INTRODUCTION

1. The simplicity of a well designed hydraulic system and aerial assembly allows for an individual with average ability and proper training to become proficient in operating the aerial ladder. The safe and efficient execution of the aerial assembly functions during operations will depend, in part, on the operator's capacity not to extend the limitations and safety factors of the aerial assembly design.

THE AERIAL ASSEMBLY IS NOT INSULATED. KEEP THE AERIAL AT LEAST TEN FEET FROM OVERHEAD POWER LINES. WHEN ELEVATING THE ASSEMBLY NEAR LINES, PERSONNEL ON THE GROUND SHOULD STAND CLEAR OF THE VEHICLE, AND AVOID STEPPING ONTO OR TOUCHING THE VEHICLE UNTIL THE ASSEMBLY IS IN A SAFE POSITION WITH RESPECT TO THE OVERHEAD POWER LINES. PERSONNEL TOUCHING THE GROUND AND THE VEHICLE, WITH THE ASSEMBLY CONTACTING AN ENERGIZED POWER LINE, WILL BECOME A PATHWAY TO GROUND FOR ELECTRICAL CURRENT, RESULTING IN SEVERE PERSONAL INJURY OR DEATH.

2. Only trained operators should be allowed to operate the aerial assembly, observing the following rules to ensure safety and operational efficiency:

- Complete a comprehensive study of the manual and have a thorough knowledge of operating instructions,
- Learn to operate the controls without looking at the control panel. Learn the location of each control, its function, and how it operates.
- Operate the controls smoothly to prevent jerking and erratic aerial movement. Whipping and bouncing are the most likely cause of damage to the aerial and rotation gear assembly.
- Practice basic no load operations at a low engine RPM setting, under capable supervision during initial training. Practice full load operations in simulated "on the scene" conditions.
- Do not leave the operator's control station with the aerial assembly raised, or in an operational capability.
- Do not lower the aerial on buildings, trees, telephone poles, lights, or the truck body.
- Give undivided attention to the aerial assembly during operations, if distracted, stop operations.
- Personnel must wear a personal safety harness while the aerial is in operation.
- The operator should keep their eyes on the assembly to avoid overhead electrical wires or any object which could be struck.

IT IS RECOMMENDED THAT A SPOTTER BE USED IN STOWING THE AERIAL DEVICE INTO THE CRADLE. FAILURE TO DO SO COULD RESULT IN PROPERTY DAMAGE.
THE OPERATOR SHOULD NEVER LEAVE THE OPERATOR'S CONTROL STATION DURING ON SCENE OPERATIONS. IF PERSONNEL ON THE AERIAL BECOME OVERCOME BY SMOKE OR OTHERWISE INCAPACITATED, THE OPERATOR CAN MOVE THE AERIAL TO A SAFE LOCATION.

- Perform inspection of the aerial assembly and outriggers daily. Perform weekly operational tests to ensure unit readiness.
- Note and report any signs of trouble before or during operation, paying particular attention to the following:
  - Drifting hydraulic cylinders.
  - Excessive oil pressure, oil leaks, and excessive oil consumption.
  - Unusual noise or vibrations in the hydraulic pump.
  - Erratic movement of the aerial, turntable, outrigger jacks, or function controls.
  - Metal particles, sand, or other contamination on the aerial extension slide surfaces, outrigger jack legs, or cylinder rod surfaces.
  - Un lubricated aerial extension slide pads, or outrigger jack leg slide surfaces, pulleys, and retainers.

SITE LOCATION

1. The vehicle should be positioned at a suitable location where the ground is stable and the vehicle will be as level as possible. Maximum outrigger jack loads are generated during operation of the ladder assembly at full extension and low elevation to the side of the vehicle.

