

SERVICE

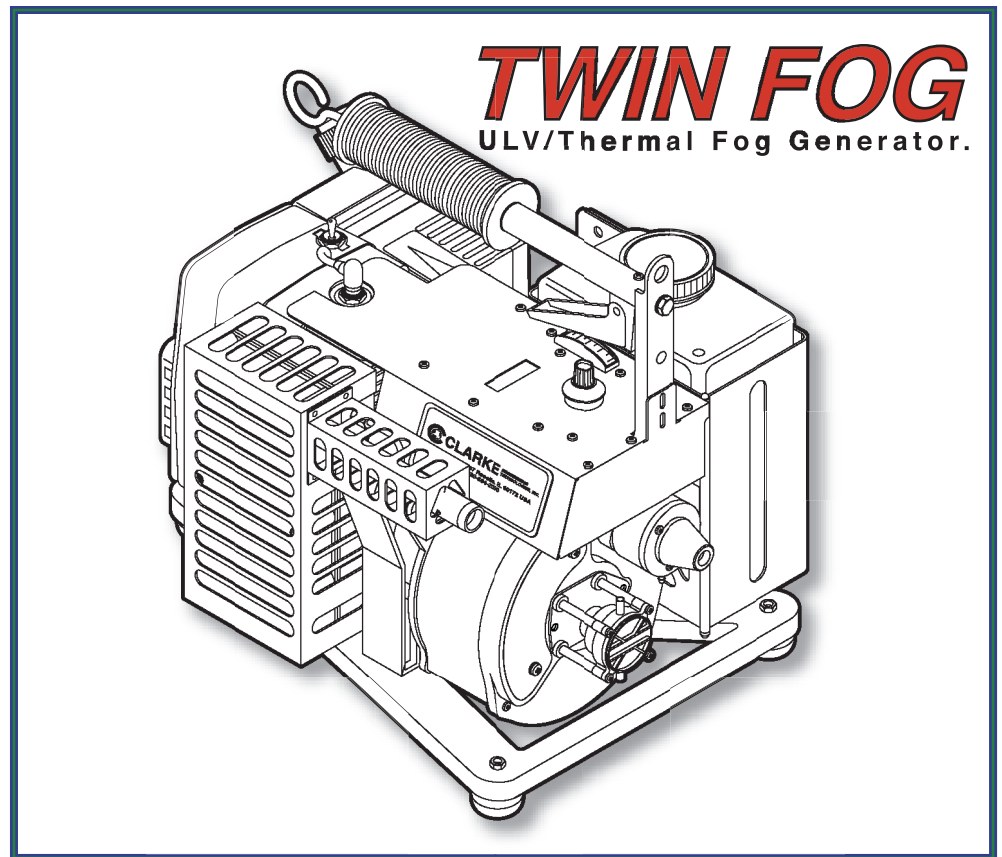
PRODUCTS

EQUIPMENT

EDUCATION

CLARKE

Mosquito Control



INSTRUCTION MANUAL AND PARTS LIST

Global Solutions for Mosquito Control 

159 N. Garden Ave. • P.O. Box 72197 • Roselle, IL 60172 USA
Ph.# 630-894-2000 • Toll Free 800-323-5727 • Fax 630-894-1774
www.clarkemosquito.com

(a) Clarke Mosquito Control Products (Clarke) warrants the Twin Fog (the Product) to be free from defects in material and workmanship for a period of twelve (12) months from the date of delivery to the customer. This warranty specifically excludes normal wear and tear items including, but not limited to, spark plugs and filters. Clarke will replace any parts which are found by Clarke to defective and Clarke will repair or replace any unit which Clarke finds to be the result of poor workmanship.

All warranty evaluation or repair is to be done at Clarke s facility or a place designated by Clarke. Any returns to Clarke for warranty evaluation or repair must be returned freight prepaid and must be returned with a Returned Merchandise Authorization (RMA) number issued by Clarke to the customer. Clarke assumes no responsibility for any returns without an RMA number. An RMA number can be obtained by contacting the Clarke office in Roselle, IL USA at the numbers below.

Some of the parts on the unit are warranted separately by their manufacturers (the Component Manufacturers). The information on these parts and their warranties is included with the documentation on the unit.

The following are specifically excluded from the Clarke Warranty for this unit:

1. Any item warranted by a Component Manufacturer.
2. The cost of labor in connection with replacement or repair of defective parts unless the work is done by Clarke.
3. Any product that has been altered from its original factory configuration or has unauthorized additions.
4. Any misuse of the product or damage resulting from that misuse, including improper chemical usage.

(b) OTHER THAN THE WARRANTY SPECIFICALLY PROVIDED IN SUBPARAGRAPH (a) CLARKE MAKES NO EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER THING CONCERNING THE PRODUCTS, NOR DOES CLARKE MAKE ANY REPRESENTATIONS CONCERNING THE PRODUCTS, OTHER THAN THAT SUCH PRODUCTS, WHEN SHIPPED FROM CLARKE S FACILITES, SHALL MEET SUCH APPLICABLE SPECIFICATIONS.

The exclusive remedy for breach by Clarke of any warranty or any other duty owed by Clarke in all cases, whether based on negligence, misrepresentation, other tort (including strict tort), contract or warranty, but excepting those cases involving claims of persons alleging personal injury because of Clarke s negligence or willful misconduct, shall be limited to replacement of the Product sold pursuant to subparagraph (b) herein, with respect to which damages are claimed, plus transportation charges thereon. Under no circumstances shall Clarke be responsible for special, indirect or consequential damage, even if Clarke has been advised of the possibility of such damages.

Clarke Mosquito Control Inc. Tel: ++630-894-2000 USA or Toll Free (in USA) 1-800-323-5727
Fax: ++ 630-894 1774

TWIN FOG

CLARKE Twin Fog SPECIFICATIONS

Manual Issue CLARKE Twin Fog, 9/00

Engine	Tecunseh Two-Cycle
Blower	CLARKE Special Design
ULV Dispersal Head	CLARKE Design with no moving parts
Fog Nozzle	CLARKE Special Design
Fuel	Gasoline Min Octane
Fuel Tank Capacity	1 quarts (.95 liters)
Insecticide Tank Capacity	32 ounces (946 ml)
Droplet Size	90% less than 20 Microns
Flow Rate	3.5 oz/min (104 ml/min)
Size	13" (33 cm) Long 10" (25 cm) Wide 14" (36 cm) High
Net Weight (Empty)	16 pounds (7 kilos)
Shipping Weight	20 pounds (9 kilos)
Shipping Cube	1.72 feet (.05 meters)

THIS MANUAL IS FOR MY CLARKE TWIN FOG

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.

TWIN FOG

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 CLARKE Twin Fog ULV/Thermal Fog Generator.

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 CLARKE Twin Fog ULV/Thermal Fog Generator. No difficulty should be encountered in following them.

Before attempting to start your unit the first time, study the complete Operating Instructions carefully and identify all parts referred to. You will find that the operation of your CLARKE Twin Fog ULV/Thermal 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 CLARKE Twin Fog ULV/Thermal 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.

WARRANTY	1
CLARKE TWIN FOG SPECIFICATIONS.....	2
FOREWORD	3
SAFETY SUMMARY	5
SCOPE	6
DESCRIPTION	6
THEORY OF OPERATION	7
ASSEMBLING INSTRUCTIONS	8
ENGINE PREPARATION.....	9
OPERATING INSTRUCTIONS	11
PRE-START.....	12
START-UP	12
ULV FOGGING.....	13
THERMAL FOGGING	13
CALIBRATION ADJUSTMENT	15
MAINTENANCE INSTRUCTIONS	16
GENERAL	16
DAILY.....	16
EVERY 50 HOURS	16
EVERY 100 HOURS	16
ENGINE.....	18
PREPARATION FOR STORAGE.....	19
CONTENTS - ILLUSTRATED PARTS BREAKDOWN SECTION.....	21
ILLUSTRATED PARTS BREAKDOWN SECTION.....	22
TROUBLE SHOOTING CHECKLIST	34

⚠ WARNING

THIS CLARKE TWIN FOG 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 CLARKE TWIN FOG.

⚠ 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 whle 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.

This manual provides the description, theory of operation, operating instructions, calibration instructions, maintenance instructions and illustrated parts breakdown for the CLARKE Twin Fog ULV/Thermal Fog Generator.

DESCRIPTION

The CLARKE Twin Fog ULV/Thermal Fog Generator is intended for insect control use. It consists of a positive displacement blower driven by a 2-cycle gasoline engine, an insecticide pump, a ULV discharge head, a thermal fog nozzle, an insecticide tank and a flow control panel for adjusting insecticide flow rates. The Twin Fog Fog Generator is a complete hand held unit weighting only 16 pounds.

