HOMOLOGATION NO.
H79

NATIONAL HOMOLOGATION FORM

KARTING ENGINE

Manufacturer	**FUJI HEAVY INDUSTRIES LTD**
Make	**SUBARU**
Model	**KX21 (DU)**
Validity of the homologation	***June 2019***
Number of pages	**34**

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.

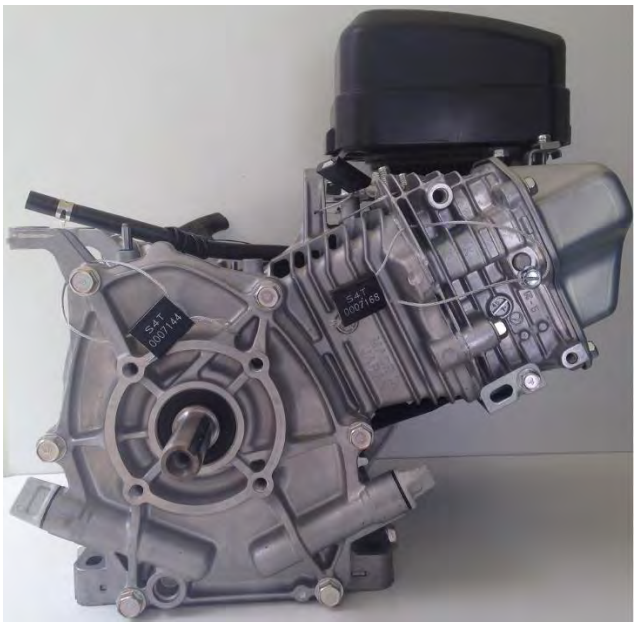


PHOTO OF DRIVE SIDE OF ENGINE

PHOTO OF OPPOSITE SIDE OF ENGINE

Signature and stamp of Karting Australia

Les Allen
National Technical Commissioner
9 August 2017

PHOTO OF DRIVE SIDE OF THE COMPLETE ENGINE

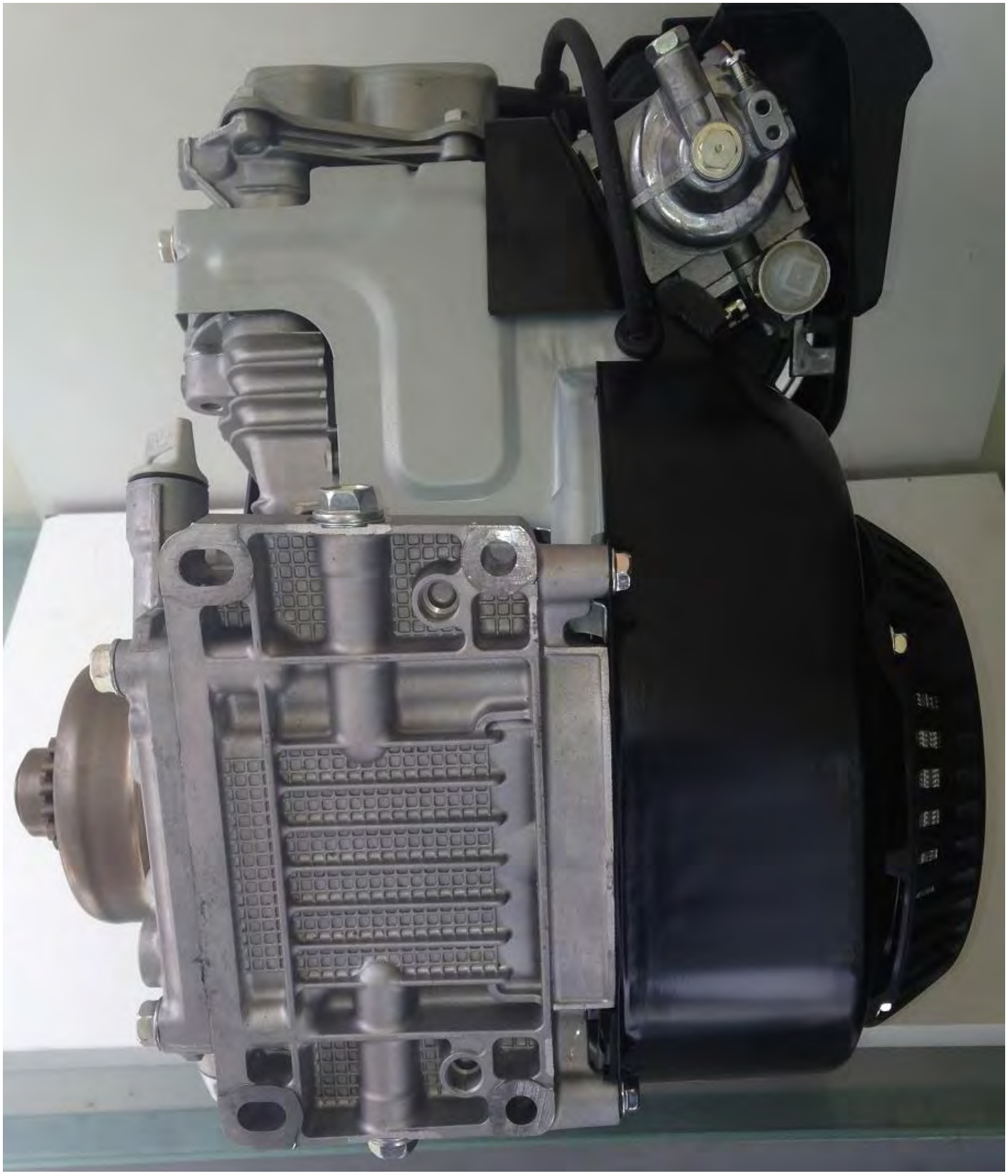
PHOTO OF OPPOSITE DRIVE SIDE OF THE COMPLETE ENGINE

PHOTO OF FROM THE REAR OF THE COMPLETE ENGINE

PHOTO OF THE FRONT OF THE COMPLETE ENGINE

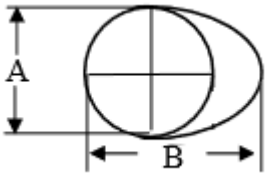
PHOTO OF THE COMPLETE ENGINE TAKEN FROM ABOVE

PHOTO OF THE COMPLETE ENGINE TAKEN FROM BELOW



TECHNICAL INFORMATION		
A	CHARACTERISTICS	
The number of decimal places must be 2 or comply with the relevant tolerance.		*Tolerances & remarks*
Cylinder		
Sleeves	**YES**	
Volume of cylinder	**211.62cm³**	<u>≤125cm³</u>
Original bore	**67 mm**	--
Theoritical maximum bore	**67.019mm**	**STD**
Theoretical maximum bore (+0.50mm os)	**67.519mm**	**(+0.05MM OS)**
Stroke	**60mm**	+/-0.1mm
Cylinder Head Height – Measured from sealing to sealing surface	**64.5mm**	
Maximum compression ratio	**10 : 1**	
Number of exhaust ports / ducts	***1***	--
Volume of the combustion chamber	***23.5cm³***	+/-0.5cc
Length between the axis of connecting rod	***91.3mm***	+/-0.1mm
Cooling System		
Cooling System	***Air cooled***	
Air admission system	***Natural fan assisted***	
Carburettor		
Number of Carburation systems	***1***	
Type	***Side draft fixed venturi butterfly***	
Make and Model	***MIKUNI (Amercian corporation)***	
Number of throttles / slides per carburettor	***1***	
Max diameter of flange hole of carburettor exit point	***22mm***	
Max diameter of venture at narrowest point	***17mm***	
Main Jet	***83.8***	
Pilot Jet	***41.3***	

Ignition		
Ignition make	***Subaru***	
Ignition model	***BM3803***	
Voltage	***12V***	
Starting System	***Recoil Starter***	
Generator	***NO***	
Ignition System	***Transistorized magneto***	
Number of Coils	***1***	
Number of condensors, distributors, contact breaker	***0,0,0***	
Number of plugs per cylinder	***1***	
Flywheel		
Minimum weight of flywheel	***2400g***	
Crankshaft		
Number of MAIN bearings	**2**	--
Diameter of bearings (External caged roller) timing case end	**52mm**	±0.1mm
