Read the operator 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 or may depict similar models where a topic is identical.
### Machine Identification

Record your machine details in the log below. If you replace this manual, be sure to transfer this information to the new manual.

If you or the dealer have added options not originally ordered with the machine, or removed options that were originally ordered, the weights and measurements are no longer accurate for your machine. Update the record by adding the machine weight and measurements with the option(s) weight and measurements.

<table>
<thead>
<tr>
<th>Model Number</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Number</td>
<td></td>
</tr>
<tr>
<td>Machine Height</td>
<td></td>
</tr>
<tr>
<td>Machine Length</td>
<td></td>
</tr>
<tr>
<td>Machine Width</td>
<td></td>
</tr>
<tr>
<td>Machine Weight</td>
<td></td>
</tr>
<tr>
<td>Year of Construction</td>
<td></td>
</tr>
<tr>
<td>Delivery Date</td>
<td></td>
</tr>
<tr>
<td>First Operation</td>
<td></td>
</tr>
</tbody>
</table>

**Accessories**

- 
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### Dealer Contact Information

| Name: |          |
| Street: |          |
| City/State: |          |
| Telephone: |          |
| Email: |          |
| Dealer's Customer No.: |          |

⚠️ **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov
Table of Contents

Important Safety Information........................................1
Introduction..............................................................11
  Description of Unit................................................11
  Intended Usage.....................................................11
  Document Family................................................11
Covered Models.......................................................11
Using This Manual..................................................11
Definitions...................................................................11
Owner Assistance......................................................12
  Further Assistance................................................12
Preparation and Setup...............................................13
  Initial Setup........................................................13
  Pre-Setup Checklist..............................................13
  Hitching Tractor to Planter.....................................14
  3-Point Hitching..................................................14
  Electrical Hookup................................................16
  Hydraulic Hose Hookup........................................17
  Protecting Hydraulic Motor Seals............................18
  Frame Height and Leveling....................................19
  Raise Parking Stands............................................20
  Marker Extension...............................................21
Operating Instructions...............................................22
  Pre-Start Checklist..............................................22
  Monitor Operation...............................................23
  Raising/Lowering Planter......................................23
  Folding the 3PYP...............................................24
  Locking Pins.....................................................25
  Lift Assist Cylinder Lock-Up.................................27
  Transport the 3PYP to the field................................27
  Steering....................................................................28
  Unfolding The 3PYP..............................................29
  Electric Clutch Operation.......................................31
  Electric Clutch Lock-Up........................................31
  Marker Operation................................................34
  Marker Tilt-Up....................................................35
  Marker Unfold (one side).......................................35
  Row Marker Operation.........................................35
  Folding The Markers............................................35
  Marker Tilt-Down................................................35
  Unusual Marker Operations....................................35
  Airbox Operation................................................36
  Fan Operation.....................................................36
  Y-Tubes..................................................................36
  82 Bushel Hopper Operation..................................37
  Adding Seed to 82 Bushel Hopper............................37
  Changing the Seed Box or 82 Bushel Hopper...............38
  Steering with Control Monitor (S/N B1127J+)...............40
  Steering System Selection.....................................40
  Steering Calibration............................................40
  Advanced Setup................................................41
  Diagnostics.......................................................41
  Steering with Module Control (S/N A1055S-B1126J)......42
  Steering Configuration Switch...............................43
  Field Set-Up Checklist.........................................43
  Field Operation................................................45
  Planting....................................................................46
  Checking Planting Rate.........................................46
  Short-Term Parking...............................................46
  Long-Term Storage...............................................47
Adjustments................................................................48
  Setting Seed Rate.................................................49
  Indexing..................................................................49
  Gauge Wheel Sprocket Selection.............................49
  Drive Range Sprockets..........................................50
  Upper Drive Sprocket............................................50
  Transmission Sprockets.........................................51
  Transmission Adjustments.....................................52
  Gauge Wheel Adjustments.....................................52
  Gauge Wheel Tension............................................53
  Contact Drive Adjustments....................................53
  Hydraulic Down Pressure.......................................54
  Cart Weight Transfer...........................................55
  Priority Flow Hydraulic Systems............................55
  Marker Adjustments.............................................56
  Marker Disk Adjustment........................................56
  Height Switch Adjustment.....................................57
  Fan Adjustments.................................................58
  Fertilizer Setup..................................................58
  Liquid Fertilizer Strainer.......................................59
  Fertilizer Orifice Plates........................................60
  Fertilizer Row Shut-Off.........................................60
  Fertilizer Relief Valve..........................................61
  25 Series Row Units...............................................62
  Row Unit Down Pressure.......................................63
  Adjusting Down-Pressure.......................................64
  Row Unit Shut-Off................................................65
  Row Unit Lock-Up................................................66
  Unit-Mount Cleaner Adjustments............................67
  Coulter Adjustments.............................................68

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<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Row-Unit Opener Adjustments</td>
<td>69</td>
</tr>
<tr>
<td>Setting Planting Depth</td>
<td>69</td>
</tr>
<tr>
<td>Disk Angle and Side Depth Wheels</td>
<td>69</td>
</tr>
<tr>
<td>Adjusting Disk Angle &amp; Side Depth Wheels</td>
<td>70</td>
</tr>
<tr>
<td>Row-Unit Opener Disk Adjustments</td>
<td>71</td>
</tr>
<tr>
<td>Opener Disc Contact Region</td>
<td>71</td>
</tr>
<tr>
<td>Adjusting Disc Contact</td>
<td>71</td>
</tr>
<tr>
<td>Adjusting Depth Wheel Scrapers</td>
<td>72</td>
</tr>
<tr>
<td>Seed Meter Setup and Adjustment</td>
<td>72</td>
</tr>
<tr>
<td>Meter Removal</td>
<td>72</td>
</tr>
<tr>
<td>Singulator Plus™ Meter Wheel Replacement</td>
<td>74</td>
</tr>
<tr>
<td>Meter Installation</td>
<td>75</td>
</tr>
<tr>
<td>Finger Meter Adjustments</td>
<td>76</td>
</tr>
<tr>
<td>Finger Meter Brush Adjustment</td>
<td>76</td>
</tr>
<tr>
<td>Finger Meter Inserts</td>
<td>77</td>
</tr>
<tr>
<td>Sunflower Meter Configurations</td>
<td>77</td>
</tr>
<tr>
<td>Sprocket Indexing (Stagger)</td>
<td>78</td>
</tr>
<tr>
<td>Seed Firmer Adjustments</td>
<td>78</td>
</tr>
<tr>
<td>Keeton® Seed Firmer Adjustment</td>
<td>78</td>
</tr>
<tr>
<td>Seed-Lok® Seed Firmer Lock-Up</td>
<td>78</td>
</tr>
<tr>
<td>Press Wheel Adjustment</td>
<td>79</td>
</tr>
<tr>
<td>Press Wheel Down Pressure</td>
<td>80</td>
</tr>
<tr>
<td>Press Wheel Stagger</td>
<td>80</td>
</tr>
<tr>
<td>Press Wheel Centering</td>
<td>80</td>
</tr>
<tr>
<td>Press Wheel Assembly with Cast Wheels</td>
<td>81</td>
</tr>
<tr>
<td>Troubleshooting</td>
<td>82</td>
</tr>
<tr>
<td>General Troubleshooting</td>
<td>82</td>
</tr>
<tr>
<td>Airbox Troubleshooting</td>
<td>85</td>
</tr>
<tr>
<td>Steering Error Flash Codes</td>
<td>86</td>
</tr>
<tr>
<td>Maintenance and Lubrication</td>
<td>87</td>
</tr>
<tr>
<td>Maintenance</td>
<td>87</td>
</tr>
<tr>
<td>Seed Clean-Out</td>
<td>88</td>
</tr>
<tr>
<td>Cleaning Out Air System</td>
<td>88</td>
</tr>
<tr>
<td>Cleaning Out Meters</td>
<td>88</td>
</tr>
<tr>
<td>Air Box Residue Clean-Out</td>
<td>89</td>
</tr>
<tr>
<td>Marker Maintenance</td>
<td>90</td>
</tr>
<tr>
<td>Marker Shear Bolt Replacement</td>
<td>90</td>
</tr>
<tr>
<td>Marker Chain Length Adjustment</td>
<td>90</td>
</tr>
<tr>
<td>Dual Marker Speed Adjustment</td>
<td>91</td>
</tr>
<tr>
<td>Hitch Shims</td>
<td>91</td>
</tr>
<tr>
<td>Chain Maintenance</td>
<td>92</td>
</tr>
<tr>
<td>Chain Slack</td>
<td>92</td>
</tr>
<tr>
<td>Meter Drive Chain</td>
<td>92</td>
</tr>
<tr>
<td>Meter Maintenance</td>
<td>93</td>
</tr>
<tr>
<td>Finger Pickup Meter Maintenance</td>
<td>93</td>
</tr>
<tr>
<td>Finger Set Inspection</td>
<td>93</td>
</tr>
<tr>
<td>Finger Meter Re-Assembly Steps</td>
<td>93</td>
</tr>
<tr>
<td>Precautions</td>
<td>93</td>
</tr>
<tr>
<td>Population Max™ Annual Maintenance</td>
<td>94</td>
</tr>
<tr>
<td>Population Max™ Installation</td>
<td>94</td>
</tr>
<tr>
<td>Skip Stop™ Annual Maintenance</td>
<td>95</td>
</tr>
<tr>
<td>Skip Stop™ Installation</td>
<td>95</td>
</tr>
<tr>
<td>Exchanging Finger Sets</td>
<td>96</td>
</tr>
<tr>
<td>Install Corn Finger Set</td>
<td>99</td>
</tr>
<tr>
<td>25 Series Disk Spreaders and Scrapers</td>
<td>100</td>
</tr>
<tr>
<td>25 Series Row-Unit Side Wheels</td>
<td>100</td>
</tr>
<tr>
<td>Hydraulic Filter</td>
<td>101</td>
</tr>
<tr>
<td>Replacing Hydraulic Filter</td>
<td>101</td>
</tr>
<tr>
<td>Bleeding Hydraulics</td>
<td>102</td>
</tr>
<tr>
<td>Bleeding Lift Hydraulics</td>
<td>102</td>
</tr>
<tr>
<td>Bleeding Fold Cylinder Hydraulics</td>
<td>102</td>
</tr>
<tr>
<td>Bleeding Marker Hydraulics</td>
<td>102</td>
</tr>
<tr>
<td>Bleeding Lift Hydraulics</td>
<td>103</td>
</tr>
<tr>
<td>Bleeding Marker Fold Hydraulics</td>
<td>107</td>
</tr>
<tr>
<td>Seed Flap Replacement (s/n A1055S-)</td>
<td>108</td>
</tr>
<tr>
<td>Seed Flap Replacement (s/n A1056S+)</td>
<td>108</td>
</tr>
<tr>
<td>Lubrication</td>
<td>109</td>
</tr>
<tr>
<td>Seed Lubricants</td>
<td>116</td>
</tr>
<tr>
<td>Options</td>
<td>117</td>
</tr>
<tr>
<td>Planter Options</td>
<td>117</td>
</tr>
<tr>
<td>Row Unit Options</td>
<td>121</td>
</tr>
<tr>
<td>Appendix A: Reference Information</td>
<td>126</td>
</tr>
<tr>
<td>Specifications and Capacities</td>
<td>126</td>
</tr>
<tr>
<td>Tire Inflation Chart</td>
<td>126</td>
</tr>
<tr>
<td>Torque Values Chart</td>
<td>127</td>
</tr>
<tr>
<td>Hydraulic Diagrams</td>
<td>128</td>
</tr>
<tr>
<td>Chain Routing</td>
<td>137</td>
</tr>
<tr>
<td>Row Unit Placement</td>
<td>141</td>
</tr>
<tr>
<td>Appendix B - Option Installation</td>
<td>147</td>
</tr>
<tr>
<td>Appendix C: Initial Setup</td>
<td>148</td>
</tr>
<tr>
<td>Post-Delivery Checklist</td>
<td>148</td>
</tr>
<tr>
<td>Seed Monitor Console Installation</td>
<td>148</td>
</tr>
<tr>
<td>Radar Calibration</td>
<td>149</td>
</tr>
<tr>
<td>Install Tractor Steering Components</td>
<td>149</td>
</tr>
<tr>
<td>Compatible Tractors</td>
<td>149</td>
</tr>
<tr>
<td>Steering with Control Monitor</td>
<td>150</td>
</tr>
<tr>
<td>Steering with Control Module</td>
<td>152</td>
</tr>
<tr>
<td>Steering Setup</td>
<td>152</td>
</tr>
<tr>
<td>Steering System Hydraulic Bleeding</td>
<td>153</td>
</tr>
<tr>
<td>Steering System Modes of Operation</td>
<td>153</td>
</tr>
<tr>
<td>Steering Calibration</td>
<td>153</td>
</tr>
<tr>
<td>Steering Configuration Switch</td>
<td>153</td>
</tr>
<tr>
<td>Wheel Sensor Calibration</td>
<td>154</td>
</tr>
<tr>
<td>Emergency Moves Without Steering</td>
<td>156</td>
</tr>
<tr>
<td>Force Caster Float</td>
<td>156</td>
</tr>
<tr>
<td>Hydraulic Down Pressure Calibration</td>
<td>157</td>
</tr>
<tr>
<td>PC Closed Down Pressure</td>
<td>157</td>
</tr>
<tr>
<td>LS Closed/PFC Down Pressure</td>
<td>158</td>
</tr>
<tr>
<td>Center Section Leveling</td>
<td>159</td>
</tr>
<tr>
<td>Wing Leveling</td>
<td>159</td>
</tr>
<tr>
<td>Appendix D: Older Equipment</td>
<td>160</td>
</tr>
<tr>
<td>Hitching with Row Mode Spacer</td>
<td>160</td>
</tr>
<tr>
<td>Hydraulic Down Pressure Calibration</td>
<td>161</td>
</tr>
<tr>
<td>PC Closed Down Pressure</td>
<td>161</td>
</tr>
<tr>
<td>PC Closed Down Pressure (S/N A1006S-)</td>
<td>162</td>
</tr>
<tr>
<td>PC Closed Down Pressure (S/N A1025S+)</td>
<td>162</td>
</tr>
<tr>
<td>LS Closed/PFC Down Pressure</td>
<td>163</td>
</tr>
<tr>
<td>LS Closed/PFC Down Pressure (S/N A1025S+)</td>
<td>164</td>
</tr>
<tr>
<td>Hydraulic Bleeding (S/N A1006S-)</td>
<td>165</td>
</tr>
<tr>
<td>A1006S-, A1007S-A1024S Lift System</td>
<td>167</td>
</tr>
<tr>
<td>Appendix R - Row-Pro™</td>
<td>170</td>
</tr>
<tr>
<td>Row-Pro™ Troubleshooting</td>
<td>177</td>
</tr>
</tbody>
</table>
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.

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 “Safety Decals” on page 5, thoroughly.
▲ 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.

Handle Chemicals Properly

Agricultural chemicals can be dangerous. Improper use can seriously injure persons, animals, plants, soil and property.

▲ Read and follow chemical manufacturer’s instructions.
▲ Wear protective clothing.
▲ Handle all chemicals with care.
▲ Avoid inhaling smoke from any type of chemical fire.
▲ Store or dispose of unused chemicals as specified by chemical manufacturer.

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.
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.

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

Transport Machinery Safely
Maximum transport speed for implement is 20 mph (32 kph), 13 mph (22 kph) in turns. Some rough terrains require a slower speed. Sudden braking can cause a towed load to swerve and upset.

▲ Do not exceed 20 mph. Never travel at a speed which does not allow adequate control of steering and stopping. Reduce speed if towed load is not equipped with brakes.

▲ Comply with state and local laws.

▲ Do not tow an implement that, when fully loaded, weighs more than 1.5 times the weight of towing vehicle.

▲ Carry reflectors or flags to mark planter in case of breakdown on the road.

▲ Keep clear of overhead power lines and other obstructions when transporting. Refer to transport dimensions under “Specifications and Capacities” on page 126.

▲ Do not fold or unfold the planter while the tractor is moving

Shutdown and Storage
▲ Lower planter, put tractor in park, turn off engine, and remove the key.

▲ Secure planter using blocks and supports provided.

▲ Detach and store planter in an area where children normally do not play.
Practice Safe Maintenance

▲ Understand procedure before doing work. Use proper tools and equipment. Refer to this manual for additional information.
▲ Work in a clean, dry area.
▲ Lower the planter, put tractor in park, turn off engine, and remove key before performing maintenance.
▲ Make sure all moving parts have stopped and all system pressure is relieved.
▲ Allow planter to cool completely.
▲ Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding on planter.
▲ Inspect all parts. Make sure parts are in good condition and installed properly.
▲ Remove buildup of grease, oil or debris.
▲ Remove all tools and unused parts from planter before operation.

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 planter functions.
▲ Operate machinery from the driver’s seat only.
▲ Do not leave planter unattended with tractor engine running.
▲ Do not dismount a moving tractor. Dismounting a moving tractor could cause serious injury or death.
▲ Do not stand between the tractor and planter 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 planter. Make sure all persons are clear of working area.
Safety Decals

Safety Reflectors and Decals
Your implement comes equipped with all lights, safety reflectors and decals in place. They were designed to help you safely operate your implement.

▲ Read and follow decal directions.
▲ Keep lights in operating condition.
▲ Keep all safety decals clean and legible.
▲ Replace all damaged or missing decals. Order new decals from your Great Plains dealer. Refer to this section for proper decal placement.
▲ When ordering new parts or components, also request corresponding safety decals.

To install new decals:
1. Clean the area on which the decal is to be placed.
2. Peel backing from decal. Press firmly on surface, being careful not to cause air bubbles under decal.

Slow Moving Vehicle Reflector
818-055C

On the back of the planter walkboard; one total

Red Reflectors
838-266C

On the back of seed box support structure each end (above wheels) and on the back of the wing tool bars, each end, two each side: four total
Amber Reflectors
838-265C

(S/N A1055S-) On the front of tool bar, at each end and near wing separation point; four total.

(S/N A1056S+) On a bracket on the outside of each parking stand, on outside of each caster wheel support; four total.

Daytime Reflectors
838-267C

On the back of seed box support structure each end (above wheels) and on the back of the wing tool bars, each end and near separation; six total.
**Danger: Crushing Hazard**

818-590C

On tool bar inboard of parking stand, each side, two total

---

**Danger: Read Manual**

848-512C

On tongue at hitch; 1 total

---

**Warning: Electrocution Hazard**

838-599C

On marker section each end; two total

---

**Warning: High Pressure Fluid Hazard**

818-339C

On on each end of center tool bar, and front of center section; three total
Warning: Moving Parts
818-860C

On tool bar inboard of gauge wheel each side, two total

Warning: Overhead Hazard
818-580C

On marker section each end; two total

Warning: Pinch/Crush
818-045C

On marker base, inside face, each end,
On wing arm link, each side
On wing rest, each side; six total

Warning: Pinch/Shear Hazard
818-579C

Front face of marker base bracket; two total
Warning: Speed
818-188C

**WARNING**
EXCESSIVE SPEED HAZARD
To Prevent Serious Injury or Death:
• Do not exceed 20 mph maximum transport speed. Loss of vehicle control and/or machine can result.

On front of center section; one total

Caution: Read Operator’s Manual
818-078C

**CAUTION**

On center tool bar; one total

Caution: Tires Not A Step
818-398C

**CAUTION**

Above all four tires; four (4) total

Caution: Tire Pressure
858-781C

**CAUTION**

On side of caster gauge wheel for ground drive; two total
Caution: Tire Pressure
858-669C

To Avoid Injury or Machine Damage from Improper Tire Inflation or Torquing of Wheel Bolts:

- Maximum inflation pressure for tires is 44 psi.
- Torque wheel bolts to 90 - 105 ft-lb.

On side of caster gauge wheel for hydraulic drive; two total

Caution: Tire Pressure
844-071C

To avoid injury or machine damage from improper tire inflation or torquing of wheel bolts:

- Maximum inflation pressure of tires is 80 psi.
- Torque wheel bolts to 170 ft-lb.

On side of caster wheel, single and dual (shown); two total
Introduction

Great Plains welcomes you to its growing family of new product owners. The 3-Point 40-Foot Yield-Pro® Planter (3PYP) has been designed with care and built by skilled workers using quality materials. Proper setup, maintenance, and safe operating practices will help you get years of satisfactory use from the machine.

Description of Unit

The 3PYP is a semi-mounted implement for use in conventional till, minimum-till, or light no-till conditions. The 3PYP accepts optional unit mounted coulters. The unit mounted coulters make it suitable for light to moderate no-till conditions only. The 3PYP is outfitted with 25 Series, side-depth-control row-units. The 3PYP stack-folds for transport.

Intended Usage

Use the 3PYP to seed production-agriculture crops only. Do not modify the planter for use with attachments other than Great Plains options and accessories specified for use with the 3PYP.

This manual covers all vintages of 3PYP planters (does not include model 3PYPAl with Air-Pro® meters). Not all illustrations and photographs represent the most recent products.

Document Family

401-312M Operator Manual (this document)
401-312B Seed Rate Charts
401-312P Parts Manual
401-312Q Pre-Delivery Manual
110011425 Quick-Start Guide, 24 twin row
110011427 Quick-Start Guide, 32 twin row
110011468 Quick-Start Guide, 16-row
110011469 Quick-Start Guide, 12-row
110011375 IntelliAg® Operator manual

Covered Models

3PYP-1236 12 Row, 36-Inch Spacing
3PYP-1238 12 Row, 38-Inch Spacing
3PYP-1240 12 Row, 40-Inch Spacing
3PYP-1630 16 Row, 30-Inch Spacing
3PYP-2320 23 Row, 20-Inch Spacing
3PYP-24TR36 24 Row (12 Twin), 36-Inch Spacing
3PYP-24TR38 24 Row (12 Twin), 38-Inch Spacing
3PYP-24TR40 24 Row (12 Twin), 40-Inch Spacing
3PYP-3115 31 Row, 15-Inch Spacing
3PYP-32TR30 32 Row (16 Twin), 30-Inch Spacing

Using This Manual

This manual will familiarize you with safety, assembly, operation, adjustments, troubleshooting, and maintenance. Read this manual and follow the recommendations to help ensure safe and efficient operation.

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.

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.

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.
Owner Assistance

If you need customer service or repair parts, contact a Great Plains dealer. They have trained personnel, repair parts and equipment specially designed for Great Plains products.

Refer to Figure 3

Your machine’s parts were specially designed and should only be replaced with Great Plains parts. Always use the serial and model number when ordering parts from your Great Plains dealer. The serial-number plate is located on the front face of the left wing rest near machine center.

Record your 3PYP model and serial number here for quick reference:

Model Number:__________________________
Serial Number: __________________________

Your Great Plains dealer wants you to be satisfied with your new machine. If you do not understand any part of this manual or are not satisfied with the service received, please take the following actions.

1. Discuss the matter with your dealership service manager. Make sure they are aware of any problems so they can assist you.

2. If you are still unsatisfied, seek out the owner or general manager of the dealership.

Further Assistance

Great Plains Manufacturing, Inc. and your Great Plains dealer want you to be satisfied with your new 3PYP. If for any reason you do not understand any part of this manual or are otherwise dissatisfied, please take the following actions first:

1. Discuss the matter with your dealership service manager. Make sure they are aware of any problems so they can assist you.

2. If you are still unsatisfied, seek out the owner or general manager of the dealership.

If your dealer is unable to resolve the problem or the issue is parts related, 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.
Preparation and Setup

This section helps you prepare your tractor and 3PYP for use, and covers tasks that need to be done only once per hitch, seasonally, or when the tractor/planter configuration changes.

Before using the 3PYP in the field, you must hitch the planter to a suitable tractor, inspect systems, level the planter. Before using the planter for the first time, and periodically thereafter, certain adjustments and calibrations are required.

Initial Setup

Prior to first use, and if the tractor changes, these items need to be completed:

- Install tractor cab consoles (page 148).
- Set initial down-pressure (option, page 157).
- Check center section and wing level (page 159).
- Install Options not factory- or dealer-installed.

Pre-Setup Checklist

1. Read and understand “Important Safety Information” on page 1.
2. Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
3. Check that all grease fittings are in place and lubricated. Refer to “Lubrication” on page 109.
4. Check that all safety decals and reflectors are correctly located and legible. Replace if damaged. See “Safety Decals” on page 5.
5. Inflate tires to pressure recommended and tighten wheel bolts as specified. See “Tire Inflation Chart” on page 126.
Hitching Tractor to Planter

**DANGER**

Crushing Hazard:  
Do not stand or place any body part between planter and moving tractor. You may be severely injured or killed by being crushed between the tractor and planter. Stop tractor engine and set parking brake before attaching cables and hoses.

3-Point Hitching

Refer to Figure 4

For older planters with row mode spacers, see "Hitching with Row Mode Spacer" on page 160.

The left arm 1 of the tractor 3-point hitch is secured and prevented from shifting laterally. The right arm 2 is allowed to float on the pin.

The objective is to align the planter center-line with the tractor center-line.

1. The planter includes several spacers to position and secure the left arm of the 3-point hitch:
   - 1 401-630H SPACER 3 PT 1 1/2 X 2
   - 2 411-442D LOWER 3PT PIN SPACER 1/2 THK
   - 5 411-448D LOWER 3PT PIN SPACER 1/4 THK
   - 1 411-449D TUBE 3" X 1 1/2" X 1/2" LONG

2. The tube spacers (11 and 13) are always used, and are typically positioned on the right and left of the tractor hitch arm.

3. Insert open-end spacers (1 and 2) to the left of the smaller tube spacer 11 to achieve center-line alignment. The following table has recommendations for specific tractors.

<table>
<thead>
<tr>
<th>Tractor Model</th>
<th>Spacers</th>
<th>Tube (3)</th>
<th>1/2 in (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case IH® Magnum™/MX</td>
<td>to Left</td>
<td>1 to Left</td>
<td></td>
</tr>
<tr>
<td>John Deere 8000</td>
<td>to Left</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

4. Add a combination of the remaining spacers to eliminate any slack space on the pin, and minimize side-to-side play during operations.

5. Secure both sets of spacers with the provided 1/2-13 bolts, lock washers and nuts.
Refer to Figure 5

6. Connect your lower tractor 3-point arms to the planter 3-point hitch. If using quick hitch be sure planter locks into hitch securely.

This is a semi-mounted implement.
- Older models have no top link.
- 2007+ models have a flexible top link which may be used, with care, in certain situations.
- If the top link is not used, you may optionally use lift-assist weight transfer to apply some of the cart weight to the openers during planting.

Refer to Figure 6

If using lift-assist weight-transfer (and not using the 3-point top link), make sure the parallel arms are configured as follows:

7. Install the lift-assist weight-transfer pins. The pins are stored in a plate behind the cart parallel arm pivot weldment. Install them in the large holes at the bottom of the rod-end lug in the frame-to-cart parallel arms.

8. Remove the lift-assist shear bolts from the small holes below the lift-assist rod-end lug upper pivot pin. Store the bolts in the plates behind the cart parallel arm pivot weldments.

If using the 3-point top link, make sure the parallel arms are configured as follows:

9. Install the lift-assist shear bolts. Spare bolts are stored in a plate behind the cart parallel arm pivot weldment. Secure the bolt in the small hole below the lift-assist rod-end lug upper pivot pin.

10. Remove the lift-assist weight-transfer pins. These are located at the bottom of the rod-end lug in the frame-to-cart parallel arms. The pin is stored in a plate behind the cart parallel arm pivot weldment.

Refer to Figure 5

11. Connect the flexible top link only for field operations and maintenance (never for transport).

Adjust the top link with the tractor turnbuckle and the sliding link.

For field operations, adjust the top link so that it is slack with the planter lowered, and taut near the top of hitch travel with the planter raised. The goal is to reduce the weight borne by the rear lift assist cylinders, and reduce any tendency for the tires to dig on end-of-pass turns and during backing.

12. Raise tractor 3-point just enough to relieve pressure from the bases of the parking stands.
Electrical Hookup

Refer to Figure 7

Your 3PYP is equipped with several standard and optional devices that require separate electrical connections. For future reference, note any optional connections on this checklist.

4  ① Lights
4  ② DICKEY-john® Planter Control
4  ③ Steering ECU
?  ④ __________________________
?  ⑤ __________________________
?  ⑥ __________________________

Make sure tractor is shut down with accessory power off before making connections.
These connections may be made in any order. The key requirement is that all connections be made prior to planter movement.

Switch control boxes should be mounted in your tractor cab in a location with easy access. Route wiring harnesses with enough slack to allow for tractor movement, especially on articulating tractors.
Hydraulic Hose Hookup

Only trained personnel should work on system hydraulics!

WARNING

High Pressure Fluid Hazard:
Escaping fluid under pressure can have sufficient pressure to 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 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.

Refer to Figure 7

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

Current Style Color Coded Hose Handles

<table>
<thead>
<tr>
<th>Color</th>
<th>Hydraulic Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steering</td>
<td>(no color code)</td>
</tr>
<tr>
<td>Black</td>
<td>Fan</td>
</tr>
<tr>
<td>Green</td>
<td>Wing Fold / Marker Tilt/Fold</td>
</tr>
<tr>
<td>Blue</td>
<td>Lift / Down Pressure</td>
</tr>
<tr>
<td>Yellow</td>
<td>Hydraulic Drive</td>
</tr>
</tbody>
</table>

To distinguish hoses on the same hydraulic circuit, refer to the symbol molded into the handle grip. Hoses with an extended-cylinder symbol feed cylinder base ends. Hoses with a retracted-cylinder symbol feed cylinder rod ends.

For hydraulic fan and drive motors, connect the hose under the retracted cylinder symbol to the pressure side of the motor. Connect the hose under the extended cylinder symbol to the return side of the motor.

The fan motor further requires hookup of a third line, which returns hydraulic fluid from the fan motor case.
Older Style Hoses with Color Ties

Refer to Figure 8

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 tie.

<table>
<thead>
<tr>
<th>Color</th>
<th>Hydraulic Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steering</td>
<td>(no color code)</td>
</tr>
<tr>
<td>Orange</td>
<td>Fan</td>
</tr>
<tr>
<td>White</td>
<td>Wing Fold / Marker Tilt/Fold</td>
</tr>
<tr>
<td>Blue</td>
<td>Lift / Down Pressure</td>
</tr>
<tr>
<td>Yellow</td>
<td>Hydraulic Drive</td>
</tr>
</tbody>
</table>

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

For hydraulic fan and drive motors, connect the hose under the retracted cylinder symbol to the pressure side of the motor. Connect the hose under the extended cylinder symbol to the return side of the motor.

Protecting Hydraulic Motor Seals

Low Pressure (Case) Drain Connection
1. Attach case drain hose to low pressure drain connection.
2. Connect low pressure return hose to low pressure return connector.
3. Connect hydraulic hoses to tractor remotes.

**NOTICE**

Motor Seal Damage Risk:
Case Drain Hose must be attached first, prior to inlet and return hoses being connected.

Case Drain Hose must be detached last, to prevent damage to the fan motor.

**NOTICE**

Case drain hose must be hooked up first and unhooked last to prevent damage to hydraulic motor seals.

**NOTICE**

Hydraulic Motor Performance Risk:
DO NOT connect the case drain line to a power-beyond-port.
Frame Height and Leveling

All frame sections must be at the correct height and level to maintain even planting depth.

Periodic frame-leveling adjustments should not be necessary unless the depth control stop has changed since last leveling. If you are having problems with uneven depth, check planter levelness and follow these procedures.

1. Complete the steps under “Bleeding Hydraulics” on page 102, before proceeding.
2. Before first use, and as necessary thereafter, complete or check: “Center Section Leveling” on page 159, “Wing Leveling” on page 159, and “Hydraulic Down Pressure Calibration” on page 161.
3. Unfold the planter fully. See “Unfolding The 3PYP” on page 29.

Set Initial Planter Height

The planter is designed to operate with the main tool bar 26 inches (66 cm) above the planting surface (level ground or bed peaks).

Tractor 3-point control must be in Depth Control mode, and not Draft Control mode.

When lowering the planter for the first time on the planting ground:

4. Completely lower the 3-point.
5. Completely lower the Lift Assist. If necessary, first raise lift off transport locks, remove and stow locks.
6. Raise the 3-point until the tool bar is 26 inches above the planting surface.
7. Set the cab 3-point lever stop to capture this “lowered” height.

On beds, it will further be necessary to use customer-supplied blocks to raise the down-stop position of the lift assist cylinders. One way to accomplish this is:

Refer to Figure 10

8. Place a carpenter’s level on a side tube of the center frame (pointed to in Figure 10). Have an assistant stand a safe distance away and observe it.
9. With the 3-point lowered to the 26 inch stop, incrementally raise the lift assist until the frame is level.
10. Check that the front tool bar is at 26 inches above planting surface. If not, adjust stop and repeat step 9.
11. Measure the length of exposed rod on the lift cylinders. Provision two (sets of) blocks in that length (or stacked to that length).

12. Fully raise the lift assist and insert the blocks.

Older planters with rephasing cylinders need to have the cylinder rephrased as the first step. See page 167.

Level frame in planting conditions. Failure to do so may result in machinery not producing desired results.
Raise Parking Stands

Refer to Figure 11

1. If not already at minimum length, remove lower pin ① of parking stand, fully retract the inner leg ②, and re-insert pin.
2. Remove upper (holding) pin ③ of parking stand (at bottom of hinge bracket).

Refer to Figure 12

CAUTION

Falling Object Hazard:
Do not stand directly in front of the stand while raising it. You need to have one hand free to insert the pin, and if you lose your grip on the stand, it can swing down and inflict injury.

3. Swing the parking stand forward and up until it is above the rear hole. Place the holding pin ① in the rear-most top hole ④ of the hinge plate. This is the parking stand position for transport and field operation.

If 3PYP is equipped with row cleaners, the stand may not be able to get fully vertical. It may be necessary to use front top hole ⑤.

4. Secure hoses and cables to that they have sufficient slack for hitch movements, but cannot get caught between moving parts of planter. Failure to safely route and secure hoses and cables could result in damage requiring component repair/replacement, and lost field time.
Marker Extension

Marker extension needs to be adjusted once for the initial 3PYP setup, and later only if changing row spacing (including locking up row units for single-row operation on a twin-capable planter).

1. If changing between single- and twin-row operation on older planters, be sure the Row Mode Spacer blocks are first set correctly before adjusting markers. See page 160.

2. Move the planter to a location where both markers may be safely unfolded. Unfold the planter. Lower the planter. Tilt up and unfold one marker.

3. Find the suggested initial marker Extension Ⓟ in the following tables.

Refer to Figure 13 and Figure 14

4. Measure out the Extension Ⓟ distance from each outside end row unit (or row unit in use for twin-row in lock-up). Do not measure to center of row pair.

5. Mark the ground at this point.

6. To adjust marker width, loosen nuts Ⓡ on U-bolts Ⓢ. Move marker disk tube Ⓣ in or out to get the proper adjustment. Tighten nuts Ⓡ.

