

# CP ONE35

## The CP One35 Casa Performance kit & Related products

**LAST UPDATED 16.09.2019**

Below we have listed information relative to the J Range and Luna Line engines, their differences and possible alternatives using standard or **Casa Performance ('CP')** parts. At the time of writing (March 2019) some parts are not available as they are being manufactured. As and when new parts become available, we will alter and update the information contained within this File.

### ***What do I need to fit a 'CP One35' kit to my scooter?***

Contrary to what some people have stated, the absolute **bare minimum** of parts needed to convert your scooter are a **CP One35** kit and a correct width **48mm stroke crankshaft** (see below). If you have a 50cc or 75cc scooter you will also need a set of **cylinder studs** and a **cylinder cowl**.



### **'CP ONE35' CYLINDER KIT**

The [CP One35](#) 135cc is a plug and play cylinder kit. The complete kit includes the following parts:

- 1 x cylinder
- 1 x cylinder head
- 1 x inlet manifold
- 1 x reed valve
- 1 x piston
- 4 x gaskets (base / inlet / exhaust)
- Fasteners and hardware

### **Technical Specification:**

Capacity: 135cc (48 stroke x 60mm bore)

Material: very high grade aluminium produced in steel moulds

Induction: 4-petal reed valve with one piece rubber manifold

Cylinder head: very high grade aluminium with multi point fixing

Exhaust: 4 stud fixing (2 studs are in the standard positions)  
Piston: specific 60mm with wire type rings made by Meteor exclusively for Casa Performance  
Power output: 10-15bhp (depending on exhaust used)  
Modifications needed to engine casing: **NONE**

The **CP One35** kit is designed to fit **ALL** the following Lambretta models:

#### Luna Line

Lui 50C & 50CL (50cc 3-speed)

Lui-Vega-Cometa (75cc 4-speed)

#### J Range

J50 (50cc 3-speed)

Cento (100cc 3-speed)

J125 (125cc 3-speed)

J125 Starstream & Super Starstream (125cc 4-speed)

**THE CP ONE35 KIT WILL FIT ANY J50 (ALL VERSIONS), CENTO, J125, STARSTREAM, LUI 50C & CL, LUI-VEGA-COMETA 75 ENGINE CASING WITHOUT MODIFICATION!**

**The reason is that all these Lambretta models have the same base gasket & crankcase mouth design.**

Longer cylinder studs will be required for all 50cc and 75cc models. The studs needed are those fitted as standard to Cento, J125 and Starstream models (part No. [967](#) ).

#### **CRANKSHAFT**

##### ***What crankshaft do I need?***

All J Range and Luna line scooter engines can be divided into two groups, with correspondingly **different width crankshafts**:

1. All 3-speed models (see the model listing above) have **36mm** wide crankshafts
2. All 4-speed models (see the model listing above) have **40mm** wide crankshafts

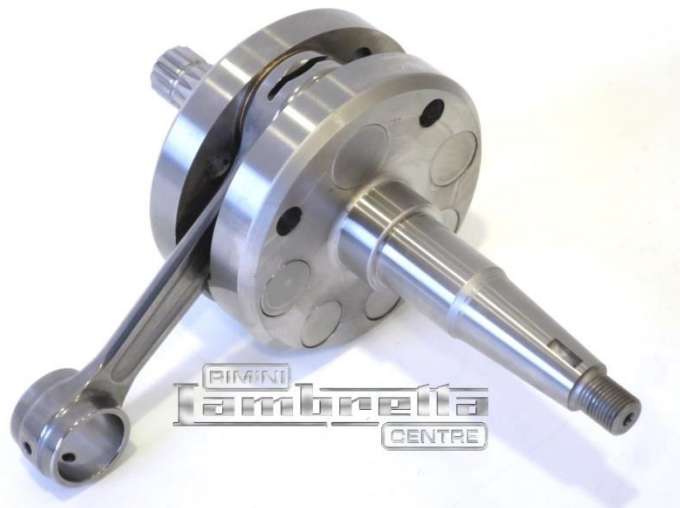
All Lambretta 50cc and 75cc models use a short 44mm stroke crankshaft, whereas all 100cc and 125cc models use a longer 48mm stroke crankshaft. The **CP One35** kit is designed to be used with a **48mm stroke** crankshaft. For models that have an incorrect 44mm stroke crankshaft, when choosing a replacement crankshaft the all-important factor is that the **WIDTH** is correct for your engine casing (i.e. 36mm for a 3-speed casing or 40mm for a 4-speed casing).

