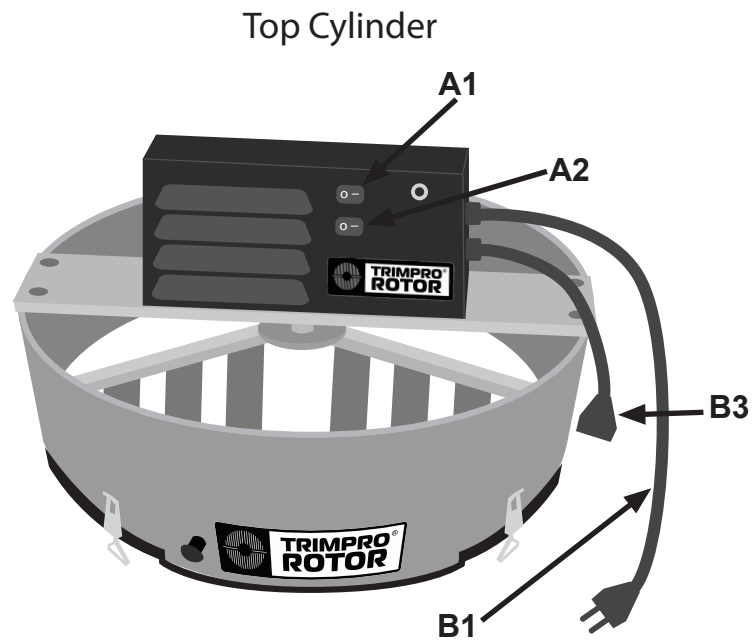
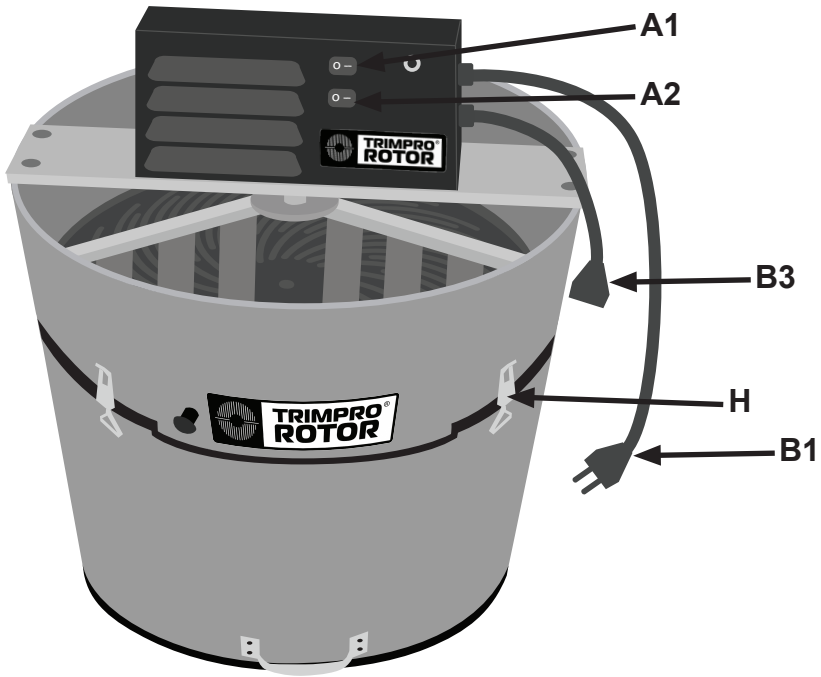
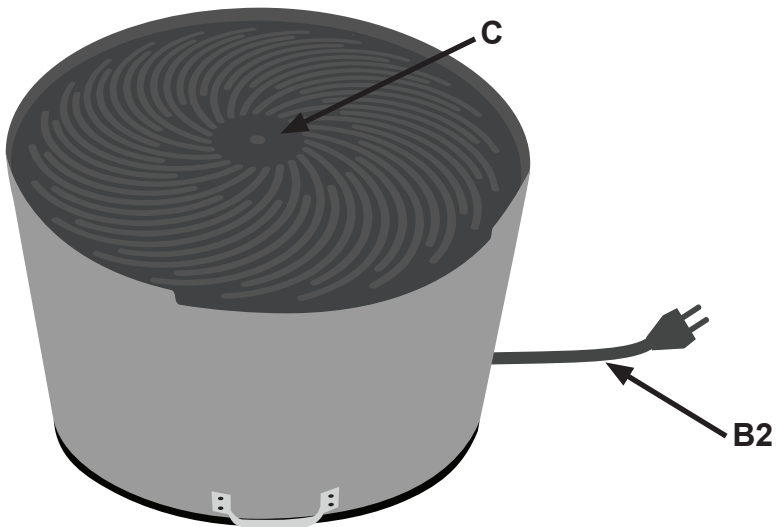




