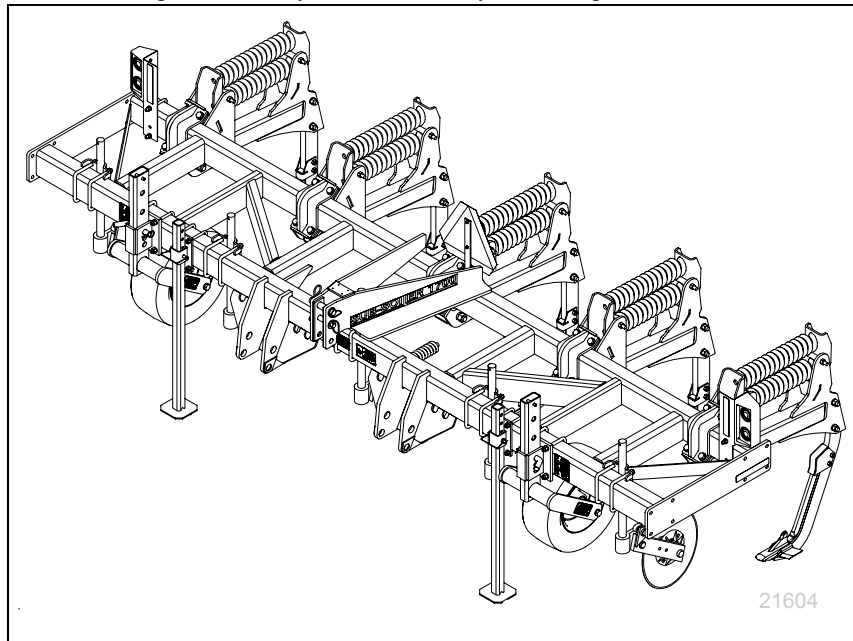


Operator Manual

SS1300, SS1310, SS1700 & SS1710
Sub-Soiler Inline Ripper



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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Printed 2018-07-09

596-086M

Machine Identification

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

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

Model Number	
Serial Number	
Machine Height	
Machine Length	
Machine Width	
Machine Weight	
Year of Construction	
Delivery Date	
First Operation	
Accessories	

Dealer Contact Information

Name: _____

Street: _____

City/State: _____

Telephone: _____

Email: _____

Dealer's Customer No.: _____



WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov



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Printed in the United States of America



Important Safety Information

Look for Safety Symbol

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



Be Aware of Signal Words

Signal words designate a degree or level of hazard seriousness.

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



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



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



Prepare for Emergencies

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



Be Familiar with Safety Decals

- ▲ *Read and understand "Safety Decals" on page 5-8, thoroughly.*
- ▲ *Read all instructions noted on the decals.*
- ▲ *Keep decals clean. Replace damaged, faded and illegible decals.*



Wear Protective Equipment

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



Handle Chemicals Properly

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

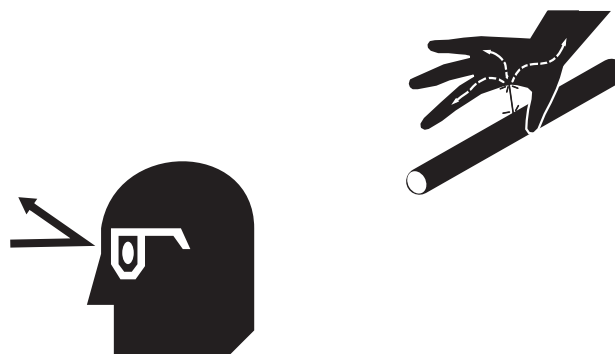
- ▲ *Read and follow chemical manufacturer's instructions.*
- ▲ *Wear protective clothing.*
- ▲ *Handle all chemicals with care.*
- ▲ *Avoid inhaling smoke from any type of chemical fire.*
- ▲ *Store or dispose of unused chemicals as specified by chemical manufacturer.*



Avoid High Pressure Fluids

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

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



Use Safety Lights and Devices

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

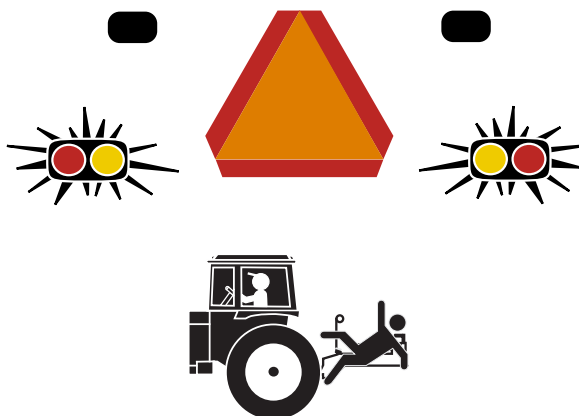
- ▲ *Use flashing warning lights and turn signals whenever driving on public roads.*

Use lights and devices provided with implement

Keep Riders Off Machinery

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

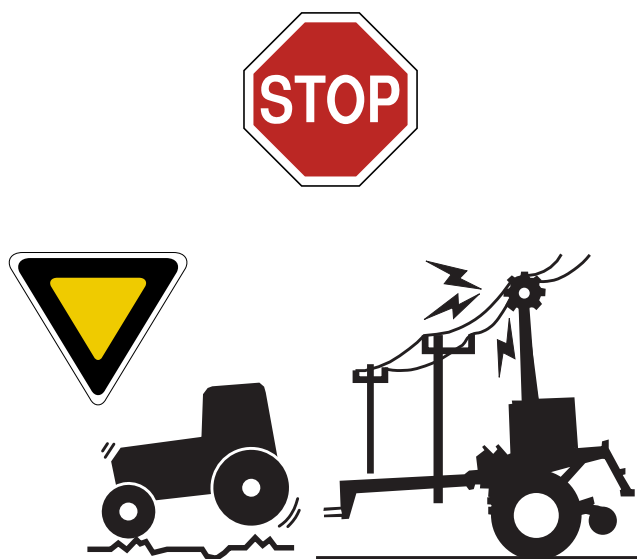
- ▲ *Never allow children to operate equipment.*
- ▲ *Keep all bystanders away from machine during operation.*



Transport Machinery Safely

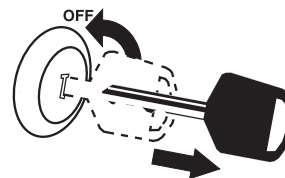
Maximum transport speed for implement is 20 mph (32 kph), 13 mph (22 kph) in turns. Some rough terrains require a slower speed. Sudden braking can cause a towed load to swerve and upset.

- ▲ *Do not exceed 20 mph. Never travel at a speed which does not allow adequate control of steering and stopping. Reduce speed if towed load is not equipped with brakes.*
- ▲ *Comply with state and local laws.*
- ▲ *Do not tow an implement that, when fully loaded, weighs more than 1.5 times the weight of towing vehicle.*
- ▲ *Carry reflectors or flags to mark Sub-Soiler in case of breakdown on the road.*
- ▲ *Keep clear of overhead power lines and other obstructions when transporting. Refer to transport dimensions under “SS1300-SS1700 Specifications and Capacities” on page 24.*
- ▲ *Do not fold or unfold the Sub-Soiler while the tractor is moving*



Shutdown and Storage

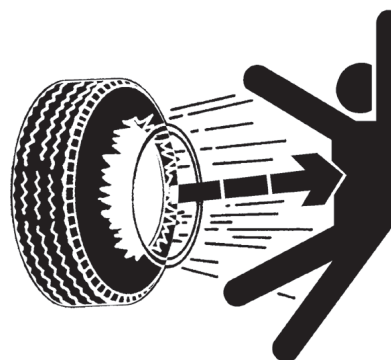
- ▲ *Lower Sub-Soiler, put tractor in park, turn off engine, and remove the key.*
- ▲ *Secure Sub-Soiler using blocks and supports provided.*
- ▲ *Detach and store machine in an area where children normally do not play.*



Tire Safety

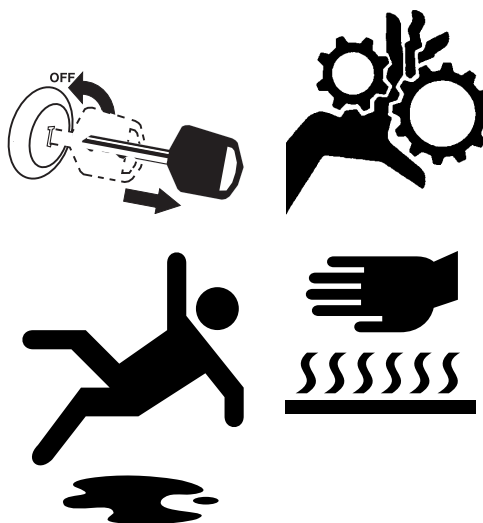
Tire changing can be dangerous and should be performed by trained personnel using correct tools and equipment.

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



Practice Safe Maintenance

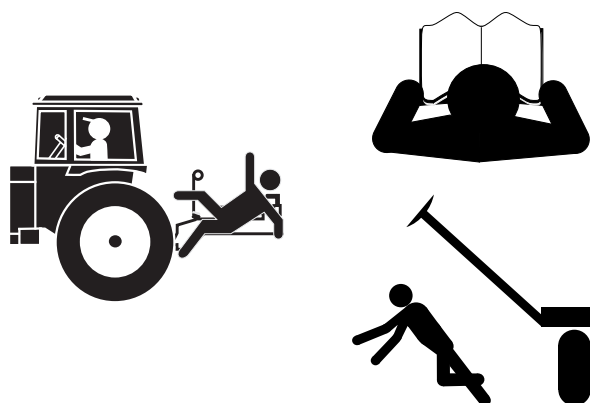
- ▲ *Understand procedure before doing work. Use proper tools and equipment. Refer to this manual for additional information.*
- ▲ *Work in a clean, dry area.*
- ▲ *Lower the machine, put tractor in park, turn off engine, and remove key before performing maintenance.*
- ▲ *Disconnect battery ground cable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



Safety At All Times

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

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



Safety Decals

Safety Reflectors and Decals

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

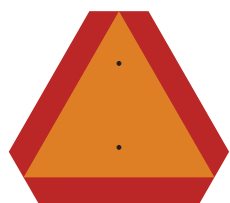
- ▲ *Read and follow decal directions.*
- ▲ *Keep lights in operating condition.*
- ▲ *Keep all safety decals clean and legible.*
- ▲ *Replace all damaged or missing decals. Order new decals from your Great Plains dealer. Refer to this section for*

proper decal placement.

- ▲ *When ordering new parts or components, also request corresponding safety decals.*

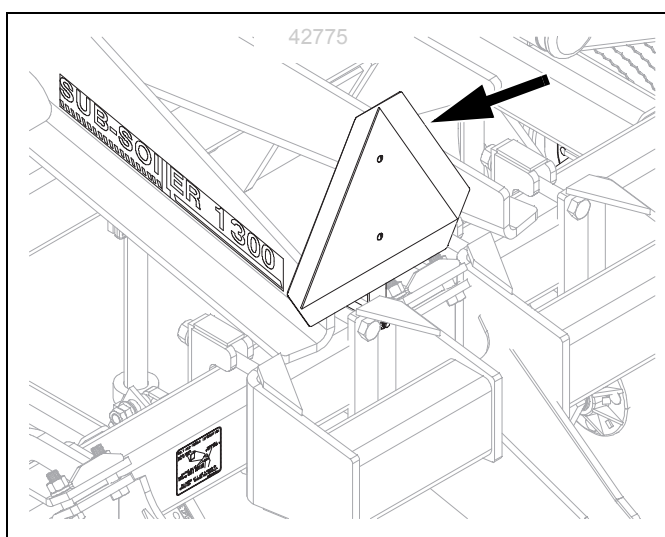
To install new decals:

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



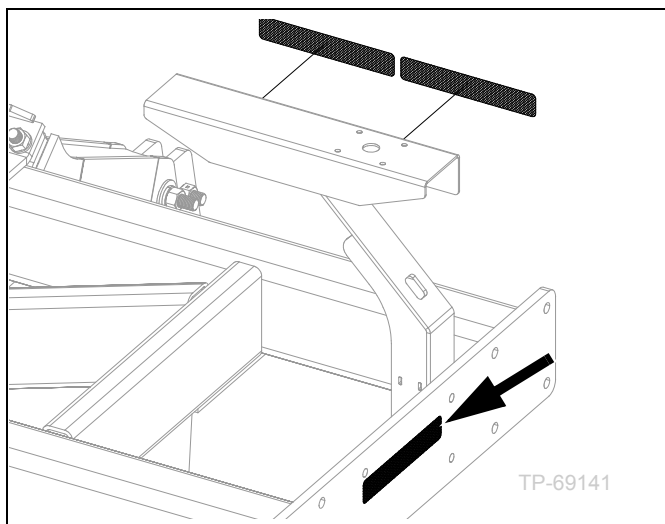
818-055C Slow Moving Vehicle Reflector

On the back of the center SMV post;
1 total



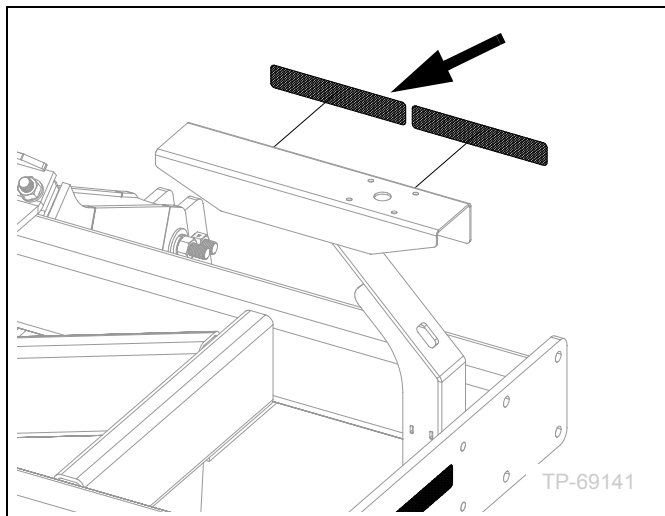
838-265C Amber Reflectors

One on outside of center frame (both sides);
2 total

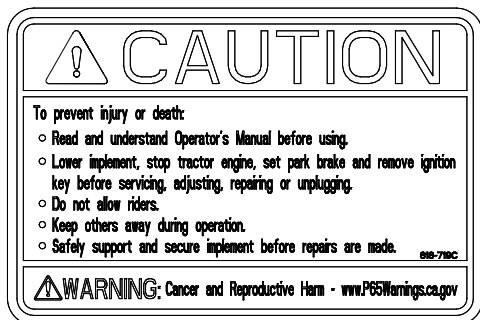
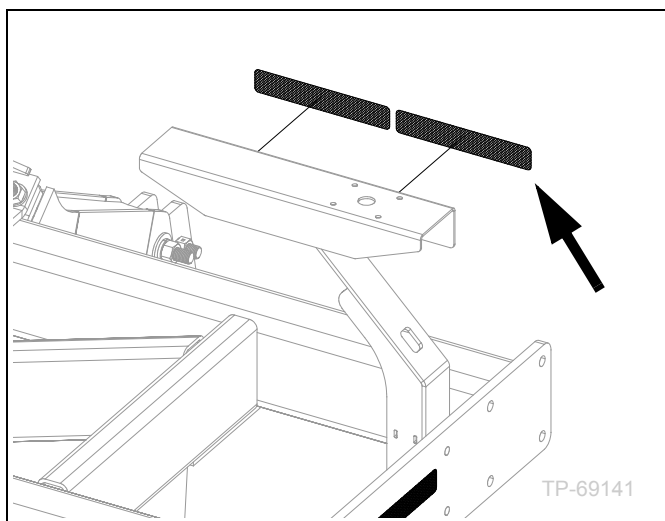


838-266C**Red Reflectors**

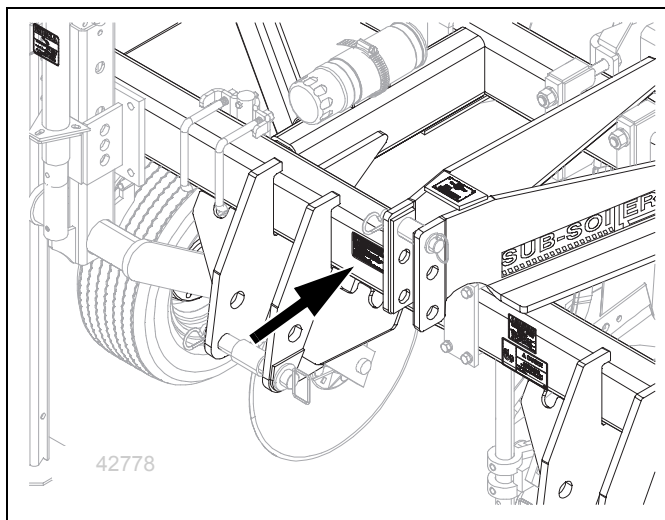
On rear of light brackets (inside);
2 total

**838-267C****Orange Reflectors**

On rear of light brackets (outside);
2 total

**818-719C****Caution: General Instructions**

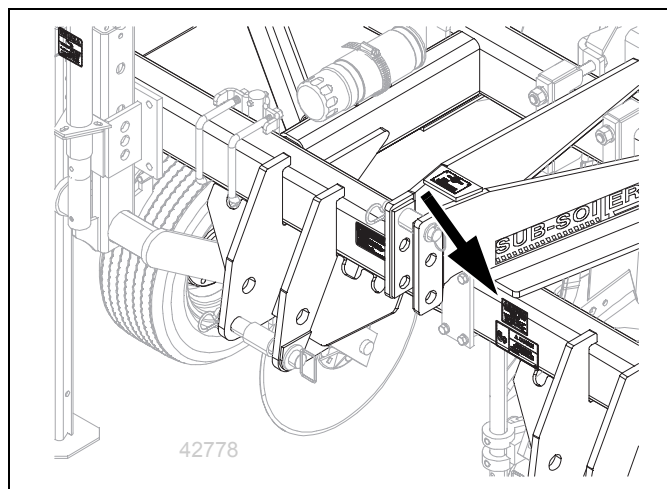
On front of center frame;
1 total



**818-337C****Warning: Excessive Speed Hazard**

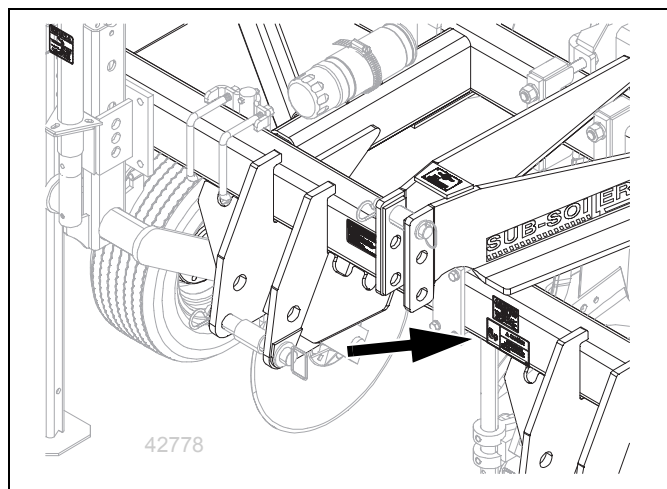
On front of center frame;

1 total

**818-590C****Danger: Crushing Hazard**

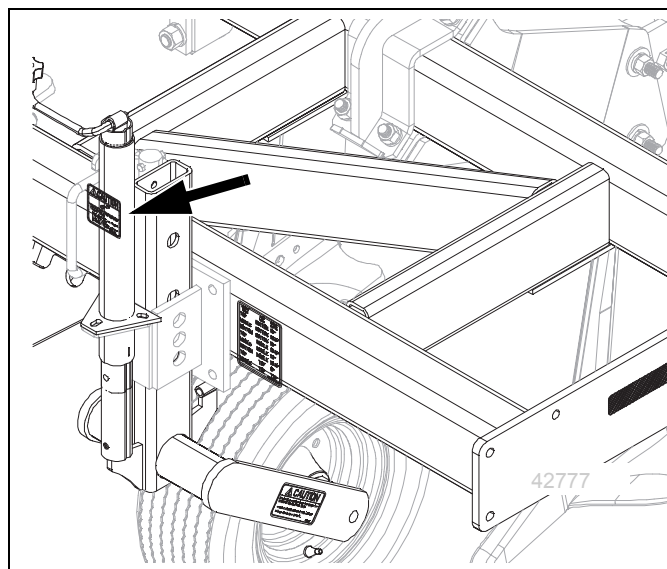
On front of center frame;

