

Multi Clutch Instructions

Thank you for purchasing the UNI Multi Clutch, it will allow you quick and accurate adjustment of clutch leverage, giving you more control over lever weight and bite point feel.

The Multi Clutch is intended to work with a modern high performance clutch (not the original clutch). To ensure the best performance fit a new clutch cable, and assess the clutch lever, pivot, and gear housing for wear and replace as necessary.

The Kit contains:

4 Position Clutch arm,
Clutch shaft
Cog
Phosphor Bronze Pressure bush case

Steel Pressure bush rack
Clutch arm return spring
10mm external circlip
12mm external Circlip
2 Clutch shaft shims
Clutch shaft O ring
Clutch shaft E Clip
8mm Cable Trunnion

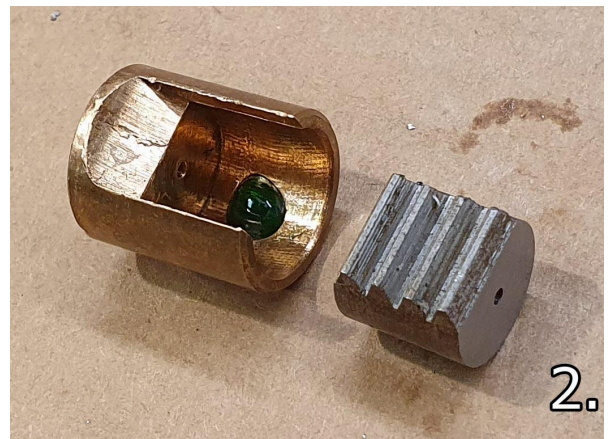


You will need:

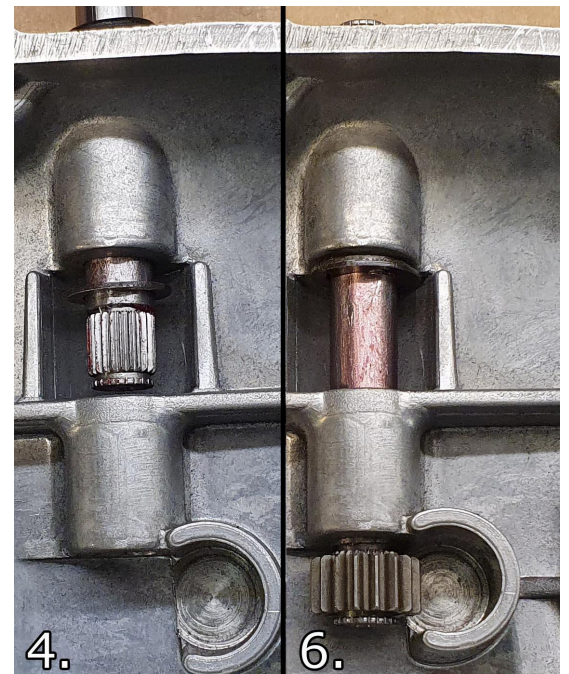
A GP type crankcase cover.
A high performance Lambretta clutch such as one of the Rayspeed cassette type clutches.
A clutch cable in good condition
A clutch lever, pivot and switch housing in good condition.
High temperature lithium grease.
High strength bearing retaining compound (or similar).

Quick Fitting Guide:

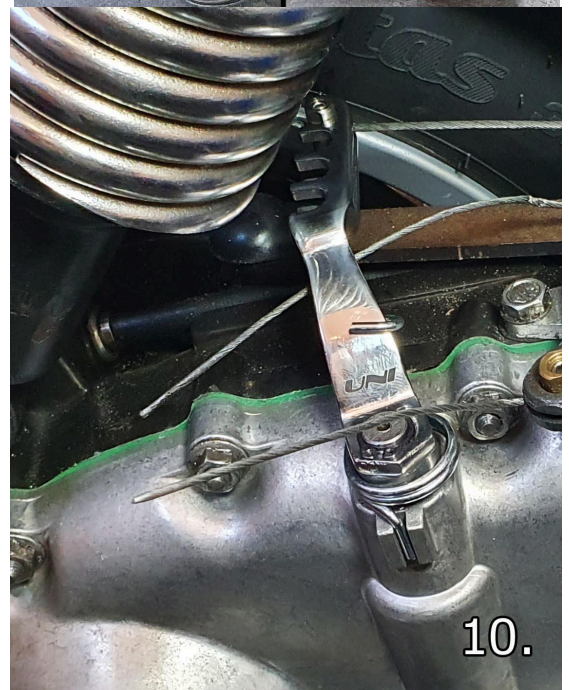
1. Remove and strip the existing clutch shaft and arm from your GP crankcase cover.
2. Put a drop of high strength retaining compound onto the steel pressure bush rack, and fit it into the phosphor bronze pressure bush case. Wipe off and excess and blow through the central pressure hole. It is ok to heat this up to make the retaining compound cure quickly.



