Degelman

OPERATOR & PARTS MANUAL

PRO-TILL®
HIGH PERFORMANCE TILLAGE

143346 v1.3

DEGELMAN INDUSTRIES LTD.
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PRO-TILL® HIGH PERFORMANCE TILLAGE 33

PRO-TILL® HIGH PERFORMANCE TILLAGE 40

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OPERATORS SECTION - TABLE OF CONTENTS

PARTS SECTION - TABLE OF CONTENTS

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⚠ IMPORTANT:

READ MANUAL

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⚠ IMPORTANT SAFETY REMINDER

PRO-TILL®
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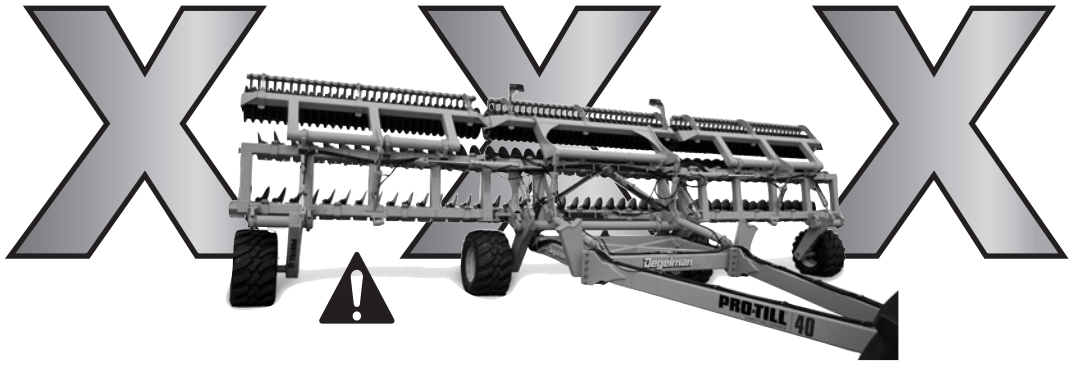
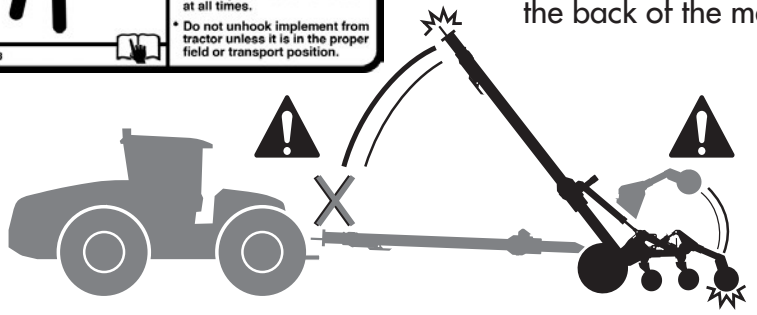
⚠ DANGER - NEVER PARK, UN-HOOK, or SERVICE Pro-Till with REAR WINGS RAISED



⚠ 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

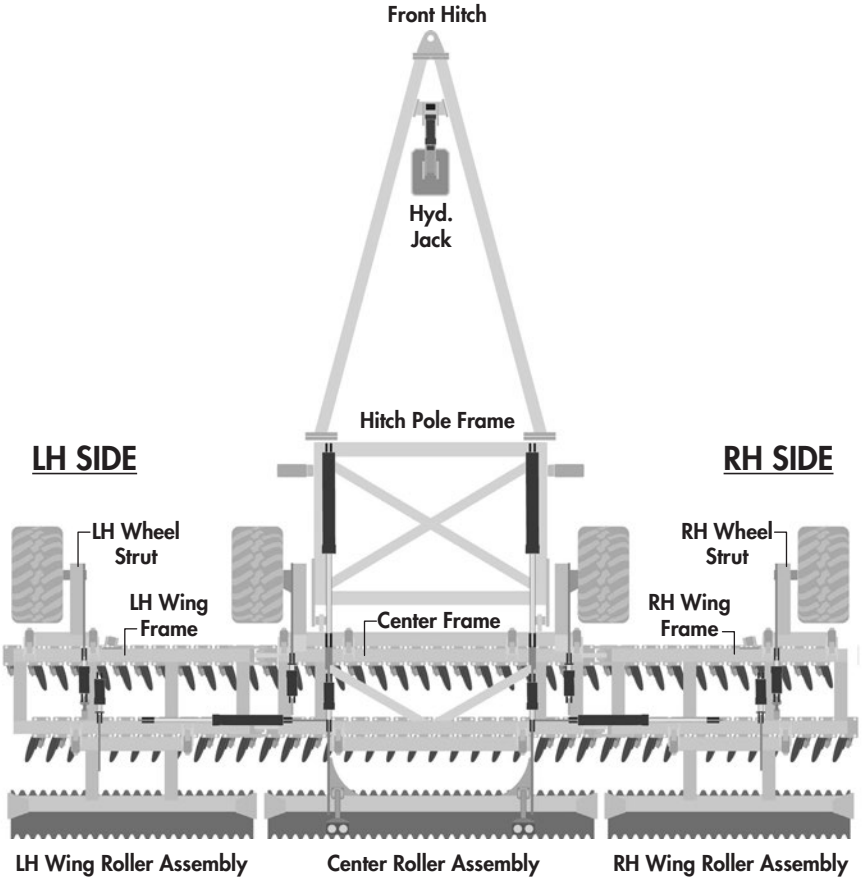
PRO-TILL®
HIGH PERFORMANCE TILLAGE

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.

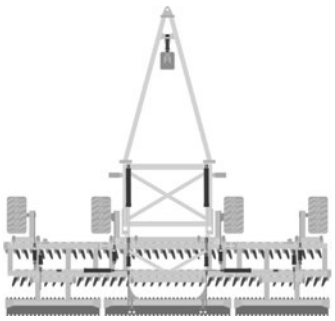
TO THE NEW OPERATOR OR OWNER - Safe, efficient and trouble free operation of your Degelman PRO-TILL requires that you and anyone else who will be operating or maintaining it, read and understand the Safety, Operation, Maintenance and Troubleshooting information contained within this manual.

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.

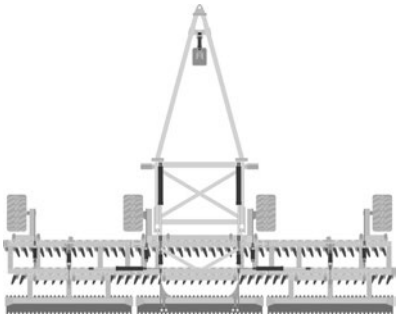
OPERATOR ORIENTATION - The directions left, right, front and rear, as mentioned throughout the manual, are as seen from the tractor drivers' seat and facing in the direction of travel.



PRO-TILL® HIGH PERFORMANCE TILLAGE 33



PRO-TILL® HIGH PERFORMANCE TILLAGE 40



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

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!

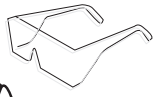
GENERAL SAFETY

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 / UNHOOKING

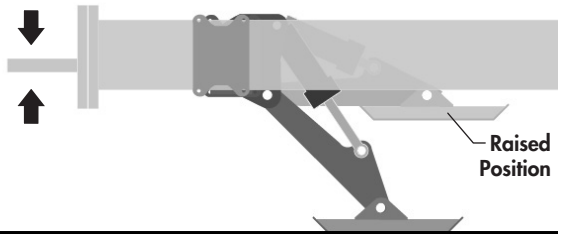
The PRO-TILL should always be parked on a level, dry area that is free of debris and foreign objects. Follow this procedure to hook-up:

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 hydraulics. To connect, proceed as follows:

- 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 be labelled in a suggested order of priority from most used to least:

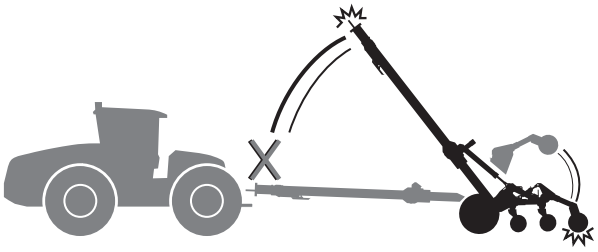
(1) Wheels, (2) Packers, (3) Wings, (4) Transport, (5) Jack

5. Use the hydraulic jack controls to raise or lower the hitch to align with the drawbar.



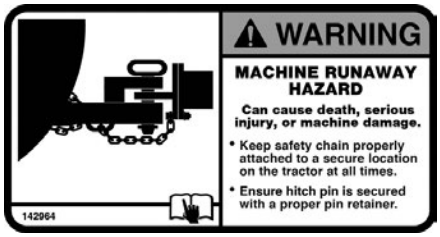
⚠ **WARNING:** *Tractor **MUST** be equipped with a clevis hitch to prevent unit from tipping upward while folding into and out of transport. A safety chain must also always be properly installed.*

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.*



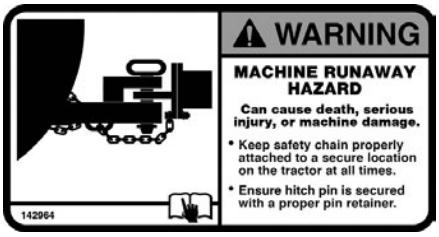
TRANSPORT SAFETY

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 30 km/h** or **19 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.

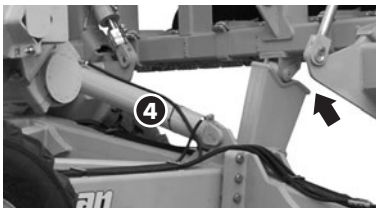
⚠ **IMPORTANT:** *UNDER NO CIRCUMSTANCES SHOULD THERE EVER BE RIDERS WHILE THE PRO-TILL IS IN TRANSPORT.*

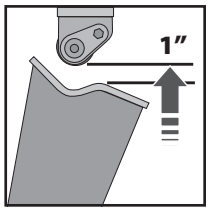
TRANSPORT TO FIELD POSITION

FOLLOW PROCEDURE BELOW:

A. Drive the PRO-TILL onto level ground so it is straight behind the tractor.

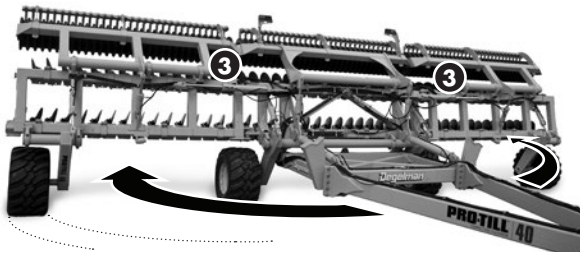
B. **Slightly** extend the Transport Cylinders (#4) only to remove the weight of wings from the wing transport carriers. Do not lift any more than needed to take the weight off transport carriers.





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

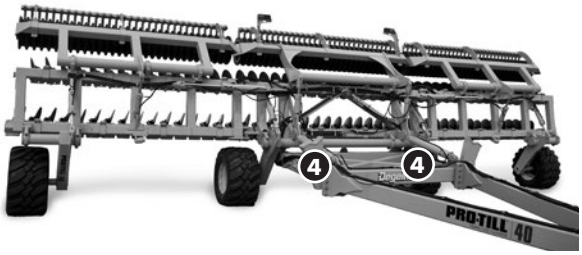
C. Extend the Wing Cylinders (#3) to fully open the wings behind the machine.

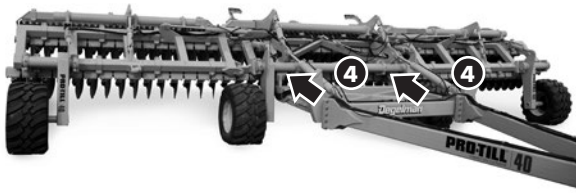


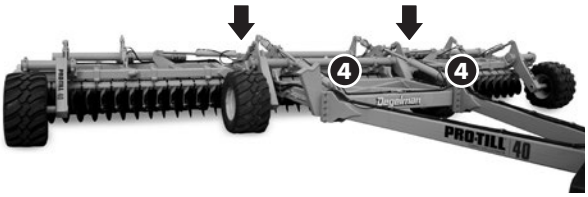
⚠ **NEVER LIFT WINGS**

Unfold using **WING CYLINDERS**, then lower rear sections using the **TRANSPORT CYLINDERS**.

D. With the wings fully open, extend the Transport Cylinders (#4) to fully lower the PRO-TILL rear frame sections to the ground.

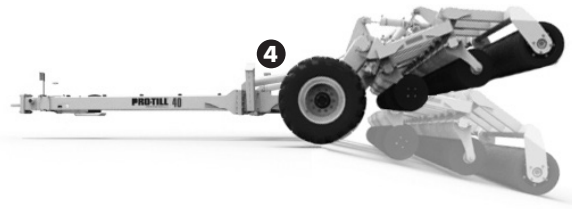






E. Place both the Transport Cylinders (#4) and the Wing Cylinders (#3) into the FLOAT position before operation.

⚠ **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.*



FIELD TO TRANSPORT POSITION

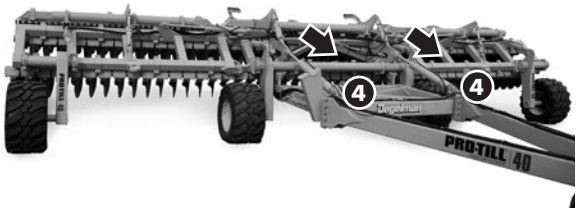
FOLLOW PROCEDURE BELOW:

A. Fully extend the Wheel and Roller Cylinders (#1 & #2), 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.*

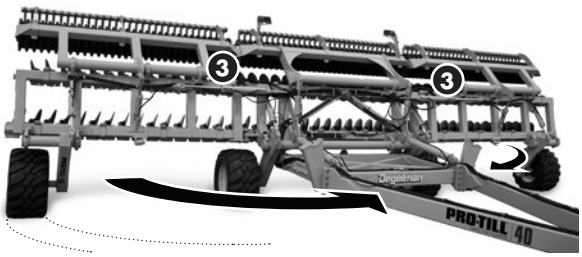
B. Retract the Transport Cylinders (#4), fully raising the **complete rear section** (center frame and wing sections).

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



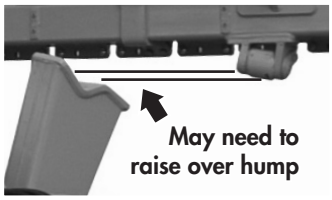
⚠ **NEVER LIFT WINGS**

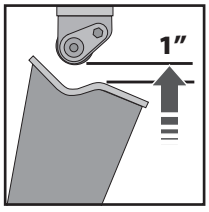
Lift rear sections using **TRANSPORT CYLINDERS**, then fold the wings forward using the **WING CYLINDERS.**



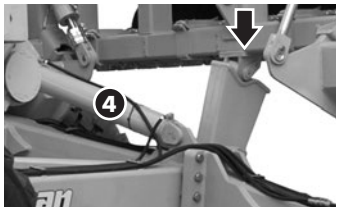
C. Retract the Wing Cylinders (#3), bringing both wings inward towards the frame.

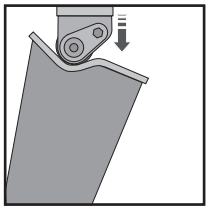
D. When the wings get close to the wing transport carriers, you may need to *slightly* extend the Transport Cylinders (#4) so the rollers can reach the correct position.





E. With the wings in the proper position, retract the Transport Cylinders (#4) fully lowering the wings onto the wing transport carriers.





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 all grease points.

   *(**Note:** Do **NOT** grease the **spherical bearings** on the packer ends even though they may have grease fittings. They come pre-lubricated and sealed from the factory)*
4. Check all bolt tightness.
5. Adjust Disc and Packer height 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.

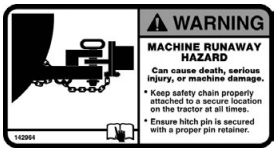
PRE-OPERATION CHECKLIST

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

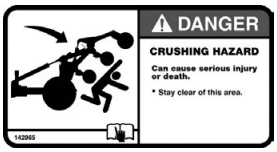
Before operating the machine and each time thereafter, the following areas should be checked off:

1. Lubricate 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:

   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 and/or Packer height as outlined in the adjustments section. If excessive disc wear is notice, replacement may be required. Refer to maintenance section.

OPERATING GUIDELINES

1. Place both the Transport Cylinders (#4) and the Wing 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.

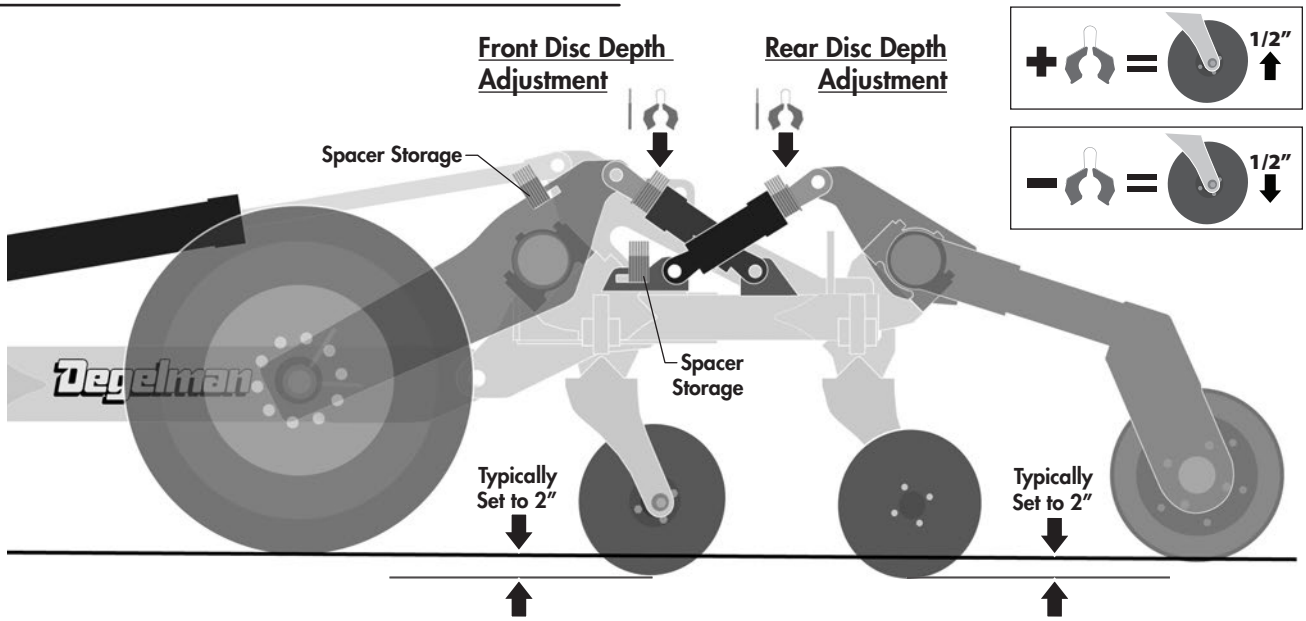
3. When making headland turns, the operator may wish to slightly raise the disc sections by activating the Wheel (#1) or Roller (#2) cylinders (or both). Remember to lower after coming out of the turn.

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 a 1/4" stop lowers cutting depth 1/2" deeper, Adding a 1/4" stop raises discs up 1/2" higher.

6. 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.

SETTING DISC DEPTH - FRONT AND REAR



Adjusting the cutting depth of the front and rear discs is accomplished by adding or removing a number of 1/4" spacers from specified cylinders.

The spacers limit the stroke distance of the cylinders, changing the amount that the front and rear of the disc frames are lowered.

Each spacer (1/4") that is added to the cylinder raises the frame height by 1/2". Therefore, to lower discs deeper into the soil, you would remove *one* spacer for *each* 1/2" of depth change required.

A typical recommended penetration depth of 2" is suggested for both front and rear discs. This depth, however, can be adjusted to the operators needs and preferences or based on different crop varieties and soil conditions.

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 or rear disc sections are done individually:

• Adjust the front disc height by adding/removing spacers to the two center section wheel cylinders.

• Adjust the rear disc height by adding/removing spacers to the two rear wing packer cylinders.

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

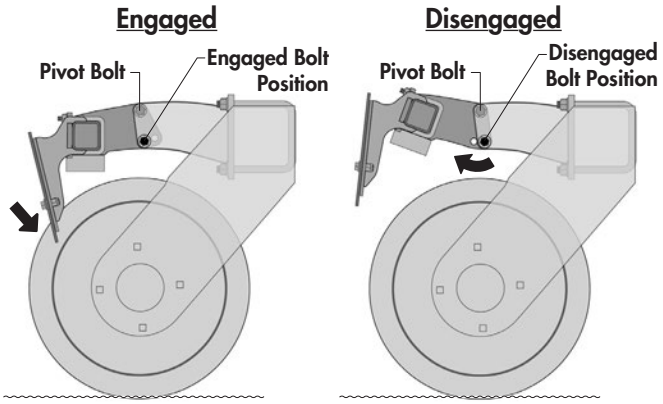
Use the following as a guideline for setting depth:

1. Drive the PRO-TILL onto level ground.
2. Fully retract the Wheel (#1) and Packer (#2) 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 Wheel (#1) and Packer (#2) cylinders.
5. - If the front discs need to be lowered, you will need remove one spacer for each 1/2" you want to lower it. These will be removed from the two center wheel cylinders and placed in the storage position.

   - If the front discs need to be raised, you will need to add one spacer for each 1/2" you want to raise it.
6. - If the rear discs need to be lowered, you will need remove one spacer for each 1/2" you want to lower it. These will be removed from the two wing packer cylinders and placed in the storage position.

