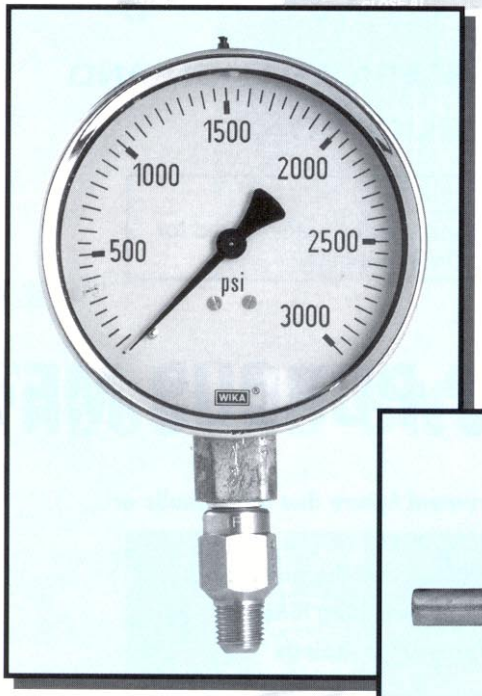
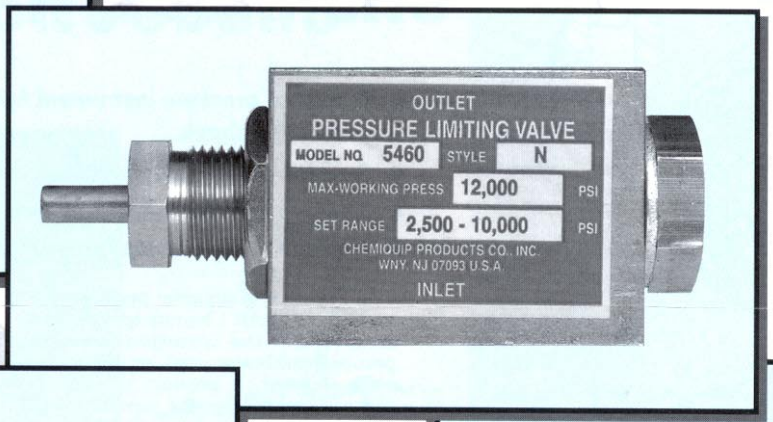
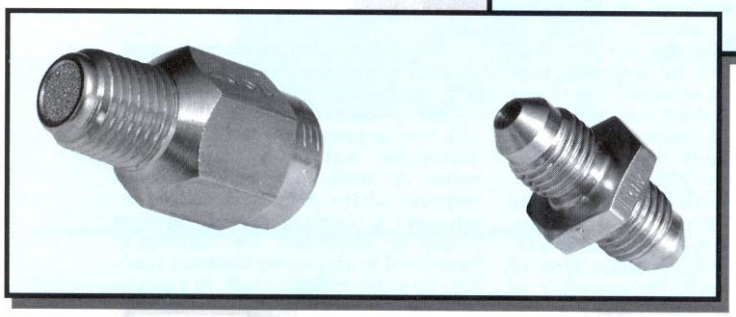
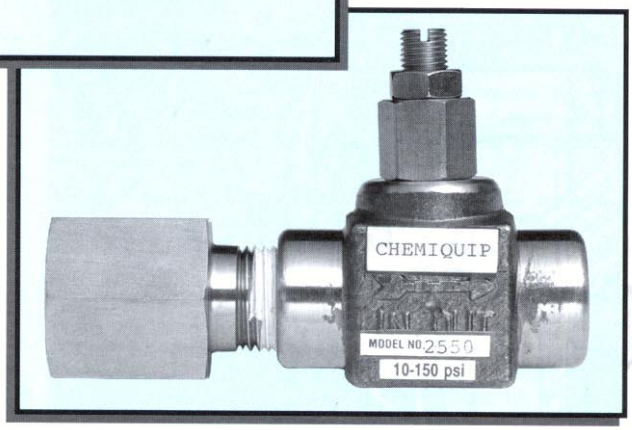
CHEMIQUIP

CATALOG 99/CQC





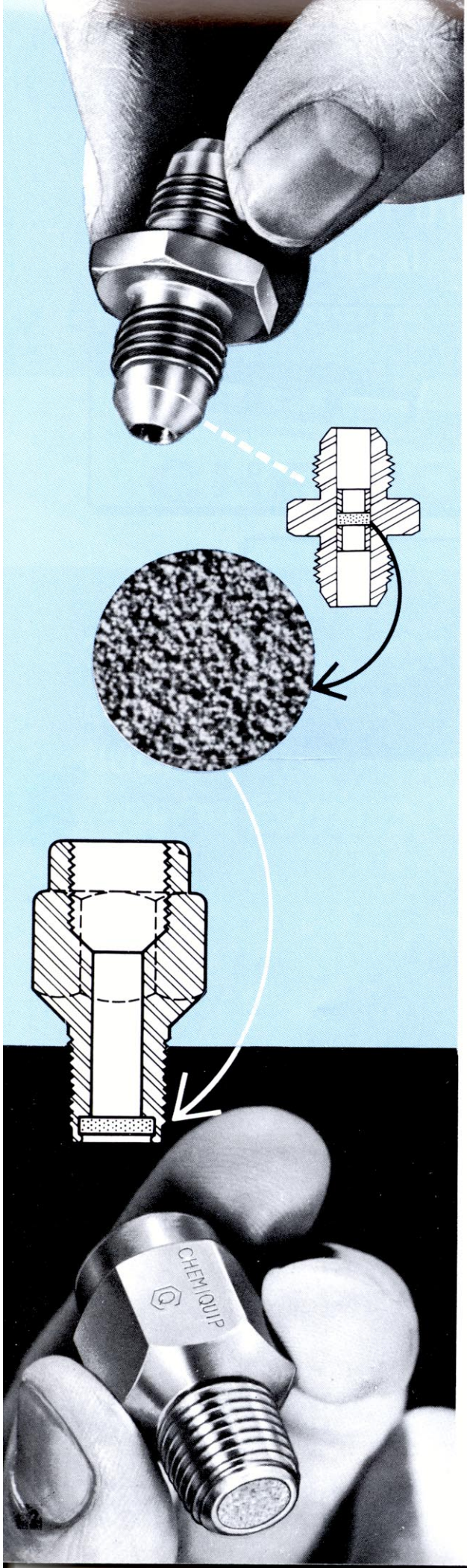




56 2nd Ave
Brooklyn, NY 11215
Tel: (201) 868-4445
Fax: (201) 868-4447

- POROUS METAL PRESSURE SNUBBERS
- SPECIAL PURPOSE SNUBBERS
- SEALED SYSTEM (DIAPHRAM SEAL)
- BITE TYPE (PRESSURE TYPE) SNUBBERS
- AIRCRAFT, AUTOMOTIVE, REFRIGERATION SNUBBERS
- PRESSURE LIMITING VALVES
- EXCESS FLOW VALVES
- EXCESS FLOAT CHECK VALVES
- TEPTAPE

CHEMIQUIP PRODUCTS CO., INC.



Designed for use with hydraulic and pneumatic systems in Industry...

FOR AIRCRAFT, REFRIGERATION AND AUTOMOTIVE APPLICATIONS

100% Inspection
Each Snubber is individually tested for flow rate before shipping

CHEMIQUIP POROUS METAL

- **Eliminate pressure instrument failure due to hydraulic or pneumatic shock**
- **Smooth out pressure impulses and fluctuations**
- **Remove harmful solids from actuating fluid**
- **Assure steady average pressure readings**

The key to the superior performance and efficiency of Chemiquip Pressure Snubbers is the corrosion-resistant porous membrane used as the snubbing element. A product of electric furnace technology, the porous metal disc is fabricated by sintering pre-alloyed, type 316 stainless steel powder, or other corrosion-resistant materials, in an electric furnace. The powder particles are firmly welded at their tangent points to create a mechanically stable structure with a tensile strength of 20,000 psi. There is absolutely no evidence of particle migration regardless of the magnitude of the pressure, shock, or longevity of service.

The particle size of the powder determines the pore opening. The standard flow capacity of the snubber is adjusted by using the pore size most suited to the viscosity of the pressure-actuating medium. Various pore sizes are available for use with oils, water, gases or mercury.

With a Chemiquip Snubber, positioned up-stream of a pressure-sensitive instrument, the instrument response to system pressure changes is at a rate in proportion to the pressure differential across the snubber element. A moderately rapid, smooth response of the pressure-sensitive instrument is obtained, free of transient surges or pulsations. The snubber is calibrated to give an equilibrium reading, up-scale or down-scale, in approximately 2-3 seconds.

Instrument failure due to pressure shock is eliminated.

CHEMIQUIP SNUBBERS can also be connected to any line:

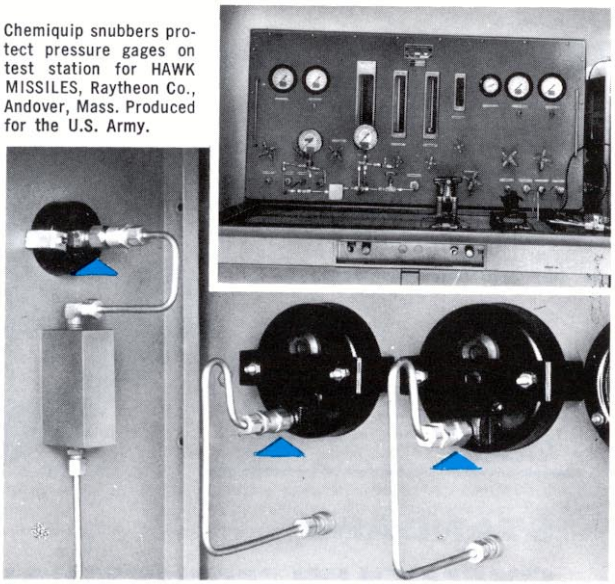
- **for filtration of small quantities of fluids (for example, flue gas sampling);**
- **as a metering device (fluid to be metered should be free of suspended solids-inclusions);**
- **a variety of other applications (see following pages).**

The myriads of minute pores in the porous disc resist clogging by solids suspensions, a frequent occurrence with single orifice types of snubbers. Small and compact, the Chemiquip Snubber is easily cleaned. It is inexpensive; has no moving parts to be out of order or wear. Before shipping, all male threads of Chemiquip Snubbers are wound with TEPtape™ Thread Sealant (see Back Cover) to assure 100% sealing.

CHEMIQUIP SNUBBERS CONFORM WITH U.S. MILITARY SPECIFICATIONS

Chemiquip Snubbers conform with Specifications MIL-S-2940B (Dampeners, Fluid Pressure, Gauge Protection). In addition to style and size of ports specified. Chemiquip Snubbers are available with a wide variety of other sizes and connections.

Chemiquip snubbers protect pressure gages on test station for HAWK MISSILES, Raytheon Co., Andover, Mass. Produced for the U.S. Army.

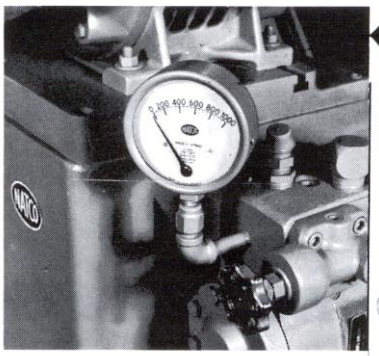


TYPICAL INDUSTRIAL APPLICATIONS FOR CHEMIQUIP POROUS METAL PRESSURE SNUBBERS

DAMPENING PULSATIONS: Systems which establish pulsations—such as reciprocating machines or force pumps—require protection for the pressure-sensitive instruments assembled to them. The snubber is designed to afford a mean average pressure-response with a maximum of accuracy.

DAMPENING SURGES: If the pressure-sensitive instrument is unprotected in systems where high pressure may be suddenly vented, the mechanism will be damaged or the pointer broken, bent or shifted up scale. These snubbers are calibrated to give an equilibrium reading either up or down scale in about 2-3 seconds.

PRESSURE SNUBBERS



High pressure hydraulic Natco pump. Snubber protects gage from rotary pump pulsations.

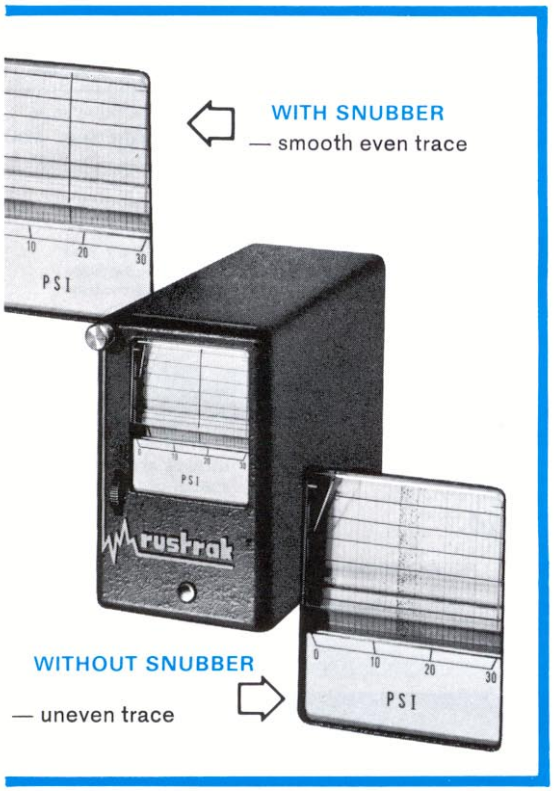
Kent-Moore power steering tester. Snubber damps pump pulsations.

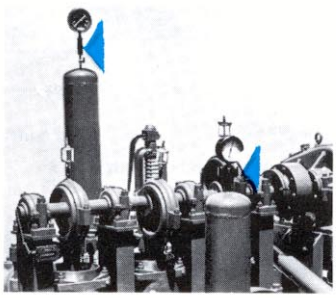
FOR FILTERING SMALL QUANTITIES OF LIQUIDS OR GASES: The porous membrane in the snubber provides a surface upon which droplets of oil or moisture suspended in a gaseous phase may coalesce. Hence it is possible to remove small quantities of such liquids. When the snubber is used as a filter, particles ⅓ the pore diameter, or smaller, are effectively removed. Information concerning pore size and permeability can be supplied on request.

FOR METERING: Many types of instruments and machines require that a certain amount of liquid or gas be constantly bled. Here the pressure snubber replaces capillary tubing which is much more cumbersome, harder to control and shows a greater tendency toward plugging. Throughput rates may be supplied in an infinite variety.

FOR MERCURY - TYPE INSTRUMENTS: The snubber dampens pulsations and surges and also confines mercury in the tube. Mercury will not penetrate the Grade HX snubber at pressures under 25 psi. Finer grades of snubbers will confine the mercury at higher pressures.

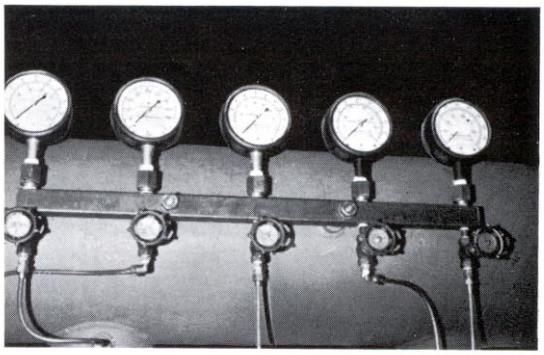
NOTE: The snubber may be effectively adapted for use with systems containing high concentrations of suspended solids by filling the bourdon tube of the gage with glycerin, light viscosity oil or non-miscible fluid and capping the Pressure Instrument connection with a snubber.