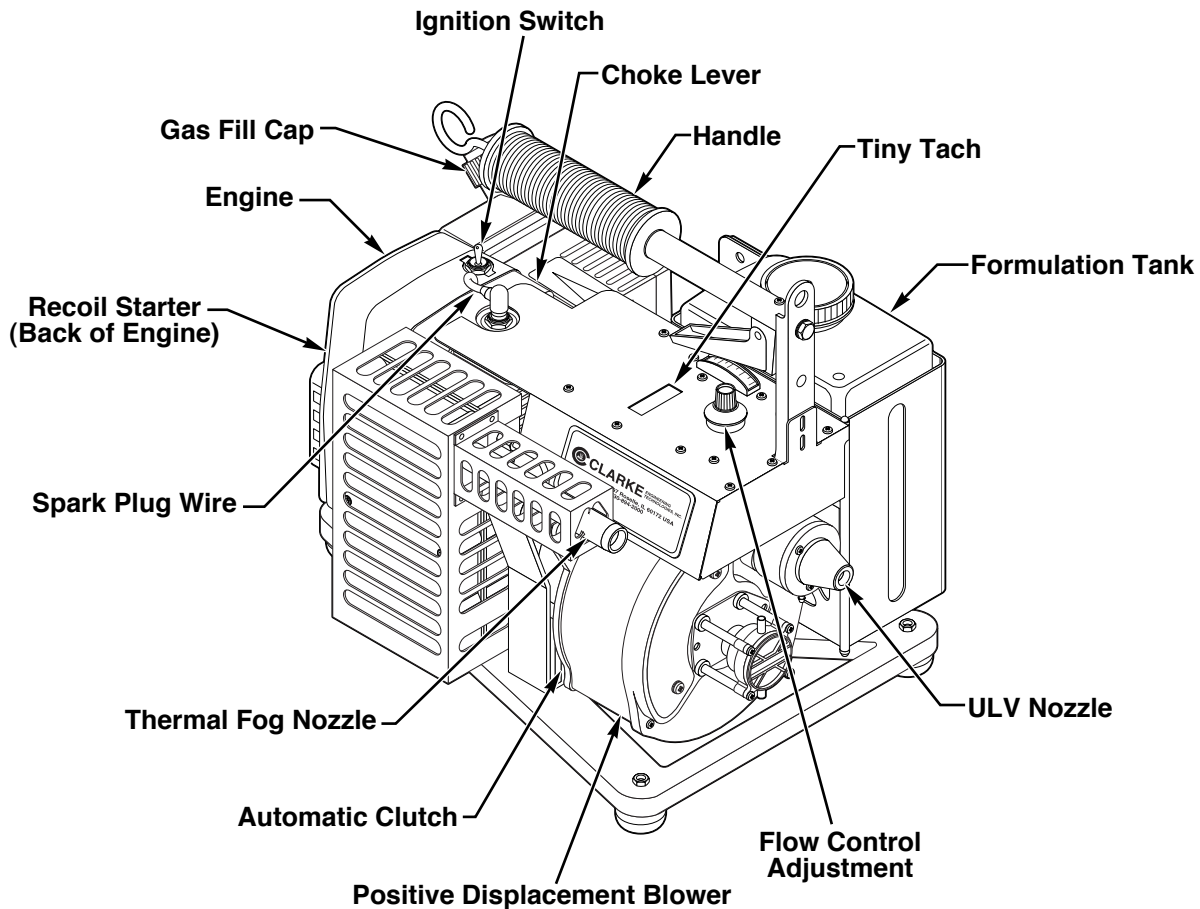


Figure 1

TWIN FOG

The CLARKE Twin Fog ULV/Thermal Fog Generator is designed for dispersing insecticides as either a Ultra Low Volume (ULV) Cold Aerosol Fog Generator or a Thermal Fog Generator. A selector switch is mounted on the control panel to switch from ULV to Thermal mode. The default position is the ULV mode. The insecticide is pumped from the insecticide tank by the insecticide gear pump to the flow control adjustment valve. This needle valve has arbitrary setting from 0 to 10 for setting the flow rate. The valve is closed when turned fully clockwise. Three complete counterclockwise turns from the closed position fully opens the valve. When the engine throttle trigger is squeezed, the insecticide flows either to the ULV nozzle or the Thermal Fog nozzle, depending on which position the selector switch is set. The insecticide will flow through the needle valve when adequate air pressure opens the valve. The CLARKE Twin Fog ULV/Thermal Fog Generator is designed to operate only at full throttle.

In the ULV mode, the insecticide flows to the specially designed Clarke dispersing head where it is sheared into optimum size droplets by the air blast from the blower and is dispersed into the atmosphere. After dispersal, the droplets stay suspended in the air and penetrate the insect infested area. A pressure gauge mounted on the control panel measures the air pressure at the ULV nozzle.

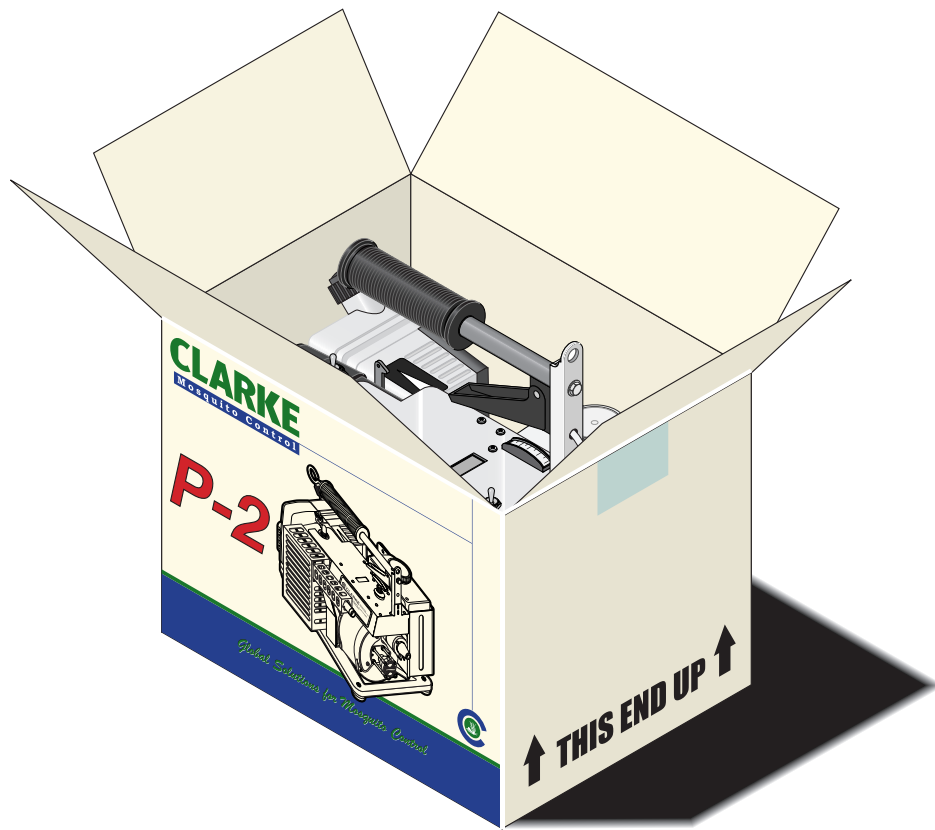
In the Thermal mode, the insecticide flows to the thermal fog nozzle where it is vaporized by the heat from the engine muffler and is dispersed into the atmosphere. After dispersal, the droplets stay suspended in the air and penetrate the insect infested area.

A tachometer/hour meter (Tiny Tach) is also mounted on the control panel. When the engine is running, the display will indicate the RPM of the engine. When the engine is shut down, the display will switch to run time, initially in minutes and then switching to hours once the total reaches 60 minutes. The display will flash off and on for approximately 10 minutes to show the total run time. If, after the display stops flashing, only two numbers are shown, the time indicated represents minutes, i.e. 03 means three minutes. If there are four digits, such as 0024, then the time indicated will be the number of hours. The meter will automatically switch from minutes to hours once run time reaches 59 minutes. Reference Figure 1.

8 ASSEMBLY INSTRUCTIONS

CLARKE
Mosquito Control

The Clarke Twin Fog ULV/Thermal Fog Generator is shipped completely assembled ready for operation. Only the insecticide and fuel mix need to be added. Before proceeding to the operating instructions, prepare the engine for operation.



TWIN FOG

FUEL-OIL MIXTURE

1. Oil
 - Use a clean, high quality, two-cycle oil. DO NOT USE multi-viscosity oils. For longer engine life, less spark plug fouling and less carbonizing of the ports, a synthetic two-cycle oil is highly recommended.
2. Gasoline
 - Always use fresh, clean automotive type gasoline. While unleaded regular is preferred, leaded premium grades are acceptable. DO NOT USE gasoline containing methanol.
3. Mixing Instructions
 - Fill an approved clean container with one quarter of the recommended amount of gasoline using the fuel mix chart on page 9.
 - Add the recommended amount of oil to the gasoline in the container using the fuel mix chart on page 9.
 - Screw the cap on the container and shake vigorously.
 - Unscrew the cap on the container and add the remaining gasoline.

Fuel Mix Chart		Mixture 24:1	
U.S.		Metric	
Gasoline	Oil To Be Added	Petrol	Oil To Be Added
1 Gallon	5 ounces	4 Liters	167 milliliters
2 Gallon	11 ounces	8 Liters	333 milliliters
5 Gallon	27 ounces	20 Liters	833 milliliters

ENGINE SPECIFICATIONS

Engine Type Cycle	Tecumseh Two-	Fuel Tank	1 Quart (.95 Liters)
Displacement:	49.2 cc 3 cu. in.	Spark Plug:	Champion RCJ8Y
Starter:	Auto Rewind	Spark Plug Gap:	0.030 inches
Carburetor:	All Position - Diaphragm Type		
Lubrication:	Fuel - Oil Mix 24 to 1		

CAUTION

AVOID BREATHING SPRAY MIST. A RESPIRATOR SHOULD BE WORN AT ALL TIMES WHEN DISPERSING MATERIAL.

IMPORTANT: Failure to follow proper gasoline-oil mix instructions could result in serious damage to the engine.

NEVER mix gasoline & oil directly in the engine fuel tank.

NEVER add fuel to the tank in a closed unventilated area.

DO NOT add fuel to this unit near an open fire or spark.

BE SURE to wipe off spilled fuel before attempting to start the engine.

DO NOT attempt to refuel an extremely hot engine.

NOTE

When preparing fuel mixture, mix only the amount needed for the job you are to do. Do not use fuel mixture that has been stored longer than two (2) months. Fuel mixture stored longer than this will cause hard starting and poor performance. If fuel mix has been stored longer than this time, it should be removed and filled with a fresh mixture.

Read this complete OPERATION INSTRUCTIONS section before starting the CLARKE Twin Fog ULV/Thermal Fog Generator.

When operating the CLARKE Twin Fog ULV/Thermal Fog Generator for the first time, move to an uncongested and well-ventilated work area in an open area away from flammable materials.

