

Bristol Babcock

HELICOID[®]

INSTRUMENTS

With The Exclusive Cam-And-Roller Movement

The Exclusive Helicoid® Cam & Roller Movement

Reduces the wear problems associated with conventional geared movements, thus increasing service life and maintenance of accuracy. The rolling action of the cam facing against the highly polished stainless steel roller produces minimal friction and wear. The unique back adjust screw provides readily ac-

cessible external zero adjustment for most applications. The consequent use of a lighter nonadjustable pointer further promotes wear resistance under dynamic conditions. User experience has proven that Helicoid's Cam and Roller Movement dramatically increases gauge life—up to ten times over conventional geared movements. This is especially

true in applications where the gauge is subjected to severe pressure pulsations or mechanical vibration. Gauge life is further extended by careful choice of materials. For example, the connecting linkage is made of durable corrosion-resistant materials.

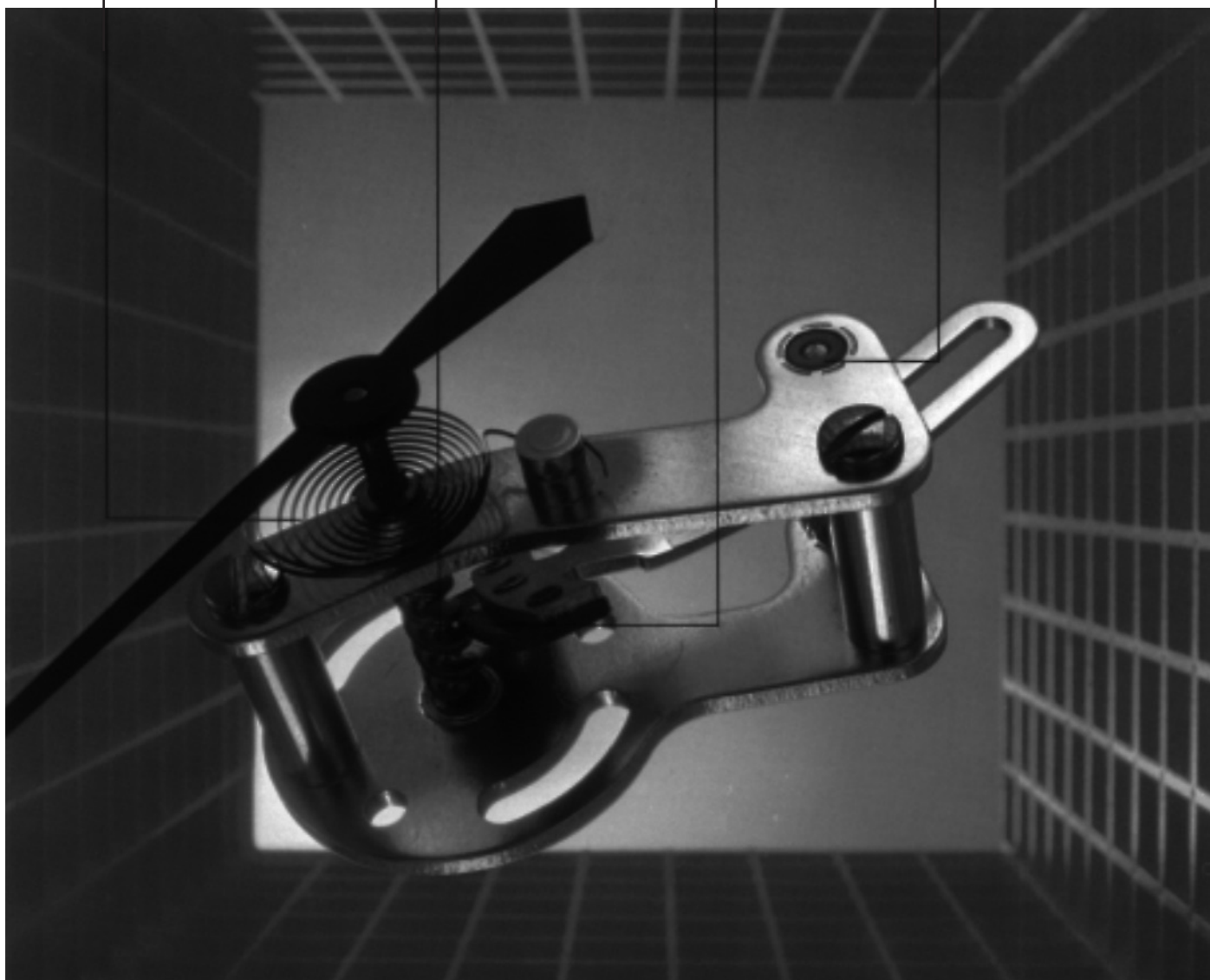
Stainless steel hairspring tension maintains smooth contact between cam facing and roller, also eliminating backlash in the linkage.

