

### Upstream & Downstream Effects

#### Typical Installation Effects:

The table below was derived from flow test data. The accuracy of the tests, in view of the purpose for which they are used, is  $\pm [0.25(\beta/0.7)^4]\%$ . Metering similar flow disturbers should give similar effects. Since HVTs have sufficiently long recovery cones, a flow disturber coupled directly to its outlet will have no effect on the throat pressure sensation. Thus, it does not impair the accuracy of the flow measurement. The table below should be used as follows:

- To secure the "normal" accuracy for the flow measurement, the HVT should be located at a distance following the disturber as indicated on the graph for the type of disturber, inlet tapping and beta ratio of the HVT.
- If there is insufficient piping available to secure normal accuracy, read the disturbance effect from the graph for the beta used and for the length of upstream pipe available.

Calculate the accuracy for the metering section as follows:

Installed Accuracy =  $A_B + \Delta C$

where  $A_B$  is:

For static inlet tapped HVTs,

$\beta$	$A_B$
0.5000	+/-0.50%
0.6000	+/-0.50%
0.7000	+/-0.50%

For corner inlet tapped HVTs,

$\beta$	$A_B$
0.5000	+/-0.50%
0.6000	+/-0.50%
0.7000	+/-0.53%

- Use flow straighteners only to stop swirls as in the case of two elbows which are direct-coupled in 90° planes. Contact PFS for design.

Improperly used straighteners may cause greater errors than the ones they are supposed to eliminate.

- For the effects of other types of disturbers or of disturbers in series, contact PFS.

