



# **Motorcycle Electronic Cruise Control**

## **How to select your Universal Cruise Control parts**

**16 January 2017**

### **MOTORCYCLE CRUISE CONTROLS**

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**NOTE: - We recommend that you read this manual in conjunction with a cruise control installation manual for a model that is similar to yours (and is likely to use similar cruise control parts) so that you can see what is involved in a cruise control installation and to allow you to become familiar with the cruise control components. This will help you to decide what parts you might need, and where they might fit on your motorcycle.**

MotorCycle Cruise Control installation on bikes for which we have not developed model-specific kits, resolves into four separate processes:

1. Mechanical installation;
2. Electrical installation;
3. Diagnostic testing; and
4. Cruise Control calibration.

1. The mechanical installation comprises mounting the cruise control Computer; Control Switch; Cable Interface Unit (CIU); and Electric Throttle Servo. It also requires disconnecting the opening throttle cable from the bike, connecting the Servo to the CIU, connecting the CIU to the bike's throttle spindle with a cable MotorCycle Cruise Controls provides, and connecting the existing throttle cable to the CIU.

It may also require installation of a passive or active speed sender unit depending on whether the bike has a suitable digital speed signal available and accessible.

2. The electrical installation comprises modifying a supplied universal wiring harness to connect the cruise control computer to:

- a. The Cruise Control Switch - MotorCycle Cruise Controls supplies all terminals and connectors [orange/black; grey/black; yellow/black; red/black; green/black; brown/black wire colours];
- b. The battery ground – typically a 6mm ring terminal [black wire colour];
- c. The front or rear brake switch which supply 12 volt switched power and brake detection [orange wire (power), grey wire (brake detection)]. **NOTE: - in most cases, connection is only required to one switch, NOT both, as usually both brake light switches are on the same circuit, HOWEVER, on some modern bikes with complex electronics, particularly CAN-BUS systems, front and rear brake switches are on independent circuits, this requires different methods of connecting for power and brake sensing;**
- d. The bike's clutch switch [blue wire];
- e. The bike's tacho signal - ignition coil primary [thick yellow wire]; and
- f. The bike's speed signal [single blue/black wire for accessing speed signal on the bike - or blue & black in shielded co-axial wire for passive speed sensor].

3. Diagnostic testing - as detailed in Section 8 of the Setup Manual &

4. Cruise Control Calibration – as detailed in Section 9 of the Setup Manual

There are a number of points that should be checked on your motorcycle before ordering your universal cruise control. Taking the time to carefully check the following items should make the installation of the cruise control much easier to undertake, and produce a much neater and more effective installation. It should also result in much less lost time due to having to order alternative parts.

The main points that should be checked are:

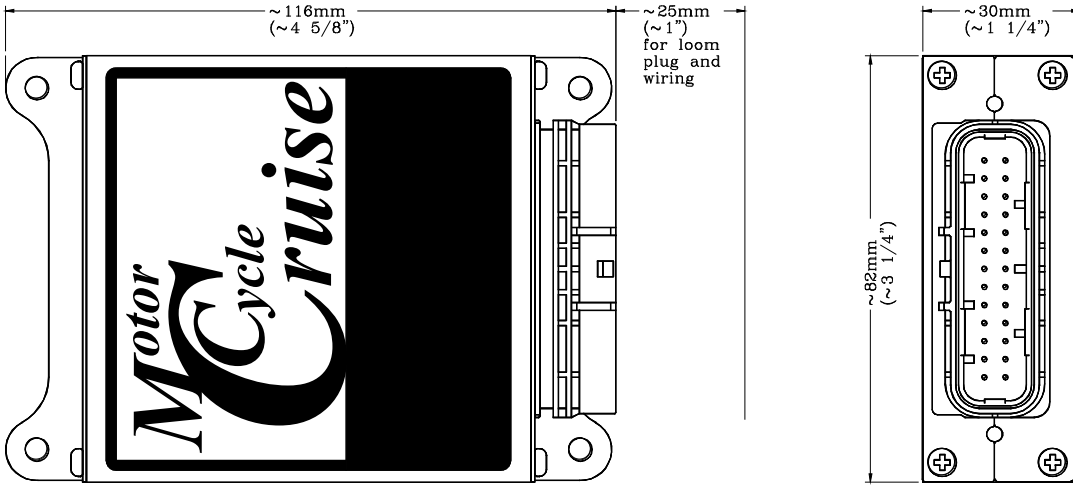
1. Do you have space to mount the cruise control components (cruise control computer, throttle servo, cable interface unit, and control switch)?
2. Does your bike have twin throttle cables (one to open the throttle and one to close it) or a single cable?
3. What is throttle cable travel (how far the throttle cable moves from idle to full throttle)?
4. What is the free length of the throttle cable at the carburettor (throttle body) end of the cable? This is the exposed length of the inner cable from the end of the outer cable or adjuster lock nut to the cable nipple.
5. What thread type and size is used on the adjusters on the throttle cable at the carburettor (throttle body) end?
6. What type and size of cable nipple is fitted to the bike's throttle cable at the carburettor (throttle body) end?
7. Think about where you propose to mount the CIU (Cable Interface Unit) and how long the cable from the CIU to the bike's carburettors (throttle bodies for a fuel injected models) needs to be?
  - In order to do this you have to define where the CIU will go that is within reach of the existing throttle cable when it is disconnected from the carburettors or throttle bodies.
8. Think about where you propose to mount the throttle servo and how long the cable from the servo to the CIU needs to be?
9. What is the most suitable control switch bracket for your bike?
10. Do you want a black control switch or chromed?
11. What speed sensing arrangement is suitable for your bike?
12. What sort of electrical connectors are on the bike for brake light switch, clutch switch, ignition primary (either ignition coil or tachometer) and speedometer sender?
13. What parts kit/s will be needed to be able to fit the cruise control to your bike?

These questions and how to answer them are covered in some detail in the following pages.

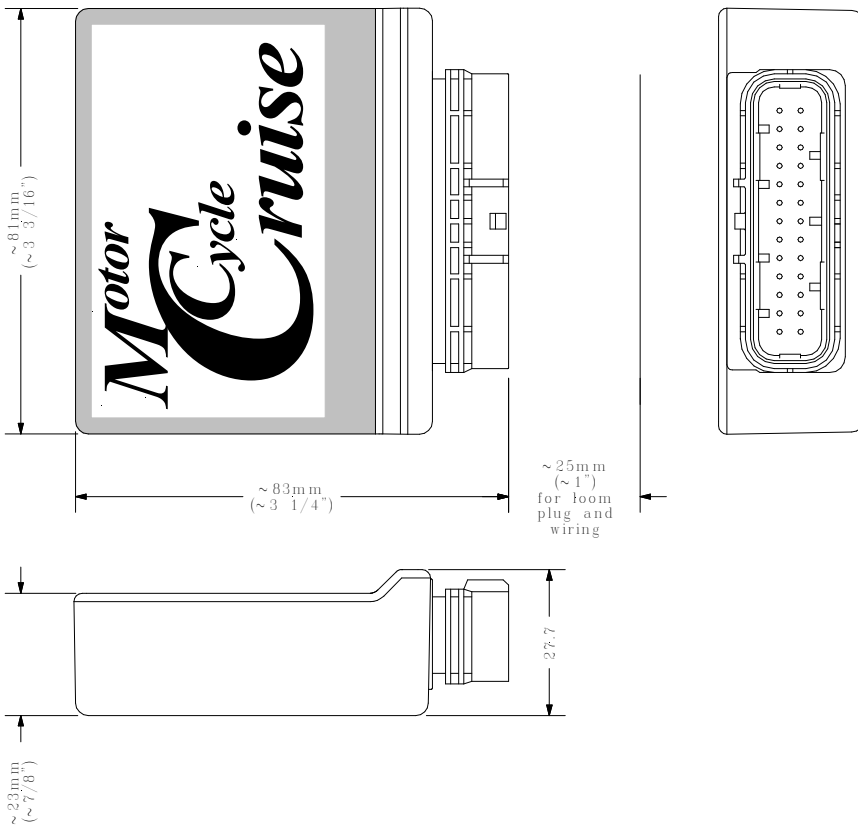
# 1. Space for the cruise control parts.

## Computer

NOTE: - Most of our 'older' cruise control models were designed around this computer, part number MCSU400C, so older installation instruction sets will show this computer. This computer is no longer available and has been replaced by our new MCS8000C computer.



The new version is the MCS8000C computer. This unit is more compact and lighter than the older model. It weighs about 140 grams or 5 ounces.



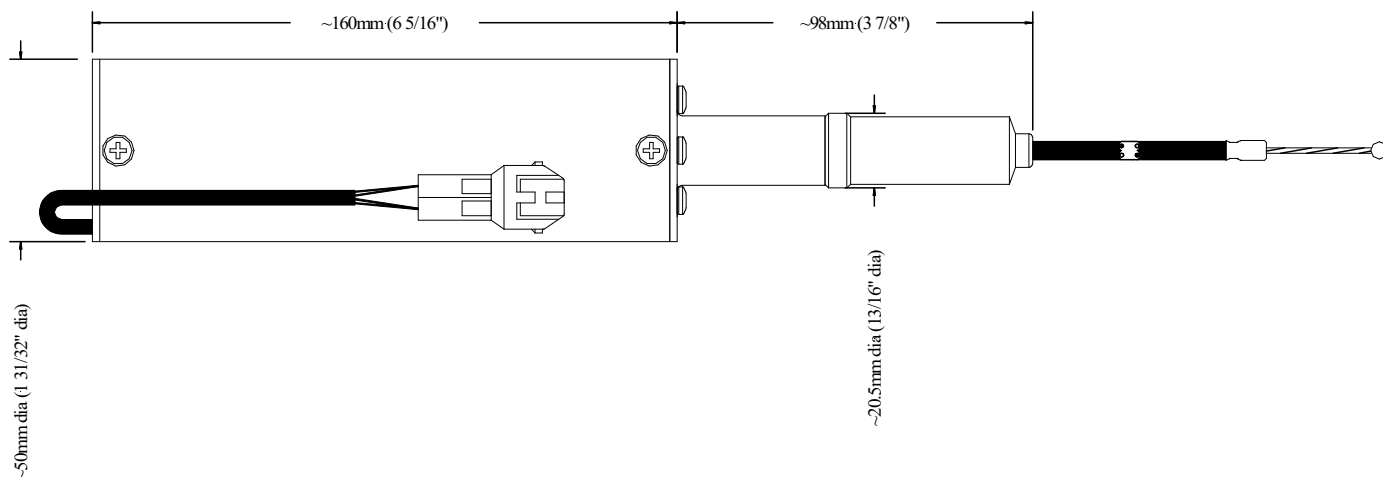
The computer should be mounted in a position away from very strong electrical fields (starter motor, alternator, regulator/rectifier, ignition coils and spark plug leads and associated wiring). It should also be mounted away from the engine heat and exhaust heat. The usual positions are under the seat or behind one of the side covers.

Often the easiest way to mount it is with Velcro tape. **Take a photo of the proposed location from about half a metre away (2') and email it to us.**

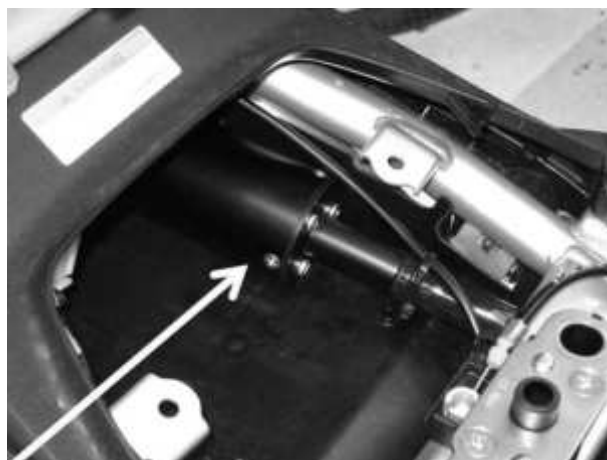
## Throttle Servo

This can be mounted pretty much anywhere within reach of the cable to the CIU (see section 8), but should be kept away from extreme heat (exhaust headers or junctions) and not mounted in direct water/dirt/road spray locations. The servo body is aluminium tube, anodised black to improve the appearance. The ends of the servo are made of black engineering plastic. More detail on actuator mounting and connection is provided later in this document.

The servo weighs about 700grams or 25 ounces.



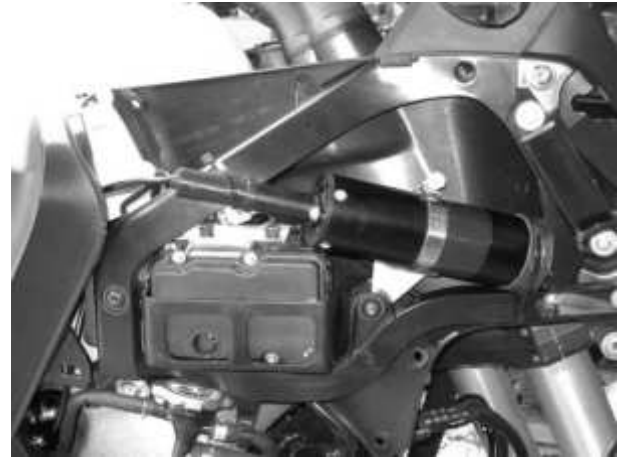
This photo shows the throttle servo fitted at the rear of a Suzuki DL1000 V-Strom. It is mounted in the storage space under the pillion seat using Velcro mounting tape.



This photo shows the servo fitted to a Harley Davidson Dyna. In this case the servo is mounted to the frame tube with conventional hose clamps. The hose clamps are covered with black heat shrink tube to improve the appearance and to prevent damage to the paint on the frame and the black anodised finish on the servo.



This photo shows the throttle servo fitted to a Honda VFR1200X Crosstourer. The servo is mounted on the right side of the bike, high in the fairing beside the head light.



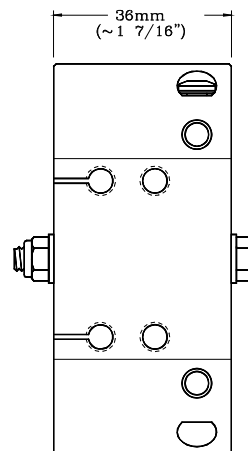
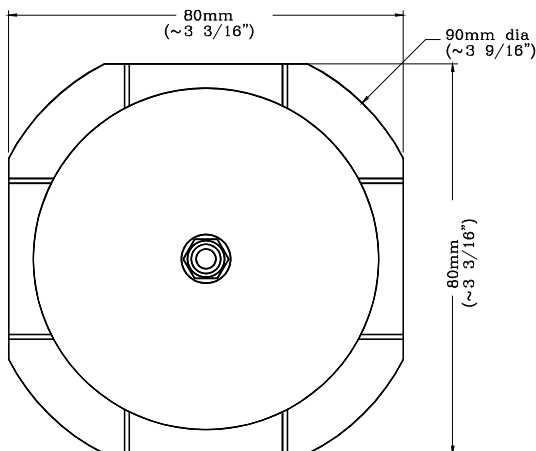
***Take a photo of the proposed location from about half a metre away (2') and email it to us.***

### Cable Interface Unit (CIU)

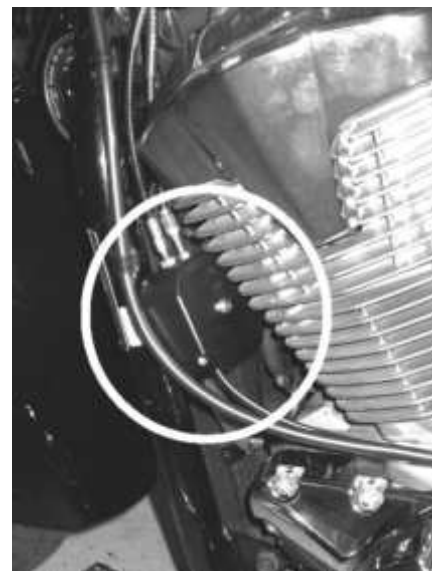
This must be mounted as close as possible to the carburettors/s or throttle body/s and the bike's existing throttle cable must be able to reach the CIU. More detail on CIU connection is provided later in this document. Don't forget to allow space for the cables and adjusters that enter the CIU.

Disconnect the opening throttle cable from the bike's throttle spindle and ensuring it is not 'kinked' and only has smooth radius curves, route or re-route it as required, so that the end of the cable is located somewhere the CIU can be mounted unobtrusively, but with ease of access to assemble it.

This location needs to be reasonably close to the throttle spindle as MotorCycle Cruise Controls will supply a cable to run from the CIU back to the throttle spindle – preferably less than 420mm (1'6") in length - and routed to ensure the supplied cable also has no sharp curves or kinks in it. Curves of radius 10cm (3") or more are acceptable.

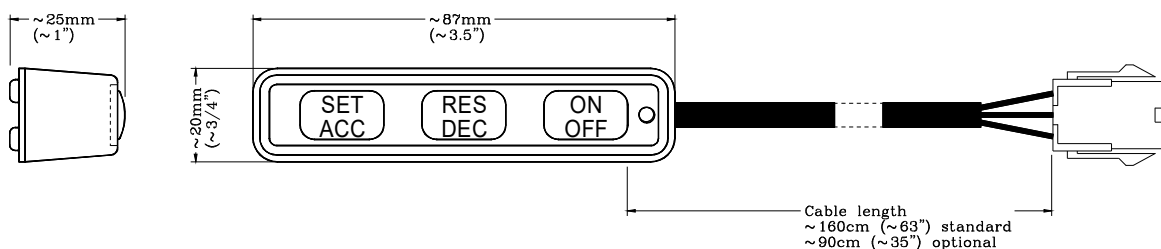


The photos below show the CIU fitted to a Honda VTX1800 with a CIU cover in the left and a Honda VTX1300 without a CIU cover on the right.



### Control Switch

The control switch is usually mounted either above or below the left handlebar switch block, however it can be ordered with the button pattern reversed (SET/ACC on the right and ON/OFF on the left) to allow fitment on the right side of the handlebar. Details of the control switch mounting brackets and photographs of the installations are shown in section 9. The switch is available in two wire lengths. 160cm is standard, and a shorter version at 90cm is an option.



## **2. Twin versus single throttle cables.**

Most Japanese motorcycles have twin cable (push/pull), almost all BMW's have single pull cable. Even early BMW R series with twin cable are still effectively a single pull cable because BOTH cables open the throttle, they just go to separate carburettors.

The majority of other makes use twin throttle cables, but not all, and not all models.

If your bike has two throttle cables attached to the twist grip, and they appear to come from each side of the twist grip (most do) then your bike has twin push/pull cables.

If your bike has only one cable, then it is a single cable system. Some earlier model 'R' series BMW's, and possibly some other European 'V' twins, have a cable from each carburettor going directly to the twist grip, so there are two cables, but BOTH are pulled.

