VACUUM EMASCULATOR ASSEMBLY INSTRUCTIONS

1) Remove the tray from the tool box. On each support shelf that held the tray, drill a ½" (12mm) hole approximately 1½" (4cm) from the rear (hinge side) of the tool box. Remove burrs from the underside of the hole with a file.

2) Assemble the hose barb sub-assembly. With the threaded end of one hose barb pointed at you, wrap teflon tape around the end of the threads in a clockwise direction about 3-4 times. Thread the hose barb onto a ½" 90° elbow tightly, using a wrench. Screw another hose barb through the support hole on the left and into the other end of the elbow (teflon tape may not work here since it needs to thread through the hole first before threading into the elbow). Point the lower hose barb toward the front of the tool box. Also, to tightly fasten this assembly to the shelf, the upper hose barb may need to pass through one or two lock washers before threading into the elbow.

3) Cut your piece of wood 6½" x 19" (16.5cm x 48cm) and place it in the tool box. It will be loose so that it will fit past the support shelves. Slide the wood as far forward and as far to the left as possible. For AC emasculators, cut another piece of wood 4" x 7" (10cm x 18cm). Save for step 8.

4) Attach the muffler/filter (B300Q) to the pump. First, hold the muffler so that the threaded end is pointing toward you. Wrap teflon tape clockwise around the threads 3-4 times. Screw the muffler onto the pump, making sure the flow arrow is pointing toward the muffler. Hand-tighten only.

5) With the wood in the tool box slid toward the front and the left side, place the pump with muffler on the wood as far as possible to the right and front of the box without the pump or muffler being in contact with the tool box. Mark the pump location on the wood. Remove the pump and the wood from the tool box. Place the pump on the marked location, then accurately mark the position for 3 bolts to secure the pump to the wood. Return the wood to the tool box, slide it toward the front and left side, and place the pump on its marked location.

For 12V DC emasculators, place the battery on the wood toward the rear of the tool box and as far to the right as possible so that it doesn’t contact the pump. Mark the location and cut out the area so that the battery will sit inside the cutout portion of the wood. This will keep the battery from sliding around inside the tool box.

For 110-240V AC emasculators, prepare the electrical handy box by removing a knock-out at one end. Then, holding the handy box with the knock-out opening facing you, remove the farthest knock-out on the left side. Firmly attach the cable connectors to the knock-out holes, making sure that the adjustment screws are on the outside of the box and pointed up. Attach the handy box to the wood with at least 2 wood screws. The handy box should be behind the pump with the end cable connector facing the front and the side cable connector facing into the box. Do not allow the handy box to extend over the edge of the wood.

For 110-240 AC emasculators, use the smaller 4" x 7" piece of wood as a partition behind the pump (refer to the photograph). Use the three deck or drywall screws to attach the small piece of wood, screwing up from the underside of the larger piece of wood and countersinking the screw heads.

7) Drill slightly oversized holes (3/8" holes for a ¼" bolt) at the positions that were marked for the pump. The bolts should pass up through the underside of the wood, and be countersunk so that the bolt head is below the surface. Lower the pump onto the bolts, and tighten the nuts firmly with a wrench.
9) With the pump connected to the wood and out of the tool box, assemble all brass fittings and threaded nipples to the pump, valve, strainer, and gauge. Refer to the assembly diagram for your emasculator to determine the order that the parts should go together. Also, refer to the photograph of your emasculator to see how the assembly twists around to fit into the tool box. Use teflon tape, wrapped clockwise 3-4 times, on all male threads. **Hints:**

a) Sometimes a small group of fittings can be assembled to each other before threading them into position. For example, for a 110-240V emasculator, the first 3-5 parts could be assembled tightly before that group is threaded into the pump. Be careful when threading the adapter into the pump inlet port, but you should normally use a wrench to firmly tighten the fittings and threaded nipples to each other.

b) When tightening a part into position, try not to go further than intended because loosening the parts to get to the final position can cause leaks.

c) When attaching the strainer w/ clear bowl, be sure to notice the flow arrow on the strainer and attach the assembly to maintain proper flow direction. The flow arrow on the strainer must point toward the pump.

10) When wiring your emasculator, be sure to follow all National Electric Codes. Please consult a qualified electrician if you are unsure how to proceed.

