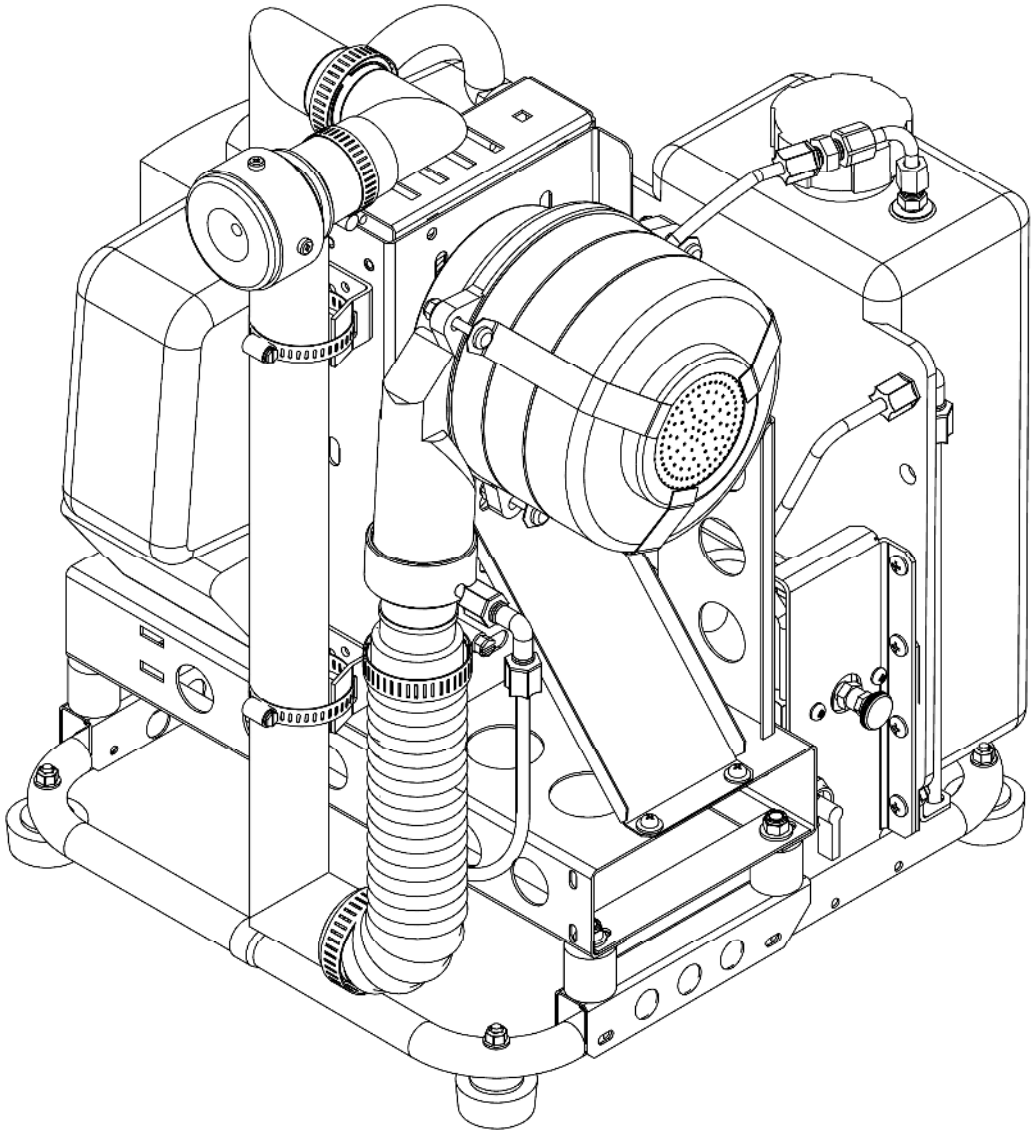
Mini-Lite™ ULV/Mister



INSTRUCTION MANUAL FOR OPERATION, SERVICE AND MAINTENANCE MINI-LITE™ MODEL 2990, SERIES 1

PARTS LISTING FOR

CURTIS DYNA-FOG® Ltd.

Mini-Lite™ ULV/Mister

TABLE OF CONTENTS

To the New Owner..... 4
Foreword..... 4
Machine Specifications..... 5
Working Principles..... 6
Fluid Systems Diagram..... 7
Major Components Diagram..... 8
Assembly Instructions..... 9
Charging the Battery..... 9
Machine Installation..... 10
Safety Precautions..... 11
Machine Operation..... 13
Pre-Spray Checklist..... 14
Measuring Liquid Flowability (Viscosity)..... 15
Flow Rate Table..... 16
Engine Operation Instructions..... 17
Fuel..... 17
Staring Instructions..... 17
Stopping Instructions..... 18
Operator Safety..... 18
Remote Control Box..... 19
Machine Calibration..... 20
Flushing System..... 22
Emergency By-Pass of the Solenoid Valve..... 23
Engine Maintenance..... 24
Speed Adjustment..... 24
Air Filter..... 24
Fuel Filter..... 25
Spark Plug..... 25
Muffler..... 25
Engine Fins..... 25
Poly-V Belt and Sheave Drive..... 26
Belt Alignment..... 26
Belt Tension..... 27
Blower Assembly..... 28
Inspection of the Blower..... 28
Air Filter Assembly..... 30
Preventive Maintenance Schedule..... 31
Tachometer/Hour meter..... 32
Troubleshooting..... 33-34
Parts Listings..... 35-49
Optional Remote Spray Nozzle..... 50
Parts Information..... 51-58

TO THE NEW OWNER

Dear Valued Customer,

Congratulations on selecting **Dyna-Fog**[R] and one of the finest and compact Ultra-Low-Volume (ULV), machines in the world. The **Mini-Lite**[TM] is the newest in the **Dyna-Fog**[R] family of spraying equipment, and represents the latest in portable spray technology. The Mini-Lite[TM] was developed to provide a powerful yet affordable multi-purpose machine in a portable, lightweight package.

Trials have proven the Mini-Lite™'s effectiveness. Its simple operation and portable design, combined with the ability to produce variable flow rates make the **Mini-Lite**[TM] the most powerful machine of its type for dispensing liquids in the 20 micron range.
Backed by our Quality, Workmanship and more than 50 years of service, we are confident that the **Mini-Lite**[TM] will be a valuable addition to any spraying program.
Thank you for choosing Dyna-Fog[R]***.***

FOREWORD

The application of insecticides is the predominant method by which man attempts to control the size of insect populations. Due to environmental and economical reasons, it is desirable to treat a given area with the least amount of insecticide that can be made to be effective. The most efficient method is to break up the liquids into aerosols and distribute these fine droplets over the target area. The small droplets stay suspended for longer periods of time due to their size and are distributed more evenly, remaining effective longer.

The term ULV is an abbreviation for Ultra-Low-Volume, the technology used to treat areas with small amounts of chemical in an aerosol form. These chemicals are usually in a more concentrated state than chemicals used in other methods of application.

For best results, the Dyna-Fog ULV aerosol generator model 2990 should be operated and maintained in compliance with this manual. Insecticides must be applied in compliance with their label instructions.

WARNING

READ AND THOROUGHLY UNDERSTAND ALL INFORMATION, CAUTIONS AND WARNINGS ON THE FORMULATION LABEL WHICH MAY AFFECT PERSONAL SAFETY. KNOW ANY DANGERS OF THE SOLUTION USED AND KNOW WHAT TO DO IN CASE OF AN ACCIDENT INVOLVING THE SOLUTION. ALWAYS USE THE APPROPRIATE SAFETY EQUIPMENT AND DRESS ACCORDINGLY TO THE CHEMICAL FORMULATION WHICH IS BEING USED.

MACHINE SPECIFICATIONS

FOR Mini-Lite™ , MODEL 2990 SERIES 1

TYPE :	Low Operating cost Aerosol Generator, Non Thermal Insecticide, Ultra-Low-Volume (ULV). Using adequate flow rate will produce larger droplets (mister).
ENGINE :	Tanaka Purefire™, 2-cycle, 40 cc, low emission, 1.8 HP. Gasoline consumption : 26.7 oz/hour (800 ml/hour) approx. Operating Speed : 8,500 RPM
HOURMETER TACHOMETER:	Digital, displays RPM when engine is running. Shows accumulated running hours for the engine. Programmable maintenance intervals.
BLOWER :	High speed Rotary type, 3-Stage, Belt driven, 95 cfm (2.68 m3/min) unrestricted, pressure 3 psi (.2 bar) max., tangential discharge, steel shaft with two ball bearings.
FLOW CONTROL:	Metering (needle) valve to produce different flow rates, from 0-7 oz/min (207 ml/min), 0-17 oz/min (502 ml/min) with optional Remote Spray Attachment
REMOTE CONTROL:	Electric remote control with Spray “ON/OFF” switch actuating a 2-way S.S. solenoid valve.
BATTERY:	12 VDC , 7.5 AH, sealed (Non-spillable) maintenance-free rechargeable battery with protective case
NOZZLE :	Single high output Microtec™ nozzle mounted on adjustable boom. Optional: Remote nozzle kit with higher output.
BOOM:	Adjustable, 360° in the vertical plane and 360° in the horizontal plane. Adjustable height.
TANKS :	Corrosion resistant, high density Polyethylene. Formulation : 1.25 U.S. Gallons (4.72 liters). Gasoline : 33.3 oz (1 Lt)
FRAME:	High Strength, Welded Steel Tube
DROPLET SIZE :	90% of all droplets under 20 Microns (ULV) Volume Media Diameter (VMD) depending on flow rate and viscosity. When the high flow rate is discharged through the single nozzle, the machine will produce larger droplets for residual deposit.
ACCESSORIES:	Flowability meter to determine the formulation viscosity, 2-cycle oil beaker, funnel, spare belt, etc.
DRY WEIGHT :	29 lbs. (13.2 Kg.)
DIMENSIONS:	15” W x 15” L x 28” H (38 x 38 x 71 cm.)

SHIPPING INFORMATION (BOXED)

DIMENSIONS :	18" W x 18.5" L x 30" H (45 x 47 x 76 cm)
VOLUME :	5.62 cu.ft. (.159 cu. meter) Approx.
WEIGHT :	38 lbs (17.3 Kg) Approx.

OPTIONS: ATV/Wheel Mounting Kit (P/N-63995)
Remote Spray Hose Kit 50 ft (15 m) P/N-63945-50, 100 ft (30 m) P/N-63945-100
Water Repellant Machine Cover (P/N-63997)

WORKING PRINCIPLES

The **Mini-Lite™** is powered by a 40cc Tanaka 2-cycle gasoline engine. The Mini-Lite™ is designed to offer a Low operational cost with a complete and compact aerosol generator.

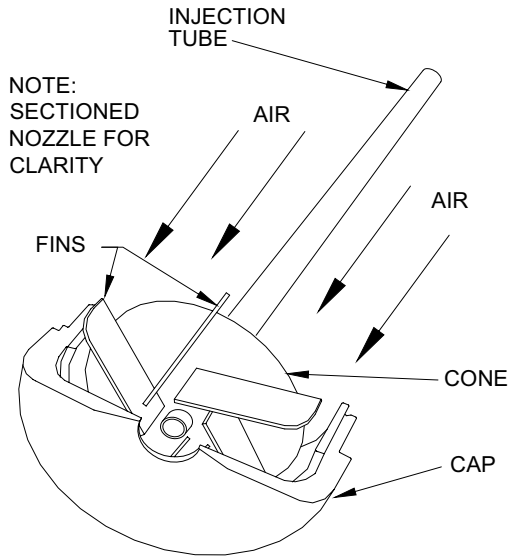
The engine and blower assembly are mounted on a lightweight steel tubular frame with vibration isolators between them.

The Engine is used to belt drive a 3-stage High-Volume Blower. The engine has a fixed but adjustable throttle control that allows to obtain the ideal working engine operating speeds.

The blower supplies air thru a flexible hose to the boom and to the nozzle where the air creates a “suction” on the formulation supply tube.

The suction in the formulation supply tube causes liquid to be drawn from the formulation tank, thru a 3-way selector valve, onto a metering valve, into a 2-way solenoid valve and to the nozzle.

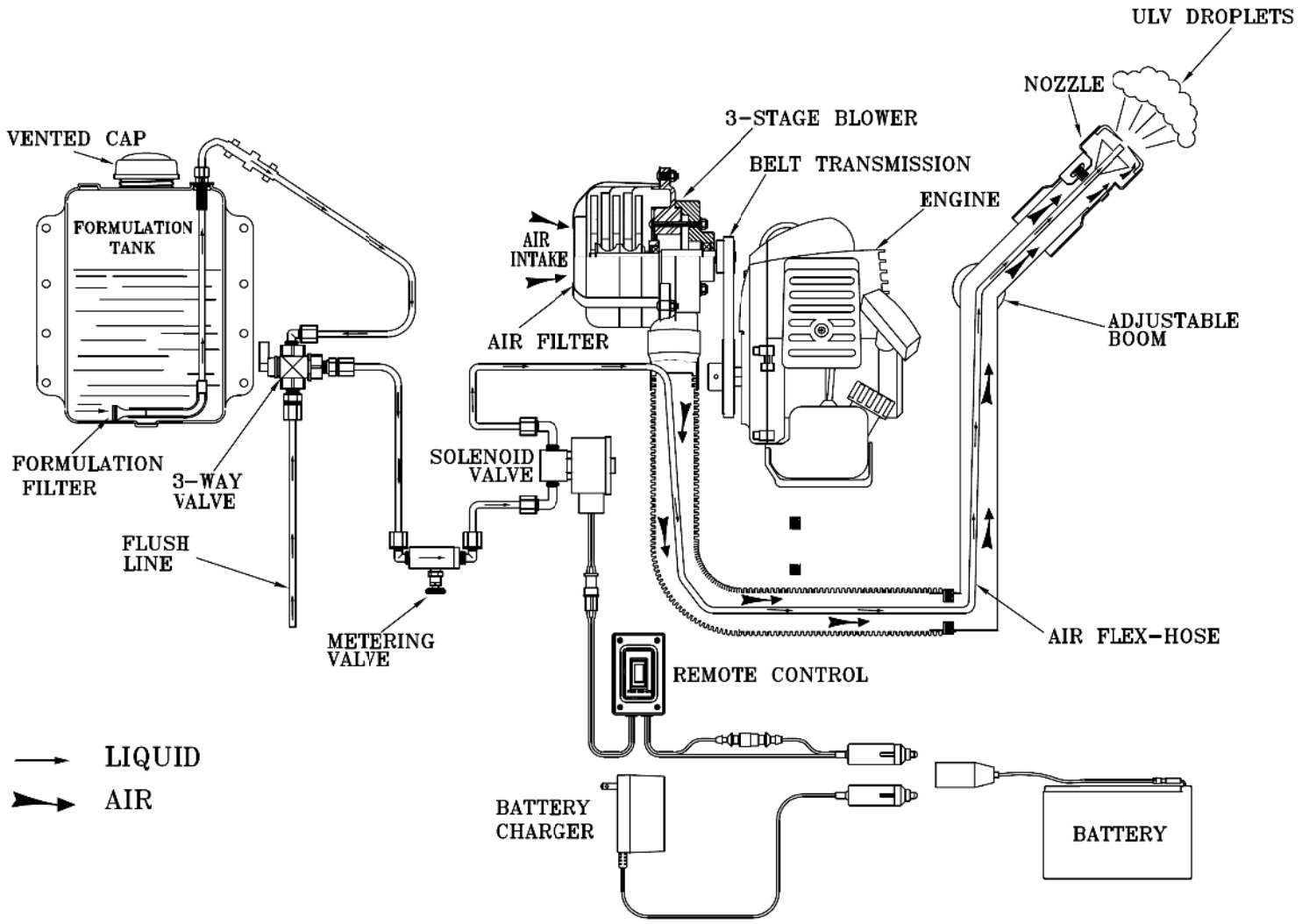
The nozzle has six stationary fins that create a swirling effect of the air mass as it leaves each nozzle. In the center of this swirling air mass is a liquid supply spray tube. The spray tube directs the formulation into the air mass where it is sheared into billions of tiny droplets (10-20 micron) and propelled thru the air to their target.



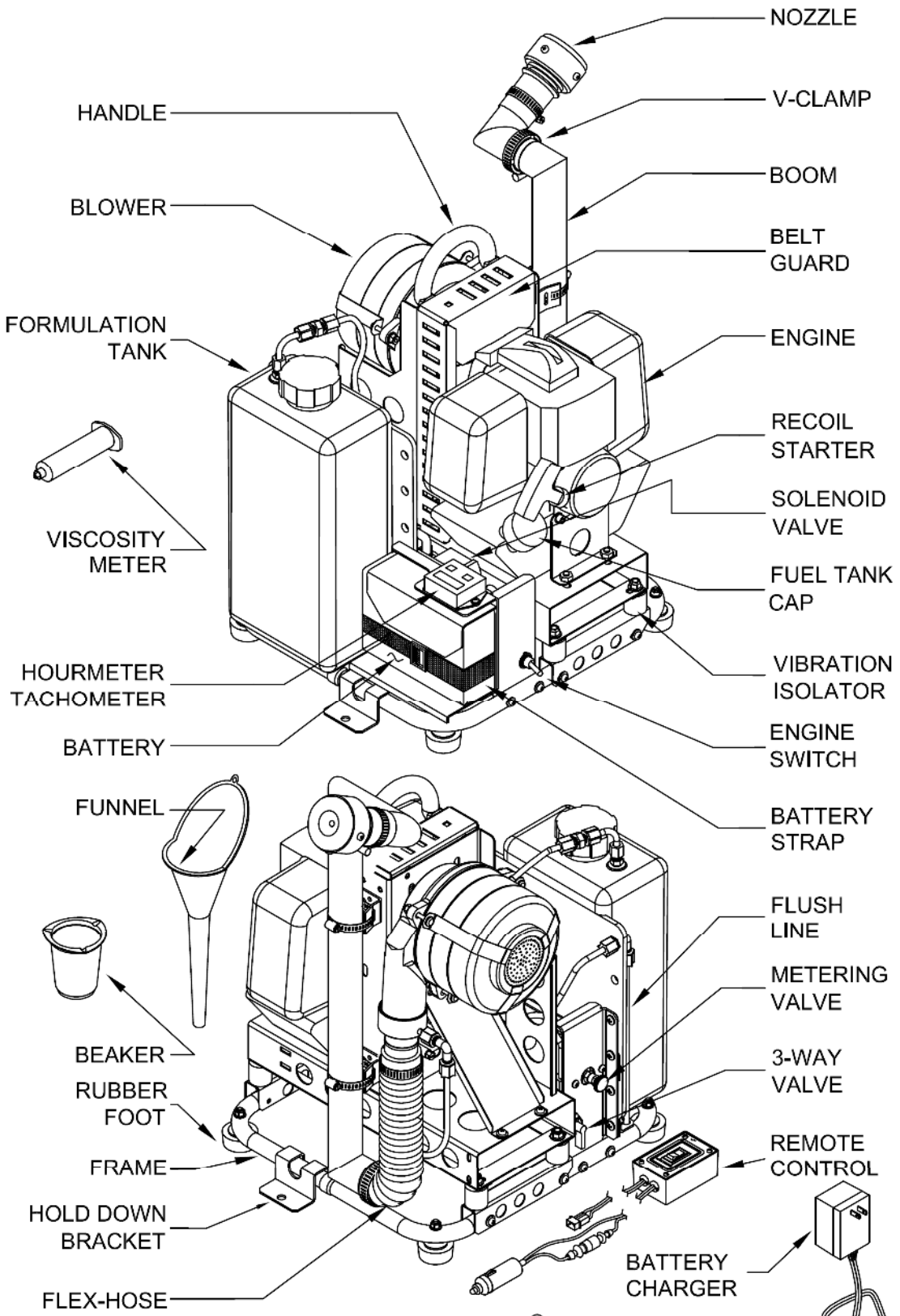
HOW THE MICROTEC NOZZLE WORKS

This unit is equipped with a flushing system that is controlled from the manual 3-way valve. The flushing liquid is conveyed to the nozzle in the same manner as the formulation.

NOTE: The system must be flushed after each use.



DYNAFOG Mini-Lite™
FLUID SYSTEMS DIAGRAM



***CURTIS* DYNA-FOG® Mini-Lite™**

MAJOR COMPONENTS DIAGRAM

8

ASSEMBLY INSTRUCTIONS

1) Uncrate the unit and remove all packing materials.
NOTE: It is a good idea to retain the original machine shipping carton for storage.

2) Place the remote control unit where it will not be damaged while the machine is being installed.

3) Remove the machine from the shipping skid by removing the screws that retain the shipping brackets. Keep the brackets for mounting the machine to your Golf cart, vehicle or trailer bed.

4) Activate the dry charge storage battery according to the following instructions:

CHARGING THE BATTERY

Battery: 12 V, 7.5 AH, sealed (Nonspillable) maintenance-free rechargeable battery
Caution:
Contains toxic material (lead) and corrosive fluid (acid) – Keep away from children
Flush with water at once if contaminated with electrolyte (acid)
Do not charge in gas tight container
Do not short the battery terminals
Do not incinerate
Unlawful to discard in landfill
Recycle with automotive battery scrap at an EPA or other registered facility

Automatic Sealed Lead Acid Battery Charger

This charger is designed to fully charge a battery and maintain it at the proper storage voltage without the damaging effects caused by trickle chargers.

The length of time required to fully charge a battery is dependant on the state of discharge. Discharging a battery deeply is not recommended, nor should they be stored in a discharged state for very long. This results in a condition known as “sulphation” which is effectively a permanent reduction in energy storage capacity.

CAUTION

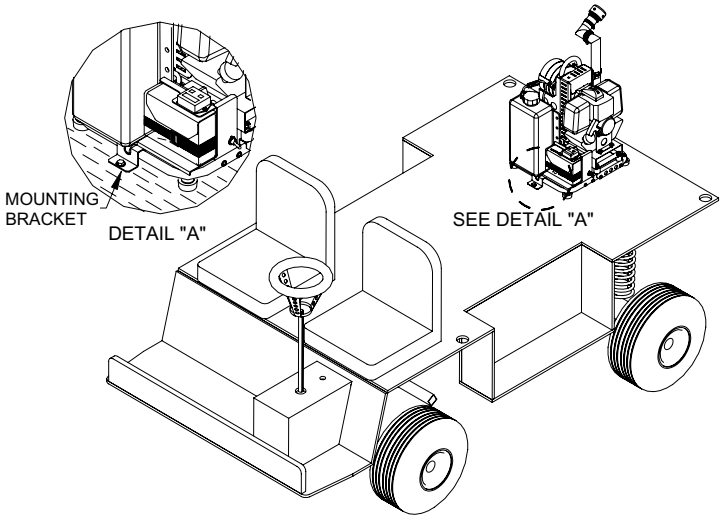
Do not attach leads to battery in reverse polarity or short leads while charger is plugged in.

MACHINE INSTALLATION

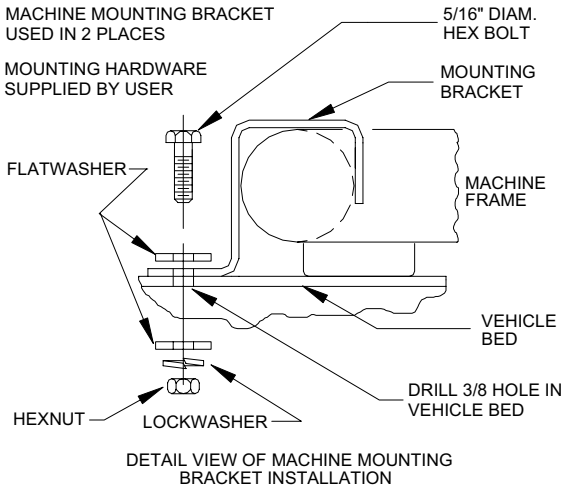
1. Remove the machine from the skid and lift the machine onto the vehicle with the discharge end of the machine toward the rear of the vehicle.

