

# Smooth Stop II

brake valve pat#6,053,192

part # 5340

**BVM**

The Smooth Stop is known for its miserly use of air supply and very proportional application of air pressure to the patented BVM "O"-Ring Brake system.

Designer and patent holder of the Smooth Stop, Steven Ellzey, has made it even better.

The newly designed and now available plunger mechanism reduces the former unit's sensitivity to installation accuracy. Side loads on the new plunger (due to less than perfect installations) are a lot less likely to cause a leak.

Our factory and flight testing signals that Smooth Stop II will be a more "user friendly" product.

## Features:

- Totally proportional operation with the BVM brake system and some other brands.
- No load on the servo at any setting. A mini servo like the JR 341 or 351, Futaba 3101 or 3102, or Airtronics 94555 work best.
- Slender configuration allows the system to fit almost anywhere in your model.
- Light weight: 2-1/2 ounces complete with servo.
- Operates from same air tank as used for the retract system or you can add another air tank to have your brakes completely independent - for increased model safety.

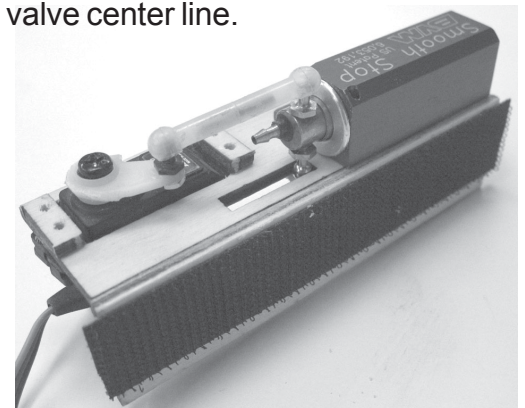
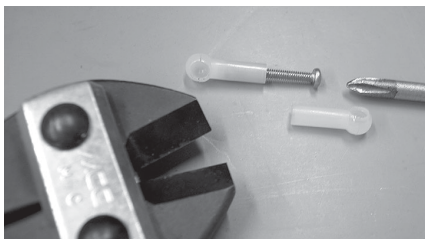
## Assembly: refer to photos below

*Important items:* use a servo arm that provides a .4" radius output. Trim excess plastic from servo arm. Use the plywood frame provided for correct alignment of actuating shaft and the servo arm.

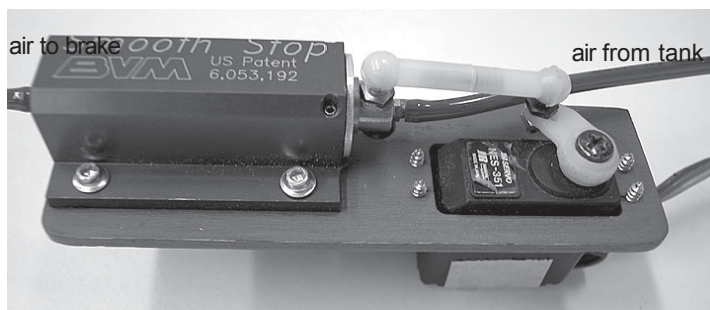
The servo mounts on the bottom of the 1/8" ply board and the valve mounts on the top. It is important to have the height of the servo arm close to the same height of the valve center line.

## Linkage

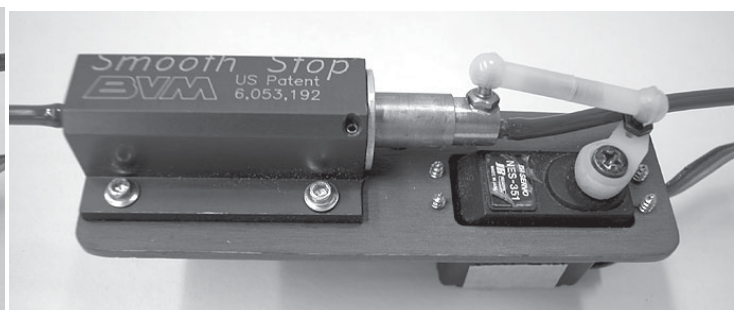
- Use a good phillips head screwdriver to thread the #2-56 bolt completely into one nylon socket link. Cut the head of the bolt off, deburr and then thread on the other nylon socket link as shown below.



The steel ball on the bottom side of the plunger engages the slot in the ply mount to keep the plunger from rotating. This particular mount is held in the mold with adhesive backed velcro.



Brakes off position.



Brakes full on position.

## Valve Travel Adjustment

- Set ATV (in JR transmitter) to 70% in both directions with the plunger in the full in (brakes off position) apply the servo arm to the output shaft.
- Connect the “air-in” tubing (from tank) and “air out” tubing (to wheel brake) as shown. Operate the servo slowly to check for correct direction and total travel.
- Pressurize the system to 100psi. Increase the “brakes on” ATV to 140%. The outer brass sleeve should exit the valve body about 5/8”. In this position, the system will deliver about 85 psi to the wheel brakes.
- Each brake application utilizes 1 to 2 psi of air. Note that when the pressure drops below about 40 psi the brass sleeve releases and the brakes release. This is the minimum serviceable system pressure.
- Use the servo slow feature of your radio to activate the brake operating servo. This allows the pressure compensating feature of the Smooth Stop to catch up thereby putting less stress on the linkage system.

## Operation

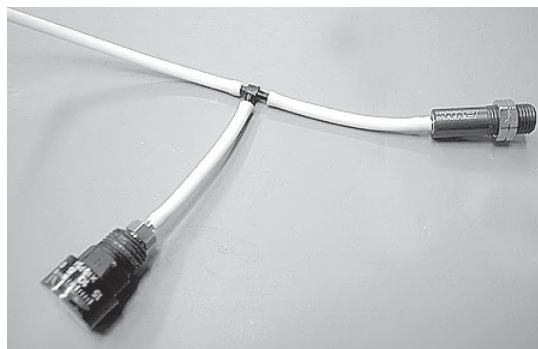
**NOTES:** A separate air storage tank can be used to have the ultimate braking system. The landing gear operation would not be affected by a brake system leak or bleed down.

It is preferable to use a channel on your radio that operates with a slide switch or dial to experience easy and totally “smooth” braking action. We use the Aux 3 channel on the JR 10X transmitter actuating the brakes with the convenient side lever.

For the first flight of the day, especially if the system has not been used in some time, pressurize the tank and cycle the valve numerous times to allow the O-rings to “seat” again. Check your air pump pressure indicator to be certain that the system is not leaking in either brakes on or off position.

Modelers, new to jets, may not have a lot of experience with air systems but as our models get more realistic in function i.e. retractable landing gear, wheel well doors, speed brakes and wheel brakes it is good to know that it is normal to have to exercise and service these systems on a regular basis. Air and hydraulic systems in real aircraft are the same.

A BVM Mini Air Gauge (BVM #2250) Tee'd into the system allows easy monitoring of the brake system pressure.



## Yearly Maintenance

We have been using the valve long enough to know that the O-ring lube should be refreshed about twice a year. Use only Parker Super O-lube (BVM #5779). Apply a small amount to the O-ring (on the piston) but do not allow the small hole to get clogged. If after a few years, the O-ring seems dead, replace it with BVM #5743. Be careful to not scratch the groove. Pinch the ring with your fingers then pry it out of the groove with a wooden toothpick.