



7865 Mill Road
Elkins Park, PA 19027 USA
Tel. 215 635 6520 FAX 215 635 4951

PHOENIX Hobby Products

Installation Instruction Sheet Tricycle Landing Gear

General

This kit contains all the hardware and hinges needed to operate the retract doors on model aircraft. It does NOT include the retract mechanism, wheels, or wheel retainers, doors or glue. The retract system and wheels must be mounted in place and should be in operation before attempting to mount doors. If the surface is rough and you use epoxy glue, drill several 1/16"-5/64" holes in the hinge mounting surfaces so the epoxy can come thru and will hold like rivets. The anaerobic glue will hold the pin to the hinge arm. Stop blocks must be used on all doors to keep them from going into the wheel wells too far. Clearance of 1/16"-1/8" should be kept around doors and wheel wells to prevent binding when opening and closing. Although complete instructions are supplied, the builder should be experienced with retract wheels and systems. Use the diagrams to help guide you thru the installation.

NOSE GEAR DOORS

Be sure to cut door opening wide enough for the leg of the landing gear to clear the edge of the opening by 1/4". On the inside surface of the fuselage skin, 9/16"-5/8" back from the edge and parallel to the opening edge, mount a 1/16" straight balsa strip whatever width that is convenient. The hinge base will be using this strip as a mounting guide. **ALIGNMENT** of the hinge pins is necessary for freely operating doors. One way to keep the hinge pins aligned is to tack glue a 3/32" straight piece of balsa to the arms on a flat surface the correct distance apart. Then place the base of the hinges against the guide strip and glue in place. If the surface is curved, use epoxy. Mount one hinge with small torsion spring on one side against the guide strip approximately 1/4" past the axle of the nose wheel toward the retract mechanism when retracted. Mount the other torsion spring hinge on the other side across from the first hinge. Mount the two plain hinges approximately 1" from the end of the retract opening in line with the first two hinges and against the guide strip of balsa. It is **NOT** recommended to remove the hinge pin, as the torsion spring is difficult to install correctly. The arms of the hinges must pass the retract well edge for the doors to operate correctly. They should operate by hand correctly at this time. The spring on the one hinge should be holding the hinge in the open position. Make sure the door would open and close properly, and then remove the scrap balsa on the arms. Mount your doors on the hinges. Again, check for freedom of movement of the door. Both doors should want to stay open! Install the wavy wire in the spring hinges with a hole in them. The slight bend in the straight section of the wire form should keep the wire form away from the doors when the wire form is in a U form inside the wheel well. Install the short pin into the bulkhead closest to the wheel (when retracted) and on the side away from the wheel. Form a loop of monofilament to fit over the wavy wire and reach the short pin just installed. This monofilament will keep the wire from causing the wheel to rotate and then drop the wire. As the tire contacts the wavy wire, it will cause the doors to start closed. Rotate the gear by hand and make sure the doors close when retracted all the way. If the doors remain partially open, extend the gear and close the bends on the wavy wire slightly to shorten the wire form. Then retry closing the doors. If the doors close on the tire, open the bends slightly to lengthen the wavy wire. **CAUTION!** Make sure the tire is not holding the doors from closing completely. Again, check for free movement. The doors must snap open and want to stay open.

MAIN GEAR DOORS
(Large and small door on each main gear)
LARGE DOOR

The large door is made from a paper (or cardboard) pattern you make by drawing and cutting to shape and fitting into the wheel well. It is recommended you use plywood (1/16") for the large doors, or reinforced balsa, with ribs or coating. Cut the bottom edge of large door so the angle of the edge is parallel with the ground when the plane is at rest and not below the hub of your wheel. It may be higher from the ground, but should not be above the axle of your wheel, unless the actual airplane was so built. The large door is then connected to the main gear via two clamps to the music wire gear with four (4) self-tapping screws.

