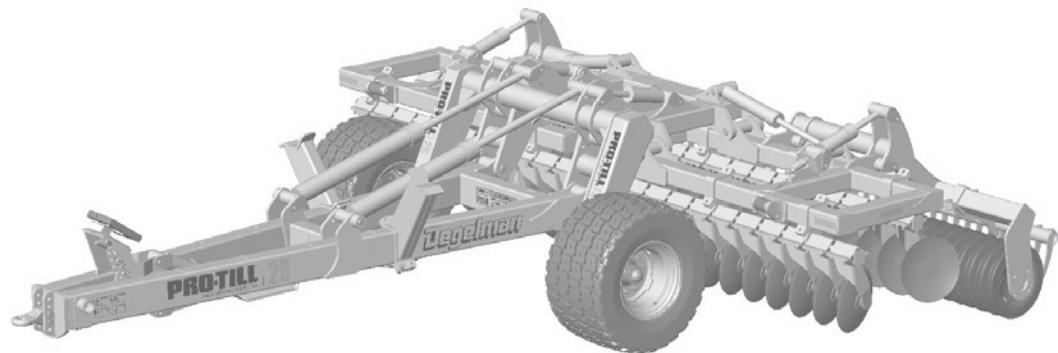


Degelman

**OPERATOR & PARTS
MANUAL**

PRO-TILL®
HIGH PERFORMANCE TILLAGE



143354 v1.1

DEGELMAN INDUSTRIES LTD.
BOX 830-272 INDUSTRIAL DRIVE,
REGINA, SK, CANADA, S4P 3B1
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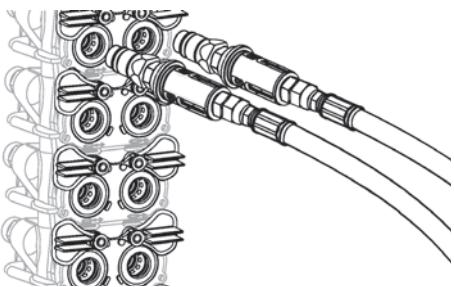
PRO-TILL® 20
HIGH PERFORMANCE TILLAGE

PRO-TILL® 26
HIGH PERFORMANCE TILLAGE

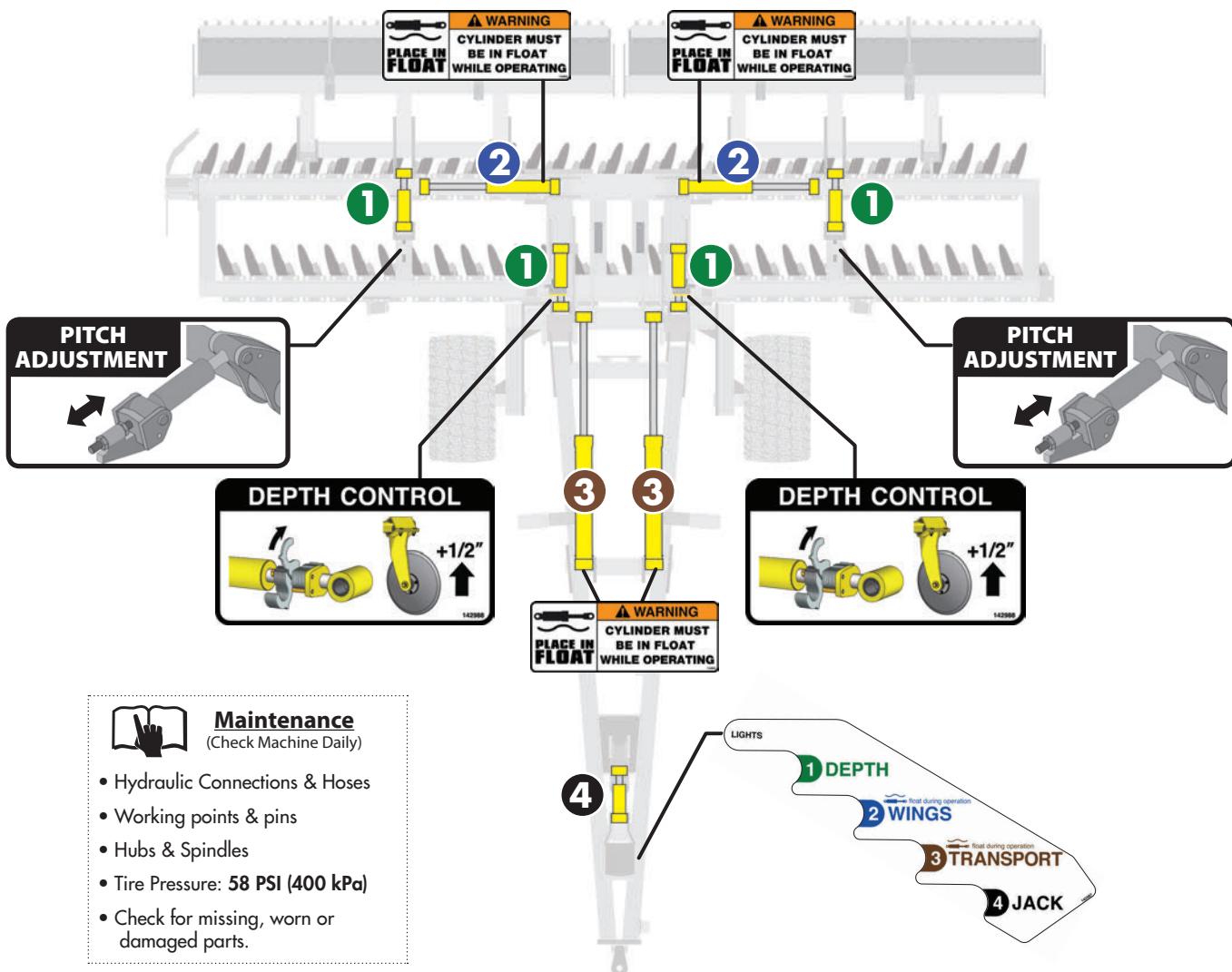
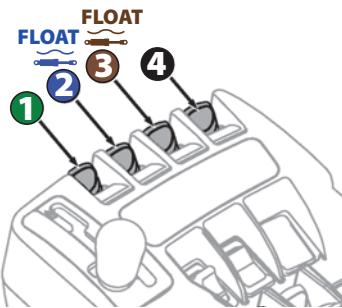
PRO-TILL QUICK-START GUIDE*

Degelman

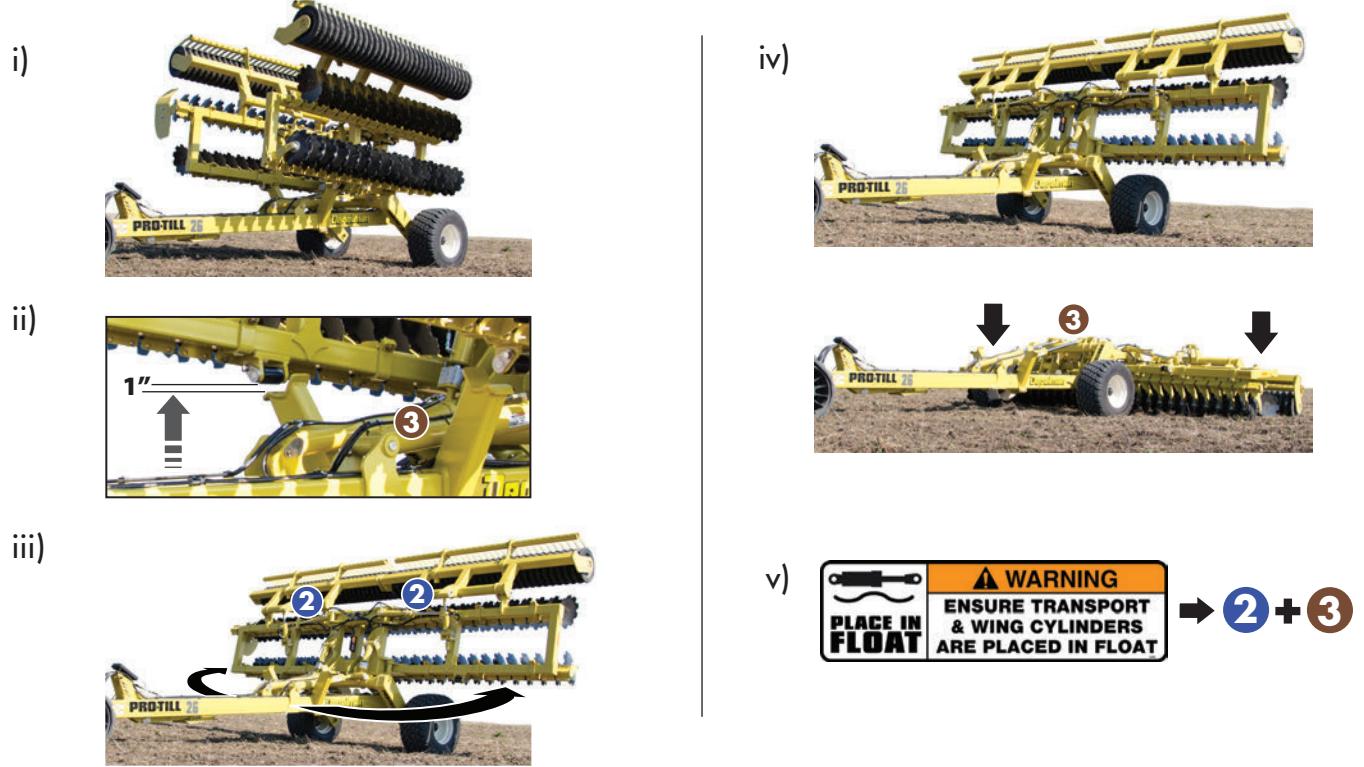
A Connect Hydraulics



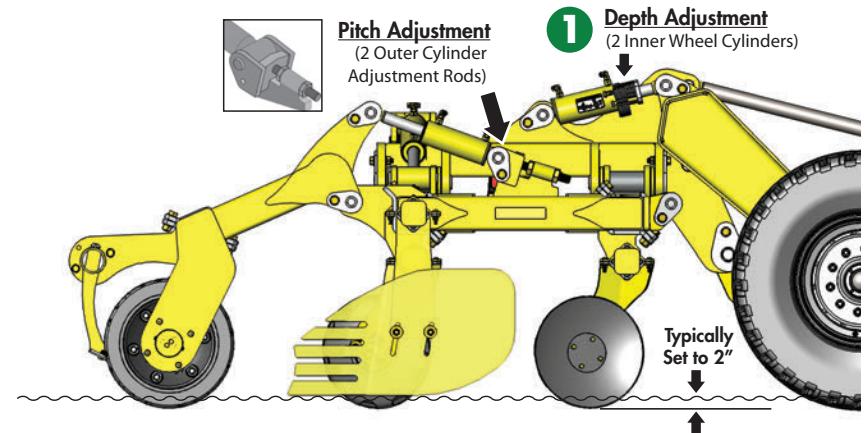
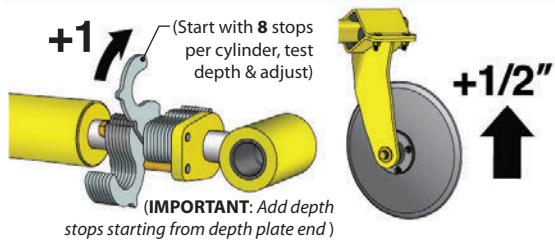
- 1 DEPTH
- 2 WINGS
- 3 TRANSPORT
- 4 JACK



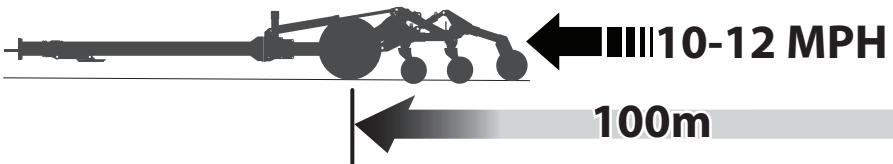
B Put in Field Position



C Set Cutting Depth

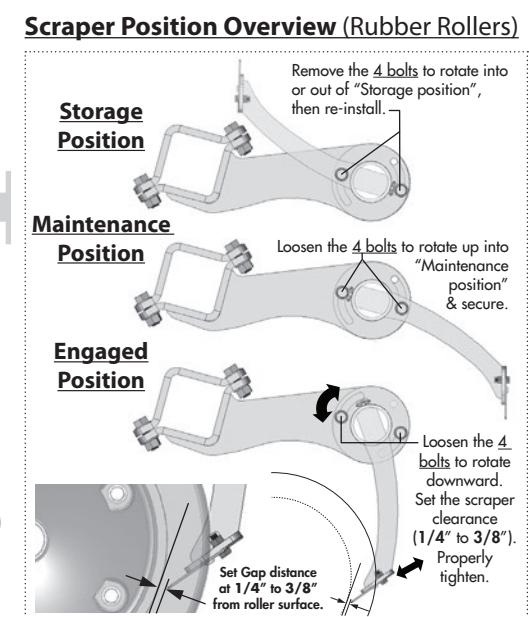


D Test. Check. Adjust.



E Raise ① for Headland Turns.

F MAX Transport Speed: 40 km/h (25 MPH)



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PRO-TILL®

HIGH PERFORMANCE TILLAGE

* Reference Sheet Quick-Start Guide

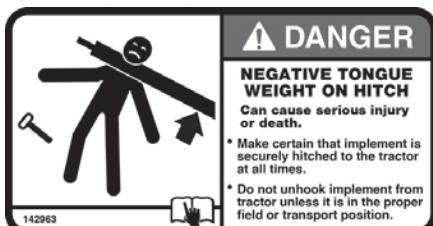
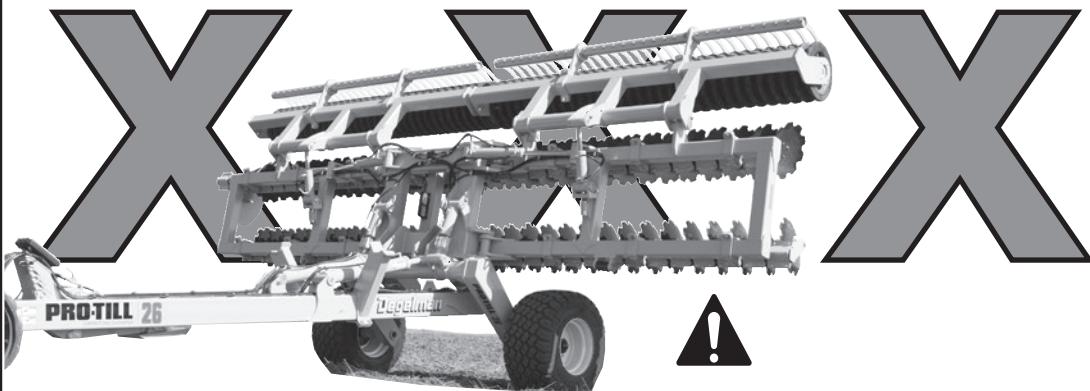
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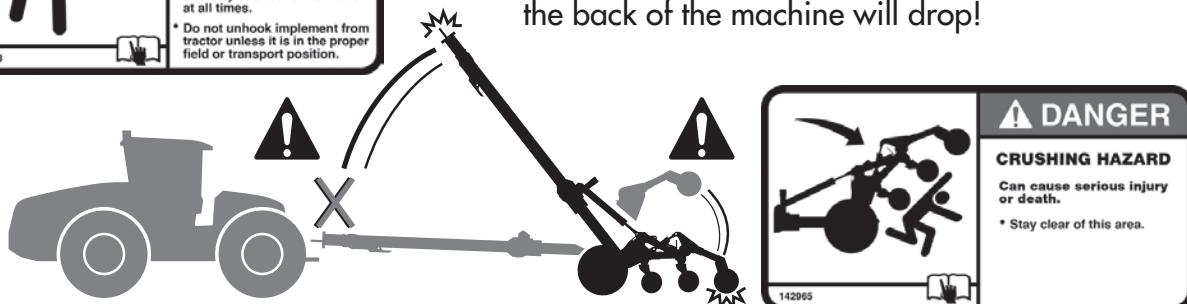
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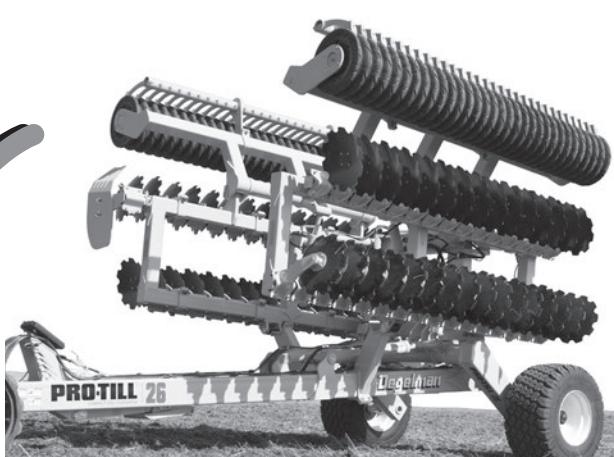
**! DANGER - NEVER PARK, UN-HOOK, or SERVICE Pro-Till with REAR WINGS RAISED**

! DANGER

If the front hitch becomes disconnected in this position the front hitch will raise suddenly and the back of the machine will drop!

**Changing Discs and Servicing**

The best position to safely change or service the discs on the Pro-Till is when it is secured in the winged forward transport position.



Introduction

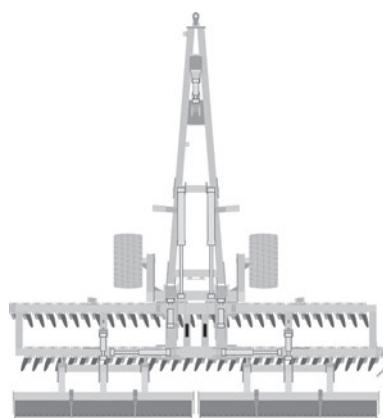
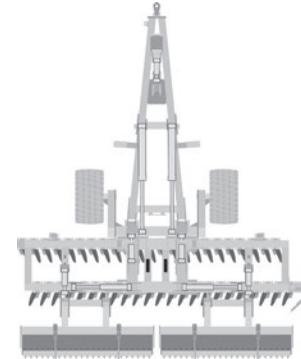
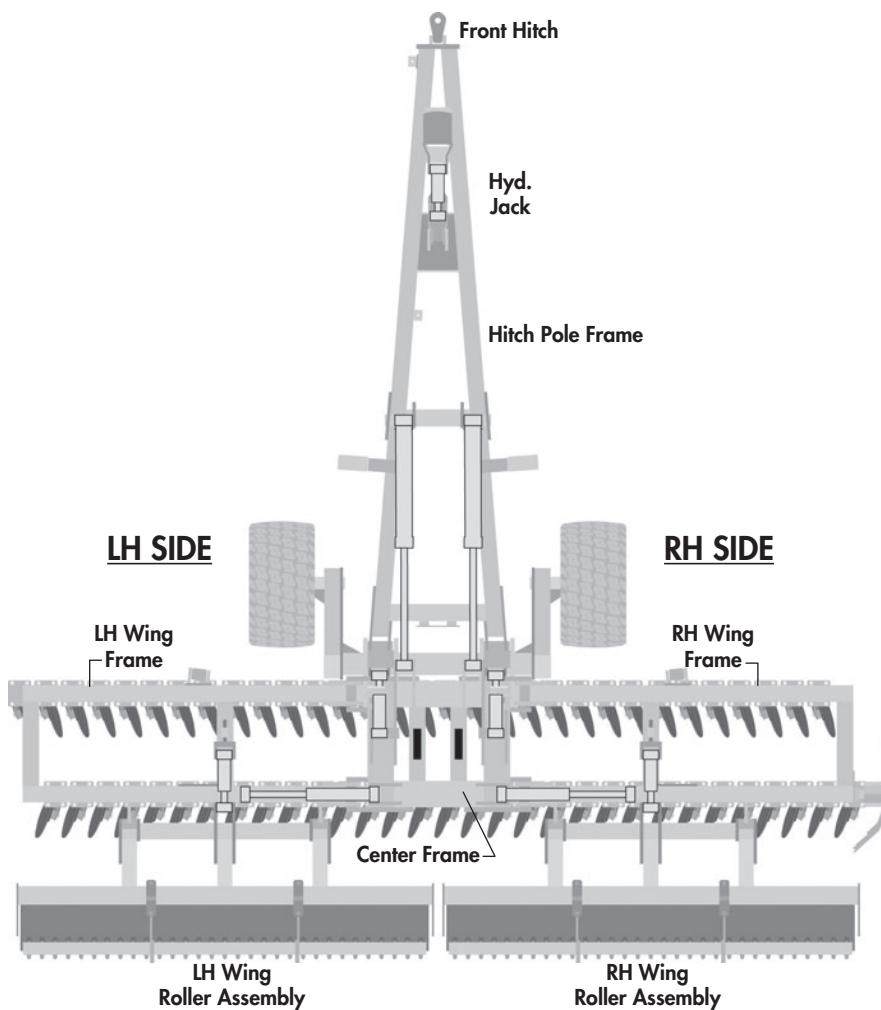


CONGRATULATIONS on your choice of a Degelman PRO-TILL to complement your farming operation. It has been designed and manufactured to meet the needs of a discerning agricultural market. Degelman PRO-TILL shreds heavy fall residue, opens up spring fields, levels ruts, destroys clods and produces an absolutely perfect seed bed. Degelman PRO-TILL is the fastest and most versatile piece of tillage equipment you will ever own. Use this manual as your first source of information about this machine.

