

Customer Tools Required: (Fig. 1)

- A socket wrench (3/8 inch drive), with a 6-inch or longer extension bar
- 7/16, 1/2 and 3/4 inch sockets
- 1/2 inch box wrench. If you have a 8HP, 9HP or 10HP engine, you will need a second 1/2 inch wrench, either box or open-end type
- A 7/16 inch box or open wrench
- Jointed pliers
- Phillips head screw driver
- A small flat blade screwdriver (3/16 or 1/4 inch blade width)
- A wooden board, about 3 to 4 inches wide and about 2 feet long, or a 2-foot length of 2 x 4 lumber

Tools provided (depending on engine type): (Fig. 2)

- 5/16 inch hex-bit socket (if you have a 5HP, 5.5HP, 6HP, 6.5HP or 7HP engine)
- 3/8 inch hex-bit socket (if you have a 8HP, 9HP or 10HP engine)
- 3/16 inch ball-end hex wrench

Parts Supplied (depending on engine type): (Fig. 3)

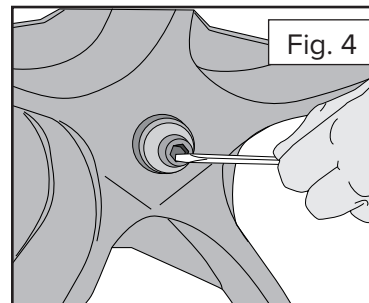
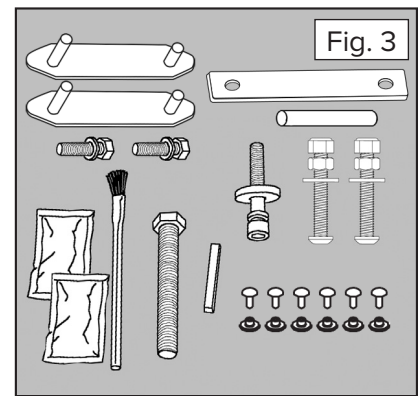
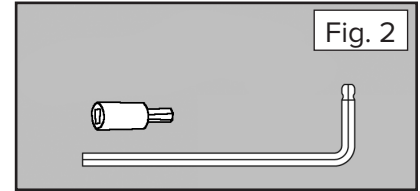
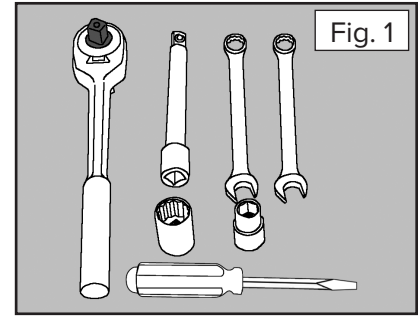
- Impeller bolt with lock washer and heavy washer
- 1/2-13 x 4 inch full threaded bolt (for use as an impeller puller, if needed)
- Shaft key for engine
- Packet of anti-seize grease (for engine shaft) and applicator brush
- 3/8 inch steel pin (used for removing impeller from engine shaft) for 8HP, 9HP or 10HP engine
- Button-head screws set of 2 with lock nuts and washers
- Packet of thread locker
- 6 or 7 new rear cover screws and nuts
- 1 or 2 gussets if you have an XL or Z-10
- Rear cover
- Heat shield (if you have a 8HP, 9HP or 10HP engine)
- Threaded Plate
- Two 5/16-24 fine thread bolts and lock washers

Disassemble The Blower Housing

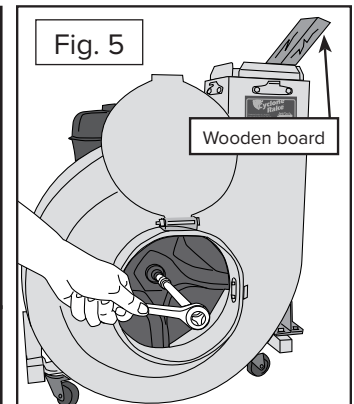
Step 1. Remove the impeller bolt:

IMPORTANT: Disconnect the spark plug wire on the engine.

- **Clean the impeller bolt hex socket thoroughly**, using the small blade screwdriver. You must remove **all dirt and debris** so that the hex-bit socket seats all the way to the bottom of the bolt head. See Fig. 4.
- Place the wooden board or 2x4 inside the blower exit chute to prevent impeller rotation.
- Use the hex-bit socket and extension bar to remove the impeller bolt. See Fig. 5.



Note: Thoroughly clean all debris from the impeller bolt hex socket before trying to remove the bolt.

