Read the operator’s 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!

Illustrations may show optional equipment not supplied with standard unit.
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Important Safety Information</td>
<td>1</td>
</tr>
<tr>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>Description of Unit</td>
<td>4</td>
</tr>
<tr>
<td>Models Covered</td>
<td>4</td>
</tr>
<tr>
<td>Document Family</td>
<td>4</td>
</tr>
<tr>
<td>Tools Required</td>
<td>4</td>
</tr>
<tr>
<td>Pre-assembly Checklist</td>
<td>4</td>
</tr>
<tr>
<td>Using This Manual</td>
<td>5</td>
</tr>
<tr>
<td>Definitions</td>
<td>5</td>
</tr>
<tr>
<td>Shipping Inventory</td>
<td>6</td>
</tr>
<tr>
<td>Unloading</td>
<td>7</td>
</tr>
<tr>
<td>Unpacking Components</td>
<td>7</td>
</tr>
<tr>
<td>Unpack Smaller Items First</td>
<td>7</td>
</tr>
<tr>
<td>Unpacking Boxes</td>
<td>7</td>
</tr>
<tr>
<td>Further Assistance</td>
<td>7</td>
</tr>
<tr>
<td>Assembly</td>
<td>8</td>
</tr>
<tr>
<td>Center Frame &amp; Lift Assembly</td>
<td>8</td>
</tr>
<tr>
<td>Center Transport 20 &amp; 25</td>
<td>10</td>
</tr>
<tr>
<td>Center Transport 30</td>
<td>10</td>
</tr>
<tr>
<td>Level Bar &amp; Fold Brackets</td>
<td>12</td>
</tr>
<tr>
<td>Hitch</td>
<td>14</td>
</tr>
<tr>
<td>Valve Brackets &amp; Valves</td>
<td>16</td>
</tr>
<tr>
<td>Valves &amp; Hoses</td>
<td>16</td>
</tr>
<tr>
<td>Depth Stop &amp; Angle Gauge</td>
<td>17</td>
</tr>
<tr>
<td>Wing &amp; Lift Assembly</td>
<td>18</td>
</tr>
<tr>
<td>Wing Transport</td>
<td>20</td>
</tr>
<tr>
<td>Attach Hose Clamps and Hose Wraps</td>
<td>20</td>
</tr>
<tr>
<td>Hydraulic Hose Hookup</td>
<td>21</td>
</tr>
<tr>
<td>Hose Handles</td>
<td>21</td>
</tr>
<tr>
<td>Purging Hydraulic System</td>
<td>22</td>
</tr>
<tr>
<td>Center Gang Bars</td>
<td>24</td>
</tr>
<tr>
<td>Wing Gang Bar</td>
<td>26</td>
</tr>
<tr>
<td>Front Light Assembly</td>
<td>28</td>
</tr>
<tr>
<td>Rear Lights</td>
<td>29</td>
</tr>
<tr>
<td>Splitter Switch</td>
<td>30</td>
</tr>
<tr>
<td>HT1100-30 Wing Fold Assist</td>
<td>31</td>
</tr>
<tr>
<td>Proximity Sensor Adjustment</td>
<td>32</td>
</tr>
<tr>
<td>Gang Cylinder Purging</td>
<td>32</td>
</tr>
<tr>
<td>Hose Routing Hitch</td>
<td>33</td>
</tr>
<tr>
<td>Gauge Wheel</td>
<td>33</td>
</tr>
<tr>
<td>Rolling Harrow (optional)</td>
<td>34</td>
</tr>
<tr>
<td>Hydraulic Reel Down Pressure Kit</td>
<td>35</td>
</tr>
<tr>
<td>Weight Package Assembly (Optional)</td>
<td>37</td>
</tr>
<tr>
<td>Appendix - Reference Information</td>
<td>38</td>
</tr>
<tr>
<td>Torque Values Chart</td>
<td>38</td>
</tr>
<tr>
<td>Tire Inflation Chart</td>
<td>39</td>
</tr>
<tr>
<td>Hydraulic Connectors and Torque</td>
<td>39</td>
</tr>
<tr>
<td>Hydraulic Lift Layout</td>
<td>40</td>
</tr>
<tr>
<td>HT1100-20 &amp; 25 Hydraulic Fold Layout</td>
<td>41</td>
</tr>
<tr>
<td>HT1100-30 Hydraulic Fold Layout</td>
<td>42</td>
</tr>
<tr>
<td>HT1100-20 &amp; 25 Hydraulic Gang Angle Layout</td>
<td>43</td>
</tr>
<tr>
<td>HT1100-30 Hydraulic Gang Angle Layout</td>
<td>44</td>
</tr>
<tr>
<td>HT1100-20 &amp; 25 Reel Hydraulic Layout</td>
<td>45</td>
</tr>
<tr>
<td>HT1100-30 Reel Hydraulic Layout</td>
<td>46</td>
</tr>
<tr>
<td>HT1100-20 Machine Layout</td>
<td>47</td>
</tr>
<tr>
<td>HT1100-25 Machine Layout</td>
<td>48</td>
</tr>
<tr>
<td>HT1100-25 Machine Layout</td>
<td>49</td>
</tr>
<tr>
<td>HT1100-30 Machine Layout</td>
<td>50</td>
</tr>
<tr>
<td>HT1100-30 Machine Layout</td>
<td>51</td>
</tr>
<tr>
<td>HT1100-20 Double Reel/Rolling Harrow Layout</td>
<td>52</td>
</tr>
<tr>
<td>HT1100-20 Double Reel/Rolling Harrow Layout</td>
<td>53</td>
</tr>
<tr>
<td>HT1100-25 Double Reel/Rolling Harrow Layout</td>
<td>54</td>
</tr>
<tr>
<td>HT1100-25 Double Reel/Rolling Harrow Layout</td>
<td>55</td>
</tr>
<tr>
<td>HT1100-30 Double Reel/Rolling Harrow Layout</td>
<td>56</td>
</tr>
<tr>
<td>HT1100-30 Double Reel/Rolling Harrow Layout</td>
<td>57</td>
</tr>
<tr>
<td>HT1100-20 Single Reel/Rolling Harrow Layout</td>
<td>58</td>
</tr>
<tr>
<td>HT1100-20 Single Reel/Rolling Harrow Layout</td>
<td>59</td>
</tr>
<tr>
<td>HT1100-25 Single Reel/Rolling Harrow Layout</td>
<td>60</td>
</tr>
<tr>
<td>HT1100-25 Single Reel/Rolling Harrow Layout</td>
<td>61</td>
</tr>
<tr>
<td>HT1100-30 Single Reel/Rolling Harrow Layout</td>
<td>62</td>
</tr>
<tr>
<td>HT1100-30 Single Reel/Rolling Harrow Layout</td>
<td>63</td>
</tr>
</tbody>
</table>

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Important Safety Information

Look for Safety Symbol

The SAFETY ALERT SYMBOL indicates there is a potential hazard to personal safety involved and extra safety precaution 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.

Be Aware of Signal Words

Signal words designate a degree or level of hazard seriousness.

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, typically for machine components that, for functional purposes, cannot be guarded.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

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.

Use Adequate Lifting Means

The frame sections and gangs of this machine are extremely heavy. If using multiple lifters, make sure each is rated for at least its share of the load.

Prepare for Emergencies

▲ Be prepared if a fire starts
▲ Keep a first aid kit and fire extinguisher handy.
▲ Keep emergency numbers for doctor, ambulance, hospital and fire department near phone.

Be Familiar with Safety Decals

▲ Read and understand the “Safety Decals” section of the Operators Manual.
▲ Read all instructions noted on the decals.
▲ Keep decals clean. Replace damaged, faded and illegible decals.
Wear Protective Equipment

▲ Wear protective clothing and equipment.
▲ Wear clothing and equipment appropriate for the job. Avoid loose-fitting clothing.
▲ Because prolonged exposure to loud noise can cause hearing impairment or hearing loss, wear suitable hearing protection such as earmuffs or earplugs.
▲ Because operating equipment safely requires your full attention, avoid wearing entertainment headphones while operating machinery.

