

WARNING

Serious personal-injury to the operator or bystanders, as well as damage to equipment or property, can occur if you do not follow all safety and assembly instructions provided with this product.

You **MUST** read, understand, and comply with all safety, assembly, and operating instructions in this manual, **BEFORE** you attempt to assemble and operate your chipper-shredder-vac.

CAUTION

HEAVY-LIFTING HAZARD

The boxes containing the chipper-shredder components, as well as some components themselves, are large and heavy.

To avoid injury, use proper handling techniques, such as:

- Bend your knees and keep weight close to your body
- Use material-handling aids (e.g. hand-truck, cart, dolly)
- Get help, when required

Assembly Instructions

General

Your Patriot Gas Chipper-Shredder-Vac (CSV) was shipped in two (2) boxes. You may receive additional packages if you ordered spare-parts or accessories, along with your unit.

Box 1 contains the, functional, lower-unit assembly, which was factory assembled by Patriot Products, and is the same box that contained these instructions.

PLEASE INSPECT THE LOWER-UNIT ASSEMBLY FOR ANY OBVIOUS SIGNS OF DAMAGE THAT MAY HAVE OCCURRED DURING SHIPMENT. IF DAMAGE IS FOUND, CONTACT PATRIOT FOR INSTRUCTIONS, BEFORE PROCEEDING.

Box 2 contains the items that were not factory assembled, for shipping purposes; you will need to assemble these items to the, functional, lower-unit assembly, before your Chipper-Shredder-Vac can be safely operated. If you ordered spare-parts or accessories, they are often shipped within this box.

Typically, both boxes arrive at the same time; however, do not become alarmed if they are delivered separately.

The steps to complete assembly of your unit, required by you, are very easy and straight-forward.

Note: The illustrations that follow depict the CSV-3065B chipper-shredder; However, the instructions are applicable to all current Patriot gas chipper-shredder models.

Tools – Required

The following tools are required, to properly complete the **Unit Assembly Process**:

- [] Tin-snips (or a similar tool), to cut the steel-banding in Box 1
- [] Phillips-head screw driver (#3 is preferred, #2 is acceptable)
- [] 7/16” combination-wrench
- [] 1/2” combination-wrench
- [] Hammer

Always use the proper hand-tools. Personal-injury can result when using the improper type-or-size of tool, as well as though the use of a worn-or-damaged tool that may slip off of hardware being tightened.

Assembly Instructions

Tools – Required (continued)

In addition, improper tools may damage hardware, making it difficult or impossible to properly tighten the hardware. Finally, damaged hardware will discourage timely-and-proper maintenance, which could lead to serious personal-injury or property-damage.

Common examples of improper assembly tools are: adjustable, open-end wrenches and toothed gripping-pliers.

Tools – Recommended

The following tools are recommended, to properly complete the **Unit Assembly Process**:

- [] Work-gloves
- [] Torque-wrench (5 – 30 ft-lb range)
 - [] 7/16" socket, for use with the torque-wrench
 - [] 1/2" socket, for use with the torque-wrench

Unit Assembly

DO NOT PROCEED UNTIL YOU HAVE RECEIVED

BOTH BOX 1 AND BOX 2;

AND

YOU HAVE **ALL** OF THE REQUIRED TOOLS

1. Identify a, ground-level, work-area, where the chipper-shredder can be handled comfortably. The area should have a hard, level surface.
2. Carefully bring both Box 1 and Box 2 to the assembly area, using proper handling techniques:
 - Bend your knees and keep weight close to your body
 - Use material-handling aids (e.g. hand-truck, cart, dolly)
 - Get help, when required
3. We recommend that you save Box 1, including its foam-and-cardboard base and cardboard-insert; also, save Box 2. Please keep these items for the first ninety (90) days you have the product, in the unlikely event you decide to return the chipper-shredder.
4. Open all four (4) top-flaps on Box 1. You will see the cardboard-insert that was placed inside the box, to help strengthen the box and



CAUTION

HEAVY-LIFTING HAZARD

The boxes containing the chipper-shredder components, as well as some components themselves, are large and heavy.

To avoid injury, use proper handling techniques, such as:

- Bend your knees and keep weight close to your body
- Use material-handling aids (e.g. hand-truck, cart, dolly)
- Get help, when required

! CAUTION

LACERATION HAZARD

The exposed-edges of the steel-banding can be sharp.

