



PRO Spray



OPERATION MANUAL AND PARTS LIST FOR MODEL ProSpray 1300 AIRLESS PAINT SPRAYER

WARNING: Before operating, doing any service or maintenance procedure, learn & follow the pressure relief procedure on page 6. Read & understand all warnings on pages 4, 5, 6 and 7

**ALL SERVICE PROCEDURES MUST BE PERFORMED
BY AUTHORIZED SERVICE CENTER.**

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INTRODUCTION

ICI ProSpray 1300

This gas powered airless sprayer is built tough to take the day after day demands of contractors. With a stainless steel, severe duty, slow stroking paint pump you have the latest technology in long life pump design with smooth operation and low maintenance.

Specifications

Pressure 0 - 3000 psi

Output 1.3 gpm

Tip size 1 gun up to 0.035

2 guns up to 0.023

Engine 5.5 hp Honda

WARNING

Prior to starting, read, understand and observe all safety precautions and warnings on cover & pages 4, 5, 6 & 7 and all labels and tags on the machine.

FLUSHING Read prior to using your sprayer

1. New Sprayer

Your ProSpray unit was factory tested in an anti-freeze solution which was left in the pump. Before using oil-base paint, flush with mineral spirits only. Before using water-base paint flush with mineral spirits, followed by soapy water, then a clean water flush.

2. Changing Colors

Flush with a compatible solvent such as mineral spirits or water.

3. Changing from water-base to oil-base paint.

Flush with soapy water, then mineral spirits.

4. Changing from oil-base to water-base paint.

Flush with mineral spirits, followed by soapy water, then a clean water flush.

5. Storage

Oil-base paint: Flush with mineral spirits.

Water-base paint: Flush with water, then mineral spirits and leave the pump, hose and gun filled with mineral spirits.

For longer storage, use mixture of mineral spirit and motor oil (half & half). Shut off the sprayer, follow Pressure Relief Procedure on page 6 to relieve pressure and make sure prime valve is left OPEN.

6. Start up after storage

Before using water-base paint, flush with soapy water and then a clean water flush.

When using oil-base paint, flush out the mineral spirits with the material to be sprayed.

HOW TO FLUSH

FIG. 1

**REMOVE
SPRAY
TIP**

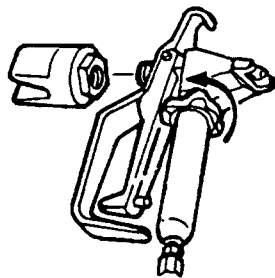
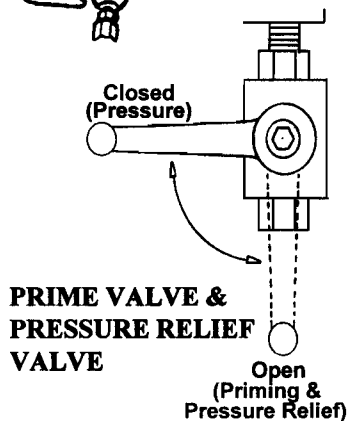


FIG. 2

**PRESSURE CONTROL
KNOB**



**PRIME VALVE &
PRESSURE RELIEF
VALVE**

FIG. 3

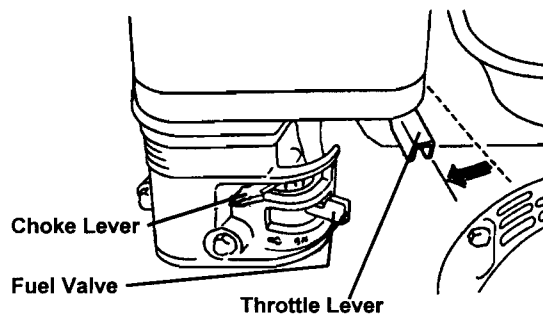


FIG. 4

**MAINTAIN FIRM
METAL TO METAL
CONTACT BETWEEN
GUN AND CONTAINER**



1. Be sure the gun safety latch is engaged and there is no spray tip in the gun. Refer to Fig. 1. Refer to your separate instruction manual provided with your gun on its safety features and how to engage safety latch.
2. Pour enough clean, compatible solvent into a large, empty metal pail to fill the pump and hoses.
3. Place the suction tube into the pail or place the pail under the pump.
4. Turn the pressure control knob to low pressure. Refer to Fig. 2.
5. Open the prime valve to the open - "Priming Position". This will allow an easy start. Refer to Fig. 2.
6. Turn the engine ON/OFF switch to on.
7. Move the choke toward the closed position as per Fig. 3.
8. Move the throttle lever slightly to the left as per Fig. 3.
9. Turn the fuel valve ON as per Fig. 3. Pull the start rope. Pull the engine over against compression stroke and then let the rope rewind slowly into the starter. Pull firmly and rapidly to start the engine. Do NOT drop the rope. Hold onto the handle while rewinding, or the rope may rewind improperly and jam the assembly. If the engine does not start, open the choke a little more. If the engine floods, open the choke all the way and continue cranking.
10. After the engine is warm, gradually close the choke lever, increase the RPM of engine by moving throttle all the way to the left. Close the prime valve. Refer to Fig. 2
11. Point the gun into the metal pail and hold a metal part of the gun firmly against the pail Refer to fig. 4.

WARNING: To reduce the risk of static sparking, which can cause fire or explosion, always hold a metal part of the gun firmly against the metal pail when flushing. This also reduces splashing. Refer to Fig.4.

12. Disengage the gun safety latch and squeeze the gun trigger. At the same time, slowly turn the pressure control knob clockwise just enough to move liquid at low pressure.
13. Allow the pump to operate until clean solvent comes from the gun.
14. Release the trigger and engage the gun safety latch.
15. If you are going to start spraying, place the pump or suction tube into the supply container. Release the gun safety latch and trigger the gun into another empty, metal container, holding a metal part of the gun firmly against the metal pail (Fig. 4) and force the solvent from the pump and hose. When paint starts coming from gun, turn pressure control knob to minimum pressure, place prime valve in prime (open) position and engage the gun safety latch.
16. If you are going to store the sprayer, remove the suction tube or pump from the solvent pail force the solvent from the pump and hose. Engage the gun safety latch and refer to the "Storage" Procedure on page 1. Step 5.
17. Whenever you shut off the sprayer follow the Pressure Relief Procedure warning on page 6.

SETTING UP

1. Connect the hose and gun.

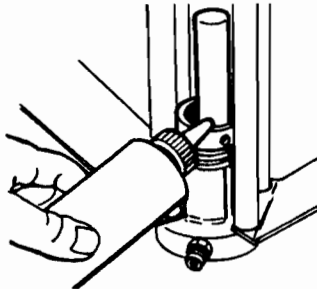
- Remove the plastic cap plug from the outlet and screw a conductive or grounded 3000 psi spray hose onto fluid outlet.
- Connect an airless spray gun to the other end of the hose, but do not install the spray tip yet!

NOTE: Do not use thread sealer on swivel unions as they are made to self seal. Use thread seal on tapered male threads only.

NOTE: The first 50' of hose should always be 3/8".

2. Fill the Packing Nut/Wet Cup 1/3 full with Throat Seal Oil (TSO) supplied. Fig 5 below.

FIG. 5



3. Check the Engine Oil Level.

- Unscrew the oil fill plug. The dipstick is attached to the plug.
- Without threading the plug into place, check to be sure the oil is up to the top mark on the dipstick.
- If oil is needed, refer to engine manual.

4. Fill the Fuel Tank

WARNING: Fuel spilled on a hot surface can cause a fire or explosion and cause serious bodily injury and property damage. Always shut off the engine and let it cool before filling the tank, and carefully follow steps a - c below being sure not to spill any fuel.

- Close the fuel shutoff valve.
- Use only clean, fresh, well-known brands of unleaded regular grade gasoline.
- Remove the fuel cap and fill tank. Be sure the air vent in the fill cap is not plugged so fuel can flow to the carburetor, then replace the cap.

5. Flush the sprayer.

See "Flushing" page 1 & 2. Your new pump was factory tested in an anti-freeze solution and it must be flushed before using.

STARTING UP

1. Learn the controls.

Pressure Control Knob - used to adjust pressure only. Turn clockwise to increase pressure and counterclockwise to decrease pressure. (See Fig. 6)

Prime & Pressure Relief Valve - Turn to OPEN position (see Fig. 7) to prime the pump. Turn to the CLOSED position to spray.

FOLLOW THE "PRESSURE RELIEF PROCEDURES" ON PAGE 6 WHENEVER YOU:

- are instructed to relieve pressure
- stop spraying
- checking or servicing any of the system equipment.
- or installing or cleaning the spray tip.

Handle Spray system as you would a loaded firearm.

CAUTION: Do not start engine without fluid pump having enough fluid so that it can be primed. Running fluid pump dry will decrease life of the pumps packings.

2. Prepare the Material

- Prepare the material according to the material manufacturer's recommendations.
- Place the pump or suction tube into the material container.

FIG. 6

PRESSURE CONTROL KNOB

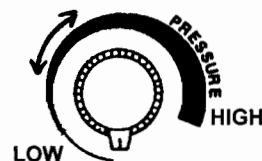


FIG. 7

Closed (Pressure)

PRIME VALVE & PRESSURE RELIEF VALVE

Open (Priming & Pressure Relief)

3. Starting the Sprayer (see Fig. 6 & 7 above)

- Prime Valve must be open - priming position.
- Pressure Control Knob must be in low pressure.
- Follow the procedure under "How to Flush", page 2, Steps 6 through 12.

WARNING: To stop the unit in an emergency or before performing any service or maintenance procedure follow the Pressure Relief Procedure on page 6 to relieve the fluid pressure.

STARTING UP CONTINUED

4. Prime the Pump

- Allow pump to operate until paint comes from gun.
- Release the trigger and engage the gun safety latch.
- Turn Prime Valve OPEN to the prime position ensuring the pressure is released from the system.
- Turn Pressure Control Knob to minimum pressure.
- Install spray tip onto gun.
- Close the prime valve to the pressure position.
- Turn the pressure control knob to desired spray pressure.
- Disengage the gun safety lock and you are ready to start spraying.

WARNING: If you spray into the paint bucket, always use the lowest spray pressure and maintain firm metal to metal contact between gun and container. See page 2, Fig 4.

5. Adjusting the Pressure

- Turn the Pressure Control Knob clockwise to increase pressure and counterclockwise to decrease pressure.
- Always use the lowest pressure necessary to completely atomize the material.

CAUTION - Operating the sprayer at higher pressure than needed wastes material, causes early tip wear and shortens sprayer life.

- If more coverage is needed use a larger tip rather than increasing the pressure.
- Check the spray pattern. The tip size and angle determines the pattern width and flow rate.

