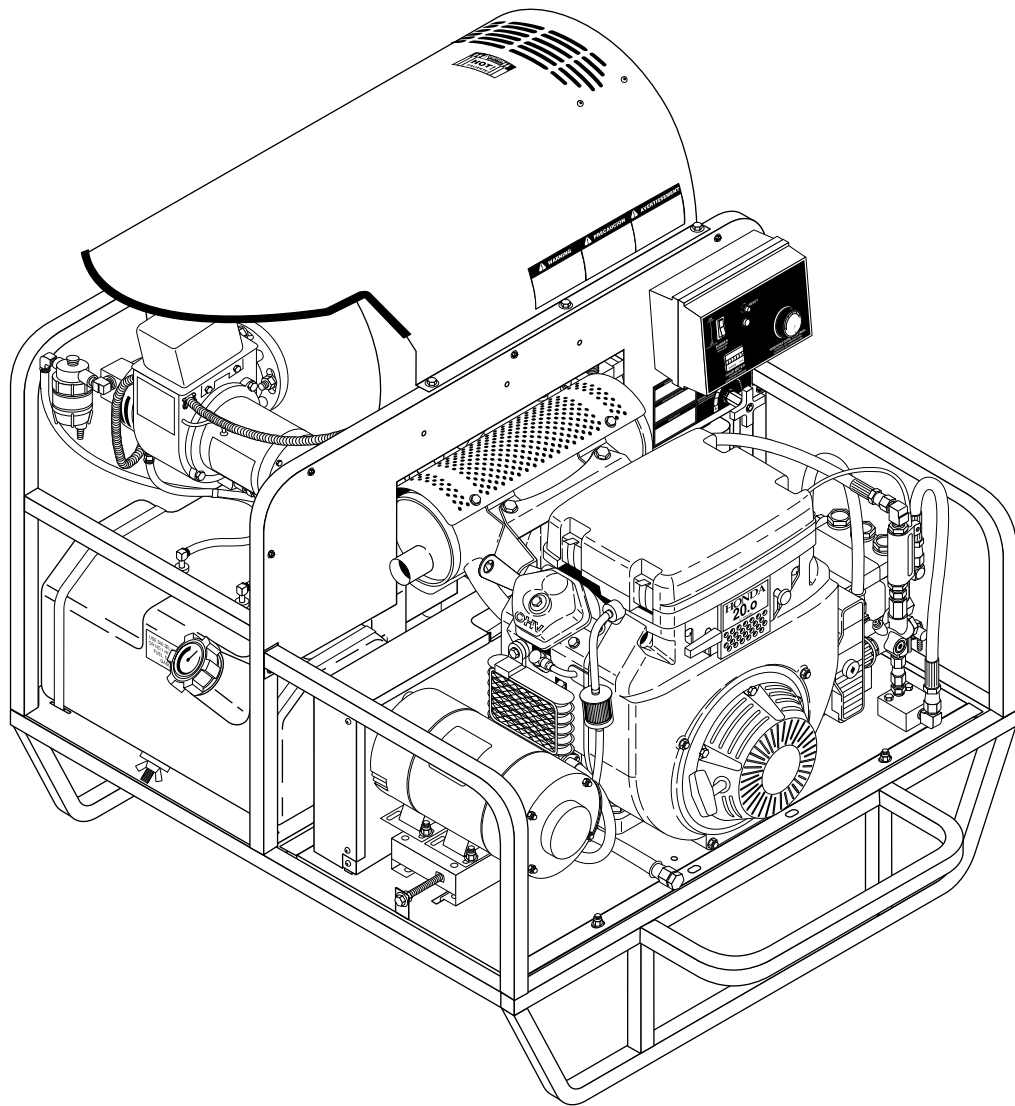




TNT

OPERATOR'S MANUAL

-
- | | | | |
|-----------------|----------------|-----------------|-----------------|
| ■ TNT-503021E | ■ TNT-503531E | ■ TNT-603531E | ■ TNT-503061E |
| ■ TNT-503021E/G | ■ TNT-503531EG | ■ TNT-603531E/G | ■ TNT-503061E/G |
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Model Number _____

Serial Number _____

Date of Purchase _____

The model and serial numbers will be found on a decal attached to the pressure washer. You should record both serial number and date of purchase and keep in a safe place for future reference.

INTRODUCTION

Thank you for purchasing a TNT Pressure Washer.

This manual covers the operation and maintenance of the TNT-503021E, TNT-503021E/G, TNT-503531E, TNT-503531E/G, TNT-603531E, TNT-603531E/G, TNT-503061E and TNT-503061E/G washers. All information in this manual is based on the latest product information available at the time of printing.

Landa, Inc. reserves the right to make changes at any time without incurring any obligation.

The TNT Series was designed for maximum use of 8 hours per day, 5 days per week.

Owner/User Responsibility:

The owner and/or user must have an understanding of the manufacturer's operating instructions and warnings before using this Landa pressure washer. Warning information should be emphasized and understood. If the operator is not fluent in English, the manufacturer's instructions and warnings shall be read to and discussed with the operator in the operator's native language by the purchaser/owner, making sure that the operator comprehends its contents.

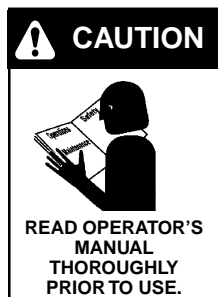
Owner and/or user must study and maintain for future reference the manufacturers' instructions.

This manual should be considered a permanent part of the machine and should remain with it if machine is resold.

When ordering parts, please specify model and serial number.

IMPORTANT SAFETY INFORMATION

WARNING: When using this product basic precautions should always be followed, including the following:



CAUTION: To reduce the risk of injury, read operating instructions carefully before using.

1. Read the owner's manual thoroughly. Failure to follow instructions could cause a malfunction of the machine and result in death, serious bodily injury and/or property damage.
2. Know how to stop the machine and bleed pressures quickly. Be thoroughly familiar with the controls.
3. Stay alert — watch what you are doing.

4. All installations must comply with local codes. Contact your electrician, plumber, utility company or the selling distributor for specific details.



WARNING: Risk of asphyxiation. Use this product only in a well ventilated area.

5. Avoid installing machines in small areas or near exhaust fans. Exhaust contains poisonous carbon monoxide gas; exposure may cause loss of consciousness and may lead to death. It also contains chemicals known in certain quantities, to cause cancer, birth defects, or other reproductive harm.



WARNING: Flammable liquids can create fumes which can ignite, causing property damage or severe injury.

CAUTION: Risk of fire. Do not add fuel when the product is operating.

6. Allow engine to cool for 2 minutes before refueling. If any fuel is spilled, make sure the area

is dry before testing the spark plug or starting the engine. (Fire and/or explosion may occur if this is not done.)

Gasoline engines on mobile or portable equipment shall be refueled:

- (a) outdoors;
- (b) with the engine on the equipment stopped;
- (c) with no source of ignition, within 10 feet of the dispensing point; and
- (d) with an allowance made for expansion of the fuel should the equipment be exposed to a higher ambient temperature.

In an overfilling situation, additional precautions are necessary to ensure that the situation is handled in a safe manner.

WARNING: Risk of explosion – do not spray flammable liquids.

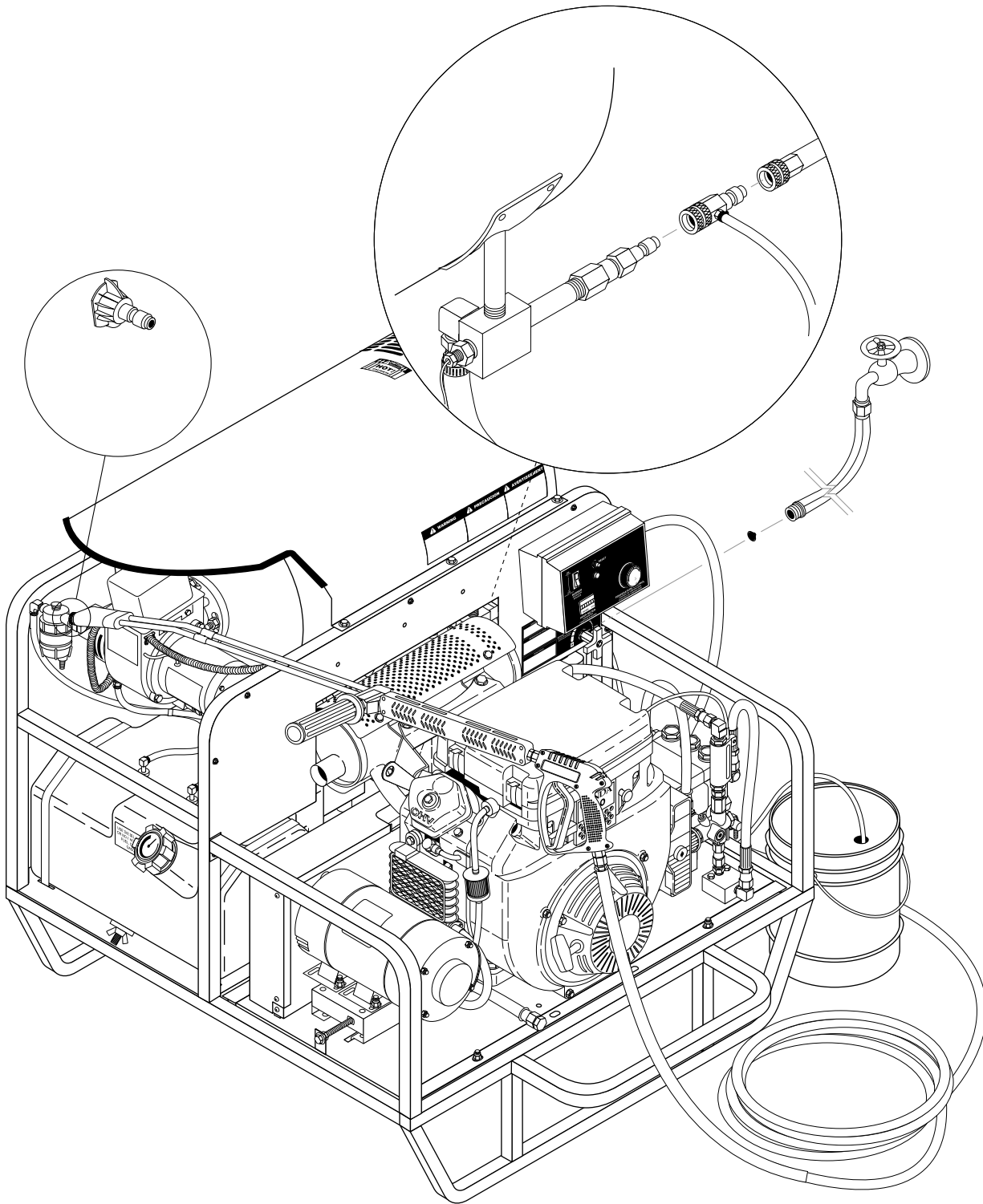
7. Do not place machine near flammable objects as the engine is hot.



