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Fitting Instructions for the 'CPOne05' Casa Performance kit

Casa Performance Product Code: X832

Introduction

The <u>CPOne05</u> kit is an advancement in the world of smallframe Lambretta models. It is a plug 'n' play **105cc** conversion kit designed, tested and produced by **Casa Performance** that can be fitted to ANY Lambretta **J Range** J50 or **Luna Line** Lui 50C/CL, Lui /Vega/Cometa 75S/SL model, with no modifications necessary to the engine casing whatsoever.

The cylinder is multi-port, made from high-grade aluminium in steel moulds, nicasil lined and has 4-stud exhaust fixing points (2 studs are in the original positions). The piston is made specifically for this kit. The inlet is via a 4-petal reed-valve with a unique, inlet manifold mounting plate, designed to accept a whole variety of carburettors. The cylinder head has multiple fixing points.

Power output depends on the carburettor and exhaust used, with a very useable, linear power delivery. The **CPOne05** is designed as a road-going kit for everyday use. It is NOT designed as a 'performance' or 'race' kit, despite having lots of tuning potential.



The 'CPOne05' kit

The complete **CPOne05** kit includes the following parts:

- 1 x cylinder
- 1 x cylinder head
- 1 x rubber inlet manifold
- 1 x reed valve

1 x piston Various gaskets Fasteners, hardware and studs

Technical Specification:

Capacity: 105cc (44 stroke x 55.5mm bore) Material: very high-grade aluminium produced in steel moulds Induction: 4-petal reed valve Cylinder head: very high-grade aluminium with multi-point fixing Exhaust: 4-stud fixing (2 studs are in the standard positions) Piston: specific mm with wire-type piston rings made exclusively for Casa Performance Modifications needed to engine casing: none

The **CPOne05** kit is designed to fit <u>ALL</u> the following Lambretta models: <u>Luna Line</u> Lui 50C & 50CL (50cc 3-speed) Lui-Vega-Cometa (75cc 4-speed) <u>J Range</u> J50 (50cc 3-speed)

(The kit can also be fitted to J Range 100 and 125cc models, but a 44mm stroke crankshaft will also be required).

The reason the CPOne05 kit fits all these Lambretta models is that they all have the same base gasket & crankcase mouth design.

What's needed?

What crankshaft do I need?

The normal 44mm stroke crankshaft fitted as standard to any 50cc or 75cc Lambretta model.

Is a standard crankshaft okay to use with a CPOne05 kit?

Yes, as long as the crankshaft is in very good condition. The power output and torque of the kit are very linear, right across the rev range (i.e. it's not 'on-off' as can be the case with some small capacity reed-valved tuning kits), and this helps to reduce crankshaft wear. If you have any doubt about wear to your crankshaft, bearings or oilseals, Casa Lambretta manufactures all these (European-made) parts at economical prices.

Can the original 'Lubematic' 2-stroke oil injection system found on 'Lui75SL' and 'Cometa' models be maintained with a CPOne05 kit?

'CPOne05' Kit Assembly

These instructions are mostly generic as they are relevant for all the J Range and Luna Line models listed above, with singular model or range references solely where needed. The protographs depict a **CPOne35** kit being fitted, but they are for reference purposes only, and the indications remain the same for the **CPOne05** kit.

1. Remove your old carburettor, exhaust and cylinder kit.

2. Thoroughly clean and degrease the entire working area with a non-aggressive product such as 'brake

cleaner'.

3. Check the conrod, the crankshaft and the main bearings for wear or play. All parts must be in perfect condition. If in doubt, replace them. **Rimini Lambretta Centre** has all the parts needed and **Casa Performance** manufacture crankshafts, <u>CNC magneto flanges</u> and <u>Ducati Firefly</u> electronic ignitions if you wish to upgrade your engine.



4. Add a drop of 2-stroke oil to the small end bearing and slide it into the conrod. The **CPOne05** piston is designed to be used with a WIDE-TYPE 12x16x16 size small end needle bearing. Some aftermarket crankshafts / conrods utilise a different (externally larger) 17mm small end bearing. If you have this type, use a 12x17x15 small end needle bearing.

5. Fit both piston rings to the piston and then <u>one</u> circlip. We thoroughly recommend the use of the 12mm version <u>circlip fitting tool</u> when doing so that have made manufactured. This superb tool makes exceptionally light work of a difficult job as can be seen in <u>this YouTube video</u>.