6. Reducing Clutch Wear

- The first 50 feet of airless spray hose should be 3/8", the larger diameter works as a pulsation damper and saves unnecessary cycling of the clutch. A minimum of 100 feet of hose should be used.
- Adjust the Engine Speed and Pump Pressure. First set the throttle lever to the maximum RPM setting (fully left). Trigger the gun onto a test paper to check the spray pattern and atomization. Adjust the Pressure Control Knob until you get a good pattern.

7. Cleaning a Clogged Tip.

IMPORTANT

WARNING: Always follow the Pressure Relief Procedure on page 6 before performing any service or maintenance procedure.

WARNING: Never hold your hand, body, fingers, or hand in a rag in front of the spray tip when cleaning or checking it for a cleared tip. Always point the gun toward the front or into a waste container when checking to see if the tip is cleared or when using a self-cleaning tip.

- Follow the Pressure Relief Procedure on page 6.
- Clean the front of the tip frequently (with toothbrush only) during the day to keep material from building up and clogging the tip.
- To clean and clear a tip if it clogs, refer to the separate instruction manual received with your gun and nozzle.

There is an easy way to keep the outside of the tip clean from material build-up:

Every time you stop spraying, for even a minute, lock the gun and submerge the gun into a small bucket of thinner comparable with the material sprayed. Thinner will dissolve the build up of paint on the outside of tip, tip guard and gun much more effectively than if the paint dries out completely.

WARNING: Clogged standard flat tip - clean only after the tip is removed from the gun. Follow the Pressure Relief Procedure Warning on Page 6.

8. When Shutting Off the Sprayer

- Whenever stop spraying, even for a short break, follow the Pressure Relief Procedure Warning on page 6.
- Clean the tip and gun as recommended by your separate gun instruction manual.
- Flush the sprayer at the end of each work day if the material you are spraying is waterbased, or if it could harden in the sprayer overnight. See "Flushing" page 1 and 2. Use a compatible solvent to flush, then fill the pump and hoses with an oil based solvent such as mineral spirits.
- For long term shutdown or storage, refer to page 1.

WARNING - Be sure to relieve pressure in the pump after filling with mineral spirits.

WARNINGS

MEDICAL ALERT - Airless Spray Wounds

*If any fluid appears to penetrate your skin, get **EMERGENCY MEDICAL CARE AT ONCE. DO NOT TREAT AS A SIMPLE CUT.** Tell the doctor exactly what fluid was injected. Have him read the following "NOTE TO PHYSICIAN".*

NOTE TO PHYSICIAN: *Injection in the skin is a traumatic injury. It is important to treat the injury surgically as soon as possible. DO NOT DELAY treatment to research toxicity. Toxicity is a concern with some exotic coatings injected directly into the blood stream. Consultation with a plastic surgeon or reconstructive hand surgeon may be advisable.*

WARNINGS

**HIGH PRESSURE SPRAY CAN CAUSE EXTREMELY SERIOUS INJURY.
OBSERVE ALL WARNINGS. THIS SPRAYER IS FOR PROFESSIONAL USE ONLY.**

INJECTION HAZARD

Fluids under high pressure from spray or leaks can penetrate the skin and cause extremely serious injury, including the need for amputation.

NEVER point the spray gun at anyone or any part of the body.

NEVER put hand or fingers over the spray tip. Do not use rag or other materials over your fingers. Paint will penetrate through material and into the hand.

NEVER try to stop or deflect leaks with your hand or body.

ALWAYS have gun tip guard in place when spraying.

ALWAYS lock gun trigger when you stop spraying.

ALWAYS remove tip from the gun to clean it.

NEVER try to "blow back" paint, this is not an air spray sprayer.

ALWAYS follow the **PRESSURE RELIEF PROCEDURE**, as shown on page 6, before cleaning or removing the spray tip or servicing any system equipment.

Be sure equipment safety devices are operating properly before each use.

Tighten all fluid connections before each use.

MEDICAL TREATMENT

If any fluid appears to penetrate your skin, get **EMERGENCY CARE AT ONCE. DO NOT TREAT AS A SIMPLE CUT.**

* Go to an emergency room immediately.

* Tell the doctor you suspect an injection injury.

* Tell him what kind of material you were spraying with and have him read **NOTE TO PHYSICIAN** on page 4.

GENERAL PRECAUTIONS

NEVER alter equipment in any manner.

NEVER smoke while in spraying area.

NEVER spray highly flammable materials.

NEVER use around children.

NEVER allow another person to use sprayer unless he is thoroughly instructed on its' safe use and given this operators manual to read.

ALWAYS wear a spray mask, gloves and protective eye wear while spraying.

ALWAYS ensure fire extinguishing equipment is readily available and properly maintained.

NEVER LEAVE SPRAYER UNATTENDED WITH PRESSURE IN THE SYSTEM. FOLLOW PRESSURE RELIEF PROCEDURES ON PAGE 6.

TOXIC FLUID HAZARD

Hazardous fluid or toxic fumes can cause serious injury or death if splashed in eyes or on skin, inhaled or swallowed. Know the hazards of the fluid you are using. Store & dispose of hazardous fluids according to manufacturer, local, state & national guidelines.

ALWAYS wear protective eyewear, gloves, clothing and respirator as recommended by fluid manufacturer.

ALWAYS INSPECT SPRAYING AREA

Keep spraying area free from obstructions.

Make sure area has good ventilation to safely remove vapors and mists.

NEVER keep flammable material in spraying area.

NEVER spray in vicinity of open flame or other sources of ignition.

Spraying area must be at least 20 ft. away from spray unit.

SPRAY GUN SAFETY

ALWAYS set safety lock on the gun in "LOCKED" position when not in use and before servicing or cleaning.

DO NOT remove or modify any part of gun.

ALWAYS REMOVE SPRAY TIP when cleaning. Flush unit with **LOWEST POSSIBLE PRESSURE.**

CHECK operation of all gun safety devices before each use.

Be very careful when removing the spray tip or hose from gun. A plugged line contains fluid under pressure.

If the tip or line is plugged, follow the **PRESSURE RELIEF PROCEDURE** as outlined on page 6.

TIP GUARD

ALWAYS have the tip guard in place on the spray gun while spraying. The tip guard alerts you to the injection hazard and helps prevent accidentally placing your fingers or any part of your body close to the spray tip.

SPRAY TIP SAFETY

Use extreme caution when cleaning or changing spray tips. If the spray tip clogs while spraying, engage the gun safety latch immediately. *ALWAYS* follow the **PRESSURE RELIEF PROCEDURE** and then remove the spray tip to clean it.

NEVER wipe off build up around the spray tip.

ALWAYS remove tip & tip guard to clean **AFTER** pump is turned off and the pressure is relieved by following the **PRESSURE RELIEF PROCEDURE.**

KEEP CLEAR OF MOVING PARTS

Keep clear of moving parts when starting or operating the sprayer. Do not put your fingers into any openings to avoid amputation by moving parts or burns on hot parts.

Precaution is the best insurance against an accident.

When starting the engine, maintain a safe distance from moving parts of the equipment.

Before adjusting or servicing any mechanical part of the sprayer, follow the **PRESSURE RELIEF PROCEDURE** on page 6, and remove the ignition cable from the spark plug to prevent accidental starting of sprayer.

WARNINGS CONTINUED ON NEXT PAGE.....

WARNINGS continued

PRESSURE RELIEF PROCEDURE

To avoid possible serious bodily injury, including injection, always follow this procedure whenever the sprayer is shut off, when checking or servicing it, when installing or changing the tips, whenever you stop spraying or when you are instructed to relieve the pressure.

1. Engage gun safety latch. Refer to separate instruction manual provided with your gun on its safety features and how to engage safety latch.

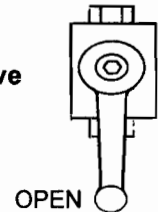
2. Turn engine off.

3. Disengage safety latch & trigger gun to relieve residual fluid pressure. Hold metal part of the gun in contact with grounded metal pail



4. Re-engage gun safety latch

5. Turn Prime/Pressure Relief Valve as shown open (priming) to relieve fluid pressure.



Leave prime valve OPEN until you are ready to spray again.

IF THE SPRAY TIP OR HOSE IS CLOGGED, follow Step 1 through 5 above. Expect paint splashing into the bucket while relieving pressure during Step 5. If you suspect that pressure hasn't been relieved due to damaged prime/pressure relief valve or other reason, **VERY SLOWLY** loosen the tip guard retaining nut or hose end couplings to relieve pressure gradually, then loosen completely. Now clear the tip, gun or hose obstruction.

Always follow recommended pressure & operating instructions

HOSES

Tighten all fluid connections securely before each use. High pressure fluid can dislodge a loose coupling or allow high pressure spray to be emitted from the coupling and result in an injection injury or serious bodily injury.

Use only hose that has a spring guard. The spring guard helps protect the hose from kinks or other damage which could result in hose rupture and cause an injection injury.

NEVER use a damaged hose, which can result in hose failure or rupture and cause in injection injury or other serious bodily injury or bodily damage. Before each use, check entire hose for cuts, leaks, abrasion or bulging of cover, or damage or movement of couplings. If any of these conditions exist, replace the hose immediately. Never use tape or any device to try to mend the hose as it cannot contain the high pressure fluid. **NEVER ATTEMPT TO RECOUPLE THE HOSE.** High pressure hose is not recoupleable.

Help prevent damage to the hose by handling and routing carefully. Do not move the sprayer by pulling it with the hose.

LABELING

Keep all labels on the unit clean and readable. Replacement labels are available from manufacturer.

GROUNDING

Ground the sprayer and other components in the system to reduce the risk of static sparking, fire or explosion which can result in serious bodily injury and property damage.

Always ground all of these components:

1. Sprayer: Connect a ground wire and clamp (supplied) to a true earth ground.
2. Fluid Hose: use only grounded hoses.
3. Spray gun or dispensing valve: grounding is obtained through connection to a properly grounded fluid hose and pump.
4. Object being sprayed: according to your local code.
5. All solvent pails used when flushing should only be metal pails which are conductive.

Once each week, check electrical resistance of hose (when using multiple hose assemblies, check overall resistance of unpressurized hose must not exceed 29 megohms (max) for any coupled length or combination of hose lengths. If hose exceeds these limits, replace it immediately.

Never exceed 500 Ft. (150 m.) overall combined hose length to assure electrical continuity.

NOTE: WARNINGS CONTINUE ON NEXT PAGE.

WARNINGS continued

AVOID COMPONENT RUPTURE

This sprayer operates at 3000 psi (205 bar). Always be sure that all components and accessories have a maximum working pressure of at least 3000 psi to avoid rupture which can result in serious bodily injury including injection and property damage.

NEVER leave a pressurized sprayer unattended to avoid accidental operation of it which could result in serious bodily injury.

