QUBICA AMF

EDGE PERFORMANCE LIFT

Upgrade Installation Manual

For 70XL, 70XLi, 90XL, & 90XLi

These Original Instructions were written in English

400-088-150 **Revision B**

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QubicaAMF
Edge Performance Lift Upgrade Installation Guide

400-088-150 Rev. B

SUMMARY OF CHANGES

Change No.	ECR No.
NEW	12-0189-02
Rev. B	17-0065

List of Effective Pages

Page	Change No.	Effective Date
All	Revision A	01/10/2013
12-13	Revision B	2/28/2017

Edge Performance Lift Upgrade

Installation of the *Edge Performance Lift* requires the removal of the existing pin elevator wheel assembly and installing the new Edge Performance Lift assembly. The existing distributor is slightly modified and reused, and a couple of new parts including an access ladder with handrails will be installed. The new Edge Performance Lift is designed to provide gentler pin handling, proper pin orientation and requires fewer adjustments than the existing pinwheel assembly.

If you purchased the Edge Performance Lift – Full Upgrade Kit which includes the Durabin Upgrade Kit, it is recommended that you install the Durabin Upgrade Kits first before proceeding with the Edge Performance Lift Upgrade. Follow the 400-088-029 Durabin w/BSO Field Upgrade instructions included with the Durabin Upgrade Kit. The Edge Shuttle Rod assembly (088-001-631), included with this upgrade, can be installed during the installation of the Durabin Upgrade Kit. The Edge Shuttle Rod Assembly installation instructions are included near the end of this manual. A "where used" list and an identification sheet is included in the back of the manual to help with the sorting of the included hardware.
This manual includes installation instructions of the Edge Performance Lift to both the 70 (XL & XLi) and 90 (XL & XLi) pinspotters.

Edge Performance Lift Upgrade Instructions

Required Tools

Ratchet (3/8" Drive) and 7/16", 1/2", 9/16", 10mm, & 17mm Sockets

7/16", 1/2", 9/16" (2), 10mm, & 17mm Combination or Ratchet Wrenches

Locking Pliers

5/32", 7/32" & 3/16" Hex Allen Wrenches or Sockets

Carpet Removal Pins (792-501-001) (2)

Carpet Tool Handle (784-003-000) or Crowbar

9" Level

File

2 Phillip Screwdrivers

Spring Puller 792-505-005

Utility Knife

Drill – 3/8" chuck or larger

Hammer Drill

7/16" Masonry Drill bit

Vacuum

Tap Wrench (sized for a 5/16-18 tap)

Torque Wrench (793-513-048)

4 pcs of 2X4s – 2 pcs two feet long and 2 pcs one foot long

Cordless Impact Driver – 12volt or larger (Optional)

4 wheel furniture dolly (Optional)

Machine Preparation

1. Lower the Sweep to the first guard position for safety.
2. Turn off the Chassis and disconnect power cords. Lock out and tag out in accordance with your centers appropriate procedures.
3. Release the Curtain from Curtain Retaining Bracket.
4. Rotate the Pin Elevator Wheel so that a Cleat will not interfere with the removal of the Distributor.
5. Remove the Distributor. Label each Distributor so that it can be reinstalled on the same lane from which it was removed. We will describe the Distributor modifications later in this manual.
6. Remove the Handrails (A) (Figure 1) from the pinspotters at the common division (lanes 2 & 3); this is where the new Ladder Assembly will be installed. Retain the hardware and the Rail Support Brackets (090-005-005).

   For 70XL and 70XLi

7. Remove the Handrail from the first pinspotter / last pinspotter of a continuous series of pinspotters.

Removal of the Chassis Support Bracket

8. Remove the PBL / LBS Guard. (B)
9. Remove the Ball Lift Guard Weldment. (C)

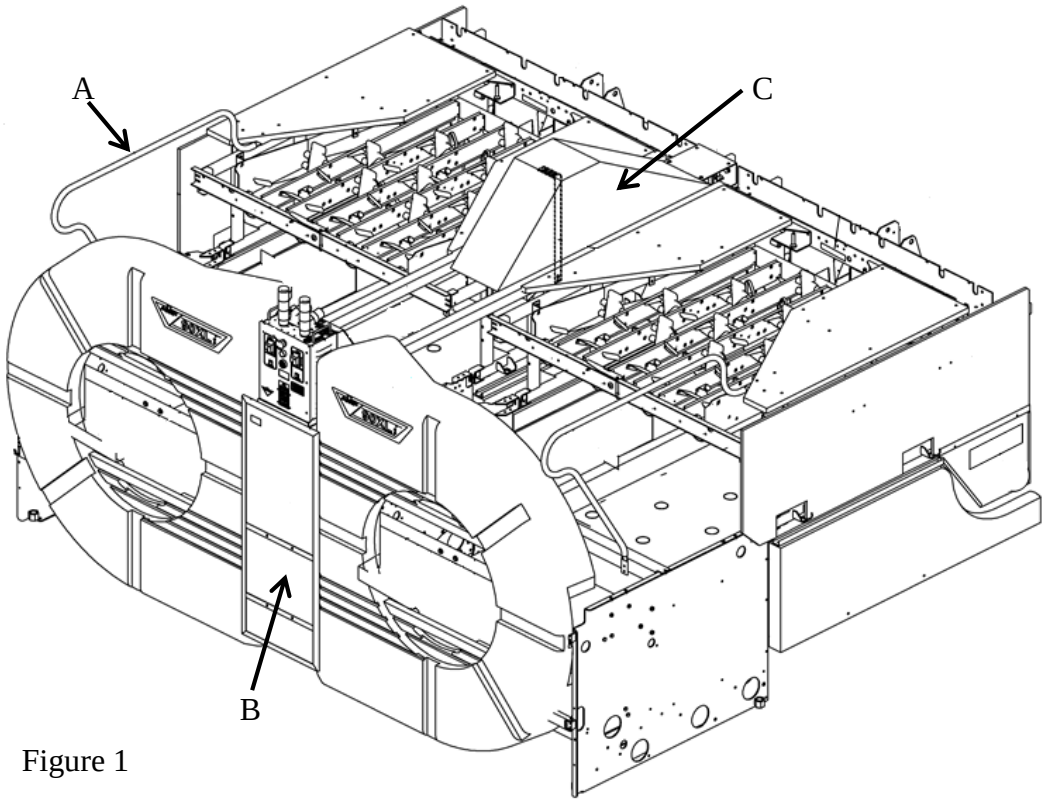


Figure 1

10. Remove the Chassis Cover. (D) (Figure 2)
11. Remove the rear Cable Duct Covers from both the odd and even pinspotters. (E) (Figure 2)
12. Disconnect the Backend Motor Cord connector from the machine power cable. The connector will be located in the rear cable duct. Do this for both pinspotters.
13. Remove the four 1/4-20 Keps nuts securing the Chassis (F) (Figure 2) to the Chassis Mounting Weldment (G) (Figure 2) (XL 090-004-706, XLi 088-000-112 or 088-200-486). Leave all the cables connected to the Chassis. Lift the Chassis from the Chassis Mounting Weldment and place the Chassis on the Platform of either the odd or even pinspotter with the back side (connector side) of the Chassis facing towards the rear of the pinspotter.
14. Remove the nut and bolt (H) (Figure 2) that secures the rear Cable Duct to the Chassis Mounting Weldment (G) assembly. Do this for both pinspotters.

Note: Retain the hardware removed in steps 8– 14 to be used during reassembly.

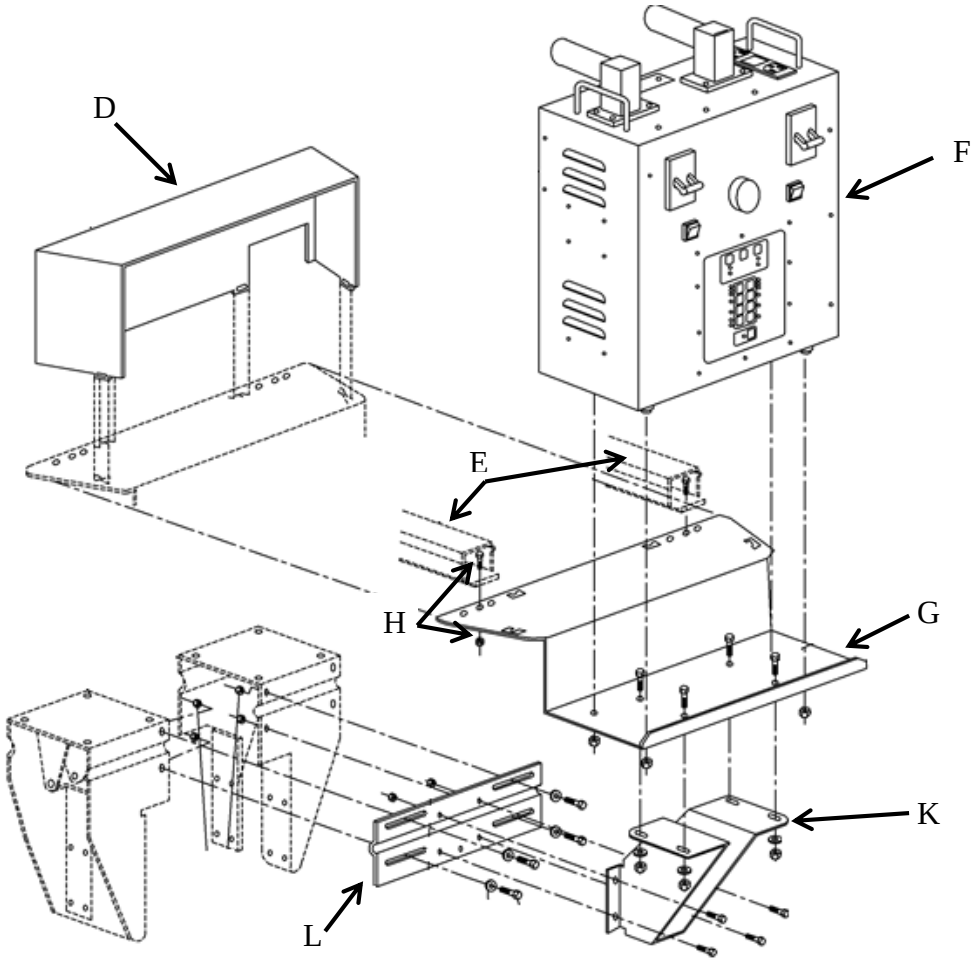


Figure 2

For 70XL and 70XLi

15. Remove the pin elevator wheel Guard Support Braces (070-011-891). (I) (Figure 3)

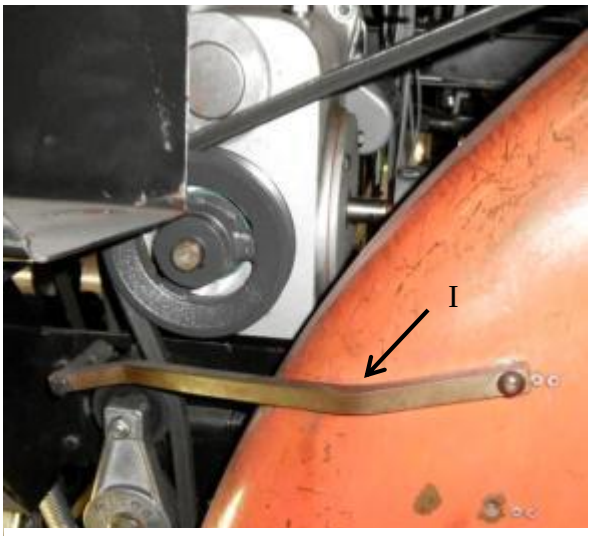


Figure 3

For all pinspotters

Figure 4

16. Remove the Pin Wheel Belt Guard from the Wheel Guard. (if applicable)
17. Release the tension on the pin elevator Belt Tensioner assembly (090-003-509) (J) (Figure 4) and remove it from the Backend Motor Mount.
18. Remove the Chassis Mounting Weldment (G) (Figure 2) (XL 090-004-706, XLi 088-000-112 or 088-200-486) from the Chassis Support Bracket (K) (Figure 2). Retain Chassis Mounting Weldment for reassembly.
19. Remove the Chassis Support Bracket (K) from the Tie Plate (L) (Figure 2) and discard.

Removal of the Pin Elevator Assembly

For all pinspotters

20. Remove the Pin Elevator Wheel Belt (090-002-065 or 070-002-005) from the Drive Pulley (000-023-673) on the Backend Gearbox.
21. Remove the Tension Spring (000-024-673) (M) (Figure 5) for the Ratchet Wheel Idler Pulley and the Tension Spring (000-026-031) (N) with the Extension Rod (070-011-034) (N) from the Strap (070-011-035) (O). Set these aside for use during reassembly.
22. Remove the Strap (070-011-035) (O) from the odd and even pinspotters kickback plates. Retain the Strap for reassembly. On 70XL and 70XLi, reinstall the hardware to support the Pin Wheel when removing the LBS in step 30.

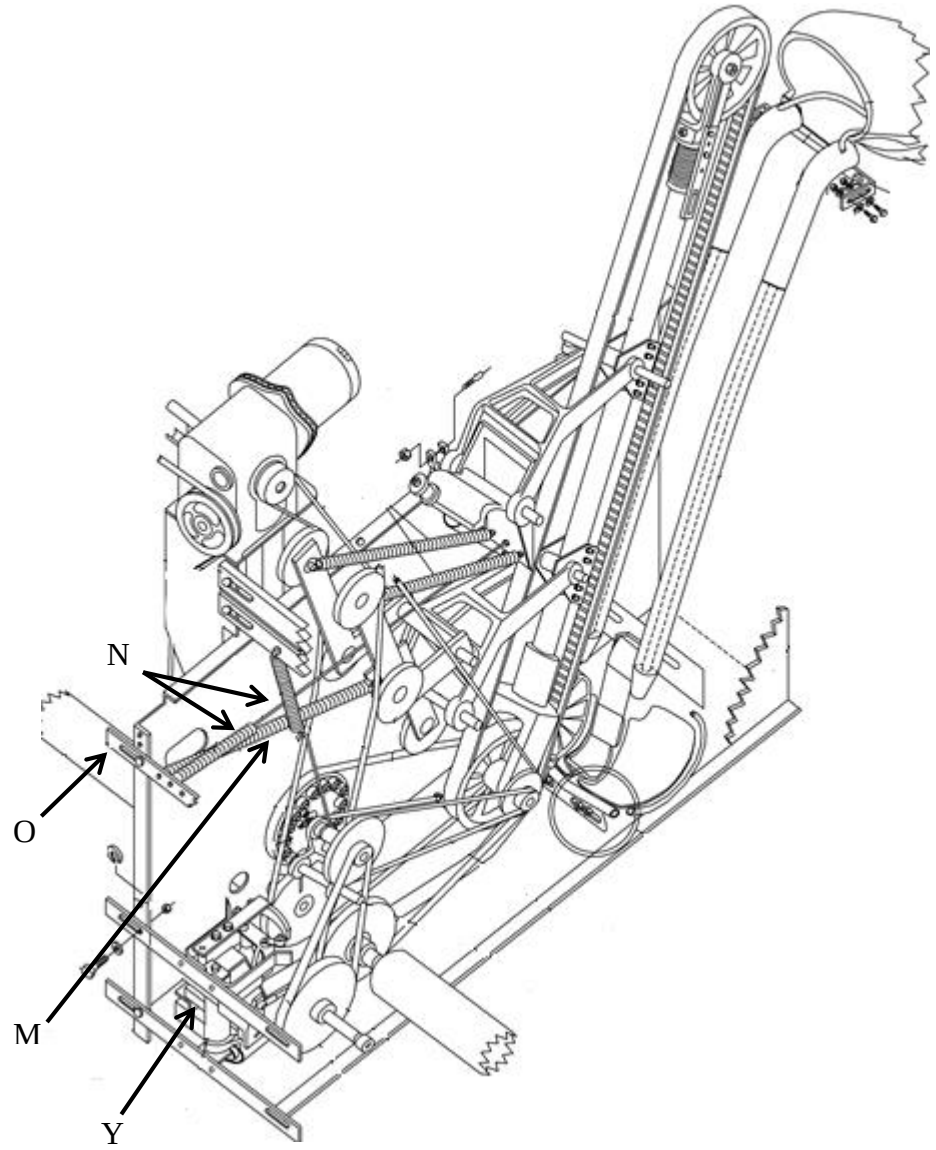


Figure 5

For 90XL & 90XLi

23. Remove the Wheel Guard (090-007-145 or 090-005-140) (P) from the Hoop Weldment (090-003-102 or 090-004-109) (Q). (Figure 6)
24. Remove the Distributor Mount Weldment (090-003-112 or 090-004-101) (R) from the Hoop Weldment (Q) and the Support Bracket (070-007-359) (S) (Figure 6).
25. The Hoop Weldment, Pin Elevator Wheel, and Drive Belt will be removed from the Kickback Side Plates as one assembly. Two people are recommended to support this assembly when removing.
26. Loosen and remove the four nuts (T) from the four 5/16-18 X 2 1/2" hex head bolts (809-857-405) that secures the Hoop Weldment to the Hinge/Spacers (090-005-106) (U) (Figure 6).

