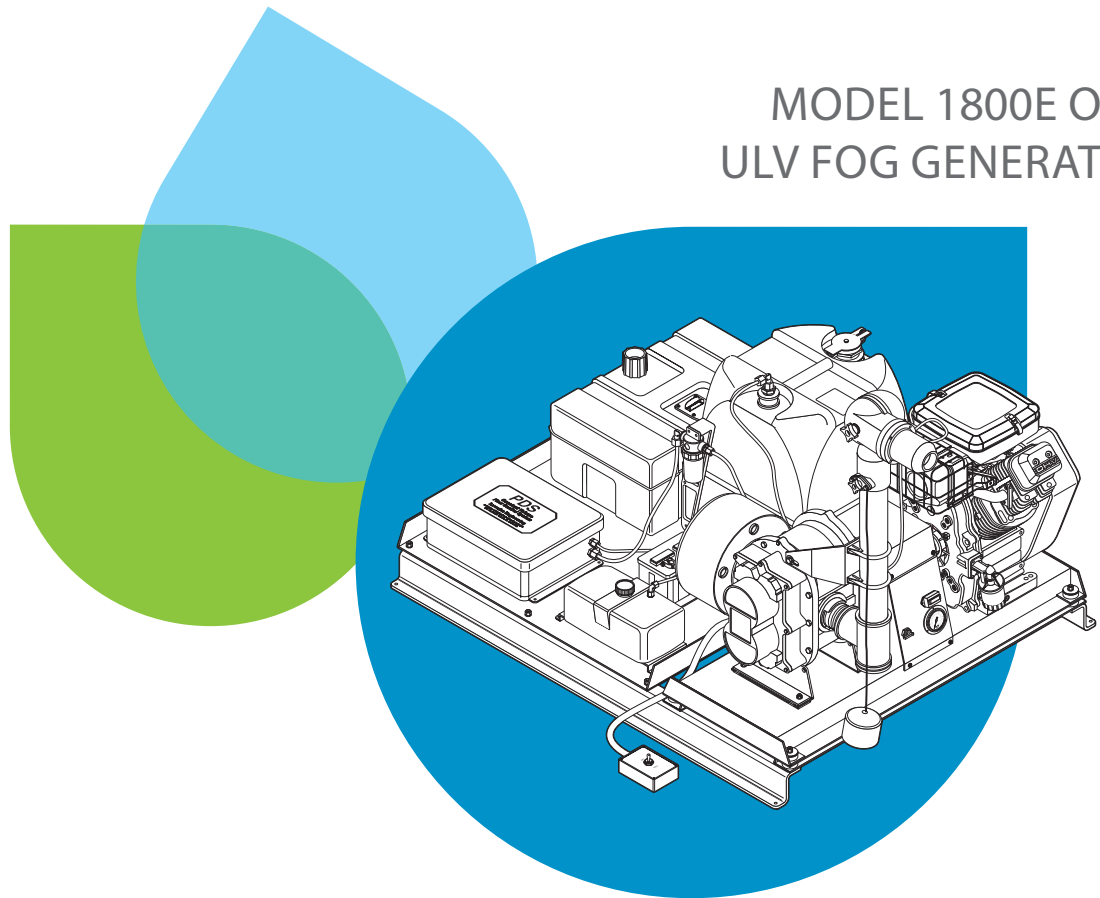




# INSTRUCTION MANUAL AND PARTS LIST

MODEL 1800E OHV  
ULV FOG GENERATOR





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## MODEL 1800E OHV

## Warranty Information

Clarke Mosquito Control Products, Inc. (CMCP) warrants that during the first year following the purchase of CMCP manufactured products or equipment, such products or equipment will perform in accordance with the instruction manuals when properly installed, operated and maintained. During the warranty period, CMCP's sole obligation and liability shall be at CMCP's option to:

A. Replace or repair defective parts (including, at CMCP's option, replacement of the entire unit) so that the unit will perform in accordance with the instruction manual.

OR

B. Refund the applicable payment upon return of the product.

Products requiring examination or repair under warranty must be returned postage/freight prepaid to CMCP in Roselle, IL. Examination and /or repair at locations other than the factory shall only be done upon authorization of CMCP and by persons approved by CMCP.

Components and accessories with electronic circuitry will carry the same warranty as the CMCP machines provided

they are installed at the factory or by an authorized factory representative. Field installations, modifications and /or the addition of other devices to CMCP circuitry void this warranty. Aftermarket electronic items and parts such as "chips", "processors", etc. are not eligible for return, credit or warranty once the shipping package has been opened.

This limited warranty does not cover components or parts covered by warranties of other manufactures.

This limited warranty specifically excludes the cost of labor to customers or to other parties connected with the examination and /or repair of warranted products.

EXCEPT AS NOTED ABOVE, NO OTHER WARRANTY IS EXPRESSED, AND NONE SHALL BE IMPLIED, INCLUDING SPECIFICALLY ANY WARRANTY OF MERCHANTABILITY OF WARRANTY OF FITNESS FOR USE OR FOR A PARTICULAR PURPOSE. EXCEPT FOR THE FOREGOING, CMCP SHALL HAVE NO LIABILITY TO CUSTOMER OR OTHER PARTY OR ANY GENERAL, SPECIAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE FAILURE OF THE PRODUCT(S) TO PERFORM AS WARRANTED, OF FOR ANY REASON.

THIS IS THE TOTAL EXTENT OF THE WARRANTY.

# SPECIFICATIONS

## MODEL 1800E OHV

### LECO 1800E OHV Specifications Engine

Manual Issue: LECO 1800E OHV 12/05

Engine	18 HP Briggs and Stratton (570 cc)
Blower	Roots (350 CFM)
Fuel	Gasoline Min Octane Fuel
Tank Capacity	12 gallons (34.2 liters)
Flush Tank Capacity	1 gallon (3.8 liters)
Insecticide Tank Capacity	15 gallons (56.7 liters)
Droplet Size	90% less than 20 Microns
Flow Rate	Up to 18 oz/min (532.26 ml/min)*
Mounting Area	48" (121.9 cm) x 39" (99.0 cm)
Net Weight (Empty)	475 pounds (215 kilos)
Shipping Weight	528 pounds (242 kilos)
Shipping Cube	60.5 feet (1.71 meters)

\* With standard 1/4" Piston. Larger pump heads available with flow rates up to 77 oz/min (2277 ml/min).

THIS MANUAL IS FOR MY LECO COLD AEROSOL FOG  
GENERATOR - Model 1800E OHV

SERIAL NUMBER \_\_\_\_\_

THE ABOVE INFORMATION, WHICH CAN BE FOUND ON THE CHASSIS,  
SHOULD BE FILLED IN. YOUR PROMPT ATTENTION TO THIS MATTER WILL  
MAKE IT CONVENIENT FOR YOU IN THE FUTURE, AS THIS INFORMATION  
MUST BE GIVEN WHEN ORDERING PARTS.

Every effort has been made to make this manual as complete as possible so that it will provide maximum assistance in operating and maintaining your LECO 1800E OHV Cold Aerosol Fog Generator.

## MODEL 1800E OHV

This manual is divided generally into two sections - Operating and Maintenance Section and Illustrated Parts Section.

The Operating and Maintenance Section contains complete instructions for assembling, installing, operating and maintaining your LECO 1800E OHV Cold Aerosol Fog Generator. No difficulty should be encountered in following them.

Before attempting to start your unit the first time, study the complete Operation Instructions carefully and identify all parts referred to. You will find that the operation of your LECO 1800E OHV Cold Aerosol Fog Generator is a simple matter. However, like all mechanical equipment, your unit requires a certain amount of maintenance.

The Maintenance Instructions will enable your LECO 1800E OHV Cold Aerosol Fog Generator to give you continuous and trouble-free service. It is highly recommended that some system be established to assure the performance of this maintenance as its importance cannot be over-emphasized.

Although, with proper maintenance, your unit should operate indefinitely without any trouble, there might come a time when trouble does develop. For such an occasion, a complete Trouble Shooting Section has been prepared and included in this manual.

The Illustrated Parts Section of the manual is made up of exploded views and parts list. Every part of the unit is illustrated and identified with a part number. Always order parts by part number, description and the serial number of your unit.

 **WARNING**

THIS LECO 1800E OHV COLD AEROSOL FOG GENERATOR IS MANUFACTURED AND SOLD FOR USE ONLY WITH INSECTICIDES WHICH HAVE BEEN DULY REGISTRATED AND APPROVED. DO NOT EXCEED THE DOSAGE SET FORTH ON THE REGISTRATION LABEL OF THE INSECTICIDE TO BE USED.

USE OF UNAPPROVED INSECTICIDES AND OR DOSAGE MAY BE HAZARDOUS

 **IMPORTANT**

ONLY QUALIFIED PERSONNEL SHOULD OPERATE THE LECO 1800E OHV FOG GENERATOR.

 **WARNING**

ALL SPRAY SWITCHES MUST BE IN THE "OFF" POSITION BEFORE THE IGNITION SWITCH IS TURNED ON.

**SAFETY SUMMARY**

1. **WARNING:** Observe all safety precautions set forth on the registration lable of the insecticide to be used.
2. **WARNING:** Never operate the fog generator in an enclosed area unless the exhaust gases are piped to the outside. Exhaust gases contain carbon monoxide, which is colorless, odorless and poisonous gas.
3. **WARNING:** Do not fill the fuel tank while the engine is in operation. Gasoline spilled on a hot engine may explode and cause serious injury to personnel.
4. **WARNING:** Do not attempt repairs in the insecticide system without protection until the system has been thoroughly flushed with a flushing solution for the insecticide used.



## MODEL 1800E OHV

This manual provides the description, theory of operation, assembling instructions, mounting instructions, operation instructions, calibration instructions, maintenance instructions and illustrated parts breakdown for the LECO 1800E OHV Cold Aerosol Fog Generator for Ultra Low Volume (ULV) application of insecticide.

## Description

The LECO 1800E OHV Cold Aerosol Fog Generator consist of an engine with a fuel tank, a rotary blower capable of developing 10 P.S.I. maximum pressure, an adjustable discharge nozzle head assembly, a flow control, an insecticide tank, a flush tank, a remote cab flow control switch and a filter-silencer with a stainless steel element.

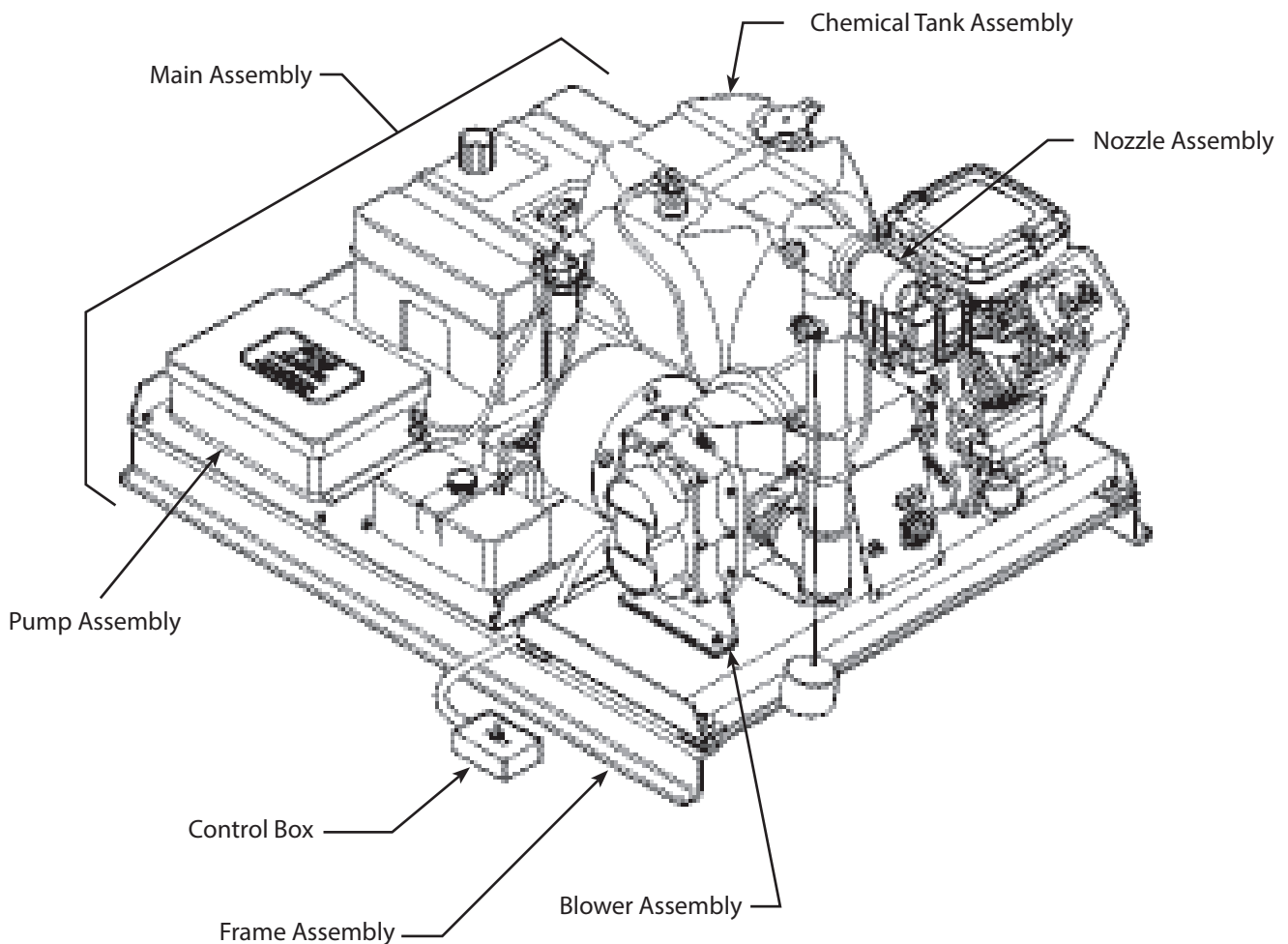


Figure 1 - Main Assembly

### Theory of Operations

The LECO 1800E OHV Cold Aerosol Fog Generator is designed for precision metering of concentrated insecticide through the discharge nozzle head. Any desired flow rate, within limits, can be easily set on the flow rate scale. When fogging, the concentrated insecticide is drawn from the insecticide tank and pumped at the preset rate with constant, even flow to the discharge nozzle head where it is sheared into optimum size droplets by the air blast from the blower and dispersed into the atmosphere. After dispersal, the droplets stay suspended in the air and drift with prevailing winds to insect infested areas. The optimum size of a particular insecticide is defined on the registration label for that insecticide and can be controlled by varying either the nozzle air pressure, the insecticide flow rate or both. Changing the speed of the engine will vary the nozzle air pressure. Slowing down the engine decreases the pressure which increases the droplet size because of less shearing action and conversely, speeding the engine up increases the pressure which decreases the droplet size for a particular flow rate. The correct flow rate will be defined on the registration label for that insecticide. As stated above, the flow rate also affects the droplet size. The droplet size tends to increase as the flow rate increases. Optimum size droplets must be maintained and should be checked periodically by an authorized person.

### Particle Size

The air pressure at the nozzle and the volume of the chemical flow changes particle size. Particle size is specified on the label of the insecticide for that insecticide. This is a part of the label and a part of the legal use of that insecticide.

It is the responsibility of the user of the equipment and the insecticide to determine that the particle size developed by the ULV Cold Aerosol Fog Generator he is using is proper for the chemical that is being used. That is the law.

Insecticide labels discuss the determination of particle size and the suppliers of the insecticide should be equipped to measure, or help you measure, the particle size produced by your ULV Cold Aerosol Fog Generator. The ULV Cold Aerosol Fog Generator should not be operated unless the required particle size is known and measured.

Clarke Engineering Technologies, Inc. can not tell you what air pressure to use with a particular insecticide to get the particle size required by the label. There are too many variables involved, such as chemical mixture, flow rate and the temperature of the insecticide.

Your Clarke representative or distributor can work with you to be sure you are producing the correct particle size for the insecticide used.

## MODEL 1800E OHV

### Assembly Instructions

The LECO 1800E OHV Cold Aerosol Fog Generator is shipped completely assembled with the exception that no battery is furnished. The customer must furnish the 12-volt battery. Also, the Remote Control Station needs to be plugged into the socket located on the machine,

see Figure 2. The plug is polarized and can only be inserted in one position. Be sure to hand tighten the knurled locking cap onto the socket.

Connect the battery cables with the ground cable on the negative post. Any group number 22NF battery will fit the battery box.