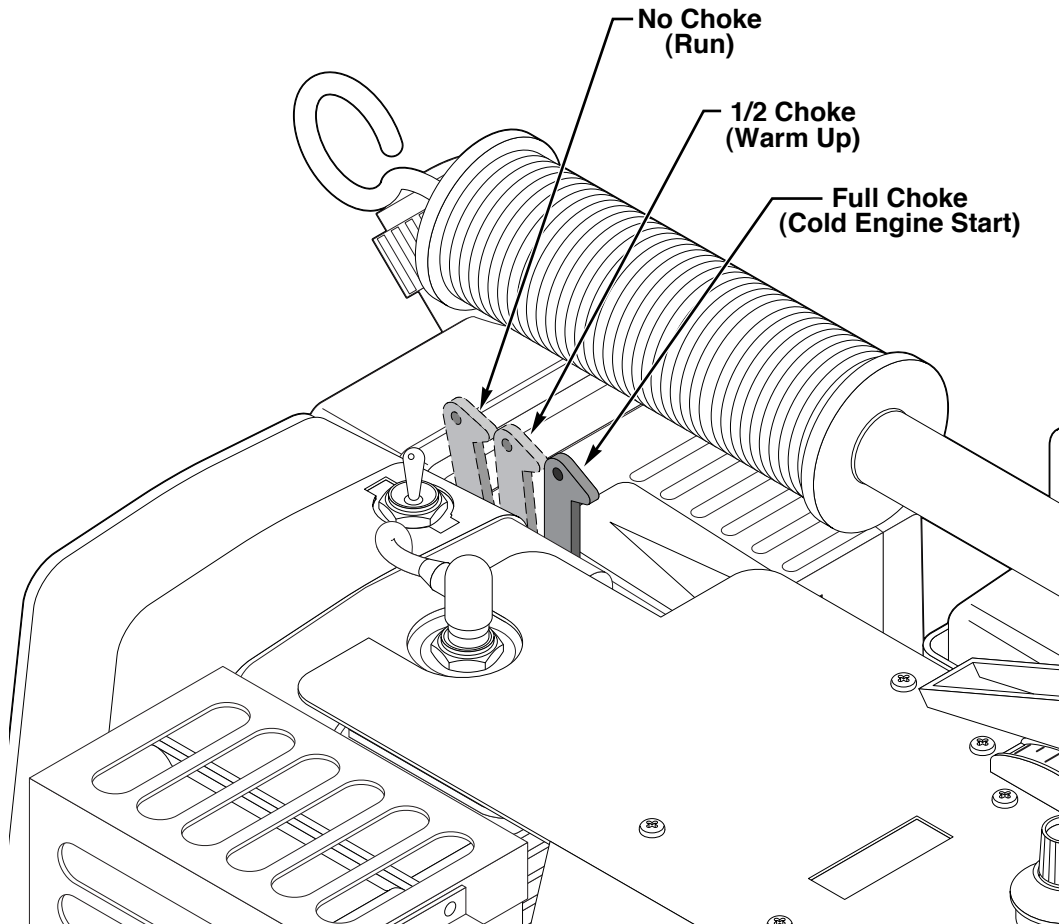


Figure 2

PRE-START

1. Fill the engine fuel tank. Reference Figure 1.
 - a. Clean around the engine fuel tank cap before removing to avoid getting dirt or other materials in the tank. Remove the cap.
 - b. Use a funnel to avoid spillage.
 - c. Add the recommended fuel mix according to the Fuel Mix Chart on page 9. Do not fill the fuel tank completely. Fill the tank to _" below the bottom of the filler neck to provide space for fuel expansion.
 - d. Replace the cap and wipe the tank clean.

5. Fill the insecticide tank. Reference Figure 1.
 - a. Remove the insecticide tank cap.
 - b. Fill the tank with the desired insecticide to within _" to the top of the tank. It is absolutely necessary that the insecticide be free of trash. Any trash or suspended solid matter may stop up the flow rate needle valve. It is recommended that the insecticide be filtered before filling the tank.
 - c. Replace the tank cap. Tighten firmly to prevent leakage.

STARTING

1. Put the engine ignition switch in the ON position. Reference Figure 1.

2. Close the choke lever to the Full Choke position. If the engine is warm or the ambient temperature is high, close the choke lever to _ Choke, or keep it open fully at No Choke. Reference Figure 2.

3. Close the flow control adjustment valve (turn fully clockwise), grasp the handle bar and squeeze the throttle trigger. Reference Figure 1.

4. Pull the recoil start briskly. Gradually return the handle. Do not let it snap back. Pull the rope in the direction of the starter rotation. Do not pull the rope out of the drum. Reference Figure 1.

5. After starting the engine, gradually open the choke by moving it to the No Choke position. Do not fully open the choke immediately when the engine is cold or the ambient temperature is low, because the engine may stop. Reference Figure 2.

6. Let the engine warm up by running it at low RPM (slow speed) for approximately one or two minutes.

NOTE: If the engine becomes flooded, turn the flow control adjustment to the fully clockwise OFF position, squeeze the throttle trigger with the choke open, and pull the recoil start until the engine starts.

ULV FOGGING

1. Move the selector switch to the ULV position. Reference Figure 1.
2. Set the flow control adjustment to the desired flow rate setting. Reference Figure 1.
3. TO START FOGGING – Squeeze the throttle trigger to full speed.
4. TO STOP FOGGING – Release the throttle trigger.
5. TO STOP THE ENGINE – Move the ignition switch to the OFF position.

THERMAL FOGGING

1. Turn the flow control adjustment to the fully OFF (clockwise) position. Reference Figure 1.
2. Move the selector switch to the Thermal Fog position. Reference Figure 1.
3. Squeeze the throttle trigger and bring the engine to full speed for 1 to 2 minutes to heat up the fog nozzle. Reference Figure 1.
4. TO START FOGGING – While at full throttle, slowly open the flow control adjustment by turning counterclockwise until the desired fog is obtained.
5. TO STOP FOGGING – Turn the flow control adjustment to the fully clockwise OFF position and run the engine at full speed until all insecticide is cleared from the fog nozzle. Then release the throttle trigger.
6. TO STOP ENGINE – Move the ignition switch to the OFF position.

NOTE

If the pump does not prime when thermal fogging, change the selector switch to the ULV position until insecticide flows out of the ULV Nozzle. This will prime the pump. Switch to the Thermal Fog position as soon as the insecticide starts coming out of the ULV nozzle.

TWIN FOG

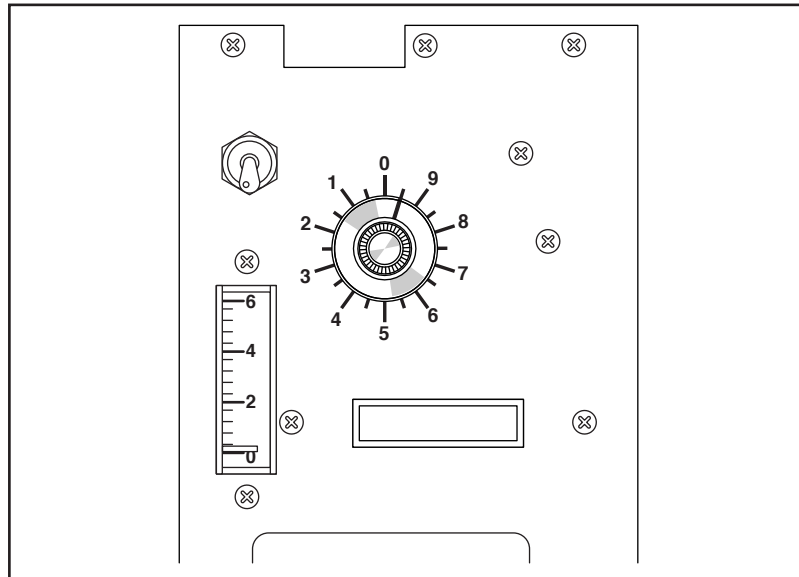


Figure 3

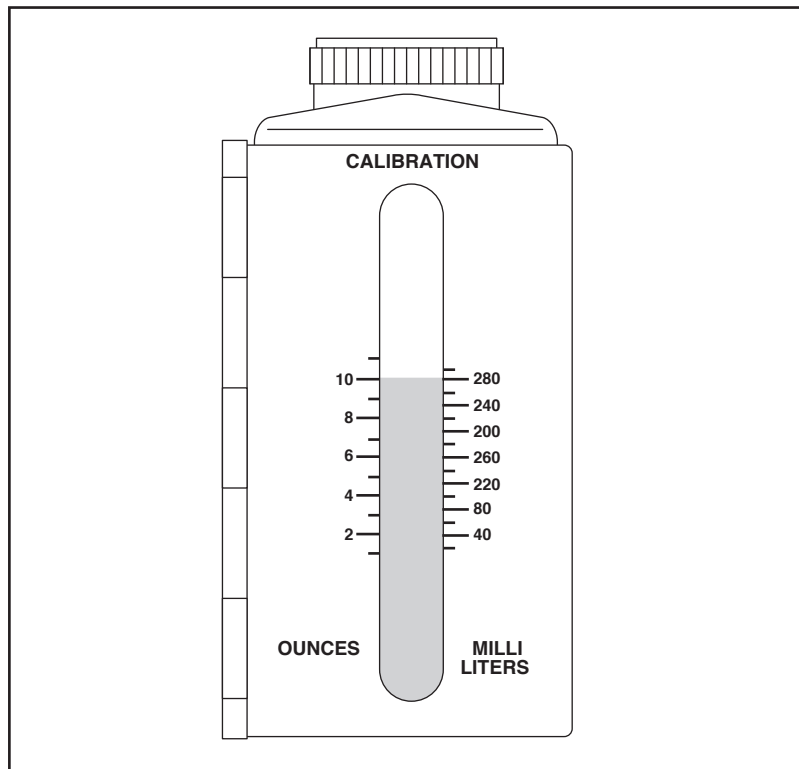


Figure 4

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

The easiest and most accurate way to calibrate the flow rate is to pre-determine the amount of insecticide to be dispersed and then time how long it takes to dispense that amount of insecticide. In other words, measure an amount of fluid to be pumped and time how long it takes to pump this amount.

This can be easily done with the Clarke ULV/Thermal Fog Generator. Figure 3 shows the flow control adjustment that has an arbitrary scale from 0 to 10 with the 0 position being the OFF position. To increase the flow, simply turn the knob counterclockwise. Note that the valve has 3 full turns from the OFF clockwise position to the counterclockwise wide open position. Figure 4 shows the insecticide tank with the calibration scale located on the front of the tank. This calibration scale is marked 1 to 11 ounces (oz.) and 20 to 300 milliliters (ml.).