27. While supporting the Hoop Weldment remove the four 5/16-18 X 2 1/2" hex head bolts (V) from the Hinge/Spacers. (Figure 6) Remove this assembly, it will not be reused.
28. **Do not remove the Hinge/Spacers at this time.**

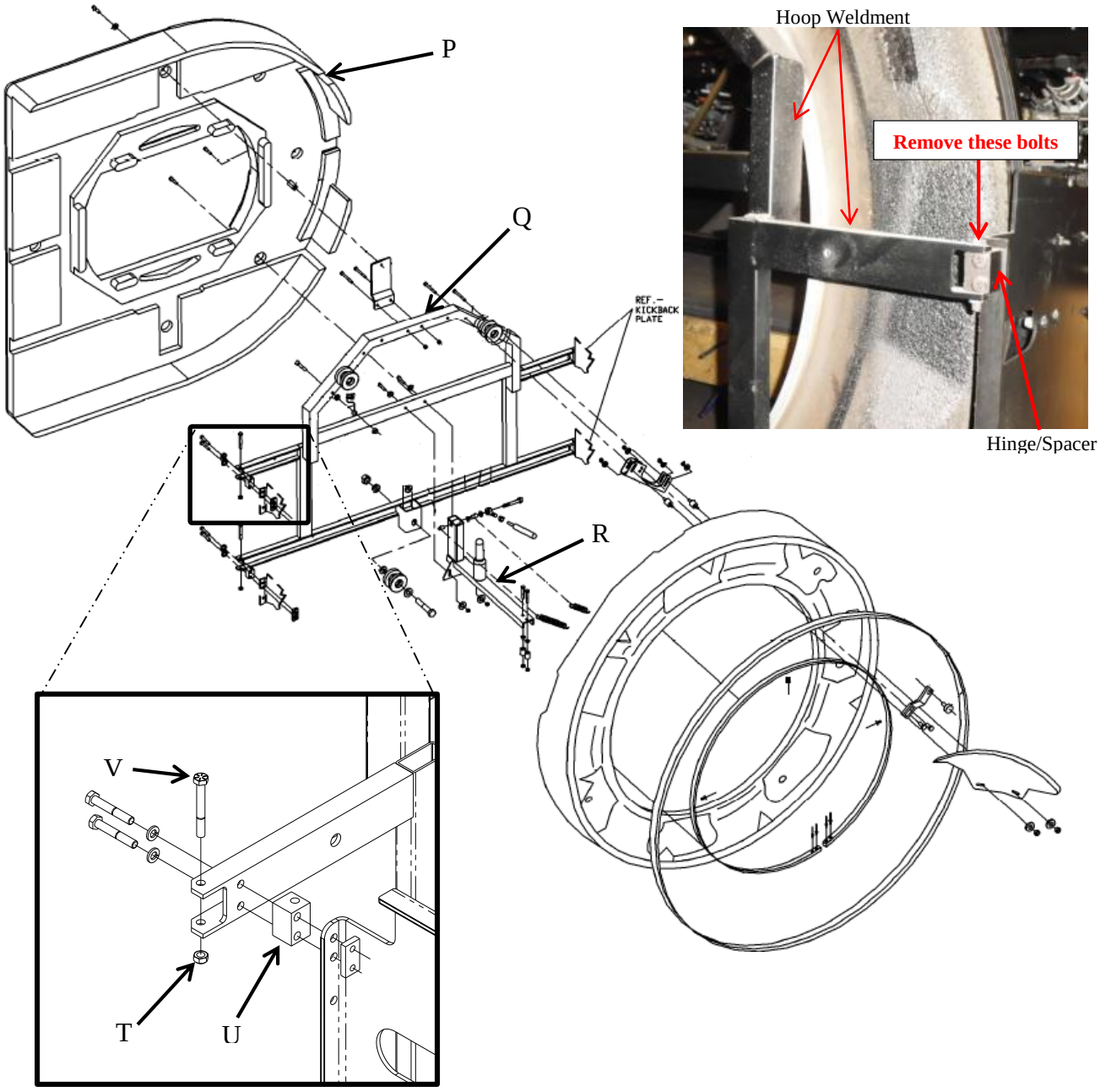


Figure 6

For 70XL & 70XLi

29. Remove the Distributor Mount Weldment (070-006-040) (W) from the Wheel Guard (070-001-207) (X) (Figure 7) and the Support Bracket (070-007-359) (S) (Figure 8).
30. Remove the Light Ball Sensor assembly (070-011-120) (Y) (Figure 5) from the pinspotters. Set aside for later attachment during reassembly.
31. Pull the Wick (000-029-203) (AA) and Spring (000-029-202) (BB) (Figure 7) from the Oiler Body and discard. Clean out any remaining oil from the Oiler Body.
32. Stack pieces of 2X4s under and parallel with the Pin Elevator Wheel (not the Guard) to support the weight of the Pin Elevator Wheel and Guard assembly. You may need to use other thicknesses of lumber to get the wood stack to the correct height to contact the Pin Elevator Wheel.
33. **Two people are recommended to support this assembly when removing**. While holding the Pin elevator Wheel assembly, remove the 3 remaining bolts securing the assembly to the kickback plates. This assembly will not be reused.

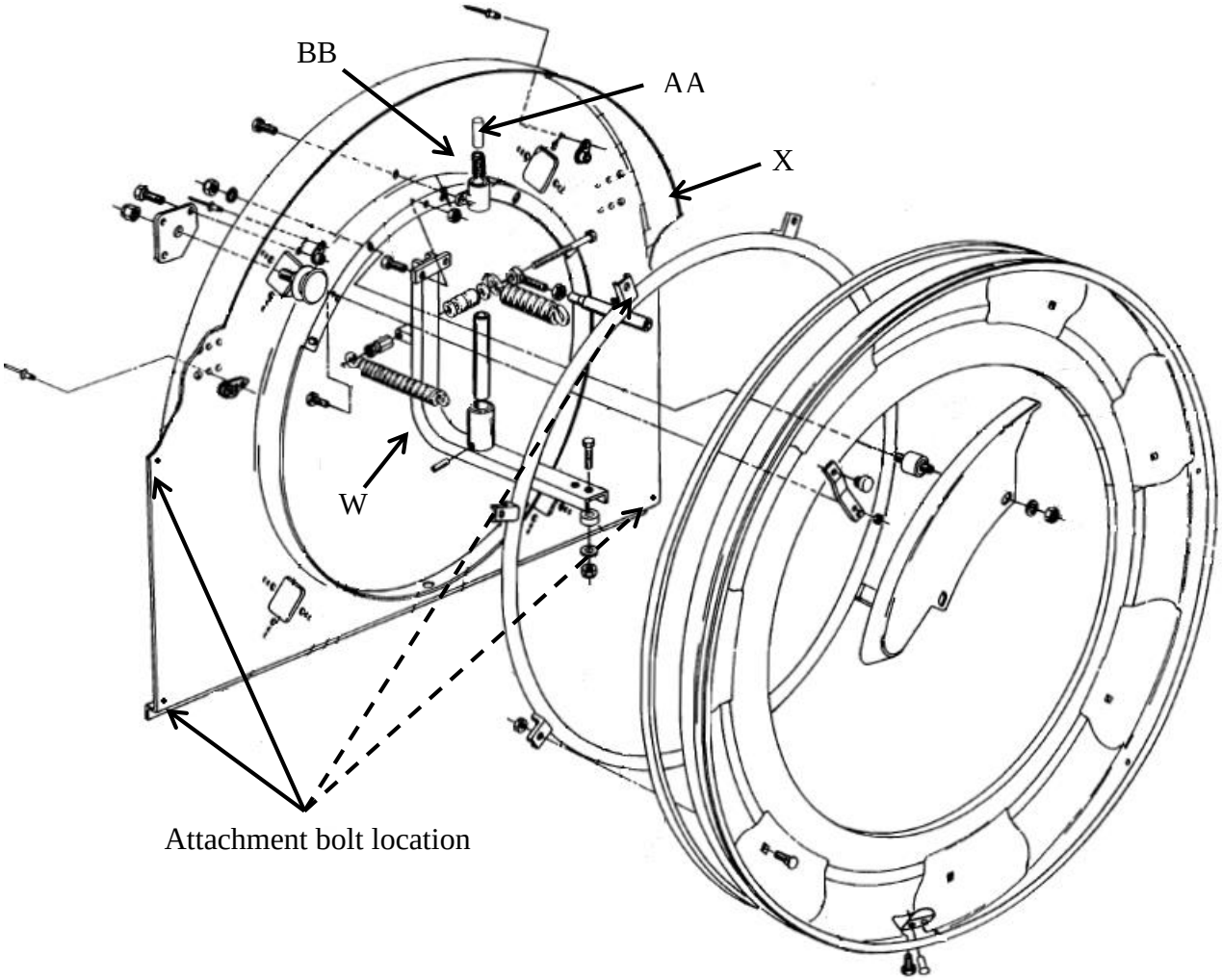


Figure 7

Removal of the Plow and Apron Assemblies

For all pinspotters

34. Remove the Small Plow (070-002-168, 070-001-404) (CC) (Figure 8) from the Ball Door Side (BDS) Kickback Plate and the Apron assembly (030-006-963, 030-006-964) (DD).
35. Remove the Large Plow (000-027-380, 000-027-381) (EE) and Apron assembly (DD), as one unit, from the Kickback Plates.
36. Remove the Side Clip (000-023-821) (FF) and the Bottom Clip (000-023-431 or 432) (GG) from the Opposite Ball Door Side (OBDS) Kickback Plate if not already removed.
37. Remove the Pin Ejector assembly (000-024-507 or 508) (HH) from the OBDS Kickback Plate.

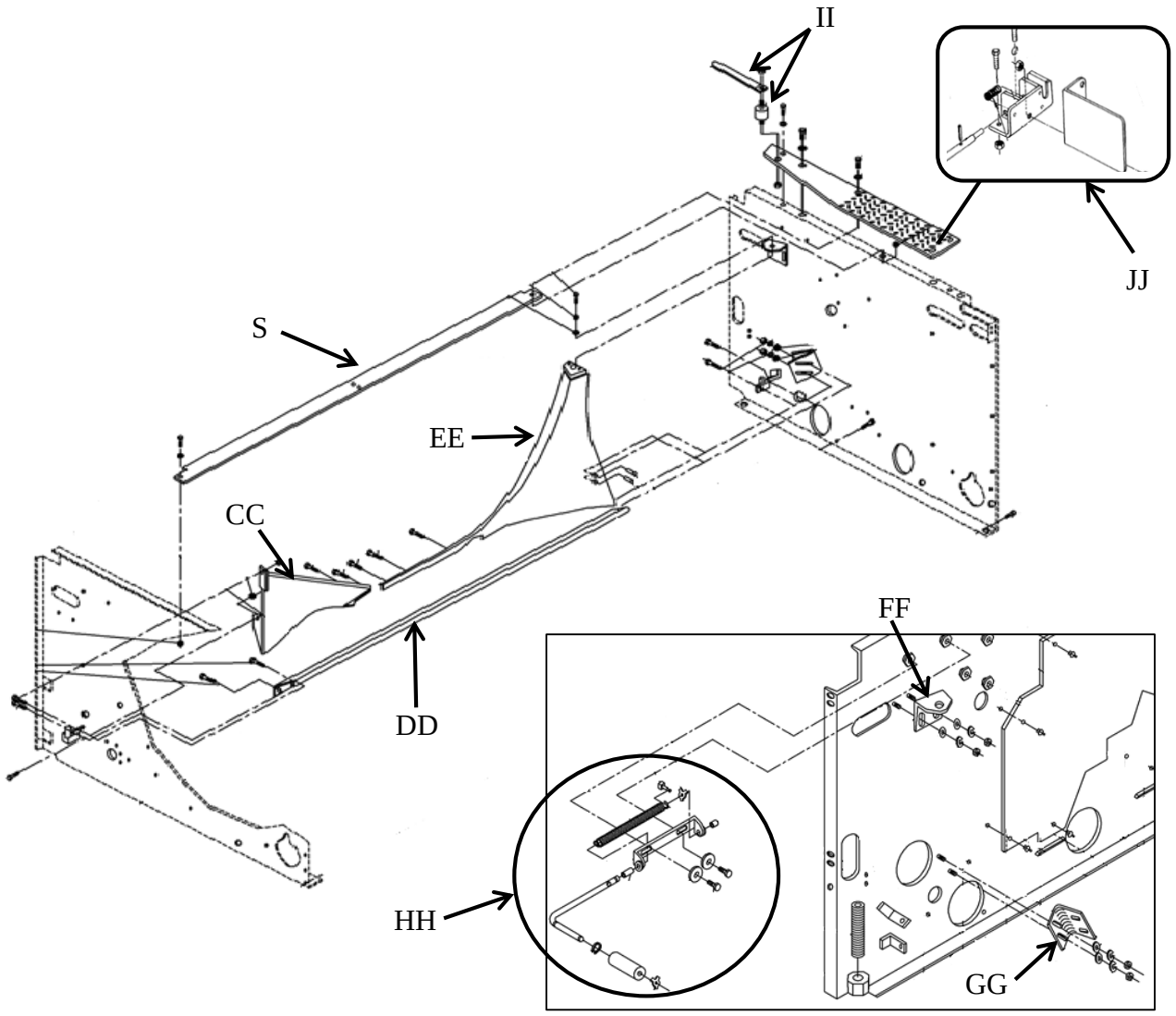


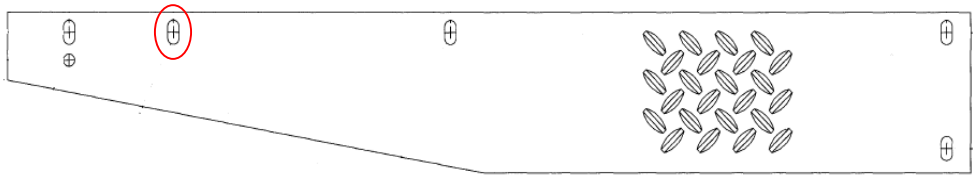
Figure 8

For 90XL & 90XLi

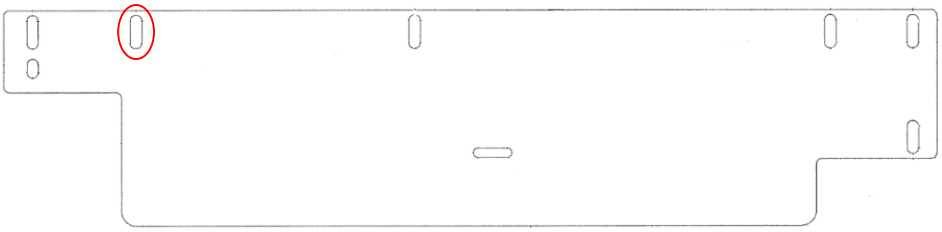
38. Remove the Pin Seating Rod (070-001-195) (II) and the Rubber Mount (000-029-068) (II) (Figure 8) from the Tread Weldment (090-004-210RH, 090-004-211LH for 90XL or 088-001-120 Even, 088-001-121 Odd, 088-200-059 Even, 088-200-060 Odd for 90XLi). (Figure 9)
39. Loosen the middle and remove the rear 5/16-18 x 1 1/4" bolt securing the Tread Weldment to the top of the OBDS Kickback Plate.

For 70XL & 70XLi

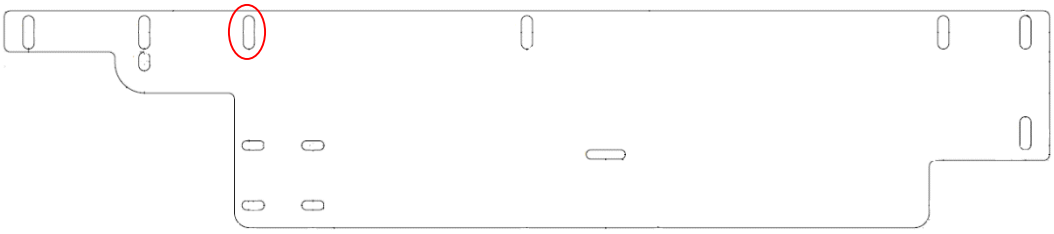
40. Remove all the bolts securing the Tread Weldment (070-001-357RH, 070-002-157LH) (Figure 9) to the OBDS Kickback Plate.
41. Remove the Curtain Retaining Support Bracket assembly (070-007-360) (JJ) (Figure 8) from the Tread Weldment. Retain the Curtain Retaining Support Bracket assembly for reassembly. Discard the Tread Weldment.