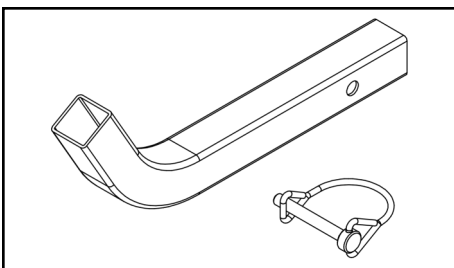
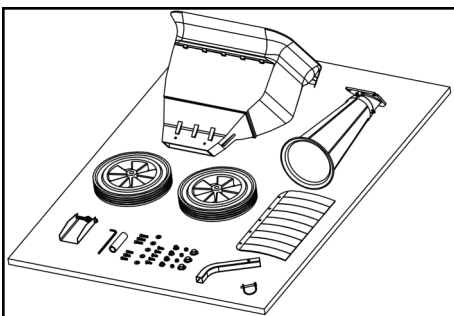
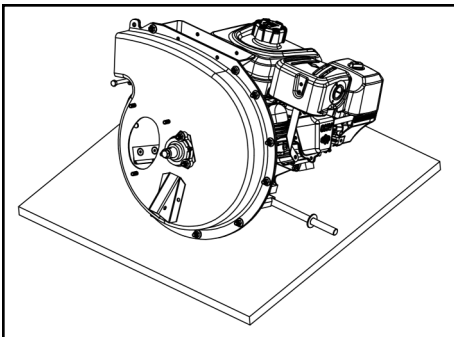
Wear work-gloves when handling steel-banding and do not pull on banding that appears to be stuck.

! CAUTION

LACERATION HAZARD

The chipper-knives are sharp.

Do not use the oval-shaped opening next to the bearing, for lifting.



Assembly Instructions

Unit Assembly (continued)

hold the lower-unit assembly in place. Please pull out and save this cardboard-insert.

- The steel-banding that holds the lower-unit assembly, to the foam-and-cardboard base, is under tension; it may have a tendency to spring apart when cut.

Note: The exposed-ends of the banding may be relatively sharp, especially after they are cut.

Carefully, cut the steel-banding as low and close to the sides of the box, as reasonably possible. Remove and discard ONLY the two (2) LOOSE pieces of banding.

TO AVOID POTENTIALLY SERIOUS PERSONAL-INJURIES, DO NOT ATTEMPT TO PULL THE REMAINING BANDING FROM THE BOX.

- The lower-unit assembly weighs approximately one-hundred (100) pounds. With assistance, carefully lift the lower-unit assembly out and place it on a hard, level surface, as shown.

Unit Model Number	Lower-Unit Weight, in pounds
CSV-2540H	76
CSV-3065B	96
CSV-3100B	118
CSV-3090H	125

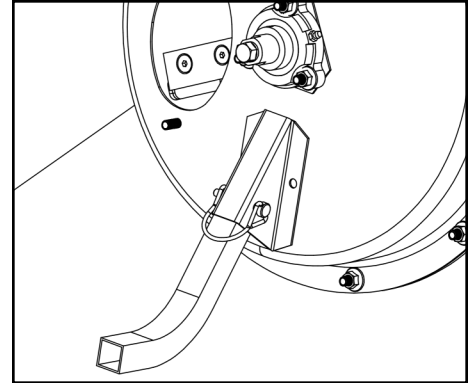
- Open all four (4) top-flaps on Box 2. Remove all items and lay them out in your work-area, for easier access. The collection-bag and safety-goggles are not shown, since they are not required during assembly.

- Locate the leg and lynch-pin.

