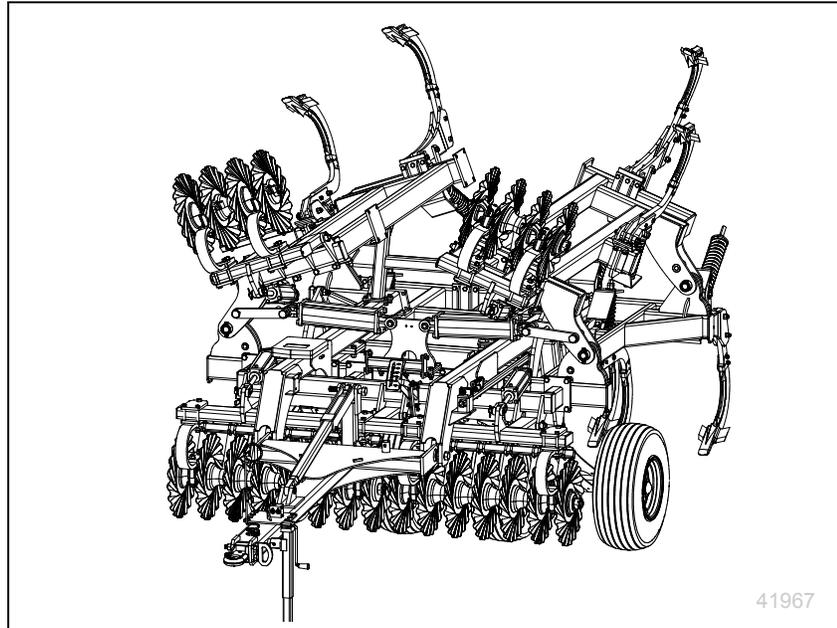


Assembly Manual

5107, 5309, 5311 & 5313
Turbo-Chisel TCN



Read the operator's manual entirely. When you see this symbol, the subsequent instructions and warnings are serious - follow without exception. Your life and the lives of others depend on it!



Illustrations may show optional equipment not supplied with standard unit.

ORIGINAL INSTRUCTIONS



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566-170Q-ENG



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Important Safety Information

Look for Safety Symbol

The SAFETY ALERT SYMBOL indicates there is a potential hazard to personal safety involved and extra safety precaution must be taken. When you see this symbol, be alert and carefully read the message that follows it. In addition to design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.



Be Aware of Signal Words

Signal words designate a degree or level of hazard seriousness.

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations, typically for machine components that, for functional purposes, cannot be guarded.



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

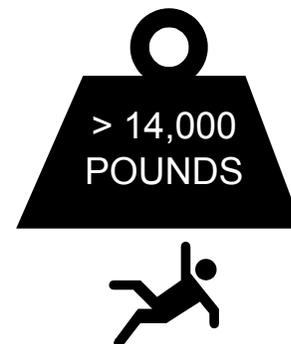


CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.



Use Adequate Lifting Means

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



Prepare for Emergencies

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



Be Familiar with Safety Decals

- s Read and understand the “**Safety Decals**” section of the Operators Manual.
- s Read all instructions noted on the decals.
- s Keep decals clean. Replace damaged, faded and illegible decals.



Wear Protective Equipment

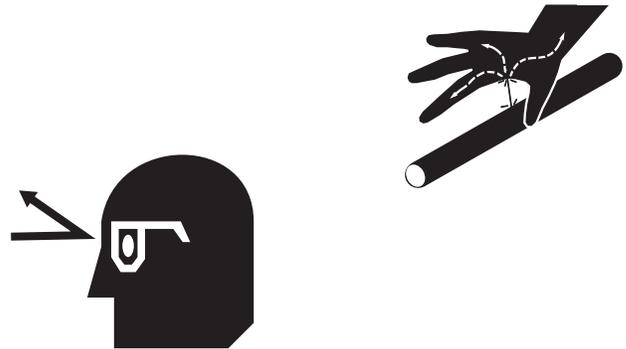
- s Wear protective clothing and equipment.
- s Wear clothing and equipment appropriate for the job. Avoid loose-fitting clothing.
- s Because prolonged exposure to loud noise can cause hearing impairment or hearing loss, wear suitable hearing protection such as earmuffs or earplugs.
- s Because operating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



Avoid High Pressure Fluids

Escaping fluid under pressure can penetrate the skin, causing serious injury.

- s Avoid the hazard by relieving pressure before disconnecting hydraulic lines.
- s Use a piece of paper or cardboard, NOT BODY PARTS, to check for suspected leaks.
- s Wear protective gloves and safety glasses or goggles when working with hydraulic systems.
- s If an accident occurs, seek immediate medical assistance from a physician familiar with this type of injury.



Use Safety Lights and Devices

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

- s Use flashing warning lights and turn signals whenever driving on public roads.

Use lights and devices provided with implement

Keep Riders Off Machinery

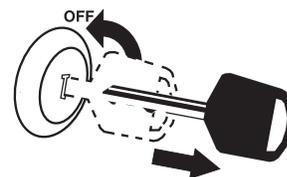
Riders obstruct the operator's view. Riders could be struck by foreign objects or thrown from the machine.

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



Shutdown and Storage

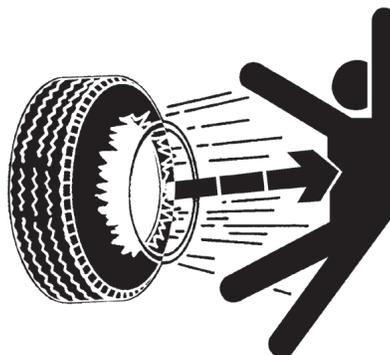
- s Lower implement, put tractor in park, turn off engine, and remove the key.
- s Secure Turbo-Chisel using blocks and supports provided.
- s Detach and store Turbo-Chisel in an area where children normally do not play.



Tire Safety

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

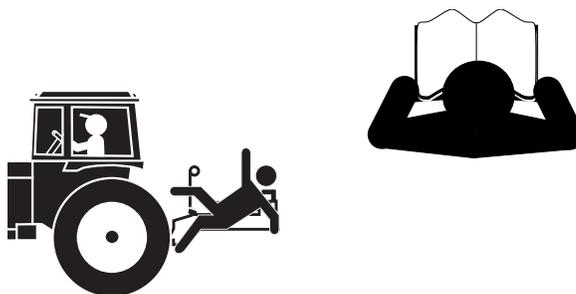
- s *When inflating tires, use a clip-on chuck and extension hose long enough for you to stand to one side—not in front of or over tire assembly. Use a safety cage if available.*
- s *When removing and installing wheels, use wheel-handling equipment adequate for weight involved.*



Safety At All Times

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

- s *Be familiar with all machine functions.*
- s *Operate machinery from the driver's seat only.*
- s *Do not leave machine unattended with tractor engine running.*
- s *Do not stand between the tractor and machine during hitching.*
- s *Keep hands, feet and clothing away from power-driven parts.*
- s *Wear snug-fitting clothing to avoid entanglement with moving parts.*
- s *Watch out for wires, trees, etc., when folding and raising machine. Make sure all persons are clear of working area.*





Introduction

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

Description of Unit

The TCN5107-5313 Turbo-Chisel is a one or three-section “vertical” tillage tool. Working width ranges from 9 to 17 feet. The implement is designed to cut, size and bury residue. It can work up to 11” deep, will dislodge rootballs and leave the field smooth enough for “one pass” finishing in Spring. For optimum leveling of your machine, it should be equipped with either a Chopper Reel or Buster Bar attachment.

Models Covered

TCN5107	15-Foot	1-section
TCN5309	18-Foot	3-section
TCN5311	21-Foot	3-section
TCN5313	24-Foot	3-section

Document Family

566-170Q-ENG	Assembly Manual (this document)
566-170Q	Pre-Delivery Manual
566-170M	Operator Manual
566-170P	Parts Manual

Tools Required

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

Pre-assembly Checklist

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

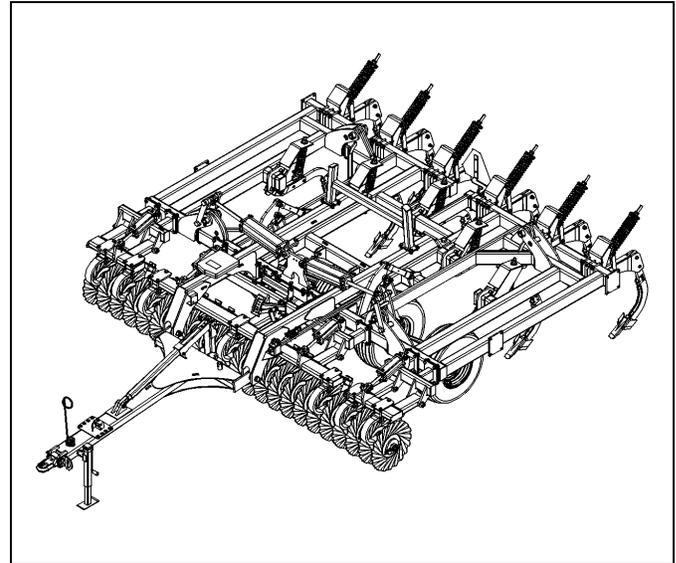


Figure 1
Turbo-Chisel Narrow

41977

Using This Manual

This manual was written to help you assemble and prepare the new machine for the customer. The manual includes instructions for assembly and setup. Read this manual and follow the recommendations for safe, efficient and proper assembly and setup.

An operator's and parts manual is also provided with the new machine. Read and understand **"Important Safety Information"** and **"Operating Instructions"** in the operator's manual before assembling the machine. Refer to the parts manual for proper part's identification. As a reference, keep the operator's and part's manual on hand while assembling.

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

Definitions

The following terms are used throughout this manual.

NOTICE

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

Note: Useful information related to the preceding topic.

Right-hand and left-hand as used in this manual are determined by facing the direction the machine will travel while in use unless otherwise stated. An orientation rose in some line art illustrations shows the directions of: Up, Back, Left, Down, Front, Right.

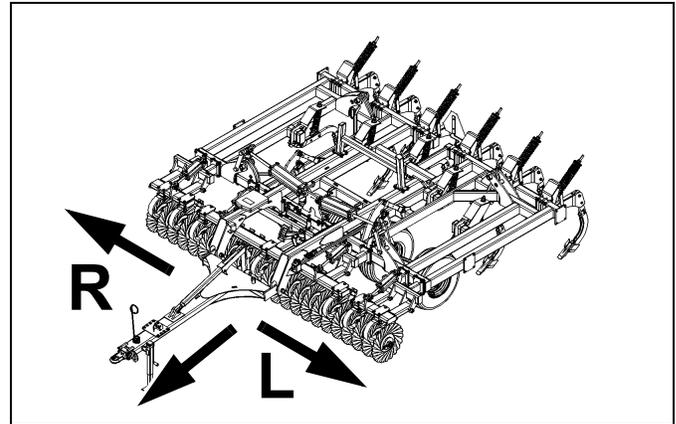
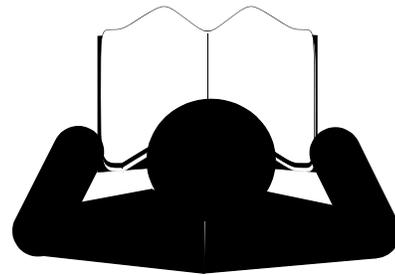
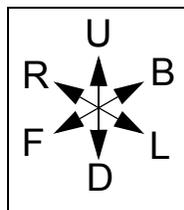


Figure 2
Right / Left

41977

Shipping Inventory

The Turbo-Chisel will be shipped unassembled as shown in a big shipping rack and shipping boxes on pallets. The only parts that will be assembled are the turbo gang assemblies and reel attachment assemblies. The reel attachments (if equipped) will be banded together with the gang assemblies on pallet.

Refer to Figure 3

- All frame sections, hitch and torque tubes will be shipped in shipping container.



Figure 3
Shipping Rack

41356

Refer to Figure 4

- Shank parts (mount assembly and shank assembly), small parts and bolts will be shipped in boxes. Rear attachment big parts will be banded to attachment smaller parts box.

Shipping containers do not need to be returned to Great Plains.



Figure 4
Shipping Boxes

41621

Unloading

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

Unpacking Components

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

Centering componets:

Be sure and center fork truck or chains (overhead hoist) on componets so they won't slide and cause injury.

Carefully un-band componets.

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

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

Unload Smaller Items First

Unloading the frames is a potentially dangerous operation.

Reduce risk and complication by first unloading

6. the tire wheel assemblies,
7. the smaller items

Place these components well out of the maneuvering area needed for unloading the gang assemblies and frames.

8. Carefully unload the Frames and hitch out of shipping rack

Unpacking Boxes

9. Carefully remove banding and lids from boxes.
10. Locate and identify all componets before assembling.

Further Assistance

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

Great Plains Service Department
1325 E. North St.
PO Box 5060
Salina, KS 67402-5060

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



Assembly

Torque Tube

Refer to Figure 5

11. Once the center Frame has been uncrated, carefully turn the center frame upside down and set on blocks to assemble torque tube.
12. Carefully raise the torque tube ① with an overhead hoist and secure with $1\frac{1}{4}$ x 7 pins ②, $\frac{3}{8}$ x $2\frac{1}{4}$ Gr. 8 special thread ③ and $\frac{3}{8}$ top lock nut.
13. Install pre-assembled hub assembly or brake hub (LH and RH, on outside spindle locations) assembly ④ (if machine is equipped with brakes) using the 1 x $4\frac{5}{8}$ pin ⑤ and secure with $\frac{3}{8}$ x 2 roll pin.
14. Attach the tire/wheel assembly ⑥ to hub assembly ④ and secure with $\frac{5}{8}$ lug nuts ⑦.
15. All bolts may be tightened to specs, See "Torque Values Chart" on page 28.

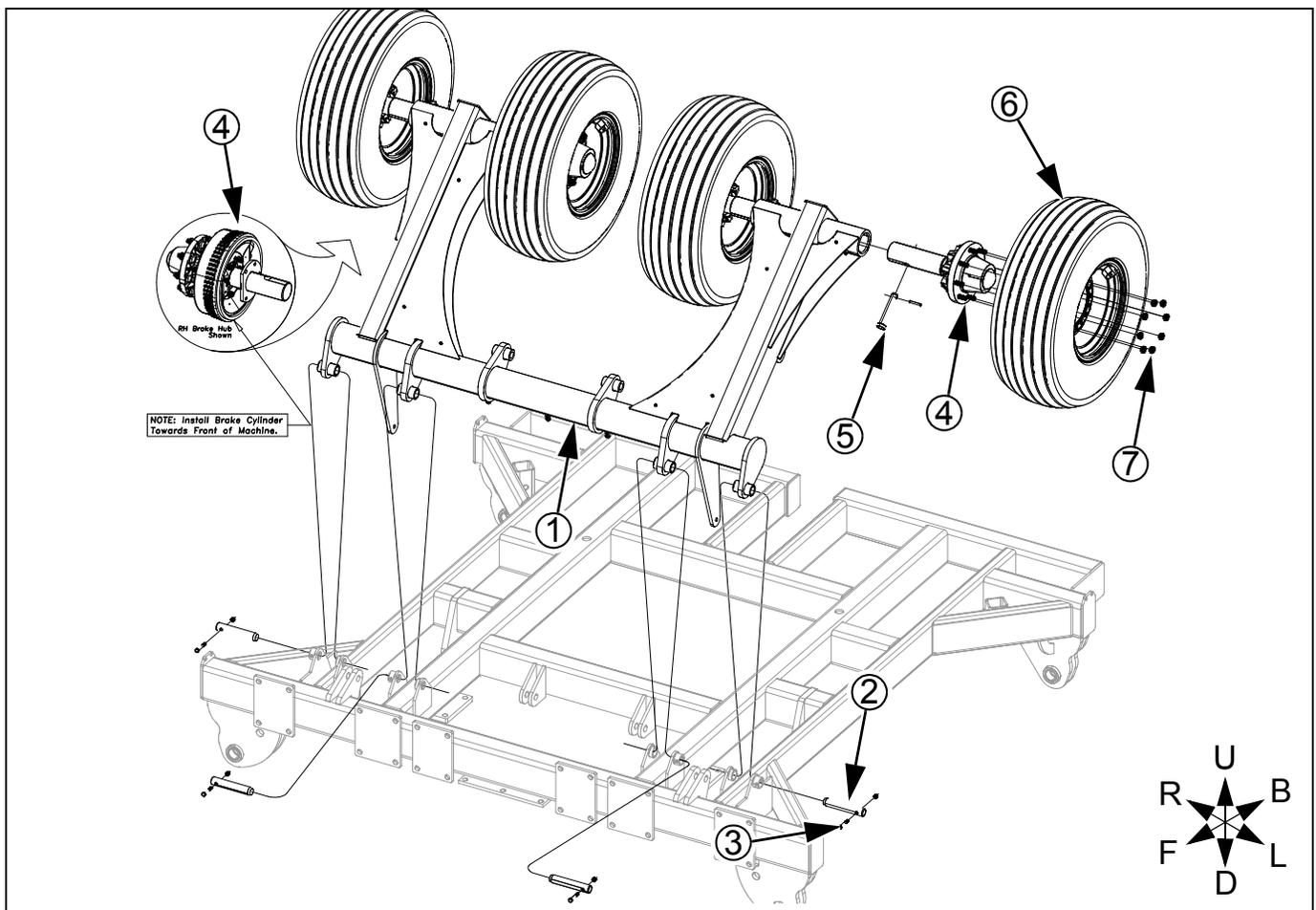


Figure 5
Torque Tube

42006

Center Lift & Gang Mount

Refer to Figure 6

16. Carefully raise center frame up from front bar and turn over and set on stands.
 17. Attach the cylinder mount bars ① and lift link ② to center frame using 1 x 3 $\frac{1}{2}$ hex bolts ③, 1 x 4 hex bolts ④ and lock nuts.
 18. Now install 4 x 10 x 1.38 cylinders ⑤ using 1 x 3 $\frac{1}{8}$ pins ⑥, 1.5 x 1.0 x .075 machine washers and $\frac{3}{16}$ x 2 cotter pins.
 19. Install cylinder transport locks ⑦ to cylinders ⑤ using the $\frac{5}{16}$ wire retainer pin.
 20. Attach center gang mount ⑧ to front of center frame with 3 $\frac{3}{4}$ x 2 hex bolts ⑨, 3 $\frac{3}{4}$ lock washers and 3 $\frac{3}{4}$ nuts.
- Note: Store extra shims ⑩ on back side of end plate facing down with same bolts ⑪ that hold rest of shims.
21. Install shims ⑩ with 3 $\frac{3}{8}$ x 1 $\frac{1}{4}$ hex bolts ⑪, 3 $\frac{3}{8}$ lock washers and 3 $\frac{3}{8}$ nuts.
 22. All bolts may be tightened to specs, See "Torque Values Chart" on page 28.

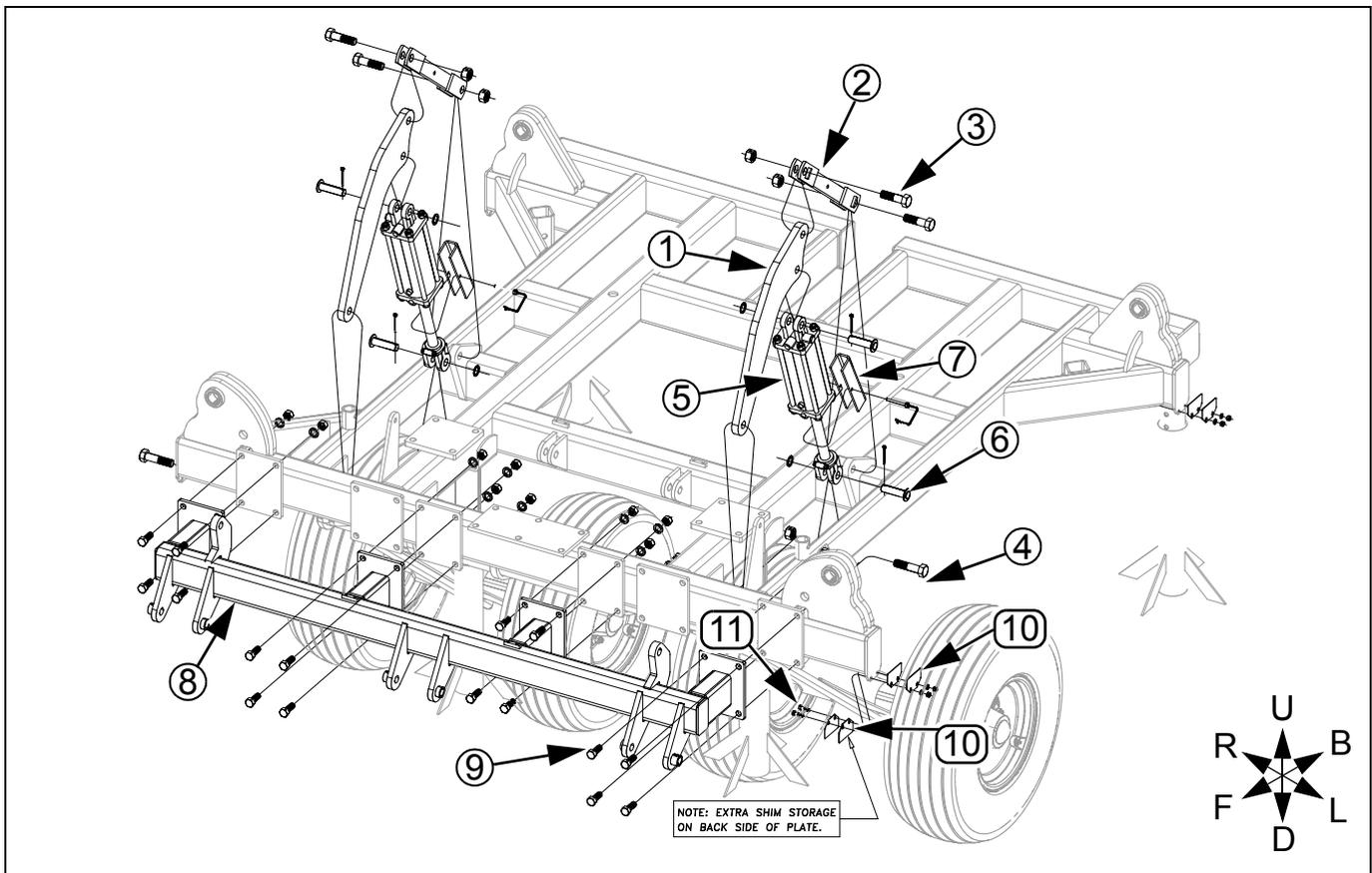


Figure 6
Center Lift & Gang Mount

42007

Trusses

Refer to Figure 7

23. Start by bolting the rear of the LH ① and RH ② trusses to center frame using $1\frac{1}{4}$ x $8\frac{1}{2}$ Gr. 8 hex bolts ③, $1\frac{1}{4}$ lock washers and $1\frac{1}{4}$ nuts. Attach middle plates of trusses with $\frac{3}{4}$ x $2\frac{1}{2}$ hex bolts ④, $\frac{3}{4}$ lock washers, $\frac{3}{4}$ nuts, front plates with $\frac{3}{4}$ x 2 ⑤ $\frac{3}{4}$ lock washers, and $\frac{3}{4}$ nuts.
24. Mount the manual pack ⑥ to RH truss ② plate with $\frac{1}{4}$ x 1 hex bolts ⑦, mini end press wheels ⑧, $\frac{1}{4}$ lock washers and $\frac{1}{4}$ nuts.
25. All bolts may be tightened to specs, See "Torque Values Chart" on page 28.

