Predelivery Instructions

CF50 and CF60
Hydraulic Cross-Fold Boom

Great Plains Manufacturing, Inc.
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Read this manual entirely. When you see this symbol, the subsequent instructions and warnings are serious - follow without exception. Your life and the lives of others depend on it!

Cover illustration may show optional equipment not supplied with standard unit.
Table of Contents

Important Safety Information .................................. 1
   Safety Notations ............................................. 1
   Safety Rules ............................................... 1
Introduction ..................................................... 2
   Description of Unit ......................................... 2
   Intended Usage .............................................. 2
   Using This Manual ......................................... 2
   Definitions .................................................. 2
   Assembly and Setup Assistance ............................. 2
Section 1 Assembly ............................................. 3
   Tools Required ............................................. 3
   Pre-Assembly Checklist .................................... 3
   Main Boom Assembly ....................................... 3
   Sprayer to Boom Instructions ................................. 3
   Boom to Three-Point Instructions ......................... 6
   Swing Arm Shock Kit ....................................... 8
   Boom Latch Assembly ..................................... 9
   Cable Assembly and Adjustment ............................. 9
Section 2 Setup ................................................ 10
   Plumb Boom ................................................. 10
Appendix ................................................................ 12
   Tire Inflation Chart ....................................... 12
   Torque Values Chart for Common Bolt Sizes ........... 12

CF50 and CF60 Hydraulic Cross-Fold Boom  500-015Q

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Printed in the United States of America.
Important Safety Information

For your safety, thoroughly read “Important Safety Information” and “Operating Instructions” in the operator’s manual before proceeding.

Safety Notations

The SAFETY ALERT SYMBOL indicates that there is a potential hazard to personal safety involved and extra safety precautions must be taken. When you see this symbol, be alert and carefully read the message that follows it. In addition to design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

Watch for the following safety notations throughout your operator’s manual.

⚠️ DANGER!

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations.

⚠️ WARNING!

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠️ CAUTION!

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

Safety Rules

Most accidents are the result of negligence, carelessness or failure to follow safety precautions. Though your implement is designed with many built-in safety features, safety precautions are mandatory to prevent accidents.
Introduction

Great Plains Manufacturing wants you to be satisfied with any new machine delivered by the Great Plains Trucking network. To ease the assembly task and produce a properly working machine, read this entire manual before assembling or setting up new equipment.

Description of Unit
The CF50 and CF60 is a non-turf type, cross-folding sprayer boom. The boom folds hydraulically to an operating width of 50 or 60 feet. The boom can be mounted on an Application Systems sprayer or a three-point hitch.

Intended Usage
Use this boom as part of a pressurized sprayer system to apply liquid pesticides, herbicides or fertilizers to agricultural production crops only. Mount the boom on an Application Systems trailer sprayer, three-point sprayer or three-point hitch only. Do not modify the boom or use the boom with any tillage attachments.

Using This Manual
This manual was written to help you assemble and prepare the new machine for the customer. The manual includes instructions for assembly and setup. Read this manual and follow the recommendations for safe, efficient and proper assembly and setup.

An operator’s manual is also provided with the new machine. Read and understand “Important Safety Information” and “Operating Instructions” in the operator’s manual before assembling the machine. As a reference, keep the operator’s manual on hand while assembling.

The information in this manual is current at printing. Some parts may change to assure top performance.

Definitions
Right and left as used in this manual are determined by facing the direction the machine will travel while in use unless otherwise stated.

IMPORTANT: A crucial point of information about the preceding topic. For safe and correct operation, read and follow the directions provided before continuing.

NOTE: Useful information about the preceding topic.

Assembly and Setup Assistance
To order additional copies of dealer assembly instructions or operator’s and parts manuals, write to the following address. Include model numbers in all correspondence.

If you do not understand any part of this manual or have other assembly or setup questions, assistance is available. Contact

Product Support
Great Plains Mfg. Inc., Service Department
P.O. Box 5060
Salina, KS 67402-5060
The following headings are step-by-step instructions for assembling the boom. Begin with Tools Required and Pre-Assembly Checklist to make sure you have all necessary parts and equipment. Then proceed with Main Boom Assembly. Follow each step to make the job as quick and safe as possible and produce a properly working machine.

The boom is shipped via flat bed truck. It is the dealer’s responsibility to unload the new machine. Unload all equipment before beginning assembly. Do not attempt any assembly work while the boom is on the truck.