Diameter of bearings (Internal caged roller) timing case end	**25mm**	±0.1mm
Diameter of bearings (External caged roller) flywheel end	**57.5mm**	±0.1mm
Diameter of bearings (Internal caged roller) flywheel end	**28mm**	±0.1mm
Minimum weight of crankshaft	**1918g with two gear press fitted (timing governor)**	minimum
Type of crankshaft bearings	**Caged roller**	
Cam shaft		
Number of camshafts	**1**	
Driving system	**Timing Chain**	
Chain Length	**572mm**	
Diameter of camshaft gear	**84mm**	
Type of valve operation	**Chain Driven overhead cam and overhead valve construction with a single cam, and**	

	cam operated decompression unit	
Cam dimensions *A*  *B*	**24mm** **29mm**	
Value opening durations		
Inlet valve opens	***20 deg BTDC***	
Inlet closes	***64 deg ATDC***	
Exhaust opens	***20 deg BTDC***	
Exhaust closes	***64 deg ATDC***	
Connecting rod		
Connecting rod centreline	**92mm**	±0.2mm
Diameter of big end	**30mm**	±0.05mm
Diameter of small end	**16mm**	±0.05mm
Cylinder Block		
Maximum Height of the cylinder block measured from the crankshaft centre axle to cylinder head gasket surface	**145mm**	
Number of cylinders	**1**	
Inlet		
Number of manifold elements	**1**	
Number of valves per cylinder	**1**	
Maximum diameter of the valves head	**28.5mm**	
Diameter of the valve stem	**5.45mm**	+/-0.5mm
Interior cooling of the valve	**NO**	
Length of the valve	**67.8mm**	+/- 1%
Minimum weight of the valve	**27g**	

Type of valve springs	**Coil Spring**	
Number of springs per valve	**1**	
Exterior diameter of springs	**21.5mm**	+/- 1mm
Max length of springs	**27.4mm**	
Number of spring coils	**5**	
Diameter of spring wire	**2.3mm**	+/-0.01mm
Valve Spring washers permitted	**Maximum 2**	
Valve Spring washer thickness	**No restriction**	
Maximum valve spring pressure with valve seated	**16PSI**	
Exhaust		
Number of manifold elements	**1**	
Diameter of outlet manifold	**22mm**	+/- 1%
Number of valves per cylinder	**1**	
Maximum diameter of valves head	**26.5mm**	
Diameter of valve stem	**5.4mm**	+/-0.5mm
Internal cooling of valve	**NO**	
Length of valve	**67.6mm**	+/- 1%
Minimum weight of valve	**26g**	
Type of valve springs	**Coil Spring**	
Number of springs per valve	**1**	
Exterior diameter of springs	**21.5mm**	+/- 1mm
Maximum length of springs	**27.4mm**	
Number of spring coils	**5**	
Diameter of spring wire	**2.3mm**	+/-0.1mm
Valve Spring washers permitted	**Maximum 2**	
Valve Spring washer thickness	**No restriction**	
Maximum valve spring pressure with valve seated	**16PSI**	