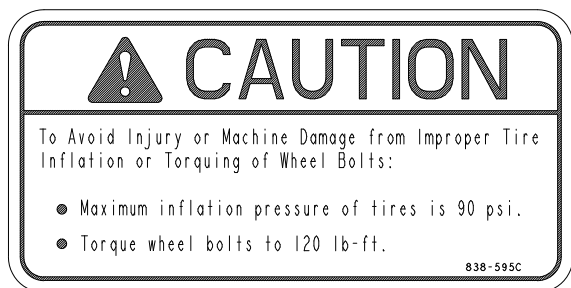
1 total

**818-398C****Caution: Tires Not A Step**

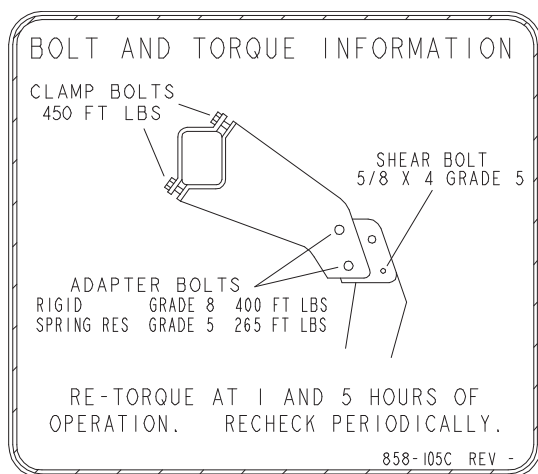
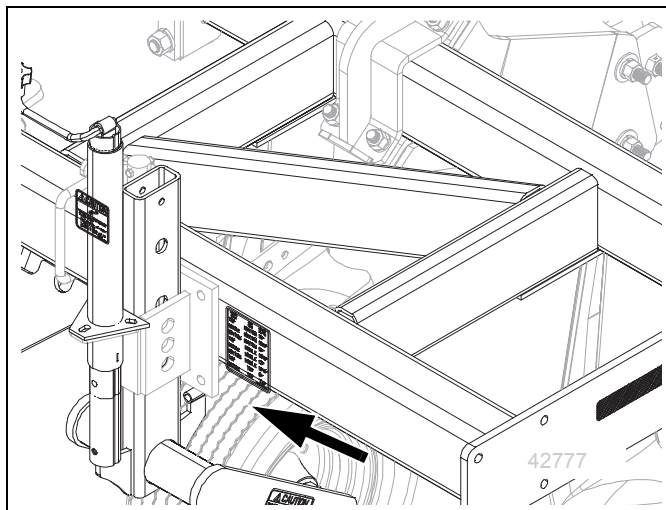
Front side of gauge wheel jacks;

2 total

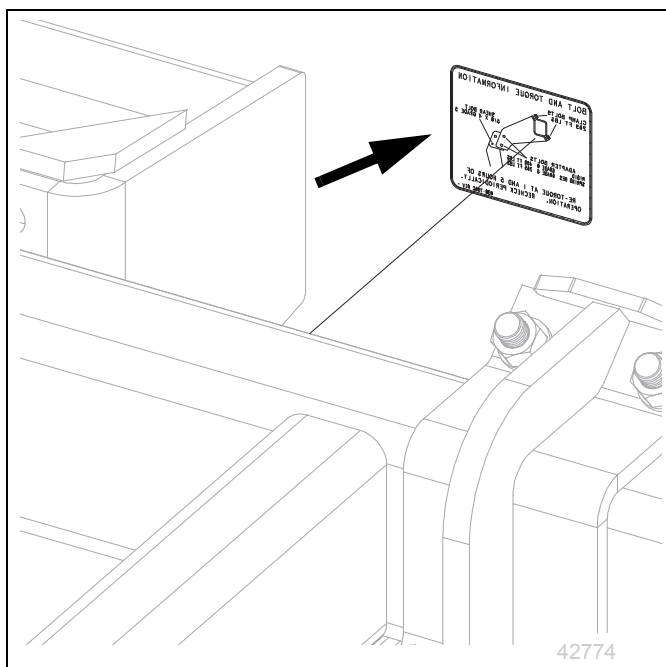


**838-595C****Caution: Tire 90 PSI**

On outside of gauge wheel arms;
2 total

**858-105C****Bolt & Torque Information**

On rear tube of center frame;
2 total





Introduction

Great Plains welcomes you to our growing family of new product owners. The Sub-Soiler Inline Ripper SS1300, SS1310, SS1700 & SS1710, 3-8 shank, have been designed with care and built by skilled workers using quality materials. Proper setup, maintenance, and safe operating practices will help you get years of satisfactory use from the machine.

Models Covered

SS1300	30"-centers, 3 shank, 1-section
SS1310	36"-centers, 3 shank, 1-section
SS1310	38"-centers, 3 shank, 1-section
SS1310	40"-centers, 3 shank, 1-section
SS1300	24"-centers, 4 shank, 1-section
SS1300	30"-centers, 4 shank, 1-section
SS1310	36"-centers, 4 shank, 1-section
SS1310	38"-centers, 4 shank, 1-section
SS1310	40"-centers, 4 shank, 1-section
SS1300	24"-centers, 5 shank, 1-section
SS1300	30"-centers, 5 shank, 1-section
SS1300	24"-centers, 6 shank, 1-section
SS1300	24"-centers, 7 shank, 1-section
SS1300	24"-centers, 8 shank, 1-section
SS1710	36"-centers, 5 shank, 1-section
SS1710	38"-centers, 5 shank, 1-section
SS1710	40"-centers, 5 shank, 1-section
SS1700	30"-centers, 6 shank, 1-section
SS1710	36"-centers, 6 shank, 1-section
SS1710	38"-centers, 6 shank, 1-section
SS1710	40"-centers, 6 shank, 1-section
SS1700	24"-centers, 7 shank, 1-section
SS1700	30"-centers, 7 shank, 1-section
SS1710	36"-centers, 7 shank, 1-section
SS1710	38"-centers, 7 shank, 1-section
SS1710	40"-centers, 7 shank, 1-section
SS1700	24"-centers, 8 shank, 1-section
SS1700	30"-centers, 8 shank, 1-section
SS1700	24"-centers, 9 shank, 1-section

See “**SS1300-SS1700 Specifications and Capacities**” on page 24 & page 25 for precise swath information.

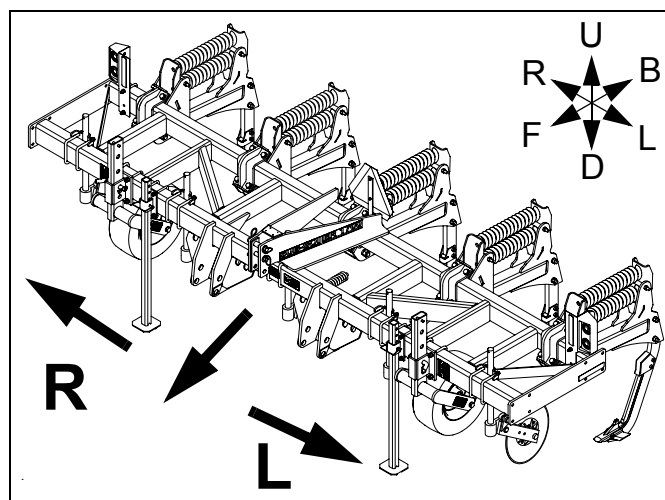


Figure 1
SS1300 Sub-Soiler

21604

Description of Unit

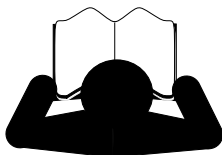
The Sub-Soiler Inline Ripper SS1300, SS1310, SS1700 & SS1710 is a one-section machine. It is designed to break up soil crust on hard dried fields while eliminating compaction layers. An optional berm conditioner may be added to the rear of each shank.

Document Family

596-086M	Operator Manual (this document)
596-086P	Parts Manual

Using This Manual

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



Owner Assistance

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

Refer to Figure 2

Your machine's parts were specially designed and should only be replaced with Great Plains parts. Always use the serial and model number when ordering parts from your Great Plains dealer. The serial-number plate is located as shown in Figure 2.

Record your SS1300-SS1700 Sub-Soiler model and serial number here for quick reference:

Model Number: _____

Serial Number: _____

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

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

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

For further assistance write to:

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

Definitions

The following terms are used throughout this manual.

NOTICE

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

Useful information related to the preceding topic.

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

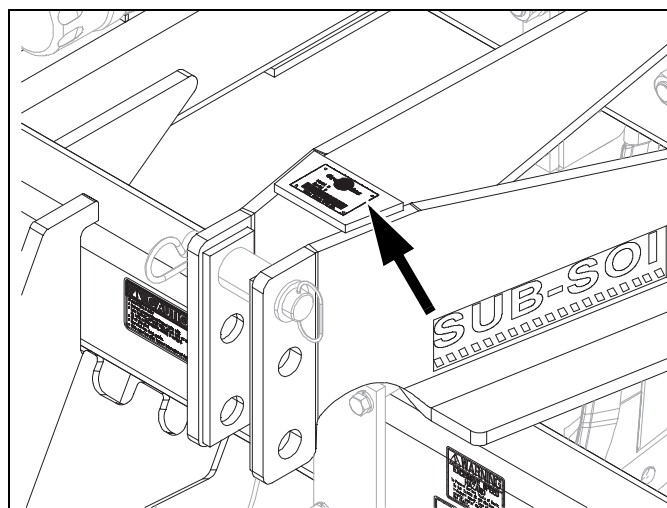
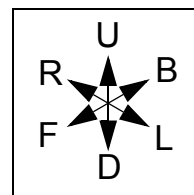


Figure 2
Serial Number Plate

42779

Further Assistance

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

Great Plains Service Department
1525 E. North St.
P.O. Box 5060
Salina, KS 67402-5060

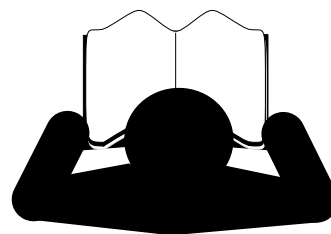
Or go to www.greatplainsag.com and follow the contact information at the bottom of your screen for our service department.



Preparation and Setup

This section helps you prepare your tractor and SS1300, SS1310, SS1700 & SS1710 Sub-Soiler for use, and covers tasks that need to be done seasonally, or when the tractor/Sub-Soiler configuration changes.

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



Prior to Going to the Field Checklist

Complete this checklist before routine setup:

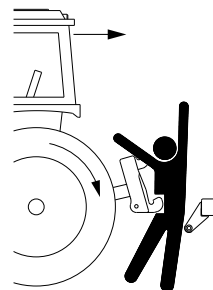
- ☐ Read and understand “**Important Safety Information**” on page 1.
- ☐ Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
- ☐ Make sure your tractor horsepower matches the implement you are pulling. This is important so the implement can do the best possible job.
- ☐ Check again for hydraulic leaks and watch that hoses do not get pinched in hinges, wing stops, etc.
- ☐ Check that all grease fittings are in place and lubricated. See “**Lubrication**” on page 23. The hubs will come pre-greased and will not need greased at this time.
- ☐ Check that all safety decals and reflectors are correctly located and legible. Replace if damaged. See “**Safety Decals**” on page 5.
- ☐ Inflate tires to pressure recommended and tighten wheel bolts as specified. See “**Torque Values Chart**” on page 27.

Hitching Tractor to Sub-Soiler

⚠ DANGER

Crushing Hazard:

Do not stand or place any part of your body between sub-soiler and moving tractor. You may be severely injured or killed by being crushed between the tractor and sub-soiler. Stop tractor engine and set parking brake before attaching cables and hoses.



⚠ WARNING

High Pressure Fluid Hazard:

Relieve pressure before disconnecting hydraulic lines. Use a piece of paper or cardboard, NOT BODY PARTS, to check for leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. 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.



Hitching with 3-Point

1. The sub-soiler is designed to use either Category II or III tractors. This implement is factory set for Category III tractors. To change to Category II, you will need a Category II Ripper hitch pin kit P/N 596-060A. See your Great Plains dealer to order kit.
2. In addition, the following bushings (not supplied by Great Plains) may be needed to fit your quick hitch or tractor's 3-point arms:
 - Upper Link 1" ID x 1 1/4" OD
 - Lower Links 1 1/8" ID x 1 7/16" OD
3. Be sure that all tractor 3-point arms are securely pinned before lifting the implement. Adjust the top 3-point link so that the frame is at desired tip depth, parallel with the ground.
4. Set the tractor 3-point draft control in the float position.
5. Raise the tractor 3-point arms as needed and pin lower arms to implement.

Refer to Figure 1

6. See drawing for correct pins and hole positions for Category II.
7. Pin upper arm to implement. For category II, install hitch pin ① in middle hole.
8. Install hitch pin supports ② in brackets as shown.

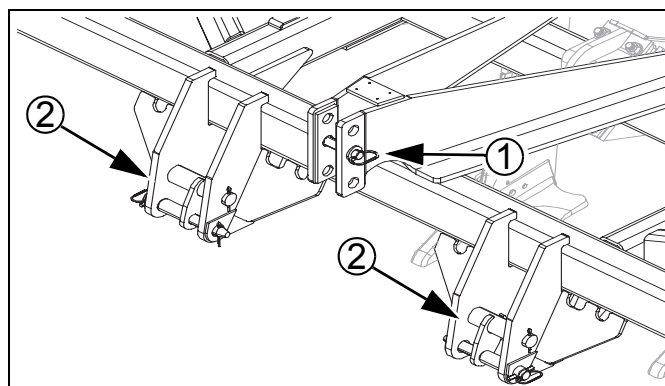


Figure 1
Cat II Hitching

42780

Refer to Figure 3

9. See drawing for correct pins and hole positions for Category III.
10. Pin upper arm to implement. For category III, install hitch pin ① in top hole.
11. Install pin ② in lower holes.
12. Connect your tractor 3-point to the sub-soiler 3-point hitch. If using quick hitch be sure sub-soiler locks into hitch securely.
13. Slowly raise implement. Watch for cab interference.
14. Set your tractor 3-point draft control to float position.
15. Plug lead from implement light harness into tractor receptacle.
16. Raise tractor 3-point just enough to relieve pressure from parking stands.
17. Raise and pin up 3-point stands. See **“Store Parking Stands”** on page 14.

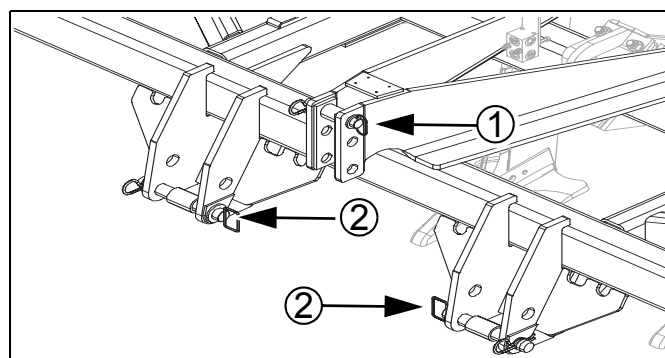


Figure 3
Cat III Hitching

42781

NOTICE

Load Sway Risk:

Adjust 3-point hitch arms and sway blocks to minimize any side-to-side sway to assure proper tracking in the field and safe road travel.

Storing Parking Stands

Refer to Figure 4

18. While holding the parking stand ①, remove the snap lock pin ②.
19. Slide the stand ① clear up in stand mount ③ as shown.
20. Install snap lock pin ② through aligned holes to secure.

Shank Mounting

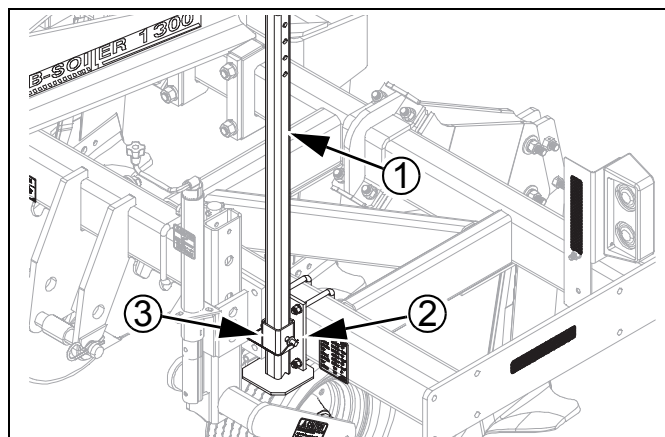


Figure 4
Store Parking Stands

41861

Straight Shanks

21. Attach the straight shank assembly ⑥ *Refer to Figure 5* or no-till shank ⑦ *Refer to Figure 6* to the auto reset shank mount ⑧ using $\frac{3}{4}$ x 6 Gr. 8 bolts ④, $\frac{3}{4}$ " hardened flat washers ⑤, two on head side and one on lock washer side, $\frac{3}{4}$ " lock washers and nuts.

 Extra hardened washers allows use of longer bolt to keep threads out of the shear area.



IMPORTANT: Torque bolts ④ to 400 FT LBS.

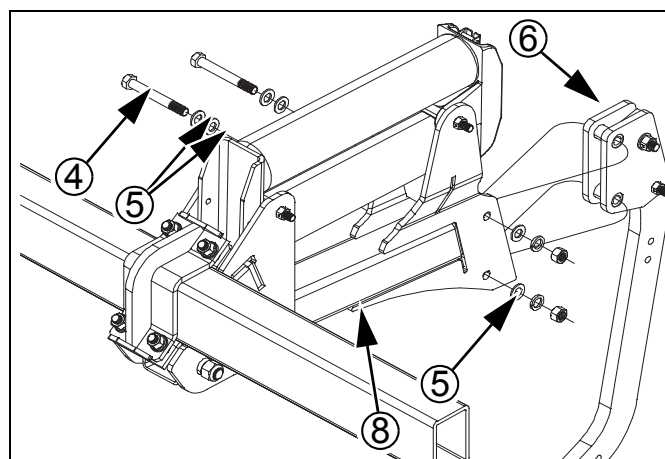


Figure 5
Straight Shank Mounting

42784

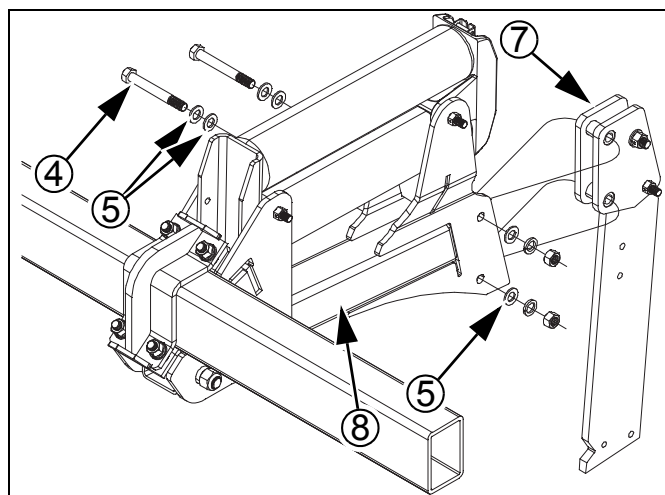


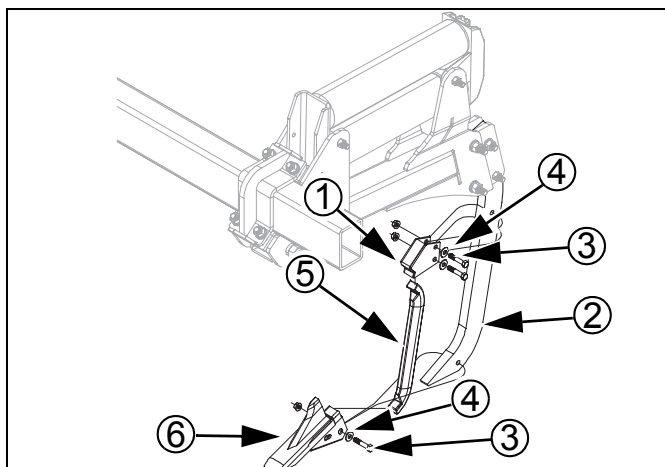
Figure 6
No-Till Mounting

42785

Straight Shins & Tips Assembly

Refer to Figure 7

22. Attach straight shin retainer ① to the straight shank ② with $\frac{1}{2}$ x $2\frac{1}{2}$ bolts ③, $\frac{1}{2}$ hardened washer ④ and flange lock nut.
 23. Slide one end of the straight wear shin ⑤ under the straight shin retainer ①. Hold the lower end in place by installing a tip ($1\frac{1}{4}$ x 2 with fin, shown) ⑥. Fasten with $\frac{1}{2}$ x $2\frac{1}{2}$ bolts ③, $\frac{1}{2}$ hardened washer ④ and flange lock nut.
-  Install the $\frac{1}{2}$ x $2\frac{1}{2}$ bolts ③ as shown. The flow of dirt on the underside of tip will tend to tighten nut.



No-Till Shins & Tips Assembly

Refer to Figure 8

24. Attach the retainer clip ① to the no-till shank ② with $\frac{1}{2}$ x $1\frac{3}{4}$ bolts ③ and $\frac{1}{2}$ flange lock nut.
25. Remove the $\frac{1}{2}$ x $1\frac{3}{4}$ roll pin ④ and save for later use.
26. Slide one end of the no-till wear shin ⑤ under the retainer clip ①. Hold the lower end in place by installing a no-till tip ⑥. Secure with $\frac{1}{2}$ x $1\frac{3}{4}$ roll pin ④ in rear hole of tip (removed in previous step).
27. Insert the $\frac{3}{4}$ x 1.7 heavy roll pin ⑦ in front hole of tip ⑥ to help secure tip.

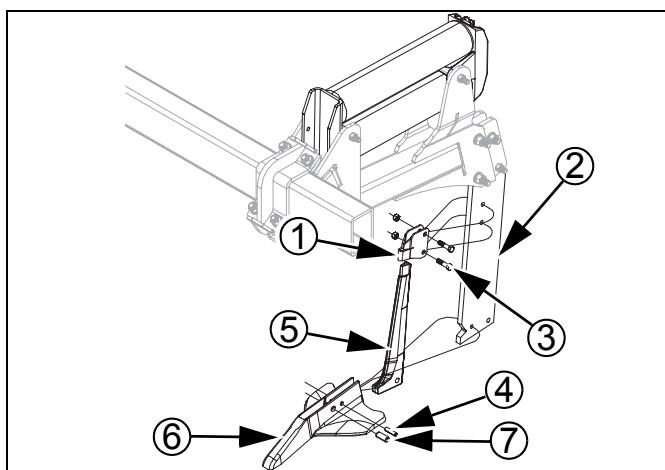


Figure 8
No-Till Shins & Tips

42787

Coulter Assembly

Refer to Figure 9

28. Position the coulter stop ① in the slot of the casting assembly ②.
29. Slide the casting assembly and coulter stop onto shank ③, sliding it up past the hole in the end.
30. Install roll pin ④ in the hole and allow casting to slide back down until it is resting on the roll pin.
31. Place jam nut ⑥ on $\frac{5}{8}$ x $1\frac{1}{2}$ " set screw ⑤ and insert set screw in the casting assembly. Insert $\frac{5}{8}$ x 1 set screw ⑦ in the coulter stop and refer to See "Coulter Alignment" on page 17 for proper setting.