If you use the circlip fitting tool, first fit the gudgeon (wrist) pin just past one of the circlip recesses, as this will ensure the circlip sits correctly when installed. Once the circlip is installed, remove the gudgeon pin.

Now slide the piston down over the conrod, with the arrow on the piston crown facing towards the exhaust port, until the holes of the piston are visibly aligned with the centre of the small end bearing. Gently push the gudgeon pin into the piston until it passes through to the other side, against the ready-fitted circlip.

If the gudgeon pin blocks part way, <u>DO NOT HIT OR FORCE IT</u> in any way. Simply move the piston around slightly to aid alignment until the gudgeon pin can be pushed through with ease. Now fit the second circlip into its hole, again preferably utilising the circlip fitting tool, ensuring that it is firmly seated within its recess once in place.



6. Fit the 2 exhaust studs, applying a small drop of medium strength Loctite threadlock (or similar) to the SHORTER threaded sections, that will be inserted into the cylinder.

Please note that exhausts produced by **Casa Performance** for the **CPOne05** kits have cylinder mounting flanges with <u>4 holes</u>, whereas all original Lambretta exhaust flanges for both J range and Luna Line models have just <u>2 holes</u>. If you intend to fit a standard type exhaust, just fit the 2 supplied studs in the original Lambretta positions (i.e. 'top left' and 'bottom right' as you look directly at the exhaust port). If you intend to fit an exhaust with 4 fixing points, remove and re-utilise the 2 studs from your original cylinder. Most original type Lui/Vega/Cometa 75cc model exhausts use a short, cast iron manifold that requires a unique, very long exhaust stud on the flywheel side. If you intend to use that exhaust, this special stud will need to be removed from your old cylinder and re-fitted to the **CPOne05** cylinder.



7. You now need to check the squish clearance between the piston crown and cylinder head. This is done 'dry', i.e. WITHOUT the use of sealant, grease or oil. There are two base gaskets supplied with each **CPOne35** kit which are 0.3mm and 0.5mm thicknesses. *We normally fit the 0.3mm gasket to start with*. Turn your crankshaft until the piston is in a fully lowered position. Slide the base gasket down over the cylinder studs until it is fully seated home on the engine casing. Ensure that the piston rings are in the correct positions with the ring pegs visible, or alternatively, this operation can be carried out without initially fitting the piston rings.



8. Now you need to slide the cylinder down over the studs, until it comes into contact with the top of the piston. Gently squeeze each piston ring to close it up, to allow the cylinder to drop down over the piston. Once both piston rings are inside the cylinder, gently slide it downwards until it's fully seated home on the engine casing. Now turn the crankshaft by hand to ensure the piston can travel freely within the cylinder.



9. With the piston in a position slightly back down into the cylinder i.e. <u>NOT</u> at top dead centre ('TDC'), place a 55mm length of solder (that is preferably 1.5mm thick) on top of the piston crown, along a line that corresponds with the gudgeon pin, as per the photo above.



10. Fit the cylinder head onto the cylinder and ensure it is fully seated home.

ONE TO WATCH! The cylinder head is a precise fit in the top of the cylinder - so take extra care when fitting, to ensure the cylinder head does not sit lop-sided on the cylinder (see above), or you could damage both the head and cylinder when you tighten up the nuts!



11. Fit 7mm washers to the 4 x cylinder studs. Now fit the 4 x 7mm nuts (the tall nut can be used in any position at this point). Tighten each nut slightly, one at a time in a criss-cross, diagonal fashion until all four are tightened up to <u>15Nm</u>. *There is no need to use Loctite, or to fit the 3 x 6mm Allen screws at this point*. Turn the engine over slowly. As the piston goes up to TDC position, it will crush the solder slightly between its crown and the underside of the cylinder head.

Now remove the 4 x cylinder nuts and the actual cylinder head. Remove the length of solder from the piston crown and GENTLY measure it with a digital vernier caliper where it has (visibly) been crushed. The measurement should be between 1.0 - 1.2mm. In our case the measurement was **1.19mm**, which is fine.

If the measurement is less than 1.0mm, replace the 0.3mm thick base gasket with the 0.5mm thick gasket, as this will effectively raise the cylinder and therefore increase the squish clearance. A combination of the two base gaskets can be used if necessary. In the (unlikely) case that it is more than 1.3mm, you will need to remove the appropriate amount of material from the shiny machined 'gasket face' area on the underside of the cylinder head with a lathe.

