cicciolo

DUCATI

Workshop Manual

(V3 October 2011)

By Joe Zeccola

Acknowlegments

This manual is the result of a collaboration, principally between Joe Zeccola (Australia), Giovanni Tosti (Italy), and Alan Moseley (France) with additions by Mike Cecchini (USA).

The information contained within is of a preliminary nature and it is intended that as owners provide addition information it will be included in future versions. The information should be used as a guide only and is not intended as a comprehensive manual for the purpose of maintaining or rebuilding a cucciolo engine.

Any comments good or bad can be forwarded to zeccolaj@hotmail.com

I highly recommend that all cucciolo owners look at the following web site for more resources including technical data, manuals, and advice. There are around 100 members with Diego Montefusco as the site administrator.

http://autos.groups.yahoo.com/group/ducatipushrodsingles/

Regards and happy riding
Joe Zeccola

Some Useful Links:

http://www.users.globalnet.co.uk/~pattle/nacc/arc0311.htm

http://xoomer.virgilio.it/siataducati/cucciolo/

http://www.cucciolo.wz.cz/cucciolo.html

http://www.motoclubconti.it/Utilit%C3%A0/File/Ricambisti.pdf

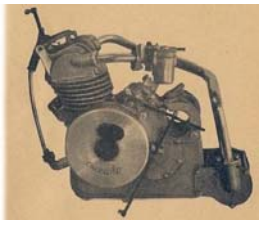
Contents

This manual has been produced in good faith and is intended as a guide only to the repair and maintenance of ducati cucciolo motorcycles. It applies to the following engines: 48cc, 60cc and 65cc Cucciolo Engines

The manual does not cover bodywork for the various models.

Chapter 1 – Model Designations

48cc T1 Siata
1945 Courtesy of Alan Moseley



48cc T1 Cucciolo
1946-1947

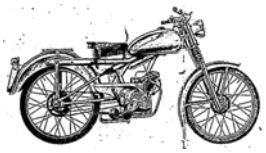
48cc T2 Cucciolo
1947-1950

60cc T3 Caproni 1st Series (1948)

60cc T3
Caproni Frame
2nd Series

60 Sport T3
1949-1952

65 Sport T3
1953



65 TL
1952-1958

65 T
1952-1958

65 TS
1955-1958

75cc
1953

M55/r T2
1955-1957

M55/e T2
1955-1957

M55/l T2
1955-1957
Indonesian Import

Chapter 2 – Routine Maintenance

2.1 Lubricants

Engine Oil

Capacity	approx 500ml (1/2 litre) fill to top of oil fill hole
Winter	40 WT straight mineral oil
Summer	50 WT straight mineral oil

2.2 Adjustments

2.2a. Spark Plug

Type	**NGK B6HS**
Spark Plug Gap	**0.65mm**

2.2b. Ignition Points

- Set to **0.5mm**

The points should START to open 25 – 27 degrees BTDC (Before Top Dead Centre) at which time the circuit is broken and a spark is generated between the points contacts and also end of the high tension lead. This happens simultaneously. Measuring the fully open points gap is difficult as the most critical setting is to adjust the points so they start to open at 25-27 deg. BTDC.

2.2c. Ignition Timing

Note: See Section 5.5 on how to set Ignition Timing

A line about 1/2" forward of the electric light terminal in etched on the crank-case pointing to the fly-wheel magneto. Two similar lines are etched on the edge of the flywheel. When the "M" is aligned with the crank case line indicates piston TDC position. Just before this position (approx 25--27 degrees) is another line on the flywheel marked "A" at which point the points should open and the spark plug should fire. (Extract from Britax Cucciolo Service Manual supplied by Mike Cecchini)

2.2d Valve Timing

Note: See Section 7.6 on how to set valve timing

Inlet opens 10° before TDC closes 25° after BDC
Exhaust open 30° before BDC closes 20° after TDC

2.3 Special Tools

2.3a Flywheel Removal Tool

22mm x 1mm Pitch, bicycle crank tool

Available from bicycle shop

2.3b Piece Rubber Strap Wrench Set Use to Retain Flywheel

ITEM 94119-2VGA

Available from from

http://www.harborfreight.com/

2.3b/2 Flywheel Locking Strap Alternative

Alternative Flywheel Strap

Use an Oil Filter Strap

2.3c Adjustable Pin Wrench

ITEM 36554-1VGA

Available from from http://www.harborfreight.com/

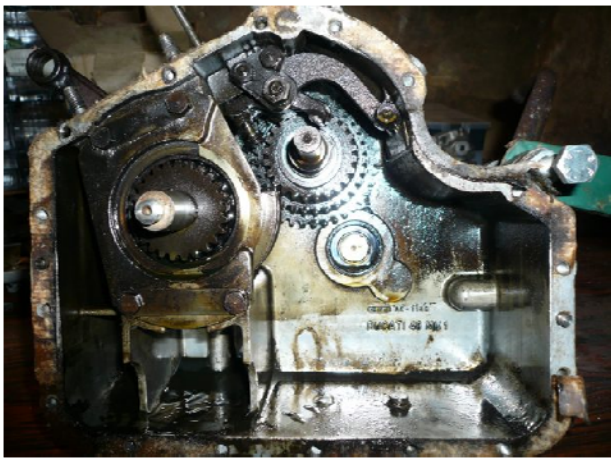
This tool is an Angle Grinder Spanner

Use to remove the flywheel points retaining cover.

- Fits grinder hubs from 3/8" to 1-1/16" in size

2.3d Piston Bore Stand

2.3e Engine Mounting Stand

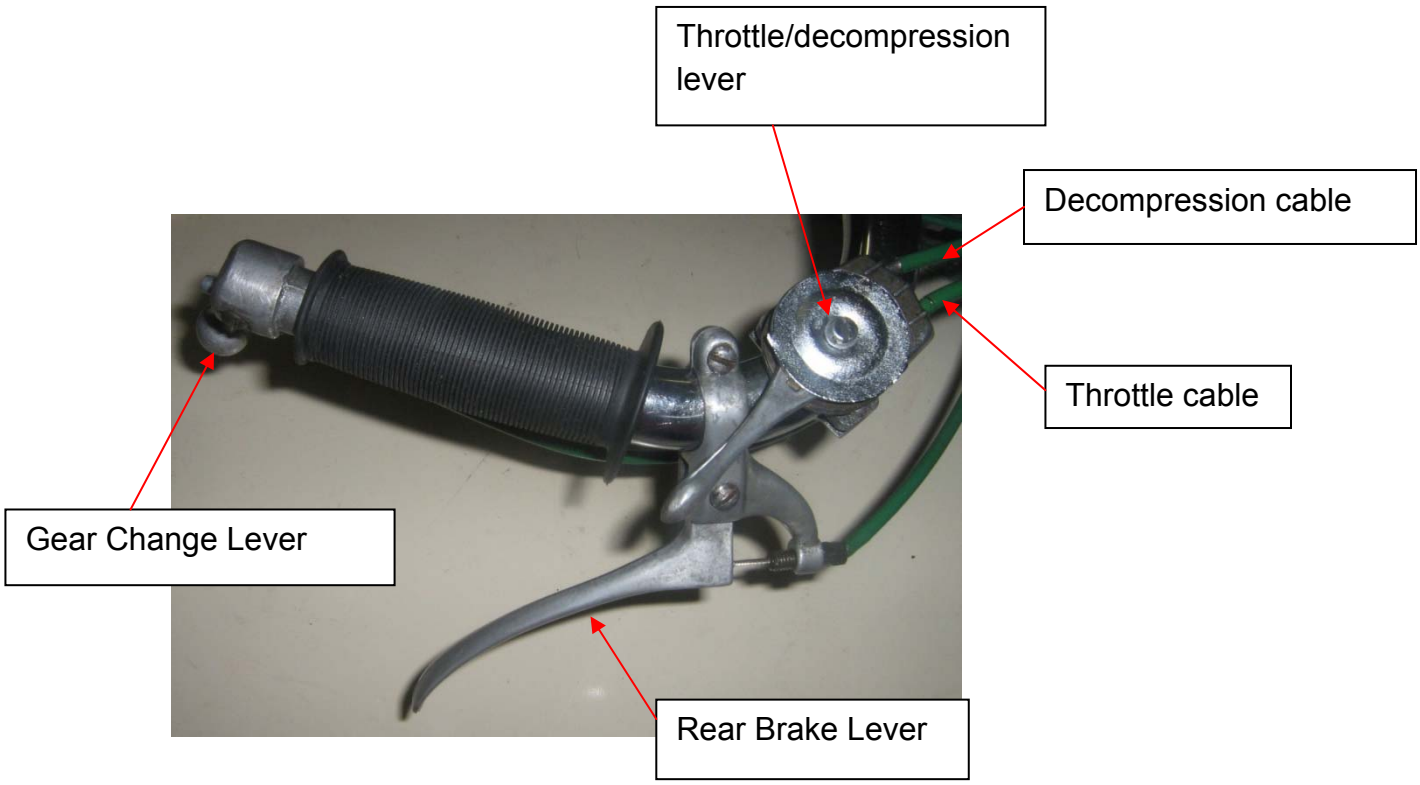


2.3f Flywheel Rotating tool

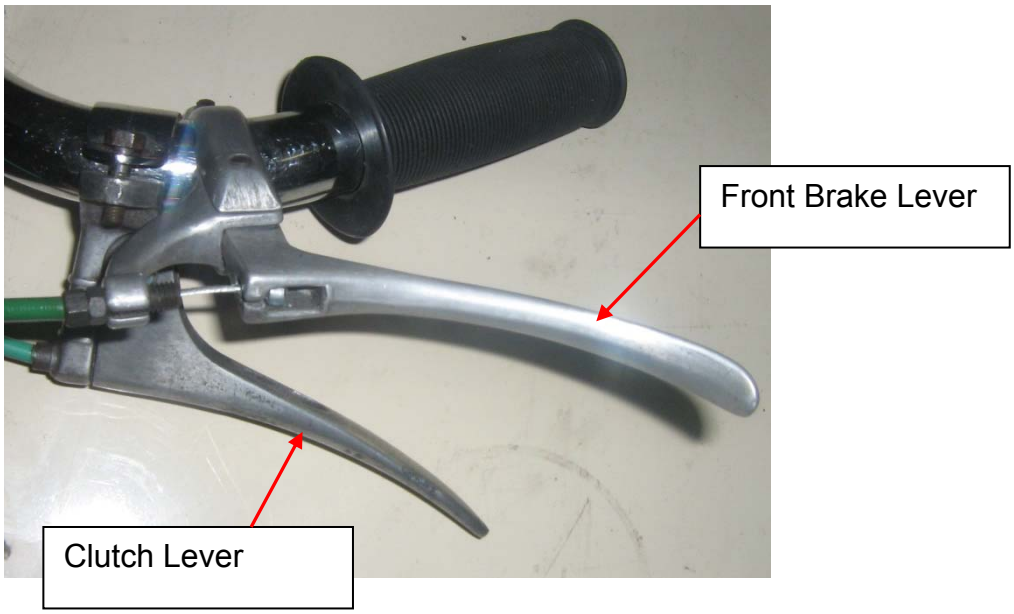
Place tool over flywheel and into end of cordless drill to rotate Flywheel.

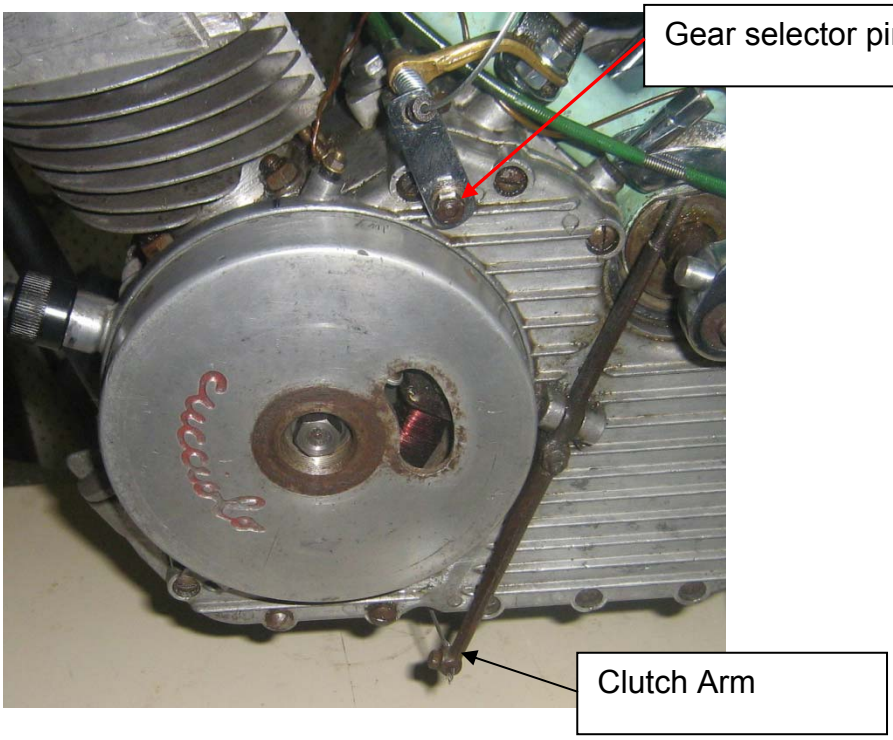
Chapter 3 – Controls

3.1 Accelerator/Throttle for T2



3.2 Clutch for T2





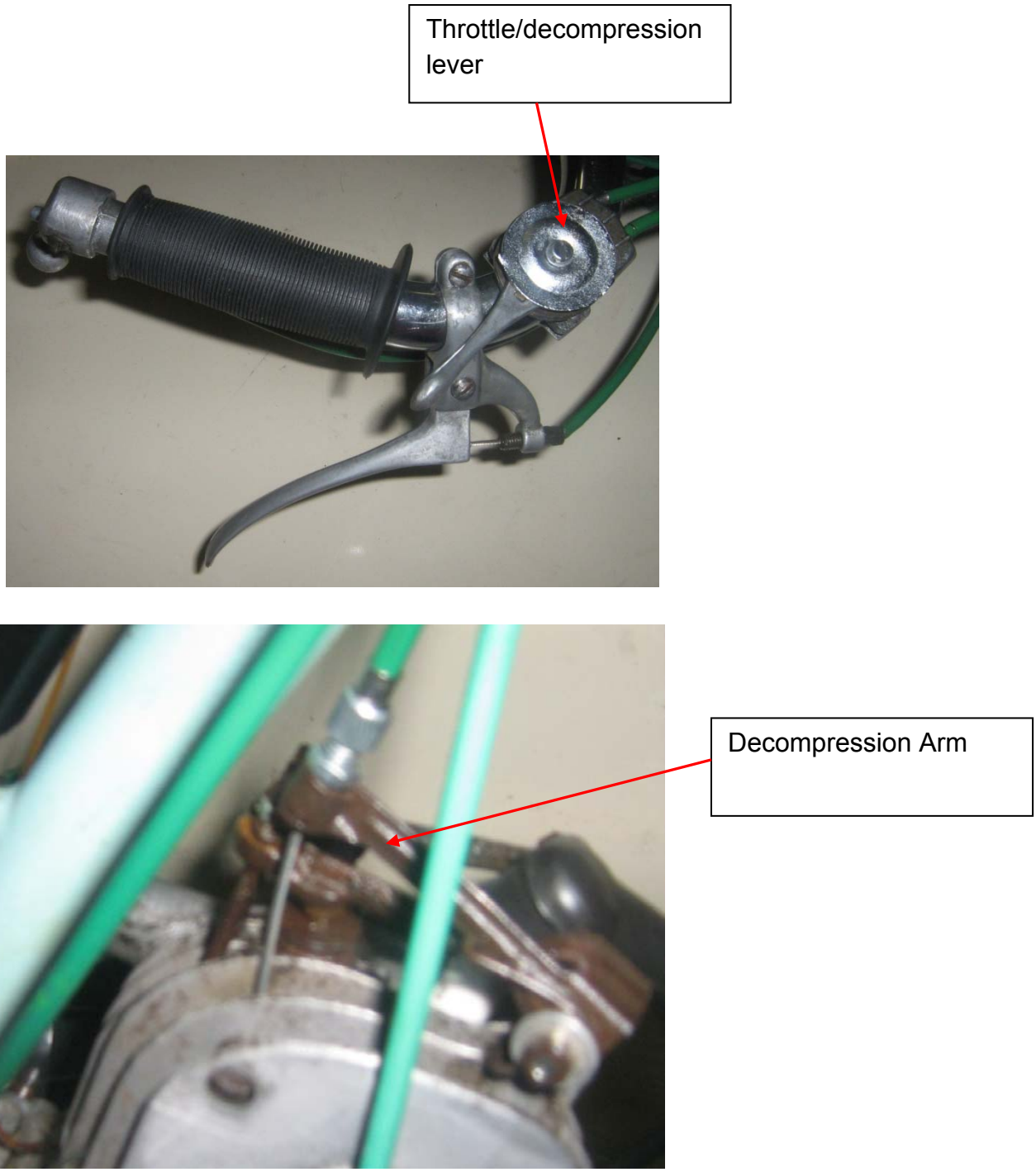
3.3 Gear lever and gear change mechanism for T2

Fig. 3.3a Low Gear

Fig. 3.3b Neutral

Fig. 3.3c High Gear

3.4 Decompression Valve for T2



Chapter 4 – Starting the Motorcycle

4.1 Starting the T2 Engine mounted on bicycle

4.1a Turn on fuel tap and pump the fuel tap tickler on top of the carburetor float bowl until fuel appears. Use regular unleaded fuel preferably without ethanol.

4.1b

4.2 Engaging the Gears

4.3 Stopping the engine

Chapter 5 – Ignition System

5.1 Ignition System Components

The ignition system comprises the following components:

1) Flywheel
2) Ignition coil
3) Condenser (capacitor)
4) Points (contact breaker)
5) High Tension lead
6) Spark plug NGK B6 HS (for 48, 60 and 65 cc cucciolo's) gap 0.65mm

5.2 How the Ignition System Works

The ignition system works like this:

The ignition system works by the **magnetised flywheel** rotating over the **ignition coil** (conductor) producing an electrical charge that is ultimately transferred via the **High Tension** lead to the **spark plug** which then ignites the fuel to create an explosion in the combustion chamber

5.3 Ignition system component definitions

Electricity

Definition

Electricity is the flow of free electrons within a conductor. Also defined as the presence and flow of an electric charge.

Flywheel

Definition.

The flywheel is a rotor with magnets which rotates off the crankshaft. The flywheel contains the magnetic field which when rotated over the ignition coil, produces a current.

Ignition coil:

***Definition*.** The ignition coil is a kind of transformer that works on the principal of self induction and mutual induction. It is composed of an iron core around which the secondary and primary coils are wound. The coil does not store any charge. As the magnetised flywheel passes over the coil, an electric charge is generated and the coil transforms the charge into thousands of volts. The current is transferred to the points via the condenser.

Condensers (capacitor)

Definition–

Is used to store and smooth out current flow. They acts as a buffer to prevent the points from arcing, by absorbing excess current

(capacitor) – An electrical device capable of storing electrical energy in an electrostatic field.

Points (contact breaker)

Definition

The points interrupt the current flowing in the primary circuit of the ignition coil. When this happens the collapsing current induces a high voltage in the secondary winding of the coil, which has many more turns. This causes a very large voltage to appear at the coil output for a short period – enough to arc across the electrodes of a spark plug.

High Tension Lead

Definition

Is the wire which goes from the Ignition coil primary coil wire to the spark plug. Transfers current from the coil to the spark plug.

Spark plug

Definition

A spark plug is an electrical device that fits into the cylinder head and ignites compressed fuels.

5.4 Testing of Ignition system Components

Testing of ignition coil.

Use a multimeter with ohms readings.

The coil should be tested for continuity i.e that there is a flow of current from the primary and secondary windings. The measuring units are ohms. When measuring for resistance in ohms the reading should be around 4.5ohms.

Fig. 5.4A

Figure **5.4A** shows a faulty ignition coil where there is a breakdown in the coil and hence there is no continuity.

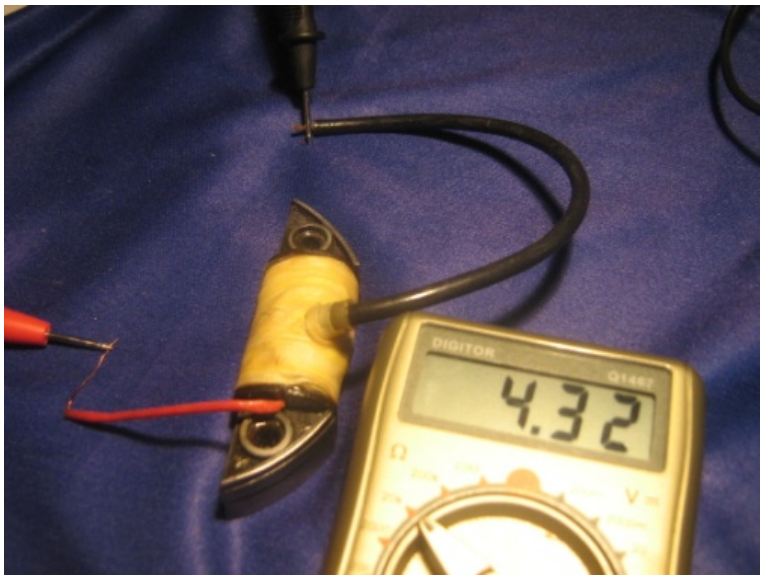


Fig 5.4B

Figure **5.4B** shows a newly rewound coil where there is continuity through the Primary (red wire to capacitor) and Secondary (black wire to spark plug) coil wires. A reading of 4.32 ohms

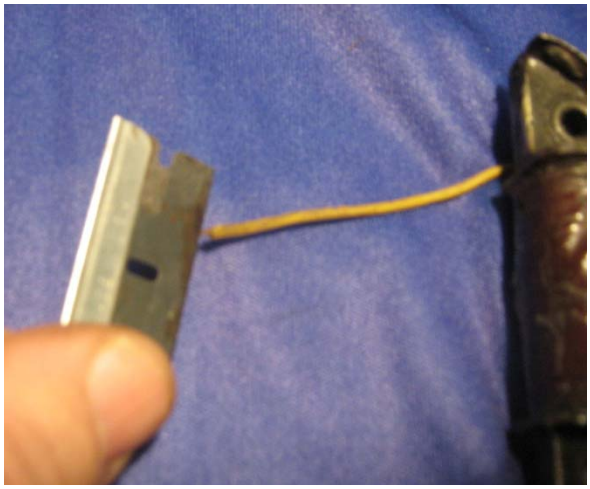


Fig 5.4C

Note that the smaller (primary) coil wire, which is to be soldered to the capacitor has a clear coating that must be removed using a razor blade or similar **(Fig 5.4C**). If the coating is not removed it is likely there will be poor conductivity of current

Testing of condenser/capacitor

Take to an auto electrician who has capability to measure the capacitor under load to determine whether it is working correctly. The unit of measurement is Microfarads (MF)

Capacitor

Size	=	18mm diameter x 32mm long (T2 cucciolo measurement) or 17mm dia x 31mm long. (60cc T3 measurement)
Capacitor Part Number	=	0.28UF 6V CE22A9V (Part number on T2 cucciolo) DUCATI - EC1319.04 - Italy (Part number on 60cc T3)

5.5 Setting Ignition timing

A line about 10mm forward of the lighting terminal in etched on the crank-case pointing to the fly-wheel magneto. Two similar lines are etched on the edge of the flywheel. When the "M" is aligned with the crank case line indicates piston TDC position. Just before this position (approx 25--27 degrees) is another line on the flywheel marked "A" at which point the points should begin to open and the spark plug should fire.