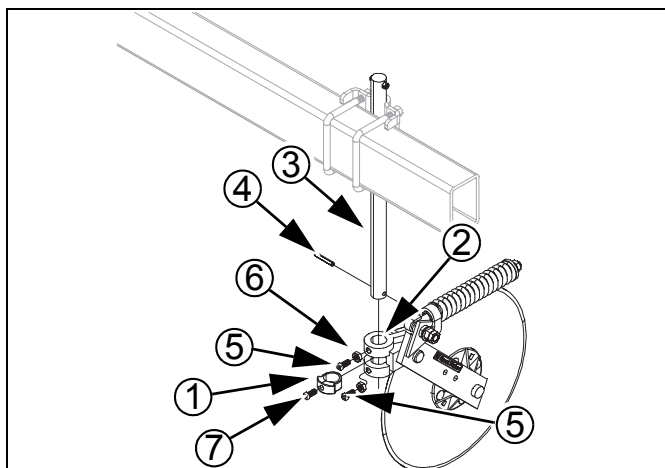


Figure 9
Coulters

42790

Machine Adjustments

Pre-Leveling of Machine

Front to Rear Leveling

32. Pre-leveling of machine may be done on a level floor. Lower the machine down until the shank tips are just above the floor.
33. Adjust the 3 point top link until the front and rear points are level.

Auto Reset Shank Adjustment

Refer to Figure 10

34. The dual spring package should be preloaded so both top and bottom springs are loaded evenly and measure 23.8" from end of coil to end of coil.

⚠ DANGER

Spring pack is pre-loaded at factory and should not be disassembled in the field. You could be severely injured or killed by instant release of stored energy.

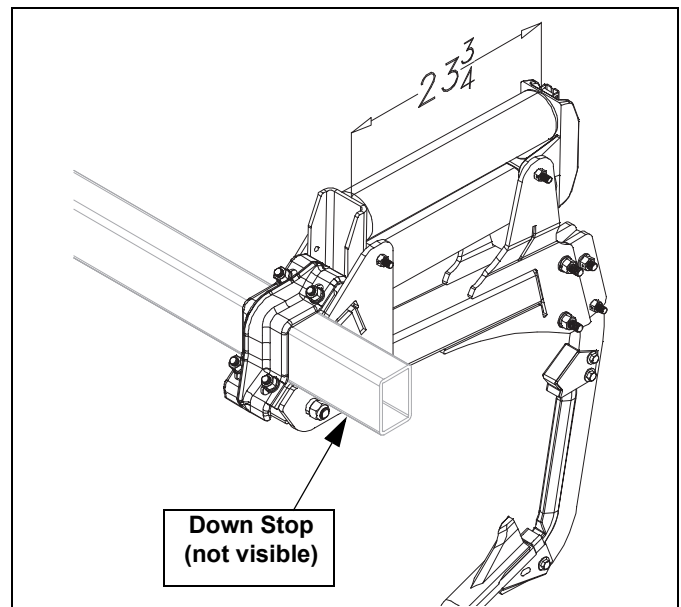


Figure 10
Auto Reset Shanks

43711

Gauge Wheel Adjustment

Refer to Figure 11

The jacks should only be used to help raise and lower the gauge wheels ①. The cross pin still needs to be used in order to avoid overloading the jack

35. Adjust the gauge wheel as shown on the shank depth decal ② on the front of the frame.

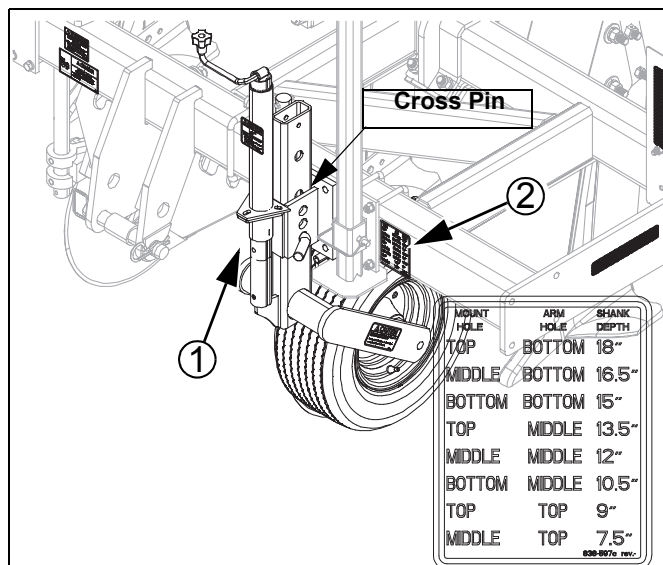


Figure 11
Gauge Wheels

42783
838-597C

Coulter Adjustment

Refer to Figure 12

Coulter Height

36. Determine the desired depth of the shank and set the gauge wheel in the appropriate hole.
37. Subtract 8" from the shank depth. Take this distance and measure from the top of the frame ① to the top of the coulter shank ②. This will allow the coulter to run approximately hub deep. If trying to deep rip less than 8", position the top of the coulter shank flush with the top of the tube.

Coulter Alignment

Refer to Figure 12

38. Loosen the top and bottom set screws ③, jam nuts ④ and swivel limiter set screw ⑤. Lower the ripper in the ground and drive forward a few feet.
39. Leave the ripper in the ground and tighten the top and bottom set screws ③ and jam nuts ④. Position the swivel limiter in the center of the slot and tighten the set screw ⑤.
40. Check alignment of the coulter and shank. Move either the coulter or shank so the shank is in the center of the groove made by the coulter.

Note: If you want the coulter to swivel, loosen the top and bottom set screws ① and jam nuts ②. Retighten jam nut to prevent from losing set screw.

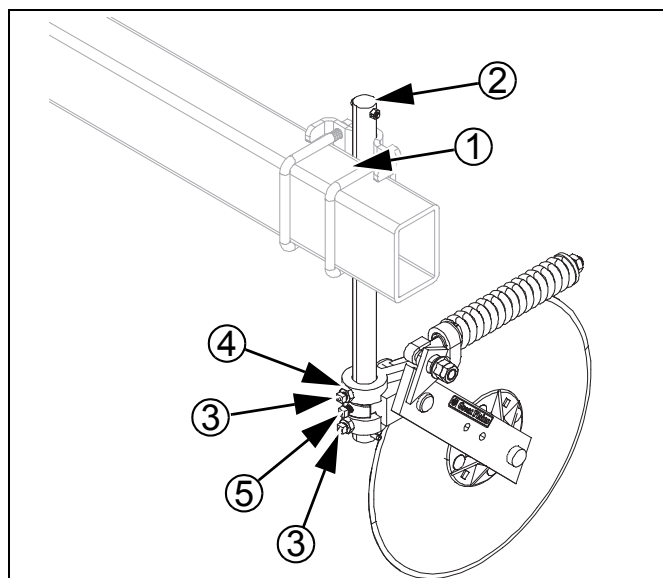


Figure 12
Coulter Alignment

42791

Coulter Spring

Refer to Figure 13

41. The coulter springs are preset at the factory to between $9\frac{7}{8}$ " to 10". This is measured from the inside surface of the coulter spring washer to the inside surface of the coulter bushing.

Note: Adjusting the spring below $9\frac{7}{8}$ " could cause premature part failure and void the warranty.

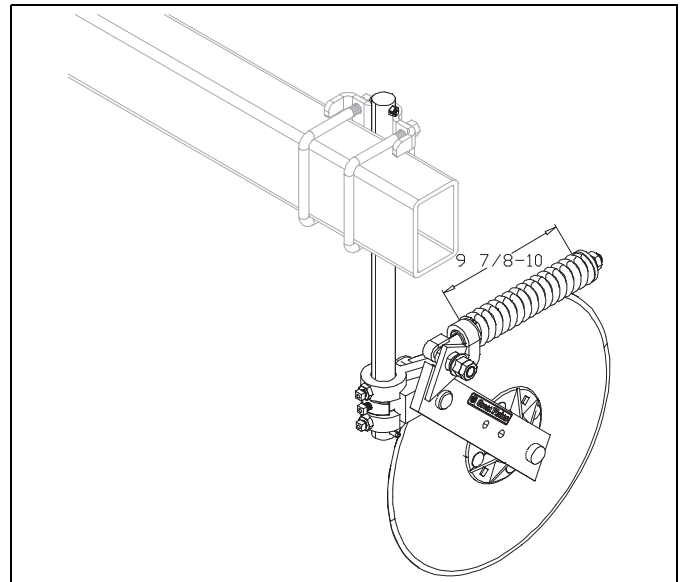


Figure 13
Coulter Spring Adjustment

42792

Berm Conditioner

Refer to Figure 14

42. The berm conditioner may be adjusted by pulling up on handle and sliding to a different notch.
43. For the deepest setting, move handle clear forward. For shallower, move handle towards rear.

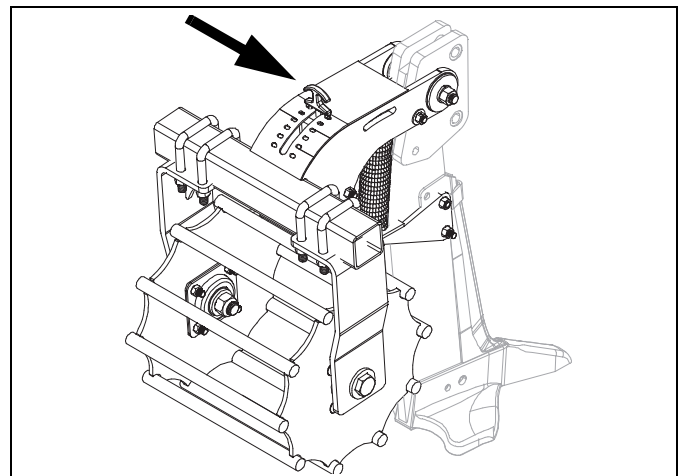


Figure 14
Berm Conditioner Adjustment

41864



Operating Instructions

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

Pre-Start Checklist

Perform the following steps before transporting the SS1300-SS1700 Sub-Soiler to the field.

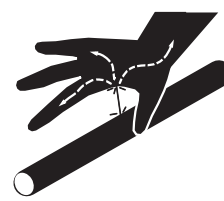
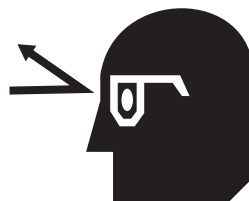
- ☐ Carefully read “**Important Safety Information**” on page 1.
- ☐ Lubricate Sub-Soiler as indicated under “**Lubrication**” on page 23.
- ☐ Check all tires for proper inflation. “**Tire Inflation Chart**” on page 26
- ☐ Check all bolts, pins, and fasteners. Torque as shown in “**Torque Values Chart**” on page 27.
- ☐ Check Sub-Soiler for worn or damaged parts. Repair or replace parts before going to the field.

Field Operation

⚠ DANGER

You may be severely injured or killed by being crushed between the tractor and implement. Do not stand or place any part of your body between implement and moving tractor. Stop tractor engine and set park brake before installing pins.

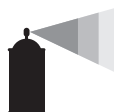
44. Hitch implement to a suitable tractor. See “**Hitching Tractor to Sub-Soiler**” on page 12-33.
45. Check to be sure machine is running level from front to rear when running machine at depth desired. See “**Front to Rear Leveling**” on page 16
46. Adjust gauge wheels to desired tillage depth. See “**Gauge Wheel Adjustment**” on page 17.
47. Adjust and align coulters to desired tillage depth. “**Coulter Alignment**” on page 17
48. Always lift implement out of the ground when turning at field ends and for other short-radius turns.
49. Both the Auto reset and Rigid shank mounts are protected by shear bolts for extreme overloads. If the shank bolt shears replace the lower bolt with the correct shear bolt, use GP part number 802-060C. (HHCS $\frac{5}{8}$ -11 x 4 Gr5).



⚠ WARNING

High Pressure Fluid Hazard:

Relieve pressure and shut down tractor before connecting, disconnecting or checking hydraulic lines. Use a piece of paper or cardboard, NOT BODY PARTS, to check for leaks. Wear protective gloves and safety glasses or goggles when working with hydraulic systems. 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.



Transporting

See “**Hitching Tractor to Sub-Soiler**” on page 12-13 before transporting the Sub-Soiler.

Check Tractor Capacity and Configuration

- Consult your tractor manual for 3-point limitations.
- Add weights to tractor as required.

When determining the weight of your Sub-Soiler, be sure to include the weight of any options.

Transport Checklist

- ☐ Plan the route. Avoid steep hills. Keep Clearances in mind.
- ☐ Make all electrical connections, See “**Hitching Tractor to Sub-Soiler**” on page 12-13.
- ☐ Raise Sub-Soiler.
- ☐ Always have lights on for highway operation.
- ☐ Comply with all federal, state and local safety laws when traveling on public roads.
- q Travel with caution. Allow safe clearance. Remember that the Sub-Soiler is wider than the tractor.

Parking

Perform the following steps when parking the implement. Refer to “Storage”, page 22, to prepare for long-term storage.

50. Park implement on a level, solid area.
51. Lower implement until shanks are resting on the ground.

Refer to Figure 15

52. Lower and pin parking stands.
53. Unplug light harness lead from tractor receptacle. Do not allow lead to rest on the ground.
54. Unhitch from the tractor 3-point.

WARNING

Loss of Control Hazard:

Use a tractor rated for the load. Add tractor ballast as needed. Do not exceed 20 mph. Towing the Sub-Soiler with a vehicle that is not adequate, or at high speeds, could lead to loss of vehicle control. Loss of vehicle can result in a serious road accident, severe injury or death. Check that your tractor has enough to handle the weight of the Sub-Soiler. Refer to your tractor's operator manual for capacities and ballast requirements.

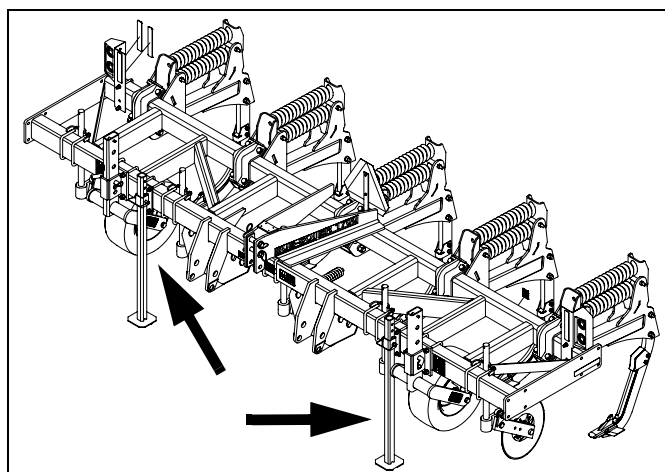
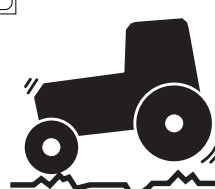


Figure 15
Parking Stands

21604



Troubleshooting

Problem	Cause	Solution
Excessive blowout	Going too fast.	Slow down.
	Ripping too shallow.	Raise guage wheel.
	Coulter not deep enough.	Lower coulter, see “Coulter Height”, page 17.
	Shank not aligned with coulter.	Align shank with trench made by coulter, see ““Coulter Alignment” Alignment”, page 17.



Maintenance and Lubrication

Maintenance

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

Refer to Figure 16

57. After using the implement for several hours, check all bolts to be sure they are tight.
58. After one hour and again after five hours re-torque the Gr. 8 bolts ① and Gr. 8 clamp bolts ② to 400 FT LBS. Re-torque periodically.
59. Lubricate areas listed under "Lubrication", page 23.
60. Inflate tires as specified on "Tire Inflation Chart", page 27.
61. Replace or rotate worn parts as needed -- hinge bolts, clevis pins, bearings, etc.
62. Check and tighten or replace any hydraulic leaks. Check hoses for any leaks. It is important that there are no leaks on the equipment.
63. Grease wheel bearings and walking beams sparingly. Over greasing may cause damage to seals and reduce the life of the bearing. Grease hinge points periodically.

Storage

64. Store implement where children do not play. If possible, store the implement inside for longer life.
65. Remove any dirt and debris that can hold moisture and cause corrosion.
66. Lubricate areas noted under "Lubrication", page 23.
67. Inspect implement for worn or damaged parts. Make repairs and service during the off season.
68. Use spray paint to cover scratches, chips and worn areas on the implement to protect the metal.

By following and maintaining a routine service and lubrication program, your tillage equipment will give you many years of service.

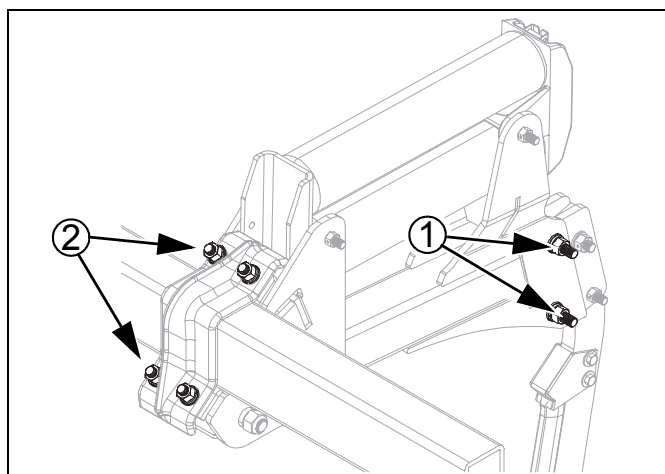


Figure 16
Re-torque Bolts

42793

For the most current manual information, visit Great Plains website listed below. For more information on operating, adjusting or maintaining your Great Plains Discovator, assistance is available.

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

Great Plains Service Department
1525 E. North St.
P.O. Box 5060
Salina, KS 67402-5060

Or go to www.greatplainsag.com and follow the contact information at the bottom of your screen for our service department. **Product Support**
 Great Plains Mfg. Inc., Service Department
(800)255-9215

Lubrication

 Multipurpose spray lube	 Multipurpose grease lube	 Multipurpose oil lube	 50	Intervals (service hours) at which lubrication is required
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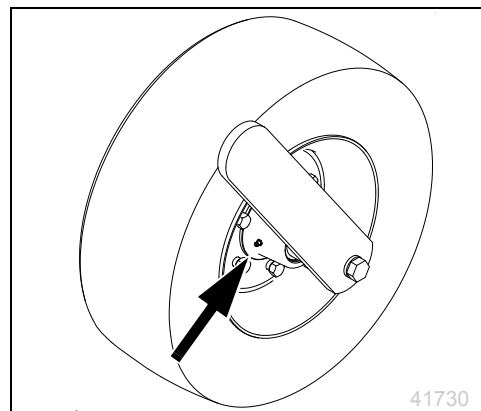
Wheel Bearings

	 Seasonally
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One on each gauge wheel.

Type of Lubrication: Grease

Quantity: Pump grease into bearings until resistance is felt, being careful not to pressurize seal or blow out cap.



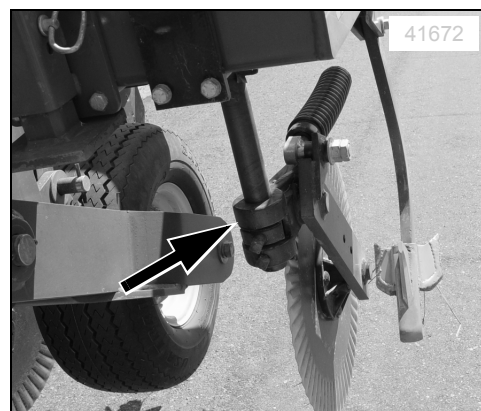
Coulter Swing Arms

	 8
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1 zerk on each hub;

Type of Lubrication: Grease

Quantity: Until grease emerges.



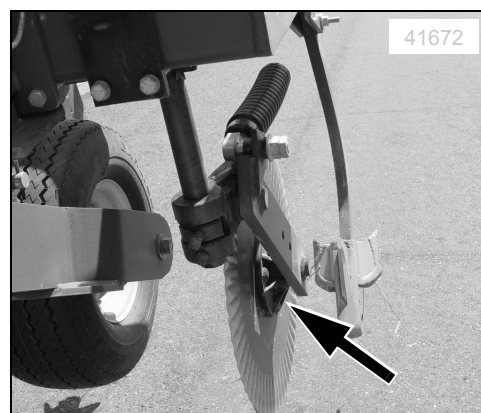
Coulter Hubs

	 Seasonally
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1 zerk on each hub;

Type of Lubrication: Grease

Quantity: Pump grease until resistance is felt, being careful not to pressurize seal or blow out cap.