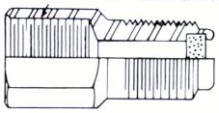
Carter Triplex Piston Pump. Used in oil refining and chemical processing.

Snubber steadies trace on Rustrak Pressure Recorder No. 162 at chemical processing plant.



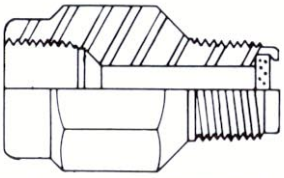
Norwalk 5-stage air compressor.
Snubbers protect the pressure gages on each stage.

⅛" NPT • HEX. SIZE: ½" (⅝" FOR 12A)
• LENGTH: 1.1" (1¼" FOR 12A)



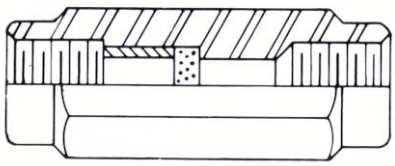
Cat. No.	Housing Material
12A	Aluminum (anodized)
12B	Brass
12S	Stainless Steel (303)

¼" NPT • HEX. SIZE: ¾" • LENGTH: 1½"



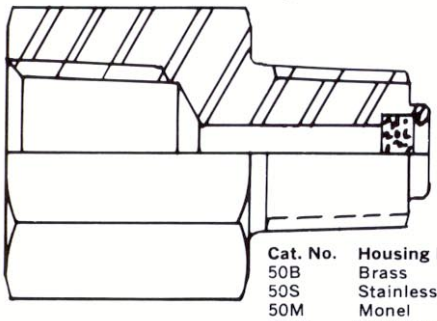
Cat. No.	Housing Material
25B	Brass
25S	Stainless Steel (303)
25M	Monel
25S6	Stainless Steel (316)

¼" NPT • HEX. SIZE: ¾" • LENGTH: 2"



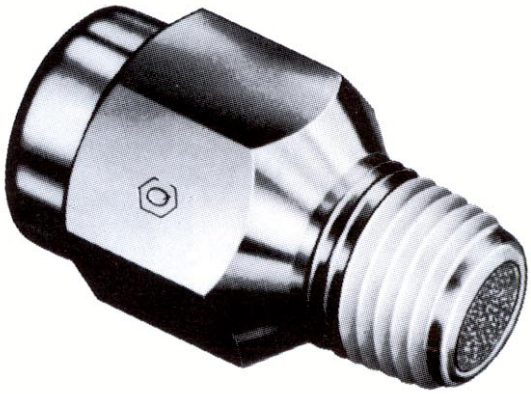
Cat. No.	Housing Material
F25S	Stainless Steel (303)—Female Coupling
2M2S	Stainless Steel (304)—Male Nipple

½" NPT • HEX. SIZE: 1¼" • LENGTH: 2.2"



Cat. No.	Housing Material
50B	Brass
50S	Stainless Steel (303)
50M	Monel
50S6	Stainless Steel (316)

316 S.S. HEX COMPILES TO THE FOLLOWING SPECIFICATIONS ASTM-A276, ASTM-A182 OR QQ-S-763
MONEL HEX. COMPLIES TO QQ-N-281 (FEDERAL) SPECIFICATION



engineering data

STANDARD CHEMIQUIP INDUSTRIAL POROUS METAL PRESSURE SNUBBERS

RECOMMENDED POROSITIES:

Type of Service	Porosity Designation	Approx. Micron Rating
Highly Viscous Fluids (over 500 S.S.U.)	C	75
Oil (225 S.S.U. to 500 S.S.U.)	D	40-45
Water and Light Oils (30 to 225 S.S.U.)	E	10
Vapor and Low Viscosity Fluids (under 30 S.S.U.)	F	7
Air or other Gases	G	2-5
Pulsating Gas	HX	1
Extreme Gas Pulsation	HXX	½

Note: Intermediate Porosities Available on Special Order
Special discs to repel water are also available and also smaller micron ratings.

STANDARD MATERIALS OF CONSTRUCTION:

Housings: Brass, Stainless Steel (303,316), Monel, Aluminum

Porous Discs: Type 316 Stainless Steel or Monel (available with Monel Housings)

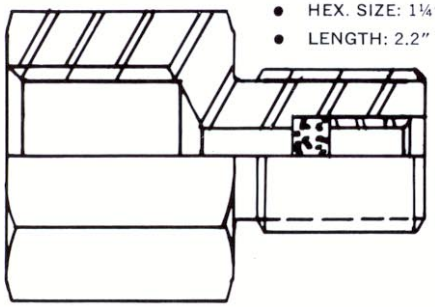
MAXIMUM PRESSURE RATINGS (psi):

Catalog No.	12	25	50
Size (Ports)	⅛"NPTF	¼"NPTF	½"NPTF
Brass	3,000	10,000	10,000
Stainless Steel	5,000	15,000	15,000
Monel	—	15,000	15,000
Aluminum	3,000	—	—
316 Stainless Steel	5,000	15,000	15,000
Effective Area	.027 sq. in.	.05 sq. in.	.05 sq. in.

Add suffix to Catalog Number to indicate desired Porosity (e.g. 12AE)

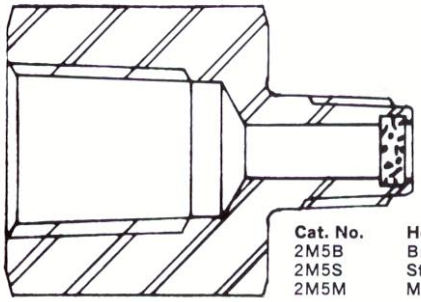
STANDARD DIMENSIONS
Scale 1:1

½" 14 NPS for High Pressure Service
• HEX. SIZE: 1¼"
• LENGTH: 2.2"



Cat. No.	Housing Material
50SS	Stainless Steel (303)

½" 14 NPT Female x ¼" NPT Male • HEX. SIZE: 1¼"
• LENGTH: 2.2"



Cat. No.	Housing Material
2M5B	Brass
2M5S	Stainless Steel (303)
2M5M	Monel

NOTE: CHEMIQUIP SNUBBERS are available in other shapes, sizes, threads and materials on special order. Prices quoted on application.

FOREIGN THREADS
ISO Standard
British Pipe
Metric

CHEMIQUIP PRESSURE SNUBBERS

with Bite-Type Connections

(Conform to U. S. Military Specifications)

With "bite-type" connections at both inlet and outlet ports, these porous metal pressure snubbers are compatible with tubing connections of this type. Chemiquip snubbers may be ordered with a "bite-type" connection at one port; a tapered pipe, flared tubing or gasket seal connection at the other port. This makes them suitable for interconnecting fittings of various types; eliminates necessity of additional adapters which may be troublesome.

CONFORM WITH MILITARY SPECIFICATIONS

Specification MIL-D-2940A and MIL-S-2940 applies to Dampeners, Fluid Pressure, Gauge Protection. This Specification embodies two elements, however.

ELEMENT 1

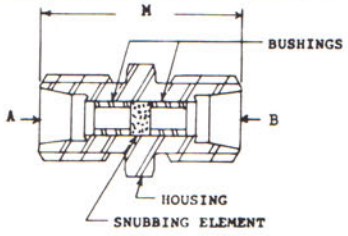
Applies to performance standards and ability of the Dampener, Fluid Pressure, Gage Protection (pressure snubber) to effect the desired results. All Chemiquip pressure snubbers conform with this element.

ELEMENT 2

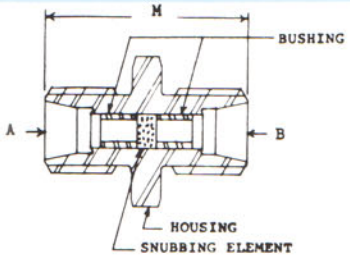
Covers the style, thread and shape of the connecting ports; further provides that each pressure snubber be equipped with a male x female port. In addition to conforming with Specifications, Chemiquip Pressure Snubbers are available with other configurations of connecting ports.

Table I indicates other Military Specifications to which a specific unit conforms as well as conformity of each specific Chemiquip pressure snubber style with all elements of MIL-D-2940A and MIL-S-2940B.

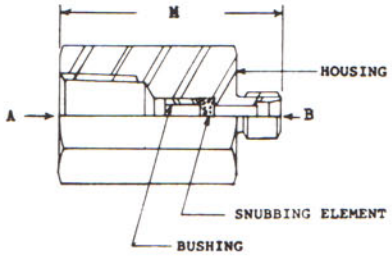
Cat. No. AC-1U



Cat. No. ACG-1U



Cat. No. 50FS-1U



Cat. No. 50FS-1K

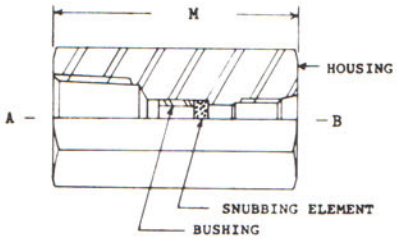


TABLE I — DIMENSIONS

Catalog No. [1,2]	A (O.D. Tube)	B (O.D. Tube)	Hex	M	Thread A	Thread B
AC-1U[3]	¼"	¼"	½"	1 1/16"	7/16"-20	
ACG-1U[3]	¼"	¼"	1 1/16"	1 1/16"	7/16"-20	
25FS-1U[3,4]	¼" npt	¼"	¾"	2"	¼" npt	7/16"-20
25FS-1K[5]	¼" npt	¼"	¾"	2 1/4"	¼" npt	7/16"-20
25MS-1U[3]	¼" npt	¼"	¾"	1 3/4"	¼" npt	7/16"-20
25MS-1K[4,5]	¼"	¼" npt	¾"	1 5/16"	7/16"-20	¼" npt
KNC-1U[3,4,5,6]	¼"	¼"	¾"	2"	7/16"-20	
50FS-1U[3]	½" npt	¼"	1¼"	2 1/4"	½" npt	7/16"-20
50FS-1K[5]	½" npt	¼"	1¼"	2 5/8"	½" npt	7/16"-20

1. Catalog Numbers Shown are made of 316 Stainless Steel. 2. Add porosity designation from Table II (C, D, E, F, G or HX) to Catalog Number. 3. Straight-thread end (male) conforms to MIL-F-21467C. 4. Conforms to MIL-D-2940A. 5. Straight-thread end (female) conforms to MS-16142. 6. Available with 9/16-18 threads.

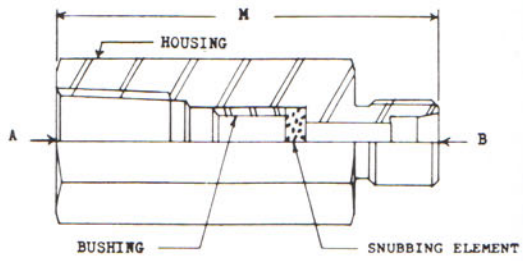
TABLE II — RECOMMENDED POROSITIES

Porosity Designation	Military Designation Type	Service Fluid	Viscosity Range
C	I	Highly Viscous Fluids	Over 500 S.S.U.
D	I	Heavy Oils	225 to 500 S.S.U.
E	II	Water & Light Oils	30 to 225 S.S.U.
F	II	Vapors & Low Viscosity Fluids	Under 30 S.S.U.
G	III	Air & Similar Gases	
HX		Violent Pneumatic Pulse	

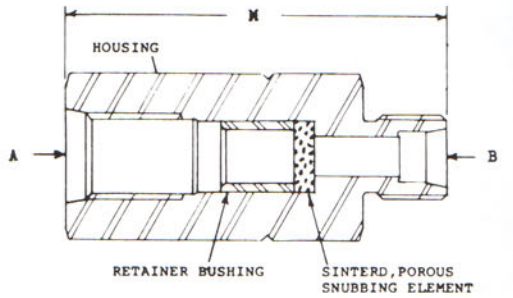
TABLE III — OPERATING CHARACTERISTICS

	Stainless Steel	Cadmium-Plated Carbon Steel	Monel (NiCu)
Operating Pressure	6,000 psi	3,000 psi	6,000 psi
Maximum Operating Temperature	1,300°F	1,300°F	700°F

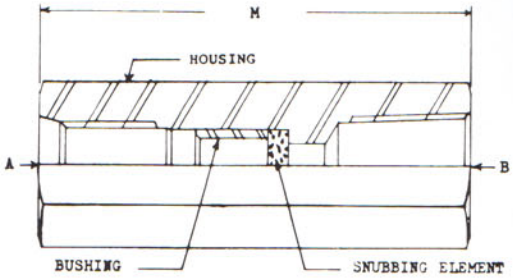
Cat. No. 25FS-1U



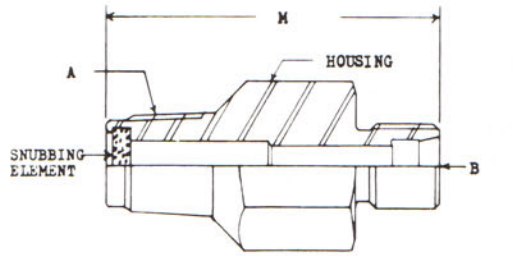
Cat. No. KNC-1U



Cat. No. 25FS-1K



Cat. No. 25MS-1U



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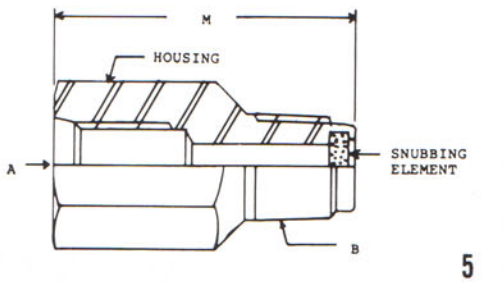
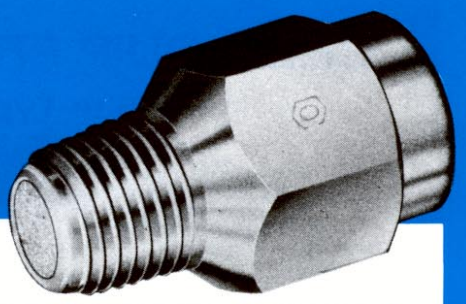


CHEMIQUIP POROUS METAL SNUBBERS

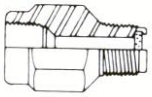


INDUSTRIAL TYPE

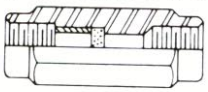
When ordering, please specify desired Porosity as shown under "Recommended Porosities"

1/8" NPT Female × 1/8" NPT Male

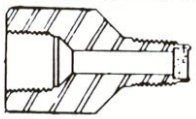
1/4" NPT Female × 1/4" NPT Male



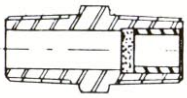
1/4" NPT Female × 1/4" NPT Female



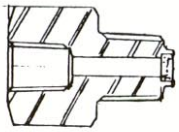
1/8" NPT Female x 1/4" NPT Male



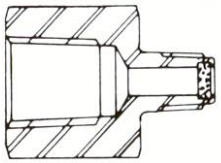
1/4" NPT Male × 1/4" NPT Male



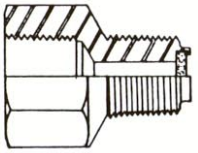
1/4" NPT Female × 1/2" NPT Male



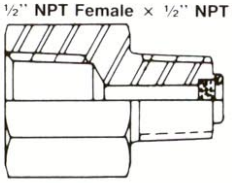
1/2" NPT Female × 1/4" NPT Male



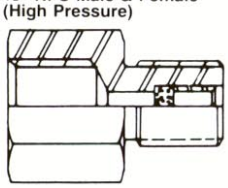
3/8" NPT Female × 3/8" NPT Male



1/2" NPT Female × 1/2" NPT Male



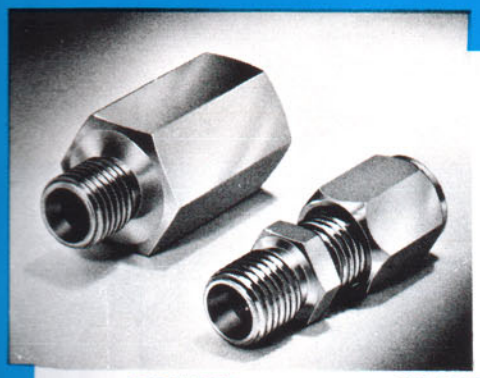
1/2" NPS Male & Female (High Pressure)