SMALL DOOR OF MAIN GEAR

If the wing has not been completed, the assembly may be done directly on the inside of the wing skin without the additional 1/16" balsa sheet. On a piece of 1/16" balsa mount one of the SUPER HIDDEN HINGES with the hinge pin 1/4" from the edge, and maintaining the 1/8" space between the bases. Directly behind and against the bases on the centerline of the space between the two hinge bases, mount the spring mounting post, with the post away from the hinges. Slip an extension spring over the post and glue the cap on the post. Cut the balsa off behind the post base and make another assembly with the other SUPER HIDDEN HINGE and spring post. Cut the hinge pin in the middle of the space between bases and bend ends to keep the pins from coming out (a small drop of glue on end of pin may do it). The hinges must be free to work at this point.

In the wheel well make room for the assembly to mount to the inside of bottom wing skin. Wing skin must be solid for this assembly. The hinge pin must be located not more than 5/8" from main wheel tire surface when in retracted position and 1/4" from the edge of well. Adjust location of assembly to center on portion of wheel well left by large door. The hinge arm must be able to move into a vertical position in relation to wing surface. If there is 3/32" wing skin, taper the balsa base of the assembly to no thickness at the hinge pin and full thickness under the spring mounting post. Put epoxy glue on the bottom of the assembly base and place into position. Use a bent wire or tool to move it into position and hold wing in horizontal position to keep assembly from moving. After the glue dries, mark the outside of wheel well where the main door ends. With the gear in extended position, place stops for the small door so it will always stop flush with the wing surface. Glue them in place. Tape or pin the small door into position, aligning with the marks on the outside of wheel well. Place some epoxy glue on the inside of the small door; push hinge arms into the epoxy without disturbing the door and let set. After glue is set, remove pins or tape. Door must move freely and open fully at this time. If not, clear obstacles and/or binding. Reglue door to be sure it is solid. With the monofilament supplied, make two loops approximately 9/16" long. Knot the ends securely, and place a drop of anaerobic glue on knots. Hook one end of loop to the spring on the post and push a bent pin thru the hole in arm of hinge and pass pin thru loop before going in the other arm. Bend point end over to keep pin from sliding out the arms. The spring should be stretched to approximately 3/4" length. Cut the balsa skin away where the monofilament hits until clear. The door will now stay open or closed. Make sure your stops are solid, for the snap action of the door will jar them. Take a pin, cut off the head and bend a small 90-degree bend in the cut end. Cut off the sharp point but leave the taper. Insert tapered end into the mounting hole in arm of hinge and align bend away from tire, and anaerobic glue. After set, move small door open, close the main gear by hand and see if the arm has to be bent to close the door more quickly or slower. Adjust the pin as needed.

