6. HYDRANTS

6.1 The primary agent used by this Department to extinguish fires is water. The primary source of water for firefighting operations is hydrants. Engine companies carry water in booster tanks and they are capable of drafting water from static sources such as rivers or lakes. But this section will describe the types of hydrants in use, the methods and equipment used for connection to hydrants, and the types of security assemblies encountered.

6.2 TYPES OF HYDRANTS

6.2.1 Smith Low Pressure Hydrant - The Smith hydrant has a black barrel with a silver bonnet. There are two outlets, one 2 1/2 inch and one 4 1/2 inch. This hydrant is equipped with two valves, a main and a drain which are both activated by the operating nut on top of the hydrant. The number on the barrel of the hydrant indicates the size of the main supplying the hydrant. A white line under the number on the barrel indicates this hydrant is on a dead end main and is only supplied from one direction. Dead end mains are generally smaller in diameter and provide less water than mains fed from two directions (see Fig. 6-1).

6.2.2 Dresser Low Pressure Hydrant - The Dresser hydrant differs from the Smith in appearance but its operation is the same. The barrel is painted black and the bonnet silver and it is provided with two outlets, one 2 1/2 inch and one 4 1/2 inch. This hydrant also has two valves (main and drain) which are activated by the operating nut. The Dresser hydrant will provide 10% to 15% greater discharge than the Smith hydrant (see Fig. 6-2).

6.2.3 Chapman and Eddy Hydrants - Both of these hydrants were originally installed by private water companies and differ from the Smith and Dresser hydrants. These hydrants will have either two 2 1/2 inch outlets or one 2 1/2 inch and one 4 1/2 inch outlet. The Eddy hydrant is found in areas served by Jamaica Water Supply. It opens and closes in a direction opposite of the Smith and Dresser hydrants. New York City has recently acquired the Jamaica Water Supply Company. New hydrants as well as replacement hydrants will be standard NYC hydrants. Hydrant barrels will be painted black and open in the same direction (clockwise) as other city hydrants.

6.2.4 High Pressure Hydrants - These hydrants are being removed and are out of service. They may still be encountered, however, and their use should be avoided (see Fig. 6-3).
6.3 CONNECTING TO HYDRANTS

6.3.1 In order to provide for a reliable and uninterrupted flow of water through attack hoselines an engine company must locate and connect to a hydrant. There are several methods of connecting to hydrants All engine companies should be equipped with the following hydrant connections:

**35-foot Soft Connection** - This is the newest of the four connections available to the engine company chauffeur. Constructed of yellow, 5-inch synthetic hose (4 1/2 inch butts), this connection is versatile and easily handled. On the newest pumpers, it is usually carried in a trough on the front bumper extension, but can also be stored near the side intakes. This hydrant connection allows an engine apparatus to be positioned anywhere from a foot or two to almost 35 feet from the hydrant. This connection can also be used over or around obstructions such as automobiles, ADV’s, rubbish piles, etc. and it provides the largest flows of any of the hydrant connections (see Fig. 6-4).

**10-foot Small Connection** - This connection (3 1/2 inch hose with 4 1/2 inch butts) requires closer and more accurate positioning of the engine at the hydrant and is carried on the side of the apparatus in a horizontal tray. Although it is semi-rigid, it can be bent and connected and will straighten when charged with water (see Fig. 6-5).

**50-Foot length of 3 1/2 inch Hose** - This is one length of standard 3 1/2 inch hose (3 inch butts) set up for rapid connection to a hydrant when use of the 35-foot soft connection or the 10-foot small connection is not possible. This option permits the most flexibility in apparatus positioning, but provides the least water flow (see Fig. 6-6).

**10-Foot Hard Suction** - This hydrant connection (4 1/2 inch hose with 4 1/2 inch butts) is larger in diameter than the small connection, but of equal length. As its name implies, it is constructed of a rigid material which makes it very difficult to bend. This connection must be used for drafting (Evolution 6). It is rarely used for connection to hydrants (see Fig. 6-7).
6.4 HYDRANT SECURITY DEVICES

The importance of the hydrant system to this Department’s mission cannot be overstated. In order to maintain this system serviceable, it has become necessary to devise and install a variety of devices to prevent unauthorized use and tampering with hydrants. Listed below are the hydrant security devices currently being used by this Department.

