



# INSTALL INSTRUCTIONS



PART NUMBER	158-8430
PART DESCRIPTION	Transfer Brush System upgrade
REV DATE	10/1/12
WRITTEN BY	Mike Purdy
APPROVED BY	Steve Sowards
MACHINE MODELS	ALL Painted Lane machines



Should only be performed by a Kegel Certified Level 1 technician

## TOOLS NEEDED:

3/8" Ratchet Wrench	3/8" Socket Extension – 6"	Small Hammer
7/16" Socket	11/32" Wrench	3/16" Allen Wrench
1/8" Allen Wrench	9/16" Wrench	¼" Allen Wrench or socket
Phillips Screw Driver	Allen Wrench Cluster	

**Please thoroughly read through the instructions prior to performing the installation of this assembly. To avoid any potential problems, if at any time during the process you may have a question, stop and contact our Tech Support department at 1-800-280-2695**

**Note: These instructions are designed to work for all different machine applications. Please reference the section applicable to your machine:**



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**Parts included w/ Transfer Brush Assy:**

- |   |  |
|---|--|
| (1) 158-9608 – 3/4" x 1" x 3/4" Plain Bushing | (1) 158-8430 Replacement Instruction   |
| (3) 154-6895 Pinch Clamp for HBMP             | (1) 153-2099 3/16" x 1/2" Key Stock    |
| (6) 153-2004 1/4" Flatwasher                  | (3) 154-6896 Spacer for HBMP           |
| (6) 153-2052 1/4-20 x 7/8" HHCS               | (1) 154-6893 Oil Head (Adjustable Tip) |
| (4) 153-2801A Shoulder Bolt 3/8" x 3/8" (CUT) | (1) 154-9201 Head Drive Belt           |
| (6) 153-2014 1/4" Lockwasher                  | (1) 154-0218 Grommet                   |
| (2) 153-2414 8-32 Hex Nut                     | (1) 153-2806 8-32 x 5/8" FHMS          |
| (1) 153-2954 HHCS – 8-32 x 1-3/4              | (1) 153-2006 3/8" Flat Washer          |
| (1) 254-8839 Buffer Idler Assy                | (1) 153-2025 3/8-16 Hexnut             |
| (1) 153-2805 3/8-16 X 1-1/4 FHSS              | (1) 153-2016 3/8" Lockwasher           |
| (1) 153-6953 Spacer – Oil Head                | (2) 153-2831 6-32 x 3/8" FHMS          |
- Template for drilling holes

**SECTION A - KUSTODIAN MODEL D / KUSTODIAN-PLUS MODEL A / ION MODEL A / ELITE PLUS MODEL A (Pgs 1-4)**

**SECTION B – PX-S MODEL C, KUSTODIAN MODEL A, B, C (Pgs 4-10)**

**SECTION C – SANCTION STANDARD AC, VB & SE ONLY (Pgs 11-17)**

**Steps:**

**SECTION A – KUSTODIAN MODEL D / KUSTODIAN-PLUS MODEL A / ION MODEL A / ELITE PLUS MODEL A**

1. Plug the machine in and menu the keypad display to the brush up/down screen. Lower the brush into the down position. Unplug machine. Remove the guards from the machine and set aside w/ fasteners for re-installation after upgrade is complete.
2. Stand the machine up in the transport position.
3. Using the 7/16" socket, remove the (4) bolts that mount the existing Transfer Brush in the machine. Remove the Transfer brush.
4. Using the Phillips screw driver and 11/32" wrench, remove the existing drip pads mounted in the machine.
5. Using the 9/16" wrench and Allen wrench cluster, loosen the Buffer Idler mounting bolt (inside the machine) and remove the buffer belt.



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6. Using the ¼” Allen wrench, loosen & remove the socket head cap screw in the end of the buffer brush shaft. You will need to hold the brush while loosening the cap screw. Using the 1/8” T-Handle Allen wrench, loosen the set screw in the pulley. Slide pulley off the end of the brush shaft as well as the ½” steel spacer. Retain the cap screw, fender washer and pulley as you will need them again when installing the new brush system. The ½” spacer can be discarded as a new ¾” one has been provided in the fastener kit.
7. Using the 3/16” Allen wrench, loosen & remove the (4) shoulder bolts holding the old brush in the machine. Two of the bolts will be removed from outside the machine (through frame into bearings), w/ the remaining (2) bolts removed from inside the machine (in connecting link to motor).
8. Slide the old brush out of the machine (from behind).

***NOTE: Before installing the Transfer Brush Upgrade in the machine, double-check the factory-set brush crush adjustment. There should be 3/16” of crush evenly across the front side of the brush and approx 1/16” across the backside. If crush needs to be adjusted: Loosen the four 8/32 screws on the right and left that secure the adjustment blocks to the bar but keep them snug. Using a 1/8 inch allen wrench, turn the setscrews clockwise to raise the transfer brush or counter clockwise to lower the transfer brush. Position the transfer brush so it is just touching the buffer brush then turn it counter clockwise to lower the transfer brush into the buffer brush so you have approx. 3/16” of crush evenly across the front side of the brush and approx 1/16” across the backside. Once you get this adjustment, tighten the 8-32” screws completely down to secure your adjustment.***

10. Slide the new 158-8430 Transfer Brush system into the machine, making sure the side w/ the longer brush shaft is towards the 7-pin side of the machine.
11. Place a nylon washer onto one of the 153-2801A Shoulder Bolt 3/8” x 3/8” (CUT) through the bushing in the side wall and screw into the tapped hole in the brush bearing mount plate above the bearing. Do the same for the opposite side. Tighten completely.
12. Push one of the bearing mount shoulder bolts through the brush lift rod connecting link and screw into the tapped hole in the bearing mount plate below the bearing. Tighten completely. Do the same for the opposite side.
13. Place the 158-9608 – ¾” x 1” x ¾” Plain Bushing provided in the fastener kit on over the brush shaft.
14. Using a small hammer, tap the ½” piece of keystick provided into the keyway in the brush shaft. Slide the pulley on over the shaft & key. Using the 1/8” T-Handle allen wrench, tighten pulley set screw completely.



