

Converting the MGL SERVO to a MGL CAPSTAN SERVO.

Parts supplied in kit



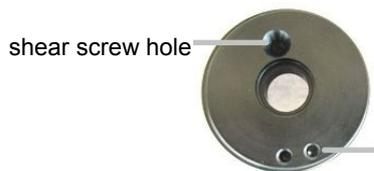
1 x bracket , 1 x bracket clamp, 4 x cap head screws M4 x 8



1 x nut M6, 1 x washer M6 , 1 x drum, 1 x shear screw M3, 2 x grub screws M3x4



4 x cap head screws M3 x 16, 4 x lock nuts M3, 4 x clamping blocks
(two pairs)



shear screw hole

grub screw holes



cable-through-hole

Requirements

1.5mm diameter cable (approx. 1Meter or longer)
permanent thread locker (i.e. Loctite)

This kit is designed to work on
MGL SERVOS



Check MGL SERVO manual for mounting
and wiring information

Capstan Servo rotation range

Bank and Pitch total amount of travel 170° MAX

Yaw total amount of travel 350° MAX

Please Note :

You need to know the installation position of the servo with respect to the control cable you want to control with the capstan servo(example: elevator, aileron). If the capstan servo is

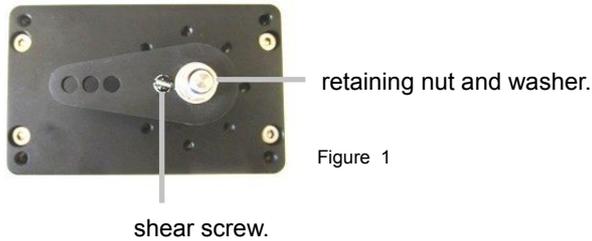
placed to far away from the control cable the capstan servo cable will damage the capstan servo bracket and cable. If the capstan servo is placed too close to the control cable, then damage could result on the control cable. You also need to decide where the capstan servo cable is going to feed in and out with regards to the capstan servo bracket

orientation. Please consider your installation carefully

1

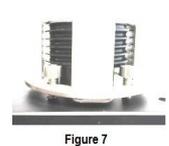
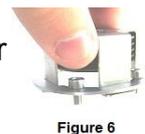
1. Removal of output arm

- 1.1 Remove the retaining nut and washer. Fig.1
- 1.2 Remove the shear screw. Fig 1
- 1.3 Check the collar is clean and free of burrs. Fig 2



2. Assembly of capstan servo parts

- 2.1 Fit clamp and bracket together. Fig 3
- 2.2 Place bracket assembly over collar to check that the key hole on the bracket, lines up with one of the four screw holes on the collar.
- 2.3 Place drum into bracket and clamp assembly. Fig 4
- 2.4 Please note the side with the large recessed round hole in the drum is the bottom and this side will go over the collar where the output arm was secured.
- 2.5 Let the bracket assembly rest on drum while holding the drum in one hand. Fig 5
Place the 4 (4 X 8mm) cap head screw into the slots on the clamp as in Fig 6. Line up the screws with four of the eight holes around the collar on the servo lid. Keep in mind where you lined up the key hole and collar earlier. Fig 7
- 2.6 Turn in the cap head screws a few turns on each screw at a time (to avoid damaging the drum) until the bracket and clamp touch the servo lid.



NB: Please check the alignment of the drum during this process.

The drum should slide on easy.

- 2.7 Turn the drum till you see shear screw hole through the key hole in the bracket.
- 2.8 Turn in the shear screw, but do not tighten this screw yet! Fig 8
- 2.9 Fit the retaining nut and washer. Hold the drum firmly. Turn the nut on



till it tightens, then turn the nut back approximately 1/8th of a turn. Fig 9

2.10 Remove the shear screw. Turn the drum slowly to feel if the drum moves with minimal friction against the collar but has no play (wobble).

2.11 Refit shear screw and adjust the nut (small adjustments only) , then remove the shear screw and check the friction again. Repeat until feels correct. Note that some collars and drums have a tight and a loose section in the drums rotation, in this case you will have to find a happy medium.

NB: When the retaining nut is too tight, causing friction between the drum and the collar, it will require more force to brake the shear screw. When the retaining nut is too loose then it may cause the drum to move (shift) incorrectly, damaging the shear screw and possibly the drum. The shear screw only works when there is minimal friction and no play between the drum and collar.

2.12 Apply a small drop of permanent thread locker (Loctite) to the shear screw (only enough to wet the last 4 threads of the shear screw).

NB: To much permanent thread locker (Loctite) will cause the excess to seep in between the drum and the collar causing the force required to brake the shear screw to increase!

2.13 Using the spanner rotate the drum till you see the two small threaded holes. These threaded holes are for the grub screws that will clamp the cable to the drum. Fig 10



Figure 10

2.14 Rotate drum till one of the grub screw holes are clear enough to turn in one grub screw and then turn the drum again till the other hole is visible.

2.15 Turn in the grub screws (Fig 11) a few turns. Do not turn these grub screws all the way in ,this will stop the cable from going through the cable-through-hole.



Figure 11

3. Fitting the cable



cable-through-hole

Figure 12

3.1 Turn the drum so you can see the cable-through-hole in the centre groove on the side of the drum Fig 12 (shows through-hole)

Align this through-hole across the part of the bracket where the capstan cable will feed in and out. Fig 13 (note through hole is positioned opposite bracket leg)



Figure 13

3.2 Feed the capstan cable through the hole. Fig 13 (cable fed through through-hole)

3.3 Feed the cable in the grooves around the drum till you get through the part of the bracket where the through-hole is lined up. Fig 14



Figure 14

3.4 Repeat the previous step with the other side of the cable, following the grooves in the opposite direction. Fig 15

 NB: If the cable does not fit flush in the grooves all the way round, then you may have skipped one when feeding the cable between the bracket and drum.



Figure 15

3.5 Once cable is threaded through correctly, then feed the cable through until you have an equal or sufficient amount on both sides.

3.6 Turn the grub screws tight, clamping the cable into place so it can't slide. Ref. Fig 10

If you need to remove the capstan servo parts, follow section 2 and 3 in reverse so as to not cause any damage to the parts.

4. Installing the capstan servo.

4.1 The clamping blocks are designed for clamping a 1.5mm capstan servo cable and a 3mm control cable. If a thicker control cable is used in aircraft then file the larger slot on the pair of clamping blocks deeper. **When the pair of clamping block are put together, the larger hole must be 0.5mm smaller than the control cable thickness.**

4.2 Mount the capstan servo in the predetermined location.

4.3 Check that there is no interference with any of the servos moving parts and capstan servo cable.

4.4 Use one pair of the clamping blocks to clamp the capstan servo



Figure 16

cable to the control cable on each end, to be controlled. Take note that the clamping blocks must not be closer than 100mm to the servo. Also make sure that the capstan servo cable is clamped with no slack. A slack cable will not be able to control the intended surface correctly, thus causing wear and could jam up the servo.



Figure 17

4.5 Move the controls from stop to stop to check that the capstan servo parts are moving correctly and that there is no interference through out the controls range.