**Example:** If you have a 3-speed Lui 50 with a 36mm wide, 44mm stroke crankshaft, you will need to fit a **crankshaft** from a Cento or J125, as these also use a 36mm wide crankshaft but have the correct **48mm** stroke needed for a **CP One35** kit.

##### ***Is a standard crankshaft ok to use with a CP One35 kit?***

**Yes, as long as the crank is in good condition.** We ran an Innocenti J125 Starstream crank in a 4-speed Vega 75cc casing when testing the prototype **CP One35** kits for several thousand miles and it was fine. The power output and torque of the kit is very linear, right across the rev range (i.e. it's not 'on-off' as can be the case with some small capacity reedvalved tuning kits) and this helps to reduce crankshaft wear. The only negative factor can be the balance factors of standard crankshafts which are not ideal for the **CP One35** kit and this could cause undue vibration.

Casa Performance will be manufacturing two simple, economic crankshafts (in both **36mm** and **40mm** widths) and also two high-end race type crankshafts, all of which will have correct balance factors for the **CP One 35** kits.



### **CARBURETTOR**

We have tested several different carbs and the best results have been obtained with [Polini CP24mm carbs](#) and [Dell'Orto PHBL 25mm carbs](#). Power output is about the same but the Polini carbs give much better fuel economy. We used foam type [airfilters](#) on the carbs during all testing. We have jetting tables for both carbs. During testing, bigger carbs were also tried but they gave no real increase in power output and had much worse fuel economy.

### **IGNITION**

#### ***Can I use the original ignition?***

**Yes, any original points ignition system can be used.** We have also developed and manufactured an all-new Italian made 12V electronic ignition system called the [Firefly](#) with **Ducati Energia** (who supplied the majority of original ignitions for Innocenti manufactured Lambrettas). The advantages of this **Ducati** system over points ignitions and 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 'cancelled'
- 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 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.

### **EXHAUST**

We intend to manufacture both a *standard* type exhaust and a *sports* exhaust for both Luna Line and J Range machines. The *standard* type exhaust for the Luna Line machines will be aesthetically identical to the Vega 75cc exhaust (it will be marketed for those machines as well) albeit internally it will be modified to produce more power. Power output of the **CP One35** kits depends on exhaust you use. Our aim is that the exhausts we will provide produce **9-10bhp** when using a *standard* version and **12bhp** with a *sports* version, as out-of-the-box kits in completely untuned format. The exhaust flange on the **CP One35** cylinder has 4 x 7mm fixing studs, as opposed to the standard 2 stud fixing. **Casa Performance** exhausts will have 4 stud fixing but all original exhausts with the standard 2 stud fixing can be used as 2 of the 4 studs on the cylinder are in the original positions.

50cc Lui engines do NOT have the additional exhaust mounting lug cast into the casing to the right of the flywheel cowling, as their 75cc counterparts have. **Casa Performance** produces a stainless steel [flywheel spacer ring](#) that fits under the original 50cc flywheel cowling and has this additional lug incorporated within (see below). This adapter ring also doubles up as a spacer to fit under 50cc flywheel cowlings (as they are

much shallower than 100 / 125cc flywheel cowlings) to obtain the correct height needed to be used in conjunction with 100 / 125cc cylinder cowlings.



