

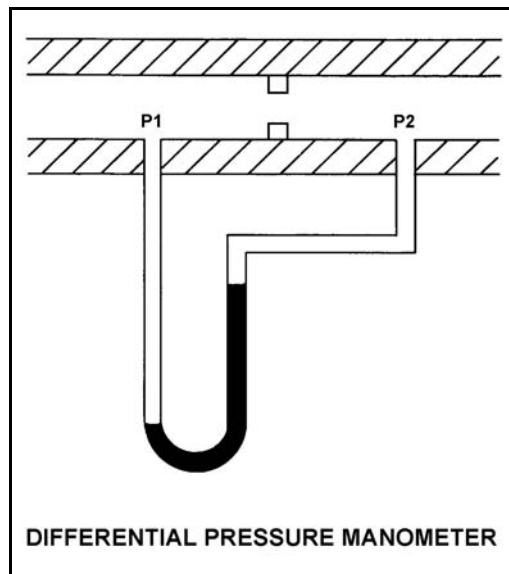
TOPIC: 293001  
KNOWLEDGE: K1.03 [2.5/2.7]  
QID: B73 (P2673)

Refer to the drawing of a differential pressure manometer (see figure below).

A differential pressure manometer filled with water is installed across an orifice in a ventilation duct to determine the direction of airflow. With the ventilation conditions as shown, the pressure at P1 is \_\_\_\_\_ than P2, and airflow is \_\_\_\_\_.

- A. greater; left to right
- B. greater; right to left
- C. less; left to right
- D. less; right to left

ANSWER: A.



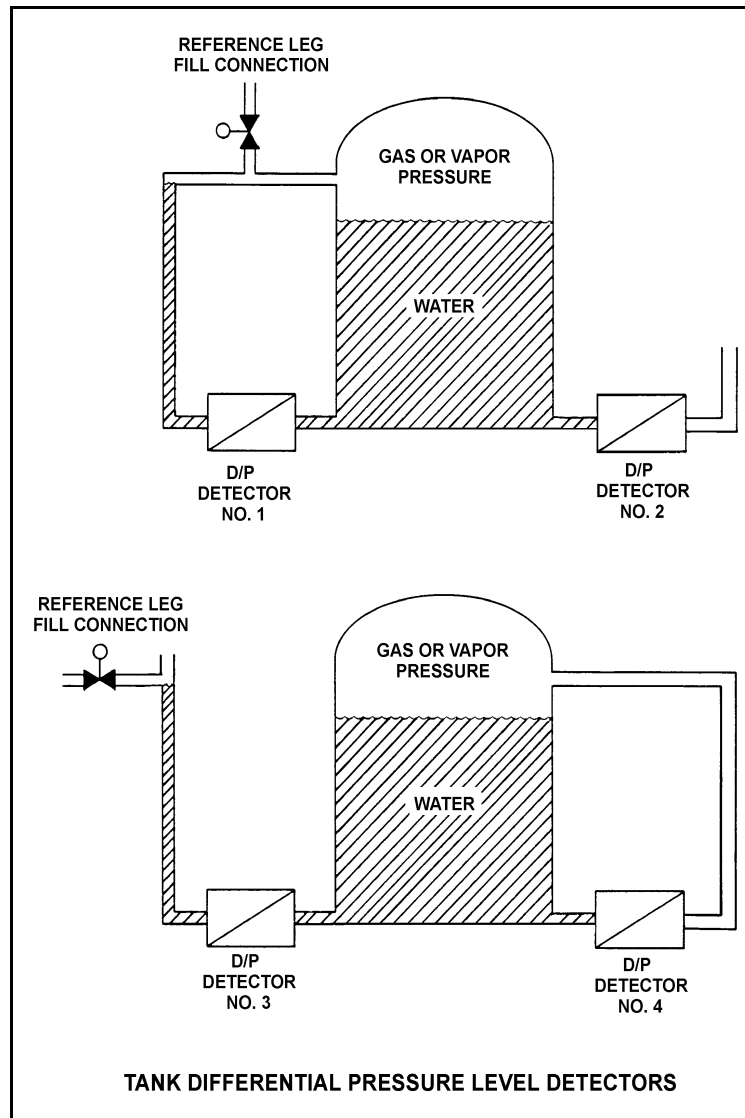
TOPIC: 293001  
KNOWLEDGE: K1.03 [2.5/2.7]  
QID: B373 (P374)

