

## **WARNING**

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

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

## **CAUTION**

### HEAVY LIFTING HAZARD

The boxes containing the chipper-shredder components, as well as some of the 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 to you in two (2) boxes. You may receive additional packages, if you ordered spare-parts or accessories, along with your unit.

Box 1, of 2, contains the lower, “functional”, portion of the unit, which was factory assembled by Patriot Products, and is the same box that contained these instructions.

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

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

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

The assembly required by you is 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 assembly of your unit:

- [ ] Tin-snips (or similar tool), to cut the steel-banding in Box 1 of 2
- [ ] 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 for assembly. Personal-injury can result through the use of the improper type-or-size of tool, as well as while using a worn-or-damaged tool, that may slip off of hardware being tightened.

## Assembly Instructions (continued)

### 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 assembly of your unit:

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

### Product Assembly

DO NOT PROCEED UNTIL YOU HAVE RECEIVED

**BOTH BOX 1, OF 2, AND BOX 2, OF 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, of 2, and Box 2, of 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, of 2, including its foam-and-cardboard base and cardboard-insert; also save Box 2, of 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) of the flaps on the top of Box 1, of 2. You will see a cardboard-insert that was placed inside the box to help strengthen



### CAUTION

#### HEAVY LIFTING HAZARD

The boxes containing the chipper-shredder components, as well as some of the 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.

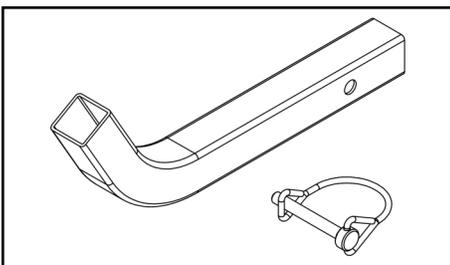
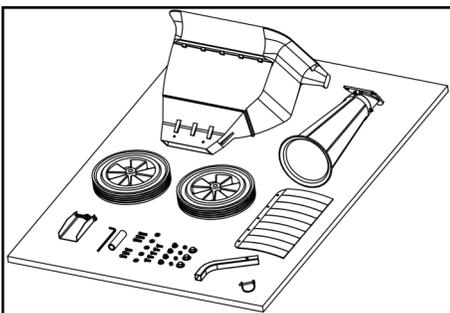
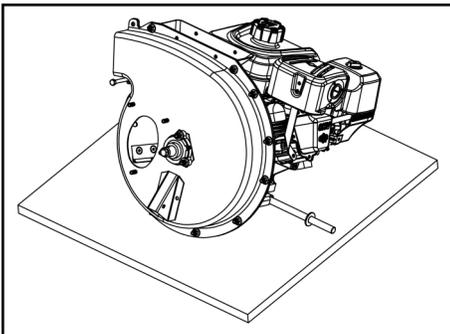
Wear work-gloves when handling steel-banding and do not pull on banding that appears to be stuck.

**! CAUTION**

**LACERATION HAZARD**

The chipper-knife is sharp.

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



## Assembly Instructions (continued)

### Product Assembly (continued)

the sides of the box and hold the lower-portion of the unit in place. Please pull out and save this cardboard-insert.

- The steel-banding, that holds the lower-portion of the unit 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 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-portion of the unit weighs roughly one-hundred (100) pounds. With assistance, carefully lift the lower-portion of the unit out of the box and place it on a hard level-surface, as shown.

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

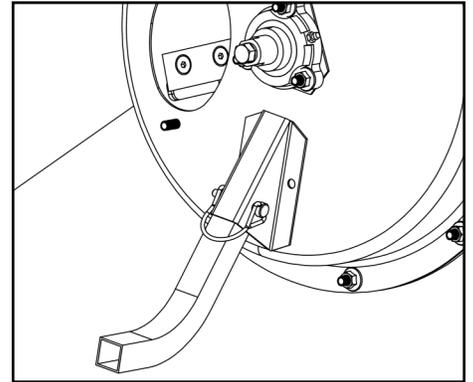
- Open all four (4) flaps on the top of Box 2, of 2. Remove all of the items from the box and lay them out in your work area, for easier access to the parts required for assembly. The collection-bag and safety-goggles are not shown, since they are not required for assembly.

- Locate the leg and lynch-pin.

