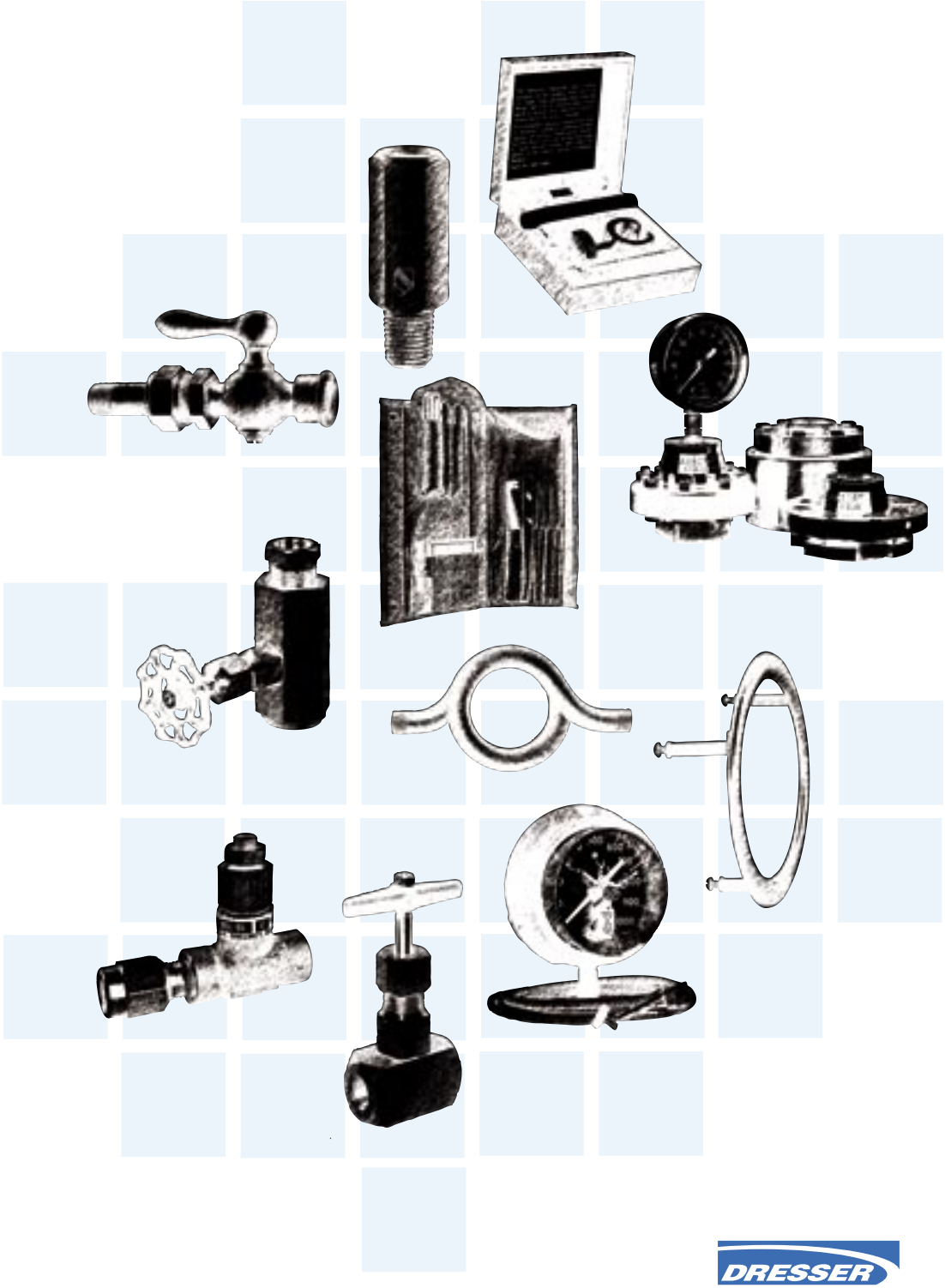
ASHCROFT®

Pressure Instrument Accessories & Options



DRESSER
Measurement

Bulletin ACC-1

CONTENTS

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Product Information

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Dresser Instrument
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Customer Service Dept.
250 East Main Street
Stratford, CT 06497-5145
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ISO 9000 Certification

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With world-class quality systems in place at all operations, customers can be assured that their buying decisions can be made every day with a higher level of supplier confidence. The ISO certification affirms Dresser's ongoing commitment to our quality policy—

"We will deliver products, services and information that meet or exceed customer requirements and expectations every time."

Throttling Devices

A throttling device should be used when a pressure gauge is subjected to rapid pressure fluctuations, which make the gauge difficult to read because of rapid pointer movement. Such a device reduces pressure impact, slows the speed and range of pointer movement, and prolongs gauge life.