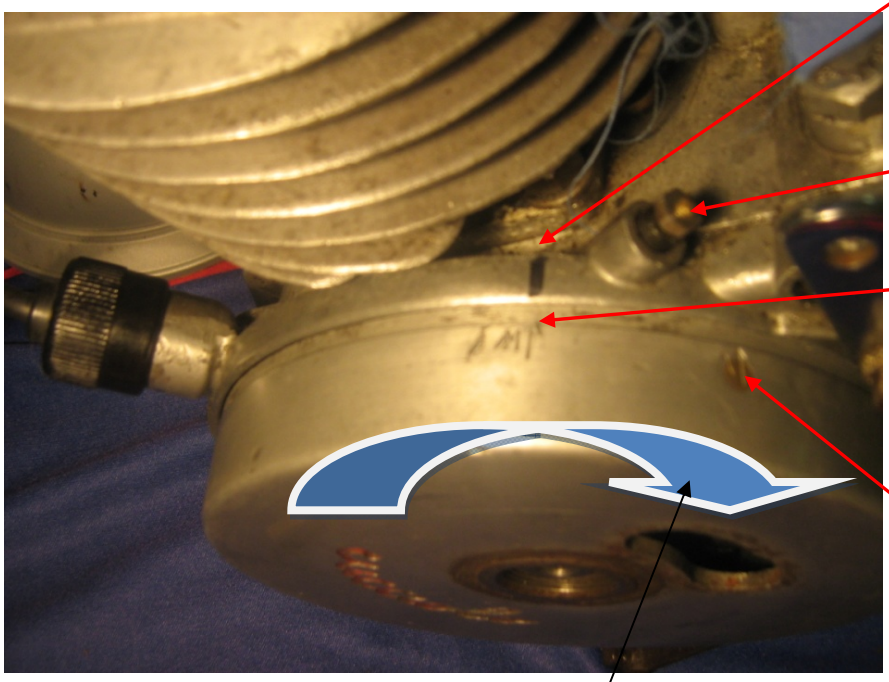
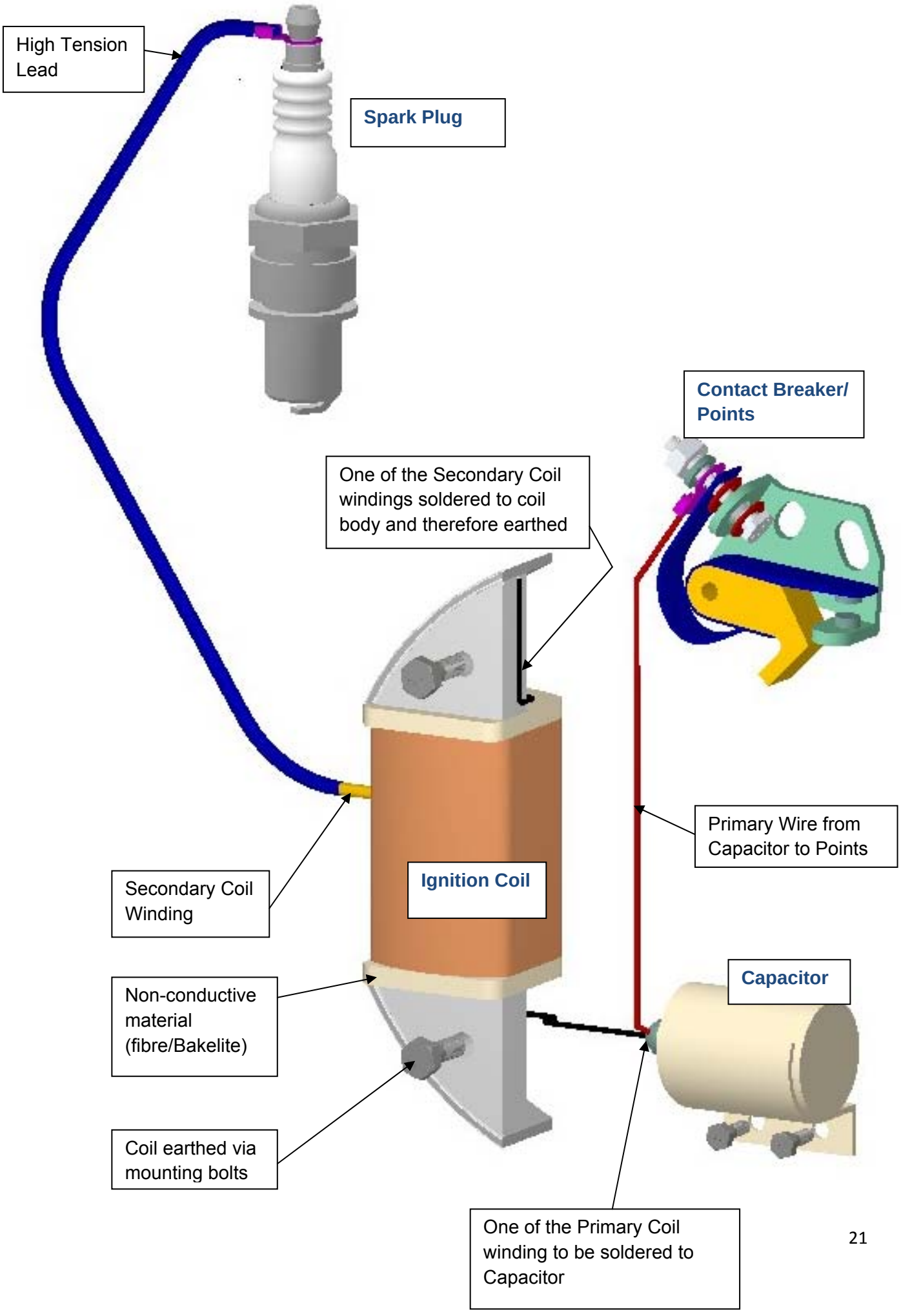


Fig. **5.5A**

Figure **5.5A** shows the position of reference marks on the crankcase and flywheel which shows when the piston is at Top Dead Centre (TDC) , reference mark "M", and also the position at which the points start to open, reference mark "A" .

5.6 Ignition System Schematic Diagram

5.7 Ignition System Wiring Diagram

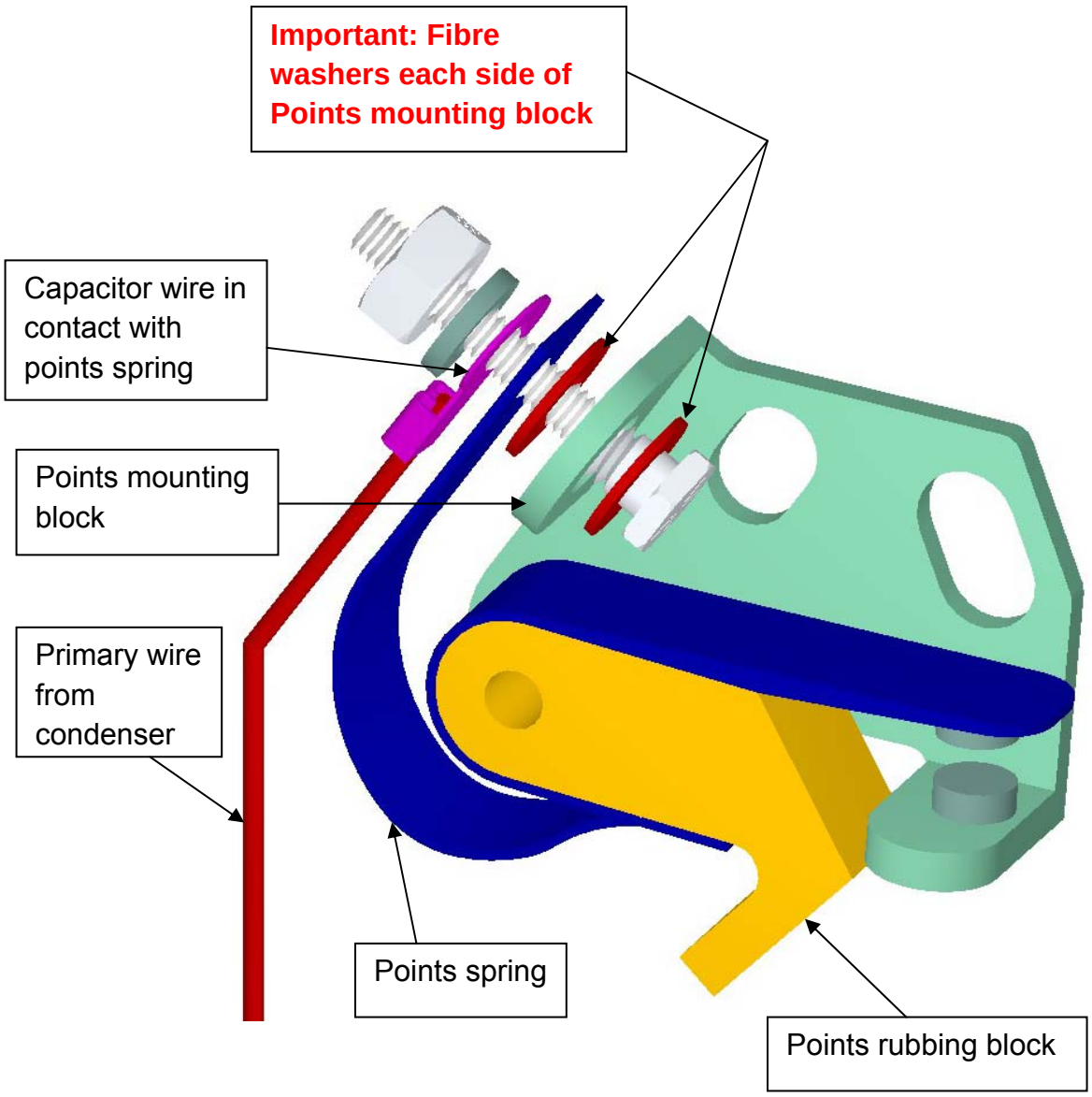


5.8 Ignition System Wiring Diagram - Points

Points/Contact Breaker

Make sure of the following:

1) There is a fibre washer each side of the mounting block. This is to isolate the points spring from the points mounting block. Failure to place the fibre washers will result in the points being earthed and therefore the circuit will be permanently closed resulting in no spark when the points open.
2) The wire from the capacitor to the points is directly behind the points spring. This is to transfer current directly to the points via the points spring.

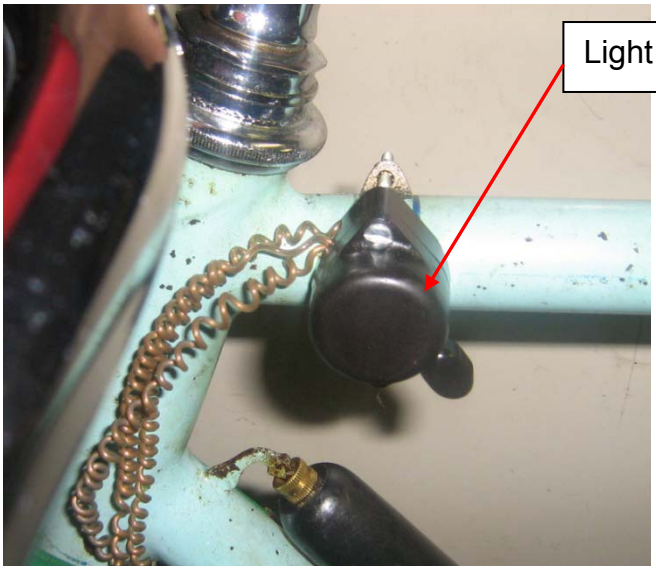


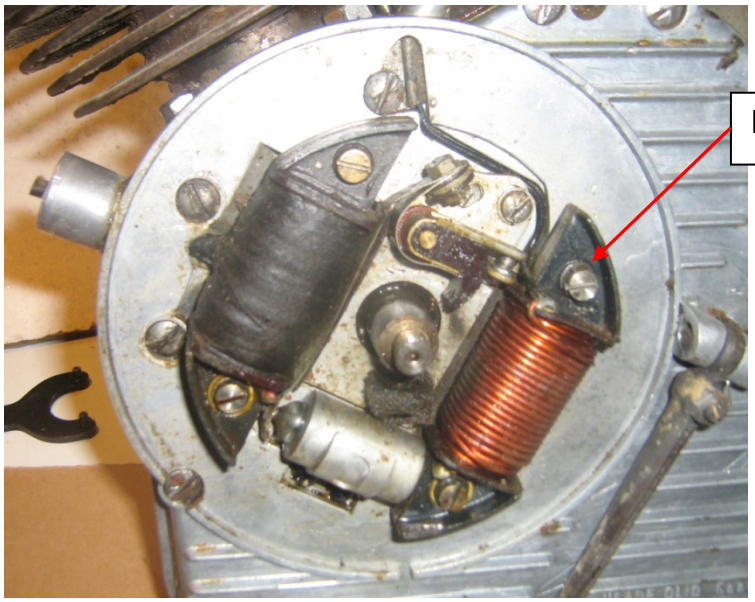
Chapter 6 – Lighting System

6.1 Lighting System Component all models

These engines have inherent light flickering at low engine speeds which has nothing to do with the ignition system even though they are mounted together.

The lighting system works by the **magnetised flywheel** rotating over the **lighting coil** (conductor) producing an electrical charge.





Chapter 7 – Engine

Never apply excessive force to anything unless you are prepared to break it and suffer the consequences of dealing with trying to repair or replace a part that is no longer available.

How a 4 stroke engine works

Note:-The 4 strokes occur during two crankshaft revolutions

1) Intake stroke	Piston at TDC (Top Dead Centre) then piston decends from the top of the cylinder, fuel and air are forced into the combustion chamber via open inlet valve.
2) Compression stroke	Fuel enters via inlet valve then closes to compress the fuel
3) Combustion Stroke	Fuel ignited by spark plug near end of compression stroke (piston near TDC)
4) Exhaust stroke	Pressure of burning gasses pushes piston through the power stroke, then the exhaust valve opens to release the burnt gasses.

7.1 Engine Specification

7.1a. Engine Specifications

Note: Piston to Cylinder clearance = 0.02mm to 0.05mm . Therefore if the piston is in the range 41.95mm to 41.98mm the cylinder bore should be 42mm ....NEED TO CONFIRM.
Pistons are made within tolerances, typically the tolerance is 0.010mm and the pistons should be measured 15mm above the bottom of the skirt.
The cylinder bore is matched to the piston + tolerance (tolerance is 0.02mm to 0.05mm)
Modern pistons have A and B notations which denotes manufacturing tolerance ranges for example:
Piston type A would be manufactured within the range of 41.95mm to 41.96mm and
Piston type B would be manufactured within the range of 41.94mm to 41.95mm.

Model	Engine Weight	Cylinder Size From Factory Owners Manuals		Piston Size	Ring Size 2 x Compression and 1 x oil ring	Max. Revs.	Horse power	Max. Speed
		Bore Alesaggio	Stroke Corsa					
48cc T2	7.94kg	Std 39mm 1st 39.25mm 2nd 39.45mm 3rd 39.65mm 4th 39.85mm	40mm	Std38.95 mm 1st 39.20mm 2nd39.40mm 3rr39.60mm 4th39.80mm	Std 1st 2nd 3rd 4th	5,000	0.95hp	50km/hr
60cc T3		42mm 1st42.25mm 2nd 42.45mm 3rd 42.65mm 4th 42.85mm	43mm	Std41.95 mm 1st42.20mm 2nd42.40mm 3rd42.60mm 4th42.80mm	Std mm 1st 2nd 3rd 4th	5,000	CV 2.25 =2.25hp	60km/hr
65cc Sport		44mm	43mm	Std.	Std mm 1st mm 2nd mm 3rd mm 4th mm	5,600	CV 2.5 =2.5hp	70km/hr

CV denotes - in french **Chevaux Vapeur** ("steam horses")
Hp denotes - horsepower

7.2 Flywheel Removal

Disclaimer. The following information is supplied in good faith. The procedures are those carried out by myself and are supplied to help those undertaking the procedure of flywheel removal.

To remove the flywheel from a ducati 48, 60 and 65 cucciolo engine, adopt the following procedure:

These instructions apply to an engine that has been removed from the motorcycle but can be modified to apply to a motor still in the frame.

1. Firstly remove the points inspection cover retaining nut using a pin tool**. Fig 7.2A.** Turn the nut anticlockwise to remove. You may need to lock the flywheel with using the strap shown in **fig 7.2B**. This is an oil filter strap.

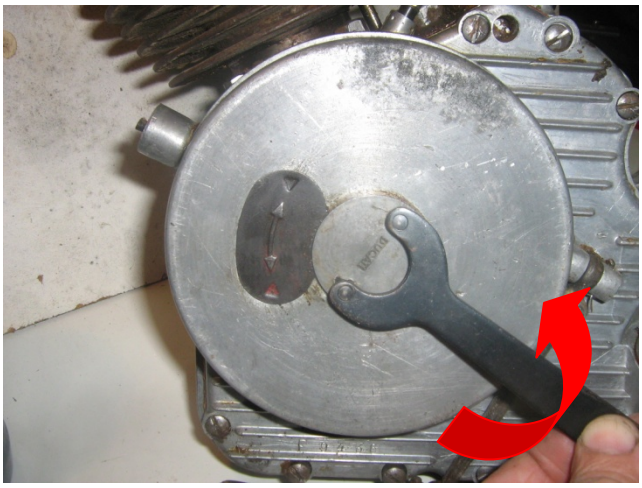


Fig. 7.2A

Fig. 7.2B

2. Once the points cover retaining nut **fig 7.2C**. and points cover **fig 7.2D** have been removed a LEFT HAND THREAD flywheel retaining nut is exposed. **Fig 7.2E.**

Fig. 7.2C

Fig.7.2D

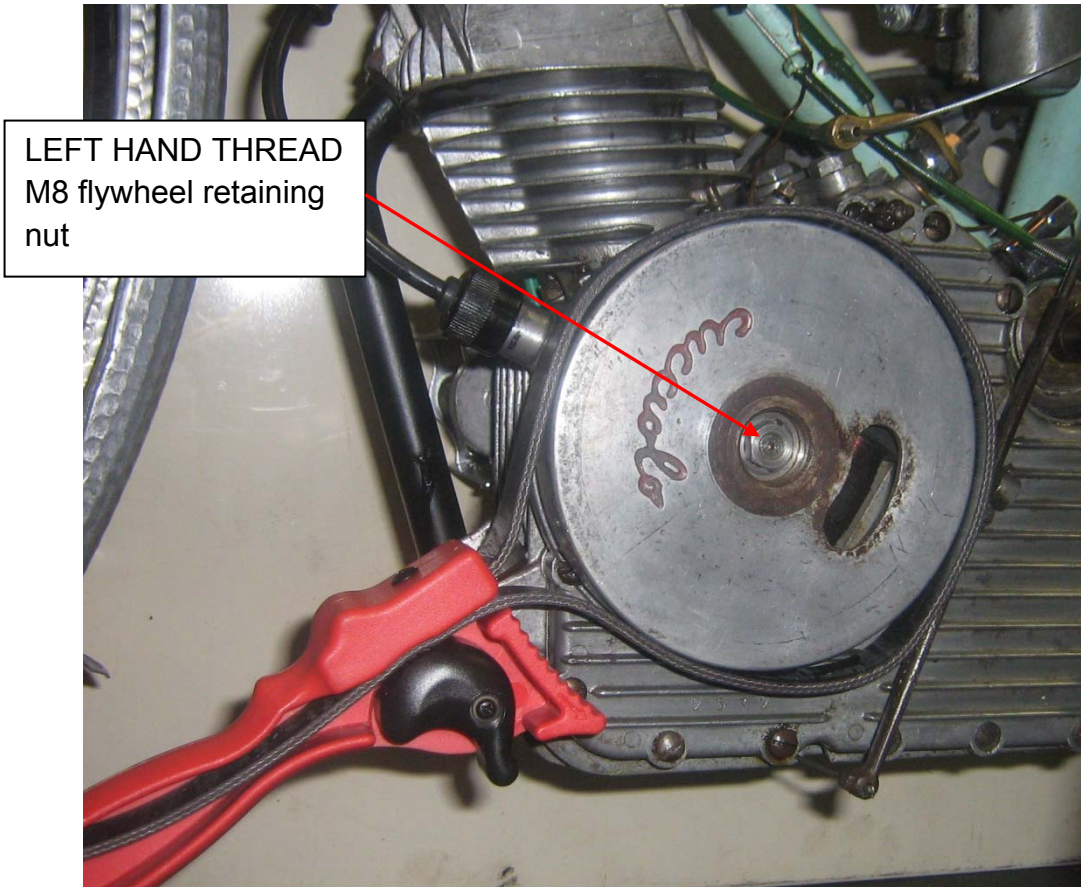


Fig 7.2E.

3. Remove the flywheel retaining nut using a 14mm socket, it may be necessary to clamp the flywheel to facilitate removal (You can use the Oil filter strap shown in **Fig 7.2B** . Turn the nut CLOCKWISE TO REMOVE. The nut is a left hand thread nut. **Fig 7.2F** If the head and cylinder have been removed from the engine, a rod can be placed through the conrod small end to lock the engine and flywheel.

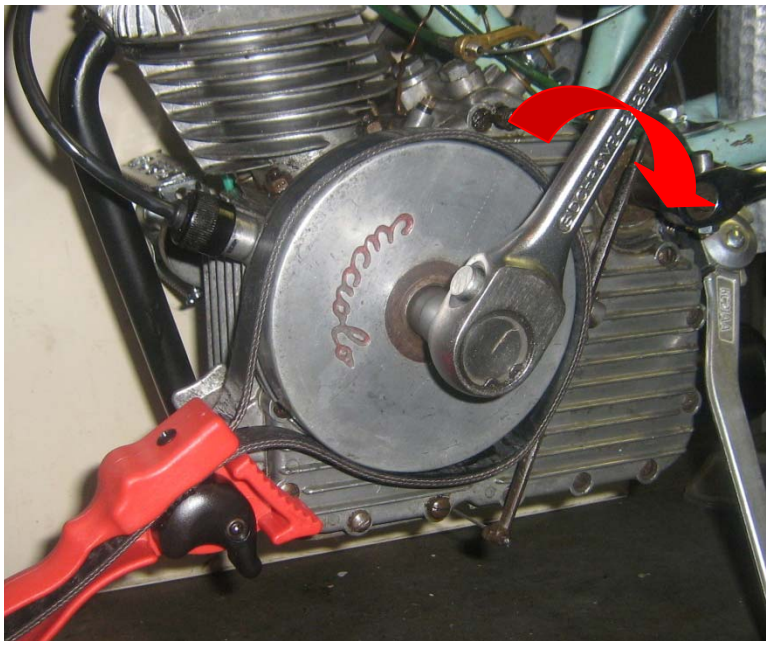


Fig. 7.2F

4. Remove the flywheel using a bicycle crank removal tool. The tool can be purchased from a bicycle store and is 22mm x 1.00 mm pitch. **Fig. 7.2G**. Screw the tool into the threaded flywheel as far as possible then turn the inner threaded section of the tool to enable removal of the flywheel. **Warning!! Make sure the flywheel thread is in good condition prior to screwing in the extractor tool. You may need to use a thread file or tap to clean and sharpen the thread.**

Fig 7.2G.

