SPARTAN TOOL

FOR TOUGH CUSTOMERS. SINCE 1943.

PRODUCT MANUAL

CADET

Spartan Tool LLC | 1618 Terminal Road | Niles, MI 49120
order by phone **800.435.3866** order online **SpartanTool.com**

Part #70700170

Contents

Notes

Warnings

- Read the safety and operating instructions before using any Spartan Tool product. Drain and sewer cleaning can be dangerous if proper procedures are not followed and appropriate safety gear is not utilized.
- Before starting unit, be sure to wear personal protective equipment such as safety goggles or face shield and protective clothing such as gloves, coveralls or raincoat, rubber boots with metatarsal guards, and hearing protection.
- Ensure the jet hose has been placed in the pipe (6 feet suggested) before engaging the water pressure to prevent the hose from coming out of the pipe prematurely and causing injury.
- Always shut off the water pressure before pulling the hose out of the pipe. Mark the hose a minimum of 3 feet from the end to help ensure the hose is not accidentally pulled out of the pipe while still under pressure. Shut off the water pressure when the hose mark is encountered.
- Drains and sewer can carry bacteria and other infectious micro-organisms or materials which can cause death or severe illness. Avoid exposing eyes, nose, mouth, ears, hands, and cuts and abrasions to waste water or other potentially infectious materials during drain and sewer cleaning operations. To further help protect against exposure to infectious materials, wash hands, arms and other areas of the body, as needed, with hot, soapy water and, if necessary, flush mucous membranes with water. Also, disinfect potentially contaminated equipment by washing with appropriate soaps or disinfectant chemicals where appropriate.
- For any questions, contact Spartan Tool at the address shown below.

CONTACT US

Spartan Tool LLC
1618 Terminal Road
Niles, MI 49120
800.435.3866
SpartanTool.com

WARNING **Cancer and Reproductive Harm - www.P65Warnings.ca.gov**

Technical Information

GENERAL

Pipe Sizes	1¼" to 3" diameter
Max water delivery	2.0 GPM
Max pressure delivery	1,500 PSI
Weight	50 lbs
Unit size	14"W x 22½"D x 9"H

MOTOR

Horsepower	1.36 HP
Speed (RPM)	2,500
Max electric draw	15 Amps / 7.5 Amps
Volts	115 / 230
Frequency (Hz)	60
Phase	Single

PUMP

Pump	Triplex plunger
Max pressure	2,400 PSI
Max water output	2.2 GPM
Max temperature	80°F
Max RPM	3,450
Plungers	3
Oil Capacity	4.7 oz

High Pressure Water Jetting

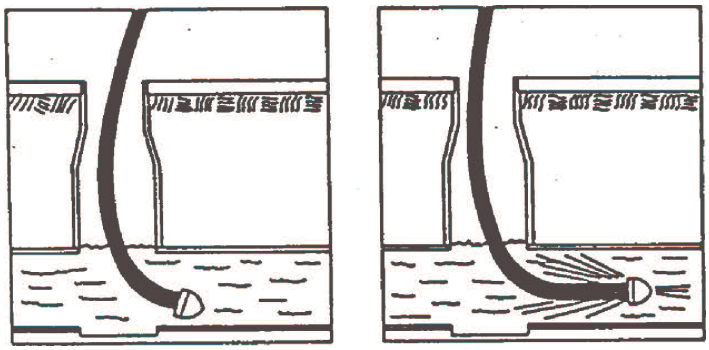
High pressure water jetting is the utilization of high pressure water combined with sufficient water flow to remove debris in drain/sewer pipes. High pressure water jetting can also be used to remove debris on surfaces.

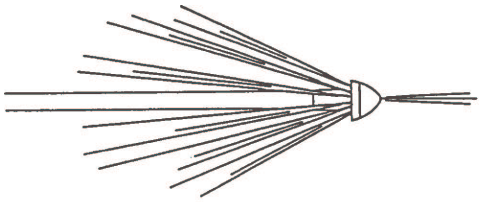
A high pressure water jet consists of a pump, a motor or engine, a length of high pressure hose, and a various assortment of nozzles.

A pipe is cleaned with a high pressure water jet by directing water pressure and flow through a nozzle. Controlled water pressure and flow propels a water jet through the sewer pipe, allowing it to remove and wash away the obstruction (see Fig. 1).

