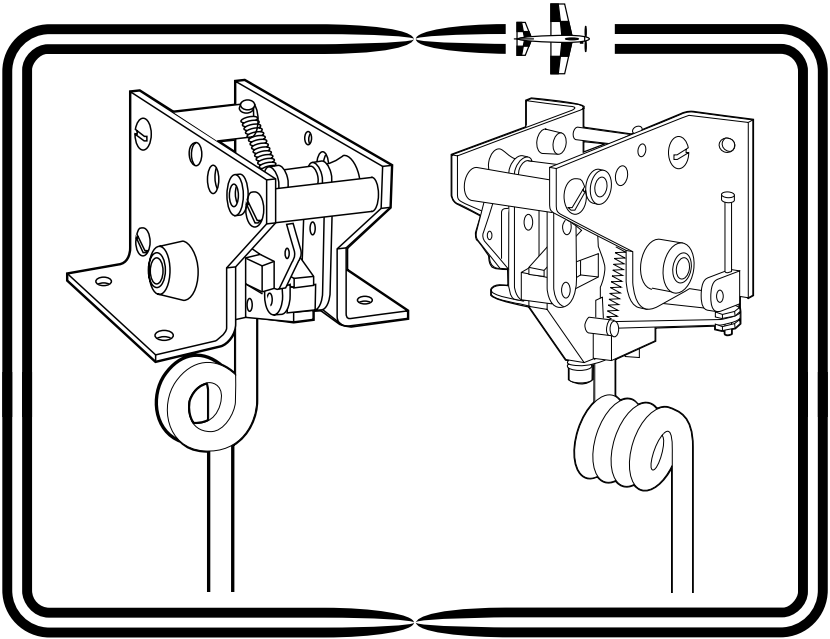


DAVE BROWN PRODUCTS INC.

SOUTHERN-PRO RETRACTABLE LANDING GEAR

INSTALLATION INSTRUCTIONS



The Southern-Pro Retract Landing Gear System is the result of several years of refinement. The units, precision built to aircraft standards, are designed to withstand the high vibration levels experienced in today's high-powered competition airplanes. The gear units themselves are very reliable in performance and if you select a good 180° retract servo to power them, you will have a system that is as reliable as your radio. As one leading flyer put it, "If the radio works, they go up and down. If the radio quits, it really doesn't make much difference!"