Cat. No.	Description	Housing Material	Net Weight	Length
12A	1/8" NPT Male × 1/8" NPT Female	Aluminum	1/4 oz.	1.1"
12B	1/8" NPT Male × 1/8" NPT Female	Brass	1/2 oz.	1.1"
12S	1/8" NPT Male × 1/8" NPT Female	Stainless Steel (303)	1/2 oz.	1.1"
25B	1/4" NPT Male × 1/4" NPT Female	Brass	2 oz.	1.5"
25M	1/4" NPT Male × 1/4" NPT Female	Monel (CuNi)	2 oz.	1.5"
25S	1/4" NPT Male × 1/4" NPT Female	Stainless Steel (303)	2 oz.	1.5"
25S6	1/4" NPT Male × 1/4" NPT Female	316 Stainless Steel	2 oz.	1.5"
F25S	1/4" NPT Female × 1/4' NPT Female	Stainless Steel (303)	2 1/2 oz.	2"
IM2B	1/8" NPT Female x 1/4" NPT Male	Brass	2 oz.	1.6"
IM2S	1/8" NPT Female x 1/4" NPT Male	Stainless Steel	2 oz.	1.6"
2M2B	1/4" NPT Male × 1/4" NPT Male	Brass	2 oz.	1 1/2"
2M2S	1/4" NPT Male × 1/4" NPT Male	Stainless Steel	2 oz.	1 1/2"
5M2M	1/2" NPT Male × 1/4" NPT Female	Monel	8 oz.	2"
5M2S	1/2" NPT Male × 1/4" NPT Female	Stainless Steel	8 oz.	2"
5M2B	1/2" NPT Male × 1/4" NPT Female	Brass	8 oz.	2"
2M5B	1/4" NPT Male × 1/2" NPT Female	Brass	5 1/2 oz.	2.1"
2M5S	1/4" NPT Male × 1/2" NPT Female	Stainless Steel (303)	5 1/2 oz.	2.1"
2M5M	1/4" NPT Male × 1/2" NPT Female	Monel (CuNi)	5 1/2 oz.	2.1"
40B	3/8" NPT Male × 3/8" NPT Female	Brass	6 oz.	2"
40S	3/8" NPT Male × 3/8" NPT Female	Stainless Steel	6 oz.	2"
40M	3/8" NPT Male × 3/8" NPT Female	Monel	6 oz.	2"
50B	1/2" NPT Male × 1/2" NPT Female	Brass	8 oz.	2.2"
50M	1/2" NPT Male × 1/2" NPT Female	Monel (CuNi)	8 oz.	2.2"
50S	1/2" NPT Male × 1/2" NPT Female	Stainless Steel (303)	8 oz.	2.2"
50S6	1/2" NPT Male × 1/2" NPT Female	316 Stainless Steel	8 oz.	2.2"
50SS	1/2" NPS Male × 1/2" NPS Female	Stainless Steel (303)	9 oz.	2.2"

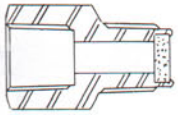
*Intermediate porosities are available on special order. Other fittings styles are available; prices on application.

CHEMIQUIP PRODUCTS CO., INC.
56 2nd Ave, Brooklyn, NY 11215 Tel. (201) 868-4445/6 Fax (201) 868-4447

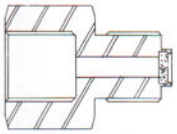


CHEMIQUIP FLARELESS (BITE-TYPE) AND GASKET SEAL TUBING SNUBBERS

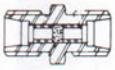
BPST SNUBBER



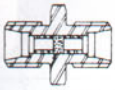
BSPP SNUBBER



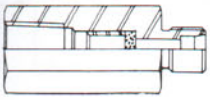
Cat. No. AC-1U



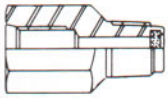
Cat. No. ACG-1U



Cat. No. 25FS-1U



*Cat. No. 25MS-1K



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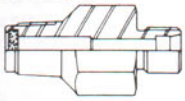

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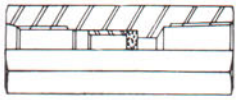
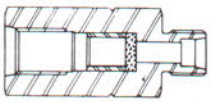


Cat. No. 150-KNC-1U



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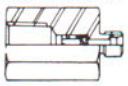
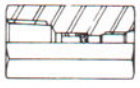


Cat. No. 50FS-1K

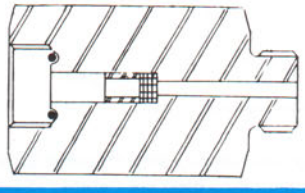


INDUSTRIAL TYPE - BRITISH PIPE THREADS

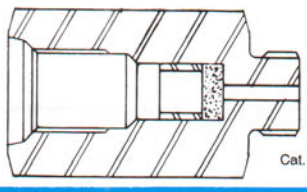
Cat No.	Description	Housing Material	Net Weight	Length
12S-BSPP 12B-BSPP	1/8" British Pipe Thread Parallel (Male x Female)	303 S.S. Brass	1 oz.	1 1/8"
12S-BSPT 12B-BSPT	1/8" British Pipe Thread Taper (Male x Female)	303 S.S. Brass	1 o z.	1 1/8"
25S-BSPP 25B-BSPP	1/4" British Pipe Thread Parallel (Male x Female)	303 S.S. Brass	1.5 oz.	1 3/8"
25S-BSPT 25B-BSPT	1/4" British Pipe Thread Taper (Male x Female)	303 S.S. Brass	1.5 oz.	1 3/8"
40S-BSPP 40B-BSPP	3/8" British Pipe Thread Parallel (Male x Female)	303 S.S. Brass	2 oz.	1 5/8"
40S-BSPT 40B-BSPT	3/8" British Pipe Thread Taper (Male x Female)	303 S.S. Brass	2 oz.	1 5/8"
50S-BSPP 50B-BSPP	1/2" British Pipe Thread Parallel (Male x Female)	303 S.S. Brass	5 oz.	2"
50S-BSPT 50B-BSPT	1/2" British Pipe Thread Taper (Male x Female)	303 S.S. Brass	5 oz.	2"

CHEMIQUIP FLARELESS (BITE-TYPE) AND GASKET SEAL TUBING SNUBBERS

Cat No.	Description	Housing Material	Net Weight	Length
AC-1U	1/4" Flareless "Bite-Type" (7/16"-20 UNF-3A) Tubing, Both Ports,1/2" Hex. Body	316 S.S	2 oz.	1 1/16"
ACG-1U	1/4" Flareless "Bite-Type" (7/16"-20 UNF-3A) Tubing, Both Ports, 11/16" Hex. Body (O Ring Seal Available)	316 S.S	2 oz.	1 1/16"
25FS-1U	1/4" NPT Female x 1/4" Flareless "Bite-Type" Tubing (7/16"-20 UN-2A)	316 S.S	2 oz.	2"
25FS-1K	1/4" NPT Female x 1/4" Female Gasket Seal Tubing (7/16"-20 UN-2B)	316 S.S	2 oz.	2"
25MS-1U	1/4" NPT Male x 1/4" Flareless "Bite-Type" Tubing (7/16"-20 UN-2A)	316 S.S	2 oz.	1 3/4"
25MS-1K	1/4" NPT Female x 1/4" Flareless Gasket Seal Tubing (7/16"-20 UN-2B)	316 S.S	2 oz.	1 9/16"
50MS-1K	1/2" NPT Male x 1/4" Flareless "Bite-Type" Tubing (7/16"-20 UNF-2A)	303 S.S	9 oz.	2 1/16"
150KNC-1U	1/4" Female Gasket Seal Tubing (7/16"-20 UNF-2B) x 1/4" Flareless "Bite-Type" Tubing (7/16"-20 UN)	316 S.S	3 oz.	2"
150KMN-1U	1/4" Female Gasket Seal Tubing (7/16"-20 UNF-2B) x 1/4" Flareless "Bite-Type" Tubing (7/16"-20 UN)	MONEL	3 oz.	2"
50FS-1U	1/2" NPT Female x 1/4" Flareless "Bite-Type" Tubing (7/16"-20 UNF-2A)	316 S.S	9 oz.	2 1/4"
50FS-1K	1/2" NPT Female x 1/4" Female Gasket Seal Tubing (7/16"-20 UNF-2B)	316 S.S	9 oz.	2 5/8"
175KNC-1U	3/8" Female Gasket Seal Tubing (9/16"-18 UNF) x 3/8" Tube (9/16"-18 UNF) Male (Conforms to Mil-D-2940A & Mil-S-2940B)	316 S.S &	5 oz.	2"
175KMN-1U	3/8" Female Gasket Seal Tubing (9/16"-18 UNF) x 3/8" Tube (9/16"-18 UNF) Male (Conforms to Mil-D-2940A & Mil-S-2940B)	MONEL	5 oz.	2"

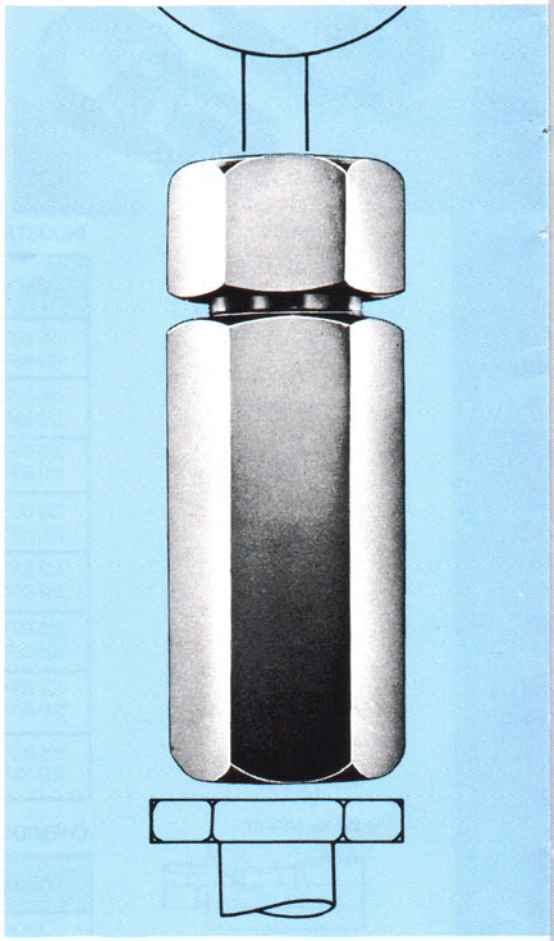


Cat. No. 175 KNC-1U (Mil-S-2940B)



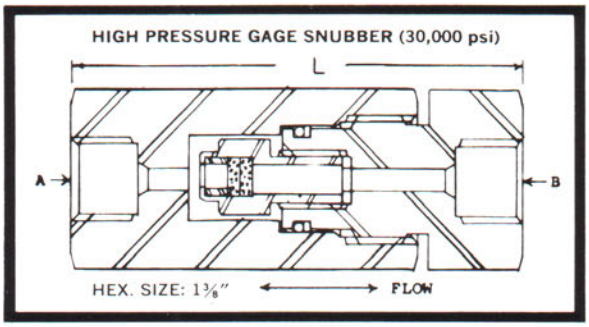
Cat. No. 175 KNC-1U (Mil-D-2940A)

CHEMIQUIP PRESSURE SNUBBERS for
SPECIAL PURPOSES



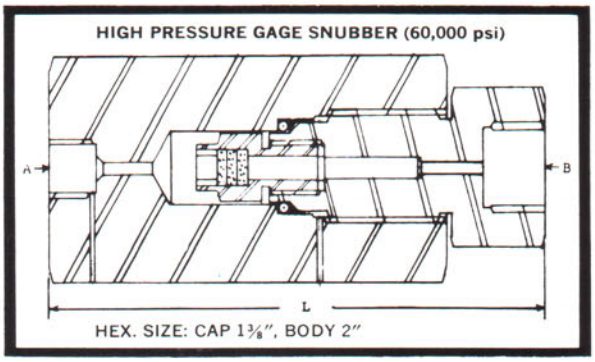
HIGH PRESSURE GAGE SNUBBER

Designed for the protection of pressure gages or other pressure devices when they are called upon to work under the extremes of pressure encountered in many chemical processing, refining and synthesizing industry factories.



HOUSING CATALOG NUMBERS (30,000 psi)

Catalog Number	Tubing Connection (AMINCO) "A"	Pipe Connection "B"	Length "L"
30-31 HF-4B-GS	1/4"	1/4" NPT	4 3/16"
30-31 HF-4-GS	1/4"	1/4" TUBE AMINCO (9/16"-18NF2)	4 3/16"
30-31 HF-6B-GS	3/8"	1/4" NPT	4 3/16"
30-31 HF-6-GS	3/8"	1/4" TUBE AMINCO (3/4"-16NF2)	4 3/16"
30-31 HF-4D-GS	1/4"	3/8" NPT	4 9/16"
30-31 HF-6D-GS	3/8"	1/2" NPT	4 9/16"
30-31 HF-4J-GS	1/4"	1/2" NPS	4 9/16"
30-31 HF-6J-GS	3/8"	1/2" NPS	4 9/16"



HOUSING CATALOG NUMBERS (60,000 psi)

Catalog Number	Tubing Connection (AMINCO) "A"	Pipe Connection "B"	Length "L"
60-31 HF-4B-GS	1/4"	1/4" NPT	5 1/2"
60-31 HF-4-GS	1/4"	1/4" TUBE AMINCO (9/16"-18NF2)	5 1/2"
60-31 HF-6B-GS	3/8"	1/4" NPT	5 1/2"
60-31 HF-6-GS	3/8"	1/4" TUBE AMINCO (3/4"-16NF2)	5 1/2"
60-31 HF-4D-GS	1/4"	3/8" NPT	6"
60-31 HF-6D-GS	3/8"	1/2" NPT	6"
60-31 HF-4J-GS	1/4"	1/2" NPS	6 1/2"
60-31 HF-6J-GS	3/8"	1/2" NPS	6 1/2"

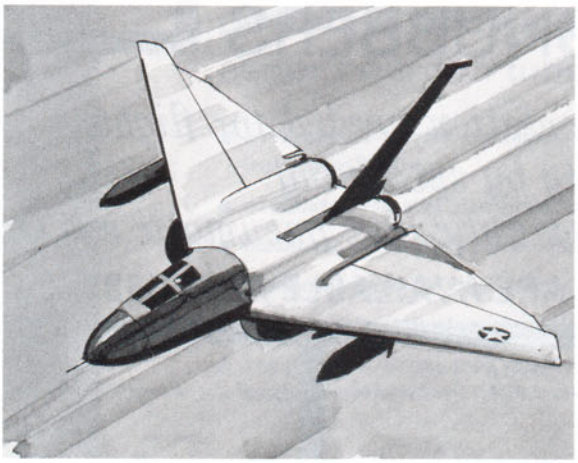
- Fabricated of Stainless Steel Type 316 for maximum operating pressures of 30,000 psi or 60,000 psi. (Unique design, utilizing an "O" ring seal, makes it possible to contain pressures to 60,000 psi without applying extreme force to threaded connections.)
- Special designs or threaded connections to order.
- Housing is easily disassembled for cleaning or service.
- No moving parts.