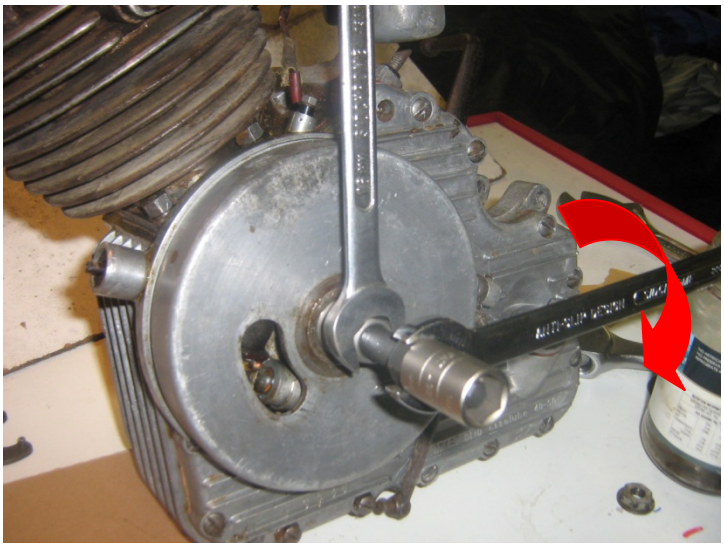


Fig. 7.2H

5. The flywheel is locked in position with a 2.5 x 3.7mm woodfuff key (this key is the same as the BMW motorcycle camshaft woodruff key).This is for all model cucciolo's from including 48cc T1 and T2, all 60cc, all all 65cc.
   Once the flywheel has been removed the ignition and lighting system is now exposed. See **Fig 7.2J**

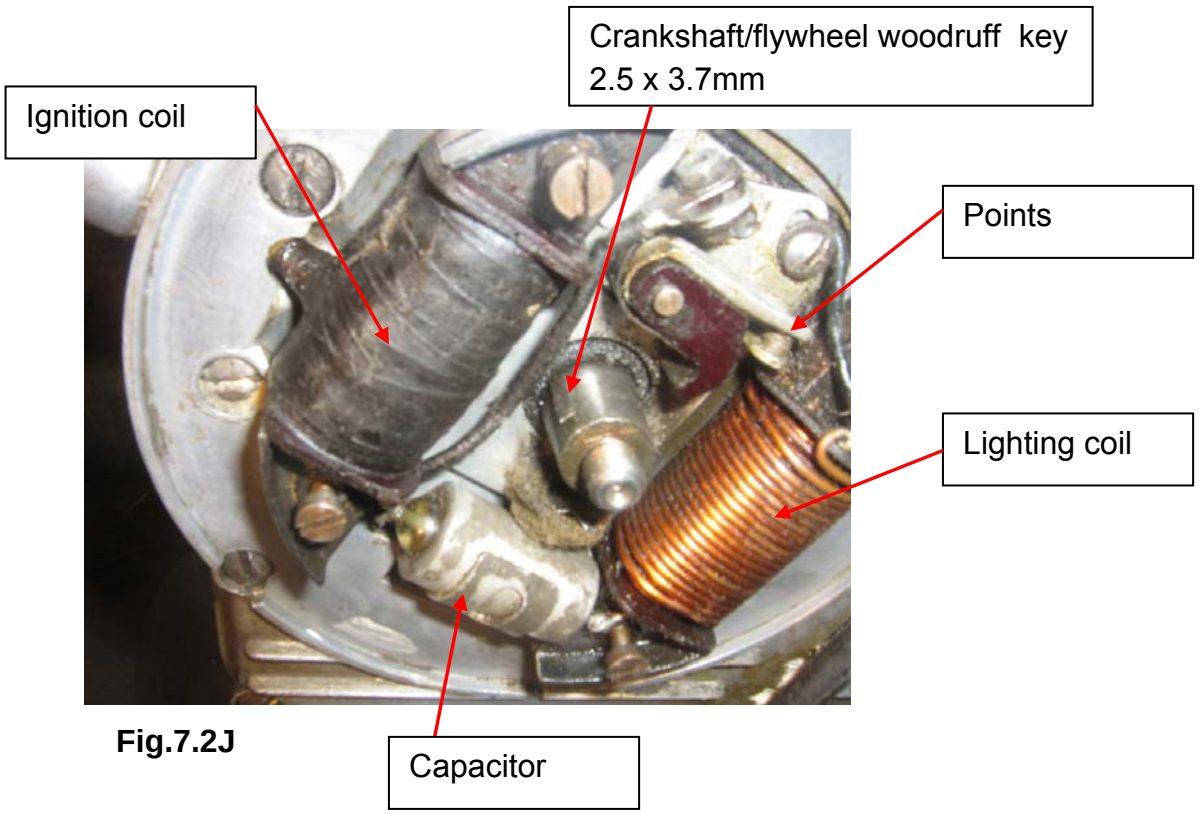


Fig.7.2J

7.3 Engine Dismantling (Giovanni Tosti)

Reminder - Never apply excessive force to anything unless you are prepared to break it and suffer the consequences of dealing with trying to repair or replace a part that is no longer available

Note: the engine shown is a 65cc sport engine.

7.3a Preparing for Dismantling

Firstly thoroughly clean the engine with degreaser, kerosene or some other suitable product to remove dirt oil and grease. Clean all bolts to make it easier to remove them.

7.3b Dismantling the Engine

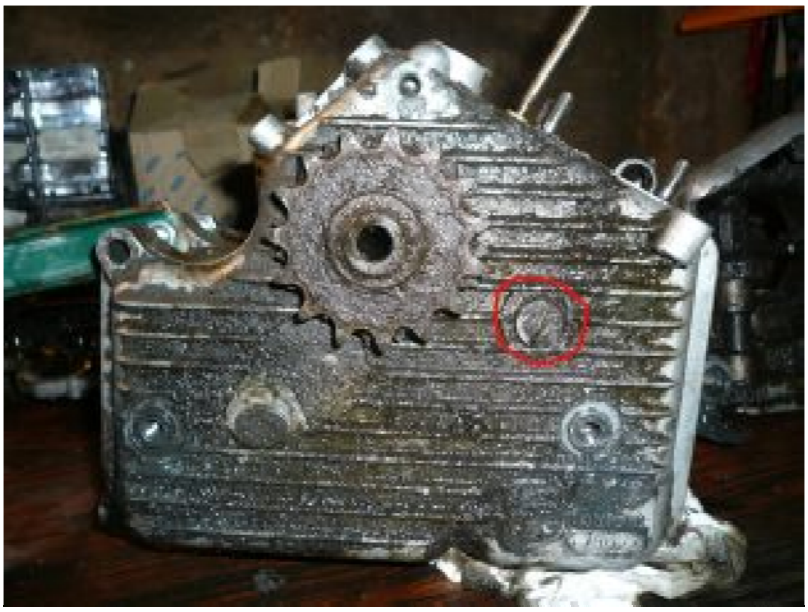
1. Drain the engine oil from the engine using a funnel with gauze wire taking note of any foreign matter that drains. Examine any foreign matter to ascertain whether there may be any broken parts
2. Organise a safe place to store, arrange and label all the pieces you remove.
3. Remove carburetor and exhaust. Remove the engine from the frame and place it on your bench.
4. I suggest you use the engine mounting holes at the rear of the crankcase to attach a solid bracket with a bolt, it is useful to hold the engine securely with a vice during your job.Unscrew the nut fixing the valve cover and remove it. Remove the fixing nuts and registers that hold the pull-rods to the superior rockers.
5. Remove the four nuts fixing the head, lift the head and the gasket and put it apart.
6. Remove the four nuts fixing the cylinder to the crankcase, you need to lift a bit the cylinder from the basement to be able to remove the nuts.
7. Now you can remove the cylinder. Remove the gudgeon pin from the small end with a draw bolt arrangement and remove the piston.
8. Remove firstly the gear selector, just remove the three screws, taking note of their position, they are all different in length and shape. You can put it aside for the moment, just avoid leaving the selector shaft which may fall out from its supports.

It will look quite dirty, it is not possible to clean it before removing it! Fig **7.3c**

Fig. **7.3c** Kickstart and gear selector box.

The right side of the crankcase, very dirty too, will have this appearance, marked in red is the

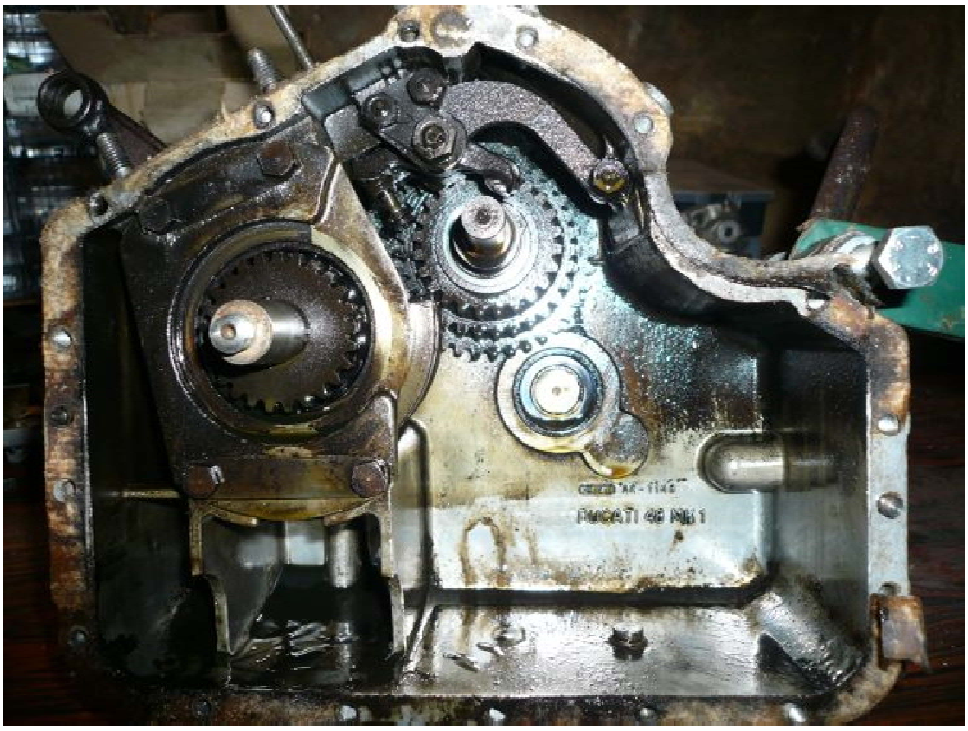
plug of the crankshaft extractor.



Once the flywheel has been removed (See Chapter 7, Section 7.2), you can remove the 16 bolts on the left side of the engine that hold the crankcase halves together. Use penetrating oil, wait 24 hours and have a very good screwdriver for this job. My engine was totally stuck but I was able to remove all the screws without any damage. Take care to arrange the screws in a proper order, they have different sizes and you must note their location. Now you can lift the crankcase cover having the engine resting on the right side. At this moment all the needle rollers from the left side cover will fall into the crankcase, don't mind, you can rescue them later.

Note the position of the mark on the timing pinion and remove it. The clutch-shaft may be now lifted and put apart. The needle rollers of the clutch-shaft and timing pinion will fall in the crankcase.

That's what you find, note that here the clutch-shaft and the timing pinion were removed. Note the bracket to fix the engine at the vice.



You can now rescue the needle rollers.
There are 12 for each side on the clutch-shaft bearings and 9 on the left side of the gear-shaft, all of the same size, total 33, and 26 thinner ones on the bearing of the timing pinion.
If you have lost someone of these it's possible to buy them from Enea Entati.
Push back the tabs of the security washers and remove the four bolts fixing the superior plate of the left crankshaft bearing, and the security washers.
Now you need a two jaw puller to remove the plate. Arrange the jaws under the two sides of the plate and extract it, you will release the left crankshaft bearing. Is not necessary before to do that to extract the primary pinion.
Now you have to access the right side of the crankcase and unscrew the plug fit on the end of the crankshaft extractor thread, use a bolt of the adapted size (in this moment I don't remember the size of the thread) on the thread to extract the crankshaft from the right bearing.
I didn't removed the gear-shaft and the inferior rockers because I had no reason to do that.
Accurately wash all the pieces and look for damage. I had a seeger (circlip) on the clutch that was broken and I had to replace it with a new one.
To reassemble the clutch I used a home made shock adsorber compressor to press it enough to place back the seeger (circlip) in its place.
Accurately remove the remains of the crankcase gasket using an appropriate gasket removal solutiont, to avoid damaging the crankcase mating surfaces. Do not use any sharp objects to clean any mating surfaces.

7.4 Engine Assembly (Giovanni Tosti)

7.4a Rebuilding the engine

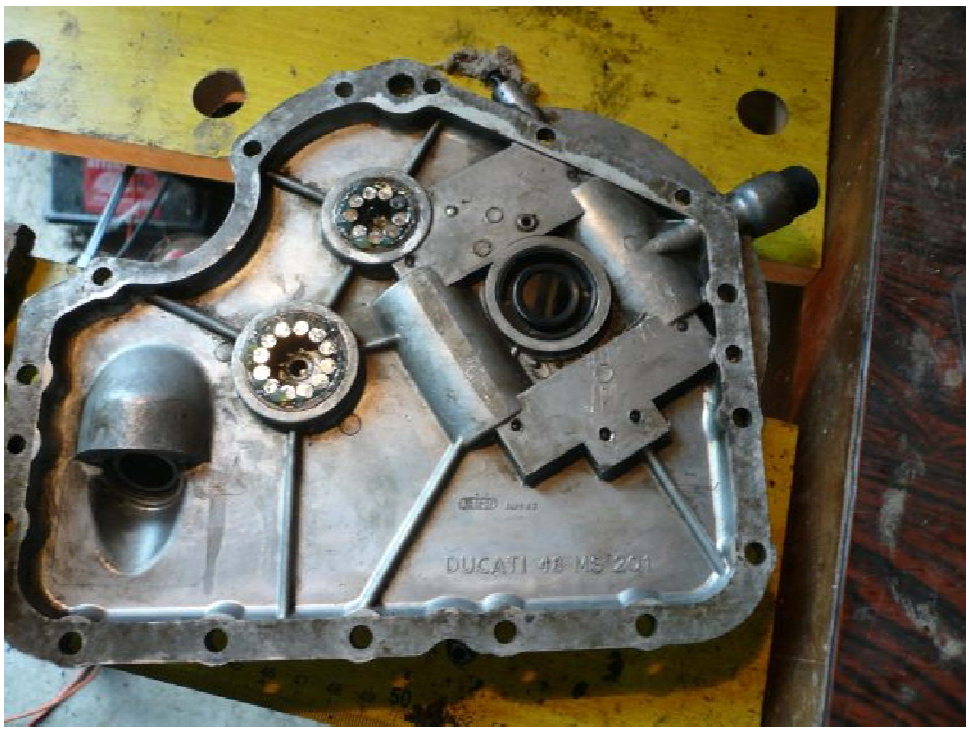
Once you have replaced all the damaged parts and verified or changed the crankshaft and big end bearings you can start the rebuilding process heating the seat of the right crankshaft bearing on the crankcase with a hot air blower. The bearing is placed in its seat with interference fit, if you get about 80 ° centigrade it will slip into place without effort.
Now you can heat the left retaining plate, place it in its location and put tab washers and bolts, than bend the tab washers to lock them against the bolts.

Now you can arrange the needle rollers of the right side of clutch-shaft, holding them in their seat with grease. Enea Entati suggest to place here one of the two spacers of the clutch-shaft, when originally the two were placed together on the left side.

You can put in place the clutch-shaft and then arrange the needle rollers of the timing pinion in the same way, note the mark for timing.

When you put the timing pinion on its shaft take care to have the crankshaft 45 degrees after TDC, you have to align the mark in the pinion with the woodruff key on the crankshaft in this way. Be aware that even a single tooth of difference is critical.

Now you can replace the old fashioned oil seal for the crankshaft on the left crankcase with a modern one (a suggestion by Enea Entati).
Now place the needle rollers on the bearing seats of the crankcase holding them with grease



Fit a new gasket, I used a gasket holder spray to simplify this difficult step (applying a thin layer of grease also works well), and now you can place the crankcase cover on the crankcase. The difficulty is aligning the shafts and bearings while keeping the needle rollers from falling out. This can be difficult therefore you have to be patient and retry a few times, repositioning the needle rollers after every failure. Enea Entati suggests to press with force the clutch with a screwdriver passed through the hole for the clutch shaft in the crankcase. In this way you force the clutch-shaft into place and you are also able to maintain alignment. I found this tip really useful.

Once you succeed in placing the crankcase cover back in place you can start inserting the screws, remember to tighten them in a cross order to avoid deformation of the crankcase cover.

Now you can replace the woodruff key on the crankshaft and align and mount the flywheel, quite difficult again. Remember before to do that to have a look at the contact breaker assembly.

Fix your flywheel with its M8x1 left handed bolt.

Remount your piston and gudgeon pin with the same drawbolt arrangement you used for dismantling, the valve incisions on the top of the piston must look backward. You can use two modern seeger (circlips) to hold the pull-rods in place if the original ones are missing (suggested by Entati).

Install the cylinder base gasket over the four cylinder studs then slip the cylinder in its place and gently compress the compression and oil rings with your fingers to allow them to slip in, a little bit of motor oil will help. Fix the cylinder with its four nuts, place a new gasket between cylinder and head and mount the head passing the pull-rods in the rocker holes and fix the head with the four nuts, than place back rockers adjusters and fixing nuts. Before mounting the valve cover you may want to verify the timing, it's quite simple, just print and cut the timing disk shown in **Chapter 7.5**, fix it on the flywheel with double sided adhesive tape aligning the 0 degree with the TDC mark on the flywheel and just note when inlet and exhaust valve begins to open and definitely close having your fingers on the pull-rod to appreciate the very initial moving, and refer to this figure (for the 65 sport):

Inlet opens 10° before TDC closes 25° after BDC

Exhaust opens 30° before BDC closes 20° after TDC

Now you can adjust the valve clearances, inlet 0.15 exhaust 0.25 mm (60-65 engines), grease the rockers and place install the cover.

7.5 Rocker arms and pull rods (by Mike Cecchini)

Mike Cecchini: Here's a photo you'll not see often. I asked on the list if the pull-rods would come loose from the cam rocker arms inside the motor..... if one removes the opposite end valve adjusting nuts. The answers is..... it's possible because these rocker arm "fingers" are open on the end, so they can come off. Bottom line is to secure the pull-rods when you take things apart up at the head.

Mike Cecchini: Here you can see the open ends of the cam rocker followers.

7.6 Countershaft Sprocket (by Mike Cecchini)

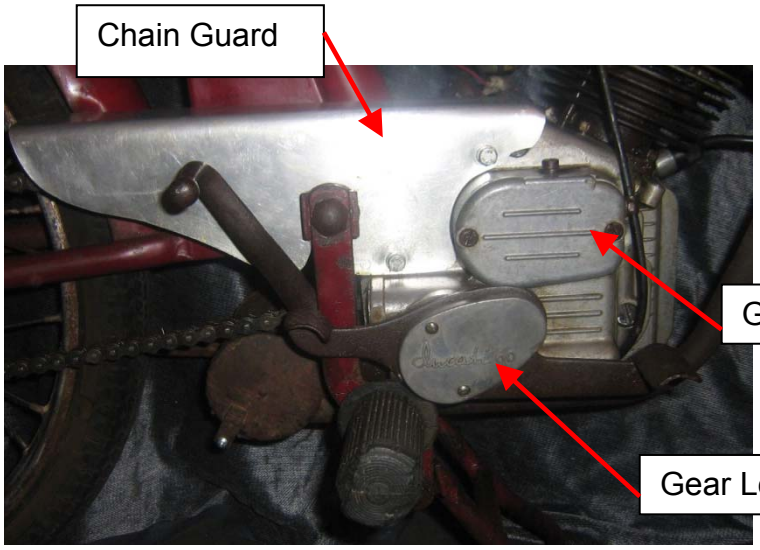
Mike Cecchini: The one-way drive sprag on T2 motors..... might be the same on others. When the bicycle pedals are roated in the normal direction it causes the rollers to ride up their ramps and lock the assembly so the pedals can move the motor for starting. When the bicycle pedals are roated in the normal direction it causes the rollers to ride up their ramps and lock the assembly so the pedals can move the motor for starting.

Mike Cecchini: This was a bit of a suprise. My completely assebled Cucciolo bike was missing these locking collars that hold the sprocket away from the engine cases. I found this out when I took apart my display motor.

Mike Cecchini: Locking collars in their place

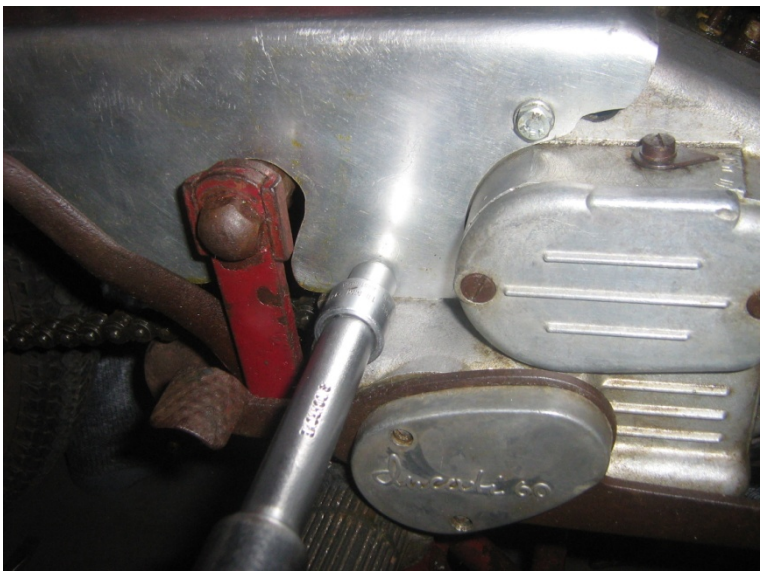
7.7 Dismantling Inspection and reassembly of Kickstart and Gear Selector mechanism for 60cc T3 (by Joe Zeccola)

Prior to removal of any parts check for smooth operation of the kickstart lever and gearchange lever to determine if there are any faults. When removing each part check for wear or broken parts and repair or replace as necessary.



Right hand side showing gear selector and kickstart cover.

