



**BLACKWOOD FIRE COMPANY
TOWER84LADDER**

**BASIC TOWER OPERATOR
TRAINING CLASS**

COURSE OBJECTIVE

- TO PROVIDE QUALIFIED COMPANY MEMBERS WITH THE BASIC KNOWLEDGE TO SAFELY AND EFFICIENTLY OPERATE THE TOWER LADDER

OPERATOR PROFICIENCY

- Successful completion of this course will provide members with the basic knowledge to operate the tower
- On-going practice will result in increased proficiency and confidence as a tower operator

COURSE SCHEDULE

- Friday Night: 1900 to 2200
 - Course Overview
 - Review of Training Manual
 - Power Point Presentation



COURSE SCHEDULE

- Saturday
 - 0800 to 1200
 - Apparatus Review
 - Power Systems
 - Turntable Controls
 - Platform Controls
 - Basic Set Up:
 - Automatic
 - Manual
 - Short Jacking



COURSE SCHEDULE

- Saturday
 - 1300 to 1600
 - Platform and Turntable Operations
 - Single Movements
 - Dual Movements
 - Platform Placement
 - Fire suppression vs. rescue



COURSE SCHEDULE

- Sunday
 - 0800 to 1200
 - Review of Saturday material
 - Emergency systems
 - Supplied Air Operations
 - Water Tower Operations



COURSE SCHEDULE

- Sunday
 - 1300 to 1600
 - Parapets
 - VES
 - Victim Removal
 - Stokes Basket Raise



VITAL STATISTICS

Apparatus

2002 Spartan Gladiator FF Chassis
KME 95' Aerialcat Tower Ladder



VITAL STATISTICS

Size/Drive Train

- Overall Height: **11'**
- Overall Length: **45'8"**
- Overall Width:
 - Outriggers Retracted: **8'4"**
 - Outriggers Extended: **18'**
 - Wheelbase: **258"**
- Gross Vehicle Wt. Rating: **79,500**
- Engine: **Detroit Diesel Series
60 rated @ 470 HP**
- Transmission: **Allison HD4060P
5 speed**
- Seating Capacity: **8**

VITAL STATISTICS

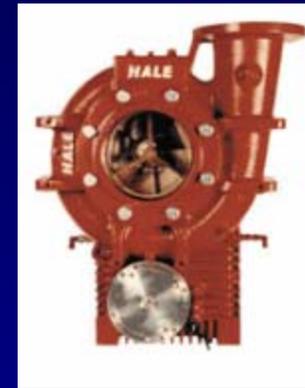
Aerial Device

- Horizontal Reach: **85'**
- Elevation (Angle): **-12 to +80 degrees**
- Vertical Reach: **95'**
- Basket Capacity: **1000 lbs.**
- Dry: **500 lbs.**
- Flowing water:
 - within 3.5 degrees of level
- Waterway Capacity: **1500 GPM**
 - If gun(s) are positioned above ladder centerline or >45 degree side to side **1000 GPM**

VITAL STATISTICS

Pump/Hose

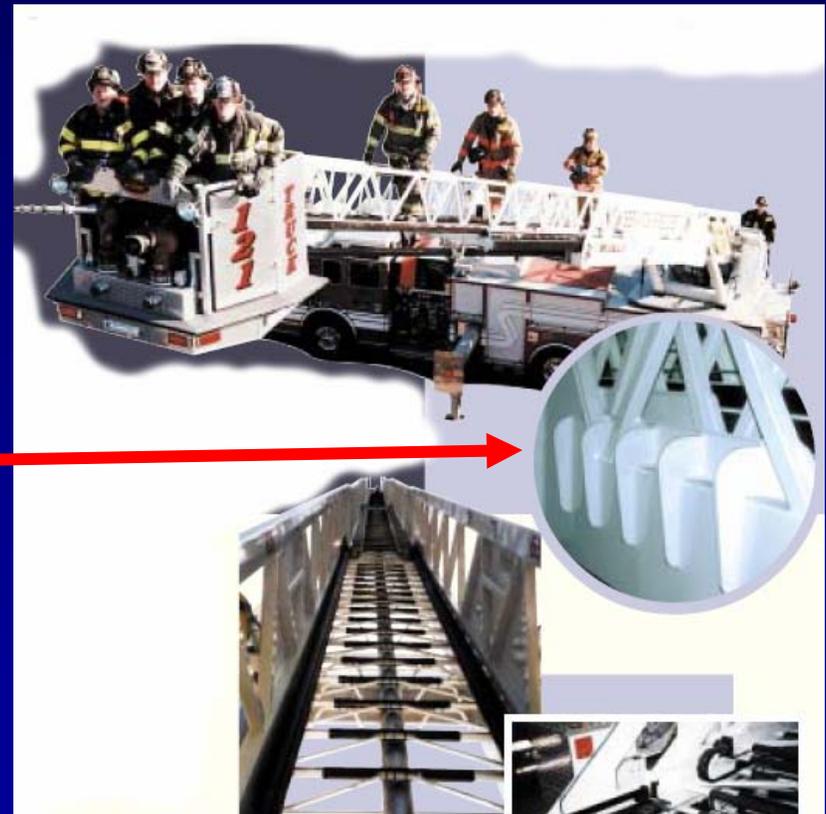
- Pump: Hale 8FG 2500 GPM
Single Stage



- Booster Tank: 300 gallon capacity

LADDER CONSTRUCTION/FEATURES

- 5 section mid-mount design
- Ladder constructed of 80,000 PSI Steel
- Internally rust proofed
- Force distribution members
 - Located on the overlap area between sections
 - Strengthens the ladder and helps distribute the loads



LADDER MOUNT DESIGN TORQUE BOX

- Torque box is constructed and bolted to the frame
- Ladder is then mounted to the torque box
 - Adds strength
 - Ties frame rails together
 - Resists twisting forces



LADDER MOUNT DESIGN

- The mount design and piston configuration allow the platform to reach the ground while fully retracted (on level ground)



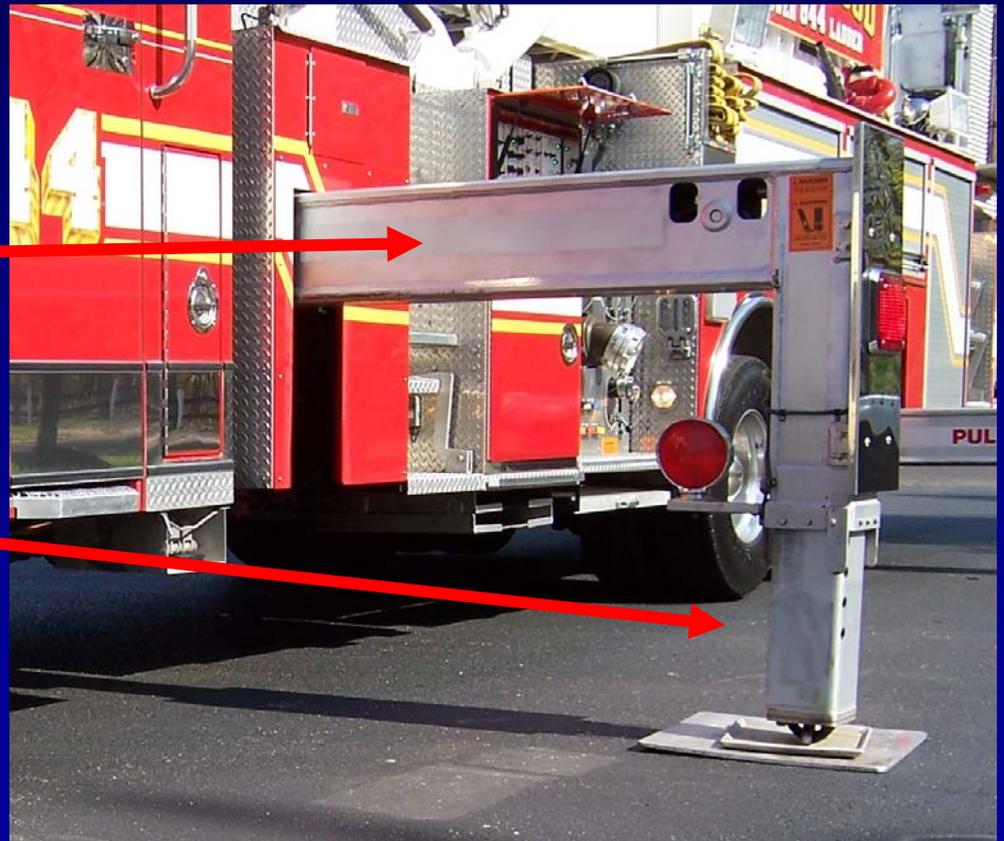
OUTRIGGERS

- H style
 - Also referred to as “out and down”
- Rear outriggers are mounted under frame
- Front outriggers are mounted to the torque box, above the frame



OUTRIGGERS

- Nomenclature:
 - Beam
 - Moves in and out
 - Jack
 - Moves up and down



OUTRIGGERS

- Wheel span of the truck is not sufficient to overcome the weight of the ladder when rotated to the side of the truck
- Outriggers increase the footprint of the truck and provide the necessary stabilization
- Proper deployment of the outriggers is one of the most critical aspects of preparing the aerial device for service
- Use is mandatory whenever the ladder is raised from the cradle
- **Without additional stabilization, the truck will fall onto it's side.**

OUTRIGGERS

- Stabilization is provided by extending the outrigger beams and lowering the jacks to support the weight of the apparatus
 - Working side outriggers must be fully extended
 - Non-working side outriggers do not have to be extended
 - Jacks must still be used