TO THE NEW OPERATOR OR OWNER - Safe, efficient and trouble free operation of your Degelman PRO-TILL requires that you and anyone else who will be operating or maintaining it, read and understand the Safety, Operation, Maintenance and Troubleshooting information contained within this manual.

By following the operating instructions in conjunction with a good maintenance program your machine will provide many years of trouble-free service. Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Degelman Dealer if you need assistance, information, or additional copies of the manual.

OPERATOR ORIENTATION - The directions left, right, front and rear, as mentioned throughout the manual, are as seen from the tractor drivers' seat and facing in the direction of travel.



Why is SAFETY important to YOU?

3 BIG Reasons:

- Accidents Can Disable and Kill
- Accidents Are Costly
- Accidents Can Be Avoided



SAFETY ALERT SYMBOL

The **Safety Alert Symbol** identifies important safety messages applied to the PRO-TILL and in this manual. When you see this symbol, be alert to the possibility of **injury or death**. Follow the instructions provided on the safety messages.

The **Safety Alert Symbol** means:
ATTENTION!
BECOME ALERT!
YOUR SAFETY IS INVOLVED!

SIGNAL WORDS

Note the use of the Signal Words: **DANGER**, **WARNING**, and **CAUTION** with the safety messages. The appropriate Signal Word has been selected using the following guidelines:



DANGER

DANGER: Indicates an imminently hazardous situation that, if not avoided, **WILL** result in death or serious injury if proper precautions are not taken.



WARNING

WARNING: Indicates a potentially hazardous situation that, if not avoided, **COULD** result in death or serious injury if proper precautions are not taken.



CAUTION

CAUTION: Indicates a potentially hazardous situation that, if not avoided, **MAY** result in minor or moderate injury if proper practices are not taken, or, serves as a reminder to follow appropriate safety practices.

Safety

SAFETY

YOU are responsible for the safe operation and maintenance of your Degelman PRO-TILL.

YOU must ensure that you and anyone else who is going to operate, maintain or work around the PRO-TILL be familiar with the operating and maintenance procedures and related **SAFETY** information contained in this manual.

This manual will take you step-by-step through your working day and alerts you to all good safety practices that should be adhered to while operating this equipment.

Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this equipment is familiar with the recommended operating and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

- PRO-TILL owners must give operating instructions to operators or employees before allowing them to operate the PRO-TILL, and at least annually thereafter per OSHA regulation 1928.51.
- The most important safety device on this equipment is a SAFE operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the manual and to follow these. All accidents can be avoided.
- A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death.
- Do not modify the equipment in any way. Unauthorized modification may impair the function and/or safety and could affect the life of the equipment.
- Think SAFETY! Work SAFELY!

GENERAL SAFETY

1. Read and understand the Operator's Manual and all safety signs before operating, maintaining or adjusting.



2. Install and properly secure all shields and guards before operating. Use hitch pin with a mechanical locking device.

3. Have a first-aid kit available for use should the need arise and know how to use it.

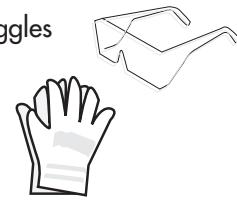


4. Have a fire extinguisher available for use should the need arise and know how to use it.



5. Wear appropriate protective gear. This list includes but is not limited to:

- A hard hat
- Protective shoes with slip resistant soles
- Protective glasses or goggles
- Heavy gloves
- Wet weather gear
- Hearing protection
- Respirator or filter mask



6. Clear the area of people, especially small children, and remove foreign objects from the machine before starting and operating.

7. Do not allow riders.

8. Stop tractor engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.

9. Review safety related items with all operators annually.

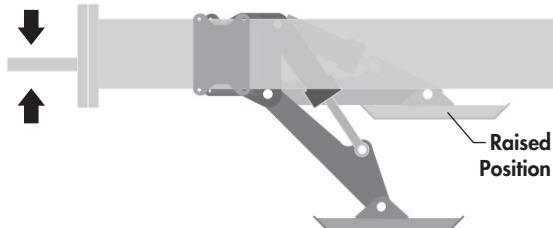
Hook-Up

HOOK-UP / UNHOOKING

The PRO-TILL should always be parked on a level, dry area that is free of debris and foreign objects. Follow this procedure to hook-up:

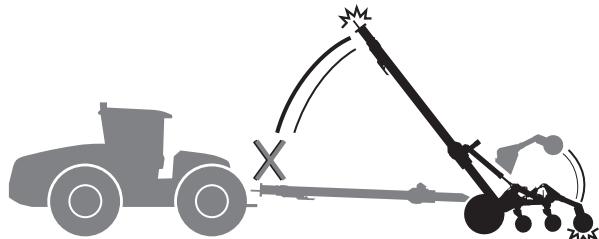
1. Clear the area of bystanders and remove foreign objects from the machine and working area.
2. Make sure there is enough room to back the tractor up to the trailer hitch.
3. Start the tractor and slowly back it up to the hitch point.
4. Connect the hydraulic.
 - Use a clean cloth or paper towel to clean the couplers on the ends of the hoses. Also clean the area around the couplers on the tractor. Remove the plastic plugs from the couplers and insert the male ends.
 - Be sure to match the pressure and return line to one valve bank.
 - Hoses have been labelled in a suggested order of priority from most used to least:
 - (1) Depth (2) Wings (3) Transport (4) Jack
5. Use the hydraulic jack controls to raise or lower the hitch to align with the drawbar.

IMPORTANT: Close the ball valve to prevent accidental operation of this circuit. Ensure ball valve handle remains in closed position.



WARNING: Tractor **MUST** be equipped with a clevis hitch to prevent unit from tipping upward while folding into and out of transport. A safety chain must also always be properly installed.

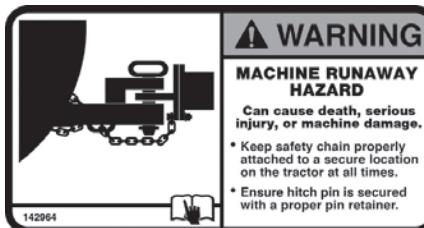
6. Slowly back tractor up to align the hitch.
7. Install a drawbar pin with provisions for a mechanical retainer such as a KLIK pin. Install the retainer.
8. Install a safety chain between the tractor and the hitch.
9. Connect lights (electrical socket plug) to tractor.
10. Raise the hydraulic hitch jack.
11. When unhooking from the tractor, reverse the above procedure.



WARNING/DANGER: Never disconnect Pro-Till from tractor if rear sections of machine are partially raised. **Negative Hitch Weight** may result, the hitch pole may suddenly raise, and the rear section would come crashing down. Only disconnect when unit is on level ground in the proper transport or field position.



WARNING/DANGER: Tractor **MUST** be properly equipped with a clevis hitch and safety chain to prevent **Negative Hitch Weight** occurring when raising or lowering the rear sections. If the unit is not properly attached to the tractor with a clevis hitch and safety chain, the negative hitch weight could result in the hitch pole suddenly raising and the rear section to come crashing down.



Transport

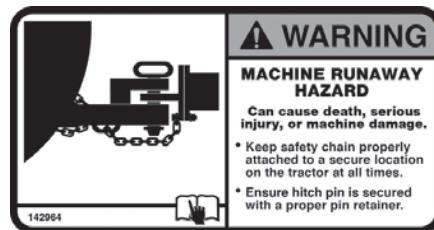
TRANSPORT SAFETY

1. Read and understand ALL the information in the Operator's Manual regarding procedures and SAFETY when operating the PRO-TILL in the field/yard or on the road.
2. Check with local authorities regarding machine transport on public roads. Obey all applicable laws and regulations.
3. Always travel at a safe speed. Use caution when making corners or meeting traffic.
4. Make sure the SMV (Slow Moving Vehicle) sign, and all the lights and reflectors that are required by the local highway and transport authorities are in place, are clean and can be seen clearly by all overtaking and oncoming traffic. Be sure to check with local highway authorities and comply with their lighting and transport requirements.
5. Keep to the right and yield the right-of-way to allow faster traffic to pass. Drive on the road shoulder, if permitted by law.
6. Always use hazard warning flashers on tractor when transporting unless prohibited by law.
7. Always use a pin with provisions for a mechanical retainer and a safety chain when attaching to a tractor or towing vehicle.

TRANSPORTING

Use the following guidelines while transporting the PRO-TILL:

1. Use a safety chain and a pin with provisions for a mechanical retainer.



2. Ensure Pro-Till is in the full transport position with the wing rollers secure and properly in place.
3. Ensure debris that may fall or become dislodged during transport is removed.
4. Be sure hazard lights are flashing and SMV decal is visible.
5. MAXIMUM RECOMMENDED TRANSPORT SPEED: **MAX 40 km/h or 25 mph.**
(Road Conditions, Field speeds may be lower.)

Due to weight of the machine and tire ratings, do not exceed the recommended maximum speeds or severe tire damage / excessive wear may occur.

⚠️ IMPORTANT: UNDER NO CIRCUMSTANCES SHOULD THERE EVER BE RIDERS WHILE THE PRO-TILL IS IN TRANSPORT.

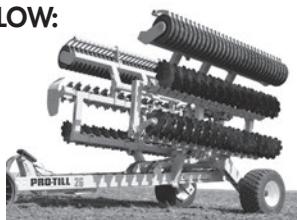


Transport to Field Position Overview

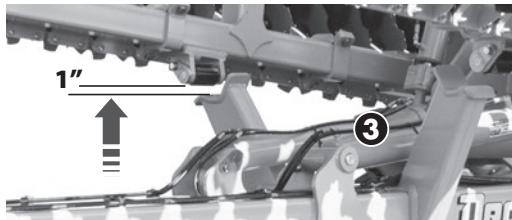
TRANSPORT TO FIELD POSITION

FOLLOW PROCEDURE BELOW:

- A. On level ground, position the Pro-Till so it is straight in-line behind the tractor.

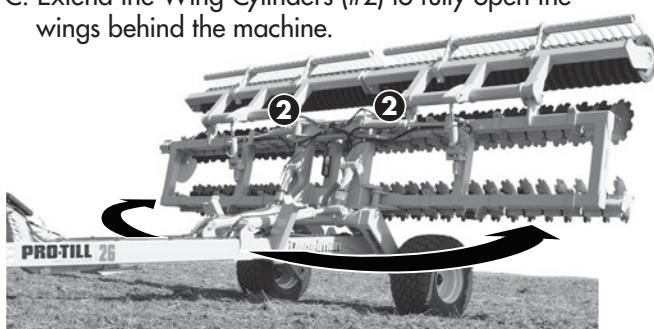


- B. **Slightly** extend the Transport Cylinders (#3) just enough to remove the weight of wings off from the wing transport carriers. Do not lift more than needed.

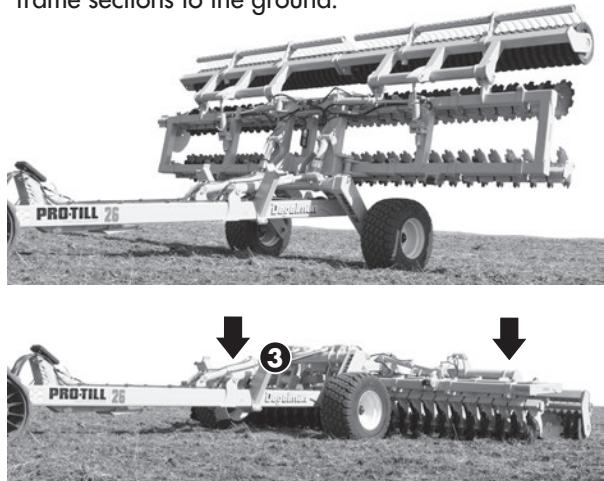


⚠️ IMPORTANT: *DO NOT* fully extend the transport cylinders at this point. Follow proper procedures to prevent possible equipment damage or failure.

- C. Extend the Wing Cylinders (#2) to fully open the wings behind the machine.



- D. After fully opening the wings, extend the Transport Cylinders (#3) to completely lower the Pro-Till rear frame sections to the ground.



- E. Place both the Transport Cylinders (#3) and the Wing Cylinders (#2) into the FLOAT position before operation.

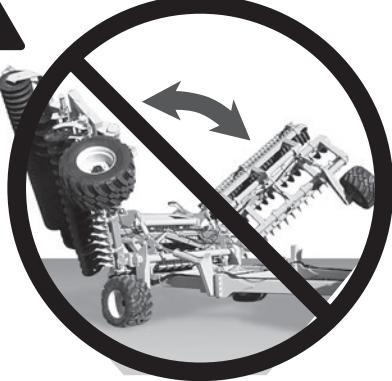
⚠️ IMPORTANT:
The Transport & Wing Cylinders **MUST** both be in the "FLOAT" position in order for the Pro-Till to properly contour the ground and to avoid possible cylinder or equipment damage.



→ **2 + 3**

⚠️ NEVER LIFT WINGS!

Unfold using the Wing Cylinders (2), then lower all rear sections using the Transport Cylinders (3).



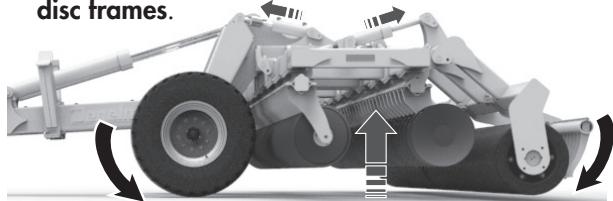
Field to Transport Position Overview

FIELD TO TRANSPORT POSITION

FOLLOW PROCEDURE BELOW:



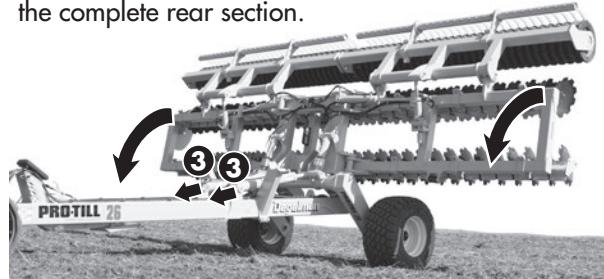
- A. In field position, fully extend the Depth (#1) cylinders (Wheels & Rollers) to completely raise the disc frames.



NOTE: It is important to fully raise the disc frames up as high as possible as it puts the rollers and wheels in the correct position for low transport.

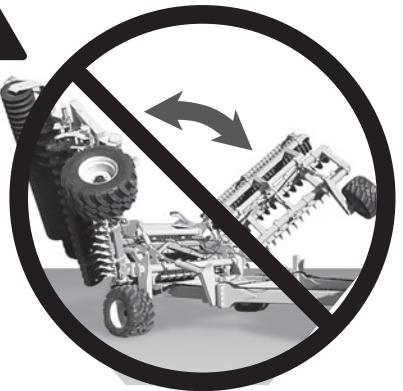
⚠️ IMPORTANT: DO NOT retract the Wing cylinders to raise the wings at this point. Follow proper procedures to prevent possible equipment damage or failure.

- B. Retract the Transport cylinders (#3), fully raising the complete rear section.

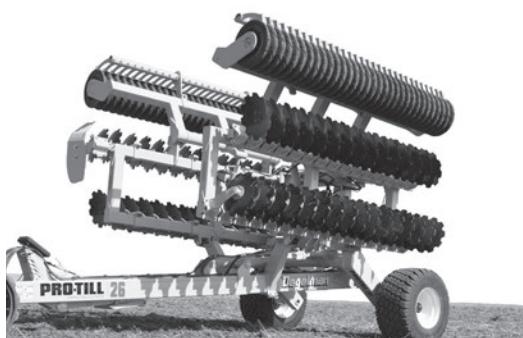
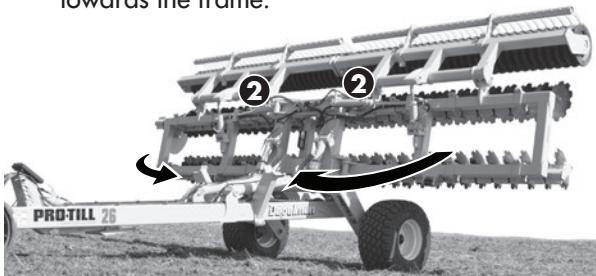


⚠️ NEVER LIFT WINGS!

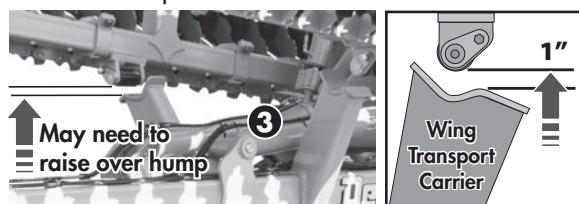
Lift rear sections using the **Transport Cylinders (3)**, then fold the wings forward using the **Wing Cylinders (2)**.



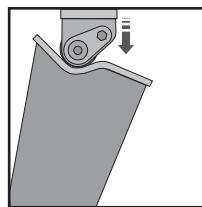
- C. After raising all the rear sections, retract the Wing cylinders (#2) to bring both wings inward towards the frame.



- D. When the wings get close to the wing transport carriers, you may need to slightly extend the Transport cylinders (#3) so the rollers can reach the correct position.



- E. With the wings in the proper position, retract the Transport cylinders (#3) fully lowering the wings onto the wing transport carriers.



Operation

OPERATING SAFETY

1. Read and understand the Operator's Manual and all safety signs before using.
2. Stop tractor engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
3. Keep hands, feet, hair and clothing away from all moving and/or rotating parts.

4. Do not allow riders on the PRO-TILL tractor during operation or transporting.
5. Keep all shields and guards in place when operating (if applicable).
6. Clear the area of all bystanders, especially children, before starting.
7. Do not operate machine on overly steep side hills or slopes.
8. Be careful when working around or maintaining a high-pressure hydraulic system.
Ensure all components are tight and in good repair before starting.

BREAK-IN

Although there are no operational restrictions on the PRO-TILL when it is new, there are some checks that should be done when using the machine for the first time, follow this procedure:

IMPORTANT: *It is important to follow the Break-In procedures especially those listed in the "Before using" section below to avoid damage:*

A. Before using:

1. Read Safety Info. & Operator's Manual.
2. Complete steps in "Pre-Operation Checklist".
3. Lubricate any grease points.
4. Check all Bolt Tightness.
5. Adjust Disc Cutting Depth as outlined in the "Setting Disc Depth" section.