7. Repeat steps 4 and 6 for the other side.

8. With the planter still lowered, drive forward a few feet for each side.

9. Check the mark locations. Adjust to obtain the table value.

<table>
<thead>
<tr>
<th>Row Spacing</th>
<th>Marker Extension Ⓟ</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 in. (38.1 cm)</td>
<td>240 in. (609.6 cm)</td>
</tr>
<tr>
<td>20 in. (50.8 cm)</td>
<td>240 in. (609.6 cm)</td>
</tr>
<tr>
<td>30 in. (76.2 cm)</td>
<td>255 in. (647.7 cm)</td>
</tr>
<tr>
<td>30 in. (76.2 cm) Twin-Row</td>
<td>251 in. (637.5 cm)</td>
</tr>
<tr>
<td>36 in. (91.4 cm) Single</td>
<td>234 in. (594.4 cm)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Row Spacing</th>
<th>Marker Extension Ⓟ</th>
</tr>
</thead>
<tbody>
<tr>
<td>36 in. (91.4 cm) Twin-Row</td>
<td>230 in. (584.2 cm)</td>
</tr>
<tr>
<td>38 in. (96.5 cm) Single</td>
<td>247 in. (627.4 cm)</td>
</tr>
<tr>
<td>38 in. (96.5 cm) Twin-Row</td>
<td>243 in. (617.2 cm)</td>
</tr>
<tr>
<td>40 in. (101.6 cm) Single</td>
<td>260 in. (660.4 cm)</td>
</tr>
<tr>
<td>40 in. (101.6 cm) Twin-Row</td>
<td>256 in. (650.2 cm)</td>
</tr>
</tbody>
</table>
Operating Instructions

This section covers general operating procedures. Experience, machine familiarity, and the following information will lead to efficient operation and good working habits. Always operate farm machinery with safety in mind.

Pre-Start Checklist

Perform the following steps before transporting the 3PYP to the field.

**WARNING**

*High Pressure Fluid Hazard:*
Escaping fluid under pressure can have sufficient pressure to penetrate the skin. Check all hydraulic lines and fittings before applying pressure. Fluid escaping from a very small hole can be almost invisible. Use paper or cardboard, not body parts, and wear heavy gloves to check for suspected leaks. If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury.

- Carefully read “Important Safety Information” on page 1.
- Install seed rate meters appropriate for crop. To change meters, see “Seed Meter Setup and Adjustment” on page 72.
- Install seed wheels appropriate for crop. To change wheels, see “Singulator Plus™ Meter Wheel Replacement” on page 74. Make sure correct 6- or 12-finger units are installed for the intended row spacing.
- Lubricate planter as indicated under “Lubrication” on page 109.
- Check all tires for proper inflation. See “Tire Inflation Chart” on page 126.
- Check all bolts, pins, and fasteners. Torque as shown in “Torque Values Chart” on page 127.
- Check planter for worn or damaged parts. Repair or replace parts before going to the field.
- Check hydraulic hoses, fittings, and cylinders for leaks. Repair or replace before going to the field.
Monitor Operation

Refer to Figure 15

The monitor system includes two cab components:
① IntelliAg® seed monitor console, and
② IntelliAg® clutch-folding module (switch panel)

Switch panel operations are described in this section.
Monitor console operation is described in a separate manual supplied with your 3PYP. Operations covered in that manual (and therefore not in this manual) include:

- hydraulic drive control (option)
- setting rate limits and detecting out-of-limits
- seed rate calibration
- GPS integration
- planting rate
- fan rpm
- fertilizer rate

Raising/Lowering Planter

Refer to Figure 16 (which depicts the planter both raised and unfolded)

Planter raising relies on the 3-point hitch in front, and the Lift Assist cylinders in back. To raise or lower the planter, move the levers for both the Lift circuit and the 3-point hitch.

Great Plains recommends this sequence (to prevent lateral dragging of wing components):

- in Raising, operate the planter Lift circuit first, and
- in Lowering, operate the hitch circuit first.

The planter may be raised or lowered in either the folded or unfolded configuration.

The lift assist circuit may also include the optional down pressure system. This system engages and disengages automatically.

**NOTICE**

**Machine Damage Risk:**
Do not raise or lower while any planter folding operations are underway or partially complete.

**NOTICE**

**Machine Damage Risk:**
Always raise planter for reverse/backing operations.
Folding the 3PYP

Fold the 3PYP for moves between fields and over public roads. Fold the planter on level ground with the tractor in park.

**NOTICE**

**Certain Machine Damage:**
Machine damage will occur if wing flex and lock pins are not properly configured for folding. Follow the instructions on the following pages carefully.

**WARNING**

**Pinch Point and Crushing Hazard.**
To prevent serious injury or death:

- Do not allow anyone to be on or near the planter, or beyond the ends of the planter during unfolding. Numerous pinch and crush points exist in the mechanism. The wings are massive. Coulters and row openers are sharp.
- Fold only with markers resting in transport cradles.
- Fold only if hydraulics are bled free of air and fully charged with hydraulic oil.
- Stay away from frame sections when they are being raised.
- Keep away and keep others away when folding planter.
Locking Pins

Refer to Figure 18

Each wing has two removable pins, stored in the parking stand ① when not in use:

- Wing Lock Pin ②
  
  Used to connect the wing tool bar to the center section tool bar during planting operations, and keep the wing tool bar at the same height as the mainframe tool bar. When this pin is installed at the coupling, the outer wing is either rigid, or can flex (depending on the planter “flex” configuration)

- Wing Flex Lock Pin ③
  
  Required to stabilize pivot during folding and unfolding. Used during planting to prevent wing flex.

The following table summarizes pin use.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Location</th>
<th>During</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wing Lock ②</td>
<td>Stowed</td>
<td>• Planter Folded</td>
<td>Must be removed from coupling during folding and unfolding or machine damage will result.</td>
</tr>
<tr>
<td>Wing Lock ②</td>
<td>Tool bar Coupling</td>
<td>• Planting</td>
<td>Must be removed from coupling during folding and unfolding or machine damage will result.</td>
</tr>
<tr>
<td>Flex Lock ③</td>
<td>Stowed</td>
<td>• Planting</td>
<td>Must be present in pivot during folding and unfolding or machine damage will result.</td>
</tr>
<tr>
<td>Flex Lock ③</td>
<td>Wing Arm Pivot</td>
<td>• Folding/Unfolding</td>
<td>Must be present in pivot during folding and unfolding or machine damage will result.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• At all times on “Flex Lock” planters</td>
<td></td>
</tr>
</tbody>
</table>

The INNER pins must be IN and the OUTER pins must be OUT during folding and unfolding, or machine damage will result.

Figure 18
Wing Lock Pin Locations

Figure 19
Wing Lock ② & Pin Storage ①
1. Put tractor in Park.

Refer to Figure 18 and Figure 19 on page 25

2. Make sure the inner wing flex lock pins are in place in the pivot.

3. Make sure the outer wing lock pins are out of the tool bar coupling.

**NOTICE**

*Machine Damage Risk:*
Wing pins must be inner-in and outer-out during folding and unfolding wings or machine damage will occur.

- No pins are required to lock the planter in the folded configuration.

Refer to Figure 23

4. Set all DICKEY-john® selector switch module FRAME switches 1 2 3 to off (down).

5. Raise planter (see "Raising/Lowering Planter" on page 23).

6. Set FRAME switch "Wing Fold" 1 to on (up).

7. Activate (normally Extend) tractor hydraulic circuit to unfold wings.

8. When fully folded, set hydraulic circuit to off.

9. Set “Wing Fold” switch 1 to off.

- Wing Fold switch 1 has priority over switches 2 and 3. If switch 1 is left on, marker operations are disabled.
Lift Assist Cylinder Lock-Up

When moving the raised planter more than a short distance, or over any paved surface, do not rely solely on the lift cylinders to keep it raised. Install transport locks.

Refer to Figure 21

1. Remove the transport locks 1 from their storage positions. Do not store the locking pins on the empty storage tabs.
2. Fully raise the planter (using both 3-point and lift assist).
3. Remove any height adjusting blocks from the lift assist cylinders.
4. Install the transport locks on the cylinder rods 2, securing them with the same pins used for storage.
5. Lower the lift assist cylinders onto the locks. Leave the 3-point raised.

Transport the 3PYP to the field.

Do so only with wings folded and markers stowed.

1. Disconnect 3-point top link
   (on 2008+ models with flexible top link).

**DANGER**

Loss of Steering Control Hazard:
Never transport with top link connected. When the top link is adjusted for field work, some of the weight of the planter mainframe is carried by the top link, which can dangerously reduce tractor front wheel traction and steering control.

2. Make sure tractor is fueled for the work planned.
3. Before departing, ensure that opener depth and seed rate have been determined, or that the necessary data is with you.
4. Close slide gate on hopper or seed box.

**NOTICE**

Reduction of Control Risk:
Seed may be loaded prior to travel, but increases stopping distance, increases the need for caution in turns and braking, and increases tire wear.

5. Hitch, making electrical and hydraulic connections. These steps are described beginning at “Hitching Tractor to Planter” on page 14.
6. If markers are unfolded, fold them per the instructions on page 35. If markers are tilted up, tilt them down into their cradles per “Marker Tilt-Down” on page 35.
7. Raise planter.
8. Install cylinder lock-up channels on lift assists. See “Lift Assist Cylinder Lock-Up” on page 27
9. If planter wings are unfolded, fold them. See "Folding the 3PYP" on page 24

10. Always have lights on for highway operation.

11. Comply with all federal, state and local safety laws when traveling on public roads.

12. Travel with caution.

⚠️ CAUTION

Transport Hazard:
Do not exceed 20 mph, or the posted speed limit (whichever is lower) when driving straight.

⚠️ CAUTION

Transport Hazard:
Do not exceed 13 mph, or the posted speed limit (whichever is lower) in turns.

13. Keep Clearances in mind. Folded, your 3PYP may be over 25 ft wide and over 12 1/2 ft. high.

### Steering

Never exceed 13 mph (22 kph) in turns. The 3PYP is extremely heavy, and can cause “over-steer” with most tractors. Above 8 mph the rear wheels caster and provide only modest resistance to side sway by the planter.

If not equipped with Steering, the rear wheels on the 3PYP are full castering at all times.

If your 3PYP is equipped with hydraulic Steering, it is normally engaged at all times when speed is less than 8 mph. Although not used during forward motion in transport, it MUST be engaged for any backing. See “Steering with Control Module” on page 152

⚠️ NOTICE

Never exceed 3 mph (5 kph) in reverse.

⚠️ NOTICE

Machine Damage Risk:
Never back up with the planter lowered.

⚠️ NOTICE

Machine Damage Risk:
If planter has optional steering, never back up without steering engaged.
Unfolding The 3PYP

WARNING

Crushing, Pinch-Point and Overhead Hazards -
To prevent serious injury or death:

▲ Do not allow anyone to be on or near the planter, or beyond the ends of the planter during unfolding. Numerous pinch and crush points exist in the mechanism. The wings are massive. Coulters and row openers are sharp.

▲ Unfold only if hydraulics are bled free of air and fully charged with hydraulic oil.

▲ Unfold only with markers resting in transport cradles.
1. Move planter to an area of level ground. Put tractor in Park.

2. Unless rechecked recently, level the planter per the instructions on "Frame Height and Leveling" on page 19.

Refer to Figure 24

3. Make sure wing flex lock pins are in place.

**NOTICE**

**Certain Machine Damage:**

Wing flex lock pins must be in place during folding and unfolding wings or machine damage will occur.

4. Verify that the wing lock pins are available, and are not in the wing lock-down holes. Normally, in storage, transport and set-up, these pins are stored in dedicated holes in the parking stand bracket.

If the lock pins are stored in the lock holes, the wings will not fully deploy.

Refer to Figure 23

5. Set all DICKEY-john selector switch module FRAME switches to off (down).

6. Raise planter.

7. Set FRAME switch “Wing Fold” to on (up).

8. Activate (normally Extend) tractor hydraulic circuit to unfold wings.

9. When fully unfolded, set hydraulic circuit to off.

10. Set “Wing Fold” switch to off (or marker operations will be disabled).

Refer to Figure 25

11. Insert wing lock pins.

If operation will be over uneven ground, remove wing flex lock pins, and store in parking stand bracket holes.
Electric Clutch Operation

Your planter has two or three clutches in the meter drive system. Each clutch enables or disables groups of row units (see table next page). This mode of operation may be needed, for example, for planting a pass that isn’t the full width of the machine.

Which row units are controlled by the clutch switches depends on how your row units are driven. On ground-drive machines, the Left/Right switches control only the wing row units. On hydraulic-drive machines, the Left/Right switches each control half the row units (and the Center switch has no function).

The Master switch controls all row units, regardless of drive type. For all switches, “OFF” (down) removes power from the clutch, disengaging that set of row units.

Electric Clutch Lock-Up

In case of electric clutch failure, an electric clutch can be mechanically engaged.

Refer to Figure 27 and Figure 28

1. Remove the three M8-1.25x14 mm metric bolts 1 from their storage locations near the clutch. Save the nuts.
2. At the clutch, align the cutouts 2 with the holes 3.
3. Insert the M8-1.25x14 mm metric bolts 1.

If you observe half the hole obstructed by a metal disc 4, you are not at a cutout.

If the entire hole is obstructed by a metal disc 4, you are not at a cutout.

When at a cutout, the bolt will screw in with minimal resistance until the bolt head reaches the clutch face.

Use only the provided 14 mm length bolts. Longer bolts will damage the clutch. Shorter bolts may not effect a lock-up. Replacement bolts are Great Plains part number 802-782C.
### 12-row Ground Drive (36 in. Single, 38 in. Single, 40 in. Single)

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### 12-Row Hydraulic Drive (36 in. Single, 38 in. Single, 40 in. Single)

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### 24-Row (12 Twin) Ground Drive (36 in. Twin, 38 in. Twin, 40 in. Twin)

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### 24-Row (12 Twin) Hydraulic Drive (36 in. Twin, 38 in. Twin, 40 in. Twin)

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### 31-Row Ground Drive (15 in. Single)

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### Clutch Switch Coverage

#### 32-Row (16-Twin) Ground Drive (30 in. Twin)

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#### 32-Row (16-Twin) Hydraulic Drive (30 in. Twin)

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2019-10-24  | 3PYP  | Table of Contents  | Index  | Operating Instructions | 33
Marker Operation

![Diagram of Cab Selector Controls](image)

**WARNING**

**Overhead Hazard:**
To prevent serious injury or death, do not allow anyone to stand near or beyond the end of the wings during marker operations. Marker arms are heavy and marker discs may be sharp.

If your 3PYP has markers, unfolding of the markers is performed only after unfolding the wings.

The Wing switch must be OFF during all marker operations. When Wing Fold is ON, marker switches are disabled.

The tilt operation is performed before the unfold operation. The tilt switch must be OFF during marker fold operations. When Marker Tilt is ON, the Marker Fold switch is disabled.

Before operating markers, make sure cylinders are properly bled. See "Bleeding Hydraulics" on page 102.

This section presumes correct marker length for your pass spacing. If this has not been set, or needs to be changed, see "Marker Extension" on page 21.

This section presumes a factory marker chain configuration. If your chain has been replaced, or stretched, adjust the links to the correct slack length. See "Marker Chain Length Adjustment" on page 90.

Dual markers are equipped with an automatic sequence valve that controls which side activates, as well as marker deployment.

Folding speed of dual markers is adjusted via set screws on the sequence valve body. Excessive folding speed may damage markers. See "Dual Marker Speed Adjustment" on page 91.
Marker Tilt-Up

Refer to Figure 29 and Figure 30

1. On the DICKEY-john® selector switch module, set all FRAME switches off (down).
2. Set “Marker Tilt” switch to on (up).
3. Move tractor hydraulic control (lever or switch) for the marker circuit to Retract. Hold until marker is raised. Do not leave control in detent.
4. Set “Marker Tilt” switch to off (down), and leave it in off position during normal field operations.

Marker Unfold (one side)

Refer to Figure 29 and Figure 31

1. On the DICKEY-john® selector switch module, set “Marker Fold” to on (up).
2. Move tractor hydraulic control (lever or switch) for the marker circuit to Extend. Hold until marker completely unfolded. Do not leave tractor control in detent.
3. If the marker side operating is not the desired side, let it unfold part way, and move the tractor’s circuit control to “Retract”. When the marker is folded, move the circuit control to Extend to activate the other side.

On the DICKEY-john® selector switch module leave the “Marker Fold” switch on during normal field operations. The other FRAME switches must be OFF.

Row Marker Operation

To alternate which side is marked:
1. Move the tractor’s circuit control to Retract. Hold until marker is folded.
2. Move the tractor's circuit control to Extend. Hold until the new side’s marker is fully unfolded.
3. Return tractor control to neutral/off.

Folding The Markers

If your planter has markers, they must be folded and secured before folding the wings.
1. Move the tractor’s circuit control to Retract. Hold until marker is folded.

Marker Tilt-Down

With both markers in the upright and folded configuration, and the tractor circuit control off/neutral:
1. On the DICKEY-john® selector switch module, set “Marker Fold” to off (down).
2. On the DICKEY-john® selector switch module, set “Marker Tilt” to ON.
3. Move tractor circuit control to Extend. Hold until markers are resting in transport cradles.

Unusual Marker Operations

Both Sides Unfolded

With both markers in the upright/tilted positions:
1. Unfolded either side, and when completely deployed...
2. Move lever/switch to Retract momentarily, and return to Extend to deploy other side.
Airbox Operation

Refer to Figure 32

The function of the airbox ① is to mix seed with turbulent air from the hydraulic fan, which exit through a manifold to the seed tubes which serve the row unit meters.

Fan Operation

The hydraulic fan must hook up to the case drain line first. Check with tractor manufacturer for proper connection of oil sump return line.

Use tractor remote hydraulic valve flow control to set fan speed. Start with flow on low setting. 8 to 12 gallons per minute is average flow.

Do not apply pressure to the return line or operate with restricted return line or motor seals will be damaged.

Recommended butterfly valve setting is 0°. Recommended fan speed depends on planter configuration:

- 3800 rpm: 2008+ planters using 2008+ 82 bu. hoppers (or older hoppers with the vent line update)
- 3500 rpm: 2006- planters, or any planter using bulk seed boxes or unvented hoppers

Do not run the fan at speeds over 4500 rpm or speeds under 3000 rpm. Fans operating at too high a speed create too much air flow causing seed to plug up the air box. Fans operating too slowly do not create enough air flow to push the seed to the meter, causing the seed tube to plug. If air system does not operate suitably with fan speeds between 3000-4500 rpm, refer to the troubleshooting chart, and then adjust the fan butterfly valve. See “Fan Adjustments” on page 58.

Watch monitor and adjust fan speed by increasing or decreasing hydraulic flow from tractor.

When starting empty you must blow seed out to the meters for two to four minutes to fill meters.

The monitor has a level sensor below the hopper or seed box to warn when seed box is empty. There are three to four acres of seed in the system when the sensor first indicates box empty.

Before the first planting each season, or when using new meters or meter wheels for the first time, for the first time at the start of each season, add 1/3 cup graphite to bottom of airbox.

Y-Tubes

Refer to Figure 33

Y-tube gates can be shut off to feed only one row for single-row planting on 15 inch, 20 inch, or twin-row machines. In the photograph, both meter tubes are open.

For precise centerline alignment, it is also advisable to offset the hitch. See “Hitching Tractor to Planter” on page 14

You can also shut off the Y-tube gates to clean out the air system and meters. Refer to “Cleaning Out Air System” on page 88.
82 Bushel Hopper Operation

**CAUTION**

**Tipping Hazard:**
Load the 82 bushel hopper only when mounted on the cart. A full hopper can weigh over 5000 lbs, which is above the lifting and balance capability of most tractors and farm forklifts.

**Adding Seed to 82 Bushel Hopper**

1. If using new meters for the first time, measure out approximately 3 gallons of seed into a pail. Add \(\frac{1}{3}\) cup of lubricant. Mix and pour into air box before mounting hopper.

2. If no seed container is present, or the previous operation was using a bulk seed box, mount the empty 82 bu. hopper on cart. See “Changing the Seed Box or 82 Bushel Hopper” on page 38.


4. Set FRAME hydraulic switches to OFF.

5. Turn off seed box fan. This also turns off the Steering (if installed).

6. Make sure walkboard is locked closed (unless it needs to be opened for seed loading).


8. Measure the lubricant required, and if loading seed by bag, determine the amount of lubricant per bag.

**NOTICE**

Observe all safety precautions for use of loading equipment, particularly augers.

9. Add seed, mixing in lubricant continuously or per bag.


An update kit is available for older 82 bushel hoppers, providing consistent seed flow at higher fan speeds. See page 120.
Changing the Seed Box or 82 Bushel Hopper

The 3PYP accepts only the Great Plains 82 Bushel hopper or bulk seed boxes that meet the Pioneer® PROBOX® specification.

**CAUTION**

*Tipping Hazard:*
Place or remove an 82 Bushel hopper only when empty. A full hopper can weigh over 5000 pounds, which is above the lifting and balance capability of most tractors and farm forklifts.

1. Park the planter in an area with level ground and sufficient room to maneuver a tractor or fork-loader.
2. Turn off the seed box fan.
4. Close the slide gate at the base of the hopper or seed box.

Refer to Figure 35

5. Remove the walkboard lock pin ①.

Refer to Figure 36

6. Swing the walkboard completely open and secure with keeper.

Refer to Figure 35

7. Remove the two pins ②, one back left, one right front, used to retain the seed box or hopper. Remove these pins even if no container is presently mounted.

---

a. PROBOX® is a registered trademark of Pioneer Hi-Bred International, Inc.
Refer to Figure 37

8. Align the lifting forks with the slots in the rear of the seed box or hopper. Slowly drive forward until the forks are completely under the container.

9. Slowly lift the seed container above the bracket, and back away from the planter.

10. Lower the container to the ground for exchange with the next seed box.

11. If mounting a seed box, open the new seed box and measure out approximately 3 gallons of seed into a pail. Add 1/3 cup of lubricant. Mix and pour into air box before mounting new seed box.

12. If mounting a seed box, add lubricant to the seed box at this time. It may be easier to add it while the box is still at ground level.

**NOTICE**

**Plugging and Inconsistent Population Risk:**
Talc + graphite lubricant is mandatory for all seed, especially treated or inoculated seed when using precision meters. However, DO NOT use talc with finger pickup meters. Use only graphite lubricant with finger pickup meters. See “Seed Lubricants” on page 116

Refer to Figure 38

13. Approach the hopper or seed box from the back (the side with the slide gate).

**CAUTION**

**Tipping Hazard:**
A full seed box can weigh over 2500 pounds. Make sure your tractor or fork lift is rated for and configured to lift this weight. Do not let anyone stand under or in front of the elevated seed box.

**NOTICE**

It is possible to lift the hopper or seed box from any side, but it will only function properly if the seed gate is to the rear of the planter.

14. Slowly lift the full seed box or empty hopper, and place it in the planter air box frame.

15. Install the box retaining pins in frame corners.

16. It may be necessary to make a one-time adjustment to the seal on the top of the air box, to obtain full contact between air box and seed box/hopper.

17. If installing an empty hopper for planting, load seed (and lubricant).

18. Open the slide gate.

19. Return the walkboard to the closed position and install the latching pin.
Steering with Control Monitor (S/N B1127J+)

Steering System Modes of Operation

There are two modes of operation for the steering system on the 3PYP and 3PYPA planters. Which mode of operation to use is based on whether the tractor is manually steered or has an auto-steer system.

If the tractor is manually steered then the planter steering system should be set to "Steer While Planting" mode. In this mode the planter steering system is always active.

Steering System Selection

Tap the '3PYP' soft key to open the 3PYP Steering System screen. In order to enable steering, tap the ON soft key for 'Master Steering System.' Your machine now has the steering system enabled. In order to use the steering system for planting, tap the ON soft key for ‘Steer While Planting.’

Tap the OFF soft key to disable any of these selections.

Steering Calibration

The hydraulic steering system has calibration modes for caster and tractor wheel sensors. To perform one of these calibrations, first fully connect your planter to the tractor, level the machine, and set it on a reasonably flat surface large enough for simple operation. Then select Yes and proceed to the calibration instructions screen.

Machine calibration requires you make three separate movements with the machine: left, center, and right. After each of these movements, click the 'Press to Save' button followed by 'Next' to proceed to the next calibrations step. Once all three movements are performed and saved, machine calibration is complete.

Hydraulic-powered planter hydraulic steering is standard on the 3PYP planter.
Advanced Setup

Advanced Setup grants access to more factory settings. Many of these should only be changed by a certified Great Plains dealer. However, if you need to alter your settings for either tractor, CANBus, or ISOBus steering, you can make that change in your terminal’s advanced setup page.

To access the advanced setup screen, go to the initial steering calibration screen and tap on ‘Advanced Setup’. A number pad will prompt you for the level 2 access code. Tap in ‘344787’ and you should see the ‘Advanced Setup’ screen appear. Now you can tap on a box next to the steering you want to select it for use. Tap on the home icon to exit when finished.

**NOTE: Unavailable Steering**

If a steering system is unavailable, its name will have a line struck through it on your screen. Check your onboard CPU if your system appears unavailable.

Diagnostics

Tap on the diagnostics icon to analyze machine sensor feedback and check for any problems your planter may be experiencing.

An unfilled circle indicates the machine’s function is normal. If a circle is filled red , then the sensors have either detected an open (disconnected) circuit or a short circuit has occurred. Check the appropriate area of the machine to assess the problem.

If a circle is filled gray , then the sensors detected an error has occurred but was cleared.
Steering with Module Control (S/N A1055S-B1126J)

Hydraulic-powered planter steering is standard on 3PYP planters. Before using the system for transport or field operations, calibrate the ECU\(^a\) (page 153).

Steering controls caster position. When the hydraulic steering system is active, the casters steer to match the turning radius of the tractor. This prevents wheel digging in soft soils, and minimizes field damage when backing and turning on beds.

*Refer to Figure 43*

When engaged (via switch 1), the system functions automatically, and is active for all forward and reverse movements up to 8.0 mph. Casters float during any movement above 8.0 mph (12.9 km/h).

---

**NOTICE**

**Equipment Damage Risk:**
All reverse planter movements require the tractor for which the planter steering is calibrated. The casters match steering only with that tractor, and only with steering engaged. See “Emergency Moves Without Steering” on page 156.

**NOTICE**

**Equipment Damage Risk:**
If the Power LED 2 is not on and steady, do not move the planter or make only careful forward moves. If the LED is blinking, there is a steering malfunction, and steering is NOT engaged. See “Steering Error Flash Codes” on page 86.

---

\(^a\) Electronic Control Unit - Steering match relies on sensors mounted on both planter and tractor, and calibration of the ECU (page 153). The tractor sensor is normally dealer-installed, a topic covered in the 3PYP Pre-Delivery Manual, publication 401-312Q.
Steering Configuration Switch

This cab-mounted switch box controls both normal operation and field calibration of the Steering system. It has 4 switches and 3 indicator lamps. See page 153 for calibration details. In normal operations, only the STEER switch ① and indicators ② and ③ are employed.

<table>
<thead>
<tr>
<th>Steering Control Module Function</th>
<th>Switch Positions and Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>① STEER Toggle Switch:</td>
<td>On (up): Steering enabled (casters match or float)</td>
</tr>
<tr>
<td>Steering System Power</td>
<td>Off (down): Steering disabled (casters in Float)</td>
</tr>
<tr>
<td>② LED:</td>
<td>On steady: Steering system active (casters match or float)</td>
</tr>
<tr>
<td>Power / Fault</td>
<td>Blinking: Steering system fault (casters in Float)</td>
</tr>
<tr>
<td>③ FLOAT LED:</td>
<td>Off: Normal operation - steering system active if STEER on</td>
</tr>
<tr>
<td>Float / Caster</td>
<td>On: Casters in Float (if STEER LED is steady)</td>
</tr>
<tr>
<td>④ CALIBRATION Toggle Switch:</td>
<td>L: Caster aspect sensor (casters in Float)</td>
</tr>
<tr>
<td>Calibration Modes</td>
<td>C: Calibration mode off (normal transport/field mode)</td>
</tr>
<tr>
<td></td>
<td>R: Tractor aspect sensor (casters in Float)</td>
</tr>
<tr>
<td>⑤ LEARN Button:</td>
<td>First press: Learn tight Right turn</td>
</tr>
<tr>
<td>Calibration (Learn)</td>
<td>Next press: Learn Straight ahead</td>
</tr>
<tr>
<td></td>
<td>Next press: Learn tight Left turn</td>
</tr>
<tr>
<td>⑥ LED:  Calibration</td>
<td>Off: Normal (non-Calibration) operation</td>
</tr>
<tr>
<td></td>
<td>Dim: Either Calibration mode selected</td>
</tr>
<tr>
<td></td>
<td>Bright Flash: Button ⑥ press acknowledged</td>
</tr>
<tr>
<td>⑦ Rotary Switch Knob</td>
<td>Vertical position: Normal operation - steering system active while planting as well as raised</td>
</tr>
<tr>
<td>(ONLY APPLIES TO s/n A1056S+)</td>
<td>Horizontal position: Used when tractor is utilizing auto-steer - steering system floats while planting - active only when planter is raised</td>
</tr>
</tbody>
</table>

Field Set-Up Checklist

Use the following tables to develop a final checklist for your tractor/planter configuration. Additional or fewer steps may be necessary depending on tractor features, planter options and planting accessories.

<table>
<thead>
<tr>
<th>Mechanical Checklist</th>
<th>Electrical Checklist</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Tongue height preset on 3-point</td>
<td>□ Verify electrical hookups solid</td>
<td>19</td>
</tr>
<tr>
<td>□ 3-point top link adjusted (if used)</td>
<td>□ Power up monitor and observe any diagnostic messages</td>
<td>15</td>
</tr>
<tr>
<td>□ Planter unfolded</td>
<td>□ With hydraulic circuits in neutral, check switches and indicator lights on CLUTCH and FRAME switch panel. Return all switches to OFF.</td>
<td>29</td>
</tr>
<tr>
<td>□ Front-to-rear level</td>
<td>□ If equipped with hydraulic planter drive, verify that radar speed sensor is pointed at ground, at an angle approximately 35° below horizontal.</td>
<td>19</td>
</tr>
<tr>
<td>□ Side-to-side level at gauge wheels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Marker tilt complete</td>
<td>a. Refer to monitor manual.</td>
<td>19</td>
</tr>
<tr>
<td>□ Marker initial length set</td>
<td>b. Refer to sensor documentation.</td>
<td>35</td>
</tr>
<tr>
<td>□ Marker disc angle set</td>
<td></td>
<td>56</td>
</tr>
<tr>
<td>□ Markers folded (unless already at start of first planting row)</td>
<td></td>
<td>21</td>
</tr>
</tbody>
</table>
### Air System Checklist

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manifold to seed box or hopper seal</td>
<td>-</td>
</tr>
<tr>
<td>Seed loaded</td>
<td>37</td>
</tr>
<tr>
<td>Seed lubricated</td>
<td>37</td>
</tr>
<tr>
<td>Tube gates turned on to correct rows</td>
<td>36</td>
</tr>
<tr>
<td>No air leaks (except from seed box)</td>
<td>-</td>
</tr>
<tr>
<td>Hose routings - no sags, no pinches (check wing-folded &amp; field positions)</td>
<td>-</td>
</tr>
<tr>
<td>Clean-out doors closed at meters</td>
<td>88</td>
</tr>
<tr>
<td>Hoses fully connected to meters and locked</td>
<td>75</td>
</tr>
</tbody>
</table>

### Row Units Checklist

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preset depth handles to 7 holes showing above “T”</td>
<td>69</td>
</tr>
<tr>
<td>Preset down force springs to first notch (lightest) setting for most conditions, 2nd notch otherwise</td>
<td>63</td>
</tr>
<tr>
<td>Set all unit-mounted coulters to ( \frac{1}{4} ) in shallower than opener blades.</td>
<td>68</td>
</tr>
<tr>
<td>Check coulter alignment to row</td>
<td>68</td>
</tr>
<tr>
<td>Check closing wheel alignment</td>
<td>79</td>
</tr>
<tr>
<td>Set closing wheels to first notch (light setting)</td>
<td>79</td>
</tr>
<tr>
<td>Engage meter clutch for all desired rows</td>
<td>31</td>
</tr>
<tr>
<td>Check action and contact of side depth wheels</td>
<td>70</td>
</tr>
<tr>
<td>Gauge wheel scraper gap (if installed)</td>
<td>72</td>
</tr>
</tbody>
</table>

### Row Cleaners Checklist

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer wing cleaners clear of center section hoses (wings folded). Observe cleaners during wing unfold to ensure none catch on hoses.</td>
<td>24</td>
</tr>
<tr>
<td>Cleaner depth setting</td>
<td>67</td>
</tr>
</tbody>
</table>

### Fertilizer (Option) Checklist

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check tractor-mounted components</td>
<td>a</td>
</tr>
<tr>
<td>Check for correct orifice plates</td>
<td>b</td>
</tr>
<tr>
<td>Check unused rows correctly closed off</td>
<td>58</td>
</tr>
<tr>
<td>Fill system half full with water, and check for leaks - run pump if possible</td>
<td>-</td>
</tr>
<tr>
<td>Check all row unit lines are connected, free of kinks, and discharge tube/nozzles are clear</td>
<td>-</td>
</tr>
</tbody>
</table>

### Hydraulic System Checklist

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check hydraulic reservoir full</td>
<td>-</td>
</tr>
<tr>
<td>Inspect connections for leaks</td>
<td>-</td>
</tr>
<tr>
<td>Perform a raise and lower operation</td>
<td>23</td>
</tr>
<tr>
<td>Check fan speed and airflow direction</td>
<td>a</td>
</tr>
<tr>
<td>If equipped, set CLUTCH Master switch off, and check hydraulic planter drive rotation</td>
<td>31</td>
</tr>
<tr>
<td>Ensure all FRAME switches are OFF except Marker Fold</td>
<td>26</td>
</tr>
</tbody>
</table>

### Row Units Checklist

- Operate fan briefly and observe rotor blades spinning toward exit port. Check rpm on seed monitor.

### Gauge Wheel Planter Drive Checklist

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check gauge wheel inflation and tread condition</td>
<td>126</td>
</tr>
<tr>
<td>Set range, transmission and upper drive sprockets for desired seed rate</td>
<td>49</td>
</tr>
<tr>
<td>Check all chains for lubrication and proper slack</td>
<td>109</td>
</tr>
<tr>
<td>Lubricate slider joints on drive shafts</td>
<td>109</td>
</tr>
<tr>
<td>Check clutch operation</td>
<td>31</td>
</tr>
</tbody>
</table>

### Hydraulic Planter Drive Checklist

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check chain lubrication and slack</td>
<td>109</td>
</tr>
<tr>
<td>Input initial values for desired seed rate</td>
<td>a</td>
</tr>
<tr>
<td>Pre-run system using seed monitor Calibration mode to verify hydraulic action</td>
<td>b</td>
</tr>
<tr>
<td>Lubricate slider joints on drive shafts</td>
<td>109</td>
</tr>
<tr>
<td>Check clutch operation</td>
<td>31</td>
</tr>
</tbody>
</table>

### Fertilizer (Option) Checklist

- Refer to seed monitor manual and Seed Rate manual.
- Refer to seed monitor manual.
**Meters Checklist**

<table>
<thead>
<tr>
<th>Task</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correct meters for seed</td>
<td>a</td>
</tr>
<tr>
<td>Correct wheels for seed</td>
<td>*</td>
</tr>
<tr>
<td>Correct fingers for seed</td>
<td>*</td>
</tr>
<tr>
<td>Close clean-out doors</td>
<td>88</td>
</tr>
<tr>
<td>Corn? Check timing of meters for twin-row</td>
<td>*</td>
</tr>
<tr>
<td>Check chain tension</td>
<td></td>
</tr>
<tr>
<td>Check meter assemblies secured</td>
<td>75</td>
</tr>
<tr>
<td>Engage drive couplers</td>
<td>75</td>
</tr>
<tr>
<td>Add lubricant to seed if not already done</td>
<td>37</td>
</tr>
</tbody>
</table>

**Field Operation**

Perform all steps in "Pre-Start Checklist" on page 22 and "Field Set-Up Checklist" on page 43.