Avoid High Pressure Fluids

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, seek immediate medical assistance from a physician familiar with this type of injury.

Use Safety Lights and Devices

Slow-moving tractors and towed implements can create a hazard when driven on public roads. They are difficult to see, especially at night.

▲ Use flashing warning lights and turn signals whenever driving on public roads.
▲ Use lights and devices provided with implement.

Keep Riders Off Machinery

Riders obstruct the operator’s view. Riders could be struck by foreign objects or thrown from the machine.

▲ Never allow children to operate equipment.
▲ Keep all bystanders away from machine during operation.

Shutdown and Storage

▲ Lower implement, put tractor in park, turn off engine, and remove the key.
▲ Secure Terra Max using blocks and supports provided.
▲ Detach and store Terra Max in an area where children normally do not play.
Tire Safety

Tire changing can be dangerous and should be performed by trained personnel using correct tools and equipment.

▲ When inflating tires, use a clip-on chuck and extension hose long enough for you to stand to one side—not in front of or over tire assembly. Use a safety cage if available.

▲ When removing and installing wheels, use wheel-handling equipment adequate for weight involved.

Safety At All Times

Thoroughly read and understand the instructions in this manual before operation. Read all instructions noted on the safety decals.

▲ Be familiar with all machine functions.

▲ Operate machinery from the driver’s seat only.

▲ Do not leave machine unattended with tractor engine running.

▲ Do not stand between the tractor and machine during hitching.

▲ Keep hands, feet and clothing away from power-driven parts.

▲ Wear snug-fitting clothing to avoid entanglement with moving parts.

▲ Watch out for wires, trees, etc., when folding and raising machine. Make sure all persons are clear of working area.
Introduction

The Terra Max has been designed with care and built by skilled workers using quality materials. Proper setup, maintenance, and safe operating practices will help the customer get years of satisfactory use from the machine.

Description of Unit

The HT1100-20 - HT1100-30 Terra Max is a three section “hybrid” tillage tool. Working width ranges from 18 to 30 feet. The implement is designed to cut and size residue, till soil for faster seedbed warming, break up soil crust on hard dried fields while eliminating compaction layers. The front and rear gangs may be adjusted from 0-8 degree angle, depending on the aggressiveness desired. Various finishing attachments are also available to further smooth, redistribute residue, kill weeds, and break clods.

Models Covered

- HT1100-20 20’ (7.5in) spacing
- HT1100-25 25’ (7.5in) spacing
- HT1100-30 30’ (7.5in) spacing

Document Family

- 586-831Q Pre-Delivery Manual
- 586-831P Parts Manual
- 586-831Q-ENG Assembly Manual (this document)

Tools Required

- Basic Hand Tools
- Torque Wrench
- Fork Truck, Overhead Hoist or Loader

Pre-assembly Checklist

- Before assembling, read and understand “Important Safety Information” in front part of this manual.
- Have at least two people on hand while assembling.
- Make sure area is level and free of obstructions (preferably an open concrete area).
- Have all major components
- Have all fasteners and pins shipped with machine.
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 and parts 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. Refer to the parts manual for proper part’s identification. As a reference, keep the operator’s and part’s manual on hand while assembling.

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

Definitions

The following terms are used throughout this manual.

**NOTICE**

A crucial point of information related to the preceding topic. Read and follow the directions to remain safe, avoid serious damage to equipment and ensure desired field results.

Useful information related to the preceding topic.

Right-hand and left-hand as used in this manual are determined by facing the direction the machine will travel while in use unless otherwise stated. An orientation rose in some line art illustrations shows the directions of: Up, Back, Left, Down, Front, Right.
Shipping Inventory
The machine will be shipped unassembled as shown in a big shipping rack and shipping boxes on pallets. The only parts that will be assembled are the gang assemblies, reel and rolling harrow attachment assemblies.

Refer to Figure 3
- All frame sections, hitch and torque tubes will be shipped in shipping container rack.
- Small parts and bolts will be shipped in boxes.

Refer to Figure 4
- Rear attachments and gang assemblies will be shipped in shipping container rack.
- Shipping containers or racks do not need to be returned to Great Plains.
Unloading

Once everything is unloaded from “storage pod” you may proceed with taking parts out of shipping containers. Carefully move everything to level site and prepare to unpack items.

Unpacking Components

Be sure you have read and understood the Important Safety Information, starting on page 1 of this manual, before you start unpacking components.

Centering components:
Be sure and center fork truck or chains (overhead hoist) on components so they won’t slide and cause injury.

Carefully un-band components.

Now unload individual components one at a time using a fork truck or overhead hoist.

Move each component out of the way so you have plenty of room to remove the next one.

Unload Smaller Items First

Unloading the frames is a potentially dangerous operation. Reduce risk and complication by first unloading
1. the tire wheel assemblies,
2. the smaller items

Place these components well out of the maneuvering area needed for unloading the gang assemblies and frames.
3. Carefully unload the frames and hitch out of shipping rack

Unpacking Boxes

Position boxes in area that you can maneuver components up to machine to assembly.
4. Carefully remove banding from boxes.
5. Carefully remove banding from brace bars and finishing reels.
6. Locate and identify all components before assembling.

Further Assistance

Great Plains Manufacturing, Inc. wants you to be satisfied with your new Terra Max. If for any reason you do not understand any part of this manual or are otherwise dissatisfies with the product please contact:

Great Plains Service Department
1525 E. North St.
PO Box 5060
Salina, KS 67402-5060

Or go to www.greatplainsag.com and follow the contact information at the bottom of your screen for our service department.
Assembly

Center Frame & Lift Assembly

Refer to Figure 5

Note: Once the center frame has been uncrated and put on stands, the brace bar may be installed. See “Parts Manual” for part numbers and description of parts.

7. Align holes in plates of the center brace bar (1) with holes on front of center frame (2), secure with $\frac{3}{4} \times 2$ hex bolts (3), $\frac{3}{4}$ lock washers and nuts.

8. Install the center cylinder mounts (16) to the center frame (2) use $\frac{3}{4} \times 2$ hex bolts (3), $\frac{3}{4}$ lock washers and nuts to secure to the frame.

9. Carefully lower the torque tube (4) with an overhead hoist until holes are aligned with the holes on top of center frame (2) and secure with 1.25 x 7.75 pins (6), and 1.25 x 6.75 pin (5), $\frac{3}{8} \times 2\frac{1}{4}$ Gr. 8, and special thread bolts (7) and $\frac{3}{8}$ top lock nuts.

10. Align hole in lift strap (8) and cylinder mount plate (9) in proper orientation shown in drawing. Secure lift strap (8) with 1 x $3\frac{1}{2}$ hex bolts (10) and 1 lock nuts, rear of cylinder mount plate (9) to plates of torque tube (4) with 1 x 4 hex bolt (11) and 1 lock nut.

11. Install the cylinders (12) using 1 x $3\frac{1}{8}$ pins (13), 1.5 x 1.0 x .075 machine washers and $\frac{5}{16} \times 2$ cotter pin.

12. Install cylinder transport locks (13) onto cylinder rods (12) using $\frac{3}{8}$ x 3 pins and clip pins.

13. Install center breaker crossbar (14) using $\frac{5}{8} \times 5\frac{1}{2}$ 5 u-bolt (15) and $\frac{5}{8}$ lock washers and hex bolts.

14. Tighten all bolts with lock nuts snug, but do not torque. The rest of the bolts may be tightened to specs, See “Torque Values Chart” on page 38.
Figure 5
Center Frame & Lift Assembly
Center Transport 20 & 25

Refer to Figure 6

15. Slide walking beam assembly (1) into torque tube (2) and align holes. Secure with \( \frac{1}{2} \times 6 \), Gr. 8 hex bolts (3) and 1/2 top lock nut.

16. Slide hub/spindle assemblies (4) into walking beam assembly (1) and align holes. Secure with \( \frac{1}{2} \times 5 \) hex bolts (5) and 1/2 top lock nut.

