

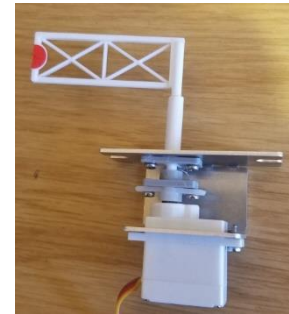
# Dingo Servo Mounts

## Crossing Gate Mount Ver "A" Assembly Instructions.

The Mount is now at Ver "A" and has extra holes on the frame to allow the fitting of the new Switch option.

Please read these instructions right through before commencing.

Take a little care with the assembly and you will have a really robust servo mount. Remember that you can only bend the aluminium once, so make sure you have the correct orientation before bending. (I cannot stress this enough! Check and double check before you bend.) Bending can be done by hand on the edge of a work bench or on a wooden block.



Before you start, make sure that all the parts are in the kit (see diagram on the back page.) Check the metal parts for excess flash from the lasercutting and remove if required with a small file or modelling knife. A small amount of burr on the edges will not affect operation. Any pips can be easily filed away.

Start by folding the Main plate along the dotted line to form a "U" Bracket. (Hold the top part firmly while bending to avoid any kinks in the motor mount section.) Make sure that both bends are fully 90 deg. You can always hold the part against the benchtop and just push a little more.

This is the block I use as a bending jig.



(If you fold this one the wrong way, it will just mean that your servo will be on the other side of the mount, but will still function fine)

Next take the top Flange and fit it through the round hole in the top of the mount from inside the "U" and secure with the 2 M2 x 3mm screws. (Note all holes are pre-tapped for the screws.) The screws should finish more or less flush with the top of the mount and not protrude at all.



Now fit the larger tube into the top bracket.

At this point you might need to cut the tube to the required length so that it just fit flush to

the top of the baseboard. (Note you will need to drill a 5mm hole through the baseboard to accommodate this tube)

The tube should be a press fit, but can be secured with a small drop of glue if required.

Now prepare the Servo horn to drive the dog.



Start by taking the double ended horn from the servo packet and cutting the horn so that only 3 holes remain on each side of the centre.



Now drill the second hole on each side out to 1.8mm and fit the 2 M2 x 5mm screws through these holes from the "servo" side



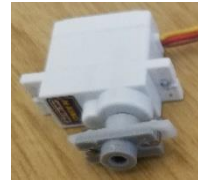
# Dingo Servo Mounts

## Crossing Gate Mount Ver "A" Assembly Instructions.

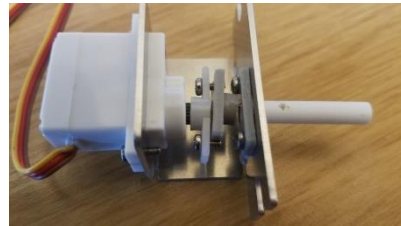
Now the servo motor needs to be centred by means of a servo tester or the control software. Attach the modified horn with the small screw provided by the servo manufacturer. **(Be careful with these screws as they have a mind of their own and are hard to find replacements for)**



Now we need to balance the dog on top of this arrangement and carefully fit the whole lot through from the bottom of the mount such that the dog is directly underneath the top flange.



Use the 2 M2 x 6mm screws to secure the motor.



Note: The Dog has been lengthened to make it easier to use with the SG90 servos. Also longer screws help with the attachment of these 2 parts.

The smaller tube will then pass through the outer tube and fit snugly into the dog. Test the unit to make sure that everything is moving smoothly.

Now all that remains to be done is to fit the unit to the layout with the 2 supplied flanged fixing screws and set up the end positions using the control software of choice.

I have 3D printed a OO crossing gate which has been glued to the smaller tube.

This has then been cut to length so that the gate swings correctly just above the track.

When setting up I move the servo to its one end position, then fit the gate and it should then swing to the other side when the servo is rotated to its other end stop.

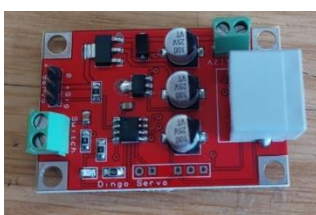
Replacement tubes can be cut from styrene tube – 3/16" tube Evergreen Item No 226 and the 1/8" tube is Item No 224

You could also use 1/8" brass tube for the centre if you were soldering the whole unit together or you might want to glue a wire into the small tube and then operate the gate from that.

I know you are all very talented modellers and will come up with the right solution to suit your needs.