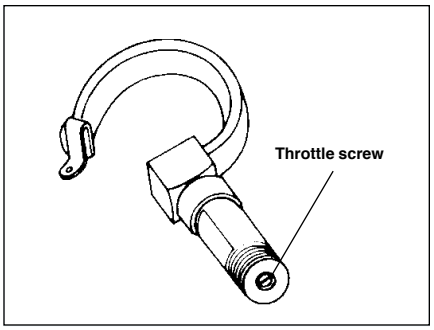
Throttling effect is obtained by installing a restricting orifice between the gauge socket connection and the bourdon tube. Several types are available: throttle screws, pressure snubbers, pulsation dampeners, Gauge Saver® and the Campbell MICRO-BEAN.

Severe service applications are characterized by the presence of significant levels of pressure pulsation and/or vibration. Gauges should be protected from severe pressure pulsation by the inclusion of a dampener such as a throttle plug/screw or porous metal snubber. If the pulsation is extreme, a liquid-filled gauge, with dampener, should be used. A liquid-filled gauge will also last significantly longer than a comparable dry gauge when vibration is present. If the vibration levels are extreme, the only solution may be to remotely mount the gauge away from the source of vibration. In that case flexible tubing may be used to connect the gauge to the pressure source.

THROTTLE SCREWS

The simplest means of providing a restriction in the socket, a throttle screw, should be ordered with the gauge. Threaded or pressed into an instrument socket, the throttle screw orifice selected is based on the viscosity of the pressure fluid, rapidity of pressure fluctuations, and the amount of dampening effect desired.

A smaller orifice should be used for low viscosities, high frequencies, high pressure and reduced pointer amplitude. To accommodate these variables, throttle screws are available in these sizes: 0.0135, 0.020, 0.031, 0.040, and 0.070 inches, in brass and stainless steel. When orifice size or service condition is not specified, Ashcroft gauges with dial sizes of 4 1/2″ or larger will be supplied with an orifice size of .020. Gauges with dial sizes less than 4 1/2″ are supplied with a .013 orifice size.



PULSATION DAMPENER

Threads onto a gauge socket and provides restriction by means of a moving pin, which may be placed in either of five different sized holes, and thus allows the user to vary the amount of dampening to suit requirements. The pulsating pressure moves the pin up and down, providing a self-cleaning action. Dampeners are shipped with a pin in the “middle” hole, and may be used in either a vertical or horizontal position. Maximum pressure is 5000 psi.

Type Number	NPT Conn.	Material (oz.)	Weight
25-1106B	1/4	Brass	4
50-1106B	1/2	Brass	8
25-1106D	1/4	Steel*	4
50-1106D	1/2	Steel*	8
25-1106S	1/4	Stainless Steel	4
50-1106S	1/2	Stainless Steel	8

* Internal parts are stainless steel.

GAUGE SAVER® THROTTLING DEVICES

An elastomeric bladder separates the process fluid from the pressure element. The entire system above the bladder is solid filled with a fluid such as glycerin or silicone. A throttling felt is installed in the fluid system where it is not subjected to the process fluid. This device is suitable for use where temperature, pressure, and process material will not affect the elastomeric bladder or liquid fill. The gauge saver should be attached to the gauge at the factory, but it is possible to install it in the field. The throttling effect can be adjusted before the system is filled and assembled. The steel bulb chamber is easily cleaned. Gauge savers are also safety devices, increasing gauge life by preventing corrosive process material from contacting the bourdon tube. Use of gauge saver adds 1/2% to gauge accuracy.

Type No.	NPT Conn.	Pressure Range psi	Maximum Temperature °F	Elastomeric Bladder Material	Weight (oz.)	Remarks
25-1073C	1/4	100/1000	150	Neoprene	9	Small size approx 3 1/2″ long For 3 1/2″ and smaller gauges
25-1073D	1/4	100/1000	150	Neoprene	20	For 4 1/2″ and larger gauges
25-1073DV	1/4	160/1000	450	Viton	20	For 4 1/2″ and larger gauges
50-1073D	1/2	100/5000	150	Neoprene	32	For 4 1/2″ and larger gauges
50-1073DV	1/2	160/5000	450	Viton	32	For 4 1/2″ and larger gauges

PRESSURE SNUBBER

Type Number	NPT Conn.	Material		Max psi Rating
		Housing	Filter Disc	
25-1112B	1/4	Brass	316 SS	10,000
50-1112B	1/2			
25-1112S	1/4	303 SS	316 SS	15,000
50-1112S	1/2			
25-1112M	1/4	R Monel	Monel	15,000
50-1112M	1/2			

Porosity	Max Pore Cap. Opening (Inches)	CFH at 1 psi Diff. Press.	For use with
D	0.0025	6.5	Oil (50 to 500 S.S.U.)
E	0.0025	3.0	Water & Light Oils (Under 50 S.S.U.)
G	0.0008	1.1	Air, Steam and Gases
HX	0.0006	0.4	Mercury Manomometers

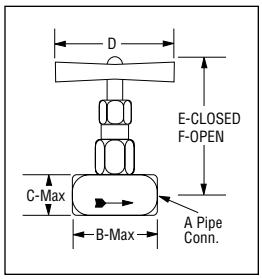
Used for dampening and filtering, the snubber has a metal disc available in four standard grades of porosity. The one best suited for the application can be selected from the chart, using the same guidelines as for throttle screws (see page 3). Due to the large filter area, the snubber has less tendency to clog than orifice-type devices. All-metal construction permits the snubber to be washed in a variety of common solvents.