## Assembly Instructions (continued)

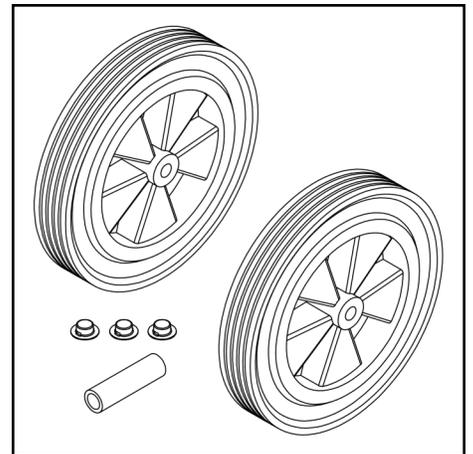
### Product Assembly (continued)

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

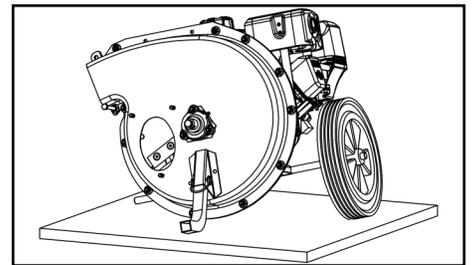


10. Locate the two (2) wheels, three (3) push-nuts, and short piece of PVC pipe.

*Note: One (1) of the push-nuts is a spare.*

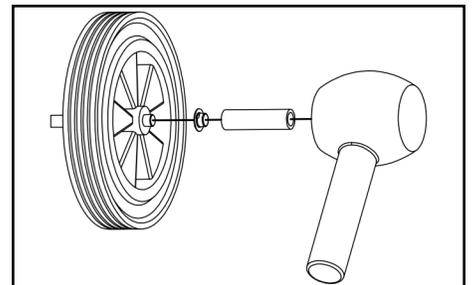


11. The wheels are identical, so it doesn't matter which of the wheels are placed on the unit first. The wheels are also symmetrical, so it doesn't matter which side of the wheel faces out. Lift the axle approximately 7 inches, slide the wheel completely onto the raised-end of the axle, and lower the axle until the wheel rests on the ground.



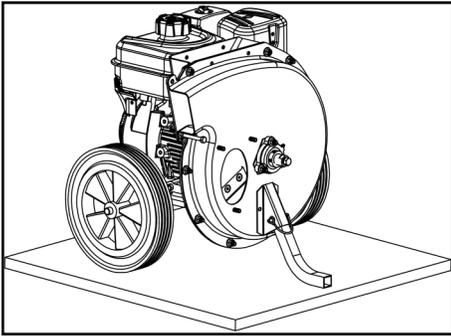
12. Place a push-nut in the end of the PVC pipe and position the push-nut against the end of the axle. Firmly strike the free-end of the PVC pipe, with a hammer, to drive the push-nut onto the axle, leaving a small gap between the push-nut and the wheel.

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

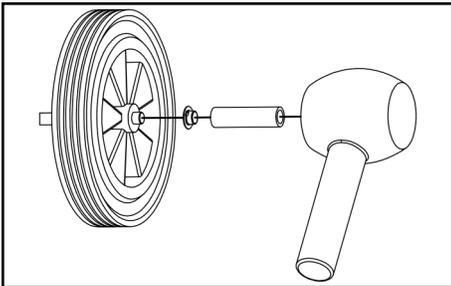


## Assembly Instructions (continued)

### Product Assembly (continued)

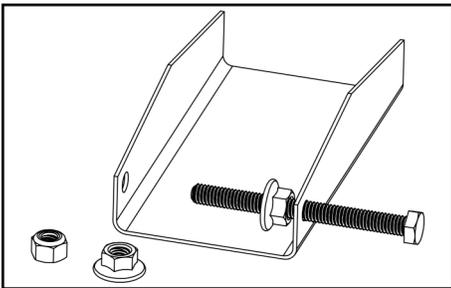


13. Lift the free-end of the axle approximately 7 inches, slide the remaining wheel completely onto the free-end of the axle, and lower the axle until the wheel rests on the ground.