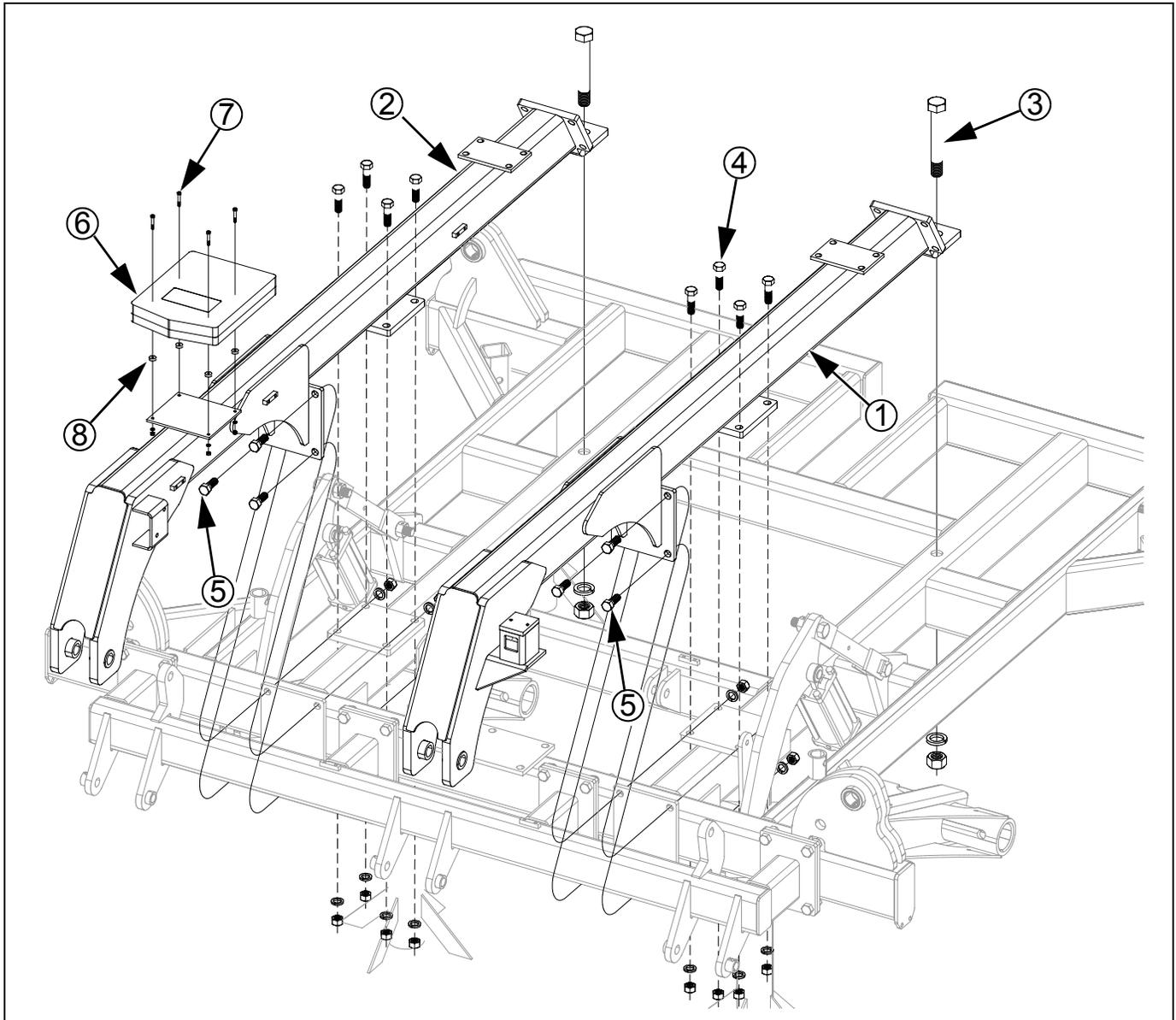


Figure 7
Truss

42008

Hitch & Center Lift Assembly

Refer to Figure 8

26. Attach hitch pole ① to trusses using 1 1/4 x 8 Gr. 8 hex bolts ②, 1 1/4 flat washers ③ (one on each side of uni-ball) and top lock nuts. Washers are needed to ensure a tight fit. Bolts need tightened securely, but do not over-tighten as the hitch needs to pivot.
 27. Mount square jack ④ to front mount on hitch ① with pin provided with jack. Use jack to help support front of hitch for rest of hitch assembly.
 28. Attach the four lift mechanism links ⑤ to the level bar links ⑥ and torque tube with 1 x 6 Gr. 8 hex bolts ⑦, and 1 lock nuts. Attach rear of level bar link ⑥ to center frame ears with 1 x 2²⁹/₆₄ pins ⑧, 1.5 x 1.0 x.075 machine washers ⑨ and ³/₁₆ x 2 cotter pins.
 29. Attach the rear of the level bars ⑩ to the top of the level bar links ⑥ with 1 x 6 Gr. 8 hex bolts ⑪ and 1 lock nuts.
 30. Attach level bar brace ⑫ between the level bars using ⁵/₈ x 1 1/2 hex bolts ⑬, ⁵/₈ lock washers and ⁵/₈ nuts.
 31. Now the back of the hitch turnbuckle ⑭, turnbuckle lock ⑮ and leveling arm ⑯ may be attached to the front of level bars ⑩ with 1 1/4 x 9 special thread hex bolt ⑰ and 1 1/4 lock nut.
 32. The bottom of the hitch leveling arm ⑯ can be attached to the back of the hitch pole ① using 1 x 7 Gr. 8 hex bolt ⑱ and 1 lock nut.
 33. The front of the hitch turnbuckle ⑭ may be attached to the hitch pole ears with 1 x 3⁵/₈ clevis pin ⑲, 1.5 x 1.0 x.075 machine washers and ³/₁₆ x 2 cotter pins. Attach the ³/₈ x 4 pin wire snap lock ⑳ to the turnbuckle lock ⑮.
 34. If machine is equipped with optional brakes, install air line holder ㉑, through first coil of spring in the hose holder ㉒. Secure by aligning holes in hose holder and hole on air line holder, install 1/2 x 1 hex bolt ㉓, 1/2 flat washer, 1/2 lock washer and 1/2 nut.
 35. Attach counterbalance valve ㉔ to the plate on front of hitch pole ① with ⁵/₁₆ x 3 1/2 hex bolts ㉕ and ⁵/₁₆ lock washers.
 36. Align holes in safety chain support ㉖, cat III hitch tongue ㉗ with holes on left side of hitch pole ①, secure with 1 x 8 Gr. 8 special hex bolts ㉘, 1 lock washers and 1 nut.
 37. Install safety chain ㉙ on bottom side of hitch ①, secure with ⁷/₈ x 3 hex bolt ㉚, ⁷/₈ flat washer ㉛, ⁷/₈ lock washer and ⁷/₈ nut.
 38. Attach hitch clevis ㉜ to cat III hitch tongue ㉗ with ³/₄ x 5 1/2 Gr. 8 hex bolt ㉝ and ³/₄ lock nut.
- Note: Do not use hitch clevis ㉜ if tractor has a hammer strap. Use for transporting with truck.
39. Route safety chain ㉙ through safety chain support ㉞.
 40. All bolts may be tightened to specs, See “**Torque Values Chart**” on page 28.

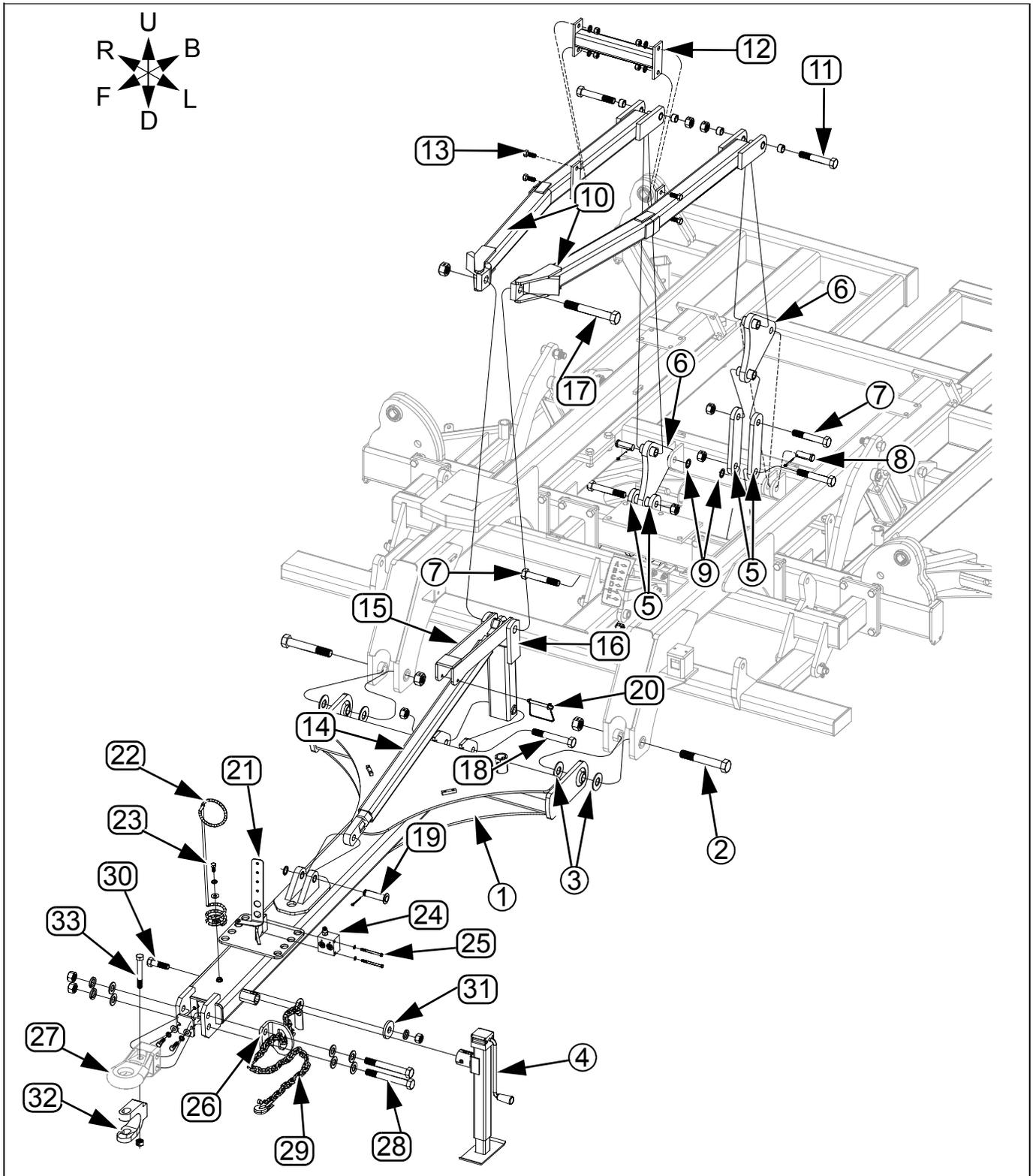


Figure 8
Hitch & Center Lift

143364

Refer to Figure 9**Wings**

41. Carefully align holes in wing frame LH and RH ① with holes on center frame hinges. Secure with $1\frac{3}{4}$ x $8\frac{5}{8}$ pins ②, $\frac{1}{2}$ x $3\frac{1}{2}$ hex bolts ③ and $\frac{1}{2}$ top lock nuts.
- Note: Be sure hole in pin and hole in collar on wing frame are aligned and bolt goes through both of them.
42. Attach wing stop ④ to center frame with $\frac{5}{8}$ x $1\frac{1}{2}$ hex bolts ⑤, $\frac{5}{8}$ lock washers and $\frac{5}{8}$ nuts.
43. Install center fold bracket ⑥ to center frame with $\frac{3}{4}$ x $2\frac{1}{2}$ hex bolts ⑦, $\frac{3}{4}$ lock washers and $\frac{3}{4}$ nuts.
44. Attach rebound valve plate ⑧ with $\frac{3}{4}$ x $2\frac{1}{2}$ hex bolts ⑦, $\frac{3}{4}$ lock washers and $\frac{3}{4}$ nuts.
45. Install rebound valve ⑨ with $\frac{5}{16}$ x 4 hex bolt ⑩, $\frac{5}{16}$ lock washer and $\frac{5}{16}$ hex nut.
46. Attach double tee block ⑪ with $\frac{5}{16}$ x $3\frac{1}{2}$ hex bolts ⑫, $\frac{5}{16}$ lock washer and $\frac{5}{16}$ hex nut.
47. Attach wing shank mount ⑬ (model 5313 only), secure with $\frac{3}{4}$ x $2\frac{1}{2}$ hex bolts ⑦, $\frac{3}{4}$ lock washers and $\frac{3}{4}$ nuts.
48. Align holes in link ⑭, rod end of 5 x 16 x 1.5 cylinder ⑮ and double fold link ⑯, secure with $1\frac{1}{4}$ x 9 special thread hex bolts ⑰ and $1\frac{1}{4}$ top lock nuts.
49. Secure other end of link ⑭ to front wing hinge lower hole with $1\frac{1}{4}$ x $3\frac{5}{8}$ pin ⑱, 1.88 x 1.25 x 10ga machine washer and $\frac{3}{16}$ x 2 cotter pins.
50. Secure base end of cylinder ⑮ with 1 x $3\frac{1}{8}$ pins ⑲, 1.5 x 1.0 x .075 machine washers and $\frac{3}{16}$ x 2 cotter pins.
51. Mount wing gang mount (models 5311-5313) ⑲ to front wing plates with $\frac{3}{4}$ x 2 hex bolts ⑳, $\frac{3}{4}$ lock washers and $\frac{3}{4}$ hex nuts.
52. Tighten all bolts to specs, See "**Torque Values Chart**" on page 28.
53. See "**Valve, Fitting and Hose Assembly**" on page 16 for proper fitting assembly,
54. Turn elbow ㉒ into rod end of fold cylinder ⑮.
55. Thread $\frac{3}{4}$ morb - $\frac{3}{4}$ fjc adapter ㉓ onto elbow ㉒.
56. Thread two way valve ㉔ onto adaptor ㉓.
57. Thread $\frac{3}{4}$ morb- $\frac{3}{4}$ mjc adaptor ㉓ into two way valve ㉔.
58. See "**Fittings Torque Values**" on page 29 for proper torque value.

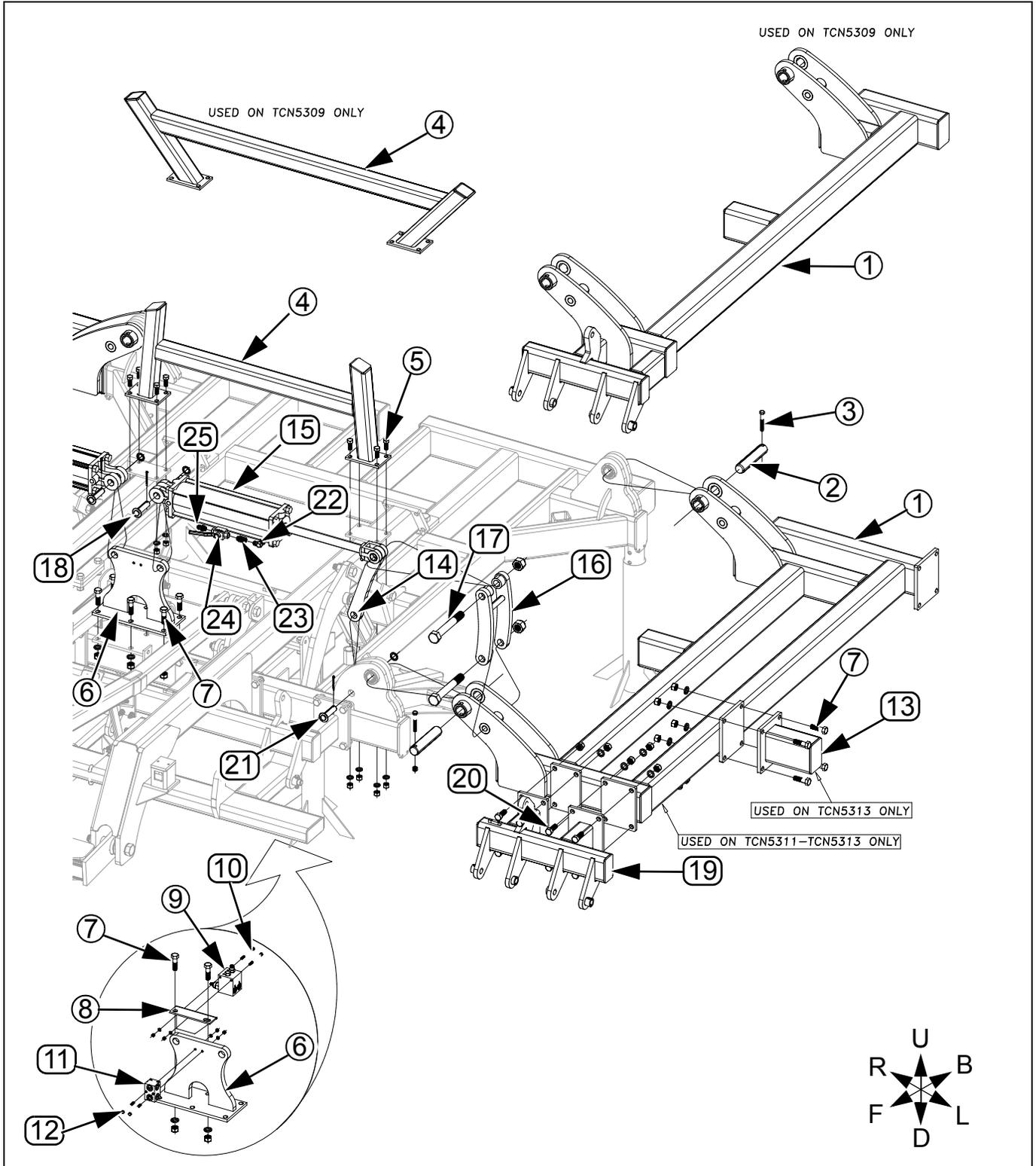


Figure 9
Wing

42010

569-190S Shank

Note: See machine layouts in Appendix for proper shank placement. The front and rear shank mount assemblies will be shipped pre assembled from factory in two parts in boxes. There will be the mount assembly and the shank assembly.

Refer to Figure 10

59. Install the mount assembly ① to the rear side of tubes. Install front mount bracket ② on front of tubes, align holes, secure with $\frac{3}{4}$ x $2\frac{1}{2}$ hex bolts ③, $\frac{3}{4}$ lock washers and $\frac{3}{4}$ nuts. Slide these two parts over frame tube in proper location.
60. Attach the shank assembly ④ with $\frac{3}{4}$ x 4 hex bolts ⑤, $\frac{3}{4}$ lock washers and $\frac{3}{4}$ nuts.
61. Tighten all bolts to specs, See “**Torque Values Chart**” on page 28.