2. Use good judgement in a potentially precarious situation to not jeopardize vehicle stability. Take into consideration the following conditions:
  - Overhead power lines within TEN FEET of the aerial extension or other obstructions. The aerial ladder is not insulated and becomes a direct line for electrical flow.
  - Reach capability of the aerial assembly to required area. Refer to the safeload and reach charts outlined later in this section.
  - Hot and/or soft asphalt where outriggers may sink and cause the vehicle to become unstable.
  - Soft earth or ground erosion caused by hydrant or supply hose run-off water or rain.
  - Frozen ground thaw caused by vehicle created heat.
  - Retaining wall heights, open construction areas, underground parking ramps, or garages.
  - Underground drain or sewer pipes.
OUTRIGGER PADS SHOULD NOT BRIDGE CURBS, DITCHES, GULLIES, OR RUN-OFF DRAINS, OR BE PLACED OVER MANHOLE COVERS.

- Under any conditions, use wheel chocks under the front wheels.

LOAD CAPACITY AND TIP LOAD CHARTS

The Load Capacity Chart and Tip Load charts are mounted at the control console and the base of the aerial assembly on the left side. To ensure safe operations, the following general guidelines must be adhered to:

- Do not rely on memory. Refer to the charts before operating the aerial.
- Never exceed the published load limits.
- Distribute the weight on the aerial device evenly. Ten feet between personnel recommended.
PTO OPERATION

1. The power required to drive the main hydraulic pump is supplied by the vehicle engine accessory drive. The aerial PTO switch is located on the driver's control panel in the vehicle cab.

NOTE: On this vehicle the hydraulic system is supplied by the power steering pump. In this case, the PTO switch selects between the power steering or aerial operations through a diverter valve.

2. Outrigger and aerial assembly operations can begin after the aerial PTO is engaged. Engage the aerial
PTO in accordance with the following instructions.

NOTE: On vehicles equipped with an electro-hydraulic PTO, the PTO must be engaged below 1000 RPM.

NOTE: PTO engagement can only be achieved with the transmission in neutral, and the parking brake is set.

3. Set the parking brake.

OUTRIGGER OPERATION

1. The purpose of the outrigger is to provide an expanded level, rigid base for aerial operations.

2. Field circumstances can prevent less than ideal conditions for maximum stability provided by the outriggers.

3. Keep in mind that the more out of level the vehicle is, the more ladder stability is reduced.

4. Extend the outrigger jacks in accordance with the following instructions:

5. Position the vehicle at the selected site.

6. Shift the transmission to NEUTRAL.

7. Set the parking brake. With the engine at idle, engage the aerial PTO switch located on the cab dash.

8. Upon exiting the vehicle, wedge block the front wheels.

NOTE: The outrigger controls are located at the rear of the vehicle. The left jack control operates each left outrigger. The right jack control operates each right outrigger.

9. On the MASTER JACK CONTROL PANEL located at the rear of the vehicle, position the MASTER POWER switch to ON. The MASTER POWER indicator lamp will illuminate.

10. Position the LADDER/JACKS transfer switch to JACKS.

OPEN FLOW SYSTEM

With the engine at governed RPM, the hydraulic pump supplies fluid to the inlet ports of the various system control valves. The hydraulic fluid circulates through the control valves, filter, etc., and returns to the supply reservoir if the operating controls remain in neutral. Pressure in the non-functioning condition is very slight since minimal resistance is encountered. When an operator actuates a control lever, pressure in the applicable line of the selected system increases simultaneously, relative to resistance, resulting in the functional performance of the selected system.
11. Using the independent jack control on either side first, extend the outrigger out to the end of the cylinders stroke.

12. Spot the auxiliary jack pads, Then continue lowering the jacks, raising the vehicle until the tires are just clear of the ground.

**NOTE:** The auxiliary jack pads are located on the underside of the vehicle body, adjacent to each outrigger. The pads are intended to be used whenever the outriggers are operated.

13. Using the opposite JACK control, extend the opposite side outriggers in the same manner, raising the vehicle until the tires are just clear of the ground.

**NOTE:** Do not lower the outrigger jacks to the limit of the lift function. If the ground is not perfectly level, the operator will be unable to set the jacks securely on the ground, and the vehicle will not level.

14. Level the vehicle using the jack controls. The green INTERLOCK indicator lamp will light when both right
and left jacks down lights are illuminated.

**NOTE:** Recheck blocks after the vehicle has been raised. Ensure the blocks are repositioned from all wheels before lowering the vehicle and stowing outriggers.