B. After operating for 2 hours:

1. Check all hardware. Tighten as required.
2. Check all hydraulic system connections. Tighten if any are leaking.

PRE-OPERATION CHECKLIST

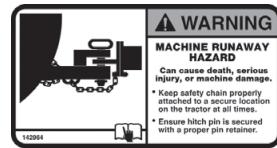
It is important for both personal safety and maintaining good operational condition of the machine that the pre-operational checklist be followed.

Before operating the machine and each time thereafter, the following areas should be checked off: 

1. Inspect the machine per the schedule outlined in the "Maintenance Section".

2. Use only a tractor with adequate power to pull the PRO-TILL under ordinary operating conditions.

NOTE: *It is important to pin the drawbar in the central location only.*

3. Ensure that the machine is properly attached to the tractor using a clevis hitch, safety chain and a drawbar pin with provisions for a mechanical retainer. Make sure that a retainer such as a Klik pin is installed.


WARNING: *Negative Hitch Weight* may occur when raising or lowering the rear sections. If the unit is not properly attached to the tractor with a clevis hitch and safety chain, the negative hitch weight could result in the hitch pole to suddenly raise and the rear sections to come crashing down.



4. Before using, inflate tires to:

Tires (382 FLOTTRUCK):
600/50 R22.5: **58 PSI (400 kPa)**

5. Check oil level in the tractor hydraulic reservoir. Top up as required.

6. Inspect all hydraulic lines, hoses, fittings and couplers for tightness. Tighten if there are leaks. Use a clean cloth to wipe any accumulated dirt from the couplers before connecting to the tractor's hydraulic system.

7. Inspect the condition/wear of the discs. If needed or desired, adjust the Disc Cutting Depth as outlined in the adjustments section. If excessive disc wear is evident, replacement may be required. Refer to maintenance section.

Operation

OPERATING GUIDELINES

1. Place both the Wing Cylinders (#2) and the Transport Cylinders (#3) into the FLOAT position before operation.

⚠️ IMPORTANT: The Transport Cylinders and Wing Cylinders **MUST** both be in the **FLOAT** position for the PRO-TILL to contour properly and to avoid possible cylinder or equipment damage.



2. **Maximum** operating speed is recommended at approximately 12 to 14 mph.
Minimum operating speed is recommended at approximately 7 mph.
3. When making headland turns, the operator may wish to slightly raise the disc sections by activating the Depth Cylinders (#1). Remember to lower after coming out of the turn.
4. Each time you start a new field you may need to adjust the cutting depth depending on the type of crop residue or soil conditions. The operator can adjust the cutting depth by raising/lowering the front or rear sets of discs by following the guidelines in the "Setting Disc Depth" section.
5. After making adjustments to the cutting depth it is recommended to bring the Pro-Till up to speed (10-12mph) to test the depth setting by driving about 100m (cutting performance changes dramatically from a slow speed to high speed). Stop, check depth and cut of field, re-adjust the height higher or lower, if needed, based on your preference. Remember: Removing one depth stop lowers cutting depth 1/2" deeper, Adding one depth stop raises discs up 1/2" higher.
6. Check/adjust the deflector shield height setting.
7. Harder, packed soil may require additional passes for optimum results. It is recommended to do a second pass at an angle to the original pass.

Operation

SETTING DISC DEPTH & DIRT DEFLECTOR

NOTE: As the discs wear with usage, the disc depth settings will also need to be adjusted accordingly.

Use the following as a guideline for setting depth:

1. Drive the PRO-TILL onto level ground. For initial setup, try "8 Depth Stops" on each cylinder stop.
2. Fully retract the Depth (#1) cylinders to lower rear frame to ground.
3. Check the penetration depth of the front and rear row of discs. Take note of how much you would like to raise or lower both the front and rear disc sections - round to the nearest 1/2".
4. Fully raise the frame back off the ground by extending the Depth (#1) cylinders.
5. Adjust Disc height at the two front wheel cylinder positions.

Lower Discs - Remove one Depth Stop for each 1/2"

Raise Discs - Add one Depth Stop for each 1/2"

6. Repeat above procedure until proper depth is achieved.
7. Adjust Dirt Deflector height as shown below.

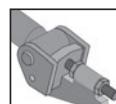
PITCH ADJUSTMENT

Some operators may also prefer to adjust the front or rear frame disc sections to run slightly higher than the other.

Adjustments to the front to rear disc section height or "pitch" are done with the threaded pitch adjustment rods:

- **Shortening adjustment rod length:**

- Lowers the Rear Discs
- Reduces Roller Pressure



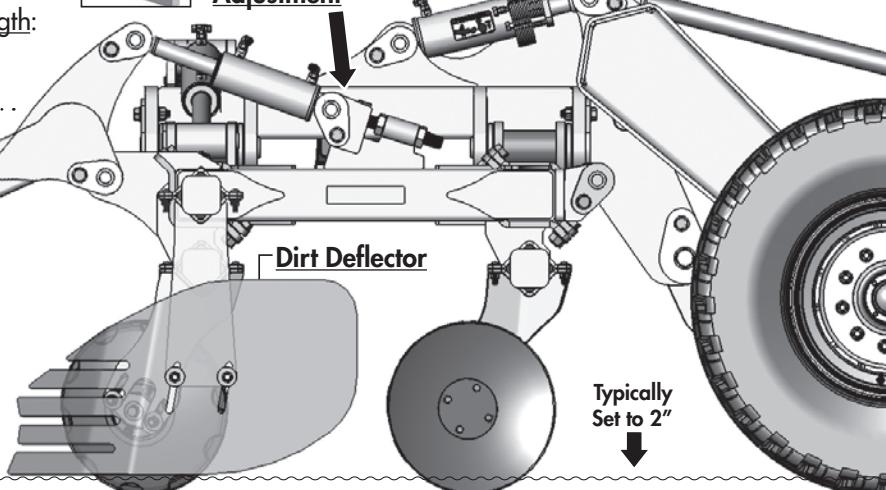
- **Lengthening adjustment rod length:**

- Raises the Rear Discs
- Increases Roller Pressure

NOTE: For better performance, adjust pitch slightly down (lengthen rod length) to increase roller pressure.

Disc Depth Adjustment

Pitch Adjustment



Adjust "Deflector Angle" when the Pitch of the Frame is adjusted.

Note: If running Nose up or Nose down, adjust the deflector angle accordingly.

RECOMMENDED PROCEDURE TO SET DEFLECTOR HEIGHT:

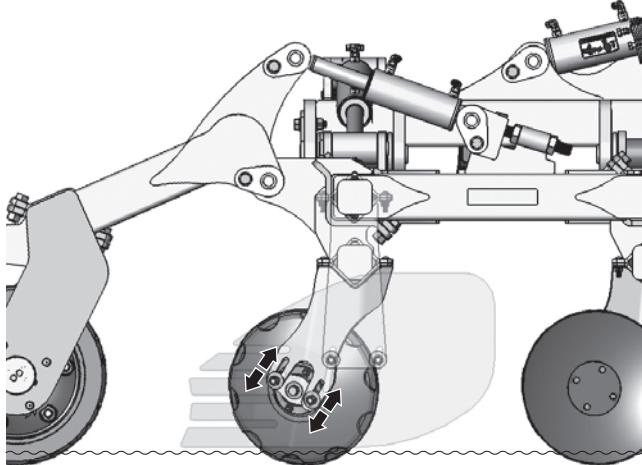
- 1-Run the machine with discs set to the proper depth.
- 2-Stop the machine.
- 3-Adjust the height so the deflector is running just slightly above the ground.

IMPORTANT: You may need to adjust the deflector height according to soil penetration. Best setting is when deflector runs just slightly above the ground.

Operation

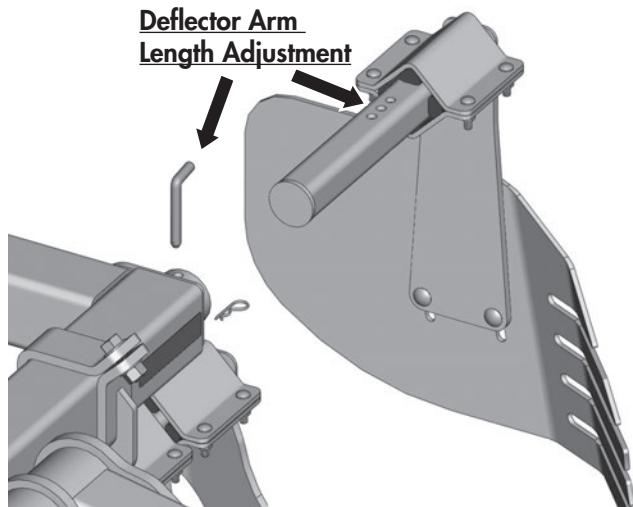
SETTING ADJUSTMENT DISC

This adjustable furrow reducer disc allows the operator to adjust the end disc. It is typically set to two inches higher than the other discs. If the cutting depth is lowered and the end disc is leaving too deep of a groove, the operator should adjust the disc higher as needed for desired results.



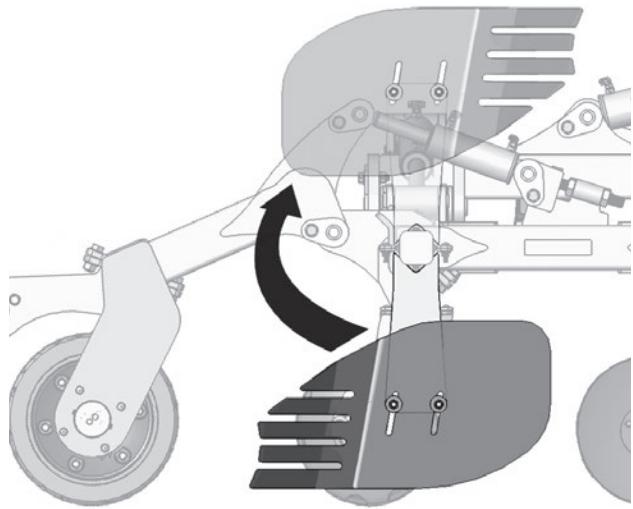
SETTING DIRT DEFLECTOR ARM DISTANCE

The distance of the deflector arm has three possible settings that can be adjusted depending on the disc/frame pitch settings, soil conditions, and preference of the operator. If the deflector is plugging or restricting the flow of dirt and trash, you may wish to move the deflector arm outward.



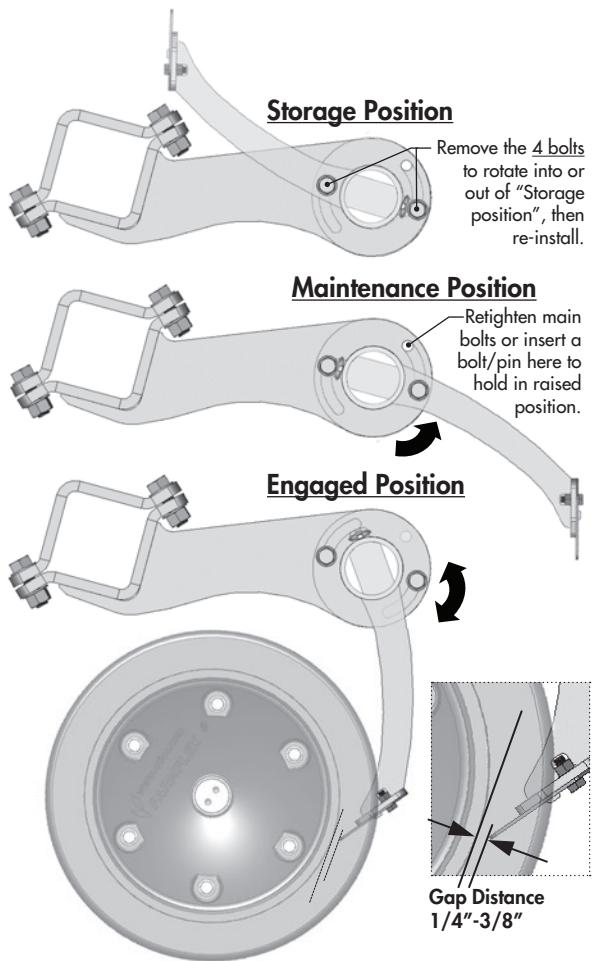
DISENGAGING DIRT DEFLECTOR

The dirt deflector may be disengaged or stored in the upright position by removing the deflector arm pin, rotating the deflector arm upward 180 degrees, and re-installing the pin. If preferred, it could also be completely removed by pulling the pin and removing.



Operation

SCRAPER POSITION OVERVIEW



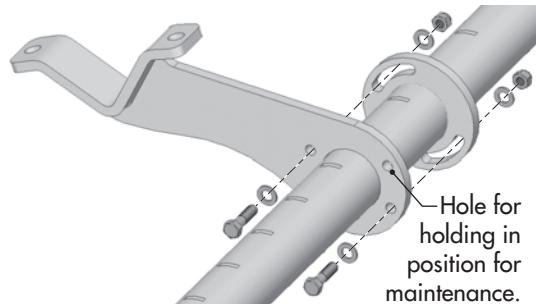
SETTING SCRAPER POSITION

Change into Storage Position:

- Loosen & remove the 4 bolts (2 per arm).
- Rotate section upward to new position.
- Reinstall bolts and tighten in place.
- Reverse procedure to put into working position.

Change into Maintenance Position (from engaged):

- Loosen the 4 bolts (2 per arm).
- Rotate section upward until top hole is open.
- Tighten bolts to secure and/or insert bolt or pin (user supplied) into top hole to secure in position.



Change into Engaged Position (from maintenance):

- Loosen the 4 bolts (2 per arm).
- Rotate section down until scraper blades are at desired distance from inner roller groove.
(1/4" to 3/8" is the recommended distance)
- Tighten bolts to secure in position.

REVERSING SCRAPER BLADES



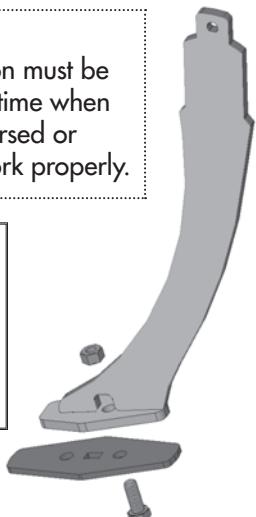
Double Sided Blades

Note: Complete section must be changed at the same time when blades are being reversed or adjustment will not work properly.



Heavy Duty Replacement Scraper Blades
requires new hardware (Bolts & Locknuts)
Note: This is a replacement part only that
will work best only after roller has
been run and has relaxed into its
permanent shape. (Qty: 46 or 62)

573320 - HD Scraper Blade
118279 - Bolt, 1/2 x 1-1/2 GR8
118729 - Lock Nut, 1/2 Unitorque



Service & Maintenance

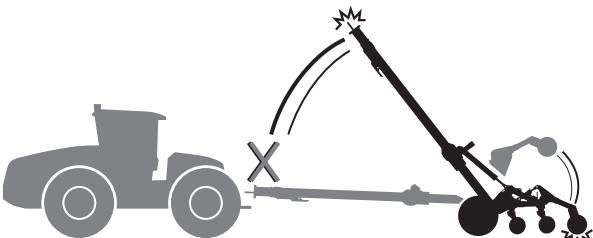
MAINTENANCE SAFETY

1. Review the Operator's Manual and all safety items before working with, maintaining or operating the PRO-TILL.
2. Stop the tractor engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting, repairing or unplugging.
3. Keep hands, feet, clothing and hair away from all moving and/or rotating parts.
4. Clear the area of bystanders, especially children, when carrying out any maintenance and repairs or making any adjustments.

5. Place safety stands or large blocks under the frame before removing tires or working beneath the machine.
6. Be careful when working around or maintaining a high-pressure hydraulic system. Wear proper eye and hand protection when searching for a high pressure hydraulic leak. Use a piece of wood or cardboard as a backstop when searching for a pin hole leak in a hose or a fitting.
7. Always relieve pressure before disconnecting or working on hydraulic system.
8. Never disconnect Pro-Till from tractor if rear sections of machine are partially raised. See warning below:



⚠ WARNING/DANGER: Never disconnect Pro-Till from tractor if rear sections of machine are partially raised. Negative Hitch Weight may result, the hitch pole may suddenly raise and the rear section would come crashing down. Only disconnect when unit is on level ground in the proper transport or field position.



HYDRAULIC SAFETY

- Make sure that all components in the hydraulic system are kept in good condition and are clean.
- Replace any worn, cut, abraded, flattened or crimped hoses and metal lines.
- Do not attempt any makeshift repairs to the hydraulic lines, fittings or hoses by using tape, clamps or cements. The hydraulic system operates under extremely high-pressure. Such repairs will fail suddenly and create a hazardous and unsafe condition.
- Wear proper hand and eye protection when searching for a high-pressure hydraulic leak. Use a piece of wood or cardboard as a backstop instead of hands to isolate and identify a leak.

- If injured by a concentrated high-pressure stream of hydraulic fluid, seek medical attention immediately. Serious infection or toxic reaction can develop from hydraulic fluid piercing the skin surface.
- Before applying pressure to the system, make sure all components are tight and that lines, hoses and couplings are not damaged.

Service & Maintenance

MAINTENANCE CHECKLIST

After reviewing the Maintenance and Hydraulic Safety Information, use the Maintenance Checklist provided for regular service intervals and keep a record of all scheduled maintenance:

(Initial break-in review. Read full section on pg.8)

A. Before using:

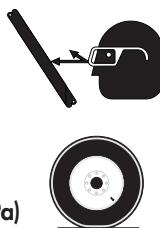
1. Read Safety Info. & Operator's Manual.
2. Complete "Pre-Operation Checklist"
3. Check all Bolt Tightness.
4. Adjust Disc Cutting Depth as outlined in the "Setting Disc Depth" section.

B. After operating for **2 hours**:

1. Check all hardware. Tighten as required.
2. Check all hydraulic system connections. Tighten if any are leaking.

Maintenance Check - 10 Hours

- Check for worn or damaged parts
- Hydraulic fluid leaks
- Damaged hoses
- Check tire pressure:
Tires (382 FLOTTRUCK):
600/50 R22.5: **58 PSI (400 kPa)**



Maintenance Check - 50 Hours

- Grease hubs & spindles
- Check working points & pins
- Safety signs clean



Annually

- Bolt tightness
- Wheel bearings



STORAGE

The PRO-TILL should be carefully prepared for storage to ensure that all dirt, mud, debris and moisture has been removed.

Follow this procedure when preparing to store:

1. Wash the entire machine thoroughly using a water hose or pressure washer to remove all dirt, mud, debris or residue.
2. Inspect all parts to see if anything has become entangled in them. Remove the entangled material.
3. Lubricate hub and spindle grease fittings to remove moisture
4. Inspect all hydraulic hoses, fittings, lines and couplers. Tighten any loose fittings. Replace any hose that is badly cut, nicked or abraded or is separating from the crimped end of the fitting.
5. Touch up all paint nicks and scratches to prevent rusting.
6. Select an area that is dry, level and free of debris.
7. Store in either Transport or Field position.
8. Use hydraulic cylinder jack.
9. Oil any exposed chrome shafts on the hydraulic cylinders to prevent rusting.



Service & Maintenance

TORQUE SPECIFICATIONS

CHECKING BOLT TORQUE

The tables shown below give correct torque values for various bolts and capscrews. Tighten all bolts to the torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength (Grade/Class) bolt.