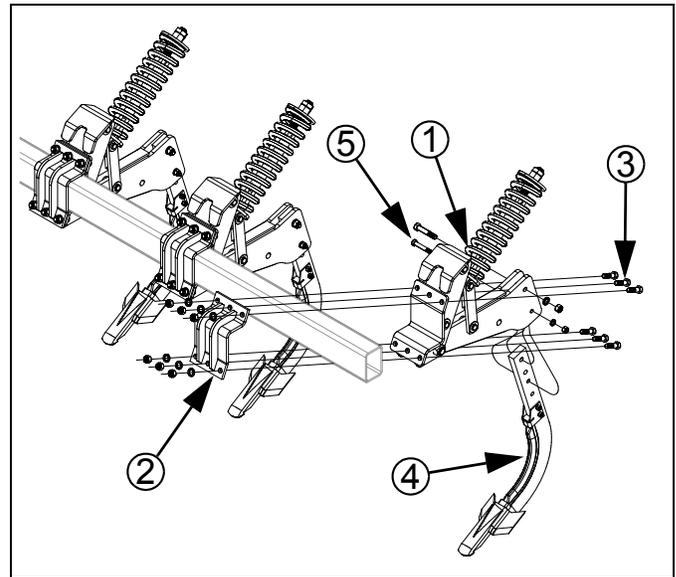


Figure 10
569-190S Shank

42011

569-196S Shank

Refer to Figure 11

62. Install the mount assembly ① to the rear side of tubes. Install front mount bracket ② on front of tubes, align holes, secure with $\frac{3}{4}$ x $2\frac{1}{2}$ hex bolts ③, $\frac{3}{4}$ lock washers and $\frac{3}{4}$ nuts. Slide these two parts over frame tube in proper location.
63. Attach the shank assembly ④ with $\frac{5}{8}$ x $4\frac{1}{2}$ hex bolt ⑤, $\frac{5}{8}$ lock washer and $\frac{5}{8}$ nut (rear hole), $\frac{1}{2}$ x 3 hex bolt ⑥, $\frac{1}{2}$ lock washer and $\frac{1}{2}$ nut (front hole).
64. Tighten bolt ⑦ until shank weldment ⑧ is parallel to the ground.
65. Tighten all bolts to specs, See “**Torque Values Chart**” on page 28.

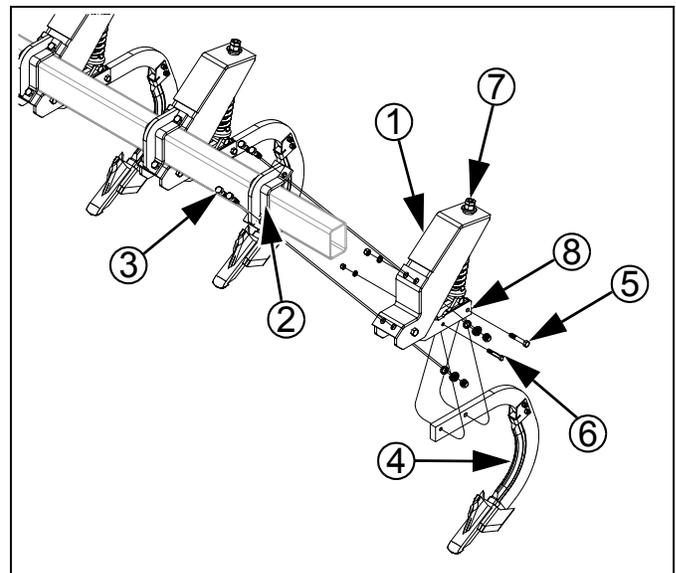


Figure 11
569-196S Shank

42012

Turbo Gang

Note: See machine layouts in Appendix for proper gang placement. The gang assemblies will come pre assembled from factory and attached to the gang bar.

Refer to Figure 12

66. Install the gang assembly ① using 1 x 9 $\frac{1}{2}$ hinge pin ②, secure with $\frac{3}{8}$ x 2 $\frac{1}{4}$ Gr. 8, special thread hex bolts ③, 3/8 top lock nuts.
67. Attach cylinders ④ to ears on gang bars and gang mounts with, secure with 1 x 3 $\frac{1}{8}$ pins ④, 1.5 x 1.0 x.075 machine washers and $\frac{3}{16}$ x 2 cotter pins.
68. Tighten all bolts to specs, See “**Torque Values Chart**” on page 28.

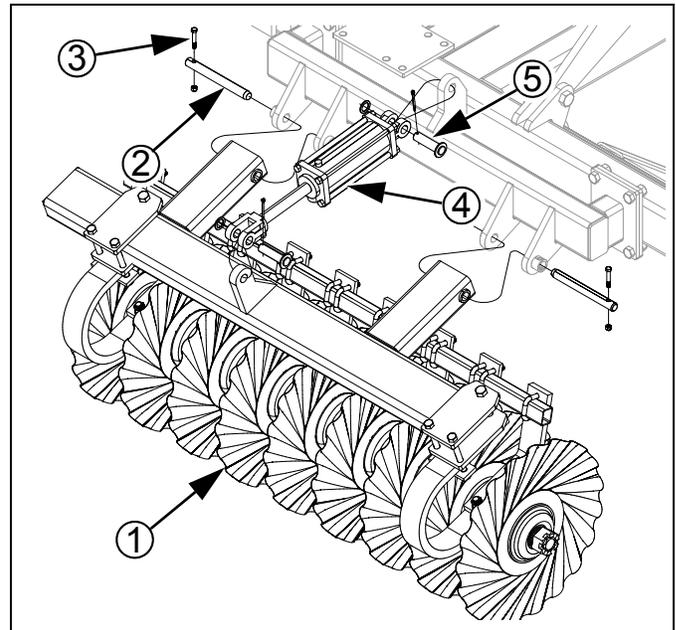


Figure 12
Turbo Gang

42013

Depth Gauge

Refer to Figure 13

69. Install the link mount ① to the center gang bar with $\frac{1}{2}$ x 3 $\frac{1}{32}$ x 7 $\frac{1}{4}$ u-bolt ②, $\frac{1}{2}$ lock washers and $\frac{1}{2}$ nuts.
70. Install leveling weldment ③ to the center gang mount with $\frac{1}{2}$ x 5 $\frac{1}{32}$ x 4 $\frac{1}{2}$ u-bolts ④, $\frac{1}{2}$ lock washers and $\frac{1}{2}$ nuts.
71. Slide the depth gauge pointer ⑤ over the leveling weldment bolt, secure with $\frac{1}{2}$ lock nut.
72. Align one set of holes in the two links ⑦, one on each side of the depth gauge pointer hole ⑤, secure with $\frac{1}{2}$ x 1 $\frac{1}{2}$ bolt ⑧ and $\frac{1}{2}$ lock nut.
73. Attach the other end of the links ⑦, one on each side of the hole in the link mount ① with $\frac{1}{2}$ x 1 $\frac{1}{2}$ bolt ⑧ and $\frac{1}{2}$ lock nut.
74. Tighten all u-bolts to specs, See “**Torque Values Chart**” on page 28. Tighten the three lock nuts up snug, but be sure the links will pivot.
75. Clean the surface where TC depth coultter decal ⑨ goes and peel backing off of decal and fasten decal on plate. Firmly press decal to get all air bubbles out.

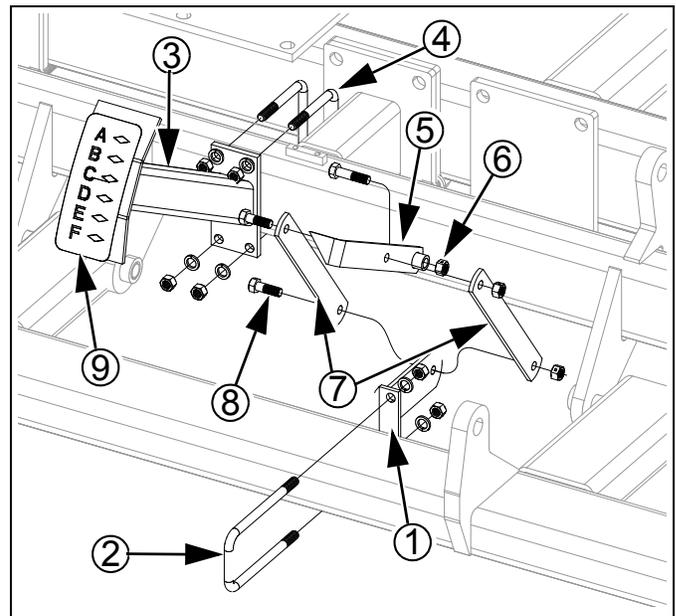


Figure 13
Depth Gauge

42016

Valve, Fitting and Hose Assembly

Refer to Figure 14

Depth Stop

76. Align holes in depth control valve ① to top of depth stop valve mounting bracket using $\frac{5}{16}$ x 2 hex bolts ② and $\frac{5}{16}$ lock washers.
77. Slide one end of (with 2 holes) depth stop tube ③ through slotted hole in depth stop valve mounting bracket. Slide other end of depth stop tube ③ over lever on torque tube, secure with $\frac{1}{2}$ x 3 hex bolt ④, $\frac{1}{2}$ lock washer and $\frac{1}{2}$ nut.
78. Bolt depth stop screw assembly ⑤ to front of depth stop tube ③ with $\frac{1}{2}$ x 2 $\frac{1}{2}$ hex bolts ⑥, $\frac{1}{2}$ lock washers and $\frac{1}{2}$ nuts.
79. Tighten all u-bolts to specs, See “**Torque Values Chart**” on page 28.

Note: Install all hydraulic fittings as shown in steps below. See hydraulic layouts in Appendix for proper hose routing.

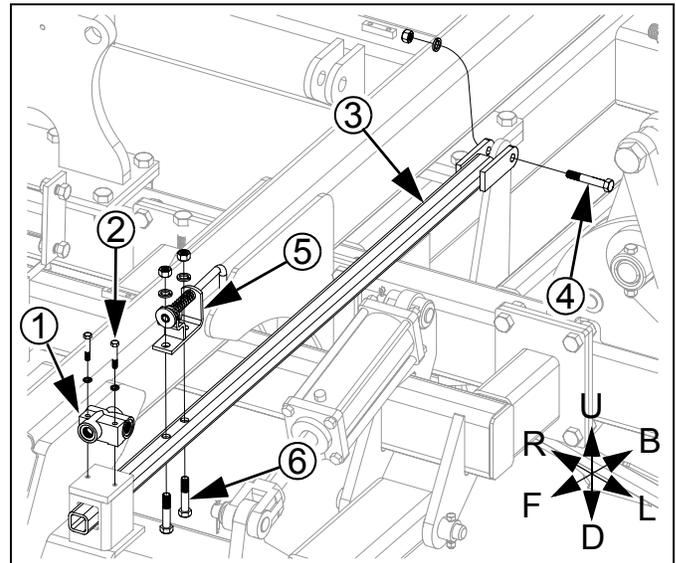


Figure 14
Depth Stop

42017

Refer to Figure 15

Install Rebound Valve and O-Ring Fittings

80. Thread straight (non-adjustable stud) fittings ③ into ports V1, V2 and C2 of rebound valve ①.

Note: Tighten as shown below. Do not over tighten as this could cause damage to valves.

- a. Inspect all components for damage or contamination during shipping.
 - b. Lubricate o-ring and threads on fitting.
 - c. Turn fitting into port until finger tight, See “**Fittings Torque Values**” on page 29.
81. Thread elbow (adjustable stud) fitting ② into port C1 of rebound valve ①.
 - a. Follow steps a and b from the foregoing instructions, then proceed with the following steps below.
 - b. Looking from fitting from end with nut/washer/o-ring assembly, turn nut clockwise as far as possible.
 - a. Using wrench, turn fitting into port until the washer touches the port spot face. Continue turning fitting until washer touches thread nearest wrench pad.
 82. Back off fitting counterclockwise not exceeding one revolution until it is oriented in the correct position.
 83. Place wrench on the wrench pad of fitting to keep fitting from turning, See “**Fittings Torque Values**” on page 29.

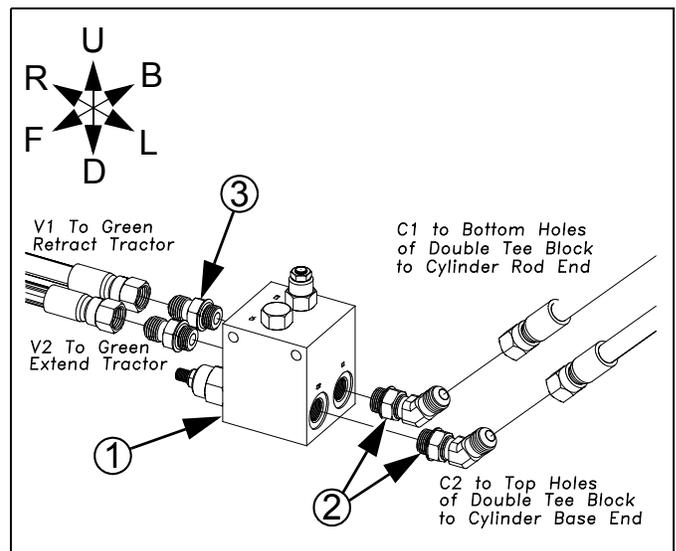


Figure 15
Rebound Valve Fittings

41580

Refer to Figure 16

Install Depth Control Valve and O-Ring Fittings

84. Thread elbow (adjustable stud) fitting ③ into left port of depth stop valve ①. Thread straight (non-adjustable stud) fittings ② into front port of depth control valve ①.
85. Tighten as shown in steps 79, 80.

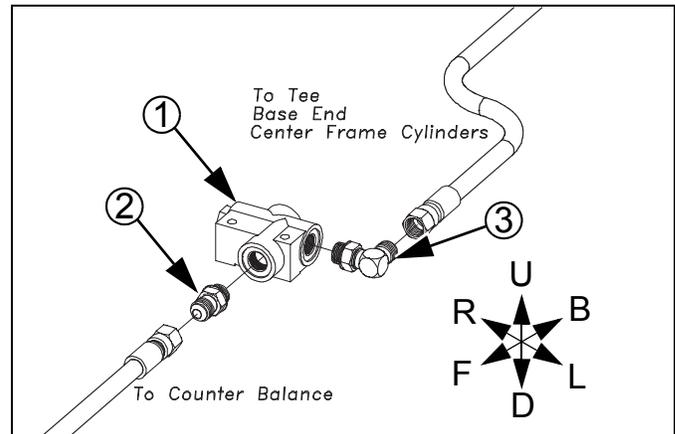


Figure 16
Depth Control Valve Fittings

41671

Refer to Figure 17

Install Hose Handle and JIC Fittings

Note: Hose handles are color coded. See “**Hydraulic Hose Hookup**” on page 18 for proper placement on hoses.

86. Install fittings ② to end of hoses ① running to front of hitch. Attach poppet fittings ③ to fittings ②.
87. Tighten as shown in steps 79.80.
88. Align the grooves in the front of the hose handles ④ with the ribs in the fittings ② as shown and install the self threading screws ⑤ through holes.
89. Route hoses as shown in layout section in Appendix.
90. When the JIC hoses are routed, follow the following procedure for hooking up and tightening.
 - a. Inspect for possible contamination or damage from shipping or handling. Sealing surface should be smooth. Annular tool marks of (100uin) concentric with thread permissible.
 - b. Lubricate the threads and the entire surface of the cone with hydraulic fluid or a light lubricant.
 - c. Align mating components for hand connection and turn flare nut until sealing surfaces make full contact.
 - d. Torque nut to, See “**Torque Values Chart**” on page 28. If a wrench pad is provided next to nut, place a second wrench on pad to prevent flare from rotating while being torqued.
 - e. When torquing nut onto a straight flared fitting, it may be necessary to also place a wrench on the flared fitting wrench pad to prevent it from turning during assembly.

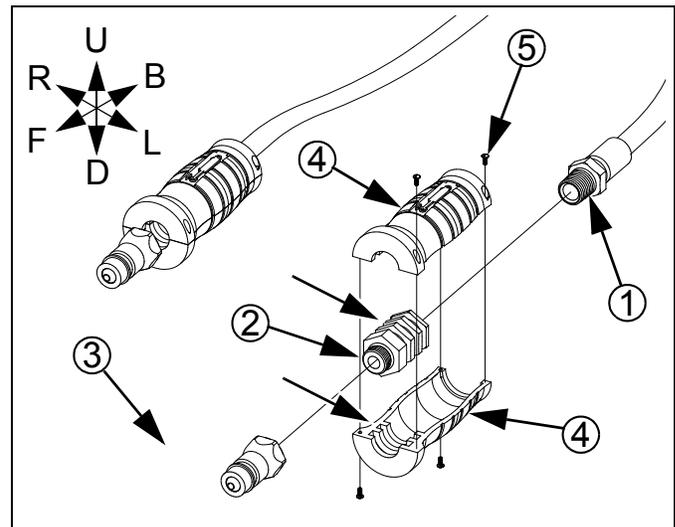


Figure 17
Hose Handle

41672

91. Alternate Assembly Method for JIC.
 - a. If torqued method not possible, then proceed to the steps below.
 - b. Lightly wrench tighten the nut until there is firm resistance.
 - c. Place a wrench on wrench pad next to nut as near the 6 o'clock position as possible.
 - d. Place second wrench on nut as near the 3 o'clock position as possible.
 - e. Turn nut clockwise to no less than the 4 o'clock position and no more than the 6 o'clock position. Required rotation generally decreases as size increases.

Refer to Figure 18

Attach Hose Clamps and Hose wraps

92. When all the hoses are hooked up and tightened properly, put hose clamps on hoses as shown.
93. Install hose wraps on hoses as needed.

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

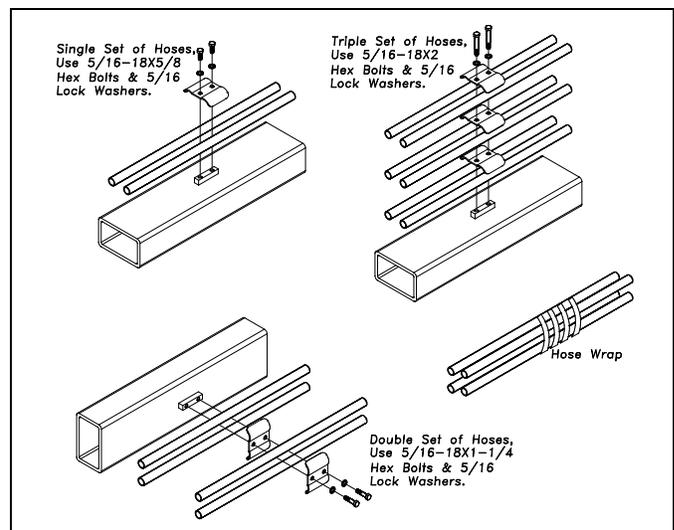


Figure 18
Hose Clamp

41583

Hydraulic Hose Hookup

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

Color	Hydraulic Function
Black	Lift (2 hoses)
Green	Fold (2 hoses)
Red	Gang (2 hoses)

High Pressure Fluid Hazard:

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

Only trained personnel should work on system hydraulics.



Refer to Figure 19

Hose Handles

95. To distinguish hoses on the same hydraulic circuit, refer to hose handles. The hose under an extended-cylinder symbol feeds a cylinder base end. The hose under a retracted-cylinder symbol feeds a cylinder rod end.
96. Once all hoses are tightened, hook hoses to tractor

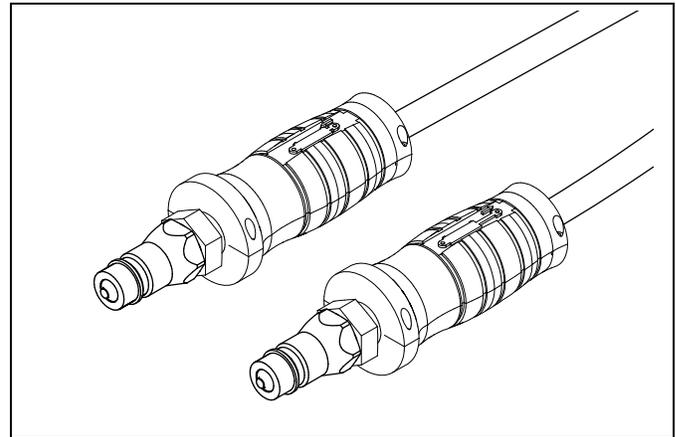


Figure 19
Hose Handles

41552

Refer to Figure 20

Purging Hydraulic System

97. Charge the lift system first. Extend the lift cylinders ① (black handles) until the center section is fully raise. Remove the cylinder transport locks ②. Raise and lower the gang system several times to purge air from system. Watch for leaks and retighten fittings if necessary.
98. You may now charge the fold system. Before charging the fold cylinders ③, make sure the rod end of the cylinders are unbolted and block is under cylinder as shown, so that when the rod is extended, it will clear the wing fold brackets. Extend the fold cylinders ③ (green ends) completely and then close them. Extend and retract the cylinders several times to purge air from the system. Now the cylinders may be extended far enough to be connected to the wing fold brackets. Remove wood block and install $1\frac{1}{4}$ x 9 special thread hex bolt ④, and $1\frac{1}{4}$ top lock nut. Tighten bolt snug but be sure fold links will still pivot.
99. The gang lift system ⑤ (red handles), will need purged. The wing gangs will not start to rise until the center cylinders are fully extended and the master cylinders begin to bypass oil through the rephasing ports, to the wing cylinders. Continue to pump oil to the gang system until the wing gang cylinders are also fully extended. At this point, reverse the flow and raise the gangs, retracting all cylinders. Repeat this procedure several times until all the air is purged out of the system.