Stainless steel zero adjustment screw with graphited disc provides low friction contact with roller. (Not shown.)

Stainless steel roller with a highly polished surface.

Delrin cam facing will not warp or distort. (Dupont product)

Bearing are low friction, nonmetallic and corrosion resistant. Rulon-J. (Furson product)



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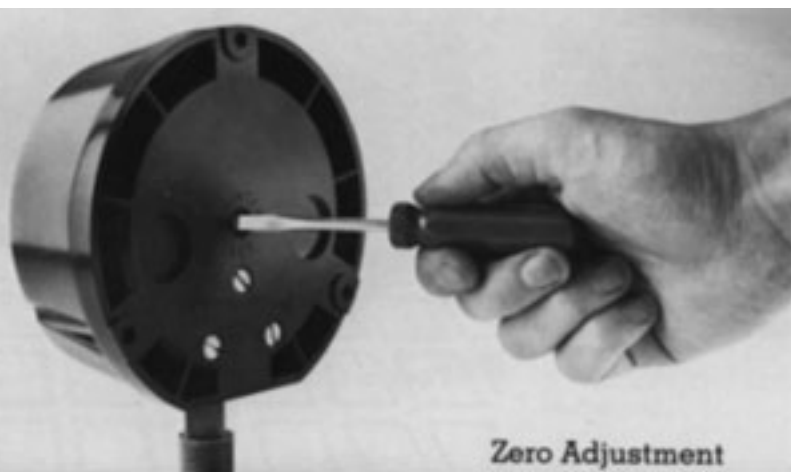
Easy Calibration & Adjustment

Helicoid's Micro-Range Adjuster provides a precise, simple method for gauge span adjustment. By removing a rubber grommet, adjustment can be accomplished with a hex wrench from outside the case. Micro-

Range Adjuster is standard on test gauges and is available as an option on certain others. Refer to options Page 10.

The external zero adjustment screw is standard on all Helicoid gauges and provides micrometer pointer adjustment with infinite

resolution. The screw is located at the back of the gauge, making it unnecessary to remove the lens in order to make an adjustment. A nylon patch on the screw threads prevents change of setting under vibration conditions.



Zero Adjustment



Span Adjustment

Case Materials & Styles

Aluminum Case
Stem Mount



Aluminum Case

Die or sand cast aluminum alloy with baked black satin enamel finish. Square flush cases have black wrinkle finish. Stainless steel lens retaining snap ring.

Stem Mount (3½", 4½", 6", 8½")

- ☐ Plain case for stem (line) mounting.
- ☐ 3½" only available with bronze or bronze/monel system assembly.

Wall Mount (3½", 4½", 6", 8½")

- ☐ 3½" provided with two rear studs, optional strap mounting available.
- ☐ 3½" only available with bronze or bronze/monel system assembly.
- ☐ Other sizes provided with integral rear flange for surface or wall mounting.

Flush Mount (3½", 4½", 6", 8½")

- ☐ 3½" provided with rear studs and U-Clamp mounting.
- ☐ 3½" only available with bronze or bronze/monel system assembly.
- ☐ Other sizes provided with integral front flange and mounting studs.
- ☐ 4½", 6", 8½" options include holes through flange for front mounting or rear studs with U-Clamp.

Solid Front (4½", 6" only)

- ☐ Stem and flush mounting arrangements.
- ☐ Flush mounting provided with integral mounting studs or holes through flange for front mounting.
- ☐ Provided with full area blow-out disc in rear of case.

Phenol Case

Compression molded filled phenolic material. Black glossy finish. Stainless steel lens retaining snap ring.



Aluminum Case
Wall Mount



Aluminum Case
Flush Mount



Phenol Case

**Stainless Steel Case
Wall Mount**



Open Front (3½", 4½", 6")

- ☐ 3½" only available with bronze or bronze/monel system assembly.
- ☐ Stem or surface mounting.