090-004-211 LH shown, 090-004-210 RH (90XL)

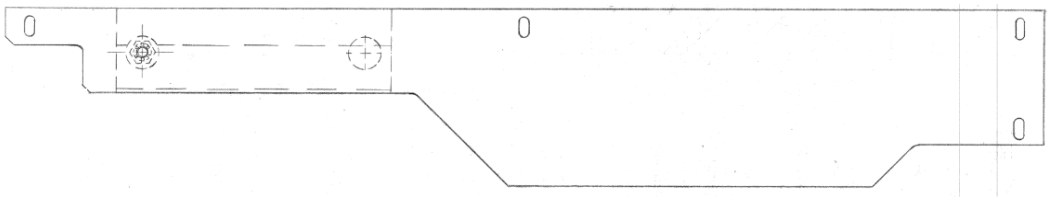


088-001-120 Even shown, 088-001-121 Odd (Early 90XLi)



088-200-059 Even shown, 088-200-060 Odd (Later 90XLi and XLi Edge)

*** Above three styles of Tread Weldments will be used with the Edge Performance Lift Upgrade ***
As they have the correct bolt hole location needed for the new Distributor Support (088-001-521, - 520)



070-002-157 LH Shown, 070-001-357 RH (82-70, 70XL and 70XLi)

*** This style of Tread Weldment needs to be replaced with provided 088-200-059 or – 060 Tread Weldment***
Included in the 088-001-871 or 088-001-872 (70 Odd or 70 Even Edge Performance Lift Upgrade Kit)

Figure 9

For all pinspotters

42. Clean the kickback plates to remove any grease and grime from the areas where the plow and apron assemblies were attached.

    Picture at right depicts how the back end should look at this point.

Installing the Anti-Idling Assembly & Anti-Idling Corner Block

43. Release the Front Roller from its Bearing Support Brackets as described in the pinspotter service and parts manual.
44. Place the Front Roller onto the Bounce Board assembly. It does not have to be removed from the pinspotter.
45. Disconnect the Cushion Shock from the Cushion Weldment. Retain the Pin (000-022-821) and Washers (948-975-172) for use during reassembly.
46. Remove the Angle (000-022-878) (KK) (Figure 10) from the BDS Kickback Plate.

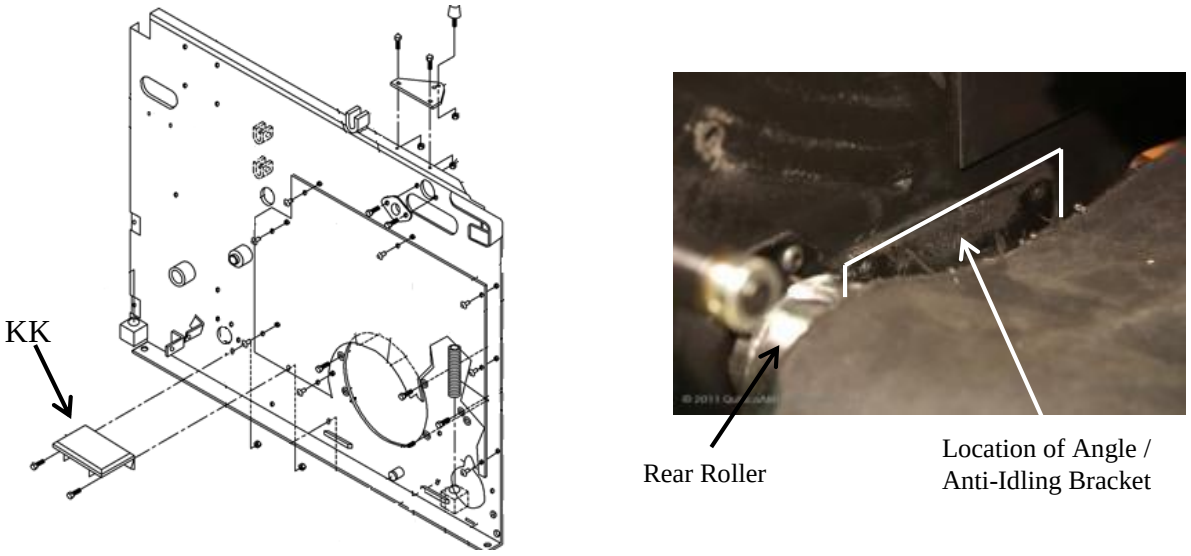


Figure 10

47. Install the Anti-Idling Bracket assembly (088-001-570 for even pinspotter (LL), 088-001-569 for odd pinspotter (MM) (Figure 11)).
    A. The Anti-Idling Bracket assembly will attach in the same location as the Angle.
    B. Work the Anti-Idling Bracket assembly under the Carpet but on top of the Bounce Board assembly, with the studs facing toward the Kickback Plate.

C. Using your arm closest to the Kickback Plate that the Anti-Idling Bracket assembly will attach to, reach inside the Carpet and grasp the end opposite of the studs.

D. Work the Anti-Idling Bracket assembly off of the Bounce Board assembly onto the inside of the Carpet.

E. With your other hand reach under the bottom of the Carpet, pushing the Carpet and Anti-Idling Bracket assembly upward to align the studs with the holes in the Kickback Plate, while pulling the Anti-Idling Bracket assembly towards the Kickback using the hand inside the Carpet.

48. **Make a quick check to be certain the correct Anti-Idling Bracket assembly is installed in the correct pinspotter**. Look at the bottom edge of the fiber panel and the top edge of the Anti-Idling Bracket assembly. The top edge of the Anti-Idling Bracket assembly will be parallel with the bottom edge of the Fiber Panel when the correct Anti-Idling Bracket assembly is installed. (Figure 11)

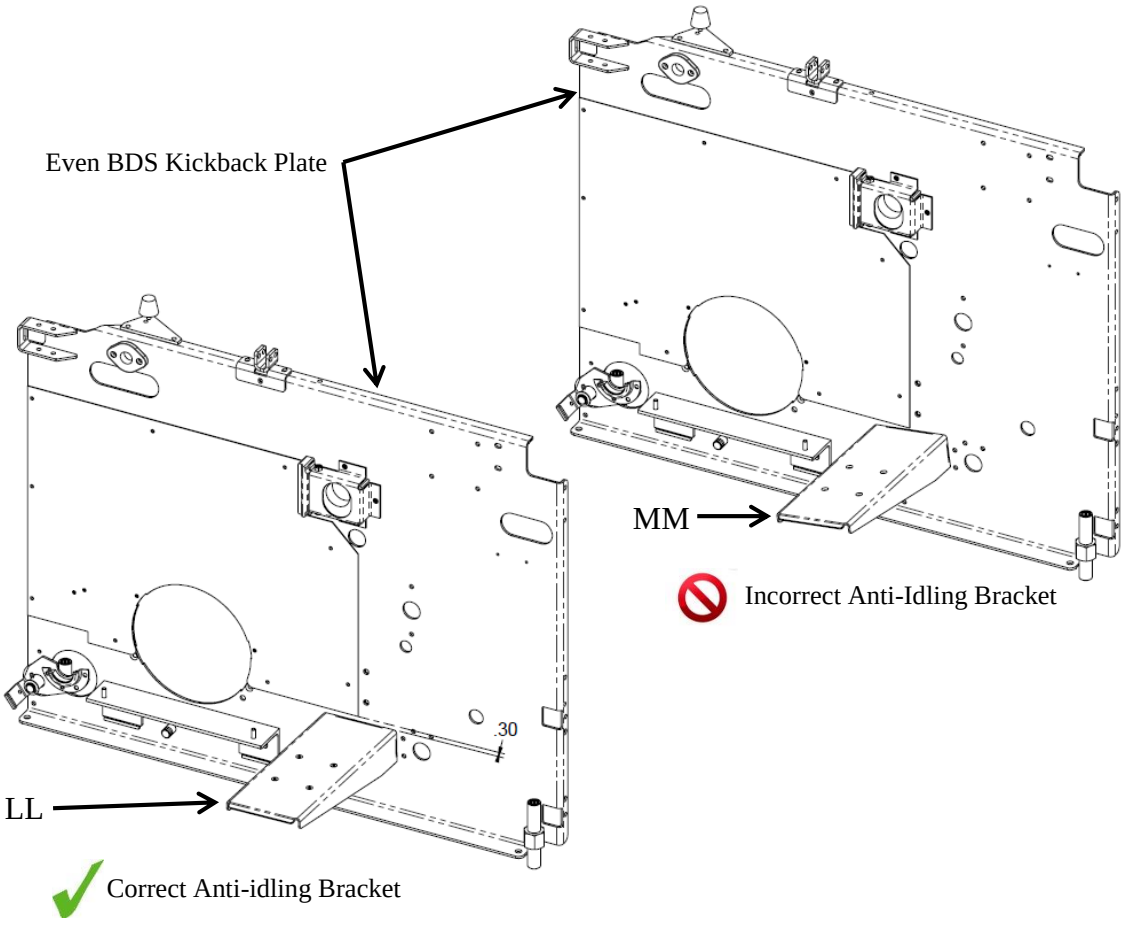


Figure 11

49. Secure with two 5/16-18 Stover nuts included in the 088-001-839 Hardware Kit. Fully tighten the nuts.

50. Place the Edge Corner Block Drill Guide (088-001-838) (Figure 12), packaged in the 088-001-839 Hardware Kit, against the BDS Kickback Plate and make sure that the guide is setting on the top of the Anti-Idling Bracket assembly with the inside of the small tab against the front end (toward the tail plank side) of the Anti-Idling Bracket assembly.

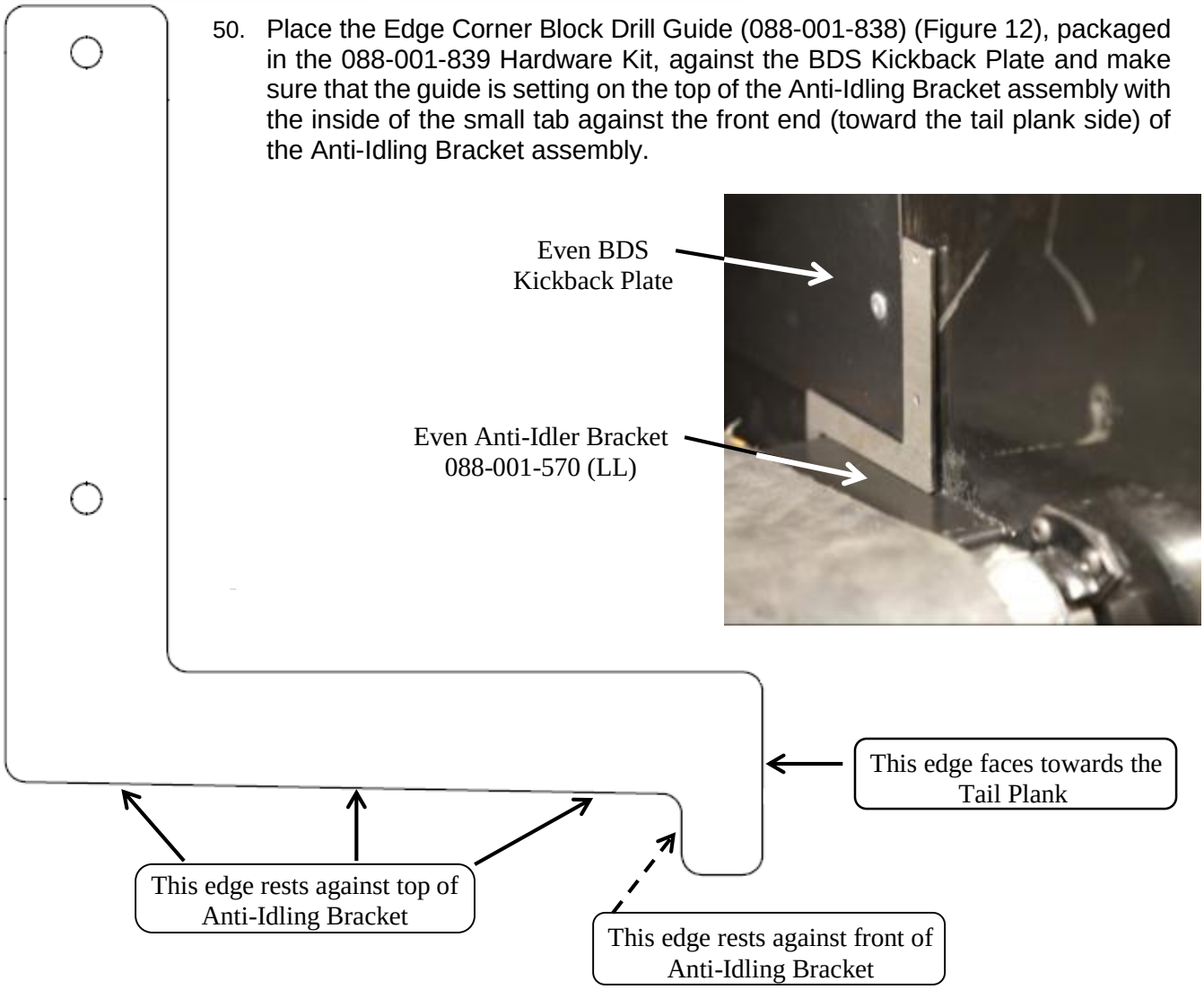


Figure 12

51. While holding the Edge Corner Block Drill Guide in this position, use the 3/16” drill bit (782-505-028) to drill the pilot holes for the Anti-Idling Corner Block.
52. Remove the drill guide and open the holes to 11/32” using first the 1/4" drill bit (782-505-029) then the 11/32” drill bit (782-505-030).
53. Use a file or deburring tool to remove rough edges from the holes.
54. Vacuum the metal chips from the carpets, kickbacks, and floor.
55. Attach the Anti-Idling Corner Block (088-001-640 even or 088-001-641 odd (Figure 13)) using two 5/16-18 x 3 Screws 808-557-481, four Spacers 722-505-002, two 5/16 Washers 948-722-111, and two Nuts 844-057-002 included in the hardware kit. Be sure that the spacers go between the anti-idling block and the kickback plate. The washers should go between the block and the screw heads. Tighten securely.
56. Reconnect the Cushion Shock to the Cushion Weldment. Be sure to place the two Washers (one on each side) of the Cushion Shock and the inside of the hanger ears of the Cushion Weldment. Secure the Pin with an X-washer (963-600-002).

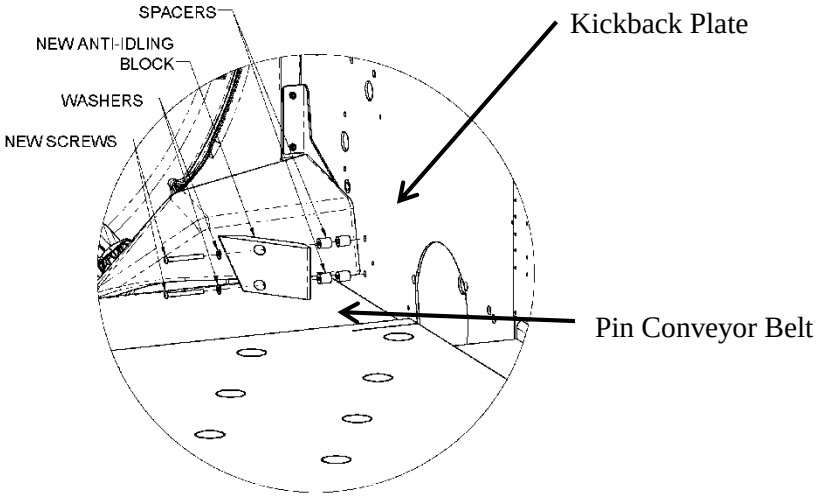


Figure 13

57. Install the Front Roller as described in the pinspotter service and parts manual.

Check for Pin Clearance under the Cushion Assembly

58. By hand, pass a bowling pin under the Cushion Assembly and check for any areas where the belly of the pin contacts the Cushion Plank, Facing, or Rivets. Do this along the entire length of the Cushion.
59. If the pin contacts only the Facing, trim the bottom of the Facing even to the bottom edge of the Cushion Plank using a utility knife. If using the Velcro Cushion Cover, always align the bottom edge of the Velcro Cushion Cover to the Cushion Plank.
60. If the pin is contacting the Cushion Plank, the Cushion Block Support (000-022-794 for the odd and 000-022-795 for the even pinspotter) should be replaced on the BDS Kickback Plate. (Included in the Upgrade kit)
61. If the pin is still contacting the Cushion Plank, slightly loosen the hardware mounting the Cushion Plank to the weldment. Have a helper, using a 2 x 4 placed on edge, lift the Cushion Plank, while you tighten the mounting hardware.