Repeat the above process once you have made the alterations until your squish measurement is within the correct range.



12. Carefully remove the cylinder, taking care not to damage the base gasket. Remove the base gasket and lightly grease it (with heavy duty bearing grease) and slide it back down over the studs until it is fully seated home on the engine casing. Alternatively, we recommend the use of a good quality sealant such as **Threebond** instead of grease.



13. Apply a smear of good quality 2-stroke oil over the entire bore inside the cylinder. Slide the cylinder down over the studs, until it comes into contact with the top of the piston. Ensure that the piston rings are in the correct positions with the ring pegs visible. Gentle squeeze each piston ring to close it, thus allowing the cylinder to drop down over the rings. Once both piston rings are inside the cylinder, gently slide it downwards until its fully seated home on the engine casing. Now turn the crankshaft by hand to ensure the piston can travel freely up and down within the cylinder.



14. Apply a smear of <u>Threebond sealant</u> to the machined 'gasket face' area of the cylinder head, and allow it a little drying time. Fit the cylinder head onto the cylinder and ensure its fully seated home. Again, take care to ensure that the cylinder head is correctly seated into the cylinder!

Fit 7mm washers to the 4 cylinder studs. Apply a small drop of medium strength Loctite threadlock (or similar) to the protruding threads of the cylinder studs. Now fit the 4 x 7mm nuts. The nut fitted to the front, on the kickstart side, needs to be the unique, taller nut (i.e. No.'4' in the photo below-left and indicated by the pen in the photo below-right).



Tighten each nut slightly, in a criss-cross diagonal fashion, as per the sequence of the **red** numbers in the photo above, until all four are tightened up to **15Nm**. Fit the split and flat washers to the 3 x 6mm Allen screws and fit them to the cylinder head. Tighten them up fully to **11Nm** as per the sequence of the **green** numbers in the photo above-right. Turn the crankshaft by hand to ensure the engine rotates smoothly.



15. Apply a smear of <u>Threebond sealant</u> to both of the reed-valve gaskets and then carefully place one over the reed petals of the reedvalve block. Then insert the reedvalve into the cylinder. Place the second inlet gasket on top of the reedvalve.

16. A thick stainless steel adaptor plate is supplied as standard with all **CPOne05** kits which allows the use of various cast aluminium inlet manifolds, from all those fitted as standard to every Luna Line or J Range models, to the larger 18/20/22mm manifolds (with 125/150/175cc stud spacing) used on largeframe models.





X833

X833A

You also have the possible choice of using the rubber one-piece inlet manifold for 24mm Polini / 25mm Dell'Orto PHBL carbs (as supplied with **CPOne35** kits) or the <u>cast aluminium manifolds</u> by **Casa Performance** (see pic above), designed to take Dell'Orto SH20mm (for Luna Line models) or SHB19mm carbs (for J range models). This means there really is a veritable plethora of possible carb manifolds that can be used with the kit and listing all the differences would be nearly impossible. The choice is endless!

Obviously, if you choose to use the 12mm carb fitted as standard to J50 or Lui50 machines, the performance will be hampered by such a small carb. Yes, they can be used, but **Casa Performance** recommends the following carburettor & manifold set-ups:

<u>50cc LuiC/CL</u>: a <u>Dell'Orto SH20mm carb</u> manufactured by Scootopia mounted, on a <u>75cc type inlet</u> <u>manifold</u> manufactured by Casa Lambretta. This set-up can be used with a Casa Lambretta Lui/Vega/Cometa 75cc type <u>airfilter box</u>.

<u>75cc Lui/Vega/Cometa</u>: the standard factory fitted parts are perfect, although you will need to re-jet the carburettor.

<u>J50cc</u> : a <u>Dell'Orto SHB 19mm carb</u> kit (supplied with a dedicated Casa Lambretta manifold). This kit can be used with the standard airfilter set-up.



If you choose to use a cast aluminium type Lambretta inlet manifold, that will need to be bolted to the stainless steel adaptor plate, as seen in the pics. The plate is supplied with a standard 50cc-sized inlet

aperture. If you choose to use a larger carburettor and manifold, then that aperture will need to be opened out with a multi-tool or similar, to suit. When you place an inlet gasket on top, you can see if/ how much material should be removed. For demonstration purposes, in the accompanying pic above, we have used a 19mm inlet manifold & gasket, and it is easy to see what material has to be removed (indicated by the red arrow in the pic above) from the adaptor plate, when compared to the larger aperture of the actual gasket.



