

PART NUMBER	158-8430N
PART DESCRIPTION	DUO Transfer Brush Upgrade Kit
REV DATE	11/06/2014
MACHINE MODELS	ALL painted style lane machines
12345 DIFFICULTY LEVEL	

Basic knowledge on ALL aspects of the lane machine. Including, mechanical, electrical and operating software.

Tools Needed:

3/8" Ratchet 9/16" Wrench Drill 5/16 Wrench 7/16" Socket ½" Wrench 1"; 25/64" drill bits Phillips Screwdriver

Allen Wrench Cluster Prybar 3/8" Wrench small gear puller

TECHNICAL NOTE

Please thoroughly read the instructions prior to performing the installation of this assembly.

To avoid any potential problems, if at any time during the process you have a question, stop and contact our Tech Support department at the numbers listed below.





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Important notes

In some models it may be necessary to turn off the 'chop brush'. To do this you will need to access the program thoughtware inside the lane machine or use KOSI PRO. Contact Kegel for further help in doing this.

Removal of Buffer Brush assembly

- 1. With the machine laying down in the operating position, using the test outputs, lower the buffer brush into the "down" position and disconnect power from the machine.
- Stand the machine up in the transport position. Remove the three phillip screws from the cover over the head drive motor on the 7 pin side of the machine.
- 3. Remove the buffer idler pulley along with the belt. It is important to remember in which hole that it's mounted through, so make note or take a photo. Set this aside along with the fasteners for re-installation later.
- 4. With the ¼" allen wrench, remove the allen bolt, along with the fender washer holding on the buffer pulley.
- 5. Once the buffer belt is removed from around the pulley assembly, you will see a small hole. This is the access point in which to loosen the set screw, but do not remove.
- 6. Remove pulley from the shaft along with the key and spacer. Set these aside, along with the other hardware, for later use.
- Remove the bottom 'cut' shoulder bolt that attaches the lowering link to the bearing assembly. Do this to the 7 pin side of the lane machine as well. Keep the hardware.
- 8. Remove the top shoulder bolt from both sides and the assembly will come out of the machine in one piece.



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SHOULDER

CUT SHOULDER BOLT



BOLT AND FENDER WASHER

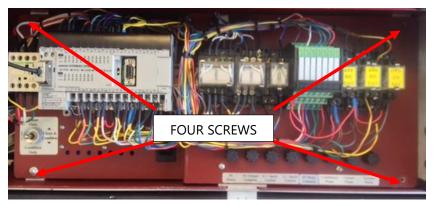
SET SCREW

Removal of Oil Head Bar assembly

- 9. Lay the machine down in the operating position and remove the lid assembly. Do this by removing the two 8-32 flat head screws from the black lid mounting plate located on the 10 pin side of the lane machine. On some models, it may be necessary to remove the green wire located in the cleaning compartment next to the incoming power source.
- 10. Remove the recovery tank from the machine.
- 11. On Kustodian model lane machines, it will necessary to remove the vacuum motor assembly. Unplug the vacuum motor from the machine wire harness, and remove the fasteners that hold the vacuum motor/box in the machine. Set aside motor and fasteners later use.



12. You will now need to remove the pc plate assembly. Remove the four screws (shown below) that hold the plate in the machine. Carefully lift the plate assembly up and set aside.



13. Remove the screws that attach the 7 and 10 pin head proximity sensors to the white block. Set the fasteners for re-attachment later, move both sensors out of the way for now.



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jam nuts on the inside of the head-timing block. Moving the block in towards the machine will allow the head timing belt to become slack enough to remove from the pulley.

14. Located on the outside of the machine, on the 10 pin side, is the head timing assembly. Loosen the

- 15. Remove the oil tip assembly from the oil head block and follow the tubing all the way back, through the spring assembly and unplug it from the fitting. Discard the Oil tip and hose assembly.
- 16. Remove the four corner screws from the top plate on the oil head assembly and set aside. Remove the head drive belt from the machine and discard.

17. Remove the six bolts that secure the head bar mount blocks to the machine. There will two that secured the left proximity sensor, two in the right proximity sensor head block, and two in the middle, as shown in the picture. Lift the oil head bar and block up and out of machine as one unit.