2. Pass the remote control unit through an open window (if any) and locate it within reach of the person operating the machine. If permanent vehicle installation is desired, the remote control cable can be fed through a clearance hole in the vehicle chassis and then reconnected. When drilling clearance holes, ensure that all sharp edges are removed and covered to prevent premature wearing of the remote cable. When routing the cable to the vehicle cab, do not allow the cable to be exposed to any sharp edges. Avoid sharp bends when routing the cable. Once the cable has been routed to the cab, reseal all drilled openings to prevent moisture and/or exhaust gases from entering the cab.

3. Using the (2) hold-down brackets used for mounting the machine to the shipping skid, securely mount the machine to the bed of the vehicle (see diagram below). Depending on the type of bed surface, it may be necessary to use additional mounting hardware to secure the machine. Dyna-Fog® offers an ATV/Wheel mounting kit to fit a wide range of mounting surfaces.



VIEW OF MACHINE MOUNTED ON VEHICLE



VIEW OF MACHINE MOUNTING

WARNING

NEVER ATTEMPT TO OPERATE THE MACHINE WITHOUT FIRST VERIFYING THAT IT IS SECURELY MOUNTED. FAILURE TO DO SO COULD RESULT IN SEVERE INJURY.

SAFETY PRECAUTIONS

WARNING

READ AND UNDERSTAND THESE SAFETY PRECAUTIONS BEFORE OPERATING MACHINE

1. **ENGINE AND FUEL**: This machine uses gasoline mixed with 2-cycle oil as the fuel for the internal combustion engine and all precautions commonly applying to this volatile fuel should be observed. Exercise extreme caution to avoid spilling of gasoline. If spillage occurs, wipe it off and allow evaporation time before starting the engine. DO NOT attempt to put fuel in tank while the machine is still running. Avoid smoking or open flames in area when handling gasoline. Never run the unit indoors unless exhaust is vented to outside. These fumes contain carbon monoxide which is colorless and odorless and can be fatal.

CAUTION

DO NOT OPERATE ENGINE WITHOUT MUFFLER.

NOTE: The engine is equipped with a muffler that has spark arrestor which is required in some States.

DO NOT TOUCH HOT MUFFLER, CYLINDER OR FINS WHEN HOT AS CONTACT MAY CAUSE BURNS.

EXCEPT FOR ADJUSTMENT, DO NOT OPERATE THE ENGINE IF AIR CLEANER OR COVER DIRECTLY OVER THE CARBURETOR AIR INTAKE IS REMOVED.

DO NOT RUN THE UNIT IF THE BELT GUARD IS REMOVED.

2. **MACHINE DAMAGE**: Never operate a machine after it has been damaged. A damaged machine can be very hazardous.

3. **WIND**: Spraying during windy conditions is not usually practical because the formulation will drift out of the intended area. However, under NO circumstances should spraying into the wind be attempted. This may cause hazardous accumulations on the machine or carrying vehicle.

4. **SAFETY EQUIPMENT**: In addition to any safety equipment that may be required by the type of formulation which is being used, the following items should be mandatory for each vehicle which carries this machine during fogging operations.

    a. Fire Extinguisher, chemical-type rated for fuel fires.
    b. First Aid Kit.
    c. Eye Wash Solution.
    d. Safety Glasses.
    e. Container of Oil Dry Compound.
    f. Gloves Rated for High Temperature.
    g. Respirator Adequate for Formulation being used.

5. **CHILDREN**: Many spraying operations are performed in residential areas, commonly at dusk. This presents the operator with the problem of children who are attracted to the noise and/or mist being created. Children have been observed running into and riding bicycles through the mist. The possible hazard lies in the toxic effect of some formulations, the severity of which depends upon the chemical used, mist density and the length of time of direct exposure.

    IT IS THE OPERATOR'S RESPONSIBILITY TO DISCOURAGE ANYONE FROM PLAYING IN THE MIST OR BEING NEAR THE MOVING VEHICLE.

6. **FORMULATIONS**: Ensure that formulations are applied only in strict compliance with the formulation label as well as local, state and federal regulations and that these formulations are dispersed only by trained personnel of public health organizations, mosquito abatement districts, pest control operators or other qualified personnel.

    a. Always comply with any requirements for protective clothing, goggles, gloves, facial masks or respirators required on the formulation label.
    b. Do not exceed the dosage set forth on the registration label of the insecticide to be used.
    c. Always store formulation in its original labeled container.

7. **BLOWER PRESSURE**: The appropriated blower pressure is generated when the engine is running above 8000 RPM.

MACHINE OPERATION

CAUTION

READ THIS COMPLETE OPERATION SECTION AND THE SECTION ON SAFETY PRECAUTIONS BEFORE STARTING THE MACHINE FOR THE FIRST TIME.

For first time operation, the sections on MACHINE INSTALLATION and MACHINE OPERATION must be performed before proceeding with this section.

When operating this machine for the first time, move to an uncongested and well-vented work area away from flammable materials.

WARNING

READ THE SECTION ON SAFETY PRECAUTIONS BEFORE PREPARING TO DISPENSE FORMULATION.

READ AND THOROUGHLY UNDERSTAND ALL INFORMATION, CAUTIONS AND WARNINGS ON THE FORMULATION LABEL WHICH MAY AFFECT PERSONAL SAFETY. KNOW ANY DANGERS OF THE SOLUTION USED AND KNOW WHAT TO DO IN CASE OF AN ACCIDENT INVOLVING THE SOLUTION.

ALWAYS USE THE APPROPRIATE SAFETY EQUIPMENT AND DRESS ACCORDING TO THE CHEMICAL FORMULATION WHICH IS BEING USED.

WARNING

DO NOT USE ANY SUBSTANCES FROM UNMARKED CONTAINERS OR FROM CONTAINERS WITH OBVIOUSLY ALTERED LABELS.

READ AND FOLLOW THE INSTRUCTIONS ON THE CHEMICAL SOLUTION LABEL FOR ULV SPRAYING OF THE SOLUTION.

DO NOT SPRAY NEAR AN OPEN FLAME OR HOT MATERIALS.

DO NOT LEAVE THE MACHINE UNATTENDED.

PRE-SPRAY CHECK LIST

1. Verify that the remote control box is within easy reach of the operator.

2. Verify that the boom is in the correct position as required for the spraying operation to be accomplished, and that the ring clamp which allows this positioning is tight.

3. Verify that the engine has sufficient fuel and is properly lubricated.

4. Verify that the blower does not have obstruction at the air intake filter.

5. Inspect all hoses for abnormal conditions.

6. Verify that no foreign objects or tools have been left in or about the machine.

7. Verify that the sufficient amount of formulation is in the tank and that the tank filling cap is tight and its air vent hole is not restricted.

8. Verify that the battery is charged and mounted securely and the strap is proper and tight.

9. Verify that all safety equipment is in place and is in proper working order.

10. Verify that the flow rate control has been calibrated and is dispensing formulation in accordance with the manufacturers label requirements.

CAUTION

BEFORE PROCEEDING WITH ANY SPRAYING OPERATION, THE OPERATOR SHOULD BE THOROUGHLY FAMILIAR WITH STARTING AND STOPPING THE MACHINE AND WITH ALL THE OPERATING CONTROLS. IF YOU ARE OPERATING THE MACHINE FOR THE FIRST TIME, EXERCISE THE MACHINE THROUGH ITS FULL OPERATIONAL SEQUENCES FROM A POSITION OF FULL VISIBILITY OF THE MACHINE BEFORE OPERATING THE MACHINE FULLY REMOTE. THIS IS ALSO A GOOD IDEA FOR EXPERIENCED OPERATORS WHO MAY BE OPERATING A NEW MACHINE OR WHO MAY BE REACTIVATING A MACHINE AFTER REPAIRS OR A PERIOD OF INACTIVITY. REFER TO THE ENGINE MANUAL FOR STARTING AND STOPPING INSTRUCTIONS.

MEASURING LIQUID FLOWABILITY (VISCOSITY)

In order to achieve consistent results in generating aerosols with a Volume Median Diameter (VMD) in the sub 20 micron range, several variables must be kept under control at the same time. The ability of an aerosol generator to consistently break up a liquid into appropriate sized droplets depends on (3) key elements:

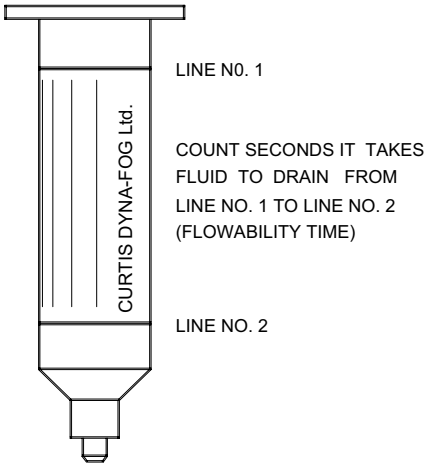
1. The available energy flow (air flow) through the nozzle is governed by the blower speed. As the air mass and its velocity through the nozzle decreases, the droplet size (VMD) will increase assuming that the liquids viscosity and flow rate remains constant.
2. The flow rate of the liquid governed by the opening of the flow control valve.
3. The viscosity of the liquid.

Various liquids have different viscosities. Viscosity is defined as a fluids resistance to flow commonly measured in units of a centipoise (CP). Generally, the thicker the liquid, the greater the viscosity and the higher the CP number. Examples of some liquid viscosities are:

LIQUID	VISCOSITY (CP)
WATER	1
DIBROM	3-4
DOW MFC	3-4
PYRETHRIN, RESMETHRIN	6-7
DURSBAN 1.5 ULV	12-14
TECHNICAL MALATHION	28

TO MEASURE THE FLOWABILITY (VISCOSITY) OF YOUR FORMULATION:

1. Place a sample of the formulation liquid to be dispensed in the relative flowability meter provided with the machine such that the liquid level is above the top line.
2. Hold the meter vertical and allow the liquid to flow through the brass orifice at the outlet end of the meter into an appropriate container.
3. Using a stopwatch or a watch with a sweep second hand, determine the flowability time in seconds that it takes for the liquid level to fall from the top line to the bottom line.



FLOWABILITY TEST METER

NOTE: Periodically calibrate the flowability meter using plain water. Water should flow through the orifice such that the time between the top line and the bottom line is 32 ± 2 seconds.

Once the flowability of the liquid has been measured, the following table can be used as an approximate guide for setting the Metering Valve for your spray application.

FLOW RATE TABLE

VALVE SETTING (TURNS OPEN)	VISCOSITY 32 SECONDS		VISCOSITY 88 SECONDS	
	FLOW ML/MIN	FLOW OZ/MIN	FLOW ML/MIN	FLOW OZ/MIN
1	10	0.33		
1-1/2	17	0.57		
2	28	0.93		
2-1/2	50	1.67	4	0.13
3	170	5.67	38	1.27
3-1/2	200	6.67	40	1.33
FULL	210	7.00	42	1.40

The flow rate indicated in above table is the average value of several machines tested and 20” vertical distance between the nozzle at the boom and the liquid level inside the tank.

The Dyna-Fog^{R} Nozzle will produce 90% of the droplets below 20 microns (ULV) when used at the recommended flow rates. This meets the requirements of all current chemical labels for controlling flying insects.

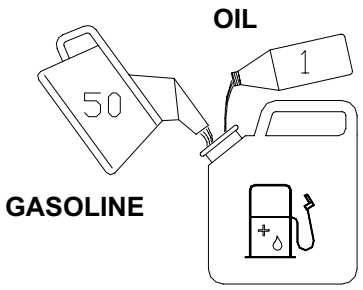
When the high flow rate is discharged through a single nozzle the Mini-Lite^{TM} will produce larger droplets suitable for applying a residual deposit to vegetation and any other surface.

Note: Always handle and dispose of all chemicals in accordance with the manufacturers instructions and the material safety data sheet for the chemical being used.

ENGINE OPERATION INSTRUCTIONS

WARNING

The *Mini-Lite*™ is equipped with a two-stroke engine. Always run the engine on gasoline, which is properly mixed with two-cycle oil.



GASOLINE/OIL RATIO

FUEL

Use unleaded gasoline with an 89 octanes or higher rating. Use a quality two-cycle oil at mixing ratio of 50:1. (See right diagram)

Always mix gasoline and oil in a separate clean container. Mix the gasoline thoroughly before filling the engine fuel tank.

STARTING INSTRUCTIONS

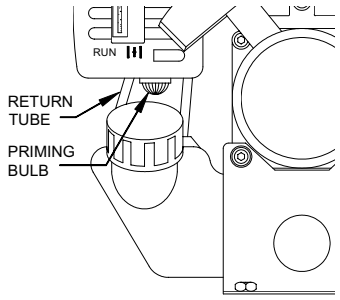
Read and understand operation manual before attempting to operate machine.

1. Set ignition switch (engine kill switch) to **ON** (Run) position. (See below right diagram)

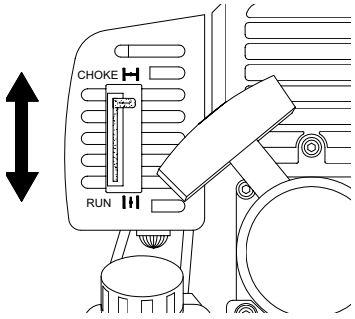
2. Depress priming bulb several times to purge air in carburetor, until the fuel flows through return pipe. (See below left diagram)

3. Pull choke lever upward to choke position (**closed**). (See below middle diagram)

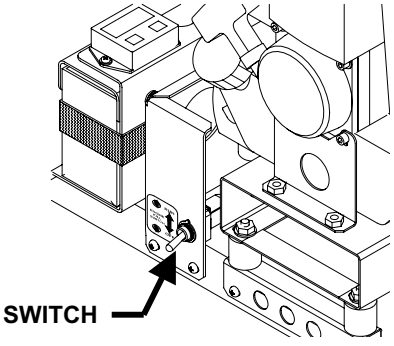
4. Pull recoil starter briskly, taking care to keep the handle in your grasp and not allowing it to snap back.



PRIMER BULB



ENGINE CHOKE



ENGINE KILL SWITCH

5. When you hear the engine want to start, return the choke lever to **run** position (open). Then pull recoil starter briskly again.

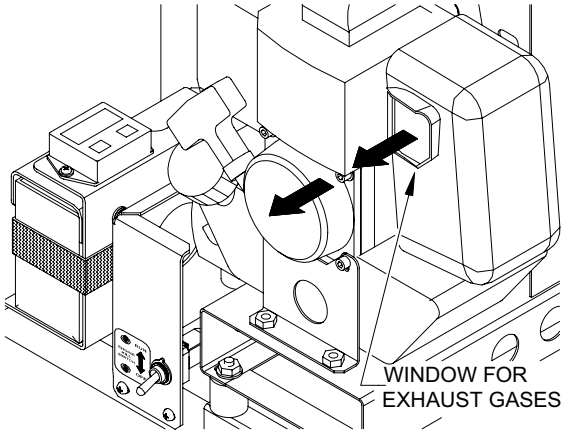
Note: if engine does not start, repeat procedures 3 to 5.

WARNING

As recommended for any machine driven by an internal combustion engine, this equipment is intended for use outdoors and in a well ventilated area in order to prevent Carbon Monoxide poisoning.

CAUTION

Keep the space close to the engine exhaust clear to avoid damage of property or personal injury. The gases coming out the engine exhaust (muffler) are HOT when the engine is running.



TO STOP THE MACHINE:

1. Turn OFF the spray switch at the remote control to stop the spray operation and remove energy to the solenoid valve.
2. Move the *engine kill switch* to the *stop* (down) position.

OPERATOR SAFETY

Keep all loose items (ie. Clothing, hair, jewelry, etc...) away from all moving parts.

Many of the formulations which can be dispensed with this machine are highly toxic and require special safety equipment. Read and observe the formulation label safety precautions, warnings and procedures before operating machine.

Always wear hearing protection.

Never let an inexperience person operate the machine.

Do not operate the machine if you are ill, or under the influence of alcohol, drugs or medication.

CAUTION

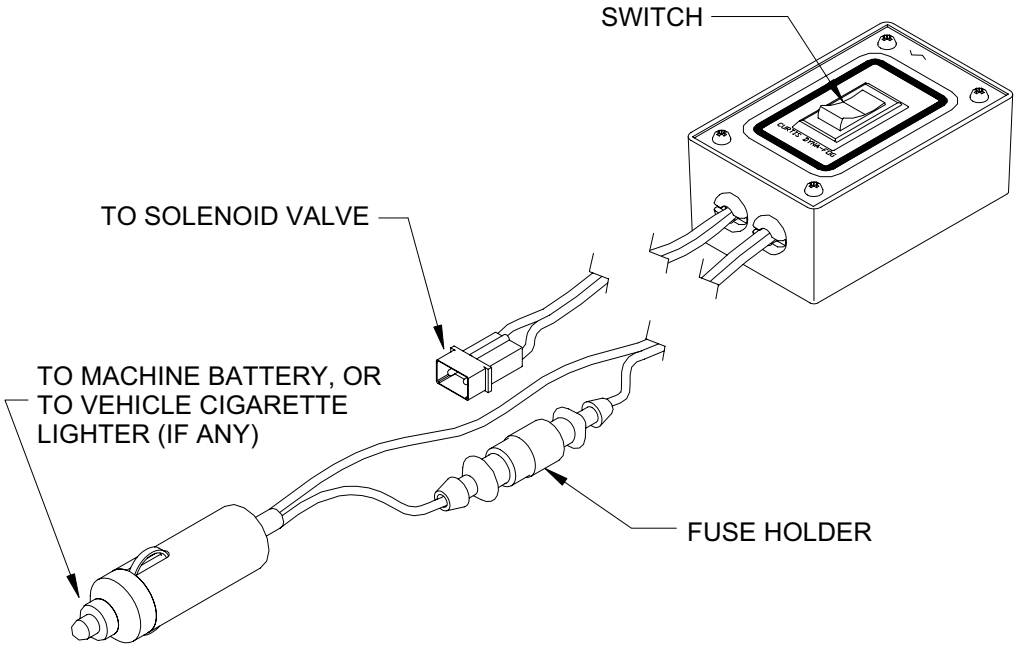
Do not start the machine without the belt guard and the heat shield cover installed.

REMOTE CONTROL BOX

The machine is equipped with a remote control unit that contains the Spray “ON/OFF” switch.

SPRAY ON: Applies +12V DC and opens the 2-way solenoid valve to allow the flow of liquid.

SPRAY OFF: Removes power and closes the 2-way solenoid valve to stop the flow of liquid.



REMOTE CONTROL BOX ASSEMBLY

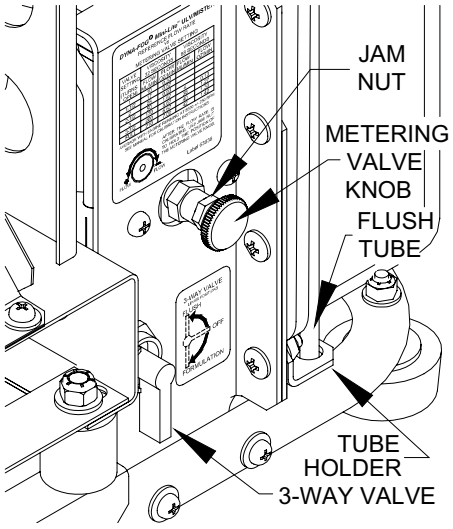
IMPORTANT:

Be sure to turn "OFF" after operation of machine, to prevent discharging battery. Some users prefer to disconnect the remote control from the machine to avoid the discharge of the battery, if the switch is left in “ON” when the engine is not working. Keep the remote control unit where it will not be damaged or lost while the machine is not working.

MACHINE CALIBRATION

Refer to the flow tables provided with your machine to determine the proper valve setting to produce your desired flow rate.

For easier procedure, the calibration is performed thru the flush line, as following:



1) Locate the machine in an open and well ventilated place.

2) Verify that the spray switch at the remote control is in the “OFF” position.

3) Remove the end of the flush tube from the tube holder (see diagram).

4) Prepare a graduate cylinder or container with at least 10 oz (300 ml) of formulation.

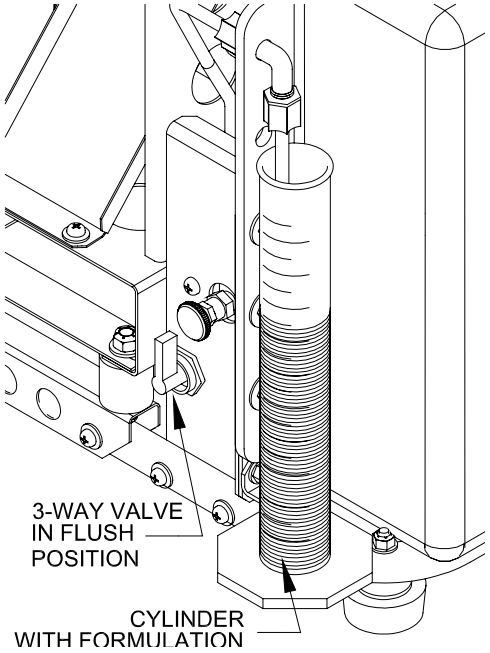
5) Insert the end of the Flush Tube into the container with formulation.

6) Loosen the jam nut and rotate the metering - valve knob to the valve setting to obtain the desired flow rate according to the flow table. Tight down the jam nut to prevent the valve setting from accidentally be changed

7) Rotate the lever of the 3-way valve to the flush position (pointing up).

8) With the engine running, move the spray switch at the remote control to the “ON” position.

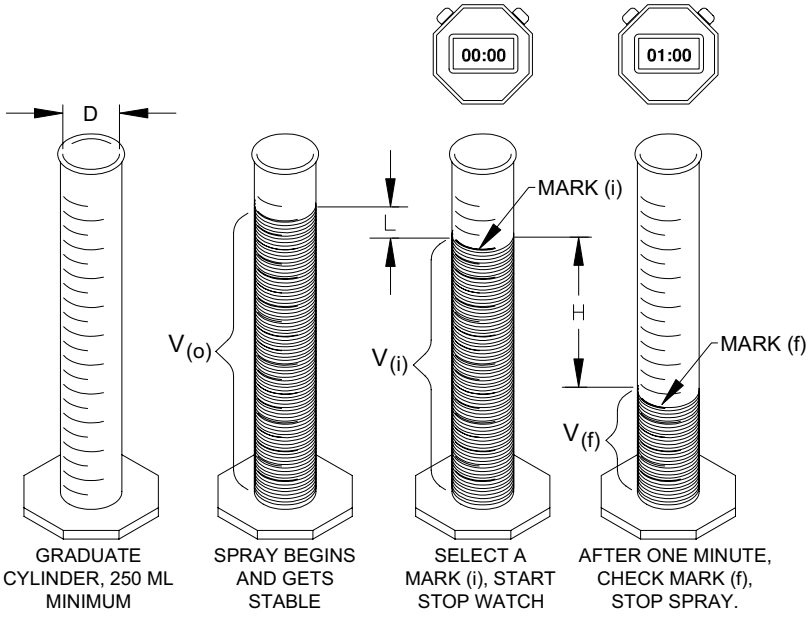
9) Let the machine spray for few seconds to remove any air bubbles from the tube, then turn the Spray OFF.