3. Check the pressure bush assembly is a snug fit in the crankcase cover. It may be necessary to use some emery paper or a flap wheel to increase the size of the hole if it is too tight.
4. Slide a shaft shim and o'ring on to the top of the clutch shaft and fit the 12mm circlip.
5. Lightly grease the clutch shaft and o'ring and part way into the crankcase cover, and fit the other clutch shaft shim to the shaft.
6. Locate the cog on to the bottom of the clutch shaft inside the crescent support of the crankcase cover. Use a small amount of retaining fluid on the spline.
7. Push the shaft all the way home and fit the E clip in the shaft groove.
8. Wipe off any excess fluid, and fit the Pressure bush assembly (with a little grease). This will help locate the cog where it needs to be on the shaft.



9. Fit the Multi clutch arm, and apply gentle force to the arm whilst holding the pressure bush down. This will take up any space in the spline in the direction of load. Use a little heat to make the retaining compound to go off quickly.
10. Fit a new crankcase gasket and fit the cover back on to the engine.



11. Move the multi clutch arm to the shaft spline that allows the 4 trunnion positions to be closest to 90 degrees to the crankcase gasket surface when under light tension. This will allow you to change the trunnion position with minimal adjustment to the clutch lever. Fit the clutch arm spring.
12. Fit the trunnion on to the clutch cable then drop in the cable protecting lenti (metal circle) and screw in the grub screw. When correctly positioned the clutch arm should not be applying any force to the clutch until the clutch lever is pulled.

Note: The clutch arm has been designed to allow a 19mm spanner to fit and actuate the clutch. This allows for quick and easy selection of trunnion position.

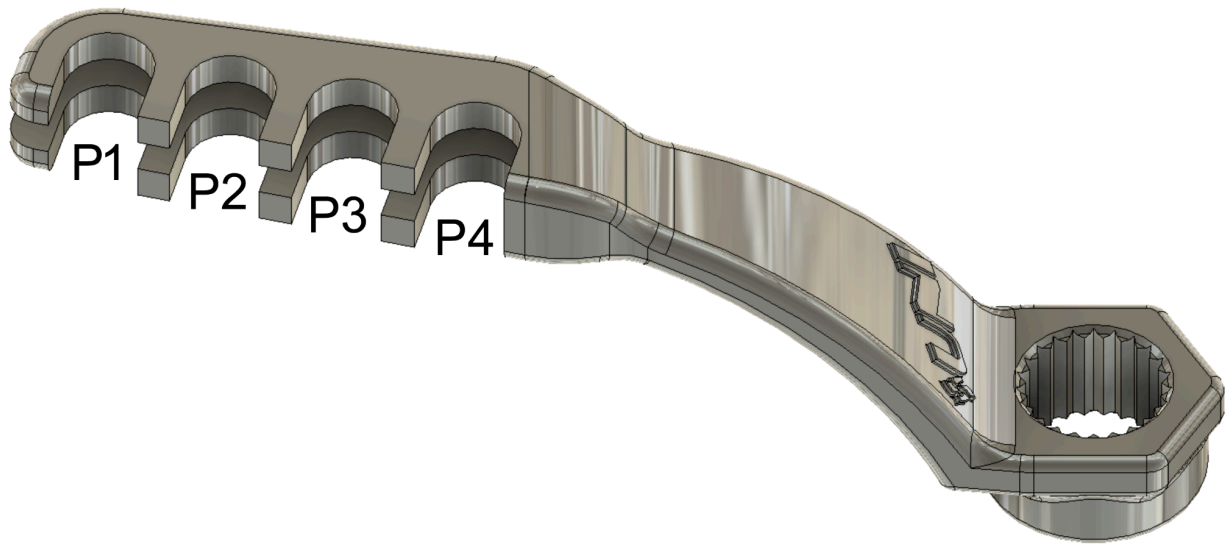
Before fitting the multi clutch:

Check your clutch cable is in good condition, that the ends of the cable are well supported and that your clutch lever pivot bolt, the pivot bolt holes are in good condition. Check the cable travel when under load is at least 13mm. These checks are covered in detail at the end of the instructions. If you have not confirmed the condition of these parts you will not get the desired results. A worn or lightly damaged clutch cable can typically increase the force required to operate the clutch by 70%, i.e. a new cable and good controls can have a greater effect on clutch lever weight and control than the multi clutch. Do not ignore the basics, the multi clutch merely offers quick adjustment of leverage, it will not compensate for damaged parts.

The Multi clutch has been designed to work with GP type crankcase covers and AF Rayspeed Cassette clutches (and other high performance Lambretta clutches). The accuracy of manufacture of most uprated clutches means they do not need to be depressed as far as the original Lambretta design for them to operate. It is this feature that allows the multi clutch to work.

The original Lambretta clutch will not work with the lighter settings of the multi clutch as the standard clutch needs the full travel that Innocenti originally designed for.

The Multi clutch makes adjusting clutch leverage quick and easy. This allows the rider to choose the weight and 'feel' that suits them best. This may be the lightest setting for some, whilst others will prefer a more positive 'bite'.



