ROCKVILLE VOLUNTEER FIRE DEPT.

ENGINE 703B

2015 Pierce Arrow XT

1-15-5236

Outline

This presentation is designed to provide quick reference of the following for the incumbent driver on E703B:

- Quick Guide Specifications (critical numbers)
- Crew cab layout *(RVFD Duties by Position Guidance)*
- Pump operation
- CAFS Foam system
- Hose Loads
- Deck Gun / Ground Base Operation
- Daily / Routine Maintenance

Quick Guide Specifications

Vehicle	
CHASSIS	PIERCE ARROW XT
LENGTH	**30 ft 4.75 in**
WIDTH	**9 ft 4 in**
HEIGHT	**9 ft 7.5 in**
WHEELBASE	14 ft 8.5 in
GROSS VEHICLE WEIGHT	**48,500 lbs**

Quick Guide Specifications

Engine & Transmission	
Engine	Cummins ISX12
Horsepower	500hp at 1800rpm
Governed Speed	67 mph
Torque	1645 lb-ft at 1200rpm
Transmission	Allison Automatic EVS4000P

Quick Guide Specifications

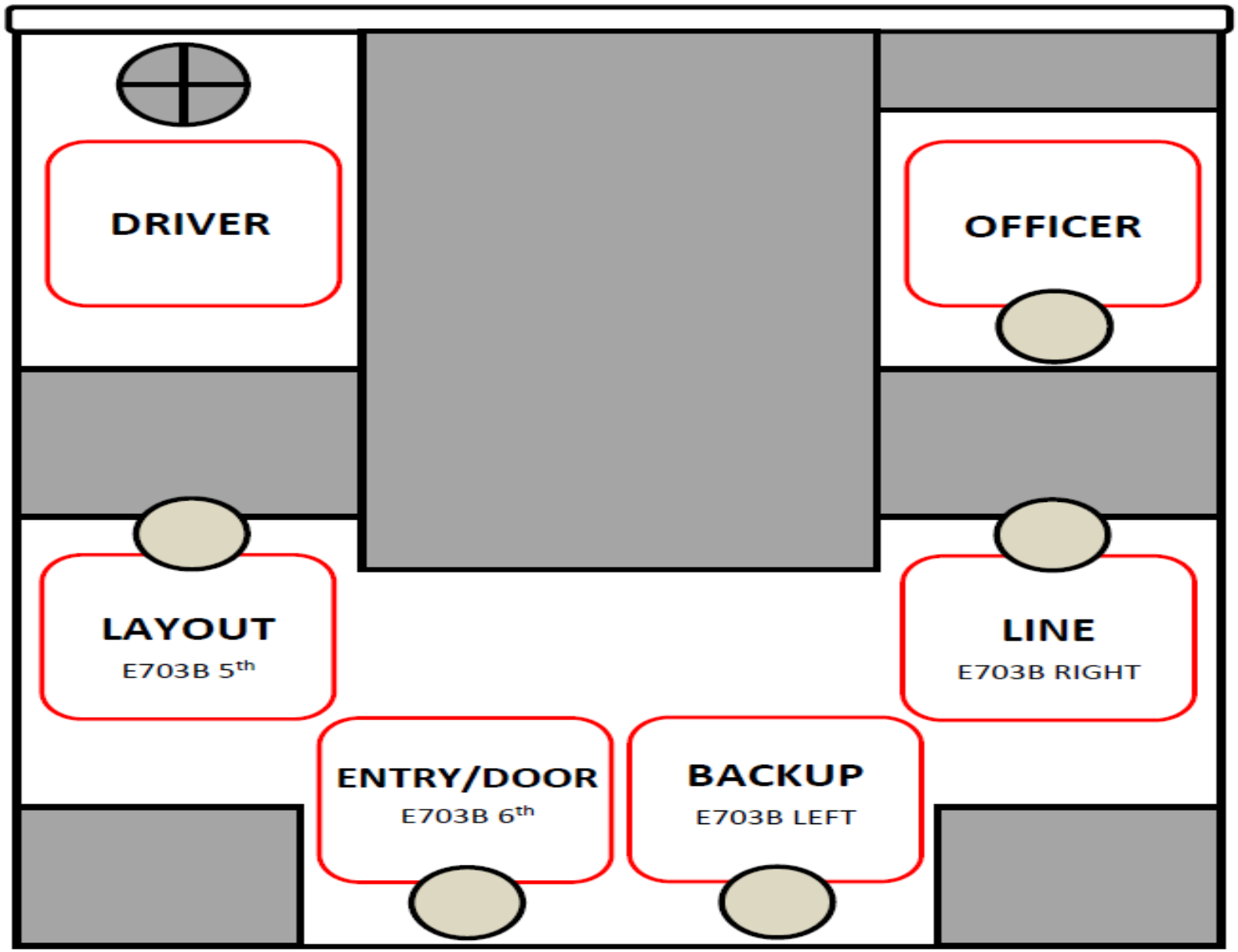
Pump	
Make	Hale
Capacity	1500GPM – SINGLE STAGE
Foam System	Hercules CAFS
CAFS Air Compressor	200cfm @ 150psig

