

NCBA 6-Frame Radial Extractor

Dadant Ranger M00401

Operation and Maintenance



Assembly Small Parts

**NOTE: THIS EXTRACTOR IS NOT EQUIPPED FOR LARGE FRAMES
ONLY SIX-INCH FRAMES AND SMALLER – MEDIUM & SMALL**

1. Three washer/wing nut sets attach stand to base.
2. Two chain assemblies with a washer & wing nut on the eyebolt end secure tank to stand.
3. Four sets of bolt & washer (below tank lid) and washer, lock washer & wing nut (above tank lid) secure motor assembly to tank lid.
4. Three sets of "L"-bolts & washer, and washer, lock washer and wing nut fasten top to tank.
5. NOT SHOWN:
Six (6) pieces of truck inner tube
Square plywood bucket support
Electric Uncapping Knife
Capping Scratcher
Cleaning kit with (3) brushes and green pad
Box with tool, motor, assembly parts & spare parts.
6. Tools provided in kit:
7/16" Open/Box end wrench (motor bolt heads).



Small Parts Used In Assembly

Weight and Size of Extractor's Large Components

Tank & Rotary Reel – diameter 18", height 24", weight 26 #

Tank alone – diameter 18", height 24", weight 13 #

Stand - 18" Triangle x 16" high, weight 8 #

Base, Plywood 1" x 39" diameter, weight 25 #

Motor & Parts Box – 10" x 15" x 15" high, weight 18 #

Major Parts



Figure 1 - Plywood Base with Stand attached.
Shown with extra piece for bucket support.



Figure 2- Radial Reel
Bottom shaft end mates to nylon bushing
at bottom of tank.
NOTE FRAME PLACEMENT: Frame sides set in trays
on bottom, top bar to the outside of the tank with
frame 'ear' hanging over edge of the frame tray.



Figure 3 (left) - Tank Lid

Fixed rear portion is held in place with three sets of "L"-bolts, washers, and wing nuts.

Note the Radial Reel drive gear at center of lid, which mates with motor drive gear.

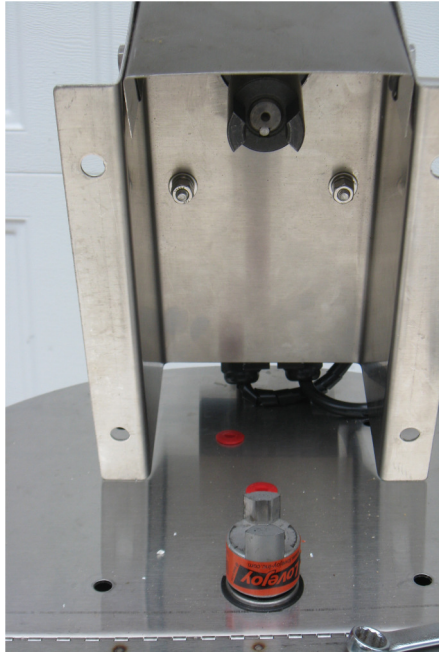


Figure 4 - Set Motor and Reel drive gears (top & bottom center) perpendicular to each other before setting motor in place.



Figure 5 – Chain assembly with washers hanging over “L”-bolt.



Figure 6 - Chain Assembly secures Tank to Stand.



Figure 7 – Radial Reel in tank
Note frame brackets on lower and upper rings.
Frame top bar is placed toward edge of tank.