Ideally, a sewer pipe is cleaned from the lower end of the pipe and the hose propels itself to the higher end of the pipe. By slowly withdrawing the jet hose, the water pressure and flow cleans the line most effectively. When it is impossible to clean from the lower end of the pipe, the pipe must be water jetted several times to remove all the debris. A skilled operator can effectively clean a drain/sewer regardless of the obstacles in the way.

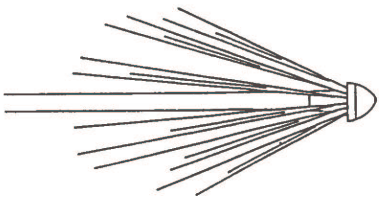
HOW A JET WORKS





Penetrating Nozzle 70700670

Nozzle to be used for initial penetration of sewer pipe.



Closed Nozzle 72705400

Nozzle to be used for thorough cleaning of sewer pipe.

FIG. 1

Safety Procedures

WARNING Read the Product Manual thoroughly before using a Spartan Tool product. Drain/sewer cleaning can be dangerous if proper procedures are not followed. Know the proper operation, correct applications, and limitations of all Spartan Tool products before use.

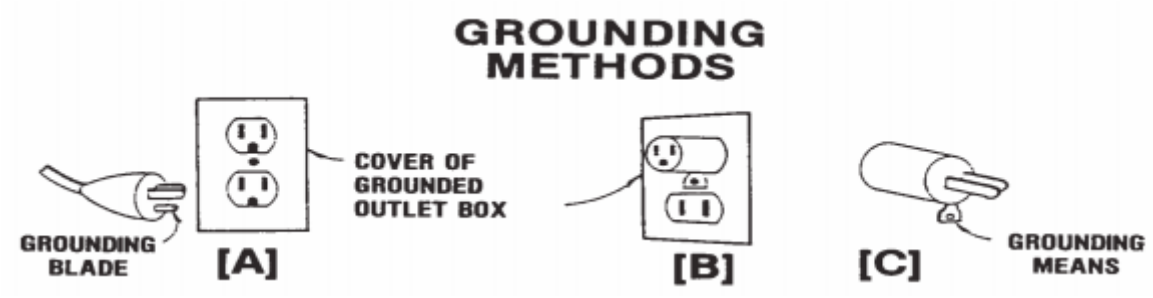
CAUTION Use of any electrical equipment in a wet environment can cause fatal shock if equipment is not properly grounded, adequately maintained, and if care is not used by the operator.

GROUNDING INSTRUCTIONS

Before using your Spartan Tool equipment, make sure a properly grounded, three-hole outlet is available. If not, as in some older homes, use a three-prong adapter and connect the green pigtail (or grounding lug) to a known ground, such as a cold water pipe. A three-prong adapter with grounding lug can be purchased from any hardware store. Never cut off the grounding prong for use in a two-hole outlet receptacle. By doing so, you have cut off your protection from shock.

Spartan Tool equipment must be grounded while in use to protect the operator from electrical shock. Spartan Tool equipment comes with a three-conductor cord and a three-prong grounding-type plug to fit the properly grounded receptacle. The green (or green and yellow) conductor in the cord is the grounding wire. Never connect the green (or green and yellow) wire to a live terminal. Your unit is for use on 120V, it has a plug that looks like that shown in Fig. A. An adapter (see Fig. 2 and 3) is available for connecting Fig. A type plugs to a two-prong receptacle, except in Canada.

The green-colored rigid ear (or lug) extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box.



Don't assume that all outlets are properly installed. Check the outlet and also the adapter, if used, with an outlet testing device which quickly indicates if a ground is connected. Correct a faulty test indication before proceeding.

The Spartan Cadet is equipped with a ground fault interrupter (GFI) to help guard against shock in a damp environment.

Extension cords that are 25' or shorter and minimum 12ga. can be used with the Cadet.

Safety Procedures

CAUTION Always locate drain/sewer cleaning machine as close as possible to opening of pipe. Do not locate machine more than 3 feet from the opening of the pipe.

CAUTION Avoid eye or skin contact with acids or caustic substances while cleaning drains and sewers.

Always wear safety goggles and rubber gauntlet-style gloves when cleaning drains/sewers to avoid injury.

Before beginning work, ask the customer if acids or caustic substances are present in the pipe and take appropriate action to safeguard yourself, the equipment, and your customer's property. If in doubt, litmus paper used at the opening of the pipe may give an indication of the type of substance in the line. Litmus paper (acids/caustics) can be purchased at most pharmacies.

CAUTION Drains/sewers carry bacteria and the possibility of infectious disease exists, if exposed.