IMPERIAL TORQUE SPECIFICATIONS

(based on "Zinc Plated" values)



Size	Grade 5 lb.ft (N.m)	Grade 8 lb.ft (N.m)
1/4"	7 (10)	10 (14)
5/16"	15 (20)	20 (28)
3/8"	25 (35)	35 (50)
7/16"	40 (55)	60 (80)
1/2"	65 (90)	90 (120)
9/16"	90 (125)	130 (175)
5/8"	130 (175)	180 (245)
3/4"	230 (310)	320 (435)
7/8"	365 (495)	515 (700)
1"	550 (745)	770 (1050)
1-1/8"	675 (915)	1095 (1485)
1-1/4"	950 (1290)	1545 (2095)
1-3/8"	1250 (1695)	2025 (2745)
1-1/2"	1650 (2245)	2690 (3645)

METRIC TORQUE SPECIFICATIONS

(based on "Zinc Plated" values)

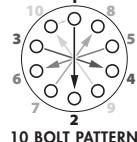


Size	Class 8.8 lb.ft (N.m)	Class 10.9 lb.ft (N.m)
M6	7 (10)	10 (14)
M8	16 (22)	23 (31)
M10	30 (42)	45 (60)
M12	55 (75)	80 (108)
M14	90 (120)	125 (170)
M16	135 (185)	195 (265)
M18	190 (255)	270 (365)
M20	265 (360)	380 (515)
M22	365 (495)	520 (705)
M24	460 (625)	660 (895)
M27	675 (915)	970 (1315)
M30	915 (1240)	1310 (1780)
M33	1250 (1695)	1785 (2420)
M36	1600 (2175)	2290 (3110)

WHEEL NUT & WHEEL BOLT TORQUE

Wheel Nut/Bolt Torque

Size lb.ft (N.m)
3/4 280-300 (380-405)



Wheel Tightening Procedure

1. Install and hand tighten nuts/bolts.
2. Tighten to approx 20% Torque value using the 10 Bolt Star or CrissCross pattern shown above.
3. Tighten to Full Torque value using the Star or CrissCross pattern.
4. If applicable, install Rear Locknuts using Wheel Torque Values.

HYDRAULIC FITTING TORQUE

Hydraulic Fitting Torque*

Size	lb.ft (N.m)
1/2	34 (46)
3/4	75 (100)
7/8	90 (122)

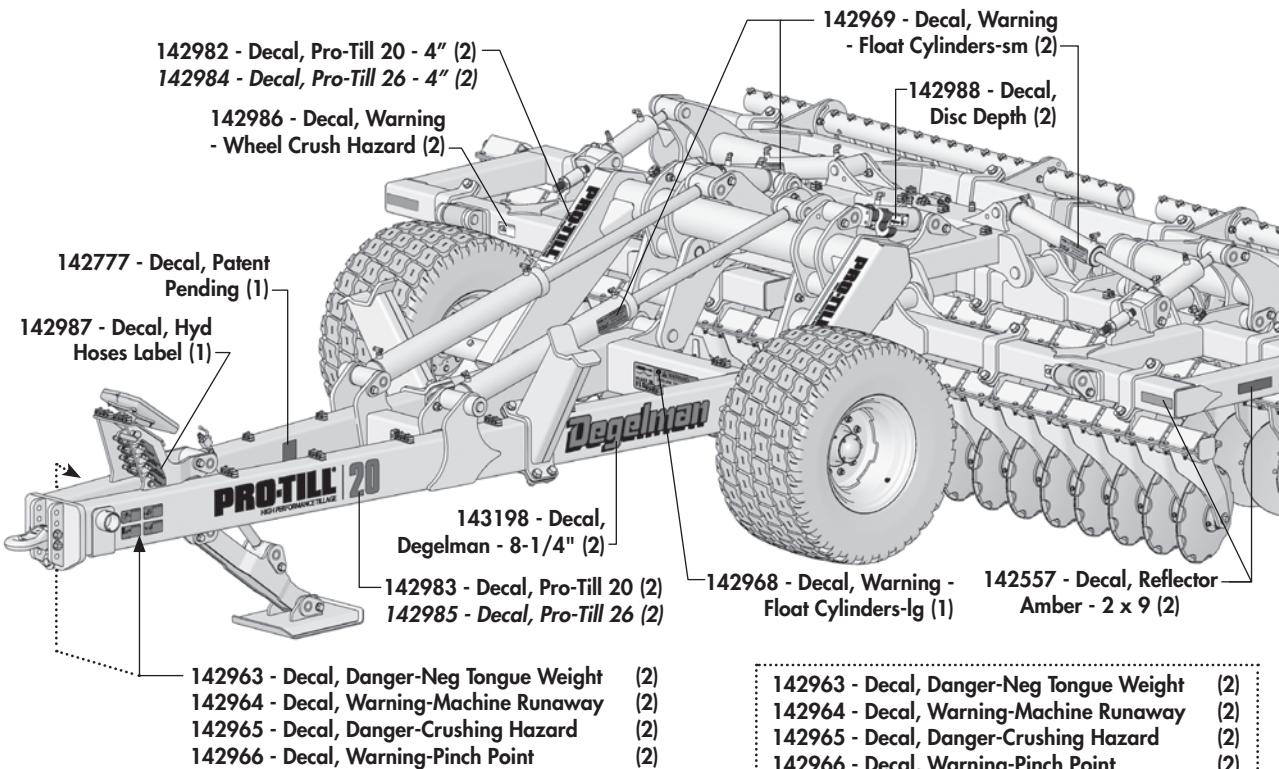
* The torque values shown are based on lubricated connections as in reassembly.

Tightening Flare Type Tube Fittings

1. Check flare and flare seat for defects that might cause leakage.
2. Align tube with fitting before tightening.
3. Lubricate connection and hand tighten swivel nut until snug.
4. To prevent twisting the tube(s), use two wrenches. Place one wrench on the connector body and with the second tighten the swivel nut to the torque shown.

Service & Maintenance

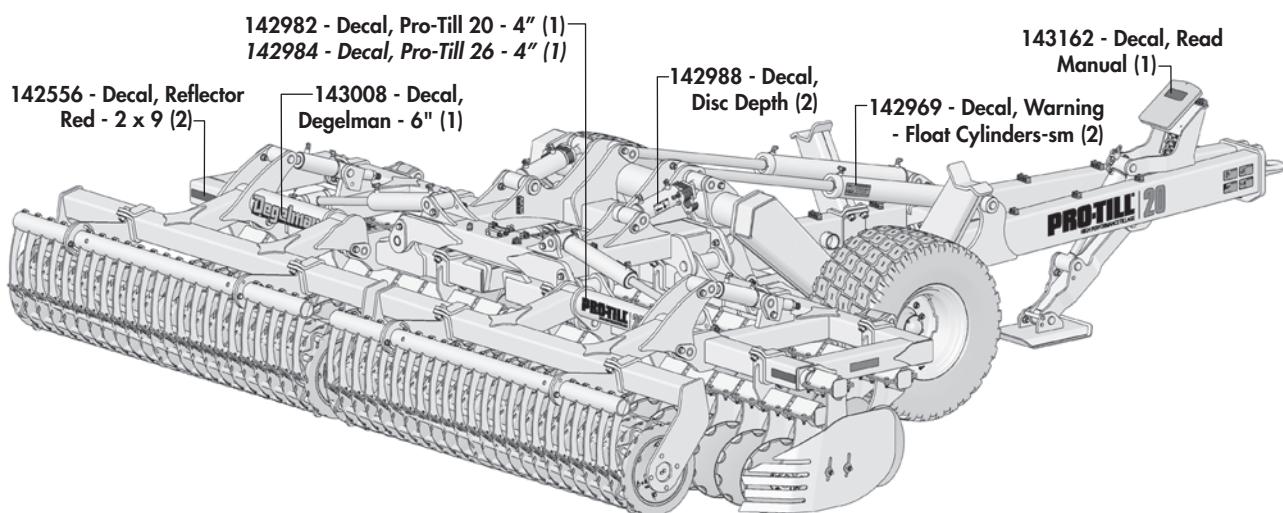
DECAL LOCATION OVERVIEW



SAFETY DECALS & REFLECTORS

Keep safety decals and signs clean and legible at all times. Replace safety decals and signs that are missing or have become illegible. Safety decals or signs are available from your Dealer Parts Department.

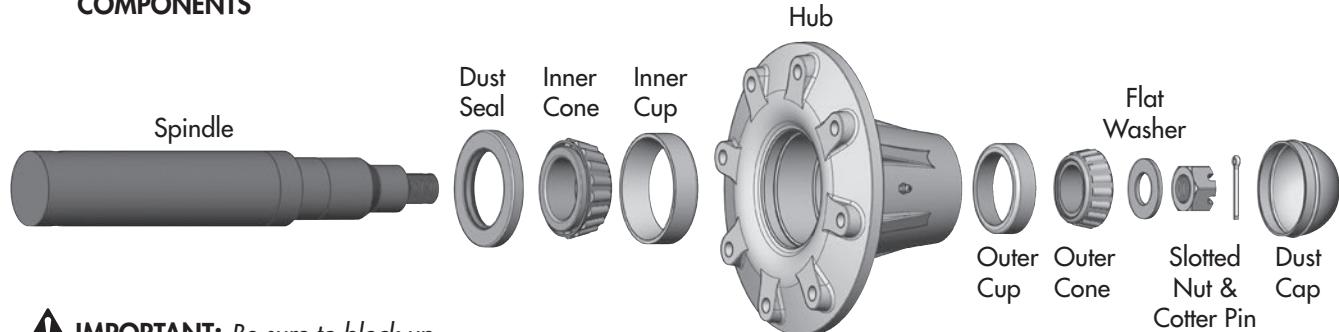
142963 - Decal, Danger-Neg Tongue Weight	(2)
142964 - Decal, Warning-Machine Runaway	(2)
142965 - Decal, Danger-Crushing Hazard	(2)
142966 - Decal, Warning-Pinch Point	(2)
142968 - Decal, Warning-Float Cylinders-lg	(1)
142969 - Decal, Warning-Float Cylinders-sm	(4)
142986 - Decal, Warning-Wheel Crush Hazard	(2)
142556 - Decal, Reflector Red - 2 x 9	(2)
142557 - Decal, Reflector Amber - 2 x 9	(4)
142987 - Decal, Hydraulic Hose Label	(1)
142988 - Decal, Disc Depth	(2)
142008 - Decal, Degelman - 6"	(1)
143198 - Decal, Degelman - 8-1/4"	(2)
142982 - Decal, Pro-Till 20 - 4"	(3)
142983 - Decal, Pro-Till 20 - 7"	(2)
142984 - Decal, Pro-Till 26 - 4"	(3)
142985 - Decal, Pro-Till 26 - 7"	(2)



Service & Maintenance

WHEEL HUB REPAIR

COMMON HUB & SPINDLE COMPONENTS



! IMPORTANT: Be sure to block up unit securely before removing tires.

DISASSEMBLY

1. Remove dust cap.
2. Remove cotter pin from nut.
3. Remove nut and washer.
4. Pull hub off spindle.
5. Dislodge the inner cone bearing and dust seal.
6. Inspect cups that are press fitted into hub for pits or corrosion and remove if necessary.
7. Inspect and replace defective parts with new ones.

ASSEMBLY

1. If cups need replacing, be careful to install them gently and evenly into hub until they are fully seated.
2. Apply a thick wall of grease inside hub. Pack grease in cones.
3. Install inner cone and dust seal as illustrated.
4. Position hub onto spindle and fill surrounding cavity with grease.
5. Assemble outer cone, washer and nut.
6. Tighten nut while rotating hub until there is a slight drag.
7. Turn nut back approximately 1/2 turn to align cotter pin hole with notches on nut.
8. Install cotter pin and bend legs sideways over nut.
9. Fill dust cap half full of grease and gently tap into position.
10. Pump grease into hub through grease fitting until lubricant can be seen from dust seal.

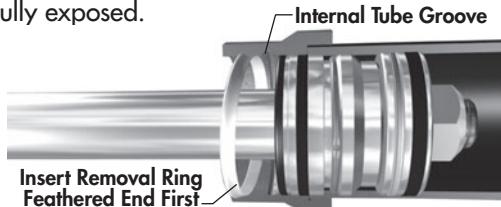
Service & Maintenance

REPAIRING A WIRE RING CYLINDER

NOTE: You will need the following tools: Rubber Mallet, Screwdriver, Punch, Pliers, and the proper seal kit.

Use the following as a guideline for repair:

1. Drain cylinder.
2. Fully retract the rod and remove the external steel wire ring.
3. Remove any dirt that may have accumulated on the cylinder head.
4. Using the mallet and punch, push the head into the cylinder tube until the internal tube groove is fully exposed.



5. Take the removal ring from the seal kit:
 - Straighten the removal ring and remove any kinks or excessive curl from the ring to make installation easier and prevent it from falling out.
 - Note:** Do not cut the ring, the removal ring end should have to be snapped into place.
 - Orient the removal ring with the feathered end pointing into the tube and insert into the groove.
 - Use a screwdriver or a finger to hold one end of the ring in the groove while fitting the other end of the ring into the groove. The tips should snap in together.
6. Once the removal ring is in the groove, double check to ensure it is secure and fully seated before the next step.
7. The next step is to pull and completely remove the rod assembly from the tube.
 - Extend rod to pull head out of tube. As the rod assembly is being pulled out, ensure the removal ring does not get clipped or become dislodged. If it does, push the cylinder head back in and replace or re-seat the removal ring.
 - Completely remove rod and head from tube. If the rod does not pull out easily, push the head back in and re-check that the ring is properly secured in the groove before proceeding. If necessary replace the ring in position.

Note: Excessive force will not overcome a jammed ring and could damage the cylinder.

8. Once you have removed the rod assembly, remove the removal ring from the tube.
9. Remove and replace all of the piston seals.
10. Install but leave the cylinder O-Ring seal loose.
11. Lubricate the cylinder tube and piston seals.
12. Insert the piston into the tube at least 3"-4", tap the cylinder head into the tube until the cylinder head starts to engage into the tube.
13. Use the supplied band clamp to compress the retaining ring so it will go into the tube. Make sure the cam of the band clamp is not overtop of the gap in the ring. Tighten the band clamp to ensure the wire ring is fully seated. Then, loosen the clamp approx. 1/2 a turn to allow band clamp to slide during final assembly.
14. Tap the cylinder head into the tube. The key to this step is to slowly tap the cylinder head until the ring is approaching the edge of the band clamp. At this point you want to give the cylinder head a good, solid hit to transfer the ring from the band clamp to the cylinder tube.
Note: To light of a tap at this point may allow the ring to eject. If this happens, pry the cylinder head out to expose the ring groove, and start over with the band clamp.
15. Once the ring is in the tube, remove the band clamp and install the cylinder O-Ring seal.
16. It is critical at this point to tap the cylinder head in flush with the end of the tube. This ensures the ring is properly seated into the tube groove.
- IMPORTANT:** If the cylinder head is not tapped flush with the end of the tube, the ring will seat into the tube groove causing the cylinder head and/or rod assembly to be ejected from the tube when the cylinder is pressurized.
17. Pull the rod out to expose the external wire ring groove in cylinder head, and then install the external ring.
18. Before using the cylinder, ensure that you double check your work.

Service & Maintenance

REPLACING A PRESSED BUSHING

NOTE: You may need the following tools:
Press, hammer, punch, pry-bar, "Step-Tool"

Use the following as a guideline for repair:

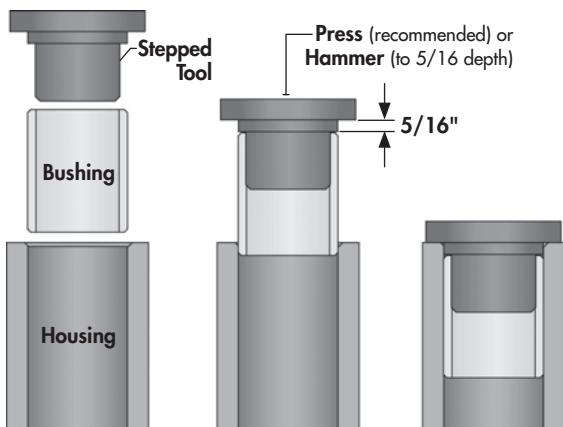
1. Ensure the area and frame are properly secured, supported, and safe to work on. Safely remove the pin(s), cylinder, and/or components necessary in order to access and work on the damaged bushing.
2. Remove the existing bushing using required tools. In some instances, you may need to cut the damaged bushing in order for easier removal (use proper safety precautions and try not to damage other components if using this method).
3. With the bushing removed, clean and prepare the location for the new bushing insert.

Note: It is recommended to use a mixture of "Dish Soap and Water" as a lubricant on the outside of the composite bushing.

IMPORTANT: DO NOT use oil or grease on outside or inside of composite bushings.

Hint: A suggestion to aid in installation is to freeze the composite bushing for 1hr or use dry ice before installation to make it slightly easier to press in.

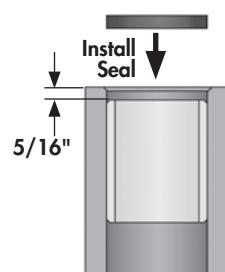
4. Use a stepped tool to ensure the edge of the bushing is not damaged when inserting.



5. Ensuring the bushing is properly aligned, press into hole (preferred method) or hammer into position by striking the stepped tool.

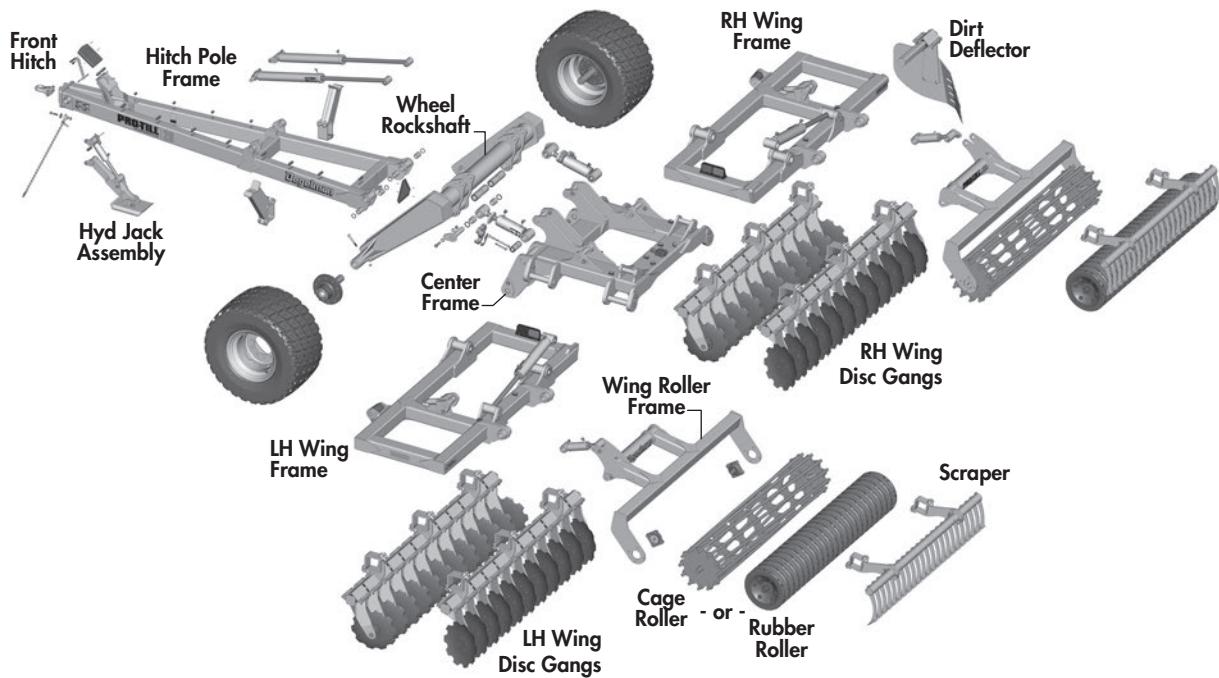
6. Continue to install until the bushing edge is recessed in to a distance of $5/16"$ to allow for the outer seal to be properly installed. Do not exceed this depth.