STEEL NEEDLE VALVE

The steel needle valve is an economical, adjustable throttling device for any severe gauge application where the precise adjustment of the Campbell MICRO-BEAN® is not required. It provides the most practical means for varying the orifice to determine the exact orifice for any specific service condition. The valve has an internal seat and is of bar stock construction.

Dimension – Inches						
A – NPT Conn.	B	C	D – min.	E	F	Weight oz.
1/4	2 1/8	7/8	2 1/2	3	3 1/8	8
1/2	2 1/4	1 1/4	2 1/2	3 1/16	3 3/16	21

NPT Conn.	Type Numbers Lock Bonnet Type Valves	Material	Pressure Ratings Noncorrosive Service (psi)			
			100°F	550°F	850°F	1000°F
1/4	25-7001L	Carbon Steel with 12-14% chrome Stainless Steel Stem	10,000	7735	—	—
1/2	50-7001L					
1/4	25-7004L	316 Stainless Steel	7000	4500	3895	3535
1/2	50-7004L					



CAMPBELL MICRO-BEAN

This precision valve has a very long taper on the plug, which will permit precise adjustment of the dampening effect. A filter is built into the valve in order to keep foreign matter from plugging the fine orifice. The MICRO-BEAN is made of 1 1/2″ hexagonal bar stock and is 4″ in length. Turning the handwheel produces the degree of dampening required.

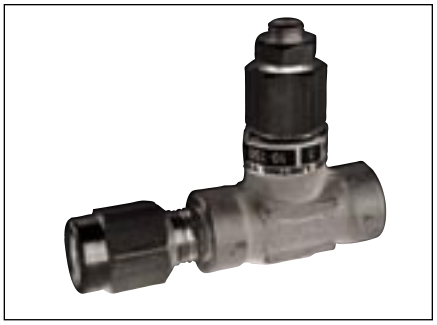
Type Number	NPT Conn.	Material	Weight	Pressure Rating psi
25-1110B	1/4	Brass	2 1/4 lb	3000
50-1110B	1/2	Brass	2 1/4 lb	3000
25-1110S	1/4	Steel	2 1/4 lb	6000
50-1110S	1/2	Steel	2 1/4 lb	6000
25-1110C	1/4	303 Stainless Steel	2 1/4 lb	10,000
50-1110C	1/2	303 Stainless Steel	2 1/4 lb	10,000
25-1110A	1/2	316 Stainless Steel	2 1/4 lb	10,000
50-1110M	1/2	Monel	2 1/4 lb	10,000

CHEMIQUIP PRESSURE LIMITING VALVE SNUBBER[1]

Type Number	Conn.	Material	Available Ranges
25-255B[2]	1/4 NPTF	Brass	10-150 psi[3]
25-255S[2]	1/4 NPTF	303 SS	150-500 psi
50-2550D[4]	1/2 NPTF	316 SS	500-1000 psi
			1000-3000 psi

(1) Cannot be used with Ashcroft diaphragm seals.
(2) Specify porosity designation.
(3) Use code XFS for factory setting
(4) Meets NACE MR01-75 requirements

Assures positive, repeatable performance of the instrument by protecting against surges and pulsations. Automatically shuts off when overpressure occurs and is restored when pressure falls below preset values.

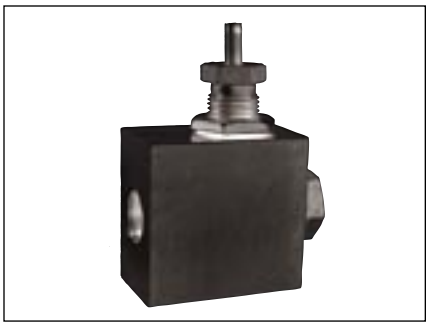


CHEMIQUIP PRESSURE LIMITING VALVE

Type Number	Conn.	Material	Available Ranges[3]
25-5460	1/4 NPTF	303 SS	100-800 psi
50-5500	1/2 NPTF	303 SS	800-2500 psi
09-6430[1]	1/4 AMINCO	303 SS	2500-10,000 psi[1]
			10,000-18,000 psi[2]

(1) Not available attached to instrument at factory.
(2) Available with model 09-6430 only.
(3) Use code XFS for factory setting

Protects pressure instruments against surges and pulsations. Provides automatic positive protection and accurate, repeatable performance. Automatic pressure shut-off. Built-in snubber enhances instrument, protecting performance.