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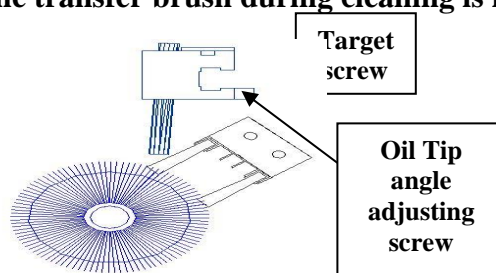
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15. Place the (3) 5/16” flatwashers provided in the fastener kit inside the pulley up against the end of the buffer brush shaft. The washers act as a spacer.
16. Screw the socket head cap screw w/ fender washer into the end of the buffer brush shaft. Tighten completely.
17. Push the bearing mount plates outward against the side walls of the machine so they are flush against the frame. Tighten the (4) bearing set screws (two in each bearing).
18. Place the buffer belt back on over the motor and brush pulleys so that it is routed underneath the belt idler. Using the 9/16” wrench and Allen cluster, tighten the buffer idler assy so it is tight against the belt. The belt should be taught, but not rock hard.
19. Plug the machine back in and menu to the buffer brush up/down screen. Operate the brush up and down a few times making sure it raises and lowers properly. The bearing mount plates should sit flush against the side walls, but not be tight against them. Re-adjust if necessary.

**We have included several sample patterns with this upgrade. Use these patterns as a starting point and make adjustments as you see fit.**

**NOTE: Wiping the oil from the transfer brush during cleaning is not recommended.**



### **SECTION B – PX-S MODEL C, KUSTODIAN MODEL A, B, C**

1. Make sure buffer brush is in the “down” position. Disconnect power from the machine.
2. Stand machine up in the transport position. Remove the cover/guard over the head drive motor & buffer belt (7-pin side). Remove the buffer-belt idler (remember which hole in the frame you remove this from - critical) and buffer belt from the machine. Set aside both (with fasteners) for re-installation later.
3. Using the ¼” Allen wrench, loosen & remove the socket head cap screw in the end of the buffer brush shaft. You will need to hold the brush while loosening the cap screw. Using the 1/8” T-Handle Allen wrench, loosen the set screw in the pulley. Slide pulley off the end of



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the brush shaft as well as the ½” steel spacer. Retain the cap screw, fender washer and pulley as you will need them again when installing the new brush system. The ½” spacer can be discarded as a new ¾” one has been provided in the fastener kit.

4. Using the 3/16” Allen wrench, loosen & remove the (4) shoulder bolts holding the old brush in the machine. Two of the bolts will be removed from outside the machine (through frame into bearings), w/ the remaining (2) bolts removed from inside the machine (in connecting link to motor).
5. Slide the old brush out of the machine (from behind).
6. Lay machine down in the operating position. You will now need to remove the lid; start by removing the two 8-32 flat head screws (10-pin side) from the black lid mounting plate. Set aside plate and screws for use later. Carefully remove lid from the machine.
7. On the same side of the machine (10-pin), remove the cover/guard from the head timing sensor and transfer chain.
8. The next step is to remove the recovery tank from the machine (Kustodian Only).
9. The following step applies to the Kustodian only. Now you will need to remove the vacuum motor assembly. Start by unplugging the motor from the machine wire harness. Next you will need to remove the fasteners that hold the vacuum box in the machine. Set aside motor and fasteners for re-installation later.
10. You will now need to remove the pc plate assembly. Remove the four screws that hold the plate in the machine. Lift plate assembly up and disconnect all plugs that go from the plate to the machine wire harness (note the correct locations of all plugs). Set aside plate and fasteners for use later.
11. Remove fasteners that attach both head prox sensors to the machine. Save fasteners for re-attachment later, lay both sensors out of the way (in the electrical compartment).
12. Loosen nuts on the inside of the head-timing block (10-pin side) assembly, so the block can be moved in toward the machine frame. Moving the block in will allow the head timing belt to become slack.
13. Remove the four screws from the top plate on the oil head assembly. Remove the head drive belt from the machine. Lay tip and hose holder assembly aside. Set aside screws and top plate for use later.
14. Remove the six bolts that secure the head bar mount blocks to the machine. Lift head bar, blocks, and head out of machine as one unit.

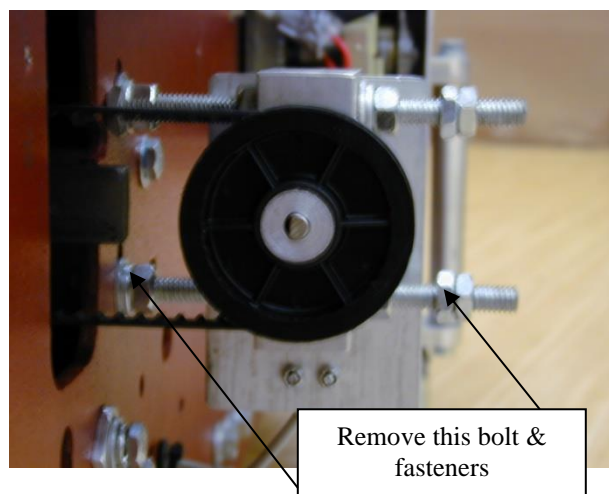


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15. Remove bottom bolt (along with fasteners) in head timing block. Set aside fasteners and bolt for re-installment later. DO NOT loosen top bolt from frame.



16. Remove the ¼" (black) button-head screw from the left side (7-pin) of the wiper assembly. Save for re-installation.
17. Next, you will need to remove the sprockets from the transfer roller motor shaft and from the transfer roller. Loosen set screws, attach the gear puller (if needed) to the sprocket on the transfer motor shaft and remove, repeat for the transfer roller. Discard sprockets and chain.
18. Unplug the transfer motor from the machine wire harness. Remove fasteners that hold motor to the machine frame. Discard motor and fasteners.
19. Remove the felt drip pads located on either side of the transfer roller, discard pads and fasteners.
20. Place a small screwdriver between the wiper pad and transfer roller, pry the wiper back from the roller and insert a small pin or rivet in the hole at the top of the plate (repeat for each pad). This will prevent the pads from ejecting when the transfer roller assembly is removed. Remove the fasteners from the transfer roller arms, take transfer roller and arms out of machine as one unit and discard.
21. Loosen collars on wiper bar adjustment bolts. Remove bolts and fasteners from assembly and wall of machine. Remove wiper assembly from machine, save washers as they will be used later (also save the two bolts and fasteners that hold the actual assembly to the frame, they will be used to install the adapter plate). Remove both wiper bar adjustment brackets from frame and discard. Replace black button head bolt you removed earlier and tighten.



