Arcadia Fire Department

PROBATIONARY FIREFIGHTER EDUCATION AND TRAINING PROGRAM

Equipment Specification Manual

Revised March 2020

AC Hotstick
Akron Four Way Valve
Ajax Rescue Tool
Arizona Vortex

California Air Tool Compressor
Class III Harness
Con Space CSI-1000 Communications System
Con Space CSI-2000 Communications System
Coppus Cadet Utility Blower

Dewalt 20 Volt Cordless 21 Degree Plastic Collated Framing Nailer
Dewalt 21 Degree Framing Nailer
Dewalt Reciprocating Saw
Dewalt Demolition Hammer
Dewalt Big Demolition Hammer

Escape Belt

Fire Extinguishers
Fire Hose
Foam Eductors

Gas Trac SENSIT HXG-3

High Performance Ejector
Hitachi Nailer/Compressor
Honda EM5000SX Generator
Honda EU2000i Generator
Honeywell Titan SCBA
Hot Cutters
Hurst 27 Spreader
Hurst Defender 28 Spreader
Hurst JL 150 Cutter
Hurst JL500 LP Cutter
Hurst Mini Mate Power Plant
Hurst Mini Rams
Hurst ML-16S Combination Tool
Hurst ML-32 Spreader
Hurst X-Tractor C Combination Tool

Stihl Chainsaw MS 460

Submersible Pump Operation - Multiquip

Tempest Power Blower
Tempest Electric Blower
Thermal Imagers - Bullard
Truck 105 Aerial Ladder Set-up
Truck 705 Aerial Ladder Set-up
Trash Pumps

Unifire Power Blowers

WAP Wet/Dry Vacuum
Water Pump WH15X
Whiffs Filtration Masks

Equipment	Truck 105	Truck 705	USAR 106
Ajax Rescue Tool	x		
Akron Four Way Valve			
Arizona Vortex			x
AC Hotstick			
California Air Tool Compressor			x
Class III Harness	x	x	x
Con Space CSI 1000			x
Con Space CSI 2000			x
Coppus Cadet Utility Blower			x
Dewalt Framing Nailer DWF83PL			x
Dewalt Framing Nailer DCN21PL			x
Dewalt Reciprocating Saw	x	x	x
Dewalt Demolition Hammer			
Dewalt Big Demolition Hammer			
Electrical Safety Gloves			
Escape Belt			
Fire Extinguishers			
Fire Hose			
Foam Eductor			
Gas Trac SENSIT HXG-3			
Honeywell Titan SCBA			
High Performance Ejector			
Honda EM5000SX Generator		x	x
Honda EU2000i Generator	x		
Hot Cutters	x	x	
Hurst 27 Spreader		x	
Hurst Defender 28 Spreader			x
Hurst JL 150 Cutter			
Hurst JL500 LP Cutter	x		
Hurst Mini Mate Power Plant	x	x	x
Hurst Mini Rams	x		x
Hurst ML-16S Spreader	x		
Hurst ML-32 Spreader	x		
Hurst X-Tractor C Combination Tool	x	x	
Hurst X-Tractor Cutter			
Hurst X-Tractor II Cutter		x	x

K501 Handheld Gas Core Drill			x
Ladder Belt			
Ladders - Aluminum			
Ladders - Wood			
Lampe High Pressure Air Bags	x	x	
Lampe Low Pressure Air Bags	x	x	
Maxi Force Air Bags			x
MSA Altair 5X Multi Gas Monitor			x
Panther HIP-PAC			x
Paratec 60 Air Chisel		x	
Paratec 90 Air Chisel			x
Paratec Rescue Struts			x
Plug N Dike			
PPE			
Rescue 42 Telecrib	x	x	
RIC Bag	x	x	x
Rigded Palm Nailer			x
Rope	x	x	x
Salvage Covers	x	x	x
Search Cam 3000			x
Smoke Generator			
Sperian Warrior SCBA	x	x	x
Station 105 Clarifier			
Station 105 Generator			
Station 105/106 Compressor			
Station 106 Generator			
Station 107 Compressor			
Station Fuel Storage			
Station Utilities			
Stihl Chainsaw MS 460	x	x	x
Stihl Rotary Saw TS 400	x	x	
Stihl Rotary Saw TS 480i			
Stihl Rotary Saw TS 760			x
Submersible Pump Multiquip		x	
Submersible Pump Prossor			
Tempest Electric Blower	x		
Tempest Power Blower	x		

Thermal Imagers	x	x	x
Trash Pumps			
Truck 105 Aerial Ladder Set Up	x		
Truck 705 Aerial Ladder Set Up		x	
Unifire Power Blowers		x	
WAP Wet/Dry Vecuum	x	x	
Water Pump WH15X			
Whiffs Filtration Masks			

TOOL:

AC HOT STICKS

APPLICATION:

- For detecting potentially hazardous AC voltages in train incidents, structure fires, downed power lines, lockout-tagout (confined space, trench rescue, USAR), hazmat, and natural disasters.
- Warning signals (beeping & LED lights) will increase as the Hot Stick approaches the source.
- Self-test operates for 3 seconds after turning on, and is ready for use in 10 seconds.

TOOL SPECIFICATIONS:

- Temperature Range:
- Operating: -22 to 122F
- Storage: -40 to 158F
- Weight with batteries: 1 lbs 4 oz.
- Frequency Detection: 20 Hz - 100 Hz
- Splash-waterproof.
- Housing: PVC Plastic, Intrinsically Safe.
- 3 Sensitivity settings: Focused, Low, High.
- **Front-Focused Sensitivity**: Detection from the FRONT of the HotStick only.
- **Low Sensitivity**: Detection from ALL sides of the HotStick.
- **High Sensitivity**: Detection from ALL sides of the HotStick.

SAFETY CONSIDERATION:

- Treat all wires or suspected electrical sources as if they are hot, until confirmed otherwise.
- Initially set detector setting in the high sensitivity setting, this setting quickly warns the user of energized electrical hazards, low sensitivity or front focused settings maybe used to more accurately identify an electrical hazard if needed.
- Will not detect:
    - DC voltages.
    - AC voltages that are fully enclosed and shielded in a grounded metal conduit or solid metal enclosures.

AFTER USE MAINTENANCE:

- Standard AA alkaline batteries with normal operation will last approx. 1 year.
- Unit will beep continuously if batteries need replacement.
- Unscrew lanyard side to access batteries.

Akron Four Way Valve

TOOL: Akron Four Way Valve

APPLICATION: The basic concept of the four way valve is to enable an engine company to get water on the fire as rapidly as possible by making a hydrant to fire hose lay, thus saving the time it takes to pass a hydrant, pull hose at the fire and then lay back to the hydrant. After making hydrant to fire lay it conditions warrant, an engine company, whether it is the engine who laid the line or a separate engine, can connect to the four way valve, direct the flow of water into the engines suction, run it through the pump out the discharge back through the four way valve and to the fire ground. Thus not interrupting the flow of water during the whole operation.

TOOL:

35' Aluminum Extension Ladder

SPECIFICATIONS:

Material 6061-T6 alloy - minimum yield 38,000 p.s.i.
Dimensions
Total extended Length: 35'
Bedded Length: 20' 3.25"
Width: 24"
Depth: 6.5"
Total Weight: 122 lbs
Rating: 750 lb Duty Rated

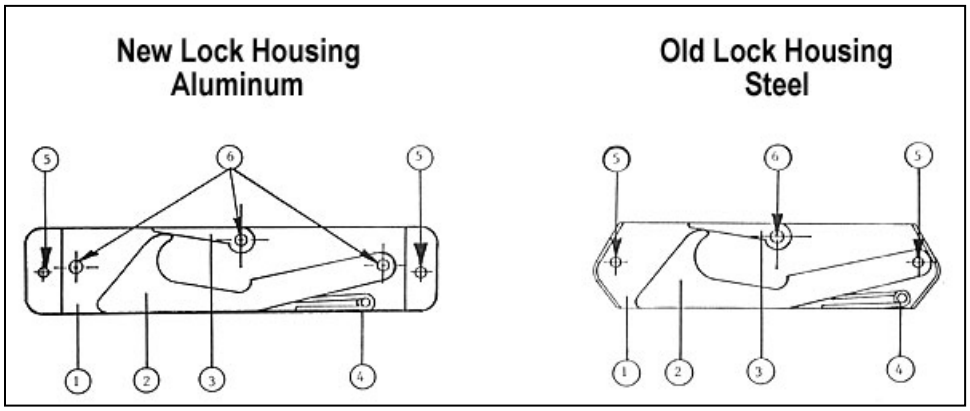
CLEANING LADDERS / LUBRICATING:

Soap and water works best. Be sure to flush inside the rails and rungs to clear dirt. Use liquid car wax and Scotch brand green scrub pad to buff the surface to a smooth finish. Be sure to clean and rewax the slide areas at the same time. Be sure to check any heat sensor labels as you clean and wash and try not to wash away the labels. (Replacement labels are readily available from the ladder manufacturer)

Lubrication of Ladders Clean ladders last longer and properly lubricated ladder sections slide easier and simply work better. Regardless of the age, all ladders will extend and retract easier and smoother if the contacting parts have some lubrication on these surfaces. Duo-Safety Ladder suggests plain old candle wax or paraffin wax as your best lubrication. This wax coats and works into the pores of the ladder material and does not easily wash away with frequent water baths. This candle wax is also inexpensive and is readily available anywhere. We suggest you extend the ladder and simply rub the candle wax over and onto all of the contacting parts. NOTE: Do not forget to coat the lock parts (lock hook and finger) with wax as this reduces the wear on the rungs as these parts move over the rungs every time the ladder is used. CLEAN and WAX and INSPECT to keep the ladder accident free. Be sure your ladder is ready to use and it will always be ready to carry you to greater heights.

LADDER PARTS/ACCESSORIES:
Spring operated, automatic lock assemblies that engage and lock upper sections to lower sections, always operating in pairs. Duo-Safety Spring Lock Assembly

1. Lock housing & cover plate (not shown)
2. Lock hook
3. Finger (note position)
4. Spring
5. Mounting bolt holes
6. Shoulder bolt hole



TOOL: Arizona Vortex

APPLICATION: The unique design of the **Arizona Vortex** lets rescuers establish a high anchor point in just about any location. As a fixed A-frame with a third rotating leg, the Vortex will function as a tripod, an A-frame, or a gin pole. The legs are two-piece sections that can be adjusted every 6.5 inches for a variety of lengths, including a third section if one leg needs to be extended even further. By disassembling the head piece and the legs, the Vortex fits into five bags making it easy to carry and to store in a rescue vehicle. The feet have stainless grade aluminum. Inside height clearance in regular tripod configuration: 80 inches. Weight of complete system: 65 pounds.

SAFETY CONSIDERATIONS: Rescuers using the **Arizona Vortex (AZV)** shall be well versed in all aspects of the system to assure that the system is used in an optimal and safe manner.

TOOL SPECIFIC:
1 Tripod head assembly with carrying bag
3 Claw feet
3 Flat feet
3 Adjustable upper legs
6 Lower legs
13 Quick pins
3 Carrying bags

MAINTAINANCE: The **Arizona Vortex** should be inspected after every use and have it recorded in the inspection log. Clean as needed after every use. If the **Arizona Vortex** is dropped or impact loaded it should be inspected by a qualified inspector before being placed back into service. **All** repair work **must** be done by the manufacturer.

SPECIFICATION MANUAL LOCATED IN USAR 106

Tool: CALIFORNIA AIR TOOLS 4610S Ultra Quiet, Oil-Free, Lightweight Air Compressor

Application: The CALIFORNIA AIR TOOLS 4610S Ultra Quiet & Oil-Free Air Compressor is designed to be one of the quietest air compressors in the industry having only 60 decibels of sound. This air compressor is ideal for anyone working inside where noise is a major issue.

Tool Specifications:

- Ultra Quiet- Only 60 decibels
- Oil-Free Pump – Cleaner air for better tool operation.
- Two pressure control gauges
- Two universal 1/4″ quick connectors
- Thermal Overload Protector
- 120 PSI Maximum Pressure
- 110v / 60hz
- Low Amp Draw - 8.5 Amps
- Time to fill tank from empty to full - 130 Seconds
- Recovery time from 90 PSI to 120 PSI - 30 Seconds
- Less heat which dissipates more efficiently
- 4.6 Gallon Steel Air Tank
- 56.2 pounds and easy to transport.
- L (19.2) x W/D (17.25") x H (20")

Operation:

Starting the Compressor

1. Turn the power switch to the OFF position
2. Attach the air hose to the ¼” quick connect coupler
3. Close the drain valve
4. Have air filter attached
5. Plug the power supply cord into a power supply socket
6. Turn the power switch to the ON position
7. Let the motor run and tank fill until motor turn off

8. To regulate the air flow
   While the air compressor is running, turn “ON” your tool and turn the regulator knob to the right increasing the pressure. Turn the pressure up until the desired pressure is Reached.
9. Operate air tool normally

Shutting down the compressor

1. Turn the power switch to the OFF position
2. Unplug the power supply cord
3. Reduce the pressure in the air tank through the air supply

Pressure Switch – The pressure switch is factory pre-set to shut off at between 115–120 PSI and to re-start at between 85–90 PSI

Maintenance:

Draining the Air Tank

1. Place the air compressor above a container capable of holding water
2. With compressed air in the tank, slowly turn the drain valve knob to the forward (open) or straight position
3. After all of the accumulated water has drained out, turn the drain valve knob to the closed or left position in order to avoid leakage
4. Draining the air tank protects parts from rust and corrosion

Cleaning or Changing the Air Filter

1. Open the lid on the air filter, then remove the air filter element
2. To clean the element blow off or brush off the dirt and dust
3. If, clogged, replace with new air filter

Safety:

Minimum safety requirements include helmet, goggle, and gloves specified in AFD Department Guideline 101 – Personnel Protective Equipment

Be cautious of electrical shock hazards both prior and during operations. Operate at proper voltage.

Maintain a safe working environment and avoid any damage to the tool during operation to prevent any type of rupture to the tanks.

Class III Harness

TOOL: Class III Harness

APPLICATION: The CMC FIRE-RESCUE HARNESS is a NFPA class III harness that is to be used primarily for the rescuer; and in some case the victim(s). It is a harness that fastens around the waist, around the thighs, or under buttocks, and over shoulders otherwise fully encapsulating the rescuer (per NFPA 1893 2012 Edition).

SAFETY CONSIDERATIONS:

- Perform cursory inspection and check component compatibility before each use:
    - Checking for cuts, worn or frayed areas, broken fibers, soft or hard spots, discoloration, or melted fibers
    - Check stitching for pulled threads, abrasion, or breaks
    - Check the hardware for damage, sharp edges, and improper operation
- Be trained and familiar in donning and doffing equipment correctly
- Tie back all loose ends to prevent snags (make use of web-keepers)
- Whenever possible, always have a partner perform safety check of donned harness system

TOOL SPECIFIC:

- Fixed Dorsal D-ring
    - Adjusts for different size rescuers
    - Stays in one place when loaded increasing safety and comfort
    - Used for fall arrest & vertical hoists (i.e. confined space entries)
- Waist D-ring
    - Allows stable sitting position for rappelling
- Sternal D-ring
    - Used best for vertical helicopter hoists or other vertical hoists
- (2) Gear loops
    - Allows for easy access to equipment as needed
- Web-Keepers
    - Velcro straps used to tie back belts
- Straps are made of 1 ¾ “ nylon flat webbing
- Harness is rated for 600 lbs

MAINTAINANCE:

- During use, carrying, and storage keep the harness away from:
    - Acids
    - Alkalis
    - Exhaust emissions
    - Rust
    - Strong chemicals
    - High heat exposures or flame impingement
- If the harness is soiled:
    - It can be washed with cold water a mild detergent
    - Dry out of direct sunlight
    - Do not dry in an automatic dryer
    - Store in cool, dry location

TOOL: **CON-SPACE** CSI–1000 Communication System

APPLICATION: The **CON-SPACE** CSI–1000 Communication System and Rescue Probe is a two-way communication accessory designed to provide rescuers with a basic means of victim location and communication.

SAFETY CONSIDERATIONS: Rescuers using the **CON-SPACE** System shall be well versed in all aspects of the System to assure that the system is used in an optimal and safe manner.

OPERATION:

TOOL SPECIFIC: Four (4) 'AA' batteries.

MAINTENANCE: If modules or cables become contaminated with fuels, oils or corrosive fluids, they should be wiped off. Mineral spirits are recommended for cleaning the cable jacket.

If the low battery indicator starts to"beep" when turned on or the unit does not power up when turned to the on position, the batteries shall be changed.

B-CHECK: A visual inspection shall be made of the unit to assure the unit is clean, dry and ready for use. The B-Day routine shall include switching the power to ON and testing the microphone and headset to assure the unit is working properly.

TOOL: **CON-SPACE** CSI–2000 Communication System

APPLICATION: The **CON-SPACE** CSI–2000 Communication System and Rescue Probe is a two-way communication accessory designed to provide rescuers with a basic means of victim location and communication.

SAFETY CONSIDERATIONS: Rescuers using the **CON-SPACE** System shall be well versed in all aspects of the System to assure that the system is used in an optimal and safe manner.

OPERATION:

TOOL SPECIFIC: Three (3) 1.5v size 'C' batteries. (Must be Eveready E93 or Duracell MN-1400 to maintain Intrinsic Safe certification).

MAINTENANCE: If modules or cables become contaminated with fuels, oils or corrosive fluids, they should be wiped off. Mineral spirits are recommended for cleaning the cable jacket.

If the low battery indicator starts to flash when turned on or the unit does not power up when turned to the on position, the batteries shall be changed.

B-CHECK: A visual inspection shall be made of the unit to assure the unit is clean, dry and ready for use. The B-Day routine shall include switching the power to ON and testing the microphone and headset to assure the unit is working properly.

TOOLS: COPPUS CADET UTILITY BLOWER / EXHAUSTER

APPLICATION: The Coppus Cadet is a portable unit designed to supply fresh air. The unit can also be used to exhaust noxious and hazardous fumes from a confined space.

SAFETY CONSIDERATIONS:

- Basic safety precautions should always be followed to reduce the risk of fire, electric shock, and personal injury.

1. Consider work area environment.
2. Use safety glasses and dust masks if work area is dusty.
3. Never place your fingers inside fan shroud while fan is running and/or plugged in.
4. Provide a fresh air environment for blower unit.

OPERATION:

1. Connect air duct to unit. Plug power cord into power supply. Use "O" Ring lever for on/off use.
2. To use for exhaust applications reverse the "Convert-A-Bell" fitting and apply the 8" duct to the exhaust side.

TOOL SPECIFIC:

All major components are constructed of a durable, Non-Corrosive glass filled polypropylene material.

Weight-40 LBS
Dimensions-21" L x 13" W x 15.63 H
Motor Rating- ½ Horsepower at 3450 RPM's
Voltage-115
HZ-60 XP
Current- 7.0
Noise level- 78 DBA
Electric motor has sealed bearings.
Duct size- 8" x 20'
Free flow air- 867 CFM (1) 90' Bend 776 CFM
Model # VEP 1
PT # 1-500605-00

MAINTENANCE: Keep the blower housing, Motor, and Fan wheel clean.

B-CHECK: Inspect for damage. Check for binding of the motor and fan wheel. Check for operation by turning unit on and off. Inspect power cord for damage.

Arcadia Fire Department

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Equipment Specification Manual

Revised August 2015

Tool: DeWalt 20 Volt Cordless 21 Degree Plastic Collated Framing Nailer

Application: The DCN21PL 20-Volt MAX 21° Plastic Collated Framing Nailer is DEWALT's first cordless 21° framing nailer. The DCN21PL is capable of driving plastic collated fasteners up to 3-1/4 in. L for use in a variety of applications. The DCN21PL can also drive the largest diameter fastener in framing applications, the 0.0148 in. Dia nail. The upgraded engine design increases power and drive quality compared to previous DEWALT cordless nailers. Its compact shape, well-balanced design and easy to operate features makes it a highly productive tool that helps with shoring operations.

Tool Specifications:

- Firing mode Selective: Bump or Sequential
- Voltage: 20V
- Height: 16.5" (419 mm)
- Width: 4" (104 mm)
- Length: 13.25" (335 mm)
- Weight: 8.5 lbs (3.85 kg)
- Magazine angle: 21°
- Loading capacity: Up to 49 nails

NAIL SPECIFICATIONS

- Full Round Head
- Nail lengths: 2" – 3-1/4" (50 mm – 83 mm)
- Shank diameters: 0.113" – 0.148" (2.8 mm– 3.3 mm)
- Nail stick angles: 21°
- Shank types: Smooth and Ring

Operation:

Preparing the Tool

- Before you use the cordless nailer, be sure that battery pack is fully charged

Mode Selection

- Sequential Action: Use sequential action for intermittent nailing where very careful and accurate placement and depth control is desired. The sequential actuation mode provides the maximum delivery of power for driving the longest nails.

To Operate the Nailer in Sequential Action Mode

1. Slide the selector to the left, with single nail showing and number 2 power mode
2. Fully depress nosepiece against the work surface (motor will start).
3. Pull trigger (nail will drive into work surface).
4. Release trigger.
5. Lift nosepiece off work surface.
6. Repeat steps 2 through 4 for next application.

NOTICE: The contact trip needs to be depressed followed by a trigger pull for each nail followed by a release of both the contact trip and trigger after each nail.

- Bump Action: Bump action is intended for rapid nailing on flat, stationary surfaces and typically most effective for applications that require driving shorter nails. When using bump action, two methods are available: place actuation and bump actuation.

To Operate the Tool Using the Place Actuation Method

1. Slide the selector to the right, with three nails showing and number 2 power mode
2. Depress the contact trip against the work surface.
3. Depress the trigger.

To Operate the Tool Using the Bump Actuation Method

1. Depress the trigger.
2. Push the contact trip against the work surface. As long as the trigger is depressed, the tool will fire a nail every time the contact trip is depressed. This allows the user to drive multiple nails in sequence

Loading the Tool

1. Turn the nailer upside down.
2. Slide the spring-loaded pusher latch to the base of the magazine to lock it into place.
3. Drop nail strips into the loading slot of the magazine, making sure the nail heads align correctly with the slot opening. (Refer to Nail Specifications to determine compatible size.)

Dry Fire Lock Out

- The nailer is equipped with a dry fire lockout which prevents the tool from actuating when the magazine in nearly empty. When approximately 4 nails remain in the magazine, the tool ceases to operate. Refer to Loading the Tool to reload a stick of collated nails

Adjusting Depth

1. To drive the nail shallower, rotate the depth adjustment wheel 3 to the left, toward the shallow nail icon.
2. To drive a nail deeper, rotate the depth adjustment wheel 3 to the right, toward the deeper nail icon.

Jam/Stall Indicator Light

- There is a jam/stall indicator light located on the foot of the tool.

Stall Release

- If the nailer is used in harder wood where all available energy in the motor is used to drive a fastener, the tool may stall. The driver blade will not complete the drive cycle and the jam/stall indicator will flash. Rotate the stall release lever on the tool and the mechanism will release.

NOTE: The tool will disable itself and not reset until the battery pack has been removed and reinserted. If the driver blade does not automatically return to the home position, proceed to Clearing a Jammed Nail. If the unit continues to stall please review the material and fastener length to be sure that it is not too rigorous an application.

Clearing a Jammed Fastener
WARNING: To reduce the risk of serious personal injury, disconnect battery pack from tool before making any adjustments, changing accessories, servicing, or moving the tool:

1. Remove battery pack from tool and engage trigger lock-off.
2. Slide the spring-loaded pusher latch to the base of the magazine to lock it into place and unload nail strip.
3. Using the hex tool provided, loosen the two hex bolts at the top of the magazine.
4. Rotate the magazine forward.
5. Remove jammed/bent nail, using pliers if necessary.
6. If the driver blade is in the down position, rotate the stall release lever on the top of the nailer.

NOTE: If the driver blade will not reset after rotating the stall release lever, manually resetting the blade with a long screw driver may be necessary.

7. Rotate the magazine back into position under the nose of the tool and tighten hex bolts.

NOTE: Should nails continue to jam frequently in nosepiece, have tool serviced by an authorized DeWALT service center.

Maintenance:

Cleaning

- Blow dirt and dust out of all air vents with clean, dry air at least once a week

Replacing the Return Springs and Profile

- Step-by-Step Instructions: https://www.youtube.com/watch?v=iPa_0ar5ZyQ&t=3s

Safety:

Minimum safety requirements include **helmet, goggle, and gloves** specified in AFD Department Guideline 101 – Personnel Protective Equipment

Never assume the tool is empty, remove tool from battery supply to clear for jams or removing fasteners. NEVER attempted to fire tool against/or at anything other than a solid surface.