17. Attach tire/wheel assemblies (6) with \( \frac{5}{8} \) lug nuts (7).

18. Tighten all bolts with lock nuts snug, but do not torque. The rest of the bolts may be tightened to specs, See “Torque Values Chart” on page 38.

Center Transport 30

The walking beam (8) may come pre-assembled to torque tube (20). If not pre-assembled start by assuring the bearings (8) and inside of torque tube is clean, packing the bearings (8) with grease and following the steps closely to assure the correct assembly of components.

Refer to Figure 7

19. Once the bearings (8) are packed with grease, slide them (one on each side) into pre-installed bearing cup of torque tube (20). Slide seals (9) into torque tube (20). Slide spindle sleeve (10), one into inside of torque tube (20), through seal (9) and bearing (8), the other one over the pivot spindle (12). Slide the LH and RH walking beams (11) over torque tube (13) in orientation shown with spindle tubes offset towards top. Be sure holes are aligned and slide pivot spindle (12) through from outside of machine. Secure with two 2.25 x 1.50 x 10ga machine washers (13) and 1 \( \frac{1}{4} \) slotted nut (14). Tighten 1 \( \frac{1}{4} \) slotted nut (14) down snug, then back off \( \frac{1}{4} \) to \( \frac{1}{4} \) turn, enough to align slot with hole in pivot spindle and install \( \frac{1}{4} \times 3 \) cotter pin (15). Bend cotter pin over to secure. Be sure walking beam (11) will pivot freely but there should be no endplay.

20. Grease zerk (21) sparingly but do not over grease.

21. Slide hub/spindle assembly (16) into walking beam (11) and align holes. Secure with \( \frac{3}{4} \times 5 \) hex bolts (17) and \( \frac{3}{4} \) top lock nut.

22. Attach tire/wheel assembly (18) with \( \frac{3}{4} \) flange nuts (19).

23. Tighten all bolts with lock nuts snug, but do not torque. The rest of the bolts may be tightened to specs, See “Torque Values Chart” on page 38.
Level Bar & Fold Brackets

Refer to Figure 8

24. Install fold brackets (1) (rear fold bracket only on 30 model) with $3/4 \times 2$ hex bolt (2), $3/4$ lock washers and nuts.

25. Attach outside plate of wing stops (3) to plate on frame with $5/8 \times 1/2$ hex bolts (4), $5/8$ lock washers and nuts. Secure inside plate to truss bars with $5/8 \times 41/2 \times 91/2$ u-bolts (5), $5/8$ lock washers and nuts.

26. Attach $3/4 \times 3$ hitch pin (13) to tube wing stops (3).

27. Install rear level bar (6) to torque tube with $1 \times 91/2$ pins (7), $3/8 \times 21/4$, Gr. 8 hex bolts (8) and $3/8$ nylon lock nut.

Be sure to install weight packs before attaching the front and back halves of the level bar.

28. Secure the front of the level bar (12) to the rear (6) with $3/4 \times 2$, Gr. 8 hex bolts (5) $3/4$ lock washers and nuts.

29. Install h-bracket assembly (9) to front of level bar (12) between the 2 halves of the spring (14), secure on rod with spring guide (15), $11/2$ hex nut and $11/2$ jam nut.

30. Install bottom of h-bracket assembly (9) to center brace bar with $1 \times 31/4$ clevis pin (10), $1.5 \times 1.00 \times 0.075$ machine washer (11) and $3/16 \times 2$ cotter pin.

31. Bolts may be tightened to specs, See “Torque Values Chart” on page 38 and all cotter pins may be bent.
Figure 8
Level Bar & Fold Brackets
Hitch

Refer to Figure 9

32. Bolt the hitch frame (1) to front trusses with the 1\(\frac{1}{4}\) x 8 Gr. 8 bolts (2), 1\(\frac{1}{4}\) flat washer (3) (one side of uniball to take up space) and 1\(\frac{1}{4}\) top lock nuts. Tighten bolts snug, do not torque, as the hitch must pivot freely.

33. Install jack (4) on front outside of hitch to support the front of hitch (1) for the rest of assembly.

34. Attach h-bracket (5) in orientation shown below with 1 x 2\(\frac{29}{64}\) clevis pins (6), 1.5 x 1.00 x 0.075 machine washers and \(\frac{3}{16}\) x 2 cotter pins.

35. Attach ends of level bar tube (7) with 1\(\frac{1}{4}\) x 8\(\frac{1}{2}\) Gr. 8 special thread bolts (8), to h-brackets (5), on hitch frame and center frame, secure with 1\(\frac{1}{4}\) top lock nut.

36. Attach base end of cylinder (10) with 1 x 6 Gr. 8 special thread bolt (11) to ears on hitch frame, attach the rod end to the cylinder to top of the h-bracket (5) with 1 x 8 Gr. 8 special thread bolt (9) and 1 top lock nuts.

37. Attach two, 1\(\frac{3}{4}\) gang wrenches (12) and one, 2\(\frac{5}{16}\)-\(\frac{15}{16}\) turnbuckle wrench (13) over pegs on back of hitch, secure with \(\frac{3}{16}\) w/cotter/chain (14).

38. Install the spring hose holder (15) to welded nut on front of hitch with 1\(\frac{1}{2}\) x 1 Gr. 5 bolt (16), 1\(\frac{1}{2}\) lock washer and flat washer.

39. Align holes in hitch base (17) with holes on front of hitch frame (1). Align holes of safety chain support (18) in orientation shown, secure with two, 1 x 8 Gr. 8 special thread bolts (9), six, 1 flat washers (19) (4 right side, 2 left side), 1 lock washers and 1 nuts.

40. Attach safety chain (20) to bottom side of hitch frame (1), secure with \(\frac{7}{8}\) x 3 hex bolt (21), \(\frac{7}{8}\) flat washer, \(\frac{7}{8}\) lock washer and \(\frac{7}{8}\) nut.

41. Mount manual pack (22) with 1\(\frac{1}{4}\) x 1 hex bolts (23), mini end wheel press wheels (24), 1\(\frac{1}{4}\) lock washers and nuts. Tighten all bolts with lock nuts snug, but do not torque. The rest of the bolts may be tightened to specs, See “Torque Values Chart” on page 38.

Before adhering the decal to the level gauge bracket, be sure to retract the cylinder all the way, position A lines up with the red indicator.
Valve Brackets & Valves

Refer to Figure 11

- The valves and will be connected to the correct hoses and will need to be installed on the center brace bar. The brackets may be in place. If for some reason they are not follow the steps below to install.

42. Use $\frac{5}{16} \times 4\frac{1}{2}$ Gr. 5 hex bolt (3), $\frac{5}{16}$ lock nuts and washers to secure the bypass valve (1) to the bypass valve bracket (2). The bypass valve bracket (2) is attached to the center frame using $\frac{3}{8} \times 1\frac{1}{2}$ hex bolts (4), $\frac{3}{8}$ lock washers and hex nuts.

43. The lock valve (5) is attached to a mounting plate that is welded to the frame. Use $\frac{1}{4} \times 1\frac{3}{4}$ Gr. 5 hex bolts (6) to secure to the frame.

44. Depth control valve (7) is secured to the frame using $\frac{5}{16} \times 2$ hex bolts (8) and $\frac{5}{16}$ lock washers.

45. The splitter valve (9), is secure to the mounting plate on the center brace bar using $\frac{5}{16} \times 2$ hex bolts (8) and $\frac{5}{16}$ lock washers.