Appendix

SS1300-SS1700 Specifications and Capacities

Model SS1300						
Shank Spacing	76cm (30")	91cm (36")	97cm (38")	102cm (40")	61cm (24")	76cm (30")
Number of Shanks	3	3	3	3	4	4
Weight (Rigid No-Till Shank)	1061kg (2339lbs)	1061kg (2339lbs)	1061kg (2339lbs)	1061kg (2339lbs)	1143kg (2519lbs)	1143kg (2519lbs)
Weight (Auto ResetShank)	1424kg (3140lbs)	1424kg (3140lbs)	1424kg (3140lbs)	1424kg (3140lbs)	1627kg (3587lbs)	1627kg (3587lbs)
Working Width	229cm (7' 6")	274cm (9' 0")	290cm (9' 6")	305cm (10' 0")	244cm (8' 0")	305cm (10' 0")
Transport Width	339cm (11' 2")	339cm (11' 2")	339cm (11' 2")	339cm (11' 2")	339cm (11' 2")	339cm (11' 2")
Gauge Wheel Tire Size	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY
Number of Gauge Wheels	2	2	2	2	2	2
Horsepower (PTO)	150-240	150-240	150-240	150-240	200-320	200-320
Kilowatt	112-179	112-179	112-179	112-179	150-239	150-239

Model SS1300						
Shank Spacing	91cm (36")	97cm (38")	102cm (40")	76cm (24")	76cm (30")	61cm (24")
Number of Shanks	4	4	4	5	5	6
Weight (Rigid No-Till Shank)	1143kg (2519lbs)	1143kg (2519lbs)	1143kg (2519lbs)	1220kg (2688lbs)	1220kg (2688lbs)	1403kg (3092lbs)
Weight (Auto ResetShank)	1627kg (3587lbs)	1627kg (3587lbs)	1627kg (3587lbs)	1825kg (4023lbs)	1825kg (4023lbs)	2129kg (4694lbs)
Working Width	366cm 12' 0"	386cm (12' 8")	407cm (13' 4")	305cm (10' 0")	381cm (12' 6")	366cm (12' 0")
Transport Width	339cm (11' 2")	339cm (11' 2")	339cm (11' 2")	339cm (11' 2")	339cm (11' 2")	400cm (12' 10")
Gauge Wheel Tire Size	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY
Number of Gauge Wheels	2	2	2	2	2	2
Horsepower (PTO)	200-320	200-320	200-320	250-400	250-400	300-480
Kilowatt	150-239	150-239	150-239	187-299	187-299	224--358

Model SS1300									
Shank Spacing	61cm (24")	61cm (24")							
Number of Shanks	7	8							
Weight (Rigid No-Till Shank)	1538kg (3392lbs)	1714kg (3778lbs)							
Weight (Auto ResetShank)	2364kg (5212lbs)	2683kg (5914lbs)							
Working Width	427cm (14' 0")	488cm (16' 0")							
Transport Width	426cm (14' 0")	500cm (16' 5")							
Gauge Wheel Tire Size	20.5X8 10 PLY	20.5X8 10 PLY							
Number of Gauge Wheels	2	2							
Horsepower (PTO)	350-400	400+							

SS1300-SS1700 Specifications and Capacities

Model SS1700									
Shank Spacing	91cm (36")	5	5	5	5	5	6	6	6
Number of Shanks	5	5	5	5	5	5	6	6	6
Weight (Rigid No-Till Shank)	1327kg (2925lbs)	1327kg (2925lbs)	1327kg (2925lbs)	1327kg (2925lbs)	1327kg (2925lbs)	1327kg (2925lbs)	1406kg (3100lbs)	1406kg (3100lbs)	1406kg (3100lbs)
Weight (Auto ResetShank)	1932kg (4260lbs)	1932kg (4260lbs)	1932kg (4260lbs)	1932kg (4260lbs)	1932kg (4260lbs)	1932kg (4260lbs)	2133kg (4702lbs)	2133kg (4702lbs)	2133kg (4702lbs)
Working Width	457cm (15' 0")	483cm (15' 9")	483cm (15' 9")	483cm (15' 9")	483cm (15' 9")	483cm (15' 9")	549cm (18' 0")	549cm (18' 0")	579cm (19' 0")
Transport Width	443cm (14' 4")	443cm (14' 4")	443cm (14' 4")	443cm (14' 4")	443cm (14' 4")	443cm (14' 4")	543cm (17' 10")	543cm (17' 10")	543cm (17' 10")
Gauge Wheel Tire Size	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY
Number of Gauge Wheels	2	2	2	2	2	2	2	2	2
Horsepower (PTO)	250-400	250-400	250-400	250-400	250-400	250-400	300-480	300-480	300-480
Kilowatt	187-299	187-299	187-299	187-299	187-299	187-299	224--358	224--358	224--358

Model SS1700									
Shank Spacing	102cm (40")	6	6	6	6	6	6	6	6
Number of Shanks	6	6	6	6	6	6	6	6	6
Weight (Rigid No-Till Shank)	1406kg (3100lbs)	1406kg (3100lbs)	1406kg (3100lbs)	1406kg (3100lbs)	1406kg (3100lbs)	1406kg (3100lbs)	1627kg (3588lbs)	1627kg (3588lbs)	1627kg (3588lbs)
Weight (Auto ResetShank)	2133kg (4702lbs)	2133kg (4702lbs)	2133kg (4702lbs)	2133kg (4702lbs)	2133kg (4702lbs)	2133kg (4702lbs)	2420kg (5336lbs)	2420kg (5336lbs)	2420kg (5336lbs)
Working Width	610cm (20' 0")	610cm (20' 0")	610cm (20' 0")	610cm (20' 0")	610cm (20' 0")	610cm (20' 0")	711cm (23' 4")	711cm (23' 4")	711cm (23' 4")
Transport Width	594cm (19' 6")	594cm (19' 6")	594cm (19' 6")	594cm (19' 6")	594cm (19' 6")	594cm (19' 6")	645cm (21' 2")	645cm (21' 2")	645cm (21' 2")
Gauge Wheel Tire Size	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY
Number of Gauge Wheels	2	2	2	2	2	2	2	2	2
Horsepower (PTO)	300-480	300-480	300-480	300-480	300-480	300-480	350+	350+	350+
Kilowatt	224--358	224--358	224--358	224--358	224--358	224--358	261+	261+	261+

Model SS1700									
Shank Spacing	61cm (24")	8	8	8	8	8	8	8	8
Number of Shanks	8	8	8	8	8	8	8	8	8
Weight (Rigid No-Till Shank)	1743kg (3842lbs)	1743kg (3842lbs)	1743kg (3842lbs)	1743kg (3842lbs)	1743kg (3842lbs)	1743kg (3842lbs)	1882kg (4148lbs)	1882kg (4148lbs)	1882kg (4148lbs)
Weight (Auto ResetShank)	2712kg (5979lbs)	2712kg (5979lbs)	2712kg (5979lbs)	2712kg (5979lbs)	2712kg (5979lbs)	2712kg (5979lbs)	2907kg (6408lbs)	2907kg (6408lbs)	2907kg (6408lbs)
Working Width	488cm (16' 0")	488cm (16' 0")	488cm (16' 0")	488cm (16' 0")	488cm (16' 0")	488cm (16' 0")	549cm (18' 0")	549cm (18' 0")	549cm (18' 0")
Transport Width	488cm (16' 0")	488cm (16' 0")	488cm (16' 0")	488cm (16' 0")	488cm (16' 0")	488cm (16' 0")	513cm (16' 10")	513cm (16' 10")	513cm (16' 10")
Gauge Wheel Tire Size	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY	20.5X8 10 PLY
Number of Gauge Wheels	2	2	2	2	2	2	2	2	2
Horsepower (PTO)	400+	400+	400+	400+	400+	400+	450+	450+	450+
Kilowatt	298+	298+	298+	298+	298+	298+	336+	336+	336+

Tire Inflation Chart

Tire Inflation Chart		
Wheel	Tire Size	Inflation
Gauge Wheel	20.5x8.0 10-ply LRE	90 psi 621 kPa

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

Torque Values Chart

Bolt Size in-tpi ^a	Bolt Head Identification					
						
	Grade 2	Grade 5	Grade 8			
	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					
						
	Class 5.8	Class 8.8	Class 10.9			
	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

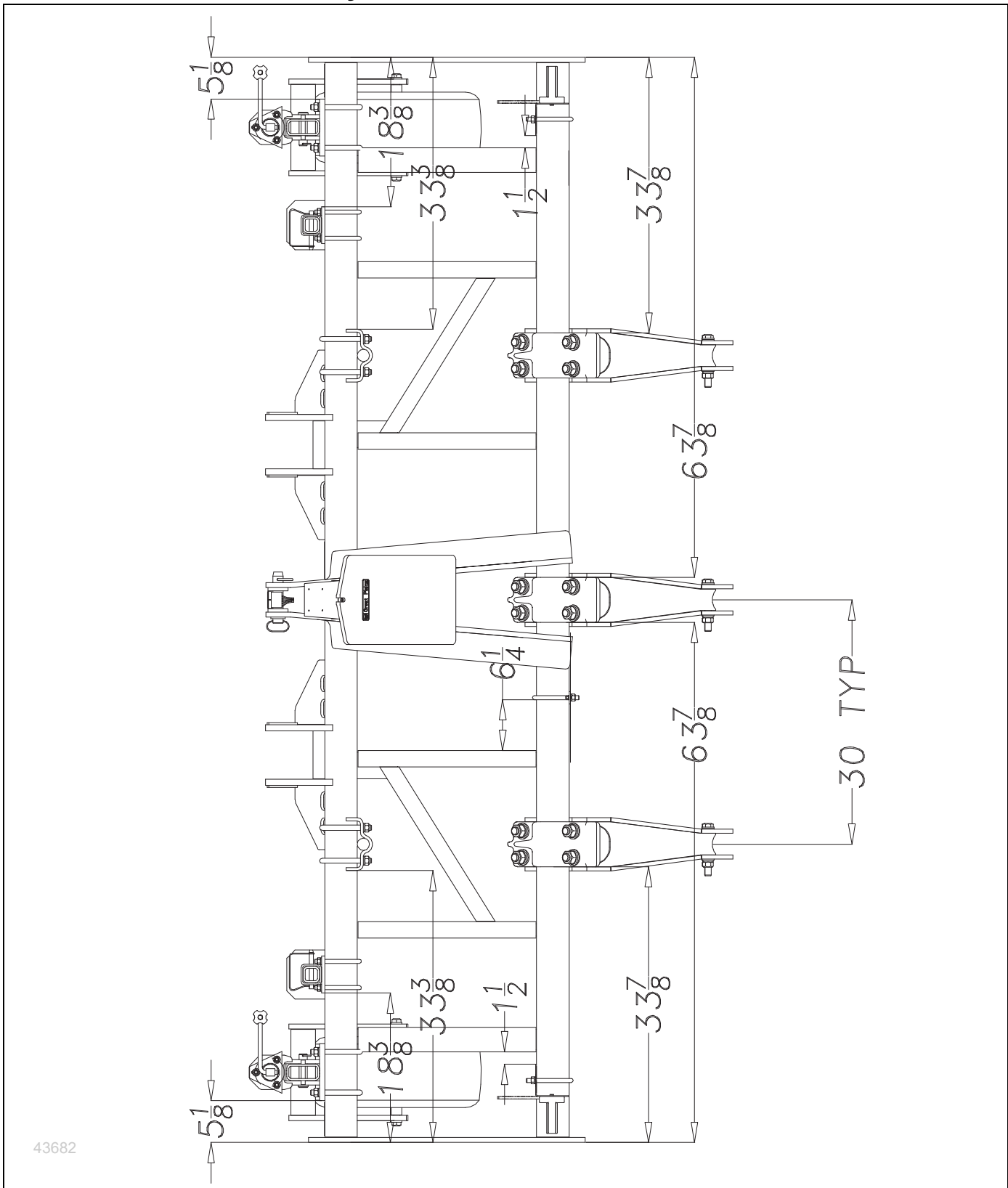
d. ft-lb = foot pounds

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

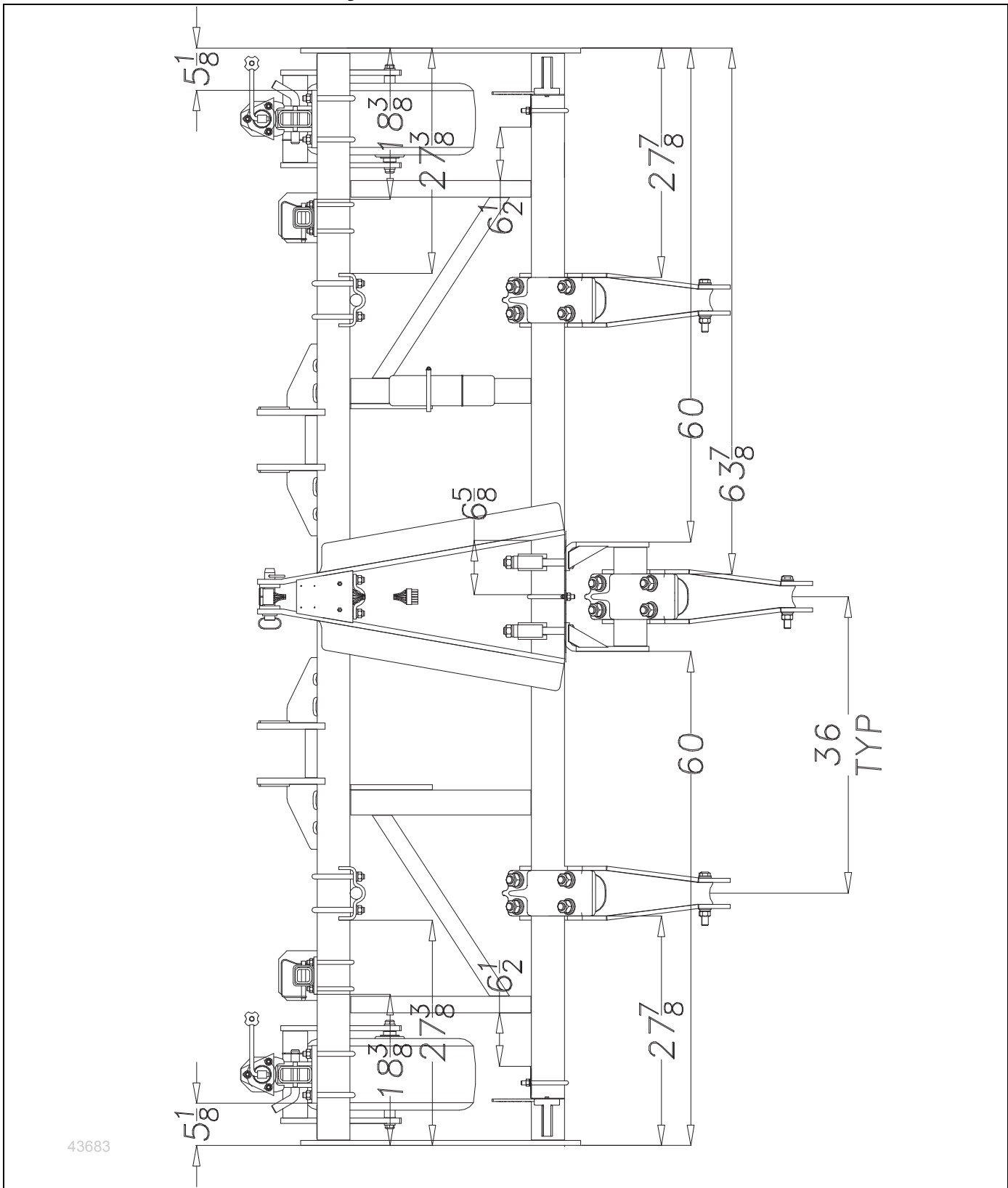
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Torque Values Chart	
Wheel Bolt Torque Values	1/2" - 20 (75-85ft-lbs)
Wheel Bolt Torque Values	5/16" - 18 (80-90ft-lbs)
Wheel Bolt Torque Values	5/8" - 18 (85-95ft-lbs)

