



# CHICAGO FIRE HYDRANTS

The following documents pertain to Chicago Fire Hydrants and their operation.

In Chicago, we are fortunate to have a great water supply system. The system is classified as a high volume, low pressure system. The average pressure for this system is between 30 & 40 psi and can flow approximately 1000 gpm.

Different companies have manufactured Chicago style hydrants through the years to the same specifications. Different manufacturers include:

<b>Manufacturer</b>	<b>Model Number</b>
Cincinnati Water Works CWW	2166
East Jordan Iron Works (EJIW)	0720
Kennedy Valve	0407

To activate these hydrants, turns must be made clockwise (to the right) This is opposite of virtually every other hydrant style in the surrounding suburbs. The Chicago water department suggest 10 to 12 turns will sufficiently open a hydrant.

## **COLOR CODING OF HYDRANTS**

Chicago hydrants are painted the traditional red with the flange a contrasting color that identifies the potential delivery capability of the hydrant.

The colors appearing on the flange include:

*White* - hydrants that are off dead-end mains or are intermediate hydrants on long unsupported mains.

*Red* -- hydrants off of 6-inch and 8-inch mains that are supported at least within 600 feet.

*Yellow* -- hydrants off of 12-inch and 16-inch mains.

*Blue* -- hydrants off of mains larger than 16 inches in diameter.

In case of fire, the color assists in identifying the best hydrant to use.





# ***SEPTEMBER QUICK DRILL***

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## **“YOU’RE ON THE HYDRANT!”**

If you are the firefighter assigned to the hydrant, you have a lot of responsibility. Everyone is depending on you to get a positive source of water. A surprising amount of thought and preparation goes into your job if you’re on the hydrant. Here are some suggestions to help you get the job done.

### **When you get the hydrant assignment:**

1. Put your tools in position where they’re secure and handy. The tools include:
  - Hydrant wrench(es)
  - Gate valve with Storz fitting (4½ female X 4” Storz)
  - A pair of Storz wrenches
  - A pipe wrench for stripped hydrant nuts
  - Option: An old trick is to carry a quarter to insert between the hydrant wrench and a stripped stem nut to create a bite and allow turning of the valve.

Note: You may not carry all these tools to the hydrant, but know where they are located on the engine in case you need them.
2. Inspect the LDH hose beds. Make sure the front bumper has the standard equipment—150 feet of LDH hose; soft suction connected to the front intake with the Storz fitting attached (4½ male x 4” Storz).
3. Talk to the engineer.
  - Let him or her know that you are assigned to the hydrant
  - Ask any questions you may have about procedures, the location of equipment, etc.
  - Coordinate what the signal will be for you to send the water
4. Know where the engine intake ports are and how they operate.
5. Inventory any wrenches and fittings that may be required for special occupancies in your still district.

### **When you get dispatched to a fire:**

1. When you are en route to the fire, consider where the nearest hydrant may be based on the address given.

Hydrants can be found near street corners and in the middle of the block. Typically, hydrant location will correspond to the address number: Hydrants in the middle of the block will be located in front of addresses that end at or near the number 30; hydrants near the corner or additional hydrants on a long city block can be found in front of addresses that end at or near the numbers 00 or 59. (See photos on next page).



Photos: Hydrants are typically located in front of address numbers that end at approx. 30 or 59/00.

2. It is best to secure your own hydrant rather than connect to a hydrant already in use by another engine; the available water may be insufficient to supply both pumpers.
3. If you are responding to a location with unique water supply problems, consult with the officer and engineer so that everyone can plan accordingly.
4. Start looking for hydrants a few blocks before arriving on-scene; you can at least determine what side of the street they're likely to be on, (they often continue on the same side of the street for some distance).

**When you arrive at the scene:**

1. Locate the most convenient hydrant. It may be located in front of or to the rear of the engine.
2. Before you head to the hydrant, communicate to the engineer which way you are going.
3. If you have to cross the street for a hydrant, you may do so. However, it is best to select a hydrant on the same side of the street as the engine so that supply hose will not be driven over.