15. Visually check outriggers for stable positioning.

16. Position LADDER/JACKS transfer switch to LADDER.

**SLOPED SURFACES**

1. Setting the outriggers should not be attempted on slopes exceeding 6% grade (3.4 degrees, 6 foot rise per 100 feet) front to rear, or side to side. The vehicle should not exceed a 6% grade when outriggers are set. Observe the grade indicators located at the rear of the vehicle, and maintain between the green and yellow zones. The smoothest operation will be obtained when leveled within the green zone. If the vehicle is on a slight slope, extend the outriggers in accordance with the following instructions:

2. Ensure the vehicle is ready for outrigger extension (See Outrigger Operations).

3. Extend the outrigger on the uphill (high) side first, until the jack is touching the ground.

4. Extend the outrigger on the downhill (low) side, raising the vehicle to a level position. The vehicle must be raised enough to sequence the interlock system and unload the suspension.

5. Using the opposite JACK control, extend the opposite side outriggers in the same manner, raising the vehicle slightly, taking the rear tires slightly off the ground.

**CAUTION**

PREFERRED AERIAL OPERATION IS ON THE UPHILL SIDE. WHEN CIRCUMSTANCES FORCE OPERATIONS TO BE PERFORMED ON THE DOWNHILL SIDE, A REDUCED PAYLOAD AND SHORTENED RADIUS WILL BE REQUIRED TO COMPENSATE FOR THE INCREASED TILTING FORCES, WHICH CREATE REDUCED VEHICLE STABILITY. THIS IS ONLY TRUE IF OPERATING ON GREATER THAN 6% SLOPE.
UNEVEN TERRAIN

1. On uneven terrain, where outriggers cannot be extended enough to give proper lift, blocking with sufficient support size and strength may be placed under the outrigger pads.

NOTE: The first choice when encountering uneven terrain is to relocate the vehicle. If on scene emergency conditions do not permit relocation, blocking may have to be used.

2. Caution should be exercised when using blocking. Place the blocking so it will not slip from under the jack pad.

NOTE: EMERGENCY ONE does not recommend that blocking be used, but does recognize that not all emergency situations will allow ideal operating conditions.

WINDY CONDITIONS

Aerial assembly operations are not recommended with wind speeds in excess of 35 MPH. Operations with full load and extension are capable of being performed by the ladder assembly within the 35 MPH wind speed limit.

EXTREME HEAT CONDITIONS

1. If the aerial assembly is exposed to extreme heat during operation, thoroughly inspect the assembly, directing particular attention to the ladder extension slide pads, cables, waterway seals, pulleys, and hydraulic lines.

2. The aerial should be inspected and tested in accordance with NFPA-1914 standard testing. Check the heat indicators located at the tip of each aerial section on the forward facing brace. If the heat indicator turns black, have the aerial tested using a Barber-Coleman Model GYZJ 934-1 portable hardness tester, check the aerial material for hardness. Normal hardness readings should fall between 78 to 82.

FREEZING CONDITIONS

1. A substantial build-up of ice is very probable in freezing weather when operating a waterway system on the aerial assembly.
WHEN OPERATING IN FREEZING CONDITIONS, SAND OR SALT SHOULD BE USED UNDER THE JACK PADS TO KEEP THE VEHICLE FROM SLIDING WHEN THE AERIAL IS IN THE EXTENDED POSITION. SERIOUS DAMAGE TO EQUIPMENT AND INJURY OR DEATH TO PERSONNEL ON THE AERIAL DEVICE COULD OCCUR.

**NOTE:** Ice build-up and accumulation on the aerial will decrease load and extension capabilities. Use a steam cleaner or de-icer to remove ice. **Do not chip ice with an axe.**

2. Aerial movement should be possible even with a build-up of ice. Ice build-up on the aerial may have to be tolerated until corrective action can be taken. Avoid ice accumulation on any controls.

**NOTE:** Hydraulic aerial movement will be comparatively slow when the fluid is cold. Normal speed will return as the fluid warms from circulation.

3. When a vehicle has been exposed to below zero weather without operating for a prolonged period of time, allow the fluid to circulate at low throttle until the fluid becomes warm before operating the ladder or outrigger functions.