ALWAYS follow the PRESSURE RELIEF PROCEDURE whenever you stop spraying and before adjusting, removing or repairing any part of the sprayer.

NEVER alter or modify any part of the equipment to avoid possible component rupture which could result in serious bodily injury and property damage.

NEVER use weak or damaged or non-conductive paint hose. Do not allow kinking or crushing of hoses or allow it to vibrate against rough or sharp or hot surfaces. Before each use, check hoses for damage and wear and ensure all fluid connections are secure.

REPLACE any damaged hose. NEVER use tape or any device to mend the hose.

NEVER attempt to stop any leakage in the line or fittings with your hand or any part of the body. Turn off the unit and release pressure by following PRESSURE RELIEF PROCEDURE,

ALWAYS use approved high pressure fittings and replacement parts.

ALWAYS ensure fire extinguishing equipment is readily available and properly maintained.

WARNING

Do not use halogenated solvents in this system. The prime valve, 2 gun manifold and most airless guns have aluminum parts and may explode. Cleaning agents, coatings, paints or adhesives may contain halogenated hydrocarbon solvents. DON'T TAKE CHANCES! Consult your material suppliers to be sure. Some of the most common of these solvents are: Carbontetrachloride, Chlorobenzene, Dichloroethane, Dichloroethyl Ether, Ethylbromide, Ethylchloride, Tetrachloroethane. Alternate valves and guns are available if you need to use these solvents.

PREVENT STATIC SPARKING/FIRE/EXPLOSIONS

ALWAYS be sure all equipment and objects being sprayed are properly grounded. Always ground sprayer, paint bucket and object being sprayed. See "grounding" on page 6 for detailed grounding information.

Vapors created when spraying can be ignited by sparks. To reduce the risk of fire, always locate the sprayer at least 20 feet (6 m.) away from the spray area. Do not plug in or unplug any electrical cords in the spray area, which can create sparks, when there is any chance of igniting vapors still in the air. Follow the coating & solvent manufacturers safety warnings and precautions.

Use only conductive fluid hoses for airless applications. Be sure gun is grounded through hose connections. Check ground continuity in hose & equipment. Overall (end to end) resistance of unpressurized hose must not exceed 29 megohms for any coupled length or combination of hose length. Use only high pressure airless hoses with static wire approved for 3000 psi.

FLUSHING

Reduce the risk of injection injury, static sparking or splashing by following the specific cleaning procedure on pg. 7.

ALWAYS follow the PRESSURE RELIEF PROCEDURE on page 6.

ALWAYS remove the spray tip before flushing. Hold a metal part of the gun firmly to the side of a metal pail and use the lowest possible fluid pressure during flushing. NEVER use cleaning solvents with flash points below 140 degrees F. Some of these are: acetone, benzene, ether, gasoline, naphtha. Consult your supplier to be sure. NEVER SMOKE IN THE SPRAYING/CLEANING AREA.

GAS ENGINE PRECAUTIONS

Locate unit 25 feet away from spray area in well ventilated area. NEVER operate in closed building unless exhaust is piped outside. NEVER allow hose to lay against engine mufflers or hot parts. NEVER refill fuel tank while engine is hot or is running.

Important: United States Government safety standards have been adopted under the Occupational Safety & Health Act. These standards, particularly the General Standards, Part 1910, & the Construction Standards, part 1926 should be consulted.

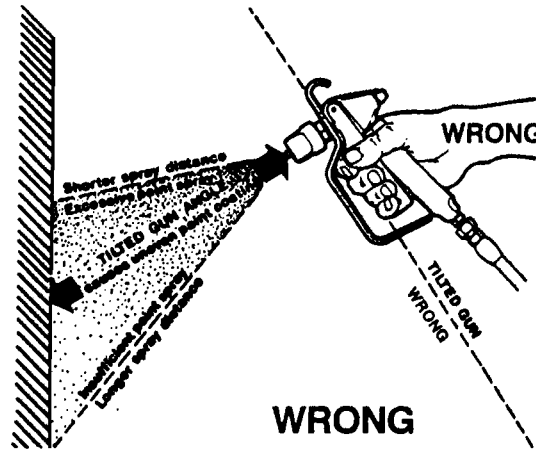
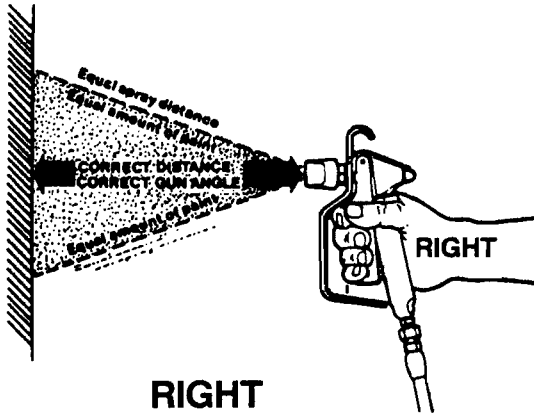
WHEN SPRAYING & CLEANING WITH FLAMMABLE PAINTS OR THINNERS:

1. When spraying with flammable liquids, the unit must be located a minimum of 25 feet away from the spraying area in a well ventilated area. Ventilation must be sufficient enough to prevent the accumulation of vapors.
2. To eliminate electrostatic discharge, ground the spray unit, paint bucket and spraying object. Use only high pressure airless hoses approved for 3000 psi which is conductive.
3. Remove spray tip before cleaning gun and hose. Make contact of gun with bucket and spray without the tip in a well ventilated area, into the grounded steel bucket.
4. Never use high pressure in the cleaning process. USE MINIMUM PRESSURE.
5. Do not smoke in spraying/cleaning area.

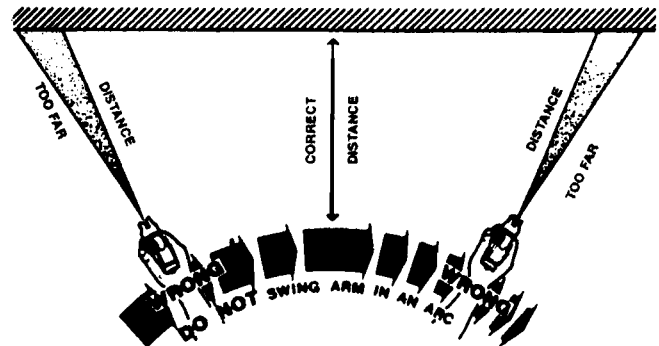
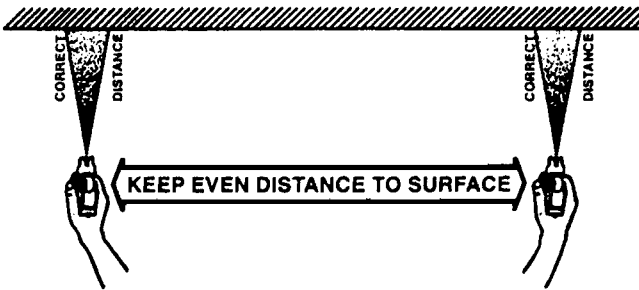
SPRAY TECHNIQUE

Good Spray Gun Technique is at the core of any spray-paint operation. Operator skill and efficiency is as important as good equipment and good paint. Good spray technique is a skill that can be quickly learned by following

these simple instructions. If you are not familiar with spraying techniques, we recommend that you study this section of your manual and practice the proper technique on pieces of cardboard or a suitable surface.



Hold the spray gun 12-15 inches away from the work surface and keep it perpendicular (straight) to the surface. Move the spray gun parallel to the work and at a right angle to the surface.



RIGHT

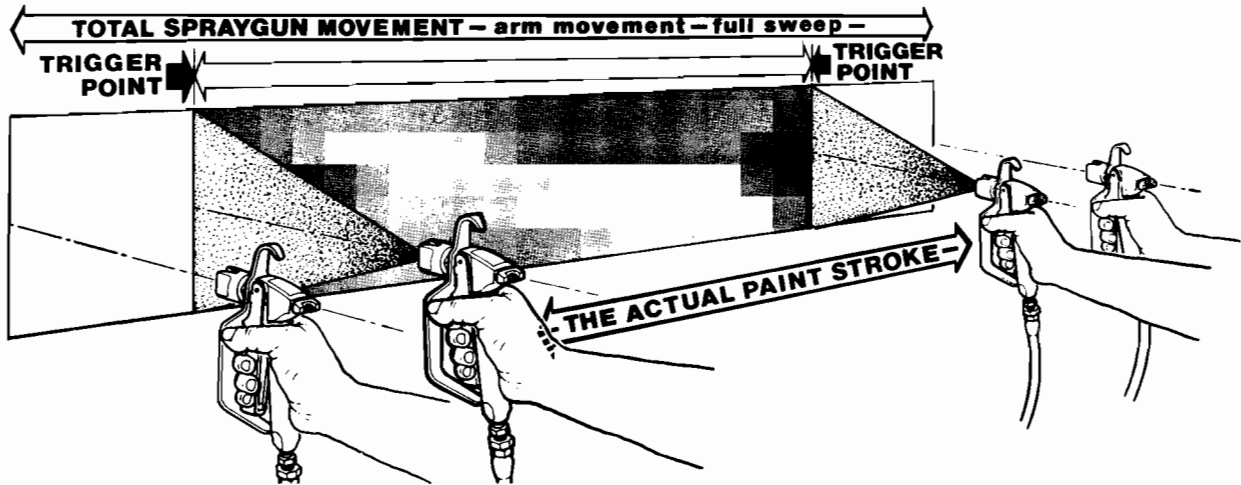
WRONG

Move the gun at a steady rate in order to apply a good coverage. The wet coat should be just under the thickness at which a run or sag will occur. Slow gun movement or gun held too close will result in an overly wet or thick wet or thick coat coverage that is likely to run or sag.

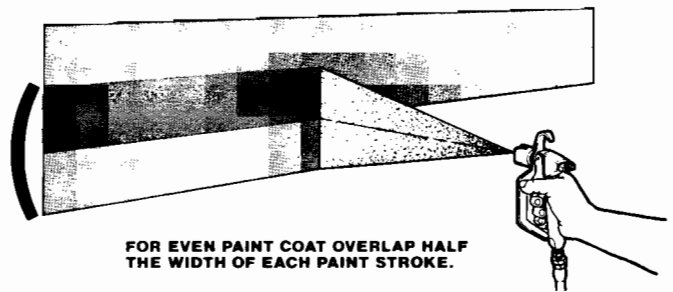
The closer the spray gun is held to the work, the thicker the paint is deposited and the faster the gun must be moved to prevent sags and runs. Holding the gun too far from the work will cause excessive fog, overspray, and a thin and grainy coat.

Do not wave the spray gun. This waving is called (arching). Instead, hold the spray gun at a 12- to 15-inch distance perpendicular from the work.