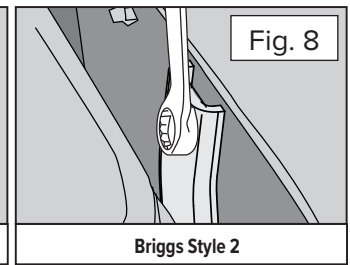
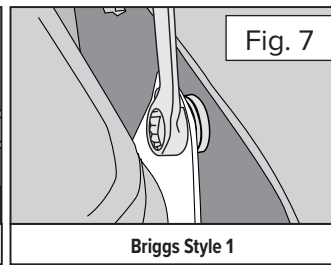
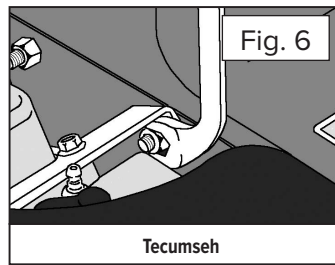


WARNING: Never use an L-shaped hex wrench to remove the impeller bolt. You will not get enough torque and risk stripping the bolt head. If you strip the bolt head, you will not be able to remove the engine.

Step 2. Remove the blower housing nut which connects the engine to the blower assembly

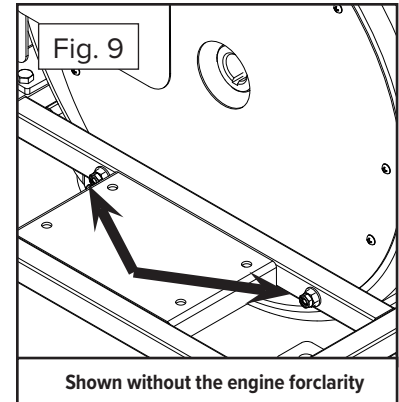
Note: Save the hardware as you go.

- There are several styles of bracket under the nut, depending on the engine being replaced, but the nut is the same for all. See Fig. 6, Fig. 7 & Fig. 8.
- Use the 1/2 inch box wrench to remove the nut.



Step 3. Remove the connecting screws

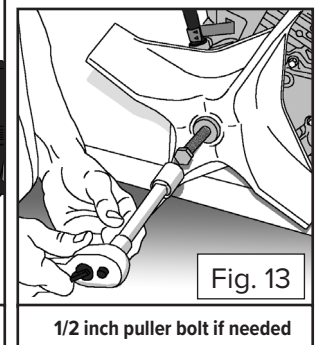
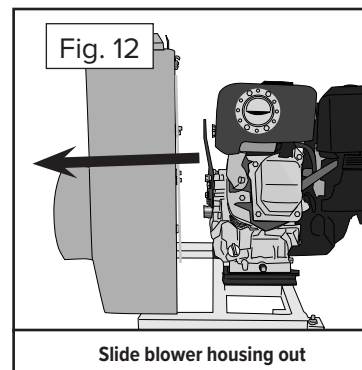
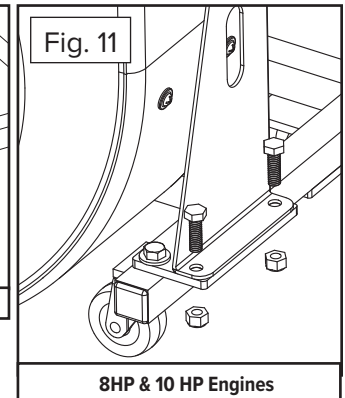
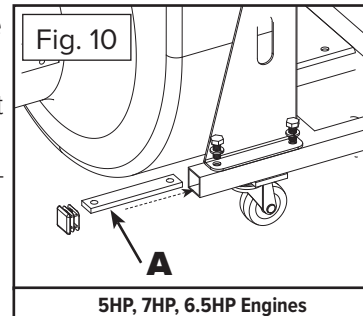
- Using a 1/2 inch socket and wrench remove the two 5/16 nylon lock nuts from each of the 5/16 screws that hold the blower housing to engine frame. See Fig. 9
- **(For 5-7 HP units)** Remove the blower support bracket by removing the 5/16-24 fine thread bolts and pop off the small white end cap, remove the treaded plate from the inside of the motor frame. **SAVE** these items for re-assembly. The housing should now be free from the engine frame. See Fig. 10.
- **(For 8-10 HP units)** Remove the support bracket from the support plate on the motor frame by removing the two 5/16-18 nuts and bolts. The housing should now be free from the engine frame. See Fig. 11.