### **Making the hydrant connection:**

1. Make sure the hydrant is operational before committing hose. Advance to the hydrant with your tools, remove port caps and flush the hydrant. (During cold weather—below 32 degrees—briefly “crack” open the hydrant stem and listen for a hiss indicating flowing water).
2. If the hydrant is operational, attach the gate valve to the port furthest from the apparatus. Then,
  - If LDH is to be used as the supply line, remove the Storz fitting from the gate valve and attach it to the other hydrant port. Then, return to the apparatus and stretch the LDH supply line to the hydrant and attach it to the Storz fitting.
  - If soft or hard suction is to be used as the supply line, the Storz fitting shall remain on the gate valve. Remove the Storz adapter from the soft suction hose and connect the soft suction or the hard suction directly to the open hydrant port.
3. Upon receiving the signal from the engineer, open the hydrant valve to send the water.

### **After you send the water:**

1. Straighten out kinks in your supply hose line, and report any major leaks to the engineer.
2. Check with the engineer to make sure he or she needs no further assistance.
3. Don the rest of your personal protective gear and report to your company officer.
4. As you follow the attack line towards the fire, straighten out kinks, check for and tighten any leaking connections, and make sure the shut-off pipe is open and the wye is gated properly if used.
5. Size-up the progress being made on the fire; your exterior view may provide helpful information for your company.

### **Troubleshooting:**

If you have difficulties that will cause a significant delay in getting water, tell your engineer immediately. The engineer can then alert the other company members that they may only have 500 gallons of water to work with.

**A positive source of water is a huge step  
towards safety and success at the fire scene.  
Take your job seriously when you're on the hydrant.**





# SEPTEMBER QUICK DRILL

## HYDRANT WRENCHES

Here is a back-to-basics review of hydrant wrenches found on the Chicago Fire Department. Included are illustrations of each wrench and its corresponding parts along with explanations for their use. Also, techniques are offered to help members effectively use the hydrant wrenches.

Terminology:

Operating **key** – The female fitting that is located **on the wrench**.

Operating **nut** – The male fitting that is located **on the hydrant** or valve stem.

### “Standard” Hydrant Wrench

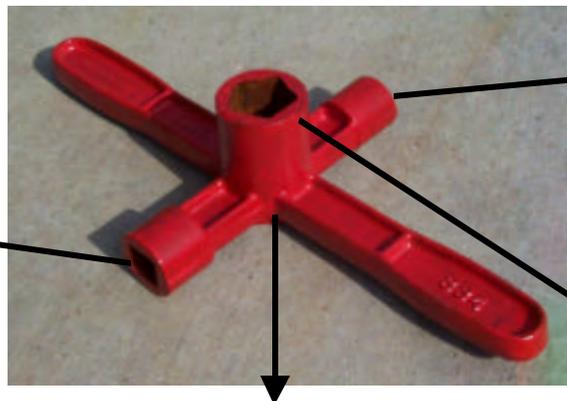
The Standard hydrant wrench has four keys and each key is used for specific purposes.

Illustration:

#### “STANDARD” HYDRANT WRENCH



SMALL SQUARE KEY



SMALL PENTAGON KEY



LARGE SQUARE KEY

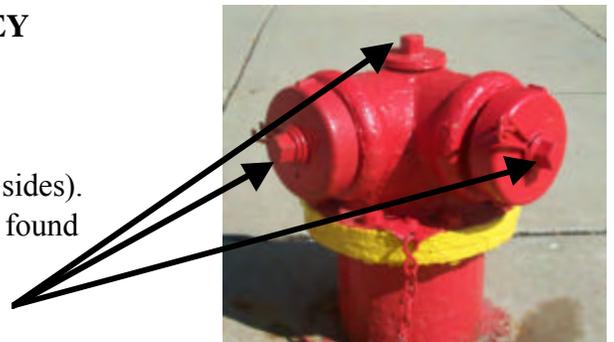


LARGE PENTAGON KEY

Uses of the Standard hydrant wrench keys:

1. Large pentagon key (pentagon = five angles & five sides).
  - Fits the pentagon shaped operating nuts that are found routinely on Chicago hydrants and port caps.

Pentagon nuts



2. Small square key.

- Fits valve operating nuts found on wall hydrants.



- Opens subway sidewalk access, which has a small square operating nut.



- Fits the valve operating nut that is hidden under the hood of a hydrant, (the hood contains the large pentagon nut)—if the hood is missing, the hydrant can still be turned on.



3. Small pentagon key.

- Used by the Water Department to unscrew the caps of Buffalo Boxes in order to access the water supply valve. Buffalo Boxes are found in front of most structures, usually near the parkway or sidewalk; the valve controls the water supply to that structure.