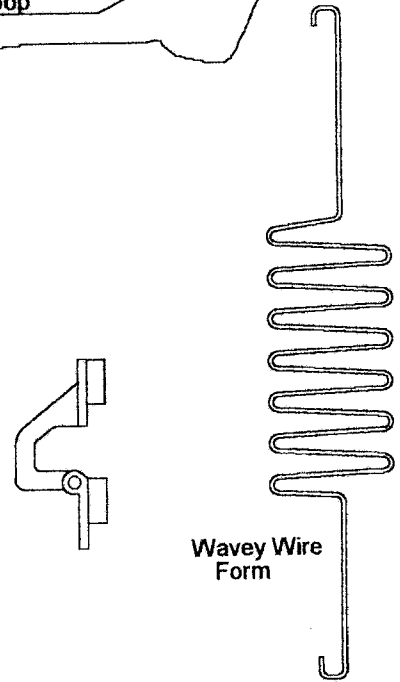
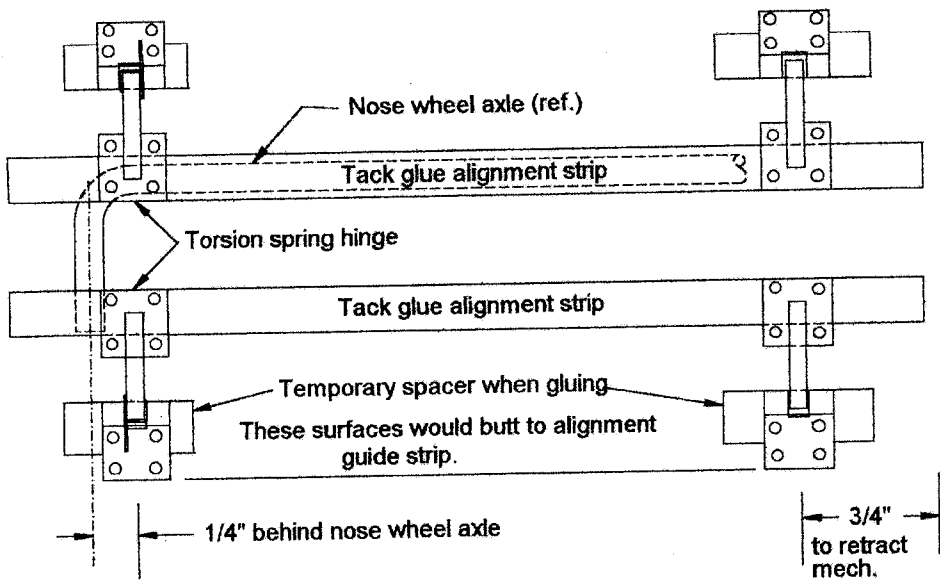
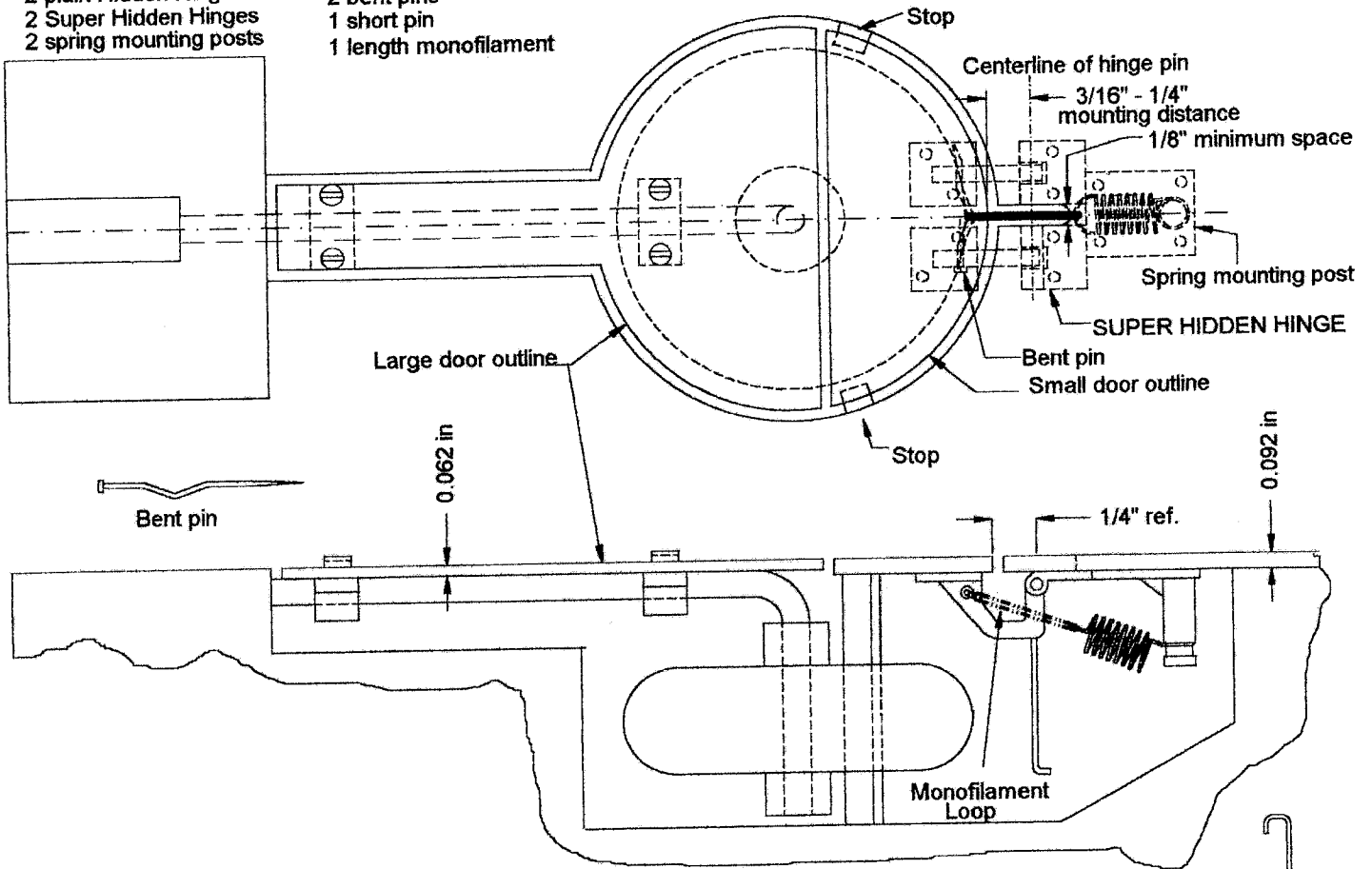
Repeat the above operations for the other main gear if not done. You should have fully operational doors on all wheels. Smooth flying.

