

**SUPPLEMENT to the  
SZD-51-1 "JUNIOR" GLIDER  
FLIGHT MANUAL**

**Instructions for Trailering, Assembling,  
and Disassembling the Glider**

**Prepared by the Minnesota Soaring Club**

## TABLE OF CONTENTS

<b>Preface .....</b>	<b>i</b>
<b>Prior to leaving the airport with the trailer .....</b>	<b>1</b>
<b>Disassembling the Junior and Putting it in the Trailer .....</b>	<b>3</b>
<b>Assembly .....</b>	<b>7</b>
<b>CHECKLIST: Before leaving airport with trailer.....</b>	<b>11</b>
<b>CHECKLIST: Disassemble and put into trailer .....</b>	<b>12</b>
<b>CHECKLIST: Assembly .....</b>	<b>13</b>

## Preface

This supplement was originally prepared by Kathleen Winters, Dave Klatt, Jim Hard, and Red Haines, after practicing disassembling the glider, putting the glider into the trailer, and assembling the glider. Other club members have contributed comments; one major comment that is recognized as constituting a significant improvement is addition of photos or drawings rather than referring to those in the Glider Flight Manual.

The purpose of this supplement is to guide club members in learning and becoming proficient in the disassembly, assembly, and trailering operations. For that purpose, it is written in greater detail than the Glider Flight Manual. In event of a conflict between this supplement and the Flight Manual, the Flight Manual shall be accepted as the authority.

Checklists are provided for use by those who have learned and become proficient in the subject operations. Those checklists are brief and are intended only to assure that all essential operations are completed and that all parts and accessories are accounted for. The checklists are included in this supplement and are provided in plastic laminations for field application.

Members performing these operations should use those checklists each and every time they perform these operations, for safety and to prevent loss of or damage to the Club's equipment.

The master of this supplement is a digital document maintained by Red. Please forward comments, including identified errors, recommendations for improving it, and any material you may offer, such as illustrations, to him or to the Director of Operations for incorporation into future revisions.

### **Prior to leaving the airport with the trailer**

1. Get three keys for the trailer (left padlock key, right padlock key, and front door key).
2. Open the front door, get the jack handle (one with the socket at the end) from the tool box in the front of the trailer, and raise the jack at the rear of the trailer.
3. Disconnect the chains holding the trailer wheels to stakes.
4. Hitch the trailer to the tow vehicle.
  - A. Park the tow vehicle to conveniently hitch the trailer where you can drive them away while clearing the stakes and any other obstacles.
  - B. Release the hand brake and remove any chocks blocking the wheels.
  - C. Turn the trailer and hitch it to the tow vehicle. One person can easily lift the tongue. If it is on smooth, hard, level surface, one person can easily turn it. It may take two persons to move it forward or backward.
  - D. Lift the hitch handle and pull it forward to unlatch the hitch.

### **CAUTION: This trailer needs a 2 inch ball hitch.**

- E. Place the hitch over the 2" ball on the tow vehicle, engage the ball, and latch the hitch. Check security of the hitch. Connect the safety chains and the trailer hand brake cable to the tow vehicle. Assure that the hand brake is completely released. Connect the light cable and check that all lights function. Raise the tongue dolly.

**NOTE:** The tongue dolly wheel will fall off if it is overextended. Put it back on and turn the handle to re-engage the threads and raise it.

5. Before leaving Stanton Airport, check the following:
  - A. Hitch is secure
  - B. Safety chains are fastened to the tow vehicle
  - C. Brake safety cable is fastened to the tow vehicle
  - D. Brake is completely released.
  - E. Trailer lights function.
  - F. Wing support horse is in the trailer
  - G. Fuselage dolly is in the trailer.
  - H. Tail dolly is in the trailer.
  - I. Fuselage dolly track is in the trailer.
  - J. The tool box contains the following items:
    - a. Wing lever
    - b. Two jack handles
    - c. Two fuselage dolly lock clips
    - d. Ground tow rope
    - e. Four short plastic tubes to put over the fuselage alignment pins
    - f. Cloth to wrap and secure the spar bolt
    - g. Two weights for holding wings on the wing support horse or on the ground
    - h. One zip-lock bag containing tire stem adapters
    - i. One tool pouch containing 2 brake wrenches, pliers, and screwdriver
    - j. One foam pad to place between the fuselage and fuselage restraining strap.
    - k. Two bungee cords.
    - l. Two aileron gust locks.