a) **For 12V emasulators,** attach the black wire from the pump to the black battery terminal clamp. This attaches to the **negative** battery terminal. Remove no more than 1/2” of insulation from both the red wire from the pump and from each side of the extra red wire. Using the crimping tool, connect one ring lug to the red wire coming from the pump, and one ring lug to only one end of the extra red wire. Take the toggle switch, and with the terminal screws on the bottom of the switch facing you, pass one terminal screw through the ring lug on the wire coming from the pump and screw it to the terminal on the right. Pass the other terminal screw through the ring lug from the extra wire and screw it to the terminal on the left. Attach the red battery clamp to the other end of that wire. This attaches to the **positive** battery terminal. (see 12V emasculator photo)

b) **For 120-240V emasulators,** cut off the female end and 2’ of wire from the extension cord that you are using for your power supply. Save the short piece of wire for later. Push the cut end from the longer length of wire through the side cable connector about 4 inches. Tighten the adjustment screws of the cable connector to hold the power cord firmly. Next, push the wires from the pump through the end cable connector. First, connect the green wire from the pump to the green wire from the power cord. Remove no more than 1/2” of insulation from each wire and use the crimping tool to firmly attach wires to each end of one butt connector. **For 120V systems,** do the same with the white wire from the pump and the white wire from the power cord. Then, remove the individual wires from the cut off female end of the power cord. Get 16” of black wire, fold it in half, strip no more than 1/2” of insulation from both ends of this wire, and strip 1/2” of insulation from the ends of the black wires from the power cord and pump. Using butt connectors and the crimping tool, connect the black power cord wire to one side of the folded black wire, and connect the black pump wire to the other side of the folded black wire. Pass the folded end of this wire through the end cable connector toward the outside of the handy box. Tighten down the adjustment screws of the cable connector so that the black wires are held firmly. Be sure that all the butt connectors remain inside the handy box. Using the wire cutter
part of the crimping tool, cut the wire at the fold. **For 240V systems,** remove the individual wires from the cut off female end of the power cord, discard the green wire and save the other two wires. Determine which wire in the power cord is the neutral wire, and which is the hot wire. For some European-type cords, the neutral wire is blue and the hot wire is brown. **In all cases, connect neutral to neutral and hot to hot!** Get 16” of neutral wire from the cut off section of power cord, fold it in half, and strip no more than ½” of insulation from both ends of this wire. Using butt connectors and crimping tool, connect one end of the folded neutral wire to the white wire coming from the pump and then connect the other end of the folded neutral wire to the end of the power cord wire of the same color. Pass the folded end of the neutral wire through the end cable connector toward the outside of the handy box. Repeat this with 16” of hot wire from the cut off section of power cord. Strip ½” of insulation from both ends of the hot wire, crimp a butt connector to one end of the folded hot wire, then crimp the black wire coming from the pump to the other side of the same butt connector. Crimp another butt connector to the other end of the folded hot wire, then crimp the hot wire from the power cord to the other end of this butt connector. Pass the folded end of the hot wire through the end cable connector toward the outside of the handy box, making sure all butt connectors remain inside the handy box. Using the wire cutter part of the crimping tool, cut both the neutral and hot wires at the fold. **Identify and label** which ends of both the neutral and hot wires originate at the power cord, and which ends originate at the pump. Gather the wires coming through the cable connector and tighten down the adjustment screws so that the two hot wires and the two neutral wires are held firmly.

11) Connect the cut ends of the wires to the toggle switch. **For 120V systems,** the toggle switch will have two screws along the bottom side. Strip no more than ½” of insulation from the cut ends of the wires. Using the crimping tool, connect one ring lug wire connector to each wire. Pass the toggle switch screws through the ring lugs and screw down both ring lugs to the toggle switch. It does not matter to which pole the wires are attached. For safety, wrap electrical tape around both screws. **For 240V systems,** the toggle switch will have four screws along the bottom sides. The neutral wires will attach along one side and the hot wire will attach along the other side. Strip no more than ½” of insulation from the cut ends of the 2 neutral wires and the 2 hot wires. Using the crimping tool, connect one ring lug wire connector to each wire. Pass the toggle switch screws through the ring lugs and screw down all four ring lugs to the toggle switch: **The hot wires must be on one side of the switch, and the neutral wires must be on the other side. Both the hot and neutral wire coming from the pump must be opposite each other. The hot and neutral wires coming from the power cord must also be opposite each other.** For safety, wrap electrical tape around all the screws with ring lugs.

12) Place the entire assembly into the tool box by putting in the hose barb end first, then lower the pump down into position. Slide the entire assembly forward and to the left. At this point, small strips of wood could be added along the back (except where 12V battery should go) and along the right side. Use adhesive tape to attach the small strips to the main piece of wood. This will prevent the pump from sliding around inside the tool box.
13) Place the toggle switch into the hole on the support shelf on the right side of the tool box. Push the toggle up through the bottom of the hole and screw the thin hex nut on to the threads. Tighten securely with a wrench, then screw the black rubber boot over the toggle switch.

14) Cut a small piece of clear PVC tubing to connect the hose barb at the end of the pump assembly with the lower hose barb attached to the support shelf on the left side of the tool box. Cut about 8' (3m) of clear PVC tubing and fit it over the upper hose barb attached to the left support shelf. Cut down a pipette tip so that it fits into the far end of the clear tubing and cut a very small hole at the end of the pipette tip.....just big enough for the anthers to fit through.

You are now ready to power up your new vacuum emasculator!

Remember to occasionally unscrew the bottom of the strainer bowl and dump out the accumulating anthers. Too many anthers in the strainer bowl will obstruct the air flow and reduce the efficiency of the emasculator.