



City of Winter Park Fire-Rescue Standard Operating Guideline

220.03

**Title: Procedures for the Maintenance
and Operation of Engine 161**

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Purpose: To establish a procedure to outline the regular maintenance and operations of Engine 161, Pierce Quantum Pumper.

Scope: This policy will outline what maintenance is to be performed by Department personnel and what is to be referred to the garage personnel. In addition, this SOG will cover those operational considerations of this apparatus with regards to testing, training and fire / rescue operations.

General:

220.03.01. Description:

1996 Pierce Quantum, 1500 GPM Pumper manufactured by Pierce Manufacturing of Appleton, Wisconsin. Engine 161 was placed in service on Friday, October 18, 1996. This unit is designed to operate under Department staffing policies and be utilized as Advanced Life Support Engine. Engine 161 is currently assigned to Station 62, and is used as the departments reserve Engine Company.

220.03.02. Specifications:

1. Engine - Detroit Diesel Series 60 Four Stroke
 - a. OIL - SAE 15w40
 - b. ANTI-FREEZE / 60 Quarts
 - c. POWER STEERING FLUID - Dextron 2 ATF / 8 Pints
 - d. FUEL TANK - Diesel / 65 Gallons
2. Transmission - Allison "WORLD" Transmission HD4060D
 - a. FLUID - Dextron 3 ATF / 37 Quarts
3. Chassis - Pierce Manufacturing / Quantum
 - a. Front Axle - / 90 wt. varies with axle

- b. Rear Axle - / 90 wt. 36 Pints
- c. Tires - Front / 385/65R 22.5 Rear / 12R22.5
- 4. Pump - Hale 1500 GPM Single Stage
 - a. Relief Valve Control
 - b. 750 gallon water tank
- 5. Measurements
 - a. Overall Length = 33' 2.5" Bumper to Bumper
 - b. Angle of Approach = 8 degrees
 - c. Angle of Departure = 8 degrees
 - d. Overall Height = 9' 7.5" to the top of the A/C unit on cab
 - e. Cab Height while tilted = 12' 10"
 - f. Wheelbase = 205.25"
 - g. Width = 96"

220.03.03. Fire Department Performed Maintenance:

Daily Check List Items:

- a. Visual Inspection / Around / Over / Under Vehicle
- b. Check all liquid levels on chassis: engine, transmission, coolant, pump oil, power steering and all other liquid levels.

NOTE - If engine was running within the previous (5) minutes of the engine oil being checked it should be allowed to sit and drain into the oil pan for a proper check.

- c. Check belts for wear, tension and condition.
- d. Visually check fuel level tank gauge and condition of tank for any damage.
- e. Compare water tank level readings in cab and on pump panel
- f. Tires and Wheels - Check and maintain correct air inflation pressures per tire side-wall instructions (weekly). Rims and wheel covers should be inspected for damage. These are STEEL RIMS.
- g. Automatic Transmission - Check shift selector to make sure the indicator matches the mode selector.

h. To properly check the transmission fluid level the following should be performed in order;

1. Stop Engine
2. Set Parking Brake
3. Place Transmission in NEUTRAL
4. Engine should be at NORMAL OPERATING TEMPERATURE
5. Engine RPM should be at IDLE

NOTE: DIPSTICK WILL SHOW AN ADD OR FULL INDICATION. FLUID SHOULD ONLY BE ADDED BY MAINTENANCE PERSONNEL

- i. Fire Pump - Check overall operation of fire pump and primer pump oil level.
- j. Electrical System - Check all lights and gauges.
- k. Check mirrors.
- l. Visually Check Water Tank Level.
- m. Examine all other equipment as required.
- n. Run auxiliary generator to normal operating temperature during weekly

All Personnel should review the Manufacturers Operations Manual for additional checklists covering the pump and other special equipment.

- o. Washing of Apparatus - Painted surfaces may be washed as normal. Truck may be placed on the waxing rotation to maintain appearance. Avoid waxing close to the reflective striping or lettering to prevent wax build-up on the edges of the letters. **DO NOT WAX POWDER-COATED ROLL UP DOORS.** A special product is available for the maintenance of these doors.

NOTE: DO NOT SPRAY COOL WATER ON RIMS OR CHASSIS COMPONENTS THAT ARE HOT. ALL SURFACES SHOULD BE ALLOWED THE TRUCK TO COOL PRIOR TO RINSING.

220.03.04. Operations:

Set Up for Pump Operations:

These apparatus operate much the same as the other pumpers the Department utilizes. All personnel must become familiar with those items that are particular to these units. Items listed in this procedure are designed to serve as a reminder. They are not intended to act as the pump operation manual.

These units are equipped with "Detroit Diesel" D-DEC electronic engine controllers. The device allows for the electronic control of the RPMs of the engine at either the drivers position or at the pump panel.

NOTE: THERE IS NO MANUAL (VERNIER) THROTTLE ON THESE UNITS. IF THE D-DEC CONTROLLER FAILS, ENGINE RPMs CANNOT BE RAISED.

The valve located on the right side large diameter discharge is designed as a "slow-close" valve. Additional pressure is required to close this valve over any other on the truck.