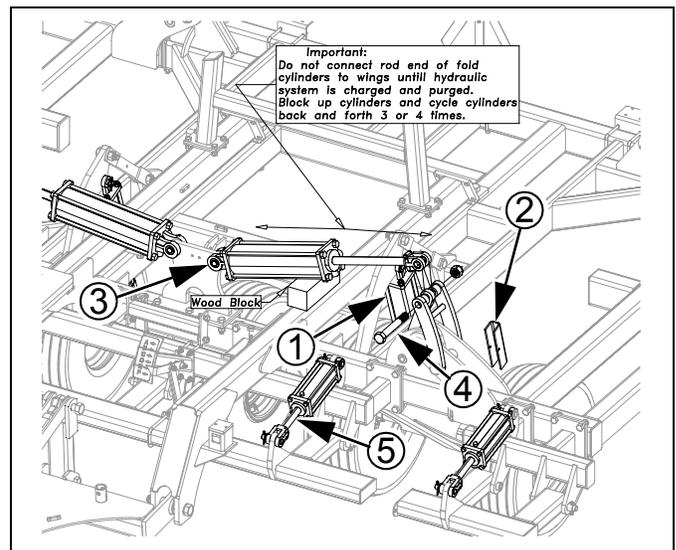


Figure 20
Hydraulic Purging

42018

Refer to Figure 21

North American Light Assembly

100. Fasten light bracket LH ① to center frame with $\frac{1}{2} \times 4 \frac{1}{32} \times 7 \frac{1}{4}$ u-bolts ③, $\frac{1}{2}$ lock washers and $\frac{1}{2}$ nuts. Repeat same procedure for light bracket RH ②.
101. Attach light mounting brackets ④ to back side tube, of center frame, with $\frac{1}{2} \times 6 \frac{1}{32} \times 5 \frac{1}{4}$ u-bolts ⑤, $\frac{1}{2}$ lock washers and $\frac{1}{2}$ nuts.
102. Attach smv post ⑥ to top side of same tube as light mounting brackets ④, as close to center as possible. Secure with $\frac{1}{2} \times 4 \frac{1}{32} \times 7 \frac{1}{4}$ u-bolts ③, $\frac{1}{2}$ lock washers and $\frac{1}{2}$ nuts. Attach smv sign ⑦ to back side of smv post ⑥, secure with $\frac{1}{4} \times \frac{3}{4}$ pan head screws ⑧, $\frac{1}{4}$ lock washers and $\frac{1}{4}$ nuts.
103. Route light harness 30' lead ⑨ from front of hitch (tractor plug to front), along same route as hydraulic hose (fasten in same clamps and hose wraps as hoses). Plug one end of enhance light module ⑩ to small end of light harness 30' lead ⑨. Plug bigger end of wishbone light harness ⑪ into other end of enhance light module ⑩. Route other ends over towards (marked left and right) the light mounting brackets as shown.
104. Mount red lamp lights ⑫ to top of light mounting brackets ④, with $\frac{1}{4} \times 1 \frac{1}{4}$ hex bolts ⑭ and $\frac{1}{4}$ lock nuts.
105. Mount amber lamp lights ⑬ to top of light brackets ① and ②, with $\frac{1}{4} \times 1 \frac{1}{4}$ hex bolts ⑭ and $\frac{1}{4}$ lock nuts.
106. Tighten all bolts to specs, See "**Torque Values Chart**" on page 28. Be sure and get all wiring harnesses fastened up securely with hose wraps or clamps (if routed close to hydraulic hoses) or use cable ties ⑮.

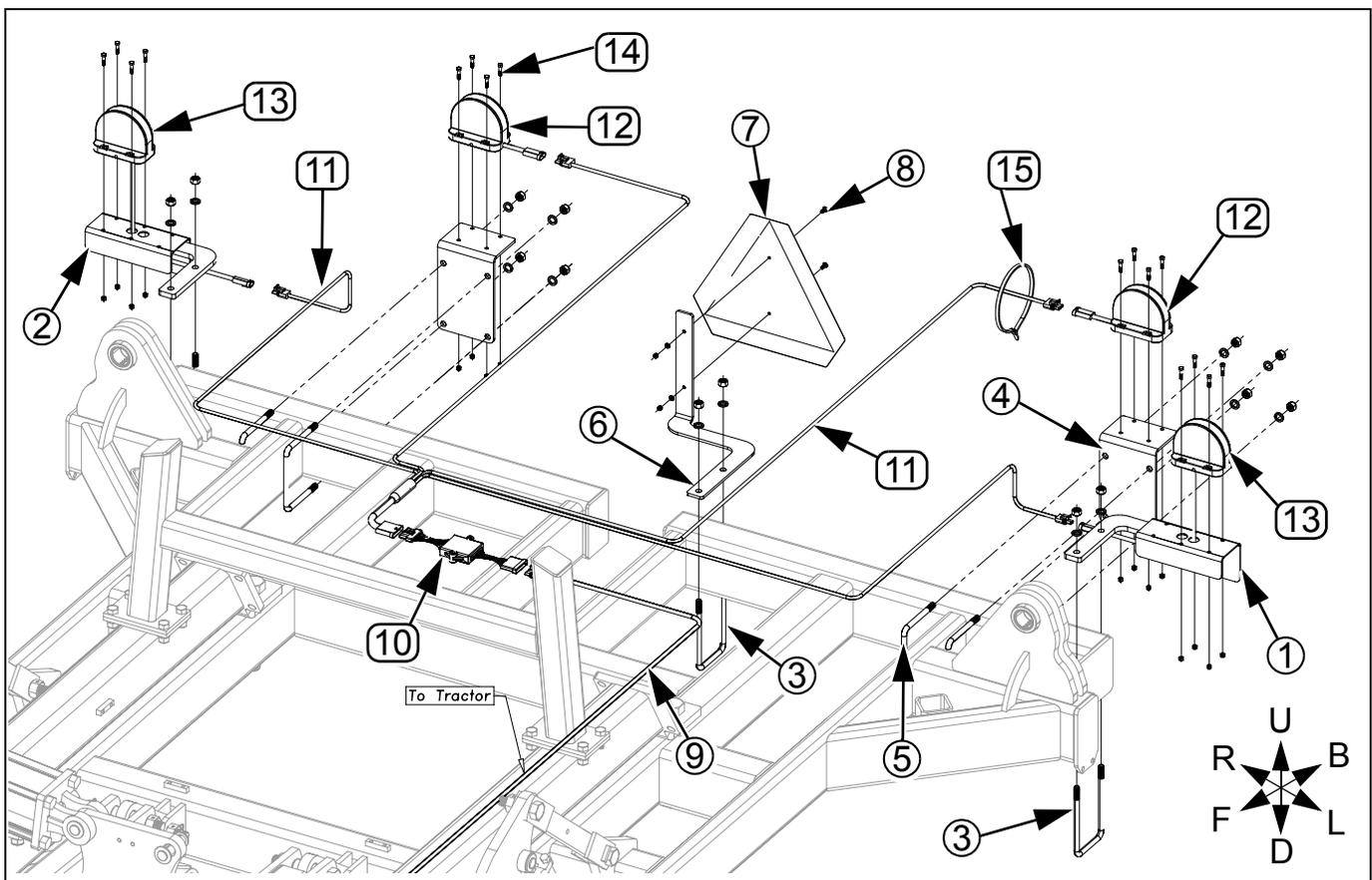


Figure 21
North American Lights

43353

Refer to Figure 22

International Lights Assembly

107. Attach the EU front light bracket LH ① to the outside of the LH truss. Remove the 1 $\frac{1}{4}$ x 8 Gr. 8 hex bolt ③ (if already installed). Align hole in front light bracket LH ①, secure with 1 $\frac{1}{4}$ x 8 Gr. 8 hex bolt ③, $\frac{3}{4}$ lock washer and $\frac{3}{4}$ nut. Repeat same procedure for the EU front light bracket RH ②.
- Note: There are several options for mounting the rear light brackets. The option shown is for mounting on the chopper reel arm. U-bolts are provided for mounting on the buster bar arms or the center frame, if no attachments are installed on machine.
108. Install the EU rear light brackets ④ to the chopper reel arm, secure with $\frac{1}{2}$ u-bolts ⑤, $\frac{1}{2}$ lock washers and $\frac{1}{2}$ nuts.
- Note: Adjust the EU rear light brackets ④ so they clear when folding.
109. Mount the front sign mount weldments ⑥ with $\frac{3}{8}$ x 2 x 2 $\frac{3}{4}$ u-bolts ⑦, $\frac{3}{8}$ lock washers and $\frac{3}{8}$ nuts.
- Note: Adjust the front sign mount weldments ⑥, from center of machine to outside of sign to a maximum of 150cm (59") as shown.
110. Attach the rear light bracket extension ⑧ to rear of light brackets ④ (towards outside of machine) with $\frac{3}{8}$ x 1 hex bolts ⑨, $\frac{3}{8}$ lock washers and $\frac{3}{8}$ nuts.
111. Mount the rear sign mount weldments ⑥ to outside of rear light bracket extension ⑧ with $\frac{3}{8}$ x 1 hex bolts ⑨, $\frac{3}{8}$ lock washers and $\frac{3}{8}$ nuts.
112. Attach the front light bracket ⑩ with $\frac{3}{8}$ x $\frac{3}{4}$ hex bolts ⑪, $\frac{3}{8}$ lock washers and $\frac{3}{8}$ nuts.
113. Mount the red/white fluorescent panels ⑫, in orientation as shown, using $\frac{3}{8}$ x $\frac{3}{4}$ hex bolts ⑪, $\frac{3}{8}$ nylon jam nuts.
114. Slide wire of clear oval light ⑬, through holes on front light bracket ⑩, secure with #10 hex screws, #10 internal star washers and 10-24 nylock nuts provided with light.
115. Mount rear light brackets ⑭ to the rear sign mount weldments ⑥, using $\frac{3}{8}$ x 1 hex bolts ⑨, $\frac{3}{8}$ lock washers and $\frac{3}{8}$ nuts.
116. Slide pegs of the red triangle reflectors ⑮ through holes of the rear light brackets ⑭, secure with nuts provided.
117. Mount red and amber lights ⑯ on rear light brackets ⑭, secure with self tapping screws provided with lights.
118. Route light harness EU ⑰ from front of hitch (tractor plug to front), along same route as hydraulic hose (fasten in same clamps and hose wraps as hoses). Plug other ends into lights (marked left and right).
119. Attach speed limit bracket ⑱ with $\frac{1}{2}$ x 4 $\frac{1}{32}$ x 7 $\frac{1}{4}$ u-bolts ⑲, $\frac{1}{2}$ lock washers and $\frac{1}{2}$ nuts.
120. Attach smv post ⑳ to top side of rear center frame tube, as close to center as possible. Secure with $\frac{1}{2}$ x 4 $\frac{1}{32}$ x 7 $\frac{1}{4}$ u-bolts ⑲, $\frac{1}{2}$ lock washers and $\frac{1}{2}$ nuts. Attach smv sign ㉑ to back side of smv post ㉑, secure with $\frac{1}{4}$ x $\frac{3}{4}$ pan head screws ㉒, $\frac{1}{4}$ lock washers and $\frac{1}{4}$ nuts.
121. Attach beacon mount ㉔ to right rear sign mount weldment ⑥ with $\frac{3}{8}$ x 1 hex bolts ⑨, $\frac{3}{8}$ lock washers and $\frac{3}{8}$ nuts.
122. Attach beacon light amber ㉕ to top of beacon mount ㉔ using phms #10-24 x 2 ss ㉖, #10 internal star washers and 10-24 nylock nuts.
123. Mount license plate light ㉗ to rear of beacon mount ㉔ with 10-24 x $\frac{3}{4}$ screws, phms #10-24 x 2 ss ㉖, #10 internal star washers and 10-24 nylock nuts.
124. Remove nut from beacon light switch ㉙ and slide switch through right, hole of beacon mount ㉔ and re-attach nut to back side of mount.
- Note: The plugs of beacon light harness ㉚ will be marked for locations to be plugged into.
125. Plug the beacon light harness ㉚ to appropriate plugs.
126. Tighten all bolts to specs, See "**Torque Values Chart**" on page 28. Be sure and get all wiring harnesses fastened up securely with hose wraps or clamps (if routed close to hydraulic hoses) or use cable ties ⑬ as needed to keep wiring harness from dragging or getting pinched.

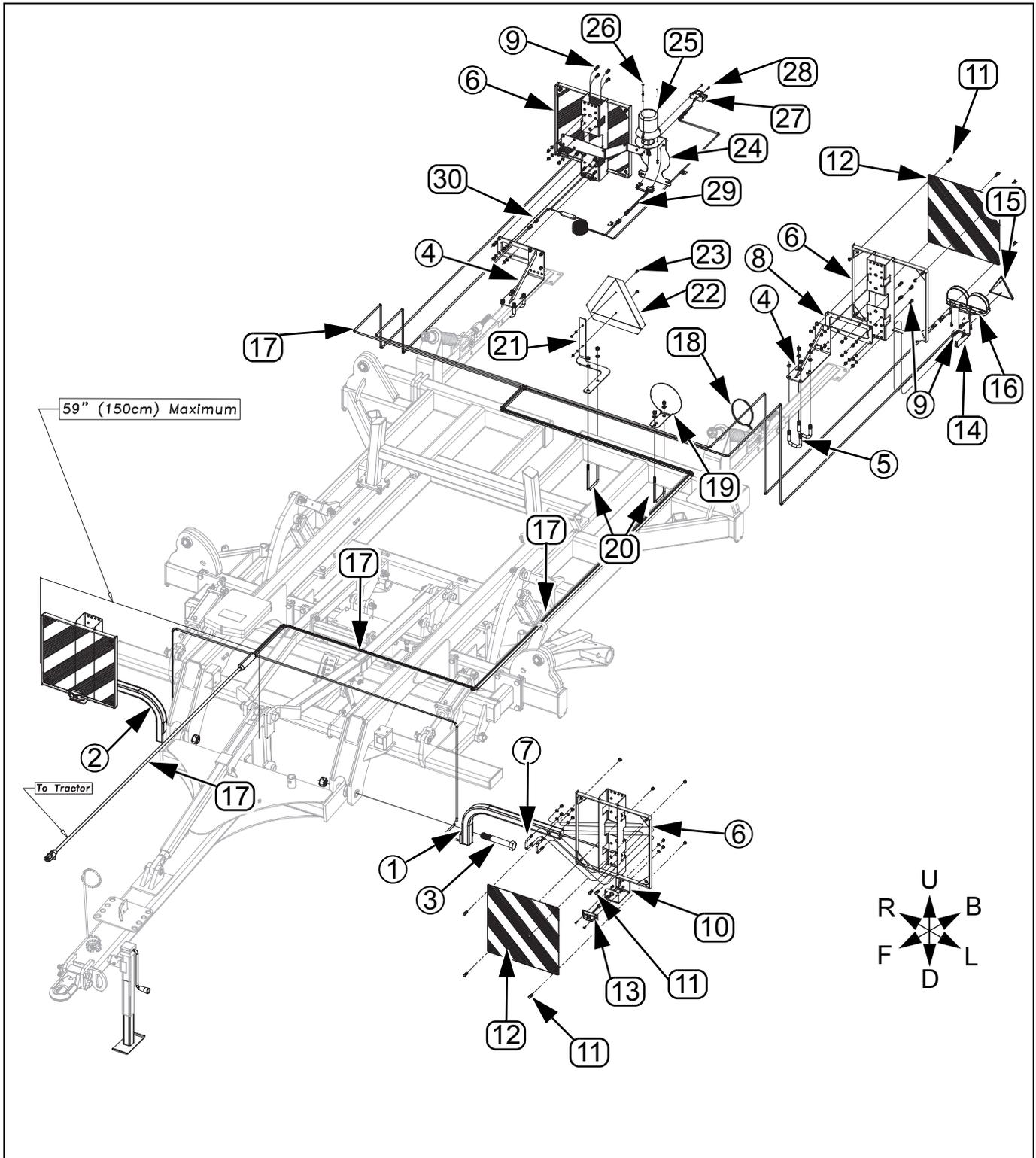


Figure 22
International Lights

43365

Refer to Figure 23

Air Brakes Assembly

127. Start by installing the air/hydraulic booster plate ① to the plate on inside of RH truss with $\frac{3}{8}$ x 1 hex bolts ②, $\frac{3}{8}$ lock washers and $\frac{3}{8}$ nuts. Attach the air/hydraulic booster ③ to the outside of air/hydraulic booster plate ①, using $\frac{5}{16}$ x 1 hex bolt, ④ $\frac{5}{16}$ lock washer and $\frac{5}{16}$ nut.
- Note: See “Install Rebound Valve and O-Ring Fittings” on page 16 for proper fitting installation. Be sure the brake spindle assemblies were installed with the brake cylinder towards front of machine.
128. Install the copper gasket ⑤ and invert flare fitting ⑥ into rear of the air/hydraulic booster ③.
129. Mount the flare brass fitting with tab ⑦ to the center plate with two holes, with $\frac{5}{16}$ x 1 hex bolt ④, $\frac{5}{16}$ lock washer and $\frac{5}{16}$ nut.
130. Now route the three $\frac{1}{8}$ ” dot brake lines ⑧. Fasten into fittings as shown. Fasten brake lines up along frame close to where the hydraulic hoses go. Fasten brake lines along back of frame tube and along torque tube gussets where the holes are drilled using $\frac{3}{8}$ hose clamps ⑨ with $\frac{5}{16}$ x 1 hex bolt ④, $\frac{5}{16}$ lock washer and $\frac{5}{16}$ nuts. They need to be fastened with the cable ties ⑩ as needed.
131. Mount the tank brackets ⑪ with $\frac{1}{2}$ x $4\frac{1}{32}$ x $7\frac{1}{4}$ u-bolts ⑫, $\frac{1}{2}$ lock washers and $\frac{1}{2}$ nuts. Attach the air tank ⑬ and emergency relay valve plate ⑭ to the top side of the tank brackets with $\frac{7}{16}$ x $1\frac{1}{4}$ hex bolts ⑮, $\frac{7}{16}$ lock washers and $\frac{7}{16}$ nuts.
132. Install brass plugs ⑯, $\frac{3}{4}$ pipe plug ⑰ to rear of tank and petcock ⑱ to bottom of tank.
133. Attach brass fitting ⑲, brass nipple ⑳, adapter ㉑ and emergency valve relay ㉒ to front of tank.
134. Attach adapters ㉑ to both sides (3 total) of relay valve. Fasten adapter ㉓ to front of relay valve. Attach brass plug ㉔ into lower left adapter ㉑. Install brass fitting ㉕ into upper adapter ㉑. Attach the $\frac{3}{8}$ brass fitting ㉖ in the brass fitting ㉕.
135. Fasten one of the brake filters ㉗ to the $\frac{3}{8}$ brass fitting ㉖. Fasten other brake filter ㉗ to front side of other filter with $\frac{5}{16}$ x $3\frac{1}{2}$ hex bolts ㉘, $\frac{5}{16}$ lock washers and $\frac{5}{16}$ nuts.
136. Now attach the five, $\frac{3}{8}$ x $\frac{3}{8}$ brass elbows ㉙ to locations shown in drawing. Attach two $\frac{1}{2}$ x $\frac{1}{2}$ fitting ㉚ to the air line holder. Attach three $\frac{1}{2}$ x $\frac{3}{8}$ brass fittings ㉛ to locations shown.
137. Run the $\frac{3}{8}$ nylon brake line ㉜ as shown. Cut each piece to length needed. Be sure to hook into the correct fittings.
138. Attach the $\frac{3}{8}$ air coil hose (blue) ㉝, to top $\frac{1}{2}$ x $\frac{1}{2}$ fitting ㉚. Fasten the air gladhand (blue) ㉞ to other end of blue hose. Repeat the same procedure for the $\frac{3}{8}$ air coil hose (red) ㉟ and air gladhand (red) ㊱ to the lower $\frac{1}{2}$ x $\frac{1}{2}$ fitting ㉚.
139. Attach the two gladhand storage holders ㊲ to the air line holder, with $\frac{5}{16}$ x 1 hex bolt ④, $\frac{5}{16}$ lock washer and $\frac{5}{16}$ nut.
- Note: Be sure brake lines are secured to where they won't get pinched when raising machine up and down.
140. Attach wheel chock holders ㊳ (optional) to plates on front outside tube of center frame with $\frac{1}{2}$ x $1\frac{1}{2}$ hex bolts ㉞, $\frac{1}{2}$ lock washers and $\frac{1}{2}$ nuts.
141. Slide wheel chocks ㊴ onto pegs of wheel chock holders ㊳, secure with chain fasteners ㊵.
142. Clean area and place wheel chock decals ㊶ on angle tube beside wheel chock holders ㊳.
143. Tighten all bolts to specs, See “Torque Values Chart” on page 28.