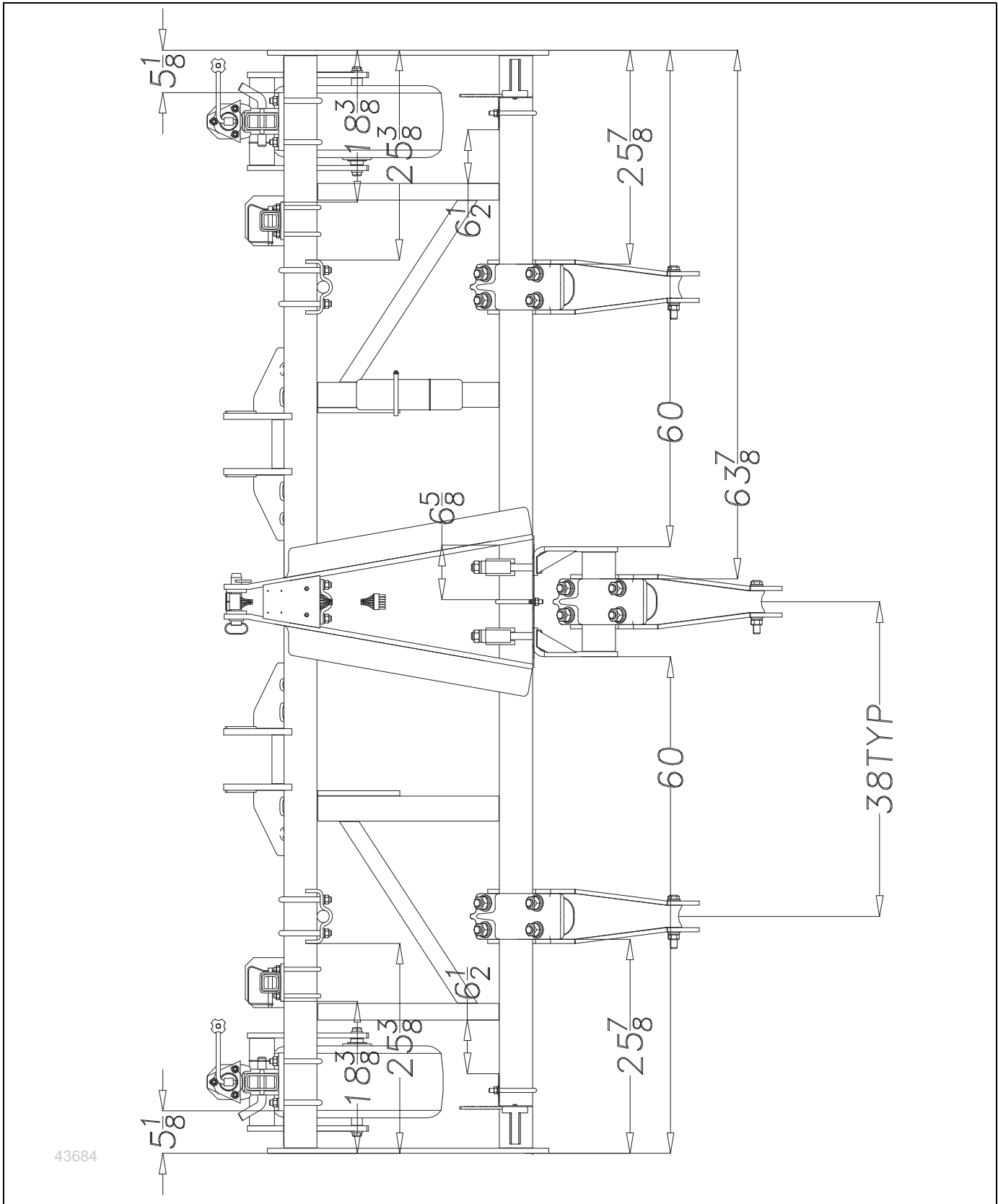
SS1300-03-30" Machine Layout



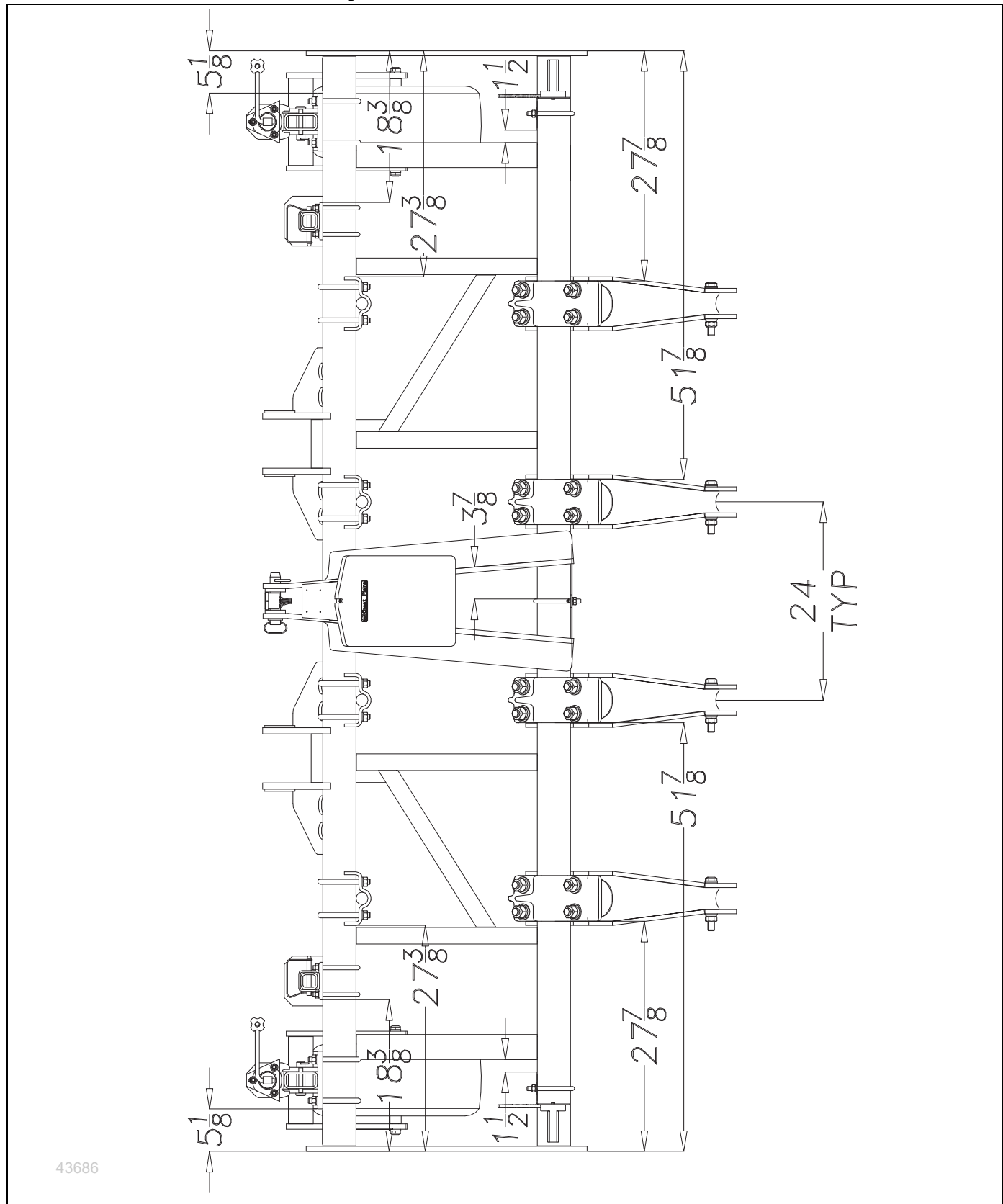
SS1310-03-36" Machine Layout



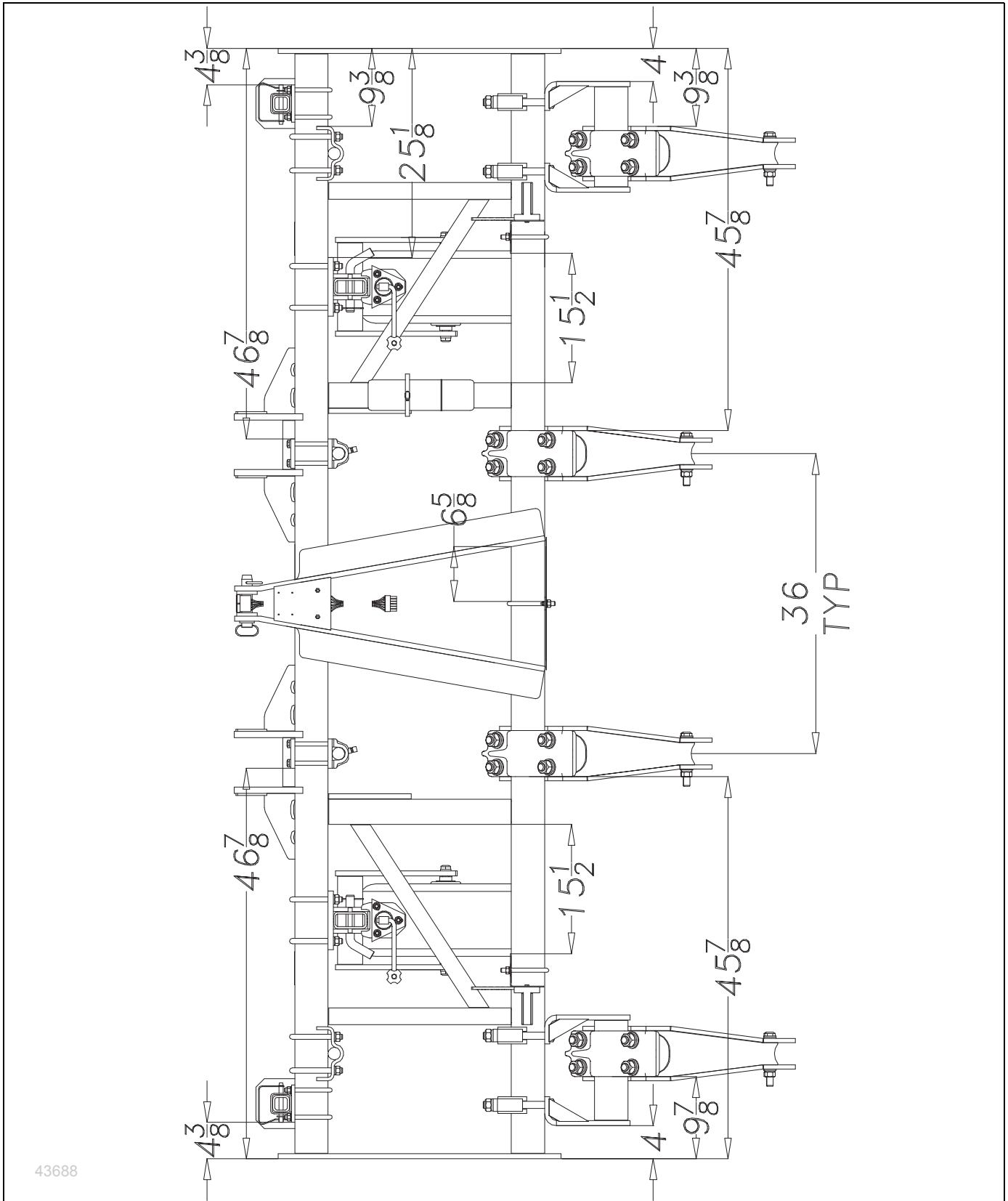
SS1310-03-38" Machine Layout



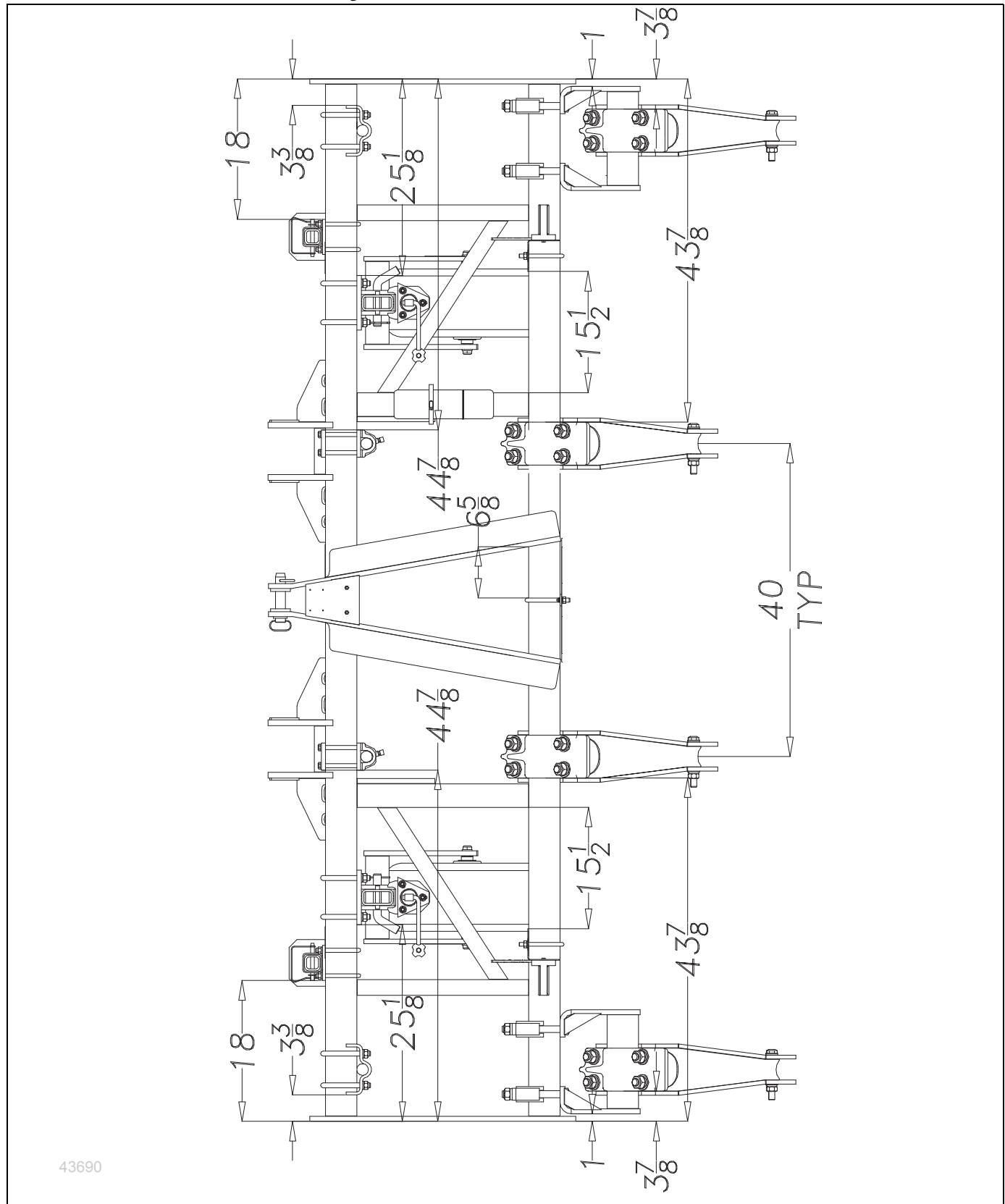
SS1300-04-24" Machine Layout



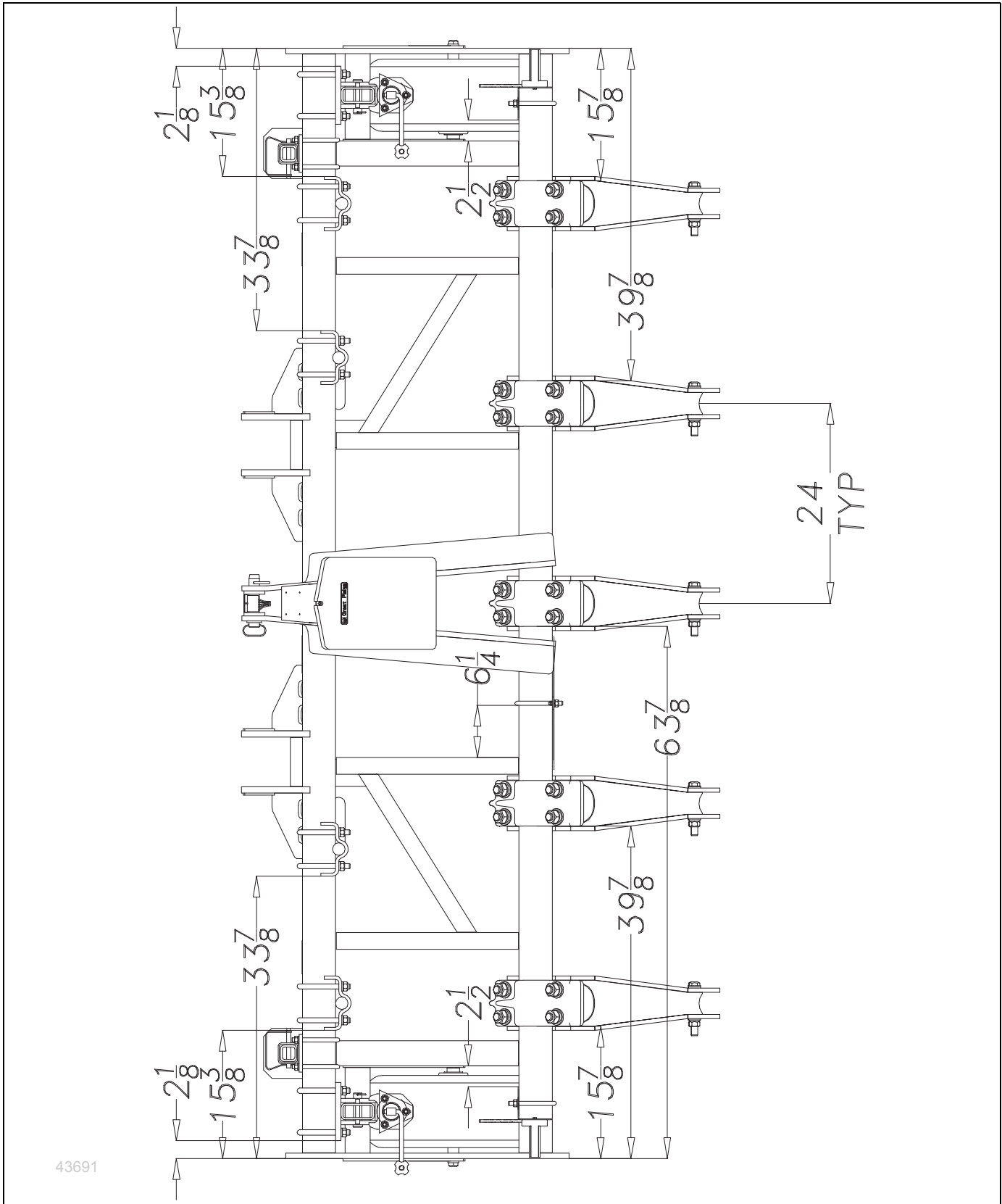
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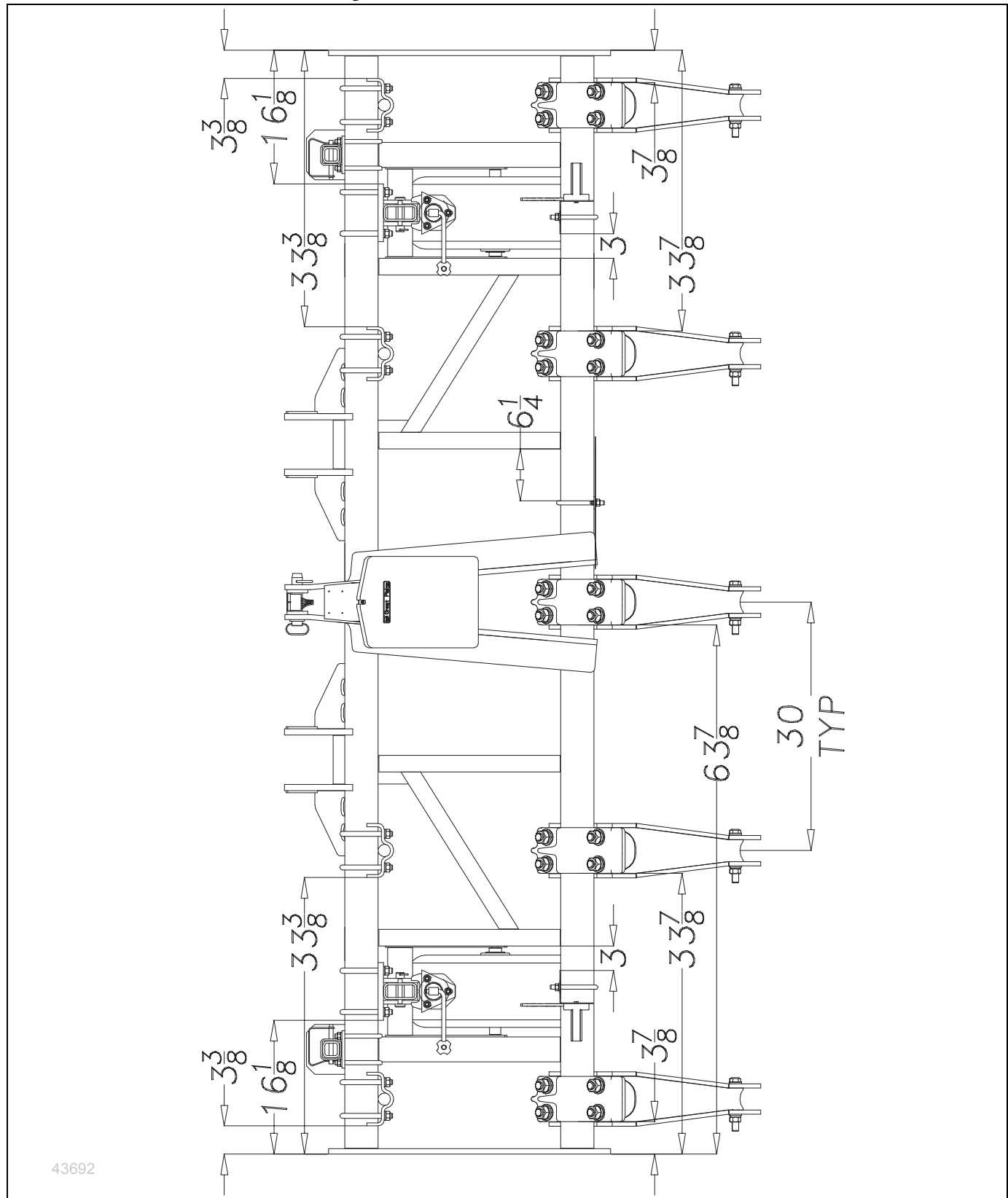
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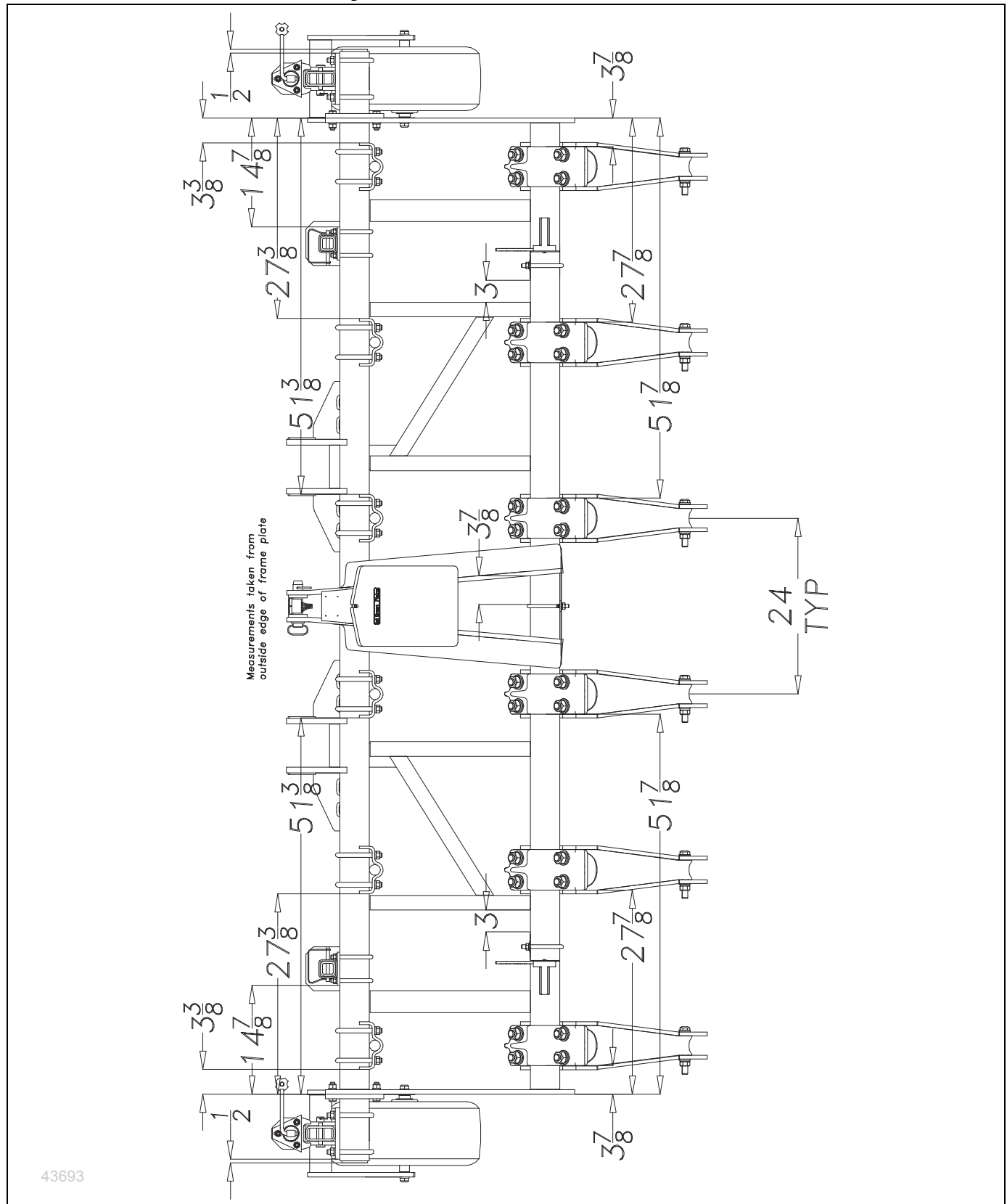
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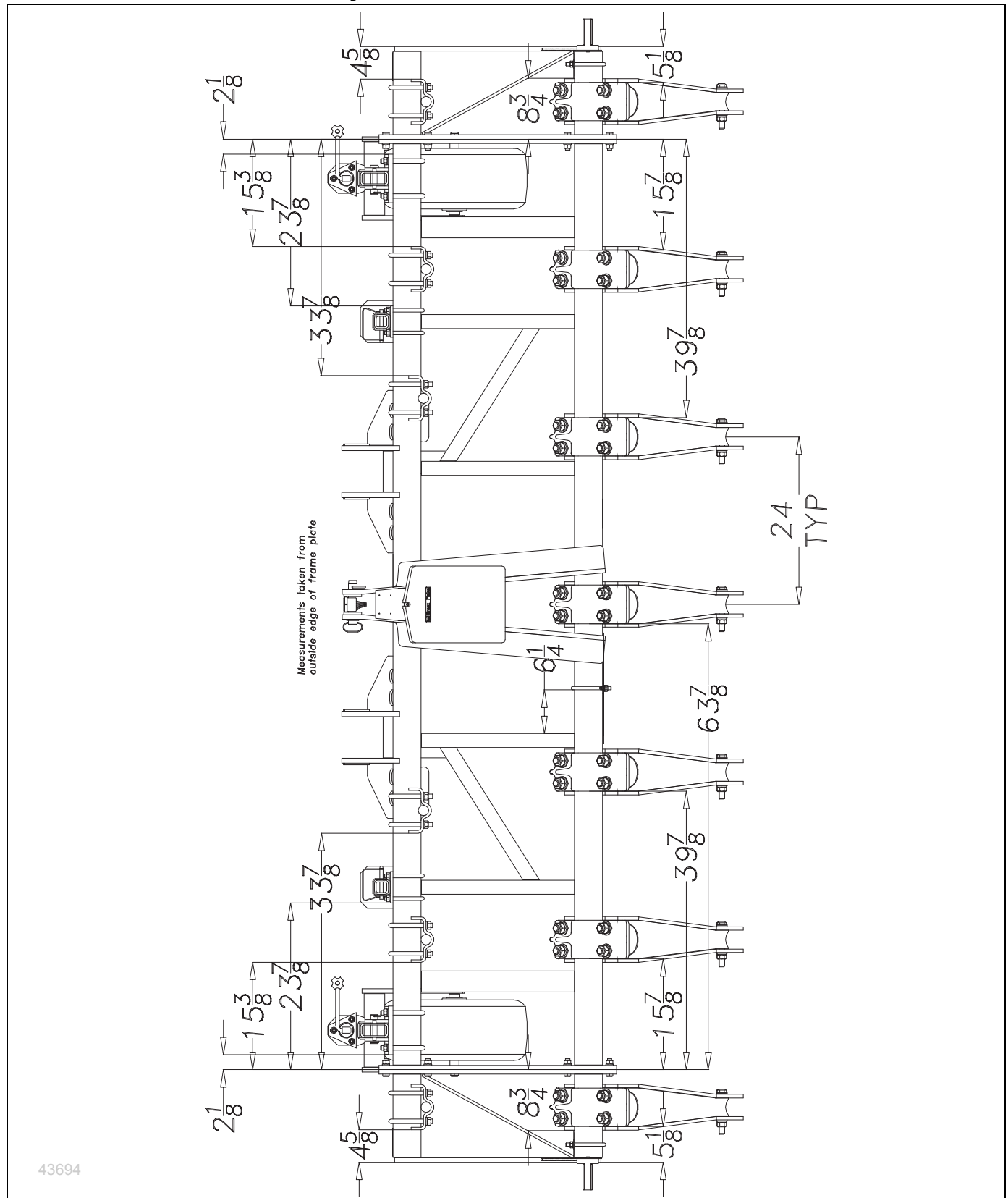
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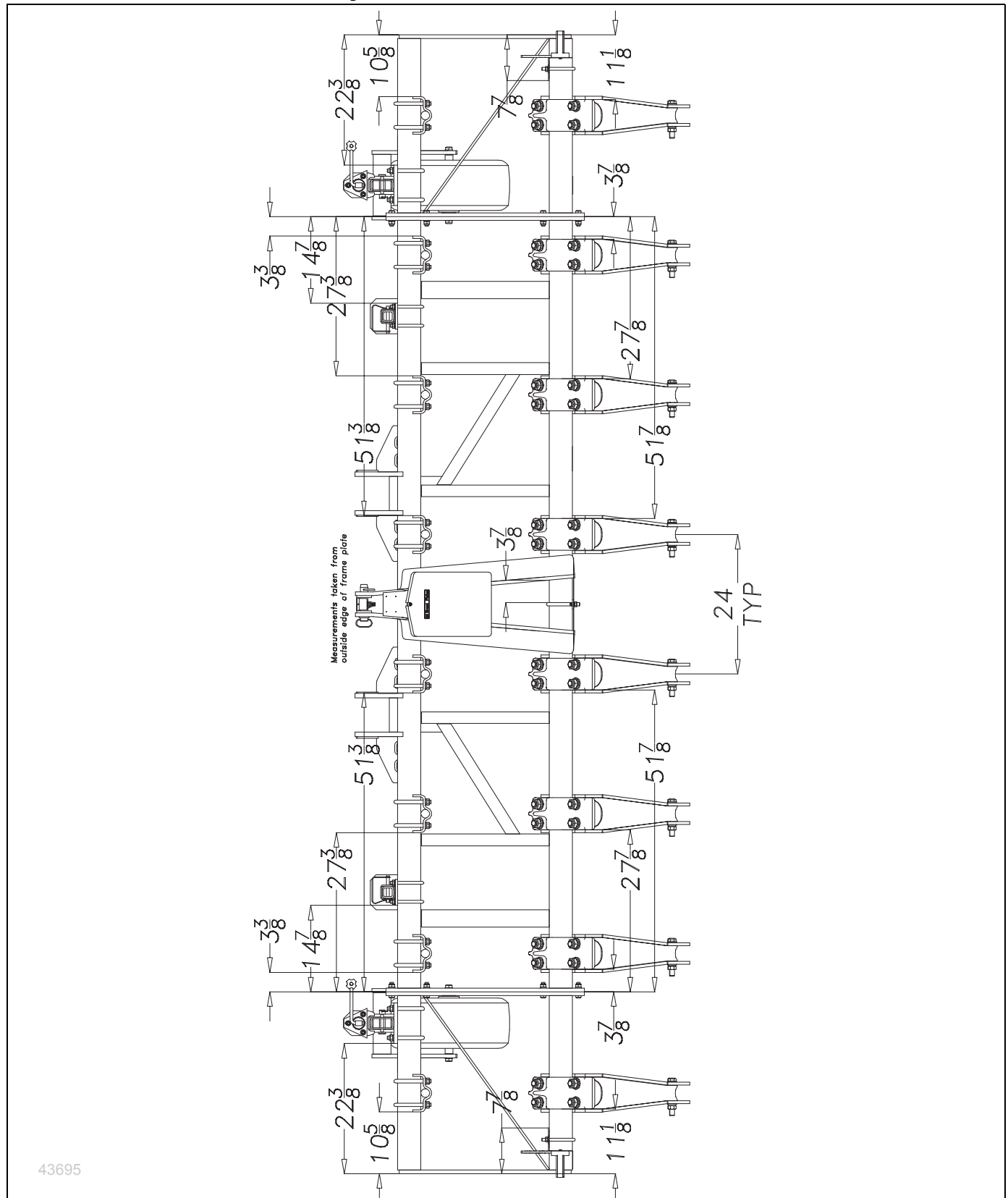
SS1300-06-24" Machine Layout