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***NOTE: Before installing the Transfer Brush Upgrade in the machine, double-check the factory-set brush crush adjustment. There should be 3/16" of crush evenly across the front side of the brush and approx 1/16" across the backside. If crush needs to be adjusted: Loosen the four 8/32 screws on the right and left that secure the adjustment blocks to the bar but keep them snug. Using a 1/8 inch allen wrench, turn the setscrews clockwise to raise the transfer brush or counter clockwise to lower the transfer brush. Position the transfer brush so it is just touching the buffer brush then turn it counter clockwise to lower the transfer brush into the buffer brush so you have approx. 3/16" of crush evenly across the front side of the brush and approx 1/16" across the backside. Once you get this adjustment, tighten the 8-32" screws completely down to secure your adjustment.***

23. Slide the new 158-8430 Transfer Brush system into the machine, making sure the side w/ the longer brush shaft is towards the 7-pin side of the machine.
24. Place a nylon washer onto one of the 153-2801A Shoulder Bolt 3/8" x 3/8" (CUT) & push through the bushing in the side wall and screw into the tapped hole in the brush bearing mount plate above the bearing. Do the same for the opposite side. Tighten completely.
25. Push one of the bearing mount shoulder bolts through the brush lift rod connecting link and screw into the tapped hole in the bearing mount plate below the bearing. Tighten completely. Do the same for the opposite side.
26. Place the 158-9608 – 3/4" x 1" x 3/4" Plain Bushing provided in the fastener kit on over the brush shaft.
27. Using a small hammer, tap the 1/2" piece of keystick provided into the keyway in the brush shaft. Slide the pulley on over the shaft & key. Using the 1/8" T-Handle allen wrench, tighten pulley set screw completely.
28. Place the (3) 5/16" flatwashers provided in the fastener kit inside the pulley up against the end of the buffer brush shaft. The washers act as a spacer.
29. Screw the socket head cap screw w/ fender washer into the end of the buffer brush shaft. Tighten completely.
30. Push the bearing mount plates outward against the side walls of the machine so they are flush against the frame. Tighten the (4) bearing set screws (two in each bearing).
31. Place the buffer belt back on over the motor and brush pulleys so that it is routed underneath the belt idler. Using the 9/16" wrench and Allen cluster, tighten the buffer idler assy so it is tight against the belt. The belt should be taught, but not rock hard.

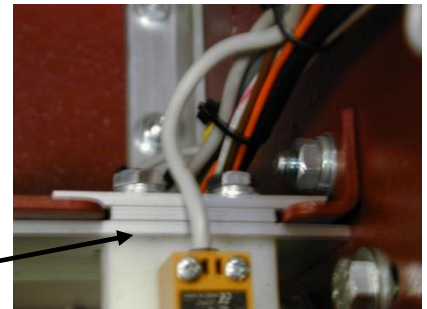


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32. Next you will need to mount the adapter plate to the transfer wall, use the bolts and washers in the fastener kit. Make sure the plate is aligned correctly in the machine; the six 1/4" mount holes will need to be "UP" when the plate is installed. There is also a 3/8" hole that will be toward the right side (10-pin) of the plate when installed correctly. Assembly is bolted in to slots, make sure mount bolts are all the way to the bottom of the slots before tightening.
33. This is an optional step and will require the use of a right-angle drill. Locate the 3/8" hole toward the right end of the adapter plate. Center punch this hole on the frame and drill out with a 3/8" bit. This hole will allow you to adjust the oil tip using a screwdriver. If you do not choose to drill this hole the tip can still be adjusted with a pair of pliers.
34. Remove the "old" oil head block from the head bar. Cut a 1-1/2" piece of belt off your old head belt. Use superglue to fasten this piece of belt to the top of the new oil head (in the belt-track).
35. This step applies to the new oil head. Screw one of the new 8-32 nuts on to the new 8-32 x 5/8" flat head screw (this is the target screw and will be adjusted later). Now insert the screw with nut in to the top hole on the oil head, tighten down by hand for now. Next you will need to screw the other 8-32 nut on to the longer (8-32 x 1-3/4") screw (this screw is the oil tip angle adjustment 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 is flush with the counter bore that goes through the head.
36. Slide new oil head on to head bar assembly, make sure head slides down entire length of bar freely. Be sure head is in correct configuration on bar; screws will face in toward the PC compartment of machine when installed.
37. You will now need to re-install the head bar assembly in the machine. Start by sliding a 1/4" lock washer and 1/4" washer (that you removed earlier) on two of the new 1/4-20 x 3/4 bolts. Now insert the two bolts through one of the new pinch clamp bars (1" x 2.5" plate). Slide one of the spacer bars (1" x 1.5" plate) on top of the pinch bar. Repeat the previous steps two more times. You will now have a total of three mounting assemblies. Use one of the mounting assemblies per head mount block (refer to picture above). Tighten all fasteners down completely.
38. Next, install the NEW head drive belt. Begin by looping the belt over both pulleys (head drive pulley -7-pin side; head adjustment pulley – 10-pin side). Position both ends of the belt evenly on top of the oil head block (trim any excess belt). Superglue both ends to the small piece of belt on top of the head assembly. Re-install the cover plate on top of the head, tighten down fasteners (do not over-tighten).



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39. You will now need to re-position the head belt adjustment block (10-pin side). Slide adjustment block out from machine and tighten down fasteners. Adjust belt tension to feel, if you press down on the belt with minimum pressure, it should just come in contact with the head bar.
40. Re-install both head prox sensors using the fasteners you removed earlier.
41. Slide head assembly in front of either prox sensor. Use a feeler gauge to adjust the target (flat-head 8-32 screw) to the sensor. There should be .025" gap between the target and the sensor.
42. Locate tip and hose holder assembly. Follow hose from assembly back to splash guard (this end will be inserted into a large spring). Remove this end of the hose from quick-disconnect fitting on splash guard. Use a rag to wipe up any oil that may drip from hose or fitting.
43. Slide hose out of spring, set spring aside for re-installation later.
44. Discard old tip and hose holder assembly.
45. Next you will need to remove the fasteners that attach the hose clamp to the splash guard. Once removed, insert new 8-32 screw and washer provided through splash guard. Slide clamp back on new screw and secure with new washer and locknut.
46. You will now need to disconnect the oil hose from the other side of the quick disconnect fitting on the splash guard. Follow the hose up to where it connects to the valve assembly, disconnect hose here also and discard this piece of hose.
47. The next step is to remove the quick disconnect fitting from the splashguard. This can be accomplished by using a wrench and/or pair of pliers. Discard this fitting. Insert the new grommet provided in the hole where the quick disconnect fitting was.
48. Insert NEW Tip holder assembly into Oil Head assembly. Press Tip Holder assembly down and turn clockwise until Holder assembly stops. You will need to adjust the oil-tip angle screw (this is the long screw that is toward the bottom of the Oil Head). 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. Check this with the buffer brush running. To operate the brush, press the button on top of the buffer motor contactor. After making each position adjustment you will also need to make sure the tip is as close to the black brush as possible without touching. The height can be adjusted by loosening the set screw in the tip holder collar and sliding the tip holder up or down. Re-tighten set screw when desired height is