Assembly Instructions

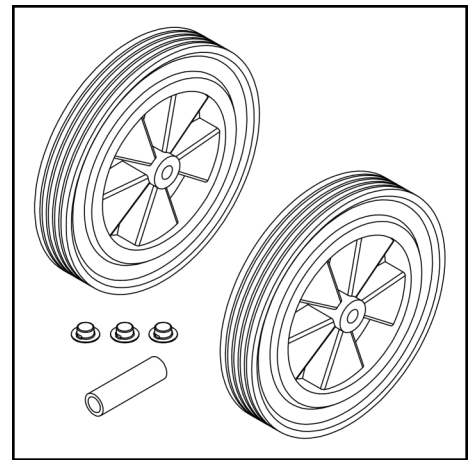
Unit Assembly (continued)

9. Insert the leg into its bracket, and secure it with the lynch-pin, as shown.

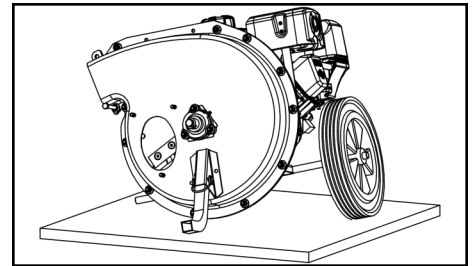


10. Locate the two (2) wheels, three (3) push-nuts, and short piece of PVC pipe.

Note: One (1) push-nut is a spare.

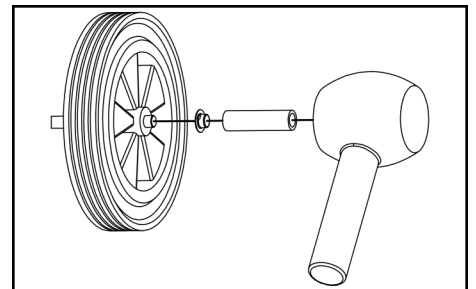


11. The wheels are identical, so it doesn't matter which is placed on the unit first. The wheels are also symmetrical, so it doesn't matter which side faces out. Lift the axle, approximately seven (7) inches; slide either wheel completely onto the axle; and lower the axle, until the wheel rests on the ground.



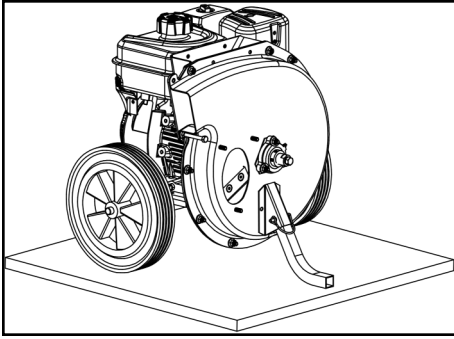
12. Place a push-nut in the PVC pipe and position the push-nut against the axle. Firmly strike the PVC pipe with a hammer, to drive the push-nut onto the axle, leaving a small gap between the push-nut and the wheel.

Note: Leaving a small gap between the push-nut and the wheel will allow the wheel to turn freely.

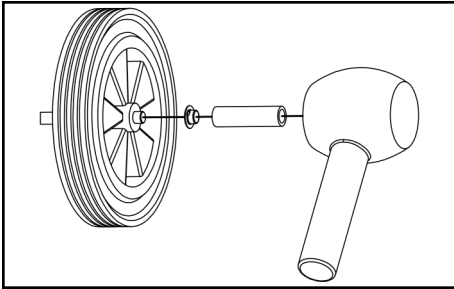


Assembly Instructions

Unit Assembly (continued)

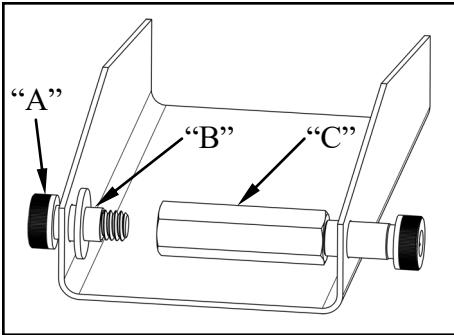


13. Lift the axle's free-end, approximately seven (7) inches; slide the remaining wheel completely onto the axle; and lower the axle, until the wheel rests on the ground.



14. Place a push-nut in the PVC pipe and position the push-nut against the axle. Firmly strike the PVC pipe with a hammer, to drive the push-nut onto the axle, leaving a small gap between the push-nut and the wheel.

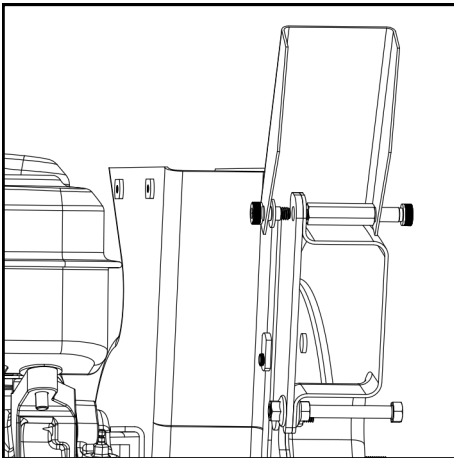
Note: Leaving a small gap between the push-nut and the wheel, will allow the wheel to turn freely.