OUTRIGGER PADS

- Use is mandatory
- Provides NFPA required surface area
- Spreads force of outriggers over wider area
- Beware of soft or uneven surfaces
 - Use cribbing if necessary



TRUCK STABILITY

The stabilizers are only as strong as the surface they're resting on



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Note the relatively small size of the circular pads

TRUCK STABILITY

- Outriggers must rest on firm even ground
- Use extreme caution if:
 - Outrigger(s) will rest on unpaved or ice covered surfaces
 - Especially if truck is on a grade
- Precautions must be taken to ensure truck will not slide
- At least one tire must be in contact with ground when outriggers are set (parking brake locks all wheels)
- **If unsure, do not use aerial!**

PROOF LOAD TESTING

- Designed to replicate the following conditions:
 - Dead Weight (the single most severe load):
 - Weight of the ladder, empty platform and equipment
 - Ladder fully extended in all elevation attitudes.
 - Platform Loads:
 - Weight of the occupants and equipment the platform must carry
 - Up to 1,500lbs in all extension/elevation possibilities

PROOF LOAD TESTING

- Ice Loads
 - Up to 1/4" ice on all exposed elements
 - Nearly 3,600 lbs of additional weight to the entire structure
- Dynamic Loads
 - Abrupt stops and starts of the ladder
- Wind Loads
 - 50 mph from all directions
- Hose Nozzle Thrust Loads
 - All possible thrust directions of the nozzle

PROOF LOAD TESTING



COMPARTMENT LABELING

- ALL outside compartments on the sides of the truck are assigned an alpha-numeric designation
 - L for left side of truck
 - R for right side of truck
 - Number designation for front to back

COMPARTMENT LABELING

Driver's (Left) Side



COMPARTMENT LABELING

Officer's (Right) Side



HOSE LOADS

Front Bumper Line

- 150' of 1 3/4" hose with 15/16" smooth bore nozzle
 - 185 GPM @ 50 PSI
 - < 2 minutes flow on tank water



HOSE LOADS

Preconnect 1

- 150' of 2 ½" hose with 1 ¼" smooth bore tip
 - Blitz Line
 - 330 GPM @ 50 PSI
 - < one minute flow on tank water



HOSE LOADS

Preconnect 2

- 300' of 1 3/4" hose with 15/16" smooth bore tip
 - 185 GPM @ 50 PSI



HOSE LOADS

Driver Side Rear Bed

- 250' of 3" hose with 1½" smooth bore nozzle
 - Bomb Line
 - 475 GPM at 50 PSI
 - About 40 seconds of flow on tank water



HOSE LOADS

Officer Side Rear Bed

- 700' of 5" LDH Supply Hose
 - transverse packed
 - couplings aligned with chute



BODY MOUNTED DECK GUNS

- Two body mounted Elkhart Stinger deck guns
 - Stacked tips
 - Pre-piped
 - Can be removed for portable mount
 - 500 to 1,000 GPM flow capability



ELECTRICAL CAPACITY

- Harrison 30KW hydraulic generator
 - Powered by a live power PTO
 - can be left running while truck is in motion
- Engine RPM's **MUST BE** below 900 RPM when PTO is engaged
 - Serious damage can result



CORD REELS

- One mounted in the driver's side rear body access ladder well
 - 200' 10/4 wire
 - 220V/20 amp at plug
 - Reduced to 110V/20 amp at junction box outlets



CORD REELS

- One mounted in officer's side front body access ladder well
 - 200' 10/3 wire
 - 120V/20 amps
 - Junction box located in compartment R-7



SCENE LIGHTING

- Total of 21,250 watts of scene lighting
 - Critical to firefighter safety
 - Victim identification
 - Scene hazards

BEFORE



AFTER



Which fireground would you rather operate on?

LIGHT TOWER

- 9,000 watt Wilburt Night Scan light tower
 - 15' extension
 - total 25' from ground
 - Control head located in L-4
 - On/off safety switch
- Use caution with main when light tower is up



BODY MOUNTED LIGHTS

- 4 – 1,500 watt body mounted lights
 - Switched at breaker panel
 - Can be removed for portable use
 - Tripods in transverse compartment #2



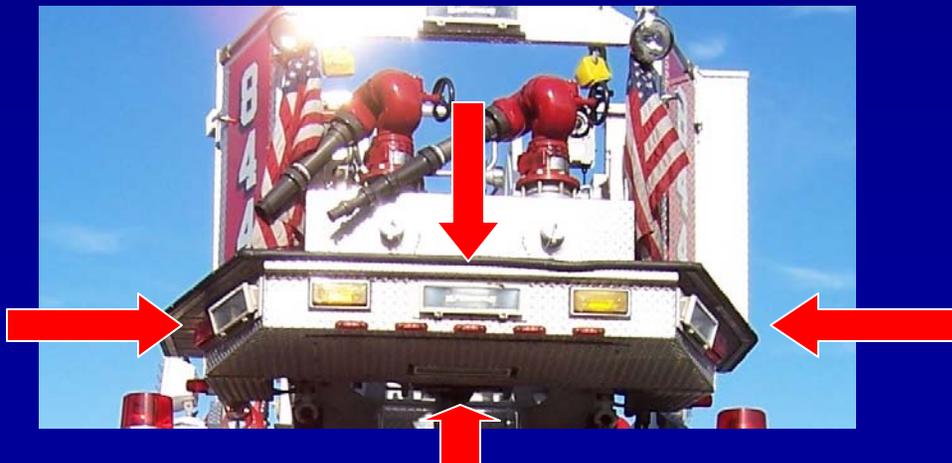
CAB MOUNTED LIGHTS

- One 750 watt light on each side
 - Switched in cab



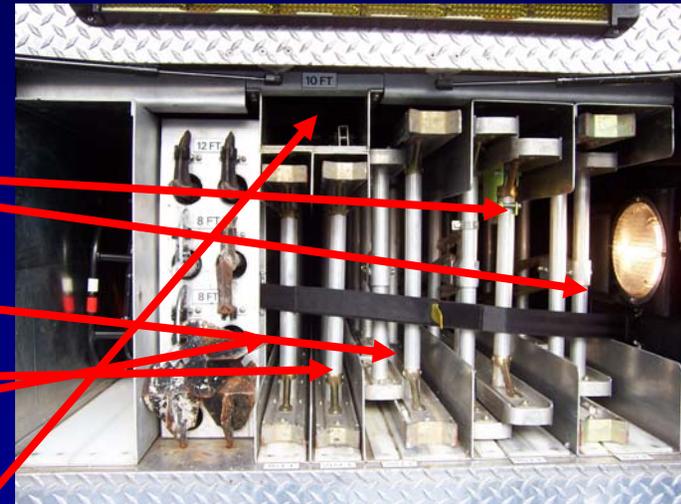
PLATFORM MOUNTED LIGHTS

- 5 fixed mount 750 watt lights
- 2 pole mounted 500 watt lights
- Individually switched in platform



GROUND LADDERS

- 160' Total
 - Two 35' 2 section
 - One 28' 2 section
 - One 20' roof
 - Two 16' roof
 - one mounted in ladder fly
 - One 10' folding ladder



Outrigger Control Panels

- There are two outrigger control panels on the truck

Driver's side



Officer's Side



Driver Side Panel



Fast Idle Switch

- Momentary contact switch which activates high idle setting
- Results in increased hydraulic pressure = more speed



Automatic/Manual Switch

- Used to reset the outrigger computer
 - Perform before using automatic outrigger controls
 - Toggle switch to manual, then back to automatic
 - 5 minute timer
- Must be positioned in Automatic setting for automatic outrigger set up
- Manual controls not affected by switch position



Extend Outriggers Button

- Pressing this button causes all outrigger beams to move out to their full extension simultaneously
- If an individual outrigger has been put in "manual" mode, it will not move
- Blue light will illuminate
 - Unless short jacking



Level Truck Button

- Pressing this button simultaneously extends all jacks to raise and level the truck
- Truck will raise to full height, pause, then lower to a level position
- Blue Truck Level light will illuminate



Lower Truck Button

- Momentary contact button
- Lowers truck by simultaneously retracting all jacks
- Movement will stop when button is released
- Used to lower truck until one wheel is touching
- Blue Truck Level light will go out



Ladder Operation Light

- Green light which illuminates to indicate all jacks are set and ladder is safe to operate

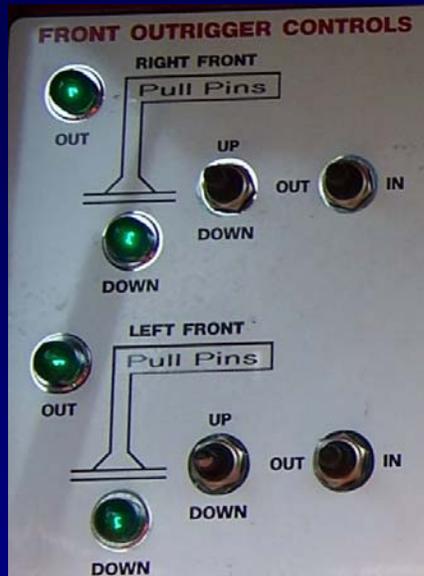


Auto Level Mode Switches (4)

- One switch per outrigger
- Automatic setting used for normal set up
- Manual mode used to disable automatic beam extension
- Affects only beam movement – not jacks



Front and Rear Outrigger Controls



- Separate "Up/Down" and "In/Out" buttons for each outrigger
 - Used to manually set outriggers
- Green lights indicate status
 - "Out" lights will not illuminate if outrigger is short jacked

Stow Button

- Momentary contact
- **MUST PULL PINS FIRST**
 - **Driver's responsibility**
- Push and release
- All jacks will raise, there will be a several second delay, then all beams will retract



Stop Emergency Switch

- Used to stop all outrigger movement in case of emergency
- To activate, raise cover and move switch to right
- To reset, close the cover
 - 30 second delay before operations resume
 - Must toggle automatic/manual switch



Emergency Hydraulic Pump System (EHPS)

- Momentary contact (push and hold) switch
- Activates two (2) emergency hydraulic pumps powered by the vehicle batteries.
- Enables limited function of the ladder and outriggers to stow the unit.