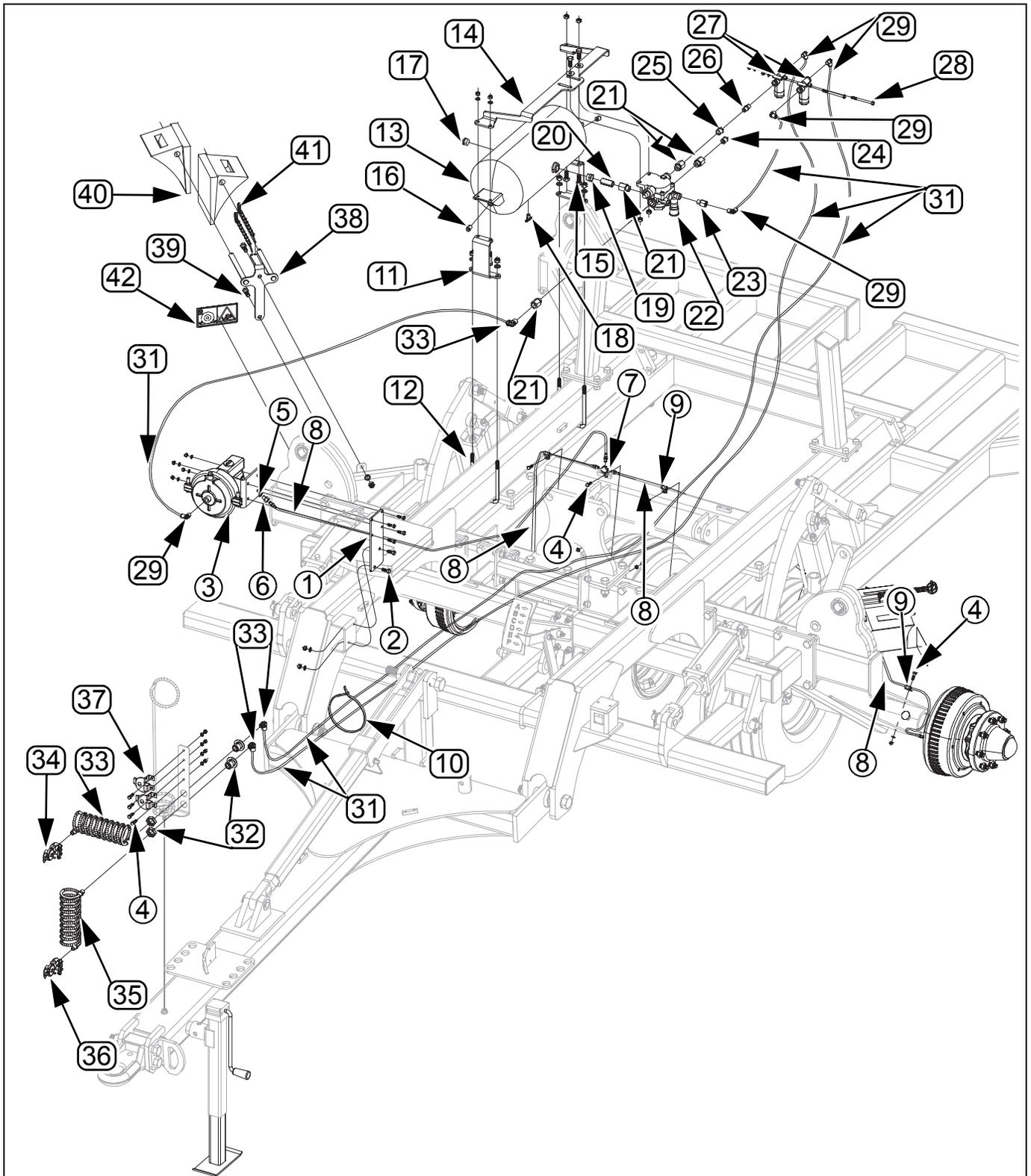


Figure 23
Air Brakes

42019

Refer to Figure 24

Hydraulic Brakes Assembly

144. Start by installing the air/hydraulic booster plate ① to the plate on inside of RH truss with $\frac{3}{8}$ x 1 hex bolts ②, $\frac{3}{8}$ lock washers and $\frac{3}{8}$ nuts. Install the hydraulic de-intensifier assembly ③ to left side of fold stop using plate ①, $\frac{5}{16}$ x 1 hex bolt ④, $\frac{5}{16}$ lock washer and $\frac{5}{16}$ nut.

Note: See “**Install Rebound Valve and O-Ring Fittings**” on page 16 for proper fitting installation. Be sure the brake spindle assemblies were installed with the brake cylinder towards front of machine.

145. Install invert flare fitting ⑥ with copper gasket ⑤ into rear of the air/hydraulic booster ③.

146. Mount the flare brass fitting with tab ⑦ to the center plate with two holes, with $\frac{5}{16}$ x 1 hex bolt ④, $\frac{5}{16}$ lock washer and $\frac{5}{16}$ nut.

147. Now route the three $\frac{1}{8}$ ” dot brake lines ⑧. Fasten into fittings as shown. Fasten brake lines up along frame close to where the hydraulic hoses go. They may be fastened with the cable ties ⑩ as needed. Fasten brake lines along back of frame tube and along torque tube gussets where the holes are drilled using $\frac{3}{8}$ hose clamps ⑨ with $\frac{5}{16}$ x 1 hex bolt ④, $\frac{5}{16}$ lock washer and $\frac{5}{16}$ nuts.

148. Attach elbow ⑪ to front side of hydraulic de-intensifier ③.

149. Now the 272” hydraulic hose ⑫ may be installed to the elbow. Fasten adaptor ⑬ to other end of hose and male poppet end ⑭ to end of adaptor.

Note: Be sure brake lines and hydraulic hoses are secured to where they won't get pinched when raising machine up and down.

150. Attach wheel chock holders ⑮ (optional) to plates on front outside tube of center frame with $\frac{1}{2}$ x $1\frac{1}{2}$ hex bolts ⑯, $\frac{1}{2}$ lock washers and $\frac{1}{2}$ nuts.

151. Slide wheel chocks ⑰ onto pegs of wheel chock holders ⑮, secure with chain fasteners ⑱.

152. Clean area and place wheel chock decals ⑲ on angle tube beside wheel chock holders ⑮.

153. Tighten all bolts to specs, See “**Torque Values Chart**” on page 28.

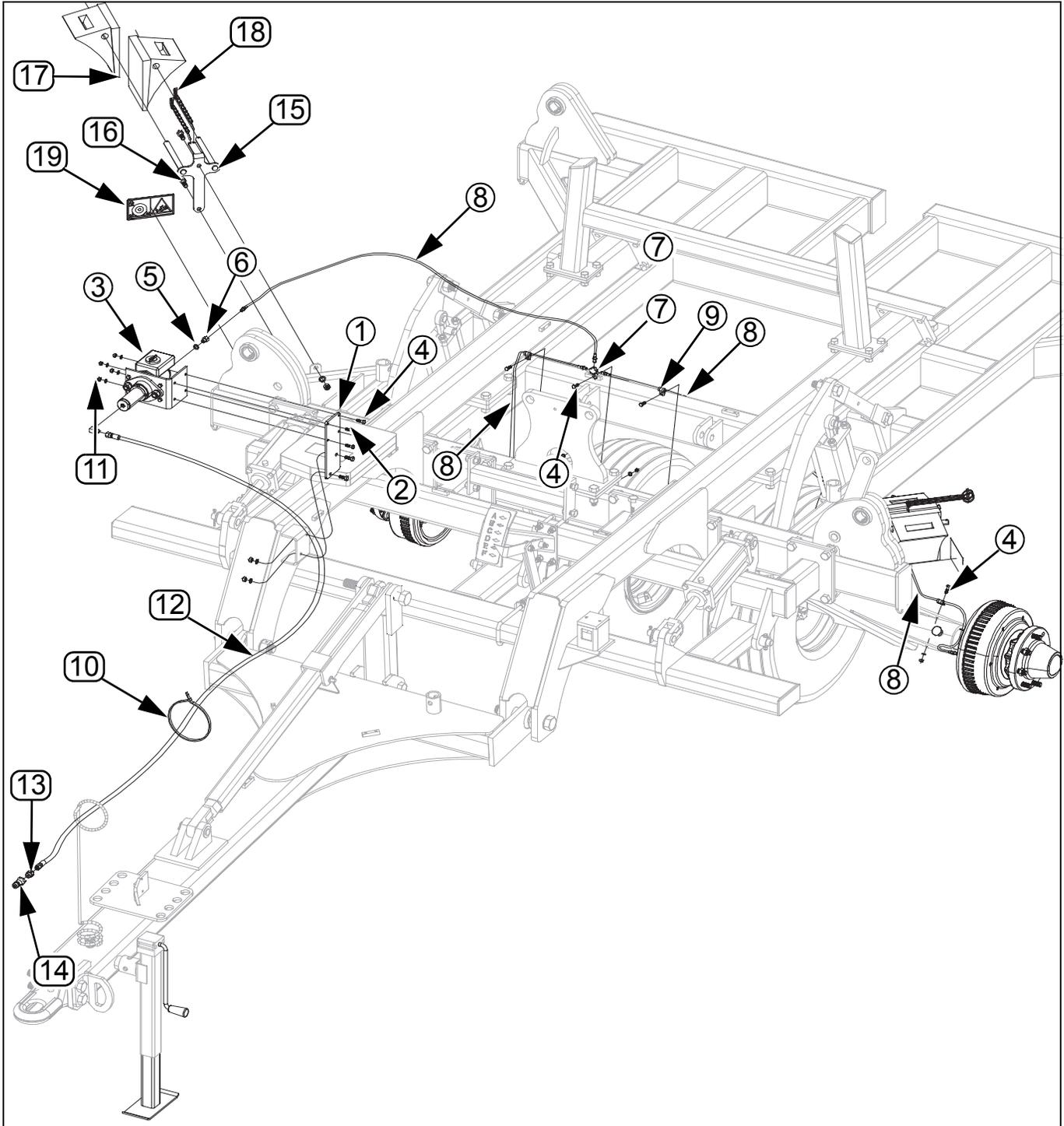


Figure 24
Hydraulic Brakes

42020

Install Rear Hitch (optional)

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

Refer to Figure 25

154. Attach rear hitch trusses ① to rear of hitch trusses with $\frac{3}{4}$ x $2\frac{1}{2}$ hex bolts ②, $\frac{3}{4}$ lock washers and $\frac{3}{4}$ nuts. Attach middle of rear hitch trusses to tubes on center frame with $\frac{3}{4}$ x $4\frac{1}{32}$ x $7\frac{1}{2}$ u-bolts ③, $\frac{3}{4}$ lock washers and $\frac{3}{4}$ nuts.

155. Attach 56" cross arm ④ to bottom side of rear hitch truss plates with $\frac{5}{8}$ x $3\frac{1}{32}$ x $4\frac{1}{2}$ u-bolts ⑤, secure with $\frac{5}{8}$ lock washers and $\frac{5}{8}$ nuts.

Note: Do not tighten any bolts until every thing is installed.

Note: The bolt on sleeve assembly with rigid or flex slide ⑥ may be fastened using $\frac{5}{8}$ x $3\frac{1}{32}$ x $4\frac{1}{2}$ u-bolt ⑤, secure with $\frac{5}{8}$ lock washers and $\frac{5}{8}$ nuts.

Note: Tighten all bolts to specs, See "**Torque Values Chart**" on page 28.

Note: If machine is equipped with optional rear hitch accessory kit may be installed as shown in "Parts Manual".

Note: Route hoses and light harness along hitch and frame with hose clamps and hose wraps, provided.

Note: Be sure hoses and light harness is fastened securely so they don't drag or get pinched.

Completing Setup

156. Be sure all bolts are tightened to specs, See "**Torque Values Chart**" on page 28

157. The decals may now be installed.

158. See appropriate pages for decals in the "Parts and Operator's Manual" for decal placement.

159. To install new decals:

- Clean the area on which the decal is to be placed.
- Peel backing from decal. Press firmly on surface, being careful not to cause air bubbles under decal.

160. If machine has an optional finishing attachment or, refer to the "Parts Manual" for parts break down and attachment layout drawings of this manual.

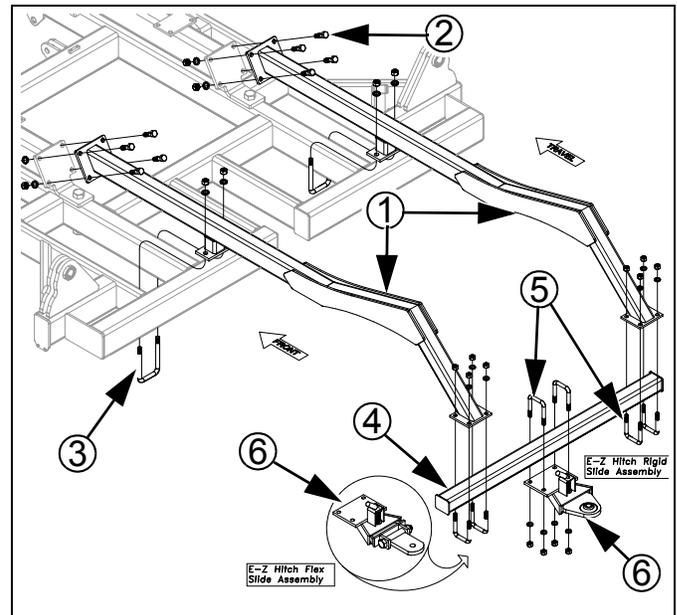


Figure 25
Rear Hitch

42049

NOTICE

If machine is equipped with a rear attachment, be sure you install the optional rear jack stand, see "Parts Manual (Rear Jack Stand)" so machine doesn't tip backwards when unhooking machine from tractor.

161. Once the options are installed and all of the hydraulic procedures have been completed, you may fold and raise/lower the machine to check for clearance and interferences.

162. Be sure to consult the operating instructions, "Operator's Manual", for the first time field adjustments before going to the field.



Appendix

Torque Values Chart

Bolt Size in-tpi ^a	Bolt Head Identification					
						
	N-m ^b	ft-lb ^d	N-m	ft-lb	N-m	ft-lb
1/4-20	7.4	5.6	11	8	16	12
1/4-28	8.5	6	13	10	18	14
5/16-18	15	11	24	17	33	25
5/16-24	17	13	26	19	37	27
3/8-16	27	20	42	31	59	44
3/8-24	31	22	47	35	67	49
7/16-14	43	32	67	49	95	70
7/16-20	49	36	75	55	105	78
1/2-13	66	49	105	76	145	105
1/2-20	75	55	115	85	165	120
9/16-12	95	70	150	110	210	155
9/16-18	105	79	165	120	235	170
5/8-11	130	97	205	150	285	210
5/8-18	150	110	230	170	325	240
3/4-10	235	170	360	265	510	375
3/4-16	260	190	405	295	570	420
7/8-9	225	165	585	430	820	605
7/8-14	250	185	640	475	905	670
1-8	340	250	875	645	1230	910
1-12	370	275	955	705	1350	995
1 1/8-7	480	355	1080	795	1750	1290
1 1/8-12	540	395	1210	890	1960	1440
1 1/4-7	680	500	1520	1120	2460	1820
1 1/4-12	750	555	1680	1240	2730	2010
1 3/8-6	890	655	1990	1470	3230	2380
1 3/8-12	1010	745	2270	1670	3680	2710
1 1/2-6	1180	870	2640	1950	4290	3160
1 1/2-12	1330	980	2970	2190	4820	3560

Bolt Size mm x pitch ^c	Bolt Head Identification					
						
	N-m	ft-lb	N-m	ft-lb	N-m	ft-lb
M 5 X 0.8	4	3	6	5	9	7
M 6 X 1	7	5	11	8	15	11
M 8 X 1.25	17	12	26	19	36	27
M 8 X 1	18	13	28	21	39	29
M10 X 1.5	33	24	52	39	72	53
M10 X 0.75	39	29	61	45	85	62
M12 X 1.75	58	42	91	67	125	93
M12 X 1.5	60	44	95	70	130	97
M12 X 1	90	66	105	77	145	105
M14 X 2	92	68	145	105	200	150
M14 X 1.5	99	73	155	115	215	160
M16 X 2	145	105	225	165	315	230
M16 X 1.5	155	115	240	180	335	245
M18 X 2.5	195	145	310	230	405	300
M18 X 1.5	220	165	350	260	485	355
M20 X 2.5	280	205	440	325	610	450
M20 X 1.5	310	230	650	480	900	665
M24 X 3	480	355	760	560	1050	780
M24 X 2	525	390	830	610	1150	845
M30 X 3.5	960	705	1510	1120	2100	1550
M30 X 2	1060	785	1680	1240	2320	1710
M36 X 3.5	1730	1270	2650	1950	3660	2700
M36 X 2	1880	1380	2960	2190	4100	3220

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

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

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Torque Values Chart	
Wheel Bolt Torque Values	1/2"-20 (75-85ft-lbs)
Wheel Bolt Torque Values	9/16"-18 (80-90ft-lbs)
Wheel Bolt Torque Values	5/8"-18 (85-100ft-lbs)

Tire Inflation Chart

Tire Inflation Chart		
Wheel	Tire Size	Inflation
Center/Transport	12.5L x 15" 12-Ply	379 kPa 55 psi

Tire Warranty Information

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

	ManufacturerWeb site
Firestone	www.firestoneag.com
Gleason	www.gleasonwheel.com
Titan	www.titan-intl.com
Galaxy	www.atgtire.com
BKT	www.bkt-tire.com

Hydraulic Connectors and Torque

Refer to Figure 26 (a hypothetical fitting)

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

- ① **NPT** - National Pipe Thread
Note tapered threads, no cone/flare, and no O-ring. Apply liquid pipe sealant for hydraulic applications. Do not use tape sealant, which can clog a filter and/or plug an orifice.
- ② **JIC** - Joint Industry Conference (SAE J514)
Note straight threads ④ and the 37° cone ⑤ on "M" fittings (or 37° flare on "F" fittings). Use no sealants (tape or liquid) on JIC fittings.
- ③ **ORB** - O-Ring Boss (SAE J514)
Note straight threads ⑤ and elastomer O-Ring ⑦. Prior to installation, to prevent abrasion during tightening, lubricate O-Ring with clean hydraulic fluid. Use no sealants (tape or liquid) on ORB fittings. ORB fittings that need orientation, such as the ell depicted, also have a washer ⑧ and jam nut ⑨ ("adjustable thread port stud"). Back jam nut away from washer. Thread fitting into receptacle until O-Ring contacts seat. Unscrew fitting to desired orientation. Tighten jam nut to torque specification.

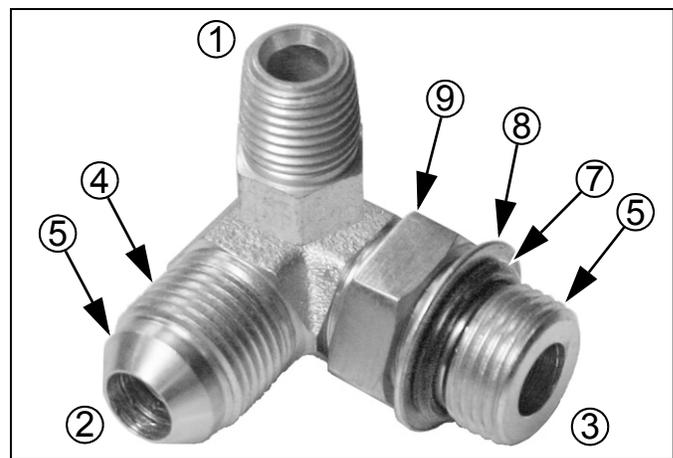
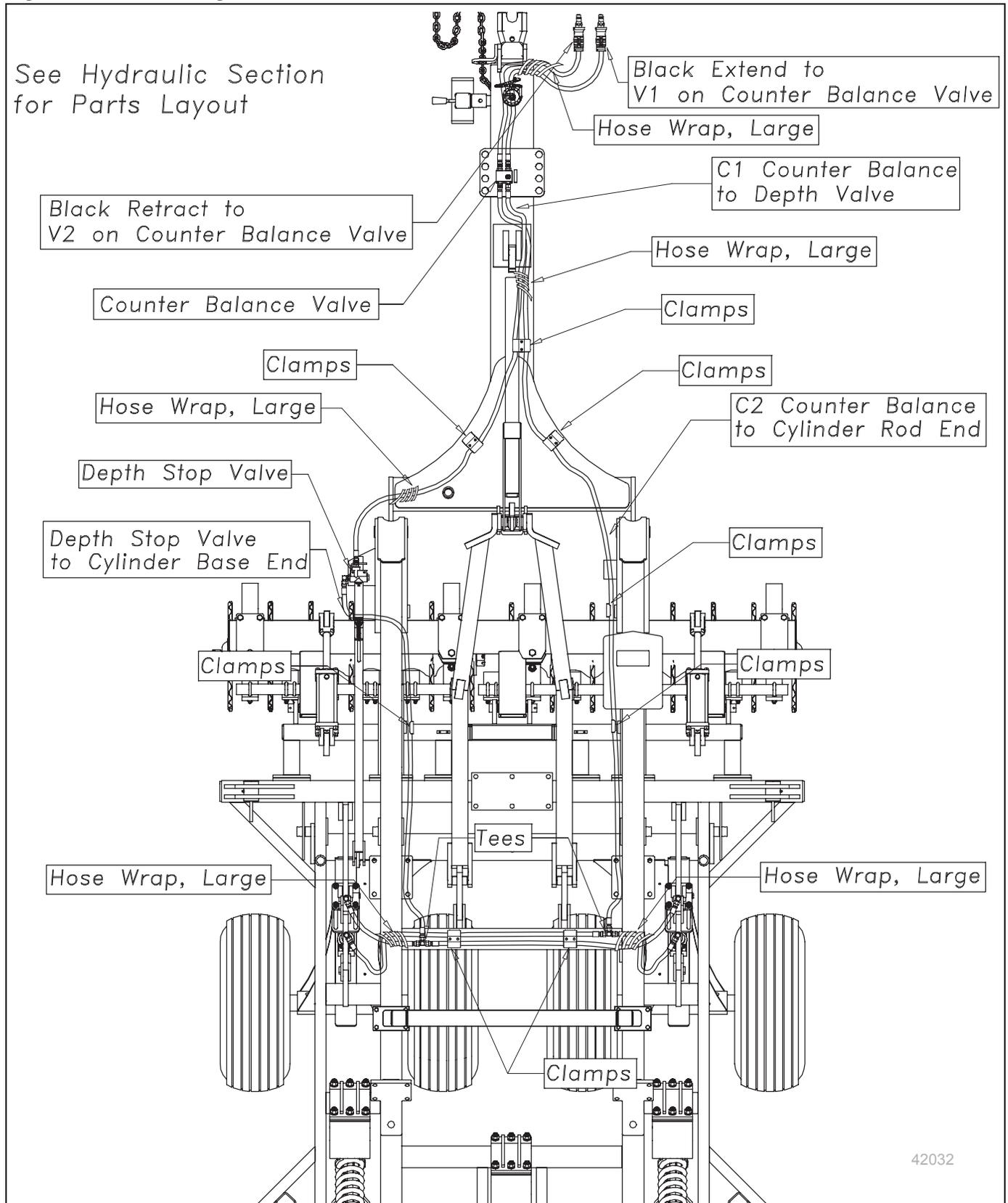