6.4.1 HYDRA-SHIELD - A threaded hydrant cap with three (3) indentations on its surface. Except for the three tapered indentations, the cap has a smooth rounded surface which prevents removal using conventional tools. The wrench matches the indentations on the cap and also contains the standard socket to fit the hydrant operating nut. Both 2 1/2 inch and 4 1/2 inch outlets are provided with Hydra Shield caps (see Fig. 6-8).

NOTE: The wrench fits both the 2 1/2 inch and 4 1/2 inch caps.

6.4.2 CUSTODIAN HYDRANT GUARD - A free spinning cap which completely covers the hydrant operating nut to prevent it from being turned on by unauthorized users. A special wrench, equipped with an internal magnet, enables the hydrant to be opened. In addition to operating the Custodian guard, the special wrench can be used to remove and replace the hydra-shield hydrant caps as well as open our standard hydrant. Under no circumstances shall this wrench be struck with an axe, sledge hammer or other similar tool (see Fig. 6-9).
6.4.3 **HYDRO-LOC** - No longer being installed, but still might be encountered, especially in remote areas such as along highways or in parks. For this reason, all engine company personnel should be familiar with its design and method of removal. The hydro-loc assembly requires a special wrench (see Fig. 6-10).

6.4.4 **HYDRANT HARNESS** - Like the hydro-loc, the hydrant harness is no longer being installed but may still be encountered at operations (see Fig. 6-11).

![Fig. 6-8](image1) ![Fig. 6-9](image2) ![Fig. 6-10](image3) ![Fig. 6-11](image4)

6.5 **HYDRANT DISCS**

6.5.1 Hydrant discs are used to provide rapid identification of hydrants that are unserviceable for any reason. The company number and individual disc number shall be marked in black on one side of each disc. Discs shall also be used to identify out of service or partially serviceable auxiliary fire protection systems such as sprinkler and standpipe systems.

6.5.2 Different color discs are used to indicate different problems as follows:

- **White Disc** - available in two sizes, for placement on the 4 1/2 inch or 2 1/2 inch outlets of unserviceable hydrants and 3 inch siamese of out of service auxiliary fire protection systems.

- **Yellow Disc** - available in two sizes for placement on the 4 1/2 inch or 2 1/2 inch outlets of frozen hydrants.

- **Blue Disc** - for placement on 3 inch siamese of auxiliary fire protection system to indicate a system is not functioning as a fully automatic system and/or a portion of the system is such that it will operate effectively when supplied.
6.6 HYDRANT PLUGS AND STANDARD WRENCHES

6.6.1 Hydrants not equipped with security devices, which require special wrenches, are operated using the standard hydrant wrench. This wrench is used by simply placing it over the five sided operating nut on the top of the hydrant, turning the handle to tighten onto the nut and rotating the nut clockwise to open.

6.6.2 When a hydrant is selected for use and the 2 1/2 inch outlet cap is missing, an apparatus cap or spare hydrant cap carried on the apparatus can be used to cap the outlet. If the outlet threads are damaged or missing, or if no cap is available, a hydrant plug should be used as follows (see Fig. 6-12A - 6-12D):

- Remove the 4 1/2 inch cap and flush hydrant.
- Shut down hydrant and exam barrel for sharp objects and debris before inserting T-Bolt. Grip the T-BOLT firmly with one hand and maneuver it through the 4 1/2 inch opening into the hydrant barrel. A firm grip must be maintained on the T-BOLT to prevent it from being dropped into the hydrant barrel.
- Place the threaded rod of the T-BOLT through the 2 1/2 inch opening and center it in the middle of the opening. The non-threaded section of the T-BOLT being held inside the hydrant should be maintained in a vertical rather than horizontal position in order for sufficient thread to protrude through the opening to complete the connection.
- Hold the T-BOLT firmly against the inside of the hydrant barrel with one hand and turn the handle onto the threaded end of the T-BOLT with the other hand. The washer must be on the outside of the hydrant for the plug to work correctly.
- Turn the handle clockwise while holding the T-BOLT until the handle is tight against the 2 1/2 inch nozzle or barrel.
- Hook up to the 4 1/2 inch outlet using the proper hydrant connection.
- Open the hydrant.
- The hydrant plug is removed by reversing the steps outlined above.