Before calibrating, loosen the insecticide tank cap to release the vacuum that slightly distorts the tank while the unit is running. After calibration, tighten the cap.

CALIBRATION

1. Assume you decide to calibrate by collecting a 100-milliliter (ml.) sample. You simply choose a point on the scale (say at the 200 ml. mark) and start spraying. Start the stopwatch as the fluid level passes this mark. When the fluid level passed the mark that is 100 milliliters lower (in this case, the 100 ml. mark), stop the stopwatch.
2. If it takes 38 seconds to spray this 100-milliliter (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-milliliter sample times $1.57 = 157 \text{ ml.}$ in one minute (157 ml./min). To change milliliters to fluid ounces (oz.) divide milliliters by 29.57. There are 29.57 milliliters in one fluid ounce. $157 \text{ ml.} \div 29.57 = 5.3 \text{ oz./min.}$
3. If this is not the desired flow rate, repeat the above steps. By trial and error, continue to adjust the knob until the desired flow rate is achieved.

The Conversion Table below will be helpful if it is necessary to calibrate in a different unit from that given in the dosage recommendation.

CONVERSION TABLE		
GIVEN	MULTIPLY	TO OBTAIN
Fl. Oz. / Min.	00.479000	Gal. / Hr.
Fl. Oz. / Min.	29.568000	MI. / Min.
Gal. / Hr.	02.133300	Fl. Oz. / Min.
Gal. / Hr.	63.080000	MI. / Min.
MI. / Min.	00.033820	Fl. Oz. / Min.
MI. / Min.	00.015852	Gal. / Hr.

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 CLARKE Twin Fog ULV/Thermal Fog Generator.
- Service the engine according to the Engine Maintenance below and the Engine Operator's Manual that is enclosed.

DAILY

- Visually check the fog generator each day before use and make any necessary adjustments and /or repairs.
- Check all bolts and fasteners and tighten if necessary.
- Check the nozzle for wear or physical damage. Replace if damaged.

EVERY 50 HOURS

- Check all fuel mix hoses, insecticide lines and fittings for cracks, leaks or wear. Replace if needed.

EVERY 100 HOURS

- Check the spark plug yearly or every 100 operating hours. Reference Figure 5
 1. Clean the area around the spark plug.
 2. Remove and inspect the spark plug.
 3. Replace the spark plug if the electrode is pitted, burned or the porcelain is cracked.
 4. Check the electrode gap with a wire feller gauge and set the gap at .030" if necessary.
 5. Install the spark plug and tighten securely.

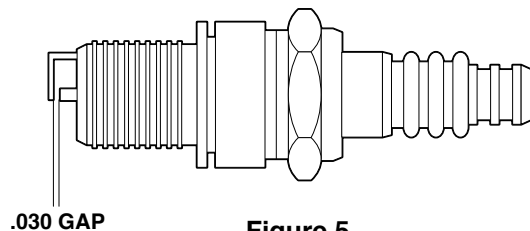


Figure 5

TWIN FOG

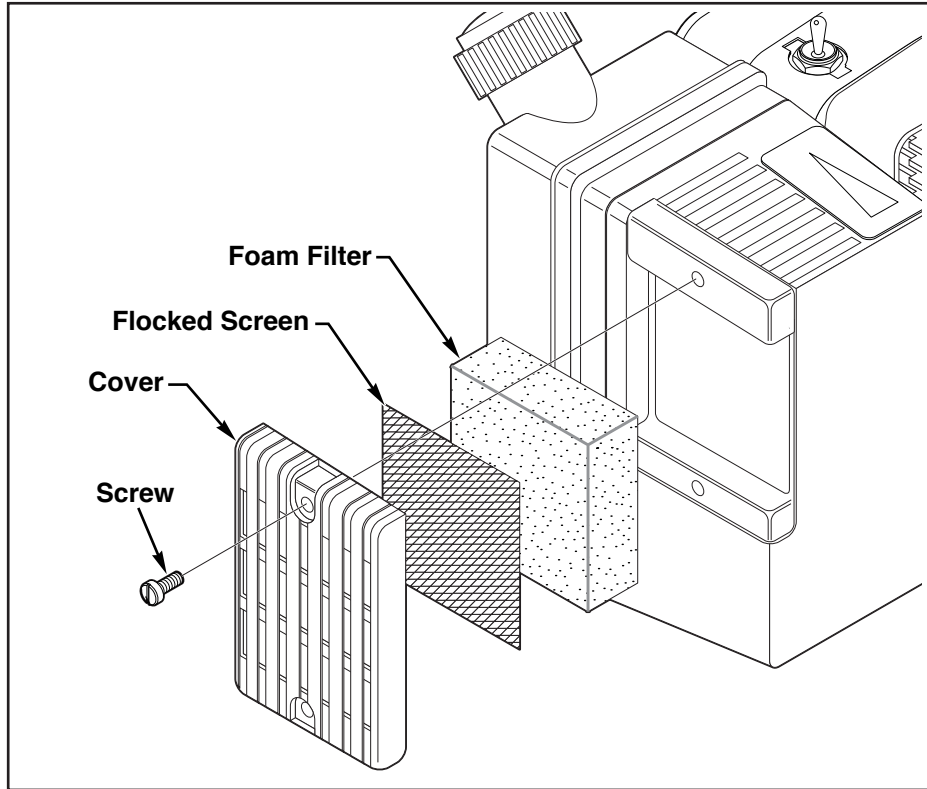


Figure 6

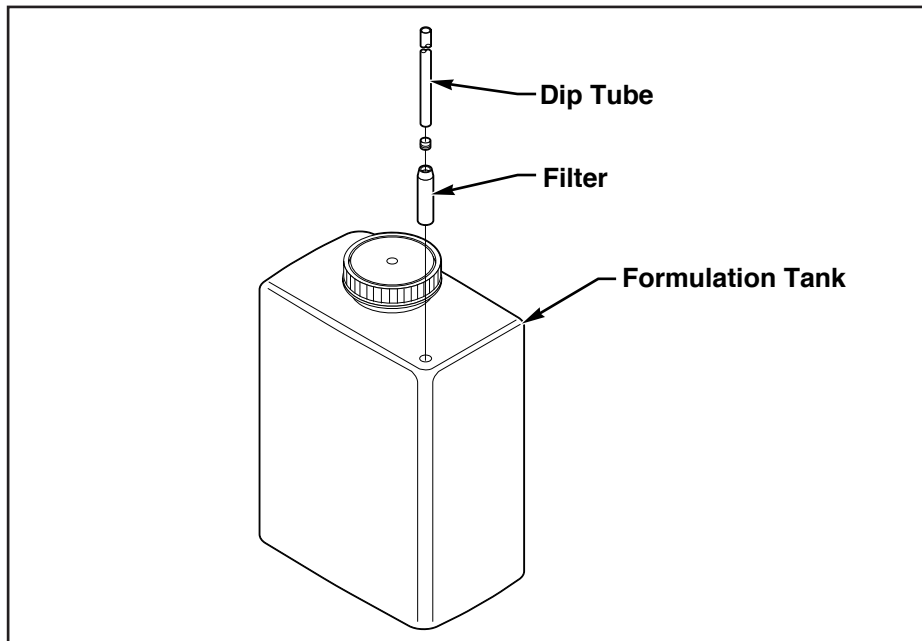


Figure 7

TWIN FOG

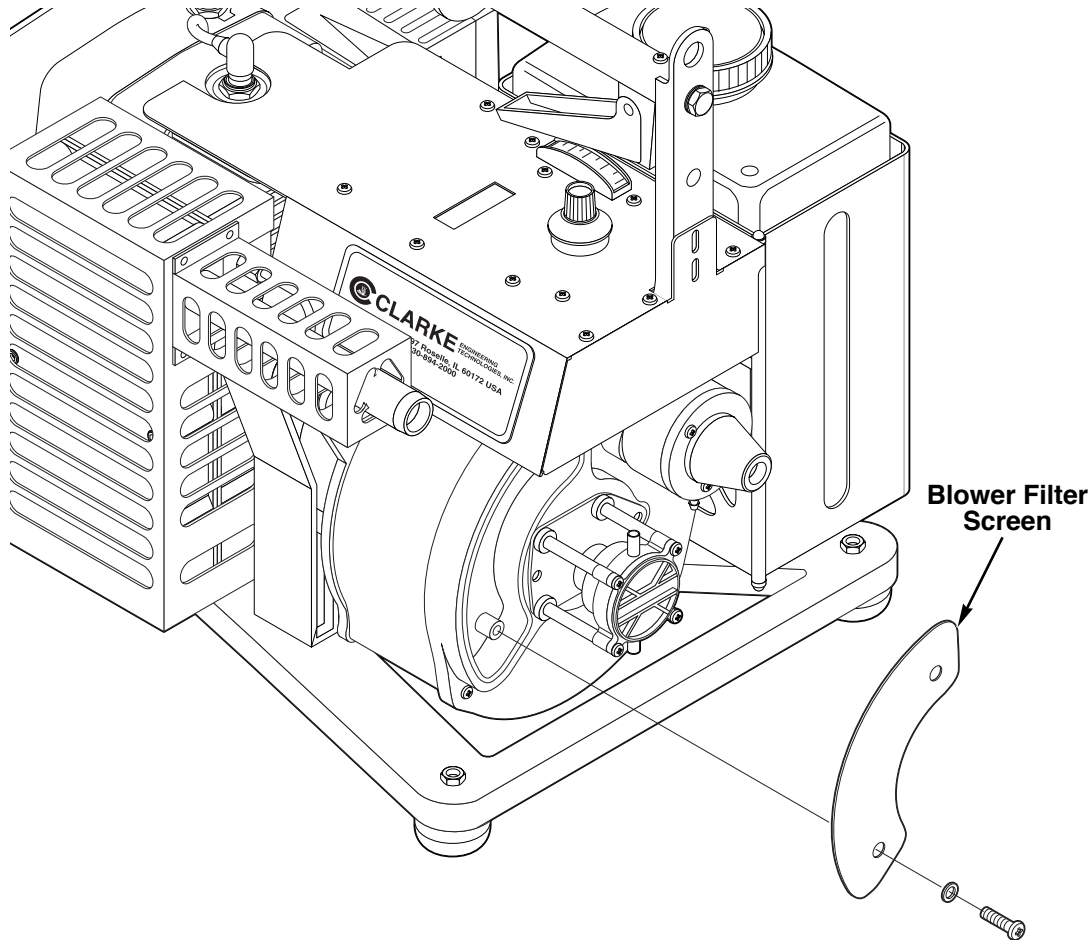
WHEN REQUIRED**AIR CLEANER** - Reference Figure 6

1. To remove and install air filter
 - a. Loosen the two screws.
 - b. Remove the cover.
 - c. Remove the optional pre-filter.
 - d. Remove the foam filter.
 - e. Inspect the pre-filter and/or foam filter for discoloration or dirt accumulation. If either is present, service as described below.
 - f. Clean the inside of the cover and body thoroughly.
 - g. Reassemble as shown.