WARNING: Risk of injection or severe injury to persons - Keep clear of nozzle - Do not touch or direct discharge stream at persons. This machine is to be used only by trained operators.

CAUTION: Hot discharge fluid. Do not touch or direct discharge stream at persons.

COMPONENT IDENTIFICATION



- High pressure developed by these machines will cause personal injury or equipment damage. Use caution when operating. Do not direct discharge stream at people, or severe injury or death will result.



WARNING: High pressure spray can cause paint chips or other particles to become airborne and fly at high speeds.

- Eye safety devices, safety clothing and foot protection must be worn when using this equipment.
 - Never make adjustments on machine while it is in operation.
- WARNING: Spray gun kicks back. Hold with both hands.**
- Grip cleaning wand securely with both hands before starting the cleaner. Failure to do this could result in injury from a whipping wand.
 - Machines with spray gun should not be operated with the spray gun in the off position for extensive periods of time as this may cause damage to the pump.
 - The best insurance against an accident is precaution and knowledge of the machine.
 - TUFF will not be liable for any changes made to our standard machines, or any components not purchased from TUFF.



WARNING: Keep wand, hose and water spray away from electrical wiring or fatal electric shock may result.

- Read engine safety instructions provided.
- Never run pump dry or leave spray gun closed longer than 5 minutes.
- Inlet water must be cold and clean fresh water.
- Use No. 1 or No. 2 Heating Oil (ASTM D306) only. **NEVER** use gasoline in your fuel oil tank. Gasoline is more combustible than fuel oil and could result in a serious explosion. **NEVER** use crankcase or waste oil in your burner. Fuel unit malfunction could result from contamination.
- Do not confuse gasoline and fuel oil tanks. Keep proper fuel in proper tank.
- Protect machine from freezing.
- Be certain all quick coupler fittings are secured before using pressure washer.
- Do not allow acids, caustic, or abrasive fluids to pass through the pump.

- To reduce the risk of injury, close supervision is necessary when a product is used near children. Do not allow children to operate the pressure washer. **This machine must be attended during operation.**
- Do not operate this product when fatigued or under the influence of alcohol or drugs. Keep operating area clear of all persons.
- Protect discharge hose from vehicle traffic and sharp objects. Inspect condition of high pressure hose before using or bodily injury may result.
- Before disconnecting discharge hose from water outlet, turn burner off and open spray gun to allow water to cool below 100°F before stopping the machine. Then open the spray gun to relieve pressure. Failure to properly cool down or maintain the heating coil may result in a steam explosion.
- TUFF will not be liable for any changes made to our standard machines or any components not purchased from TUFF.
- Do not overreach or stand on unstable support. Keep good footing and balance at all times.
- This machine must be attended during operation.
- CAUTION: Risk of injury. Disconnect battery ground terminal before servicing.**

PRE-OPERATION CHECK

- Pump oil (SAE 30W non-detergent oil, General)
- Cold water supply (6 gpm • 58" • 20 psi)
- Hose, wand, nozzle (nozzle size per serial plate)
- Water filter (intact, non restrictive)
- Engine fuel (unleaded 86 or higher octane)
- Engine oil (SAE 10W30)
- Burner fuel (No. 1 home heating fuel or diesel)

SET-UP PROCEDURES

This machine is intended for outdoor use only. Machine must be stored indoors when not in use.

- Attach a 5/8" water supply hose to inlet connector. Minimum flow should be 6 or 10 gpm depending on model of machine.
- Attach high pressure hose to discharge nipple using quick coupler. Lock coupler securely into place by pulling back coupler collar and inserting it into discharge nipple, then pushing collar forward to lock in place.
- Attach variable pressure control wand to spray gun using teflon tape on threads to prevent leakage.
- Attach swivel connector on discharge hose to spray gun using teflon tape on threads.

5. Check engine and pump oil level by removing oil dipstick, making sure oil is on proper indicator marking. Oil should be visible one half way up sight glass (SAE 30W non-detergent).
6. Fill red gasoline tank.
7. Fill green fuel tank. Do not confuse gasoline and fuel oil (diesel) tanks. Keep proper fuel in proper tank.
8. Install proper battery making sure that the red cable is attached to the positive terminal. Use a 12V Group 24 battery.

OPERATING INSTRUCTIONS

1. Read engine warning and operating instructions.
2. Turn on water at faucet. Check for water leaks; tighten as needed.
3. Pull wand coupler collar back and insert desired pressure nozzle into wand coupler then secure by pushing coupler collar forward.

NOTE: Variable pressure control wand handle must be turned clockwise to enable water to flow out of the high pressure nozzle.

4. Pull spray gun trigger to relieve pressure. Read engine manual provided and pull choke. Turn engine switch to the START position and hold it there until the engine starts. **NOTE:** Do not engage electric starter for more than five (5) seconds at a time. If engine fails to start, release the switch, pull spray gun trigger to relieve pressure and wait ten seconds before operating the start again. When the engine starts, allow the engine switch to return to the ON position. If the engine is to be started without the battery, turn switch to start position and pull starter grip to start. Turn off choke.

CAUTION: Small engines may kick back. Do not hold starter grip tightly in hand.

5. With the spray nozzle pointed away from you or anybody else, press the trigger on the spray gun to obtain pressurized cold water spray.
6. For hot water, turn the burner switch to ON when a steady stream of water flows out of the spray gun. Burner will now light automatically.

NOTE: Do not start machine with burner switch on.

7. To apply detergent, place detergent pick-up tube into a container of detergent and turn the detergent valve counter clockwise (see page 4).

GENERAL WASHING TECHNIQUES

1. Hold spray nozzle approximately one foot from the surface being cleaned. Spray at an angle to get under the material and lift it off.
2. When detergent is required for cleaning, start washing from the bottom and work up. Better detergent economy and faster results will be obtained by allowing the chemical to set 5-10 minutes. After washing, rinse from the top down.
3. Cleaning heavy dirt or material away with a hard stream of clear water is recommended before using a cleaning agent.

SHUT DOWN PROCEDURES

1. Rinse all detergent lines with clean water, to remove any soap residue.
2. Turn burner switch off and continue spraying, allowing the water to cool to below 100°F.
3. Turn engine key switch off.
4. Turn off water supply.
5. Squeeze trigger on spray gun to relieve remaining pressure.
6. Remove water supply hose.
7. In freezing conditions, disconnect water, drain float tank and add a 50/50 mixture of anti-freeze. Start the machine and squeeze trigger on spray gun to allow the mixture to flow out of the wand. Now turn off the engine. See winterizing procedure under Maintenance and Service.



CAUTION: Do not allow pump to run longer than 5 minutes without water. Disconnect all hoses to allow water to drain.

With machine off, open spray gun to release pressure before removing discharge hose.

WARNING: Some detergents may be harmful if inhaled or ingested, causing severe nausea, fainting or poisoning. The harmful elements may cause property damage or severe injury.

HOW TO USE THE OPTIONAL DETERGENT INJECTOR

The machine can siphon and mix detergents with the use of Landa's detergent injector kit.

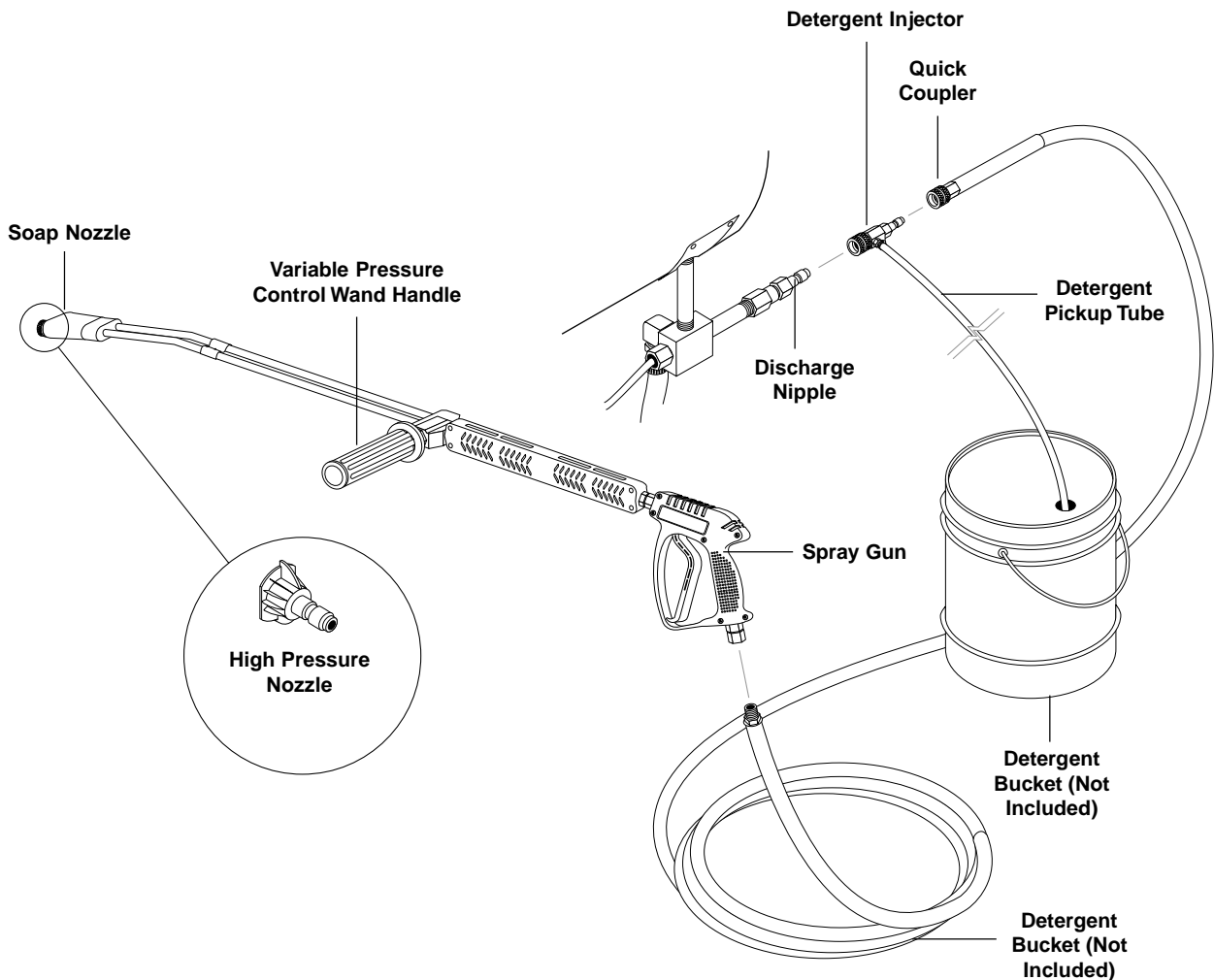
1. Pull injector quick coupler collar back and secure on discharge nipple. Injector valve body arrow should point in direction of flow.
2. Connect high pressure hose to injector discharge nipple securing quick coupler.
3. Start machine as outlined in Operating Instructions.
4. Place detergent pick-up tube into container of detergent.
5. Turn pressure control handle counterclockwise on the variable pressure wand. This lowers the pressure by directing the water flow through the soap nozzle and allows the detergent injector to siphon soap.