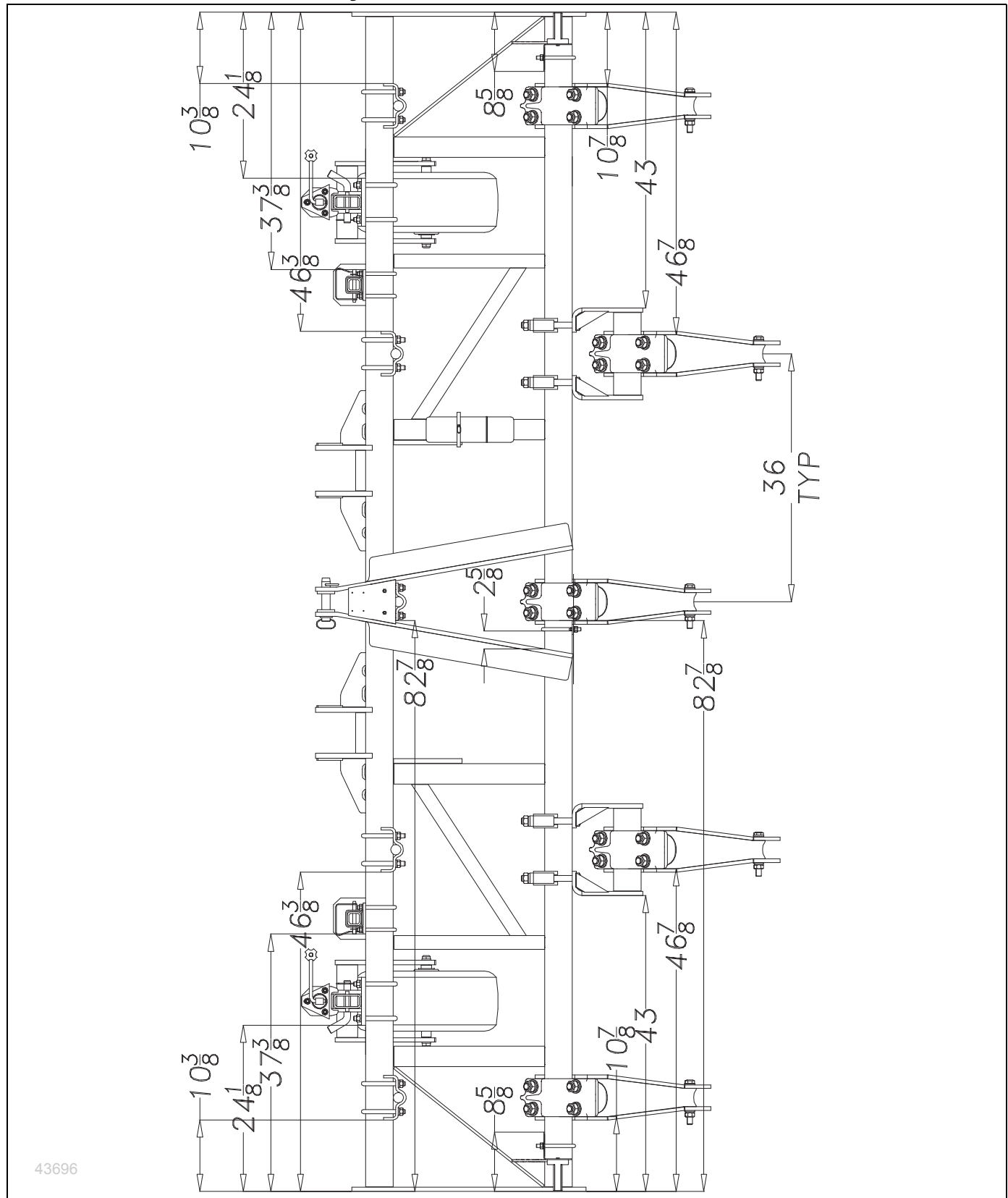
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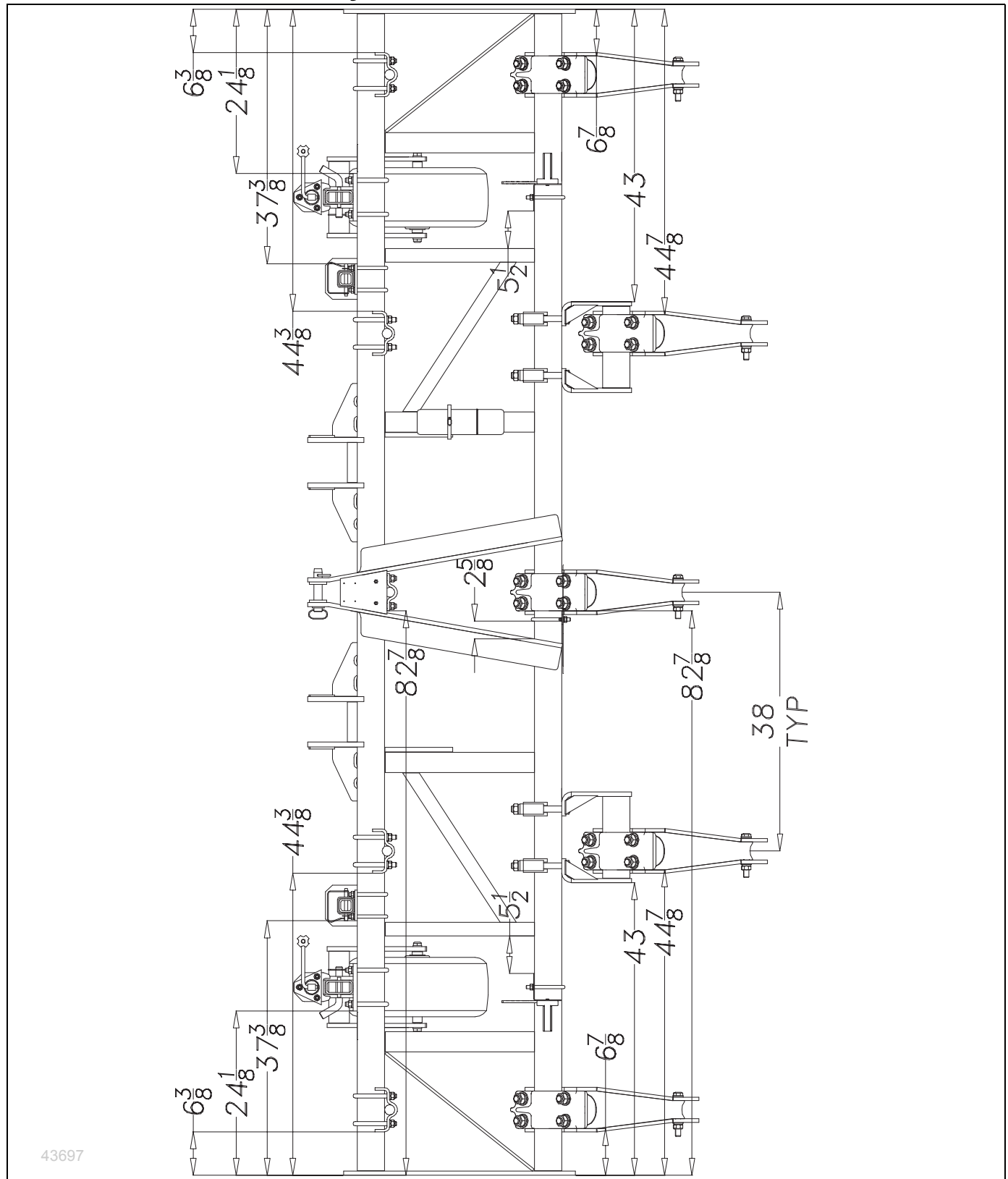
SS1300-08-24" Machine Layout