There are two different length screws supplied with the **CPOne05** kit for fixing the inlet manifold. Given the mass choices and variations in height of the possible manifolds that can be used, the shorter of the two may need to be shortened to achieve the correct length. The reason for this is that once tightened, it may protrude out from of the underside of the plate (see pic). <u>DO NOT FIT THE ADAPTOR PLATE IF THIS IS THE</u> <u>CASE</u>; remove and shorten the screw slightly, until it is no more than flush with the underside of the plate once retightened. If you fail to do so, it will come into contact with the reed-valve and once everything is tightened up, the protruding screw could damage the reed-valve, or allow air to enter, as an air-tight seal will not be obtained.



Once you are happy with the screw length, apply a small drop of medium strength Loctite threadlock (or similar) to all 5 x Allen screws. Add their flat 6mm washers and tighten the whole reedvalve & manifold assembly to the cylinder. RLC recommends applying a smear of <u>Threebond sealant</u> to both sides of all inlet gaskets.

17. Fit the exhaust gasket to the cylinder and then fit the exhaust. Again, RLC recommends applying a smear of <u>Threebond sealant</u> on both sides of the gasket.

18. The original cylinder head cowling will need to modified to fit the **CPOne05** kit. The area around the reed-valve assembly and the aperture for the spark plug will need material removed. Do so, one small piece at a time, until you are happy with the clearance and the spark plug access.

19. Fit and tighten the sparkplug and then fit the HT cap. The **CPOne05** kit uses a long-reach type spark plug.

20. Connect the fuel line, choke cable and throttle cable to the carburettor. Fit the carburettor to the manifold and firmly tighten the clamp.

Open the petrol tap, activate the choke and start the scooter. *Enjoy!*

OTHER INFORMATION

PETROL FUEL TAP

For Luna Line models use the larger bore, <u>8mm attachment type petrol tap</u> as fitted to 75cc models. These are available in both 'front exit' and 'rear exit' versions.



For J Range models, the original type tap has a long main body that can come into contact with the carburettor. Therefore replace the standard fuel tap with a **rear or side-exit** <u>Fast Flow' type fuel tap</u> as used on largeframe models (see pic above). Although the main body of the tap is shorter, it will fit okay. If it still fouls against the top of the carburettor, remove and shorten the throttle cable curve, until you have clearance. Shorten the petrol tap rod to suit. If the curved throttle cable guide on top of the carburettor still fowls the petrol tap, this can be shortened (where it fits into the top of the carburettor).

IGNITION SETTINGS AND SPARK PLUG TYPE



Can I use the original ignition?

Yes, any original points ignition system can be used. However, we have also developed and manufactured an **Italian-made 12V electronic ignition** system called the **Ducati Firefly** in collaboration with World-renowned experts in this field, **Ducati Energia** (who supplied the majority of original ignitions for Innocenti manufactured Lambrettas).

The advantages of this **Ducati Firefly** ignition system over points ignitions - and any other electronic ignitions - are as follows:

- it has a genuine full **90W** power output, so you have great lights even at low revs
- it has a single pick-up, whereas most alternative systems have twin sparks with one being 'wasted'
- it has a full **Ducati** guarantee
- the fan is CNC manufactured in aluminium and much more robust than plastic alternatives
- both the regulator and CDI are commonly available as they are used on various other **Ducati** ignitions
- the fan is a Casa Performance HiFlow item studied to massively increase airflow but reduce drag
- unlike other systems, this REALLY is a 'plug 'n' play' system with no "fettling" or "adjusting" required.

Ignition should be so 19° BTDC. RLC recommends the use of a <u>NGKB8ES</u> long-reach spark plug for the **CPOne05** kits.

EXHAUST Luna Line Models



The power output of the **CPOne05** kits depends on which exhaust you use. **Casa Performance** manufactures a standard 'box'-type <u>Maxibox</u> exhaust for Luna Line models.



If you use a original type **Vega 75cc model** exhaust, power output will be approx. 10% higher if you remove the 'baffle' disc (as seen in the 60's Lambretta Tuning Manual) as indicated above.

As the exhaust flange on the **CPOne05** cylinder has 4 x 7mm fixing studs, as opposed to the standard 2-stud fixing, **Casa Performance** exhausts all have 4-stud fixing but all original exhausts with the standard 2-stud fixing can be used, as 2 of the 4 studs present on the cylinder are in the original positions.