4. Oil locked in the outrigger cylinders, or any cylinder locked for an extended period of time during operation, will quickly return to ambient temperature.

5. Thoroughly inspect the aerial assembly after operating in ice and freezing conditions. Particular attention should be directed to the extension slide pads, cables, pulleys, and hydraulic lines.

6. Ensure waterway has been drained as per procedures in WATERWAY DRAINING later in this section.

**OPERATOR CONTROL CONSOLE**

The operator control console is located on the left side of the ladder assembly and has three separate levers controlling the three aerial functions of raising-lowering, extension-retraction, and rotation. Lever movement for the desired function is outlined below.

**CAUTION**

**ALWAYS OPERATE CONTROLS SLOWLY AND SMOOTHLY TO AVOID JERKY AND ERRATIC LADDER MOVEMENT. DO NOT MAKE SUDDEN CONTROL LEVER, ENGAGE, OR DISENGAGE MOVEMENTS. SUDDEN ERRATIC LADDER OR JERKING MOTION COULD ENDANGER PERSONNEL, AND CAUSE DAMAGE TO THE LADDER ASSEMBLY.**

1. Apply slow even pressure to control levers for smooth ladder function starts and stops. Hold each lever back or forward until desired ladder position is obtained.

2. Increasing the operational speed of a given function is controlled by lever movement away from its neutral position.

3. Use finger and handrest (formed ring around control levers), for improved hand stability and metering control.
OTHER FEATURES

1. LOAD CAPACITY CHART
2. RUNG ALIGNMENT INDICATOR
3. EMERGENCY PUMP SWITCH
4. FAST IDLE SWITCH
5. LADDER LIGHTS SWITCH
6. PANEL LIGHTS SWITCH
7. LADDER CONTROLS
8. MONITOR CONTROLS
9. HYDRAULIC PRESSURE GAUGE
10. INTERCOM SYSTEM
11. FLOWMINDER
12. BREATHING AIR LOW LIGHT

Load Capacity Chart (1)
- Understand the load capacities of this chart.
- Never exceed the published load limits.

Rung Aligned Indicator (2)
This light will illuminate when the ladder rungs are in alignment and safe for climbing.

Emergency Pump Switch (3)
Activate this switch when the hydraulic system has failed. Use the pump only to retract the outriggers and bed the ladder (see Auxiliary Hydraulic Pump Operations later in this section).
**Fast Idle Switch (4)**
Activate this switch to increase/decrease engine RPM.

**Ladder Light Switch (5)**
Activate this switch to illuminate the ladder spotlights.

**Panel Light Switch (6)**
Activate this switch to illuminate the panel console lights.

**Aerial Controls (7)**
These controls allow movement of the ladder assembly.

**Monitor Controls (8)**
These three switches control the monitor at the tip of the aerial. The controls are as follows: left/right, stream/fog, and up/down.

**Hydraulic Pressure Gauge (9)**
This gauge displays the operating pressure when the ladder is active. Normal operating range is between 1000 and 3000 PSI.

**Intercom (10)**
The intercom system has the following functions:

- **Base Volume Knob:** This knob controls the volume at the control console.

- **Talk Switch:** This switch allows the console operator to communicate with personnel on the aerial tip.

- **Tip Volume Knob:** This knob controls the volume at the platform speaker.

**Flowminder Gauge (11)**
This digital gauge monitors the flow in the waterway system.

**Breathing Air Low light (12)**
This light will illuminate when the breathing air pressure is at 20%. An audible alarm will sound with the light. See BREATHING AIR OPERATIONS later in this section.

**Hourmeter**
An hourmeter, situated on the front of the console, displays the hours used on the aerial device. It will continue to run anytime the aerial master switch is on.
INTERLOCK SYSTEM OPERATION

1. The electro/hydraulic interlock system is designed to allow boom and aerial assembly operation only after all outrigger jacks are positioned on stable ground. Normal retraction of the outriggers can be accomplished only when the ladder is firmly stowed.

NOTE: If the electro/hydraulic interlock system fails to operate, see Manual Interlock Override in this section.

