



FleetPlow™ MD-12 & MD-12B Assembly & Installation Manual for Truck and Bus Models

This manual covers all models, please refer to the appropriate steps during the installation

June 30th, 2020 Version

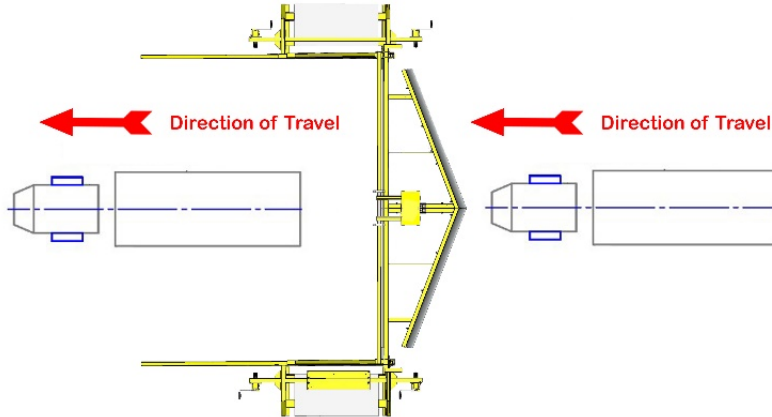
****When the assembly is complete, please use your phone or digital camera to take photos like those shown on Page 5 and send them to photos@scrapersystems.com. This helps us to verify the installation and provide documentation for the warranty. Thank you.**



READ BEFORE BEGINNING ASSEMBLY

IMPORTANT: LOCATING YOUR FLEETFLOW

1. Confirm the area of installation, operation, and storage are level, not to exceed 3% grade in any direction.
2. Be sure your FleetFlow is operated at a yard location that allows your vehicle to enter and exit while maintaining a straight direction of travel, no turning.
3. Clear area of snow and ice.

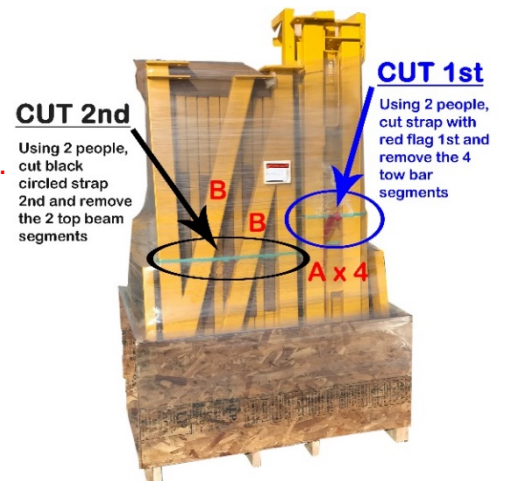


IMPORTANT: UNPACKING STEEL COMPONENTS PALLET. This requires two (2) people to unpack. Keep crate intact as much as possible. It can be used later as a platform for assembly.

See pages 3 and 4 for complete component list and exploded view.

CAUTION: Components are heavy. Smaller components are packed inside larger pieces. Tow Bar Segments and Top Beam Outside Segments are packed vertically and can tip over when cutting straps (see #2 below in red).

1. Remove stretch wrap.
2. Find red flagged strap. While 1 person steadies the pieces standing upright, the other person carefully cuts the strap. Do not cut all strapping at one time. Cut only the strapping for the pieces to be unpacked.
3. Remove Tow Bars Segments (A x 4) and then Top Beam Segments (B x 2) and set aside, out of the way.
4. Unload loose components, keeping like parts together before proceeding with strap removal.
5. The MD-12 FleetFlow will arrive with the Ballast Side Frames pre-attached to their bases and will require the two Ballast Base sections to be unbolted after unloading of parts. Pg. 6 Step #3



EQUIPMENT AND TOOLS REQUIRED or Assembly Requirements

1. Forklift with minimum 3000 lb. capacity and 150" lift height.
2. Impact Driver must be used on 1/2" bolts and torqued to 57 ft/lbs.

Tools Required:

Tape Measure
Impact Driver and socket set up to 3/4"
Torque Wrench
Grease Gun, to grease wheels and jacks
Banding Cutters
Ratchet and Sockets sets - Standard & Metric
Adjustable wrench or box wrenches for above socket
1/8" Allen Wrench - Longer T-Handle works best
3/8" Allen Wrench
13mm Socket
8' Step Ladder

Helpful Recommended Tools:

Tapered Drift Pins up to 3/4" diameter
Cordless or Electric drill and bit set to 3/4"
Diagonal Cutters
Pry/Crow Bar
1/4-20 Tap
Rubber Mallet
Chain or lifting strap for 500 lb. concrete ballast block
Flat and Phillips Head Screw Drivers
Utility Knife

Always check that the below listed and pictured items have been received with the shipment.

Open and check pallets. (1) Steel Components, (1) Concrete Ballast Blocks with Box of Brushes or Squeegees

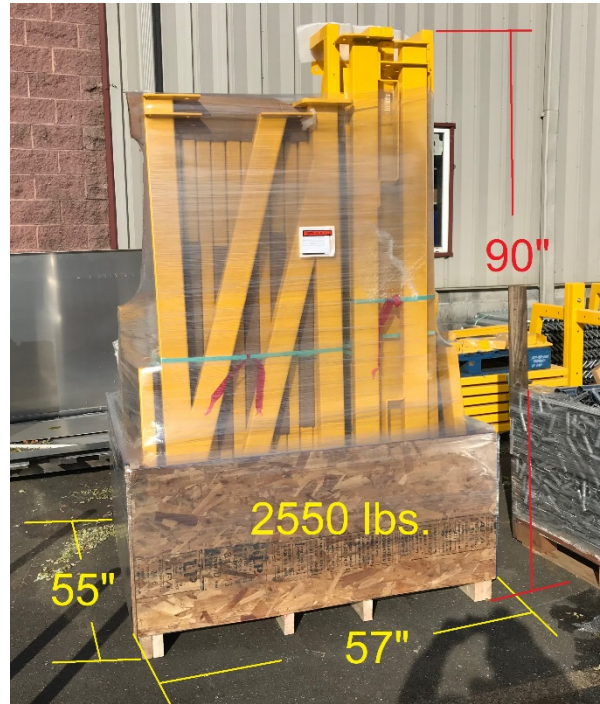
Standard Items on Steel Components pallet:

- A** - (4) Tow Bar Segments
- B** - (2) Outside Top Beam Segments
- C** - (2) Jack Bars
- D** - (2) Plow Frames
- E** - (2) Plow Blades, LH & RH
- F** - (4) Plow Guide Track Segments
- G** - (2) Plow Track Splice Brackets
- H** - (1) Top Beam Center Segment
- J** - (1) Hoist Cover – labeled with Logo
- K** - (1) Damper Spring Assembly
- L** - (4) Jack Assemblies
- M** - (2) 8" Swivel Casters
- M1** - (2) 8' Rigid Casters
- N** - (4) Caster Mounting Plates
- O** - (60) 2-Hole Segment Plates, (6 bundles of 10 each)
- P** - (8) 3-Hole Segment Plates, (1 bundle of 8 each)
- Q** - (12) Plastic Plow Slider Pads, (2 bundles of 6 each)
- R** - (1) Battery Tray
- S** - (1) Battery Box and Battery
- T** - (1) Control Box, DC System and **TT**-Pendant
- U** - (12) Triangle Segments
- V** - (2) Ballast Bases (bolted to side frames)
- W** - (4) Ballast Side Frames (bolted to bases)
- X** - (1) 12V DC Hoist
- Z** - (2) Control Box Mounting Brackets
- (1) Assembly Instructions
- (1) Owner's Manual
- (1) Can Touch Up Paint
- Hardware, includes:

- Frame Bag/Box
- Jack Bar Bag
- Top Beam Bag
- Tow Bar Bag
- Plow Bag/Box
- Plow Track Bag
- Battery Frame Bag
- Hoist/Electrical Bag

Standard items on Ballast Block Pallet:

- Y** - (2) Concrete Blocks, 500 lbs. each



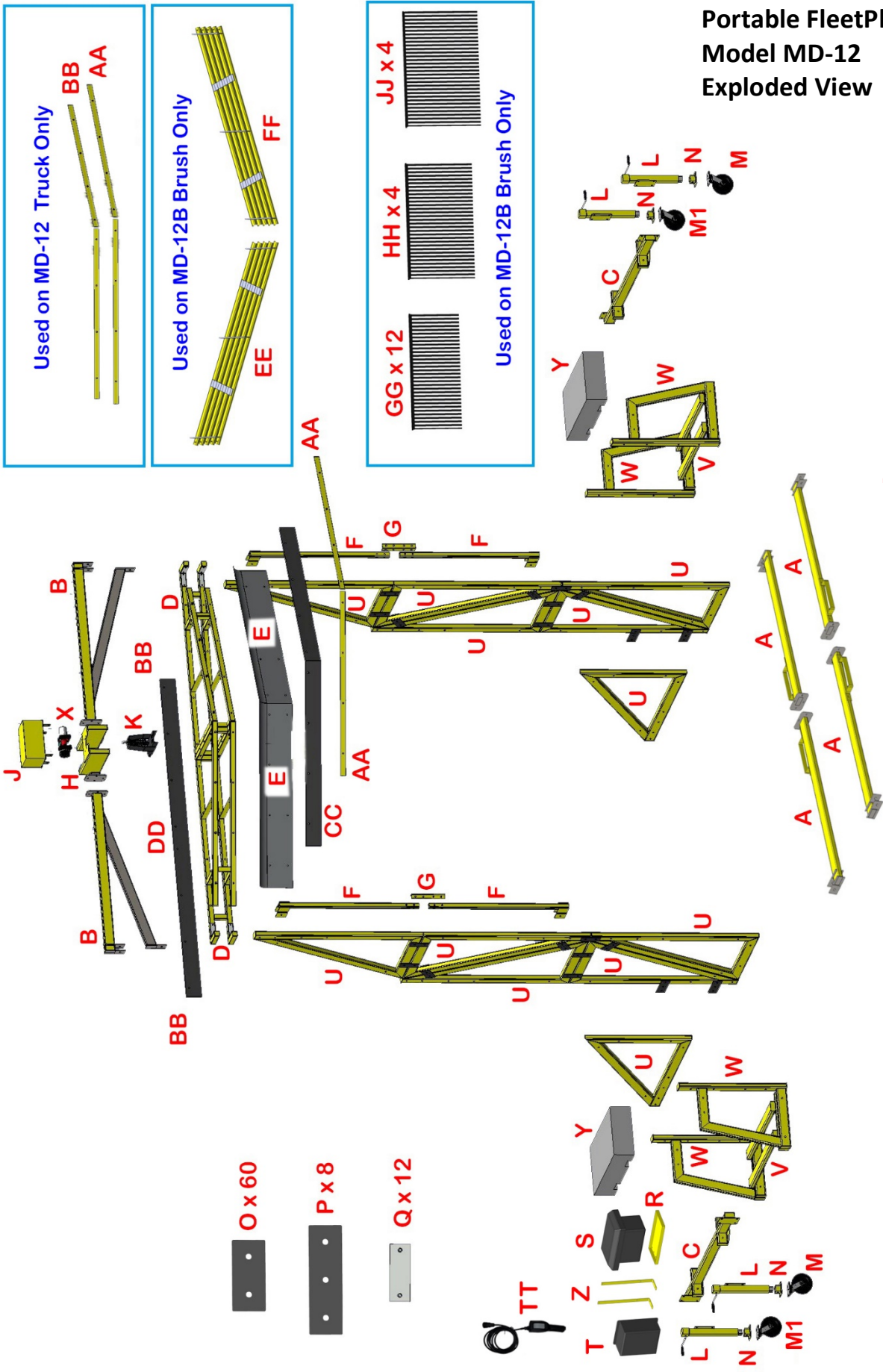
Components on MD-12 Pallets

- AA** - (2) Steel Main Squeegee Clamping Bars, (front V) (70.75")
- BB** - (2) Steel Secondary Squeegee Clamping Bars, (back) (60.75")
- CC** - (1) Main Rubber Squeegee, (front V) (142.00")
- DD** - (1) Secondary Squeegee, (back) (132.00")

Components on MD-12B Pallets

- EE** - (1) Brush Frame, LH
- FF** - (1) Brush Frame, RH
- GG** - (12) 10" Brushes
- HH** - (4) 14" Brushes
- JJ** - (4) 16" Brushes

Portable FleetPlow
Model MD-12
Exploded View



UPON COMPLETION of ASSEMBLY: Assure the following.

- **When not in use, always leave plow in the full up position to prevent damage to the plow or vehicle if someone attempts to drive through it.**
- **All wires, cables and cord sets must be attached to the FleetPlow as shown or instructed in these instructions.**
- **Take four digital photos of the completed FleetPlow and email them to Scraper Systems, photos@scrapersystems.com. Below are our preferred angles for the images: front quarter view, back quarter view, close-up of the controls, and close-up of the Squeegees or Brushes.**
- **Always clean off surface dirt and touch up scratched and marred paint that can occur during shipping and handling. Scraper Systems includes touch up paint in each shipment. It's best to perform touch up during assembly of each section.**
- **Always ensure the plow raises and lowers freely with minimal contact of wear pads to steel.**
- **Read and understand all Operational Instruction in the Owner's Manual.**

*****When the assembly is complete, please use your phone or digital camera to take photos like those shown below and send them to photos@scrapersystems.com. This helps us to verify the installation and provide documentation for the warranty. Thank you.***