SPRAY TECHNIQUE continued

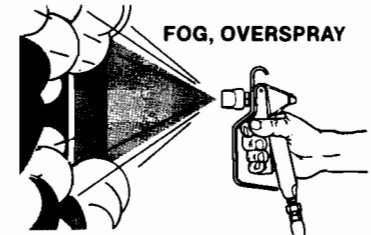
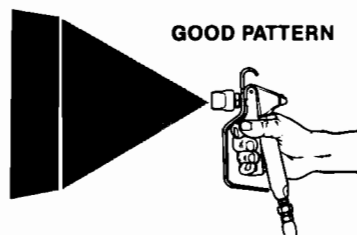
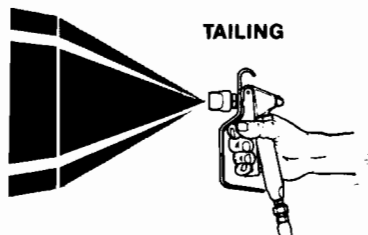


It is important to “trigger” the gun **after** gun movement (arm movement) has started and release trigger (shut gun off) **before** gun movement ends. Gun movement is always longer than actual paint (spray) stroke. In that manner, even blending and uniform paint coat thickness is achieved over the entire surface. When the gun is in motion as the trigger is pulled, it deposits an even amount of paint.



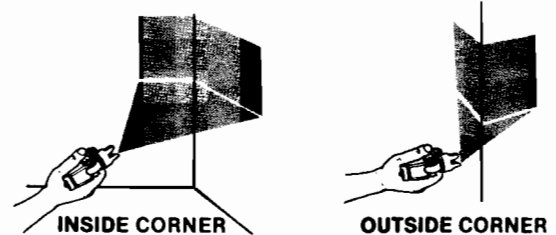
Overlap the previous pass by half the width of the spray pattern. Aim at the bottom of the previous pass.

Spray with uniform strokes from left to right and from right to left, holding stroke speed, distance, lapping, and triggering as uniform as possible.



Adjust pressure control knob so that paint is completely atomized from the spray gun. Insufficient pressure will result in “tailing.” Too

much pressure will result in excess fog and overspray, excessive tip wear, and increased sprayer wear and tear.



Always use the lowest pressure possible to obtain desirable results.

Test the spray pattern on a piece of cardboard or other surface.

“Inside” and “outside” corners can be sprayed.

Aim the spray gun toward the center of the corner. The spray pattern is divided in half, and the edges of the spray pattern on both walls are the same.

AIRLESS SPRAY GUN OPERATION

DEFECTS

CAUSE

CORRECTION

Coarse spray	Low pressure	Increase the pressure
Excessive fogging (Overspray)	High pressure	Reduce the pressure to satisfactory pattern distribution
	Material too thin	Use less thinner
Pattern too wide	Spray angle too large	Use smaller spray angle tip
Pattern too narrow	Spray angle too small	Use larger spray angle tip (if coverage is okay, try tip in same nozzle group)
Too much material	Nozzle too large Material too thin Pressure too high	Use next smaller nozzle. Reduce pressure
Too little material	Nozzle too small Material too thick	Use next larger nozzle
Thin distribution in center of pattern "horns"	Worn tip Wrong tip	Change for new tip Use nozzle with a narrow spray angle
Thick skin on work	Material too viscous Application too heavy	Thin cautiously Reduce pressure and/or use tip in next larger nozzle group
Coating fails to close and smooth over	Material too viscous	Thin cautiously
Spray pattern irregular, deflected	Orifice clogged Tip damaged	Clean carefully Replace with new tip
Craters or pock marks bubbles on work	Solvent balance	Use 1 to 3% "short" solvents remainder "long" solvents (this is most likely to happen with material of low viscosity, lacquers, etc.)
Clogged screens	Extraneous material in paint Coarse pigments Poorly milled pigments (paint pigments glocculate) cover screen. Incompatible paint mixture and thinners	Clean screen Use coarse screen if orifice size allows Use coarser screen, larger orifice tips. Obtain ball milled paint. If thinner has been added, test to see if a drop placed on top of paint mixes or flattens out on the surface. If not, try different thinner in fresh batch of paint.

TEST THE PATTERN

Good, Full Pattern



Spotty Pattern—
Increase Pressure



SPRAY TIP SELECTION

Spray tip selection is based on paint viscosity, paint type, and job needs. For light viscosities (thin paints), use a smaller tip; for heavier viscosities (thicker paints), use a larger tip size.

Spray tip size is based on how many gallons

of paint per minute can be sprayed through the tip.

Do not use a tip larger than the maximum pump flow rate or capacity the sprayer can accommodate. Pump flow rate is measured in gallons per minute (GPM).

TIP NUMBER	ORIFICE SIZE	FAN WIDTH	LATEX			OIL BASE		FINE LACQUER & STAINS	STAINS LARGE AREAS				
			FLAT AREAS	LARGE FLAT	TRIMS	SMALL AREAS	LARGE AREAS						
311	.011	6-8"						X		PAINT MUST BE STRAINED USE FINE GUN FILTER 120-004F 120-090FX			
411	.011	8-10"						X					
511	.011	10-12"						X					
413	.013	8-10"				X			X				
513	.013	10-12"				X			X				
613	.013	12-14"				X			X				
415	.015	8-10"					X						
515	.015	10-12"	X				X						
615	.015	12-14"	X				X						
317	.017	6-8"			X							FOR BETTER RESULTS, STRAIN PAINT USE COARSE GUN FILTER 120-004C 120-090CX	
417	.017	8-10"	X										
517	.017	10-12"	X	X									
617	.017	12-14"	X	X									
318	.018	6-8"	X		X								
418	.018	8-10"	X	X									
518	.018	10-12"	X	X									
618	.018	12-14"		X									
521	.021	10-12"		X									
621	.021	12-14"		X									
721	.021	14-16"		X									

PATTERN WIDTH

Thickness of the paint coat per stroke is determined by spray tip "fan width," rate of the spray gun movement, and distance to surface.

SPRAY TIP SELECTION

Two tips having the same tip size, but different pattern widths will deliver the same amount of paint over a different area (wider or narrower strip)

A spray tip with a narrow pattern width makes it easy to spray in tight places.

Use only good quality, high-pressure tungsten carbide spray tips.

LARGER SIZES AVAILABLE

SPRAY TIP REPLACEMENT

During use, especially with latex paint, high pressure will cause the orifice to grow larger. This destroys the pattern.

Replace tips before they become excessively worn. Worn tips waste paint, cause overspray, make cutting-in difficult, and decrease sprayer performance. The average life of a spray tip is 100 gallons of paint before tip replacement is required.

Use the chart above for selecting proper spray tips to meet your job needs.

REGULAR MAINTENANCE

1. Always stop the pump at the bottom of its stroke when you take a break or at the end of the day. This helps keep material from drying on the rod and damaging the packings.

2. Keep the displacement pump packing nut/wet cup 1/3 full of TSO (Throat Seal Oil) at all times. The TSO helps protect the packings and rod.

3. **Inspect the packing nut daily.** Your ProSpray pump has a patented "Triple Life Packing System". **Packing life will be extended a minimum**

of 3 times if the following Packing Tightening Procedure is followed:

Inspect the packing nut daily. If seepage of paint into the packing nut and/ or movement of the piston upward is found (while not spraying), the packing nut should be tightened enough to stop leakage only, but not any tighter.

Overtightening will damage the packings and reduce the packing life to the life of other piston pumps.

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
There is spitting from the gun.	The fluid supply is low or empty.	Refill the supply container.
	Air entrapped in the fluid pump or hose.	Check for loose connections on the siphon assembly, tighten, then reprime pump.
Paint leaks into the wet cup	The packing nut/wet cup is loose.	Tighten just enough to stop leakage.
	The upper packings are worn or damaged. Worn Piston Rod.	Replace the packings. See page 15. Replace Piston Rod
The engine operates, but the paint pump doesn't cycle.	The pressure setting is too low.	Increase the pressure. See page 4.
	The clutch is not engaged.	See Troubleshooting pg. 17.
	The displacement pump is seized.	Service the pump. See pgs. 14 & 15
The engine and displacement pump operates, but paint pressure is too low or none	The pressure setting is too low.	Increase the pressure, see page 4, step 4.
	The tip or gun filter is clogged.	Remove the tip and/or filter and clean them.
	The tip is worn.	Replace Tip.
	The fluid displacement pump filter is clogged.	Clean the filter.
The displacement pump operates, but the output is too low on the downstroke or both strokes.	There is a large pressure drop in the fluid hose.	Use a larger diameter hose.
	The lower check valve ball is not seating properly.	Service the lower check valve see page 14.
The displacement pump operates, but the output is too low on the upstroke.	The upper check valve ball is not seating properly.	Service the upper check valve per page 14.
	The lower packings are worn or damaged.	Replace the packings. See page 15.
Clutch does not engage. Clutch slippage.		See Troubleshooting page 17. Call Authorized Service Center.
Engine stops		Refer to Engine Manual.

SERVICING FLUID PUMP

Note: Check everything in the Troubleshooting Chart before disassembling the sprayer.

FLUID PUMP DISCONNECT

1. Flush out the material you are spraying, if possible.
2. Follow the Pressure Relief Procedure on Page 6. Stop the pump in the middle of down stroke.
3. Remove the suction tube and fluid hose (if so equipped) from the fluid pump.
4. Remove 2 retaining rings and slip the sleeve of the coupling down and remove both coupling halves. This will disconnect fluid pump from the connecting rod.
5. Unscrew the two tie rod locknuts.
6. Pull the pump off the tie rods.

FLUID PUMP REINSTALL

1. Loosen the packing nut and extend piston rod to fully up position. Slip sleeve (189-047) over the piston rod.
2. Make sure that spacer tubes (301-048) are in place.
3. Connect connecting rod with fluid pump by installing coupling halves (189-046). Slide sleeve over coupling halves. Secure with retaining ring (189-048).
4. Secure the fluid pump housing to the tie rods (100-328) and screw locknuts with washers on loosely.
5. Tighten the tie rod locknuts evenly to 30 ft. lb.

NOTE: After all the rod locknuts are tight, the alignment of both rods should allow easy assembly and disassembly of the coupling. If any binding, loosen and retighten all the rod locknuts to improve the alignment. Misalignment causes premature wear of seal and packings.

6. Tighten the packing nut, just tight enough to stop leakage, but no tighter. Fill the wet cup of the packing nut 1/3 full with TSO.
7. Start the pump and operate it slowly (at low engine speed) to check the piston rod for binding. Adjust tie rod lock nuts if necessary to eliminate binding.