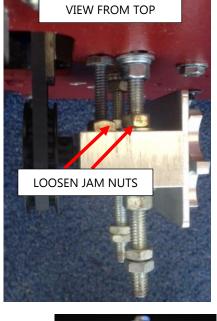


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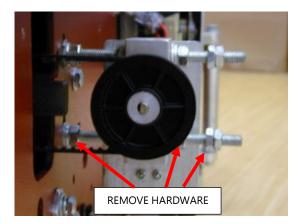






Removal of Transfer roller and Motor

18. Remove all of the hardware from the bottom bolt in the head timing block as shown to the right. You will need to hold the fastening hardware while turning the bolt from the inside. Set aside fasteners and bolt for re-installment later. DO NOT loosen top bolt from frame.



19. On the left side of the wiper assembly, remove the ¼" button-head allen bolt that goes through the assembly and left side of the frame. This bolt also mounts the head drive motor bracket to the side plate. (the pic is for illustration only, and shows the bolt after the assembly has been installed).

- 20. On the Transfer Roller Motor assembly, locate the master link on the chain and remove the link along with the chain and discard.
- 21. Remove the sprockets from the transfer roller motor shaft and transfer roller. Loosen set screws on both of the sprockets. It may be necessary to attach a gear puller, but the sprockets will need to be removed from the shaft. Discard the sprockets and the chain.
- 22. Unplug the transfer motor from the machine wire harness. Remove fasteners that hold motor to the machine frame. Discard motor and fasteners.



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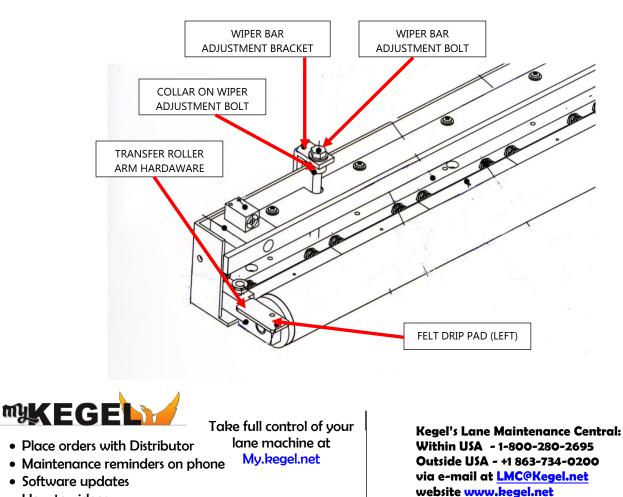
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USE THE DIAGRAM AT THE BOTTOM OF THE PAGE FOR PART DESCRIPTIONS.

- 23. Remove the felt drip pads located on each side of the transfer roller and discard
- 24. Pin back the wiper pads by pushing back the pad assembly with a screwdriver and placing a small rivet inside of the hole located on the top of the plate. (this will prevent the pads from ejecting when the transfer roller assembly is removed).
- 25. Remove the Transfer roller hardware from the roller arms as shown below. Remove the transfer roller and arms out of machine as one unit and discard.
- 26. Loosen the collars on the wiper bar adjustment bolts. Unthread the bolts and fasteners from assembly and wall of the machine and save the hardware for later use.
- 27. Remove the wiper assembly from the machine.
- 28. Remove both of the wiper bar adjustment brackets from the frame and discard.
- 29. On the 7 pin side of the machine, replace the allen head bolt you removed earlier in step 19, and tighten.
- 30. On the 10 pins side of the machine, replace the long all-threaded lower bolt for the Oil head timing adjustment block.



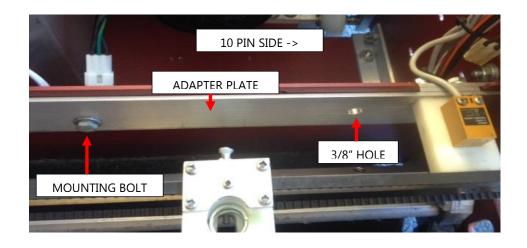


Rev. 3.14

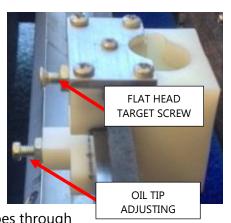
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INSTALLING THE OIL HEAD BAR ASSEMBLY

31. Using the 1/4-20 x 3/4" hardware you removed earlier, mount the adapter plate to the transfer wall. Align the plate adapter with the six ¼" mount holes towards the top and the 3/8" hole facing the 10 pin wall as shown below. With the mounting bolts finger tight, let the adapter rest at the lowest point and finishing tightening them up.