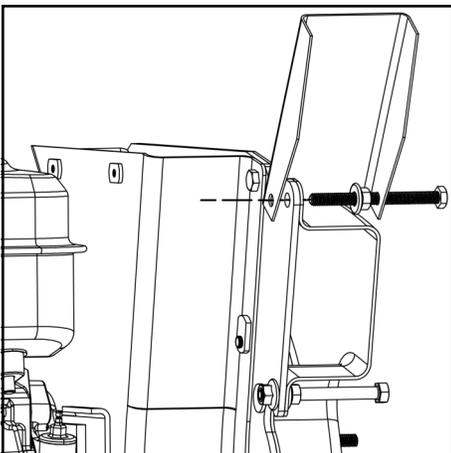


14. Place a push-nut in the end of the PVC pipe and position the push-nut against the end of the axle. Firmly strike the free-end of the PVC pipe, with a hammer, to drive the push-nut onto the axle, leaving a small gap between the push-nut and the wheel.

*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. Remove both the nylon-insert lock-nut and the first serrated flange-nut, as shown.



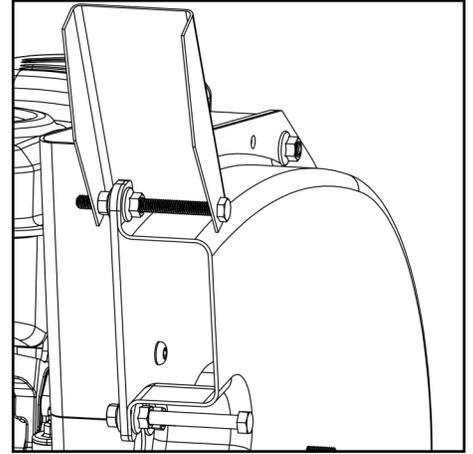
16. Position the discharge-deflector assembly, at the discharge-opening of the wood-chipper, as shown.

*Note: The bolt is supposed 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 clarify the assembly process; the deflector can hang down during assembly, if that is easier.*

## Assembly Instructions (continued)

### Product Assembly (continued)

17. Position the serrated flange-nut, removed in step 15, on the left side of the hole in the center-plate and begin to thread the bolt through the nut. Once the nut is on the bolt, you can use the deflector to hold the nut in position, while you turn the bolt. Ultimately, the bolt will pass completely through the nut and the corresponding hole, in the left side of the deflector. Stop turning the bolt, just before the head of the bolt makes contact with the right side of the deflector.



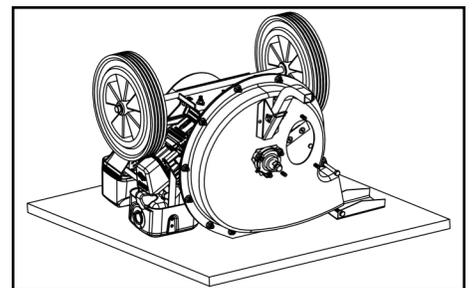
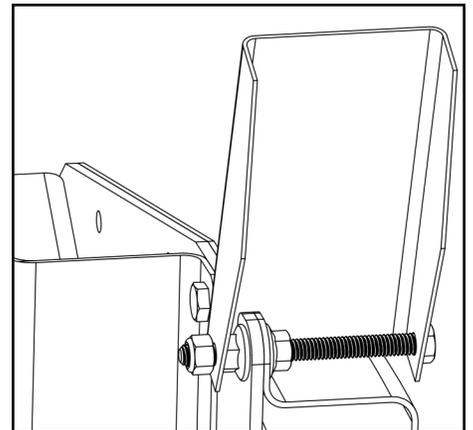
18. While holding the discharge-deflector in place, tighten the rightmost serrated flange-nut against the fan-housing using a 1/2" wrench. Finally, attach the nylon-insert lock-nut on the end of the bolt, using a 1/2" wrench. The bolt needs to just pass through the plastic in the end of the nut. **DO NOT** tighten the nylon-insert lock-nut **too** tight or it can prevent the discharge-deflector from swinging freely.

If the discharge-deflector does not swing freely, simply loosen the rightmost serrated flange-nut, enough that you can turn the bolt; Turn the bolt slightly, while holding the leftmost serrated flange-nut against the center-plate, in or out as required, to adjust the assembly. Then retighten the rightmost serrated flange-nut.