SNUBBER ELEMENT CATALOG NUMBERS

Catalog Number	Service Fluid	Viscosity Range
HP-50C	Highly Viscous Fluids	Over 500 S.S.U.
HP-50D	Heavy Oils	225 to 500 S.S.U.
HP-50E	Water and Light Oils	30 to 225 S.S.U.
HP-50F	Vapors and Low Viscosity Fluids	Under 30 S.S.U.
HP-50G	Air and Similar Gases	
HP-50HX	Violent Gas Pulsations or Surges	

When ordering, please specify both Housing Catalog Number and Snubbing Element Catalog Number.

CHEMIQUIP AIRCRAFT PRESSURE SNUBBERS



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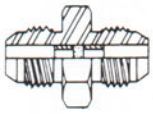
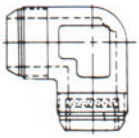


TYPE B

TYPE L



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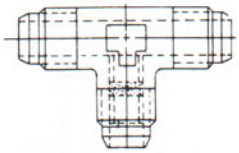

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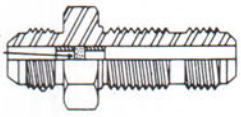
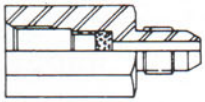


TYPE AR

TYPE KAC



PROTECT HYDRAULIC & PNEUMATIC PRESSURE SENSITIVE DEVICES

- **Insure steady, accurate pressure response**
- **Protect pressure sensitive instruments against pulsation or surges**
- **Increase instrument life.**

WHEN ORDERING, PLEASE SPECIFY DESIRED POROSITY AS SHOWN UNDER "RECOMMENDED POROSITIES"

Description of Fitting		HOUSING MATERIAL			
		Cadmium-Plated Steel		Stainless Steel	
		Cat. No.	Weight	Cat. No.	Weight
Coupling Flare x Flare (similar to AN815)	1/4" Flare (7/16"-20 NF-3)	AN-1	1/2 oz.	AC-1	1/2 oz.
	3/8" Flare (9/16"-18 NF-3)	AN-6	1 oz.	AC-6	1 oz.
	1/2" Flare (3/4"-16 NF-3)	AN-8	2 oz.	AC-8	2 oz.
Coupling Flare x NPT (similar to AN816)	1/4" Flare (7/16"-20 NF-3) x 1/8" NPT Male	12BN-1/12MR-4	1/2 oz.	12BC-1/12MRS-4	1/2 oz.
	1/4" Flare (7/16"-20 NF-3) x 1/4" NPT Male	25BN-1/25MR-4	1/2 oz.	25BC-1/25MRS-4	1/2 oz.
	3/8" Flare (9/16"-18 NF-3) x 1/4" NPT Male	25BN-6/25MR-6	1 oz.	25BC-6/25MRS-6	1 oz.
Elbow Flare (similar to AN821)	1/4" Flare (7/16"-20 NF-3)	LN-1	1 oz.	LC-1	1 oz.
	3/8" Flare (9/16"-18 NF-3)	LN-6	2 oz.	LC-6	2 oz.
	1/2" Flare (3/4"-16 NF-3)	LN-8	3 oz.	LC-8	3 oz.
Tee Flare (similar to AN824)	1/4" Flare (7/16"-20 NF-3)	TN-1	2 oz.	TC-1	2 oz.
	3/8" Flare (9/16"-18 NF-3)	TN-6	3 oz.	TC-6	3 oz.
	1/2" Flare (3/4"-16 NF-3)	TN-8	4 oz.	TC-8	4 oz.
Bulkhead Coupling Flare (similar to AN832)	1/4" Flare (7/16"-20 NF-3)	AHN-1	1 oz.	AHC-1	1 oz.
	3/8" Flare (9/16"-18 NF-3)	AHN-6	2 oz.	AHC-6	2 oz.
	1/2" Flare (3/4"-16 NF-3)	AHN-8	3 oz.	AHC-8	3 oz.
Reducing Coupling Flare x Flare (similar to AN919)	1/4" Flare (7/16"-20 NF-3) x 1/8" Flare (5/16"-20 NF-3)	ARN-1	1 oz.	ARC-1	1 oz.
	3/8" Flare (9/16"-18 NF-3) x 1/4" Flare (7/16"-20 NF-3)	1ARN-6	1 oz.	1ARC-6	1 oz.
	1/2" Flare (3/4"-16 NF-3) x 1/4" Flare (7/16"-20 NF-3)	1ARN-8	2 oz.	1ARC-10	2 oz.
Flare Tube Bushing Gasket Seal x Flare (similar to AN894)	1/4" Tube x 1/4" Flare (7/16"-18 NF-3) x (7/16"-20 NF-3)	1KAN-1	2 oz.	1KAC-1	2 oz.
	3/8" Tube x 1/4" Flare (9/16"-18 NF-3) x (7/16"-20 NF-3)	6KAN-1	2 oz.	6KAC-1	2 oz.
	3/8" Tube x 3/8" Flare (9/16"-18 NF-3) x (9/16"-18 NF-3)	6KAN-6	2 oz.	6KAC-6	2 oz.
	1/2" Tube x 1/4" Flare (3/4"-16 NF-3) x (7/16"-20 NF-3)	8KAN-1	3 oz.	8KAC-1	3 oz.
	1/2" Tube x 3/8" Flare (3/4"-16 NF-3) x (9/16"-18 NF-3)	8KAN-6	3 oz.	8KAC-6	3 oz.

*Intermediate porosities are available on special order. Other styles of fittings available; prices on application.

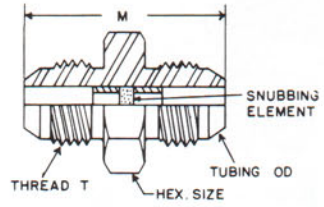
CHEMIQUIP POROUS METAL PRESSURE SNUBBERS

AIRCRAFT

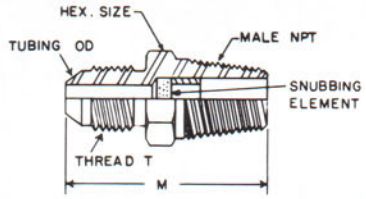
Insure the reliable instrumentation needed for flight performance and aircraft safety by specifying Chemiquip Snubbers for hydraulic and pneumatic systems.

ALL AN AND MS TYPE FITTINGS ARE AVAILABLE AS SNUBBERS

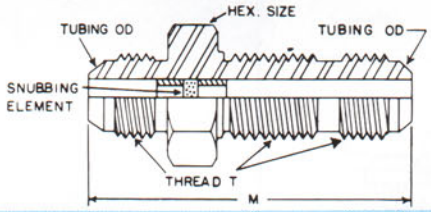
TYPE A
Flared Tube Union



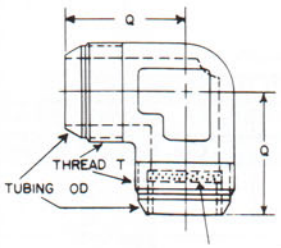
TYPE B
Flared Tube and Pipe Thread Nipple



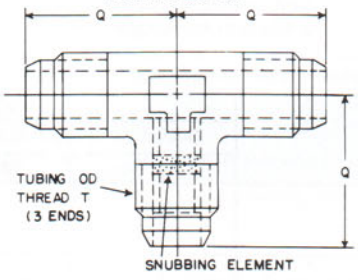
TYPE AH
Flared Tube Bulkhead Union



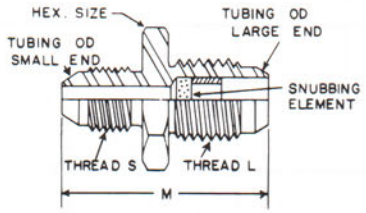
TYPE L
Flared Tube Elbow



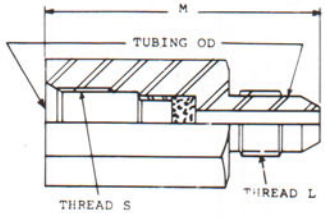
TYPE T
Flared Tube Tee



TYPE AR
Flared Tube Reducer



TYPE KAC
Flared Tube Bushing



AIRCRAFT SNUBBERS DIMENSIONS

CATALOG NUMBER	TUBING SIZE (Inches)	HEX (Inches)	DIMENSIONS M Q (Inches)	THREAD T	THREAD NPT
AC-1	1/4	11/16	1 1/4	7/16"-20	
AC-6	3/8	13/16	1 3/8	9/16"-18	
AC-8	1/2	1	1 9/16	3/4"-16	
12 BC-1	1/4	1/2	1 7/64	7/16"-20	1/8"
25 BC-1	1/4	9/16	1 3/8	7/16"-20	1/4"
25 BC-6	3/8	5/8	1 3/8	9/16"-18	1/4"
LC-1	1/4		57/64	7/16"-20	
LC-6	3/8		1 1/16	9/16"-18	
LC-8	1/2		1 1/4	3/4"-16	
TC-1,	1/4		55/64	7/16"-20	
TC-6	3/8		1 1/32	9/16"-18	
TC-8	1/2		1 7/32	3/4"-16	
AHC-1	1/4	11/16	2 3/64	7/16"-20	
AHC-6	3/8	13/16	2 7/32	9/16"-18	
AHC-8	1/2	1	2 29/64	3/4"-16	
				THRD. S	THRD. L
ARC-1	1/8 x 1/4	11/16	1 1/4	5/16"-24	7/16"-20
1 ARC-6	1/4 x 3/8	13/16	1 13/32	7/16"-20	9/16"-18
1 ARC-10	1/4 x 1/2	1	1 17/32	7/16"-20	3/4"-16
1 KAC-1	1/4 x 1/4	11/16	1 45/64	7/16"-20	7/16"-20
6 KAC-1	3/8 x 1/4	13/16	1 25/64	9/16"-18	7/16"-20
6 KAC-6	3/8 x 3/8	3/4	1 5/16	9/16"-18	9/16"-18
8 KAC-1	1/2 x 1/4	1	1 37/64	3/4"-16	7/16"-20
8 KAC-6	1/2 x 3/8	1	1 35/64	3/4"-16	9/16"-18

ORDERING INFORMATION:
When ordering, specify Part No. and Porosity designation. If required, CHEMIQUIP Engineers will aid in the selection of proper metal or porosity.

ENGINEERING DATA:

OPERATING CHARACTERISTICS

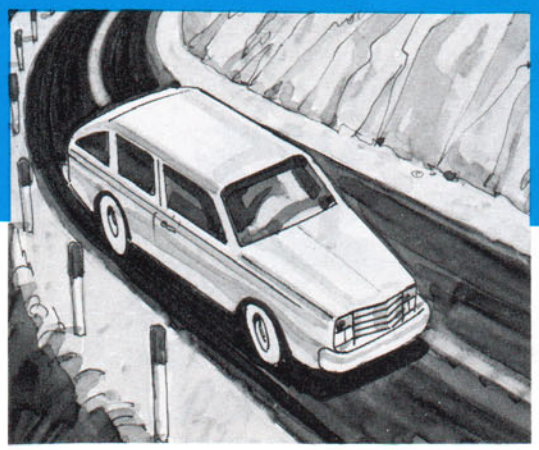
	Stainless St. Housing	Cad. Pltd. CarbonSt.Hsg	Bushing 302 St. St.	Porous Disc 316 St. St.
Burst Pressure	35,000 psi	30,000 psi	—	12,000 psi
Proof Pressure	23,200 psi	20,000 psi	—	6,500 psi
Working Pressure	11,600 psi	10,000 psi	5,500	5,500
Differential Press.	—	—	5,500	5,500 psi
Max. Oper. Temp.	1,300°F	1,300°F	1,300°F	1,300°F

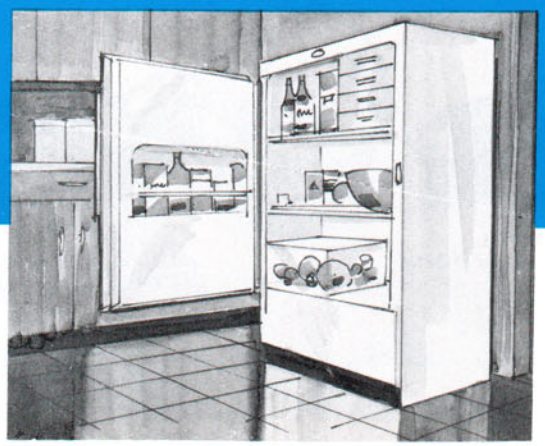
STANDARD MATERIALS OF CONSTRUCTION

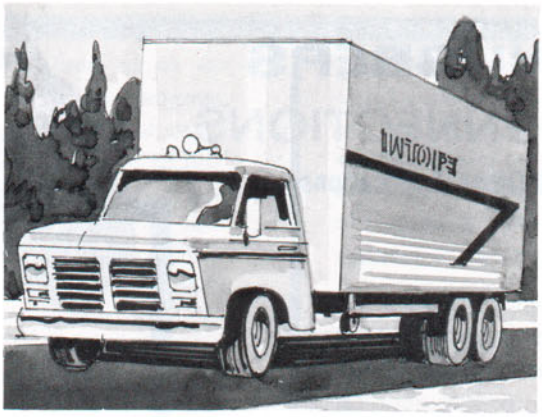
Housing:
- 303 Stainless Steel
- 316 Stainless Steel
- Cadmium Plated Carbon Steel
- Aluminum
- Monel

Porous Disc:
- 316 Stainless Steel
- Monel

REFRIGERATION, AUTOMOTIVE AND OTHER APPLICATIONS

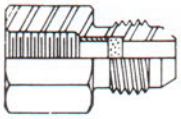


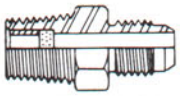




REFRIGERATION AND AUTOMOTIVE TYPE WITH TAPERED PIPE AND FLARE TUBING CONNECTIONS, Conforms with JIC Standards

When ordering, please specify desired Porosity as shown under "Recommended Porosities"

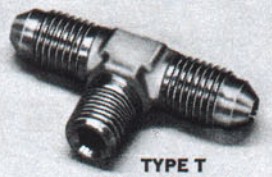




Description of Fitting	HOUSING MATERIAL			
	Cadmium-Plated Steel		Stainless Steel	
	Cat. No.	Weight	Cat. No.	Weight
1/8" NPT Female x 1/4" Flare	12-FR-4	1 oz.	12-FRS-4	1 oz.
1/8" NPT Female x 5/16" Flare	12-FR-5	1 oz.	12-FRS-5	1 oz.
1/4" NPT Female x 1/4" Flare	25-FR-4	1 oz.	25-FRS-4	1 oz.
1/4" NPT Female x 5/16" Flare	25-FR-5	1 oz.	25-FRS-5	1 oz.
1/4" NPT Female x 3/8" Flare	25-FR-6	1 oz.	25-FRS-6	1 oz.
1/2" NPT Male x 1/4" Flare	50-MR-4	3 oz.	50-MRS-4	3 oz.
1/8" NPT Male x 5/16" Flare	12-MR-5	2 oz.	12-MRS-5	2 oz.
1/2" NPT Male x 5/16" Flare	50-MR-5	3 oz.	50-MRS-5	3 oz.
1/4" NPT Male x 5/16" Flare	25-MR-5	2 oz.	25-MRS-5	2 oz.
1/2" NPT Male x 3/8" Flare	50-MR-6	3 oz.	50-MRS-6	3 oz.