46. If your unit has the Hydraulic Reel option there will be an additional down pressure valve (10), mount this on the back side of the bulkhead fitting plate, using mount (11), replace the $\frac{3}{8} \times 1\frac{1}{2}$ Gr. 5 (4) hex bolts, with $\frac{3}{8} \times 2$ (4). Use $\frac{5}{16} \times 4\frac{1}{2}$ Gr. 5 hex bolt (3), $\frac{5}{16}$ lock nuts and washers to secure

47. Be sure hoses are routed as shown in, See “Valves & Hoses” on page 16.

48. Bolts may be tightened to specs, Bolts may be tightened to specs, See “Torque Values Chart” on page 38.

Valves & Hoses

Refer to Figure 12

- The hoses may be shipped hooked up to valves, cylinders, but will need to be routed and attached to the machine in the proper places. The hoses from the hitch will need to be connected to the bulkhead fittings on the center brace bar. The bypass (1), lock valve (2), splitter valve (3) and depth control valve (4) hoses will be routed underneath or around the weight kits (if your unit is equipped with this option) so that they may be installed or removed without taking hoses or valves lose. The hoses will be secured to the frames using hose holders and P-clips. If any of the hoses are not already secured to the frame route the hoses along the path with the hose holders to the bulkhead brackets and fittings. See “Appendix - Reference Information” on page 38 for proper mounting instructions and hose routing.
### Depth Stop & Angle Gauge

**Refer to Figure 14**

49. See machine layout drawings in Appendix for proper gang gauge placement for each model. Cycle gang cylinders several times before adjusting the angle gauge rod to 0°.

50. Slide depth stop tube (1) from rear of machine under left wing stop through square hole on depth control bracket on center wing brace. Align rear holes over lever on torque tube, secure with ½ x 3 hex bolt (2), ½ top lock nut.

51. Fasten depth stop assembly (3) on top of depth stop tube with ½ x 2½ hex bolts (4), ½ lock washers and nuts.

52. Attach angle gauge bracket assembly (5) to front of center frame with ½ x 3⅛ x 6 u-bolts (6), ½ lock washers and ½ nuts.

53. Attach gauge link (7) to ear on front of center frame and gauge bracket assembly (5), secure with ⅜ x 1 ⅛ hex bolts (8) and ⅜ top lock nuts.

54. Tighten all bolts with lock nuts snug, but do not torque. The rest of the bolts may be tightened to specs, See “Torque Values Chart” on page 38.

---

*Figure 12*  
Depth Stop & Angle Gauge  
TP-69598
Wing & Lift Assembly

Refer to Figure 13

55. Attach wing brace (1) to wing frame (2) with \( \frac{3}{4} \times 2 \) hex bolts (3), \( \frac{3}{4} \) lock washers and nuts.

56. Attach wing brace (1) and wing frame (2) to center frame with wing hinge pins (4), \( 1\frac{1}{4} \) flat washers (5) (rear side of wing hinge tubes only, do not use washer on wing brace bar) and 1 lock nuts.

57. Install lh and rh wing wheel arms (6) with 1 x 7 pins (7), \( \frac{5}{8} \times 2\frac{1}{4}, \) Gr. 8, special thread hex bolts (8) and \( \frac{5}{8} \) nylon lock nut.

Be sure turnbuckle assembly (9) is preset at \( 45\frac{1}{2} " \) before installing as shown below. See gang angle adjustment in “Operator Manual” before going to field.

58. Install wing wheel turnbuckles (9) to front, top hole, of cylinder mount plate (10) with 1 x 4 hex bolts (11) and 1 lock nuts.

59. Install rear hole of cylinder mount plate (10) to inside of plates of wing wheel arms (6) with 1 x 4 hex bolts (11) and 1 lock nuts.

60. Secure front of wing wheel turnbuckles (9) to plate on wing frame (2) with 1 x 4 hex bolts (11) and 1 lock nuts.

61. Install wing lift cylinders (12) (base end to cylinder mount plate (10)) with 1 x 3\( \frac{1}{8} \) pins (13), 1.5 x 1.0 x 0.075 machine washers and \( \frac{5}{16} \times 2 \) cotter pin.

62. Attach wing cylinder lug (14) to front tube of wing frame (2) with \( \frac{5}{8} \times 3\frac{1}{32} \times 6\frac{1}{2} \) u-bolts (15), \( \frac{5}{8} \) lock washers and nuts.

63. Now the base end of fold cylinders (16) may be hooked up with the 1 x \( 3\frac{1}{8} \) clevis pin (13), 1.5 x 1.00 x 0.075 machine washer and \( \frac{5}{16} \times 2 \) cotter pin.

64. Do not hook up rod end of fold cylinder (16) until system is purged of air. See “Purging Hydraulic System” on page 22.

65. Tighten all bolts with lock nuts snug, but do not torque. The rest of the bolts may be tightened to specs, See “Torque Values Chart” on page 38.
Figure 13
Wing & Lift Assembly
Wing Transport

Model HT1100-20 uses only one tire/wheel on the wheel arm.

Refer to Figure 14

66. Slide hub/spindle assembly (1) into torque tube (2) and align holes. Secure with \( \frac{5}{16} \times 3\frac{1}{2} \) hex bolts (3) and \( \frac{5}{16} \) top lock nut.

67. Attach tire/wheel assembly (4) with \( \frac{5}{8} \) lug nuts (5).

68. Tighten all bolts with lock nuts snug, but do not torque. The rest of the bolts may be tightened to specs, See “Torque Values Chart” on page 38.

---

Attach Hose Clamps and Hose Wraps

Refer to hydraulic layouts in “Appendix” section of this manual for proper lift and fold hose routing on center and wings. Do not clamp hoses on hitch until gang hoses are hooked up, See “Gang Cylinder Purging” on page 32. See “Hydraulic Connector ID” on page 39 for proper fitting installation.

Refer to Figure 15

69. When all the lift and fold hoses are hooked up and tightened properly, put hose clamps on hoses as shown.

70. Install hose wraps on hoses as needed.

Be sure and get hoses and light wiring harness fastened properly so they do not drag. Check to be sure there is enough slack in hinge area when folding machine the first time.
Hydraulic Hose Hookup

71. Great Plains hydraulic hoses are color coded to help you hookup hoses to your tractor outlets. Hoses that go to the same remote valve are marked with the same color.

<table>
<thead>
<tr>
<th>Color</th>
<th>Hydraulic Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>Lift (2 hoses)</td>
</tr>
<tr>
<td>Green</td>
<td>Fold (2 hoses)</td>
</tr>
<tr>
<td>Red</td>
<td>Gang Adjustment (2 hoses)</td>
</tr>
<tr>
<td>Yellow</td>
<td>Hydraulic Reel Att. (2 hoses)  (Optional)</td>
</tr>
</tbody>
</table>

**WARNING**

*High Pressure Fluid Hazard:*
Relieve pressure before disconnecting hydraulic lines. Use paper or cardboard, NOT BODY PARTS, to check for leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. Escaping fluid under pressure can have sufficient pressure to penetrate the skin causing serious injury. If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury. Only trained personnel should work on system hydraulics.

Hose Handles

72. To distinguish hoses on the same hydraulic circuit, refer to hose handles. The hose under an extended-cylinder symbol feeds a cylinder base end. The hose under a retracted-cylinder symbol feeds a cylinder rod end.

73. Once all hoses are tightened, hook hoses to tractor.

---

*Figure 16 Hose Handles*
Purging Hydraulic System

When lift and fold hoses are routed and hooked up to cylinders and valves the systems will need purged of air. Purging the lift and fold system now will allow the wings to be folded and unfolded. The machine may also be raised up or down for ease of gang assembly installation.

Refer to Figure 17

74. Charge the lift system first. Extend the lift cylinders (1) (black handles) until the center section is fully raised. Remove the cylinder transport locks (2) and store on lift straps (3). Raise and lower the lift system several times to purge air from system. Watch for leaks and retighten fittings if necessary.

75. You may now charge the fold system. Before charging the fold cylinders (4), make sure the rod end of the cylinders are un-bolted or un-pinned and block (6) is placed under cylinders as shown, so that when the rod is extended, it will clear the wing fold brackets. Extend the fold cylinders (4) (green ends) completely and then close them. Extend and retract the cylinders several times to purge air from the system.

76. Now the rod end of fold cylinders (4) may be hooked up to wing with the 1 x 3 1/8 usable pin (5), 1.5 x 1.0 x 0.075 machine washer and 3/16 x 2 cotter pin. Bend cotter pin over to secure.
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Center Gang Bars

Refer to center gang bar assembly in “Parts Manual” for correct part numbers of all components. Refer to machine layout drawings in this manual for correct gang assembly placement.

