



SAFE™ \ DESTROYER™

Installation and Application



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1 September 2001

TECHNICAL BULLETIN

Savant Measurement Corporation is committed to providing the user community with a variety of cost effective, engineered solutions for everyday application challenges. As such, we maintain a broad product line, including both Flow Conditioners (GFC® and pFC™) and Acoustic Filters, (SAFE™ and Destroyer™) to fulfill the varied needs of our customers.

The SAFE and Destroyer provide the user with the option of using either or both devices as required to satisfy the need for noise reduction for Multi-path Ultrasonic Meters (MUSM). If the noise is of such a magnitude that line of sight and total absorption is required then both may be used, if it is not convenient to employ the use of a single blind tee.

If the anticipated noise reduction required is in the order of 20-30 dB a single SAFE would be sufficient for the installation even if the noise is coming directly at the meter. Testing has shown that the SAFE demonstrates gross noise absorption of 40-50 dB with indirect noise and 20-30 dB with direct noise. Thus the user has the flexibility to determine which installation option best suits the application and mechanical limitations of the station design.

Based on research carried out it is anticipated that in the worst-case flow/dP noise scenarios a noise reduction of 40-50dB satisfies most “noisy” applications. This reduction provides the MUSM with the opportunity to work within a reasonable signal to noise or gain ratio level.



Destroyer®



SAFE®



The Destroyer and SAFE have both been designed for simple retrofit and new installations. They both utilize a single flange connection. In the case of the SAFE it is 3/4" between flanges, with a single pin connection downstream on the element canister of the assembly, thus ensuring mechanical robustness in real world installations.

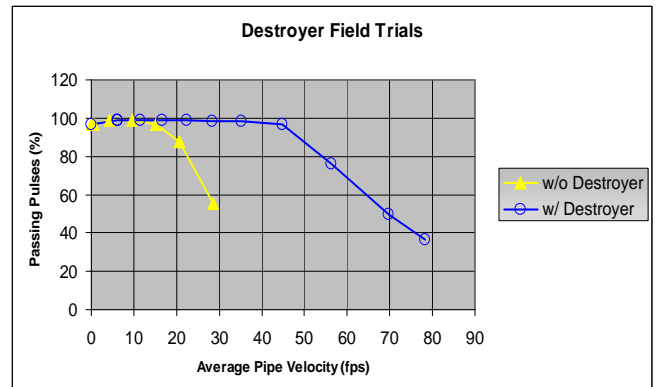
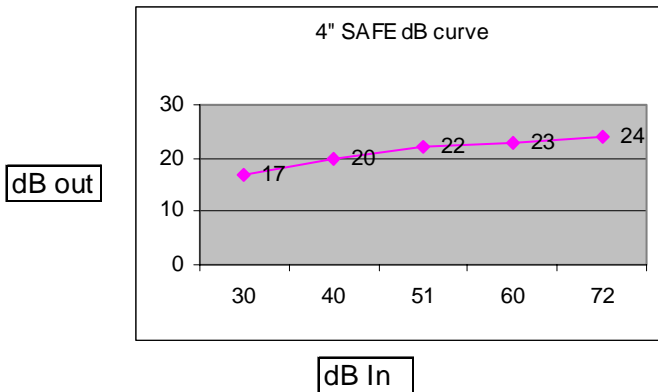
The SAFE has been thoroughly tested in both wet\dry and dirty\clean scenarios. Wet testing used a combination of both water and hydro-carbon components to emulate the combination of water, pipeline rouge and compressor oil.

The SAFE may also be retrofitted easily with new absorbent elements as required.

Installation of the devices is easily accomplished with either existing or new flow conditioner installations and may be deployed where the noise source is upstream or downstream in either uni-directional or bi-directional installations.