## Dis-assembling the Junior and Putting it in the Trailer

**NOTE:** Two people can disassemble and assemble this glider if one is strong enough and tall enough to handle the wing root and the other is able to comfortably hold the wing tip for a few minutes while the first aligns the pins and control links. It is better to employ three persons when possible.

1. Park the trailer and glider near each other with the glider positioned to go into the trailer. Align them facing the wind to minimize the possibilities that the wind will push the glider around, blow it over (either before or after the wings are off), or slam its control surfaces against the stops. There must be room on each side to pull the wings away from the glider. Choose an area to minimize getting dirt into bearings and onto fittings and to minimize damage to the surfaces if you must place either the wings or the horizontal stabilizer and elevator assembly on the ground.

Assure that there are pads on the ground ready to receive the wings and tail in case you must place either on the ground.

2. Lower the jack at the tail of the trailer so the trailer remains steady.
3. Place the fuselage dolly track in place on the trailer, making sure the pins on the track engage the sockets on the trailer.
4. Put the dolly retainer clips in the holes in the track.
5. Put the fuselage dolly on the track, behind the retainer clips. The strap should point rearward.
6. Place the glider in position, ready to go onto the fuselage dolly, and remove the tail dolly from the glider.
7. Remove the tail and secure it in the trailer, while there is room in the trailer.

**CAUTION:** Don't push on the trailing edges of the ailerons. It is OK to pull the wing tips forward, pull on the shoulder harness, or pull on the cockpit combing.

**NOTE:** Have two pads ready to receive it in case it is necessary to place it on the ground (upside down, with protruding parts on top).

- A. Remove the safety pin (item 6, safety pin, in figure 6) from the tail retaining bolt (item 5, bolt, figure 6).
- B. While one person holds the horizontal stabilizer assembly, the other must use a tool, a small pin or Phillips screwdriver (same as item 14 in assembly section) in the hole in the retaining pin to gently twist the retaining pin back and forth while pulling it forward out of the assembly. Place the safety pin back into the retaining pin and put the pin where it will not collect dirt (wrap it in a clean cloth).

- C. Lift up the elevator while two people raise the assembly from the vertical stabilizer. If you must set it down, place it on pads with protruding parts up to prevent damage. Carry it into the trailer and secure it to the trailer top in the straps provided. Clean the retaining bolt and put it back into the vertical stabilizer (item 2, figure 6). The double drilled hole goes up! Install the safety pin so the bolt can't come out.
8. Pull the fuselage onto the fuselage dolly (with the fuselage dolly on the track and the track engaged to the trailer) until the landing gear almost touches the dolly.
  9. Place the wing support horse from the trailer under one wing and place the rubberized weight on that wing to prevent the glider from tipping.
  10. Remove loose items from the cockpit and baggage compartment.
  11. Remove the wings and secure them in the trailer. See figure 5.

**CAUTION: Although 2 persons can remove the wings if they are tall enough and strong enough, it is better to have three people to perform this task.**

**CAUTION: Have pads in place to protect the wings in case it is necessary to place them on the ground.**

- A. Install aileron gust locks. There is a hole in the right wing aileron horn fairing to accept the bungee hooks. On the left, hook to the horn arm.
- B. Remove the safety pin, item 9 in figure 5.
- C. Lift the retainer-handle (unlabeled in the figure, it's the handle the safety pin was in) that retains the spar bolt (item 7, bolt) to disengage it from the fuselage.
- D. While one person lifts and gently manipulates the wing tip to relieve force on the spar bolt, use the retainer-handle to gently twist and pull the spar bolt forward and out of the spars.
- D. Place the safety pin back in the retainer-handle, wrap the parts in a clean cloth, and place them in the tool box in the trailer.
- F. While one person gently lifts the wing tip and pulls the wing 3-4 inches away from the fuselage, the other person stands in front of the wing at the root, ready to steady it to prevent rotation and ready to lift it from each side (front and back) of the spar as the wing moves away from the fuselage. If a third person is available, that person stands at the rear of the wing root ready to support the rear while another stands at the front of the wing root ready to support the front. It is much easier to handle a wing with three persons!

