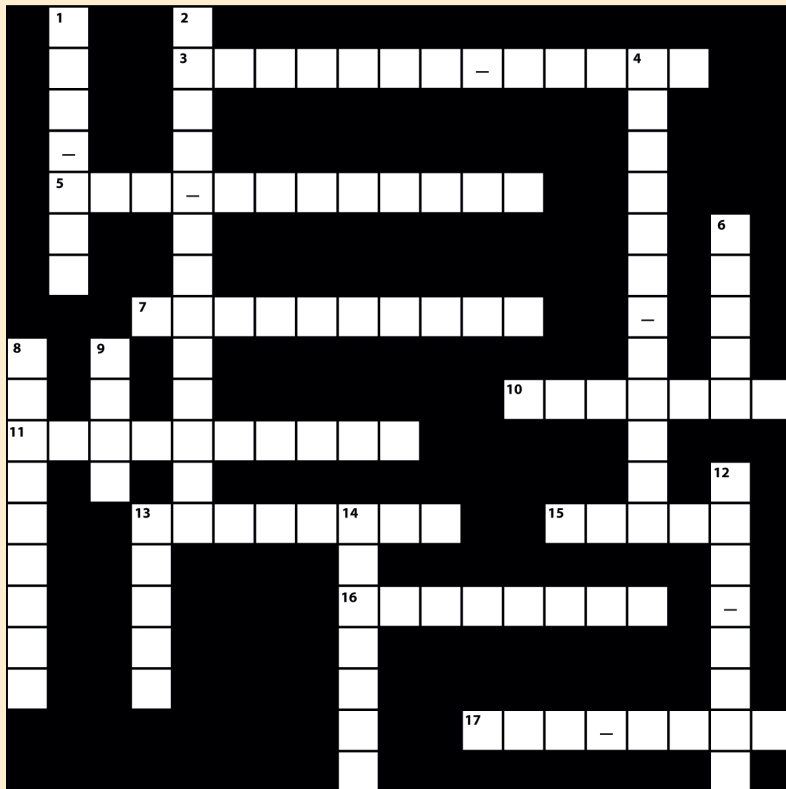


Take the HVAC CHALLENGE™

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

► Boilers



ACROSS

- In this type of boiler, air is drawn into the combustion chamber to maintain negative pressure.
- This type of boiler is constructed for maximum working pressures of 15 psig steam and up to 160 psig hot water.
- This type of draft boiler uses a fan or blower or other machinery to create the required pressure difference across the boiler.
- This efficiency is gross energy output divided by energy input.
- This efficiency is the input minus stack loss divided by input, and generally ranges from 75% to 86% for most non-condensing boilers.
- This efficiency is the actual operating efficiency that the boiler will achieve during the heating season at various loads.
- This type of boiler is generally available in standard sizes from 35,000 to over 100,000 Btuh.
- The ratio of maximum to minimum fuel input.
- In this type of boiler design, the combustion chamber is surrounded by the fluid backed sections.

DOWN

- In this type of boiler design, the tops and sides of the combustion chamber are enclosed by fluid-backed sections.
- This type of boiler is designed to operate above 15 psig steam, or above 160 psig and/or 250°F for water boilers.
- In this type of boiler, air is forced into the combustion chamber to maintain a positive pressure in the combustion chamber and/or space between the tubing and the jacket.
- This type of boiler generally ranges in size from 50,000 Btuh to the largest boilers made, and the designs are constructed to either ASME SCI or SCIV requirements.
- This type of cast-iron boiler is generally designed according to ASME SCIV requirements and ranges in size from 35,000 to 13,975,000 Btuh gross output.
- This organization published Standard CSD-1-1998 "Controls and Safety Devices for Automatically Fired Boilers."
- In this type of boiler design, the combustion chamber is beneath the fluid-backed sections.

- This type of boiler is generally available in standard sizes up to and above 100,000 lb/hr.
- This type of draft boiler is designed to operate with a negative pressure in the combustion chamber and in the flue connection.

To brush up on the facts behind this month's clues, refer to Chapter 27 ("Boilers") in the 2004 ASHRAE Handbook - Systems and Equipment.

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