

Hand Held Seed Harvester Manual

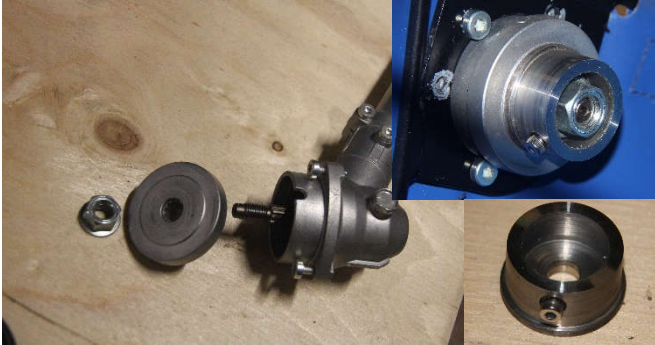


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Revised 2020-11-30 for Echo Model TBC260SF Engines & Drive Trains
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Hand Held Seed Harvester Assembly Instructions

1. Take lower drive tube and remove allen screw from drive roller and then remove the 17mm drive nut. (Turn clockwise to remove)



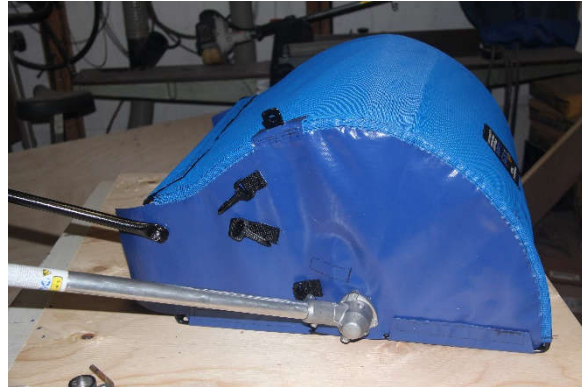
2. Remove drive cone, spline washer and set aside.



3. Decide what position you want the hopper in. Position #1 is for waist to knee height seeds and #2 is for seeds above waist and for really low seeds.

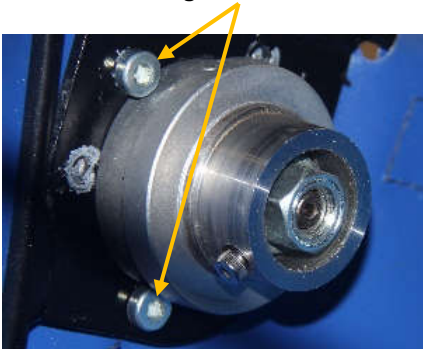


Position 1

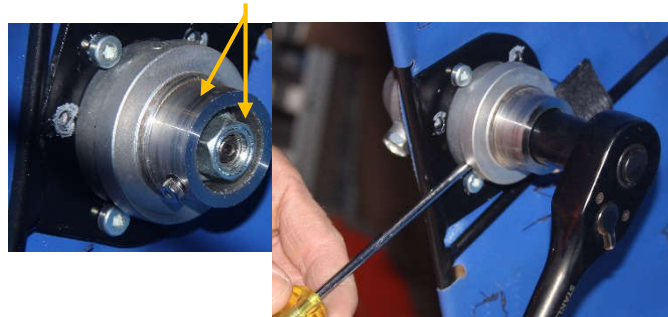


Position 2

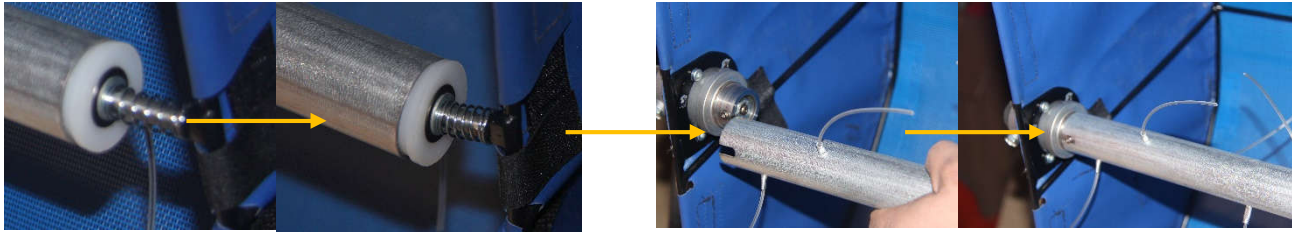
4. With the three T27 torque screws mount lower drive tube to the hopper in the desire position as illustration above illustrates. Tighten securely but do not over tighten.