Always wear safety goggles and rubber gloves.

Avoid contact with ears, eyes, or mouth with contents of pipe to lower the risk of infection.

Due to possibility of contact with contamination and explosive sewer gases, **do not smoke** when operating the Cadet

Avoid exposing any cuts to drains/sewers and sewer cleaning equipment.

FOLLOW ALL RULES OF SAFETY AND GOOD HOUSEKEEPING.

- Keep work area clean.
- Keep all safety guards in place.
- Stay alert.
- Place machine and controls in stable and accessible position for safe operation.
- Properly store the tools.
- Keep children away from all equipment.
- Use only recommended equipment and accessories. Maintain tools in original working condition.
- Do not wear loose-fitting clothes.
- Do not exceed limitations of equipment and accessories.
- Avoid accidental starting by unplugging machine when not in use.
- Always wear recommended safety gear.
- Always lift with legs and not your back.
- Wear hearing protection when using equipment for extended periods of time.

Pre-Operation Checklist

Before using the operating instructions for the Cadet, follow this checklist:

1. Inspect equipment before use: Look for loose screws, frayed power cord, exposed wires, damaged hoses, and evidence of leaky or faulty fittings. Repair damage before use.

2. The inlet screen must be cleaned before each use to avoid damage to the pump. To clean the inlet screen, remove the hose by pulling back on the disconnect fitting at the water inlet valve (see Fig. 2). Remove the water inlet valve and screen. Rinse the screen thoroughly with water. Replace the screen, water inlet valve and hose.

WARNING Never operate the Cadet without the inlet screen. Damage to the pump may occur.

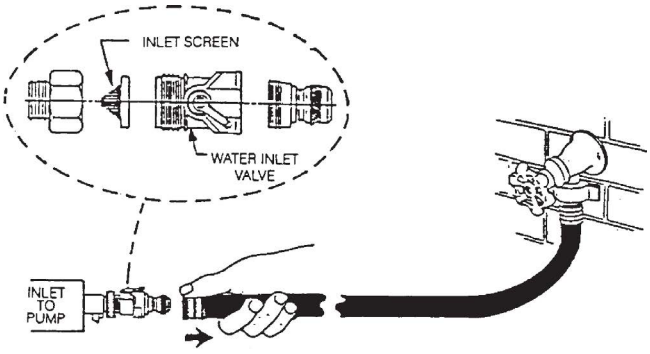


FIG. 2

3. Use only garden hose with ⅝" I.D. Make sure there are no impurities in the incoming water supply. If the possibility of impurities exist, turn on the incoming water supply for 15 seconds to remove debris or rust build up.

4. Flush the high pressure hose before use.

5. Select the proper nozzle for the application. Inspect, clean, and install it on the hose. Ensure the nozzle has been tightened sufficiently to avoid loosening.

6. Check the ground fault interrupter (GFI) before each use. (See instructions located on the GFI.) **DO NOT USE IF THE GFI INDICATOR LIGHT DOES NOT GO ON WHEN RESET OR IF THE INDICATOR LIGHT REMAINS ON WHEN THE TEST BUTTON IS PUSHED IN.**

Operating Instructions

WARNING A minimum of 15 Amps must be available on the electrical circuit at all times for the Cadet to function properly on a 115V circuit.

CAUTION: 15 AMP CIRCUIT - MAX PRESSURE 1,500 PSI

1. Make sure the Pre-Operation Checklist has been followed before operating the Cadet.
2. Position the Cadet close to the pipe opening and electrical outlet.
3. Unspool the HP hose and push at least 3 feet of hose into the pipe.

CAUTION Vibration while operating the Cadet is normal. Protect the high pressure hose from sharp edges and protect property from damage due to contact with the high pressure hose.

FIG. 3

4. Connect one end of the supply hose to the clean water and the other end of the hose to the water inlet connection (see Fig. 3).
5. Turn on the water faucet.
6. Prime the system by turning on the water inlet valve (see Fig. 4). Open the throttle valve fully (counter clockwise) and allow the water to flow until the air is purged from the system.