Image 1. Quarter View, Entire Machine, Behind Plow



Image 2. Quarter View, Entire Machine from Front of Plow

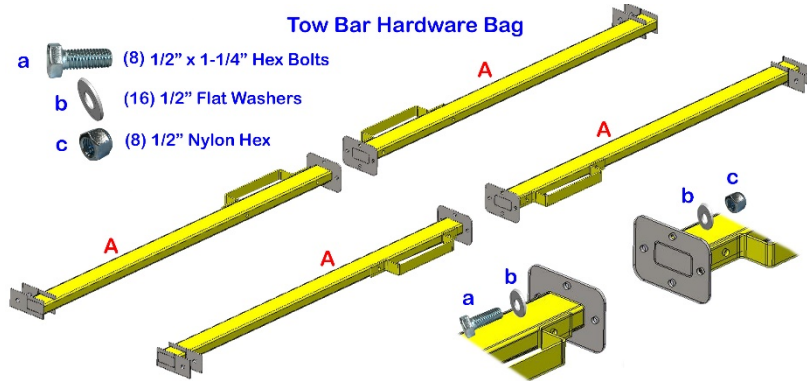


Image 3. Close-Up of Control Box and Battery

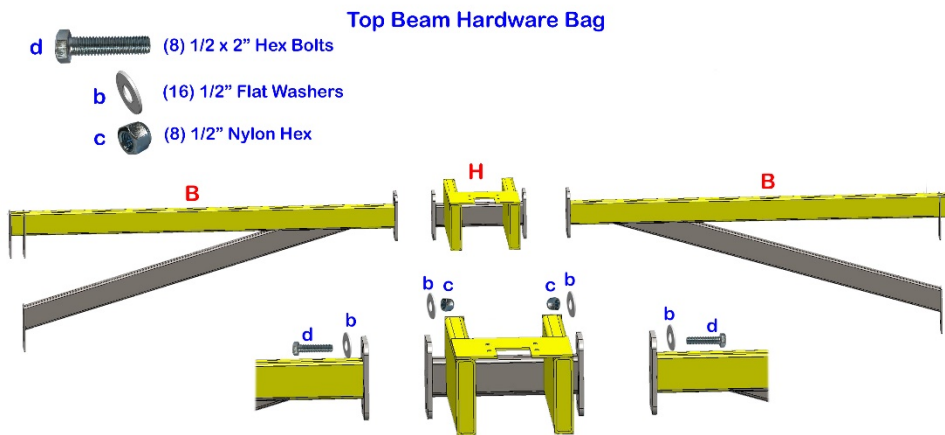


Image 4. Close-Up of Squeegee or Brushes

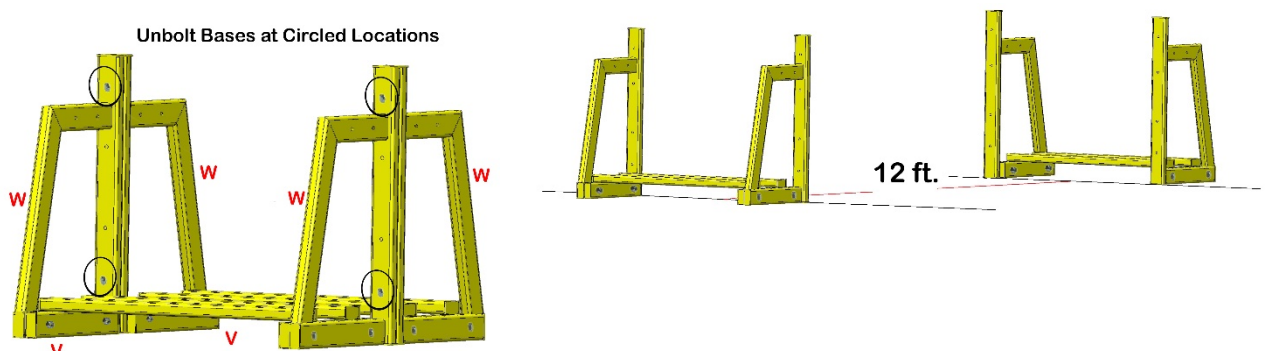
1. Bolt the 4 Tow Bar Segments (A) together, creating 2 Tow Bars using $\frac{1}{2}$ " x 1-1/4" hex bolts, flat washers and nylon hex nuts. Impact Driver must be used on $\frac{1}{2}$ " bolts and torqued to 57 ft/lbs.



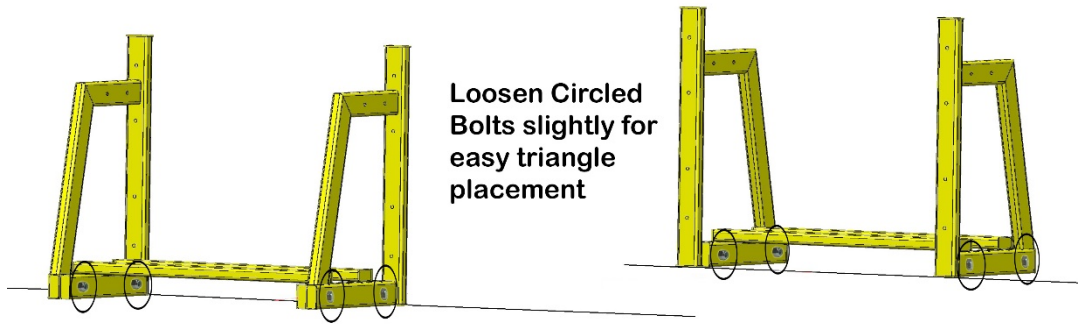
2. Layout 2 Top Beam Outside Segments (B) and Top Beam Center Segment (H) and bolt together using $\frac{1}{2}$ " x 2" hex bolts, flat washers and nylon hex nuts.
(Use the forks of the lift to balance both outside segments while bolting the center segment in place.)



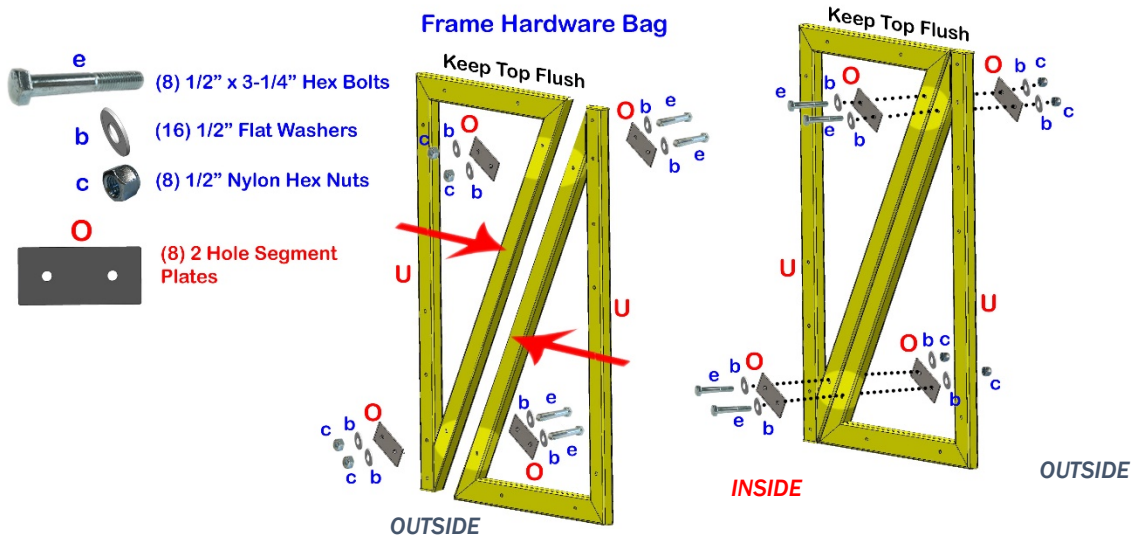
3. The 2 Ballast Bases (V) and Ballast Side Frames (W) arrive pre-bolted together for shipment purposes. Unbolt Ballast Bases from each other, then position them in the installation area 12 ft. apart. **Measure and square at 12' inside to inside distance.**



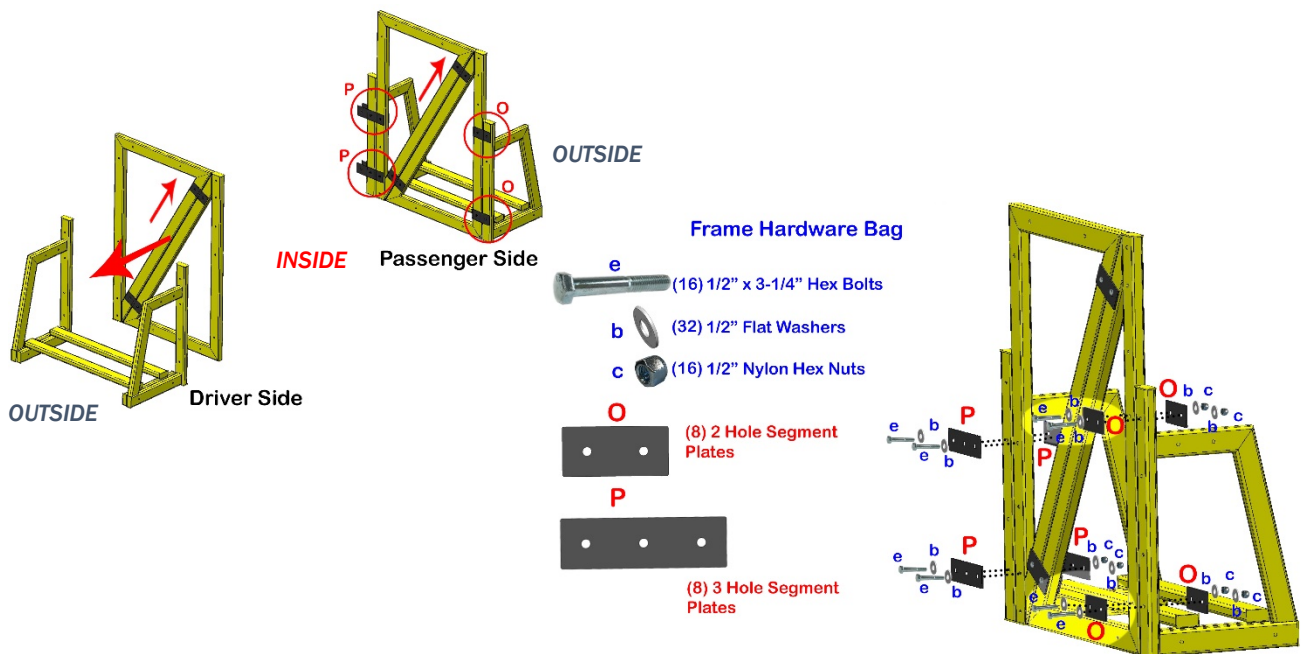
4. Loosen the circled bolts. *This allows for easy insertion of the assembled triangles in the following Steps.*



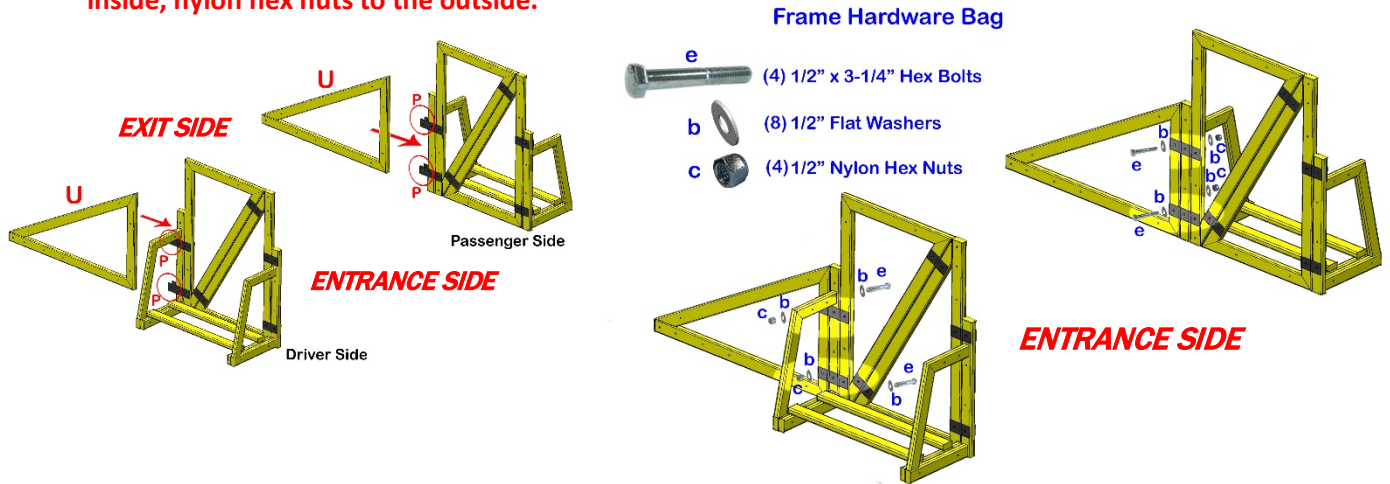
5. Assemble 4 Triangle Segments (U) into 2 rectangular shapes using 2 Hole Segment Plates (O). Tighten. **Note direction of diagonals. Bolt heads must be on the drive thru area side of the frame with nylon hex nuts on the outside. All Triangles are the identical.**



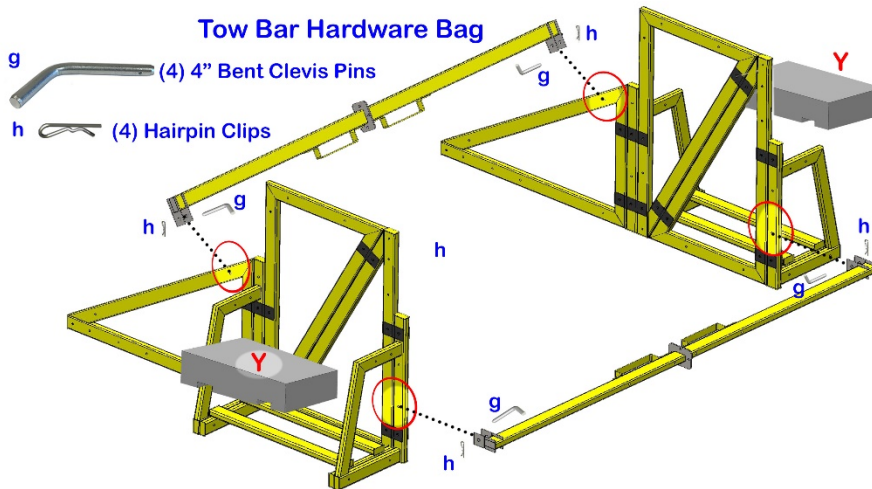
6. Position rectangles between Ballast Side Frames. Bolt in place using 2 Hole and 3 Hole Segment Plates. **Note direction of diagonal connections. Bolt heads must be on the drive thru area side of the frame with nylon hex nuts on the outside.** Do not tighten yet.



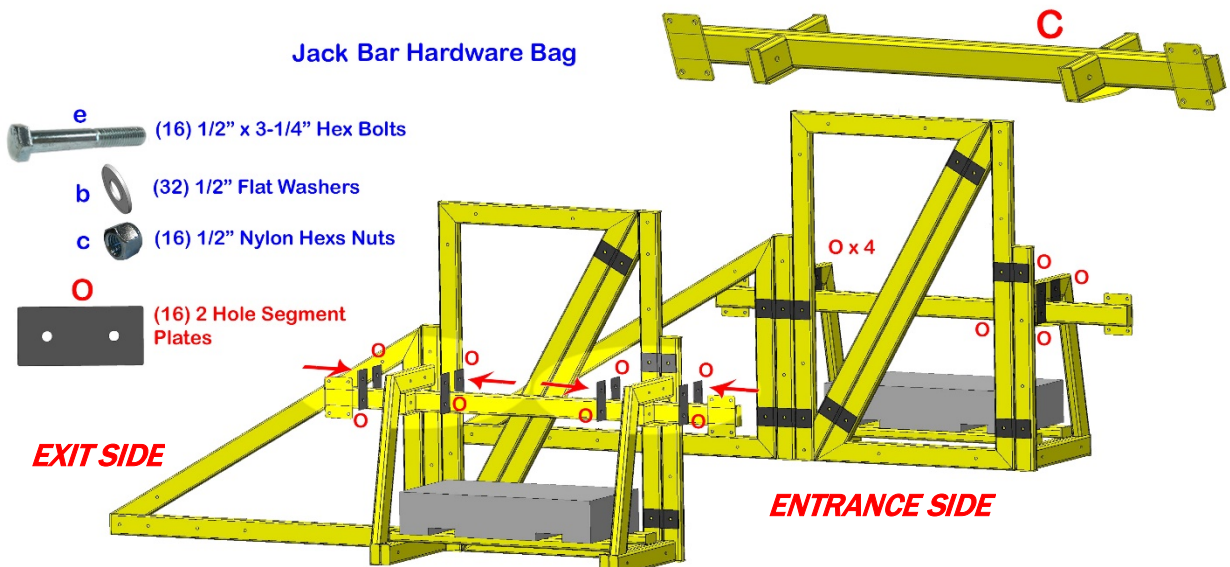
7. Position 2 Triangle Segments (U) as outriggers. Slide between the 3 Hole Segment Plates (P) attached in Step #6. Bolt in place. **Tighten all bolts including ballast base and side frames. Remember, bolt heads to the inside, nylon hex nuts to the outside.**