Installing the Idler Mounts

62. Locate the Idler Assembly (088-001-550 Even or 088-001-549 Odd) (OO) (Figure 14).
63. Unscrew the Tension Adjusting Screw (809-857-445) (PP) from the Idler Bar Weldment, allowing the Idler Bar and Pulley Assembly (Z) to be removed from the Idler Mount (RR). Set the Idler Bar and Pulley Assembly and hardware aside. (Figure 14)
64. Remove the nuts from the most rearward two bolts of the four bolts attaching the Backend Motor Mount (090-003-509) (QQ) to the BDS Kickback Plate. (Figure 15) **Do not remove the bolts at this time.**

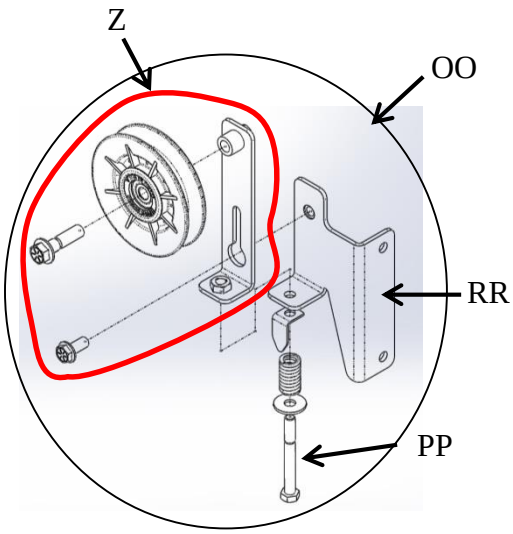


Figure 14

65. Remove only one of the two bolts.
66. Attach the Idler Mount (RR) (088-001-539 Even or 088-001-534 Odd) (Figure 15) to the outside of the BDS Kickback Plate using a 5/16-18 x 1 Hex Screw 809-857-165 placed thru the hole of the Idler Mount that corresponds to the bolt removed in step 65, then thru the kickback plate, and finally thru the Backend Motor Mount. Start, but don't tighten, a 5/16-18 Stover nut on the bolt.

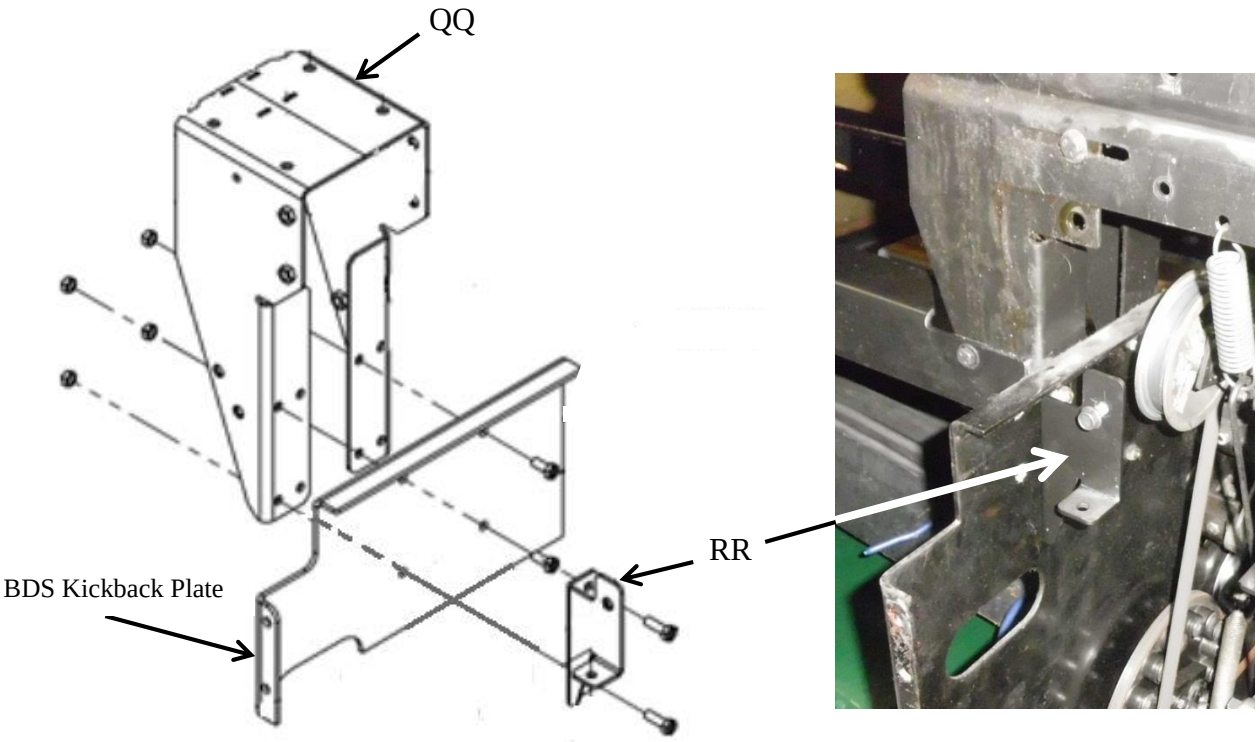
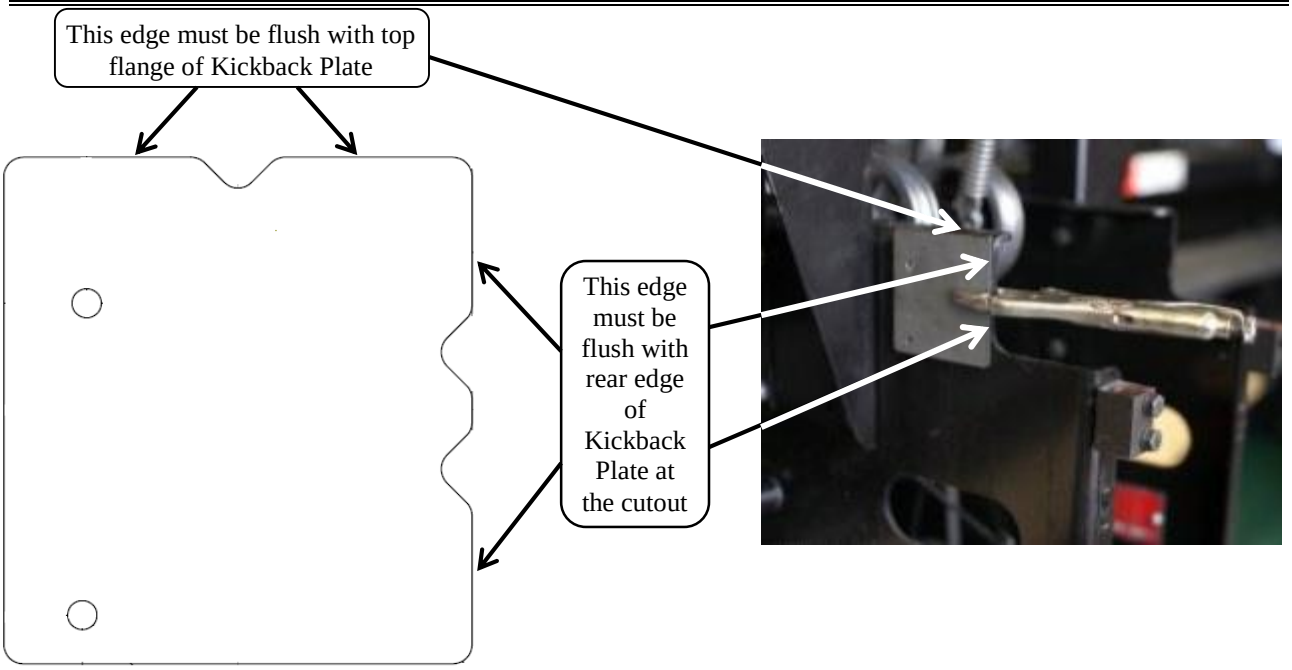


Figure 15

67. Install the second bolt to secure the Idler Mount to the kickback plate repeating steps 65 and 66.
68. Tighten all the nuts and bolts.

Drilling the Edge Drive Support Bolt Attachment Holes

69. Place the Edge Drive Support Drill Guide (088-001-837) at the inside of the rear upper corner of the BDS Kickback Plate. Using a straightedge or level, align the edge with one notch flush to the top flange of the kickback plate. Align the edge with the two notches flush with the back edge of the kickback plate. Clamp the drill guide in place with locking pliers. (Figure 16)
70. Use the 3/16" drill bit (782-505-028) to drill the pilot holes.
71. Remove the drill guide and open the holes to 13/32" using first the 1/4" drill bit (782-505-029), then the 11/32" (782-505-030), and finally the 13/32" drill bit (782-505-031).
72. Use a file or deburring tool to remove rough edges from the holes.
73. Vacuum the metal chips from the carpet, kickback flanges, and the floor.



088-001-837
Edge Drive Support Drill Guide

Figure 16

Drilling the Distributor Support Bolt Attachment Holes

For 90XL & 90XLi

74. Place the flat end with the one hole of the Distributor Support (088-001-521 Odd or 088-001-520 Even (SS) (Figure 17)) under the Tread Weldment and on top of the flanged edge of the OBDS Kickback Plate. Have the other end supported either by a helper holding it or temporarily clamping it to the Backend Motor Mount* (QQ) with locking pliers.

75. Align the hole of the Distributor Support with the attachment hole of the Tread Weldment (see Figure 9, Page 9 for hole location), securing it to the OBDS Kickback Plate with a 5/16-18 x 1 1/4 Screw HHC (809-857-205) and 11/32 Washer PL Black Oxide (948-722-111). Tighten all the bolts securing the Tread Plate to OBDS Kickback Plate.

* Backend Motor Mount 088-001-800 has the holes drilled and weldnuts attached to accept the bolts that secure the Distributor Support. With this version Backend Motor Mount, support the distributor Support with the attaching hardware.

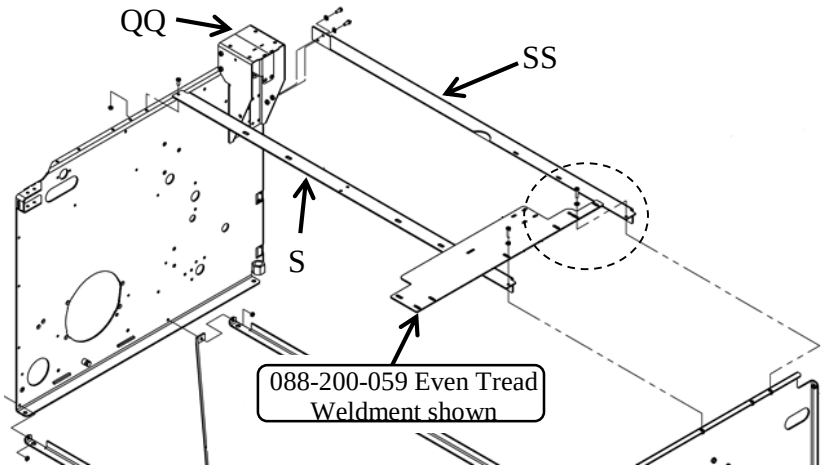


Figure 17

For 70XL & 70XLi

76. Secure the Curtain Retaining Support Bracket (070-007-360) (JJ) (Figure 8) removed in step 41 to the Tread Weldment (088-200-060 Odd or 088-200-059 Even), included in the 70 Edge Lift upgrade kit, using a 5/16-18 x 1 Hex Screw (809-857-165) and 5/16-18 Stover Nut (844-057-002) on the inside hole.
77. Attach the Tread Weldment to the OBDS Kickback Plate with three 5/16-18 x 1 1/4 Screw HHC (809-857-205) and 11/32 Washers PL Black Oxide (948-722-111). Do not tighten at this time.
78. Place the flat end with one hole of the Distributor Support (088-001-521 Odd or 088-001-520 Even (SS) (Figure 18)) under the Tread Weldment and on top of the flanged edge of the OBDS Kickback Plate. Have the other end supported either by a helper or temporarily clamping it to the Backend Motor Mount* (QQ) (Figure 17) with locking pliers.
79. Align the hole of the Distributor Support with the slot of the Tread Weldment that is located 4 3/4" (120.65mm) from the rear of the Tread Weldment.
80. Mark the location of the center of the Distributor Support hole on the flange of the OBDS Kickback Plate. (Figure 18)

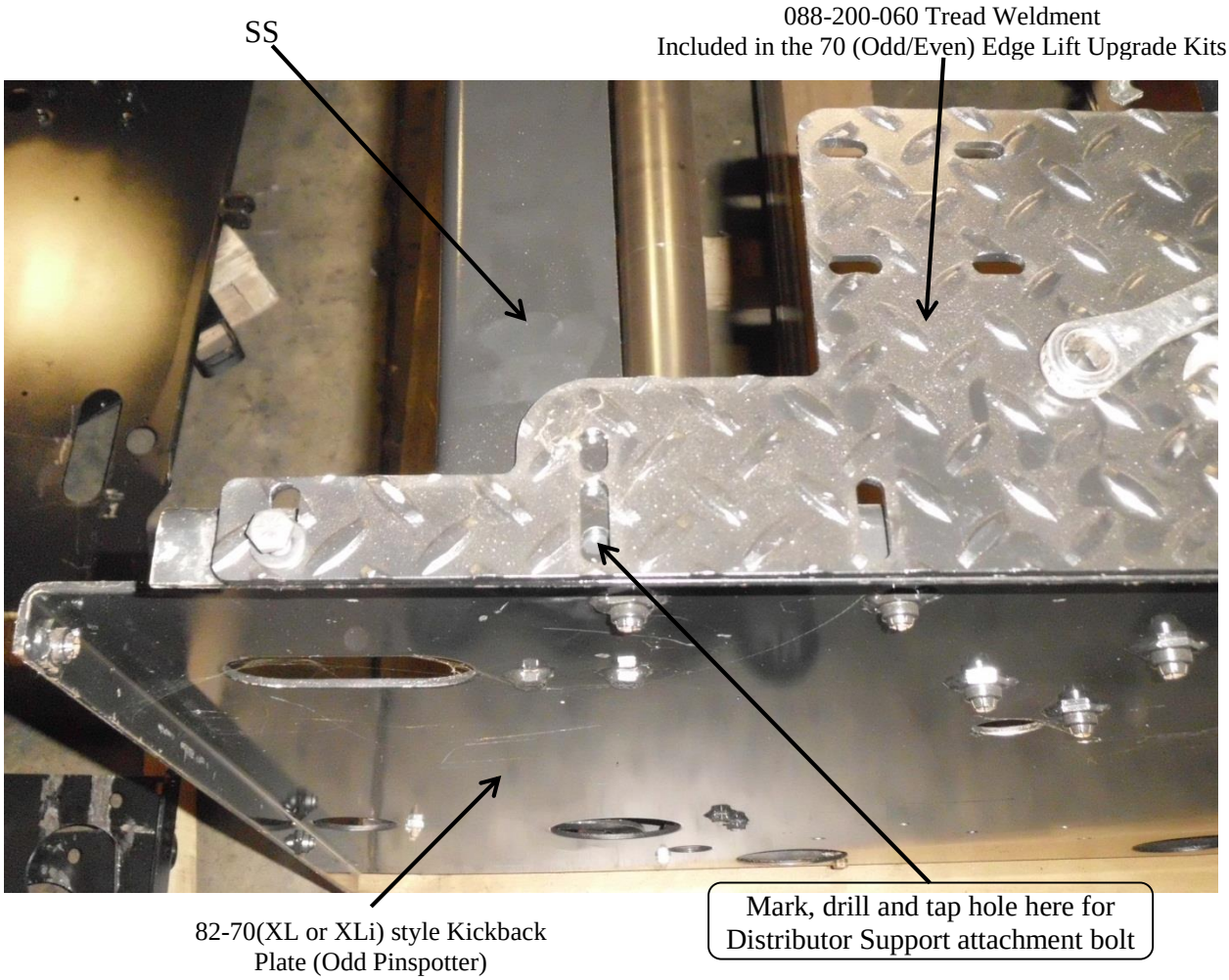


Figure 18

81. Remove the Distributor Support; drill a pilot hole using the 3/16” drill bit (782-505-028). Open the hole using first the 1/4" drill bit (782-505-029) and finally with the “F” drill bit (782-505-021).
82. Insert the included 5/16-18 Tap (792-043-570) into your tap wrench; cut threads for a 5/16-18 bolt in the hole drilled in step 81.
83. Reinstall the Distributor Support under the Tread Weldment and secure with a 5/16-18 x 1 1/4 Screw HHC (809-857-205) and 11/32 Washer PL Black Oxide (948-722-111).Tighten all the bolts securing the Tread Plate to the kickback plate.

For all pinspotters

84. Level the Distributor Support (SS) and when level, clamp to the Backend Motor Mount* (QQ) with locking pliers.
85. Using the 11/32” drill bit (782-505-030) mark the center of the holes using the Distributor Support as a drill guide. Drill pilot holes with the 3/16” drill bit (782-505-028) thru the Backend Motor Mount. Open the holes to 11/32” using first the 1/4" drill bit (782-505-029) and finally with the 11/32” drill bit (782-505-030).
86. Secure the Distributor Support to the Backend Motor Mount with two 5/16-18 x 3/4 Hex Screw (809-857-125) and 5/16-18 Stover Lock Nuts (844-057-002).
87. Vacuum the metal chips from the carpets, kickback flanges, and the floor.