6.6.3 On any hydrant with the caps securely in place, make sure hydrant is shut down before attempting to remove the cap.

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6.7 SPECIALLY DESIGNATED HYDRANTS

6.7.1 Yellow Hydrants on Parkways and Expressways - Some hydrants on parkways and expressways are shut down at the curb valve year round. These hydrants could create a hazard if illegally opened and the water was deflected into passing traffic. In order to easily identify these hydrants they are painted yellow. To use a yellow parkway hydrant, it must be turned on using a curb valve key. [AUC 205 Add 2.]

6.7.2 Red Air Cock Hydrants - Hydrants on 30 inch diameter or greater mains in strategic locations (high and low points). Also allow Water Department repair crews to bleed off air when repairs are completed. These hydrants are painted red and are excellent sources of water for fire department use.

6.7.3 Red Satellite Water System Hydrants - Twin Hydrant arrangement on large mains for a rapid and adequate source of water for Satellite Water System. Two special hydrants, each with two 4 1/2 inch outlets, painted red and located close to each other. Engine companies should avoid use of these hydrants. [AUC 274 Add 1]

6.8 HYDRANT FITTINGS

6.8.1 The standard hydrant is provided with two outlets, a 2 1/2 inch and a 4 1/2 inch with male threads. Three of the four hydrant connections attach directly to the 4 1/2 inch outlet without the use of any fittings or adapters. The following fittings or adapters must be used in order to connect 3 1/2 inch hose to a hydrant:

- The hydrant reducing cap, a 4 1/2 inch by 3 inch double female adapter, which allows connection of 3 1/2 inch hose equipped with 3 inch couplings to the 4 1/2 inch hydrant outlet (See Fig. 6-13).

- The hydrant wye, which consists of a 4 1/2 inch female swivel and two 3 inch male outlets with quarter-turn ball valves controlling each 3 inch male outlet. Allows connection of two 3 1/2 inch supply lines to the 4 1/2 inch outlet on a hydrant.

- The 2 1/2 inch hydrant wye, similar to the wye used on the 4 1/2 inch outlet, which connects to the hydrants 2 1/2 inch outlet and has two 2 1/2 inch male outlets with quarter turn ball valves (See Fig. 6-14).

- For engine companies with 3 1/2 inch hose loaded for the back-stretch (male 3 inch butt on top of bed) the use of two fittings, a 3 inch x 2 1/2 inch reducer and 2 1/2 inch double female allows direct connection of the 3 inch male coupling to the 2 1/2 inch outlet on the hydrant.

- For engine companies that carry the female coupling on top of the 3 1/2 inch hose load a 2 1/2 inch to 3 inch increaser can be carried (hand tight) to the female swivel of the hose. To connect to the hydrant, the increaser is removed and connected to the 2 1/2 inch outlet on the hydrant and then the 3 1/2 inch hose is connected to the increaser.

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6.9 CUSTODIAN HYDRANT WRENCH REPLACEMENT

6.9.1 Each unit has been issued a custodian wrench with an individual serial number.

6.9.2 The Bureau of Technical Services will maintain a database of all custodian wrenches with their serial numbers and corresponding units. This database information will be updated whenever a new wrench is issued to a Unit.

6.9.3 If a custodian wrench is broken, it should be delivered to the administrative Division for replacement by Technical Services.

6.9.4 Each Division shall have three (3) wrenches on hand as spares and marked as such.

6.9.5 When a custodian wrench is broken, lost or stolen, the Division will provide a loaner wrench (spare) to the Unit until a new one is secured from Technical Services. Upon receipt of the new wrench, the Unit will return the spare to the issuing Division.

6.9.6 Lost or stolen wrenches should be reported on a Lost Property Report (FS-112) as directed by Section 1.15.5 of the Manual of Requisitions and Payrolls.

6.9.7 The security of hydrant wrenches is an integral part of the success of the custodian hydrant program. To this end, Company Commanders are reminded of their responsibility to insure that procedures are in place to insure wrenches are not lost or stolen.