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.
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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 Discovator using blocks and supports provided.
▲ Detach and store Discovator 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 DVN Discovator 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 Series VIII, 8315-8324DVN Discovator is a three-section field finishing, one-pass tillage tool. Working width ranges from 15 to 24 feet. The implement is designed to combine discing/slicing, cultivating, harrowing and herbicide incorporation in a single pass. Various finishing attachments are available to customize your tillage and residue requirements for your operation.

Models Covered

- 8315DVN  15-Foot  3-section
- 8318DVN  18-Foot  3-section
- 8321DVN  21-Foot  3-section
- 8324DVN  24-Foot  3-section

Document Family

- 550-466Q-ENG Assembly Manual
- 550-466Q Pre-Delivery Manual (this document)
- 550-466M Operator Manual
- 550-466P Parts Manual

Tools Required

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

Pre-assembly Checklist

1. Before assembling, read and understand “Important Safety Information” in front part of this manual.
2. Have at least two people on hand while assembling.
3. Make sure area is level and free of obstructions (preferably an open concrete area).
4. Have all major components
5. Have all fasteners and pins shipped with Discovator.
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

The Discovator will be shipped pre-assembled as shown.

Refer to Figure 3

• The Discovator will be shipped with shipping stands that will not need to be returned to Great Plains.
• Some models may not have center hub/wheel assemblies installed.
• Wings will be connected to center frame and folded in transport positions.
• All hydraulics will be connected and purged.
• Gangs will be pre-assembled and banded together on pallets.
• Shank mount assemblies will be attached to frames in proper locations.
• Pre-assembled light brackets will be banded to center frame.

Refer to Figure 4

• Shank assemblies will be shipped in a box on a pallet.
• Finishing attachments (if equipped), will be pre-assembled and banded to pallet.

Figure 3
Shipping Machine

Figure 4
Shipping Shanks
Unloading

Be sure the truck is on level ground, preferably concrete.

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

Unloading Smaller Items First

Unloading the Discovator is a potentially dangerous operation. Reduce risk and complications by first unloading:

1. the gangs and finishing attachments
2. the misc. boxes
3. the Discovator (described in the next section)

Unload Discovator

4. Place these components well out of the maneuvering area needed for unloading the Discovator.
5. Double-check that all chains and tie-down straps have been released and stowed.
6. Set parking brake on trailer tractor.
7. Slowly lift the Discovator off trailer bed using two fork lifts.
8. Stop lifting about 12” above the bed.
9. Have the truck driver slowly pull the trailer straight out from under the Discovator.
10. Making sure to keep level from front to back and side to side, slowly lower the Discovator.
11. Lower the Discovator down until the shipping stands are about 12” off ground.
12. Remove shipping stands.
13. If machine does not have the center hub/wheel assembly mounted See “Refer to Figure 5” on page 8 to install before putting machine completely on ground.
14. Remove tongue jack from field positions and put in storage position with foot of jack towards ground.
15. Slowly lower Discovator until it resting on the center transport tires and front tongue jack.

Unpacking Boxes

- Position boxes in area that you can maneuver components up to machine to assembly.
16. Carefully remove banding from boxes.
17. Carefully remove banding from gangs and finishing reels.
18. Locate and identify all components before assembling.

Further Assistance

Great Plains Manufacturing, Inc. wants you to be satisfied with your new 8315-8324DVN. If for any reason you do not understand any part of this manual or are otherwise dissatisfied with the product please contact:

**Great Plains Service Department**
1525 E. North St.
P.O. 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

Install Center Hub/Wheel

If center hub/wheel assembly ① is already installed on machine go to, See “Refer to Figure 6” on page 8.

Refer to Figure 5

19. While unloading machine from truck, lower Discovator down close to ground leaving high enough to install center hub/wheel assembly ①.

Pin ② and roll pin will be in manual pak located on hitch.

20. Locate center hub/wheel assembly ①, slide spindle into torque tube ③.

21. Align holes, attach pin ② through holes and secure with roll pin.

22. Repeat same procedure for other side.

23. Remove screw jack from field position on hitch and install in storage position on front left side of hitch.

24. Now machine may be carefully lowered down to ground and let machine rest on tires and jack.

Attach machine to tractor as shown in “Operator’s Manual”, to raise machine up and down for ease of installing components.

Install K-Flex Shanks

Refer to Figure 6

25. If machine is equipped with magnum shanks, See “Refer to Figure 7” on page 9.

26. The shank mounts will be shipped in correct location from factory. If something got moved during shipping, go to layout section of “Operator’s Manual” for proper placement.

27. Locate shank assemblies from misc. box and remove the $\frac{5}{8} \times 2$ bolt ① from shank assembly ②.

28. Slide shank assembly ② through slot in shank mount ③ and align holes as shown below.

29. Re-attach $\frac{5}{8} \times 2$ bolt ①, secure with $\frac{5}{8}$ lock nut.

30. Bolt ① may be tightened to specs, See “Torque Values Chart” on page 12.

31. Repeat same procedure for rest of shanks.
Install Magnum Shanks

Refer to Figure 7

32. The shank mounts will be shipped in correct location from factory. If something got moved during shipping, go to the layout section of “Operator’s Manual” for proper placement.