**If you have twin push/pull cables, then you will need a dual spool CIU for the cruise control kit. This means that you will need one of the MSCU 400 D kits. Which one will be covered in the next section.**

**If you have a single cable, then you will need a single spool CIU. This means you will need one of the MCSU 400 E kits. Which one will be covered in the next section.**

### **3. Throttle cable travel.**

The amount of actual throttle cable travel varies a lot from bike to bike. The minimum we have measured is around 19mm (3/4"). The longest we have measured is around 38mm (1 1/2"). This difference is huge, and presents quite a challenge in coping with these differences both from the point of view of accommodating these travels mechanically inside the CIU and also the resultant change in calibrating the cruise control.

We currently have two different design CIU housings (different internal diameter) as well as two different diameter dual spools.

What diameters you choose is a function of the throttle cable travel AND the engine power/responsiveness.

The tabulation below shows how much cable travel the cruise control will be able to apply for the various CIU configurations. NOTE that this does NOT effect how much throttle the RIDER can apply, only how much the CRUISE CONTROL can apply.

24/66 CIU can pull about 10mm (~3/8") of throttle cable travel.

30/66 CIU can pull about 13mm (~1/2") of throttle cable travel.

30/52 CIU can pull about 16mm (~5/8") of throttle cable travel.

In most cases on larger bikes, you only want the cruise to be able to apply about 1/2 throttle. The less throttle the cruise is able to apply, the more 'accurate' the cruise control performance will be. On low power bikes that use more throttle at cruising speeds (smaller capacity bikes or mid capacity cruisers), you may want the cruise control to be able to apply much more throttle, so in those cases, you would select a CIU that allows the cruise to apply about 3/4 to full throttle.

**If your bike has a single 'pull' cable, there are two CIU options available.**

**The E 30/66 one is better for less than 25mm (1") cable travel and powerful bikes.**

**The E 30/52 is for cable travel over 25mm (1") and less powerful bikes.**

**If you bike has twin 'push/pull' cables, there are three CIU options available.**

**The D 24/66 copes better when cable travel is less than 20mm (3/4") and big powerful bikes.**

**The D 30/66 one is better for 20mm to 25mm (3/4" to 1") cable travel and mid capacity bikes.**

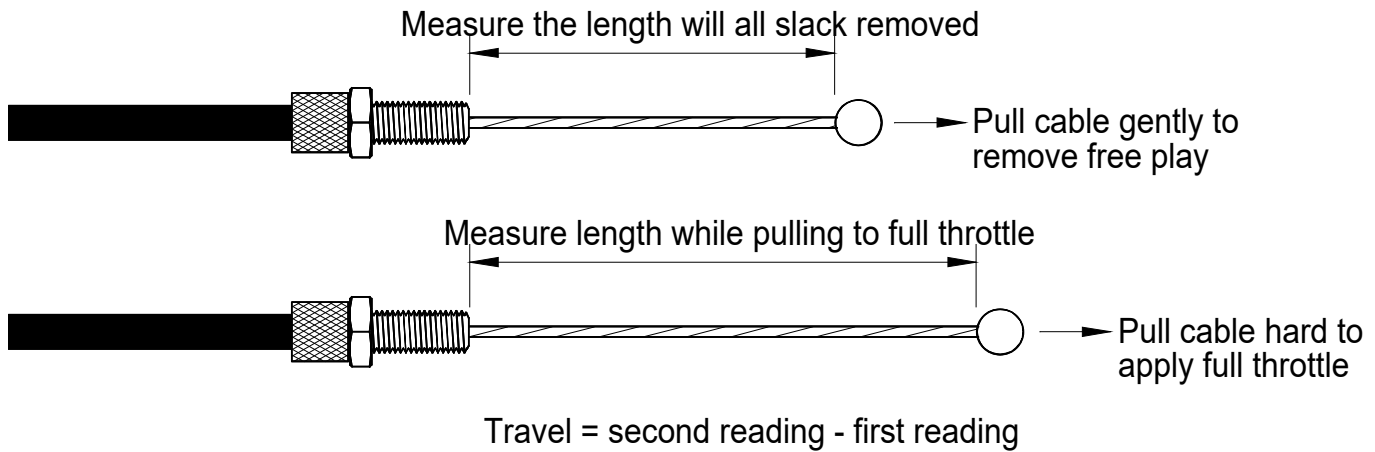
**The D 30/52 is for cable travel over 25mm (1") and small capacity bikes.**

**NOTE: The above travel recommendations are for bikes with a lot of horsepower. Smaller capacity (500cc and under) sport/naked bikes and cruisers up to 800cc may well need a CIU that allows the cruise to apply 3/4 throttle or more if they are to perform satisfactorily on undulating terrain (up fairly steep hills).**

The best way to measure the cable travel, is to disconnect the PULL or OPENING throttle cable at the twist grip, pull the cable gently to take up any slack and measure the free length of cable with a ruler. Then pull the cable to full throttle and measure the free length. The pulled length minus the initial length will give you the throttle cable travel from idle to full throttle. You may need an assistant to take measurements while you pull the cable.



This measurement taken at the TWIST GRIP end of the opening (pull) throttle cable



**CAUTION: - Be careful to pull the closing cable when you release the opening cable, otherwise the cable may disconnect itself from the carburettor (throttle body) end. This could require major disassembly of the bike to re-connect to the carburettors (throttle bodies).**

As a rule, modern Japanese sports bikes have cable travels between 19mm and 22mm (3/4"~7/8"). Modern Japanese Sports Touring bikes usually have a little more travel, between 21 and 25mm. Japanese cruisers usually have more, typically 22mm to about 32mm (7/8"~1 1/4"). In our (limited) experience with European bikes (some BMW's and a Ducati) these have longer cable travels, typically 25mm to 38mm (1" to 1 1/2"). Later model bikes seem to moving to shorter cable travels.

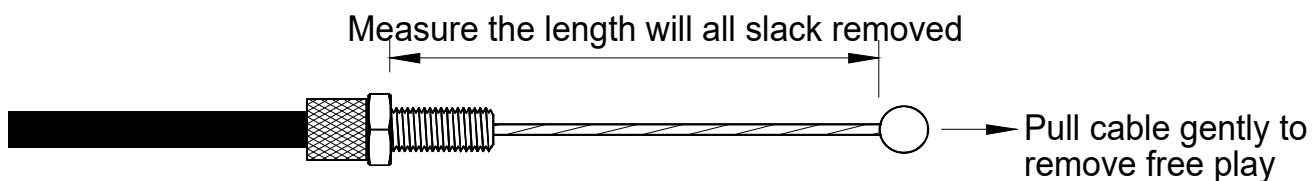
Older Japanese bikes (pre '90's) usually have more rather than less travel.

#### **4. Throttle cable free length.**

This is usually not an issue, but some bikes with unusually long cable free lengths and unusually short free lengths can cause problems inside the CIU.

This measurement MUST be taken at the CARBURETTOR or THROTTLE BODY end of the throttle cable. Unfortunately, on many bikes with will mean MAJOR disassembly (fuel tank and air box removal) to disconnect the cable from the carburettors/throttle bodies. Most people will likely decide to punt their luck with this one and in the majority of cases it will not be an issue.

This measurement taken at the CARBURETTOR OR THROTTLE BODY end of the opening (pull) throttle cable. Measure the free length with ALL cable adjusters screwed in fully to give as much free play as possible.



On most motorcycles this length will not be an issue, however some can cause problems particularly if your bike needs to use the D 24 CIU because the cable travel is short.

To determine if your cable is too long.

Measure the length as shown above from the lock nut on the adjuster to the inside of the cable nipple. Make sure that the nut is screwed all the way up the adjuster. If the adjuster has two nuts, screw BOTH of them all the way up the adjuster. If you intend to use the D 24 dual spool CIU this must be 102mm (4") or less. If you intend to use the D 30 dual spool CIU this must be 127mm (5") or less. If your cable exceeds these lengths, you may not be able to fit the cruise control to your bike without modifying the cable.

**D 24 dual spool CIU – Free length of cable must be 102mm (4") or less.**

**D 30 dual spool CIU – Free length of cable must be 127mm (5") or less.**

To determine if your cable is too short.

Measure the length as shown above then SUBTRACT the throttle cable travel (as measured in the previous step) from the free length. This will give the length as shown above when the bike has full throttle applied. If the result is less than 32mm (1 ¼"), you will not be able to fit a cruise control to your bike, as you may not be able to achieve full throttle without damaging the throttle cable or the CIU. It is preferable for the result to equal 38mm (1 ½") or greater.

**Free length of cable – throttle cable travel = free length at full throttle. This must equal 32mm (1 ¼") or more.**

**CAUTION: - Measuring the length as shown above while turning the twist grip to full throttle will NOT work, as the twist grip usually has about twice as much or more available travel as is actually used by the carburetors or throttle bodies.**

## **5. Throttle cable adjuster thread type.**

The majority of motorcycles have throttle cable adjusters that have an M6 x 1 thread (6mm diameter x 1mm pitch metric thread). This is the standard metric **coarse** 6mm thread. If you go to a bolt store and ask for a bolt with a 6mm thread, that is what will be supplied.

The next most common thread is M8 x 1.25 thread (8mm diameter x 1.25mm pitch metric thread). Some Suzuki models use this thread size. We can supply adaptor washers for our cables to suit this design.

Some motorcycles have throttle cable adjusters with a M6 x 0.75 thread (6mm diameter x 0.75mm pitch metric thread). This is the standard metric **fine** 6mm thread. This is a relatively unusual size, but it is a 'recognised' standard. BMW motorcycles almost always have this thread, and some other manufacturers also use this, but it is not all that common. The other exception that is common is Mikuni CV carburetors that have enclosed throttle mechanisms. These are usually only fitted to ATV's and are not commonly fitted to road motorcycles. Polaris, Bombardier and Yamaha ATV's often have Mikuni CV carburetors fitted to them and use this thread. These may also be fitted to some large dual purpose (road/trail) bikes. We have not fitted a cruise control to any of these bikes at this stage, so we have no experience with these bikes.

Some manufacturers don't use threaded fittings at all.

Many Kawasaki's have a plain metal end to the cables, usually 6mm diameter.

Some have plastic moulded fittings (some BMW models in particular) and others just have the bare end of the cable or a simple cap (some Harley Davidson's).

**Our universal CIU is supplied with the cable holes drilled and tapped for M6 x 1 thread. If any other type is required it will have to be specifically ordered, or we can supply the CIU with pilot drillings only so you can drill and tap the holes as required.**

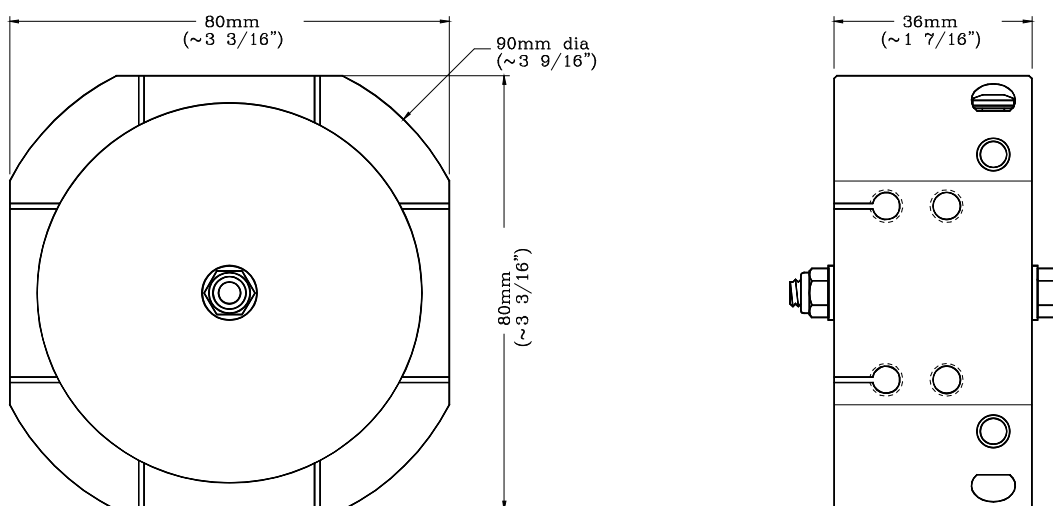
## **6. Throttle cable nipple type and size.**

The most common type of cable nipple is the barrel or cylindrical nipple. These are usually 6 ~6.5mm diameter (about 1/4") and are usually between 6 and 10mm long (1/4" ~ 3/8"). The nipples on our carburettor cable that must be fitted to the bike's carburettor or throttle body are currently 6mm (15/64") diameter by 6mm (15/64") long.

## **7. 'Carburettor' cable length.**

This might be a little difficult to determine as the location of the CIU is also dependent to a lesser extent on where you are going to mount the cruise control throttle servo. The main limitation in CIU mounting location is usually the length of the bike's throttle cable. This usually dictates the location of the CIU, and that in turn dictates the location of the throttle servo.

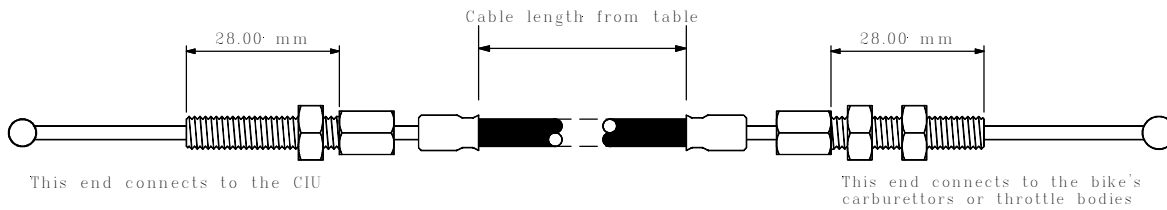
The drawing below shows the Cable Interface Unit and some dimensions. The size is the same for all variants of the CIU.



The throttle servo cable connects the throttle servo to the cable interface unit. The bike's opening (pull) throttle cable must also be connected to the cable interface unit, so the CIU location is dictated by where you can route the bike's throttle cable.

The carburettor cable must then be long enough to reach from the CIU to the bike's carburettors or throttle bodies. Generally it is desirable to use the shortest carburettor cable possible to keep the throttle's 'feel' as light and positive as you can, and this also has some effect on the performance of the cruise control. We try to use cables shorter than 420mm if possible. Most cruise control kits use 150 to 360mm cables.

The drawing below shows our 'standard' carburettor cable. The length is measured roughly from the inside edge of the caps on each end of the outer cable, so essentially the 'visible' length of the cable with the adjusters fitted.



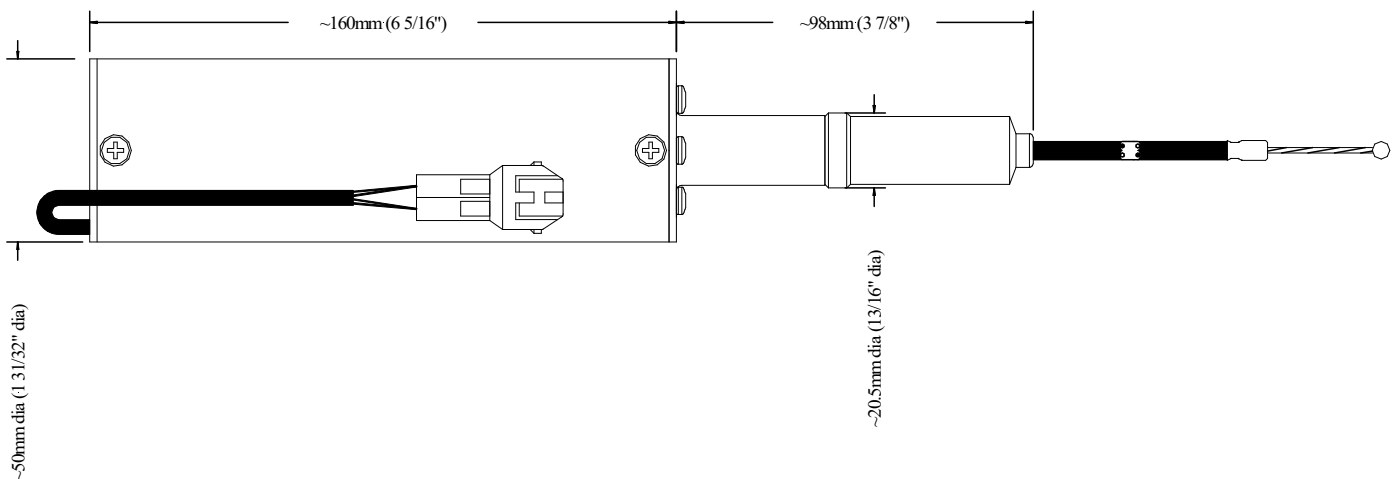
The lengths currently available are:

- 100mm (4"). Part number MCSCC100.
- 150mm (6"). Part number MCSCC150.
- 200mm (8"). Part number MCSCC200.
- 250mm (10"). Part number MCSCC250.
- 300mm (12"). Part number MCSCC300. This is the default 'standard' part included in the kit if another size is not requested.
- 360mm (14"). Part number MCSCC360.
- 420mm (16"). Part number MCSCC420.
- 500mm (19"). Part number MCSCC500.
- 850mm (33"). Part number MCSCC850.
- 1150mm (45"). Part number MCSCC1150.

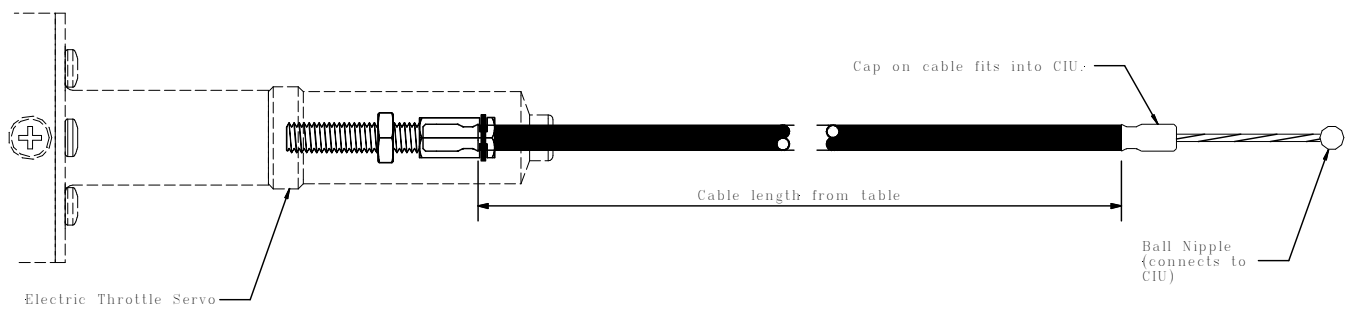
The longest cables will work, and do work quite well in the few installations that we have done that require their use, but if it is at all possible to use shorter cables you should do so. If the longest cables are used, careful and regular attention to lubrication of ALL the cables in the throttle system will be required to maintain satisfactory throttle feel and cruise control performance. This should be done anyway for all cable lengths, but the longer cables make this more necessary.