Refer to Figure 18

77. Position gang assemblies (1) in proper locations. Install the gang pivot bolt (2) through tubes of gang bars and tubes on center frame, secure with 1\(\frac{1}{4}\) flat washers (3) (one on top and one on bottom), 1\(\frac{1}{4}\) slotted nut (4) (one on top and one on bottom). Tighten bolts snug, torque to 350 to 400ft-lbs. Install the 3\(\frac{1}{16}\) x 2 cotter pins (5) through 1\(\frac{1}{4}\) slotted nuts (4) and bend over to secure.

Be sure turnbuckle assembly (9) is preset at 67\(\frac{1}{4}\)” before installing as shown. See gang angle adjustment in “Operator Manual” before going to field. Attach rear of front turn buckle to rocker arm before attaching to front gang on right side due to clearance issue with center breaker.

78. Install rocker arm (6) to tube on center frame with 1\(\frac{1}{4}\) lock nut (7), to secure to frame.

79. Install link (8) with 1 x 3 clevis pin (10), 1.5 x 1.00 x 0.075 machine washer (11) and 3\(\frac{1}{16}\) x 2 cotter pin (5).

80. Install link (9), on ear on front of rear gang bars and on to rocker arm (6). Secure with 1 x 3 clevis pin (10), 1.5 x 1.00 x 0.075 machine washer (11) and 3\(\frac{1}{16}\) x 2 cotter pin (5).

81. Install the round tubes (14) (two on each gang bar) between bottom front plate (12) (slotted hole toward rear), rear plates (13) and plates on center frame. Install the 3\(\frac{3}{4}\) x 6 hex bolts (15), 3\(\frac{1}{4}\) lock washers and nuts. Attach other ends of plates (12) and (13) to bottom of center frame with 3\(\frac{3}{4}\) x 2 hex bolts (15) and 3\(\frac{1}{4}\) lock washers.

82. Install bracket (16) on bottom side of gang bar plate, secure with 5\(\frac{3}{8}\) x 3\(\frac{1}{2}\) hex bolts (17), 5\(\frac{3}{8}\) lock washers and nuts.

83. Attach cylinder lug (20) to center frame using 3\(\frac{3}{4}\) x 2 hex bolt (21), lock washer and nuts.

84. Now the gang cylinders (18) may be hooked up with the 1 x 3\(\frac{3}{4}\) clevis pin (19), 1.5 x 1.00 x 0.075 machine washer (11) and 3\(\frac{1}{16}\) x 2 cotter pin (5).

85. Hook gang cylinder hoses to gang cylinders, be sure all fittings are tightened to specs, See “Hydraulic Connector ID” on page 39. Now the gang system may be purged of air. See “Purging Hydraulic System” on page 22.

86. Bolts may be tightened to specs, See “Torque Values Chart” on page 38 and all cotter pins may be bent.
Figure 18
Center Gang Bars
**Wing Gang Bar**

Refer to center gang bar assembly in “Parts Manual” for correct part numbers of all components. Refer to machine layout drawings in this manual for correct gang assembly placement.

Refer to Figure 19

87. Position gang assemblies (1) in proper locations. Install the gang pivot bolt (2) through tubes of gang bars and tubes on center frame, secure with 1\(\frac{1}{4}\) flat washers (3) (one on top and one on bottom), 1\(\frac{1}{4}\) slotted nut (4) (one on top and one on bottom). Tighten bolts snug, torque to 350 to 400ft-lbs. Install the \(\frac{3}{16}\) x 2 cotter pins (5) through 1\(\frac{1}{4}\) slotted nuts (4) and bend over to secure.

Be sure turnbuckle assembly (6) is preset at 96\(\frac{1}{2}\)” before installing as shown below. See gang angle adjustment in “Operator Manual” before going to field.

88. Install turnbuckle assembly (6), adjustable end on ear on front of rear gang bars and fixed end on ear of front gang bars. Secure with 1 x 3 clevis pin (7), 1.5 x 1.00 x 0.075 machine washer (8) and \(\frac{3}{16}\) x 2 cotter pin (5).

89. Install the round tubes (11) (two on each gang bar) between bottom front plate (9) (slotted hole toward rear), rear plates (10) and plates on wing frame. Install the \(\frac{3}{4}\) x 6 hex bolts (12), \(\frac{3}{4}\) lock washers and nuts. Attach other ends of plates (9) and (10) to bottom of wing frame with \(\frac{3}{4}\) x 2 hex bolts (13) and \(\frac{3}{4}\) lock washers.

90. Install bracket (14) on bottom side of gang bar plate, secure with \(\frac{5}{8}\) x 3\(\frac{1}{2}\) hex bolts (15), \(\frac{5}{8}\) lock washers and nuts.

91. Now the gang cylinders (16) may be hooked up with the 1 x 3.38 clevis pin (17), 1.5 x 1.00 x 0.075 machine washer (8) and \(\frac{3}{16}\) x 2 cotter pin (5).

92. Hook gang cylinder hoses to gang cylinders, be sure all fittings are tightened to specs, See “Hydraulic Connector ID” on page 39. Now the gang system may be purged of air, See “Purging Hydraulic System” on page 22.

93. Bolt may be tightened to specs, See “Torque Values Chart” on page 38 and all cotter pins may be bent.
Figure 19
Wing Gang Bars
Front Light Assembly

Refer to Figure 20

94. Fasten LH (1) and RH (2) light brackets to center brace bar with 1/2 x 3 3/32 x 6 u-bolts (3), 1/2 lock washers and nuts.

95. Route light harness lead w/valve (4) from front of hitch (tractor plug to front), along same route as hydraulic hose (fasten in same clamps and hose wraps as hoses) to center brace bar. Plug one end of enhance light harness (5) to small end of light harness lead w/valve (4). Plug bigger end of light harness dual amber (6) into other end of enhance light module (5). Route shorter leads over towards (marked left and right) the front light mounting brackets as shown. Route long lead (6) along hoses on center frame tube to rear of machine. This lead will be hooked up as shown in, See “Rear Lights & SMV” on page 29.

96. Mount amber lamp lights (7) to top of light brackets (1) and (2), with 1/4 x 1 Gr. 5 hex bolts (8) and 1/4 lock nuts. Plug lead of amber lamp lights (7) into leads of light harness dual amber (6).

97. Tighten all bolts with lock nuts snug, but do not torque. The rest of the bolts may be tightened to specs, See “Torque Values Chart” on page 38. Be sure and get all wiring harnesses fastened up securely with hose wraps or clamps (if routed close to hydraulic hoses) or use cable ties (9).
Rear Lights

Refer to Figure 22 & Figure 22

See layout drawings in Appendix for proper light bracket placement. If machine is not equipped with a rear attachment the rear light brackets will need to be mounted to the rear plate of the center frame with the $\frac{3}{4} \times 2$ bolts (8).

98. Attach SMV bracket (1) to rear of center frame using $\frac{1}{2} \times 3\frac{1}{3} \times 6$ u-bolt (2), $\frac{1}{2}$ lock washers and $\frac{1}{2}$ nuts.

99. Attach the SMV sign (3) to the rear of the smv bracket (1) with $\frac{1}{4} \times \frac{3}{4}$ pan head screws (4), $\frac{1}{4}$ lock washers and $\frac{1}{4}$ nuts.

If your machine has a rear attachment then you will need to install the outside lights on to the rear attachment frame.

100. Remove $\frac{3}{4}$ 2 bolts (8) from light brackets. Install the LH (5) and RH (6) light brackets to plates of center drag frame (7) with the $\frac{3}{4} \times 2$ bolts (8), $\frac{3}{4}$ lock washers and $\frac{3}{4}$ nuts.

101. Tighten all bolts to specs, See “Torque Values Chart” on page 38.
**Splitter Switch**

*Refer to Figure 23*

1. The electrical pigtail that attaches to the switch and the splitter valve will be stored in the manual pak.

2. Attach the pigtail (1) to the splitter valve (2) and then to the light harness lead (3).

3. The switch on the pigtail (1) will need installed into the switch bracket (4) that will be mounted on the bulkhead bracket on the front of the brace bar.