33. To install the shank assemblies ③ the $\frac{1}{2} \times 1 \frac{1}{2}$ bolt ① will need loosened clear up but do not take clear out. This will allow the spring to pivot so you can install the $\frac{5}{8} \times 2$ bolt ②.

Fig The $\frac{3}{4}$ hex jam nut ⑤ will be torqued the correct amount at the factory, and will not need to be removed.

34. Locate shank assemblies from misc. box and remove the $\frac{5}{8} \times 2$ bolt ② from shank assembly ③.

35. Slide shank assembly ③ through shank cradle in shank mount ④ and align holes as shown below.

36. Re-attach $\frac{5}{8} \times 2$ bolt ②, secure with $\frac{5}{8}$ lock nut.

37. Bolt ② may be tightened to specs, See “Torque Values Chart” on page 12. Re-tighten $\frac{1}{2} \times 1 \frac{1}{2}$ bolt ① until threads bottom out. Be sure and tighten $\frac{3}{4}$ hex jam nut ⑤ until thread bottom out to ensure that hole doesn’t wear excessively.

38. Repeat same procedure for rest of shanks.

Attach Disc or Coulter Gangs

Refer to Figure 8

39. The gang hanger assemblies ② will be shipped mounted to machine in proper location.

40. The L bundle number will written on a blade of each disc or coulter gang assembly ①. See layout section of “Operator’s Manual” for proper placement.

41. Remove the $1 \times 5 \frac{1}{2}$ pin ③ and the $\frac{3}{4} \times 2 \frac{1}{2}$ pin ⑥ from gang hanger assemblies ② as shown.

42. Move disc or coulter blade assembly ① into positions with a fork truck or overhead hoist and align holes. Re-install the $1 \times 5 \frac{1}{2}$ pin ③, secure with the $\frac{3}{8} \times 2 \frac{1}{4}$ bolt ④ and lock nut. Re-install the $\frac{3}{4} \times 2 \frac{1}{2}$ pin ⑥ to spring assemblies ⑤, secure with $\frac{3}{4}$ flat washer and cotter pin.

43. All bolts may be tightened to specs, See “Torque Values Chart” on page 12. Bend over cotter pins.

44. Repeat same procedure for rest of gangs.
Install Lights and SMV

Refer to Figure 9
45. Remove $\frac{1}{2} \times 1\frac{1}{2}$ bolts from the left and right hand light bracket assemblies from center frame.
46. Align the holes with the center frame plate and re-install the $\frac{1}{2} \times 1\frac{1}{2}$ bolts, secure with the $\frac{1}{2}$ lock washers and nuts.
47. Carefully un-band smv sign assembly from back of center frame, remove $\frac{1}{2}$ u-bolts from smv post. Mount smv sign assembly to back side of center frame tube as shown as close to center as possible, re-install $\frac{1}{2}$ u-bolts, secure with $\frac{1}{2}$ lock washer and nut.
48. Tighten all bolts to specs, See “Torque Values Chart” on page 12.

Install Rear Hitch (optional)

The rear tow hitch will be shipped with big components banded together and bolts will be in a box. Carefully un-band the components.

Refer to Figure 10
49. Attach left and right rear hitch arms, rear hitch truss, rear truss support to center frame using $\frac{5}{8} \times 1\frac{1}{2}$ bolts, $\frac{5}{8} \times 3\frac{1}{32} \times 5\frac{1}{2}$ u-bolts, secure with $\frac{5}{8}$ lock washers and nuts.

Do not tighten any bolts until every thing is installed.
50. Now install the rear hitch frame using $\frac{5}{8} \times 1\frac{1}{2}$ bolts, $\frac{5}{8} \times 4\frac{1}{32} \times 4\frac{1}{4}$ u-bolts, secure with $\frac{5}{8}$ lock washers and nuts.
51. The bolt on sleeve assembly with rigid or flex slide may be fastened using $\frac{5}{8} \times 3\frac{1}{32} \times 4\frac{1}{2}$ u-bolt, secure with $\frac{5}{8}$ lock washers and nuts.
52. Tighten all bolts to specs, See “Torque Values Chart” on page 12.
53. If machine is equipped with optional rear hitch accessory kit may be installed as shown in “Parts Manual”.
54. Route hoses and light harness along hitch and frame with hose clamps and hose wraps, provided.

Be sure hoses and light harness is fastened securely so they don’t drag or get pinched.
Completing Setup

55. If the Discovator is equipped with an optional finishing attachment, refer to “Parts Manual” for parts breakdown and layout section of “Operator’s Manual” for proper placement.