**CAUTION: If the wing and spar drop as they clear the fuselage, the spar or the alignment pin on the end of the spar may damage the fuselage. Don't let the wing root drop!**

**CAUTION: The alignment pins protruding from the end of each spar can damage the fuselage side unless care is taken to keep them away from the fuselage.**

- G. Carry the wing away from the fuselage and to the trailer. Place the spar on the wing dolly with the leading edge of the wing down, right wing on right side of trailer, left wing on left side, push it all the way into the trailer, and rest it on the pad provided in the trailer.
  - H. While one person supports the other wing's tip, another removes the weight and the horse supporting that wing. Remove that wing and place it in the trailer as in F and G above.
  - I. Place the four short plastic tubes over the wing alignment pins (figure 5, item 2) on the fuselage to prevent them from damaging the wings as the fuselage goes into the trailer.
12. Route the fuselage dolly strap through the wing spar socket of the fuselage and into its buckle. Pull it snug, but no gorilla tactics.
13. Latch the canopy and close the canopy vent to keep out dirt and dust.
14. Double check that the tail retaining bolt and safety pin are in place and are secure in the fuselage.
15. Assure that the fuselage restraining strap in the trailer is extended to its maximum length and pulled toward the rear of the trailer. Pull the fuselage dolly retaining pins from the track, put them in the tool box, and push the fuselage into the trailer.
16. Raise the fuselage restraining strap over the rudder and stabilizer. Place the foam pad under the strap on top of the fuselage just in front of the stabilizer and pull the strap snug.
17. Secure all tools and accessories in the trailer.
- A. Put the dolly ramp into the trailer at the rear and assure that it engages the hold-downs on the trailer floor at the front of the ramp.
  - B. Place the wing support horse on top of the ramp, with the pads down. Secure it with two bungee cords.
  - C. Place the tail dolly in the front of the trailer and secure with cord or bungee.
  - D. Pick up all other tools and accessories and put them in the tool box.
  - E. Inventory the tool box:
    - a. Wing lever
    - b. Two jack handles
    - c. Two fuselage dolly lock clips
    - d. Ground tow rope
    - e. Spar bolt and handle assembly, wrapped in cloth

- f. Two weights for holding wings on the ground
  - g. One zip-lock bag containing tire stem adapters
  - h. One tool pouch containing 2 brake wrenches, pliers, and screwdriver
  - i. Tube of grease
- F. General trailer inventory and security check:
- a. Four short plastic tubes over the fuselage alignment pins
  - b. One foam pad between the fuselage and fuselage restraining strap.
  - c. Two aileron gust locks on the ailerons.
  - d. Fuselage dolly track
  - e. Wing support horse
  - f. Tail dolly
18. Close the trailer carefully and lock both rear latches and the front door.

## Assembly

Assembly requires two tools: the wing assembly lever and a small rod to push in the tail retaining bolt (#1 Phillips screwdriver or the screwdriver in the tool pouch in the trailer tool box will serve).

**NOTE:** Two people can dis-assemble and assemble this glider if one is strong enough and tall enough to handle the wing root and the other is able to comfortably hold the wing tip for a few minutes while the first aligns the pins and control links. It is better to employ three persons when possible to minimize the risks of personal injury and glider damage.

**NOTE:** Maintain a light coat of grease on mating metal parts, especially spar and elevator bolts. Scrupulously clean them to remove accumulated dirt before assembly.

The order of assembly is:

1. Unlock and open the trailer. Remove the wing support horse and the pads that will be put in place to receive a wing or tail in case it becomes necessary to put them on the ground.
2. Lower the jack under the tail of the trailer to steady the trailer.
3. Place the dolly ramp in place on the trailer, making sure both pins that lock it to the trailer are engaged.
4. Release the strap at the rear of the fuselage and remove the fuselage from the trailer on the dolly.
5. Set up the horse near one wing tip position, to be put in place after the wing is mated to the fuselage, and place the rubberized weight near the horse.
6. Confirm that the air brake handle is forward and the stick is neutral. Remove one wing from the trailer and insert its spar into the spar socket of the fuselage. One person carries the wing tip and the other (two other people are better) carries the wing root. The person(s) at the root grasps the wing with one hand in front of the spar (item 1 in figure 5) and the other hand behind the spar and gently place the spar in the fuselage socket.