Quick Guide Specifications

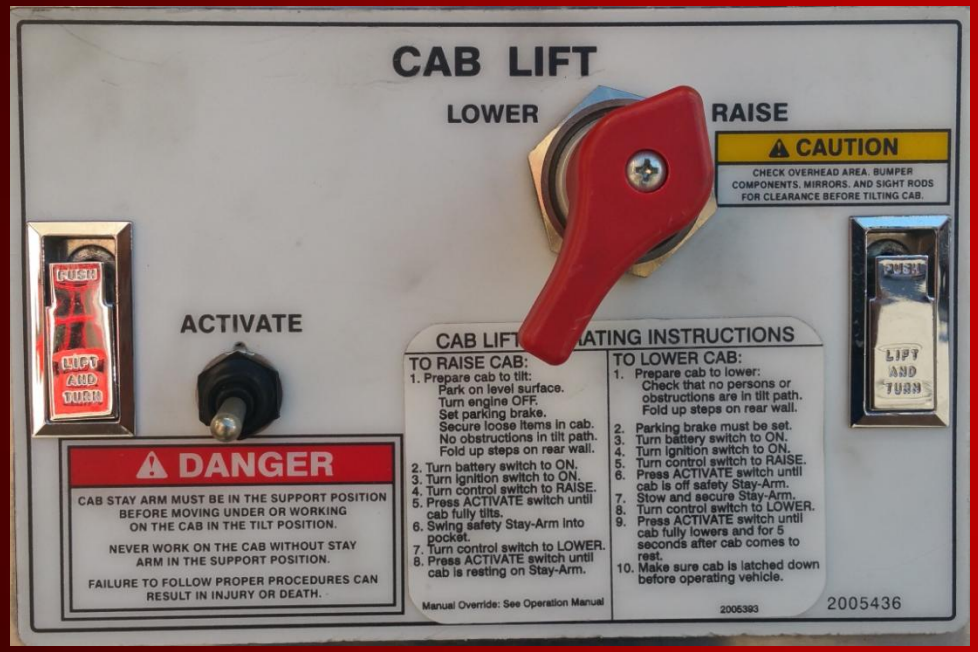
Fluid Capacities		
Booster Tank	**750 Gallons**	Water
Foam A Tank	25 Gallons	National Knockdown
Foam B Tank	25 Gallons	AFFF
Fuel Tank	**65 Gallons**	Diesel
Diesel Exhaust Fluid Tank	**4.5 Gallons**	DEF Fluid
Oil Reservoir	4 Gallons	

ENGINE 703B – 2015 PIERCE

6 PERSON CREW



Routine Maintenance



LOCATED ON OFFICER SIDE PUMP PANEL

CAB LIFT OPERATION

Prior to engaging cab lift

SECURE ALL CAB EQUIPMENT:

- Map Books
- Headsets
- Portable radios
- SCBA's
- PPE
- Any other loose equipment

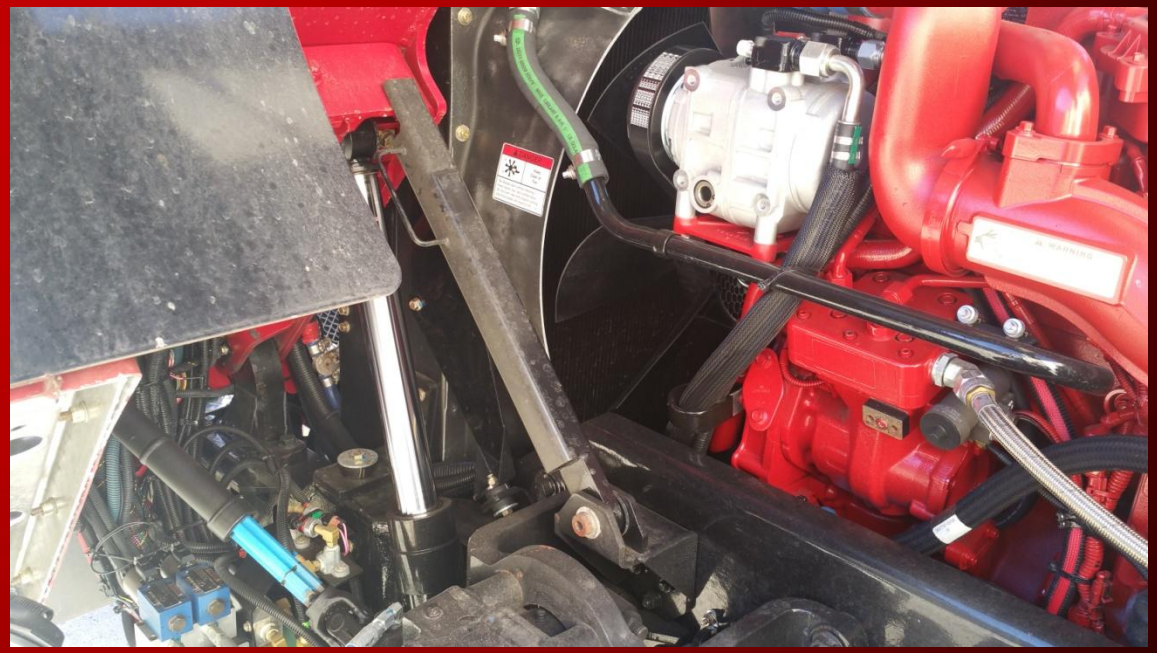
1. Battery switch **ON**
2. Ignition switch **ON**
3. Cab Lift in **RAISE**
4. Lift **ACTIVATE** switch

Routine Maintenance

LOCATED ON DRIVER SIDE NEAR FRONT AXLE

CAB LIFT OPERATION

After raising cab place cab stabilizer / safety bar, by flipping into position.



Routine Maintenance

Routine Maintenance

UNDER CAB / ENGINE COMPARTMENT

- Engine oil Fill / Dip Stick
- Transmission Fluid Fill / Dip Stick
- Power Steering fluid
- Coolant
- Vogel Lube
- Air Filter

Engine Oil / Transmission Fluid dip sticks accessible through cab interior when cab is in normal position.

Routine Maintenance

HIGH EXHAUST SYSTEM TEMPRATURE (HEST) LAMP

The HEST Lamp illuminates to indicate that high exhaust temperatures may exist due to aftertreatment regeneration. This is normal and does not signify the need for any kind of vehicle or engine service. When this lamp is illuminated, ensure that the exhaust pipe outlet is not directed at any combustible surface or material.

Routine Maintenance

DIESEL PARTICULATE FILTER (DPF) LAMP - ILLUMINATED

The DPF Lamp indicates, when illuminated or flashing, that the DPF requires regeneration. This is accomplished by the following:

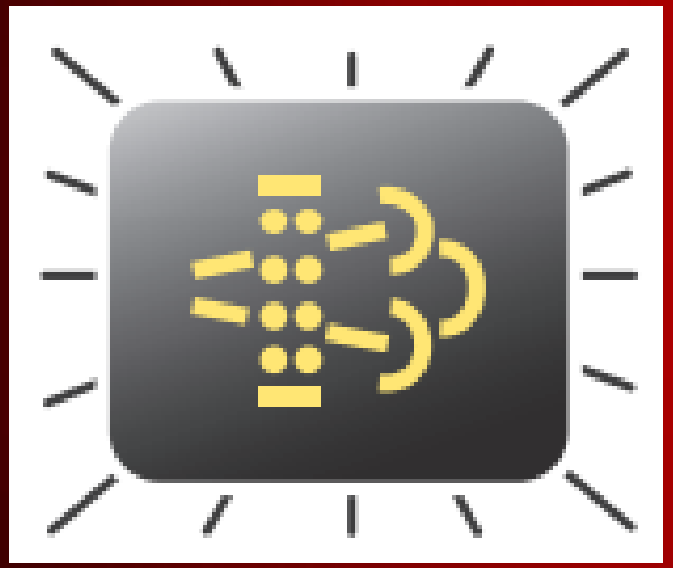
1. If the vehicle is equipped with a Regeneration Inhibit Switch, ensure that the switch is not in the Inhibit position.
2. Perform a DPF regeneration by one of the following methods:

   a. Change to a more challenging duty cycle, such as highway driving, for at least **<u>20</u>** minutes. (note: DPF regen will begin if needed while in pump gear)

   OR

   b. Perform a parked regeneration.