SERVICING UPPER AND LOWER CHECK VALVES

LOWER CHECK VALVE (SEE FIG. 8 & 10)

1. Screw the lower check valve nut (187-018) out of the pump housing (187-313) containing intake seat support (187-017).
2. Remove the intake seat (187-065), "O" ring (187-034), intake ball (187-020) and retainer (187-016).
3. Clean all parts and inspect them for wear or damage, replacing parts as needed. Old "O" rings should be replaced with new ones

Note: "O"ring PN 187-028 is available in the following materials: Viton for waterbase paint - letter "V" after part no. Teflon for other fluids - letter "T" after part no.

4. Clean inside of pump housing (187-313).
5. Reassemble the valve and screw it onto the pump housing if no further pump service is needed.

PLUNGER-ROD, UPPER CHECK VALVE (SEE FIG. 8,10)

1. Stop piston rod in middle of it's stroke. Remove retaining rings (189-048).
2. Slip the sleeve (189-047) off the coupling halves (189-046) and remove both coupling halves. This will disconnect piston rod from pump drive.
3. Screw the lower check valve nut (187-018) off the pump and remove lower check valve.
4. Loosen the packing nut and push the piston rod down and out of the housing.
5. Place rod holder Part No. 187-248 in a vise. Slide the rod into the holder and lock in place with a 1/4" pin. Push the pin through the holder and the rod. Screw the seat support (187-021) out of rod, remove "O"ring (187-033T), seat (187-044) and ball (115-022) out of the piston rod (187-311).

NOTE: Retainer (187-032) with "O"ring (187-033V) and ball stop (187-022) may remain in the piston rod. Clean and check visually the ball stop (187-022) for excessive wear. If ball stop needs to be replaced, install any screw with thread 1/2-13NC into the threaded hole of retainer (187-032) and pull straight out.

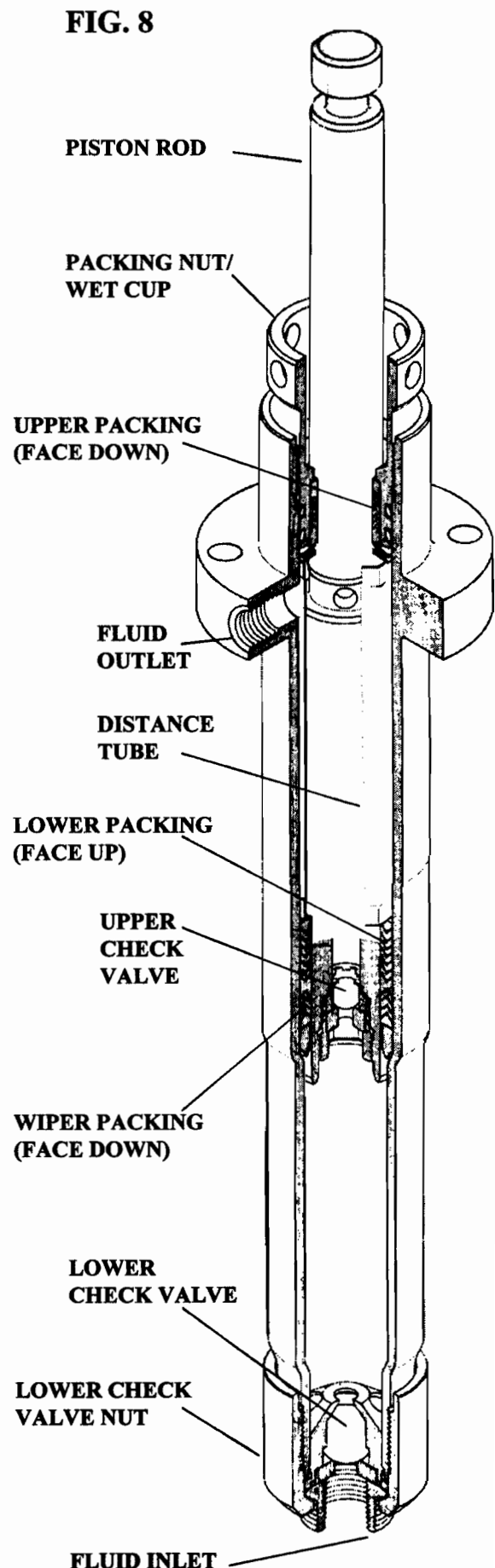
6. Clean all parts and inspect them carefully for wear or damage. Inspect the outside of the piston rod for scoring or wear. Replace these parts if needed. A worn piston rod will cause premature wear of packings.

7. Install parts back into piston rod as per Fig. 10, pg. 16 VIEW A as shown.

Note: Before installing discharge seat support (187-021), place two drops of loctite No. 242 (blue) on threads before assembling.

8. After installation and tightening of discharge seat support, check to ensure ball stop (PN 187-022) is properly installed in piston rod and has not fallen into piston bore. Check by pushing on the ball and feeling a positive stop against the ball stop

NOTE: Piston rod can be replaced more economically through the Exchange Program.



V-PACKING REPLACEMENT

1. Remove the fluid pump as per the "Fluid Pump Disconnect" instructions on page 13.
2. Unscrew and remove the lower check valve per instructions on page 14.
3. Unscrew & remove the packing nut (187-046). Push the piston rod down through the packings and out of the pump. Wrap some masking tape around the bottom of the piston. Now push the piston back through the pump and remove through the top. The packings and glands will be removed with the piston rod, leaving the pump casing (187-313) empty. Utilizing tool (PN 187-249) the complete packing set & piston can be removed quickly and easily.
4. Disassemble and clean all parts for reassembly. Discard old packings, but retain old glands for reuse.

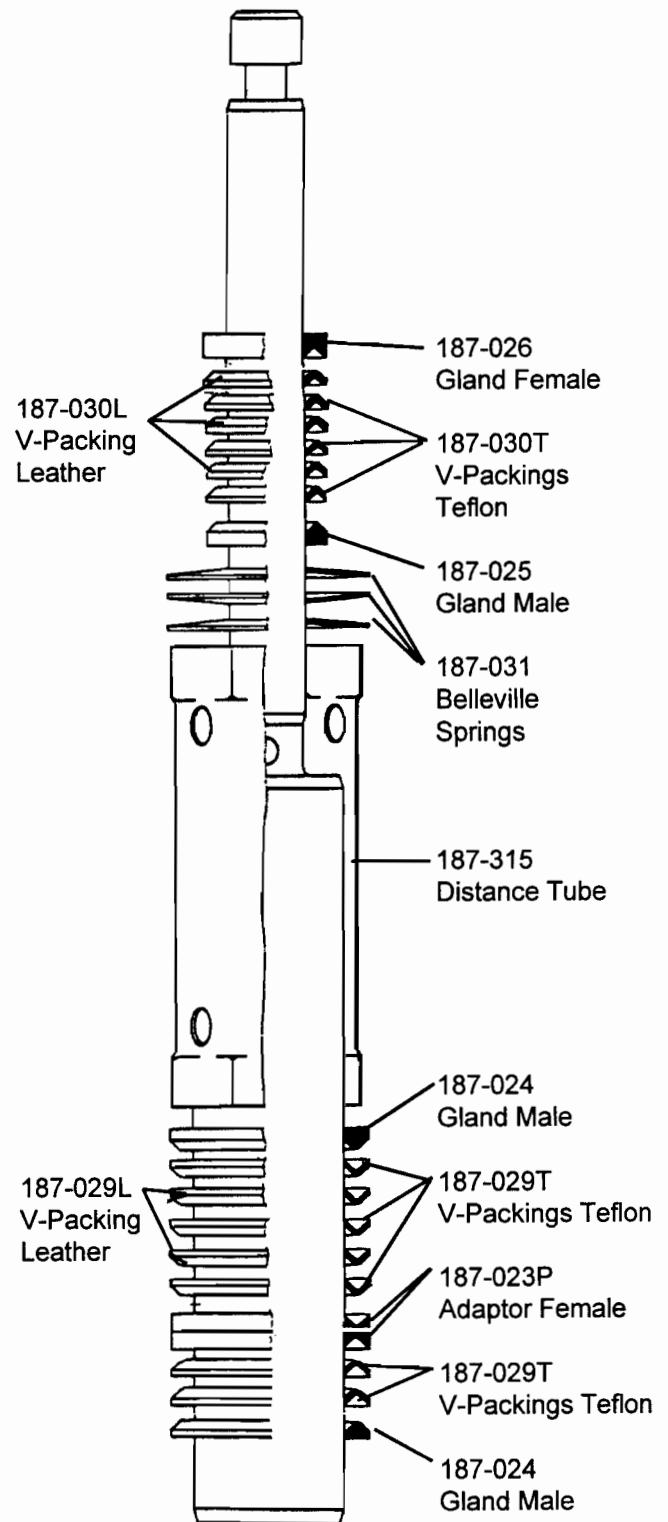
REASSEMBLY

5. Lubricate leather packings in lightweight oil for 10 min. prior to assembly.
6. Remove masking tape from piston. (if used)
7. Reassemble all parts onto piston as per drawing Fig. 9 in the following order:
 - a. Start with lower male gland, (187-024)
 - b. Two new V-packings face down (187-029T)
 - c. Female adaptors (187-023P).
 - d. Five V-Packings face up.(alternating Teflon & Leather)
 - e. Upper male gland (184-024)
 - f. Slide on distance tube (187-315).
 - g. Three Belleville Spring (187-031) starting with the first spring facing down and next facing up and the third facing down.
 - h. Slide on upper male gland (187-025) with bevel facing up.
 - i. Six V-Packings faced down.(alternating Teflon & Leather)
 - j. Female Gland (187-026)
 - k. Slide on the V-Packing holder (187-047)over upper packings.
8. Lubricate inside of cylinder & outside of packings then slide complete assembly into the pump casing (187-313). Thread packing nut (187-046) into cylinder and tighten (hand tight only).
9. Install the lower check valve and tighten the lower check valve nut (187-018).
10. Connect the pump to the machine as per fluid pump reinstall procedure (page 13).
11. Tighten the packing nut just enough to stop leaks.