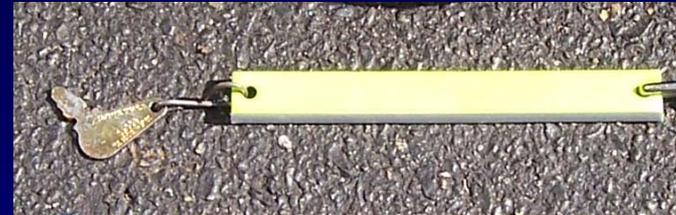
Emergency Hydraulic Pump System (EHPS)

- The red EPU light will illuminate when pump is in use.
- **Use is limited to removing a tower crew from danger and/or stowing the tower and outriggers.**
 - Pump can only run for 7 minutes
 - Requires 1 ½ hours to cool



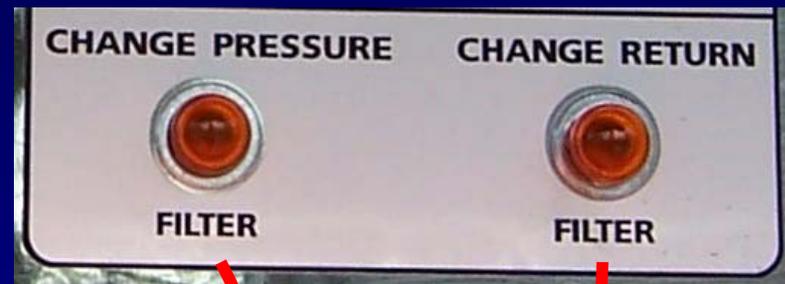
Emergency Override Key Switch

- Allows manual operation of the diverter valve
- Overrides ALL built in safety functions
- **Use is limited to emergency situations**



Change Filter Warning Lights

- These lights pertain to maintenance issues
- If illuminated, fill out an Equipment Report after the incident



Officer Side panel

- Limited controls
 - Right side outriggers
 - Fast idle
 - EPHU



APPARATUS SET UP

- The actions necessary to prepare the tower ladder for aerial operations shall be the driver's responsibility
- The steps include:
 - Engaging ladder power and ladder PTO
 - Extending the outriggers, placing the ground pads, and raising the truck to level
 - Setting the outrigger safety pins
 - Lowering the body access ladders

APPARATUS SET UP

- If the tower driver is committed to another task, the IC or truck officer may designate another qualified member to prepare the aerial for service
 - This member will assume all responsibilities of the driver

APPARATUS SET UP

- While crew deploys to perform assigned functions, driver surveys scene to determine best placement for the truck
 - Consult with IC
 - Determine priority
 - Rescue
 - Fire suppression
 - Emergency egress



APPARATUS POSITIONING

- Correct positioning of the apparatus is of utmost importance. Taking a few extra seconds to determine proper placement upon arrival will often save time in the long run, and ensure the selection of a position of maximum efficiency. The electronic range finder is recommended when apparatus reach is a concern. This should be done PRIOR to setting the outriggers.



APPARATUS POSITIONING

- The driver/officer must also check for any overhead obstructions, including, but not limited to the following:
 - Power lines (maintain 10' clearance)
 - Trees
 - Signs and other overhead obstructions
 - Any obstructions between the turntable and the building objective



APPARATUS SET UP

- Activate the “Ladder Power” switch
- This provides electrical power to the ladder



APPARATUS SET UP

- Activate the “Ladder PTO” switch
- This provides hydraulic pressure to operate the tower and outriggers



APPARATUS SET UP

- If necessary, activate the generator PTO and engage the pump



APPARATUS SET UP

- Ensure adequate clearance for outriggers
 - Spotlights
 - 6' hook



APPARATUS SET UP

OUTRIGGER DEPLOYMENT OPTIONS

- The next series of slides describe the various outrigger deployment methods available to the driver
- The driver shall choose the best option, based on prevailing fireground conditions, taking into consideration apparatus placement, congestion, visibility, and other unforeseen factors
- **It is the driver's responsibility to ensure the outriggers do not come in contact with any persons or objects during deployment**

APPARATUS SET UP

OUTRIGGER DEPLOYMENT OPTIONS

- Automatic
 - beam extension and truck leveling accomplished automatically
- Semi-Automatic
 - beams extended manually, truck leveled automatically
- Manual
 - all operations accomplished manually
- Short Jack
 - one or both beams on non-working side not fully extended

AUTOMATIC DEPLOYMENT

- Ensure area around truck is clear
- Proceed to driver's side control panel
- Activate high idle
- Toggle automatic/manual switch
- **Confirm beam extension area is clear**
- Push "Extend Outriggers" button
 - Monitor area by using camera monitor and/or walking back and forth between sides of truck
- Wait until all beams are fully extended

AUTOMATIC DEPLOYMENT

- Set ground pads
- **Notify all personnel in the area the truck is about to be raised**
- Press "Level Truck" button
- Wait until truck finishes leveling
- Press "Lower Truck" button until at least one wheel is touching the ground
- Set jack pins
- Lower all body access ladders

SEMI-AUTOMATIC DEPLOYMENT

- Proceed to the Officer's Side Control Panel
- Manually extend right side front and rear beams
- Place ground pads under jacks
- Ensure area under jacks is clear of any obstructions
- Manually lower both jacks until they are touching the ground pads
- Close the compartment door



SEMI-AUTOMATIC DEPLOYMENT

- Proceed to driver's side control panel
- Ensure adequate clearance
- Depress "Extend Outriggers" button or extend beams manually
- **CAUTION: Always extend driver's side beams manually if either or both O/S beams were "short jacked"**
- Place ground pads
- Remainder of set up is the same as Automatic Deployment

SEMI AUTOMATIC DEPLOYMENT SHORT JACKING

- **Both working side outriggers MUST be extended fully**
- One or both outriggers on the opposite side can be "short jacked"
 - to avoid an obstruction, leave roadway open, etc...
- Manually extend the non-working side beam(s) to desired length
 - Always use the control panel on the short jacked side
 - No minimum extension length
 - Try to extend far enough for jack pins to be inserted

SEMI AUTOMATIC DEPLOYMENT SHORT JACKING

- Manually extend working side beams to FULL extension
- Follow previously described leveling options

YES



NO!!

MANUAL DEPLOYMENT

- Extend beams using officer and/or driver's side control panels
- Identify the two outriggers on the downhill side of the apparatus
 - Left side, right side, front or back
- Lower the downhill jacks to raise the truck past level
- Lower the uphill jacks to level the truck
- Use bubble gauges to verify level
- Set jack pins
- Lower all body access ladders

OUTRIGGER STATUS LIGHTS

- After all outriggers are properly deployed, the following lights should illuminate
 - Blue "Truck Level" light
 - Green "Out" lights (except short jacked beams)
 - Green "Down" lights
 - Green "Ladder Operation" light



BUBBLE LEVEL INDICATORS

- Located in both front body access ladder wells
 - Reading should be within green section
- Use to verify auto level and for manual deployment

D/S Front



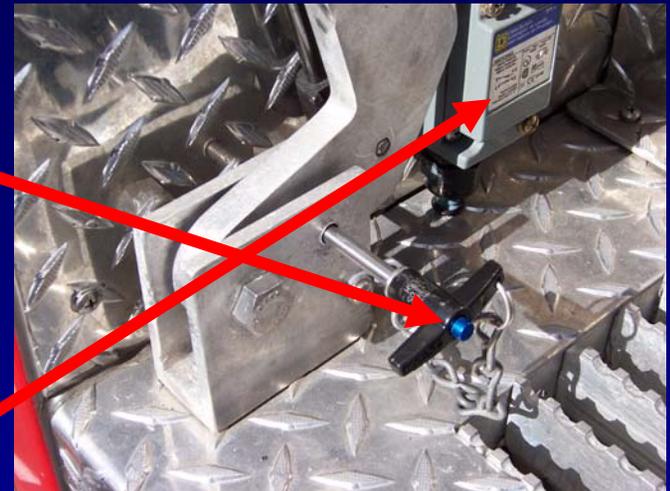
SETTING PINS

- All pins must be set before operating tower
 - **DRIVER'S RESPONSIBILITY**
- Mechanical safety in the event of catastrophic jack failure
- Do not seat fully in hole to allow clearance for shoulder



BODY ACCESS LADDERS

- To remove pin, first depress blue button to release catch
- Switch activates "Open Compartment Door" warning light



BODY ACCESS LADDERS

- ALL ladders must be folded down after the jacks are set

D/S Front



D/S Rear



O/S Front



BODY ACCESS LADDERS

- As the tower moves, the front ladders may become inaccessible



TURNTABLE OPERATOR

- Responsible for safety of platform crew and firefighters operating on or near the truck
- Must monitor position and movement of tower at all times
- Anticipate movement and potential obstacles/hazards
 - **Especially electrical wires**
- **No member will climb onto the truck or remove any equipment without first obtaining approval from the turntable operator when the ladder is in operation**

TURNTABLE OPERATOR

- Maintain open line of communication with platform crew
 - Intercom system
 - Portable set to alternate frequency
 - Municipal or GT Fireground
 - Monitor main channel!