## 8. Throttle Servo cable length.

The servo cable has to reach from the Throttle Servo to the CIU (Cable Interface Unit). The drawing below shows the throttle servo and some dimensions. The servo can be mounted using long hose clamps to a frame tube, similar to way the remote reservoir on some shocks are mounted, or brackets can be made to mount it.



The drawing below shows our servo cable. The length is measured roughly from the inside edge of the caps on each end of the outer cable, so essentially the 'visible' length of the cable with the adjuster fitted to one end and the visible part of the cable outside the CIU.



The throttle servo cable is available in the following lengths.

- 100mm (4"). Part number MCSSC100.
- 150mm (6"). Part number MCSSC150.
- 200mm (8"). Part number MCSSC200.
- 250mm (10"). Part number MCSSC250.
- 300mm (12"). Part number MCSSC300.
- 360mm (14"). Part number MCSSC360.
- 420mm (16"). Part number MCSSC420.
- 500mm (19"). Part number MCSSC500.
- 580mm (22"). Part number MCSSC580.
- 650mm (25"). Part number MCSSC650.
- 750mm (29"). Part number MCSSC750.
- 850mm (33"). Part number MCSSC850. This is the default 'standard' part included in the kit if another size is not requested.
- 1000mm (39"). Part number MCSSC1000.
- 1150mm (45"). Part number MCSSC1150.

The longest cables will work, and do work quite well in the few installations that we have done that require their use, but if it is at all possible to use shorter cables you should do so. If the longest cables are used, careful and regular attention to lubrication of ALL the cables in the throttle system will be required to maintain satisfactory throttle feel and cruise control performance. This should be done anyway for all cable lengths, but the longer cables make this more necessary.

## **9. Control switch brackets.**

The following pages show the range of control switch brackets currently available or that are being manufactured at this time. This is to assist you in selecting an appropriate bracket for your motorcycle where we are not familiar with the model, or if you are looking for an alternative to the arrangement supplied with your cruise control kit.

The listing shows the part number for the switch mounting bracket, a description and a list of the typical models that the switch bracket is used on, a photo of a typical installation (where available, some photos show the old design switch, but the basic dimensions are about the same) and a drawing with the main dimensions of the bracket.

Note that many of these brackets are symmetrical and can be inverted (turned upside down) so that the switch may be mounted either above or below the handlebar as long as the design of the bike's switchgear and clutch lever assembly mounting (where used) and the dimensions of the bracket will allow this. This is noted for each bracket in the text.

Many of these brackets are now available finished in black satin powder coat as well as raw or polished stainless steel. We cannot guarantee availability of all finishes being available at all times. Bending the

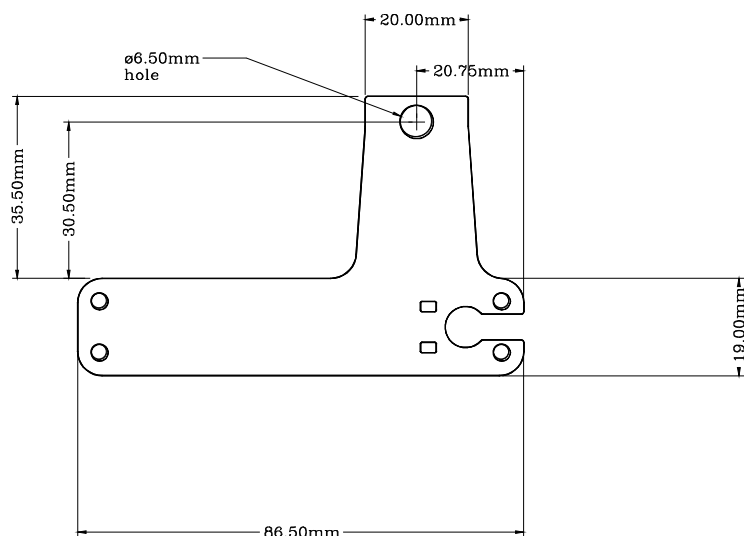
brackets after powder coating is still OK, as long as the bend can be made without marking the powder coat. We have experimented doing a 90 degree bend in a sheet metal folder on a powder coated bracket, and the powder coating did not crack or lift, but it was marked by the bender. Slight hand bending should not cause any issues at all. All of these brackets are laser cut 304 stainless steel.

Note: - For those countries that are using imperial measurement (inches), 1" = 25.4mm. Approximate conversions are 3mm = 1/8", 6mm = 1/4", 10mm = 3/8", 13mm = 1/2", 19mm = 3/4", 25mm = 1", 32mm = 1 1/4", 38mm = 1 1/2" and so on. For a precise conversion, 1" = 25.4mm

**The 'standard' bracket supplied in the kit if another is not specified is the MCS830A shown below.**

### **MCS830A**

Honda Sports Tourer below handlebar mount (ST1100, VFR750, VFR800, VTR1000F etc). This photo is of a Honda ST1100.



This bracket may also be used to mount the switch above the handlebar, however there are other brackets specifically made for this fitment.

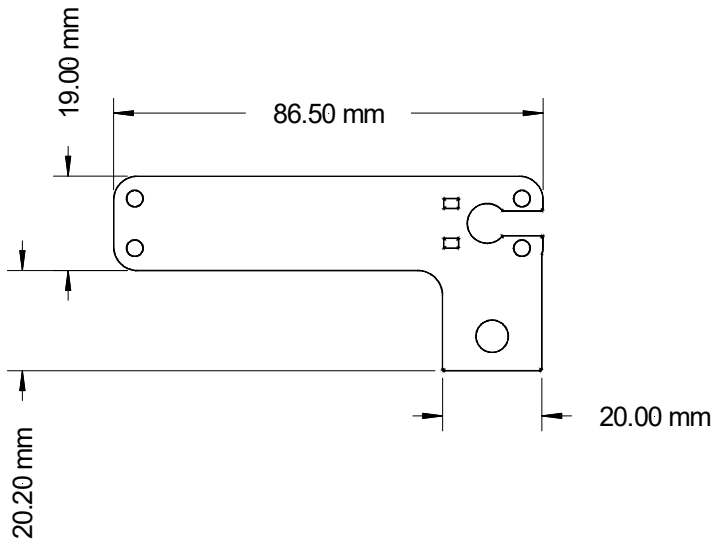
This example is fitted to a 2005 Honda VFR800FI.



### MCS831I

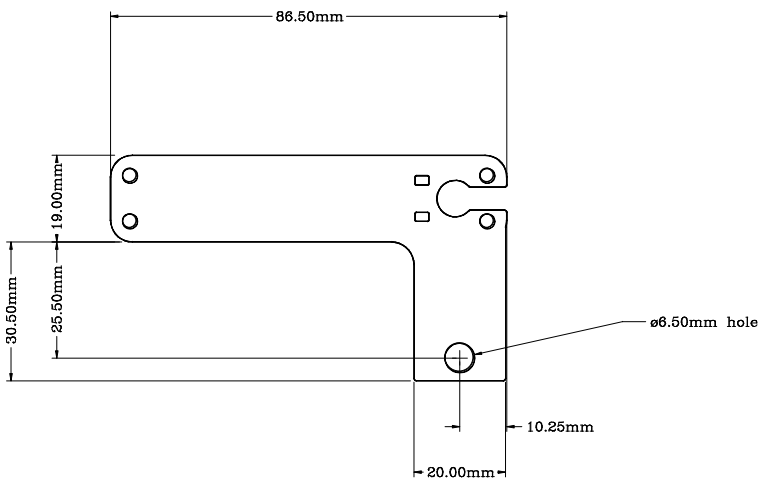
Sports Tourer above handlebar mount. This is shown on a 2011 Kawasaki Ninja 1000.

This bracket has a very short mounting leg (20mm high), and will not fit most motorcycles.



### MCS830B

Honda Sports Tourer above handlebar mount (ST1300, CBR1100XX etc).



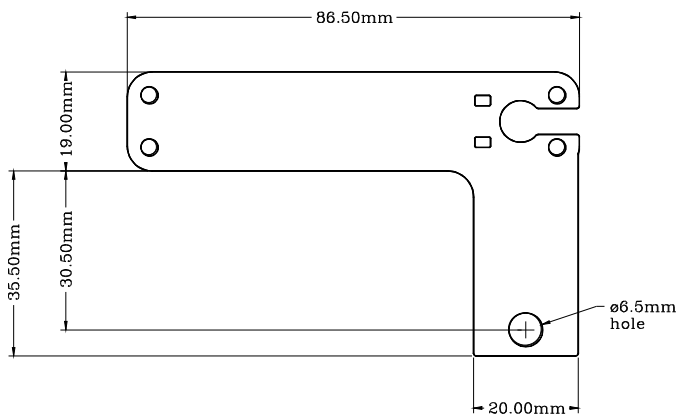
This bracket may also be used to mount the switch under the handlebar provided that the cruise control switch will clear the bike's switch block. The length of the mounting leg is not long enough for this on most motorcycles. In this example it is fitted to an early '80's Honda VT250 where the switch block does not have much bulk below the handlebar. It is also used on the current Suzuki GSX1400 in the same way.



## MCS831A

Honda above or below handlebar mount for low profile switch blocks.

The mounting leg on this bracket is 5mm longer than MCS830B and may be used for the same applications.



This bracket may be used to mount the switch over or under the handlebar provided that the cruise control switch will clear the bike's switch block. The length of the mounting leg is not long enough for this on most motorcycles. In these photos it is fitted to a Honda VFR1200X Crosstourer, and may be mounted either above or below the handlebar. It is also used on the 2014 model VFR800F to mount the switch below the handlebar.

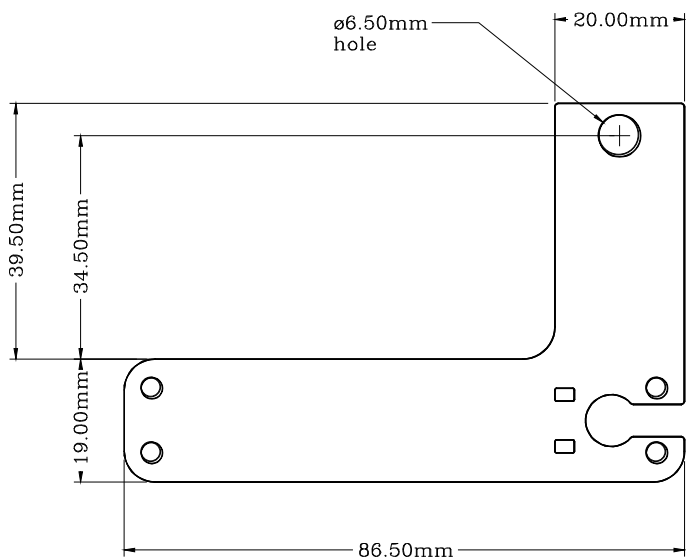




## MCS830C

Honda Cruiser below or above handlebar mount (VTX, Valkyrie, VT750 Shadow etc).

The mounting leg on this bracket is 4mm longer than MCS831A and 9mm longer than the MCS830B.



The MCS830C bracket was also used on the Suzuki AN650 Bergman. A slot is cut in the plastic handlebar cover for the switch bracket.



This bracket was also used on a Suzuki GS500E.

This bracket may also be used to mount the switch over the handlebar. In most cases the switch will be higher than it needs to be, however it is good for bikes that have a choke or cold start lever on the switch block. The example shown a mid .90's Kawasaki ZZR600. It is also used on the carburettor version of the Honda CBR1100XX Super Blackbird, also to allow clearance for the choke lever.

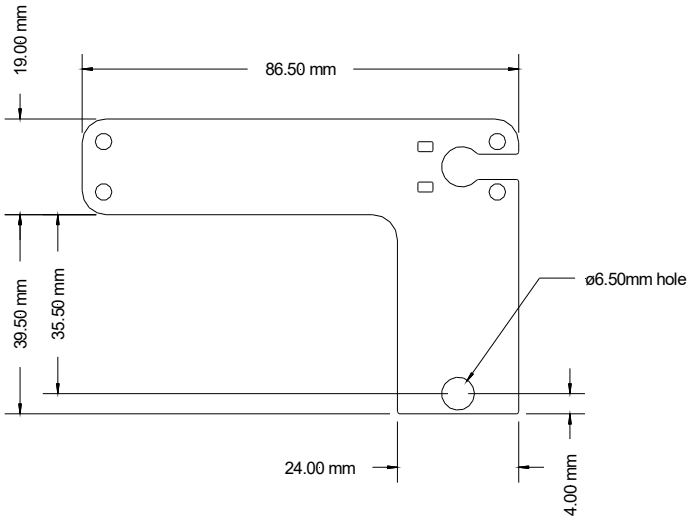


## MCS8310

Honda CRF1000 Africa Twin switch bracket. This bracket is designed specifically for this model Honda.

It is almost the same as the MCS830C (previous page), but the mounting leg is wider (24mm vs 20mm) and the position of the hole for the mounting bolt is slightly different, to fit the unique clutch lever mounting clamp on the CRF1000.

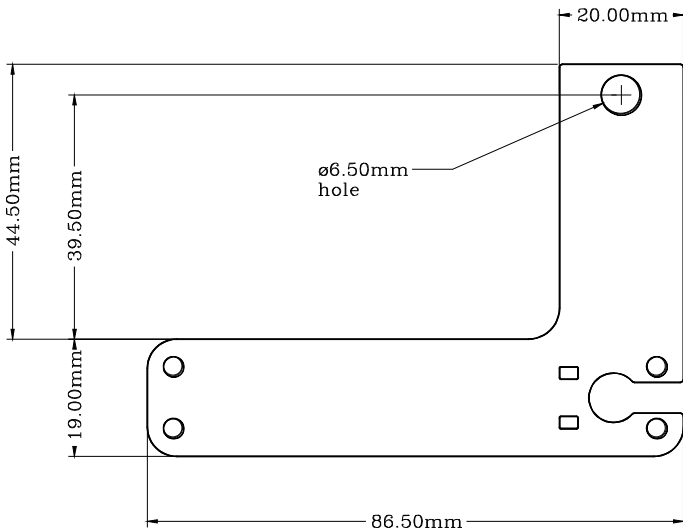
The photo shows a modified MCS830C switch bracket. Note that the vertical leg of the switch bracket is slightly narrower than the clutch lever mounting clamp. The bolt hole also had to be modified to fit.



## MCS830X

'Standard' below or above handlebar mount.

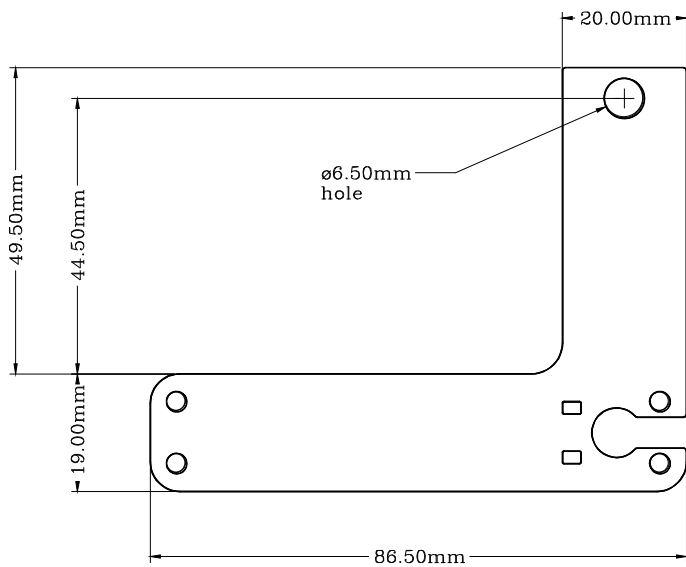
The mounting leg on this bracket is 5mm longer than MCS830C.



## MCS830Y

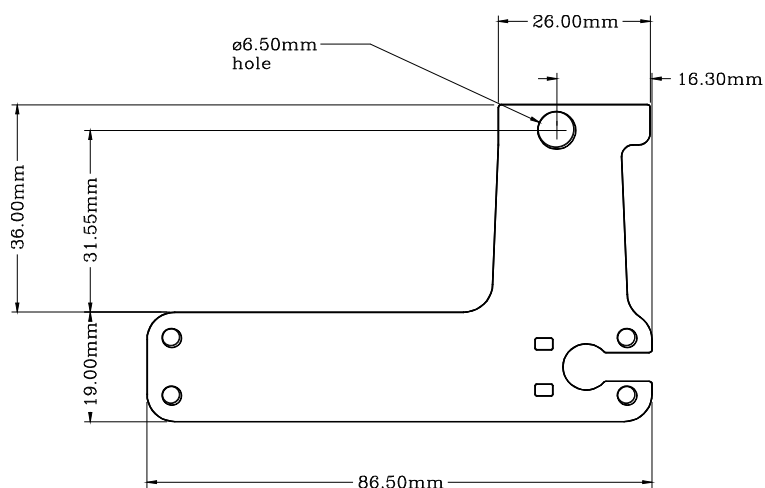
'Standard' below or above handlebar mount. The photo shows the switch fitted to a 2010 Kawasaki Z1400GTR Concours.

The mounting leg on this bracket is 5mm longer than MCS830X.



## MCS830D

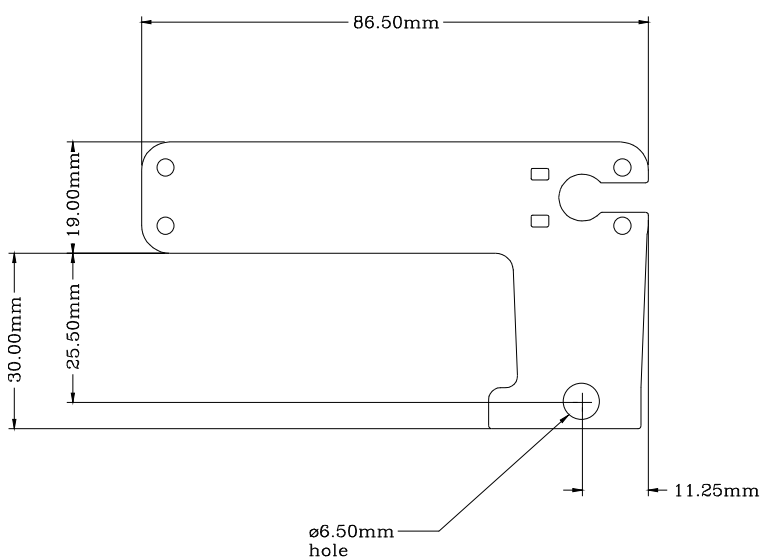
Yamaha & Kawasaki Sports Tourer below handlebar mount (FJR1300, Z1000GTR, ZZR1100 etc).



This bracket is NOT suitable for mounting above the handlebar, as the shape of the bracket and the mounting hole are not symmetrical. If it is desired to mount the switch above the handlebar, use MCS830I bracket.