Step 4. Remove the Blower Housing

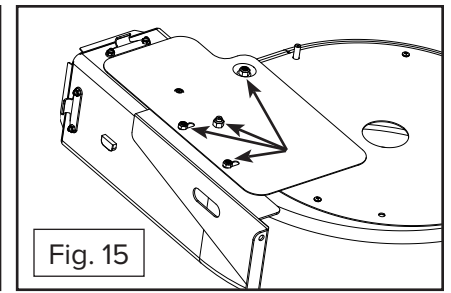
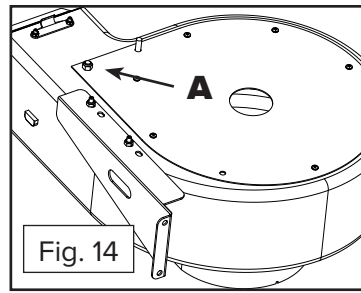
- Pull the blower housing away from the engine. See Fig. 12. The engine shaft should pull right out of the impeller. If necessary, reach inside the front of the blower to support the impeller while you pull out the engine. The impeller will stay inside the sealed blower housing.
- If the impeller does not pull out easily by hand: 8, 9 & 10 HP engines insert the 3/8 inch steel pin into the hole in the impeller hub, then screw in the 1/2-13 bolt. All others just use the 1/2-13 bolt. Use a 3/4 inch socket to tighten the bolt. It will act as a puller to remove the impeller. See Fig. 13.

TIP: Because the motor frame is on wheels, it is helpful to clamp one or two short lengths of 2x4 to your work bench so the frame does not roll around. This is especially helpful if you are doing a one-person job.



Step 5. Remove the rear cover (and heat shield)

- (For 5-7 HP units) Using a 1/2 inch wrench or socket remove the nylon lock nut (A). Then using a Phillips head screw driver, remove the 6 special screws holding the cover to the rear of the blower housing. See Fig. 14.
- (For 8-10 HP units) Using a 7/16 inch and a 1/2 inch wrench or socket, remove the 4 nylon lock nuts holding the heat shield. See Fig 15.
- Then using a 1/2 inch wrench or socket remove the nylon lock nuts (B). Then using a Phillips head screw driver, remove the 7 special screws holding the cover to the rear of the blower housing.



Step 7. Remove the impeller

- Remove the impeller and discard the old blower housing.

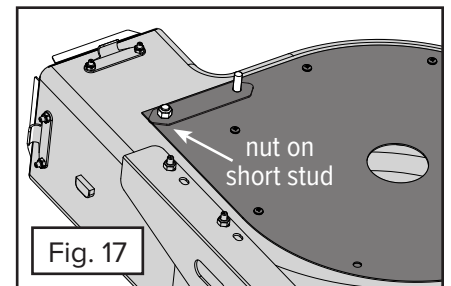
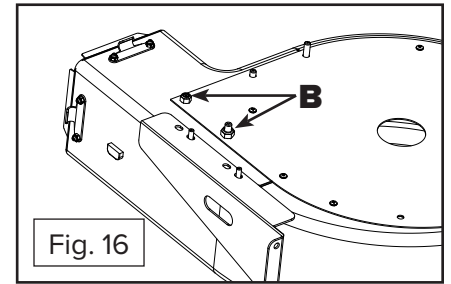
Assemble The New Blower Housing: 5-7HP

Step 1. Install your existing impeller

- Lay the new blower housing flat on the workbench with the back opening facing up.
- Push the 6 special nuts inside and up through the holes in the blower housing and use the use jointed pliers to firmly secure in place.
- Place your existing impeller into the back of the new blower housing.

Step 2. Install rear cover and gusset

- Place the new rear cover over the back of the blower housing and loosely install the 6 new special screws into the special nuts with the thread locker provided.
- Reach into the top of the blower housing with the rear gusset and install it inside the blower housing. Then secure the short stud with the 5/16-18 nylon lock nut. See Fig. 17
- Now, go around and securely tighten all 6 nuts and screws.