10) Check the position of the liquid level or “initial” mark (indicated as Mark (i) in next diagram).

11) With the engine running, move the spray switch at the remote control to the “ON” position for one minute.

12) After passed the one minute, turn the Spray “OFF” and check the position of the liquid level or “final” mark (indicated as Mark (f) in next diagram).



In the diagram, **D** represents the internal diameter of the graduate cylinder.
V(o) is the total volume of formulation added to the cylinder.
V(i) is the initial Volume when the stop watch start to count.
V(f) is the final volume when the stop watch reach one minute.
L is the difference in levels of the liquid used to remove bubbles from the lines.
H is the difference in levels of the liquid sprayed during one minute.

For better accuracy, it is recommended that the graduate cylinder or cylindrical container has a diameter bigger than 1.75 inches.

The flow rate could be calculated as the difference between the Initial Volume minus the Final Volume, divided in the spray time “t” (one minute recommended).

$$\text{Flow Rate} = \frac{V(i) - V(f)}{t}$$

If the spray time was one minute, the flow rate is the difference between volumes; if the spray time was two minutes, divide the difference of volumes in two.

If necessary, increase or decrease valve setting to achieve the desired flow rate.

Remove the cylindrical container used for calibration and pour the remaining formulation into the formulation tank being careful not to spill any of the liquid.
Turn “ON” the spray for few seconds to remove liquid from the flush line. Then turn “OFF” the spray, clean the formulation from the tube and reinsert the end of the Flush tube into the hole of the tube holder.

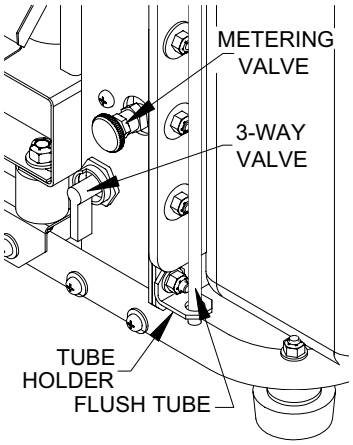
Move the lever of the 3-way valve to the Formulation position (down). The machine was calibrated and is ready to spray.

FLUSHING SYSTEM

The system must be flushed after each use to protect the equipment from the corrosive material in the formulation.

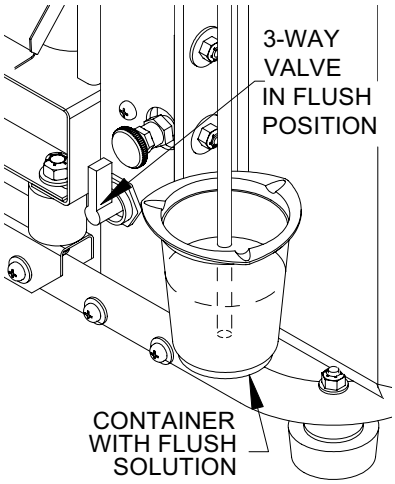
CAUTION

Never handle any parts that come in contact with the formulation until the unit has been thoroughly flushed with recommended flushing agent.



The manual 3-way valve is used as a selector to route either Formulation or Flushing solution from their respective tank/container to the nozzle.
To flush the system, locate the machine in an open and well ventilated place, and perform the following procedure:
1) Verify that the spray switch at the remote control is in the “OFF” position.
2) Remove the end of the flush tube from the tube holder (see diagram).
3) Prepare a container with at least 33 oz (100 ml) of flushing solution (like Kerosene or Diesel fuel).

4) Insert the end of the Flush Tube into the container with flushing solution.
5) Rotate the lever of the 3-way valve to the flush position (pointing up).
6) Whit the engine running, move the spray switch at the remote control to the “ON” position.
The flushing solution will pass through the hoses, valves and nozzle, flushing the system.

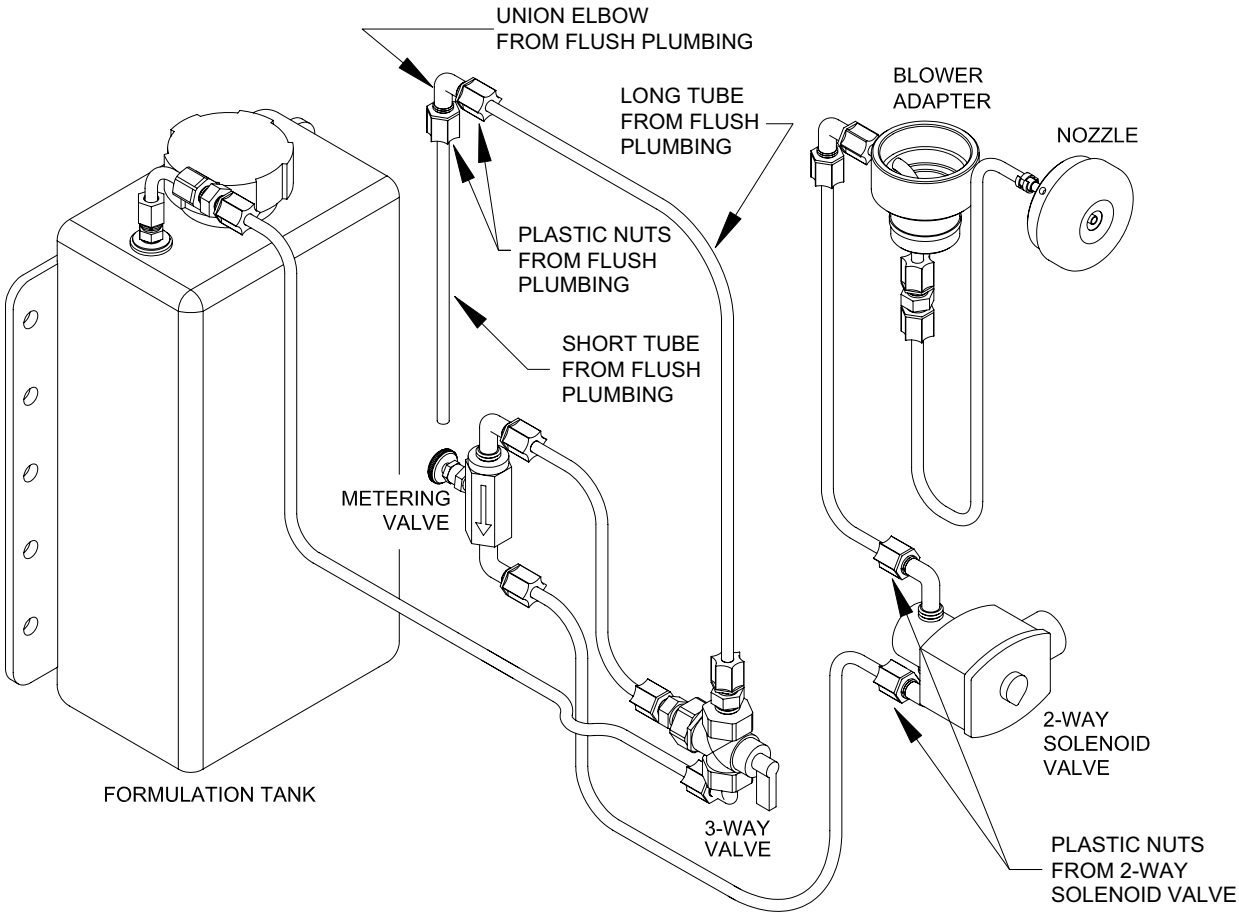


When the flushing solution is finished, move the spray switch at the remote control to the “OFF” position, move the lever of the 3-way valve to the “OFF” position (horizontal), turn the engine kill switch to the Stop (OFF) position.

Remove the container used for the flushing solution, reinsert the end of the Flush tube into the hole of the tube holder, and disconnect the remote control from the solenoid valve.

Note: To reduce the time of the Flushing operation, the metering valve could be fully opened after at least 16 oz (50 ml) of flush solution have been introduced into the system. Once this operation is performed, close the metering valve after flushing the system. Flow rate calibration will be required for next use.

EMERGENCY BY-PASS OF THE SOLENOID VALVE



The electrical control system of the Spray could be down for reasons such as: discharged machine battery, broken remote control fuse, lost remote control or a broken solenoid valve.
As we understand the importance of the spray applications, we include an emergency procedure to temporary bypass the Remote Control / Battery / Solenoid Valve spray cut-off system.

To by-pass the solenoid valve proceed as following:
1) Loosen the plastic nuts from the 2-way solenoid valve until they are disconnected from the elbows.
2) Loosen the plastic nuts from the Union Elbow of the Flush plumbing until they are disconnected from the union elbow. Keep in a safe place the two plastic nuts and the short tube. The union elbow will be used in next step.
3) Install the union elbow as connecting element between the lines disconnected in step 1.
The Spray ON/OFF could be performed with the manual 3-way valve.
Fix the problem that required the Emergency By-pass system, and restore the machine to the standard Spray control system proceeding in reverse order.

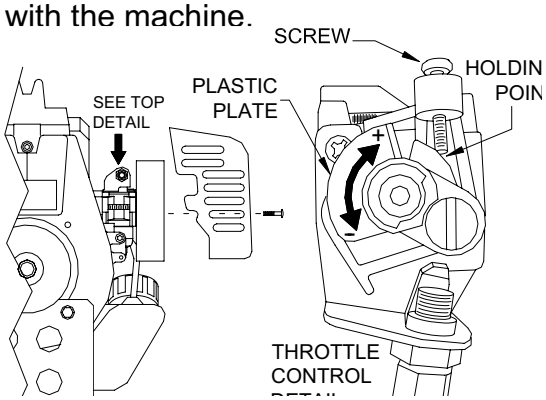
ENGINE MAINTENANCE

Maintenance, replacement or repair of the emission control devices and systems may be performed by any nonroad engine repair establishment or individual.

In the carburetor, fuel is mixed with air. When the engine is tested at the factory, the carburetor is pre-set.

SPEED ADJUSTMENT

When the Mini-Lite™ is tested at the factory, the engine working speed is basically adjusted. The working speed for the engine is 8500 rpm (+/- 250 rpm). A further adjustment may be required, according to climate or altitude existing at the place to work with the machine.

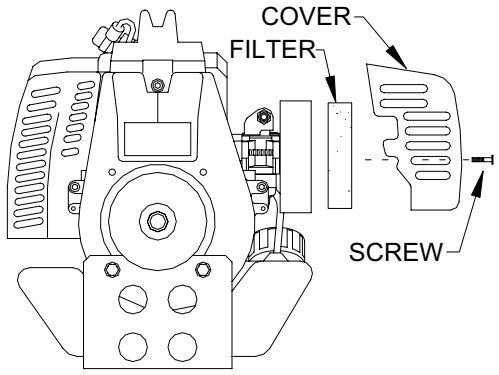


To adjust the engine speed remove the plastic air cleaner cover from the engine, loose the adjuster screw; to increase the speed unscrew the adjuster screw and rotate the plastic plate clockwise, to decrease the speed rotate the plastic plate counter clockwise, then tight down the screw to hold the position. Check the speed with a tachometer after 5 or 7 minutes of operation, readjust if required. Reinstall the plastic air cleaner cover.

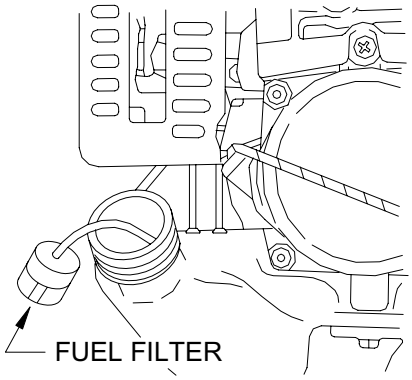
AIR FILTER

The air filter must be cleaned periodically from dust and dirt in order to avoid: Carburetor malfunctions, Starting problems, Engine power reductions, Unnecessary wear on the engine parts and/or abnormal fuel consumption.

Clean the air filter daily or more often if working in exceptionally dusty areas.
To clean the air filter, remove the air filter cover and the filter (1) as shown in the right diagram. Rinse the filter in warm soapsuds. Check that the filter is dry before reassembly. An air filter that has been used for some time cannot be cleaned completely. Therefore, it must regularly be replaced with a new one. A damaged filter must be replaced.



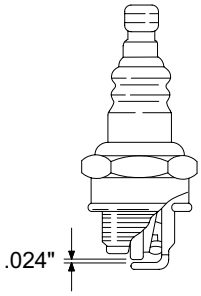
FUEL FILTER



Drain all fuel from the fuel tank and pull fuel filter line from tank. Pull filter element out of holder assembly and rinse element in warm water with detergent.
Rinse thoroughly until all traces of detergent are eliminated. Squeeze, do not wring, away excess water and allow element to air dry.
Note: If element is hard due to excessive dirt build up, replace it.

SPARK PLUG

The spark plug condition is influenced by: An incorrect carburetor setting, Wrong fuel mixture (too much oil in the gasoline), A dirty air filter and/or hard running conditions such as cold weather.

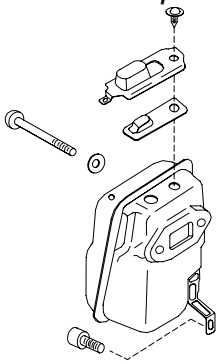


These factors cause deposits on the spark plug electrodes, which may result in malfunction and starting difficulties. If the engine is low on power, difficult to start or runs poorly at idling speed, always check the spark plug first. If the spark plug is dirty, clean it and check the electrode gap. Readjust if required. The correct gap is .024" (.6 mm). The spark plug should be replaced after about 100 hours of operation, or early if the electrodes are badly eroded.

***Note**: in some areas, local laws requires using a resistor spark plug to suppress ignition signals. If this machine was originally equipped with resistor spark plug, use the same type of spark plug for replacement*.

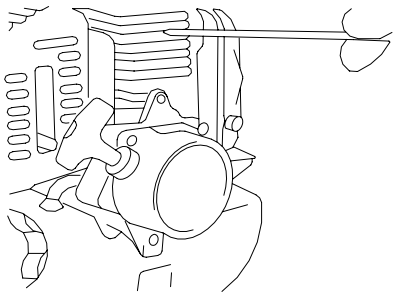
MUFFLER

Remove the muffler and clean out any excess carbon from the exhaust port or muffler inlet every 100 hour of operation. If you find corrosion on the muffler, replace it.



ENGINE FINS

The engine is air cooled, and air must circulate freely around the engine and over cooling fins on cylinder head to prevent overheating.

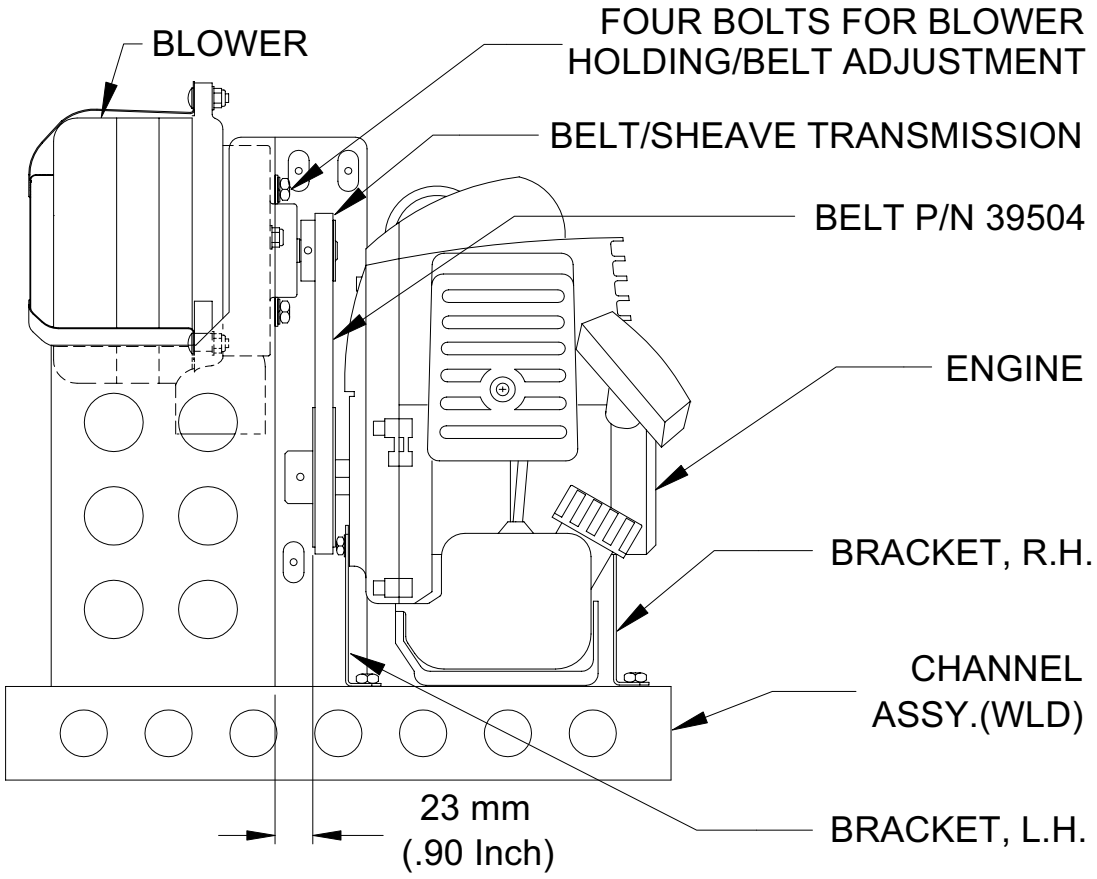


Every 100 hours of operations, or once a year (more often if conditions require), clean fins and external surfaces of engine of dust, dirt and oil deposits which can contribute to improper cooling. ***Note**: Do not operate engine with engine shroud or muffler guard removed as this will cause overheating and engine damage.*

POLY-V BELT AND SHEAVE DRIVE

In order to obtain the appropriated blower speed and use low weight components, the Poly-V drive provide the best of all the power transmission , including the superior driving force of multiple V-belts without the matching problems associated with individual belts.

To obtain the longer life of the belt transmission components, please follow the instructions indicated in this section.



DISTANCE FOR BELT ALIGMENT

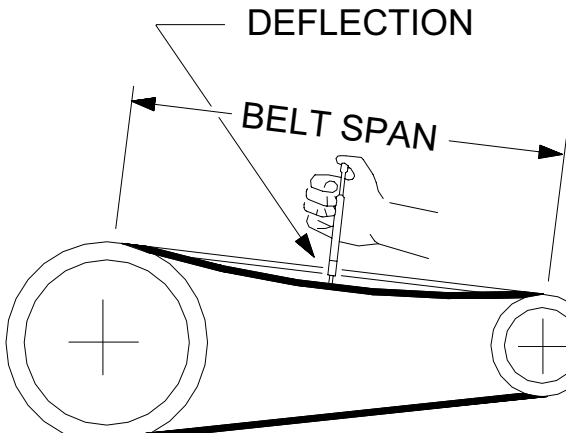
BELT ALIGNMENT

If the engine was removed from the machine for maintenance purposes, use a metal strip (or similar) of .90” (23 mm) wide as spacer to reinstall the engine in the appropriated place. Be sure the surface of the big pulley of the engine makes flat contact with the spacer, and the other edge of the spacer makes full contact with the vertical wall of the channel assembly. The .90” distance should remain after tighten down the bolts to the engine brackets. In that position the belt/sheaves will be aligned.

BELT TENSION

Belt tension is highly important. When in operation both tight and slack strands of the belt should be in a straight line from sheave to sheave; a very small sag or bow could be acceptable at the slack strand. Check belt tension after eight (8) hours operation, followed by periodic inspections to be sure belt is under sufficient tension and that belt is not slipping or jumping from the groove.

Proper Tension is found when a force of one pound is applied to the center of the belt span, and a deflection between .18 (minimum) and .25 (maximum) inches is present. The maximum value is indicated for “New Belt” and new belt should be tensioned at this value to allow for expected tension loss. Used belts should be maintained at the minimum value of deflection. For reference please see right diagram.



BELT DEFLECTION

An excessive belt tension could produce non-desirable effects, as shorter life of bearings (engine and blower), power reduction, higher temperature, etc.

Do not install a new belt on worn sheaves. Such sheaves should be replaced to insure a proper fit of the belt in the grooves and prevent slippage and premature belt wear.

If sheave(s) change is required, they are sold already assembled with the shaft (for the blower) or on the shaft adapter (for the engine). Under normal conditions, the sheaves will last hundreds of hours before a change could be required.

Do not force belt over sheave grooves. Slack off drive for easy mounting of belt. Adjust drive and check that belt operates free and clear of all obstructions.

Keep belt clean. Do not use belt dressing. If belt slips, clean and readjust belt tension.

Keep extra belts stored in a cool, dark and dry place.

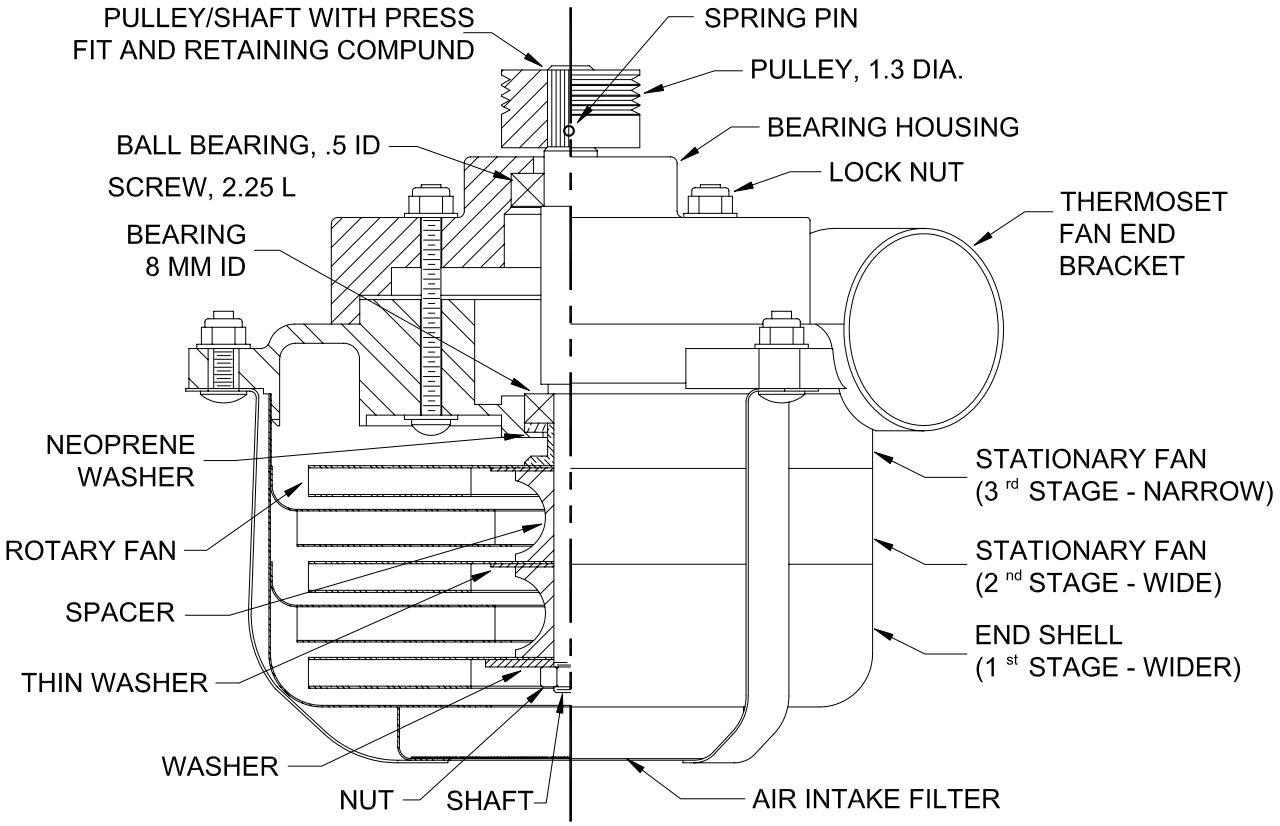
CAUTION

Because of the possible danger to person(s) with accidents which may result in the use of this belt transmission, is important to install the belt guard before to run the engine. Do not use the machine if the belt guard is not installed.