## MCS830I

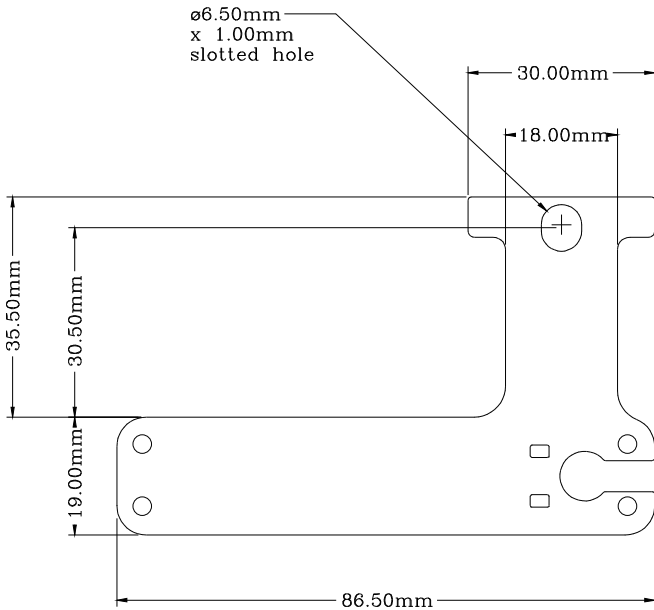
Kawasaki, Yamaha Sports Tourer above handlebar mount (FJR1300 etc).



This bracket is NOT suitable for mounting below the handlebar, as the shape of the bracket and the mounting hole are not symmetrical. If it is desired to mount the switch below the handlebar, use MCS830D bracket.

## **MCS830G**

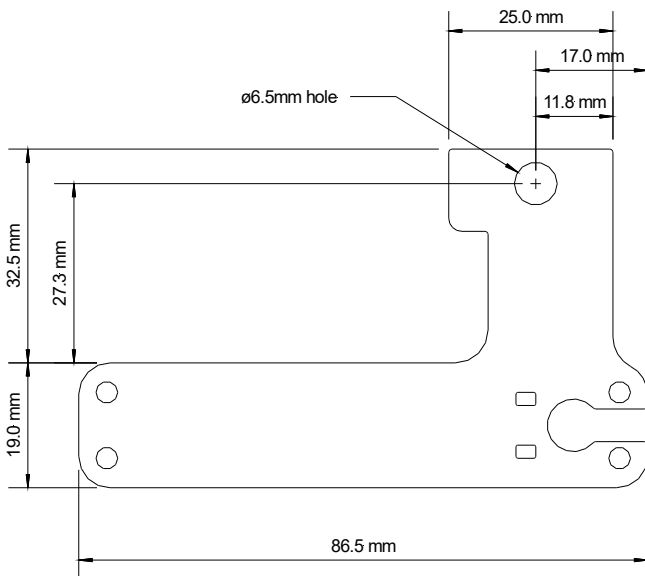
Kawasaki Cruiser below handlebar mount (VN1600D etc).



This bracket may also be used to mount the switch above the handlebar provided that the switch will clear the bike's switch block and the mirror mounting post does not interfere with this location. It would NOT be possible to mount the switch above the handlebar on the bike shown (VN1600) as the mirror mount post is in the way of the bracket and the control switch. The MCS830M switch bracket would be suitable to mount the switch above the handlebar.

## **MCS831B**

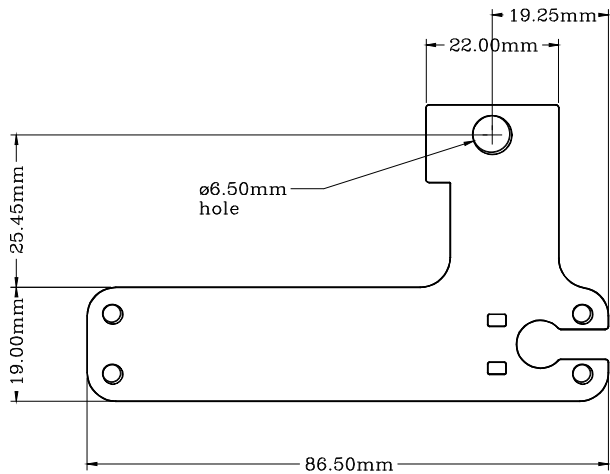
Kawasaki Trail bike below handlebar mount (KLE650 Versys etc).



This bracket is designed specifically for the Versys but will probably fit a range of Kawasaki 'trail' bikes and probably other brands as well. This bracket may also be used to mount the switch above the handlebar provided that the switch will clear the bike's switch block and the mirror mounting post does not interfere with this location. It would NOT be possible to mount the switch above the handlebar on the bike shown (Versys 650) as the mirror mount post is in the way of the bracket and the control switch. The MCS830M switch bracket would be suitable to mount the switch above the handlebar.

## MCS830Q

Triumph Rocket III.



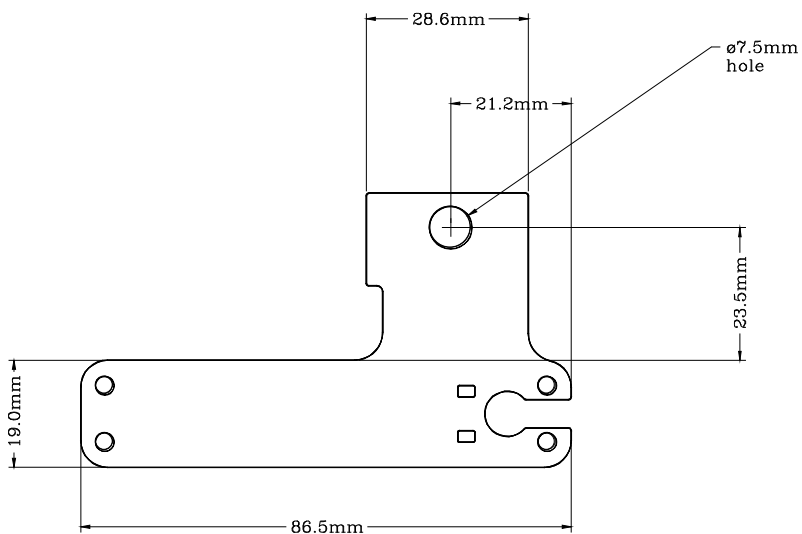
This bracket is designed specifically for the Rocket III.

It may be reversed to allow fitment either below or above the handlebar.



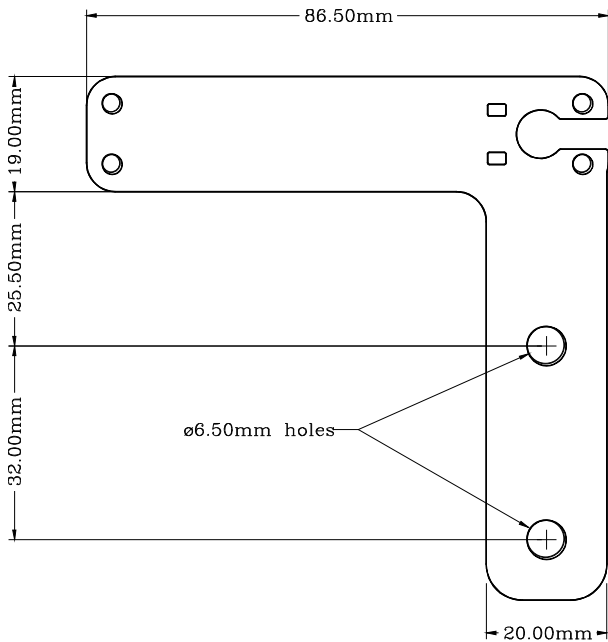
## MCS830R

Harley Davidson originally designed for the bikes fitted with the Evolution motor. This photo is from a 2007 FXS Softail, but this bracket will fit every model Harley Davidson with this type of switchgear for the last 20 plus years including current models.



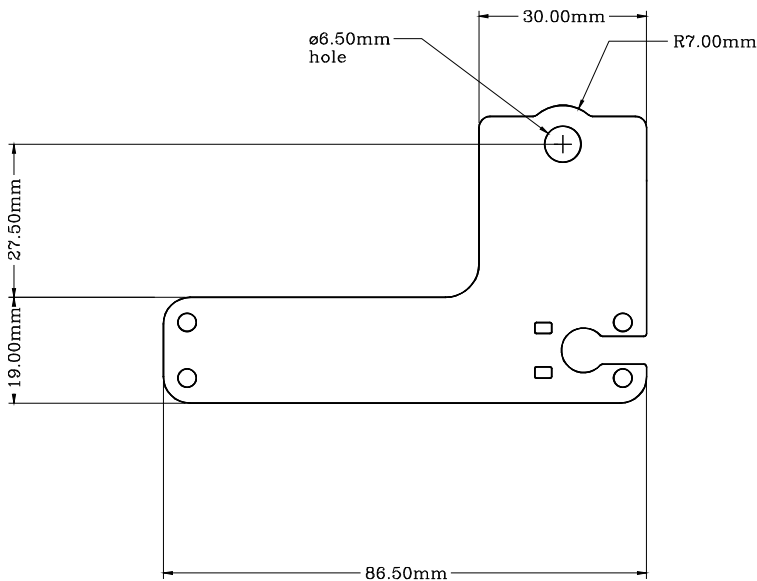
### MCS830S

Honda ST1300 with Honda RDS radio system fitted. The control switch bracket fits in front of the radio control head bracket.



### MCS830J

Honda late '80's.

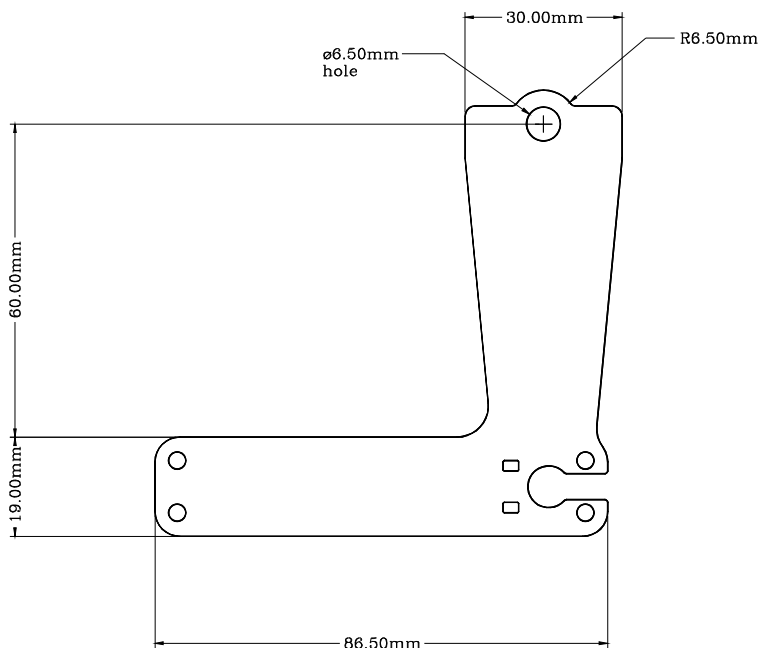


The bracket does NOT fit between the clamp faces as most other designs do, but is simply placed under the head of the bolt that clamps the clutch lever to the handlebar. The photo shows MCS830C bracket used with this mounting method. The MCS830C bracket (shown in the photo) has a longer and thinner mounting leg than the MCS830J (refer to the dimensions drawing).

This bracket may also be used to mount the switch above the handlebar provided that the switch will clear the bike's switch block and the mirror mounting post does not interfere with this location.

## MCS830K

Honda early '80's.



The bracket is used for early clutch lever clamps that use a vertical clamp bolt instead of the later designs that use a horizontal bolt. A longer bolt is supplied and a nut and washers are fitted below the bracket to hold it in place.

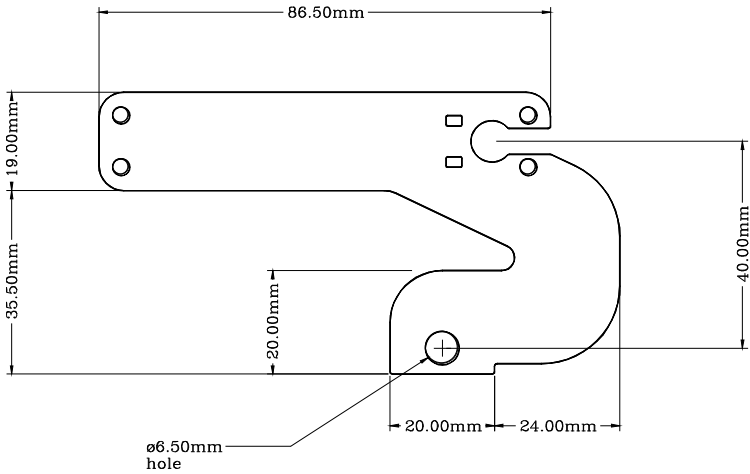
This bracket may also be used to mount the switch above the handlebar provided that the switch will clear the bike's switch block and the mirror mounting post does not interfere with this location.

This bracket can be supplied either flat (as long as we have stock of flat brackets) or bent as shown.



## MCS830N

Yamaha Scooter (T Max 500).

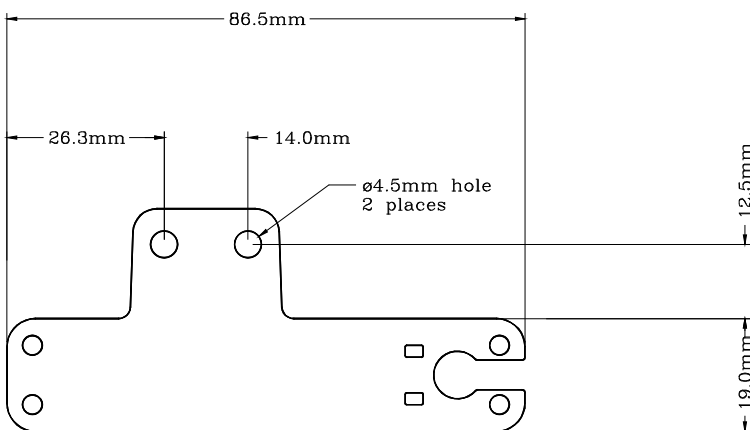


This bracket is similar to the MCS830A mounted upside down, except the mounting 'arm' has a kink to wrap around the plastic cover on the handle bars.



## MCS830H

Screw mount bracket for bikes with plastic handlebar covers (Honda PC800 etc).

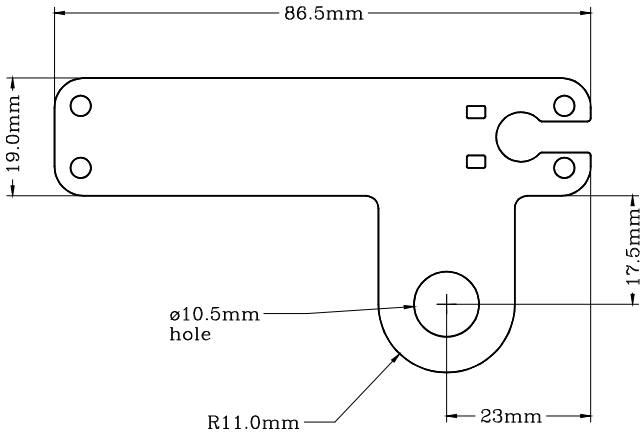


This bracket may be used to mount the switch above or below the handlebar, as long as there is no interference with the bike's switch gear.

This bracket also comes with a small backing plate with two M4 (metric 4mm) threaded holes that fits inside the plastic handlebar cover instead of using self tapping screws or nuts and washers. M4 screws are provided as well. This bracket can be supplied either flat (as long as we have stock of flat brackets) or bent as shown.

## MCS830M

Mirror mount – 4mm high.

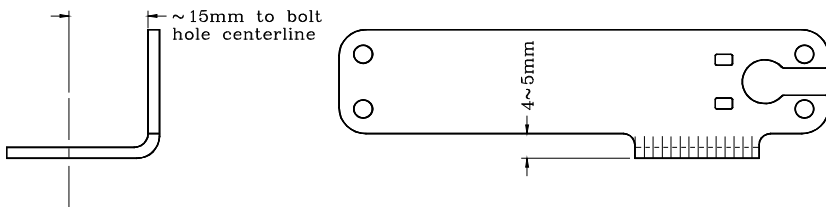


This bracket is used to mount on the mirror stalk (where fitted) or the mirror mounting hole. Some bikes have the hole, but have a plug in the hole. This plug can be removed and a bolt fitted to mount the switch.

The bracket is short so the switch does not end up too far above the bike's switch block (about 4~5mm from the bolt mounting face to the underside of the switch as shown in the drawing below).

**This bracket can be supplied either flat (as long as we have stock of flat brackets) or bent as shown.**

The standard bend used for this bracket is shown in the drawing below

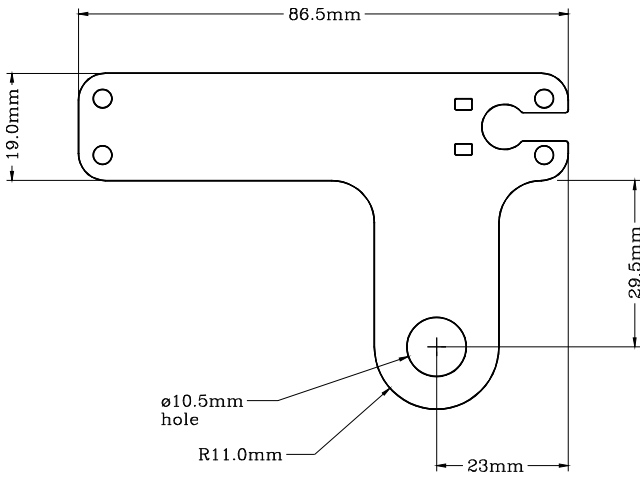


This photo shows the switch mounted on a Suzuki GSX1400.



## MCS830L

Mirror mount – 16mm high.

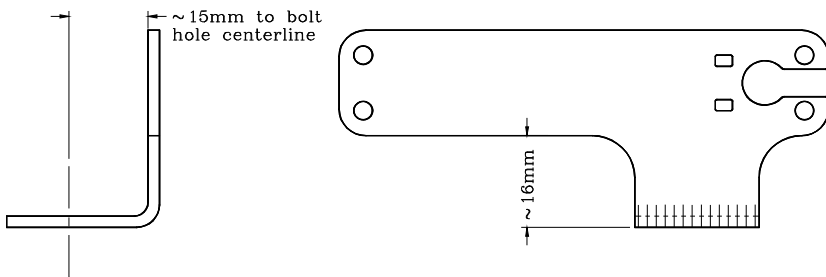


This bracket is the same as MCS830M (previous page) but has a longer mounting leg for use on bikes that have a shorter mirror mounting boss (the boss is lower than the top of the bike's left side switch block)

This version of this type of bracket is designed for bikes that have a mirror mounting boss that is lower than, or level with, the top of bike's left side switch block. The bracket is high enough to lift the switch above the switch block (about 16mm from the bolt mounting face to the underside of the switch as shown in the drawing below).

The standard bend used for this bracket is shown in the drawing below.

**This bracket can be supplied either flat (as long as we have stock of flat brackets) or bent as shown.**



This photo shows the switch mounted on a Yamaha TDM900.

