



OPERATION MANUAL

ATFS MODEL ED 20



Operation manual – ATFS Power Unit ED 20



ATFS LLC is not responsible for damages or injuries resulting from a failure to comply with instructions in this manual. Please read entire manual carefully before use.



The ATFS ED 20 must only be operated and maintained by trained personnel.



This equipment contains high pressure water. **Serious personal injury or death may result from improper use.**



Personal protective equipment is required to operate this equipment.



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1.0 UNIT SPECIFICATIONS

ED 20 Unit Specifications	
Nominal Pump Flow	20 GPM (75.6 LPM)
Maximum Pressure	1200 PSI (82 BAR)
Engine	24 HP, DIESEL Powered (DEUTZ D1.2)
Installation Environment	Outdoor Mobile Vehicle, enclosed * or exposed * see Section 0 for installation requirements
Fuel Requirements	Diesel fuel
Fuel Tank Capacity	Remote (CUSTOMER SUPPLIED)
Water Inlet Pressure Limits	0 PSIG (Atmospheric Pressure) to 50 PSIG Max, (0 BAR to 3.5 BAR) <i>See Section 4.4.2 for further requirements</i>
Overall Unit Dimensions (L x W x H)	43" x 45" x 38" (1,092 mm x 1143 mm x 965 mm)
Hose Length / Reel	Optional 200ft.
Power Unit Weight (Dry)	480 Lbs (220 kgs)

Optional Features:

- Class A Foam Induction (optional)
- External electric rewind reel with 200ft of high-pressure hose (optional)

2.0 GENERAL DESCRIPTION

The ATFS Ultra High-Pressure Cooling/Fire Suppression system allows the operator to attack fire from a safe position without the need of entering the interior of a structure.

The system is extremely effective on closed structures including ships, buildings, basements, roofs, floors, and other areas where firefighting and rescue activities are difficult and dangerous to carry out. The ATFS has the unique ability to attack the fire in its three-dimensional gaseous phase thereby reducing the potential for flashover or back draft conditions.

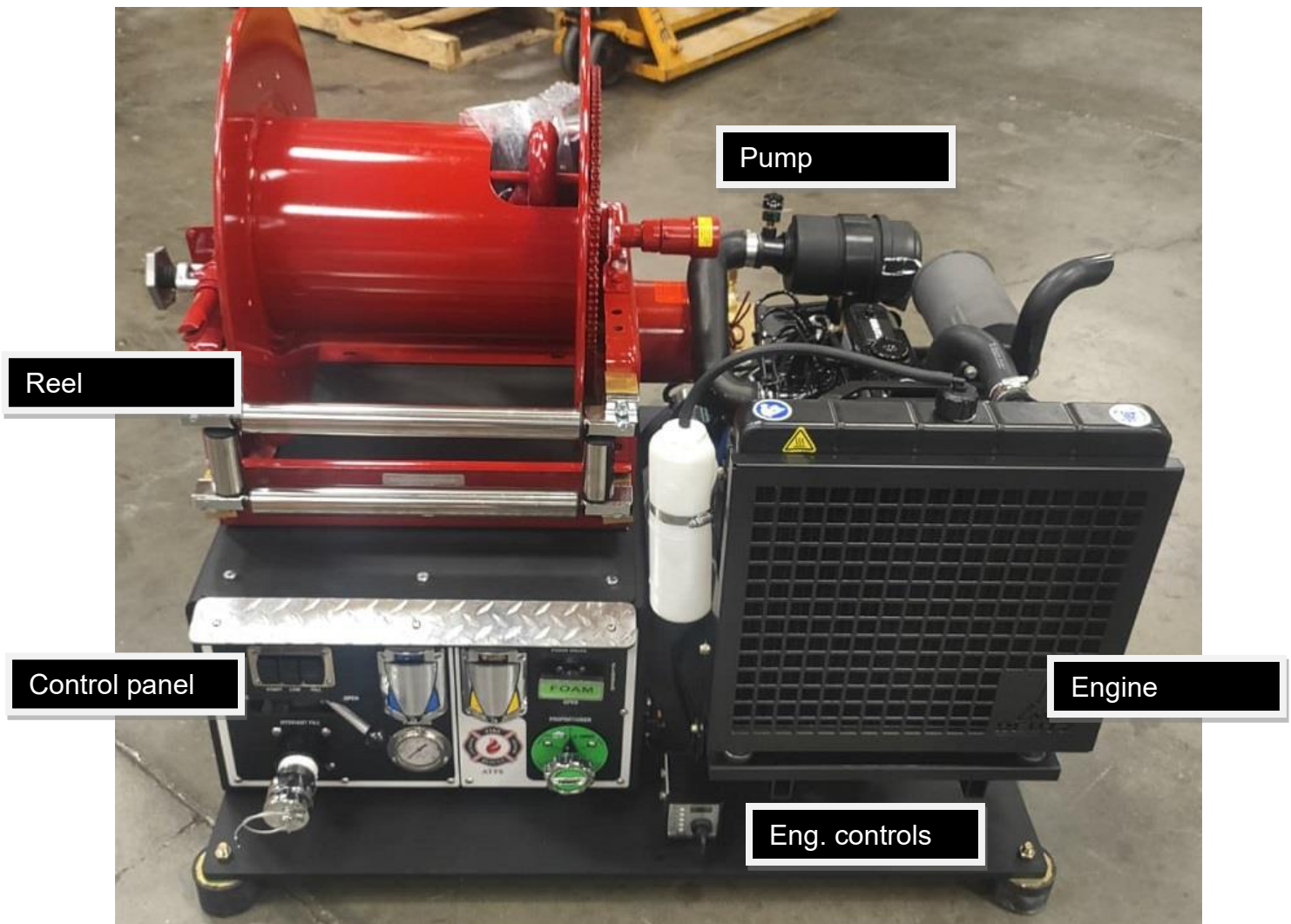
The system consists of a portable, diesel-powered, high-pressure pumping unit. Special firefighting nozzle should be used to handle 1200psi pressure and 20 GPM flow. The unit is typically supplied with 200 feet of high-pressure attack hose located on a powered hose reel.