6. Open spray gun. Water detergent ratio is approximately 15 to 1.

7. When you finish washing, rinse by simply turning the variable pressure wand control handle clockwise to increase pressure.

NOTE: The detergent injector will not siphon detergent with the water flowing through the high pressure nozzle at the end of the wand.

8. For clean up, place detergent c v tube into container of clear water and follow steps 4 and 5 to prevent detergent deposits from damaging the injector.



PREVENTATIVE MAINTENANCE

1. Check to see that water pump is properly lubricated.
2. Follow winterizing instructions to prevent freeze damage to pump and coils.
3. Always neutralize and flush detergent from system after use.
4. If water is known to be high in mineral content, use a water softener on your water system, or de-scale as needed.
5. Do not allow acidic, caustic or abrasive fluids to be pumped through system.
6. Always use high grade quality cleaning products.
7. Never run pump dry for extended periods of time.
8. Use clean fuel-kerosene, No. 1 fuel oil, or diesel. Clean or replace fuel filter every 100 hours of operation. Avoid water contaminated fuel as it will damage the fuel pump.
9. If machine is operated with smoky or eye burning exhaust, coils will soot up, not letting water reach maximum operating temperature.
10. Never allow water to be sprayed on or near the engine or burner assembly or any electrical component.
11. Periodically delime coils as per instructions.
12. Check to see that engine is properly lubricated.

It is advisable, periodically, to visually inspect the burner. Check air inlet to make sure it is not clogged or blocked. Wipe off any oil spills and keep equipment clean and dry.

The flow of combustion and ventilating air to the burner must not be blocked or obstructed in any manner.

The area around the Landa washer should be kept clean and free of combustible materials, gasoline and other flammable vapors and liquids.

MAINTENANCE AND SERVICE

Unloader Valves:

Unloader valves are preset and tested at the factory before shipping. Occasional adjustment of the unloader may be necessary to maintain correct pressure.

Winterizing Procedure:

Damage due to freezing is not covered by warranty. Adhere to the following cold weather procedures whenever the washer must be stored or operated outdoors under freezing conditions.

During winter months, when temperatures drop below 32°F, protecting your machine against freezing is necessary. Store the machine in a heated room. If this is not possible then mix a 50/50 solution of anti-freeze and water in the float tank. Turn the engine on to siphon the anti-freeze mixture through the machine. If compressed

air is available, an air fitting can be screwed into the float tank by removing the float tank strainer and fitting. Then inject the compressed air. Water will be blown out of the machine when the trigger on the spray gun is opened.

High Limit Hot Water Thermostat:

For safety, each machine is equipped with a temperature sensitive high limit control switch. In the event that the water should exceed its operating temperature, the high limit control will turn the burner off until the water cools then automatically reset itself. The thermostat sensor is located on the discharge side of the heating coil. The thermostat control dial is located on the control panel.

Pumps:

Use only SAE 30 weight non-detergent oil. Change oil after first 50 hours of use. Thereafter, change oil every three months or at 500 hour intervals. Oil level should be checked through use of dipstick found on top of pump, or the red dot visible through the oil gauge window. Oil should be maintained at that level.

Cleaning of Coils:

In alkaline water areas, lime deposits can accumulate rapidly inside the heating coil. This growth is increased by the extreme heat build up in the coil. The best preventative for liming conditions is to use high quality cleaning detergents. In areas where alkaline water is an extreme problem, periodic use of Landa Deliming Powder (C-Tech Part #9-028008) will remove lime and other deposits before coil becomes plugged. (See Deliming instructions for use of Landa Deliming Powder.)

Deliming Coils:

Periodic flushing of coils or optional float tank is recommended.

- Step 1 Fill a container with 4 gallons of water, then add 1 lb. of deliming powder. Mix thoroughly. Pour mixture into float tank.
- Step 2 Remove wand assembly from spray gun and put spray gun into float tank. Secure the trigger on the spray gun into the open position.
- Step 3 Turn engine on, allowing solution to be pumped through coils back into the float tank. The solution should be allowed to circulate 2-4 hours or until the color changes.
- Step 4 After circulating solution, flush the entire system with fresh water. Clean out float tank and then reinstall wand assembly to spray gun.

Removal of Soot and Heating Coil:

In the heating process, fuel residue in the form of soot deposits may develop between the heating coil pipe and block air flow which will affect burner combustion. When soot has been detected on visual observation, the soot on the coil must be washed off after following the coil removal steps (See Coil Removal on page 9).

Rupture Disk:

If pressure from pump or thermal expansion should exceed safe limits, the rupture disk will burst allowing high pressure to be discharged through hose to ground. When disk ruptures it will need to be replaced.

Fuel:

Use clean fuel oil that is not contaminated with water and debris. Replace fuel filter and drain tank every 100 hours of operation.

Use No. 1 or No 2 Heating Oil (ASTM D306) only. NEVER use gasoline in your burner fuel tank. Gasoline is more combustible than fuel oil and could result in a serious explosion. NEVER use crankcase or waste oil in your burner. Fuel unit malfunction could result from contamination.

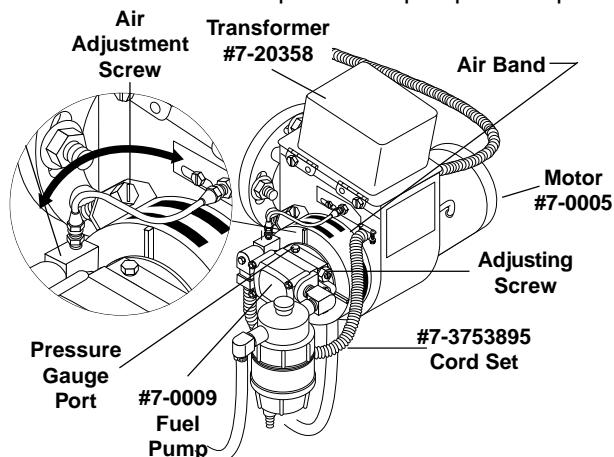
Fuel Control System:

This machine utilizes a fuel solenoid valve located on the fuel pump to control the flow of fuel to the combustion chamber. The solenoid, which is normally closed, is activated by a flow switch when water flows through it. When the operator releases the trigger on the spray gun, the flow of water through the flow switch stops, turning off the electrical current to the fuel solenoid.

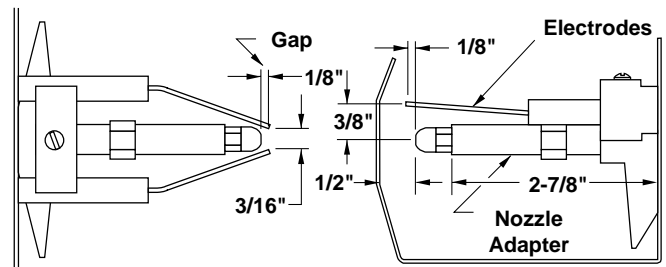
The solenoid then closes, shutting off the supply of fuel to the combustion chamber. Controlling the flow of fuel in this way gives an instantaneous burn-or-no-burn situation, thereby eliminating high and low water temperatures and the combustion smoke normally associated with machines incorporating a spray gun. Periodic inspection, to insure that the fuel solenoid valve functions properly, is recommended. This can be done by operating the machine and checking to see that the burner is not firing when the spray gun is in the OFF position.

Fuel Pressure Adjustment:

To control water temperature, adjust fuel pressure by turning the regulating pressure adjusting screw clockwise to increase, counterclockwise to decrease. Do not exceed 200 psi. **NOTE:** When changing fuel pump, a bypass plug must be installed in return port or fuel pump will not prime.



DC Electrodes Setting



Top View

Side View

Periodically Check Wiring Connections. If Necessary To Adjust Electrodes, Use Diagram.

Burner Nozzle:

Keep the tip free of surface deposits by wiping it with a clean, solvent saturated cloth, being careful not to plug or enlarge the nozzle. For maximum efficiency, replace the nozzle each season.

Air Adjustment:

Machines are preset and performance tested at the factory - elevation 100'. A one-time initial correction for your location will pay off in economy, performance, and extended service life. If a smoky or eye-burning exhaust is being emitted from the stack, two things should be checked. First, check the fuel to be certain that kerosene or No. 1 home heating fuel is being used. Next, check the air adjustment on the burner.