Assembly

- (1) READ ALL DIRECTIONS --- HANDLE THE "RADIAL REEL" CAREFULLY SO THE RINGS STAY ROUND AND IN BALANCE. THE TANK AND COVER ARE MADE OF RELATIVELY LIGHT-WEIGHT STAINLESS STEEL – TAKE CARE NOT TO DING OR DENT THESE PARTS IN TRANSPORT OR HANDLING!
- (2) PRECISE CENTERING OF THE LID AND MOTOR ASSEMBLIES IS CRITICAL TO REDUCING VIBRATION DURING OPERATION – WHEN ASSEMBLED AND EMPTY, YOU SHOULD BE ABLE TO RUN THE EXTRACTOR AT 100% SPEED WITH MINIMAL (LESS THAN .25" TOP EDGE DISPLACEMENT) AND NO "CLICKING" SOUND OF METAL-ON-METAL CONTACT.
- (3) TOOLS: A 7/16" box/open end wrench (use box end) for holding motor assembly bolt-heads still as wing nuts are tightened on top.
- (4) Plywood Base and Stand.
 - a. Lay out five (5) pieces of tire inner tube, one in center and four around, to set the plywood base on. This is experimental. Hopefully, crude but effective. The intent is to protect the floor surface from damage from the extractor's vibrations, and reduce extractor "walk" during operation.
 - b. Position the plywood base over the inner tube pieces with the bolt threads up and the straight side positioned where you will want to place your honey collection bucket.
 - c. Attach Stand to Base: See Figure 1. On the stand, locate the chain attachment bar that is parallel to one side of the triangular stand. Position the stand so that this bar is parallel to the straight side of the base. Carefully place holes in stand legs over the bolts so that you don't mar the bolt threads. With stand in place over all three bolts, place a flat washer and lock-washer over each bolt and tighten with a wing nut.
- (5) Tank Placement: place the tank on top of the stand so that the honey gate is facing the straight edge of the base, and so that it sits inside all three legs.
- (6) Extractor is normally transported with tank cover and rotating "radial reel" in place in the tank. While you should receive the extractor clean, you may want to remove the cover and reel to inspect the tank before using it.
- (7) Removing the Radial Reel and Cover Assembly:
 - a. Locate the three wing nuts on the rear, fixed portion of the tank cover.
 - b. The two chain assemblies should be transported in the small parts bag, but remove them if necessary.
 - c. When removing wing nuts, take care to keep track of the lock washer, and flat washer above the lid, and the three "L"-bolts with flat washers inserted through the top edge of the tub;
 - d. Carefully remove the cover and radial reel assembly. Reach into the tank and grip the central shaft in two places and lift it out – don't lift it by the reel parts.
 - e. Set aside until you have completed your inspection.
- (8) Re-install the radial reel and cover assembly now, if it is not yet in place.
 - a. Attach a flat washer to each "L-bolt" and insert, from outside-in, through the three holes near the top edge of the tank.
 - b. Gripping at the central shaft, place the reel into the tank, taking care to align the bottom shaft into the nylon bushing.