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The ATFS ED 20 unit is a complete “plug and play” system built into a self-supporting frame that allows quick deployment and/or installation of the unit. Water can be supplied from either a pressurized source or external holding tank.

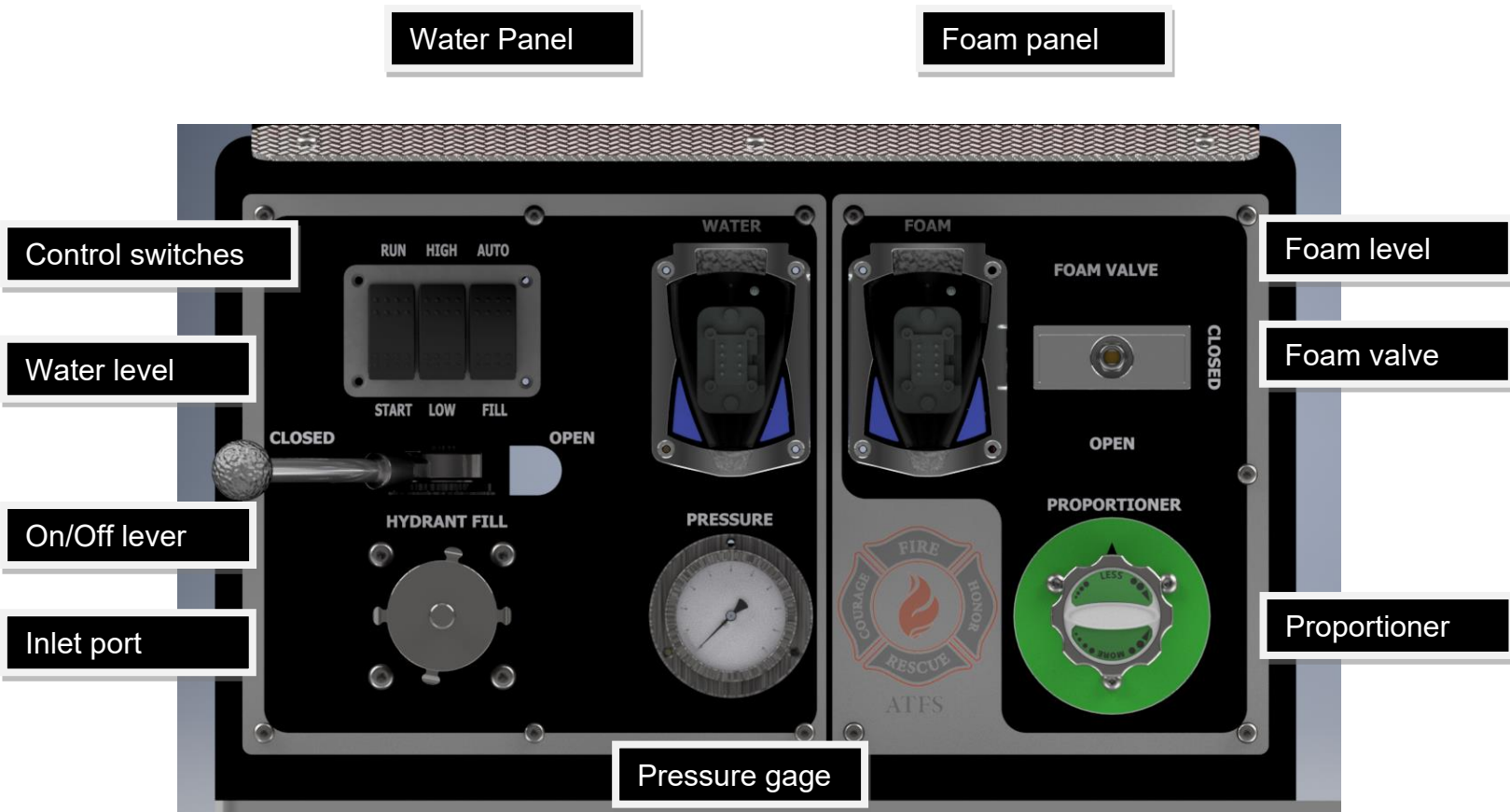
Figure 0.1 – ED 20 General Features





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Figure 0.2 – ED 20 Control Panel





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2.1 Using this Manual

Every attempt has been made to ensure that this documentation is complete and accurate at the time of publication. It is imperative, however, that anyone attempting to use this manual must have good comprehension of this equipment. Further, this manual can in no way replace the common sense of an individual. If at any time this manual seems to contradict itself, or common sense, discontinue the procedure, re-read the section, and seek assistance from other personnel familiar with operation of this equipment.