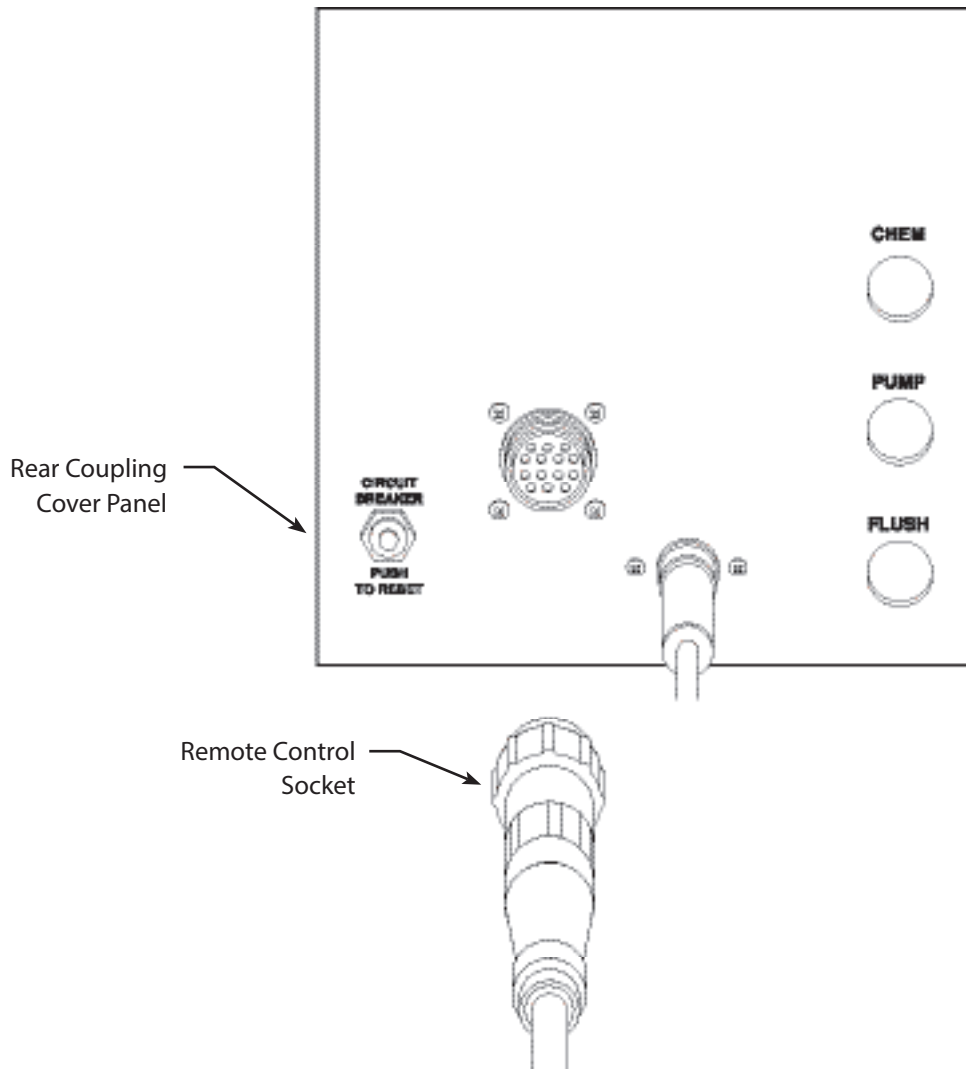


Figure 2 - Remote Control Station

# MOUNTING INSTRUCTIONS

MODEL 1800E OHV

## Mounting Instructions

In order to eliminate vibration and excessive cab noise, the LECO 1800E OHV Cold Aerosol Fog Generator should be bolted to the bed of the vehicle. Position the fog generator so that the nozzle is located towards the rear

of the vehicle and all switches are easily accessible. Make sure that the fog generator is located where the insecticide tank can be easily filled. With the fog generator in the correct location, simply drill holes through the holes in the Z-base rails and fasten the fog generator to the bed with plated bolts.

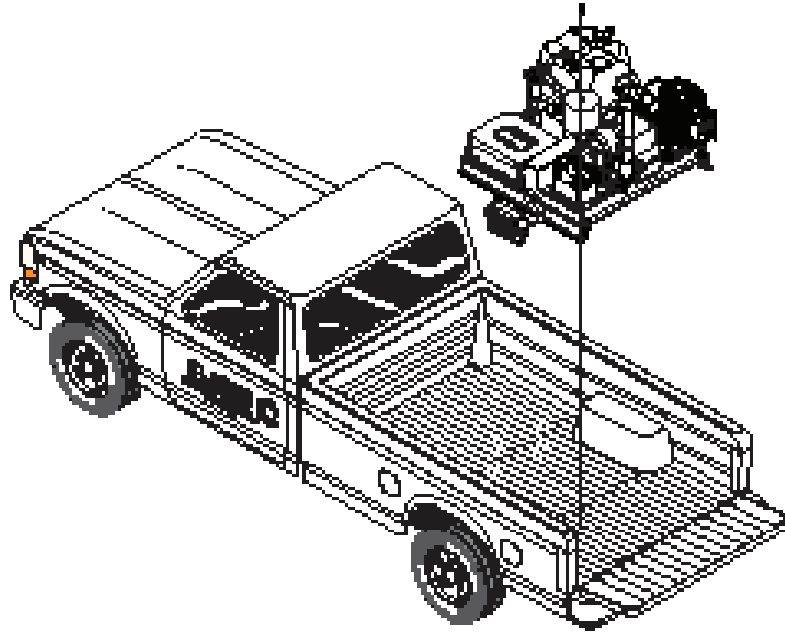


Figure 3 - Mounting to a Vehicle

NOTE: Hearing protection must be worn when outside the vehicle in close proximity with the Clarke Cougar Cold Aerosol Fog Generator Cold Aerosol Fog Generator when it is running.



NOTE: Hearing protection must be worn when outside the vehicle in close proximity with the LECO 1800E OHV COLD AEROSOL FOG GENERATOR Cold Aerosol Fog Generator when it is running.

## MODEL 1800E OHV

### Remote Control Station

The Remote Control Box contains the SPRAY switch, which turns the spray or flush on and connects to the LECO 1800E OHV Cold Aerosol Fog Generator through a two-wire cable. Mount the small enclosure in the cab

of the vehicle in a convenient location. Route the cable back to the LECO 1800E OHV Cold Aerosol Fog Generator in a way that affords protection against cutting and snagging. Plug the cable in and hand tighten the knurled locking cap onto the socket.



Figure 4 - Remote Control Station

### Operating Instructions

Read this complete Operation section before starting the LECO 1800E OHV Cold Aerosol Fog Generator.

When operating the LECO 1800E OHV Cold Aerosol Fog Generator for the first time, move to an uncongested and well-ventilated work area in an open area away from flammable materials.

#### Pre-Start

1. Make sure that all switches are in the OFF position.
2. Verify that the battery cable connections are correct and tight. This is a negative ground system.
3. Verify that no foreign objects or tools have been left in or about the fog generator.
4. Check the oil in the engine. If necessary, add oil until the level reaches the mark on the dipstick. The engine manual supplied with the Fog Generator will advise the correct oil to use. Reference Figure 5.
5. Check the oil and lubrication levels on the blower. See the LUBRICATION section on page 25 and page 26.
6. Fill the gasoline tank. Reference Figure 5.

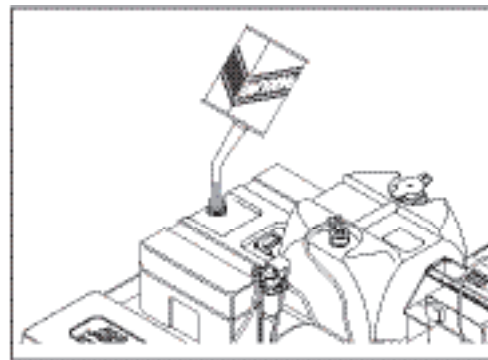
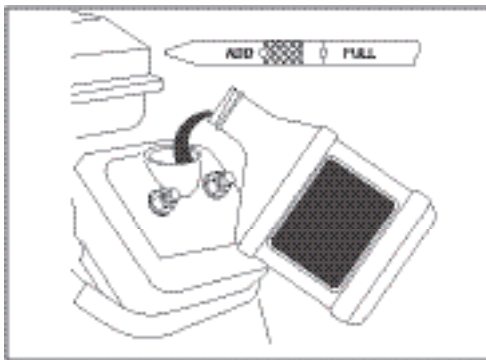


Figure 5 - Fill engine Oil and Gasoline Tank

## MODEL 1800E OHV

7. Service the insecticide tank with the appropriate insecticide. Always use a funnel with a strainer screen when adding insecticide to the tank. Reference Figure 6.
8. Place flushing solution in the flush tank. Reference Figure 6.

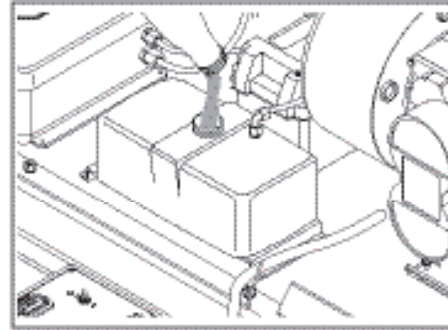
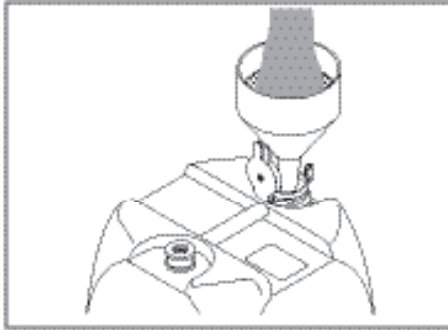


Figure 6 - Filling Insecticide Tank and Flush Tank

9. Verify that the Remote Control Box is within easy reach of the operator.
10. Verify that the nozzle is in the correct position for spraying. The nozzle is adjustable both horizontally and vertically. To rotate the nozzle, loosen the appropriate knob on the side of the mast or side of the nozzle head and rotate the nozzle. Retighten the knobs after adjustment. Reference Figure 7.

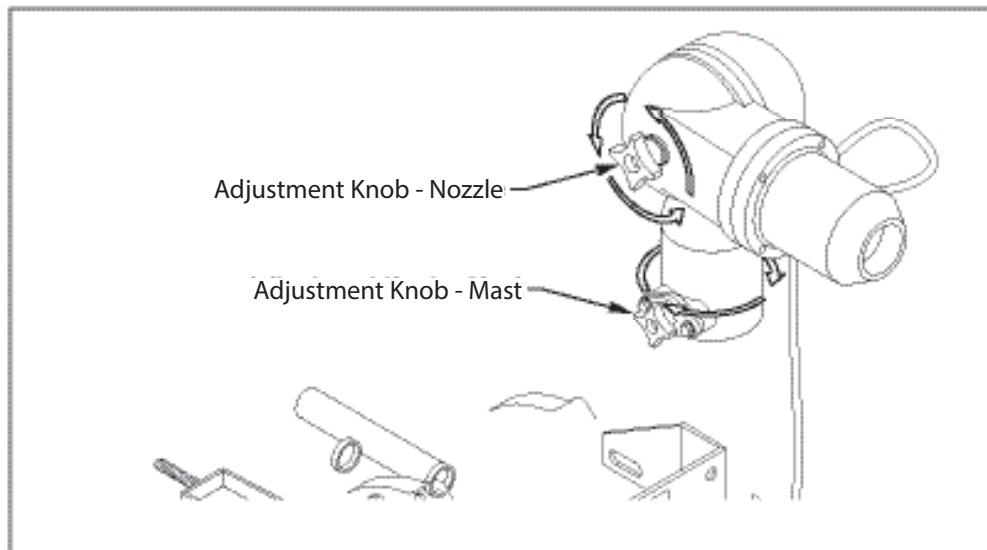


Figure 7 - Nozzle Position

### Spray/Flush Valve

The LECO 1800E OHV Cold Aerosol Fog Generator is equipped with a manual Spray/Flush valve that connects either the insecticide or flush solution to the nozzle. This valve is located next to the pressure gauge on the fog

generator. Moving this valve to SPRAY connects the insecticide tank to the nozzle. Moving this valve to FLUSH connects the flush tank to the nozzle. When the Spray switch is turned on, either the insecticide or flush solution will be sprayed from the nozzle. Reference Figure 8.

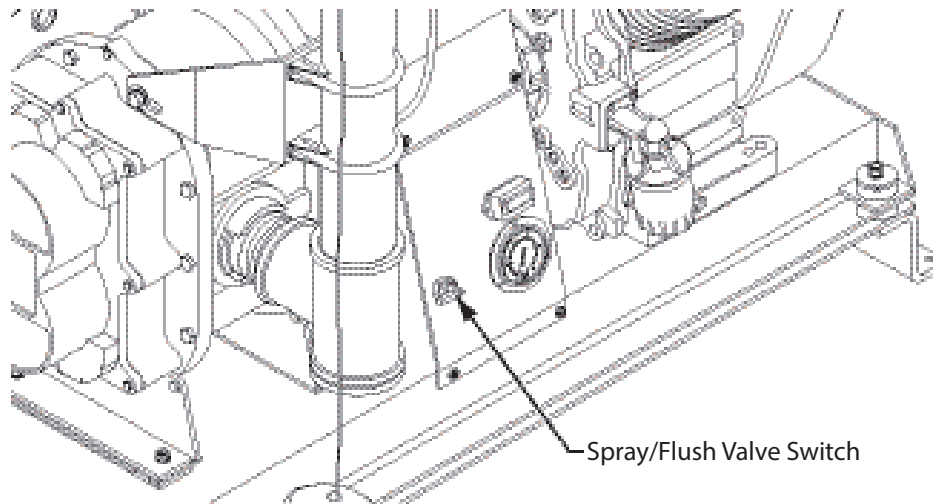


Figure 8 - Spray/Flush Valve



## MODEL 1800E OHV

## Start-Up

1. On the Remote Control Box, set the Spray ON/OFF switch to the OFF position. Reference Figure 4.
2. Set the Spray/Flush valve to SPRAY. Reference Figure 8 on page 12.
3. For a cold engine, choke the engine, turn key or pull start until the engine fires.
4. For a hot engine, turn key or pull start until the engine fires.
5. When the engine fires, release the engine choke

NOTE: Using short cranking cycles of several seconds provides the best starter life. Prolonged cranking can damage the starter motor if cranked more than 15 seconds per minutes.

The unit is equipped with a glycerin filled pressure gauge to read the nozzle air pressure and is mounted on the fog generator coupling guard between the engine and blower. Reference Figure 9.

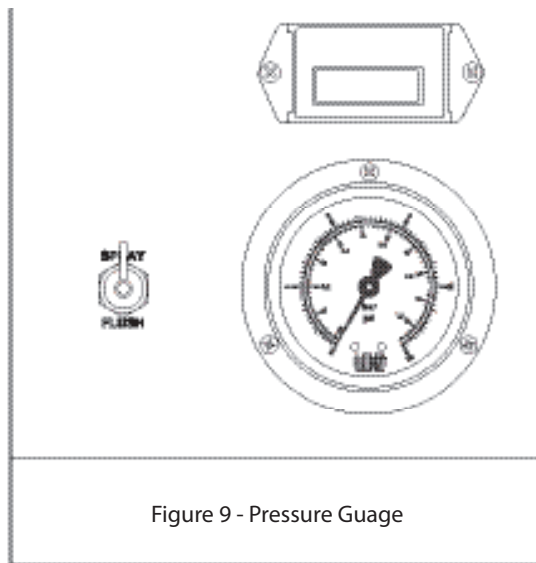


Figure 9 - Pressure Gauge

### Adjusting the Nozzle Air Pressure

Nozzle air pressure is one of the main criteria for good particle size. Changing the speed of the engine adjusts this pressure. The nozzle air pressure can be adjusted by checking the pressure gauge as the engine speed

is increased or decreased using the large silver hex nut under the carburetor air filter. This large hex nut adjusts the governor control and should be turned in small amount only after the engine has reached normal operation temperature. Reference Figure 10.