J Range Models



Casa Performance manufactures a standard-type <u>Maxibox</u> exhaust for J Range models. This is the dedicated exhaust for use with the CPOne05 (see above pic), and the use of any other exhaust could seriously compromise the power output of the kit.

GEARBOX

The **CPOne05** kit can be used with standard smallframe Lambretta gearing, with an abundance of sprockets available to acquire your desired final drive ratio. We have seen that the final drive ratio you choose depends greatly on the exhaust and carburettor used.

For gearbox options, these are our recommendations:

3-speed gearboxes

Standard 50cc 3-speed gearboxes (all versions of both J50 and Lui50) can be used, but you will need to change just the front sprocket, or both primary drive sprockets to obtain longer gearing. **You should be looking to obtain a 5.6:1 final drive ratio** (i.e. similar to a J125). Another possible modification is the use of the <u>Perfect Ratio Gear Cluster</u> by Casa Performance, that gives much better spaced gearing, utilising the 58T-53T-46T loose cogs of the mid-late production J50 and Lui models.

Another alternative is the fitment of a complete Cento or J125 3-speed gearbox and primaries. All parts for these are <u>readily available</u> new, as they are manufactured by Casa Lambretta.

4-speed gearboxes

If you have a 4-speed engine casing, you can use a standard 4-speed Vega 75cc, or J125 Starstream gearbox and primaries. All 4-speed Lui/ Vega/Cometa and J125 Starstream loose gear cogs, cluster and full gearbox sets are <u>readily available</u> new, as they are manufactured by Casa Lambretta.



<u>'Vega5' 5-speed gearbox</u>

Casa Performance has designed, developed and manufactured the <u>Vega5</u>, which is a complete **5-speed** gearbox that can be fitted to **ANY** J Range or Luna Line scooter, irrespective of engine capacity size (cc) or if it is a 3 or 4-speed engine casing. For 4-speed engine casings the **Vega5** is a plug 'n' play gearbox that requires **no modifications or additional components**.



For 3-speed engine casings, you will also require a 4-speed layshaft (<u>M336</u> for J Range and <u>M253</u> for Luna Line scooters), a 4/5-speed type gearbox endplate (remade <u>Casa Performance endplates</u> are also be available, see above), a 4-speed engine sidecasing, a distance-spacer for the chain guide(s), 4-speed type gearchange control shaft with integral lever (i.e. the shaft that actually goes down into the gearbox), a 4-speed type tie-bar and a special front drive sprocket sleeve (<u>X813</u>).

There are two versions of the **Vega5** gearbox: <u>Mk1</u> and <u>Mk2</u> (released in July 2022). The Mk2 has muchreduced 2nd-3rd-4th-5th ratios, making it much better for use with machines fitted with a sports expansion chamber-type exhaust, enabling the use of a cush-drive type front sprocket assembly to be fitted. For identification purposes, these are the teeth numbers:

Mk1 loose cog teeth: 44-41-37-33-31 Mk1 cluster teeth: 10-13-16-18-20

Mk2 loose cog teeth: 44-41-38-35-34

Mk2 cluster teeth: 10-13-16-18-20

The individual components of the two versions are NOT to be mixed, as only the loose first gear cog is identical in both Mk1 and Mk2 gearboxes.

ENGINE SIDECASING

Please note that J Range and Luna Line 4-speed sidecasings are MUCH deeper than equivalent 3-speed sidecasings. In both 3 and 4-speed cases, J Range and Luna Line sidecasings are perfectly interchangeable with each other, despite being aesthetically different externally, as Luna Line sidecasings are visibly much more angular.



Examples: A 3-speed J50 sidecasing can be fitted to a 3-speed Lui 50cc, or vice-versa. Or, if you want to fit a 5-speed **Vega5** gearbox to any J Range or Luna Line scooter, irrespective of engine capacity or model, you can use a sidecasing from either a 4-speed Starstream, a 4-speed Lui/Vega/Cometa or the <u>sidecasing</u> <u>manufactured by Casa Performance</u>. This has the added benefit of an internal 'rack and pinion' clutch actuating arm, making handlebar clutch lever operation extremely light, even with a heavy-duty clutch.

TRANSMISSION

<u>Clutch</u>

Original J Range and Luna Line clutches were manufactured in either 2 or 3-plate versions, depending on the scooter model. There are three different sizes of clutch (bell) crownwheel sprockets in 45, 46 and 47 teeth sizes.