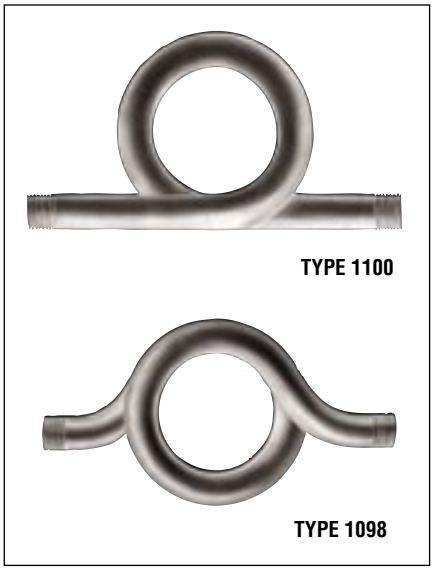


Type of Service	Porosity Designations
High viscous fluids (over 500 S.S.U.)	C
Oil (225-500 S.S.U.)	D
Water and light oils (30-225 S.S.U.)	U
Vapor and low viscosity fluids (Below 30 S.S.U.)	F
Air or other gases	G
Extreme gas pulsations	HX

SIPHONS

In order to prevent live steam from entering a pressure gauge bourdon tube, a siphon filled with water should be installed between the gauge and the process line. If freezing of the condensate in the loop of a siphon is a possibility, a diaphragm seal should be used to isolate the gauge from the process steam. Also use siphons whenever condensing hot vapors (not just steam) are present. May also be used to decrease temperature of hot process media.

- Pigtail Siphon – Number 1100 Series, 1/4″, 1/2″ sizes: to 500 psi and 400°F.
- Coil Pipe Siphon – Number 1098 Series, 1/4″, 1/2″ sizes: to 9550 psi and 400°F.



TYPE 1100

TYPE 1098

Type Number	NPT Conn.	Material	Capacity
25-1098 I	1/4	Iron	500 psi & 400°F
25-1098 B	1/4	Brass	250 psi & 400°F
25-1098 S	1/4	ASTM A-106 Seamless Steel Grade A	338 psi & 1000° to 3360 psi & –20° to 400°F
50-1098 S	1/2	ASTM A-106 Seamless Steel Grade A	333 psi & 1000°F to 3000 psi & –20° to 400°F
50-1098 SD	1/2	ASTM A-106 Seamless Steel Grade A	420 psi & 1000°F to 3740 psi & –20° to 400°F
50-1098 CD	1/2	ASTM A-213 Seamless Steel Grade T 22	1048 psi & 1200°F to 9550 psi & –20° to 400°F
50-1098 NS	1/2	Seamless Stainless Steel, Type 316	294 psi & 1500 psi to 3981 psi & –20 to 100°F
50-1098 ND	1/2	Seamless Stainless Steel, Type 316	336 psi & 1500 psi to 5840 psi & –20° to 100°F
25-1100 A	1/4	Stainless Steel	500 psi & 400°F
25-1100 I	1/4	Iron–6 3/8″ Long	
25-1100 IL	1/4	Iron–8″ Long	
25-1100 IN	1/4	Iron–Angle	
25-1100 B	1/4	Brass–5 3/8″ Long	250 psi & 400°F
25-1100 BL	1/4	Brass–8” Long	

DIAPHRAGM SEALS

Designed for use with pressure gauges, switches, transducers or transmitters on process applications, where:

- Process element materials capable of withstanding corrosive effects of certain fluids are not available.
- The process fluid being measured would normally clog the pressure measuring element.
- The process fluid in the measuring element might freeze due to changes in ambient temperatures.

A diaphragm assembly fabricated of materials that will withstand various corrosive media encountered, separates the measuring element from the process fluid. Since the space between the diaphragm and the measuring element is completely filled with glycerin, silicone, halocarbon or others, any movement of the diaphragm caused by a change in the process pressure will be indicated by the instrument.

Ashcroft diaphragm seals are normally mounted directly to the socket of an instrument. Diaphragm seals (isolators) with filled, flexible line assemblies are another good solution to the problem of hot or very cold liquid and gas lines. Due to the small diameter of the flexible line (capillary) a five foot line length will usually assure that the temperature of the gauge connection does not exceed 150°F. Even one foot of capillary often will prevent the high temperature of the seal from reaching the gauge. This solution is also superior to a siphon on steam service where the water filled siphon might freeze. Refer to Diaphragm Seal Bulletin DS-1 or pages 64-73 of OH-1.

INSTRUMENT CONNECTION SYSTEM

The Instrument Connection System is a pre-assembled block and bleed valve which allows the removal of instruments for calibration, repair or replacement without interrupting the process flow.

