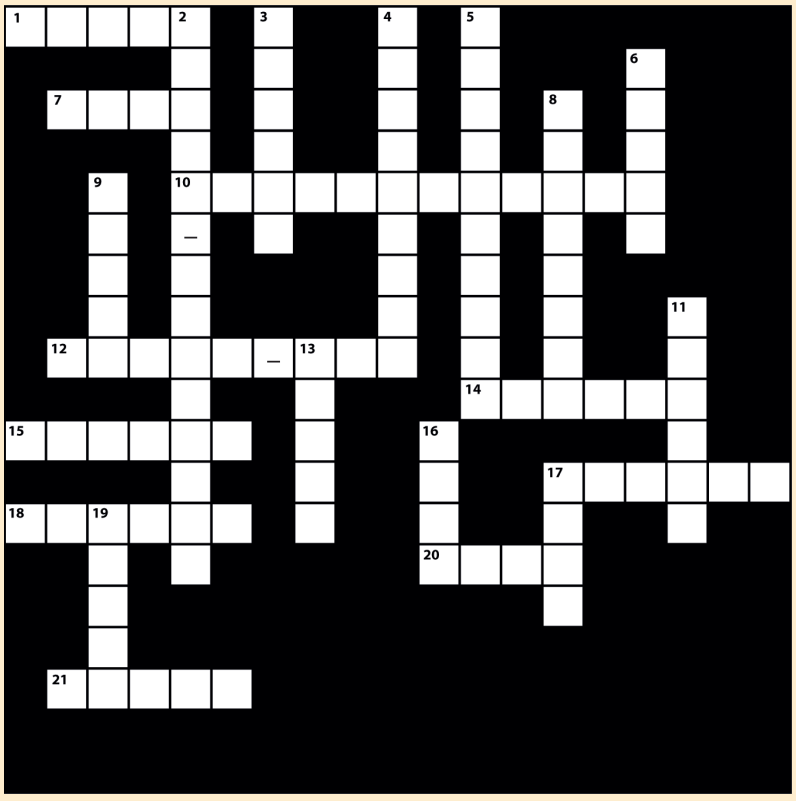
Take the HVAC CHALLENGE™

BY STEVEN G. LIESCHEIDT, P.E., CSI-CCS, CCPR

Valves



ACROSS

1. The amount of pressure drop below the set pressure that causes the valve to react to a load change.
7. When this type of valve is used, a reduced port should be used or the valve should be sized smaller than the piping in order to achieve adequate control (pressure drop).
10. This type of radiator valve is self-operated and does not require external energy.
12. This type of valve either mixes or diverts steams of fluid.
14. Water hammer is a series of pressure pulsations of varying magnitude above and below this pressure of water in the pipe.
15. This type of valve control characteristic in a valve produces equal flow increments per equal stem travel throughout the travel range of the stem.
17. These valves open rapidly (pop-action) and are used for gases and vapors.
18. This type of butterfly valve has tapped holes in the wafer body, which may serve as a future point of connection.
20. This type of valve controls flow by means of a wedge disk fitting against machined seating faces.
21. These parts of a valve can be machined integrally of the body material, press-fitted or threaded.

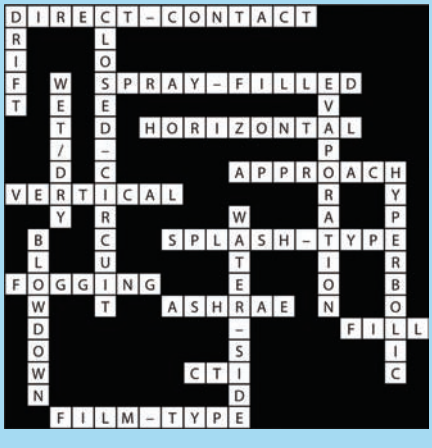
DOWN

2. This type of valve uses a much smaller intermediate pilot valve that controls the flow of steam to a large diaphragm that ten acts on the valve stem.
3. Water hammer is often accompanied by a sound resembling a pipe being hit by this tool.
4. The ration of the maximum and minimum pressure drop across a valve in actual conditions.
5. This occurs when the pressure of a flowing fluid drops below the vapor pressure of the fluid.
6. This type of valve prevents reversal of flow, controlling the direction of flow rather than stopping or starting flow.
8. This component of a valve converts the controller's output into the rotary or linear action required by the valve stem, which changes the flow through the valve.
9. This type of valve is available in a Saunders-type body, which is used for slurry control in many industries.
11. These valves open or close gradually in proportion to excessive pressure and are used for liquids.
13. This type of butterfly valve is clamped between two companion flanges whose bolts carry the pipeline tensile stress.
16. This type of valve is a manual fluid flow control device that operates from fully open to completely shot off within a 90° turn.
17. This packing around this part of the valve undergoes constant wear due to the movement.
19. In this type of valve the flow is controlled by a circular disk forced against or withdrawn from an annular ring, or seat that surrounds an opening through which flow occurs.

To brush up on the facts behind this month's clues, refer to Chapter 42 ("Valves") in the *2004 ASHRAE Handbook – Systems and Equipment.*

Lieschedit is a sales engineer with Langendorf Supply Co., Inc. in St. Louis, MO. E-mail him at **stevel@lsco-inc.com.**

Can't wait until next issue?

Now, check out the answers for this month's "HVAC Challenge" on page 104 or check out answers from past puzzles on ***www.esmagazine.com.***

Solution to April's HVAC Challenge™