4. On the HT1100-30 the pigtail will also attach to the fold assist harness (5) and the fold assist harness will plug into the bypass valve (6).
HT1100-30 Wing Fold Assist

Refer to Figure 24

Wings need to be folded up when installing the proximity sensor (4) to prevent damage to sensor and brackets. Be sure wing safety lock pins are installed.

104. Slide proximity mount bracket (1) over hinge pin (2) in orientation shown, secure with 1 lock nut (3). Tighten 1 lock nut (3) snug but do not torque.

105. Slide proximity sensor (4) through inside, big hole of proximity mount bracket (1) from rear. Be sure there is a nut (5) on back side of bracket and secure with a nut (5) on front side. Route leads of proximity sensor (4) towards center of machine on front tube of center frame as shown.

106. Plug short leads of the fold assist harness (6), one end to the light harness lead w/valve (7) and the other end into the lead from the bypass down pressure valve solenoid (8).

107. Route the rest of fold assist harness (6) as shown back to front tube of center frame and attach plugs to the proximity sensor (4) leads.

108. Be sure and get all wiring harnesses fastened up securely with hose wraps or clamps (if routed close to hydraulic hoses) or use cable ties.

Figure 24
30 Wing Fold Assist
Proximity Sensor Adjustment

Refer to Figure 25

Wings need to be folded up when adjusting the proximity sensor (1) to prevent damage to sensor and bracket. Be sure and adjust proximity sensors before unfolding. Be sure wing safety lock pins are installed.

109. Loosen nuts (2) (one on front and one on back side of sensor bracket, adjust the proximity sensor (1) to 1/8” to 1/4”, from front of proximity sensor (3) to rear of wing tube (4) as shown.

110. Re-tighten nuts (2) to secure proximity sensor (1).

Gang Cylinder Purging

Refer to Figure 26

Refer to hydraulic layouts in “Appendix” section of this manual for proper gang hose routing on center and wings. See “Hydraulic Connector ID” on page 39 for proper fitting installation. See “Hose Clamp Assembly” on page 20 for proper clamping of hoses.

111. Retract and extend the gang system (5) (Red Handles) several times to purge air from system. Watch for leaks and re-tighten fittings if necessary.
Hose Routing Hitch

Refer to Figure 27

112. Route hydraulic hoses (1) from valves (2), on center brace bar, gang hoses and light harness, under manual pak bracket (3), under front of hitch turnbuckle (4) along all hose clamp blocks and through spring hose holder loop (5) to front of hitch (6) as shown. Secure hoses with hose clamps (7), \( \frac{5}{16} \) hex bolts and \( \frac{5}{16} \) lock washers.

Be sure all hose clamp bolts are tight. Attach hose wraps (8) as needed. Check that all hoses on machine are fastened properly and they won't get pinched at hinge points or drag on ground. Check all connections again for leaks.

Figure 27
Hose Routing Hitch

Gauge Wheel

Refer to Figure 28

113. Install wheel arm mount (1) on wing brace with \( \frac{5}{8} \times 2 \) hex bolts (2), secure with \( \frac{5}{8} \) lock washers and nuts.

114. Attach screw jack (3) to wheel arm mount (1) with \( \frac{1}{2} \times 1\frac{1}{4} \) hex bolts (4), \( \frac{1}{2} \) top lock nuts.

115. Slide gauge wheel spindle receiver (5) into wheel arm mount (1), secure with \( \frac{3}{4} \times 4 \) hex bolts (6), \( \frac{3}{4} \) lock washers and \( \frac{3}{4} \) nuts. Install the \( \frac{5}{8} \times 1\frac{1}{4} \) hex bolts (7) to the wheel arm mount (1).

116. Align hole in 6-bolt hub/spindle assembly (8) with hole in gauge wheel spindle receiver (5), secure with \( \frac{5}{16} \times 2\frac{13}{16} \) clevis pin (9) and \( \frac{1}{8} \times 1 \) cotter pin.

117. Attach wheel/tire assembly (10) to 6-bolt hub/spindle assembly (8) with \( \frac{9}{16} \) lug nuts (11).

118. Tighten all bolts with lock nuts snug, but do not torque. The rest of the bolts may be tightened to specs, See “Torque Values Chart” on page 38.

Figure 28
Gauge Wheel
Rolling Harrow (optional)

Refer to Figure 29

All rolling harrow brackets (3) and ball joint brackets (6) and (7) should be already installed in proper locations. You will simply need to connect the rolling harrow assemblies (9) with the ball joints to the brackets on the drag frame (1). Each spike tube (8) will have a letter decal on the top of the tube. The letter A starts on the far left side of the unit and proceeds to the right.

119. Start by installing the drag frames (1) with 3/4 x 2 hex bolts (2), 3/4 lock washers and nuts. Torque bolts to 265 ft-lb.

120. Carefully lower machine down or use fork lift (if available) to raise rolling harrow assemblies (9) to rolling harrow brackets (3). Align ball joint brackets (6) and (7) with rolling harrow brackets (3), secure with 1 x 4 hex bolts (5) and 1 nylon lock nut. Tighten the 1 x 4 hex bolt (5), only until lock nut is against side of bracket, if over tightened damage to the ball joint brackets will occur.

If you should have to remove these brackets, re-attach all the ball joints with 5/8 x 3 1/32 x 4 1/2 u-bolts (4). It is very important to install the rolling harrow assembly in the proper location, see “Layout Section” of this manual for proper dimensions where it is marked xxx in drawing below. The rolling harrow bracket (3) dimensions are coming off of rear, front tube of drag frame (1) to front of plate of rolling harrow bracket (3). The ball joint bracket (6) is dimensioned off of end of rolling spike tube (8) to side of plate on ball joint bracket (6) (dimensions in layout drawings may come off either end of tube). For complete parts breakdown see “Attachment Section” of Parts Manual.

Re-installation instructions are to place left ball joint brackets (6) in proper location from layout drawing and torque u-bolts to 150 ft-lb. Leave right ball joint bracket (7) loose, as it may need move a little while you bolt up the left rolling harrow bracket (3).
Hydraulic Reel Down Pressure Kit

Refer to Figure 30

121. Install the cylinder mount (1) and mounting bracket (2), using \( \frac{5}{8} \times 5 \) hex bolt (3), lock washer and hex nut in the proper locations on the rear drag frame (4).

122. Mount the double reel arms (5) to the mounting bracket (2) using \( \frac{5}{8} \times 4\frac{1}{4} \) special thread Gr. 8 hex bolt (6).

123. Attach the cylinders (7) to the drag arm assembly (5) and the cylinder mount (1) using clevis pin 1 x 3.13 (8) and cotter pin \( \frac{3}{16} \times 2 \) (9).

124. Attach the double reel arms (5) to the double reel pivot bracket (10) using 1 x 7.52 usable pin (11). The double reel frames (12) may need to be attached to the arms (5) using u-bolt \( \frac{1}{2} \times 2 \times 3 \) (13). The reels (14) bolt on to the double reel frames (12) using 1 x 4 (15).

125. Attach the double reel bolt on arm (16) to the double reel frame (12) using \( \frac{5}{8} \times 2 \) hex bolt (17), lock washers and nuts.

126. The hydraulics will be run along the hitch and will need to be hooked to the down pressure valve that will be mounted to the center frame on a bracket. Hoses will be run along the center frame and to the double tee block. The top ports of the double tee block will be routed to the rod end of the hydraulic cylinders. For complete hose routing See “Double Hydraulic Reel Layout” on page 52.

127. Hook the hydraulic hoses to the cylinders, rod to rod, and base to base.

128. Purge the hydraulics of air and check for leaks.

Please see layouts for dimensions and placement, and Part Manual for a complete list of parts.
Figure 30
Hydraulic Double Reel
Weight Package Assembly (Optional)
Refer to Figure 31

**CAUTION**

Lower machine until coulters are on ground and pressure is off leveling system.

Use up to 2 sets of weights (4 weights) may be installed in positions shown.

**NOTICE**

If you have only 1 weight pack set, it be installed in front of the fold cylinder. If you have 2 sets, one must be installed in front of the fold cylinder bracket and one must be installed behind the fold cylinder bracket.