Solid Front (4½" only)

- ☐ Stem or surface mounting.
- ☐ Provided with full area blow-out disc in rear of case.

Stainless Steel Case

- ☐ Stainless steel satin finish case and press fit lens retaining bezel.

Stem Mount (3½" only)

- ☐ Available with bronze, steel or bronze/monel system assembly.

Wall Mount (3½" only)

- ☐ Same as stem mount except provided with integral rear flange with through holes for surface mounting.

Flush Mount (3½" only)

- ☐ Available in round front flange.
- ☐ Same as stem mount except provided with rear studs and U-Clamp.

- ☐ Also available in front flush.

**900 Series Solid Front
Polyester Case**

Injection molded 30% glass filled polyester. Solid front construction with full area blowout disc in rear of case. Threaded lens retaining ring. Improved impact resistance. Standard color is black with matte finish. Optional colors are red, green, yellow, and blue.

Stem Mount (4½" only)

- ☐ Plain case for stem mounting.

Wall Mounting (4½" only)

- ☐ Plain case provided with snap fit rear flange with through holes.

Flush Mounting (4½" only)

- ☐ Plain case provided with snap fit studded front flange.
- ☐ Stainless steel mounting hardware.

In General:

1. All case styles are provided in weather resistant construction with gaskets at all case openings.
2. Back and bottom connected cases are provided as standard. Side and top connection provided as optional.
3. All internal fasteners are stainless steel.

**Stainless Steel Case
Stem Mount**



**900 Series
Solid Front
Polyester Case**

Test, Special, & Other Gauges

Test Gauges

For applications requiring improved sensitivity, readability and accuracy, Helicoid offers a variety of test gauges:

Sizes: 4½", 6", 8½".

System: phosphor bronze, steel, 316 stainless steel or monel.

Case: All aluminum styles.

Range: 30 in. of Hg Vac. through 0-1,000 P.S.I. for bronze systems. 30 in. of Hg Vac. through 0-10,000 P.S.I. for steel and monel systems. 30 in. of Hg Vac. through 0-1,000 P.S.I. for 316 stainless steel systems.

Dials: White test dial, 270° arc with non-parallax mirrored ring and knife edged balanced pointer.

Connection: ¼" or ½" NPT bottom or back.

Accuracy: ± ¼ of 1% of scale range. (ANSI B40.1-Grade 3A)

Air Receiver Gauge

Indicates remote process variable by receiving proportional change in pressure from a pneumatic transmitter. A wide Bourdon tube coupled with Helicoid's exclusive Cam and Roller Movement provides required sensitivity. Dial information includes relationship between process variable and transmitted pressure.

Sizes: 3½", 4½", 6" and 8½".

System: Phosphor bronze tube and brass socket.

Transmitted Range: 3-15 P.S.I., 3-27 P.S.I. and other standard ranges.

Dials: White 270° arc, linear or square root standard scales in a variety of process units.

Cases: All case styles.

Connection: ¼" or ½" NPT bottom or back.

Accuracy: ± ½ of 1% of scale range. (ANSI B40.1-Grade 2A)

Oxygen Gauge

Specially processed and cleaned for commercial gaseous oxygen service. Other levels of cleaning can be provided to applicable standards. Gauges are supplied with plastic lens, blowout discs—and "Oxygen—use no oil" nameplate.

Refrigeration Gauge

For applications requiring a dual-scale dial showing the pressure and temperature relationship of a refrigerant such as R-12, R-22, R-502, R-134A or ammonia. Standard dial provided with red temperature and black pressure scales in English units. Other colors and metric units can be provided.

Available in all sizes, case styles and system materials.

900 Series Gauge†

Small Gauges

Dry and Liquid Filled Gauges (1½", 2" & 2½"): *Helicoid* offers a complete line of pressure gauges in both conventional and liquid filled versions. A variety of models is available in pressures up to 15,000 psi. These gauges are equipped with a heavy duty system for typical hydraulic and pneumatic service. Stainless steel housings are standard.

Other *Helicoid* Gauges Include:

Absolute Pressure Gauge: same general construction features as standard gauges except that the pointer is set at 14.7 P.S.I.A. (or equivalent), under prevailing atmospheric pressure. This gauge is not compensated for changes in barometric pressure.

Head Pressure Gauge: same general construction features as standard gauges. Used for indicating the height of a liquid in a reservoir or tank. Liquid and specific gravity should be specified when ordering.