Tool: DeWalt DWF83PL 21 Degree Plastic Collated Framing Nailer, 2" to 3-1/4"

Application: The CALIFORNIA AIR TOOLS 4610S Ultra Quiet & Oil-Free Air Compressor is designed to be one of the quietest air compressors in the industry having only 60 decibels of sound. This air compressor is ideal for anyone working inside where noise is a major issue.

Tool Specifications:

- Fastener Head Type: Full Round Head
- Fastener Shank Type: Smooth, Ring
- Fastener Shank Diameter: .113” to .148”
- Fastener Range: 2” to 3-1/4”
- Fastener Collation: Plastic Strip
- Magazine Capacity: 50 Nails
- Item Weight: 9.5 lbs
- Length: 21.5”
- Width: 4.95”
- Height: 12.5”

Operation:

Preparing the Tool

1. Before you use the nailer, be sure that the compressor tanks
2. . Lubricate the tool following these directions:
   a. Use DeWALT pneumatic tool oil or a non-detergent S.A.E. 20 weight oil. DO NOT use detergent oil or additives as they will damage o-rings and rubber parts.
   b. Use a filter-regulator-lubricator in the air line between the compressor and the tool when possible.
   c. If a lubricator is not available, add 5 to 10 drops of oil in the air fitting a least twice a day or every 4 hours of use.
3. Wear proper eye, hearing and respiratory protection.
4. Remove all fasteners from the magazine
5. Check for smooth and proper operation of contact trip and pusher assemblies. Do not use tool if either assembly is not functioning properly. NEVER use a tool that has the contact trip restrained in the up position.

6. Check air supply. Ensure that air pressure does not exceed recommended operating limits, refer to Tool Specifications.
7. Connect air hose.
8. Check for audible leaks around valves and gaskets. Never use a tool that leaks or has damaged parts. Shutting down the compressor

SEQUENTIAL TRIP

1. Push and hold in pivot pin (I) opposite the selector, while rotating the selector (J) 180° counterclockwise to the sequential trip position
2. Ensure the selector is fully seated in the new position.

To operate the nailer in sequential trip mode:

1. Depress the contact trip firmly against the work surface.
2. Depress the trigger.

Clearing a Jammed Fastener

WARNING: Disconnect air line from tool, engage trigger lock and remove fasteners from magazine before making adjustments or personal injury may result. If a nail becomes jammed in the nosepiece, keep the tool pointed away from you and follow these instructions to clear:

1. Disconnect the air supply from the tool.
2. Pull pusher (E) back and lock the base of the magazine.
3. Slide fasteners out of the magazine.
4. If nail is jammed between the driver and nose casting force driver blade back to the top using a 1/4" (6.4 mm) punch and hammer. When the nail is released it will fall free or can be removed using pliers.
5. If nail still cannot be removed, remove the magazine:

a. Remove screw.
b. Remove magazine.
c. Remove bent nail.
d. Reassemble in reverse order.

NOTE: Should nails continue to jam frequently in nosepiece, have tool serviced by an authorized DeWALT service center.

Maintenance:

Draining the Air Tank

1. Place the air compressor above a container capable of holding water
2. With compressed air in the tank, slowly turn the drain valve knob to the forward (open) or straight position

Cleaning

- Blow dirt and dust out of all air vents with clean, dry air at least once a week.
- Disconnect air line from tool and remove fasteners from magazine before making adjustments or personal injury may result.

Follow tools manual for possible trouble shooting methods should the nailer have any issues during operation.

Safety:

Minimum safety requirements include **helmet, goggle, and gloves** specified in AFD Department Guideline 101 – Personnel Protective Equipment

Never assume the tool is empty, remove tool from air supply to clear for jams or removing fasteners. NEVER attempted to fire tool against/or at anything other than a solid surface.

TOOL
Heavy-Duty 24V Cordless Reciprocating Saw Kit - DW008K-2

FEATURES

Lever action keyless blade clamp for fast and easy blade changes
Two speed control for metal and wood cutting
Electric brake for greater control
3-Position adjustable shoe increases overall blade life
On-board blade storage for convenience of carrying additional blades
FAN COOLED battery and charger technology increases run-time and number of recharges

SPECIFICATIONS

Voltage	24 V
Keyless Blade Clamp	Yes
Strokes/Min	0-2,400/0-2,900 spm
Stroke Length	1-1/8 "
Electric Brake	Yes
Tool Weight	8.4 lbs
Shipping Weight	21.7 lbs

Dual Speed Switch
Store in the "locked" position. The switch is located on the top of the saw
Low range – for cutting metal
High range – for cutting wood, plastic and other soft materials
Use fine tooth blade for cutting ferrous (containing iron) metals and a coarse blade for non-ferrous materials

Blade storage
Teeth facing in when inserting the blade
Press blade completely in, jaws will catch and hold the blade

Blade release lever
SAFETY NOTE: Lock trigger and remove battery before installing or removing blades
To install blade
1. Open blade clamp release – lever up
2. Insert blade shank from the front
3. Close blade clamp release – lever down

To remove blade from saw

1. Open blade clamp release - lever up
2. Remove blade

Battery charging

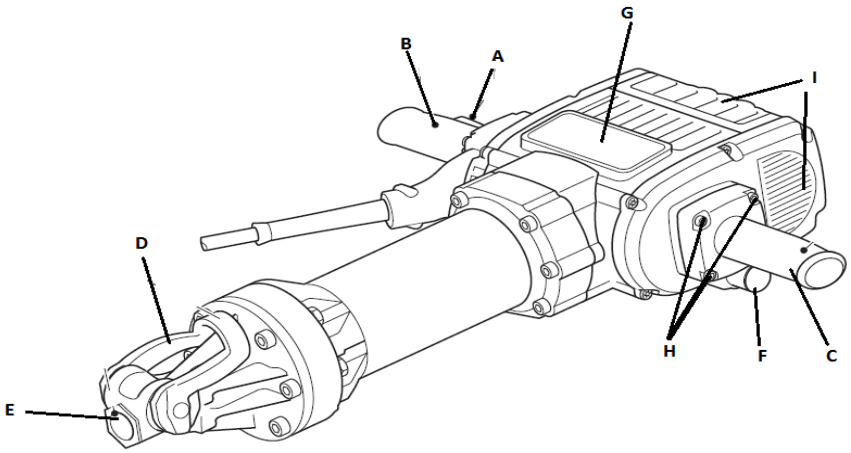
1. The red light will blink continually indicating that the 1-hour charge cycle has started
2. When the 1-hour charge cycle is completed, the light will stay on continuously and will no longer blink. This indicates that the battery is fully charged and ready for use

TOOL: **Demolition Hammer D25980**

TOOL SPECIFICATIONS:

- Amps: 15 Amps
- Impact Energy: 52 Joules
- Max Watts Out: 1600 W
- Tool Length: 30.75 in
- Tool Weight: 68.3 lbs
- Chuck Type: 1-1/8" HEX
- Loaded Speed: (BPM) 900 bpm
- Power Tool Type: Corded
- Vibration Control Yes: Shocks™
- Measured sound level: 104 dB

Components:

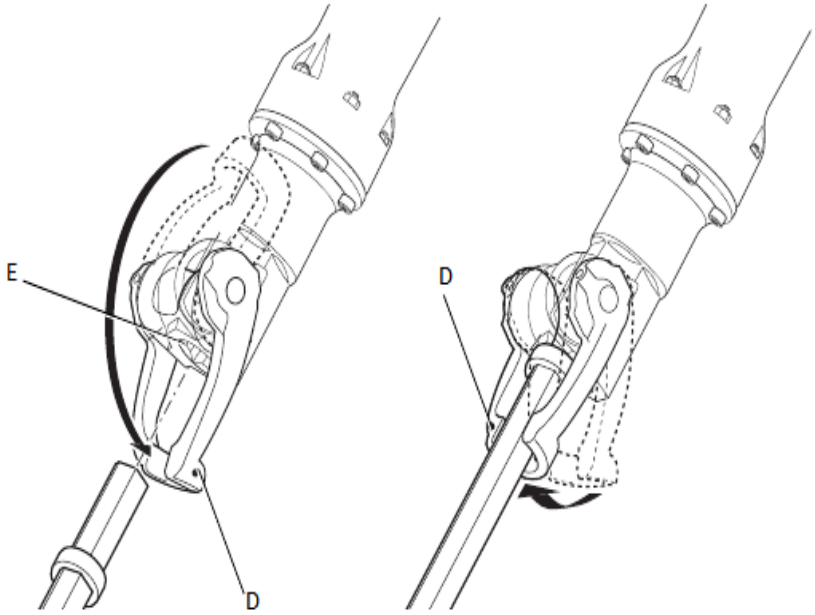


Description:
a. On/off switch
b. Right Side Handle
c. Left Side Handle
d. Bit retainer
e. Bit holder
f. Active vibration control
g. Front of tool
h. Hex head screws
i. Air Vents

Inserting and Removing 1-1/8" Hex Accessories

TO FIT A CHISEL WITH COLLAR ON THE SHANK

1. Pull the tool retainer (d) to the unlock position.
2. Insert the chisel shank into the tool holder (e). Ensure chisel shank is correctly oriented as shown.
3. Push the retainer (d) in line with the accessory shank to lock the accessory in position.
4. Pull on the chisel to check if it is properly locked. The hammering function requires the chisel to be able to slightly move axially when locked in the tool holder.
5. To remove a chisel pull back the retainer (d) and pull the chisel out of the tool holder (e).



Maintenance

- Lubrication: Your power tool requires no additional lubrication.
- Cleaning:
  - Blow dirt and dust out of the main housing with dry air as often as dirt is seen collecting in and around the air vents. Wear eye protection when performing this procedure.
  - Never use solvents or other harsh chemicals for cleaning the non-metallic parts of the tool. These chemicals may weaken the materials used in these parts. Use a cloth dampened only with water and mild soap. Never let any liquid get inside the tool; never immerse any part of the tool into a liquid.

Safety

- Use personal protective equipment. Always wear eye protection. Protective equipment such as dust mask, helmet, or hearing protection used for appropriate conditions will reduce personal injuries.

- Always observe the safety instructions and applicable regulations.

- Be aware of the location of pipework and wiring.

- To reduce the risk of serious personal injury, ALWAYS hold securely in anticipation of a sudden reaction.

- Prevent unintentional starting. Ensure the switch is in the off position before connecting to power source and picking up or carrying the tool. Carrying power tools with your finger on the switch or energizing power tools that have the switch on invites accidents.

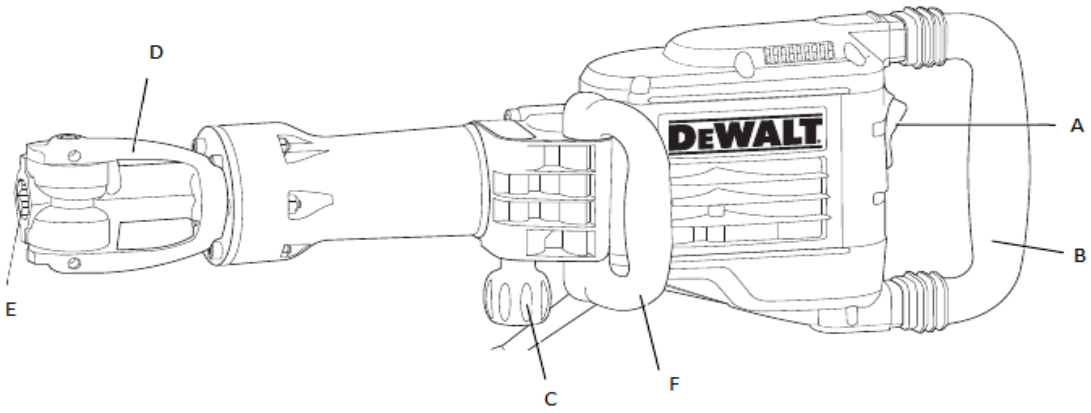
- Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations

TOOL: **Demolition Hammer D25960**

TOOL SPECIFICATIONS:

- Amps: 15 Amps
- Impact Energy: 35 Joules
- Max Watts Out: 1600 W
- Tool Length: 30 in
- Tool Weight: 40.5 lbs
- Chuck Type: 1-1/8" HEX
- Loaded Speed: (BPM) 1460 bpm
- Power Tool Type: Corded
- Vibration Control Yes: Shocks™
- Measured sound level: 102 dB

Components:

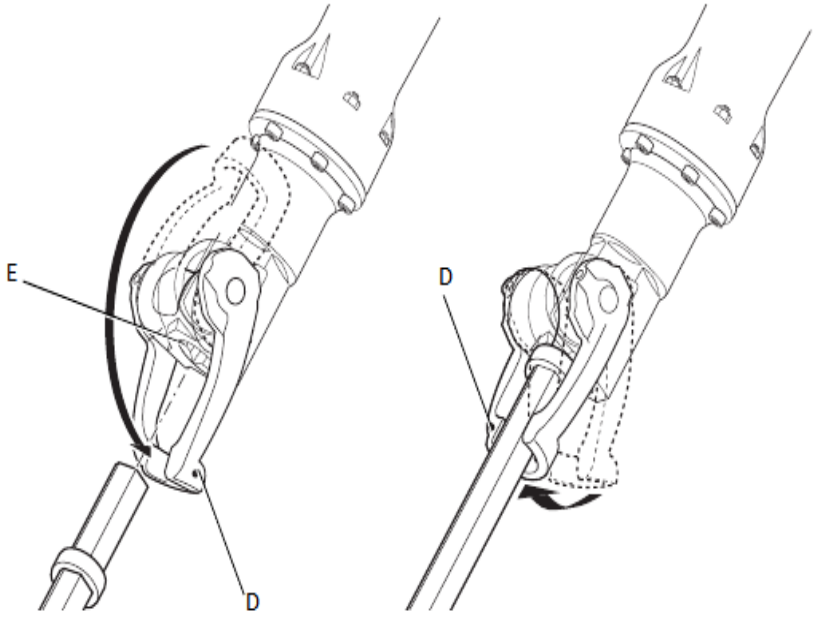


Description:
a. On/off switch
b. Main handle
c. Side handle clamping knob
d. Tool retainer
e. Tool holder
f. Side handle

Inserting and Removing 1-1/8" Hex Accessories

TO FIT A CHISEL WITH COLLAR ON THE SHANK

1. Pull the tool retainer (d) to the unlock position.
2. Insert the chisel shank into the tool holder (e). Ensure chisel shank is correctly oriented as shown.
3. Push the retainer (d) in line with the accessory shank to lock the accessory in position.
4. Pull on the chisel to check if it is properly locked. The hammering function requires the chisel to be able to slightly move axially when locked in the tool holder.
5. To remove a chisel pull back the retainer (d) and pull the chisel out of the tool holder (e).



Maintenance

- Lubrication: Your power tool requires no additional lubrication.
- Cleaning:
  - Blow dirt and dust out of the main housing with dry air as often as dirt is seen collecting in and around the air vents. Wear eye protection when performing this procedure.
  - Never use solvents or other harsh chemicals for cleaning the non-metallic parts of the tool. These chemicals may weaken the materials used in these parts. Use a cloth dampened only with water and mild soap. Never let any liquid get inside the tool; never immerse any part of the tool into a liquid.

Safety

- Use personal protective equipment. Always wear eye protection. Protective equipment such as dust mask, helmet, or hearing protection used for appropriate conditions will reduce personal injuries.

- Always observe the safety instructions and applicable regulations.

- Be aware of the location of pipework and wiring.

- To reduce the risk of serious personal injury, ALWAYS hold securely in anticipation of a sudden reaction.

- Prevent unintentional starting. Ensure the switch is in the off position before connecting to power source and picking up or carrying the tool. Carrying power tools with your finger on the switch or energizing power tools that have the switch on invites accidents.

- Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations

Escape Belt

TOOL: Escape Belt

APPLICATION: The FIRE INNOVATIONS CHEYENNE ESCAPE BELT is a class I NFPA rescue belt that fastens only around the waist, includes at least one load-bearing attachment point, and is intended for use by the wearer as an emergency self-rescue device (per NFPA 1983).

The escape belt is designed to be worn over your turnout coat and donned in conjunction with your axe.

SAFETY CONSIDERATIONS:

- Perform cursory inspection and check component compatibility before each use
    - Checking for cuts, worn or frayed areas, broken fibers, soft or hard spots, discoloration, or melted fibers
    - Check stitching for pulled threads, abrasion, or breaks
    - Check the hardware for damage, sharp edges, and improper operation
- Be trained and familiar in donning and doffing equipment correctly
- Tie back all loose ends to prevent snags

TOOL SPECIFIC:

- Fixed NFPA D-ring
- Gear loops on both sides
- Ambidextrous user design
- Double layered Kevlar construction
- Parachute rated buckles
- Adjustable waist strap to accommodate a range of sizes for rescuers

MAINTAINANCE:

- During use, carrying, and storage keep the harness away from:
    - Acids
    - Alkalis
    - Exhaust emissions
    - Rust
    - Strong chemicals

- High heat exposures or flame impingement

- If the harness is soiled:
  - It can be washed with cold water a mild detergent
  - Dry out of direct sunlight
  - Do not dry in an automatic dryer
  - Store in cool, dry location

- If there is any doubt about the serviceability of the harness, remove the harness from service and destroy it.

TOOL: Fire Extinguisher (Serviced Annually)

TOOL SPECIFICATIONS:

Stored-Pressure Water Extinguishers

Size:	2 ½ Gallons
Applicable to:	Class A fires
Stream Reach:	30-40 feet
Discharge time:	30-60 seconds
Hydrostatic testing:	Every 5 years
Servicing:	Contact Department Fire Extinguisher Repair Person

Carbon Dioxide Extinguishers

Size:	10 BC
Applicable to:	Class A and B
Stream Reach:	3-8 feet
Discharge time:	8-30 seconds
Hydrostatic testing:	Every 5 years
Servicing:	Contact Department Fire Extinguisher Repair Person

Dry Chemical Extinguishers

Size:	20A - 120BC
Applicable to:	Class A, B and C
Stream Reach:	5-20 feet
Discharge time:	8-25 seconds
Hydrostatic testing:	If carried on apparatus, every 5 years. If stored in quarters, every 12 years.
Servicing:	Contact Department Fire Extinguisher Repair Person

Type K Wet Chemical Extinguisher

Size:	6 Liter
Applicable to:	Class K
Stream reach:	10-12 feet
Discharge time:	55-60 seconds
Hydrostatic testing:	Every 5 years
Servicing:	Contact Department Fire Extinguisher Repair Person

Type K wet chemical extinguishers contain a potassium acetate based, low PH extinguishing agent developed for use in combating fires in pre-engineered restaurant kitchen systems. A recent trend in restaurants is to utilize more efficient cooking appliances and the use of unsaturated cooking oils. The Type K fire extinguisher has a greater fire fighting capacity and cooling effect designed to combat fires in pre-engineered restaurant kitchen systems.

Fire extinguisher servicing and maintenance: Fire extinguisher repair person will coordinate annual service of all extinguishers located on vehicles and inside of stations. Any extinguishers requiring additional maintenance or service such as after being used on an incident shall be reported to the on duty station Captain who will then schedule service. The two authorized Fire Extinguisher Companies are Marx Bros. and JAM Fire Protection.

Marx Bros. Fire (Los Angeles) 323-263-6954 extinguishers will be picked up and returned by Marx Bros.

JAM Fire Protection**-** location 1930 S. Myrtle, Monrovia 626-256-4400 extinguishers can be dropped off and picked up by department personnel.

TOOL: Fire Hose

TOOL SPECIFICATIONS:

- Synthetic double jacket, rubber lined
- Red head champhered couplings with national standard threads
- Replacement: Every 10 years
- Service test pressure: 300psi
- Hose sizes:

    1) 4 inch hose
        - Length: 15', 33', 50', and 100'
        - Color: Yellow
        - Weight: 65-100 lbs
    2) 2 ½" hose
        - Length: 50'
        - Color: Yellow
        - Weight: 32 lbs
    3) 1 ¾" hose
        - Length: 50'
        - Color: Yellow
        - Weight: 19 lbs
    4) 1 ½" hose
        - Length: 50'
        - Color: Red
        - Weight: 18 lbs

- 1 ¾" High Rise Hose

    1) Synthetic double jacket, thermoplastic lined
    2) Red head champhered couplings with national standard threads
    3) Length: 50'
    4) Weight: 16 lbs
    5) Color: Orange

- 1 ½" Brush Hose
    1) Lightweight lined synthetic hose
    2) Lightweight aluminum couplings with national standard threads
    3) Length: 100'
    4) Weight: 15 lbs
    5) Color: White
    6) No annual service test performed on brush hose

MAINTENANCE:

- All hose is cleaned with mild soap and water when dirty
- Do not use any chemicals to clean hose
- Any hose found with damage, should be tagged and rolled reverse roll with male out

TOOL: Foam Eductor and Nozzle

TOOL SPECIFICATIONS:

Angus 450 Low Pressure Variable Foam Eductor – RED BAND

Body, Barrel, Feet:	-	corrosive resistant aluminum
Venturi tube and valve:	-	high strength plastic material
Filter, metering and control pin	-	stainless steel
Pick-up tube connection	-	hermaphrodite-coupling chrome plated brass
Connector	-	1 ½" N.S.T
Weight with connectors	-	6.3 lbs.
Length with connectors	-	14.74 inches
Width	-	5.9 inches
Overall height	-	7.5 inches

To use the Eductor:

- Hook up the hose to the eductor. Use a maximum of 200 feet of 1 ½" hose from the eductor to the yellow Angus 450 (Red Band) foam nozzle or 120 GPM setting on a fog type nozzle.
- Hook up the pick-up tube to the eductor. Turn the metering knob to the desired induction rate, insert the pick-up tube into the concentrate, pump 150 PSI to the eductor, open the nozzle and apply the foam.
- You can use 2 ½" hose from the engine to the foam eductor to get more distance from the engine to the foam nozzle, but you must maintain the required pressure to the eductor.

NOTICE: All foam application nozzles must be either ON or OFF. There can be no in-between setting. If you use anything other than open, the eductor will not work or you will not get the proper mix of foam concentrate and water.

TOOL: SENSIT HXG-3

TOOL SPECIFICATIONS:

- Sensor: Solid state, no contamination worry
- Power: 3 "C" Alkaline Batteries
- Size: 11.5" X 3" X 2.32" – Probe length 16"
- Weight: 1.2 Pounds
- Alarm: Approximately 50% L.E.L. (2.5% Methane or 0.75% Pentane)
- Battery Life: Approximately 25 Hours of continuous use
- Battery-saver circuitry: Auto shutoff after 15 minutes
- Senses the following gases: Acetone, Alcohol, Ammonia, Butane, Ethylene Oxide 2610, Gasoline, Halon, Hydrogen, Industrial solvents, Jet Fuel 2610, Lacquer Thinner, Methane, Natural Gas, Propane, Refrigerants

HOW IT WORKS:

This tool is designed to detect combustible gases. The present alarms are indicated by a red flashing LED, display indicator and alarm sound. The Combustible gas alarm is present from 50% LEL (2.5% methane or 0.75% pentane). The sensor is a heated semiconductor material that changes electrical resistance when it comes in contact with a combustible gas or most toxic gases.

TICK ADJUSTMENT:

The most sensitive adjustment is a very slow rate. The ear can recognize a very small change. If there is a combustible present, the adjustment can easily be nulled out to find the leak.

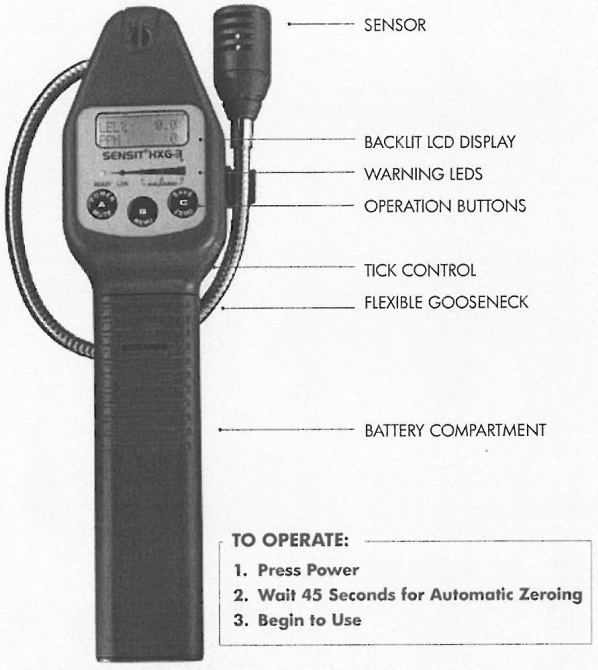
WARM-UP/ PURGE TIME:

Approximately 30 seconds/ 1 Minute

MAINTENANCE:

- Always check for operation on B-day
- Check unit for damage
- Make sure batteries are good

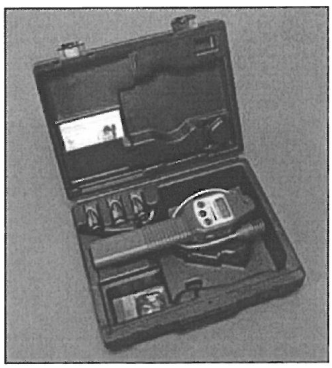
DRAFT



TO OPERATE:

1. **Press Power**
2. **Wait 45 Seconds for Automatic Zeroing**
3. **Begin to Use**

Patented



STANDARD KIT

Hard Carrying Case
3 "C" Batteries
Wrist Strap
Instruction Manual

KIT OPTIONS

Optional PPM
Probe Assembly
Printer
PC Interface
Calibration Kit

OPTIONAL FEATURES

Internal Pump (HXG-3P):
Provides Faster Response
Provides Better Sensor Protection

SENSOR SPECIFICATIONS

TYPE	RESOLUTION	RANGE	ACCURACY
PPM*	1 or 10ppm	0-50,000 ppm	±10%
LEL	0.1%	0-100% LEL	±10%

*PPM Optional

PRODUCT SPECIFICATIONS

Size:	11.5" x 3" x 2.2" (29.21 x 7.62 x 5.89 cm)
Weight:	1.2 lb. (0.54 kg)
Operational Temp:	-4 to 122° F (-20 to 50° C)
Battery Life:	Alkaline: Approximately 25 hrs. Continuous

CLASSIFIED UL 7WA6

SENSIT® HXG-3 instruments are approved UL913, For Class 1, Division 1, Groups C, D, T3 hazardous locations when used with Duracell MN1400BK batteries or equivalent alkaline batteries.