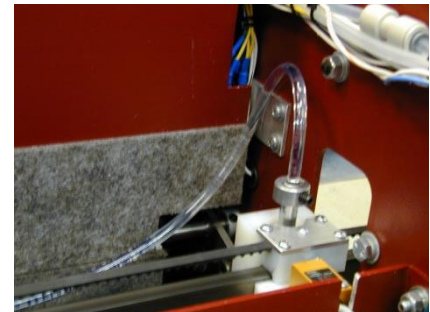
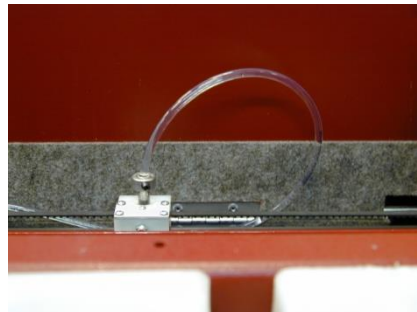
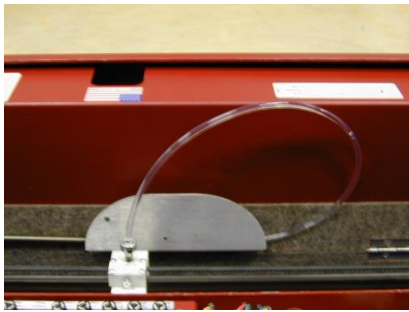
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achieved. **NOTE:** After you have completed all adjustments and run the machine, if you notice a zig-zag pattern in the oil on the lane, you will need to adjust the Oil Tip position. Adjust the oil tip further up the transfer brush to eliminate this problem (make adjustments in small increments until zig-zags disappear).

49. Insert other end of hose back through spring and clamp on splash guard. As you have noticed the new hose is longer. Feed hose through grommet in splash guard and back up to the valve assembly. Press hose firmly into fitting.
50. Tighten clamp back down onto hose spring (make sure clamp is secured over the black tape area of the spring).
51. You will need to make sure the hose is installed in the machine correctly. If the hose is correct it should resemble the sequence of images on the next page, when the oil head is slid toward the 7-pin side of the machine. The natural arc of the hose should loop toward the 7-pin side and the loop in the hose should lay toward splash guard. If hose does not loop correctly, you will have to remove the Oil Tip assembly from the head and re-insert.



52. You can now re-install the vacuum motor assembly and fasteners you removed earlier. Plug motor back in to the machine wire harness.
53. Re-install the pc plate assembly back in the machine. Reconnect all plugs going from the pc plate back to their original locations in the machine wire harness. Tighten down fasteners in all four corners of the pc plate assembly (be careful not to pinch any wires between the plate and the machine frame).
54. Stand machine up in the transport position. Next, you will need to re-install the buffer belt idler assembly (use the same hole in frame you removed the idler from) and the buffer belt.
55. Lay machine back down in operating position.
56. Install recovery tank.
57. Restore power to the machine and refer to the "Oil Head Timing Adjustment" section of your owner's manual.
58. Replace covers/guards and lid back on machine.



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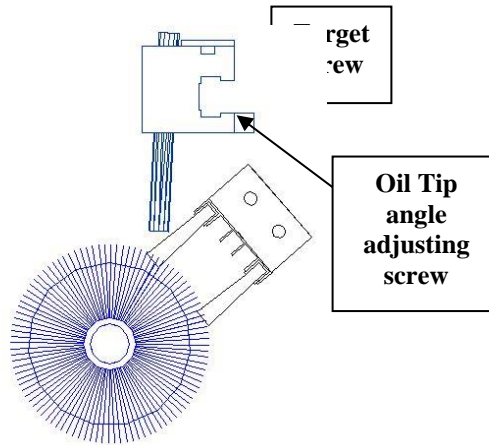
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59. We have included a sample pattern with this upgrade. Use this pattern as a starting point and make adjustments as you see fit.

**We have included several sample patterns with this upgrade. Use these patterns as a starting point and make adjustments as you see fit.**

**NOTE: Wiping the oil from the transfer brush during cleaning is not recommended.**



## **SECTION C (SANCTION STANDARD AC / SE / VB ONLY)**

1. Make sure buffer brush is in the “down” position. Disconnect power from the machine.
2. Stand machine up in the transport position. Remove the cover/guard over the head drive motor & buffer belt (7-pin side) and the Head Timing cover on the 10-pin side. Remove the buffer-belt idler (remember which hole in the frame you remove this from - critical) and buffer belt from the machine. Set aside both (with fasteners) for re-installation later.
3. Using the ¼” Allen wrench, loosen & remove the socket head cap screw in the end of the buffer brush shaft. You will need to hold the brush while loosening the cap screw. Using the 1/8” T-Handle Allen wrench, loosen the set screw in the pulley. Slide pulley off the end of the brush shaft as well as the ½” steel spacer. Retain the cap screw, fender washer and pulley as you will need them again when installing the new brush system. The ½” spacer can be discarded as a new ¾” one has been provided in the fastener kit.
4. Using the 3/16” Allen wrench, loosen & remove the (4) shoulder bolts holding the old brush in the machine. Two of the bolts will be removed from outside the machine (through frame into bearings), w/ the remaining (2) bolts removed from inside the machine (in connecting link to motor).



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5. Slide the old brush out of the machine (from behind).
6. Next, you will need to remove the sprockets from the transfer roller motor shaft and from the transfer roller. Loosen set screws, attach the gear puller (if needed) to the sprocket on the transfer motor shaft and remove, repeat for the transfer roller. Discard sprockets and chain.