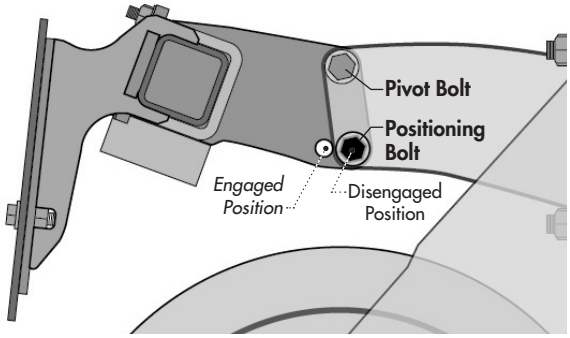
   - If the rear discs need to be raised, you will need to add one spacer for each 1/2" you want to raise it.
7. Repeat above procedure until proper depth is achieved.

SCRAPER POSITIONS



SETTING SCRAPER POSITION

The optional scrapers for the rubber rollers can be adjusted to either Engaged or Disengaged settings.

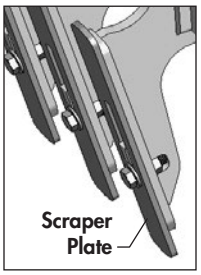


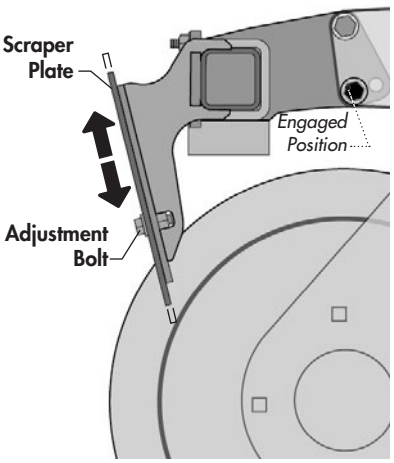
To change from one position to the next:

- Loosen the Pivot Bolts (4 per section).
- Remove the Positioning Bolts (4 per section).
- Position Scraper Assembly at desired position.
- Re-install Positioning Bolts.
- Properly tighten all Pivot and Positioning bolts.

ADJUSTING SCRAPER PLATE DEPTH

NOTE: *As the scraper plates wear with usage they will need to be adjusted accordingly.*





To adjust the depth of the scraper plates:

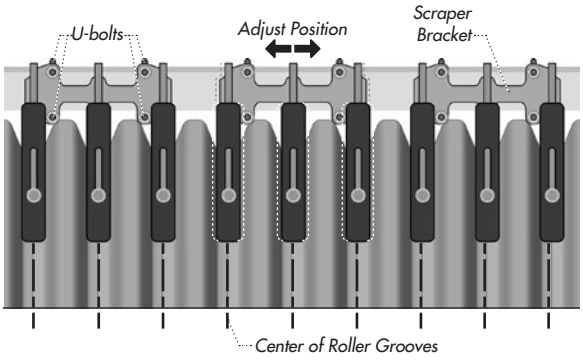
- Position Scraper assembly into "Engaged" position
- Partially loosen the "Adjustment" bolt but do not fully remove. (Locknut is held from behind)
- Adjust scraper plate to desired position.
- Properly re-tighten Adjustment bolt.

NOTE: *As the scraper plates wear with usage they will need to be adjusted accordingly.*

INITIAL SCRAPER BRACKET ADJUSTMENT

The distance between the centers of the rubber roller ring grooves may change slightly during initial use due to the rubber equalizing from manufacturing. This may require adjusting the scraper bar bracket positions to accommodate. Follow procedure below:

- Loosen scraper bracket U-bolts.
- Adjust bracket position to align scraper bars to center of rubber roller grooves.
- Re-tighten U-bolts.
- Re-check after use.

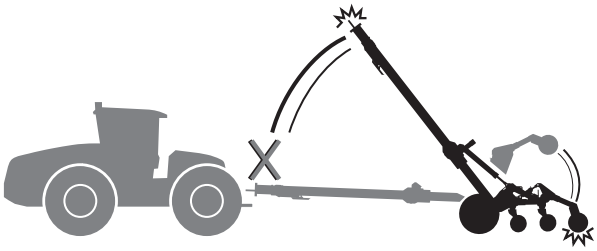


MAINTENANCE SAFETY

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.

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.

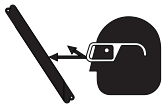
142556 - Decal, Reflector Red - 2 x 9	(2)
142557 - Decal, Reflector Amber - 2 x 9	(2)
142963 - Decal, Danger-Neg Tongue Weight	(2)
142964 - Decal, Warning-Machine Runaway	(2)
142965 - Decal, Danger-Crushing Hazard	(2)
142966 - Decal, Warning-Pinch Point	(2)
142968 - Decal, Warning-Float Cylinders-lg	(1)
142969 - Decal, Warning-Float Cylinders-sm	(4)
142008 - Decal, Degelman - 6"	(3)
143198 - Decal, Degelman - 8-1/4"	(1)
142961 - Decal, Pro-Till 33 - 4"	(2)
142962 - Decal, Pro-Till 33 - 7"	(2)
142949 - Decal, Pro-Till 40 - 4"	(4)
142950 - Decal, Pro-Till 40 - 7"	(2)
142951 - Label, Hose-1-Wheels Ext	(1)
142952 - Label, Hose-1-Wheels Ret	(1)
142953 - Label, Hose-2-Packers Ext	(1)
142954 - Label, Hose-2-Packers Ret	(1)
142955 - Label, Hose-3-Wings Ext	(1)
142956 - Label, Hose-3-Wings Ret	(1)
142957 - Label, Hose-4-Transport Ext	(1)
142958 - Label, Hose-4-Transport Ret	(1)
142959 - Label, Hose-5-Jack Ext	(1)
142960 - Label, Hose-5-Jack Ret	(1)

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:

(Note: Do ***NOT*** *grease the* ***spherical bearings)***

Maintenance Check - 10 Hours



- Hydraulic fluid leaks
- Damaged hoses
- Check tire pressure:

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

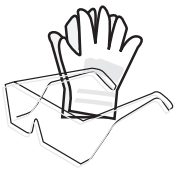
Grease Points - 25 Hours

- Front Frame / Rockshaft Pins
- Wing Frame Pins
- Cylinder Pins

Grease Points - 50 Hours

- Wing Transport Roller Pins
- Hubs & Spindles
- Working points & pins
- Safety signs clean

Annually



- Bolt tightness
- Wheel bearings

SERVICE

GREASING

Grease: Use an SAE multipurpose grease with extreme pressure (EP) performance. Also acceptable is an SAE multipurpose lithium.

1. Use only a hand-held grease gun for all greasing.
2. Wipe grease fitting with a clean cloth before greasing, to avoid injecting dirt.
3. Replace and repair broken fittings immediately.
4. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.
5. Inject grease until you see grease being expelled from the bearing or bushing areas.

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 all grease fittings to remove moisture (except spherical bearings - refer to pg.11)
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 the exposed chrome shaft on the hydraulic cylinders to prevent rusting.

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	Grade 8
	lb.ft (*N.m*)	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*)

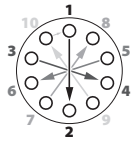
METRIC TORQUE SPECIFICATIONS

(based on "Zinc Plated" values)

Size	Class 8.8	Class 10.9
	lb.ft (*N.m*)	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)



10 BOLT PATTERN

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.

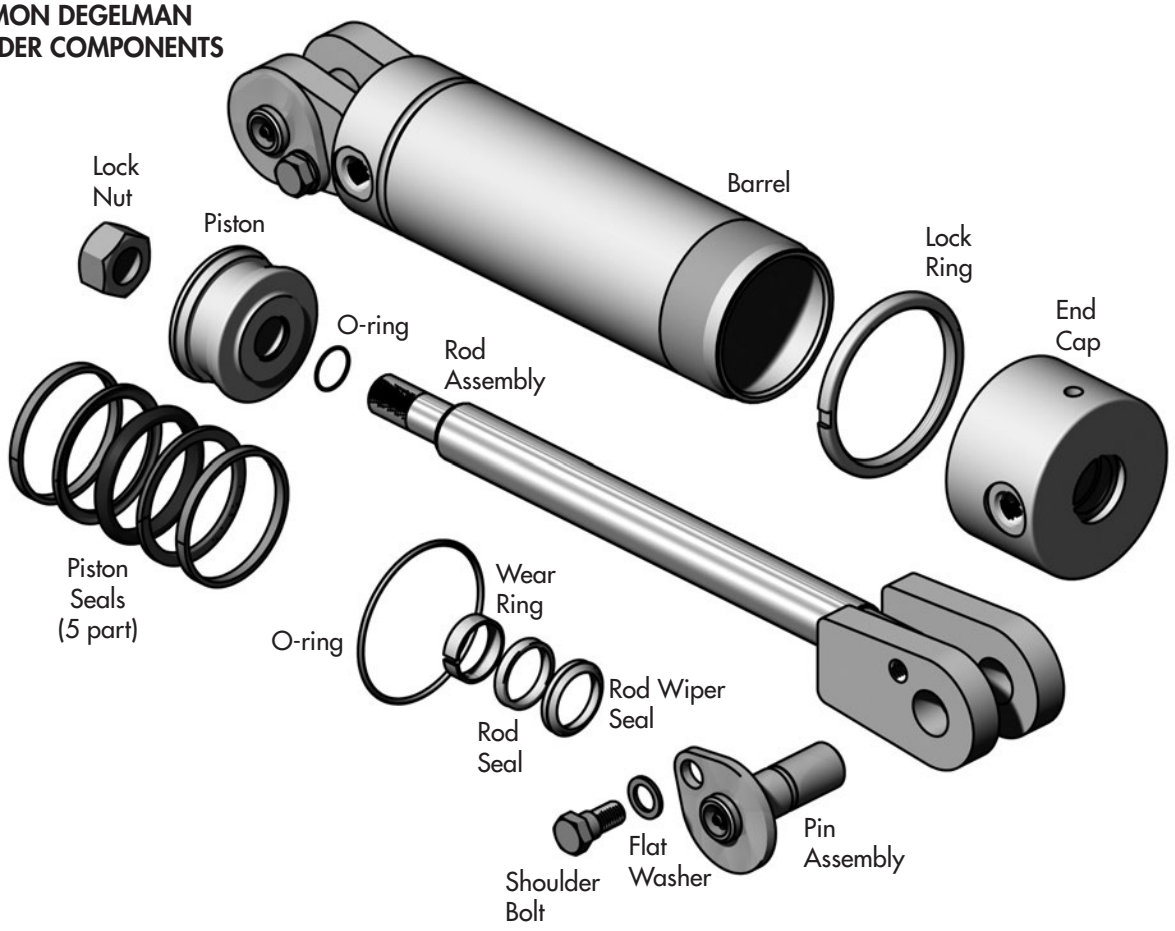
Tightening Flare Type Tube Fittings

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.

HYDRAULIC CYLINDER REPAIR

When cylinder repair is required, clean off unit, disconnect hoses and plug ports before removing cylinder.
NOTE: *Complete rebuilt cylinders may be available. Contact your dealer for further information.*

COMMON DEGELMAN CYLINDER COMPONENTS



DISASSEMBLY

1. Loosen lock ring and turn off end cap.
2. Carefully remove piston, rod and cap combination.
3. Disassemble piston from rod by removing lock nut.

NOTE: *DO NOT clamp rod by chrome surface.*

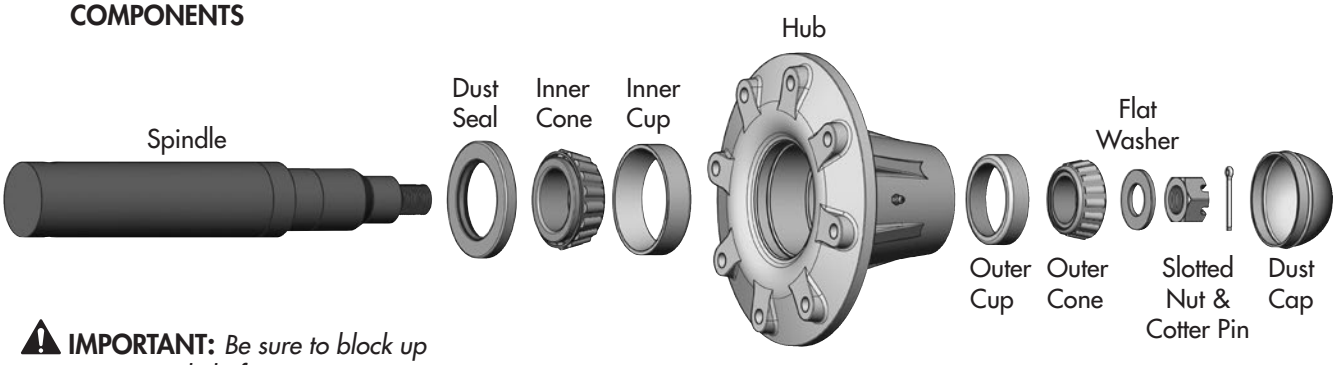
4. Slide off end cap.
5. Remove seals and inspect all parts for damage.
6. Install new seals and replace damaged parts with new components.

ASSEMBLY

1. Reinstall rod through end cap.
2. Secure piston to rod with lock nut. Torque to 225 ft-lb (305 N·m).
3. Thread lock ring fully onto barrel.
4. Lube inside of barrel and piston seals with hydraulic oil.
5. With cylinder body held gently in a vise, insert piston, end cap and rod combination using a slight rocking motion.
6. Turn end cap fully against lock ring then back off end cap to align ports.
7. Tighten lock ring against end cap using a punch and hammer.

WHEEL HUB REPAIR

COMMON HUB & SPINDLE COMPONENTS



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

DISASSEMBLY

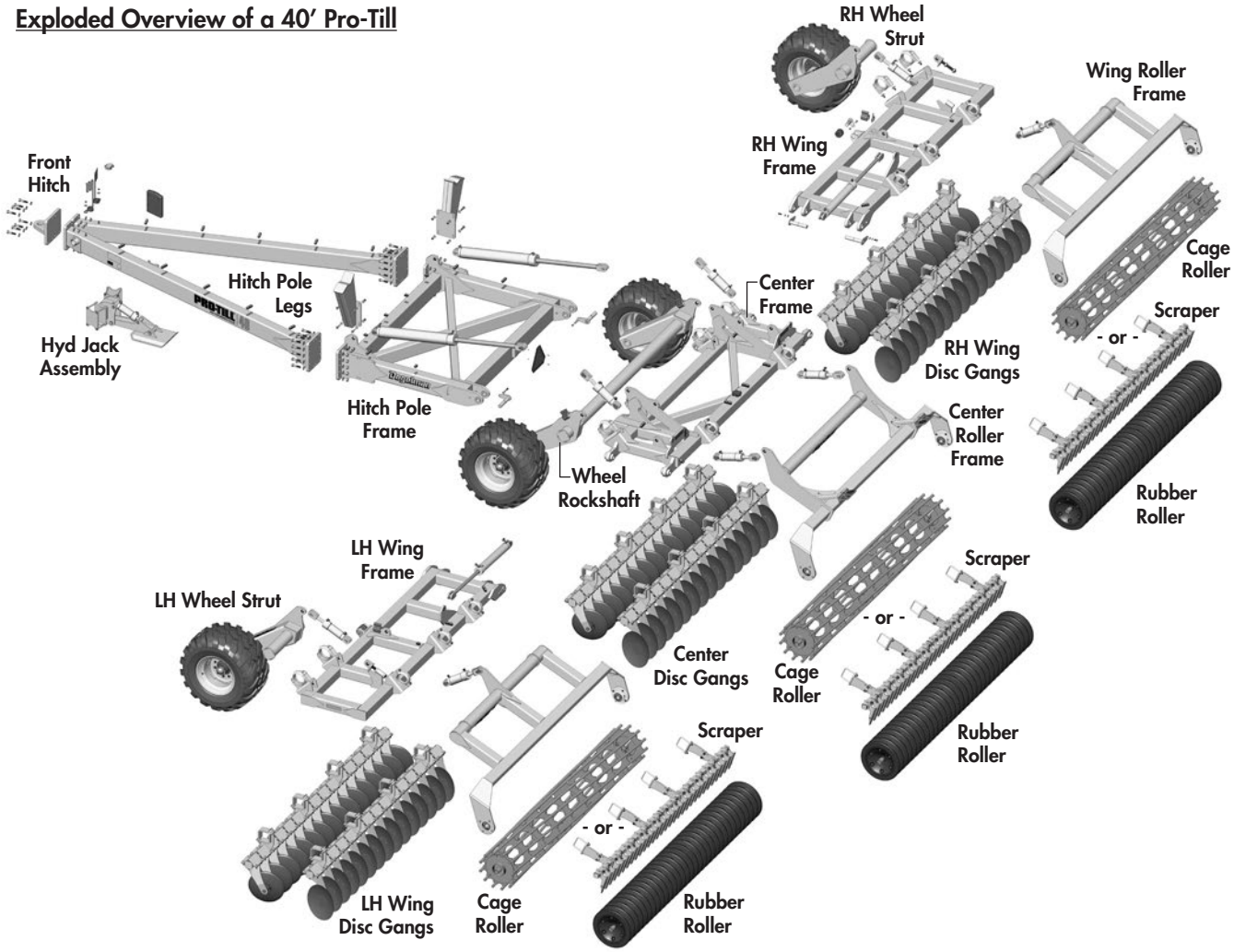
1. Remove dust cap.
2. Remove cotter pin from nut.
3. Remove nut and washer.
4. Pull hub off spindle.
5. Dislodge the inner cone bearing and dust seal.
6. Inspect cups that are press fitted into hub for pits or corrosion and remove if necessary.
7. Inspect and replace defective parts with new ones.

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.