Safety:

- Fire safe block valve to API 607
- Welded construction has 40% fewer leak paths than conventional in-house assemblies
- Lockout capability eliminates accidental opening of the valve by plant personnel during routine maintenance
- Full port ball valve has straight-through passage with high flow capacity and is less likely to plug up. It is much easier to rod-out when and ever it does plug compared to smaller port angled passage needle type block valves
- The oval safety handle makes it easy to identify if valve is open or closed – needle valve types makes this impossible to see at a glance
- Quarter turn valve operates very quickly compared to needle valve type block valves which require several turns to open to full flow capacity
- This bottom entry block valve stem will not blow out whereas needle valve type block valve stems will if holding pin is compromised

Savings:

- Welded construction eliminates most of the parts and labor associated with conventional in house assemblies
- Customers report a 30% savings over conventional in-house assemblies
- Allows the removal of instruments without shutting down the process flow

ELECTRIC WARNING CONTACTS

The Ashcroft® 2265 electric contact is an ideal accessory to turn on a signal light, sound an alarm, or operate a pump or valve. The contacts can easily be set so that a circuit can be closed or opened at a desired pressure or temperature.

Settings can be easily made in the field without removing the instrument from service. Contact adjustment is made externally with a removable key to make the instrument virtually tamper proof.

The contact is designed for easy installation on Types 1279, 1377 and 1379 Duragauge pressure gauges (either stem or flush mounted), Type 1125 differential pressure gauges, or Type 600A Duratemp dial thermometers.

Contacts are equipped with adjustable magnets to eliminate chatter caused by vibration. A plug-in connector with five feet of electrical cable is standard.

Use with Ashcroft Model No.	Description	Availability			
		Code		Mounting	
		45	60		
		4½″ Dial	6″ Dial	Stem	Flush
1279	Duragauge	X	—	X	X(1)
1377	pressure	X	X	—	X
1379	gauge	X	X	X	X(1)
1125	D/P gauge	X	X	X	X
				Surface	Flush
600A-02	Duratemp	X	X	—	X
600A-03	remote	X	X	X	X
600A-04	thermometer	X	X	X	X

(1) Flush mounting requires type 1278 flush mounting ring.
All specifications are subject to change without notice.

Model	Code	Contact Arrangements
2265	XED	High and low contact
	XEE	Double high contact
	XEF	Double low contact
	XEG	"OFF" at low and high, and "ON" in between

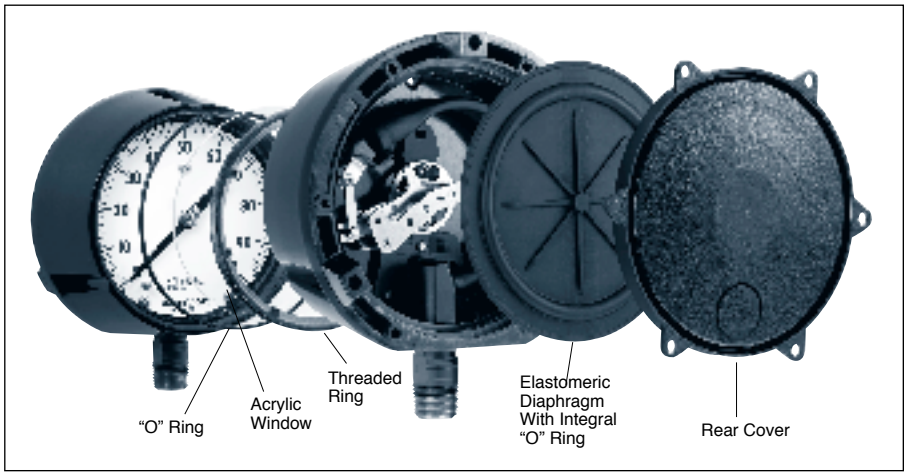
Indicating accuracy of Ashcroft Duragauge, above 300 psi with contact: Pointer not carrying contact – 1.0%; Pointer carrying contact – 1.5%. For ranges below 30 psi, add an additional ½% to indicating accuracies.

CONVERSION KIT

For field converting 4½″ 1279(*)S and 4½″ and 6″ 1379(*)S Duragauge® gauges to a sealed case design suitable for either hermetic sealing or liquid filling.

Kit includes:

- O-ring for front case seal.
- Acrylic window.
- Elastomeric diaphragm (Buna-N) for rear case seal.
- Lexan® rear cover and stainless steel mounting screws.
- 303 stainless steel or Monel throttle screws.



HOW TO ORDER THIS CONVERSION KIT

For: 4½″ size, lower connected – order type A1280 Kit.
4½″ size, back connected – order type A1283 Kit.
6″ size, lower and back connected – order type A1284 Kit.