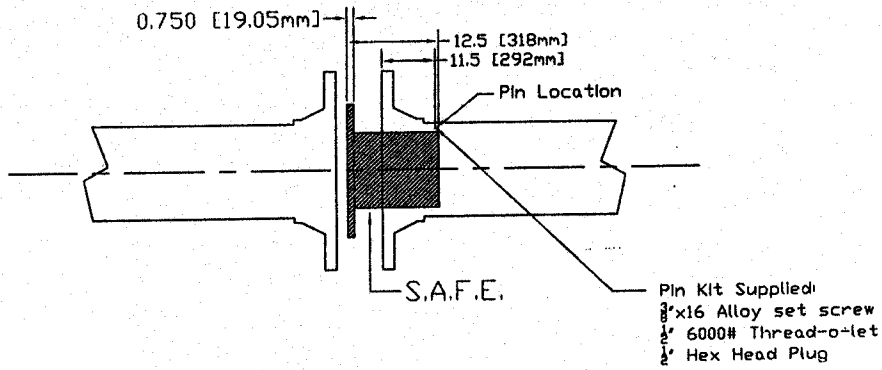
Performance:

dB In	30	40	51	60	72	83
dB out	17	20	22	23	24	27



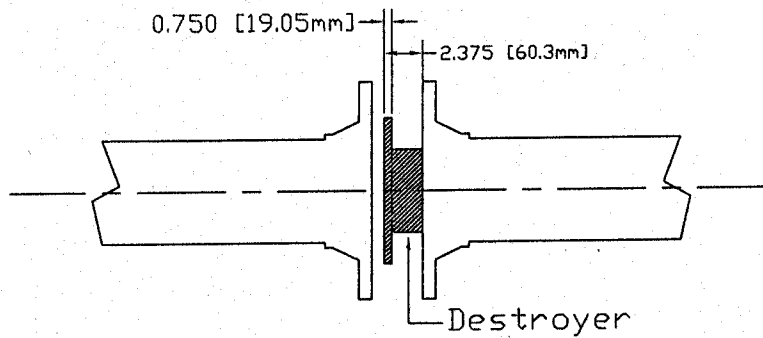


Acoustic Filter Installations



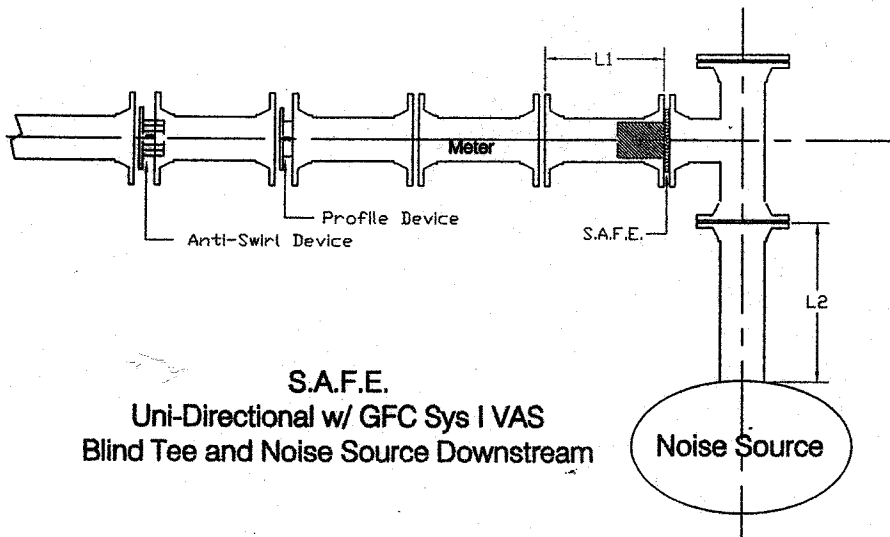
The S.A.F.E. is typically installed between gaskets and raised face flanges -- rtj flange installation is also available by special order. The recommended installation location will differ depending on the surrounding installation. Please contact Savant Measurement for assistance in determining the best location for your application.

