

Manafacturer: **TORINI** Part Number: **TC25018** Description: **Head Cover**



CLUTCH

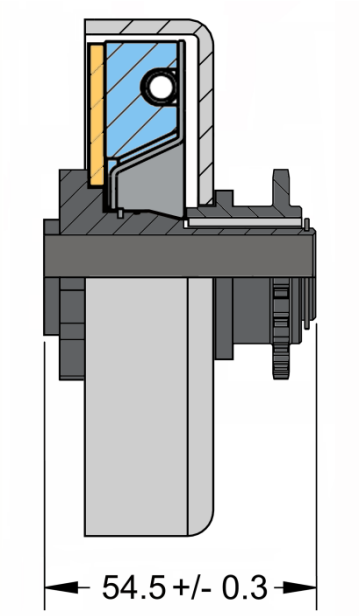
CLUTCH SELECTION

Identification Page	*Description*
 Inboard Mount  Outboard Mount	Type: Centrifical Clutch Friction shoe (2) Manafacturer: NORAM Part Number: TC-GEL19219 Supermaxx Senior
 Inboard Mount  Outboard Mount	Type: Centrifical Clutch Full metal, shoe (6) Manafacturer: TORINI Part Number: TC2300 Supermaxx Senior

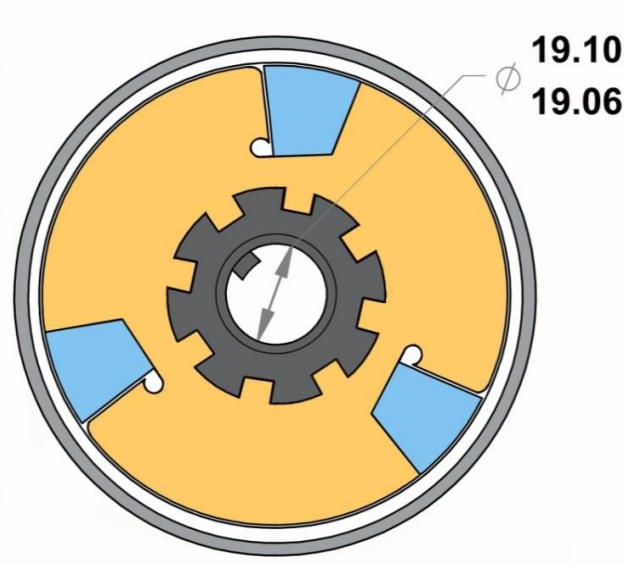
CLUTCH

TECHNICAL DRAWING (exploded view) OF THE CLUTCH ASSEMBLY

TC2300 TORINI Clutch



Sprocket Variants:
T17, T18, T19, Y20, T21



Drum Dimentions :

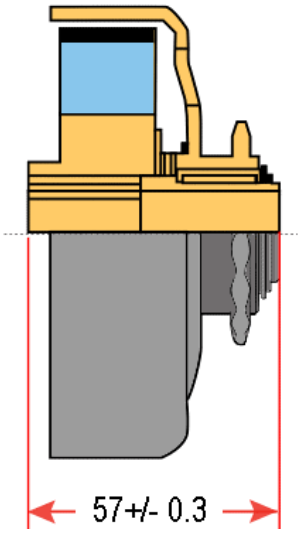
OD 107. +/- 0.2mm

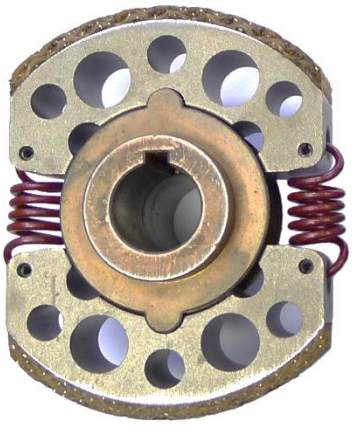
ID 101mm
(Wear limit + 1mm)