2.2 Scope

This manual covers installation, operation, and maintenance of the ATFS ED 20. It is supplied to supplement in-person ATFS administered user training, which is required for each installation. Standard components, such as the unit engine and pump, are covered by the manufacturer's literature found in 0.

2.3 Terms and Abbreviations

CCW	Counterclockwise
CW	Clockwise
EOS	End of Section
GPM	Gallons Per Minute
HP	Horsepower
LPM	Liters Per Minute
NPT	National Pipe Thread (Imperial Tapered Pipe Thread Standard)
PPE	Personal Protective Equipment
PSI	Pounds Per Square Inch (without suffix, assumed to be gauge pressure).
PSIG	Pounds per Square Inch, Gauge Pressure

(EOS)



3.0 SAFETY INFORMATION

The ATFS ED 20 is an inherently powerful and potentially dangerous piece of equipment, however with proper care and training it can be operated safely. ED 20 must only be operated by personnel that have successfully completed an in-person ATFS training course. This manual is intended to reinforce and review safety techniques previously mastered during ATFS training. It is recommended that qualified users complete training exercises at least every 3 months.

Users must comply with all local and national laws concerning high pressure water jetting equipment as well as all firefighting regulations.

It is strongly recommended that this entire manual be reviewed in-depth before operating or maintaining this equipment. Service work should only be performed by individuals who have been properly trained on this equipment. Refer to the applicable section in this manual for the correct procedures prior to any installation, setup, or maintenance work.



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3.1 Personal Safety

Operation of the ATFS ED 20 fire-fighting system must only be attempted by highly skilled firefighters with appropriate protective equipment and specialized ATFS training. Operation of the system without the proper equipment and training can result in significant personal injury or death.



ATFS LLC is not responsible for damages resulting from a failure to comply with instructions in this manual. Please read carefully before use.



Never direct the jet stream at a person or animal. Never direct towards power lines or other high voltage equipment.



*Seek immediate medical attention if any unprotected part of the body comes in contact with the high-pressure water stream. **Serious personal injury can result from an untreated water injection wound.***



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3.2 Personal Protective Equipment Requirements

Always wear appropriate Personal Protective Equipment (PPE) when operating this equipment. An example is shown in Figure 3.1. At minimum, those operating the ATFS must wear the following:

- Full face visor (minimum 6"), or safety goggles
- Helmet
- Hood
- Structural firefighting gloves
- Structural firefighting gear
- Turnouts
- Protective footwear



Failure to wear appropriate protective clothing may result in serious personal injury, amputation or death.



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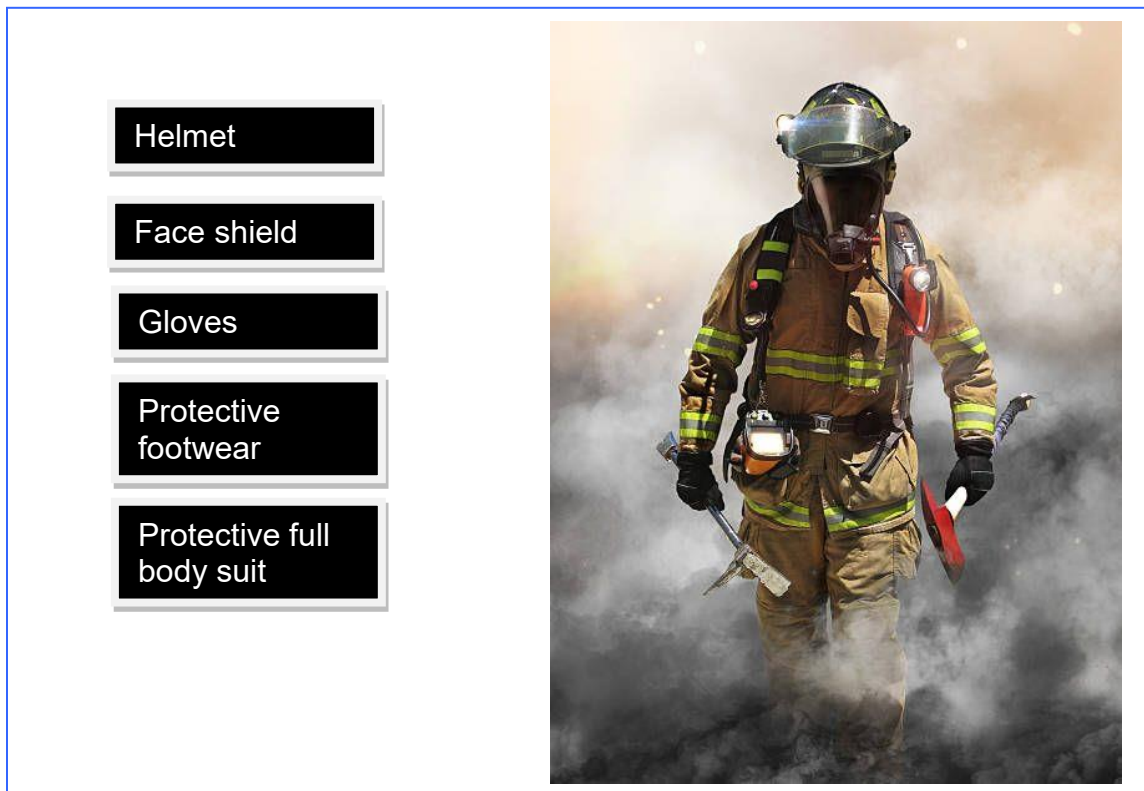