Piston		
Number of piston rings	***3***	
Min. weight of complete piston including pins, clips, rings	***190g***	minimum
Overall Height	***40mm***	
Crown to Pin	***15mm***	
Skirt to Pin	***17mm***	
Distance from gudgeon pin centre line to highest point of piston	***23mm***	*+/- 0.1mm*

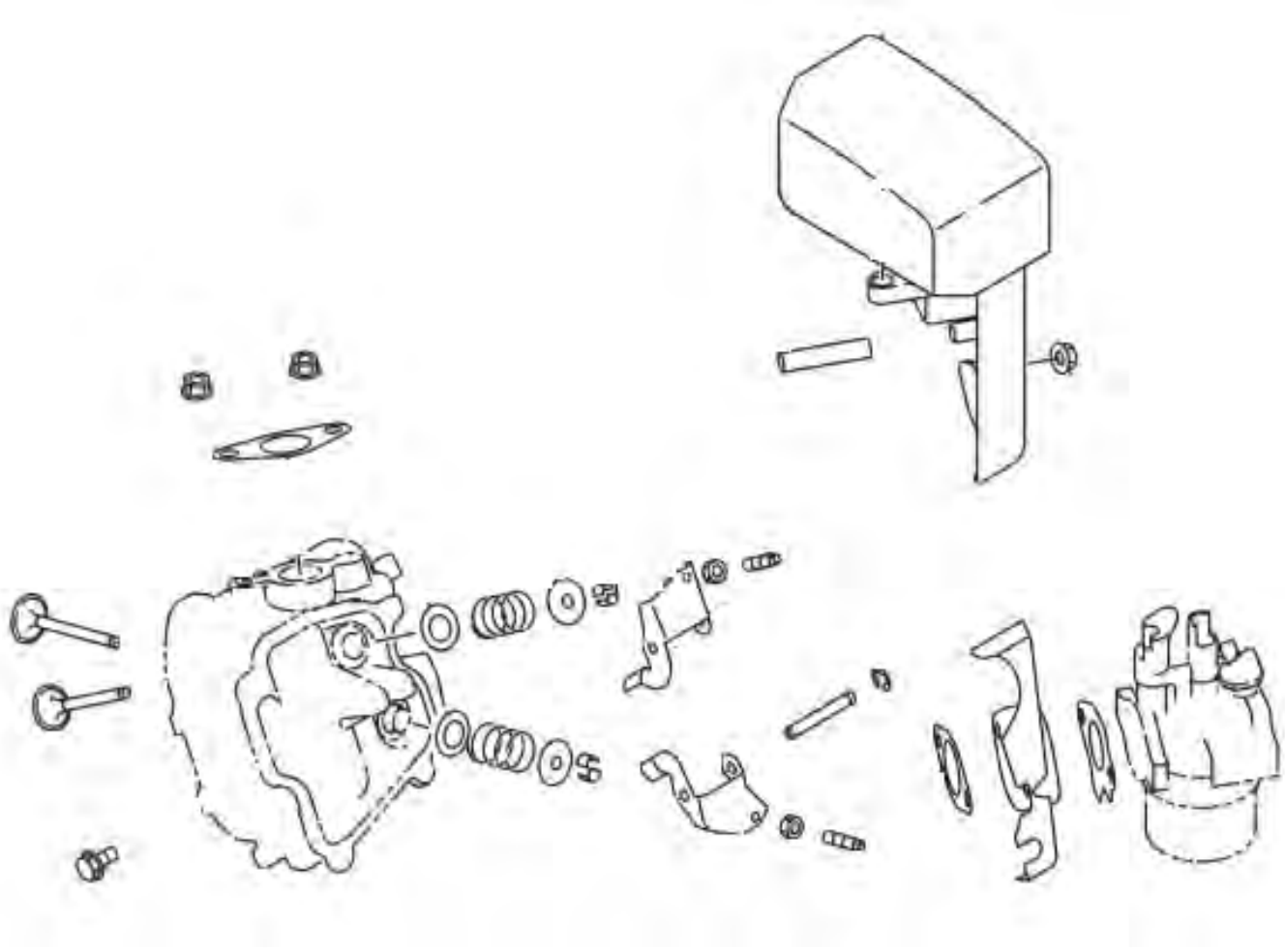
Distance +/- between the top of piston at TDC and gasket plane of the cylinder block	***0.1mm***	*+/- 0.2mm*
Gudeon pin		
Length	***48.5*mm**	±0.05mm
Diameter inside	***11mm***	±0.05mm
Diameter outside	***16mm***	±0.05mm
Material	***Steel***	
Gaskets		
Cylinder head gasket minimum thickness	***0.12mm***	
Cylinder head gasket maximum thickness	***0.23mm***	
Lubrication		
Engine Lubrication System	***Splash Lubrication***	
Number of oil pumps	**NA**	
Clutch		
NORAM GE SERIES		
Drive system	***Mechanical***	
Number of centrifugal weights	***2 shoes***	
Clutch Sprocket	***Free***	
MAXTORQUE SS		
Drive system	***Mechanical***	
Number of centrifugal weights	***6 shoes***	
Clutch Sprocket	**Free**	

C	*MATERIAL*
Cylinder head	*Aluminium Alloy*
Cylinder	*Aluminium Alloy*
Cylinder wall Sleeves	*Cast Iron*
Sump	*Aluminium Alloy*
Crankshaft	*Steel Alloy*
Connecting rod	*Aluminium Alloy*
Piston	*Aluminium Alloy*
Inlet Manifold	*Bakelite*
Flywheel	*Steel*
Exhaust manifold	*Steel*