**CAUTION: If the wing and spar drop as they clear the fuselage, the spar or the alignment pin on the end of the spar may damage the fuselage. Don't let the wing root drop!**

**CAUTION: The alignment pins protruding from the end of each spar can damage the fuselage side unless care is taken to keep them away from the fuselage.**

The person at the root assures that the aligning pins protruding from the fuselage (item 2 in figure 5) are engaging the sockets in the wing (item 4 in the figure) and guides the

wing while the person at the tip holds the aileron neutral, assures the air brake is closed, and gently pushes the wing into place. The person at the root should direct the person at the tip to move wing tip forward or back for alignment. The person at the tip must gently raise and lower the tip to secure alignment and push to seat the alignment pins and control linkages. The person at the root may have to move the stick and dive brake handle to align the control linkages. When that wing is engaged, the person working at the root must go place the horse under that wing tip and place a weight on the wing.

7. Repeat the process to install the other wing (don't forget to confirm that the air brake handle is forward and the stick is neutral). It must engage two alignment pins protruding from the fuselage and one alignment pin protruding from the first wing's spar (item 3 in the figure).

8. While one person looks to assure that both wings remain in place and confirms the control linkages remain engaged (by moving the controls), the other person should use the wing assembly lever (item 5 in figure 5) to pull the wings into alignment with the retaining pin hole and install the wing retaining pin (item 7). Put the assembly lever on the pins protruding above the spars and pry gently while pushing on the retaining pin. Return the assembly lever to the tool box!

9. Put the retaining pin retainer into the socket in the fuselage and install its safety pin.

10. Remove the aileron locks; wrap the bungee cords that secured them around the locks and the foam pad from under the fuselage strap and place them in the tool box.

11. Recheck correct control operation.

12. Before attempting to install the tail, confirm that the trim control is fully forward.

13. Two people remove the horizontal stabilizer assembly (item 1 in figure 6) from the trailer, confirm there is no dirt on the rollers (item 3), and lift the assembly into place above the vertical stabilizer (item 2). One lifts the elevator to its full up position and guides everything into place. Lower the elevator to permit the assembly to drop into position.

14. Use the tool, a small pin or Phillips screwdriver, to push the retaining bolt (item 5) into place, with the double drilled hole up. Align the safety pin hole and install the safety pin (item 6).

15. Install the tail dolly.

**Perform a positive control check and record assembly in the log book.**

16. Place the fuselage dolly track in the trailer, with its legs engage the hold-downs.

17. Place the wing support horse on top of the dolly track, pads down, and secure it with two bungee cords.
18. Wrap the aileron locks and the foam pad from under the fuselage strap in the aileron lock bungees and place them in the tool box in the trailer.
19. Place the wing lever and the tool used to install the tail retaining bolt in the tool box.
20. Place both weights in the tool box.
21. Secure the straps that hold the tail and fuselage in the trailer.

22. Inventory the trailer.
  - A. Wing support horse is in the trailer
  - B. Fuselage dolly is in the trailer.
  - C. Fuselage dolly track is in the trailer.
  - D. The tool box contains the following items:
    - a. Wing lever
    - b. Two jack handles
    - c. Two fuselage dolly lock clips
    - d. Ground tow rope
    - e. Four short plastic tubes to put over the fuselage alignment pins
    - f. Cloth to wrap and secure the spar bolt
    - g. Two weights for holding wings on the wing support horse or on the ground
    - h. One zip-lock bag containing tire stem adapters
    - i. One tool pouch containing 2 brake wrenches, pliers, and screwdriver
    - j. One foam pad to place between the fuselage and fuselage restraining strap.
    - k. Two bungee cords.
    - l. Two aileron gust locks.
23. Close the trailer and lock both latches and the front door.
24. Park the trailer where it belongs and secure it with wheel chains and tongue chain.
25. Lower the jack at the tail to prevent wind from tipping it and blowing it around.
26. **Return the keys to the office!**