MOTOR REPLACEMENT: STEP BY STEP

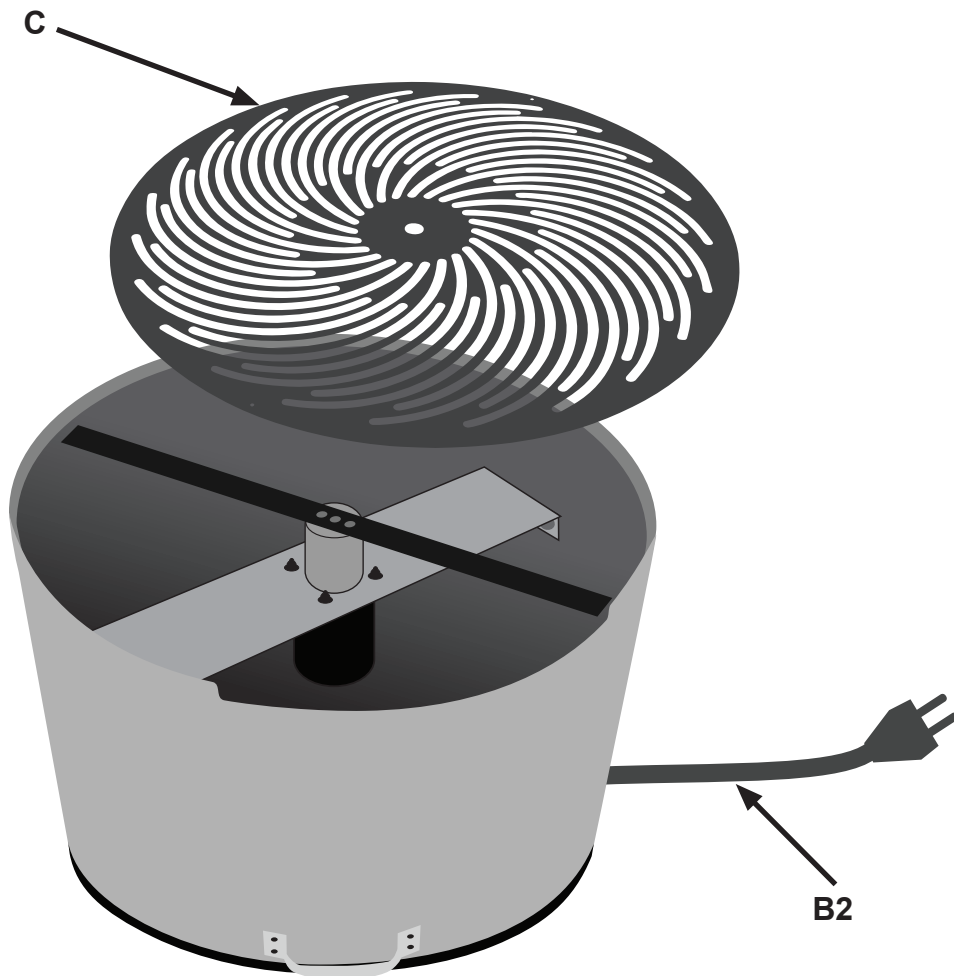
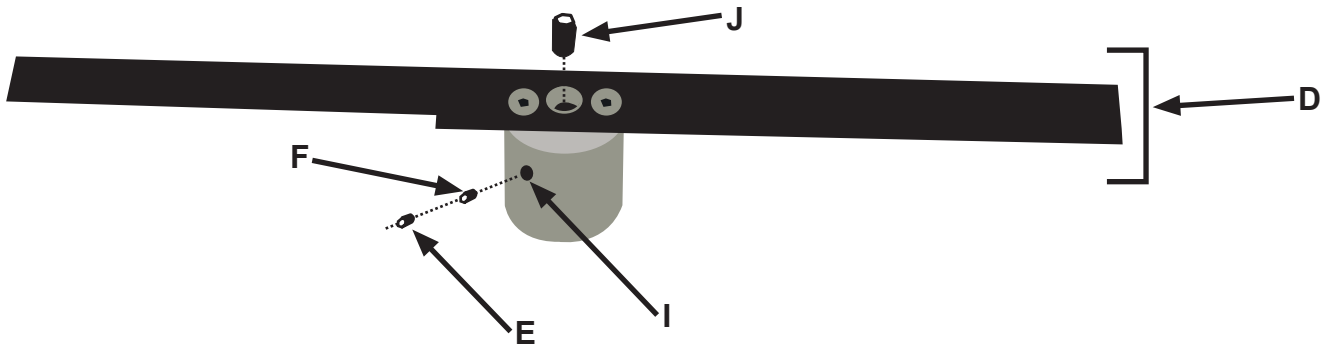


Bottom Cylinder





MOTOR REPLACEMENT: STEP BY STEP





VIDEOS ALSO AVAILABLE (English only) →

How to change the blade motor



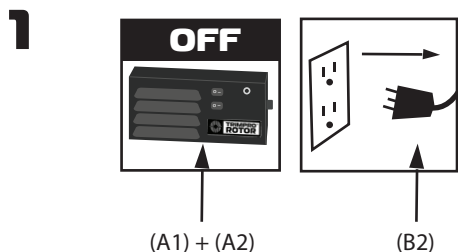
https://www.youtube.com/watch?v=0_kOi6j05U