4. Large square key.
  - Used by the water department to operate large underground valves.

### **“Bullet” Hydrant Wrench**

The Bullet hydrant wrench has two keys. This wrench was created and distributed when bullet port caps were introduced in an attempt to prevent the public from turning on the hydrant—if people couldn’t remove the port caps there would be no reason for them to turn on the hydrant.

However, the bullet port caps were not a deterrent, people were able to remove them. Still, the Bullet hydrant wrench continued to be needed on fire companies because hydrants may be encountered that have a pentagon operating nut and bullet port caps.

Illustration:



### **“BULLET” HYDRANT WRENCH**



**BULLET KEY**

**LARGE PENTAGON KEY**

Uses of the Bullet hydrant wrench keys:

1. Large pentagon key. (Same use as described previously).
2. Bullet key.
  - Fits bullet nuts found on port caps. Has a latch that can be hooked behind the bullet port cap to assist in removing the cap. Hook the latch behind the cap as shown to hold the bullet key firmly in place and then unscrew the cap.



## “Custodian”/“Neo Custodian” Hydrant Wrench

The Custodian and the Neo Custodian hydrant wrenches are essentially the same hydrant wrench, the only difference being that the Neo Custodian wrench has a stronger magnet inserted into the custodian key than the Custodian wrench. This wrench has three usable keys.

Custodian operating nuts were installed in Chicago hydrant operating valves to limit the public’s ability to turn on the hydrant. It was later discovered that the magnet in the nut was too sensitive—the public found magnets that worked and were able to turn on the hydrants. As a counter-move, stronger magnets were installed in the hydrant operating nuts and the hydrant wrench was fitted with a stronger magnet. This new wrench that contained the stronger magnet was stamped with the word “neo”, making it the Neo Custodian.

At this time, all Custodian wrenches have been replaced with Neo Custodian wrenches, according to the Water Department. Furthermore, the recent shipments of these wrenches have the stronger magnet but are no longer stamped “neo”, making these wrenches identical except for the name.

Illustration:

### **“NEO CUSTODIAN”/“CUSTODIAN” HYDRANT WRENCH**



**LARGE PENTAGON KEY**



**BULLET KEY**



**CUSTODIAN KEY**

The Neo Custodian/Custodian hydrant wrench has three usable keys:

1. Large pentagon key. (Same use as described previously).
2. Bullet key. (Same use as described previously).

3. Custodian key.
- Fits the Custodian operating nut that is found routinely on Chicago hydrants.

When the grooves of the Custodian key are fit together with the grooves of the Custodian operating nut, a magnet is engaged that allows the hydrant to be turned on.

If the magnet does not engage as it should, strike the custodian nut a few times on the top and sides with a hammer or the handle of the hydrant wrench and then try the key again. If the magnet in the operating nut becomes frozen or otherwise lodged, striking the nut will usually dislodge the internal magnet so that the device functions properly.



### **“McGuard” Hydrant Wrench**

The McGuard hydrant wrench no longer has a specific use on the Chicago Fire Department. Originally, this wrench was designed for use with test hydrants in Engine 30’s still district. These test hydrants were not successful in preventing the public from turning on the hydrant, so the test hydrants were discontinued. At that time the McGuard wrench became obsolete.

Many companies still have the McGuard wrench as part of company inventory. Even though it is no longer used for its originally intended purpose, the McGuard wrench may be used for its spanner wrenches (designed for use on pin and rocker lugs), and its adjustable keys (useful for gripping stripped valve nuts, large pentagon nuts and operating some non-Chicago hydrants).

Illustration:

### **“MCGUARD” HYDRANT WRENCH**



### **Tips for using hydrant wrenches:**

- Hydrant person should carry change—a quarter for use with the large pentagon key and a nickel for use with the small square key. In the event that an operating nut is somewhat rounded, these coins may be inserted between the nut and the hydrant wrench key to take up the space that is created by the rounded nut and allow for turning of the valve.
- An unofficial device called a “persuader” can be made for all hydrant wrenches that will act as a lever and facilitate opening the hydrant valve. The persuader is a hollow pipe that is slipped over the hydrant wrench arm that extends the arm of the wrench and gives the user additional leverage.
- 12 turns is sufficient to fully open Chicago hydrants, according to the Water Department.
- Maintenance on the Custodian key: Remove rust from the magnet using emery cloth.
- A pipe wrench can be used as a back-up method for opening numerous valves.