Refer to the drawing of four tank differential pressure (D/P) level detectors (see figure below). The tanks are identical and are being maintained at 17 psia and the same constant water level. They are surrounded by atmospheric pressure.

Which one of the level detectors is sensing the greatest D/P?

- A. No. 4
- B. No. 3
- C. No. 2
- D. No. 1

ANSWER: C.



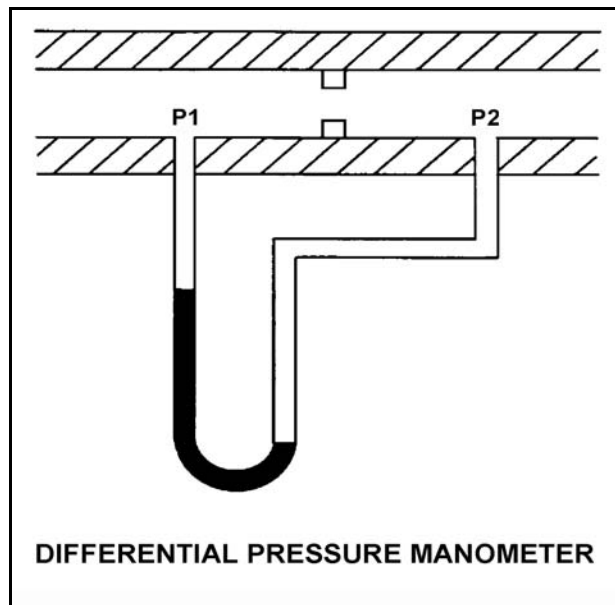
TOPIC: 293001  
KNOWLEDGE: K1.03 [2.5/2.7]  
QID: B673 (P2973)

Refer to the drawing of a differential pressure manometer (see figure below).

A differential pressure manometer filled with water is installed across an orifice in a ventilation duct to determine the direction of airflow. P1 and P2 are pressures sensed in the ventilation duct. With the conditions shown, P1 is \_\_\_\_\_ than P2 and airflow is to the \_\_\_\_\_.

- A. greater; right
- B. less; right
- C. greater; left
- D. less; left

ANSWER: D.



TOPIC: 293001  
KNOWLEDGE: K1.03 [2.5/2.7]  
QID: B1073 (P2873)