How to calibrate the blade

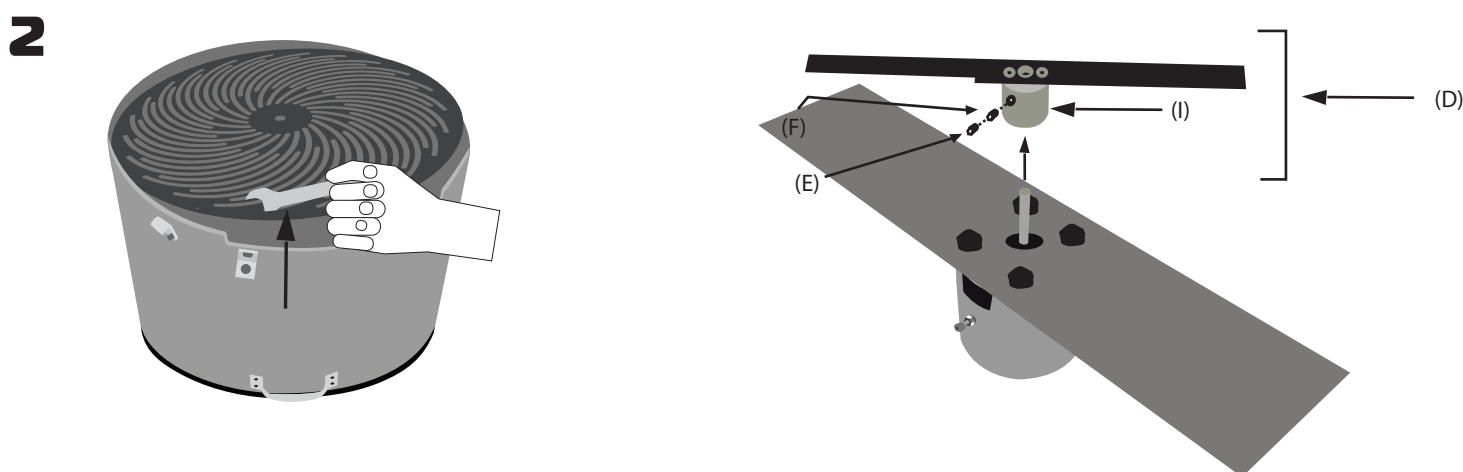


<https://www.youtube.com/watch?v=0e3QMc-RIEk>

MOTOR REPLACEMENT: STEP BY STEP



Make sure the machine is unplugged from the wall and both motors are turned off on the switches A1 and A2, remove the top cylinder of the machine by unlocking the 4 metal hood fasteners (H). It helps to push the front of the top cylinder toward the back before trying to pull it off from the bottom cylinder. Make sure the 2 electrical plugs (B2 and B3) are unplugged from each other.



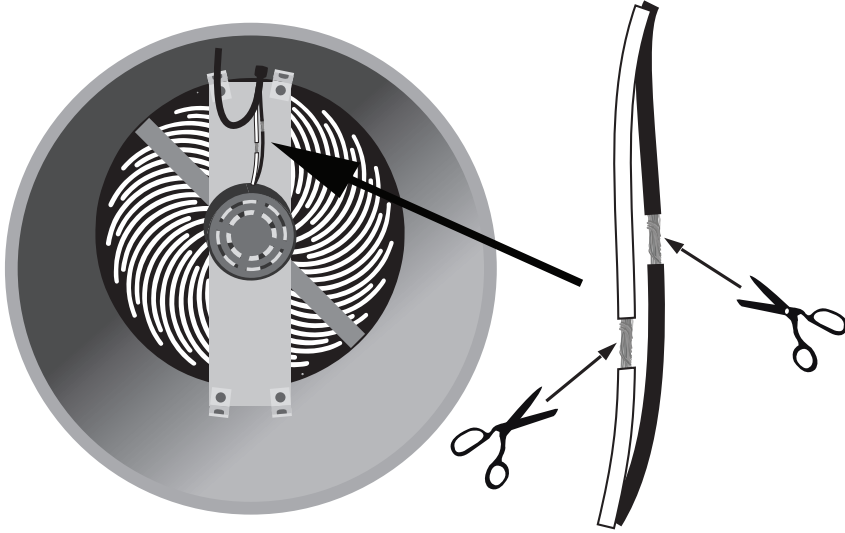
If you don't need to change the motor, go to step #10 (blade balancing). Take a bolt wrench or one of the Allen key provided with the machine to remove the grate. Remove the 2 set screws (E and F) on the side of the aluminum hub (hole I) underneath the blade, remove the whole blade assembly (D). If you don't touch the set screw on top of the aluminum hub (J), that will save you some height adjustment later on.



Put the machine on it's back with the under part of the machine facing you. Make sure the middle plate where the motor goes is in a vertical position, electrical plug on top, that would be the ideal way to work. You'll see that the inside wire is covered by a plastic protection with a "tie-wrap" at the end to keep it in place, cut the "tie-wrap" and remove the plastic protection with your hands.