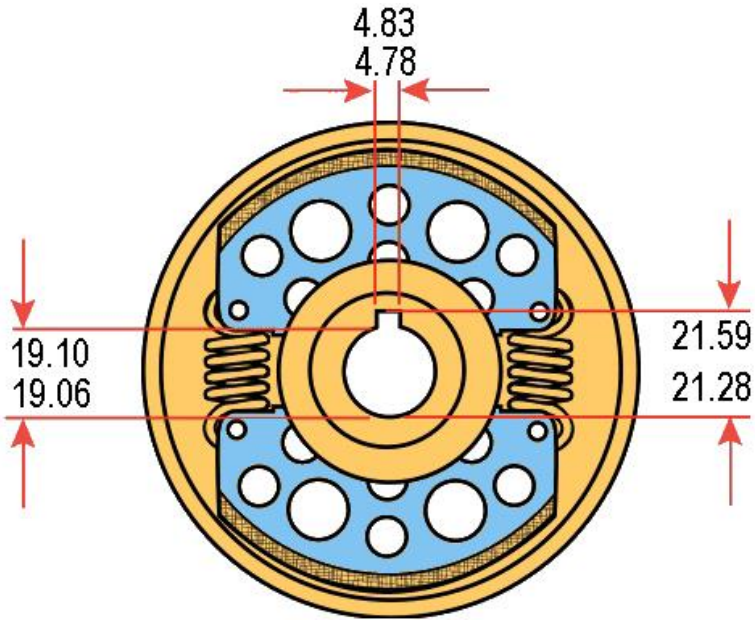
CLUTCH

TECHNICAL DRAWING (exploded view) OF THE CLUTCH ASSEMBLY

TC-GEL19219 NORAM Clutch







Drum Dimentions :

OD 101.7 +/- 0.2mm

ID 95mm
(Wear limit + 1mm)

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

...Section D.4

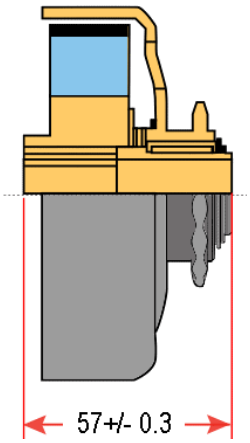
D.4 *CLUTCH*

TECHNICAL DRAWING (exploded view) OF THE CLUTCH ASSEMBLY

TC-GEL19219 High Performance Clutch

Drum Dimentions :

OD 101.7 +/- 0.2mm **ID** 95mm (Wear limit + 1mm)



Outboard Rotation

SETTING - 1

RAPID ENGAGEMENT

Outboard Rotation

SETTING - 2

MODERATE ENGAGEMENT

Outboard Rotation

SETTING - 3

SMOOTH ENGAGEMENT

Sprocket variants:

- **17 tooth, 18 tooth, 19 tooth, 20 tooth, 21 tooth**

Spring variants:

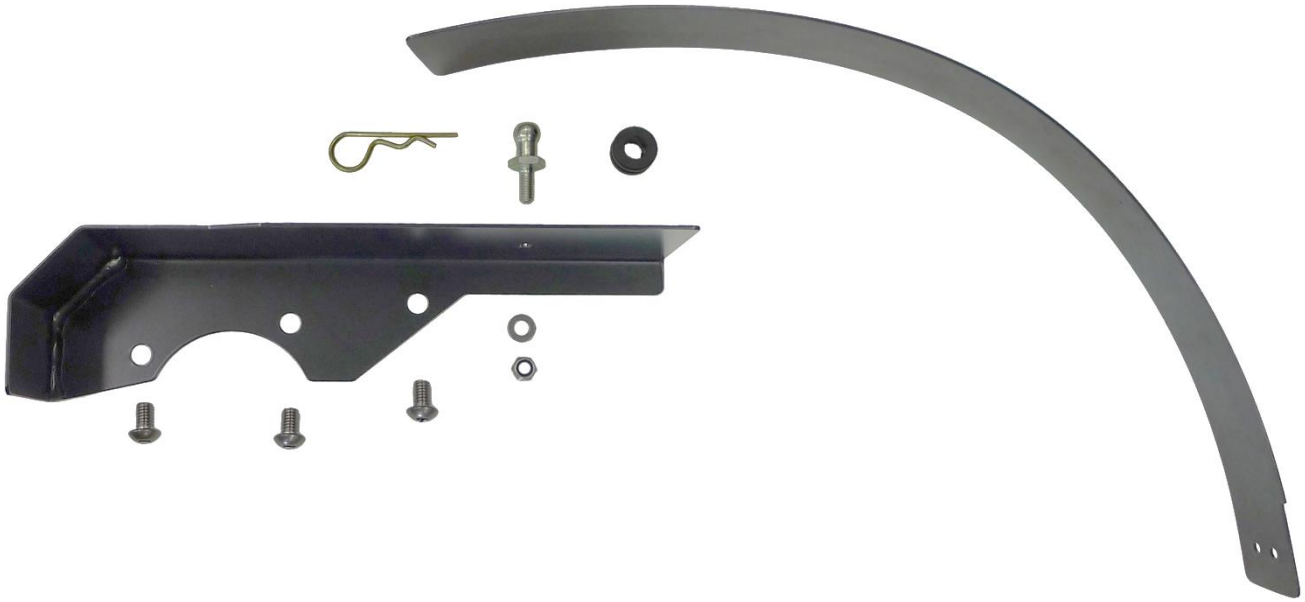
- **Red - 2200 rpm, White - 2700 rpm**

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

CHAIN GUARD

PHOTOS OF THE CHAIN GUARD ASSEMBLY

TC25080 Chain Guard - TX250 Supermaxx



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.

Engine Base Plate

ENGINE MOUNTING

Engine Adaptor Plate

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

The Engine Mount Adaptor Plate is provided pre-drilled to suit multiple karts and engine mounts.

- The plate is an integrial part of the engine assembly.
- It provides structural integrity to the crankcase under high load conditions.
- It also maintains a forward angle on the motor to ensure adequate lubrication.

(Rear)  (Front)

NOTE: It is only permitted to use the engine without the Engine Mount Adaptor Plate, provided a third-party engine mount that delivers the requisite ridgidness to maintain crankcase integrity under high load conditions as well as sufficient forward angle to ensure lubrication is used in its place.

A list of Torini approved third-party engine mounts (that do not necessitate the use of the Engine Mount Adaptor Plate) can be found at :
http://www.torini.com.au/index.php?dispatch=products.view&product id=25

Engine Base Plate

ENGINE MOUNTING

Additional Holes

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

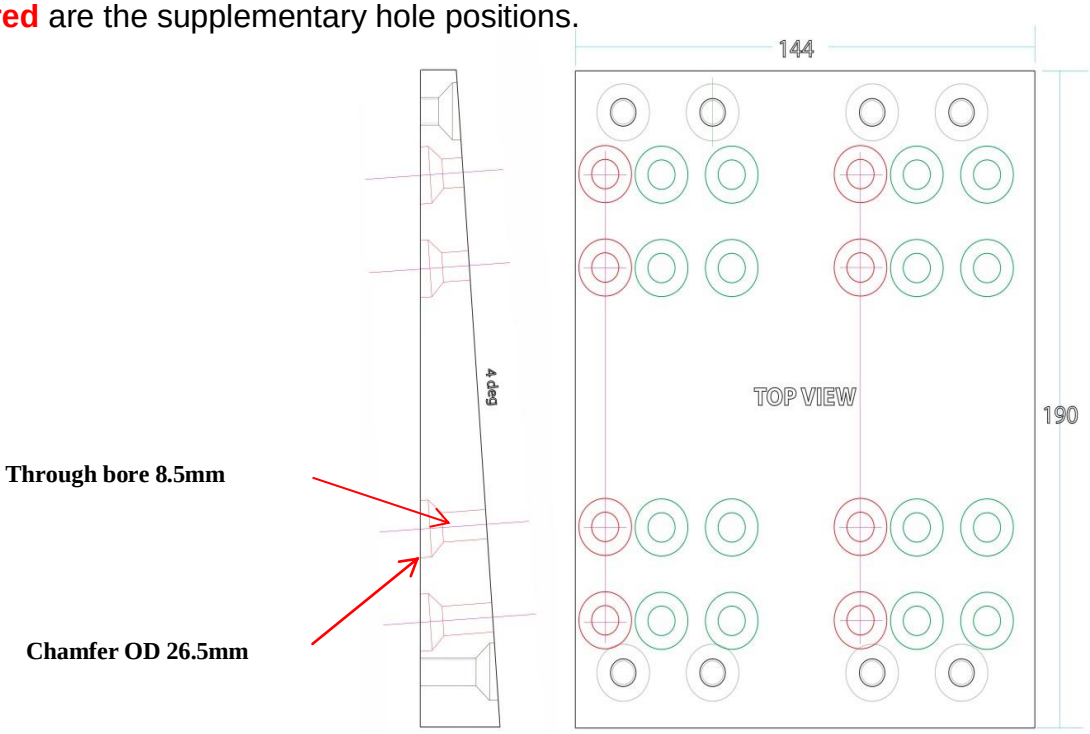
Rational: Allows for additional holes to be machined in order to mount an engine to frame.