7. Repeat procedure for bushing on opposite side.
8. When both bushings are installed to the proper depth, install new seals.
9. Re-assemble all other necessary components.

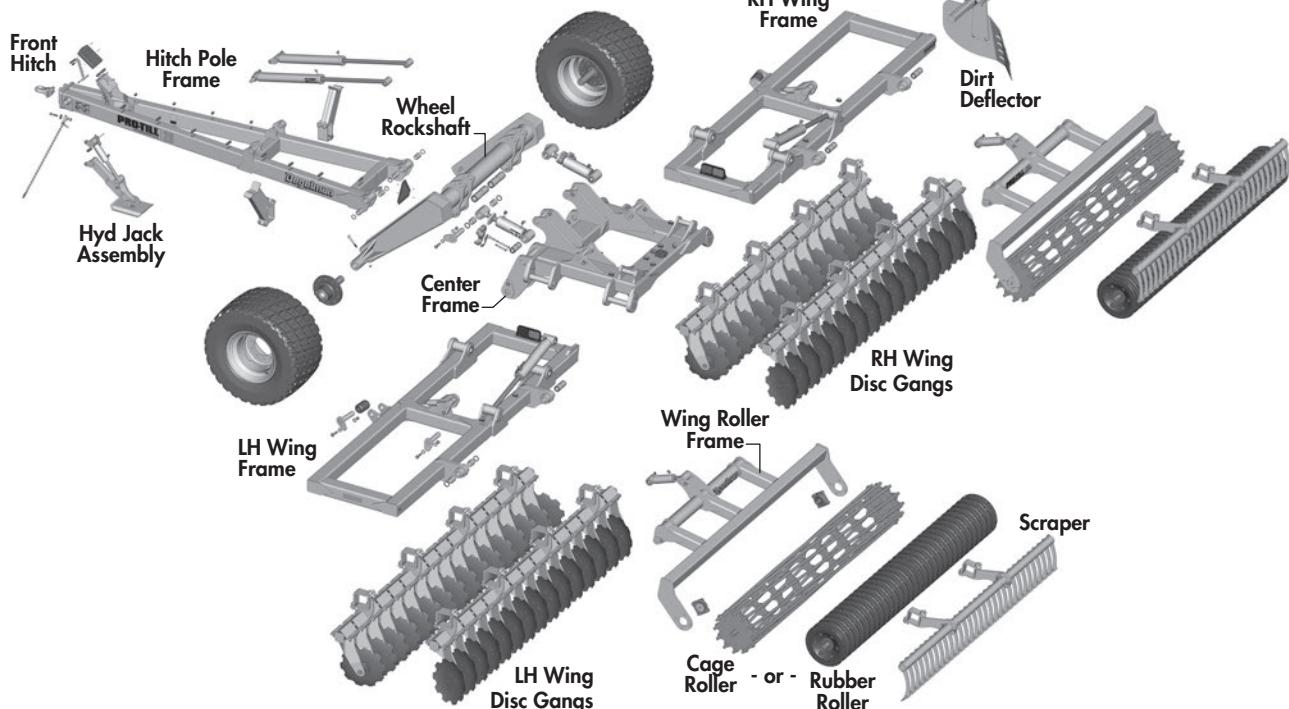


Pro-Till Overview

Exploded Overview of a 20' (6m) Pro-Till

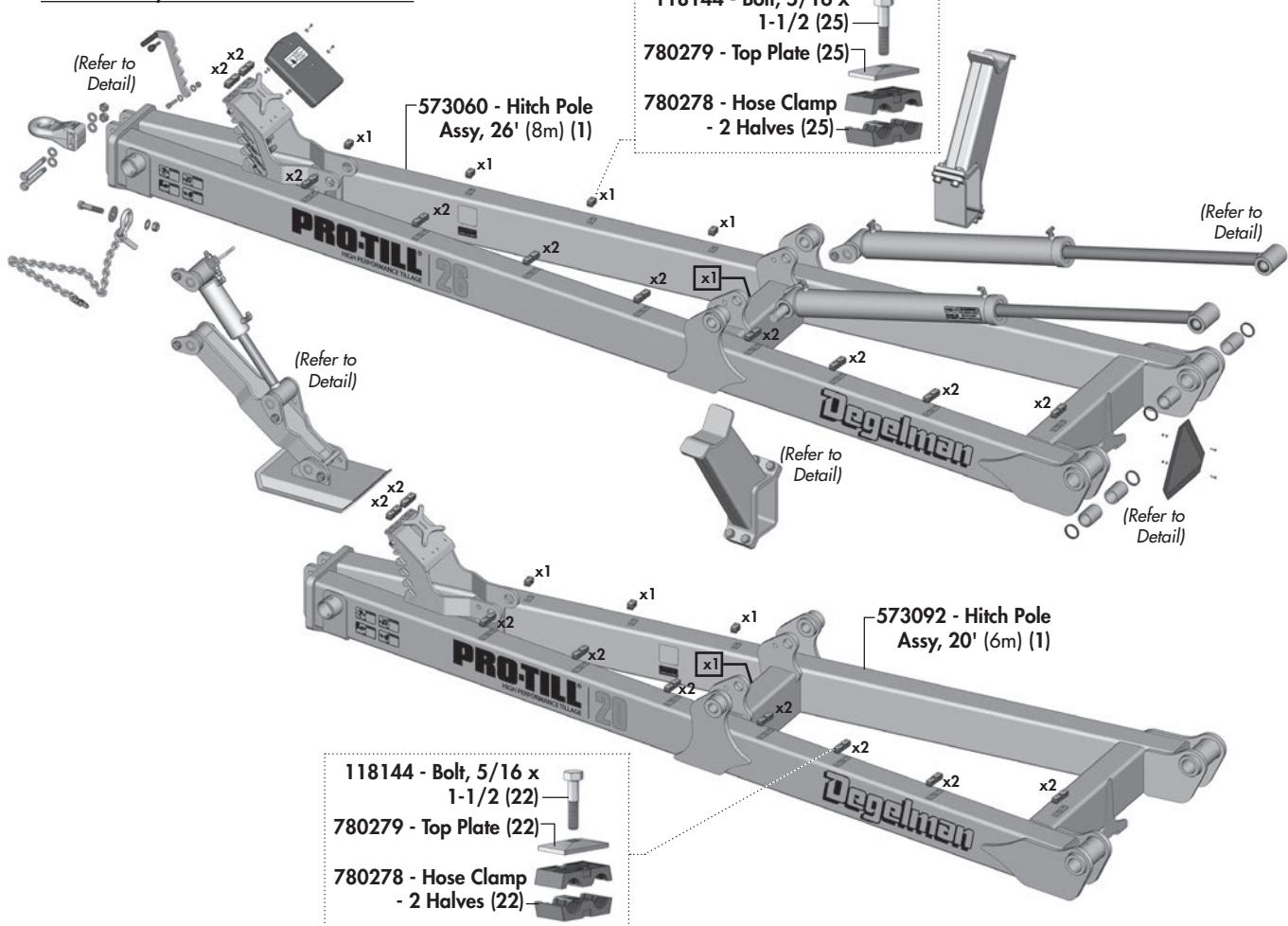


Exploded Overview of a 26' (8m) Pro-Till

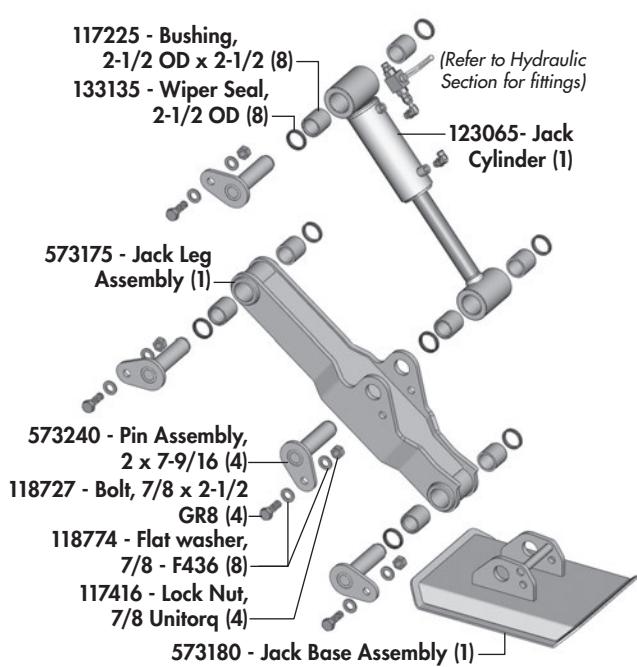


Hitch Pole / Front Frame Components

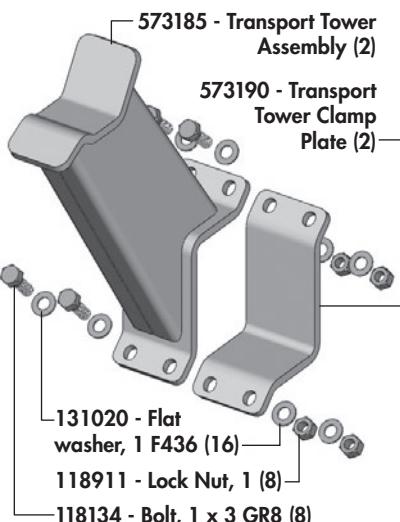
Hitch Pole /Front Frame Overview



Jack Assembly Components

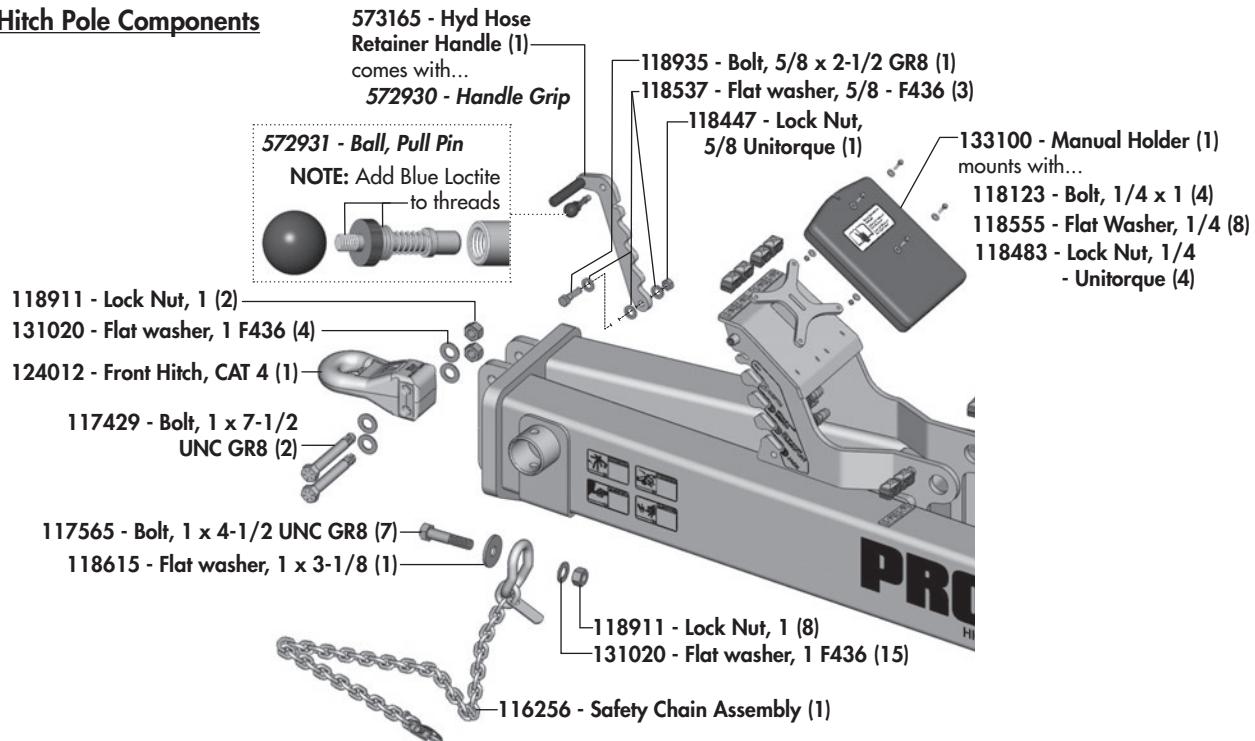


Transport Tower Components

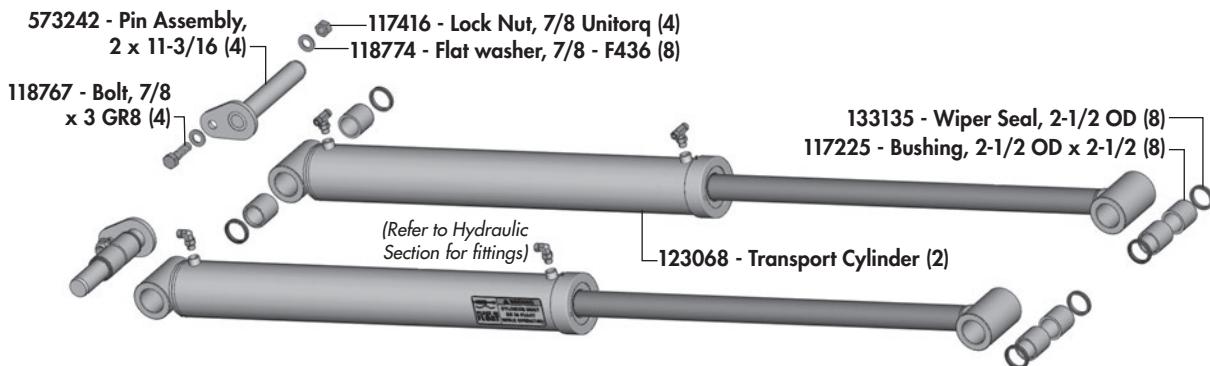


Hitch Pole / Front Frame Components

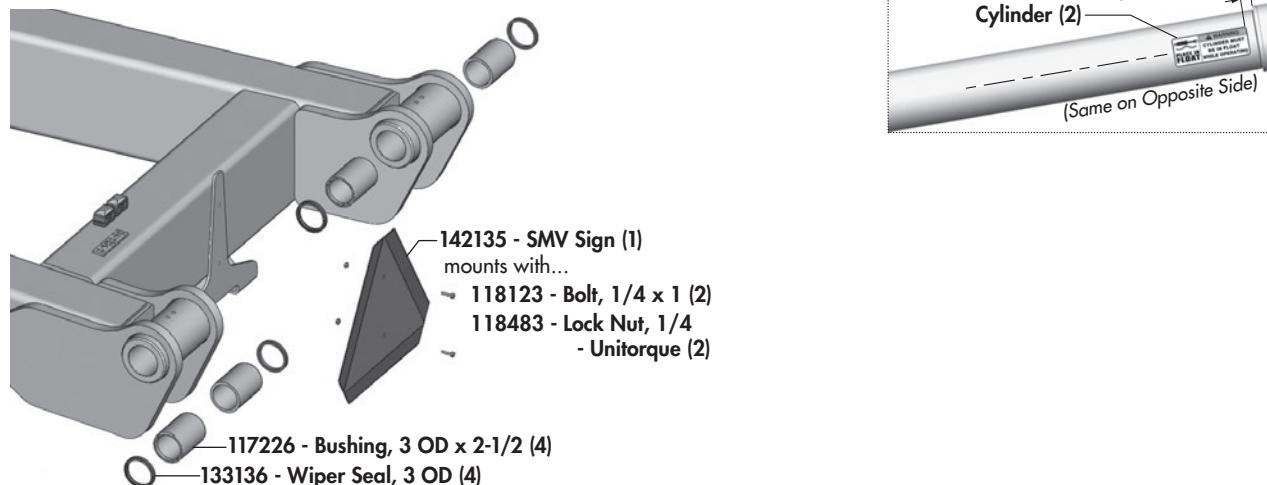
Front Hitch Pole Components



Transport Cylinder Components

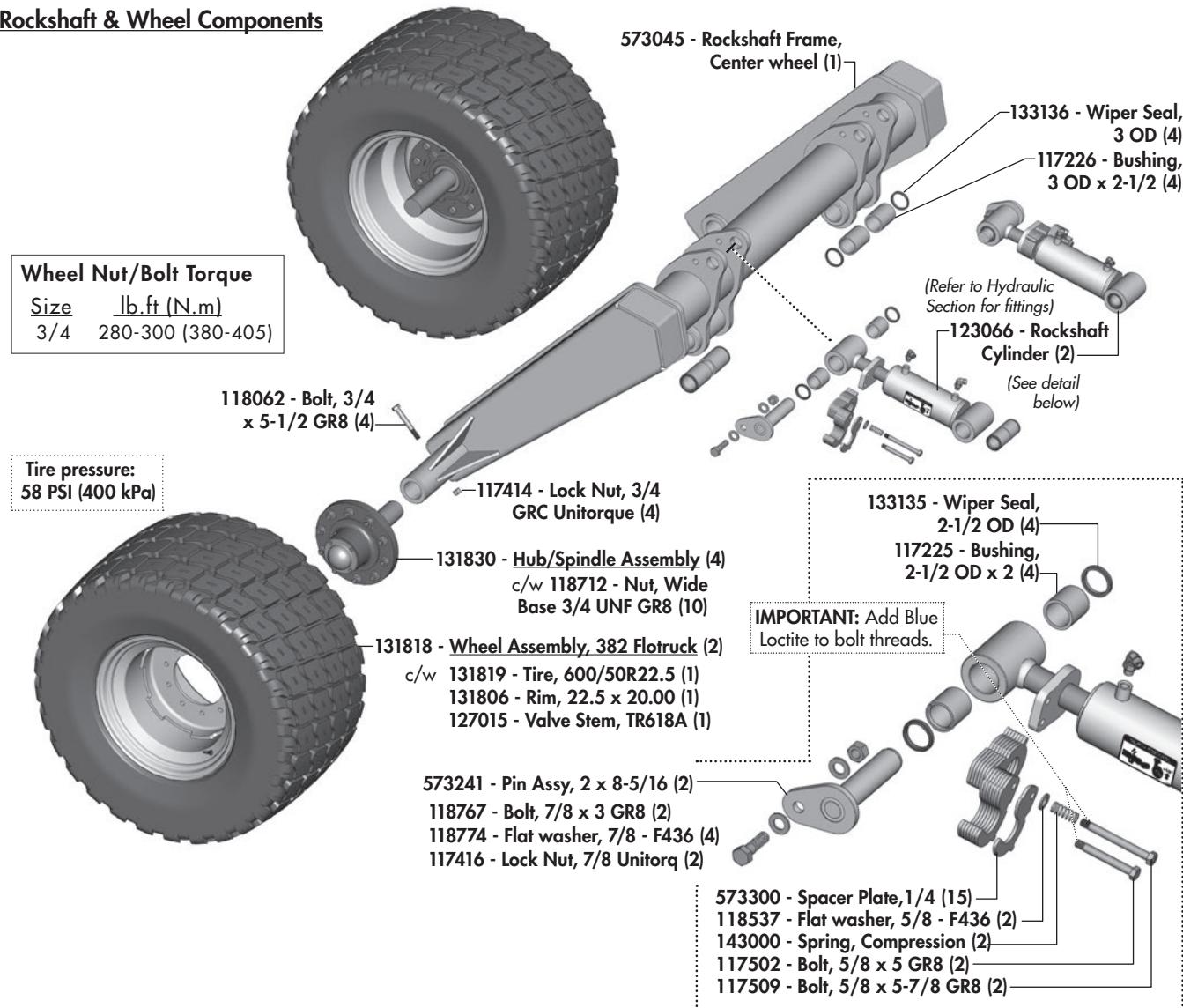


Rear Hitch Pole Components

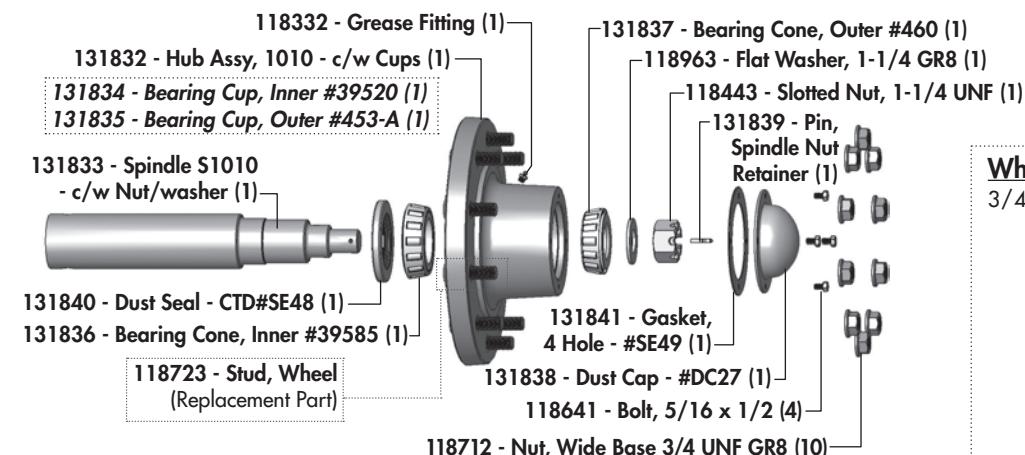


Wheel & Rockshaft Components

Rockshaft & Wheel Components



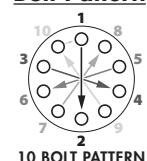
131830 - Hub/Spindle Assembly (4)