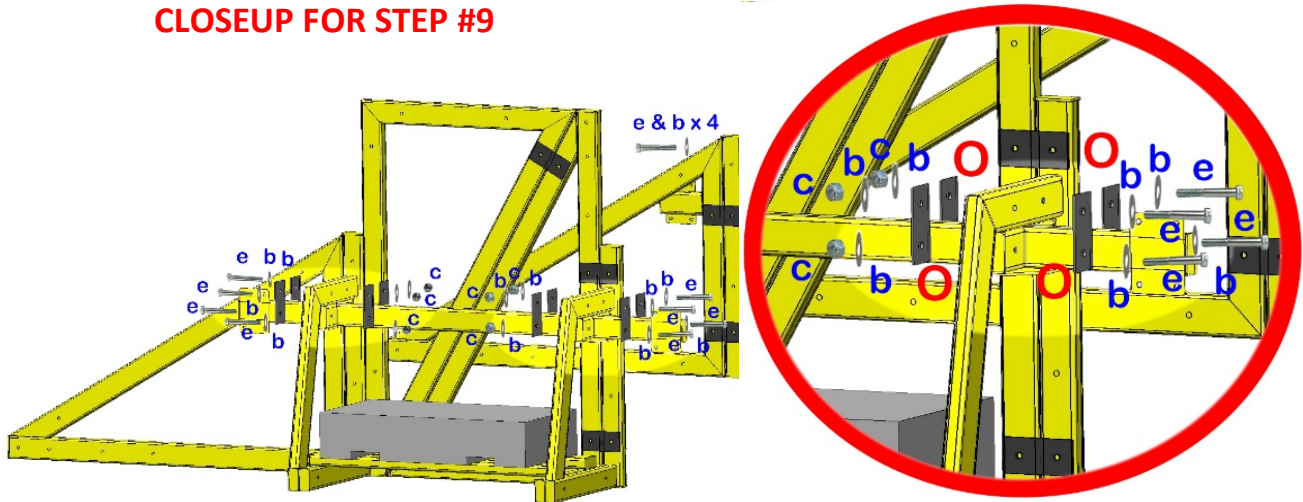
8. Measure and square the two base frames. Attach Tow Bars assembled in Step #1, using clevis pins and hairpin clips, to aid in squaring of the base frames. Set Concrete Ballast Blocks (Y) on base frames.



9. Attach Jack Bars (C) using 2 Hole Segment Plates (O). Take care that the jack mounting plates are facing away from drive-thru area. Tighten. *See closeup next page.*



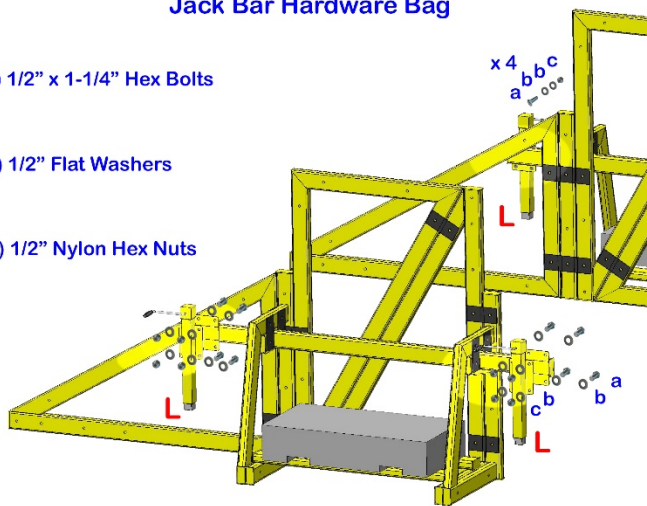
CLOSEUP FOR STEP #9



10. Attach Jack Assemblies (L)

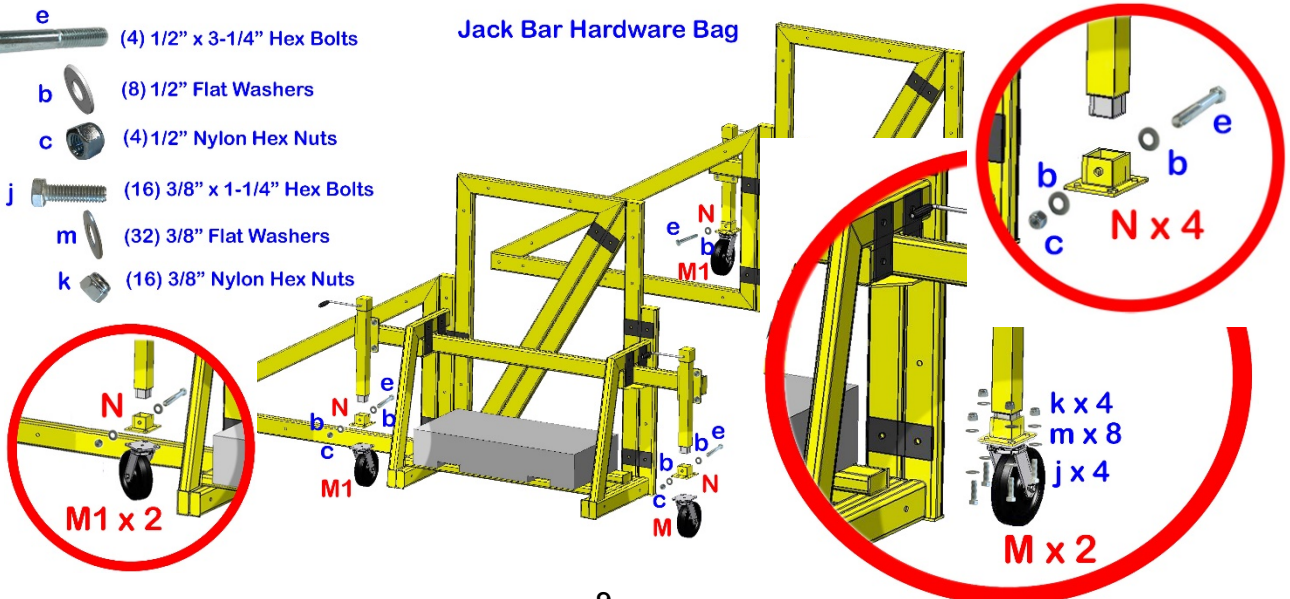
Jack Bar Hardware Bag

- a** (16) 1/2" x 1-1/4" Hex Bolts
- b** (32) 1/2" Flat Washers
- c** (16) 1/2" Nylon Hex Nuts

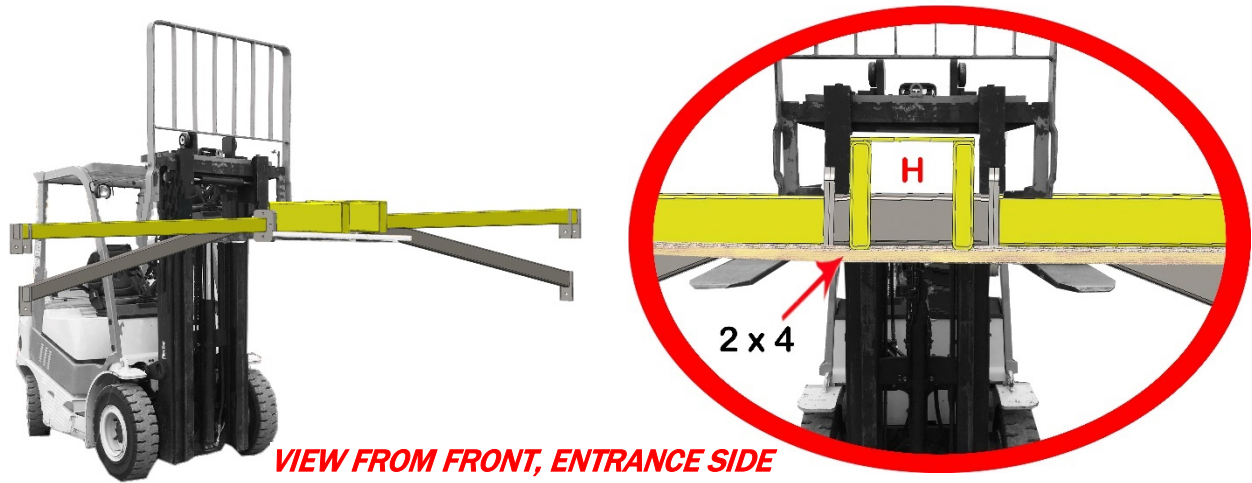


11. Attach Caster Mounting Plate (N) and 2 Swivel Casters (M) and 2 Rigid Casters (M1) to Jack Assemblies.
Swivel casters are attached on the plow side and the Rigid casters are attached on the outrigger side.

- e** (4) 1/2" x 3-1/4" Hex Bolts
- b** (8) 1/2" Flat Washers
- c** (4) 1/2" Nylon Hex Nuts
- j** (16) 3/8" x 1-1/4" Hex Bolts
- m** (32) 3/8" Flat Washers
- k** (16) 3/8" Nylon Hex Nuts



12. Using forklift, lift the Top Beam Assembly to working height while supporting the Top Beam Center Segment with 2 x 4's from the crate. This will keep Top Beam Assembly from tipping between the forks.

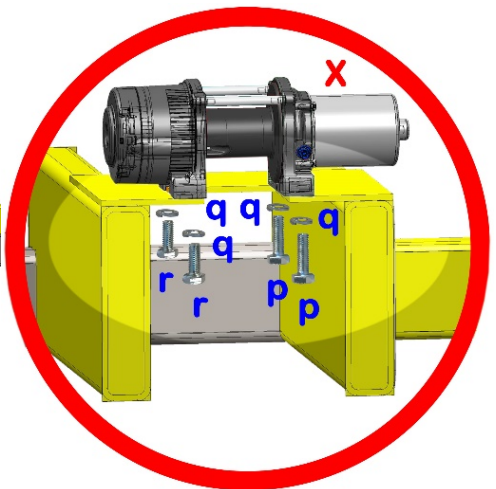
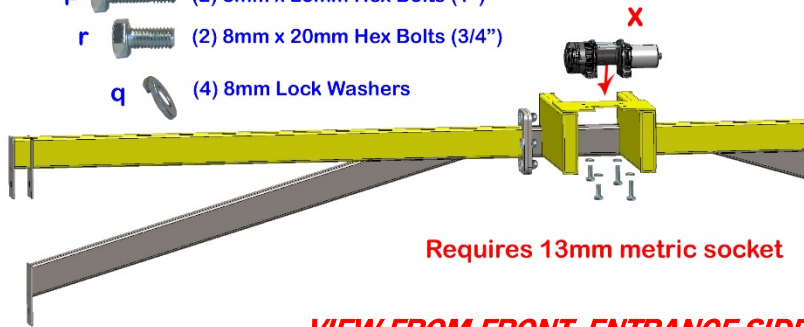


13. With Top Beam stabilized on the forks, attach Hoist (X) to Top Beam. Use hardware supplied in the hoist box. **NOTE: Uses metric hardware.**

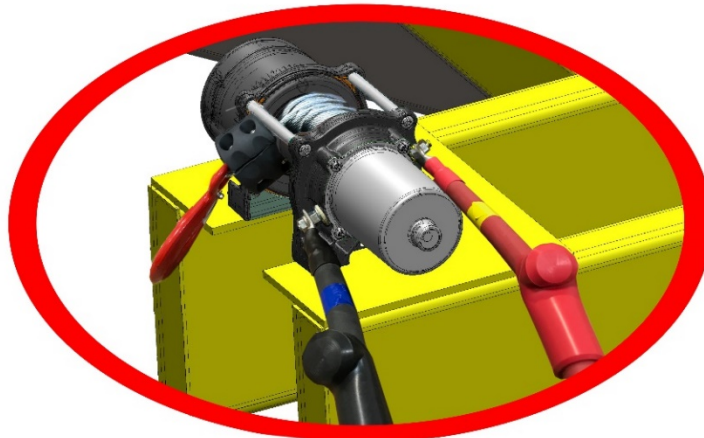
Hoist must be installed with terminal posts for the battery cables on the right-hand side when viewing as shown

Included in Hoist Box

- p (2) 8mm x 25mm Hex Bolts (1")
- r (2) 8mm x 20mm Hex Bolts (3/4")
- q (4) 8mm Lock Washers

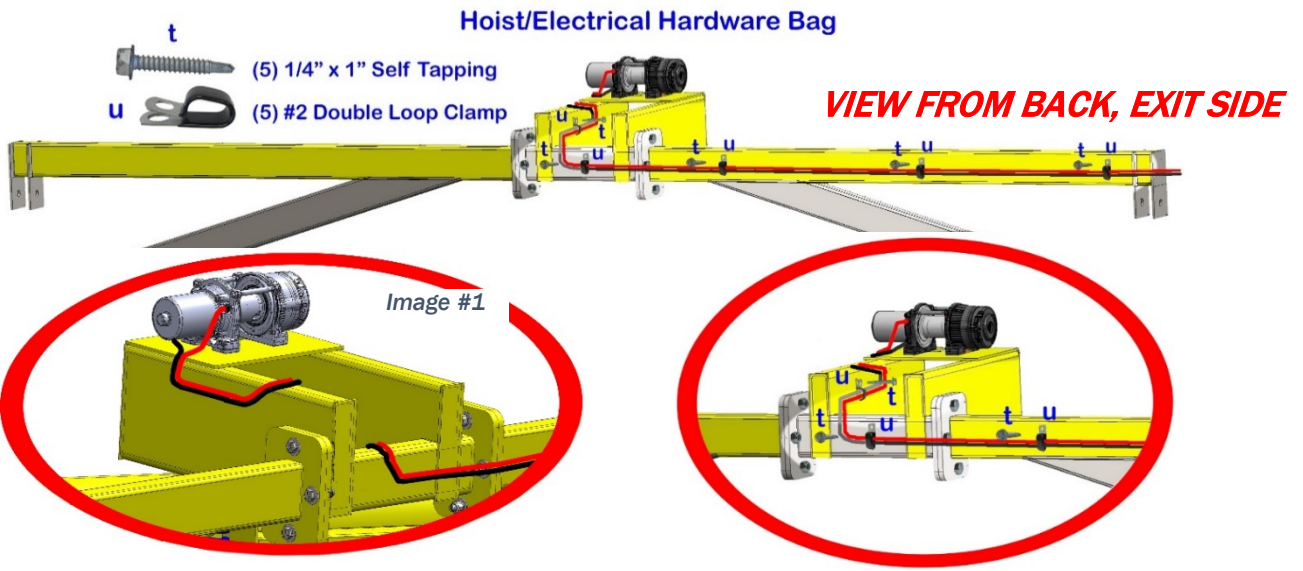


14. Remove the top nuts on the hoist's terminal posts. Place the cable lugs on the appropriate terminal posts and replace nuts, tighten. **The terminal posts on the hoist are color coded Yellow and Blue. Match up the color-coded cables as supplied. The Red Cable is Positive and will be marked with Yellow colored tape. The Black Cable is Negative and will be marked with Blue colored tape.**



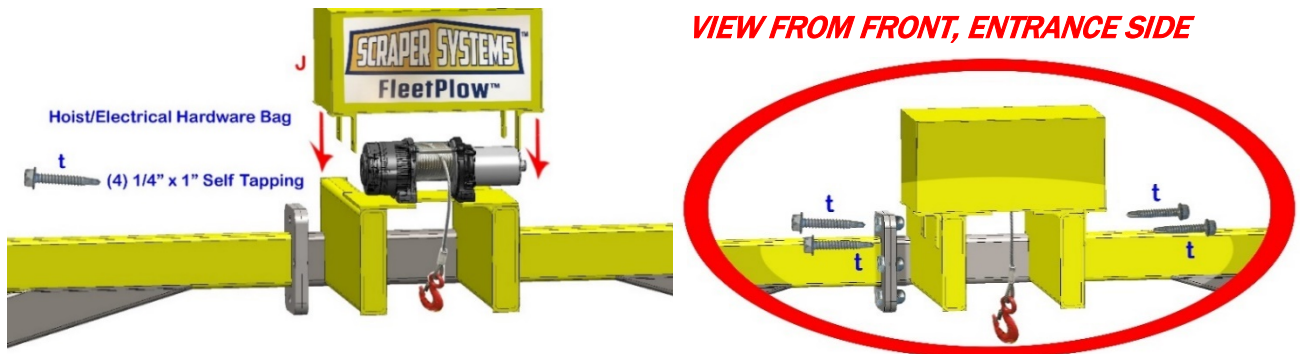
15. Slide boots over the terminal posts and lugs on Hoist. Using Double Loop Clamps, attach cables across the Top Beam as shown.