- c. Reach under the tank cover and insert threads of “L-bolts” through the three holes in the cover, starting in the rear.
 - d. Align the lid so that it is above the rim of the tank all around.
 - e. Locate the chain assemblies, and place the top “L-bracket” over the “L-bolt” on either side of the tank, which should be directly over the bar on the stand that the eye-bolt will fasten through.
 - f. Place a flat washer then a lock washer over each “L”-bolt.
 - g. Loosely install three wing nuts over each of the “L-bolts”. *Position each “L”-bolt so its head is flush with side of tank and vertical up through hole in lid*, centering the tank cover before tightening the three wing nuts. Care at this step helps insure centering and smooth rotation of the radial reel.
- (9) Secure the tank to the stand with the chain assemblies – see Figure 6. The chain assemblies should be hanging down from the two side “L-bolts”. Insert the eye-bolt at the bottom of each chain through the hole in the end of the bar on the stand. Place a washer over one eye-bolt and screw a wing nut on the eyebolt until just snug. Do the same for the other side. Tighten both wing nuts securely.
- (10) Attach the Motor Assembly to the top of the Tank Assembly:
- a. Note the four holes on the rear tank lid and the four holes on the motor assembly bracket. The motor assembly installs with the motor switch and controls at the back of the tank.
 - b. On the bottom of the motor assembly and on the top of the tank assembly, observe the gears that will mate the motor to the top shaft of the radial reel. Rotate these two shafts into perpendicular positions to facilitate placement of the motor on the lid.
 - c. Place the motor assembly on the lid so that the two gears engage cleanly and the assembly sits flat on the lid with the mounting holes aligned.
 - d. Locate the four sets of mounting bolts, consisting of a bolt and bottom flat washer, and a top flat washer, lock washer and wing nut. *At the end of this step, the two drive gears should be perfectly centered and aligned together.*
 - i. Insert a flat washer over the bolt and, from inside the tank under the top lid, insert the bolt up through the mounting hole;
 - ii. while holding the bolt in place, place a flat washer and then a lock washer over the bolt end and install a wing nut until just snug, with a “wing” of the wing nut pointing to (almost touching) the motor bracket to maintain sufficient spacing for later tightening. (This also seems to help center the mating gears together.) Do not tighten yet, as you may need to slightly reposition the motor assembly bracket as the other bolts go in.
 - iii. Similarly, install the other three motor bracket bolts, washers and wing nuts. Rotate the Radial Reel to check for smooth spinning. Slightly adjust the alignment of the motor assembly if necessary.
 - iv. *See Operation #5-6-7 below. Briefly run the extractor at lowest speed and view the gear alignment from the rear. If the top gear edge hangs over the lower, adjust the motor position for perfect gear alignment before final tightening of the bolts & wing nuts.*
 - v. Using the box-end of the 7/16” wrench, hold and tighten the bolt end under the tank cover, while tightening each of the four wing nuts to secure the motor assembly.



Operation

- (1) WHEN OPERATING THE EXTRACTOR, BE MINDFUL TO KEEP HANDS AND OBJECTS AWAY FROM THE ROTATING CAGE INSIDE THE TANK.
- (2) NOTE: This extractor is not equipped to extract LARGE frames – insert six-inch and smaller (Medium and Small) frames only!
- (3) *This machine is a BEAST and can easily break comb on wax & wire foundation, and even wooden frames, at higher speeds. Operate so that vibration causes no more than ¼" (one quarter inch) displacement at the top cover – when you stand still allowing the cover to just touch your hand, the "wiggle" should create no more than a ¼" gap. Operate at 40% speed or less until comb is near empty; then slowly increase speed keeping vibration low.*
- (4) Rotate the Radial Reel by hand to insure that it moves smoothly, easily, and quietly. If it does not, check for proper mating of the drive gears. Also check to be sure the top lid is centered and "L"-bolts are flush to the side of the tank and vertical through the lid.
- (5) Insure that the control switch is in the "OFF" position and the speed control set to "0" (see photo above left).
- (6) Plug the motor assembly in, and turn the power switch to "on".
- (7) Before placing honey frames in the frame holders, test for proper operation of the extractor. With no frames in the tank, slowly advance the speed to from 0 to 100, returning to zero at the first sound of metal hitting metal. It should spin smoothly, and relatively quietly. If necessary, loosen the four (4) motor bracket bolts and slightly reposition the motor assembly.
- (8) It is critically important to balance frames in the extractor, placing similar weight frames in each set of three opposing brackets. See Figure 7 and note how the frame brackets at the bottom of the radial reel are configured in pairs, with the central ends of each pair nearly touching. Consider that the three sets of bracket pairs angled together have a "left" bracket and a "right" bracket. As best as you can, place three similar weight frames in the "left" set and another three similar weight frames in the "right" set. A slowing of the motor can indicate frames are too out-of-balance.
- (9) You may find it more efficient to extract three same-weight frames at higher speed than six less-well-balanced frames at lower speed.
- (10) *Insert frames in radial reel as shown in Figure 2, with frame top bar facing outside of tank and "ear" of frame hanging over the edge of the bottom radial frame bracket. Insert uncapped frames of honey in either three (3) or six (6) frame brackets.*
- (11) Slowly turn up the extractor speed to 40%. Spin for about 4 minutes, then attempt to slowly increase speed. If it does not spin quietly and in balance, back off the speed until it does.
- (12) If you let honey collect in the bottom of the extractor, monitor the level and do not let it reach the bottom of the Radial Reel. A slowing of the speed can indicate too much honey in the bottom.
- (13) Do not attempt to operate the Extractor when the extractor assembly is tilted. The base was constructed with a flat front side to facilitate tipping the extractor toward the honey gate to help honey drain toward the honey gate after you have finished extracting.

