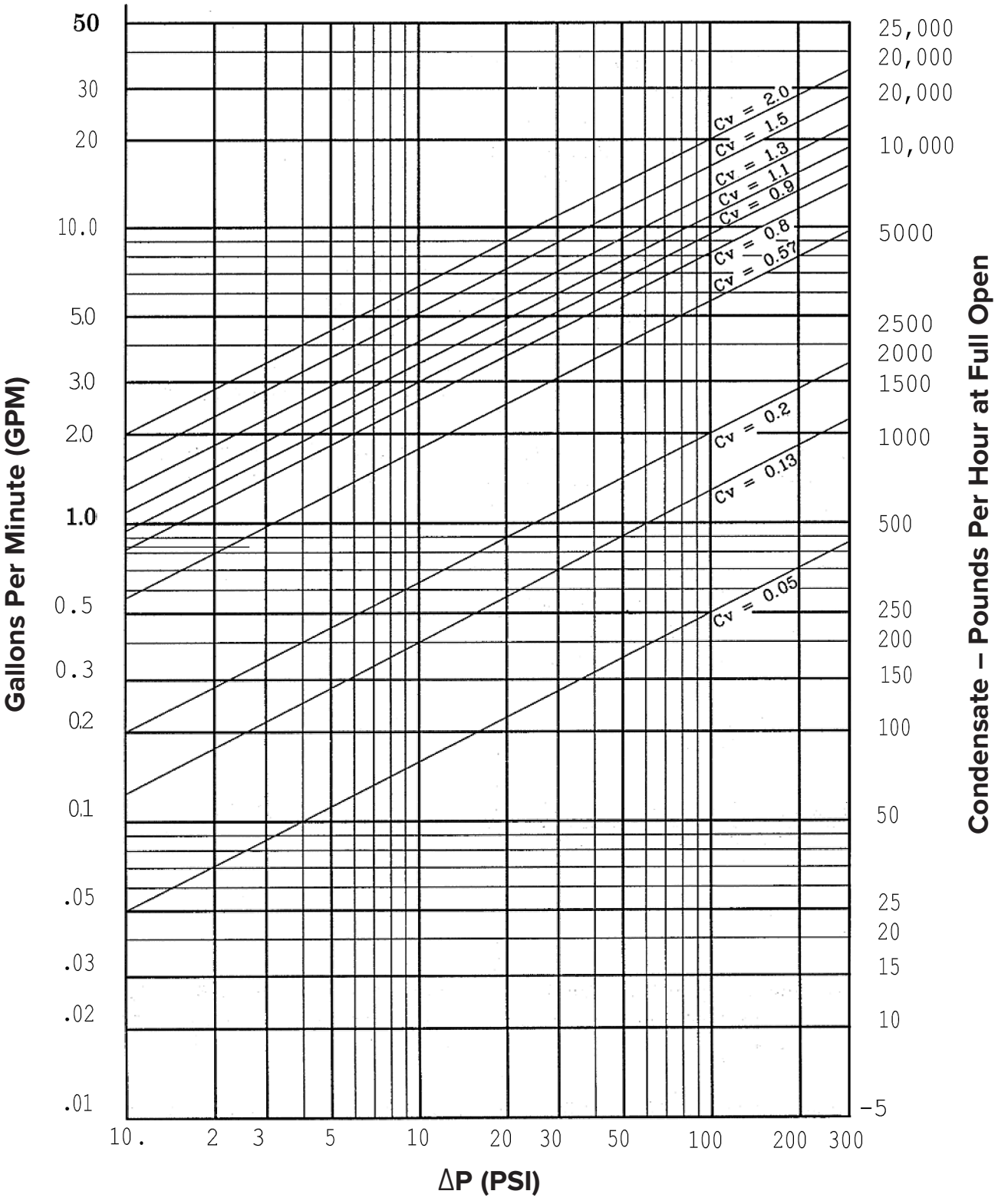
Armstrong®

TEMPERATURE ACTUATED VALVE

Temperature Actuated Valve

Temperature Actuated Valve Flow Capacities



Temperature Actuated Valve

Approximate Cv Required Uninsulated*
For Freeze Protection of Water Lines

1. $GPM = \dfrac{A_1\ AP_2\ (O.5t_w\text{-}t_a + 16)}{40.1\ d^2\ (t_w - 32)}$

Where: GPM = gallons per minute of water flow

A_1 = pipe flow area, ft^2

A_2 = exposed pipe surface area, ft^2

t_W = temperature of resupply water, °F

t_a = minimum air temperature, °F

d = ID of pipe, ft

2. $C_V = \dfrac{GPM}{\sqrt{\Delta P}}$ Where: GPM = gallons per minute of water flow

C_V = total required C_V of valves

ΔP = pressure drop across valves

(if valves discharge to atmosphere

$\Delta P = P_S$ where P_S is supply pressure.)

EXAMPLE: Freeze protect a 125 foot long run of 2” pipe when the minimum air temperature is -15°F. The resupply water is 40°F minimum, at 60 psig.

From pipe data chart, for 2” schedule 40 pipe:

A_1 = 3.36 sq. in. = 0.023 ft^2

A_2 = 0.622 ft^2/ft x1 25 ft = 77.8 ft^2

d = 2.067 in. = 0.172 ft

1. $GPM = \dfrac{(0.023)(77.8)\ [(0.5)(40) - (-15) + 16]}{40.1\ (0.172^2)(40 - 32)}$ GPM = 9.6

2. $C_V = \dfrac{96}{\sqrt{60}} = 1.24$

Chose the valve or valves required to give a C_V of 1.24 or more; in this case a single C port ASDV. In some cases, a single valve will suffice; however, the use of several smaller valves will improve reliability.

*For properly insulated lines, use 25% of the C_V indicated as an approximation of required C_V.

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624-EN

Printed in USA - 11/16