



***RheoVac*[®] Probe Installation**

The *RheoVac* probe can be installed only in the condenser-to-exhauster vacuum line where a conditioned gas/water vapor stream exists and where it will not be exposed to temperatures above 210°F (99°C). For best noise-free flow rate measurements, a location at least 15 diameters downstream of a line turn or valve and 5 diameters upstream of the next perturbation is recommended. If these distances are not available, install the probe with two-thirds of the available straight-run upstream of the probe and one-third downstream¹. These locations are shown in the “*RheoVac* Probe Location Recommendation,” Figure 1.

Figure 1 shows four plane line configurations found in operating power plants. Configurations A and B feature line layouts that generally place the exhauster inlet above the condenser outlet. In Configurations C and D, the exhauster inlet can be found below the condenser outlet. When considering probe placement in Configurations A and C, select a location with acceptable straight-run and accessibility to aid in probe insertion and removal.

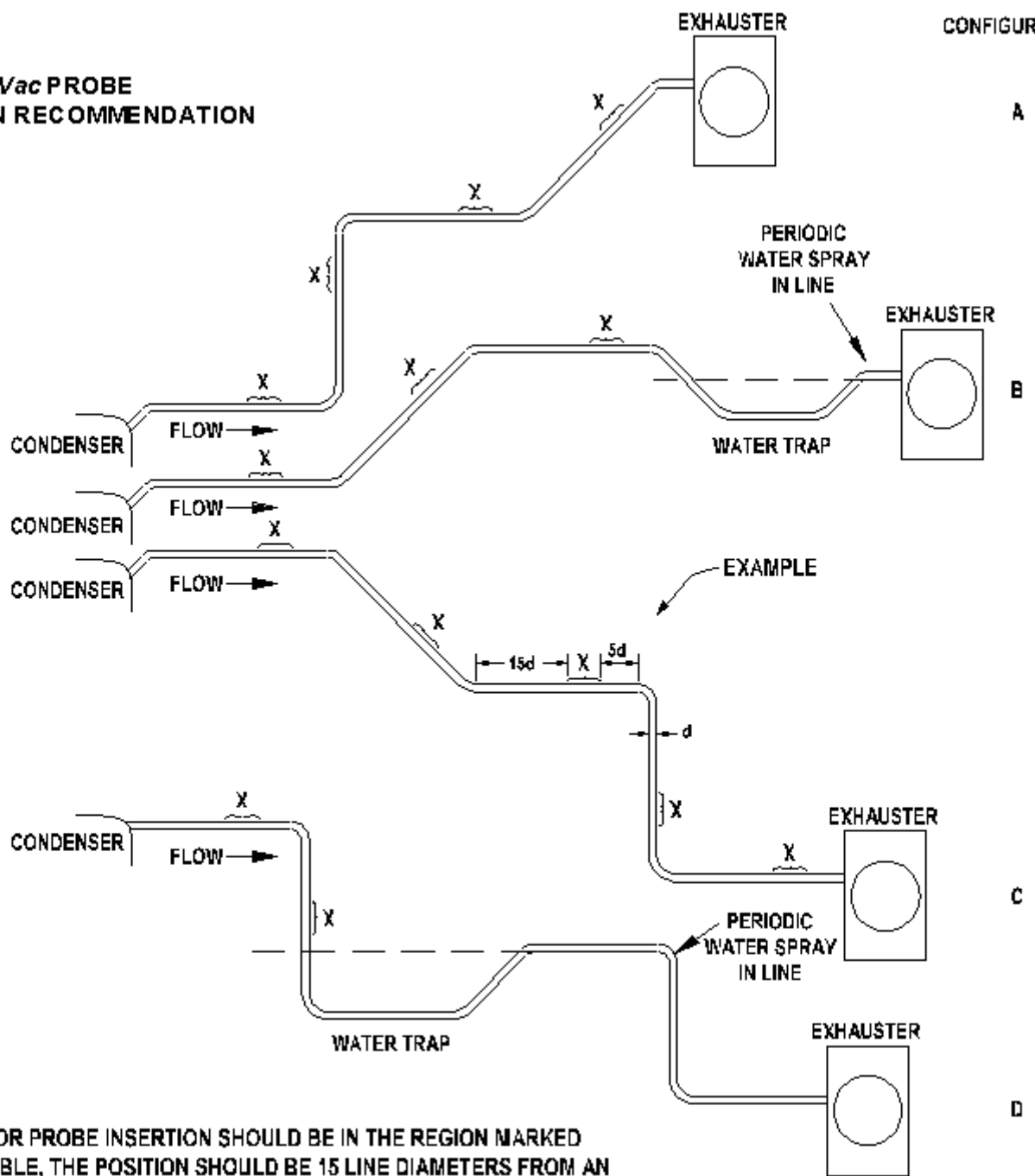
Configurations B and D show exhauster lines which have been installed in a manner that creates a water trap. Under conditions where ambient temperature outside the line is lower than the stream temperature, condensation of water vapor can occur and accumulate in the trap, restricting or completely shutting off the vapor/gas flow stream to the exhauster. This condition eventually leads to water spray or water surging in the line beyond the trap. For this reason, probe installation in the trap or between the trap and the exhauster is not recommended.

Probes in horizontal, vertical (flow up or down), or angled runs should be installed at a 90° angle to the pipe in a position where the probe is parallel to the ground (see Figure 2). This prevents water droplets from clinging to the probe tips, which can occur if the probe axis is angled with the tips downward. There are no other critical orientation requirements except the probe must be rotated such that the flow vector passes between the probes. The junction box on the probe will have a directional arrow which should be properly aligned with flow in the pipe.