SENSIT® HXG-3 Instrument (No Pump)

SENSIT HXG-3 (No Pump)
Part # 907-00000-01

SENSIT® HXG-3 Standard Kit Replacement Parts

Sensor EX (LEL) (2611 Silver 4 Prong)
Part # 375-2611-01

Sensor Cap
Part # 365-00045

Hard Carrying Case
Part # 872-00001

Wrist Strap
Part # 360-00040

Instruction Manual
Part # 750-00023

SENSIT® HXG-3P Instrument (With Pump)

SENSIT HXG-3P (With Pump)
Part # 907-00000-07

SENSIT® HXG-3P Standard Kit Replacement Parts

Sensor EX (LEL) (2611 Silver 4 Prong)
Part # 375-2611-01

Sensor Cap (Replacement) w/"O" Rings
Part # 870-00018

Hard Carrying Case
Part # 872-00001

Wrist Strap
Part # 360-00040

Instruction Manual
Part # 750-00027

SENSIT® HXG-3 Manual Calibration Kits

Methane Calibration Kit (21 liter 2.5% Methane)
Part # 881-00015

Pentane Calibration Kit (34 liter 50% Pentane)
Part # 881-00077

SENSIT® HXG-3P Manual Calibration Kits

Methane Calibration Kit (21 liter 2.5% Methane)
Part # 881-00016

Pentane Calibration Kit (34 liter 50% Pentane)
Part # 881-00067

SENSIT® HXG-3/3P Replacement Cylinders

2.5% Methane/Air (21 Liter)
Part # 315-080012

2.5% Methane/Air (221 Liter)
Part # 315-180013

Pentane (50% LEL) (34 Liter)
Part # 315-100003

SENSIT Technologies

MADE IN USA

851 Transport Drive
Valparaiso, IN 46383-8432

Phone: 888 4SENSIT
888 473 6748
219 465 2700

Fax: 219 465 2701
www.gasleaksensors.com

SENSIT Technologies
is in compliance with ISO 9001:2008

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Distributed by:

TOOL: High Performance Ejectors

APPLICATION: The Ejector is a valuable tool for obtaining additional water supplies from sources that would normally be difficult or impossible to reach. The Ejector will pick up more than twice the water that is used to activate the Ejector. This allows water to be achieved from as much as 70 feet below the pumper or sources several hundred feet from the pump.

SPECIFICATIONS:

Size	18 ¼" (L) x 4 ½" (W) x 5 ½" (H)
Weight	4 ¾"
Inlet	1 ½"
Discharge	2 ½"
Suction	2 ½"

PERFORMANCE DATA:

Inlet PSI	Inlet GPM	Pickup GPM	Discharge GPM	Discharge in feet
100 PSI	76	133	209	25
140 PSI	88	133	221	35
180 PSI	100	133	233	60
200 PSI	107	133	240	70

TOOL: Honda EM5000SX Generator

APPLICATION: Used to provide emergency AC/DC electrical power.

TOOL SPECIFICATIONS:

Engine -	Four stroke, overhead valve, single cylinder
Displacement -	20.6 cubic inch
Fuel Tank -	4.5-gallon capacity
Run Time -	6 hours
Oil Capacity -	1.2 quarts, with low oil alert
Air Filter -	Free Flow, wire mesh filter
Rated Output -	5000 watts 120/240 volt 12 volt DC for battery charging
Weight -	176.4 lbs

SAFETY CONSIDERATION:

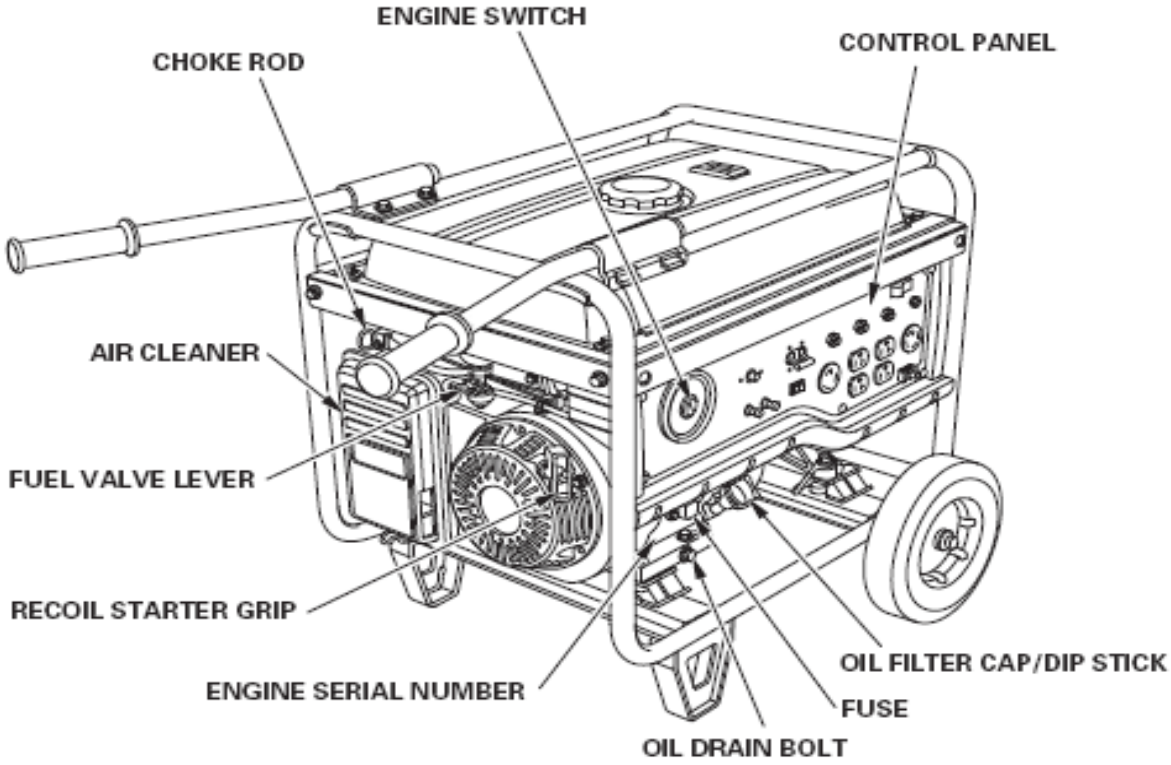
1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Operator should wear eye protection and gloves, anytime generator is being used.
3. When in use, keep generator away from large amounts off water.
4. Maintain proper footing and balance at all times, when moving generator.
5. Operate at high idle under load.

STARTING

1. Check oil and fuel
2. Turn on fuel
3. Turn on choke if cold
4. Start with pull start or battery.
5. Pull 2 to 3 times (Short tugs, do not pull rope out of its housing)
6. To stop, allow motor to idle and place button all the way up

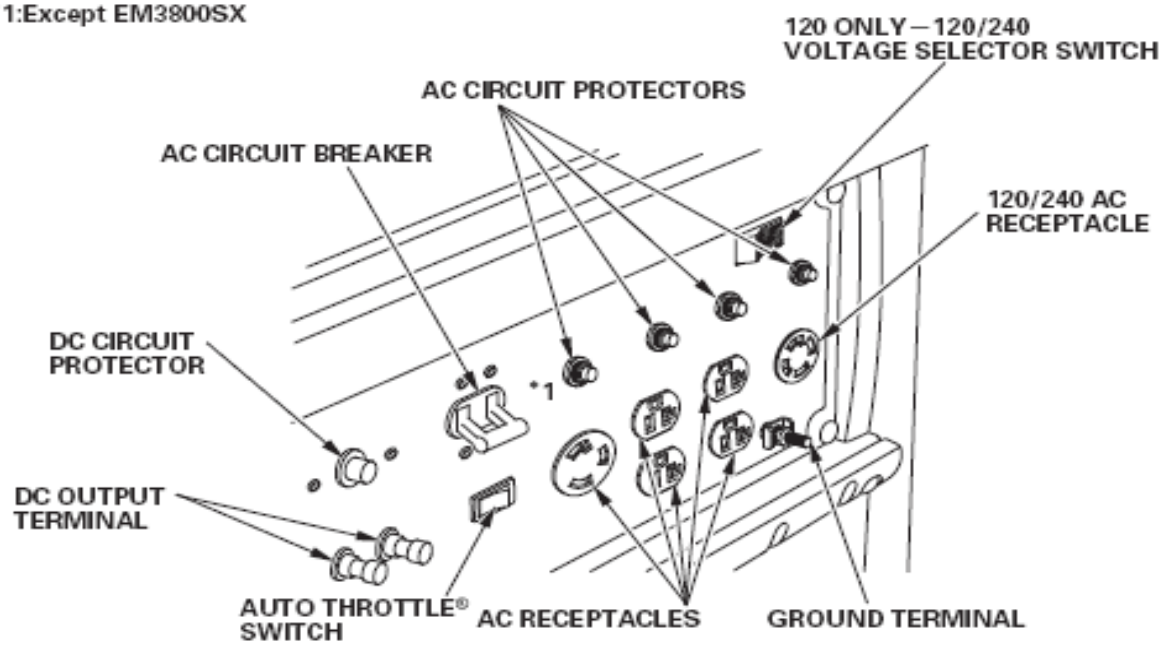
AFTER USE MAINTENANCE:

1. Be sure all parts are clean
2. Inspect carefully for damage
3. Inspect plugs for wear and damage.
4. Make sure generator is secured in compartment
5. Check all nuts, bolts, retainer rings and screws are in place and securely fastened
6. Check fuel and oil level



CONTROL PANEL

*1:Except EM3800SX



TOOL: Honda EU2000i Generator

APPLICATION: Used to provide emergency AC/DC electrical power.

TOOL SPECIFICATIONS:

Engine -	Four stroke, overhead cam shaft, single cylinder
Displacement -	6.01 cubic inch
Fuel Tank -	0.95 gal
Run Time -	4-15 hours (load dependent)
Oil Capacity -	0.42 quarts, with low oil alert
Oil Type-	10W 30
Rated Output -	1600 VA 120 volt
Maximum Output-	2000 VA
Dry Weight -	45.9 lbs

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Operator should wear eye protection and gloves, anytime generator is being used.
3. When in use, keep generator away from large amounts off water.
4. Maintain proper footing and balance at all times, when moving generator.
5. Operate in high idle, under a load.
6. Keep away from hot exhaust system.
7. Before refueling, stop the engine and keep heat, sparks, and flame away.
8. Handle fuel only outdoors.
9. Do not fill the fuel tank above the upper limit line.
10. Wipe up spills immediately.
11. Never run the generator in a closed or even partly closed area where people may be present.
12. Do not expose the generator to moisture, rain or snow.
13. Do not operate the generator with wet hands.

STARTING

1. Ensure that all appliances connected to the generator are turned off.
2. Turn the fuel cap vent lever to the ON position.
3. Check oil and fuel.
4. Turn on fuel.
5. Turn on choke if cold.
6. Turn the ignition switch to the ON position.
7. Start with pull start.
8. Pull 2 to 3 times. (Short tugs, do not pull rope out of its housing)
9. If choke is unnecessary, gradually move it to the OPEN position as engine warms up

STOPPING

1. Unplug appliances from the generator receptacles.
2. Turn the engine switch to the OFF position. (The fuel valve will automatically close.)
3. Allow the engine to COOL prior to placing the fuel vent lever to the OFF position.
4. If two generators were connected for parallel operation, disconnect the parallel operation kit after stopping the engines if you do not wish to resume parallel operation.

AFTER USE MAINTENANCE:

1. Be sure all parts are clean
2. Inspect carefully for damage
3. Inspect plugs for wear and damage.
4. Make sure generator is secured in compartment
5. Check all nuts, bolts, retainer rings and screws are in place and securely fastened
6. Check fuel and oil level

TOOL: ***Honeywell TITAN Self Contained Breathing Apparatus***

COMPONENTS:

- Air Cylinder and Valve
- First Stage Regulator
- Second Stage Regulator
- Heads-Up Display (HUD)
- Low Air Audible Alarm (Warbling Whistle)
- Backpack Assembly
- Integrated PASS System/Remote Gauge
- Face piece
- Voice Amplification System (VAS)
- Emergency Breathing Safety System (EBSS)
- RIC quick fill system with Universal Air Connection (UAC)

1. Air Cylinder and Valve

   Aluminum Cylinder wrapped in carbon fiber with an epoxy overlay
   Each cylinder is hydrostatically tested
   -every 5 years
   -when damaged or suspected to be unsafe
   Cylinder valve overhauled every 5 years
   15 years of service life
   60 minute cylinders @ 4500psi contain 88 cubic feet of air
   45 minute cylinders @ 4500psi contain 66 cubic feet or air
   Burst disk will burst @ approx. 6750psi
   Luminescent cylinder band and cylinder pressure gauge
   Each cylinder will have an AFD tracking number, Department of transportation number and a "lot" number
   Manufacture month and year

2. First Stage Regulator

   Balanced piston design
   Reduces cylinder pressure to an intermediate pressure to a nominal 115psi
   Factory set relief valve protects system against over pressurization (200-225psi)

3. Second Stage Regulator

   Quarter turn quick connect with Heads-Up Display (HUD)
   Pilot valve-operated positive pressure regulator
   Receives air from first stage regulator at a nominal 115psi
   Reduces intermediate pressure down to just above at atmospheric pressure, (1 inch of water pressure)
   Regulator is activated via the First-Breath-On (FBO) mechanism
   Bypass valve for emergency use when air is restricted or interrupted

4. Heads-Up Display (HUD)

Indicates air pressure remaining through openings in the face piece nozzle cover
Activates automatically when cylinder valve is opened
Consists of four green LED's representing Full, ¾, ½, 1/3
As pressure drops, the LED's turn off
At 50% capacity the LED representing ½ capacity flashes for 20 seconds then returns to a continuous light
At 33% capacity the last LED turns from green to red and will flash continuously
At 10% capacity the last LED will flash noticeably faster continuously
When pressure drops below approx. 200 psi the HUD will turn off
No lighted LED's indicate zero air pressure
An external LED on HUD warns others of user's low air by flashing at the same time the 1/3 LED is flashing inside the module
Powered by batteries on backpack battery compartment

5. Low Air Audible Alarm (Warbling Whistle)

Activated by first stage pressure reducer when the cylinder is reduced to 33%
Approx. 15 minutes of service time remaining when activated
Will continue to alarm until pressure is nearly depleted
Sound is driven by intermediate pressure not cylinder
Located at the top of the back pack assembly near your ears
Produces 84db at 3 meters

6. Backpack Assembly

Maxx Motion swivel and pivot mechanism increases mobility
Lightweight aluminum back plate
Adjustable cylinder band assembly allows for 30, 45, and 60 min cylinders
Attached webbing strap handle and integrated carrying handle on side rated at 1,000lbs
Kevlar and Nomex fabric
Battery compartment utilizes 4 "C" batteries
Use only approved Batteries
Duracell MN1400 or PC1400 or Energizer E93 or EN93
2 regulator receivers
Utility D-ring tested to 1,000 lbs.

7. Integrated PASS System/Remote Gauge

Provides audible and visual alarms on front and back of the SCBA
Powered by central power source on backpack
2 motion sensors. 1 on front PASS and 1 in the backpack.
Data logging records recent events
Large Analog Display with LED backlight
Two buttons: Alarm and Reset
Alarm (red) Manual alarm will activate when pressed and held for 1 second. Can be utilized with or without air in the system
Reset (yellow) Resets alarm mode when pressed twice within 2 seconds
Low battery will emit yellow LED every 10 seconds and will "chirp"

8. Twenty/20+ CBRN Face piece
   Scratch resistant polycarbonate lens
   Permanent anti-fog lens coating
   Butyl rubber seal
   Nose cup with one way valves helps reduce fogging
   Adaptable to Air Purifying Respirators
   NIOSH certified for use in CBRN environments

9. Voice Amplification System (VAS)

   Attached to right side of face piece
   Runs on three AAA batteries
   For push to talk press and hold power button until done talking
   For hands free mode press twice and red light will turn on inside mask

10. EBSS

    Two step, push-pull, female quick disconnect fitting
    Dual fitting on 32" hose allows air to be **shared** without regulator disconnection
    Quick deployment strap attached to Y block
    Escape use only
    Connection is for 2 users only. 1 donor and 1 receiver

11. RIC UAC

    Located posterior to CGA hand wheel
    For emergency filling only
    Not for continuous air supply. For continuous air use EBSS in RIC bag.
    Has its own relief valve to prevent cylinder over pressurization
    Dust plug **must** be in place when not in use to keep UAC free of debris

Hot Cutters

TOOL: Hot Cutters

APPLICATION: This tool is carried on all first line fire apparatus. Its intended purpose is for cutting the drip loops on residential electrical lines when there is no other way to turn off the power safely.

SPECIFICATIONS:

- The handles are rated at 100,000 volts per foot for five minutes (when clean and dry).
- When cutting the wires, always cut one wire at a time.
- Never cut through all three braided wires at once. This will result in a direct short across the line, which will melt the cutter and possibly injure the individual making the cut.
- Cut the drip loop wires in such a way so that when the job is done the service line is still supported from the power pole and left attached to the structure.

Hurst 27
Spreader

TOOL: Hurst 27 Spreader

APPLICATION: Used for gaining access to victims in emergency situations such as vehicle extrication, industrial entrapment and building collapse.

TOOL SPECIFICATIONS:

Length -	27 in.
Weight -	48 lb.
Spreading Distance -	27.00 in.
Spreading Force at tips:	14,500 lbs.
Closing Force at tips:	13,000 lbs.

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Dress in full turnouts including eye protection and gloves.
3. Avoid hydraulic fluid contact with eyes, skin and clothing.
4. Maintain tool awareness around all rescuers and patients.
5. When pulling, keep clear of chains.
6. When lifting, always use cribbing to shore and stabilize the object being lifted
7. When removing the tool from a multi-tool circuit, be sure the other tools are not in use and the dump valve is in the “closed” position before disconnecting unit
8. Maintain proper footing and balance at all times, do not overreach.
9. Make sure all couplers are wiped clean before connection.

OPERATIONS:

Pre-operation procedures

1. Connect hoses
    - Wipe all couplers with lint free cloth
    - Connect hoses from the hydraulic power source to the tool fittings
2. Check power source
    - Start power unit and pressurize hydraulic lines

Operation

1. Move trigger to check operation
2. Place tool in opening to be spread or crushed
3. Using your thumb, use the directional control valve to spread (to the left) or crush (to the right) the desired material

AFTER USE MAINTENANCE:

1. When storing tool, compensate for possible pressure buildup from thermal expansion of hydraulic fluid by connecting the two short hoses on the tool.
2. Move trigger in both directions to equalize the pressure on the piston.
3. Be sure all parts are clean
4. Inspect carefully for hydraulic leaks
5. Inspect hoses and couplings for wear and damage
6. Check control valve operation for easy operation and free return
7. Check all nuts, bolts, retainer rings and screws are in place and securely fastened

Hurst Defender 28 Spreader

TOOL: Hurst Defender 28 Spreader

APPLICATION: Used for gaining access to victims in emergency situations such as vehicle extrication, industrial entrapment and building collapse.

TOOL SPECIFICATIONS:

Length -	30.4 in.
Weight -	49 lb.
Spreading Distance -	28.3 in.
Spreading Force at tips:	35,100 lbs.
Closing Force at tips:	9,000 lbs.

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Dress in full turnouts including eye protection and gloves.
3. Avoid hydraulic fluid contact with eyes, skin and clothing.
4. Maintain tool awareness around all rescuers and patients.
5. When pulling, keep clear of chains.
6. When lifting, always use cribbing to shore and stabilize the object being lifted
7. When removing the tool from a multi-tool circuit, be sure the other tools are not in use and the dump valve is in the “closed” position before disconnecting unit
8. Maintain proper footing and balance at all times, do not overreach.
9. Make sure all couplers are wiped clean before connection.

OPERATIONS:

Pre-operation procedures

1. Connect hoses
    - Wipe all couplers with lint free cloth
    - Connect hoses from the hydraulic power source to the tool fittings
2. Check power source
    - Start power unit and pressurize hydraulic lines

Operation

1. Move trigger to check operation
2. Place tool in opening to be spread or crushed
3. Using your thumb, use the directional control valve to spread (to the left) or crush (to the right) the desired material

AFTER USE MAINTENANCE:

1. When storing tool, compensate for possible pressure buildup from thermal expansion of hydraulic fluid by connecting the two short hoses on the tool.
2. Move trigger in both directions to equalize the pressure on the piston.
3. Be sure all parts are clean
4. Inspect carefully for hydraulic leaks
5. Inspect hoses and couplings for wear and damage
6. Check control valve operation for easy operation and free return
7. Check all nuts, bolts, retainer rings and screws are in place and securely fastened

HURST JL 150 CUTTER

TOOL: Hurst JL 150 Cutter

APPLICATION: Used for gaining access to victims in emergency situations such as vehicle extrication, industrial entrapment and building collapse.

TOOL SPECIFICATIONS:

Weight -	36 lbs.
Opening Distance	7.25 in.
Cutting Force at tip -	25,000 lbs.
Cutting Force At Notch -	70,000 lbs.

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Dress in full turnouts including eye protection and gloves.
3. Avoid hydraulic fluid contact with eyes, skin and clothing.
4. Maintain tool awareness around all rescuers and patients.
5. When cutting, keep clear of blade.
6. When removing the tool from a multi-tool circuit, be sure the other tools are not in use And the dump valve is in the “closed” position before disconnecting unit
7. Maintain proper footing and balance at all times, do not overreach.
8. Make sure all couplers are wiped clean before connection.

OPERATIONS:

Pre-operation procedures

1. Connect hoses
    - Wipe all couplers with lint free cloth
    - Connect hoses from the hydraulic power source to the tool fittings
2. Check power source
    - Start power unit and pressurize hydraulic lines

Operation

1. Move trigger to check operation
2. Place tool in opening to be spread, crushed or cut
3. Using your thumb, use the directional control valve to spread (to the left) or crush (to the right) the desired material

AFTER USE MAINTENANCE:

1. When storing tool, compensate for possible pressure buildup from thermal expansion of hydraulic fluid by connecting the two short hoses on the tool.
2. Move trigger in both directions to equalize the pressure on the piston.
3. Be sure all parts are clean
4. Inspect carefully for hydraulic leaks
5. Inspect hoses and couplings for wear and damage
6. Check control valve operation for easy operation and free return
7. Check all nuts, bolts, retainer rings and screws are in place and securely fastened

TOOL: Hurst JL500 LP Cutter

APPLICATION: Used for gaining access to victims in emergency situations such as vehicle extrication, industrial entrapment and building collapse.