**X800**



### **GEARBOX**

The 'CP One35' kit can be used with standard Lambretta gearing, with sprockets used to get the required ratios. We are currently testing various set-ups and alternatives for gearing. We've seen that the ratio depends greatly on the exhaust used, with *sports* exhausts needing much shorter overall gearing ratios.

For gearbox options, these are our recommendations:

#### **All 3-speed models**

If you have a 3-speed engine casing use a 3-speed Cento or J125 gearbox. Please note that 50cc 3-speed gearboxes (both J50 and Lui 50) are too short to be used. All 3-speed Cento and J125 loose gear cogs, clusters and full gearbox sets are [readily available](#).

#### 4-speed models

If you have a 4-speed engine casing, use a 4-speed Vega 75cc or J125 Starstream gearbox. All 4-speed Lui / Vega / Cometa and J125 Starstream loose gear cogs, clusters and full gearbox sets are [readily available](#).

#### 'Vega5' 5-speed gearbox

**Casa Performance** has designed, developed and manufactured the [Vega5](#) 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's a 3 or 4-speed engine.



For 4-speed engines 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 ([M336](#) for J Range and [M253](#) for Luna Line scooters), a 4-speed gearbox endplate (available shortly, see below), a 4-speed engine sidecasing and a special front drive sprocket sleeve ([X813](#)).

**3D plastic print-out of  
the forthcoming CP  
gearbox endplate**



#### **ENGINE SIDECASING**

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

**Examples:** A 3-speed J50 sidecasing can be fitted to a 3-speed Lui 50cc. Or, if you want to fit a 5-speed **Vega5** gearbox to any J Range or Luna Line scooter, irrespective of engine cc or model, you can use a sidecasing from either a 4-speed Starstream or a 4-speed Lui-Vega-Cometa.



## TRANSMISSION

### Clutch

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. J Range clutch (45,46 and 47 teeth) crownwheels all use a [needle bearing](#) which runs within a pressed-in steel race, whereas Luna Line scooters use a bronze bush in (46 and 47 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. Only 50cc machines (both J Range and Luna Line) use 2-plate clutches and in any case these are NOT to be used. **Therefore all the following information is relevant to the 3-plate type clutch spiders ONLY.**



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, just ensure it is a **3-plate type** with 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):

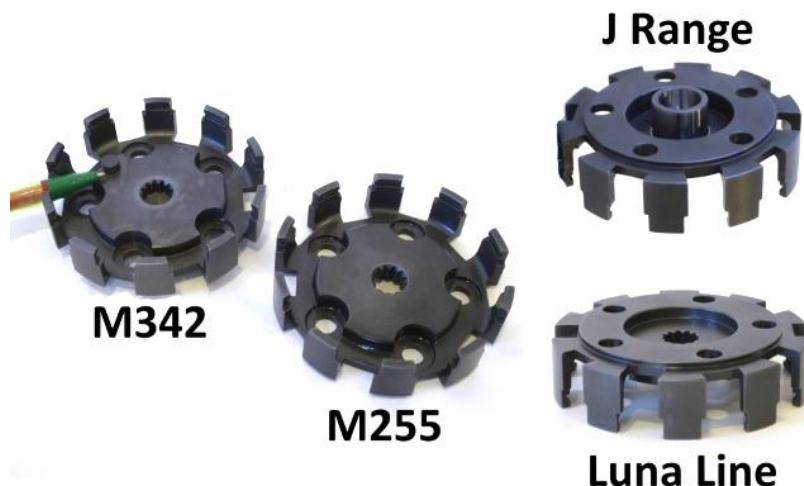
J50 (early 1964 production only): small splined hole / 3-plate = **OK!** ([M342](#))

J50 (all subsequent models): small splined hole / 2-plate = fit clutch spider [M342](#)

Cento 100 - J125 - Starstream: large splined hole / 3-plate = **OK!** (*Casa part coming soon*)

Lui 50C & CL: small splined hole / 2-plate = fit clutch spider [M255](#)

Lui - Vega - Cometa 75cc: small splined hole / 3-plate = **OK!** ([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!*

### 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 are extremely rare and are usually completely worn out, so replacement with a Casa Lambretta spider [M342](#) is recommended. J Range clutch spiders are easily identifiable as they have extra cylindrical 'shoulder' on the underside for the needle bearing to run on and also have a small lug for the securing tab washer (as indicated by the green 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 [M255](#).