- 32. Assemble the new oil head assembly. From the kit, take one of the 8-32 nuts and thread it onto 8-32 x 5/8" flat head screw. Now insert the screw with nut into the top hole on the oil head, tighten down by hand for now. This is the target screw and will be adjusted later.
- 33. Take the other 8-32 nut and thread it onto the longer 8-32 x 1-3/4" screw. Insert this screw in the hole that is located in the part of the oil head that extends out from the rest of the oil head. Tighten this screw until it's flush with the counter bore that goes through



the head. This screw is the oil tip angle adjustment screw and will be adjusted in later steps.

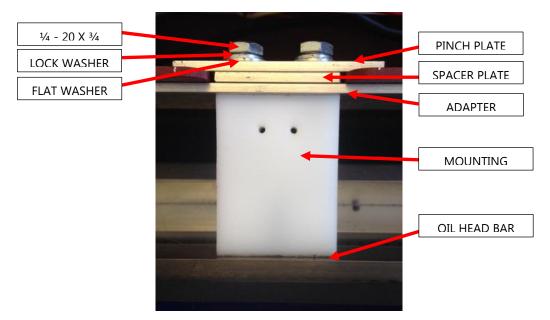
34. Slide new oil head assembly onto the head bar assembly. When doing this, make sure that the screws in the oil head assembly face the same direction as the white oil head mounting blocks and towards the machine (shown in pic at the top of the page). Also, ensure that the oil head assembly will slides nice and smooth the entire length of bar.



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- 35. In the kit, locate the six (6) $\frac{1}{4}$ -20 x $\frac{3}{4}$ bolts, six (6) $\frac{1}{4}$ lockwashers and the six (6) washers. Assembly the hardware by placing the lockwasher onto the bolt followed by the washer.
- 36. The Oil Head bar assembly will mount to the machine using a series of plates and bolts to 'pinch' into place.
- 37. In the kit, locate the 3 longer Pinch plates and the 3 Spacer plates as shown in the picture above.
- 38. Assemble the bolts and plates as shown above. Mount the middle block first. The bolts will go through the adapter plate and thread into the white mounting block assembly. Hand tighten them for now.
- 39. Repeat the above steps for the 7 and 10 pin mounting blocks.
- 40. Fasten the bolts all the way while keep the head bar level and equal from side to side.
- 41. Attach the proximity sensors back into place using the same hardware as before. Keep the block square with the head bar (shown in pic) when tightening down.





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Installing the Oil Head Belt assembly

42. to allow adjustment of the oil head belt, loosen the jam nuts that are located outside of the machine on the oil head adjusting block assembly bolts (shown right). Back them away from the block around one inch.

- 43. Take the new oil head belt assembly from the kit, and cut a piece off of it that will fit into the channel of the oil head.
- 44. Lay the cut piece of belt in the channel with the cogs facing up, as shown to the right.
- 45. Take the oil head belt and route it around the oil head drive pulley on the 7 pin side and around the idler pulley on the 10 pin side.
- 46. With the oil head assembly in the middle of the head bar, have the belt meet both ends on top of the oil head assembly.
- 47. With a small drop of super glue on the belt in the channel, attach the left end of the oil head belt 'half way' into the cogs of the belt in the oil head assembly as shown to the right.

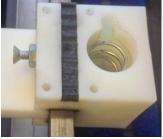


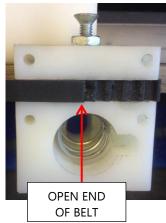
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- 48. With the oil head belt routed around both of the pulleys, hold the belt in the oil head in place with right hand and with your left hand, pull the belt tight so that they meet in the middle of the oil head assembly.
- 49. Cut off the extra length of belt to allow both ends of the oil head belt to meet flush in the channel of the oil head assembly as shown to the right.
- 50. Remove the center screw from the center of the belt retainer plate.
- 51. Fasten down the oil head belt back into place using the plate. You will need to slide this into place while at the same time, threading on of the screws into the plate.
- 52. Fasten the rest of the plate into place using the hardware that was removed earlier.
- 53. Now that the oil head belt is fastened into place, tighten the small center screw. The small screw allows for the belt to not come out of the head assembly while in motion.
- 54. Adjust the tension of the oil head belt assembly. To do this, push Oil Head adjustment block away from the machine to tighten the belt and hand tighten the jam nuts against the block.
- 55. Move the oil head to the 7 pin side of the machine, and push down on the belt. When the correct adjustment is reached, the belt should tighten as it touches the head bar assembly.
- 56. You will now need to set the adjustment for the Target screw to activate the left and right proximity sensors. Move the oil head in front of the right proximity sensor inside the lane machine.