5. Once lower drive tube is position securely (follow Torque recommendations of Echo) reinstall the splined washer and drive cone, tighten 17 mm nut securely (tightens counter clockwise) by inserting a small screw driver in the holes as in illustration #...



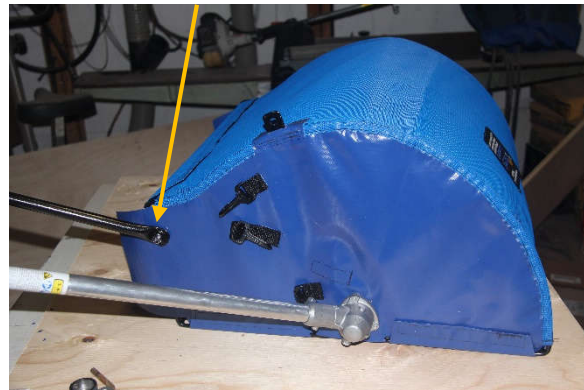
6. At this time select the proper reel and install it. This is a quick connect system with no tools needed. See illustration #....



8. Next install handle assembly onto lower drive tube and proper hopper mount location. Tighten tube clamp and hopper mounting bolt securely. Note: the handle has two hopper mount positions #1 and #2

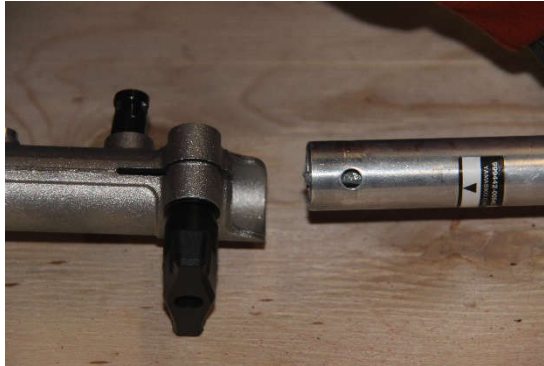


Position 1



Position 2

9. Install upper drive tube into lower drive tube by rotating & pushing upper drive tube into lower drive tube until it bottoms. Rotate upper drive tube slightly back & forth until silver set screw clicks into the proper hole. Make sure the spring pin is engaged in the hole by rotating it slightly & trying to pull lower drive tube out. Upper drive tube **MUST** be held firmly into lower drive tube. Tighten large black plastic wing-nut tightener snugly by hand.



10. Once machine is assembled put your shoulder harness on and adjust harness mount so that the machine is mostly balanced the strap. This adjustment allows you to carry the weight on your body instead of your arms. At this time adjust the left-hand handle position to a comfortable spot and tighten securely. (Note: after running the machine for the first 10 minutes re-check tightness of the handle fasteners, especially the clamp on the lower torque tube.)

Portable Seed Harvester Operating Instructions

Introduction

Your new portable seed harvester has been developed by Prairie Habitats Inc. and GP Restoration Solutions Inc. over years of field testing by many people around the world. It is easy to use, efficient, and has low impact on harvested areas. Please take the time to read the manual - it will save you time and expense and help you make the most of your seed harvester.

Warranty

GP Restoration Solutions Inc. warrants the seed harvester hopper, cover, bag and reel cores for one year from the original date of purchase. This warranty covers any defects in materials, workmanship and parts. It does NOT cover reel lines, base or cutter rivets, normal wear or problems related to improper maintenance or fuel, abuse, neglect, inappropriate use, accidents or unauthorized modification.

This warranty does not cover seed harvester reel filaments that wear out during the normal course of harvesting. A reel repair kit is provided for this purpose. Instructions are provided in this manual on how to replace lines, should this become necessary. Reels have been designed to be easily and quickly repaired with pop rivets and line trimmer line commonly available at most hardware stores. Transportation costs back to Prairie Habitats Inc. for all warranty work are the responsibility of the purchaser.