Figure 3.1 – Example of Required Personal Protective Equipment

3.3 Modification to the Equipment

Do not make any unauthorized modifications or repairs to this equipment. Components used throughout this assembly were specifically designed or selected to safely meet the unique high-pressure requirements. Only replace parts with those recommended by or supplied by ATFS. Any unapproved modifications will void the equipment warranty. Unauthorized modification or part substitution can result in severe personal injury or death.



Unauthorized replacement of any part may lead to catastrophic equipment failure and serious personal injury and/or death.

(EOS)



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4.0 INSTALLATION

The ATFS must be installed in accordance with the requirements outlined below. The unit should be installed in a vehicle to allow for maximum mobility and flexibility.

4.1 Uncrating and Lifting

Open the shipping crate with care and inspect the equipment for any damage. If found, immediately contact ATFS and the shipping company. *If the unit cannot be installed immediately, leave it in its crate and provide adequate indoor storage to protect against damage.*

The ED 20 should be lifted using provided lifting straps. Do not lift from the upper portion of the frame. Verify that lifting equipment is rated for the weight listed in 1.0 Unit specification sheet and that the unit is stable before moving.

4.2 Installation Location

For maximum flexibility the ATFS Power Unit should be installed in a mobile vehicle capable of reaching its anticipated targets within its 200 ft hose length. The ATFS Power Unit can be installed in an enclosed* or open environment.

**** Enclosed installations will require provisions for adequate engine cooling air flow and venting of engine exhaust. See Error! Reference source not found. below.***

Installation location must be a level surface able to safely support the unit weight (as listed in the 1.0 Unit Specifications). Orient to allow unrestricted access to the hose reel, control panel and aggregate vessel located on the front of the unit. Allow a minimum of 3 ft behind the unit and access from above to conduct service and repair work. Take note of frequently serviced areas such as the engine and fuel tank.



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4.3 Mounting Guidelines

ED 20 has seven mounting holes in its bottom feet. Verify that the mounting location can safely support the unit weight (as listed on the 1.0 Unit Specification page).

4.4 Initial Set Up

After you first receive the ATFS Power unit, the following must be checked and completed.

- 1) Connect the battery (See Section 4.4.1)
- 2) Check the engine oil (See Engine Manual located in Section 9)
- 3) Check the pump oil (See Pump Manual located in Section 9)
- 4) Connect the inlet water hose (See Section 4.4.2)
- 5) Connect fuel tank to the Power unit.

4.4.1 Connecting the Battery Terminals

Battery is not provided with the ATFS power unit. To connect an external customer supply battery, follow the instructions below:

- 1) Select appropriate length of positive and negative battery cables to cover the distance between the ED20 and Battery of the host vehicle.
- 2) Crimp appropriate cable ends for Battery terminal connection and ED 20 connections.
- 3) Turn ED20 engine Ignition key to OFF position.
- 4) Turn the battery disconnect switch to OFF position.
- 5) Turn the main system braker on the side of the box to OFF position. (See figure 4.1)
- 6) Connect the positive cable to the open terminal on the Battery disconnect switch on the EDG20 base plate.
- 7) Connect positive cable to the positive terminal of the supply Battery. (See figure 4.2)
- 8) Connect negative cable to the negative terminal of the Battery. (See figure 4.2)



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- 9) Connect the negative cable to main base plate of the ED20. This is the mounting bolt of the pump support SS bracket closest to the Battery disconnect.
- 10) Check all connections.