TOOL SPECIFICATIONS:

.Length	30.5 in.
Width	11.5 in
Height	8.5 in.
Weight	47.5 in
Cutter Opening	7.8 in

NFPA Cutter Ratings:

A7/ B9/ C7/ D8/ E9

*New Ratings Method

Material Category	A Round Bar	B Flat Bar	C Round Pipe		D Square Tube	E Angle Iron
						
Material	A-36 Hot-Rolled	A-36	Schedule 40 A-53 Grade B		A-500 Grade	A-36
Performance Level	Diameter (in.)	Thickness × Width (in. × in.)	Nominal size (in.)	OD × Wall Thickness (in. × in.)	Dimension × Wall Thickness (in. × in.)	Square Dimension × Thickness (in. × in.)
1	⅜	¼ × ½	⅜	0.68 × 0.09	½ × 0.06	½ × ⅛
2	½	¼ × 1	¾	1.05 × 0.11	1¾ × 0.06	1 × ⅛
3	⅝	¼ × 2	1	1.32 × 0.13	1 × 0.08	1¼ × 3⁄16
4	¾	¼ × 3	1¼	1.66 × 0.14	1¼ × 0.12	1½ × 3⁄16
5	⅞	¼ × 4	1½	1.90 × 0.15	1½ × 0.12	1½ × ¼
6	1	⅜ × 3	2	2.38 × 0.15	1¾ × 0.12	1¾ × ¼
7	1¼	⅜ × 4	2½	2.88 × 0.20	2 × 0.15	1½ × ⅜
8	1½	⅜ × 5	3	3.50 × 0.22	2½ × 0.19	2 × ⅜
9	1¾	⅜ × 6	3½	4.00 × 0.23	3 × 0.19	2½ × ⅜

For SI units 1 in. = 25.4 mm.

Hurst JL500 LP Cutter

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Dress in full turnouts including eye protection and gloves.
3. Avoid hydraulic fluid contact with eyes, skin and clothing.
4. Maintain tool awareness around all rescuers and patients.
5. When cutting, keep clear of blade.
6. When removing the tool from a multi-tool circuit, be sure the other tools are not in use And the dump valve is in the “closed” position before disconnecting unit
7. Maintain proper footing and balance at all times, do not overreach.
8. Make sure all couplers are wiped clean before connection.

OPERATIONS:

Pre-operation procedures

1. Connect hoses
    - Wipe all couplers with lint free cloth
    - Connect hoses from the hydraulic power source to the tool fittings
2. Check power source
    - Start power unit and pressurize hydraulic lines

Operation

1. Move trigger to check operation
2. Place tool in opening to be cut
3. Using your thumb, use the directional control valve to cut the desired material.

AFTER USE MAINTENANCE:

1. When storing tool, compensate for possible pressure buildup from thermal expansion of hydraulic fluid by connecting the two short hoses on the tool.
2. Move trigger in both directions to equalize the pressure on the piston.
3. Be sure all parts are clean
4. Inspect carefully for hydraulic leaks
5. Inspect hoses and couplings for wear and damage
6. Check control valve operation for easy operation and free return
7. Check all nuts, bolts, retainer rings and screws are in place and securely fastened

TOOL: Hurst Mini Mate Power Plant

APPLICATION: Used to provide hydraulic power to extrication equipment.

TOOL SPECIFICATIONS:

Engine

Engine	Honda GX-100
	-3 horsepower, 4 stroke overhead cam, single cylinder
Hydraulic Reservoir	.92 gal
Valve type	dual simultaneous
Weight	60.4 lbs.
Fuel	Unleaded 86 Octane or Higher

Hydraulic pump

Dual Pump with dump valves

Normal output 5,000 psi.

Hurst fluid only

MAINTENANCE:

1) Clean static board every 25 hours or as needed.
2) Keep louvered area around cooling system (near pull starter) clear of debris.
3) Clean spark arrestor every 50 hours.
4) Clean air filter in low or non-suds detergent and warm water.
   Do not use petroleum base solvents

TOOL: Hurst Mini Ram

APPLICATION: Used for gaining access to victims in emergency situations such as vehicle extrication, industrial entrapment and building collapse.

TOOL SPECIFICATIONS:

JL20a	**-**	Opening force	15,000 lbs.
		Closing force	7,000 lbs.
		Length open	22.25 inches.
		Length closed	14.50 inches.
		Weight	18 lbs.
JL30a	**-**	Opening force	15,000 lbs.
		Closing force	7,000 lbs.
		Length open	35.63 inches.
		Length closed	23.00 inches.
		Weight	31 lbs.
JL60c	**-**	Opening force	15,700 lbs.
		Closing force	9,570 lbs.
		Length open	60.00 inches.
		Length closed	35.00 inches.
		Weight	36.5 lbs.

Extensions 6, 8, 10 inches, placed on the stationary end only and can not be utilized on the JL20a.

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Dress in full turnouts including eye protection and gloves.
3. Avoid hydraulic fluid contact with eyes, skin and clothing.
4. Maintain tool awareness around all rescuers and patients.
5. When lifting, always use cribbing to shore and stabilize the object being lifted
6. When removing the tool from a multi-tool circuit, be sure the other tools are not in use And the dump valve is in the “closed” position before disconnecting unit
7. Maintain proper footing and balance at all times, do not overreach.
8. Make sure all couplers are wiped clean before connection.

OPERATIONS:

Pre-operation procedures

1. Connect hoses
    - Wipe all couplers with lint free cloth
    - Connect hoses from the hydraulic power source to the tool fittings
2. Check power source
    - Start power unit and pressurize hydraulic lines

Operation

1. Move trigger to check operation
2. Place tool in opening to be spread
3. Using your thumb, use the directional control valve to open (to the left) or close (to the right) the desired material

AFTER USE MAINTENANCE:

1. When storing tool, compensate for possible pressure buildup from thermal expansion of hydraulic fluid by connecting the two short hoses on the tool.
2. Move trigger in both directions to equalize the pressure on the piston.
3. Be sure all parts are clean
4. Inspect carefully for hydraulic leaks
5. Inspect hoses and couplings for wear and damage
6. Check control valve operation for easy operation and free return
7. Check all nuts, bolts, retainer rings and screws are in place and securely fastened

HURST ML-16S COMBINATION TOOL

TOOL: Hurst ML-16S Maverick Combination Tool

APPLICATION: Used for gaining access to victims in emergency situations such as vehicle extrication, industrial entrapment and building collapse.

TOOL SPECIFICATIONS:

Length -	33 in.
Height -	7.3 in.
Width -	11 in.
Weight -	38 lbs.
Spreading Distance -	16 in.
Cutting Distance -	9 in.
Highest Spreading Force (HSF):	13,000 lb.
Pulling Force:	8,100 lb.
Cutting Force:	60,000 lb.
Lowest Pulling Force (LPF):	7,020 lb.

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Dress in full turnouts including eye protection and gloves.
3. Avoid hydraulic fluid contact with eyes, skin and clothing.
4. Maintain tool awareness around all rescuers and patients.
5. When lifting, always use cribbing to shore and stabilize the object being lifted
6. When removing the tool from a multi-tool circuit, be sure the other tools are not in use and the dump valve is in the “closed” position before disconnecting unit
7. Maintain proper footing and balance at all times, do not overreach.
8. Make sure all couplers are wiped clean before connection.

OPERATIONS:
Pre-operation procedures

1. Connect hoses
    - Wipe all couplers with lint free cloth
    - Connect hoses from the hydraulic power source to the tool fittings
2. Check power source
    - Start power unit and pressurize hydraulic lines

Operation

1. Move trigger to check operation
2. Place tool in opening to be spread, crushed or cut
3. Using your thumb, use the directional control valve to spread (to the left) or crush (to the right) the desired material

AFTER USE MAINTENANCE:

1. When storing tool, compensate for possible pressure buildup from thermal expansion of hydraulic fluid by connecting the two short hoses on the tool.
2. Move trigger in both directions to equalize the pressure on the piston.
3. Be sure all parts are clean
4. Inspect carefully for hydraulic leaks
5. Inspect hoses and couplings for wear and damage
6. Check control valve operation for easy operation and free return
7. Check all nuts, bolts, retainer rings and screws are in place and securely fastened

Hurst ML-32 Spreader

TOOL: Hurst ML-32 Spreader

APPLICATION: Used for gaining access to victims in emergency situations such as vehicle extrication, industrial entrapment and building collapse.

TOOL SPECIFICATIONS:

Length -	27.30 in.
Height -	8.30 in.
Width -	14.00 in.
Weight -	52.00 lb.
Spreading Distance -	32.00 in.
Highest Spreading Force (HSF):	16,000 lb.
Lowest Spreading Force (LSF):	6,604 lb.
Highest Pulling Force (HPF):	14,400 lb.
Lowest Pulling Force (LPF):	7,020 lb.

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Dress in full turnouts including eye protection and gloves.
3. Avoid hydraulic fluid contact with eyes, skin and clothing.
4. Maintain tool awareness around all rescuers and patients.
5. When pulling, keep clear of chains.
6. When lifting, always use cribbing to shore and stabilize the object being lifted
7. When removing the tool from a multi-tool circuit, be sure the other tools are not in use And the dump valve is in the “closed” position before disconnecting unit
8. Maintain proper footing and balance at all times, do not overreach.
9. Make sure all couplers are wiped clean before connection.

OPERATIONS:
Pre-operation procedures

1. Connect hoses
    - Wipe all couplers with lint free cloth
    - Connect hoses from the hydraulic power source to the tool fittings
2. Check power source
    - Start power unit and pressurize hydraulic lines

Operation

1. Move trigger to check operation
2. Place tool in opening to be spread or crushed
3. Using your thumb, use the directional control valve to spread (to the left) or crush (to the right) the desired material

AFTER USE MAINTENANCE:

1. When storing tool, compensate for possible pressure buildup from thermal expansion of hydraulic fluid by connecting the two short hoses on the tool.
2. Move trigger in both directions to equalize the pressure on the piston.
3. Be sure all parts are clean
4. Inspect carefully for hydraulic leaks
5. Inspect hoses and couplings for wear and damage
6. Check control valve operation for easy operation and free return
7. Check all nuts, bolts, retainer rings and screws are in place and securely fastened

HURST X-TRACTOR C
Combination

TOOL: Hurst X-Tractor C

APPLICATION: Used for gaining access to victims in emergency situations such as vehicle extrication, industrial entrapment and building collapse.

TOOL SPECIFICATIONS:

Length -	30.3 in.
Height -	7.3 in.
Width -	11 in.
Weight -	40 lbs.
Cutting Opening -	10.5 in.
Cutting Force -	up to 81, 381 lbs.
Spreading Force -	up to 24, 279 lbs.
Spreading Distance -	14.1 in.
Pulling Force -	up to 10,554 lbs.

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Dress in full turnouts including eye protection and gloves.
3. Avoid hydraulic fluid contact with eyes, skin and clothing.
4. Maintain tool awareness around all rescuers and patients.
5. When cutting, keep clear of blade.
6. When removing the tool from a multi-tool circuit, be sure the other tools are not in use And the dump valve is in the “closed” position before disconnecting unit
7. Maintain proper footing and balance at all times, do not overreach.
8. Make sure all couplers are wiped clean before connection.

OPERATIONS:
Pre-operation procedures

1. Connect hoses
    - Wipe all couplers with lint free cloth
    - Connect hoses from the hydraulic power source to the tool fittings
2. Check power source
    - Start power unit and pressurize hydraulic lines

Operation

1. Move trigger to check operation
2. Place tool in opening to be spread, crushed or cut
3. Using your thumb, use the directional control valve to spread (to the left) or crush (to the right) the desired material.

AFTER USE MAINTENANCE:

1. When storing tool, compensate for possible pressure buildup from thermal expansion of hydraulic fluid by connecting the two short hoses on the tool.
2. Move trigger in both directions to equalize the pressure on the piston.
3. Be sure all parts are clean
4. Inspect carefully for hydraulic leaks
5. Inspect hoses and couplings for wear and damage
6. Check control valve operation for easy operation and free return
7. Check all nuts, bolts, retainer rings and screws are in place and securely fastened

HURST X-TRACTOR CUTTER

TOOL: Hurst X-Tractor Cutter

APPLICATION: Used for gaining access to victims in emergency situations such as vehicle extrication, industrial entrapment and building collapse.

TOOL SPECIFICATIONS:

Length -	28.2 in.
Height -	7.3 in.
Width -	11 in.
Weight -	39 lbs.
Cutting Opening -	6.19 in.
Cutting Force -	38,000 lbs.
Cutting Force At Notch -	71,700 lbs.

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Dress in full turnouts including eye protection and gloves.
3. Avoid hydraulic fluid contact with eyes, skin and clothing.
4. Maintain tool awareness around all rescuers and patients.
5. When cutting, keep clear of blade.
6. When removing the tool from a multi-tool circuit, be sure the other tools are not in use And the dump valve is in the “closed” position before disconnecting unit
7. Maintain proper footing and balance at all times, do not overreach.
8. Make sure all couplers are wiped clean before connection.

OPERATIONS:

Pre-operation procedures

1. Connect hoses
    - Wipe all couplers with lint free cloth
    - Connect hoses from the hydraulic power source to the tool fittings
2. Check power source
    - Start power unit and pressurize hydraulic lines

Operation

1. Move trigger to check operation
2. Place tool in opening to be spread, crushed or cut
3. Using your thumb, use the directional control valve to spread (to the left) or crush (to the right) the desired material

AFTER USE MAINTENANCE:

1. When storing tool, compensate for possible pressure buildup from thermal expansion of hydraulic fluid by connecting the two short hoses on the tool.
2. Move trigger in both directions to equalize the pressure on the piston.
3. Be sure all parts are clean
4. Inspect carefully for hydraulic leaks
5. Inspect hoses and couplings for wear and damage
6. Check control valve operation for easy operation and free return
7. Check all nuts, bolts, retainer rings and screws are in place and securely fastened

Hurst X-Tractor II Cutter

TOOL: Hurst X-Tractor II Cutter

APPLICATION: Used for gaining access to victims in emergency situations such as vehicle extrication, industrial entrapment and building collapse.

TOOL SPECIFICATIONS:

Length -	28.84 in.
Height -	7.30 in.
Width -	11 in.
Weight -	39.4 lb.
Opening Distance -	6 in.
Cutting Force -	72,000 lbs.

The body of the tool is of aluminum forging for its light weight, strength and long life.
The tool has a dual pilot check valve to prevent accidental movement of the arms in the event of power loss.
The control mechanism is of deadman design and actuated by thumb pressure.
The tool has two 20 in. hoses attached, with quick disconnects on the end for the attachment of additional hose lengths.

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Dress in full turnouts including eye protection and gloves.
3. Avoid hydraulic fluid contact with eyes, skin and clothing.
4. Maintain tool awareness around all rescuers and patients.
5. When cutting, keep clear of blade.
6. When removing the tool from a multi-tool circuit, be sure the other tools are not in use and the dump valve is in the “closed” position before disconnecting unit
7. Maintain proper footing and balance at all times, do not overreach.
8. Make sure all couplers are wiped clean before connection.

OPERATIONS:
Pre-operation procedures

1. Connect hoses
    - Wipe all couplers with lint free cloth
    - Connect hoses from the hydraulic power source to the tool fittings
2. Check power source
    - Start power unit and pressurize hydraulic lines

Operation

1. Move trigger to check operation
2. Place tool on item to be cut.
3. Using the trigger control, to spread the tips (to the left) or close (to the right) on the desired material

AFTER USE MAINTENANCE:

1. When storing tool, compensate for possible pressure buildup from thermal expansion of hydraulic fluid by connecting the two short hoses on the tool.
2. Move trigger in both directions to equalize the pressure on the piston.
3. Be sure all parts are clean
4. Inspect carefully for hydraulic leaks
5. Inspect hoses and couplings for wear and damage
6. Check control valve operation for easy operation and free return
7. Check all nuts, bolts, retainer rings and screws are in place and securely fastened

TOOL: KOR-IT K-501 Handheld Gas Core Drill

APPLICATION: The K-501 can be used by one person to core and drill through stone, concrete or asphalt at any angle

TOOL SPECIFICS:

Bit Design	Trapezoid Diamond Segments
Bit Size	2.25" diameter 15.25" long Up to 6" bit diameter capacity
Engine	Honda GX 35
Engine Type	4-cycle OHC Single Cylinder
Engine Displacement	35.8 cc or 2.18 cu in
Engine Fuel	Gasoline (86 octane or higher)
Fuel Capacity	0.67 qt (0.1675 gal)
Oil Capacity	0.11 qt
Oil Type	SAE 10W-30
Power	1.3 bhp at 7,000 rpm
Torque	1.2 lb/ft
Spark Plug Gap	0.6-0.7mm
Weight	22 lbs dry (power head)

SAFETY CONSIDERATIONS:

1. Do not operate the tool unless thoroughly trained in its use
2. Never carry the tool or put it down while the bit is spinning
3. Provide for ventilation if used in a confined area and continuously monitor the atmosphere using a multi-gas instrument
4. Always wear safety equipment such as goggles, ear and head protection, and safety shoes when operating the tool
5. Operate the tool in well-ventilated areas only
6. Always use a full throttle when cutting
7. A bumping action while drilling indicates the core has broken. Immediately back out and remove the broken core once the power and water has been shut off. Drilling with a broken core inside the barrel may damage the bit
8. If the bit jams in the hole, shut off the power and disconnect the bit from the tool before attempting to free the bit from the hole
9. Do not overreach. Maintain secure footing and balance at all times.

OPERATION:

General Procedure

1. Attach the bit properly
2. Once the motor is started, lower the system until the bit makes contact with the surface, then apply firm pressure on the bit
3. If at any time the bit seems to be dragging or slowing, too much pressure or force is being applied – Too much pressure causes "polishing" of diamonds
4. Reduce chattering by increasing pressure on the bit or by realigning the bit into the cut
5. Withdraw the bit while the machine is still running
6. Shut off power first, then water

Connecting with Water

1. Water must be flowing at all times when drilling in order to flush the cuttings and cool the bit
2. Always turn on water before beginning to drill
3. Connect the water inlet to a water source using a common garden hose
4. Use the flow valve on the inlet to control the flow
5. Adjust the valve so enough water is flowing back out of the hole to flush the cuttings from the face of the bit
6. Supply sufficient water to remove the cuttings and maintain a circle of clear water around the outside of the bit on the surface of the material being drilled

MAINTENANCE:

1. Inspect the barrel and bit for damage (no chips, cracks, or damage)
2. Inspect the handlebar (Securely fastened and clean)
3. Inspect the trigger
4. Make sure all operating controls and indicators are easily accessible.
5. Check all fasteners for tightness
6. Check the equipment for oil leaks
7. Clean spark arrestor every 100 hours
8. Keep engine level during storage to avoid leakage

B-DAY CHECK:

- All of the above regular maintenance plus the following.

1. Run the tool.
2. Check all fluid levels.
3. Make sure power head and bit are clean and free from dirt and debris.
4. Make sure all parts are secure and in good working condition.

TOOL: Ladder Belt

APPLICATION: The GEMTOR LADDER BELT is intended for use as a positioning device while operating on an aerial device as well as for use as an emergency self-rescue device. Per NFPA guidelines, this belt shall not allow greater than 24 inches in total length between the surface of the belt to the inside of the connector device (carabiner).

TOOL SPECIFIC:

- 3” wide buckle strap
- 5” wide body pad
- High strength nylon webbing
- Lock stitched with high tenacity nylon thread
- Double tongue buckle for rapid engagement and release of the belt
- Zinc plated steel triple action hook operates with one hand

MAINTAINANCE:

- During use, carrying, and storage keep the harness away from:
  - Acids
  - Alkalis
  - Exhaust emissions
  - Rust
  - Strong chemicals
  - High heat exposures or flame impingement
- If the harness is soiled:
  - It can be washed with cold water a mild detergent
  - Dry out of direct sunlight
  - Do not dry in an automatic dryer
  - Store in cool, dry location
- If there is any doubt about the serviceability of the harness, remove the harness from service and destroy it.

TOOL: Ground Ladders

APPLICATION: Fire service ladders are essential to the success of many fire ground and rescue scene functions. It is crucial that all firefighters be knowledgeable of all specifications and characteristics of ground ladders. (See AFD Ladder Manual)

LADDER SPECIFICATIONS:

Manufacture: Alaco Ladder Company
Chino, CA (909) 591-7561

Construction: Beams - Air-dried West Coast Dougles Fir

Rungs - Hickory

Finish - 3 coats "Watco Oil"

Maximum Ladder Loading

Folding	300 lbs.
Single & Roof	750 lbs.
Extension	750 lbs.
Combination	750 lbs.

10ft. Folding Attic Ladder

Model: 2305-10
Width: 12 1/8 inches
Rungs: 12 inches on center
Weight: 20 lbs.

12ft. Combination- Step and Extension Ladder

Model: 1600F-12
Width: 27 inches at base, 18 3/8 inches at tip
Length: 85 inches retracted, 12 ft extended
Rungs: 12 inches on center
Weight: 34 lbs.

LADDER SPECIFICATIONS: Cont.

14ft. Baby Bangor Extension Ladder

Model: 2301-14
Width: 14 ½ inches
Length: 109 inches retracted, 14 ft extended
Weight: 45 lbs.

16ft. Roof Ladder with folding hooks

Model: 2304-16
Width: 16 inches
Rungs: 12 inches on center
Weight: 48 lbs.

20ft. Roof Ladder with folding hooks

Model: 2304-20
Width: 16 inches
Rungs: 12 inches on center
Weight: 60 lbs.

24ft. Extension Ladder- 2section, tapered truss construction

Model: 2300-24
Halyard: ½ inch polyester rope
Width: 22 inches
Length: 14 ft. retracted, 24 ft. extended
Rungs: 12 inches on center
Weight: 105 lbs.

28ft. Extension Ladder- 2 section, tapered truss construction

Model: 2300-28
Halyard: ½ inch polyester rope
Width: 22 inches
Length: 16 ft. retracted, 28 ft. extended
Rungs: 12 inches on center
Weight: 125 lbs.

LADDER SPECIFICATIONS: Cont.

35ft. Extension Ladder- 2 section, tapered truss construction

Model: 2300-35
Halyard: 5/8 inch polyester rope
Width: 24 inches
Length: 19 feet 10 inches retracted, 35 ft. extended
Rungs: 12 inches on center
Weight: 171 lbs.

40ft. Extension Ladder- 2 section with tormentor poles

Model: 2300P-40
Halyard: 5/8 inch polyester rope
Width: 28 5/8 inches over poles
Length: 23 feet 4 inches retracted, 40ft. extended
Weight: 248 lbs.

LADDER TERMS:

Angle of inclination	Refers to the angle of a ladder in place in relation to horizontal (climbing angle).
Base Section	The lower section of an extension ladder.
Beam	The side rail of a ladder.
Butt	The bottom of ground end of a ladder.
Butt Spurs	Metal safety plates attached to the butt end of ground ladder beams.
Dogs	(Pawls, Locks) – Devices attached to the inside of the beams on fly sections used to hold the fly section in place after it has been extended.
Extension Ladder	A term to identify a ladder with two or more sections.
Fly	The upper section or top sections of an extension ladder.
Ground Ladder	A term to designate the difference between ladders rose on the ground and those rose from the apparatus.

LADDER TERMS: Cont.

Halyard	A rope or cable used for hoisting fly sections.
Hooks	A pair of sharp curved devices, which fold outward from each beam at the top of a roof ladder.
Pulley	A small grooved wheel through which the halyard is drawn.
Rail	The two lengthwise members of a trussed ladder, which are separated by truss or separation blocks.
Rungs	Cross members between the beams on which people climb.
Spurs	Metal points at the lower end of tormentor poles.
Stops	Wood or metal pieces that prevent the fly section from being extended to far.
Single Ladder	Term used to identify a ladder consisting of one section.
Tip or Top	The extreme top of a ladder
Tormentor pole	The poles, which are attached to long extension ladders to assist in raising and steadying the ladder, some poles, are permanently attached and some are removable.

LADDER SAFETY CONSIDERATION:

- Extreme caution is necessary whenever ladders are used near electrical power sources.
- When lifting and lowering ladders have adequate manpower for the task, bend knees, keep back as straight as possible and lift with the legs not the back or arms.
- Ensure ladders are footed or secured whenever firefighters are climbing or working from them.
- Whenever possible ladders should be tied in at the top, this will prevent the tip from pulling away from the side of the building.
- Before climbing ladder with a halyard any excess halyard rope should be tied to a rung as a safety measure to prevent the fly from slipping and to keep anyone from tripping over it.
- The load is the total weight on the ladder including persons, their equipment, and any other weight such as charged hose lines.
- When two or more firefighters are lifting a ladder, lifting should be on command of one of the firefighters at the rear. Lifting should be done in unison.
- The disadvantage of a folding ladder is its limited weight load; less than half a regular single ladder, its narrowness which makes climbing awkward and leg locking impractical.
- Whenever you work from a ladder you should use the leg lock method and you should use the leg opposite from which the work is being performed.
- The fly section should be toward the building.

RULES FOR LADDER LENGTH:

- The ladder should extend a few feet (three rungs at least) beyond the windowsill or roof edges when it is being used to gain access. This extension of the ladder provides ladder visibility and handholds when stepping on or off the ladder.
- When ladders are used to rescue from a window opening, the tip of the ladder is placed at or just below the windowsill.
- Remember that the designated length is derived from a measurement of the maximum extended length. This is not the ladders reach because ladders are set approximately 75 degrees. The reach will therefore be less than the designated length.
- A rule of thumb on the maximum working height for a ladder set at proper climbing angel:
  1) Ladders 35 feet and under reach one foot less than the designated lengths.
  2) Ladders over 35 feet reach 2 feet less than the designated length.
- A residential story will average 8-10 feet floor to floor with a 3-foot distance from floor to the windowsill.
- Commercial buildings will average 12 feet from floor to floor with a 4-foot distance from the floor to the windowsill.