V-PACKING KIT - TEFLON AND LEATHER (187-040)

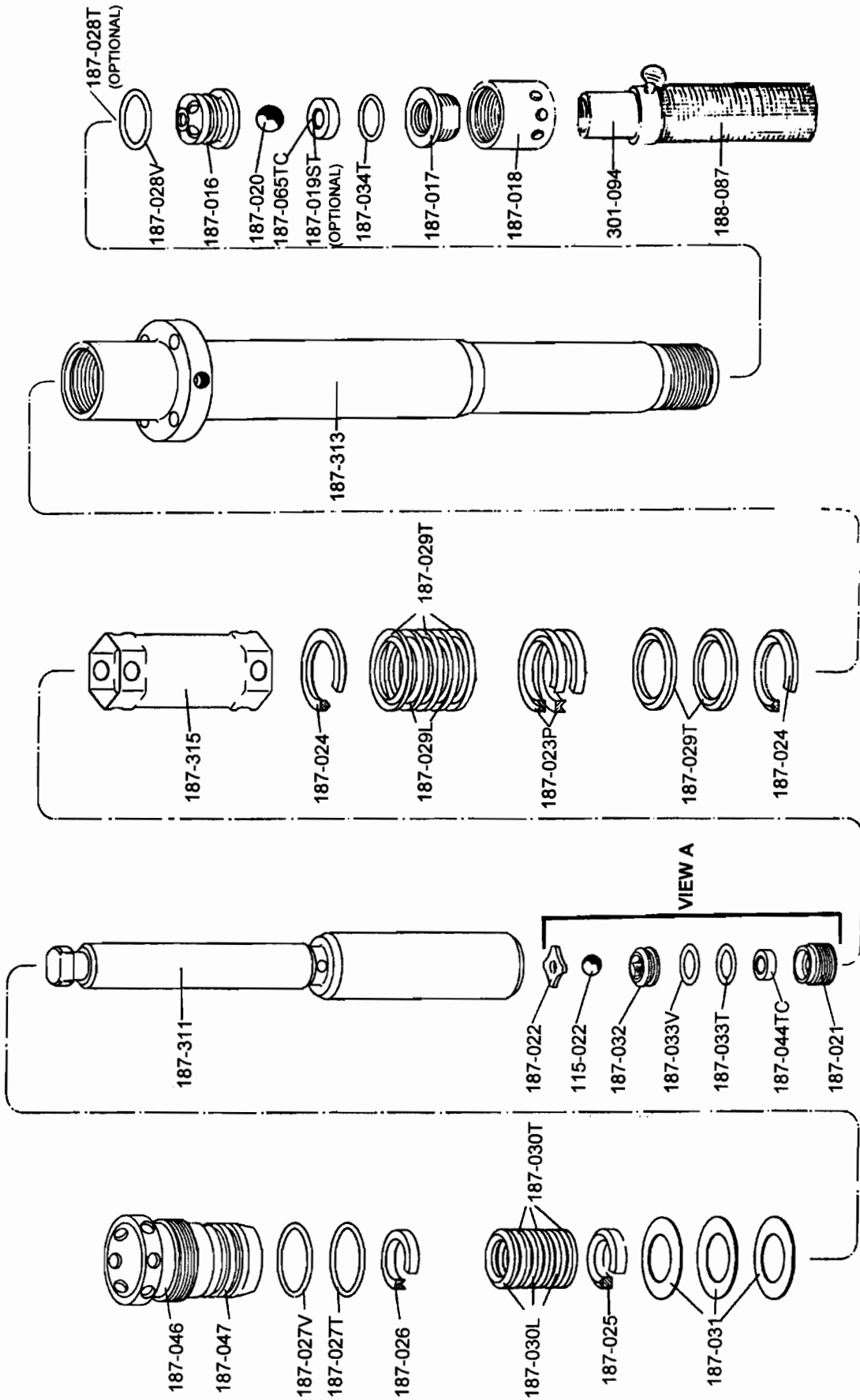
Note: O-ring (187-028) on lower ball cage is supplied in Teflon and Viton. Use Viton when spraying latex or oil based paints and Teflon when spraying paints with high solvents.

FIG. 9



FLUID PUMP - 187-310

FIGURE 10

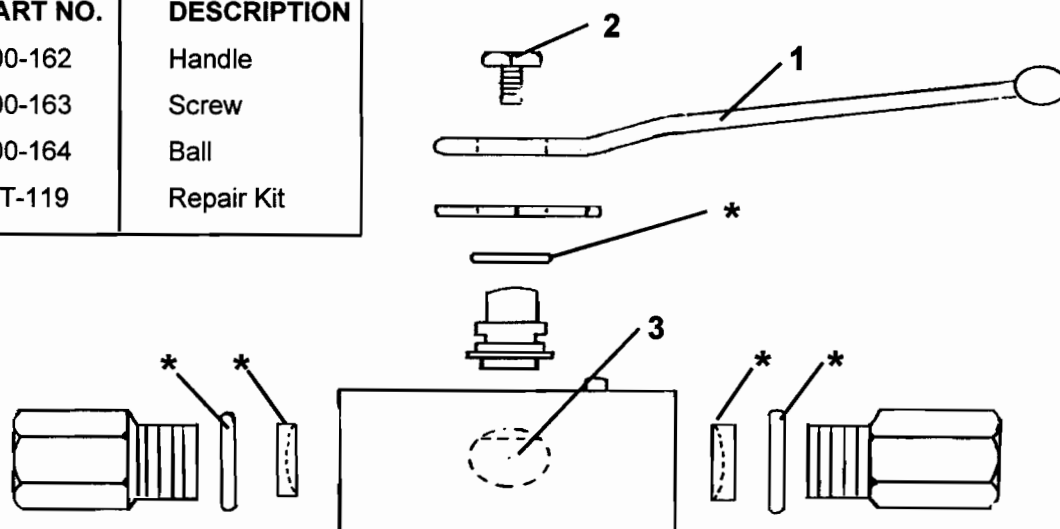


NOTE: Letter following the part numbers describes the material used for V-packings and O-rings.
 L- Leather
 V- Viton
 P- Plastic
 T- Teflon

BALL VALVE - PART NO. 100-119

FIGURE 11

PARTS LIST - FIG.11		
ITEM NO.	PART NO.	DESCRIPTION
1	100-162	Handle
2	100-163	Screw
3	100-164	Ball
*	KIT-119	Repair Kit



TROUBLESHOOTING - CLUTCH DOES NOT ENGAGE

STEP 1: Remove upper Clutch cover Part No. 301-254. Remove Electrical Box Cover (bottom) Part No. 301-326.

STEP 2: Check all electrical connections between engine magneto, sensor, control board and clutch for loose connections or damaged leads. See Figure 12. If no discrepancies are found, continue to the next step.

STEP 3: Use a multimeter to conduct the following resistance checks:

- a. Disconnect leads from Control Board Assembly (blue) from leads on Clutch Assembly (black). Measure resistance between two Clutch Assembly Leads.

$$R \text{ clutch} = 10 - 16 \text{ ohms}$$

- b. Measure resistance from Clutch Assembly Lead (black) to frame. It should read open or no less than 50 k-ohms. If resistance measurements are not within specifications, replace clutch as per directions "Clutch Replacement" page 23.

If resistance measurements are within specifications continue to Step 4.

STEP 4: Connect a multimeter across the two Electrical Control Leads (blue). With engine at maximum RPM, Pressure Control Knob in maximum position (CW) and the Prime/Pressure Relief Valve in the Open (Prime) Position, read the DC voltage from Electrical Control Assembly.

$$V = 13 - 14 \text{ VDC}$$

If voltage is incorrect, disconnect the Engine Magneto Lead (Pink) from the Control Board Assembly lead (black) and measure the voltage from magneto lead to ground with the machine set up as in the first part of this step.

$$V_{\text{mag-gnd}} = 11 - 30 \text{ VAC}$$

If magneto voltage is not within specifications contact Honda Repair Facility. If magneto voltage is correct, either the sensor (331-073A) or Electrical Control Board (301-282) has failed.

STEP 5: First replace sensor, if clutch still has not engaged replace Electrical Control Board as per "Replacement of Electrical Board, page 18.

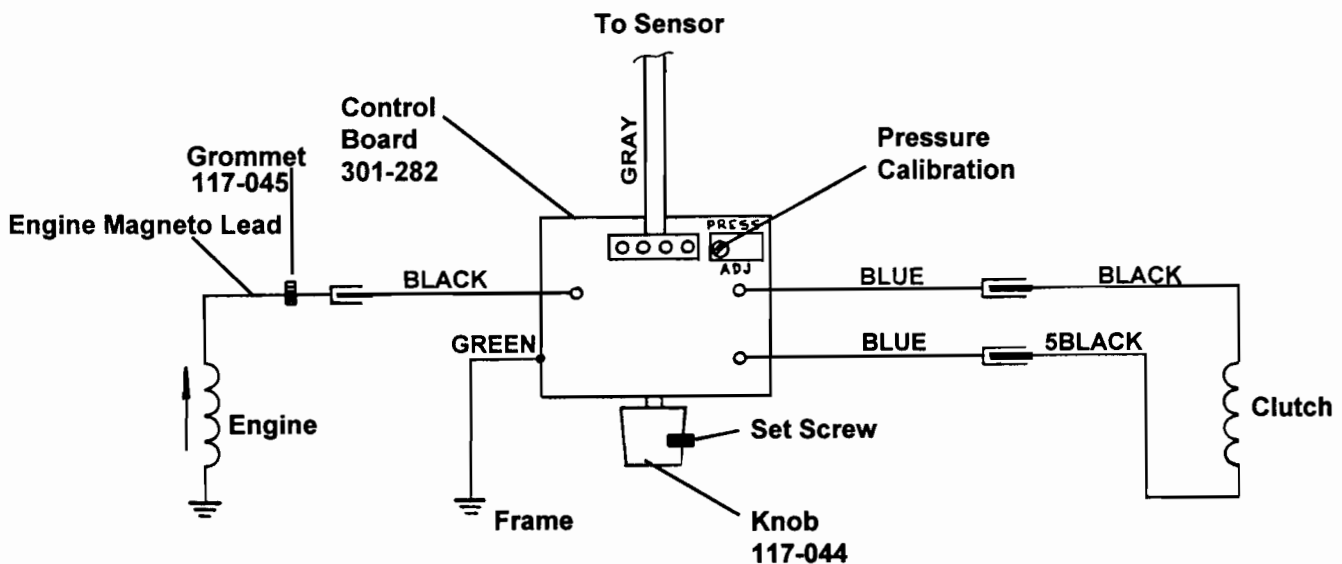
REPLACEMENT OF ELECTRICAL CONTROL BOARD

1. Remove electrical cover.
2. Disconnect sensor lead from Electrical Board.
3. Disconnect two clutch leads on Electrical Board from leads on clutch.
4. Disconnect the Electrical Board Green "Ground" lead from frame.
5. Using a 1/16" allen, loosen set screw in Pressure Control Knob and remove knob.
6. Using a 1/2" nutdriver or 1/2" deep socket, remove nut from pressure control shaft. This will allow removal of electrical control board from frame.
7. Replace Electrical Board Assembly in reverse order. Adjust pressure as per procedure below, "Pressure Calibration on the Electrical Control Board".

