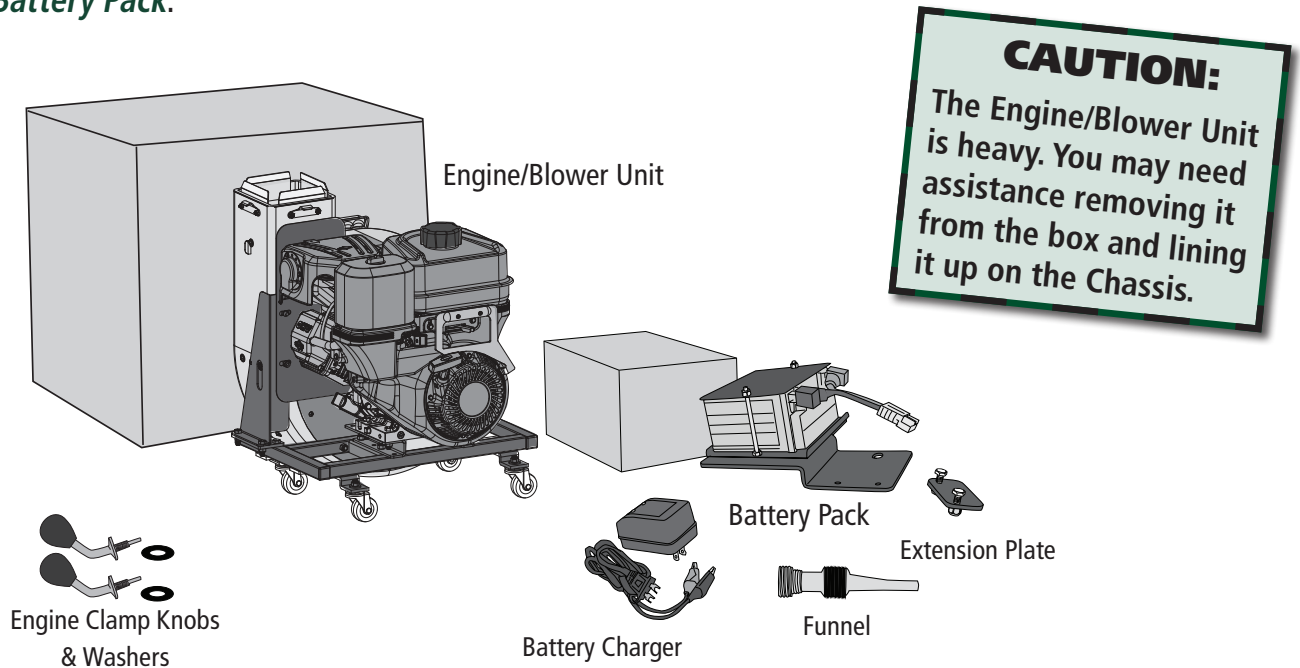


# ELECTRIC START ENGINE: ASSEMBLY & INSTALLATION

The **8 HP & 10 HP Electric Start Engine/Blower Unit** is on its own chassis with wheels. It's located in the box labeled **Engine/Blower Unit**. The Battery for the Electric Start Engine will be in its own box labeled **Battery Pack**.



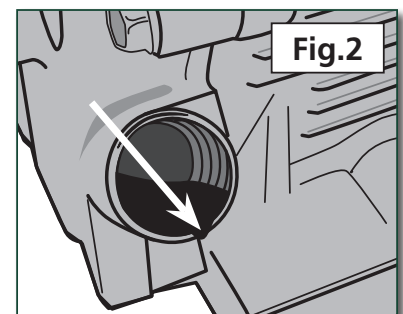
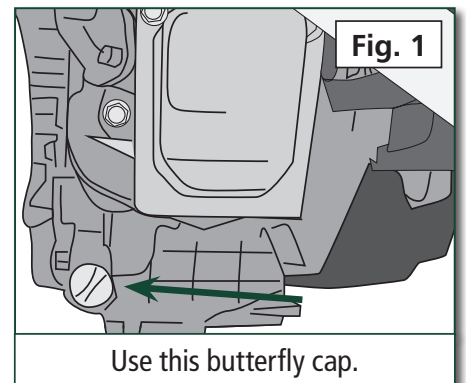
**INSTALLATION NOTE:** *The Engine/Blower Unit can be heavy. Use two people for this step if necessary.*

1. Remove the Engine/Blower Unit from the box using the handles on each side.

## FILL THE ENGINE WITH OIL: ELECTRIC START ENGINE ONLY

**IMPORTANT:** *DO NOT USE THE DIPSTICK on the butterfly plug to measure when filling the engine oil. It is hard to read when the oil is new, and you might over or under fill, resulting in engine damage. Instead, use this simple procedure:*

1. **(Fig. 1)** Locate the YELLOW plastic "butterfly" plug at the base of the engine, ***under the exhaust deflector***.
2. Remove the YELLOW butterfly plug and place a rag under the opening to catch any oil spills.
3. **(Fig. 2)** Using the small flexible funnel packed inside the Battery Pack box, slowly pour oil into the opening ***until the oil reaches the top of the butterfly hole***. (See chart on page 2 for recommended oils.)
4. Replace the butterfly plug and ***tighten firmly by hand***. Do not use a wrench or pliers as you might break the plug. Wipe up any oil spills.