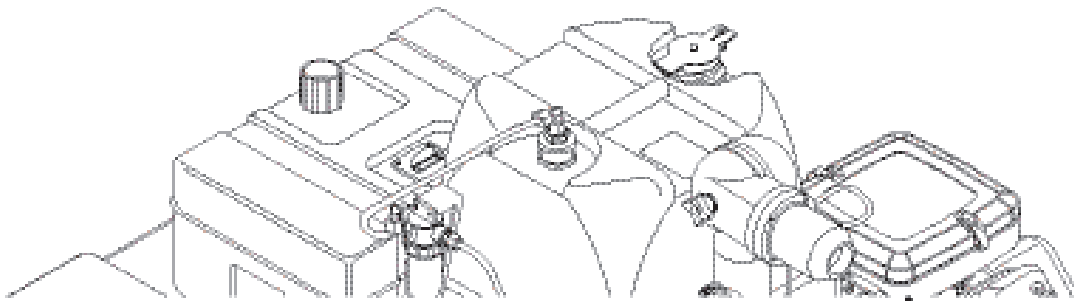
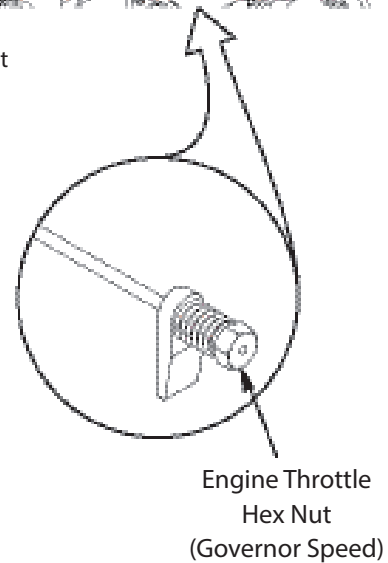


Figure 10 - Throttle Hex Nut



## MODEL 1800E OHV

### Setting the Flow Rate

The LECO 1800E OHV Cold Aerosol Fog Generator is equipped with the CLARKE PDS Flow Control. The angular deflection of the cylinder of the pump with respect to the zero point on the calibration scale of the pump controls the flow rate and direction. With the cylinder pointer at 10 on the rear scale, fluid will be passed from the front port to the rear port at 100% on the maximum rated volume. With the pointer at 10 on the front scale, fluid will pass from the rear port to the front port at a maximum rate. Set at 5 on the scale, flow rate will be 50% of maximum; at 4, it will be 40% etc. The flow rate control setting may be changed at any time while the pump is operating or idle. Since the insecticide flows only in one direction, use only the half of the pointer scale numbers from 0 to

10 nearest the pump outlet port. The other half of the pump scale reverses the pumping direction. In other words, for positive flow, always move the pointer in the direction of the pump outlet port.

To set the flow rate, do the following:

1. Open the cover of the flow control box. Reference Figure 11.

2. Loosen the pump pointer locking plate by loosening the two round knurled knobs, one on each side of the locking plate. Loosen only enough to move the pointer. The pointer should be moved against a slight pressure. Reference Figure 12 on page 16.
3. Turn the black knob on the side of the pump to increase or decrease the flow setting. The flow scale is an arbitrary scale and is marked from 0-10(zero to ten), which represents 0-100% of flow rate. Reference Figure 12 on page 16.
4. Set the flow rate by following the instructions in the CALIBRATION section on page 18. The correct flow rate, along with correct nozzle pressure, is one of the main criteria for good particle size.

Always retighten the round knobs before checking the flow rate, as a loose pointer will affect the pump accuracy.

This procedure is necessary only on the initial setting of a flow rate.

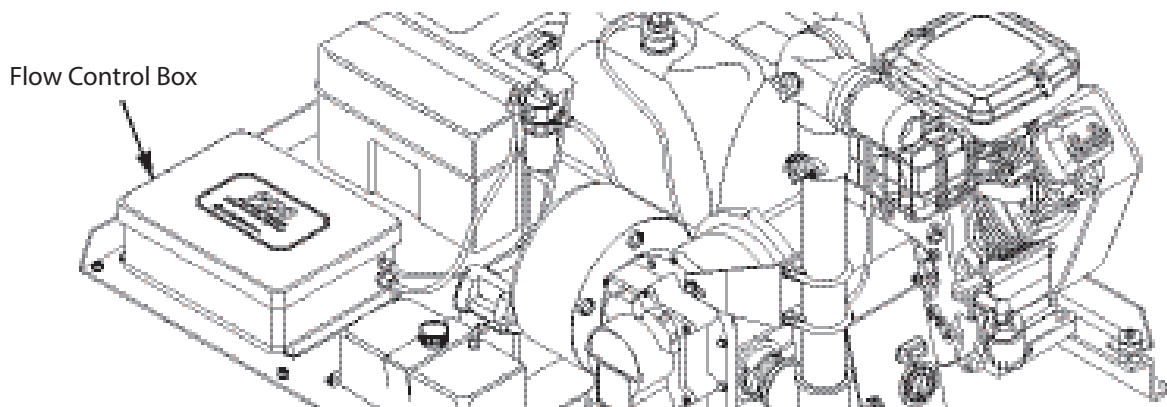


Figure 11 - Flow Control Box

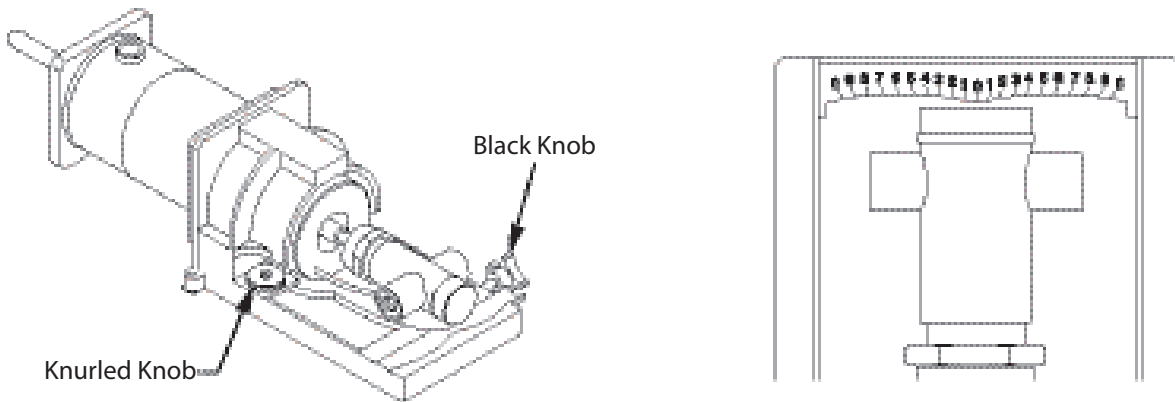


Figure 12 - Adjusting the Flow Scale

## IMPORTANT

Before proceeding with any spraying operation, the operator should be thoroughly familiar with starting and stopping the fog generator and with all of the operation controls. If operating the fog generator for the first time, exercise the machine through its full operational sequences from a position of full visibility of the fog generator before operating the fog generator fully remote. Refer to the OPERATING INSTRUCTIONS section for starting and stopping instructions.

### Spraying

1. With the engine running, check to make sure the nozzle pressure is within the preset pressure range. The insecticide label will define the correct nozzle pressure needed to produce the optimum particle size. The LECO 1800E OHV Cold Aerosol Fog Generator is preset at the factory at 6 P.S.I. If a different nozzle pressure is required change the engine speed by adjusting the engine throttle.
2. To turn spray on: On the LECO 1800E OHV COLD AEROSOL FOG GENERATOR, move the Spray/Flush

valve to SPRAY. Reference Figure 8. On the Remote Control Box, move the spray switch to ON position. Reference Figure 4 on page 9.

3. To turn spray off: On the Remote Control Box, turn the spray off by moving the spray switch to the OFF position. Reference Figure 4 on page 9.

NOTICE: On the initial start, it may take several seconds for the insecticide to reach the nozzle from the insecticide tank, fill the lines and start spraying. This is normal.

## MODEL 1800E OHV

### Flushing Instructions

It is absolutely necessary to use a flushing solution that will cut your insecticide. Do Not use diesel oil as a flushing solution.

It is a simple matter to flush the system as follows:

1. If the engine is not running, start the engine as explained in the START-UP section on page 13.
2. On the connection panel assembly, turn Select Spray/Flush valve to FLUSH.
3. On the Remote Control Box, turn the Spray switch ON. When the flushing solution starts spraying from the nozzle, spray for 2 to 3 minutes. This is ample time to flush the system.
4. Turn the Spray switch OFF. It is highly recommended that the fog generator be shut down immediately after flushing to prevent insecticide from being accidentally drawn into the system.

### Shut-Down

Before shutting down the engine be sure the spray is turned off as explained in the SPRAYING section on page 16. To stop the engine, turn key off on engine.

After stopping the engine, place the Spray/Flush valve on the fog generator to SPRAY. The fog generator is now ready for spraying the next time it is used.

### Operating Instructions Summary

Pre-Start as shown on page 10.

Start-Up as shown on page 13.

Setting the Flow Rate as shown on page 15. The engine needs not to be running when performing this operation. See the CALIBRATION section on page 18 for calibrating to a correct flow rate. As noted, the flow rate needs only be set initially when a new flow rate is desired or a different insecticide is being used.

Spraying as shown on page 16.

Flushing as shown on page 17.

Shut-Down as shown on page 17.

### Calibration

Calibration is a system of accurately checking how much insecticide is dispersed in a certain time period. In order to do this, a stopwatch, a calibrated cylinder and usually a calculator is needed.

There are two methods of obtaining a calibrated sample. The first is to take a timed sample using a stopwatch. Measure the actual flow for a specified period of time and determine the exact flow rate. Of course the longer the period of time used on checking, the more accurate the calibration will be. While this method is fairly accurate, it is sometimes difficult to watch the fog generator, watch the graduated cylinder, and watch the stopwatch all at the same time. This is the Timed Method.

Another method is to measure an amount of fluid to be pumped and then time how long it takes to collect this amount. Since this method allows you to simply push the stopwatch at the beginning and end of the amount, you only need to be watching the graduated cylinder. This method allows you to use larger samples since you are not dependent on time. This is the Pre-Determined Amount Method.

To calibrate using the TIMED METHOD:

1. Disconnect the insecticide discharge line from the nozzle and place in a suitable container. Do not allow insecticide to be discharged into the nozzle of an idle fog generator. Reference Figure 13 on page 19.
2. Be sure the Spray switch on the Remote Control Box is in the OFF position.
3. Move the Select Spray/Flush switch to the SPRAY position.
4. Start the fog generator according to the Operation Instructions and continue to the section on setting the flow rate.
5. Turn the spray ON and let the insecticide flow into the container. Be sure the fog generator's insecticide lines are free from air bubbles. On initial start up, it may be useful to temporarily move the cylinder pointer to a higher scale reading to get the system primed and purged of any air bubbles.
6. Set an arbitrary flow rate by moving the cylinder pointer. To move the cylinder pointer, open the pump box cover, loosen the two knurled knobs holding the pointer in place and turn the adjustment knob on the side of the cylinder pointer housing to set the pointer to an arbitrary setting and lock the pointer in place. The pointer should be moved against a slight pressure. Loosen the two knurled knobs only enough to move the pointer.
7. Measure the actual flow for a specified period of time by quickly moving the insecticide discharge line from the container to the graduated cylinder at the start of timing. When the time period is up, quickly move the insecticide discharge line back into the container.

## MODEL 1800E OHV

8. Turn the spray OFF.
9. Determine the exact flow rate by dividing the measured (actual) amount collected in the graduated cylinder by the time period. This will give volume of flow per time of flow, for example, milliliters per minute (ml./min.) or fluid ounces per minute (oz./min.).
10. If this is not the desired flow rate, repeat steps 5 through 8 above and by trial and error, continue to move the cylinder pointer until the desired flow rate is achieved.
11. When the desired flow rate is obtained, check to make sure the cylinder pointer is locked into place, close the pump box cover and shut down the fog generator.
12. Return the insecticide discharge line to the nozzle.

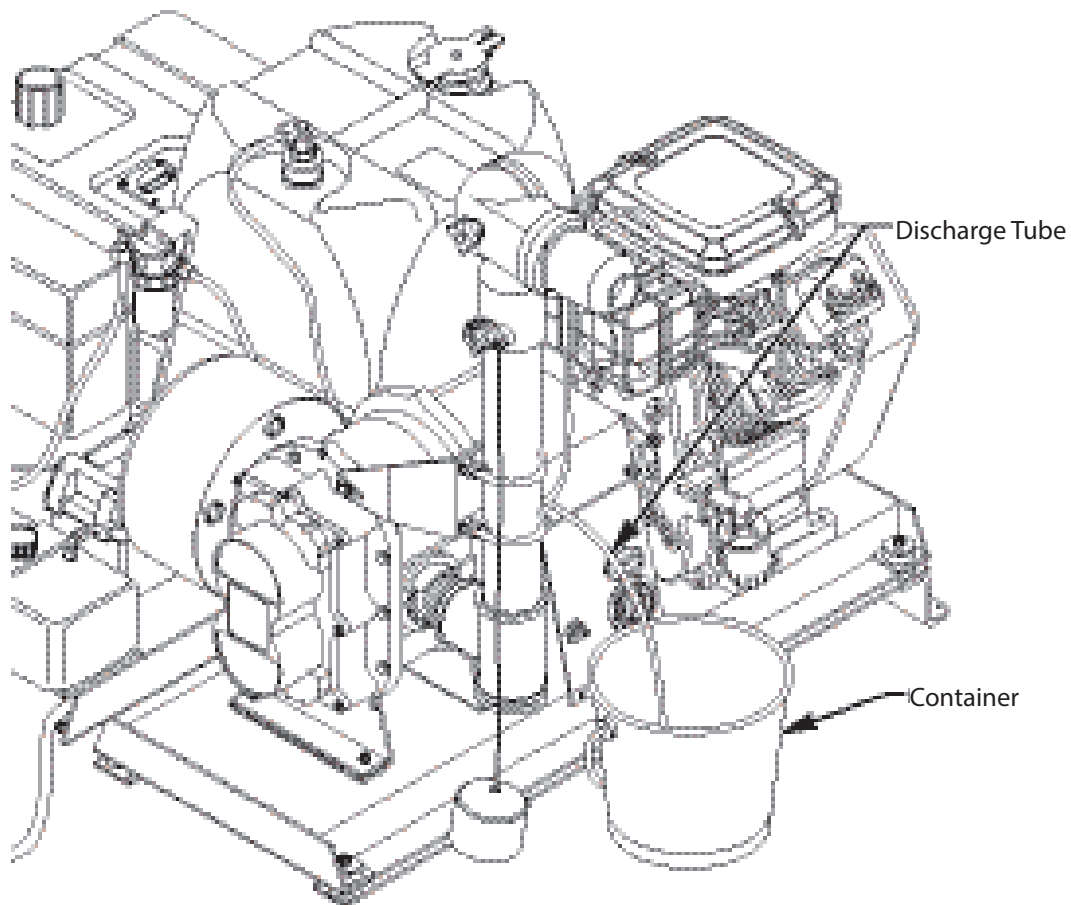


Figure 13 - Discharge Tube

### To calibrate using the PRE-DETERMINED AMOUNT METHOD:

Assume you decide to calibrate by collecting a 100-milliliter (ml.) sample. You simply choose a point on the graduated cylinder (say at the 130 ml. mark) and start the stopwatch as the fluid level passes this mark. When the fluid level passed the mark that is 100 ml. higher (in this case, the 230 ml. mark), stop the stopwatch.

1. Disconnect the insecticide discharge line from the nozzle and place in a suitable container. Do not allow insecticide to be discharged into the nozzle of an idle fog generator. Reference Figure 13 on page 19.
2. Be sure the Spray switch on the Remote Control Station is in the OFF position.
3. Move the Select Spray/Flush switch to the SPRAY position.
4. Start the fog generator according to the Operation Instructions and continue to the section on setting the flow rate.
5. Turn the spray ON and let the insecticide flow into the container. Be sure the fog generator's insecticide lines are free from air bubbles. On initial start up, it may be useful to temporarily move the cylinder pointer to a higher scale reading to get the system primed and purged of any air bubbles.
6. Set an arbitrary flow rate by moving the cylinder pointer. To move the cylinder pointer, open the pump box cover, loosen the two knurled knobs holding the pointer in place and turn the adjustment knob on the side of the cylinder pointer housing to set the pointer to an arbitrary setting and lock the pointer in place. The pointer should be moved against a slight pressure. Loosen the two knurled knobs only enough to move the pointer.
7. Quickly move the insecticide discharge line from the container to the graduated cylinder. As soon as the fluid level passes the pre-determined point on the graduated cylinder, start the stopwatch. When the fluid level passes a mark, say 100 ml. higher, stop the stopwatch.
8. Quickly move the insecticide discharge line from the graduated cylinder to the container.
9. Turn the spray OFF.
10. If it takes 38 seconds to spray this 100-ml. sample, you will need to adjust to what would have sprayed in one minute.  $60 \text{ seconds} \div 38 \text{ seconds} = 1.57$  times as much in one minute. The 100-ml. sample times  $1.57 = 157 \text{ ml.}$  in one minute. To change ml. to fluid ounces (oz.) divide ml. by 29.57. There are 29.57 milliliters in one fluid ounce.  $157 \text{ ml.} \div 29.57 = 5.3 \text{ oz./min.}$
11. If this is not the desired flow rate, repeat steps 5 through 8 above. By trial and error, continue to move the cylinder pointer until the desired flow rate is achieved.



## MODEL 1800E OHV

12. When the desired flow rate is obtained, check to make sure the cylinder pointer is locked into place, close the pump box cover and shut down the fog generator.
13. Return the insecticide discharge line to the nozzle.

### Maintenance

## IMPORTANT

It is highly recommended that some system be established to assure the performance of the following maintenance instructions.

