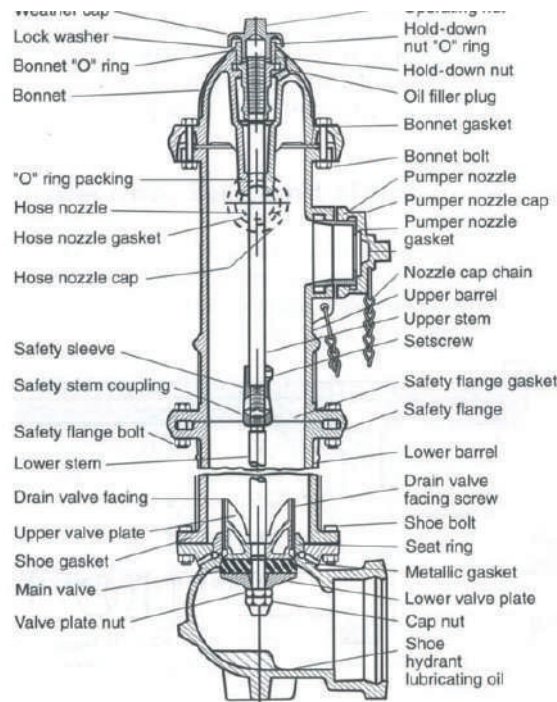




**Fire Protection & Life Safety
System - Fire Hydrants
OPERATION & MAINTENANCE MANUAL**

Operation & Maintenance Manual

Fire Protection & Life Safety System - Fire Hydrants

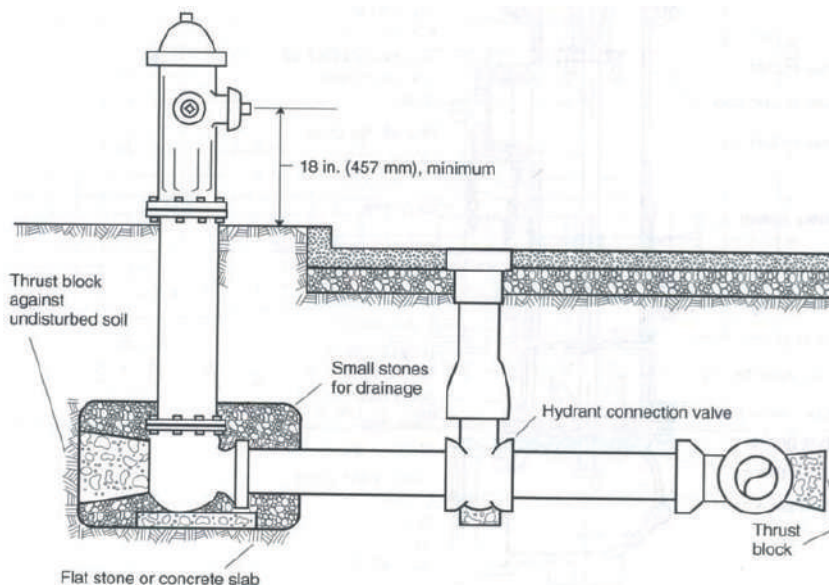


Dry Barrel Fire Hydrant

General

Fire Hydrants are devices connected to the water mains and are used by fire departments or fire brigades to obtain a continuous water supply. The most common type is the dry barrel hydrant, in which the control line is below the frost line. Dry barrel hydrants are also known as "Frost Proof" hydrants.

Although connected to the water mains, a dry barrel hydrant normally does not have water in the barrel. To activate the hydrant, an operating nut at the top of the hydrant is rotated to open a large valve at the base. The nut and valve are attached by a valve stem. Dry barrel fire hydrants usually rest on a pit 2 feet (60cm) in diameter and at least 2 feet (60cm) deep below the base of the hydrant. The depth of the pit will vary depending on the frost line in the area. The pit is filled with gravel or stone to facilitate draining of the barrel hydrant and thus avoid freezing. A small drain near the base of the barrel opens when the fire hydrant is shut. When the fire hydrant valve is opened several turns this drain shuts. It is important to fully open the dry barrel hydrant to assure the drain valve is closed and water is not forced out of the drain holes under pressure. If this occurs the soil at the base of the hydrant may wash away, causing the hydrant to settle and possibly breaking the pipe.



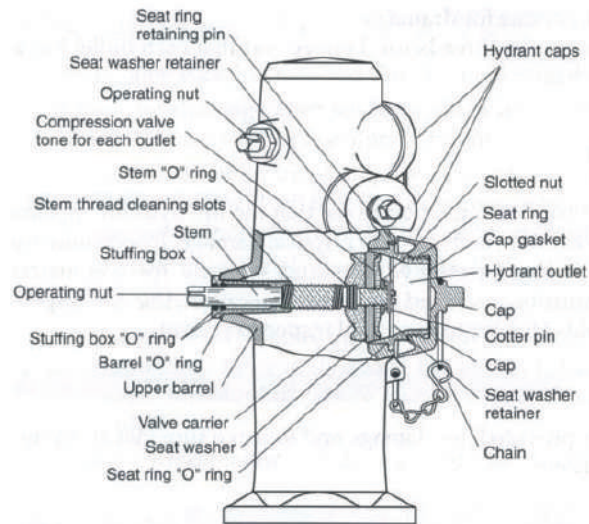
Typical Hydrant Connection

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Dry barrel hydrants located in areas where they might be struck by motorized vehicles often have safety flanges in the valve stem and barrel. A vehicle hitting a hydrant protected with a safety stem can break the stem and barrel, but the striking force does not affect the hydrant valve, which is below the ground. Without safety flanges the hydrants that are struck by a vehicle often break the underground piping to which they are attached. Another type of hydrant is the wet barrel hydrant, sometimes used where there is no danger of freezing weather. The wet barrel hydrant is normally filled with water and usually has a compression valve at each outlet



Wet Barrel Fire Hydrant

The most common hydrants have one 4 ½ inch outlet and two 2 ½ inch outlets. Hydrants with other size outlets are available

Acceptance Test

1. Fully open and close each hydrant under system water pressure.
2. A flow test should be conducted to document the original flow conditions.
3. Check dry barrel hydrants for drainage.
4. Inspect the hydrant outlet threads for damage and that each outlet has a cap with retainer chain.