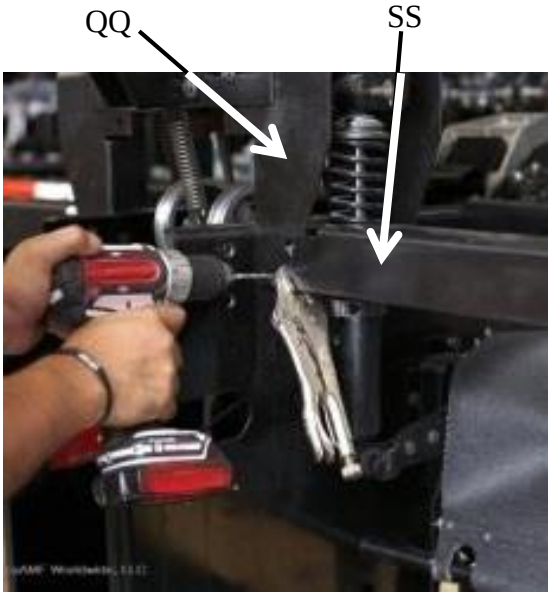


Figure 19

Installing the Distributor Mount

88. The Distributor Mount (088-002-208) (TT) (Figure 20) attaches to the Distributor Support (088-001-520 Even or 088-001-521 Odd) (SS) with two 5/16-18 x 1 Hex Screw 809-857-165 (a), four 5/16 GR8 Washers (947-356-617) (b), and two 5/16-18 Stover Lock Nuts (844-057-002) (c). One 5/16 GR8 Washers (947-356-617) goes under the bolt head and one under the nut when properly assembled.
89. The front end of the Distributor Mount attaches to the Support Bracket (070-007-359) (S) with two 5/16-18 x 2 ¼ Hex Screws (809-857-365) (d), two Distributor Support Spacers (070-008-449) (e), four 11/32 Washers PL Black Oxide (948-722-111) (f), and two 5/16-18 Stover Lock Nuts (844-057-002) (c). A Distributor Support Spacer (070-008-449) and two of the 5/16 flat washers are stacked together between the bottom side of the Distributor Mount and the top of the Support Bracket at each bolt location. 5/16 flat washers may need to be added or removed to correctly set the height of the Distributor above the Bin. (Figure 20)
90. Make sure that the Distributor Mount is all the way down in its slots or is contacting the top of the Distributor Support, and then tighten the nuts and bolts.
91. Securely tighten the nuts and bolts attaching the front of the Distributor Mount to the Support Bracket.

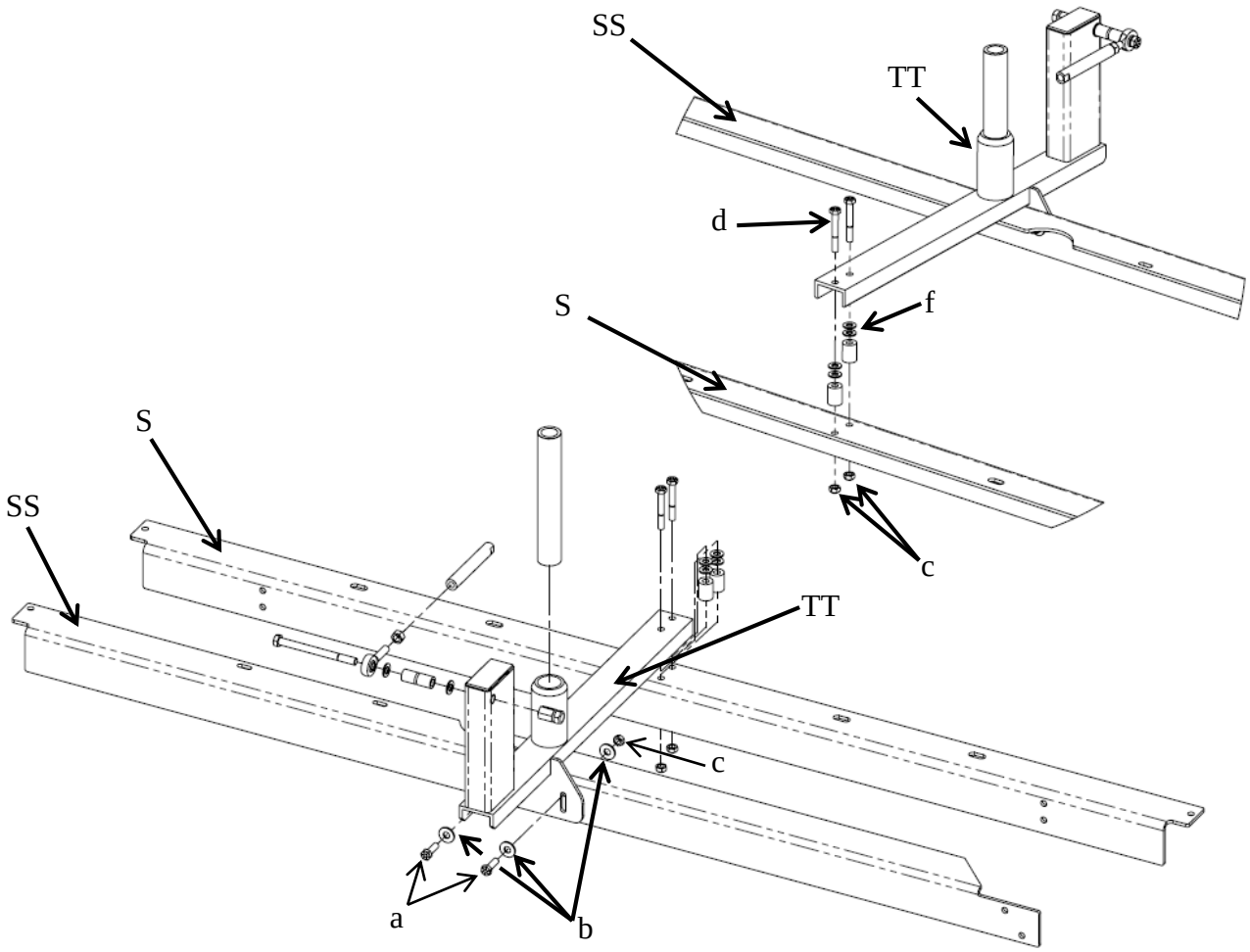


Figure 20

92. Remove and discard the tape securing the Safety Link Tube to the Distributor Mount.

Installing the Distributor

93. Slide the Distributor Spacer (070-006-143) over the post of the Distributor Mount. If a Distributor Spacer was not currently being used (90XLi), one is included in the 088-001-839 Hardware Kit. Be sure that a distributor spacer is not stuck to the thrust washer of the distributor as two distributor spacers could create problems.
94. Apply a light coat of grease to the post of the Distributor Mount.
95. Install the Distributor onto the post, making sure it is seated all the way down against the Distributor Spacer.
96. Check that the height of the Distributor Belt Guard (070-006-137) is 1/4” to 1/2” above the raised ridge that runs along the back of the Durabin or is 3/8” above the bolt head for the bin switch lever of a metal bin. Raise or lower the height by adding or removing 5/16 flat washers to the Distributor Support Spacers located under the front of the Distributor Mount.
97. Check the balance of the Distributor.

A. With the Safety Link Spring (070-006-030), Lateral Spring (000-026-032), and Driveshaft (090-006-102, 090-006-103) removed, the extended Distributor must stay positioned over the head pin and not rotate to the left or right. If it doesn't, make the following adjustments.

B. Be sure that one side of the Distributor Mount is always in contact (or bottomed out in the slots) with the Distributor Support (088-001-520 Even, 088-001-521 Odd).

C. If the Distributor moves away from the 1 pin position, slightly loosen only the nut and bolt that secures the Distributor Mount to the Distributor Bracket on the side to which the Distributor is moving.

D. Tap or pry the Distributor Mount in the opposite direction of which the distributor is moving using a hammer or crowbar until the Distributor stays in position over the head pin position. (Holding the distributor in the position over the head pin will make it easier to move the distributor mount).

E. Tighten the nut and bolt.

Modifying the Distributor

98. Unless you have a workbench setup to hold a Distributor, it's easier to modify the Distributor while on the pinspotter before installing the Edge Performance Lift to the kickback plates. This would also be a good time to replace any worn or broken parts on the Distributor.

99. Remove the O-pan (090-003-007) from the Distributor casting (070-006-136).

100. Place the Edge Distributor Trip Arm Spacer (088-001-548) (UU) between the Distributor Casting and the Trip Stop Support Bracket (070-006-084) (VV) when installing the Trip Stop Support Bracket. Secure using the original two bolts with two 1/4-20 CAD STV (844-049-002). (Figure 21)

101. Attach the Edge Distributor Funnels (088-001-512 - 7 pin side (WW) and 088-001-511 - 10 pin side (XX)) to the Distributor Casting using the included 1/4-20 x 1 1/4 Screws Hx ButHd (808-549-200) each with a 1/4" Flat Washer Black Oxide (948-753-101) and a 1/4-20 CAD STV. The Edge Distributor Funnels locate to the inside of the Support Guides. (Figure 21)

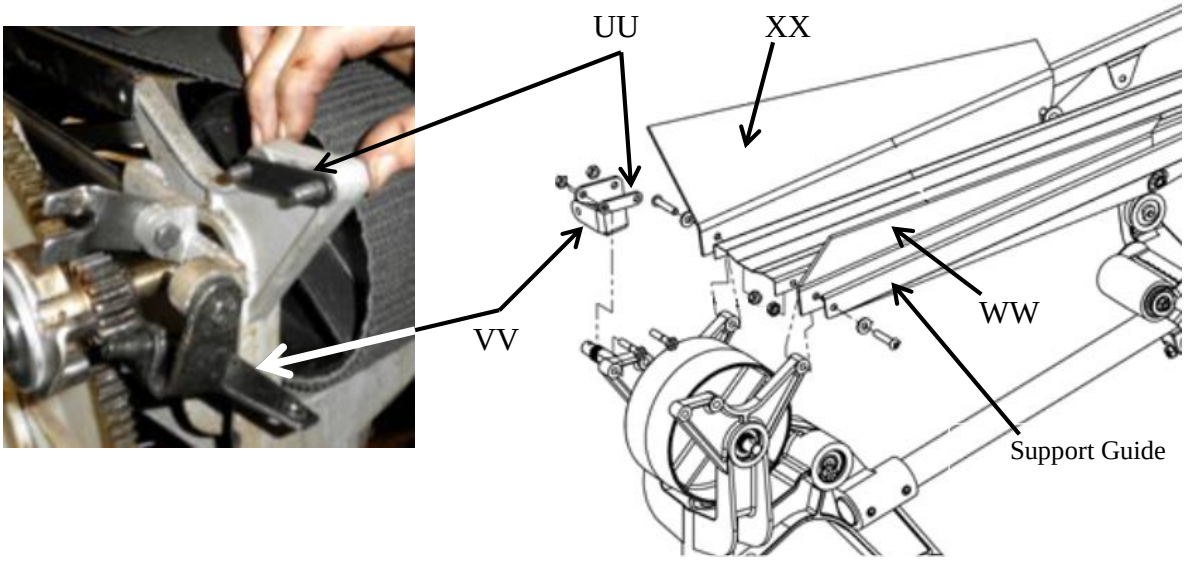


Figure 21

102. Replace the two Outer Spacers (070-006-140) with the two Edge Outer Spacers (088-001-578) (YY) and two 1/4 ID x 7/8 Washers (000-026-865) (ZZ). Only hand-tighten the nut and bolts at this time.
103. The Edge Distributor Funnels locate between the Support Guides and the 1/4 ID x 7/8 Washers (000-026-865) with the notches against the 1/4-20 x 5 1/2" bolt securing the Support Guides and Belt Runner together.
104. Tighten all the hardware. **Do not over tighten** the 1/4-20 x 5 1/2" bolt and nut that secures the notched end of the distributor funnels. **There should only be one or two threads exposed past the Stover nut when correctly tightened.**
105. Install the Edge Performance Cam Upgrade 612-088-501 following the instructions (400-088-093) included in the upgrade kit.
106. Install the Safety Link Spring, then the Lateral Spring, and the Distributor Driveshaft if not already installed.

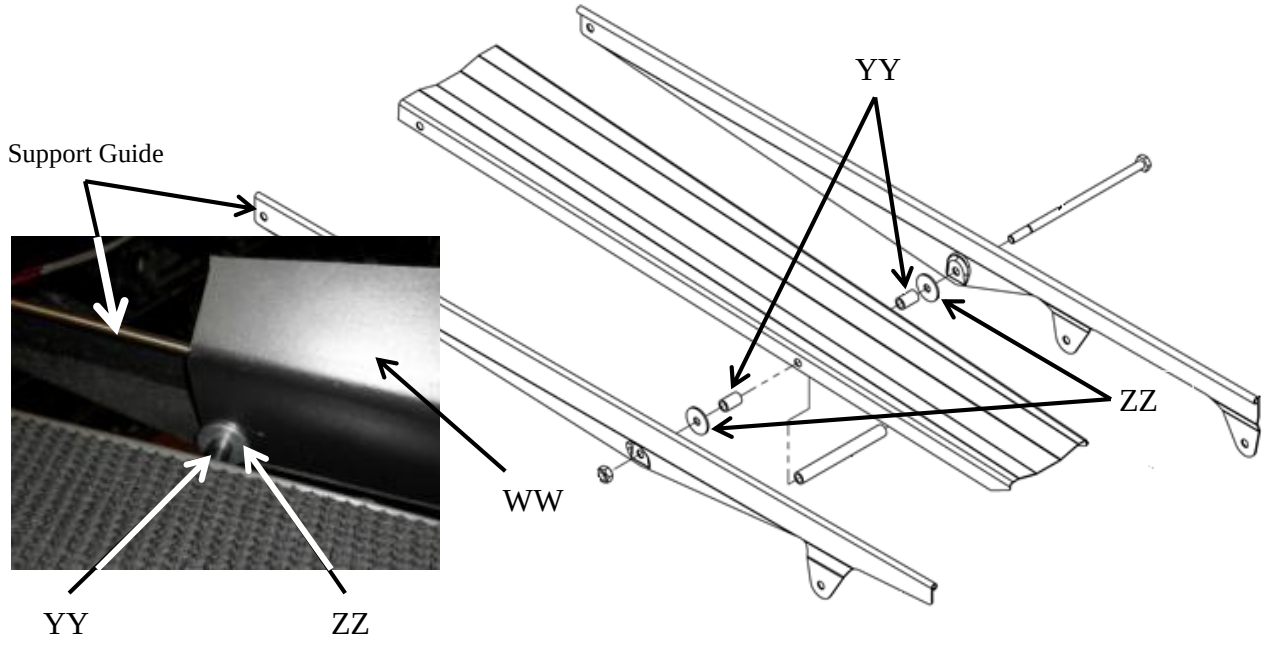


Figure 22

Preparing the Kickbacks for Edge Lift Attachment - 90XL and 90XLi

107. Remove both of the Hinge/Spacers (090-005-106) (U) and Nut Plates (090-005-123) (AAA) from the BDS Kickback Plate.
108. On the OBDS Kickback Plate, the Nut Plates (090-005-123) need to be retained for attachment of the Edge Performance Lift. To retain the nut plates, replace the lower bolt of the Hinge/Spacer with a 5/16-18 x 3/4 Hex Screw (809-857-125). The Hinge/Spacer (U) will need to be rotated to have access to the bolt hole in the kickback plate. Tighten the bolt securely. Remove the upper bolt and Hinge/Spacer and discard. (Figure 23)

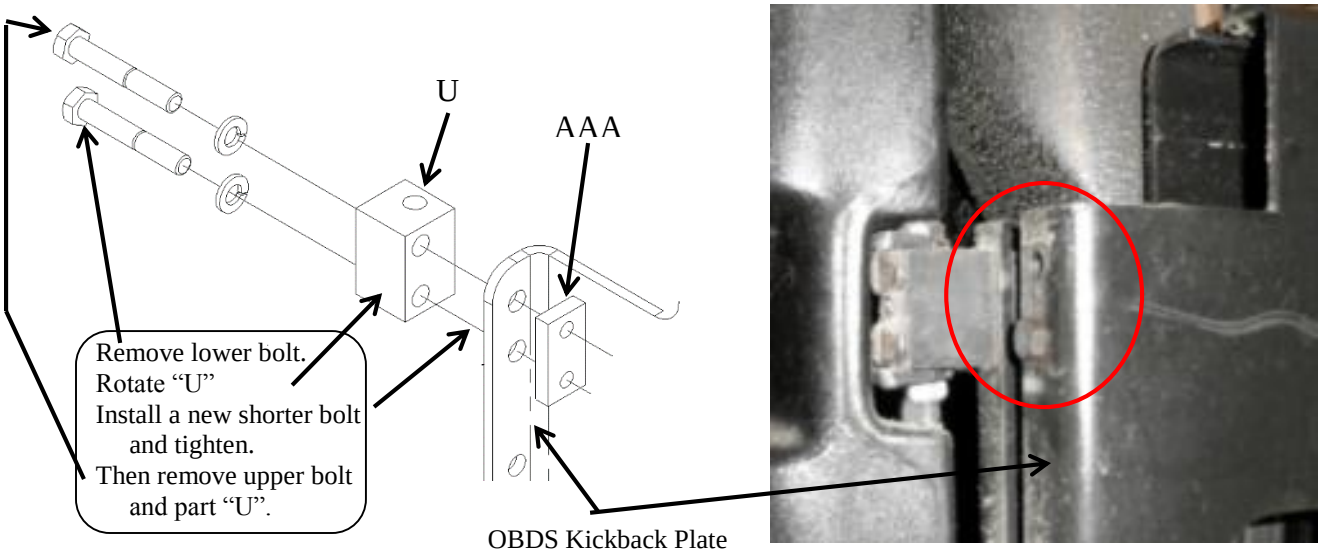


Figure 23

Installing the Edge Chassis Support Mount

109. Remove the Pin Elevator Wheel Drive Sheave (000-023-673) from the Backend Gearbox. Check for any existing burrs on the shaft or key. File or sand as needed to remove the burrs.