Disassembly and Cleaning

Reverse the assembly process, screwing wing nuts onto bolts to keep washers, nuts and bolts properly paired.

If you think you can adequately clean the extractor without removing the Radial Reel, you can't. Be kind to the next user. Fully disassemble the extractor and clean it thoroughly.

- (1) The goal of cleaning is to remove every trace of honey and wax from all extractor parts and surfaces. Wipe the motor and cord with a damp cloth.
- (2) NEVER IMMERSER THE UNCAPPING KNIFE IN WATER – JUST SCRUB & RINSE. Thoroughly remove all traces of wax and scorch from the uncapping knife, after it cools, with the thin green scrubbing pad. A little scouring powder can help. Wipe the cord with a wet cloth.
- (3) To clean the extractor, choose a location where the tank and radial reel can be sprayed with water to rinse thoroughly – a large sink, clean concrete or in a shower.
- (4) The cleaning kit in a paper or mesh bag (which allows tools to dry rather than mold) includes
 - a. An approximately 4"x6" scrubbing pad with handle for the tub sides;
 - b. A thinner green scrubbing pad for stubborn wax spots, and the hot knife – used with a little Barkeepers Friend or other scouring powder, you can get the knife as clean as new.
 - c. A toothbrush – good for cleaning the bottom inside rim, inside the center plastic bushing and inside honey gate of the tank.
 - d. A scrubbing brush with a handle for cleaning smaller parts of the Radial Reel.
- (5) BE SURE TO THOROUGHLY RINSE ALL SOAP FROM ALL PARTS AND WIPE DRY.

Prepare the Extractor for transport:

1. Tighten wing nuts and washers snug on the plywood base.
2. You can transport the stand attached to the plywood base if it all fits your vehicle that way.
3. Transport the tank with the Radial Reel installed in the tank and the top bolted in place.
4. Place two (2) Chain Assemblies and the four (4) Motor Attachment Bolt sets in the assembly parts baggie, and place in gallon baggie with spare parts.
5. After cleaning all the "sticky" from the motor assembly & cord, wrap the cord around the motor and place it, mounting bracket-down, in a corner of the cardboard box. The square bucket stand fits along a side of the box, with a piece of cardboard to separate it from the motor.
6. Place rubber tire pieces at the bottom, then the parts baggie and uncapping knife along with the capping scratcher. Place the cleaning kit in its bag on top.

Replacing the Fuse

Within the Baldor Motor Control housing there are two fuses shown in the photo below. They protect the motor from drawing too much current when too much load is placed on the motor, for example, when the person extracting allows too much honey to collect in the bottom of the extractor tub and the level is above the bottom of the radial reel. The two fuses are labeled Arm (Armature – a 2 amp fuse on the left in the photo) and Line (a 5 amp fuse on the right in the photo). Spare Armature fuses are in the spare parts kit of the extractor – use Buss type AGC-2 or equivalent.

To replace the fuse,

1. Unplug the motor from power
2. Unplug the Motor Control from the Motor Power Cable (see the connector end in the photo)
3. Loosen the screw holding the Baldor Motor Control to the motor assembly
4. Remove four screws and lift the motor control cover off being careful not to stress the wires running between the two parts.
5. Locate and inspect the ARM (Armature) fuse. A break in the conductor should be visible. Replace the fuse with a new one.
6. Reassemble.