PRESSURE CALIBRATION ON THE ELECTRICAL CONTROL BOARD

1. Turn "Pressure Calibration" Trimpot adjustment on electrical control board in the counter clockwise direction at least 15 revolutions.
2. Connect 5000 psi glycerine pressure guage on output of pump between hose and gun to monitor Fluid Pump Pressure.
3. Start engine and run at maximum RPM. Turn Prime/Pressure Relief Valve to the open (Prime) position. Turn Pressure Control Knob to maximum position (fully clockwise).
4. Using an insulated screwdriver, adjust "Pressure Calibration" Trimpot by turning clockwise until the clutch engages. When the clutch engages the pump will commence Priming. When pump is primed, turn the Prime/Pressure Relief Valve to the Closed (Pressure) Position. The pump will begin to pressurize and the clutch will disengage at a low pressure. Continue turning the Trimpot clockwise to increase pressure to 3000 psi.
5. Trigger gun. The pressure should drop approximately 350-400 psi, the clutch will engage and build pressure to 3000 psi and disengage. Trigger gun several times to ensure proper pressure setting.
6. Turn Pressure Control Knob to minimum position. The clutch should disengage and pump stop moving.
7. Secure leads with tie strap.
8. Replace cover on unit. Ensure the leads are not pinched or damaged in the process of replacing covers.

FIGURE 12



CLUTCH REPLACEMENT

REMOVE CLUTCH AS FOLLOWS:

(See Figs. 13 & 14)

1. Remove upper and lower clutch covers and electrical cover.
2. Disconnect two clutch leads from electrical board leads. Pull clutch leads through grommet from frame.
3. Disconnect and remove fluid section from gearbox, including connecting rod assembly.
4. Remove four bolts, Items 7 & 11 (Fig. 13), holding gearbox and clutch assembly to holder, Item 6. Remove gearbox with clutch assembly attached.

INSTALL NEW CLUTCH AS FOLLOWS:

1. With gearbox held as described above, place first spacer, Item 7 and bearing, Item 6 onto gearbox shaft. (See Fig. 14)
2. Insert snap rings (2), Item 5, into recesses of cog pulley portion of clutch. Place cog pulley portion of clutch onto shaft.
3. Place second spacer, item 7 into cog pulley portion of clutch. This spacer will rest on the first bearing, Item 6 installed.
4. Insert second bearing, Item 6, on top of upper snap ring, Item 5.
5. Lay ring, Item 8 on top of last bearing. Ensure the small area of ring is against bearing (see Fig. 14).
6. Place coil portion of clutch down onto cog pulley portion of clutch and center on gearbox shaft.
7. Screw differential screw, Item 1 into coupling screw and nut until 1/16" is showing. (See Fig. 15).
8. Push coupling assembly, Items 1,9 and 10, into clutch assembly until it comes to a positive stop. (Differential screw comes into contact with the threaded gearbox shaft.)
9. With 13/16" wrench on coupling screw and 5/16" allen wrench in differential screw, simultaneously screw coupling assembly into gearbox shaft by turning clockwise until a positive stop is reached.
5. Place gearbox in vice by gripping the drive crank allowing the clutch assembly to face up. Use caution and not allow Gearbox to swing and damage casting against vice.
6. Hold coupling screw, Item 10, Fig. 14 with 13/16" wrench, then with 5/16" allen wrench screw differential screw, Item 1, out of coupling screw and gearbox shaft.
7. Screw large end of differential screw (Item 1) into coupling screw (Item 10) and pull Items 9 & 10 out of clutch assembly.
8. The clutch, Item 4, can now be removed. Items 5 - 8 should be inspected for wear, replace if needed.
10. Hold coupling screw and tighten differential screw to 30 ft-lbs. This will expand the coupling assembly. thereby holding the clutch assembly to gearbox shaft. Turn clutch observing a gap of approximately 1/32" between two clutch surfaces.
11. Reconnect gearbox and clutch assembly to holder with four bolts as follows:
 - Place cog belt on large pulley portion of clutch. Hold belt and let gearbox hang upside down. Place belt over upper pulley on engine, Item 3, Fig. 13. Rotate gearbox upright and install bolts loosely.
 - Push down on gearbox with approximately 50 psi of force to tighten belt. Align gearbox vertically and tighten bolts.
12. Insert clutch leads back through grommet in frame and connect to electrical control board leads.
13. Connect spring, Item 3, Fig 14, to holder, Item 6, Fig. 13.
14. Reconnect fluid section.
15. Check clutch and pump for proper operation. Replace covers.

ENGINE ASSEMBLY - PART NO. 301-283

FIGURE 13

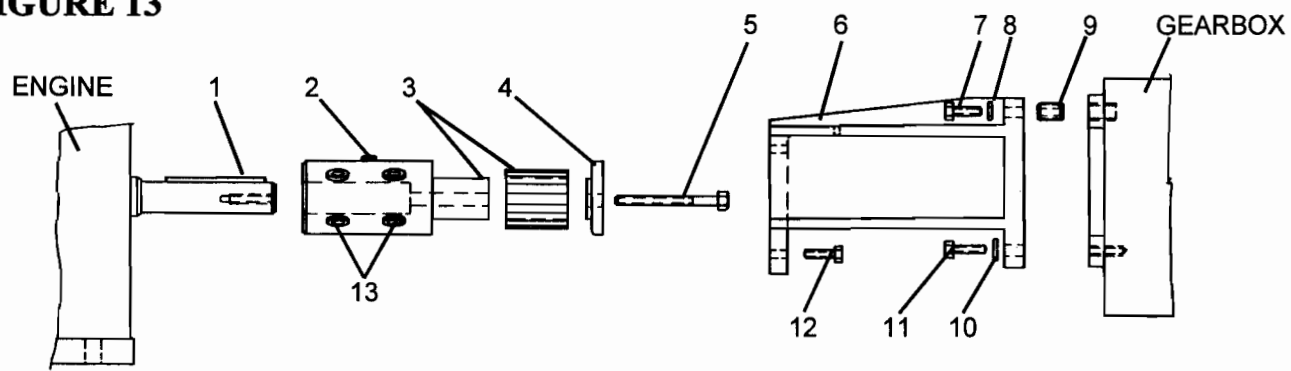


FIGURE 13 PARTS LIST					
ITEM NO.	PART NO.	DESCRIPTION	ITEM NO.	PART NO.	DESCRIPTION
1	112-029	Key (3/16 x 1 1/2)	8	140-034	Washer, Flat 3/8 (2)
2	100-357	Screw, Soc	9	301-272	Insert (2)
3	301-222A	Hub/Sheave Ass'y	10	140-029	Washer, flat 5/16 (2)
4	301-229	Plate	11	111-044	Screw, cap 5/16-18 (2)
5	301-230	Screw Cap (5/16-24X 2 1/4)	12	100-392	Screw, cap 5/16 - 2 (4)
6	301-271	Holder	13	100-383	Screw, soc 3/8 - 24 (4)
7	100-370	Screw, Cap (3/8 - 16 x 1) (2)			

CLUTCH ASSEMBLY - PART NO. 301-284

FIGURE 14

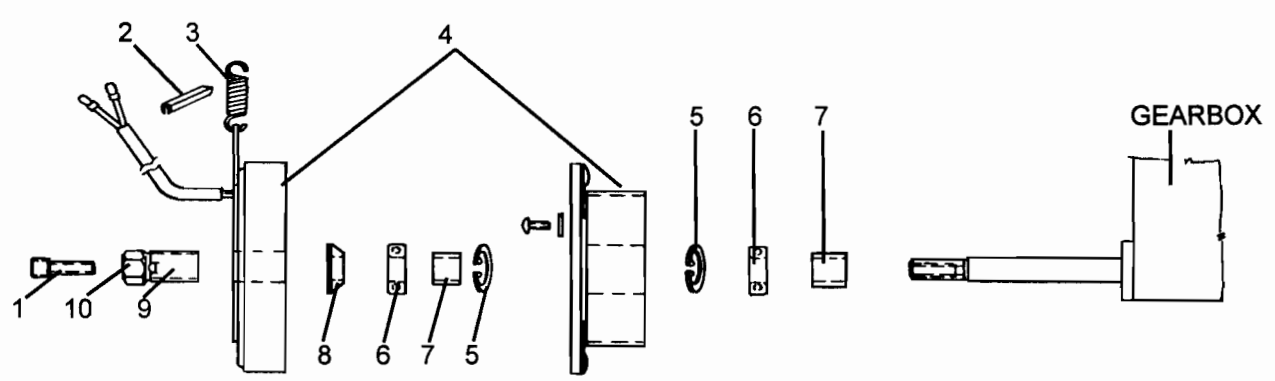


FIGURE 14 PARTS LIST					
ITEM NO.	PART NO.	DESCRIPTION	ITEM NO.	PART NO.	DESCRIPTION
1	112-041	Screw - Differential	6	301-037	Bearing (2)
2	301-316	Rubber Edge	7	301-274	Spacer (2)
3	136-068	Spring	8	301-275	Ring
4	301-264	Clutch	9	112-033A	Coupling Nut
5	100-333	Retaining Ring (2)	10	112-034	Screw, Coupling