INTERCOM SYSTEM

- Three locations on truck

Turntable



Platform



Pump Panel

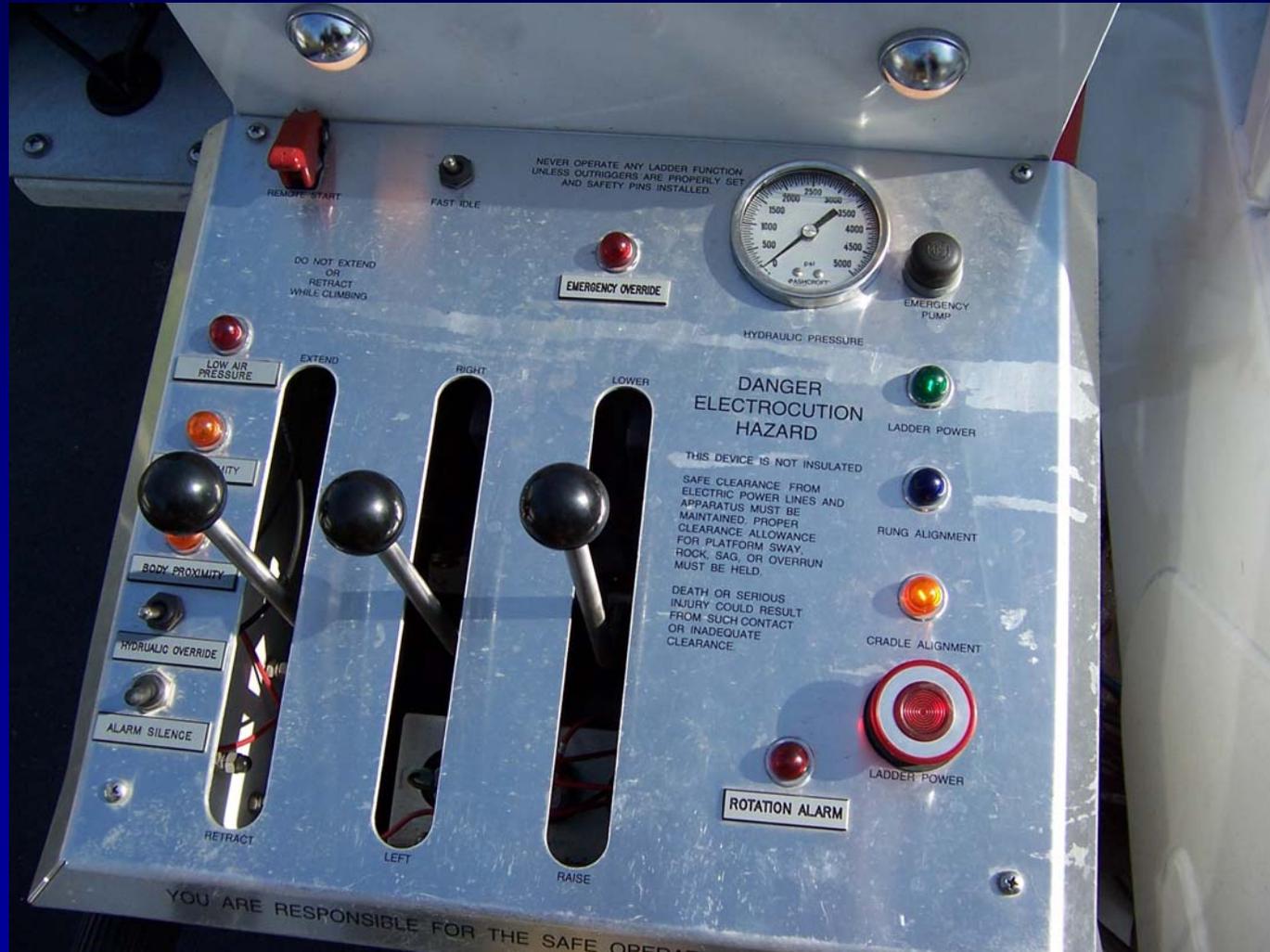


- Turntable and pump panel intercoms have "push to talk" switches
 - Platform intercom has no switch

INTERCOM SYSTEM

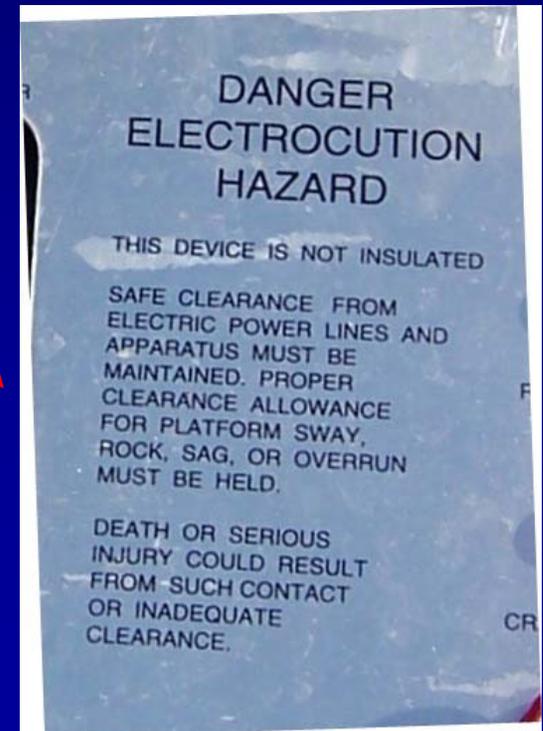
- Advantages
 - Hard wired
 - Dedicated frequency
- Disadvantages
 - Location of platform intercom
 - Interference between turntable and pump panel intercoms
 - Reliability

TURNTABLE CONTROLS



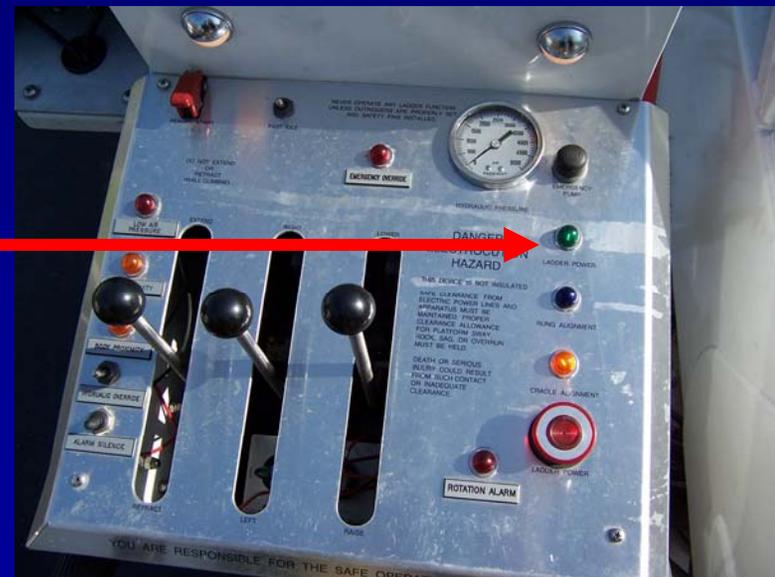
SAFETY LABELS

- Always observe all manufacturer safety warnings



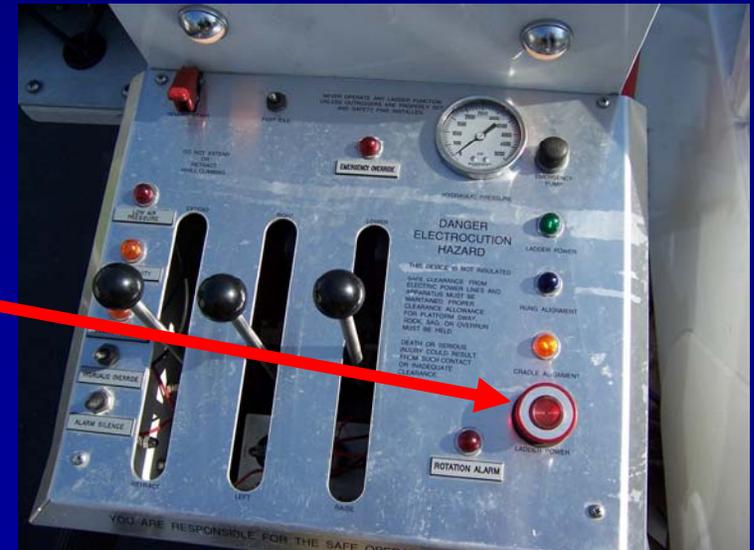
GREEN LADDER POWER LIGHT

- Light should be illuminated to indicate ladder has power



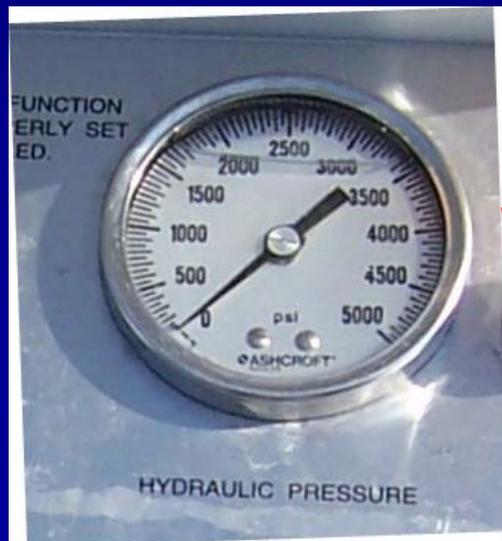
LADDER POWER BUTTON

- Provides electrical power to operate both turntable and platform controls
- Pull up to activate power
 - Button will illuminate
- Push down to turn off