Wheel Nut Torque

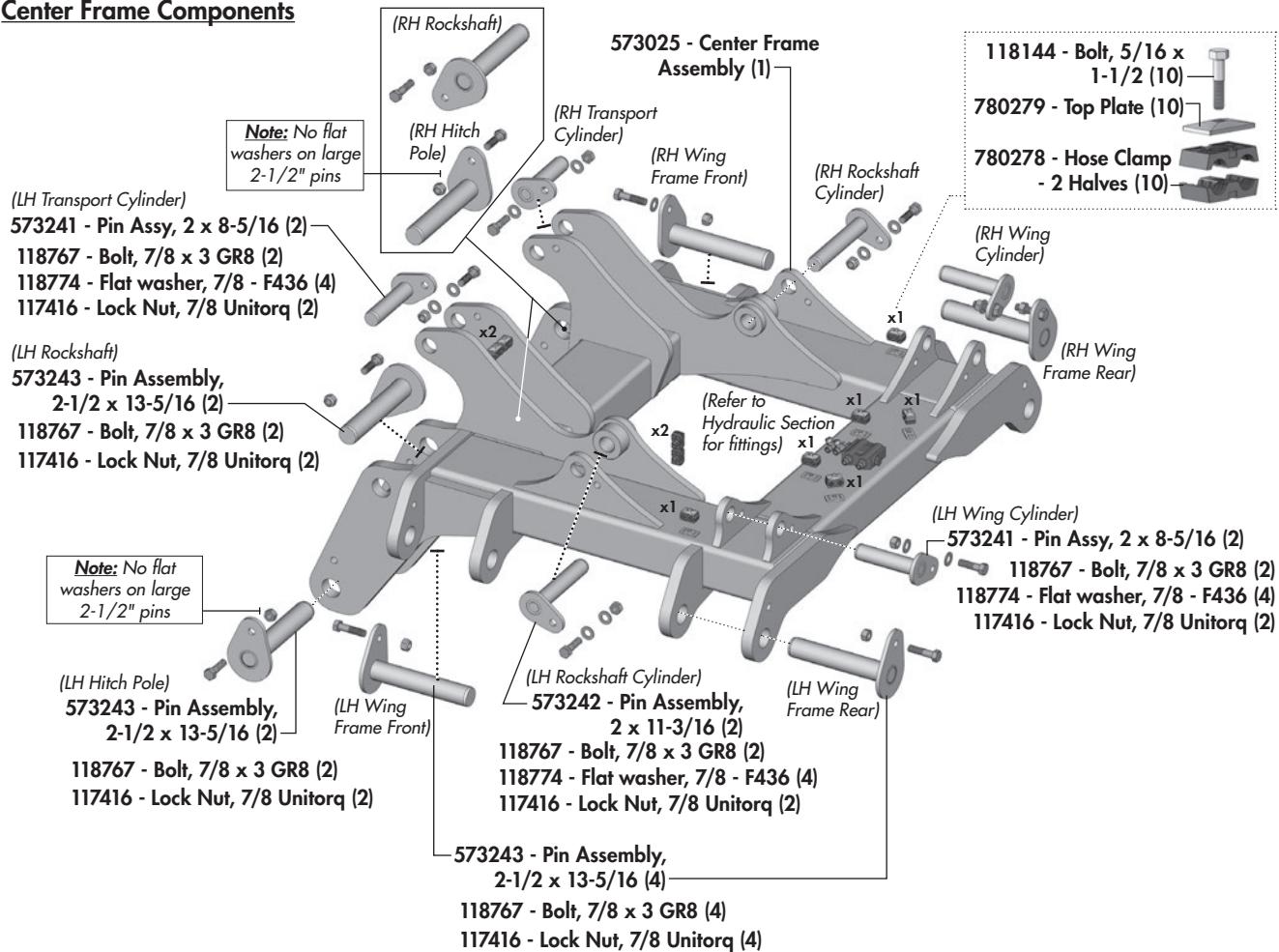
3/4": 280-300 lb.ft
(380-405 N.M)

Bolt Pattern



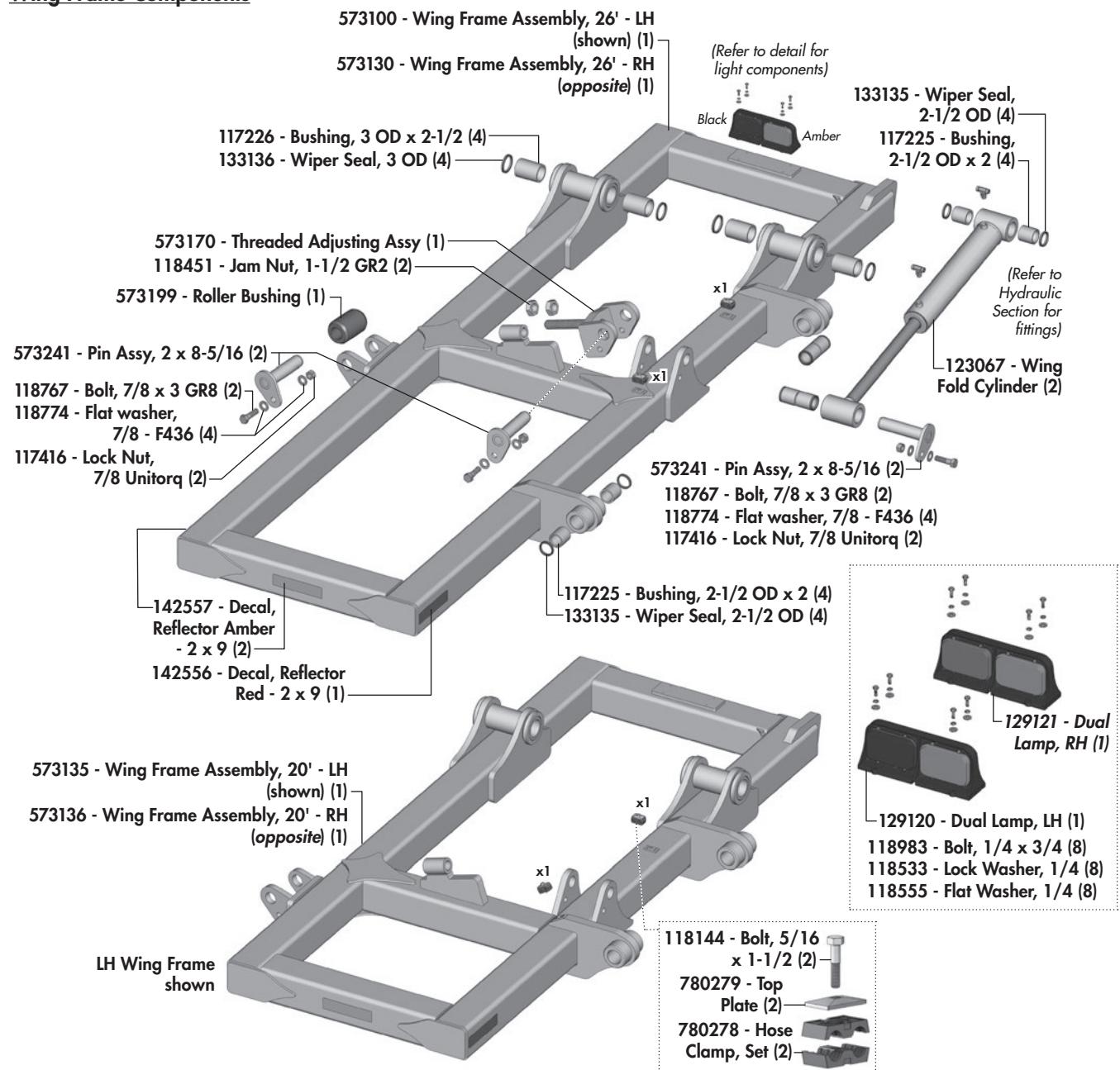
Center Frame Components

Center Frame Components

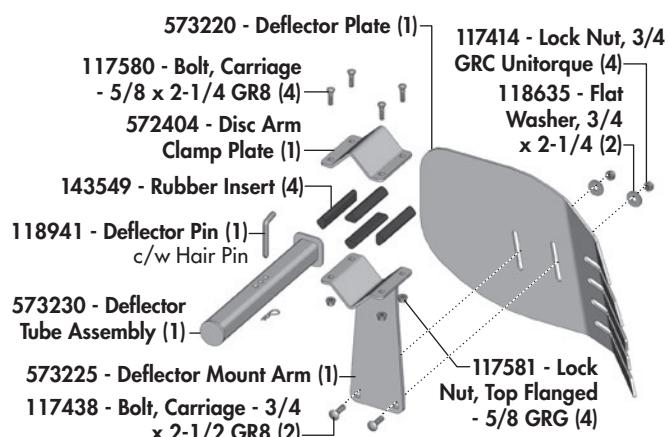
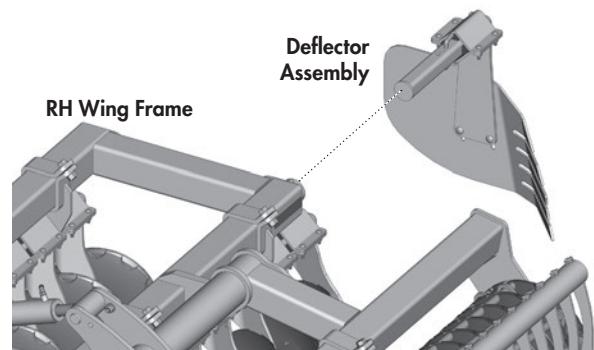


Wing Frame Components

Wing Frame Components

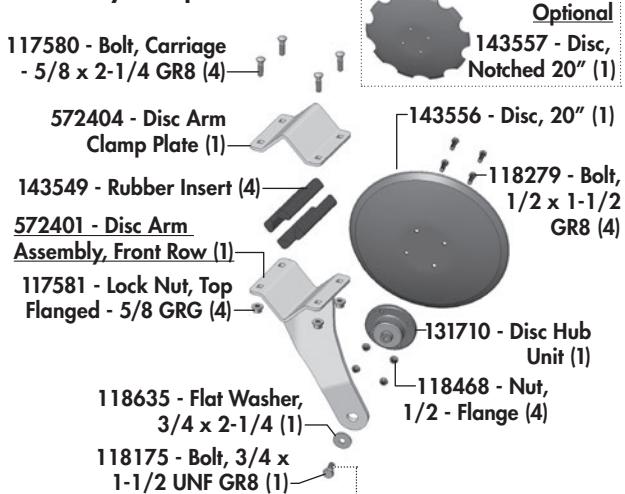


Deflector Assembly Location/Components



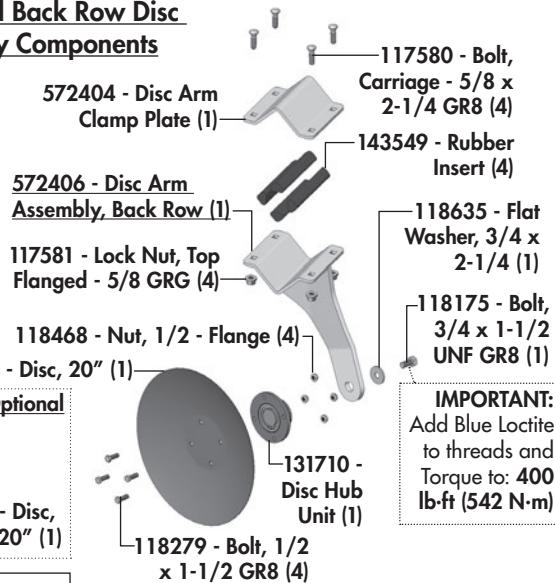
Disc Gang Components - 20" Discs

Standard Front Row Disc Assembly Components



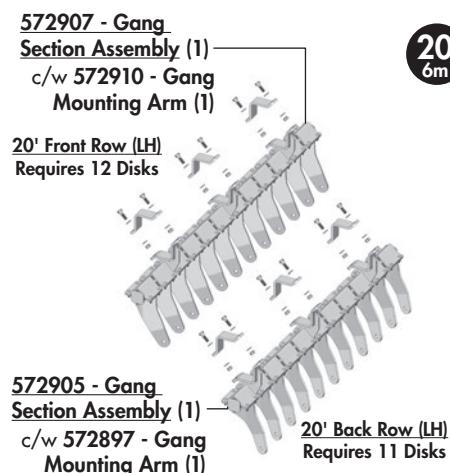
IMPORTANT: Add Blue Loctite to threads & Torque to 400 lb-ft (542 N·m)

Standard Back Row Disc Assembly Components

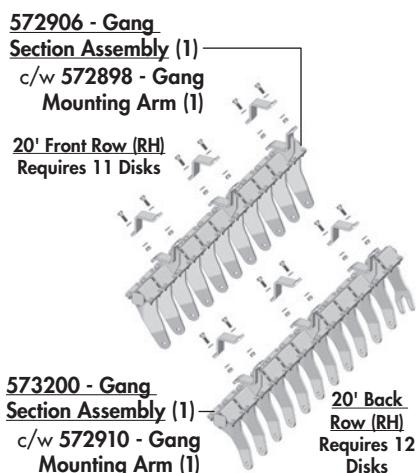


IMPORTANT:
Add Blue Loctite to threads and
Torque to: 400
lb-ft (542 N·m)

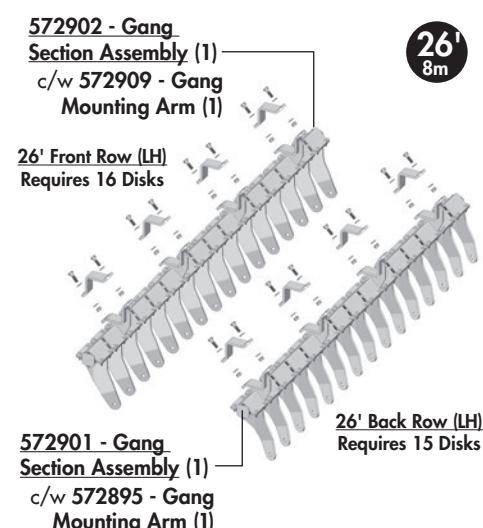
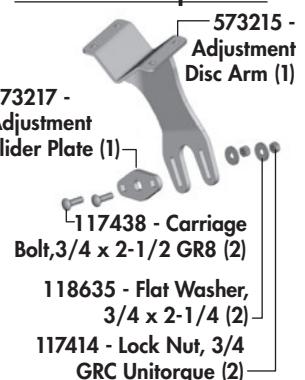
LH Gang Assembly Overview



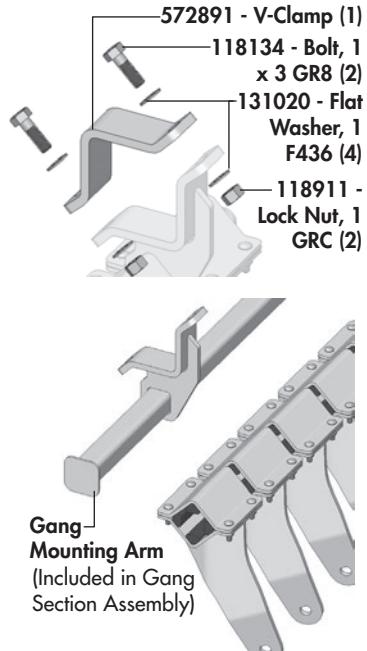
RH Gang Assembly Overview



RH - Back Row Adjustment Disc Arm Components

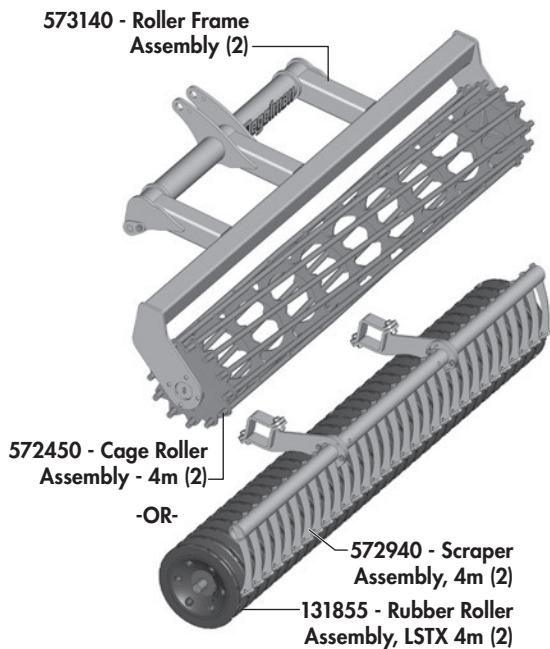


Gang Assembly Mounting (12 or 16)