2. OPERATIONAL DESCRIPTION: The following is a sequential operational description of the hydraulic interlock system, beginning with the aerial in the stowed (travel) position. Viewing the electrical and hydraulic schematics while reading the operational descriptions, will aid in understanding the interlock system.

3. The stowed aerial closes the plunger switch located on the forward ladder support. This switch allows 12-volts to the JACKS side of the manual LADDER/JACKS transfer switch. Manually tripping the transfer switch to JACKS allows the 12-volts to activate the solenoid directional valve, directing fluid flow from the hydraulic pump through valve port 'P' and out valve port 'A' to the outrigger control valves. The directional valve is detented and will stay in position throughout either outrigger or aerial operations once it has been activated.

4. Switches on each jack leg are wired in series and will activate a relay, that in turn will turn on the jack down lights. After all the jacks down lights are on, the interlock light will come on automatically.

5. The instant 12-volts is at the aerial side of the transfer switch, the indicator lamp will light. The illuminated indicator will mean that 12-volts is available at the transfer switch to redirect the solenoid hydraulic directional valve for aerial operations. Manually tripping the transfer switch to LADDER will energize the solenoid for the directional valve and redirect fluid pressure thru port 'P' and out port 'B' to the aerial control valves.

6. Once the aerial is raised from the stowed position, the roller plunger switch opens, and electrical flow to the JACKS side of the transfer switch is stopped, making the switch non-functional for jack operational transfer. When the aerial is firmly stowed, the transfer switch will again become functional for transfer to jack operations.

NOTE: When the aerial is in the raised position and the vehicle electrical power is shut off, the interlock lamp will go out. When vehicle power is restored, the jacks down and interlock lights come on and aerial power will resume.

7. Manually placing the transfer switch to JACKS will activate the solenoid directional valve and redirect hydraulic flow for outrigger operations. When the JACK controls are placed in the UP position, to begin retracting the outrigger jacks, 12 volts from the switch will activate the relay and shut off the interlock light, killing power to the aerial side of the transfer switch.
MANUAL INTERLOCK OVERRIDE

1. In the event that the electro/hydraulic interlock system malfunctions, the directional solenoid valve can be manually overridden to re-direct hydraulic pressure flow for either aerial or outrigger operations. Access is through a small door at the rear of the vehicle.

NOTE: The LADDER/JACKS transfer switch must be positioned in the correct functional mode before the control valve will switch to the desired function.

2. Outrigger jack power is redirected by pressing the manual actuator facing the operator, when the access door is opened.

3. Aerial power is redirected by reaching behind the control valve and depressing the actuator.

WARNING

MANUAL INTERLOCK OVERRIDE SHOULD ONLY BE PERFORMED IN THE EVENT OF AN ELECTRICAL SYSTEM MALFUNCTION. DO NOT OPERATE THE AERIAL UNLESS THE OUTRIGGERS ARE EXTENDED TO A SAFE OPERATING CONDITION. FAILURE TO FOLLOW THESE DIRECTIONS COULD RESULT IN SERIOUS INJURY OR DEATH.

MANUAL OVERRIDE of the JACK CONTROL VALVE

1. In the event of electrical failure, follow the procedures below:

2. Depress the manual override button on the unloader valve.

3. Depress the manual override button on the desired jack control.

NOTE: LADDER/JACK selector switch must be in the jack mode.
AUXILIARY HYDRAULIC PUMP

1. The boom and outriggers may be moved to the stowed position in case the main hydraulic pump malfunctions or the vehicle engine stalls.

CAUTION

THE AUXILIARY PUMP MOTOR IS NOT DESIGNED OR INTENDED FOR CONTINUOUS USE. OPERATION SHOULD BE LIMITED TO THE NECESSARY TIME TO RETURN THE AERIAL ASSEMBLY AND OUTRIGGERS TO THE STOWED POSITION. DAMAGE TO PUMP WILL RESULT.

2. The auxiliary hydraulic pump is driven by a 12-volt DC electric motor which uses the vehicle batteries as its power source.

3. Use of the auxiliary pump will enable operation of all hydraulic functions, but not simultaneous operation. The operational speed of each function will be reduced due to a substantially lower GPM flow than the main hydraulic pump.