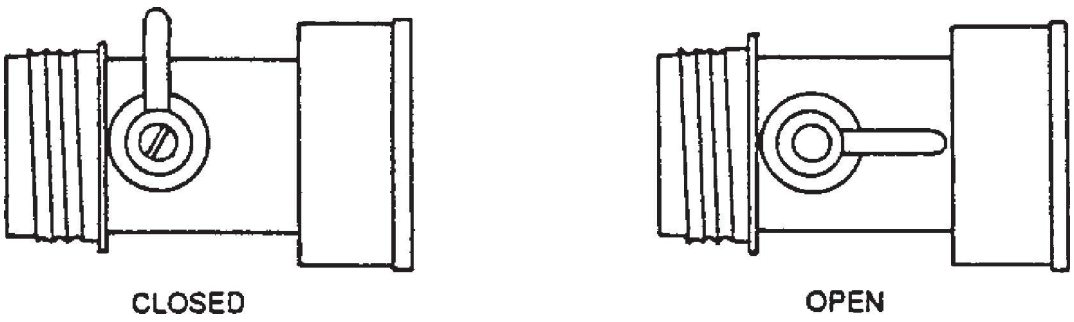


FIG. 4

7. Push the power switch ON, briefly, to finish flooding the water circuit. Push the power switch off and close the water inlet valve.
8. Attach the desired nozzle, then allow the water jet hose to enter the pipe a few feet by holding the hose and pushing it into the pipe.

9. Dial the throttle valve all the way closed (against the arrows on the knob) and open the throttle valve, again, 1 to 2 full turns before energizing the equipment and setting the pressure.

10. The Cadet will operate up to 1,500 PSI with supplied open nozzle (70700670) and 700 PSI with the supplied closed nozzle (72705400). If the machine is operating at a lower pressure, the throttle valve knob can be turned in the open direction (following the arrows on the knob) to increase the pressure. The operating pressure is shown on the pressure gauge (see Fig. 5).

FIG. 5

11. Open the inlet water valve. Energize the equipment with the power switch and set your working pressure. See Chart 1 for pressures and run times.

» Use the lowest pressure whenever possible.

» For every continuous cycle, allow the jetter to cool for a minimum of 15 minutes. Keep the unit plugged in to power as the fan will help cool the unit.

Nozzle with 3⁄16" hose	30 minutes continuous
70700670 open, ¾ gpm	1500 psi (max)
72705400 closed, 2 gpm	700 psi (max)

CHART 1

CAUTION Never operate the jetter for periods longer than the recommended continuous time and never operate the jetter at maximum pressure for more than two 30-minute cycles per two hours.

12. While working, always pull the water jet hose back one half the distance advanced. The actual cleaning of the pipe takes place when the hose is pulled back toward the operator. Pulling the water jet hose backwards also ensures that the hose is not caught in the pipe or has not exited the pipe.

13. If the water jet hose fails to advance, it may be necessary to pull off additional hose and twist the hose in a corkscrew-like manner (see Fig. 6).

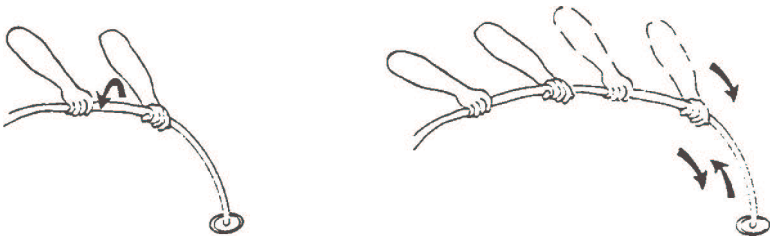


FIG. 6

14. In those rare instances where backflow is created, a bilge pump may be used (see Fig. 7).

15. When the pipe cleaning operation is complete, the Cadet ***must be shut down in the following sequence to avoid problems:***
    a. Turn off the motor switch
    b. Turn off the water faucet
    c. Close the water inlet valve
    d. Unplug the electrical outlet
    e. Disconnect the garden hose
    f. Retrieve the HP hose

16. **For more operating tips and troubleshooting, see the Cadet Quick Guide in the organizer pocket of your Cadet.**