#### SET THE MACHINE DOWN IN THE OPERATING POSITION

7. You will now need to remove the lid; start by removing the two 8-32 flat head screws (10-pin side) from the black lid mounting plate. Set aside plate and screws for use later. Carefully remove lid from the machine.
8. Unplug the transfer motor from the machine wire harness. Remove fasteners that hold motor to the machine frame. Discard motor and fasteners.
9. Remove the felt drip pads located on either side of the transfer roller, discard pads and fasteners.
10. Place a small screwdriver between the wiper pad and transfer roller, pry the wiper back from the roller and insert a small pin or rivet in the hole at the top of the plate (repeat for each pad). This will prevent the pads from ejecting when the transfer roller assembly is removed. Remove the fasteners from the transfer roller arms, take transfer roller and arms out of machine as one unit and discard.
11. Loosen collars on wiper bar adjustment bolts. Remove bolts and fasteners from assembly and wall of machine. Remove wiper assembly from machine, save washers as they will be used later (also save the two bolts and fasteners that hold the actual assembly to the frame, they will be used to install the adapter plate). Remove both wiper bar adjustment brackets from frame and discard. Replace black button head bolt you removed earlier and tighten.
12. Remove fasteners that attach both oil head proximity sensors to the white support blocks in the machine. Save fasteners for re-attachment later, lay both sensors out of the way (in the electrical compartment).
13. On the outside of the machine, loosen nuts on the inside of the head-timing block (10-pin side) assembly, so the block can be moved in toward the machine frame. Moving the block in will allow the head timing belt to become slack.
14. Remove the four screws from the top plate on the oil head assembly. Remove the head drive belt from the machine. Lay tip and hose holder assembly aside. Set aside screws and top plate for use later.
15. Remove the six bolts that secure the head bar mount blocks to the machine. Lift head bar, blocks, and head out of machine as one unit.



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16. On the 10 pin side of the machine, remove the bottom all-thread bolt that goes through the existing wiper assembly and into the head timing block. Set aside fasteners and bolt for re-installment later. DO NOT loosen top bolt from frame.
17. Remove the ¼” (black) button-head screw from the left side (7-pin) of the wiper assembly. Save for re-installation.
18. Remove the “old” oil head block from the head bar. Cut a 1-1/2” piece of belt off your old head belt. Use superglue to fasten this piece of belt to the top of the new oil head (in the belt-track).

***NOTE: Before installing the Transfer Brush Upgrade in the machine, double-check the factory-set brush crush adjustment. There should be 3/16” of crush evenly across the front side of the brush and approx 1/16” across the backside. If crush needs to be adjusted: Loosen the four 8/32 screws on the right and left that secure the adjustment blocks to the bar but keep them snug. Using a 1/8 inch allen wrench, turn the setscrews clockwise to raise the transfer brush or counter clockwise to lower the transfer brush. Position the transfer brush so it is just touching the buffer brush then turn it counter clockwise to lower the transfer brush into the buffer brush so you have approx. 3/16” of crush evenly across the front side of the brush and approx 1/16” across the backside. Once you get this adjustment, tighten the 8-32” screws completely down to secure your adjustment.***

19. Slide the new 158-8430 Transfer Brush system into the machine, making sure the side w/ the longer brush shaft is towards the 7-pin side of the machine.
20. Place a nylon washer onto one of the 153-2801A Shoulder Bolt 3/8” x 3/8” (CUT) & push through the bushing in the side wall and screw into the tapped hole in the brush bearing mount plate above the bearing. Do the same for the opposite side. Tighten completely.
21. Push one of the bearing mount shoulder bolts through the brush lift rod connecting link and screw into the tapped hole in the bearing mount plate below the bearing. Tighten completely. Do the same for the opposite side.
22. Place the 158-9608 – ¾” x 1” x ¾” Plain Bushing provided in the fastener kit on over the brush shaft.
23. Using a small hammer, tap the ½” piece of keystick provided into the keyway in the brush shaft. Slide the pulley on over the shaft & key. Using the 1/8” T-Handle allen wrench, tighten pulley set screw completely.
24. Place the (3) 5/16” flatwashers provided in the fastener kit inside the pulley up against the end of the buffer brush shaft. The washers act as a spacer.



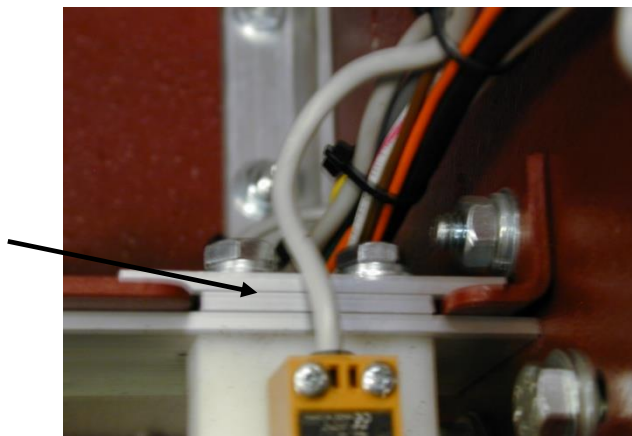
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25. Screw the socket head cap screw w/ fender washer into the end of the buffer brush shaft. Tighten completely.
26. Push the bearing mount plates outward against the side walls of the machine so they are flush against the frame. Tighten the (4) bearing set screws (two in each bearing).
27. This step applies to the new oil head. Screw one of the new 8-32 nuts on to the new 8-32 x 5/8" flat head screw (this is the target screw and will be adjusted later). Now insert the screw with nut in to the top hole on the oil head, tighten down by hand for now. Next you will need to screw the other 8-32 nut on to the longer (8-32 x 1-3/4") screw (this screw is the oil tip angle adjustment 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 is flush with the counter bore that goes through the head.
28. Install the (1) 153-6953 Spacer – Oil Head into the 3/8" slot in the 154-6893 Oil Head (Adjustable Tip) supplied, using the (2) 153-2831 6-32 x 3/8" FHMS. Slide new oil head on to head bar assembly, make sure head slides down entire length of bar freely. Be sure head is in correct configuration on bar; screws will face in toward the PC compartment of machine when installed.
29. You will now need to re-install the head bar assembly in the machine. Start by sliding a 1/4" lock washer and 1/4" washer (that you removed earlier) on two of the new 1/4-20 x 3/4 bolts. Now insert the two bolts through one of the new pinch clamp bars (1" x 2.5" plate). Slide one of the spacer bars (1" x 1.5" plate) on top of the pinch bar. Repeat the previous steps two more times. You will now have a total of three mounting assemblies. Use one of the mounting assemblies per head mount block (refer to picture above). Tighten all fasteners down completely.



30. Next, install the NEW head drive belt. Begin by looping the belt over both pulleys (head drive pulley -7-pin side; head adjustment pulley – 10-pin side). Position both ends of the belt evenly on top of the oil head block (trim any excess belt). Superglue both ends to the small piece of belt on top of the head assembly. Re-install the cover plate on top of the head, tighten down fasteners (do not over-tighten).