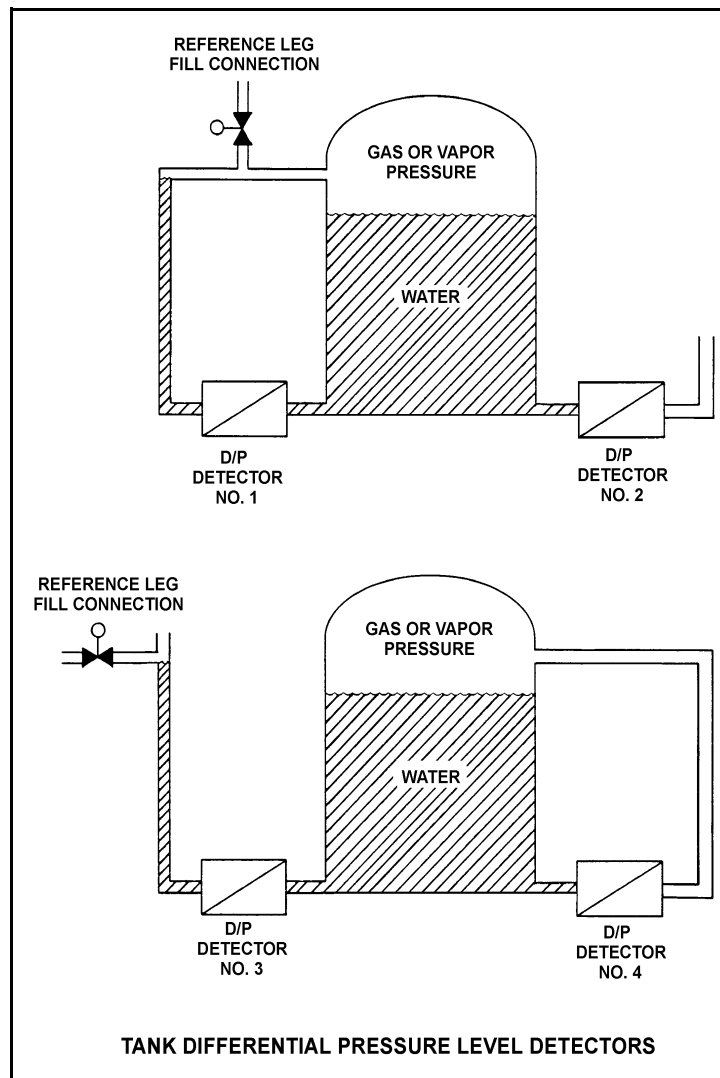
Refer to the drawing of four differential pressure level detectors (see figure below).

The tanks are identical and are being maintained at 30 psia with a water level of 20 feet. They are surrounded by standard atmospheric pressure. The water temperatures in the tanks and reference legs are the same.

If each detector experiences a ruptured diaphragm, which detector(s) will cause indicated tank level to decrease? (Assume actual tank water level remains constant.)

- A. No. 1 only
- B. No. 2 only
- C. No. 1, 2, and 3
- D. No. 2, 3, and 4

ANSWER: D.



TOPIC: 293001  
KNOWLEDGE: K1.03 [2.5/2.7]  
QID: B1174 (P1673)

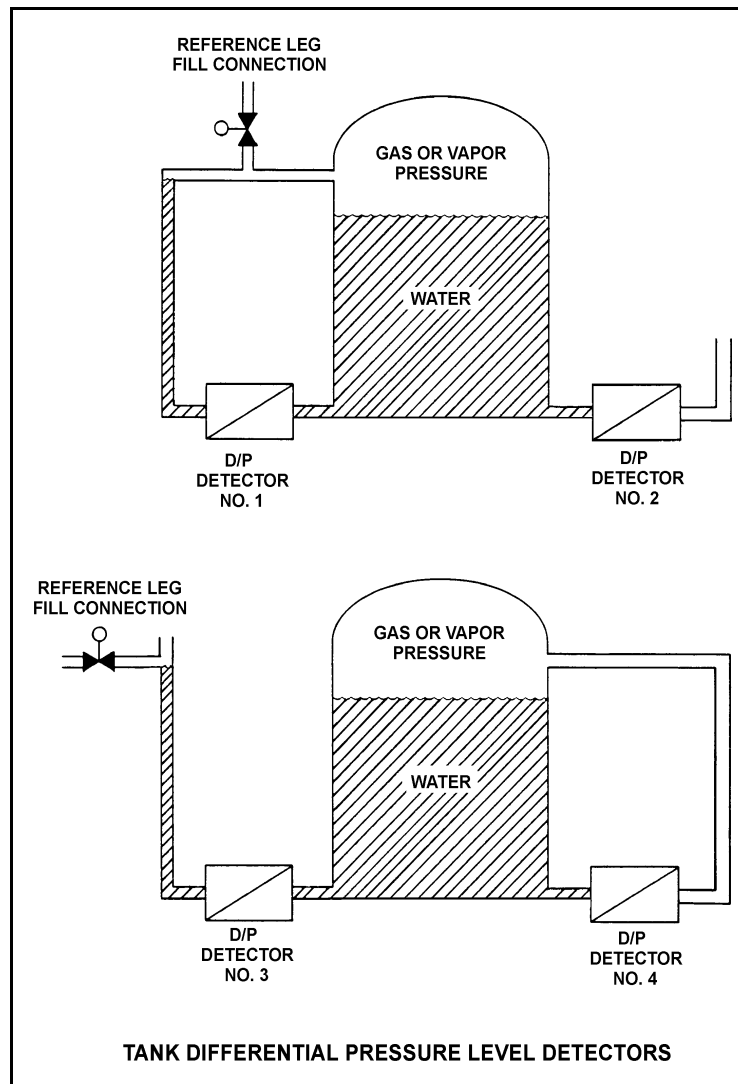
Refer to the drawing of four identical tank differential pressure (D/P) level detectors (see figure below).