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- 57. Adjust the screw so that a gap of .015" between the screw and the front of the proximity sensor. Fasten the nut on the screw once the correct adjustment has been obtained.
- 58. Now move the oil head to the left prox sensor and check if that adjustment is ok. Its ok that the gap is not exactly the same as the other sensor just so long as it activates.

Installing the Oil Tip and Hose assembly

- 59. Remove the end of the oil tip and hose from quick-disconnect fitting on located on the splash guard. Use a rag to wipe up any oil that may drip from hose or fitting.
- 60. Discard old tip and hose holder assembly.
- 61. Next you will need to remove the fittings and hose clamp from the splash guard. Remove the hose on the inside of the splash guard going up to the fitting. Once removed, insert the grommet from the kit into the hole.



- 62. Attach the clamp to the splash guard with the new 8-32 screw and washer provided in the kit. This should go around the spring as shown in the picture.
- 63. Insert the open end of hose through spring and clamp on splash guard. Route the hose through the grommet in the splash guard and back up to the valve assembly. Press hose firmly into the fitting.



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Adjusting the Oil Tip and Hose assembly

Correct adjustment of the Oil Tip is very important and is a determining factor in applying a consistent pattern!

There are two adjustments that can be made to the oil tip. One adjustment is the height of the tip. The other is the position of the tip. The point where the Transfer Brush and the Buffer Brush meet will form a "V". The Oil Tip should be as close to this "V" as possible, without actually dispensing oil into the "V" area.

- 64. The oil tip height can be adjusted by loosening the set screw in the collar located on the tip holder, and sliding it up or down until the proper height. You will want the tip height to be just off of the transfer brush and not touching it.
- 65. Check the adjustment by sliding the head from the left wall and back to the right. Equal height should be found.
- 66. The oil tip pitch can be adjusted using the bottom screw and jam nut. Pitch should be set to dispense conditioner on the black transfer brush not on the blue buffer brush.
- 67. When the hose is inserted in the oil head correctly, it should resemble the sequence of images below. The natural arc of the hose should loop toward the splash guard while moving to the 7-pin side. If hose does not loop correctly, you will have to remove the Oil Tip assembly from the head and loosen the collar and turn it but do not move up or down.





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INTSALLING THE DUO BRUSH ASSEMBLY

Remove the Splash Guard assembly

- 1. Remove the oil tip hose from the oil control valve, pull hose through the splash guard, take out the oil tip and set aside or discard and replace this later with the one in your kit.
- 2. If the machine is equipped with the keypad attached to the Splash guard, remove the cable from the bottom of the Keypad assembly. Also, if the machine is equipped with the power button located on the splash guard, remove the wiring from the bottom of the button assy.
- 3. Loosen the ¼-20 bolts on the LDS block, holding the splash guard assembly in place.



4. Carefully remove the splash guard from your lane machine, being careful to disconnect keypad (if needed)

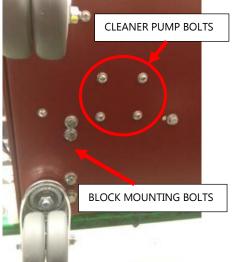
Remove the Cleaner Pump assembly

Machines with 4 spray Jet style cleaner pump:

- 5. Remove the cleaner pump assembly from the rear panel and leave it lying to the side. Use a towel for any dripping.
- 6. Now that the cleaner pump is out of the way, remove the LDS adjustment block (shown below) and set aside.

Machines with Peristaltic Cleaner pump assembly:

- 7. With a towel on underneath the machine to catch any drips, disconnect the tubing coming from the cleaner pump assembly.
- 8. Remove the four screws from the rear panel that mount the cleaner pump assembly and set the pump aside.