**First Pass Operation**

<table>
<thead>
<tr>
<th>Task</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fold up marker</td>
<td>35</td>
</tr>
<tr>
<td>Raise planter and line up at start of first planting row</td>
<td>23</td>
</tr>
<tr>
<td>Set tool bar height to 26 inches.</td>
<td>19</td>
</tr>
<tr>
<td>Set tractor 3-point hitch to &quot;depth control&quot; operation (and not load control) If tractor hitch is set for load control, planting depth will be uneven.</td>
<td></td>
</tr>
<tr>
<td>Unfold marker on next-row side.</td>
<td>34</td>
</tr>
<tr>
<td>Turn on seed fan. Adjust hydraulic flow for 3800 rpm.</td>
<td>36</td>
</tr>
<tr>
<td>If planter is equipped with hydraulic drive, engage drive via seed monitor. Refer to seed monitor manual.</td>
<td></td>
</tr>
<tr>
<td>If planter has a fertilizer system, turn on the pump. Refer to pump manual.</td>
<td></td>
</tr>
<tr>
<td>On CLUTCH switch control panel, set all switches to ON.</td>
<td>31</td>
</tr>
<tr>
<td>Pull forward, lower planter, and begin planting for a short distance.</td>
<td></td>
</tr>
<tr>
<td>Stop. Assess: planting depth seed spacing press wheel operation</td>
<td></td>
</tr>
<tr>
<td>Make necessary adjustments</td>
<td>48</td>
</tr>
</tbody>
</table>

**Turns**

<table>
<thead>
<tr>
<th>Turn</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stop at completion of row</td>
<td></td>
</tr>
<tr>
<td>2. Fold marker</td>
<td>35</td>
</tr>
<tr>
<td>3. Raise planter</td>
<td>23</td>
</tr>
<tr>
<td>4. Make turn</td>
<td></td>
</tr>
<tr>
<td>5. Lower planter</td>
<td>23</td>
</tr>
<tr>
<td>6. Unfold marker on next-row side.</td>
<td>35</td>
</tr>
<tr>
<td>7. Begin planting</td>
<td>46</td>
</tr>
</tbody>
</table>

**Suspending Planting**

<table>
<thead>
<tr>
<th>Task</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stop tractor</td>
<td></td>
</tr>
<tr>
<td>2. Shut off seed fan</td>
<td>36</td>
</tr>
<tr>
<td>3. Shut off fertilizer pump</td>
<td></td>
</tr>
<tr>
<td>4. Raise planter</td>
<td>23</td>
</tr>
<tr>
<td>5. Shut off hydraulic drive (if equipped)</td>
<td></td>
</tr>
<tr>
<td>6. Fold Marker</td>
<td>35</td>
</tr>
<tr>
<td>7. Tilt Marker down</td>
<td>35</td>
</tr>
</tbody>
</table>

**Ending Planting**

<table>
<thead>
<tr>
<th>Task</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Suspend operations as above, then</td>
<td></td>
</tr>
<tr>
<td>2. Install lift assist locks</td>
<td>27</td>
</tr>
<tr>
<td>3. Steering OFF</td>
<td>42</td>
</tr>
<tr>
<td>4. Lights ON</td>
<td></td>
</tr>
<tr>
<td>5. Transport</td>
<td>27</td>
</tr>
</tbody>
</table>

a. Refer to Seed Rate manual.
Planting

When all checklist items are complete, a planting pass normally consists of a few simple steps:

Pass 1 (with marker extended)
1. Lower planter; hitch then lift.
2. Drive forward.

Checking Planting Rate

Although your seed monitor reports useful full pass results, cautious practice includes manually checking the seed rate early in the first pass.

Short-Term Parking

1. Fold markers and tilt them down. See “Folding The Markers” on page 35
2. Choose a location with level firm ground. Do not unhitch on a steep slope.
3. Unfold the planter. If there is ample space, Great Plains recommends parking the planter unfolded. This allows easiest access for routine maintenance, particularly on the folding mechanism. Do not insert wing lock pins.

Refer to Figure 46 and Figure 47

- CAUTION -

Falling Object Hazard:
Do not stand in front of stand while swinging it down. If you lose control of the motion, the stand can seriously injure you.

4. Remove pin 1 holding each parking stand 2 up. Swing stands down. They may not be fully vertical at this point.
5. Fully raise planter.
6. The load on the parking stands is as much as 5700 pounds each (or 116 psi). If the ground is soft or uncertain, place boards or concrete pads under the parking stand locations.
7. Insert pin 1 in the lower hole 3, locking the stand in the parking position.
8. Remove pin 4 and extend inner parking leg 5 to the ground.
9. Slowly raise the leg until the hole in the outer leg aligns with a hole in the inner leg. Re-insert pin 4.
10. Install lift assist lock if not already present.
11. Lower planter until hitch is not resting on tractor 3-point.
12. Disconnect hydraulic lines. Secure them so that they do not touch the ground.
13. Disconnect electrical cables, capping where provisioned.

Long-Term Storage
14. Park the 3PYP indoors if possible, per the steps above. Great Plains recommends parking/storing in the raised position, unfolded, on extended parking stands and with lift-assist cylinder locks in place.
15. If no hopper or seed box is mounted, cap the air box.
16. If empty seed box or hopper is mounted, close the seed gate and the lid.
17. If partially-loaded seed box or hopper is mounted, close seed gate, and remove seed box. Store planter only without seed.
18. Open air box clean-out door. Clean out residual seed.
20. Clean out air delivery system. Run fan with meters disconnected.
21. Tie or tape a small plastic bag over ends of all seed delivery tubes to prevent insects from entering or nesting.

If meters are dismounted, tie or tape a small plastic bag over ends of all air tubes, and block openings where meters attach to row units.
22. Apply grease to exposed cylinder rods to prevent rust.
23. Flush fertilizer lines (if present).
24. Empty and clean fertilizer filter.
25. Plug or cap fertilizer line to tractor.
26. Clean planter of mud, dirt, excess oil and grease.
**Adjustments**

To get full performance from your 3PYP, you need an understanding of all component operations, and many provide adjustments for optimal field results. Some of these have already been covered earlier in this manual. Even if your planting conditions rarely change, some of these items need periodic adjustment due to normal wear.

<table>
<thead>
<tr>
<th>Adjustment</th>
<th>Page</th>
<th>The Adjustment Affects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame height</td>
<td>19</td>
<td>Planting depth</td>
</tr>
<tr>
<td>Frame level</td>
<td>19</td>
<td>Planting consistency</td>
</tr>
<tr>
<td>Height Switch Adjustment</td>
<td>57</td>
<td>Correct off/on state of meter drive</td>
</tr>
<tr>
<td>Wing Leveling</td>
<td>159</td>
<td>Planting consistency</td>
</tr>
<tr>
<td>Gauge Wheel Tension</td>
<td>53</td>
<td>Planting depth; reliable row unit operation</td>
</tr>
<tr>
<td>Gauge Wheel Sprocket Selection (ground drive)</td>
<td>49</td>
<td>Reliable row unit operation</td>
</tr>
<tr>
<td>Hydraulic Drive (option) Adjustments</td>
<td>-</td>
<td>Refer to 3PYP Seed Rate manual</td>
</tr>
<tr>
<td>Gauge Wheel Sprocket Selection (ground drive)</td>
<td>-</td>
<td>Refer to 3PYP Seed Rate manual</td>
</tr>
<tr>
<td>Marker Extension</td>
<td>21</td>
<td>Intended row spacing</td>
</tr>
<tr>
<td>Marker Chain Length Adjustment</td>
<td>90</td>
<td>Visibility of centerline mark</td>
</tr>
<tr>
<td>Dual Marker Speed Adjustment</td>
<td>91</td>
<td>Reliable marker operation</td>
</tr>
<tr>
<td>Fan Adjustments</td>
<td>58</td>
<td>Consistent seed flow to meters</td>
</tr>
<tr>
<td>Fertilizer Setup (option)</td>
<td>58</td>
<td>Seed germination and growth</td>
</tr>
<tr>
<td>Fertilizer Orifices (option)</td>
<td>-</td>
<td>Refer to 3PYP Seed Rate manual</td>
</tr>
<tr>
<td>Hydraulic Down Pressure</td>
<td>62</td>
<td>Consistent planting depth</td>
</tr>
<tr>
<td>25 Series Row Units</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>Row Unit Lock-Up</td>
<td>66</td>
<td>Single/twin-row operation</td>
</tr>
<tr>
<td>Row Unit Down Pressure</td>
<td>63</td>
<td>Planting depth</td>
</tr>
<tr>
<td>Unit-Mount Cleaner Adjustments (Option)</td>
<td>67</td>
<td>Row preparation</td>
</tr>
<tr>
<td>Coulter Adjustments (Option)</td>
<td>68</td>
<td>Row pre-groove depth</td>
</tr>
<tr>
<td>Row-Unit Opener Adjustments</td>
<td>69</td>
<td>Seed groove depth and width</td>
</tr>
<tr>
<td>Adjusting Depth Wheel Scrapers</td>
<td>72</td>
<td>Consistent seed groove depth</td>
</tr>
<tr>
<td>Seed Meter Setup and Adjustment</td>
<td>72</td>
<td>Consistent seed population</td>
</tr>
<tr>
<td>Finger Meter Indexing</td>
<td>-</td>
<td>Refer to 3PYP Seed Rate manual</td>
</tr>
<tr>
<td>Seed Firmer Adjustments (Option)</td>
<td>78</td>
<td>Seed-soil contact</td>
</tr>
<tr>
<td>Press Wheel Adjustment</td>
<td>79</td>
<td>Effective soil coverage</td>
</tr>
<tr>
<td>Monitor Adjustments</td>
<td>-</td>
<td>Refer to Seed Monitor manual</td>
</tr>
<tr>
<td>Older Planters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Row mode spacer</td>
<td>160</td>
<td>Intended row-group spacing</td>
</tr>
<tr>
<td>Hydraulic Down Pressure</td>
<td>161</td>
<td>Consistent planting depth</td>
</tr>
</tbody>
</table>
Setting Seed Rate

The procedure for setting seed rate depends on whether the planter has ground (contact) drive or hydraulic drive. Rate setting details are found in other manuals. Some general information is found in this manual. Regardless of how rate is set, rate is precisely measured by the seed monitor, for most seed types.

Indexing

In twin-row operations with finger pickup meters, seed-to-seed spacing between pairs of a “row” can be controlled by sprocket indexing (see page 78).

Gauge Wheel Sprocket Selection

On 3PYPs without hydraulic drive, the row units are driven by the gauge wheels, in ground drive.

Refer to Figure 49

The ground drive assembly has three chains that are user adjustable:

1. Range
   - 2 of 6 sprockets, stored on shafts
     both ends may adjust
2. Transmission
   - 2 of 10 sprockets, stored on vertical spindle
     both ends may adjust
3. Upper drive
   - 1 of 2 sprockets, selected by spacer
     only one end adjusts

For a specific row-spacing, meter and seed, the starting sprocket settings for all three chains are found in the Seed Rate Chart book for this planter (manual part number 401-312B).

Fine adjustment to planting rate is made by the Transmission chain (1).

Sprocket pairings are identified in the Charts both by sprocket size and by which sprocket is mounted on which shaft.

Sprockets are sized by tooth count, stamped on the sprocket. The same shaft can be both a driving and driven shaft depending on the required combinations.

The DRIVING shaft on any chain is the one closer to the gauge wheel (lower in the assembly).

The DRIVEN shaft on any chain is the one further from the gauge wheel (higher in the assembly).
For All Ground Drive Adjustments
Steps:
1. Raise the planter and install lift-assist cylinder locks.
2. Rotate each gauge wheel. Check that seed meters, seed tubes and drives are working properly and are clear of debris and obstructions.
3. Check tire pressure, per “Tire Inflation Chart” on page 126.

Drive Range Sprockets
1. Obtain the sprocket pairing from the Seed Rate Chart.
2. Loosen the bolt on the forward idler, and slide the idler to the bottom of its track.
3. Remove the lynch pins from both the driving and driven shafts.
4. Remove the four alternate sprockets, and set them on the tool bar.
5. Remove the chain and hang it behind a lynch pin on the transmission.
6. Exchange the existing low range sprockets for those called out in the Seed Rate Chart.

**NOTICE**

**Equipment Damage/Misapplication Risks:**
Make sure the correct sprockets are mounted on the driving or driven shafts as called for by the Charts.
7. Slide the idler up, and tighten its bolt, allowing \( \frac{1}{4} \) inch slack in the longest chain span.
8. Store the four alternate sprockets on the shafts and re-pin.

Upper Drive Sprocket
1. Obtain the driven sprocket selection from the Seed Rate Chart. Make sure your configuration actually needs to be changed.
2. Loosen the bolt on the forward idler, and slide the idler to the bottom of its track.
3. Remove split plastic spacer. It will be to the left of the smaller (18 tooth) sprocket if the 18T was in use, and to the right of the larger (36 tooth) sprocket if the 36T was in use.
4. Move the spacer (part number 120-337S) to the other side of the sprocket pair, sliding the sprocket pair left or right to make room.
5. Lift the chain off the sprocket formerly in use, and move it to the sprocket to be used.
6. Slide the idler up, and tighten its bolt, allowing \( \frac{1}{4} \) inch slack in the longest chain span.

**NOTICE**
The 3PYP must be unfolded, and the tractor or planter parked, before making any of these adjustments.
Transmission Sprockets

1. Obtain the initial sprocket pairing from the Seed Rate Chart.
2. Loosen the bolt on the forward idler 1, and slide the idler to the bottom of its track.
3. Remove the lynch pins from both the driving 2, and driven 3 shafts.
4. Remove the chain and hang it behind a lynch pin on the low range.
5. As needed, exchange the existing sprocket pair for the new pair, using alternate sprockets from the vertical storage spindle 4.

**NOTICE**

**Equipment Damage/Misapplication Risks:**
Make sure the correct sprockets are mounted on the driving or driven shafts as called for by the Charts.

6. Slide the idler 1 up, and tighten its bolt, allowing 1/4 inch slack in the longest chain span.
7. Store the removed and any loose sprockets on the spindle shaft and re-pin it. Make sure all eight alternative sprockets are accounted for.
Transmission Adjustments
For singulating and finger pickup meters, rate adjustments should never be necessary. If the seed spacing is not correct, it is likely that there is a planter configuration error or malfunction. Find and correct the problem. Do not attempt to compensate for it by adjusting the target population rate.

For volumetric seeds, after checking initial planting rate, per the Seed Rate manual, it may be necessary to make changes to the transmission sprocket configuration.

If the error is small, a few percent, choose a slightly higher or lower target population from the Seed Rate chart, and install new sprockets for that rate.

If the error is large, it is likely that there is a planter configuration error or malfunction. Find and correct the problem. Do not attempt to compensate for it by adjusting the target population rate.

Gauge Wheel Adjustments
The gauge wheels, which may also be contact drive wheels, serve three functions:

1. Regardless of meter drive type, the gauge wheels each establish the heights of their respective wings. A spring-loaded yoke assembly provides some flexibility over rocks and uneven ground. See “Gauge Wheel Tension” on page 53 to set this spring.

2. In ground-drive (contact-drive), the gauge wheels mutually contribute drive power for the row unit mechanisms. See “Gauge Wheel Sprocket Selection” on page 49.

3. In ground-drive, the gauge wheels control the planting rate at the meters, via three sprocket setup positions. See “Gauge Wheel Sprocket Selection” on page 49.
Gauge Wheel Tension

Refer to Figure 55

Before performing this step, the 3PYP center section and wings must be level and aligned, and the tool bar height must be set to 26 inches. If these steps have not been performed, “Frame Height and Leveling” on page 19 and “Wing Leveling” on page 159.

As the gauge wheel tire wears, this adjustment may need periodic attention.

The planter must be on firm, level ground for this step (which may be performed when the planter leveling is done). The planter must be unfolded.

1. Raise the planter so that the gauge wheels are just off the ground.
2. Loosen the nut ① above the yoke block ②.
3. Raise or lower the planter so that the base of the tool bar is 26 inches from the ground.
4. Using an open-end or adjustable wrench at the integral hex nut ⑤ of the adjustment link ④, rotate the link ④ until the spring is just touching the yoke block ②, with neither gap nor compression.
5. Tighten the top nut ①.

Contact Drive Adjustments

When planting, if the monitor indicates under-seeding, check for slippage of the gauge wheels. If they are slipping:

1. Raise the planter so that the gauge wheels are just off the ground.
2. Loosen the nut ① above the yoke block ②.
3. Using an open-end or adjustable wrench at the integral hex nut ⑤ of the adjustment link ④, rotate the link ④ to adjust the gauge wheel tension. Using the base of the link flange ③, and the pivot grease zerk ⑤ as a reference, increase this distance ⑤ to increase down-force on the wheel.
4. Tighten the top nut ①.
Hydraulic Down Pressure

Refer to Figure 56

If the desired opener depth cannot be consistently achieved using spring adjustment (page 64), or the gauge wheel is slipping at the force required, the optional hydraulic down pressure may remedy the problem. It uses two cylinders to transfer more weight to the wings.

**NOTICE**

**Equipment Damage Risk:**

*The current hydraulic down pressure option is compatible only with “closed center” tractor hydraulics.*

Before making depth adjustments with valve 1, make sure the system (valve 3) has been calibrated. See “Hydraulic Down Pressure Calibration” on page 161.

To adjust hydraulic down pressure:

1. Set the mechanical (cam spring) down pressure to notch 3. See “Row Unit Down Pressure” on page 63.

2. The remote lever must be LOCKED OPEN in this position to provide constant pressure/flow to the openers.

3. With the tractor hydraulic lever locked forward, release the lock disk 2, turn the knob 3 on the pressure control valve 1.

4. Watch the pressure gauge 4 and set the desired pressure. Clockwise increases the pressure and counterclockwise decreases pressure.

5. Once the pressure is set, lock the knob with the lock disk 2.

Refer to “Hydraulic Down Pressure Calibration” on page 161 to know what to expect the planter to do as hydraulics are cycled.

The recommended pressure range for planting is between 400 psi and 600 psi.

The opener pressure setting controls the soil firming pressure on the press wheel as well as the disk penetrating force. **DO NOT** use more opener down pressure than necessary to obtain the desired opener penetration and to maintain the proper firming action over the seed. Excessive opener force will lead to excessive wear and damage of the opener components.

John Deere 8000 Series tractors:

Set timer to continuous. Push lever forward until detent clicks.

**Case IH® Magnum™ tractors:**

Lock lever forward in detent position. You may need to turn up detent pressure to its maximum setting. Do not tie hydraulic lever past detent position with a strap. See your tractor dealer for hydraulic-system details.

**Other tractors:**

Lock lever forward in detent position. You may need to turn up detent pressure to maximum or use a mechanical detent holder to hold lever forward. See your tractor dealer for providing constant flow to openers.
Cart Weight Transfer

On s/n A1025S+ planters, some of the cart weight can be transferred to the mainframe by retraction of the lift-assist cylinders, with a weight-transfer pin in place. This operating mode is compatible with wing-lock, wing-flex and hydraulic down-pressure planters.

1. Disconnect the 3-point top link.

Refer to Figure 57

2. Install the lift-assist weight-transfer pins ①. The pins are stored in a plate behind the cart parallel arm pivot weldment. Install them in the large holes at the bottom of the rod-end lug in the frame-to-cart parallel arms.

3. Remove the lift-assist shear bolts from the small holes ② below the lift-assist rod-end lug upper pivot pins. Store the bolts in the plates behind the cart parallel arm pivot weldments.

4. Fully retract the lift-assist cylinders when lowering the planter in the field.

Priority Flow Hydraulic Systems

On some tractors with load-sensing hydraulics, the tractor remote circuit #1 is capable of taking nearly 100 percent of available hydraulic flow. Operating the openers or markers on circuit #1 will starve the other circuit, making one function inoperable.

To operate markers and constant opener down pressure at the same time, connect the lift assist to circuit #2 and the markers to circuit #3.

On some tractors with very positive remote hydraulic checks, a slight increase in the reading on the pressure gauges may occur after the tractor remote lever is returned to neutral. This is caused by back pressure on the opener cylinders and may be ignored. The NET OPERATING PRESSURE on the opener cylinders is maintained at the pressure you selected while the tractor remote lever was held forward—not at the “apparently increased” pressure. Reactivating the tractor lever forward confirms this.
Marker Adjustments

There are five adjustments for markers:

- **Disk Angle**
  Even if your row spacing rarely changes, you may need to adjust disk angle for soil conditions and planting speed.

- **Marker Width**
  Once set for a specific row spacing, this only needs periodic checking to ensure the clamp is secure. See page 21.

- **Shear Bolt Replacement**
  If a marker hangs up on an obstruction, a bolt at the fold is designed to fail. Positions are provided nearby for storage of replacement shear bolts. See page 90.

- **Chain Length**
  Depending on marker width, you may want to adjust the chain length to ensure the markers are off the ground when the planter is raised. See page 90.

- **Marker Speed**
  Once initially set by your dealer, this rarely needs modification. See page 91.

**Marker Disk Adjustment**

![Figure 58 Marker Disk Angle](image)

**CAUTION**

*Sharp Object Hazard:* Marker disks may be sharp. Use caution when making adjustments in this area.

**Refer to Figure 58**

To change angle of cut, and the width of the mark, loosen 1/2 inch bolts ⊙ holding disk assembly.

For a wider mark (W), increase the angle of the marker with respect to the tube ⊙. For a narrower mark (N), reduce the angle.

Tighten bolts ⊙.

The direction of travel (T) tends to drive the disk angle to Wide. If bolts are not tight enough, or loosen over time, the disk will slip into the Wide mark configuration.
Height Switch Adjustment

Refer to Figure 59

The 3PYP includes a sensing switch that signals the seed monitor (and activates the meter drives), when the planter is lowered for planting.

Although factory-preset for typical planting conditions, Great Plains recommends adjusting this switch for your exact field conditions and planting depth. Check the switch seasonally thereafter, or when planting conditions change. Also perform this adjustment if the switch is replaced or dislodged.

The switch is located on the parallel arms connecting the planter mainframe to the air cart.

Refer to Figure 60

1. Lower the planter to the height at which seed delivery is to begin.
2. Loosen bolts holding switch bracket to frame.
3. Move bracket and switch up or down so switch toggle arm makes contact with upper parallel arm.

It may be necessary to loosen the screws holding the switch to the bracket and rotate the switch slightly on the bracket.

If the switch is ever completely removed, be sure to replace it with the cable exit at the bottom. If the cable is at the top, switch operation is reversed, and moisture will accumulate in the switch, causing eventual switch failure.
Fan Adjustments

Recommended fan butterfly valve setting is 0°. Recommended fan speed depends on planter configuration:

- 3800 rpm 2008+ planters using 2008+ 82 bu. hoppers (or older hoppers with the vent line update)
- 3500 rpm 2006- planters, or any planter using bulk seed boxes or unvented hoppers

Adjust the basic fan rate with the tractor hydraulic system and fan rpm display on seed monitor. Do not run the fan over 4500 rpm or under 3000 rpm.

Fans operating at too high a speed create too much air flow causing seed to plug up the meter box. Fans operating too slowly do not create enough air flow to push the seed to the meters, causing the seed tube to plug. If air system does not operate suitably with fan speeds between 3000-4500 rpm, refer to the troubleshooting chart, and then adjust the fan butterfly valve.

The butterfly valve may be helpful if your tractor can maintain a high, but irregular fan rpm. Set the rpm to above 3500 rpm with the valve completely open (0°). Adjust the valve angle in the 20-30° range until you achieve the desired seed flow consistency.

Fertilizer Setup

⚠️ DANGER

Agricultural Chemical Hazard:
Some chemicals will cause serious burns, lung damage, and death. Avoid contact with skin or eyes. Wear proper protective equipment as required by chemical manufacturer. Avoid prolonged breathing of chemical fumes. Wear respirator as required by chemical manufacturer. Seek medical assistance immediately if accident occurs. Know what to do in case of accident.

A fertilizer distribution system is optional on the 3PYP. The Great Plains provisioned components include:

- the lines to the row units (connected to Keeton® seed firmers if present),
- orifice fittings for each row
- distribution lines
- manifold
- pressure gauge
- relief valve
- inlet (1 inch female NPT) from pump system on tractor (Refer to Figure 63 on page 61).

If installed, there are five points of fertilizer setup and/or adjustment:

1. Pump drive connection and valves
   These are separately provisioned tractor-mounted components, and are not described in this manual.

2. Strainer setup
   This is a separately provisioned tractor-mounted component, but the mesh screen size must be compatible with the orifice plates in the distribution system. See this page and “Fertilizer Orifice Plates” on page 60.

3. Relief valve setting
   See “Fertilizer Relief Valve” on page 61.
4. Pump drive rate  
This is a separately provisioned tractor-mounted capability. Rate setting is described in this manual, but system operation is not.

5. Row orifice setup  
See “Fertilizer Orifice Plates” on page 60

Great Plains recommends checking with your local agronomist as soil conditions vary. Soil conditions in your area may need less or more fertilizer than represented in these charts. Do not exceed 12 gallons per acre in any case.

The liquid fertilizer system is designed to operate (ideally) between 15 and 40 psi, but in no case more than 85 psi. Several system elements affect system pressure, and need initial setup, periodic maintenance, and adjustment when changing seed rates.

**Liquid Fertilizer Strainer**

A strainer is normally supplied with the fertilizer pump option and is plumbed between the tank(s) and the pump.

The strainer will have been delivered with a mesh screen. You need to check that it is an appropriate size for the orifice plates you plan to use.

The standard orifice plates for the 3PYP are size 48.

If changing screen sizes, keep in mind the following:

- Generally, select a mesh screen the same or slightly smaller than the orifice size.
- A substantially smaller mesh (e.g. 100) will reduce manifold orifice plates plugging so often, but the strainer screen will have to be cleaned more often.
- A much larger mesh (e.g. 50 or 30) will pass more material but should only be considered when using large manifold orifice plates.
- A plugged or partially plugged screen will starve the pump and will result in a reduced application rate.
Fertilizer Orifice Plates

Refer to Figure 62

To install, insert the plate 1 inside the gasket 2 supplied with the nozzle 3. Insert the gasketed plate with the legend side facing out the nozzle outlet (typically up).

In general, the orifice 1 needs to be small enough to create enough pressure in the manifold to operate the check valves 3 in the boom clamps, but not so much that the system dumps product at the boom relief valve.

The recommend operating pressure is: 15 to 40 psi

Using an orifice size too large can result in unequal flow at rows, intermittent flow, and flow stoppage at rows where pressure falls below the 8 psi required to open the clamp check valve. Using a size too small can cause excess back-pressure resulting in material dumping at the boom relief valve.

Use the same size at all active rows.

Exception: If one or two outside “zone coulter” applicators re-trace the same furrow on opposing passes, you can halve the rate at these rows (only) by using a smaller orifice plate (see table at right)

Alternate orifice plates are listed under “Fertilizer Orifice Plates” on page 120.

The Seed Rate Chart book for this planter (manual part number 401-312B) contains a table of orifice sizes in gallons per acre.

Fertilizer Row Shut-Off

Refer to Figure 62

Unused drop lines may be shut off by replacing the nozzle 3 with a Great Plains 832-042C cap 5. Twin row boom systems separately include caps for half the rows.

When installing a cap:

• It is not necessary to remove the gasketed orifice plate from inside the clamp. The cap includes its own gasket that seals at the end of the clamp port.
• Use a tie wrap or other line to secure the loose nozzle and drop line tubing to the boom.
• Adjust pump and/or orifice plates for new rate and row spacing.

Material Loss Risk:

Do not apply materials without first reviewing setup. Shutting off rows does not change the application rate. Unless the pump is reset, it operates at the prior rate, doubling the flow at each nozzle. This can result in excess pressure, and material loss at the relief valve.

![Figure 62 Fertilizer Orifice Plate]

Table: Fertilizer Orifice Plate Sizes

<table>
<thead>
<tr>
<th>Orifice Size</th>
<th>Part Number</th>
<th>Port Diameter</th>
<th>Port Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>832-052C</td>
<td>0.020 in</td>
<td>0.20 mm²</td>
</tr>
<tr>
<td>28*</td>
<td>832-056C</td>
<td>0.028 in</td>
<td>0.40 mm²</td>
</tr>
<tr>
<td>34*</td>
<td>832-053C</td>
<td>0.034 in</td>
<td>0.59 mm²</td>
</tr>
<tr>
<td>48*</td>
<td>832-054C</td>
<td>0.048 in</td>
<td>1.17 mm²</td>
</tr>
<tr>
<td>59</td>
<td>832-057C</td>
<td>0.059 in</td>
<td>1.76 mm²</td>
</tr>
<tr>
<td>80</td>
<td>832-055C</td>
<td>0.080 in</td>
<td>3.24 mm²</td>
</tr>
<tr>
<td>98</td>
<td>832-059C</td>
<td>0.098 in</td>
<td>4.87 mm²</td>
</tr>
</tbody>
</table>

* Sizes standard in many fertilizer bundles. Check your accessories before ordering.

Agricultural Chemical Hazard:

Wear protective gloves when changing orifice plates and strainer screens. Consult material manufacturer or supplier documents for proper handling and steps to take if skin contact occurs.
Fertilizer Relief Valve

Refer to Figure 63

A relief valve and pressure gauge are mounted at the fertilizer inlet connection point to the tractor, and provides the fertilizer feed to the manifold (manifold not shown). The relief valve protects the manifold, lines and fittings from excessive pressure. Any product that dumps over the relief valve will discharge from the dump line in relative safety, rather than appearing unpredictably at some random point in the system.

To set relief valve:

1. Unlock plastic jam nut from relief valve knob.
2. Unscrew knob clockwise (looking down) until it loses contact with internal spring.
3. Screw knob counterclockwise two turns. Start at this setting.
4. Observe manifold gauge and watch for relief valve dump line discharge while operating in the field.
5. If valve is dumping product and gauge reads under 85 psi, stop tractor and turn knob clockwise 1/4 turn. Continue operating at normal field speed. Repeat this step as needed until no product is discharged from relief valve dump line.
6. If the pressure gauge reads above 85 psi, change to a larger orifice. Go to step 2 and repeat.

Ground Drive Fertilizer Pump

Planters ordered without a fertilizer pump system, or which have an older shaft-driven pump may be upgraded to ground drive CDS-John Blue® piston pump:

<table>
<thead>
<tr>
<th>Option Packages</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3PYP JB GND DRV PSITON PMP ASM</td>
<td>407-422A</td>
</tr>
</tbody>
</table>

For operations, see the Seed Rate manual.
25 Series Row Units

Refer to Figure 64 (which depicts a row unit fully populated with all optional accessories supported for use with the 3PYP planter)

- All row-unit components are unit-mounted.
  - The 3PYP does not support frame-mounted components other than the row unit itself.

From front to back, a Great Plains 25 Series row unit can include the following capabilities (some optional):

Row Unit Lock-Up: (standard, pin not shown)
In twin-row configurations, the rear row unit may be locked up to reduce wear in single-row operations, using a pin stored in a hole in the upper forward mount, which is transferred to a hole below the rear end of the lower parallel arms. See “Row Unit Lock-Up” on page 66

- Parallel arms: standard
  - Each row unit is mounted on the planter with parallel arms which allow each row unit to independently move up and down while staying horizontal. See “Row Unit Down Pressure” on page 63

Row cleaners: optional
Row cleaners clear trash from the row. Twin-row planters support single-arm cleaners. Single-row planters support single- or double-arm cleaners. See “Unit-Mount Cleaner Adjustments” on page 67

- Coulter: optional, choice of wheels
  - Coulters cut any remaining trash, and create a pre-groove for light no-till planting. The down force needed to cut and widen the coulter groove is supplied by the row unit. The depth relative to the opener is set by a choice of hub mounting holes. See “Coulter Adjustments” on page 68

Openers: standard, 2 per row unit
Openers double disks widen the coulter groove, creating the seed bed. Setup controls depth, width and sidewall angle. See “Row-Unit Opener Adjustments” on page 69

- The depth gauge wheels also accept an optional scraper. See “Adjusting Depth Wheel Scrapers” on page 72

Seed meter: required, choice of models/features
Meters deliver singulated or volumetric seed. See “Seed Meter Setup and Adjustment” on page 72

- Seed delivery tube: standard (not shown)
  - No adjustments are necessary.

Seed firmer (optional):
Keeton® seed firmer (shown mounted)
Improves seed-soil contact, and provides a stable arm for a low-rate liquid fertilizer delivery tube. See “Keeton® Seed Firmer Adjustment” on page 78

- Seed-Lok® firming wheel (shown in inset)
  - Improves seed-soil contact. See “Seed-Lok® Seed Firmer Lock-Up” on page 78

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**NOTICE**

Certain Machine Damage:
Do not back up with row units in the ground. To do so will cause severe damage and row unit plugging.
Row Unit Down Pressure

Refer to Figure 65

The ideal amount of down-force causes the side gauge wheels to compress any loose surface soil, but not press a trench into subsoil.

To assess down-force, operate the planter for a short distance on typical ground (with or without seeding), and stop. Leave the planter lowered (row units in ground).

At several row units, inspect the furrow created by the opener discs, but prior to furrow closing by the press wheels.

Be sure to inspect rows both in and out of tire tracks.

Refer to Figure 66

1. If the side gauge wheels are leaving no tracks, or light tracks, increase down-force.

2. If the wheels are compressing trash and loose soil, and leaving clear tracks right at the top of the subsoil, down-force is probably correct and needs no adjustment.

3. If the wheels are creating a trench into the subsoil, down-force is too high and needs to be reduced.
Refer to Figure 68

An adjuster cam \( \circ \) sets down pressure individually for each row unit. This is useful for penetrating hard soil and planting in tire tracks. For best results always adjust tractor tires so they are not ahead of 30 inch rows. Use only enough down pressure to cut the seed trench and maintain proper soil-firming over seed. Excessive row unit down force will lead to premature wear on row unit components, uneven seed depth and gauge wheel slippage (unless hydraulic down force is used).

### Adjusting Down-Pressure

Refer to Figure 67 (on page 64, shown at cam setting 2), Figure 68 and Figure 69

To adjust down pressure, use a \( 1 \frac{1}{8} \) inch (29 mm) open end wrench or the tool \( \odot \) stored under the walkboard. 3PYP must be unfolded for this adjustment.

1. Raise the planter. Although this adjustment can be made with the planter lowered, the springs will be in tension, and will require more effort. The extra force required may also damage tools.
2. Install lift assist cylinder locks.
3. Put tractor in Park and shut it off.
4. Position wrench on the fixed nut \( \ominus \) near or slightly forward of vertical.
5. Pull upper spring link \( \Theta \) back.
6. Move the adjustment cam to the new setting on the spring adjust bar \( \Phi \).

\( \checkmark \) Do not set all rows higher than notch four. Using high settings across all rows causes uneven planting. Individual rows may be set higher if running in tire tracks.