BLOWER ASSEMBLY

The Mini-Lite™ is equipped with a high performance rotary blower, including special features as following:

Three-stage, 5.7" (145 mm) diameter. Air delivery: 99 CFM Unrestricted.
Steel shaft mounted on double ball bearing. Thermoset fan end bracket.
Aluminum (anodized) bearing housing. Aluminum commutator bracket.
Belt driven, aluminum Poly-V shave. Stainless steel air filter/guard assembly.
Working pressure: 2 to 3 psi, depending of number of nozzles and engine speed.
Tangential bypass discharge to separate working air from bearing housing.

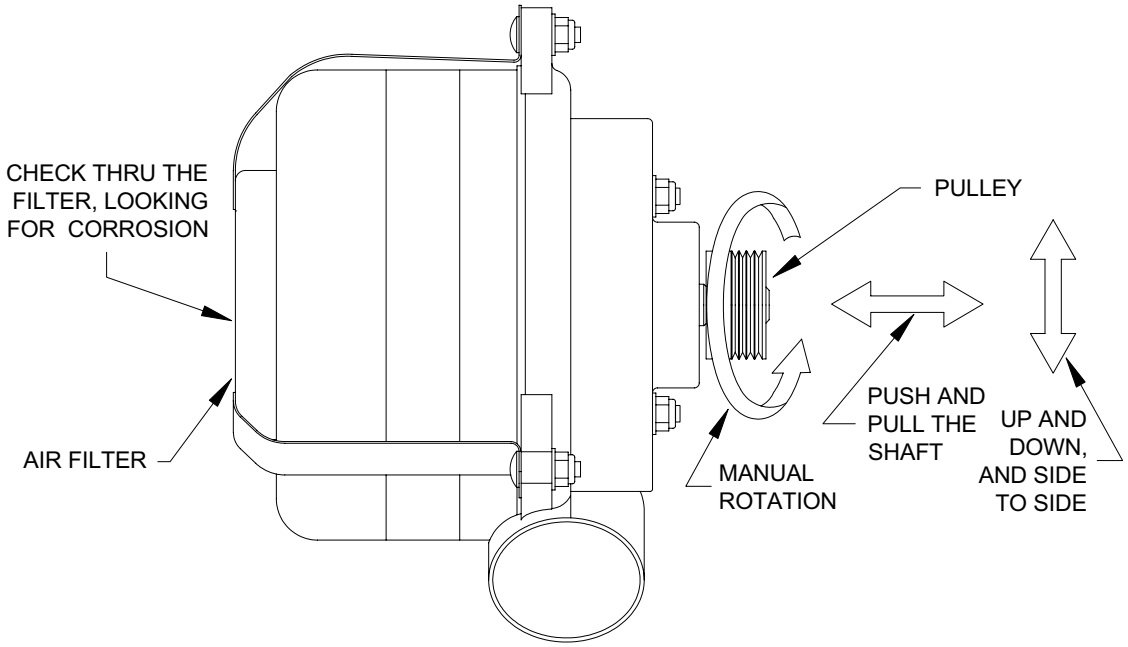


BLOWER ASSEMBLY SHOWING CROSS SECTION

INSPECTION OF THE BLOWER:

The Blower should be checked periodically, testing the bearings for abnormal conditions or excessive wear, checking the rotating fans and other components for corrosion, etc. To know if detailed inspection of the blower is required, a preliminary inspection is required.

To perform a preliminary inspection, the machine has to be stopped and cold. Remove the three screws of the Belt Guard Assembly and take the guard off; Loose the four bolts that hold the Blower to the Upright Channel (vertical plate), move the blower down on the slides and remove the belt. You will be able to rotate the blower with your hand at the pulley side. Also tray to move the shaft axially and transversely, looking for a bearing play. If the rotation of the shaft is not smooth or if a considerable play is found, a detailed inspection should be performed. Additionally at this point is convenient to check the fan for high corrosion by using a flashlight and looking thru the air filter, the critical point is around the nut/washer, on the aluminum of the fan. If high corrosion is present, a detailed inspection should be performed too.



PRELIMINARY INSPECTION OF THE BLOWER

After inspected, if the Blower Assembly looks in good condition, reassembly the belt tighten the blower bolts and tensioning the belt as indicated at the “Belt Transmission” section; reinstall the Guard Assembly and the Heat Shield Assembly.

The Blower Assembly is a very critical component which works at extremely high speed (about 20,000 RPM), then we recommend that the detailed inspection (if needed) will be performed by your nearest Dyna-fog distributor.

CAUTION:

Do not run the machine if the belt guard is removed in order to prevent possible danger to person(s).

AIR FILTER ASSEMBLY:

The Intake Filter Assembly is mounted on the blower, and it is performing three main functions:

- Dirt and other foreign particles are filtered from the incoming air by means of the reusable stainless steel element.
- It works as a safety guard, avoiding the contact of body parts (as fingers) from rotary parts (fan/shaft end).
- It allows positive hold down between the external shells and the thermoset fan end bracket.

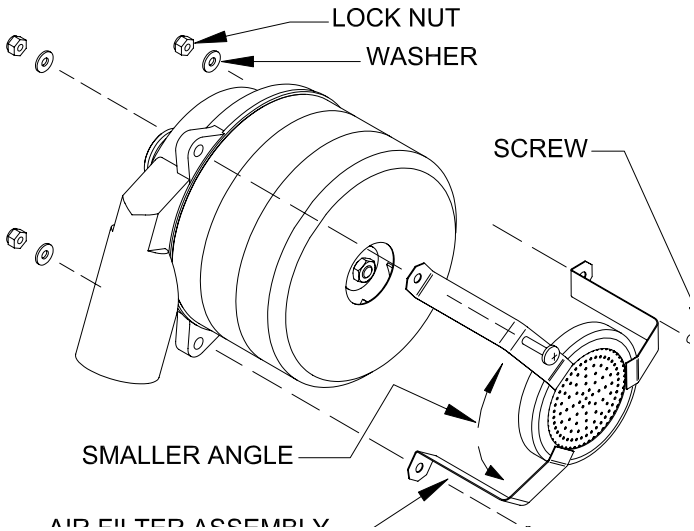


FIGURE 17 - AIR FILTER ASSEMBLY

Before every operation of the machine, verify that the air filter assembly is in the right place and the screw/nuts that hold it to the thermoset fan end bracket are tight.

CAUTION:

Do not run the machine without the Inlet Filter assembly; as this would cause serious damage to the blower unit or personal injury.

REMOVAL AND CLEANING

If cleaning procedure is required for the inlet filter, loose and remove the three nylock nuts/washers/bolts, that hold the filter assembly to the thermoset fan end bracket.

Clean the stainless screen in an approved solvent, dry with compressed air, or shake to remove excess solvent and allow to dry naturally.

Inspect the screen for defects that may permit dirt or other foreign particles to enter into the blower, inspect the outer shell and hold down strips for cracks or breaks, and replace if required.

To reassembly the filter, take into account that the hold down strips have not symmetrical angular distribution. Please see above diagram for reference.

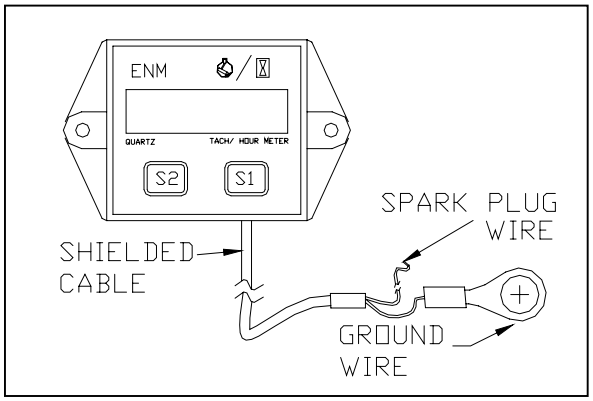
PREVENTIVE MAINTENACE SCHEDULE - MINILITE

FREQUENCY / OPERATION	AFTER EACH USE	8 HOURS OR DAILY	25 HOURS OR NEW SEASON	50 HOURS OR NEW SEASON	100 HOURS OR NEW YEAR
ENGINE					
CLEAN AIR FILTER		■			
CHECK MUFFLER					■
CLEAN GASOLINE FILTER				■	
CLEAN COOLING FINS					■
CHECK RPM			■		
CLEAN OR REPLACE SPARK PLUG					■
ROTARY BLOWER					
CHECK AIR FILTER		■			
PRELIMINAR INSPECTION					■
BELT TRANSMISSION					
CHECK BELT AND PULLEYS			■		
CHECK TENSION				■	
CHANGE BELT					■
OTHERS					
FLUSH LIQUID SYSTEM	■				
CHARGE BATTERY	■				
CHECK FRAME, GUARDS	■				
CLEAN MACHINE			■		

NOTE: THE INTERVALES SHOWN REPRESENT AN APPROXIMATE TIME PERIOD FOR PERFORMING THE MAINTENANCE SHOWN. DEPENDING ON THE ACTUAL OPERATING ENVIRONMENTAL CONDITIONS, IT MAY BE NECESSARY TO PERFORM EACH OPERATION MORE OR LESS FREQUENTLY THAN WHAT IS SHOWN.

TACHOMETER / HOURMETER

THE NEW MODEL OF THE TACHOMETER/HOURMETER ALLOW THE POSSIBILITY TO USE THE MAINTENANCE METER TO ALERT MAINTENANCE PERSONNEL THAT A TIME INTERVAL HAS EXPIRED AND SERVICE SHOULD BE PERFORMED ON THE ENGINE.



INTRODUCTION

The ENGINE MONITOR is a self powered LCD Hourmeter/Tachometer and Maintenance Meter. An internal lithium battery furnishes the power for the monitor. A wire around the spark plug wire of the engine provides both a tachometer signal and an indicator that the engine is running. The maintenance meter is used to alert maintenance personnel that a time interval has expired and maintenance should be performed on the engine. Before changing any setting to the ENGINE MONITOR, ensure that the engine is Off.

INSTALLATION

Unpack and attach the unit to a location where it can be easily read. Uncoil the shielded wire and wrap 3 or 4 turns of the red wire around the engine's spark plug wire. The white wire must be attached to the engine's frame. The LCD will be blank because the ENGINE MONITOR is in its storage or sleep mode. With the engine off, press and hold the S1 button for 1 second to activate the monitor. This one time action will remove the ENGINE MONITOR from the sleep mode and turn it on. The LCD will display the accumulated hours on the hourmeter and a HOURS icon.

TO SET THE MAINTENANCE INTERVAL TIMER

Press and hold down the S2 button for 4 seconds. The right most digit on the LCD will flash and the service icon will be displayed. Pressing and holding the S1 button will cause the flashing digit to automatically increment. When the desired number has been reached release the S1 button and press the S2 button for 1 second to increment to the next digit. Repeat above steps until the service time interval has been entered. After 14 to 16 seconds with no buttons pressed, the LCD display will return to total hours mode.

ACTIVATING THE MAINTENANCE INTERVAL TIMER

Press and hold the S1 and S2 button simultaneously for 20 seconds. The two digits will increment to 20 seconds and then return to total hours mode. When the engine is running and the maintenance time has reached zero, the service icon will come on.

VIEWING MAINTENANCE INTERVAL

Press and hold the S2 button for 4 seconds to view remaining time of your maintenance interval. To continue current maintenance do nothing. If you would like to start a new maintenance interval, repeat steps 4 & 5 again. Each time you want to view the remaining time of your maintenance, press and hold S2.

RESETTING THE SERVICE ICON

Press and hold the S1 and S2 buttons for 20 seconds. The service icon will shut off. The maintenance time will automatically default to the number previously programmed.

TO DISPLAY HOURS ONLY

Press and hold the S1 button until 04 is displayed. Release the S1 button and the display returns to total hours after 8 to 10 seconds. When the engine is running the display will show hours only, no RPM and the Hour Icon will blink.

TROUBLESHOOTING GUIDE

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. RECOIL STARTER FAILS TO CRANK THE ENGINE	A. DEFECTIVE RECOIL STARTER	A. CHECK RECOIL STARTER. SERVICE IT IF REQUIRED.
	B. BELT TRANSMISSION WITH OBSTRUCTIONS	B. CHECK BELT AND PULLEYS FOR OBSTRUCTIONS.
	C. ENGINE LOCKED UP	C. CHECK THE ENGINE FOR ROTATION. CONSULT THE NEAREST SERVICE CENTER
	D. BLOWER LOCKED UP	D. INSPECT BLOWER FOR ROTATION CONSULT THE NEAREST SERVICE CENTER
2. ENGINE HARD TO START OR STOPS	A. ENGINE KILL SWITCH IN STOP POSITION.	A. PLACE SWITCH IN "ON" OR "RUN" POSITION.
	B. FAULTY START-STOP SWITCH (ENGINE KILL SWITCH).	B. REPLACE FAULTY SWITCH.
	C. NO FUEL OR CONTAMINATED FUEL.	C. ADD FUEL OR CLEAN TANK AND REFUEL.
	D. CLOGGED FUEL FILTER	D. CLEAN FILTER (IF POSSIBLE) OR REPLACE IT.
	E. SPARK PLUG FAULTY	E. CLEAN OR REPLACE SPARK PLUG
	F. TERMINAL LOOSE OR WIRING DEFECTIVE	F. TIGHTEN LOOSE TERMINALS, REPLACE DEFECTIVE WIRING.
	G. SPARK PLUG WIRE DISCONNECTED	G. CONNECT SPARK PLUG WIRE.
	H. LOOSEN GASOLINE HOSE OR PERFORATED GASOLINE HOSE.	H. TIGHTEN LOOSE CLAMPS OR CHANGE THE GASOLINE HOSE.
3. ENGINE MISSES OR RUN ERRATICALLY.	A. START-STOP SWITCH (KILL SWITCH) CONTROL IN STOP POSITION.	A. PLACE SWITCH IN "ON" OR "RUN" POSITION.
	B. FAULTY START-STOP SWITCH (ENGINE KILL SWITCH).	B. REPLACE FAULTY SWITCH.
	C. NO FUEL OR CONTAMINATED FUEL.	C. ADD FUEL OR CLEAN TANK AND REFUEL.
	D. CLOGGED FUEL FILTER	D. CLEAN FILTER (IF POSSIBLE) OR REPLACE IT.
	E. CARBURETOR MOUNTED GASKED LEAKS	E. TIGHTEN BOLTS, REPLACE GASKET IF REQUIRED.
	H. VACUUM CREATED INSIDE FUEL TANK	H. LOOSE THE FUEL TANK CAP, IF IMPROVES, CHECK OR REPLACE TANK VENT.
4. ENGINE KNOCKS OR DEVELOPS NOISE.	A. SPARK ARRESTOR CLOGGED.	A. CLEAN OR REPLACE.
	B. FLYWHEEL LOOSE.	B. CONSULT NEAREST SERVICE CENTER.
	C. SHAFT ADAPTOR/PULLEY LOOSE.	C. CONSULT NEAREST SERVICE CENTER.
	D. LOOSE BELT.	D. TIGHTEN LOOSE BELT.

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
5. ENGINE WILL NOT ADLE SMOOTHLY	A. CARBURETOR DIRTY OR OUT OF INTERNAL ADJUSTMENT.	A. CLEAN AND CHECK CARBURETOR
6. ENGINE OVERHEATS.	A. FUEL WITHOUT 2 CYCLES OIL.	A. ALWAYS USE GASOLINE WITH 2-CYCLES OIL, PROPORTION OF 50:1
	B. EXHAUST RESTRICTED.	B. CLEAN OR REPLACE MUFFLER.
	C. SPARK ARRESTOR CLOGGED.	C. CLEAN OR REPLACE.
	D. DIRTY COOLING FINS.	D. CLEAN FINS.
7. ENGINE DOES NOT DELIVER FULL POWER.	A. CARBURETOR CHOKE VALVE PARTIALLY OPEN	A. ADJUST CHOKE.
	B. AIR CLEANER DIRTY.	B. SERVICE AIR CLEANER.
	C. CARBURETOR DEFECTIVE.	C. CLEAN, ADJUST OR REPLACE.
	D. EXHAUST RESTRICTED.	D. CLEAN OR REPLACE MUFFLER.
	E. SPARK ARRESTOR CLOGGED.	E. CLEAN OR REPLACE.
	F. BELT OVERTIGHT OR MISALIGMENT BELT/SHEAVES.	F. INSPECT BELT/SHEAVES.
8. BLOWER WILL NOT OPERATE WHILE ENGINE IS RUNNING.	A. DEFECTIVE BELT	A. CHECK ALIGMENT AND TENSION. REPLACE IF REQUIRED.
	B. BEARINGS WEARING OUT.	B. CONSULT NEAREST SERVICE CENTER.
	C. NUT LOOSE AT THE BLOWER SHAFT.	C. CONSULT NEAREST SERVICE CENTER.
9. BLOWER EXTREMELY NOISY	A. LOOSE INTAKE AIR FILTER.	A. TIGHTEN LOOSE SCREWS/NUTS.
	C. NUT LOOSE AT THE BLOWER SHAFT.	C. CONSULT NEAREST SERVICE CENTER.
	D. BROKEN ROTARY FAN.	D. CONSULT NEAREST SERVICE CENTER.
10. BLOWER RUNS BUT NO FLOW OF LIQUID.	A. AIR LEAKE IN THE SUCTION LINE (HOSE).	A. CHECK HOSES, TIGHTEN CONNECTORS. REPLACE HOSE IF REQUIRED.
	B. SHUT OFF VALVE DOES NOT OPEN	B. CHECK BATTERY VOLTAGE. CHARGE IF REQUIRED.
	C. FORMULATION FILTER CLOGGED.	C. CLEAN OR REPLACE FILTER.
	D. FLOW CONTROL VALVE CLOGGED.	D. CHECK VALVE AND CLEAN IF REQUIRED USING LIQUID (REVERSED) OR AIR JET.
	E. FORMULATION FILTER ABOVE FORMULATION LEVEL.	E. RELOCATE FILTER TO A BETTER POSITION.