## **Emergency Threaded Hydrant Ports** **Quick Drill**

### **Objectives:**

1. Learn how to install the threaded hydrant port
2. Understand operational requirements when using this device

In response to reports from the field concerning the theft of threaded ports from fire hydrants, the department has issued a set of two threaded ports to each engine company to be used during emergency operations. These hydrant ports will allow field operations the opportunity to use of what would normally be an “out of service” hydrant. When a decision has been made to utilize the emergency port(s), the hydrant should be checked for service. Flush the hydrant to confirm its operability before performing the following steps to install the hydrant port(s).



Hydrant without ports Photo 1



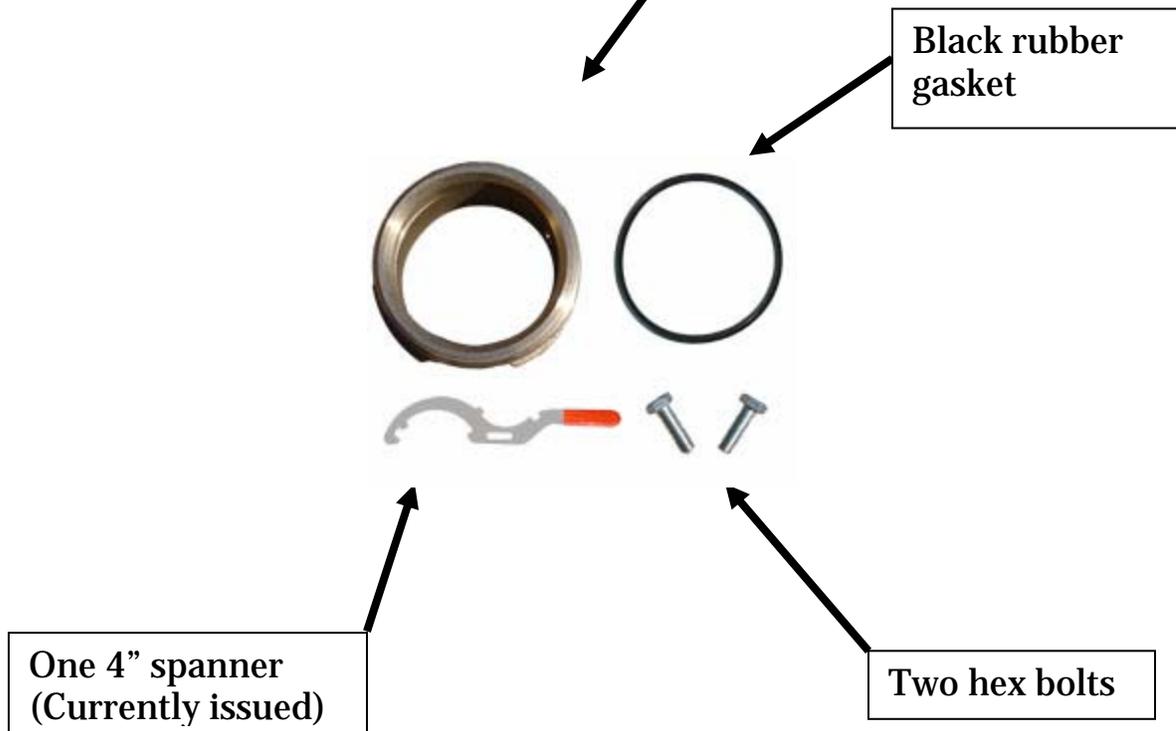
Threaded Hydrant Port Photo 2

## **The Threaded Hydrant Port Kit**

Each threaded hydrant port is the same size, dimension, and thread pattern we currently use.