TYPE A-1285

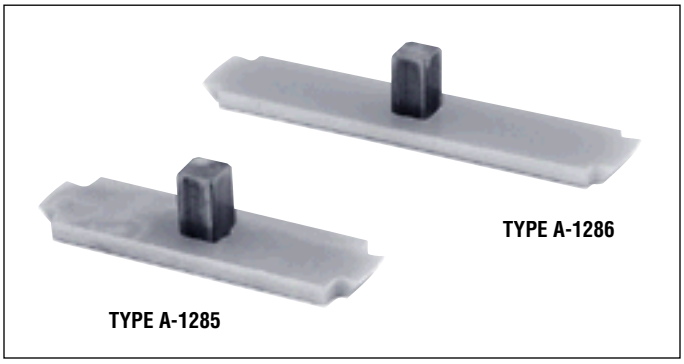
Ring Wrench – 4½″

(For installing front threaded rings in 4½″ Duragauge gauge.)

TYPE A-1286

Ring Wrench – 6″

(For installing front or rear threaded rings in 6″ Duragauge gauge.)



TYPE A-1287

Cone Tool

For installing diaphragm and garter spring on back connected liquid-filled or hermetic sealed Duragauge gauges.

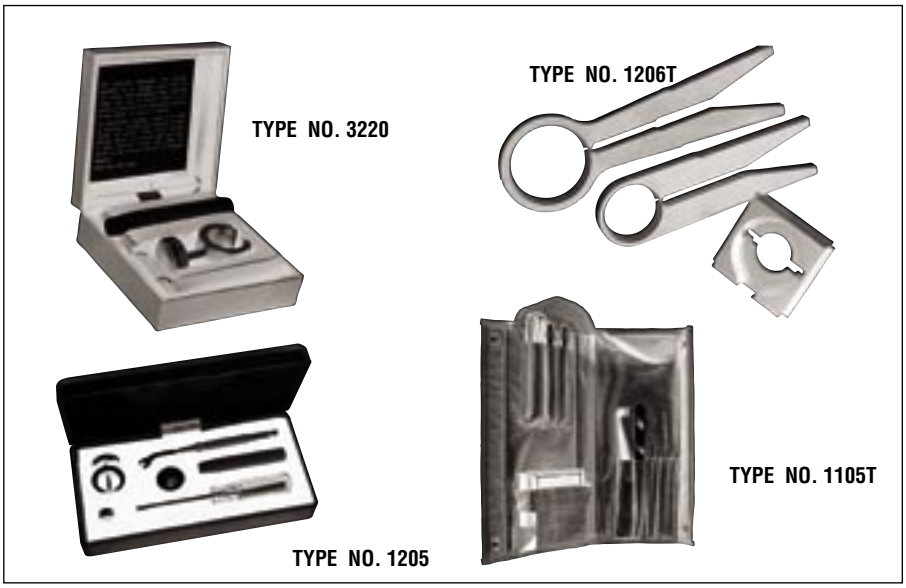
TOOLS

Hand Jack Set – gauge pointer remover and a pointer set to secure pointer to the shaft. Type No. 3220.

Ring Removal – For the 2½″ and 3½″ 1009 gauge. Includes 2½″ and 3½″ wrench and nest. Type No. 1206T.

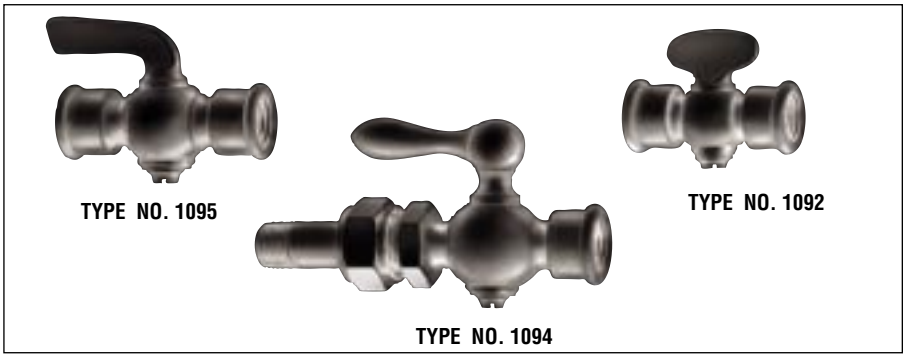
Small Tools – For the 2½″ and 3½″ 1009. Includes pointer puller, span adjust wrench, slotted screw driver for pointer adjustment, pointer staker and pinion backup. Type No. 1205.

Gauge Tool Kit – A complete kit for gauge maintenance. Includes hand jack set, screw driver, five reamers, pin vise holder, wiggler and tweezer all packed in a neat carrying case. Ideal for a gauge maintenance shop. Type No. 1105T.



