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# Sukhoi Su-37 with Thrust Vectoring

The Sukhoi Su-37 Super Flanker created quite a stir when it debuted at the 1996 Farnborough Airshow.

Equipped with a three-axis thrust vectoring system with twin pivoting exhaust nozzles, the Su-37 performed astonishingly aggressive maneuvers including Cobras, tail slides, and many other maneuvers at or below the aircraft's stall speed.

Steve Shumate duplicated the Su-37 complete with a three-axis thrust vectoring system, as an easy-to-build, all-foam park jet. The model features twin electric motors with pusher props attached to pivoting motor mounts to provide the thrust vectoring (TV). To achieve pitch TV (elevator control), both motors pivot up and down simultaneously. For roll TV (aileron control), the two motors pivot up and down in opposite directions. Yaw TV (rudder control), is accomplished with differential throttle control. Functional rudders are optional.

Steve's Su-37 has conventional flight controls (tailerons and rudders), and the



PHOTOS BY STEVE SHUMATE

TV functions are mixed to work with the flight controls. A simple flip of the switch allows Steve to switch the TV system on and off. With the TV system on, Steve's model is amazingly agile and has greatly enhanced slow airspeed control at high angles of attack. According to Steve, the model's best characteristic is that the controls never get mushy. At all airspeeds and attitudes the Su-37's control response remains strong and precise.

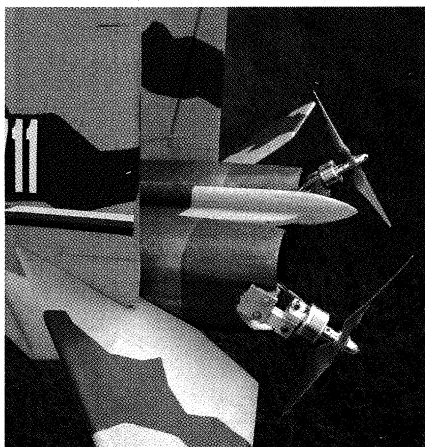
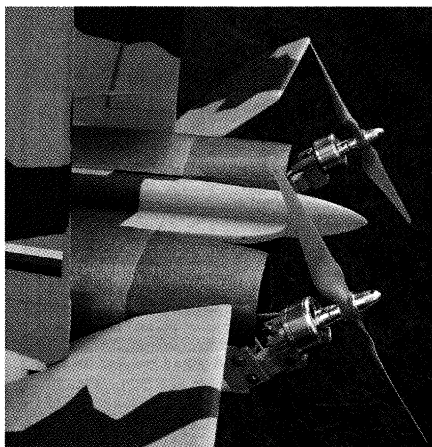
For power, Steve used two LittleScreamers Park Jet motors (available from Hobby Lobby) that are specifically designed for small pusher prop jet mod-

## SPECIFICATIONS

**TYPE** pusher jet  
**WINGSPAN** 30 in.  
**WING AREA** 290 sq. in.  
**LENGTH** 43.2 in.  
**WEIGHT** 24 to 30 oz.  
**WING LOADING** 12 to 15 oz./sq. ft.  
**FLIGHT CONTROLS** tailerons, rudders (optional), three-axis thrust vectoring (optional)

## RECOMMENDED GEAR

**MOTOR** two LittleScreamers Park Jet motors  
**PROP** two APC (counter-rotating) 6x4E props  
**ESCS** two Castle Creations Thunderbird 18  
**SERVOs** three micro Futaba S3110 for the stabilizers and rudder, and two Hitec HS-85MG for the thrust vectoring mechanisms  
**BATTERY** 2100mAh 11.1V LiPo



els. Weighing less than 1 ounce, each motor produces about 185 watts to give the Su-37 a very high power-to-weight ratio. With twin LittleScreamers motors (using counter-rotating propellers to eliminate prop-torque effects), the Su-37 has a top speed of about 80mph and a thrust-to-weight ratio of about 1.7:1. Although the full-size Su-37 has canards to enhance control response at high angles of attack, the model has fixed canards for simplicity and because they really aren't needed.

As with all of Steve's designs, the Su-37 features a simple flat sheet-foam wing and a foam fuselage that's laminated from several flat sheets then carved and sanded to shape. Look for a Homebuilt article featuring Steve's Su-37 Super Flanker in an upcoming issue. For more information, including a flight video, see the online exclusive at backyardflyer.com. ☉