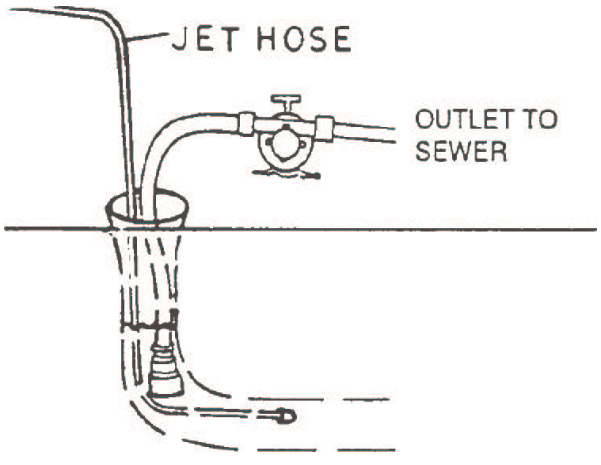


FIG. 7

Preventative Maintenance & Troubleshooting

1. **Cold Weather Protection:** To avoid damage to the pump and water jet hose, keep the Cadet from freezing temperatures. If the Cadet must be stored in freezing temperatures, you must use one of the following methods:
   - **Method 1:** Use pressurized air to blow out any remaining water left inside pump and hose.
   - **Method 2:** Attach a short garden hose (not to exceed four feet) to the water inlet valve and put the other end of the garden hose into a mixture of 50% antifreeze and 50% water. Plug in the machine and turn the motor switch ON. Allow the mixture to be pumped completely through the system.

2. **Hot Water Damage to Pump:** Never use water at temperatures higher than 80°F. Hot water above 80°F will damage the pump and void the warranty.

3. **Cavitation (loss to flow or air in the system):** If there is insufficient water flow in the garden hose or if air enters the inlet side of the pump, cavitation will occur. The pump will become noisy and vibrate. Damage to the pump can occur. If cavitation occurs, check for the following:
   a. Filter screen at inlet is dirty or blocked.
   b. Small diameter garden hose being used. (The longer the hose, the larger the required diameter.) Garden hoses available in ½", ⅝" or ¾".
   c. Insufficient water flow. With the garden hose disconnected from the unit and the valve turned on, a full stream should flow two feet or more from the hose end.
   d. Check for kinks in garden hose.
   e. Be sure hose gaskets are used at both ends of hose connections.

4. **Pump Requirements:** Change crankcase oil after first 50 hours of operation, then at regular intervals of 200 hours or less, depending on operating conditions. Use ONLY Giant crankcase oil or a 20W-50 synthetic oil. Failure to comply with these conditions voids the warranty.

Troubleshooting

PROBLEM	POSSIBLE CAUSES	CORRECTIVE ACTION
Low Pressure	Inlet suction clogged or improper size.	Clean. Use adequate size. Check more frequently.
	Inadequate water supply.	Check flow available to pump.
	Worn nozzle.	Replace nozzle of proper size.
	Leaky discharge hose.	Repair or replace.
	Pressure gauge inoperative or not registering accurately.	Check with new gauge. Replace worn or damaged gauge.
	Air leak in inlet plumbing.	Disassemble, reseal, and reassemble.
	Worn packing seals.	Replace packing seals.
	Broken valve spring.	Replace spring.
	Fouled or dirty inlet or discharge valves.	Clean inlet and discharge valves.
	Worn or plugged relief valve on pump.	Clean, reset, and replace.
	Cavitation.	Check suction lines on inlet of pump for restrictions.
Rough/pulsating operation with pressure drop.	Worn packing.	Replace packing.
	Inlet restriction.	Check system for stoppage, air leaks, and correctly sized inlet plumbing.
	Cavitation.	Check inlet lines for restrictions and/or proper size.
Water in crankcase.	High humidity.	Reduce oil change interval.
	Leakage of crankcase or seals installed backwards.	Replace packing.
	Worn seals.	Replace seals.
Noisy operation.	Worn bearings.	Replace bearings. Refill crankcase with recommended lubricant.
	Cavitation.	Check inlet lines for restrictions and/or proper size.
Frequent or premature failure of the packing.	Damaged or worn plungers.	Replace plungers.
	Abrasive material in the fluid being pumped.	Install proper filtration on pump inlet plumbing.
	Excessive pressure and/or temperature of fluid being pumped.	Check pressures and fluid inlet temperature. Be sure they are within specified range.
	Over pressure of pumps.	Reduce pressure.
	Running pump dry.	Do not run pump with inadequate water supply.
Excessive leakage.	Worn or cracked plungers.	Replace plungers.
	Inlet pressure too high.	Reduce inlet pressure.
High crankcase temperature.	Wrong grade of oil.	Use Giant oil or 20W-50 synthetic oil.
	Improper amount of oil in crankcase.	Adjust oil level to proper amount.