56. Once the options are installed, fold the Discovator to check for clearance and interferences. Slowly fold Discovator while watching that hoses and wiring harnesses do not become pinched or kinked while watching for interferences.

Double check that all bolts are tightened to specs, See “Torque Values Chart” on page 12.Consult the operating instructions, “Operator’s Manual”, for the first time field adjustments before going to the field.
### Torque Values Chart

<table>
<thead>
<tr>
<th>Bolt Size</th>
<th>Bolt Head Identification</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>Grade 2</td>
</tr>
<tr>
<td></td>
<td>N-m(^b) ft-lb(^d)</td>
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<tr>
<td>(\frac{1}{4})-20</td>
<td>7.4</td>
</tr>
<tr>
<td>(\frac{1}{4})-28</td>
<td>8.5</td>
</tr>
<tr>
<td>(\frac{5}{16})-18</td>
<td>15</td>
</tr>
<tr>
<td>(\frac{5}{16})-24</td>
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<table>
<thead>
<tr>
<th>Bolt Size</th>
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<td>N-m ft-lb</td>
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<tr>
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<td>M20 X 1.5</td>
<td>310</td>
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<tr>
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</tr>
<tr>
<td>M30 X 3.5</td>
<td>960</td>
</tr>
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<tr>
<td>M36 X 3.5</td>
<td>1730</td>
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<tr>
<td>M36 X 2</td>
<td>1880</td>
</tr>
</tbody>
</table>

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

Disc or Coulter Gang Bolt Torque 1 1/2"-6 650-750 Foot-pounds (175 lbs on 4’ cheater).
Tire Inflation Chart

<table>
<thead>
<tr>
<th>Tire Size</th>
<th>Inflation</th>
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<tbody>
<tr>
<td>6.70 x 15&quot;</td>
<td>221 kPa 32 psi</td>
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<tr>
<td>4-Ply</td>
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</tr>
<tr>
<td>12.5L x 16.5&quot;</td>
<td>724 kPa 105psi</td>
</tr>
<tr>
<td>Load G Galaxy</td>
<td></td>
</tr>
<tr>
<td>32-15.5 x 16.5&quot;</td>
<td>621 kPa 793 psi</td>
</tr>
<tr>
<td>Load G Galaxy</td>
<td></td>
</tr>
<tr>
<td>380/55R x 16.5</td>
<td>503 kPa 73 psi</td>
</tr>
<tr>
<td>Load F RI</td>
<td></td>
</tr>
</tbody>
</table>

Tire Warranty Information

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

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Web site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firestone</td>
<td><a href="http://www.firestoneag.com">www.firestoneag.com</a></td>
</tr>
<tr>
<td>Gleason</td>
<td><a href="http://www.gleasonwheel.com">www.gleasonwheel.com</a></td>
</tr>
<tr>
<td>Titan</td>
<td><a href="http://www.titan-intl.com">www.titan-intl.com</a></td>
</tr>
</tbody>
</table>

Hydraulic Connectors and Torque

Refer to Figure 11 (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.

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 and the 37° cone 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 and elastomer O-Ring. 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 and jam nut (“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>
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<tr>
<th>Dash</th>
<th>Fitting</th>
<th>N-m</th>
<th>Ft-Lbs</th>
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<tr>
<td>-4</td>
<td>1/4-18 NPT</td>
<td>1.5-3.0 turns past finger tight</td>
<td></td>
</tr>
<tr>
<td>-5</td>
<td>1/2-20 JIC</td>
<td>19-20</td>
<td>14-15</td>
</tr>
<tr>
<td>-5</td>
<td>1/2-20 ORB w/jam nut</td>
<td>12-16</td>
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<tr>
<td>-6</td>
<td>5/16-18 JIC</td>
<td>24-27</td>
<td>18-20</td>
</tr>
<tr>
<td>-6</td>
<td>5/16-18 ORB w/jam nut</td>
<td>16-22</td>
<td>12-16</td>
</tr>
<tr>
<td>-6</td>
<td>5/16-18 ORB straight</td>
<td>24-33</td>
<td>18-24</td>
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<tr>
<td>-8</td>
<td>3/4-16 JIC</td>
<td>37-53</td>
<td>27-39</td>
</tr>
<tr>
<td>-8</td>
<td>3/4-16 ORB w/jam nut</td>
<td>27-41</td>
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</tr>
<tr>
<td>-8</td>
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8315DVN S7T Layout
8315DVN S5T HR Layout
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8318DVN CH4B Coil Tine Layout
8321DVN HD 3Bar Spike W/Reel Layout
8321DVN S7T Layout
8321DVN S5T HR Layout
8321DVN CH4B Coil Tine Layout
8324DVN HD 3Bar Spike W/Reel Layout
8324DVN S7T Layout
8324DVN S5T HR Layout
8324DVN CH4B Coil Tine Layout

Diagram showing the layout of 8324DVN CH4B Coil Tines with measurements标注 in centimeters and inches.
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