Routine Maintenance



DIESEL PARTICULATE FILTER (DPF) LAMP - FLASHING

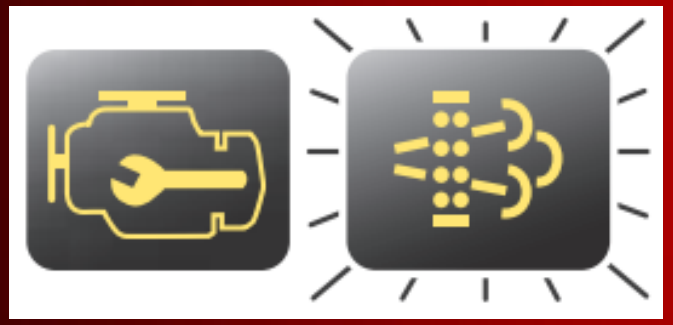
If a regeneration is not performed in a timely manner after the DPF Lamp is illuminated, the DPF Lamp will begin to flash. This indicates a higher level of soot in the DPF. In addition, engine power may be reduced automatically.

Perform a parked regnen cycle as soon as possible!

Parked regen takes approx 15-20 minutes. This process should NOT be interrupted and will automatically terminate when completed. Place the unit OOS Mechanichal during Parked DPF Regen.

Routine Maintenance

DIESEL PARTICULATE FILTER (DPF) LAMP
FLASHING WITH AUDIBLE WARNING OR CHECK ENGINE LAMP



A flashing DPF Lamp combined with an Audible Warning and/or illuminated Check Engine Lamp indicates that the DPF needs regeneration immediately. **Engine power will be reduced automatically.** A parked regeneration is required.

Perform a parked regnen cycle immediately!

Parked regen takes approx 15-20 minutes. This process should NOT be interrupted and will automatically terminate when completed. Place the unit OOS Mechanical during Parked DPF Regen.

Routine Maintenance

REGENERATION INHIBIT SWITCH

- The purpose of this switch is to temporarily prevent or disable DPF regeneration.
- Unnecessary or **excessive use of the Regeneration Inhibit Switch will result in** a loss of fuel economy, and **an increased need for parked regeneration**.
- **This switch should only be utilized under extreme emergency circumstances.**

Routine Maintenance

PARKED DPF REGEN

- Park vehicle in an appropriate location (at least 6 feet from any objects & not in apparatus bay), set parking brake, and place transmission in Neutral, and allow at least 30 minutes for the regeneration. **Do not** engage high idle or pump during DPF regen.
- Set up a safe exhaust area. Confirm that nothing is on or near the exhaust system surfaces.
- Ensure that your fast-idle and PTO switches are off before starting regeneration.

Routine Maintenance

PARKED DPF REGEN

- Push the Manual Regeneration Switch to begin a parked regeneration.

  Note: Engine speed will increase, and there may be a noticeable change to the sound of the turbocharger during the regeneration process. Once the diesel particulate filter is regenerated, the engine will automatically return to the normal idle speed.

- Monitor the vehicle and surrounding area during regeneration. If any unsafe condition occurs, shut off the engine immediately.

Routine Maintenance

PARKED DPF REGEN

- To stop a parked regeneration, depress the clutch, brake or throttle pedal.

Note: This should only be done during extenuating circumstances.

- Once regeneration is complete, exhaust gas and exhaust surface temperatures will remain elevated for 3 to 5 minutes.

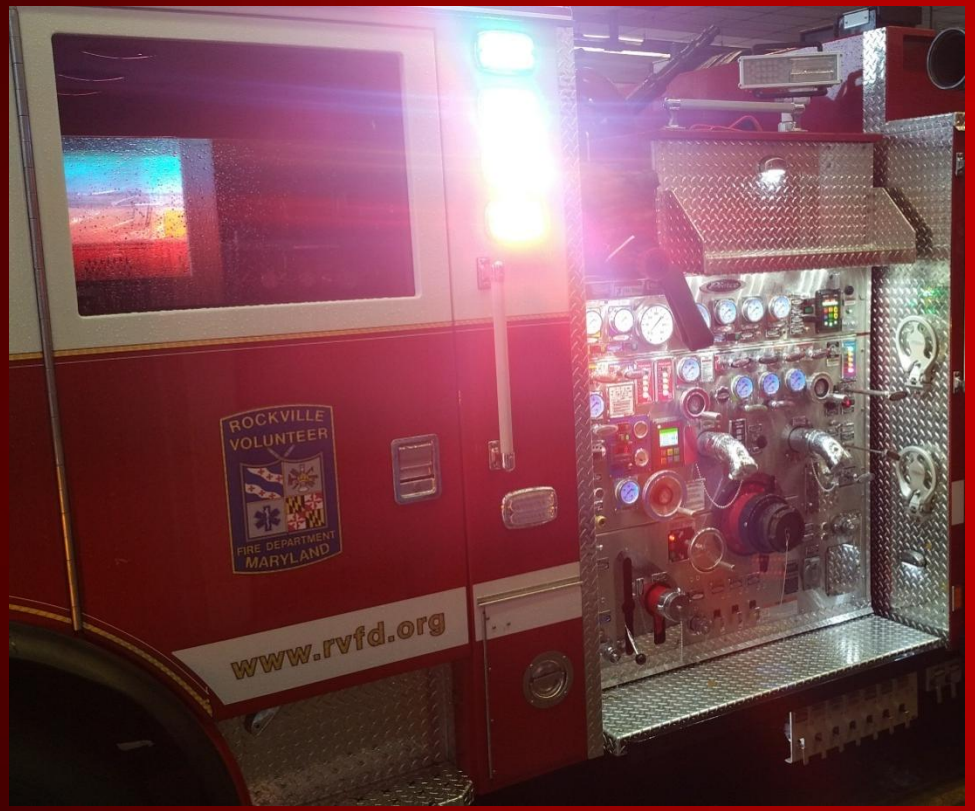
Pump Operation

PLACING THE PUMP IN GEAR

PUMP SHIFT CONTROL is located to the left of the steering column.