**Tools Required**
- Forklift or overhead crane
- General hand tools

**Pre-Assembly Checklist**
1. Read and understand “Important Safety Information” on page 1 before assembling.
2. Have at least two people on hand while assembling.
3. Make sure the assembly area is level and free of obstructions (preferably an open concrete area).
4. Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
5. Check that all safety labels and reflectors are correctly located and legible. Replace if improperly located or damaged. Refer to Safety Labels, “Important Safety Information” in the operator’s manual.

**Main Boom Assembly**

**Sprayer to Boom Instructions**

If mounting the boom on a sprayer, follow these instructions.

1. Position tractor and sprayer in a clear, level area with jack placed in the park position. Adjust jack so sprayer tank is level and elevator mast is straight up and down. Keep tractor hooked to sprayer.

**WARNING!**

Failure to keep tractor hooked to sprayer may cause sprayer to tip backwards during initial boom installation.

**Refer to Figure 1-1.**

2. Bolt elevator in the low position if sprayer frame is in the high position. If sprayer frame is going to be used in low position, keep elevator in high position and refer to the single axle sprayer manual to adjust frame. Adjust the hydraulic elevator until the elevator slide is toward the bottom of the elevator mast.

3. If boom is mounted on a single-axle sprayer, install the boom carrier (1) with the eight 1/2-by-3-inch bolts and nuts (2) provided.

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**Figure 1-1**
Carrier Assembly for Single-Axle Sprayers

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Section 1 Assembly

Refer to Figure 1-2.

4. If boom is mounted on a trailer sprayer install the carrier (1) with four 1/2-by-1 3/4-inch bolts (2) and backup plate (3) to secure the top supports as illustrated. Assemble the four 1/2-by-1 1/4-inch bolts (4) in the bottom supports. Assemble bolts in the orientation shown.

5. Remove the center A-frame weldment (5). Remove both spring holder pins (6) and the two spring holders (7).

6. Install center section of the boom (8) by attaching the swing arms (9) with pivot pins (10) and spring pins (11) provided. Insert the level-float lock pin (12) into the lock position and fasten retaining pin (13).

7. Re-assemble center A-frame weldment (5). Install the two spring holders (7) with the two adjoining spring holder pins (6) and secure pins with the spring pins (14) in the box of parts. Torque bolts and nuts that secure A-frame weldment to the proper torque specifications. Refer to “Torque Values Chart for Common Bolt Sizes” on page 12.
8. Using a forklift or overhead crane, carefully position the hinge point of left boom wing (15) near the hinge point of center section (8) of boom.

NOTE: If the boom nozzles are mounted on wings, use the wing with nozzles mounted on the front and back as the left wing. Use the wing with nozzles on the back only as the right wing.

9. Slightly loosen adjustment plate nuts (16) and assemble boom hinge pin (17) to attach boom wing to center section. Secure hinge pin with snap ring (18).

10. Remove all support of inside boom arm and allow the hinge to carry the weight. Position the adjustment plate (19) so there are no gaps between the ball joints and the hinge tubing on boom wing. This will prevent boom from sliding to the front and rear. Secure the adjustment plate by tightening nuts (16) to 85 foot-pounds.

11. Level inside boom arm with center section (8) by positioning the shims (20) on hinge rest until the boom is level. The bottom tube of inside boom arm should be parallel to the frame of center section (8). Tighten shim bolts when finished by supporting inside boom arm with a forklift.

**CAUTION!**
Be careful not to pinch fingers in hinge. Make sure boom is securely supported before adjusting shims.

12. With inside boom arm supporting its own weight, position the outside boom arm with a sawhorse so adjustment bolt (21) is touching the stop point and the boom is level and unfolded. Attach outside boom arm with 5/8-inch pivot pin (22). Secure pivot pin with a spring pin (23).

13. Level outside boom arm by adding or removing a washer (24) on the adjustment bolt (21) so outer boom section is level with inside boom arm. Tighten jam nuts when finished.

14. Position spring nut (25) so nut is flush with end of the spring rod (26) for maximum spring adjustment. Attach the cable (27) with the 1/2-by-1 3/4-inch bolt and nut assembled through the hole on the spring rod (26). Attach other end of cable to outside boom arm with the 1/2-by-2 1/4-inch bolt and 1/2-inch nut.