Dingo Servo Mounts have a single RED servo board unit and a Twin Red servo board which will operate this unit.

Other control boards are on offer from MERG (in kit form) or from companies like Megapoints and Tam Valley Depot.



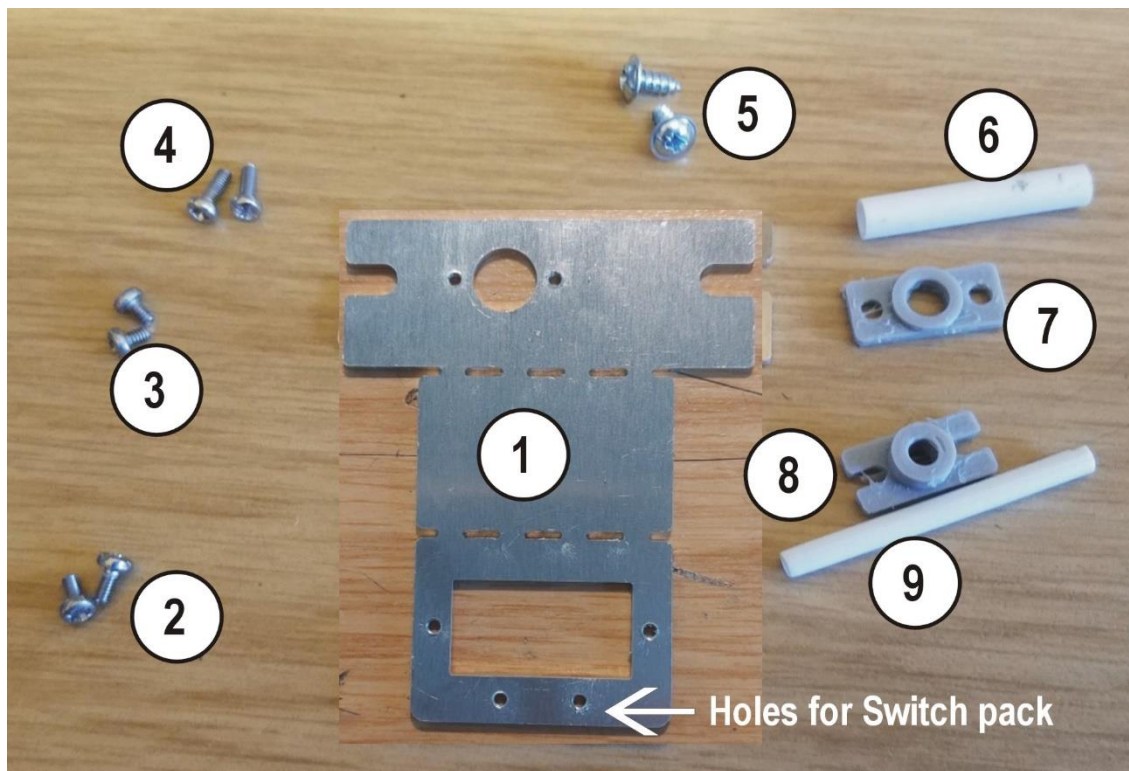
The New Switch pack is available for this unit but can only be used with a HobbyKing HK15178 servo.

Development work is underway to make adapters for other servos.

# Dingo Servo Mounts

## Crossing Gate Mount Ver "A" Assembly Instructions.

No	Description	Qty
1	Main Body	1
2	M2 x 5 mm Pozi Pan Head Screws (Prev 4mm)	2
3	M2 x 3 mm Pozi Pan Head Screws	2
4	M2 x 6 mm Pozi Pan Head Screws	2
5	3mm x 6mm long Flange fixing Screws.	2
6	3/16" Polystyrene Tube (Outer Tube)	1
7	Top Flange	1
8	Drive Dog	1
9	1/8" Tube (Inner Tube)	1
	2mm dia x 2mm Magnets (On back of Insert)	2



I hope you have many trouble free hours operating this unit.

I welcome feedback in order to improve the units for the future.

Please forward any comments or issues to me.

David Ingoldby

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# Dingo Servo Mounts

Crossing Gate Mount Ver "A" Assembly Instructions.

## Adding a Clutch *(this should work OK with OO and N gauge models)*

I have had some comments since creating this mount especially about the problems encountered if the gate has not been moved and an expensive loco derails or worse falls on the floor after hitting the gate.

So here is the method of modifying the unit to contain a magnetic clutch so that the gate will **"Get out of the way"** when the train comes.

Grateful thanks to my friend Howard Watkins for demonstrating this method to me some years ago.