The engine and drive tube warranty is covered in the Echo manual. Warranty claims on these parts of the seed harvester can be made with your nearest Echo dealer or Prairie Habitats Inc. No other express or implied warranty exists.

Set-up

See photo instructions on page 2-4 for assembly steps. Once assembled, put on the dual strap harness and adjust it for a proper fit. You should guide the machine with your arms, but let the harness the weight. If you are harvesting seeds below your waist use hooper/handle position #1. When harvesting seed heads higher than your waist put hooper/handle in position # 2, adjust shoulder strap positioning clamp closer to hopper until the machine is mostly balanced on the strap, and cinch the strap up shorter so that the machine is carried higher on your body. When harvesting low to the ground use hopper/handle position #2 and lengthen the strap so the machine is carried lower. This will save your back from too much bending over. Always use proper safety precautions when operating this machine.

Fuel (Follow instructions as per the Echo Manual)

Please follow the instructions in the Echo manual for gasoline/oil mixes. This is a two cycle engine, requiring the mixing of fresh, unleaded, 89+ octane gasoline and 2 CYCLE oil for fuel at a ratio of 25:1 to 50:1 (gas : 2 cycle oil). You also can use Aspen alkylate pre-mixed, 2 cycle fuel for lower emissions, better engine performance and longer fuel storage life.

Choosing and Using Reels

To begin harvesting, choose the reel most suited to the species you intend to harvest. The light duty reel has fine filaments and mainly is used for very light, fluffy-seeded species

in conditions of low humidity. These include such plants as Goldenrods, Asters and Little Bluestem.

The medium duty reel has heavier filaments and is used for fluffy species under moister conditions, in addition to most warm and cool season grasses, legumes, forbs and herbs. It also is used for harvesting leaves from medicinal, herb and spice plants. If in doubt about what reel to use, try the medium duty one first.

The heavy duty ripper head has the thickest filaments with rivet base cutters attached. These heads are used for tough headed composite flowers and shrubs such as Purple Coneflower (*Echinacea* sp.), Black Eyed Susan, Sunflower, Cup Plant, Compass Plant, Bergamot, Wild Rose and any other plant where the whole flower head or a berry needs to be removed. The seeds then are extracted from the cut-off flowerheads by processing. Using too light a head will result in premature breakage of the reel filaments. Using too heavy a head will result in collecting more chaff than necessary.

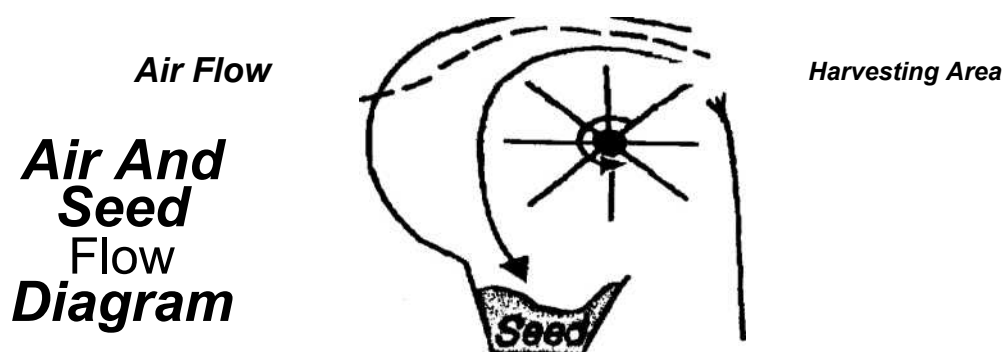
Harvesting

To harvest, ensure that the seed you intend to collect is ripe and dry. Face into the wind, and approach your intended seed plot with the machine running, the hopper tipped at about a 45° angle and the seed harvester reel parallel to the ground. The handle bracket is designed so that when the unit is picked up, the hopper will naturally tip to this position.