The tanks are identical and are currently at 2 psig overpressure, the same constant water level, and a temperature of 60°F. They are surrounded by atmospheric pressure. All level detectors have been calibrated and are producing the same level indication.

If a leak in the top of each tank causes a complete loss of overpressure, which level detector(s) will produce the lowest level indication?

- A. No. 1 only
- B. No. 2 only
- C. No. 1 and 4
- D. No. 2 and 3

ANSWER: D.



TOPIC: 293001  
KNOWLEDGE: K1.03 [2.5/2.7]  
QID: B1873 (P573)

A water storage tank is enclosed to prevent vapors from escaping to the environment. The tank is also pressurized with nitrogen to prevent air inleakage. A differential pressure detector with a dry reference leg is used to measure the tank level.

To achieve the greatest accuracy of measurement, the low pressure side of the detector should sense which one of the following?

- A. The pressure at the bottom of the tank
- B. The pressure of the atmosphere surrounding the tank
- C. The pressure of a column of water external to the tank
- D. The pressure of the gas space at the top of the tank

ANSWER: D.

TOPIC: 293001  
KNOWLEDGE: K1.03 [2.5/2.7]  
QID: B2373 (P2373)

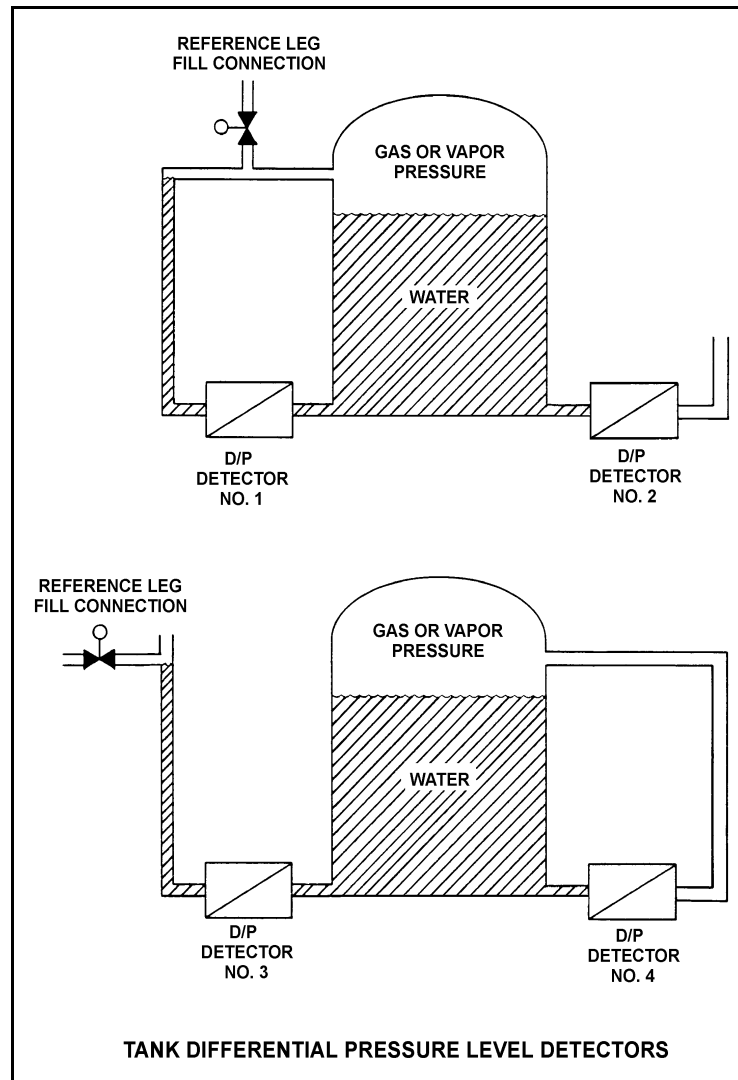
Refer to the drawing of four identical tank differential pressure level detectors (see figure below).