15. Release support under outside boom arm and allow boom to carry its own weight.

16. Tighten the spring nut (25) until spring is compressed to a length of 10 inches as shown in Figure 1-3. Lock with second nut.

17. Disconnect the elbow (28) attaching the two hydraulic hoses together on the hydraulic cylinder. Attach other loose elbow in the box (29) to the hose (30) and attach the feed-line hoses (31) to the elbow ends. Route hydraulic hoses next to elevator hydraulic hoses through center of boom. Use cable ties (32) to secure the hoses after all hydraulic hoses have been routed.

**WARNING!**
Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Use a piece of paper or cardboard, NOT BODY PARTS, to check for suspected leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.

18. Prime the hydraulic cylinder (33) before attaching to boom wing. Using tractor hydraulics, fully extend cylinder. Then reverse hydraulic flow and retract the cylinders. Make sure the cylinder bottoms out under full hydraulic pressure. Extend the cylinder once again and fasten it to boom wing with the pin provided.

**WARNING!**
Bleed hydraulic hoses before trying to fold or unfold boom. Failure to do so could cause boom to crash causing damage to boom and potential injury to persons near boom.

19. Repeat steps 8 through 18 for right wing.

20. Reposition Slow Moving Vehicle bracket (34) in center of boom and fasten with u-bolt.

21. Position a remote nozzle tube (35) and bracket (36) on each wing. (Mount bracket on front of boom on left wing and on the rear of boom on the right wing). Use the 5/16-inch u-bolts and nuts to attach the bracket. Position bracket but do not tighten nuts.
22. Assemble the nozzle check valve and bracket onto remote nozzle bracket installed in step 21. Position nozzle for correct spacing (15, 20 or 30 inches) and tighten the nuts on the bracket. Attach hose to nozzle check valve with hose clamps provided. Install feedline hose correctly so hose will not droop or kink when folded.

23. If boom is 60 feet wide and equipped with a 15-inch or 30-inch nozzle spacing, move the skid wheels out so the outer wheel bracket u-bolt is 5 inches from end of boom tube. This will prevent the wheel from interfering with spray pattern.

24. Slowly fold the boom. Watch that boom folds to correct resting position. You may need to loosen the adjustment plate nuts only slightly and position the boom wing to fold correctly. Slowly maneuver the boom to move to the folded position. With the boom in the correct folded position, tighten down the adjustment plate nuts (16) to 85 foot pounds. Make sure the adjustment plate is adjusted so there are no gaps in between the hinge ball joints and the hinge tubing on the boom wing.

**Boom to Three-Point Instructions**

If mounting the boom on a three-point carrier, follow these instructions.

1. Mount three-point carrier to a tractor with correct pin mountings determined from Figure 1-4. Level the three-point carrier to prevent the boom from hitting the tractor cab when folding or raising the boom.

![Figure 1-4 Pin and Spacer Configuration](image_url)

**Figure 1-4 Pin and Spacer Configuration**

NOTE: The category 4 narrow hitch (CAT IV-N) spacers are not standard parts supplied with the three-point boom.

2. Follow step 5 through step 24 under *Sprayer to Boom Instructions* starting on page 3 to complete boom assembly.
Refer to Figure 1-5.

3. Mount cam-lock connectors (2) onto three-point carrier with the six 5/16-by-3/4-inch bolts, nuts and mounting brackets as shown.

4. After the nozzles and hoses are mounted on the boom, attach boom line hoses from three separate boom sections to cam-lock fluid connectors (3) with hose clamps provided. (Refer to Plumb Boom, page 10, for instructions on mounting nozzles and hoses.) Route hose from tractor to male cam-lock fluid connectors (3) which fasten into stationary female fluid connectors mounted on three-point carrier.

5. Route boom hoses to the tractor to ensure there is no kinking, drooping below the tractor, or rubbing on the tractor frame when in operation. Use the cable ties to fasten and protect the hose.

6. Check to see that all nuts are tightened. See the Torque Values Chart in “Appendix” on page 12. Check to see that all hose clamps are tight.
Swing Arm Shock Kit

Refer to Figure 1-6.

The boom must be mounted to the sprayer or tractor before swing arm shock kit is assembled.

1. Center the shock mount weldment (1) on boom carrier frame as shown and bolt in place using the 3/8-inch u-bolts (2) and the 3/8-inch flange nuts (3).