Touch the seed heads to be harvested with the top part of the rotating bristles (see diagram below and photo on page seven). The part of the reel from the middle to the top is the harvesting area. Here the filaments are rotating inward, back into the hopper, and will grab the seed and pull it in. Contacting the seed head below the middle of the reel will kick seed out and ahead of the machine. Here, the filaments are rotating outward and away from the hopper.

Begin harvesting slightly below the seed head and move the machine up the stalks only, not down. This ensures that the top, inward rotating filaments are the first to contact the seed, maximizing your seed capture.

Throttle speed should be adjusted so that most of the seed is coming off, but as much of the leaves and stalks as possible remain on the plant (unless, of course you are trying to collect leaves and stalks as in medicinal plant harvesting). The harvester cannot differentiate between desirable seed and other material such as leaves, stalks and weeds. It will collect whatever contacts the rotating reel, so try to harvest clean stands where the seed heads are not mixed in with other plant material whenever possible. This will minimize your seed cleaning needs. Generally, the taller the plant and the less other material there is around the seed heads, the cleaner your final harvest will be.



The seed harvester should be moved slowly into the patch with a gentle upward motion whenever desirable plant material is contacted. You can walk in a straight line if the patch is uniform as in a nursery, or sweep the harvester from side to side. Working into the wind will greatly increase your harvesting efficiency, especially with light fluffy seed. Here the wind assists the vacuum that the high-speed brush rotation creates, and captures more seed.

Once the hopper bag is full, detach it and check the bag. Heavier clean seed generally is in the bottom of the bag. Chaff, stalks and debris often remain on top. After removing chaff, empty seed into a storage bag or other container. Periodically check your harvested seed to ensure that it is dry. If it feels unusually warm or damp to the touch, it is starting to heat up and may quickly reach temperatures lethal to the seed. It is vital to spread the seed out to dry as soon as possible to maintain seed viability.

Seed harvesting rates will vary with the species, its ripeness, stand density, wind direction, humidity and operator experience. Some experimentation will be necessary to determine what works best for you in your area. We recommend that you practice harvesting on some plants that do not matter, such as weeds or other plants you have no desire to harvest. This will allow you to get your techniques down well, and prevent the loss of valuable seed in the learning process.

Once you have mastered the use of the portable seed harvester, you can move on to the plants that are your intended target. Remember to clean out the hopper bag first before harvesting these more valuable species.

Safety

Safety is a prime concern when using any piece of equipment. Your seed harvester is a powerful machine and must be used carefully by competent staff. **Maintain** the motor as per instructions in the Echo manual. **Check** and tighten if necessary, all bolts, Torx screws, nuts and rivet bases before and after each day's use. **Follow** all Echo safety precautions, as well as the ones specific to the seed stripper in this manual.

Keep the Allen wrench and appropriate tools with you when harvesting and **tighten** any screws if they become loose. **Apply clear nail polish, Permatex Blue Medium or Loc-Tite Medium (Non-permanent) to threads if screws loosen prematurely.**

Always wear the safety goggles supplied to protect your eyes from sharp pieces of flying stalks, seeds and debris. Wear hearing protection and steel-toed work boots. **Be careful** in steep terrain and keep a solid footing. **Never** allow any part of your body or anyone else's to contact any part of the rotating reel or hot engine surfaces. Serious injury will result.

Keep bystanders and animals at least 50 ft (15 m) away. **Do not** allow children or pets near harvesting activities. **Inspect** the harvester reels and other parts of the machine daily for damage, and replace or repair as necessary. **Do not** use this or any other motorized equipment when wildfire danger is high in grassland and forest areas. Occasional sparks, which are a normal occurrence from any motor or high-speed rotating device, may cause wildfires. **Do not** run at full throttle for more than 3 to 4 minutes at a time. Allow several minutes for the unit to cool down after full throttle use. Most species are best harvested with varying throttle speeds from 1/4 to 3/4 full throttle. Varying throttle speeds will greatly increase the service life of your seed harvester.

Maintenance

Follow all maintenance procedures in the Echo manual. Remove any stalks or plant debris that gets wound around reel base as soon as they appear. Keep all bolts, nuts, button socket cap screws, Torx screws, pipe clamps and other fasteners securely tightened. Clean hopper cover with a stiff nylon brush, air compressor hose and/or soap and water if it gets plugged with seed or plant debris. Store in a cool dry place, removing all fuel from engine for storage longer than one month if not using Aspen alkylate fuel.