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31. You will now need to re-position the head belt adjustment block (10-pin side). Slide adjustment block out from machine and tighten down fasteners. Adjust belt tension to feel, if you press down on the belt with minimum pressure, it should just come in contact with the head bar.
32. Re-install both head prox sensors using the fasteners you removed earlier.
33. Slide head assembly in front of either prox sensor. Use a feeler gauge to adjust the target (flat-head 8-32 screw) to the sensor. There should be .025" gap between the target and the sensor.
34. Locate tip and hose holder assembly. Follow hose from assembly back to splash guard (this end will be inserted into a large spring). Remove this end of the hose from quick-disconnect fitting on splash guard. Use a rag to wipe up any oil that may drip from hose or fitting.
35. Slide hose out of spring, set spring aside for re-installation later.
36. Discard old tip and hose holder assembly.
37. Next you will need to remove the fasteners that attach the hose clamp to the splash guard. Once removed, insert new 8-32 screw and washer provided through splash guard. Slide clamp back on new screw and secure with new washer and locknut.
38. You will now need to disconnect the oil hose from the other side of the quick disconnect fitting on the splash guard. Follow the hose up to where it connects to the valve assembly, disconnect hose here also and discard this piece of hose.
39. The next step is to remove the quick disconnect fitting from the splashguard. This can be accomplished by using a wrench and/or pair of pliers. Discard this fitting. Insert the new grommet provided in the hole where the quick disconnect fitting was.
40. Insert NEW Tip holder assembly into Oil Head assembly. Press Tip Holder assembly down and turn clockwise until Holder assembly stops. You will need to adjust the oil-tip angle screw (this is the long screw that is toward the bottom of the Oil Head). 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. Check this with the buffer brush running. To operate the brush, press the button on top of the buffer motor contactor. After making each position adjustment you will also need to make sure the tip is as close to the black brush as possible without touching. The height can be adjusted by loosening the set screw in the tip holder collar and sliding the tip holder up or down. Re-tighten set screw when desired height is



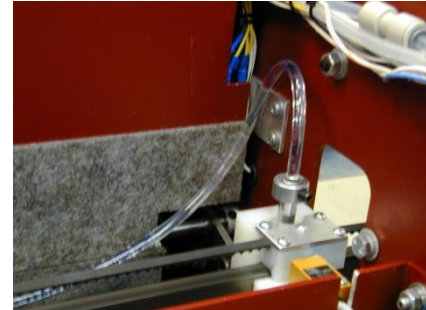
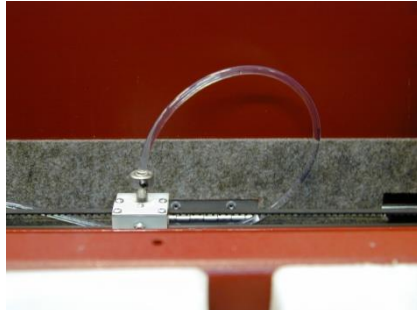
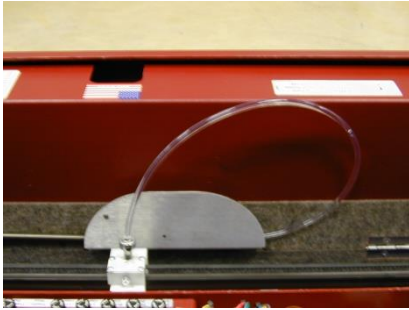
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achieved. **NOTE:** After you have completed all adjustments and run the machine, if you notice a zig-zag pattern in the oil on the lane, you will need to adjust the Oil Tip position. Adjust the oil tip further up the transfer brush to eliminate this problem (make adjustments in small increments until zig-zags disappear).

41. Insert other end of hose back through spring and clamp on splash guard. As you have noticed the new hose is longer. Feed hose through grommet in splash guard and back up to the valve assembly. Press hose firmly into fitting.
42. Tighten clamp back down onto hose spring (make sure clamp is secured over the black tape area of the spring).
43. You will need to make sure the hose is installed in the machine correctly. If the hose is correct it should resemble the sequence of images on the next page, when the oil head is slid toward the 7-pin side of the machine. The natural arc of the hose should loop toward the 7-pin side and the loop in the hose should lay toward splash guard. If hose does not loop correctly, you will have to remove the Oil Tip assembly from the head and re-insert.



44. You can now re-install the vacuum motor assembly and fasteners you removed earlier. Plug motor back in to the machine wire harness.
45. Re-install the pc plate assembly back in the machine. Reconnect all plugs going from the pc plate back to their original locations in the machine wire harness. Tighten down fasteners in all four corners of the pc plate assembly (be careful not to pinch any wires between the plate and the machine frame).
46. Using the template provided, drill a 3/8" hole in the frame in the location noted. Mount the Buffer Idler Assy provided on the outside of the machine, secured on the backside w/ a 3/8" flatwasher, lockwasher & nut. Push idler down onto buffer belt until taught and completely tighten.
47. Lay machine back down in operating position.
48. Install recovery tank.
49. Restore power to the machine and refer to the "Oil Head Timing Adjustment" section of your owner's manual.



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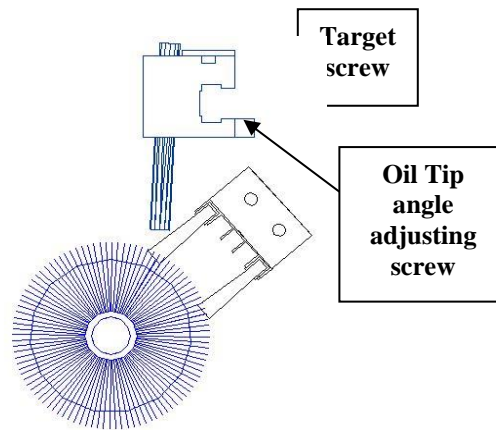
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50. Replace covers/guards and lid back on machine.