NOTE: Keep cables to outside of hoist mount, as shown in image #1, to not interfere with hoist cover.



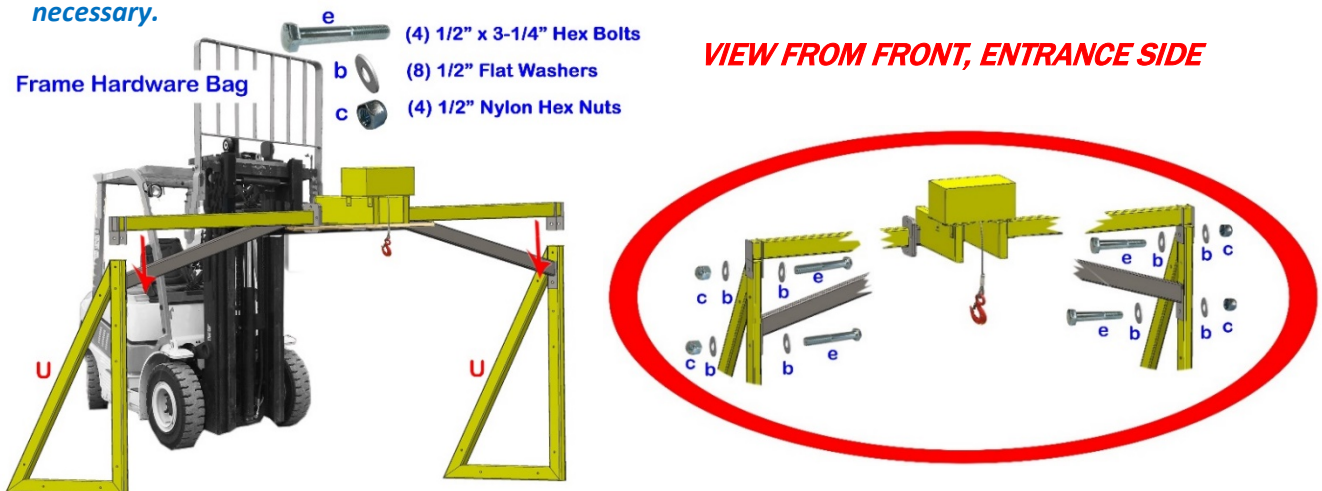
16. Connect Control Box (T) to Battery (S) using wing nuts supplied in the Hoist/Electrical Hardware Bag. Red cable to Positive terminal and Black cable to Negative terminal. Using Red Key, turn disconnect to "ON". Then using Pendant, lower the hoist hook to allow clearance for attaching the Hoist Cover.

17. Attach Hoist Cover (J)

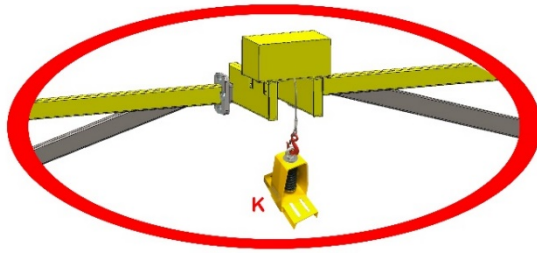


18. Turn Red Key to "OFF" and disconnect Battery.

19. Raise up the Top Beam Assembly. Then attach Triangle Segments (U) on each side. *Touch up paint as necessary.*



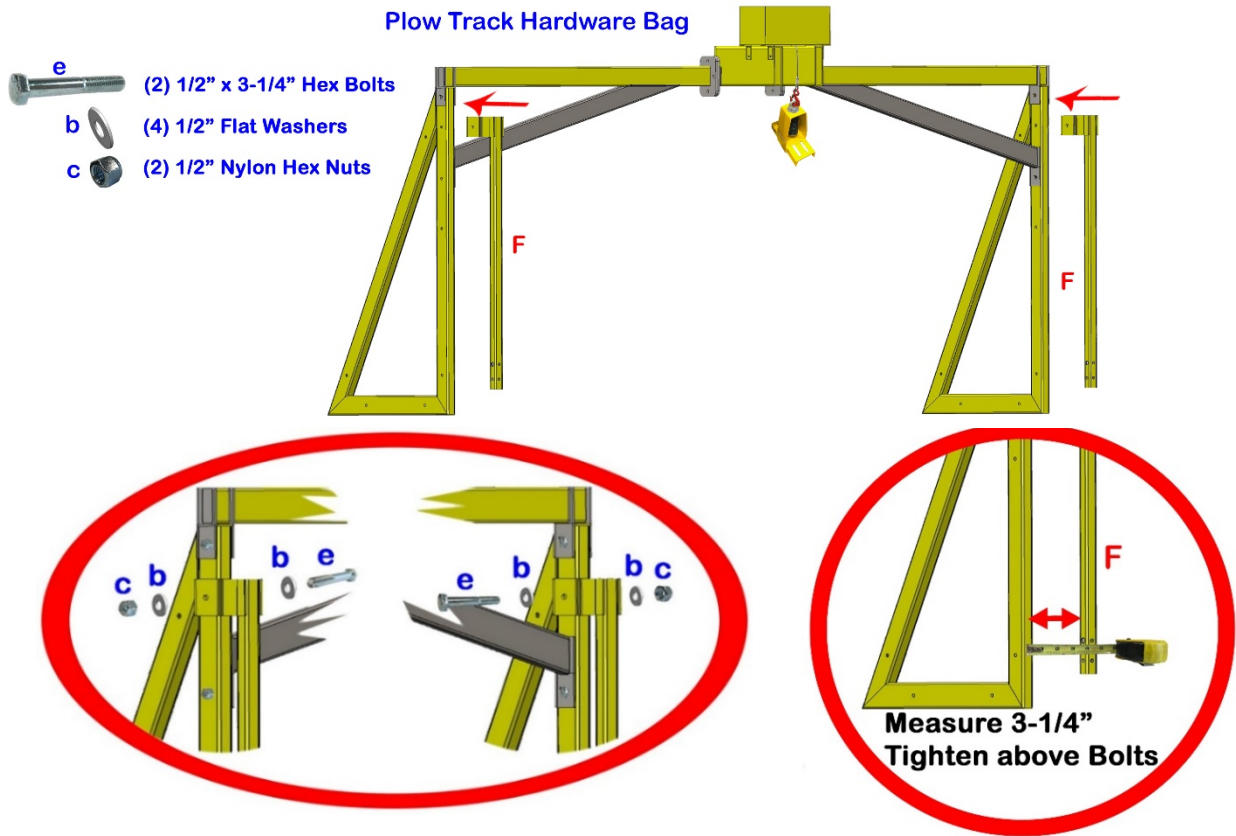
20. With top section still being supported by forklift, hang Damper Spring Assembly (K) on hook to keep wire rope tight around spool.



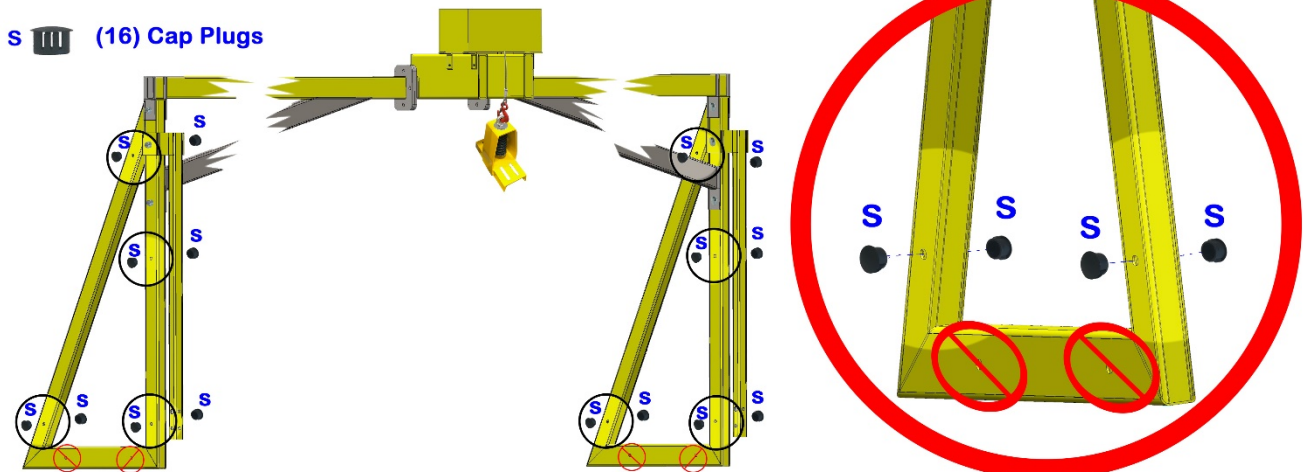
Note: Forklift not shown in all pictures

21. Still supported by forklift, attach 2 Plow Track Guides (F) to the upper section. Measure guide track at the bottom, inside to inside, for 3-1/4" spacing then tighten.

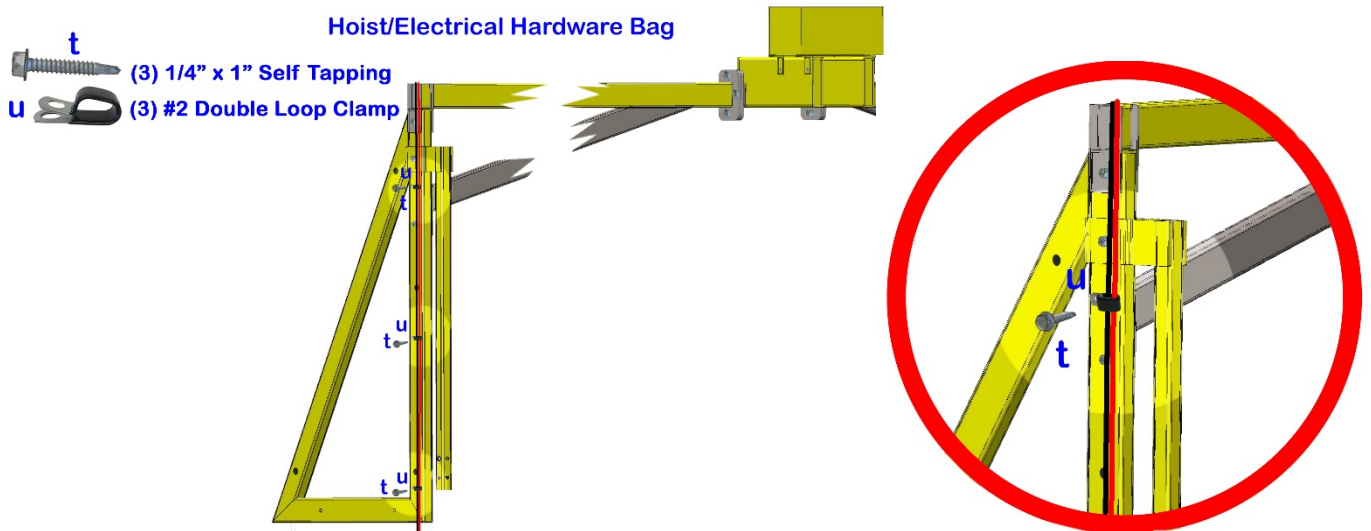
NOTE: Track sections are identical and can be used on either side.



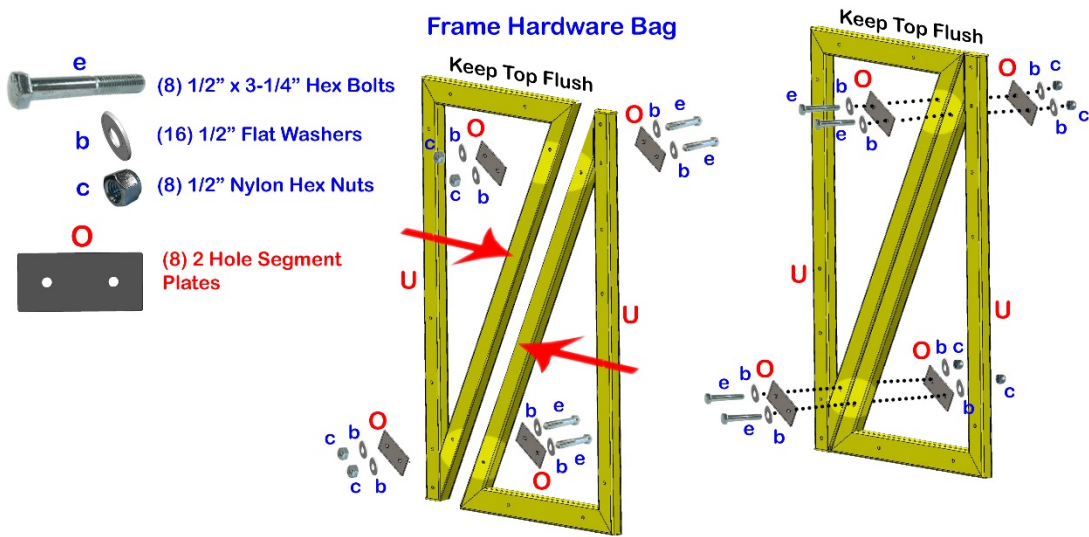
22. Push Cap Plugs in black circled holes on both sides of the tubing, while still being supported by forklift. Do not install Cap Plugs in red circled holes as those will be used later to secure the upper and middle sections.



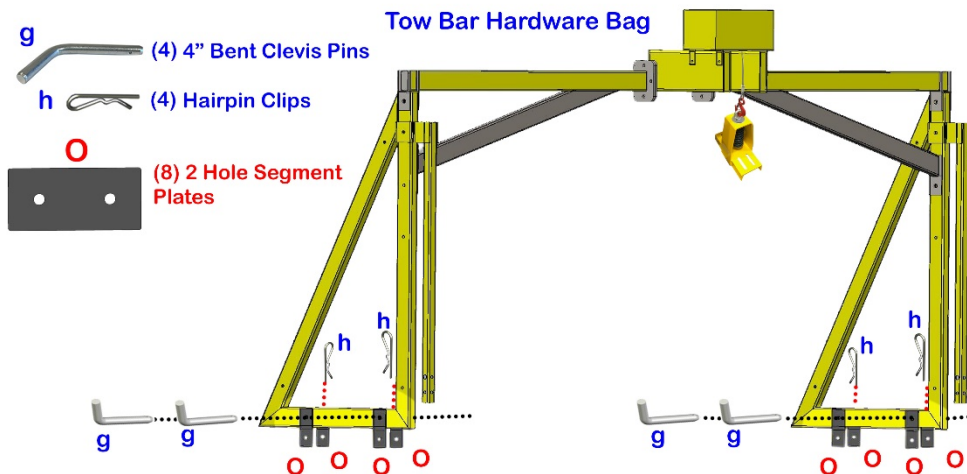
23. Using Double Loop Clamps, attach cables down the vertical section of the upper Triangle, driver's side.