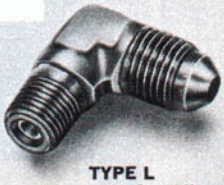
*Intermediate Porosities are available on special order. Other styles of fittings available; prices on application.

TYPE A
Flared Tube Union



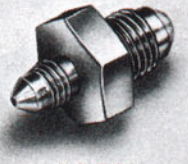
TYPE T
Flared Tube Tee

TYPE B
Flared Tube and Pipe Thread Nipple



TYPE L
Flared Tube Elbow

TYPE AH
Flared Tube Bulkhead Union



TYPE AR
Flared Tube Reducer

CHEMIQUIP PRESSURE SNUBBERS

WITH TUBING CONNECTIONS

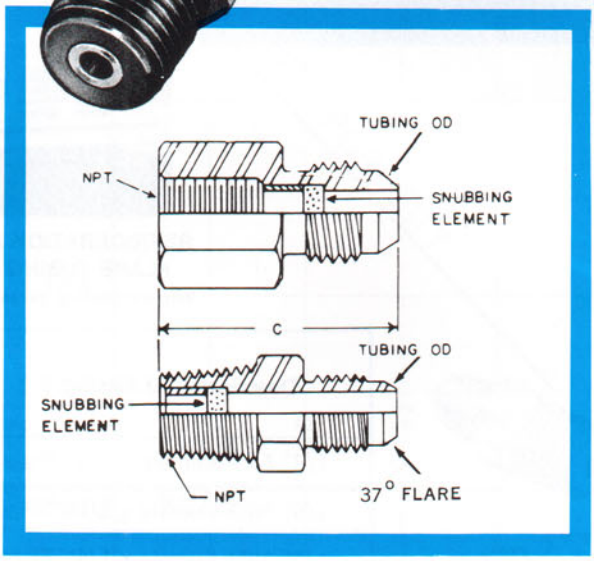
for Refrigeration, Automotive, and Other Applications

ENGINEERING DATA:

RECOMMENDED POROSITIES:

Type of Service	Porosity Designation	Micron Rating
Highly Viscous Fluids (over 500 S.S.U.)	C	75
Oils (225 to 500 S.S.U.)	D	40-45
Water and Light Oils (30 to 225 S.S.U.)	E	10
Vapor and Low Viscosity Fluids (under 30 S.S.U.)	F	7
Air or other Gases	G	2-5
Pulsating Gas	HX	1
Extreme Gas Pulsation	HXX	½

Note: Other porosities available on special order.



Add suffix to Catalog Number to indicate desired Porosity (e.g. 12-FR-4C)

STANDARD MATERIALS OF CONSTRUCTION:

Housing: Cadmium-plated Carbon Steel; Stainless Steel (300 Series)

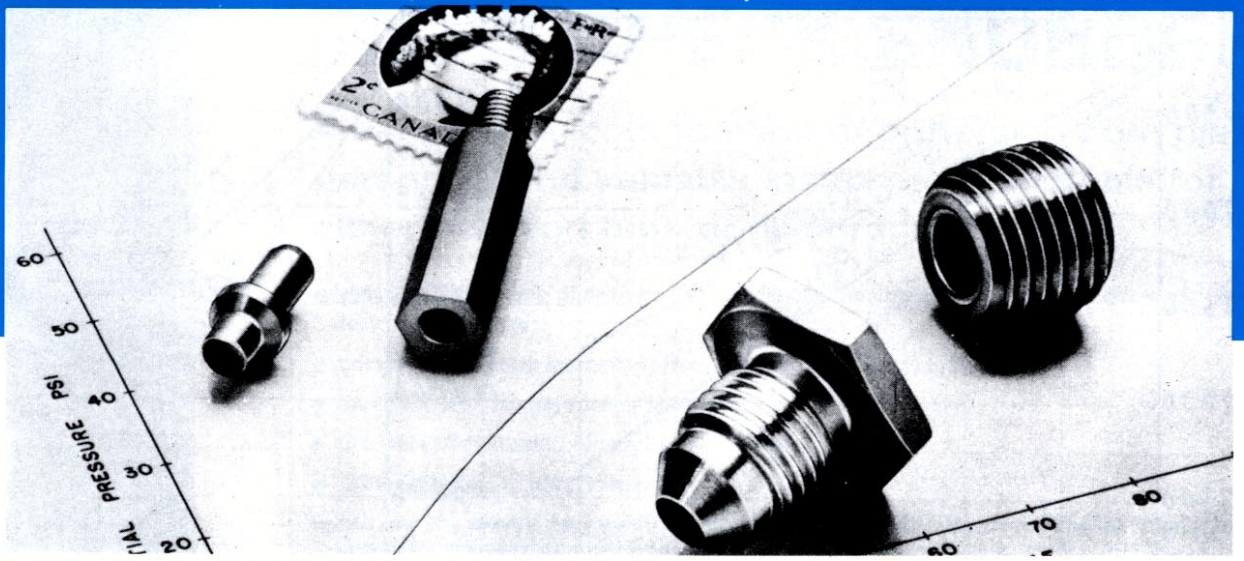
Porous Disc: Stainless Steel Type 316

DIMENSIONS:

Catalog No.	Tubing (O.D.)	Pipe npt	Overall Length (C)
12-FR-4	¼"	⅛" Female	1 3/16"
12-FR-5	5/16"	⅛" Female	1 3/16"
25-FR-4	¼"	¼" Female	1⅜"
25-FR-5	5/16"	¼" Female	1 5/16"
25-FR-6	⅜"	¼" Female	1 5/16"
12-MR-4	¼"	⅛" Male	1⅛"
12-MR-5	5/16"	⅛" Male	1 3/16"
25-MR-4	¼"	¼" Male	1⅜"
25-MR-5	5/16"	¼" Male	1 5/16"
25-MR-6	⅜"	¼" Male	1 5/16"

CHEMIQUIP PRODUCTS CO., INC.
56 2nd Ave, Brooklyn, MI 11215 Tel. (201) 868-4445 Fax (201) 868-4447

FLOW RESTRICTORS
(BLEED VALVES)



TYPICAL CHEMIQUIP FLOW RESTRICTORS Other Styles Are Available On Order

Many of the highly sophisticated systems which are currently used by industry and in the aerospace program, require a restrictor for accurately metering limited quantities of liquids or gases. These restrictors must fulfill rigid size, weight, accuracy and repeatability standards. The usual method for effecting this control is the employment of needle valves, capillary tubing or orifice plates. Objection to these methods may be found in their susceptibility to erosion, high cost of production, difficulty in machining and a high weight factor. Using these methods, it is difficult to achieve repeatable and duplicate performance for many flow restrictors on production runs. The Chemiquip system, involving the use of a porous restrictor element, fulfills all of the requirements for compactness, lightness and extreme accuracy. It is also inexpensive to produce and capable of highly repeatable results for the full production run. The Chemiquip porous metal restrictor element consists of a porous membrane having myriads of fine ports. By careful control of the porous membrane, in terms of its pore size, it is possible to achieve accuracy beyond the limits of any other known production method.

In addition to its extreme accuracy, the Chemiquip Flow Restrictor is versatile in that it may be fitted into wide varieties of housings for assembly in the most convenient fashion. A few typical types of mounting are pictured.

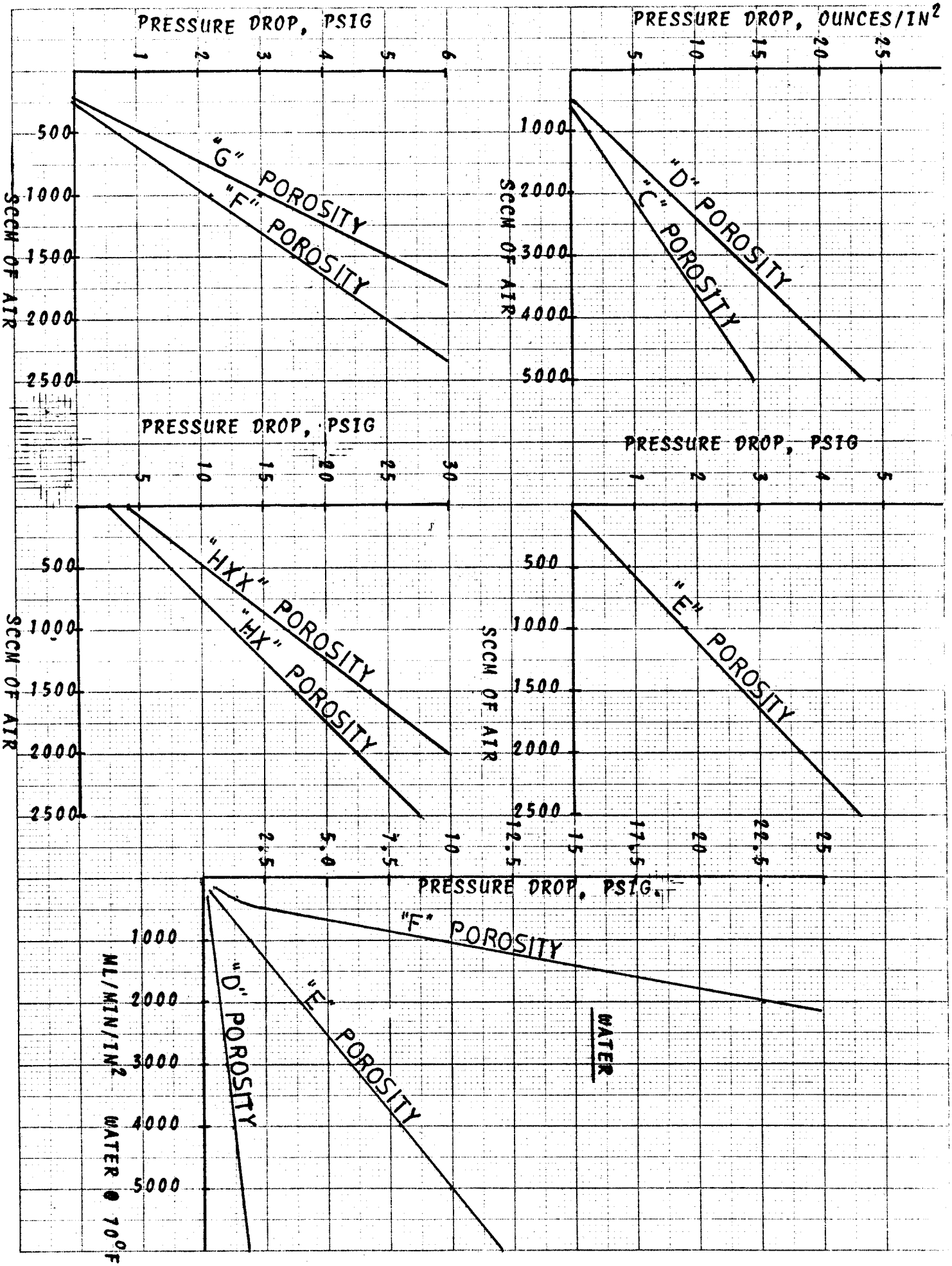
In addition, it is possible to supply flow restrictors having conventional pipe thread or tubing connections. Unmounted flow restrictor elements may also be provided. However, since it is necessary to calibrate the flow restrictor element after it has been mounted, the accuracy of the unmounted element may not be as high, in terms of flow control, as that of the mounted element. Since the flow control is achieved by the use of a porous membrane which is a fraction of an inch in thickness and diameter, the weight of the completed device is essentially the weight of the mounting.

The flow restriction which is achieved with this small wafer can be likened to many feet of weighty and cumbersome capillary tubing. Since flow restrictors are [redacted] suit specific applications, there is no standard unit available. The tolerance for specific flow of liquids or gases may be indicated by the user. The flow restrictor is guaranteed to fulfill all prescribed requirements.

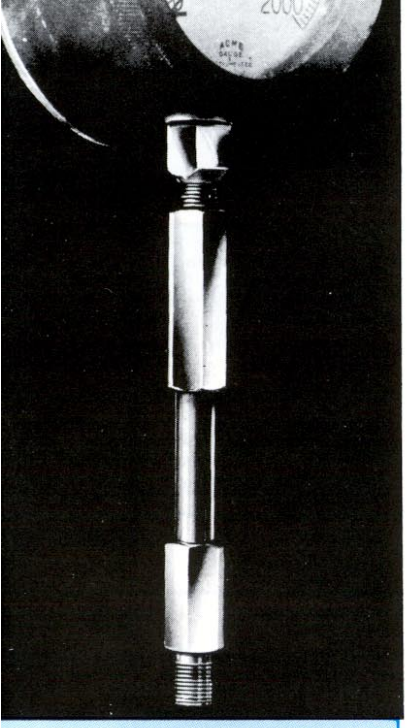
Typical examples of flow vs. pressure drop are shown on the accompanying curves. It will be noted that the flows plotted on these curves are virtually linear. In addition to these characteristics, it is possible to achieve and maintain high accuracy. Flows of as little as 1 cc/sec. of standard air at a pressure difference of 60 psig have been produced on a production basis, the while maintaining a tolerance of 10% deviation from the mean flow. The same high accuracy and repeatable performance can be expected for the entire production run. These results are achieved at a far lower cost than that available from any other standard flow restrictor.

When ordering, the following information shall be furnished:

1. **Size and style of connections (i.e., pipe, tubing or other)**
2. **Material of construction.**
3. **Phase and viscosity of fluid to be restricted.**
4. **Flow requirement and pressure differential.**
5. **Flow tolerance.**



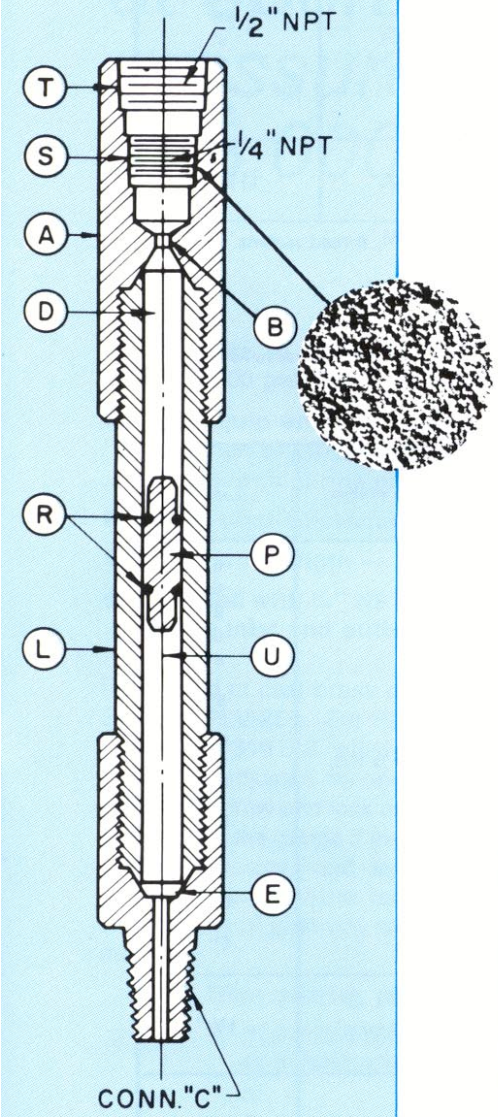
TYPICAL FLOW CURVES OF CHEMIQUIP FLOW RESTRICTORS



EXCESS FLOW CHECK SNUBBER

A simple, low-cost method of protecting both plant personnel and valuable instruments. Suitable for either bourdon tube or diaphragm type, it...

