



Fire Protection Training

Procedures Handbook 4300

WATER SUPPLY SYSTEMS

TOPIC: How To Use A Pitot Tube To Determine Hydrant Flow

TIME FRAME: 30 Minutes

LEVEL OF INSTRUCTION:

BEHAVIORAL OBJECTIVE:

Condition: Fire hydrant with 2 1/2" outlet, hydrant wrench, pitot tube with gauge, and record sheet

Behavior: The student will determine flow pressure completing all operations in sequence.

Standard: With a minimum of 70% accuracy

MATERIALS NEEDED:

- Fire hydrant with 2 1/2" outlet
- Pitot tube with gauge
- Hydrant wrench
- Record sheet and pencil

REFERENCES:

- IFSTA, Essentials of Fire Fighting, 2nd Edition, Chapter 8
- IFSTA, Water Supplies For Fire Protection, 4th Edition, Chapter 4
- IFSTA, Fire Department Pumping Apparatus, 7th Edition, Chapter 8

PREPARATION:

It is important for every firefighter to know the ultimate capacity of the water system. Fire fighting defenses and operations cannot be planned without these facts. A hydrant flow test for an area is a means for establishing the quantity of water available for fire fighting.



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HOW TO USE A PITOT TUBE TO
DETERMINE HYDRANT FLOW

OPERATIONS

KEY POINTS

1. Open petcock

2. Close petcock

3. Remove hydrant cap

4. Open hydrant

5. Pick up pitot tube

6. Grasp pitot tube

7. Place left wrist

8. Edge pitot tube

9. Hold pitot tube

1a. On pitot tube

NOTE: This is to make certain the air chamber is drained.

2a. On pitot tube

3a. From a 2 1/2" outlet

b. Counter- clockwise

4a. With hydrant wrench

b. Counter- clockwise

c. Slowly

d. Fully

5a. Gauge face up

b. Sharp edge of blade toward you.

6a. With right hand at air chamber

b. With left hand fingers split around the gauge outlet

7a. On the edge of the hydrant discharge outlet

8a. Into water stream

b. Counter- clockwise

c. With small opening or point centered in the stream

d. Left wrist still on discharge outlet

9a. Away from the outlet

b. Approx. 1/2 the diameter of the opening (2 1/2" = 1 1/4")

c. 90 degree angle to stream

NOTE: The pitot tube blade should now be parallel to the outlet opening with the air chamber kept above the horizontal plane passing through the center of the stream. This will increase the efficiency of the air chamber and help limit needle fluctuations.



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10. Read and record

10a. The velocity pressure

b. From gauge

NOTE: If the needle is fluctuating, read the value located in the center between the high and low extremes.

11. Open petcock

11a. After test is completed

b. Drain all the water

c. From the assembly

d. Before storing

12. Close hydrant

12a. With hydrant wrench

b. Clockwise

c. Slowly

13. Replace hydrant cap

13a. Clockwise

b. Hand tight

14. Record

14a. Hydrant pressure



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HOW TO USE A PITOT TUBE TO DETERMINE HYDRANT FLOW

APPLICATION:

The student will practice until proficient.

EVALUATION:

A performance examination.

ASSIGNMENT:

To be determined by instructor(s).

Performance Examination

HOW TO USE A PITOT TUBE TO
DETERMINE HYDRANT FLOW

	<u>POINTS</u>
1. Open petcock - pitot tube to drain air chamber	<u>10</u>
2. Close petcock - pitot tube	<u>10</u>
3. Remove hydrant cap from 2 1/2" outlet	<u>5</u>
4. Open hydrant fully	<u>5</u>
5. Pick up pitot tube	<u>5</u>
6. Grasp pitot tube at air chamber with right hand	<u>5</u>
7. Grasp pitot tube with left hand and split fingers around the gauge outlet	<u>10</u>
8. Place left wrist on edge of hydrant outlet	<u>5</u>
9. Edge pitot tube into water stream with small opening centered in the stream	<u>10</u>
10. Hold pitot tube with blade 1 1/4" from outlet opening and parallel to the outlet opening	<u>10</u>
11. Read the velocity pressure from the gauge. If the needle fluctuates, pressure is midway between high and low reading.	<u>5</u>
12. Open petcock after test is completed and drain assembly	<u>5</u>
13. Close hydrant with hydrant wrench	<u>5</u>
14. Replace hydrant cap	<u>5</u>
15. Record hydrant pressure	<u>5</u>
	POINTS POSSIBLE: <u>100</u>
	POINTS DEDUCTED:
	FINAL SCORE:

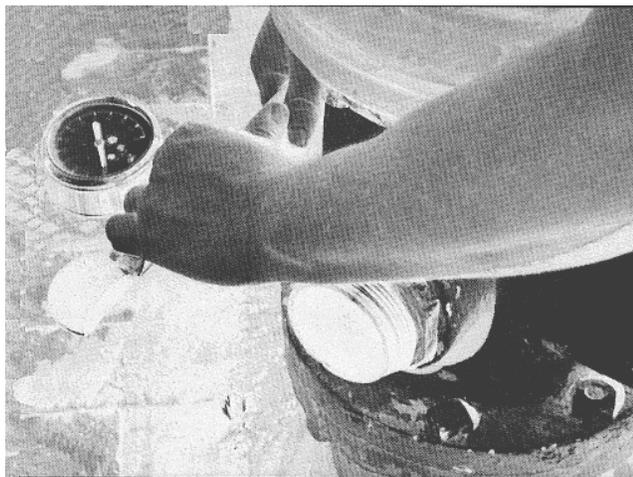
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Page 1

EVALUATOR'S SIGNATURE:

DATE:

COMMENTS:



The left hand fingers are split around the gauge outlet and the left side of the wrist is placed on the top of the hydrant outlet. Steady the pitot by holding the left wrist atop the discharge outlet. When water is flowing fully slice the blade of the pitot gage into the stream.