# TECH TIP # 54

HARDI
HEATING, AIRCONDITIONING & REFRIGERATION DISTRIBUTORS INTERNATIONAL

One of a series of dealer contractor technical advisories prepared by HARDI wholesalers as a customer service.

## Finding Relative Humidity Using a Nomograph

*** The chart on the reverse side was developed by William Sisson, Pryor, Oklahoma and published in Heating/Piping/Air Conditioning Magazine, Two Illinois Center, Suite 1300, 233 North Michigan Ave, Chicago, IL 60601.***

**Relative humidity** is usually shown in increments of 10 percent on a psychrometric chart, and this requires considerable interpolation when determining the relative humidity from wet and dry bulb temperature readings. Also, the many other values found on a well constructed psychrometric chart result in a great many lines that lead to confusion when determining relative humidity. The nomograph on the reverse side provides a faster, less confusing method for finding relative humidity at standard barometric pressure of 29.92 in. Hg. (14.7 psia) from dry and wet bulb temperature readings. It is based on the Apjohn equation:

$$RH = 100\,[P_w - 0.01108\,(t_d - t_w)] / P_d \text{ where…}$$

RH = relative humidity, percent
$P_w$ = vapor pressure of water at wet bulb temperature, in. Hg.
$t_d$ = dry bulb temperature, F
$t_w$ = wet bulb temperature, F
$P_d$ = vapor pressure of water at dry bulb temperature, in. Hg.

**Example:**

If the dry bulb temperature of air is 84º F and the wet bulb temperature is 72º F, what is the relative humidity?

*Solution:* Extend the line from 72 on the $t_w$ scale through 84 on the $t_d$ scale to the RH scale. There, read the corresponding relative humidity as 56 percent.

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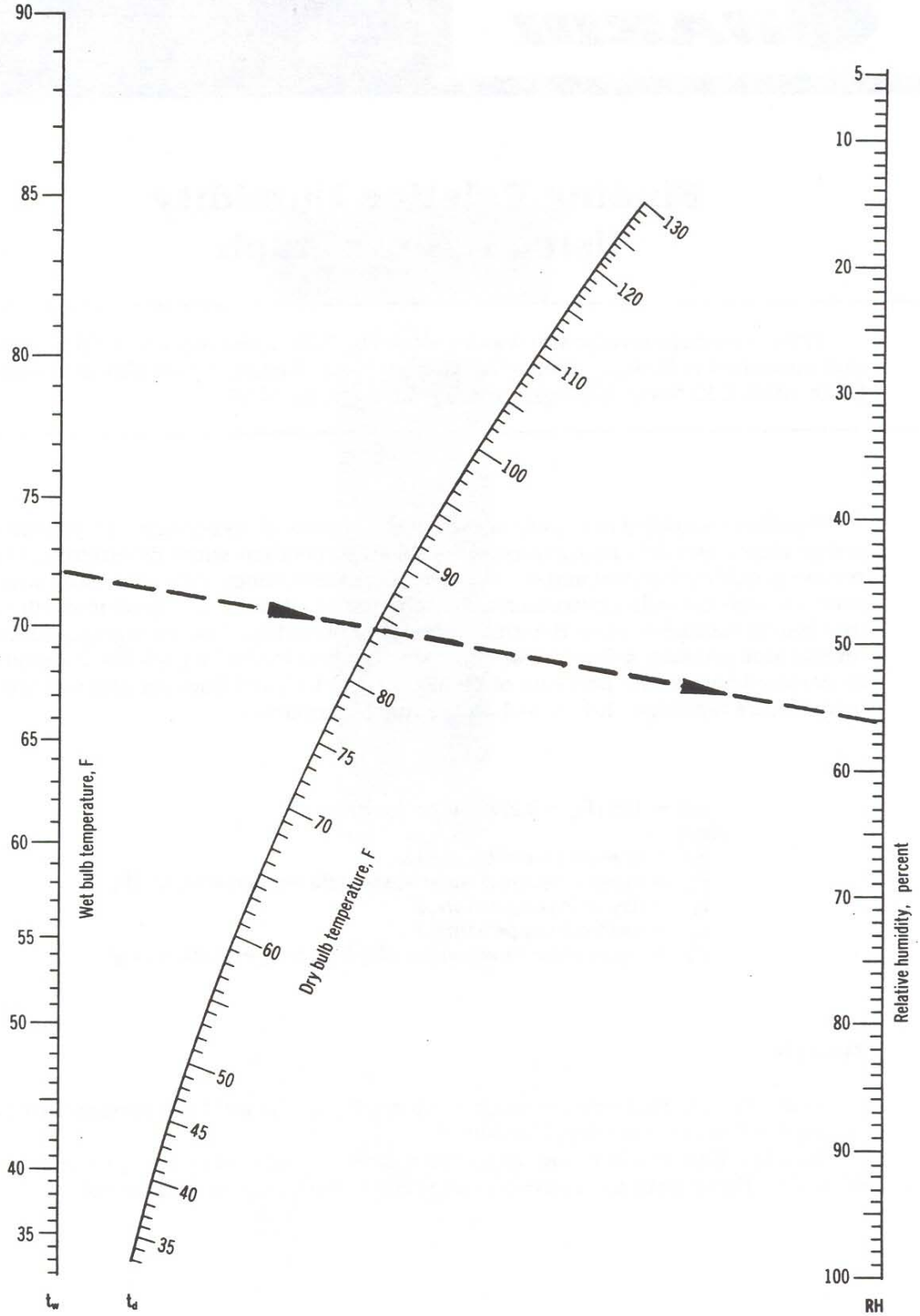


Nomograph determines relative humidity faster than a psychrometric chart when wet and dry bulb temperatures are knowr
Broken line indicates solution to example in text.