D	*PHOTOS, DRAWINGS & GRAPHS*

D.1 *CYLINDER UNIT*

EXPLODED DRAWING OF CYLINDER HEAD, CARBURETTER AND RELATED PARTS



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

PHOTO OF THE CYLINDER BASE

... Section D.1

PHOTO OF SPRINGS, RETAINERS, WASHERS AND ROCKERS

DRAWING OF THE CYLINDER HEAD without dimensions

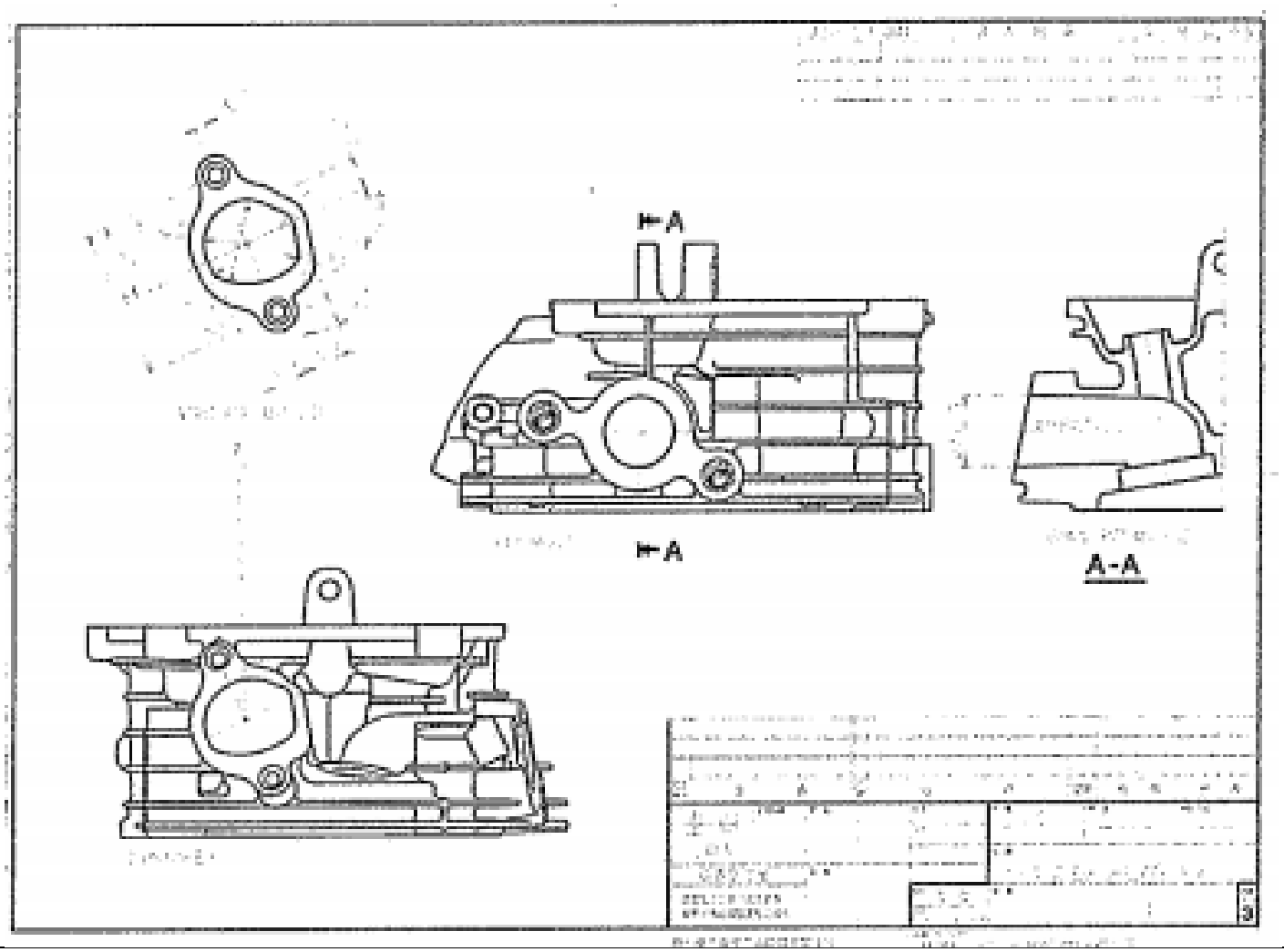
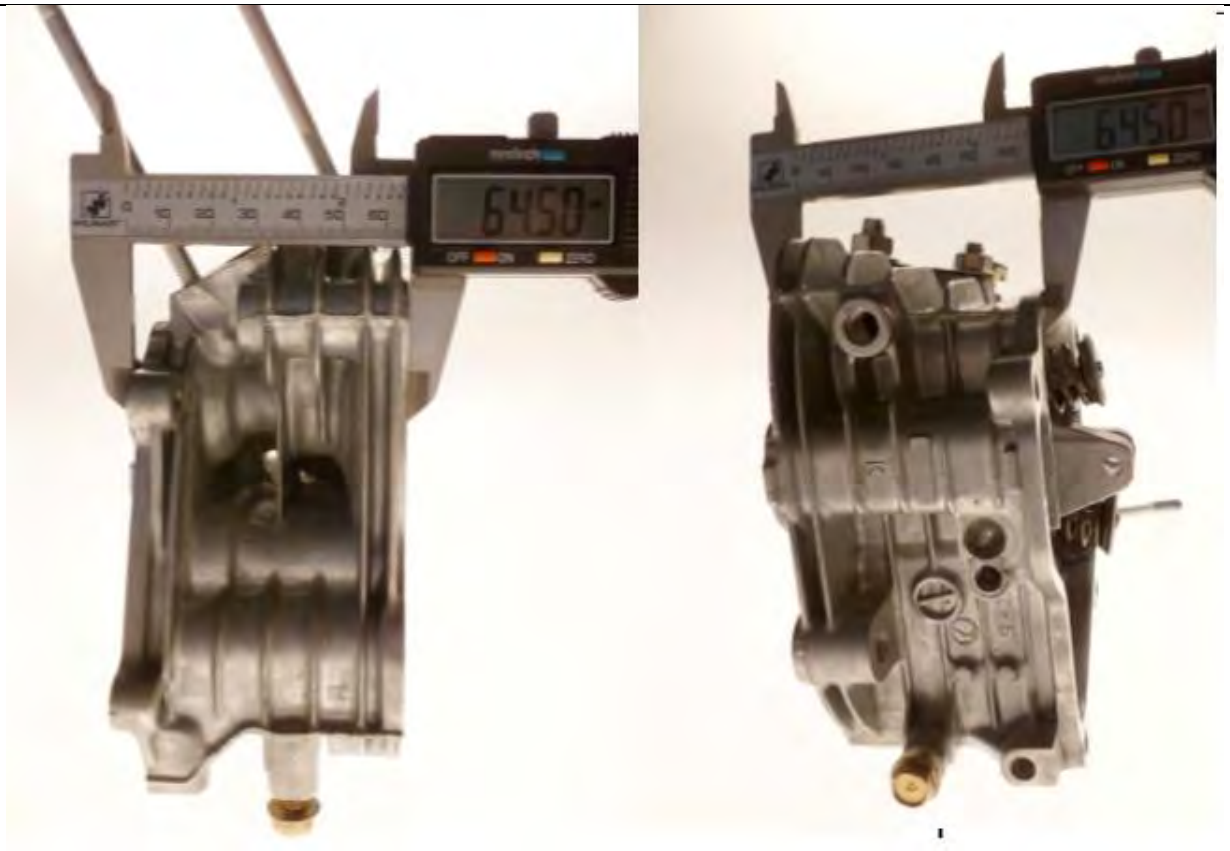