Incorporating a unique combination of innovative design features and superior materials, *Helicoid* has created the most universal and most cost-effective gauge for the process industry. Featuring *Helicoid's* exclusive Cam and Roller Movement, the 900 Series can be furnished or adapted in a variety of configurations. These include dry, liquid-filled, sealed, wall, flush or stem mount.

Internals

- ☐ Bar stock socket and drawn-tube construction.
- ☐ Bronze systems are silver brazed.
- ☐ Other systems heli-arc welded.
- ☐ Cantilevered movement prevents calibration shift due to misaligned piping or case installation torque up to 40 ft./lbs.

Case

- ☐ 4½" dia. solid front design using glass filled polyester.
- ☐ Stronger and more impact resistant than phenolic or polypropylene.

- ☐ Full area blowout disc in rear of case.
- ☐ Designed to exceed MIL-I-18997 rupture test.
- ☐ Snap-fit wall or flush mounting rings.
- ☐ Standard color is black. Optional colors are red, green, yellow, and blue.

Exclusive External Zero Adjustment

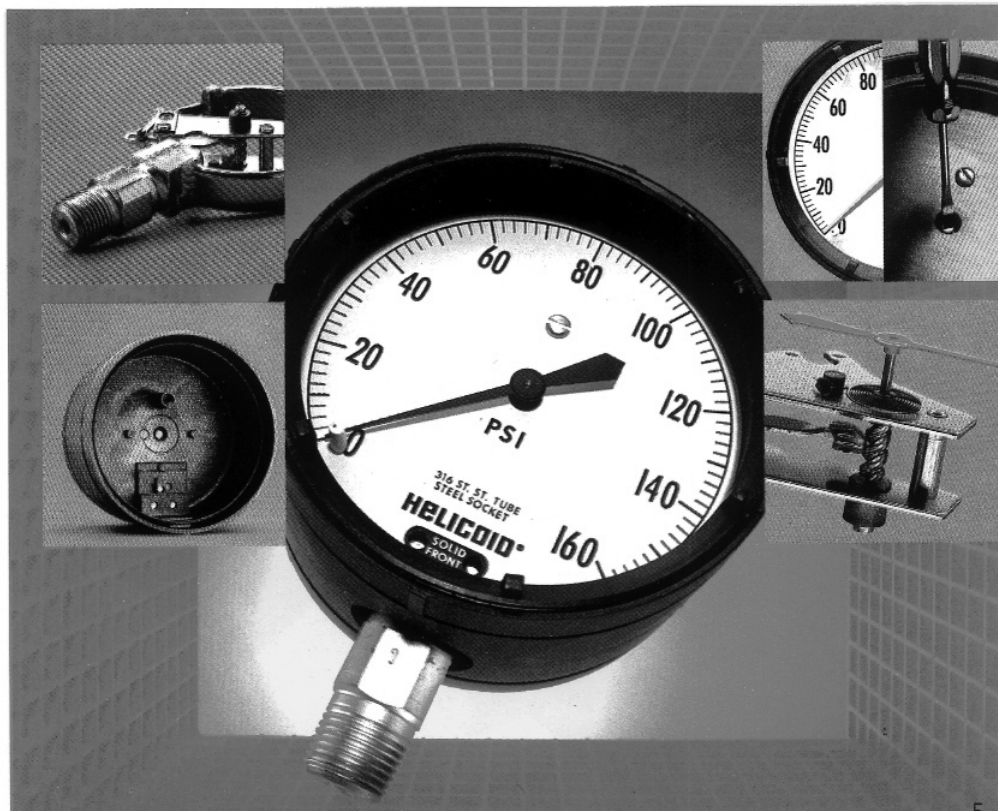
- ☐ Externally accessible on *dry, liquid-filled and sealed models*.
- ☐ Fine micrometer adjustment allows infinite resolution.

Cam and Roller Movement

- ☐ 300 Series stainless steel construction.
- ☐ Precision molded Ryton®* bearings.
- ☐ Span and zero adjustment easily accessible from rear of case.
- ☐ Built-in overload and underload stops.

*Registered Trademark of Phillips Petroleum Company.

†See Catalog HG-106 for additional information.