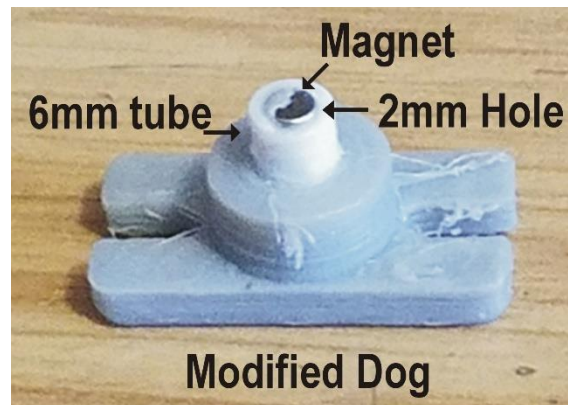
Firstly, you will need to modify the dog so as to contain a small magnet

Cut a short length of the 1/8" tubing to about 6mm – Once this is in the dog it should protrude by about 3mm from the top.

Carefully drill a 2mm hole in the top end for approx. 2mm into the tube.

Now fit a 2mm x 2mm dia rare earth magnet into this hole.

This tube can now be glued into the dog without getting any glue on the outside of the tube as this needs to run smoothly in the outer tube.



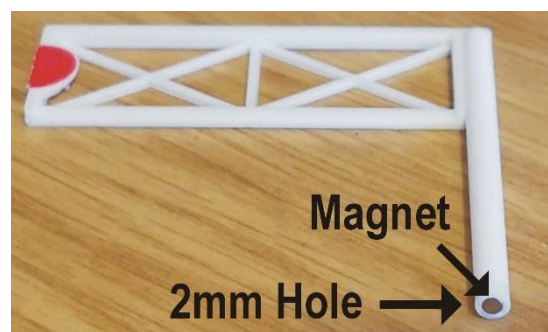
Now take the gate post (which has been cut to the correct length) and drill a 2mm hole carefully into the bottom of it to about 2mm deep.

We need to get the 2 magnets to pull together and not push apart.

My simple method of getting this right is to put the second magnet on top of the dog so that they connect, and then carefully push the gate post over this magnet.

They will fit snugly and should now pull apart easily. Reassemble the unit with the dog just entering the outer tube and when all is tightened up you can drop the gate post in from the other side.

The gate will now be able to move quite freely to position, but should have enough tension to operate freely with the servo, however, if a loco bumps into it the gate will swing away and can easily be reset once the offending loco has moved on.



We will be providing these 2 magnets in the kits from now on, but should you have bought a kit previously without magnets, I will happily post you a set free of charge.

Note: The magnets will be taped to the back of the pack insert card.