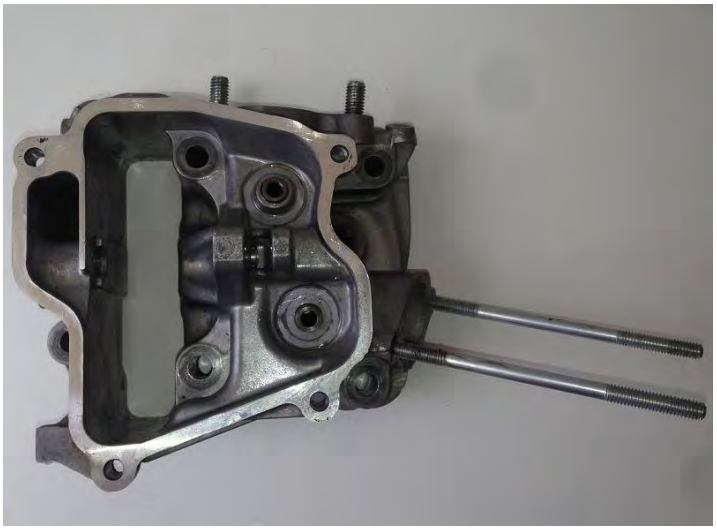
PHOTO OF THE COMBUSTION CHAMBER IN THE CYLINDER HEAD

... Section D.1

VERTICAL CROSS SECTION VIEW OF CYLINDER HEAD



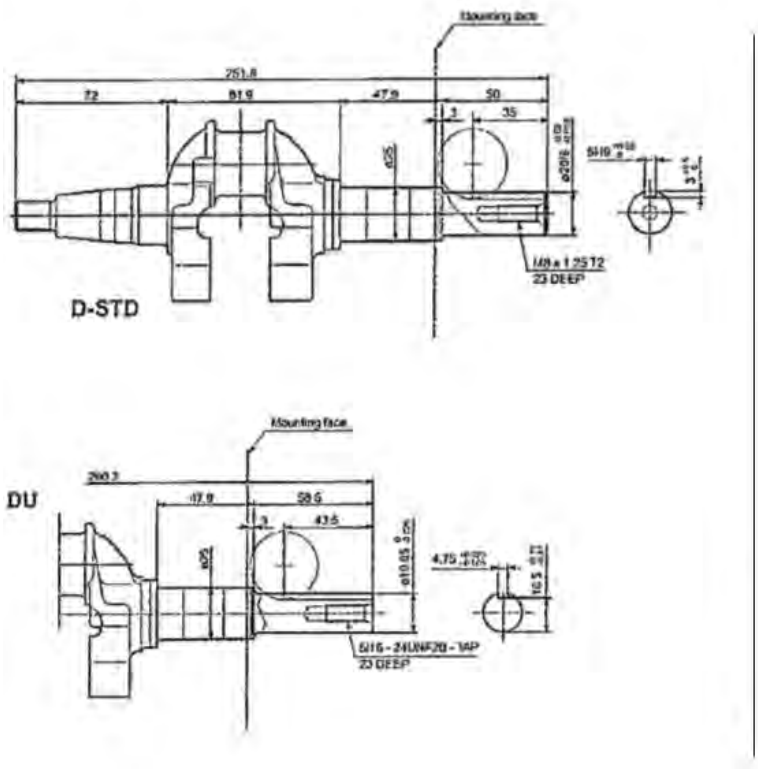
... Section D.1

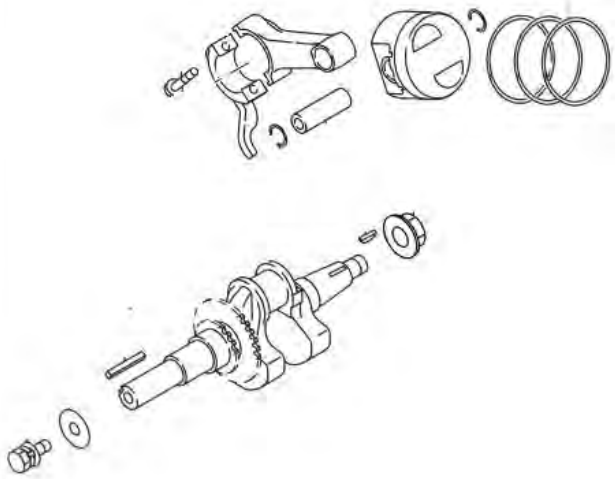
PHOTO OF THE CYLINDER FROM ABOVE	*PHOTO OF THE CYLINDER FROM CARBURETTOR MOUNT*
	

... Section D.1

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

EXPLODED DRAWING OF THE PISTON, CRANKSHAFT, CONNECTING ROD AND CRANKCASES UNIT (exploded crankshaft)





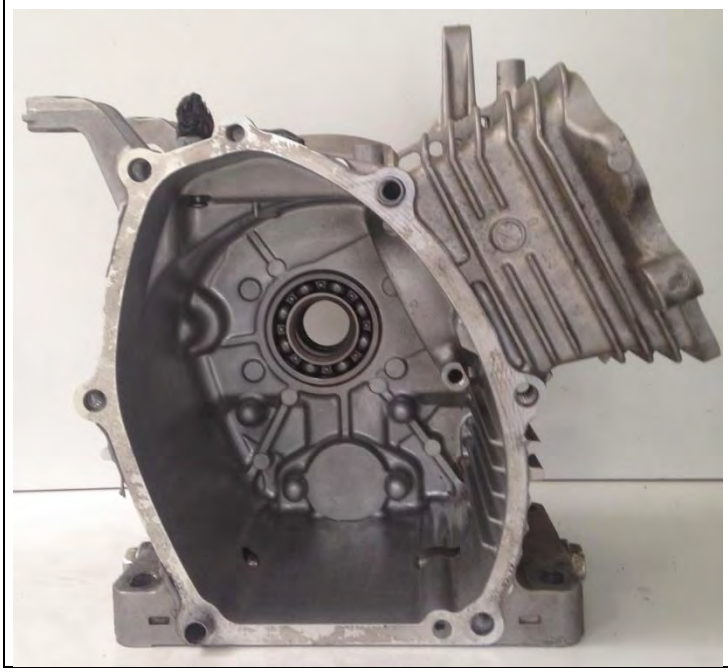