<table>
<thead>
<tr>
<th>Cam Notch</th>
<th>Down-Force(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>zero (out of notch)</td>
<td>Maintenance Only</td>
</tr>
<tr>
<td>one</td>
<td>345 lbs (156 kg)</td>
</tr>
<tr>
<td>two</td>
<td>370 lbs (168 kg)</td>
</tr>
<tr>
<td>three</td>
<td>400 lbs (181 kg)</td>
</tr>
<tr>
<td>four</td>
<td>450 lbs (204 kg)</td>
</tr>
<tr>
<td>five</td>
<td>500 lbs (227 kg)</td>
</tr>
<tr>
<td>six</td>
<td>550 lbs (249 kg)</td>
</tr>
<tr>
<td>tip</td>
<td>Do Not Use</td>
</tr>
</tbody>
</table>

\(^a\) Includes both spring force and row unit weight.
Row Unit Shut-Off

Skip-row operations, such as planting from every other row when switching from 30 inch twin-row to 30 inch single-row, requires shutting down unused rows.

Refer to Figure 70

Shutting off seeding at a row involves 4 to 7 steps:

1. Identify the rows to shut off.
2. Disengage row unit drive coupler.
3. Close seed flow to row at Y-tube (if present).
4. Lock up row unit to reduce wear (optional).
5. Reset marker extension (if used).
6. Reset monitor active row pattern and row spacing to avoid nuisance alarms (always done).
7. Shut off fertilizer drop lines (Option, see Seed and Fertilizer Rate manual 401-312B for details).

8. Identify Rows to Shut Off

On twin-row planters, openers are installed with short and long opener mounts. If locking up unused rows of a twin-row planter, shut off the rear (long mount) rows.

On single-row planters with mid-length mounts, any rows may be locked up.

9. Close Y-Tubes

Refer to Figure 71

If any shut-off rows are served by a Y-tube, close the gate for the branch to that row. Rotate the valve cap until the indicator/handle is perpendicular to the tubes.

Closing the Y-tube prevents seed from entering an unused hose, reducing waste and simplifying clean-out.
Row Unit Lock-Up
Alternate twin-row units (the rear units) can be pinned in the up position to accommodate single-row spacing.

Refer to Figure 72
The lock-up pins ① for each rear row unit are located in a storage hole ② in the row unit mount. To lock up a unit, the unit must be raised, and the pin moved to the lock-up hole ③ in the row unit shank.

-watermark
If you lose a pin, the replacement part number is 805-033C
1. Raise the planter. Although this adjustment can be made with the planter lowered, the springs will be in tension, and will require more effort. The extra force may also damage tools.
2. Install lift assist cylinder locks. Lower parking stands.
3. Unhitch tractor. Move row mode spacer on an older planter (see page 160).
4. Set the down pressure springs be set to the minimum setting, per the instructions on page 63.
5. Raise the row unit high enough that the hole for the pin is above the lower parallel arm. This can be done in several ways, including:
   a. use a hoist at the rear of the shank ④
   b. use a jack under the shank extension ⑤

-watermark
NOTICE
Machine Damage Risk:
Raising a row unit on a block by lowering the planter is risky. Full lowering can easily damage components, and hydraulic failure is a safety hazard.

-watermark
CAUTION
Crushing and Sharp Object Hazards:
Do not attempt to lift the row unit by hand. The weight of the unit, plus the force of the springs (even at minimum) is too great (plus, a free hand is needed for pin insertion). Even with multiple people lifting, hand-lifting is unsafe - there are numerous sharp edges, and the row unit will snap down violently if a grip is lost.

Refer to Figure 73
6. Remove the pin from the storage hole ② and insert and secure it in the lock-up hole ③.
7. Lower row unit until lower parallel arm rests on lock-up pin.
8. Shut off Y-tube port for the current row unit.
10. Repeat for all rows needing lock-up.
Unit-Mount Cleaner Adjustments

*Refer to Figure 74 and Figure 75*

Optional Martin row cleaners are unit-mounted, using:
- UMRC: Unit-Mount Row Cleaner (stand-alone), or
- UMC-RC: Unit-Mount Coulter RC (on coulter bracket, with or without a coulter disk present).

There are two adjustments:

1. Wheel placement (forward or aft mounting hole, for more or less aggressive cleaning), and
2. Wheel height, adjusted by a stop. Cleaner arms float. The stop only sets the lowest position.

In UMRC mount, a pinned cross-tube on the mount adjusts the depth. In UMC-RC (coulter) mount, a sliding down-stop block adjusts how close to the ground the row cleaners operate.

The row cleaner needs to be adjusted for your conditions, crop changes, and as coulters and openers wear. Ideally, cleaners contact only the trash, and do not disturb the soil. If allowed to "dig", row cleaners can reduce seed coverage.

Suggested initial depth is tine tips at ground level.

Make the adjustment with the planter raised. Install lift-assist cylinder locks. Also check bolt tightness prior to each planting session, to avoid down-stop slippage.

To adjust the row cleaner:

1. Determine the height adjustment required. Measure from the lowest tine to the ground. Determine the desired new measurement.
2. Support most or all of the weight of the arm to prevent injury and ease the adjustment. Loosen bolts on UMC-RC. Remove bent pin on UMRC.
3. Support arm at desired height.
4. UMRC: Slide adjustment tube until cross-tube contacts arm at target height. Insert bent pin in whichever hole pair is most in alignment. Each possible hole pairing adjusts the tine height by about 3/4 inch (19 mm).
5. UMC-RC: Slide the down-stop on the arm:
   - back toward the pivot for shallower cleaning, or
   - forward toward the tines for deeper cleaning.
   Tighten the bolts.
6. Check the new height measurement.

Refer to Row Cleaner manual 204-085M-A for further information on use, adjustment and maintenance of row cleaners.

**Sharp Object Hazard:**
Row cleaner tines, casting edges and coulter blades are sharp. Wear hand protection when working in this area.
Coulter Adjustments

The ideal operating depth for coulter is $\frac{1}{4}$ inch (6 mm) above opener depth. Although they may have originally been set to this depth, coulter (and opener) blades wear with time, and may need adjusting.

Adjusting the coulter depth is accomplished by re-mounting the coulter blade in one of the six mounting holes arranged in a staggered pattern in the coulter bracket.

Refer to Figure 76 and Figure 77

Raise planter and install cylinder locks before working on coulters. Row unit may be fully lowered or locked up. Do not attempt to move blade when the current or new position causes it to contact the ground during the adjustment. Be careful around the front end of row units. Row clear tines and coulter blades may be sharp.

To adjust coulter depth:

1. Determine the present opener and coulter depths.
2. Note which bracket hole the coulter is presently using.
3. Determine which new hole will position the coulter closer to the $\frac{1}{4}$ inch above depth. See the table below. If none, don’t move it.
4. Remove the $\frac{5}{8}-11\times4$ inch bolt, lock washer and nut (in Figure 76).
5. Move the blade to the new position. Insert the bolt, and tighten on the lock washer and nut.

<table>
<thead>
<tr>
<th>Hole Number</th>
<th>Depth of (new) coulter blade relative to (new) opener blades</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1 inch (2.5 cm) above</td>
</tr>
<tr>
<td>3</td>
<td>$\frac{1}{2}$ inch (1.6 cm) above</td>
</tr>
<tr>
<td>5</td>
<td>$\frac{1}{4}$ inch (6.4 mm) above</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>$\frac{3}{8}$ inch (9.5 mm) below</td>
</tr>
<tr>
<td>6</td>
<td>$\frac{3}{4}$ inch (1.9 cm) below</td>
</tr>
</tbody>
</table>

6. Re-adjust openers, if installed.

If a worn coulter cannot be adjusted to satisfactory operating depth, replace coulter.
Row-Unit Opener Adjustments

25 Series openers have three adjustments:
1. Planting/seed depth.
2. Gauge wheel/opener disk clearance.
3. Opener disk angle.

Setting Planting Depth
*Refer to Figure 78*

The “T” handle  sets planting depth by limiting the how high the side depth gauge wheels ride relative to the opener disks. The position of the seed tube itself is fixed relative to the disks, and is not adjusted.

To adjust seed depth, pull the “T” handle up and back, move it forward or aft, and set it back in a different pair of holes in the scale.

- The shallower planting, move the “T” handle forward.
- For deeper planting, move the “T” handle back.

Changing planting depth may also require changing disk angle.

Disk Angle and Side Depth Wheels
*Refer to Figure 79*

Disk angle affects seed groove angle/width, and may need to be narrowed to achieve the desired seed depth in some conditions.

Disk-to-wheel angle and clearance ideally has the wheel just touching the disk when the wheel is raised to planting depth (is up against the stop set by the “T” handle). The goal is to have both disks and wheels turn freely, but keep soil and trash from getting between them.

These two adjustments interact with each other. Changing one requires at least checking the other.

In addition to changing the disk angle due to changing depth or new field conditions, these two settings may need attention over time as the disk and wheels wear from normal use. This adjustment will also need to be made if any opener components are replaced.
Adjusting Disk Angle & Side Depth Wheels

Refer to Figure 80
For 2 inch planting depth, adjust side depth wheel angle so wheels contact row unit disks at the bottom of wheel. Check with row units in soil so wheels are held up. At the same time, keep side gauge wheels close to opener disks so openers do not plug with soil or trash.

Wheels should be out far enough so disks and wheels turn freely.

Refer to Figure 81
To adjust side gauge wheels:
1. Raise planter slightly removing weight from side gauge wheels.
2. Loosen hex-head bolt ①. Move wheel and arm out on O-ring bushing.
3. Loosen pivot bolt ②. Turn hex adjuster ③ so indicator notch ④ is at 5 o’clock to 7 o’clock.

Use this as the starting point for adjustment.
4. Move wheel arm in so side gauge wheel contacts row unit disk. Tighten hex-head bolt ① to clamp arm around bushing and shank.
5. Check wheel-to-disk contact at 2 inch planting depth. Lift wheel 2 inch and release. When let go, wheel should fall freely.

• If wheel does not contact disk at bottom to area where blade leaves contact with soil, move hex adjuster until wheel is angled for proper contact with disk.

• If wheel does not fall freely, loosen hex-head bolt ① and slide wheel arm out just until wheel and arm move freely. Tighten hex-head bolt ① according to grade:
  1/2 inch Grade 5 bolt on 25 series, 75 foot-pounds.
  1/2 inch Grade 8 bolt on 25 series, 110 foot-pounds.

Use “Torque Values Chart” on page 127 for reference.

6. Keep turning hex adjuster and moving wheel arm until the wheel is adjusted properly. When satisfied, tighten pivot bolt ② to 110 foot-pounds.
Row-Unit Opener Disk Adjustments

Opener Disc Contact Region

Refer to Figure 82

Opener disc angle and stagger is not adjustable, but disc-to-disc spacing is, and may need attention as discs experience normal wear. Spacers will need to be reset when blades are replaced.

The ideal spacing causes the blades to be in contact for about one inch ①. If you insert two pieces of paper between the blades, they should slide to within zero (touching) to 1.5 inch (3.8 cm) of each other. If zero, the gap between the blades should not be significantly greater than the thickness of two sheets of paper.

If the contact region is significantly larger or there is a large gap, it needs to be adjusted by moving one or more spacer washers.

Adjusting Disc Contact

Refer to Figure 82 and Figure 83

1. Raise the planter and install lift cylinder locks.
2. Remove the side gauge wheels ② on the row unit in need of adjustment.
3. Remove the bolt ③ retaining the opener disc ④ on one side. Carefully remove the disc. Do not lose the hub components and spacer washers ⑤, ⑥. Make note of how many spacer washers ⑤ are between the disk and the nut bar ⑦.

When the bolt is fully removed from the disk, a dust cap ⑨ or hold-down bracket will be loose.
4. To reduce the spacing between the discs (the normal case), move one spacer washer from the inside ⑤ to the outside ⑥ of the disc. Do not discard any spacers. They will be moved to the inside upon eventual replacement of a completely worn out blade.
5. Re-assemble and check disk contact.
Adjusting Depth Wheel Scrapers

*Refer to Figure 80*

Scraper are optional, and may be useful in moist or sticky soils that tend to accumulate on gauge wheels and reduce intended planting depth.

To adjust scrapers:

1. Loosen nut ①.
2. Slide scraper ② toward gauge wheel ③ until scraper touches tire.
3. Slide scraper ② away from wheel ③ leaving a 1/8 inch (3.2 mm) gap at ④.
4. Rotate scraper left and right around bolt, making sure it cannot touch tire if bumped in field. If it can touch tire, back scraper away from wheel until it cannot.
5. Center scraper angle on bolt ① until gap ④ is constant.
6. Tighten nut ①.

Seed Meter Setup and Adjustment

Your 3PYP was originally supplied with a specific seed meter type and internal components optimized for a particular crop. Depending on the meter type and configuration, there may be adjustments available.

You can also entirely change the meter, or swap internal components, as your crop mix changes. This manual section assumes that you need to install new meters, then describes their internal configuration, and finally any adjustments.

**Meter Removal**

1. Clean out the meter. See “Meter Removal” on page 72.

*Refer to Figure 85*

2. Slide the retaining ring up on the seed hose, and remove the seed hose.

The 3PYP supports

- Great Plains Singulator Plus™ meters and
- Finger-pickup meters.

The 3PYP does not support feeder cups. Use a Singulator Plus™ meter with specific wheels for volumetric applications.
**Refer to Figure 86**
3. Release the lower latch.

![Figure 86 Lower Meter Latch](image1)

**Refer to Figure 87**
4. Release the upper latch and swing the meter mount away from the meter.

![Figure 87 Upper Meter Latch](image2)

**Refer to Figure 88**
5. Lift up, then back, and remove the meter.

![Figure 88 Singulator Meter Removal](image3)

**Refer to Figure 89**
6. While the meter is removed, take time to inspect the meter drive chain ①, idlers ② and drive sprocket ③, and perhaps perform the periodic chain lubrication.

   Idlers are spring-loaded, so no slack adjustment is required.

![Figure 89 Inspect Meter Drive](image4)
Singulator Plus™ Meter Wheel Replacement

Choose the correct seed meter wheel for the type of seed you will be using. Be sure to use the same wheel type on all meters.

**NOTICE**

25 Series Meter Wheels Not Interchangeable:
Seed meter wheels for the 25 Series row units are made of a green color material and are not interchangeable with the other Great Plains seed meter wheels, discs and plates for other machines. Use only green wheels in 25 Series row units.

1. Clean out meter. For more information, see "Meter Removal" on page 72
Refer to Figure 90
2. Push in spring-loaded wheel retainer and make 1/4 turn. Pull off wheel retainer and spring.
Refer to Figure 91
3. Pry the seed meter wheel out about 1/4 inch using the tool stored under the walkboard, and spin backward to clean out seeds from top pockets.
Refer to Figure 92
4. Remove seed meter wheel.

Refer to Figure 93

- With the seed meter wheel removed, you may want to check the meter for internal damage or trash.
- Some wear on top edge of slide is normal. Excess wear is cause for replacement.
5. When changing crops be sure to clean out air system before installing new meters or wheels. See "Cleaning Out Air System" on page 88
6. Place new wheel on meter wheel shaft. Seat wheel fully on cross-pin.
7. Replace spring-loaded wheel retainer. Make 1/4 turn to seat cross-pin in shallow groove of retainer.
Meter Installation

Installation is the reverse of the removal process, with two steps omitted.

Refer to Figure 94

1. Insert the meter.
   1. Insert the top meter tab (with the hook).
   2. Align the meter base with the latch plate ears.
   3. Insert the bottom meter tab.
   Mind the lower latch, as it tends to swing under the meter base and block mating with the latch plate.

Refer to Figure 87 on page 73

2. Engage the upper latch.

Refer to Figure 86 on page 73

3. Engage the lower latch, and swing the mounting plate into engagement with the meter. It may be necessary to spin the drive coupler to ease this.

Refer to Figure 85 on page 72

4. Slide the seed hose over the meter inlet tube, and then slide the retaining ring down the seed hose.

Refer to Figure 95

5. Release the upper latch.
Finger Meter Adjustments
The finger pick-up meter has an adjustable brush, and alternate inserts are available for the backing plate. The brush has been pre-set to the optimum setting for most seed sizes. The factory-installed insert is the “A” insert.

Optimum planting speed is 4 1/2 to 5 miles per hour (7.2-8 km/h). Excess speed causes poor spacing performance due to seed tube bounce, and may also cause improper depth control due to row unit bounce.

Always pay attention to your planter monitor. Compare actual seed usage to your estimates.

Fine-tune your planter by thoroughly checking all key components including: seed tubes, chains, sprockets, tire pressure, seed monitor, double disk openers, gauge wheels, seed firmer, closing wheels, parallel arms, and the row unit itself.

Finger Meter Brush Adjustment
The brush reduces or eliminates “doubles” (delivering two seeds per finger), but if set too aggressively can cause “skips” (delivering no seed on some fingers). As needed, adjust for minimal doubles and skips.

These instructions describe the current finger pickup meter shipped with new Great Plains planters, which has an integrated adjustment lever for the brush. If you have added pre-existing finger meters after purchase, there is some chance that you may have the previous model meter, adjusted by screwdriver rather than lever. If so, rely on counting detents to determine the setting. Not all have 9 detents.

Refer to Figure 96
The adjustable brush provides additional flexibility to accommodate a wide range of seed sizes. Use lever (L) to gently rotate the brush into position.

The settings range from 1 to 5 with detents at each half step, for a total of 9 detents. The factory default setting is 2 1/2. Although the numbers are molded into the meter housing, only “1” and “5” may be visible. To ensure consistency, rotate the lever fully counter-clockwise (1), and count detents as you advance it to the desired setting.

<table>
<thead>
<tr>
<th>Bag Weight (80,000 seeds)</th>
<th>Seeds Per Pound</th>
<th>Brush Setting</th>
<th>Seeds Per Kilogram</th>
<th>Bag Weight (80,000 seeds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rounds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65 lbs</td>
<td>1230 or less</td>
<td>1</td>
<td>2710 or less</td>
<td>29.5 kg</td>
</tr>
<tr>
<td>65 to 55 lbs</td>
<td>1230 to 1450</td>
<td>2</td>
<td>2710 to 3195</td>
<td>29.5 to 24.9 kg</td>
</tr>
<tr>
<td>55 to 45 lbs</td>
<td>1450 to 1780</td>
<td>3</td>
<td>3195 to 3925</td>
<td>24.9 to 20.4 kg</td>
</tr>
<tr>
<td>45 to 35 lbs</td>
<td>1780 to 2300</td>
<td>4</td>
<td>3925 to 5070</td>
<td>20.4 to 15.9 kg</td>
</tr>
<tr>
<td>35 lbs</td>
<td>2300 or more</td>
<td>5</td>
<td>5070 or more</td>
<td>15.9 kg</td>
</tr>
<tr>
<td>Flats</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 lbs</td>
<td>1780 or less</td>
<td>1</td>
<td>3925 or less</td>
<td>20.4 kg</td>
</tr>
<tr>
<td>45 to 35 lbs</td>
<td>1780 to 2300</td>
<td>2</td>
<td>3925 to 5070</td>
<td>20.4 to 15.9 kg</td>
</tr>
<tr>
<td>35 lbs</td>
<td>2300 or more</td>
<td>3</td>
<td>5070 or more</td>
<td>15.9 kg</td>
</tr>
</tbody>
</table>
Finger Meter Inserts

Refer to Figure 97

The backing plate is equipped with an “A” insert for Corn, and a “C” insert for Sunflower. In tests, these inserts provide the best performance in most seed sizes. However, there are alternate inserts that can be used. Before changing to a different insert, please consult with a Great Plains service representative for a recommendation.

The insert type is molded into the back. Changing inserts requires meter disassembly.

**NOTICE**

**Meter Reliability Risk:**

*Be cautious in using seed treatments, additives, and other chemicals when possible. They can cause meter performance problems and premature wear. If graphite is used, use Precision Planting® planting graphite or Great Plains graphite, which is less abrasive. Generally, seeds treated with Maxi, Captan, and similar coatings benefit from graphite. Always store meters in a dry, secure place. Moisture, temperature, nest-building insects and rodents can create problems. Always pay attention to your seed monitor and operating manual. Monitor the amount of seed you are planting compared to expectations. Investigate abnormalities!*

Sunflower Meter Configurations

Review the finger pickup meter configuration, based on the seed size. See chart below. See “Exchanging Finger Sets” on page 96 for component removal and installation instructions.

The standard Sunflower configuration is suitable for #4 and #3 seed sizes. Larger seeds may require the Corn meter configuration. Using a finger pickup meter for Confection seeds is not recommended.

**Finger Pickup Configurations for Sunflower**

<table>
<thead>
<tr>
<th>Meter Component</th>
<th>#4 (Oil Seed Size)</th>
<th>#3 (Oil Seed Size)</th>
<th>#2 (Oil Seed Size)</th>
<th>Confection Seed (Oil Seed Size)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Finger Set</strong></td>
<td>~16500 seeds/kg (~7500 seeds/pound)</td>
<td>~14300 seeds/kg (~6500 seeds/pound)</td>
<td>~12100 seeds/kg (~5500 seeds/pound)</td>
<td>Not recommended for XL confection seed</td>
</tr>
<tr>
<td><strong>2. Backing Plate</strong></td>
<td>343067° (12-finger sunflower)</td>
<td>343067° (12-finger sunflower)</td>
<td>343029° (12-finger corn)</td>
<td></td>
</tr>
<tr>
<td><strong>3. Brush Block</strong></td>
<td>343091° (brushless block)</td>
<td>343091° (brushless block)</td>
<td>343052° (adjustable brush block)</td>
<td></td>
</tr>
</tbody>
</table>

- c. These components are included in the standard 890-856C Corn meter.
- s. These components are included in the standard 890-912C Sunflower meter, and the 403-659A Conversion Kit.
Sprocket Indexing (Stagger)
(Applies to both ground and hydraulic drive)

If you are planting:
• finger-metered,
• twin-row crops,
• at seed interval spacings above 6 1/2 inches,
you can synchronize each pair of adjacent meters in a twin row so that you achieve the maximum seed-to-seed spacing between the units of the pair.

Refer to the Seed Rate manual for details.

Seed Firmer Adjustments
25 Series row units include a standard seed flap, and accept one of two optional seed firmers.

Keeton® Seed Firmer Adjustment
The optional Keeton® Seed Firmer is an engineered polymer shape that slides down the seed furrow. It traps seeds as they exit the seed tube and firms them into the bottom of the “V”.

Refer to Figure 98
The firmer is provided with a preset tension which is recommended for using the first year. The tension screw can be tightened in subsequent years according to your needs. Firmers should provide just enough tension to push seeds to the bottom of the trench.

Measure the distance from the ground to the head of the tension screw. This distance should be 4 to 4 1/2 inches. If not, loosen the bolts in the mounting bracket and select different holes until the proper measurement is attained.

Seed-Lok® Seed Firmer Lock-Up
Optional Seed-Lok® firming wheels provide additional seed-to-soil contact. The wheels are spring loaded and do not require adjusting. In some wet and sticky conditions the wheels may accumulate soil. To avoid associated problems, you can lock-up the firmers.

Sharp Object Hazard:
Row unit disk blades may be sharp. Use caution when making adjustments in this area. To adjust the Keeton® seed firmer, lower the planter until the disks of the row units are resting on the ground.

Figure 98
Keeton® Seed Firmer
Refer to Figure 99 (which depicts a row unit with discs, side depth wheels/arms and press wheels removed for illustrative purposes - removal is not necessary for lock/unlock)

To lock up Seed-Lok® wheels:
1. Raise planter. Insert lift assist cylinder locks.
2. Lift Seed-Lok® lock-up handle 1 until lever stop 2 is free to rotate.
4. Push up on Seed-Lok® wheel 4 until wheel arm latches up 5.

To release a locked-up Seed-Lok®:
1. Insert a 1/4 in. tool drive tip in the tool hole 6 of the handle 1. Alternatively, lift up on the wheel 5.
2. Rotate the handle clockwise (handle arm up) until the Seed-Lok® wheel releases at the latch point 5 and falls free.
3. While holding the handle up, rotate the raised portion of the lever stop 2 under both sides 2 of the handle at the arm end. Remove the tool.

Engage the lever stop under the handle 2 when Seed-Lok® is in use. If left disengaged 3, a furrow obstruction could cause unintended lock-up.

Press Wheel Adjustment
The press wheels close the furrow which gently presses the soil over the seed to ensure good seed-to-soil contact for even emergence.

To provide consistent seed firming, the press wheels are free to move downward from their normal operating position. This system maintains pressing action even if the row unit arm is lifted when the disks encounter obstructions.

Refer to Figure 100, 101 and 102
There are three adjustments available on the press wheel assembly and a fourth option on press wheel assemblies with cast wheels:
1. Down pressure (shown at maximum)
2. Wheel stagger (shown staggered)
3. Centering (see Figure 102 on page 80)
4. Cast Wheel Plow Angle (see Figure 103 on page 81)
Press Wheel Down Pressure
Handle sets down pressure, which may need adjustment for different soil types and field conditions.

- Relax the handle forward (in the direction of travel) for decreased down pressure.
- Pull the handle back for increased down pressure.

Higher press wheel down pressures reduce the down force on the main row unit shank components, such as the openers. High press wheel settings may require an increase in overall row unit down force. See page 63.

Press Wheel Stagger
The factory stagger setting has been found optimal for residue flow. If your conditions appear to require even press wheels, you might try one row before reconfiguring the entire planter. To change the stagger:

1. Raise the planter and install the lift assist cylinder locks. See “Lift Assist Cylinder Lock-Up” on page 27
2. Remove the bolt, nut and lock-washer for the left press wheel.
3. Move the spacer and wheel to the forward of the two mounting holes at .
4. Re-install the bolt, lock washer and nut. Tighten.

Press Wheel Centering
If one press wheel is running in the seed trench, or the wheels are not centered over the trench, the angle of the press wheel assembly can be adjusted as follows:

1. Determine how far, and in which direction, the press wheel assembly needs to move to center the wheels.
2. Raise planter and install lift assist cylinder locks. See "Lift Assist Cylinder Lock-Up" on page 27
3. Pick some reference points on the unit to be adjusted and an adjacent row unit. Measure the distance between them.
4. Loosen the rear ½ inch hex-head bolts .
   Do not loosen the two bolts forward of the hex-head bolts. One of the forward bolts is square-head. The other may be hex or square.
5. Turn the hex head cam under the forward hex head bolt , and obtain the new distance between the reference points.
6. Tighten both hex head bolts .
Press Wheel Assembly with Cast Wheels

Tight soil may require the need to drag/plow the trench closed. The factory setting on press wheel assemblies with cast wheels is 4- (maximum plow). If the conditions in your region appear to require less plow, there are two additional settings: 2- (less plow) and 0- (no plow). To change the plow setting:

**Refer to Figure 103**

1. Raise planter and install lift assist cylinder locks. See “Lift Assist Cylinder Lock-Up” on page 27.
2. Remove the bolt ①, lock-washer ② and spacers ③ for the press wheel ④.
3. Remove bolt ⑤, flat washer ⑥ and hex nut ⑦ for casting ⑧.
4. Place a 3/4 inch open end wrench on tab ⑨ of casting. Rotate casting until the desired angle setting (4-, 2- or 0-) hole lines up with a hole on the press wheel mount weldment ⑩ (only one set of holes will line up for each setting).
5. With holes lined up replace casting bolt ④ and flat washer ⑤. Secure with hex nut ⑥.

If press wheel adjustments do not provide satisfactory furrow closing, your conditions may require alternate press wheels. A variety of wheel assemblies are available. Consult your Great Plains dealer.
## Troubleshooting

### General Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planting too much</strong></td>
<td>Incorrect seed rate.</td>
<td>Check seed rate information in the seed monitor manual.</td>
</tr>
<tr>
<td></td>
<td>Actual field size is different.</td>
<td>Verify field size.</td>
</tr>
<tr>
<td></td>
<td>Incorrect tire size or air pressure.</td>
<td>Correct tire size and air pressure, page 126.</td>
</tr>
<tr>
<td></td>
<td>Improper sprocket.</td>
<td>Check sprockets</td>
</tr>
<tr>
<td></td>
<td>Improper gap on speed sensor.</td>
<td>Check speed sensor on planter for $\frac{1}{16}$ inch to $\frac{1}{8}$ inch gap from wheel. Improper gap can cause erratic speed signal causing monitor to falsely report improper planting rate. Monitor may also falsely report a low rate on soybeans by as much as 5 percent due to difficulty in counting all of the seeds.</td>
</tr>
<tr>
<td></td>
<td>Meter wheel or finger pickup has more cells than indicated on seed rate chart.</td>
<td>Charts are based on either 6 finger or 12 finger meters or various wheel counts.</td>
</tr>
<tr>
<td><strong>Planting too little</strong></td>
<td>Incorrect seed rate.</td>
<td>Check seed rate information.</td>
</tr>
<tr>
<td></td>
<td>Excessive field speed.</td>
<td>Reduce field speed.</td>
</tr>
<tr>
<td></td>
<td>Seed size and weight may vary.</td>
<td>Adjust seed rate handle.</td>
</tr>
<tr>
<td></td>
<td>Incorrect tire size or air pressure.</td>
<td>Correct tire size and air pressure, page 126.</td>
</tr>
<tr>
<td></td>
<td>Actual field size is different.</td>
<td>Verify field size.</td>
</tr>
<tr>
<td></td>
<td>Excessive gaps between planter passes.</td>
<td>Adjust marker, page 56.</td>
</tr>
<tr>
<td></td>
<td>Plugged row-unit seed tube.</td>
<td>Lift planter, expose bottom of seed tube and clean out.</td>
</tr>
<tr>
<td></td>
<td>Thrown or worn drive chains</td>
<td>Check drive chains.</td>
</tr>
<tr>
<td></td>
<td>Worn sprockets and/or chain idlers.</td>
<td>Replace sprockets and/or chain idlers.</td>
</tr>
<tr>
<td></td>
<td>Improper sprocket.</td>
<td>Check sprockets</td>
</tr>
<tr>
<td></td>
<td>Improper gap on speed sensor.</td>
<td>Check speed sensor on planter for $\frac{1}{16}$ inch to $\frac{1}{8}$ inch gap from wheel. Improper gap can cause erratic speed signal causing monitor to falsely report improper planting rate. Monitor may also falsely report a low rate on soybeans by as much as 5 percent due to difficulty in counting all of the seeds.</td>
</tr>
<tr>
<td></td>
<td>Meter wheel or finger pickup has fewer cells than indicated on seed rate chart.</td>
<td>Charts are based on either 6 finger or 12 finger meters or various wheel counts.</td>
</tr>
<tr>
<td>Problem</td>
<td>Cause</td>
<td>Solution</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| **Uneven seed spacing.**        | Hydraulic meter drive motor rpm too low for reliable control by proportional valve. | 1. Increase field speed.  
2. Use a seed wheel with lower cell count.  
Switch from 12 finger meters to 6 finger meters. |
<p>| Excessive field speed.          | Reduce field speed.                                                   |                                                                          |
| Unclean seed.                   | Use clean seed.                                                       |                                                                          |
| Seed-Lok® plugging.             | Lock up Seed-Lok®, page 78.                                           |                                                                          |
| Row-unit disks not turning.     | See &quot;Row-unit disks not turning freely,&quot; in this Troubleshooting chart. |                                                                          |
| Plugged row-unit seed tube.     | Lift up planter, expose bottom of seed tube and clean out.            |                                                                          |
| Worn/rusted sprockets and/or chain idler. | Check and replace any worn/rusted sprockets or chain idlers.       |                                                                          |
| Partially plugged row-unit seed tube. | Lift up planter, expose bottom of seed tube and clean out.         |                                                                          |
| Lack of proper seed lubrication on seed. | Refer to Seed Lubricant, page 121.                                     |                                                                          |
| Use of excessively sticky or wet seed treatment. | Check your treatment.                                                   |                                                                          |
| Inadequate contact wheel spring pressure. | Check for correct tire air pressure, page 126.                      |                                                                          |
| Air pressure in contact wheel incorrect. | Check for correct tire air pressure, page 126.                    |                                                                          |
| <strong>Uneven seed depth</strong>           | Excessive field speed.                                                | Reduce field speed.                                                      |
|                                  | Planting conditions too wet.                                          | Wait until drier weather.                                                |
|                                  | Incorrect coulter depth setting.                                      | See coulter manual.                                                      |
|                                  | Excessive or improper row unit down pressure spring setting.          | See 25 Series row-units, page 64.                                       |
|                                  | Damaged seed tubes.                                                   | Check seed tubes for damage.                                             |
|                                  | Seed-Lok® building up with dirt.                                      | Lock up Seed-Lok®, page 78.                                              |
|                                  | Row-unit not penetrating low spots.                                    | Adjust row-unit, page 64.                                                |
|                                  | Rough planting conditions.                                            | Rework the field.                                                       |
|                                  | Seed firmer not in place and set to correct tension.                  | Refer to Keeton® Seed Firmer, page 78.                                   |
| <strong>Row-unit disks not turning freely.</strong> | Row-unit plugged with dirt.                                          | Clean row-unit.                                                          |
|                                  | Planting conditions too wet.                                          | Wait until drier weather.                                                |
|                                  | Seed-Lok® is plugging row-unit.                                       | Lock up Seed-Lok®, page 78.                                              |
|                                  | Failed disk bearings.                                                | Replace disk bearings.                                                   |
|                                  | Bent or twisted row-unit frame.                                       | Replace row-unit frame.                                                  |
|                                  | Partially plugged row-unit seed tube.                                 | Lift up planter, expose bottom of seed tube and clean out.              |
| <strong>Press wheels not compacting the soil as desired.</strong> | Too wet or cloddy.                                                   | Wait until drier weather or rework ground.                              |
|                                  | Use of incorrectly shaped tire for your conditions.                  | Wedge shaped wheels work best on narrow spacings and in wet conditions. Round edge wheels work best in wider row spacings and drier conditions. |
|                                  | Incorrect press wheel depth.                                          | Reset press wheel depth, page 79.                                       |
| <strong>Excessive seed cracking.</strong>    | Excessive field speed.                                                | Reduce field speed.                                                      |
|                                  | Unclean seed.                                                         | Use clean seed.                                                          |
|                                  | Damaged, old or dry seed.                                             | Use clean, new seed.                                                     |</p>
<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press wheel or row-units plugging</td>
<td>Planting conditions too wet.</td>
<td>Wait until drier weather.</td>
</tr>
<tr>
<td></td>
<td>Too much pressure on row-units.</td>
<td>Reduce down pressure on row-units.</td>
</tr>
<tr>
<td></td>
<td>Coulters set too deep, bring up excess dirt and moisture.</td>
<td>Check coulter adjustment.</td>
</tr>
<tr>
<td></td>
<td>Planter not set to run level from front to rear, carrying enough weight on gauge wheels to prevent “nosing over”, or set too low on rear caster eyebolts allowing it to run “nose high”.</td>
<td>Check see “Frame Height and Leveling” on page 19</td>
</tr>
<tr>
<td></td>
<td>Backed up with planter in the ground.</td>
<td>Clean out and check for damage.</td>
</tr>
<tr>
<td></td>
<td>Failed disk bearings.</td>
<td>Replace disk bearings.</td>
</tr>
<tr>
<td></td>
<td>Disk blades worn.</td>
<td>Replace disk blades.</td>
</tr>
<tr>
<td></td>
<td>Scraper worn or damaged.</td>
<td>Replace scraper.</td>
</tr>
<tr>
<td>Air lines plugging between air box and Y splitters</td>
<td>Fan too slow.</td>
<td>Speed up fan.</td>
</tr>
<tr>
<td>Seed blowing out of pro-box door area</td>
<td>Fan too fast.</td>
<td>Slow down fan.</td>
</tr>
<tr>
<td>Air line plug between Y-tube &amp; meter</td>
<td>Improper air hose routing.</td>
<td>With machine folded the air lines should be tight. With it unfolded they should form a gentle horizontal “S” shape through the holders with no big sags.</td>
</tr>
<tr>
<td>Air lines plugging above air box at fold area</td>
<td>Fan too slow.</td>
<td>Speed up fan.</td>
</tr>
<tr>
<td></td>
<td>Improper air hose routing.</td>
<td>With machine folded the air lines should be tight. With it unfolded they should form a gentle horizontal “S” shape through the holders with no big sags.</td>
</tr>
<tr>
<td>Hydraulic marker functioning improperly</td>
<td>Air or oil leaks in hose fittings or connections.</td>
<td>Check all hose fittings and connections for air or oil leaks.</td>
</tr>
<tr>
<td></td>
<td>Low tractor hydraulic oil level.</td>
<td>Check tractor hydraulic oil level.</td>
</tr>
<tr>
<td></td>
<td>Loose or missing bolts or fasteners.</td>
<td>Check all bolts and fasteners.</td>
</tr>
<tr>
<td></td>
<td>Needle valve plugged.</td>
<td>Open needle valve, cycle markers slowly and reset needle valve, refer to page 56.</td>
</tr>
<tr>
<td></td>
<td>Needle valve(s) in sequence valve plugged.</td>
<td>Open needle valves, cycle markers slowly and reset needle valves, refer to page 56.</td>
</tr>
<tr>
<td></td>
<td>Wing Fold Switch ON</td>
<td>Turn Wing Fold switch OFF</td>
</tr>
<tr>
<td>Marker disk does not mark</td>
<td>Marker folding linkage does not have enough slack to allow marker disk to drop into field depressions.</td>
<td>Maximum down float should be limited by the slot at the rod end of the marker cylinder, refer to page 56.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reverse marker disk to pull or throw dirt.</td>
</tr>
</tbody>
</table>
## Airbox Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Fix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single row doesn’t fill or keep up with other rows.</td>
<td>Y-tube is bent/angled off feed pipe.</td>
<td>Loosen and rotate pipe so the bend is straight down and Y-tube is not pointing to front or rear of air pipe.</td>
</tr>
<tr>
<td>Both rows on one meter outlet low or not keeping up with other rows.</td>
<td>Blockage in air slot in top of airbox.</td>
<td>Clear by using a long slim tool and taking hose off hose outlet or clean-out door.</td>
</tr>
<tr>
<td>⚠️ This is more likely to occur on end outlets.</td>
<td></td>
<td>⚠️ May be necessary to take top off airbox to clear debris from slot.</td>
</tr>
<tr>
<td></td>
<td>Bad hose routing between delivery hose and airbox on wing.</td>
<td>Correct hose routing.</td>
</tr>
<tr>
<td>Multiple rows fail for lack of seed.</td>
<td>Fan speed too high/too low.</td>
<td>Check/adjust fan speed.</td>
</tr>
<tr>
<td></td>
<td>Out of seed.</td>
<td>Add seed.</td>
</tr>
<tr>
<td>Single or multiple hoses plugging just ahead of airbox.</td>
<td>Fan speed too high/too low.</td>
<td>Check/adjust fan speed.</td>
</tr>
<tr>
<td></td>
<td>Possible air leak.</td>
<td>Check for air leak downstream between box and top of meter.</td>
</tr>
<tr>
<td>All rows fail.</td>
<td>Lack of seed.</td>
<td>Add seed.</td>
</tr>
<tr>
<td></td>
<td>Fan speed too high.</td>
<td>Adjust fan speed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Extremely high populations may require slightly reduced field speed.</td>
</tr>
<tr>
<td>1, 2, 3, or more outlets fail.</td>
<td>Foreign matter in seed chamber in bottom of airbox.</td>
<td>Clean out seed chamber.</td>
</tr>
<tr>
<td>☢️ Outlets can be side-by-side or random. Plugging may also move from one outlet to another.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Little or no seed to many rows, with heavily treated seed.</td>
<td>Seed treatment sticky.</td>
<td>Add talc to seed to dry out seed treatment.</td>
</tr>
</tbody>
</table>
Steering Error Flash Codes

Failure and errors detected by the self-diagnostics in the steering ECU are presented to the operator as a series of flashes of the Power LED.