Harvesting Tips



Important! Contact seed heads here in the upper quadrant of reel rotation area with hopper tipped forward about 45 degrees. Here the reel is rotating inward towards the hopper and will capture maximum seed. Adjust the angle of the harvester with the two optional positions available to best match the angle of harvest for the height of plants you are harvesting.

* Start just below the seed heads and work with an upward sweeping motion. Contacting seed heads lower than the middle of the reel will result in seed thrown away from hopper.

*Be selective - the seed harvester will harvest anything it contacts, and cannot differentiate between seed, leaves and stalks.

*The cleanest seed will come from clean and uniform stands, with seed heads fully ripe and away from other plant material. Harvest facing the wind whenever possible - this increases the efficiency of the airflow.

*The easiest seed to harvest is from plants which have open, upright seed heads at the tops of the plant or at the outer ends of branches.

*Vary your throttle speed to see what harvests the best and cleanest seed. The higher the throttle speed, the more material your harvester will bring in.

*Clean seed usually settles to the bottom of the hopper. Leaves, stalks and chaff normally stay near the top.

To replace worn reel line follow these directions referring to the photos on p. 11:

Tools needed - side cutters, vice grips, matches, lighter or candle, container of cold water (Option 1)

- 1) Basic repair kits for the all reels are included with your machine. Additional rivets and string trimmer lines normally are available at most hardware stores. Additional reels or parts for them also can be ordered from Prairie Habitats Inc.
- 2) Obtain appropriate pop rivets and remove their shafts, leaving the empty rivet bases. Also, obtain a length of the appropriate thickness string trimmer line.
- 3) Light duty reels have 0.125 inch (3.175 mm) diameter pop rivets and 0.065 inch (0.165 mm) diameter string trimmer line; medium duty reels have 0.188 inch (4.76 mm) pop rivets and 0.095 inch (0.241 mm) diameter string trimmer line; heavy duty ripper heads have 0.250 inch (6.35 mm) pop rivets and 0.130 inch (0.330 mm) diameter trimmer line.
- 4) Using side cutters, cut off broken rivet at its base flush with the reel and pop the end down through reel with a centre punch to remove.
- 5) Thread a length of string trimmer line down through the hole and out one end of the reel.
- 6) Slide a rivet base over the end of the line as shown.
- 7) Option 1) Melt the end of the line with a match, lighter or candle, then tamp it on an unpainted metal or concrete surface to flatten it, then harden in cold water. This ensures it does not pull through the rivet base.

CAUTION - DO NOT do this near flammable fuels or oils, in an enclosed area, or in dusty conditions. Always perform this under well-ventilated conditions away from dry grassland vegetation, dusty seed, motors and fuel tanks. Melting line will cause serious burns on skin & clothing. BE CAREFUL!! Wear leather gloves, cotton, wool, or Nomex-type flame retardant clothing. Do not wear synthetic fibres such as nylon, polyester or rayon, due to high burn hazard.

Option 2) Alternative method – Squish a small portion of the end of the line so that it will not pull through rivet when pulling it through the hole in the reel

- 8) Pull string trimmer line and rivet base up through the end of the reel and into the hole.
- 9) Crimp rivet base with vice grips so it does not pull back through the hole in the reel.
- 10) Cut off the end of the string trimmer line to the appropriate length.
- 11) For heavy duty ripper reel cutters, place rivet base over end of installed line, crimp rivet with side cutters. Melt, flatten & harden end of line to prevent it from pulling back through rivet base.

Note: You can use this method to custom design different seed harvester reels with different densities and lengths of line for special harvesting applications - see below.

To customize seed harvester reels:

Adding or subtracting reel lines for different species or crop harvesting applications is a simple matter of drilling the appropriately sized holes in the reel cores. Then follow the above instructions to install the required sized line and rivet bases. Ensure the reels are balanced to prevent undue wear and tear on the operator and machine. Customer-modified reels are not warranted.

Hand Held Seed Stripper Reel Repair Instructions