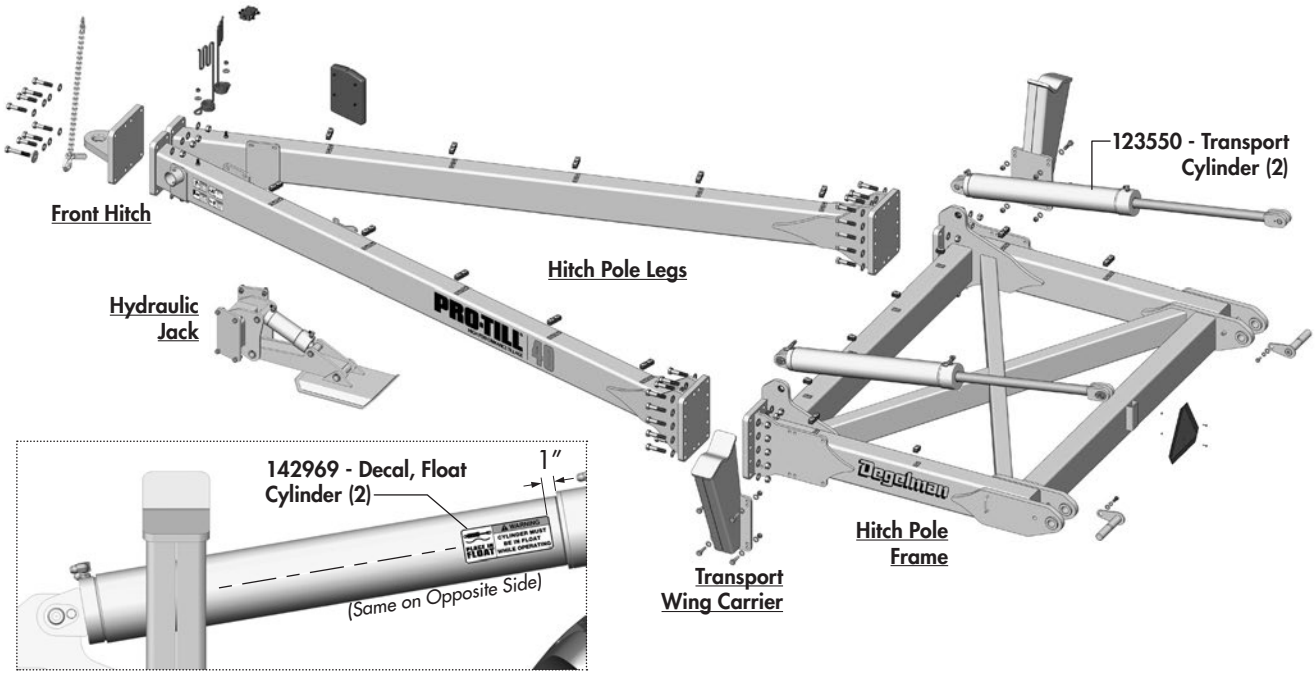
Pro-Till Overview

Exploded Overview of a 40′ Pro-Till

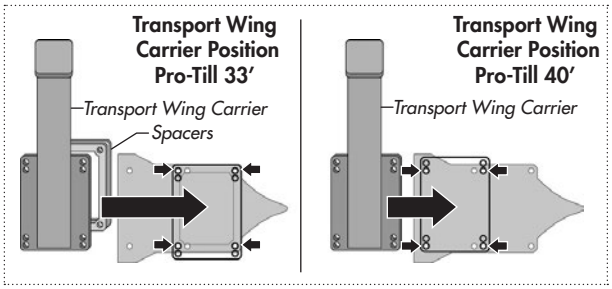


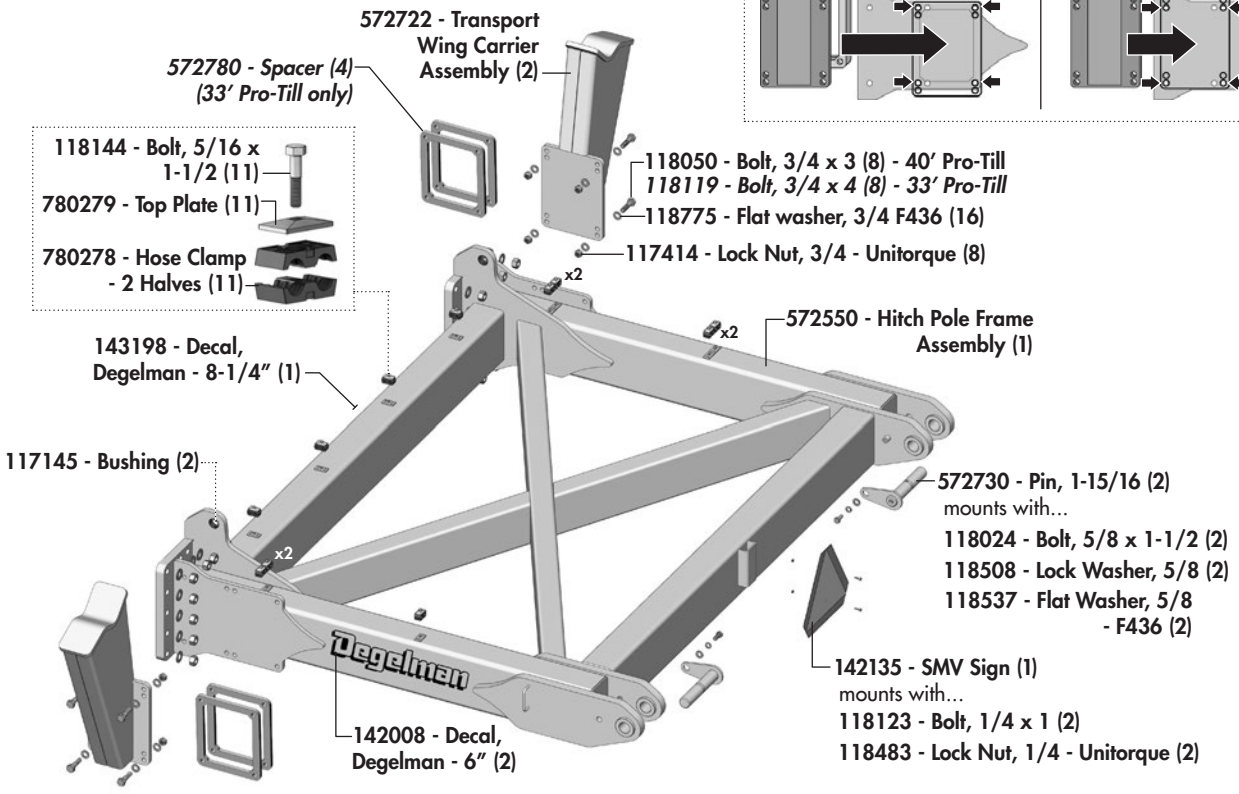
Hitch Pole Frame Components

Hitch Pole Frame Overview



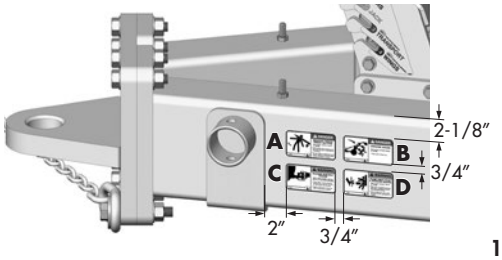
Hitch Pole Frame Components Detail



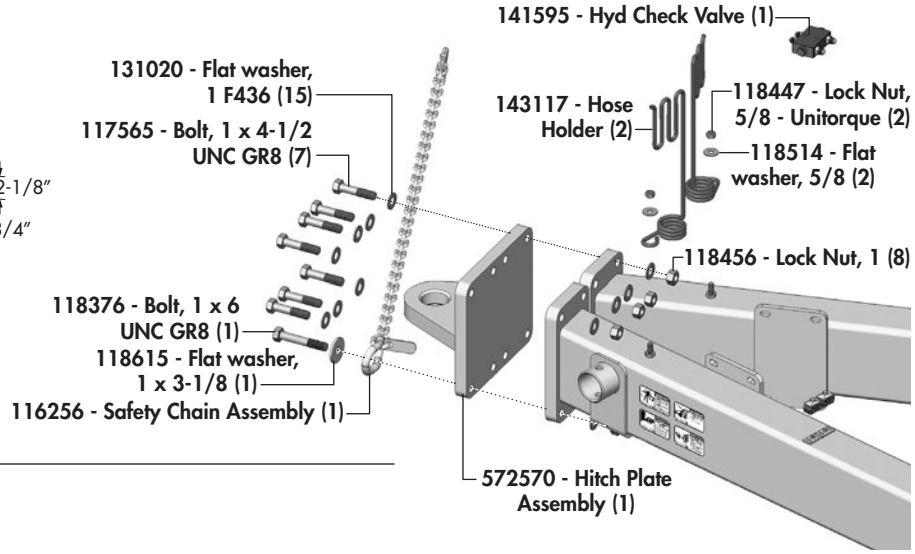


Hitch Pole Frame Components

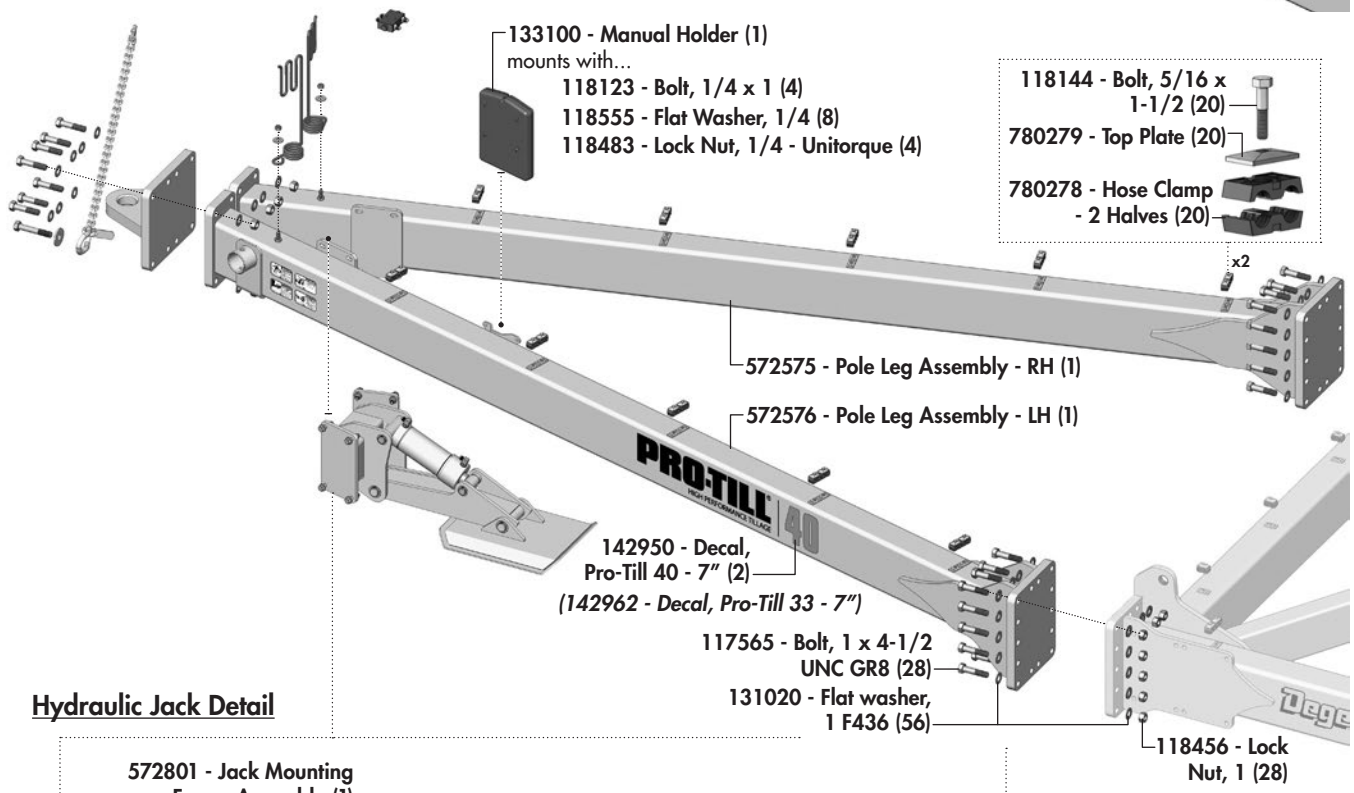
Front Hitch Detail



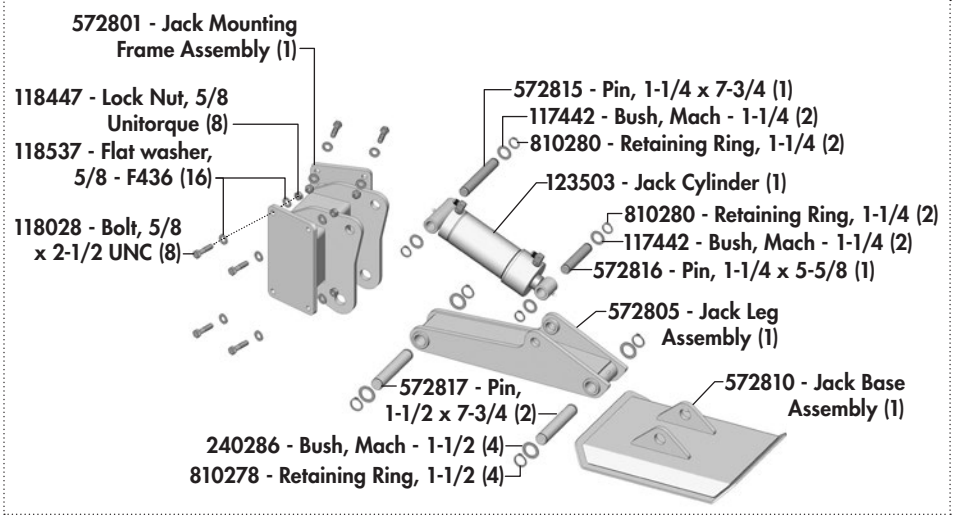
A 142963 - Decal, Danger - Negative (2)
B 142965 - Decal, Danger - Crushing (2)
C 142964 - Decal, Warning - Hazard (2)
D 142962 - Decal, Warning - Pinch (2)



Hitch Pole Leg Components

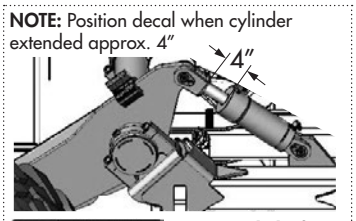


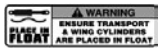
Hydraulic Jack Detail



Wheel & Rockshaft Components

Center Wheel Rockshaft Components

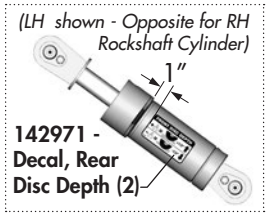




142968 - Decal, Float Cylinder (1)

Rockshaft Decal

C/L



142971 - Decal, Rear Disc Depth (2)

117145 - Bushing

RH

572640 - Rockshaft Frame, Center wheel (1)

122883 - Cylinder Depth Stop Block - 1/4" (16)

123570 - Center Rockshaft Cylinder (2)

118062 - Bolt, 3/4 x 5-1/2 GR8 (4)

LH

117414 - Lock Nut, 3/4 GRC Unitorque (4)

131830 - Hub/Spindle Assembly (4) c/w 118712 - Nut, Wide Base 3/4 UNF GR8 (10)

131803 - Wheel Assembly (4) c/w 131807 - Tire, 600/50R22 (1) 131806 - Rim, 22.5 x 20.00 (1) 127015 - Valve Stem, TR618A (1)

RH Wheelstrut Components

142949 - Decal, Pro-Till 40 - 4" (1)

(142961 - Decal, Pro-Till 33 - 4")

117145 - Bushing (1)

123590 - RH Wheel Cylinder (1)

572655 - Wheel Strut Assembly - RH (1)

LH Wheelstrut Components

142949 - Decal, Pro-Till 40 - 4" (1)

(142961 - Decal, Pro-Till 33 - 4")

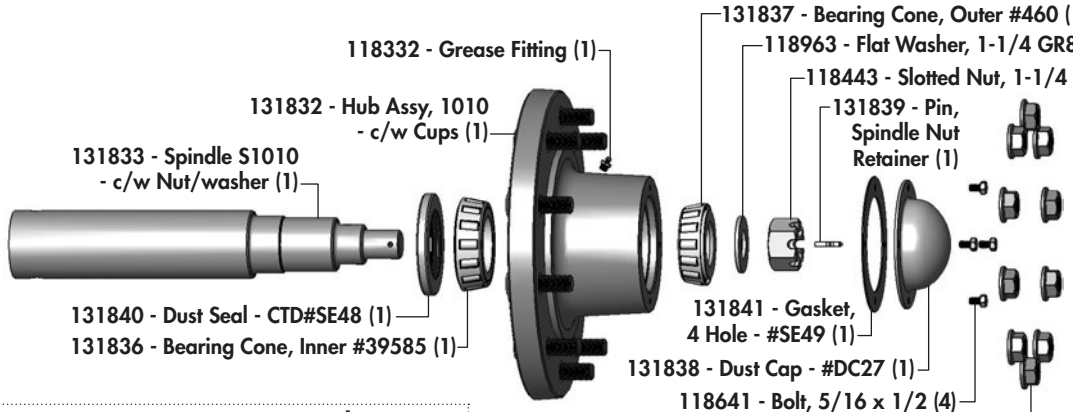
117145 - Bushing (1)

123590 - LH Wheel Cylinder (1)

572656 - Wheel Strut Assembly - LH (1)

Tire pressure: 58 PSI (400 kPa)

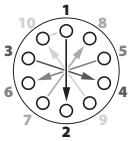
131830 - Hub/Spindle Assembly (4)



Wheel Nut Torque

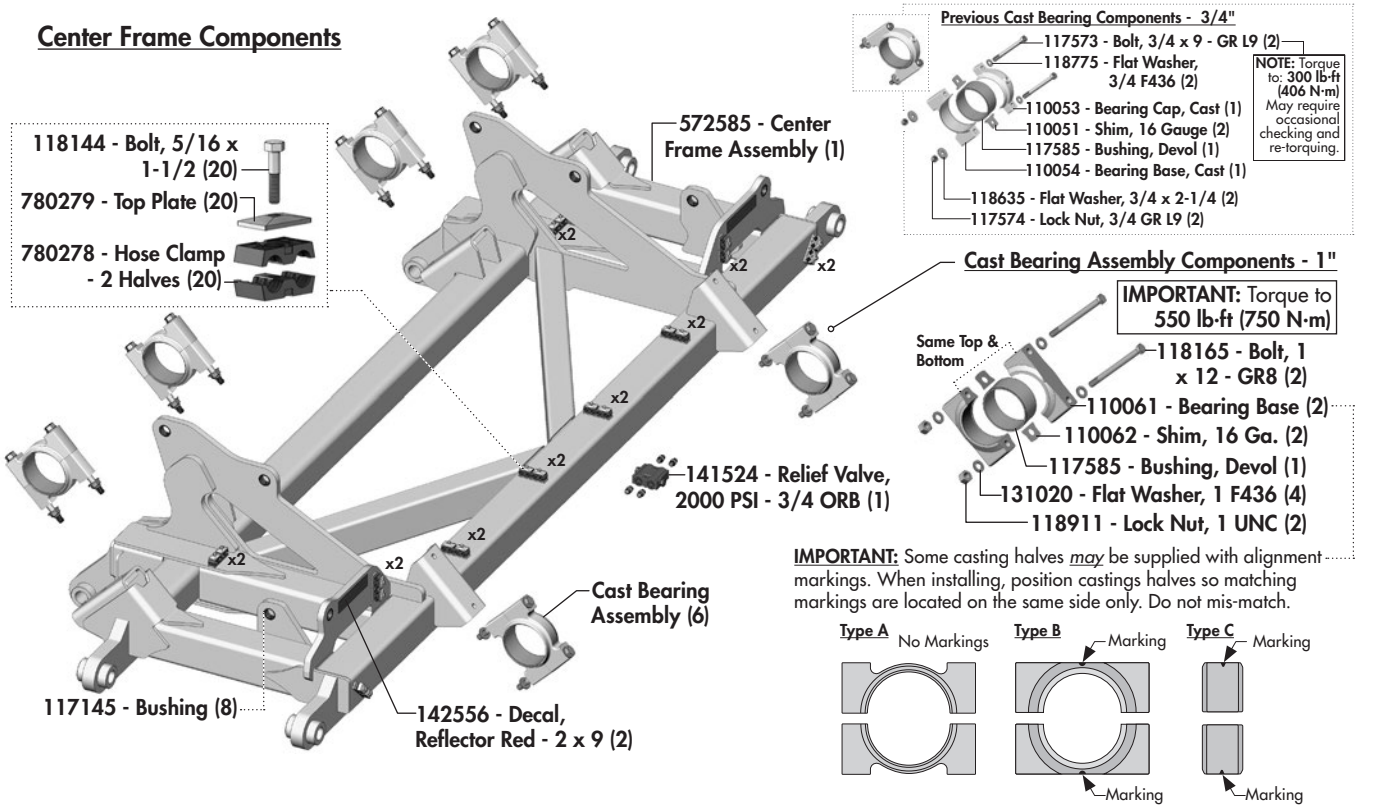
Size	lb.ft (N.m)
3/4	280-300 (380-405)