Savant MEASUREMENT CORPORATION			
TITLE: S.A.F.E.			
B	DWG. NO.	SAFE Install	REV. A
DATE	02Nov01	SCALE	n/a
		SHEET 1 of 1	



The Destroyer is typically installed between gaskets and raised face flanges -- rtj flange installation is also available by special order. The recommended installation location will differ depending on the surrounding installation. Please contact Savant Measurement for assistance in determining the best location for your application.

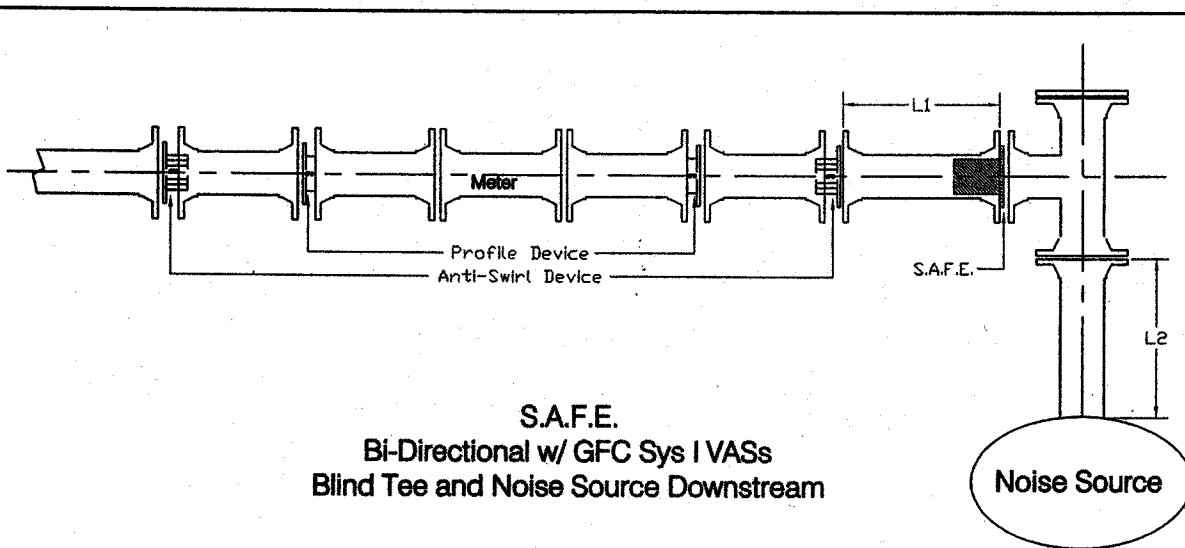
Savant MEASUREMENT CORPORATION			
TITLE: Destroyer			
B	DWG. NO.	Destroyer Inst Detail	REV. A
DATE	02Nov01	SCALE	n/a
		SHEET 1 of 1	



S.A.F.E.
 Uni-Directional w/ GFC Sys I VAS
 Blind Tee and Noise Source Downstream

Min	Rec	Description
L1	5D _n 7D _n	Distance from meter to SAFE installation location
L2	3D _n 5D _n	Distance from blind tee to noise source

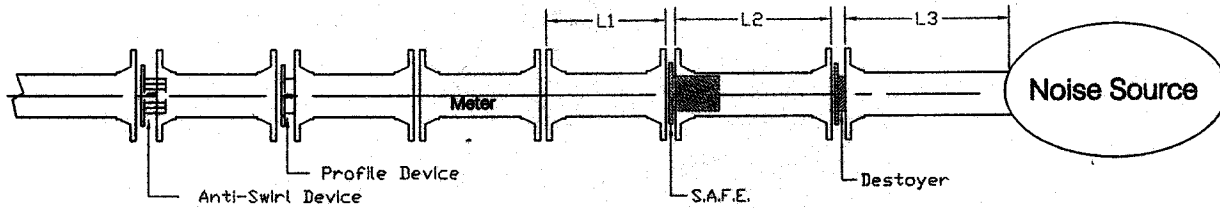
SOUND MEASUREMENT CORPORATION			
TITLE: S.A.F.E.			
B	DWG. NO. SAFE Tee NS	SCALE	REV. A
DATE 10SEP01	SCALE n/a	SHEET 1 of 1	