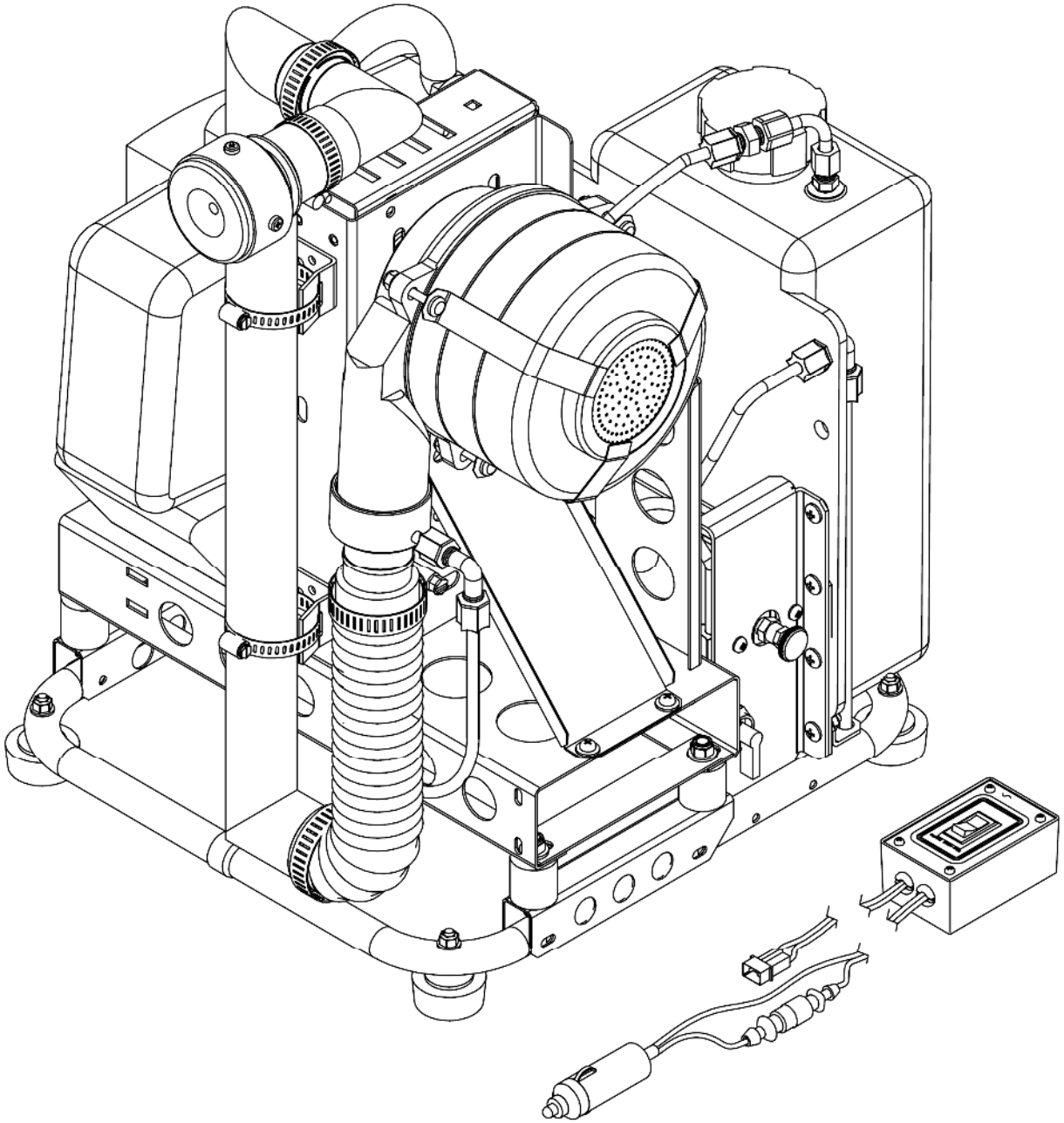
PARTS LISTING FOR

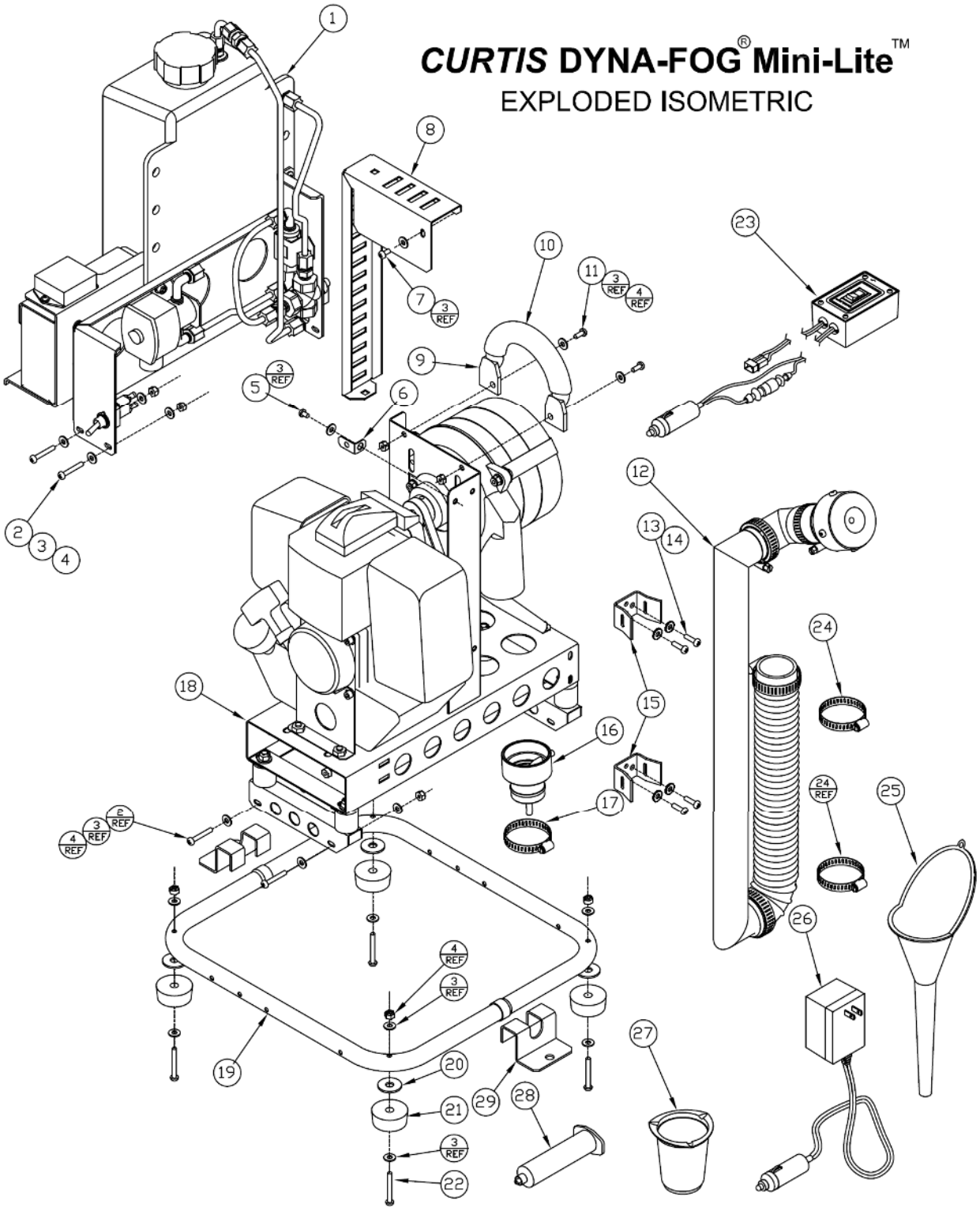
DYNA-FOG®

Mini-Lite™

MODEL 2990, SERIES 1

ENGINE DRIVEN ULV/MIST SPRAYER




CURTIS DYNA-FOG® Mini-Lite™
EXPLODED ISOMETRIC

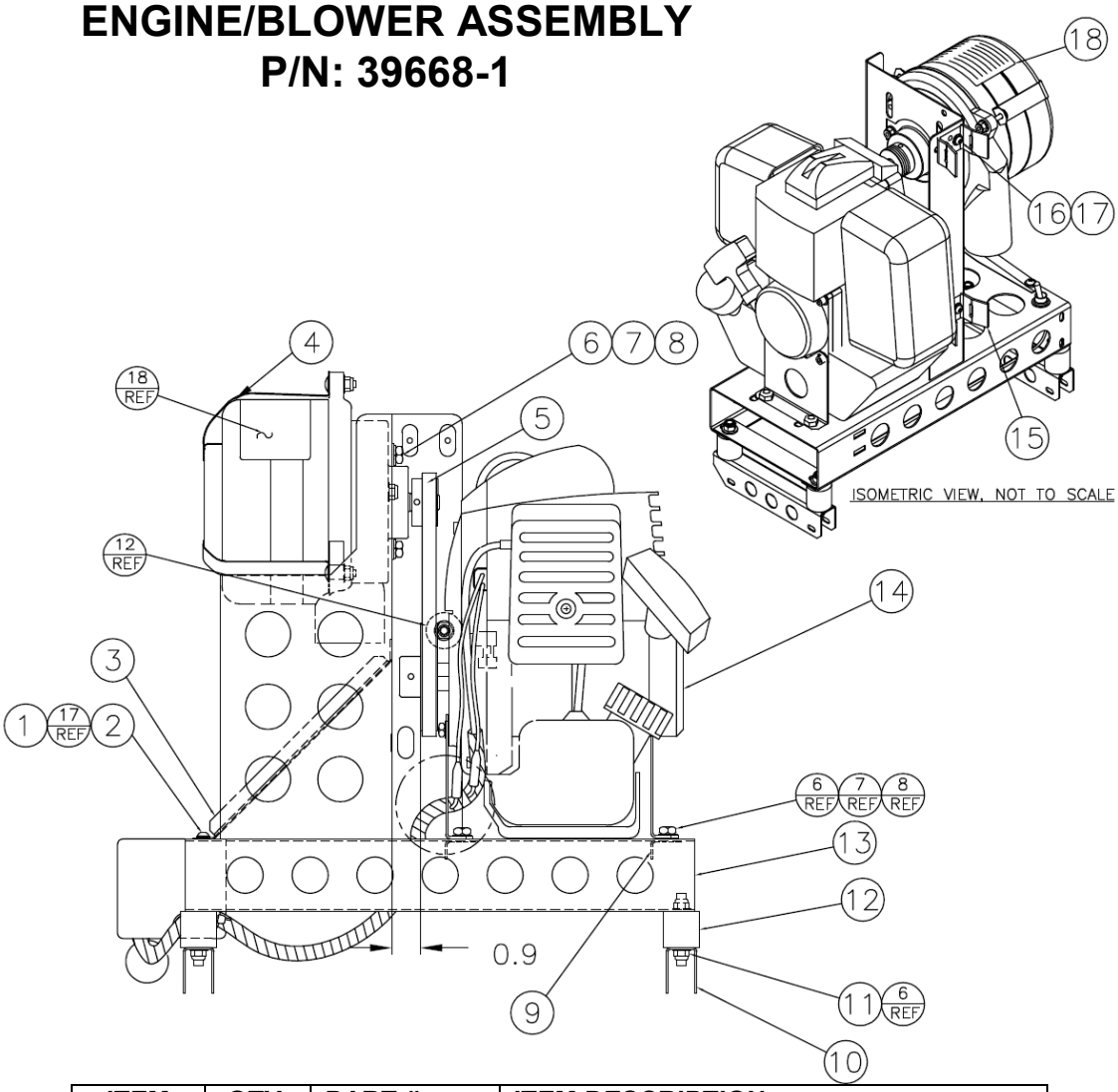
ITEM	P/N	QTY	DESCRIPTION
1 (*)	63932	1	VAVLES/TANK AY, MINI-LITE
2	159962	8	SCREW, 10-24 x 1-1/4
3	120391	46	WASHER, FLAT, #10, REG
4	190254	20	NUT, 10-24 LOCK, HEX
5	157678	1	SCREW, 10-24 x 3/8, TRCR
6	63990	1	BRACKET AY (WELD), CHANNEL/GUARD
7	453120	1	SCREW, 10-24 x 1/4
8	39723	1	GUARD AY, BELT
9	63931	1	HANDLE, MINI-LITE
10	64228-3	1	GRIP, FOAM HANDLE, 5.5" LENGTH
11	159908	2	SCREW, 10-24 x 3/8, PNCR
12 (*)	63915	1	BOOM AY, MINI-LITE
13	159920	4	SCREW, 10-24 x 1/2 PH
14	138479	4	WASHER, LOCK, #10, EXTO
15	39529	2	BRACKET, NOZZLE (ANOD)
16	63922	1	ADAPTER AY, BLOWER
17	20054-2	4	CLAMP, WORM DRIVE, 1.5
18 (*)	39668-1	1	PLATE AY, ENGINE/BLOWER (MINI-LITE)
19	63917	1	BASE AY, (WELD/DRILLED)
20	9417714	4	WASHER, 10 FLAT, WIDE
21	49029	4	BUMPER, RUBBER
22	159967	4	SCREW, 10-24 x 1-1/2
23 (*)	86724	1	REMOTE BOX AY
24	63941	2	CLAMP AY (W/ SLEEVE), BOOM MINI-LITE
25	39725	1	FUNNEL, PLASTIC
26	86711-2	1	BATTERY CHARGER, 110 VAC-12 VDC
27	39596	1	BEAKER, 100 ML, POLY
28	62332	1	VISCOSIMETER
29	63927	2	BRACKET, FRAME HOLDER (COATED RUBBER)

(*) Detailed parts list in other page

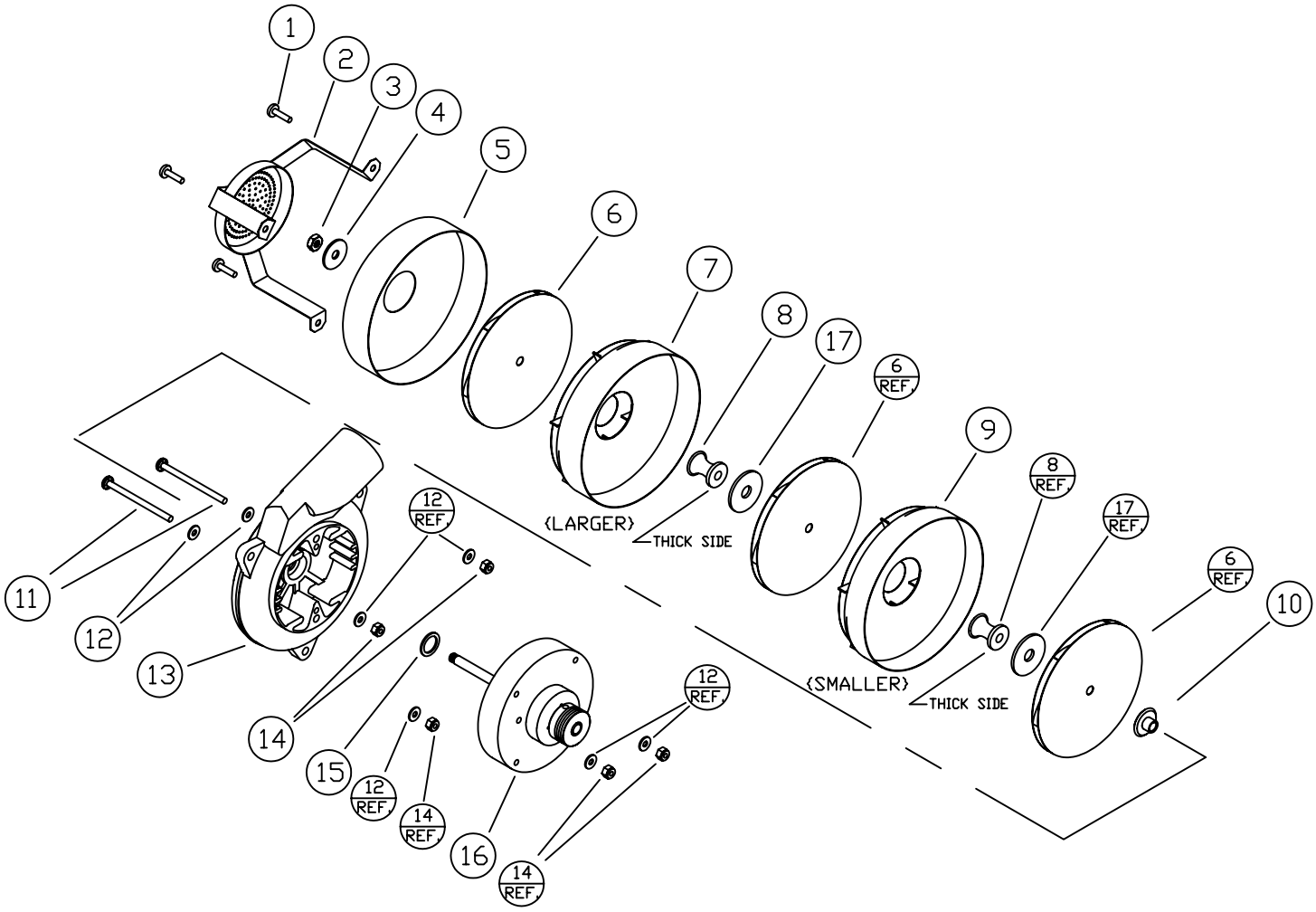
CURTIS DYNA-FOG® Mini-Lite™

EXPLODED ISOMETRIC

ENGINE/BLOWER ASSEMBLY
P/N: 39668-1



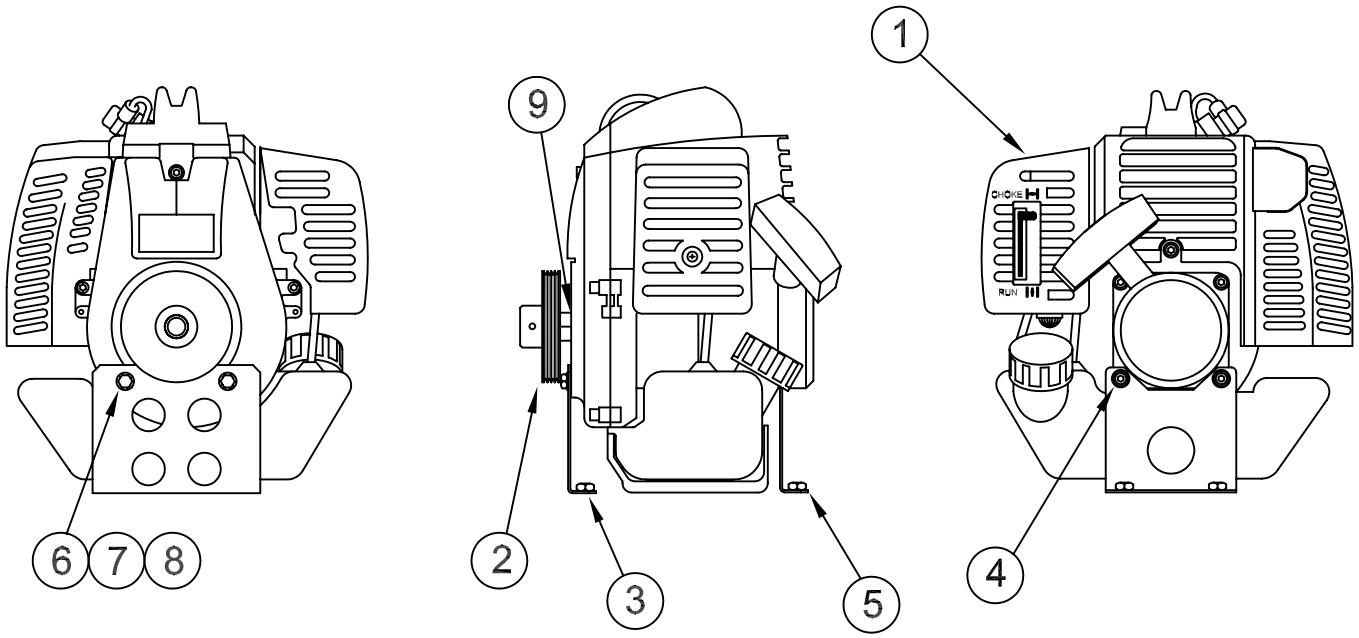
ITEM	QTY.	PART #	ITEM DESCRIPTION
1	2	120391	WASHER, FLAT, #10 REG.
2	4	157684	SCREW, 10-24 X 1/2, TRCR
3	1	63921	BRACKET, SUPPORT
4	1	39651	BLOWER AY.
5	1	39504	BELT, POLY-V (16.0”)
6	18	120392	WASHER, FLAT, 1/4 REG.
7	8	120854	BOLT HEX 1/4 – 20 X 5/8
8	8	120380	WASHER, LOCK 1/4 SPLIT
9	2	39711	STIFFENER, ENGINE MOUNTING
10	2	39696	BRACKET, ISOLATORS SUUPORT
11	8	9419454	NUT, NYLOCK 1/4 – 20
12	5	63148	MOUNT, SHOCK (1/4 – 20)
13	1	39674	CHANNEL AY., TWISTER XL
14	1	39656-1	ENGINE AY., 40CC TANAKA (MOD.)
15	2	39529	BRACKET, NOZZLE
16	4	159920	SCREW, 10-24 X 1/2, TRCR
17	8	138479	WASHER, LOCK, #10, EXTO
18	1	39706	LABEL, STARTING



CURTIS DYNA-FOG® Mini-Lite™

BLOWER ASSEMBLY P/N C39651

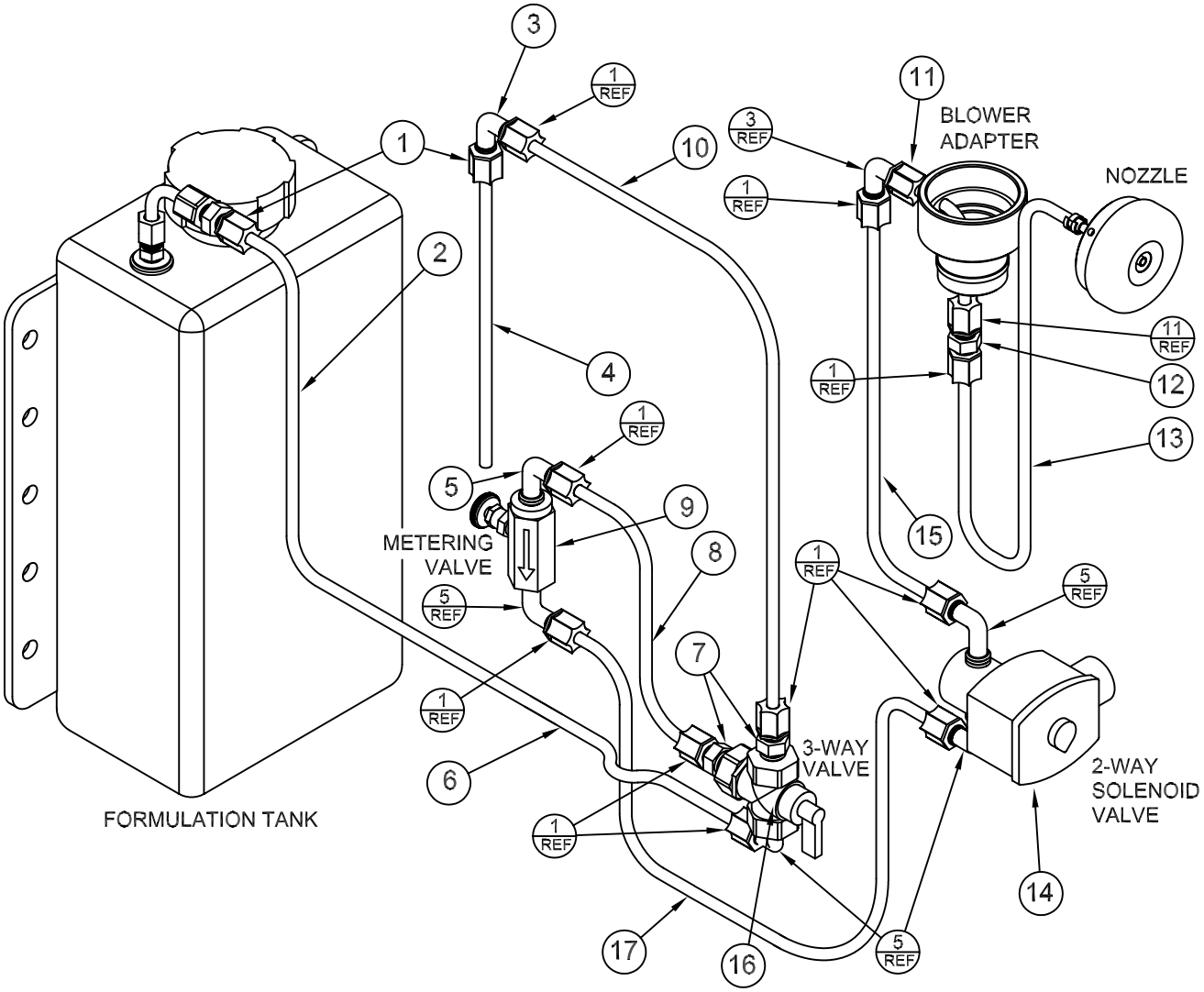
ITEM	QTY.	PART NUMBER	ITEM DESCRIPTION
17	2	A39651-14	WASHER, 1.5" OD
16	1	C39698	SHAFT/BEARING HOUSING AY.
15	1	A39651-2	WASHER, NEOPRENE
14	5	A190254	NUT,10-24 LOCK,HEX
13	1	B39651-31	BRACKET, FAN END, MACHINED
12	7	A120391	WASHER,FLAT,#10,REG.
11	2	A159982	SCREW, 10-24X2.25 PAN H.
10	1	A39651-4	SPACER
9	1	B39651-7	FAN STATIONARY
8	2	B39651-6	SPACER
7	1	B39651-8	FAN STATIONARY
6	3	B39651-5	FAN ROTATING
5	1	B39651-9	FAN SHELL
4	1	A39651-13	WASHER
3	1	A39651-11	NUT
2	1	B39663	FILTER ASSEMBLY
1	3	A273746	SCREW, 10-24X3/4 TRCR



CURTIS DYNA-FOG® Mini-Lite™

ENGINE ASSEMBLY, P/N 39656-1

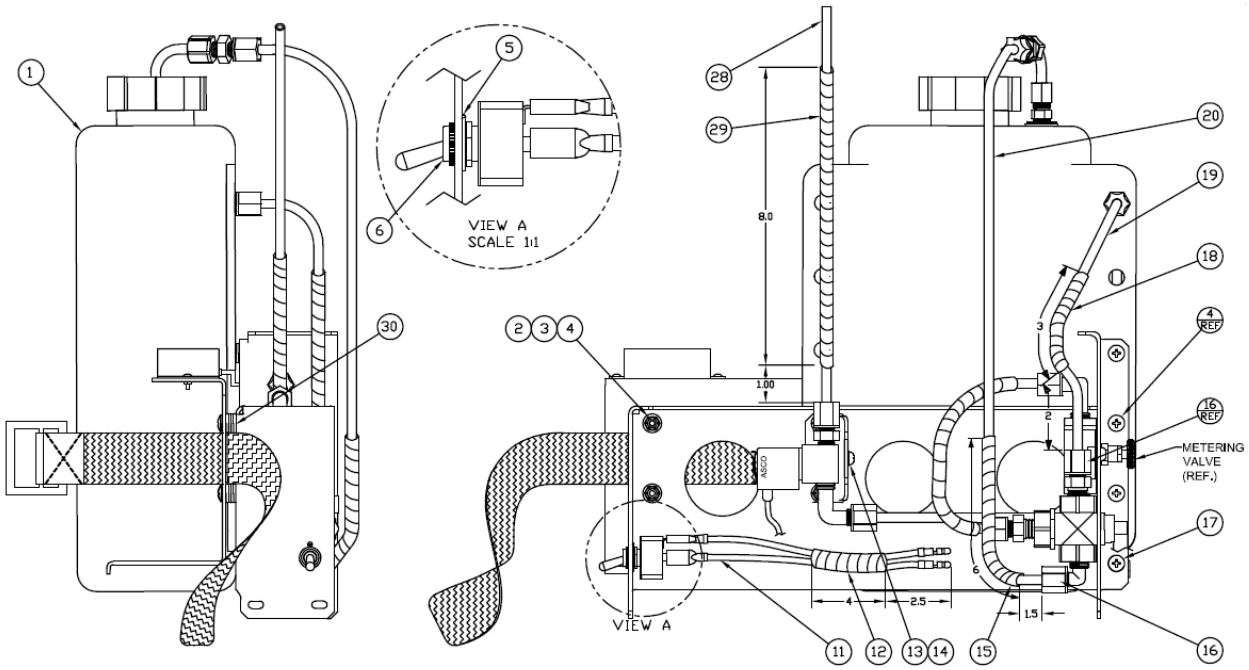
ITEM	QTY	P/N	DESCRIPTION
1	1	39656	ENGINE, 40 CC, TANAKA
2	1	39712	PULLEY/SHAFT ADAPTER AY
3	1	39658	BRACKET, L.H.
4	2	120391	FLAT WASHER, #10
5	1	39659	BRACKET, R.H.
6	2	39720	BOLT 6 MM - 1 MM
7	2	120392	FLAT WASHER, 1/4
8	2	121753	LOCK WASHER, 1/4
9	1	39710	WASHER, LOCK, SPLIT, 10 MM