There are 2 to 12 flashes, interrupted by a short pause. Multiple errors are flashed in rotation, with a long pause between each error code. A maximum of five error states are reported in any single rotation.

Any of these errors causes the ECU to default the hydraulic steering to “float”.

**NOTICE**

**Certain Machine Damage:**

*Do not back up if ANY of these errors occurs.*

*Steering is disabled.*

*The wheels cannot fully caster and machine damage will result.* If the problem cannot be corrected in the field, drive forward to remove the planter from the field.

<table>
<thead>
<tr>
<th>Code</th>
<th>Diagnostic</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 1</td>
<td>Float valve HS short to battery</td>
<td>Check float valve coil and cable to ECU.</td>
</tr>
<tr>
<td>1 - 1</td>
<td>Float valve LS short to battery</td>
<td>ECU is detecting an unexpected voltage in the circuit.</td>
</tr>
<tr>
<td>1 - 2</td>
<td>Float valve HS short to ground</td>
<td>Check float valve coil and cable to ECU.</td>
</tr>
<tr>
<td>1 - 2</td>
<td>Float valve LS short to ground</td>
<td>ECU is detecting a short to ground.</td>
</tr>
<tr>
<td>1 - 3</td>
<td>Float valve open circuit</td>
<td>Check float valve coil and cable to ECU.</td>
</tr>
<tr>
<td>1 - 3</td>
<td>Float valve open circuit</td>
<td>ECU is failing to detect presence of coil - no circuit continuity.</td>
</tr>
<tr>
<td>2 - 1</td>
<td>ST1 valve HS short to battery</td>
<td>Check ST-1 valve coil and cable to ECU.</td>
</tr>
<tr>
<td>2 - 1</td>
<td>ST1 valve LS short to battery</td>
<td>ECU is detecting an unexpected voltage in the circuit.</td>
</tr>
<tr>
<td>2 - 2</td>
<td>ST1 valve HS short to ground</td>
<td>Check ST-1 valve coil and cable to ECU.</td>
</tr>
<tr>
<td>2 - 2</td>
<td>ST1 valve LS short to ground</td>
<td>ECU is detecting a short to ground.</td>
</tr>
<tr>
<td>2 - 3</td>
<td>ST1 valve open circuit</td>
<td>Check ST-1 valve coil and cable to ECU.</td>
</tr>
<tr>
<td>2 - 3</td>
<td>ST1 valve open circuit</td>
<td>ECU is failing to detect presence of coil - no circuit continuity.</td>
</tr>
<tr>
<td>3 - 1</td>
<td>ST2 valve HS short to battery</td>
<td>Check ST-2 valve coil and cable to ECU.</td>
</tr>
<tr>
<td>3 - 1</td>
<td>ST2 valve LS short to battery</td>
<td>ECU is detecting an unexpected voltage in the circuit.</td>
</tr>
<tr>
<td>3 - 2</td>
<td>ST2 valve HS short to ground</td>
<td>Check ST-2 valve coil and cable to ECU.</td>
</tr>
<tr>
<td>3 - 2</td>
<td>ST2 valve LS short to ground</td>
<td>ECU is detecting a short to ground.</td>
</tr>
<tr>
<td>3 - 3</td>
<td>ST2 valve open circuit</td>
<td>Check ST-2 valve coil and cable to ECU.</td>
</tr>
<tr>
<td>3 - 3</td>
<td>ST2 valve open circuit</td>
<td>ECU is failing to detect presence of coil - no circuit continuity.</td>
</tr>
<tr>
<td>5 - 1</td>
<td>Tractor sensor short to ground</td>
<td>Check tractor wheel sensor for:</td>
</tr>
<tr>
<td>5 - 1</td>
<td>Tractor sensor short to ground</td>
<td>A. travel limits of sensor.</td>
</tr>
<tr>
<td>5 - 1</td>
<td>Tractor sensor open circuit</td>
<td>B. cable to ECU</td>
</tr>
<tr>
<td>5 - 1</td>
<td>Tractor sensor open circuit</td>
<td>C. function of sensor</td>
</tr>
<tr>
<td>5 - 2</td>
<td>Tractor sensor open circuit</td>
<td>ECU not detecting tractor sensor. Use same steps as for 5 - 1.</td>
</tr>
<tr>
<td>6 - 1</td>
<td>Caster sensor short to ground</td>
<td>Check caster wheel sensor, using same steps as for 5 - 1.</td>
</tr>
<tr>
<td>6 - 2</td>
<td>Caster sensor open circuit</td>
<td>ECU not detecting caster sensor. Use same steps as for 5 - 1.</td>
</tr>
<tr>
<td>8 - 1</td>
<td>ECU low voltage</td>
<td>Check tractor voltage above 10Vdc.</td>
</tr>
<tr>
<td>8 - 1</td>
<td>ECU low voltage</td>
<td>Check connections to ECU. Check harnesses and switchbox connections.</td>
</tr>
</tbody>
</table>
Maintenance and Lubrication

Maintenance

Proper servicing and maintenance is the key to long implement life. With careful and systematic inspection, you can avoid costly maintenance, downtime, and repair. Always turn off and remove the tractor key before making any adjustments or performing any maintenance.

![WARNING]

**Crushing Hazard:**
You may be severely injured or killed by being crushed under the falling implement. Always have transport locks in place and frame sufficiently blocked up when working on implement.

![WARNING]

**High Pressure Fluid Hazard:**
Escaping fluid under pressure can have sufficient pressure to penetrate the skin. Check all hydraulic lines and fittings before applying pressure. Fluid escaping from a very small hole can be almost invisible. Use paper or cardboard, not body parts, and wear heavy gloves to check for suspected leaks. If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury.

1. After using your planter for several hours, check all bolts to be sure they are tight.
2. Remove excess slack from chains. Clean and use chain lube on all roller chains as needed.
3. Maintain proper air pressure in planter tires.
4. Keep disk scrapers properly adjusted.
5. Clean planter on a regular basis. Regular and thorough cleaning will lengthen equipment life and reduce maintenance and repair.
7. Replace any worn, damaged, or illegible safety labels by obtaining new labels from your Great Plains dealer.
Seed Clean-Out

Cleaning Out Air System

1. Shut off sliding door at bottom of seed box or bean hopper.
2. Place a pan or tarp under the manifold to catch the seed.
3. Open manifold door to empty seed from manifold.
   If needed, additional access doors are provided.
4. Shut door under manifold.

Refer to Figure 104

5. Close all Y-tubes.
6. If seed meters were cleaned out first, leave the hoses disconnected at the meters.
7. Turn on the air fan and let it run.
8. Start at one end of planter and place a bucket under the hose or meter to catch the seed. If hose is connected, open clean-out door.
9. Open the Y-tube gate feeding that meter. Let the air blow seed out. Keep the meter open for a couple of minutes after the seed stops blowing out.
10. Close the Y-tube gate feeding that meter. Close the meter clean out door.
11. Repeat procedure on the next meter in line. Continue with this procedure until you have reached the opposite end of the planter.

Cleaning Out Meters

Refer to Figure 105

1. Place a bucket or pan under meter to catch any seed during clean-out.
2. Slide the retaining ring up and remove seed hose.

Singulating Meter

Refer to Figure 106

3. Pull clean-out door away from the opening and allow seed to fall.
4. Remove the seed meter wheel for thorough cleaning. Refer to “Seed Meter Setup and Adjustment” on page 72 for more information.

Finger Pickup Meter

Refer to Figure 107

5. Pull clean-out door away from the opening and allow seed to fall.
Air Box Residue Clean-Out

Planting in extremely dusty conditions, particularly dusty and humid conditions, or otherwise sticky soils, can lead to air residue build-up inside the airbox. This residue can cause seed delivery blockages.

Refer to Figure 108 and Figure 109 (Figure 108 depicts a partially and a completely plugged agitation port, and build-up in the RH plenum chamber)

Whenever opening the airbox clean-out door ①, inspect the agitation ports ②. If any are partially or completely blocked, follow the clean-out instructions on this page.

Seasonally, remove the inspection ports on each of the airbox, and inspect plenum chambers 1 (LH) and 16 (RH). If any build-up is observed, follow the more comprehensive inspection steps and clean-out instructions on this page.

1. Spot the planter at a suitable location for clean-out and follow the parking instructions (page 46).
2. If seed is loaded, close the slide gate for the hopper or bulk seed box (page 37).
3. Set out a tarp for recovery of any expected seed still in the airbox. Open the airbox clean-out door ①.
4. Remove the inspection port covers from each end of the airbox (not shown in figures).
5. Use an indelible marker to identify the hoses on seed hose ports ③ 1 through 16. Disconnect the clamps and hoses.
   
   Further disassembly of the airbox is not recommended, as joints are sealed with silicone adhesive, and would need to be cleaned and resealed.

6. Inspect the agitation ports ②. Break up any build-up. Use a hooked tool or wire to pull smaller fragments down through the ports. For larger fragments, reach in through the inspection ports or vacuum them out via those ports.
7. Inspect the entire plenum area ④ for build-up. Break up any deposits. Vacuum them out through the inspection ports.
8. From the seed hose ports ⑤, inspect the seed air ports ⑥. Break up any deposits. Vacuum out from clean-out door.
9. With all ports and doors still open, operate the planter fan to blow up any remaining loose residues.
10. Reconnect the seed hoses. Reinstall the inspection port doors. Close the clean-out door.

Flushing the airbox with water is not recommended. If done, operate the fan for an extended period to completely remove any moisture prior to storage or field operations.
Marker Maintenance

Marker Shear Bolt Replacement

Refer to Figure 110

If a marker gets caught or hits an obstruction, it is designed to fail a shear bolt (1) at the fold, pivot on a second bolt (2), and swing back.

The shear bolt is a hex head cap screw, 7/16-14X1/2X2 inch Grade 5, Great Plains part number 802-589C, plus a 7/16-14 lock nut, Great Plains part number 803-200C.

Install a replacement shear bolt on the vertical faces on the side opposite from the pivot bolt (2). Do not use a higher grade bolt, or marker hang-ups may result in machine damage. Do not use a lower grade bolt, or you may experience nuisance shears.

Refer to Figure 111

If your planting frequently encounters shear hazards, you can store 6 spare shear bolts/nuts per marker side, in storage holes (3) at the fold point.

---

Marker Chain Length Adjustment

Great Plains suggests checking marker chain slack every few years. If any maintenance or repairs cause the chain to be disconnected, correct slack needs to be set at installation.

Perform any checks and adjustments with the marker folded and tilted down into its cradle.

Refer to Figure 112

At the midpoint in the exposed chain, pull it toward the front of the planter.

Measure the distance between that mid-point and the nearest point on either of the two parallel tubes of the marker intermediate arm. The target value is: 18 inches (46 cm).

If the slack is outside this range, remove the bolt and nut at the lower end of the chain and adjust the length.

NOTICE

A chain length too short or too long can result in marker damage.
Dual Marker Speed Adjustment

**CAUTION**

**Crushing and Sharp Object Hazards:**
You may be injured if hit by a folding or unfolding marker. Markers may fall quickly and unexpectedly if the hydraulics fail. Never allow anyone near the planter when folding or unfolding the markers.

**Refer to Figure 113 and Figure 114**
Adjust folding speed for dual markers with hex adjustment screws on the sequence valve body. The valve sequence body is top left center section, near front. Loosen jam nuts before making adjustments.

There is one adjustment screw for fold-out speed and one for fold-down speed. You can identify adjustment screws by markings stamped in valve body.

Turn adjustment screws clockwise (S: slower) to decrease folding speed and counterclockwise (F: faster) to increase folding speed.

With tractor idling at a normal operating speed, adjust marker folding to a safe speed. Excessive folding speed could damage markers and void the warranty.

After adjusting the folding speed, tighten jam nuts on hex adjustment screws to hold settings.

**Hitch Shims**

**Refer to Figure 115**
*(an exploded view - remove only specified parts)*

If the planter tends to pull to the right or left, inserting, moving or stacking hitch shims may correct the problem. The standard planter has one shim installed on the left. A spare hitch shim was shipped with the planter.

To remove or insert a shim:
1. Loosen the eight nuts and bolts on the lower hitch, only on the side to be changed.
2. At the four set screws, loosen the four jam nuts. Drive the set screws in until the existing shim is free, or the gap is large enough to insert a shim.
3. From the top, insert or remove:
   - ④ 401-943D SHIM HITCH FLANGE
4. Back out the four set screws. Tighten the eight nuts and bolts. Turn the set screws in until they make contact. Secure them with the four jam nuts.
Chain Maintenance
Inspect and lubricate chains regularly. The slack of new chains tends to increase during the first few hours of operation due to seating.

Chain Slack
Check slack within the first 8 hours of operation and tighten idlers as necessary.

Refer to Figure 116, which, for clarity, greatly exaggerates slack, and omits the idlers.

1. Measure the span for allowable slack:
   Locate the longest span of each chain (usually the span which does not run through the idlers).

2. Determine the ideal slack:
   Long chains (over 36 in./91 cm):
   \( \frac{1}{4} \) inch per foot (2.1 cm/m)
   Vertical short chains:
   \( \frac{1}{4} \) inch per foot (2.1 cm/m)
   Horizontal short chains:
   \( \frac{1}{2} \) in. per foot (4.2 cm/m).

3. Measure the current slack:
   Acting at a right angle to the chain span at the center of the span, deflect the chain in both directions. The slack is the distance of the movement.

4. Adjust the idlers for ideal slack.
Whenever mounting a chain, make sure the clip at the removable link is oriented to minimize snags.

Refer to Figure 117 (gray or striped arrows show chain direction in chain routing diagrams)
Install clip with open end facing away from direction of chain travel.

Meter Drive Chain
Refer to Figure 118
Remove the seed meter and check the chain and sprocket for wear. Refer to “Seed Meter Setup and Adjustment” on page 72, for more information.
Meter Maintenance

Finger Pickup Meter Maintenance

Finger Set Inspection
Finger sets should be inspected on an annual basis. After cleaning, carefully inspect the fingers and springs for wear or other abnormalities that may develop. Excessive wear may disrupt singulation performance.

Great Plains recommends having the meter service performed by a recognized professional repair facility, such as a certified MeterMax® representative. If you choose to service them yourself, follow these procedures when installing the finger sets.

See page 72 for meter removal.

**CAUTION**

Agricultural Chemical Hazard:
Follow material supplier recommendations carefully. Handle the meter as if it were treated seed. Use supplier-recommended cleaning agents. Any seed treatment build-up inside a meter is likely to be at a higher concentration than on the actual seed.

Finger Meter Re-Assembly Steps

Refer to Figure 119

1. Be sure the belt ➊ is oriented as shown in Figure 119.

2. Slide the finger set ➋ over the shaft ➋ and rotate clockwise until it sits against the backing plate ➌.

3. One click will sound when the holder engages the roll pin and a second click will sound when the cam engages the bearing housing.

4. Firmly press the finger set ➋ against the backing plate ➌ while tightening the nut ➍.

5. Tighten the nut ➍ until contact is made between the nut and the finger set ➋. Turn 1/4 to 1/2 flat (1/24 to 1/12 of a turn) (a flat is one of the six sides of the nut) after contact is made. See page 98 for details. This equals about 0.45 N-m (4 inch-pounds) of torque on the nut.

6. Place the slotted nut cover ➎ on and carefully align the slotted nut cover with the shaft hole. Insert the cotter pin ➏.

7. Rotate the finger set clockwise and make sure the fingers open and close properly. Rotate the meter and make sure the meter turns freely and that there is no air gap between the outer rim of the ashtray and the backing plate. Fingers should be closed at the 8:00 to 2:00 position (exit hole) and open at the 2:00 to 8:00 position.

**Precautions**
Visually check that there is no visible air gap between the holder and backing plate.

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a. MeterMax® is a registered trademark of Precision Planting®, Inc.
Make sure the finger set is properly torqued against the backing plate. Improperly torqued finger sets may disrupt seed singulation.

**Population Max™ Annual Maintenance.**

Population Max™ insert should be inspected annually. Inspect plate for wear or other abnormalities that may develop. The action site area might also eventually show some wear. When signs of wear appear, simply replace insert.

Make sure transition between the Population Max™ backing plate and the insert is smooth. A slight incline from backing plate to insert (clockwise motion) may cause seeds to catch. Readjust insert if necessary.

Be cautious in using seed treatments, additives, and other chemicals. They can cause meter performance problems, premature wear to meter parts, and may cause undesired chemical reaction or deterioration to the Population Max™ material. When using seed treatments always use graphite.

If Population Max™ plates are not installed in meter, store in a vertical position on a cylindrical rod or face to face.

**Population Max™ Installation**

**Refer to Figure 120**

1. Remove brush screws and brush. Gently pull insert out.
2. Select appropriate insert and carefully slide into the window. Insert may catch on a finger or two. It may be necessary to lift the fingers up with a small screwdriver or rotate the fingers backward while sliding insert in. Insert will slide in without any unnecessary force.
3. Make sure insert slides in all the way and firmly locks in place.
4. Secure insert to backing plate by fastening the two screws through the insert.
5. Reinstall brush and screws. Be careful! Do not tighten brush too tightly or plastic lip may crack.

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a. Population Max™ is a trademark of Precision Planting, Inc.
Skip Stop™ Annual Maintenance

Skip Stop™ should be inspected on an annual basis. Inspect cushion for wear, pockets, or other abnormalities that may develop. Excessive wear or pocket formation may cause seeds to become trapped and disrupt singulation performance. As a general rule, if there is a pocket that is large enough to hold one or more seeds after the belt has passed by, Skip Stop™ Cushion should be replaced.

Skip Stop™ Installation

Refer to Figure 121

1. Remove back metal cover by removing five bolts. Four bolts attach cover to metal housing and one bolt holds idler wheel and bushing.
2. Align new Skip Stop™ metal cover over housing.

Skip Stop™ metal cover has a hole cut out for Skip Stop™ Cushion. Make sure idler wheel and bushing remain properly aligned and insert 1/4X2 inch bolt. Secure bolt loosely.
3. Insert remaining three 1/4X1/2 inch bolts to fasten metal cover to housing. Tighten all bolts securely.
4. Tighten bolt that secures idler wheel and turn belt via the bearing shaft by hand to verify that belt is centered between housing. If necessary, loosen bolt and slide cover to adjust and re-center belt.
5. Place Skip Stop™ Cushion over the opening. Insert two 1/4X3/4 inch bolts to secure Skip Stop™ Cushion to housing.

NOTICE

Meter Performance Risk:

Make sure Skip Stop™ Cushion is secured tightly to back metal cover and cannot turn or rotate. Make sure Skip Stop™ Cushion does not interfere with belt rotation in any manner. A loose Skip Stop™ Cushion may result in seed leakage, poor meter performance,

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a. Skip Stop™ is a trademark of Precision Planting, Inc.
Exchanging Finger Sets

Although time-consuming, corn meters may be, with care, converted to sunflower meters, and vice-versa. Starting with factory-supplied corn meters, order quantity 16 of: 403-659A SUNFLOWER 12 FINGER CONV KIT

Refer to Figure 122

This kit contains a sunflower finger set ①, Insert C ② and brushless block ③.

_meter conversion is available only for finger pickup meters that were originally corn meters. Factory-supplied sunflower meters cannot be converted to corn meters, as they lack a brush adjustment decal, which requires a factory alignment fixture.

Remove Meter Cover

1. Remove the finger pickup meters from the rows (page 72).
2. Remove three sets of bolts and nuts securing the cover to the meter.

Remove Adjustment Lever

Refer to Figure 123

3. Remove the E-clip ⑥ closer to the brush block ⑦.
4. Withdraw the adjustment lever ⑧. Store the removed e-clip on it.

Sunflower meters use a brushless block (installed at step 13). The brushless block cannot be installed with the adjustment lever present.

Remove Brush Block

5. Remove the two screws ⑨ that secure the brush block ⑦, then remove the brush block.

a. Larger sunflower sizes plant with the standard Corn configuration. See “Sunflower Meter Configurations” on page 77.
Remove Corn Finger Set

Refer to Figure 124

6. Straighten and remove the cotter pin ①.
7. Remove the nut cover ②.
8. Remove the nut ③.
9. Remove the corn finger set ④.

Remove Insert “A”

Refer to Figure 125

10. Remove the two screws ⑤ that secure the Insert ⑥ to the backing plate.
11. Lift the insert out of the backing plate.

Install Insert “C”

12. Select a meter insert from the conversion kit. Inspect the back for a legend identifying it as “C”. Install it in the backing plate. Secure with screws ⑤.

Install Brushless Block

13. Select a brushless block ⑦ from the conversion kit. This block, in addition to having no brushes, also has a single mounting screw hole (the removed brush block has two holes).

Install the block as shown, using one screw through the center outer hole ⑧ in the backing plate.

Do not re-install the adjustment lever. It is not used with sunflower meters.
Install Sunflower Finger Set

Refer to Figure 127

14. Select the finger set ① from the conversion kit. Sunflower fingers have short square “flags” at the ends of the fingers, compared to corn finger sets, which have longer rounded flags.

Place the finger set on the meter shaft. Rotating the finger set and shaft as needed, seat the finger set fully against the back plate. There should be no air gap between the hub rim and the backing plate.

The shaft cross-pin ② seats in deep detents ③ in the finger set hub. The bearing housing has a rectangular notch ④ that engages a rectangular tab projection ⑤ in the finger set.

If the finger set does not seat fully, this is usually because the notch and projection are not mated. Rotate the finger set clockwise until you feel two clicks. The fingers should dip into the seed drop exit port, then lift, without catching on the backing plate.

15. Select the nut from step 8. Spin it onto the shaft. Do not tighten at this step.

Set Finger Set Torque

Refer to Figure 128

16. Loosen the nut ⑥.

Press the finger set hub firmly against the back plate, checking that it is fully seated and has no wobble.

Turn the nut until it contacts the finger set hub (this is the nut position shown as a dashed hexagon in the upper right illustration).

Tighten the nut by 1/2 to 3/4 of a nut “flat” (this is the nut position shown as a solid hexagon). This equals about 0.45 N-m (4 inch-pounds) of torque on the nut.

Refer to Figure 127

17. Place the nut cover ⑦ on the shaft, making sure to align it so that the shaft pin hole is not obscured by a castellation.

18. Insert the cotter pin ⑧, but do not secure it.

19. Verify that the finger set turns with a slight amount of resistance, and that the fingers operate correctly. Every finger flag must be closed between 8:00 and 2:00 o’clock, and open between 2:00 and 8:00.

20. Secure the cotter pin.

21. Reinstall the meter cover. Reinstall the meter (page 75).

Field Results and Equipment Damage Risks:
Set the nut torque only as specified. If the nut is too loose, doubles result during seeding. If the nut is too tight, it creates excess drag on the drive system, and the finger set hub wears out prematurely.
Re-Install Corn Finger Set
These instructions presume that the sunflower meter was originally a corn meter.

Dismount Meter
1. Remove the finger pickup meters from the rows (page 72).
2. Remove three sets of bolts and nuts securing the cover to the meter.

Remove Brushless Block
Refer to Figure 126 on page 97
3. Remove the screw that secures the brush block, then remove the brush block.

Remove Sunflower Finger Set
Refer to Figure 127 on page 98
4. Straighten and remove the cotter pin.
5. Remove the nut cover.
6. Remove the nut.
7. Remove the corn finger set.

Remove Insert “C”
Refer to Figure 125 on page 97
8. Remove the two screws that secure the Insert to the backing plate.
9. Lift the insert out of the backing plate.

Install Insert “A”
10. Select a saved meter insert “A”. Inspect the back for a legend identifying it as “A”. Install it in the backing plate. Secure with screws.

Install Brush Block
Refer to Figure 123 on page 96
11. Select a saved brush block and second mounting screw. This block, in addition to having brushes, also has a two mounting screw holes (the removed brushless block has one hole).

   Install the block as shown, using two screws through the inner holes in the backing plate.

Install Adjustment Lever
Refer to Figure 123 on page 96
12. Select a saved adjustment lever with two E-clips. Remove the clip nearest the tip. Insert the lever through the rim of the belt housing and fully seat it the tip in the brush block. Secure with E-clip.

Install Corn Finger Set
Refer to Figure 127 on page 98
13. Select a saved corn finger set. Corn fingers have longer rounded flags.

Place the finger set on the meter shaft. Rotating the finger set and shaft as needed, seat the finger set fully against the back plate. There should be no air gap between the hub rim and the backing plate.

The shaft cross-pin seats in deep detents in the finger set hub. The bearing housing has a rectangular notch that engages a rectangular tab projection in the finger set.

If the finger set does not seat fully, this is usually because the notch and projection are not mated. Rotate the finger set clockwise until you feel two clicks. The fingers should dip into the seed drop exit port, then lift, without catching on the backing plate.

14. Spin the nut onto the shaft. Do not tighten.

Set Finger Set Torque
Refer to Figure 128 on page 98
15. Loosen the nut.

   Press the finger set hub firmly against the back plate, checking that it is fully seated and has no wobble.

   Turn the nut until it contacts the finger set hub (this is the nut position shown as a dashed hexagon in the upper right illustration).

   Tighten the nut by \( \frac{7}{16} \) to \( \frac{3}{4} \) of a nut “flat” (this is the nut position shown as a solid hexagon).

Refer to Figure 127
16. Place the nut cover on the shaft, making sure to align it so that the shaft pin hole is not obscured by a castellation.
17. Insert the cotter pin, but do not secure it.
18. Verify that the finger set turns with a slight amount of resistance, and that the fingers operate correctly. Every finger flag must be closed between 8:00 and 2:00 o’clock, and open between 2:00 and 8:00.
19. Secure the cotter pin.
20. Reinstall the meter (page 75).
25 Series Disk Spreaders and Scrapers

It is normal for the blade spreader to have some looseness in the holder and between the blades. Some looseness is required for proper operation.

Refer to Figure 129 and Figure 130

1. Remove side gauge wheels @ from arms @ to access row-unit disks @ and disk scrapers @.

Your 25 Series row unit may also have optional gauge wheel scrapers (not shown). Adjustments to these are described on page 72.

2. With the unit raised, check blade spreader @ for wear. Replace spreader if it is narrower than 1/2 inch wide. To replace, remove disk blade , drive out roll pins @, and install new spreader.

3. When reinstalling disk blades, put two shims Â between bearing and shank on each blade. Tighten bolts.

You may need fewer washers on worn disks.

4. Check that outside disk scrapers @ are formed to disk blades to help remove any mud. Bend and twist scrapers to fit blades as necessary. After every 200 acres of operation, check outside scrapers for proper adjustment and wear. Replace outside scrapers as necessary.

25 Series Row-Unit Side Wheels

Refer to Figure 130

1. Lift opener side gauge wheel off the ground. Move tire in and out to check for end play. Check for roughness in bearing by rotating wheel. If bearings are rough, inspect and replace if necessary.

2. The side wheels are preset at the factory. However, because of normal wear it may become necessary to make adjustments so the wheel remains close to the disk. To prevent plugging, loosen clamp bolt @ and slide arm @ inward to take up gap between side wheel and disk blade. If more adjustment is needed, go to step 3.

3. Remove bolt - and wheel @. Remove shims @ from the inside of wheel @ and place them on the outside of wheel. Always place removed shims from the inside to the outside. When installed, wheel should turn freely and not hit the arm at the curve. Do not add any more shims than necessary.

4. Disassemble side gauge wheel arm @ from unit. Remove bushing @ from sleeve @ and check for wear. If necessary, replace bushing @.

5. When reinstalling side gauge wheels, align tab on hex adjustment @ with notch in bushing. Replace bolt and tighten.

6. Adjust side gauge wheels. Refer to “Adjusting Disk Angle & Side Depth Wheels” on page 70.

Sharp Object Hazard:
Disk edges are sharp. Be careful when working in this area.
Hydraulic Filter

If your 3PYP has the optional hydraulic drive, it is also equipped with a high-pressure filter to protect that system. With attention to clean connections, the consumable element in this filter rarely needs replacing.

The filter has a pop-out indicator to alert you that the filter must be replaced before next use. The element cannot be cleaned and re-used; it must be replaced.

If you keep a spare filter on hand, replace the element when the indicator pops. If you don't keep a spare, plan on seasonal element replacement.

For extended element life, clean all hydraulic quick-connects before making connections, and never let them fall to the ground.

**WARNING**

**High Pressure Fluid Hazard:**
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.

Replacing Hydraulic Filter

Have cleaning rag, plus a pail ready to catch excess hydraulic fluid. Even with the system depressurized back to the tractor, there will be some spillage.

**Refer to Figure 131**

1. Set tractor hydraulic controls for the drive circuit to “float” and shutdown tractor. Allow oil to cool.
2. Set the pail under the filter.
3. Unscrew lower canister housing and empty it into the pail.
4. Remove the filter element and safely discard it.
6. Clean canister threads, and re-lubricate O-ring with clean hydraulic fluid.
7. Re-install canister housing.
8. Re-set pop-out indicator (as necessary).
9. Activate tractor hydraulic circuit and check for leaks with paper or cardboard.
Bleeding Hydraulics
Bleeding procedures vary for different planter vintages:
s/n A1025S and higher: this page
s/n A1006S- (and lower): page 165
s/n A1007S to A1024S: page 165
When performing bleeds per the instructions in the
Maintenance section, be sure to use the procedure for
your implement.

Bleeding Lift Hydraulics
Normally the lift hydraulics are bled at the factory before
shipping, and bleeding should not be required other than
to raise fully and hold lever on for one minute or until all
cylinders extend fully.
If it is necessary to further bleed lift system, see
“Bleeding Lift Hydraulics” on page 103.

Bleeding Fold Cylinder Hydraulics
Normally the fold hydraulics are bled at the factory
before shipping, and bleeding should not be required other than
to fold fully and hold lever on for one minute or until all
 cylinders reach the end of their stroke.
If it is necessary to further bleed fold system, see
“Bleeding Wing Fold Cylinder Hydraulics” on page 105.

Bleeding Marker Hydraulics
To fold properly, the marker hydraulics must be free of
air. If the markers fold in jerky, uneven motions, see
“Bleeding Marker Tilt Hydraulics” on page 106.

⚠️ DANGER
Sudden Crushing Hazard:
If the planter is folded, and it is suspected that the fold
system has air in it, DO NOT attempt to unfold before
accomplishing the full fold bleed procedure at “Bleeding
Wing Fold Cylinder Hydraulics” on page 105.

If the fold system has air in it, the wings can descend too
fast.

⚠️ NOTICE
Over-Torque Leak Risk:
Bleed only at
JIC (Joint Industry Conference, 37·flare) or
NPT (National Pipe Thread, tapered thread) fittings,
and never at
ORB (O-Ring Boss) or
QD (Quick Disconnect) fittings.

⚠️ NOTICE
JIC fittings do not require high torque. JIC and O-ring
fittings do not require sealant.

⚠️ NOTICE
Machine Damage Risk:
Do not fold or unfold without first raising planter
Bleeding Lift Hydraulics

*Refer to Figure 132 and Figure 133. Figure 132 depicts the parallel arms disconnected from the seed support structure. Disconnect only the cylinder rod end for bleeding.*

Normally the lift hydraulics are bled at the factory before shipping, and bleeding should not be required other than to raise fully and hold lever on for one minute or until all cylinders extend fully.