Figure 0.1 - 10AMP Breaker

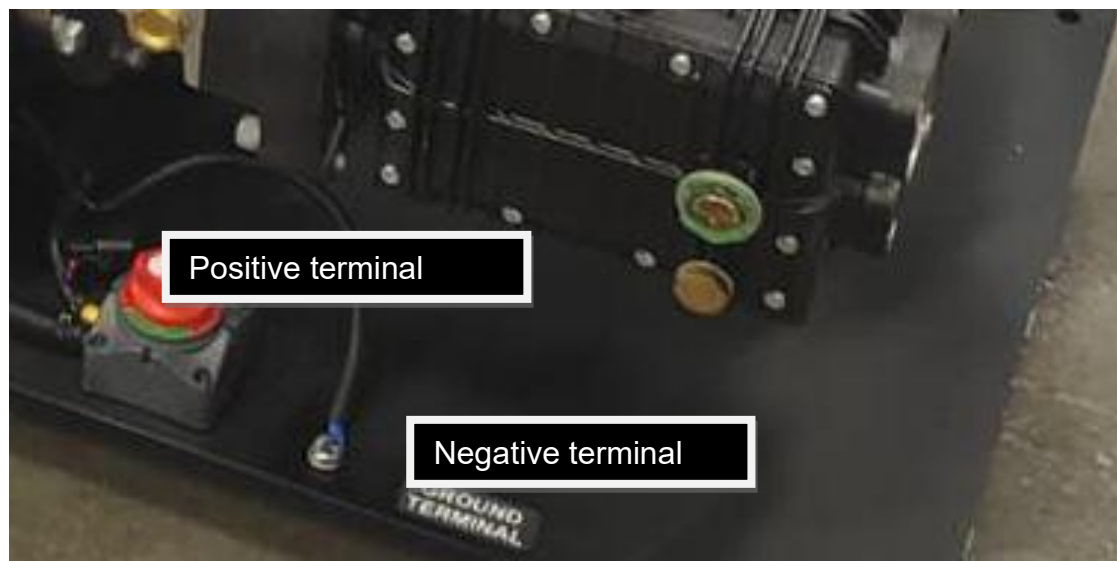


Figure 0.2 – Connecting the Battery Terminals.

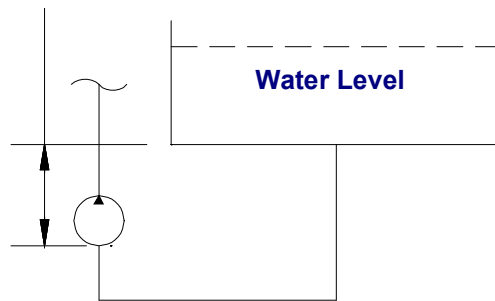


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4.4.2 Connecting the Water Source

Connect a suitable water source to the inlet fitting with a 1" inside diameter hose as shown in Figure 0.1 below. Water can be supplied from either be a tank or pressurized* source (such as from a hydrant or charge pump). ****If using a pressurized water source, verify that the limits found in the 1.0 Unit Specification sheet are maintained.*** Ensure that the source can reliably deliver the maximum pump flow listed on the 1.0 Unit Specification page. If connecting to a tank, locate the inlet fitting below the bottom of the tank to ensure a flooded suction line.

**Pump Inlet Must be
Below the Tank Bottom**



Water quality found in tap or hydrant water is sufficient for normal operation. ***The ED 20 is NOT designed to pump unfiltered water such as from a lake, stream or sea.***



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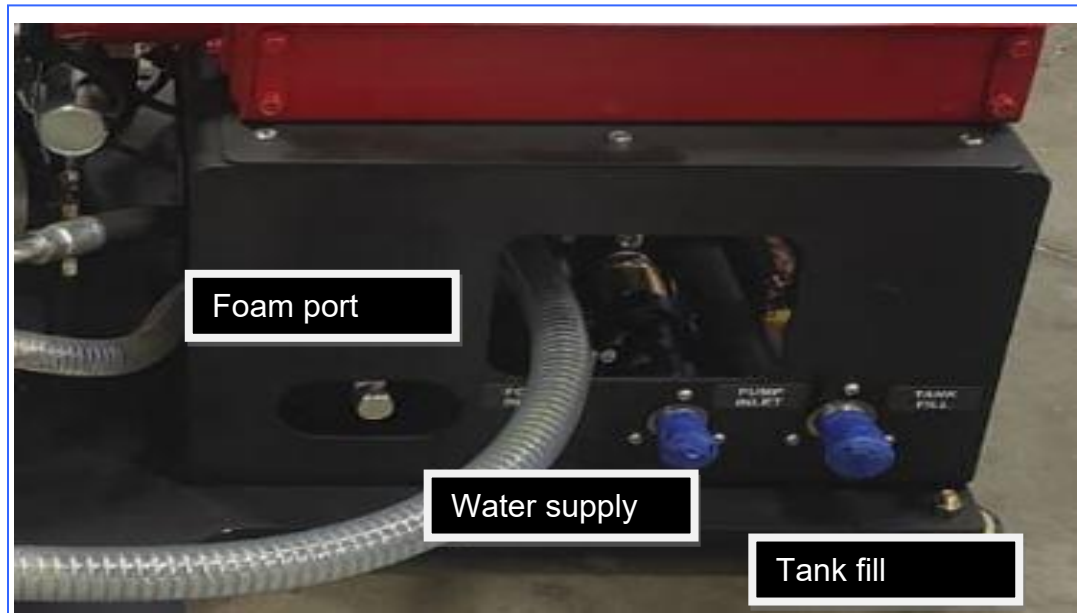


Figure 0.1 – Connecting the Water Source

(EOS)



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5.0 OPERATION

The ATFS ED 20 is operated by two (2) properly trained individuals. One operates the nozzle while the other operates the power unit. Both operators must be in audio communication with each other.



The ED 20 can only be operated by properly trained personnel. Review the safety requirements found in Section 0 before proceeding.