CLIMBING A LADDER

- Climbing angle
  - **1)** The firefighter should stand erect facing the ladder with the toes touching the butt spur. The arms are held straight out from the body as if to grip a rung. If the palms fall naturally on the rung nearest shoulder height then the angle of inclination is correct. If the hands will not reach the rung the butt needs to be moved in toward the building. If the hands extend beyond the rung the butt needs to be brought away from the building.

  - **2)** An easy way of determining proper climbing angle is to take the working distance of the ladder and divide it by four. For example, if 20 feet of ladder is needed to reach a window, the butt end should be placed 5 feet from the building.

INSPECTION AND MAINTENANCE:

General

1) All ground ladders shall be visually inspected monthly and after each use.
2) Visual inspection shall include but not limited to checking:
   - Heat sensor labels, indicating heat exposure.
   - All rungs, snugness and tightness.
   - All bolts and rivets, for tightness
   - Welds, for cracks or defects.
   - Beams and rungs for:
     Cracks- Openings parallel to the grain
     Splintering- Small pieces of wood separated from a larger piece.
     Breaks- Openings, perpendicular to the grain
     Gouges- Areas of missing wood
     Wavy conditions or deformations
   - Butt spurs, for excessive wear
3) Any signs of failure
4) Ground ladder shall be wiped off after being washed, maintained as free from water as possible.
5) Ground ladders shall have reflective tape at the top of each section for the purpose of visibility.
6) Roof ladder hooks shall be checked for proper operation
7) Halyard shall be securely tied off and in good condition
8) Lock/pawl assemblies shall be checked for operation
9) Damaged or defective ground ladders shall be removed from service, marked repaired, and service tested prior to further use.

Wood Ladders

1) Ladders shall be placed on ladder maintenance stands
2) All extension ladders shall be extended for inspection
3) Sand damaged areas (if needed) using medium (100-150 grit) sand paper
4) **Always sand with the grain**
5) Feather in damage area, sanding approximately 1 to 2 inches into the undamaged area
6) Re-sand with fine (180-220 grit) sand paper to increase smoothness of the surface
7) Wipe entire ladder with damp, clean cloth, removing dirt and or sanding dust
8) Dry ladder with dry, clean cloth
9) Apply “Watco Oil” with clean cloth, applying a light film over entire surface of ladder
10) Allow 30 minutes for ladder to dry
11) Return to service

Number: 15 Code: 1500.L-3
Revision Date: 8/5/2015

Lampe High Pressure Air Bags

TOOL: High Pressure Lampe Air Bags

APPLICATION: Used for lift and displacement of heavy rigid objects in emergency situations such as building collapse, structural containment, vehicular extrications, industrial entrapment, and excavation collapse and containment. Can be used under water and on soft ground.

SAFETY CONSIDERATIONS: Dress in full turnouts including eye protection.
Anticipate and prepare for movement of the object, crib as you go, center load on lift bag, never stack more than two bags, inflate slowly and constantly reassess operation.(Stacking airbags is not recommended)

OPERATION: Select a compressed air source (SCBA bottle, AU 106, etc), make connection to pressure regulator, attach air hose quick connect coupling to regulator and to air bag making sure to lock safety rings. Position air bag and **slowly** open air supply, adjusting pressure regulator from 0 to 145 psi. Press deadman switch **slowly** to inflate bag. Once bag is at desired height, close the shut-off valve on the safety in-line relief valve.

MAINTENANCE: Clean with soap and water solution (never use petroleum based products). Inspect bags, couplings, and hoses for cuts, abrasions, air bubbles, and bulges (ply separation).

B-CHECK: Engineer will assure cleanliness and proper operation during weekly B-day check.

TOOL SPECIFIC:

Model 145-10	Size -	17" X 12" X 1.5"
	Operating Pressure -	145 PSI
	Bursting Pressure -	500 PSI
	Maximum Lifting Force -	10 Tons
	Maximum Lifting Height -	8 inches
	Volume -	2 Cubic Feet
	Nominal Lift -	2 Tons / 4 inches
	Weight -	8 lbs
	Resistant to:	Acid, oil, Gasoline
	Quantity -	1
Model 145-22	Size -	30.5" X 13" X 1.5"
	Operating Pressure -	145 PSI
	Bursting Pressure -	500 PSI
	Maximum Lifting Force -	22 Tons
	Maximum Lifting Height -	9 inches
	Volume -	7 Cubic Feet
	Nominal Lift -	8 Tons / 4 inches
	Weight -	14 lbs
	Resistant to:	Acid, oil, Gasoline
	Quantity -	1
Model 145-42	Size -	30" X 25" X 1.5"
	Operating Pressure -	145 PSI
	Bursting Pressure -	500 PSI
	Maximum Lifting Force -	42 Tons
	Maximum Lifting Height -	14 inches
	Volume -	20 Cubic Feet
	Nominal Lift -	16 Tons / 6 inches
	Weight -	20 lbs
	Resistant to:	Acid, oil, Gasoline
	Quantity -	1

High Pressure Hose	Marked with red tape	
	Length -	16 feet, 10.5 inches
	Operating pressure -	145 PSI
	Bursting Pressure -	2900 PSI
	Resistant to:	Acid, oil, Gasoline
	Quantity -	3
Pressure Reducer	Input Pressure -	Up to 4500 PSI
	Output Pressure -	0 – 174 PSI
	Length -	6’
Fill Fittings	High Pressure -	Red Gauge
	Max Pressure -	174 PSI
	Safety Lock -	Quick Connect Couplings

Lampe Low Pressure Air Bags

TOOL: Low Pressure Lampe Air Bags

APPLICATION: Used for lift and displacement of heavy rigid objects in emergency situations such as building collapse, structural containment, vehicular extrications, industrial entrapment, and excavation collapse and containment. Can be used under water and on soft ground.

SAFETY CONSIDERATIONS: Dress in full turnouts including eye protection.
Anticipate and prepare for movement of the object, crib as you go, center load on lift bag, never stack more than two bags, inflate slowly and constantly reassess operation.(Stacking airbags is not recommended)

OPERATION: Select a compressed air source (SCBA bottle, AU 106, etc), make connection to pressure regulator, attach air hose quick connect coupling to regulator and to air bag making sure to lock safety rings. Position air bag and **slowly** open air supply, adjusting pressure regulator from 0 to 145 psi. Press deadman switch **slowly** to inflate bag. Once bag is at desired height, close the shut-off valve on the safety in-line relief valve.

MAINTENANCE: Clean with soap and water solution (never use petroleum based products). Inspect bags, couplings, and hoses for cuts, abrasions, air bubbles, and bulges (ply separation).

B-CHECK: Engineer will assure cleanliness and proper operation during weekly B-day check.

TOOL SPECIFIC:

Model 50	Size -	33" X 46" X 2.5"
	Operating Pressure -	14.5 PSI
	Bursting Pressure -	174 PSI
	Maximum Lifting Force -	8 Tons
	Maximum Lifting Height -	32 inches
	Volume -	26 Cubic Feet
	Nominal Lift -	6 Tons / 25 inches
	Weight -	15.5 lbs
	Resistant to:	Acid, oil, Gasoline
	Quantity -	2
Low Pressure Hose	Marked with blue tape	
	Length -	16 feet, 8 inches
	Operating pressure -	14.5 PSI
	Bursting Pressure -	174 PSI
	Resistant to:	Acid, oil, Gasoline
	Quantity -	2
Pressure Reducer	Input Pressure -	Up to 4500 PSI
	Output Pressure -	0 – 174 PSI
	Length -	6'
Fill Fittings	High Pressure -	Blue Gauge
	Max Pressure -	15 PSI
	Safety Lock -	Quick Connect Couplings

TOOL*:* Maxiforce Airbags

APPLICATION: Used for lift and displacement of heavy rigid objects in emergency situations such as building collapse, structural containment, vehicular extrications, industrial entrapment, and excavation collapse and containment. Can be used under water and on soft ground.

SAFETY CONSIDERATIONS: Dress in full turnouts including eye protection.
Anticipate and prepare for movement of the object, crib as you go, center load on lift bag, never stack more than two bags, inflate slowly and constantly reassess operation.

OPERATION: Select a compressed air source (SCBA bottle, AU 106, etc), make connection to pressure regulator, attach air hose quick connect coupling to regulator and to air bag making sure to lock safety rings. Position air bag and **slowly** open air supply, adjusting pressure regulator from 0 to 135 psi. Press deadman switch **slowly** to inflate bag. Once bag is at desired height, close the shut-off valve on the safety in-line relief valve.

MAINTENANCE: Clean with soap and water solution (never use petroleum based products). Inspect bags, couplings, and hoses for cuts, abrasions, air bubbles, and bulges (ply separation).

B-CHECK: Engineer will assure cleanliness and proper operation during weekly B-day check.

TOOL SPECIFIC: **KPI 12**
Max lifting capacity at 118 psi: 12 tons
Size: 22.25” long, 16” wide, .8” thick
Lifting height: 9.2”
Max working pressure: 118 psi
Bursting pressure: 700 psi
Air requirement: 4.9 cubic feet
Inflation time: 4 seconds
Weight: 11 lbs.

KPI 17
Max lifting capacity at 118 psi: 17 tons
Size: 22.25" long, 16" wide, .8" thick
Lifting height: 9.2"
Max working pressure: 118 psi
Bursting pressure: 700 psi
Air requirement: 4.9 cubic feet
Inflation time: 4 seconds
Weight: 11 lbs.

KPI 22
Max lifting capacity at 118 psi: 21.8 tons
Size: 21.25" long, 21.25" wide, .8" thick
Lifting height: 11.1"
Max working pressure: 118 psi
Bursting pressure: 700 psi
Air requirement: 7.3 cubic feet
Inflation time: 7 seconds
Weight: 15 lbs.

KPI 32
Max lifting capacity at 118 psi: 31.8 tons
Size: 25" long, 25" wide, .8" thick
Lifting height: 13.1"
Max working pressure: 118 psi
Bursting pressure: 600 psi
Air requirement: 13.8 cubic feet
Inflation time: 11 seconds
Weight: 21 lbs.

KPI 44
Max lifting capacity at 118 psi: 43.8 tons
Size: 28" long, 28" wide, .8" thick
Lifting height: 15.5"
Max working pressure: 118 psi
Bursting pressure: 475 psi
Air requirement: 21.6 cubic feet
Inflation time: 20 seconds
Weight: 29 lbs.

KPI 74
Max lifting capacity at 118 psi: 73.4 tons
Size: 39.75" long, 38" wide, 1" thick
Lifting height: 20"
Max working pressure: 118 psi
Bursting pressure: 475 psi
Air requirement: 47 cubic feet
Inflation time: 53 seconds
Weight: 60 lbs.

MSA Altair 5X Multigas Detector

TOOL: MSA Altair 5X Multigas Detector

APPLICATION: To investigate the gas and vapor levels of a hazardous environment and to determine a safe working environment.

TOOL SPECS: Takes approximately 100-120 seconds to turn on (if sample tubing attached add approximately 1 second per foot).
Operates using a rechargeable Li-Ion battery pack and has an approximate operation time of 17 hours.
Monitors: *Oxygen* (High Alarm preset at 23% and Low Alarm at 19.5%), *Carbon Monoxide* (High Alarm preset at 100 PPM and Low Alarm preset at 25 PPM), *Hydrogen Sulfide* (High Alarm preset at 15 PPM and Low Alarm preset at 10 PPM), and *Pentane* (High Alarm at 20% LEL and Low Alarm at 10% LEL) levels.

OPERATION: Press and hold ON/OFF button for 2-3 seconds to power on (***ALWAYS*** turn monitor on in a ***CLEAN*** environment).
Test pump by placing finger over pump inlet (pump should stall and an alarm should sound); hit reset button to reset.
Allow monitor to complete a self-calibration (may take up to 2 minutes).
Move around environment allowing monitor to take in air and identify changes in the atmosphere.
Report hazardous readings as monitor alarms sound.
To power down: hold ON/OFF button for 5-10 seconds.

SAFETY: ***ALWAYS*** wear appropriate PPE (including SCBA if needed) when monitoring a potentially hazardous environment.
NEVER submerse pump inlet into liquids.
NEVER change out battery packs in a hazardous environment.

MAINTENANCE: Operate monitor ***EVERY*** Saturday.
Perform Blocked Flow test and Bump test before each days use.
Charge battery pack if less than ½ battery life or as needed.
Calibrate quarterly and after use in a hazardous environment.

PANTHER HIP-PAC
Supplied Air Respirator (SAR)
P9686 Series 10 min. Escape

Set Air Cart Regulator at 100 psi, Bleed Air Lines For Three Minutes

Components

- Air Cylinder and Valve
- First Stage regulator
- Second Stage regulator
- Harness
- Regulator hose with SAR port
- Face piece

Air Cylinder and Valve

- Fully wrapped carbon (15 year life)
- Each cylinder is hydrostatically tested
  - -every 5 years
  - -when damaged or suspected to be unsafe
- Cylinder valve overhauled every 5 years
  - 15 years of service life
- 10 minute cylinders @ 4500psi contain 17 cubic feet of air
- Burst disk will burst @ approx. 6750psi
- Luminescent cylinder band and cylinder pressure gauge
- Each cylinder will have an
  - -AFD tracking number
  - -Department of transportation number and a "lot" number
  - -Manufacture month and year

Harness Assembly

- Made of a Kevlar/Nomex blend
- Has a regulator receiver
- 3/8" quick connect hose female/male couplers

First Stage Regulator

- Balanced piston design
- Reduces cylinder pressure to an intermediate pressure of 80-150psi
- Factory set relief valve protects system against over pressurization

Second Stage Regulator

- Pilot valve-operated positive pressure regulator
- Receives air from first stage regulator at 80-150psi
  - Reduces intermediate pressure down to just above at atmospheric pressure, (1 inch of water pressure)
  - Regulator is activated via the First-Breath-On (FBO) mechanism

COMPASS (Integrated Pass Kit)

- Automatic pneumatic activation
- Two activation modes
  - Auto (when pressurized)
  - Manual (by pressing the manual switch once)
- Three Operational modes
  - Sensing (30-35 Seconds with no movement)
  - Pre-Alarm (after sensing pre alarm will activate for 10-13 seconds before alarm)
  - Alarm (must be reset manually)
- Alarm
  - Six alarm signals with same directional sound
  - Five flashing lights
  - 95 dBA from 3 meters
- Heat Alert (Alarms will activate based upon a time temperature curve)
  - The Alarm is a triple ascending tone with a unique LED display.
- Power Source
  - Pneumatic
  - **Battery (9V)**

Twenty-Twenty Plus CBRN Face piece

- Silicone face piece
- Scratch resistant polycarbonate lens
- Permanent anti-fog lens coating
- Butyl rubber seal
- Nose cup with one way valves helps reduce fogging
- Adaptable to Air Purifying Respirators
- NIOSH certified for use in CN/CS environments and chemical warfare agents

Confined Space Operations

- Always check the atmosphere with a monitor at least every five minutes
- Bleed at lines at a rate of 1 minute for every 100 feet (or 3 Min total)
- There should always be a back up crew that is in full PPE with SABA units attached and ready
- Every rescuer must have at least 2 light sources and a Pass device
- Ventilation must be established prior to making entry
- Every rescuer must have a wired communication device and also carry a radio
- Rescuers must be attached to a rope system

Refer to AFD Department Guideline #125 for additional Confined Space rescue operations.

PARATECH 60
PNEUMATIC AIR CHISEL

TOOL: Paratech Pneumatic Air Chisel

APPLICATION: Used for gaining access to victims in emergency situations such as vehicle extrication, industrial entrapment and building collapse.

PRINCIPLE OF OPERATION Spring return air activated cylinder. Piston rod used as a hammer,
impacting on the bit, held by a spring-loaded retainer.

TOOL SPECIFICATIONS:

Length -	21.2 inches
Width -	6.125 inches
Operating range -	40 – 250 PSI
Air consumption -	5.2 cfm
Weight -	7 lbs
Oil -	Pneumatic oil only

PRESSURE & TOOL BIT INFORMATION:

APPLICATIONS	RECOMMENDED PRESSURE	BIT USED
Breaking Concrete	125-200 psi	Bullpoint, Chisel
Breaking Concrete Block	100-150 psi	Bullpoint, Chisel, Spade
Breaking Car Door Hinges	150-250 psi	Chisel
Breaking Locks	100-225 psi	Chisel, Lock Breaker
Cutting Light Sheet Metal	75-150 psi	Curved Cutter, Dual Cutter
Cutting Metal Containers and Tanks	75-200 psi	Curved Cutter, Dual Cutter
Cutting Car Door Posts	100-150 psi	Chisel, Curved Cutter
Cutting Aircraft Skin	75-150 psi	Curved Cutter
Cutting Metal Roll Up Doors	100-150 psi	Curved Cutter, Dual Cutter
Popping Rivets	75-200 psi	Chisel, Spade
Shattering Castings	100-200 psi	Bullpoint, Chisel
Plugging Leaks	50-150 psi	Plug Driver

PARATECH PNEUMATIC AIR CHISEL

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Dress in full turnouts including eye protection and gloves.
3. Maintain tool awareness around all rescuers and patients.
4. When cutting, keep clear of blade.
5. When changing bit, be sure tool is disconnected from air source.
6. Maintain proper footing and balance at all times, do not overreach.
7. Make sure all couplers are wiped clean before connection.
8. **DO NOT OPERATE TOOL WITHOUT A LOAD** (DRY FIRE)
9. **DO NOT EXCEED MAXIMUM OPERATING PRESSURE**

OPERATIONS:

Pre-operation procedures

1. Unpack the tool and check for obvious signs of damage.
2. Fill the automatic inline oiler with proper oil (Marvel Air Tool Oil Recommended)
3. Select and insert a tool bit in the safety retainer.
4. If using a SCBA cylinder, setup pressure regulator.
5. Connect extension hose between the Airgun and Supply.
    - Wipe all couplers with lint free cloth
    - Connect hoses from the hydraulic power source to the tool fittings
6. Turn on air supply, check for operation (if using cylinder, set pressure at 90 psi)
7. Set pressure to bit use and material being extricated.

Operation

1. Place tool on item to be removed or cut.
2. Apply pressure and squeeze trigger.
3. Use short controlled tool blasts.

AFTER USE MAINTENANCE:

1. Disconnect from air source.
2. Check for any damage.
3. Be sure all parts are clean.
4. Check retainer ring for smooth operation.
5. Inspect hoses and couplings for wear and damage
6. Check control valve operation for easy operation and free return.
7. Check all nuts, bolts, retainer rings and screws are in place and securely fastened.
8. Sharpen or replace any damaged bits.

TOOL*:* Paratech Rescue Struts

APPLICATION: These tools are designed to be used for complex rescue operations such as: trench rescue, building collapse, structural containment, industrial entrapment, and excavation collapse and containment.

TOOL SPECS:
Acme Thread Strut (24.8”-35.4” x4).
Acme Thread Strut (36.6”-58.3” x8).
Struts are adjustable (manually or pneumatically).
Struts can be locked in place at desired length.
Struts can be extended up to 36” using up to 2 extensions.
Base plates are either 6” rigid or swivel.
Strut axial crush strength exceeds 50,000 psi.
Swivel base plates can rotate 20 degrees to accommodate contact.
Dual Deadman Controller with 250 psi relief valve allows for operation of 2 struts simultaneously.
Pressure regulator allows inlet pressures up to 6,000 psi and working pressures up to 250 psi.
Pressure regulator design to connect to SCBA bottle.
Air hoses are 3/8” inside diameter with quick disconnect fittings and a working pressure of 250 psi.

SET-UP: Connect Pressure Regulator to SCBA bottle. Connect air hose from Pressure Regulator to Dual Deadman Controller. Make sure Pressure Regulator is depressurized and air flow valve is in the off position and open SCBA bottle. Slowly open air flow valve. Connect air hose from end of Dual Deadman Controller to air strut. Make sure appropriate base plates are attached to air strut. Place strut into position and slowly adjust to desired effect either manually or pneumatically. Once in place turn strut collar down until locked in place. Slowly release air pressure after locked in place and turn off air flow valve before disconnecting.

SAFETY PRECAUTIONS:
Do not operate tools unless properly qualified and trained.
Dress in appropriate PPE for the environment in which you are working.
Do not over reach and maintain proper footing.
Do not connect any pressurized hoses to struts.
Do not exceed any equipment pressure ratings.

SAFETY PRECAUTIONS:

Follow trench collapse spacing charts according to type of soil as per manufacturer recommendations.
Do not use equipment that has an air leak, is cracked or damaged.
Do not use struts in trenches as a ladder.
Struts are not designed to accept more than 2 extensions totaling 3 feet in length.
They can be used in conjunction with, or in place of, wood cribbing or other shoring or support devices.
Follow working load chart as per manufacturer recommendations for collapse/rescue situations.

MAINTENANCE:

Clean strut with a damp cloth to remove dirt, grease, and oils and then dry with lint free cloth.
Check for any cracks or leaks.
If struts and equipment have not been used within a 3 month period then a quarterly field test must be done to ensure its integrity and operational capability.

TOOL: Personnel Protective Equipment

APPLICATION: While working at the scene of a fire or rescue, a great deal of emphasis is placed on safety to avoid injury. Turnouts, work uniform, gloves and goggles, are worn to avoid contamination by fluids, smoke or debris.

PROTECTING THE PUBLIC AND PERSONNEL FROM CONTAMINATION

1. Soiled personnel protective equipment (PPE), can expose firefighters and the public to toxins and carcinogens that enter the body through ingestion, inhalation and absorption. Through time, repeated small exposures to some contaminants adding up over time may cause a synergistic effect resulting in health problems, including cancer.
2. Clothing that is contaminated with blood or other body fluids presents the potential risk of transmitting communicable disease to a person coming in contact with the clothing.
3. Do not expose the public to contaminated PPE, at any time.
4. Avoid exposing any children to contaminated PPE, since they are more interested in touching and wearing the equipment. Children are also less likely to wash off any contaminates that they have picked up from handling the PPE.
5. Under no circumstances should soiled or contaminated PPE be brought home, washed at home or washed at a public laundry mate.
6. Wash all soiled PPE or uniforms, at the station, no exceptions.

REDUCED PERFORMANCE HAZARDS OF CONTAMINATED PPE:

1. Soiled PPE reflects less radiant heat.
2. PPE heavily contaminated with hydrocarbons are more likely to conduct electricity.
3. PPE impregnated with oil, grease, and hydrocarbon deposits from soot and smoke can ignite.

CLEANING FREQUENCY:

1. PPE should be cleaned at least every six months.
2. PPE should be cleaned as soon as possible after an incident where the equipment has been contaminated.

GENERAL CLEANING:

1. Hose down at the fire scene, gently scrub with soft bristle brush
2. While wearing gloves, inspect the PPE for damage and level of contamination
3. Clean all turnouts at station 105/106, air dry, do not use sunlight for drying.

CONTAMINATION INVOLVING BODY FLUIDS:

1. Remove PPE from the body
2. Isolate and bag PPE, wearing protective gloves.
3. Use hydrogen peroxide for blood and wash at station 106

CLEANING AGENTS:

1. Cleaning – approved cleaners
    - Liquid whisk
    - Liquid cheer
    - Liquid fab
2. Oxygenated Bleaches only (Do not use Chlorine bleach)
3. Spot cleaning and pre-treating
    - Liquid shout
    - Liquid spray and wash
    - Liquid tide
4. Do not use Dry Cleaning for PPE

CLEANING INSTRUCTIONS:

1. Machine cleaning
    - Remove liner from outer shell
    - No chlorine bleach
    - Water temperature greater than 130 degrees
    - Ph greater than 10.5
    - Avoid mixing flame resistant and non-flame resistant items
    - Avoid mixing non-similar PPE items (Turnouts and Station wear)
    - Use station 106-turnout washer only!

2. Drying guidelines for PPE
    - Air drying is the primary procedure recommended by PPE manufacturers
    - Do not air dry PPE in direct sunlight
    - Machine drying with no heat may be used, however the mechanical action may damage PPE.
    - Machine drying with heat is not recommended
    - Studies have shown that air exposure is helpful in removing contaminants. Therefore, PPE should be hung for maximum air exposure after each use and cleaning.