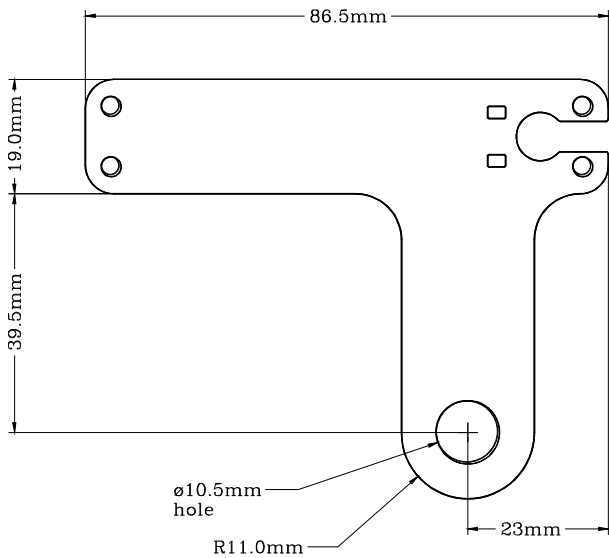
It is also used on the Yamaha V-Star 1100.



BMW R1200GS – note that access to trip and hazard light switches is restricted but is still possible from behind the cruise control switch.

## MCS830W

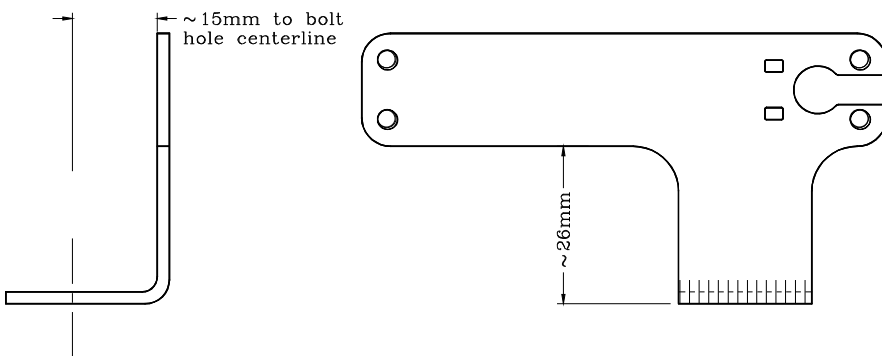
Mirror mount – 26mm high. This is the same as the MCS830L bracket, but 10mm taller. This bracket is half way between the MCS830L (previous page) and MCS830U (next page) switch brackets.



This version of this type of bracket is designed for bikes that have controls fitted on top of the left side switch block, such as the Hi-Lo beam switch on the Suzuki DL650 (see photo below).

The standard bend used for this bracket is shown in the drawing below.

**This bracket can be supplied either flat (as long as we have stock of flat brackets) or bent as shown.**



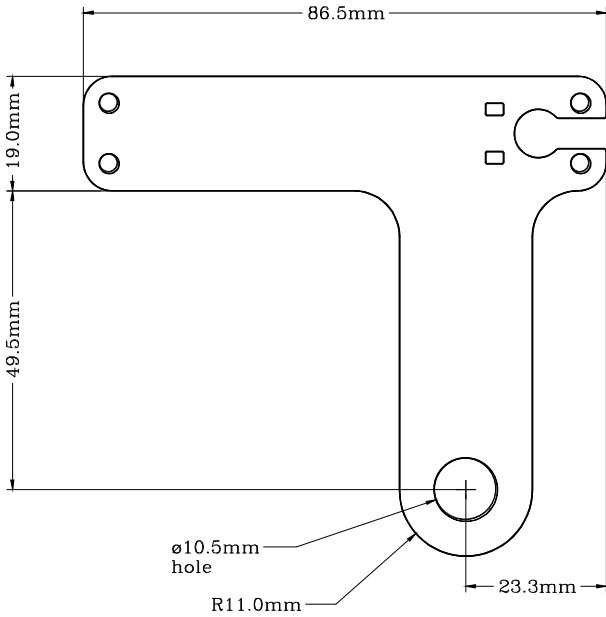
BMW R1200GS – note that access to info and ABS switches is easier than the MCS830L bracket, but leaves the cruise control switch closer than the MCS830U bracket.



Suzuki DL650 V-Strom – The MCS830L bracket could be used on this bike, but this restricts access to the head light Hi-Lo beam switch. This bracket allows better access while still keeping the cruise control switch reasonably close.

## MCS830U

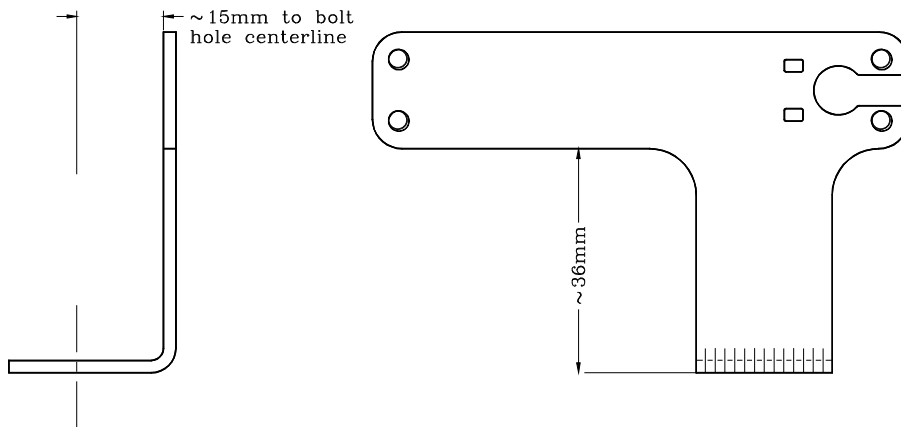
Mirror mount – 36mm high. This is the same as the MCS830L bracket, but 20mm taller.



This version of this type of bracket is designed for bikes that have extra controls fitted above the left side switch block, like the auxiliary light switch fitted to the BMW R1200GS Adventure.

The standard bend used for this bracket is shown in the drawing below.

**This bracket can be supplied either flat (as long as we have stock of flat brackets) or bent as shown.**

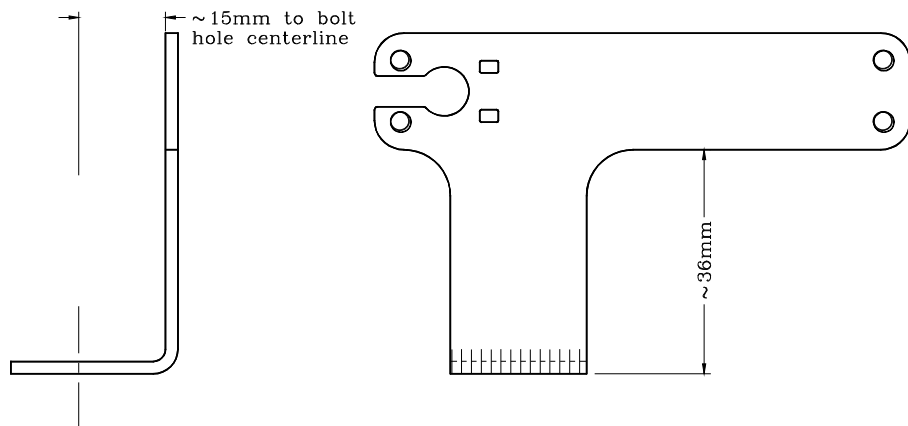


BMW R1200GS Adventure – note that access to info and ABS switches is easier, and the auxiliary light switch is visible under the switch. Note that while sitting on the bike, the auxiliary light switch is almost completely hidden behind the cruise control switch, however access with a thumb or finger is a little easier.



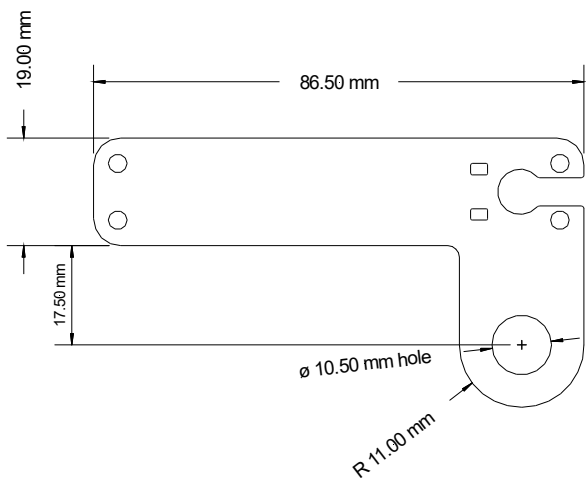
See over the page for more options with this switch bracket.

We also usually have some brackets available with a reversed bend for mounting on the right side instead of the left. This also requires a right side control switch (see next section).



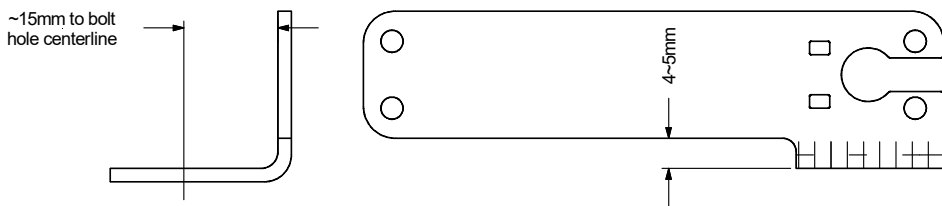
### **MCS831P**

Mirror mount – 4mm high with full offset.



This bracket is the same as the MCS830M, except that the mounting leg is all the way to the right, to move the switch closer to the hand grip. This is used on bikes where the mirror mounting post is further away from the hand grip than normal.

**This bracket can be supplied either flat (as long as we have stock of flat brackets) or bent as shown.**  
The standard bend used for this bracket is shown in the drawing below.

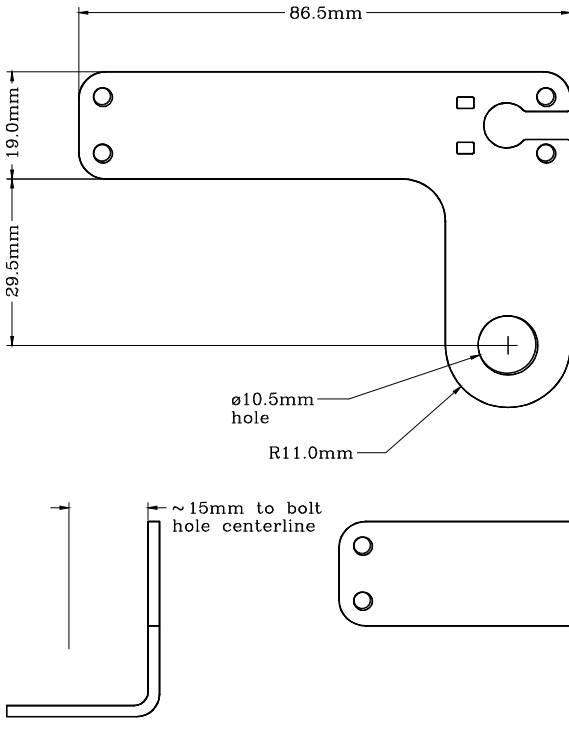


This photo shows the switch mounted on a KTM 1190 Adventure R.



## **MCS8300**

Mirror mount – 16mm high with full offset.



This bracket is the same as the MCS830L, except that the mounting leg is all the way to the right, to move the switch closer to the hand grip. This is used on bikes where the mirror mounting post is further away from the hand grip than normal.

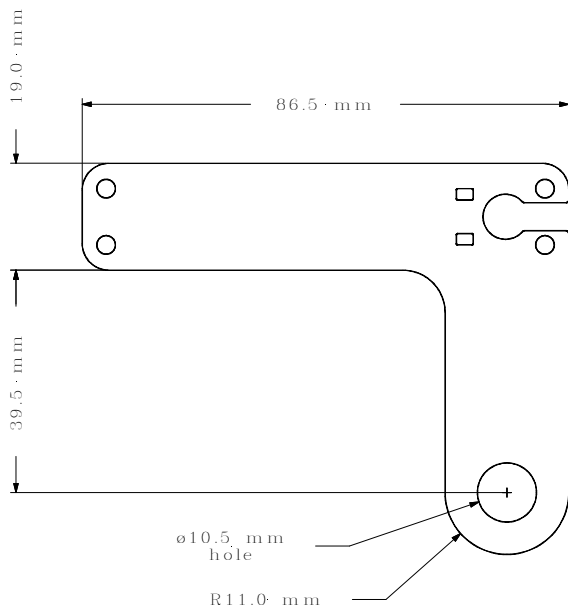
**This bracket can be supplied either flat (as long as we have stock of flat brackets) or bent as shown.** The standard bend used for this bracket is shown in the drawing below.

This photo shows the switch mounted on a Yamaha XV1900 Roadliner.



## MCS831M

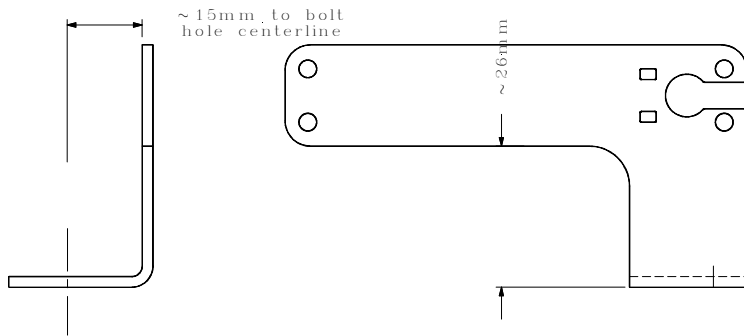
Mirror mount – 26mm high with full offset.



This bracket is the same as the MCS8300, but it taller, still with the mounting leg is all the way to the right, to move the switch closer to the hand grip. This is used on bikes where the mirror mounting post is further away from the hand grip than normal.

**This bracket can be supplied either flat (as long as we have stock of flat brackets) or bent as shown.**

The standard bend used for this bracket is shown in the drawing below.



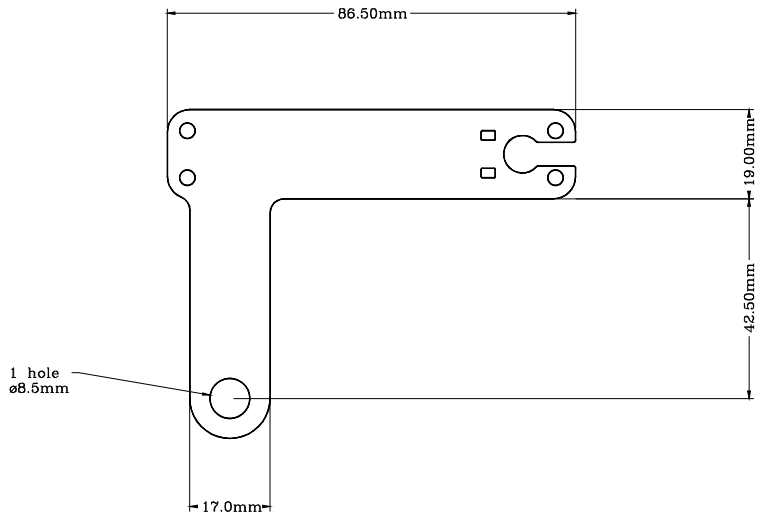
This photo shows the switch mounted on a Yamaha MT-09 Tracer (FJ-09).





## MCS830E

### BMW mirror hole mount

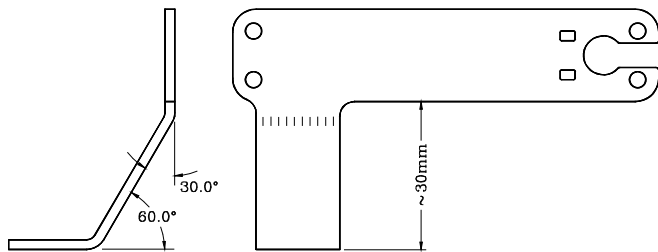


This bracket is bent to fit the mirror mounting hole on '80's and later K and R (oilhead or R259) series BMW's with cable operated clutches.

It is mounted either using the mirror stalk when fitted to the bike, or a bolt provided as shown in the photos.

The standard bend used for this bracket is shown in the drawing below

**This bracket can be supplied either flat (as long as we have stock of flat brackets) or bent as shown.**



This example shows the bracket fitted to an '80's R100RT, mounting the switch under the handlebar, still on the mirror mounting hole (old style switch shown).

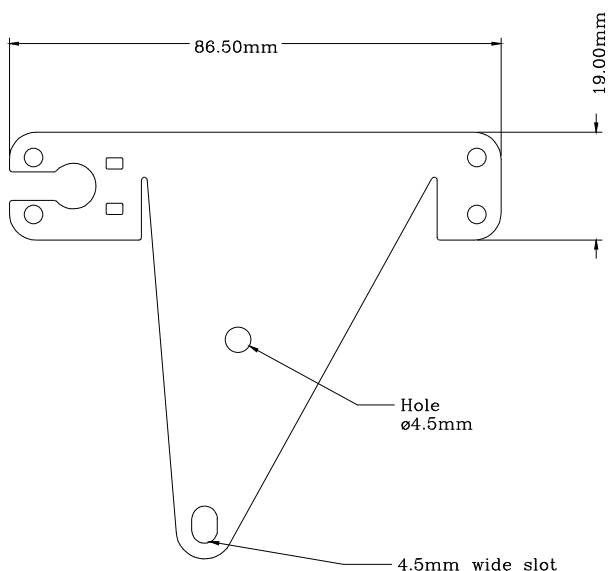


This example shows the bracket fitted to a /7 R series ('79 R100RS), mounting the switch above the handlebar, however the bends on the bracket required to do this can be difficult to achieve unless you have access to a sheet metal bender.



### **MCS830F**

#### **BMW clutch fluid reservoir mount**



This bracket is bent to fit on the clutch fluid reservoir mounting screws on '90's and later K and R series BMW's with hydraulic clutches. This bracket has been fitted without modification to K1200RS, K1200GT, R1150RT, R1150GS and R1100S.

This bracket is fitted in conjunction with the MCS830Z weather seal cover (see last page).