The main difference is that J Range clutch (<u>45,46</u> and <u>47</u> teeth) crownwheels all use a <u>needle bearing</u> which runs within a pressed-in steel race, whereas Lune Line scooters use a bronze bush in (<u>46</u> and <u>47</u> tooth) crownwheels.

Clutch spider

Once again, Innocenti confusingly produced two different types of central clutch spiders for 2-plate or 3-

plate clutches, albeit with correspondingly (easily visible) different heights. With the sole excpetion of some very early J50s, all subsequent 50cc machines (both J Range and Luna Line) have a 2-plate clutch, which can be used if stronger springs are fitted.



The clutch spiders have two different sizes of the central splined hole, which is either SMALL or LARGE, where it fits onto the gearbox cluster. When choosing a clutch spider for your scooter, ensure it has the correct-sized central splined hole to match your gearbox cluster.

The SMALL splined hole measurement is 13.2mm, whereas the LARGE hole measurement is 15.2mm.

They can be divided up as follows, along with the recommended replacement upgrade Casa Lambretta clutch spider (if needed):

J50 (early 1964 production only): small splined hole/3-plate = $\underline{M342}$ J50 (all subsequent models): small splined hole/2-plate = $\underline{M342}$ Cento 100 /J125/Starstream: large splined hole/3-plate = $\underline{M340}$ Lui 50C/CL: small splined hole/2-plate = $\underline{M255}$ Lui/Vega/Cometa 75cc: small splined hole/3-plate = ($\underline{M255}$)



The new generation Casa Lambretta clutch spiders are modern CNC manufactured parts that are angular on the underside, making them perfect if you wish to convert your standard clutch to 4-plates (advisable)!

J Range clutch spiders

For J Range scooters, there are two types of 3-plate clutch spiders, with either a SMALL or LARGE central splined hole. Original Innocenti small hole spiders were only fitted to VERY early production J50 models but

they are extremely rare and usually completely worn out, so replacement with a Casa Lambretta spider <u>M342</u> is recommended. J Range clutch spiders are easily identifiable as they have an extra cylindrical 'shoulder' on the underside for the needle bearing to run on and they also have a small lug for the securing tab washer (as indicated by the pen in the photo above).

Luna Line clutch spiders

This 3-plate type, as fitted by Innocenti to all Lui/Vega/Cometa 75cc models, is without the protruding 'shoulder' on the underside, as a bronze bush and steel spacer are used. These are also easily identifiable as there is no tab washer lug, as a spring washer is used under the main fixing nut instead. If you wish to replace or upgrade this part, the correct Casa Lambretta clutch spider is <u>M255</u>.

Can a standard type clutch be used?

Yes, but only if you have a <u>3-plate clutch</u> and use stronger 'competition' or <u>200cc model clutch springs</u>. An engine fitted with a **CPOne35** kit and a Standard type exhaust will require <u>at least</u> a 3-plate clutch, and even then, this is pushing the situation to the absolute limit. Converting to a 4, or better still, a 5-plate clutch is a sensible option. <u>The 2-plate clutches found on J50cc and Lui 50 models are NOT sufficient</u>.

Alternatively, **Casa Performance** now produces a 5-plate, 10-spring, modern cassette-type clutch called the <u>LunaMaster</u> specifically designed for use with the **CPOne35** kits, in **45**, **46** and **47** teeth sizes. These clutches are quite capable of resisting power outputs of even highly tuned **CPOne35** kits and they use the same friction clutch plates as those utilised in Casa Performance **SSR265 Scuderia** engines.



Sprocket Combinations & Drive Chains

Drive chains in (nearly) all ('pitch') lengths are readily available from <u>Casa Performance</u>. The best 'tool' to calculate eventual gearbox combinations, ratios and set-ups is **Tony Cassidy's** excellent <u>GEARBOX</u> <u>VISUALISER</u>.