Place engine in neutral gear prior to dissasembly. The pointer should be on the “0” mark denoting neutral gear. Spin the rear wheel to check that the engine is in neutral.

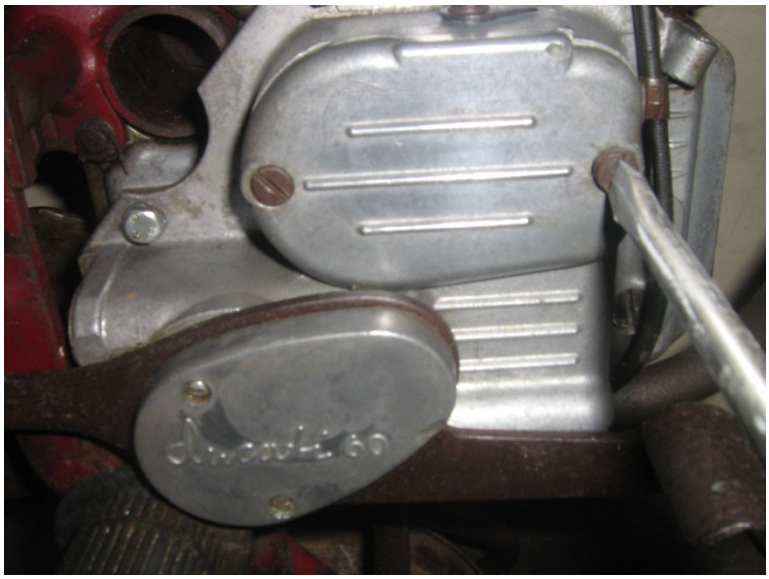


Remove the 3 x M6 chainguard retaining bolts with 10mm socket and remove the chainguard.

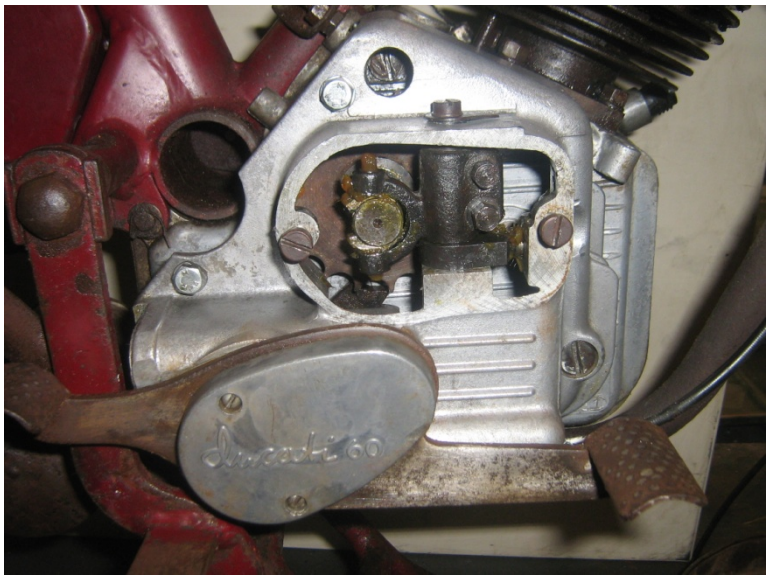
Remove the chain. This need to be done to allow access to the kickstart and gear selector box retaining bolt. Note the chain locking clip is placed so the closed end is in the direction of chain travel.

Remove the M6 clutch cable guide bracket bolt with 10mm spaner

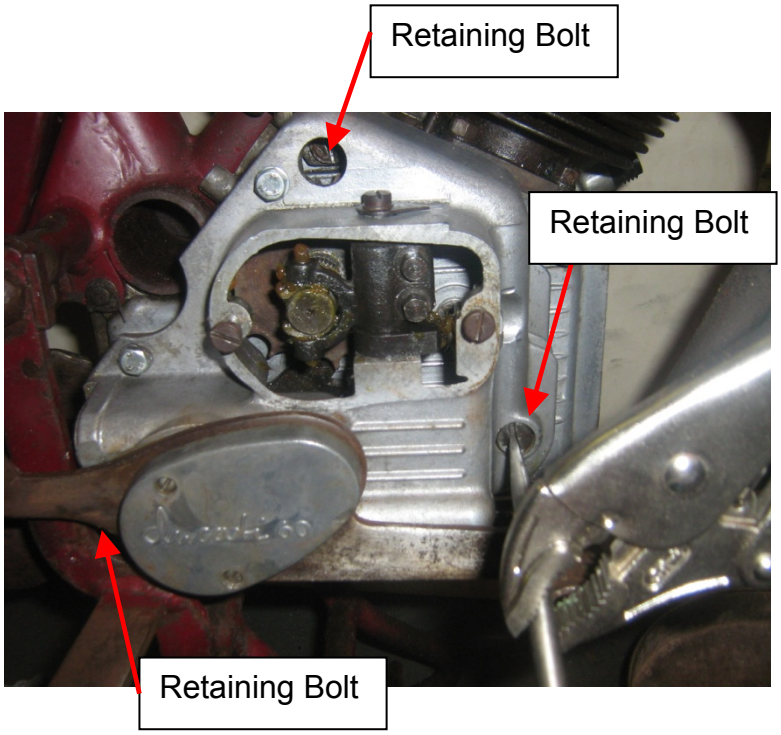
Remove the footpeg rubber uising a tyre lever or similar.



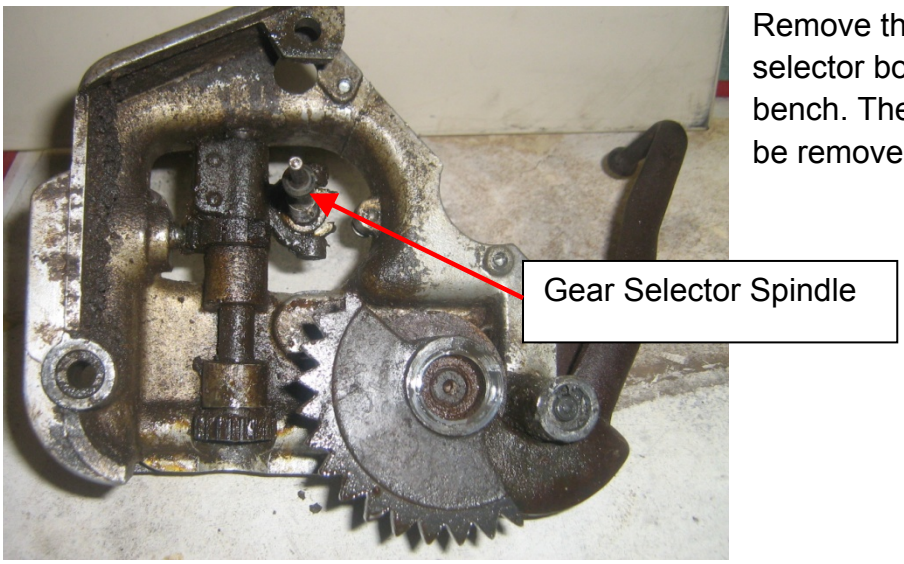
Remove the 2 M6 x 16mm long slot head bolts to remove the gear change shaft cover.



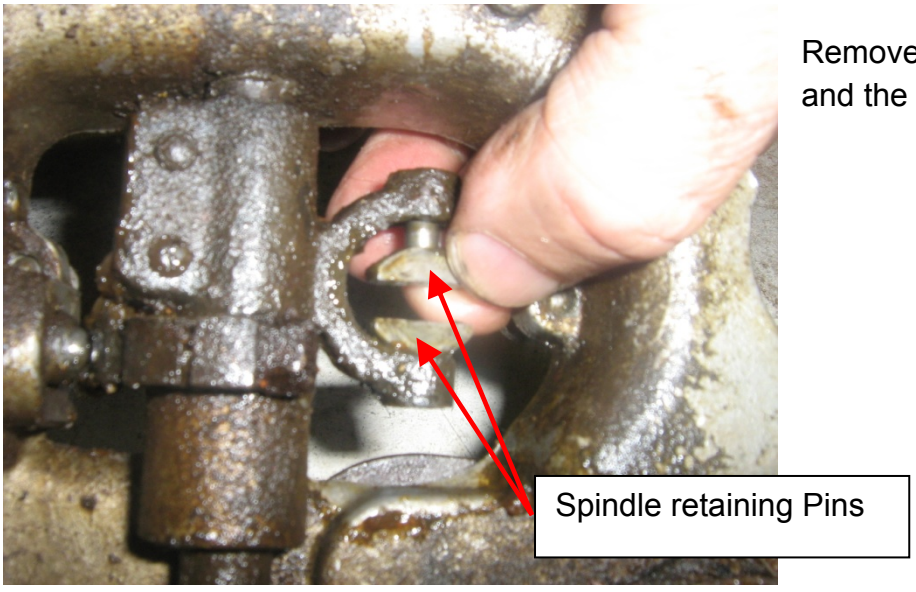
The gear selector assembly is now visable. Where possible it is good practice to put the bolts in their original location, this reduces the possibility of loosing bolts and fasteners.



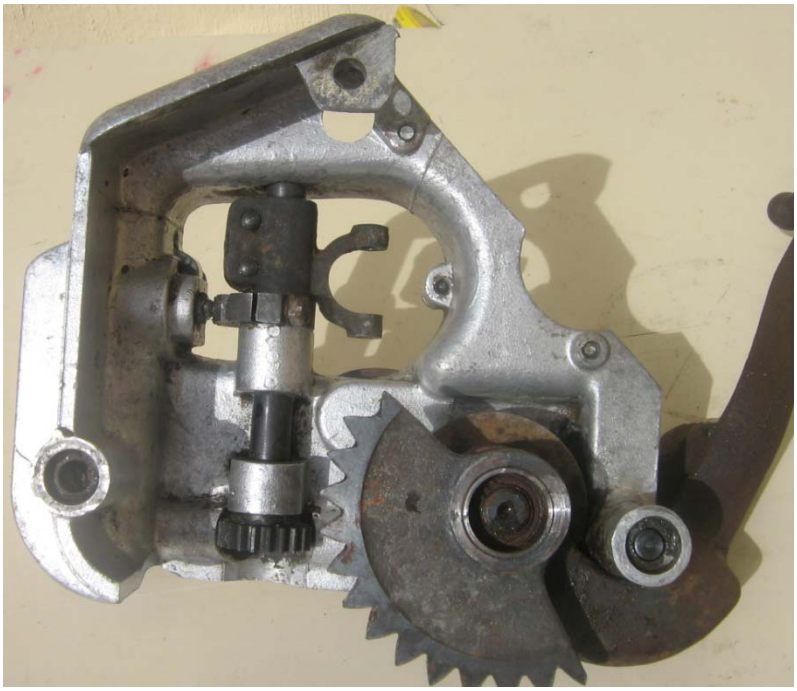
Remove the 3 x M8 slot head bolts which secure the the kickstart and gear selector box assembly. It may be necessary to apply a solution to loosen any stuck bolts. It may also be necessary to use some vice grips hold onto the screw driver to assist with turning the bolts. A “T” handle screwdriver would be useful.



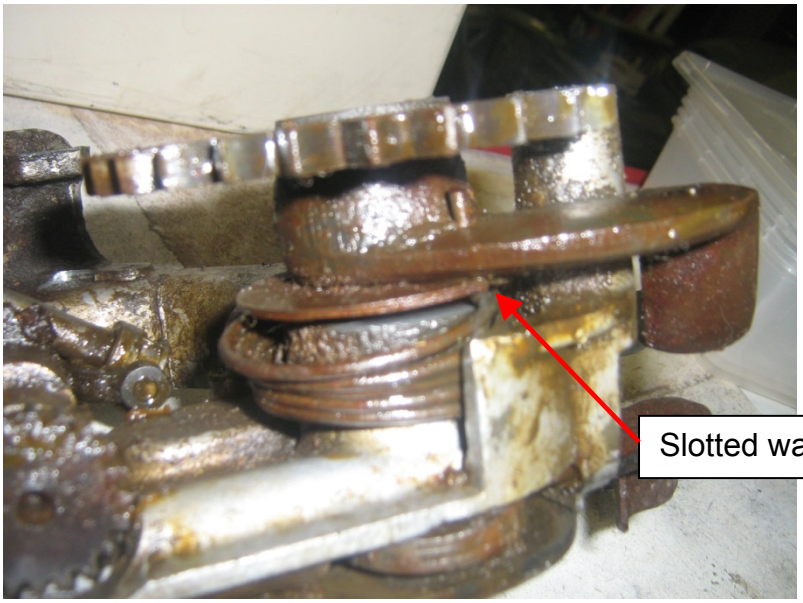
Remove the kickstart and gear selector box and place on a clean bench. The gear selector spindle can be removed.



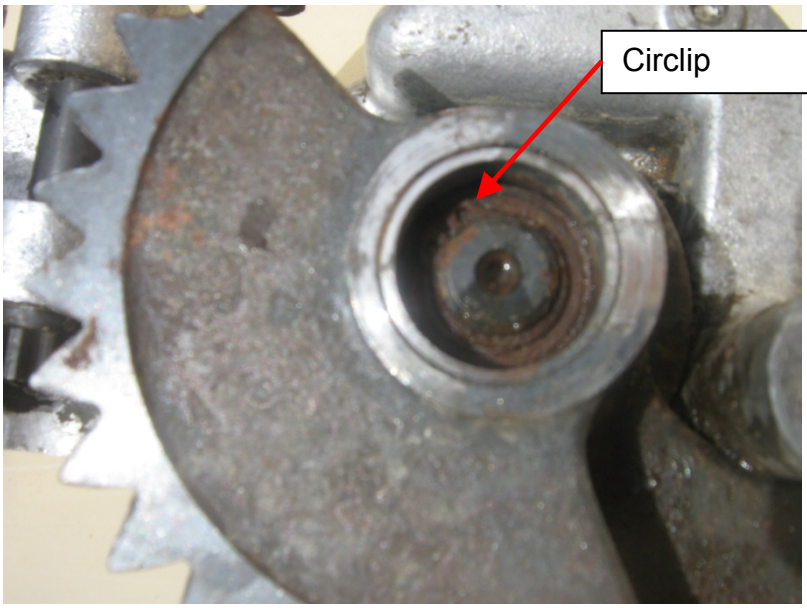
Remove the gear selector spindle and the spindle retaing pins.



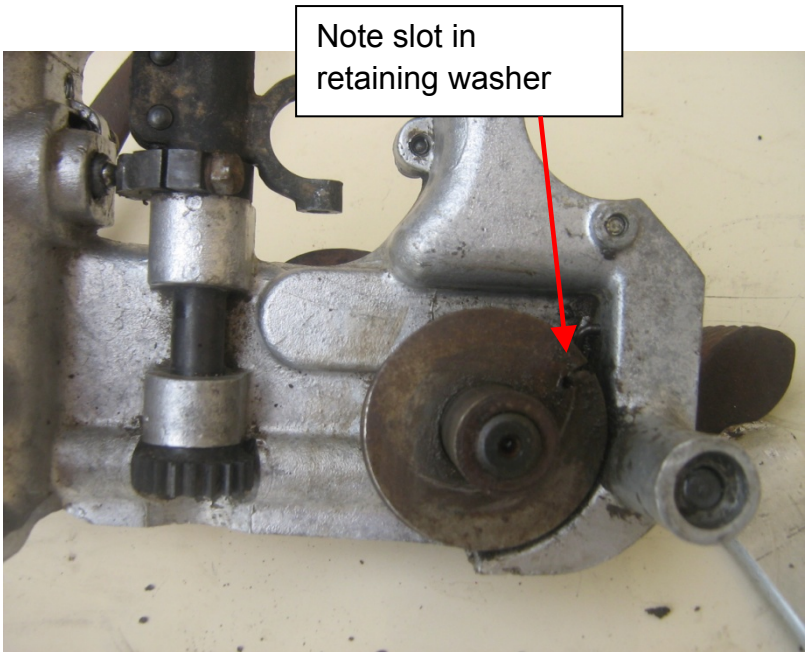
Place the cover on a clean bench and clean all exposed parts with degreaser, kerosene or similar.



Note the kickstart spring passes through the slotted washer then the kickstart lever.

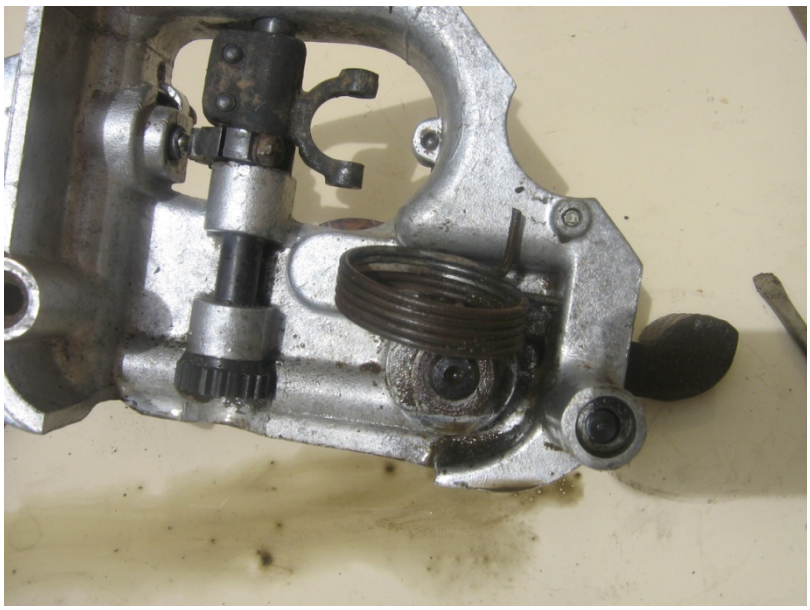


To remove the kickstart lever remove the circlip and the 20 od x 12 id x 1mm shim under the circlip.

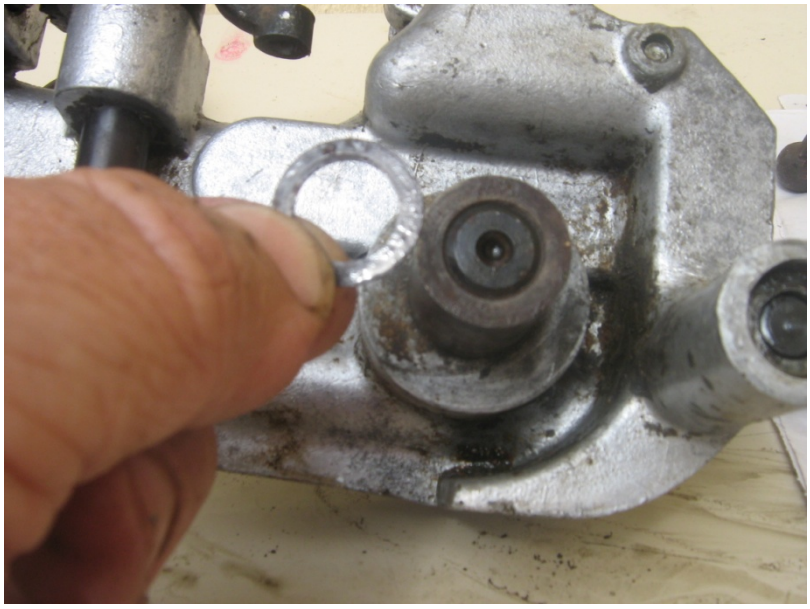


Once the kickstart lever has been removed the spring retaining washer is exposed and can be removed.

The kickstart lever spring is now exposed and can be removed.



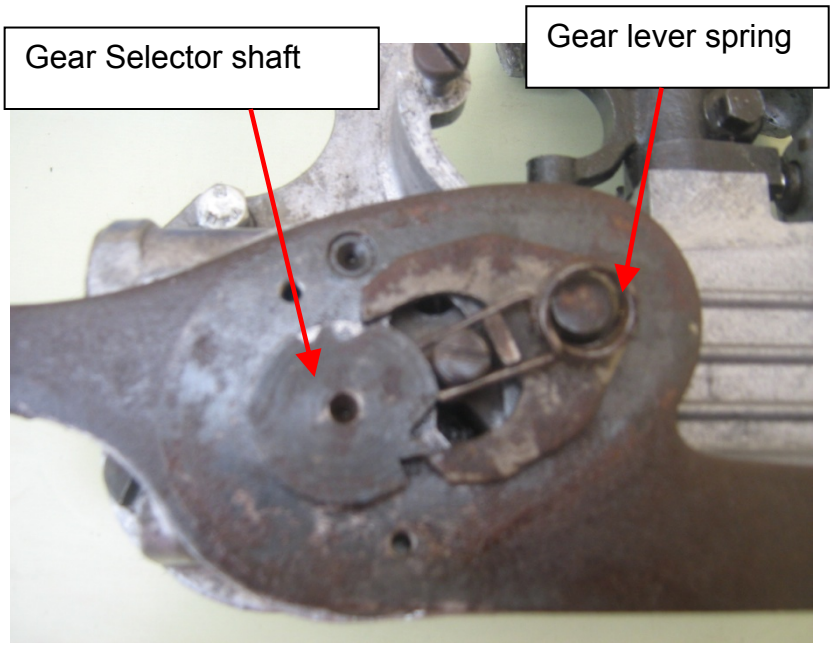
Rotate the spring over the crankcase housing to facilitate removal.



20 od. x 12id. x 1mm shim that sits under the kickstart/gearlever retaining circlip.

Removal of Gear Lever

Remove the 2 M4 x 12mm long domed slot head bolts that retain the gear lever cover

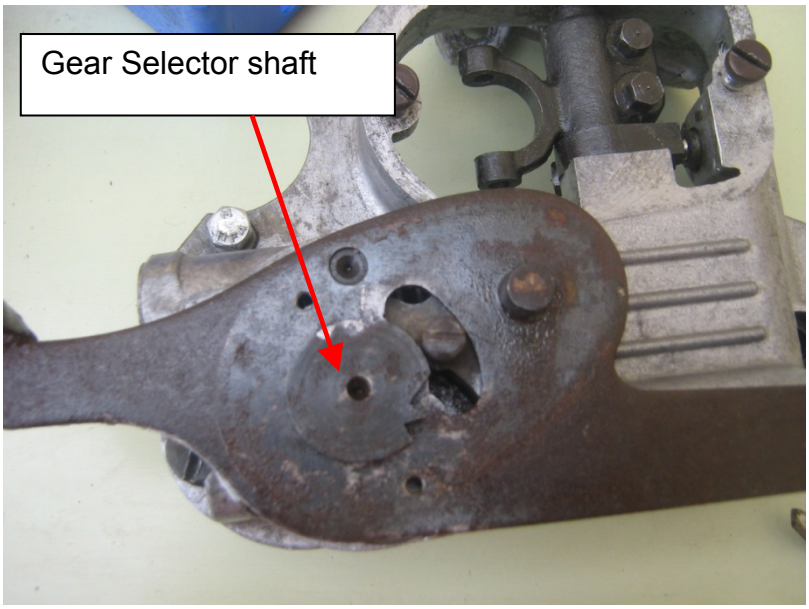


The gear lever spring and selector claw are now exposed. Note the gear lever cannot be removed until the circlip and shim are removed from the other end of the gear selector shaft.