**This bracket can ONLY be supplied bent as shown and is usually coated with black satin powder coat.**



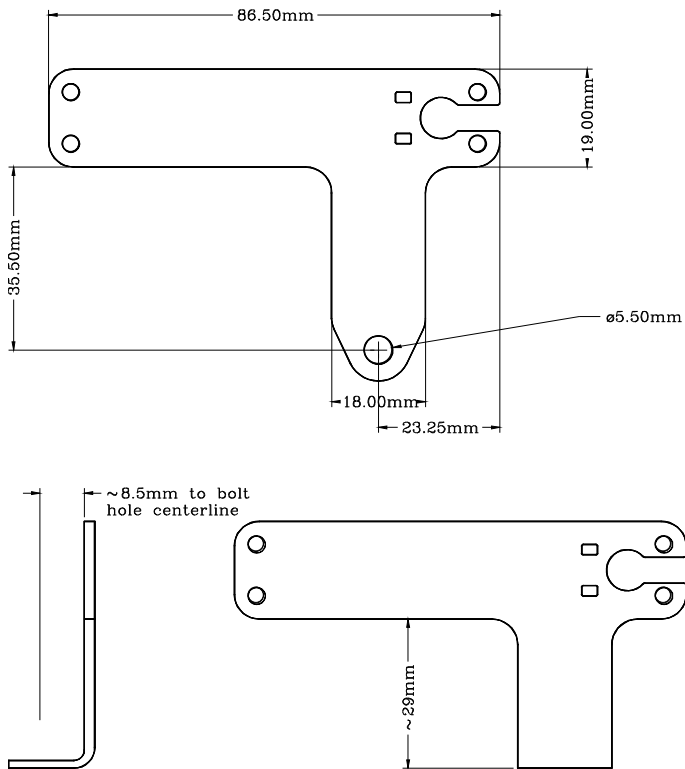
## **MCS830P**

BMW late model clutch lever clamp mount (R1200S shown in the photo). Fits F800ST, K1200S etc.

This bracket mounts on one of the clutch lever clamp bolts. The bolt must be replaced with a longer bolt.

The standard bend used for this bracket is shown in the drawing below.

**This bracket can be supplied either flat (as long as we have stock of flat brackets) or bent as shown.**



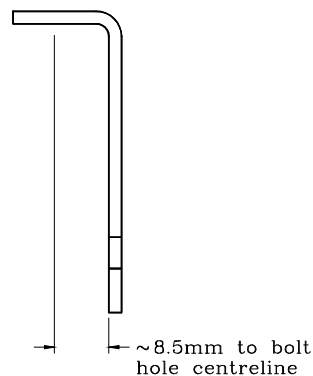
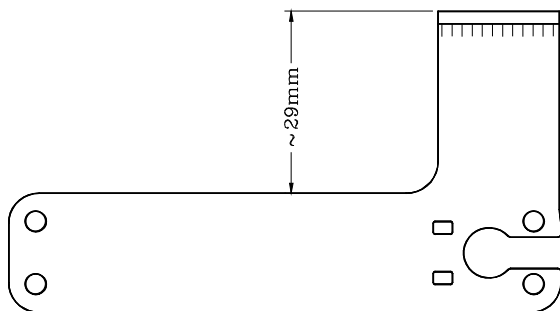
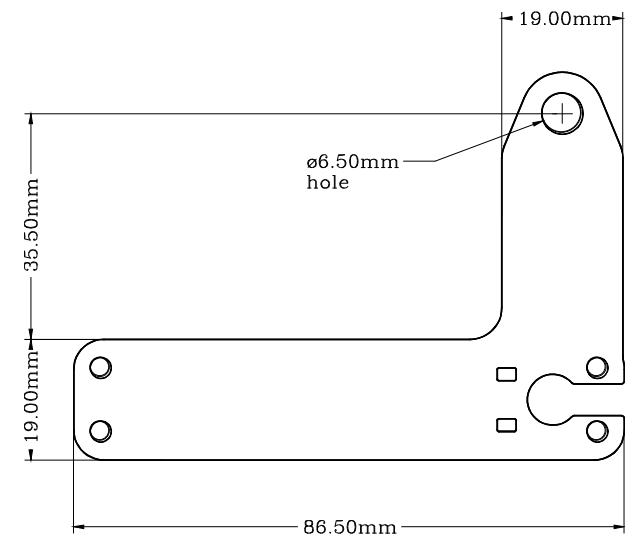
## **MCS830T**

Can-Am Spyder manual shift. This bracket is designed specifically for the Spyder, but may fit other bikes with similar clutch lever mounting methods.

This bracket mounts on one of the brake lever clamp bolts. The bolt must be replaced with a longer bolt and a washer and nut fitted.

The standard bend used for this bracket is shown in the drawing below.

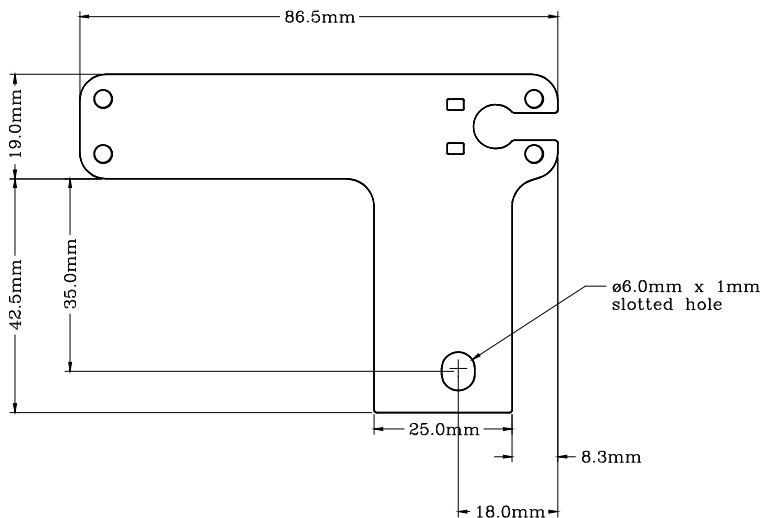
**This bracket can be supplied either flat (as long as we have stock of flat brackets) or bent as shown.**



## MCS830V

Can-Am Spyder electric shift. This bracket is designed specifically for the Spyder, but may fit other bikes.

This bracket mounts on the bikes gear shift paddle housing. It fits in the split of the clamp that holds the housing to the handlebar.

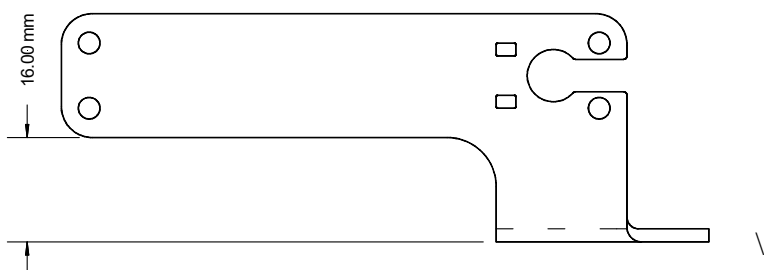
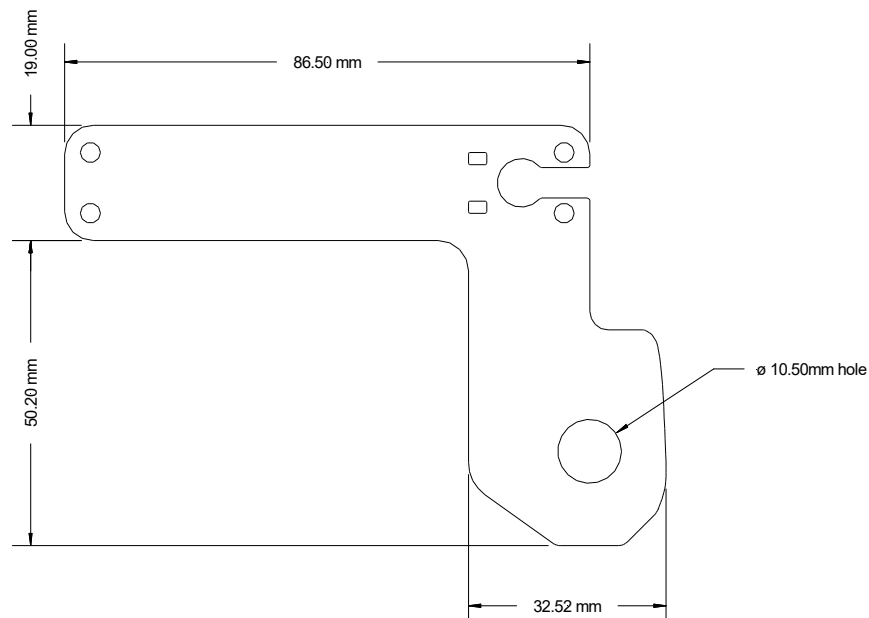


## MCS831C

Ducati Multistrada 1200S (model years around 2011). This bracket is designed specifically for the Multistrada.

This bracket mounts on the base of the left side mirror. It fits in the split between the clutch lever assembly and the mirror.

Contact us for more detailed dimensions on this bracket if needed.

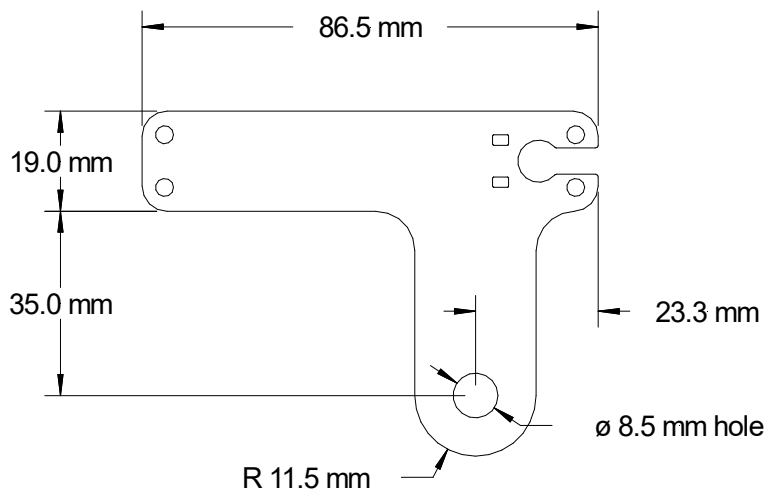


### **MCS831D**

Boom Trike above bar mirror mount switch bracket. This bracket is designed specifically for the Boom Trike, but may also fit other models.

This bracket mounts on the clamp bolt for the left side mirror.

Contact us for more detailed dimensions on this bracket if needed.

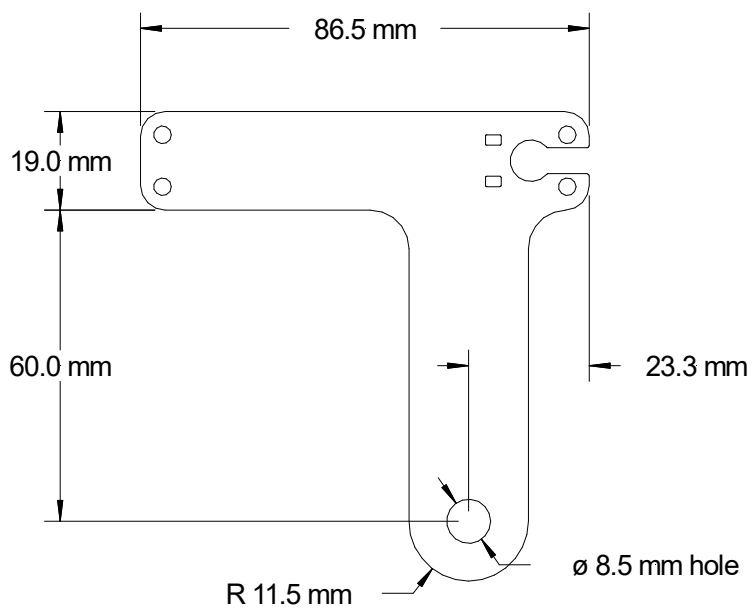


### **MCS831E**

Boom Trike below bar mirror mount switch bracket. This bracket is designed specifically for the Boom Trike, but may also fit other models.

This bracket mounts on the clamp bolt for the left side mirror. The mounting leg is longer than the MCS831D above, but otherwise is the same.

Contact us for more detailed dimensions on this bracket if needed.

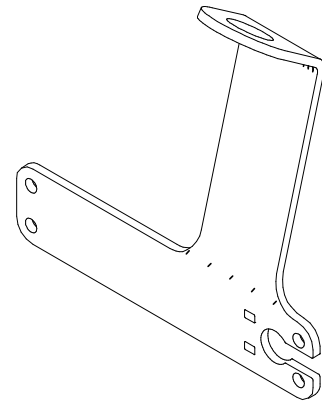
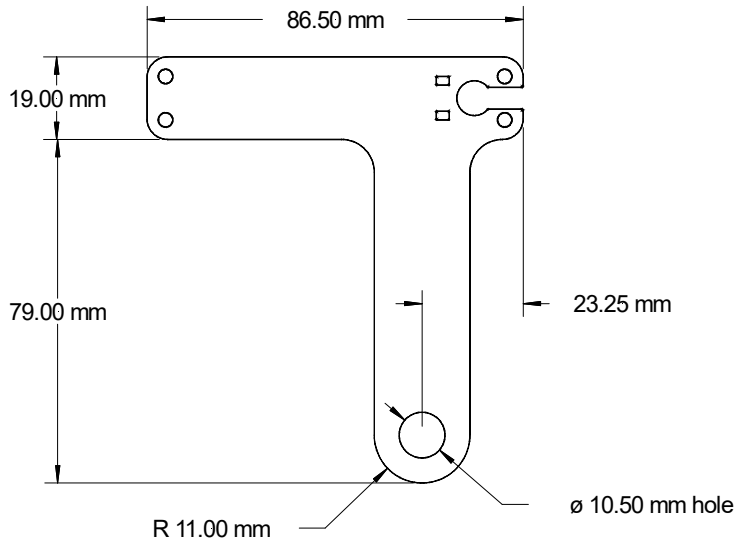


### **MCS831K**

Touroz (Rewaco) trike mirror mount switch bracket. This bracket is designed specifically for Touroz. The bracket has several bends in to achieve the placement shown.

This bracket mounts on the clamp bolt for the left side mirror. The mounting leg is longer than the MCS831E above, and the mounting hole is larger at 10.5mm diameter.

Contact us for more detailed dimensions on this bracket if needed.

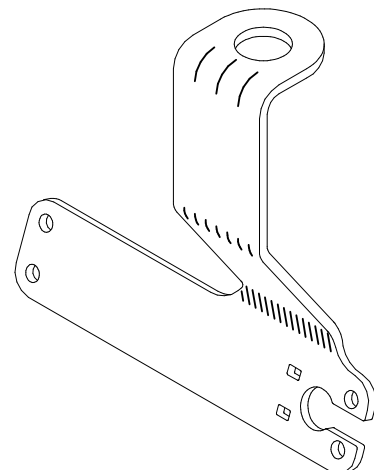
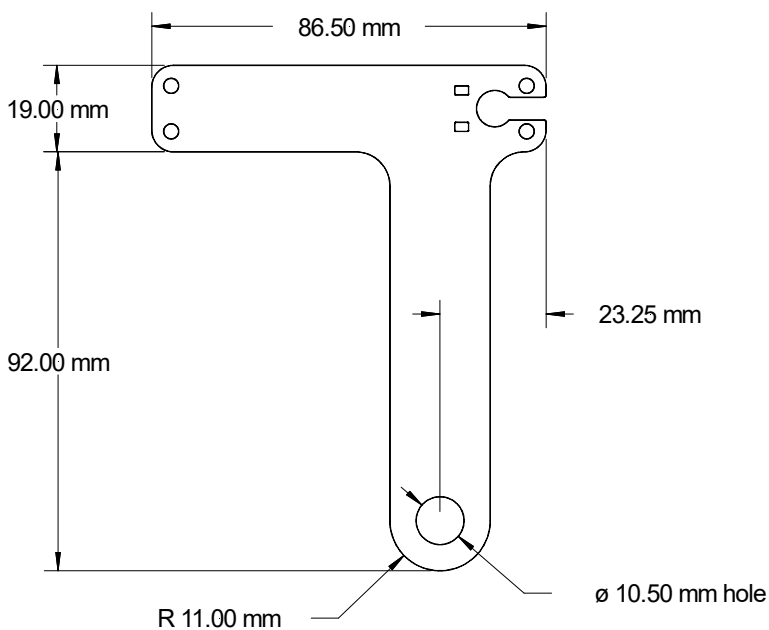


### **MCS831J**

KTM 690R mirror mount switch bracket. This bracket is designed specifically for KTM. The bracket has several bends in to achieve the placement shown.

This bracket mounts on the clamp bolt for the left side mirror. The mounting leg is longer than the MCS831K above, but otherwise is the same.

Contact us for more detailed dimensions on this bracket if needed.





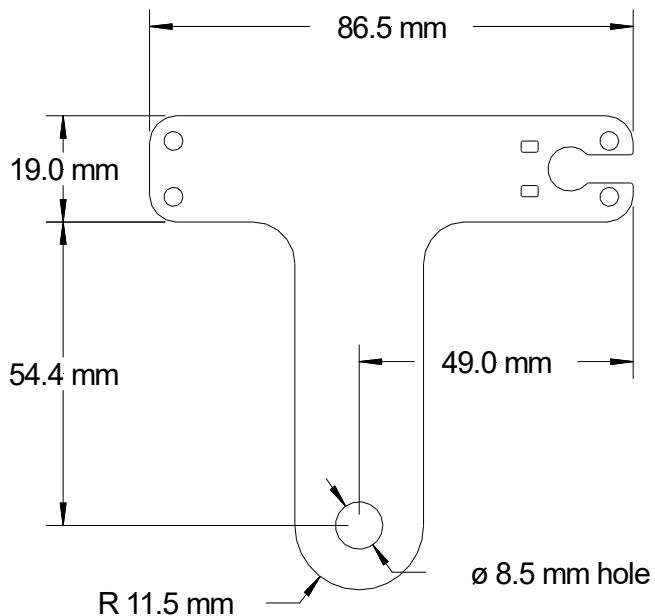
### **MCS831F**

Honda late model Adventure Touring mirror mount switch bracket. This bracket is designed specifically for late model Honda Adventure Touring models for mounting on the mirror stalk, for mirrors with an 8mm mounting thread. The next page has another identical bracket with a hole for a 10mm hole for the Honda CTX700.

We have not used this bracket, one of our more conventional brackets has been used instead, however we have made them and they are available. We have not fitted this to a bike or taken a photograph of it.

This bracket mounts on the left side mirror stalk, when the mirror stalk is screwed into an extension of the clutch lever assembly fluid reservoir.