MOTOR REPLACEMENT: STEP BY STEP

4

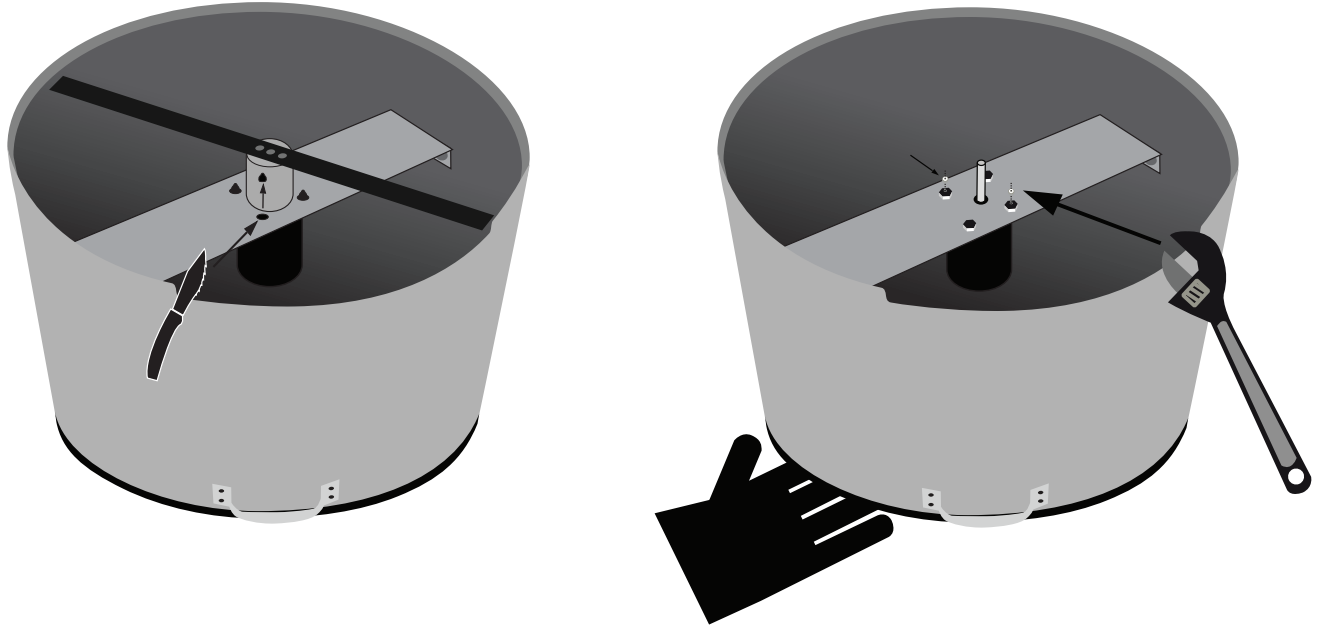


Before you take out the motor, you'll have to cut the wires from the motor that are welded to the electrical cable wire.

You have to cut very low (closer to the motor than the machine exterior), if you cut too close to the machine exterior, you won't have enough length to weld the new motor wires in place, you rather have too much that you can shorten later on than not enough !

You'll also notice some "rubber protection" where the wires from the motor and alimentation cable come together, that is where the wires were welded, you want to cut at the end of the rubber protection close to the motor, try to remove the old protective shrink afterward to have access to the "skinned" wires coming from the plug cable. You'll need to remove the remaining part of the bottom wire, only the wires from the electrical cable should remain.

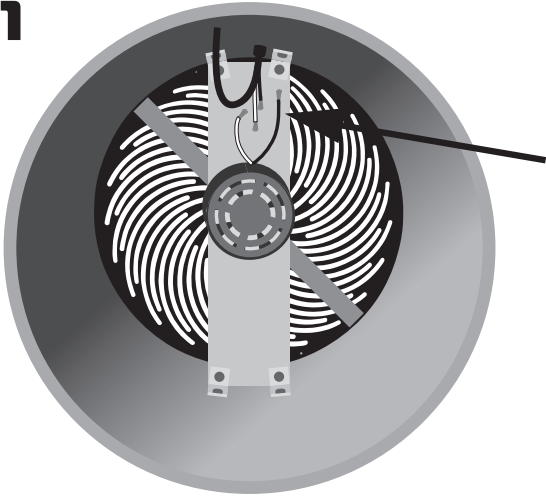
5



You'll have to put the machine back in a standing position. Remove the black glue capping, a flat headed screwdriver or an exacto knife can do the trick. Afterward, remove the 2 small "lock nuts" on top of the drilled screw, try not to turn the screw underneath and try not to touch the 2 other plain screw, that can save you some blade calibrating time later on. With the wires cut down, the old motor will fall, you might want to put your hand underneath if you don't want it to fall abruptly.

MOTOR REPLACEMENT: STEP BY STEP

6.1



Put the machine on it's back (like on step #4) to install the new motor. Install the new motor and put the 2 lock nuts to keep it in place. You'll have 2 wires coming out of the motor, make sure they are on the same side as the electrical cable like on figure 6.1.

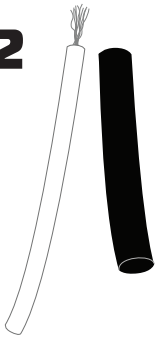
2 pieces of heat shrink tubing sleeve are provided with the new motor (figure 6.2), put 1 around each wire coming out of the motor (figure 6.3), you'll need that to cover the spot where you will weld your wires later on. 2 skinned wires are coming from the electrical cable, you have to bring the 2 wires coming out of the motor next to the wires of the same color (white wire in the example on figure 6.4, do the same for the black wires) coming from the electrical plug. Shorten the wires coming from the motor but not too short. You need about 1³/₄ (44 mm) of skinned wires that will be tied together with the skinned wires of the electrical cable (for better reference, make sure the skinned area is smaller than the shrinking sleeve provided with the motor). With the motor and electrical cable wires next to each other, you'll need almost 2" (51 mm) of parallel wire length to skin the 2 wires and to tie them together before welding them.

IMPORTANT: The skinned part for each wire must not be at the same height, for each wires. If the skinned part of the white and black wires touch each other, it will cause an electrical spark that will probably damage the motor beyond repair.

Use an electrical wire Skinner to "skin" the wires, then twist the white wire from the motor to the white wire of the electrical plug, do the same with each of the black wires (figure 6.5).