The *RheoVac* probe installs through an Intek-supplied hot tap assembly. A 1½” female NPT coupling (supplied) must be welded on the pipe as shown in Figure 2, and the pipe must have a 1½” hole drilled through it. Allow 4 feet of clearance out from the coupling to accommodate probe installation through the hot tap assembly.

¹ Straight-run is limited in many plants. Lack of straight-run does not prevent use of the unit. This suggestion comes from good practices for high accuracy flow measurement, but several of the primary *RheoVac* measurements are not affected by straight-run and a mass flow measurement error only affects the air in-leakage reading by a small percentage. There is much value in trending data over time and observing changes in *RheoVac* readings in relation to plant events.

RheoVac PROBE
INSERTION RECOMMENDATION



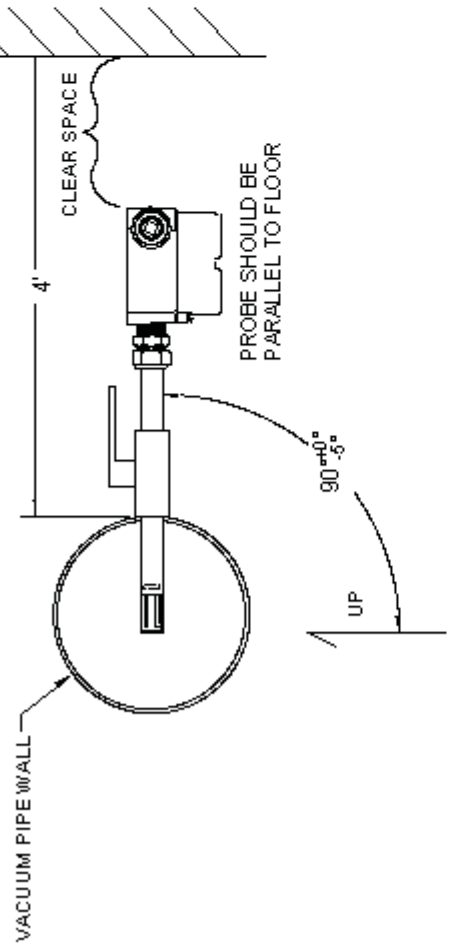
LOCATION FOR PROBE INSERTION SHOULD BE IN THE REGION MARKED "X". IF POSSIBLE, THE POSITION SHOULD BE 15 LINE DIAMETERS FROM AN UPSTREAM LINE TURN AND 5 DIAMETERS FROM A DOWNSTREAM TURN. IF NOT, HAVE TWO-THIRDS OF THE AVAILABLE STRAIGHT-RUN UPSTREAM OF THE PROBE.

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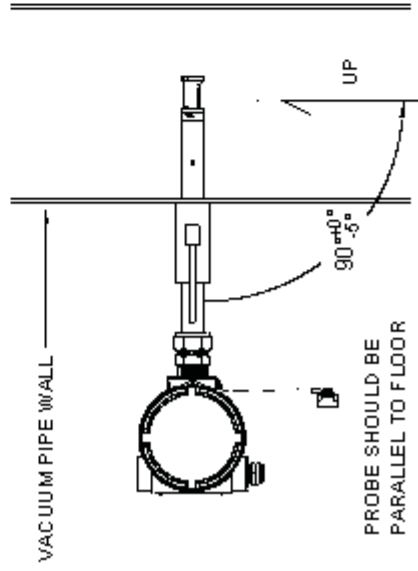
Figure 1

REVISIONS			
REV	DESCRIPTION	DATE	APVD
A	EDITING CHANGES	11/18/97	MH
B	Changed installation angle	11/15/99	BC
C	Edited Hot Tap Installation	12/04/00	BC
D	Changed Probe Box	12/04/07	BH

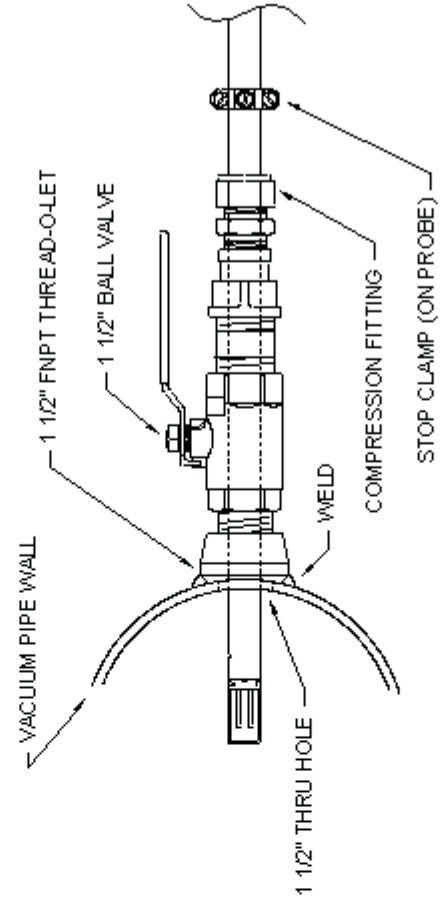
REQUIRED INSTALLATION ANGLE FOR HORIZONTAL PIPE RUN



REQUIRED INSTALLATION ANGLE FOR VERTICAL PIPE RUN



RHEOVAC HOT TAP INSTALLATION



UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.	DATE	10/03/95
TOLERANCES: A: ±0.015	DESIGNED BY	JVR
B: ±0.030	CHECKED BY	
C: ±0.060	APPROVED BY	
D: ±0.125	PROGRAM:	
E: ±0.250	SIZE	A
F: ±0.500	CAGE CODE	59936
G: ±1.000	DRAWING NO.	94078-3
H: ±2.000	SCALE	1 OF 1
I: ±4.000	SHEET	
J: ±8.000	CONTR.	
K: ±16.000	FILE	94078-3

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PROBE INSTALLATION DETAIL

Figure 2