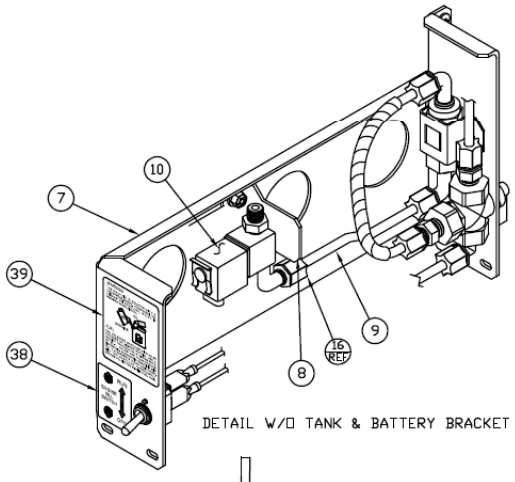


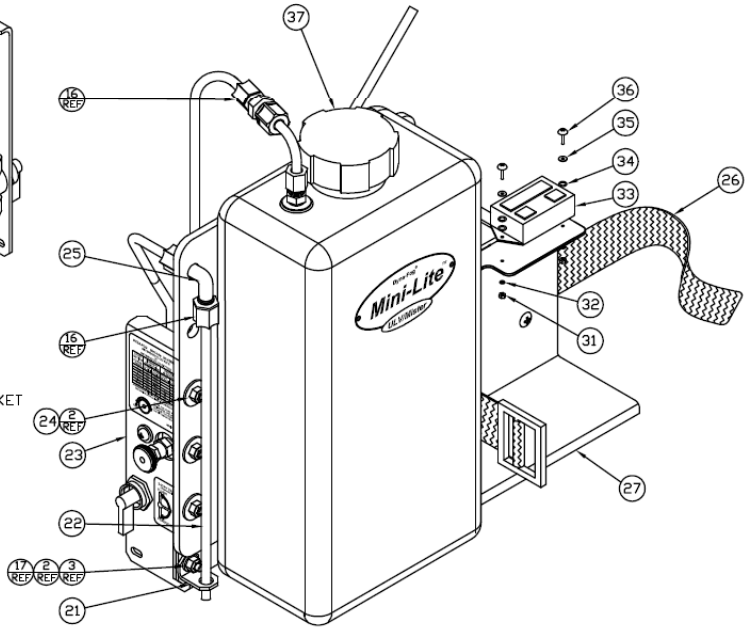
CURTIS DYNA-FOG® Mini-Lite™

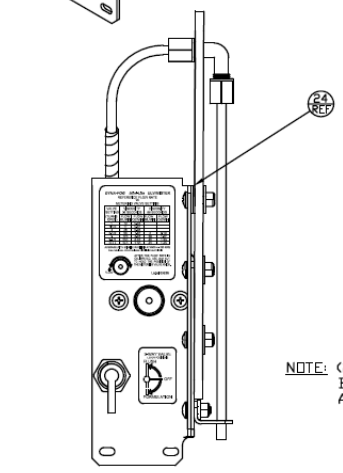
PLUMBING DIAGRAM & PARTS

ITEM	QTY	P/N	DESCRIPTION	ITEM	QTY	P/N	DESCRIPTION
1	12	62582-1	NUT,0 .25, PLASTIC GRIP	9	1	22235	VALVE, METERING
2	18.5"	RM58212	TUBING, .25 x .042 W	10	9"	RM58212	TUBING, .25 x .042 W
3	2	62555-1	ELBOW, UNION 1/4T	11	2	62550-1	NUT, .25, STL GRIP
4	10"	RM58212	TUBING, .25 x .042 W	12	1	62553-1	CONNECTOR, UNION, 1/4T
5	3	62641-2	ELBOW, 1/4MP - 1/4T	13	36"	RM58212	TUBING, .25 x .042 W
6	9.5"	RM58212	TUBING, .25 x .042 W	14	1	62638-2	SOLENOID, 2-WAY, MOD
7	2	62552-1	CONNECTOR, 1/4MP - 1/4T	15	12.8"	RM58212	TUBING, .25 x .042 W
8	8.5"	RM58212	TUBING, .25 x .042 W	16	1	86196	VALVE, 3-WAY (BRASS)
				17	5.8"	RM52121	TUBING, .25 x .042 W







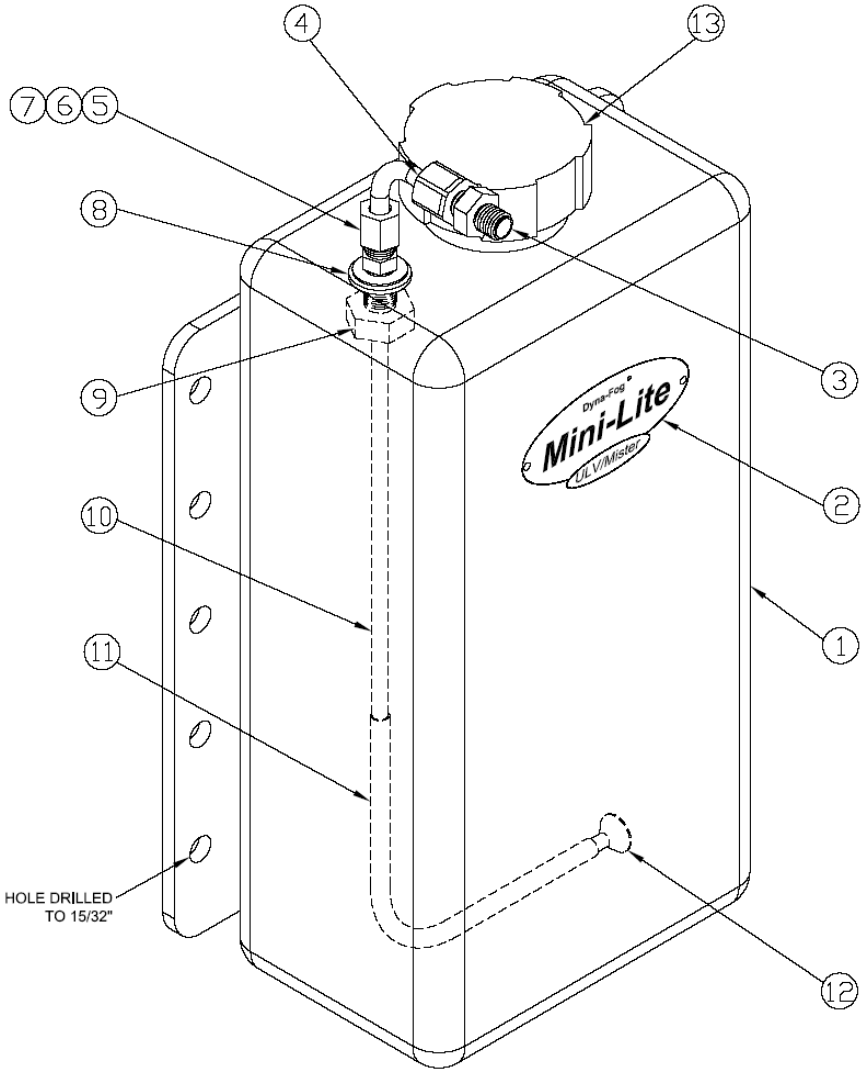


VALVES/TANK ASSEMBLY
P/N: 63932

NOTE: (2) ITEM 3TO BE PLACED BETWEEN TANK AY (P/N 63337-5) AND PANEL AY (P/N 63929)

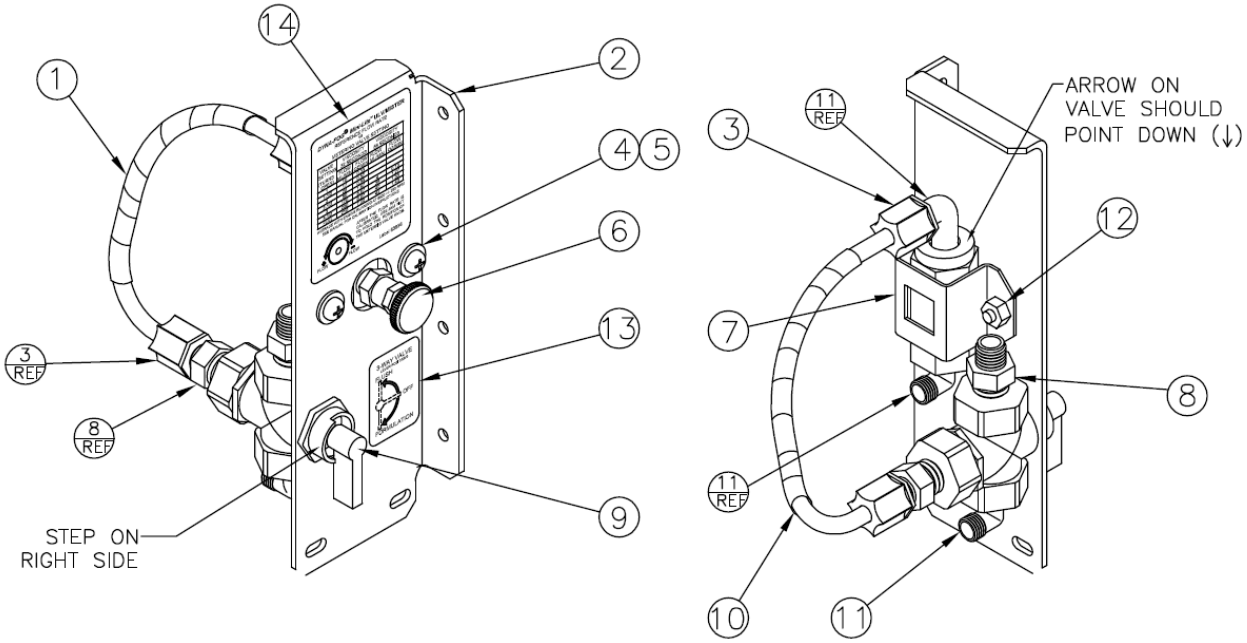
VALVES/TANK ASSEMBLY P/N: 63932

ITEM	QTY.	PART #	ITEM DESCRIPTION
1	1	63337-5	TANK AY., FORMULATION (MOD.)
2	8	190254	NUT, 10-24 LOCK, HEX
3	15	120391	WASHER, FLAT, #10 REG.
4	7	273746	SCREW, 10-24 X 3/4, TRCR
5	1	30024	RING, LOCKING
6	1	62369	SWITCH, ON/OFF
7	1	63919	BRACKET, FORM TANK
8	1	63988	BRACKET, SOLENOID VALVE
9	5.8”	RM58212	TUBING, .25 X .042 WALL
10	1	63928	VALVE AY (MECH), 2-WAY SOLENOID
11	2	39657-1	WIRE AY., KILL SWITCH
12	4”	RM63414	WRAP, POLY SPIRAL 1/4
13	2	63899	SCREW, 3MM X .5 X 10MM, CRPH
14	2	138522	WASHER, LOCK #4, INTO
15	6”	RM39019	WRAP, POLY SPIRAL 3/8
16	8	62582-1	NUT, .25 PLST GRIP
17	1	9415361	SCREW, 10-24 X 5/8, TRCR
18	3”	RM39019	WRAP, POLY SPIRAL 3/8
19	9”	RM58212	TUBING, .25 X .042W
20	18.5”	RM58212	TUBING, .25 X .042W
21	1	63930	BRACKET, FLUSH HOSE
22	10”	RM58212	TUBING, .25 X .042W
23	1	63929	PANEL AY., VALVES
24	5	9417714	WASHER, #10, FLAT WIDE
25	1	62555-1	ELBOW, UNION, 1/4T
26	1	63933	STRAP, BATTERY, MINI-LITE
27	1	63926	BRACKET, BATTERY
28	12.8”	RM58212	TUBING, .25 X .042W
29	8”	RM39019	WRAP, POLYSPIRAL 3/8
30	2	86602	SPACER, SUPPORT .25” L
31	2	114524	NUT, 6-32, HEX
32	2	138526	WASHER, FLAT, #6
33	1	64016	HOURMETER/TACHOMETER
34	4	10200-7	O-RING
35	2	131014	WASHER, FLAT, #6
36	2	159336	SCREW, 6-32 X 1/2, PNCR
37	1	63302-2	CAP AY., 2 QT., VENTED
38	1	63937	LABEL, RUN/OFF
39	1	39709	LABEL, FUEL



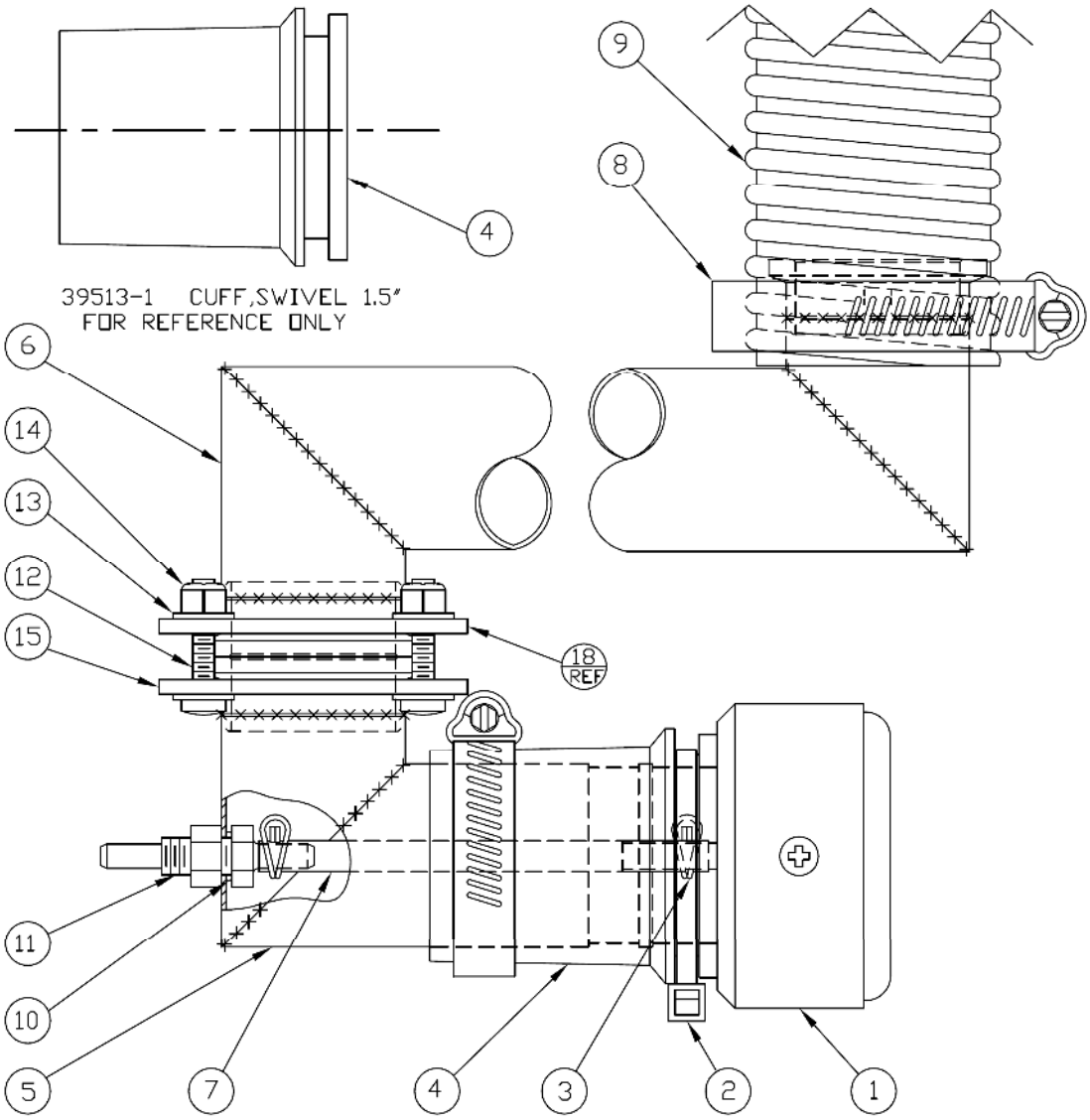
FORMULATION TANK ASSEMBLY P/N: 63337-5

ITEM	QTY.	PART #	ITEM DESCRIPTION
1	1	63302-8	TANK, 5 QT, MACH.
2	1	63938	LABEL, LOGO
3	1	62553-1	CONNECTOR, UNION 1/4T
4	1	62550-1	NUT, .25 STL. GRIP
5	1	145463	NUT, 1/4 TUBE
6	1	114628	SLEEVE, 1/4 TUBE
7	1	10105	CONNECTOR, STANDPIPE
8	1	53131	WASHER, FLAT
9	1	74288	NUT, LOCK, 1/8 NPSL
10	1	63336	STANDPIPE, 1/4
11	1	62227-5	TUBE, BLUE, 3/16 ID. X 5/16 OD.
12	1	62346	FILTER, PLASTIC
13	1	63302-2	CAP AY., 2 QT., VENTED



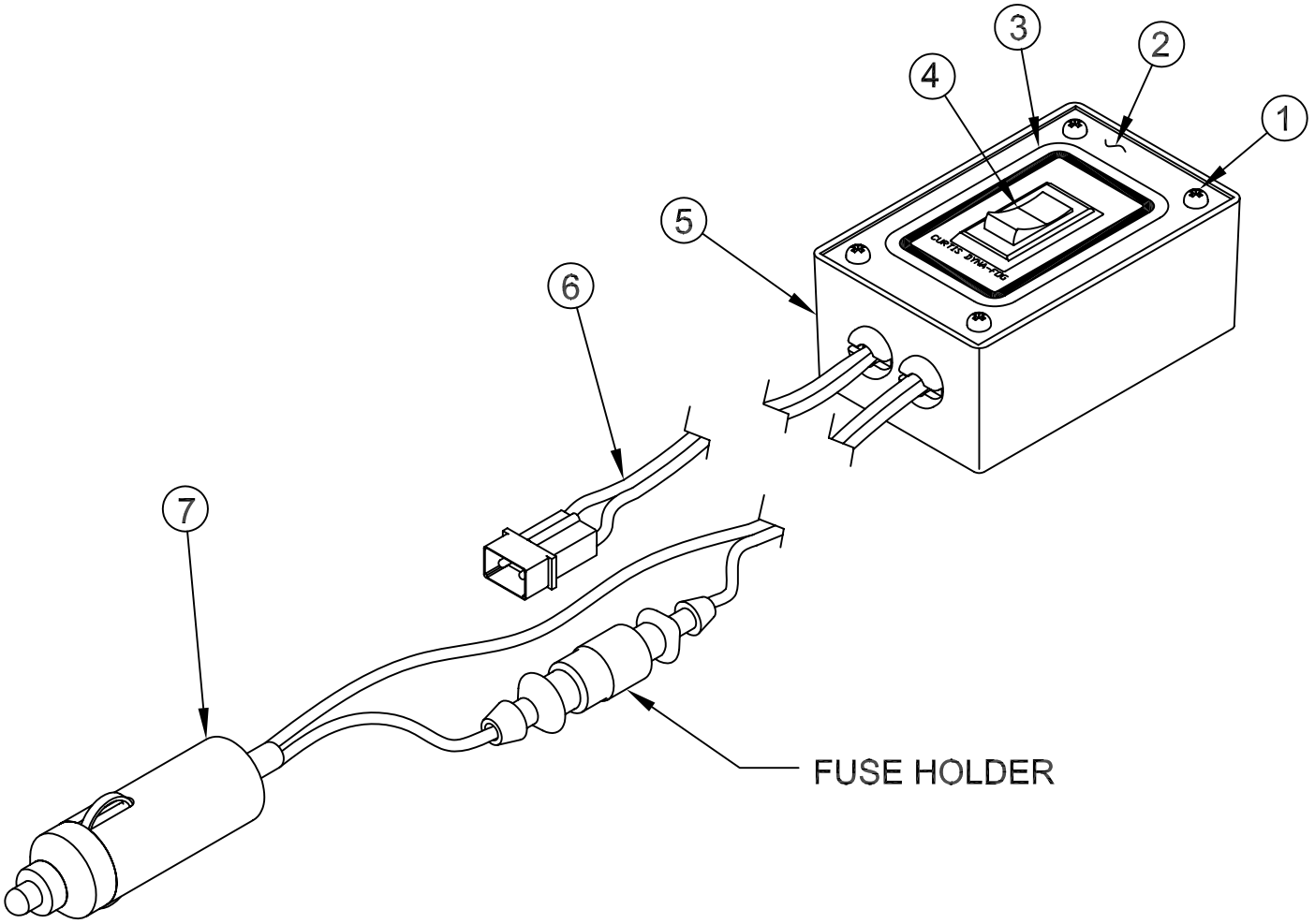
PANEL ASSEMBLY, VALVES
P/N: 63929

ITEM	QTY.	PART #	ITEM DESCRIPTION
1	1	RM39019	WRAP, POLY SPIRAL 3/8
2	1	63920	BRACKET, VALVE SUPPORT
3	2	62582-1	NUT, .25 PLASTIC GRIP
4	2	121841	WASHER, #8, SPLIT
5	2	159582	SCREW, 8-32 X 3/8 PNCR
6	1	22235	VALVE, METERING
7	1	22293	BRACKET, BALL VALVE
8	2	62552-1	CONNECTOR, 1/4MP – 1/4T
9	1	86196	VALVE, 3-WAY (BRASS)
10	1	RM58212	TUBING, .25 X .042 W X 8.5 L
11	3	62641-2	ELBOW, 1/4MP – 1/4T
12	2	114653	NUT, 10-32, HEX
13	1	63940	LABEL, FORMULATION/FLUSH
14	1	63936	LABEL, FLOW RATE