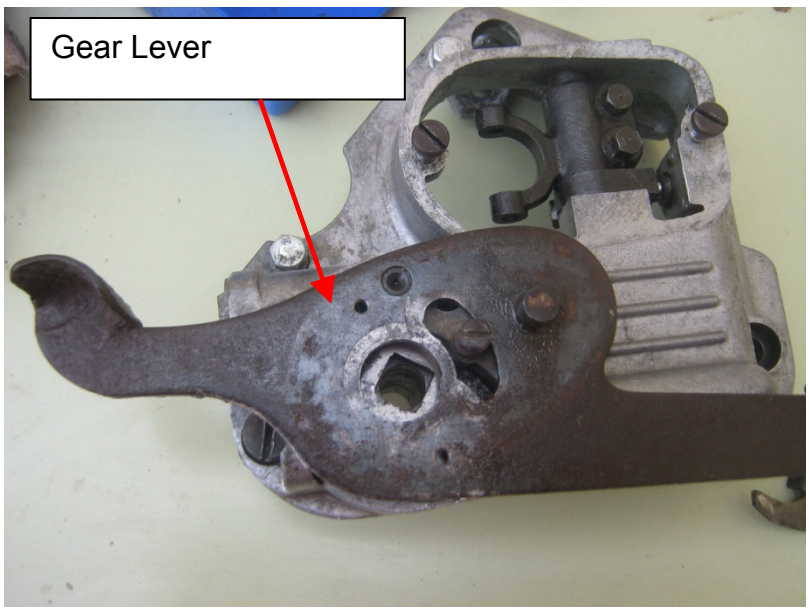
Arrangement when gear lever is in neutral “0” gear.

At this stage as the kickstart shaft needs to be removed. However it is retained by a circlip which is accessable only from the back side of the crankcase cover.

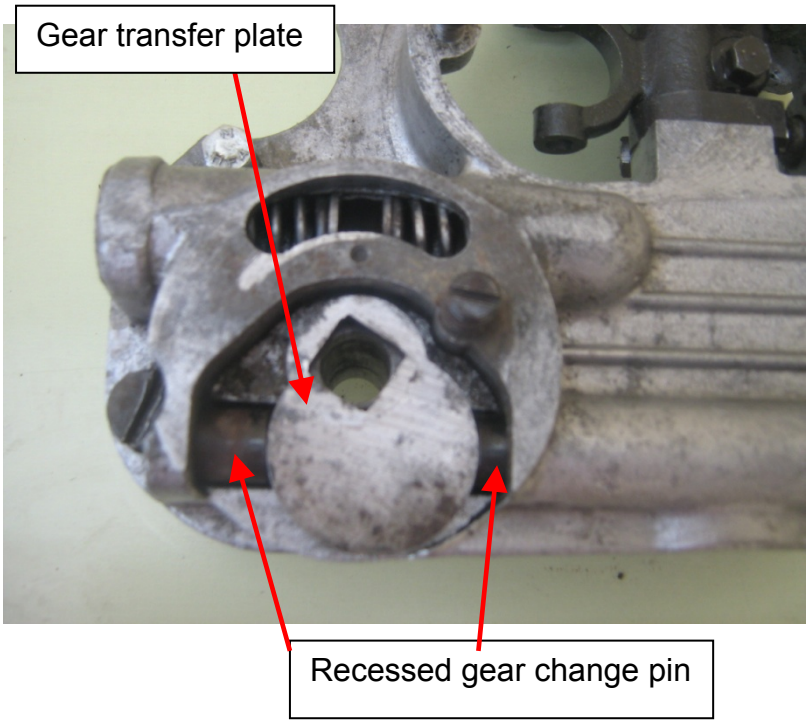
The gear lever spring sits loosly over the pin



Once the claw is removed the gear selector shaft can be removed.

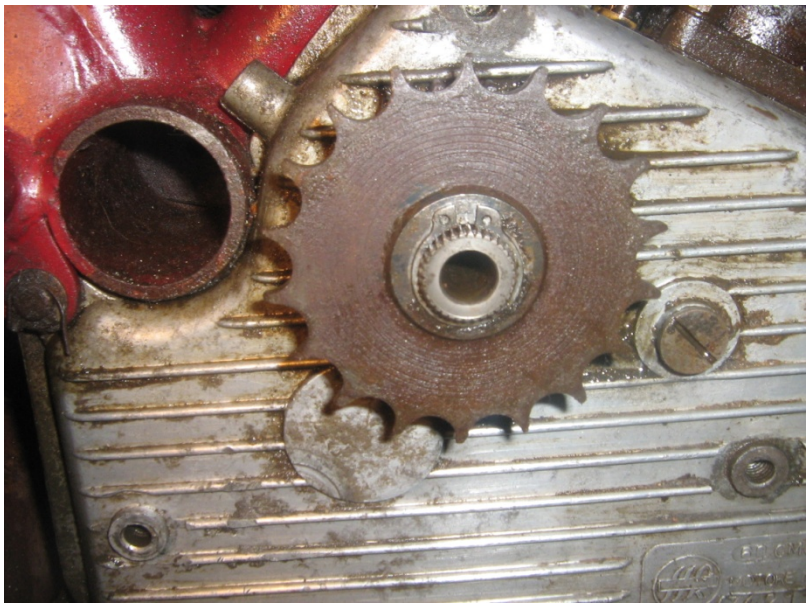


The gear lever can now be removed.

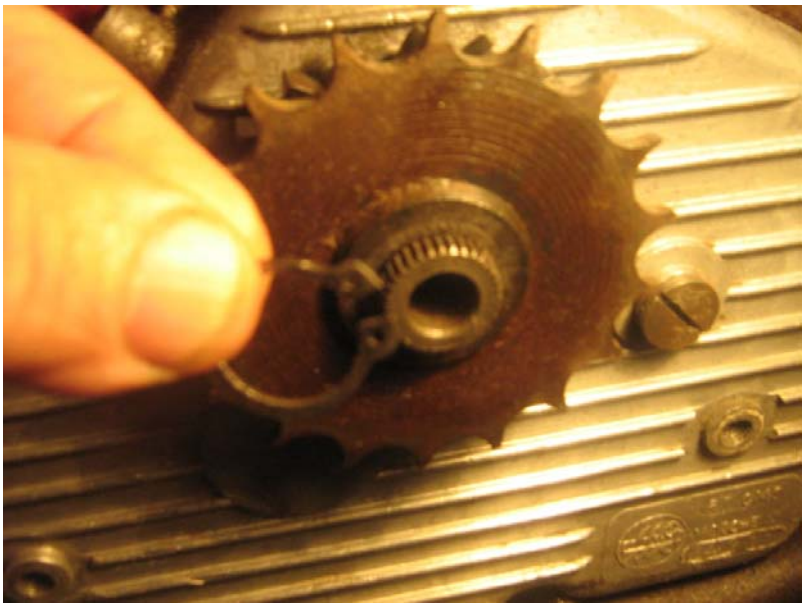


The gear lever can now be removed exposing the plate that engages into the recessed gear change pin.

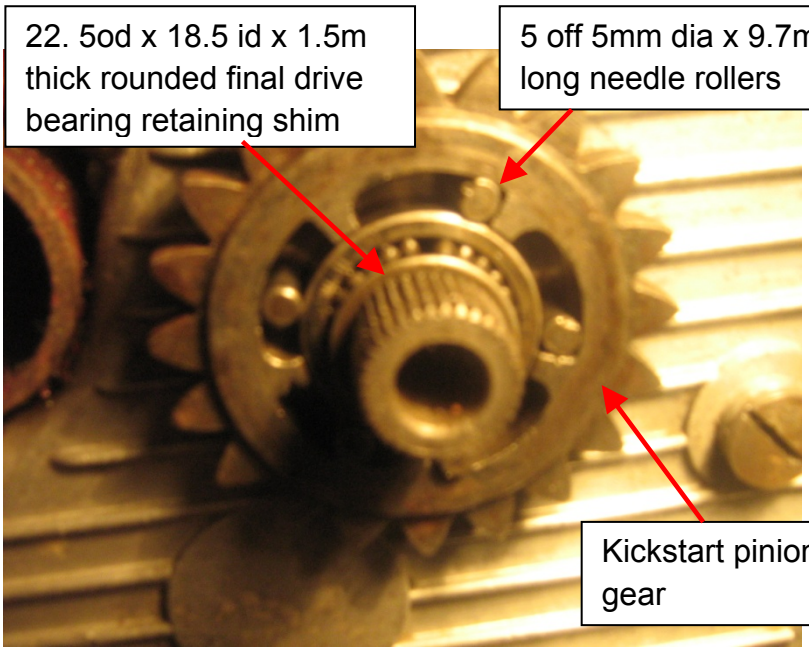
Remove the plate and the recessed gear change pin is exposed.



Final drive/countershaft sprocked.



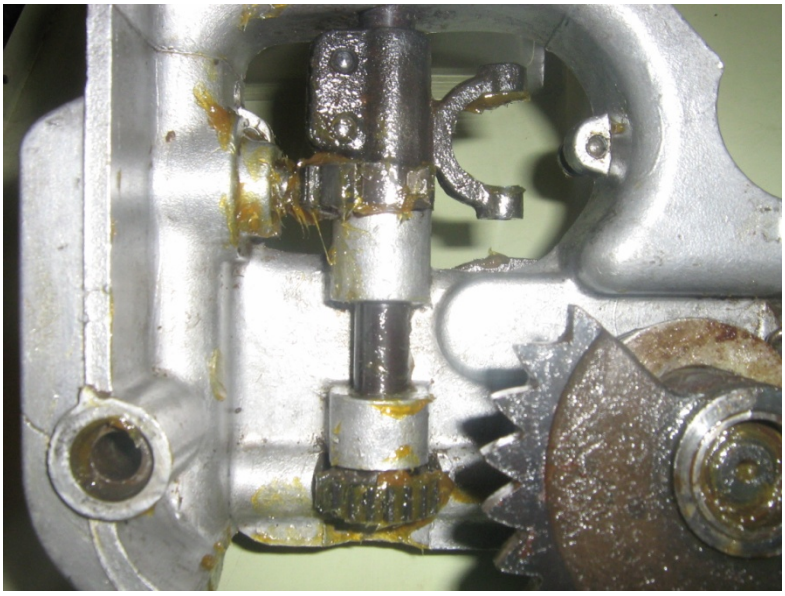
The final drive or countershaft sprocket is retained by a circlip. Remove the circlip and slide the sprocket off.



Kickstart pinion gear and 5 off 5mm dia x 9.7mm long needle rollers. Note the shape of the grooves for the needle rollers – they are tapered to enable the rollers and therefor the pinion to lock in position when the kickstart lever is activated.

2 off 42mm od x 39.2mm id x 1.05 thick shims that sit behind the kickstart pinion gear. Shims are used to achieve a snug fit of the various components with minimum end float, therefore shim thickennes may vary.

It is a good idea to arrange all parts neatly in containers.



Assemble parts in the reverse order of removal and apply a liberal coating of grease to all moving parts during reassembly

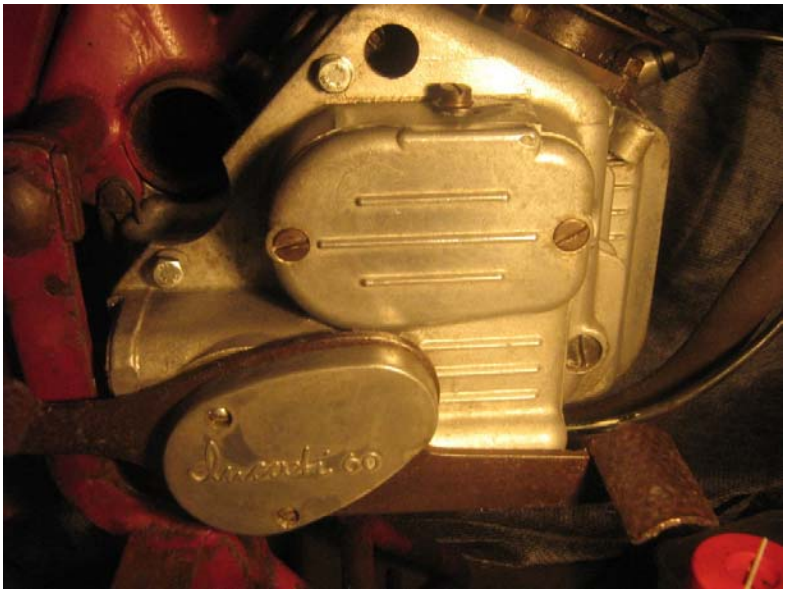


Image of reassembled kickstart/ gear selector cover.

7.8 Valve Timing

Timing of the valves involves setting the valves so the inlet and exhaust valves open and close at the correct time to enable fuel to enter the head at the correct time and for exhaust gasses to be discharged from the cylinder head at the correct time.

Setting:

Inlet opens 10° before TDC and closes 25° after BDC
Exhaust open 30° before BDC and closes 20° after TDC

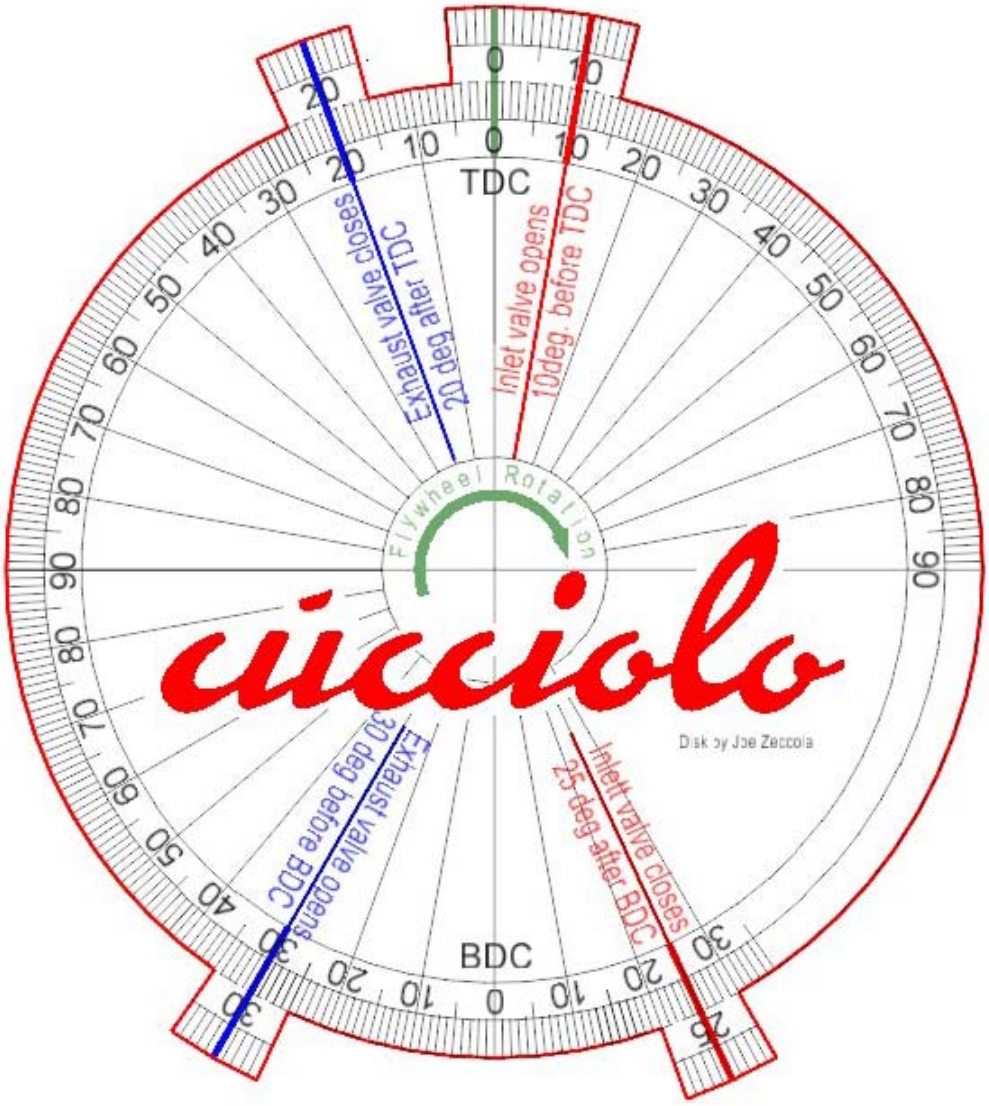


Fig. 7.8a

Figure **7.8a** shows a Degree Disk that can be printed off and used to set the valve timing. Fix the disk to the face of the flywheel with the TCD aligning with the “M” marking on the flywheel. Rotate the flywheel so the “M” mark on the flywheel aligns with the marking on the crankcase. Rotate the flywheel and adjust the valve rockers to comply with the settings noted above.

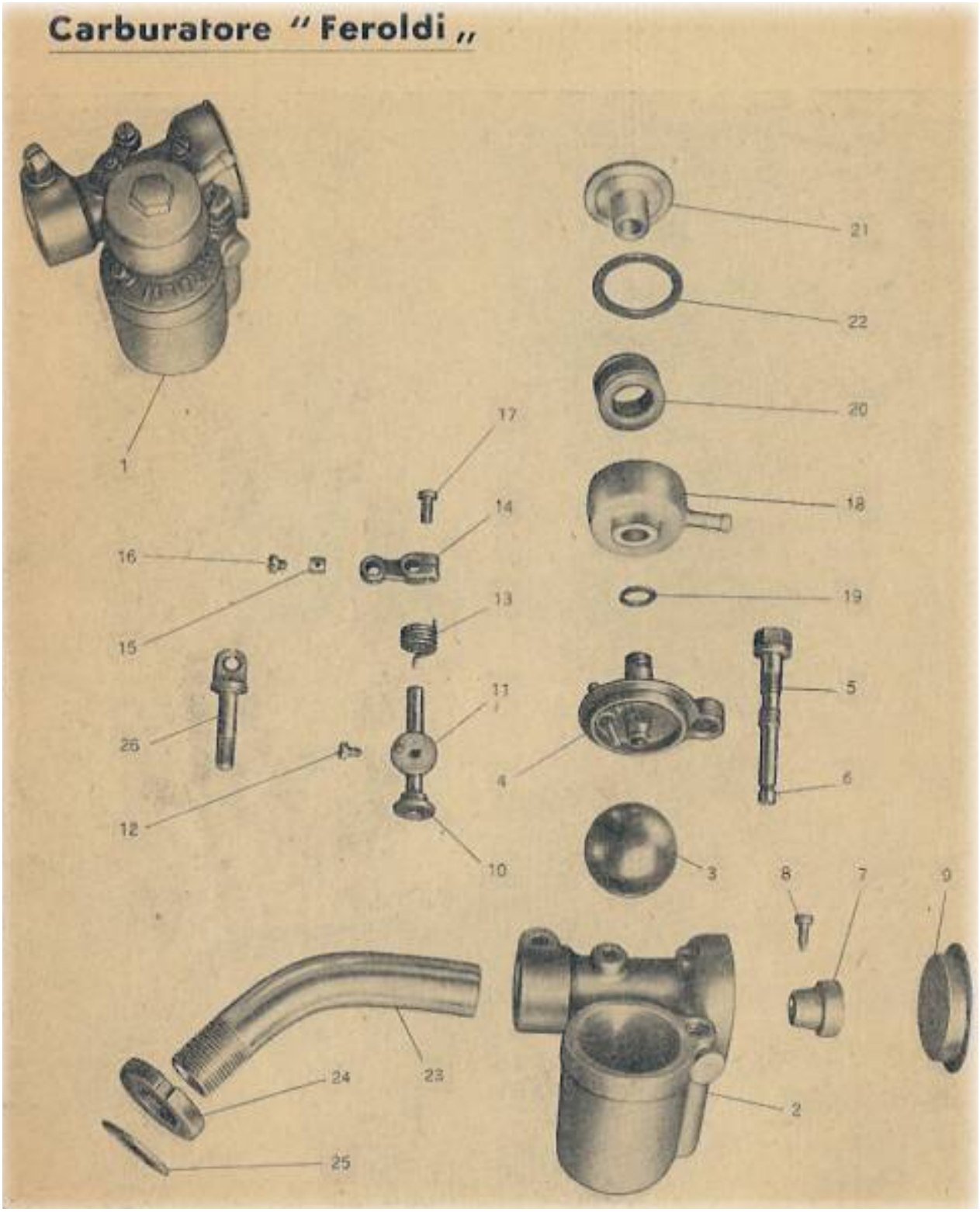
Chapter 8 – Carburetor

Note all cucciolo carburetors take 5mm ID fuel line

8.1 Table Of Carburetor Types

Cucciolo Model	Carburetor Type	Main Jet	Idle Jet	Needle Jet
T1	Feroldi or Weber 14/8			
T0, T2	Weber 14/8	55	45	10
55M, 55E, 55R	Weber 14MFC			
60cc and various 65cc	Weber 15MFC			
60 Sport	Weber 16MFC			

8.2 Feroldi Carburetor for T1 Cucciolo

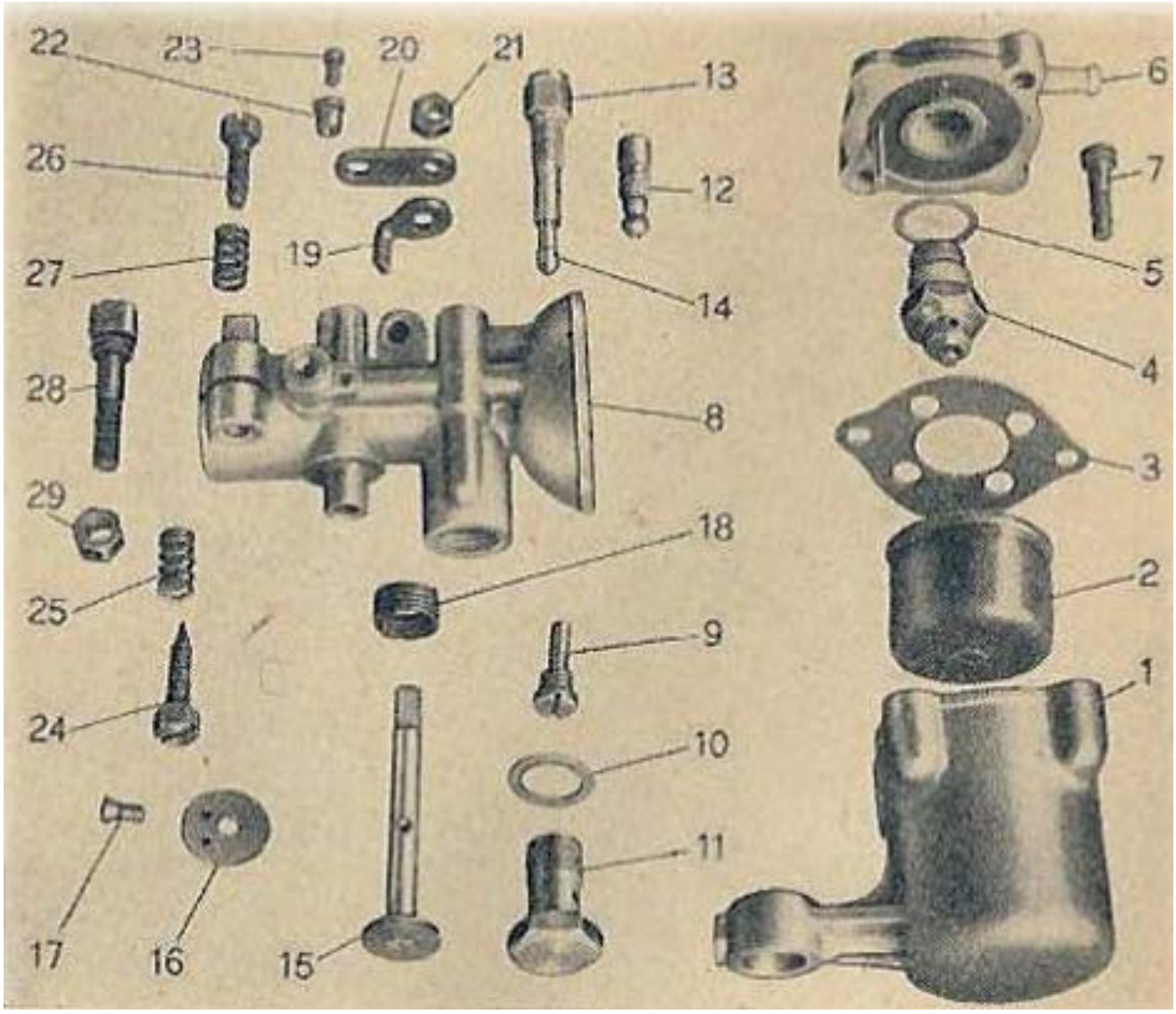


Exploded View of Ferodi Carburetor

Parts List Feroldi Carburetor

Part No	Description
1	Carburetor Feroldi
2	Carburetor body
3	float
4	Cap
5	
6	
7	
8	
9	
10	
11	
12	
13	Spring
14	
15	Cable locking pin
16	Cable locking screw
17	
18	
19	
20	
21	
22	Gasket
23	Inlet manifold
24	Inlet manifold lock nut
25	