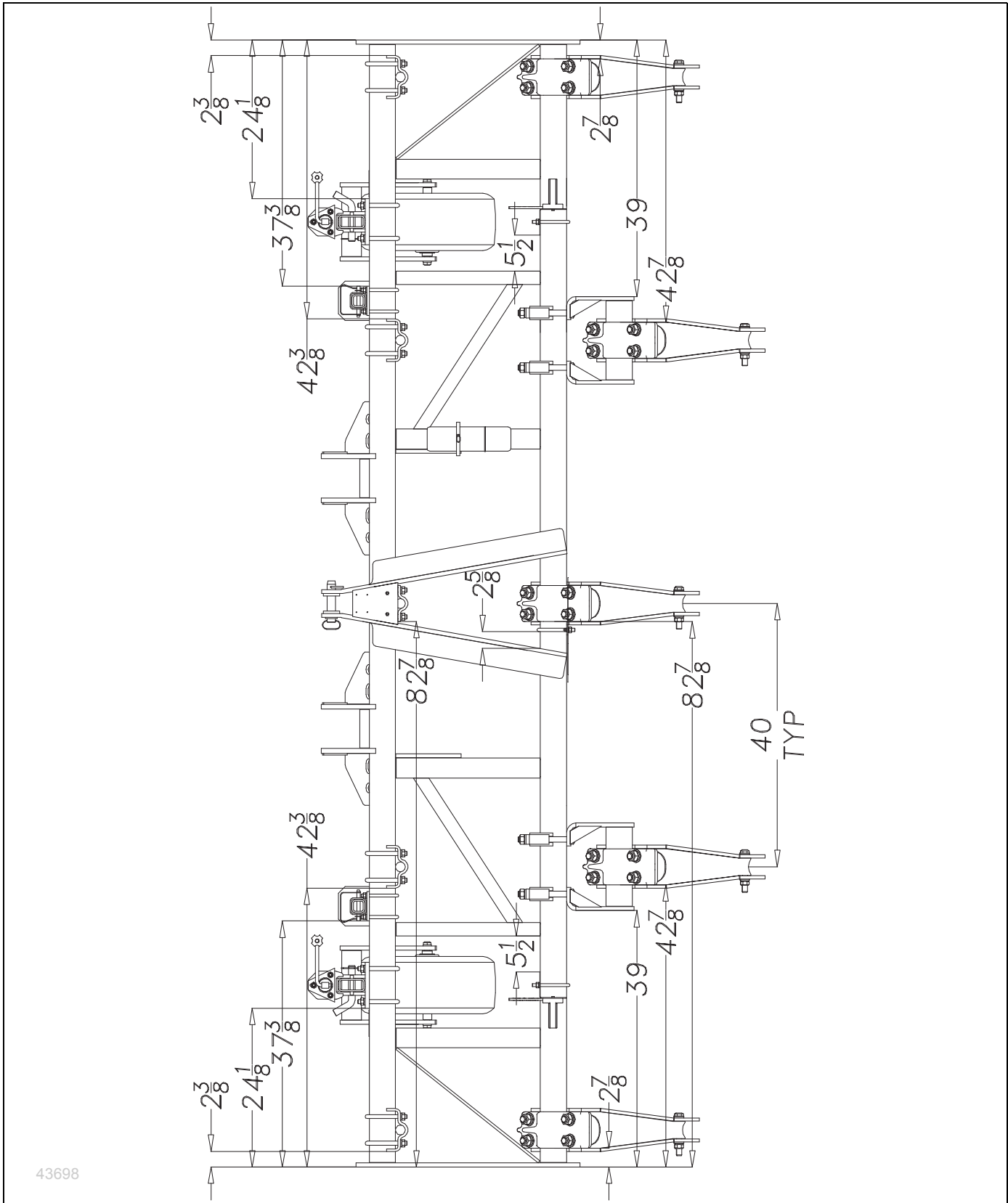
SS1710-05-36" Machine Layout



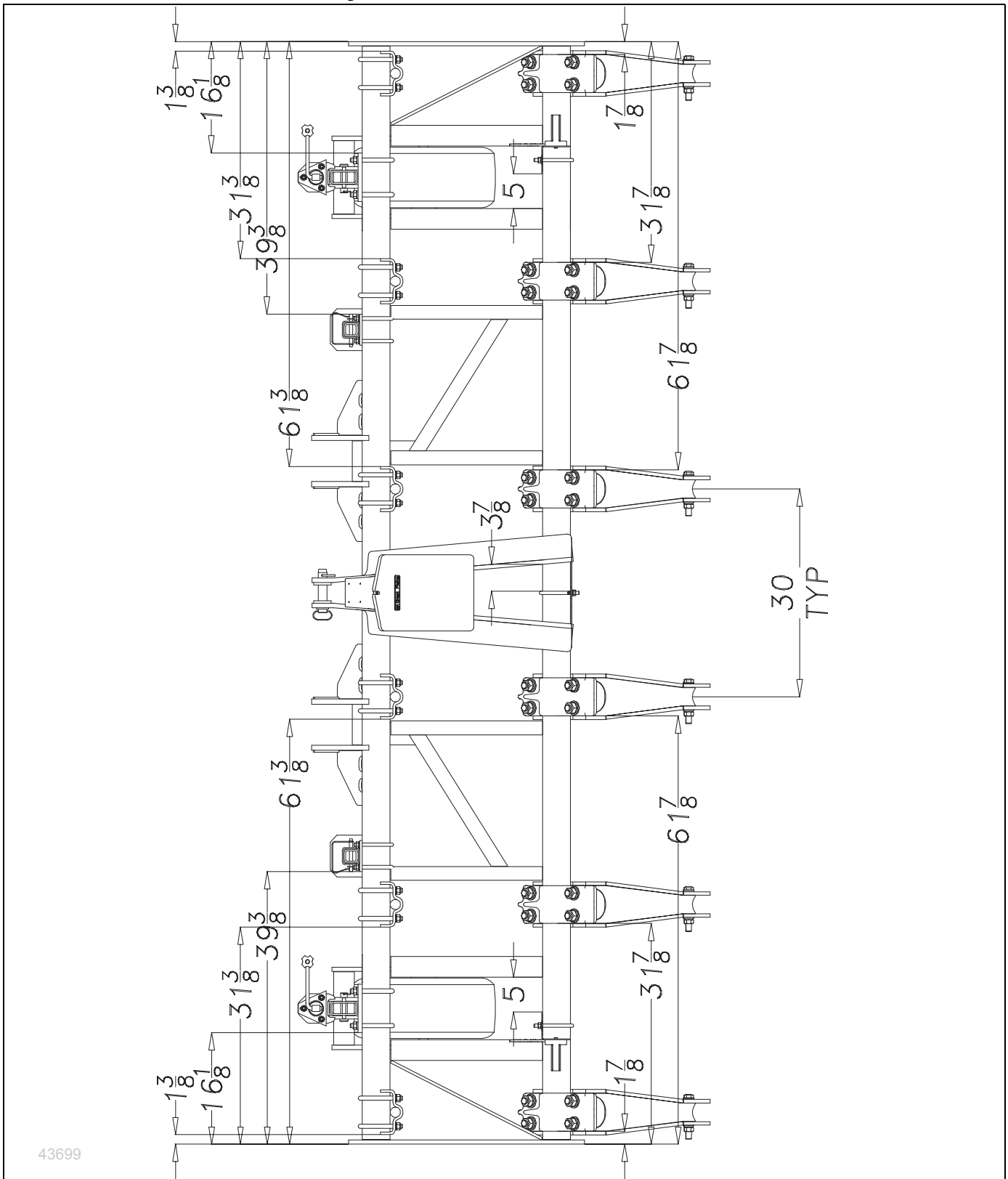
SS1710-05-38" Machine Layout



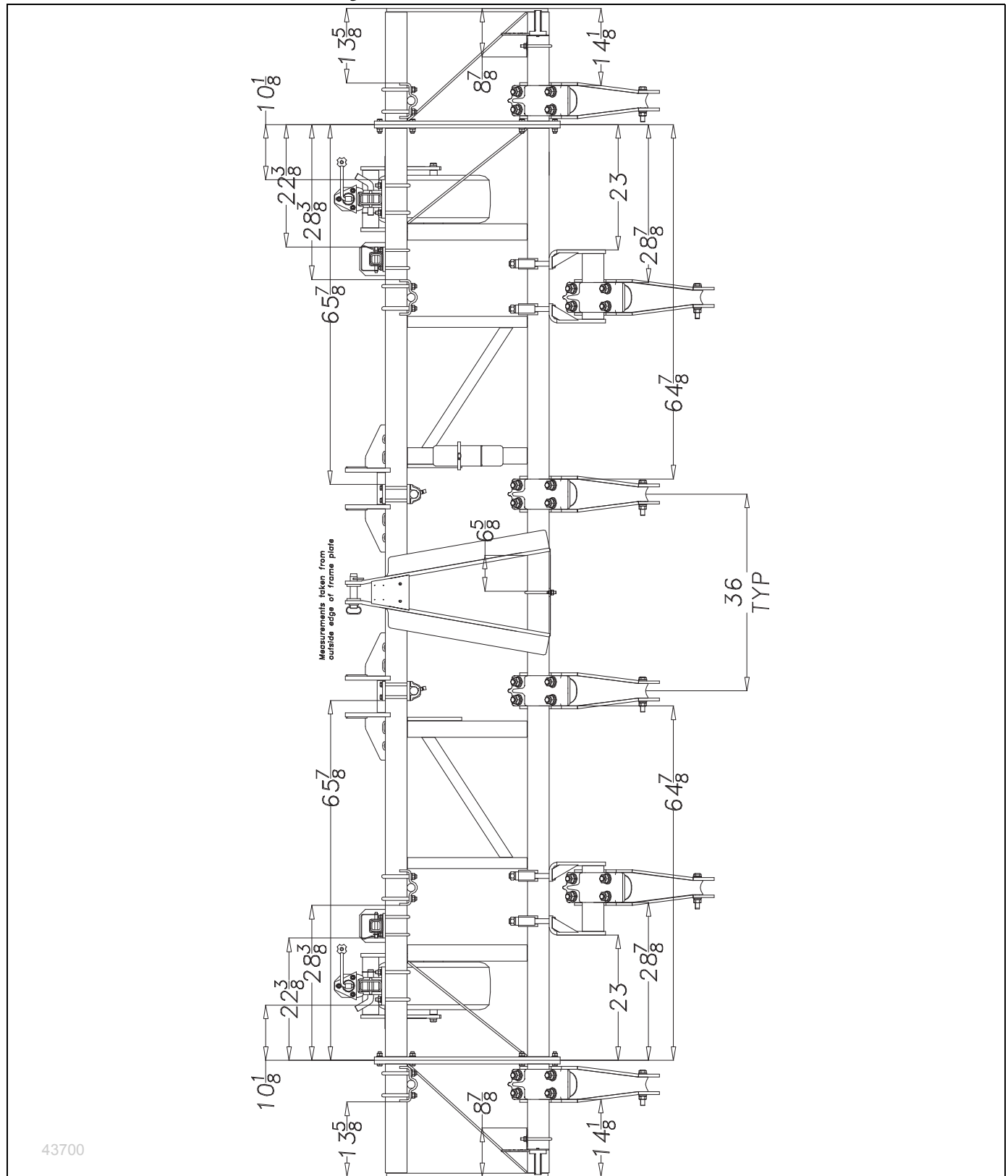
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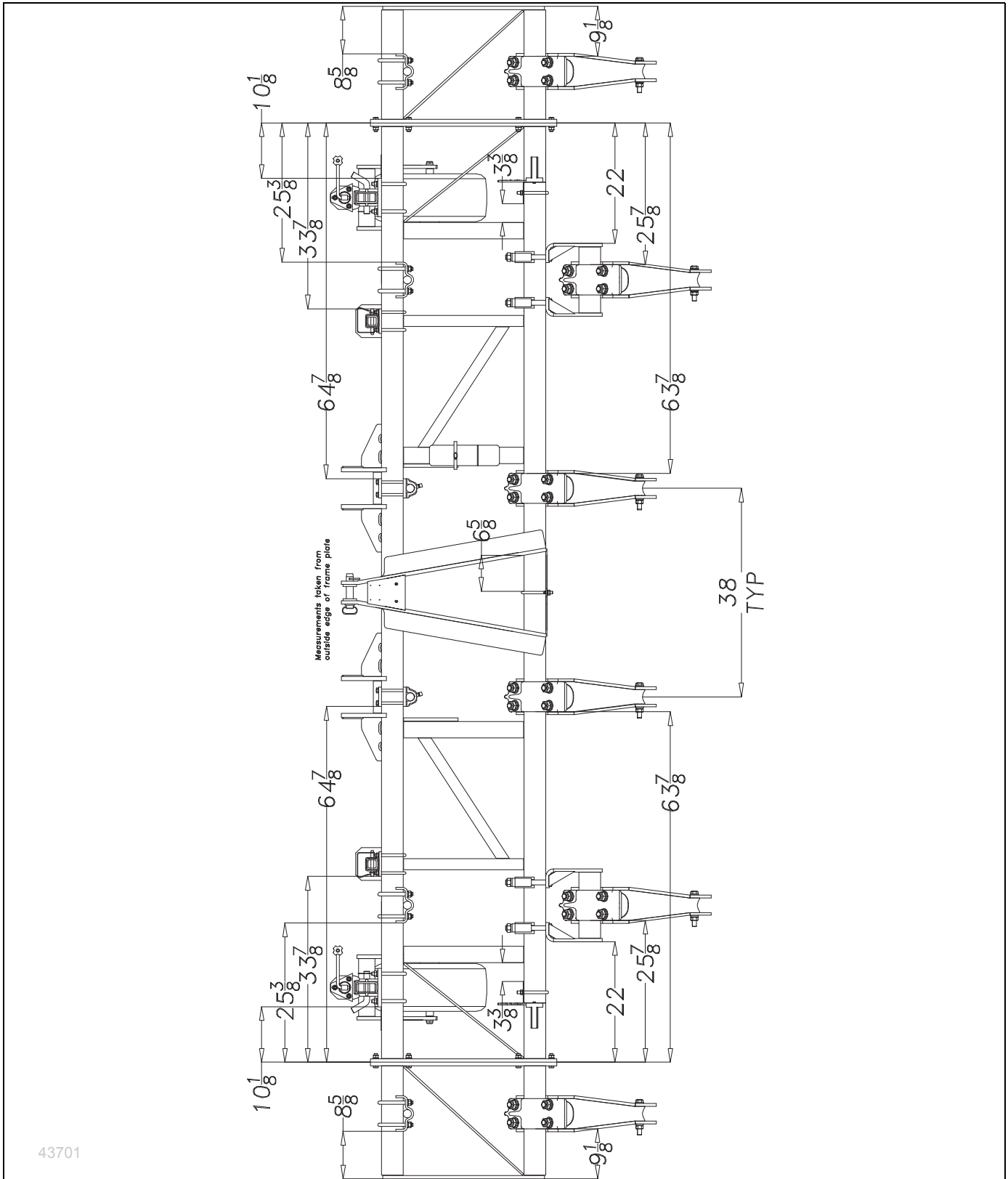
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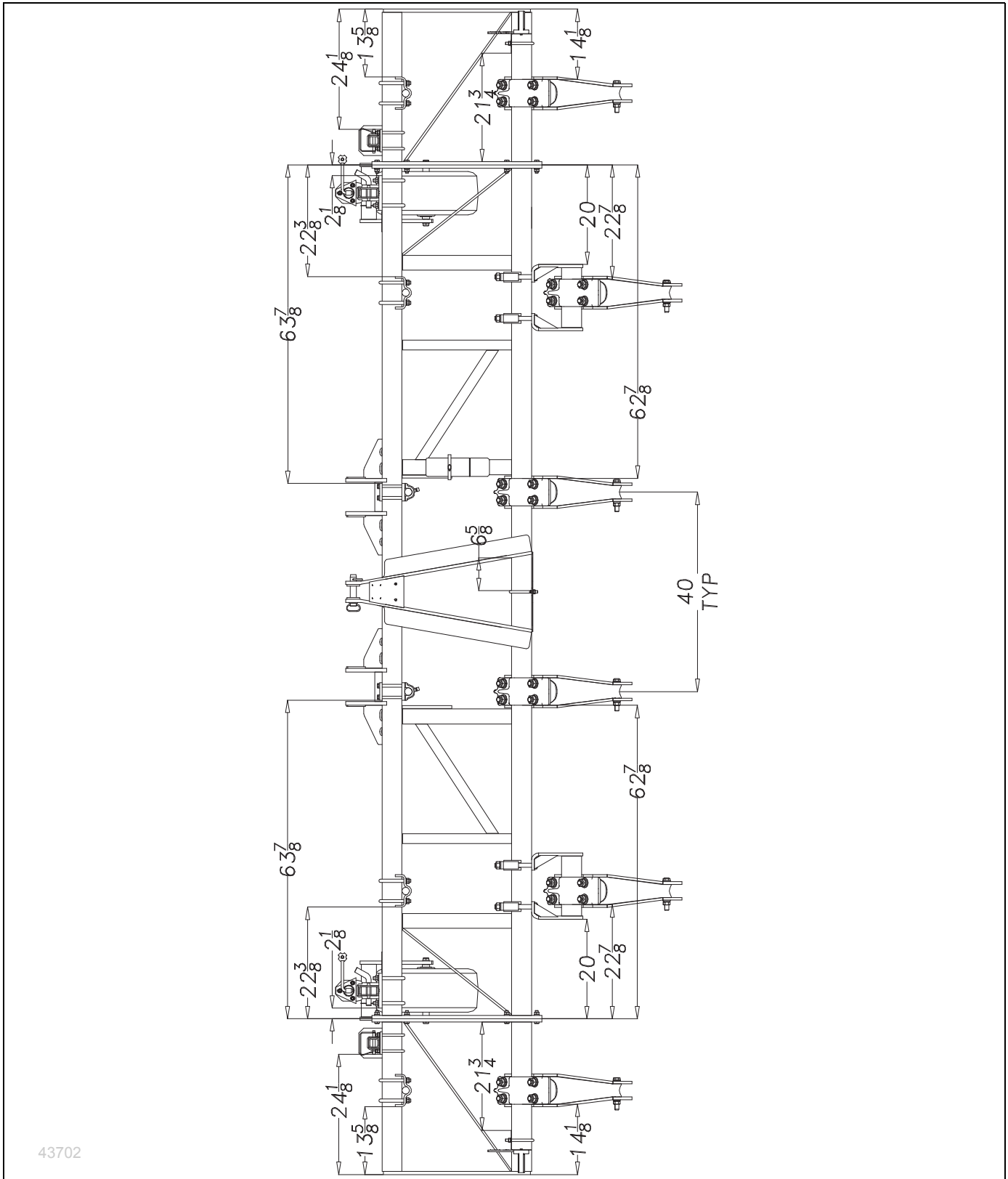
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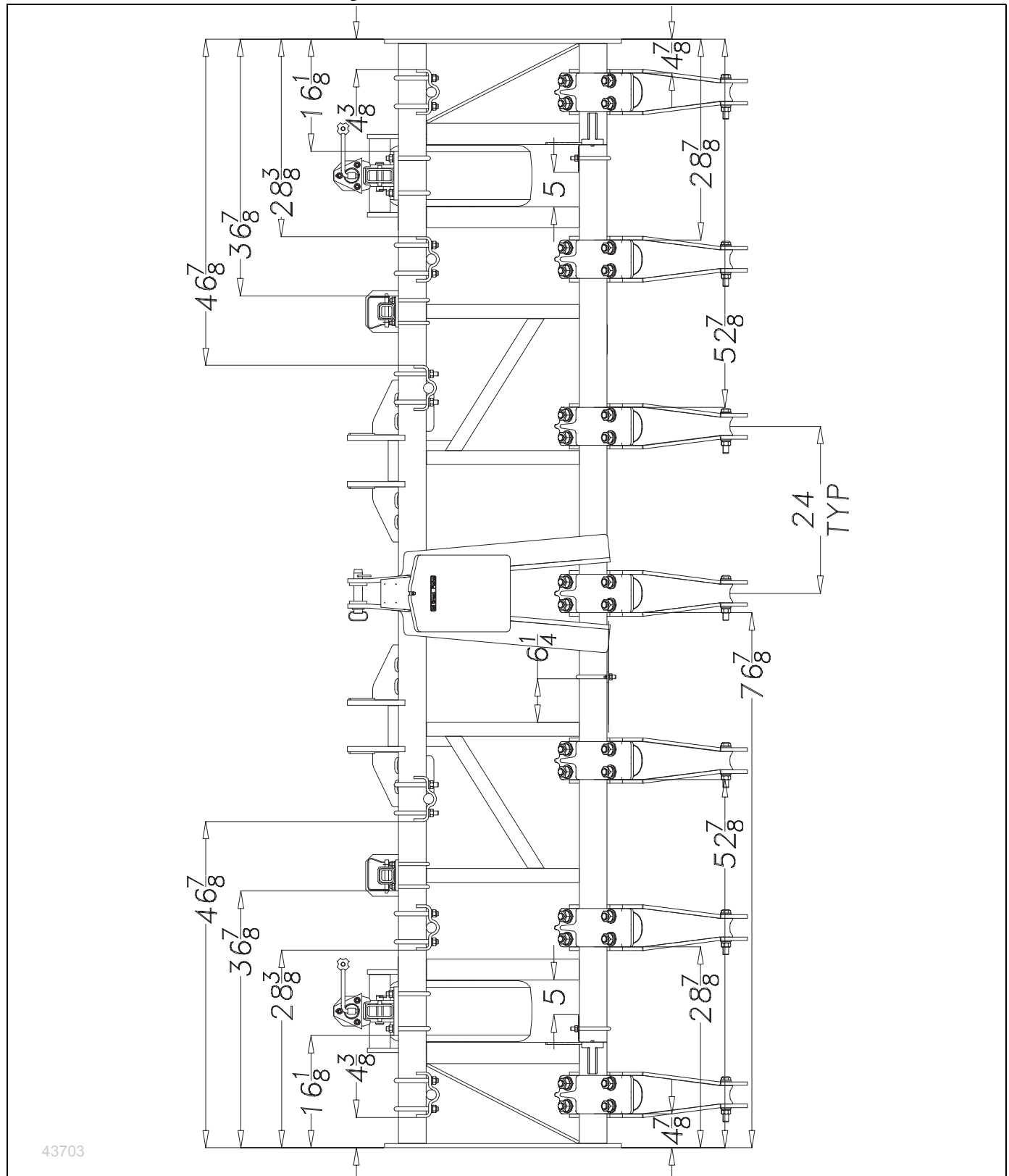
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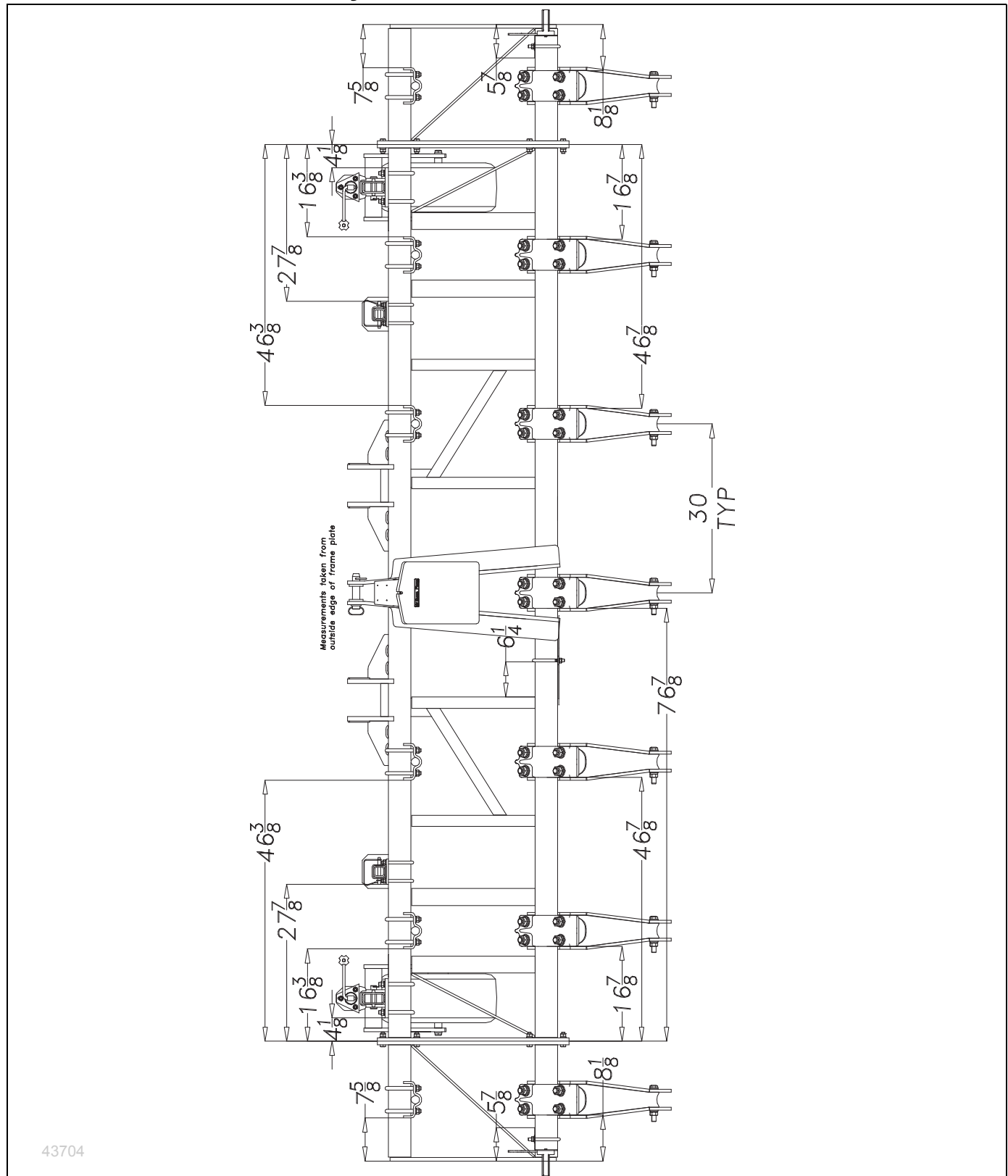
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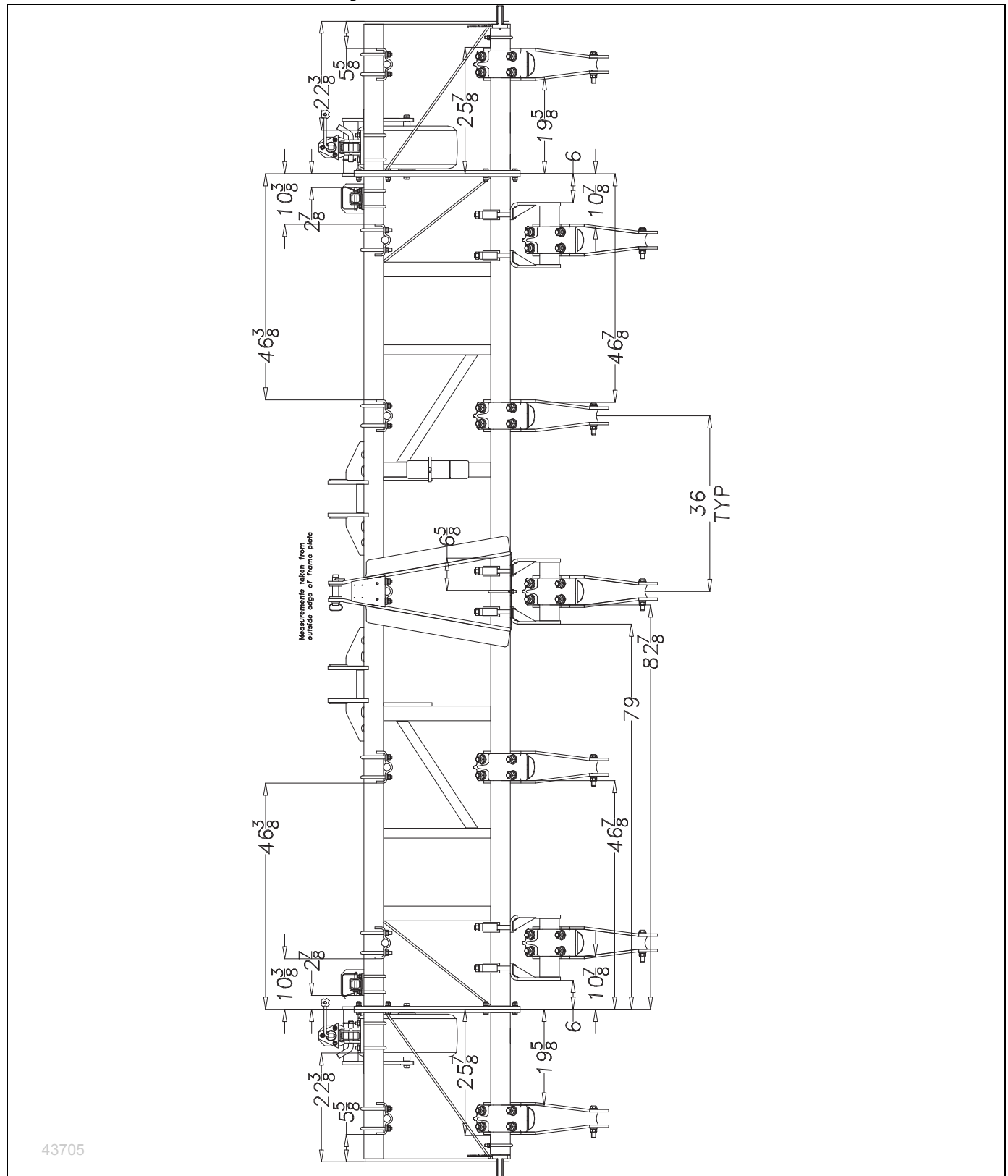
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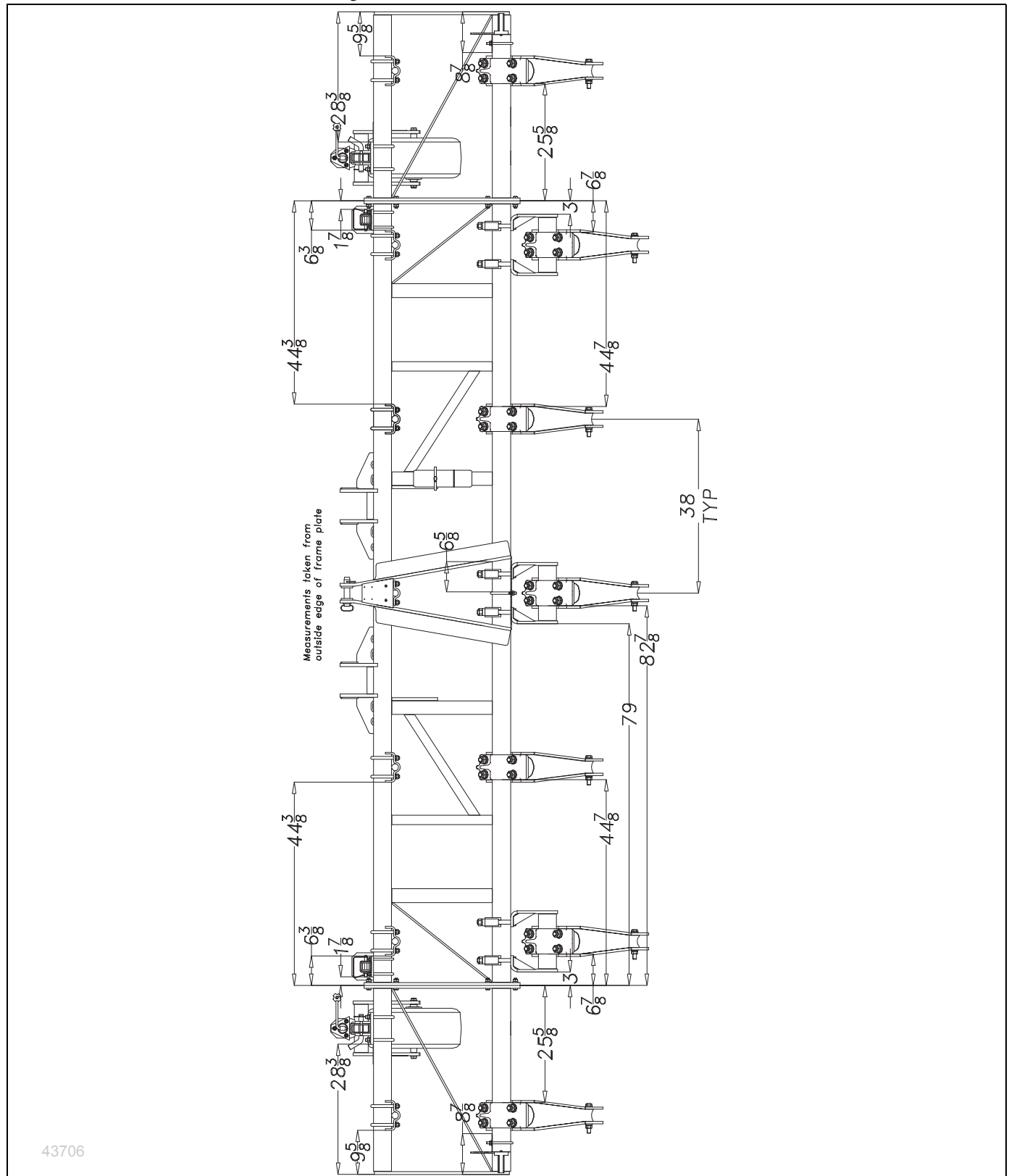
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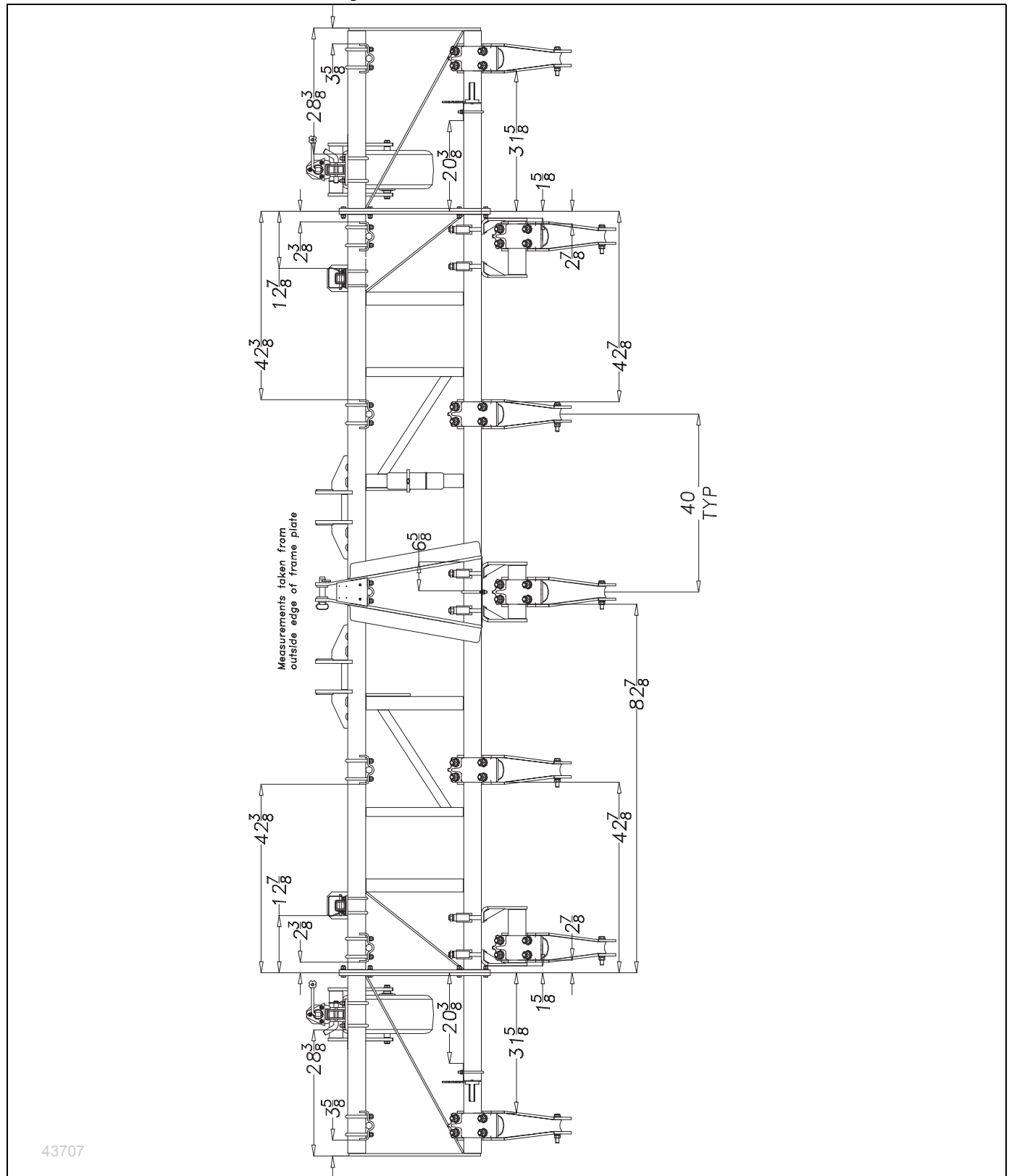
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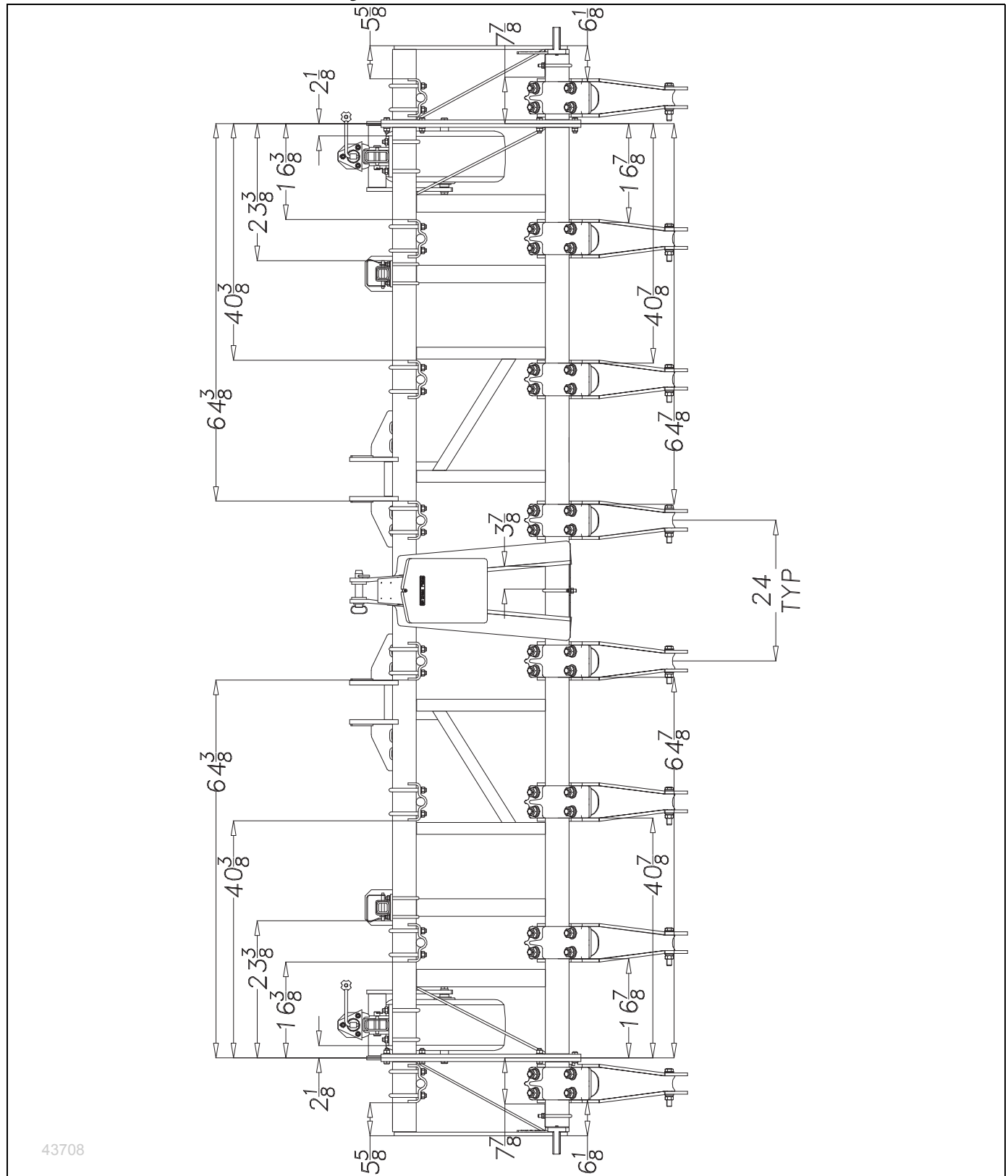
SS1710-07-38" Machine Layout