Without screws or gaskets.	***The aim of the exploded drawings is to identify the principles, the functioning and the whole mechanical unit***

...Section D.2

PHOTO OF THE CRANKSHAFT	*PHOTOS OF THE CONROD AND PISTON*
	
PHOTOS OF THE PISTON (MAIN DIMENSIONS incl. tolerances – see specifation table)	

CONNECTING ROD WITH SPLASH FEED

...Section D.2

PHOTO OF THE INSIDE OF THE CRANKCASE	*PHOTO OF THE INSIDE OF THE GASKET CASE - CRANKCASE*
	

PHOTOGRAPH OF TOP OF CRANKCASE

D.3 *INTAKE*

...Section D.3

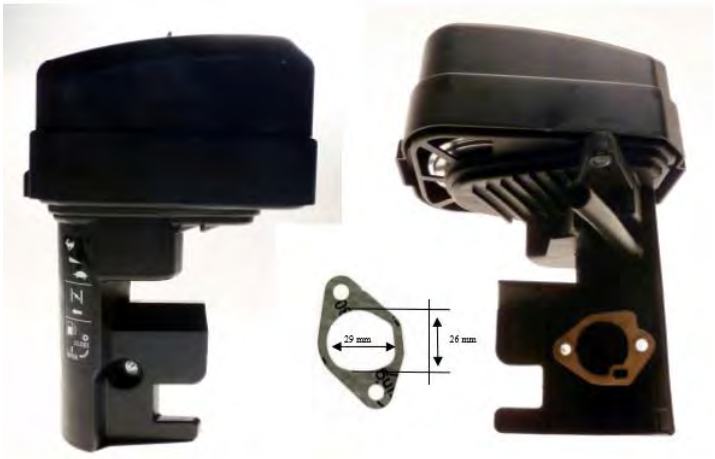
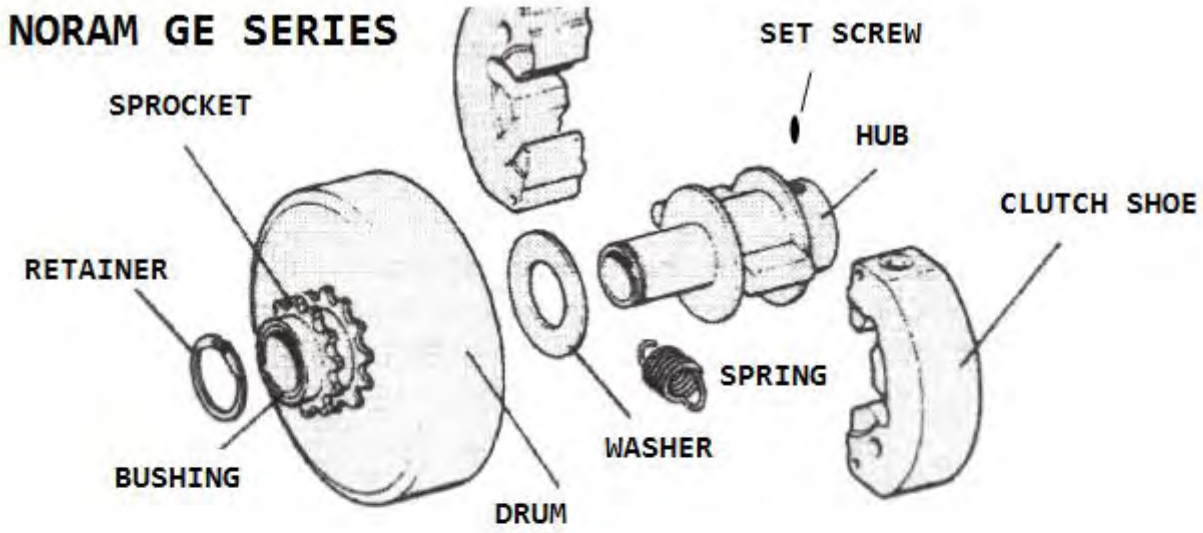
PHOTO OF AIR CLEANER ASSEMBLY	*PHOTO OF THE AIR FILTER*
	