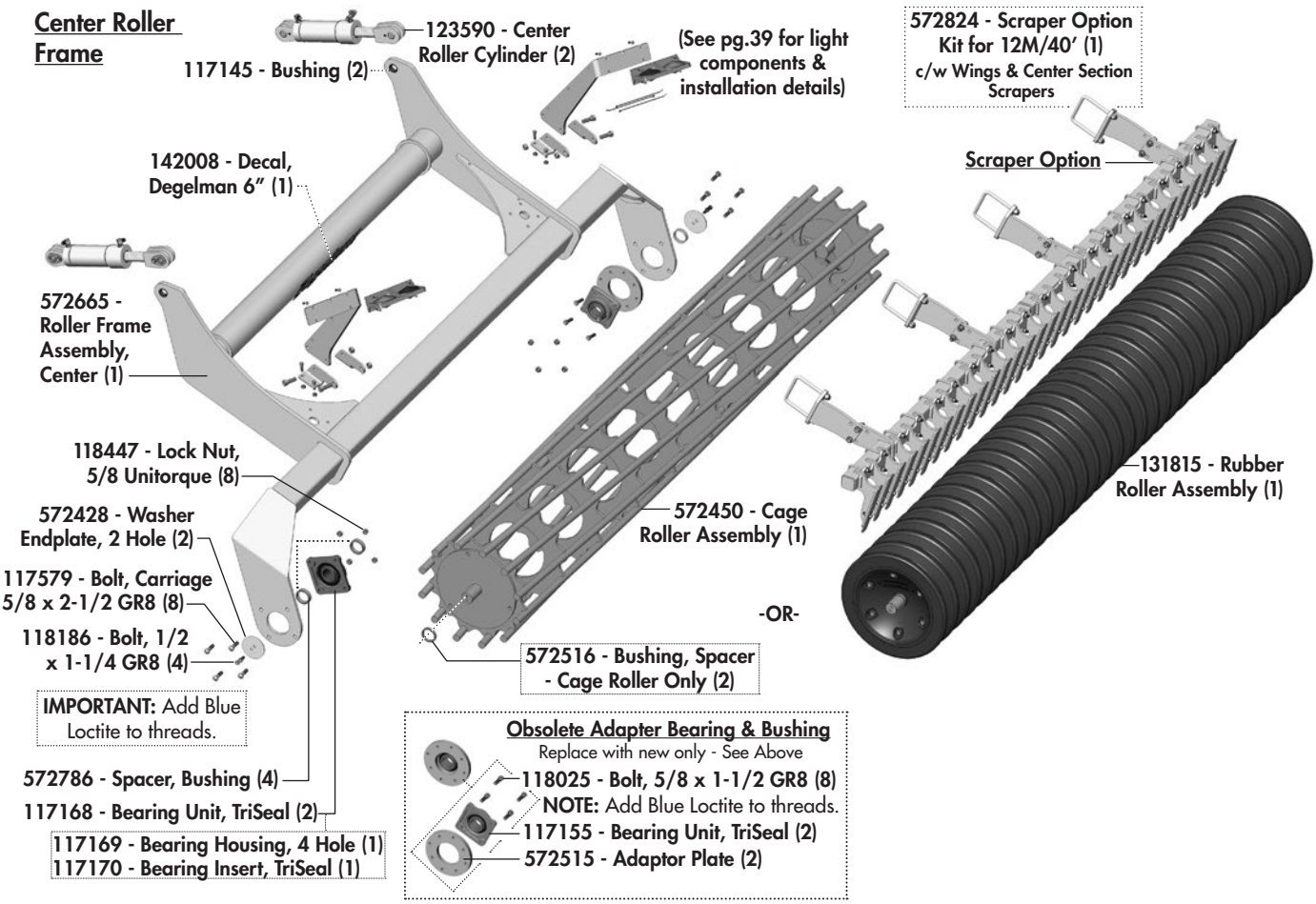
Bolt Pattern



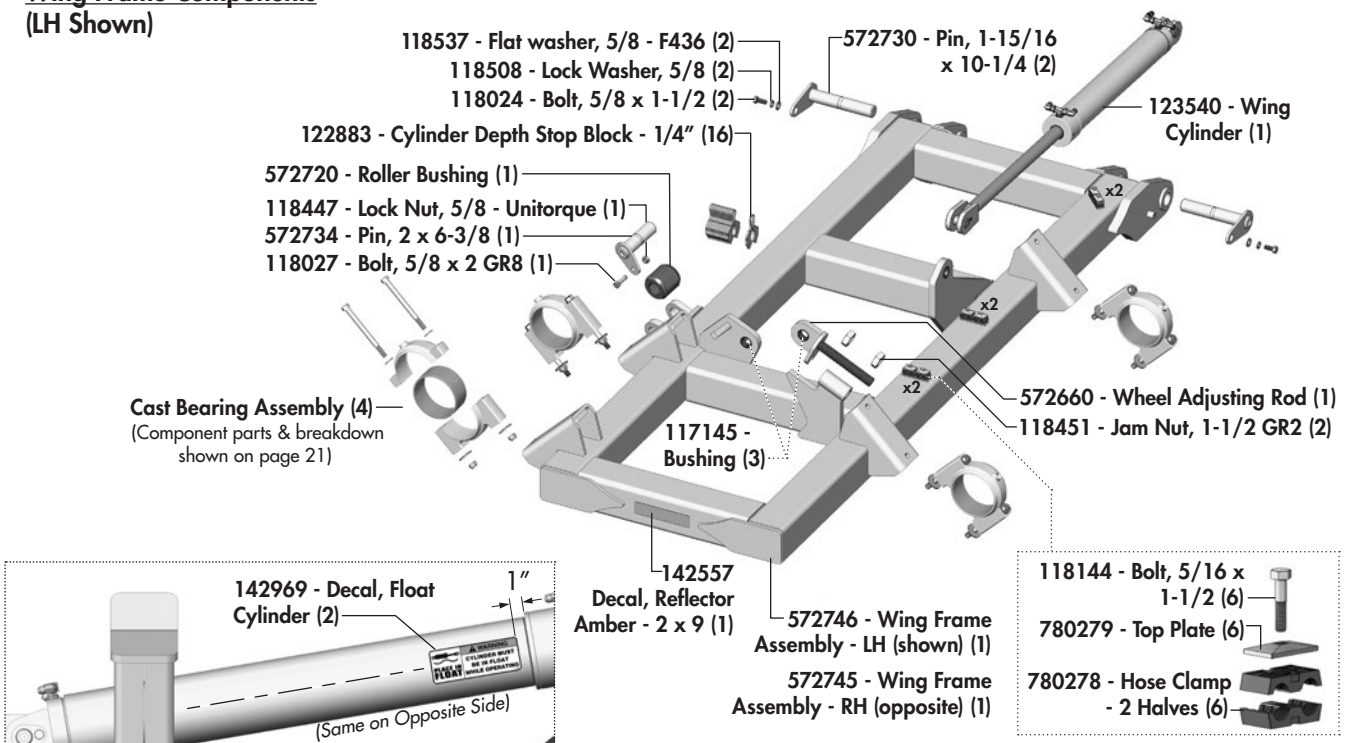
10 BOLT PATTERN

Center Main and Roller Frame Components

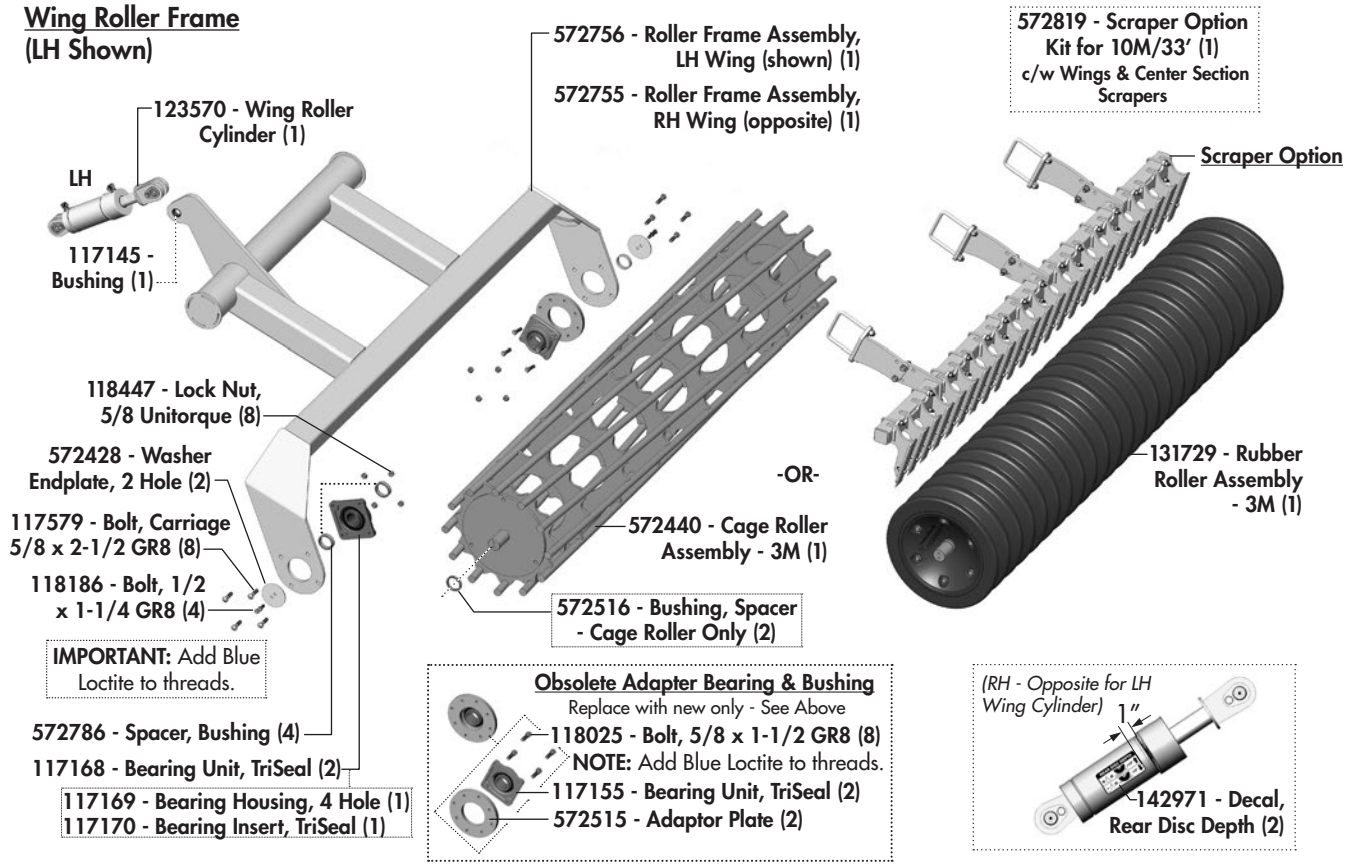




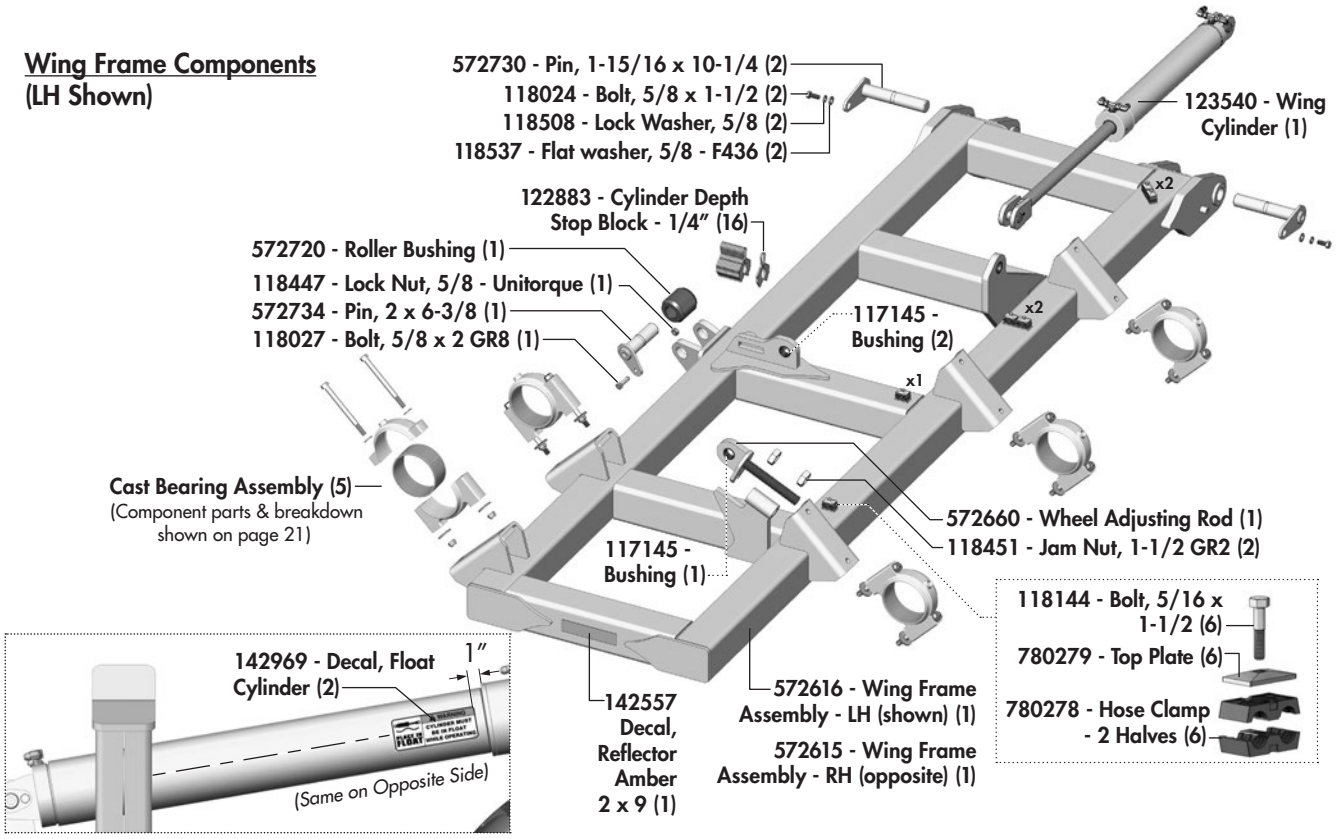
Wing Frame Components
(LH Shown)



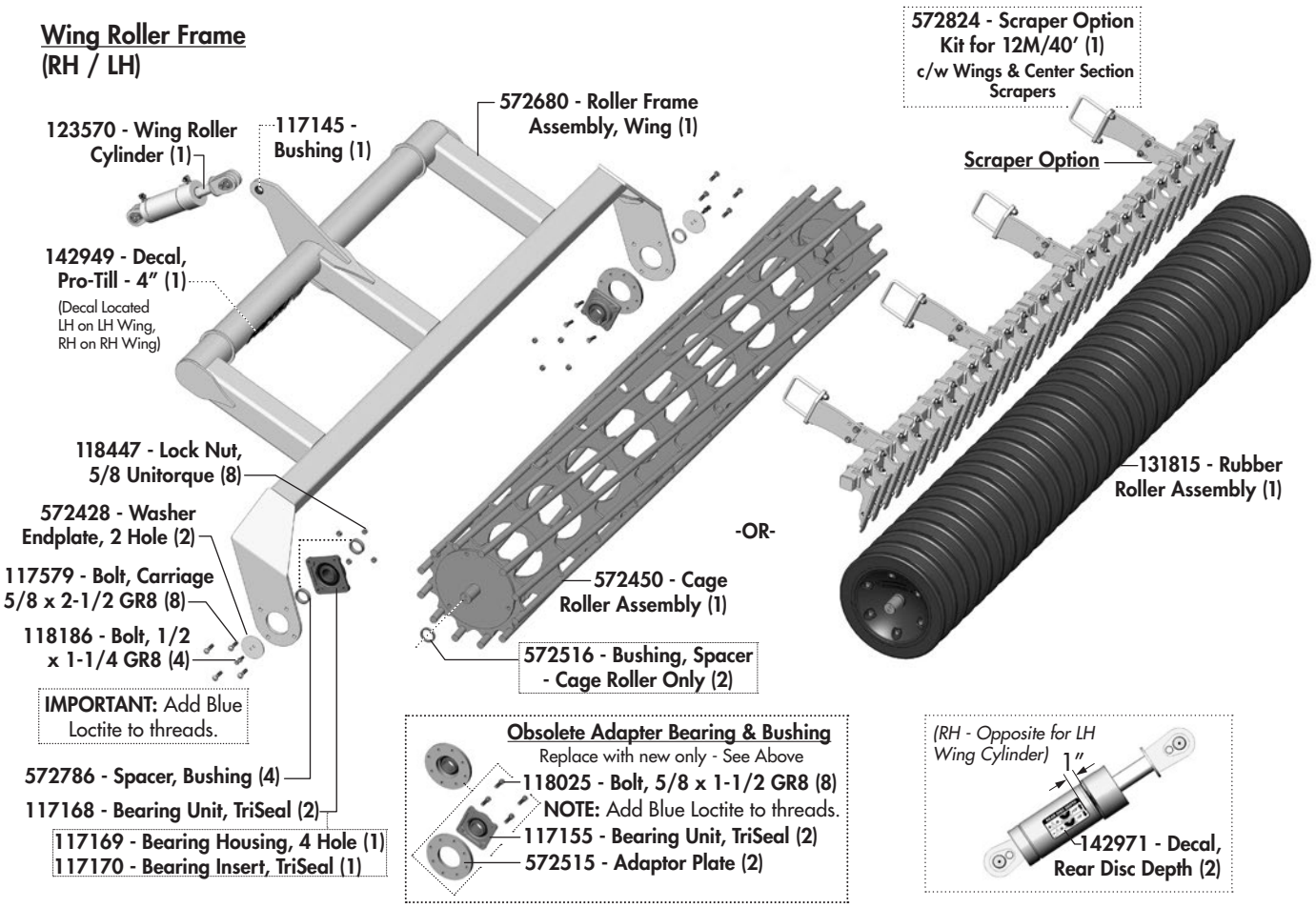
Wing Roller Frame
(LH Shown)



Wing Frame Components
(LH Shown)



Wing Roller Frame
(RH / LH)



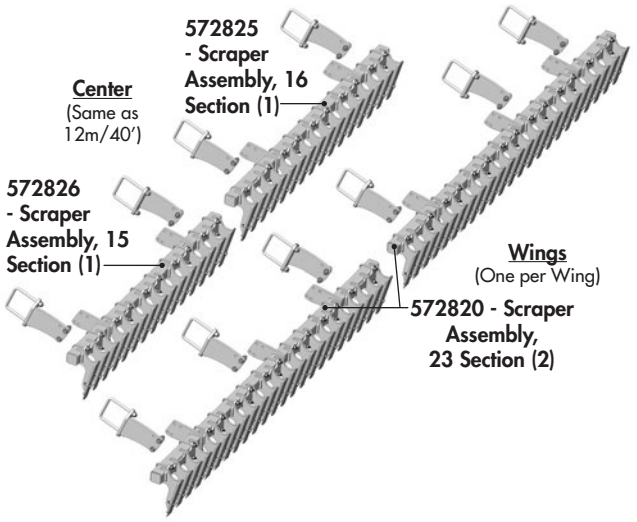
Scraper Kit Components

572819 - Scraper Option Kit for 10M/33' (1)

Scrapers Sections for 10M/33' Kit

Center Section 572826 - 15 Section (1) & 572825 - 16 Section (1)

Wings 572820 - 23 Section (2 - one per wing)



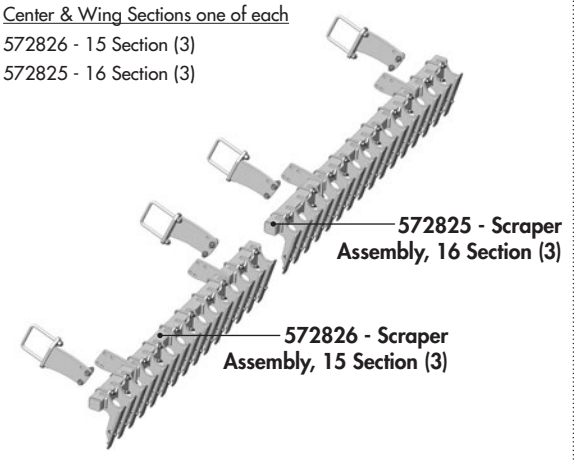
572824 - Scraper Option Kit for 12M/40' (1)

Scrapers Sections for 12M/40' Kit

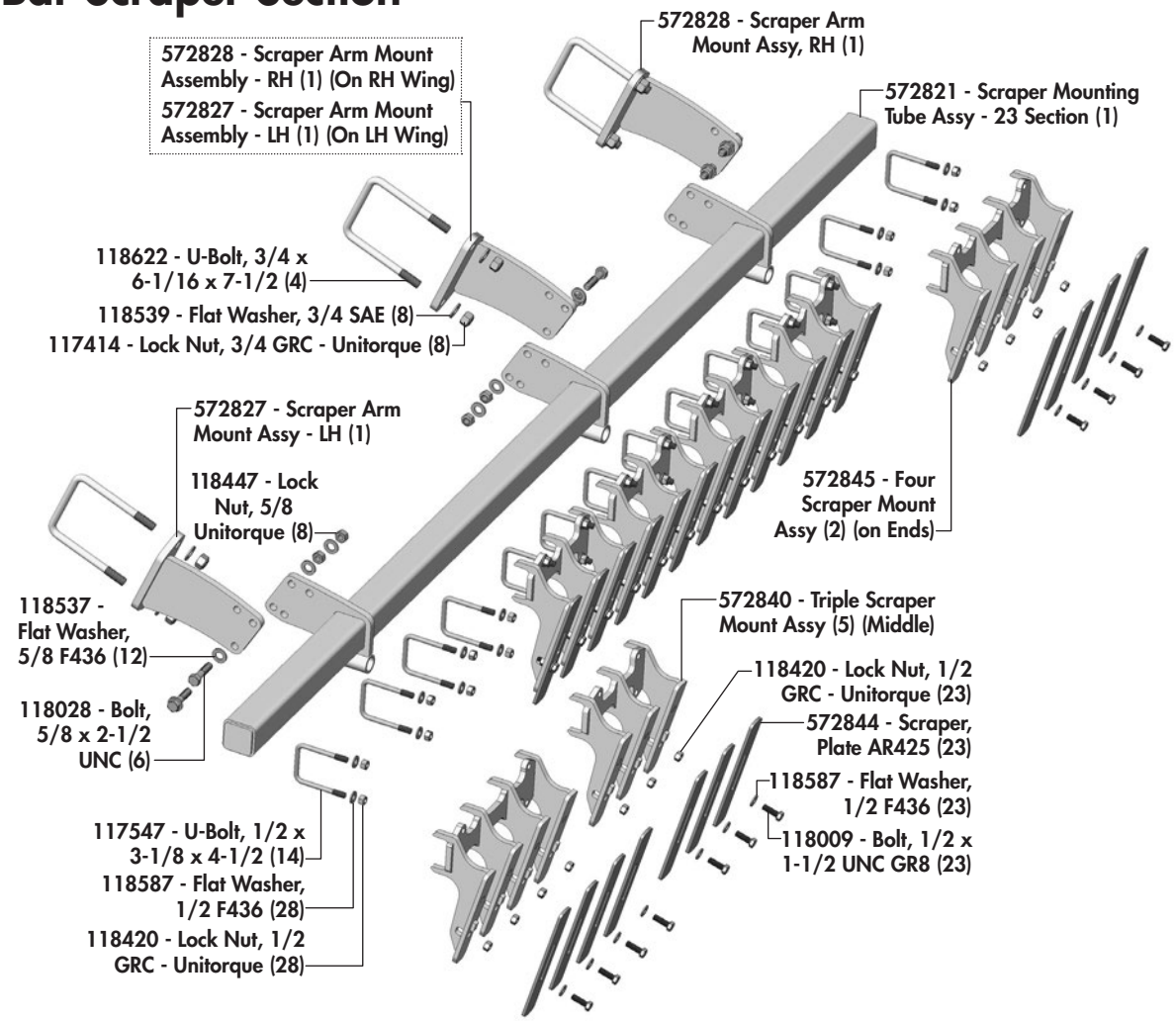
Center & Wing Sections one of each

572826 - 15 Section (3)

572825 - 16 Section (3)



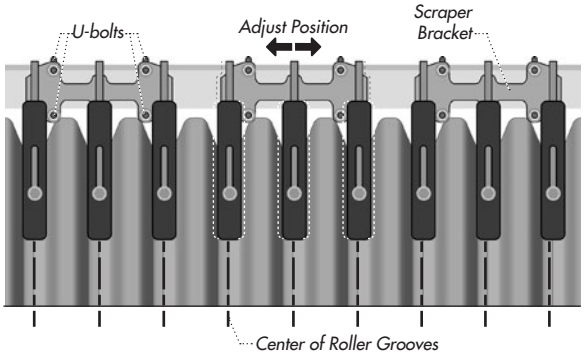
23 Bar Scraper Section



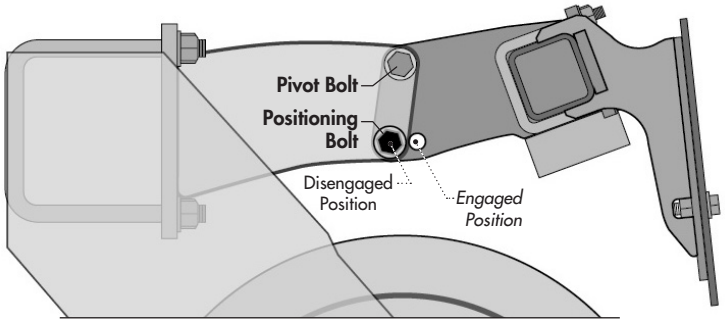
Scraper Kit Components

Initial Scraper Bracket Adjustment

- Loosen scraper bracket U-bolts.
- Adjust bracket position to align scraper bars to center of rubber roller grooves.
- Re-tighten U-bolts. Re-check after use.