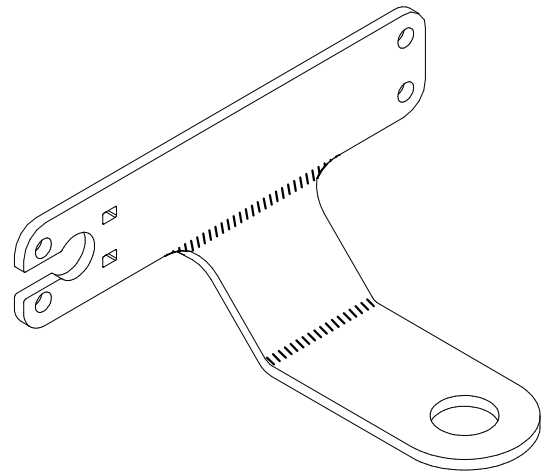
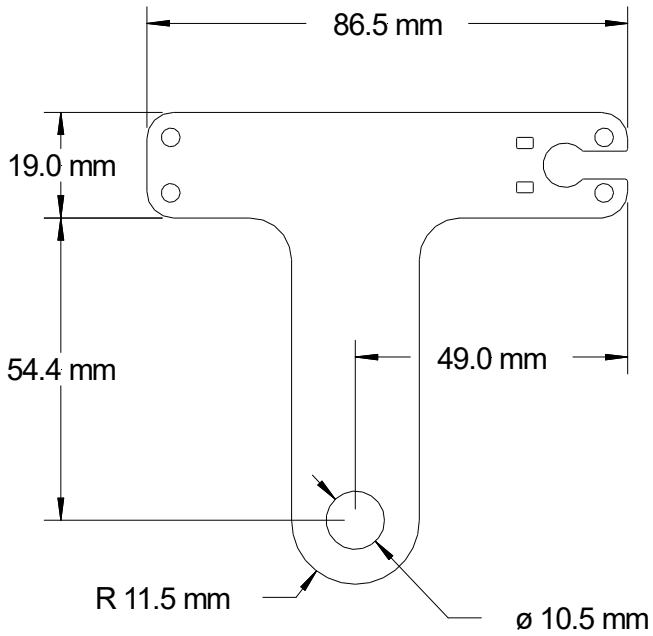
Contact us for more detailed dimensions on this bracket if needed.



### MCS831R

Honda CTX700 switch bracket. This is almost identical to the MCS831F late model Adventure Touring mirror mount switch bracket on the previous page; just the mirror mounting hole is bigger. This bracket is designed specifically for the CTX700 for mounting on the mirror stalk, which has a 10mm mounting thread.

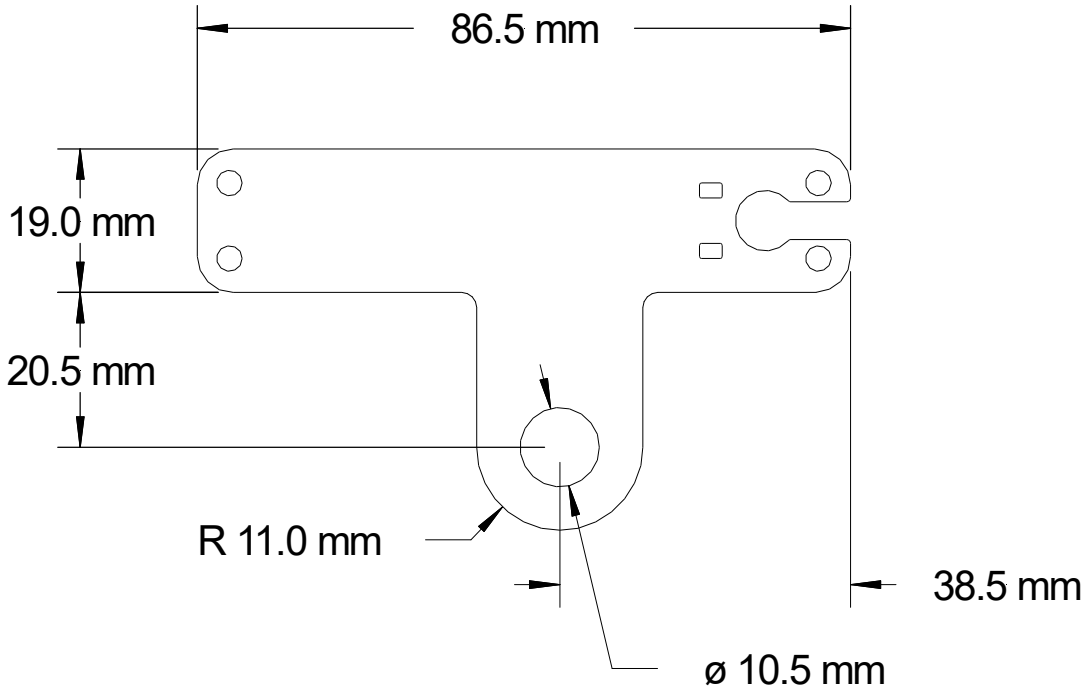
Contact us for more detailed dimensions on this bracket if needed.



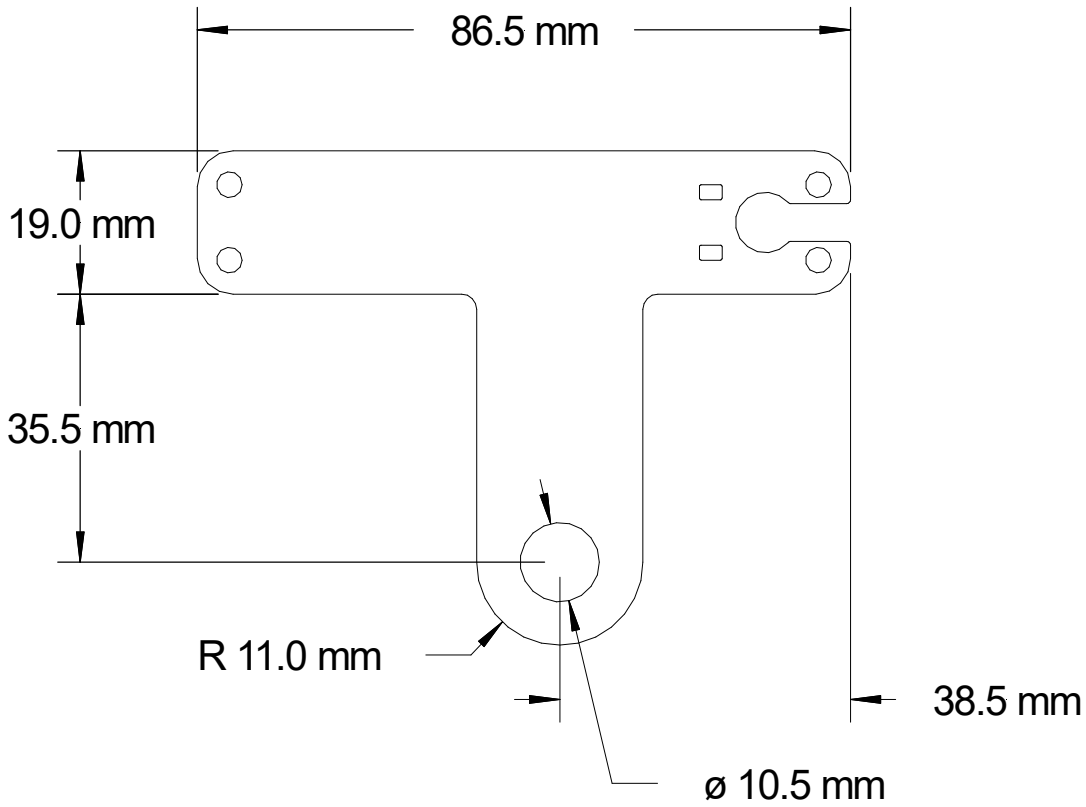
**MCS831Q & MCS831S**

These are both mirror mount switch brackets, both made specifically for customers who needed brackets with these dimensions.

**MCS831Q**



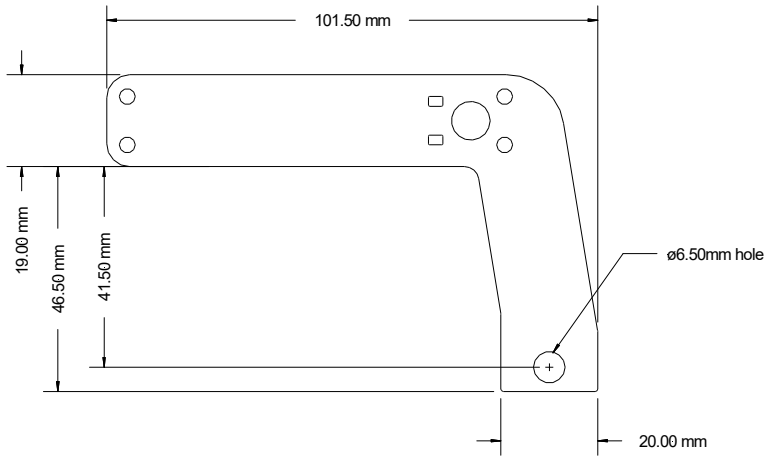
**MCS831S**



### **MCS831G**

Honda GL1800 F6B switch bracket. This bracket is designed specifically for late model Honda F6B.

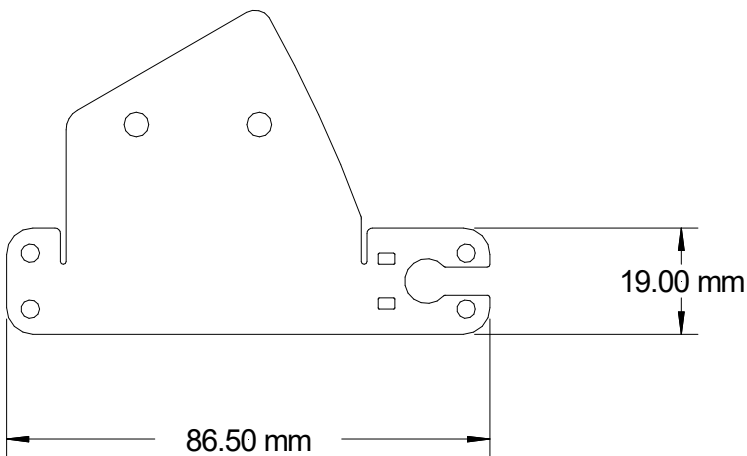
Contact us for more detailed dimensions on this bracket if needed.



### **MCS831H**

Honda GL1800 F6B screw mount switch bracket. This bracket is designed specifically for late model Honda F6B. The bracket is screwed to the top of the bike's left side switch housing.

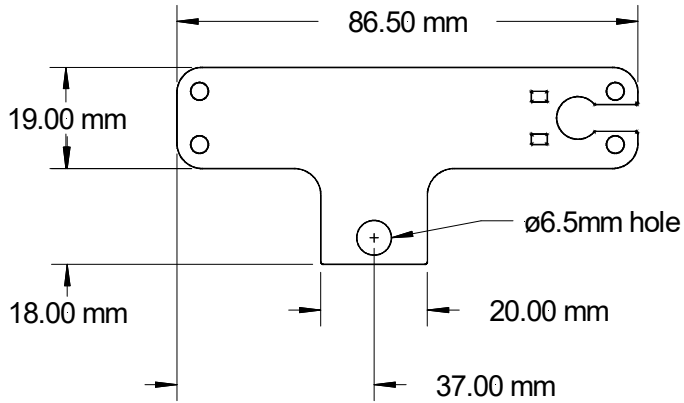
Contact us for more detailed dimensions on this bracket if needed.



### MCS831L

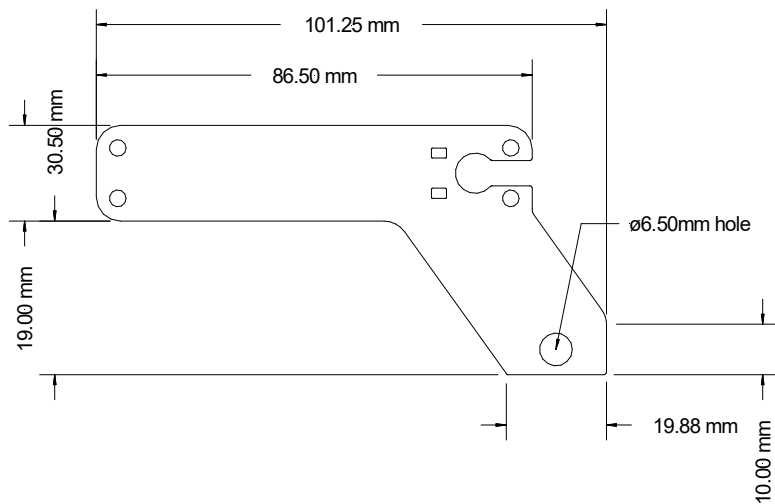
Honda CBR900RR Fireblade 2000 switch bracket. This bracket is designed specifically for this model Honda Fireblade.

The switch is offset towards the middle of the bike to clear the fairing screen when the bars are turned right.



### MCS831N

Honda CTX1300 switch bracket. This bracket is designed specifically for this model Honda.



## **MCS830Z**

Weather seal cover.



This item is a thin stainless steel cover for the back of the control switch. This is used where the switch mounting bracket does not provide full coverage on the back of the control switch (eg. MCS830F BMW mount) or when the switch is mounted using self-adhesive tape or some other mounting method that does not use a rear mounted bracket.

## Mounting the control switch on the right side of the bike.

It is possible to disassemble the control switch and reverse the buttons (the silicone rubber key pad is one piece and must be cut into separate buttons) to allow the switch to be mounted on the right handle bar instead of the left. This compromises the water sealing slightly (not usually an issue though). Most of the control switch brackets are reversible, although those that are bent with require reverse bends to allow mounting on the right side.

The photo shows the switch using a MCS830B bracket on a Yamaha FJR1300.



## 10. Black or chromed control switch

This photo shows the control switch in the standard black finish. The colour and texture of the switch housing matches most bike's switch housing pretty well. The grey colour of the buttons also matches the grey buttons that many bikes have.



This photo shows the control switch with the switch housing with a chrome plate finish. This is an extra cost option and is not always available. Contact us for details of availability.



## **11. Speed sensing arrangement**

### Electric speedometers.

Many modern bikes have electric speedometers, either an analogue (needle) type or a digital type.

In most cases it is not too difficult to connect the cruise control to the speedometer signal to pick up the speed signal for the cruise control. There are some instances where the current draw (typically 50~100µA or 50~100 micro amperes) for the cruise control can effect the speed signal. This can result in incorrect operation of the speedometer or error codes in EFI modules occasionally. In some cases the frequency range of the bike's speedometer sender is too high for the cruise control. This can limit the maximum speed that the cruise control will operate, and when also combined with current draw issues can cause other problems. Generally if the bike produces less than 80~100 pulses per wheel revolution there will not be any problems. Pulse rates above this may cause issues in some cases.

Most bikes use a Hall Effect (electronic) speed sender. These have three wires going to them, one for power to the sender (this can be anywhere from 5V to 12V), another wire for ground (negative connection) and the third is the signal wire. You will need either an electrical multimeter, an oscilloscope OR a wiring diagram to determine which wire to tap into for speed signal.

Some bikes (mostly 90's BMW) have a passive coil speed sensor in the final drive housing. This type usually only has two wires.

You can tap into the wire anywhere in the bike's wiring, however it is usually easiest at the sender unit. The sender may be mounted on the bike's gearbox near the output shaft, outboard of the front sprocket for the drive chain, on the front wheel (usually where a normal speedometer cable would connect) or in the final drive housing on some shaft drive bikes.

You may also be able to tap into the signal at the back of the bike's speedometer. This is sometimes easy because quite often the speedometer has screws or posts and nuts for electrical connection.

In many cases (particularly for Japanese bikes) we have suitable terminals and housings available to allow you to connect to the bike's speed signal without cutting ANY wires at all. We can supply appropriate connectors to allow you to 'patch' into the bike's speed signal without damaging the bike's wiring.

### Cable driven speedometers.

If your bike has a cable driven speedometer, you will need to fit a speed sensor to either the front or rear wheel.

We have a speed sensor kit available and a 'universal' mounting bracket to allow you to fit the speed sensor to the bike. The sensor is mounted next to the bolts that hold one of the brake discs to the wheel or can be mounted next to the sprocket on the rear wheel if it has mounting bolts that are suitable. We **STRONGLY** recommend that you do not mount the speed sensor or magnets too close to any ABS (anti-lock brake) sensors that might be mounted on the bike.



Here are some photos of examples using the universal bracket to mount the speed sensor.

This example is on the rear wheel of a Honda ST1100 before we designed a specific bracket for it.

It sits under the swing arm. It is mounted on the axle pinch bolt, but we replace the bolt with a longer bolt screwed in from underneath, and use a nut on the top to 'pinch' the axle.

It is also cable tied to the swing arm to prevent vibration breaking the bracket.



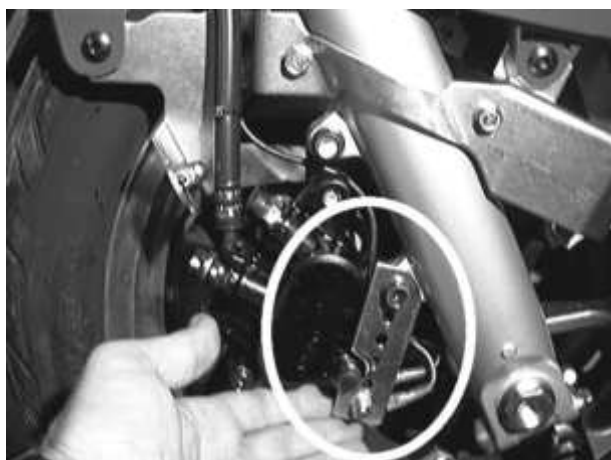
This example is on the rear wheel of a Suzuki GSF1200S Bandit.

This arrangement has the bracket mounted on one of the brake caliper mounting bolts.

You can also see one of the magnets fitted to the brake disc bolt (small circle in the photo).

This example is on the rear wheel of a Kawasaki Z1000GTR Concours before we designed a specific bracket for it.

This arrangement has the bracket mounted to the brake caliper torque arm bolt.



This example is on the front wheel of a Honda PC800 Pacific Coast before we designed a specific bracket for it.

This arrangement has the bracket mounted on one of the brake caliper mounting bolts.

The disc brake mounting bolts are usually socket head cap screws (Allen bolts) or Torx fasteners (these have a spline instead of a hex in the bolt head). We have a variety of magnets available that fit neatly into the socket on the bolt. These magnets are very strong and will not fall out, and are nickel plated to prevent corrosion. If your bike has normal bolts OR stainless steel cap screws (stainless steel is not magnetic so the magnet will not hold) instead of socket head cap screws, simply replace one or all of the bolts with equivalent size zinc plated high tensile cap screws. These are readily available in suitable sizes from bolt & fastener outlets.