HYDRAULIC PRESSURE GAUGE

- Displays system hydraulic pressure
- Normal reading is approximately 1200 PSI – when executing movement



EMERGENCY PUMP BUTTON

- Push and hold
- Activates EHPS



CONTROL LEVERS

- Feather type
 - Increased lever movement = increased speed
- Overrides platform controls



EXTEND/RETRACT LEVER

- Up to extend the ladder
- Down to retract the ladder



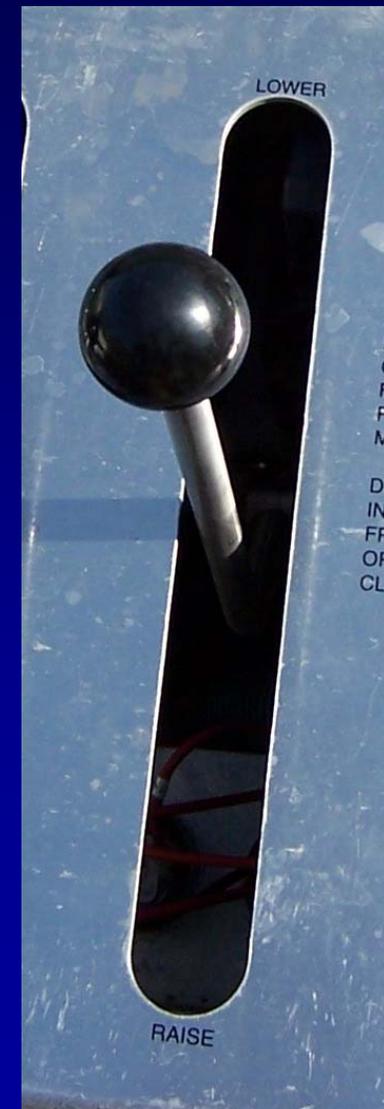
RIGHT/LEFT LEVER

- Up to move the main to the right
- Down to move the main to the left
- From operator's perspective



LOWER/RAISE LEVER

- Up to lower the main
- Down to raise the main



BLUE RUNG ALIGNMENT LIGHT

- As ladder is extended or retracted, light will illuminate to indicate rungs are aligned – for climbing safety



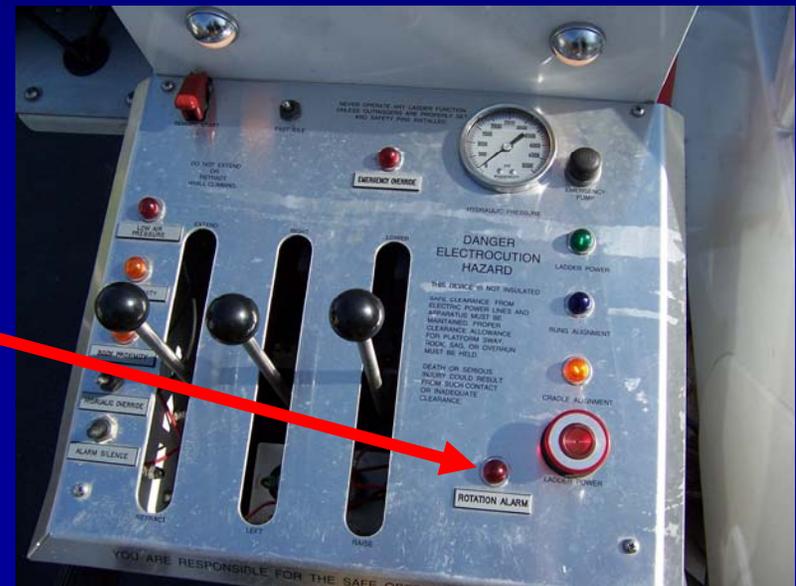
CRADLE ALIGNMENT

- Yellow indicator light
- Red arrows
- Visual confirmation



RED ROTATION ALARM LIGHT

- Activates when tower is moved to short jacked side
- Audible alarm will also sound



RED LOW AIR WARNING LIGHT

- Warns of low breathing air supply
 - $< 25\%$ remaining
 - accompanied by audible alarm



Cab/Body Proximity Warning Lights

- Lights and audible alarm activate to indicate main is at preset limits



HYDRAULIC OVERRIDE SWITCH

- Momentary contact switch
- Overrides preset limits for cab and body avoidance systems



ALARM SILENCE SWITCH

- Silences audible cab and body alarms
 - Up = silence
 - Down = active



DEADMAN FOOT PEDAL

- Depressing pedal activates turntable operator controls
 - Does not affect platform controls
- Keep foot off pedal when not operating tower
 - Prevent inadvertent movement



PLATFORM CONTROL PANEL



PLATFORM CONTROL PANEL

- High speed = full power
- Low speed = half power
 - Used for close maneuvering
 - Other situations requiring extra caution



PLATFORM CONTROL PANEL

- Joystick Controller
 - Allows for dual movements
 - Feathering of controls
- Red deadman button
 - Must be depressed to activate controls
- Turntable controls override platform
- Observe safety warnings



RAISING THE AERIAL

- Quickest method is for the firefighters to enter the platform while truck is being set up
 - Bring necessary tools for assignment
- Once outriggers are set, driver will take a position at the turntable control panel
- Driver establishes communication with platform crew, engages power switch
- Driver raises aerial from cradle
 - Raising ladder above 20 degrees will avoid activation of body avoidance alarm

FALL PROTECTION

- Appropriate harness/ladder belts are mandatory. Personnel must be secured to a designated anchor point or retractable lanyard for fall protection



SAFETY PRECAUTIONS OPERATING ON SLOPES

- Turntable leveled within 6% of grade (6' of rise per 100') = full capacity
- Turntable leveled between 6% and 14% of grade (6' - 14' per 100') = 50% capacity
- Over 14% grade = **DO NOT OPERATE**



100" beam – 15"
gap when level =
15% grade

SAFETY PRECAUTIONS ICE BUILDUP

- If excessive ice deposits begin to build up on the ladder:
 - Shut down or reduce water discharge
 - Gradually extend and retract the ladder to break off the ice
 - Minimize load on ladder during icing conditions
 - Do not operate below 55 degrees elevation with ladder extended
- **Do not operate ladder if ice build up exceeds 1/4"**



SAFETY PRECAUTIONS ELECTRICAL WIRES

- Maintain a minimum of 10' clearance from electrical wires
- Do not allow personnel standing on the ground to touch the truck when the aerial is operating near wires
- If the ladder comes in contact with an electrical wire:
 - Remain on the truck until the ladder is moved away from the wire or the power is shut off
 - If necessary to exit the truck for life safety purposes, jump clear of the truck to avoid completing the circuit to ground



SAFETY PRECAUTIONS MISCELLANEOUS

- **DO NOT**
 - Operate ladder with winds gusting above 50 mph
 - Set the platform down on a building or object
 - Weakens the ladder and could result in failure
 - Extend, retract, raise or lower the ladder with personnel on it

OPERATING THE AERIAL

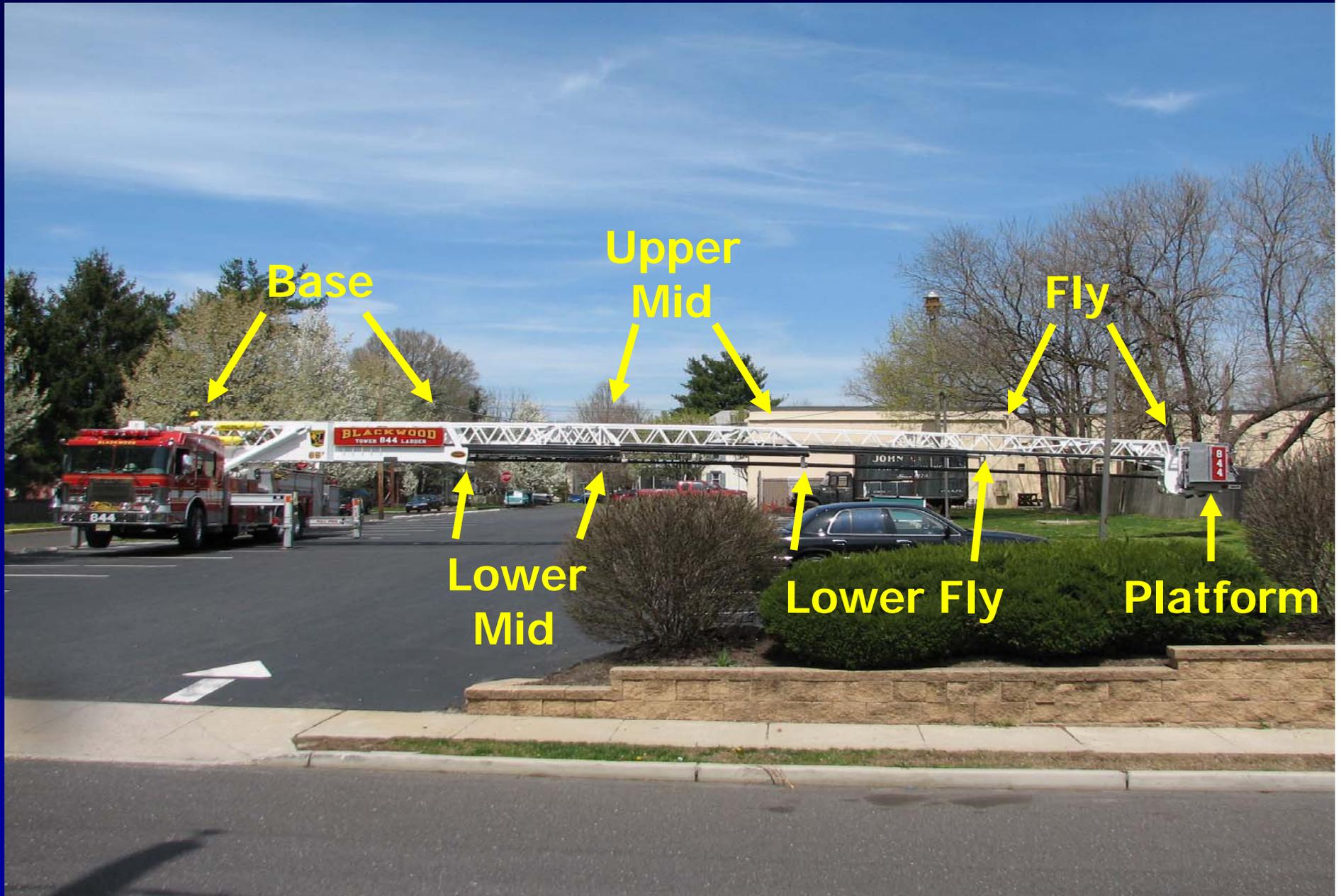
- Turntable operator will usually relinquish control to platform operator
 - Platform operator may opt to have turntable operator continue to control movement
 - Helpful when platform crew is operating master streams
- Turntable operator will monitor all aerial movements, and will communicate any hazards to platform crew