If the planter has wing flex cylinders or hydraulic down pressure, bleed the small cylinders at the wing/center coupling before bleeding the lift circuit. See “Bleeding Wing Flex Hydraulics” on page 104

If necessary to further bleed system, follow these steps.

1. Consult the lift circuit hydraulic diagram for your planter:
   - “Lift with Wing Flex (S/N A1025S+)”, page 133
   - “Lift with Wing Flex Lock (S/N A1025S+)”, page 134
   - “Lift with Hydraulic Down-Pressure (S/N A1025S+)”, page 135
   - “Lift with Hydraulic Down-Pressure (S/N A1025S+)”, page 135
   (both partially repeated here for reference).

2. Check that tractor hydraulic reservoir is full. Set hydraulics for low flow rate.

3. Lower planter.

**Lift Bleed (S/N A1025S+)**

If your planter is serial number A1024S or lower, see “Appendix D: Older Equipment” on page 160.

4. Disconnect and lower rod ends of lift assist cylinders.

5. Extend the lift circuit until rods are fully extended. Set circuit to Neutral.

6. Loosen the JIC fitting at the base end ① (top) of the left lift cylinder.

7. Extend the lift circuit again until fluid appears at the loosened fitting. Set control lever to Neutral and secure the fitting.

8. Loosen JIC fitting at base end ② of right lift cylinder.

9. Extend the lift circuit until fluid appears at the loosened fitting. Set lever to neutral. Secure the fitting.

10. Retract the cylinders. Set circuit to Neutral. Elevate both cylinders until the rod ends are higher than the base ends.

11. Loosen JIC fitting at rod end ③ of the left lift cylinder.

12. Retract the lift circuit again until fluid appears at the loosened fitting. Set control lever to neutral and secure the fitting.

13. Loosen JIC fitting at rod end ④ of right lift cylinder.

14. Retract the lift circuit again until fluid appears at the loosened fitting. Set control lever to neutral and secure the fitting.

15. Re-pin cylinders to seed cart lugs.
Bleeding Wing Flex Hydraulics

Refer to Figure 134 and Figure 135

1. Consult appropriate flex circuit hydraulic diagram for your planter:
   "Lift with Hydraulic Down-Pressure (S/N A1025S+)", page 135
   "Lift with Hydraulic Down-Pressure (S/N A1025S+)", page 135
   (both partially repeated here for reference)
2. Check that tractor hydraulic reservoir is full. Set hydraulics for low flow rate.
3. Set circuit to Retract and retract cylinders until they stop.
4. Set circuit to neutral.
5. Loosen JIC fitting at right cylinder, base end ①:
6. Set circuit to Extend until fluid appears.
7. Neutralize circuit and secure JIC fitting.
8. Set circuit to Extend until rods extend to stop.
9. Neutralize circuit and loosen JIC fitting at left cylinder, rod end ②:
10. Set circuit to Retract until fluid appears.
11. Neutralize circuit and secure JIC fitting.
12. Extend and retract circuit several times.
Bleeding Wing Fold Cylinder Hydraulics

Normally the fold hydraulics are bled at the factory before shipping, and bleeding should not be required other than to fold fully and hold lever on for one minute or until all cylinders reach the end of their stroke.

**CAUTION**

Do not unfold planter if significant bleeding is necessary. It is not safe to unfold with air in the fold system. If significant air is suspected, skip step 5.

1. Consult appropriate flex circuit hydraulic diagram for your planter:
   - "Wing Fold without Markers" on page 128
   - "Wing Fold with Markers" on page 129 (both partially repeated here for reference).
2. If a leak or component failure is suspected, correct it before proceeding.
3. Check that tractor hydraulic reservoir is full.
4. If the planter wings are folded, safety chain the wings together before proceeding.
5. If safe, unfold the wings. See “Unfolding The 3PYP” on page 29 If the planter is equipped with markers, leave the marker switches Off during this bleed.
6. Set hydraulics for low flow rate. Disconnect the rod ends 3 of both wing fold cylinders, so that they may extend without moving the wings.
7. Retract the wing fold circuit.
8. Loosen the JIC fittings at both wing fold cylinder base ends 4.
9. Set wing fold circuit to Extend until fluid emerges.
10. Neutralize the circuit and secure the fittings.
11. Fully extend the wing fold cylinder rods.
12. Loosen the JIC fittings at both wing fold cylinder rod ends 3.
13. Set wing fold circuit to Retract until fluid emerges.
14. Neutralize the circuit and secure the fittings.
15. Fully retract the wing fold cylinder rods.
16. Cycle the circuit to fully extend then fully retract both cylinders. Repeat this two times.
17. Re-attach the rod ends to the wings.
18. Unchain as needed and fold and unfold wings several times.
Bleeding Marker Tilt Hydraulics

Refer to Figure 138 and Figure 139.

**CAUTION**

*Bleeding must be performed with markers folded and tilted down.*

Normally the tilt hydraulics are bled at the factory before shipping, and bleeding should not be required other than to fold fully and hold lever on for one minute or until all cylinders reach the end of their stroke.

1. Consult complete tilt circuit hydraulic diagram for your planter: "Wing Fold with Markers" on page 129 (partially repeated here for reference)
2. Check that tractor hydraulic reservoir is full.
3. Unfold the wings. See "Unfolding The 3PYP" on page 29 Turn the wing switch Off and leave it (and the marker fold switch) Off during this bleed.
4. Leave the markers tilted down.
5. Disconnect the rod ends 1 of both tilt cylinders.
6. Retract the tilt circuit.
7. Loosen the JIC fittings at both tilt cylinder base ends 2.
8. Set wing fold circuit to Extend until fluid emerges.
9. Neutralize the circuit and secure the fittings.
10. Extend the tilt rods.
11. Loosen the JIC fittings at both tilt cylinder rod ends 1.
12. Set tilt circuit to Retract until fluid emerges.
13. Neutralize the circuit and secure the fittings.
14. Re-attach the rod ends to the markers.
Bleeding Marker Fold Hydraulics

Refer to Figure 140 and Figure 141.

Normally the marker hydraulics are bled at the factory before shipping, and bleeding should not be required other than to fold fully and hold lever on for one minute or until all cylinders reach the end of their stroke.

1. Consult complete tilt circuit hydraulic diagram for your planter: “Wing Fold with Markers” on page 129 (partially repeated here for reference)
2. Check that tractor hydraulic reservoir is full.
3. Unfold the wings. See “Unfolding The 3PYP” on page 29 Turn the wing switch Off and leave it (and the marker fold switch) Off during this bleed.
4. Leave the markers tilted down.
5. Disconnect rod ends ② of both marker fold cylinders.
6. Retract the marker fold circuit.
7. Loosen the JIC fittings at both marker fold cylinder base ends ③.
8. Set marker fold circuit to Extend until fluid emerges.
9. Neutralize the circuit and secure the fittings.
10. Extend the tilt rods.
11. Loosen the JIC fittings at both marker fold cylinder rod ends ②.
12. Set tilt circuit to Retract until fluid emerges.
13. Neutralize the circuit and secure the fittings.
14. Re-attach the rod ends to the markers.
Seed Flap Replacement (S/N A1055S-)

Refer to Figure 142

To replace a seed flap ① use a needle nose pliers or similar tool and squeeze the tabs ② together. Pull plastic seed flap ① down out of metal bracket ③.

If replacing with 817-349C:
Push new seed flap ① up through metal bracket ③ until tabs ② on seed flap snap in place.

If replacing with 816-302C:
See seed flap replacement instructions below.

Figure 142
817-349C Seed Tube Flap

Seed Flap Replacement (S/N A1056S+)

Refer to Figure 143

To replace an 816-302C seed flap ① use a needle nose pliers or similar tool to grasp “T” top of flap. Pull upward to pull flap up out of metal bracket ③.

Push new seed flap ① down through metal bracket ③ until flap snaps into place with “T” top resting on top of bracket.

Figure 143
816-302C Seed Tube Flap
Lubrication

**Meter Drive Chains**

10 chains on ground-drive 3PYPs
7 chains on hydraulic-drive 3PYPs
plus:
1 meter drive chain per row unit

Type of Lubrication: Chain Lube
Quantity: Coat thoroughly

**Frame-to-Frame Parallel Arms**

8 zerks, 4 each side

Type of lubrication: Grease
Quantity: Until grease emerges

**Wing Drive Shafts**

8 zerks, 4 each side:
① one each universal joint
② two each outer shaft sleeve

Type of lubrication: Grease
Quantity: Until grease emerges (joints)
Quantity: 3 pumps (shafts), or
with wings folded: until grease emerges
Wing Link Arms

14 zerks, 7 each side
① Lower link inner pivot
② Lower link outer pivot
③ Flex pivot (zerk not visible in figures)
④ Upper link inner pivot
⑤ Upper link outer pivot
⑥ Cylinder base
⑦ Cylinder rod

Type of lubrication: Grease
Quantity: Until grease emerges
Marker Arms (Option)

8 zerkks, 4 each side
① Tilt base pivot
② Fold base pivot
③ Inner arm pivot
④ Outer arm pivot
Type of lubrication: Grease
Quantity: Until grease emerges

Caster Steering Arms (Option)

4 zerkks, 1 each tie rod
Type of lubrication: Grease
Quantity: Until grease emerges
Steering Arm Hub (Option)

2 bearings
Type of lubrication: Grease
Quantity: Repack

Caster Pivots (s/n A1055S-)

2 zerks, 1 each side
Type of lubrication: Grease
Quantity: Until grease emerges

Caster Pivots (s/n A1056+)

3 zerks each spindle;
6 total
Type of lubrication: Grease
Quantity: Until grease emerges
Caster Steering Tie Rods (s/n A1055S-)

Seasonal

1 zerk each tie rod;
4 total
Type of Lubrication: Grease
Quantity: Until grease emerges

Caster Steering Tie Rod (s/n A1056S+)

Seasonal

1 zerk, tie rod;
2 total
Type of Lubrication: Grease
Quantity: Until grease emerges

Caster Steering Spindle (s/n A1055S-)

Seasonal

2 bearing races
Type of Lubrication: Grease
Quantity: Re-pack
Caster Wheel Bearings

- **Seasonal**
- 4 bearings, 2 each wheel
- Type of lubrication: Grease
- Quantity: Repack

Marker Disk Hubs (Option)

- **Seasonal**
- 4 bearings, 2 each marker
- Type of lubrication: Grease
- Quantity: Repack

Gauge Wheel Yokes

- **Seasonal**
- 6 zerks, 3 each side:
  1. on adjustment rod lower pivot (to front)
  2. on yoke pivot (on top, not visible)
- Type of lubrication: Grease
- Quantity: Until grease emerges
Gauge Wheel Bearings

4 bearings, 2 each side
Type of lubrication: Grease
Quantity: Repack

Walkboard Pivot

1 zerk
Type of lubrication: Grease
Quantity: Until grease emerges

Row Cleaner Bearings (Option)

1 zerk each wheel, 1 or 2 wheels per row
Type of lubrication: Grease
Quantity: Until resistance is felt
To avoid damaging the seal, do not add grease at high pressure.
Seed Lubricants

**Singulator Plus™ Meters (all seeds)**
Ezee Glide Plus Talc-Graphite Mix
- 821-069C bucket, 5 gallon (19 liter)

Ezee Glide Plus Lubricant
To maximize performance of Great Plains metering systems, it is imperative to use only “Ezee Glide Plus” lubricant. “Ezee Glide Plus” Talc-Graphite lubricant is mandatory for all seeds, especially treated or inoculated seed. *Thorough mixing of seed and added lubricant is required.*

Recommended usage:
For clean seeds other than milo and cotton sprinkle one cup of Ezee Glide Plus Talc per 4 bushels or units (170 ml per 100 liters) of seed.
For milo and cotton double the application to one cup (or more) per 2 bushels or units (335 ml per 100 liters) of seed.
Adjust this rate as necessary so all seeds become coated while avoiding an accumulation of lubricant in the bottom of the hopper.
For seed with excessive treatment, or for humid planting environments, increase the rate as needed for smooth meter operation.

**CAUTION**
**Irritation and Chronic Exposure Hazard:**
Wear gloves. DO NOT use hands or any part of your body to mix seed lubricant. Wear a respirator when transferring and mixing. Avoid breathing lubricant dust. Not an acute hazard. May cause mechanical eye or skin irritation in high concentrations. As with all mineral spills, minimize dusting during clean-up. Prolonged inhalation may cause lung injury. Product can become slippery when wet.

**Finger Pickup Meters**
EZ-Slide Graphite Powder
- 821-042C bottle, 1 pound (450 grams)
- 821-060C jug, 5 pound (2.3 kg)

For Finger Pick Up Meters Only
Use only approved Graphite Powder available from Great Plains Mfg. Inc. or Precision Planting to ensure proper lubrication of finger pickup corn seed meters.

Recommended usage:
For finger pickup meters, add one tablespoon (15 ml) of graphite for each unit of seed corn (80000 kernels).
In high humidity conditions, or seeds with heavy seed treatments, increase the application to two tbsp (30 ml).
If delivery of seed from the hopper to the finger meter is an issue, add “Ezee Glide Plus” talc and graphite blend at a rate of one cup (237 ml) per 4 units of seed. Adjust until issue is resolved.
Options

PTO Pump Kits
For tractors lacking a sufficient number of remotes with adequate continuous oil flow capability, kits are available to operate the fan(s) optionally the hydraulic seed drive motor, via mechanical Power Take-Off (PTO).

A 1000 rpm PTO is required with either:
1 3/4 inch. (44.5 mm) 20-spline shaft, or
1 3/8 inch (35 mm) 21-spline shaft.

Order one kit and one coupler.

<table>
<thead>
<tr>
<th>Kits and Couplers</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3PYP HYD DRV PTO KIT</td>
<td>401-939A</td>
</tr>
<tr>
<td>3PYP GRND DRV PTO KIT</td>
<td>401-941A</td>
</tr>
<tr>
<td>1 3/4-20 PTO COUPLER</td>
<td>826-777C</td>
</tr>
<tr>
<td>1 3/8-21 PTO COUPLER</td>
<td>826-778C</td>
</tr>
</tbody>
</table>

Operation and installation of the PTO kits is described in manual 411-015M, included with each kit.

Planter Options
10 in. Seed Monitor Screen
The standard 3PYP seed monitor system now includes a 10 in. LCD color display. This larger 10 in. color display is available as an upgrade for older planters with the 5 in. console.

<table>
<thead>
<tr>
<th>Description</th>
<th>Initial Order Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>DICKEY-john® Intelli-ag 10 in. monitor</td>
<td>823-255C</td>
</tr>
</tbody>
</table>
Ground or Hydraulic Drive

Seed meter rotation on the 3PYP is powered by gauge wheels (ground drive) or dedicated motor (hydraulic drive). Hydraulic drive is optional, and replaces the ground drive. Either is factory-installed. Gauge wheels are always present.

The drive type affects gauge wheel tires, the number of clutches and which row units clutches control. It is not possible to have both ground and hydraulic drive installed on the same machine at the same time.

For operations, see: “Gauge Wheel Adjustments” on page 52, and “Electric Clutch Operation” on page 31.

Markers

Markers are a standard factory-installed feature on the 3PYP, but may be optionally deleted, for example, if all planting is done via GPS navigation. If any possible future planting might require markers, do not delete them from the initial 3PYP order.

For operations, see: “Bleeding Marker Hydraulics” on page 102, “Folding The Markers” on page 35, and “Marker Adjustments” on page 56.
## Wing Coupling Options

At time of initial planter ordering, one of the following three options must be specified for wing to center section coupling:

- **Hydraulic Down Pressure**

  Wing coupling cylinders are actively controlled, and used to transfer weight to the wings as needed in challenging light no-till conditions on uneven ground.

  For operation, see “Hydraulic Down Pressure Calibration” on page 161 and “Hydraulic Down Pressure” on page 54.

- **Wing Flex**

  Hydraulic cylinders at the coupling allow the wings to flex during planting, but keep them level during folding. This configuration is suitable for most planting situations.

- **Wing Lock**

  Wings are rigidly coupled to center via tie bars. This configuration is only suitable for planting strictly on flat ground.

For any of the coupling options, see pinning requirements at “Locking Pins” on page 25.

<table>
<thead>
<tr>
<th>Description</th>
<th>Initial Order Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wing Lock Option</td>
<td>(80)</td>
</tr>
<tr>
<td>Wing Flex Option</td>
<td>(81)</td>
</tr>
<tr>
<td>Hydraulic Down Pressure</td>
<td>(82)</td>
</tr>
</tbody>
</table>
Fertilizer Manifold
The 3PYP supports an optional “wet” fertilizer distribution system that relies on a tank/pump/filter system separately provisioned and tractor-mounted. This system is required if the optional Keeton® seed firmers are to be used for fertilizing.

For operations, see: “Fertilizer Setup” on page 58, and the Seed Rate manual.

Fertilizer Orifice Plates
The manifold system includes size 80 plates. To order alternate plates, use the following part numbers. Order one per row unit.

<table>
<thead>
<tr>
<th>Orifice Size</th>
<th>Great Plains Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>832-052C</td>
</tr>
<tr>
<td>28</td>
<td>832-056C</td>
</tr>
<tr>
<td>34</td>
<td>832-053C</td>
</tr>
<tr>
<td>48</td>
<td>832-054C</td>
</tr>
<tr>
<td>59</td>
<td>832-057C</td>
</tr>
<tr>
<td>80</td>
<td>832-055C</td>
</tr>
</tbody>
</table>

82 Bushel Seed Hopper
The 82 bu. hopper may be purchased with the 3PYP or added later. Only the 82 bu. size is supported on the 3PYP.

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>82 bu. Bulk Hopper</td>
<td>403-143K</td>
</tr>
<tr>
<td>Air Release Field Kit</td>
<td>401-508A</td>
</tr>
</tbody>
</table>

The 82 bu. hopper has no prerequisites on the planter, but you will need a means of top-loading seed when the hopper is mounted on the seed box. This hopper is usually too heavy too be safely fork-lifted onto the planter if already pre-loaded with seed.

The 401-508A kit adds an internal venting system to older hoppers, permitting consistent seed flow at higher fan speeds. This kit is not required for new orders of 403-143K hoppers.

For operations, see: “82 Bushel Hopper Operation” on page 37.
Seed Lubricants

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ezee Glide Plus Talc + Graphite (5 gallon container)</td>
<td>821-069C</td>
</tr>
<tr>
<td>Graphite (1 pound bottle)</td>
<td>821-042C</td>
</tr>
<tr>
<td>Graphite (5 pound jug)</td>
<td>821-060C</td>
</tr>
</tbody>
</table>

**Row Unit Options**

**Row Cleaners**

Optional Martin row cleaners are unit-mounted, using either a coulter disk mounting bracket (1), with or without a disk), or “stand-alone”, using a unit-mount assembly (2).

Single-Row planters support single- or double-wheel row cleaners.

Twin-Row planters support only single-wheel row cleaners, in alternating left/right cleaner hub orientations.

Coulter-mounted (requires coulter):

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-wheel, 16 pair of left/right</td>
<td>207-107A</td>
</tr>
<tr>
<td>Single-wheel, 12 pair of left/right</td>
<td>207-108A</td>
</tr>
<tr>
<td>Double-wheel, 16 rows</td>
<td>207-113A</td>
</tr>
<tr>
<td>Double-wheel, 16 rows</td>
<td>207-125A</td>
</tr>
<tr>
<td>Double-arm, 12 rows</td>
<td>207-126A</td>
</tr>
<tr>
<td>UMC-Row Cleaner</td>
<td>207-301A</td>
</tr>
</tbody>
</table>

Stand-alone (includes mount):

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-wheel, 16 pair of left/right</td>
<td>207-111A</td>
</tr>
<tr>
<td>Single-wheel, 12 pair of left/right</td>
<td>207-112A</td>
</tr>
<tr>
<td>Double-wheel, 16 rows</td>
<td>207-117A</td>
</tr>
<tr>
<td>Double-arm, 12 rows</td>
<td>207-129A</td>
</tr>
<tr>
<td>Double-wheel, 12 rows</td>
<td>207-130A</td>
</tr>
<tr>
<td>Stand Alone Row Cleaner</td>
<td>207-302A</td>
</tr>
</tbody>
</table>

For operations, see: “Unit-Mount Cleaner Adjustments” on page 67.

207-xxK and -xxS kits do not include a manual.

<table>
<thead>
<tr>
<th>Individual Row Cleaners</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>UMRC Dual Wheel</td>
<td>207-213K</td>
</tr>
<tr>
<td>UMRC LH Single Wheel</td>
<td>207-215K</td>
</tr>
<tr>
<td>UMRC RH Single Wheel</td>
<td>207-216K</td>
</tr>
<tr>
<td>UMC-RC Dual Wheel</td>
<td>207-098S</td>
</tr>
<tr>
<td>UMC-RC LH Single Wheel</td>
<td>207-092S</td>
</tr>
<tr>
<td>UMC-RC RH Single Wheel</td>
<td>207-093S</td>
</tr>
<tr>
<td>RC Install/Use/Parts Manual</td>
<td>204-085M-A</td>
</tr>
</tbody>
</table>
Disk Coulters
Optional unit-mount disk coulters are available with 15 inch fluted blades, 15 inch turbo blades or 14 inch straight blades. If you need complete coulters, with unit mount and blade the selection includes:

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 mounts w/15 in. fluted blades</td>
<td>204-527A</td>
</tr>
<tr>
<td>24 mounts w/15 in. fluted blades</td>
<td>204-528A</td>
</tr>
<tr>
<td>32 mounts w/15 in. turbo blades</td>
<td>204-529A</td>
</tr>
<tr>
<td>24 mounts w/15 in. turbo blades</td>
<td>204-530A</td>
</tr>
<tr>
<td>32 mounts w/14 in. straight blades</td>
<td>204-531A</td>
</tr>
<tr>
<td>24 mounts w/14 in. straight blades</td>
<td>204-532A</td>
</tr>
<tr>
<td>31 mounts w/15 in. fluted blades</td>
<td>204-533A</td>
</tr>
<tr>
<td>31 mounts w/15 in. turbo blades</td>
<td>204-535A</td>
</tr>
<tr>
<td>16 mounts w/15 in. fluted blades</td>
<td>204-539A</td>
</tr>
<tr>
<td>16 mounts w/15 in. turbo blades</td>
<td>204-541A</td>
</tr>
<tr>
<td>16 mounts w/14 in. straight blades</td>
<td>204-543A</td>
</tr>
<tr>
<td>16 mounts w/15 in. fluted blades</td>
<td>204-551A</td>
</tr>
<tr>
<td>12 mounts w/15 in. fluted blades</td>
<td>204-552A</td>
</tr>
<tr>
<td>16 mounts w/15 in. turbo blades</td>
<td>204-553A</td>
</tr>
<tr>
<td>16 mounts w/15 in. turbo blades</td>
<td>204-554A</td>
</tr>
<tr>
<td>16 mounts w/14 in. straight blades</td>
<td>204-555A</td>
</tr>
<tr>
<td>12 mounts w/14 in. straight blades</td>
<td>204-556A</td>
</tr>
</tbody>
</table>

Coulter Blades
Replacement and alternate coulter blades include (quantity 1 per row unit):

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turbo, 15 in. (20 flutes)</td>
<td>820-327C</td>
</tr>
<tr>
<td>Fluted, 15 in. (50 flutes)</td>
<td>820-331C</td>
</tr>
<tr>
<td>Straight, 14 in.</td>
<td>820-259C</td>
</tr>
</tbody>
</table>

For operations, see: "Coulter Adjustments" on page 68.
Seed Meters

Seed meters are not standard in the base 3PYP configuration. Normally, one or more sets are ordered with the original planter. One set is factory-installed. Meters are simple to change. Available models include (part number are for a single row unit):

<table>
<thead>
<tr>
<th>Description</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singulator Plus</td>
<td>403-156K</td>
</tr>
<tr>
<td>12FP 12-Finger Pick-Up (30 in.)</td>
<td>403-158K</td>
</tr>
<tr>
<td>12FP 12-Finger Pick-Up (sunflower)</td>
<td>403-203K</td>
</tr>
<tr>
<td>6FP 6-Finger Pick-Up (Twin/20 in.)</td>
<td>403-169K</td>
</tr>
</tbody>
</table>

For operations, see: “Seed Meter Setup and Adjustment” on page 72.

Seed Meter Wheels

Singulator Plus™ meters accept a variety of seed wheels, each optimized for specific seeds. Wheels are simple to change. 25 Series meters accept only green seed wheels.

Singulating Wheels

<table>
<thead>
<tr>
<th>Description</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soybean (1700-2000 seeds/lb)</td>
<td>403-122D</td>
</tr>
<tr>
<td>Soybean (2000-2700 seeds/lb)</td>
<td>403-123D</td>
</tr>
<tr>
<td>Soybean (2700-3200 seeds/lb)</td>
<td>403-124D</td>
</tr>
<tr>
<td>Soybean (3200-3600 seeds/lb)</td>
<td>403-125D</td>
</tr>
<tr>
<td>Soybean (3600-4000 seeds/lb)</td>
<td>403-126D</td>
</tr>
<tr>
<td>Cotton (4000-4600 seeds/lb)</td>
<td>403-133D</td>
</tr>
<tr>
<td>Cotton (4600-5200 seeds/lb)</td>
<td>403-134D</td>
</tr>
<tr>
<td>Cotton (5200-6000 seeds/lb)</td>
<td>403-135D</td>
</tr>
<tr>
<td>Milo (low rate/solid, 51 pockets)</td>
<td>403-136D</td>
</tr>
<tr>
<td>Milo (low rate/row, 102 pockets)</td>
<td>403-137D</td>
</tr>
<tr>
<td>Milo (high rate/solid, 135 pockets, 10500-14000 seeds/lb)</td>
<td>403-138D</td>
</tr>
<tr>
<td>Milo (high rate/solid, 135 pockets, 12000-18000 seeds/lb)</td>
<td>403-140D</td>
</tr>
<tr>
<td>Milo (high rate/row, 135 pockets, 10500-14000 seeds/lb)</td>
<td>403-139D</td>
</tr>
<tr>
<td>Milo (high rate/row, 135 pockets, 12000-18000 seeds/lb)</td>
<td>403-141D</td>
</tr>
</tbody>
</table>

For operations, see: “Singulator Plus™ Meter Wheel Replacement” on page 74.

Volumetric Wheels

<table>
<thead>
<tr>
<th>Description</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat (35-145 lbs/ac)</td>
<td>403-118D</td>
</tr>
<tr>
<td>Wheat, High Rate (70-190 lbs/ac)</td>
<td>403-119D</td>
</tr>
<tr>
<td>Soft Red Wheat, High Volume, V3</td>
<td>403-120D</td>
</tr>
</tbody>
</table>
Gauge Wheel Scrapers

When planting in moist or sticky soils, these scrapers are useful in preventing build-up that might otherwise result in shallow planting.

Order one part per wheel (2 per opener).

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 1/2 inch Gauge wheel scraper</td>
<td>404-194D</td>
</tr>
<tr>
<td>3 inch Gauge wheel scraper</td>
<td>404-195D</td>
</tr>
<tr>
<td>4 inch Gauge wheel scraper</td>
<td>404-196D</td>
</tr>
</tbody>
</table>

The scrapers mount on the bottom rear of the depth wheel arm, using the existing bolt and lock washer. The slot in the scraper is long enough to clear the lower grease zerk, and allow adjustment as wheel and scraper wear.

For operations, see:
“Adjusting Depth Wheel Scrapers” on page 72.

Seed-Lok® Seed Firmer

The base 3PYP includes no seed firmers. A choice of firmers is an option in the product bundles, or may be field-installed as kits. Only one type of seed firmer may be installed at the same time. Order one per opener.

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 Series Seed-Lok® kit</td>
<td>404-093K</td>
</tr>
</tbody>
</table>

For operations, see:
“Seed-Lok® Seed Firmer Lock-Up” on page 78.

Keeton® Seed Firmer

The base 3PYP includes no seed firmers. A choice of firmers is an option in the product bundles, or may be field-installed as kits. Order one per opener. Only one type of seed firmer may be installed at the same time.

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keeton® seed firmer</td>
<td>890-796C</td>
</tr>
</tbody>
</table>

The Keeton® seed firmer also supports low-rate fertilizer delivery. For this use, the optional fertilizer manifold (page 120) must also be installed.

For operations, see:
“Keeton® Seed Firmer Adjustment” on page 78.
Seed Tube Brush
One brush is provided with the planter. Order the following part for additional or replacement brushes.

<table>
<thead>
<tr>
<th>Description</th>
<th>Order Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEED TUBE CLEANER BRUSH</td>
<td>891-259C</td>
</tr>
</tbody>
</table>

Row Unit Press Wheels
The base 3PYP includes a choice of press wheels. Additional wheels are available, and all may be field-installed.

This manual does not list kit part numbers as the available wheels are often region-specific. Consult your Great Plains dealer.

For operations, see: “Press Wheel Adjustment” on page 79.

Steering
The standard 3PYP now includes standard steering, which is also available as an upgrade for existing planters with full-castering wheels.

On turns in soft soils and/or on beds, the steering option is valuable. It prevents castering in backing, and steers the casters to match the turning radius of the tractor steering. This relies on a sensor mounted on a tractor front wheel.

The mechanical, hydraulic and electronic components are factory-installed on the planter, and configured to your row spacing. The tractor sensor bracket and components are normally dealer-installed as part of pre-delivery setup.

The steering option includes mounting brackets suitable for the following tractor models:
- Case IH® MX 220 through MX 285
- John Deere 8000 Series with rigid or ILS front suspension

<table>
<thead>
<tr>
<th>Description</th>
<th>Initial Order Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steering, 20 in., 40 in., 40TR</td>
<td>401-564A</td>
</tr>
<tr>
<td>Steering, 15 in., 30 in., 30TR</td>
<td>401-561A</td>
</tr>
<tr>
<td>Steering, 36 in., 36TR</td>
<td>401-562A</td>
</tr>
<tr>
<td>Steering, 38 in., 38TR</td>
<td>401-563A</td>
</tr>
</tbody>
</table>

For steering operations, see: “Steering Calibration” on page 153, and “Steering” on page 28.
# Appendix A: Reference Information

## Specifications and Capacities

<table>
<thead>
<tr>
<th>Specification</th>
<th>3PYP (excluding 30 inch Twin)</th>
<th>3PYP 30 in Twin Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tractor Requirements</td>
<td>220 hp (164 kW), estimated minimum(^a)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>minimum weight 13000 lbs (5897 kg) at front wheels</td>
<td></td>
</tr>
<tr>
<td>Hitch Load</td>
<td>6575 to 11400 lbs (2982 to 5170 kg) depending on configuration</td>
<td></td>
</tr>
<tr>
<td>Hydraulic Load</td>
<td>3 (closed/open center), plus 1 for hydraulic drive, 2250 psi, 21.86 gal/min</td>
<td></td>
</tr>
<tr>
<td>Hitch</td>
<td>3-point semi-mounted</td>
<td></td>
</tr>
<tr>
<td>Transport Width</td>
<td>24 ft. 6 in. (7.46 m)</td>
<td>25 ft. 2 in. (7.67 m)</td>
</tr>
<tr>
<td>Working Width</td>
<td>40 ft. (12.2 m)</td>
<td></td>
</tr>
<tr>
<td>Transport Length</td>
<td>16 ft. 10 in. (5.13 m)</td>
<td></td>
</tr>
<tr>
<td>Transport Clearance</td>
<td>14 in. (35.6 cm)</td>
<td></td>
</tr>
<tr>
<td>Transport Height</td>
<td>12 ft. 8 in. (3.86 m) with markers; 12 ft. 6 in. (3.81 m) without markers</td>
<td></td>
</tr>
<tr>
<td>Weight (Approx.)</td>
<td>17100 lbs (7756 kg) [30 in. twin-row with coulters and row cleaners]</td>
<td></td>
</tr>
<tr>
<td>Row Spacing</td>
<td>15 in./38 cm, 20 in./51 cm, 30 in./76 cm, 36 in./91 cm, 38 in./96.5 cm, 40 in./102 cm, Twin 36, Twin 38, Twin 40, Twin 30 in./76 cm</td>
<td>Twin 30 in./76 cm</td>
</tr>
<tr>
<td>Number of Openers</td>
<td>12 (36/38/40 in.), 23 (20 in.), 24 (Twin), 31 (15 in.)</td>
<td>32</td>
</tr>
<tr>
<td>Seed Hopper Capacity</td>
<td>82 bu. (2890 liter) hopper or ProBox</td>
<td></td>
</tr>
<tr>
<td>Tire Sizes</td>
<td>Transport/Caster: 32x15.5x16.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hydraulic Drive Gauge Wheel: 9.5Lx15 6 Ply Rib Implement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ground Drive Gauge Wheel: 7.6-145 6 Ply Lug</td>
<td></td>
</tr>
<tr>
<td>Opener Travel</td>
<td>10 in. (25.4 cm)</td>
<td></td>
</tr>
<tr>
<td>Opener Depth Range</td>
<td>0 to 3(\frac{1}{2}) in. (0 to 8.9 cm)</td>
<td></td>
</tr>
<tr>
<td>Opener Down Pressure</td>
<td>springs (std.): 200 to 500 lb per row</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) Without coulters

## Tire Inflation Chart

<table>
<thead>
<tr>
<th>Wheel</th>
<th>Tire Size</th>
<th>Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caster</td>
<td>32-15.5L x 16.5</td>
<td>115 psi (792 kPa)</td>
</tr>
<tr>
<td>Ground Drive</td>
<td>7.6-145 6 Ply Lug</td>
<td>40 psi (276 kPa)</td>
</tr>
<tr>
<td>Hydraulic Drive</td>
<td>9.5Lx15 6 Ply Rib Imp.</td>
<td>44 psi (303 kPa)</td>
</tr>
</tbody>
</table>

## Tire Warranty Information

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.