Coil Removal:

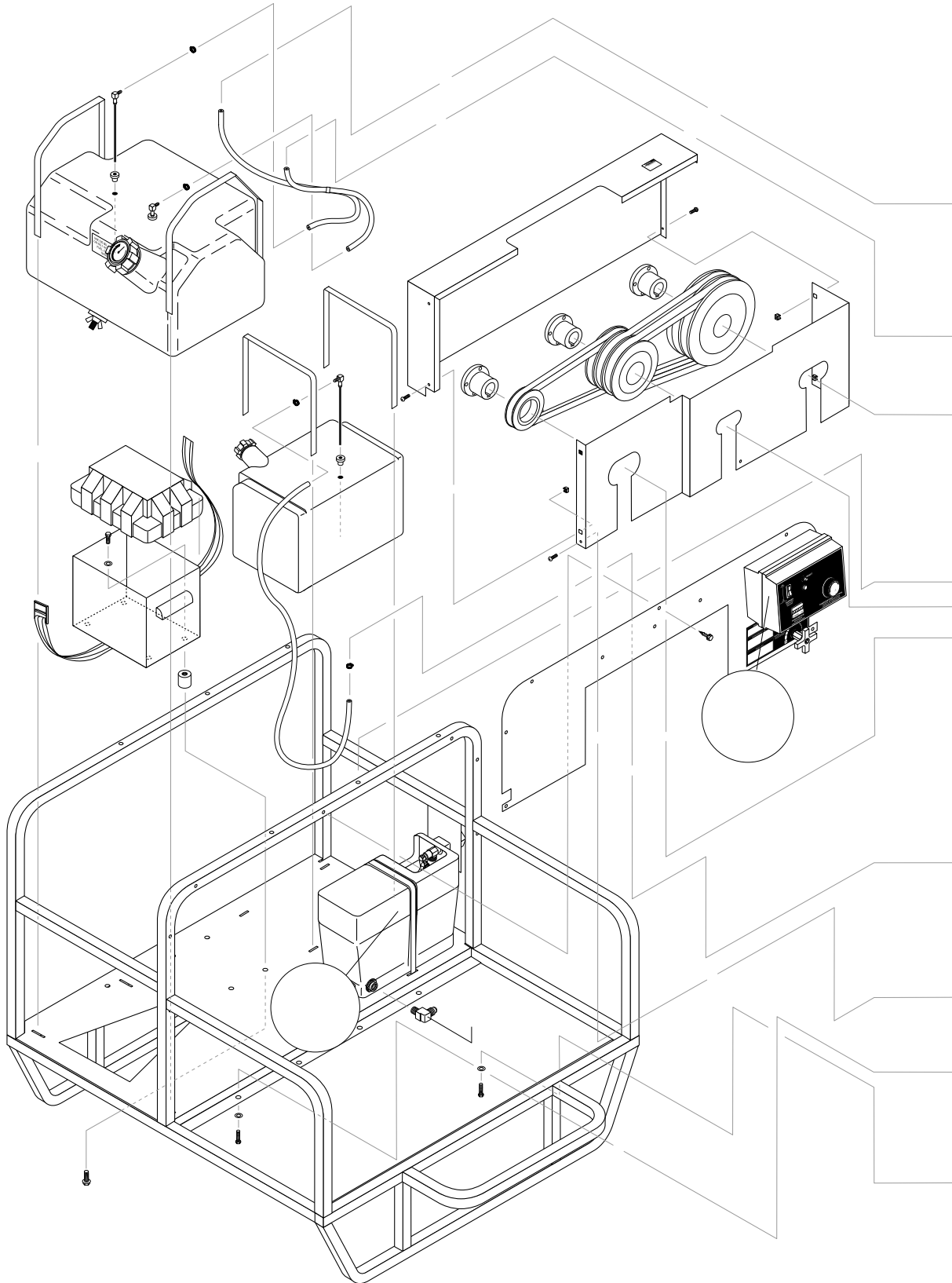
Removal of coil because of freeze breakage, or to clean soot from it can be done quickly and easily.

1. Disconnect hose from pump to inlet side of the coil.
2. Carefully disconnect the thermostat sensor making sure you do not crimp the capillary tube.
3. Remove burner assembly from combustion chamber.
4. Remove the 3-3/8 bolts from each side of coil and tank assembly (these bolts are used to fasten tank to chassis).
5. Remove fittings connected to the 1/2" pipe nipples from inlet and discharge sides of coil.
6. Remove top tank wrap, bend back insulation tabs and fold back blanket.
7. Remove bolts that hold down coil to bottom wrap.
8. Remove coil.
9. Replace or repair any insulation found to be torn or broken.
10. Remove insulation retainer plates.

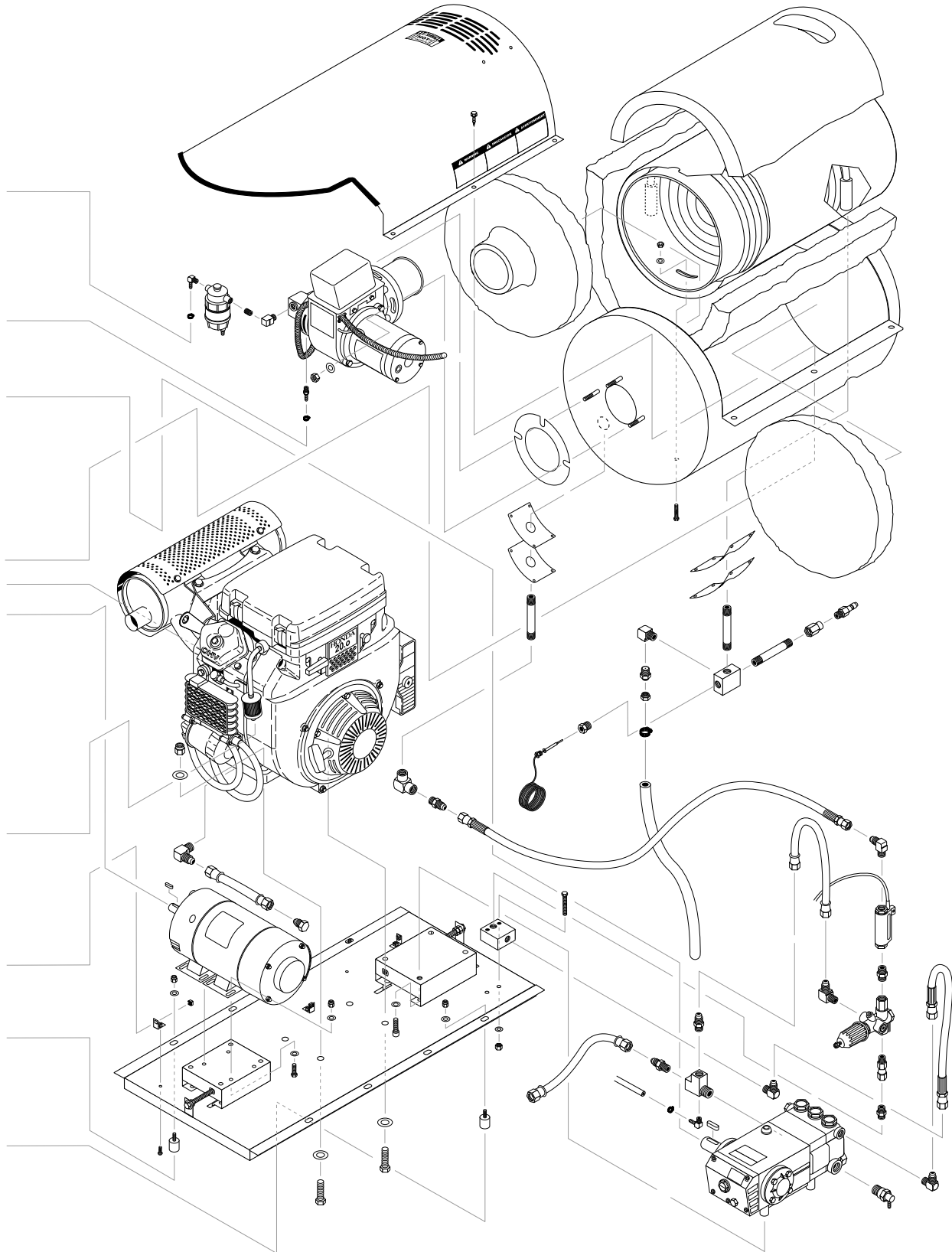
Coil Reinstallation:

Reinstall new or cleaned coil reversing Steps 9 through 1.