PHOTO OF THE CAM & CAM GEAR AND DECOMPRESSION UNIT

D.4 *CLUTCH*

TECHNICAL DRAWING (exploded view) OF THE CLUTCH ASSEMBLY



NORAM GE SERIES FRONT VIEW

NORAM GE SERIES REAR VIEW

MAXTORQUE SS CLUTCH

MAXTORQUE SS TOP VIEW

MAXTORQUE SS BOTTOM VIEW

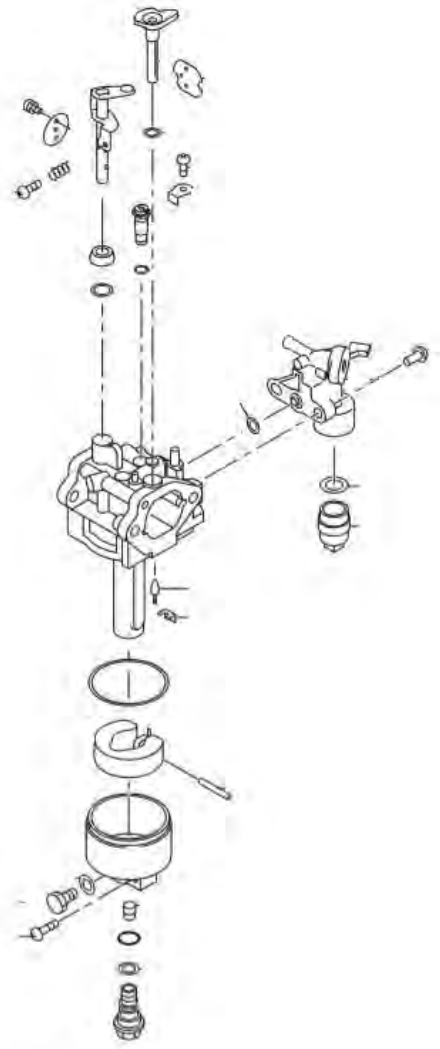
VIEW INSIDE CLUTCH BELL FROM REAR

EXPLODED DIAGRAM OF MAXTORQUE SS CLUTCH COMPONENTS

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

... Section D.4

EXPLODED DRAWING OF CARBURETOR AND COMPONENTS



PHOTOGRAPH OF CARBURETOR

D.5 *EXHAUST SYSTEM*

PHOTO OF THE EXHAUST HEADER & MUFFLER FLANGE

PHOTO OF THE COMPLETE EXHAUST SYSTEM

... Section D.5

TECHNICAL DESCRIPTIONS OF THE EXHAUST (Art. 8.9.3 of HR)		
Weight in g	------	*Minimum*
Volume in cc	------	*+/-5 %*
TECHNICAL DRAWING		
It must include all the information necessary to build this exhaust.		