System Assembly

Typically consists of a socket, Bourdon tube, tip and back-plate. When pressure is applied, the Bourdon tube deflects to provide input motion to the movement and pointer. The use of special, high quality Bourdon tubing combined with careful design and manufacture results in maximum torque output to overcome friction, with minimum stress for long life. All system assemblies are overpressured, leak tested, and stress relieved. System assembly materials must be carefully selected for corrosion resistance and operating temperature. Silver brazed systems can withstand 350°F fluid temperature, and welded systems 750°F with a resulting accuracy degradation of approximately 1½ percent per 100°F. Normal operating pressure should not exceed 75 percent of system assembly range.

Available Materials are:

Bronze

- ☐ Phosphor Bronze Tube (Grade A)
- ☐ Brass Socket
- ☐ Brass Tip
- ☐ Silver Brazed Joints

Steel

- ☐ Steel Tube (A.I.S.I. 4130)
- ☐ Steel Socket (A.I.S.I. 4140)
- ☐ Steel Tip (A.I.S.I. 1020)
- ☐ Heli-Arc Welded Joints
- ☐ Hardened & Tempered
- ☐ Internally Coated with rust preventive

Stainless

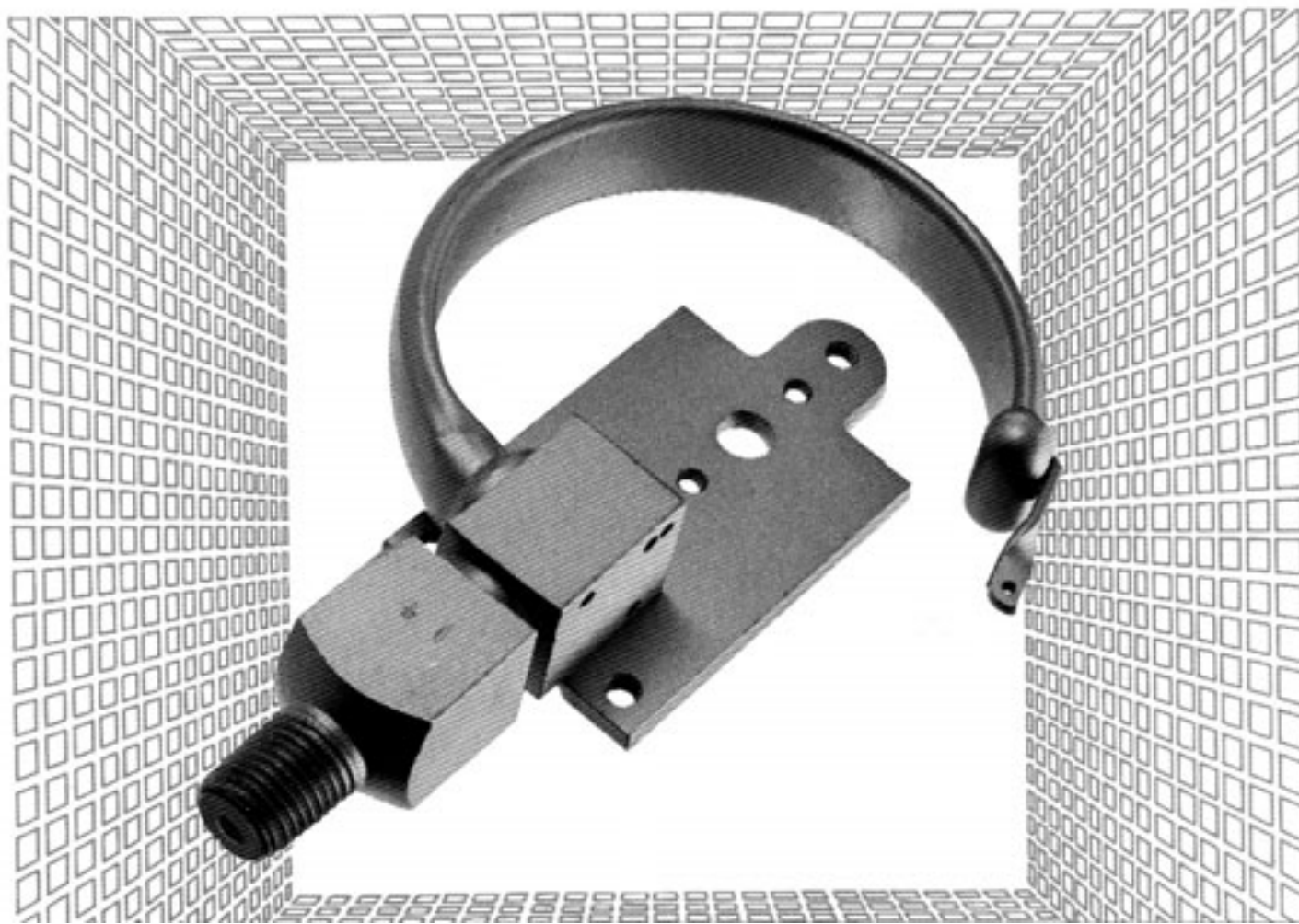
- ☐ Stainless Steel Tube (A.I.S.I. 316)
- ☐ Stainless Steel Socket (A.I.S.I. 316)
- ☐ Stainless Steel Tip (A.I.S.I. 316)
- ☐ Heli-Arc Welded Joints