Scraper Positions Overview



16 Bar Scraper Section

572831 - Scraper Mounting Tube Assy - 16 Section (1)

572828 - Scraper Arm Mount Assy, RH (1)

118622 - U-Bolt, 3/4 x 6-1/16 x 7-1/2 (1)

118539 - Flat Washer, 3/4 SAE (2)

117414 - Lock Nut, 3/4 GRC - Unitorque (2)

572840 - Triple Scraper Mount Assy (4)

572845 - Four Bar Scraper Mount Assembly (1)

118009 - Bolt, 1/2 x 1-1/2 UNC GR8 (16)

118587 - Flat Washer, 1/2 F436 (16)

572844 - Scraper, Plate AR425 (16)

118420 - Lock Nut, 1/2 GRC - Unitorque (16)

15 Bar Scraper Section

572827 - Scraper Arm Mount Assy, LH (1)

572832 - Scraper Mounting Tube Assy - 15 Section (1)

118447 - Lock Nut, 5/8 Unitorque (2)

118537 - Flat Washer, 5/8 F436 (4)

118028 - Bolt, 5/8 x 2-1/2 UNC (2)

572840 - Triple Bar Scraper Mount Assembly (5)

572844 - Scraper, Plate AR425 (15)

118587 - Flat Washer, 1/2 F436 (15)

118009 - Bolt, 1/2 x 1-1/2 UNC GR8 (15)

117547 - U-Bolt, 1/2 x 3-1/8 x 4-1/2 (10)

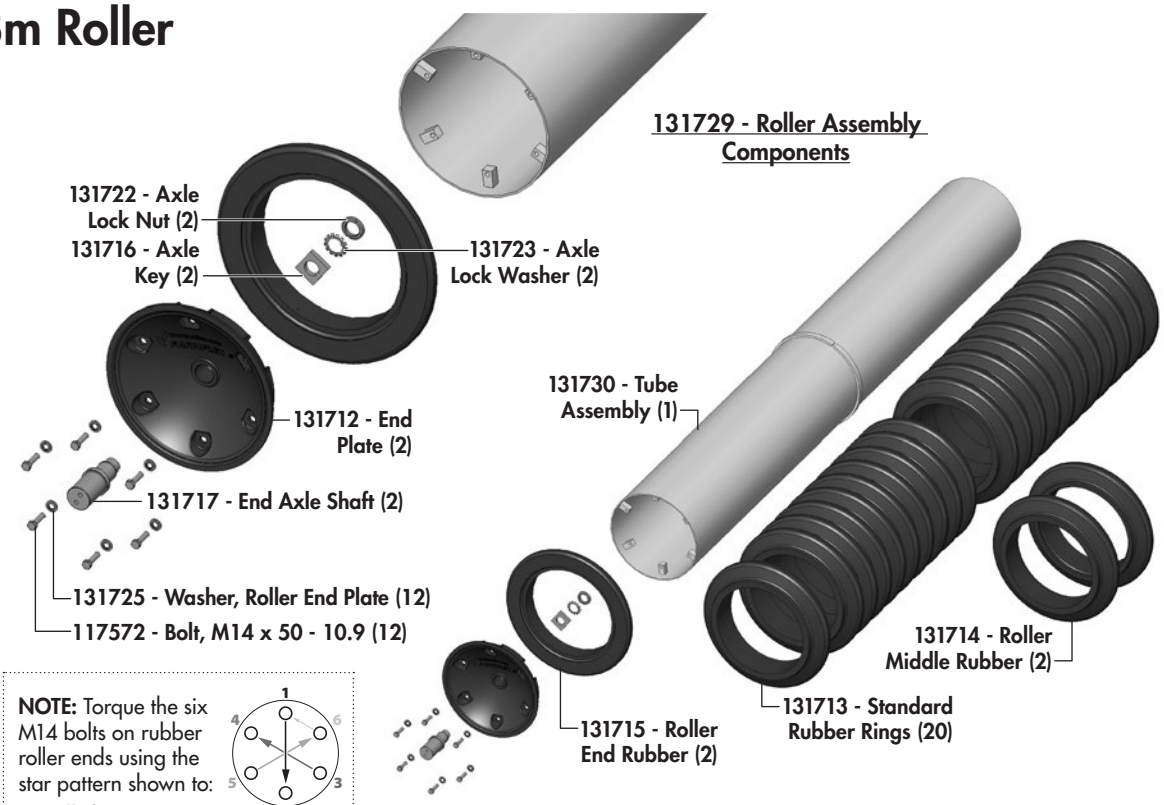
118587 - Flat Washer, 1/2 F436 (20)

118420 - Lock Nut, 1/2 GRC - Unitorque (20)

118420 - Lock Nut, 1/2 GRC - Unitorque (15)

Rubber Roller Components

3m Roller

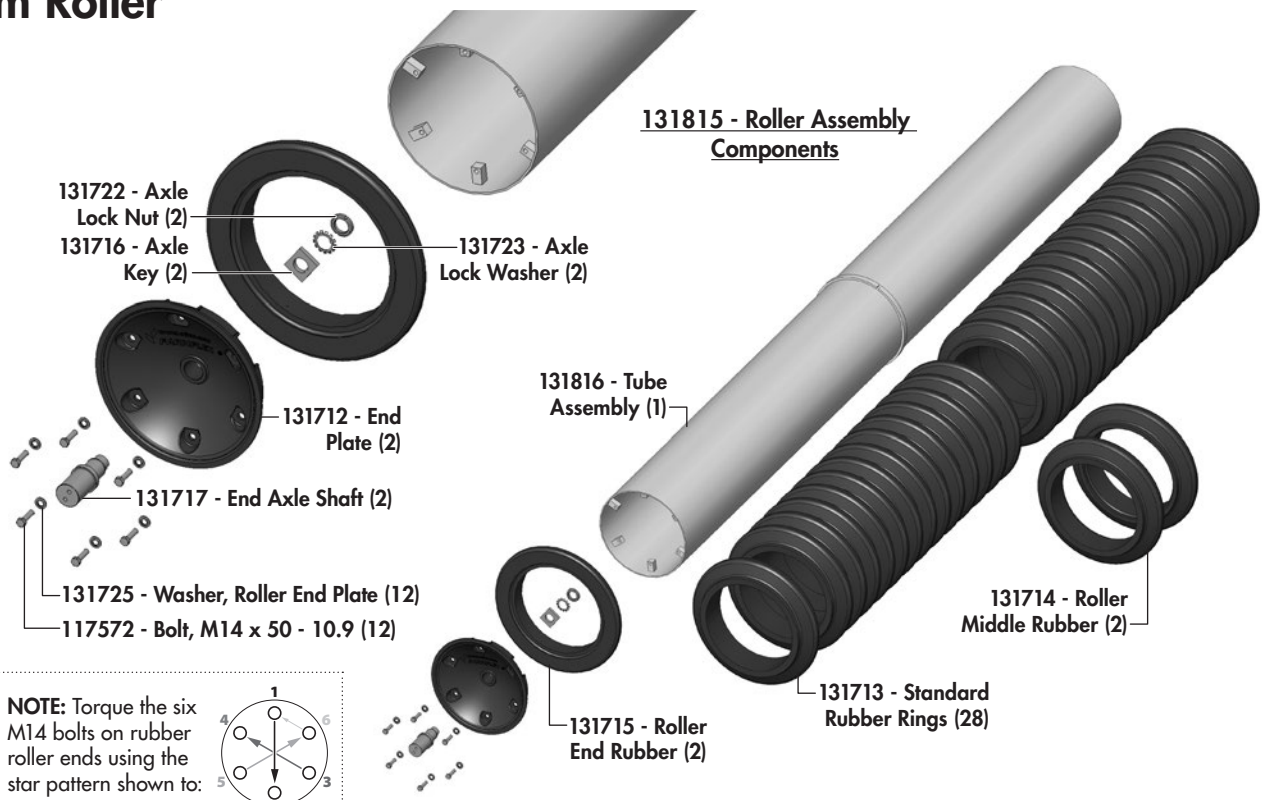


NOTE: Torque the six M14 bolts on rubber roller ends using the star pattern shown to:

125 lb·ft (170 N·m)

6 BOLT PATTERN

4m Roller



NOTE: Torque the six M14 bolts on rubber roller ends using the star pattern shown to:

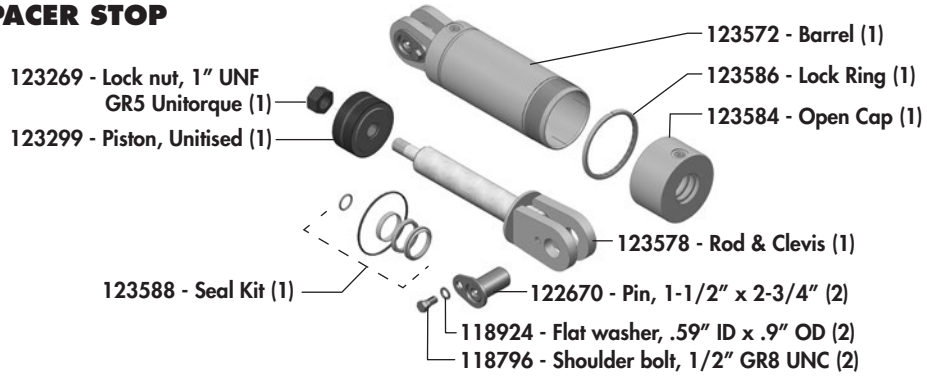
125 lb·ft (170 N·m)

6 BOLT PATTERN

Hydraulic Cylinders

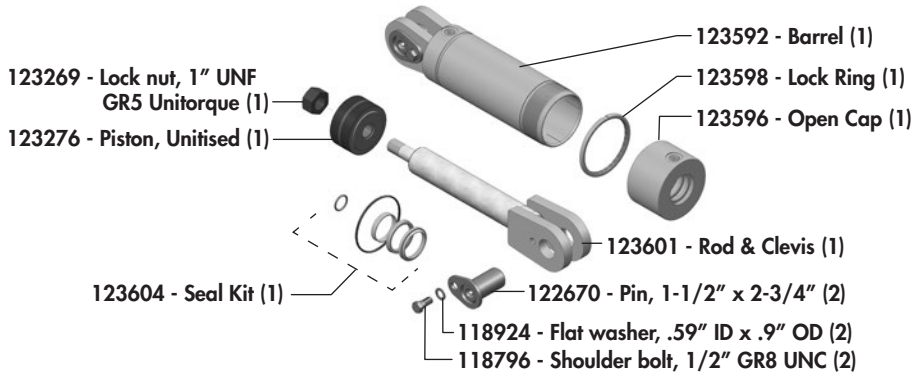
MASTER CYLINDER WITH SPACER STOP

123570 - Cylinder, 4-1/2" x 8" x 2"



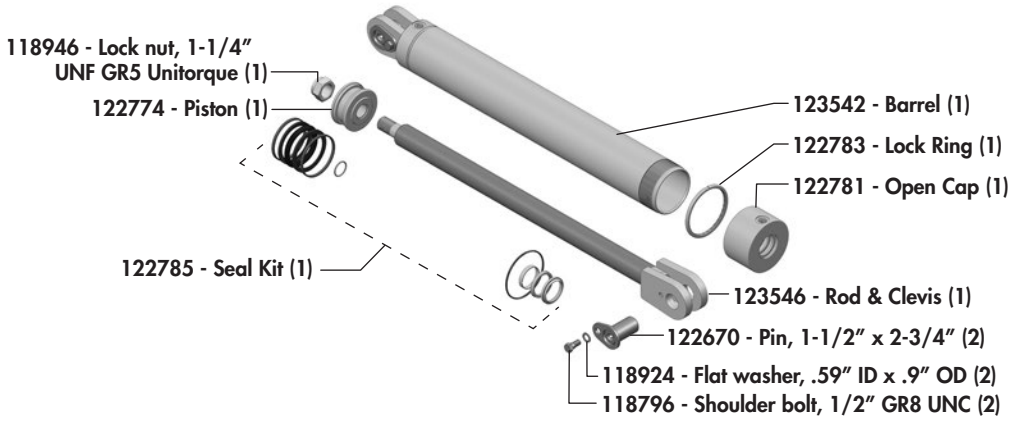
SLAVE CYLINDER

123590 - Cylinder, 3-3/4" x 8" x 2"



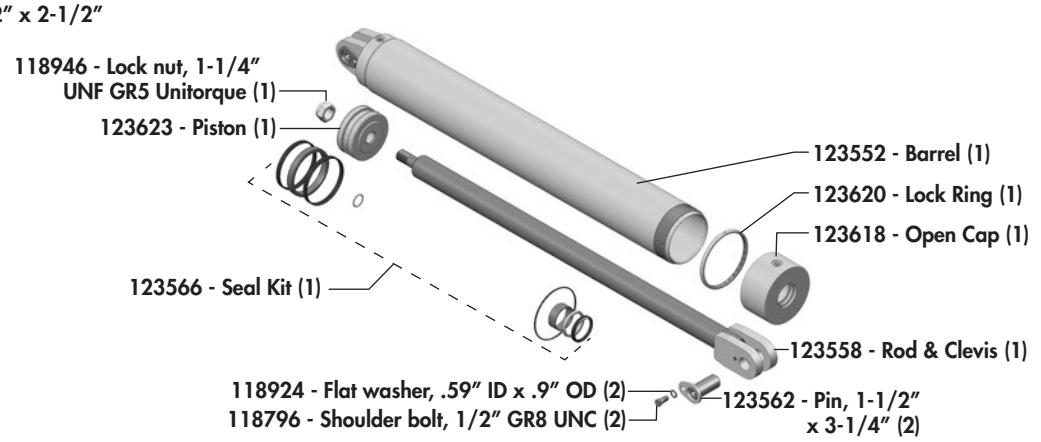
WING CYLINDER

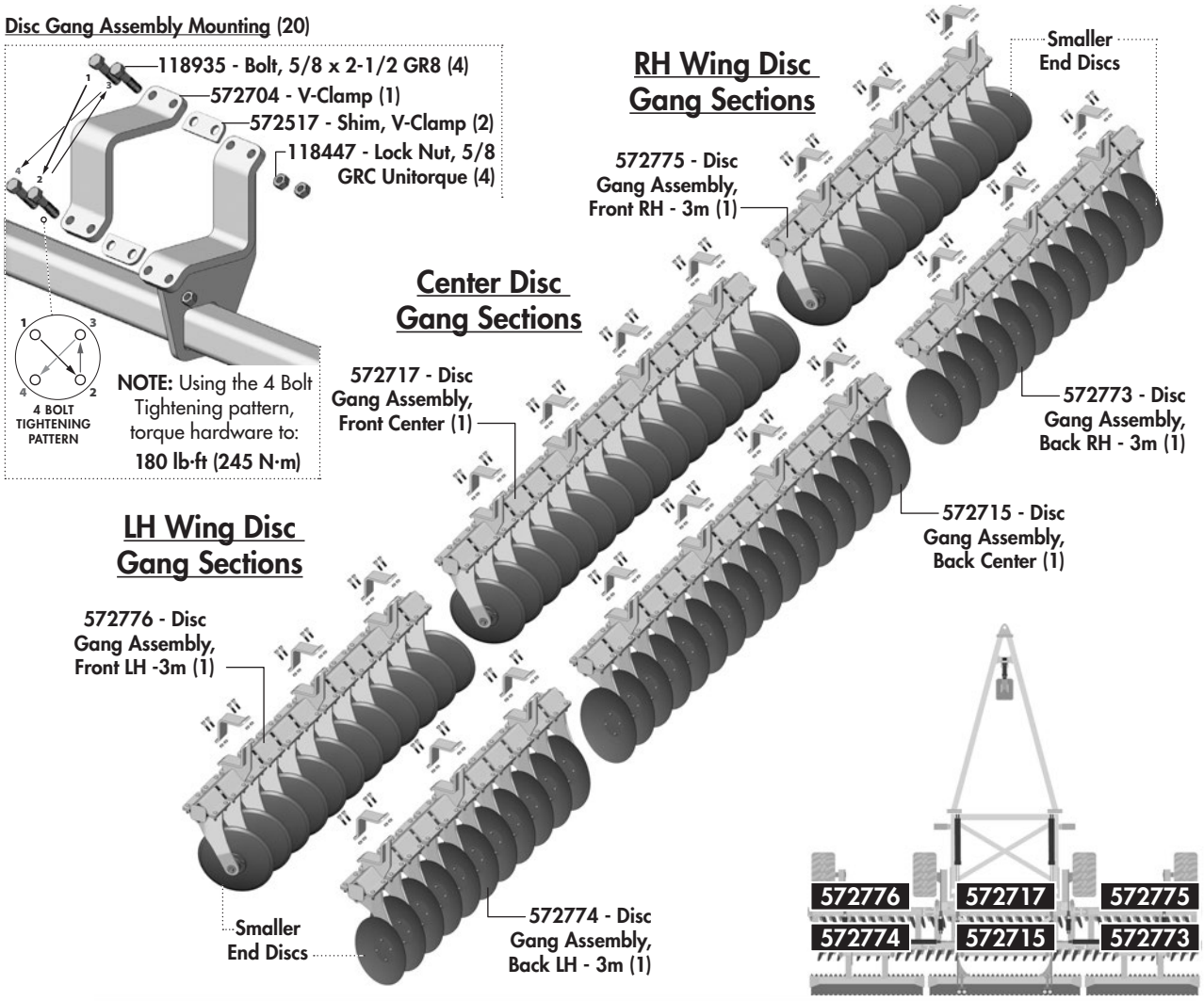
123540 - Cylinder, 4" x 28" x 2"



TRANSPORT CYLINDER

123550 - Cylinder, 5-1/2" x 42" x 2-1/2"



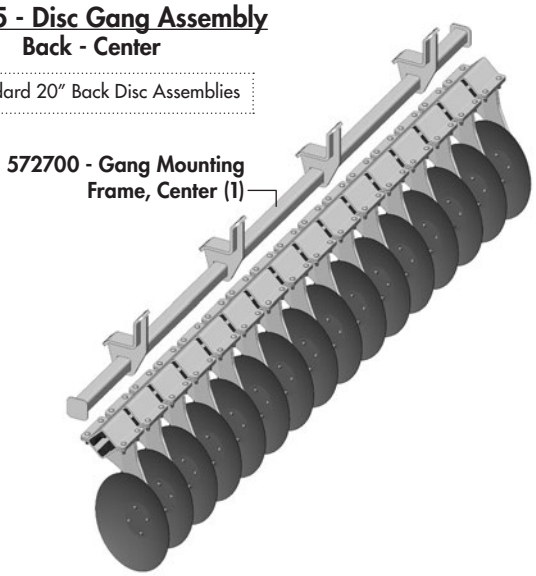


572717 - Disc Gang Assembly,
Front - Center

16 - Standard 20" Front Disc Assemblies

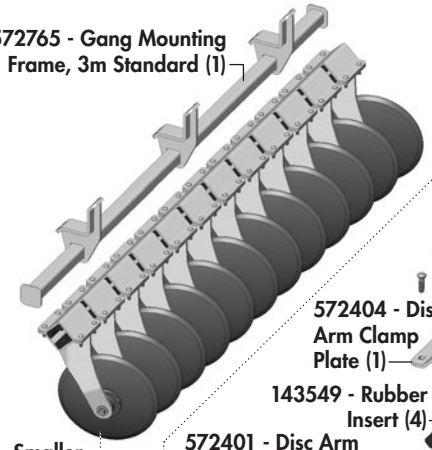
572715 - Disc Gang Assembly
Back - Center