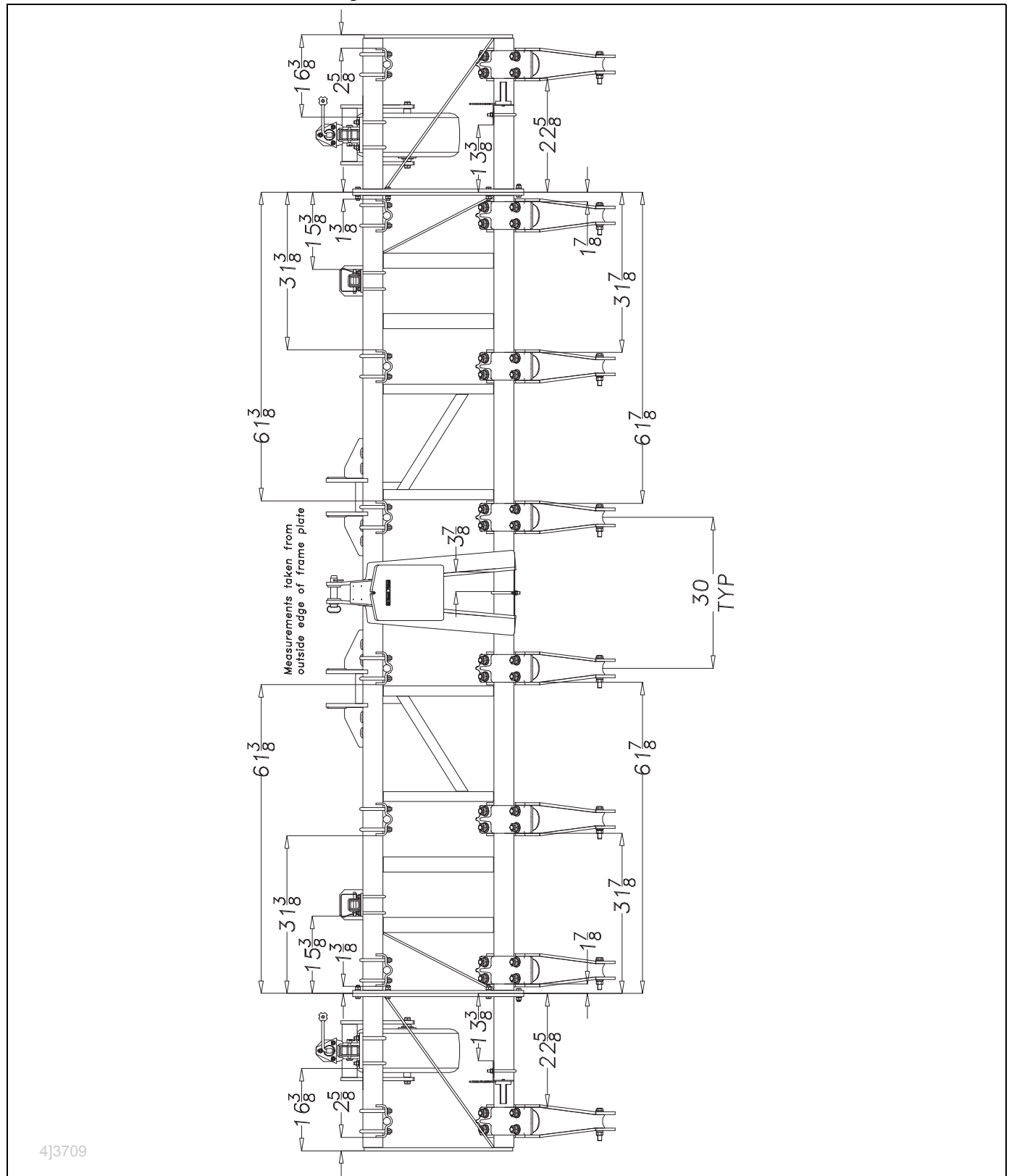
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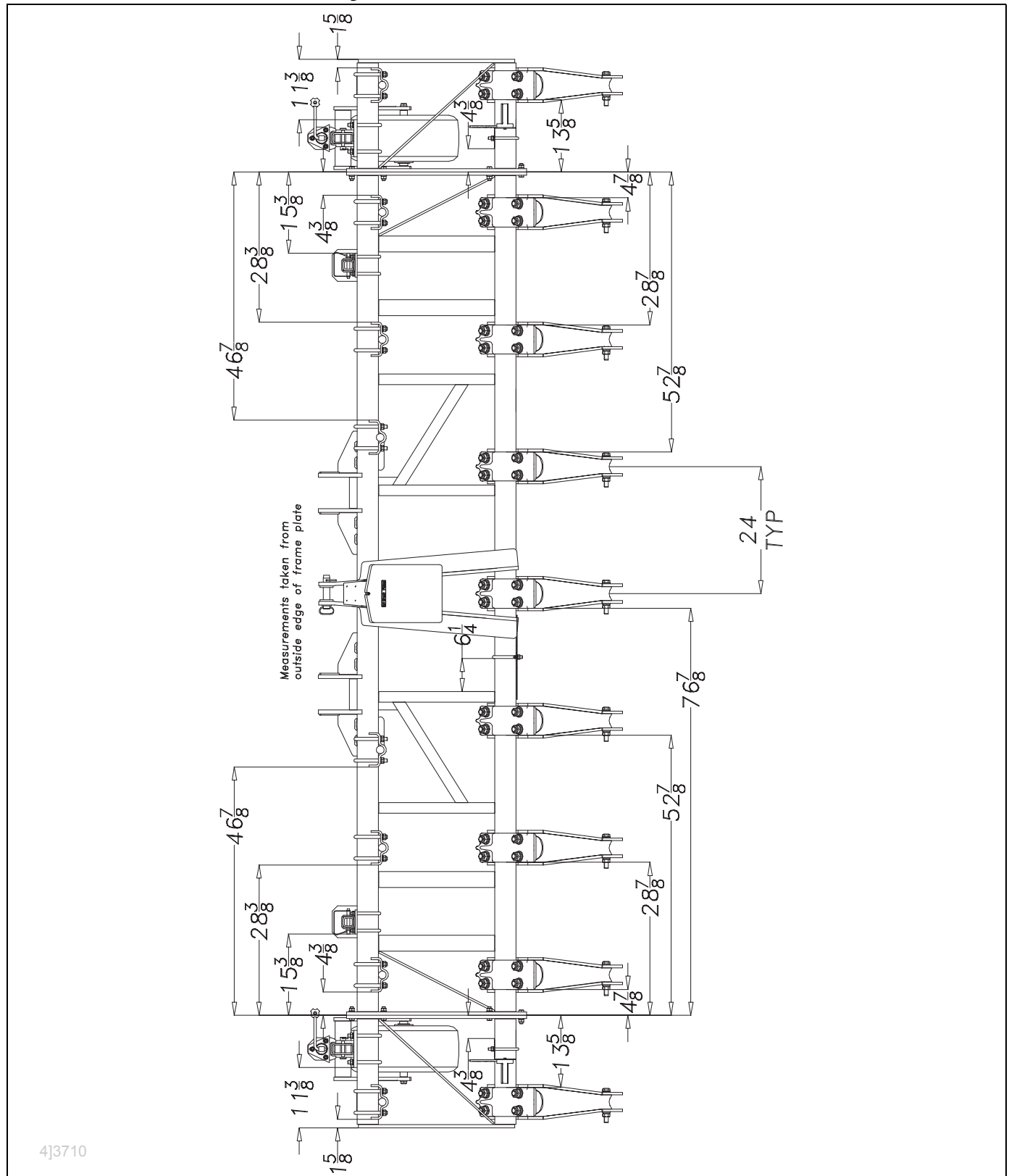
SS1700-08-24" Machine Layout



SS1700-08-30" Machine Layout



SS1700-09-24" Machine Layout



Warranty

Great Plains Manufacturing, Incorporated warrants to the original purchaser that this tillage equipment will be free from defects in material and workmanship for a period of one year from the date of original purchase when used as intended and under normal service and conditions for personal use; 90 days for commercial or rental purposes. This Warranty is limited to the replacement of any defective part by Great Plains Manufacturing, Incorporated and the installation by the dealer of any such replacement part. Great Plains reserves the right to inspect any equipment or part which are claimed to have been defective in material or workmanship.

This Warranty does not apply to any part or product which in Great Plains' judgement shall have been misused or damaged by accident or lack of normal maintenance or care, or which has been repaired or altered in a way which adversely affects its performance or reliability, or which has been used for a purpose for which the product is not designed. This Warranty shall not apply if the product is towed at a speed in excess of 20 miles per hour.

Claims under this Warranty must be made to the dealer which originally sold the product and all warranty adjustments must be made through such dealer. Great Plains reserves the right to make changes in materials or design of the product at any time without notice.

This Warranty shall not be interpreted to render Great Plains liable for damages of any kind, direct, consequential, or contingent, to property. Furthermore, Great Plains shall not be liable for damages resulting from any cause beyond its reasonable control. This Warranty does not extend to loss of crops, losses caused by harvest delays or any expense or loss for labor, supplies, rental machinery or for any other reason.

No other warranty of any kind whatsoever, express or implied, is made with respect to this sale; and all implied warranties of merchantability and fitness for a particular purpose which exceed the obligations set forth in this written warranty are hereby disclaimed and excluded from this sale.

This Warranty is not valid unless registered with Great Plains Manufacturing, Incorporated within 10 days from the date of original purchase.

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