Bronze/Monel

- ☐ Monel Tube (K-500)
- ☐ Brass Socket
- ☐ Brass Tip
- ☐ Silver Brazed Joints
- ☐ Precipitation Hardened

Monel

- ☐ Monel Tube (K-500)
- ☐ Monel Socket (Alloy 400)
- ☐ Monel Tip (Alloy 400)
- ☐ Heli-Arc Welded Joints
- ☐ Precipitation Hardened



Options

Micro-Range Adjuster

An externally accessible simple method for gauge span adjustment. Not available in phenol, 900 Series, or 3½" case sizes.

Liquid-Filled Gauges

Available in 3½" stainless steel case (mineral oil-filled) and 900 Series case (glycerine-filled). Silicone oil fill optional. Liquid-Filled Gauges may be necessary for an application when one or more of the following conditions are present:

Vibration

Caused by equipment or gauge support member.

Pulsation

Rapid fluctuation of pressure in a very limited portion of the total pressure range.

Cycling

Severe pressure fluctuations that cover a broader range and are less frequent than pulsation.

Hostile Environments

Such as corrosive or dirty atmospheres.

Warning: Selection of fill liquid is critical. In the event of system failure, fill liquid and process media must not produce a hazardous reaction.

Capillary Bleed

This feature allows for removal of trapped air, or flushing and cleaning the system assembly with suitable solvents. The capillary tubing internally connects the closed end of the Bourdon tube system with an external ball valve and set screw. With pressure applied, opening the valve allows the fluid to purge the system. For those applications requiring frequent use of the valve, a replaceable valve assembly can be provided.

Grease-Fitting

An externally accessible grease fitting enabling the user to fill the system assembly with a suitable material such as silicone grease. This prevents the entry of solids or solidifying materials which would normally clog the Bourdon tube, making the gauge inoperative. Typical applications are found in the plastic and rubber processing industries.

Snubbers

- ☐ S-2—Air, Light Gases, and Liquids
- ☐ S-4—Water, Steam, and Medium Liquids
- ☐ S-6—Heavy Liquids

Lenses

- ☐ Anti-Glare Glass
- ☐ Plastic (Acrylic)
- ☐ Shatterproof Glass

Pointers

- ☐ Red Maximum Pointer with Reset
- ☐ Red Set Hand on Dial
- ☐ Micro Adjust

Cases

- ☐ Polished Aluminum Flangeless Case (Except 3½")
- ☐ Polished Aluminum Flange (Flush Case)

- ☐ Drain Hole
- ☐ Front Flush Mounting (4½" or Larger Aluminum Cases)
- ☐ U-Clamp (Flush Mounted Cases) standard in 3½"

Identification

- ☐ Aluminum Adhesive Tag
- ☐ Stainless Steel Tag and Wire
- ☐ Special Marking on Gauge Box

Gauge Connections

- ☐ Top or Side
- ☐ Aminco 9/16" × 18 Internal
- ☐ 7/16" × 20 Internal
- ☐ Other special threads on application

Dials

- ☐ Black Dial
- ☐ Colored Arc or Line
- ☐ Mirrored Test Gauge Dial & Knife Edge Pointer
- ☐ Service Nameplate
- ☐ Special Dials on Application

Calibration & Testing

- ☐ Certificate of Conformance (Cert. A & B)
- ☐ Certificate of Gauge Readings (Cert. C)
- ☐ Mass Spectrometer Leak Test
- ☐ Positional Calibration
- ☐ Absolute, false reading, non-linear dial calibration

Quick Selection Chart

How To Order

1. Standard product codes have 13 characters, the first eight for basic features and the last five for options. For non-standard products (not codeable or more than five options) specify requirements. A special 15 character code will be assigned at Order Entry.