15. Locate the discharge-deflector assembly. Unscrew the shoulder-bolt "A" from the coupling-nut "C", as shown.

Note: For your convenience, we have installed a black plastic retention-ring "B" on the shoulder-bolt. Its purpose is to secure the washer and the shoulder-bolt in their proper location on the discharge-deflector. This makes it easier for you to attach the discharge-deflector to the unit and helps minimize the possibility of you installing the discharge-deflector assembly incorrectly.

The retention-ring "B" is only provided for convenience and is not an essential component. Should the retention-ring become damaged or fall off, it does not need to be replaced because it will not affect the operation of the discharge-deflector.



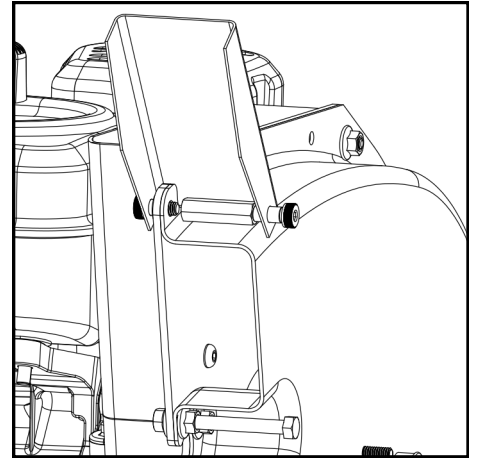
16. Position the discharge-deflector assembly at the discharge-opening, as shown.

Note: The shoulder-bolt is intended to pass through the hole in both the center-plate and fan-housing, located above the discharge-opening. Also, please note that the discharge-deflector is shown raised, to better illustrate the assembly process; the deflector can hang down during assembly, if that is easier.

Assembly Instructions

Unit Assembly (continued)

17. Push the threaded end of the shoulder-bolt through the hole on the center-plate's left-side: until the washer is in full contact with the center-plate, as shown.



18. While holding the shoulder-bolt and discharge-deflector in place, hand-tighten the coupling-nut: until it contacts the fan-housing's right-side, as shown.

Note: The hardware used is intentionally chosen to minimize the possibility of you installing the discharge-deflector assembly incorrectly. However, it is still important not to cross-thread or over-tighten the hardware.

To finish installing the assembly, insert the short-arm of the 3/16" Allen-wrench into the head of the shoulder-bolt and use a 1/2" wrench on the coupling-nut to tighten.

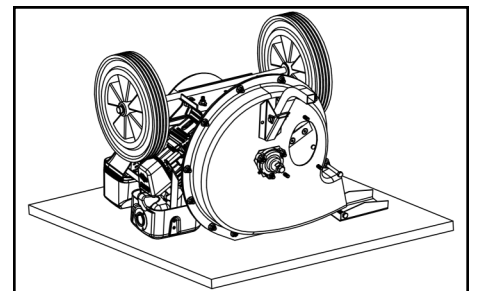
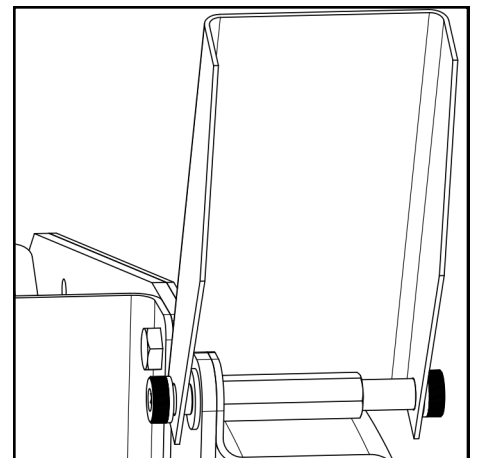
Finally, verify that the discharge-deflector swings freely.

Note: It is critical that the discharge-deflector swings freely. If it does not, processed material cannot exit the chipper and will clog the unit.

