

Replacing both the Disc Shaft Pinion Gear and the CE Drive Wheel (Electric Machine)

This is a very complicated procedure that requires dismantling the machine. It is recommended that this procedure be done at our repair facility.

Please Note: Take care not to lose screws or other small parts you may encounter

1. Make sure the machine is turned off and unplugged. Set the Coin Selector Knob to "C". Set the Coin Gauge Knob to the Dime setting.
2. Open the top Tray and remove the two screws holding the Tray/Spout assembly onto the machine. Set the Tray/Spout assembly and the screws aside.
3. On the upper right side of the machine are the Coin Gauge and the Coin Gauge Cover. Remove the Coin Gauge Cover from the machine, exposing the Coin Gauge. Set the Cover and its screws aside.
4. You will see a vertical screw with a spring around it located between the Coin Gauge Assembly and the Silver Hopper ring. Remove this screw and spring and set them aside.
5. The Coin Gauge Assembly is held on by 2 screws, one in front and one behind. The Coin Gauge may also be seated on pins. Remove these two screws and the Coin Gauge Assembly. Please Note: There is a small metal plate that is also attached to the rear screw; set it aside with the screws.
6. Under the Coin Gauge Assembly, there is a T-shaped bar called the Guide Rail. The small tab on the top of the Guide Rail fits into the groove on the underside of the Coin Gauge Assembly. Make note of the position of the Guide Rail, as you will need to make sure it's in the same place when you put everything back together.
7. On the top left of the machine is the Meter. Remove the 4 screws that hold the Meter and remove the Meter. Set the Meter and its screws aside.
8. There is a large metal ring on the top of the machine called the Hopper. It is held on by 2 pins, one on either side of the machine. You will need to remove the pin on the left side of the machine (the side where the power switch is). The best way to do this is to turn the machine on its side, and take a punch and tap the pin through the hole. The pin will end up inside the machine, and you will need to retrieve it later on once the Disc is removed from the machine.
9. Once the pin is tapped out, turn the machine right side up again, and pull up on the left-hand side of the Hopper, and it should lift out of the machine. You may need to work it out a bit, off of the other pin on the right side. Set the Hopper aside.
10. Once the Hopper is removed, locate the star-shaped gear on the top front of the machine. There is also a plastic gear mounted above the Star gear. Remove the plastic gear using a 1/16" Allen wrench to loosen the set screws. Do not remove the set screws from the gear, just loosen them. Pull the gear off of the shaft.
11. There is a nut holding the Star gear onto the machine. Use a pair of needle-nose pliers to hold the Star gear in place so it does not turn. Use a 5/16" wrench to loosen the nut and remove it and the Star gear from the shaft. There may also be a metal washer under the nut. Set the Star, nut and washer aside.
12. Locate the Coin Guide Finger, which is directly under where the Star was. The Finger sticks out over the Disc. Remove the 2 screws that hold the Finger on, and remove the Finger. Set it and its screws aside. There is a washer made of felt that is under the Finger. Pull the Felt Washer out and set it aside with the Finger.

13. The cover over the motor is attached with 4 screws, two on each side. Remove the screws and set them aside. Pull the motor cover off and set it aside. NOTE: For Models CECR1 & CECR4, there is a metal plate around the crimper. You need to remove this plate in order to remove the motor cover.

14. Next, you will be turning the machine upside down. On the front of the machine are the hooks where you hook your coin tubes on. Once you turn the machine over, take a wood block and set the machine so the hooks rest on the edge of the block. Choose a block of sufficient height so the machine lays relatively flat, usually about 2 1/4".

15. With the machine upside down, locate the Power Switch. There is a nut and an On/Off Plate on the outside of the Switch that holds it on. Remove the nut and Plate and slide the Switch out of its hole. Set the nut and Plate aside for later.

16. With the machine still upside down, you can see the 3 screws that hold the base of the machine onto the rest of it. These screws run through the base and into 3 metal rods, called the Frame Stands. Remove these 3 screws and set them aside.

17. The base (which includes the motor) should now lift off of the machine, and the Motor Belt should come loose. The rectangular metal Wrapper that surrounds the machine should lift off as well. Set the Base, Belt and Wrapper aside.

18. You should see the Disc shaft and the bracket it's mounted into, as well as the Disc Shaft Pinion Gear. The Gear is pinned to the shaft. Make sure the Disc Shaft is seated all the way down in the bracket. Use a punch to tap the pin out of the gear, and discard it. Be careful, as sometimes the pin can be stuck in the hole very tightly, and it may take some effort to remove it. Take care not to damage the bracket, or the disc shaft.