### General

- Replace worn or damaged parts on the LECO 1800E OHV Cold Aerosol Fog Generator.
- Service the engine according to the Engine Maintenance Manual. The engine is equipped with a replaceable oil filter. Reference Figure 16 on page 25.
- Service the blower according to the Blower Maintenance Manual and the BLOWER LUBRICATION section on page 25 and page 26.

### Daily

- Visually check the fog generator each day before use and make any necessary adjustments and /or repairs.
- Crank the engine and check the nozzle air pressure as indicated on the pressure gauge on the fog generator. If the pressure varies more than + or - 1/2 P.S.I. from the preset pressure range, readjust the nozzle air pressure. See ADJUSTING THE NOZZLE AIR PRESSURE on page 14.
- After use of the fog generator, flush the insecticide system with a suitable flushing solution. See FLUSHING INSTRUCTIONS on page 17.

## MODEL 1800E OHV

### Every 50 Hours

- Check the flow rate calibration. See SETTING THE FLOW RATE on page 15 and CALIBRATION ADJUSTMENTS on page 18.
- Check all bolts and fasteners and tighten if necessary.
- Check all gasoline hoses, insecticide lines and fittings for cracks, leaks or wear. Replace if needed.
- Check all nozzle parts for wear or physical damage. Replace damaged parts.
- Remove and clean the element in the filter-silencer as follows. Reference Figure 14. .
  - a. Remove the wing nut and washer.
  - b. Remove the cover and element.
  - c. Clean the inside of the housing and the element as required. If the element is damaged or bent, replace with a new one.
  - d. Replace the element, cover, washer and wing nut.

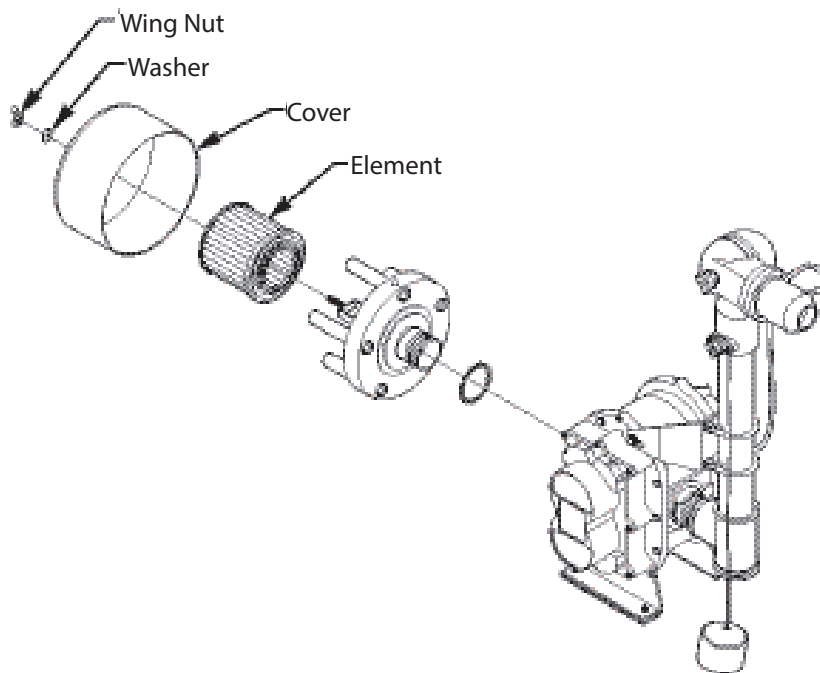


Figure 14 - Filter Element Replacement

### Every 100 Hours

- Clean the insecticide filter. If this filter becomes stopped up, the insecticide flow will be restricted or stopped. There is a fine mesh screen located in the cylindrical housing. This screen can be removed for inspection and/or cleaned by manually unscrewing the housing bowl. Reference Figure 15.
- Check the battery voltage. Test the battery with a volt-ohmmeter. Connect the positive (+) meter lead to the positive (+) battery terminal. Connect the negative (-) meter lead to the negative battery terminal. Set the meter on volts. If the meter reads 11.5 to 12 or more volts, the battery is OK. If the meter reads less than 11.5 volts, check the specific gravity of the electrolyte. See below for instructions on checking specific gravity of the electrolyte.
- Check the battery electrolyte. Remove the battery vent caps and check the electrolyte level. Add clean distilled water if necessary to cover the battery

plates. Check the specific gravity of the electrolyte with a hydrometer. If the specific gravity is between 1.250 and 1.280, the battery cell being tested is OK. If the specific gravity is between 1.225 and 1.250, the battery cell being tested is still in fair condition. If the specific gravity is below 1.150 in any one cell, replace the battery. If the specific gravity in one cell is 0.050 more or less than the other cells, and charging does not bring the charge to a 50% charge, replace the battery.

- Replace the in-line gasoline filter. Using pliers, loosen the tension on the two hose clamps and slide them off of the filter barbs. Remove the old filter from the gasoline hose. Install a new filter and replace the hose clamps. New filters can be installed with the direction of flow going either way. Never reverse an old filter. Reference Figure 15.

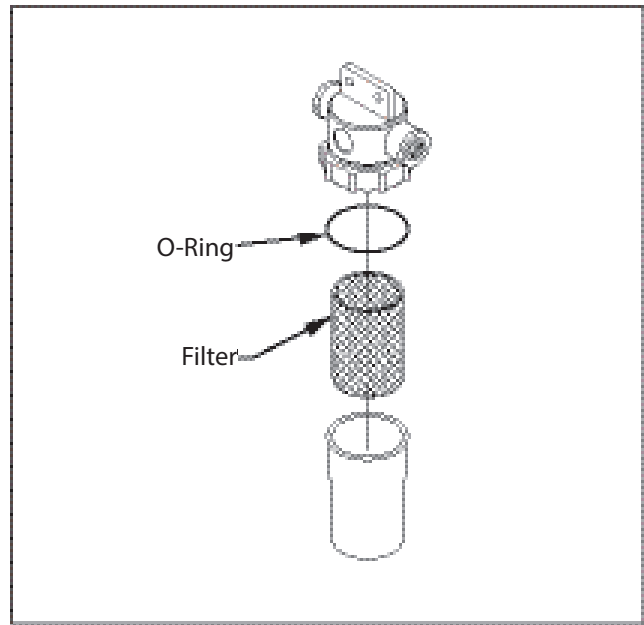
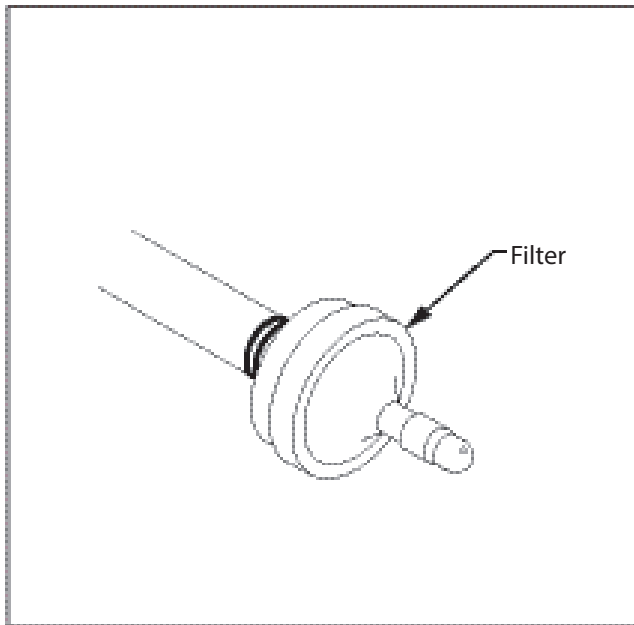


Figure 15 - Inline Gas Filter and Insecticide Filter

MODEL 1800E OHV

Engine

Lubricate and service the engine according to the engine manual. We recommend the use of a high quality, SAE 30W detergent oil classified "for service SF, SG, SH" (such as Briggs & Stratton(r) 100005 or 100028) when operating at temperatures above 40 F. Below 40, SAE 10W30 or 5W30 oil is acceptable. Reference Figure 12.

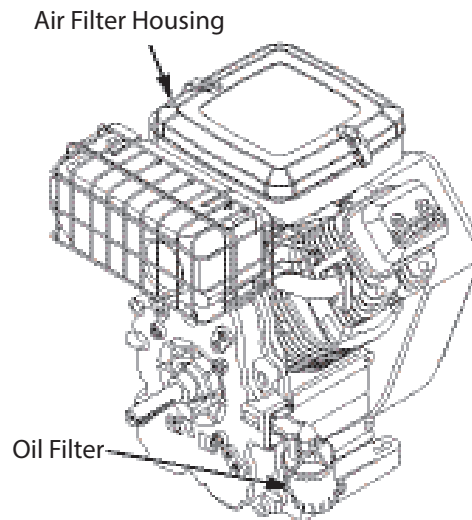


Figure 16 - Engine Filters

Blower

A simple but very effective lubrication system is employed on the blower. At the drive shaft end the bearings are grease lubricated using hydraulic pressure relief fittings. These relief fittings vent any excess grease, preventing pressure build-up on the seals. A restriction plug and metering orifice prevent loss of lubricant from initial surges in lubricant pressure but permit venting excess lubricant under steadily rising pressures.

The blind end bearings and timing gears are enclosed by a gearhouse located opposite the drive end of the blower. The lower timing gear functions as an oil slinger, carrying lubricant to the upper timing gear and providing splash lubrication for the bearings. Pressure within the gearbox is vented through the breather plug.

To fill the gearbox, remove the breather plug and the oil overflow plug. Fill the reservoir up to the overflow hole. Place the breather and the overflow plug into their respective holes.

Under normal conditions the oil level on the non-drive end of the blower should be checked every 25 hours of operation. Change the oil every 100 hours or 30 days, whichever comes first. Under extremely hot or dusty operation conditions, the oil level should be checked more often and may require more frequent changes. Every six months the oil breather plug should be removed cleaned in solvent and blown out with clean compressed air to provide unobstructed venting.

Shaft bearings at the drive end of the blower are grease lubricated and each bearing housing is equipped with pressure type grease fittings and pressure type relief fittings. When servicing drive end bearing, use a premium grade, petroleum base grease with high temperature and moisture resistance and good mechanical stability. Using a pressure gun, force new lubricant into each drive end bearing housing until traces of clean grease comes out of the relief fittings. Grease should be added using hand operated grease gun to the drive end bearings at varying time intervals depending on duty cycle.

Recommended greasing intervals:

1. With the blower operating 8 hours per day, grease should be added every two weeks.
2. With the blower operating 16 hours per day, grease should be added every week.

More frequent intervals may be necessary depending on the grease operating temperature and under unusual circumstances.

The oil used must be of the proper viscosity and certified to meet M-S type specifications of heavy-duty type. Do not use multiple viscosity oils.

Recommended oil viscosity:

- 30° F and under            SAE 30
- From 30° F to 90° F    SAE 40
- From 90° F                SAE 50

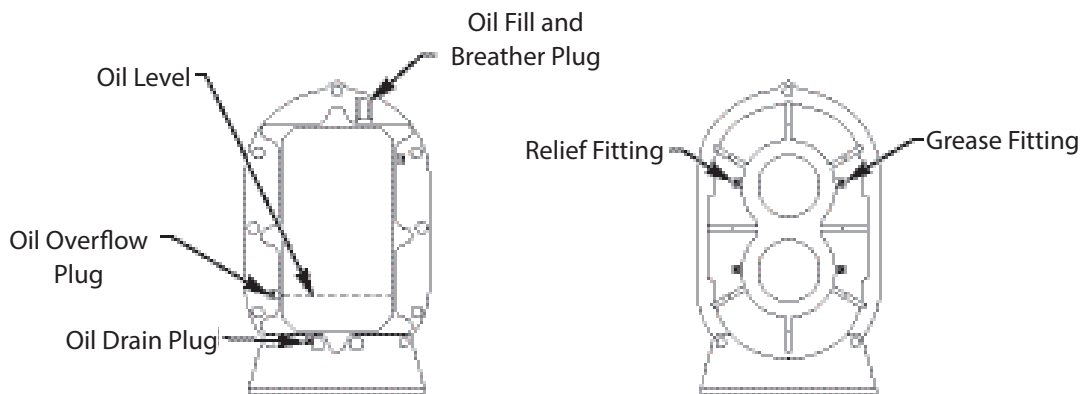


Figure 17 - Blower

MODEL 1800E OHV

Coupler

To replace the engine or blower coupling or the coupling sleeve:

1. Disconnect the negative (black) battery cable on the battery.
2. Remove the coupling guard cover. (4 screws, internal washers)
3. Remove the pressure gauge panel assembly (2 screws, internal washers) and set aside toward engine assembly.

NOTE: You do not need to disconnect hoses and wires on machine.

4. To remove coupling halves. Remove the 6 capscrews with nord lock washers (3 on the blower side, 3 on engine side). Then remove the 4 squarehead capscrews located on the bushings, inside the coupler halves. (2 on the blower side, 2 on engine side). Take 1 squaredhead capscrew and tighten in the center hole of both the blower and engine bushing. Break loose from the shaft. Reference Figure 18.

NOTE: If these couplings are hard to remove, the couplings are rusted to the shafts. Take some penetration oil such as Marvel Mystery oil and spray onto shafts to loosen the rust from shafts and bushings.

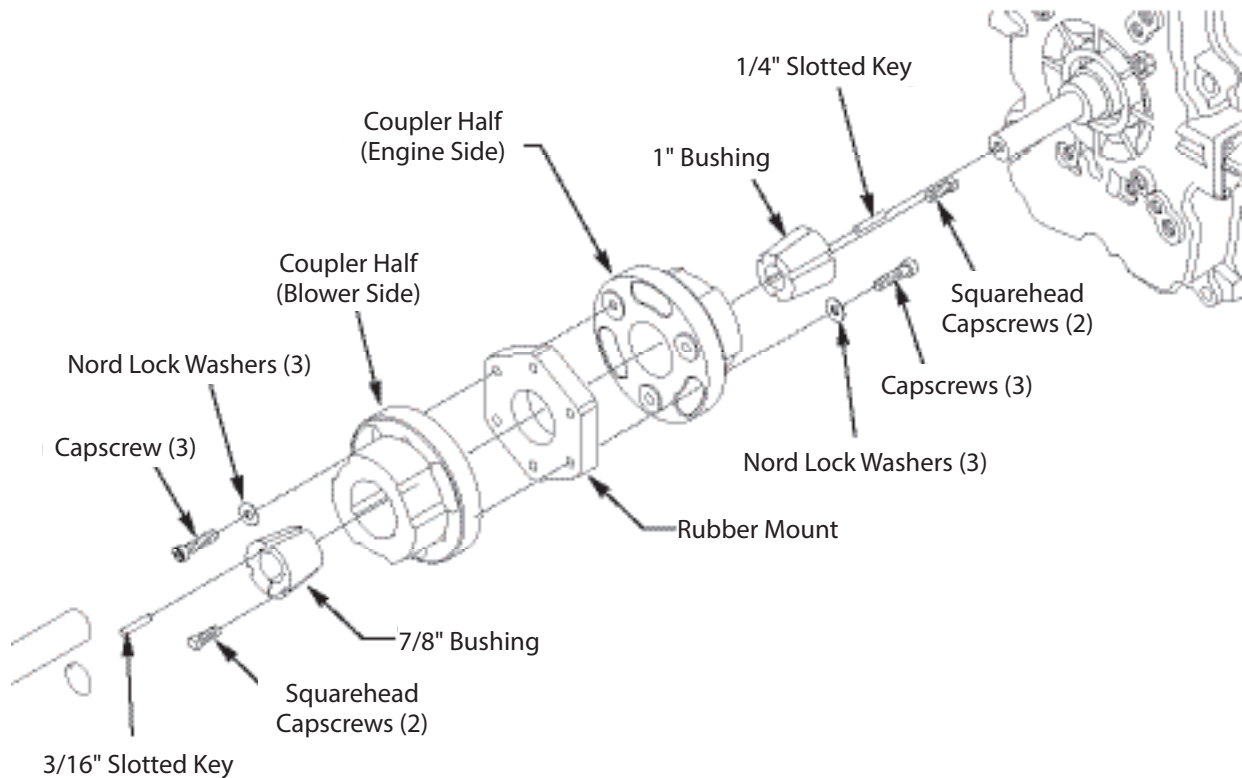


Figure 18 - Coupling Assembly

- Remove blower from the mainframe (4 nuts, bolts, lock washers). Carefully remove rust, dirt, burrs, etc. from both engine and blower shafts using a file or emery cloth.
- Take the engine coupler half and place a 1" bushing into the center of the coupler aligning the 3

open holes. Take 2 squarehead capscrews and screw finger tight into the two opposite holes across from each other on the bushing. Take 1/4" slotted key, install between bushing and slide coupler half onto the engine shaft. Leave loose, go to step 7. Reference Figure 20.