16 - Standard 20" Back Disc Assemblies

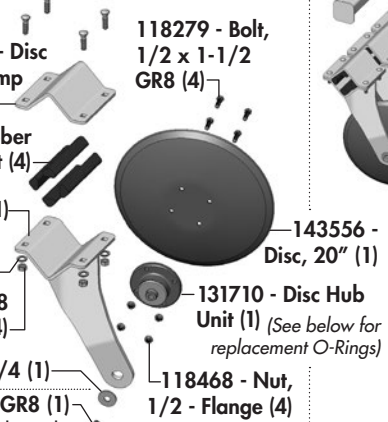


572776 - Disc Gang Assembly, Front - LH - 3m

11 - Standard 20" Front Disc Assemblies
1 - Smaller 18" Front Disc Assembly

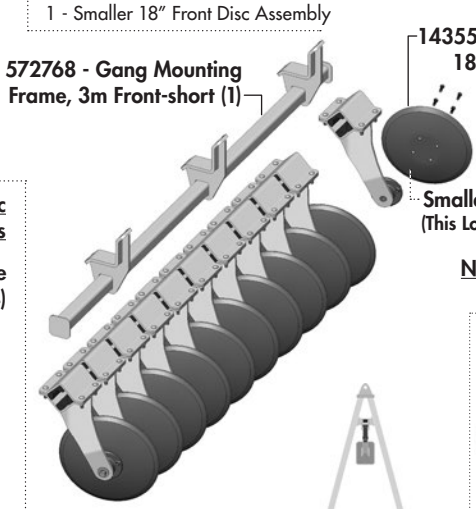


Standard Front Disc Assembly Components



572775 - Disc Gang Assembly, Front - RH - 3m

10 - Standard 20" Front Disc Assemblies
1 - Smaller 18" Front Disc Assembly

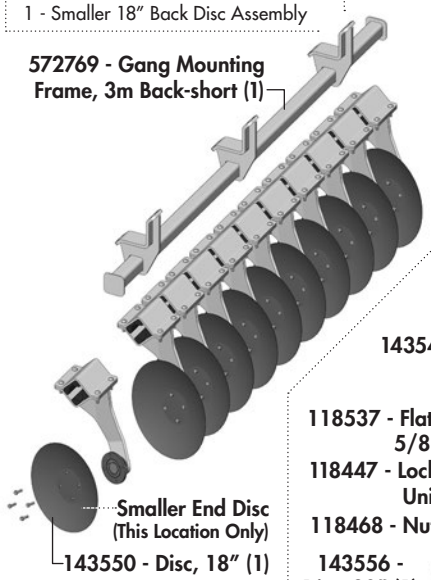


Notched Disc Option Also Available

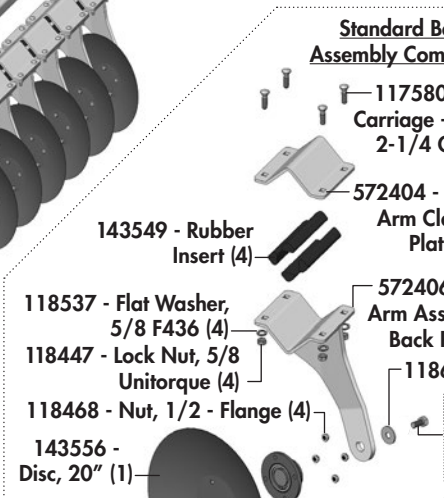
143557 - Disc, Notched 20" (1)

572774 - Disc Gang Assembly Back - LH - 3m

10 - Standard 20" Back Disc Assemblies
1 - Smaller 18" Back Disc Assembly

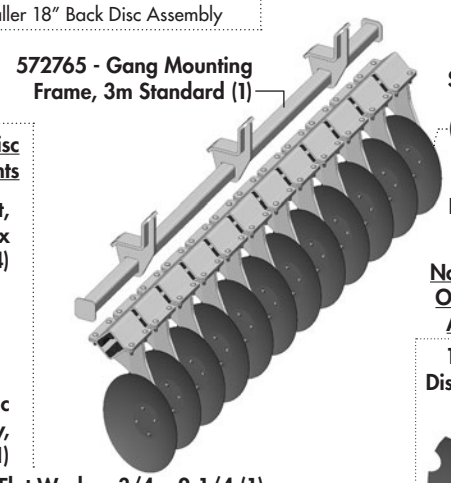


Standard Back Disc Assembly Components



572773 - Disc Gang Assembly Back - RH - 3m

11 - Standard 20" Back Disc Assemblies
1 - Smaller 18" Back Disc Assembly



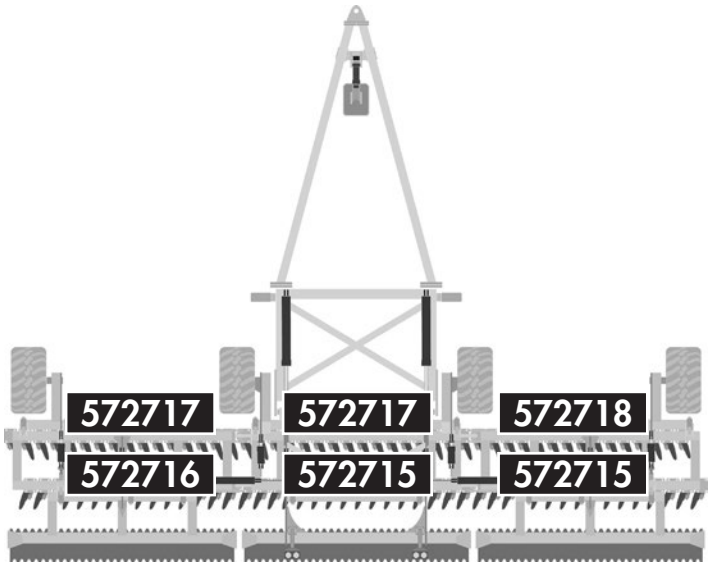
Notched Disc Option Also Available

143557 - Disc, Notched 20" (1)

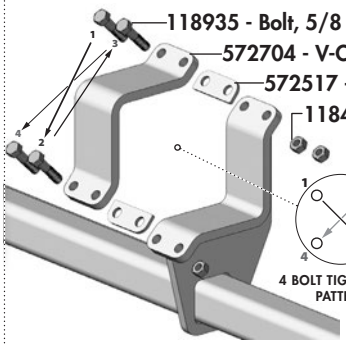
Replacement O-Rings
INA - Markings
121080 - O-Ring, Nitrile M6x88 (1)

Replacement O-Rings
GBGI - No Marks
121081 - O-Ring, Nitrile #342 (1)

Disc Gang Assembly Sections Overview

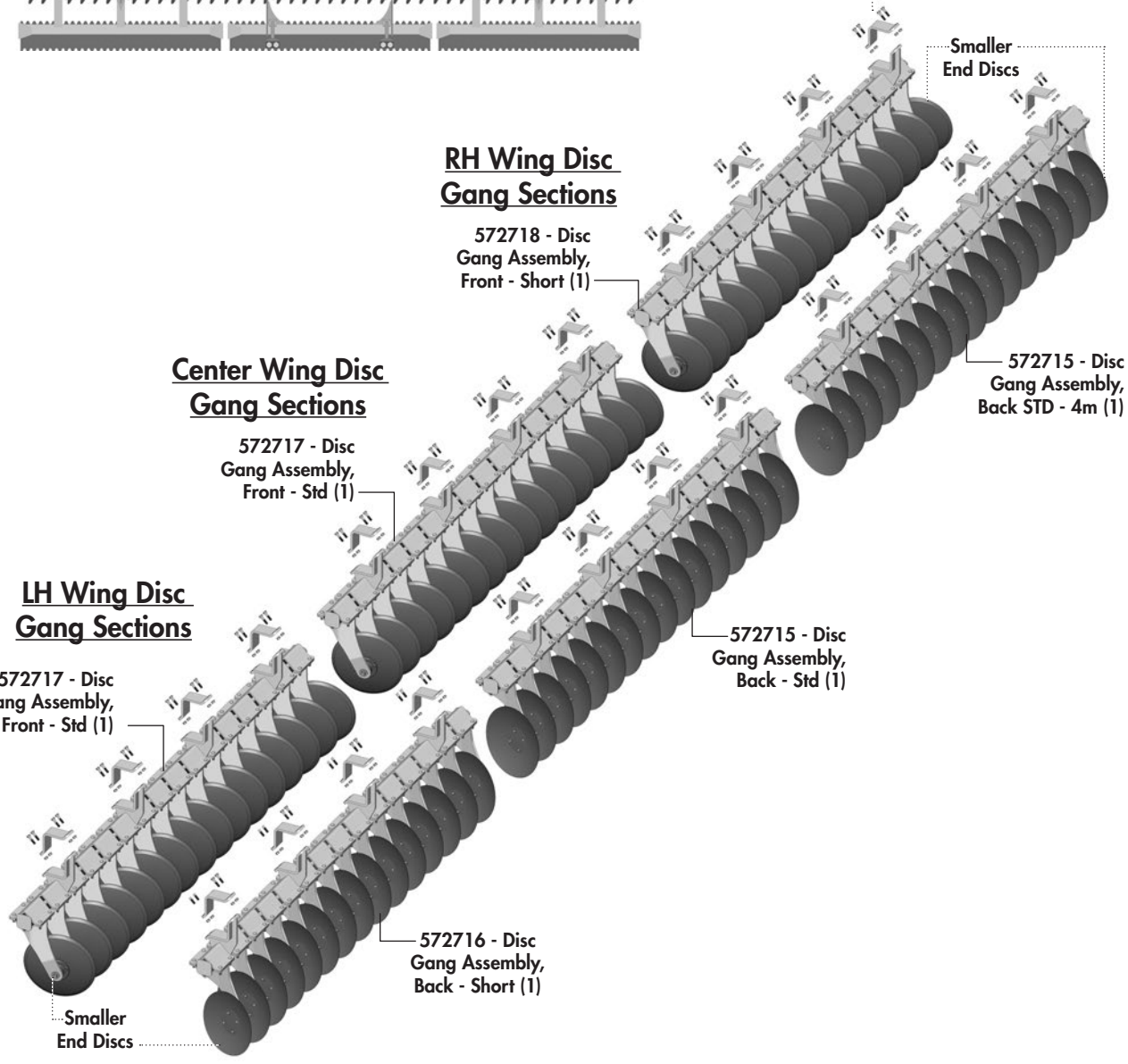


Disc Gang Assembly Mounting (24)



118935 - Bolt, 5/8 x 2-1/2 GR8 (4)
572704 - V-Clamp (1)
572517 - Shim, V-Clamp (2)
118447 - Lock Nut, 5/8 GRC Unitorque (4)

NOTE: Using the 4 Bolt Tightening pattern, torque hardware to:
180 lb·ft (245 N·m)

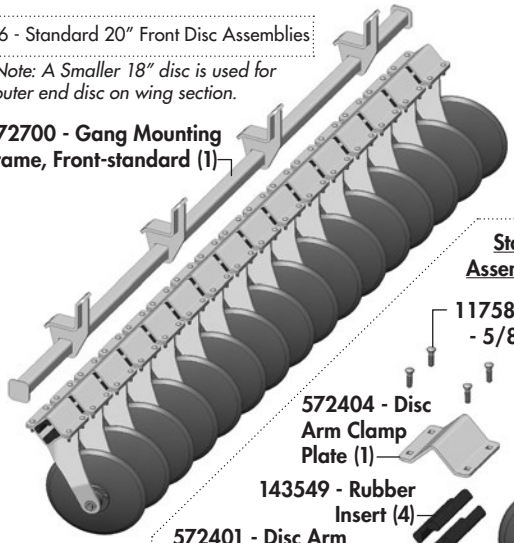


572717 - Disc Gang Assembly, Front - Standard Section

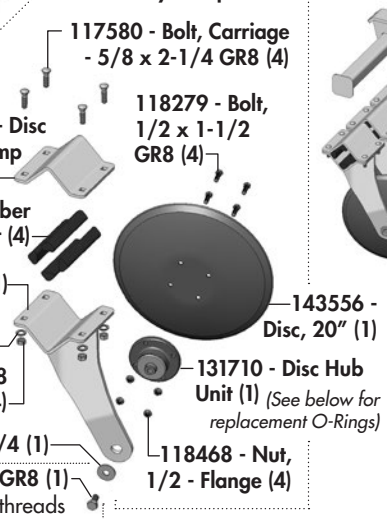
16 - Standard 20" Front Disc Assemblies

Note: A Smaller 18" disc is used for outer end disc on wing section.

572700 - Gang Mounting Frame, Front-standard (1)



Standard Front Disc Assembly Components



IMPORTANT: Add Blue Loctite to threads and Torque to **350 lb·ft (475 N·m)**

572718 - Disc Gang Assembly, Front - Short Section

14 - Standard 20" Front Disc Assemblies
1 - Smaller 18" Front Disc Assembly

572712 - Gang Mounting Frame, Front-short (1)

143550 - Disc, 18" (1)

Smaller End Disc (This Location Only)

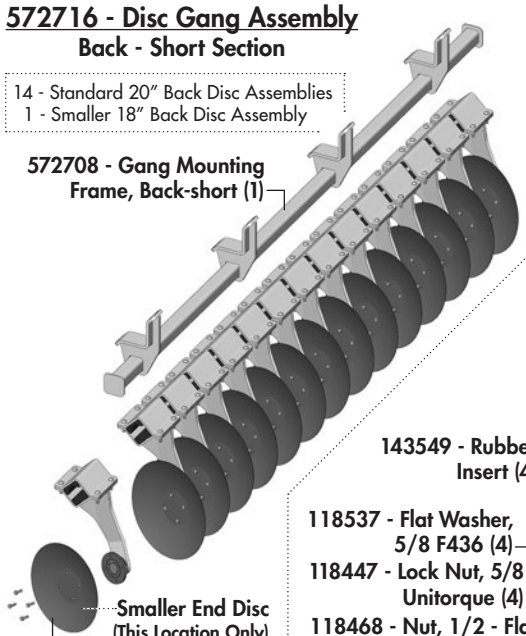
Notched Disc Option Also Available

143557 - Disc, Notched 20" (1)

572716 - Disc Gang Assembly Back - Short Section

14 - Standard 20" Back Disc Assemblies
1 - Smaller 18" Back Disc Assembly

572708 - Gang Mounting Frame, Back-short (1)



Smaller End Disc (This Location Only)

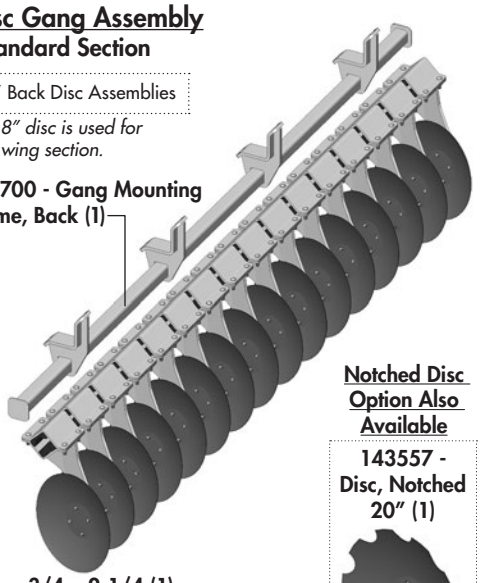
143550 - Disc, 18" (1)

572715 - Disc Gang Assembly Back - Standard Section

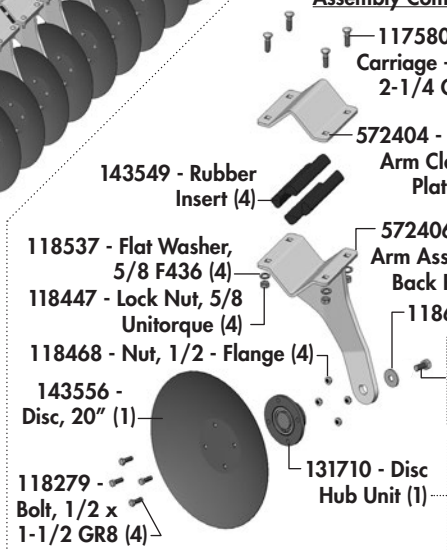
16 - Standard 20" Back Disc Assemblies

Note: A Smaller 18" disc is used for outer end disc on wing section.

572700 - Gang Mounting Frame, Back (1)



Standard Back Disc Assembly Components



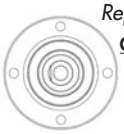
118175 - Bolt, 3/4 x 1-1/2 UNF GR8 (1)
IMPORTANT: Add Blue Loctite to threads & Torque to **350 lb·ft (475 N·m)**

Notched Disc Option Also Available

143557 - Disc, Notched 20" (1)

Replacement O-Rings
INA - Markings
121080 - O-Ring, Nitrile M6x88 (1)

Replacement O-Rings
GBGI - No Marks
121081 - O-Ring, Nitrile #342 (1)

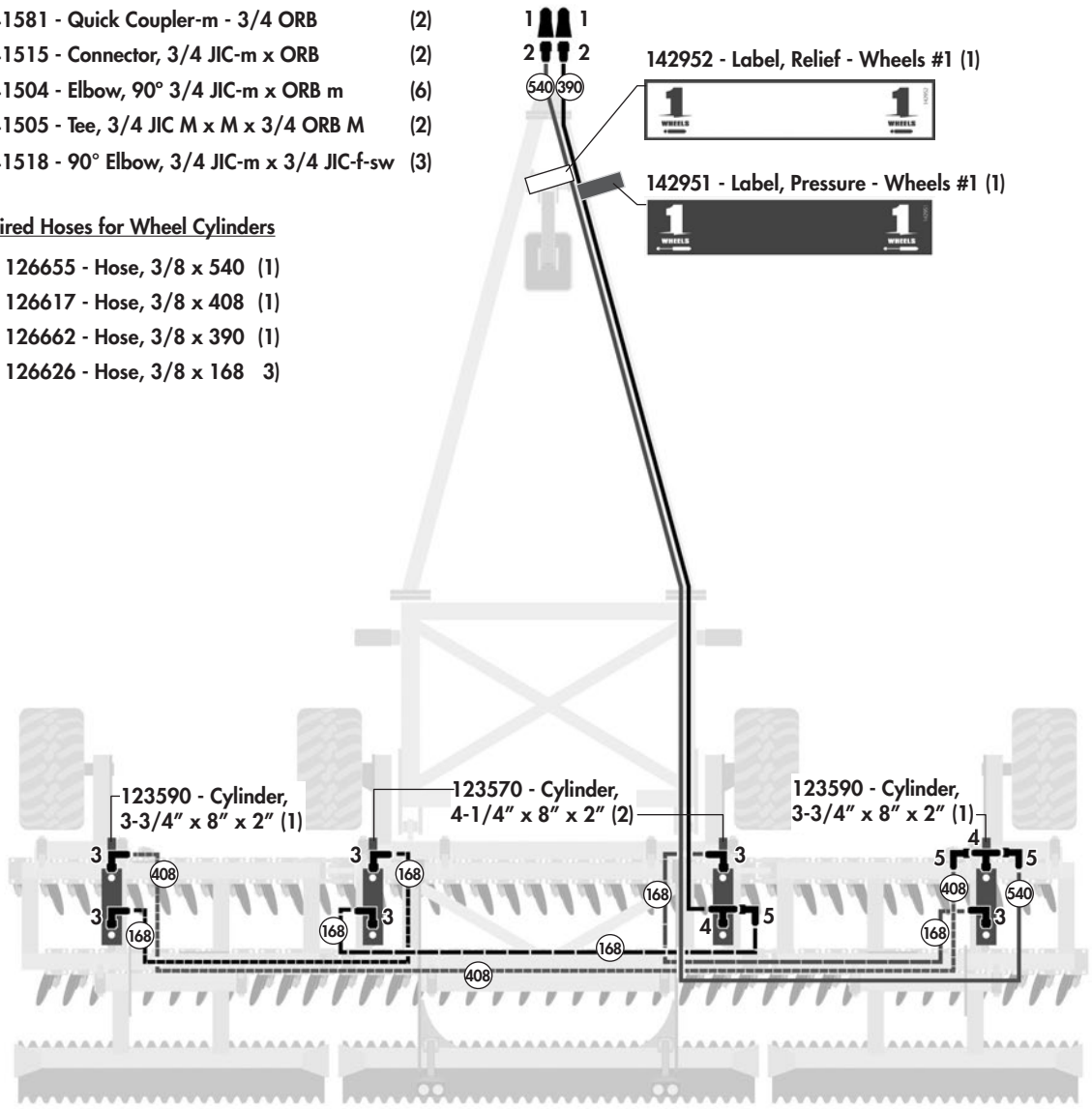


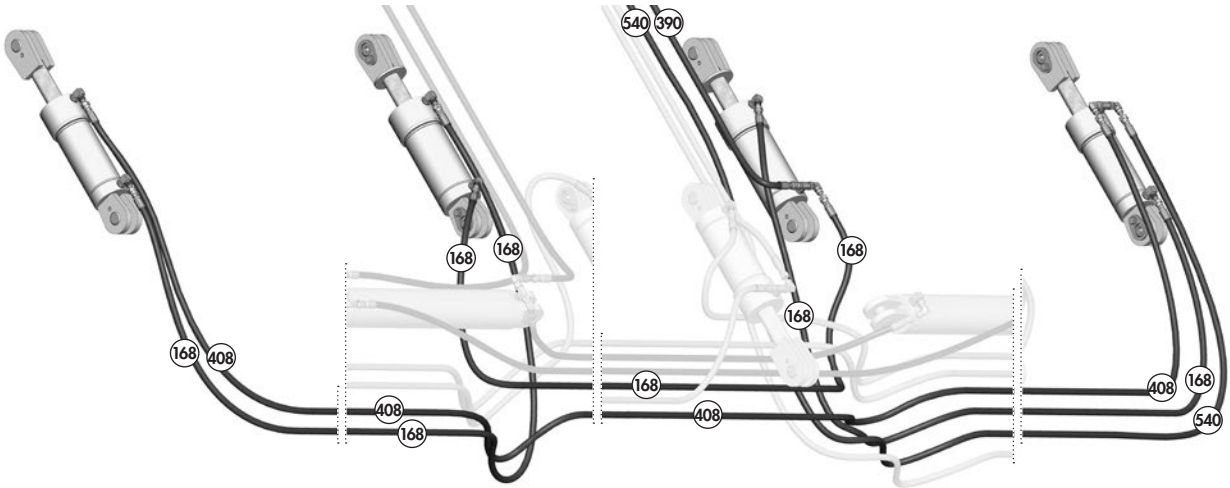
Hydraulic Fittings Required

1	141581 - Quick Coupler-m - 3/4 ORB	(2)
2	141515 - Connector, 3/4 JIC-m x ORB	(2)
3	141504 - Elbow, 90° 3/4 JIC-m x ORB m	(6)
4	141505 - Tee, 3/4 JIC M x M x 3/4 ORB M	(2)
5	141518 - 90° Elbow, 3/4 JIC-m x 3/4 JIC-f-sw	(3)