EXPLODED VIEW
LEFT SIDE



EXPLODED VIEW
RIGHT SIDE



**EXPLODED VIEW
PARTS LIST**

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	95-07200010	Top Wrap, SS, PHW Series II	1	27	2-00101	Nipple, 1/2" x 3", Galv.	2
2	2-01104	Trim, 1/16" Black, /ft	.6	28	2-00241	Coupling, 1/2" x 3/8" Reducing	1
3	90-1006	Bolt, 5/16" x 3/4"	4	29	2-2007	Nipple, 3/8" x 3/8" NPT St Mal	1
4	2-0031	Elbow, 3/8" Street	1		2-20022	Nipple, 3/8" Female Fastener	1
5	90-1016	Bolt, 3/8" x 1", NC HH	15	30	2-0032	Elbow, 1/2" Street	1
6	7-01484	Insulation/Blanket - Die Cut 28" x 24"	1	31	2-90041	Clamp Screw #16	1
7	7-01430	Insulation Blanket - No Foil, 24" x 57"	1	32	4-05088	Thermostat, General, 302°	1
8	10-02011	Label, Use only Gasoline	1	33	4-02047725	Hose, 25" x 3/8", 100R2, Pres Loop	1
9	10-02025A	Label, Hot/Caliente	3	34	4-02047716	Hose, 16" x 3/8", 100R2 Pres Loop	1
10	10-02028	Label, Warning- Exposed Pulleys	2	35	90-19959	Screw, 3/8" x 1" HX Wash	6
11	7-0141	Insulation, Burner Head, w/Hole	1	36	90-2001	Nut, 5/16" ESNA	4
12	95-07121212	Coil Replacement Schedule 80 w/Mild Steel Wrap	1	37	90-4001	Washer, 5/16" Flat SAE	8
13	95-07200012	Wrap, Bottom, Stainless Steel	1	38	2-1089	Hose Barb, 1/4" Barb x 1/4" Pipe, 90°	3
14	7-0140	Insulation, Front Head, No Hole	1	39	2-1037	Tee, 1/4" Branch Male	1
15	7-12484	Gasket, Standard - Large	1	40	2-1076	Bushing, 1/2" x 1/4" Pipe	1
16	7-0144	Gasket, Burner Plate	2	41	2-11080	Push-on 3/4" x 1/2" Male	1
17	95-07121113	PHW/VNG Insulation Retainer Plate	2	42	4-02120000	Hose, 3/4", Push-on /ft.	1.3
18	7-00030	Burner Assy, Beckett 12 Volt	1	43	5-3208	Unloader, AR, AL607	1
	7-58726	▲ Electrode Rod & Insulator Assy	1	44	2-00101	Nipple, 1/2" x 4" Gal Sch 80	1
	7-21441	▲ Solednoid, Valve, Fuel 12 Volt	1	45	2-1060	Elbow, 1/2" JIC x 3/8" 90°	3
	7-21404	▲ Wheel, Blower Fan	1	46	95-07101226	Discharge Block, 1/2"	1
	7-21405	▲ Coupling, Fuel	1	47	90-1020	Bolt, 3/8" x 2", NC HH	2
	7-0102	▲ Nozzle, Burner 2.00, 90°, B	1	48	95-07101216/B	Block, Unloader, 3/8" x 3/8" Brass	1
	7-0103	▲ Nozzle, Burner, 2.25, 90°, B	1	49	4-02130050	Hose, Conduit 7/8" /ft.	2
19	2-1022	Elbow, 1/4" Street	1	50	10-02029	Label, Danger Cool Engine	1
20	2-1002	Nipple, 1/4" Close	1	51	2-0079	Swivel, 1/2" JIC x 3/8" Male	1
21	2-9905	Filter, Fuel/Oil H2O Separator	1	52	2-0051	Nipple, 1/2" JIC x 3/8" Pipe	1
22	90-1019	Bolt, 3/8" x 1-3/4" Tap	3	53	90-1011	Bolt, 5/16" x 2", NC HH	4
23	2-9000	Clamp, Screw, #4	7	54	2-10730	Elbow, 3/4" JIC x 1/2", 90°	1
24	4-02100000	Hose, 1/4", Push-on /ft	14	55	2-1105	Swivel, 1/2" JIC Fem, Push-on	4
25	2-1085	Hose Barb, 1/4" Barb x 1/4" ML Pipe	1	56	4-02110000	Hose, 1/2" Push-on /ft.	1.5
26	2-00120	Nipple, 1/2" x 5" (4-2000, 4-3000, 5-3000, 5-3500)	1	57	2-1062	Elbow, 1/2" JIC x 1/2" 90°	1
	2-00123	Nipple, 1/2"x5" Black Pipe (4-4000)	2	58	2-0053	Elbow, 1/2" JIC, 3/8" 90°	2
				59	2-1035	Cross, 1/2" Female, Pipe	1
				60	2-30082	Pump Protector, 1/2" PTP	1
				61	2-1007	Nipple, 1/2" Hex	1
				62	4-02100030	Inlet Hose, 30" Supply Water	1
				63	4-02100013	Inlet Hose, 13" Supply Water	1

EXPLODED VIEW PARTS LIST (continued)

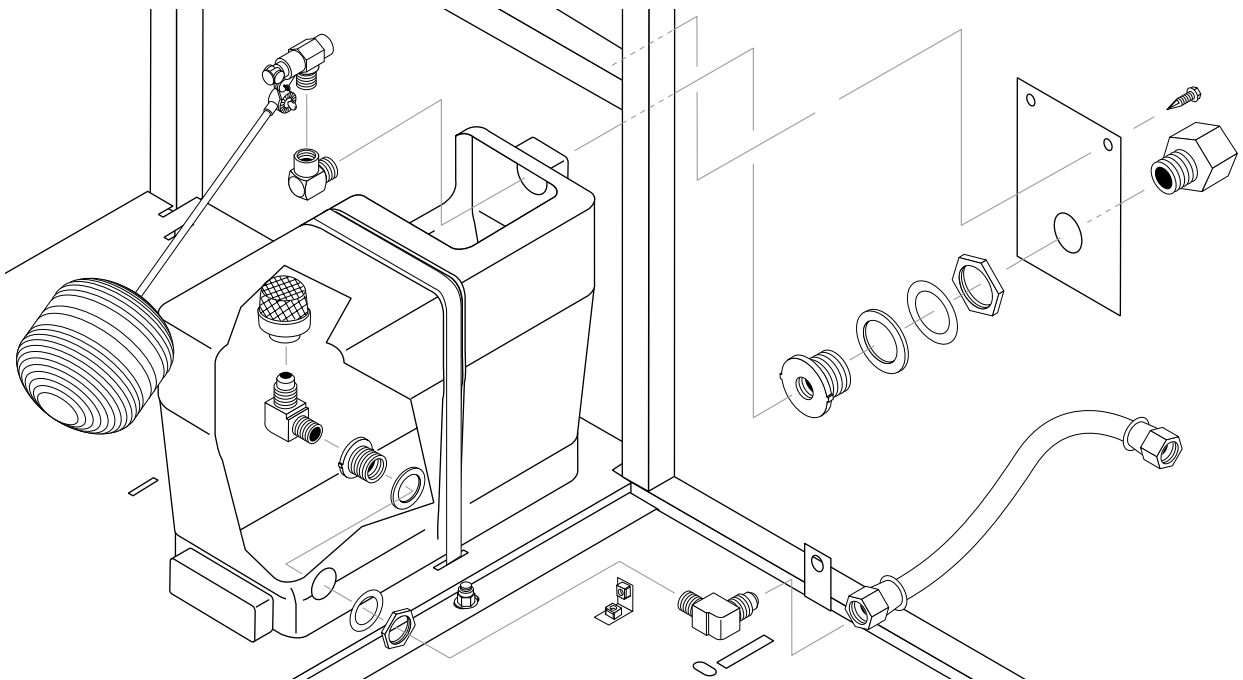
ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
64	2-10712	Tee, 1/2" x 1/2" JIC 51#	1	79	5-40403001	Pulley, BK30H (4-2000) GEN.	1
65	2-1024	Elbow, 1/2" Street, Brass	1		5-40403201	Pulley BK32H (4-4000, 5-3000, 5-3500) GEN	1
66	6-0601	Generator, Winco (2000 watts)	1		5-40403401	Pulley, BK34H (4-3000) GEN.	1
66	6-0107	▲ Cord, Molded, Royal, K1426, 14-3	1	80	5-604022	Belt, BX 22 (all models)	1
67	2-0006	Nipple, 3/8" Hex	1	81	5-531112	Bushing, P2, x 1" (all models)	1
68	95-0712112	Rail, Pump or Generator Combo (PHW/Skid)	2	82	5-407034	Pulley, 3 TB 34 (all models)	1
69	95-07141110	Retainer, Pump Take Up, Plated	2	83	5-602033	Belt, AX33 (4-2000)	2
70	90-10220	Bolt, 3/8" x 3-1/2", Tap	4		5-602035	Belt, AX35 (4-3000)	2
	90-2020	▲ Nut, Cage 3/8" x 12 GA	9		5-604032	Belt, BX32 (4-4000)	2
	90-2007	▲ Nut, 3/8", HEXNC	4		5-604036	Belt, BX36 (5-3000, 5-3500)	2
	90-4002	▲ Washer, 3/8", SAE, Flat	50	84	5-402084	Pulley, 2AK84 Pump (4-3000)	1
71	2-0056	Elbow, 1/2" JIC, 3/8", 90°, LBG (VAN., 20 HP Honda only)	1		5-40509001	Pulley, 2BK90 H Pump (5-3000, 5-3500)	1
	2-1101	▲ Adaptor, 3/8" x 1/4" (20 HP Honda only)	1		5-402074	Pulley, 2AK74 H Pump (4-2000)	1
72	2-1050	Plug, 1/2" JIC, Flare (VAN., 20 HP Honda only)	1		5-40506701	Pulley, 2BK67H (4-4000)	1
73	10-99087	Label, Warning	1	85	5-12024	Bushing, H x 24 mm (all models)	1
74	2-11050	Swivel, 3/4" JIC FEM, Push-on	1	86	95-071410294	Belt Guard, Cover, (4-2000, 4-3000)	1
75	5-0107	Engine, Honda, GX340 QAE, E/S 11 HP (PGHW4-20321E)	1		95-071410293	Belt Guard, Cover, (4-4000, 5-3000, 5-3500)	1
	5-010722	Engine, Honda GX390 KQAE2 13 HP E/S (4-30321E1)	1	87	2-3408	Rupture Disk Assy, 8000 PSI	1
	5-0309	Engine, Van. 16 HP ES No Tank (5-30221E)	1		2-3480	Rupture Disk Replacement Only, 8000 PSI	1
	5-0316	Engine, Van. 21 HP E/S (5-35221E, 4-40221E)	1	88	95-071410274	Belt Guard, End Support, Gen End (16, 20, 21 HP Engines)	1
	5-0105	Engine, Honda, GX340KQAP2 11 HP, Pull Start (4-20321)	1		95-071410230	Belt Guard, End Support, Gen End (9, 11, 13 HP Engines)	1
	5-01093	Engine, Honda, GX620K1QB3, 20 HP, 20 Amp E/S (5-35321E)	1	89	2-10884	Diptube, 17"	2
76	76-807964	Muffler, Exhaust Skid, 16 HP Van.	1	90	95-071410273	Belt Guard, End Support, Pump End (all models)	1
	76-808597	▲ Muffler, Van. 21 HP	1	91	95-071410292	Face Plate, Belt Guard (all models)	1
	77-VHLM4	▲ Muffler, (20 HP Honda)	1	92	5-23042	Pump, General, TS1011L (4-2000, 4-3000)	1
77	95-07101149	Guard, Muffler, Vanguard	1		5-2306	Pump, General TS2021-L (5-3000, 5-3500)	1
	95-07101153	Guard, Van. 21 HP	1		5-2320	Pump, General, T-9281 (4-4000)	1
	95-071011491	▲ Brace, Vangrd Muff. Bracket	2	93	90-1996	Bolt, 3/8" x 3/4", NC HH, whiz	5
78	5-511063	Bushing, H x 5/8" (Winco only)	1		90-2020	▲ Nut, Cage, 3/8" x 12 GA	9