NOTE: One momentary contact switch to activate the auxiliary pump is located at the rear operator’s control station for boom and outrigger assembly operation, and two switches located at the rear of the vehicle for outrigger operation. Optional switches may be located at the pump operator’s station.

4. Activate the auxiliary pump by holding the momentary contact switch to ON, while simultaneously operating the retract, rotate, or lower control levers. After operations have been completed,
release the momentary contact switch to halt auxiliary pump operation.

5. To manually activate the auxiliary pump for outrigger operations, hold the momentary contact switch, located on the rear panel, in the ON position. Operate the right and left JACK levers to raise and stow outriggers. Release the momentary contact switch to halt auxiliary pump operation.

NOTE: If outrigger jacks fail to complete full cycle of retraction, the dual sequencing valves may be set too high to allow operation at the reduced GPM and PSI output of the auxiliary pump.

6. Refer to OUTRIGGER PROGRESSIVE OPERATION in the Service and Maintenance manual.

EMERGENCY OPERATIONS

1. If a failure or rupture in the hydraulic system occurs, operations should be halted immediately.

2. Depending on the failure or rupture location, it may be necessary to shut down the hydraulic pump by disengaging the PTO, or stopping the vehicle engine. Not operating a particular control in-line with a rupture may be sufficient action to stop fluid from being ejected.

### RUNG ALIGNMENT

When extending or retracting the ladder, observe the rung alignment indicator light located on the turntable control console. The lamp will illuminate when the overlapping sectional rungs are properly aligned for climbing.

### INTERCOM OPERATION

1. 2 WAY INTERCOM. An intercom is located at the rear operator control station and boom tip. OFF/ON, VOLUME and TALK switches for intercom operation are located at the control station.

2. Personnel at the aerial tip are not required to operate controls to talk or listen. The speaker at this station is a talk/listen type module. A volume knob is located at the control station, controlling speaker volume only, not the talk function.

3. The control station operator will be required to depress and hold the talk momentary contact switch while talking. During initial start up, turn the OFF/ON switch to ON. Gradually turn the VOLUME knob and vocally test the system for a suitable volume level at each intercom control station.

### OPERATING INSTRUCTION OUTLINE

1. The safe and efficient operation of the aerial functions during operation will depend on the ability of the operator not to exceed the capabilities and safety factors of the aerial design. Read and observe all instructions and safety precautions as an aid to proper operation.
2. Make a visual inspection of the aerial, waterway system, cables, hydraulic lines, etc., before operation. Do not operate the vehicle until all repairs have been made.

3. Choose a suitable location on stable ground, and position the vehicle as level as possible, being aware of power lines and buildings.

4. Set the parking brake, set the transmission to neutral, wedge-block the front wheels, and engage the PTO. Position MASTER POWER switch located on the master jack control panel to ON.

5. Extend the outriggers, position the auxiliary jack pads, and lift the tires slightly off the ground to a level position. Observe the INTERLOCK indicator lamp.

6. Position LADDER/JACKS transfer switch to LADDER. Observe the Safe Load and Reach Chart located on the operator control station panel.

7. Raise the aerial enough to clear cab and equipment before extending or rotating. Operate the aerial at engine idle R.P.M when maneuvering the aerial near buildings or confined spaces.

8. The fast idle switch may be activated to raise engine RPM for multiple controls in non-restricted areas.

9. Raise, extend, and rotate the aerial assembly.

10. Return the aerial to the stowed position, operating the engine at idle RPM. Bed the aerial down in the cradle. Observe hydraulic pressure of between 1000-1200 PSI at idle speed only.