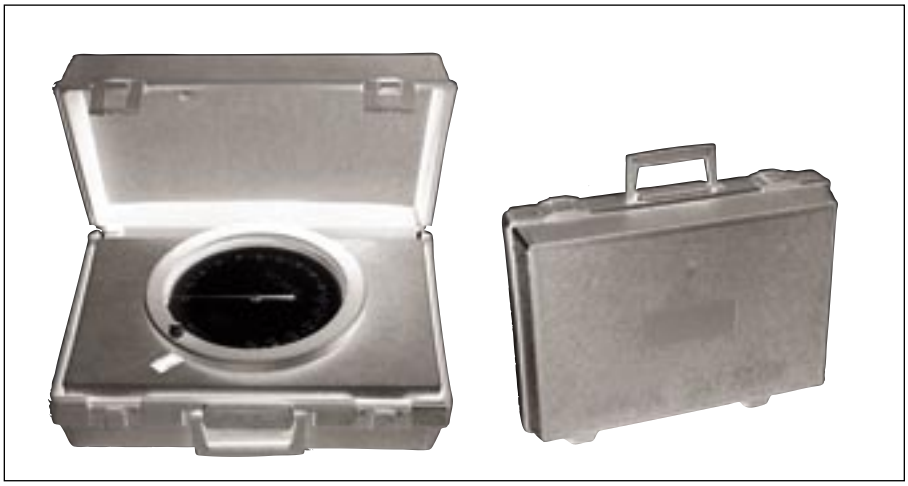
COCKS

- ¼″ brass Tee Handle Cock No.1092 – Wgt. 3 oz.
- ¼″ brass Lever Handle Union Cock No.1094 – Wgt. 10 oz.
- ¼″ brass Lever Handle Cock No.1095 – Wgt. 4 oz.
- All rated 100 psi air.



TEST GAUGE CARRYING CASE

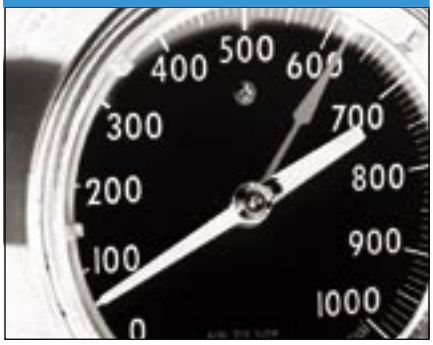
This rugged blow-molded high-density polyethylene carrying case accommodates the standard 4½″, 6 and 8½″ Ashcroft Type 1082 analog test gauge. It accepts both lower and back connect gauges. A foam insert protects the gauge when not in use. Type No. 2505.



CODE	DESCRIPTION	PRESSURE GAUGE TYPE							
		DURAGAUGES	1009 (2½", 3½")	1009 (4½", 6")	1008 (63mm, 100mm)	TEST GAUGES	GENERAL SERVICE	SPECIAL SERVICE	1490/1495 SERIES
XBF	Wall mounting bracket			●					
XFW	Back flange		●						
XFF	Front flange		●	●	●				
XUC	U-clamp		●	●				●	
XLJ	Dry liquid-fillable gauge		●	●	●				
XOS	Overload stop	●	STD	●		STD	●	●	
XVS	Underload stop	●	STD	●		STD	●	●	
XTS	Throttle screw	●		●		●	●	●	
XTU	Throttle plug		●		●				●
XSM	Stainless movement	STD	STD	●		STD	●	●	
XS4	Slotted link movement (decrease)	●		●			●	●	
XRJ	Slotted link (increase)	●		●			●	●	
XAP	Adjustable pointer		●	●			●	●	
XMP	Micrometer pointer	STD	●	●			●	●	
XSH	Red set hand stationary	●	●	●			●	●	
XEO	Red set hand adjustable	●	●	●		●	●	●	
XEP	Maximum pointer	●		●		●	●	●	
XEQ	Minimum pointer	●		●		●	●	●	
XPD	Plastic window	●	STD	●	STD	●	●	●	STD
XSG	Safety glass	●	●	●		●	●	●	
XMG	Metric version gauge		●		●				
XRG	Regular glass	STD		STD		STD	STD	STD	
XDA	Dial marking	●	●	●	●	●	●	●	●
XNN	Paper tag	●	●	●	●	●	●	●	●
XNH	Stainless steel tag	●	●	●	●	●	●	●	●
XAB	Absolute pressure	●		●			●		
XAJ	½% optional accuracy	STD		●			●	●	
XAN	1% optional accuracy		STD	STD			STD		●
XRA	Retard scale	●		●			●		
XWN	White dial	STD	●	●	STD	STD	●	●	STD
XBD	Black dial	●	●	●	●	●	●	●	●
X6B	Oxygen-cleaned gauges (gaseous)	●	●	●	●	●	●	●	
XTB	Tip bleed	●			●	●			
XED	High and low electric contacts	●							
XEE	Double high-electric contacts	●							
XEF	Double low-electric contacts	●							
XEG	Electric contacts off at low or high and in-between	●							
XGV	Silicone-filled gauge	●	●	●	●				
XGX	Halocarbon-filled gauge	●	●	●	●				
XCH	Carrying handle					●			

NOTES:
The options listed above are only a partial listing. For other options on these or other pressure instruments please call the factory for availability.