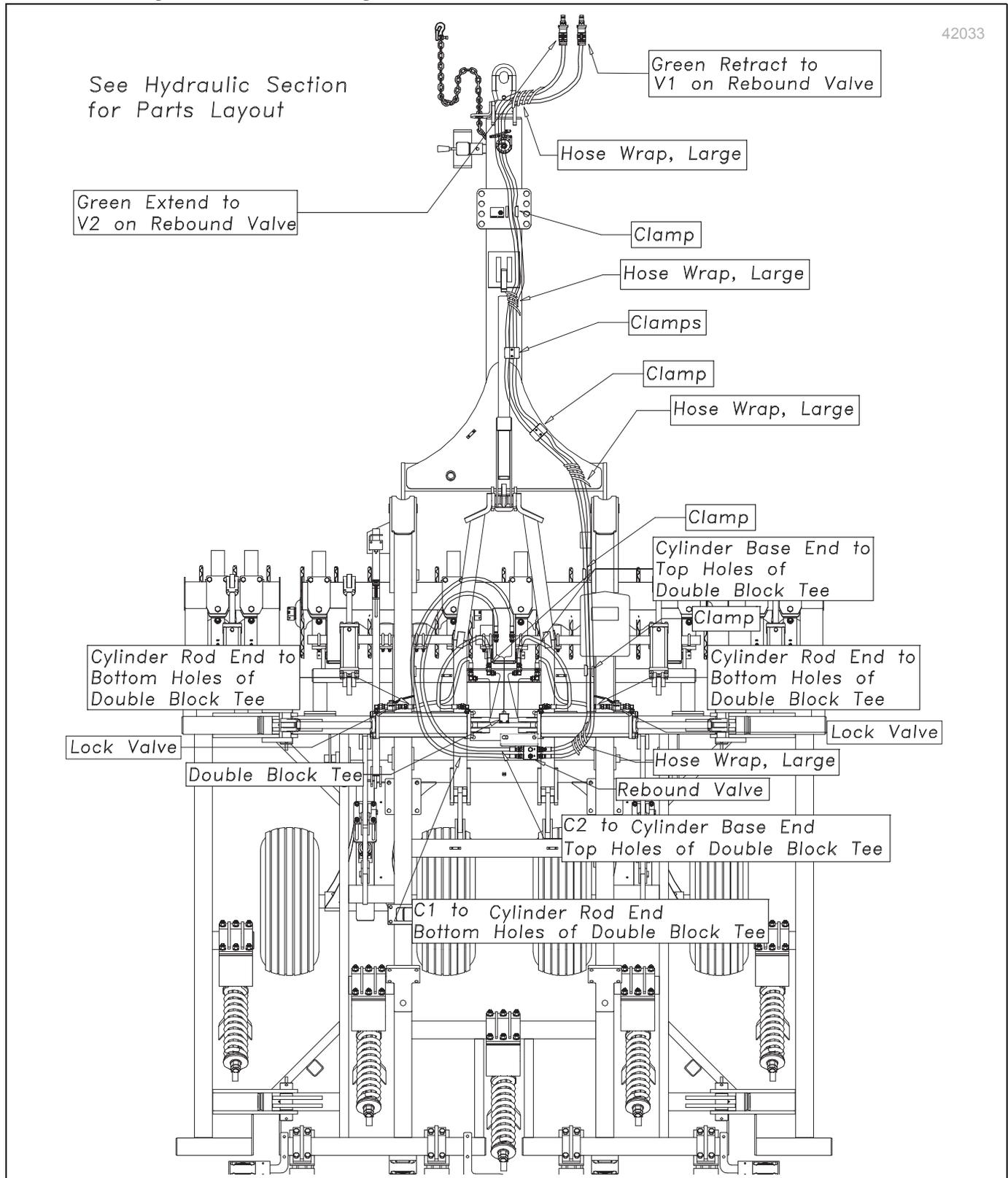
Figure 26
Hydraulic Connector ID 31282

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

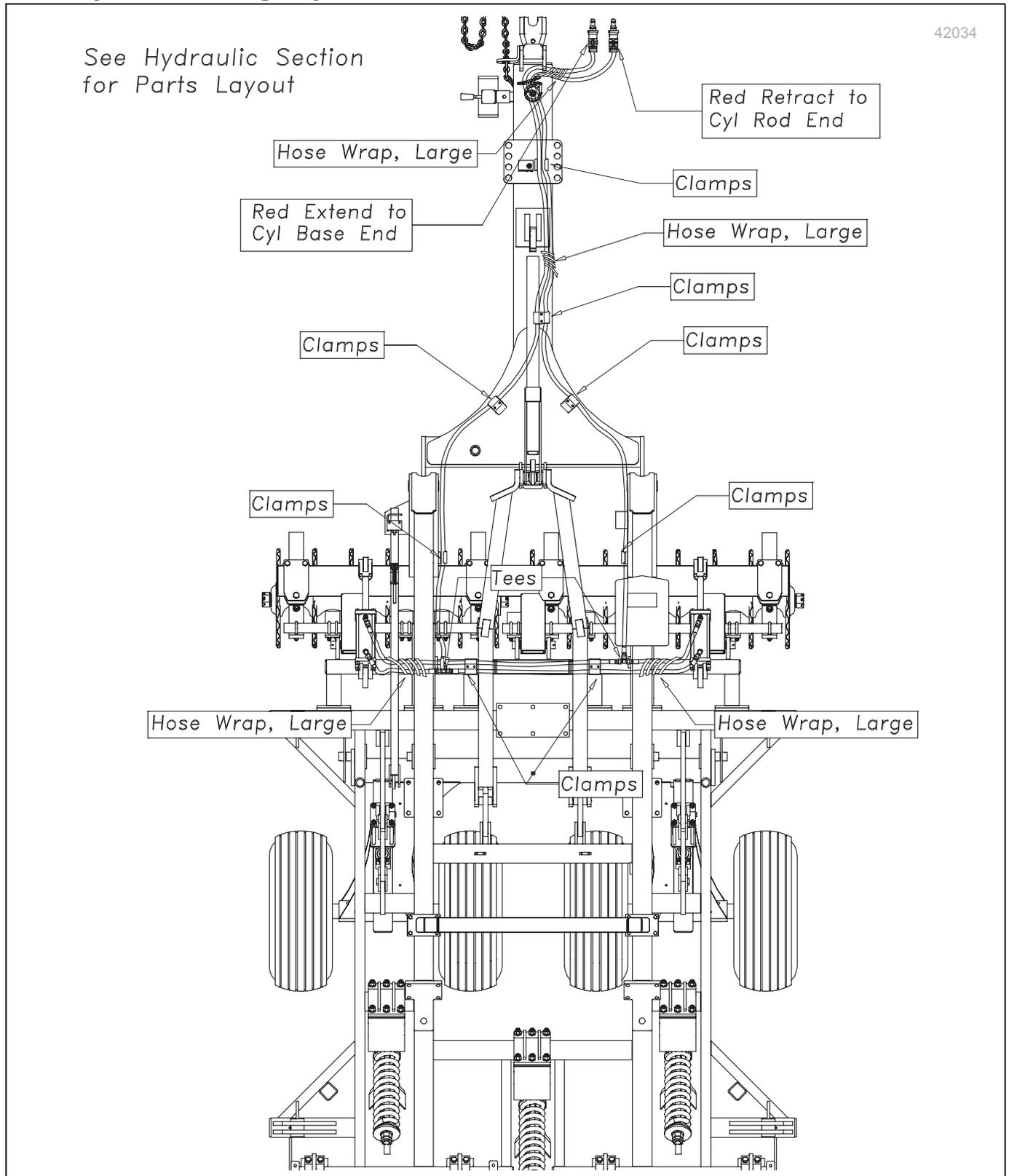
Hydraulic Lift Layout



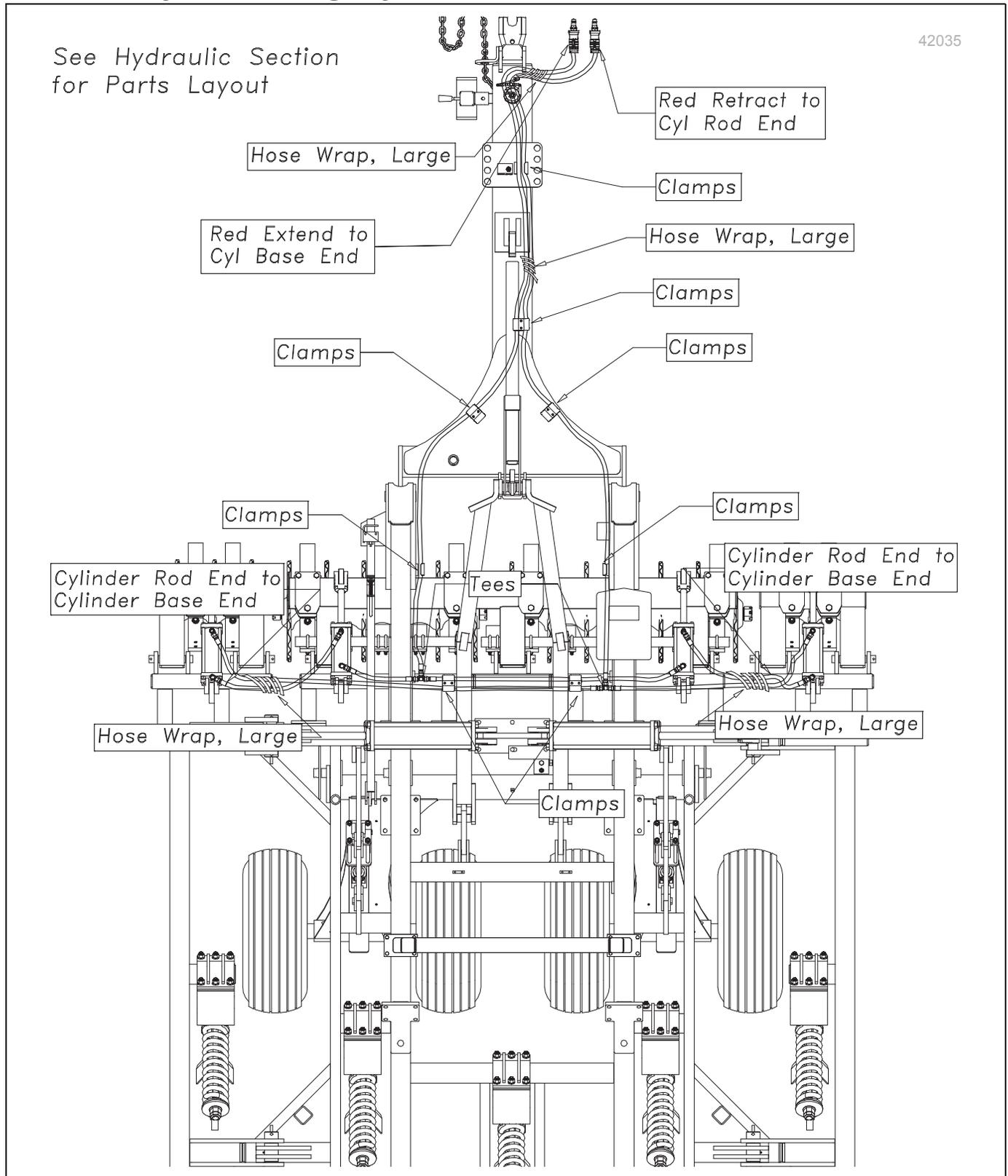
3-Section Hydraulic Fold Layout



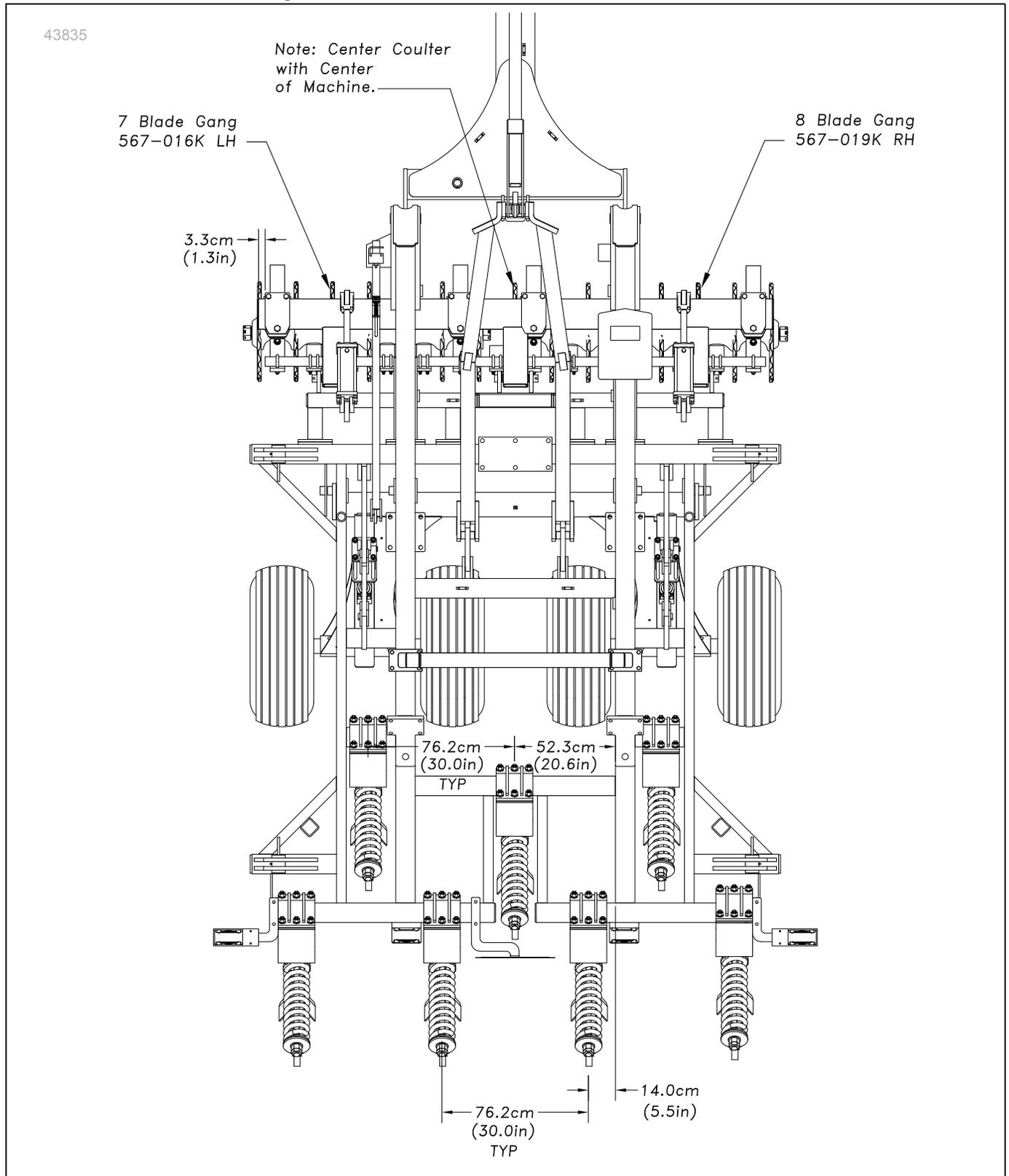
5107 Hydraulic Gang Layout



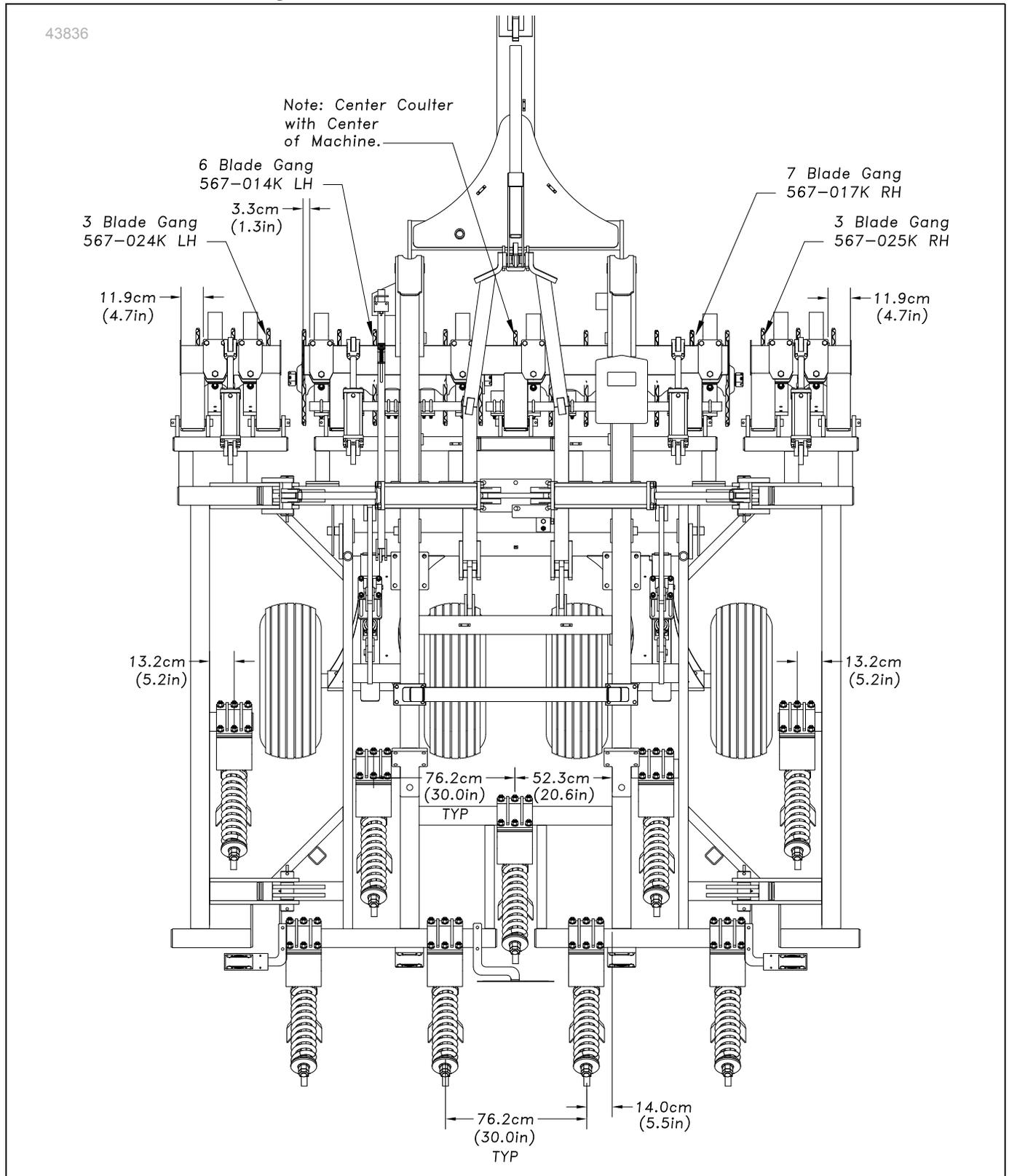
5309-5313 Hydraulic Gang Layout



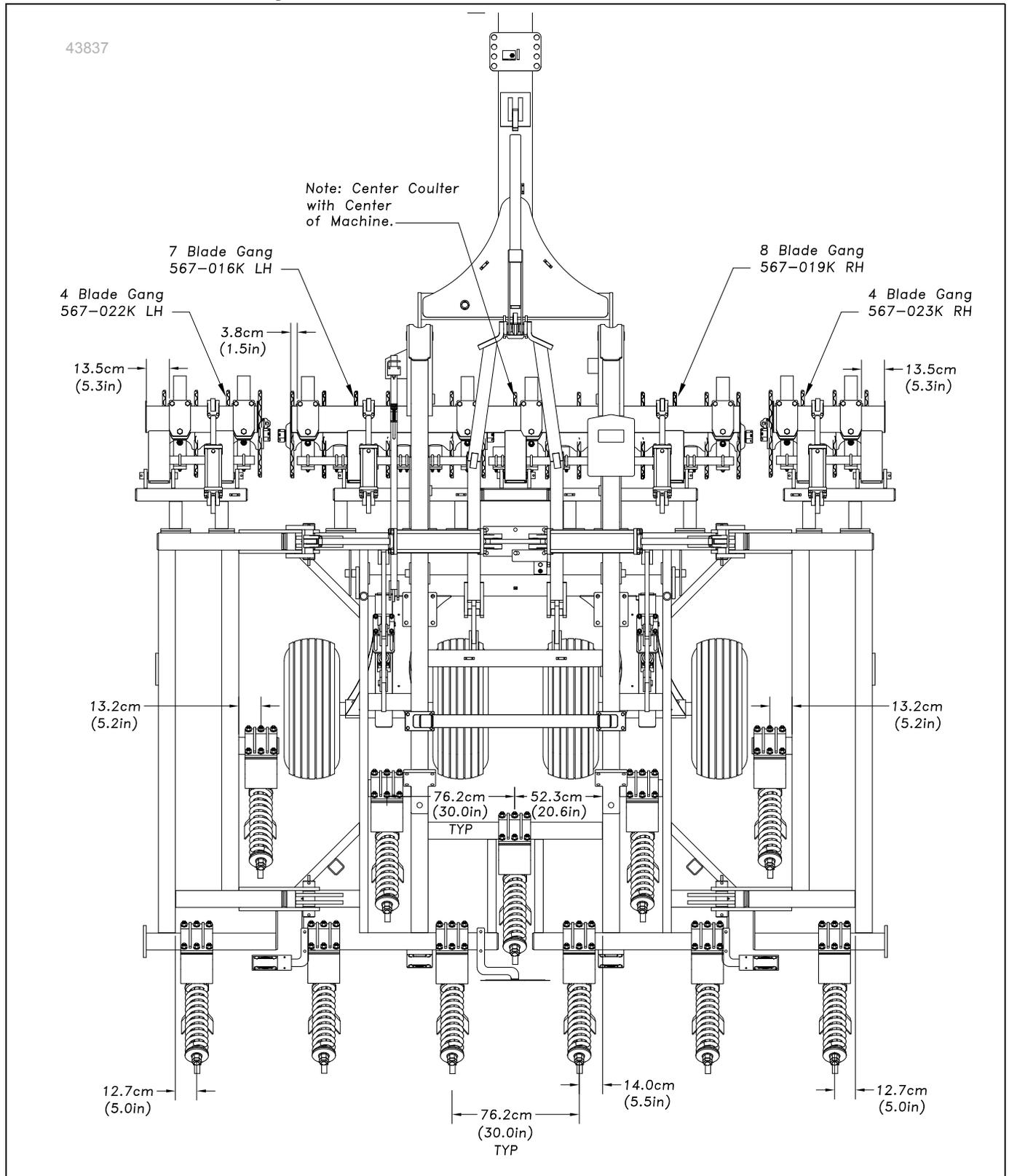
TCN 5107 Machine Layout



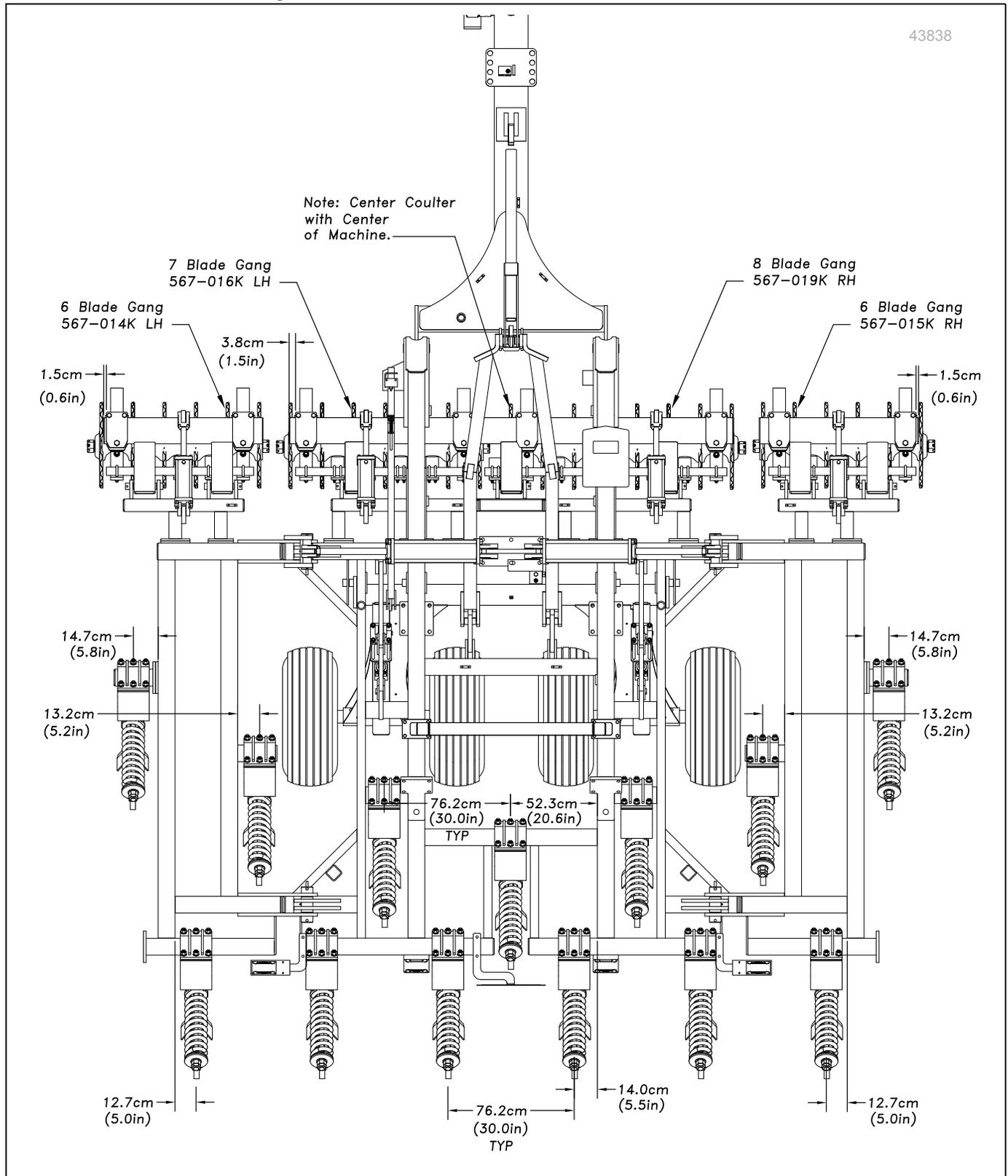
TCN5309 Machine Layout



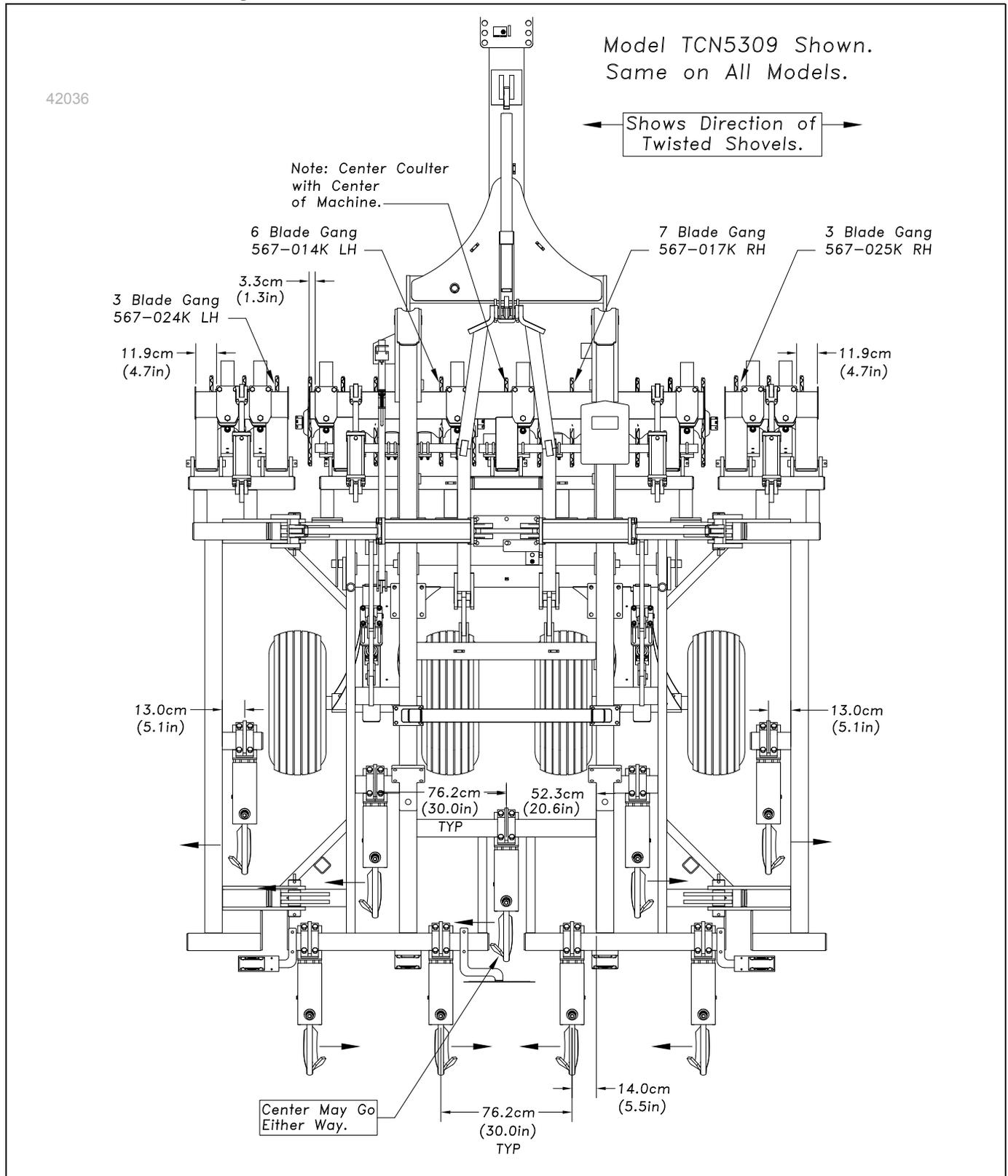
TCN5311 Machine Layout



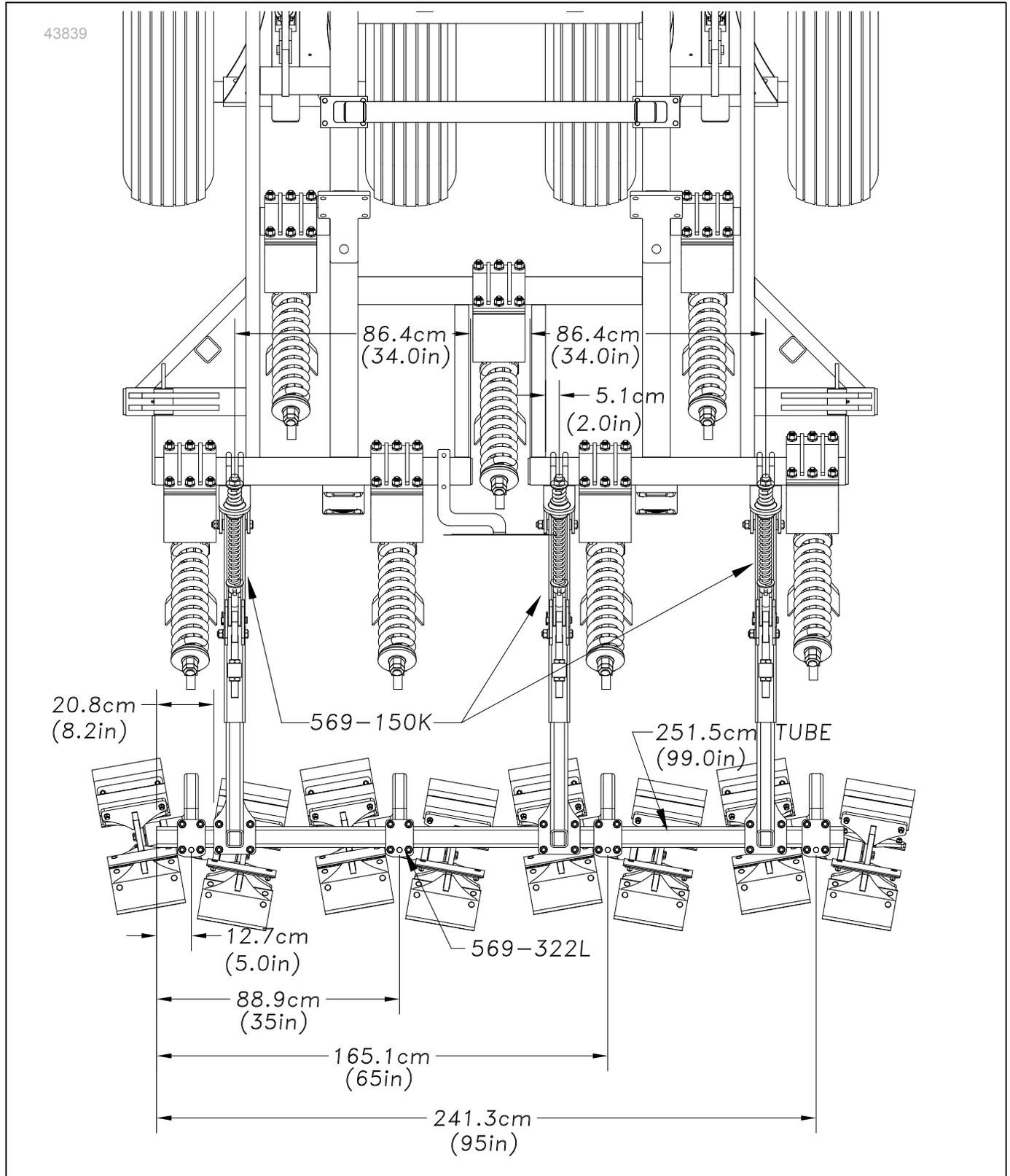
TCN5313 Machine Layout



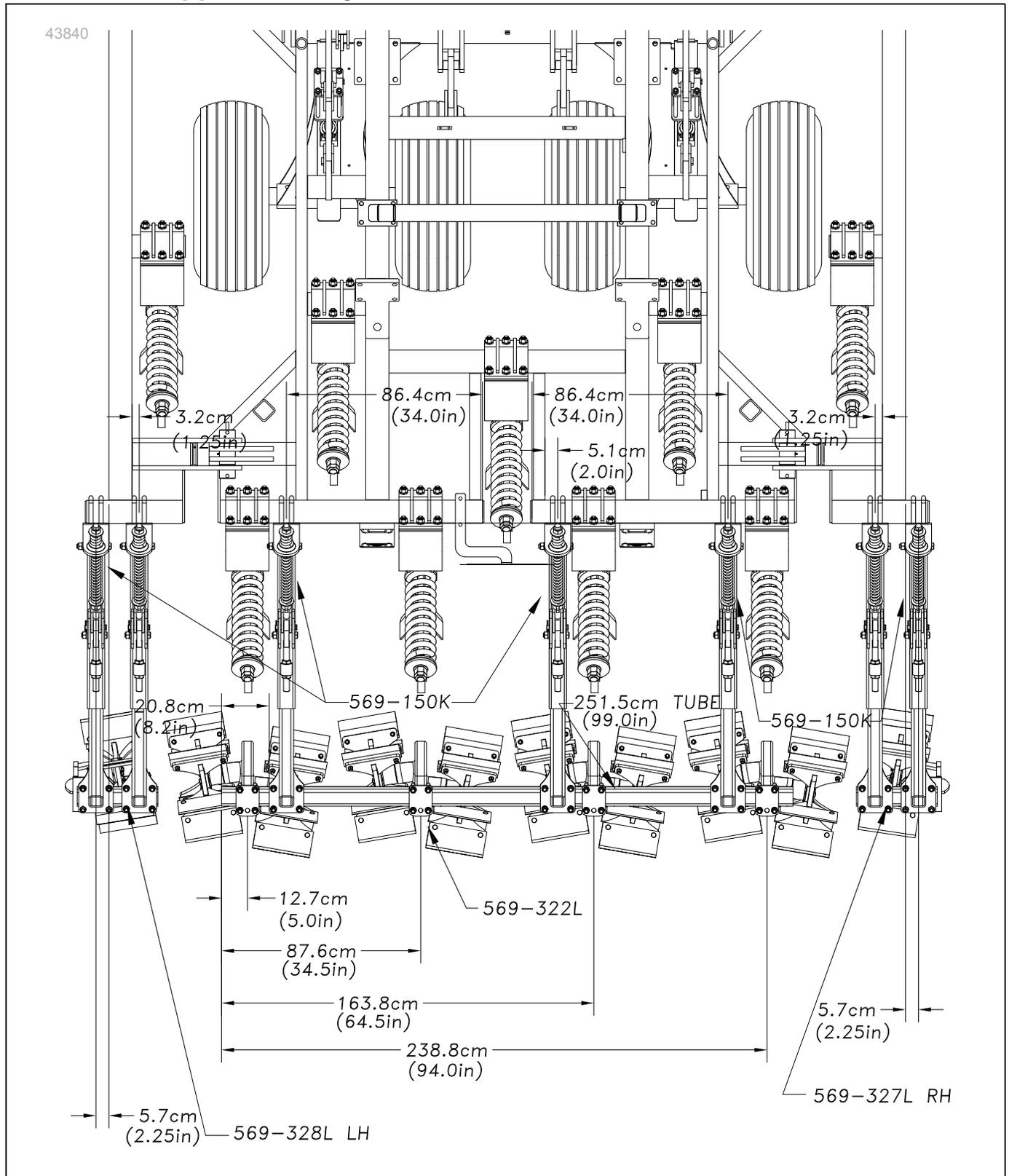
Twisted Shovel Layout



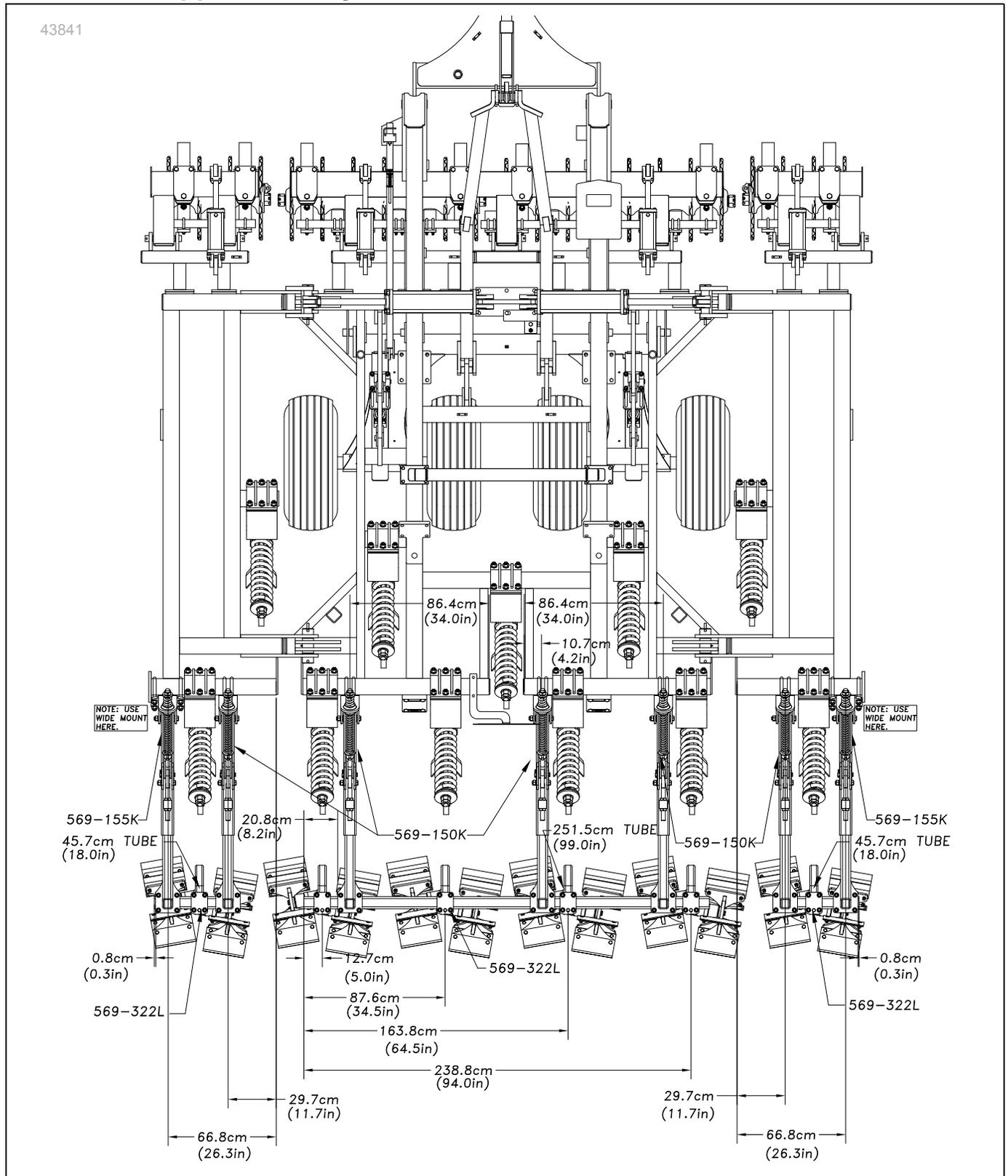
TCN5107 Chopper Reel Layout



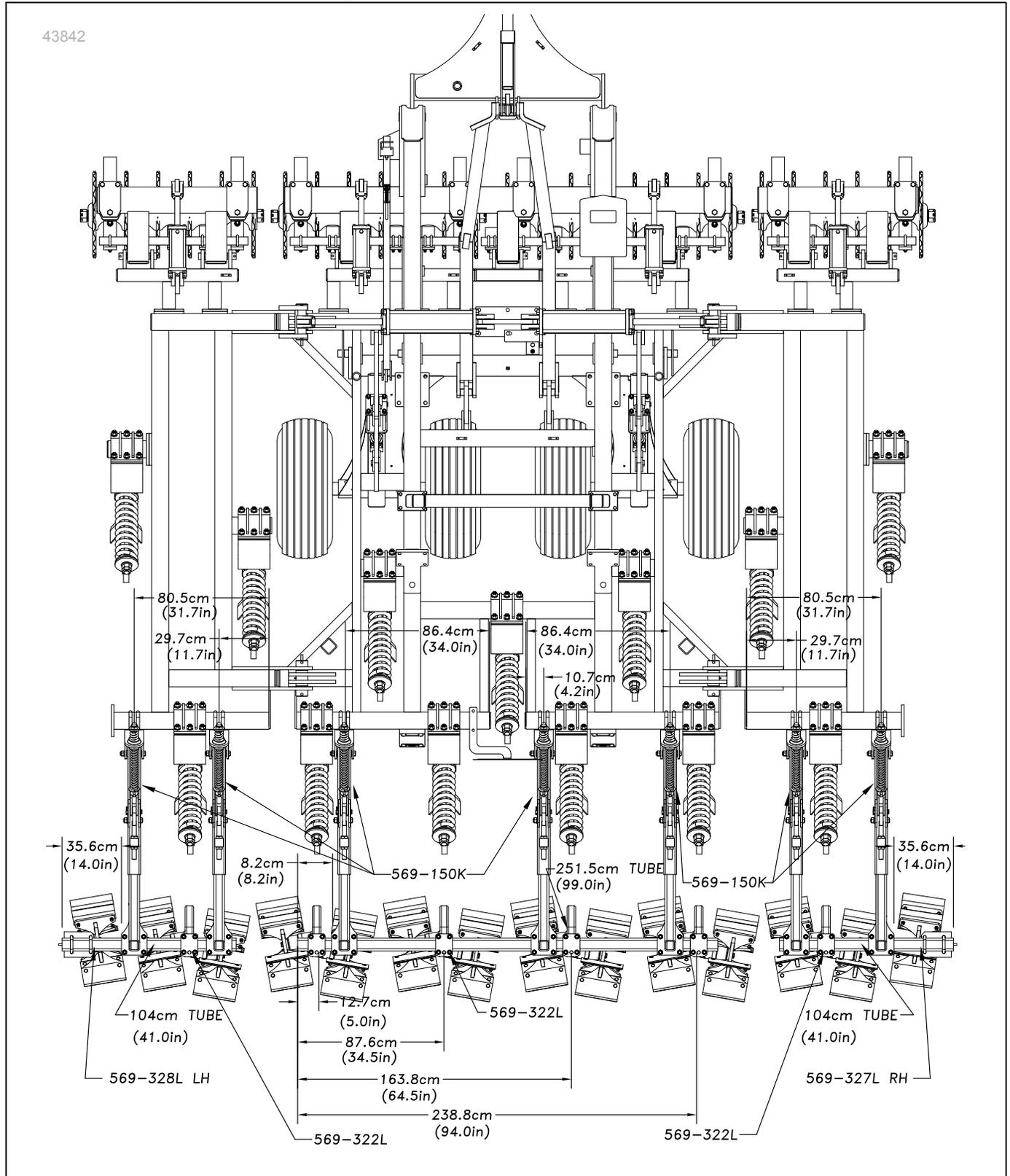
TCN5309 Chopper Reel Layout



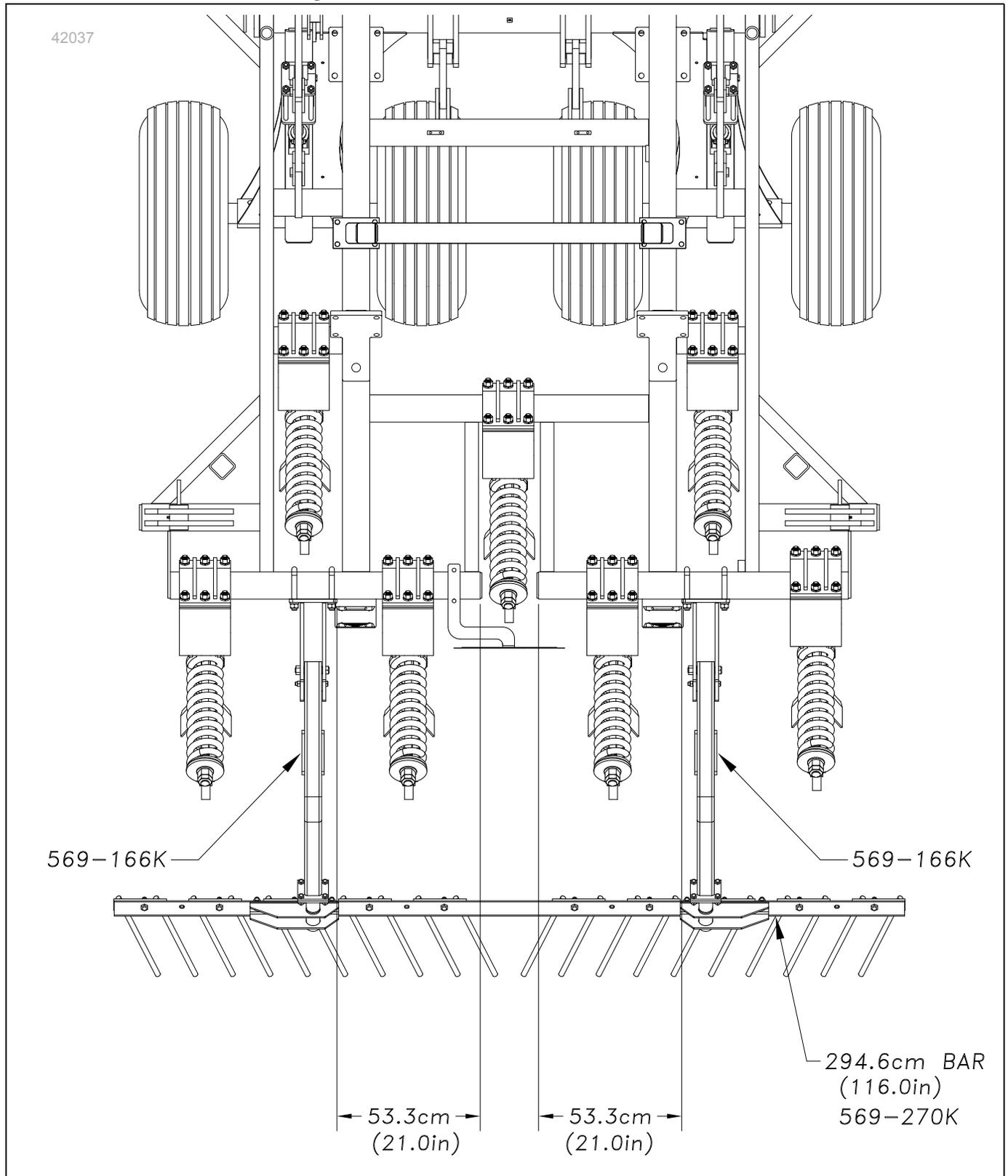
TCN5311 Chopper Reel Layout



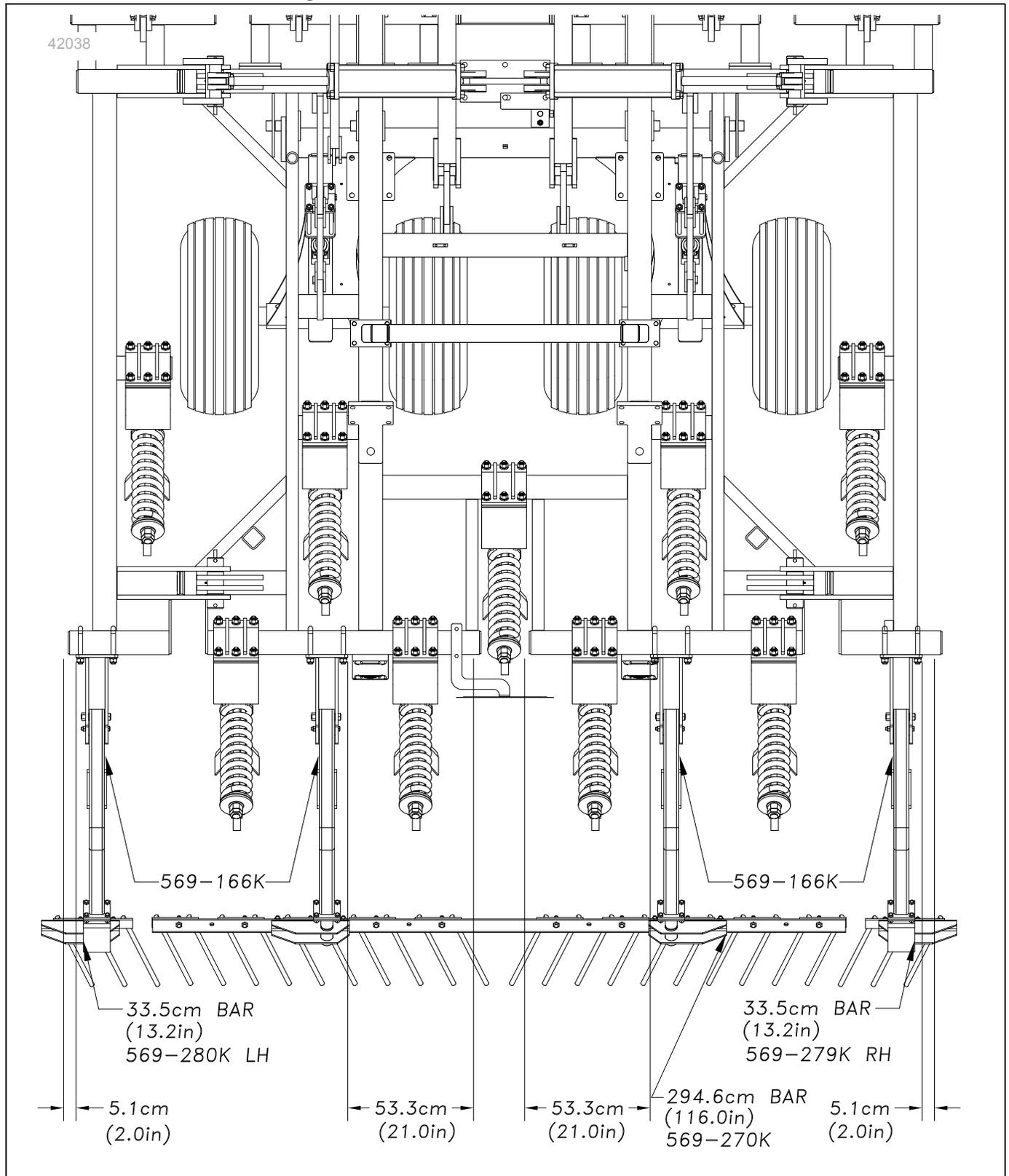
TCN5313 Chopper Reel Layout



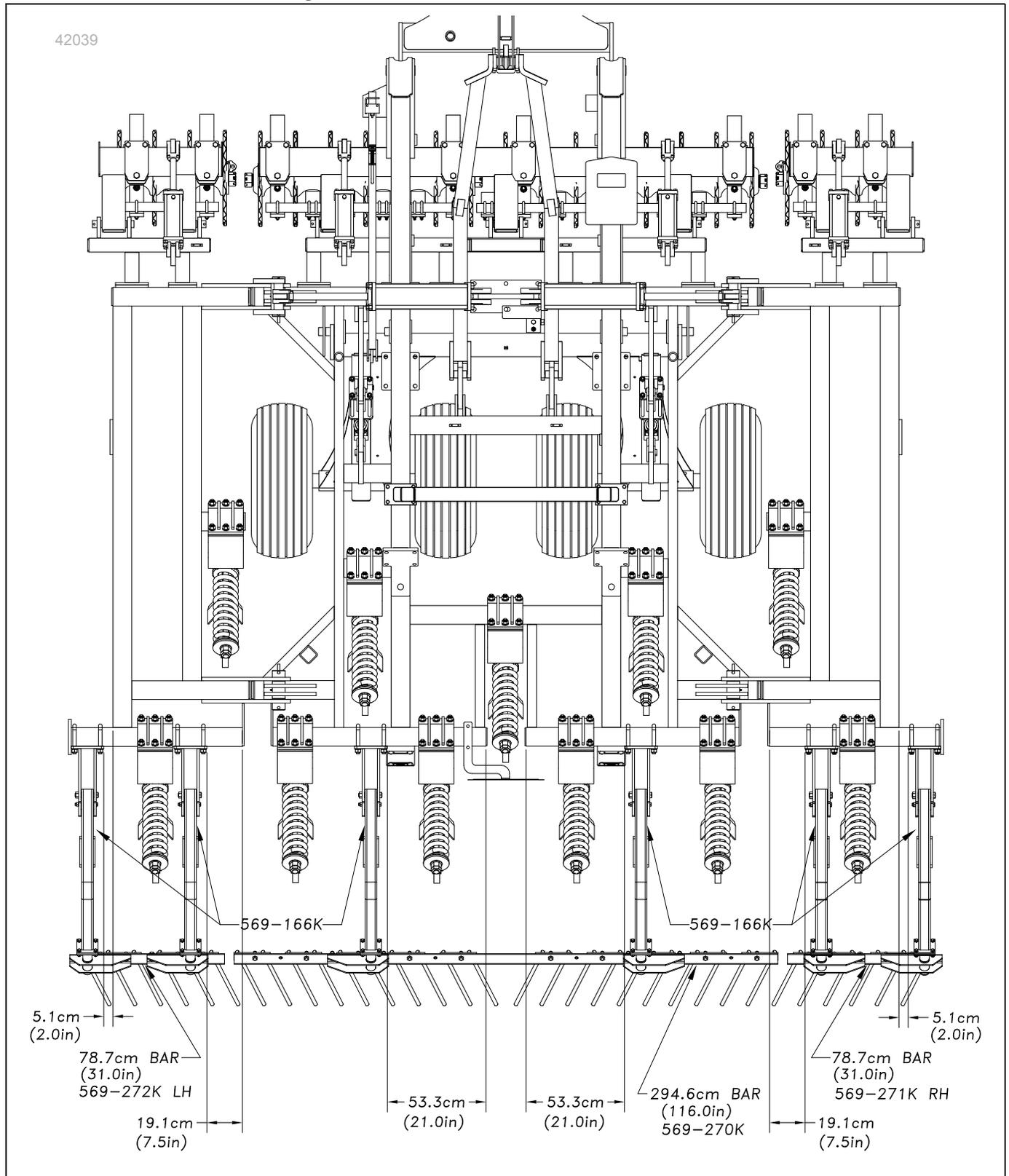
TCN 5107 Buster Bar Layout



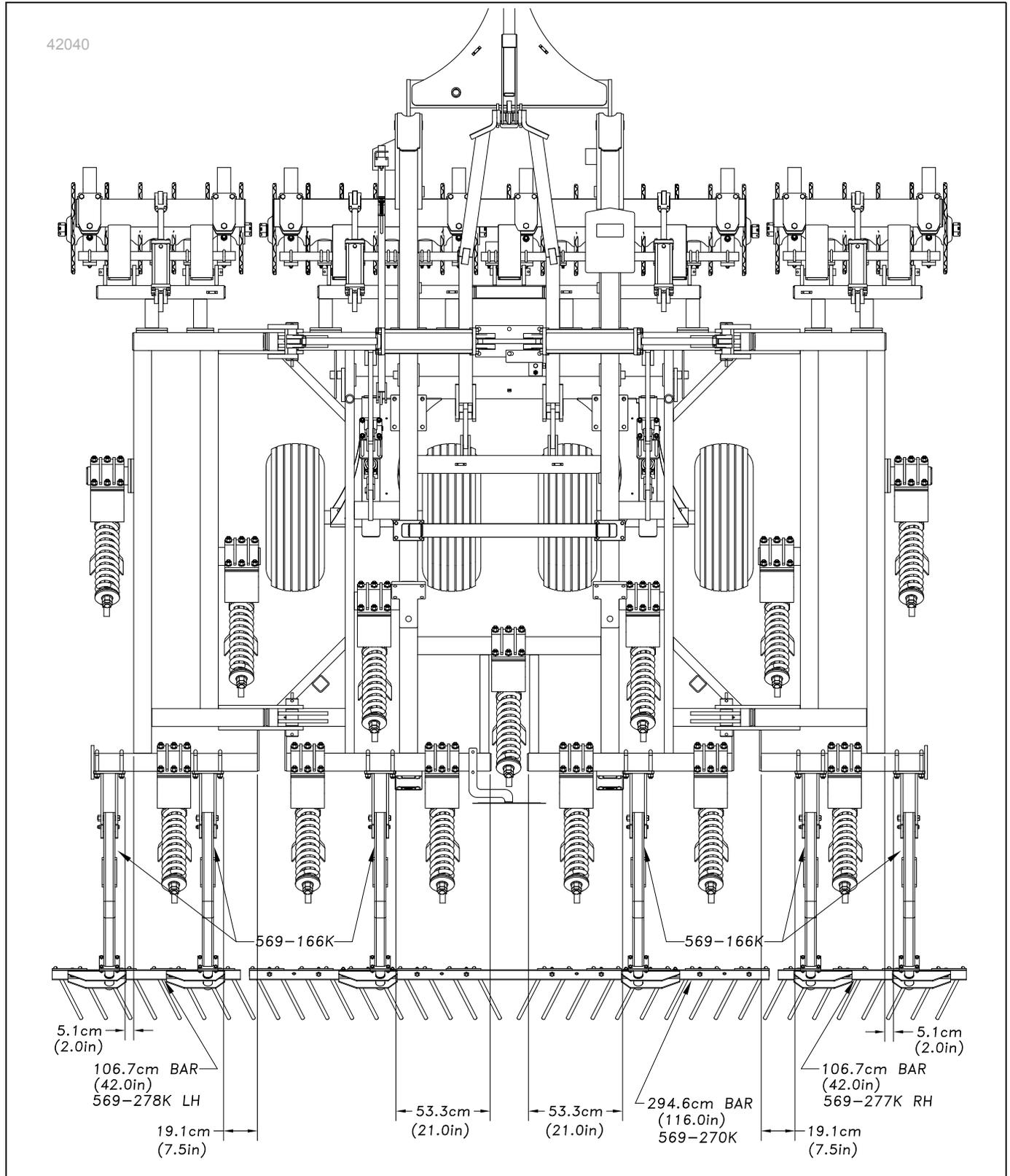
TCN5309 Buster Bar Layout