OPERATING THE AERIAL

- The turntable operator will monitor the ladder extension and notify the platform operator when approaching full extension
 - Actual ladder extension is length indicated minus 10' (height of truck)

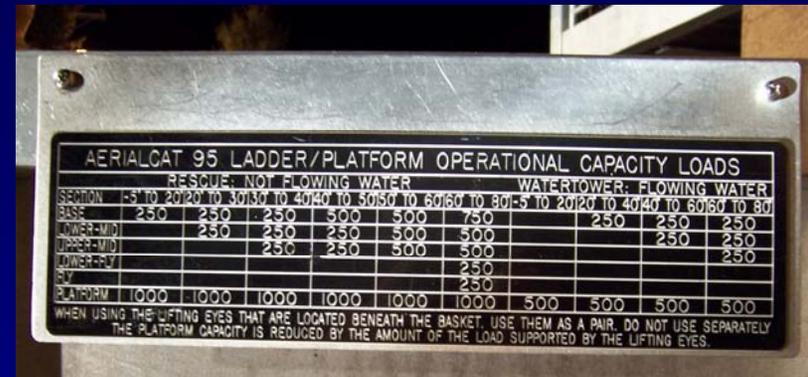


LADDER SECTION NOMENCLATURE



WEIGHT/WATER FLOW RESTRICTIONS

- The turntable operator, pump operator and platform crew must constantly monitor their actions to ensure compliance with the operational capacity loads of the aerial
 - water flow
 - angle of operation
 - weight



Aerialcat 95 Ladder/Platform Operational Capacity Loads table. The table is divided into two main sections: 'RESERVE: NOT FLOWING WATER' and 'WATERTOWER: FLOWING WATER'. The 'RESERVE' section has columns for 5' to 20', 20' to 30', 30' to 40', 40' to 50', 50' to 60', and 60' to 80'. The 'WATERTOWER' section has columns for 5' to 20', 20' to 40', and 40' to 80'. The rows represent different parts of the ladder: BASKET, LOWER-MID, UPPER-MID, UPPER-EXT, and PLATFORM. The PLATFORM row shows a capacity of 1000 for the reserve section and 500 for the watertower section. A note at the bottom states: 'WHEN USING THE LIFTING EYES THAT ARE LOCATED BENEATH THE BASKET, USE THEM AS A PAIR. DO NOT USE SEPARATELY. THE PLATFORM CAPACITY IS REDUCED BY THE AMOUNT OF THE LOAD SUPPORTED BY THE LIFTING EYES.'

	RESERVE: NOT FLOWING WATER						WATERTOWER: FLOWING WATER		
SECTION	5' to 20'	20' to 30'	30' to 40'	40' to 50'	50' to 60'	60' to 80'	5' to 20'	20' to 40'	40' to 80'
BASKET	250	250	250	500	500	750	250	250	250
LOWER-MID		250	250	500	500			250	250
UPPER-MID			250	250	500	500			250
UPPER-EXT						250			
EXT						250			
PLATFORM	1000	1000	1000	1000	1000	1000	500	500	500



WEIGHT/WATER FLOW RESTRICTIONS

Load capacity plates are located near turntable and platform control stations

AERIALCAT 95 LADDER/PLATFORM OPERATIONAL CAPACITY LOADS										
SECTION	RESCUE: NOT FLOWING WATER						WATERTOWER: FLOWING WATER			
	-5' TO 20'	20' TO 30'	30' TO 40'	40' TO 50'	50' TO 60'	60' TO 80'	-5' TO 20'	20' TO 40'	40' TO 60'	60' TO 80'
BASE	250	250	250	500	500	750		250	250	250
LOWER-MID		250	250	250	500	500			250	250
UPPER-MID			250	250	500	500				250
LOWER-FLY						250				
FLY						250				
PLATFORM	1000	1000	1000	1000	1000	1000	500	500	500	500

WHEN USING THE LIFTING EYES THAT ARE LOCATED BENEATH THE BASKET, USE THEM AS A PAIR. DO NOT USE SEPARATELY
THE PLATFORM CAPACITY IS REDUCED BY THE AMOUNT OF THE LOAD SUPPORTED BY THE LIFTING EYES.

SUPPLIED AIR BREATHING SYSTEM

- The platform is equipped with a supplied air breathing system
- Breathing air is stored in two 4500 PSI cylinders mounted to the base section of the ladder
 - Each cylinder holds 444 cubic feet of air
 - Refilled via a “quick fill” fitting on side of turntable control tower



SUPPLIED AIR BREATHING SYSTEM

- The air is pre-piped to the platform
- There are four air outlets mounted to the front wall of the platform



SUPPLIED AIR BREATHING SYSTEM

- The air in the platform is regulated by a valve located next to the driver's side access gate
 - Should be set to 125 PSI
- System pressure gauges and regulator are located at the rear of the turntable operators panel



SUPPLIED AIR BREATHING SYSTEM

- Blue 6' air extension hoses are located in the platform tool compartment
- When breathing air is needed, the platform crew can plug one end of the extension hose into the platform fitting, and the other end into the supplied air fitting on their SCBA
 - Leave SCBA bottle off



SUPPLIED AIR BREATHING SYSTEM

- If necessary for the crew to exit the platform, they can disconnect from the supplied air system and utilize the SCBA cylinder for air

ELEVATED WATER FLOW

- Multiple options exist:
 - Dual deck guns
 - Two (2) 2 ½" discharges
 - 1 ¾" hose
 - Shower head



PLATFORM MOUNTED DECK GUNS

- Left gun
 - Stored with 1 3/8" tip
 - 500 gpm flow
 - Penetration/force
- Right gun
 - Stored with 2" tip
 - 1,000 GPM flow
 - Heavy fire conditions
- Always store guns tight to platform, with valves closed



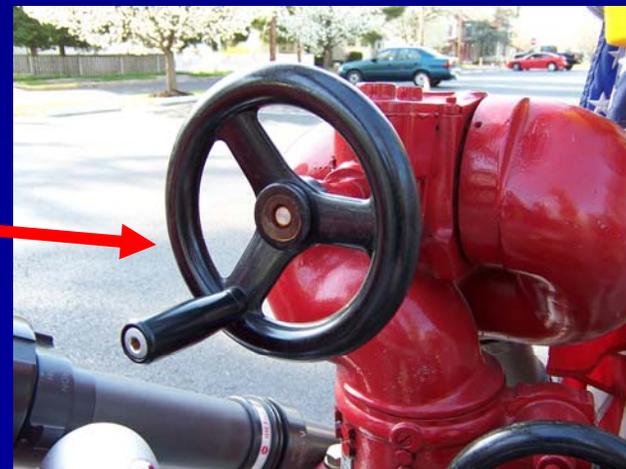
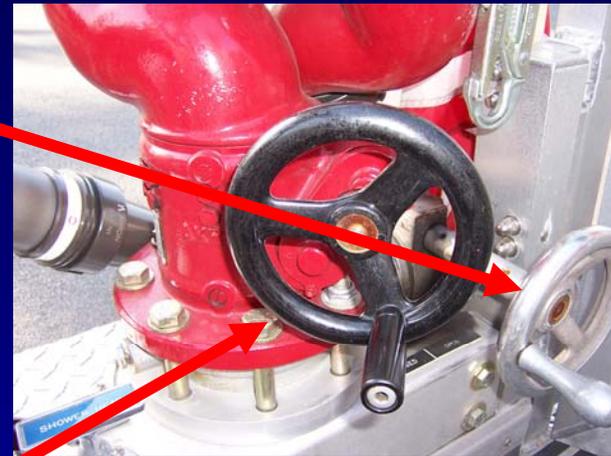
PLATFORM MOUNTED DECK GUNS