The tanks are identical and they are presently at 2 psig overpressure, 60°F, and the same constant water level. They are located within a sealed containment structure that is being maintained at atmospheric pressure. All level detectors have been calibrated and are producing the same level indication.

If a ventilation malfunction causes containment structure pressure to decrease to 12 psia, which level detectors will produce the lowest level indication?

- A. 1 and 3
- B. 2 and 4
- C. 1 and 4
- D. 2 and 3

ANSWER: C



TOPIC: 293001  
 KNOWLEDGE: K1.03 [2.5/2.7]  
 QID: B2573 (P2574)

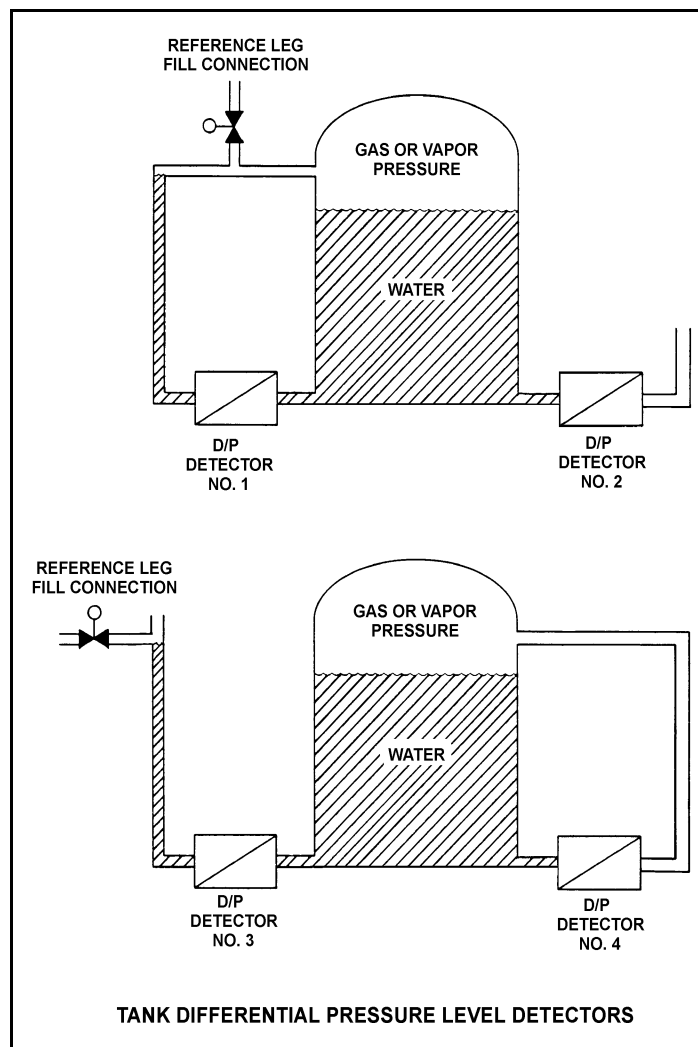
Refer to the drawing of four identical tank differential pressure level detectors (see figure below).