The magnets are available in the following sizes:

- 4mm diameter x 2mm long. This size fits the T-30 Torx fasteners sometimes used on the latest (2008) BMW brake discs. Two of these magnets are required in each bolt (4mm stack height). This is **Part Number MCS 047**. Used where there is very close clearance between the end of the bolt and fork leg or brake caliper.
- 4mm diameter x 5mm long. This size fits the T-30 Torx fasteners sometimes used on the latest (2008) BMW brake discs. This is **Part Number MCS 043**. Used where clearance is not such an issue.
- 4.75mm diameter x 4.75mm long. This size fits the T-40 Torx fasteners sometimes used on most BMW brake discs (pre 2008). This is **Part Number MCS 046**. It will also fit a 5mm hex (some M8 cap screws with a button head).
- 6mm diameter x 1.5mm long. Suitable for the recessed head on some 5mm bolts. This is **Part Number MCS 044**. Some bikes use 5mm bolts to mount ABS tone wheels or other cosmetic shields to the wheel.
- 6mm diameter x 2mm long. Same as above but slightly longer. Suitable for the recessed head on some 5mm bolts. This is **Part Number MCS 041**.
- 6mm diameter x 3mm long. Suitable for 6mm hex with a shallow hex head, sometimes found on button head cap screws. This is **Part Number MCS 040**.
- 6mm diameter x 4.5mm long. Suitable for most 6mm hex socket head cap screws. Most Japanese and many European bikes use M8 (metric 8mm) socket head cap screws to mount the discs. Most of these have a 6mm hex head for a Allen (hex) key. This is the default 'standard' part included in the kit if another size is not requested. This also fits in T-50 Torx fasteners. This is **Part Number MCS 045**.
- 6mm diameter x 6mm long. Suitable for deep hex head screws or if the bolt head is countersunk into the disc. The photo showing the ST1100 magnet on the next page used this magnet because the bolt is countersunk into the disc. This is **Part Number MCS 039**.
- 6.35mm diameter x 6.35mm long (1/4" x 1/4"). Not commonly used. This is **Part Number MCS 038**. Will fit neatly into a socket head cap screw with a hex for a 1/4" Allen (hex) key.
- 8mm diameter x 5mm long. Not commonly used. This is **Part Number MCS 036**. This magnets fits neatly into the end of a M8 Nylok nut (nylon insert locking nut). It can be pressed into the nylon insert in the end of the nut and the nut is then screwed onto the threaded end of an 8mm bolt.
- 10mm diameter x 3mm long (this can be glued to the wheel if all else fails). This is **Part Number MCS 033**.

The photo shows a Honda ST1100 rear disc brake with a magnet in the disc brake mounting bolt.

It is recommended that you fit magnets to all of the mounting bolts on the wheel (usually 4, 5 or 6 bolts), however one will still work satisfactorily, although the low speed performance (below 60 kph (40 mph) of the cruise control may suffer a little with only one magnet.



### Bikes that use studs instead of bolts to mount brake discs or the drive sprocket.

If your bike has a stud and nut instead of a bolt, we have a sensor magnet nut available that may be used.

One of the bikes nuts is removed from the stud, and this long nut is used to replace it. The nut has a magnet embedded in the top of it.

The photo shows this arrangement on the rear wheel of a Honda GL1200 Gold Wing.

This nut has an M8 coarse thread (8mm metric coarse), which is standard for most brake disc and sprocket mounting bolts/studs.

**If you want this sensor magnet nut in your kit your need to order an 'MCS073 Sensor magnet nut'.**



## 12. Electrical connectors.

We have available to us most of the common electrical terminals and housings used for connections on motorcycles.

If you can take digital photos, and e-mail them to us, we can usually identify the type and supply them with the kit. This will enable you to make ALL or most electrical connections on the bike without cutting or soldering any wires on the bike's wiring loom.

The drawings following show the most common connectors found on Japanese bikes and a description of their most common applications. Some European manufacturers use these connectors too.

**NOTE: - The electrical terminal kit is a standard cost and includes a basic set of terminals that every kit uses. These include terminals and blanking plugs for the cruise control computer plug, ring or eye terminals for ground connection.**

**If you take the time to find out what your bike has in most cases we will be able to supply all or most of the terminals and housings needed to professionally finish the installation. There is NO ADDITIONAL COST involved in supplying these parts. You just have to tell us what to supply.**

**We will NOT supply multiple different types of connectors for each position. ie. We will only supply one type of connectors for brake switch connection, one type for clutch switch connection etc.**

Brake light switch connection.

**NOTE: - You will only need to connect the cruise control to either the front OR rear brake light switches. NOT BOTH.**

Most manufactures have brake light switches on the FRONT brake that has two small spade terminals on them. The cruise control can be connected to this switch if desired. Typically, the width of the spade on these switches is 4.8mm, which is a standard size, but is smaller than most 'normal' spade terminals that are common in automotive applications.

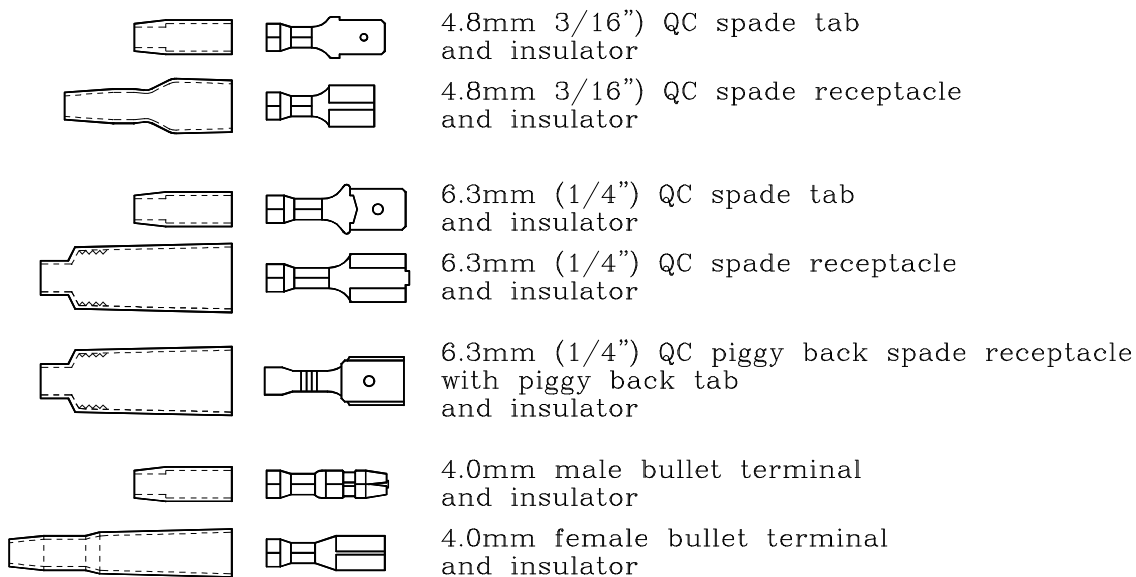
The photo shows a typical Honda front brake light switch with the cruise control brake sensor wires connected to the switch and the bike's original wires connected to a 'patch' connections with spade terminals on them.



**If you want these terminals in your kit your need to order a '4.8mm QC Spade Brake Switch kit'.**

The drawing below shows a selection of regular terminals available.

Any sets of these may be requested for brake light switch connection.

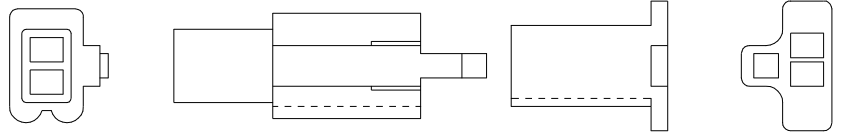


In addition to the above, the following drawings show a variety of brake light switch connectors that are used on REAR brakes.

This is an older design but is still used on some bikes. All manufacturers have used this design at some time.

**If you want these plugs in your kit your need to order a 'JD 2 way Brake Switch kit'.**

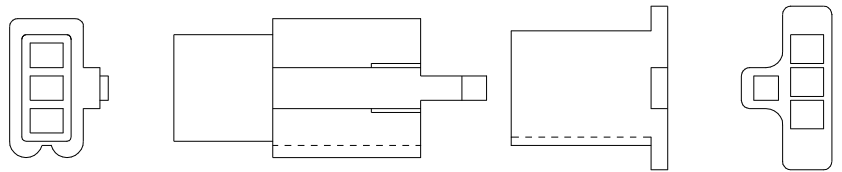
Rear brake light switch connector (unsealed)  
 Part ID. JD02 2 way  
 Wire colours usually black on switch end  
 Wire colours variable at loom end  
 All makes use this



This is the same design as the above, but using a three-way plug instead of a two-way. Only two of the holes are used for brake light switch connection.

**If you want these plugs in your kit your need to order a 'JD 3 way Brake Switch kit'.**

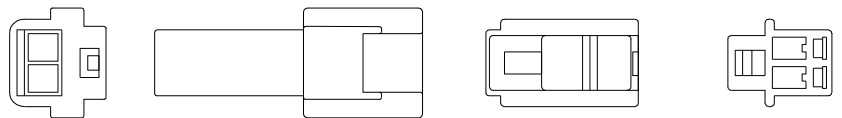
Rear brake light switch connector (unsealed)  
 Part ID. JD02 3 way  
 Wire colours usually black on switch end  
 Wire colours variable at loom end  
 All makes use this



This design is current on many Yamaha models. We have not seen this type of plug on other makes at this time.

**If you want these plugs in your kit your need to order a 'MT090 Unsealed 2 way Brake Switch kit'.**

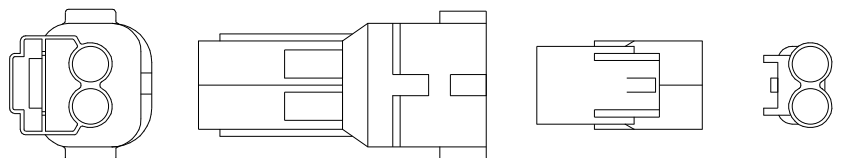
Yamaha rear brake light switch connector (unsealed)  
 Part ID. MT090 Unsealed 2 way  
 Wire colours usually black at switch end  
 Brown and yellow at loom end  
 Other colours also used



This is a common design seen on some Honda cruisers. We have not seen this on other makes at this time.

**If you want these plugs in your kit your need to order a 'HM090 Sealed 2 way Brake Switch kit'.**

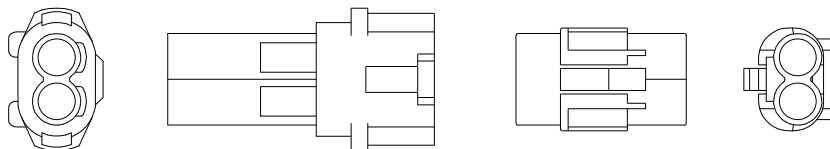
Rear brake light switch connector (sealed)  
 Part ID. HM090 Sealed 2 way  
 Wire colours usually black on switch end  
 Wire colours variable at loom end  
 All makes use this



This is a common design on some Yamaha cruisers. We have not seen this on other makes at this time. This is VERY similar to the one below, but they will NOT fit each other. Be careful to select the correct plug type.

**If you want these plugs in your kit you need to order a 'MT090 IL Type Sealed 2 way Brake Switch kit'.**

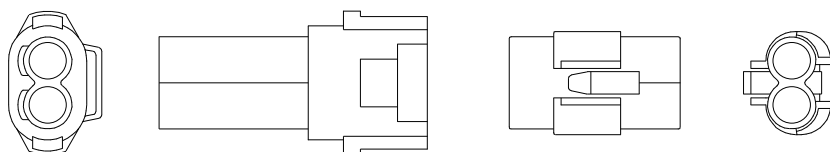
Rear brake light switch connector (sealed)  
Part ID. MT090 IL type Sealed 2 way  
Wire colours usually black on switch end  
Wire colours variable at loom end  
All makes use this



This is VERY similar to the one above, but they will NOT fit each other. Be careful to select the correct plug type.

**If you want these plugs in your kit you need to order a 'MT090 AL Type Sealed 2 way Brake Switch kit'.**

Rear brake light switch connector (sealed)  
Part ID. MT090 AL type Sealed 2 way  
Wire colours usually black on switch end  
Wire colours variable at loom end  
All makes use this



#### Clutch switch connection.

Many manufacturers have a clutch switch on the clutch lever assembly that has two small spade terminals on it. The cruise control can be connected to this switch if desired. Typically, these spades are the same as those used on the brake light switch, 4.8mm.

**If you want these terminals in your kit you need to order a '4.8mm QC Spade Clutch Switch kit'.**

As for the brake light switch connection, the selection of terminals shown in the picture on page 24 are also available for clutch switch connection.

In addition to this, a number of bikes are now coming out with clutch switches that use the JD style brake light switch connector (see page 23). The female housing is moulded into the switch, and the male housing is fitted to the wiring loom. Because we have both male and female housings available, we can supply the parts necessary to make a suitable patch for the clutch switch connection.

**For a 2 way plug, if you want these plugs in your kit you need to order a 'JD 2 way Clutch Switch kit'.**

**For a 3 way plug, if you want these plugs in your kit you need to order a 'JD 3 way Clutch Switch kit'.**

Tach sensor connection.

On most installations, the tach sensor wire will be connected to the active terminal on one of the bike's ignition coil primary. This connection is usually a 6.3mm QC spade terminal on the coil and a matching receptacle on the wire. The easiest way to make this connection is to use a 'piggy back' terminal on the end of the tach sensor wire. This terminal connects to the spade terminal on the bike's ignition coil, and the bike's wire connects to the piggy back terminal.



**If you want this connection in your kit you need to order a 6.3mm QC Piggy Back Receptacle Tach Sense kit.**

As for the brake light switch connection, the selection of terminals shown in the picture on page 22 are also available for tach sensor connection (the piggy back terminal is shown in this picture).

We have also seen some bikes using the HM and MT090 sealed 2 way connectors that are shown on page 24.

Speed sensor connection.

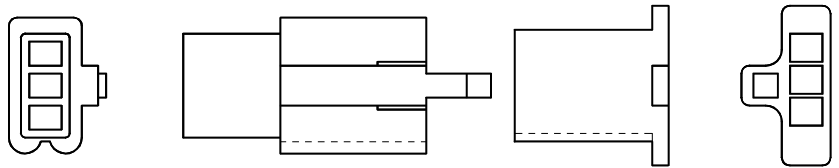
If you order a speed sensor assembly with your kit, you will automatically receive suitable terminals to enable you to connect this to the wiring loom.

If you are going to connect the cruise control to your bike's speedometer sender, the following drawings show a variety of common speedometer sender connectors that are in use.

This is an older design but is still used on many bikes. Most manufactures have used this design at some time.

**If you want these plugs in your kit your need to order a 'JD 3 way Speed Sensor kit'.**

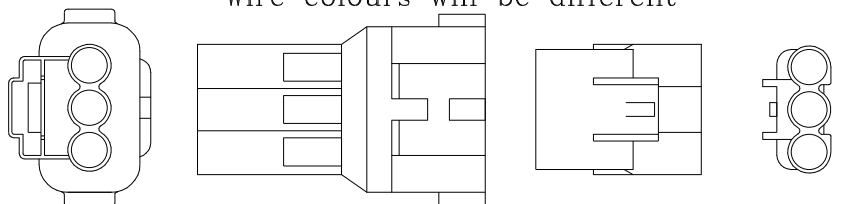
Honda speed sensor connector (unsealed)  
Part ID. JD022 and JD023  
Wire colours usually pink, green and black  
Other makes use this too  
Wire colours may be different



These two designs are in common use at the moment.

Because you only need to connect to ONE of the speed sensor wires, we do not provide these three way housings, but we DO provide suitable terminals, seals and ONE way housings to enable you to assemble a suitable patch.

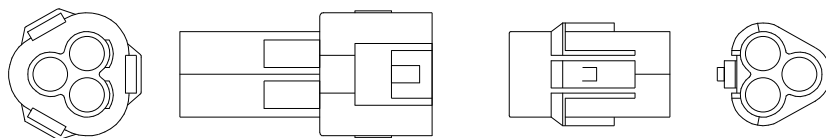
Speed sensor connector (sealed)  
Part ID. HM090 Sealed 3 way  
Honda wire colours usually pink, green and black  
Other makes use this too  
Wire colours will be different



If you have either of these designs of speedometer sender connector on your bike we can supply suitable terminals and housings to make a waterproof patch connection.

Yamaha speed sensor connector (sealed)  
Part ID. MT090 Sealed 3 way  
Wire colours usually orange, pink and black/white at sensor end  
Blue/yellow, black/white and white at loom end  
Other colours also used

**If you want this in your kit your need to order a 'MT090 Sealed 1 way Speed Sensor kit'.**



While it is difficult to cover all designs possible on motorcycles, many current Japanese motorcycles use either HM 090 or MT 090 sealed connectors in many different positions on their bikes. These connectors may be anything from the two and three way connectors shown here, up to 20 way or more. They all use the same terminals, and as a result the 1 way patch kit can be used.

The 'MT090 Sealed 1 way Speed Sensor kit' can be used in many different locations to make a safe, waterproof patch connection.

If you wish to make up a patch using all three wires on the above designs, we can supply patch kits using the three way housings instead of one-way. This makes fitting the patch easier, however making the patch is more time consuming.

**If you want either of these in your kit your need to order:**

**'HM090 Sealed 3 way Speed Sensor kit' for the HM 090 plugs shown above.**

**'MT090 Sealed 3 way Speed Sensor kit' for the MT 090 plugs shown above.**

Ground connection.

Suitable 6.3mm (1/4") ring terminals are provided in the kit to allow connection to the battery negative terminal.

NOTE: - We have many other connectors available, the the connectors shown here are just the very common ones used on Japanese bikes.

If you can take good clear photos and email them to us, we may be able to supply most or all of your terminal and housing requirements.



### **13. What Parts kit/s?**

This is where all the above comes together.

In order to fit the cruise control to your bike you will have to select what parts kits you need.

#### **Kit Part Number**

#### **What it contains and what decisions need to be made**

MCSU 600 P24 kit  
Basic components kit

Contains the main common parts for the cruise control, the computer, throttle Servo, control switch, etc. You must have one of these.

**What length ‘Carburettor’ cable do you need?**

**What length Throttle Servo cable do you need, or do you want the longest cable and you can cut it to length?**

MCSU 400 ‘A’ kit  
Brackets kit

Contains some universal brackets (or dedicated brackets if available), bolts and other parts including the control switch bracket. You have to have this.

**What control switch bracket do you need?**

**Do you want a black or chromed control switch?**

**What servo mounting bracket/s do you need? (refer to the “MCS850 Electric Throttle Servo instead of vacuum actuator” document for details about these brackets)?**

MCSU400 ‘C’ kit  
Speed sensor kit

OPTIONAL. Contains a speed sensor, universal bracket (or dedicated bracket if available) and sensor magnets.

**Do you need a speed sensor kit?**

**What size and number of magnets do you need?**

MCSU400 ‘D’ 24/66 kit  
MCSU400 ‘D’ 30/66 kit  
MCSU400 ‘D’ 30/52 kit  
Dual Spool CIU kits

OPTIONAL. Contains a dual spool CIU assembly.

**Do you need a dual spool CIU, if so which one, D24/66, D30/66 or D30/52?**

MCSU400 ‘E’ 30/66 kit  
MCSU400 ‘E’ 30/52 kit  
Single Spool CIU kit

OPTIONAL. Contains a single spools CIU assembly.

**Do you need a single spool CIU, if so which one, E30/66 or E30/52?**

MCSU400 ‘G’ kit  
CIU Cover kit

OPTIONAL. Contains polished cover for the CIU. Only needed if you feel the CIU detracts from the bike’s appearance. Usually only fitted to cruisers where the CIU is fully exposed and visible.

See over the page for a picture of the CIU cover.

**Do you need to improve the appearance of the CIU?**

MCU400 ‘H’ kit  
Electrical connection kit

OPTIONAL. Contains electrical terminals for most or all of the connections for the cruise control to the bike and connection within the cruise control.

Very strongly recommended.

**What terminal kits do you need?**

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