Recommended torque: 14 - 16 ft-lb

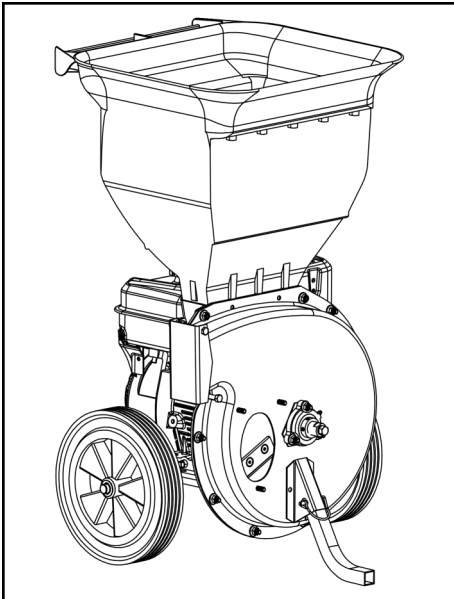
19. Visually inspect the lower-unit assembly for any obvious debris, such as foam, cardboard, or plastic edge-protectors; which may have fallen into the unit during shipping or handling.

Note: If necessary, carefully turn the lower-unit assembly upside-down, as shown, to remove the debris.



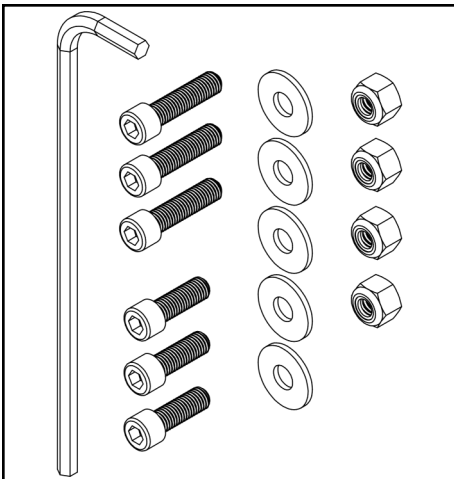
Assembly Instructions

Unit Assembly (continued)



20. Place the shredder-hopper on the lower-unit assembly.

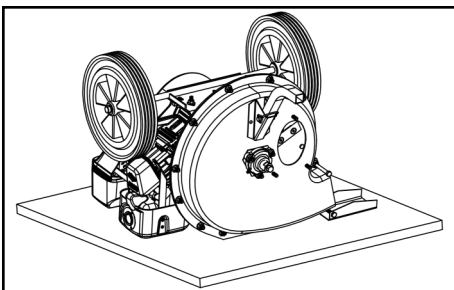
Note: The hopper's handle should be positioned on the chipper-shredder, as shown.



21. Locate the following items, as shown:

- a. One (1) – Long-arm Allen-wrench, 3/16"
- b. Three (3) – Socket-head cap-screw, 1/4" x 1"
- c. Three (3) – Socket-head cap-screw, 1/4" x 3/4"
- d. Five (5) – Flat washer, 1/4"
- e. Four (4) – Nylon-insert lock-nut, 1/4"

Note: The above includes one (1) spare for each part: b, c, and d.



Note: Be careful not to drop the hardware or tools when attaching the shredder-hopper. If something is accidentally dropped into the lower-unit assembly, you can remove the hopper; then, carefully turn the lower-unit assembly upside-down, as shown, to retrieve the hardware.

Assembly Instructions

Unit Assembly (continued)

22. Place one (1) 1/4" flat washer onto one (1) 1/4" x 3/4" socket-head cap-screw. Carefully reach down through the shredder-hopper and insert the screw, with washer, through the hole in the shredder-hopper, as shown; then, hand-tighten.

Note: There are nuts welded to the chipper-shredder's grinder-housing, that correspond with the holes in the shredder-hopper. The cap-screws must thread through these weld-nuts.