2. Examples shown at right illustrate code build-up. When a gauge feature or option is not required, use numeral "0" in that code position. Options (Tables 6 & 7) must be presented alphabetically. Abbreviated descriptions, in parenthesis, are typical of sales order and product packaging information.

3. Dual scale marked (*) begin with the dial range from Table 3. Example: J7 (Table 3) and N (Table 4)

will produce a dual scale of 6000 P.S.I.G and 400 kg/cm².

4. The following dial ranges include units of measurement. When selected use numeral "0" for Table 4.

Code	Units	Code	Units
L5	Percent	V1	In. Hg. Vac.
L7	P.S.I.G.	V3	mm Hg. Vac.
P1-Q5	In. Hg. Vac./P.S.I.	V5	kPa Vac.
R1-S3	bar Vac & Pressure	V7	mbar Vac.
S5-T7	kPa Vac. & Pressure	V9	bar Vac.

5. For standard compound refrigeration scales (red degrees F outer scale) use code W from Table 4.

6. For Ranges 1000psi & Below 316SS bourdon tube may be substituted for 4130 Alloy steel.

Table 1 - Gauge Size & Series, Case Material & Style, Bourdon Tube & Socket Material Type

Gauge Size & Series	Case Material & Abbreviation	Style	Type 10 Bronze & Brass	Type 30 Alloy Steel & Steel				Type 40 All 316 St. St.		Type 65 K. Monel & Brass	Type 60 K-Monel & Monel	
			Vac. to 1,000 P.S.I.	(See Note 6 Above) Vac. to 1,000 P.S.I.	To 10,000 P.S.I.	To 20,000 P.S.I.	Vac. to 1,000 P.S.I.	To 10,000 P.S.I.		1,500 to 10,000 P.S.I.	Vac. to 1,000 P.S.I.	To 10,000 P.S.I.
3½" 300 Series (ANSI Grade A)	Phenol (PH)	SM	E1A							E5A		
	Aluminum (AL)	SM	E1C							E5C		
		FM	E1E							E5E		
		FMS	E1F							E5F		
	Stainless Steel (SS)	SM	E1M	† E3M	E3M		††E4M	E4M		E5M		
		WM	E1N	† E3N	E3N		††E4N	E4N		E5N		
		FM	E1P	† E3P	E3P		††E4P	E4P		E5P		
4½" 400 Series (ANSI Grade 2A)	Phenol (PH)	SM	F1A	F3A	F3A	F3A	F4A	F4A			F6A	F6A
	Phenol SF (PHSF)	SM	F1B	F3B	F3B	F3B	F4B	F4B			F6B	F6B
	Aluminum (AL)	SM	F1C	F3C	F3C	F3C	F4C	F4C			F6C	F6C
		WM	F1D	F3D	F3D	F3D	F4D	F4D			F6D	F6D
		FM	F1E	F3E	F3E	F3E	F4E	F4E			F6E	F6E
	Aluminum SF (ALSF)	SM	F1G	F3G	F3G	F3G	F4G	F4G			F6G	F6G
6" 600 Series (ANSI Grade 2A)	Phenol (PH)	SM	G1A	G3A	G3A	G3A	G4A	G4A			G6A	G6A
	Aluminum (AL)	SM	G1C	G3C	G3C	G3C	G4C	G4C			G6C	G6C
		WM	G1D	G3D	G3D	G3D	G4D	G4D			G6D	G6D
		FM	G1E	G3E	G3E	G3E	G4E	G4E			G6E	G6E
	Aluminum SF (ALSF)	SM	G1G	G3G	G3G	G3G	G4G	G4G			G6G	G6G
		FM	G1H	G3H	G3H	G3H	G4H	G4H			G6H	G6H
		WM	G1W	G3W	G3W	G3W	G4W	G4W			G6W	G6W
8½" 800 Series (ANSI Grade 2A)	Aluminum (AL)	SM	H1C	H3C	H3C	H3C	H4C	H4C			H6C	H6C
		WM	H1D	H3D	H3D	H3D	H4D	H4D			H6D	H6D
		FM	H1E	H3E	H3E	H3E	H4E	H4E			H6E	H6E