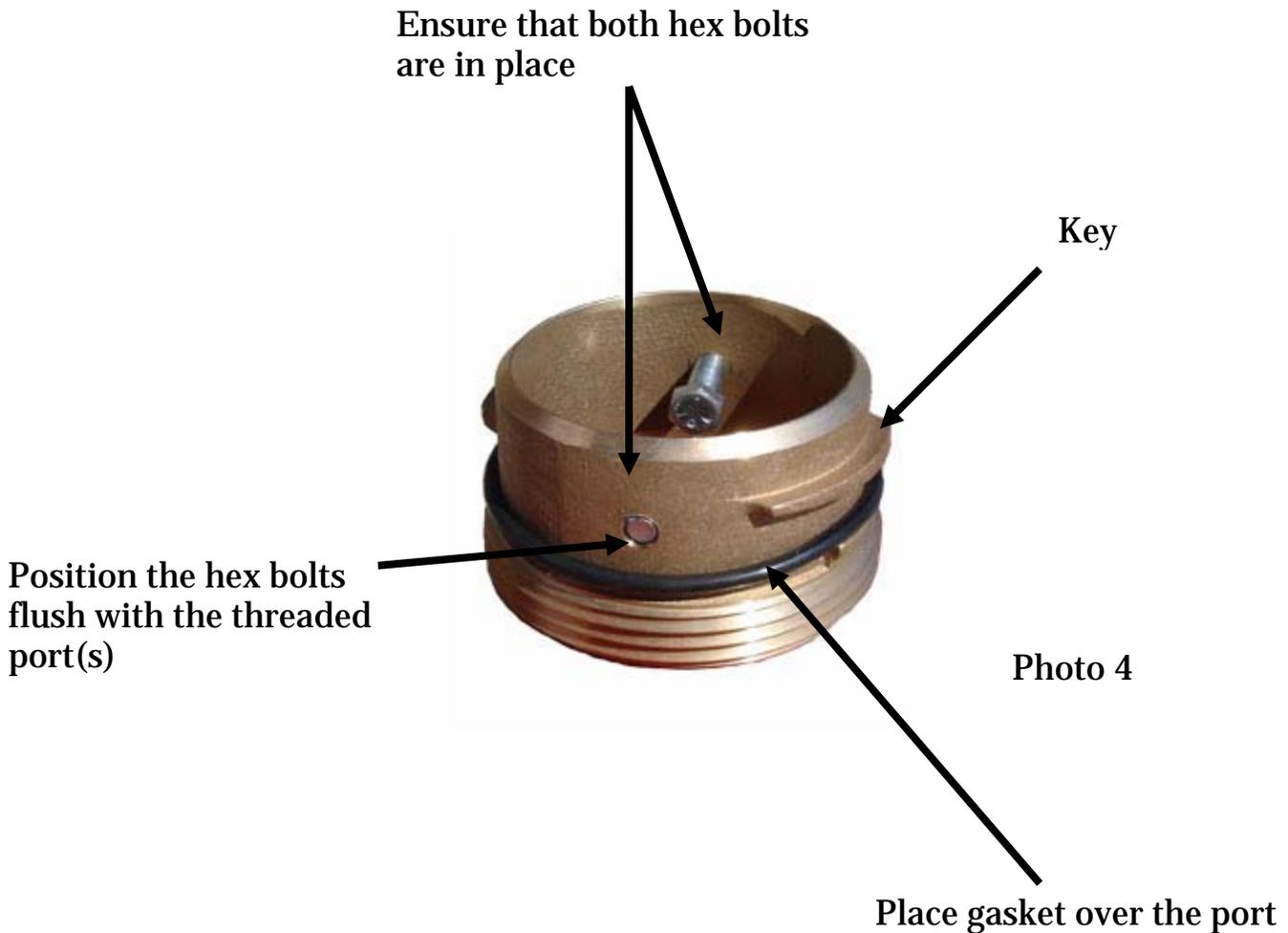
Photo 3



**NOTE:** Upon issue, exercise the bolt completely through the threaded port(s) by turning it clockwise, and then return it to the neutral position as shown in photo 3. The bolt end should be flush with the exterior of the threaded port(s).

## The Ready Position

Store each threaded hydrant port as show below. When a decision is made to utilize the emergency threaded port(s), the person assigned to the hydrant shall follow hydrant operations per G.O. 93-013.



## Installing the Hydrant Port

Do not install the threaded hydrant ports until you first test and flush the hydrant. If it is inoperable, move to the next servicable hydrant.

**Step 1:** Upon inspection of a hydrant missing a threaded port(s), look to see if the black gasket remains within the hydrant bonnet. If no gasket is present remove the black rubber gasket from your threaded port(s) and insert it into the hydrant



Photo 5

**Step 2:** Insert the threaded port into the hydrant with a gloved hand, (**Caution:** threads can be sharp). Align the port key with the key opening on the hydrant bonnet. If the black gasket is located within the bonnet (or you opt to utilize the one issued), you will have to use the “Storz” 4” spanner wrench to turn the port counter clockwise until it stops.