**EXPLODED VIEW
PARTS LIST (continued)**

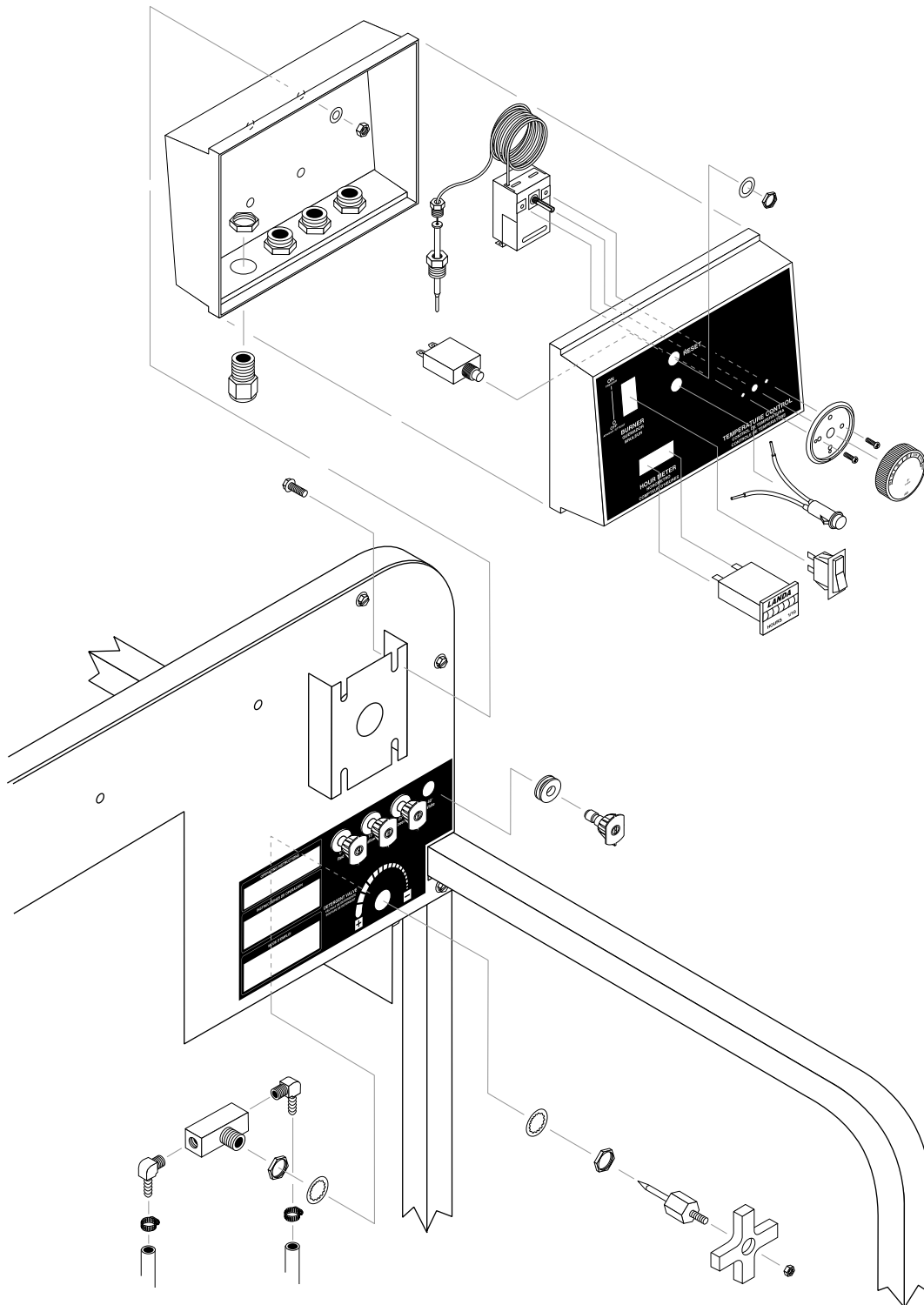
ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
94	90-10343	Bolt, 10 mm x 20 mm, HH	4	109	2-01167	Cap, Fuel Tank, Plastic (Van., 20 HP Honda only)	2
95	90-2002	Nut, 3/8" ESNA, NC	4	110	2-011501	Tank, Fuel, 10 Gallon Poly, Diesel, Green (4-4000, 5-3000, 5-3500)	1
96	90-4002	Washer, 3/8", SAE, Flat	50	111	2-011502	Tank, Fuel, 5 Gallon Poly, Gasoline, Red (4-4000, 5-3000, 5-3500)	1
97	2-0115	Box, Battery, M-100	1	112	2-1088	Hose Barb 1/4" Barb x 1/8" ML Pipe, 90°	1
	2-0117	Battery Box (5-35321E, 4-40321E Only)	1	114	2-01157	Cap, 14" w/Fuel Gauge, (4-2000, 4-3000)	1
	2-011500	▲ Plate, Battery Box, Large, Polypro	1	115	2-1088	Hose Barb 1/4" Barb x 1/8" ML Pipe 90°	2
	2-011700	▲ Plate, Battery Box, Small Polypro (5-35321E Only)	1	116	2-1052	Nipple, 1/2" JIC x 3/8" Pipe	1
98	90-10051	Bolt, 5/16" x 1/2", Button Head	4	117	10-020110	Label, Use only Kerosene	2
99	90-4008	▲ Washer, 5/16", Lock, Split Ring	4	118	2-1060	Elbow 1/2" JIC x 3/8", 90°	1
100	90-4011	Washer, 5/16" Star	4	119	95-07141045	Tank, Fuel, PGHW (4-2000, 4-3000)	1
101	2-01011	Isolator, 5/16", F x F, 1"	4	120	2-00602	Adapter, 1/2" MJIC x 1/2" FWPT, 90°	1
102	95-07141043	Power Platform, PGHW (All)	1	121	6-04174	Switch, Reed	1
103	90-4007	Washer, 3/8" x 1-1/2", Fender, SAE	8	122	2-4019	Gasket, Fuel Tank/ in.	24
104	2-0108	Bumper Pad, Engine	16	123	6-021730	Switch, Flow MV60	1
105	95-07141004	Cage, PGHW	1			▲ Not Shown	
106	2-0104	Pad, Hard Rubber	8				
107	2-10942	Swivel, 1/2" MP x 3/4" GHF w/Strainer	1				
108	95-07164010	Strap, MHP Fuel Tank w/Hole	8				

TNT FLOAT TANK ASSEMBLY & PARTS LIST (OPTIONAL) EXPLODED VIEW

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	2-01164	Tank, Plastic Universal	1	11	95-07121207	Lid and Hinges	1
2	2-0147	Plug, Overflow	2	12	2-3014	Valve, Fluidmaster 400A Float	2
3	2-0151	Plug, Float Tank (Items 3 - 6)	1	13	2-10942	Swivel, 1/2" MP x 3/4" GHF w/Strainer	1
	4-02100000	1/4", Push-on Hose /inch	1	14	2-1902	Strainer, Inlet Garden Hose	1
4	90-4030	Screw, 5/16" - 18 x 1-1/2" SS, Button Socket	1	15	2-1024	Elbow, 1/2" Street, Brass	1
5	90-4032	Washer, 5/16", SS	1	16	2-10712	Tee, 1/2" x 1/2" JIC #51	1
6	90-4031	Nut, 5/16" - 18, Wing, SS	1	17	90-300210	Screw, #14 x 1", Tek, Blk	5
7	2-1062	Elbow, 1/2" JIC x 1/2", 90°	1	18	90-40002	Washer, 1/4", SAE, Blk	3
8	2-11041	Connector, 1/2" Anchor	1	19	2-11080	Push-on, 3/4" x 1/2" Male	1
9	4-02100013	Inlet Hose, 13" Supply Water	1	20	2-1906	Strainer, 1/2" Basket	1
10	4-02100030	Inlet Hose, 30" Supply Water	1				