129. Start by removing the $\frac{3}{4} \times 2$ Gr. 8 bolts (5) from level bar assembly.

130. Pivot level bar (6) up so there will be clearance to set the 750 pound weight assemblies (8) into place.

131. Pivot level bar spring assembly (7) forward.

132. Carefully lower the 750 pound weight assemblies (8) (4 maximum) onto center frame trusses (9), two on front side of fold cylinders and two on rear side of fold cylinders.

133. Slide rear weights as far forward as possible and install weight box stops (10) on inside of trusses as close to weight as possible (rear weights), secure with $\frac{1}{2} \times 4\frac{1}{32} \times 5\frac{1}{4}$ u-bolt (11), $\frac{1}{2}$ lock washers and $\frac{1}{2}$ nuts.

134. Use a $\frac{1}{2} \times 4\frac{1}{32} \times 9\frac{1}{4}$ u-bolt (12) to install the front weight stops (13). Be sure to leave enough space for wing rest to attach to brace bar in front of weight packs.

135. Torque bolts to 85 ft-lbs.

Refer to Figure 32

136. Pivot level bar (1) and the level bar spring assembly (2) until holes in plates are aligned.

137. Re-install $\frac{3}{4} \times 2$ Gr. 8 bolts (3), secure with $\frac{3}{4}$ lock washers and nuts.

138. Torque $\frac{3}{4} \times 2$ Gr. 8 bolts (3) to 375 ft-lbs to be sure bolts do not work loose and cause damage to machine.
# Appendix - Reference Information

## Torque Values Chart

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<td>370</td>
<td>275</td>
<td>955</td>
</tr>
<tr>
<td>11/16-7</td>
<td>480</td>
<td>355</td>
<td>1080</td>
</tr>
<tr>
<td>11/16-12</td>
<td>540</td>
<td>395</td>
<td>1210</td>
</tr>
<tr>
<td>11/16-15</td>
<td>680</td>
<td>500</td>
<td>1520</td>
</tr>
<tr>
<td>11/16-18</td>
<td>750</td>
<td>555</td>
<td>1680</td>
</tr>
<tr>
<td>1-5/8</td>
<td>890</td>
<td>655</td>
<td>1990</td>
</tr>
<tr>
<td>11/8-12</td>
<td>1010</td>
<td>745</td>
<td>2270</td>
</tr>
<tr>
<td>11/8-16</td>
<td>1180</td>
<td>870</td>
<td>2640</td>
</tr>
<tr>
<td>11/8-18</td>
<td>1330</td>
<td>980</td>
<td>2970</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bolt Size</th>
<th>Class 5.8</th>
<th>Class 8.8</th>
<th>Class 10.9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>mm x pitch</strong></td>
<td><strong>N-m</strong></td>
<td><strong>ft-lb</strong></td>
<td><strong>N-m</strong></td>
</tr>
<tr>
<td>M 5 X 0.8</td>
<td>4</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>M 6 X 1</td>
<td>7</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>M 8 X 1.25</td>
<td>17</td>
<td>12</td>
<td>26</td>
</tr>
<tr>
<td>M 8 X 1</td>
<td>18</td>
<td>13</td>
<td>28</td>
</tr>
<tr>
<td>M10 X 1.5</td>
<td>33</td>
<td>24</td>
<td>52</td>
</tr>
<tr>
<td>M10 X 0.75</td>
<td>39</td>
<td>29</td>
<td>61</td>
</tr>
<tr>
<td>M12 X 1.75</td>
<td>58</td>
<td>42</td>
<td>91</td>
</tr>
<tr>
<td>M12 X 1</td>
<td>60</td>
<td>44</td>
<td>95</td>
</tr>
<tr>
<td>M12 X 1</td>
<td>90</td>
<td>66</td>
<td>105</td>
</tr>
<tr>
<td>M14 X 2</td>
<td>92</td>
<td>68</td>
<td>145</td>
</tr>
<tr>
<td>M14 X 1.5</td>
<td>99</td>
<td>73</td>
<td>155</td>
</tr>
<tr>
<td>M16 X 2</td>
<td>145</td>
<td>105</td>
<td>225</td>
</tr>
<tr>
<td>M16 X 1.5</td>
<td>155</td>
<td>115</td>
<td>240</td>
</tr>
<tr>
<td>M18 X 2.5</td>
<td>195</td>
<td>145</td>
<td>310</td>
</tr>
<tr>
<td>M18 X 1.5</td>
<td>220</td>
<td>165</td>
<td>350</td>
</tr>
<tr>
<td>M20 X 2.5</td>
<td>280</td>
<td>205</td>
<td>440</td>
</tr>
<tr>
<td>M20 X 1.5</td>
<td>310</td>
<td>230</td>
<td>650</td>
</tr>
<tr>
<td>M24 X 3</td>
<td>480</td>
<td>355</td>
<td>760</td>
</tr>
<tr>
<td>M24 X 2</td>
<td>525</td>
<td>390</td>
<td>830</td>
</tr>
<tr>
<td>M30 X 3.5</td>
<td>960</td>
<td>705</td>
<td>1510</td>
</tr>
<tr>
<td>M30 X 2</td>
<td>1060</td>
<td>785</td>
<td>1680</td>
</tr>
<tr>
<td>M36 X 3.5</td>
<td>1730</td>
<td>1270</td>
<td>2650</td>
</tr>
<tr>
<td>M36 X 2</td>
<td>1880</td>
<td>1380</td>
<td>2960</td>
</tr>
</tbody>
</table>

a. in-tpi = nominal thread diameter in inches-threads per inch  
b. N·m = newton-meters  
c. mm x pitch = nominal thread diameter in mm x thread pitch  
d. ft-lb = foot pounds

Torque tolerance + 0%, -15% of torquing values. Unless otherwise specified use torque values listed above.
Tire Inflation Chart

<table>
<thead>
<tr>
<th>Wheel</th>
<th>Tire Size</th>
<th>Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gauge Wheel</td>
<td>9.5L x 15” 8-Ply</td>
<td>44 psi (303 kPa)</td>
</tr>
<tr>
<td>Transport/Center 20 &amp; 25</td>
<td>Titan 380/55R x 16.5G</td>
<td>73 psi (503 kPa)</td>
</tr>
<tr>
<td>Transport/Center 30</td>
<td>BKT 410/50R x 16.5</td>
<td>67 psi (503 kPa)</td>
</tr>
<tr>
<td>Transport/Wings 20 &amp; 25</td>
<td>11L-15SL 12-Ply</td>
<td>52 psi (359 kPa)</td>
</tr>
<tr>
<td>Transport/Wings 30</td>
<td>12.5L x 15” 12-Ply</td>
<td>52 psi (359 kPa)</td>
</tr>
</tbody>
</table>

Tire Inflation Chart

Hydraulic Connectors and Torque

Refer to Figure 33 (a hypothetical fitting)

Leave any protective caps in place until immediately prior to making a connection.

- **NPT** - National Pipe Thread  
  Note tapered threads, no cone/flare, and no O-ring.  
  (1) Apply liquid pipe sealant for hydraulic applications.  
  Do not use tape sealant, which can clog a filter and/or plug an orifice.

- **JIC** - Joint Industry Conference (SAE J514)  
  Note straight threads (4) and the 37° cone (5) on “M” fittings (or 37° flare on “F” fittings).  
  Use no sealants (tape or liquid) on JIC fittings.

- **ORB** - O-Ring Boss (SAE J514)  
  Note straight threads (5) and elastomer O-Ring (7).  
  Prior to installation, to prevent abrasion during tightening, lubricate O-Ring with clean hydraulic fluid.  
  Use no sealants (tape or liquid) on ORB fittings.

ORB fittings that need orientation, such as the ell depicted, also have a washer (8) and jam nut (9) (“adjustable thread port stud”). Back jam nut away from washer. Thread fitting into receptacle until O-Ring contacts seat. Unscrew fitting to desired orientation. Tighten jam nut to torque specification.