**CHECKLIST: Before leaving airport with trailer**

- 1. Hitch on proper size ball, locked and safetied**
- 2. Safety chains secured**
- 3. Safety brake cable attached to tow vehicle**
- 4. Hand brake released**
- 4. Trailer lights working**
- 5. Wing support horse is in the trailer**
- 6. Fuselage dolly is in the trailer.**
- 7. Tail dolly is in the trailer.**
- 8. Fuselage dolly track is in the trailer.**
- 9. The tool box contains the following items:**
  - a. Wing lever
  - b. Two jack handles
  - c. Two fuselage dolly lock clips
  - d. Ground tow rope
  - e. Four short plastic tubes to put over the fuselage alignment pins
  - f. Cloth to wrap and secure the spar bolt
  - g. Two weights for holding wings on the wing support horse or on the ground
  - h. One zip-lock bag containing tire stem adapters
  - i. One tool pouch containing 2 brake wrenches, pliers, and screwdriver
  - j. One foam pad to place between the fuselage and fuselage restraining strap.
  - k. Two bungee cords.
  - l. Two aileron gust locks.

## **CHECKLIST: Disassemble and put into trailer**

- 1. Lower the jack at the tail of the trailer.**
- 2. Place the fuselage dolly track in place.**
- 3. Put the dolly retainer clips in the holes.**
- 4. Put the fuselage dolly on the track.**
- 5. Place the glider in position and remove the tail dolly.**
- 6. Remove the tail and secure it in the trailer**
- 7. Pull the fuselage onto the fuselage dolly.**
- 8. Position the wing support horse and weight.**
- 10. Remove the wings and secure them.**
- 11. Secure the fuselage dolly strap.**
- 12. Latch the canopy and close the canopy vent.**
- 13. Fasten the fuselage restraining strap.**
- 14. Secure all tools and accessories in the trailer.**
  - A. Dolly ramp.
  - B. Wing support horse.
  - C. Tail dolly
  - D. Inventory the tool box:
    1. Wing lever
    2. Two jack handles
    3. Two fuselage dolly lock clips
    4. Ground tow rope
    5. Spar bolt and handle assembly.
    6. Two weights for holding wings on the ground
    7. One zip-lock bag containing tire stem adapters
    8. One tool pouch containing 2 brake wrenches, pliers, and screwdriver
    9. Tube of grease
  - E. General trailer inventory and security check:
    - a. Four short plastic tubes over the fuselage alignment pins
    - b. One foam pad between the fuselage and fuselage restraining strap.
    - c. Two aileron gust locks on the ailerons.
- 15. Close the trailer carefully and lock both rear latches and the front door.**

## **CHECKLIST: Assembly**

- 1. Lower the jack under the tail of the trailer.**
- 2. Place the dolly ramp in place.**
- 3. Remove the fuselage from the trailer.**
- 4. Set up the horse and rubberized weight near one wing tip position.**
- 5. Install wings.**
- 6. Install tail.**
- 7. Install tail dolly.**
- 8. Return items and inventory the trailer.**
  - A. Wing support horse.
  - B. Fuselage dolly..
  - C. Fuselage dolly track..
  - D. The tool box:
    1. Wing lever
    2. Two jack handles
    3. Two fuselage dolly lock clips
    4. Ground tow rope
    5. Four short plastic tubes to put over the fuselage alignment pins
    6. Cloth to wrap and secure the spar bolt
    7. Two weights for holding wings on the wing support horse or on the ground
    8. One zip-lock bag containing tire stem adapters
    9. One tool pouch containing 2 brake wrenches, pliers, and screwdriver
    10. One foam pad to place between the fuselage and fuselage restraining strap.
    11. Two bungee cords.
    12. Two aileron gust locks.
- 9. Close the trailer and lock both latches and the front door.**
- 10. Park and secure the trailer.**
- 11. Lower the jack at the tail**
- 12. Return the keys to the office!**
- 13. Perform positive control check.**