STORAGE QUIDELINES FOR PPE:

1. PPE should be clean and dry before storage
2. The storage area should be clean, dry, and well-ventilated
3. Keep PPE out of direct sunlight or other sources of UV radiation
4. Avoid exposure to temperature extremes for extended periods
5. Avoid sharp objects during storage
6. Avoid contact with hydraulic fluids, solvents, hydrocarbons, and hydrocarbon vapors
7. Avoid contact with tools, chemicals, and other equipment when storing PPE in compartments or trucks
8. Avoid contact of soiled PPE with personnel belongings
9. Avoid storage of soiled PPE inside living quarters
10. Avoid storage of soiled PPE within the passenger compartments of vehicles

INSPECTION GUIDELINES FOR PPE:

1. PPE should be cleaned prior to an inspection.
    - This will assist in detecting any damage such as discoloration or heat damage.
2. Foreign substances that contaminate PPE may be flammable, toxic or carcinogenic.
3. Check for char or heat damage.
    - These areas need to be thoroughly checked for strength loss or other signs of degradation.
4. Check for fabric or material damage.
    - Look for rips, tears, cuts, abraded or worn areas, fraying, and weak areas.
5. Check for thread or seam damage.
    - All layers of the PPE must be checked for any type of seam failure.
6. Check for fabric discoloration.
    - These areas should be checked for strength and integrity.
7. Check reflective trim for burns, melting, loss of it's retro-reflective properties, and if any trim is missing.
8. Check the hardware and reinforcements on coats and pants.
9. Check the attachment system of the thermal liner to the outer shell for proper fit.
10. Check the helmet for bubbling, delaminating, soft spots, dents, cracks, and loss of surface gloss.

TOOL: Plug N' Dike

APPLICATION: Spill Control

SPECIFICATIONS: Plug N Dike seals off fuels, solvents and many other chemicals. Plug N Dike seals immediately and sticks to dirty, crumpled surfaces even with the fluid flowing out. No surface preparation is required. It will plug up to 3 feet of head

Plug N Dike is a nontoxic, nonflammable blend of high absorption polymers in a blended bentonite base that forms an immediate seal. It has been used for over 18 years by fire departments, transportation companies and industrial operations.

Plug The Leak
Take a handful and apply it directly to the area leaking. These are ideal for including with spill response kits. This amount is usually sufficient for a gas or diesel tank leak. The containers shown are P-2, (10 oz) and 1-PMP (1-lb).

Plug Larger Leaks
For areas that have potential for larger leaks, the 4-PMP (4-lb) and 8-PMP (10-lb) containers are recommended.

Dike or Plug the Spill
Pour out a dike of the dry, granular Plug N Dike and spray the surface with water. It immediately contains the spill and protects adjacent areas. The dry Plug N Dike can also be mixed with water to form a paste to plug leaks. Available sizes: 48P (48#/5-gal pail) or 10P (10#/1-gal jar).

It Works
During an accident, a car gas tank sustainded a 2-inch puncture. Even though the tank was dirty and greasy, the Plug N Dike stopped the leak. (Fire Dept., Ohio).

It Works
A tractor-trailer overturned resulting in a 4-inch by 10-inch tear along a seam. A Plug Rug was used to stop the spill and contain most of the gasoline. (State Highway Dept., N.Y.)

TOOL: Rescue 42 TeleCrib

APPLICATION: Designed to assist fire/rescue personnel with the rapid stabilization of highway vehicles, light aircraft, light structures and machinery.

TOOL SPECIFICATIONS:

Quantity:	Weight:	Length extended:	Capacity
2 Short Struts	9 pounds	26”-67”	8,000 lbs
2 Long Struts	15 pounds	38”-103”	8,000 lbs

Material:		
	Tubing	Kevlar composite tubing
	base/ combi-head	1” Mild Steel
	hooks	8”
		-5,000 lb. max
	wreckers hook	3/8”
	cinch ring	-10,000 lb. max (4536 kg)
	strap	Rescue Straps 27’
		-3,335 lb working
		-10,000 lb max
	combi- head	-4,000 lb. working
		-8,000 lb. tested
	chain	Grade 70 chain
		-6,600 lb. working
		-26,400 lb. tested

MAINTENANCE:

Each Rescue Strut should be inspected after each use, checking for the following items:

A frame/tripod heads

- Check for smooth removal and reconnection of head to riser.
- Check for any cracks along welds or surface areas.
- Articulating heads should also be checked for smooth operation.

Pins

- Check for proper number of pin (3) per unit.
- Check each safety wire lock for proper motion, secure attachment to head of pin and/or any bends, cracks or twists in wire.
- Check pins for burrs, nicks and gouges.

Riser Tubing

- Check for binding by removing inside tube.
    - Tube should slide out completely with out binding.
    - Remove middle tube.
    - Tube should slide out completely with out binding.
- Replace center tube into base tube and inside tube into center tube, all should slide freely with no resistance.

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. **PPE: Full turnouts including eye protection and gloves.**
3. Maintain tool awareness around all rescuers and patients.
4. When pulling, keep clear of straps.
5. Maintain proper footing and balance at all times, do not overreach.

PURPOSE

In accordance with existing guidelines, the RIC Team Bag has been developed to provide specialized RIC equipment.

Upon a report of a lost or trapped firefighter, Command should deploy the R.I.C.(s) to the last reported location of the lost/trapped firefighter(s). The R.I.C. should be assigned a **Rescue Group** designation with appropriate rescue equipment and personnel.

Components
- Air Cylinder and Valve
- First Stage regulator
- Hose Assembly (Low & High Pressure)
- UAC
- Y adapter and bleed valve
- Canvas RIC bag

First Stage Regulator
- Balanced piston design
- Reduces cylinder pressure to an intermediate pressure of 80-150psi
- Factory set relief valve protects system against over pressurization

Second Stage Regulator
- Pilot valve-operated positive pressure regulator
- Receives air from first stage regulator at 80-150psi
- Reduces intermediate pressure down to just above at atmospheric pressure, (1 inch of water pressure)
- Regulator is activated via the First-Breath-On (FBO) mechanism

Facepiece (Twenty-Twenty Plus CBRN Facepiece)
- Scratch resistant polycarbonate lens
- Permanent anti-fog lens coating
- Butyl rubber seal
- Nose cup with one way valves helps reduce fogging
- Adaptable to Air Purifying Respirators
- NIOSH certified for use in CN/CS environments and chemical warfare agents

HP Fill Hose
- 10’ in length, stored with Intermediate Pressure hose in a nylon sleeve.
- Connected to the CGA hand wheel on one end and UAC on the other.
- Braided High pressure hose with a protective wrap.

IP Hose
- 10’ in length, stored with High Pressure hose in a nylon sleeve.
- Connected to First stage regulator on one end and Y adapter.
- Not to exceed pressure of 400psi.

UAC
- UAC is located at the end of the HP Fill hose.
- Dust cap provided to protect fitting.
- Quick-disconnect fitting.
- Can be coupled and uncoupled with pressure in the fill hose and with the SCBA activated.
- UAC system shall accomplish fully filling a 45-minute SCBA cylinder in approximately 30-60 seconds.
- Filling is complete when both cylinders have equalized.

Y Adapter
- Contains one male fitting and one female coupling on the Y
- Contains a bleed valve at the top of the Y.

Usage
- When making the connection resistance will be felt due to the 90- 140psi in the IP hose.

  Types of connections
  - Connections with RIC UAC
    Connect to HP RIC hose to UAC fitting on SCBA, located underneath cylinder stem.
    This connection will balance out the pressures in the RIC bag and the SCBA it is connected to.
    This connection can be removed after the pressures have equalized. (approx. 30-60 seconds)
  - Connections with RIC Y adapter **(Female end)**
    Connects to the Second Stage Regulator located in RIC bag.
    Connects to the buddy breather male end.
  - Connections with RIC Y adapter (Male end)
    Connect Y adapter male end to Buddy breather female end on Firefighters hip.
    Connection can be made to "Panther HIP PAK" on the USAR during confined space operations.

NOTE: The use of the Y adapter to buddy breather <u>does not</u> balance out pressure in the cylinder. Therefore the best option, if possible, is to hook to the UAC.

The Y connection is intermediate pressure only; therefore the victim is breathing off the RIC bag at this point and should not be removed from the source.

It is possible to hook more than one Firefighter to this adapter. *For example: FF A uses his buddy breather Male Side to connect to RIC bag Female Side. FF B uses his buddy breather Female side to RIC bag Male side. Or to FF B's Male side to FF A's male side.*

Bleed Valve
- Located at the top of the Y adapter. Allows us to purge the IP hose once it has been charged.

Survivair Bag
- Components
  - Nylon bag
  - Kevlar shoulder straps
  - Kevlar handle
  - D rings
  - Reflective bands at the top and middle of the bag
  - Flashlight
  - PASS
  - Trauma Shears
  - Dikes
  - 12' Webbing

Survivair Bag (cont'd)

- Components
    - Red aluminum carabiners (30 KN)
    - Two pouches
    - One for Facepiece
    - One for Fill hose
    - Rope pouch
    - 150' Sterling "Searchlite" Heat resistant search line
    - 1 knot at 50', 2 knots at 100'
    - MBS 3,017 lbs
    - Technora mixed with nylon core.
    - 7.5 mm
    - Reflective fibers in the sheath.

TOOL: **RIDGED PALM NAILER R350PNE**

APPLICATION: To aide with shoring and temporary support of only that part of a damaged, collapsed, or partly collapsed structure that is required for conducting search and/or rescue operations at reduced risk to rescue personnel.

SPECIFICATIONS:

Fastener Type- Bulk nails
Fastener Length- 1 ½"- 3 ½"
Fastener Range- 4D-16D
Tool Weight- 2.9lbs
Operating Pressure- 50-120psi **NOTE** Exceeding 120psi will damage tool
Air consumption- 0.105 ft3 / cycle@100psi
Air Inlet- ¼" NPT

ADDITIONAL FEATURES:

Depth of Drive Adjustment- The tool-free depth of drive adjustment lets the operator select precise driving depth of the fastener.

Magnetic Nail Guide- The magnetic nail guide holds nails securely in place while driving nails into the work piece.

Quick-Connect Swivel Connector- The quick-connect swivel connector helps prevent hose tangles.

Self-Cleaning Air Filter- The self-cleaning air filter keeps debris out of the tool and extends the life of the tool.

Tool-Free Micro Adjustable Depth-of-Drive- Accurate depot control protects work surface
Comfortable Adjustable Hand Strap- provides a snug, comfortable fit with positions for both right and left hand operation and is made with contractor grade materials.

Zinc Top Cap with Aluminum Main Body- Provides enough mass for smooth nail driving yet optimizes weight at a manageable 2.9 lbs.

Hex Grip- enhanced micro- Texture for secure grip and maximum user comfort.

OPERATION:

NOTE-The tool's driving mechanism may cycle when the tool is first connected to the air supply. Always connect the tool to the air supply before loading nails to prevent injury from unintended cycling. Always make sure the nosepiece is empty at the beginning of each work session, before connecting to an air supply.
With the nose of the tool pointed away from you, feed a nail into the nosepiece. Be sure the nails are pointed downward and at the angle.

SETTING THE AIR PRESSURE-
The amount of air pressure required will depend on the size of the nail and the work piece material. Begin testing the depth of drive by driving a test nail into the same type of work piece material used for the actual job. Drive a test nail with the air pressure set at 50-55 psi. Raise or lower the air pressure to find the lowest setting that will perform the job with consistent results. It may be possible to achieve the desired depth with air pressure adjustments alone. If finer adjustments are needed, use the drive depth adjustment on the tool ** NOTE** Do not exceed pressures above 120psi

DRIVE DEPTH ADJUSTMENT-
The driving depth of the nail may be adjusted. It is advisable to test the depth on a scrap work piece to determine the required depth for the application. To determine depth of drive, first adjust the air pressure and drive a test nail. To achieve the desired depth, use the drive depth adjustment on the tool.
Disconnect the tool from the air supply. Turn the depth selector left or right to change the driving depth. Reconnect the tool to the air supply. Drive a test nail after each adjustment until the desired depth is set.

DRIVING NAILS-
Place tip of the nail against the work piece. Push the tool firmly with your palm. Keep the nail in line with the nosepiece as the nail is driven. Remove the tool from the nail when complete.

SAFETY:

Minimum safety requirements include helmet, goggles, and gloves specified in AFD Department Guideline 101- Personnel Protective Equipment.

Never assume the tool is empty.

Remove tool from air supply to adjust tools depth.

NEVER attempted to fire tool against/or at anything other than a solid surface.

MAINTANENCE:

GENERAL MAINTENANCE-
Avoid using solvents when cleaning plastic parts. Most plastics are susceptible to damage from various types of commercial solvents and may be damaged by their use. Use clean cloths to remove dirt, dust, oil, grease, etc.

TROUBLESHOOTING:

**If tool is operating sluggish or fails to operate consider the following.

Possible problems may consist of: Inadequate air supply, inadequate lubrication, Worn or damaged O-rings or bumper.

Possible solutions may include: Verify adequate air supply, Lubricate tool. If any worn O-rings are suspected take tool out of service for repair.

TOOL: Rope

APPLICATION:

Rescue Rope - This rope meets the life safety rope requirements of NFPA 1983. Standard on fire service life safety rope and system components; 1995 Edition, NFPA 1500, Standard on Fire Department Occupational Safety and Health Program. Provides use requirements for life safety rope.

Type -	Static Kernmantle
Fiber -	Nylon
Length -	150' & 300' sections
Diameter -	½" (12.7mm)
Maximum Working Load -	630 lbs
Maximum Breaking Strength -	9500 lbs

Drop Bag SCBA (utility rope) -

The primary use for this rope is as a utility rope, tag line, etc. This rope does meet the personal escape rope requirements of NFPA 1983, Standard on Fire Service Life Safety Rope and System Components, 1995 edition.

Type -	Static Kernmantle
Fiber -	Nylon
Length -	60 feet
Diameter -	11/32" (8.3mm)
Maximum Working Load -	200 lbs
Maximum Breaking Strength -	3000 lbs

NOTE: This rope is not life safety rope. Emergency self-rescue/ escape rope.

APPLICATION: cont.

Webbing - This rope meets the life safety rope requirements of NFPA 1983. Standard on Fire Service Life Safety Rope and System Components. 1995 Edition. NFPA 1500, Standard on Fire Department Occupational Safety and Health Program. Provides use requirements for life safety rope.

Type -	Tubular Webbing
Length -	Orange, 20 feet
	Yellow, 12 feet
	Green, 5 feet
Diameter -	1 inch
Maximum Breaking Strength -	4000 lbs

CARE AND MAINTENANCE OF RESCUE ROPE

Cleaning and Disinfecting Rope Rescue Hardware and Software

Hardware:

- Disinfecting:
  - Spray or dunk in a 10% bleach solution.
  - 60 seconds max.
  - Flush with plain water.

- Cleaning:
  - Use plain water or a light soap solution.
  - Work any moving parts in the solution.
  - Flush with plain water, working any moving parts while flushing.
  - Make sure all soap is off the hardware.

Note: Do not use oil or grease on any hardware, for it will just attract dirt.

Software:

- Disinfecting:
  - Spray or dunk in a 10% bleach solution.
  - Hose/wash off in plain water. Make sure you get all the solution off the software.
  - Hang dry ONLY, not in the sunlight. Do not use a dryer.

- Cleaning:
  - Chain or secure software in a mesh bag.
  - The turnout washer can be used, **BUT** you must first run a complete cycle of that machine with nothing in it to clean it of any residue from previous washings.
  - Put the software in the machine and ONLY use Woolite or LifeLine cleaner. All other detergents are harmful for the materials.
    Run the machine and hang dry material ONLY, not in the sunlight. Do not use a dryer.

NOTE: Bleach is a corrosive agent. Never use more than a 10% solution and do not exceed the 60 seconds emersion time. Flush very good after disinfecting.

TOOL: Salvage Covers

APPLICATION: To protect from damage caused by heat, smoke, and water. These losses may be reduced through planned and well-executed use of salvage covers. (See Essentials for detailed uses)

SALVAGE COVERS SPECIFICATIONS:

- The City of Arcadia Fire Department uses three types of salvage covers, all having reinforced corners, edge hems and grommets.

1) Waterproof Woven Canvas	12' X 18'	22 lbs.
2) Polyethylene Plastic	12' X 12'	2 lbs.
3) Vinyl-laminated nylon	12' X 18'	16 lbs.

MAINTENANCE:

- Proper cleaning, drying, and repairing of salvage covers will increase their span of service.
- Covers that are extremely dirty and stained may be scrubbed with a mild detergent solution and thoroughly rinsed.
- Salvage covers should be allowed to dry thoroughly, prior to storage.
- Permitting salvage covers to dry while in a dirty condition is not a good practice. After carbon and ash stains have dried, a chemical reaction takes place which rots canvas.

FOLDING:

- There are many ways to fold a salvage cover for different types of uses. Arcadia has adopted the Accordion Fold for its use of salvage covers. One or more people when spreading the cover out over objects to be protected can use this type of fold.

FOLDING: Cont.

Steps for folding the Accordion Fold:

1. Lay the cover in a flat position on the floor with the finished (weathered) side up.
2. Turn all corners in about ten inches.
3. Then with two members kneeling at opposite sides of the cover, place the outside hand on the end of the cover, three feet from the edge, reach over with the inside hand and grasp the turned end corners. (The corners are turned in only to provide a handhold; they are flat in the final fold)
4. Working together, bring the outside edge to the center.
5. Further reduce the width of the cover by grasping the folded edge, pull taut and bring to the center of the cover.
6. Repeat steps 3, 4, and 5 on the unfinished side.
7. Remove excess air in the cover with a push broom.
8. With both members at one end of the cover on opposite sides, measure in about nine inches.
9. Place thumbs of outside hands under the cover at nine inches. Place inside hands spaced at about 18 inches. Using the outside hand as a pivot, bring the first pleat even with the end of the cover.
10. Continue making accordion pleats until the cover is completely folded.

Tool: SCBA Filling Station

Application: Used for filling SCBA cylinders

Tool Specifications:

Compressor

- Bauer K-180 compressor
- 22 CFM
- Electric – 20 HP Motor
- Storage pressure – 5000 PSI
- Storage capacity – 1600 cubic feet
  Four (4) ASME storage tanks

Fill Station

- (2) SCBA fill whips
- Bleed valve
- Safety compartment door
- Safety bar interlock
- Fill control panel with adjustable regulator, relief valve, manual control valve, and pressure gauge for each fill position

Operation:

Filling SCBA Cylinders

1. Place SCBA cylinders in safety compartment door
2. Attach SCBA fill whip
3. Close bleeder valve on fill whip (finger tight)
4. Open SCBA cylinder(s)
5. Close safety compartment door
6. Lower safety bar interlock *(bar must be locked to fill)*
7. Set selector valve to “fill from compressor” or “fill from storage”
   - When filling from compressor, compressor will not run until cut in pressure is reached
     - Compressor cut in 4100 psi
     - Compressor cut out 5000 psi

8. Adjust regulator fill pressure
   - Do not set regulator above 4500 psi
   - Inlet pressure must be higher than regulated pressure
9. Open fill valve
   - Fill cylinder as slow as possible to reduce hot filling
10. Close fill valve when cylinder is full
11. Raise safety bar interlock
12. Open safety compartment door
13. Close SCBA cylinder valve
14. Open bleeder valve on fill whip
15. Remove SCBA cylinder
16. Bleed off regulator when complete
17. Turn compressor off when storage bottles are full to prevent compressor from cycling

Filling Storage Tanks:

1. Place compressor switch to on position
2. Storage tanks must be below 4100 psi for compressor to start
3. When storage reaches 5000 psi, compressor will turn off

TOOL*:* CONSPACE SearchCam 3000

APPLICATION: This camera is used for general search and rescue where visibility may be limited due to obstructions or limited access.

SAFETY CONSERNS:
Do not operate camera unless properly trained.
Dress in proper PPE for the environment in which you will be working.
Always be aware of your surroundings.
Make sure you are using the proper camera cable and equipment for the job you are performing.
Make sure batteries are fully charged prior to operating.
Camera will automatically shut down when battery level gets too low (camera must have two batteries for proper operation).

SET-UP:
The camera is stored in the case partially assembled to reduce rescue launch time. Power Module (gun handle), camera head, extension tubes, and video cable are all pre-connected.
Attach Video Display Unit (VDU) to Power Module and lock in place.
Make sure Power Module is in the “off” position.
Remove both battery caps, insert two fresh batteries, and replace battery caps.
Turn Power Module to the “on” position. Turn on VDU (make take up to 15 seconds to boot up).

OPERATIONS:
Rocker control buttons are located on the Power Module.
Articulation Rocker: 240 degree viewing area.
Illumination Rocker: turns on light, increases and decreases brightness.
Headset Rocker: increases and decreases headset volume when headset is plugged in.
Push-to-talk Rocker: allows the operator to communicate with victim when headset is plugged in. Push left or right to talk and let go to listen.
Image Capture Rocker: allows the operator to take pictures during search. Pictures are stored onto SD card.

POWER DOWN:

It is **IMPORTANT** to follow proper power down procedure to ensure intact images, videos and not corrupting the SD card.
Press and hold VDU on/off button for 3 seconds (may take about 10 seconds to power down).
After VDU is completely powered down, turn Power Module to the “off” position.

TOOL SPECIFIC:

Fully assembled camera weighs approximately 10lbs.
Runs on two rechargeable Lithium Ion battery sticks (fully charged batteries will typically last 2 hours).
Camera head can be submersed in water up to 75 ft. deep (camera head only).
Camera has 240 degree viewing capability.
Power Module has 5 Rocker switches to control the cameras: articulation, illumination, headset volume, Push-to-Talk (PTT) functions, and image capture capabilities.
Video Display Unit (VDU) is a color screen capable of taking photos, video, and receiving audio.
Headset can be attached to bottom of VDU to pick up audio.
Sun Shield can be attached to VDU for a better image in bright conditions.
Batteries can be swapped out during operation, but only 1 at a time (it is recommend to change both).

STORAGE & MAINTENANCE:

Clean and dry all parts prior to storage.
Keep out of dirt (if possible).
Retract all extension tubes prior to storage.
Inspect for damage after every use.
Charge all batteries prior to storage.
Charge all batteries in gang charger only.
Make sure Power Module is in the “off” position.
Do not leave the camera in direct sunlight.
Once a month the camera head should be removed from the unit for cleaning and lubrication (follow instruction manual for proper cleaning directions).

TOOL: Smoke Generator

SPECIFICATIONS:

Combustion Chamber -	15.8 H.P.
Fuel Consumption -	1.4 Liters per hour
Fuel Tank Capacity -	1.3 Liters
Ignition By Electric Coil -	Supplied by 4-6 volt batteries
Solution Tank -	Capacity 5.7 liters
Weight -	9.2 Kg.
Solutions -	Oil base for outside use and water base for inside use

MODE OF OPERATION:

The system operates without any moving parts. The carburetor, mixing tube, combustion chamber and resonator, use an acoustical oscillation system.

Liquids can be feed into the pulsating gas stream of the resonator at the outlet end. The high frequency of the gas allows the application and break up of solutions, otherwise susceptible to combustion or decomposition. Thus, allowing for lots of smoke.

OPERATING INSTRUCTIONS:

1. Wear ear protection
2. Do not fog if the unit is not running perfect
3. Wear breathing apparatus when working in enclosed areas
4. Do not leave generator running unobserved in closed areas for long periods
5. Do not transport unit in closed vehicles while still warm
6. Shut off fuel before transporting
7. Use regular leaded gas

TOOL: Station 105 Clarifier

APPLICATION:

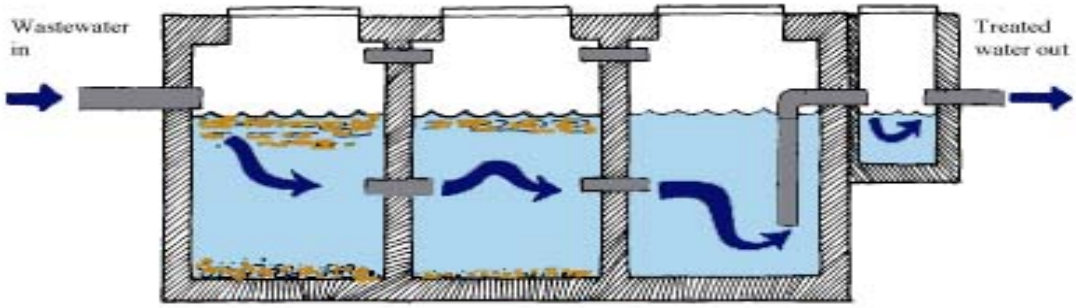
Facilities generating wastewater with significant oil and grease content are required to pretreat these wastes before discharging to the city or storm drain systems. Pretreatment requires that a clarifier or oil/water separator be installed and maintained on site. Station 105 fell within this requirement when it was designed. While in normal mode, the ultimate discharge is directed to the sewer system in order for normal water usage to be treated at a water treatment facility. Clarifiers and oil/water separators cannot be used for the disposal of hazardous waste such as coolants, solvent, Freon, hydraulic fluids, transformer oils, etc. Station 105's clarifier must be periodically pumped out by an authorized hazardous disposal waste company, which is coordinated and scheduled annually by Public Works.