24. Again, assemble 4 Triangle Segments (U) into 2 rectangles, identical to Step #5.

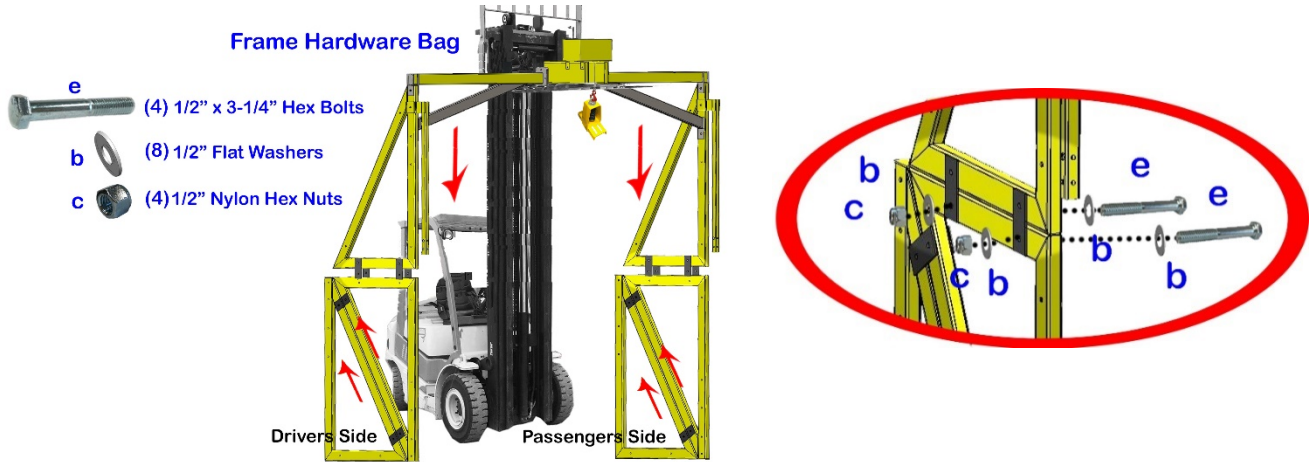


25. Still being supported by the forklift, attach 2 Hole Segment Plates (O) to the bottom of the upper section using Clevis Pins and Hairpin Clips.

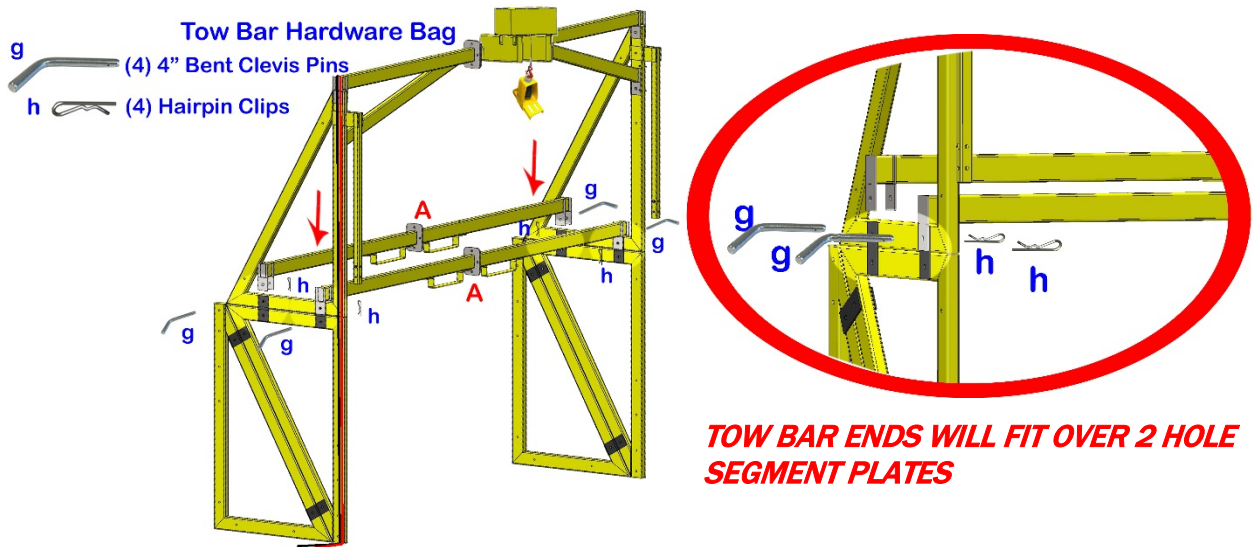


26. Lift upper section and lower onto rectangles assembled in Step #24. Bolt together and tighten.

Note direction of the center diagonal pieces of the rectangle when placing top section on.

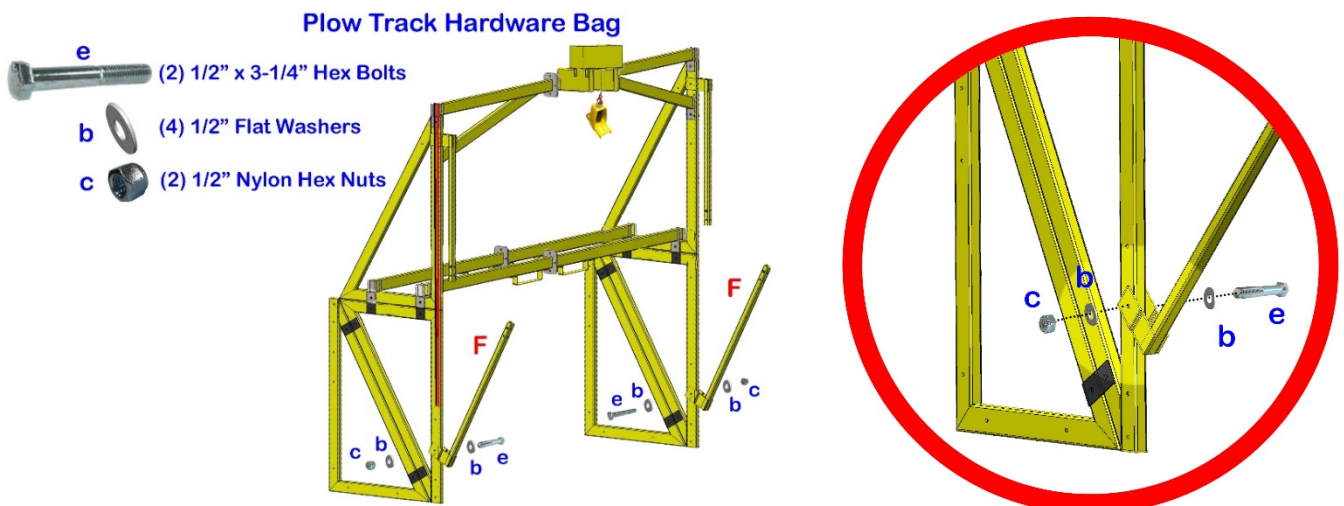


27. Remove clevis pins from the top holes. Slide Tow Bars (A) over 2 Hole Segment Plates on upper section, for preparation for lift. Reinstall clevis and hairpin clips. Forklift is no longer necessary from this point to support the structure.

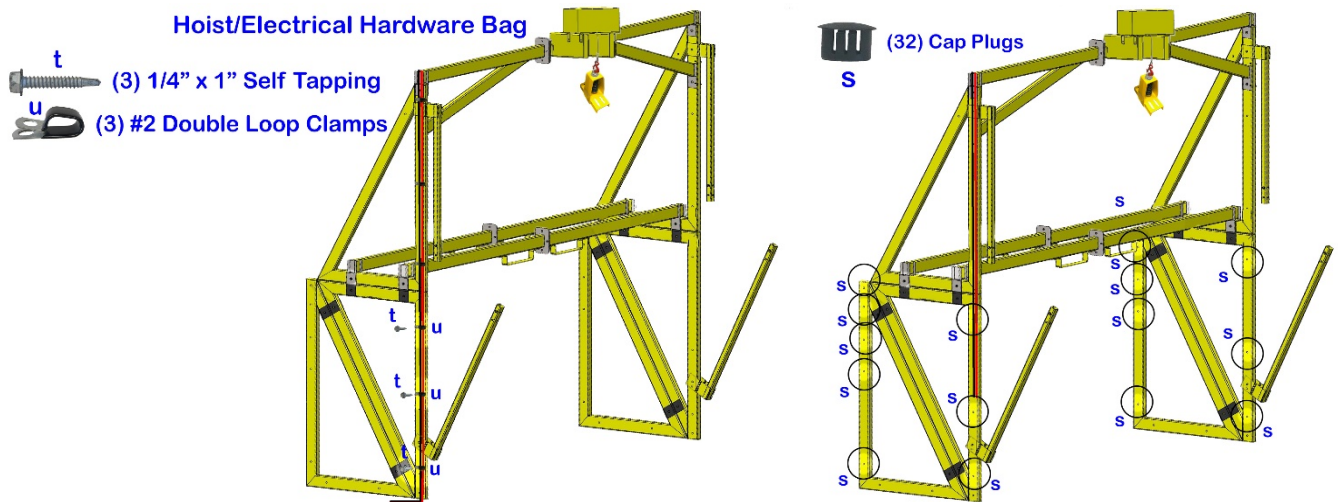


28. Bolt on lower Plow Track Guides (F), utilizing the 3rd hole up from the bottom. Do not tighten. *Touch up paint.*

Leave lower plow track guides leaning out as shown. Plow assembly will be installed here in later step.



29. Attach cables to lower section using Loop Clamps and install Cap Plugs both sides of tubing in circled holes.

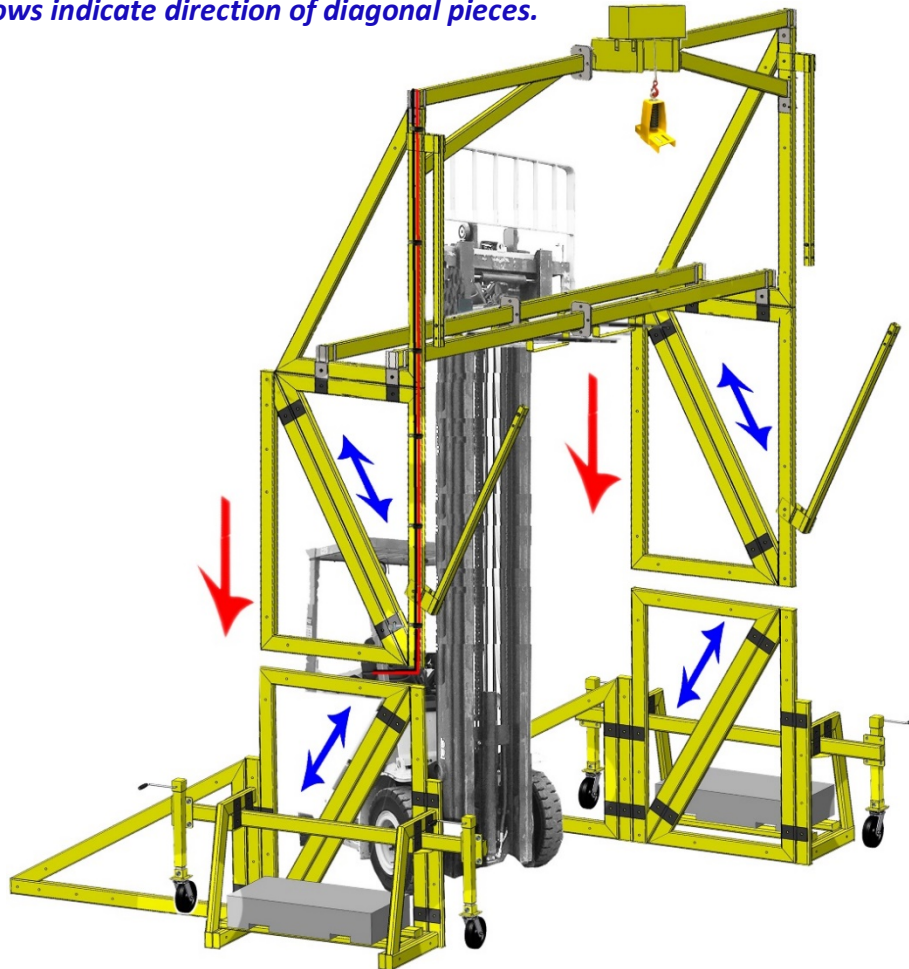


BEFORE LIFTING, CHECK THAT ALL HARDWARE IS CORRECTLY POSITIONED. BOLT HEADS ON THE INSIDE AND NYLON HEX NUTS ON THE OUTSIDE OF ASSEMBLY

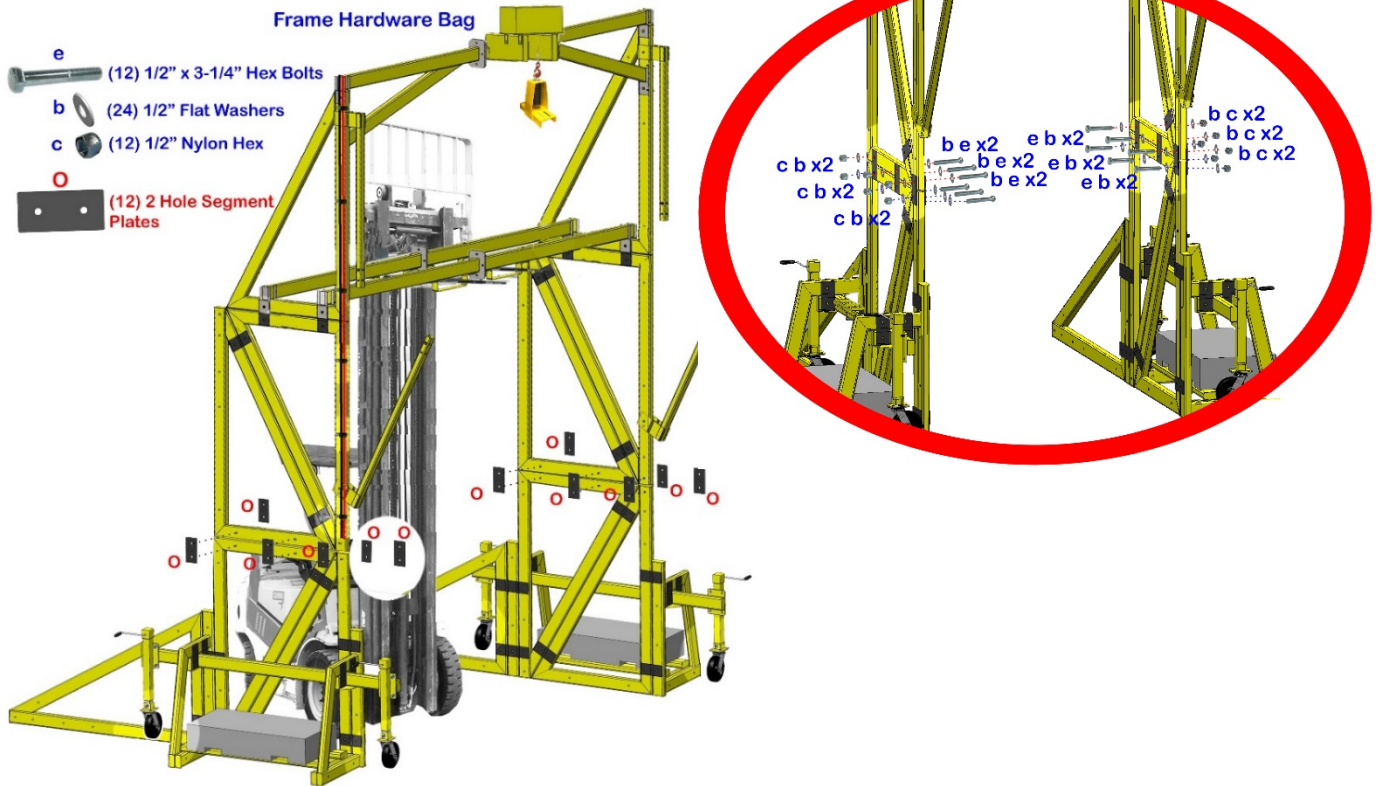
Reminder: Battery cables attached to the frame in previous steps are also attached to the control box. Prior to lifting, ensure cables and control box are free to move and are in no danger of being damaged during the lift or placement of the top section on the bottom sections.