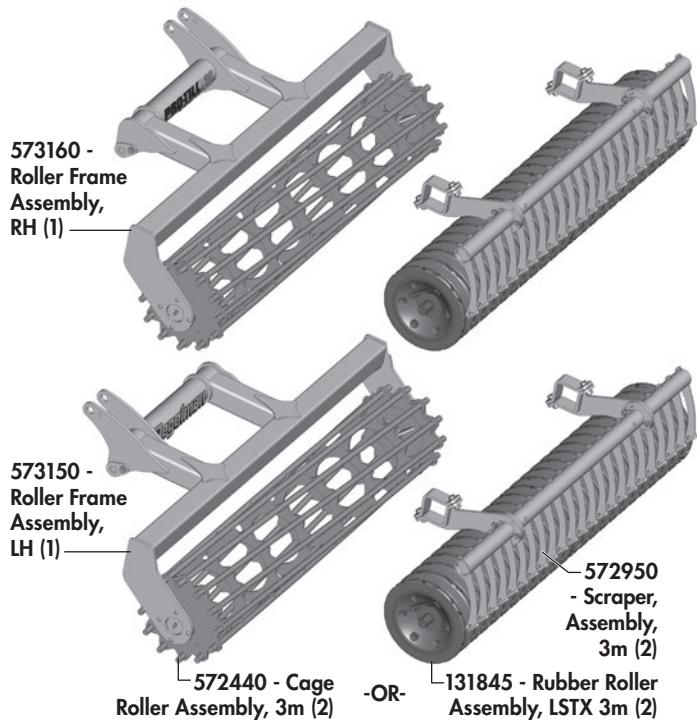


Roller Frame Components

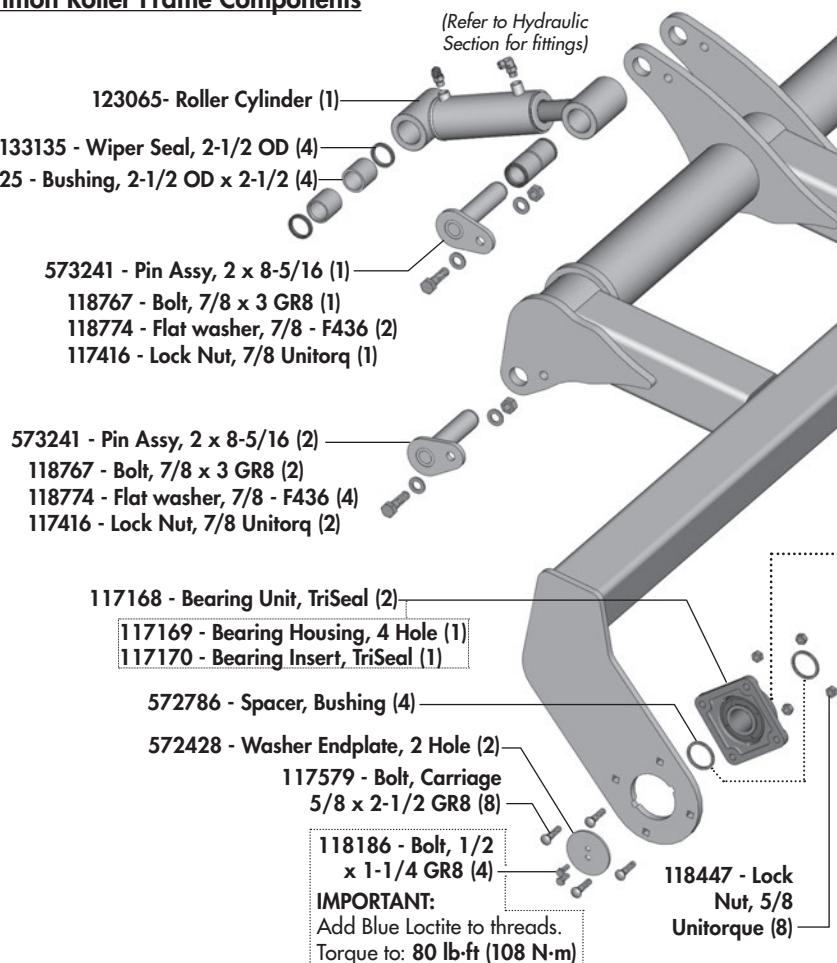
26' (8m) Roller Frame Components



20' (6m) Roller Frame Components (RH/LH)



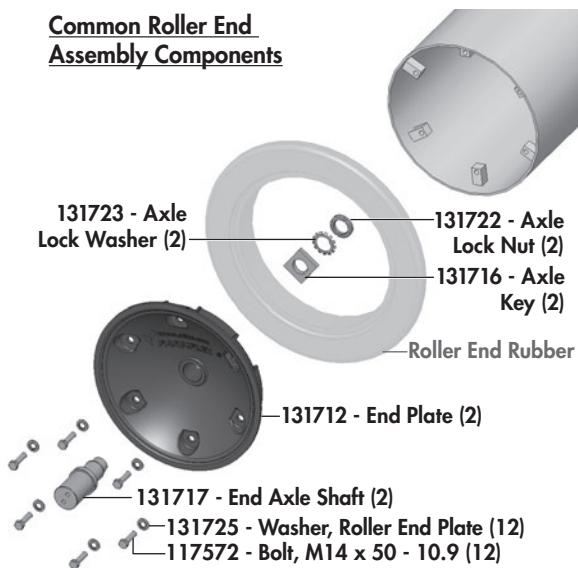
Common Roller Frame Components



IMPORTANT:
Setscrew MAX Torque
is 21 lb-ft (29 N·m).
Do not over-torque.

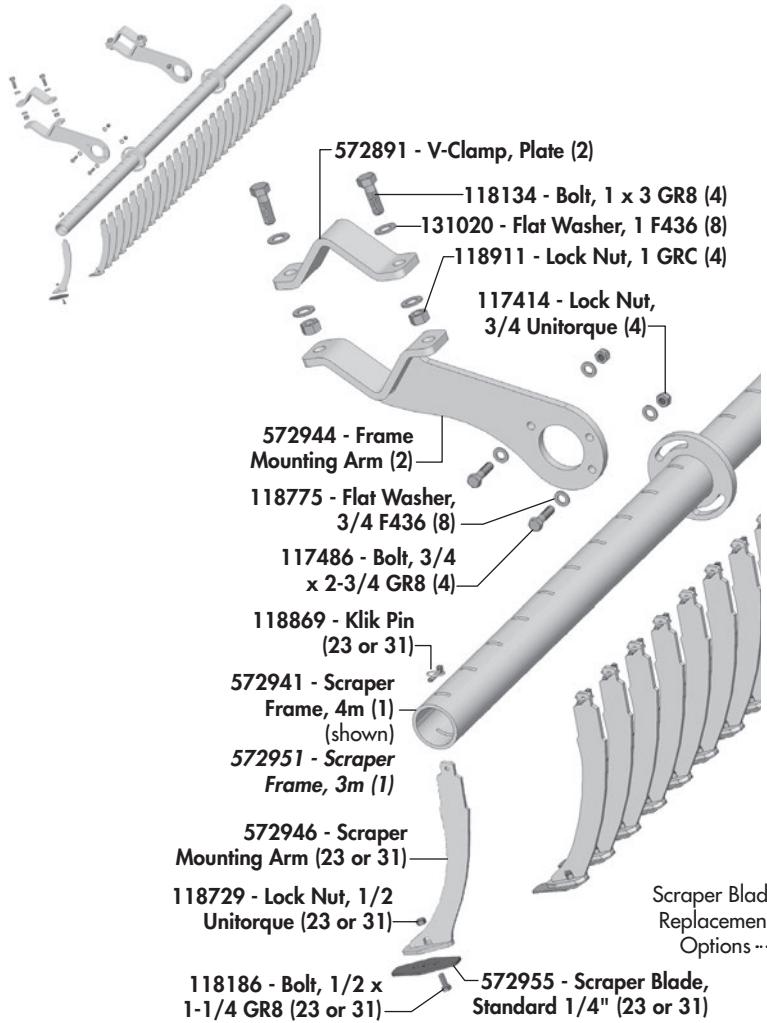
Rubber Roller and Scraper Components

Common Roller End Assembly Components

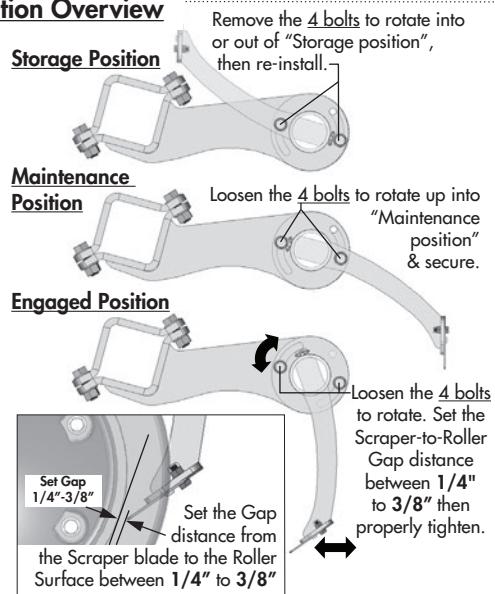


Scraper Section Component Overview

572940 - Scraper, 31 Section - 4m (shown)
572950 - Scraper, 23 Section - 3m



Scraper Position Overview



Standard - Scraper Blade Kits - c/w Bolts & Locknuts.
20' Kit: 572676 (Set of 46) **26' Kit:** 572678 (Set of 62)

Heavy Duty Replacement Scraper Blades

requires new hardware (Bolts & Locknuts)

Note: Replacement part only. Works best only after roller has been run and has relaxed into its permanent shape.

Must purchase by QTY (ProTill Model: 20'-46 or 26'-62)

573320 - Scraper Blade, HD - 3/8
 118279 - Bolt, 1/2 x 1-1/2 GR8
 118729 - Lock Nut, 1/2 Unitorque



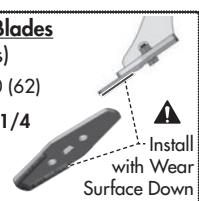
Max-Life Replacement Scraper Blades

requires new hardware (Locknuts)

Kits: 20': 572649 (46) 26': 572650 (62)

572957 - Scraper Blade, Max-Life - 1/4

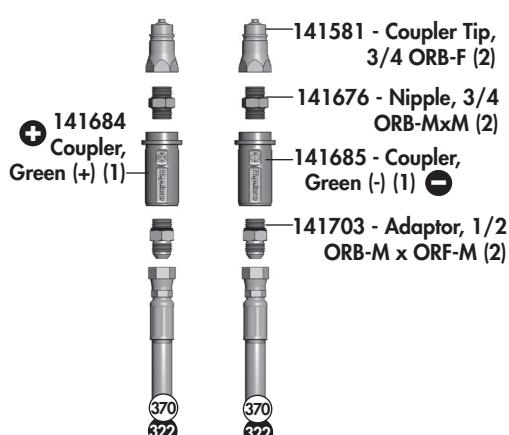
118186 - Bolt, 1/2 x 1-1/4 GR8
 118729 - Lock Nut, 1/2 Unitorque



Hydraulic Layout - 1 - Depth

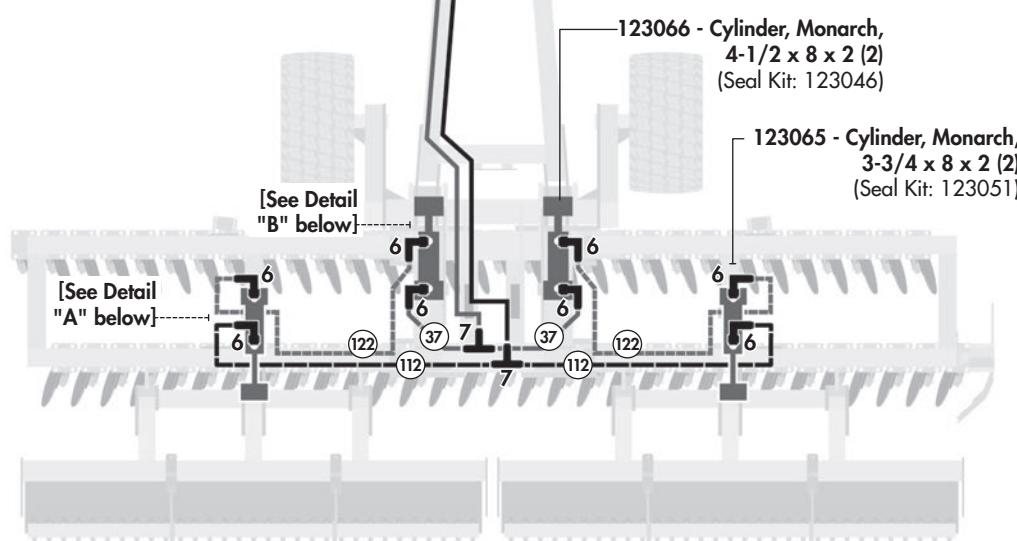
Hydraulic Fittings Required

- | | | |
|---|---------------------------------------|-----|
| 1 | 141581 - Coupler Tip, 3/4 ORB-F | (2) |
| 2 | 141676 - Nipple, 3/4 ORB-MxM | (2) |
| 3 | 141684 - Coupler, Green (+) | (1) |
| 4 | 141685 - Coupler, Green (-) | (1) |
| 5 | 141703 - Adaptor, 1/2 ORB-M x ORF-M | (2) |
| 6 | 141704 - Elbow, 90° 1/2 ORB-M x ORF-M | (8) |
| 7 | 141706 - Tee, 1/2 ORF MxMxM | (2) |

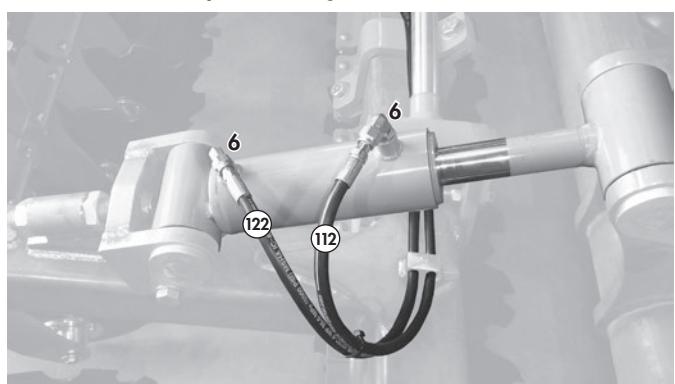


Required Hoses for Wing Cylinders

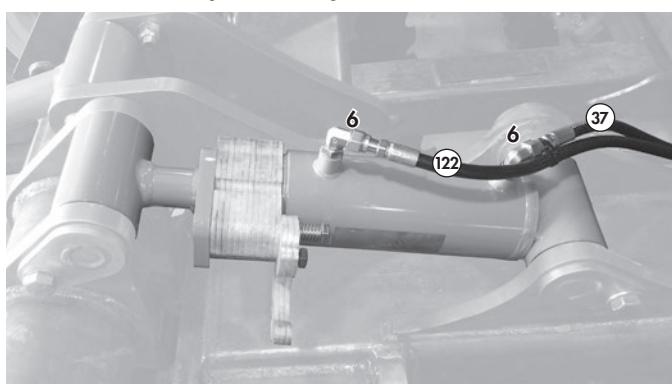
- 26' Models Only - (370) 126721 - Hose, 3/8 x 370 (2)
- 20' Models Only - (322) 126717 - Hose, 3/8 x 322 (2)
 (122) 126710 - Hose, 3/8 x 122 (2)
 (112) 126709 - Hose, 3/8 x 112 (2)
 (37) 126708 - Hose, 3/8 x 37 (2)



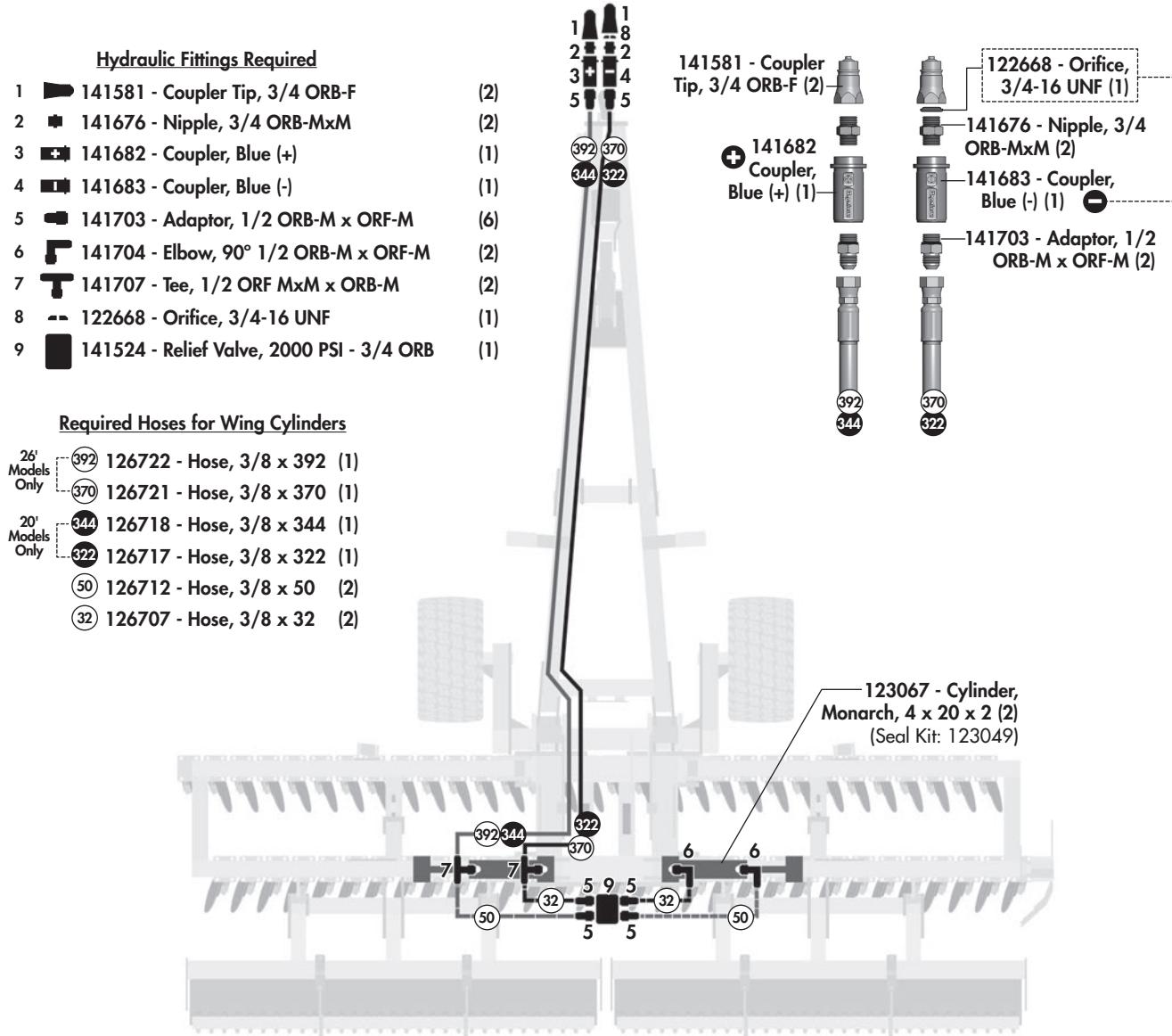
Detail A - LH Roller Cylinder Configuration (RH is Opposite)



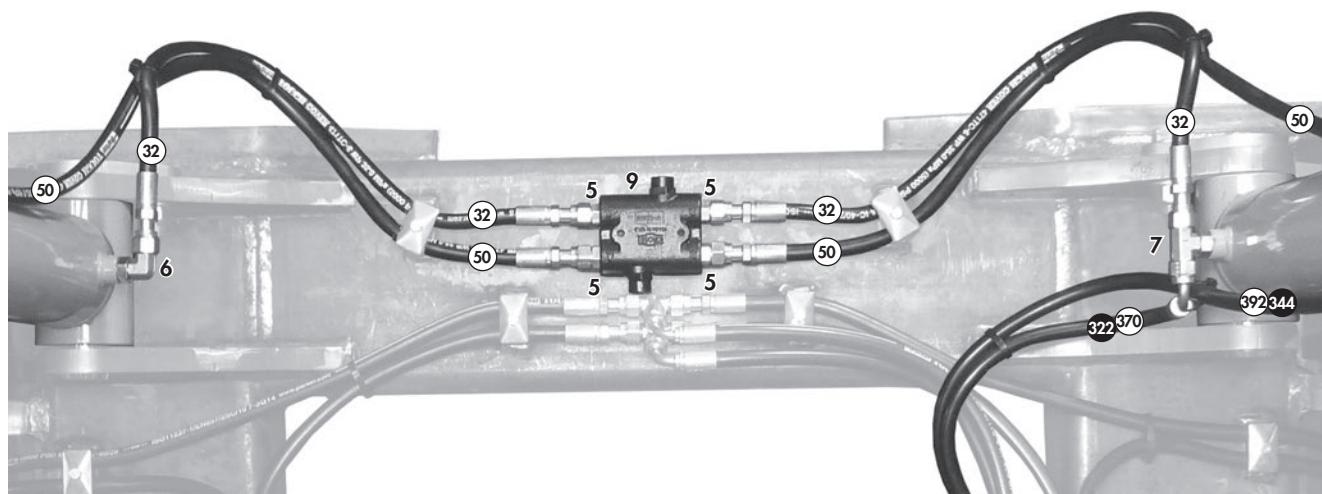
Detail B - LH Wheel Cylinder Configuration (RH is Opposite)