COMPONENTS:

The diversion system consists of a butterfly/ball valve located underground in a vault adjacent to a clarifier which controls the flow to the sewer or storm drain.

Butterfly / Ball Valve

Vault



Side view of how a Clarifier works

Clarifier lids at station 105

RAINSWITCH AND PILOT STATION

Designed for sewer/storm drain diversion control, the rain switch will detect 1/10th of an inch of rainfall, which assures the initial run-off will flow to the sewer system. This first run-off is typically high in contaminants and bacteria, therefore needs to flow to the sewer system for proper treatment. The rain switch is connected to a diversion system, directing the subsequent run off to the storm drain system. The diversion system consists of a butterfly/ball valve adjacent to a clarifier which controls the flow to the sewer or storm drain.

The rain switch is made of stainless steel to ensure long life against harsh environments. The rain switch is designed with a 14" funnel to collect the falling rain. Once a 1/10th of an inch of rain has fallen, the level chamber will be filled to the point that the capacitive level switch will sense the level, and change state (switch). This signal will then start the sequence described below.

Rain Switch (located on roof)

Pilot Station with manual reset
(located on east wall in apparatus floor)

Normal Mode (No Rain):

The pump or valve is in its normal mode, with flow into the sewer system. The green at light at pilot station is **ON**, indicating "normal mode".

Divert Mode (Raining):

After 1/10th of an inch of rain has fallen, the rainswitch will change the state of the pump or valve, diverting the rainwater to the storm drain system.
The green light at the pilot station goes **OFF** and the red light will go **ON** once the valve has reached its divert position, indicating the system is in the "divert mode".

Manual Reset

After it stops raining, depress the reset pushbutton on the station, causing the solenoid valve to open (draining the rainswitch). The pushbutton must be depressed until all water is completely drained from the rainswitch. This will return the system to the "normal mode" position. The red light will go off and the green light will go on indicating the system is back in "normal mode".

MAINTENANCE

The wash rack located adjacent to the fuel tanks has two drains with filters underneath. Weekly cleaning during Sunday B-Day routine, or as needed, of the two rear ramp clarifier drain filters will prevent buildup of dirt and grime and provide proper drainage of the wash rack area. Simply remove the steel grates, remove the filters, scoop debris out and dispose of in trash, hose out filter and then re-install.

Rear Ramp Drains

Clean filter

TOOL: Station 105 Emergency Generator

APPLICATION: Used to provide emergency AC/DC electrical power.

ENGINE SPECIFICATIONS:

MAKE.....Generac
GENERATOR SIZE……135KW
OUTPUT VOLTAGE……120/208 V, 3 Phase
MODEL.....8241390100
CYLINDERS.....6 in-line
DISPLACEMENT.....6.8 Liters (415 cu. in.)
BORE.....106 mm (4.19 in.)
STROKE.....127 mm (5.0 in.)
COMPRESSION RATIO.....17.0:1
INTAKE AIR.....Turbocharged, Aftercooled
NUMBER OF MAIN BEARINGS.....7
CONNECTING RODS.....6-Carbon Steel
CYLINDER HEAD.....Cast Iron with Overhead Valve
PISTONS.....6-Heat Resistant Aluminum Alloy
CRANKSHAFT.....Case Hardened, Die Forged, Carbon Steel

VALVE TRAIN:

LIFTER TYPE.....Solid
INTAKE VALVE MATERIAL.....Special Heat Resistant Steel
EXHAUST VALVE MATERIAL.....Special Heat Resistant Steel
HARDENED VALVE SEATS.....Replaceable
VALVES PER CYLINDER.....2

ENGINE GOVERNOR:

❒ELECTRONIC.....Standard
FREQUENCY REGULATION, NO-LOAD TO FULL LOAD....Isochronous
STEADY STATE REGULATION.....±0.25%

LUBRICATION SYSTEM:

TYPE OF OIL PUMP.....Forced Feed Lubrication w/ Oil Pump
OIL FILTER.....Full Flow, Cartridge
CRANKCASE CAPACITY.....22.7 Liters (6.0 U.S. gallons)

Temperature	**Oil Grade (Recommended)**
Above 80*F	SAE 30w or 15w-40
23*F to 80*F	SAE 20w-20 or 15w-40
Below 32*F	SAE 10w or 15w-40

COOLING SYSTEM:

TYPE OF SYSTEM.....Pressurized, closed recovery
WATER PUMP.....Pre-lubed, Self-Sealing
TYPE OF FAN.....Pusher
NUMBER OF FAN BLADES.....7
DIAMETER OF FAN.....660 mm (26.0 in.)
COOLANT HEATER.....120V, 1800 W
PROPYLENE GLYCOL and DE-IONIZED WATER…….50-50 Mixture

FUEL SYSTEM:

FUEL.....#2D Fuel (Min Cetane #40)
(Fuel should conform to ASTM Spec.)
FUEL FILTER.....10 Micron
FUEL INJECTION PUMP.....ZEXEL
FUEL PUMP.....Mechanical
INJECTORS.....Multi-hole, nozzle type
ENGINE TYPE.....Direct injection
FUEL LINE (Supply).....9.53 mm (0.375 in.)
FUEL RETURN LINE.....9.53 mm (0.375 in.)
FUEL TANK……..Mounted in Base

ELECTRICAL SYSTEM:

BATTERY CHARGE ALTERNATOR.....45 Amps at 24 V
STARTER MOTOR.....24 V
RECOMMENDED BATTERY.....2-12V, 31
GROUND POLARITY.....Negative

CONTROL PANEL FEATURES

- TWO FOUR LINE LCD DISPLAYS READ:
  - Voltage (all phases)
  - Power factor
  - kVAR
  - Engine speed
  - Run hours
  - Fault history
  - Coolant temperature
  - Low oil pressure shutdown
  - Overvoltage
  - Low coolant level
  - Not in auto position (flashing light)
  - ATS selection
  - Current (all phases)
  - kW
  - Transfer switch status
  - Low fuel pressure
  - Service reminders
  - Oil pressure
  - Time and date
  - High coolant temperature shutdown
  - Over speed
  - Low coolant level
  - Exercise speed

- INTERNAL FUNCTIONS:
  - I2T function for alternator protection from line to neutral and line to line short circuits
  - Emergency stop
  - Programmable auto crank function
  - 2 wire start for any transfer switch
  - Communicates with the Generac HTS transfer switch
  - Built-in 7 day exerciser
  - Adjustable engine speed at exerciser
  - RS232 port for GenLink® control
  - RS485 port remote communication
  - Canbus addressable
  - Governor controller and voltage regulator are built into the master control board
  - Temperature range -40 °C to 70 °C

STANDARD ENGINE & SAFETY FEATURES

- High Coolant Temperature Automatic Shutdown
- Low Coolant Level Automatic Shutdown
- Low Oil Pressure Automatic Shutdown
- Over speed Automatic Shutdown (Solid-state)
- Crank Limiter (Solid-state)
- Oil Drain Extension
- Radiator Drain Extension
- Factory-Installed Cool Flow Radiator
- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Rubber-Booted Engine Electrical Connections
- Secondary Fuel Filter
- Fuel Lockoff Solenoid
- Stainless Steel Flexible Exhaust Connection
- Battery Charge Alternator
- Battery Cables
- Battery Tray
- Vibration Isolation of Unit to Mounting Base
- 24 Volt, Solenoid-activated Starter Motor
- Air Cleaner
- Fan Guard
- Control Console
- Coolant Heater

STARTING:

Three ways to start the generators

- Power Failure, or shut down breaker
- Test switch on control panel
- On/Off switch on Enunciator panel

MAINTENANCE:

Saturday "B" Day Check

- Oil Level
- Water Level
- Glass sediment chamber for water or debris
    - If present call for service
- Battery

All other service / maintenance are done by a licensed contractor.

Note: This engine shall not be operated more than a total of 200 hours in any one year which includes no more than 50 hours for maintenance and performance testing.
The operation of this engine beyond the 50 hours per year is allotted only in the event of a loss of grid power.

TOOL: Station Air Compressor

SPECIFICATIONS:

Manufacture: American Brake Shoe CO., Kellogg Division

Model: 321 TV Pump

Pump: Two Cylinder/ Two stage

Safety Relief Valve: Set at 200 PSI

Regular Setting @ 175 PSI

Tank Size: 60 Gallons

WEEKLY MAINTENANCE:

1. Examine Filter element remove if dirty.
2. Check oil level
3. Drain water from tank
4. Stop, look and listen for any unusual noise
5. Check Tension on belts (be sure to cut power to compressor before you check).
   - The switch is located in the electrical panel, lower right box.
6. Keep compressor clean
7. Every three months drain oil and replace with approximately one quart of 30 wt oil.

TOOL: Station 106 Emergency Generator

APPLICATION: Used to provide emergency AC/DC electrical power.

TOOL SPECIFICATIONS:

Engine - Caterpillar Olympian CD 150 Diesel Engine
Displacement - 636 cubic inch turbocharged diesel engine
Fuel Tank - Automatic fill off Station fuel tanks
Oil Capacity - 20 quarts of 30-wt oil
Normal operating rpm 1800
Starts off 24 volt, 1240 cranking amp battery
Normal Oil Pressure - 40 to 50 psi.
Emergency Shut Down Feature
1) High Engine Temperature
2) Low oil Pressure
3) Over Crank Alarm
4) Over Speed Alarm
5) Low Water
6) Sensor Loss

Electrical Plant

Watts - 150,000
Amps - 300
Voltage - 120 – 208 / 3 Phase 4 wire
Hertz - 60 Hz 1800 rpm

STARTING

1. Two ways to start the generators
   - Power Failure
   - Test switch on control panel

B DAY CHECK-OUT PROCEDURE

1. Flip generator switch from automatic to off.
2. Sweep out room of all foreign materials (leafs, dirt, etc)
3. Check generator fluids (radiator water, oil, fuel) and belt condition.
4. Check both batteries for “green eye”.
5. Visually check belt condition and oil level on the air compressor.
6. Drain the water from the air compressor.
7. Mark the Check-out forms for the generator and air compressor.
8. Flip generator switch from off to automatic.
9. Secure generator room.

TOOL: Station 107 Air Compressor

SPECIFICATIONS:

Manufacture: Craftsman

Model: 919176850

Horsepower: 5 H.P.

Safety Relief Valve: Set at 200 PSI

Regular Setting @ 175 PSI

Tank Size: 20 Gallons

WEEKLY MAINTENANCE:

1. Examine Filter element remove if dirty.
2. Check oil level
3. Drain water from tank.
4. Stop, look and listen for any unusual noise
5. Check Tension on belts (be sure to cut power to compressor before you check).
   - Just unplug unit.
6. Keep compressor clean
7. Every three months drain oil and replace with approximately one quart of 30 wt oil.

TOOL: Station Fuel Storage

SPECIFICATIONS:

Station 105

- 3000 Gallon above ground diesel tank - Located at NE corner of parking lot
- 3000 Gallon above ground unleaded tank - Located at NE corner of parking lot

Station 107

- 2000 Gallon above ground diesel tank – Located at the Orange Grove Ave. entrance of the adjacent water yard

All Fuel Tanks will only be filled to 90% of their max capacity

- Station 105 = max 2700 Gal. each tank
- Station 107 = max 1800 Gal. in tank

MAINTENANCE:

All fuel tanks are maintained by “iifuels inc.”
All fuel tanks are monitored remotely by “iifuels inc.” and Battalion Chiefs

- Each tank’s status and usage is tracked via “iifuels inc.” FUELSIGHT software creating a **site event log**
- “iifuels inc.” will automatically send refueling truck when tanks reach a predetermined trigger level (*this level is set by the responsible Battalion Chief*)
- Alarm notifications and conditions are electronically sent to Battalion Chiefs

Additional refueling sites within the city include:

- Police Station = 12,000 Gal. unleaded (maximum capacity of 10,800 Gal.)
- City Yards = 6000 Gal. unleaded (maximum capacity of 5400 Gal.)
- City Yards = 6000 Gal. diesel (maximum capacity of 5400 Gal.)

TOOL: Station Utilities

STATION 105 UTILITIES:

- Water valves: Located on northwest corner of station (outside)
- Natural gas: Located on northeast corner of station (outside)
- Electrical panels: Located in room on southeast corner of station, room at north end of hallway (across from weight room), and upstairs in fire pole hallway
- Main panel: Located in room on southeast corner of station

STATION 106 UTILITIES:

- Water valves: Located on northwest corner of station (outside)
- Natural gas: Located on northwest corner of station (outside)
- Electrical panels: Located in workshop, slop room, and training room
- Main panel: Located in rear room of workshop

STATION 107 UTILITIES:

- Water valves: Located on west wall of station (outside)
- Natural gas: Located on west wall of station (outside)
- Electrical panels: Located on west wall of station (outside)
- Main panel: Located on west wall of station (outside)

TOOL: Stihl 460 Chain Saw

APPLICATION: Used for gaining access to victims in emergency situations, such as industrial entrapment and building collapse. In addition, it can be used for ventilation and forcible entry.

TOOL SPECIFICATIONS:

Engine -	Two stroke, single cylinder
Displacement -	4.67 cubic inch
Maximum Torque -	2.7 lbs @ 6500 rpm's
Idle Speed -	2500 rpm's
Compression -	Ms 460 has a compression release
Fuel Tank -	1.69 pints
Fuel Mix -	50:1
Air Filter -	Free Flow, wire mesh filter
Bar Oil -	Stihl bar and chain oil
Bar Length -	20"
Bar Chain -	.375 Pitch, Carbide tip
Clutch -	Clutch engages @ 3100 rpm's
Weight -	16.5 lbs

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Dress in full turnouts including eye protection and gloves.
3. Maintain tool awareness around all rescuers and victims.
4. When cutting, keep clear of blade.
5. Maintain proper footing and balance at all times, do not overreach.
6. **Do not start chain saw with chain break engaged.**
7. Operate saw at high engine speeds

STARTING

1. Check bar oil and fuel
2. Start with saw on the ground
3. Place start switch all the way down (Choke position) with trigger engaged
4. Pull 2 to 3 times (Short tugs, do not pull rope out of its housing)
5. Once you hear motor turn over, move button up one click
6. Pull to start
7. To stop, allow motor to idle and place button all the way up

AFTER USE MAINTENANCE:

1. Be sure all parts are clean
2. Inspect carefully for damage
3. Inspect bar for wear and damage.
4. Rotate bar after use (Rotate edge used for cutting)
5. Replace chain if 3 or more teeth are missing in a row or six total for chain.
6. Check all nuts, bolts, retainer rings and screws are in place and securely fastened
7. Check fuel and oil level

TOOL: Stihl TS 400 Rotary Saws

APPLICATION: Used for gaining access to victims in emergency situations such as vehicle extrication, industrial entrapment and building collapse. In addition, it can be used for ventilation and forcible entry.

TOOL SPECIFICATIONS:

DISPLACEMENT	64.1 cc (3.91 cu. in.)
ENGINE POWER	3.2 kW (4.4 bhp)
WEIGHT	12" 9.45 kg(20.8 lbs.) 14" 9.8 kg(21.6 lbs.)
FUEL CAPACITY	740 cc (25 oz.)
ENGINE SPEED	9,700 rpm (Elec. gov)
MAX SPINDLE SPEED	5,350 rpm
ARBOR SIZE	20 mm
WHEEL SIZE	300 mm (12"), 350 mm (14")
FUEL MIX	50:1

Abrasive Wheels -
1) Composite abrasive wheels for steel, stone asphalt, ductile cast pipes and plastic.
2) Diamond abrasive wheels for concrete, stone and asphalt.
3) Carbide wheels for cutting milled lumber.

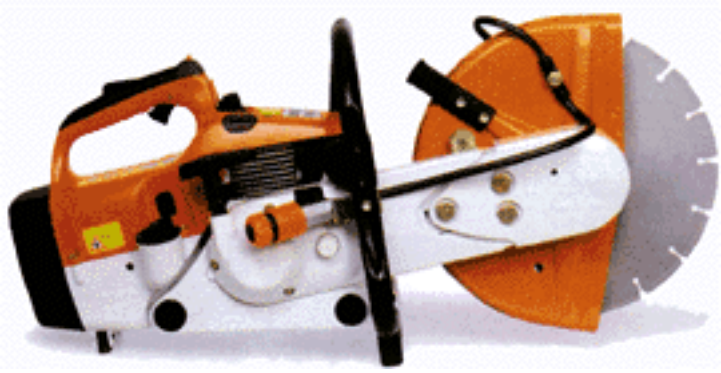
Cutting depth: 12 inches
Diameter: 4 inches

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Dress in full turnouts including eye protection and gloves.
3. Maintain tool awareness around all rescuers and patients.
4. When cutting, keep clear of blade.
5. Maintain proper footing and balance at all times, do not overreach.

AFTER USE MAINTENANCE:

1. Be sure all parts are clean
2. Inspect carefully for damage
3. Inspect cutting blades for wear and damage
4. Replace abrasive wheels after every use and discard used wheel
5. Check all nuts, bolts, retainer rings and screws are in place securely fastened and
6. Check fuel level



TOOL: Stihl TS 480i

APPLICATION: Used for gaining access to victims in emergency situations such as vehicle extrication, industrial entrapment and building collapse. In addition, it can be used for ventilation and forcible entry.

TOOL SPECIFICATIONS:

DISPLACEMENT	4.41 cu in
ENGINE POWER	5.2 hp @ 9300 rpm (fuel injected)
WEIGHT	22.0 lbs
FUEL CAPACITY	740 cc (25 oz.)
ENGINE SPEED	9,700 rpm (Elec. gov)
MAX SPINDLE SPEED	5,350 rpm
ARBOR SIZE	20 mm (.787 in)
WHEEL SIZE	300 mm (12")
FUEL MIX	50:1 (MOTOMIX)
SPARK PLUG	Bosch WSR 6 F or NGK BPMR 7 A
ELECTRODE GAP	.02in

Abrasive Wheels -
1) Tiger Tooth wheels for steel, stone, asphalt, rebar, copper pipe, corrugated roofing, stucco, wood, stainless steel, concrete, and plastic. (Multi-Purpose)
2) Diamond abrasive wheels for concrete, stone and asphalt.
3) Carbide wheels for cutting milled lumber.
4) Composite abrasive wheels for steel, stone, ductile cast pipes and plastics.

Cutting depth: 3.9 inches
Diameter: 12 inches
Tightening Torque: 22 lbf ft

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Dress in full turnouts including eye protection and gloves.
3. Maintain tool awareness around all rescuers and patients.
4. When cutting, keep clear of blade.
5. Maintain proper footing and balance at all times, do not overreach.

STARTING PROCEDURE:

(THIS SAW IS FUEL INJECTED AND HAS NO CHOKE)

1. Press throttle trigger lockout and throttle trigger, holding them simultaneously.
2. Move the switch to ***I***
3. Press the decompression button down
4. Press the manual fuel pump bulb **7** times.
5. Check your surroundings to make sure it is safe to run the saw.

AFTER USE MAINTENANCE:

1. Be sure all parts are clean
2. Inspect carefully for damage
3. Inspect cutting blades for wear and damage
4. Replace abrasive wheels after every use and discard used wheel
5. Check all nuts, bolts, retainer rings and screws are in place and securely fastened
6. Check fuel level

TOOL: Stihl TS 760 Rotary Saws

APPLICATION: Used for gaining access to victims in emergency situations such as vehicle extrication, industrial entrapment and building collapse. In addition, it can be used for ventilation and forcible entry.

TOOL SPECIFICATIONS:

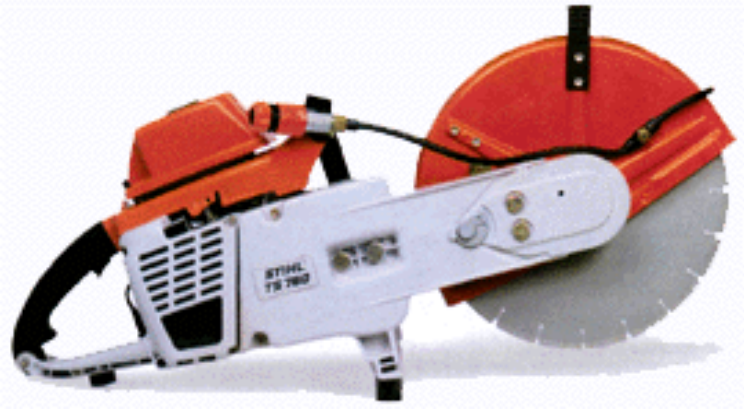
DISPLACEMENT	111 cc (6.77 cu. in.)
ENGINE POWER	4.8 kW (6.5 bhp)
WEIGHT	14" - 13.7 kg (30.2 lbs.) 16" - 15.4 kg (34 lbs.)
FUEL CAPACITY	1200 cc (40.5 oz.)
ENGINE SPEED	9,200 rpm (14") 8,400 rpm (16") (Elec. governed)
MAX SPINDLE SPEED	5,350 rpm (14") 4,600 rpm (16")
ARBOR SIZE	20 mm
WHEEL SIZE	350 mm (14") or 400 mm (16")
FUEL MIX	50:1

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Dress in full turnouts including eye protection and gloves.
3. Maintain tool awareness around all rescuers and patients.
4. When cutting, keep clear of blade.
5. Maintain proper footing and balance at all times, do not overreach.

AFTER USE MAINTENANCE:

1. Be sure all parts are clean
2. Inspect carefully for damage
3. Inspect cutting blades for wear and damage
4. Replace abrasive wheels after every use and discard used wheel
5. Check all nuts, bolts, retainer rings and screws are in place and securely fastened
6. Check fuel level



Multi-Quip
Submersible Pump

TOOL: Submersible Pump / Multiquip

TOOL SPECIFICATIONS:

Submersible Pump –	Model	ST2047
	Horse Power	1
	Amps	63
	Volts	115
	Hertz	60 Hz
	Phase	1
	GPM	85
	Discharge size	1 ½”
	Head	46’ max
	Weight	55 lbs

SERVICE OF SUBMERSIBLE PUMP:

- This pump is equipped with pre-lubricated bearings, which require no service.
- The pump has a built-in thermal overload protection that shuts down pump when operating temperature becomes to high and automatically restarts once the temperature returns to an acceptable level.
- Cable jacket should be examined for breaks periodically.
- After use – clean strainer and run clean water through pump.

ABUSE OR MISAPPLICATION:

- Pumping abrasives
- Pumping corrosive, or hot (over 40 degrees)
- Careless handling, lifting pump by cable (use utility rope)
- Improper maintenance
- Incorrect power
- Cut cable jacket
- Cable splices or joints not waterproofed
- Operating pump without strainer or with damaged strainer

SUBMERSIBLE PUMP OPERATING INSTRUCTIONS:

1. Check pump nameplate for voltage rating prior to connecting to power source.
2. Provide suitable ground connection at power source
3. While using submersible pump, make sure mushroom type strainer is tightened in place on suction side of the pump, at all times. This strainer will allow you to displace water up to ½" in depth.
4. Tie rope to pump and lower or place in puddle.
5. Plug 50' extension cord (provided on pump), directly to wall plugs or generator.

TOOL: Tempest Electric Power Blower

APPLICATION: When properly performed, either in positive pressure attack or assisting with horizontal ventilation, using blowers will greatly increase fire ground effectiveness and firefighter safety.

TOOL SPECIFICATIONS: Model - 700-060

CFM - 11,698
Weight - 72 lbs
Prop - 21" Air Flex Fiberglass Reinforced Polyamide
Guard - Turbo 2000 Tapered Aluminum
Frame - Rugged, Lightweight, Square-Steel Tubing
Tilt Angle - Dual Foot-Operated Tilt Mechanism
Five Position Tilt: +15°, +10°, +5°, 0°, -5°
Motor - Marathon Electric Direct-Drive Electric Motor
1725 RPM
115/208-230 Volt

Maximum Power Cord Length (In Feet) 20 Amp Circuit-Min.

Motor HP	14GA	12GA	10GA	8GA	6GA
1/3	215'	330'	550'	850'	1,350'
1.0	60'	95'	150'	240'	380'
1.5	45'	75'	115'	190'	300'

MAINTENANCE:

- Run once a week
- Check fuel and oil weekly
- Check nuts and bolts are secure
- Clean as needed
- Change oil every January or as needed
- Clean air filter as needed

STARTING:

1. Ensure blower toggle is switched to the off position.
2. Plug blower into power source.
3. Switch toggle to the ON position

*****WHEN USING A GENERATOR, IT IS IMPERATIVE THAT THE GENERATOR BE RUNNING AT FULL CAPACITY BEFORE PLUGGING IN ANY ELECTRIC BLOWER!!!!******

AFTER USE MAINTENANCE:

1. Stop unit before unplugging from power source. Make sure toggle switch is set to **STOP**.
2. Be sure all parts are clean
3. Inspect carefully for any damage.
4. Check all nuts, bolts, retainer rings and screws are in place and securely fastened

TOOL: Tempest Power Blower

APPLICATION: When properly performed, either in positive pressure attack or assisting with horizontal ventilation, using blowers will greatly increase fire ground effectiveness and firefighter safety.