<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>Goodyear</td>
<td><a href="http://www.goodyearag.com">www.goodyearag.com</a></td>
</tr>
<tr>
<td>BKT</td>
<td><a href="http://www.bkt-tires.com">www.bkt-tires.com</a></td>
</tr>
<tr>
<td>Titan</td>
<td><a href="http://www.titan-intl.com">www.titan-intl.com</a></td>
</tr>
<tr>
<td>Gleason</td>
<td><a href="http://www.gleasonwheel.com">www.gleasonwheel.com</a></td>
</tr>
</tbody>
</table>
### Torque Values Chart

<table>
<thead>
<tr>
<th>Bolt Size</th>
<th>Bolt Head Identification</th>
<th></th>
<th>Bolt Size</th>
<th>Bolt Head Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Grade 2</td>
<td>Grade 5</td>
<td>Grade 8</td>
<td>Class 5.8</td>
</tr>
<tr>
<td></td>
<td>N-m</td>
<td>ft-lb</td>
<td>N-m</td>
<td>ft-lb</td>
</tr>
<tr>
<td>1/4-20</td>
<td>7.4</td>
<td>5.6</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>1/4-28</td>
<td>8.5</td>
<td>6.8</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>5/16-18</td>
<td>15</td>
<td>11</td>
<td>24</td>
<td>17</td>
</tr>
<tr>
<td>5/16-24</td>
<td>17</td>
<td>13</td>
<td>26</td>
<td>19</td>
</tr>
<tr>
<td>3/8-16</td>
<td>27</td>
<td>20</td>
<td>42</td>
<td>31</td>
</tr>
<tr>
<td>3/8-24</td>
<td>31</td>
<td>22</td>
<td>47</td>
<td>35</td>
</tr>
<tr>
<td>7/16-14</td>
<td>43</td>
<td>32</td>
<td>67</td>
<td>49</td>
</tr>
<tr>
<td>7/16-20</td>
<td>49</td>
<td>36</td>
<td>75</td>
<td>55</td>
</tr>
<tr>
<td>1/2-13</td>
<td>66</td>
<td>49</td>
<td>105</td>
<td>76</td>
</tr>
<tr>
<td>1/2-20</td>
<td>75</td>
<td>55</td>
<td>115</td>
<td>85</td>
</tr>
<tr>
<td>9/16-12</td>
<td>95</td>
<td>70</td>
<td>150</td>
<td>110</td>
</tr>
<tr>
<td>9/16-18</td>
<td>105</td>
<td>79</td>
<td>165</td>
<td>120</td>
</tr>
<tr>
<td>5/8-11</td>
<td>130</td>
<td>97</td>
<td>205</td>
<td>150</td>
</tr>
<tr>
<td>5/8-18</td>
<td>150</td>
<td>110</td>
<td>230</td>
<td>170</td>
</tr>
<tr>
<td>3/4-10</td>
<td>235</td>
<td>170</td>
<td>360</td>
<td>265</td>
</tr>
<tr>
<td>3/4-16</td>
<td>260</td>
<td>190</td>
<td>405</td>
<td>295</td>
</tr>
<tr>
<td>7/8-9</td>
<td>225</td>
<td>165</td>
<td>585</td>
<td>430</td>
</tr>
<tr>
<td>7/8-14</td>
<td>250</td>
<td>185</td>
<td>640</td>
<td>475</td>
</tr>
<tr>
<td>1-8</td>
<td>340</td>
<td>250</td>
<td>875</td>
<td>645</td>
</tr>
<tr>
<td>1-12</td>
<td>370</td>
<td>275</td>
<td>955</td>
<td>705</td>
</tr>
<tr>
<td>1-1/4</td>
<td>480</td>
<td>355</td>
<td>1080</td>
<td>795</td>
</tr>
<tr>
<td>1-1/2</td>
<td>680</td>
<td>500</td>
<td>1520</td>
<td>1120</td>
</tr>
<tr>
<td>1-5/8</td>
<td>750</td>
<td>555</td>
<td>1680</td>
<td>1240</td>
</tr>
<tr>
<td>1-7/8</td>
<td>890</td>
<td>655</td>
<td>1990</td>
<td>1470</td>
</tr>
<tr>
<td>1-11/16</td>
<td>1010</td>
<td>745</td>
<td>2270</td>
<td>1670</td>
</tr>
<tr>
<td>1-5/8</td>
<td>1180</td>
<td>870</td>
<td>2640</td>
<td>1950</td>
</tr>
<tr>
<td>1-1/2</td>
<td>1330</td>
<td>980</td>
<td>2970</td>
<td>2190</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.
Hydraulic Diagrams

Where system revisions apply, this section includes only diagrams for planters (S/N A1025S+). For earlier production, consult the Parts Manual (401-312P).

Wing Fold without Markers

![Hydraulic Diagram](image-url)
Wing Fold with Markers
Fan with Hydraulic Steering (S/N A1024S-)
Fan with Hydraulic Steering (S/N A1025S through A1055S)
Fan with Hydraulic Steering (S/N A1056S+)
Lift with Wing Flex (S/N A1025S+)
(without Hydraulic Down-Pressure)
Lift with Wing Flex Lock (S/N A1025S+)
(without Hydraulic Down-Pressure)
Lift with Hydraulic Down-Pressure (S/N A1025S+)
Hydraulic Meter Drive
Chain Routing

Legend:

- **34T**: Sprocket Tooth count
- **34i**: Idler Tooth count
- **56P**: Chain Pitch count
- **L**: Direction of chain in motion

**Gauge Wheel (Ground Drive) Chain**

- **A**: Range Sprockets: 15T, 18T, 19T, 20T, 30T, 38T
- **B**: Transmission Sprockets: 17T, 19T, 2@23T, 24T, 25T, 26T, 27T, 28T

Diagram showing the chain routing with Sprocket Tooth count, Idler Tooth count, Chain Pitch count, and Direction of chain in motion.
Transmission (Ground Drive) Chain

Range Sprockets:
15T, 18T, 19T, 20T, 30T, 38T

Transmission Sprockets:
17T, 19T, 2@23T, 24T, 25T, 26T, 27T, 28T

Upper Drive Sprockets:
18T or 36T, captive
Ground Drive Chain

25T

109

Left side shown
Hydraulic Drive Chain
Row Unit Placement
15 in. Single Row Spacing

USE ROW UNIT MOUNT W/ SLOT IN FACE
15.00 REF TYP

MIRROR DIMENSIONS FOR OPPOSITE SIDE

25424

100%
20 in. Single Row Spacing

30 in. Single Row
Spacing

30 in. Twin Row Spacing

36 in. Single Row

DPIP ROW UNIT PLACEMENT
30" TWIN ROW SPACING

PLACE REAR MOUNTS TO THE LEFT AS SHOWN ACROSS ENTIRE MACHINE

MIRROR DIMENSIONS FOR OPPOSITE SIDE

DPIP ROW UNIT PLACEMENT
36" SINGLE SPACING

MIRROR DIMENSIONS FOR OPPOSITE SIDE
Spacing

36 in. Twin Row Spacing

38 in. Single Row
Spacing

38 in. Twin Row Spacing

40 in. Single Row
Spacing
40 in. Twin Row Spacing

3PYP ROW UNIT PLACEMENT
40" TWIN ROW SPACING

PLACE REAR MOUNTS TO THE LEFT AS SHOWN ACROSS ENTIRE MACHINE

MIRROR DIMENSIONS FOR OPPOSITE SIDE

25433
Appendix B - Option Installation

Scraper Installation (122-278S)

Optional carbide disc scrapers are not factory installed. Start with row 1 (left-most row unit).

If a Keeton® seed firmer is also installed, see the Parts Manual for assembly details.

This scraper is not compatible with Seed-Lok®.

Refer to Figure 144 and Figure 145

1. Remove one or both opener disc blades to gain safe access to the mount ①. Note the position of bushings and spacers for correct re-assembly (page 147).

2. Select one each:
   ⑦ 802-024C HHCS 3/8-16X3 GR5
   ⑥ 129BXT824 BRACKET FOR 890-929C FIRMER
   ⑤ 122-177D 10HD25 INSIDE SCRAPER MNT TUBE

   Insert the bolt ⑦, from the rear, through the lowest hole of the bracket ⑤. Place the tube ⑤ over the bolt.

3. Select one scraper set:
   ⑬ 890-928C 25 SER AIR DESIGN IN SCRAPER

   Place the shoulder washer ② on bolt ⑦ with the larger diameter to the rear (toward bolt head). Place the left scraper blade ③ on the washer, followed by the right scraper blade ④.

4. Select one each:
   ⑱ 804-011C WASHER FLAT 3/8 USS PLT
   ⑲ 804-013C WASHER LOCK SPRING 3/8 PLT
   ⑯ 803-014C NUT HEX 3/8-16 PLT

   Place the flat washer ⑱ on the bolt ⑦, followed by the lock washer ⑲ and nut ⑯. Tighten bolt and nut to 3/8-16 GR5 torque spec. Make sure blades pivot freely.

5. Select the scraper spring ⑤. Connect the spring between the blades, using the small top holes.

6. Select two sets:
   ⑧ 802-172C HHCS 5/16-18X2 1/2 GR5
   ⑰ 803-043C NUT HEX WHIZ 5/16-18 PLT

   Insert the scraper assembly ⑤ between the middle four lower square holes ⑥ of the opener frame. Secure with bolts ⑧ and whiz nuts ⑰.

7. Re-mount the removed disc blade.
Appendix C: Initial Setup

This Appendix covers setup tasks performed only once, or at infrequent intervals. Routine setup tasks are covered in “Preparation and Setup” on page 13. Perform Appendix B tasks first. Some of these items may already have been done by your Great Plains dealer.

Post-Delivery Checklist

1. Make sure the tractor is compatible (see list below).
2. Read and understand “Important Safety Information” on page 1.
3. Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
4. Check that all grease fittings are in place and lubricated. Refer to “Lubrication” on page 109.
5. Check that all safety decals and reflectors are correctly located and legible. Replace if damaged. See “Safety Decals” on page 5.
6. Inflate tires to pressure recommended and tighten wheel bolts as specified. See ‘Tire Inflation Chart’ on page 126.

Seed Monitor Console Installation

The 3PYP planter’s standard seed monitor system includes a virtual terminal and switch panel that must be mounted in the tractor cab. As supplied by DICKEY-john®, the kit includes a flat bracket for the modules, and a ball swivel for mounting the bracket in the tractor.

NOTICE

Mount the modules so that they are easy to monitor during planting, but do not interfere with safe operation of the tractor in the field or on public roads.

The ball swivel includes four 10-32 screws. You or your dealer must provide the mounting holes for the screws. Your dealer may have alternate suction cup or clamping brackets available if you prefer to avoid drilling holes.

Refer to the included DICKEY-john® manual for harness connections.
Radar Calibration
At the first opportunity to operate the planter in the field (with or without planting), the radar component of the seed monitor needs to be calibrated. The seed monitor manual describes the procedure.

The planter must be in the lowered/field position for this calibration. The angle of the sensor changes when the planter is raised, and readings during planting will be incorrect if calibrated in the raised configuration.

Due to this angle change, seed monitor speed readings will not match tractor speedometer reading during transport.

Install Tractor Steering Components
Compatible Tractors
New 3PYP planters include hydraulic steering, which requires mounting a sensor in the tractor steering gear or if available, using existing tractor sensors. ISO compatible wheel tractors and track tractors with factory installed (not aftermarket) auto-steer ready components use the electronic steering sensor module and harnessing. Non ISO compatible and those tractors without factory installed auto-steer components require the linear sensor in the steering gear.

Brackets and instructions are included for the following tractor brands and models.

The tractor must otherwise also meet the requirements listed under Specifications and Capacities in “Appendix A: Reference Information” on page 126.
Steering with Control Monitor
(S/N B1127J+)

Steering System Modes of Operation
There are two modes of operation for the steering system on the 3PYP and 3PYPA planters. Which mode of operation to use is based on whether the tractor is manually steered or has an auto-steer system.

If the tractor is manually steered then the planter steering system should be set to “Steer While Planting” mode. In this mode the planter steering system is always active.

Steering System Selection
Tap the ‘3PYP’ soft key to open the 3PYP Steering System screen. In order to enable steering, tap the [ON] soft key for ‘Master Steering System.’ Your machine now has the steering system enabled. In order to use the steering system for planting, tap the [ON] soft key for ‘Steer While Planting.’

Tap the [OFF] soft key to disable any of these selections.

Steering Calibration
The hydraulic steering system has calibration modes for caster and tractor wheel sensors. To perform one of these calibrations, first fully connect your planter to the tractor, level the machine, and set it on a reasonably flat surface large enough for simple operation. Then select [YES] and proceed to the calibration instructions screen.

Machine calibration requires you make three separate movements with the machine: left, center, and right. After each of these movements, click the ‘Press to Save’ button followed by ‘Next’ to proceed to the next calibrations step. Once all three movements are performed and saved, machine calibration is complete.

Hydraulic-powered planter hydraulic steering is standard on the 3PYP planter.
Advanced Setup

Advanced Setup grants access to more factory settings. Many of these should only be changed by a certified Great Plains dealer. However, if you need to alter your settings for either tractor, CANBus, or ISOBus steering, you can make that change in your terminal’s advanced setup page.

To access the advanced setup screen, go to the initial steering calibration screen and tap on ‘Advanced Setup’. A number pad will prompt you for the level 2 access code. Tap in ‘344787’ and you should see the ‘Advanced Setup’ screen appear. Now you can tap on a box next to the steering you want to select it for use. Tap on the home icon to exit when finished.

NOTE: Unavailable Steering

If a steering system is unavailable, its name will have a line struck through it on your screen. Check your onboard CPU if your system appears unavailable.

Diagnostics

Tap on the diagnostics icon to analyze machine sensor feedback and check for any problems your planter may be experiencing.

An unfilled circle indicates the machine’s function is normal. If a circle is filled red, then the sensors have either detected an open (disconnected) circuit or a short circuit has occurred. Check the appropriate area of the machine to assess the problem.

If a circle is filled gray, then the sensors detected an error has occurred but was cleared.
Steering with Control Module
(S/N A1056S through B1126J)

If you do not have one of the brands and models listed on this page, consult your Great Plains dealer. The list of supported tractors, and available sensor mounting brackets, is planned for expansion.

At time of publication, this 3PYP steering system was not expected to become compatible with tracked or articulated tractors.

Seed cart steering is hydraulically controlled to match steering of the tractor based on one of the following:

- the extension of a linear displacement sensor at the tractor steering gear
- the value of the steering angle signal on the CANbus,
- the value of the signal as transmitted from the steering sensor.

You will find one of the following three major sub-assemblies installed on your tractor:

1. the electronic steering module connected to the tractor's implement CAN network
2. the electronic steering module connected directly to the tractor, factory installed steering angle sensor
3. a tractor steering sensor, with brand-model-specific brackets, which detects tractor wheel pointing.

Sensor installation is normally completed by the Great Plains dealer prior to delivery. If it was not, obtain the Pre-Delivery Manual (part number 401-312Q) from the dealer. Only the Pre-Delivery manual includes tractor steering sensor installation instructions.

Refer to Figure 151

Do the following setup to the cab steering switch console (1) which controls operation and calibration of the steering system:

Mount the switch box (1) in any convenient location that allows observation of fault indications, and does not obstruct safe operation of the tractor.

Route the main harness (2) to the hitch, where it mates with the Steering ECU harness.

Connect the steering module or tractor sensor lead to the 3-pin connector (3).

Connect the power leads (4) to a 12Vdc source (red +, black -).

Steering Setup

Perform a steering calibration, per "Steering Calibration" on page 153.
Steering System Hydraulic Bleeding
The steering system is self-purging and never requires bleeding if operated with all four hoses correctly connected.

Steering System Modes of Operation
*Refer to Figure 154*
There are two modes of operation for the steering system on the 3PYP and 3PYPA planters. Which mode of operation to use is based on whether the tractor is manually steered or has an auto-steer system.

If the tractor is manually steered then the planter steering system should be set to “Steer While Planting” mode. In this mode the planter steering system is always active.

If the tractor is steered with an auto-steer system then the planter steering system should be set to the “Float While Planting” mode. In this mode the steering system is active only when the planter is in the raised position. When the planter is in the down (planting position) the planter steering system is in the float mode.

Steering Calibration
Hydraulic-powered planter hydraulic steering is standard on the 3PYP planter.

The hydraulic steering system has two calibration modes:
1. one for caster wheel sensor calibration
2. one for tractor wheel sensor calibration.

After initial wheel calibration at delivery of the planter, periodic re-calibration is necessary in the following circumstances:
- Re-calibrate for use with a different tractor.
- Re-calibrate if maintenance required dismounting any steering sensor, tire size or tractor tire size and/or wheel arrangement has changed.
- Great Plains recommends seasonal re-calibration.
- Re-calibrate if steering software is updated.

Steering Configuration Switch
This cab-mounted switch box controls both normal and field calibration of the hydraulic steering system. It has
4 switches, 3 indicator lamps, that perform the following functions.

<table>
<thead>
<tr>
<th>Steering Control Module Function</th>
<th>Switch Positions and Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>① STEER Toggle Switch:</td>
<td></td>
</tr>
<tr>
<td>Steering System Power</td>
<td>On (up): Steering enabled (casters match or float)</td>
</tr>
<tr>
<td></td>
<td>Off (down): Steering disabled (casters in Float)</td>
</tr>
<tr>
<td>② LED:</td>
<td></td>
</tr>
<tr>
<td>Power / Fault</td>
<td>On steady: Steering system active (casters match or float)</td>
</tr>
<tr>
<td></td>
<td>Blinking: Steering system fault (casters in Float)</td>
</tr>
<tr>
<td>③ FLOAT LED:</td>
<td></td>
</tr>
<tr>
<td>Float / Caster</td>
<td>Off: Normal operation - steering system active if STEER on</td>
</tr>
<tr>
<td></td>
<td>On: Casters in Float (if STEER LED is steady)</td>
</tr>
<tr>
<td>④ CALIBRATION Toggle Switch:</td>
<td></td>
</tr>
<tr>
<td>Calibration Modes</td>
<td>L: Caster aspect sensor (casters in Float)</td>
</tr>
<tr>
<td></td>
<td>C: Calibration mode off (normal transport/field mode)</td>
</tr>
<tr>
<td></td>
<td>R: Tractor aspect sensor (casters in Float)</td>
</tr>
<tr>
<td>⑤ LEARN Button:</td>
<td></td>
</tr>
<tr>
<td>Calibration (Learn)</td>
<td>First press: Learn tight Right turn</td>
</tr>
<tr>
<td></td>
<td>Next press: Learn Straight ahead</td>
</tr>
<tr>
<td></td>
<td>Next press: Learn tight Left turn</td>
</tr>
<tr>
<td>⑥ LED:</td>
<td></td>
</tr>
<tr>
<td>Calibration</td>
<td>Off: Normal (non-Calibration) operation</td>
</tr>
<tr>
<td></td>
<td>Dim: Either Calibration mode selected</td>
</tr>
<tr>
<td></td>
<td>Bright Flash: Button © press acknowledged</td>
</tr>
<tr>
<td>⑦ Rotary Switch Knob</td>
<td></td>
</tr>
<tr>
<td>(ONLY APPLIES TO PLANTERS WITH s/n A1056S+)</td>
<td>Vertical position: Normal operation - steering system active while planting as well as when raised</td>
</tr>
<tr>
<td></td>
<td>Horizontal position: Used when tractor is utilizing auto-steer - planter steering system floats</td>
</tr>
<tr>
<td></td>
<td>while planting - active only when planter is raised</td>
</tr>
</tbody>
</table>

### Wheel Sensor Calibration

The planter must be completely connected to the tractor, and leveled, before beginning the procedure. You need a reasonably level area large enough for completely turning and straightening the rig.

**Refer to Figure 152 and the table on page 154**

1. Raise the planter. Folding is also suggested if the test area is small, or uneven enough to cause wing openers to touch the ground.
2. Ensure the hydraulic steering ECU is connected to the cab switch box, and powered-up (switch ©).

#### Caster Right Calibration

3. Put the steering in caster wheel sensor calibration mode, by setting Calibration switch © to the “CASTER” position.
4. Do not move the Calibration toggle switch from the “CASTER” position until step 10, or the new caster calibration is ignored.
5. Make a complete forward right circle, as tight as the rig permits, with all wheels in a hard right turn. Stop.

**NOTICE**

**Steering Mismatch Risk:**

*Do not press the LEARN button more than once for each orientation (right, straight, left). If pressed more than once, invalid steering data is stored. You must restart the sequence (see “Errors and Re-Tries” on page 155).*

#### Caster Straight Calibration

6. Drive straight forward until the entire rig is running in a straight line. Stop, with all wheels straight ahead.
7. Press and hold the “learn” button © on the switch box, until the LEARN indicator © flashes.

#### Caster Left Calibration

8. Make a complete forward left hand circle, as tight as the rig permits, with all wheels in a hard left turn. Stop.
9. Press and hold the “learn” button on the switch box, until the LEARN indicator flashes.

10. Complete the caster wheel sensor calibration mode, by setting Calibration switch to “OFF”.

Wheel Tractors and Alternate Method for Track Tractors (S/N A1056S+)

Tractor Right Calibration

11. Put the steering in tractor wheel sensor calibration mode, by setting Calibration switch to the “TRACTOR” position.

Do not move the Calibration toggle switch from the “TRACTOR” position until step 18, or the new tractor calibration is ignored.

12. Make a complete forward right turn, as tight as the rig permits, with all wheel in a hard right turn. Stop.

13. Press and hold the “learn” button on the switch box, until the LEARN indicator flashes.

Notice

Steering Mismatch Risk:
Do not press the LEARN button more than once for each orientation (right, straight, left). If pressed more than once, invalid steering data is stored. You must restart the sequence (see “Errors and Re-Tries” on page 155).

Tractor Straight Calibration

14. Drive straight forward until the entire rig is running in a straight line. Stop, with all wheels straight ahead.

15. Press and hold the “learn” button on the switch box, until the LEARN indicator flashes.

Tractor Left Calibration

16. Make a complete forward left turn, as tight as the rig permits, with all wheel in a hard left turn. Stop.

17. Press and hold the “learn” button on the switch box, until the LEARN indicator flashes.

18. Complete the tractor wheel sensor calibration mode, by setting Calibration switch to “OFF”.

Errors and Re-Tries

If you are unable to complete a sequence, set the Calibration switch to “OFF”, and restart the calibration sequence from the beginning (step 3 for caster or step 11 for tractor). Do not attempt to start from where you left off.

If you need to re-try a sequence (for example, you run out of room to complete a circle or straight run), set the Calibration switch to “OFF”, reposition the rig and begin again.

It is not necessary to re-calibrate caster steering, if only the tractor steering needs to be re-done.

Track Tractor Preferred Method of Tractor Steering Sensor Calibration (S/N A1056S+)

19. Turn the Ignition Switch to the ON position. DO NOT START the ENGINE.

20. Put the Steer Toggle switch to the ON position. The power light on the steering switch box and the LED’s on the electronic steering module should all be illuminated.

21. Put the steering in the tractor sensor calibration mode by setting Calibration switch to the TRACTOR position.

Do not move the Calibration toggle switch from the TRACTOR position until step 28 or the new tractor calibration is ignored.

22. Turn the steering wheel all the way to the right and hold in this position to simulate a hard right hand turn.

23. Press and hold the LEARN button on the switch box until the LEARN indicator flashes.

24. Release the steering wheel. It should return to the center position.

25. Press and hold the LEARN button on the switch box until the LEARN indicator flashes.

26. Turn the steering wheel all the way to the left and hold in this position to simulate a hard left hand turn.

27. Press and hold the LEARN button on the switch box until the LEARN indicator flashes.

28. Complete the tractor sensor calibration mode by setting Calibration switch to OFF. Only at this point are the new calibration values accepted by the system.
Emergency Moves Without Steering

To move the planter with a tractor lacking 3PYP steering components, or to move a planter with a steering system malfunction, the casters must be in Float. Steps below describe methods for several situations.

**Force Caster Float**

Any of these configurations will float the casters.

1. **Normal Caster Float**  
   (for forward travel only - **do not back up**)
   a. Shut off tractor. Power-Beyond cannot be connected with tractor running.
   b. Make all normal hydraulic and electrical connections, including steering. Start tractor.
   c. Set “STEER” switch on steering switch box OFF.
   d. If casters do not float, try step 2.

2. **ECU-Disconnected Caster Float**  
   (for forward travel only - **do not back up**)
   a. Shut off tractor. Power-Beyond cannot be connected with tractor running.
   b. Make all normal hydraulic connections, including steering (see page 17). Start tractor.
   c. Make all normal electrical connections, EXCEPT steering (see page 16).

3. **Mechanical Float**  
   (for forward travel only)  
   (S/N A1056S+)
   a. Remove the 1 1/4 inch pin locking the caster weldment and steering arm weldment together.
   a. Make all normal hydraulic and electrical connections EXCEPT power beyond pressure line.

**NOTICE**

Equipment Damage Risk:  
Make no planter moves of any kind with casters in hydraulic lock. Damage to both planter and tractor is likely. Take all steps necessary on this page to enter Float state.

**NOTICE**

Equipment Damage Risk:  
Make only careful forward moves with casters in Float. With options 1-3, do not make reverse moves. The casters immediately swivel to a hard turn state, usually opposite to any tractor turn. Damage to planter and tractor is likely.
Hydraulic Down Pressure Calibration

Refer to Figure 155

If your planter is equipped with the optional hydraulic down pressure system, it needs an initial/seasonal setup.

**NOTICE**

If your tractor has Open Center hydraulics, do not engage the down pressure hydraulics. The current hydraulic down pressure option is compatible only with tractors having Closed Center systems.

The hydraulic down pressure kit is integrated with the lift assist system. When the down pressure system cycles, the planter raises and lowers.

There are two adjustable valves in the system:

① Bypass valve
   located near parallel arms

② Adjustment valve
   located near hitch

**PC Closed Down Pressure**

Tractors with Pressure Compensating Closed Center Hydraulics (PC Closed)

Refer to Figure 155

1. Release locking disk ③.
2. Close bypass valve ① for no oil flow by turning knob ④ on valve clockwise completely.
3. Tighten locking disk ③. Always operate the planter with the bypass valve closed.

No further adjustments are made at this time. See “Hydraulic Down Pressure” on page 54 for field operations.

Figure 155: s/n A1025S+
Hydraulic Down Pressure Valves
LS Closed/PFC Down Pressure

Tractors with Load Sensing Closed Center Hydraulics (LS Closed) or Pressure Flow Compensating (PFC) Systems

Refer to Figure 156

1. Release locking disk ③.
2. Close bypass valve ① for no oil flow by turning knob ⑥ on valve clockwise completely.
3. Tighten locking disk ③.
4. With tractor at half throttle, adjust flow-control valve on tractor so openers raise and lower at a reasonable speed. Keep tractor at one-half throttle for remaining steps.

Faster opener raise/lower increases potential for oil over-heating, wear and tractor damage.

5. Engage tractor hydraulics and lower openers. Lock hydraulic lever on tractor for continuous operation.

6. Release locking disks ③ and ⑤. Adjust pressure-control valve ② knob ⑥ for opener down pressure so gauge ⑦ is at 600 psi.

7. While watching gauge ⑦, slowly turn knob ⑥ on bypass valve ① counterclockwise. Adjust bypass valve ① just until needle on gauge ⑦ begins to move down from 600 psi. Use locking disk ③ to lock bypass valve at this setting. (See also note below.)

8. Adjust pressure-control valve ② knob ⑥ to desired opener down pressure per “Hydraulic Down Pressure” on page 54. Tighten locking disks ③ and ⑤.

While 600 psi is a good starting point for setting the bypass valve, if you consistently operate the planter with low opener down pressure you can set the bypass valve below 600 psi. If you consistently operate the planter with very high opener down pressure, you may need a bypass-valve setting above 600 psi.

Machine Damage Risk:
Failure to use the bypass valve on load-sensing tractors may cause major tractor damage.

The higher the bypass pressure, the greater the potential for oil over-heating and tractor damage. However, for proper opener operation the bypass valve must be set at least 300 psi above the opener down-pressure setting when the tractor is at one-half throttle. Therefore, you should set the bypass valve as low as possible while staying at least 300 psi above the opener down pressure setting.
Center Section Leveling

Refer to Figure 157

1. Put planter in field position by lowering and pulling forward.

**NOTICE**

Planted must be fully lowered to field position and hitch height must be set before making side-to-side adjustments.

2. Measure the elevation of both left and right sides of the planter, near the wing pivot location. If they are not the same, adjust the tractor 3-point arm linkage to equalize, while keeping center height at desired value (nominally 26 inches/66 cm).

Wing Leveling

Wing leveling check/adjustment is required prior to first use of the 3PYP, and periodically thereafter, such as when using a different tractor, or when the tractor set-up has been modified for use with another implement.

Before performing this operation:

- Planter must be hitched and all connections made. See “Hitching Tractor to Planter” on page 14
- Planter must be unfolded on firm level ground. See “Unfolding The 3PYP” on page 29
- Planter must be lowered.
- Center section must be leveled. See “Frame Height and Leveling” on page 19
- Wing Flex Lock pin must be installed. Wing (down) lock pin must be removed and wing flex lock pins must be removed and in storage (Refer to Figure 25 on page 30).

Refer to Figure 158 and Figure 159

1. Measure from the bottom of the wing tool bar to the ground at the outer end of each wing.
2. Compare to the measurement at the outer end of the center tool bar, at the wing pivot location. All measurements should be identical, and nominally 26 in.
3. If measurements do not match, loosen upper wing link arm lock nut ①, and adjust link length.
4. If adjustments are needed on either side, re-check the other side after each adjustment, and re-adjust it as needed.
5. Once level, tighten the wing link arm lock nut ①.
Appendix D: Older Equipment

Hitching with Row Mode Spacer

**DANGER**

You may be severely injured or killed by being crushed between the tractor and planter. Do not stand or place any part of your body between planter and moving tractor. Hitch planter before making any other connections. Stop tractor engine and set park brake before attaching cables and hoses.

**Refer to Figure 160**

1. Set the spacer blocks 1 on the lower hitch pins for twin or single-row operation.

   The blocks are set to the right for twin-row (shown) and to the left for single-row operation.

   To Move the Spacer:
2. Remove $\frac{1}{2}-13$ bolt, washers and nut 2.
3. Remove pin 3.
4. Flip spacer block 1 180 degrees.
5. Insert pin 3 from other side of hitch.
6. Align spacer’s bolt hole, and pin arm bolt hole with hole in hitch 4, re-insert and tighten bolt 2.

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**Figure 160**
Row Mode Spacer
Hydraulic Down Pressure Calibration

Refer to Figure 161, Figure 162 or Figure 163

If your planter is equipped with the optional hydraulic down pressure system, it needs an initial/seasonal setup.

Depending on the serial number of your planter the hydraulic down pressure system will look like one of three illustrations here.

There are two adjustable valves in these systems:

① Bypass valve
   located near parallel arms

② Adjustment valve
   located near hitch

The hydraulic down pressure kit is integrated with the lift assist system. When the down pressure system cycles, the planter raises and lowers.

PC Closed Down Pressure

(S/N A1007S through A1024S)

Tractors with Pressure Compensating Closed Center Hydraulics (PC Closed)

Refer to Figure 161

1. Release locking disk ③.
2. Close bypass valve ① for no oil flow by turning knob ④ on valve clockwise completely.
3. Tighten locking disk ③. Always operate the planter with the bypass valve closed.

No further adjustments are made at this time. See “Hydraulic Down Pressure” on page 54 for field operations.

Equipment Damage Risk:

If your tractor has Open Center hydraulics, do not engage the down pressure hydraulics. The current hydraulic down pressure option is compatible only with tractors having Closed Center systems.
PC Closed Down Pressure (S/N A1006S-)

Tractors with Pressure Compensating Closed Center Hydraulics (PC Closed)

Refer to Figure 162
1. Release locking disk ③.
2. Close bypass valve ① for no oil flow by turning knob ④ on valve clockwise completely.
3. Tighten locking disk ③. Always operate the planter with the bypass valve closed.

No further adjustments are made at this time. See “Hydraulic Down Pressure” on page 54 for field operations.

PC Closed Down Pressure (S/N A1025S+)

Tractors with Pressure Compensating Closed Center Hydraulics (PC Closed)

Refer to Figure 163
1. Release locking disk ③.
2. Close bypass valve ① for no oil flow by turning knob ④ on valve clockwise completely.
3. Tighten locking disk ③. Always operate the planter with the bypass valve closed.

No further adjustments are made at this time. See “Hydraulic Down Pressure” on page 54 for field operations.
LS Closed/PFC Down Pressure
(S/N A1007S through A1024S) and (S/N A1006S-)
For (S/N A1025S+) see next page
Tractors with Load Sensing Closed Center Hydraulics
(LS Closed) or Pressure Flow Compensating (PFC)
Systems
Refer to Figure 164 and Figure 165

**NOTICE**

*Failure to use the bypass valve on load-sensing tractors may cause major tractor damage.*

1. Release locking disk ③.
2. Close bypass valve ① for no oil flow by turning
   knob ④ on valve clockwise completely.
3. Tighten locking disk ③.
4. With tractor at half throttle, adjust flow-control valve
   on tractor so openers raise and lower at a
   reasonable speed. Keep tractor at one-half throttle
   for remaining steps.

![Faster opener raise/lower increases potential for oil over-heating, wear and tractor damage.](image)

5. Engage tractor hydraulics and lower openers. Lock
   hydraulic lever on tractor for continuous operation.
6. Release locking disks ③ and ⑤. Adjust
   pressure-control valve ② knob ⑥ for opener down
   pressure so gauge ⑦ is at 600 psi.
7. While watching gauge ⑦, slowly turn knob ④ on
   bypass valve ① counterclockwise. Adjust bypass
   knob ④ just until needle on gauge ⑦ begins to move
down from 600 psi. Use locking disk ③ to lock
   bypass valve at this setting. (See also note below.)
8. Adjust pressure-control valve to desired opener
down pressure per *Hydraulic Down Pressure* on
   page 54. Tighten locking disks ③ and ⑤.

![The higher the bypass pressure, the greater the potential for oil over-heating and tractor damage.](image)

While 600 psi is a good starting point for setting the bypass valve, if you consistently operate the planter with low opener down pressure you can set the bypass valve below 600 psi. If you consistently operate the planter with very high opener down pressure, you may need a bypass-valve setting above 600 psi.
LS Closed/PFC Down Pressure (S/N A1025S+)

For (S/N A1007S to A1024S) and (S/N A1006S-)

Tractors with Load Sensing Closed Center Hydraulics (LS Closed) or Pressure Flow Compensating (PFC) Systems

Refer to Figure 166

**NOTICE**

*Failure to use the bypass valve on load-sensing tractors may cause major tractor damage.*

1. Release locking disk ③.
2. Close bypass valve ① for no oil flow by turning knob ④ on valve clockwise completely.
3. Tighten locking disk ③.
4. With tractor at half throttle, adjust flow-control valve on tractor so openers raise and lower at a reasonable speed. Keep tractor at one-half throttle for remaining steps.

.append

Faster opener raise/lower increases potential for oil over-heating, wear and tractor damage.
5. Engage tractor hydraulics and lower openers. Lock hydraulic lever on tractor for continuous operation.
6. Release locking disks ③ and ⑤. Adjust pressure-control valve ② knob ⑤ for opener down pressure so gauge ⑦ is at 600 psi.
7. While watching gauge ⑦, slowly turn knob ③ on bypass valve ① counterclockwise. Adjust bypass knob ④ just until needle on gauge ⑦ begins to move down from 600 psi. Use locking disk ③ to lock bypass valve at this setting. (See also note below.)
8. Adjust pressure-control valve knob ⑤ to desired opener down pressure per “Hydraulic Down Pressure” on page 54. Tighten locking disks ③ and ⑤.

append

The higher the bypass pressure, the greater the potential for oil over-heating and tractor damage. At the same time, for proper opener operation the bypass valve must be set at least 300 psi above the opener down-pressure setting when the tractor is at one-half throttle. Therefore, you should set the bypass valve as low as possible while staying at least 300 psi above the opener down pressure setting.

While 600 psi is a good starting point for setting the bypass valve, if you consistently operate the planter with low opener down pressure you can set the bypass valve below 600 psi. If you consistently operate the planter with very high opener down pressure, you may need a bypass-valve setting above 600 psi.
Hydraulic Bleeding (S/N A1006S-)

Re-phase Lift Cylinders

Applies only to planters (S/N A1006S-) with rephasing double-acting cylinders. Single-acting and parallel-plumbed double-acting cylinders on later planters never require rephasing.

In typical use during a single planting operation, it is normal for the lift cylinders to get out of phase, resulting in uneven raising and lowering of the 3PYP.