This is the complete list of all possible front drive sprocket & clutch crownwheel sprocket combinations for all J Range and Luna Line Lui/Vega/Cometa models, complete with the required length chain (all with *live* product links):

45T Clutch crownwheel Sprocket 45T clutch sprocket + <u>11T</u> front sprocket = <u>73 link chain</u> 45T clutch sprocket + <u>12T</u> front sprocket = *NO*! 45T clutch sprocket + <u>13T</u> front sprocket = <u>74 link chain</u> 45T clutch sprocket + <u>14T</u> front sprocket = <u>74 link chain</u> 45T clutch sprocket + <u>15T</u> front sprocket = <u>75 link chain</u> 45T clutch sprocket + <u>16T</u> front sprocket = <u>75 link chain</u>

46T Clutch crownwheel sprocket

46T clutch sprocket + <u>11T</u> front sprocket = *NO*! 46T clutch sprocket + <u>12T</u> front sprocket = <u>74 link chain</u> 46T clutch sprocket + <u>13T</u> front sprocket = <u>74 link chain</u> 46T clutch sprocket + <u>14T</u> front sprocket = <u>75 link chain</u> 46T clutch sprocket + <u>15T</u> front sprocket = <u>75 link chain</u> 46T clutch sprocket + <u>16T</u> front sprocket = <u>76 link chain</u>

47T Clutch crownwheel sprocket

47T clutch sprocket + 11T front sprocket = 74 link chain
47T clutch sprocket + 12T front sprocket = stretched 74 link chain
47T clutch sprocket + 13T front sprocket = 75 link chain
47T clutch sprocket + 14T front sprocket = NO!
47T clutch sprocket + 15T front sprocket = NO!
47T clutch sprocket + 16T front sprocket = 76 link chain

Front Sprocket

Front drive sprockets are divided into two types: **cush-drive** and **NON cush-drive**. Cush drive type front sprocket assemblies were fitted as standard to Cento, J125 and Starstream models. All 50cc and 75cc models have NO cush drive as standard, but they can easily be converted to cush drive with the appropriate parts, all of which are <u>readily available</u>.

The advantages of a cush drive set-up are that this really reduces wear and tear on the gearbox and clutch and it therefore follows that the fitment is advised. 3-speed models need a different drive sprocket sleeve (also called a collar) than 4-speed models, as this is longer and has an extra section that fits between the crankshaft and main drive side bearing. The dish-shaped washer under the sleeve is also different for 3 and 4-speed models.

If you intend to fit a 4 or 5-speed gearbox into a 3-speed engine casing, you will need a <u>special front</u> <u>sprocket sleeve</u> produced by **Casa Performance** to obtain the correct chain alignment between the sprocket and clutch.

Front drive sprockets are available in the following types and teeth sizes:

NON cush drive sprockets

<u>11 teeth</u> (Innocenti + Casa Performance) note: there are versions for both 3 and 4-speed engines
<u>12 teeth</u> (Casa Performance) note: there are versions for both 3 and 4-speed engines
<u>13 teeth</u> (Innocenti + Casa Performance) note: there are versions for both 3 and 4-speed engines
<u>14 teeth</u> (Casa Performance) note: there are versions for both 3 and 4-speed engines
<u>15 teeth</u> (Casa Performance)

<u>Cush drive sprockets</u> <u>14 teeth</u> (Innocenti + Casa Lambretta) <u>15 teeth</u> (Casa Performance) <u>16 teeth</u> (Casa Performance) **Examples**: If you have a <u>3-speed</u> J50, you will need to fit a cush drive sprocket assembly from a <u>3-speed</u> Cento or J125. If you have a <u>4-speed</u> Cometa 75cc, you will need to fit a cush drive sprocket assembly from a <u>4-speed</u> J125 Starstream.



<u>Which cush drive set-up to choose when converting a NON cush drive model :</u> 3-speed J50 (all versions): you will need the cush drive parts from a 3-speed Cento / J125 3-speed Lui 50C / 50CL: you will need the cush drive parts from a 3-speed Cento / J125 4-speed Lui/Vega/Cometa 75cc: you will need the cush drive parts from a 4-speed J125 Starstream



Please note some <u>very</u> early production J50 models were also fitted with a 14T cush drive set-up that uses a unique height spring (Item: <u>M345z</u>).



Chain Guides

Standard chain guides can be used. Alternatively, **Casa Performance** has manufactured a <u>very high quality</u> <u>top chain guide</u> tensioner for all J Range and Luna Line scooters, and this can be used without the lower guide. There are two original types of guides (with different fixing hole distances cast into the engine casing) and this new chain guide tensioner can be used for either type of engine casing.



LAYSHAFT AXLE

3-speed and 4-speed layshafts have visibly different lengths. The difference between J Range and Luna line layshafts is that the latter have longer teeth for the fitment of a splined, cone-less rear hub, as can be seen in the photo below. This applies to both 3 and 4-speed versions.