- **prevents the escape of noxious, toxic or flammable liquids or gases in the event of instrument rupture;**
- **completely isolates instrument from pressure actuating medium;**
- **maximum working pressure—30,000 psi;**
- **prevents transmission of surges or pulsations;**
- **is designed not to plug, clog or fail;**
- **has just one moving part which moves only a fraction of an inch, resulting in virtually no mechanical wear.**



5-RMB
15-RMB
15-RMC
15-RMD

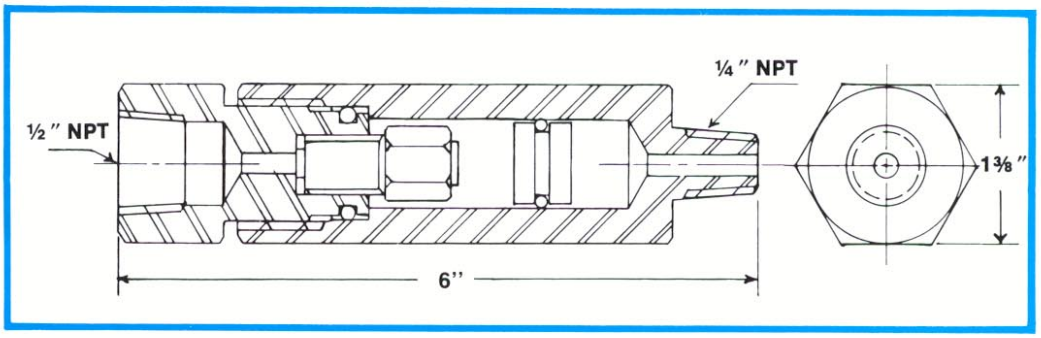
The Excess Flow Check Snubber of Type 316 stainless steel has an overall length of 6" approximately. It consists of a free bobbin type piston (P), equipped with two Buna "N" or Viton O Ring (R) for positive mechanical seal, assembled into a cylinder (L) which is carefully honed and lapped to provide a good mechanical bearing surface. In operation, the instrument and cylinder are completely filled with light mineral oil, glycerine or other low viscosity non-corrosive liquid. Pressure applied upstream of the piston (U) causes movement in the piston which is directly transmitted to the instrument through the filled, sealed system.

A specially-designed Chemiquip porous metal snubber (S) is built into the sealed side (A) of the device. The snubber smooths out transient surges or pulsations, preventing their transmission to the pressure instrument, yet permitting a full scale equilibrium reading of the instrument within three seconds. For unusual requirements, specially calibrated snubbers are available.

For assembly to the pressure instrument, a ½" npt female threaded connection is provided. For pressure instruments 'equipped with ¼" npt threads, a ¼" npt x ½" npt reducing bushing, Part No. RB2, is available.

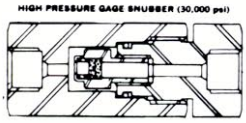
In the event of instrument rupture pressure upstream of the piston (U0 forces the piston (P) to the opposite end of the cylinder (L), closing the port (B) and thus prevents loss of product, at pressures as high as 30,000 psi. Since the snubber is built into the sealed end of the device, there is no danger of contamination of its porous material with entrained solids suspensions which may be present in the pressure-actuation medium.

Cat. No.	Maximum Operating Pressure (psi)	Connection C
5-RMB	5,000	¼" npt male
15-RMB	15,000	¼" npt male
15-RMC	15,000	⅜" npt male
15-RMD	15,000	½" npt male
30-RHM 4	30,000	¼" male high pressure tubing
30-RHM 6	30,000	⅜" male high pressure tubing
15-RAF 1	15,000	1/16" female taper seal tubing
15-RAF 2	15,000	⅛" female taper seal tubing
30-RHF 2	30,000	⅛" female high pressure tubing
30-RHF 4	30,000	¼" female high pressure tubing
30-RHF 6	30,000	⅜" female high pressure tubing
30-RHF 9	30,000	9/16" female high pressure tubing



Chemiquip Catalog — SUPER-HIGH-PRESSURE TYPE

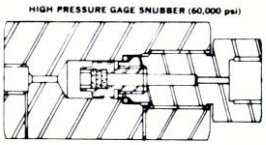
When ordering, please specify both desired Housing AND Snubbing Element Catalog numbers from charts

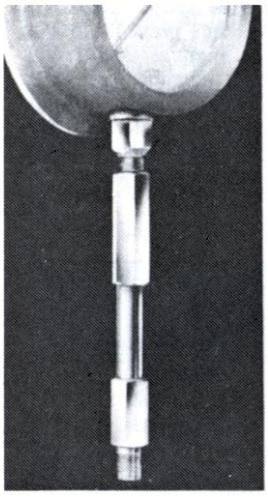


HOUSING CATALOG NUMBERS (30,000 psi)

Catalog Number	Tubing Connection (AMINCO) "A"	Pipe Connection "B"	Housing	Net Weight	Length
30-31-HF-4B-GS	¼"	¼" NPT	Type 316 Stainless Steel	1½ lbs.	4 3/16"
30-31-HF-4-GS	¼"	¼" TUBE AMINCO			4 3/16"
30-31-HF-6B-GS	⅜"	¼" NPT			4 3/16"
30-31-HF-6-GS	⅜"	⅜" TUBE AMINCO			4 3/16"
30-31-HF-4D-GS	¼"	½" NPT			4 9/16"
30-31-HF-6D-GS	⅜"	½" NPT			4 9/16"
30-31-HF-4J-GS	¼"	½" NPS			4 9/16"
30-31-HF-6J-GS	⅜"	½" NPS			4 9/16"
HP-50	Snubber Element Only (Specify Porosity when Ordering)		Type 303 Stainless Steel	3 oz.	1¼"

ALL Chemiquip Snubbers are delivered with NPT Male threads pre-wrapped with TEPtape™, thread sealant.





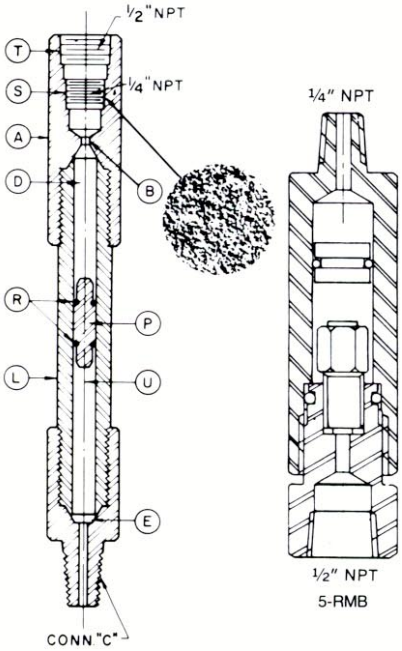
HOUSING CATALOG NUMBERS (60,000 psi)

Catalog Number	Tubing Connection (AMINCO) "A"	Pipe Connection "B"	Housing	Net Weight	Length
60-31-HF-4B-GS	¼"	¼" NPT	Type 316 Stainless Steel	3¼ lbs.	5½"
60-31-HF-4-GS	¼"	¼" TUBE AMINCO			5½"
60-31-HF-6B-GS	⅜"	¼" NPT			5½"
60-31-HF-6-GS	⅜"	⅜" TUBE AMINCO			5½"
60-31-HF-4D-GS	¼"	½" NPT			6"
60-31-HF-6D-GS	⅜"	½" NPT			6"
60-31-HF-4J-GS	¼"	½" NPS			6½"
60-31-HF-6J-GS	⅜"	½" NPS			6½"
HP-50	Snubber Element Only (Specify Porosity when Ordering)		Type 303 Stainless Steel	3 oz.	1¼"

ALL Chemiquip Snubbers are delivered with NPT Male threads pre-wrapped with TEPtape™, thread sealant.

EXCESS FLOW CHECK SNUBBER

- prevents the escape of noxious, toxic or flammable liquids or gases in the event of instrument rupture
- completely isolates instrument from pressure acuating medium
- maximum working pressure—30,000 psi
- prevents transmission of surges or pulsations
- is designed not to plug, clog or fail
- has just one moving part which moves only a fraction of an inch, resulting in virtually no mechanical wear.



Cat. No.	Maximum Operating Pressure (psi)	Connection C	Housing	Net Weight	Length
5-RMB	5,000	¼" npt male	Type 316 Stainless Steel	1½ lbs.	6"
15-RMB	15,000	¼" npt male			6"
15-RMC	15,000	⅜" npt male			6"
15-RMD	15,000	½" npt male			6"
30-RHM 4	30,000	¼" male high pressure tubing			6"
30-RHM 6	30,000	⅜" male high pressure tubing			6"
15-RAF 1	15,000	⅛" female taper seal tubing			6"
15-RAF 2	15,000	¼" female taper seal tubing			6"
30-RHF 2	30,000	⅛" female high pressure tubing			6"
30-RHF 4	30,000	¼" female high pressure tubing			6"
30-RHF 6	30,000	⅜" female high pressure tubing			6"
30-RHF 9	30,000	⅝" female high pressure tubing			6"
25PE	¼" NPT Male Porosity E Snubber Element (for use with Excess Flow Check)		Stainless Steel	1 oz.	1¼"
RB-2	¼" NPT x ½" NPT Reducing Bushing (for use with instruments having ¼" NPT Male connection)		Stainless Steel	3 oz.	1"

15-RMB
15-RMC
15-RMD

Superior Gauge Protection... from **CHEMIQUIP**

pressure limiting valve-snubber

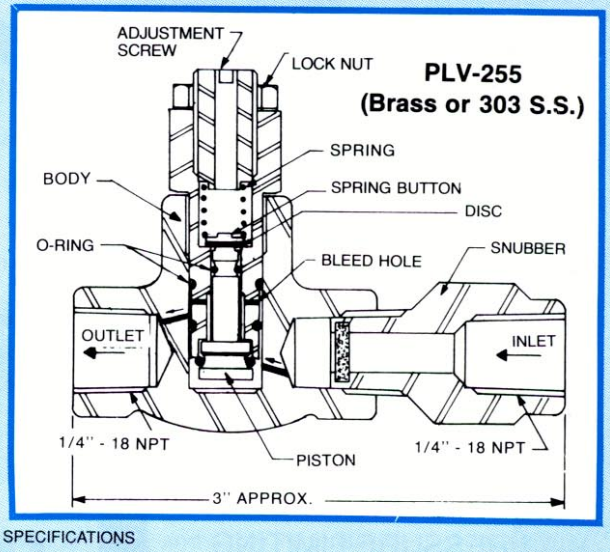
Model No. PLV-255 & PLV-2550*

* 316 S.S. - Meets N.A.C.E. MR0175 On Hardness

*Achieves new level of **Automatic** pressure gauge protection —Built-in snubber enhances valve's gauge-protecting performance*

For use with liquids or gases at operating pressures to 8,000 psi

PLV-2550
(½" NPT END CONNECTIONS)



PLV-255
(Brass or 303 S.S.)

- **Available in 4 set ranges: 10-150 psi, 150-500 psi, 500-1,000 psi, 1,000-3000 psi**
- **Chemiquip snubber assures positive, repeatable performance of valve and gauge — by protecting against surges, pulsations and entrained solids inclusions**
- **Swift, simple external adjustment**
- **Entire unit length — 3" (PLV-255) & 4" (PLV-2550)**
- **Outfitted with ¼" NPT (PLV-255) or ½" NPT (PLV-2550) female inlet and outlet ports**

Fabricated of cast brass or Forged Type 300 Series Stainless Steel for PLV-255. For PLV-2550, the valve is fabricated from forged type 316 S.S. which meets N.A.C.E. MR0175. The Valve is readily adjusted by the manipulation of a single external adjusting screw and lock nut. The Valve automatically shuts off pressure to the gauge if the pressure rises above the adjustable pre-set pressure, and automatically restores the instrument on-line when pressure falls below the pre-set value. Allows instruments of different ranges to be connected to a common manifold.

When ordering, please specify:

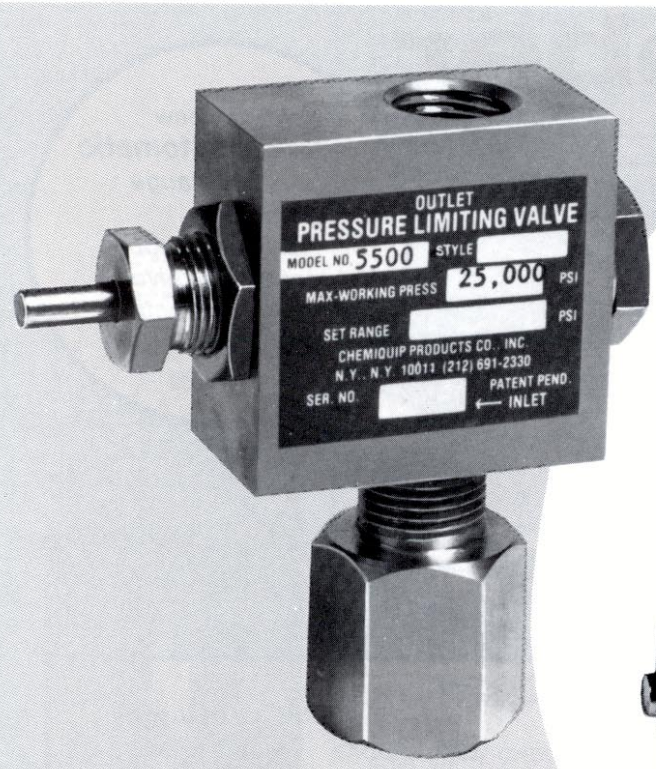
1. *PLV-255S (Stainless Steel) - ¼"NPT Connections*
   PLV-255B (Brass) - ¼"NPT Connections
   or
   PLV-2550 (316SS) - ½" NPT Connections
2. *Set Range Required*
3. *Type of Gas or Liquid in the System*

SPECIFICATIONS

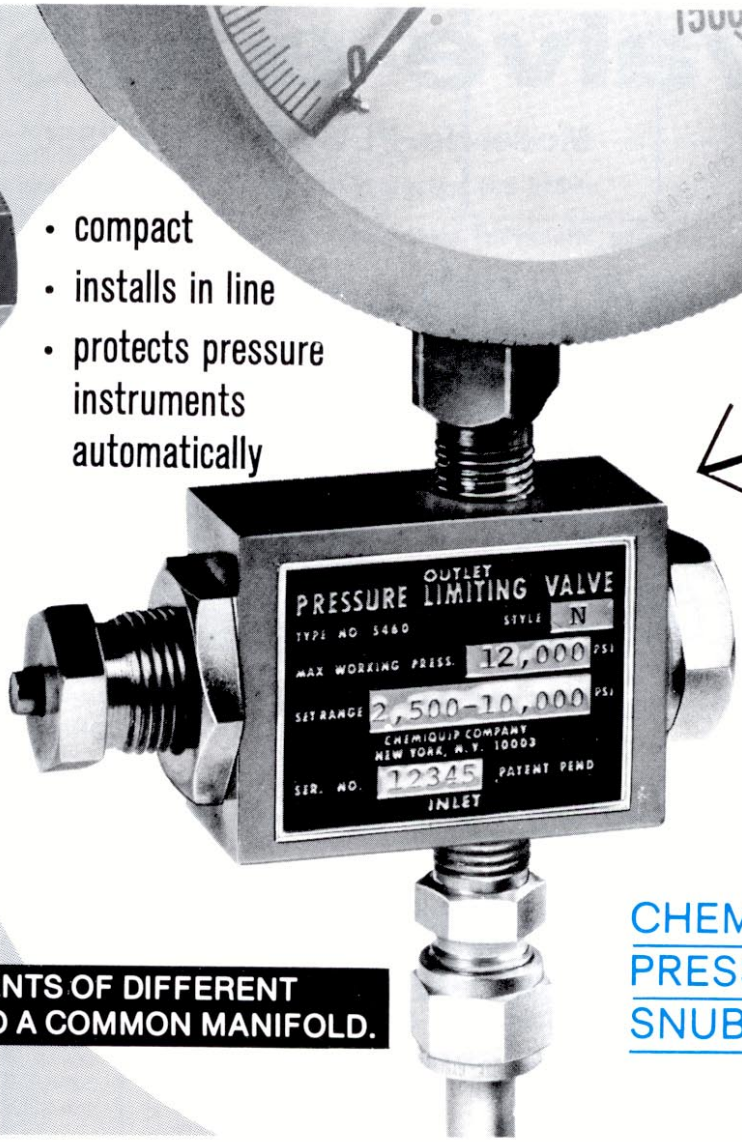
Pressure set ranges	Style-3	10-150 psi
	Style-4	150-500 psi
	Style-5	500-1,000 psi
	Style-6	1,000-3,000 psi
Inlet operating pressures		10-8,000 psi Stainless Steel
Minimum burst pressure		15,000psi (brass)
		25,000 psi (stainless steel)
Temperature ranges		-15° to 350°F (Viton)*
		-40° to 25KF (Buna N)
Body material		PLV-255S-300 Series Stainless Steel
		PLV-2550-316 Stainless Steel
Seal material		Viton or Buna N
Connections (both sides)		¼" NPT Female (PLV-255)
		½" NPT Female (PLV-2550)

*It is the customer's responsibility to make sure that the medium is compatible with the Viton or Buna-N O-Rings.

an advanced system for protection of pressure gauges and switches/CHEMIQUIP Pressure Limiting Valve



- compact
- installs in line
- protects pressure instruments automatically



ALLOWS PRESSURE INSTRUMENTS OF DIFFERENT RANGES TO BE CONNECTED TO A COMMON MANIFOLD.