To weld them together, you'll need some welding flux, small welding floss and a propane torch available in most hardware stores. Make the metal from the cable melt on the twisted wire to weld them together. Test to check if it seems to hold up together. Put the shrink sleeve on top of your welding job, and use the propane torch up and down at a regular pace on the shrink sleeve to shrink evenly. Repeat with the other wires. Once done, it should look like figure 6.6.

6.2



6.3



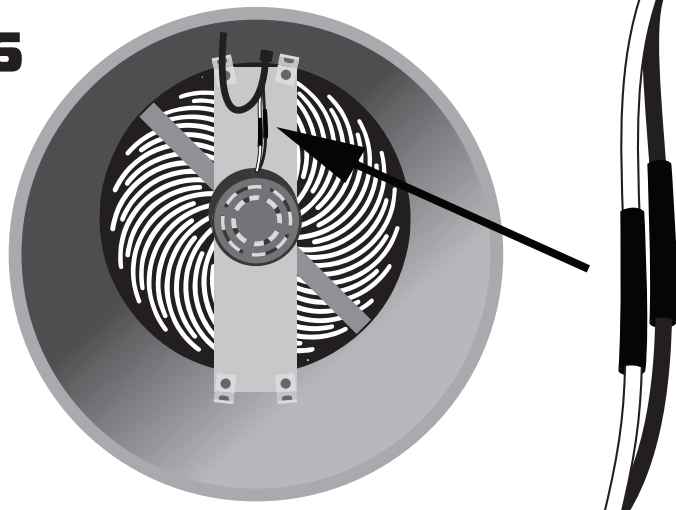
6.4



6.5



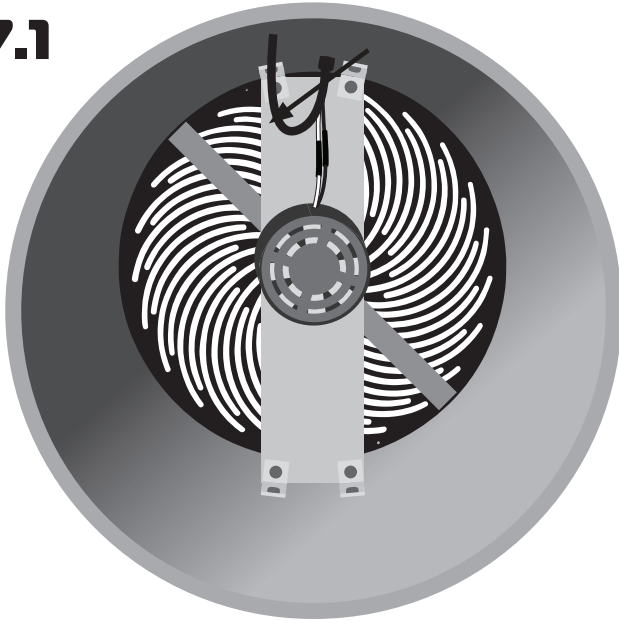
6.6





MOTOR REPLACEMENT: STEP BY STEP

7.1

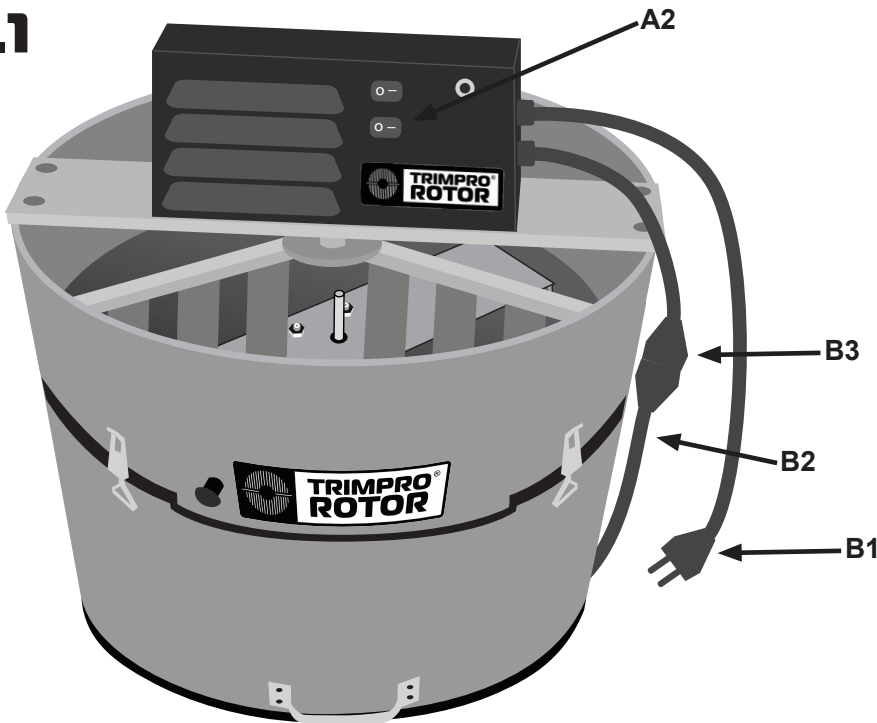


7.2



After the wires are welded together, put back the tubular plastic protection (see fig. 7.1) on your wires. Start from your motor and cover until you have reached the electrical plug, we recommend putting a small “zip tie” at the end to keep it in place. When it's done, it should look like on figure 7.2.