TCN5311 Buster Bar Layout



TCN5313 Buster Bar Layout





A	address, Great Plains 6	air line holder 10	B	banding 6	brakes	air/hydraulic 23	hydraulic 25	C	CAUTION, defined 1	center fold bracket 12	children 2	clothing 2	color code, hose 18	componets 6	contact Great Plains 6	covered models 4	cylinders	center lift 8	turbo gang 15	wing 12	D	DANGER, defined 1	decals 2, 27	definitions 5	depth gauge 15	depth stop mounting 16	depth stop valve 17	directions 5, 6	E	electrical hookup 7	F	finishing attachments 27	fire 1	fittings	JIC 17	ORB 16	fork truck 6	frames 6	H	headphones 2	hearing 2	high pressure fluids 2	hitch 10	hitch clevis 10	hose clamps 18	hose handles 17, 19	hose holder 10	hub assemblies	standard 7	hub assembly	brake 7	hydraulic connectors 29	hydraulic hoses 18	hydraulic safety 2	I	IMPORTANT!, defined 5	inflation 29	J	jack 10	jack stand 27	JIC 29	Joint Industry Conference 29	J514 29	K	kPa 29	L	layout	hydraulic lift 30	TCN5107 buster bar 43	TCN5107 chopper reel 39	TCN5107 machine 34	TCN5309 buster bar 44	TCN5309 chopper reel 40	TCN5309 machine 35	TCN5311 buster bar 45	TCN5311 chopper reel 41	TCN5311 machine 36	TCN5313 buster bar 46	TCN5313 chopper