Recommended torque: 14 - 16 ft-lb (doesn't apply to nylon-insert lock-nut )

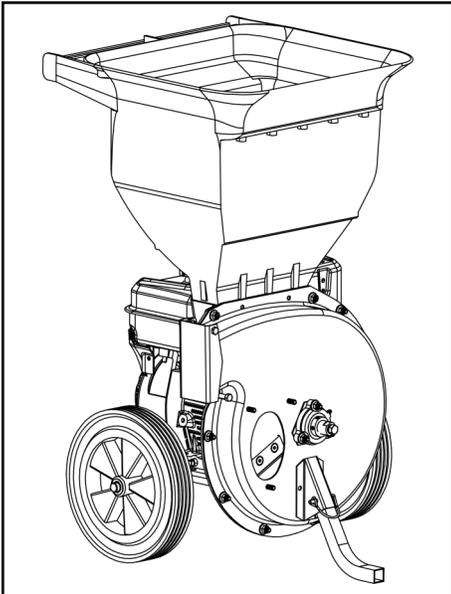
19. Visually inspect the interior of the lower-unit assembly, for any obvious debris, such as foam, cardboard, or plastic edge-protectors; which may have fallen into the unit, during shipping or handling.

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



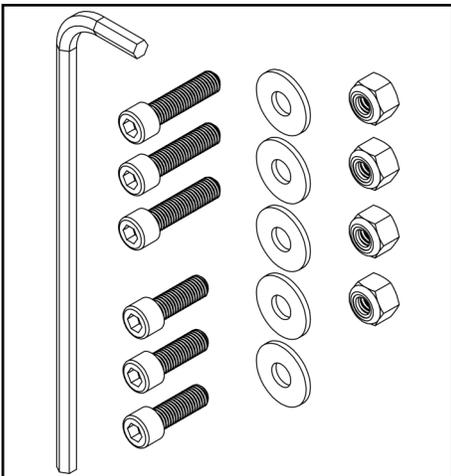
## Assembly Instructions (continued)

### Product Assembly (continued)



20. Place the shredder-hopper in the opening on the top of the lower-unit assembly.

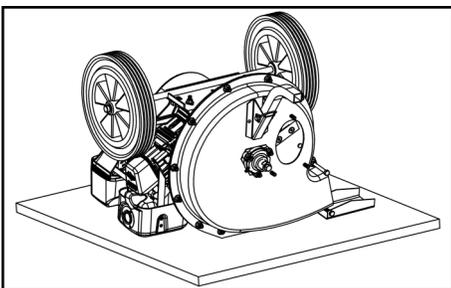
*Note: The handle on the hopper should be positioned to the rear of the chipper-shredder as shown.*



21. Locate the following items as shown:

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

*Note: The above includes one (1) spare for each of the parts b, c, and d.*



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

## Assembly Instructions (continued)

### Product Assembly (continued)

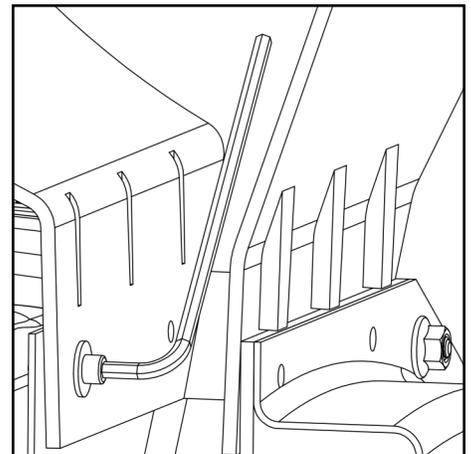
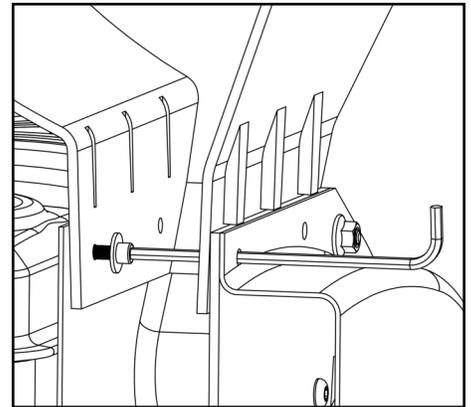
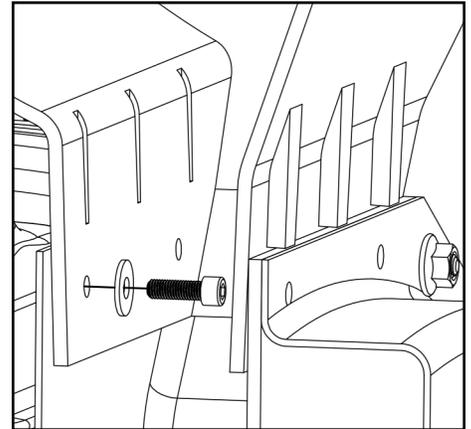
22. Place one (1) of the 1/4" flat washers onto one (1) of the 1/4" x 3/4" socket-head cap-screws. Carefully reach down through the top of the shredder-hopper and insert the screw with washer into one of the holes in the rear of the shredder-hopper, as shown, and hand tighten.