BOOM ASSEMBLY P/N: 63915

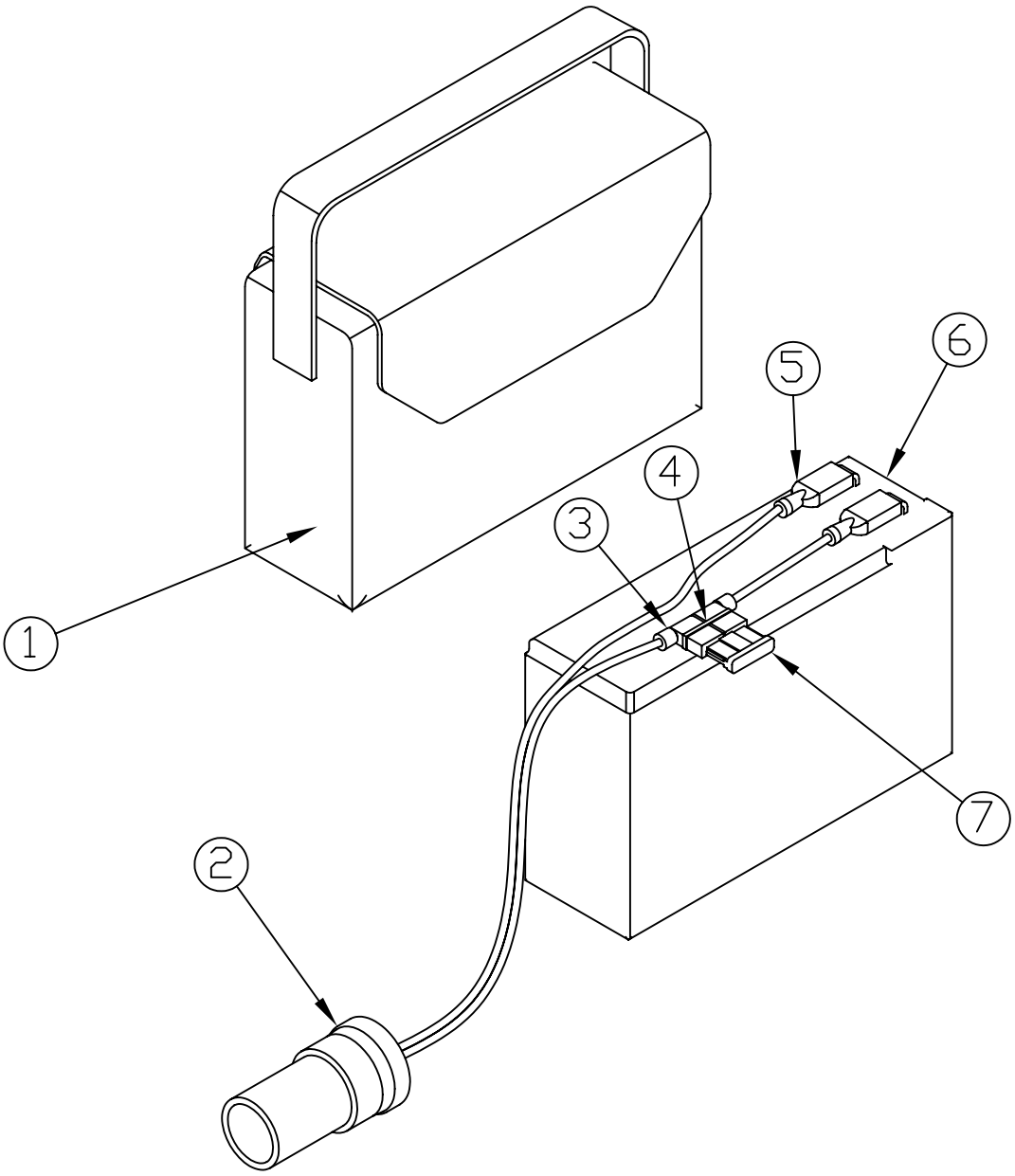
ITEM	QTY	P/N	DESCRIPTION
1	1	39726	TANK, 5 QT, MACH.
2	1	48061-4	TIE, CABLE LOCK, BLACK
3	2	80296-11	CLAMP, HOSE, DW5STZD
4	1	39513-6	CUFF, SWIVEL 1.5", SMALL, BLACK
5	1	63914-1	ELBOW AY., WELD, (NOZZLE SIDE)
6	1	63913	TUBE AY., WELDED (LONG)
7	4"	RM58212	TUBING, .250 X .042W
8	2	20054-2	CLAMP, WORM DRIVE, 1.5
9	12"	62299-7	HOSE FLEX, 1.5 I.D., CLEAR/GRAY
10	1	10100-10	"O" RING
11	1	62472	UNION, 1/4T BULKHEAD
12	3	159957	SCREW, 10-24 X 1, PNCR
13	6	120391	WASHER, 10-24 X 1, PNCR
14	3	190254	NUT, 10-24 LOCK, HEX
15	2	63886-1	CLAMP, SLOTTED, PLATE



CURTIS DYNA-FOG® Mini-Lite™

REMOTE BOX ASSEMBLY
P/N 86724

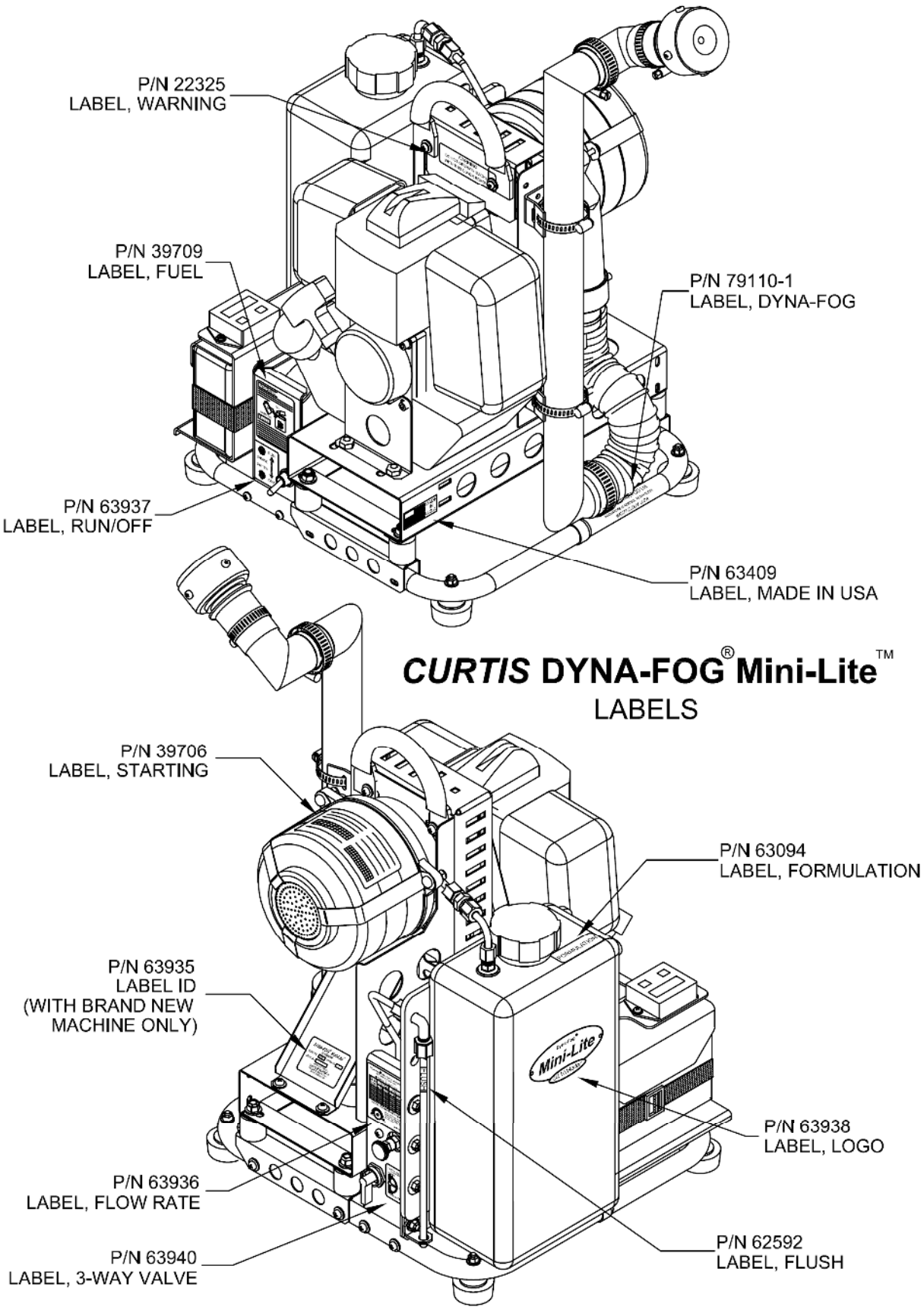
ITEM	QTY	P/N	DESCRIPTION
1	4	9405904	SCREW, 4-40 x 3/8, TAP
2	1	86723	COVER, REMOTE BOX
3	1	86729	LABEL, REMOTE BOX
4	1	86721	SWITCH, VISA - ROCKER
5	1	86722-1	ENCLOSURE
6	1	86727	CABLE, AY
7	1	9405904	SCREW, 4-40 x 3/8, TAP
NS	1	58669	FUSE



CURTIS DYNA-FOG® Mini-Lite™

BATTERY AY, 12 VDC P/N 39091

ITEM	QTY	P/N	DESCRIPTION
1	1	39092	M0055 BATTERY BAG 12V DC
2	1	39094	SOCKET, CIGARETTE LIGHTER (12 VDC B)
3	2	58668	TERMINAL, FLAG
4	1	20247	TIE, CABLE
5	2	53166	TERMINAL, SLIDE, 16-22
6	1	86711-4	BATTERY, 12V NO LABEL
7	1	65303	FUSE, 10A

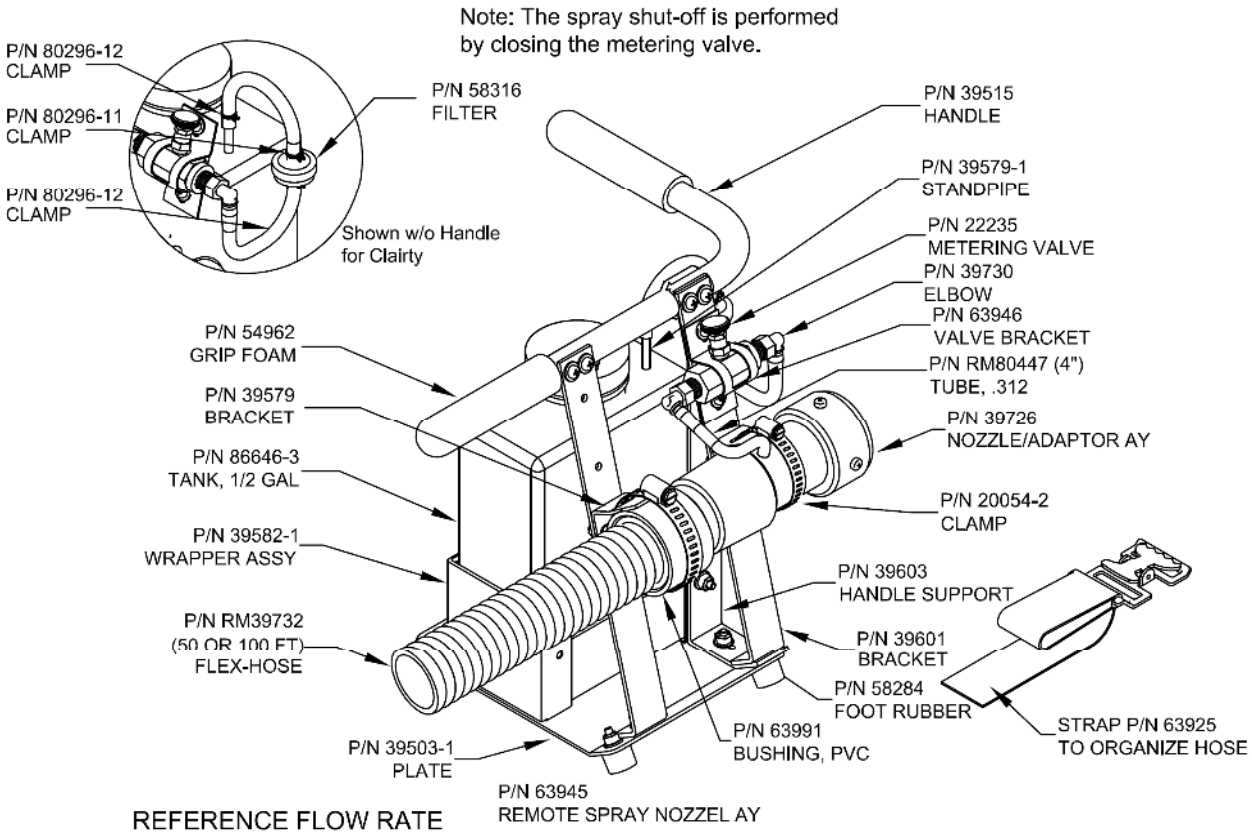


CURTIS DYNA-FOG® Mini-Lite™

LABELS

CURTIS DYNA-FOG® Mini-Lite™
Optional Remote Spray Nozzle
ULV/MISTER

With the Optional remote spray kit, you can keep the noise and emissions outdoors. The nozzle can be used at variuous heights without having any affect on liquid flow. This optional kit allow higher flow rates than the standard base unit.

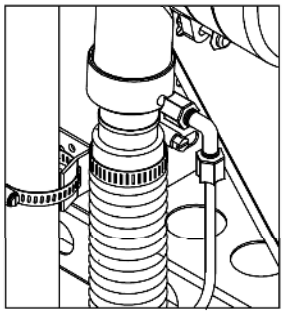


REFERENCE FLOW RATE
VS
METERING VALVE SETTING

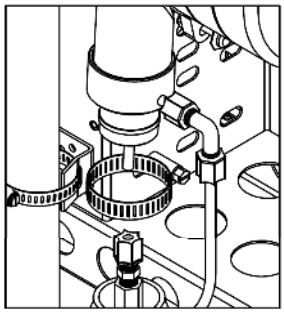
VALVE SETTING	VISCOSITY 32 SECONDS		VISCOSITY 88 SECONDS	
(TURNS OPEN)	FLOW ML/MIN	FLOW OZ/MIN	FLOW ML/MIN	FLOW OZ/MIN
0.5	8	0.27		
1	20	0.68		
1.5	35	1.18		
2	44	1.49		
2.5	74	2.50	3	0.10
3	232	7.80	5	0.17
3.5	400	13.5	120	4.00
FULL	500	17.0	140	4.70

KIT w/ 50 FT FLEX HOSE
P/N 63945-50
KIT w/ 100 FT FLEX HOSE
P/N 63945-100

CONNECTING THE REMOTE SPRAY NOZZLE

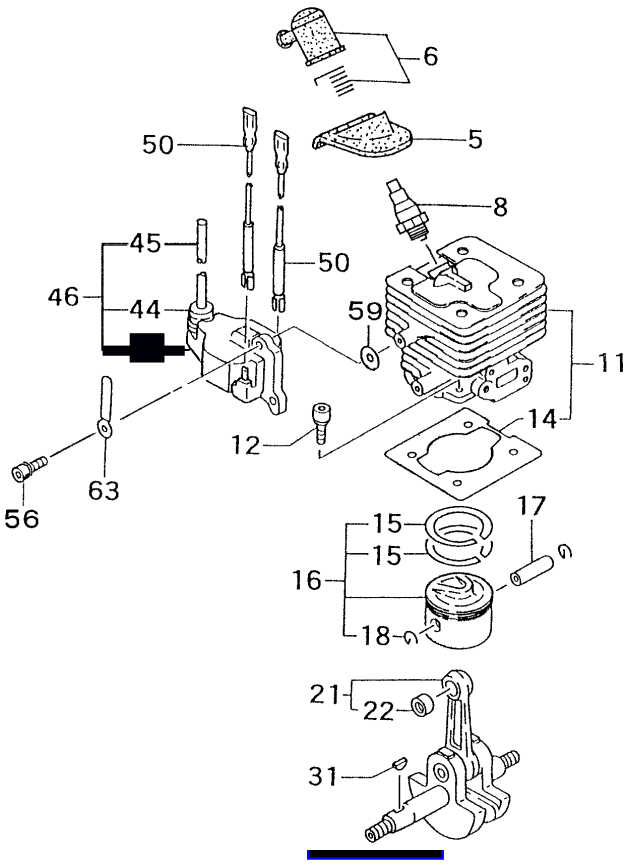


LOOSEN WORM CLAMP FROM THE BLOWER ADAPTER, PULL OFF THE HOSE.

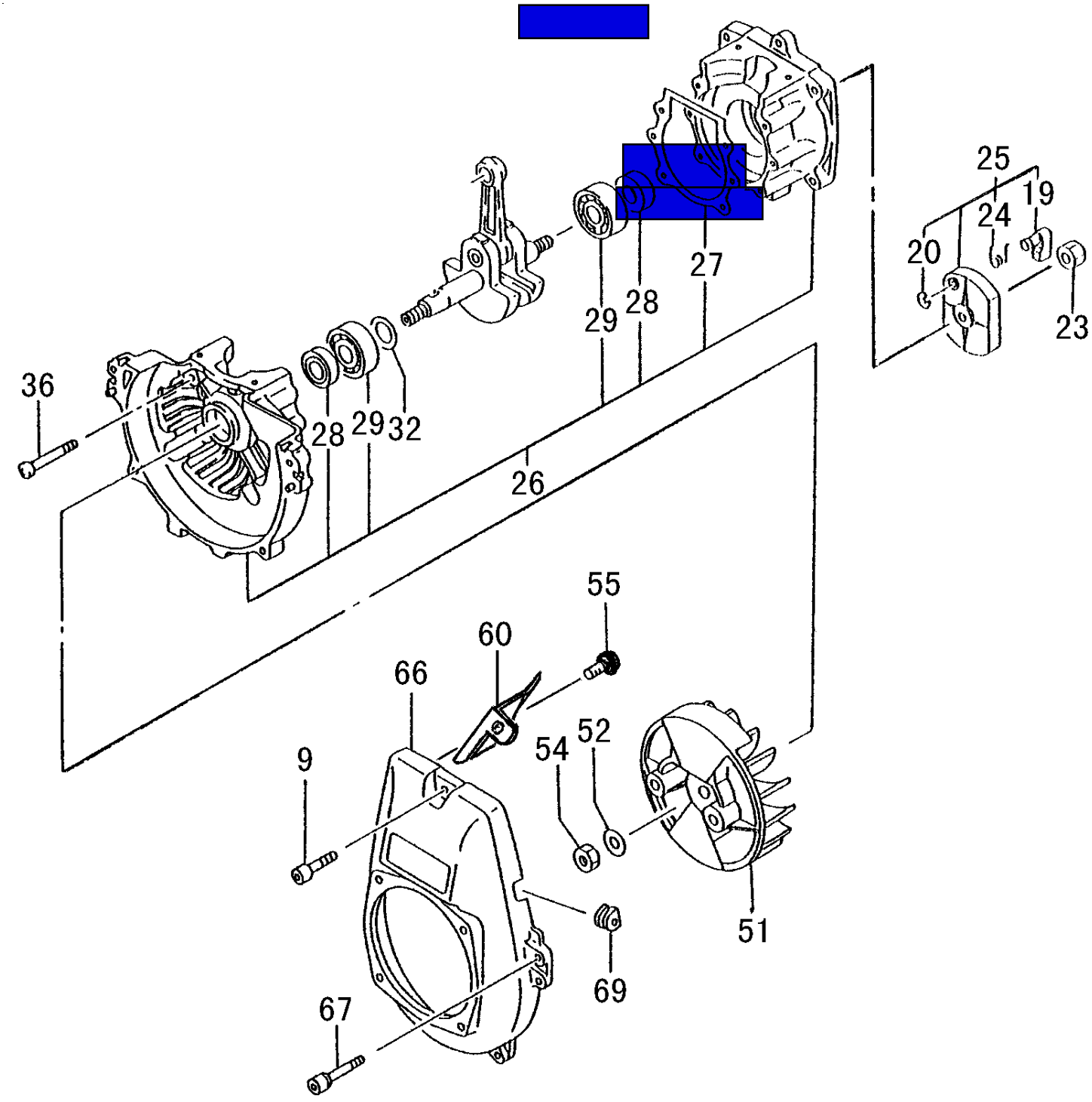


INSERT THE END OF THE SLINGER FLEX-HOSE; W/O OVERTIGHTEN INSTALL WORM CLAMP ON HOSE TO THE BLOWER ADAPTER.