8.3 Weber Carburetor For T1 Cucciolo

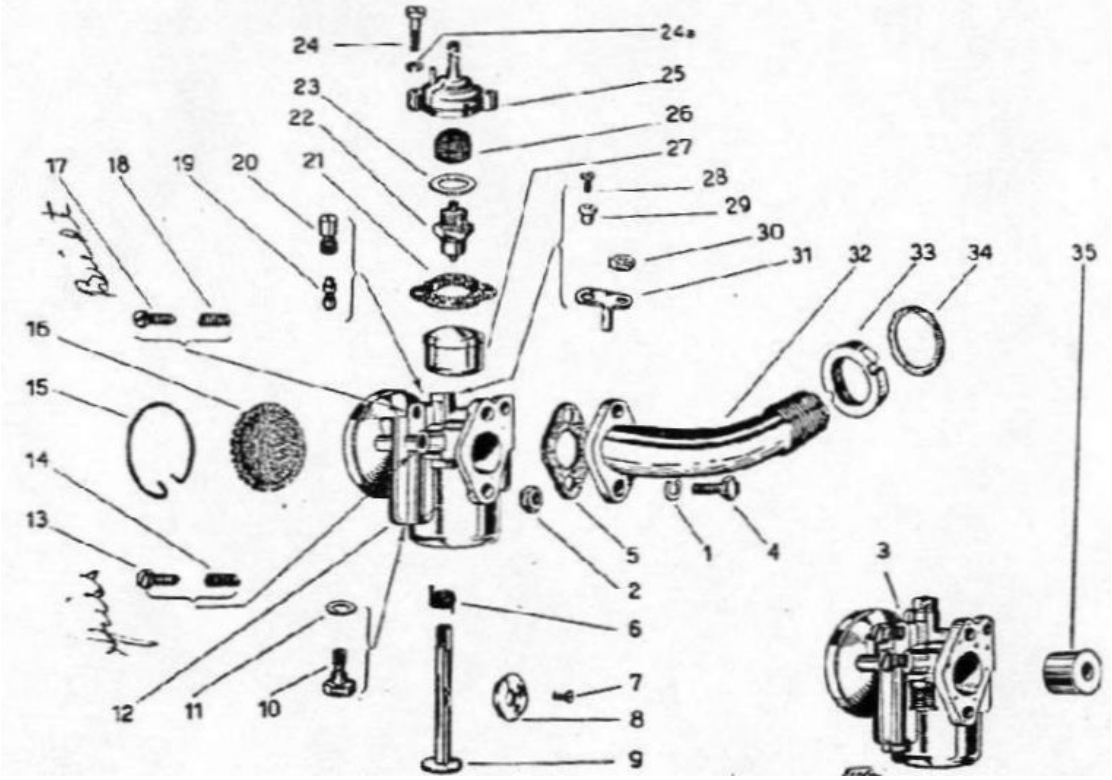


Exploded View of Weber Carburetor

Parts List Weber Carburetor

Part No	Description
1	Float bowl
2	Float
3	Float bowl gasket
4	Valve
5	gasket
6	Carburetor Cap
7	Cap retaining bolt
8	Carburetor Body
9	Main jet
10	Drain bolt washer
11	Drain bolt
12	
13	Needle jet
14	
15	
16	
17	
18	Filter
19	Cable stop arm
20	Cable guide arm
21	Nut M5
22	Cable guide
23	Cable locking screw
24	Idle Screw
25	Spring
26	Mixture Screw
27	Spring
28	

8.4 Weber Carburetor 14mm for T2 (Weber 14MFC)



Repère I. Illus. I.	Pièce I. - Part I.	DENOMINATION	COMPONENT	Validité - Validity	Q.té p. mot. I. per vel.
1	T2.M44	Rondelle élastique A5,3 UNI 1751	Lockwasher A 5,3 UNI 1751		2
2	T2.AD11	Ecrou de 5 × 4	Hex nut 5 MA × 4		2
3	T50.M46	Carburateur complet Weber 14 MFC	Carburetter body, complete Weber 14 MFC		1
4	T2.M43	Vis de 5 × 19	Screw TE 5 MA × 19		2
5	60M1.T57	Plaquette garniture de la pipe au carburateur	Gasket		1
6	T2.W1174	Ressort rappel volet de gaz	Throttle spring		1
7	T2.W1214	Vis de fixation volet de gaz	Screw for carburetter butterfly		1
8	T2.W1321	Volet de gaz	Throttle		1
9	T2.W1161a	Axe support volet de gaz complet	Spindle for throttle		1
10	T2.W1156/65	Gicleur principal	Main jet		1
11	T2.W1147	Joint garniture gicleur principal	Gasket for main jet		1
12	T2.W1167	Corps du carburateur	Carburetter body, bare	jusqu'au mot. 270999 to mot. 270999	1
	T50.W1167	Corps du carburateur	Carburetter body	du mot. 271000 from m. 271000	1
13	T2.W1138	Vis de réglage mélange minimum air	Idling mixture control screw		1
14	T2.W1173	Ressort vis réglage mélange minimum et réglage ralentie	Loading spring for idling mixture and idling speed		1
15	T50.W1977	Bague élastique pour disque prise d'air	Circlip for air intake disk	jusqu'au mot. 270999 to mot. 270999	1
16	T50.W1976	Disque prise d'air	Air intake disk	jusqu'au mot. 270999 to mot. 270999	1
15-16	65M1.W1921a	Prise d'aire	Air intake	du mot. 271000 from m. 271000	1
17	T2.W1144	Vis de butée de ralentie	Screw for idling speed		1
18	T2.W1172	Ressort réglage mélange minimum et réglage ralentie	Spring for idling jet & idling speed control		1
19	T2.W1150	Gicleur minimum	Idling jet		1
20	T2.W1151	Gicleur d'émulsion	Brass cover screw for idling jet		1
21	T2.W1146	Joint du couvercle de la cuve	Gasket for cup cover		1
22	T2.W1154a	Pointeau complet	Float valve, complete		1
23	T2.W1154	Joint du pointeau	Gasket for float valve		1
24	T2.W1153	Vis de serrage couvercle de la cuve	Screw for holding cup cover		2
24a	T50.W1906	Rondelle élastique pour vis serrage couvercle de la cuve	Washer for above		2
25	T50.W1787a	Couvercle de la cuve	Cup cover		1
26	T50.W1143a	Filtre arrivée essence	Filter gauze		1
27	T2.W1158a	Flotteur complet	Float, complete		1
28	T2.W1149	Vis serrage câble de gaz	Locking screw for Bowden cable		1
29	T2.W1148	Axe pour fixation câble de gaz	Terminal for throttle Bowden cable		1
30	T2.W557	Ecrou de blocage levier volet de gaz	Locking nut for butterfly control lever		1
31	T2.WLP140	Butée de ralentie	Butterfly control lever	31	1
32	T50.MA1	Pipe d'admission	Induction pipe		1
33	T2.M41	Ecrou de blocage pipe d'admission	Lock ring for induction pipe		1
34	T2.M40	Joint de la pipe d'admission	Gasket for incuction pipe		1
35	T50.SV/M17	Régulateur du Carburateur T50.M 46	Carburetter Governor T50.M 46		1

8.5 Weber Carburetor 15mm for 60cc T3 (Weber 15MFC)

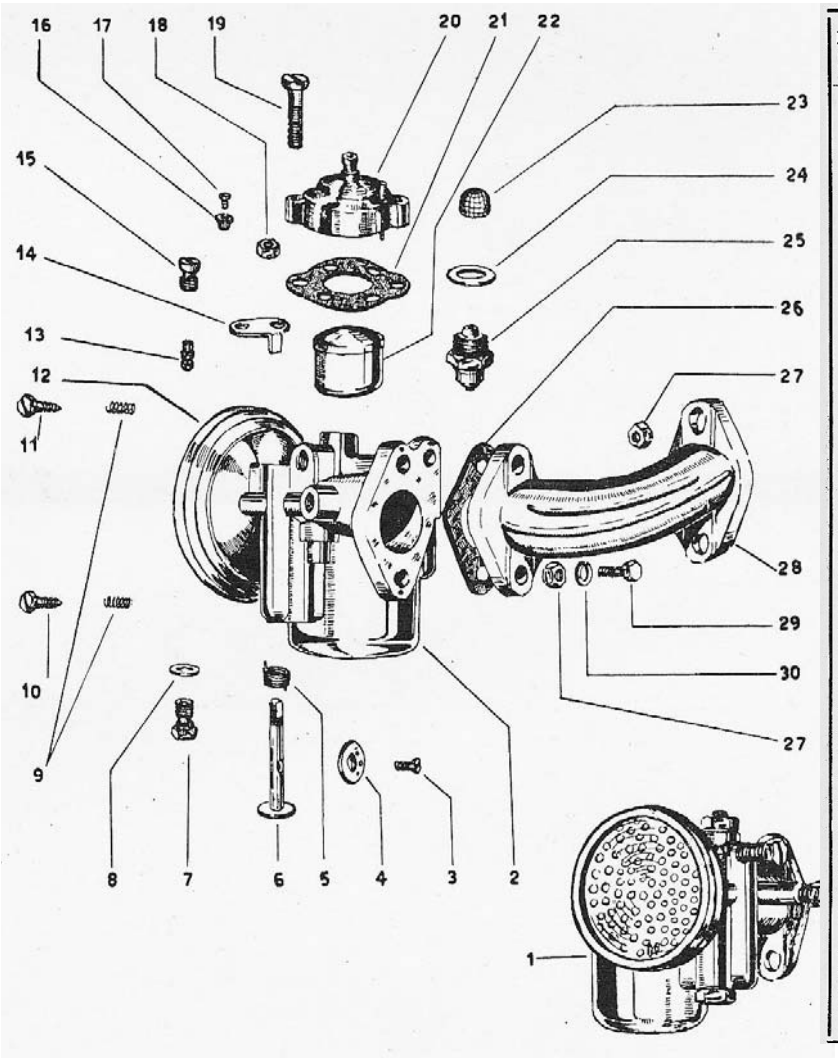


Fig. N.	Classifica	DENOMINAZIONE	Quantità p. insieme
1	60M1.T 58	Carburatore	1
2	60M1.W1944	Corpo carburatore	1
3	T2 W 1214	Vite fissaggio farfalla	1
4	60M1.W1945	Farfalla	1
5	T2 W 1174	Molla richiamo farfalla	1
6	T2 W 1161a	Alberino porta farfalla compl.	1
7	60M1.W 1156/65	Getto principale (65)	1
8	T2 W 1147	Guarnizione p. getto pricipale	1
9	T2 W 11 73	Molla p. reg. miscela minimo e reg. andatura minimo	2
10	T2 W 1138	Vite reg. miscela minimo	1
11	T2 W 1144	Vite registro andat. minimo	1
12	60M1.W1921a	Presa d'aria	1
13	T2 W1150/45	Getto del minimo (45)	1
14	T2 WLP 140	Leva comando farfalla	1
15	T2 W 1151	Porta getto del minimo	1
16	T2 W 1148	Manicotto fiss. treccia comando	1
17	T2 W 1149	Vite fiss. treccia comando	1
18	T2 W 557	Dado per bloccaggio leva comando farfalla	1
19	T2 W 1153	Vite fissaggio coperchio vasch.	2
20	60M1.W1909a	Coperchio vaschetta completo	1
21	T2 W 1146	Guarniz. p. coperchio vaschetta	1
22	T2 W 1158a	Galleggiante completo	1
23	T50 W1145a	Reticella filtrante	1
24	T2 W 1154	Guarniz. p. alloggio sede spillo	1
25	T2 W 1164a	Sede spillo completo	1
26	60MI. T 57	Guarnizione	1
27	T2 AB 11	Dado esagonale	4
28	60M1.W1015	Condotto aspirazione	1
29	T2 M 43	Vite TE	2
30	T2 M 44	Rondella elastica AM 5	4

8.6 Weber Carburetor 15mm (Weber 15MFC) for:
1951 65cc
1952 65cc TL

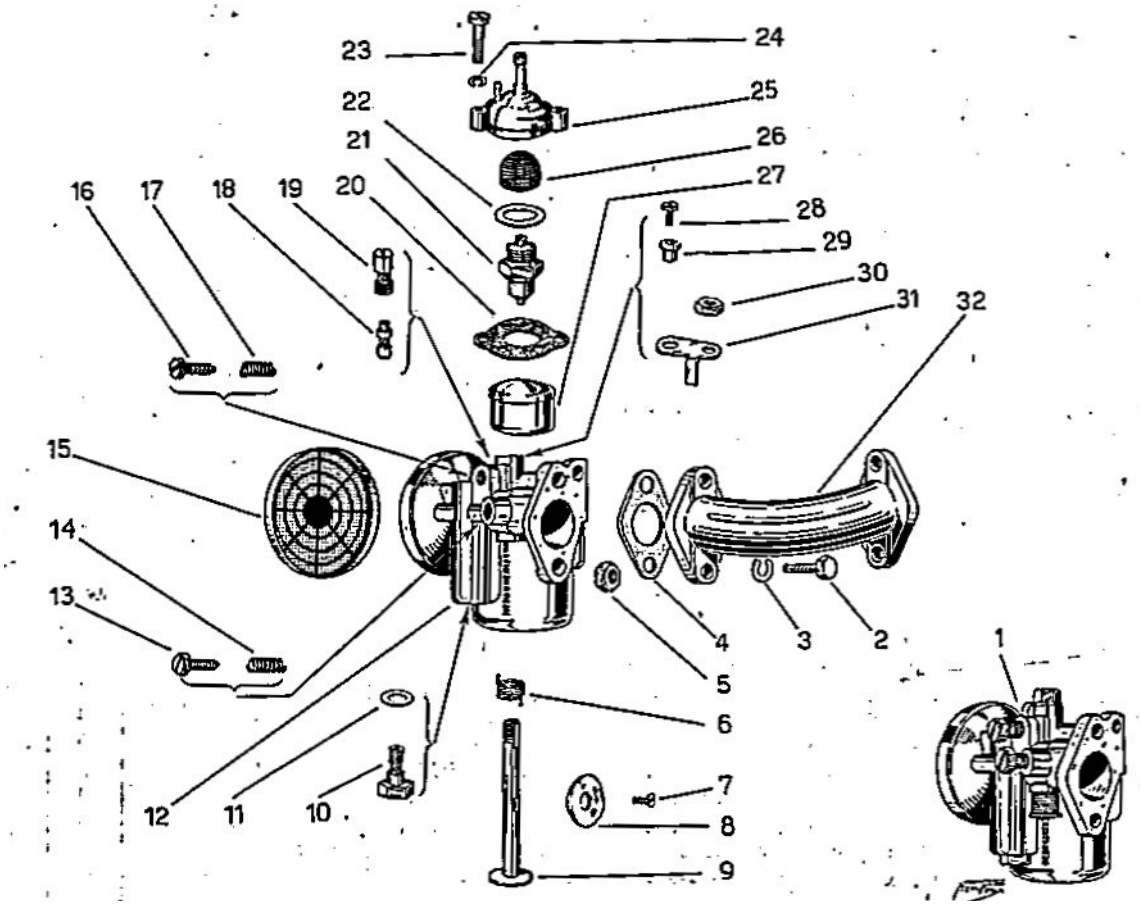


Fig.N.	CLASSIFICA	DENOMINAZIONE	VALIDITA'	QUANTITA PER 155.
1	65M1.T58	Carburatore Weber 15MFC		1
2	T2.M43	Vite TE 5 MAx19		2
3	T2.M44	Rondella elastica A 5,3 UNI 1751		4
4	60M1.T57	Guarnizione		2
5	T2.AB11	Dado esagonale 5 MAx4		4
6	T2.W1174	Molla richiamo farfalla		1
7	T2.W1214	Vite fissaggio farfalla		1
8	60M1.W1945	Farfalla		1
9	T2.W1161a	Alberino porta farfalla completo		1
10	65M1.W1156/67	Getto principale (67)		1
11	T2.W1147	Guarnizione per getto principale		1
12	60M1.W1944	Corpo carburatore		1
13	T2.W1138	Vite registro miscela minimo		1
14	T2.W1173	Molla per registro miscela minimo		1
15	60M1.W1921a	Presa d'aria		1
16	T2.W1144	Vite registro andatura minimo		1
17	T2.W1173	Molla per registro andatura minimo		1
18	T2.W1150/45	Getto del minimo (45)		1
19	T2.W1151	Porta getto del minimo		1
20	T2.W1146	Guarnizione per coperchio vaschetta		1
21	T2.W1164a	Sede spillo completa		1
22	T2.W1154	Guarnizione per alloggiamento sede spillo		1
23	T2.W1153	Vite fissaggio coperchio vaschetta		2
24	T2.AB21	Rondella elastica A 4,3 UNI 1751		2
25	60M1.W1909a	Coperchio vaschetta completo		1
26	T50.W1145a	Reticella filtrante		1
27	T2.W1158a	Galleggiante completo		1
28	T2.W1149	Vite fissaggio treccia comando		1
29	T2.W1148	Manicotto fissaggio treccia comando		1
30	T2.W557	Dado per bloccaggio leva comando farfalla		1
31	T2.WLP140	Leva comando farfalla		1
32	60M1.T1015	Condotto aspirazione		1

8.7 Weber Carburetor 15mm for 1955 65cc TS (Weber 15MFC)

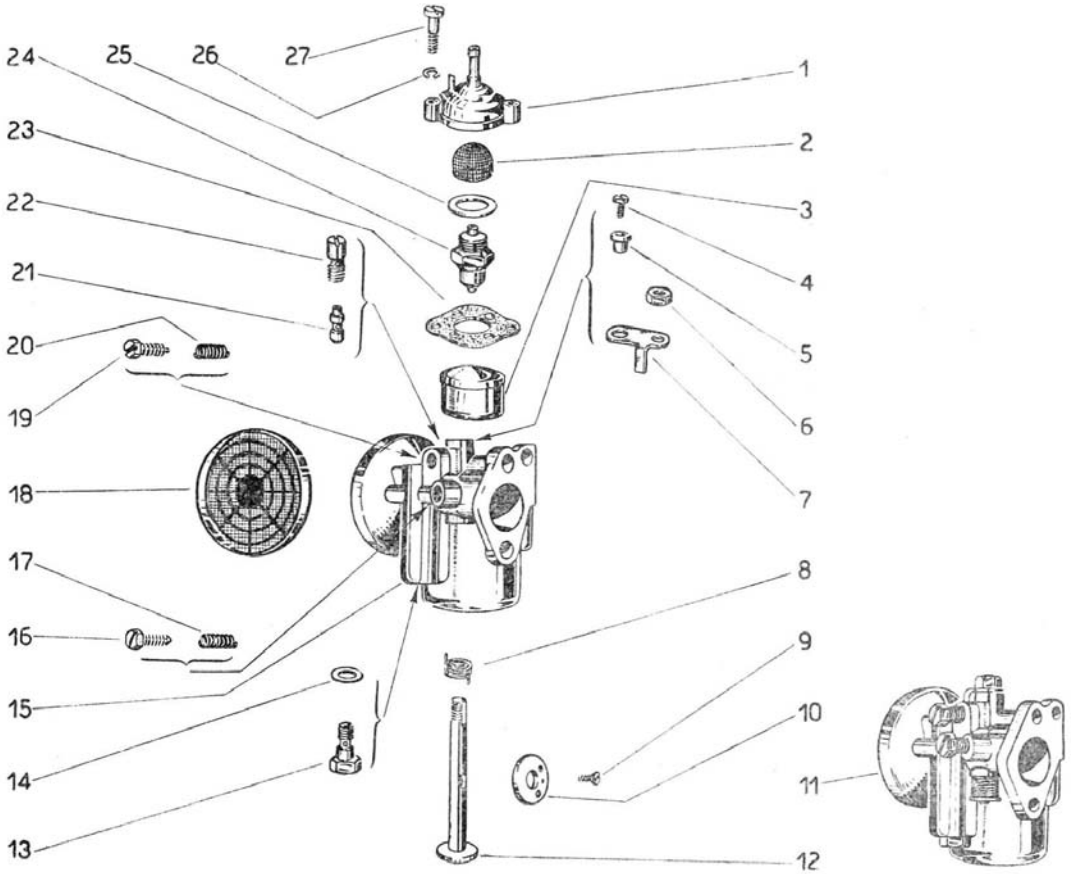


Fig. N.	CLASSIFICA	DENOMINAZIONE	VALIDITÀ	Quantità per ins.
1	65TS.D1	**Coperchio** vaschetta completo		1
2	65TS.D2	**Reticella** filtrante		1
3	65TS.D3	**Galleggiante** completo		1
4	65TS.D4	**Vite** fissaggio treccia comando		1
5	65TS.D5	**Manicotto** fissaggio treccia comando		1
6	65TS.D6	**Dado** per bloccaggio leva comando farfalla		1
7	65TS.D7	**Leva** comando farfalla		1
8	65TS.D8	**Molla** richiamo farfalla		1
9	65TS.D9	**Vite** fissaggio farfalla		1
10	65TS.D10	**Farfalla**		1
11	65TS.D11	**Carburatore** Weber 15 MFC		1
12	65TS.D12	**Alberino** porta farfalla completo		1
13	65TS.D13	**Getto** principale (67)		1
14	65TS.D14	**Guarnizione** per getto principale		1
15	65TS.D15	**Corpo** carburatore		1
16	65TS.D16	**Vite** registro miscela minimo		1
17	65TS.D17	**Molla** per registro miscela minimo		1
18	65TS.D18	**Presa** aria		1
19	65TS.D19	**Vite** registro andatura minimo		1
20	65TS.D20	**Molla** per registro andatura minimo		1
21	65TS.D21	**Getto** del minimo (45)		1
22	65TS.D22	**Porta** getto del minimo		1
23	65TS.D23	**Guarnizione** per coperchio vaschetta		1
24	65TS.D24	**Sede** spillo completa		1
25	65TS.D25	**Guarnizione** per all. sede spillo		1
26	65TS.D26	**Rond.** elast. A 4,3 UNI 1751		2
27	65TS.D27	**Vite** fissaggio coperchio vaschetta		2