8. To service the air filter
 - a. Foam Filter
 - I. Clean and re-oil every three (3) months or every 25 operating hours. Clean and re-oil daily if used in extremely dusty conditions.
 - II. Wash in water and detergent solution and squeeze (don't twist) until all dirt is removed.
 - III. Rinse thoroughly in clear water.
 - IV. Wrap in a clean cloth and squeeze (don't twist) until completely dry.
 - V. Saturate with engine oil and squeeze (don't twist) to distribute the oil and remove the excess oil.
 - b. Pre-Filter
 - V. Wash in water and detergent solution.
 - VI. Rinse thoroughly in clear water and air dry.

INSECTICIDE TANK FILTER – Reference Figure 7

Remove the Insecticide Tank Dip Tube and clean or replace the filter when necessary. This filter will stop up quickly if the insecticide has foreign material suspended in the insecticide formulation.

**Figure 8****BLOWER FILTER** – Reference Figure 8

Remove and clean the Blower Filter screen when necessary. This filter will stop up quickly if the unit is used in dusty or dirty surroundings.

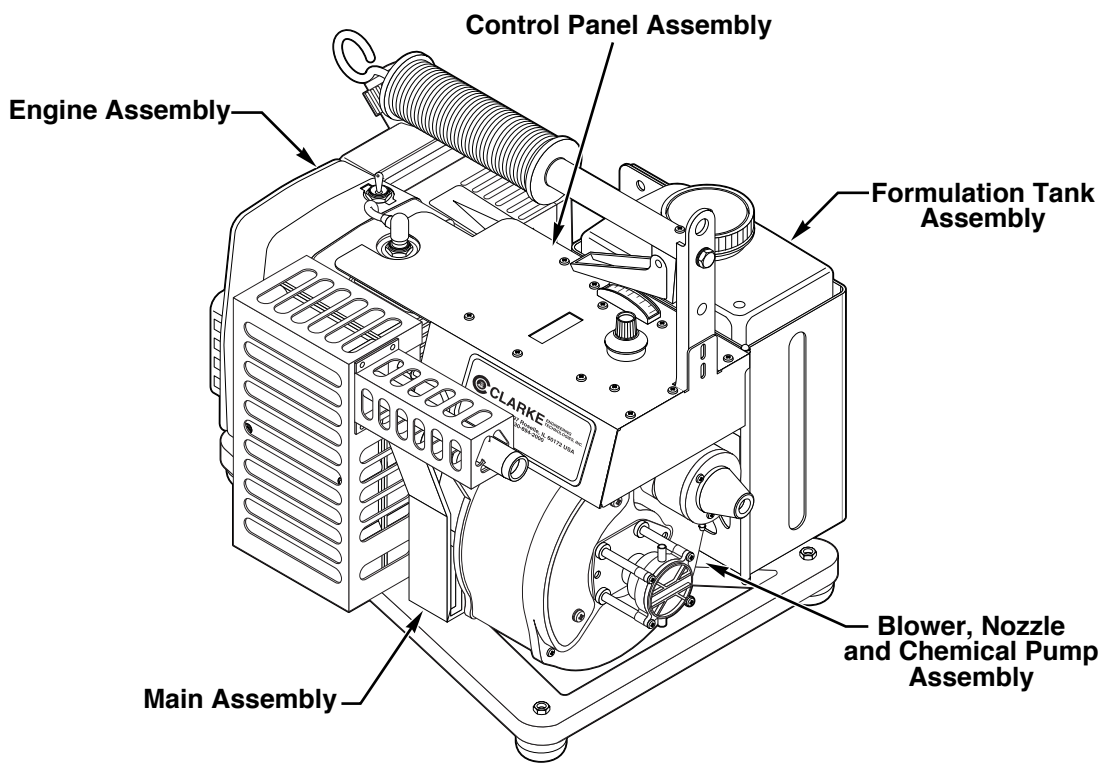
CARBURETOR

The carburetor greatly affects the operating conditions of the engine. Since it has been adjusted carefully at the factory before shipment, avoid adjusting it unless absolutely necessary. If adjustments are needed, contact your nearest Tecumseh dealer.

Before storing the CLARKE Twin Fog ULV/Thermal Fog Generator after use or if it is to be idle for any appreciable length of time, the following preparations should be made:

1. Remove insecticide from the formulation tank.
2. Put a suitable flushing solution in the tank.
3. Move the selector switch in the ULV position and start the engine.
4. Squeeze the throttle trigger and fog the flushing solution through the ULV nozzle until the system is thoroughly flushed.
5. Pour light-weight oil into the formulation tank.
6. Spray in the ULV position until the oil in the insecticide is completely through the system and sprays out of the nozzle.
7. Set the flow adjustment needle valve to 0 and stop the engine.
8. Drain the fuel mix from the fuel tank.
9. Start the engine and let it run until it stops from lack of fuel.
10. Remove the spark plug and pour a teaspoon of oil through the spark plug hole.
11. Rotate the crankshaft several times by pulling the starter handle.
12. Replace the spark plug.
13. Clean all other exterior surfaces of the engine.
14. Spread a light film of oil over any exposed metal surfaces of the engine to prevent rust.

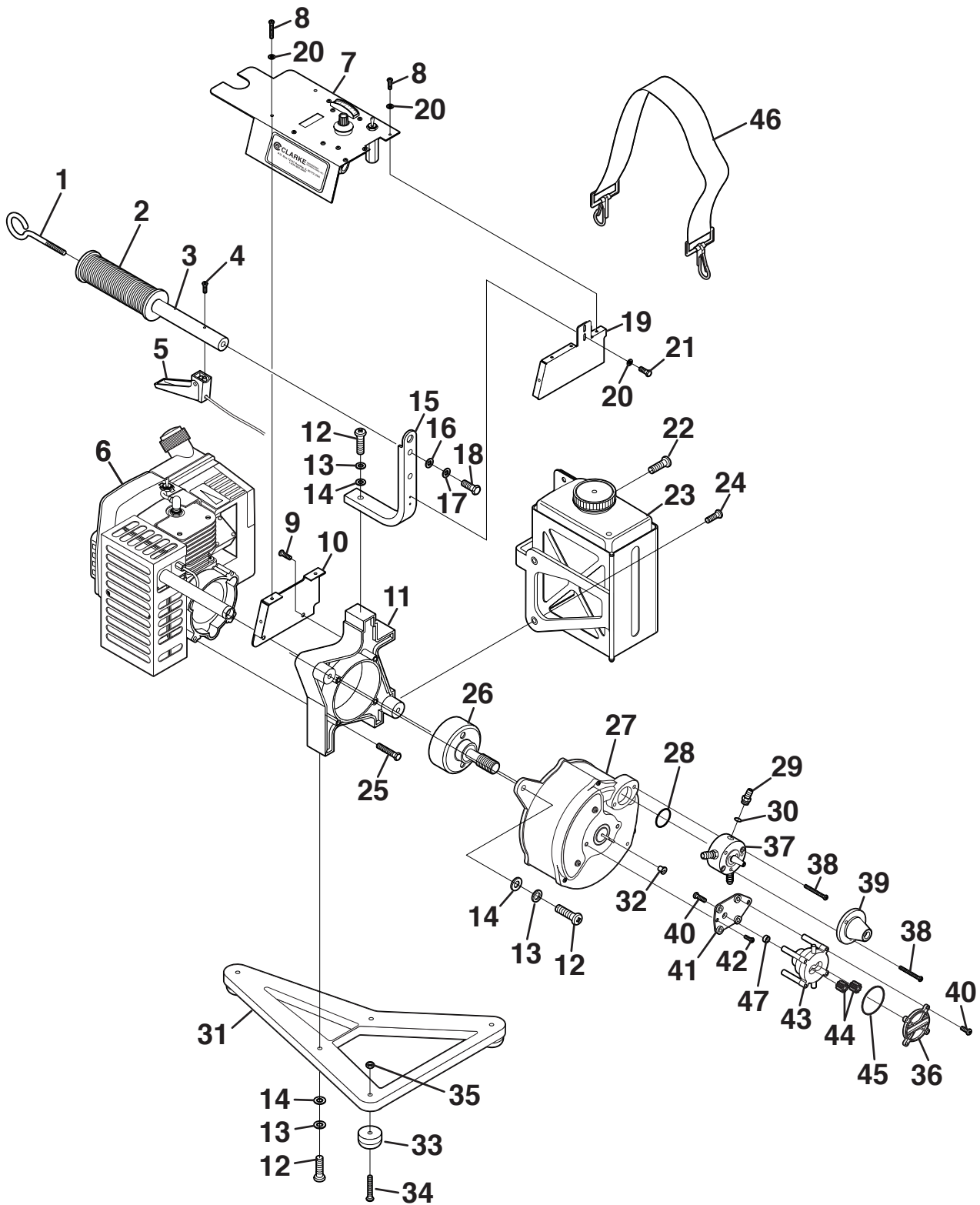
Page	Description	Part No.
22 - 23	MAIN ASSEMBLY	N/A
24 - 25	ENGINE ASSEMBLY	1-229
26 - 27	FORMULATION TANK ASSEMBLY	1-231
28 - 29	CONTROL PANEL ASSEMBLY	1-230
30 - 31	BLOWER ASSEMBLY	1-256
32 - 33	PLUMBING SCHEMATIC	N/A