1. Place the unit in NEUTRAL / activate parking brake
2. Engage the pump utilizing the PUMP SHIFT
3. Place the transmission in drive
4. Check for illumination of 2 GREEN lights:
   - PUMP ENGAGED
   - OKAY TO PUMP

Pump Operation



PLACING THE PUMP IN GEAR

Cab mounted water tank indicator lights will only illuminate when the pump is engaged.

GREEN – 76% - 100% Capacity

BLUE – 51% - 75% Capacity

YELLOW – 26% - 50% Capacity

RED – 0% - 25% Capacity

Pump Operation

PRESSURE GOVERNOR / THROTTLE OPERATION

When the pump is in gear three lights are illuminated on the pressure governor:

1. PUMP ENGAGED
2. OKAY TO PUMP
3. THROTTLE READY

Pump Operation

PRESSURE GOVERNOR / THROTTLE OPERATION

To operate the pressure governor, **PRESS** the **MODE** button to select the desired mode PSI or RPM.

Utilize **PSI MODE** (press once) for normal operations.

Utilize **RPM MODE** (press twice) for drafting and heavy duty / defensive operations.

Pump Operation

PRESSURE GOVERNOR / THROTTLE OPERATION

When operating in **PSI MODE**, the pressure governor offers the following:

- **Pressure Governor**
  - Makes use of intake pressure to maintain set master discharge pressure
    - Unit will throttle down to maintain pressure when intake pressure is received.
    - Unit will throttle up if intake pressure is lost to maintain pressure.
- **Cavitation Protection**
  - If water supply is lost, unit will idle out to avoid damage to pump.

Pump Operation

PRESSURE GOVERNOR / THROTTLE OPERATION

When operating in **PSI MODE**, the pressure governor offers the following:

- **PRESET BUTTON = 115psi** (cross-lays)
- **INC/DEC BUTTON = 2psi** per touch
- **INC/DEC BUTTON = 8psi** per second when held.

- **IDLE BUTTON** will throttle unit down to idle and bump pressure governor out of PSI/RPM mode.

Pump Operation

PRESSURE GOVERNOR / THROTTLE OPERATION

When setting pressure in PSI mode the display will flash the PSI in which the pressure governor is being set to.

The pump and discharge gauges will then catch up and match the pressure governor

Pump Operation

PRESSURE GOVERNOR / THROTTLE OPERATION

When operating in **RPM MODE**, the pressure governor **DOES NOT** auto adjust to hold the set pressure.

Any intake pressure will boost the discharge pressure.

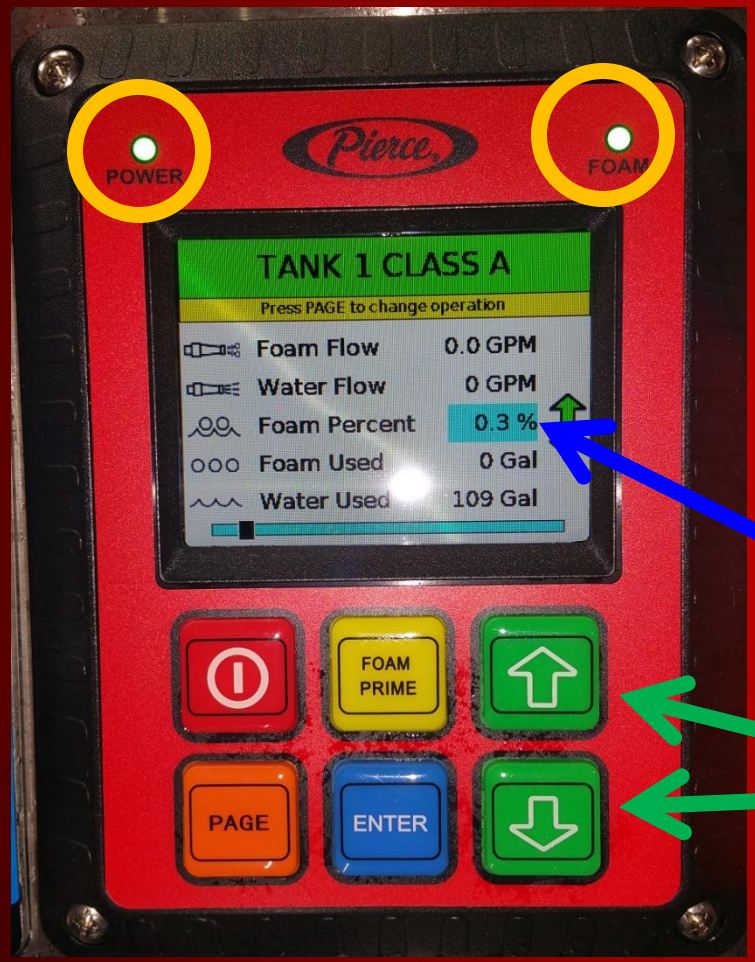
There is NO cavitation protection in RPM mode.