Figure 19 - Bushing/Shaft Installation

- Take the blower coupler half and place a 7/8" bushing into the center of coupler aligning the 3 hole openings. Take 2 squarehead capscrews and screw finger tight into the two opposite holes across from each other on the bushing. Take 3/16" slotted key, install between bushing and slide coupler half onto the blower shaft, make sure bushing and end of blower shaft are flush, then begin to tighten 2 squarehead capscrews on bushing and coupler turning equally onto the blower shaft. Torque to 14 ft. lbs. Take rubber mount and install 3 capscrews and lock washers to coupler half and tighten. Torque to 25 ft. lbs.
- Install blower to main frame using 4 bolts, washers, lock washers, nuts, finger tight.

- With both the engine and blower in place, slide engine coupler towards blower coupling and tighten equally together using 3 capscrews and lock washers. Torque to 25 ft. lbs. Take remaining 2 squarehead capscrews on engine bushing and coupler tighten equally. Torque to 14 ft. lbs.
- Check parallel alignment by placing a straight edge across the two coupling flanges and measure the maximum offset at various points around the edge of the coupling flanges without rotating the coupler flanges.

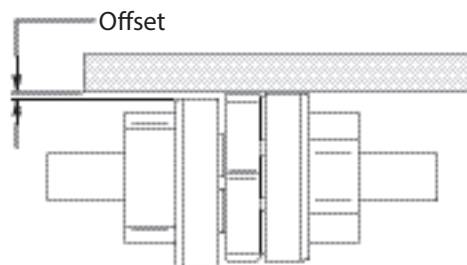


Figure 20 - Parallel Alignment



MODEL 1800E OHV

11. Check angular alignment with micrometer, vernier, or caliper. Measure from the outside of the one flange to outside of the other at intervals around the edge of the coupling flanges. Determine the maximum

and minimum dimensions without rotating the flange couplings. If correction is necessary, be sure to recheck the parallel alignment.

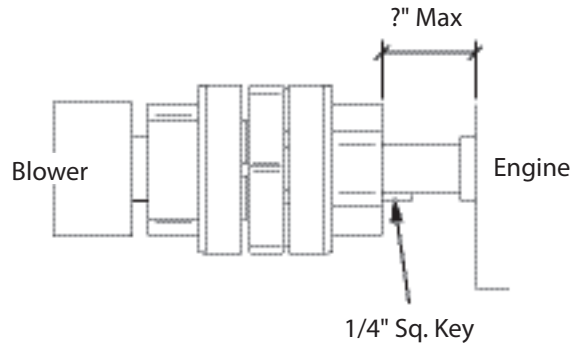


Figure 21 - Angular Alignment

12. Tighten 4 nuts on blower to main frame after alignment is completed. Recheck angular and parallel alignment.
13. Install pressure gauge panel assembly. (2 screws, internal washers)
14. Install the coupling guard cover. (4 screws, internal washers)

15. Connect the negative battery cable.

NOTE: The coupling, coupling rubber mount and connected equipment will normally operate longer and more economically when the couplings are carefully aligned.

## CAUTION

Coupling sleeve may be thrown from the coupling assembly with substantial force when the couplings are subjected to a severe shock load or abuse.

### Storage

Before storing the LECO 1800E OHV Cold Aerosol Fog Generator after use or if it is to be idle for any appreciable length of time, the following preparations should be made:

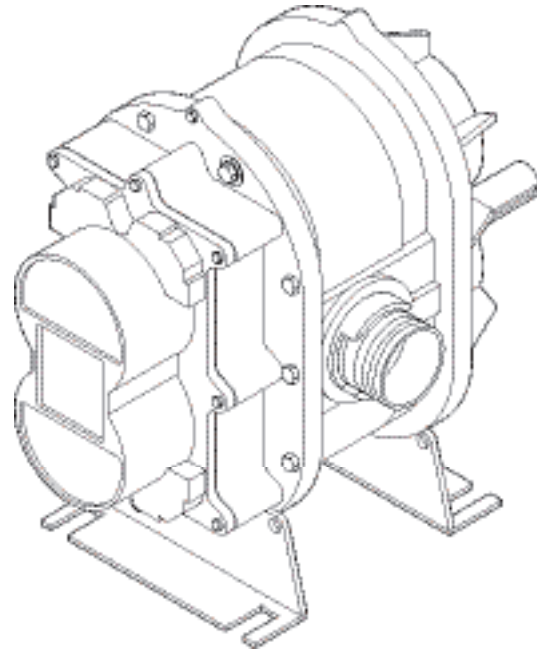
1. Flush the fog generator for at least 10 minutes.
2. Drain the insecticide tank and thoroughly clean it.
3. Drain the flush tank and thoroughly clean it.
4. Pour 1 quart of light weight oil into the flush tank. Engine oil can be used.
5. Pour enough light weight oil into the insecticide tank to cover the bottom of the drop pipe.
6. Spray and flush the fog generator until the oil in the insecticide and flush tanks is completely through the system and sprays out of the nozzle.
7. Engine:
  - a. All fuel should be removed from the tank. Run the engine until it stops from lack of fuel.
  - b. While the engine is still warm, drain the oil from the crankcase. Refill with fresh oil.
  - c. Remove the spark plugs and add a tablespoon of engine oil into the spark plug holes. Install the spark plugs, but do not connect the plug leads. Crank the engine slowly 2 to 3 revolutions to distribute the oil. Replace the plug leads.
  - d. Clean dirt and chaff from the cylinders, cylinder head fins, engine blower housing, rotating screen and muffler areas.
  - e. Clean all other exterior surfaces of the engine.
  - f. Spread a light film of oil over any exposed metal surfaces of the engine to prevent rust.
8. Remove and clean the filter-silencer element and housing as explained in the MAINTENANCE section on page 23. Reference Figure 14.

## MODEL 1800E OHV

9. Blower:
  - a. Remove the oil breather plug, clean in solvent and blow out with clean compressed air.
  - b. Drain the oil from the oil reservoir and refill with fresh oil. Grease the bearings on the drive end.
  - c. Remove the filter-silencer. If the filter-silencer is hard to unscrew from the blower inlet port, use penetrating oil such as Marvel Mystery Oil(r) to loosen the rusted threads.
  - d. Pour 1 pint of lubrication oil (SAE 40) in the blower intake.
  - e. With the engine ignition switch off, use the starter to turn the blower slowly so that the entire inner surface of the blower is coated with oil. This will prevent a coat of rust from forming in the blower and in all probability will save the cost of a new blower or an expensive repair bill.
  - f. Reinstall the filter-silencer.
10. Charge the battery and store as recommended by the manufacturer.
11. Clean all insecticide residue and oil off the LECO 1800E OHV Cold Aerosol Fog Generator and repaint if necessary.
12. Store the LECO 1800E OHV Cold Aerosol Fog Generator in a clean dry area under suitable cover protected from the elements.

A major problem can be the blower rusting up over the winter. If moisture gets into air chamber, the rotary lobes will rust together preventing the blower from turning. When this happens, either the engine or blower shaft may be sheared when the engine is started. Following the storage recommendations of this manual can prevent this.

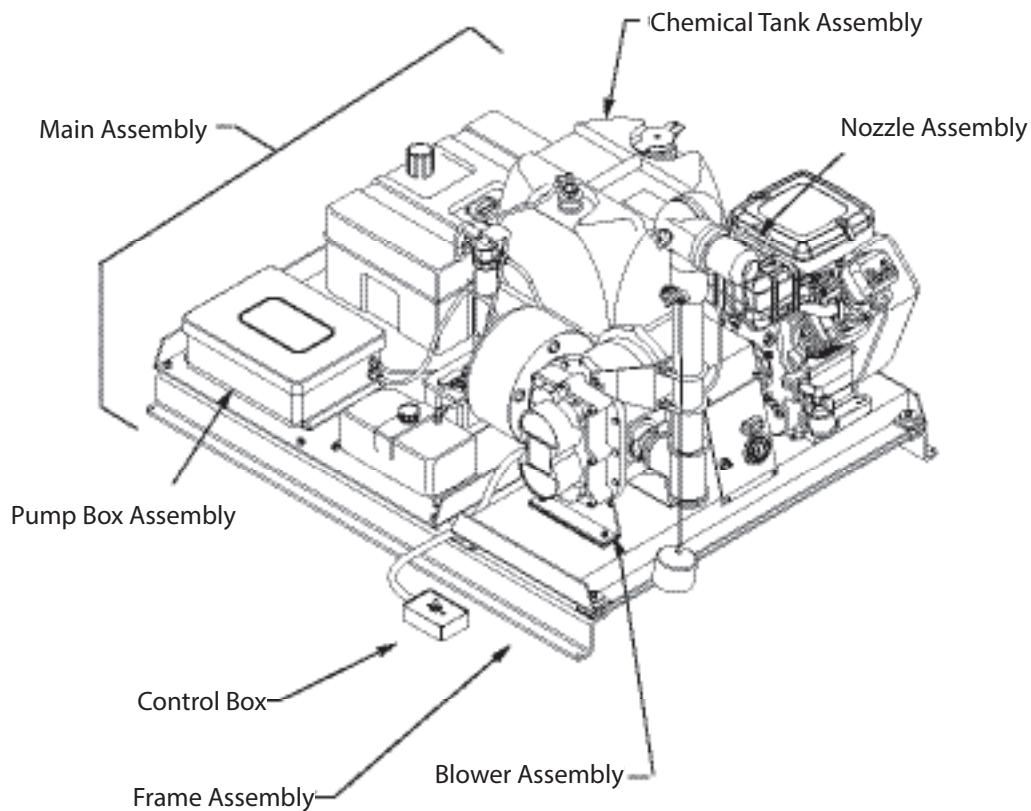
Removing the port elbows and pouring penetration oil such as Marvel Mystery Oil into the lobe chamber will usually loosen a rusted blower. The blower may need to sit for a day or two with the penetration oil in it before the engine is started. When trying to free the blower, don't turn the ignition switch on. Just bump the starter button until the blower turns. In extreme cases, the blower shaft may have to be turned by hand with the pipe wrench to loosen the lobes. Care must be taken not to damage the blower shaft with the pipe wrench. Once the blower turns, the engine can be started and the lobes should hone themselves free of rust.



# PARTS BOOK - TABLE OF CONTENTS

## MODEL 1800E OHV

PAGE	DESCRIPTION	PART NO.
34 – 37	MAIN ASSEMBLY	1800 OHV
34 – 37	ENGINE ASSEMBLY	12790
38 – 39	GAUGE PANEL ASSEMBLY	13082
38 – 39	CONNECTION PANEL ASSEMBLY	13083
40 – 43	BLOWER ASSEMBLY	12763
44 – 45	NOZZLE ASSEMBLY	10314.2
46 – 47	CHEMICAL TANK ASSEMBLY	10296
46 – 47	FILTER ASSEMBLY	12829
48 – 49	PUMP BOX ASSEMBLY	13118
50 – 51	CONTROL BOX ASSEMBLY	12313
52	ELECTRIC SCHEMATIC	N/A



Procedure for determining correct part number and description of individual parts:

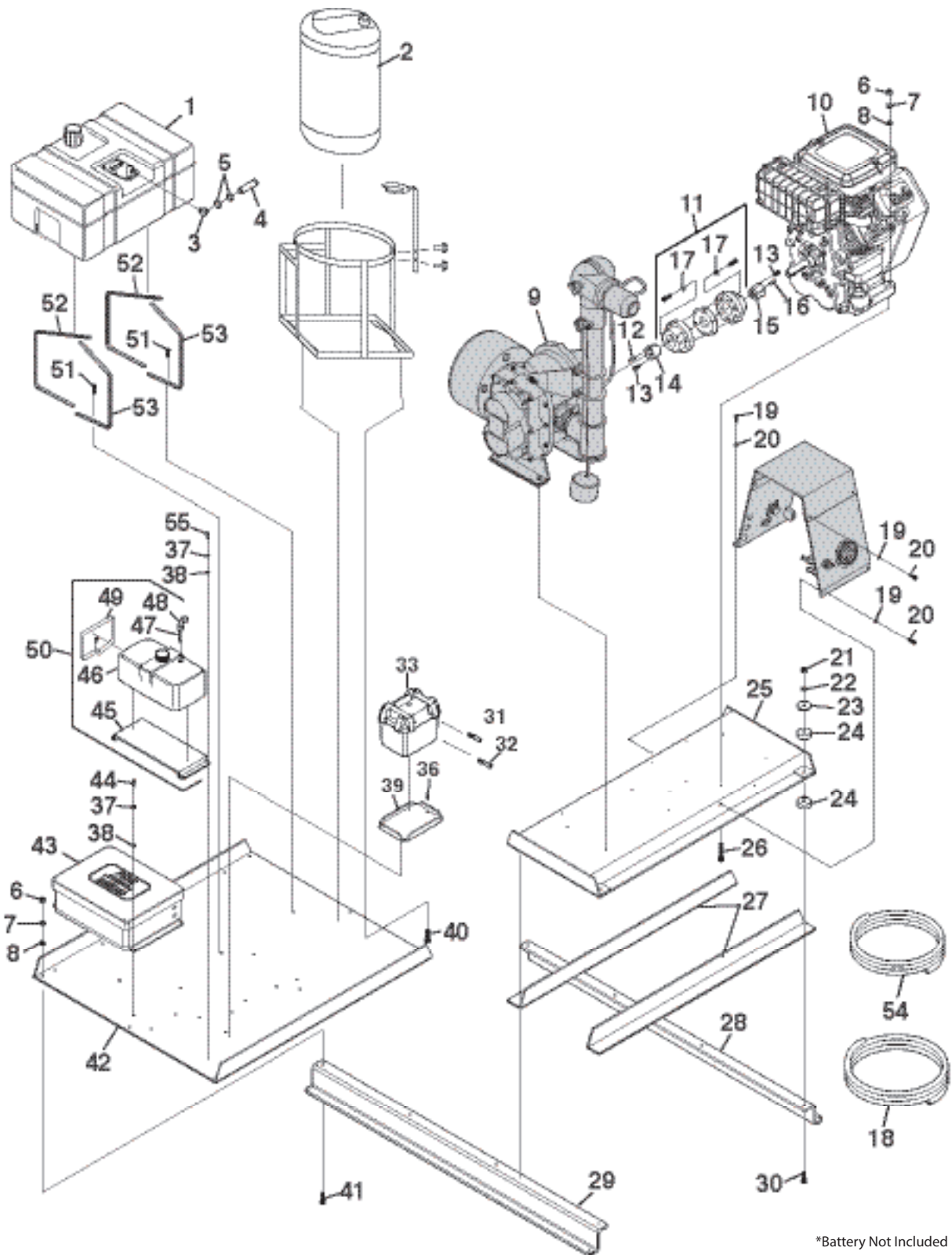
1. Refer to the complete unit breakdown illustration on 34 & 36 and the parts list on 35 & 37.
2. If the individual part is shown on the illustration, the part number and the description can be obtained from the parts list.

3. If the part is a component of an assembly, the location of the assembly breakdown can be obtained from the parts list. This assembly breakdown will identify the individual part.

NOTE: If there is a reference to serial numbers please take this into consideration.