8.1

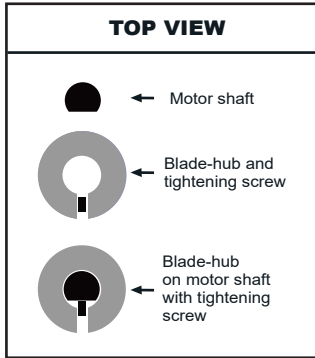
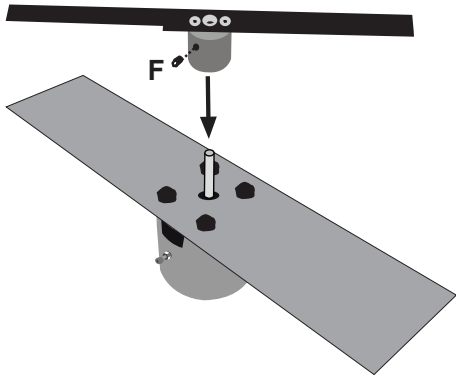


Before the blade calibration, we recommend that you test the motor to check if it's working. Don't put the blade assembly back yet, just make sure the bottom and top cylinder of the machine are plugged together (B2 into B3) like on figure 8.1 and that the alimentation cable (B1) is plugged in an electrical outlet. Turn the bottom motor switch (A2) on to see if the motor shaft is turning. If it doesn't spin, you might have to redo the welding on your wires.

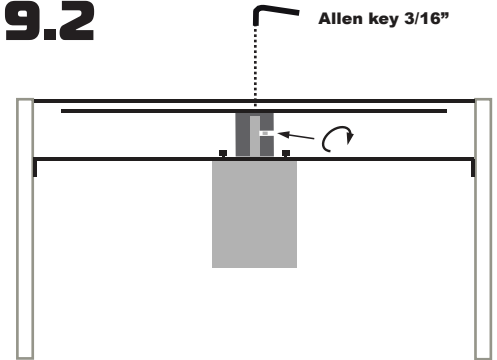


MOTOR REPLACEMENT: STEP BY STEP

9.1



9.2



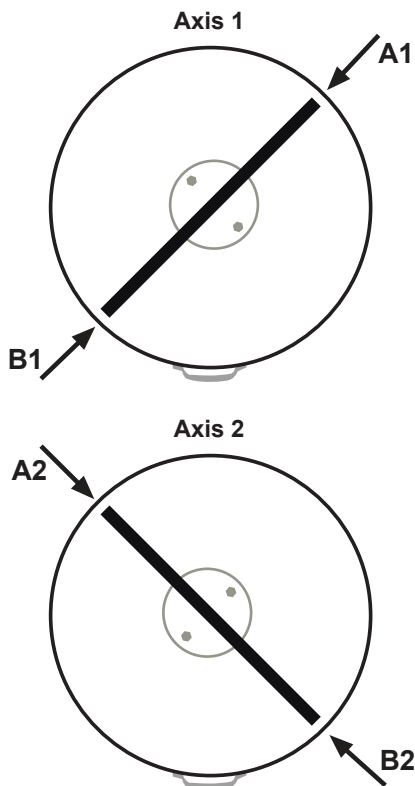
The motor is now changed. You might need to balance your blade. Before calibrating though, put back the blade assembly on the shaft, make sure the side of the hub with the set screw hole (I) is aligned with the flat part of the shaft of the motor (fig. 9.1). Put the set screw (F) back in, screw it until it's locked on the shaft of the motor and then turn counter clockwise just a little bit just to make sure it's not locked completely against the shaft but inside the hole enough to make sure the blade assembly won't move too much on the horizontal axis (fig. 9.2).

You might have to adjust the height later on and it won't work if the set screw is locked onto the shaft. If you don't put the set screw at all though, it will make the balancing aspect very difficult later on as the blade might change position around the motor shaft and you won't be able to get accurate readings with your caliper.

Put the grate back on top of the machine. Take something small that can fit into the grate slots to push on the blade to check if it is spinning freely. The "tail" of a caliper or one of the allen key provided with the machine can do. If you haven't touched the (J) screw at all while removing the blade assembly, it should spin, if it does not spin, blade is adjusted too high and is jammed against the grate, lower it by turning the (J) set screw counter clockwise a little bit and then try again.

9.3

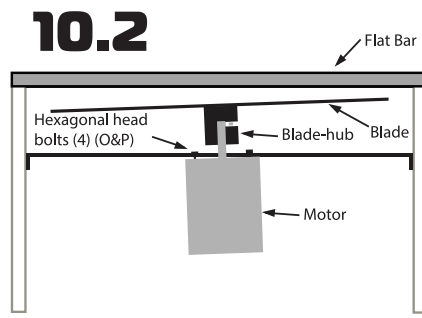
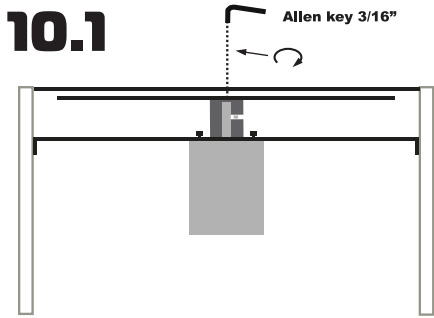
LEVELLING 2 POSITIONS



