

# Heating System Performance Score Test Procedure (HSPS)



## Purpose

The purpose of this procedure is for an HVAC professional to score the performance of an installed forced-air heating system. The resulting score represents a percent of the amount of heating entering the conditioned space divided by the equipment rated heating output capacity under test conditions.

## Preparation

- Gather equipment nameplate data. Determine the equipment rated output Btu/hr capacity under test conditions.
- Record required system information on the *Heating System Performance Score Report*.
- Start system with the controls calling for maximum heating output and corresponding fan speed. Allow system to operate for 15 minutes before testing system temperatures.

## Measure and Calculate System Temperatures

- Insert temperature probes into three *supply registers* near the center of the system and into two *return grilles* near the center of the system. Allow probe temperature to stabilize.
- Measure and record *supply register* air temperatures to the nearest 1/10<sup>th</sup> of a degree F.
- Measure and record *return grille* air temperatures to the nearest 1/10<sup>th</sup> of a degree F.
- Record each temperature measurement and calculation on the *Heating System Performance Score Report*.
- Calculate average *supply register* air temperature of the system entering the conditioned space by adding supply register air temperatures together and dividing by the number of readings taken.  
**Example: 108.3 °F + 107.4 °F + 109.2 °F = 324.9 °F. 324.9 divided by 3 = 108.3 °F.**
- Calculate average *return grille* air temperature of the system entering the conditioned space by adding return grille air temperatures together and dividing by the number of readings taken.  
**Example: 73.1 °F + 71.7 °F = 144.8 divided by 2 = 72.4 °F**
- Calculate conditioned space temperature change by subtracting average return grille air temperature from average supply register air temperature. **Example: 108.3 °F – 72.4 °F = 35.9 °F.**

## Measure and Calculate Airflow Entering the Conditioned Space

1. Measure airflow entering the conditioned space from each *supply register* with a commercial balancing hood or airflow traverse in an appropriate test location.
2. Record each airflow measurement and calculation on the *Heating System Performance Score Report*.
3. Calculate total airflow exiting the conditioned space by adding supply air register airflows together.  
**Example: 334 cfm + 218 cfm + 342 cfm + 191 cfm + 280 cfm = 1365 cfm total supply register airflow.**

## Calculate the Heating System Performance Score

4. Record each calculation on the *Heating System Performance Score Report*.
5. Calculate system delivered heating Btus/hr by multiplying the conditioned space temperature change (Steps 1-7) times the total supply register airflow (Steps 8-10) times the heating Btus/hr multiplier of 1.08. **Example: 35.9 °F x 1365 cfm x 1.08 = 52,923 Btus/hr.**
6. Calculate the Heating System Performance Score by dividing System Delivered Btus/hr (Step 12) by equipment rated output Btus/hr (100,000 example, see Purpose above) **Example: 52,923 system delivered Btu/hr divided by 100,000 equipment rated output Btu/hr. = 53% Heating System Performance Score.**