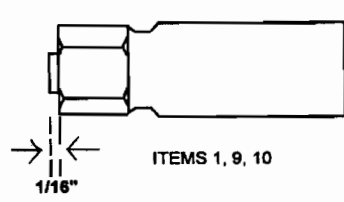


FIGURE 15

PAINT SYSTEM ASSEMBLY - PART NO. 301-327

FIGURE 16

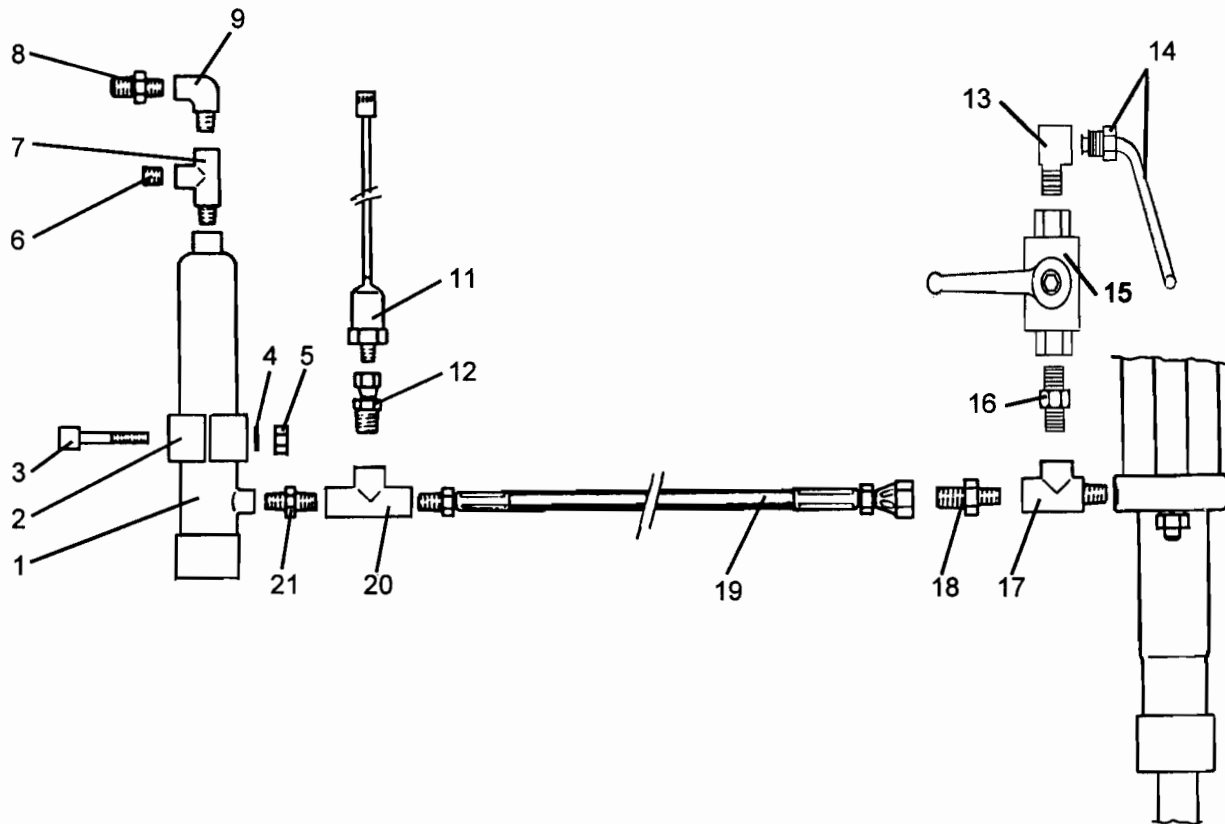


FIGURE 16 PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	ITEM NO.	PART NO.	DESCRIPTION
1	187-506	Filter Ass'y	12	100-159	Swivel, 3/8 NPT x 1/4 NPT
2	136-210	Clamp Set	13	100-102	90 deg. Elbow, Flare
3	100-318	Screw, HH,CAP 5/16-18 (2)	14	301-215	Return tube Ass'y
4	140-029	Washer, flat, 5/16 (2)	15	100-119	Ball Valve, 1/4 NPT
5	113-022	Nut, Hex 5/16-18 (2)	16	100-070	Nipple, 1/4 NPT
6	100-129	Plug 3/8 NPT	17	100-115	Tee, 1/4 NPT
7	100-134	Tee Male, 3/8	18	100-109	Hex Nipple 3/8 NPS x 1/4
8	100-034	Hose Connector 3/8	19	301-257	Hose 3/8 x 15.5 L
9	169-013	Elbow 90 deg. 3/8 NPT	20	100-036	Tee, 3/8 NPT
11	331-073A	Sensor Ass'y	21	169-010	Nipple, 3/8 NPT

COMPLETE SPRAYER

FIG. 17

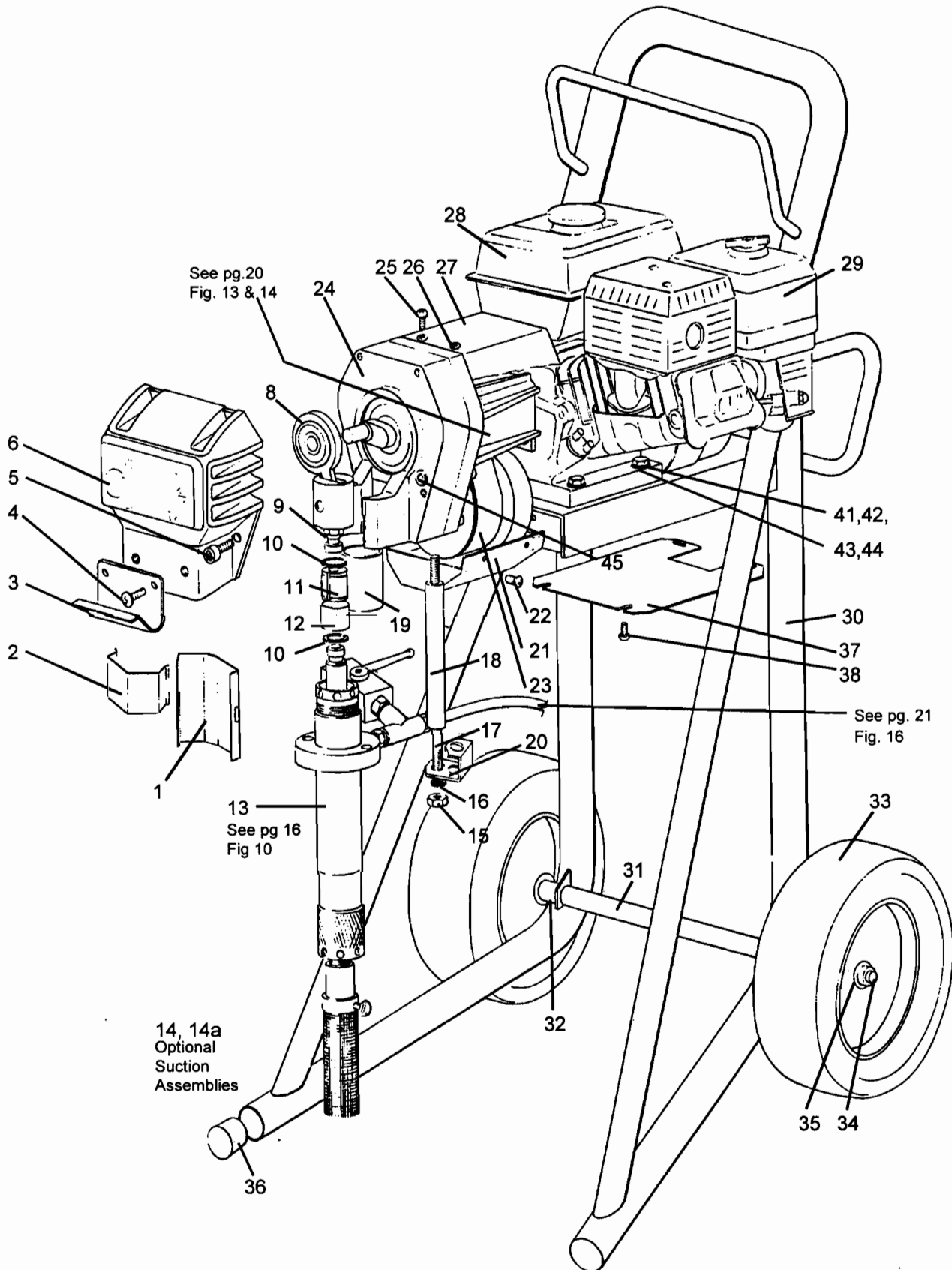


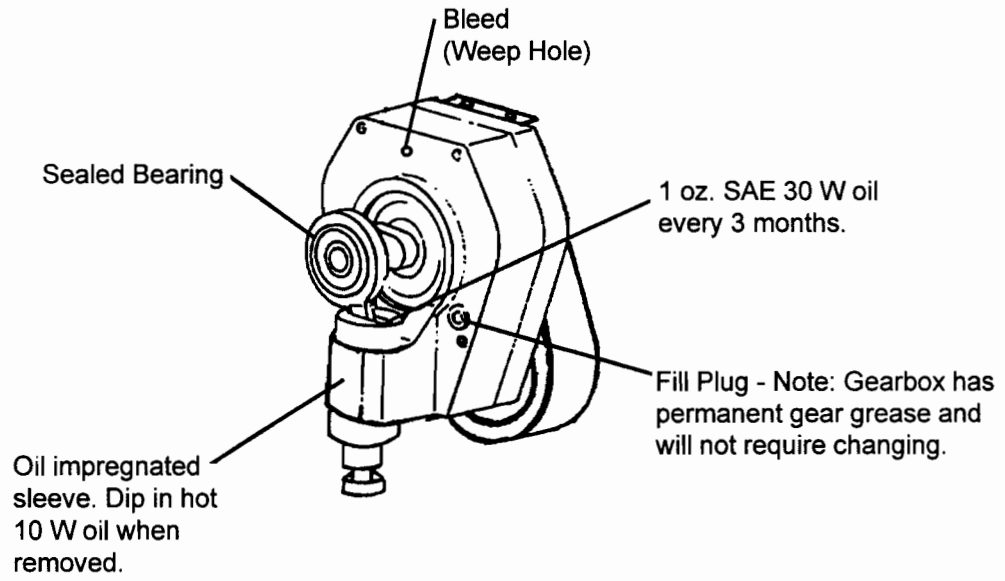
FIGURE 17 PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION			
1	301-092	Shield - rear	23	301-231	Cog Belt
2	301-189	Shield - front	24	301-270	Gear Box Gas
3	301-105	Hook	25	100-339	Screw (2)
4	100-360	Screw (2)	26	301-135	Grommet (6)
5	100-312	Screw (4)	27	301-254	Clutch cover, Top
6	301-320	Cover -gearbox	28	301-160	Honda Eng. QXS160(5.5hp)
8	301-291	Connecting Rod Ass'y	29	175-021	Air Filter , Engine
9	301-046	Rod End	30	301-239	Frame Weldment, Gas
10	189-048	Retaining Ring (2)	31	301-149	Spacer
11	189-046	Coupling Set	32	163-016	Spacer (2)
12	189-047	Coupling Cover	33	301-165	Wheel (2)
13	187-310	Fluid Pump	34	301-170	Axle
14	301-090	Suction Ass'y, 16" (5 gal.)	35	143-029	Set Collar (2)
14a	301-126	Suction Ass'y, 36" (55 gal.)	36	301-134	Solid Neoprene Stopper (2)
15	140-051	Nut (2)	37	301-326	Bottom Cover
16	140-035	Washer, Lock (2)	38	100-390	Screw (4)
17	100-328	Stud (2)	41	140-029	Washer 5/16 (8)
18	301-048	Spacer, Tube (2)	42	136-123	Screw, 5/16 (4)
19	301-047	Sleeve Bearing	43	113-023	Washer , Lock (4)
20	301-173	Retainer	44	113-022	Nut, 5/16 (4)
21	301-287	Clutch Cover - bottom	45	100-028	Plug, 1/4
22	111-037	Screw (4)			

FOR SAFETY, KEEP ALL LABELS ON UNIT CLEAN AND READABLE, ORDERING NEW LABELS AS REQUIRED.

OIL AND LUBRICATION PROCEDURE

FIG. 18



REPLACEMENT PARTS FOR FILTER

INLET 3/8" NPT (F)
OUTLET 3/8" NPT (F)