### *Can a standard type clutch be used?*

Yes, if you have a [3-plate clutch](#) and use stronger [200cc model springs](#). An engine fitted with a **CP One35** kit will require at least a 3-plate clutch. The 2-plate clutch found on most J50cc and Lui 50 scooters is NOT sufficient.

Alternatively **Casa Performance** produces a 5-plate, 10 spring, modern cassette-type clutch called the [LunaMaster](#) specifically for use with the **CP One 35** kit, in **45, 46** and **47** teeth sizes.

### **LUNAMASTER** 5 plate 10 spring smallframe Lambretta clutch



X811

### Sprocket Combinations & Chains

Drive chains in (nearly) all ('pitch') lengths are readily available from [Casa Performance](#).

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 + [11T](#) front sprocket = [73 link chain](#)

45T clutch sprocket + [12T](#) front sprocket = **NO!**

45T clutch sprocket + [13T](#) front sprocket = [74 link chain](#)

45T clutch sprocket + [14T](#) front sprocket = [74 link chain](#)

45T clutch sprocket + [15T](#) front sprocket = [75 link chain](#)

45T clutch sprocket + [16T](#) front sprocket = [75 link chain](#)

### 46T Clutch crownwheel sprocket

46T clutch sprocket + [11T](#) front sprocket = **NO!**

46T clutch sprocket + [12T](#) front sprocket = [74 link chain](#)

46T clutch sprocket + [13T](#) front sprocket = **stretched 74 link chain**

46T clutch sprocket + [14T](#) front sprocket = [75 link chain](#)

46T clutch sprocket + [15T](#) front sprocket = [75 link chain](#)

46T clutch sprocket + [16T](#) front sprocket = [76 link chain](#)

### 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 [readily available](#).

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 is also different for 3 and 4-speed models.

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

#### NON cush drive sprockets

[11 teeth](#) (Innocenti + Casa Performance) *note: there are versions for both 3 and 4-speed engines*

[12 teeth](#) (Casa Performance) *note: there are versions for both 3 and 4-speed engines*

[13 teeth](#) (Innocenti + Casa Performance) *note: there are versions for both 3 and 4-speed engines*

[14 teeth](#) (Casa Performance) *note: there are versions for both 3 and 4-speed engines*

[15 teeth](#) (Casa Performance)

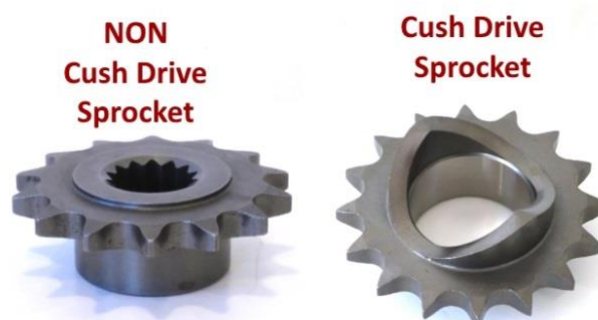
#### Cush drive sprockets

[14 teeth](#) (Innocenti + Casa Lambretta)

[15 teeth](#) (Casa Performance)

[16 teeth](#) (Casa Performance)

**Examples:** If you have a 3-speed J50 you will need to fit a drive sprocket assembly from a 3-speed Cento or J125. If you have a 4-speed Cometa 75cc you will need to fit a drive sprocket assembly from a 4-speed J125 Starstream.