# MAIN ASSEMBLY

MODEL 1800E OHV



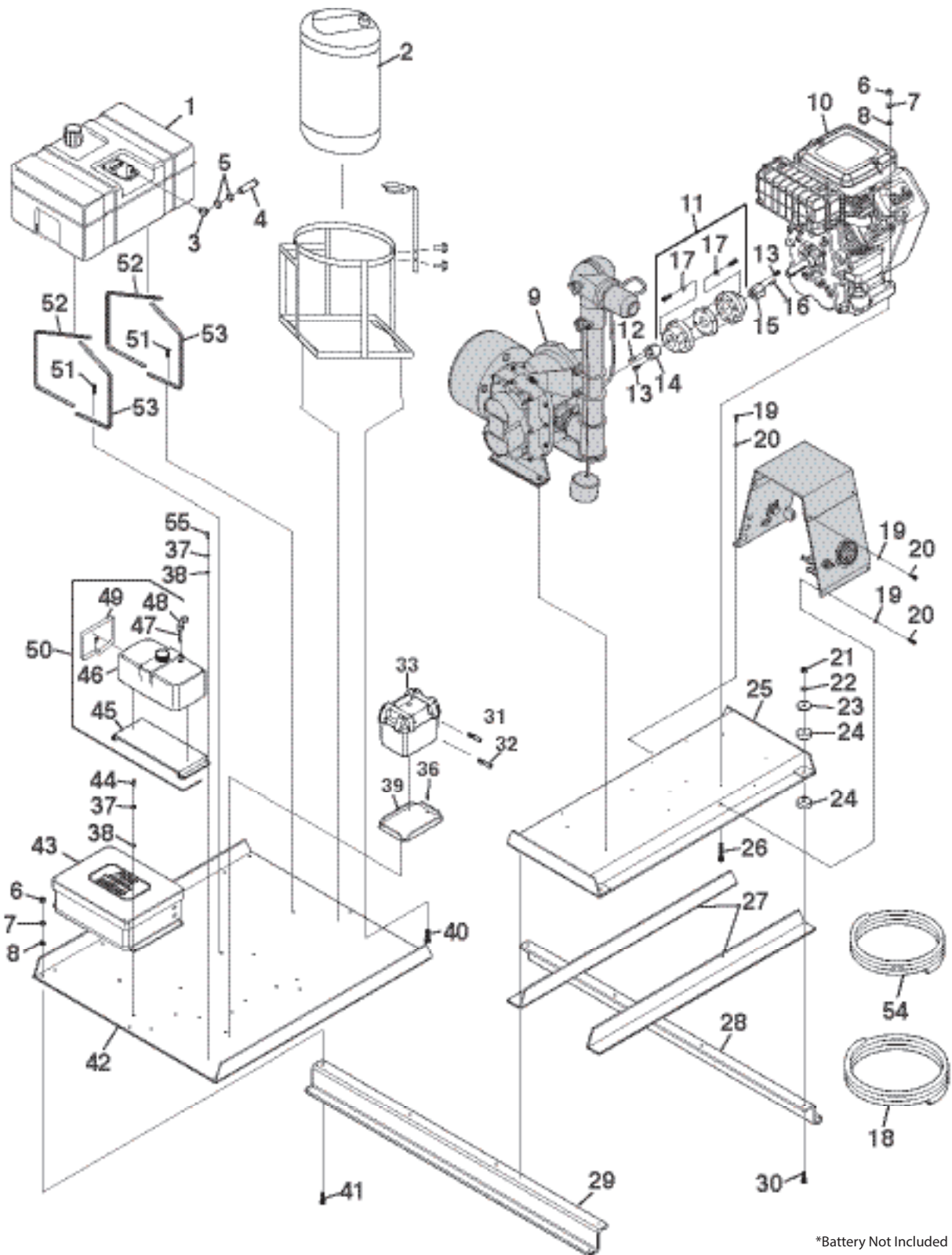
\*Battery Not Included

## MODEL 1800E OHV

POS	QTY.	DESCRIPTION	PART NO.
1	1	GAS TANK 12 GALLONS	10209
2	1	CHEMICAL TANK ASSEMBLY (SEE PAGE 44)	10296.1
3	1	1/4" X 1/4" MALE HOSE BARB	10328
4	50"	1/4" GAS LINE	10045
5	2	HOSE CLAMPS	10033
6	12	5/16" - 24 HEX NUT	11260
7	12	5/16" SPLIT LOCK WASHER	11241
8	12	5/15" SAE FLAT WASHER	11240
9	1	BLOWER ASSEMBLY (SEE PAGE 38)	12763
10	1	18 HP BRIGGS & STRATTON ENGINE	12790
11	1	COUPLER ASSEMBLY	13245
12	1	3/16" SLOTTED KEY	13234
13	4	SQUARE CAPSCREWS	11315
14	1	7/8 BUSHING	13243
15	1	1" BUSHING	13244
16	1	1/4" SLOTTED KEY	13233
17	6	10MM NORD LOCK WASHERS	13404
18	AR	3/8" POLY TUBE - ORDER BY THE INCH	10041
19	8	#10 INTERNAL LOCK WASHER	11102
20	8	10 - 32 X 3/8" PHILLIPS PAN HEAD SCREW	11145Z
21	4	3/8" - 24 HEX NUT	11320Z
22	4	3/8" SPLIT LOCK WASHER	11291
23	4	WASHER, RUBBER MOUNT	10223
24	4	RUBBER MOUNT	10222
25	1	MAIN FRAME	12794
26	4	5/16" - 24 X 2" BOLT	11268
27	2	STIFFENER ANGLE	10146
28	1	BASE RAIL, ENGINE END	10195
29	1	BASE RAIL, BLOWER END	10196
30	4	3/8" - 24 X 2 1/4" BOLT	11324Z
31	1	POSITIVE BATTERY CABLE	12645
32	1	NEGATIVE BATTERY CABLE	12769
33	1	BATTERY BOX	10007
36	2	1/4" - 20 X 3/8" PHILLIPS PAN HEAD SCREW	11201
37	8	1/4" SPLIT LOCK WASHER	11171
38	8	1/4" SAE FLAT WASHER	11170Z
39	1	BATTERY PLATE	10017
40	2	5/16" - 24 X 1" BOLT	11264
41	6	5/16" - 24 X 3/4" BOLT	11263
42	1	BASE PLATE	10140

# MAIN ASSEMBLY

MODEL 1800E OHV

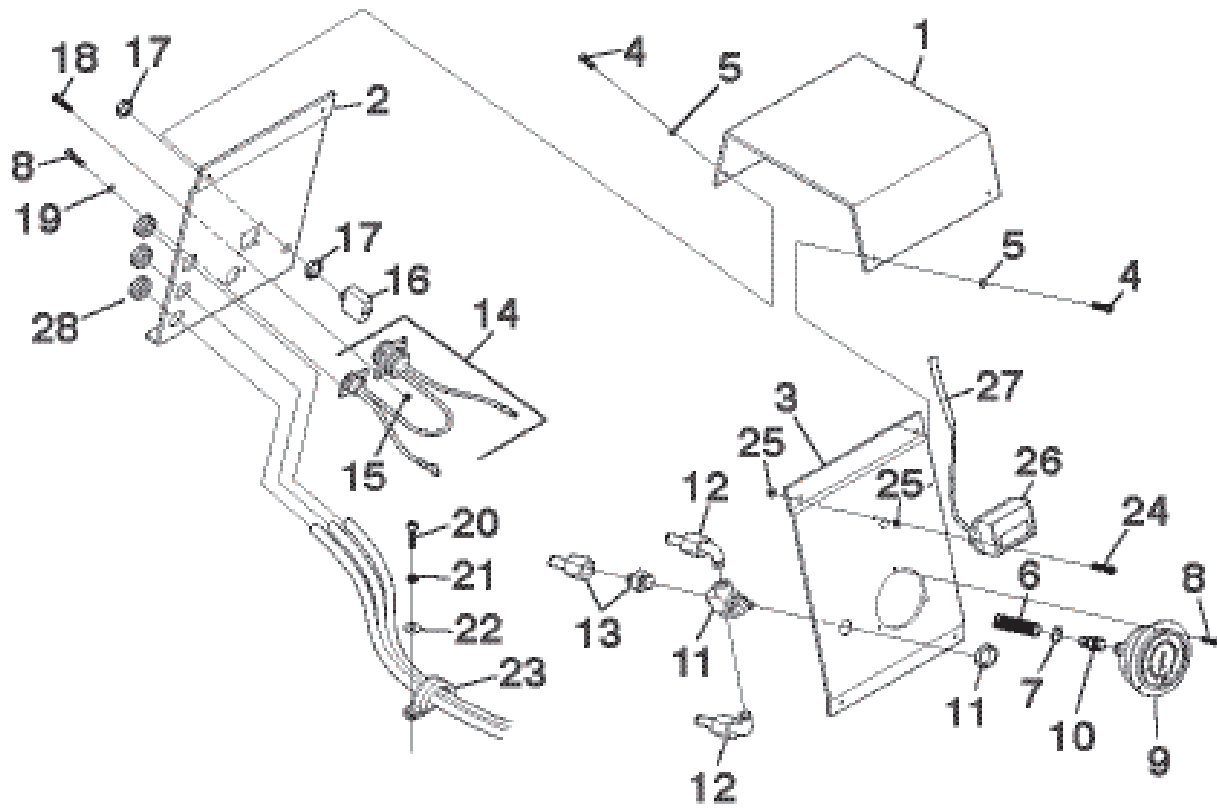


\*Battery Not Included



## MODEL 1800E OHV

POS	QTY.	DESCRIPTION	PART NO.
43	1	FLOW CONTROL ASSEMBLY (SEE PAGE 48)	13118
44	4	1/4" - 20 X 5/8" PHILLIPS PAN HEAD SCREW	11187
45	1	MOUNTING BASE, FLUSH TANK	10086
46	1	FLUSH TANK WITH CAP 12011	10211
47	1	PICK-UP TUBE	10336
48	1	3/8" X 1/4" X 90° FEMALE ELBOW INCLUDES 3/8" NUT #10539	10204
49	2	STRAP ASSEMBLY	10321
50	1	FLUSH TANK ASSEMBLY	10210
51	4	10 - 32 X 1/4" PHILLIPS PAN HEAD SCREW	11144z
52	2	STRAP ASSEMBLY FEMALE	10340.1
53	AR	STRAP ASSEMBLY MALE	10340.2
54	AR	1/4" POLY TUBE - ORDER BY THE INCH	10040
55	4	1/4" - 20 X 1/2" PHILLIPS PAN HEAD SCREW	11184



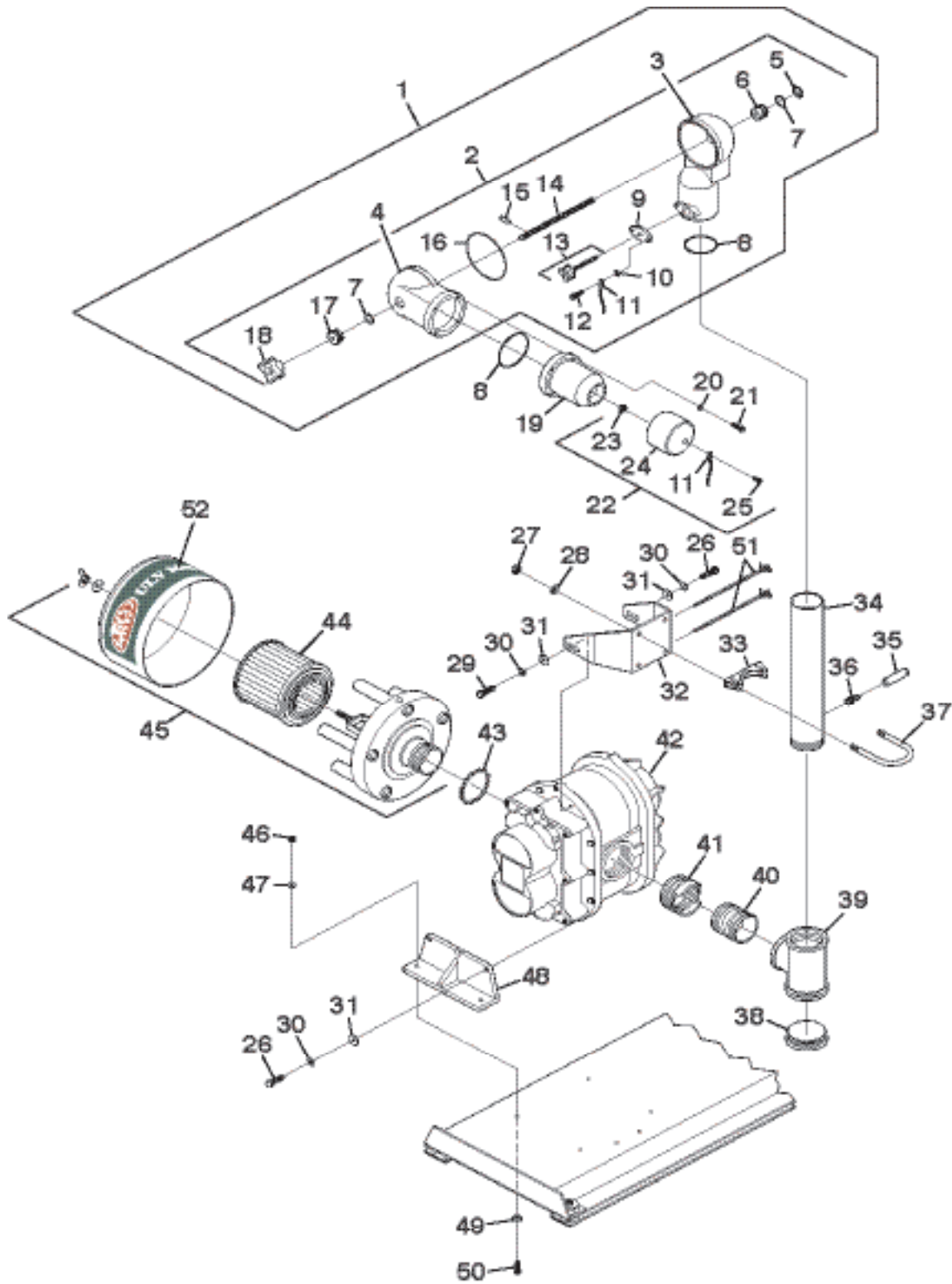
# CONNECTION/GAUGE PANEL

## MODEL 1800E OHV

POS	QTY.	DESCRIPTION	PART NO.
1	1	COUPLING COVER	12784
2	1	CONNECTION PANEL	12799
3	1	GAUGE PANEL	12798
4	4	10 - 32 X 3/8" PHILLIPS PAN HEAD SCREW	11145Z
5	4	#10 INTERNAL LOCK WASHER	11102Z
6	25"	1/4" AIRLINE	10042
7	2	HOSE CLAMP	10033
8	5	6 - 32 X 1/4" PHILLIPS PAN HEAD	11055
9	1	PRESSURE GAUGE	10550
10	1	HOSE BARB FEMALE 1/4" X 1/4"	10154
11	1	3 WAY MANUAL VALVE	10969
12	2	3/8" X 1/4" X 90° MALE ELBOW INCLUDES 3/8" NUT #10539	10181
13	1	3/8" X 1/4" MALE FITTING INCLUDES 3/8" NUT #10539	10834
14	1	HARNESS ASSEMBLY	12898
15	4	4 - 40 NYLON LOCK INSERT	11020
16	1	CIRCUIT BREAKER, INCLUDES 2 NUTS (NUT PART# 12525)	10421
17	2	NUT, CIRCUIT BREAKER	12525
18	4	4 - 40 X 3/8" PHILLIPS PAN HEAD SCREW	11013Z
19	2	#6 - LOCK WASHER	11050
20	1	1/4" - 20 X 3/4 PHILLIPS PAN HEAD SCREW	11189
21	1	1/4" LOCKWASHER	11171Z
22	1	1/4" FLAT WASHER	11170Z
23	1	CLAMP	13163
24	2	8-32 X 1/2" SCREW	11080Z
25	2	8 - 32 PLASTIC LOCKNUT	11077
26	1	TINY-TACH	12894
27	1'	HIGH TEMPERATURE SLEEVE	13171
28	3	GROMMET	12621