Pump Operation

FOAM SYSTEM OPERATION

- DEFAULT IN OFF POSITION
- To operate foam system press the RED power button.
- Foam system will only draft CLASS A FOAM SOLUTION
  - Class B draft is disabled

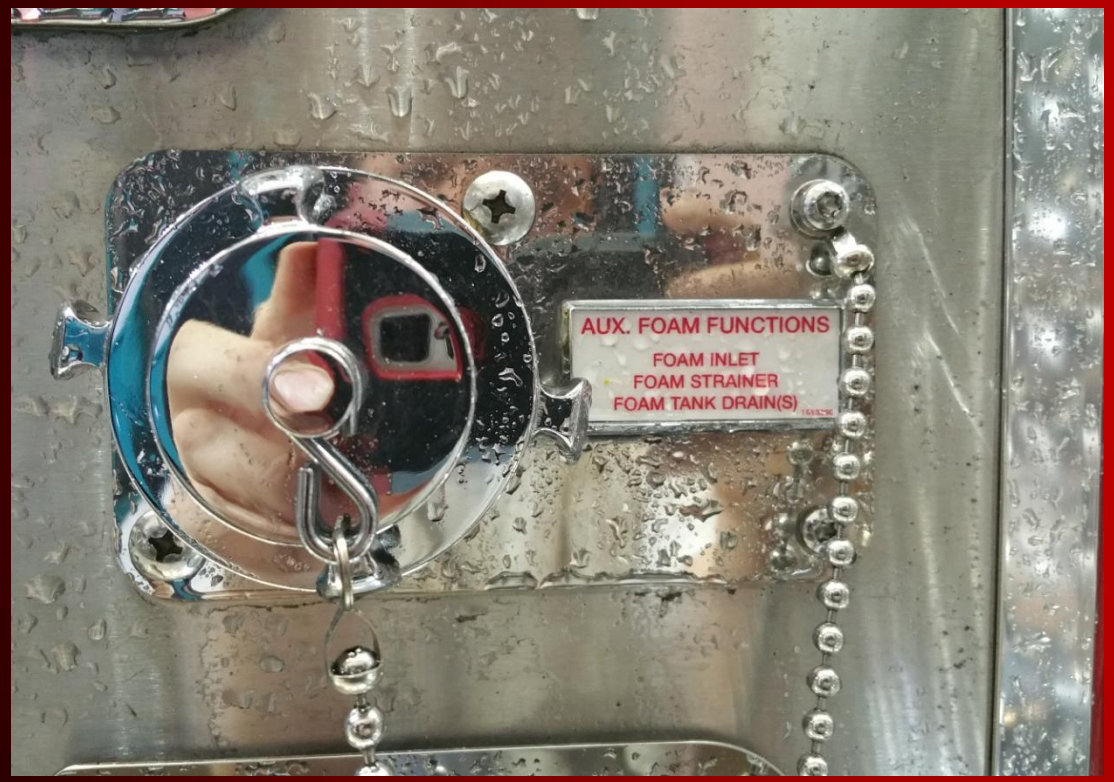
Pump Operation



FOAM SYSTEM OPERATION

- When FOAM system is in operation:
  - Power and FOAM lights will be illuminated
  - Water Used & Foam Used displays will function
  - When water/foam are flowing (lines open) FOAM light will flash.
- Default Foam Percent = 0.3%
  - Adjustable utilizing GREEN arrow keys on main screen.

Pump Operation



FOAM SYSTEM OPERATION

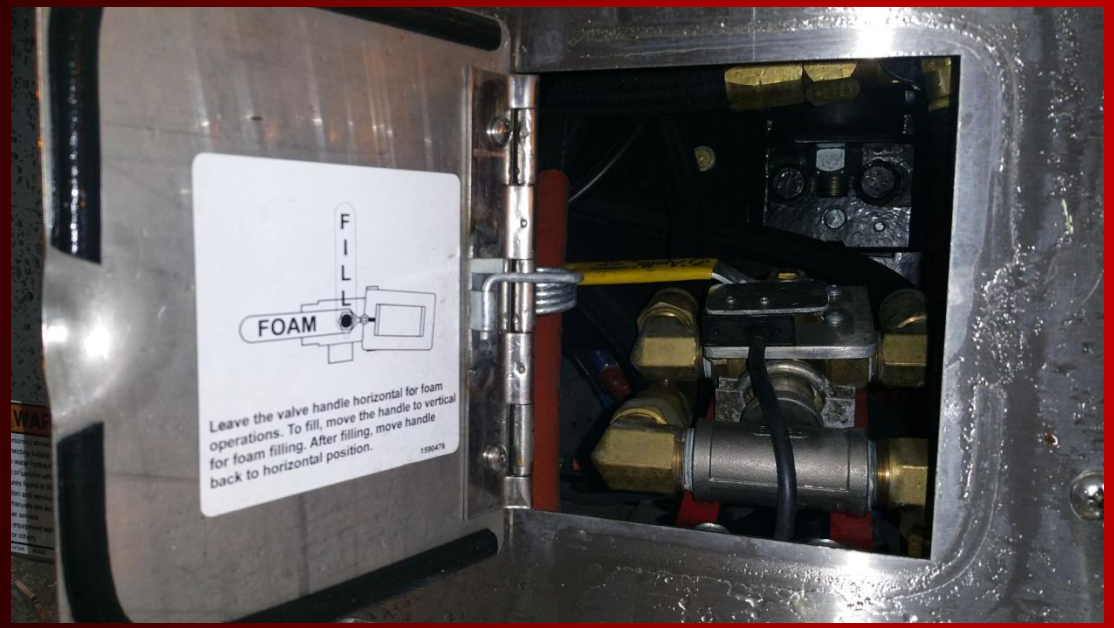
FILLING CLASS A utilizing direct tank fill:

(pump must be in gear)

1. Connect foam pick-up tube to FOAM INLET on pump panel

Pump Operation

FOAM SYSTEM OPERATION



FILLING CLASS A utilizing direct tank fill:

2. Place foam fill valve in FILL position. *(pointing away from operator)*

Pump Operation

FOAM SYSTEM OPERATION

FILLING CLASS A utilizing direct tank fill:

3. Press the PAGE button to enter the menu screen.
4. Scroll Down to the **FLUSH/FILL/DRAIN** option utilizing GREEN arrow keys
5. Press BLUE ENTER key to select option

Pump Operation

FOAM SYSTEM OPERATION

FILLING CLASS A utilizing direct tank fill:

6. Scroll Down to the **Fill Tank 1 Class A** option utilizing GREEN arrow keys
7. Press BLUE ENTER key to select option
8. Press the GREEN arrow key UP to place the system in ON

Pump Operation

FOAM SYSTEM OPERATION

FILLING CLASS A utilizing direct tank fill:

9. When complete place the system back in OFF
10. Close Tank Fill Valve
11. Disconnect foam pick-up tube
12. **RINSE FOAM PICK-UP TUBE THOUROUGHLY BEFORE PLACING BACK ON APPARATUS**

Pump Operation

FOAM SYSTEM OPERATION

FILLING CLASS A utilizing direct tank fill:

NOTE:

- If the Fill Valve is not in the FILL position when tank fill is ON the display will flash FILL/INJECT VALVE NOT IN FILL.
- **Direct tank fill must be stopped manually!** The system does not auto fill at a select rate or auto stop when full

Pump Operation

ATTENTION: USE CAUTION WHEN FILLING CLASS A & B FOAM. IF THE WRONG FOAM SOLUTION IS PLACED IN THE WRONG TANK THE MIXTURE OF CLASS A & B FOAM SOLUTION WILL SOLIDIFY IN THE TANK CAUSING SEVERE DAMAGE TO THE APPARATUS.