## OIL CAPACITY:

- 8 HP Vanguard: 26-28 ounces
- 10 HP Vanguard: 26-28 ounces

### RECOMMENDED OIL CHART

The oil should be marked A.P.I. service "SF," "SG," "SH," "SJ" or higher.

Air Temperature	Type of Oil
Above 32° F . . . . .	SAE 30 or SAE 10W30 oil
Below 32° F . . . . .	SAE 5W30 or SAE 10W oil

*If synthetic oil is preferred 5W-30 is good in all temps  
SAE 10W40 is specifically not recommended.*

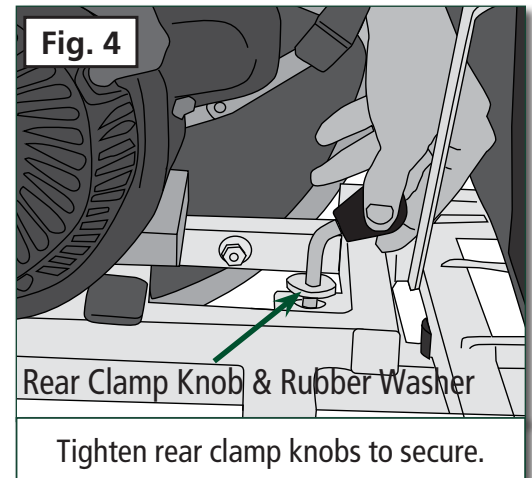
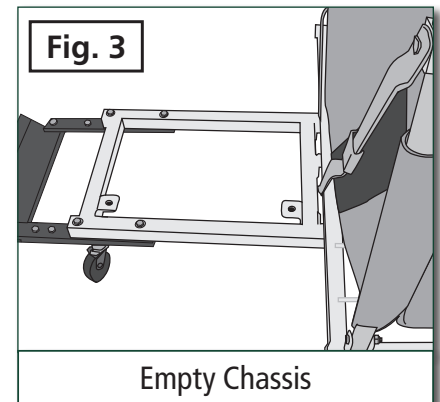
## MOUNTING THE ELECTRIC START ENGINE

**INSTALLATION NOTE:** *The Engine/Blower Unit is heavy.  
Use two people for this step if necessary.*

1. **(Fig. 3)** Lift the Engine/Blower Unit using the handles on each side and position it on the chassis in front of the collector. The blower inlet faces the same direction as your mower's discharge.

**INSTALLATION NOTE:** *Locate the two engine clamp knobs and rubber washers you removed from beneath the Chassis.*

2. **(Fig. 4)** Line up the mounting brackets on the front and rear of the Engine/Blower Unit over the threaded holes in the chassis. Then, install **ONLY the REAR Engine Clamp Knob and Rubber Washer**.