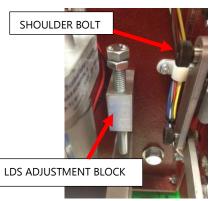
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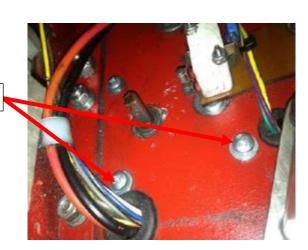
Installing the Buffer Motor support bracket

- 9. Remove the LDS adjustment block assembly by removing the mounting bolts from the front of the rear panel.
- 10. Remove the shoulder bolt that fastens the lower link to the cam. It may be necessary to heat this up as these are fastened with Loctite. VERY important to make note of the hole in the cam that the bolt is mounted in.
- 11. Next, remove the cam assembly by loosening the set screws that keep it tight to the brush up/down motor shaft.



12. Remove the two bottom motor mounting screws to the frame.





13. Locate the Buffer Mounting bracket and mounting hardware from the kit. Install the bracket as shown to the right and fasten into place using the two screws, washer and lockwasher provided in the kit.

BUFFER MOUNTING BRACKET





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14. On ALL Walker models, it will be necessary to remove the support post as shown to the right. Failure to do so will cause potential damage to the transfer roller pulley and belt assembly.



Reinstalling the components

- 15. Slide the buffer motor cam back into place and fasten the set screw on to the flat spot located on the shaft.
- 16. Reinstall the lowering link assembly. Take the shoulder bolt removed in step 19 and slide it through the link and fasten into place using Loctite. VERY important to use

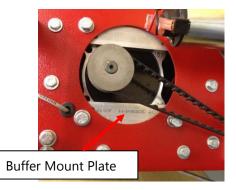
REMOVE

- 17. Reinstall the LDS block assembly removed in step 18.
- 18. Reinstall the cleaner pump assembly keeping the wires and tubing fastened neatly into place.
- 19. Reinstall the splash guard assembly.

Drilling Holes

First locate the template from the kit that correctly matches your lane machine.

- Template A Any DC lane machine that does NOT have the Buffer Mount plate shown to the right.
- Template B ALL AC model lane machines. Kustodian, Kustodian Plus, Sanction Standard and Phoenix S model C.
- Template C will be used on ALL machines to drill 10 pin side hole.





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Template C - ALL Machines

- 20. On the 10 pin side of the lane machine, line Template 'C' up with the existing holes in the side plate and tape in place.
- 21. Using a punch, mark the center of the 1" hole to be drilled.
- 22. Drill the 1" hole and deburr the hole to remove any sharp edges.

Template B

- 23. On the 7 pin side of the lane machine, line up Template 'B' with the existing marks.
- 24. Clear all wiring or items that may potentially come in contact with the drill bit while drilling the hole.
- 25. Using a center punch, mark the center of the 25/64" hole to be drilled.
- 26. Drill the 25/64" hole and deburr the hole to remove any sharp edges.



Template A

- 27. On the 7 pin side of the lane machine, line up Template 'A' with the existing marks.
- 28. Clear all wiring or items that may potentially come in contact with the drill bit while drilling the hole.
- 29. Using a center punch, mark the center of the 25/64" hole to be drilled.
- 30. Drill the 25/64" hole and deburr the hole to remove any sharp edges.



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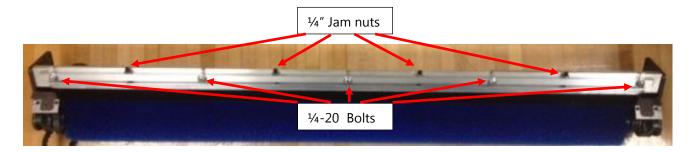
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Before installing the DUO assembly, verify that the factory set adjustment is correct. A 3/16" of crush, or deflection of bristles, evenly across the front side of the brush and 1/8" across the backside of the transfer roller.

DUO Transfer Brush assembly adjustment



- 31. Loosen the ¼" jam nuts on each square head bolt and back the bolts out so that the transfer brush can move all the way in and out of the buffer brush assembly.
- 32. loosen the five ¼-20 bolts on the front side that secure the adjustment bar, but keep them snug.
- 33. Using a ¼" wrench, screw the square headed bolts into the transfer brush to lower. Do this until the Transfer brush just contacts the buffer brush assembly. Once this happens, turn the screws two full turns and tighten them.
- 34. If a Transfer Roller adjustment is needed:
- 35. Loosen the roller pivot screws.
- Then loosen the jam nut on the Roller adjusting crew and turn the screw in or out until the 1/8" – 3/16" crush is obtained.
- 37. Tighten the jam nut and the pivot screws back into place.