- Additional stacked tips for the left gun are stored in the platform compartment
- A combination fog tip is stored on the floor of the platform
 - Exposure protection
 - Cooling a vessel
 - Dispersing a vapor cloud



PLATFORM MOUNTED DECK GUNS

- Water to guns is controlled by hand wheels mounted next to guns, at floor level
 - Left gun = CCW to open
 - Right gun = CW to open
- Gun movement controlled by hand wheels mounted to guns
 - Side to side control
 - Elevation control



PLATFORM MOUNTED DECK GUNS

- Master stream cautions
 - ANY use of master streams must be authorized by IC
 - Streams are extremely powerful
 - Ensure area is clear of firefighting personnel
- Always store guns with valves closed
 - Prevent inadvertent flow

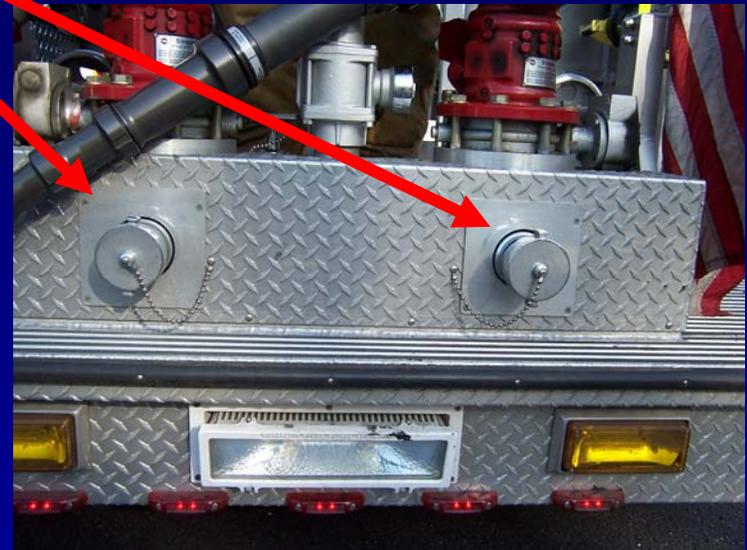


WATERWAY RELIEF VALVE

- 2 ½" relief valve located under turntable
 - Designed to protect the water system from excess pressure
 - Preset to 225 PSI
 - Limited capability
- Must leave at least one gun open when retracting main with waterway charged

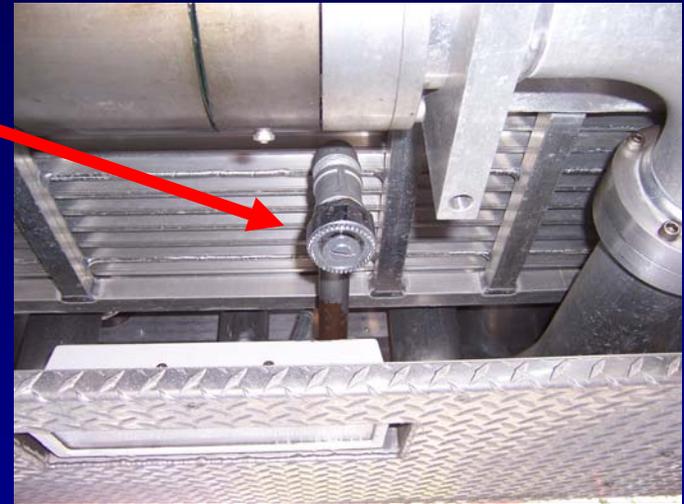
2 ½" DISCHARGES

- Located on front of platform
 - No separate valve
 - Controlled by waterway valve on pump panel
- Can be used as elevated standpipe
 - Will restrict tower movement!



SHOWER HEAD

- Located under platform
 - 100 GPM nozzle for crew protection
- Valve is mounted at floor level, front of platform
 - Pull up to charge
 - Push down to shut off



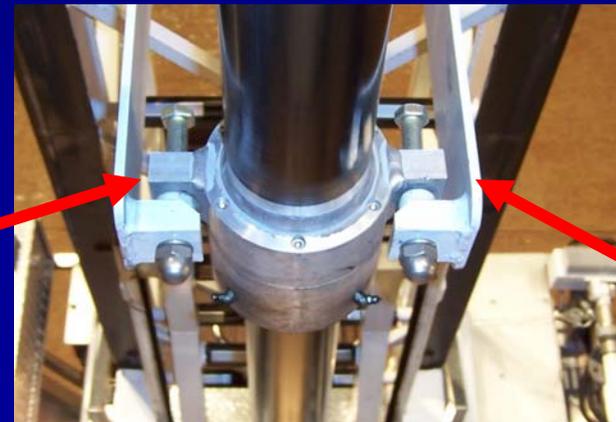
1 3/4" HOSELINE

- A short length of 1 3/4" hose with a TFT Midmatic nozzle is located in the platform
 - Fire suppression
 - Overhaul operations
 - Exposure control
- Valve to charge line is located below discharge



WATERWAY

- Water is delivered to the platform via a pre-piped waterway
 - The size varies from 5 ½" at the base to 3 ½" at the tip
 - Secured to underside of ladder with cradle type mounts
 - Allows 2" movement



WATERWAY

- The turntable and platform operators must constantly monitor ladder movement to ensure waterway is not crushed
 - Parapet walls
 - Reflective tape



DRAINING THE WATERWAY

- Open the main waterway drain
- Raise the ladder to 90 degrees
- Allow all water to drain from the waterway before bedding the ladder

BEDDING THE AERIAL

- At the conclusion of the incident, the platform operator will lower the platform to the ground
 - Secure all platform mounted equipment
 - Remove all added equipment from the platform
 - Turn off all lights
 - Ensure all water valves are closed
 - Pin all mansaver bars except the driver's side entry door
 - Install cover on platform control panel

BEDDING THE AERIAL

- The turntable operator will then bed the aerial
- Raise the aerial above 20 degrees
- Rotate to cradle alignment position
 - yellow “Cradle Alignment” light
 - red alignment arrows
 - visual observation



BEDDING THE AERIAL

- Set the ladder gently into the cradle
 - Apply momentary pressure to down lever after ladder is cradled (1200 PSI max.)
- Turn off high idle
- Turn off ladder power
- Turn off panel light
- Install cover on control panel

RESTORING THE OUTRIGGERS

- **Pull all jack pins**
- Fold and pin all body access ladders
- Visually inspect the apparatus
 - Move any equipment leaning against truck
 - Ensure there are no obstacles under the tires or chassis
- Advise all personnel the truck is about to be lowered
 - Utilize officer's side spotter if available
- Activate the high idle switch
- Press the stow button
 - The jacks will fully retract
 - After a several second delay, the beams will fully retract

LEAVING THE SCENE

- Driver shall perform the following actions PRIOR to departing the scene
 - Turn off Ladder Power and Ladder PTO
 - Visually inspect the apparatus
 - Equipment present, properly secured
 - Compartment doors closed
 - Light tower stowed
 - Turntable and platform control panel covers installed
 - Jacks and Ladder warning lights off
 - Light tower warning light off



EMERGENCY SYSTEMS

- The following series of slides describe the various alarms and interlocks on the apparatus
- The EHPS and Diverter Valve Override shall be used only to remove firefighters from a hazardous situation
 - **Use of these overrides for any other purpose must be authorized by the IC or his designee**

EMERGENCY HYDRAULIC PUMP SYSTEM (EHPS)

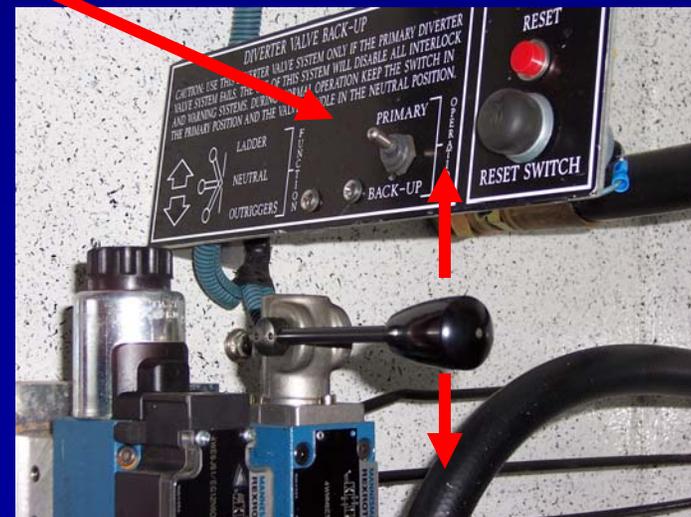
- Used if main hydraulic power is lost
- Consists of two emergency hydraulic pumps powered by the truck batteries
- Activated via push and hold switches located on both outrigger control panels and the turntable control panel
- **Use is limited to removing a tower crew from danger and/or stowing the tower and outriggers**
 - 7 ½ minutes maximum run time
 - 1 ½ hour cool down time

DIVERTER VALVE

- Automatic electric over hydraulic 3 position diverter valve
 - Located in compartment L-3 (lower)
- During normal operation, automatically diverts hydraulic fluid to either the outriggers or the ladder
 - Activating either deadman switch sends hydraulic fluid to the ladder controls
 - Interlock prevents power to the ladder if the outriggers are not properly set

DIVERTER VALVE OVERRIDE

- Valve can be operated manually in the event of electrical failure
- Activate the emergency override key
- Move the "Operation" switch from primary to backup
- Manually move valve to desired position
 - Down for outrigger operation
 - Up for ladder operation