CYLINDER, PISTON, IGNITION • FIGURE 1



ITEM	PART NUMBER	DESCRIPTION	QTY	COMMENTS
1-5	25504200200	COVER,SPARK PLUG,RUBBER	1	
1-6	15711666900	CAP,SPARK PLUG ASS'Y	1	
1-8	01804075200	PLUG,SPARK	1	
1-11	0010440590	SET,CYLINDER	1	
1-12	99461050204	BOLT,HEX,HOLE,5X20,S	4	
1-14	0170440020	GASKET,CYLINDER	1	
1-15	04104050200	RING,PISTON	2	
1-16	0300440090	SET,PISTON	1	
1-17	0370100020	PIN,PISTON	1	
1-18	03905004200	CIRCLIP,PISTON PIN	2	
1-21	0460440080	CRANKSHAFT	1	
1-22	99962101004	BEARING,NEEDLE,F1010B	1	
1-31	06802000200	KEY,WOODRUFF,3X13X5	1	
1-44	56020517200	CAP,RUBBER	1	
1-45	1782054320	CORD,HIGH TENSION	1	
1-46	1672054390	ASSY,IGNITION COIL	1	
1-50	1790007080	STOP CORD,220MM	2	
1-56	99011040182	SCREW,4X18	2	Before S/N U112140
1-56	99416040183	SCREW 4X18/WS	2	S/N U112141 and after
1-59	1820186A201	WASHER,SPECIAL	2	
1-63	19805015800	CLAMP,CORD	1	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CRANKCASE, FLYWHEEL, STARTER PULLEY • FIGURE 2

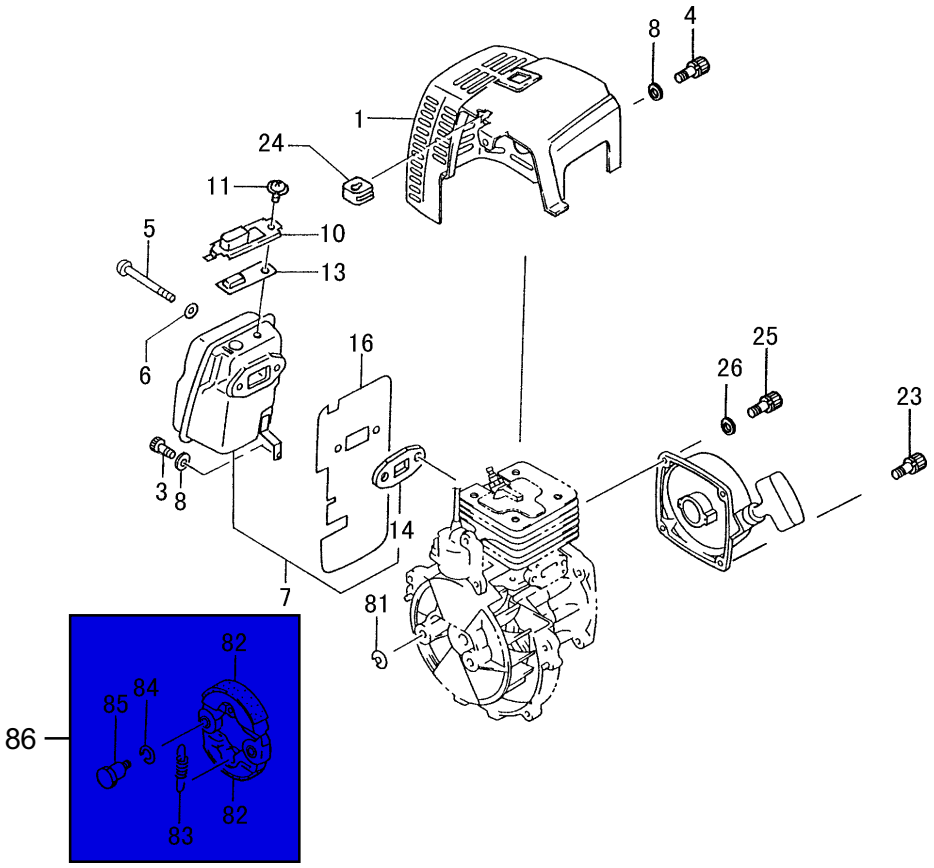
ITEM	PART NUMBER	DESCRIPTION	QTY	COMMENTS
2-9	99463050204	BOLT, HEX 5X20	1	
2-19	7880162V20	PAWL,STARTER	1	
2-20	99355050000	RING,STOP,5	1	
2-23	99111100013	NUT,10	1	
2-24	7900162V200	SPRING,PAWL,STARTER	1	
2-25	7980422090	PAWL,STARTER ASS'Y	1	
2-26	0720440090	CASE,CRANK	1	Before S/N U207704
2-26	0720440091	CASE,CRANK	1	S/N U207705 and after
2-27	0900440020	GASKET,CRANKCASE	1	*Crankcase assy includes bearings, seals
2-28	99966152511	SEAL,OIL,#VE15X25X7	2	and gaskets.
2-29	99961620200	BEARING,BALL,#6202	2	
2-32	07102007200	SHIM,15.2X20X.05	V	*Shims are "as needed" to obtain
2-32	07102007210	SHIM,15.2X20X.10	V	correct side clearance
2-32	07102007220	SHIM,15.2X20X.15	V	
2-32	07111600230	SHIM,16X21X.20	V	
2-32	07111600240	SHIM,16X21X.30	V	
2-36	99461050304	BOLT,HEX,5X30S	4	
2-51	1552053880	ROTOR,MAGNETO	1	
2-52	99201100011	WASHER,10	1	
2-54	99101100011	NUT,10	1	
2-55	99414050101	SCREW,S,5X10	1	
2-60	1320440020	DEFLECTOR,AIR	1	
2-66	1120440021	CASE,FAN (ORANGE)	1	
2-66	1120441321	CASE,FAN (POLISHED)	1	
2-67	99461050204	BOLT,HEX,HOLE,5X20,S	4	
2-69	20311660200	GROMMET,PRIMARY CORD	1	

MUFFLER, MUFFLER COVER • FIGURE 3

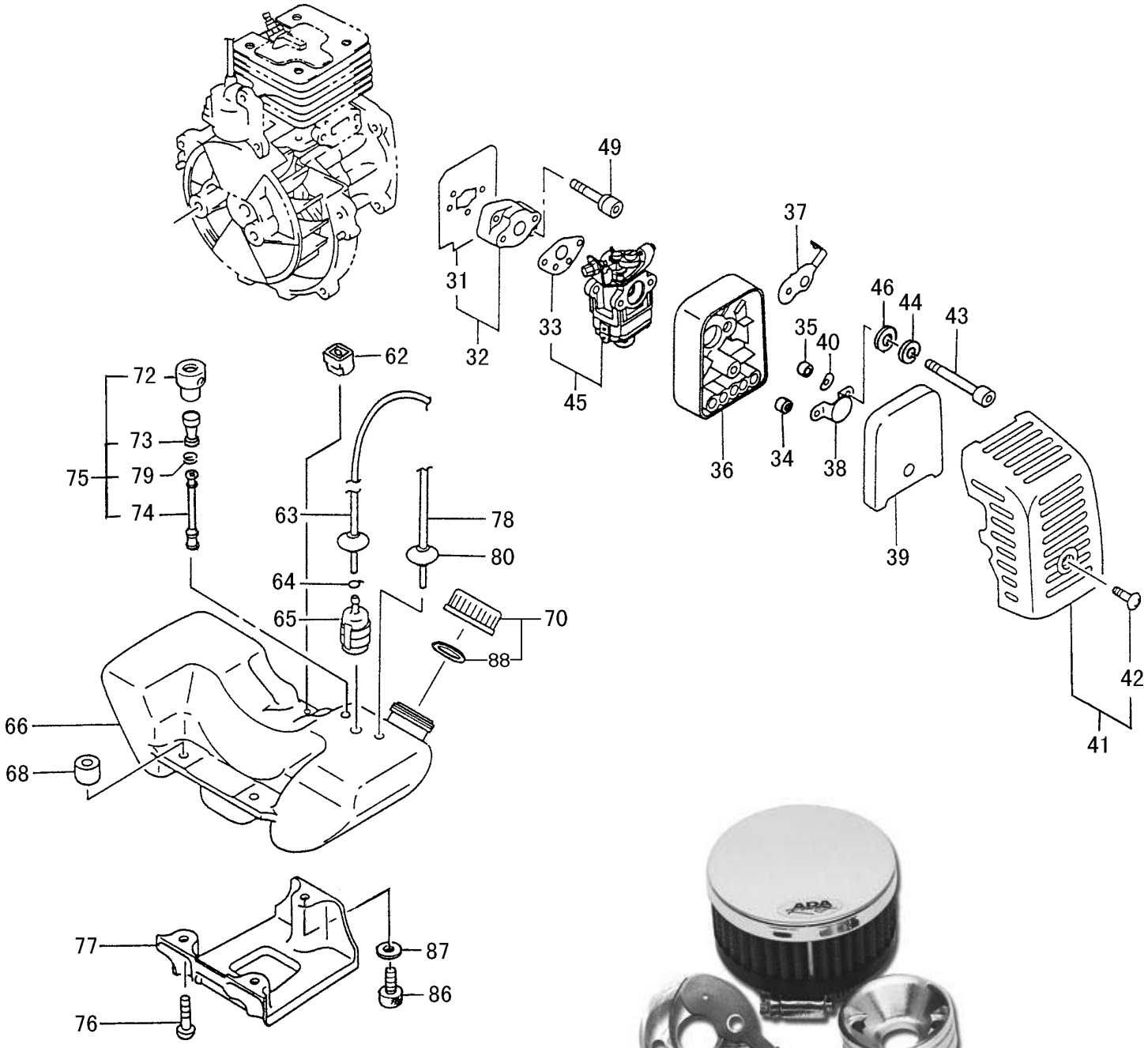
40cc Tanaka Power Pipe
Part #: 31879

Click on the pipe for more information !!

Nickel Plated Racing Pipe
Part#: 31275



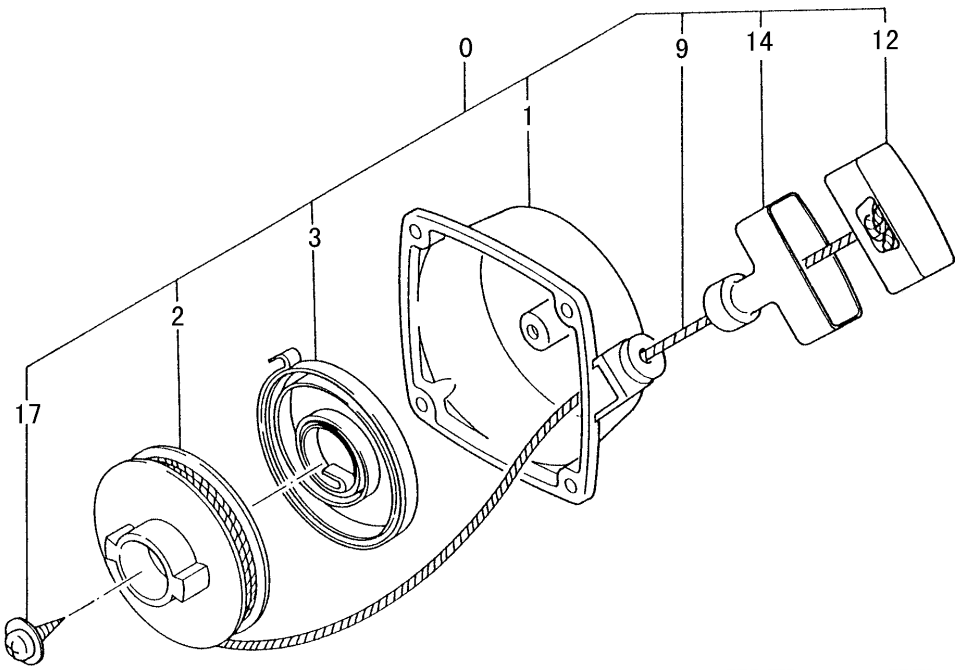
ITEM	PART NUMBER	DESCRIPTION	QTY	COMMENTS
3-1	7380440A21	PROTECTOR,MUFFLER	1	
3-3	99461050124	BOLT,HEX,5X12S	1	
3-4	99461050164	BOLT,HEX,5X16,S	1	Before S/N U207704
3-5	99053060653	SCREW,HEX,6X65	2	
3-6	99201060011	WASHER,6	2	
3-7	7040440090	SET,MUFFLER	1	
3-8	99201050061	WASHER,5	2	Before S/N U207704
3-8	99201050061	WASHER,5	1	S/N U207705 and after
3-10	7210440020	PIPE,TAIL	1	
3-11	99434040081	SCREW,4X8/S	1	
3-13	7320440020	ARRESTER,SPARK	1	
3-14	73704230200	GASKET,MUFFLER	1	
3-16	1330440020	SHIELD,HEAT	1	
3-23	99463050204	BOLT, HEX 5X20	4	Before S/N U207704
3-23	99463050204	BOLT, HEX 5X20	2	S/N U207705 and after
3-24	2030604A202	GROMMET	1	
3-25	99461050254	BOLT,HEX HOLE,5X25S	2	S/N U207705 and after
3-26	99201050061	WASHER,5	2	S/N U207705 and after
3-81	35910112203	WASHER,CLUTCH B	2	
3-82	2900420081	SHOE,CLUTCH	2	
3-83	34204200200	SPRING,CLUTCH	1	
3-84	99204100030	WASHER,WAVE,10	2	
3-85	35704201200	BOLT,CLUTCH STEP	2	
3-86	30790	CLUTCH ASS'Y	1	



MOBY XL Air Filter Kit
Part#: 30941

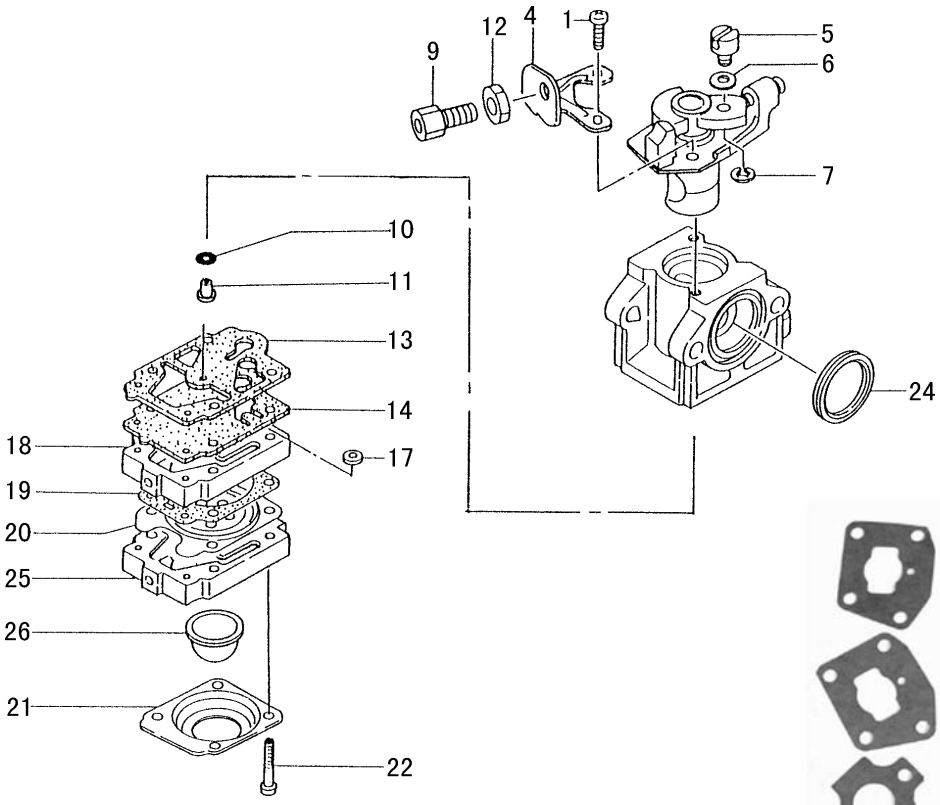
FUEL SYSTEM, AIR FILTER • FIGURE 4

ITEM	PART NUMBER	DESCRIPTION	QTY	COMMENTS
4-31	4030430020	GASKET,INLET MANIFOLD	1	
4-32	4040430090	SET,CARB INSULATOR	1	
4-33	4020430020	GASKET,CARBURETOR	1	
4-34	4530637C200	COLLAR	1	
4-35	4700138020	COLLAR,CLEANER	1	
4-36	4230138082	BODY,CLEANER	1	
4-37	5280138021	VALVE,CHOKE	1	
4-38	47601700200	BOARD,BLOW OVER CHECK	1	
4-39	4460138020	ELEMENT,CLEANER	1	
4-40	99204080030	WASHER,8	1	
4-41	4520138091	COVER,CLEANER,ASSY	1	
4-42	3800637C200	BOLT,CLEANER COVER	1	
4-43	99011050602	SCREW,5X60	2	
4-44	99210050012	WASHER,S,5	2	
4-45	4550440090	CARBURETOR	1	
4-46	78600601200	WASHER,RECOIL STARTER	2	
4-49	99416050253	BOLT,HEX HOLE,5X25WS	2	
4-62	6490168020	COLLAR,TANK FIXING	1	S/N U207705 and after
4-63	22301251901	PIPE,FUEL,3X5X230	1	
4-64	68000731201	CLIP 6.3	1	
4-65	67501630900	FILTER,FUEL	1	
4-66	5910440021	TANK,FUEL (ORANGE)	1	
4-66	5910441321	TANK,FUEL (WHITE)	1	
4-68	6590430020	COLLAR C	3	
4-70	5950656B90	CAP,FUEL BLACK,NON VENT	1	
4-73	6463252L90	AIR VENT VALVE ASSY	1	
4-74	5650440020	PIPE,AIR VENT	1	
4-75	5640661190	VENT,AIR ASSY	1	
4-76	99463050204	BOLT, HEX 5X20	3	Before S/N U207704
4-76	99463050204	BOLT, HEX 5X20	2	S/N U207705 and after
4-77	9400430020	STAND,ENGINE	1	
4-78	70003005100	PIPE,FUEL,3X5X100	1	
4-79	68000206200	CLIP,5.5	1	
4-80	22206300200	GROMMET,FUEL PIPE	1	
4-86	99461050304	BOLT,HEX,5X30S	1	S/N U207705 and after
4-87	99201050061	WASHER,5	1	S/N U207705 and after
4-88	6420608A200	GASKET,TANK CAP	1	



Billet Starter Handles
Part#: Blue - 31352 / Black - 31358
Polished - 31357 / Red - 31356

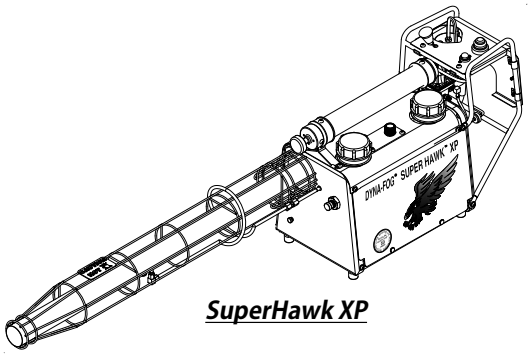
ITEM	PART NUMBER	DESCRIPTION	QTY	COMMENTS
5-0	7620422090	STARTER,RECOIL ASS'Y	1	
5-1	7720422080	BODY,RECOIL STARTER	1	
5-2	7690422020	REEL,STARTER ROPE	1	
5-3	7790422020	SPRING,RECOIL	1	
5-9	7830422020	ROPE,STARTER	1	
5-12	8350422020	CAP,HANDLE	1	
5-14	7850422020	HANDLE,STARTER	1	
5-17	8390422020	SCREW,SET	1	



40cc HP Carburetor Kit
Part#: 31283

ITEM	PART NUMBER	DESCRIPTION	QTY	COMMENTS
6-0	4550440090	SET,CARBURETOR	1	Includes carburetor gasket
6-1	51425100200	SCREW,THROTTLE SET	2	
6-4	54425164200	STAY,ADJUST,CABLE	1	
6-5	53925120200	SWIVEL	1	
6-6	5492516520	WASHER,THRUST	1	~ Contained in Carb Repair Kit
6-7	48925100200	RING,STOP	1	P/N 650-25124-900
6-9	61425137200	ADJUSTER,CABLE	1	(Not available individually)
6-10	55025100200	O-RING	1	
6-11	5992001W44	JET,MAIN,LONG,#44	1	
6-12	99101060013	NUT,6	1	
6-13	~ ~ ~	GASKET,PUMP	1	
6-14	~ ~ ~	DIAPHRAGM,PUMP	1	
6-17	57825007200	SCREEN,INLET	1	
6-18	5752515380	BODY,PUMP	1	
6-19	~ ~ ~	GASKET,DIAPHRAGM	1	
6-20	~ ~ ~	DIAPHRAGM,METERING	1	
6-21	4762515120	COVER,DIAPHRAGM	1	
6-22	5482515120	SCREW,SET	4	
6-24	4310634C200	GASKET,CLEANER	1	
6-25	4422515180	PUMP,PRIMING	1	
6-26	44725108200	BULB,PRIMING	1	

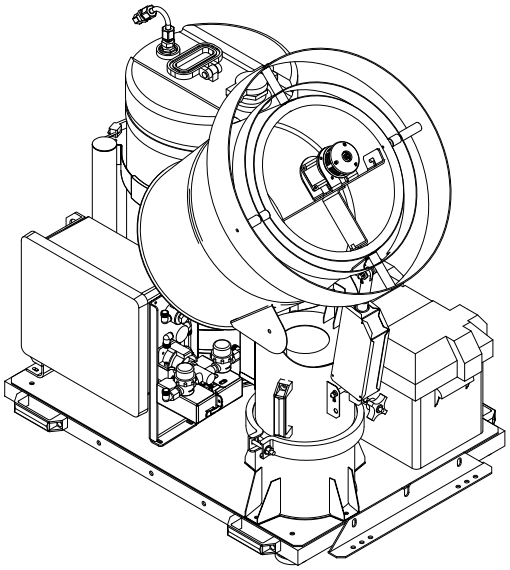
Dyna-Fog Offers a Complete Assortment of Sprayers and Foggers



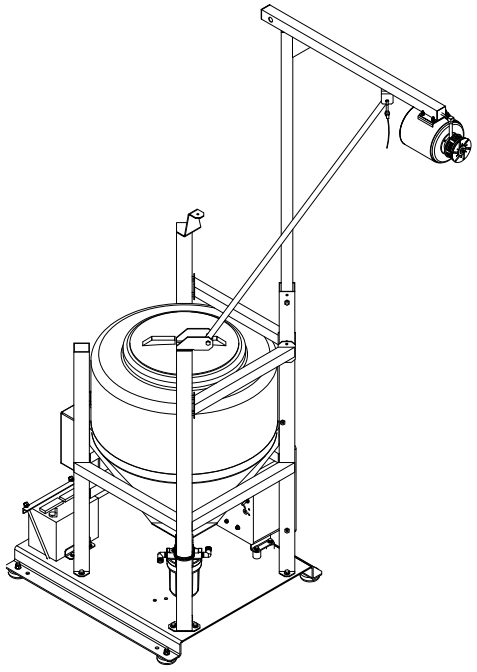
SuperHawk XP

PULSE-JET POWERED THERMAL FOGGERS:
From 0-120 GPH (0-453 LPH) output. Our complete line include different models like the Superhawk, Golden Eagle, Trailblazer, Falcon, Patriot, Blackhawk, Mister III, SilverCloud and Model 1200. Portable or Truck mounted machines. Different models are available for Oil base or Water base formulations.

ELECTRIC ROTARY ATOMIZERS:
DYNA-JET L30: State-of-the-Art, Electric Rotary Atomizer ULV Aerosol Generator. 12 VDC, Light Weight, Truck mounted Machine with FMI pump. Optional Syncroflow Available.
DYNA-JET L15: Drift Sprayer for migratory pest control like Locust. Flow Rate from 0 to 2 L/min. Optional Radar Syncroflow.

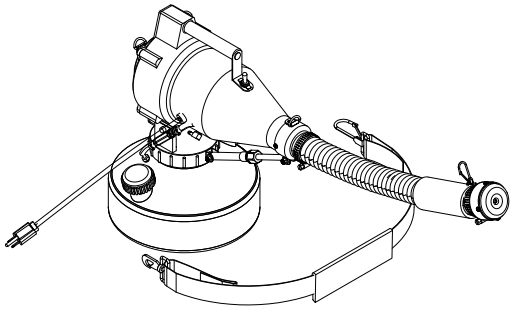


Dyna-Jet L-30

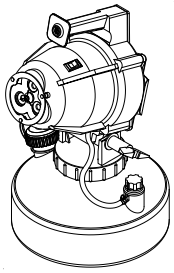


Dyna-Jet L-15

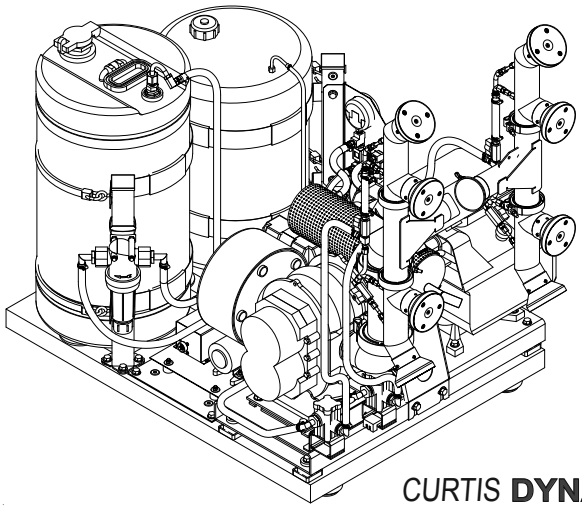
ELECTRIC HAND-HELD ULV/MIST GENERATORS:
A Full line of electric cold fog applicators with 1-3 gallon tanks, available in 115 and 230 VAC.



Cyclone Ultra-Flex



Hurricane ES



LV-8

COMBUSTION ENGINE DRIVEN ULV AEROSOL GENERATORS:
Truck mounted Units powered by 8, 9, 11, 18 and 20 HP four cycle, OHV Gasoline Engines. Diesel versions also available. One, two, four and eight nozzle configurations. Patented full remote control of boom functions (rotation of turntable and angle of nozzles) available on certain models. Your choice of Gear, Piston or Diaphragm pumping system. Pressurized system versions available for specific international markets. Optional Automatic flow control "Syncroflow" also available with Radar or GPS speed sensing. 25 cc and 40 cc two cycle portable models are also available.

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