S.A.F.E.
 Bi-Directional w/ GFC Sys I VASs
 Blind Tee and Noise Source Downstream

Min	Rec	Description
L1	5D _n 7D _n	Distance from Anti-Swirl Device to SAFE installation location
L2	3D _n 5D _n	Distance from blind tee to noise source

SOUND MEASUREMENT CORPORATION			
TITLE: S.A.F.E.			
B	DWG. NO. SAFE Bi-Dir Tee NS	SCALE	REV. A
DATE 10SEP01	SCALE n/a	SHEET 1 of 1	

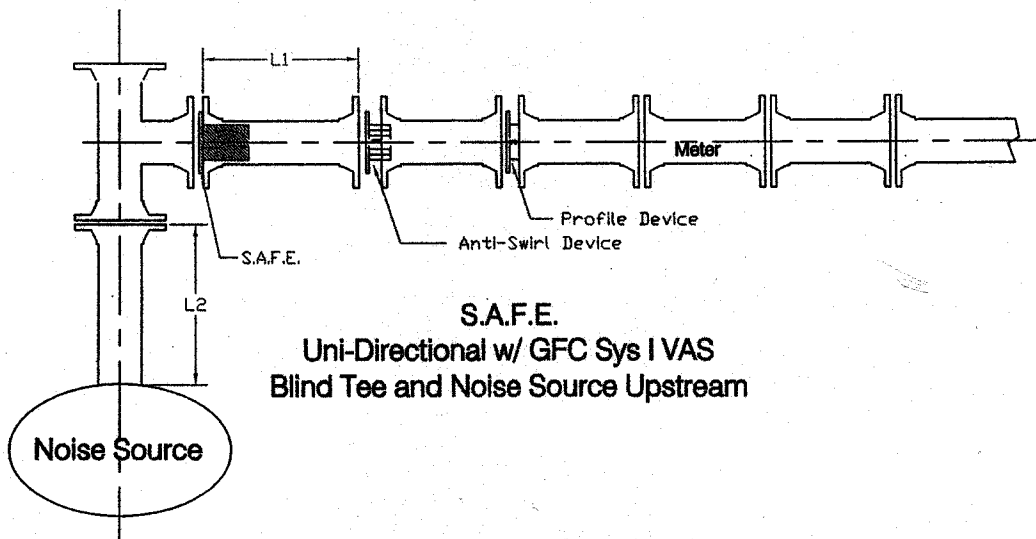


S.A.F.E.
 Uni-Directional w/ GFC Sys I VAS
 Noise Source Downstream

Min Rec Description

- L1 5D_n 5D_n Distance from meter to SAFE installation location
- L2 3D_n 5D_n Distance from SAFE installation location to Destroyer installation location
- Ld 3D_n 5D_n Distance from Destroyer to noise source

Savant Measurement Corporation			
TITLE: S.A.F.E.			
B	DWG. NO. SAFE I VAS NS	REV. A	
DATE 12SEP01	SCALE n/a	SHEET 1 of 1	



S.A.F.E.
 Uni-Directional w/ GFC Sys I VAS
 Blind Tee and Noise Source Upstream

Min Rec Description

- L1 5D_n 7D_n Distance from SAFE installation location to Anti-Swirl Device
- L2 3D_n 5D_n Distance from noise source to blind tee

Savant Measurement Corporation			
TITLE: S.A.F.E.			
B	DWG. NO. SAFE Tee NS Up	REV. A	
DATE 10SEP01	SCALE n/a	SHEET 1 of 1	



For Sales and Technical Assistance please contact us at :

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