Layshafts can be interchanged between J Range and Luna Line engines BUT if you use a standard cast iron type Luna Line rear hub, you MUST use a layshaft with longer teeth.

CYLINDER & FLYWHEEL COWLINGS

There were several types of cylinder and flywheel cowlings fitted to both J Range and Luna Line machines during production.

Flywheel Cowling

Any standard flywheel cowling can be used. J50 flywheel cowlings are made of steel, whereas Luna Line flywheel cowlings are made of plastic.

Cylinder Cowling

Although very similar in design, J50 and Lui50 cylinder cowlings have slight differences. They are interchangeable, but Lui50 cowlings have 2 integral HT coil mounting nuts on one side. 75cc Lui/Vega/Cometa type cylinder cowlings are much bigger than their 50cc counterparts.

To fit a **CPOne05** kit, the cylinder will need to be cut on the inlet side to clear the reedvalve assembly casting, and you will need to enlarge the hole for the spark plug slightly on the upper side of the aperture. The aperture for the exhaust needs little/no modification.



FLYWHEEL SIDE MAGNETO FLANGE & DRIVESIDE OILSEAL PLATE

There are two different types of mag flange fitted as standard to J Range and Luna Line machines, with two different types of bearings. Original flanges are extremely prone to breaking. Therefore **Casa Performance** has marketed <u>a CNC magneto flange</u> which is a plug 'n' play replacement for either type of original flange. This new flange (below-left) uses a single external Viton oilseal with a modern, open bearing. This helps the engine to spin MUCH more freely, whether it's standard or tuned. The flange is CNC machined and extremely high quality, with extra room for fuel to pass down inside to lubricate the bearing.

Casa Performance has also manufactured a CNC machined driveside <u>oilseal plate</u> (above right). This has an additional **Viton O-Ring** and offers perfect sealing, and comes ready supplied with a Viton oilseal (with a choice of oilseal for either 3-speed and 4-speed casings).

MODIFICATIONS NEEDED?

We have tried to make sure that the **CPOne05** kit is as close to being plug 'n' play as is humanly possible, for both J Range and Luna Line machines.

Engine Modifications

No modifications to the engine casing are necessary.

Frame Modifications

The ONLY modification required to your scooter's bodywork to fit the **CPOne05** kit is the removal of a very small section of the leading edge of the rear mudguard. This amounts to little more than a few centimetres *(approx. 5cm)* and is necessary so that the rear mudguard does not foul the reed-valve inlet manifold under

suspension movement. The picture below shows the small piece removed from a Luna Line rear mudguard.

In all cases, the easy way to check that you have removed the correct amount of material from the rear mudguard is simply to completely remove the rear suspension from the scooter and then (slowly) push down on the rear of the scooter, checking to see if the mudguard comes into contact with the inlet rubber when doing so. If they still come into contact, simply remove a small piece of the mudguard at a time until total freedom of movement is obtained.



CAN I TUNE THE 'CPOne05' KIT?

Yes! We have purposely left a large base gasket face area (including an integral extra lug for a third transfer port) on the underside of the barrel and the two transfer ports are both 'lipped' over on their extremity at the base gasket face as well. In out-of-the-box format, the ports of the **CPOne05** kit match the ports of the engine casing. If you desire to open your transfer ports, then this 'lip' can be easily removed and the size of the transfer ports increases dramatically. We market and sell the **CPOne05** as a useable, road-going kit for everyday use, making it perfect as a daily rider for **commuting**, and even **touring**, if so desired. It is <u>NOT</u> a race kit, but if you do want to tune it, the potential is definitely there.

Any modifications carried to to a **CPOne05** kit are purely at the owner's risk, and invalidate any possible claim.

LIABILITY

Rimini Lambretta Centre and Casa performance accept no responsibility for any issues arising from the fitment of the kit, in any countries where tuning, modifications or alterations are not permitted.

RUNNING IN PERIOD

The recommended running-in period for the **CPOne05** kit is 350 miles/500km. During that time, just don't thrash it, or hold it at constant speeds for prolonged periods. When running-in, it's advisable to use the scooter around town and for short journeys rather than sitting at a constant speed on a motorway. Use good quality, <u>fully synthetic 2-stroke oil</u> at 3% initially, and 2% once the scooter has been run-in.

Contact

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Dean Orton

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