# BLOWER ASSEMBLY

MODEL 1800E OHV



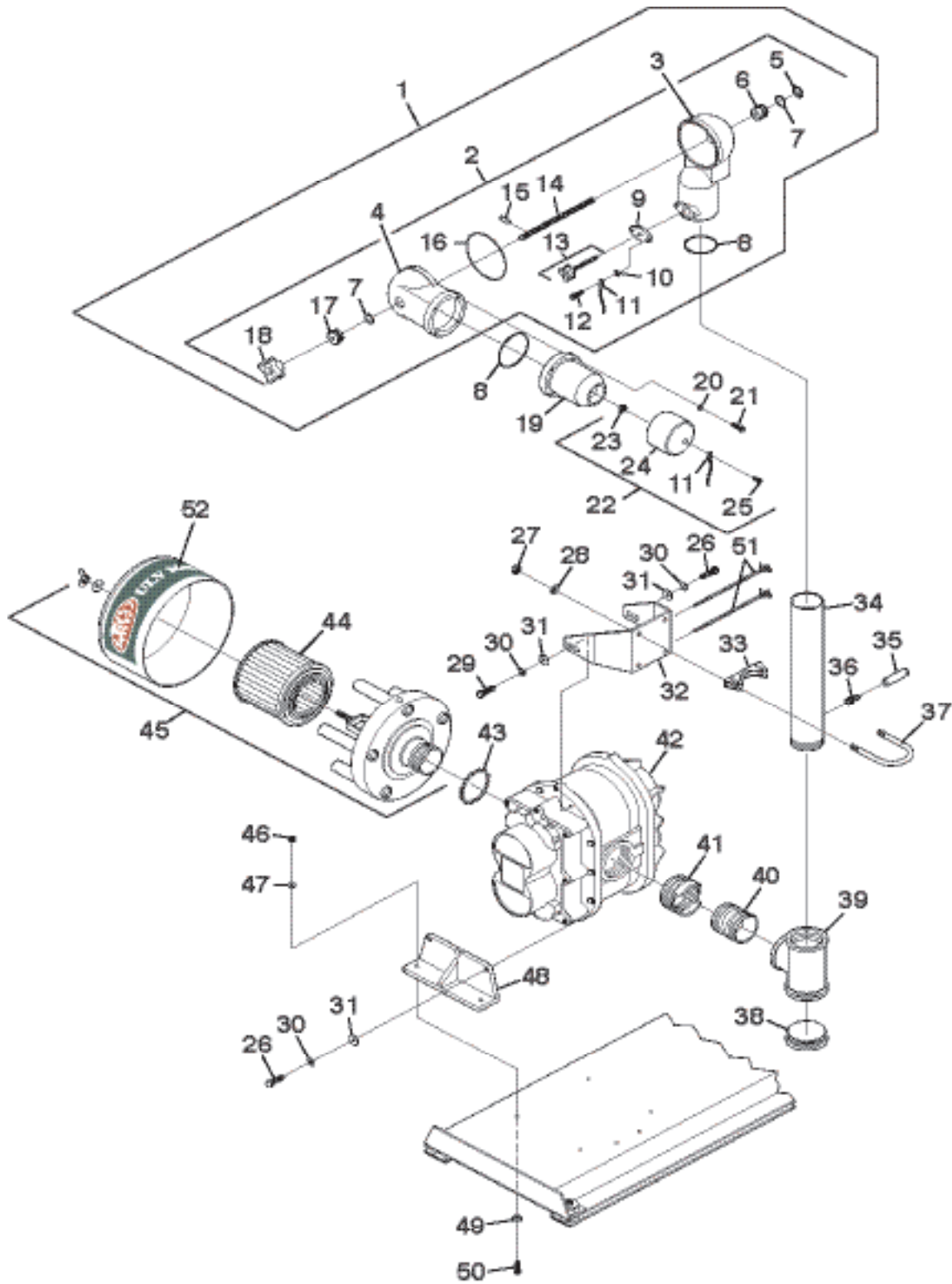
# BLOWER ASSEMBLY

## MODEL 1800E OHV

POS	QTY.	DESCRIPTION	PART NO.
1	1	SWIVEL ASSEMBLY	10312
2	1	STUD KNOB ASSEMBLY Includes 5, 6, 7, 14, 17, 18	10402.1
3	1	SWIVEL HALF INLET	10173
4	1	SWIVEL HALF OUTLET	10269
5	1	SNAP RING STAINLESS STEEL	10293
6	1	PLUG 3/8" - 24	10183.1
7	2	O-RING	10167
8	2	O-RING	10185
9	1	RETAINER PLATE	10292
10	2	INTERNAL LOCK WASHER 1/4"	11172
11	1	CABLE ASSEMBLY	10487
12	2	PHILLIPS PAN HEAD 1/4" - 20 X 3/4"	11189
13	1	STUD KNOB ASSEMBLY	10267
14	1	STUD ASSEMBLY INCLUDES #15 SPRING PIN	10268.1
15	1	SPRING PIN 1/8" X 1/2"	11001Z
16	1	O-RING	10184
17	1	PLUG FLANGE	10182
18	1	KNOB 3/8" - 24	12056
19	1	NOZZLE ASSEMBLY (See "NOZZLE ASSEMBLY" on page 42)	10314.2
20	4	HIGH COLLAR LOCKWASHER #10	11103
21	4	SOCKET CAP SCREW 10 - 24 X 3/4"	11117
22	1	RAIN CAP ASSEMBLY INCLUDES 23, 24, 25, 11	10494
23	1	FLEX LOCKNUT 10 - 24	11111Z
24	1	RAIN CAP	10488
25	1	PHIL PAN HEAD SCREW 10 - 24 X 1/2"	11113Z
26	5	BOLT 3/8" - 16 X 1-1/4"	11304
27	4	NUT 5/16" - 18	11250
28	4	LOCKWASHER 5/16	11241
29	1	BOLT 3/8" - 16 X 1"	11303
30	6	LOCKWASHER 3/8"	11291
31	6	WASHER 3/8"	11290
32	1	MAST BRACE	10285
33	2	CLAMP	10284A
34	1	MAST	10194.1
35	25"	AIRLINE 1/4"	10042
36	1	HOSE BARB W/ ORIVICE 1/4" x 1/4"	10588
37	2	U-BOLT	10284
38	1	PIPE PLUG	12013
39	1	TEE 2"	10288
40	1	NIPPLE 2" X CLOSE	10289

# BLOWER ASSEMBLY

MODEL 1800E OHV



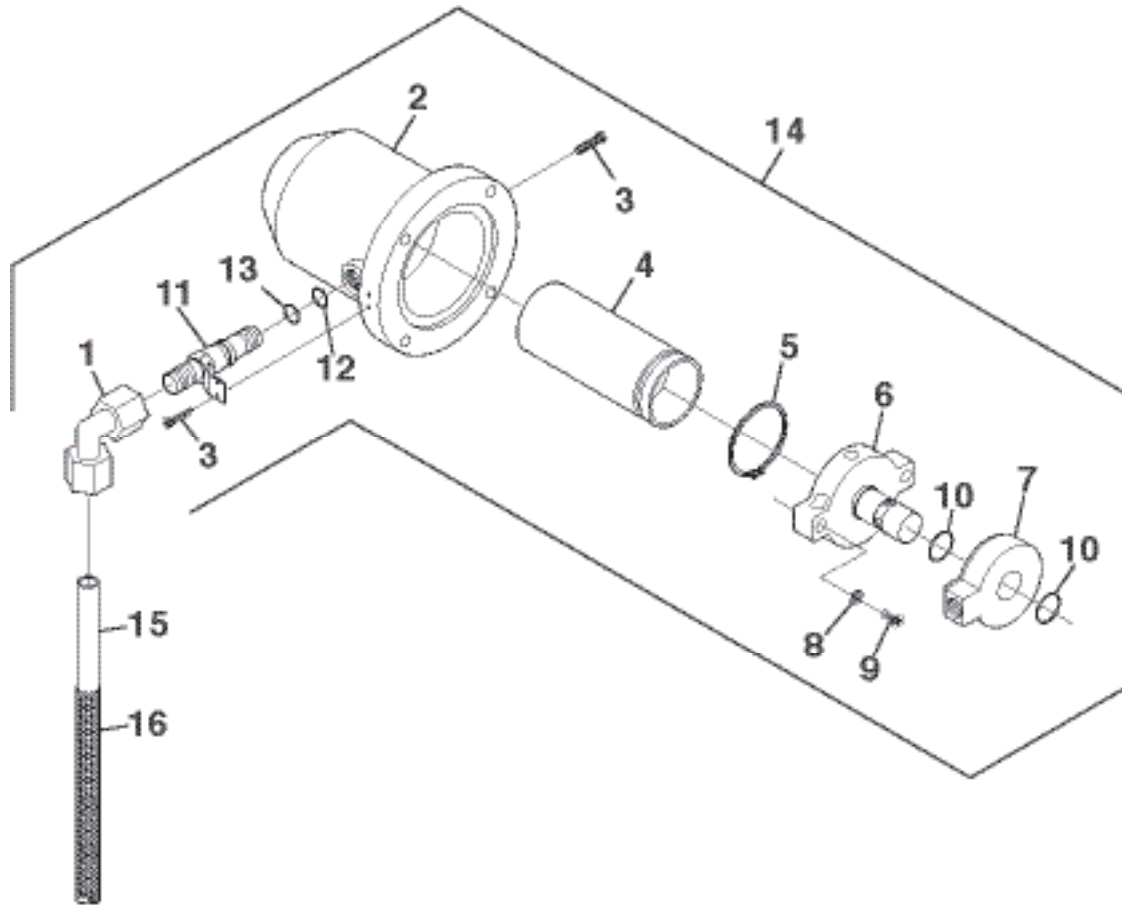
# BLOWER ASSEMBLY

## MODEL 1800E OHV

POS	QTY.	DESCRIPTION	PART NO.
41	1	BUSHING 2 1/2" X 2"	10733
42	1	BLOWER	10208
43	1	LOCKNUT 2 1/2"	10200
44	1	AIR FILTER	12021
45	1	AIRCLEANER ASSEMBLY INCLUDES 52	10114
46	4	NUT 3/8" - 24	11320Z
47	4	LOCK WASHER 3/8"	11291
48	2	FOOT	12802
49	4	WASHER SPL	13222
50	4	BOLT 3/8"- 24 X 1-1/4"	11321
51	2	TYRAP	10264
52		DECAL, AIRCLEANER	12315

# NOZZLE ASSEMBLY

MODEL 1800E OHV





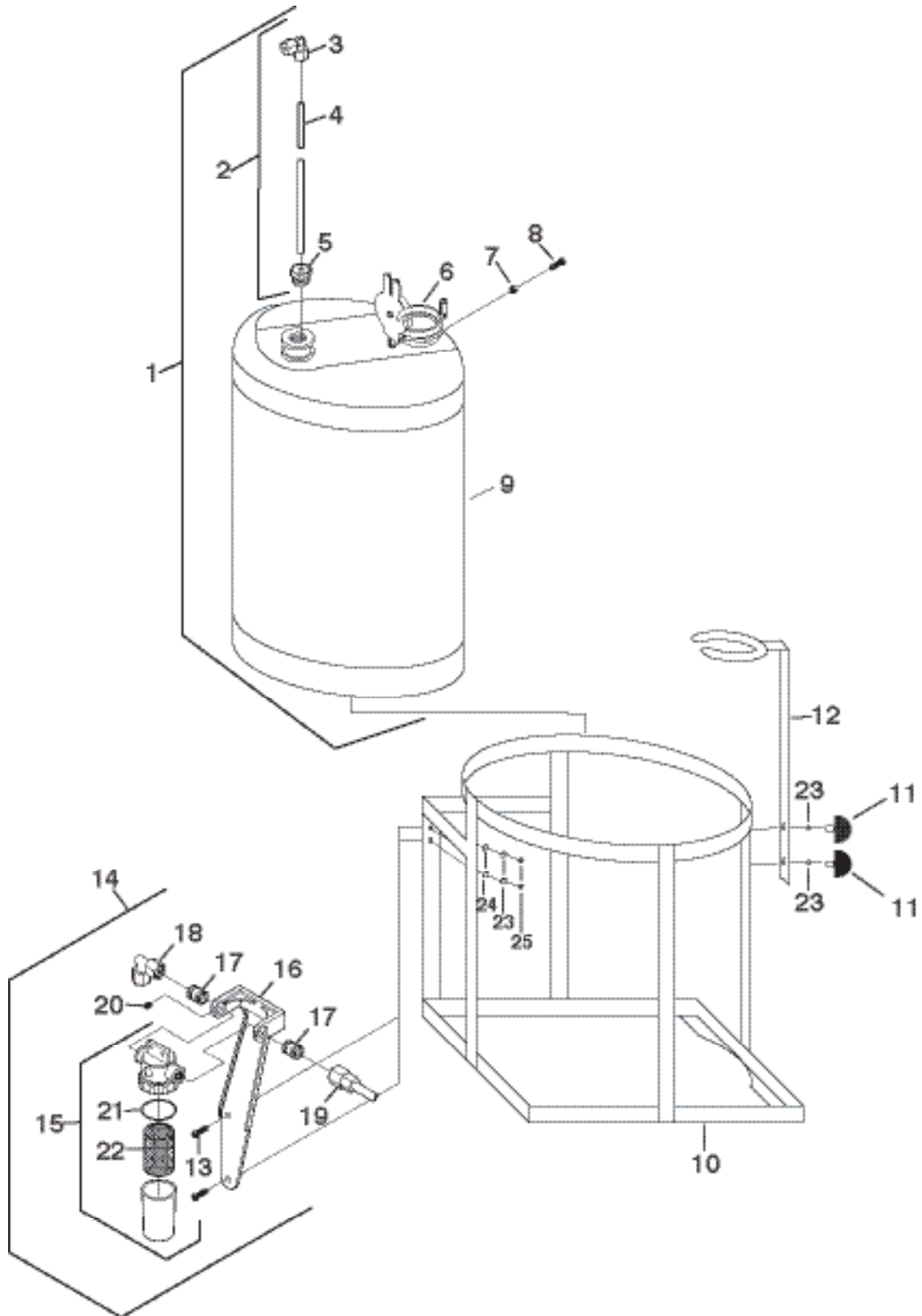
# NOZZLE ASSEMBLY

## MODEL 1800E OHV

POS	QTY.	DESCRIPTION	PART NO.
1	1	1/4" x 1/8" x 90 DEGREE FEMALE ELBOW	10249
2	1	NOZZLE BODY	10271
3	3	PHILLIS PAN HEAD SCREW 10 - 32 X 3/8	11145Z
4	1	DIFFUSER CONE	10272
5	1	SNAP RING S.S.	10788
6	1	FLUID CORE, AIR ELEMENT ASSEMBLY	12038
7	1	FLUID TEE	12454
8	2	HI COLLAR LOCK WASHER #10	11103
9	2	SOCKET CAP SCREW 10 - 24 X 3/4"	11117
10	2	O-RING	10247
11	1	INJECTION NIPPLE WELDMENT	12532
12	1	O-RING	12452
13	1	O-RING	10166
14	1	NOZZLE ASSEMBLY, INCLUDES ITEMS 1 – 18	10314.2
15	72"	1/4" POLY TUBING	10040
16	27"	SLEEVE, HIGH TEMPERATURE	13171

# CHEMICAL TANK ASSEMBLY

MODEL 1800E OHV



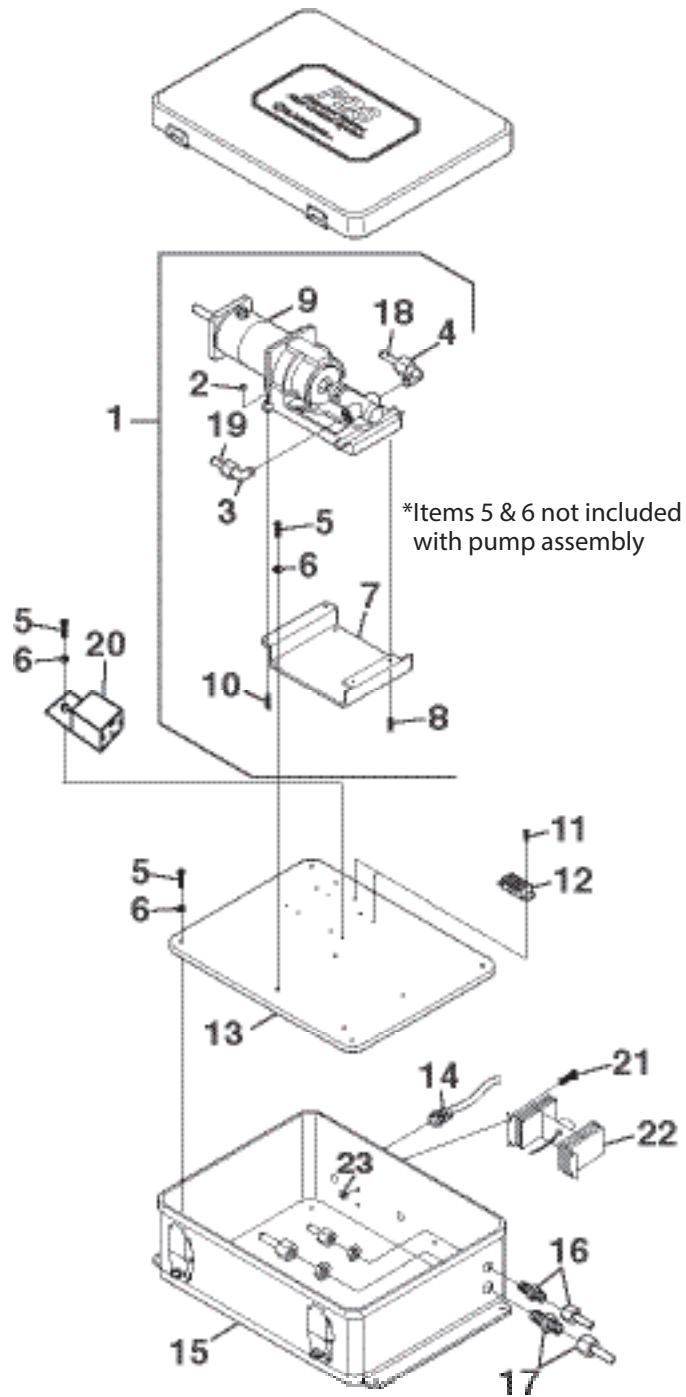
# CHEMICAL TANK ASSEMBLY

## MODEL 1800E OHV

POS	QTY.	DESCRIPTION	PART NO.
1	1	CHEMICAL TANK ASSEMBLY	10296.1
2	1	PICK UP TUBE ASSEMBLY	10298.1
3	1	3/8" X 1/4" 90° FEMALE ELBOW INCLUDES 3/8" NUT #10539	10204
4	1	PICK UP TUBE WELDMENT	12050.1
5	1	3/4" X 1/4" NYLON BUSHING DRILLED	10039.1
6	1	TANK CAP ASSEMBLY	10118
7	1	6 - 32 NYLON INSERT LOCK NUT, S.S.	11063
8	1	6 - 32 X 5/8" PHILLIPS PAN HEAD SCREW, S.S.	11058Z
9	1	CHEMICAL TANK	13593
10	1	TANK WRAP	13592
11	2	SCREW ON KNOBS	10306
12	1	TANK HOLD DOWN	13594
13	2	1/4" - 20 X 1 PHILLIPS PAN HEAD SCREW	11192Z
14	1	FILTER ASSEMBLY INCLUDES ITEMS 21 - 26	12829
15	1	STAINER ASSEMBLY INCLUDES ITEMS 27, 28	10155
16	1	CASTING, FILTER SUPPORT	12758
17	2	NIPPLE, 3/8 X 1 1/2 STAINLESS STEEL	12843
18	1	3/8 X 3/8 X 90 FEMALE JACO ELBOW	10838
19	1	FEMALE JACO 3/8 X 3/8	10836
20	2	SET SCREW 10-24 X 1/4	11133Z
21	1	GASKET	10388
22	1	STRAINER	10390
23	4	1/4" LOCKWASHER	11171
24	2	1/4" FLATWASHER	11170Z
25	2	1/4" - 20 HEXNUT	11180