Photo 6



Photo 7

**Step 3:** Once the port(s) are installed, hand tighten the hex bolts by turning them clockwise. When properly installed, this will keep the threaded port in place and prevent it from turning clockwise when attaching CFD hose and fittings.



Photo 8

### **Gasket Installation**

Any hydrant will be operable without the installation of the black rubber gasket provided the hex bolts are in the secured position.



Photo 9

Active hydrant with gasket in place



Photo 10

Active hydrant without gasket in place

## Notes

The designated firefighter assigned to securing a hydrant should test and flush the hydrant. If the hydrant is inoperable continue on to a serviceable hydrant. (Operational Order 10-011, sec V)

The designated firefighter assigned to securing a hydrant should report via fire ground if any hydrant is inoperable.

Engineers should report inoperable hydrants on the radio while leading out or thereafter.

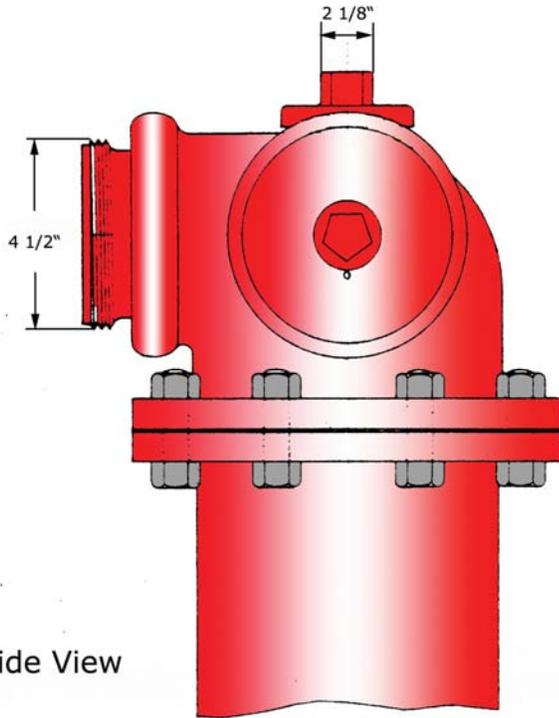
The company officer shall report all hydrant defects to the fire alarm office and the battalion chief in whose district the hydrant is located upon returning to company quarters.

Battalion Chiefs should treat missing ports as a frozen hydrant per cold weather operations and request additional resources if needed. (Cold weather and Sub-zero operations 10-011)

The City of Chicago Water Department is currently working on a more permanent solution for future operations. We thank them for their assistance with a quick solution that allows us the ability to operate vandalized hydrants.

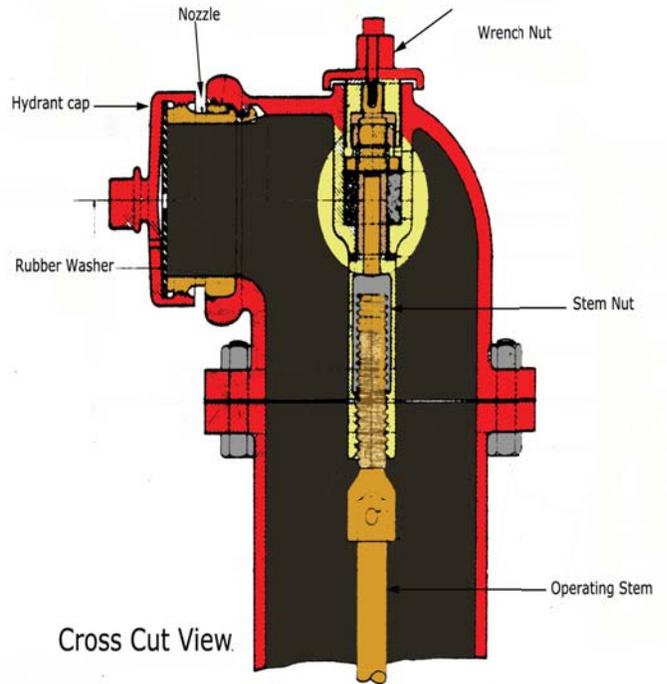
# HYDRANT VIEWS

## SIDE VIEW



Side View

## CROSS CUT VIEW



Cross Cut View.

## TOP VIEW WITH GATE VALVE