30. Lift Top Section with forks using fork loops on Tow Bars and place on top of bottom sections.

Note: Blue Arrows indicate direction of diagonal pieces.

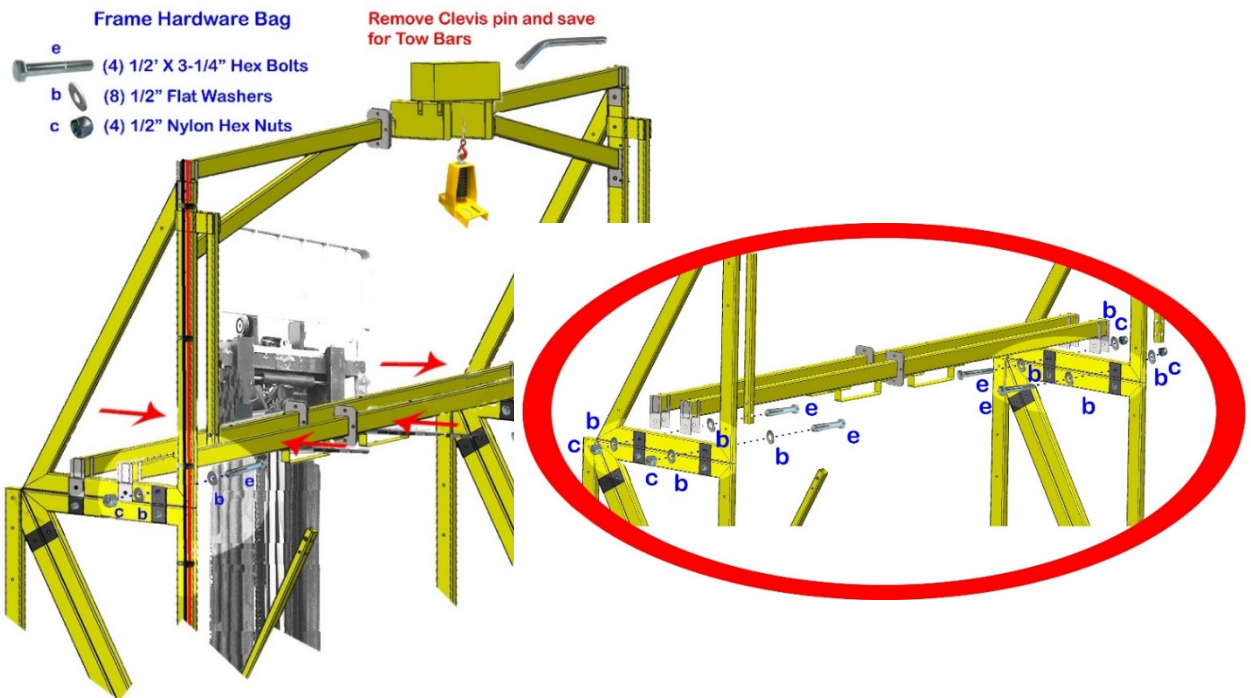


31. Bolt together top and bottom sections using 2 Hole Segment Plates, keeping entrance side rectangles flush, then tighten.

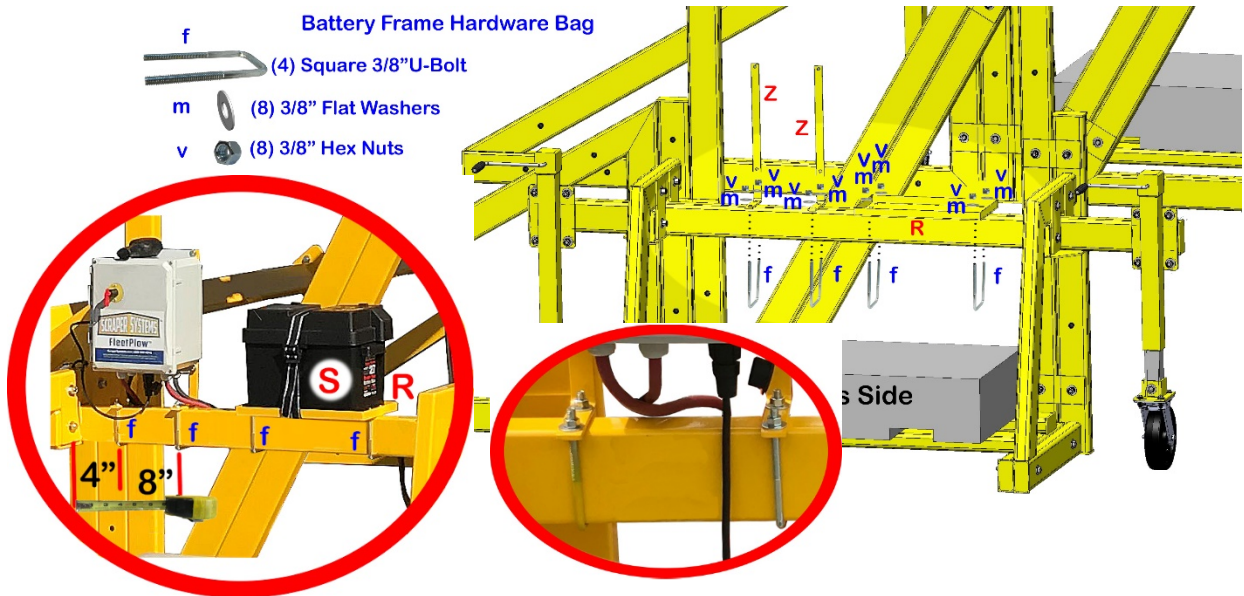


Removing Tow Bars

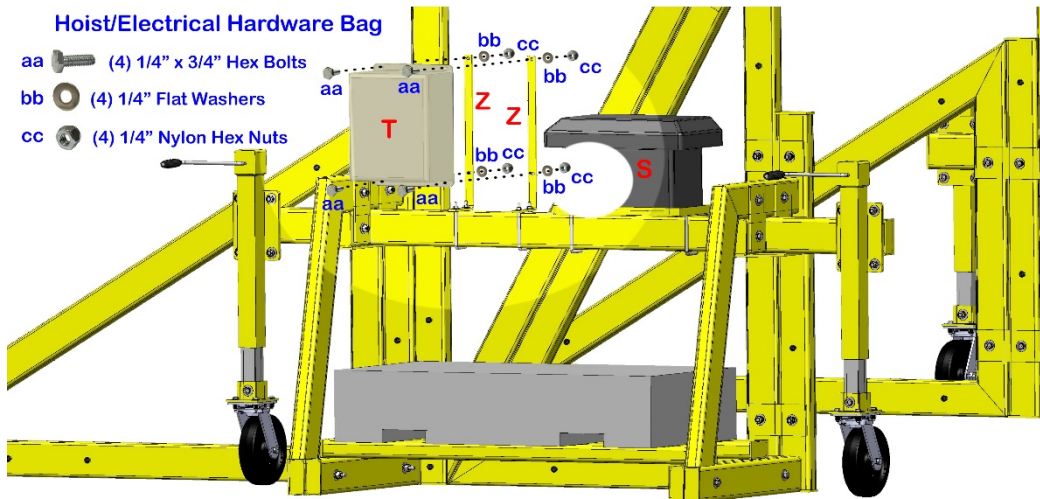
32. With forklift still engaged with the Tow Bars (lifting bars). Use an 8' step ladder to reach the Tow Bars. Remove the clevis pin from one end, slide the tow bar toward the other. In the vacant hole, refasten the sections with hex bolt, flat washers and nylon hex nut. Repeat on other end of same tow bar. Then repeat for second tow bar. Once both tow bars have been unfastened and slid towards each other, the forklift operator will be able turn while backing out of the structure removing the tow bars. Tow bars can be placed out of the way.



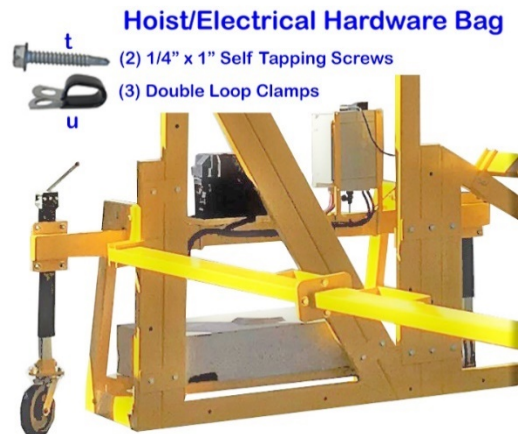
33. Attach (2) Control Box Mounting Brackets (Z) and Battery Tray (R) with square U-Bolts as shown using the measurements below. Before tightening, attach Control Box to aid in the spacing of the (Z) brackets. See Step #34. Before tightening Battery Tray, slide the supplied battery strap under the Tray.
Touch up paint as necessary



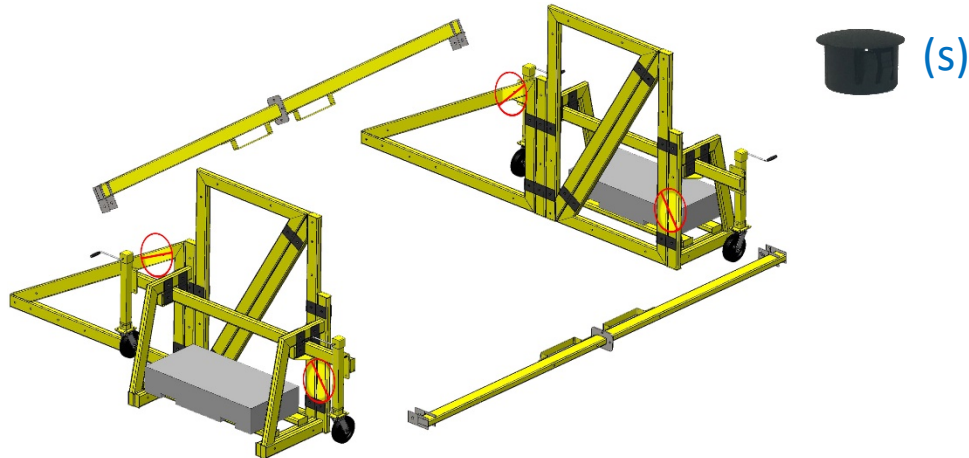
34. Tighten down Control Box Enclosure (T) and Battery Tray (R). Set Battery (S) in Tray.



35. Connect cables to battery, RED (Positive) Black (Negative), using supplied Wing Nuts (z). Then neatly attach cables to lower base section and back side of Jack Bar, using supplied clamps (u) and self-tapping screws.



36. Install Cap Plugs (s) in all **unused holes** on the bottom base section **except** ones shown circled below. Unplugged holes remain un-plugged and are used for attaching the tow bars for moving the FleetPLOW.
NOTE: Check inside and under base mount frame for unused holes and plug accordingly.



37. Assemble Plow Frame Halves. MD-12 Truck Version with Squeegees, shown in Image #1.
 MD-12B Bus or Brush Version with Brushes, shown in Image #2

Image #1 MD-12 with Squeegees

Bolt together Plow Frame halves (D) using (4) hex bolts, flat washers and nylon hex nuts.

- n** (4) 1/2" x 5-1/4" Hex Bolts
- b** (8) 1/2" Flat Washers
- c** (4) 1/2" Nylon Hex Nuts

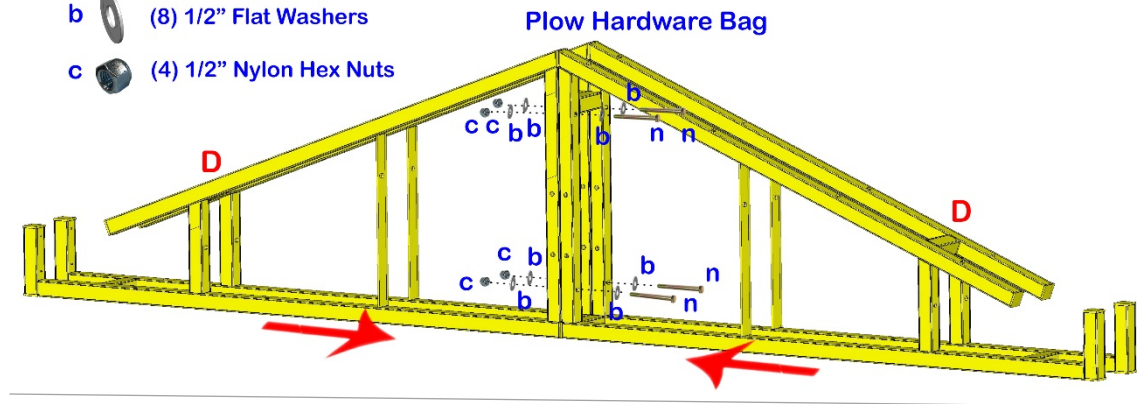
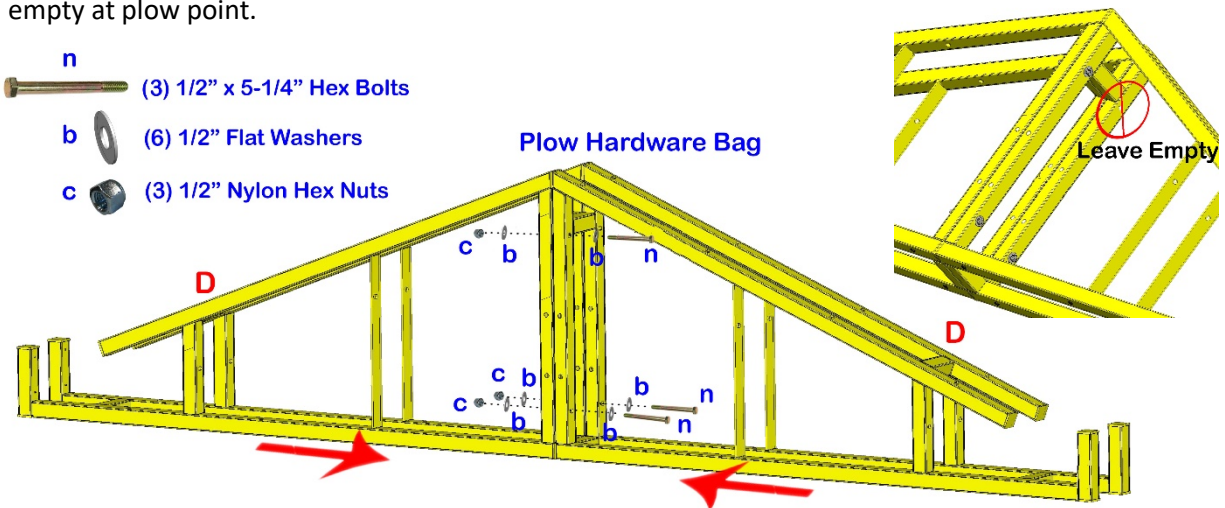


Image #2 MD-12B with Brushes

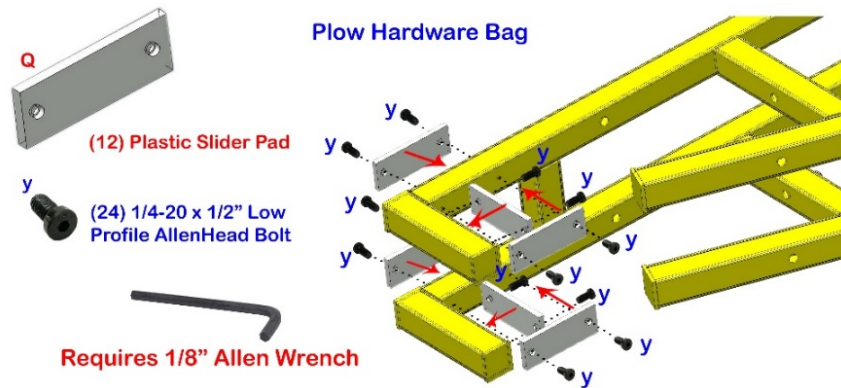
Bolt together Plow Frame halves (D) using (3) hex bolts, flat washers and nylon hex nuts. Leave one-hole empty at plow point.