*Note: **DO NOT** install the nylon-insert lock-nuts at this time. You will be advised exactly when to install them, in a future step.*

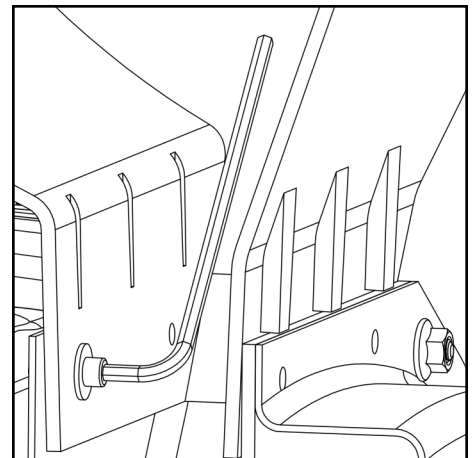
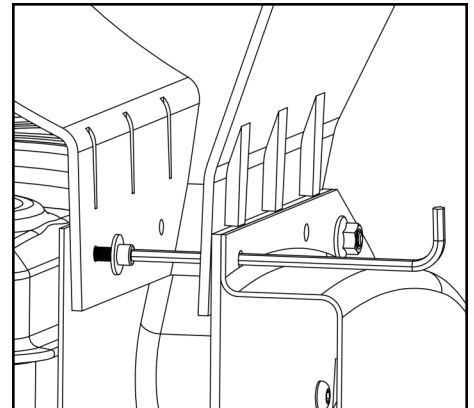
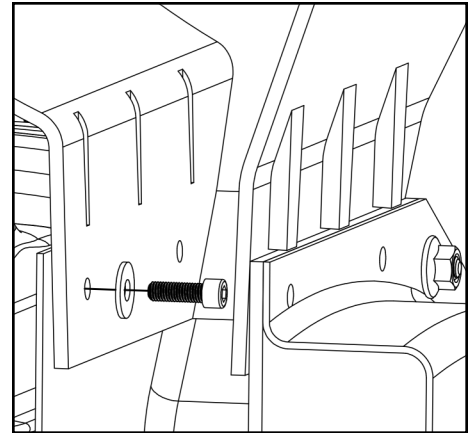
23. Use the 3/16" Allen-wrench, provided, to tighten the screw and washer installed in the previous step. Start by inserting the long-arm through the holes in the hopper and fan-housing, into the screw. This orientation of the wrench doesn't provide much leverage, but does allow you to more quickly install the screw. Tighten the screw until snug. You will finish tightening the screw, in the next step.

*Note: **DO NOT** install the nylon-insert lock-nuts at this time. You will be advised exactly when to install them, in a future step.*

24. To finish tightening the screw, reach down through the hopper and insert the short-arm of the 3/16" Allen-wrench, into the screw. This orientation of the wrench provides much greater leverage; however, movement of the wrench while in the hopper is more restricted. Finish securely tightening the screw.

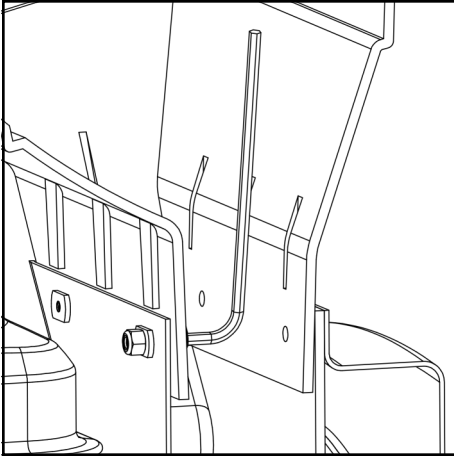
*Note: **DO NOT** install the nylon-insert lock-nuts at this time. You will be advised exactly when to install them, in a future step.*

Recommended torque: 6 - 8 ft-lb



Assembly Instructions

Unit Assembly (continued)



25. While holding the screw with the 3/16" Allen-wrench, place one (1) 1/4" nylon-insert lock-nut onto the screw and hand-tighten. Finish securely tightening the nut with a 7/16" wrench.

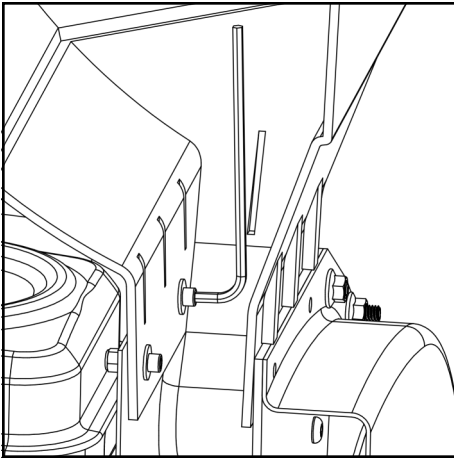
Recommended torque: 6 - 8 ft-lb

*Note: The nylon-insert lock-nut installation is **not** optional. The weld-nut is only provided to simplify the socket-head cap-screw installation. The nylon-insert lock-nut is designed to prevent the cap-screw from loosening.*

Warning: If you do not install the nylon-insert lock-nut, the socket-head cap-screw could loosen during operation and fall into the unit. Furthermore, the hopper will be loose; the cap-screw and washer will most likely be lost; and the cap-screw and washer could become projectiles. Serious personal-injury to the operator or bystanders, as well as damage to equipment or property, is possible.