**We have included several sample patterns with this upgrade. Use these patterns as a starting point and make adjustments as you see fit.**

**NOTE: Wiping the oil from the transfer brush during cleaning is not recommended.**



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# Kegel Recreation Series - HIGH STREET



Oil Pattern Distance: **44 Feet** Reverse Brush Drop: **35 Feet** Oil Per Board: **50 uL**  
 Forward Oil Total: **10.85 mL** Reverse Oil Total: **10.25 mL** Volume Oil Total: **21.1 mL**  
 Forward Boards Crossed: **217 Boards** Reverse Boards Crossed: **205 Boards** Total Boards Crossed: **422 Boards**

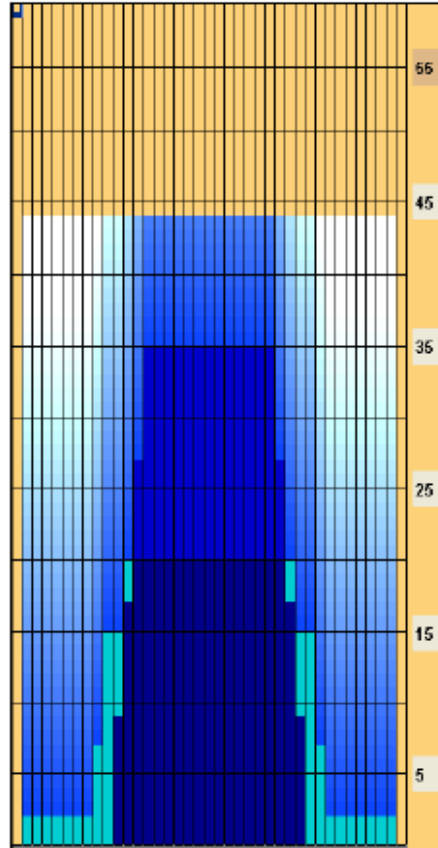
	Start	Stop	Loops	Speed	Crossed	Start	End	Feet	T.OI
1	2L	2R	2	18	74	0.0	2.5	2.5	3700
2	9L	9R	2	18	48	2.5	7.6	5.1	2300
3	10L	10R	3	18	63	7.6	15.2	7.6	3150
4	12L	12R	2	18	34	15.2	20.3	5.1	1700
5	2L	2R	0	18	0	20.3	24.0	3.7	0
6	2L	2R	0	22	0	24.0	33.0	9.0	0
7	2L	2R	0	30	0	33.0	44.0	11.0	0

	Start	Stop	Loops	Speed	Crossed	Start	End	Feet	T.OI
1	2L	2R	0	30	0	44.0	35.0	-9.0	0
2	14L	14R	3	18	39	35.0	27.4	-7.6	1950
3	13L	13R	4	18	60	27.4	17.2	-10.2	3000
4	12L	12R	4	14	68	17.2	3.3	-7.9	3400
5	11L	11R	2	10	38	3.3	6.5	-2.8	1800
6	2L	2R	0	10	0	6.5	0.0	-6.5	0

Conditioner:  
Type In or Select One

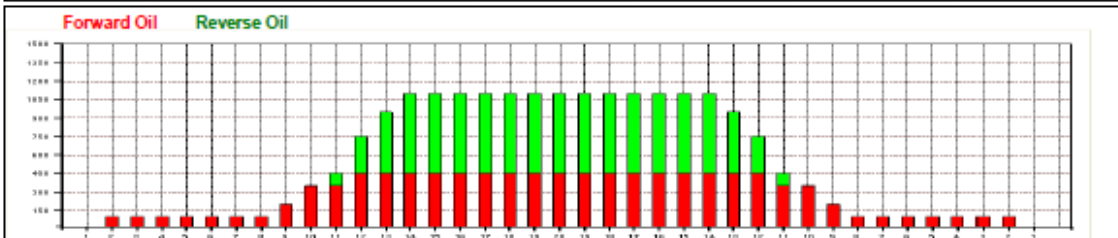
TransferType:  
Type In or Select One

- Forward
- Reverse
- Combined
- Buff



HIGH STREET8144At 44 feet in length, the oil line is very high and extends far down lane giving hold area like no other pattern in the series. Players will have to target along the highest point of oil much longer to prosper on the HIGH STREET.

Item	9L-7L:10L-10R	8L-12L:10L-10R	13L-17L:10L-10R	10L-10R:17R-13R	10L-10R:12R-8R	10L-10R:7R-3R
Description	Outside Track:Middle	Middle Track:Middle	Inside Track:Middle	Middle: Inside Track	Middle: Middle Track	Middle:Outside Track
Track Zone Ratio	11	2.97	1.03	1.03	2.97	11



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# Kegel Recreation Main Street



Oil Pattern Distance: **41 Feet**      Reverse Brush Drop: **35 Feet**      Oil Per Board: **50 uL**  
 Forward Oil Total: **8.55 mL**      Reverse Oil Total: **10.75 mL**      Volume Oil Total: **19.3 mL**  
 Forward Boards Crossed: **171 Boards**      Reverse Boards Crossed: **215 Boards**      Total Boards Crossed: **386 Boards**

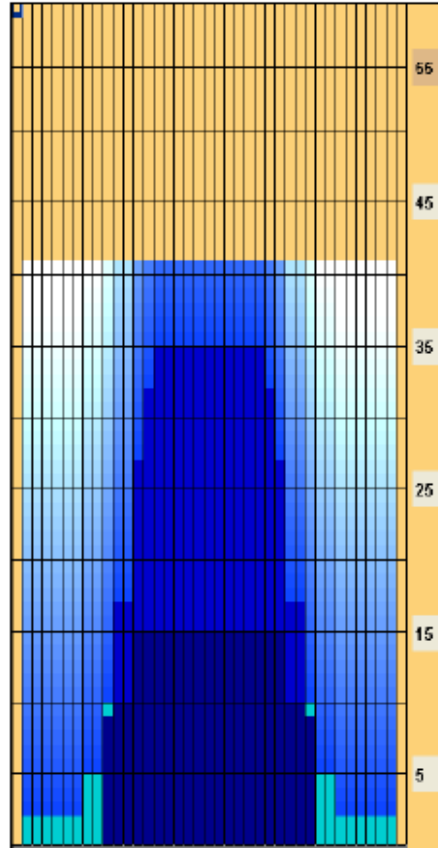
	Start	Stop	Loops	Speed	Crossed	Start	End	Feet	T.OI
1	2L	2R	2	18	74	0.0	2.5	2.5	3700
2	8L	8R	1	18	25	2.5	5.0	2.5	1250
3	10L	10R	2	18	42	5.0	10.1	5.1	2100
4	13L	13R	2	18	30	10.1	15.2	5.1	1500
5	2L	2R	0	18	0	15.2	24.0	8.8	0
6	2L	2R	0	22	0	24.0	33.0	9.0	0
7	2L	2R	0	30	0	33.0	41.0	8.0	0