8.8 Weber Carburetor 15mm for 1950 65cc Sport (Weber 15MFC)

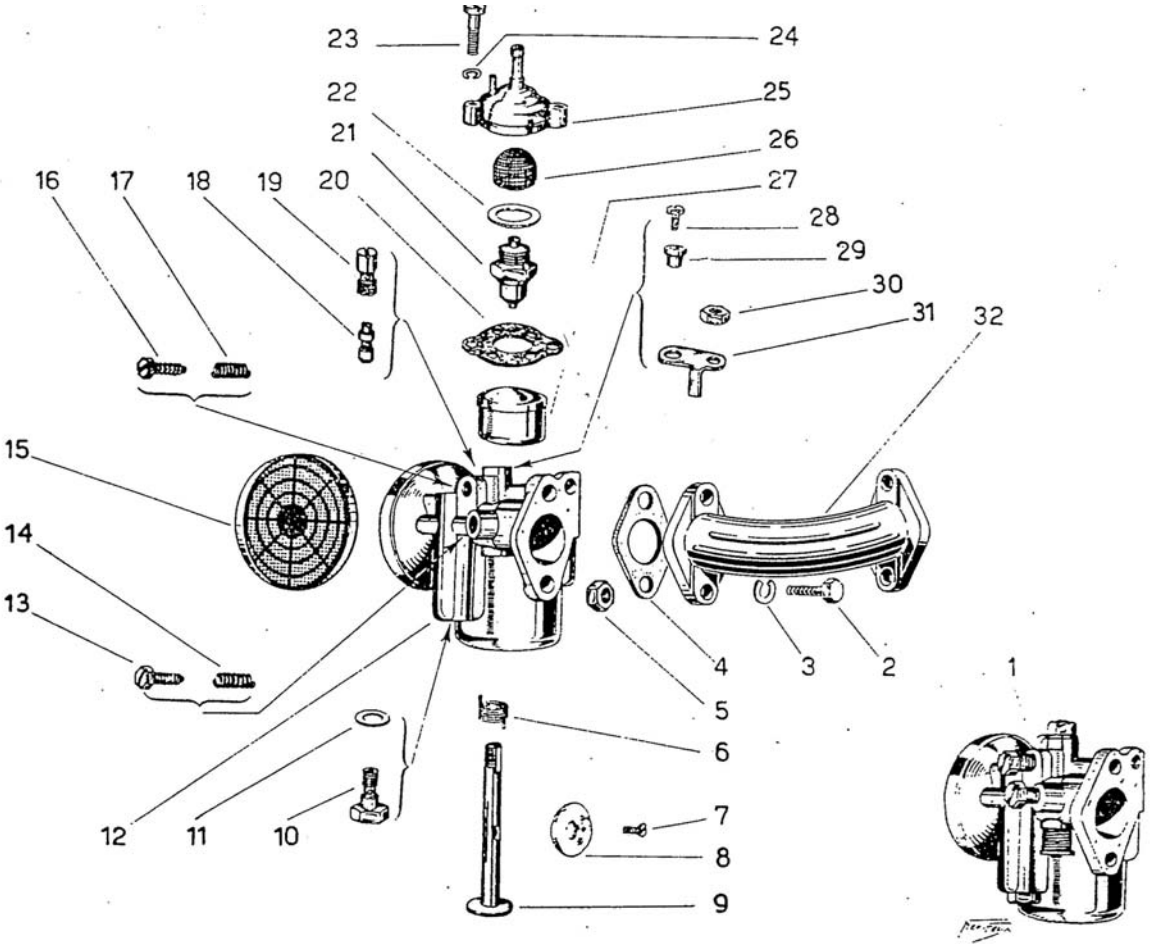


FIG. N.	CLASSIFICA	DENOMINAZIONE	VALIDITÀ	QUANTITÀ PER ISS.
1	60M1.T58	Carburatore Weber 15MFC		1
2	T2.M43	Vite TE 5 MAx19		2
3	T2.M44	Rondella elastica A 5.3 UNI 1751		4
4	60M1.T57	Guarnizione		2
5	T2.AB11	Dado esagonale 5 MAx4		4
6	T2.W1174	Molla richiamo farfalla		1
7	T2.W1214	Vite fissaggio farfalla		1
8	60M1.W1945	Farfalla		1
9	T2.W1161a	Alberino porta-farfalla completo		1
10	60M1.W1156/65	Getto principale (65)		1
11	T2.W1147	Guarnizione per getto principale		1
12	60M1.W1944	Corpo carburatore		1
13	T2.W1138	Vite registro miscela minimo		1
14	T2.W1173	Molla per registro misc. minimo		1
15	60M1.W1921a	Presa d'aria		1
16	T2.W1144	Vite registro andatura minimo		1
17	T2.W1173	Molla per registro andatura minimo		1
18	T2.W1150/45	Getto del minimo (45)		1
19	T2.W1151	Porta-getto del minimo		1
20	T2.W1146	Guarnizione per coperchio vaschetta		1
21	T2.W1164a	Sede spillo completa		1
22	T2.W1154	Guarnizione per alloggiamento sede spillo		1
23	T2.W1153	Vite fissaggio coperchio vaschetta		2
24	T2.AB21	Rondella elastica A 4.3 UNI 1751		2
25	60M1.W1909a	Coperchio vaschetta completo		1
26	T50.W1145a	Reticella filtrante		1
27	T2.W1158a	Galleggiante completo		1
28	T2.W1149	Vite fissaggio treccia comando		1
29	T2.W1148	Manicotto fissaggio treccia comando		1
30	T2.W557	Dado per bloccaggio leva comando farfalla		1
31	T2.WLP 140	Leva comando farfalla		1
32	60M1.T1015	Condotto aspirazione		1

8.9 Weber Carburetor 16mm for 1951 60cc Sport (Weber 16MFC)

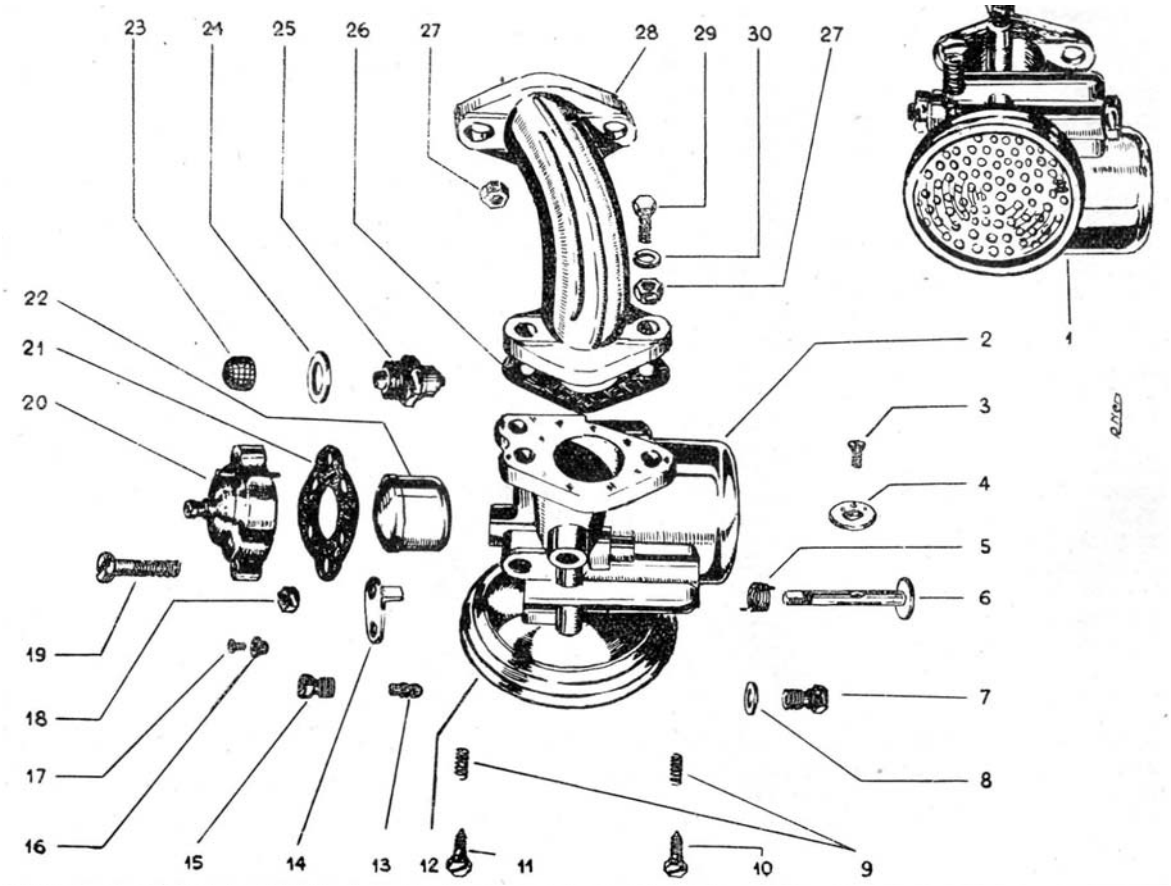


Fig. N.	CLASSIFICA	DENOMINAZIONE	VALIDITA'	QUANTITÀ PER INS.	PREZZO L.
1	60M1.T58	**Carburatore** Weber		1	
2	60M1.1944	**Corpo** carburatore		1	
3	T2.W1214	**Vite** fissaggio farfalla		1	
4	60M1.W1945	**Farfalla**		1	
5	T2.W1174	**Molla** richiamo farfalla		1	
6	T2.W1161a	**Alberino** porta-farfalla completo		1	
7	60M1.W1156/65	**Getto** principale (65)		1	
8	T2.W1147	**Guarnizione** per getto principale		1	
9	T2.W1173	**Molla** per reg. miscela min. e registro andat. minimo		2	
10	T2.W1138	**Vite** registro miscela minimo		1	
11	T2.W1144	**Vite** registro andatura minimo		1	
12	60M1.W1921a	**Presa** d'aria		1	
13	T2.W1150/45	**Getto** del minimo (45)		1	
14	T2.WLP140	**Leva** comando farfalla		1	
15	T2.W1151	**Porta-getto** del minimo		1	
16	T2.W1148	**Manicotto** fissaggio treccia comando		1	
17	T2.W1149	**Vite** fissaggio treccia comando		1	
18	T2.W557	**Dado** per bloccaggio leva comando farfalla		1	
19	T2.W1153	**Vite** fissaggio coperchio vaschetta		2	
20	60M1.W1909a	**Coperchio** vaschetta completo		1	
21	T2.W1146	**Guarnizione** per coperchio vaschetta		1	
22	T2.W1158a	**Galleggiante** completo		1	
23	T50.W1145a	**Reticella** filtrante		1	
24	T2.W1154	**Guarnizione** per alloggiamento sede spillo		1	
25	T2.W1164a	**Sede** spillo completa		1	
26	60M1.T57	**Guarnizione**		2	
27	T2.AB11	**Dado** esagonale 5 MA		4	
28	60M1.T1015	**Condotto** aspirazione		1	
29	T2.M43	**Vite** TE 5 MAx19		2	
30	T2.M44	**Rondella** elastica A 5.3 UNI 1751		4	

Chapter 9 – Wheels Brakes and Tyres

9.1 Brakes for T2 Bicycle

Front Drum Brake (Sturmey Archer)

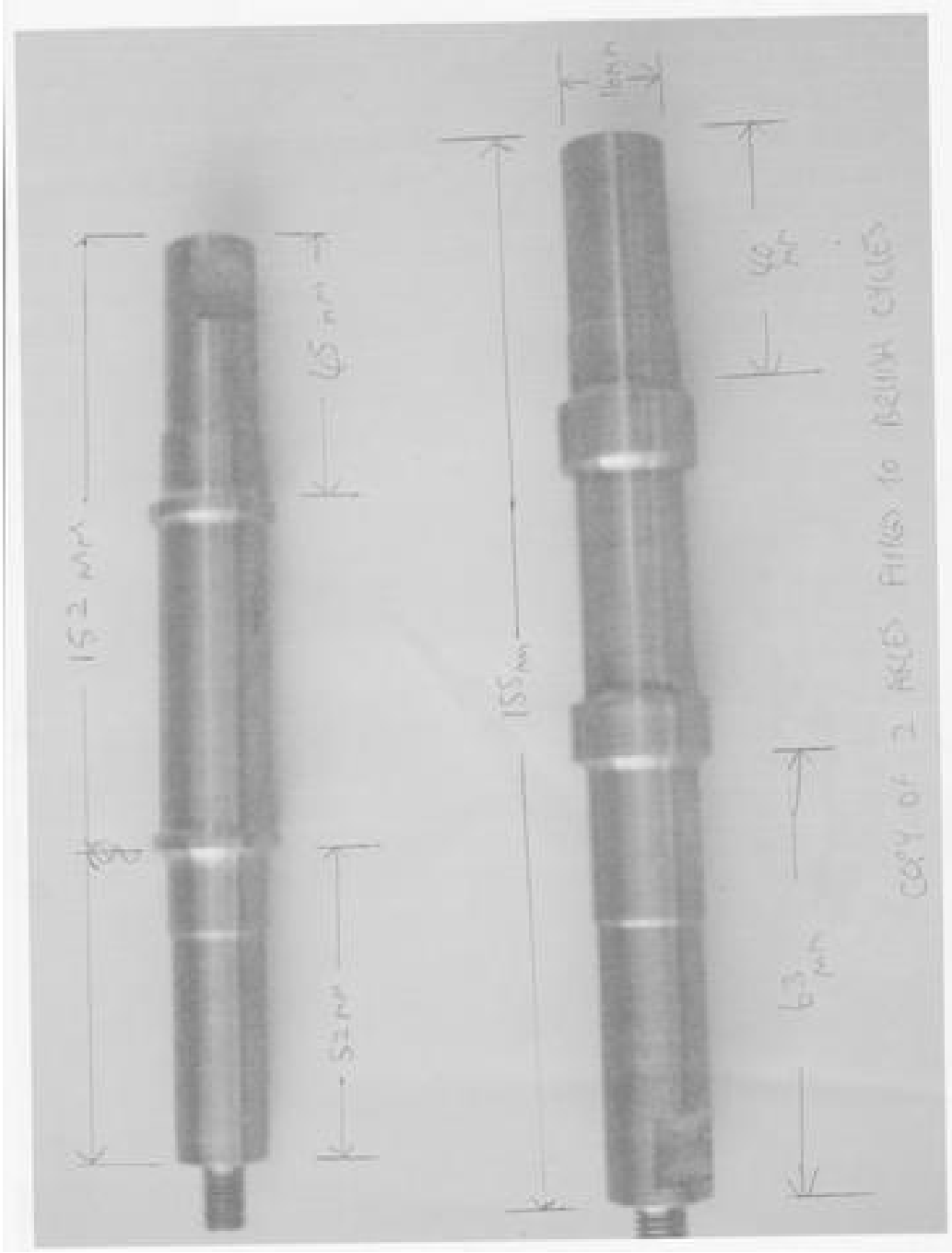
Rear Drum Brake (Leviera..... BREVETE S.G.D.G SUPER MAXI 92m/m TURISMO)

9.2a Spokes Lengths

The length is measured along the straight section and there is a 5mm long bend or cog.

Model	Front wheel non brake side	Front wheel brake side	Rear wheel brake side	Rear Wheel sprocket side	Spoke dia
60cc T3	Inner = 205mm Outer = 205mm	Inner = 195mm Outer = 195mm	Inner = 200mm Outer = 200mm	Inner = 210mm Outer = 210mm	2.5mm
65cc Sport					

9.5 Pedal Crank Assemblies by Mike Cecchini



Mike Cecchini: Considerable length differences. The short crank was on my Coven Cucciolo and the bicycle pedal arm hit the engine flywheel..... so this is why I had to switch cranks from my display Cucciolo motor and my Coven (bicycle) Cucciolo motor. Needless to say I didn't find all this out until I was ready to start my Coven Cucciolo motor..... grrrr

9.5a Pedal Crank Assemblies_Long

Mike Cecchini: I've discovered there are (at least) two different pedal crank shafts. I will refer to them as "Long" and "Short". The pics are for those wishing to duplicate the cranks. The dimension in the ruler window is 16.9 cm = 169 mm

Mike Cecchini: From th end of the left side of the crank to the ridge of the ball bearing ramp.

Mike Cecchini: From the ridges of the ball bearing ramps.

Mike Cecchini: OD of the crank end stub.

Mike Cecchini: OD of the crank roller surface.

Mike Cecchini: OD of the left end of the crank

Mike Cecchini: OD of the left end bearing surface

Mike Cecchini: From the end of the crank to the start of the cut-out for the locating/locking pin that holds the bibycle pedal arm to the crank..... not the angled area, but the start of the floor of the cut-out.

Mike Cecchini: Right end of the crank..... from the end of the crank to the floor of the cut-out.....not the angled part

Mike Cecchini: Width of the floor cut-out

Mike Cecchini: OD of the shaft when measured from the floor of the cut-out. It's hard to read but it's 13.45 mm

Mike Cecchini: Same measurement on the left end of the crank. 13.45 mm

9.5b Pedal Crank Assemblies_Short

Mike Cecchini: Now for the short crank. 150mm long

Mike Cecchini: You can follow my measurements like I did on the long crank.....but one thing about this short crank..... this cut-out has been lengthened considerably in an attempt to move the bicycle pedal arm as far out on the crank as possible.

Mike Cecchini: OD of the crank end

Mike Cecchini: OD of the other end.....etc.....etc


16.03
SHORT
CRANK


20.96
SHORT
CRANK


16.86
SHORT
CRANK


15.88
SHORT
CRANK


SHORT
CRANK
1326
mm in/F

Chapter 10 – Accessories

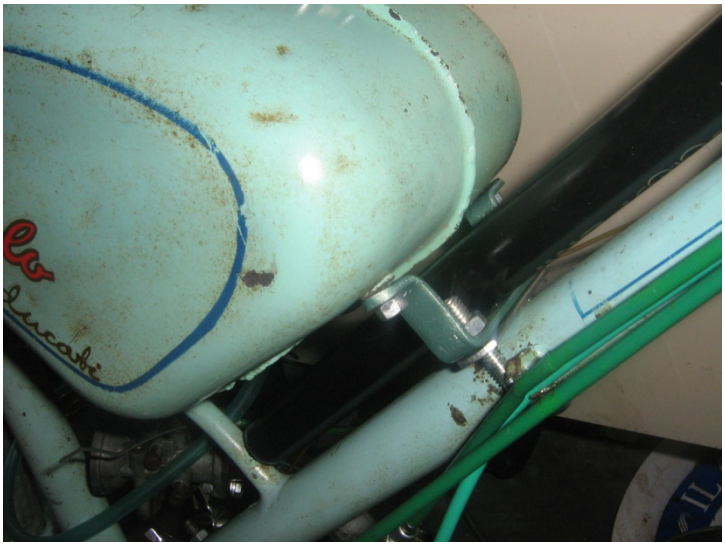
10.1 Centrestands for T2 and T50 Engines mounted in bicycle frame

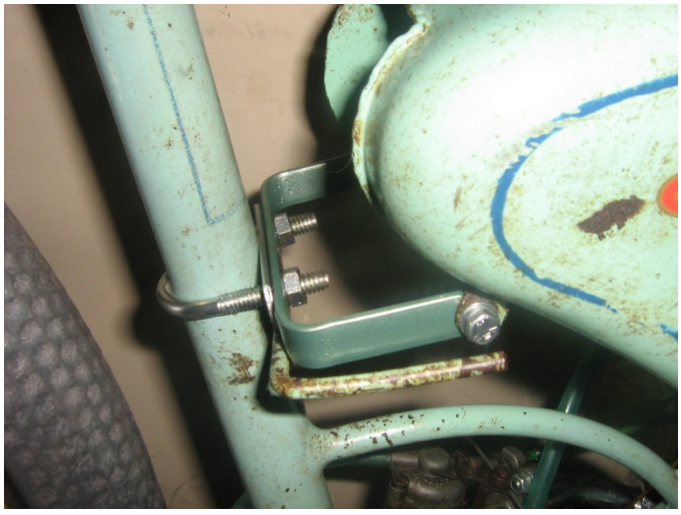
Type_1 This Type fits the T1 and T2 Cucciolo's

Type_2

Note: Type 2 fits the T50 with the low muffler mounting holes and will not fit the T1 or T2 due to the exhaust mounting holes which are higher on the T1 and T2

10.2 Fuel Tank Mounting





Original Tank with alternative fixing brackets

Chapter 11 – Decals

Note: original decals can still be found and below is the recommended procedure for applying these decals. Please note that the old decals may fall apart and it is advisable to find modern laser cut vinyl reproductions. Most of pictures shown are scans or original decals with their protective cover and therefore the images are not very clear.

11.1 Application of Original Tank Decals

Instructions for applying decals with varnish.

Apply a light uniform layer of copale varnish to the decal, remove any residue, then apply (place) the decal in the desired position and apply pressure to it until it bonds (adheres) perfectly all over ensuring all of it is stuck down.

Wait at least one hour for the decal to dry perfectly at which time it should be well bonded to the surface.

Slowly (without haste) wash/wet the decal with warm water a number of times until the protective paper is able to be removed without any resistance.

Slowly slide the protective paper off.

Leave the decal to dry and do not touch it. Spread a layer of varnish over the decal to provide a protective seal.

N.B. it is possible to substitute copale varnish with transparent varnish used for paintings. Brand names Damar, Reimbow or others. Make sure the varnish does not contain any additives.

Copal Varnish

Copal Varnish and copal medium are becoming increasingly difficult to find because amber has become semiprecious and rare. It is being replaced by such synthetics as alkyds or unspecified tree-root resins.

Copal varnish makes an excellent isolating varnish, when used in moderation, and a very hard-surface final varnish. However, copal varnish is more often produced as a convenient source of liquid copal for use in media than as a final protective varnish. Since it has been found that copal varnish darkens and often cracks with age, even without the driers that are commonly added, most recipes call for the use of stand oil or sun-thickened oil to reduce the risk of cracking.