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

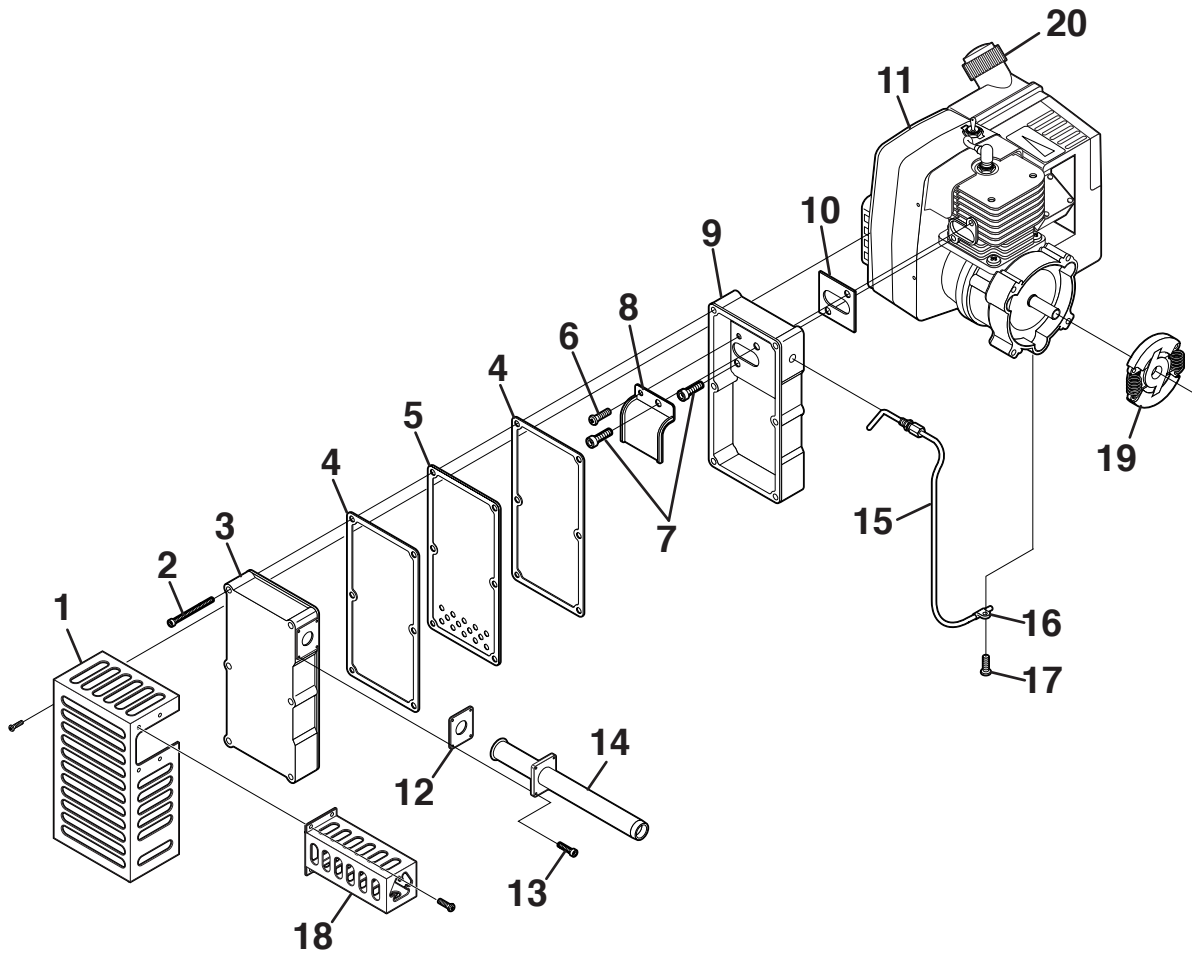
1. Refer to the complete unit breakdown illustration on page 22 and the parts list on page 23.
2. If the individual part is shown on the illustration, the part number and the description can be obtained from the parts list.
3. If the part is a component of an assembly, the location of the assembly breakdown 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, and always specify the serial number when ordering parts



TWIN FOG

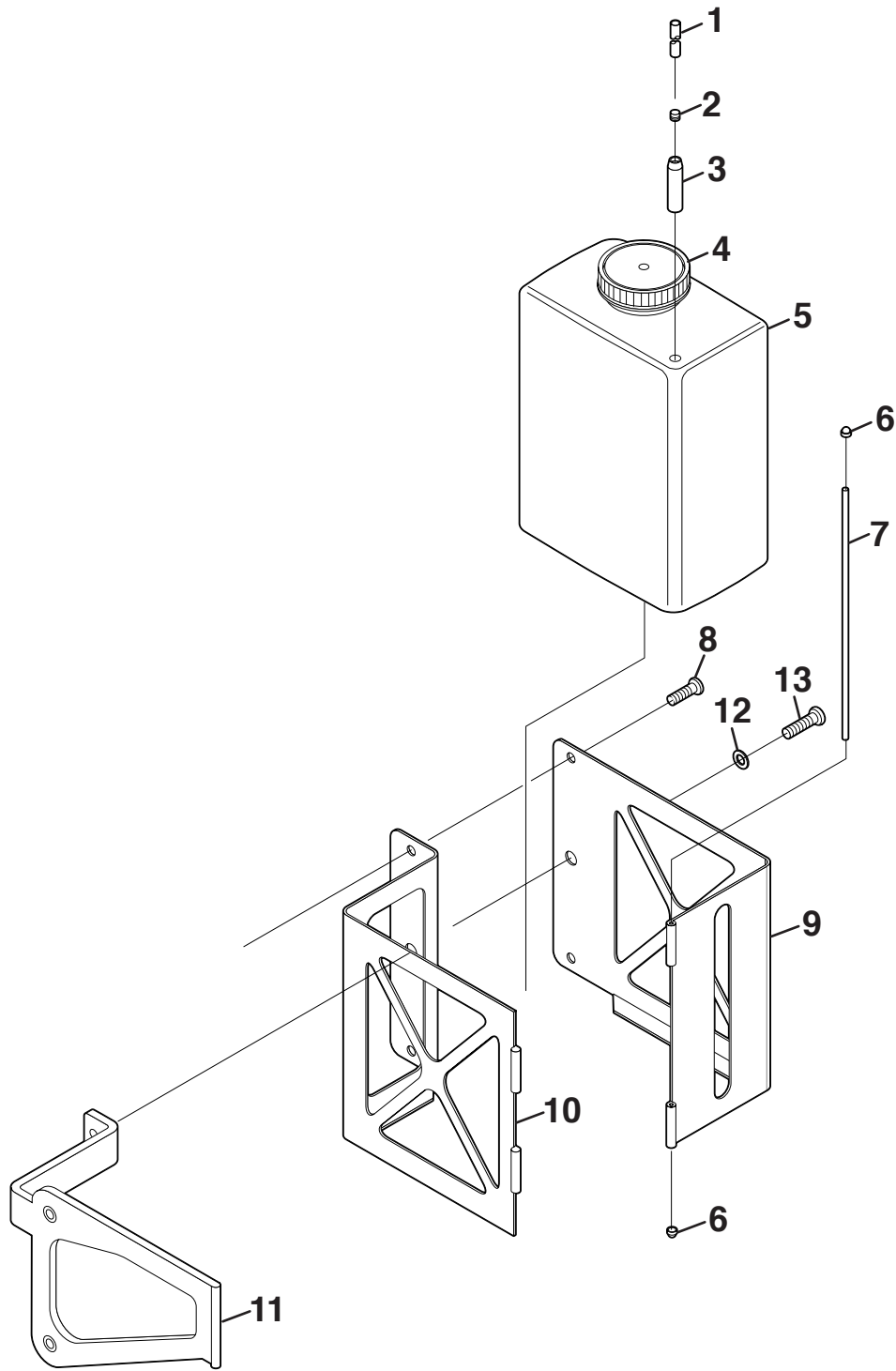
Pos	Qty.	Description	Part No.
1	1	EYEBOLT, HANDLE	1-179
2	1	HANDLE GRIP	1-113
3	1	HANDLE TUBE	1-112
4	1	SCREW TRIGGER.....	1-126
5	1	TROTTLE AND CABLE ASSEMBLY	1-191.1
6	1	ENGINE SUB ASSEMBLY - SEE PAGE 4	1-229
7	1	PANEL AND PLUMBING SUB ASSEMBLY - SEE PAGE 8	1-230
8	7	6 - 32 X 1/4 PHILLIPS PAN HEAD.....	11055
9	2	10 - 24 X 1/2" PHILLIPS PAN HEAD	11113
10	1	REAR PANEL SUPPORT	1-222
11	1	ADAPTER CASTING	1-201
12	5	1/4" X 3/4" PHILLIPS PAN HEAD	11189
13	5	1/4" SPLIT LOCK WASHER.....	11171
14	5	1/4 SAE FLAT WASHER.....	11170
15	1	SUPPOET TUBE, HANDLE	1-211
16	1	5/16" - SAE FLAT WASHER	11140
17	1	5/16" - SPLIT LOCK WASHER	11241
18	1	5/16" - 24 X 1" #5 HEX HEAD	11264
19	1	FRONT PANEL SUPPORT	1-215
20	2	#6 INTERNAL LOCK WASHER	11048
21	2	6 - 32 X 1/4" PHILLIPS PAN HEAD	11055
22	1	10 - 32 X 3/8" PHILLIPS PAN HEAD	11145
23	1	BOTTLE AND HOLDER ASSEMBLY - SEE PAGE 6	N/A
24	2	10 - 24 X 1/2" PHILLIPS FLAT HEAD.....	11114
25	4	1/4" - 20 X 1/2" PHILLIPS PAN HEAD.....	11184
26	1	CLUTCH DRUM	1-259
27	1	BLOWER ASSEMBLY	1-256
28	1	O-RING, PUMP COVER	1-241
29	3	10 - 32 X 1/8" HOSE BARB	10882
30	3	GASKET, HOSE BARB	1-140
31	1	FOOT SUPPORT	1-208
32	1	BEARING	1-206
33	3	RUBBER FOOT	1-111
34	3	10 - 32 X 5/8" PHILLIPS PAN HEAD	11158
35	3	10 - 32 SHORT GREER LOCKNUT.....	11160
36	1	COVER, PUMP HOUSING BLANK.....	1-245
	1	COVER, PUMP WITH BYPASS.....	
37	1	FLUID NOZZLE	1-203
38	3	6 - 32 X 3/4" SS PHILLIPS PAN	11064
39	1	AIR CAP	1-109
40	8	8 - 32 X 1/2" PHILLIPS PAN	11080
41	1	ADAPTER, PUMP	1-254
42	2	6 - 32 X 3/8" PHILLIPS PAN HEAD	11056
43	1	HOUSING, GEAR PUMP	1-244
44	1	GEAR SET	1-242
45	1	O-RING	1-241
46	1	STRAP ASSEMBLY	1-180
47	1	SHAFT SEAL, CHEMICAL PUMP	1-243