- n** (3) 1/2" x 5-1/4" Hex Bolts
- b** (6) 1/2" Flat Washers
- c** (3) 1/2" Nylon Hex Nuts



Tip: Utilize the shipping crate as a raised platform to finish assembling the plow.

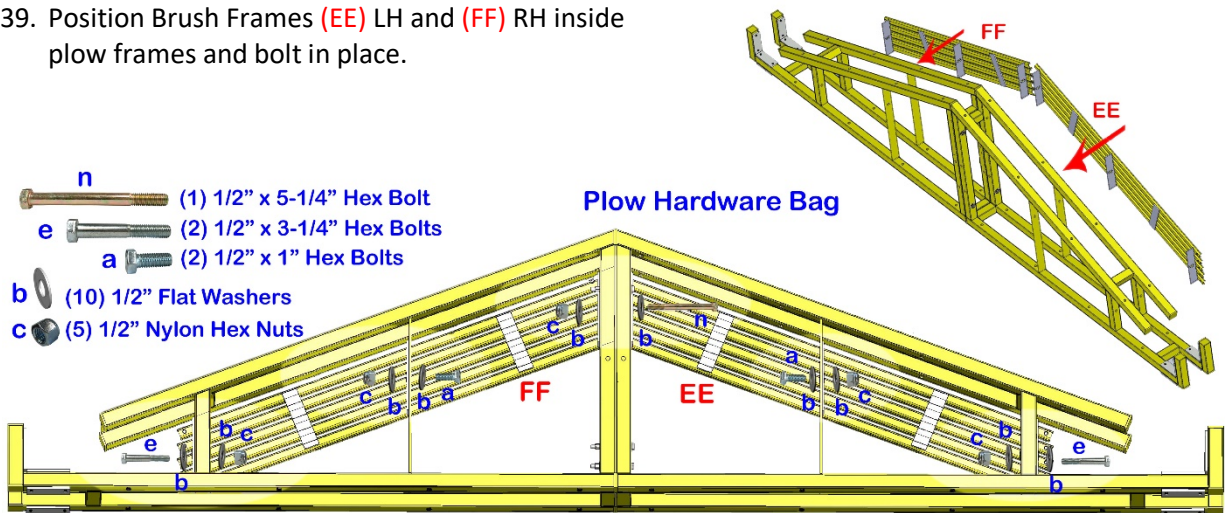
38. Bolt on the Plastic Slider Pads. NOTE: ¼-20 holes are threaded. Before installing screws assure threaded holes have been cleared of paint. If necessary, use a ¼-20 tap or ¼-20 bolt to clean threads.



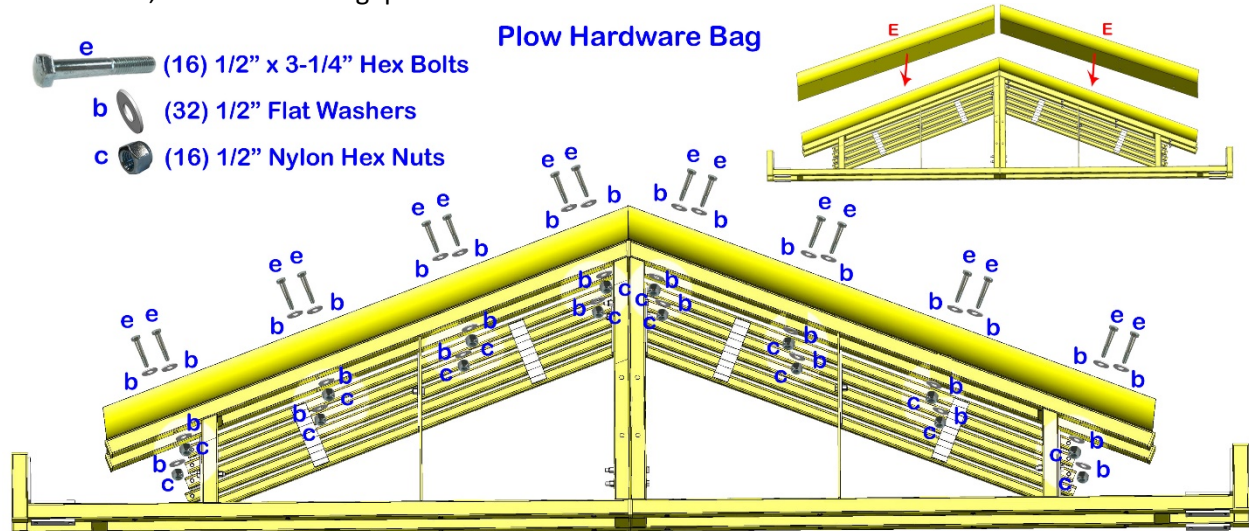
For MD-12 Truck Versions, skip to STEP #41 on page #20.

For MD-12B Brush Versions, continue with STEPS #39 - #40. Skip STEPS #41 - #42.

39. Position Brush Frames (EE) LH and (FF) RH inside plow frames and bolt in place.



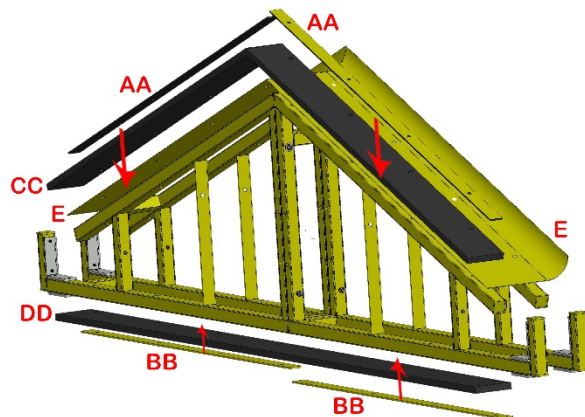
40. Lay Plow Blades (E) on plow frame. Bolt through blades and frame, top and bottom. Tighten, when properly installed, there will be no gap at "V".



41. MD-12 Truck Version with Squeegees

Lay Plow Blades (E) on plow frame. Loosely attach the Plow Blades with 1/2" x 3-1/4" bolts (e) using just the top holes in the plow frame.

Attach Main Squeegee (CC) 142" and Clamping Bars (AA) 70-3/4" with 1/2" x 4-1/4" bolts (w). Start from the point (center) of the plow and work to the outside.



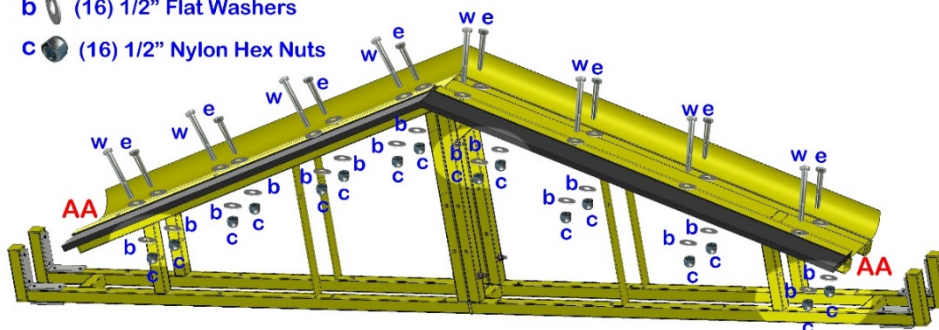
Plow Hardware Bag

w (8) 1/2" x 4-1/4" Hex Bolts

e (8) 1/2" x 3-1/4" Hex Bolts

b (16) 1/2" Flat Washers

c (16) 1/2" Nylon Hex Nuts



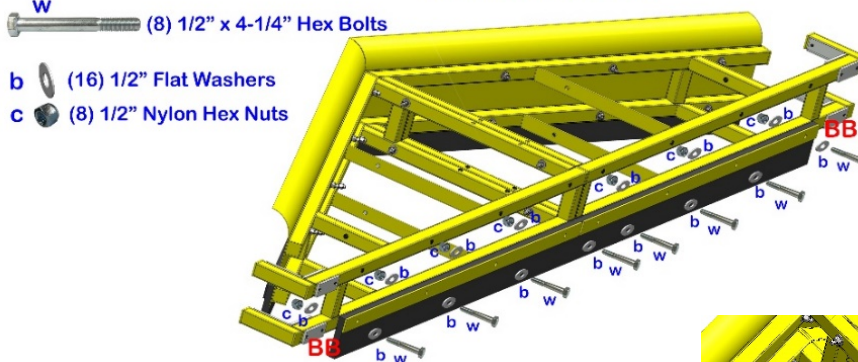
42. Attach secondary squeegee (DD) 132" with secondary clamping bars (BB) 65-3/4"

Plow Hardware Bag

w (8) 1/2" x 4-1/4" Hex Bolts

b (16) 1/2" Flat Washers

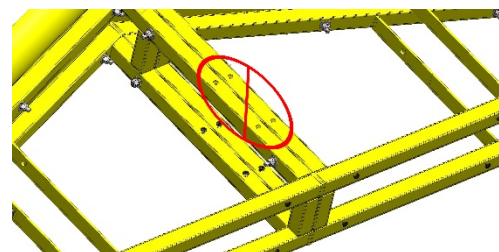
c (8) 1/2" Nylon Hex Nuts



43. Install Cap Plugs (s) in all unused holes in the plow frame. EXCEPT those on the top and bottom of the top center beam, circled.



(s)

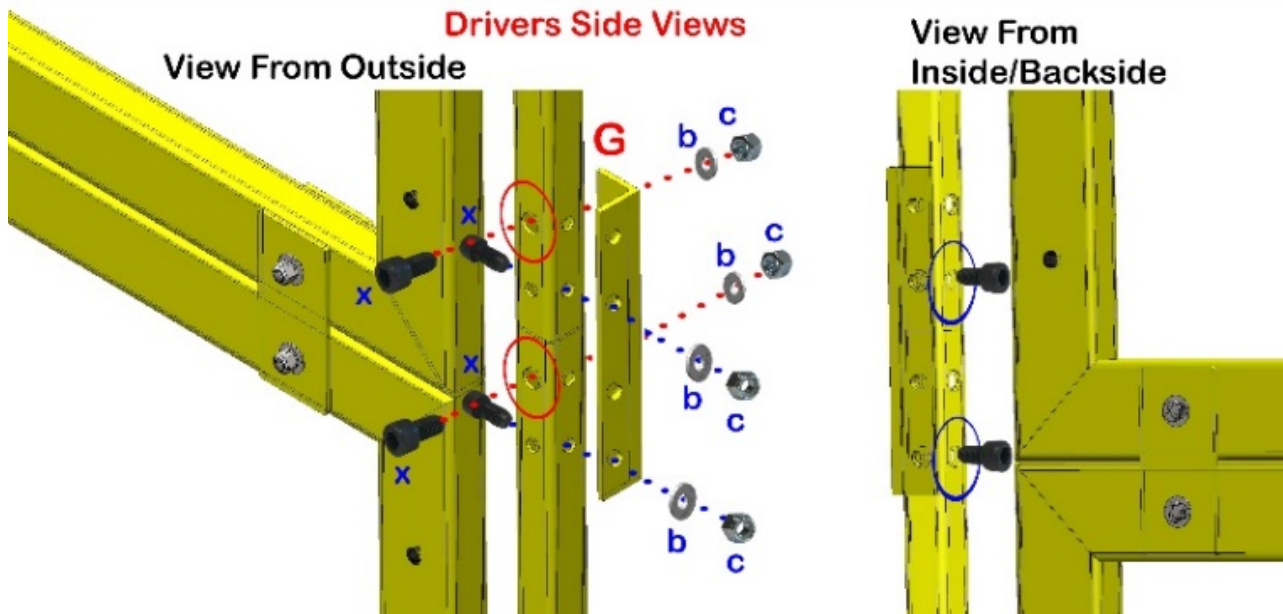
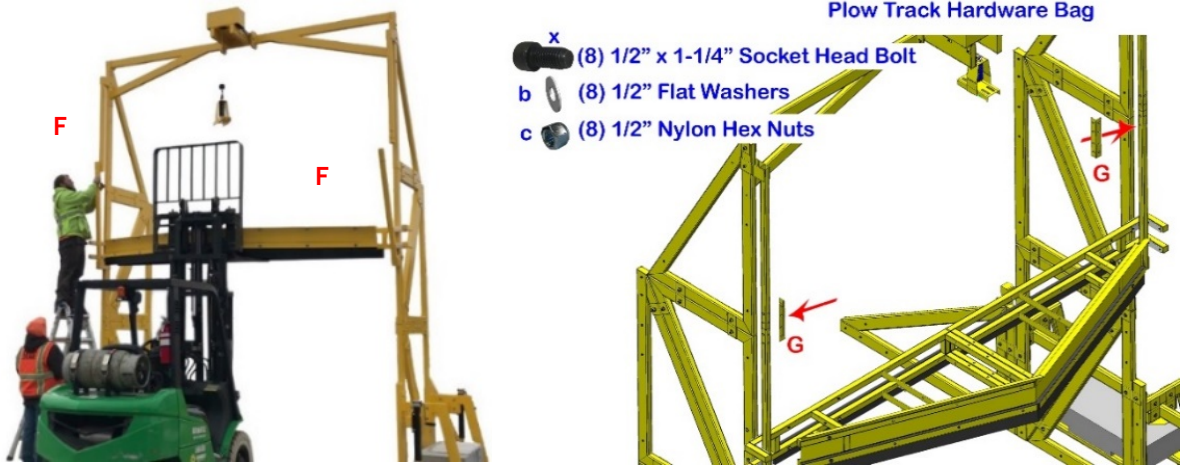


44. Using forklift, lift and load the assembled plow behind lower Plow Guide Tracks (F). Then lower to just above the bottom of the Plow Guide Tracks.