reel 42	TCN5313 machine 37	twisted shovel machine 38	3-section hydraulic fold 31	5107 hydraulic gang 32	5309-5313 hydraulic gang 33	leaks 2	left-hand, defined 5	level bar 10	lifters 1	lights 2	international 21	north american 20	M	manual pack tube 9	medical assistance 2, 18	mounting	hydraulic fittings 16	N	National Pipe Thread 29	Note, defined 5	NPT 29	O	ORB 29	orientation rose 5, 6	O-Ring Boss 29	P	protective equipment 2	psi 29	purging	fold system 19	gang lift system 19	lift system 19	R	rear tow hitch 27	rebound valve 12, 16	riders 2	right-hand, defined 5	rose, orientation 5, 6	S	SAE J514 29	safety chain 10	safety chain support 10	safety symbol 1	shank assembly	569-169S 14	569-190S 14	shank mount 12	shutdown 2	smaller items 6	storage 2	storage pod 6	symbol, safety 1	T	tables	document family 4	fittings torque 29	hose color code 18	models covered 4	torque values 28	tire inflation 29	tire wheel assembly 6	tires 3	tire/wheel assembly 7	torque tube 7	torque value chart 28	torque values chart (wheel bolts) 28	transport locks 8	turnbuckle 10	U	unload 6	URLs, tires 29	V	valve	counter balance 10	double tee block 12
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