TOOL SPECIFICATIONS: Model - 700-050

CFM - 20,152
Weight - 90lbs
Prop - 21" AirFlex Fiberglass Reinforced Polyamide
Guard - Turbo 2000 Tapered Aluminum w/ Durable Powder-Coat Finish
Frame - Rugged, Lightweight, Square-Steel Tubing with Powder-Coat Finish
Tilt Angle - Dual Foot-Operated Tilt Mechanism
Five Position Tilt: +15°, +10°, +5°, 0°, -5°
Wheels- 8" Pneumatic w/ Steel Hubs

Engine- Honda GX200 – Four stroke

Type- Single Cylinder, 4 Stroke, Gasoline
Cooling- Forced Air
Lubrication- Splash Type Oil Reservoir
Starting- Recoil with Auto Rewind

MAINTENANCE:

- Run once a week
- Check fuel and oil weekly
- Check nuts and bolts are secure
- Clean as needed
- Change oil every January or as needed
- Clean air filter as needed

STARTING:

1. Turn fuel valve on
2. Close choke (when cold)
3. Open throttle slightly (moving lever to the left)
4. Turn engine switch on
5. Pull Starter cord
6. As the engine warms up, gradually close choke
7. Position throttle to desired engine speed

AFTER USE MAINTENANCE:

1. Allow tool to idle down prior to shutting off.
2. Turn ignition switch off (Store in the on position).
3. Turn fuel off.
4. Turn Choke off.
5. Replace fuel used.
6. Be sure all parts are clean
7. Inspect carefully for any damage.
8. Check all nuts, bolts, retainer rings and screws are in place and securely fastened

TOOL: Bullard T3 Thermal Imager

APPLICATION: Identify heat / fire source, regain vision in darkness, smoke. Gain information not available to the naked eye.

The Bullard Thermal Imager was designed to handle with ease in tough fire conditions with a picture that improves as the heat rises. From the Kevlar straps to the easy-access battery compartment, the Bullard was designed to be a firefighting tool.

TOOL SPECIFICATIONS:

Weight	With battery <2.7 pounds (43 oz) Without battery <2.1 pounds (34 oz)
Dimensions	Height: 4 3/4" Length: 4" Width: 7"
Heat Test	500°F (260°C) for 8 minutes 300°F (150°C) for 16 minutes
Water Resistance	IP67
Impact/Drop Test	No functional damage, 6' drop

Casing

Shell Material	Ultem® Thermoplastic
Sealing	Silicone and Neoprene®
Strap Material	Kevlar®
Display Cover	Polycarbonate
Lens Window	Germanium (2 mm thick)

Lens

Lens Size	5.8 mm
Field of View	37.5°V x 50°H
Focus	Fixed 3 feet (1 meter) to infinity
Speed	f / 1.0

Electrical System

Power Source	NiMH Rechargeable Battery or Alkaline Batteries (8 cells)
Output	10V Nominal
Capacity	1600 mAH
Operating Time	2.5 Hours Nominal
Start Up Time	5 Seconds Nominal
Charger Single Battery	120 VAC or 12 VDC
Switch Cycle Test	1,000,000 cycles
Battery Life	1,000 charge cycles
Battery Weight	0.6 pounds (9.5 oz)
Recharge Time	1 hour nominal


Bullard T3 Series
Rear Boot
Thermal Throttle
(T3MAX only)
Polycarbonate
Display Cover
Lens Bezel
LCD Screen
Lens
Power Button
Battery
Side Strap
T3MAX
Bullard
Bullard

Figure 1

TOOL: Bullard T1 Commander Thermal Imager

APPLICATION: Identify heat / fire source, regain vision in darkness, smoke. Gain information not available to the naked eye.

The Bullard Thermal Imager was designed to handle with ease in tough fire conditions with a picture that improves as the heat rises. From the Kevlar straps to the easy-access battery compartment, the Bullard was designed to be a firefighting tool.

TOOL SPECIFICATIONS:

Weight	With battery <6.25 pounds Without battery <5.5 pounds
Dimensions	Height : 12" Length : 10" Width : 6"
Heat Test	300°F (150°C) for 15 minutes
Impact / Drop Test	No permanent functional damage, 1 meter drop
Casing	
Shell Material	Ultem Thermoplastic
Sealing	Silicone
Strap Material	Kevlar & Leather
Display Cover	Polycarbonate (hardcoated)
Lens	
Material	Germanium
Lens Size	18 mm
Field of View	55°
Distances Optimal Focus	3 feet (1 meter) to infinity

Electrical System

Power Source	NiMH Rechargeable Battery
Output	10V
Capacity	2100 mA.hr
Operating Time	1.5 Hours Nominal
Charger Single Battery	120 VAC or 12 VDC
Switch Cycle Test	1,000,000 cycles
Battery Life	1,000 charge cycles
Battery Weight	0.75 pounds

MAINTENANCE:

Daily or After Each Use:

- ❑ Ensure unit is working properly.
- ❑ Insert fully charged battery.
- ❑ If necessary, recharge battery.
- ❑ Verify all battery chargers and associated cables are functioning properly.
- ❑ Close thumb latche on battery door.
- ❑ Using a damp cloth, clean off large pieces of debris.

Weekly:

- ❑ Clean lens with soft cloth and mild cleaner.
- ❑ Clean LCD display cover with soft cloth and mild cleaner.
- ❑ Verify all hand straps are in usable condition and properly secured.
- ❑ Verify the Thermal Throttle is properly functioning.
- ❑ Check for cracks, holes or other damage to the unit's outer shell.
- ❑ Verify the batteries do not show physical signs of damage.

MAINTENANCE: Continued

Monthly:

- ❑ Check tightness of all external screws, including those holding on straps, those connecting the LCD display cover and those connecting any bumpers. Do not over-tighten.
- ❑ Cycle each battery fully. This is accomplished by using a conditioner or by fully charging and draining the battery. Ensure that one battery is always fully charged for use at an incident.
- ❑ Using a damp cloth and mild cleaner, clean the outer shell of the unit. Do not immerse the unit under water for cleaning.
- ❑ Verify that the battery contacts on the unit are corrosion-free.
- ❑ Verify the battery chargers are corrosion-free on all primary contacts.
- ❑ Users with a wireless receiver should verify that the transmitter and receiver are functioning properly and that all receiver cables are in good condition

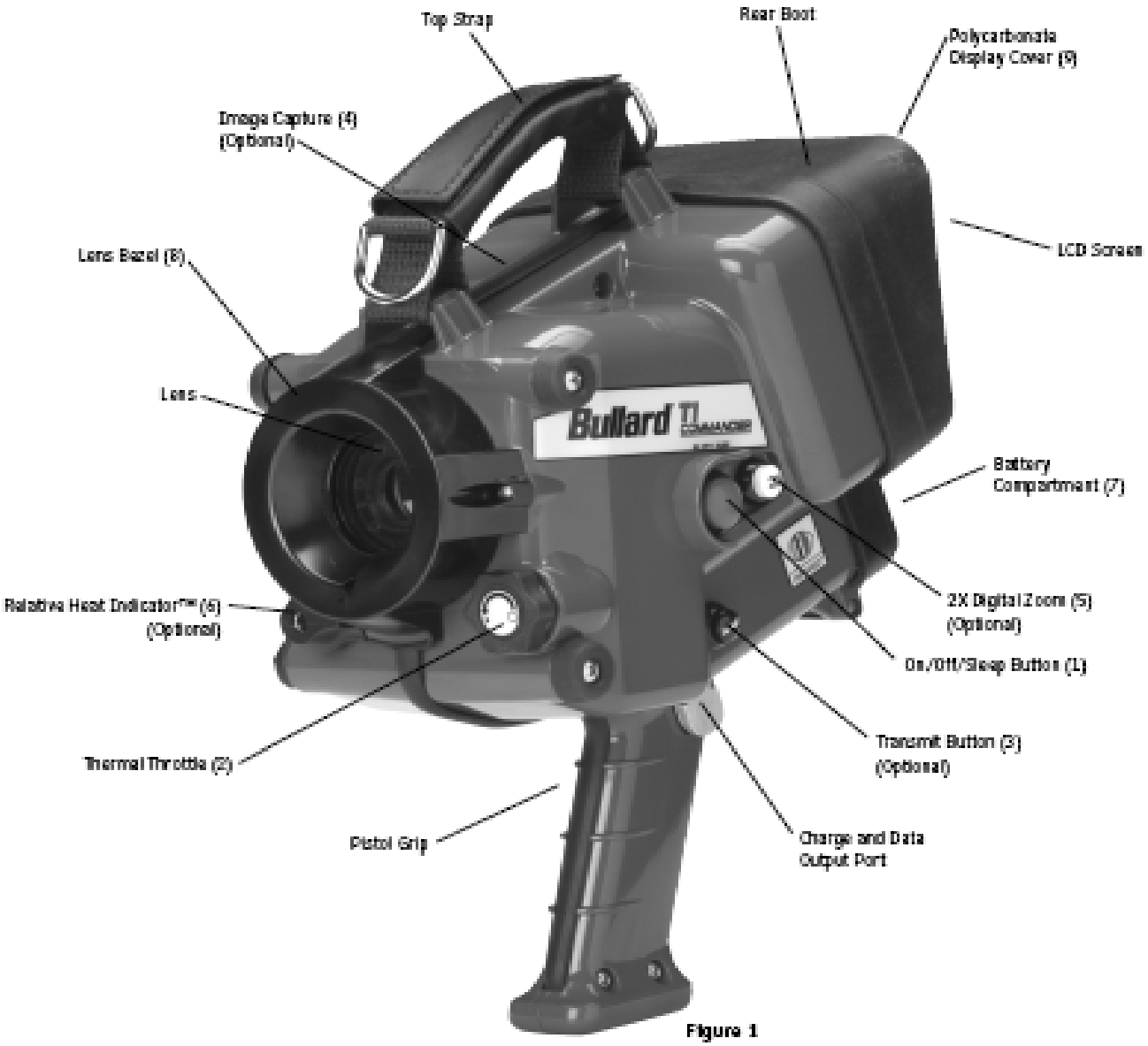

Top Strap
Rear Boot
Polycarbonate Display Cover (9)
Image Capture (4) (Optional)
LCD Screen
Lens Bezel (8)
Lens
Bullard
Battery Compartment (7)
2X Digital Zoom (5) (Optional)
Relative Heat Indicator™ (6) (Optional)
On/Off/Sleep Button (1)
Transmit Button (3) (Optional)
Thermal Throttle (2)
Pistol Grip
Charge and Data Output Port

Figure 1

TOOL: Trash Pumps

TOOL SPECIFICATIONS:

Honda WT30X Trash Pump - 3”

- Model GX240K1
- Engine type 8hp – four stroke overhead valve, single cylinder
- Displacement 14.8 cu-inch
- Maximum output 8 PSI at 3600 RPM’s
- Maximum torque 12.3 lbs per foot
- Cooling system Forced air
- Oil Alert Automatically stops engine
- Oil used SAE 10w-30
- Fuel used Unleaded
- Running time Approximately 2 – 3 hours
- Suction port diameter 3.1” Quick link
- Discharge port 3.1” NPT to 2 ½” NST
- Total head pressure 88.6 feet
- Total suction head 26.2 feet
- Discharge capacity 343 GPM
- Self-priming time 90 seconds at 14.8 feet

MAINTENANCE:

- Always check engine for oil, fuel and choke for operation
- Check all fasteners for snugness
- Check all hose and couplings for damage
- Make sure strainer is present and without damage
- Clean out pump if dirty water was pumped
- Run pump once a month for B-day check
- Use both hoses to check for holes
- Never run pump with out priming with clean water first.

SAFETY CONSIDERATION:

1. Do not operate tool unless thoroughly trained or under the supervision of an instructor.
2. Maintain tool awareness (Watch where the water is going)
3. Tie down discharge hose, when testing unit.
4. Always prime unit before using.

Truck 105
Aerial Set Up & Operation

TOOL: 100' Aerial (500 Pound Tip Capacity)

APPLICATION:

CAB OPERATIONS:

**With brakes set, and transmission in neutral.*

1. Turn on Battery
2. Turn on Ignition Switch
3. Push Start Button
4. Turn on Master Light Switch (Emergency Lights)
5. Set Front Wheel Lockout
6. Turn on Aerial Master Switch

**Exit Cab*

GROUND OPERATIONS:

1. Place wheel chocks at front and back of front axle tires (Right/Left sides)
2. Place ground pads on stabilizers (Right/Left sides)
3. Access control panel – Turn on "High-Idle" switch
4. Deploy stabilizers out, then lower and ensure truck is level and within safe operating slope levels (Green level on the Angle Indicator)
5. Shut off "High-Idle" switch and close control panel
6. Place stabilizer jack safety pins
7. Pull Fifth Wheel Lock-Out Control Lever to lock the fifth wheel in place for aerial operations once the stabilizers are set

TURNTABLE OPERATIONS:

1. Access pedestal control panel hatch
2. Turn on "High-Idle" switch
3. Press the aerial deadman switch and then Raise – Rotate – Extend Ladder (One operation at a time until the operator can operate safely and efficiently introduce additional aerial control operations)
4. Watch for obstacles on the trailer
5. Align rungs during extension (Rung Alignment Indicator Light will turn on)
6. Turn off "High-Idle" switch
7. Turn on intercom

TAKEDOWN:

1. On the turntable, turn on “High-Idle” switch at aerial ladder pedestal
2. Press the aerial deadman switch and then Retract – Rotate – Lower Ladder (One operation at a time until operator can operate safely and efficiently)
3. Turn off “High-Idle” switch and intercom, and close pedestal cover
4. Unlock Fifth Wheel Lock-Out Control Lever and return to free position for vehicle and stabilizer operations
5. Remove stabilizer jack safety pins and store them
6. Turn on “High-Idle” at stabilizer control panel
7. Raise and then retract stabilizers
8. Turn off “High-Idle” and close panel
9. Remove and secure ground pads
10. Remove and secure wheel chocks
11. Turn off Aerial Master Switch in the cab
12. Turn off Master Light Switch in the cab
13. When Maxis are released, the Front Wheel Lockout will be released

OPERATIONAL CONSIDERATIONS AND SAFETY FACTORS:

1. The Aerial PTO will only engage if the truck transmission is in neutral, the Maxis and Front Wheel Lock are both applied, and the Aerial Master Switch is on
2. Refer to Angle Indicators located near the stabilizer controls for safe operating limits while stabilizing the truck:
    a. Green Level – 100% Capacity from 0 to 5 degrees
    b. Yellow Level – 50% Capacity from 5.1 to 8 degrees
    c. Red Level – 0% Capacity above 8 degrees
3. Refer to Load Chart located on the cover of the turntable pedestal for load capacities during operations
4. Do not operate within 10 feet of power lines
5. Do not operate in wind speeds of over 50mph

INTERLOCKS AND OVERRIDES:

Interlocks:

1. Maxis set
2. Front Wheel Lock Set
3. Aerial Master switch on
4. Outriggers fully extended out and down
5. Fifth wheel lock in place once outriggers are extended
6. Ladder fully bedded

Ignition Override:

1. If the ignition and battery are both on, you can start the truck from the aerial platform.

Hydraulic Failure:

2. In the event that there is a hydraulic failure (no PTO), you must use the Emergency Hydraulic Power switches located on both the outrigger control panel and the aerial control panel to stow the ladder and outriggers. The safety interlocks will still be in place and will need to be taken into account as you stow the aerial ladder.

Electrical Failure:

3. In the event that there is an electrical power failure, you must use the Stabilizer Hydraulic Power Override controls and press the individual valves to operate the outriggers. You must also use the Aerial Hydraulic Power Override and the Pedestal Control Levers on the platform to operate the ladder. This will be a two person operation. In this capacity, you will be able to raise/lower and extend/retract the ladder. To move from side to side, the person on the platform must also use the Left/Right Rotation Overrides in conjunction with this operation. When operating in this capacity there are no safety interlocks in place.

Electrical and Hydraulic Failure (battery switch in the cab is the ONLY switch on):

4. In the event that there is an electrical power failure and a hydraulic failure from the PTO, you must use the Aerial Emergency Power Switch and Stabilizer Emergency Power Switch to stow the aerial ladder as well as the outriggers. By using this switch, it will give you both electric and hydraulic control of the aerial and the outriggers. The aerial can be used in the lower/raise and the extend/retract capacities, but you need to use the Left and Right Rotation Overrides to move from side to side. When operating in this Capacity, there are no safety interlocks in place.

Fifth Wheel Lockout:

5. The fifth wheel lockout allows free movement in the fifth wheel cylinders during road and vehicle stabilization. Once the lever is placed in aerial position; hydraulic fluid is locked in place providing a stable platform. Orange LED lights under platform indicate position of the fifth wheel lockout. These interlocks prevent movement of the stabilizers in aerial position or vise versa.

Truck 705
Aerial Set Up & Operation

TOOL: 100' Aerial

APPLICATION:

CAB OPERATIONS:

**With brakes set, and transmission in neutral.*

1. Turn on Master Switch
2. Turn on Ignition Switch
3. Push Start Button
4. Turn on Master Light Switch
5. Ladder Tower Power- Toggle Switch
6. PTO- Toggle Switch

**Exit Cab*

GROUND OPERATIONS:

1. Place wheel chalks at front/back of front axle tires
2. Place jack pads on outriggers (Rt/Lt side)
3. Access control panel – Turn on "Fast Idle" switch
4. Deploy outriggers out, then lower
5. Place jack pins
6. Shut off "fast- idle" switch

TURNTABLE OPERATIONS

1. Access control panel hatch
2. Turn on "fast- idle switch
3. Raise – Rotate – Extend Ladder
4. Turn off Fast- idle switch
5. Turn on intercom and strobe light

Key note:

The Aerial fast- idle switch will not work unless the parking brake is set, and transmission is in the neutral position.

TOOL: Unifire Power Blower

APPLICATION: When properly performed, either in positive pressure attack or assisting with horizontal ventilation, using blowers will greatly increase fire ground effectiveness and firefighter safety.

TOOL SPECIFICATIONS:

Model - DS-3P4

CFM -	22,000
Weight -	65 lbs
Prop -	18” four blade wood prop Hardwood Maple (Laminated, shatter proof)
Guard -	3/16” steel guard vinyl coated
Frame -	Stainless steel tubing (23”X23”X17”)
Tilt Angle -	Minus 10 degrees to plus 20 degrees

Engine - Honda GX160 – Four stroke

Power -	163 cc, 5.4 horsepower
Oil -	Oil Capacity: 2.03 oz.
Fuel -	Fuel Capacity: .95 Gallons (Unleaded)

MAINTENANCE:

- Run once a week
- Check fuel and oil weekly
- Check nuts and bolts are secure
- Clean as needed
- Change oil every January or as needed
- Clean air filter as needed

STARTING:

1. Turn fuel valve on
2. Close choke (when cold)
3. Open throttle slightly (moving lever to the left)
4. Turn engine switch on
5. Pull Starter cord
6. As the engine warms up, gradually close choke
7. Position throttle to desired engine speed

AFTER USE MAINTENANCE:

1. Allow tool to idle down prior to shutting off.
2. Turn ignition switch off (Store in the on position).
3. Turn fuel off.
4. Turn Choke off.
5. Replace fuel used.
6. Be sure all parts are clean
7. Inspect carefully for any damage.
8. Check all nuts, bolts, retainer rings and screws are in place and securely fastened

TOOL: WAP Wet/Dry Vacuum

APPLICATION: Intended for all wet cleaning purposes in an industrial setting. It can take up water, oil and other liquids containing dirt, which is mildly abrasive.

TOOL SPECIFICATIONS:

Water take-up capacity -	205 liters max/min
Water pump-out performance -	210 liters max/min
Container capacity -	48 liters
Total weight -	27 kg

START UP:

1. Insert mains supply plug or mains supply with integrated FI-protection switch into appropriate installed shockproof socket.
2. Be sure that the voltage displayed on the type plate corresponds with the main supply voltage
3. Insert the suction tube into the machine intake fitting
4. Connect C-discharge hose with coupled quick-action gate valve to the C-coupling.
5. Attach discharge hose
6. Set the discharge hose as short as possible
7. Insert the signal tube into the coupling outlet and the plunging pump plug into the socket on the machine
8. Operate the machine
   - Suction - Vacuum cleaner motor on / green light off
   - Automatic - Vacuum cleaner motor on / green light on/ orange light on/ discharge on
   - Pump - Vacuum off / green light off / pump on

MAINTENANCE:

- The filter sieve should be cleaned after lengthy use (wash it out with clear water, brush it or effuse it with high pressure cleaner). To do this, open the tension clamps, remove vacuum head, loosen filter tension nut, remove filter friction washer with nut, pull off and clean filter.
- Re-install in opposite order
- Be sure the filter tension nut is screwed on tightly
- The container must be emptied and scoured out after use. This prevents deposits building on the bottom of the container and in the intake area of the plunging pump.

GENERAL INFORMATION:

- Attention - Do not vacuum the filter sieve! Otherwise the motor becomes damaged
- The machine should only be used by people who are instructed in its operation and explicitly entrusted with its use.
- Be certain that the mains supply cord is not damaged by being run over, squashed, pulled, etc.
- The mains supply cord is to be regularly checked for indications of damage and aging
- The machine must not be used if the mains supply cord is not in perfect condition
- Only the following materials may be used or substituted for mains supply cords or appliance cords rubber tubing with polychloroprene coating, symbol H05RN-F

TOOL: Water Pump

TOOL SPECIFICATIONS:

Fuel	Unleaded gasoline with an octane rating of 86 or higher
Engine Oil	10W-30
Discharge Capacity	105.7 gpm/132.1 gpm
Weight(Dry)	49 lbs/51.8 lbs
Engine	GX120K1

ABUSE OR MISAPPLICATION:

- Pumping abrasives
- Pumping corrosive, or hot water (over 40 degrees Celsius)
- Careless handling, lifting pump by cable
- Improper maintenance or lack of maintenance
- Incorrect power
- Cut cable jacket
- Cable splices or joints not waterproofed
- Operating pump without strainer or with damaged strainer

SAFETY:

Pump water only
Be aware of hot exhaust
Avoid inhalation of exhaust gas

PUMP OPERATING INSTRUCTIONS:

1. Prime the pump
2. Switch fuel to the ON position
3. To start a cold engine, move the choke lever to the CLOSED position.
    a. To restart a warm engine, leave the choke lever in the OPEN position.
4. Move the throttle lever away from the SLOW position about 1/3 of the way toward the FAST position.
5. Turn the ignition switch to the ON position.
6. Pull the starter grip lightly
7. Insure choke is in the off position

STOPPING THE ENGINE:

1. Move the throttle lever to the SLOW position
2. Turn the ignition switch to the OFF position.
3. Turn the fuel valve lever to the OFF position.

MAINTENANCE:

Check Fuel level
Check Oil Level
Inspect for integrity of hose
Check for lose nuts, screws, and bolts
Check air filter

Whiffs Brush Filtration Masks

TOOL: Whiffs Brush Pro Filtration Masks

APPLICATION: The brush pro mask is the most versatile mask. It is excellent for wildland firefighter and perfect for structure overhaul/mop-up after the all clear for CO has been given.

TOOL SPECIFICATIONS:

- The mask weighs 2.1 oz. And is machine washable in cold water. Hang to dry.
- The revolutionary Xcaper moist filter delivers unparalleled protection by trapping hazardous toxins and particulate matter common to wildland and structural overhaul fires. The moisturizing agent, a 100% all – natural plant extract with high viscosity allows for easy breathing. The gel will not steam, so there is no risk of steam burns. The filter will last 8 – 10 hours in a wildland situation. The filter must be thrown away after any use in structural overhaul situations because hydrogen cyanide gas is almost always present here from burning plastic and cyanide will become trapped in the filter.

FILTER APPLICATION:

- When removing your filter from its poly-foil vacuumed packed bag, massage the filter for 1 –2 seconds with your fingertips to push the gel out of the surface of the filter bag cloth. This allows the filter to breathe easily from the very beginning. If you don't use this method, the filter will breathe a little harder for about 15 – 30 seconds until the gel moves out of the pores of the cloth.
- An unopened filter will have a shelf life of 4 – 5 years. No special storage conditions are necessary when the filter is in the poly-foil bag during non-winter months.
- Never try to remoisten the Xcaper filter with water, as serious injury from steam burns may result.
- The styrene beads used as medium to allow the filter to fit every face shape and will not off gas until 810 degrees.