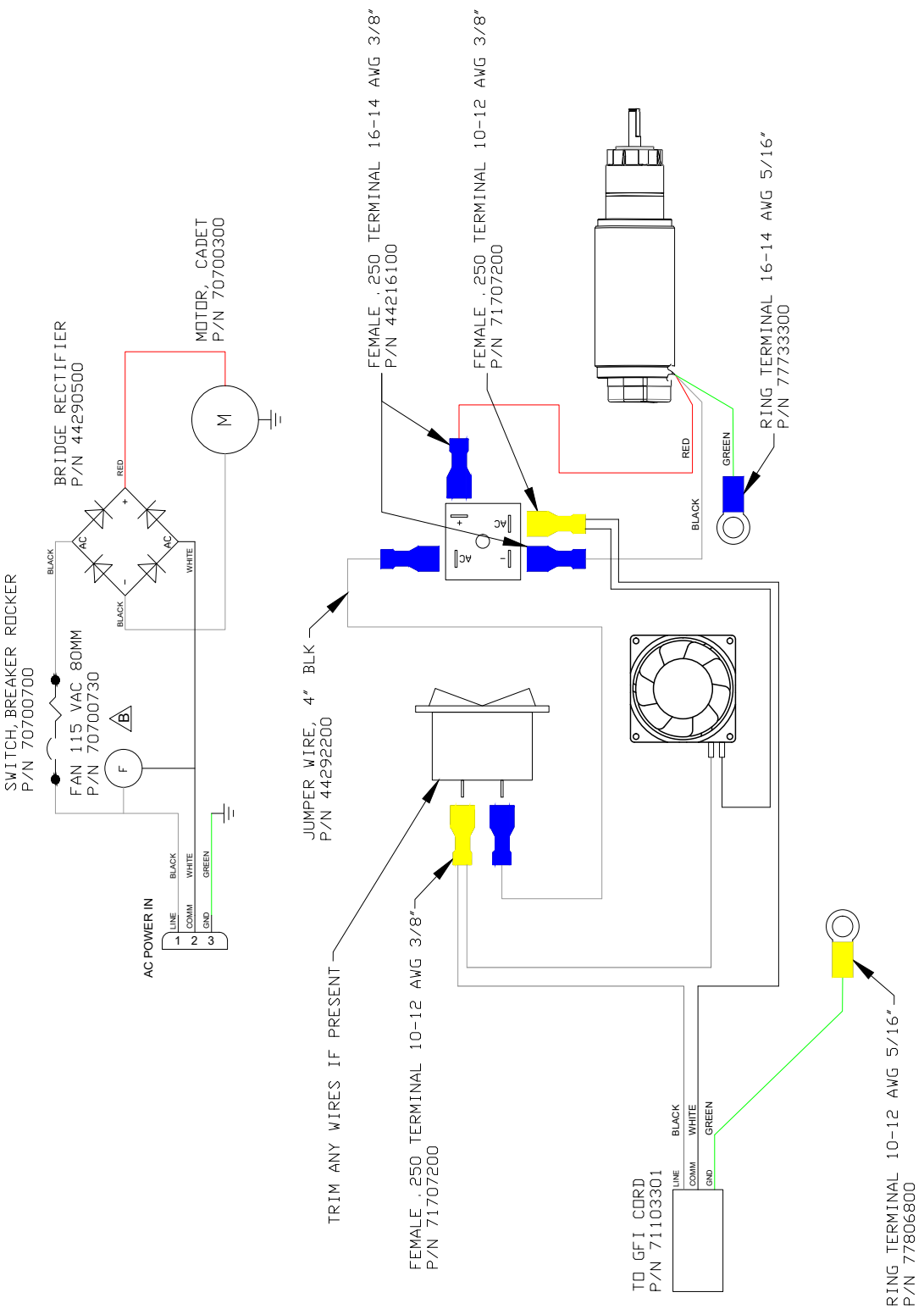
Final Assembly

1. High Pressure Hose
2. Supply Hose
3. Pump Inlet
4. Pump Outlet
5. Throttle Valve
6. Pressure Gauge
7. GFCI Cord
8. Gloves
9. On/Off Switch
10. Closed Nozzle
11. Open Nozzle
12. Nozzle Cleaner
13. Supply Valve
14. Quick Guide
15. Organizer
16. Case

STANDARD ACCESSORIES

Part Number	Description
71109900	Tip cleaner
543500-01	Hose S.S. trap 30' x 3⁄16" ID
70700670	Open nozzle
72705400	Closed nozzle
5G243631	Gloves
70700160	Quick guide
71721400	Male quick coupler ¼ FNPT

Wire Diagram



Warranty Information

For our terms and conditions, including warranty, please visit https://spartantool.com/pages/terms-and-conditions. For warranty assistance, please contact us at (800) 435-3866 or customerservice@spartantool.com.

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