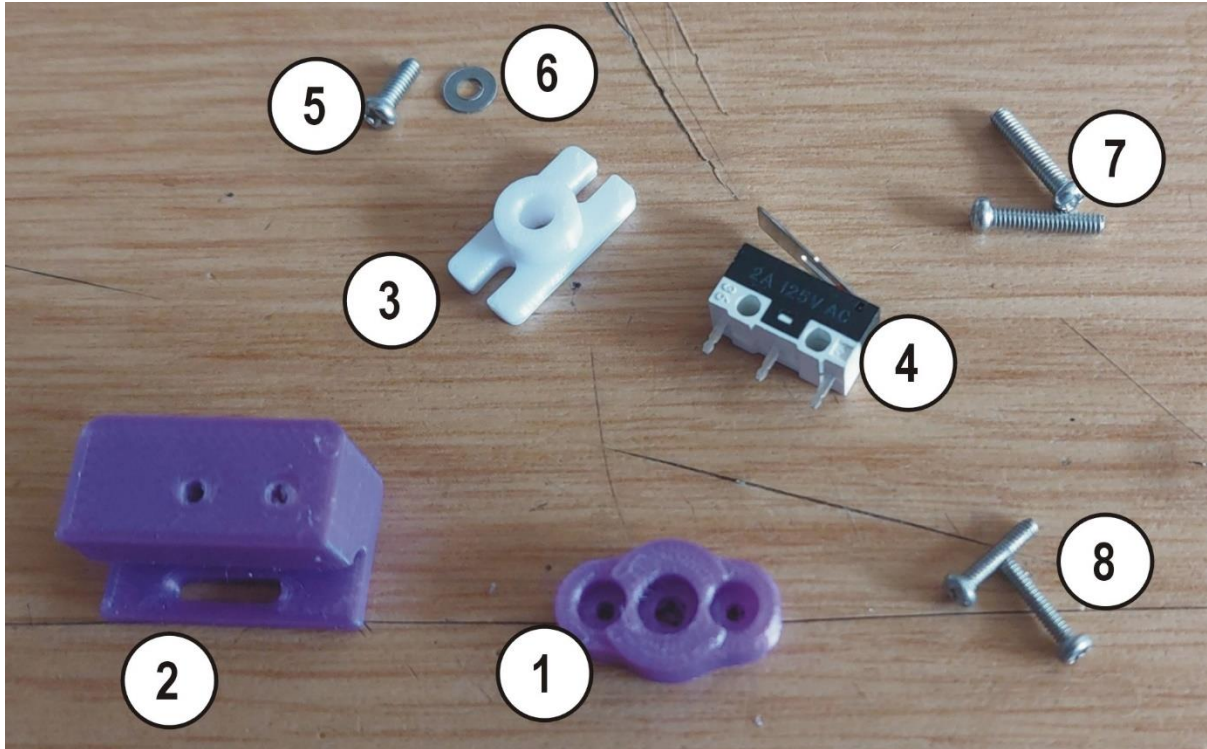
# Dingo Servo Mounts

Crossing Gate Mount Ver "A" Assembly Instructions.

## Adding a Switch *(this will only work with a HobbyKing HK15178 Servo or PowerHD HD1900A)*

The main reason to upgrade this mount to a Ver A was to add the opportunity to add a switch which can be used for feedback from the operation of this mount

Starting with a parts list which is an **additional kit** to add to the standard Crossing Gate Mount.



Part	Description	Qty
1	Drive Boss (Purple for HobbyKing HK15178 Grey for Power HD1900A)	1+ <u>1</u>
2	Switch holder	1
3	Smaller drive dog (May not be required)	1
4	Switch SPDT	1
5	M2 x 6mm Pozi Panhead screw	1
6	M2 Washer	1
7	M2 x 10mm Pozi Panhead Screw	2
8	M1.6 x 8mm Pozi Panhead Screw	2

Begin by screwing the 2 off M1.6mm x 8mm Screws into the Drive boss from the side of the larger holes. Note: Purple for HobbyKing HK15178 Grey for Power HD1900A



This is required to drive the drive dog and the reason for going in from the larger side is to allow the screw head to be concealed.

The holes in the 3D printed part should be right size to allow these screws to self-tap as you insert them.

# Dingo Servo Mounts

## Crossing Gate Mount Ver "A" Assembly Instructions.

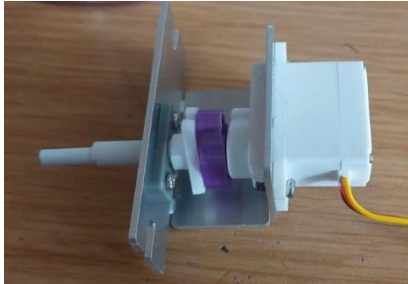


Next centre the servo with a servo tester or other means and then fit the drive boss onto the servo shaft making sure that it is square and not catching anywhere.

Tighten this with the screw supplied with the servo.

(It's always good to just operate the servo with a tester to make sure that it is all clear.

Now fit the servo into the mount having first done whatever you need to do with the drive dog



(See earlier on in this document for info on how to do this.)

If you have already glued the smaller tube to the normally supplied drive dog you may need to cut the wings off this dog so as not to interfere with the switch mechanism.

The 2 screws in the drive boss will engage into the slots on the drive dog.

This must be in place before fitting the servo.

Assemble the switch to the switch holder with the 2 M2 x 10mm screws



You may need to take some time to decide which way you want the switch to operate and fit the switch accordingly.

It can be mounted either way up and fitted to the mount with either of the 2 tapped holes in the mount.

This done to offer a wide range of options.

The switch holder is also slotted to allow for adjustment.

I find it useful to offer up the holder to the mount and find the best possible mounting point. Beware of having the switch positioned such that the cam comes into the switch from the open end of the lever as this could destroy your switch or your servo.



The completed switch unit can now be fitted to the mount with the M2 x 6mm screw and the M2 washer

Adjust it to suit while moving the servo slowly with the servo tester.

The switch should operate when the servo reaches the end of the travel.

Put the mount into service and do final adjustments when the gate is operated by your control board.

You can use the switch for feedback from the gate mount to operate ancillary equipment or provide indicator lights, signals etc.

This could also be used for feedback from a rotating ground signal which could also be operated with this mount

As this is a new design, I always welcome feedback as to its effectiveness

Regards Dave