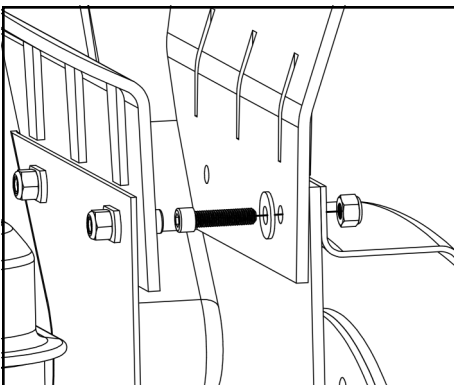
WARNING

Serious personal-injury to the operator or bystanders, as well as damage to equipment or property, can occur if you do not follow all assembly instructions provided with this product.



26. Repeat steps 22 through 25 for the second connection-point, as shown.

Recommended torque: 6 - 8 ft-lb



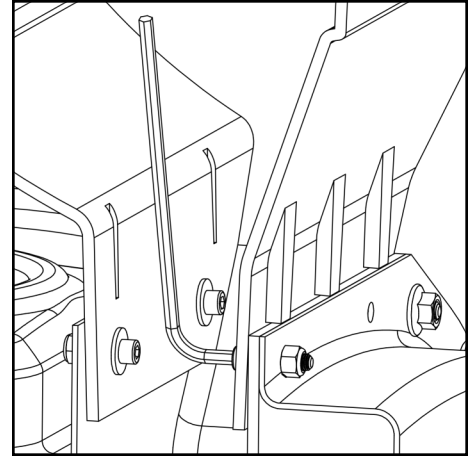
27. Place one (1) 1/4" flat washer onto one (1) 1/4" x 1" socket-head cap-screw. Carefully reach down through the shredder-hopper and insert the screw, with washer, through the hole in the shredder-hopper, as shown. While holding the screw's head, place one (1) 1/4" nylon-insert lock-nut onto the screw and hand-tighten.

Assembly Instructions

Unit Assembly (continued)

28. Reach down through the hopper and insert the short-arm of the 3/16" Allen-wrench, into the screw's head. Finish securely tightening the nut with a 7/16" wrench.

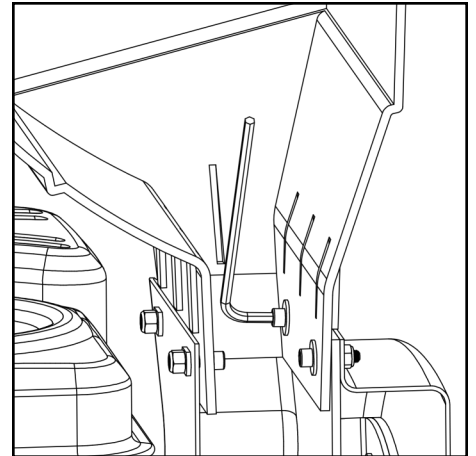
Recommended torque: 6 - 8 ft-lb



29. Repeat steps 27 and 28 for the second connection-point, as shown.

Recommended torque: 6 - 8 ft-lb

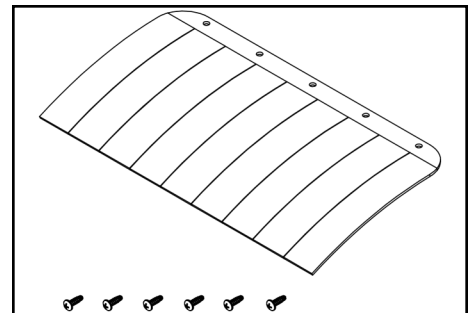
Note: Now, the hopper should not move relative to the lower-unit assembly. If necessary, re-check the tightness of all four (4) hopper attachment screws, installed in steps 22 thru 29.