5.1 Preparing the Unit for Operation

The following checklist should be completed in advance, so that the unit is always ready for immediate use. This should be completed **WEEKLY**, or after each use.

- 1) Check the engine oil. (See engine manual found in Section 9)
- 2) Check the pump oil. (See pump manual found in Section 9)
- 3) Check the water inlet strainer. (See Section 6.3)
- 4) Check the fuel tank and fill if required.
- 5) Connect the fuel line to the remote fuel pump on the engine. (See picture 5.1)
- 6) Connect return fuel line back to the fuel reservoir. (See picture 5.2)
- 7) Lubricate the hose coupling.
- 8) Connect the nozzle.



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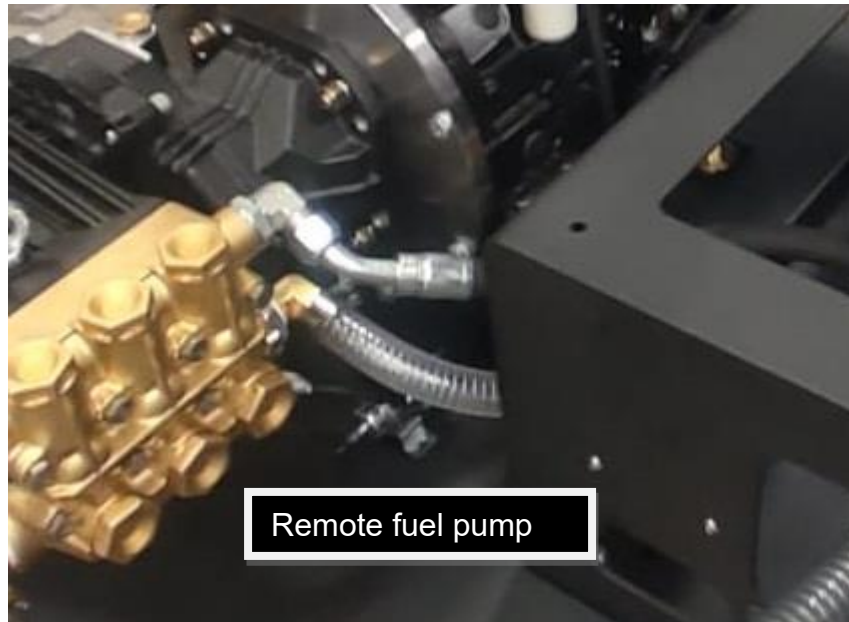


Figure 5.1 – Remote fuel pump.

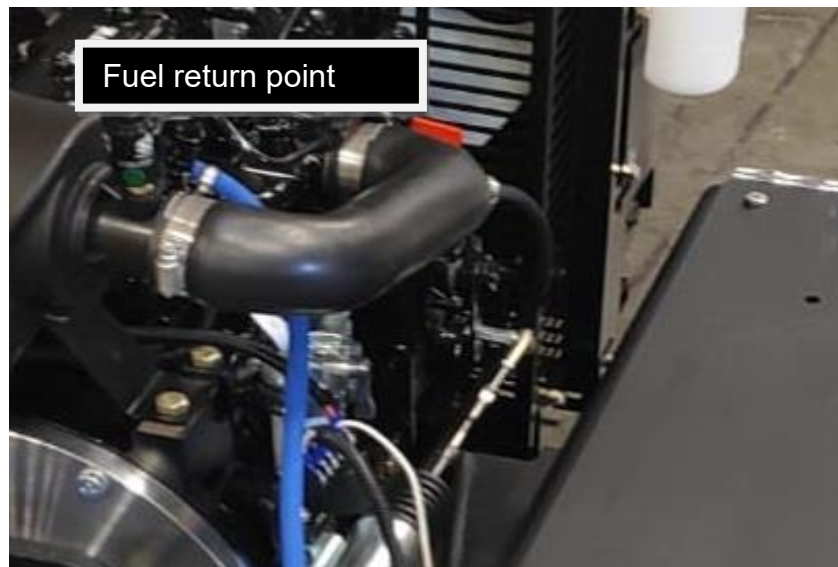


Figure 5.1 – Return fuel connection port.



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5.2 Startup

Before starting the ED 20 power unit, review all safety requirements found in Section 0. This equipment can only be operated by individuals who have successfully completed in-person ATFS training.

- 1) Verify the unit has been properly prepared for operation as described in Section 0.
- 2) Verify that the nozzle is properly connected.
- 3) Check all connections.
- 4) Turn the main battery disconnect to ON position.
- 5) Turn the main system braker to ON position – lights should be ON.
- 6) Turn ignition key to ON position.
- 7) Before starting the engine, please make sure the system switch is in START Position. Auto Flow in OFF position and Throttle is in OFF position. (See Figure 5.1)
- 8) Start the engine.