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

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 front of the hopper and fan-housing and into the head of 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.

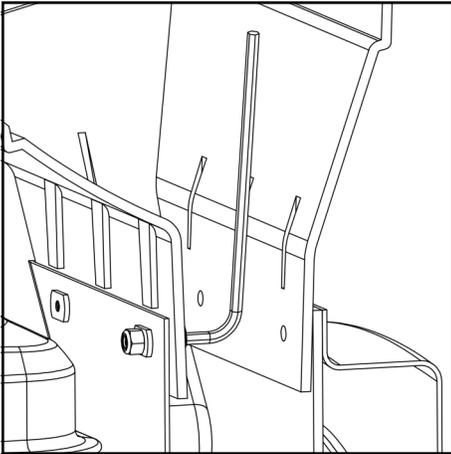
24. To finish tightening the screw, reach down through the top of the hopper and insert the short leg of the 3/16" Allen-wrench into the head of the screw. This orientation of the wrench provides much greater leverage, however movement of the wrench in the hopper is more restricted. Finish securely tightening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

Recommended torque: 6 - 8 ft-lb



## Assembly Instructions (continued)

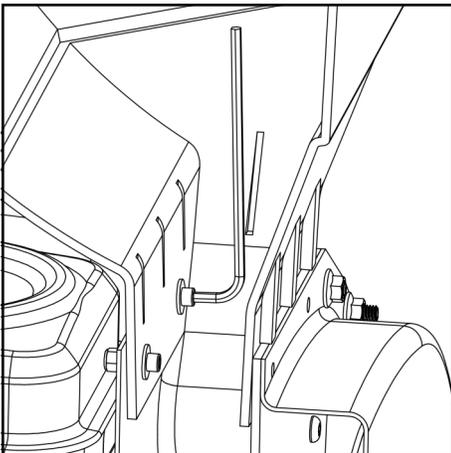
### Product Assembly (continued)



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

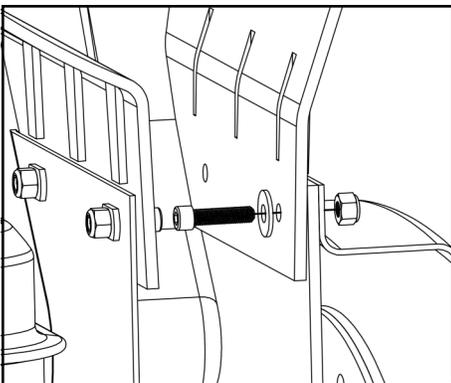
Recommended torque: 6 - 8 ft-lb

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



26. Repeat steps 22 through 25 for the second connection-point, in the rear of the shredder-hopper.

Recommended torque: 6 - 8 ft-lb



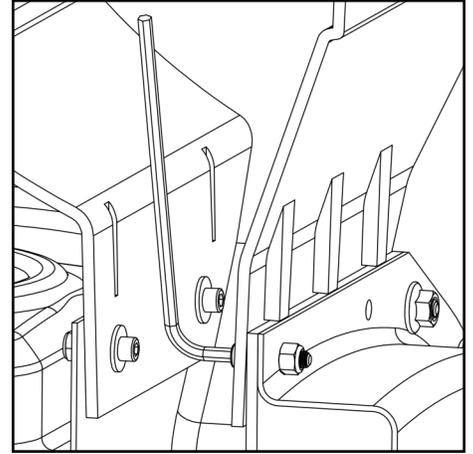
27. Place one (1) of the 1/4" flat washers onto one (1) of the 1/4" x 1" socket-head cap-screws. Carefully reach down through the top of the shredder-hopper and insert the screw, with washer, into one of the holes, in the front of the shredder-hopper, as shown. While holding the head of the screw, place one of the 1/4" nylon-insert lock-nuts onto the exposed-end, of the screw, and hand tighten.