The tanks are identical and are presently at 2 psig overpressure, 60°F, and the same constant water level. They are located within a sealed containment structure that is being maintained at atmospheric pressure. All level detectors have been calibrated and are producing the same level indication. A ventilation malfunction causes the containment structure pressure to decrease to 13 psia.

Which level detectors will produce the highest indication?

- A. 1 and 2
- B. 3 and 4
- C. 1 and 4
- D. 2 and 3

ANSWER: D.





TOPIC: 293001  
KNOWLEDGE: K1.03 [2.5/2.7]  
QID: B2773 (P2473)

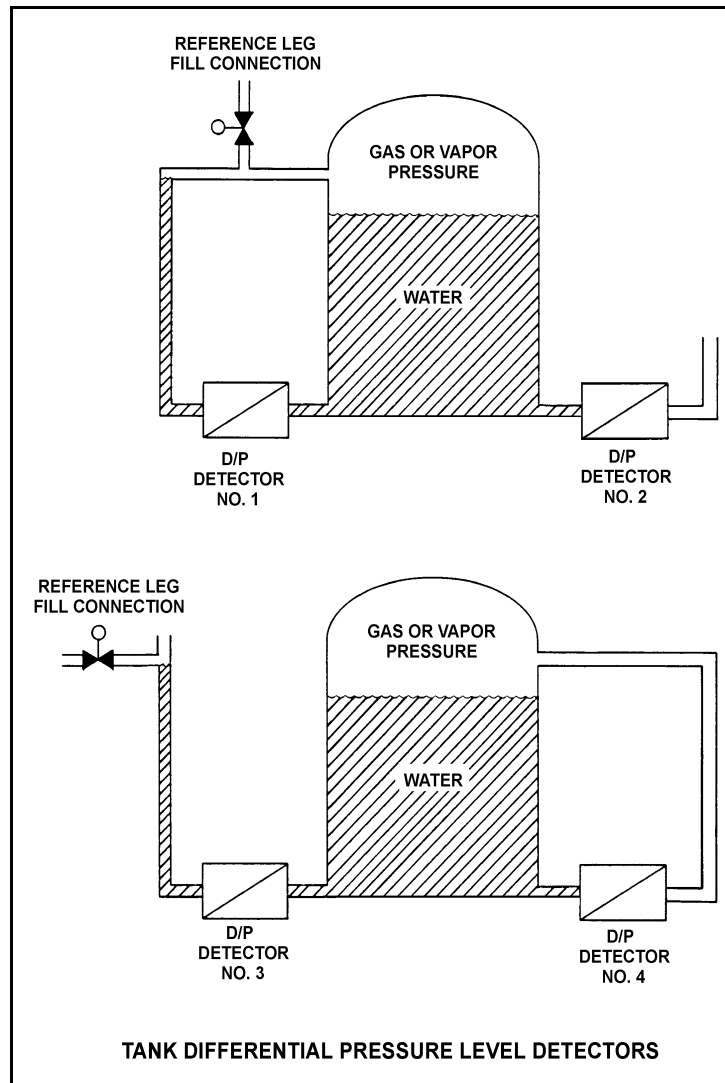
Refer to the drawing of four tank differential pressure level detectors (see figure below).

The tanks are identical and are being maintained at 30 psia and a water level of 20 feet. They are surrounded by standard atmospheric pressure. The water in the tank and reference leg is at 70°F.

If each detector experiences a ruptured diaphragm, which detector(s) will cause indicated tank level to increase? (Assume actual tank water level remains constant.)

- A. No. 1 only
- B. No. 2 only
- C. No. 1 and 3
- D. No. 2 and 4

ANSWER: A.



TOPIC: 293001  
KNOWLEDGE: K1.03 [2.5/2.7]  
QID: B3173 (P3173)

A water storage tank is vented to atmosphere. The tank is located at sea level and contains 100,000 gallons of 80°F water. A pressure gauge at the bottom of the tank reads 5.6 psig. What is the approximate water level in the tank?