... Section D.5

PHOTOGRAPHS OF THE FLYWHEEL

PHOTOGRAPH OF FLYWHEEL & FAN

FLYWHEEL TOP VIEW

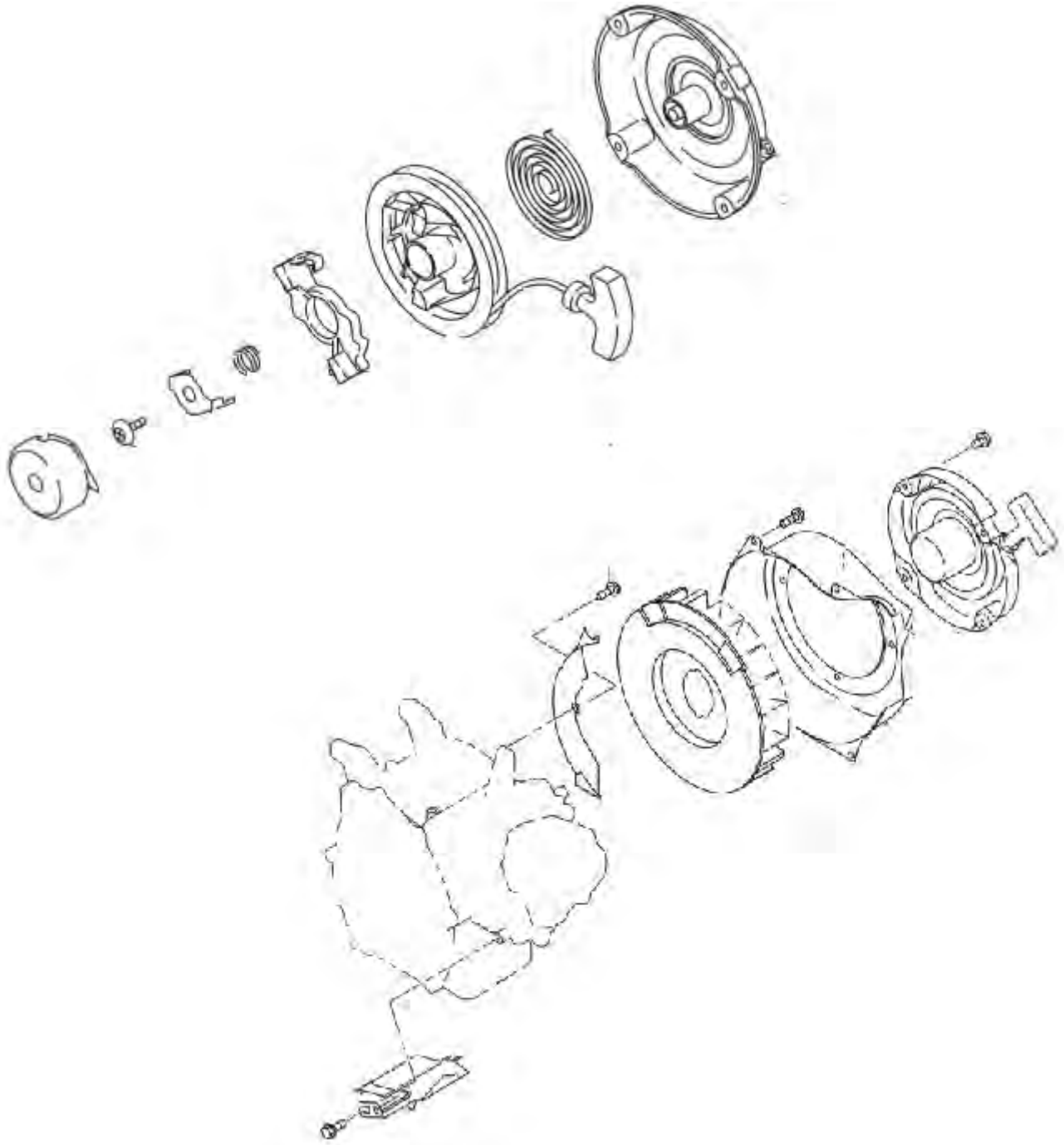
FLYWHEEL BOTTOM VIEW

PLASTIC FAN COVER TOP VIEW

PLASTIC FAN COVER BOTTOM VIEW

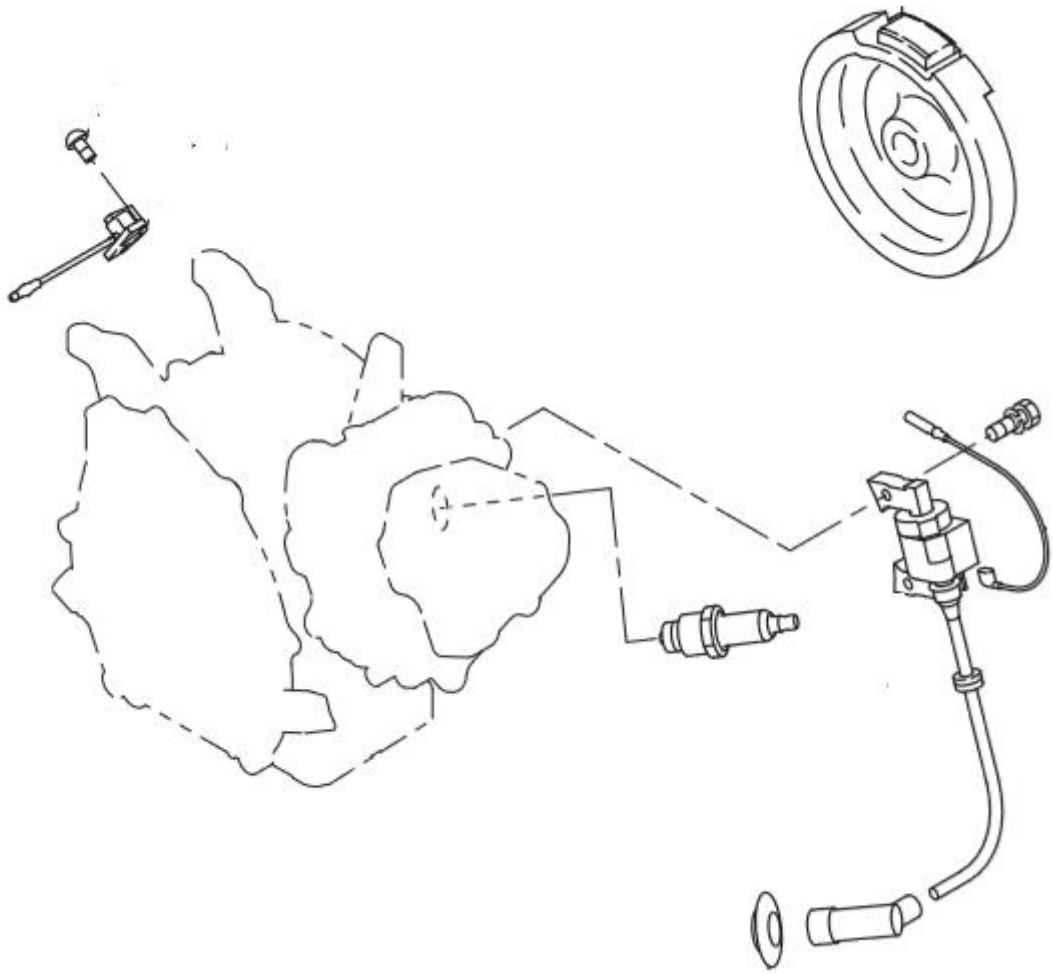
D.6 *STARTER*

EXPLODED DRAWING OF THE STARTING UNIT AND OF ITS HOUSING



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

D.8 *ELECTRICAL SYSTEM*

IGNITION SYSTEM	
IGNITION SYSTEM DIAGRAM	
	
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