	Start	Stop	Loops	Speed	Crossed	Start	End	Feet	T.OI
1	2L	2R	0	30	0	41.0	35.0	-6.0	0
2	15L	15R	1	22	11	35.0	31.9	-3.1	550
3	14L	14R	2	18	26	31.9	28.8	-3.1	1300
4	13L	13R	4	18	60	28.8	16.6	-12.2	3000
5	11L	11R	4	14	76	16.6	8.7	-7.9	3800
6	10L	10R	2	10	42	8.7	5.9	-2.8	2100
7	2L	2R	0	10	0	5.9	0.0	-5.9	0

Conditioner:  
Type In or Select One

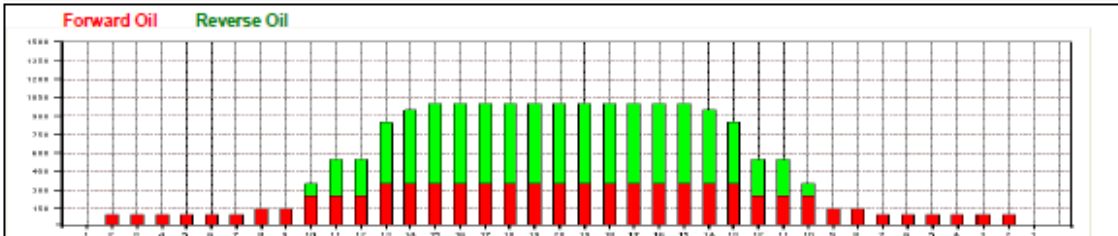
TransferType:  
Type In or Select One

- Forward
- Reverse
- Combined
- Buff



**MAIN STREET - 7241** This 41 foot pattern is typical of the many house shots used across the USA. Using a slight blend, the MAIN STREET is a pattern that enables many different styles to score while socializing and hanging out with friends.

Item	9L-7L:10L-10R	8L-12L:10L-10R	13L-17L:10L-10R	10L-10R:17R-13R	10L-10R:12R-8R	10L-10R:2R-3R
Description	Outside Track:Middle	Middle Track:Middle	Inside Track:Middle	Middle: Inside Track	Middle:Middle Track	Middle:Outside Track
Track Zone Ratio	10	2.86	1.04	1.04	2.86	10



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# Kegel Recreation Series - STONE STREET - 9642



Oil Pattern Distance: **42 Feet**      Reverse Brush Drop: **42 Feet**      Oil Per Board: **50 uL**  
 Forward Oil Total: **11.5 mL**      Reverse Oil Total: **11.65 mL**      Volume Oil Total: **23.15 mL**  
 Forward Boards Crossed: **230 Boards**      Reverse Boards Crossed: **233 Boards**      Total Boards Crossed: **463 Boards**

	Start	Stop	Loops	Speed	Crossed	Start	End	Feet	T.OI
1	2L	2R	2	14	74	0.0	1.9	1.9	3700
2	9L	9R	1	14	23	1.9	3.6	1.9	1150
3	10L	10R	2	18	42	3.8	8.0	5.1	2100
4	11L	11R	3	18	57	8.9	16.5	7.6	2650
5	12L	12R	2	18	39	16.5	21.6	5.1	1700
6	2L	2R	0	18	0	21.6	34.0	12.4	0
7	2L	2R	0	28	0	34.0	38.0	4.0	0
8	2L	2R	0	30	0	38.0	42.0	4.0	0

Navigation: Forward Reverse More

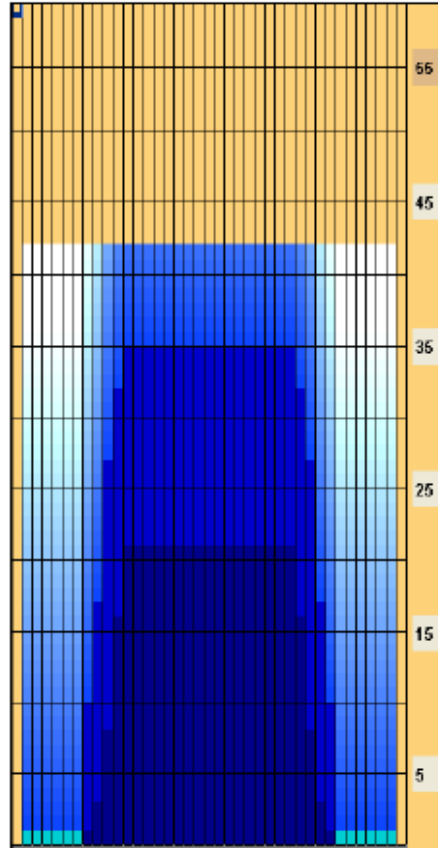
	Start	Stop	Loops	Speed	Crossed	Start	End	Feet	T.OI
1	2L	2R	0	30	0	42.0	35.0	-7.0	0
2	12L	12R	1	18	17	35.0	32.5	-2.5	650
3	11L	11R	2	18	38	32.5	27.4	-5.1	1900
4	10L	10R	4	18	64	27.4	17.2	-10.2	4200
5	9L	9R	3	18	69	17.2	9.6	-7.6	3450
6	8L	8R	1	14	25	9.6	7.7	-1.9	1250
7	2L	2R	0	10	0	7.7	0.0	-7.7	0

Navigation: Forward Reverse More

Conditioner:  
Type In or Select One

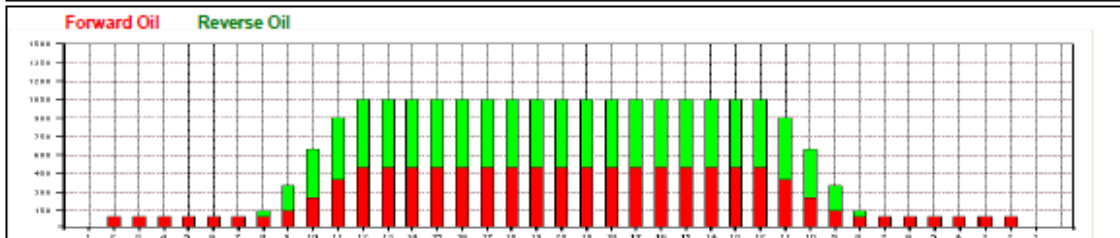
TransferType:  
Type In or Select One

- Forward
- Reverse
- Combined
- Buff



Download PDF for full description.

Item	9L-7L:10L-10R	8L-12L:10L-10R	10L-17L:10L-10R	10L-10R:17R-10R	10L-10R:12R-8R	10L-10R:7R-3R
Description	Outside Track:Middle	Middle Track:Middle	Inside Track:Middle	Middle: Inside Track	Middle: Middle Track	Middle:Outside Track
Track Zone Ratio	10.5	1.69	1	1	1.69	10.5



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