DIVERTER VALVE OVERRIDE

- **Caution: Manual operation of the valve disables ALL interlock and warning systems.**
- **Use is limited to emergency situations**
- **Ensure outriggers are properly set before diverting power to the ladder**
- **Closely monitor ALL movements of the tower**

ALARMS AND INTERLOCKS

Outrigger/Ladder Interlock

- Each outrigger is equipped with a switch that closes only when the jack is firmly in contact with the ground
- Electric power is not supplied to the aerial unless all four switches are closed
- If no power at turntable, confirm that all four jacks are properly set
 - Green jack down lights and green ladder power light

ALARMS AND INTERLOCKS

Body Proximity System

- Body avoidance alarm/interlock
- Prohibits movement into a preset area where the aerial may contact the truck body
 - **Yellow** "Body Proximity" warning light will illuminate, audible alarm will sound
 - Aerial movement will cease
 - Switches to silence the audible alarm are located on turntable and platform control panels

ALARMS AND INTERLOCKS

Cab Proximity System

- Same as body avoidance system, except prevents contact with the cab
 - **Will NOT prevent contact with raised light tower**
 - Try to avoid positions requiring the aerial to be extended over the cab
 - If aerial must be extended over cab, DO NOT use the light tower

ALARMS AND INTERLOCKS

Cab/Body Proximity System Override

- Systems have a rather large buffer area
- This can result in several feet of lost scrub area, depending on ladder extension



ALARMS AND INTERLOCKS

Cab/Body Proximity System Override

- In certain situations, it may be necessary to override the interlock to reach an objective
- Same is accomplished by activating the “Hydraulic Override” switch on the turntable control panel



ALARMS AND INTERLOCKS

Cab/Body Proximity System Override

- Holding the momentary contact switch in the up position overrides both the cab and body interlocks
- **Any aerial movement performed via this maneuver must be done with extreme caution**
- Movement should only be performed by turntable operator
 - A spotter should be used to ensure the aerial does not strike the cab, body or other obstructions

ALARMS AND INTERLOCKS

Cab/Body Proximity System Override

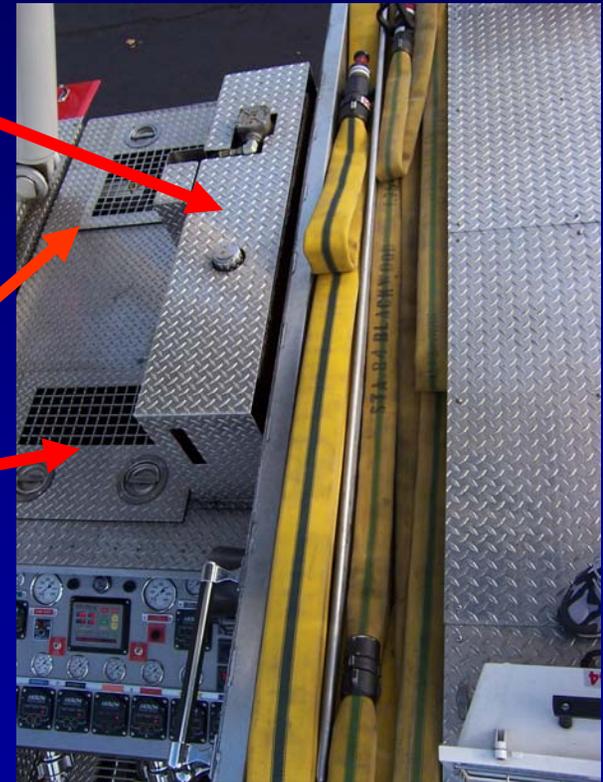
- Cab clearance with override activated
- Body clearance with override activated



ALARMS AND INTERLOCKS

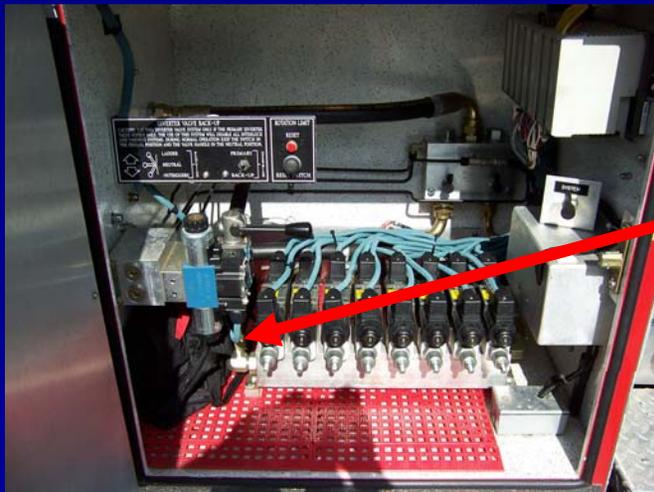
Cab/Body Proximity System Override

- Harrison Generator hydraulic oil storage tank
 - Use extra caution to avoid striking tank
- Also use caution when walking in this area
 - Avoid stepping on grates



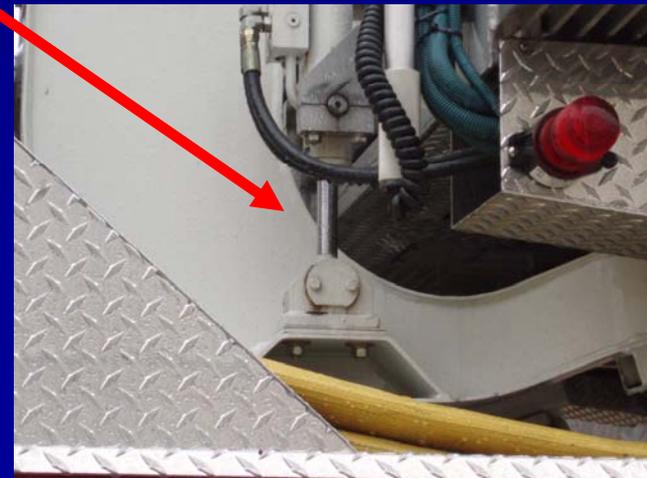
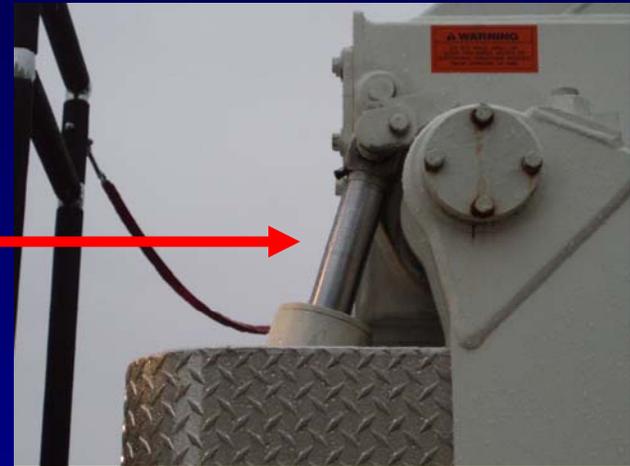
OVERRIDE KEY/TOOL BAG

- A black nylon tool bag is located in compartment L-3 (lower)
 - Contains emergency override key
 - Various small hand tools



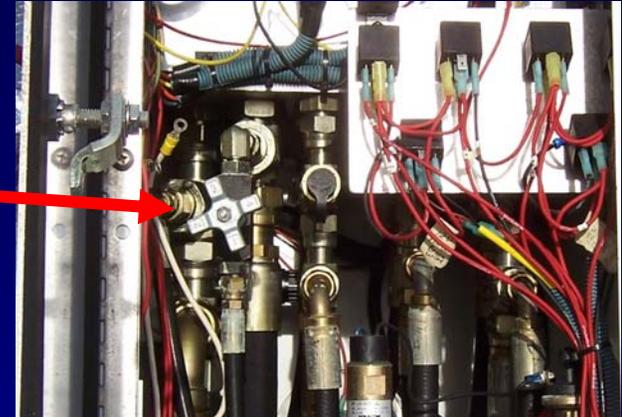
PLATFORM LEVELING SYSTEM

- Controlled by two sets of pistons
 - One set located at base of ladder
 - One set located at platform mount
- As the ladder elevation changes, hydraulic fluid is transferred between the pistons, causing a corresponding change in the platform position



PLATFORM LEVELING SYSTEM

- Fluid movement is controlled by a valve located in the rear of the turntable control panel
- May require slight adjustment to compensate for seasonal temperature changes



PLATFORM LEVELING SYSTEM

- Improper adjustment of the valve can result in the platform leveling too slow or too fast
 - Can also cause the platform to rock slowly back and forth
- **Adjustment should be made only by maintenance mechanic or designee**

PLATFORM LEVELING SYSTEM

- Hydraulic leveling system is augmented by an electrical leveling system controlled by a device mounted in the platform
- The electrical leveling system is controlled by a switch in the rear of the turntable control panel
- **Switch should be in the "ON" position during normal operation**



KEY ACTIVATED PLATFORM LEVELING SWITCH

- Key switch located on side of turntable control panel
 - Used to manually adjust the platform position
 - **Use restricted to maintenance mechanic**



PLATFORM LIFT RINGS

- Two 3" lift rings are located under the platform
- Both hooks must be used simultaneously
- Lifting capacity same as platform weight capacity
- Any weight suspended from the rings must be deducted from the platform weight capacity



When all else fails, remember...

Buddy Christ is on our side!!!!