TWIN FOG

Pos	Qty.	Description	Part No.
1	1	HEAT SHEILD.....	1-166
2	6	10 - 32 X 2 SS SOCKET CAP.....	11159
3	1	MUFFLER HALF, OUTLET SIDE.....	1-133
4	2	GASKET, MUFFLER HALVES.....	1-129
5	1	BAFFLE, MUFFLER HALVES.....	1-136
6	1	10 - 32 X 3/8" PHILLIPS PAN HEAD	11145
7	2	1/4" - 20 X 3/4" SOCKET CAP	11207
8	1	DEFLECTOR, EXHAUST.....	1-124
9	1	MUFFLER HALF, ENGINE SIDE.....	1-132
10	1	GASKET, MUFFLER TO ENGINE.....	1-169
11	1	ENGINE ASSEMBLY	1-100
12	1	GASKET, DISCHARGE TUBE.....	1-130
13	4	6 - 32 X 1/2" PHILLIPS PAN HEAD	11057
14	1	DISCHARGE TUBE	1-138
15	1	INDUCTION TUBE ASSEMBLY	1-141
16	1	CLIP INJECTION TUBE RETAINING	1-165
17	1	10 - 32 X 5/8" PHILLIPS PAN HEAD	11158
18	1	HEAT SHEILD.....	1-179
19	1	ROTOR, CLUTCH.....	1-300
20	1	GAS CAP (REPLACEMENT).....	1-185

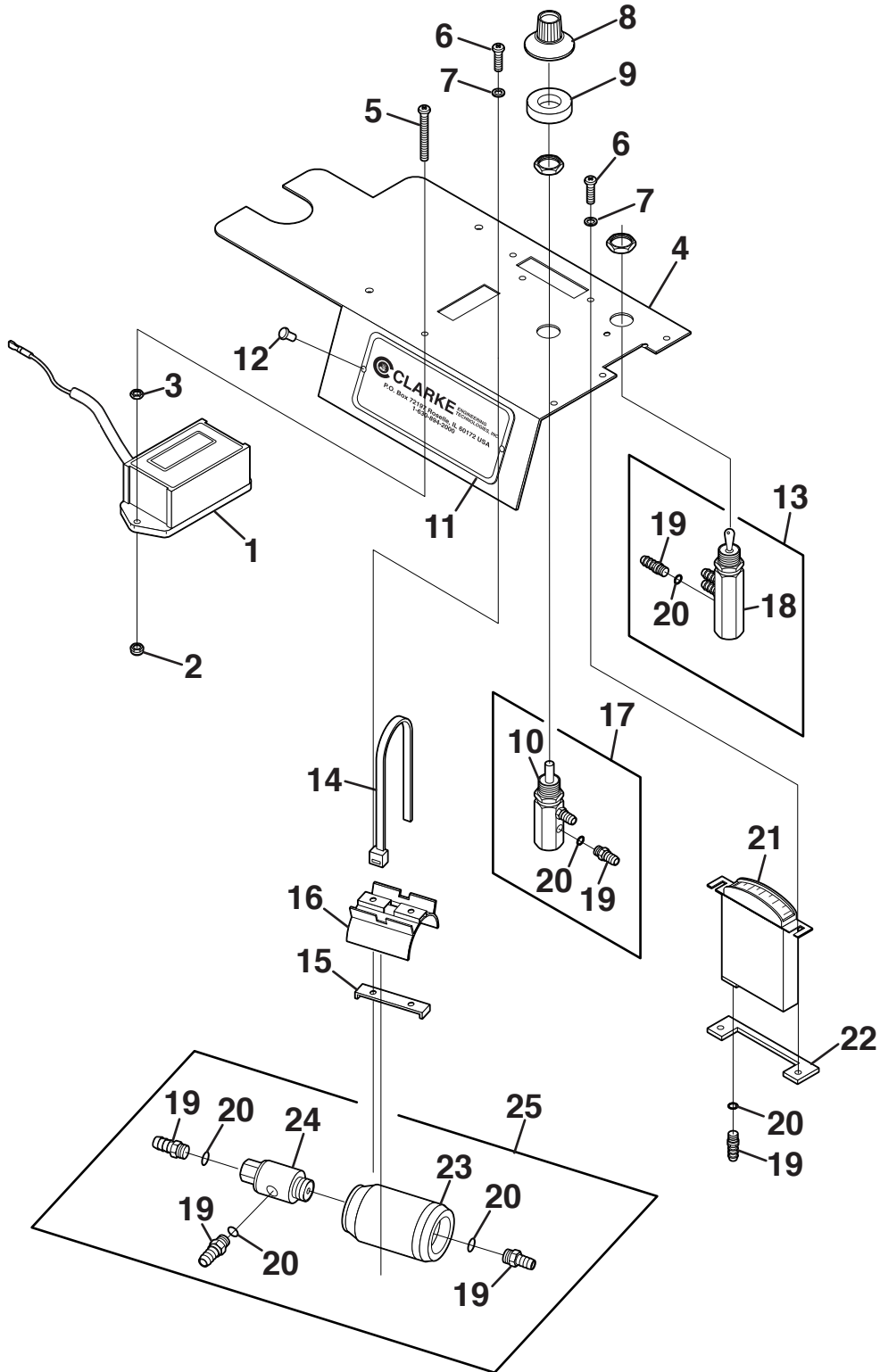
TWIN FOG



TWIN FOG

Pos	Qty.	Description	Part No.
1	24"	HOSE 1/8" ID CLEAR (FILTER TO PUMP)	1-188
2	1	FILTER ADAPTER.....	1-209
3	1	FILTER ELEMENT	1-223
4	1	CAP WITH VENT	1-186.1
5	1	FORMULATION TANK (COMES WITH ITEM #4)	1-122.1
6	2	PUSH NUT, HINGE.....	1-218
7	1	HINGE PIN.....	1-217
8	2	6 - 32 X 1/4" PHILLIPS PAN HEAD	11055
9	1	BOTTLE HOLDER OUTER HALF.....	1-219
10	1	BOTTLE HOLDER INNER HALF	1-220
11	1	BRACKET, BOTTLE HOLDER	1-216
12	1	#10 INTERNAL LOCK WASHER.....	11102
13	1	10 - 32 X 3/8" PHILLIPS PAN HEAD	11145