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Installing the DUO Transfer Brush assembly

- 38. With the machine standing in the transport position, take the DUO Brush system assembly and insert into the machine from the bottom. Make sure the roller shaft goes through the freshly drilled hole on the 10 pin side and set into place.
- 39. Take the two longer shoulder bolts that were removed in Step 8 and insert them through the top holes of the side panels from the outside in, and hand tighten them into the buffer bearing assembly.
- 40. Next, locate the shorter cut shoulder bolts removed in step 8, and insert them through the lowering link and hand tighten them into the Buffer Bearing assembly.
- 41. Fasten all four bolts tightly into place.
- 42. Locate the two pulleys and the small transfer roller belt from the kit.

Because of the tightness of the belt, the next two steps will be done with the belt around the two pulleys prior to sliding them into place.

- 43. Take one of the pulleys, and with the hub facing out, will slide onto the buffer brush shaft.
- 44. The remaining pulley will slide onto the transfer roller shaft with the hub facing in towards the machine.
- 45. Once on the shafts, fasten the set screws on the pulleys.
- 46. The allen bolt that will go into the buffer brush shaft will will be fastened with a lock washer and is reverse thread. This will tighten up by turning the wrench counter-clockwise.







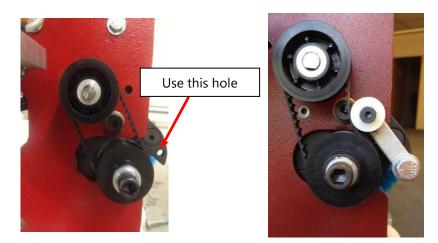
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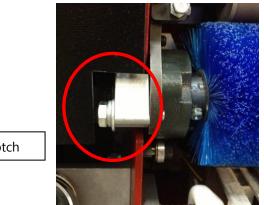


Idler Pulley assembly installation

- 47. Remove the Idler pulley assembly and hardware from the kit. This will be fastened threaded hole on the buffer bracket as shown below.
- 48. Tighten up the pulley against the belt giving around a 1/16" of tension.



Once together, it will be necessary to cut a notch in the side cover to fit properly. This will be around a $1 \frac{1}{2}$ " notch like in the picture below. When cutting metal guards, make sure you have a tool sharp enough to make a clean cut.



Notch



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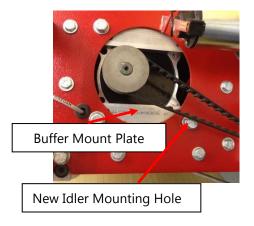


Buffer Belt and idler pulley installation

When installing the Buffer Belt, the Buffer brush must be in the down position.

ION Model A or B, and machines that utilize the Buffer Mount plate

- 49. Remove the lower right bolt as shown to the right
- 50. Locate the new longer idler mounting block and hardware from the kit and mount the assembly into the lower right mounting hole for the buffer motor assembly.
- *51.* Replace the Buffer Belt assembly around the pulleys and tighten up the buffer idler pulley with the belt assembly tight.

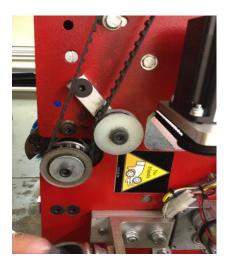


If holes were drilled

- 52. Locate the new Buffer Belt idler mounting block and hardware from the kit and hand tighten into the hole that was drilled in the earlier steps.
- 53. Route the Buffer Belt assembly around the both pulleys and tighten up the buffer idler pulley with the belt assembly tight as possible.

The positioning of the Idler Pulley assembly is very important!

• On ALL Sport model lane machines, the buffer idler pulley will go on top of the belt.





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- On ALL other models that use the Brush Chop feature, the buffer idler pulley will go on top of the buffer belt assembly.
- If the Brush Chop feature is NOT used, you may position the idler pulley on the bottom side of the belt.



54. Replace the side guards and power up the lane machine. Menu to the outputs, check the function of the buffer up and down motor, as well as the Buffer Motor assembly.



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