- 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.

Details :

Where no other mounting soloution 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.

ENGING BASE PLATE

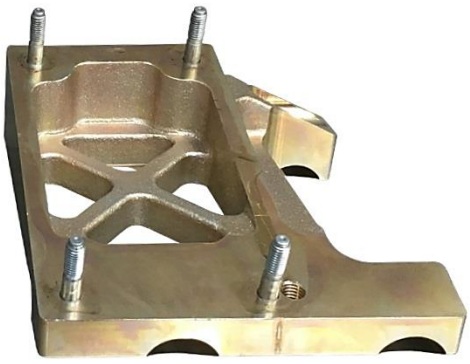
PHOTO OF APPROVED ENGING MOUNTS

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

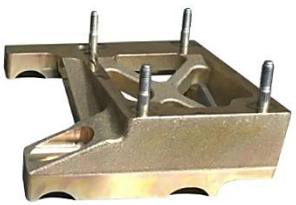
a) The Odenthal 8 degree 4-cycle EZ Set slider mount

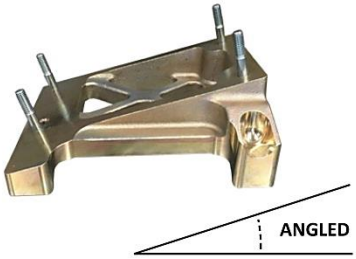
b) The CRG038N Small Offset Mount & CRG038M Large Offset Mount

SMALL OFFSET ENGINE MOUNT
P/N: CRG038N



LARGE OFFSET ENGINE MOUNT
P/N: CRG038M





CRANKCASE VENTILATION

Oil Return

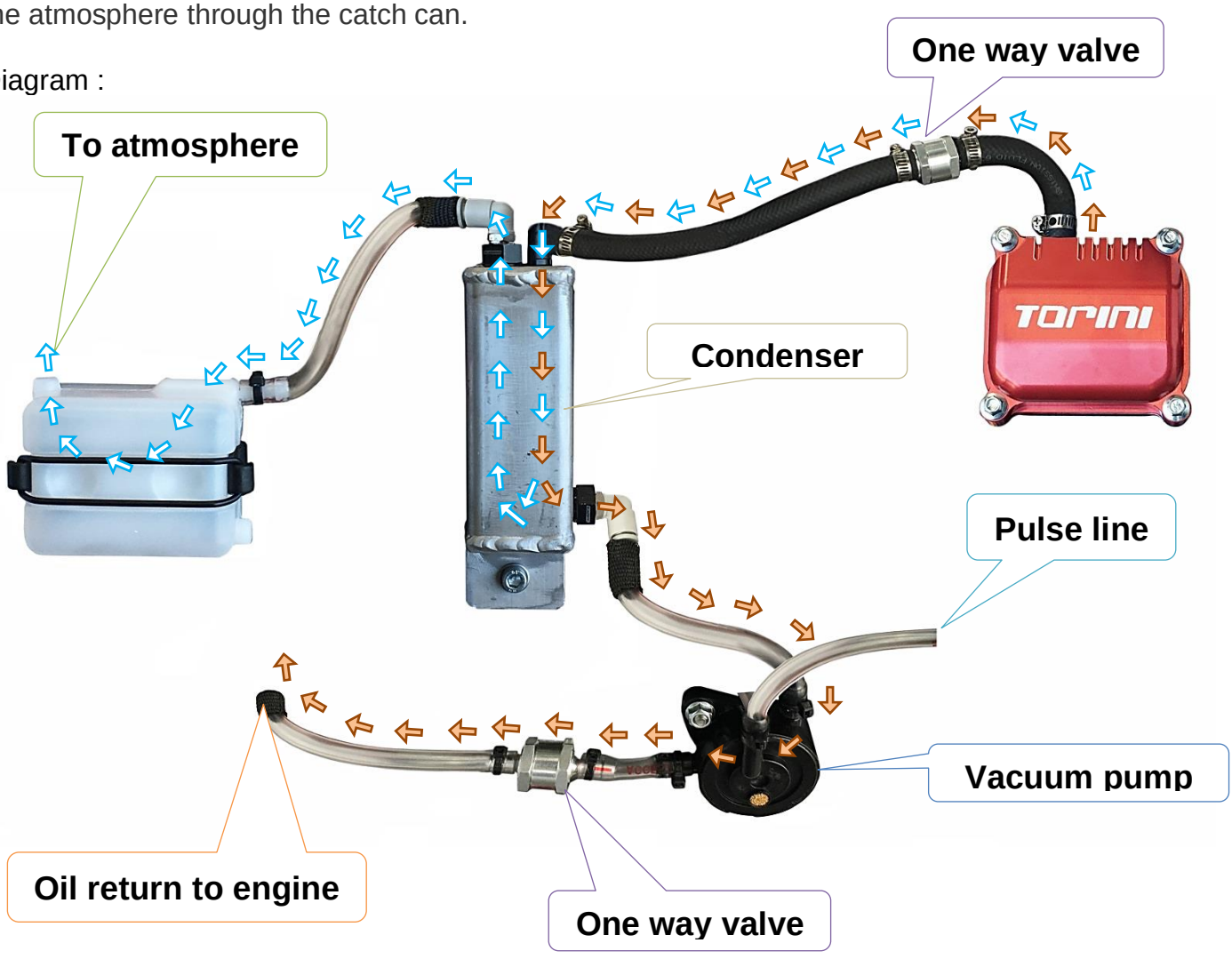
Manafacturer: **TORINI** **Oil Recovery System**