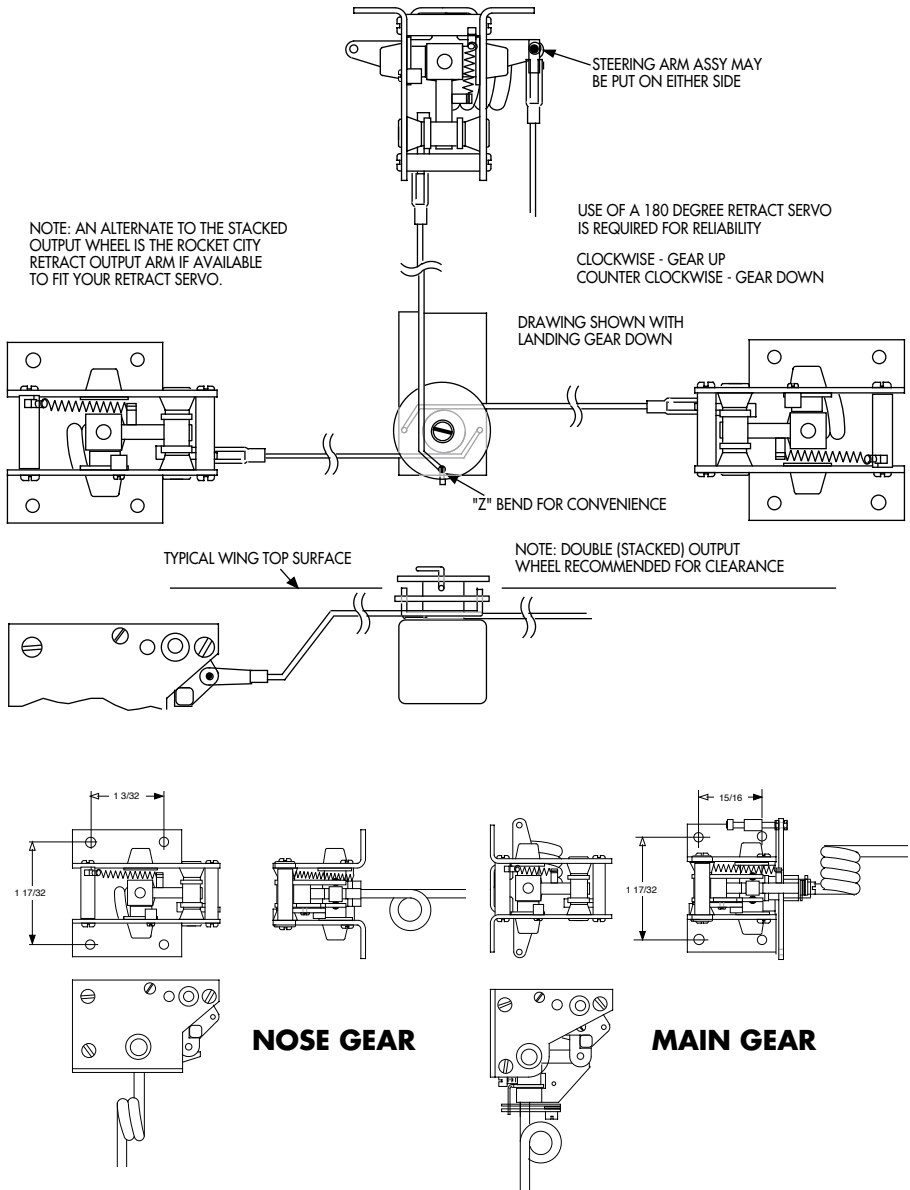
The units are simple and straight forward in operation. Installation is also straight forward and after you have made one or two installations, you will find it just as simple as a fixed gear installation, ever though a little more work is involved. Here are a few hints to assist you through that initial set up:

PREPARATION

1. Install axle shafts on the gear to suit your airplane. We recommend using Carl Goldberg or a similar type of axle shafts. It is usually best to do the main struts first and then the nose strut during final installation to get the correct ground angle. Once this is determined, you should cut off any excess strut length.
NOTE: If you do prefer to bend the struts, do not make the bend on a square-cornered device. The point of bend must be slightly rounded or the strut may break! Bend the main struts first and then the nose strut during final installation. Remove the struts from the gear unit for bending.
2. Re-install the struts and align the axle square with the gear unit. Tighten the set screws to mark the strut, then remove the strut and file a small flat on the strut to maintain alignment. The flats should be $\frac{1}{32}$ " deep by $\frac{1}{8}$ " wide.
3. Install wheel on the axle and adjust counter-balance spring so that strut will swing about 45° when unlocked. Make this adjustment by rotating the spacer with the spring anchor pin up or down slightly as required. Adjust each unit in this manner.
4. If strut length is extra long, you may have to cut a turn or two out of the spring to obtain the proper degree of counter-balance.
5. In order to prevent loosening under vibration, the lock nuts retaining the nose gear steering pin should be soldered to the steering arm.

INSTALLATION

1. The best main gear mounting arrangement we have found is the installation of a $\frac{3}{16}$ " or $\frac{1}{4}$ " plywood plate in the wing. A template for this plate is included.
2. Mount this plate $\frac{1}{16}$ " to $\frac{3}{32}$ " below the surface of the wing.
3. Mount main gear units to the plate with #4 x $\frac{3}{8}$ " sheet metal screws.
4. Do not crowd the gear. Allow $\frac{3}{16}$ " to $\frac{1}{4}$ " clearance between wheel well and tire.
5. Mount the nose gear to the firewall with #4 or #6 machine screws and blind nuts.
6. A 180° servo with $\frac{3}{4}$ " total throw should be used. The typical retract servo on the market today has extra gearing for slower movement and extra torque. This type of servo will work just fine.
7. If pushrods line up satisfactorily, then the 3 gear unit can be operated from 1 servo.
8. Use a direct pushrod hook-up. Do not allow pushrods to rub against the airplane structure.
9. Check to be sure the clevis you use on the pushrods will clear the working parts of the gear in the retracted position. We have found the mini-nylon clevis ideal.
10. During final check-out, adjust the clevis so that the locking bellcrank just touches the stops in both the up and down position. Make this adjustment at each gear unit.
11. The nose wheel steering is designed to use about $\frac{3}{16}$ " pushrod travel. This is the throw you normally get when using the inner hole of a typical rotary output disc or arm. If your servo does not provide for rotary output, then a simple reducing bellcrank arrangement mounted against the side of the fuselage can be used to reduce throw.
12. For extended nose gear life, cement a soft foam rubber pad in the wheel well to provide a cushion for the wheel in the retracted position.