Required Hoses for Wheel Cylinders

- (540) 126655 - Hose, 3/8 x 540 (1)
- (408) 126617 - Hose, 3/8 x 408 (1)
- (390) 126662 - Hose, 3/8 x 390 (1)
- (168) 126626 - Hose, 3/8 x 168 3)



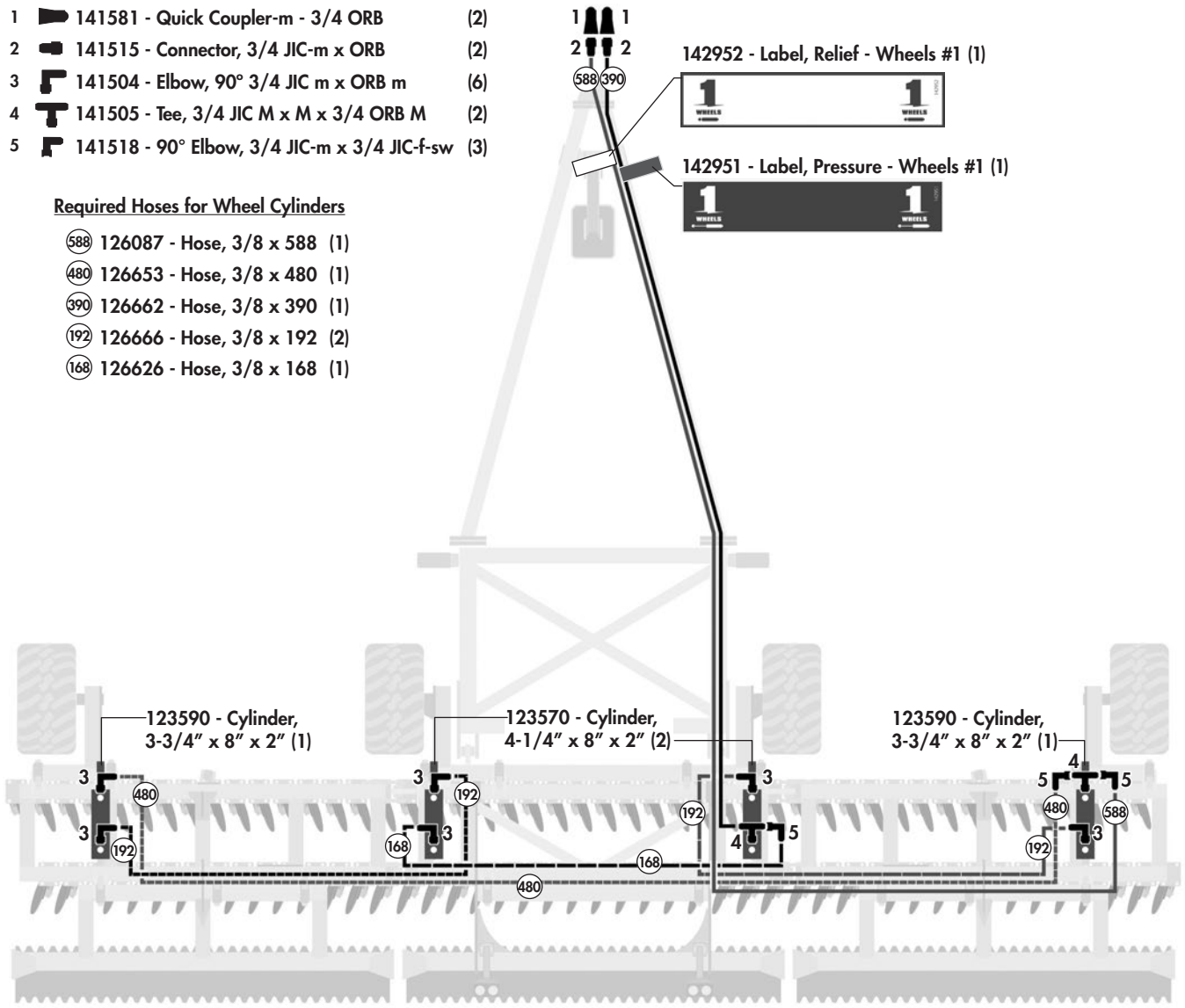


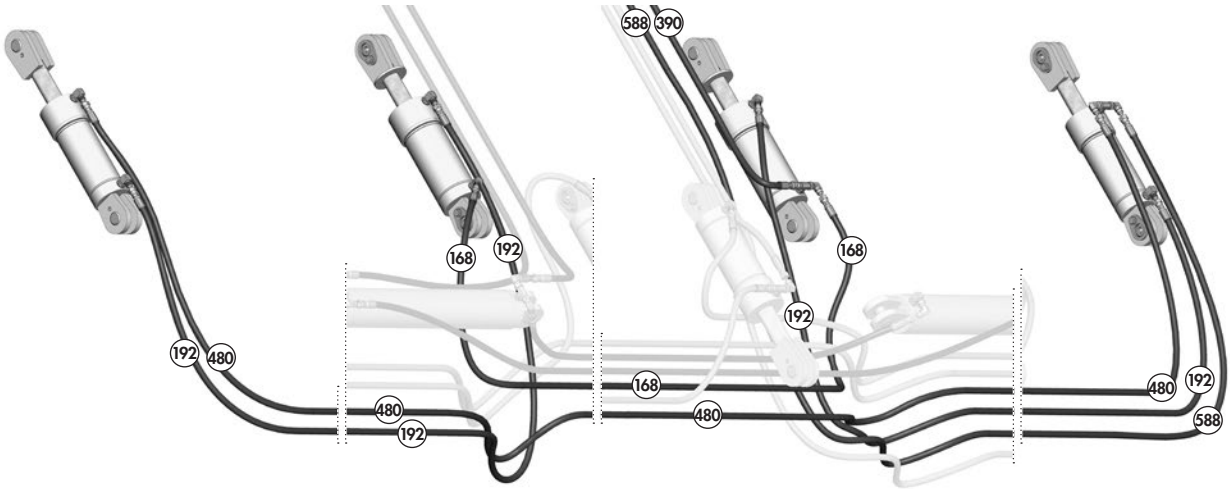
Hydraulic Fittings Required

1	141581 - Quick Coupler-m - 3/4 ORB	(2)
2	141515 - Connector, 3/4 JIC-m x ORB	(2)
3	141504 - Elbow, 90° 3/4 JIC m x ORB m	(6)
4	141505 - Tee, 3/4 JIC M x M x 3/4 ORB M	(2)
5	141518 - 90° Elbow, 3/4 JIC-m x 3/4 JIC-f-sw	(3)

Required Hoses for Wheel Cylinders

- (588) 126087 - Hose, 3/8 x 588 (1)
- (480) 126653 - Hose, 3/8 x 480 (1)
- (390) 126662 - Hose, 3/8 x 390 (1)
- (192) 126666 - Hose, 3/8 x 192 (2)
- (168) 126626 - Hose, 3/8 x 168 (1)



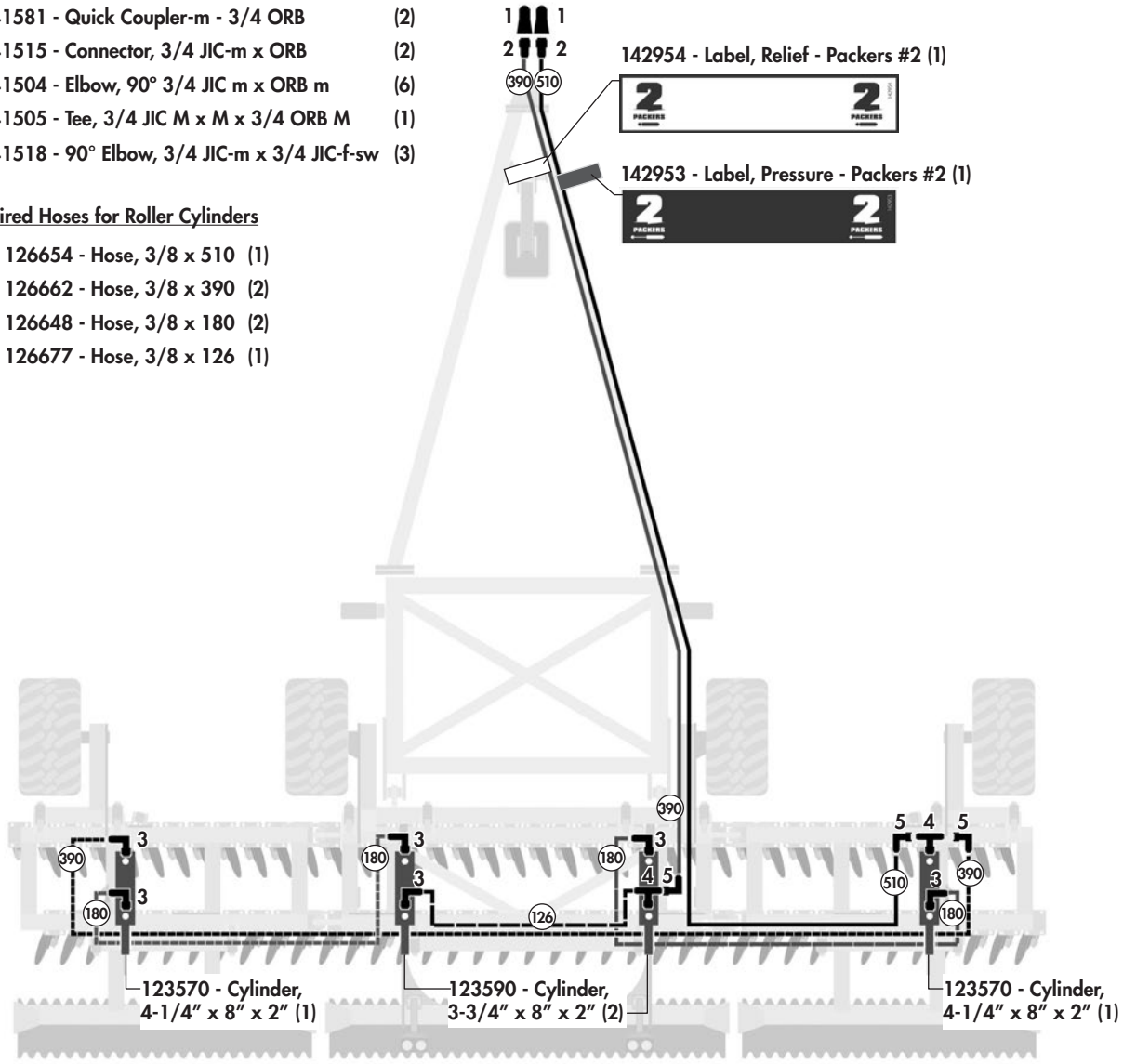


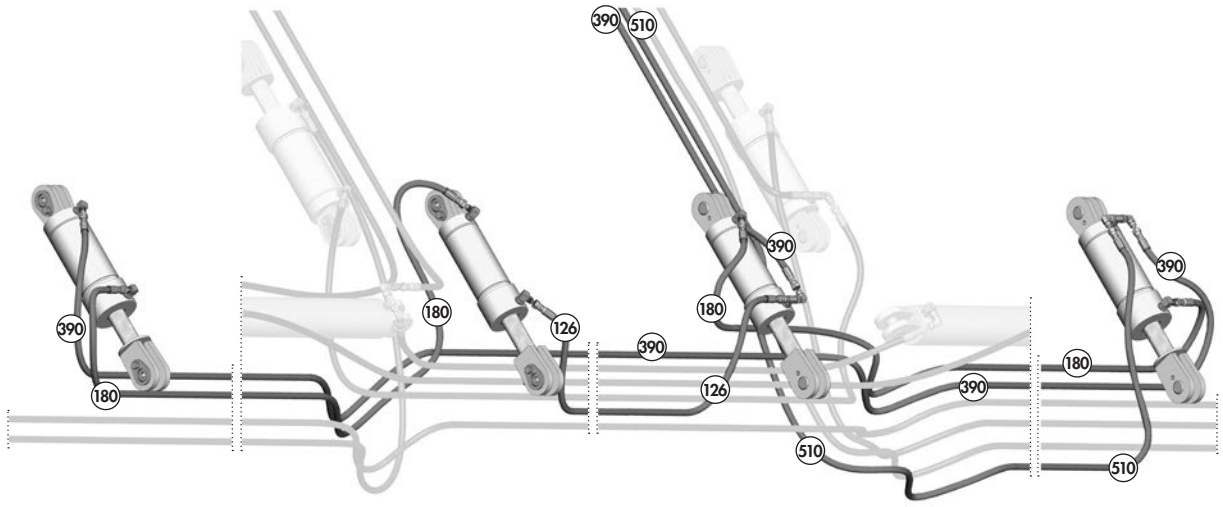
Hydraulic Fittings Required

1		141581 - Quick Coupler-m - 3/4 ORB	(2)
2		141515 - Connector, 3/4 JIC-m x ORB	(2)
3		141504 - Elbow, 90° 3/4 JIC m x ORB m	(6)
4		141505 - Tee, 3/4 JIC M x M x 3/4 ORB M	(1)
5		141518 - 90° Elbow, 3/4 JIC-m x 3/4 JIC-f-sw	(3)

Required Hoses for Roller Cylinders

- (510) 126654 - Hose, 3/8 x 510 (1)
- (390) 126662 - Hose, 3/8 x 390 (2)
- (180) 126648 - Hose, 3/8 x 180 (2)
- (126) 126677 - Hose, 3/8 x 126 (1)



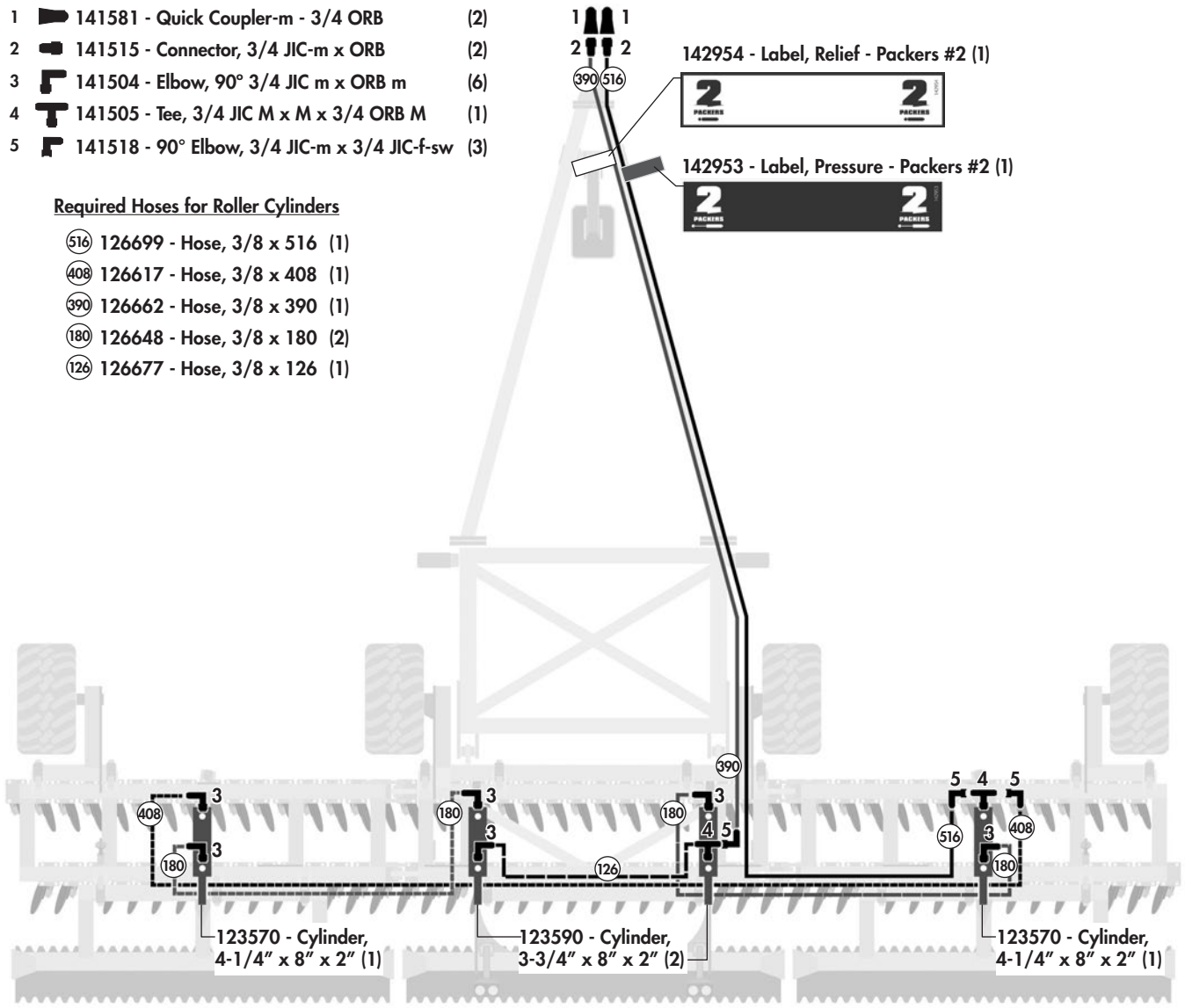


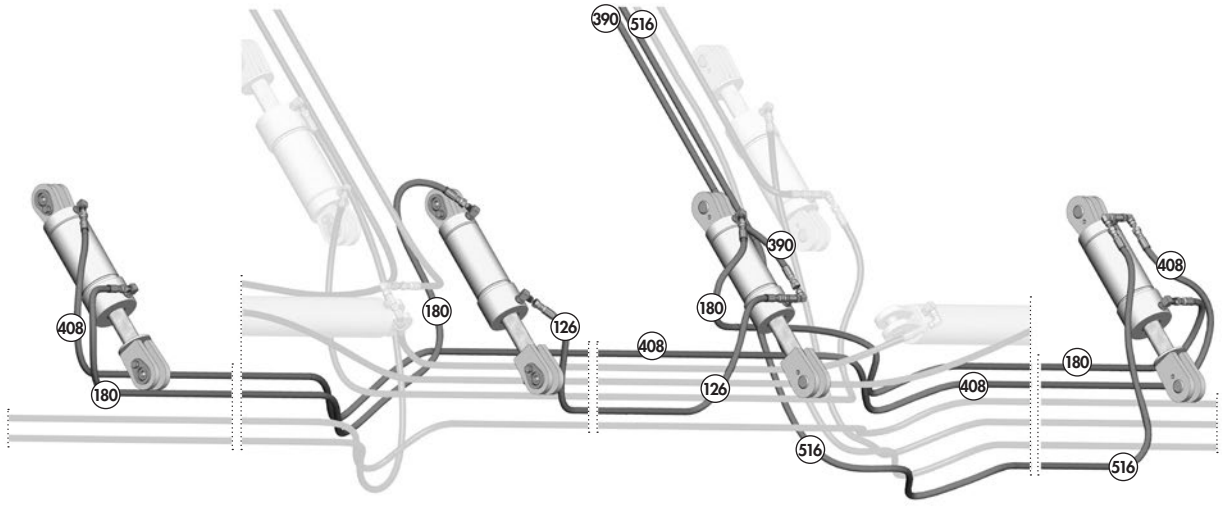
Hydraulic Fittings Required

1	141581 - Quick Coupler-m - 3/4 ORB	(2)
2	141515 - Connector, 3/4 JIC-m x ORB	(2)
3	141504 - Elbow, 90° 3/4 JIC m x ORB m	(6)
4	141505 - Tee, 3/4 JIC M x M x 3/4 ORB M	(1)
5	141518 - 90° Elbow, 3/4 JIC-m x 3/4 JIC-f-sw	(3)

Required Hoses for Roller Cylinders

- (516) 126699 - Hose, 3/8 x 516 (1)
- (408) 126617 - Hose, 3/8 x 408 (1)
- (390) 126662 - Hose, 3/8 x 390 (1)
- (180) 126648 - Hose, 3/8 x 180 (2)
- (126) 126677 - Hose, 3/8 x 126 (1)





Hydraulic Layout - 3 - Wings

Hydraulic Fittings Required

1	141581 - Quick Coupler-m - 3/4 ORB	(2)
2	141515 - Connector, 3/4 JIC-m x ORB	(6)
3	141504 - Elbow, 90° 3/4 JIC m x ORB m	(2)
4	141505 - Tee, 3/4 JIC M x M x 3/4 ORB M	(2)
5	141518 - 90° Elbow, 3/4 JIC-m x 3/4 JIC-f-sw	(5)
6	141609 - Adaptor, 3/4 JIC - 1/16 Orifice	(1)
7	141524 - Relief Valve, 2000 PSI - 3/4 ORB	(1)