CAUTION: FOAM TANK WILL OVER FLOW WHEN UTILIZING DIRECT FOAM TANK FILL THROUGH PIERCE CAFS SYSTEM. MONITOR APPROPRIATE TANK FILL GAUGE AND POSITION A MEMBER ON TOP OF APPARATUS TO LOOK OUT FOR OVER FLOW.

Pump Operation

CAFS AIR COMPRESSOR OPERATION

To activate the system press the on switch to ON.

The compressor operates in two modes AUTO and MANUAL.

AUTO = PSI increases on demand

MANUAL = provides150psi continuous

Pump Operation

CAFS AIR COMPRESSOR OPERATION

The CAFS air compressor is equipped with an AIR OUTLET on the pump panel.

It is recommended to bleed off the CAFS air compressor when not in use / OFF.

This can be done utilizing this AIR OUTLET

Pump Operation

CAFS OPERATION

CAFS / FOAM SOLUTION capable discharges are marked on the pump panel in the following ways:

- FOAM/CAFS Label on discharge gates
- Description labels on valves/gauges marked with WHITE background and RED lettering

Pump Operation

CAFS OPERATION

CAFS / FOAM SOLUTION capable discharges are equipped with AIR VALVES

AIR VALVES are piped in AFTER the discharge gate

ENSURE THESE VALVES ARE **OFF** prior to turning on the CAFS Air Compressor!!

Pump Operation

CAFS OPERATION

To provide CAFS in a capable discharge:

1. Foam System must be **ON**
2. CAFS Air Compressor must be **ON**
3. Discharge **OPEN**
4. CAFS Air Valve **OPEN**

To flow CAFS in one discharge and water/foam solution from a second discharge turn on/off the CAFS Air Valve to add/remove air as desired.

Pre-Connected Hose Loads

Location	Length / Diameter	Comments
Bumper Line	150’ of 1¾” Attack Line	Elkhart 50psi / 150gpm breakaway nozzle (**GLOW** tip w/ **WHITE** bail)
Crosslay No. 1 (Driver’s Side)	200’ of 1¾” Attack Line	Elkhart 50psi / 150gpm breakaway nozzle (**YELLOW** tip w/ **YELLOW** bail)
Crosslay No. 2 (Officer’s Side)	200’ of 1¾” Attack Line	Elkhart 50psi / 150gpm breakaway nozzle (**BLUE** tip w/ **BLUE** bail)
Driver Rear Pre-Connect	400’ of 1¾” Attack Line	Elkhart 50psi / 150gpm breakaway nozzle (**GLOW** tip w/ **BLACK** bail)
Center Rear Pre-Connect	300’ of 2” Attack Line	Elkhart 50psi / 250gpm breakaway nozzle (**GREEN** tip w/ **GREEN** bail)
Officer Rear Pre-Connect	250’ of 2½” Attack Line	2½” to 1½” Playpipe w/ Stacked tips (1”, 1 $^{1}/_{8}$”, 1 ¼”)
Booster Reel	150’ of ¾” Rubber	Variable 10 & 40gpm nozzle at 100psi

Pre-Connected Hose Loads

DRIVER REAR PRE-CONNECT

400’ of 1¾” Attack Line w/ Elkheart 50psi/150gpm Elkheart Breakaway nozzle (**GLOW** tip w/ **BLACK** BAIL)

1st - 50’ Skid Load (left) - *ear placed on first fold*

2nd - 100’ Shoulder Load (left - on top of 50’ skid) – start *male to tail board*

3rd - 150’ Shoulder load (center) – start *male to tail board*

4th - 100’ Nozzle Load (right) - *nozzle unwrapped*

CLICK TO VIEW VIDEO

DEPLOYMENT & PACKING DEMONSTRATION

link text: https://youtu.be/V5UeVeWwmh0

Pre-Connected Hose Loads

CENTER REAR PRE-CONNECT

300’ of 2” Attack Line w/ Elkheart 50psi/250gpm Elkheart Breakaway nozzle (GREEN tip w/ GREEN BAIL)

1st - 50’ Skid Load (bottom) - ear placed on first fold

2nd - 150’ Shoulder Load (middle - on top of 50’ skid) – start *male to tail w/ approx 8’ slack*

3rd - 100’ Nozzle Load (top) - *nozzle unwrapped*

Pre-Connected Hose Loads

FRONT BUMPER PRE-CONNECT

150’ of1 ¾” Attack Line w/ Elkheart 50psi/150gpm Elkheart Breakaway nozzle (**GLOW** tip w/ **WHITE** BAIL)

1st - 50’ Horse shoe Load (closest to cab) - ear placed on first fold on both sides

2nd - 50’ Horse shoe Load (center) - ear placed on first fold on both sides

3rd - 50’ Donut role nozzle load (closest to bumber) - *nozzle pointed up*

Deck Gun Operation

This unit is equipped with an AKRON® Apollo™ Hi-Riser™ monitor gun.

NOTE: This CHANGE from the MCFRS Task Force Tips Deck Gun.

All users MUST familiarize yourself with the operation of this appliance.