<table>
<thead>
<tr>
<th>Fitting</th>
<th>Dash Size</th>
<th>Fittings Torque Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4-18 NPT</td>
<td>-4</td>
<td>1.5-3.0 turns past finger tight</td>
</tr>
<tr>
<td>1/2-20 JIC</td>
<td>-5</td>
<td>19-20 14-15</td>
</tr>
<tr>
<td>1/2-20 ORB w/jam nut</td>
<td>-5</td>
<td>12-16 9-12</td>
</tr>
<tr>
<td>1/2-20 ORB straight</td>
<td>-5</td>
<td>19-26 14-19</td>
</tr>
<tr>
<td>9/16-18 JIC</td>
<td>-6</td>
<td>24-27 18-20</td>
</tr>
<tr>
<td>9/16-18 ORB w/jam nut</td>
<td>-6</td>
<td>16-22 12-16</td>
</tr>
<tr>
<td>9/16-18 ORB straight</td>
<td>-6</td>
<td>24-33 18-24</td>
</tr>
<tr>
<td>3/4-16 JIC</td>
<td>-8</td>
<td>37-53 27-39</td>
</tr>
<tr>
<td>3/4-16 ORB w/jam nut</td>
<td>-8</td>
<td>27-41 20-30</td>
</tr>
<tr>
<td>3/4-16 ORB straight</td>
<td>-8</td>
<td>37-58 27-43</td>
</tr>
</tbody>
</table>

All tires are warranted by the original manufacturer of the tire. Tire warranty information is found in the brochures included with your Operator’s and Parts Manuals or online at the manufacturer’s web sites listed below. For assistance or information, contact your nearest Authorized Farm Tire Retailer.

- **Manufacturer Web site**  
  Firestone [www.firestoneag.com](http://www.firestoneag.com)  
  Gleason [www.gleasonwheel.com](http://www.gleasonwheel.com)  
  Titan [www.titan-intl.com](http://www.titan-intl.com)  
  Galaxy [www.atgtire.com](http://www.atgtire.com)  
  BKT [www.bkt-tire.com](http://www.bkt-tire.com)
Hydraulic Lift Layout
HT1100-20 & 25 Hydraulic Fold Layout

See Parts Manual for Fittings
HT1100-30 Hydraulic Fold Layout

TP-69637

See Parts Manual for Fittings

Top

Double Tee Block

Bulkhead fittings

Relief Valve 810-348C

Two Way Valve 810-737C

Down Pressure Valve 810-900C

Case Drain Hose 811-735C

Extend 841-198C

Retract 841-838C

Clamps

Runs over gang bar, under brace bar tube
HT1100-20 & 25 Hydraulic Gang Angle Layout
HT1100-30 Hydraulic Gang Angle Layout
HT1100-20 & 25 Reel Hydraulic Layout

Reels and Harrows Removed for clarity
HT1100-30 Reel Hydraulic Layout
HT1100-25 Machine Layout
HT1100-25 Machine Layout
HT1100-30 Machine Layout
HT1100-30 Machine Layout
HT1100-20 Double Reel/Rolling Harrow Layout
HT1100-20 Double Reel/Rolling Harrow Layout
HT1100-25 Double Reel/Rolling Harrow Layout
HT1100-25 Double Reel/Rolling Harrow Layout
HT1100-30 Double Reel/Rolling Harrow Layout

![Diagram of HT1100-30 Double Reel/Rolling Harrow Layout]

[5' Double Reel 589-7885]

[5' Double Reel 589-7885]

[5' Double Reel 589-7885]
HT1100-30 Double Reel/Rolling Harrow Layout
HT1100-20 Single Reel/Rolling Harrow Layout
HT1100-20 Single Reel/Rolling Harrow Layout
HT1100-25 Single Reel/Rolling Harrow Layout
HT1100-25 Single Reel/Rolling Harrow Layout
HT1100-30 Single Reel/Rolling Harrow Layout
HT1100-30 Single Reel/Rolling Harrow Layout
Index

A
address, Great Plains .................. 7
angle gauge .................................. 17
B
banding ..................................... 7
C
CAUTION, defined ......................... 1
center frame assembly .................... 8
children ........................................ 2
clothing ........................................ 2
color code, hose ............................ 21
components .................................... 7
contact Great Plains ...................... 7
covered models .............................. 4
cylinders
  center lift .................................. 8
D
DANGER, defined ........................... 1
decals .......................................... 1
definitions ..................................... 5
depth stop ..................................... 17
directions ...................................... 5
E
electrical hookup ........................... 8
email, Great Plains ....................... 7
F
fire ............................................. 1
fork truck ..................................... 7
frames ......................................... 7
H
headphones .................................. 2
hearing ........................................ 2
high pressure fluids ........................ 2
hose clamps .................................. 20
hose handles ................................. 21
HT1100-20 .................................. 4
HT1100-25 .................................. 4
HT1100-30 .................................. 4
hydraulic connectors ...................... 39
hydraulic hoses ............................ 21
  hitch ......................................... 33
hydraulic safety ............................ 2
I
IMPORTANT!, defined .................... 5
inflation ...................................... 39
J
JIC .............................................. 39
Joint Industry Conference ............... 39
J514 ........................................... 39
L
layout
  HT1100-20 Double Reel/Rolling
  Harrow ................................... 52, 53
  HT1100-20 Single Reel/Rolling
  Harrow .................................... 47
  HT1100-20 & 25 Hydraulic Fold .... 41
  HT1100-20 & 25 Hydraulic Gang
  Angle ........................................ 43
  HT1100-20 & 25 Reel Hydraulic
  Layout ....................................... 45
  HT1100-25 Double Reel/Rolling
  Harrow ................................... 54, 55
  HT1100-25 Machine ...................... 48, 49
  HT1100-25 Single Reel/Rolling
  Harrow .................................... 60, 61
  HT1100-30 Double Reel/Rolling
  Harrow .................................... 56, 57
  HT1100-30 Hydraulic Fold ............ 42
  HT1100-30 Hydraulic Gang Angle .. 44
  HT1100-30 Machine ...................... 50
  HT1100-30 Reel Hydraulic Layout .. 46
  HT1100-30 Single Reel Following
  Rolling Harrow .......................... 62, 63
  Hydraulic Lift ............................ 40
  leaks ......................................... 2
  left-hand, defined ....................... 5
  lifters ....................................... 1
  light brackets
    front ..................................... 28
  light harness
    enhance ................................... 28
    lead w/valve .............................. 28
  lights ...................................... 2
    amber lamp ............................. 28
M
medical assistance ....................... 2, 21
National Pipe Thread ..................... 39
Note, defined ................................ 5
NPT ........................................... 39
O
ORB ........................................... 39
orientation rose ............................ 5
O-Ring Boss ................................. 39
P
protective equipment ..................... 2
purging
  fold system ................................ 22
  lift system ................................ 22
R
riders ........................................ 2
right-hand, defined ...................... 5
rose, orientation ........................... 5
S
SAE J514 .................................... 39
safety symbol .............................. 1
shutdown ....................................... 2
smaller items ................................ 7
storage ......................................... 2
storage pod ................................... 7
support ......................................... 7
symbol, safety ............................... 1
T
tables
document family ............................ 4
  fittings torque ............................ 39
  hose color code ............................ 21
  models covered ............................ 4
  torque values .............................. 38
  tire inflation .............................. 39
  tire inflation chart ...................... 39
  tire wheel assembly ...................... 7
  tires .......................................... 3
  torque tube
    center ................................... 8
  torque value chart ....................... 38
  torque values chart (wheel bolts) .... 38
U
unload ........................................ 7
URLs, tires .................................... 39
W
WARNING, defined ......................... 1
warranty ...................................... 39, 48
weight package ................................ 37
Numerics
11L-15SL 12Ply .................. 39
12.5Lx15 12Ply .................. 39
380/55rx16.5 Titan ........................ 39
410/50Rx16.5 BKT .......................... 39
586-831M, manual ...................... 4
586-831P, manual ...................... 4
586-831Q-ENG, manual .............. 4
586-831Q, manual ...................... 4
9.5L x 15" 8-Ply .................. 39