30. Locate the following items, as shown:

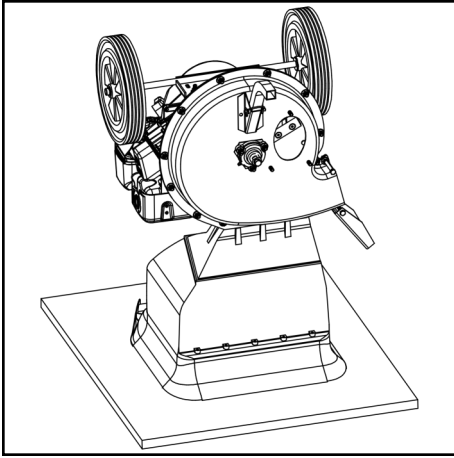
- a. One (1) – Hopper-guard
- b. Six (6) – Phillips-head, self-tapping screws, #14 x 3/4"

Note: The above includes one (1) spare for part b.

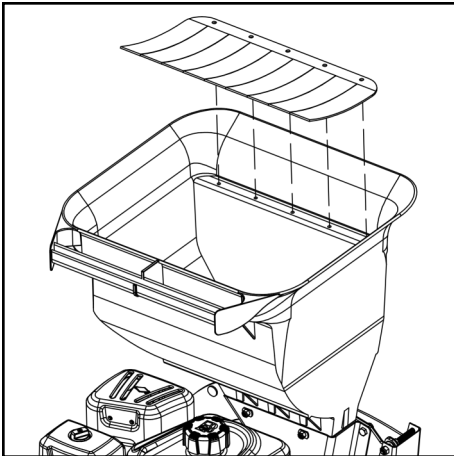


Assembly Instructions

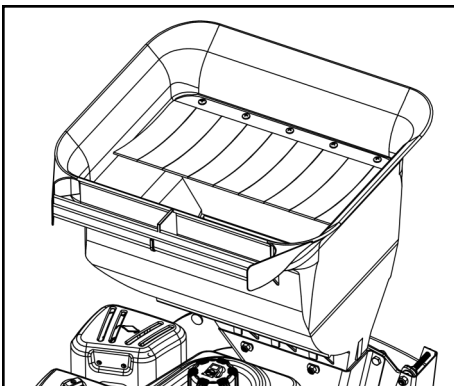
Unit Assembly (continued)



Note: Be careful not to drop the hardware or tools when attaching the hopper-guard. If something is accidentally dropped into the lower-unit assembly, you can carefully turn the unit upside-down, as shown, to retrieve the hardware.



31. The black side of the hopper-guard is considered the top. Insert one (1) #14 x 3/4" Phillips-head, self-tapping screw into each of the five (5) holes located along the top edge of the hopper-guard. This will make it easier to install the hopper-guard and help reduce the chances of dropping a screw into the lower-unit assembly.



32. Hold the hopper-guard inside the hopper, while keeping the guard's free-end raised slightly, as shown; This will also help reduce the chances of dropping a screw into the lower-unit assembly. Use a Phillips-head screw driver to securely tighten the five (5) screws.

Assembly Instructions

Unit Assembly (continued)

33. Locate the following items, as shown:

- a. One (1) – Chipper-cone assembly
- b. Four (4) – Serrated-flange-nut, 5/16"

Note: The above includes one (1) spare for part b.

34. Position the chipper-cone assembly in the oval-shaped opening of the chipper-shredder's fan-housing, as shown. Place one (1) 5/16" serrated-flange-nut on each of the three (3) studs projecting through the flange of the chipper-cone casting and hand-tighten.

*Note: It is important that you understand that cast parts, such as the chipper-cone casting, intentionally have slightly sloped faces, to accommodate manufacturing. **DO NOT OVERTIGHTEN** the nuts trying to eliminate gaps between the casting and the fan-housing! Overtightening can distort the fan-housing or break the studs.*

Finish securely tightening the three (3) nuts with a 1/2" wrench.

Recommended torque: 14 - 16 ft-lb

35. **CONGRATULATIONS! You have completed the assembly of your Patriot chipper-shredder.**

Please, be sure to carefully read and understand the operating instructions provided in this manual, before attempting to start this product.