If it spins, it does not necessarily mean that it is at the right height. You'll need to figure out the highest end of the blade by aligning it with one of the 2 axis (fig. 9.3). If you chose axis 1, you take your measurement at one of the end of the blade (A1). You need to put a calliper in the vertical position, flat on the top of the grate, the tip must touch one end of the blade. Note the measurement. Turn the blade at 180° then take another measurement by keeping your caliper at the (A1) position to see which end of the blade is the closest to the grate. The lowest reading of the 2 end is the blade's end that is the closest to the grate which we'll call the highest point of the blade. (ex.: 0.171" (4.34 mm) is closer to the grate than 0.175" (4.44 mm)). After finding which end of the blade is the closest, measure the distance of that end of the blade with the 4 extremities (A1, A2, B1, B2) to find the spot where it is the closest to the grate. It should be at around 0.17" (4.31 mm) of distance approximately from the top of the grate. (From 0.175" (4.44 mm) to 0.165" (4.19 mm) is ok). Afterward, you need to validate the balancing by aligning the blade with the adjustment screws (fig. 9.3). Axis 2 has smaller hexagonal nuts on top of them, axis 1 got plain flat screws. Take the highest point of the blade, put it in the top left part of axis 2 (A2), check the distance, flip that highest point to the other end of the axis by having the blade do a 180° turn, bottom right in that case (B2). The difference in height must be 0.005" (0.127 mm) or lower for each end. Must be the same for axis 1, top right (A1) and bottom left (B1) in that case. If it's not the case, adjust the blade balancing. See step 10.

If everything is still balanced, lock the side set screw (F) in place. Put the second one (E) inside the hole to lock the 1st one in place. Put back your top cylinder on, plug the machine back and you are good to go.

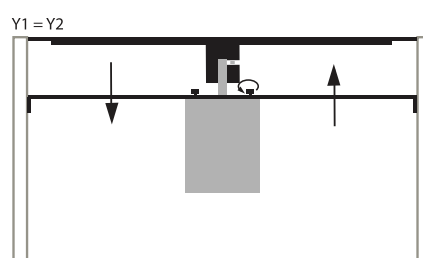
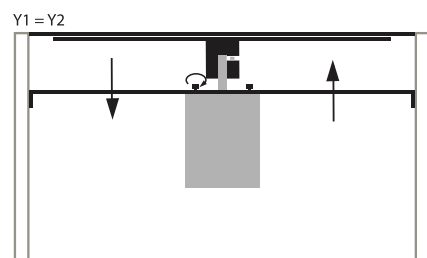
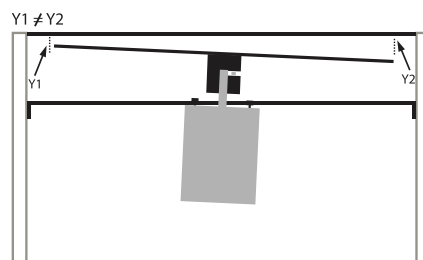
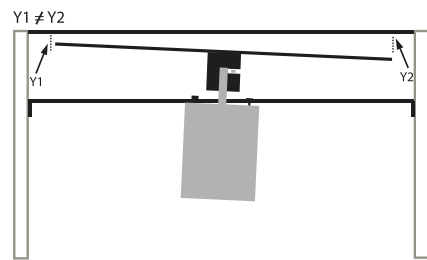
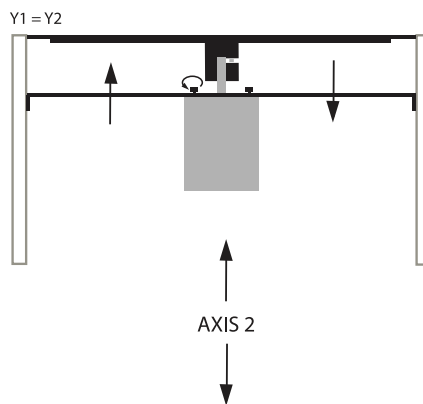
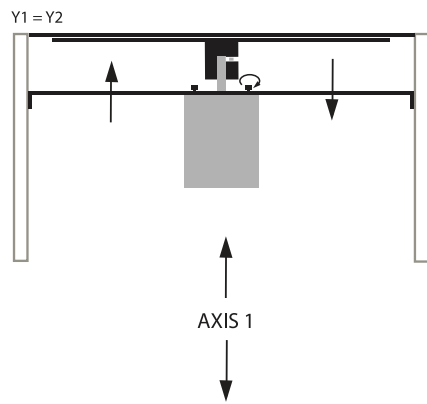
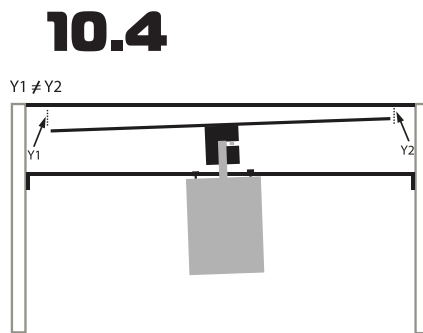
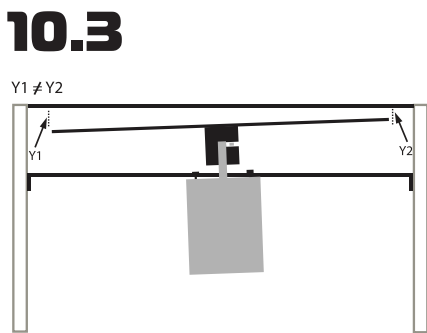
MOTOR REPLACEMENT: STEP BY STEP