Required Hoses for Wing Cylinders

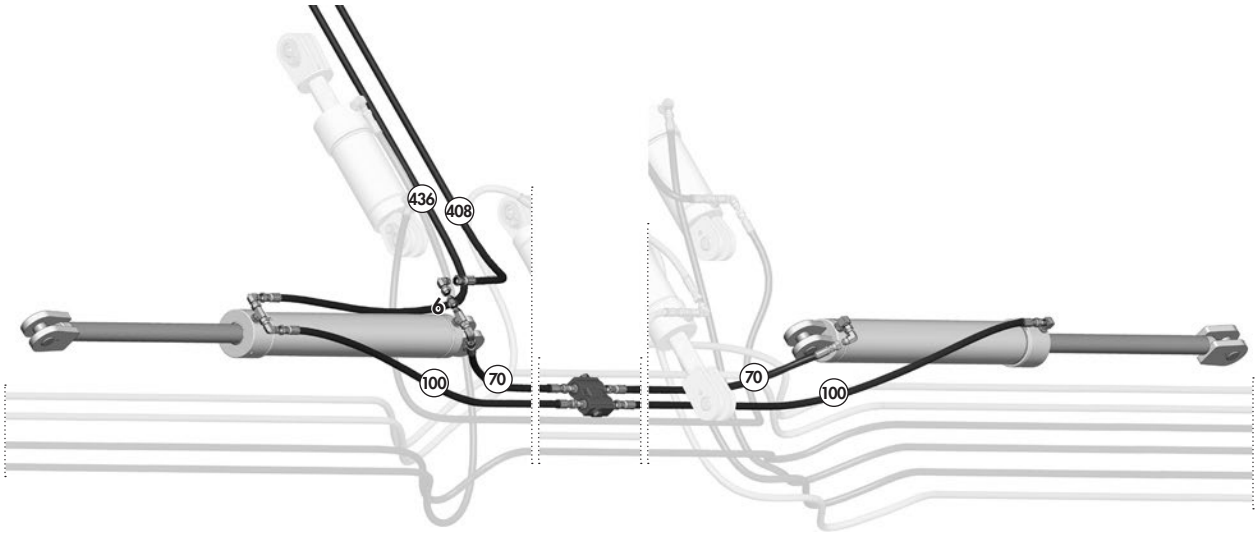
436	126618 - Hose, 3/8 x 436	(1)
408	126617 - Hose, 3/8 x 408	(1)
100	126652 - Hose, 3/8 x 100	(2)
70	126577 - Hose, 3/8 x 70	(2)

142956 - Label, Relief - Wings #3 (1)

142955 - Label, Pressure - Wings #3 (1)

123540 - Cylinder, 4" x 28" x 2" (1)

123540 - Cylinder, 4" x 28" x 2" (1)



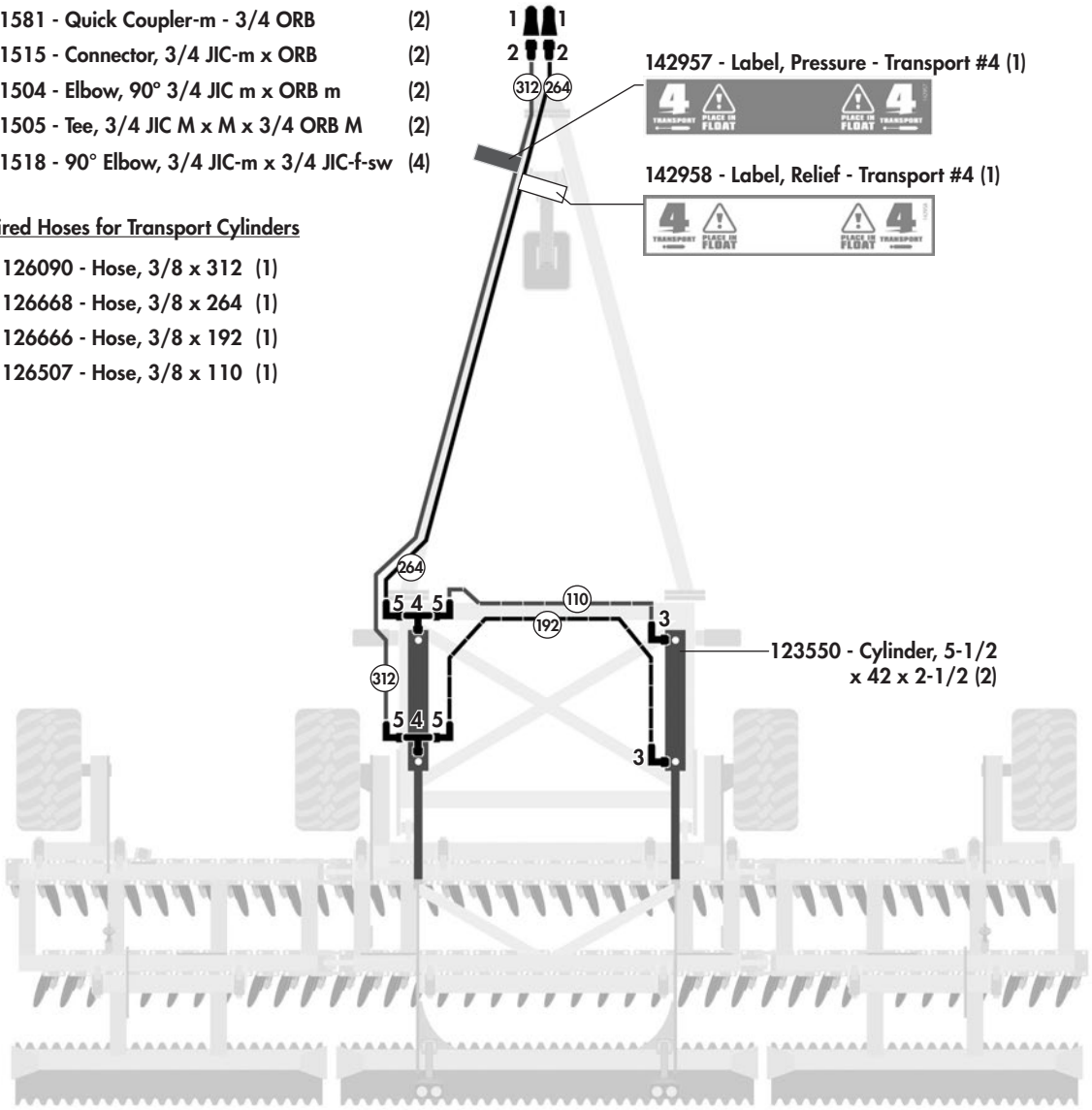
Hydraulic Layout - 4 - Transport

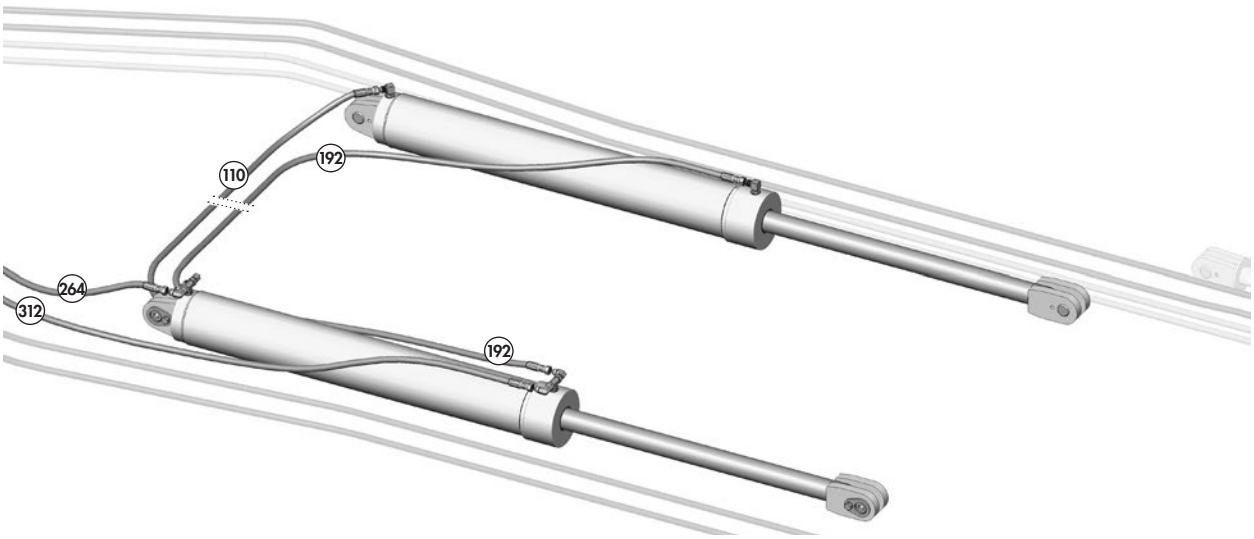
Hydraulic Fittings Required

1	141581 - Quick Coupler-m - 3/4 ORB	(2)
2	141515 - Connector, 3/4 JIC-m x ORB	(2)
3	141504 - Elbow, 90° 3/4 JIC m x ORB m	(2)
4	141505 - Tee, 3/4 JIC M x M x 3/4 ORB M	(2)
5	141518 - 90° Elbow, 3/4 JIC-m x 3/4 JIC-f-sw	(4)

Required Hoses for Transport Cylinders

- (312) 126090 - Hose, 3/8 x 312 (1)
- (264) 126668 - Hose, 3/8 x 264 (1)
- (192) 126666 - Hose, 3/8 x 192 (1)
- (110) 126507 - Hose, 3/8 x 110 (1)





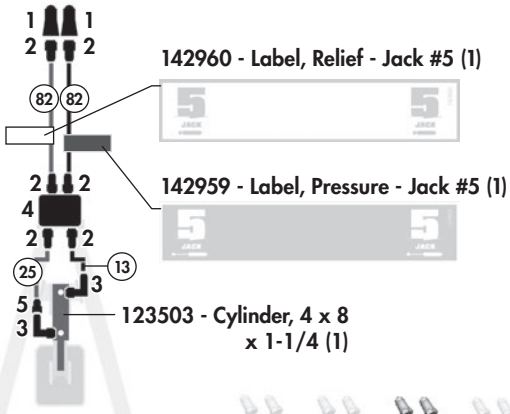
Hydraulic Layout - 5 - Jack

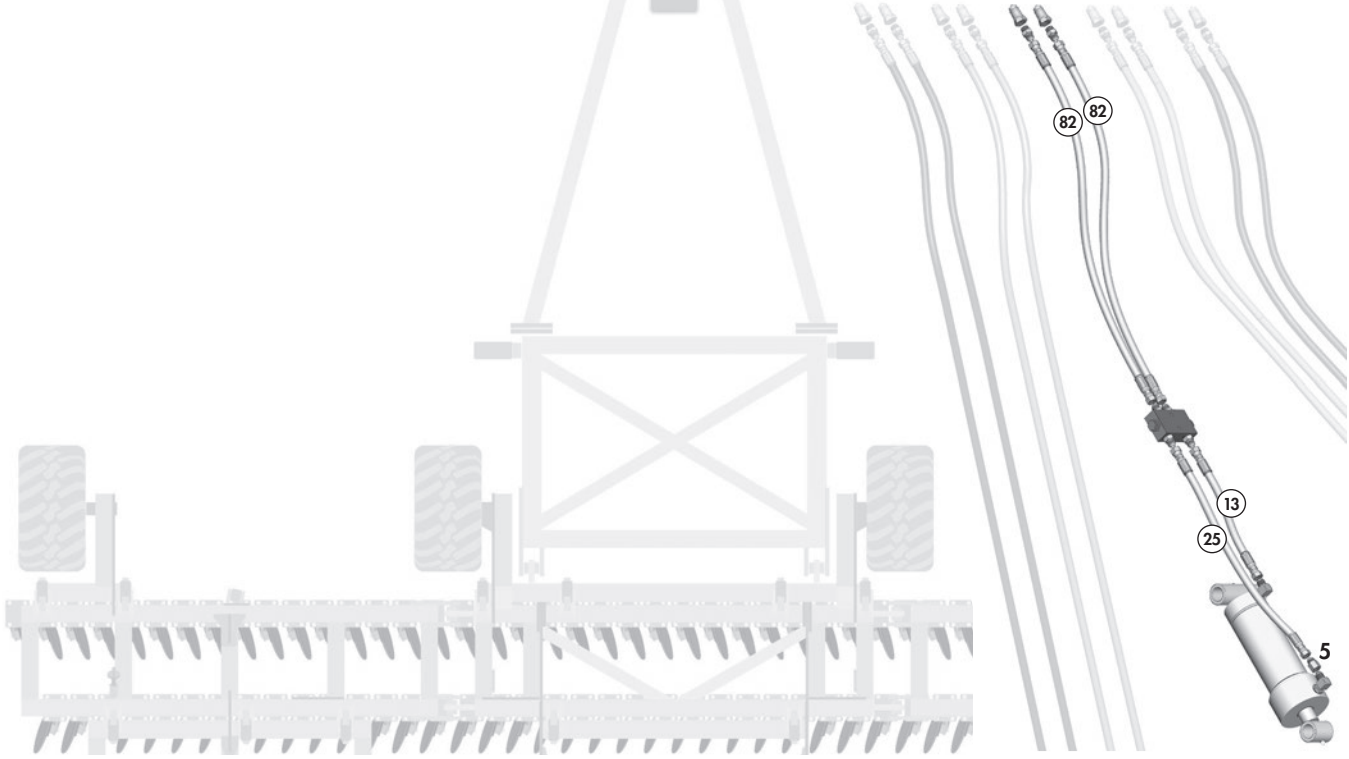
Hydraulic Fittings Required

1	141581 - Quick Coupler-m - 3/4 ORB	(2)
2	141515 - Connector, 3/4 JIC-m x ORB	(6)
3	141504 - Elbow, 90° 3/4 JIC m x ORB m	(2)
4	141595 - Dual Check Valve - #8 ORB	(1)
5	141609 - Adaptor, 3/4 JIC - 1/16 Orifice	(1)

Required Hoses for Jack Cylinders

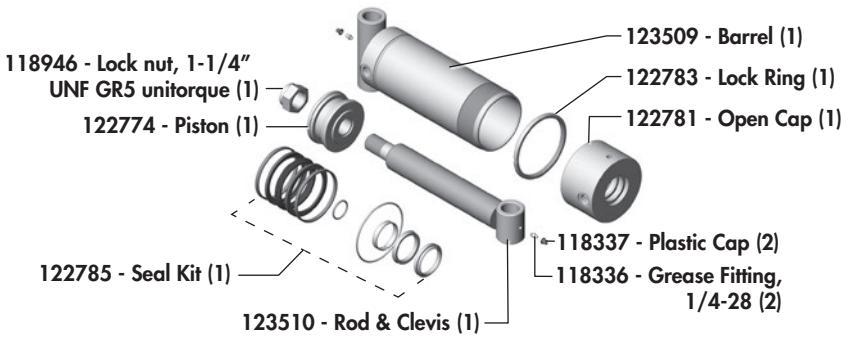
(82)	126503 - Hose, 3/8 x 82	(2)
(25)	126585 - Hose, 3/8 x 25	(1)
(13)	126596 - Hose, 3/8 x 13	(1)





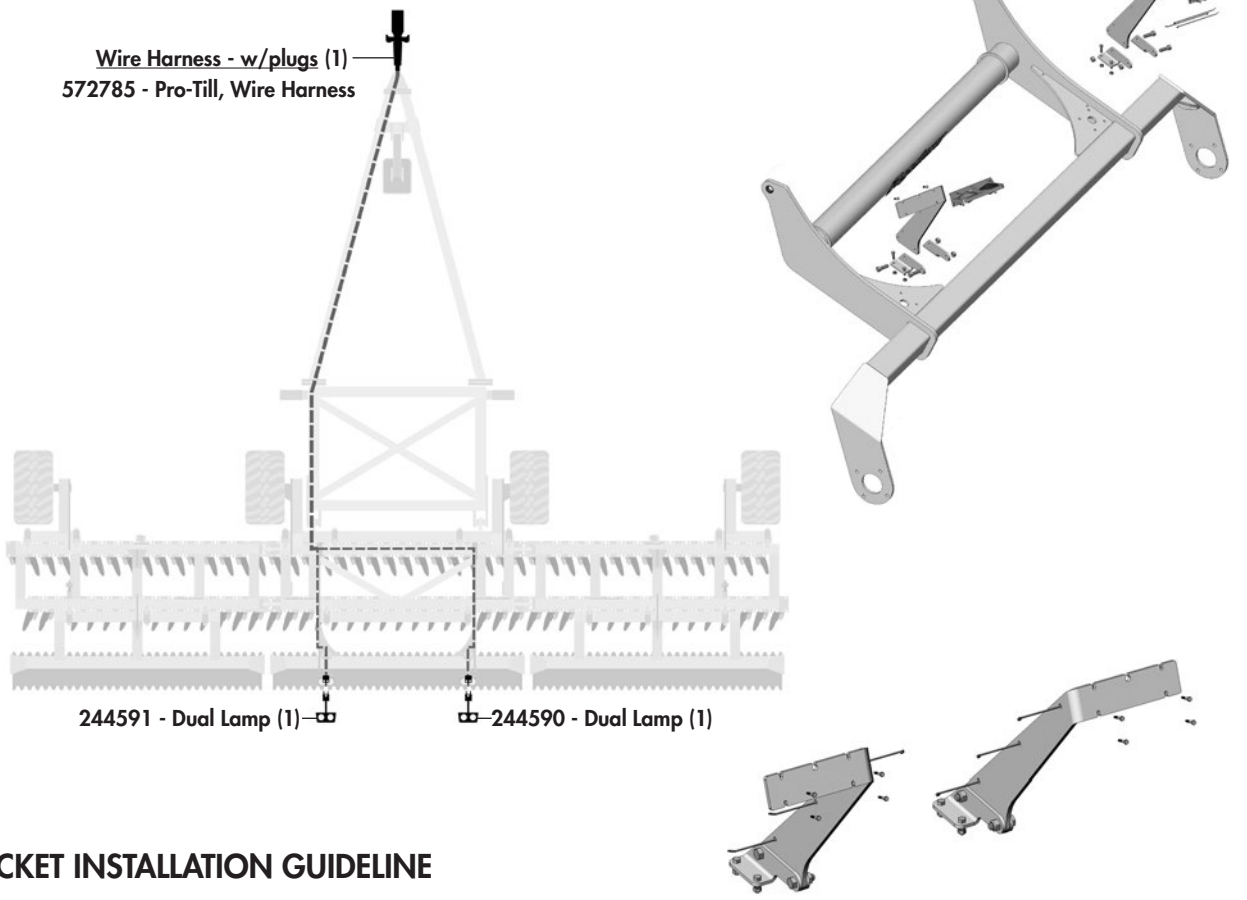
JACK CYLINDER

123503 - Cylinder, 4" x 8" x 2"
1-1/4" Pin Eye



Light Routing

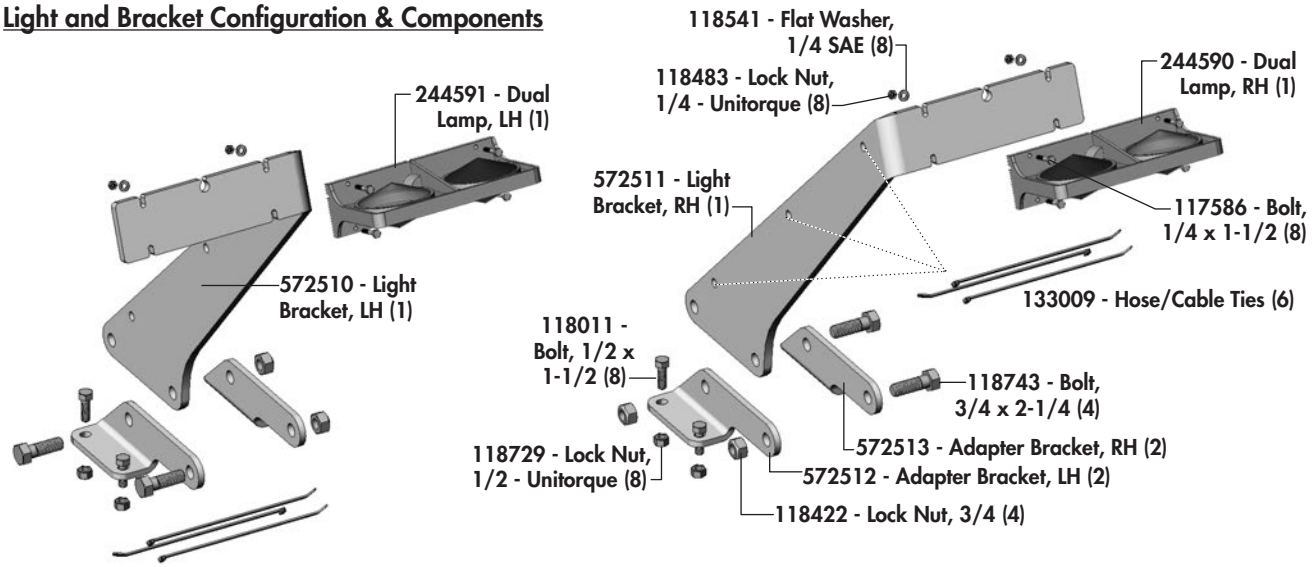
Rear Light Configuration & Components



BRACKET INSTALLATION GUIDELINE

1. Position the Adapter Brackets and LH/RH Light Brackets loosely in place with hardware. (**NOTE:** Ensure electrical cable can be properly routed up to light.)
2. Position the RH and LH Dual lamps on the new Light Brackets with hardware.
3. Connect and properly position the electrical cables to the Lamps. Secure cable to light brackets using the cable ties (3 per side).
4. Confirm proper orientation of all components then properly tighten all hardware.

Light and Bracket Configuration & Components



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: _____