Designed specifically for use with CHEMIQUIP PRESSURE SNUBBERS

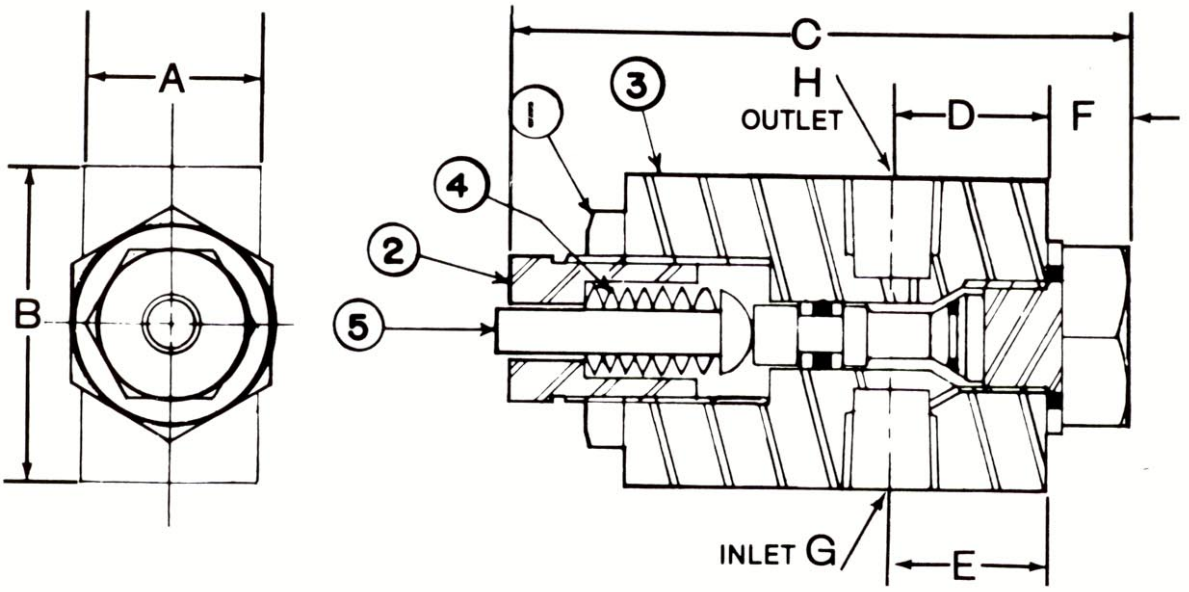
THIS PRESSURE LIMITING VALVE IS EXTREMELY COMPACT, EASILY INSTALLED & MAINTAINED

PART NO.	MAX. WORKING PRESS. (PSI)	SET RANGE (PSI)	STYLE NO.
PLV 5460	12,000	100-800	L
PLV 5460	12,000	800-2500	M
PLV 5460	12,000	2500-10,000	N
PLV 5500	25,000	100-800	L
PLV 5500	25,000	800-2500	M
PLV 5500	25,000	2500-10,000	N
PLV 6430	60,000	100-800	L
PLV 6430	60,000	800-2500	M
PLV 6430	60,000	2500-10,000	N
PLV 6430	60,000	10,000-18,000	O

• AUTOMATIC POSITIVE PROTECTION:
• ACCURATE REPEATABLE PERFORMANCE

- New Chemiquip Pressure Limiting Valve with ½''-14 NPT or ¼''-18 NPT inlet & outlet connections.
- It guards against gauge damage resulting from excess pressure.
- The shut-off pressure is adjustable from 100 to 10,000 psi for PLV-5460 & 5500; & 100-18,000 psi for PLV 6430.
- It seals out pressure rises above pre-set value automatically.
- It shuts off instrument line automatically when over pressure occurs.
- It automatically restores instrument line when pressure falls below pre-set values.
- When it is used in conjunction with Chemiquip Snubber, it protects pressure-sensitive instruments from transient line induced surges, pulsations and over pressure.
- The valve is made of 300 series stainless steel.
- The valve is rated from 12,000 to 60,000 psi, depending on models.

CHEMIQUIP PRESSURE LIMITING VALVE



	A	B	C	D	E	F	G	H
PLV 5460	1"	1¾"	4"	⅞"	⅞"	⅜"	¼" NPT	¼" NPT
PLV 5500	1¼"	2¼"	4"	⅞"	1"	⅜"	½" NPT	½" NPT
PLV 6430	2¼"	2¼"	6½"	2¾"	2⅜"	⅝"	9/16 - 18 NF for ¼" OD AMINCO	

ADJUSTMENT INSTRUCTIONS

- To increase pressure, back off lock nut (1), rotate adjustment screw (2) clockwise.
- To decrease pressure, rotate adjustment screw (2) counter-clockwise.
- IMPORTANT—For accurate, repeatable results, it is imperative to relieve upstream pressure to less than set-point before manipulating adjustment screw (2).
- When set, tighten lock nut (1). Adjustment range may be altered by removing adjustment screw (2) completely from valve body (3) and adding or removing disc springs (4) as required. Push rod (5) extends through adjustment screw (2) and moves in accordance with pressure changes. By mounting a micro switch at the end of the push rod (5), the switch may be used for electrically controlling the system.

The valve may be assembled with a snubber at inlet for complete pressure and surge or pulsation control. The snubber will also serve to smooth the reaction of the valve to pressure changes, thus avoiding erratic performance by insuring application of pressure at a constant rate. The valve may be assembled at any point or in any position in an instrument system. Adjacency to the instrument is not important to the proper operation of the valve.

TEMPERATURES RANGE:
Minus 40°C (minus 40°F) to 120°C (248°F). Temperature range is determined by seals which are used in the valve. Special seals are available to order to increase the temperature range.

ACCURACY
Repeatable accuracy of the valve depends on the rate of pressure rise. However, an accuracy of ± 10% of the set pressure may be expected.

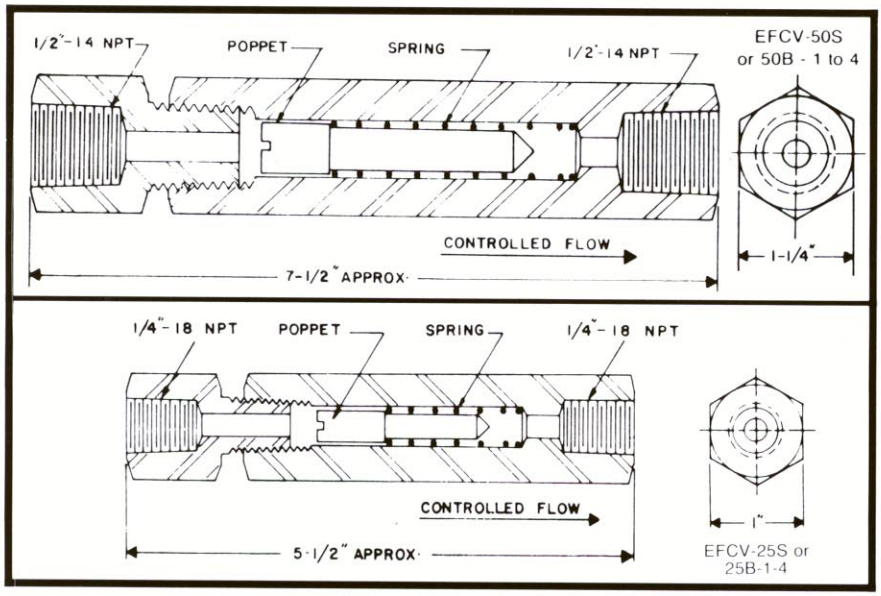
CHEMIQUIP

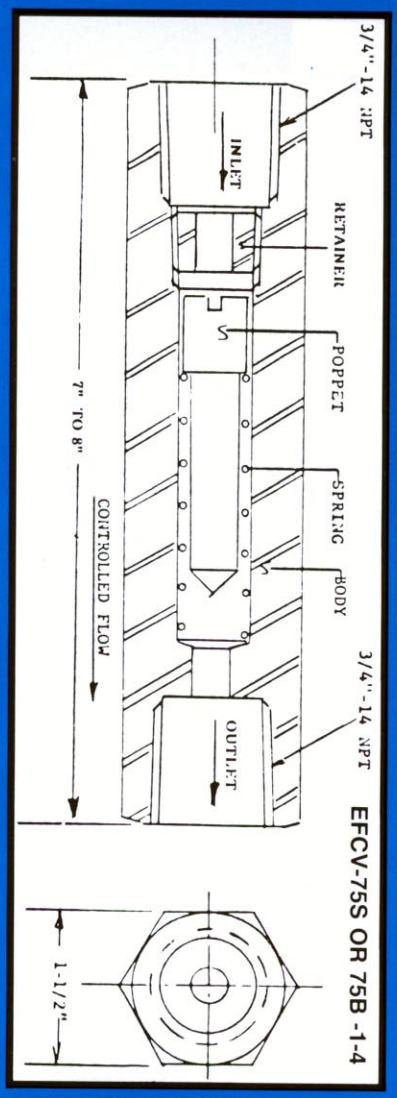
STANDARD FLOW

EXCESS-FLOW CHECK VALVE

(HYDRAULIC FUSE)

DELIVERS POSITIVE, AUTOMATIC SHUT OFF WHEN SELECTED FLOW RATE IS EXCEEDED





PROTECTS AGAINST LINE OR INSTRUMENT RUPTURE
PREVENTS UNCONTROLLED FLOW OF LIQUID

Standard Values feature stainless steel or brass construction with 3/4" NPT (EFCV-75 series), 1/2" NPT (EFCV-50 series) or 1/4" NPT (EFCV-25 series) female connections.

Maximum Operating Pressure --- Brass: 6,000 PSI
Stainless Steel 10,000 PSI

Flow rates of .1-40GPM custom designed upon request.

CATALOG NUMBER						SHUT OFF FLOW (GPM WATER)	MAX PRESSURE DROP TO CLOSE (PSI)	HEX SIZE	LENGTH
STAINLESS STEEL (EFCV-)			BRASS (EFCV-)						
-25S-0	-50S-0	-75S-0	-25B-0	-50B-0	-75B-0	0.25	2.5	1" (EFCV-25)	5½" (FCV-25)
-25S-1	-50S-1	-75S-1	-25B-1	-50B-1	-75B-1	0.50	2.5	1¼" (EFCV-50)	
-25S-2	-50S-2	-75S-2	-25B-2	-50B-2	-75B-2	1.00	5.0	1½" (EFCV-75)	7½" (EFCV-50)
-25S-3	-50S-3	-75S-3	-25B-3	-50B-3	-75B-3	2.00	5.00		
-25S-4	-50S-4	-75S-4	-25B-4	-50B-4	-75B-4	5.00	7.50		7" (EFCV-75)
-25S-5	-50S-5	-75S-5	-25B-5	-50B-5	-75B-5	7.50	7.50	1½" (EFCV-25) 1½" (EFCV-50) 1¾" (EFCV-75)	8"
-25S-6	-50S-6	-75S-6	-25B-6	-50B-6	-75B-6	10.00	15.00		

Custom Designed Valves to meet your requirements in terms of the following;

1. Liquid and gas to be accommodated.
2. Gas flow-rate which must not be exceeded.
3. Operating temperature and pressure.
4. Size and style of ports required.
5. Material of construction.
6. Up to 2" Flanged connections.

To find the shut off flow for liquids other than water, divide the water shut off flow by the square root of the liquid specific gravity.

EXAMPLE: Using EFCV-25S-4 what would be the shut off flow for an oil whose specific gravity is 1.3?

EXAMPLE: EFCV-25S-4 has a water shut off flow of 5.0 GPM

SOLUTION: Shut off flow for the oil is $\frac{5.0}{\sqrt{1.3}} = 4.4$ GPM

CHEMIQUIP STANDARD EXCESS FLOW CHECK VALVES FOR GASES

SHUT OFF RATES, SCFM OF AIR AT 70° AND DIFFERENT OPERATING PRESSURES

CATALOG NUMBER		100 psig	250 psig	500 psig	1000 psig	2000 psig	4000 psig
S.S.	BRASS						
EFCV-25S-1 EFCV-50S-1 EFCV-75S-1	EFCV-25B-1 EFCV-50B-1 EFCV-75B-1	7.5	12	16	23	32	45
EFCV-25S-2 EFCV-50S-2 EFCV-75S-2	EFCV-25B-2 EFCV-50B-2 EFCV-75B-2	15	23	32	45	64	90
EFCV-25S-3 EFCV-50S-3 EFCV-75S-3	EFCV-25B-3 EFCV-50B-3 EFCV-75B-3	30	45	64	90	128	180
EFCV-25S-4 EFCV-50S-4 EFCV-75S-4	EFCV-25B-4 EFCV-50B-4 EFCV-75B-4	75	115	164	225	320	450
EFCV-25S-5 EFCV-50S-5 EFCV-75S-5	EFCV-25B-5 EFCV-50B-5 EFCV-75B-5	115	175	240	340	480	680
EFCV-25S-6 EFCV-50S-6 EFCV-75S-6	EFCV-25B-6 EFCV-50B-6 EFCV-75B-6	150	230	320	450	640	900

To find out the shut-off flow for gases, other than air, multiply the air shut-off flow by the square root of ratio of air density and gas density . . . . • $\left(\frac{\text{density or air}}{\text{density of gas}}\right)^{1/2}$

Standard valves feature Stainless Steel or Brass construction with 1/4" NPT female connections for EFCV-25 Series and 1/2" NPT female for EFCV-50 Series.

Standard Valve Rating — Brass 6,000 psi, Stainless Steel 10,000 psi;

Options Available: Calibrated leak for automatic reset (open)

"Custom Designed" Excess Flow Check Valves are also available for the following:

a) Different Shut-off flow rate.
b) Higher pressure rating
c) Different Material of Construction
d) Different size or type of end connections.