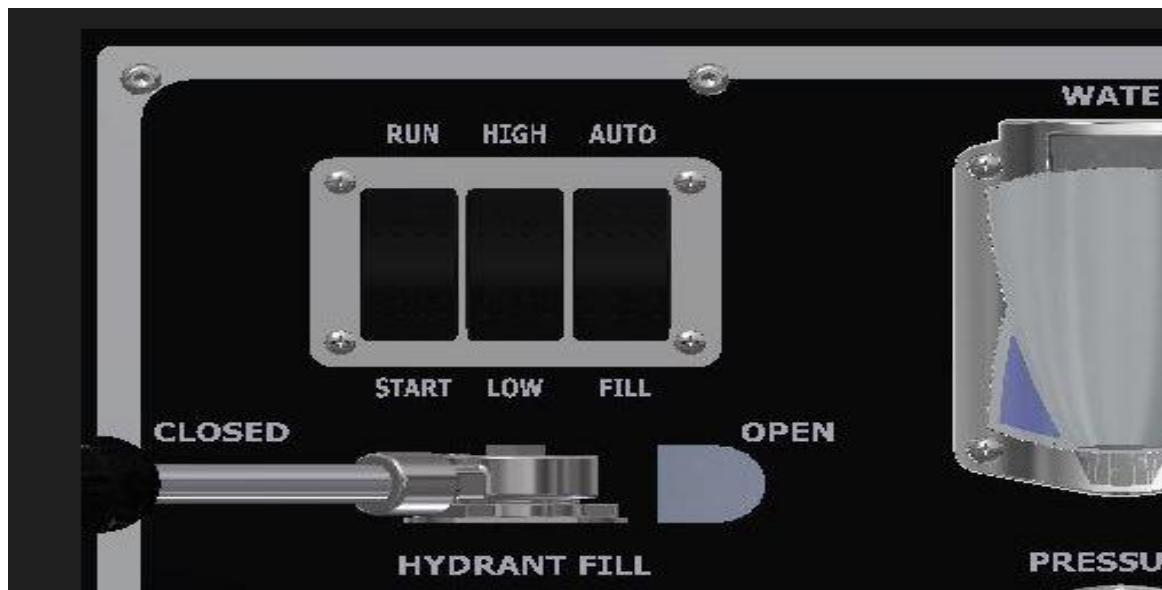


Figure 5.3 – Control Switches



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5.3 Normal Operation

Normal operation of the ATFS system is defined as user control of water flow via the nozzle valve. Control of the power unit from the nozzle valve is accomplished by pressure switch. If automatic throttle is lost when control switch is in HIGH position, pressure switch should be inspected.



Review the safety requirements for personal protective equipment and safe operation before proceeding.

- 1) Startup the power unit as described in Section 5.2.
- 2) Unroll plenty of hose and bring the lance to the target location.
- 3) Hold the nozzle firmly.
- 4) Take a firm stable stance before opening the valve
- 5) Closing the water valve will cause the power unit to go back to idle.



The ATFS must only be operated by qualified and properly trained personnel.

(EOS)



6.0 MAINTENANCE

	After Every Use	Monthly	Every 3 Months or 100 Hours*	Every 6 Months or 200 Hours*	Every 3 years or 1500 Hours*
Check nozzle and end nut for wear and replace if necessary	X				
Check engine oil and add if low ¹		X			
Check pump oil and add if low ²		X			
Replace engine oil and oil filter ¹				X	
Replace engine fuel filter ¹					X
Replace engine air filter ¹				X	
Water strainer	X				
Replace Main Power Unit Battery					X
Inspect Hose for wear or damage ³	X				
Replace Hose					X

Preventative maintenance recommendations.

* Whichever comes first

¹ See engine manufacturer's literature found in 0 for additional recommendations.

² See pump manufacturer's literature found in 0 for additional recommendations.

³ If any damage to the hose is found, replace it immediately.



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6.1 Diesel Engine Service

The diesel engine requires routine maintenance similar to a car engine. Oil must be checked and changed regularly. Oil, air and fuel filters must be checked and changed regularly. For detailed information on these routine maintenance requirements as well as other service recommendations, please see the engine manufacturer's literature found in 9.

6.2 Pump Service

The high-pressure water pump requires minimal maintenance. The pump oil should be checked on a regular basis. It uses 40 oz of SAE 30W non-detergent oil. See Pump Manufacturer's Literature found in 0 for further information.

6.3 Inspection/Cleaning of water inlet strainer

The water inlet strainer should be inspected after each use of the ED 20. To inspect and clean this strainer, follow the procedure below. (See Figure 6.1)

- 1) Isolate or disconnect the water source from the inlet connection to the power unit.
- 2) Unscrew the filter housing (turn CCW).
- 3) Pull filter bowl SIDEWAYS.
- 4) Remove the strainer.
- 5) Inspect the strainer and flush any debris clean with clean water.
- 6) Push strainer back into housing.
- 7) Push the bowl back onto filter housing.
- 8) Thread the housing nut CW by hand to tighten.