Inspection

An inspection is a quick visual examination to see that the fire hydrant appears to be in a good operating condition, and is free of physical damage. Inspections are required semiannually for dry barrel hydrants and annually for wet barrel hydrants. Any hydrant must be inspected after each operation. Use the inspection forms available at the end of the chapter to record all inspection results

Monthly

- Check hose houses, if provided for damage and to make sure that all equipment is in good condition.

Semi Annually

The following inspections are required for dry barrel fire hydrants:

- Check for tightness of hydrant outlets.
- Check for leaks.
- Check for cracks in the hydrant valve.
- Check operating nut for wear or rounded corners.
- Check outlet threads for damage

Annually

All hydrants:

- Check to see that all hydrants are accessible.

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Wet barrel fire hydrants:

- Check for tightness of hydrant outlets.
- Check for leaks in top of hydrants when hydrant valve is opened.
- Check for leaks in gaskets under caps when hydrant valves are opened.
- Check for cracks in hydrant valve.
- Inspect operating nut for wear or rounded corners.
- Inspect outlet threads for damage.

Periodic Test

Tests are required at various frequencies noted below. Use the inspection forms at the end of this manual to record all inspection results. Maintenance should be performed promptly on equipment that fail to perform as required when tested.

Flow tests need to be conducted on all fire hydrants annually, so they can be checked for ease of operation and proper operation, and to confirm the available water supply.

Note: Precautions are needed since the flow will result in a large volume of water under pressure from a fire hydrant. Contact the appropriate water authorities prior to conducting the tests.

- Fully pen each hydrant and flow for not less than 1 minute.
- Check for drainage after shutting down the dry barrel hydrants. The hydrant should drain completely within 60 minutes.
 - Check drainage by placing the palm of your hand over the 2 ½" (64mm) outlet with all other hydrant caps in place. Suction should be felt as water drains from the bottom of the hydrant.
 - Repair immediately the hydrants that do not drain properly.
 - Identify hydrants that require pumping out after operation.

Note: some hydrants may not drain due to the soil conditions or where the ground water level is above the hydrant drain. Hydrants installed in such conditions may have had the drain holes plugged at the time of installation.
- Check hydrant outlets for damage and that all caps are in place.

Maintenance

Maintenance is the work necessary to keep the equipment operable and to make repairs. Repairs to fire protection systems must be made immediately to assure that the systems will operate properly when needed. Perform maintenance promptly on any components that fail to operate properly during testing. Use the test and maintenance forms at the end of this manual to record all maintenance.

Perform the following steps as a part of annual maintenance:

- Lubricate the operating nut, packing and thrust collar to make sure that the hydrants can be readily opened.
- Maintain hose houses as required.

Record Keeping

Records should be kept of all the inspections, tests and maintenance. The forms included at the end of this manual have spaces for recording the information. Use the forms to record all visual inspection and to record all tests and maintenance.



Monthly Inspection Fire Hydrants

This form covers a 1- year period.

Year: _____ **System:** _____
Location: _____

Y = Satisfactory N = Unsatisfactory (explain below)

Date													
Inspector													
Check hose houses to make sure they are not damaged and equipment is in good condition.													
House #													
House #													
House #													
House #													
House #													
House #													
House #													

Notes: _____

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Dry Barrel Hydrants Semi-Annual Inspection. Wet Barrel Hydrants Annual Inspection

Fire Hydrants

This form covers a 1-year period.

Year: _____ **System:** _____

Location: _____

Y = Satisfactory

N = Unsatisfactory (explain below)

N / A = Not applicable

Dry Barrel Hydrants

Date		
Inspector		
Hydrant outlets are slightly more than hand-tight.		
There are no leaks in the hydrant.		
There are no cracks in the hydrant barrel.		
Operating nut is not worn, and does not have rounded corners.		
Nozzle threads are not damaged.		

Wet Barrel Hydrants

Date		
Inspector		
Hydrants are accessible		
Hydrant outlets are slightly more than hand-tight.		
There are no leaks in the top of the hydrant when hydrant valve is opened.		
There are no leaks in the gasket under the caps when hydrant valve is opened.		
There are no cracks in the hydrant barrel.		
Operating nut is not worn, and does not have rounded corners.		
Nozzle threads are not damaged.		
Check hose houses, if provided, to assure all equipment is in good condition.		

Notes: _____

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Annual Tests and Maintenance

Fire Hydrants

Date: _____	Inspector: _____	System: _____
Location: _____		

Y = Satisfactory

N = Unsatisfactory (explain below)

Lubricate operating nut.

Lubricate packing.

Lubricate thrust collar.

Operate the fire hydrant with water discharging for not less than one minute.

Notes: _____