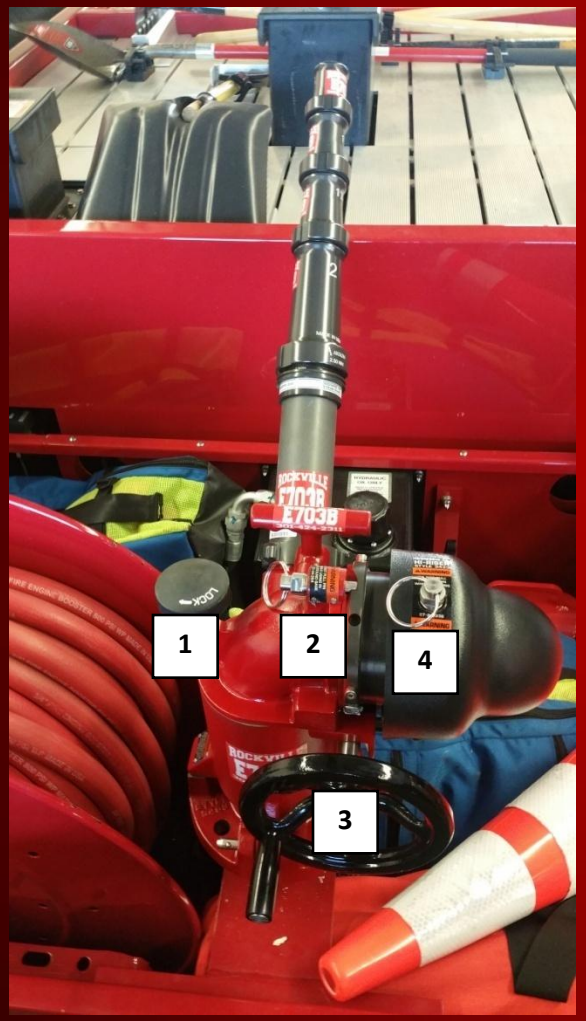
PRODUCT RATINGS		
MAXIMUM FLOW	DECK MODE	1250 gpm
	GROUND BASE (4" Supply)	1000 gpm
	GROUND BASE (Dual 3" Supply)	800 gpm
MAXIMUM PRESSURE		200 psi

TIP SIZES			
1 3/8"	1 ½"	1 ¾"	2"

Deck Gun Operation

When operating in DECK or GROUND MODE ALWAYS ENSURE THE CONNECTING PINS ARE ENGAGED BEFORE CHARGING THE DECK GUN.

Deck Gun Operation



DECK MODE

Utilize the picture to familiarize yourself with the controls of the Hi-Riser™ monitor gun.

Before operating / maneuvering the deck gun, you must first place it into the Hi-Rise position.

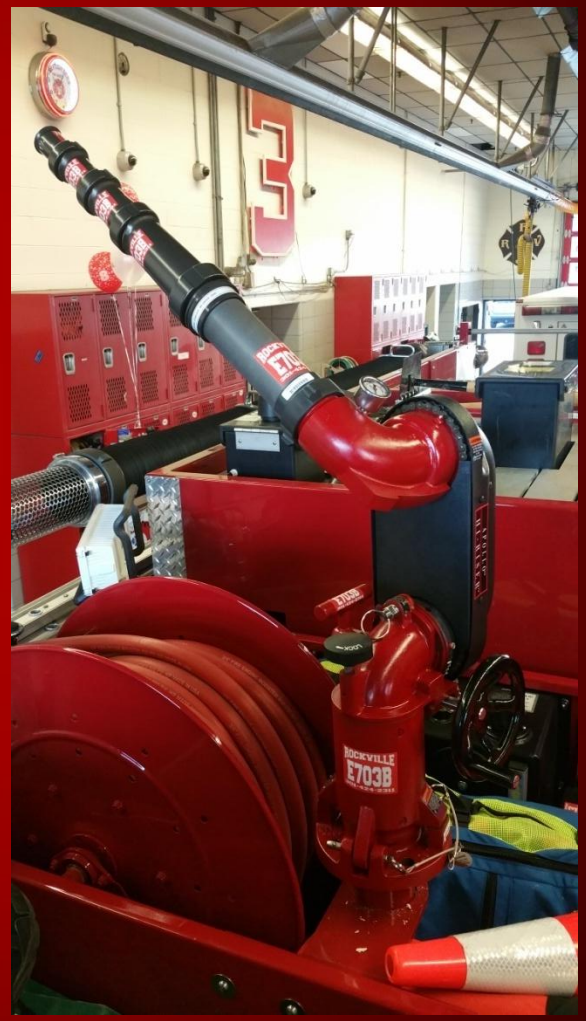
1. **SWIVEL LOCK –** Loosen to allow gun to move side to side
2. **BELOW GRADE –** Pull pin to allow gun to shoot below grade **(DO NOT OPERATE IN GROUND MODE)**
3. **VERTICAL WHEEL –** Controls UP/DOWN movement
4. **HI-RISE RELEASE –** Pull release and raise gun into hi-rise position for use. **(DO NOT OPERATE IN GROUND MODE)**

Deck Gun Operation

DECK MODE

Unit must be placed in Hi-Rise position to operate in Deck Mode.

Appliance will not clear obstacles in stowed position.



Deck Gun Operation

GROUND BASE

- Remove the deck gun from the pre-pipe by disengaging the connecting pins.
- Set up ground base:
  - Set ground base with large arm facing target
  - Set legs with striking tool on concrete or asphalt
  - Secure large leg to stationary anchor if available
  - Secure the Deck Gun to the Ground base with the connecting pins