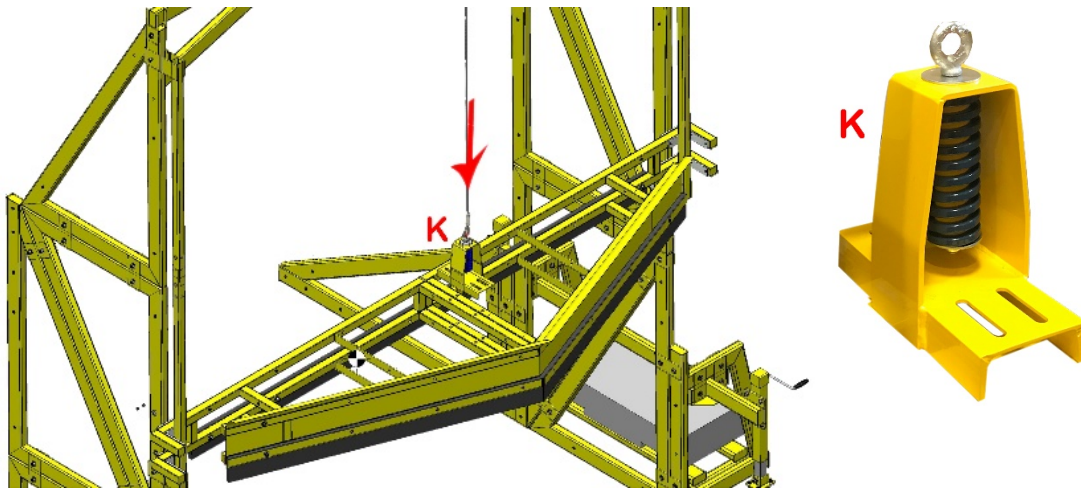


45. Working from a ladder, swing bottom Plow Guide Track (F) up into position. Splice upper and lower track sections together using the Plow Track Splice Bracket (G). Repeat on the other side of FleetPlow.

NOTE: Nuts cannot be on the backside or the outside of the Plow Guide Tracks as those will interfere with the plow when raising and lowering. See below illustration for proper placement of splice brackets.



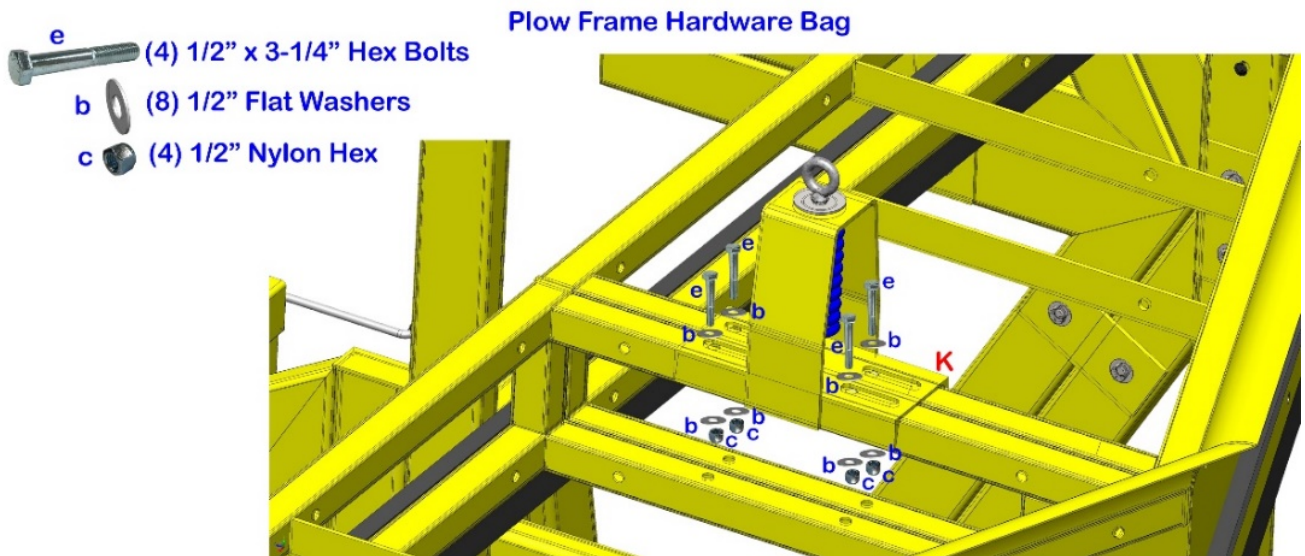
46. Pressing down button on handheld pendant control, lower Damper Spring Assembly (K) to Plow Frame.



47. Bolt Damper Spring Assembly (K) onto plow frame. Then balance.

For front (V point) to back plow balance, position the Damper Spring Assembly toward the V point to start. Damper Spring Assembly may need adjusted after attaching. Slightly raise the plow to check balance.

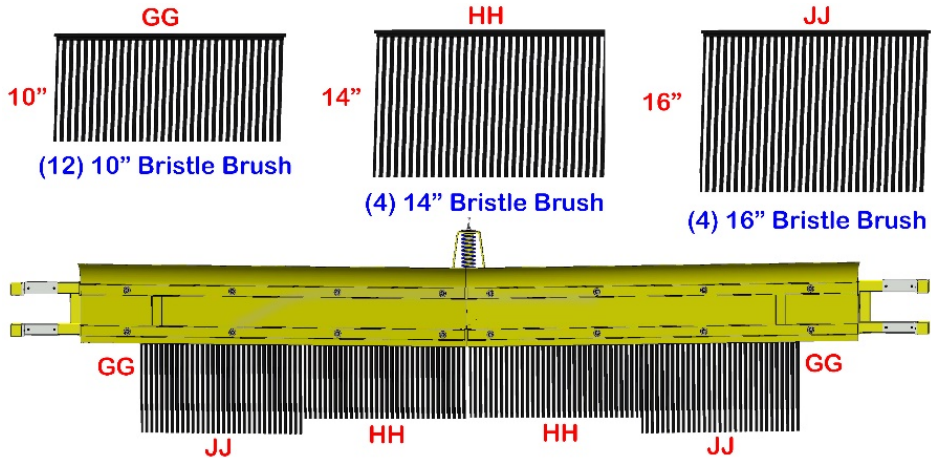
Adjust Damper Spring Assembly by sliding it forward or backwards in the slots provided. When balanced, tighten bolts. A properly balanced plow should hang freely and raise and lower smoothly with no hang ups.



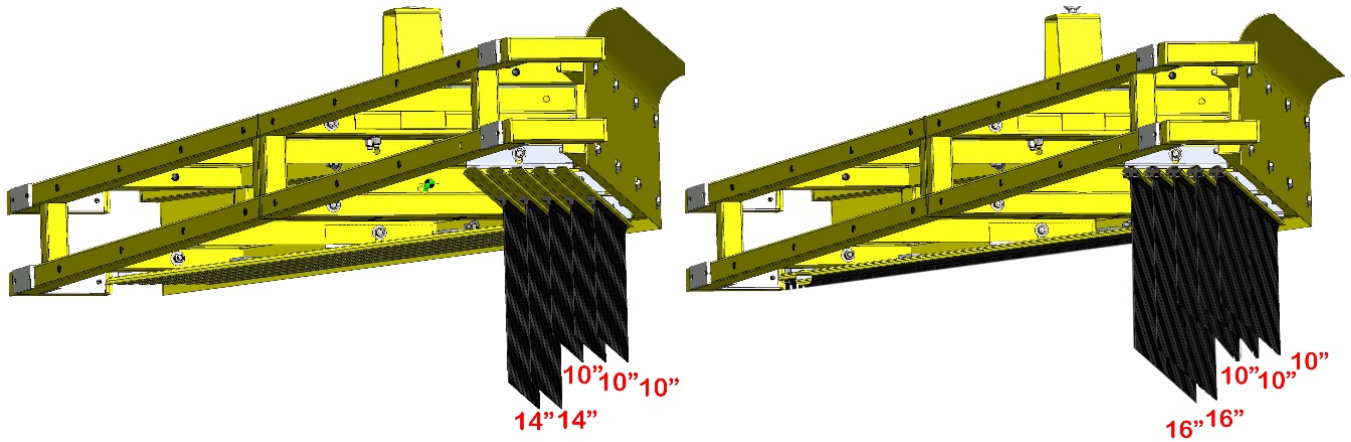
48. **MD-12 Truck Model** FleetPlow is now completely assembled. Test run plow up and down using handheld 2-button pendant control. See *STEP #59 page 24 & 25* for moving and relocating instructions for the FleetPlow after assembly.

49. **MD-12B Bus Brush Model.** Go to Step #50 Page 23.

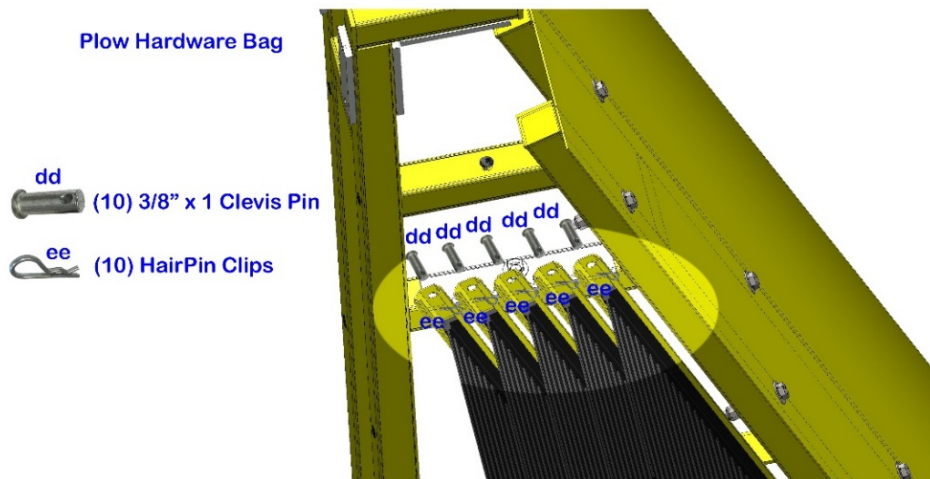
50. **MD-12B Bus Brush Model FleetPlows.** Slide brushes into Brush Frame Channels. You will need to raise and lowered the plow as necessary, to easily slide in brushes.



51. First, slide 14" Brushes (HH) into the back 2 rows of channel on Brush Frame.
52. Then slide 16" Brushes (JJ) into the back 2 rows of channel on Brush Frame.
53. Then all 10" Brushes (GG) into the front 3 rows of channel on Brush Frame.
54. Repeat on opposite side.



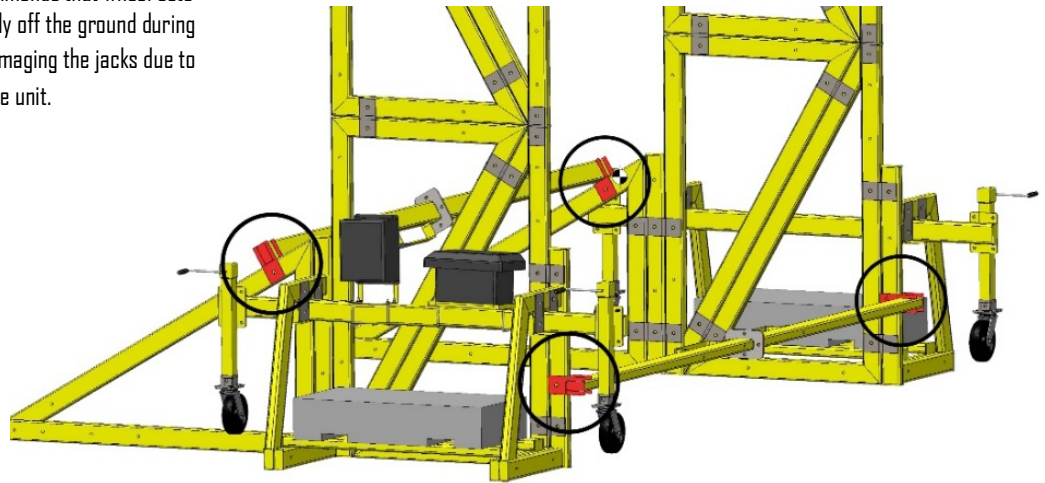
55. Drop Clevis Pins through hole at end of brush channel rows and insert Hairpin Clip.



56. Raise and lower Plow, checking front to back balance of plow, after the insertion of the brushes.
57. Re-balance as necessary, as instructed in STEP #47, page 22. A properly balanced plow should hang freely and raise and lower smoothly with no hang ups.
58. **MD-12B Bus Brush Model** FleetPlows are complete.
59. Should you decide to relocate your FleetPlow after the assembly, be sure to attach the Tow Bars using the clevis pins to the appropriate positions and lower the plow to its lowest position, before moving the FleetPlow.

NOTE: The FleetPlows are designed to be moved without needing to remove the concrete ballasts.

- Scraper Systems recommends that wheel sets are retracted sufficiently off the ground during operation to prevent damaging the jacks due to incidental bumping of the unit.



Conversion Between Operating and Rolling Modes

The FleetPlow™ has been designed for raising the frame and rolling without removing the concrete ballast weights.

- 1) **To prepare for rolling,** fasten the tow bars to the front and back of the unit using clevis pins in the holes provided.
- 2) Lower Plow Assembly to bottom of guide tracks.
- 3) Using the screw jacks, lower each wheel set so the FleetPlow frame is raised approximately 2 inches off the ground.
- 4) Depending on equipment available you may move your FleetPlow by various methods. (See Page 25)
- 5) Move slowly to the desired location on your lot and position.
- 6) **To prepare for operation,** use jacks to raise each wheel set so the frame is lowered onto the ground.
- 7) Remove the tow bars and store them in a suitable place.

Towing with a Vehicle

CAUTION: The FleetPLOW is not equipped with brakes on the caster wheels. If it is necessary to tow your FleetPLOW on a decline, you must provide a second vehicle on the back side to which the FleetPLOW is strapped to keep the FleetPLOW from rolling forward into the towing vehicle.

- Attach straps to plow side towbar of FleetPLOW, as shown.
- Pull slowly, Scraper Systems recommends having a spotter to help guide the driver while towing.
- Caution must be taken to allow appropriate stopping distance between the tow vehicle and FleetPLOW.
- Tow your FleetPLOW to your operating or storage location.



Moving with Forklift

- Put forks through fork slots on the towbar, of the exit side of the FleetPLOW, as shown.
- Lift and tilt forks back till wheels closest to forklift are slightly off the ground.
- Push or pull as need to move the FleetPLOW to your Operating or storage location.



▲ WARNING

Before operating this machinery, read the provided Owner's Manuals for all operational and maintenance requirements and procedures. Failure to read and comply with the contents of these manuals can result in serious bodily injury or death, and/or property damage. This machinery should not be operated or maintained by persons who have not read and understood all the contents of these manuals.

PLEASE REVIEW THE OPERATING INSTRUCTIONS IN OWNER'S MANUAL .



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This product is covered by one or more of the following U.S. Patents: 8,584,295; 9,168,898; 9,321,432; 9,834,181; 10,351,108; and U.S. and International Patents Pending.

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