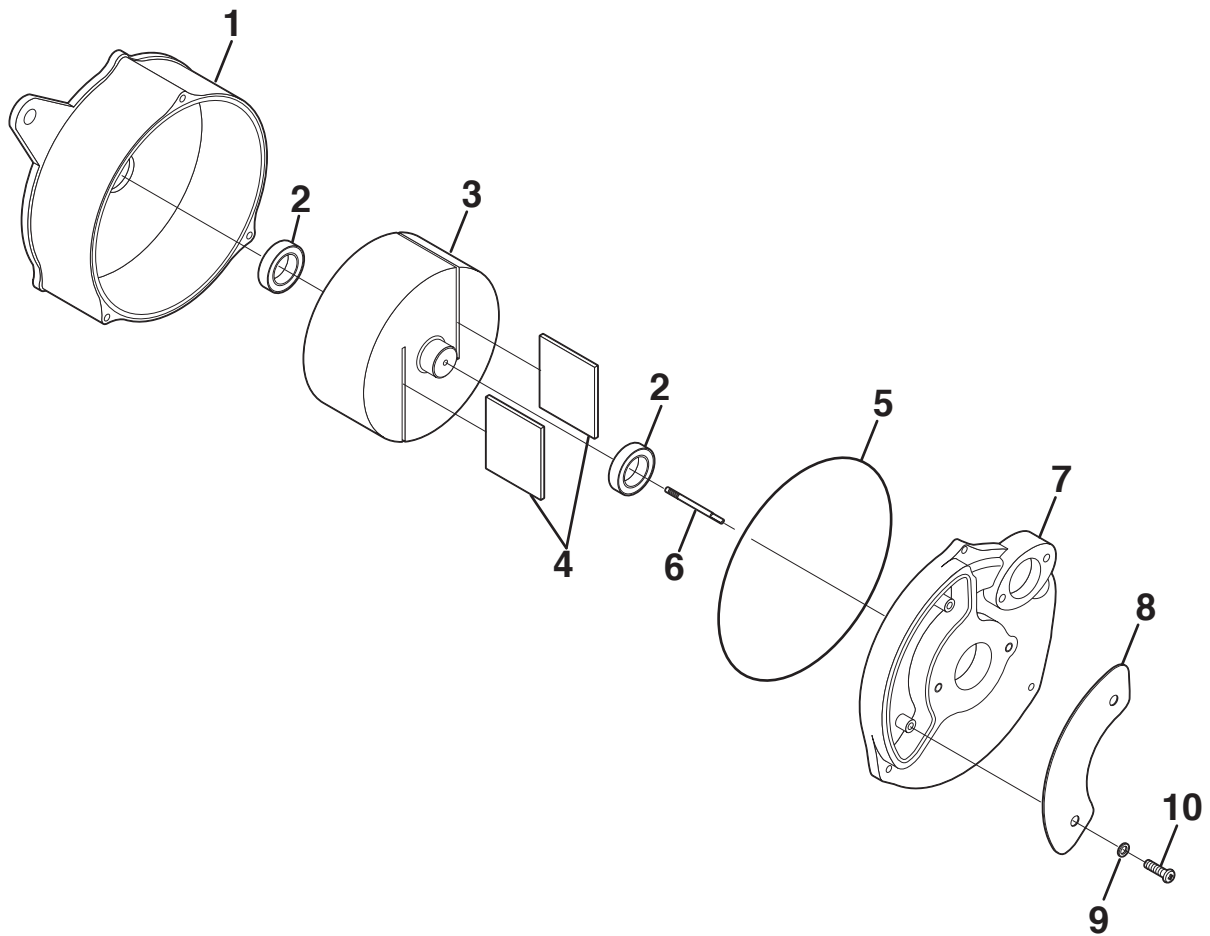
TWIN FOG



TWIN FOG

Pos	Qty.	Description	Part No.
1	1	TINY TACH.....	1-232
2	2	6 - 32 LOCK NUT	11052
3	2	6 - 32 HEX NUT	11051
4	1	TOP PANEL.....	1-210
5	2	6 - 32 X 1 1/8" PHILLIPS PAN HEAD.....	11068
6	4	6 - 32 X 1/4" PHILLIPS PAN HEAD.....	11055
7	4	#6 INTERNAL LOCK WASHER	11065
8	1	KNOB.....	10819
9	1	FOAM WASHER, NEEDLE VALVE.....	1-170
10	1	NEEDLE VALVE WITH PANEL NUTS AND LOCK WASHERS	1-197
11	1	SERIAL NUMBER TAG	1-260
12	2	1/8" POP RIVET	1-171
13	1	3 WAY SELECTOR VALVE ASSEMBLY	1-226
14	1	TY-RAP.....	10263
15	1	NUT PLATE	1-146
16	1	BRACKET, VALVE ACTUATOR HOLDER	1-148.1
17	1	NEEDLE VALVE SUB ASSEMBLY	1-156.1
18	1	SELECTOR VALVE WITH PANEL NUTS AND LOCK WASHERS	1-198
19	8	10 - 32 X 1/8" HOSE BARB	10882
20	8	GASKET, HOSE BARB	1-140
21	1	PRESSURE GAUGE	1-202
22	1	RETAINER, PRESSURE GAUGE.....	1-221
23	1	ACTUATOR ASSEMBLY.....	1-115
24	1	VALVE, ON-OFF	1-114
25	1	ON - OFF VALVE ACTUATOR SUB ASSEMBLY.....	1-228

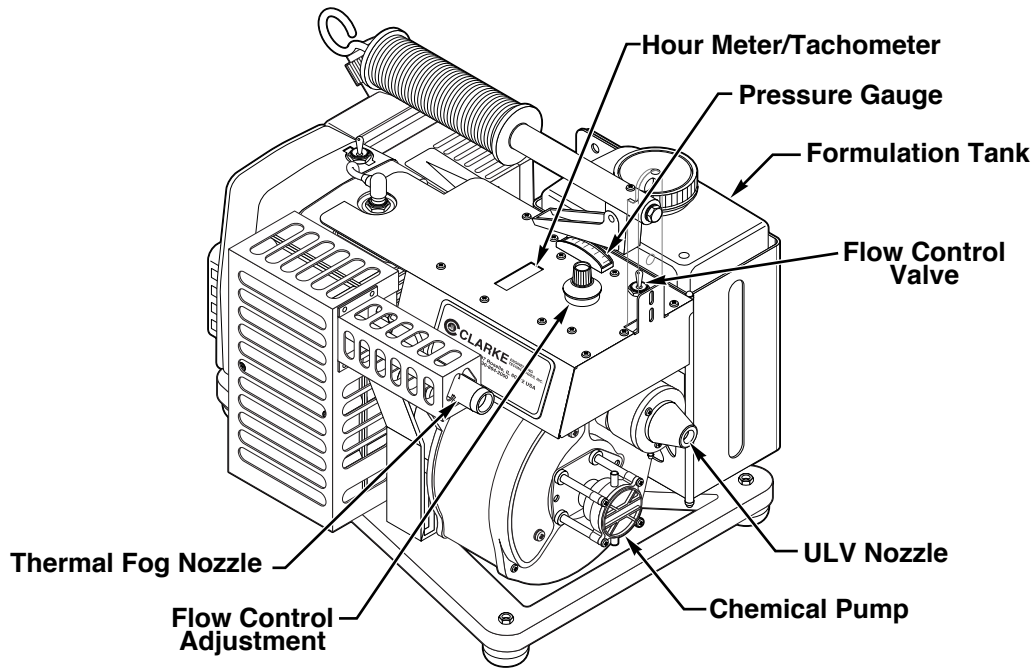
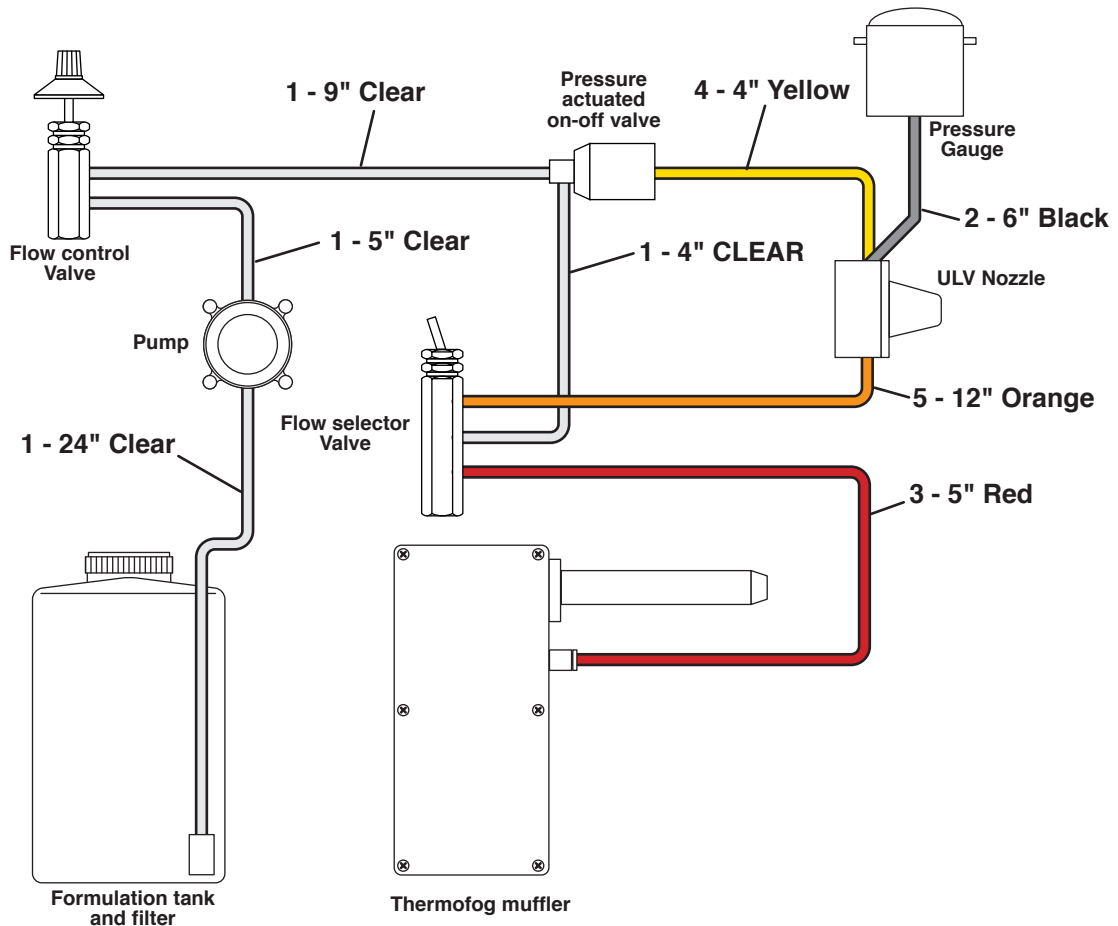
TWIN FOG



TWIN FOG

Pos	Qty.	Description	Part No.
1	1	MAIN HOUSING, BLOWER.....	1-273
2	2	BEARING, SPL	1-267
3	1	ROTOR, BLOWER.....	1-274
4	2	VANE.....	1-269
5	1	O-RING, BLOWER HOUSING	1-270
6	1	SHAFT.....	1-255
7	1	FRONT COVER, BLOWER.....	1-272
8	1	FILTER, BLOWER INTAKE	1-271
9	2	#6 INTERNAL LOCK WASHER	11065
10	2	6 - 32 X 1/4" PHILLIPS PAN HEAD	11055

TWIN FOG



TWIN FOG

Pos	Qty.	Description	Part No.
1	42"	1/8 ID POLYURETHANE TUBE (CLEAR)	1-188
2	6"	1/8 ID POLYURETHANE TUBE (BLACK).....	1-189
3	10"	1/8 ID POLYURETHANE TUBE (RED).....	1-262
4	4"	1/8 ID POLYURETHANE TUBE (YELLOW)	1-263
5	12"	1/8 ID POLYURETHANE TUBE (ORANGE).....	1-264

TWIN FOG

TROUBLE	POSSIBLE CAUSE	REMEDY
Air blast at nozzle when the throttle trigger is depressed but no pressure showing on pressure gauge.	Defective pressure gauge. Air leaks in the air line between the nozzle and the pressure gauge.	Replace. Replace air line or reconnect if loose.
Air blast at nozzle when the throttle trigger is depressed but no chemical flow.	Flow rate needle valve closed.	Open
Air bubbles in chemical lines.	Fittings crossthreaded, loose or defective between insecticide tank and pump.	Retighten or replace.
Cannot calibrate to correct flow rate.	Air bubbles in chemical lines.	Eliminate by checking fittings and chemical lines for leaks.
Chemical drips from the nozzle while running.	Engine RPM too low.	Squeeze the throttle trigger to full throttle.
Chemical leaks at fittings.	Fittings crossthreaded or defective.	Retighten or replace.
Engine does not start.	Ignition switch not on. No fuel in tank. Spark plug fouled or bad. Starter rope not engaging.	Turn on. Add proper fuel mix. Clean or replace. Repair.
Engine starts, but no air blast at nozzle.	Clutch not engaging.	Throttle trigger not squeezed. Clutch worn. Repair or replace.