# ASSEMBLING & INSTALLING THE BATTERY PACK



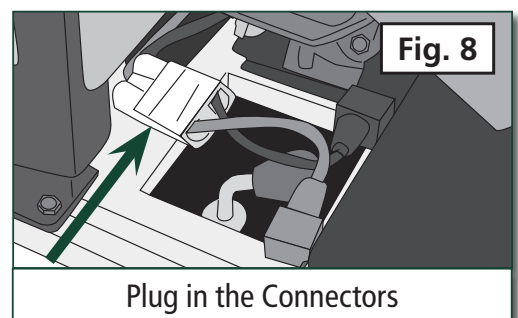
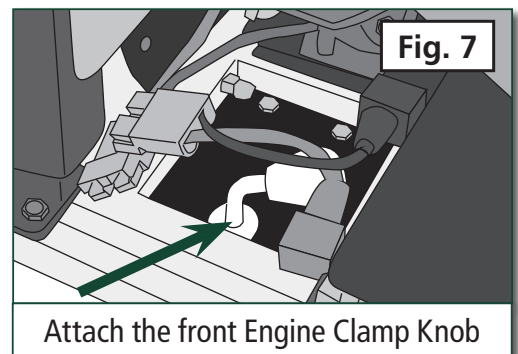
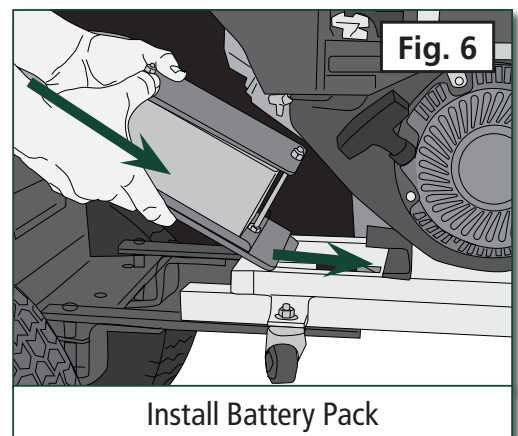
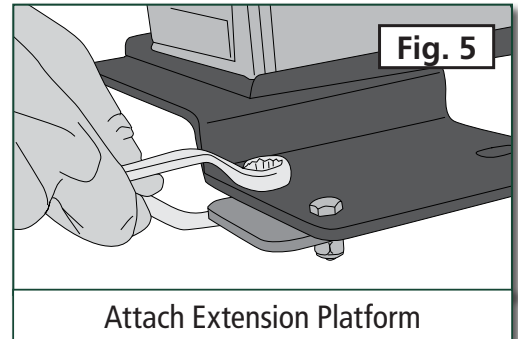
## WHERE TO FIND THE PARTS:

The battery, which is pre-installed onto the *Battery Platform*, and the *Platform Extension* with its hardware are all found inside the *Battery Pack Box*.

## TOOLS YOU'LL NEED:

- (2) 7/16" Wrenches
- 7/16" Socket

1. **(Fig. 5)** Attach the Platform Extension under the Battery Platform and secure it using two 1/4-20 x 3/4 bolts and nylon lock nuts. The bolts should be facing down as shown.
2. **(Fig. 6)** Install the Battery Pack by *sliding it down and under* in the direction shown. **Tip:** Wiggle the battery assemble slightly left to right to allow it to find its way.
3. **(Fig. 7)** Install the FRONT Engine Clamp Knob and Rubber Washer then tighten.
4. **(Fig. 8)** Plug the battery harness connector into the grey engine harness connector.



## WARNING:

When disconnecting the battery, grasp both halves of the grey connector and pull it apart. Do not pull by the wires or only one side of the connector.

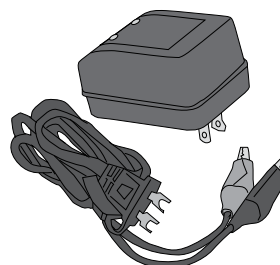
It may be difficult to disconnect, but this type of connector is required for carrying high current with no risk of shaking loose in operation.

Fortunately you should only have to do this once a season.

## CHARGING THE BATTERY

When you are not using the Cyclone Rake for extended periods (say a month or more), it is very important to connect the battery charger. Failure to do so may result in a dead and un-chargeable battery.

*Use only the battery charger supplied with the unit. It is microprocessor controlled to maintain the battery without overcharging.*



# STARTING THE ELECTRIC START ENGINE

**WARNING:** Never start engine until the Cyclone Rake is completely assembled, the engine unit is firmly bolted to the chassis, the chassis is attached to your mower and all hoses and couplings are in place.

Be sure the engine has sufficient oil before starting. Be sure the fuel tank has only *clean, fresh, unleaded regular gasoline* and that the gas cap is firmly secured to prevent spillage. Wipe up any gasoline spills before starting.

**IMPORTANT:** If you are not going to use the engine for 30 days or more, always add fuel stabilizer per Briggs & Stratton's instructions. This is available at any hardware store or in our Engine Maintenance Kit. For further details refer to your Briggs & Stratton® Operating and Maintenance Manual.

1. **(Fig. 1)** Push the red fuel shut-off lever on the front of the engine to the "ON" position.
2. **(Fig. 1)** Slide the throttle control lever *all the way to the right (rabbit)* for full throttle.
3. **(Fig. 2)** Move the grey choke lever to the *left, or Full Choke* position. Turn the key.
4. As the engine warms up, move the choke lever right to the *No Choke* position.

**NOTE:** When restarting a warm engine, use of the choke may not be necessary.

5. The engine should always run at full throttle during use.

For more information on the engine, refer to the Briggs & Stratton® Operating and Maintenance Instructions provided with your Cyclone Rake.

## STOPPING THE ENGINE

**(Fig. 3)** To stop the engine, idle down your engine using the throttle lever **(Fig. 3)** for 15-30 seconds *before* moving the red fuel shut-off lever to the "OFF" position and *remove key*.