Hydraulic Layout - 2 - Wings



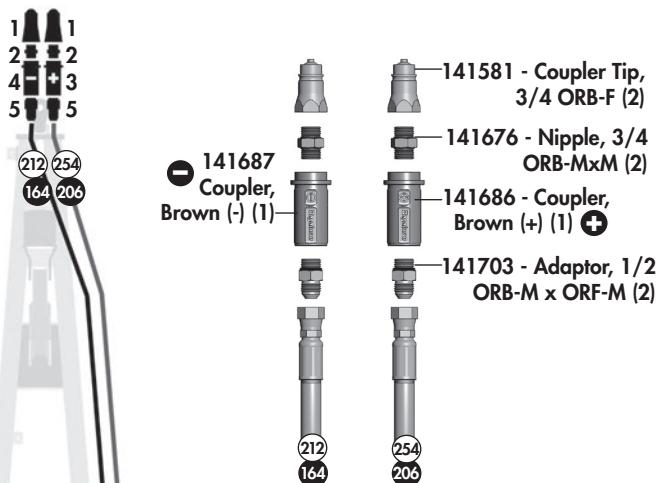
Relief Valve Connections Detail



Hydraulic Layout - 3 - Transport

Hydraulic Fittings Required

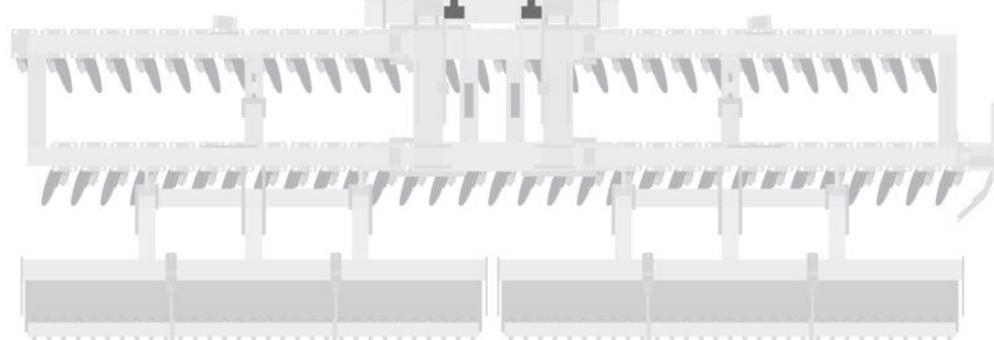
- | | | | |
|---|--|---------------------------------------|-----|
| 1 | | 141581 - Coupler Tip, 3/4 ORB-F | (2) |
| 2 | | 141676 - Nipple, 3/4 ORB-MxM | (2) |
| 3 | | 141686 - Coupler, Brown (+) | (1) |
| 4 | | 141687 - Coupler, Brown (-) | (1) |
| 5 | | 141703 - Adaptor, 1/2 ORB-M x ORF-M | (2) |
| 6 | | 141704 - Elbow, 90° 1/2 ORB-M x ORF-M | (2) |
| 7 | | 141707 - Tee, 1/2 ORF MxM x ORB-M | (2) |



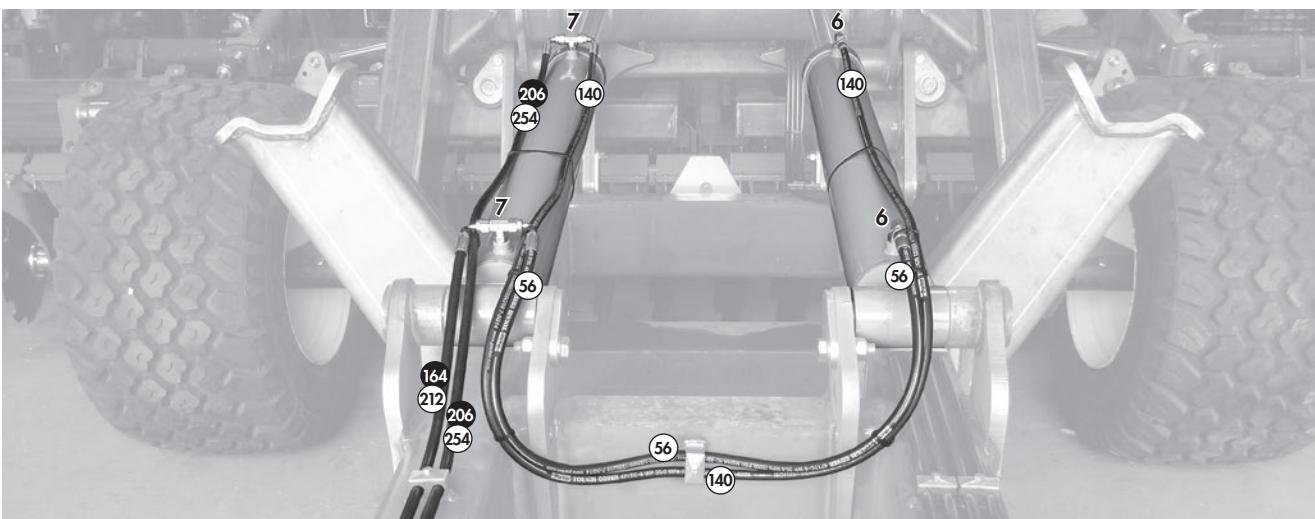
Required Hoses for Wing Cylinders

- 26' Models Only
- 254 126720 - Hose, 3/8 x 254 (1)
 - 212 126719 - Hose, 3/8 x 212 (1)
- 20' Models Only
- 206 126716 - Hose, 3/8 x 206 (1)
 - 164 126715 - Hose, 3/8 x 164 (1)
 - 140 126714 - Hose, 3/8 x 140 (1)
 - 56 126713 - Hose, 3/8 x 56 (1)

123068 - Cylinder, Monarch
5 x 40 x 2-1/2 (2)
(Seal Kit: 123069)

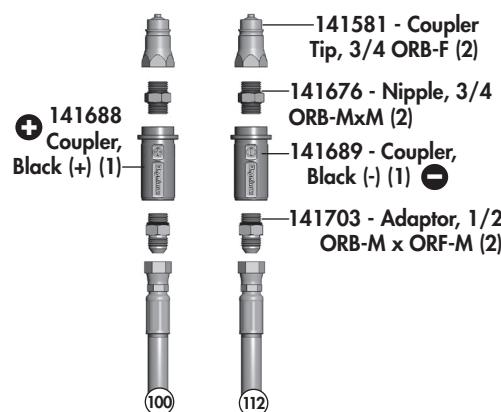
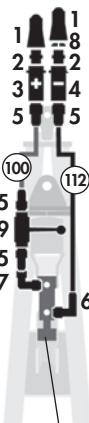


Transport Cylinder Hose Connection Detail



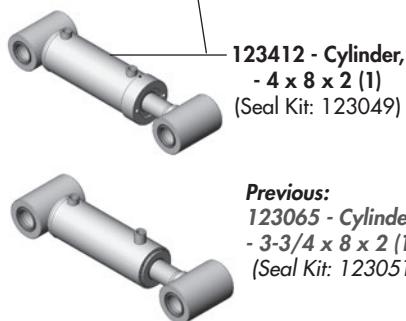
Hydraulic Layout - 4 - Jack

<u>Hydraulic Fittings Required</u>	
1	141581 - Coupler Tip, 3/4 ORB-F
2	141676 - Nipple, 3/4 ORB-MxM
3	141688 - Coupler, Black (+)
4	141689 - Coupler, Black (-)
5	141703 - Adaptor, 1/2 ORB-M x ORF-M
6	141704 - Elbow, 90° 1/2 ORB-M x ORF-M
7	141705 - Elbow, 90° 1/2 ORB-M x ORF F-SW
8	122668 - Orifice, 3/4-16 UNF
9	141597 - Ball Valve - 3/4 ORB

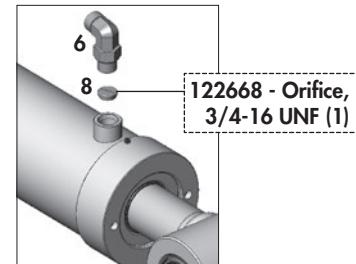


Required Hoses for Wing Cylinders

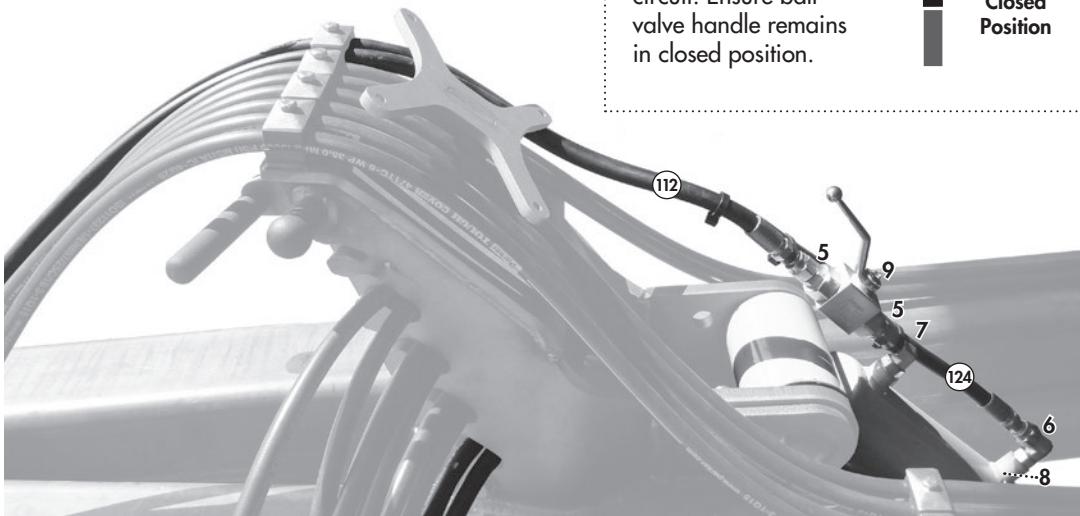
- (112) 126709 - Hose, 3/8 x 112 (1)
- (100) 126711 - Hose, 3/8 x 100 (1)



Previous:
123065 - Cylinder
- 3-3/4 x 8 x 2 (1)
(Seal Kit: 123051)

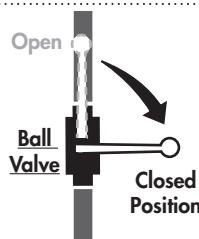


Jack / Ball Valve Connection Detail



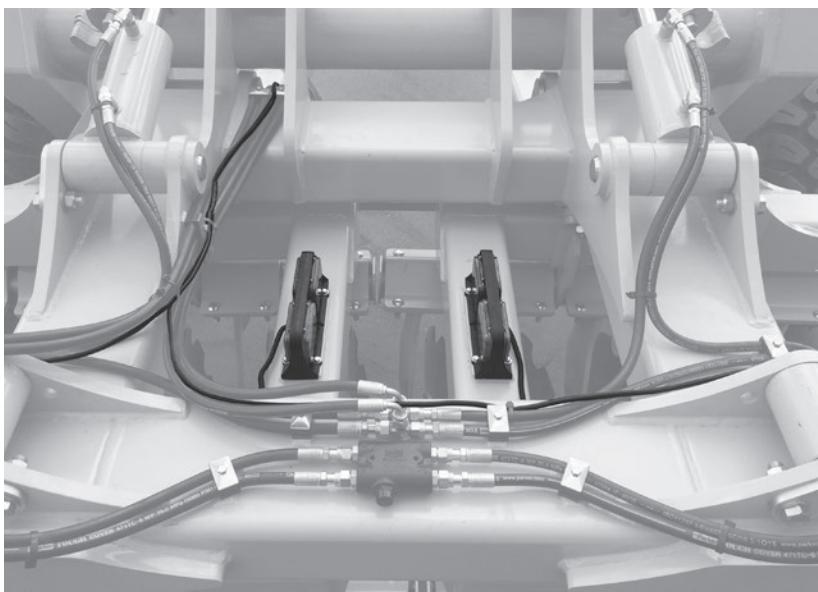
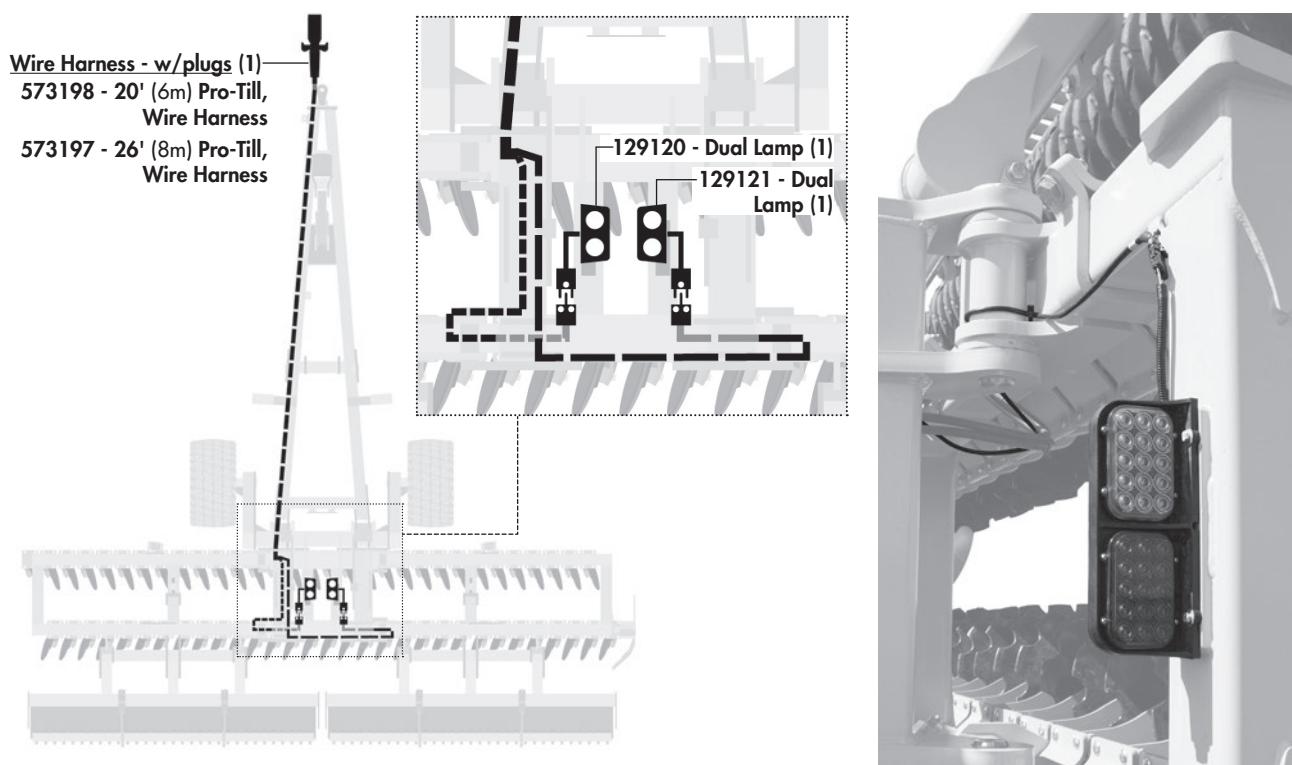
▲ IMPORTANT:

Close the ball valve to prevent accidental operation of this circuit. Ensure ball valve handle remains in closed position.



Light Routing

Rear Light Configuration



Warranty

2 Year **Limited Warranty - Agricultural Products**

Degelman Industries Ltd. ("Degelman") warrants to the original purchaser of any new Degelman equipment, purchased from an authorized Degelman dealer, that the equipment will be free from defects in material and workmanship for a period of two (2) years from the date of delivery, for non-commercial use (including farm, institutional, government, and municipality) and (1) year from the date of delivery for commercial use. The obligation of Degelman to the purchaser under this warranty is limited to the repair or replacement of defective parts in the first year and to the provision, but not the installation of replacement parts in the second year. Degelman reserves the right to inspect any equipment or parts which are claimed to have been defective in material or workmanship.

This warranty limits its replacement or repair coverage to what is consistent with the warranty of Degelman's suppliers of purchased components.

Replacement or repair parts installed in the equipment covered by this limited warranty are warranted for ninety (90) days from the date of delivery of such part or the expiration of the applicable new equipment warranty period, which ever occurs later. Warranted parts shall be provided at no cost to the user at an authorized Degelman dealer during regular working hours. Warranted replacement parts will either be replaced or rebuilt at Degelman's discretion.

Disclaimer of implied warranties & consequential damages

This warranty shall not be interpreted to render Degelman Industries Ltd. liable for injury, death, property damage or damages of any kind, whether direct, consequential, or contingent to property. Without limiting the generality of the foregoing, Degelman shall not be liable for damages resulting from any cause beyond its reasonable control, including, without limitation, loss of crops, any expense or loss of labour, supplies, rental machinery or loss of use.

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 exclusion shall not apply in any jurisdiction where it is not permitted by law.

This limited warranty shall not apply:

1. If, in the sole opinion of Degelman, the unit has been subjected to misapplication, abuse, misuse, negligence accident or incorrect off-site machine set-up.
2. To any goods that have sustained damage or deterioration attributable to a lack of routine maintenance (eg. Check and Re-torque of fastening hardware, Hydraulic fluid purities, drive train alignments, and clutch operation)
3. If parts not made or supplied by Degelman have been used in the connection with the unit, if, in the sole judgement of Degelman such use affects its performance, safety, stability or reliability.
4. If the unit has been altered or repaired outside of an authorized Degelman dealership in a manner which, in the sole judgement of Degelman, affects its performance, safety, stability or reliability.
5. To expendable or wear items such as (eg. Harrow tines, Rock Picker and Rock Rake wear teeth and replaceable bushings and pins.) and any other items that in the company's sole judgement are a wear item.

No employee or representative of Degelman Industries Ltd. is authorized to change this limited warranty in any way or grant any other warranty unless such change is made in writing and signed by the Degelman Service Manager.

This limited warranty is subject to any future availability of supply, which may directly affect Degelman's ability to obtain materials or manufacture replacement parts.

Degelman reserves the right to make improvements in design or changes in specifications at any time, without incurring obligations to owners of equipment previously delivered.

This limited warranty is subject to compliance by the customer to the enclosed *Retail Customer's Responsibility Under Degelman Warranty*.

Warranty

Retail Customer's Responsibility Under Degelman Warranty.

It is the retail customer and/or Operator's responsibility to read the Operator's Manual, to operate, lubricate, maintain and store the equipment in accordance with all instructions and safety procedures. Failure of the operator to read the operators manual is a misuse of this equipment.

It is the retail customer and/or operators responsibility to inspect the product and to have any part(s) repaired or replaced when continued operation would cause damage or excessive wear to other parts or cause safety hazard.

It is the retail customer's responsibility to deliver the product to the authorized Degelman dealer, from whom he purchased it, for service or replacement of defective parts, which are covered by warranty. Repairs to be submitted for warranty consideration must be made within forty-five days of failure.

It is the Retail Customer's responsibility for any cost incurred by the dealer for hauling of the product for the purpose of performing a warranty obligation or inspection.

WARRANTY INFORMATION

Make certain the warranty registration card has been forwarded to:

**Degelman Industries Ltd.
Box 830 -272 Industrial Dr.
Regina, SK, Canada
S4P 3B1**

Always give your dealer the serial number of your Degelman product when ordering parts or requesting service or other information.

The serial number is located on the machine as shown in the diagram below. In the space provided record the model number, the serial number and the date of purchase to assist your dealer in providing you with prompt and efficient service.

SERIAL NUMBER: _____

MODEL NUMBER: _____

DATE OF PURCHASE: _____