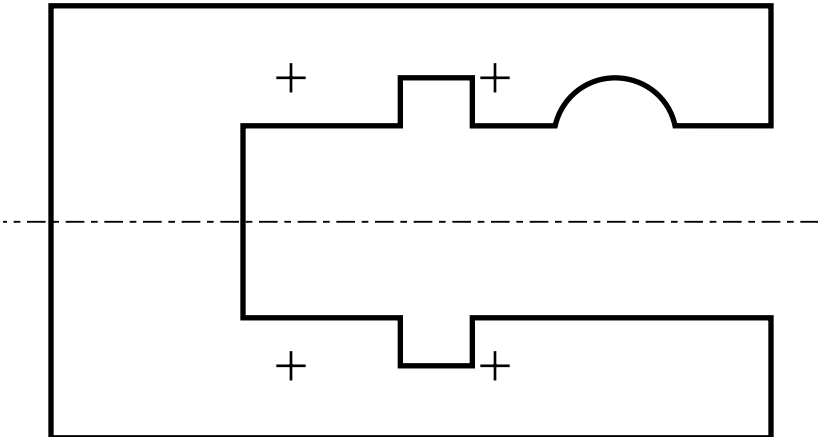
MAINTENANCE

1. The Southern-Pro landing gear is designed to operate without lubrication.
2. Remove gear occasionally and wash in tri-clean or methanol. Re-install dry. A dry gear accumulates less grit and dirt.
3. Check strut alignment frequently.
4. If the retract mechanism must be dis-assembled for part replacement, all screws should be installed with loctite to prevent their loosening under vibration.

PARTS LIST

<u>Item</u>	<u>Old Part No.</u>	<u>New Part No.</u>	<u>Price</u>
1. Nose gear block assembly	GP-12 & GP-2	ALNSBLK	\$9.50
2. Nose gear side bracket assembly - LH	GP-11-LH	STNSSPL	4.00
3. Nose gear side bracket assembly - RH	GP-11-RH	STNSSPR	4.00
4. Locking bellcrank assembly	GP-13-16	STBCSID	4.50
5. Actuator connector	GP-8	MPACTCN	.75
6. Spacer bracket	GP-3	STSPBKT	2.00
7. Spacer pin with spring anchor	GP-4A		1.50
8. Spacer pin, plain	GP-4		1.00
9. Stop pin	GP-5		1.00
10. Block spacer	GP-6	<i>(No longer used)</i>	1.00
11. Steering arm assembly	GP-21	STSTARM	5.00
12. Centering spring	GP-7	HSPCTRG	1.00
13. Steering connector	GP-20	MPSTCON	.75
14. Nose gear counter-balance spring		HSP016S	1.00
15. Nose gear strut	GP-22	WISTRTN	2.50
16. Main gear block assembly	GP-1-2	ALMNBLK	8.00
17. Main gear side bracket assembly - LH	GP-17-LH	STMNSPL	4.00
18. Main gear side bracket assembly - RH	GP-17-RH	STMNSPR	4.00
19. Main gear counter-balance spring		HSP016L	1.00
20. Main gear strut - RH	GP-23	WISTRTR	2.50
21. Main gear strut - LH	GP-24	WISTRTL	2.50
22. Cover plate, each	GP-25	STCOVER	1.25
23. Replacement screw set per unit		RPSCREW	1.25

TEMPLATE FOR MAIN GEAR MOUNTING PLATE MAKE FROM 3/8" OR 1/4" PLYWOOD



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