Deck Gun Operation

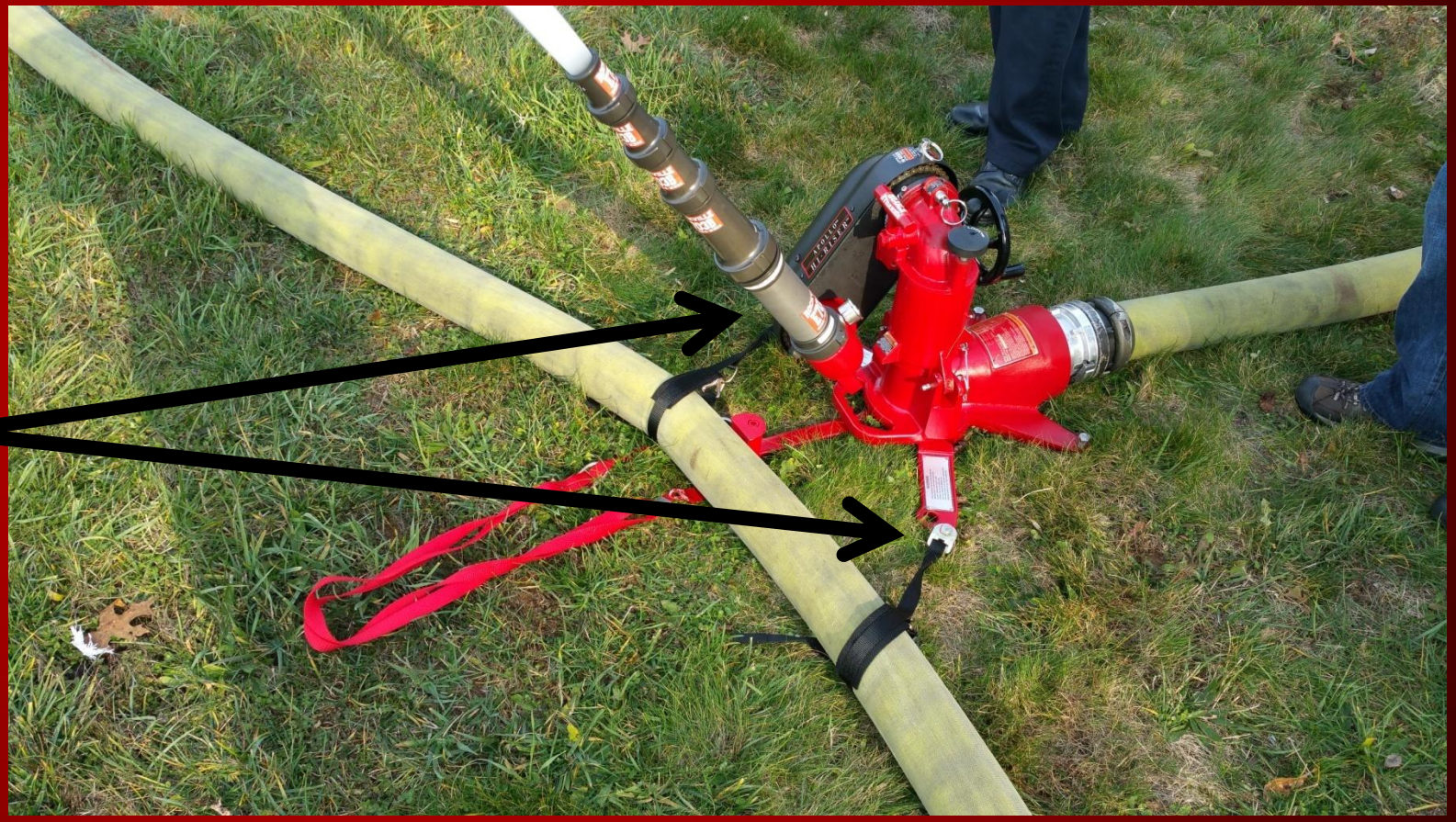
GROUND BASE

- Set up ground base (continued):
  - Supply Ground base with single 4” LDH Supply line
  - Stretch supply line across the front of the appliance (10’ in line) and loop into the rear intake.
  - Secure ground base to supply line utilizing black straps attached to side legs.

Deck Gun Operation

GROUND BASE

Side to Side Adjustment when in ground mode should only occur between side legs



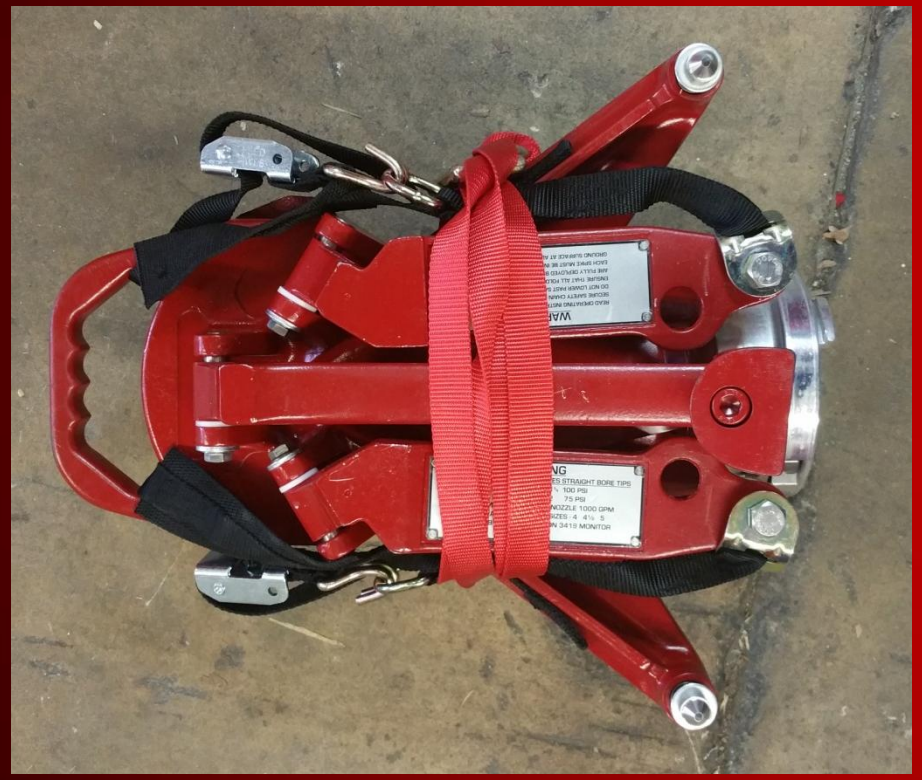
Deck Gun Operation

GROUND BASE

WARNING: DO NOT PLACE THE DECK GUN IN HI-RISE® MODE OR AIM BELOW GRADE WHEN OPERATING IN THE GROUND BASE. SERIOUS INJURY OR DEATH MAY OCCUR.

TO REMEMBER - WHEN IN GROUND MODE
"NEVER PULL THE PINS"

Deck Gun Operation



GROUND BASE

To for storage of the ground base:

- Collapse all folding arms
- Secure black hose straps onto themselves through carrying handle
- Secure red anchor point strap around the entire base and onto itself

Review

This presentation serves as a quick reference of the following for the incumbent driver on E703B (2015 Pierce Arrow):

- Quick Guide Specifications (critical numbers)
- Crew cab layout *(RVFD Duties by Position Guidance)*
- Pump operation
- CAFS Foam system
- Hose Loads
- Deck Gun Operation
- Daily / Routine Maintenance

All personnel should familiarize themselves with this apparatus and its capabilities as well as tools & appliances carried prior to driving or riding the unit.

Any Questions regarding this unit please contact
DFC C. HINDE