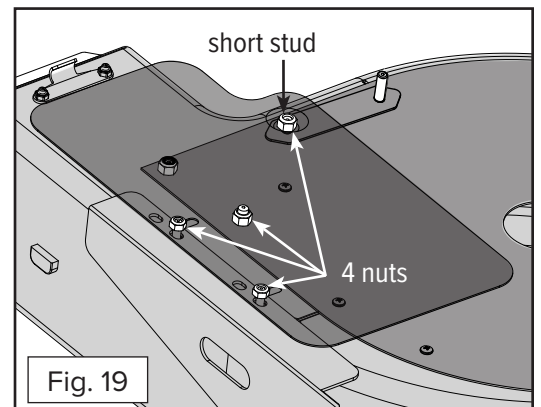
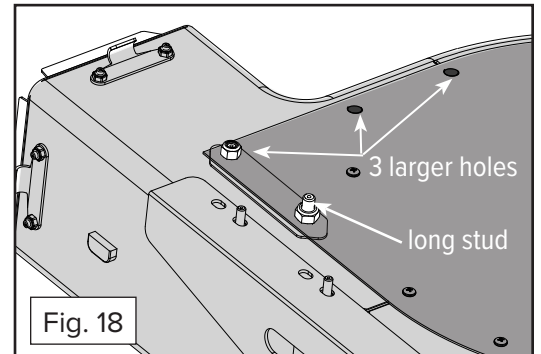
Assemble The New Blower Housing: 8-10HP

Step 1. Install your existing impeller

- Lay the new blower housing flat on the workbench with the back opening facing up.
- Push the 7 special nuts inside and up through the holes in the blower housing and use the use jointed pliers to firmly secure in place.
- Place your existing impeller into the back of the new blower housing.

Step 2. Install rear cover, gussets and heat shield

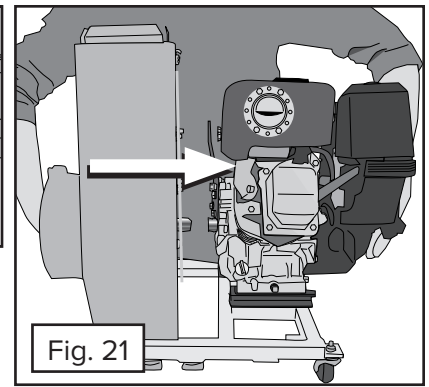
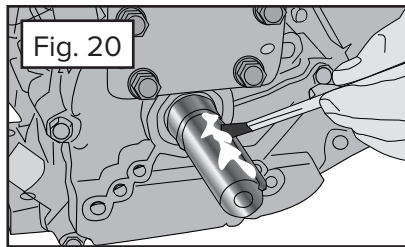
- Place new the rear cover over the back of the blower housing with the 3 larger hole at the top of the blower housing. Then loosely install the 7 new special screws into the special nuts with the thread locker provided.
- Reach into the top of the blower housing with one of the rear gussets and install it inside with the longer stud up and through the bottom hole. Then secure both studs with the 5/16-18 nylon lock nuts. See Fig. 18
- Now go around and securely tighten all 7 screws & nuts.
- Place the heat shield on top of the rear cover. Reach into the top of the blower housing with the second gusset and install it inside with the short stud up and through the heat shield. Then, secure the heat shield with 4 nylon lock nuts. See Fig. 19.



Attaching Impeller to the Engine

Step 1. Prepare the engine shaft

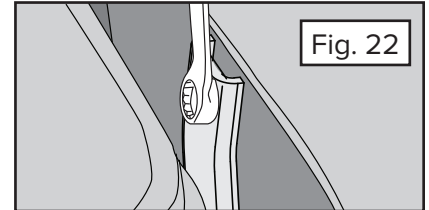
- Orient the new engine shaft so the key-way is on top. Gently pull the starter cord to rotate the shaft into position.
- Clean the shaft key-way with an old toothbrush or clean rag to remove all dust or grit from the key-way.
- Press the shaft key unto the key-way to seat it completely. You can tap it with a soft object, such as a screwdriver handle, if needed. **Do not tap it with a hammer!** If you nick the key, it will not fit the impeller hub.
- Open the pack of anti-seize grease and squeeze it onto the applicator brush. Coat the shaft and key completely with the grease. See Fig. 20.