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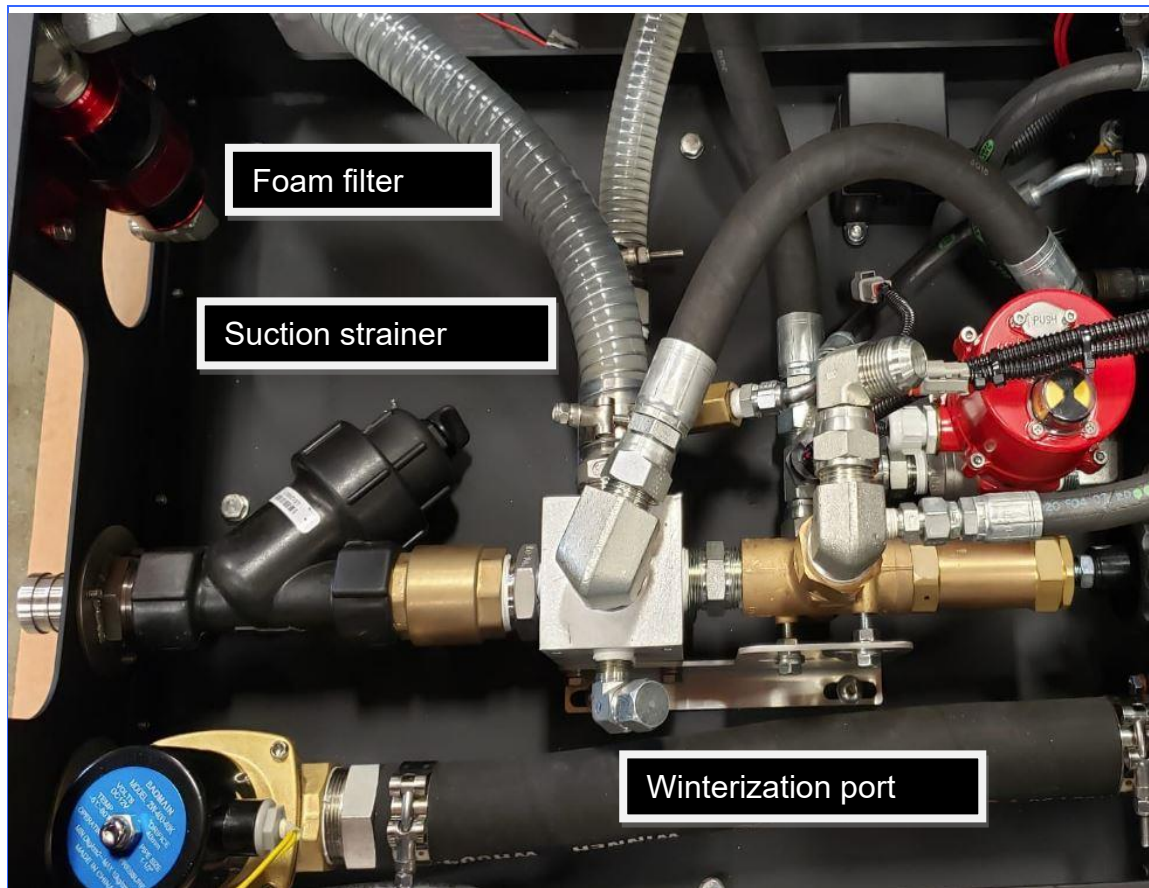


Figure 6.1 – Inspection/Cleaning Water Filter

(EOS)



7.0 WINTERIZATION



Proper winterization procedures must be followed to avoid freezing if temperatures are expected to drop below 32F. Failure to do so would result in catastrophic unit failure.

Unit should be winterized only if temperatures drop below 32 degrees at point of use to avoid freezing.

Total system displacement with 200 ft of hose (optional): 5 gallons.
Total system displacement without hose: 3 gallons.

To winterize DE - 20:

1. Fill a 5 GAL tank with appropriate antifreeze solution.
2. Connect the suction of the unit or winterization port to the antifreeze tank.
3. Start the unit and make sure the pump is primed.
4. Run the unit without the nozzle.
 - a. Run the unit for 30-40 seconds if hose is connected.
 - b. Run the unit for 20 second if hose is not connected.
5. Stop the unit.

Following this procedure will ensure all the critical system components exposed to water are filled with antifreeze.



Permanently installed stand-by winterization kit is available upon request..

(EOS)



8.0 TROUBLESHOOTING

- 1. ENGINE DOESN'T START UP.**
 - Verify power is on.
 - Check if the battery terminals are tightened.
 - Verify battery charge.
 - Check the level in the fuel tank.
- 2. THE ENGINE DOESN'T SPEED UP WHEN PULLING THE WATER VALVE.**
 - Verify control switch is moved to HIGH and pressure switch is closing.
- 3. ENGINE SPEEDS UP, BUT WATER DOES NOT GO OUT THE NOZZLE**
 - Verify all valves between the water source and the pump are fully open.
 - Check the water level in the booster tank.
 - Check for leaks in the water lines.
 - Verify that the water strainer element is clean, see Section 6.

9.0 COMPONENT LITERATURE

Electronic versions of all literature have been supplied in Adobe PDF format. The desired pages can also be accessed directly by clicking the blue underlined text links below.

DEUTZ Diesel Engine	Engine Owner's Manual Engine Service Manual Engine Troubleshooting Guide Engine Maintenance Schedule Engine Spare Parts List
UDOR Pump	Pump Drawing Pump Spare Parts Drawing
RC Tech motorized valve	Solenoid Catalog Sheet