2. Compress shock absorbers (4) to a length of 14 inches from center to center of mounting holes. Wire the shocks from base end to rod end to maintain this length during assembly.

3. Bolt the rod end of the shock to the swing arm channel (6) using the 5/8-by-4 3/4-inch bolts (5), spacers (10) and 5/8-inch flange lock nuts (7). Rotate the shock until it lines up with the mounting hole in the center shock mount weldment and cut the wire to let the shock extend into the channel. Align the shock mounting hole and bolt in place using the 5/8-by-2 3/4-inch bolt (8) and 5/8-inch flange lock nut (9).
Boom Latch Assembly
Refer to Figure 1-7.
The boom must be mounted to the sprayer or tractor before the boom latch is assembled.
Center latch assembly (1) on the front tube of the center section. Center latch bracket (2) around tube as shown.

Cable Assembly and Adjustment
Refer to Figure 1-7.
1. Attach the clevis (3) on the cable to one of the lever arms (4) as shown.
2. Route cable through cable rollers at the center of the boom as illustrated in the front view.
3. Thread cable through the gripple (5) in the direction of the arrow on the unit.
4. Thread the cable through the hole on the other lever arm (6) and back through the gripple in the direction of the arrow, leaving two inches of exposed wire.
5. Tighten by pulling on cable in the direction of the arrow.
6. Unfold both boom wings and adjust tension in the cable until there is about 1/8-inch between the top of the latch pin and the bottom of the latch pin plate. Use gripple for coarse cable adjustment and fine tune cable tension with clevis.
Section 2 Setup

Plumb Boom
If boom nozzles are pre-assembled on your boom, proceed to step 4.

1. Using a felt-tip marker, mark nozzle locations on the boom to help identify hose locations. For 15- and 30-inch spacings, start with a nozzle in the center of the sprayer. For 20-inch spacing, start with a nozzle 10 inches to the left and right of center.

2. Using mounting clamps (1), mount nozzles (2) on boom at marked locations. Refer to Figure 2-3, Figure 2-4 and Figure 2-5 for correct placement of end nozzles and tee-nozzles. When mounting nozzles on the left-hand, inside boom arm, mount nozzles on the inside of the arm. Mount all other nozzles to the rear.

3. Plumb nozzles. From the roll of 3/4-inch hose, cut lengths to connect the nozzles. Use worm clamps to secure hoses to nozzles. Refer to Figure 2-3, Figure 2-4 and Figure 2-5 for correct placement of tee-fittings (1) and feed lines. Use zip ties (2) and hose holders (3) to secure the hoses.

4. Route boom hoses through center of A frame on boom and on the front left of boom carrier. Make a loop in the hose so that when the elevator is fully raised, there is enough slack in the hose.

5. Tie hoses to the horizontal and left vertical tube of boom carrier. Zip ties hoses tight so they can not slide in and out of the tie. When routing the hoses from the elevator to the ball valves, be sure there will be no kinking, drooping, or rubbing when sprayer is in operation. Use cable ties where needed to secure the hose on sprayer.

6. Attach boom hoses to the three boom valves. Make sure left boom feed-line hose is connected to the front valve (front being toward the hitch). The left hose and valve are marked with a red tape. Attach center boom feed-line hose to the middle valve which is marked with yellow tape. The right boom feed-line hose should be connected to the rear valve which is marked with green tape.

7. Fold and unfold the boom wings to check any pinch points where the hose may become damaged. Unfold the boom, remove the boom level-float lock pin and rock the boom to check any pinch points around the swing-arms. Use zip ties to fasten hoses to prevent hose damage.

8. Check to see all nuts are tightened. See the Torque Values Chart, “Appendix” on page 12. Check to see that all hose clamps are tight.

9. Fill sprayer tank 1/4 full of water. Hook up the pump to a tractor and operate the pump with control box boom switches off and agitation wide open. If unit is equipped with boom throttling valves, open throttling valves full open. With pump running turn on all boom switches and flush out boom lines before assembling nozzles. Allow water to flow out of all nozzles at least ten seconds to ensure all foreign material is removed from the plumbing.
Figure 2-3
Plumb Nozzles, Center Section

Figure 2-4
Plumb Nozzles, Inner Wing

Figure 2-5
Plumb Nozzles, Outer Wing