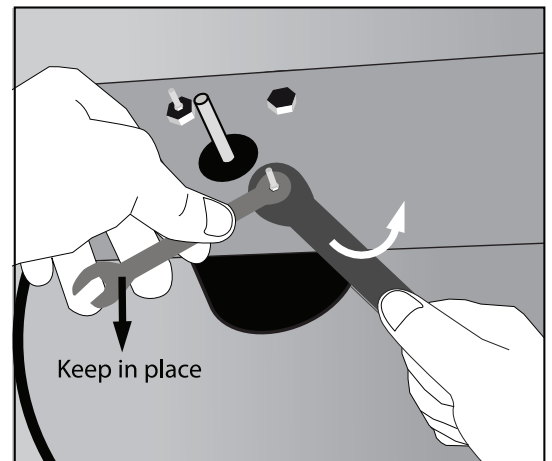
If your blade needs to be balanced, first step is to raise it as much as you can with the height adjustment set screw (J) on top of the aluminum hub (see fig. 10.1), turn clockwise until you cannot go up any further. Take a flat bar, put it on top of the cylinder aligned with one of the axis.

Let's say for example it's on top of Axis 1, you need to align the blade under the flat bar, check the gap at both end between the bar and the blade, you want to even it out as much as possible (see fig. 10.2). For that, you'll need to understand how each type of adjustment screw works. For the plain black screw (Axis 1), you need to turn clockwise with your tool on the black plain adjustment screw, that will LOWER the side of the blade you are working on (see fig. 10.3). While with the screw that got a lock nuts on top of them (Axis 2), you need to put a bolt wrench on the lock nuts to keep it in place while you'll turn counter-clockwise with another bolt wrench placed on the bigger hexagonal adjustment screw underneath (see fig.10.4).

In that case, it will RAISE the blade (see fig.10.5). Based on the gap you have between the blade, the flat bar and the axis you are working on, you'll need to turn the right adjustment screw accordingly. You want to even out the gap between the blade and flat bar as much as possible beforehand, you'll do the fine tuning later on with a vernier caliper.



10.5





MOTOR REPLACEMENT: STEP BY STEP

- 11** Once both axis has been evened out as much as possible, slightly lower the blade with the J screw to make sure it will spin freely when the grate is on. Keep it close to the grate to obtain accurate measurements with your vernier caliper. Push the blade with a small object when the grate is on to see if it's turning freely. One of the Allen key provided with the machine or the tail of your vernier caliper can do the trick if you have nothing else. Once that is confirmed, go to the next step.
- 12** Try to figure out which end of the blade is the highest spot, like on step 9, before doing the following step.
- 13** When you work on an axis, you want to validate the distance between both end and bring them as close as possible for balancing. Since for this example we are working on axis 2, take your blade "high spot" and check the measurement for the bottom right (B2 on fig.9.3). Flip the blade 180° and go check the measurement on the top left (A2 on fig. 9.3). Let's say that bottom right (B2) says 0.170" (4.32 mm) and top left (A2) says 0,160" (4.06 mm), it means you have a difference of 0.010" (2.54 mm) and that the top left is closer to the grate than the bottom right, you want to reduce that difference as much as possible. Since you need to lift the grate to have access to the calibration screws, you won't be able to measure the distance at the same time as you turn the screws. You'll need to move those adjustment screws really slowly because it doesn't take much movement to change the distance between the blade and the grate. Turn just a bit, not even a quarter of a turn. To give you a better feel of how much turning can change the distance, just screw clockwise or counter clockwise a little bit (according to the type of screw) and measure the distance again. We are working with thousand of inches/mm, it's really small but makes a lot of difference for a spinning blade. To give you an idea, 0.010" (2.54 mm) is about as thick as one of our hair but can be more than enough to make sure the blade won't cut evenly and can also cause some vibration that will damage the shaft of the motor over time. Another important detail, to even out a difference of distance of 0.010" (2.54 mm), you want to move the distance by half of it, in that case 0.005" (0.13 mm). Don't go crazy trying to bring the difference between both end to zero, a difference of 0.005" (0.13 mm) between both end is more than reasonable to consider an axis balanced. For example, if on one end it measures 0.170" (4.32 mm) and the other end measure 0.175" (4.46 mm) , the difference is 0.005" (0.13 mm) and you can consider that this axis is balanced. The distance at both end will change after using the adjustment screw so don't be surprised if it's not the same after you have worked on the adjustment screws.
- 14** Repeat the same thing as step 13 on the other axis, if per example you worked on axis 2, you need to do it on axis 1. One important thing to consider is that the previous axis might be unbalanced a bit after you finish balancing the second one, especially if you had a much bigger difference between both ends than on the previous axis, you need to re-validate again, you might have to do some tune up.
- 15** Once both axis are balanced, you want to bring your blade "high spot" to the 4 axis end to validate which one is closer to the grate, just like we did on step 9. Once you found it, you want to bring the distance between the blade and the grate to around 0.175" to 0.165" (4.45 mm to 4.19 mm) by using the "J" set screw, that's the distance the blade is set when it is shipped from our factory. Since the blade assembly often lift up a bit when you are locking the set screw "F" back in place, you might want to aim closer to 0.175" (4.45 mm) than 0.165" (4.19 mm). We recommend that you just lock the "F" set screw in the "I" hole and then validate your measure before putting the "E" screw in place. If the distance is from 0.175" to 0.165" (4.45 mm to 4.19 mm) once the set screws (F and E) has been locked in, you are good to go. If you followed all of the steps correctly, you should be able to use your machine again.