In Itiliana

Instruzioni per applicare le decalcomanie a vernice copale

Dare sulla decalcomania un leggero strato uniforme di vernice, togliere l'eventuale residuo, poi fare aderire la decalcomania nella posizione desiderata e fare pressione sulla stressa affinche (accent over the "e" in affinche) aderisca perfettamente sulla superficie in tutti suoi punti.
Attendere che si asciughi perfettamente (almeno alcune ore) finche (accent on the e again)

la decalco si sia ben fissata sulla superficie voluta.
Bagnare con acqua tiepida la cecalco piu (accent on u) volte (senza fretta) fino a quando la carta di protezione si rimuove della stressa senza fare resistenza.
Fare scivolare lentamente la carta di protezione.
Lasciare asciugare la decalco senza toccarla e stendere un velo di vernice sopra per fissaria definitivamente.

N.B. E' possibile utilizzare, in sostituzione della vernice copale, anche la vernice transparente per quadri, marca Damar, Reimbow o altre. Non devono pero (accent on the o) contenere additive

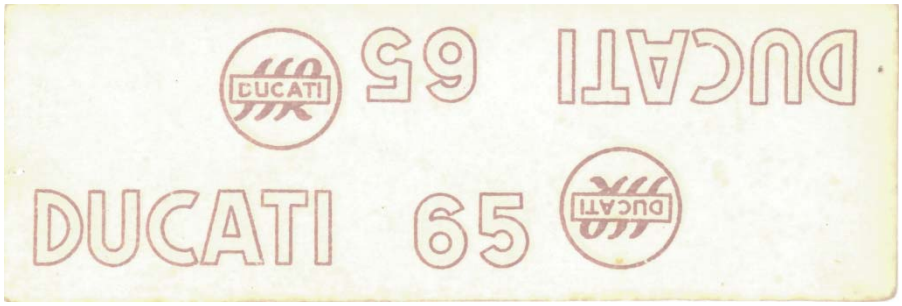
11.2 Decal Images

11.2a T1 Siata fuel tank decal

11.2b T2 fuel tank decal

11.2c 60cc T3 fuel tank decal (Ram with wings)

11.2c 60cc Sport fuel tank decal



11.2d 65cc fuel tank decal

11.2e 65 Sport fuel tank decal

11.2f 65T fuel tank decal

Chapter 12 – Parts Compatability

description	Denominazione	Cucciolo T2	60TL	65	65 Sport	65TL	65TS
Muffler	Marmitta	T50.AM	60M1.S.1000	60M1.S.1000	60M1.S.1000	60M1.S.1000 65M1.S 21000	
Exhaust header pipe	Tubo di scarico		60M1.S.2000	60M1.S.2000	65M1.S 2000	65M1.S 2000	
points	puntine	T2.MS400	T2.MS400	T2.MS400	T2.MS400	T2.MS400	
Condenser 18mm dia x 25mm long 0.28 UF capacitance	condensatore	TS.MS31	TS.MS31	TS.MS31	TS.MS31	TS.MS31	
Ignition Coil	Bobina accensione	T2.MS500	T2.MS500	65M1.M3000	65M1.M3000	65M1.M3000	
High Tension Lead end cap		T2.MS702	T2.MS702	T2.MS702	T2.MS702	T2.MS 702	
Headlight reflector	Parabola		60V1.FC73				
15W 6V front light bulb (20mmdia. Socket)	Lampada biluce 15W 6V attacco a baionetta 20dia.		60V1.FC54				
105 CEV headlight globe socket to suit 35mm opening in reflector with single “Π” clip.	Piastra 79upport lampada		60V1.FC70				
Headlight lens 105mm	Vetro per fanale		60V1.FC68				
Flywheel	Gruppo Volano		60M1.V				
Flywheel points access cover	Coperchietto feritola	T2.A10	T2.A10	T2.A10	T2.A10	T2.A10	
Flywheel outer cover nut. Holds points access cover in place	Coprimozzo	T2.A11	T2.A11	T2.A11	T2.A11	T2.A11	
Cylinder head	Testa		60M1.T1100	60M1.T1100/1	60M1.T 1100/1	60M1.T 1100/1	
Cylinder barrel			60M1.T2001	65M1.T2001	65M1.T2001	65M1.T 2001	
Chain Guard	Carterino copricatena		60V1.CC52/1				
seat	sella		60V1.SE	65V1.SE51	60V2.SE51	65V4.SE 51	
Tyre pump	Pompa pneumatico		Not Listed in manual	60V2.A54	65V2.A54	65V2.A54	
Fuel tank			60V1.SB51 60V1.SB51/1	65V1.SB1000	65V2.SB1000	65V4.SB.1000	
Fuel cap gasket	Guarnizione p. tappo		60V1.SB59/1				
Fuel cap	Leva alzavalvola benzina		60V1.SB.58 60V1.SB.58/1	65V1.SB 3001	65V2.SB56	65V1.SB 3001	
Oil Drain plug	Tappo Scarico Olio	T2.MK4 19mm	T2.MK4 21mm early 23mm late	T2.MK4 21mm	65M1.K1008	65M1.K1008	
Ribbed front tyre Pirelli 22” (22x 1 3/4 x 2)	Pneumatici Pirelli da 22”x 1,3/4x 2 anteriore						
Block rear tyre Pirelli 22” (22x 1 3/4 x 2)	Pneumatici Pirelli da 22”x 1,3/4x 2 posteriore						
Passenger footpeg rubbers							
Flywheel removal tool for 48cc Cucciolo same as for 60cc and 65cc. Tool purchased from bicycle shop as crank removal tool (22mm x 1.0mm pitch)							
Engine mounting rubber between engine and frame		3mm thick insertion rubber					
Fuel Line		5mmID x 8mm OD	5mmID x 8mm OD	5mmID x 8mm OD	5mmID x 8mm OD	5mmID x 8mm OD	
Cotter pins for Bicycle Crank		9mm Dia.					
Woodruff key for Crankshaft/flywheel 2.5mm x 3.7mm Same as BMW camshaft woodruff key		T2.M10	T2.M10	T2.M10	T2.M10	T2.M10	T2.M10

Chapter 13 – Tips and Tricks

13.1 To loosen stubborn or seized bolts and nuts:

Mix 50/50 solution of Acetone (fingernail polish remover) and ATF (Automatic Transmission Fluid) and pour around the bolt or nut, leave for 24 hours and attempt removal.

13.2 Distribution/Valve Timing Advice from Giovanni Tosti

19/07/2010

I just finished to mount my flywheel (got the M8x1 left handed die and resolved the problem) so I checked the distribution timing using a timing wheel. The suggestion by Enea Entati worked greatly, my timing is perfect:
Inlet opens 10° before TDC close 25° after BDC
Exhaust open 30° before BDC close 20° after TDC
I just post it to confirm that the method works.
In the occasion I just checked the timing of my other engine recently acquired in "working conditions", I suspected it because it absolutely refused to start despite of a good spark, it's absolutely out of timing so I have to disassemble it!

13.3 Cylinder Head Gasket Advice from Alan Moseley

16/07/2010

Hi Giovanni

I see you decided not to put in the copper gasket between the crankcase and the cylinder and I understand your dilemma but I would want more engineering information before I left it out and you may get an answer from Enea but it could also be wrong.
I would at least make sure that the piston does not touch the valves when rotating the engine by hand and I would also like to know just how much clearance there is between them just to make sure that there is ample running tolerance.
if this is ok then I think you can omit this gasket.
I notice in my spares book that there is a gasket between the cylinder and the cylinder head this should be in place when you make the above measurements.
I have come across lots of 'modified engines' especially the larger Ducs where things have to right as if not it is easy to bend a valve and damage the piston.
I wish you all the best
Cheers
Alan

13.4 Releasing a seized piston from the Cylinder by Joe Zeccola

It is common with these older engines that the piston is seized inside the cylinder. This is due to the rings being stuck because of a build up of carbon deposits between the rings and piston grooves that the rings sit in. The method outlined below is worth trying as it provides an even force over the entire surface of the piston and is non destructive.

24/01/2010

Ciao Giovanni,
the method I used recently to release a stuck piston in my 60cc single was to: firstly put penetrating oil through the spark plug hole each day over a period of about one week. Next I modified a spark plug and threaded it to suit a grease gun. I then pumped grease into the head via the spark plug hole, I continued pumping grease gradually over a period of two days once a day until the piston moved. I had to continue pumping grease to force the piston all the way down even releasing the cylinder hold down bolts to release the piston fully. This method worked well as the piston was stuck about half way down the cylinder sleeve. Can send pic of modified spark plug if you like.

Before undertaking the above procedure you should check where the piston is in relation to the cylinder by either looking through the spark plug hole or putting a length of wire in and checking where the piston is.

Before doing anything just try to remove the head and cylinder from the engine.
Hope the above makes sense.
NEVER EVER FORCE ANTHING OR USE A HAMMER- BE PATIENT.

Modified Spark Plug used as Grease Gun Adapter

Grease gun with modified spark plug

13.5 Engine Rebuild Tips from Enea Entati/Giovanni Tosti

1/07/2010

Hi Joe, the main hints are these
When he rebuild a cucciolo engine, he has done dozens of these,:
1)he utilizes a seeger (circlip) to replace the lost c rings in the rodes, to avoid them to fall down in the crankcase when the pullrode bolts are released
2)he utilize a modern oil seal without any problem to replace the old seal on the cover of the crankcase for the crankshaft hole, I got one from him
3)he puts a spacer on the right side of the clutch shaft just in front of the rolls
4)he uses high density grease to hold the rolls in place during the rebuild process, without any need to remove it
5)he suggest to reassemble the crankcase placing it on the side and pushing back the clutch with a screwdriver through the hole of the clutch shaft to be sure to mount it correctly
6)the right way to position the camshaft is not to place the crankshaft at the TDC and have the valves in suspension as usually, but to have the crankshaft 45 degrees after TDC with the side of the woodruf key facing the sign on the camshaft
7)the broken top of the carburetor cap on the fuel tube hose, an habitual finding as in mine two engines, and in your 60 new one from Italy too, can be repaired drilling the cup and replacing the hose with one from a car GPL system
I didn't ask about the ignition, cause I haven't jet tested it on this engine and in the other one it works correctly. I only had to replace the piston withy its segments and gudgeon pin and G rings and rebore, the crankshaft bearings were really good, very few miles done, I found the clutch drum seeger (circlip) broken in the crankcase, maybe the reason the bike was stopped, and Enea suggested just to replace it with a modern seeger (circlip).
He is a very sympathetic man and a real classic Ducati lover, and I agreed to call him for suggestions if I have any problem in my rebuild process and we also agreed to have a look together to my bevel driven Ducati.
Ciao
Giovanni

13.6 Flywheel Extractor Advice from Giovanni Tosti

15/07/2010

Another useful suggestion is to be cautious with the flywheel extractor. Rebuilding the engine I found that it had damaged the thread on the crankshaft, the M8 x 1 left handed one, and now I'm searching for the relative die, not very easy to find, to be able to repair the thread and mount the flywheel. On the other hand the good news is that the coils works perfectly, I have a good spark.
Giovanni

13.7 Painting tips by Joe Zeccola

Note: never use an oven used for cooking inside a home as paints are toxic. Use all the necessary protective clothing, and always paint in well ventilated area.

Method:

1) Remove old paint using paint stripper
2) Remove remainder of paint with fine sandpaper.
3) Wash off excess paint stripper with water
4) Dry off part with metholated spirits and allow part to air dry.
5) Pre heat oven to 60 deg C for approx half an hour. No need to use fan forced oven.
6) Place part in oven for 10 min. at 60 deg C
7) Remove from oven and spray with one pack epoxy automotive etch primer.
8) Place part in oven for 10 min. at 60 deg C
9) Remove from oven and lightly sand with 1000 grit sand paper.
10) Place in oven for 10 min. then remove and paint with high temp. (550 deg. C) solvent resistant engine enamel. First coat.
11) Place in oven for 10 min. at 60 deg C then remove and very lightly sand with 1000 grit sandpaper.
12) Repeat step 10 - Second coat
13) Repeat 11
14) Repeat step 10 - third coat
15) Once the third coat has been applied place the part in the oven and turn the oven off leave the part in the oven for 2 to 3 hours.

Tip
Use a light film of paint and apply from a distance of approx. 300 mm for best results.

Chapter 14 – Supplier Details

Name	Phone	Email	address
Vintage Carburetors and exhausts			
Motostoriche Suppliers of vintage exhausts and carburetors		**http://www.motostoricheitaliane.com/ducati.html**	
Brezzi-Randellini Vintage exhausts, headlight rims, tailights		**http://www.brezzirandellini.com/**	
Ciabini (Paolo) Vintage singles mufflers		**info@ciabini.com**	
Enea Entati – cucciolo exhausts	037/656189	eneaentati@libero.it	Via D.P. Balzani 31 Bondanello Moglia(MN)
Dellorto parts		**parts@genuinenos.com**	
Alepat Antonio Giannone	3474123472	alepat2007@libero.it	Talsano, Taranto
Vintage Coil rewinds			
Jan de Laat Cucciolo ignition coil rewinds		info@jandelaat.nl http://www.jandelaat.nl	
Enea Entati	037/656189	eneaentati@libero.it	Via D.P. Balzani 31 Bondanello Moglia(MN)
Vintage Decals/transfers			
Spectral Gregorio (also has cucciolo fuel caps)		**spectral@isopole.com**	
Pelders Vintage transfers		**http://www.pelders.nl/**	
Olimpiaparts Vintage decals and other stuff		**http://www.olimpiaparts.it/**	
Beppe (Ducati Transfers vintage)		**gabosimo@libero.it**	
Giorgio Panciroli Decals for Vintage ducati's		**info@vintagetransfers.it**	
Dan Murdoch	02 97483164	**dmurdoch@motographix.com.au** **decals@motographix.com.au** **http://www.decals4motorcycles.com.au/**	MotoGraphix & VapourBlast Cleaning 22a Adderley Street Lidcombe 2141 NSW
Classic Transfers UK	+44 (0) 1454 260596	**http://www.classictransfers.co.uk/pages/contact-us.php**	Classic Transfers PO Box 17 Wotton-Under-Edge Glos GL12 8YX England

Vintage Gaskets			
Cucciolo Gaskets A 1 ACCESSORY IMPORTS PTY LTD	07 38061800	**sales@a1accessory.com.au** **www.a1accessory.com.au**	12 Chetwynd St Loganholme QLD 4129
Guarnizioni Motore Moto d'epoca Andrea Fantuzzi	Tel 0432/508288 0431/60054	**http://www.guarnizionimotoepoca.com** **info@guarnizionimotoepoca.com**	Via Cavour 3 33050 Corgnolo Di Porpetto (UD)
Vintage Headlight Parts			
Scooterworks. 105mm Headlight reflectors for 60 and 65cc		**http://www.scooterworks.com/default.aspx**	
Guzzino light bulbs etc.		**http://guzzino.com/**	
Vintage Paint Codes			
Lechler Paint Italy		**http://www.lechler.eu/on-line/en/Home/Refinish/HystoricalVehicles.html** **www.lechler.it**	
Vintage Pistons and Rings			
Lucio Pozzali "Il Re dei Pistoni"	Tel 02/9010254 cell 0360/690138		
Alepat Antonio Giannone	3474123472	alepat2007@libero.it	Talsano, Taranto
Motoepoca.org Giuseppe	Tel 368/3688619	Motoepoca.org	
www.epocashop.it Antonio Muolo.	Tel 360/828267	www.epocashop.it	
Alberto Giuffrida Piston rings		**albygiuf@hotmail.com**	Via Mascalucia 15 96100 Siracusa, SR Italia
Vintage Seat Restoration			
Dante Trezzi Seat restoration		**http://www.trezzidante.it/italiano/trezzi/automoto.htm**	
Vintage speedo suppliers and repairers			
Carlo Bocca Instrument repairs in Italy	Tel: +39 338 4923034 (mon-fri 7:30am to 11:30am GMT+1, **he's very strict on that so do not upset him** Fax: +39 0125 739406	carlo.bocca@poste.it	Via Cavour 2/A 10010 Perosa C.se (TO) Italy

Vintage Rubbers			
Ermes Vintage ducati rubbers	tel: 0544 864361 cel 347 2237498	trioschigomma@alice.it	Via 2 giugno no.24 48011 Alfonsine (Ra) Italia
Sandro Mentasti Manufacturer and Supplier of Ariete products	Tel. +39 0332 310100 Fax +39 0332 312632	http://www.oldmodels.it/index1.html info@mentasti.com	**Sandro Mentasti S.r.l.** Via Giovanni Macchi, 30 21100 Varese - Italy
Vintage Tyres			
Borghi pneumatic (Amedeo Borghi)	tel: 0532 773251 fax: 0532 774095	borghipneumatici@gmail.com	44122 Ferrara (FE) - 90, vl. Po
Vintage Miscellaneous			
Alberto Giuffrida		**albygiuf@hotmail.com**	Via Mascalucia 15 96100 Siracusa, SR Italia
Andrea Di Pisani Italian Motorbikes	377 1732861 039067290237	**http://www.italian-motorbikes.com/** **info@italian-motorbikes.com**	Via Scrivia 6 37136 Verona
Antonio Giannone Alepat Cucciolo engine parts	34/41234/2	alepat2007@libero.it	Talsano, Taranto
Antonio Muolo. www.epocashop.it	Tel 360/828267	www.epocashop.it	
Giovanni Gentile		**gio655@hotmail.com** **http://www.classicitalianbikes.com**	Classic Italian Bikes Ondernemingsweg 4J 2404 HN Alphen aan den Rijn HOLLAND
Guzzino Generic electrical, fuel,parts		**http://guzzino.com/**	USA
Motoepoca.org Giuseppe	Tel 368/3688619	Motoepoca.org	
Oldtimerteile 2.5 x 3.7mm Cucciolo crankshaft/flywheel Woodruff key	Fax: +49-2599-92211	info@oldtimerteile.net http://www.oldtimerteile.net/index.php Link to woodruff key http://www.oldtimerteile.net/search.php?searchword=1-105&group=1	Germany

Chapter 15 – Additional Information

13.1 Mike Cecchini Supplied Collation

From Mike Cecchini via Ducatipushrod singles forum 27/05/2010

Note: This is gathered information and I have not proven any of it personally, so take it for what it's worth.

Please give feedback when you find out that some of it is right..... or wrong. All of us need to work on this so we'll have a good solid set of specifications we can use with confidence.

Cucciolo 48cc T2 Engine

(information from period English and Italian magazine articles)

Bore x Stroke: 39mm x 40 mm
Compression: 6.24:1
Max. rpm: 5200
HP: 1.25 @4200 rpm

Spark plugs: 14mm x 12.5mm reach
Spark Plug Gap: .018" to .026"

NGK: B6HS
AC: 44F, 42F
Bosh: W7A, TW125 to TW175 (W145T1)
KLG: F50X
Champion: RL85, L82, L82C, L85, L86, L86C, L10
NipponDenso: W20FS, W20FS-U, W14S
Autolite: 414
Pyrox: PA14B
Lodge: HN
Marelli: CW6N
PAL: N7
WEGA: N17

Flywheel Ignition Points gap: .018" -- .020" / .45mm -- .50mm

Ignition Condenser/Capacitor:
Physical size: 18mm dia x 22mm
Electrical specs: 0.28UF, 6V, #CE22A9V

Engine oil:
Essolube 40w (winter), Essolube 50w (summer).
Engine oil capacity: "A little less than" 1 pint

"Almost to the opening of the filling plug"

The use of an upper cylinder lubricant is advisable during "running-in" period of 200--250 miles.
Valve Tappet clearance: .004" to .012" / 0.1mm -- 0.3mm

****

Britax Cucciolo owners handbook circa 1952 24 pages

Oil..... approx 1 pint (bottom of oil filler hole threads)
Summer 40/50 weight
Winter 30 weight

Spark plug: Champion L-10
Spark plug set at .018"

Valve clearances:
Inlet..... .006"
Exhaust..... .008"

Ignition points:

1. Points should break (open) when flywheel mark "A" aligns with line on engine crank case. Correct gap with piston @ TDC is .010"

2. Set at .018" -- .020"

Carb idle mixture screw is air control screw. Turn clockwise (in) for less air = richer mixture. Turn counter-clockwise (out) = leaner mixture.
****

Britax Cucciolo Service Manual circa 1948 16 pages

Ignition advance is set at 27 degrees BTDC

Valve clearances:
Inlet and Exhaust..... .006"

Oil.... "A little less than one pint"

Spark plug gap: nothing mentioned. (wt?)

Ignition points setting: .018" -- .020"

Valve clearances:
Inlet and exhaust: .004" to .012" (but never over .020")

Engine timing via flywheel markings:

" A line about 1/2" forward of the electric light terminal in etched on the crank-case pointing to the fly-wheel magneto. Two similar lines are etched on the edge of the flywheel. When the "M" is aligned with the crank case line indicates piston TDC position. Just before this position (approx 25--27 degrees) is aother line on the flywheel marked "A" at which point the points should open and the spark plug should fire.
****

Ducati SSR Cucciolo T50 Service Manual circa 1948 (English translation) 18 pages
Spark plug: Any good 14mm spark plug of medium graduation (betweent 125--175 Marelli Bosch graduation) is suitable. (Ha !!)

Spark plug setting: nothing mentioned

Valve clearances:

Inlet and Exhaust: .1 mm to .3 mm.... never over .5mm

That's it !!!! Amazing eh ??
****
Ducati M55 Micromotor Service Manual and Parts Manual. (48cc)
by SSR Ducati for Associated Developments Ltd. New Zealand circa 1954. 122 pages.
Spark advance is set at 27 degrees BTDC

Valve settings:
Inlet and Exhaust..... .006"
Several pages later it says: .004" to .012" (wt??)
Several pages later it again says: 004" to .012"

Engine timing via flywheel markings:

" A line about 1/2" forward of the electric light terminal in etched on the crank-case pointing to the fly-wheel magneto. Two similar lines are etched on the edge of the flywheel. When the "M" is aligned with the crank case line indicates piston TDC position. Just before this position (approx 25--27 degrees) is aother line on the flywheel marked "A" at which point the points should open and the spark plug should fire.

Oil grade..... 30 wt.

Engine hp: 1.35 hp from 3000 rpm to 4000 rpm
Engine peak rpm 5200 rpm

Electrical: lighting 6 volts 28 watts.

Spark plug: 14mm KLG F50X
Spark plug gap: .018" to .020"

****
There you have it guys..... lots of information with some of it quite confusing and contradictory, so you'll have to use your judgement on which specifications to use. The most glaring is valve settings which I'm very much inclinded to use .006" for intake and .008 on exhaust.

Oil.... I'll be using a full synthetic multi-viscosity 20W-50.....and please.... no oil threads. I've been studying oils for the past 30 yrs and have come to my own conclusions recently with the aid of a Mobil 1 lubrication engineer with 35 yrs experience in developing oils. Mobil 1 "V-Twin" 20w--50 SG/MA rated oil is an amazing oil and at $9 qt you'll not find a better oil. I use it in everything from my lawnmower to the D16RR.....and all my cars.

Bottom line..... It's your bike..... run what you want.

My best..... Mike


DUCATI