- A. 13 feet
- B. 17 feet
- C. 21 feet
- D. 25 feet

ANSWER: A.

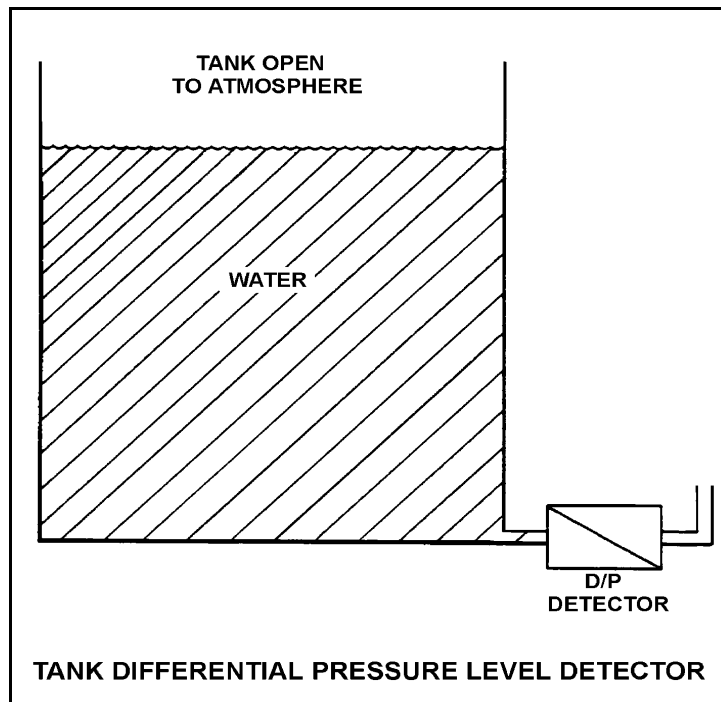
TOPIC: 293001  
KNOWLEDGE: K1.03 [2.5/2.7]  
QID: B3673 (P3673)

Refer to the drawing of a tank with a differential pressure (D/P) level detector (see figure below).

If the tank contains 30 feet of water at 60°F, what is the approximate D/P sensed by the detector?

- A. 2 psid
- B. 13 psid
- C. 20 psid
- D. 28 psid

ANSWER: B.



TOPIC: 293001  
KNOWLEDGE: K1.03 [2.5/2.7]  
QID: B3873 (P3873)

A water storage tank is vented to atmosphere. The tank is located at sea level and contains 100,000 gallons of water at 80°F. A pressure gauge at the bottom of the tank reads 7.3 psig. What is the approximate water level in the tank?

- A. 13 feet
- B. 17 feet
- C. 21 feet
- D. 25 feet

ANSWER: B.

TOPIC: 293001  
KNOWLEDGE: K1.03 [2.5/2.7]  
QID: B4537 (P4537)

A water storage tank is vented to atmosphere. The tank is located at sea level and contains 100,000 gallons of water at 80°F. A pressure gauge at the bottom of the tank reads 9.0 psig. What is the approximate water level in the tank?

- A. 13 feet
- B. 17 feet
- C. 21 feet
- D. 25 feet

ANSWER: C.

TOPIC: 293001  
 KNOWLEDGE: K1.03 [2.5/2.7]  
 QID: B4837 (P4837)

Refer to the drawing of four identical tank differential pressure (D/P) level detectors with different piping configurations (see figure below).

The tanks are identical and are presently at 2 psig overpressure, the same constant water level, and a temperature of 60°F. They are surrounded by atmospheric pressure. All level detectors have been calibrated and are producing the same level indication. A leak in the top of each tank causes a complete loss of overpressure in both tanks.

Which level detector(s) will produce the highest level indication?

- A. No. 1 only
- B. No. 2 only
- C. No. 1 and 4
- D. No. 2 and 3

ANSWER: C.