Every 8- to 10 passes, re-phase the cylinders with this procedure:

1. Raise the planter completely, and hold the hydraulic lever or switch in Extend for several seconds after the planter reaches full elevation, or until all cylinders are fully extended.
2. When all cylinders are fully extended, momentarily reverse (Retract) the control to lower the planter 1/2 inch.

Lift Bleed (S/N A1006S-)

If re-phasing does not restore proper operation, bleed the system as follows:

3. Loosen the JIC fitting at the base end (top) of the left lift cylinder.
4. Extend the lift circuit until fluid appears at the loosened fitting. Set control lever to neutral and secure the fitting.
5. Loosen the JIC fitting at the base end (top) of the right lift cylinder.
6. Extend the lift circuit until fluid appears at the loosened fitting. Set control lever to neutral and secure the fitting.
7. Retract the circuit. Set control lever to neutral.
8. Disconnect both lift cylinder rod ends.
9. Extend the lift circuit until both cylinders are fully extended.
10. Loosen the JIC fitting (2) at the rod (bottom) end of the right lift cylinder.
11. Retract the circuit until fluid appears at the loosened fitting.
12. Set circuit control to neutral and secure fitting.
13. Re-pin rod ends.
14. Unless it is suspected that a large amount of air is in the line between the cylinders, rely on the normal re-phasing operation to purge it. Otherwise...
15. Loosen the JIC fitting at the base (top) end of the right cylinder (2).
16. Extend lift circuit until fluid appears.
17. Set circuit to neutral and secure fitting.
18. Extend and retract circuit several times.

Figure 167
Re-phasing Lift Bleed
Bleeding Wing Flex Hydraulics

*Refer to Figure 134 and Figure 135*

1. Consult the Parts Manual for the appropriate flex circuit hydraulic diagram for your planter.
2. Check that tractor hydraulic reservoir is full. Set hydraulics for low flow rate.
3. Set circuit to Retract and retract cylinders until they stop.
4. Set circuit to neutral.
5. Loosen JIC fitting at right cylinder, base end ①:
6. Set circuit to Extend until fluid appears.
7. Neutralize circuit and secure JIC fitting.
8. Set circuit to Extend until rods extend to stop.
9. Neutralize circuit and loosen JIC fitting at left cylinder, rod end ②:
10. Set circuit to Retract until fluid appears.
11. Neutralize circuit and secure JIC fitting.
12. Extend and retract circuit several times.

Bleeding Wing Fold Cylinder Hydraulics

Normally the fold hydraulics are bled at the factory before shipping, and bleeding should not be required other than to fold fully and hold lever on for one minute or until all cylinders reach the end of their stroke.

**CAUTION**

*Do not unfold planter if significant bleeding is necessary. It is not safe to unfold with air in the fold system. If significant air is suspected, skip step 5.*

1. Consult appropriate flex circuit hydraulic diagram for your planter.
2. Check that tractor hydraulic reservoir is full.
3. Unfold the wings. See "Unfolding The 3PYP" on page 29. If the planter is equipped with markers, leave the marker switches Off during this bleed.
4. Set hydraulics for low flow rate. Disconnect the rod ends ③ of both wing fold cylinders, so that they may extend without moving the wings.
5. Retract the wing fold circuit.
6. Loosen the JIC fittings at both wing fold cylinder base ends ④.
7. Set wing fold circuit to Extend until fluid emerges.
8. Neutralize the circuit and secure the fittings.
9. Extend the wing fold rods.
10. Loosen the JIC fittings at both wing fold cylinder rod ends ③.
11. Set wing fold circuit to Retract until fluid emerges.
12. Neutralize the circuit and secure the fittings.
13. Re-attach the rod ends to the wings.
14. Fold and unfold wings several times.

**Lift System (S/N A1006S- and A1007S through A1024S)**

Rephasing applies only to planters (S/N A1006S-) with rephasing double-acting cylinders. Single-acting and parallel-plumbed double-acting cylinders on later planters never require rephasing.

In typical use during a single planting operation, it is normal for the lift cylinders to get out of phase, resulting in uneven raising and lowering of the 3PYP.

Every 8- to 10 passes, re-phase the cylinders with this procedure:

1. Raise the planter completely, and hold the hydraulic lever or switch in Extend for several seconds after the planter reaches full elevation, or until all cylinders are fully extended.
2. When all cylinders are fully extended, momentarily reverse (Retract) the control to lower the planter 1/2 inch.

**Lift Bleed (S/N A1007S through A1023S)**

If your planter is (S/N A1006S-), skip to step 7.

3. Loosen the JIC fitting at the base end ① (top) of the left lift cylinder.
4. Extend the lift circuit until fluid appears at the loosened fitting. Set control lever to neutral and secure the fitting.
5. Loosen the JIC fitting at the base end ② (top) of the right lift cylinder.
6. Extend the lift circuit until fluid appears at the loosened fitting. Set control lever to neutral and secure the fitting.
Lift Bleed (S/N A1006S-)
7. Loosen the JIC fitting ① at the base end (top) of the left lift cylinder.
8. Extend the lift circuit until fluid appears at the loosened fitting. Set control lever to neutral and secure the fitting.
9. Retract the circuit. Set control lever to neutral.
10. Disconnect both lift cylinder rod ends.
11. Extend the lift circuit until both cylinders are fully extended.
12. Loosen the JIC fitting ② at the rod (bottom) end of the right lift cylinder.
13. Retract the circuit until fluid appears at the loosened fitting.
14. Set circuit control to neutral and secure fitting.
15. Re-pin rod ends.
16. Unless it is suspected that a large amount of air is in the line between the cylinders, rely on the normal re-phasing operation to purge it. Otherwise...
17. Loosen the JIC fitting at the base (top) end of the right cylinder ③.
18. Extend lift circuit until fluid appears.
19. Set circuit to neutral and secure fitting.
20. Extend and retract circuit several times.

Bleeding Wing Flex Hydraulics
Refer to Figure 134 and Figure 135
1. Consult appropriate flex circuit hydraulic diagram for your planter (see Parts Manual).
2. Check that tractor hydraulic reservoir is full. Set hydraulics for low flow rate.
3. Set circuit to Retract and retract cylinders until they stop.
4. Set circuit to neutral.
5. Loosen JIC fitting at right cylinder, base end ①.
6. Set circuit to Extend until fluid appears.
7. Neutralize circuit and secure JIC fitting.
8. Set circuit to Extend until rods extend to stop.
9. Neutralize circuit and loosen JIC fitting at left cylinder, rod end ②.
10. Set circuit to Retract until fluid appears.
11. Neutralize circuit and secure JIC fitting.
12. Extend and retract circuit several times.
Bleeding Wing Fold Cylinder Hydraulics

Normally the fold hydraulics are bled at the factory before shipping, and bleeding should not be required other than to fold fully and hold lever on for one minute or until all cylinders reach the end of their stroke.

**CAUTION**

*Do not unfold planter if significant bleeding is necessary. It is not safe to unfold with air in the fold system. If significant air is suspected, skip step 5.*

1. Consult appropriate flex circuit hydraulic diagram for your planter:
   - “Wing Fold without Markers” on page 128
   - “Wing Fold with Markers” on page 129
   (both partially repeated here for reference)
2. Check that tractor hydraulic reservoir is full.
3. Unfold the wings. See “Unfolding The 3PYP” on page 29 If the planter is equipped with markers, leave the marker switches Off during this bleed.
4. Set hydraulics for low flow rate. Disconnect the rod ends of both wing fold cylinders, so that they may extend without moving the wings.
5. Retract the wing fold circuit.
6. Loosen the JIC fittings at both wing fold cylinder base ends.
7. Set wing fold circuit to Extend until fluid emerges.
8. Neutralize the circuit and secure the fittings.
9. Extend the wing fold rods.
10. Loosen the JIC fittings at both wing fold cylinder rod ends.
11. Set wing fold circuit to Retract until fluid emerges.
12. Neutralize the circuit and secure the fittings.
13. Re-attach the rod ends to the wings.
14. Fold and unfold wings several times.
Appendix R - Row-Pro™

Preparation and Setup

Row-Pro™ Setup (Option)

The factory default setting for down-force is likely to differ from that required by your next field conditions. Before modifying the monitor setting for down-force, determine what actual down force is ideal for the initial use of the planter. One method of determining an initial setting involves operating in the field (without seeding).

1. Set planting depth at T-handles (page 69).
2. Review unit-mount coulter depth relative to opener disc. Adjust as needed (page 68).
3. Start with the row unit down pressure springs in the lowest, or second-lowest notch (page 64).

Adjustment to the spring pressure may need to be made if the depth is reset or the closing wheel down pressure is adjusted.

4. Operate in the field for a short distance.
5. Evaluate the seed trench (page 63).
6. Adjust the springs until depth and closure are ideal. If the ideal setting seems to be in between two notch values, use the higher setting. Rows in wheel tracks may be higher still.
7. Engage the Row-Pro™ system. Set the initial target weight at 80 pounds.
8. Operate in the field. Evaluate furrow and closing. Adjust Row-Pro™ force setting for optimal results.
9. When verifying the final setting, and when planting, watch for Unable to Control alarms, which may indicate that the cams are a notch or more too high or too low.

If the IntelliAg® alarm indicates a value too high, reduce spring pressure. If the IntelliAg® alarm indicates a value too low, increase spring pressure.

The actual target rate is going to be different depending on the field conditions, soil type and other factors. The best way to gauge where you want the setting is to operate the system for a short time then go behind the planter and check the furrow.

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a. Optionally operate the Row-Pro™ system in Monitor Only mode, and note the forces reported.
Operating Instructions

*Refer to Figure 178*

Row-Pro™ is a factory installed option for implements with 25-series openers that are equipped with DICKEY-john® IntelliAg®. It helps the spring down force system to maintain a user-determined, ideal weight for the side depth gauge wheels. Once the springs are set, Row-Pro™ pneumatically increases/decreases pressure on the openers.

The row units are already getting their down pressure from the springs on the parallel arms. Row-Pro only acts to vary that pressure as needed to maintain consistency in different soil conditions.

There is one cylinder ① for each row located between the parallel arms. Based on loading on the side depth wheels, Row-Pro™ adjusts air pressure in the air cylinders.

*Refer to Figure 179*

There is one valve set per opener section, located in the center of the section. It allows each section to be controlled independently.

For twin row there are two valve sets ② per section: one for the front openers and one for the rear openers.
Row-Pro™ Components

Refer to Figure 180 and Figure 181

The main systems of Row-Pro™ consist of:

1. An air compressor system: one 12VDC air compressor (11) with air tank (12), two extension cables (13), and one fuse assembly (14).

2. A load sensing system: DPLCM (Down Pressure Load Cell Module) (15) and the load cells (16).

3. An adjusting system: valves (17) and air cylinders (18).

Load Cell, DPLCM and Valves

The DPLCM (15) and valves (17) are mounted together on a plate and are connected to the DICKEY-john® Row-Pro™ wiring harness (18).

Two leads on the Row-Pro™ harness each connect to a load cell (16) which is located in the opener body (see fig.162). Four leads connect to the valve sets. There is one pair (one air intake, one exhaust) for each valve.

For single row planters:
There is one load cell and one valve set per each opener section located at mid section.

For twin row planters:
There are two load cells and two valve sets per each opener section located on the long and short center row unit of the section.

The Row-Pro™ harness connects to the planter’s CANbus at connector ends (20).

The load cell provides feedback so the system can maintain the target pressures.

The DPLCM uses the readings from the load cell to regulate the air valves in order to increase or decrease pressure in the air cylinders.
Row-Pro™ Air Compressor System

Row-Pro™ Air Compressor

Refer to Figure 182

The 12VDC compressor requires both an electrical connection and a mounting location. It should be mounted in a location on the tractor or planter where most convenient. Mount where cool clean air can get to it. The battery connection is equipped with one large 60 amp spade fuse (automotive type).

If your tractor has an on-board engine driven compressor capable of 150 psi, it can be used instead of the one supplied with the planter. Hook the on-board compressor to the air tank with lines provided.

The air filter should be placed in the tractor cab where it can pull clean air from the cab. The remote air filter line should be as short as possible.

The air compressor pressurizes the air tank reservoir.

Row-Pro™ Air Tank

Refer to Figure 183

An air tank is provided and mounted on the wing. Open the air tank petcock once daily to drain water accumulation.

The air tank is used in conjunction with the air valves to maintain a set pressure value for the air cylinders.

Air valves are used to increase or decrease the amount of air provided to the air cylinders.

Row-Pro™ Air Tank Lines

Refer to Figure 184

The air tank has two lines. A 3/8 inch line attaches the compressor to the air tank. A 1/8 inch line splits at a T-junction and goes to the valves while the remaining end attaches to the compressor plate where it activates the pressure switches.

If an on-board compressor is used, plug/bypass the pressure switch branch.
Row-Pro™ Air Pressure Gauge

Refer to Figure 185

Row-Pro™ is designed to run at 150 psi. When the psi drops to 135 the compressor engages and builds back up to 150 psi. Duty cycle varies based on air usage.

Check for Air Leaks

Before going to the field check for air leaks.

1. Turn the compressor on to pressure up the primary system until it automatically shuts off. If the system loses pressure, check for leaks.

2. Use the Leak Test mode to cycle through the sections and check for leaks.
Row-Pro™ Adjustments

Refer to Figure 186

Load Cell Reading

These readings are displayed and adjusted from the IntelliAg® seed monitor console.

**Control Mode**: Auto is the normal running mode. Manual is used to control the valves only when the operator touches the increase or decrease icon on the work screen.

**Monitor Only**: This screen disables control, but still reports sensor feedback. From there, press the Down Pressure Diagnostic key and then press the Float Mode ON button to release all of the air from the system. Next, press the Float Mode OFF button. Stay on the Diagnostic screen and make a planting pass. Note the pressure displayed on the Diagnostic screen and then evaluate the seed trench. If the seed trench results are acceptable, use the displayed pressure as your target rate.

**Front-Rear Linked**: “Enabled” links the front and rear row units so that the same amount of pressure increase/decrease set at the screen is applied to front/rear row units. When “Disabled” - front/rear row units are not linked. Two sets of buttons appear on the screen that allow for adjustments of front and rear rates independently.

**Target Rate**: This is the desired down pressure on the side depth wheels. The target rate to be entered is the set rate (pounds) of the down force to determine how much pressure is applied. The system monitors and adjusts pressure to meet the defined rate set at this screen.

Pressure displayed on screen and target pressure both refer to the amount of weight carried by the side depth gauge wheels, and not overall row unit down pressure.

**Inc/Dec**: Sets the amount that the Target Rate is changed with each key press during planting operations.
**Sensitivity Adjust:** Determines how responsive the Controller is to input from the DPLCM. The range is from -10 to +10. Zero (0) is the average setting. Going below 0 decreases the reaction time. Going above 0 increases the reaction time.

**Disable Down Pressure Modules:** Modules interfacing with feedback sensors can be independently disabled so that down pressure to rear and/or front row units are not monitored or controlled. Modules that have been disabled are ignored by the system and will not report down pressure data or react to soil conditions.

(The IntelliAg® screen shows both row modules enabled ©. An unchecked box indicates disabled.)

If a section fails, that individual section can be turned on and off to locate the problem.

Refer to Figure 189

**Reset Offset Value:** Resetting Offset Values clears previous down pressure readings and resets values to zero.

1. At Main WORK SCRN press NEXT PAGE button.
2. Press MODULE CFG button.
3. At Module Configuration screen, press DPRESS SET.
4. At the Down Pressure Setting screen press OK to clear values.

**IMPORTANT:** The implement must be lifted and the implement lift switch in the up state before the OK button appears and values can be cleared.

- Make sure side depth wheels are all in the lowered position so there is no tension on the load cell. Values other than OFF or 1-6 mV may indicate stuck side depth wheels. If the reading is 0 mV, there may be a problem with load cell grounding. See “Row-Pro™ Troubleshooting”, page 178.

- **Initial Setup:** Zero out the load cell reading.
Row-Pro™ Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressor won’t turn on</td>
<td>Switch turned “off”.</td>
<td>Turn switch “on”.</td>
</tr>
<tr>
<td></td>
<td>Poor electrical connection.</td>
<td>Clean connections and reassemble.</td>
</tr>
<tr>
<td></td>
<td>Fuse blown.</td>
<td>Replace fuse (60A).</td>
</tr>
<tr>
<td>Compressor won’t turn off (runs continuously)</td>
<td>Section opener valves are installed in reverse.</td>
<td>Install opener valves correctly.</td>
</tr>
<tr>
<td></td>
<td>Stuck pressure switch(es).</td>
<td>Replace pressure switch(es).</td>
</tr>
<tr>
<td>Compressor cycles more than normal</td>
<td>Water build-up in air tank.</td>
<td>Drain tank to keep reserve volume at proper size.</td>
</tr>
<tr>
<td>Erratic down pressure reading</td>
<td>Poor electrical connection to load cell.</td>
<td>Clean connection and reassemble.</td>
</tr>
<tr>
<td></td>
<td>Load cell malfunction.</td>
<td>Replace load cell.</td>
</tr>
<tr>
<td>Persistent “high” alarm</td>
<td>Row unit spring tension too high.</td>
<td>Lower spring tension.</td>
</tr>
<tr>
<td></td>
<td>Air leak preventing cylinders from holding pressure.</td>
<td>Fix leak.</td>
</tr>
<tr>
<td>Persistent “low” alarm</td>
<td>Row unit spring tension too low.</td>
<td>Raise spring tension.</td>
</tr>
<tr>
<td></td>
<td>Air leak preventing cylinders from holding pressure.</td>
<td>Fix leak.</td>
</tr>
<tr>
<td>System won’t hold air pressure</td>
<td>Pinched/torn hose.</td>
<td>Replace hose.</td>
</tr>
<tr>
<td></td>
<td>Hose not pushed into quick connect fitting far enough.</td>
<td>Push hose in until fully seated.</td>
</tr>
<tr>
<td>Voltage reads “0” on monitor, or is unaffected by load on load cell</td>
<td>Signal wire grounded to frame.</td>
<td>Inspect for pinched or broken wiring harness between the load cell and DPLCM. Replace damaged wiring.</td>
</tr>
</tbody>
</table>

Row-Pro™ Maintenance

Check the tractor cab air filter as per manufacturer recommendation.
2-Year Limited Warranty (Yield-Pro Planters)

Great Plains Mfg., Inc. warrants to the original purchaser that this seeding equipment will be free from defects in material and workmanship for a period of one year from the original purchase date when used as intended under normal service conditions for personal use. This Warranty is limited to the replacement of any defective part by Great Plains Manufacturing and the installation by the dealer of any such replacement part during the first year of operation. Second year warranty covers parts only, excluding general ground engaging parts and labor. Items covered under the second year warranty are as follows (parts only): hitch and main frame, gauge wheels, markers, air box/ manifold, Y- splitter tubes, fan and housing, row unit weldments, unit mounted attachments and frame mounted attachments. Great Plains Mfg., Inc. reserves the right to inspect any equipment or part which are claimed to have been defective in material or workmanship. This Warranty does not apply to any part or product which, in the judgment of Great Plains Mfg., Inc., shall have been misused or damaged by accident; or, lack of normal maintenance or care; or, which has been repaired or altered in a way which adversely affect its performance or reliability; or, which has been used for a purpose for which the product is not designed. This Warranty shall not apply if the product is towed at a speed in excess of 20 miles per hour. Soils containing rocks, stumps or other obstructions may void the warranty in its entirety.

Claims under this Warranty must be made to the dealer which originally sold the unit and all warranty adjustments must be made through such dealer. Great Plains Mfg., Inc. reserves the right to make changes in materials or design of the product at any time without notice. This Warranty shall not be interpreted to render Great Plains Mfg., Inc. liable for damages of any kind, direct, consequential, or contingent to property. Furthermore, Great Plains Mfg., Inc. shall not be liable for damages resulting from any cause beyond its control. This Warranty does not extend to loss of crop, losses caused by harvest delays or any expense or loss of labor, supplies, rental machinery, or for any other reason.

No other warranty of any kind whatsoever, express or implied, is made with respect to this sale; and all implied warranties of merchantability and fitness for a particular purpose which exceed the obligations set forth in this written warranty are hereby disclaimed and excluded from this sale.

This Warranty is not valid unless registered with Great Plains Mfg., Inc. within 10 days from the date of original date of purchase.

This Warranty does not cover damage caused by acts of God or accidents.

This Warranty does not cover units with excess use or units used in custom farming.

NOTE: Effective August 17, 2007; The Extended 2 Yr. Warranty covers only units utilizing these configurations: 1) Yield-Pro (YP) Frames, 2) 25 Series Row Units, and 3) Singulating Meters. All three criteria must be met to qualify for 2-Year Limited Warranty.
<table>
<thead>
<tr>
<th>Index</th>
<th>3PYP</th>
<th>Cover</th>
<th>Table of Contents</th>
<th>179</th>
</tr>
</thead>
</table>

**A**
- adjustment valve ........................................ 157. 161
- adjustments .................................................. 48
- air box ........................................................... 47
- Air Design .................................................... 147
- air release field kit ........................................ 120
- air system clean out ........................................ 88
- airbox operation .............................................. 36
- Air-Pro® ....................................................... 11
- amber reflector ................................................ 6
- automatic sequence valve .................................... 34
- A1006S ..................................................... 163. 167
- A1006S− ........................................ 102. 162. 164. 165. 168
- A1007S ..................................................... 161. 163. 164. 167
- A1007S+ .................................................. 102. 103
- A1024S .................................................... 102. 130
- A1024S− .................................................. 102. 130
- A1025S .................................................... 102. 131
- A1025S+ .................................................. 55. 128. 133. 134. 135...
- 158 ............................................................... 162. 163
- A1055S .......................................................... 131
- A1055S− .................................................. 108. 112. 113
- A1056S+ ................................................ 108. 113. 122
- A1056S+ ................................................ 108. 122
- A1056+ ..................................................... 112

**B**
- backing plate .................................................. 76. 77. 94
- backing up ..................................................... 28
- beds ............................................................... 19
- black ............................................................. 17
- blade, coulter .................................................. 68
- bleeding steering ............................................. 153
- bleeding hydraulics .......................................... 102. 103
- blocks, height adjusting ................................... 27
- block, brushless ............................................... 97
- blue ............................................................... 17. 18
- brush ............................................................. 76
- seed tube ........................................................ 125
- brushless block ................................................ 97
- bulk seed box .................................................. 38
- butterfly valve ................................................. 36. 58
- bypass valve ................................................... 157. 158. 161. 163. 164
- bystanders ..................................................... 2

**C**
- cab selector controls ......................................... 26
- cables ............................................................. 20
- cab, tractor ..................................................... 16. 148. 152
- Calibration ..................................................... 43. 154
- calibration steering ......................................... 40. 150. 153
- cam, row unit .................................................. 64
- capacities ....................................................... 126
- Captain .......................................................... 77
- carbide scraper ............................................... 147
- case drain ...................................................... 18
- case drain line ................................................ 36
- Case IH ....................................................... 14. 54. 149
- Case IH Magnum ............................................. 54
- Case IH MX .................................................. 125
- caster float ..................................................... 156
- caster lock ...................................................... 156
- CAUTION, defined ............................................ 11
- centering, press wheel ...................................... 80
- CFM (Clutch Folding Module) ................................ 26
- chain clip ....................................................... 92
- chain length, marker ........................................ 56
- chain maintenance ........................................... 92
- chain routing .................................................. 137
- chain, gauge wheel .......................................... 137
- chain, ground drive ......................................... 139
- chain, hydraulic drive ....................................... 140
- chain, meter drive ........................................... 73
- chain, transmission .......................................... 138
- checklists
  - air system .................................................. 44
  - electrical ................................................... 43
  - fertilizer .................................................... 44
  - field ........................................................... 43
  - gauge wheel planter drive ............................... 44
  - hydraulic planter drive .................................. 44
  - hydraulic system .......................................... 44
  - mechanical .................................................. 43
  - meters ....................................................... 45
  - pre-set up .................................................. 13. 148
  - pre-start ................................................... 22
  - row cleaners ............................................... 44
  - row units ................................................... 44
- chemical ....................................................... 93
- chemicals ..................................................... 2. 58. 77. 94
- children ....................................................... 2. 3
- circuit #1 ..................................................... 55
- clean finger pickup meter .................................. 88
- clean singulating meter .................................... 88
- clearance ...................................................... 126
- closed center ................................................ 54
- Closed Center hydraulics .................................... 157. 161
- clutch plate ................................................... 31
- clutch switch coverage .................................... 32
- clutches ......................................................... 31
- color code
  - switch box ................................................ 152
  - color code, hydraulic .................................... 17. 18
- connections, electrical ..................................... 16
- console steering ............................................. 152
- console, seed monitor ..................................... 148
- contact drive .................................................. 49
- contact, opener disk ....................................... 71
- contact, side depth wheel .................................. 70
- corn meter .................................................... 96
- cotton ......................................................... 116. 123
- coulter .......................................................... 62. 67. 68
- couler blades ................................................. 122
- coulers, UMC ................................................ 122
- CP18999-EPR, gasket ....................................... 60
- cushion, Skip Stop .......................................... 95
- customer service ............................................. 12
- cylinder symbols ............................................ 17

**D**
- DANGER, defined ............................................. 1
- daytime reflector ............................................ 6
- dealer ........................................................... 12
- decal replacement ............................................ 5
- decals ........................................................... 5
- caution read operator’s manual .................. 9. 10
- tires not a step ................................................ 9
- danger crushing Hazard ................................. 7
- warning electrocution hazard ......................... 7
- high pressure fluid hazard ......................... 7
- moving parts .................................................. 8
- overhead hazard ............................................ 8
- pinch/crush .................................................. 8
- pinch/shear hazard ........................................ 8
- speed ........................................................... 9
- definitions ...................................................... 11
- depth control mode ........................................ 19
- depth gauge wheels .......................................... 62
- depth wheel scrapers ....................................... 72
- DICKEY-john ................................................. 26. 30. 35. 117. 148
- digging .......................................................... 15
- disc-to-disc spacing ......................................... 71
- disk angle ...................................................... 56
- document family .............................................. 11
- door, meter clean-out ...................................... 88
- doubles ......................................................... 76
- down pressure system ........................................ 157. 161
- down pressure, press wheel ................................ 80
- down pressure, row unit .................................... 64
- down-force, row unit ....................................... 63
- down-stop block .............................................. 67
- draft control mode ........................................... 19
- drive coupler, row unit .................................... 65
- DRIVE ........................................................... 49
- DRIVING ......................................................... 49
- dual marker speed ........................................... 91
minimum weight ........................................... 126
models covered .......................................... 11
monitor active row pattern .................................. 65
monitor operation ........................................ 23
MX .................................................................. 14, 149
MB-1.25x14mm ........................................ 31
N
Note (defined) ............................................... 11
NPT (National Pipe Thread) ......................... 102
nuisance shears ........................................ 90
O
Open Center hydraulics .................................... 157, 161
opener ....................................................... 62
opener adjustments ....................................... 69
opener disk .................................................. 71
orange ....................................................... 18
ORB (O-Ring Boss) ...................................... 102
orifice plates ............................................... 59, 60, 120
out of phase ............................................... 165, 167
P
parallel arms .................................................. 57, 62
parking .......................................................... 46
parking stand ................................................. 30, 46
parking stands ............................................. 20
parking stand, pin storage .............................. 25
pass operation ............................................... 45
PC Closed ............................................... 157, 161, 162
PC (Pressure Compensating) ..................... 157, 161, 162
pads .......................................................... 77
PFC (Pressure Flow Compensating) ........... 158, ................................. 163, 164
pins, locking ............................................... 25
pins, seed box ............................................. 38
pin, lock-up ................................................. 66
pin, parking stand ........................................ 46
pin, walkboard ............................................ 38
pin, wing flex ............................................. 159
planting operation ........................................ 46
planting rate ............................................... 46
planting, ending ......................................... 45
planting, suspending .................................. 45
plow-angle
press wheel .................................................. 79
Population Max .......................................... 94
power-beyond-port ..................................... 18
Precision™ ............................................... 77
press wheel adjustment ................................ 79
press wheel centering .................................. 80
press wheels ............................................... 62, 125
pressure gauge ........................................... 61
priority flow hydraulic systems .................. 55
PROBOX ................................................... 38
protective clothing ........................................ 2
psi ............................................................. 126
PTO ........................................................... 117
pump drive rate .......................................... 59
Q
QD (Quick Disconnect) ................................ 102
Quick-Start Guide ....................................... 11
R
radar calibration .......................................... 149
raising/lowering .......................................... 23
range .......................................................... 49
RC (Row Cleaner) ...................................... 67
red reflector ............................................... 5
refectors ...................................................... 5
amber .......................................................... 6
daylight ..................................................... 6
red ............................................................. 5
SMV .......................................................... 5
relief valve ................................................ 61
remotes ...................................................... 18
repair parts ............................................... 12
re-phase .................................................. 165, 167
reverse ..................................................... 42
reverse steering .......................................... 125
riders ......................................................... 2
right-hand (defined) ..................................... 11
row cleaner .............................................. 62
row cleaner manual .................................... 67
row cleaners ............................................. 20, 67, 121
row mode spacer ........................................ 14
row shut-off ............................................... 65
row unit down pressure .............................. 63
row unit drive coupler ................................. 65
row unit lock-up ......................................... 66
row unit placement ...................................... 141
Row-Pro ................................................... 170
S
safety .......................................................... 1
safety decals ............................................... 5
safety information ....................................... 1
sampling ................................................... 46
scraper ..................................................... 147
scraper installation ...................................... 147
scrapers ................................................... 100
scrapers, depth wheel ................................ 72
scrapers, gauge wheel ................................. 124
screen sizes ............................................... 59
seed box pins ............................................. 38
seed delivery tube ...................................... 62
seed firmer ............................................... 62
seed firmer adjustments ............................. 78
seed firmers ............................................ 124
seed flap .................................................. 108
seed gate .................................................. 47
seed loading ............................................... 27
seed lubricants .......................................... 116, 121
seed meter ............................................... 62
seed meter setup ........................................ 72
seed meters ............................................... 123
seed monitor .............................................. 16
seed monitor console .................................. 148
seed treatment ........................................... 93, 94
seed tube brush ......................................... 125
seed wheels ............................................... 123
Seed-Lok .................................................. 62, 124
Seed-Lok® ............................................... 78, 147
semi-mounted ........................................... 15
sequence valve .......................................... 34, 91
sequence, raise/lower .................................. 23
serial number ............................................ 12
service ...................................................... 12
set screws .................................................. 91
shear bolt, marker ....................................... 56, 90
shims, depth gauge wheels ....................... 100
shim, hitch ............................................... 91
shutdown .................................................. 3
side depth wheels ....................................... 69
side wheels ............................................... 100
signals ...................................................... 3
singulating ............................................... 52
singulator plus ........................................... 123
Singulator Plus™ ....................................... 74
Skip Stop .................................................. 95
skips ......................................................... 76
slack ......................................................... 50, 92
slack, marker chain ..................................... 34
slack, top link ............................................ 15
slide gate .................................................. 37
slippage .................................................... 53, 64
SMV (Slow Moving Vehicle) ...................... 5
soybean ..................................................... 123
spacier blocks ............................................ 21, 160
spacier washers ......................................... 71
spacier, row mode ....................................... 14
spare shear bolts ....................................... 90
specifications ............................................. 126
speed readings .......................................... 149
speed, dual marker ..................................... 91
spreader ...................................................
spring, gauge wheel .................................... 52, 53
sprocket indexing ....................................... 78
sprocket selection ...................................... 49
stagger ..................................................... 78
stagger, press wheel .................................... 80
stations, row unit ....................................... 141
STEER ................................................... 43, 154
steering ..................................................... 16, 17, 18, 28, 42, 125
steering calibration ................................. 40, 150, 153
steering control hazard ............................. 27
steering errors .......................................... 86
steering switch .......................................... 152
storage .................................................... 3, 47
straight coulter blades ............................... 122
strainer ..................................................... 59
sunflower meter ......................................... 96
suspending planting ................................... 45

2019-10-24

Cover Table of Contents
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>401-312P</td>
<td>manual</td>
<td>11</td>
</tr>
<tr>
<td>401-312Q</td>
<td>manual</td>
<td>11</td>
</tr>
<tr>
<td>401-425A</td>
<td>manifold</td>
<td>120</td>
</tr>
<tr>
<td>401-508A</td>
<td>hopper</td>
<td>120</td>
</tr>
<tr>
<td>401-561A</td>
<td>steering</td>
<td>125</td>
</tr>
<tr>
<td>401-562A</td>
<td>steering</td>
<td>125</td>
</tr>
<tr>
<td>401-563A</td>
<td>steering</td>
<td>125</td>
</tr>
<tr>
<td>401-630H</td>
<td>spacer</td>
<td>14</td>
</tr>
<tr>
<td>401-647Q</td>
<td></td>
<td>152</td>
</tr>
<tr>
<td>401-939A</td>
<td>PTO</td>
<td>117</td>
</tr>
<tr>
<td>401-941A</td>
<td>PTO</td>
<td>117</td>
</tr>
<tr>
<td>401-943D</td>
<td>shim</td>
<td>91</td>
</tr>
<tr>
<td>402-520A</td>
<td>kit</td>
<td>147</td>
</tr>
<tr>
<td>403-118D</td>
<td>seed wheel</td>
<td>123</td>
</tr>
<tr>
<td>403-119D</td>
<td>seed wheel</td>
<td>123</td>
</tr>
<tr>
<td>403-120D</td>
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<td>123</td>
</tr>
<tr>
<td>403-122D</td>
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</tr>
<tr>
<td>403-141D</td>
<td>seed wheel</td>
<td>123</td>
</tr>
<tr>
<td>403-143K</td>
<td>hopper</td>
<td>120</td>
</tr>
<tr>
<td>403-156K</td>
<td>seed meter</td>
<td>123</td>
</tr>
<tr>
<td>403-158K</td>
<td>seed meter</td>
<td>123</td>
</tr>
<tr>
<td>403-160K</td>
<td>seed meter</td>
<td>123</td>
</tr>
<tr>
<td>403-162K</td>
<td>seed meter</td>
<td>123</td>
</tr>
<tr>
<td>404-093K</td>
<td>Seed-Lok</td>
<td>124</td>
</tr>
<tr>
<td>404-144D</td>
<td>scraper</td>
<td>124</td>
</tr>
<tr>
<td>404-145D</td>
<td>scraper</td>
<td>124</td>
</tr>
<tr>
<td>404-146D</td>
<td>scraper</td>
<td>124</td>
</tr>
<tr>
<td>407-422A</td>
<td>pump</td>
<td>61</td>
</tr>
<tr>
<td>411-015M</td>
<td>manual</td>
<td>117</td>
</tr>
<tr>
<td>411-449D</td>
<td>tube</td>
<td>14</td>
</tr>
<tr>
<td>411-448D</td>
<td>spacer</td>
<td>14</td>
</tr>
<tr>
<td>411-442D</td>
<td>spacer</td>
<td>14</td>
</tr>
<tr>
<td>411-449D</td>
<td>tube</td>
<td>14</td>
</tr>
<tr>
<td>4500 rpm</td>
<td></td>
<td>36, 58</td>
</tr>
<tr>
<td>5 kph</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td>600 psi</td>
<td></td>
<td>54, 58, 158, 163, 164</td>
</tr>
<tr>
<td>7.6-145</td>
<td>6 Ply Lug</td>
<td>126</td>
</tr>
<tr>
<td>8.0 mph</td>
<td></td>
<td>42</td>
</tr>
<tr>
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