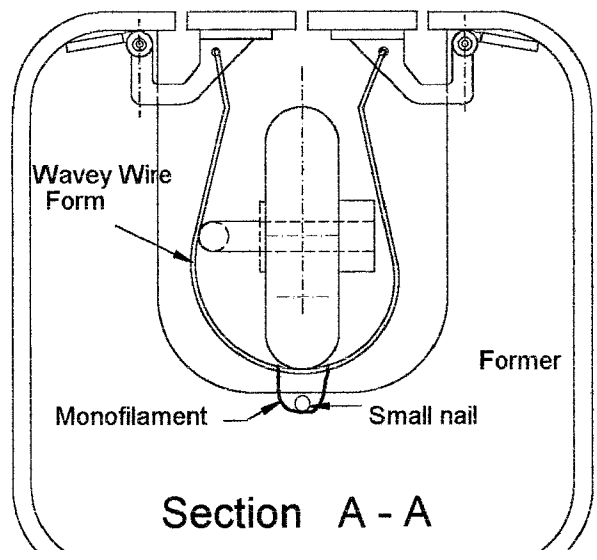
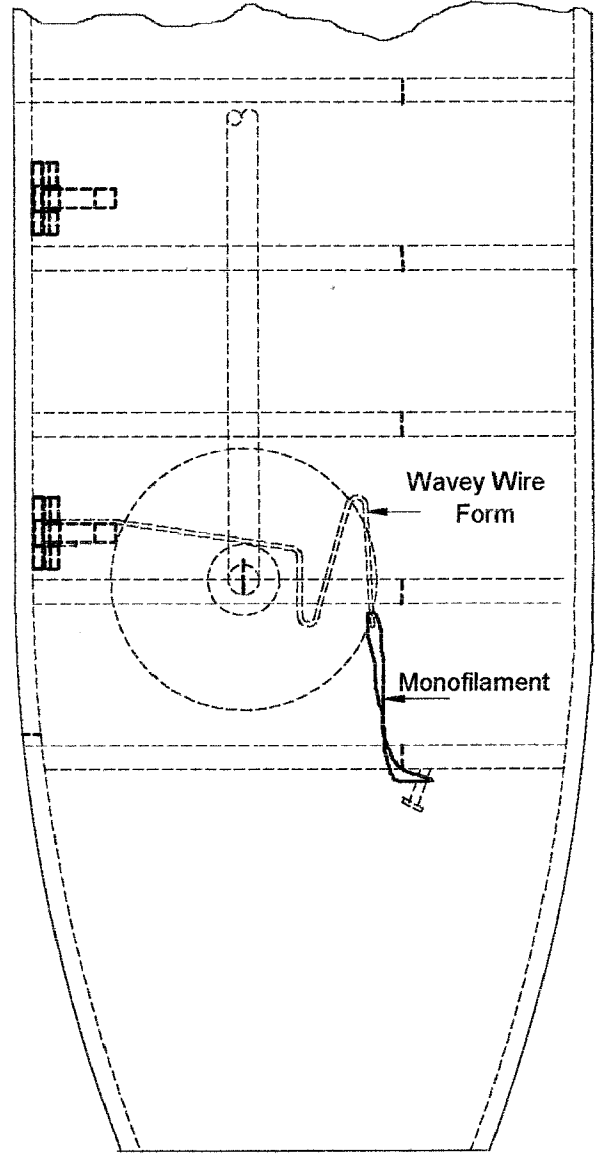
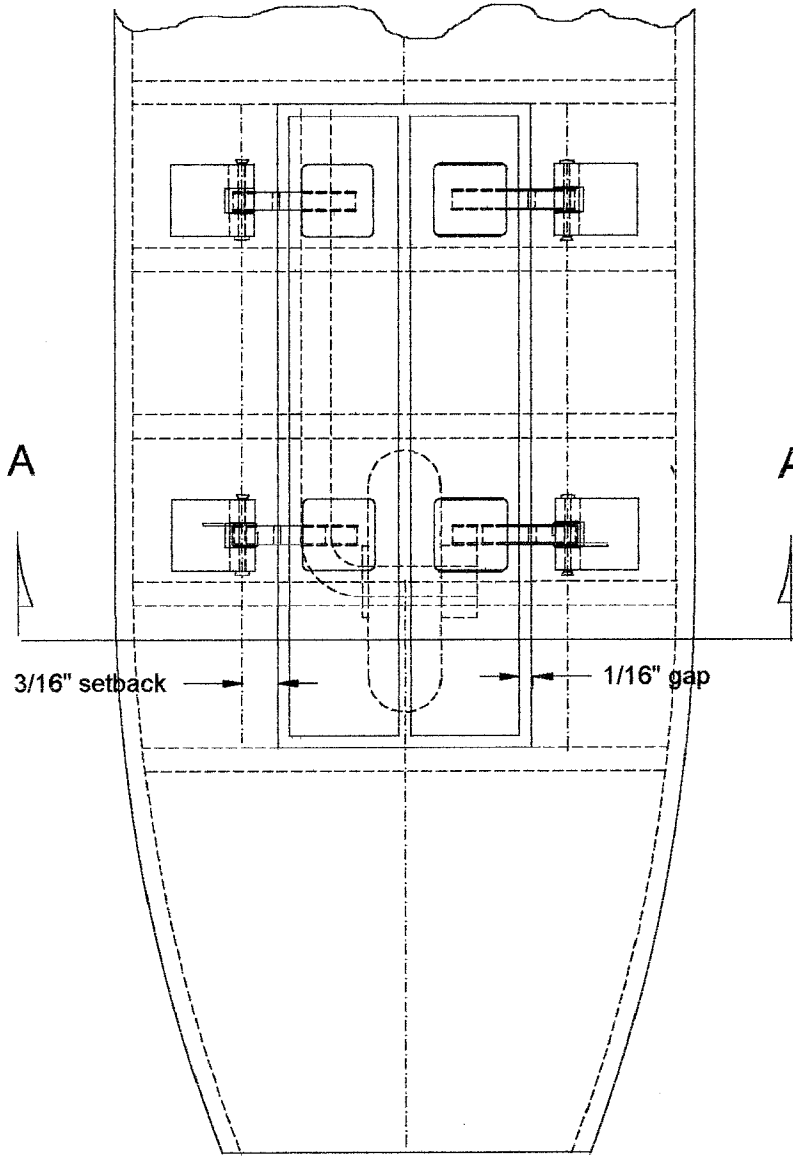
PHOENIX Hobby Products

Drawing No. 1

PARTS LIST

- | | |
|-------------------------|-----------------------|
| 4 landing gear clamps | 8 straight pins |
| 2 extension springs | 8 self-tapping screws |
| 2 torsion spring hinges | 1 wavy wire form |
| 2 plain Hidden Hinges | 2 bent pins |
| 2 Super Hidden Hinges | 1 short pin |
| 2 spring mounting posts | 1 length monofilament |





PHOENIX Hobby Products

Drawing No. 2