## Assembly Instructions (continued)

### Product Assembly (continued)

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

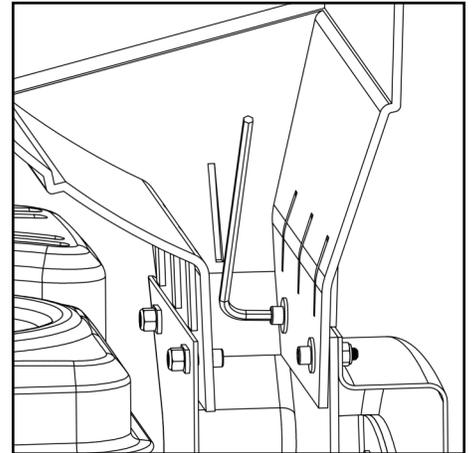
Recommended torque: 6 - 8 ft-lb



29. Repeat steps 27 and 28 for the second connection-point, in the front of the shredder-hopper.

Recommended torque: 6 - 8 ft-lb

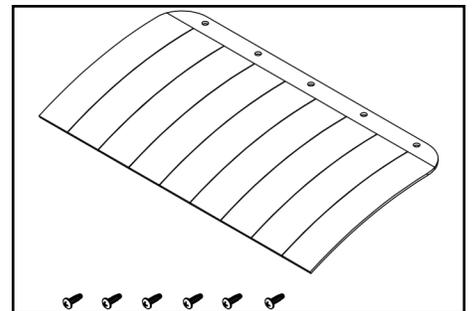
*Note: The hopper should not move, relative to the lower-unit assembly. If necessary, re-check tightness of all four (4) of the hopper attachment screws, installed in steps 22 thru 29 further.*



30. Locate the following items as shown:

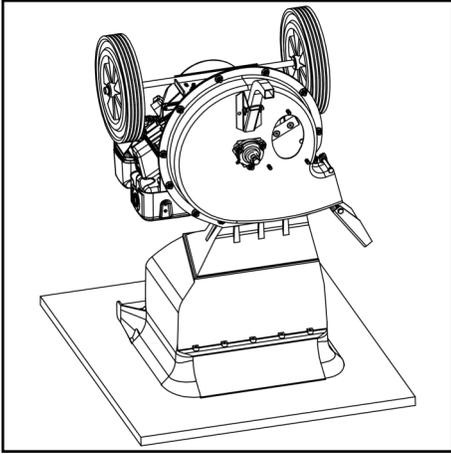
- a. One (1) – Hopper-guard
- b. Six (1) – Phillips-head self-tapping screws, #14 x 3/4"

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

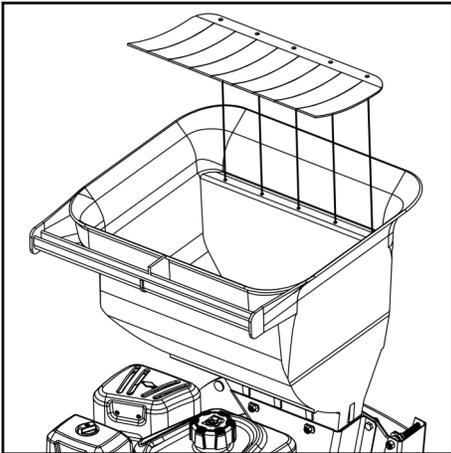


## Assembly Instructions (continued)

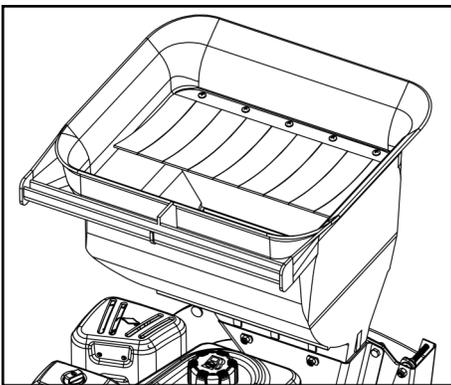
### Product Assembly (continued)



*Note: Be careful not to drop the hardware or tools into the lower-unit assembly, 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) of the #14 x 3/4" Phillips-head self-tapping screws 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 in the top of the hopper, keeping the free-ends of the guard 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 each of the five (5) screws.

## Assembly Instructions (continued)

### Product 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, in the chipper-shredder's fan-housing, as shown. Place one (1) of the 5/16" serrated flange-nuts 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, 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 each of 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.*