19. You should be able to push the Disc out of the machine from the bottom side. Hold the gear while you do so and it will slide off the end of the shaft. Don't forget to locate the pin you tapped out in step 8, and set it aside.

20. The machine should still be upside down. Look at the large metal pulley that the belt was looped around, as well as the old Drive Wheel, and the Drive Unit Bracket they are attached to. The bracket has a large bolt and nut in the end of it. The bolt is usually 5/8" and the nut is usually 11/16", though it can vary with older machines. Loosen the nut until you can easily loosen the bolt, and remove them from the bracket. Under the nut is a metal plate that connects to the Disc Bracket.

21. The nut on the Disc Bracket needs to be loosened. To do so, take a flat-head screwdriver and hold the screw in place, and turn the nut with a 3/8" wrench. You only need to loosen it, maybe 1 full turn. **Make sure you do not let the screw turn; it must stay in its exact orientation.** Rotate the metal plate out of the way for now.

22. Locate the large rubber Discharge Wheel. You'll see it's attached to a metal strap, and the strap is held onto a bracket by a large metal screw. Remove this screw. The Wheel has a spring on it, and it will pop up as the screw is loosened. Set the screw aside.

23. Next, locate the two screws holding the Drive Unit Bracket onto the machine. Remove these screws and the Drive Unit should come off of the machine. There may also be pins helping to hold the bracket in place. If so, don't lose them. As well, pay attention to the underside of the bracket as there may be plastic or metal shims under the bracket. If there are, you will need to make sure you take note of them and how they are positioned so you can put them back later. Set the screws (and/or shims) aside.

24. If you look at the Drive Unit, you'll see that the shaft of the Drive Wheel runs through the bracket, and may be held on by a Collar on the other side (newer machines may not have the collar). The Collar has a hexagonal set screw, so you'll need an Allen wrench to loosen it. Most of the time it is a 1/16" set screw, but some older models may be larger. Loosen the set screw, and once the Collar is loose the Drive Wheel should slide out of the bracket. Keep the Collar and discard the old Drive Wheel.

25. Please Note: If your machine is old, dirty, or rusty, you may have difficulty removing the Collar and/or the Drive Wheel. It may be necessary to use a punch to tap the Drive Wheel shaft through the bracket. If necessary, use care not to damage the bracket or the Pulley.

26. Take the new Drive Wheel, and apply a couple drops of oil along the shaft. The Drive Wheel should slide through the bracket. If you have difficulty, it may be necessary to take a round file and smooth out the inside of the bracket hole. As the end of the shaft comes through the other side of the bracket, slide the Collar on the shaft. Hold the Wheel so it's all the way through, and make sure the Collar is all the way on, and tighten the set screw on the Collar. Give the works a few turns to make sure it moves smoothly. Sometimes the Collar may be too tight against the bracket; adjust as necessary for both a snug fit and smooth turning.

27. Place the Drive Unit Bracket back on the machine, including any shims or pins that may have been present when you removed it. Tighten the screws most of the way down, but leave just enough looseness so you can wiggle the Bracket. Take the large screw for the metal strap and screw it most of the way down, also leaving a little play in it so you can wiggle the strap back and forth.

28. Next, rotate the small metal plate back over the hole in the Drive Unit Bracket. At this point you may want to look into the hole in the bracket. There is wadding in the hole that holds oil for lubricating the shafts. If it seems to you that the wadding may be dry, you can add 10-12 drops of oil (3-in-1 will do). Pick up the bolt and nut that you removed earlier, and adjust the nut until it sits halfway along the length of the bolt. Re-insert the bolt and nut, and hand tighten the bolt until the nut is almost contacting the plate. The plate should be loose.

29. The new Disc Shaft Pinion Gear has two sets of pin holes. Take the new Disc Shaft Pinion Gear and compare the pin holes to the old Gear to determine which ones you should use. Take the new Disc Shaft Pinion Gear and hold it in place at the bottom of the bracket. Slide the Disc shaft back into the bracket, and down into the gear. Make sure the Disc Shaft is seated all the way down in the bracket. Line up the holes on the end of the shaft with the holes in the gear, and install the new pin. As before, the pin may take some effort to get back in, and you need to make sure all the holes line up while you're doing it. A punch tool with a large flat end works well to tap the pin in.

30. Next, you need to mesh the Drive Wheel with the Disc gear. Basically, they need to be snug together without binding. You can wiggle the Drive Unit Bracket back and forth while looking at the gear mesh, and once you have it where you think it looks good, hold the bracket in place while tightening the two screws. Leave everything else loose.