110. Install the new Drive Sheave (088-001-822) onto the shaft of the Backend Gearbox with the hub facing away from the gearbox. Do not tighten the set screw.

111. Place the Hex V-belt (088-001-528) over the Drive Sheave.

112. Attach the Edge Chassis Support Mount (088-001-806) (BBB) to the Tie Plate (L) using four 5/16-18 x 3/4 Hex Screw (809-857-125), four 11/32 Washers PL Black Oxide (948-722-111), and four 5/16-18 Stover Lock Nuts (844-057-002). The 5/16 flat washers should rest against the head of the bolts. (Figure 24)

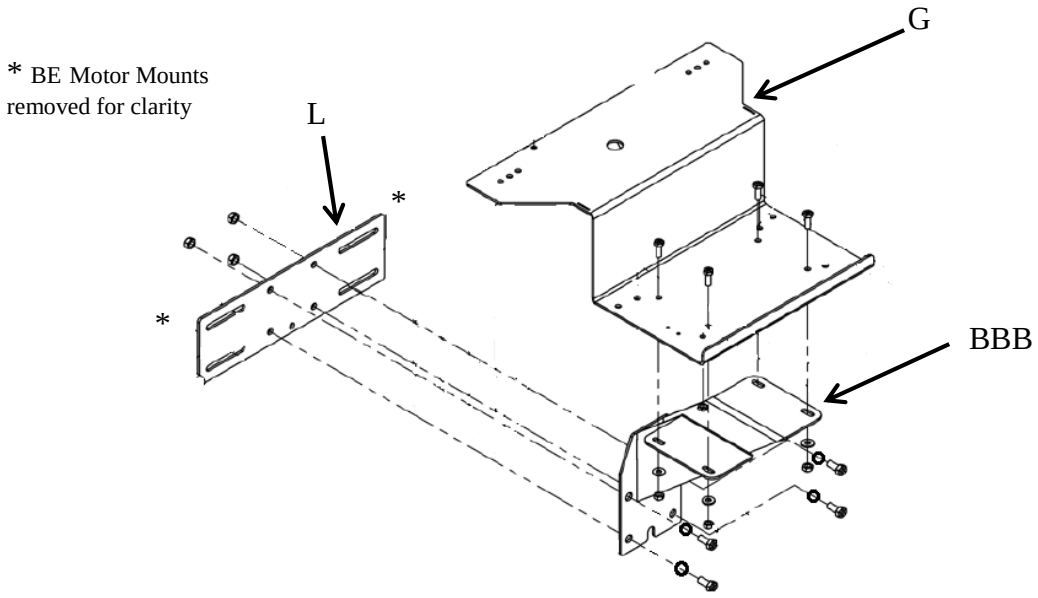


Figure 24

113. Attach the Chassis Mounting Weldment (G) (XL 090-004-706, XLi 088-000-112 or 088-200-486) to the Edge Chassis Support Mount (BBB) using four 1/4-20 x 5/8" Hex Hd Cap Screw (809-849-100), four 1/4" Flat Washer Black Oxide (948-753-101), and four 1/4-20 CAD STV (844-049-002). The flat washers go against the slots on the bottom side of the Edge Chassis Support Mount. (Figure 24)

Note: For steps 114 thru 119 refer to Figure 2 on page 3

114. Secure the rear Cable Duct to the middle hole of the three holes provided in the Chassis Mounting Weldment (G) using the original hardware.
115. Attach the Chassis (F) to the Chassis Mounting Weldment securing with four 1/4-20 Keps nuts.
116. Connect the Backend Motor Power Cord to the Cable Harness.
117. Place the cabling within the Cable Ducts, check for loose or unplugged connections to the Chassis and correct as needed.
118. Install the Cable Duct Covers (E) being careful not to pinch any of the wires.
119. Install the Chassis Cover (D).

Attaching the Plow Assemblies to the Edge Performance Lift

120. Lean the Edge Performance Lift against a wall with the front panel facing towards you.
121. Assemble the three pieces that make up the Plow assembly (Center Plow 088-001-508 (CCC), 7 pin Plow Assembly 088-001-587 (DDD), and 10 pin Plow Assembly 088-001-588) (EEE) using four 1/4-20 x 7/8 Hex Screws (809-849-145) and four 1/4 ID x 7/8 CAD Washers (000-026-865) (2 of each per side). Do not tighten the bolts at this time. (Figure 25)
122. Attach the Plow Brackets (088-001-516 - 10 pin side (FFF) and 088-001-517 - 7 pin side (GGG)) to the Plow Assemblies (088-001-588 – 10 pin and 088-001-587 – 7 pin) using four 1/4-20 x 7/8 Hex Screws (809-849-145) (two for each plow assembly). The side of the plow bracket that doesn't have a 90 degree bend attaches to the bottom side of the plow assemblies. Tighten only the plow bracket hardware to 50 in lbs. at this time. (Figure 25)
123. Secure the Plow Brackets of the Plow Assembly to the Edge Performance Lift with four 1/4-20 x 5 1/2" Screw Hex Hd (809-849-885) (HHH), four .25ID x .38OD x 5.0 Lg Spacers (088-001-544) (III), and four 1/4-20 Stover nuts (two of each for each Plow Bracket). Two of the bolts, spacers and nuts (one of each on both sides) are installed for shipping with 1/4 ID x 7/8 CAD Washers. Discard theses washers. Tighten these bolts to 80-120 In-lbs. (Figure 26)
124. The Center Plow of the Plow Assembly attaches to the front panel of the Edge Performance Lift with four 1/4-20 x 5.00 Screw Hex Hd (809-849-805) (JJJ), four 1/4 ID x 7/8 CAD Washers (000-026-865) (KKK), and the four .31ID x.44OD x 4.1 Lg Spacers (088-001-543) (LLL). (Figure 25 and 27)
125. Tighten all loose hardware attaching the Plow Assembly to the Edge Performance Lift and the hardware attaching the three pieces of the Plow Assembly together to 50 in-lbs.

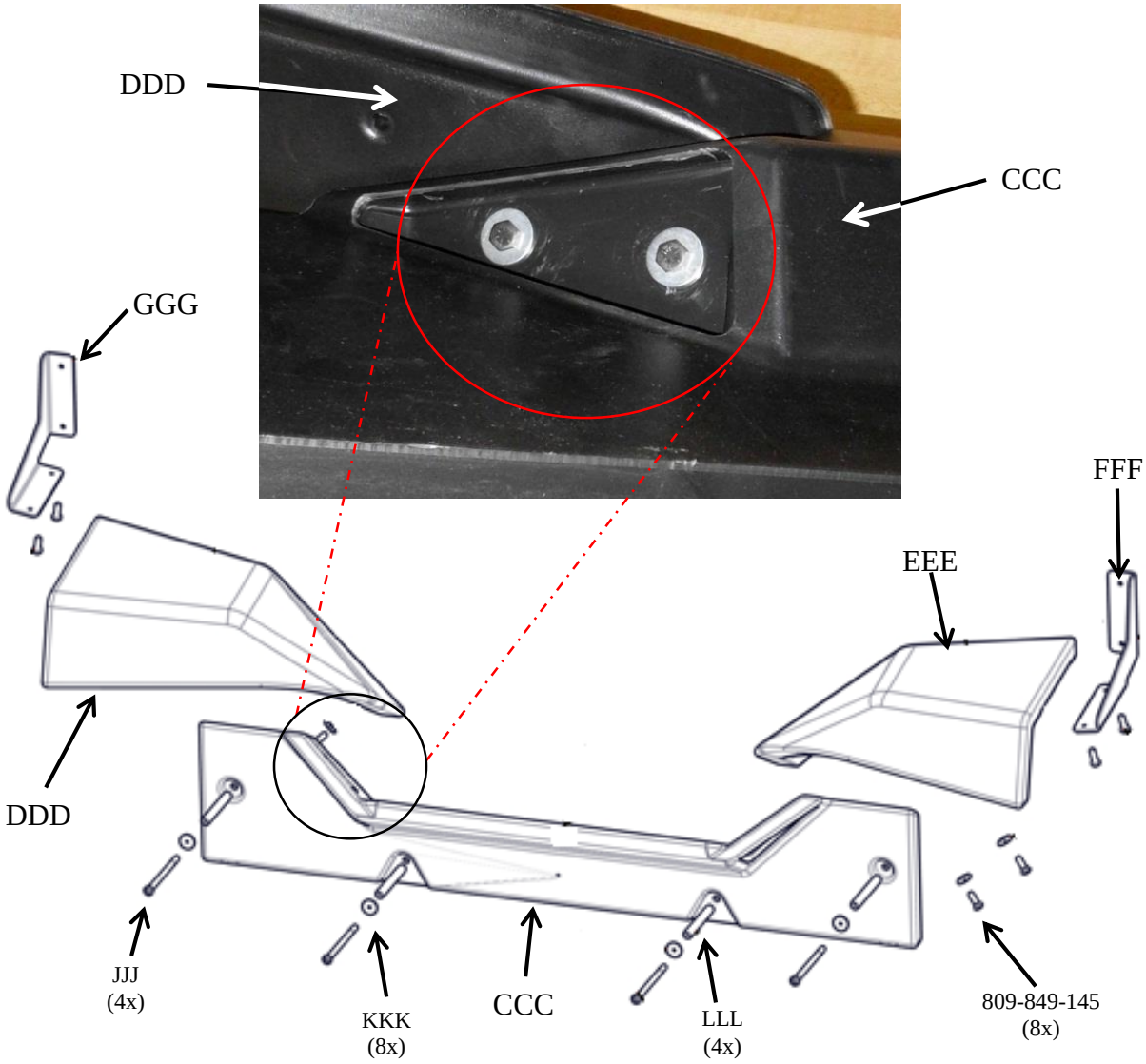


Figure 25

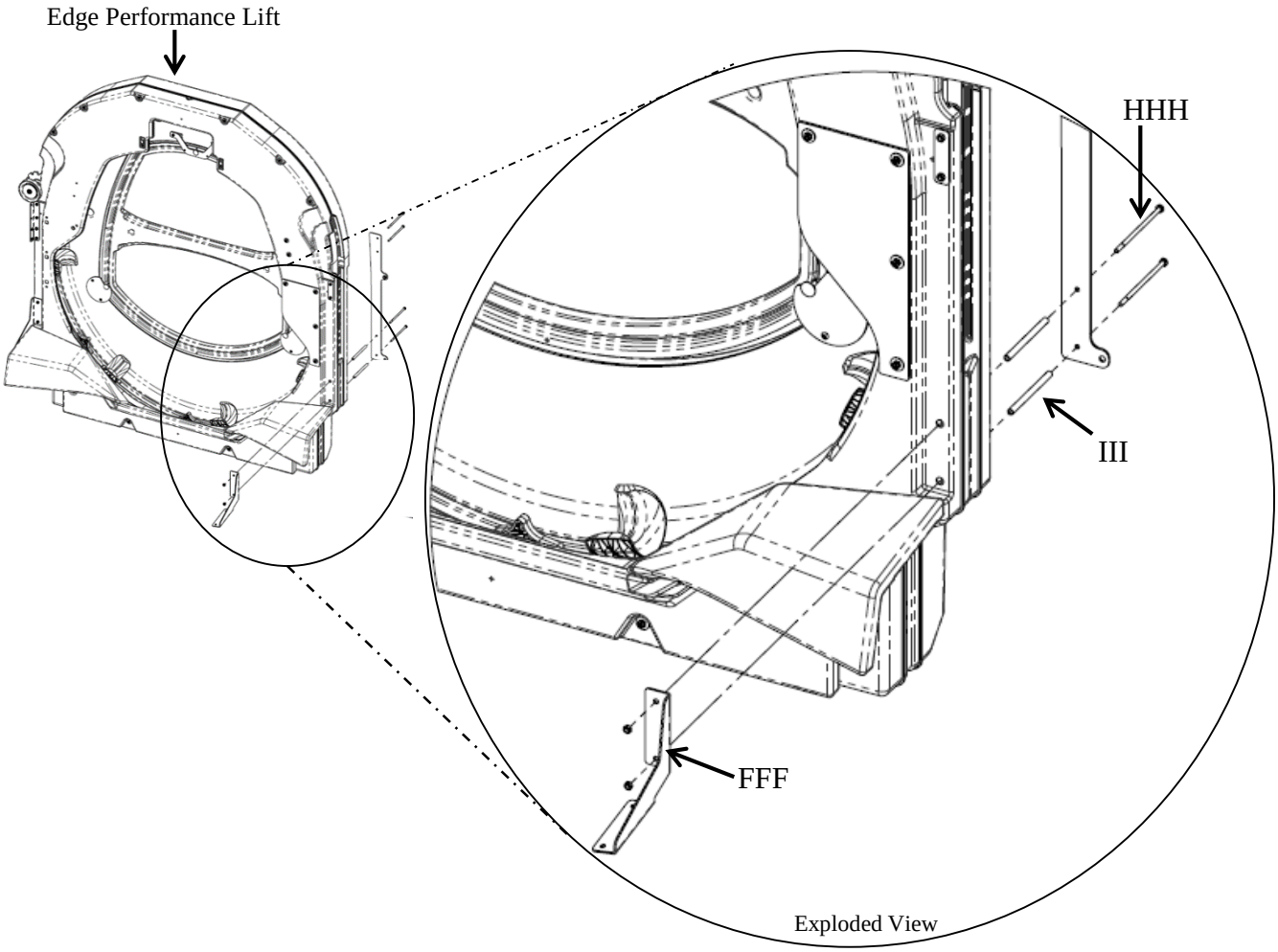


Figure 26

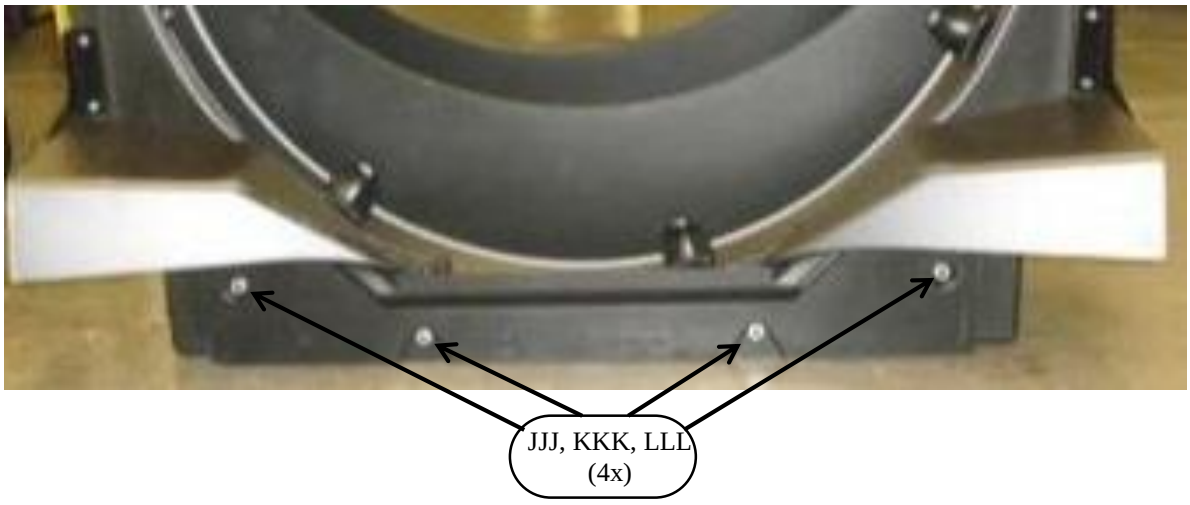


Figure 27

Attaching the O-pan to the Edge Performance Lift

126. Remove the Guard Assembly (088-001-558) (MMM) from the Edge Performance Lift. (Figure 28)

127. Remove the Guard Hanger Bracket (NNN) from the inside of the rear panel. (Figure 29)

128. Slide the O-pan assembly (088-001-577) (OOO) into the cutout of the front panel from the bottom of the opening. The rear edge of the O-pan against the inside of the rear panel and the wider portion of the O-pan against the outside of the front panel. (Figure 29)

129. Align the holes of the Guard Hanger Bracket with the holes in the rear edge of the O-pan and secure to the rear panel with two 1/4-20 x 7/8 Hex Screws (809-849-145).