STATIONARY RED SET HAND



Stationary Red Set Hand
to indicate a specific pressure. Ring must be removed to move the hand.

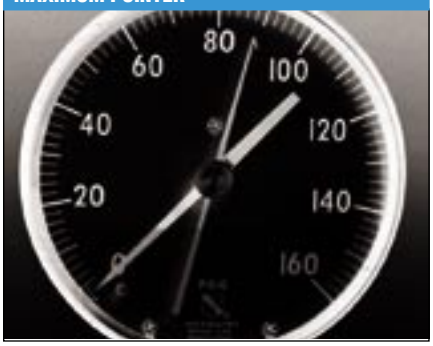
OVERLOAD STOP

Overload Stop
to protect gauge system against extreme overpressure.

SPECIAL DIAL

Special Dial
ranges different from standards, or custom artwork, available on applica-

MAXIMUM POINTER



Maximum Pointer
available for gauges 4½″ size and larger. Indicates maximum pressure attained. Can be reset by a knob on outside of window.

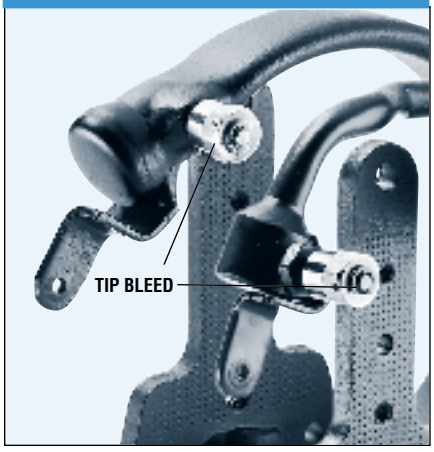
VACUUM STOP

Vacuum Stop
to protect low range gauges against vacuum.

OPTIONAL WINDOWS

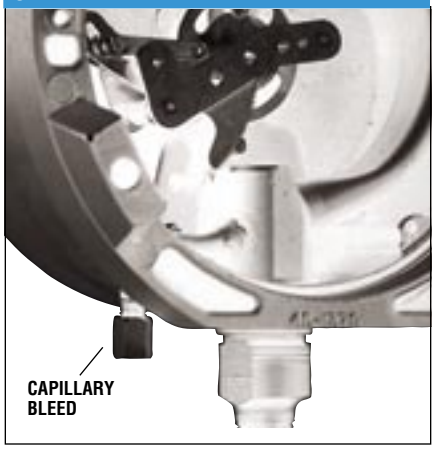
Plastic Disc –
optional for glass window
Laminated Safety Glass –
optional for glass window
Nonglare Glass –
optional for glass window

TIP BLEEDER



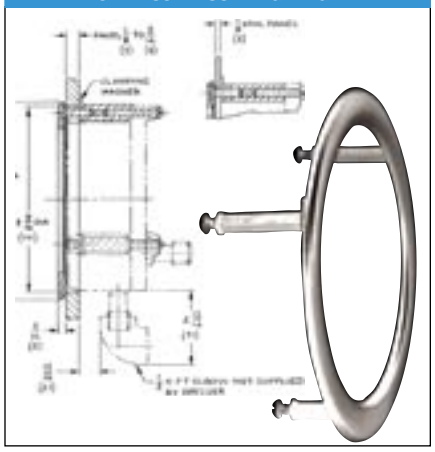
These bleeders allow trapped air to be removed from the bourdon tube. They can also be used for back-flushing or cleaning the system. The tip bleed is available with 316 stainless steel systems.
It is accessible by removing the pressure relief back. Tip bleeders are available to 23,000 psi.The capillary bleeder provides an external case connection to the

CAPILLARY BLEEDER



internals of the bourdon tube. It may be used as a pressure testing tap for gauge inspection without removing the gauge from service. Capillary bleeders are available in bottom connected gauges only. The capillary bleeder is available in 300 Series stainless steel and limited to 4½″ 1379(S)S case with 316 stainless steel system. Capillary bleeders are available to 1000 psi.

TYPE 1278M FLUSH MOUNTING RING



Gauge Size (inches)	Ring O.D. (inches)	A Dia. (inches)	"B"-Three Screws Size
4½	6.000	5.625	#10-24 x 1⅝″
6	7.765	7.25	¼-20 x 1½″

Used to flush-mount gauge types 1188, 1220, 1279 and 1379. A black wrinkle finish is standard; polished stainless steel finish is available at an extra charge.

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