Trunnion Position	Leverage (as a percentage of standard)	Typical lever weight (Kg)
Position 4 (P4)	100%	6.5
Position 3 (P3)	87%	5.6
Position 2 (P2)	75%	4.9
Position 1 (P1)	67%	4.3

Fitting an 8mm cable trunnion into Position 4 has the same leverage as the standard Lambretta clutch arm. This means that in position 4 the multi clutch arm will depress the clutch by the same distance relative to cable travel as the standard Lambretta mechanism does. So position 4 has the same weight lever feel as the standard Lambretta.

Position 3, 2, and 1 will reduce the distance the clutch is depressed and correspondingly make the clutch lever feel lighter.

Clutch controls

The most common cause of a heavy clutch is the clutch cable outer or the cable end being damaged. This damage is usually located in the headset. The clutch outer often gets crushed against the headset bottom when selecting either 4th or 1st. Also where the cable locates in to the gear



housing is often not a flat surface, and the outter can begin to pull through its ferrule end.

To correct these issues when I fit a new clutch cable I will often have to deburr / cut back any flash in the 'lozenge' hole in the headset that the clutch cable passes through so the gear housing can turn beyond 1st and 4th position without touching the clutch cable. I also fit an M3 washer on the the cable inner before it goes through the outer to provide a little more support for the cable end. I use PTFE spray on nylon lined cables and grease on standard cables.

Check that the lever pivot hole is not elongated through wear. Often this can be mitigated by fitting an M7 washer on to the lever pivot bolt before it goes through the switch housing (to stabilise it when tightened). But if the lever is worn it should just be replaced.

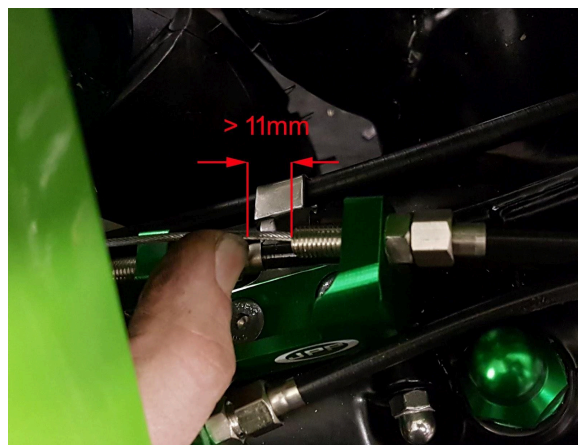
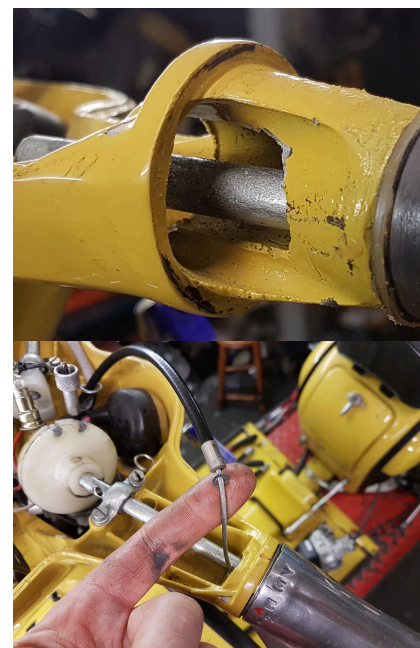
The angle of the Clutch arm on the top of the engine also makes a significant difference to the feel of the clutch. I like to set the arm to pull from 90 degrees. I.e. you will not need to adjust the cable when changing between position 1,2,3, and 4. .

Check there is not alot of play in the clutch shaft, cog, clutch arm, bore of crankcase cover, and that these are lubricated and move freely.

Daft check, but essential. Check you have not trapped the clutch inner cable behind the rear shock when fitting. This will make the clutch practically solid. Don't laugh, you would be amazed how many bikes I've had customers drop in with this problem.

Having done all of that, now check the cable travel. Attach the clutch so it is under load and set up as you would ready to ride the bike. Pull the headset clutch lever in to the handle bar. Pinch the cable inner where it comes out of the cable adjuster on the top of the engine between thumb and finger so your thumb nail presses against the cable adjuster. Now release, and measure the distance your thumb moved from the adjuster. If this is 15mm well done, everything is new and in good condition. If this is less than 11mm you have more work to do.

Low cable travel is usually because the clutch lever pivot is worn, cable outer collapsed etc. as mentioned before. But it can also be because you have thick handle bar grips fitted, or levers that have little travel (some dogleg levers and most adjustable levers have this issue).



Clutch cable adjustment, if the clutch cable adjustment is too tight the engine will encounter clutch slip under load and the clutch plates will be damaged if the clutch slips under acceleration. If the clutch cable adjustment is too slack the clutch will drag, and the bike will be difficult to ride and it will be difficult to select gear (especially the return to neutral) In-between these two settings is 'the zone' of just right.

When the clutch cable is correctly adjusted the clutch lever will be applying no force on the clutch when it is fully released. This means that correctly set up the last 1- 2 mm of clutch lever travel should be loose, and when the clutch lever is pulled into the handlebar the bike should select first gear easily and not creep forward.

For most clutches this zone is not large and as little as two turns on the clutch adjuster can be the difference between slip and drag. Other designs can be more accurate and cable adjustment can control the position of their bite point within the lever travel.