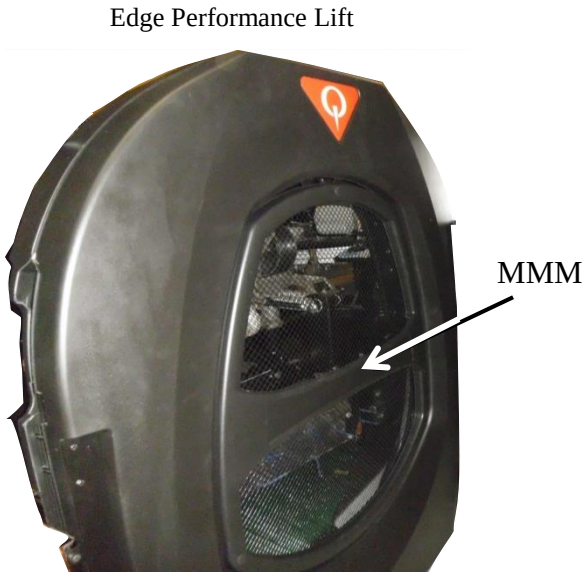


Figure 28

130. Place the O-pan Support Cap (088-001-519) (PPP) onto the center section of the O-pan Support (088-001-513) (QQQ). (Figure 29)

131. Align the holes in the O-pan Support to the holes in the underside of the O-pan and secure with two 1/4-20 x 7/8 Hex Screws (809-849-145) to the front panel of the Edge Performance Lift.

132. Tighten hardware attaching the O-pan assembly to the Edge Performance Lift to 50 in-lbs.

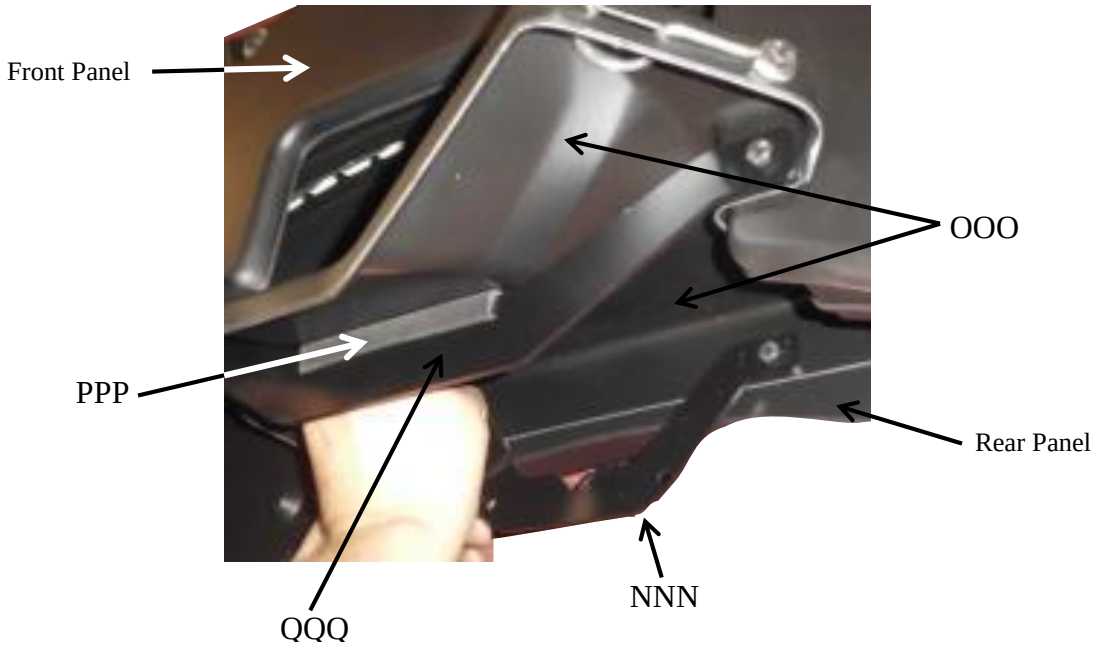


Figure 29

Installing the Edge Performance Lift

For 70XL & 70XLi

Note: Installation of the 090-005-118 handrails should be done before installing the Edge Performance Lift to the kickback plates. This will make drilling the holes in the support bracket easier. The instructions for installing the handrails are on page 29.

For all pinspotters

133. Using 2x4's as support blocks, place them on the floor so that the bottom of the Edge Performance Lift will rest on them when installing. These will be used to raise and lower Edge Performance Lift to align the bolt holes with the Kickback Plates. (Figure 30)

Figure 30

134. Lift the Edge Performance Lift several inches, tilt the top away from the pinspotter, and install the unit. Raising and tilting are necessary to ensure the Plow Assembly clears parts of the pinspotter that protrude inward from the Kickback Plates. 10 pin side plow on odd pinspotter goes over the LBS Driveshaft, but under/ behind idler assembly shaft.
135. Install the Hex V-belt (088-001-528) onto the Sprocket Drive Pulley.
136. Start the two Hex Screws (5/16-18 x 1 1/4" upper (809-857-205) and 5/16-18 x 1" lower (809-857-165)), each with a Frame Adjustment Washer 000-021-792, into the Nut Plates (AAA) on the OBDS Kickback Plates that secure the Edge Performance Lift. **Caution: Do not cross thread the bolts into the nuts.** Do not tighten at this time.
137. Start the two Hex Screws (5/16-18 x 1" (809-857-165)) (a), each with a Frame Adjustment Washer 000-021-792 (RRR), thru the two previously drilled holes next to the Idler Mount on the BDS Kickback Plate into the mount plate of the Edge Performance Lift. **Caution: Do not cross thread the bolts into the nuts**. Do not tighten at this time. (Figure 31)

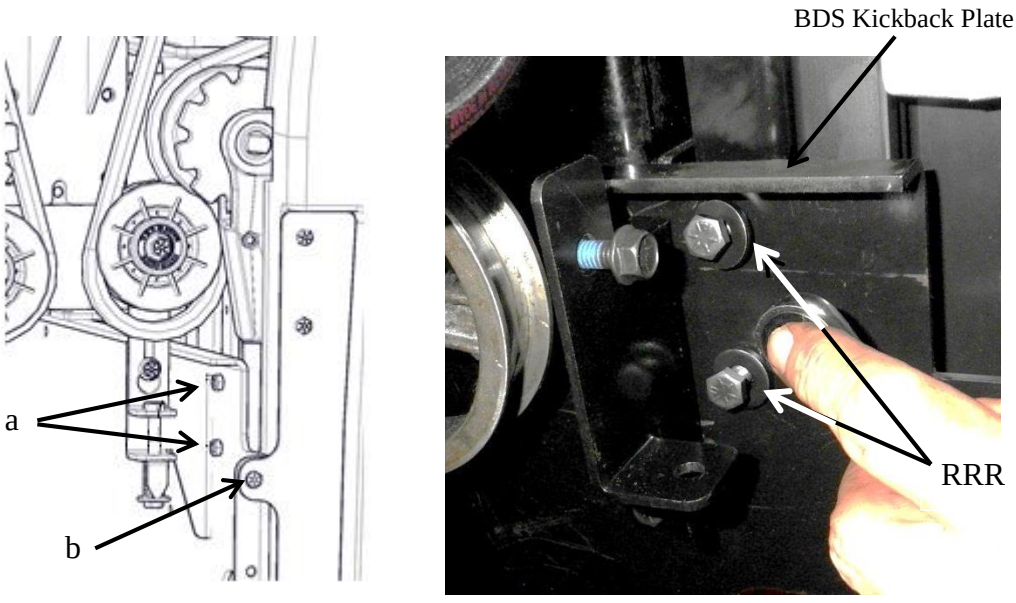


Figure 31

138. Install the two Hex Screws (5/16-18 x 1 1/4" (b) upper (809-857-205) and 5/16-18 x 1" lower (809-857-165)), each with a Frame Adjustment Washer 000-021-792, that secure the Edge Performance Lift to the BDS Kickback Plates securing with 5/16-18 Stover nuts. (Figure 31)
139. Tighten the hardware securing the Edge Performance Lift to the kickback plates flanges, and then tighten the two Hex Screws next to the Idler Mount Bracket.
140. Install the Idler Bar and Pulley Assembly (Z) to the Tension Retaining Bolt (SSS) on the Idler Mount (RR) while at the same time engaging the Hex V-belt (TTT) on the Pulley. (Figure 32)
141. Install and turn the Tension Adjusting Screw (PP) clockwise compressing the Idler Tension Spring (088-001-823) (UUU) until the point of the Idler Spring Indicator (088-001-824) (VVV) just touches the Washer (7050-034100-006) (WWW). (Figure 32)
142. Tighten the Idler Assembly Tension Retaining Bolt (SSS).

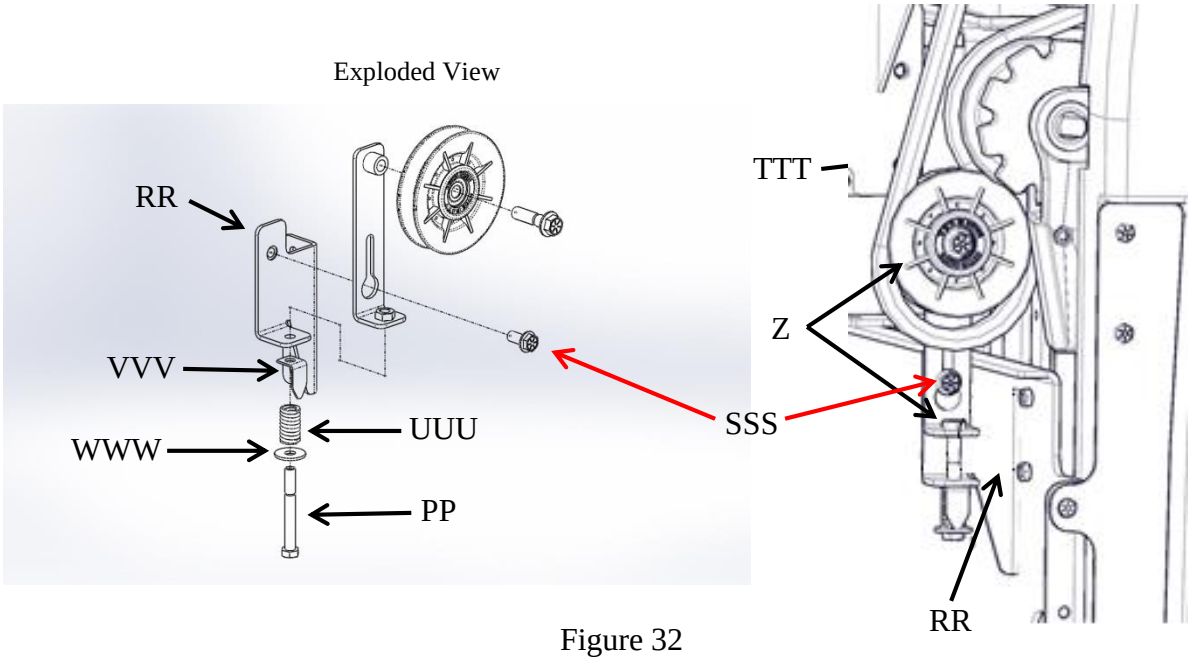


Figure 32

143. Align the Drive Sheave (088-001-822) on the Backend Gearbox with the Sprocket Drive Pulley of the Edge Performance Lift. Tighten the set screw.

    Note: For steps 144 thru 148 refer to Figure 5 on page 5

144. Attach the Strap (070-011-035) (O) (Figure 5) to the odd and even pinspotters Kickback Panels using the new included hardware - two 5/16-18 x 1 1/4 Screw HHC (809-857-205), two Spacers (070-008-212), two 11/32 Washers PL Black Oxide (948-722-111) and two 5/16-18 Stover nuts. (One of each for each kickback plate.)
145. Install the Ratchet Wheel Spring (000-024-673) (M) (Figure 5) to the Strap.
146. Attach one end of the Extension Rod (070-011-034) (N) to the PBL and the other end to the Tension Spring (000-026-031) (N) (Figure 5).
147. Connect the Tension Spring to the Strap.

For 70XL & 70XLi

148. Install the LBS and Paddle. (Y) (Figure 5) Adjust the LBS for correct operation.
149. Install the included PBL Screen Guard Kit 088-001-169.

For all pinspotters

150. Install the PBL guard. (B) (Figure 1)
151. Install the Ball Lift Guard Weldment. (C) (Figure 1)
152. Install the Guard Assembly (088-001-558) (MMM) (Figure 28).

Installing the Ladder and Handrails

The Ladder Assembly (088-500-045) is installed behind the pinspotters, centered with the common kickback of two pairs of pinspotters with both Handrails (090-006-179) attached to the Ladder and to the Platform of the pinspotter. ***It is highly recommended on 70XL and 70XLi to not install the Ladder Assembly until 2 pairs of Edge Performance Lifts are installed in a continuous run, as the original handrail (of the non-converted pinspotter) is an important structural element of the Pin Elevator Wheel.***

153. Temporarily install the two feet (aa) to the bottom of the Ladder (bb) using the included hardware. Only install with one bolt and nut on each and hand-tighten. Make sure the feet are set at the same height. (Figure 33)
154. Install the two couplers (cc) to the top of the rails of the Ladder, leaving two of the four holes in the coupler above the end of the ladder. Secure the couplers to the rails using two nuts, two bolts, and four washers for each. (Figure 33)
155. Insert the round end of the Handrails (dd) into the couplers, securing with two nuts, two bolts, and four washers on each coupler. (Figure 33)
156. Place the flattened end of the Handrails to the underside of the Platform and secure using the hardware that retained the original Handrails.
157. Level the horizontal section of handrail by raising or lowering the feet. When the handrail is as close to level as possible, secure the feet with two nuts, two bolts, and four washers in each.
158. Center the Ladder with the common kickback plates of the pinspotters. Using the holes in the flange of the feet, mark their location on the floor.

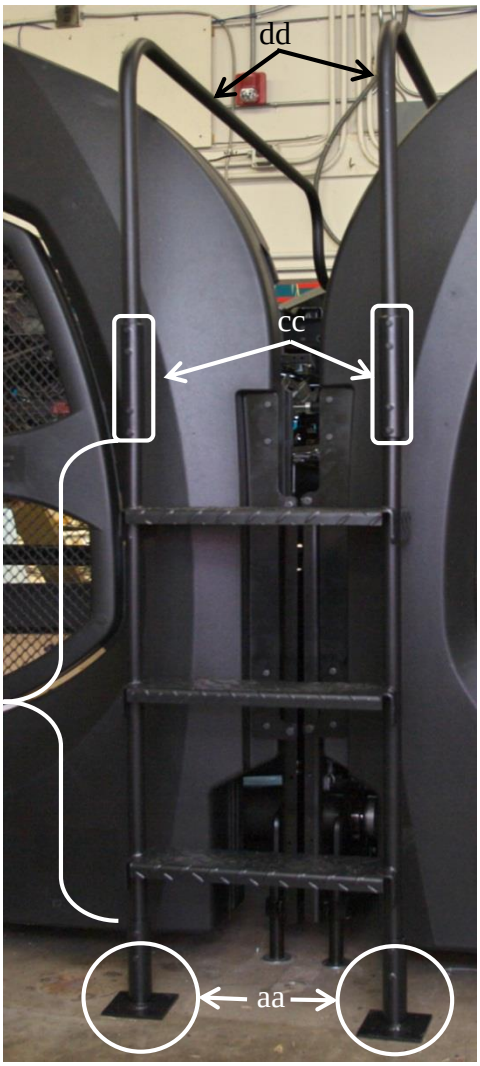


Figure 33

159. Move the Ladder enough to allow access for drilling the holes.
160. With a hammer drill and a 7/16” masonry bit, drill the marked holes to a depth of 2 3/4".
161. Vacuum the concrete dust from the drilled holes.
162. Tap the anchors with the bolt attached into the holes until the anchors are flush with the surface of the floor. Unscrew the bolts from the anchors.
163. Align the holes in the flange of the feet of the ladder with the anchors in the floor.
164. Thread the bolts into the anchors by hand until tight.
165. Tap the bolts with a hammer until the heads are against the flange of the feet.
166. Tighten the bolts with a wrench, or a socket and ratchet.