1. Pump Transfer Process

The transfer of power from the road transmission to the fire pump is accomplished through an air actuated valve. Operators should review the process found in the cab and in the written material provided by the manufacturer.

- a. Stop vehicle, set the parking brake and place road transmission in neutral.
- b. Move pump transfer valve from road to pump, stopping in the middle to allow air to exhaust from valve.
- c. Select (D) Drive on the transmission selector.
- d. Reverse process to return unit to road transmission use.

2. Cab Tilting

TO RAISE CAB

- a. Secure or remove all loose objects from inside the cab.
- b. Make sure all objects on the front bumper are removed or otherwise stowed.
- c. Make sure all cab doors are closed, all personnel are in the clear and there is sufficient overhead clearance to raise the cab.

NOTE: VEHICLE CAB SHOULD ONLY BE RAISED OUTDOORS! CLEARANCE IS TOO CLOSE TO RAISE CABS INSIDE THE APPARATUS BAYS.

- d. Raise cab by activating the switch located in the compartment behind the strobe light on the right side of the front bumper. When the cab is fully tilted, the safety bar will drop into place.

TO LOWER THE CAB

- a. Raise cab to MAXIMUM point
- b. Make sure all tools, spray cans, drop lights, etc. are removed from under the cab and engine area.
- c. Make sure that all personnel are clear from the cab area.
- d. Pull T-Handle located at lift position to release locking device.
- e. Lower the cab until the lock can be heard closing at the rear of the cab.

WARNING: Failure to perform any of these actions during the raising or lowering of the cab could result in serious injury or death or damage to the vehicle.

3. Engine Brake Operation

The Engine Brake is coupled to the engine exhaust valve train. When actuated, it prevents power strokes from occurring and the engine works as a retarding force on the vehicle.

It is controlled by a panel-mounted switch. With the control switch "ON", the engine brake will function whenever foot pressure is off the throttle. Depressing the throttle will deactivate the engine brake.

With this Detroit Diesel type engine, the brake has a two position switch which allows either the right bank or left bank of valves to be used for braking. This switch has a "HI-MED-LO" position and a separate position for "ON - OFF" when the braking effect is not desired.

For safety reasons the Department policy for operating the Jacobs Engine Brake on any apparatus will be to the drivers discretion as to use the "HI-MED-LO" mode.

WARNING: THE ENGINE BRAKE WILL BE TURNED OFF DURING ALL WET ROAD CONDITIONS. IF THE UNIT IS LEFT ON, SKIDDING MAY OCCUR ON ANY SLIPPERY SURFACE.

4. Hose Loads

These units shall be loaded with the following amounts of fire hose:

All hose shall be loaded in a way that best supports the safe and quick deployment of the line. Any changes made to current hose load configurations shall be approved by the Battalion Chief assigned to apparatus prior to the change being affected.

- a. Front Bumper Hose Bed - 100', 1 3/4' attack hose
- b. Cross Lay Hose Beds - 150', 1 3/4' attack hose & 200', 1 3/4" attack hose
- c. Rear Hose Bed - 1200' 4" LDH, 800' 2 1/2" supply hose
- d. Rear Pre-Connected Hose Bed - 200' 2 1/2" attack hose
- e. Side Hose Troughs - a 25' section of 4" LDH will be stored in each side hose troughs located at the pump panel

In addition, (1) 50' section of 1 3/4" attack hose will be stored in a twin-donut roll configuration

5. Emergency Lighting

All emergency lighting should be utilized while the vehicle is in the responding mode. Upon arrival at the scene, the operator should use their discretion in turning off any unnecessary emergency lights.

The directional arrow light at the rear of the vehicle should be used during the responding mode in the warning position. Upon arrival, the operator should utilize this light to direct traffic around the vehicle.

Perimeter scene lights located under the vehicle are designed to offer additional scene lighting around the vehicle. Perimeter scene lights should not be used while the vehicle is in motion.

Lighting supplied from the on-board generator should be established anytime an extended nighttime operation is established. These lights are designed to be operated with as little effort as possible and afford personnel a safer working environment.

6. Generator Operation

These vehicles are equipped with on-board generators. Each generator is permanently mounted on top of the pump access area and is fueled directly from the chassis fuel tank.

To start the generator:

- a. Preheat the unit by selecting the preheat switch.
- b. Wait several seconds and activate the START switch, the unit should start within several seconds.
- c. A power control panel is located in the left front (Engineers) compartment. Each circuit is controlled by a breaker.
- d. The STOP selector should be activated to turn off unit.
- e. The generator may be controlled at either the pump panel or driver's position.

NOTE: THE APPARATUS MUST BE RUNNING TO START AND OPERATE THE GENERATOR. THE FUEL SUPPLY IS CONTROLLED BY THE CHASSIS ENGINE.

7. Operational Questions

All operational questions for this vehicle shall be routed through the chain-of-command to the Battalion Chief assigned to apparatus.

A copy of the Operational Manual from Pierce Manufacturing is located in the Battalion Chief's office and is available at any time to all personnel.



A handwritten signature in black ink, appearing to read 'James E. White'. The signature is written in a cursive style and is positioned above a horizontal line.

James E. White
Chief of Department