31. Turn the machine right side up and turn the large pulley by hand to test the smoothness of the gears. If it feels too tight or too loose, turn the machine upside down and readjust. You may need to do this a few times to get it right.

32. Once you have the mesh right, turn the machine upside down again, and tighten the large screw on the strap by the Lower Wheel. Also tighten the nut around the bolt on the Drive Unit Bracket. Then, tighten the nut on the Disc Bracket, the one you loosened in step 9. **As before, make sure you hold the screw firmly in place with a screwdriver while tightening the nut.**

33. Once everything is in place, slide the Wrapper back on, and loop the Motor Belt around the Large Pulley. Slide the Power Switch back into its hole, and reattach the On/Off Plate and the nut.

34. Take the Base, and loop the Motor Belt around the small pulley on the Motor. The Belt should be seated in the grooves on both the Large Pulley and the Small Pulley. Put the base back on. Snug down the screws, but don't tighten them. The Wrapper fits into a groove around the perimeter of the machine. You'll need to make sure the Wrapper is properly seated in the groove all the way around, before you tighten the screws. You may need to work it in a bit at a time as you tighten the screws.

35. With the base secure, turn the machine right side up. Reattach the motor cover. NOTE: For models CECR1 & CECR4, reattach the metal plate around the crimper.

36. Replace the Felt Washer and the Raking Finger with its 2 screws. Slide the Drive Star over the shaft (and the metal washer if applicable) and screw on the nut partway. Take the needle-nose pliers and hold the Star gear so that one of the points is pointing directly to the back of the machine. Tighten the Nut. When you release the pliers, the Star gear should remain oriented with 1 point pointing directly toward the back of the machine. You may need to loosen and tighten it a few times to get it right. Once tightened, flip the gear with your finger a couple times to make sure it turns properly.

37. Slide the small gear back onto the shaft and tighten the set screws. We recommend giving the first one a couple turns, and then flipping the Star gear until you see the other set screw, and giving it a couple turns, and so on until they are both firm. **DO NOT OVERTIGHTEN!** You need them firmly set, but too much may strip the threads.

38. Pick up the Meter and loosen the 2 set screws on the Meter Bevel Gear, and slide it along the shaft toward the Meter housing. Re-attach the Meter to the machine with its 4 screws. In general, simply center the Meter on the platform, and tighten the screws firmly, taking care not to overtighten them, as you may damage the Meter's base.

39. Next, you need to mesh the 2 gears. You don't want them to be very tight, or very loose. They should be close enough not to slip, yet still have just a tiny bit of play. Slide the Meter Bevel Gear toward the Drive Star Shaft Pinion Gear until they are meshed, and tighten the Bevel Gear's set screws. It may be necessary to loosen the small gear again to get the proper mesh. As before, we recommend giving the first one a couple turns, and then flipping the Star gear until you see the other set screw, and giving it a couple turns, and so on until they are both firm. **DO NOT OVERTIGHTEN!** You need them firmly set, but too much may strip the threads.

40. Test your Gears and Meter by resetting the meter to zero, and then flipping the Star gear with your finger, while watching the gears for good mesh, and checking the Meter for proper counting.

41. Replace the Coin Gauge Assembly with its 2 screws (and seat it on the pins if applicable). Remember to attach the small plate that goes under the rear screw, and the Guide Rail that goes under the Coin Gauge. The Guide Rail can be a little tricky, as you want to make sure it stays seated in the groove while you attach the Coin Gauge Assembly. Once the screws are tight, turn the Coin Gauge knob and make sure the Guide Rail moves back and forth freely.

42. Put the Hopper back on by sliding the right-hand side down between the Disc and the side wall, and hooking the hole in the Hopper over the pin on that side. Push the left side down as well, and tap the pin back into place. Take care as the pin starts to contact the Hopper that you get the pin into the hole. Don't tap it into the side of the Hopper. Once the pin is in place, the Hopper should slightly rotate on the pins front-to-back. There is a little horn that sticks out of the front of the Hopper. This underside of the Horn should rest flat on the cam at the end of the Coin Gauge.

43. Take the screw with the spring around it, and replace it. It goes through the small bracket on the Hopper, and screws into the Hopper Plate. It can sometimes be difficult to hold it in place and push it down enough to get the screw to go in, so be patient. Once in, it should be screwed down all the way, but **DO NOT OVERTIGHTEN IT**. It can easily strip out.

44. Replace the Tray/Spout assembly with its 2 screws.

If all went well, the machine should be ready to test. Take a few (5-10) coins of your choice and set the Coin Gauge accordingly. Run the machine to verify operation. If you have any problems, we'll be happy to help, just give us a call.