Installing the 090-005-118 Handrails

For 70XL & 70XLi

167. For the first and last pinspotter in a center or at any separation between pinspotters, where there will be no Ladder Assembly (088-500-045) installed, a 090-005-118 Handrail (ee) will need to be installed in place of the original Handrail.
168. Install the longer flat end of the Handrail to the underside of the Platform using the hardware that attached the original Handrail.
169. Align the horizontal tube of the handrail parallel with the OBDS Kickback Plate and with the end of the handrail 3/16” to 1/4" above the bottom edge of the Support Bracket (070-007-359) clamp the handrail to the Support Bracket (S) with a pair of locking pliers. Make sure you can access one of the two holes in the handrail with the drill.
170. Mark the Support Bracket with the 11/32” drill bit (782-505-030) using the handrail as a drill guide. Drill the pilot hole using the 3/16” drill bit (782-505-028). Open the hole to 11/32” using first the 1/4" drill bit (782-505-029) then the 11/32” drill bit.

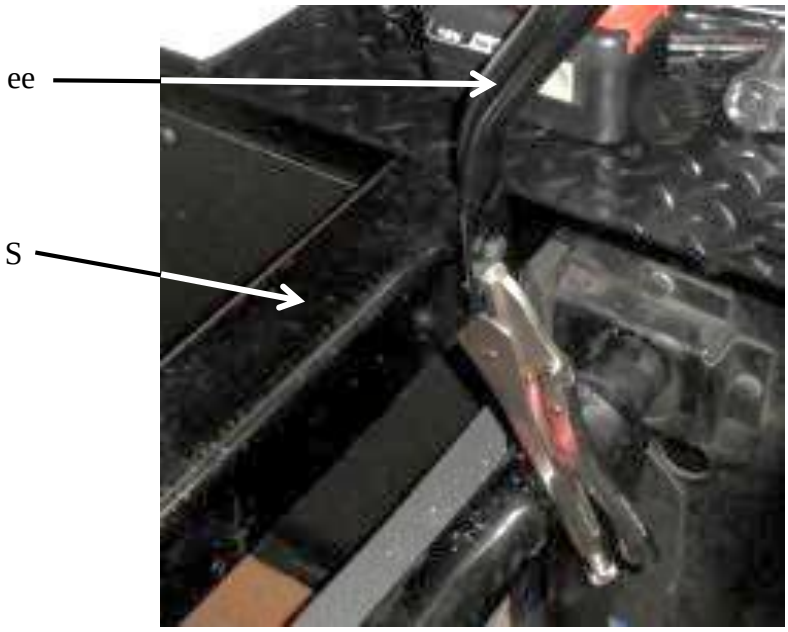


Figure 34

171. Secure the handrail to the Support Bracket with a 5/16-18 x 1 Hex Screw (809-857-165) and a 5/16-18 Stover Lock Nut (844-057-002).
172. Remove the locking pliers and follow the above procedures for drilling the other hole and secure with a 5/16-18 x 1 Hex Screw (809-857-165) and a 5/16-18 Stover Lock Nut (844-057-002).
173. Vacuum up the metal debris from drilling.

Cleaning the Edge Performance Lift after Installation

174. If not already done, vacuum up the metal debris from the inside and the surrounding area of the pinspotters.
175. Wipe off the pit conveyor belt with a dry cloth.
176. Clean the Lift's inner and outer shell, Plows, Flight Cups and Tabs (parts attached to the chain), O-Pan, Carrier Rails (must be removed from the unit), the Distributor Funnels, and the Durabin II using a cloth sprayed with a surface protectant such as Armor-All ® (715-041-422).
177. The Edge Performance Lift Manual Supplement (400-088-091) includes all the information regarding maintenance, parts, and operation of the Lift. This manual is included with the order (1 per order).

Installing the Shuttle Rod Assembly (088-001-631)

178. Remove the pins from the bin assembly.
179. While holding down on the Cam Link (070-006-278), crank the table motor/gearbox until the cam follower of the Shuttle Operating Lever (070-006-295) is in the low dwell of the Shuttle Cam (070-006-427).
180. Unhook the Shuttle Spring (070-006-447) from the bin.
181. Disconnect the Shuttle Rod assembly (090-005-263) from both the Shuttle Actuating Lever (070-006-408) and the Shuttle Operating Lever and remove from the pinspotter.
182. Install the Edge Shuttle Rod assembly (088-001-631) into the pinspotter and connect it to the Shuttle Operating Lever and the Shuttle Actuating Lever using the original hardware that was removed. (Figure 35)
183. Install the Shuttle Spring to the bin.
184. Crank the table motor/gearbox until the cam follower of the Shuttle Operating Lever is on the high dwell of the Shuttle Cam.
185. Check the shuttle position with a ruler, tape measure, or gauge. There should be a horizontal gap of 2 ±¼ inches (50.8 ± 6.35mm) between the back edge of the bin channel and the front edge of the shuttle's rear cross member If adjustment is necessary: (Figure 36)

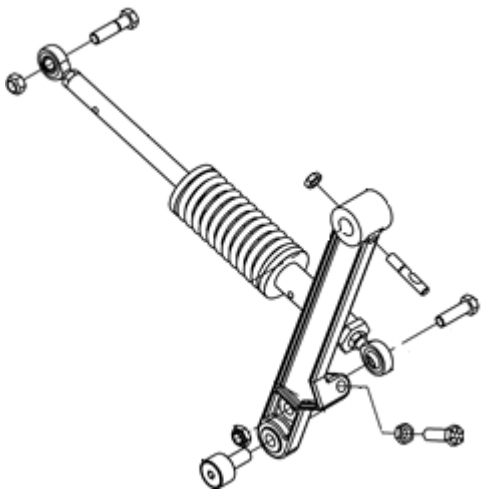


Figure 35

A. Place a punch or screwdriver through the hole near the shuttle end of the shuttle connecting rod's tube, and then loosen the jam nut on the end fitting. Do not rotate the

connecting rod's tube, as this will loosen the connecting rod's components causing the shuttle to malfunction during operation.

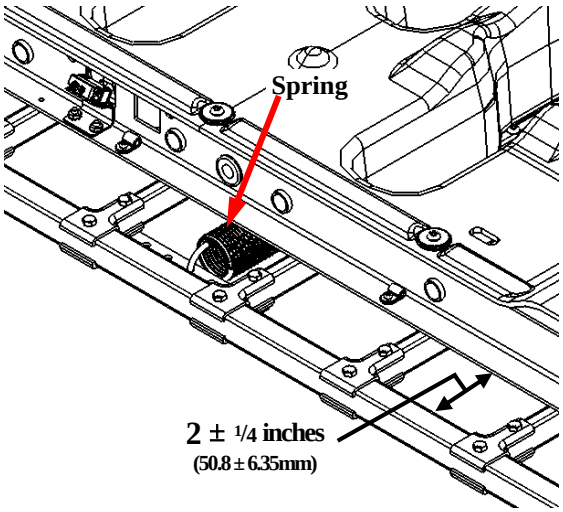


Figure 36

B. Disconnect the connecting rod from the shuttle actuating lever and rotate the end fitting to lengthen or shorten the rod as needed.

C. Reconnect the end of the rod to the actuating lever.

D. With the punch or screwdriver still in the hole in the connecting rod's tube, tighten the jam nut.

Running the Edge Performance Lift

186. Remove the Lock Out / Tag Out device and connect the pinspotter power cords to the chassis.

187. Run the pinspotter, checking the Edge Performance Lift, Distributor and Shuttle for correct operation.

188. Allow the Edge Performance Lift to run 30 seconds to 1 minute.

189. Turn off the pinspotters, remove power cords from the chassis and Lock out and Tag out in accordance with the appropriate procedures.

190. Recheck the Drive Belt tension.

    A. Loosen the Idler Assembly Tension Retaining Bolt (SSS)

    B. Turn the Tension Adjusting Screw clockwise compressing the Idler Tension Spring (UUU) until the point of the Idler Spring Indicator (VVV) just touches the Washer (WWW). (see Figure 32)

    C. Tighten the Idler Assembly Tension Retaining Bolt.

191. Connect the pinspotter power cords to the chassis.

192. Check all functions of the pinspotter.

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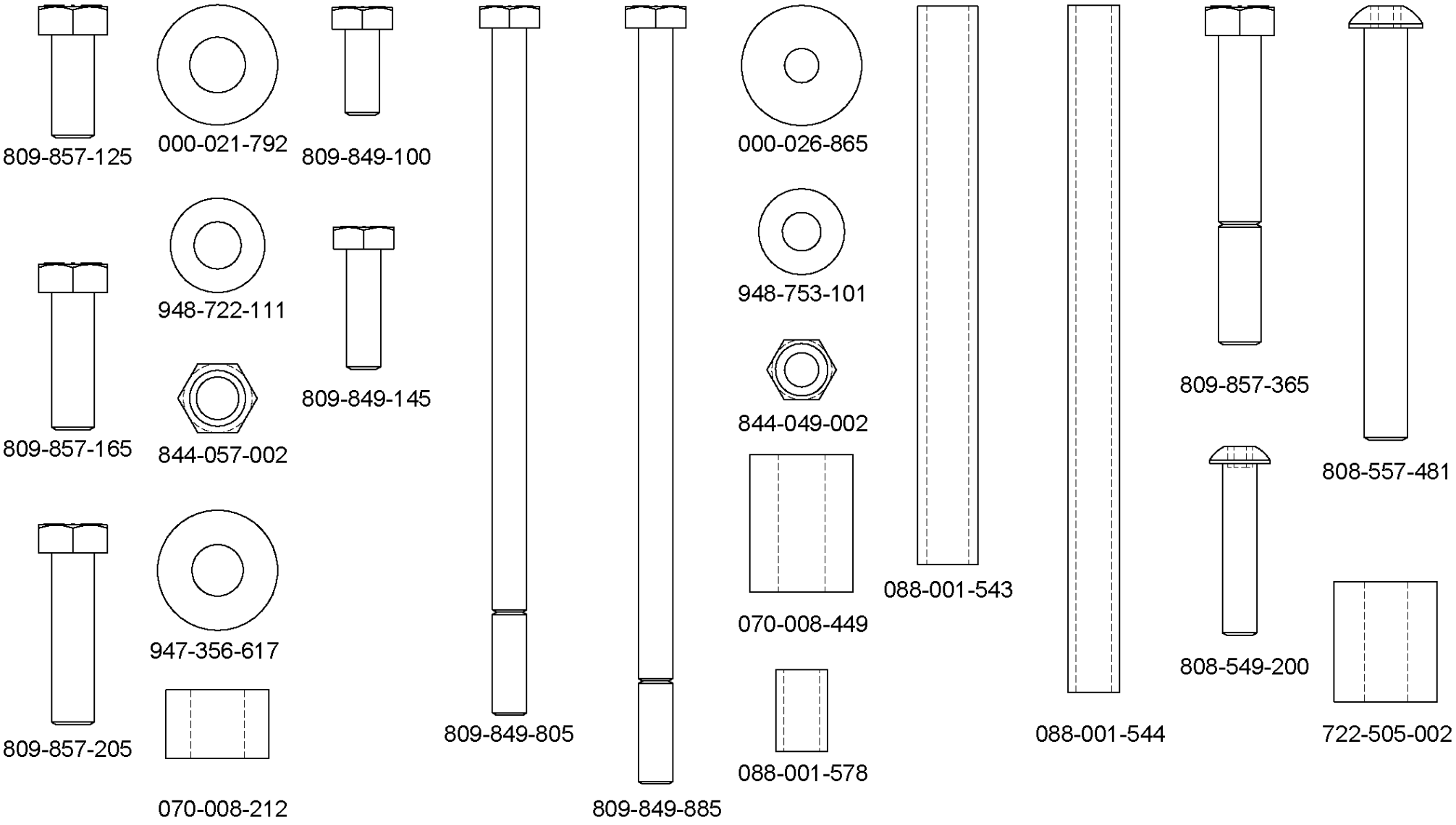
088-001-839 Hardware Kit - Where Used			
QTY	**Part Number**	**Description**	**Where used**
4	722-505-002	SPACER, ANTI-IDLING BLOCK	For Anti-Idling Corner Block to Kickback Plate attachment
1	070-006-143	SPACER, DISTRIBUTOR	Under distributor if one is not already there
1	088-001-838	EDGE CORNER BLOCK DRILL GUIDE	
1	088-001-837	EDGE DRIVE SUPPORT DRILL GUIDE	
1	088-001-548	EDGE DIST TRIP ARM SPACER	On Distributor - between Trip Stop Rod Bracket and Casting
2	088-001-578	SPACER, EDGE OUTER DIST	On Distributor - replaces original spacers
2	088-001-544	.25ID x .38OD x 5.0 Lg Spacer	Plow Brackets to Edge Performance Lift
4	088-001-543	.31ID x .44OD x 4.1 Lg Spacer	Center Plow attachment to front panel of Edge Performance Lift
2	070-008-449	Spacer Distb Support	Distributor Mount at Support Bracket
12	844-049-002	1/4-20 CAD STV	4 - Chassis Mounting Weldment to Chassis Support Bracket 2 - for long bolts to attach Plow Bracket to Edge Performance Lift 5 - for the Distributor Funnel and Trip Rod Spacer attachment bolts
6	948-753-101	1/4 Flat Washer Black Oxide	4 - for Chassis Mounting Weldment to Chassis Support Bracket attachment 2 - for the Distributor Funnel with Button head bolts
10	000-026-865	1/4 ID x 7/8 CAD Washer	4 - for Center Plow Assy to 7 and 10 pin Plow Assemblies 4 - for Plow Assy to front panel of Edge Performance Lift 2 - for Funnel attachment with new spacer at notch
2	809-849-885	1/4-20 x 5 1/2 Screw Hex Hd	For attaching Plow Bracket to Edge Performance Lift (2 installed for shipping)
4	809-849-805	1/4-20 x 5.00 Screw Hex Hd	4 - for Plow Assy to front panel of Edge Performance Lift
10	809-849-145	1/4-20 x 7/8 Hex Screw	4 - for Center Plow Assy to 7 and 10 pin Plow Assemblies 4 - for Plow Brackets to 7 and 10 pin Plow Assemblies 2 - for O-Pan Support bracket to front panel of Edge Performance Lift
4	809-849-100	1/4-20 x 5/8 Hex Hd Cap Screw	For Chassis Mounting Weldment to Chassis Support Bracket attachment
2	808-557-481	5/16-18 x 3 Screw	For Anti-Idling Corner Block to BDS Kickback Plate attachment
20	844-057-002	5/16-18 Stover Lock Nut	2 - for Anti-Idling Corner Block attachment 2 - for Anti-Idling Bracket attachment 2 - for Distributor Support to Motor Mount attachment 4 - for Chassis Support Bracket to Tie Plate attachment 2 - for Distributor Mount to Support Bracket attachment 2 - for Distributor Mount to Distributor Support attachment 2 - for Strap to Kickback Plate attachment
20	948-722-111	11/32 Washer PL Black Oxide	4 - for Chassis Support Bracket to Tie Plate attachment 1 - for Distributor Support to OBDS Kickback Plate 8 - for Distributor Mount height adjustment (as needed) 2 - for Strap to Kickback Plate attachment
6	000-021-792	Washer, Frame Adjustment	6 - for Edge Performance Lift to Kickback Plate attachment
8	809-857-205	5/16-18 x 1 1/4 Screw HHC	2 - for Edge Performance Lift to Kickback Plates attachment - upper holes 1 - for Distributor Support to Kickback Plate attachment 2 - for Strap to Kickback Plate attachment 3 - for Tread Plate to OBDS Kickback Plate attachment on 70XL or 70XLi
11	809-857-165	5/16-18 x 1 Hex Screw	2 - for Idler Mount Bracket to BDS Kickback Plates 4 - for attaching Edge Performance Lift to Kickback Plates - lower and side holes 2 - for Distributor Mount to Distributor Support attachment 2 - for 090-005-118 Handrail to Support Bracket - 70XL or 70XLi - end pinspotter
8	809-857-125	5/16-18 x 3/4 Hex Screw	4 - for Chassis Support Bracket to Tie Plate attachment 1 - for Distributor Support to OBDS Kickback Plate 2 - for Distributor Support to Backend Motor Mount attachment 2 - for Nut Plate to OBDS Kickback Plate attachment
2	809-857-365	5/16-18 x 2 1/4 Hex Screw	For Distributor Mount to Support Bracket attachment
4	947-356-617	5/16 GR8 Washer	For Distributor Mount to Distributor Support - under bolt head and nut
2	808-549-200	1/4-20 x 1 1/4 Screw Hx ButHd	For Funnel to Distributor Casting attachment
2	070-008-212	Spacer	For Strap to BDS Kickback Plate - stand-off



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