Which cush drive set-up to choose when converting a NON cush drive model :

3-speed J50 (all versions): you will need 3-speed cush drive parts from a 3-speed Cento / J125

3-speed Lui 50C / 50CL : you will need 3-speed cush drive parts from a 3-speed Cento / J125

4-speed Lui-Vega-Cometa 75cc : you will need the 4-speed cush drive parts from a 4-speed J125 Starstream

### Drive sprocket assembly for 3-speed engine casings



### Drive sprocket sleeve + dished washer for 4-speed engine casings



Please note some very early production J50 models were also fitted with an 11T cush drive set-up that uses a unique short spring (Item: [M345z](#)).

### Chain Guides

**Standard chain guides can be used.** Alternatively, Casa Performance has manufactured a [very high quality top chain guide](#) 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 the rear hub as can be seen in this photo. This applies for 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

**All standard flywheel cowlings can be used.** J Range flywheel cowlings are made of steel, with 50cc model cowlings being much shallower than their Cento or 125cc counterparts. Luna Line flywheel cowlings are made of plastic. For all 50cc & 75cc models (both J Range and Luna Line) you will need to fit the **Casa Performance flywheel spacer ring** (mentioned previously) under the flywheel cowling to distance it away from the engine casing so that it aligns correctly with the taller Cento / J125 / Starstream type cylinder cowling.

#### Cylinder Cowling

J Range cylinder cowlings are divided into two types: short type (50cc) and tall type (100cc & 125cc). Luna Line cylinder cowlings are made of steel and are both short, albeit with differences between the 50cc and 75cc versions.

To fit a **CP One35** kit, all 50cc & 75cc models (i.e. all models with a **SHORT** type cylinder cowling) will need a **TALL** type cylinder cowling. At the time of writing this means a cylinder cowling for a Cento, J125 or Starstream model. However, **Casa Performance** will be remaking dedicated **TALL** type cylinder cowlings in both steel and carbon fibre. Original cylinder cowlings will need trimming to suit around the inlet and exhaust apertures whereas the new, remade cylinder cowlings will be supplied as plug 'n' play parts.

### **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 [an all-new flange](#), 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.



We have also manufactured a CNC machined driveside [oilseal plate](#) (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 **CP One35** kit is as close to being plug 'n' play as is humanly possible, for both J Range and Luna Line machines. The **ONLY** modification required to your scooters bodywork to fit the **CP One35** 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 cm and is necessary so that the rear mudguard does not foul the reedvalve inlet manifold under suspension movement. The picture below shows the small piece removed from a Luna Line mudguard.



On Luna Line scooters, when converting to a taller (100cc, 125cc or **CP One35**) cylinder, the cylinder cowling comes into close proximity to the underside of the frame and under heavy suspension movement, these can come into contact. To eliminate this, we suggest the use of a [BGM Lambretta rear shocker](#) for a Series 3 - GP / DL with [two special reduction bushes](#) that **Casa Performance** has manufactured. The extra length of this type of rear shock absorber greatly reduces the chances of the frame coming into contact with the cylinder head cowling.

The use of a Series 3 type rear shock absorber with reduction bushes will massively improve the scooters handling on a Luna line machine and if you wish to also improve the front suspension, **Casa Performance** also market a set of [special axle nuts and weld-on top damper brackets](#) that allow the fitment of front shock absorbers as well. These can be used on both J Range and Luna Line scooters. These modifications alone will literally TOTALLY transform the way your scooter handles!

### **CAN I TUNE THE 'CP ONE35' KIT?**

**Yes!** We have purposely left a large 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 **CP One35** 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 **CP One35** 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 NOT a race kit, but if you do want to tune it, the potential is definitely there.



For any queries or further information please contact us : [dean@riminilambrettacentre.com](mailto:dean@riminilambrettacentre.com)

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Setptember 2019