# PUMP BOX ASSEMBLY

MODEL 1800E OHV



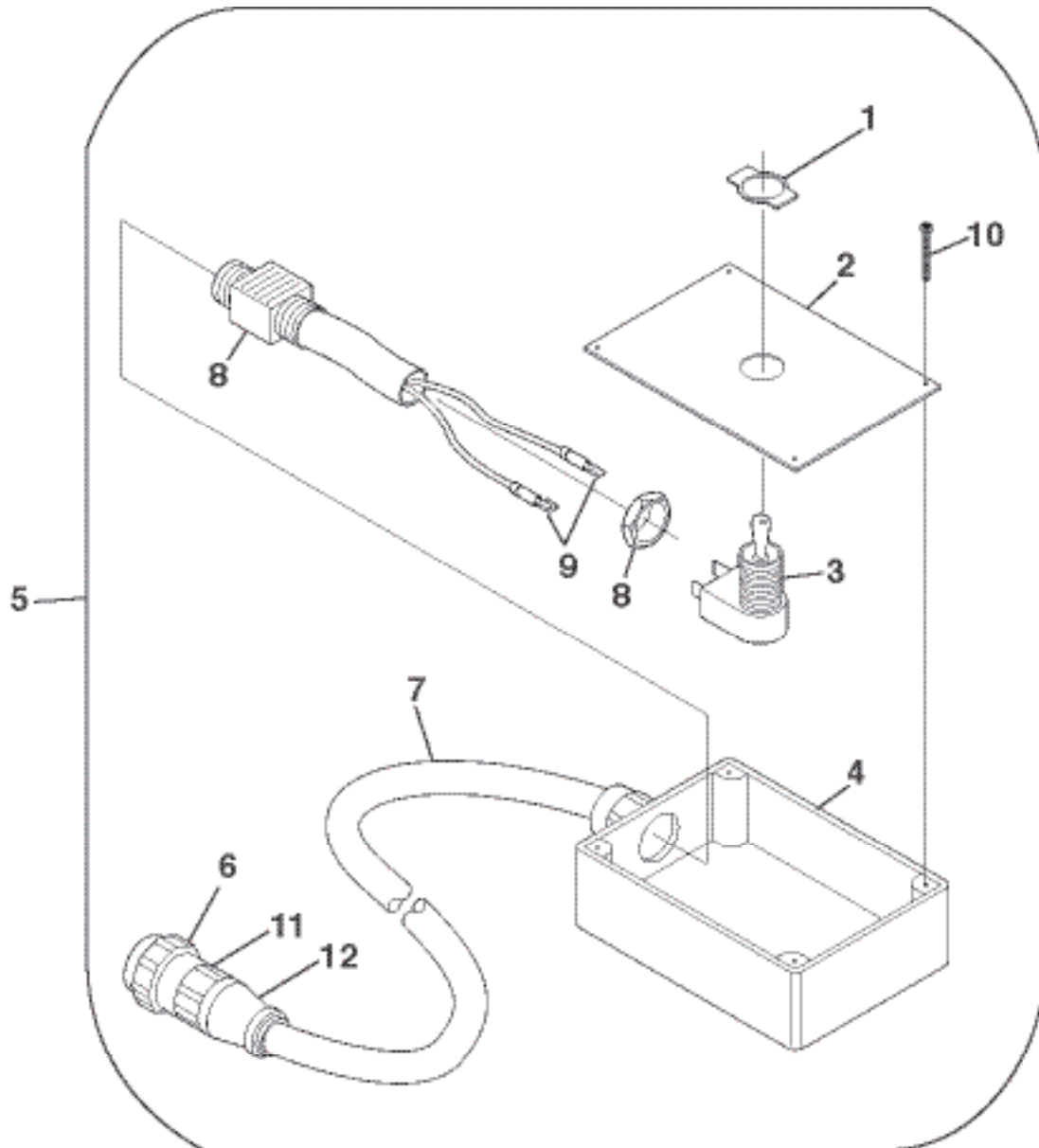
# PUMP BOX ASSEMBLY

## MODEL 1800E OHV

POS	QTY.	DESCRIPTION	PART NO.
1	1	PUMP ASSEMBLY	10344
2	2	8 - 32 NYLON INSERT LOCK INSERT	11077
3	1	1/4" X 1/4" X 90° MALE ELBOW INCLUDES 1/4" NUT #10538	10038
4	1	3/8" X 1/4" X 90° MALE ELBOW INCLUDES 3/8" NUT #10539	10181
5	9	10 - 32 X 3/8" PHILLIPS PAN HEAD SCREW	11145Z
6	9	#10 SPLIT LOCK WASHER	11101Z
7	1	PUMP PEDISTAL	10248
8	2	8 X 3/8" PHILLIPS PAN HEAD TAPPING SCREW	11075Z
9	1	PUMP	10177
10	2	8 - 32 X 7/8" PHILLIPS PAN HEAD SCREW	11081Z
11	2	6 - 32 X 3/8" PHILLIPS PAN HEAD SCREW	11056
12	1	TERMINAL STRIP	10158
13	1	PLATE	12957
14	1	PLUG HARNESS ASSEMBLY	10378
15	1	PUMP BOX DRILLED	10408.1
16	1	1/4" BULKHEAD UNION FITTING INCLUDES 1/4" NUT #10538	10179
17	1	3/8" BULKHEAD UNION FITTING INCLUDES 3/8" NUT #10539	10180
18	16"	3/8" POLY TUBE	10041
19	18"	1/4" POLY TUBE	10040
20	1	RELAY 12 VDC	13609
21	3	10 - 24 X 1/2 PHILLIPS PAN HEAD SCREW	11113Z
22	1	VOLTAGE REGULATOR ASSEMBLY	10366
23	3	10 - 24 FLEX LOCK NUT	11111Z

# CONTROL BOX ASSEMBLY

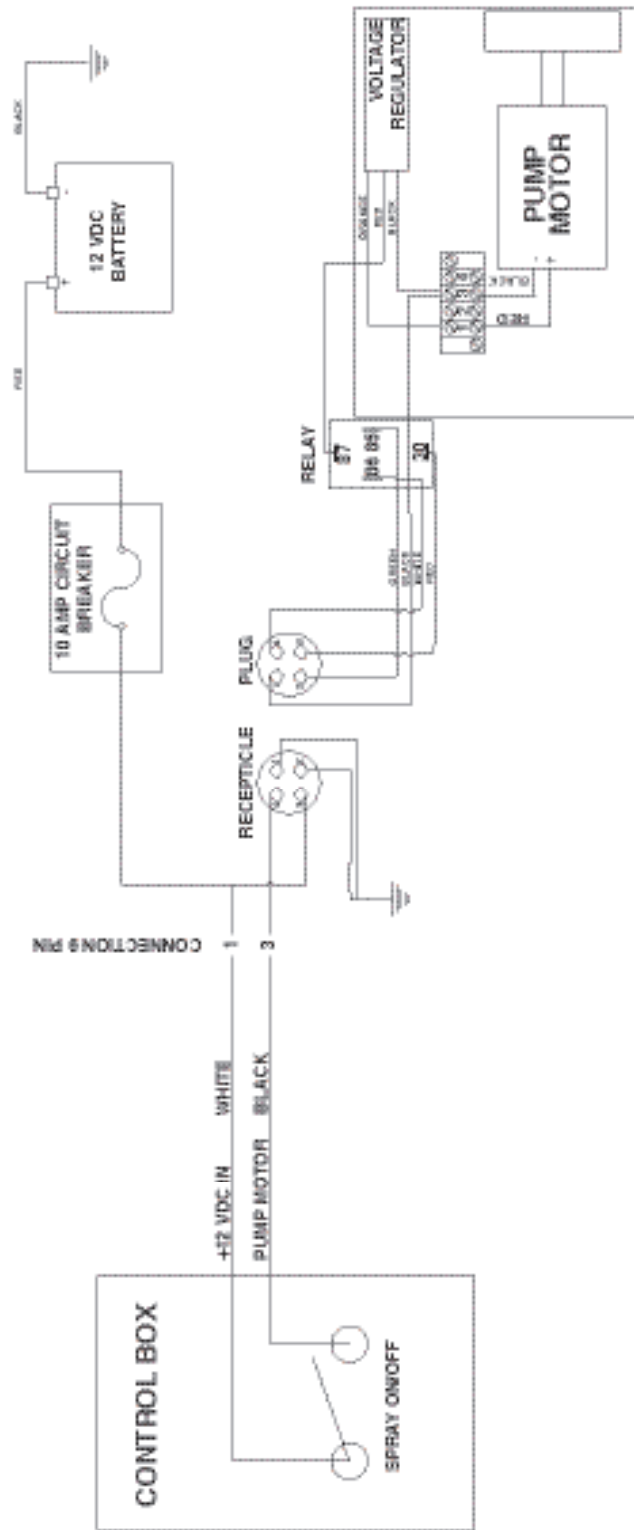
MODEL 1800E OHV



# CONTROL BOX ASSEMBLY

## MODEL 1800E OHV

POS	QTY.	DESCRIPTION	PART NO.
1	1	LABEL, ON/OFF	13412
2	1	SWITCH PANEL INCLUDES #1	12260
3	1	SWITCH	10203
4	1	BOX, DRILLED	10142.3
5	1	CONTROL BOX ASSEMBLY	12313
6	1	9 PIN PLUG	10811
7	180"	2 CONDUCTOR WIRE	SJ16-2
8	1	STRAIN RELIEF W/NUT	12336
9	2	FEMALE SPADE TERMINAL	30513
10	4	4 - 40 X 3/8" PHILLIPS PAN HEAD	11013Z
11	2	PIN, FEMALE	10256.1
12	1	STRAIN RELIEF	10810





## MODEL 1800E OHV

TROUBLE	POSSIBLE CAUSE	REMEDY
Air blast at nozzle but no pressure showing on pressure gauge.	Defective pressure gauge.	Replace.
	Air leaks in the air line between the nozzle and the pressure gauge.	Replace air line or reconnect if loose.
Air blast insufficient or no air pressure at nozzle.	Air leakage around joints on nozzle elbow assembly.	Tighten T-bolt.
	Air leakage between flange ring and nozzle baffle.	Tighten bolts.
	Defective blower.	Repair at nearest blower service center.
	Defective o-ring in socket of nozzle elbow.	Replace.
	Engine speed too low.	Set to recommended speed.
	Filter-Silencer element clogged up.	Clean and service.
Air bubbles in chemical lines.	Fittings crossthreaded, loose or defective between insecticide tank and pump.	Retighten or replace.
	Line strainer gasket pinched.	Replace gasket.
	Pulsation Damper gasket pinched.	Replace gasket.
Air pressure at nozzle but pressure gauge needle will not move when the engine speed is varied.	Defective pressure gauge.	Replace.
Blower trouble.	See blower instruction manual.	See blower manual.

# TROUBLE SHOOTING

## MODEL 1800E OHV

TROUBLE	POSSIBLE CAUSE	REMEDY
Cannot calibrate to correct flow rate.	Air bubbles in chemical lines.	Eliminate by checking fittings and chemical lines for leaks.
	Voltage too low to pump.	Replace voltage regulator.
	Battery charge too low.	Charge battery.
	Leaks in insecticide line between pump and nozzle.	Tighten fittings or replace insecticide line.
	Pump gummed up.	Flush and if necessary, let pump sit for a few hours with flushing solution in cylinder.
Cannot calibrate to correct particle size.	Air pressure too low, which will produce large particles.	Increase engine speed.
	Air pressure too high, which will produce small particles.	Decrease engine speed.
	Flow rate too high.	Calibrate to correct flow rate.
	Flow rate too low.	Calibrate to correct flow rate.
	Nozzle damaged.	Replace damaged parts.
	Temperature too low.	Calibrate above 70° F.
Chemical drips from nozzle when not running.	Insecticide tank filled completely to top.	Leave a 2" air space at the top of the tank when filling.
	Pump system running	Turn spray off.

## MODEL 1800E OHV

TROUBLE	POSSIBLE CAUSE	REMEDY
Chemical drips from the nozzle while running.	Engine RPM too low.	Set throttle for correct air pressure at nozzle.
	Excessive flow rate.	Set for correct flow rate.
	Insecticide tank filled completely to top.	Leave a 2" air space at the top of the tank.
	If the spray is ON, defective nozzle.	Replace.
	If the spray is OFF, insecticide in blower.	Run to clear blower and flush blower to remove the insecticide.
Chemical flow out of nozzle is noticeably pulsating.	No air dome in pulsation damper.	Check the air dome to make sure it has not become filled with chemical.
Chemical leaks at fittings.	Fittings crossthreaded or defective.	Retighten or replace.
Chemical pump not running when Spray switch is turned on.	Defective Spray switch or loose connectors.	Replace.

# TROUBLE SHOOTING

## MODEL 1800E OHV

TROUBLE	POSSIBLE CAUSE	REMEDY
Chemical pump runs but no chemical flow.	Leak in suction line.	Check lines, tighten.
	Out of chemical.	Check that both chemical tank and flush tank have solution in them.
	Three-way manual valve not opening.	Disassemble and clean.
	Three-way manual valve clogged up.	Replace gasket.
	Line strainer gasket pinched.	Clean or replace.
	Line strainer plugged.	Prime with motor oil.
	Pump is dry.	Visually check pump for rotation and piston movement.
	Pump defective.	Repair or replace.
Coupling sleeve damaged or thrown.	Misalignment between engine and blower shafts.	Carefully align engine and blower shafts.
Engine backfires.	Gasoline mixture too lean.	Check carburetor.
	Defective spark plugs.	Clean, adjust and/or replace.
	Inlet valves sticking.	Free, clean and adjust valve.
Engine compression low.	Valve clearance improper.	Adjust valve.
	Defective cylinder head.	Consult nearest engine service center.
	Defective valves or piston rings.	Consult nearest engine service center.
	Cylinder head gasket leaks.	Tighten head bolts or replace gasket.

## MODEL 1800E OHV

TROUBLE	POSSIBLE CAUSE	REMEDY
Engine does not deliver full power.	Carburetor choke valve partly closed.	Adjust choke.
	Air cleaner dirty.	Service air cleaner.
	Carburetor defective.	Clean, adjust or replace.
	Exhaust restricted.	Replace muffler.
Engine hard to start, will not start or fails.	Ignition switch located on engine defective.	Replace.
	Out of fuel or contaminated fuel.	Add fuel or clean tank and refuel.
	Clogged fuel filter.	Clean or replace fuel filter.
	Spark plugs faulty.	Clean or replace spark plugs.
	Fuel pump or carburetor defective.	Consult nearest engine service center.
	Defective fuel pump.	Repair or replace.
	Terminals loose or wiring defective.	Tighten loose terminals, replace defective wiring.
	Spark plug wire disconnected.	Connect spark plug wire.
	See engine instruction manual.	See engine manual.
Pinched or shorted wiring in the control box.	Re-route wires and tape them.	

# SPARE PARTS KIT FOR CLARKE LECO 1800E OHV

MODEL 1800E OHV

QTY.	DESCRIPTION	ITEM
	SPARE PARTS KIT INCLUDES THE FOLLOWING:	332669
1	STRAINER	
1	FITTING, 90°, 3/8" TUBE, 3/8" TUBE	
1	FITTING, COUPLING, 3/8" TUBE, 3/8" TUBE	
1	FITTING, ELBOW, 3/8" x 1/4", 90°	
1	FITTING, 90°, 1/4" TUBE, 1/8" TUBE, NPT	
1	T FITTING, 1/4" x 1/4" x 1/8"	
1	BULKHEAD UNION JACO 1/5	
1	FITTING, BULKHEAD, 3/8" TUBE	
1	O-RING, VITON, 70 DURO OD 4.188"	
1	O-RING, VITON, 70 DURO OD 2.625"	
2	O-RING, VITON (BROWN) OD 0.875"	
1	O-RING, VITON, 70 DURO OD 0.50"	
1	O-RING, VITON (BROWN) OD 0.438"	
8'	TUBE, 1/4" PE	
8'	TUBE, 3/8" PE	
3'	AIRLINE 1/4" ID 300 PSI MAX SE	
4'	GAS LINE 1/5	











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