Step 2. Mate the engine and impeller

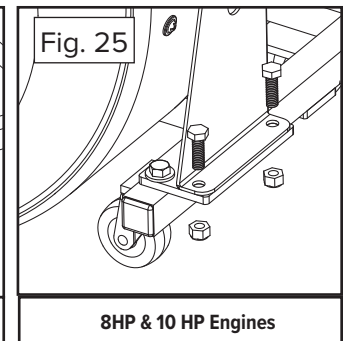
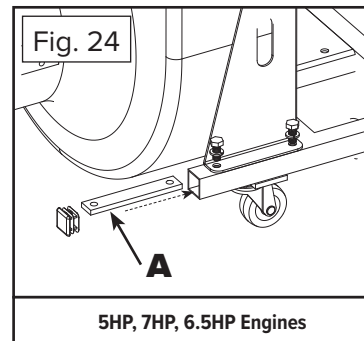
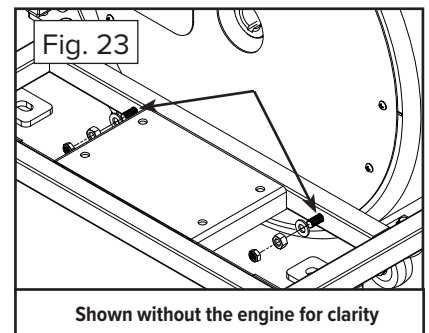
TIP: This can be done by one person. But it's a lot easier if you have a helper. The helper doesn't need any mechanical skill.

- Using one arm, reach through the front of the blower to grasp the impeller. Hold the impeller so the steel hub passes through the hole in the rear of the blower housing. With the other arm, slide the engine toward the impeller. Orient the slot in the impeller hub with the engine shaft key. Push the engine and impeller together gently so the engine shaft slides into the impeller. See Fig. 21.
- Be sure the hole in the engine bracket passes over the 5/16 inch threaded stud on the blower housing. Fig 22.



Step 3. Attach the blower housing to the engine frame

- Reach inside the blower housing and push the two button-head screws thru the blower housing and engine frame holes and install two 5/16 inch washers over the screws and attach with two 5/16 nylon lock nuts. Leave the nylon lock nuts finger-tight for now. Fig. 23.
- **(For 5-7 HP units)** Attach the support bracket directly to the leg of the motor frame using the threaded plate (A) and two 5/16-24 (fine thread) bolts and lock washers. Hold the threaded plate (A) inside the tube with your finger while starting the bolts. Then tighten the bolts firmly. Fig. 24.
- Tap the white plastic tube plug into the open end of the motor frame using a small hammer.
- **(For 8-10 HP units)** Attach the support bracket to the support plate on the engine frame by installing the two 5/16-18 nuts and bolts. See Fig. 25
- Using the ball-end hex wrench, reach inside the blower housing and insert the ball end into the button-head screws. Hold the screw heads fixed and tighten the nylon lock nuts on the outside. Tighten firmly. Fig. 26.

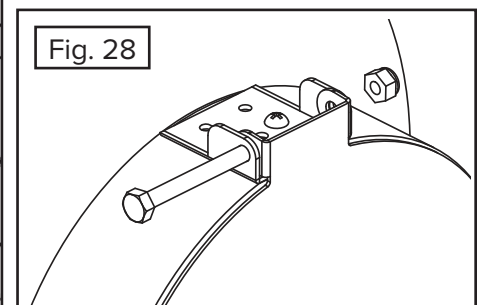
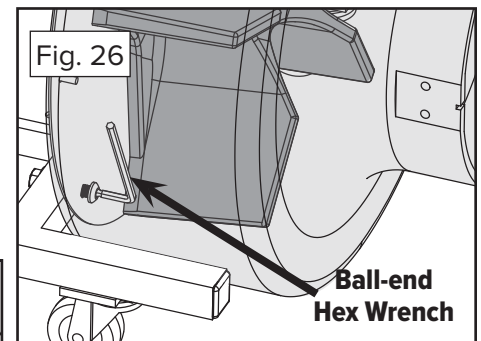
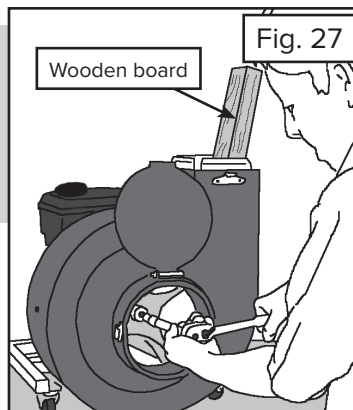


Step 4. Install the Impeller bolt and safety cover

- Place the wooden board back into the exit chute to prevent impeller rotation. Assemble the fan bolt with the lock washer and heavy washer into the impeller hub. Tighten firmly (approx 40 ft. lbs. of torque) with the ratchet wrench, extender bar and hex-bit socket. See Fig 27
- Install the safety cover on the inlet of the blower using the bolt and nylon lock nut provided. See Fig 28.

IMPORTANT:

Do not over-tighten the nut or bend the hinge bracket. The safety cover must swing loosely under its own weight for your protection. The nylon lock nut will never loosen, so there is no need to over-tighten it.



Step 5. Reconnect the spark plug wire.

That's it your done!