**TNT CONTROL PANEL
EXPLODED VIEW**

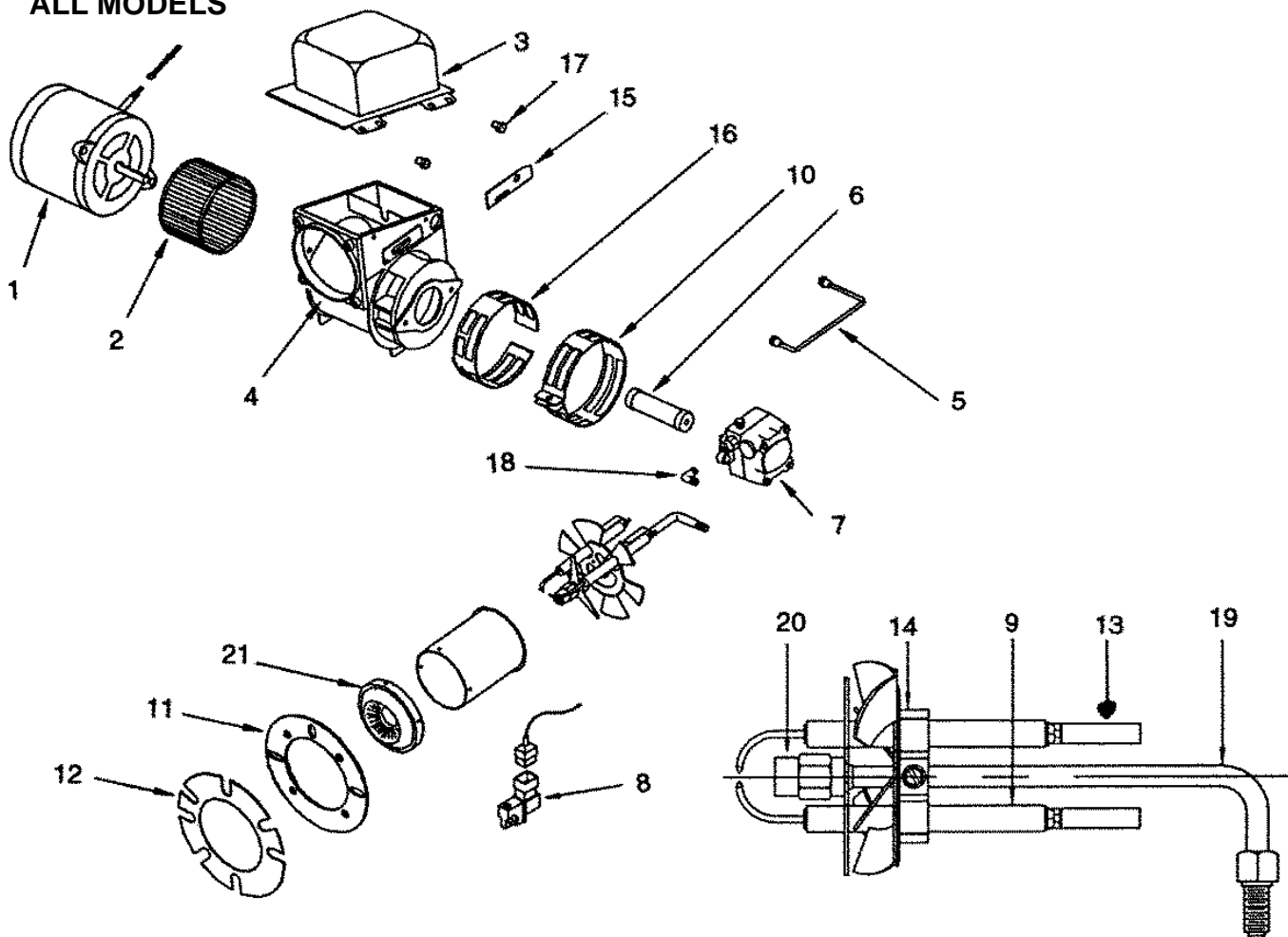


TNT CONTROL PANEL EXPLODED VIEW PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	10-07998	Label, PGHW Control Panel	1	18	4-12806000	Nozzle, 0006, Red (4-2000)	1
2	2-0103	Grommet, 1/8" Rubber	4		4-12806015	Nozzle, 1506, Yellow (4-2000)	1
3	2-0133	Screw, 10/32" x 1/2", Knob	2		4-12806025	Nozzle, 2506, Green (4-2000)	1
4	2-10260	Elbow, 1/4" Street, 45°	1		4-12806040	Nozzle, 4006, White (4-2000)	1
5	2-1089	Hose Barb, 1/4" Barb x 1/4" Pipe	3		4-12804000	Nozzle, 0004, Red (4-3000)	1
6	2-3015	Valve/Control, Metering	2		4-12804015	Nozzle, 1504, Yellow (4-3000)	1
7	2-9000	Clamp, Screw #4	3		4-12804025	Nozzle, 2504, Green (4-3000)	1
8	2-3028	Valve, Inline Metering MV250	1		4-12804040	Nozzle, 4004, White (4-3000)	1
9	4-050822	Hour Meter, ENM, 115Vac 50/60 Hz	1		4-12805500	Nozzle, 0005.5, Red (5-3000)	1
10	4-02021226	Hose, Pressure Loop, 100R2, 26" x 1/4" (PGHW5-30221E, 5-35221E, 4-40221E)	1		4-12805515	Nozzle, 1505.5, Yellow (5-3000)	1
	4-02021236	Hose, Pressure Loop, 100R2 36" x 1/4" (PGHW-4-20321E, 4-30321E)	1		4-12805525	Nozzle, 2505.5, Green (5-3000)	1
11	95-071410460	Control Panel, PGHW	1		4-12805540	Nozzle, 4005.5, White (5-3000)	1
12	6-020251	Switch, Curvette 120V and 220V	1		4-12805000	Nozzle, 0005, Red (5-3500)	1
13	2-1022	Elbow, 1/4" Steel	1		4-12805015	Nozzle, 1505, Yellow (5-3500)	1
14	4-02080000	Tube, 1/4" X 1/2" Clr Vinyl	/ft. 8		4-12805025	Nozzle, 2505, Green (5-3500)	1
15	2-00260	Elbow, 1/4", Male, Pipe	1		4-12805040	Nozzle, 4005, White (5-3500)	1
16	4-02100000	Hose 1/4" /ft.	1		4-01404000	Nozzle Only, 1/4" MEG-0004 SS (4-4000)	1
17	4-05088	Thermostat, General 302°	1		4-01404015	Nozzle Only, 1/4" MEG-1504 SS (4-4000)	1
					4-01404025	Nozzle Only, 1/4" MEG-2504 SS (4-4000)	1
					4-01404040	Nozzle Only, 1/4" MEG-4004 SS (4-4000)	1
				19	2-20024	▲ Nipple, 1/4" Female (4-4000 only)	4

▲ Not Shown

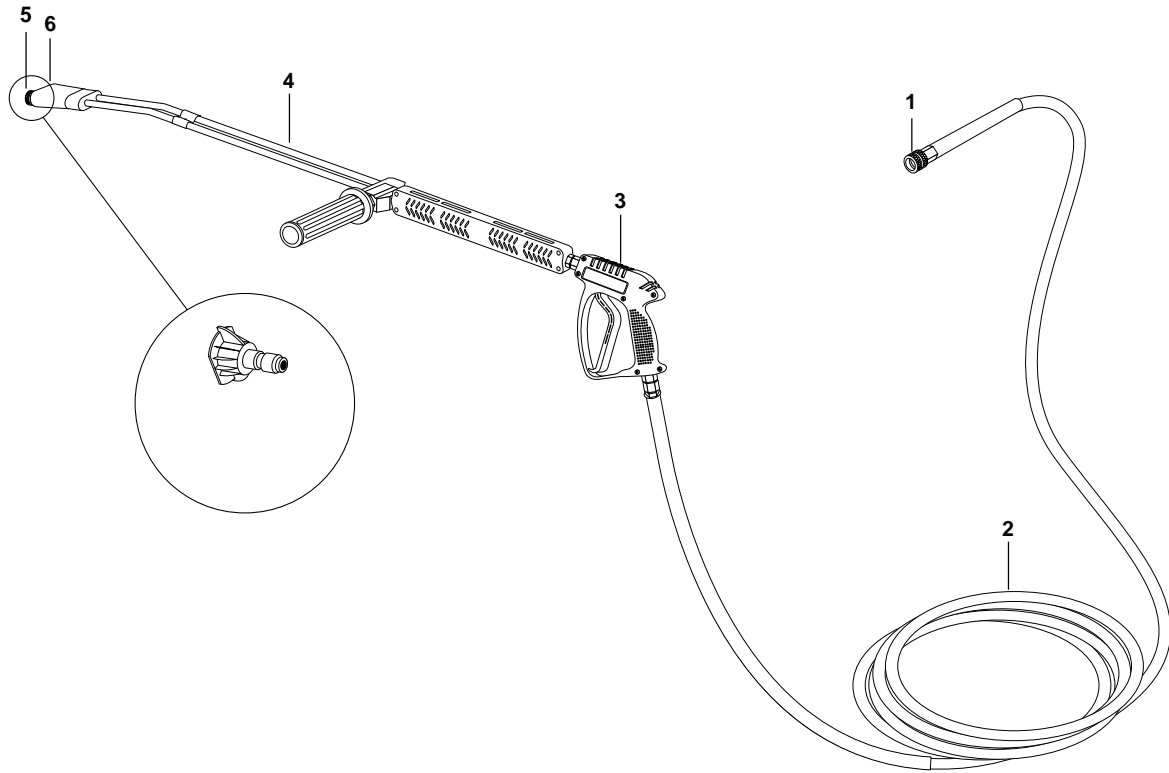
BURNER ASSEMBLY
ALL MODELS



ITEM	PART NO.	DESCRIPTION	QTY
1	7-0005	Motor 1/5 HP 3450 RPM Cap, 115V/230V	1
2	7-21854001	Fan, Burner 6"	1
3	7-20358	Transformer, Burner 115V	1
4	7-4725	Burner Housing	1
5	7-0020	Fuel Line, Copper	1
6	7-13279	Coupling, Fuel Pump to Motor	1
7	7-0009	Fuel Pump	1
8	7-0009611	Solenoid Kit w/115V Coil	1
9	7-13286	Electrode, Burner	2
10	7-2668-002	Air Adjustment Band, Outer	2
11	7-21526	Cast Flange	1
12	7-12484	Burner Gasket	2
13	7-12945	Buss Bar	2
	7-14296	▲ Nut, Gun Assembly	1
	7-100418-003	▲ Screw, Electrode Clamp	1

ITEM	PART NO.	DESCRIPTION	QTY
14	7-1006750-001	Clamp, Electrodes	1
15	7-13392	Adjustment Plate, Gun Assembly	1
16	7-2669-002	Air Band, Inner	1
17	7-13045	Bolt, Transformer Hinge	2
	7-13360	▲ Bolt, Transformer Clip	1
	7-1000689-001	▲ Hold Down Clip, Transformer	1
18	7-13494	Brass Elbow, Fuel Pump	1
19	7-30540003	Gun Assembly, Complete	1
20	7-21913-001	Adapter, Nozzle	1
		Machine Model Nozzle Fuel Burner	1
21	7-14160	Cone, Air, 4A	1
		▲ Not Shown	
MACHINE MODEL	PART NO.	BURNER NOZZLE	QTY
PGHW4-2000	7-0126	2.25/80°	1
PGHW5-3000, 5-3500	7-0127	2.50/80°	1
PGHW4-3000, 4-4000	7-0125	2.00/80°	1

TNT HOSE/SPRAY GUN ASSEMBLY & PARTS LIST ALL MODELS



ITEM	PART NO.	DESCRIPTION	QTY
1	2-2002	Coupler, 3/8" Female	1
2	4-02083450	Hose, 50' x 3/8", 2 Wire, 8500 PSI	1
3	4-01226	Spray Gun, Shut-Off, 10 GPM @ 4000 PSI, AL-A5	1
4	4-011134	Wand, VP, Molded Grip, 1/4" (X-Series)	1
	83-SSVPKIT	Repair Kit, AL Stainless Seat	1

ITEM	PART NO.	DESCRIPTION	QTY
5	2-2001	Coupler, 1/4" Male	1
	2-20023	Coupler, 1/4" Female (4-4000 only)	1
	2-0003	▲ Nipple, 1/4" Steel (4-4000 only)	1
	2-0119	▲ O-Ring, Replacement Only	1
	2-0132	▲ Seal, 1/4" Replacement Only (4-4000 Only)	1
6	4-06540	▲ Nozzle, Soap, 1/8" Brass	1