Protect your instruments and your plant personnel with

CHEMIQUIP

STANDARD FLOAT-CHECK VALVE

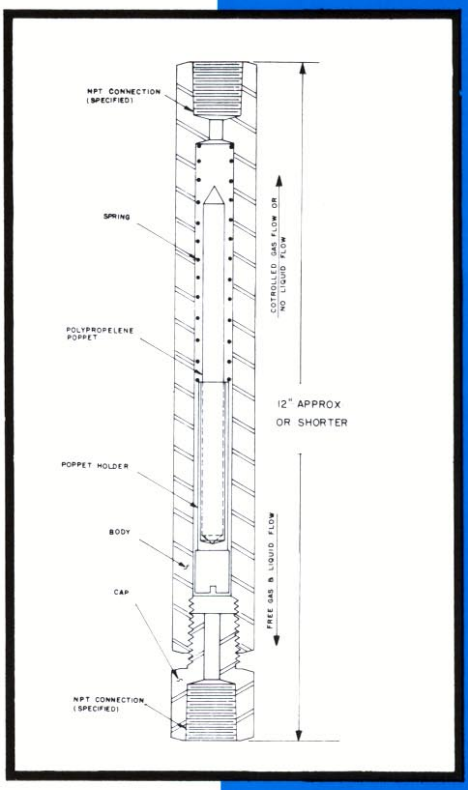
MODEL NO. FCV-25 & FCV-50

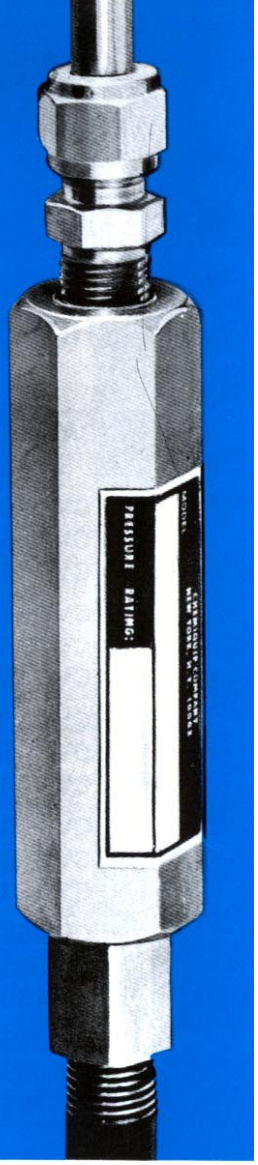
Features Stainless Steel or Brass construction with ¼" NPT (FCV-25) or ½" NPT (FCV-50) female connections.

Designed for use in Gas-Hydraulic Systems to prevent carry-over of liquids into gaseous phase of system.

A DUAL PURPOSE VALVE

1. Excess Flow Valve-Close in the event of rupture.
2. Liquid-Gas Separator. It allows gas flow but seals as soon as liquid enters





Maximum Operating Pressure: **Brass: 6000 psi**
Stainless Steel: 10,000 psi

IN OPERATION

Valve is to be vertically mounted and it permits passage of gas. When the environment in the Valve changes from gas to liquid, a float rises, closing the valve and preventing flow of liquid from entering the system. It remains closed while the float is in a liquid environment. When the liquid level subsides, float lowers to permit gas to flow through the system again.

TYPICAL APPLICATIONS

The filling of tanks or other containers with liquid by means of vacuum is a typical application. If vacuum is applied across the Valve, it closes when liquid level reaches it to prevent entrainment of liquid into vacuum system.

Valve is also used for the relief of vessels. While vessel is being filled, Valve remains open to permit discharge of displace air or other gas from vessel. If desired, Valve can be designed to shut-off at a predetermined gas flow rate. When vessel is completely filled with liquid, Valve closes automatically to prevent spillage.

CORROSION-RESISTANT

Excess Float Check Valve withstands the corrosive action of strong alkalis or reagents. For normal uses, Valve is made of type 303 stainless steel. With a hollow polypropylene float which can be used for liquid with specific gravity of 0.7 or above. Other materials of construction are available upon request.

CATALOG NUMBER	MATERIAL	END CONNECTIONS	HEX SIZE	LENGTH
FCV-255	303 S.S. w/ Polypropylene Float	¼" - 18 NPT (Female)	1¼"	12"
FCV-25B	Brass w/ Polypropylene Float	¼" - 18 NPT (Female)	1¼"	12"
FCV-50S	303 S.S. w/ Polypropylene Float	½" - 14 NPT (Female)	1½"	12"
FCV-50B	Brass w/ Polypropylene Float	½" - 14 NPT (Female)	1½"	12"

Custom Designed valves to meet your requirements are available upon request in terms of the following:

- Predetermined flow rate of gas must not be exceeded.
- Normal flow and operating pressure.
- Higher pressure and temperature rating for valves.
- Different sizes and styles of end connections.
- Different types of material of construction (examples: Monel, 316 SS, Teflon, ... etc.)

CHEMIQUIP DIAPHRAGM SEALS

Designed for the protection of pressure instruments in systems containing slurries, highly viscous or corrosive liquids or gases

- **Completely protect both pressure instrument and snubber from:**
  - **corrosion**
  - **plugging**
  - **clogging**
- **Safeguard plant personnel**
- **Simplify initial system charging—eliminate spillage**
- **Smooth response of pressure-sensitive instruments to line surges or pulsations**
- **Snubber element is preset—it never needs adjustment**
- **Permit accurate equilibrium reading in 2-3 seconds**
- **For use on systems under vacuum as well as pressure**

FACILITATE FILLING

The pourous snubbing element greatly simplifies initial charging of system. Its membrane will not pass liquids at extremely low pressure differences. The bourdon tube of the instrument can be filled completely, capped with the snubber, and righted without loss of the filling liquid.

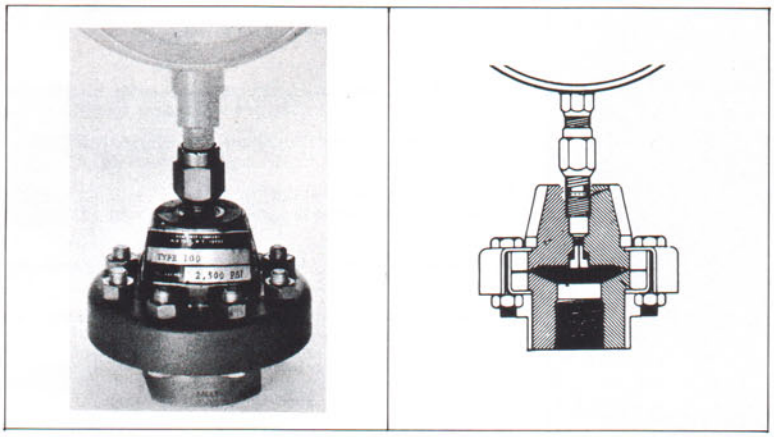
INSTALLATION INSTRUCTIONS

1. Invert pressure gage; exacuate over oil to fill bourdon tube with low viscosity oil or other suitable material. With gage still inverted, cap gage connection with snubber. Gage may now be righted safely without spillage or loss of material from bourdon tube.
2. Fill upper chamber of diaphragm completely with oil or other suitable material. Assemble gage and snubber sub-assembly to diaphragm seal. If pressure is shown on instrument as a result of overfilling of system, zero instrument.

DIAPHRAGM SEALS

Chemiquip sealed system snubbers are equipped with diaphragm seals which are designed to suit the individual requirements of specific systems. To accomplish this with maximum economy and ease, a variety of configurations are available. The diaphragm seals are fabricated of varying materials to meet specific conditions of corrosion, heat or mechanical strength.

TYPE 100



This sealed system snubber is indicated where extremely accurate response is required; or where it is desirable to disassemble the diaphragm seal for cleaning purposes. This ability is particularly important where it is being used on materials highly contaminated with solids inclusions which might tend to pack under the diaphragm.

CONSTRUCTION

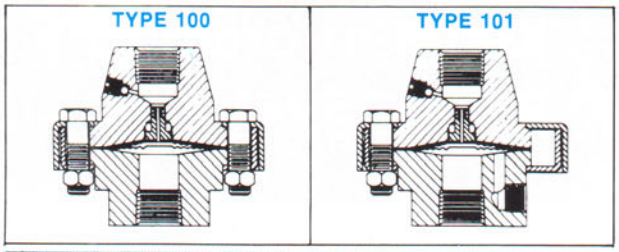
Type 100 consists of a two-piece housing, bolted together at its periphery, which is separated into two chambers by a "capsule type" diaphragm. Consisting of two thin, metallic sections firmly welded at their periphery, this type "capsule type" diaphragm prevents flow of corrosive materials into the upper chamber of the diaphragm seal. A threaded connection attaches it firmly to the pressure instrument system. The diaphragm seal may be separated to facilitate cleaning without loss of filling material from the instrument. Having a small volumetric capacity and being fabricated of very thin membranes, the "capsule type" diaphragm can achieve accurate response to minute pressure changes in the system.

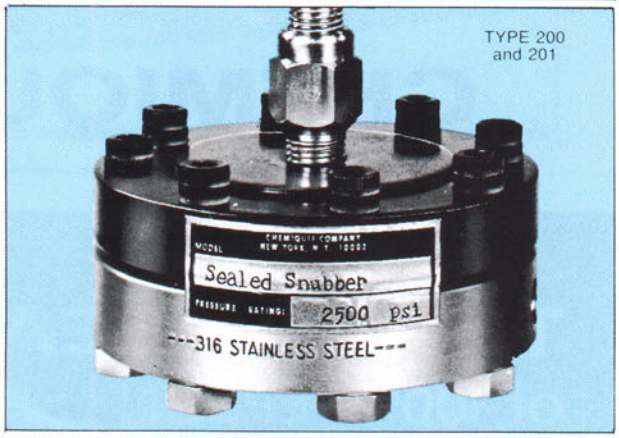
The upper chamber (A) of the diaphragm seal is forged mild steel. Stainless steel and other corrosion-resistant material are available for corrosive atmospheres. The lower chamber (B) is a forged type 316 stainless steel. It is suited to all pressures from vacuum through maximum of 2,500 psi.

TYPE 101

This type is particularly desirable for use on deau systems.

The diaphragm seal in Type 101 is the same as Type 100 except for the addition of a flushing connection in the lower chamber. This connection makes it possible to flush the lower chamber and consequently clean it without disassembling the diaphragm seal.





This economical sealed system snubber is ideally suited to applications involving the separation of the pressure instrument system from the pressure actuating material, where cleaning or purging of the lower chamber is not of importance.

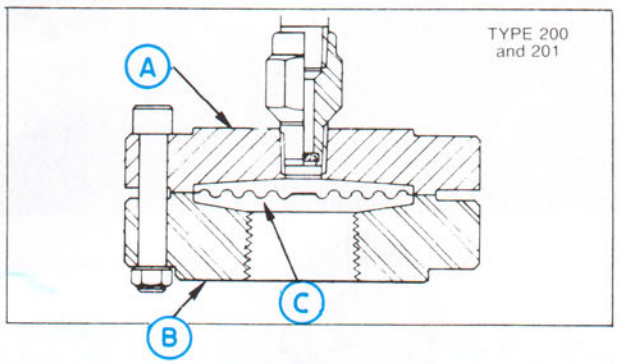
CONSTRUCTION

Type 200 is equipped with a diaphragm seal which consists of a housing, laterally bisected by a thin, metallic diaphragm. The housing's upper chamber (A) is fabricated od cadmium-plated carbon steel, the lower (B) of type 316 stainless steel. Other materials are available on special order. The diaphragm (C) is a corrugated type 316 stainless steel water, .005" thick. Maximum operating pressure is 2,500 psi. at 300 °F. (max.).

TYPE 201

Available on special order, Type 201 is identical to Type 200 except that the diaphragm is firmly welded to the upper chamber. Because the diaphragm serves only as a separating membrane, it is possible to use thinner diaphragm sections, resulting in more accurate response to minor pressure changes.

With the diaphragm firmly welded to the upper chamber, it is possible to separate the lower chamber from the upper without losing the filling material on the instrument side of the diaphragm seal. Mass spectrometer tests have proven no leakage through the weld. Maximum operating pressure is 2,500 psi.



For quick, inexpensive
POSITIVE SEALING
of all types of threaded joints in critical piping systems...

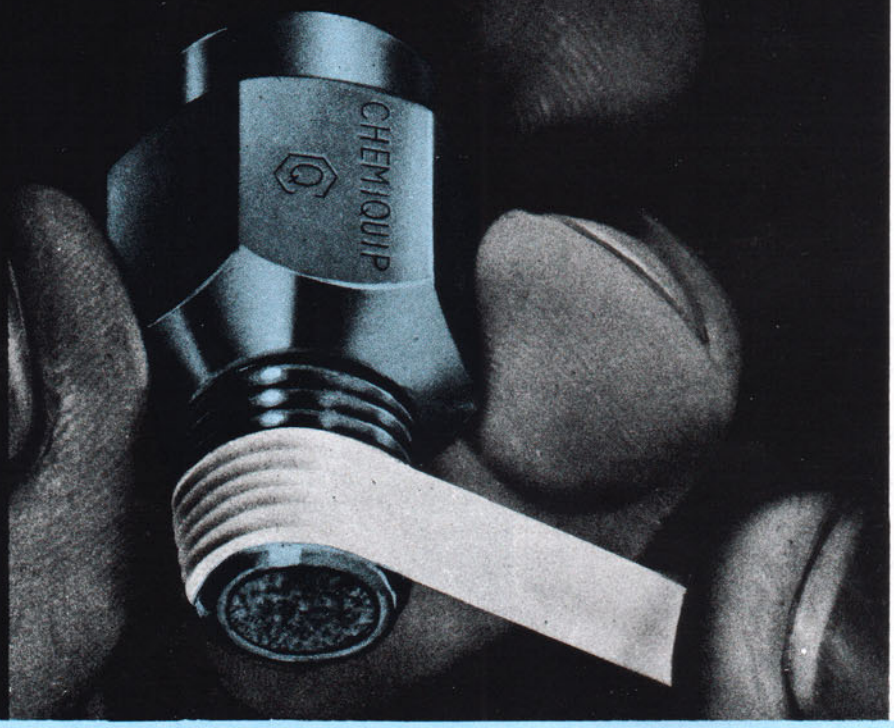
Conforms with US Military Specifications
Tested in accordance with ASTM-D-1000

TEPtape is available in 4 sizes:
¼ x 260″
¼ x 520″
½ x 260″
½ x 520″

Other sizes available on special order.

CHEMIQUIP TEPtape T.M.

THREAD SEALANT
of 100% TEFLON (DuPont) fluorocarbon resins in Ribbon Form



TEPtape T.M.

gives you all these advantages:

- **Leakproof Joints** — clean low-cost way to eliminate leakage problems, need for expensive flanged fittings.
- **100% Sealing and Positive Protection** for all types of threaded joints at 10,000 psi line pressure.
- **Usable with all Metals:** cadmium-plated steel, aluminum, brass, stainless steel, monel, copper, brass, and plastics.
- **Virtually Inert** to all known acids, caustics, gases: non-toxic, non-flammable, no water absorption.
- **Seals Efficiently at High and Low Temperatures.** Temperature range: —450°F to +500°F.
- **Self-lubricating:** and compressible; won't harden.
- **Prevents Galling, Seizing and Corrosion.**
- **Permits Frequent Disassembly,** if necessary.

Use

TEPtape T.M.

on all CHEMIQUIP Pressure Snubbers, Excess-Flow Valves, Restrictors

CHEMIQUIP PRODUCTS CO., INC.
56 2ND AVE BROOKLYN NY 11215 Tel: (201) 868-4445 Fax: (201) 868-4447