11. Place the LADDER/JACKS transfer switch from LADDER to JACKS position.

12. Completely retract the outriggers. Place the MASTER POWER switch to OFF. Disengage the PTO.

**ANTI-ELECTROCUTION PLATFORM (OPTIONAL)**

1. The pump control panel operator should stand on the anti-electrocution platform when the aerial is being operated.

2. The platform slides out from the underside of the vehicle underneath the pump panel rubrail.

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**DANGER**

IF THE AERIAL MAKES CONTACT WITH ANY ENERGIZED ELECTRICAL LINE, DO NOT ALLOW ANY PERSON ON THE GROUND TO TOUCH THE VEHICLE OR ANY PERSON ON IT. PERSONNEL ON THE AERIAL OR VEHICLE WILL BECOME THE SAME VOLTAGE POTENTIAL AS THE ELECTRICAL WIRE. THEREFORE, IT IS EXTREMELY IMPORTANT FOR PERSONNEL ON THE VEHICLE NOT TO TOUCH THE GROUND. PERSONNEL TOUCHING THE GROUND AND THE VEHICLE, WITH THE AERIAL CONTACTING AN ENERGIZED POWER LINE, WILL BECOME A PATHWAY TO GROUND FOR ELECTRICAL CURRENT, RESULTING IN SEVERE PERSONAL INJURY OR DEATH.
3. Standing on the anti-electrocution platform will raise the pump panel operator off the ground and keep the operator from being a pathway to ground for electrical current if the aerial contacts an energized power line.

4. If the aerial comes in contact with an energized power line, all ground personnel should stand clear of the vehicle and avoid stepping on or touching the vehicle until the aerial is in a safe position with respect to the power lines.

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**WATERWAY DRAINING**

1. Always drain the waterway system after use (particularly in extremely cold weather).

2. With the rear drain valve completely open, raise the aerial to its maximum elevation to allow water to completely drain from the waterway.

**NOTE:** Full extension is required to complete waterway draining.

**FLUSHING LOWER WATERWAY**

1. On vehicles equipped with a prepiped waterway and a water pump, remove the rear inlet cap and flush out the lower waterway with the water pump.

2. Flushing will help keep rust scale, sand, and other debris out of the waterway seals. Flushing should be performed monthly.
**PINNED WATERWAY**

![Warning Icon]

**DANGER**

Before pinning waterway to its alternate position, waterway must be completely drained, ladder retracted, and aerial at zero degrees elevation. Never attempt to unlock the locking pin while the waterway is in use. Serious injury or death could result.

Ensure the pin is in place and button on top of pin is popped out before waterway is placed under pressure. Damage to equipment could result.

**NOTE:** A primary concern when arriving at a fire scene is rescue capability. Therefore, it is recommended that the waterway be pinned at the mid-section as standard configuration. To attain maximum water tower operations, the monitor is to be pinned at the fly section.

**MONITOR OPERATIONS**

![Warning Icon]

**WARNING**

When operating the monitor water nozzle from the aerial tip, the operator should be secured with a safety belt. Movement of the water nozzle can cause erratic horizontal movement in the aerial due to change in direction of nozzle reaction force. Serious injury or death could occur.

Electric monitor control toggle switches for up/down, right/left, and straight/foam monitor functions are at the turntable control console and at the aerial tip. The controls at the console override the tip controls. The switches are momentary contact switches, which stop monitor functions when released.

**NOTE:** See the Akron or Elkhart operator segment later in this manual.
BREATHING AIR (OPTIONAL)

The breathing air system supplies fresh air to fire fighters during rescue operations. It is mounted at the base of the aerial ladder and is made up of air tanks, manifolds, valves, stainless steel lines and fittings, high and low pressure switches, audible and visual alarms, and fill ports.

Normal Operations

1. Open the tank valve.

2. Verify the high pressure gauge reads system pressure.

3. Verify the low pressure side of the tank reads 100 PSI.

NOTE: If the low pressure gauge does not read 100 PSI, adjust regulator by loosening the locknut and turning the schrader valve left or right to attain 100 PSI. Apply the lock nut after adjustment.

4. Attach the breathing apparatus or masks at the appropriate locations at the tip of the ladder.

NOTE: A pressure relief valve will open if operating pressure exceeds 150 PSI.

Filling the Tanks

1. Remove fill cap from fill port located on breathing air manifold.

2. Using a pressurized air source, such as certified breathing air, attach the servicing hose to the fill port.

3. Open fill valve. This valve will stop the filling process when tanks are full.

4. Open the tank valve.

5. Once system is filled, close tank valve and close needle valve.
7. Remove servicing hose and replace fill cap on fill port.