▲ Not Shown

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
LOW OPERATING PRESSURE	Faulty pressure gauge	Install new gauge.
	Insufficient water supply	Use larger supply hose; clean filter at water inlet.
	Old, worn or incorrect spray nozzle	Match nozzle number to machine and/or replace with new nozzle.
	Belt slippage	Tighten or replace; use correct belt.
	Plumbing or hose leak	Check plumbing system for leaks. Retape leaks with teflon tape.
	Faulty or misadjusted unloader valve	Adjust unloader for proper pressure. Install repair kit when needed.
	Worn packing in pump	Install new packing kit.
	Fouled or dirty inlet or discharge valves in pump	Clean inlet and discharge valves.
	Worn inlet or discharge valves	Replace with valve kit.
	Obstruction in spray nozzle	Remove obstruction.
	Leaking pressure control valve	Rebuild or replace as needed.
	Slow engine RPM	Set engine speed at proper specifications.
	Pump sucking air	Check water supply and possibility of air seepage.
	Valves sticking	Check and clean or replace if necessary.
Unloader valve seat faulty	Check and replace if necessary.	
BURNER WILL NOT LIGHT	Little or no fuel	Fill tank with fuel.
	Improper fuel or water in fuel	Drain fuel tank and fill with proper fuel.
	Clogged fuel line	Clean or replace.
	Plugged fuel filter	Replace as needed.
	Misadjusted burner air bands	Readjust air bands for clean burn.
	Little or no fuel pressure from fuel pump	Increase fuel pressure to specification and/or replace fuel pump. Test with pressure gauge.
	Faulty burner transformer	Test transformer for proper arc between contacts. Replace as needed.
	Disconnected or short in electrical wiring	All wire contacts should be clean and tight. No breaks in wire.
(continued on next page)		

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
BURNER WILL NOT LIGHT (continued from previous page)	Flex coupling slipping on fuel pump shaft or burner motor shaft	Replace if needed.
	On-Off switch defective	Check for electrical current reaching burner assembly with burner switch on.
	Heavy sooting on coil and burner can cause interruption of air flow and shorting of electrodes	Clean as required.
	Improper electrode setting	Check and reset according to diagram in Operator's Manual.
	Fuel not reaching combustion chamber	Check fuel pump for proper flow. Check solenoid flow switch on machines with spray gun control, for proper on-off fuel flow control.
	Clogged burner nozzle	Clean as required.
	Thermostat faulty or slow engine speed	Increase engine RPM to increase voltage.
	Flow switch malfunction	Remove, test for continuity and replace as needed.
	Flow solenoid malfunction	Replace if needed.
FLUCTUATING PRESSURE	Valves worn	Check and replace if necessary.
	Blockage in valve	Check and replace if necessary.
	Pump sucking air	Check water supply and air seepage at joints in suction line.
	Worn piston packing	Check and replace if necessary.
MACHINE SMOKES	Improper fuel or water in fuel	Drain tank and replace contaminated fuel.
	Improper air adjustment	Readjust air bands on burner assembly.
	Low fuel pressure	Adjust fuel pump pressure to specifications.
	Plugged or dirty burner nozzle	Replace nozzle.
	Faulty burner nozzle spray pattern	Replace nozzle.
	Heavy accumulation of soot on coils and burner assembly	Remove coils and burner assembly, clean thoroughly.
	Misaligned electrode setting	Realign electrodes to specifications.
	Obstruction in smoke stack	Check for insulation blockage or other foreign objects.
	Low engine RPM	Increase RPM.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
LOW WATER TEMPERATURE	Improper fuel or water in fuel	Replace with clean and proper fuel.
	Low fuel pressure	Increase fuel pressure.
	Weak fuel pump	Check fuel pump pressure. Replace pump if needed.
	Fuel filter partially clogged	Replace as needed.
	Soot build-up on coils not allowing heat transfer	Clean coils.
	Improper burner nozzle	See specifications. (page 18)
WATER TEMPERATURE TOO HOT	Incoming water to machine warm or hot	Lower incoming water temperature.
	Fuel pump pressure too high	See specifications for proper fuel pressure.
	Fuel pump defective	Replace fuel pump.
	Detergent line sucking air	Tighten all clamps. Check detergent lines for holes.
	Defective temperature switch	Replace.
	Incorrect fuel nozzle size	See specifications for proper fuel pressure. (page 18)
	Insufficient water supplied	Check water G.P.M. to machine.
	Restrict water flow	Check nozzle for obstruction, proper size.
PUMP NOISY	Air in suction line	Check water supply and connections on suction line.
	Broken or weak inlet or discharge valve springs	Check and replace if necessary.
	Excessive matter in valves	Check and clean if necessary.
	Worn bearings	Check and replace if necessary.
PRESENCE OF WATER IN OIL	Oil seal worn	Check and replace if necessary.
	High humidity in air	Check and change oil twice as often.
WATER DRIPPING FROM UNDER PUMP	Piston packing worn	Check and replace if necessary.
	O-Ring plunger retainer worn	Check and replace if necessary.
	Cracked piston	Check and replace if necessary.
	Pump protector	Lower water supply pressure. Do not run with spray gun closed longer than 5 minutes.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
OIL DRIPPING	Oil seal worn	Check and replace if necessary.
EXCESSIVE VIBRATION IN DELIVERY LINE	Irregular functioning of the valves	Check and replace if necessary.
DETERGENT NOT DRAWING	Air leak	Tighten all clamps. Check chemical lines for holes.
	Restrictor in float tank is missing	Replace restrictor. Check for proper orifice in restrictor.
	Filter screen on detergent suction hose plugged	Clean or replace.
	Dried up detergent plugging metering valve	Disassemble and clean thoroughly.
	High viscosity of detergent	Dilute detergent to specifications.
	Hole in detergent line(s)	Repair hole.
	Low detergent level	Add detergent, if needed.
PUMP RUNNING NORMALLY BUT PRESSURE LOW ON INSTALLATION	Pump sucking air	Check water supply and possibility of air seepage.
	Valves sticking	Check and clean or replace if necessary.
	Nozzle incorrectly sized	Check and replace if necessary (See serial plate for proper size).
	Unloader valve seat faulty	Check and replace if necessary.
	Worn piston packing	Check and replace if necessary.
BURNER MOTOR WILL NOT RUN	Fuel pump seized	Replace fuel pump.
	Burner fan loose or misaligned	Position correctly, tighten set screw.
	Defective control switch	Replace switch.
	Loose wire	Check and replace or tighten wiring.
	Defective burner motor	Replace motor.
RELIEF VALVE LEAKS WATER	Relief valve defective	Replace or repair.

OIL CHANGE RECORD

Check pump oil level before first use of your new Power Washer. **Change** pump oil after first 50 hours and every 3 months or 500 hours thereafter. Use SAE 30 weight oil, non-detergent.

Date Oil Changed Month/Day/Year	No. of Operating Hours Since Last Oil Change	Brand Name and Type of Oil (see above)

MAINTENANCE

Maintenance Operation		Every 8 Hrs or Daily	25 Hrs or Weekly	50 Hrs or Monthly	100 Hrs or Yearly	Yearly
Check Oil	Pump		X			
	Engine	X				
Change Oil	Pump					X
	Engine			X		
Air Cleaner		Check		Clean		
Spark Plug					X	
Check Valve Clearance						X
Fuel Tank Filter					X	
Water Filter/Clean		Check				X



TNT SERIES PRESSURE WASHER WARRANTY

TNT LIMITED NEW PRODUCT WARRANTY PRESSURE WASHERS

WHAT THIS WARRANTY COVERS

All TUFF PRESSURE WASHERS are warranted by TUFF to the original purchaser to be free from defects in materials and workmanship under normal use, for the periods specified below. This Limited Warranty is subject to the exclusions shown below, is calculated from the date of the original purchase, and applies to the original components only. Any parts replaced under this warranty will assume the remainder of the part's warranty period. In the case of defect, please return with a copy of your proof of purchase, to the dealer from whom you purchased your pressure washer for possible warranty.

THREE YEAR PARTS AND NO LABOR WARRANTY:

Components manufactured by TUFF, such as frames, handles, coil wraps, float tanks, belt guards, and coils. Internal components on the oil-end of all pressure washer pumps.

NINETY DAYS MINIMUM ON PARTS AND NO LABOR WARRANTY:

All other components, excluding normal wear items as described below, will be warranted for ninety days on parts. Parts warranty will be for ninety days regardless of the duration of the original component manufacturer's warranty.

WARRANTY PROVIDED BY OTHER MANUFACTURERS:

Motors, generators, and engines, which are warranted by their respective manufacturers, are serviced through these manufacturers' local authorized service centers. TUFF cannot provide warranty on these items.

WHAT THIS WARRANTY DOES NOT COVER

This warranty does not cover the following items:

1. Normal wear items, such as nozzles, guns, discharge hoses, wands, quick couplers, seals, filters, gaskets, O-rings, packings, pistons, pump valve assemblies, strainers, belts, brushes, rupture disks, fuses, pump protectors.
2. Damage or malfunctions resulting from accidents, abuse, modifications, alterations, incorrect installation, improper servicing, failure to follow manufacturer's maintenance instructions, or use of the equipment beyond its stated usage specifications as contained in the operator's manual.
3. Damage due to freezing, chemical deterioration, scale buildup, rust, corrosion, or thermal expansion.
4. Damage to components from fluctuations in electrical or water supply.
5. Normal maintenance service, including adjustments, fuel system cleaning, and clearing of obstructions.
6. Transportation to service center, field labor charges, or freight damage.

WHAT YOU MUST DO TO OBTAIN WARRANTY SERVICE

In order to obtain warranty service on items warranted by TUFF, you must return the product to the dealer from whom you purchased, freight prepaid, with proof of purchase, within the applicable warranty period. For warranty service on components warranted by other manufacturers, the TUFF Dealer can help you obtain warranty service through these manufacturers' local authorized service centers.

LIMITATION OF LIABILITY

TUFF'S liability for special, incidental, or consequential damages is expressly disclaimed. In no event shall TUFF'S liability exceed the purchase price of the product in question. TUFF makes every effort to ensure that all illustrations and specifications are correct, however, these do not imply a warranty that the product is merchantable or fit for a particular purpose, or that the product will actually conform to the illustrations and specifications. **THE WARRANTY CONTAINED HEREIN IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.** TUFF does not authorize any other party, including authorized Dealers, to make any representation or promise on behalf of TUFF, or to modify the terms, conditions, or limitations in any way. It is the buyer's responsibility to ensure that the installation and use of TUFF products conforms to local codes. While TUFF attempts to assure that its products meet national codes, it cannot be responsible for how the customer chooses to use or install the product.

TUFF PRESSURE WASHERS

659 Randall Wobbe Ln. • Springdale, AR 72764 • 1-800-772-8833



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