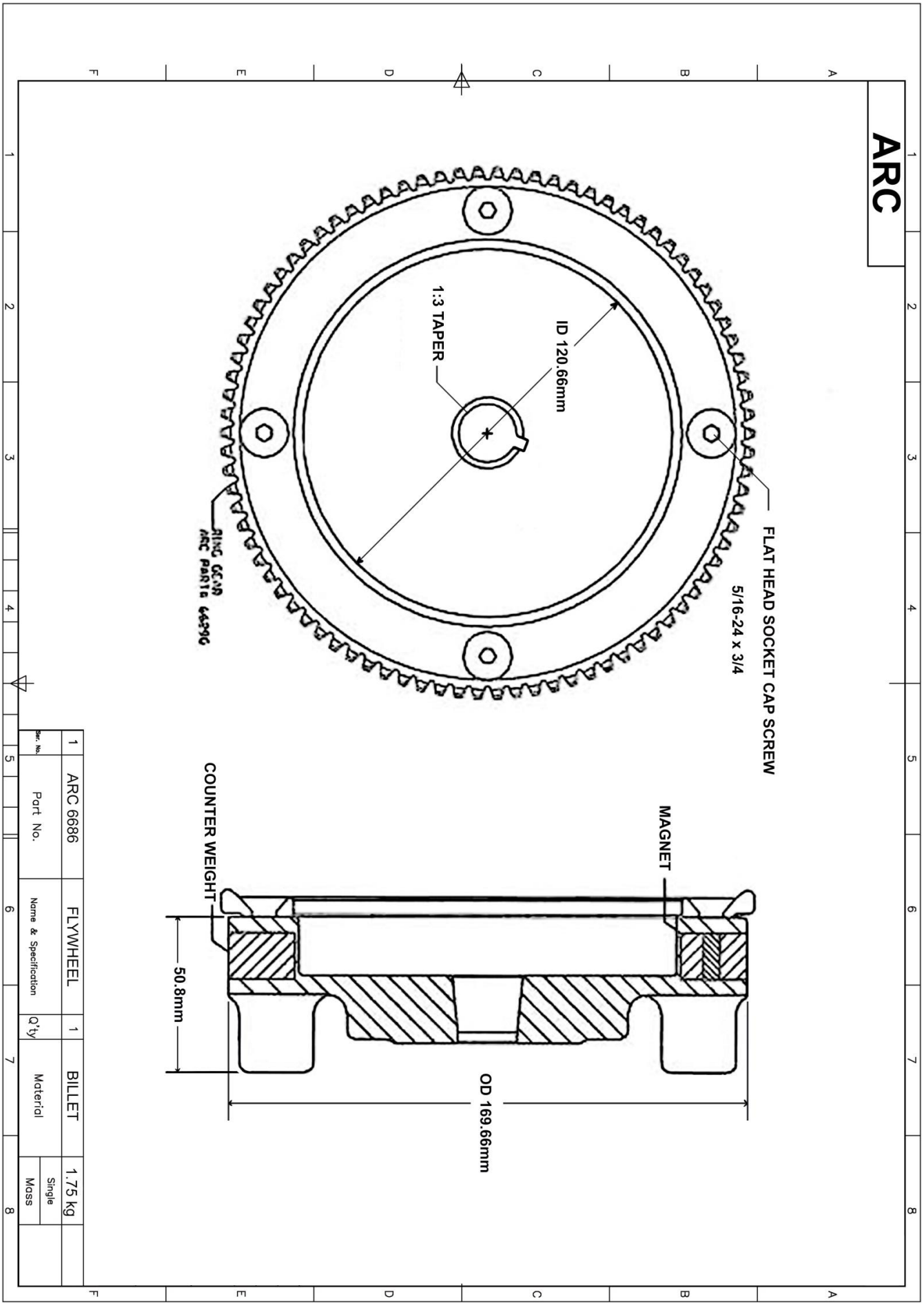
Description:

To operate the engine with minimum emmisions and maintain correct oil level over extended operating periods.

Oil vapor produced in the crankcase by operation of the engine, is channelled into a cooling chamber where the vapors are slowed and forced to make contact with baffle plates such that constituents of the vapor, which include oil, additives and detergents are condensed back into liquid and are thereby returned, to the crankcase via a vacuum pump. Unwanted vapors such as moisture are discharged to the atmosphere through the catch can.

Diagram :





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

Description: **TORINI 4s RUN-IN ENGINE OIL 1L**

Part No: **TRO10301**

Warning:

- **Run-In Period ONLY**

(Refer to Owners Manual for run-in instruction)
30-45 minutes

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

Bedding the rings in correctly will ensure peak engine performance.

Do Not use 4SRacing Oil to run engine in

Description: **TORINI 4s RACING ENGINE OIL**

500ml Part No: **TRO500**

4L Part No: **TRO4000**

Designed for:

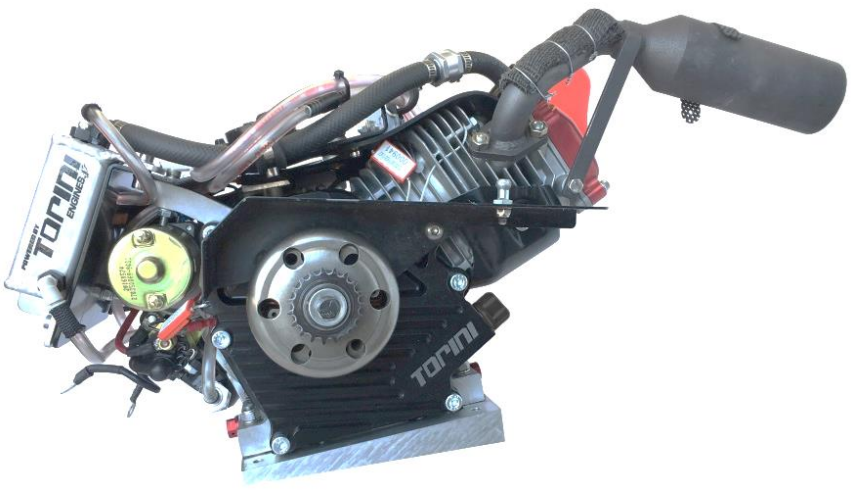
- Air cooled
- High performance
- Splash lubricated
- 4 Stroke engines
- ✓ Friction modified
- ✓ Anti foam

Can only use Torini Engine Oils – Oil capacity: 500ml

Torini race oil, has been developed over years of racing experience. It contains specially enhanced friction modifers and antifoaming agents designed for use at the high opperating tempratures of air cooled, splash lubricated 4 stroke engines, you must use the Torini engine oils.

Do not use oils designed for use in water cooled engines - Reduced engine life will occour

Note: Do not use Racing Oil prior to run in, the friction modifiers will prevent the bed in process from occouring and you will never realise the full power potential of the engine.

1-1 Product Specifications Engine model	**TX250 Supermaxx**
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 × stroke(mm)	70 × 55
Displacement (cc)	211.66
Engine oil capacity (L)	0.5
Idle speed (r/min)	1800±150
Max engine speed	7200 rpm
Starting mode	Electric
Lubrication mode	Splash
Cooling system	Fan 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 7200 rpm
Carburetor	Torini P23-19

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UPDATE LOG

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20 February 2023	Diameter of Conrod Big End	9
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