Case Style Abbreviations: SM—Stem Mount
WM—Wall/Surface Mount
SF—Solid Front

FM—Flush Mount Round Flange
FMS—Flush Mount, Square Flange
ST.ST.—Stainless

†45 to 1000 PSI
††100 to 1000 PSI

Gauge Part Number

F 4 E 4 E 9 L 1 A D H N R

4½", 316 St.St. System (440), Aluminum Case Flush Mount (ALFM), ½ N.P.T. Back Connection (2BK), 0/100 P.S.I. & kPa, Test Gauge (TG), S2 Snubber (S2), Plastic Lens (PL), System Bleed (SB), Blowout Discs (BO), U-Clamp (UC).

Indicating Pressure Switch Part Number

G 1 C 1 C 7 D 3 A G J M 0

6" Bronze System (610), Aluminum Case Stem Mount (ALSM), ¼" N.P.T. Bottom (4BT), 0/16 kg/cm², Indicating Pressure Switch (ISI), Normally Closed Switch (NC), Tamperproof Cap (TC), S2 Snubber (S2).

Table 2 – Pressure Connections

Connection Size, Location & Abbreviation	Code	Connection Size, Location & Abbreviation	Code
Not listed (customer to specify)	0	Bottom – See Optional Threads – (Table 6) (BT)	5
¼" N.P.T. Bottom (4BT)	1	Back – See Optional Threads – (Table 6) (BK)	6
½" N.P.T. Bottom (2BT)	2	¼" N.P.T. Top (4TP)	7
¼" N.P.T. Back (4BK)	3	½" N.P.T. Top (2TP)	8
½" N.P.T. Back (2BK)	4	¼" N.P.T. Top Back (4TB)	9

Table 3 – Dial Ranges (See page 10 for standards.)

	Range	Code		Range	Code
	Not listed (Specify)	00		0/2500	H9
Pressure Ranges	0/1.0	A1	Pressure Ranges	0/3000	J1
	0/1.6	A3		0/4000	J3
	0/2.0	A5		0/5000	J5
	0/2.5	A7		0/6000	J7
	0/3.0	A9		0/7000	J9
	0/4.0	B1		0/8000	K1
	0/5.0	B3		0/10,000	K3
	0/6.0	B5		0/15,000	K5
	0/7.0	B7		0/16,000	K7
	0/8.0	B9		0/20,000	K9
	0/10	C1	Air Receiver Ranges	0/10 Sq. Rt.	L1
	0/12	C3		0/100 Sq. Rt.	L3
	0/15	C5		0/100* Percent	L5
	0/16	C7		3/15* P.S.I.G.	L7
	0/20	C9	Compound Ranges	30/15*	P1
	0/25	D1		30/30*	P2
	0/30	D3		30/60*	P5
	0/35	D4		30/100*	P7
	0/40	D5		30/150* †	Q1
	0/45	D7		30/200*	Q3
	0/50	D9		30/300* †	Q5
	0/60	E1		– 1/1*	R1
	0/70	E3		– 1/1.5*	R3
	0/75	E5		– 1/3*	R5
	0/80	E7		– 1/5*	R7
	0/100	E9		– 1/9*	R9
	0/150	F1		– 1/15*	S1
	0/160	F3		– 1/24*	S3
	0/200	F5		– 100/100*	S5
	0/250	F7		– 100/150*	S7
	0/300	F9		– 100/300*	S9
	0/400	G1		– 100/500*	T1
	0/500	G3		– 100/900*	T3
	0/600	G5		– 100/1500*	T5
	0/700	G7		– 100/2400*	T7
	0/760	G8	Vacuum Ranges	30/0*	V1
	0/800	G9		760/0*	V3
	0/1000	H1		100/0*	V5
	0/1500	H3		1000/0*	V7
	0/1600	H5		1/0*	V9
	0/2000	H7			

* See note 4

† See note 5

Table 4 – Units of Measurement

Units	Code
Not Listed (Customer to Specify)	0
P.S.I.G.	A
kPa	B
bar	C
kg/cm ²	D
MPa	E
P.S.I.A.	F
mm Hg Absolute	G
Feet of Water	H
In. Hg. Pressure	J
mm Hg. Pressure	K
*P.S.I.G. & kPa	L
*P.S.I.G. & bar	M
*P.S.I.G. & kg/cm ²	N
*P.S.I.G. & Tons (Specify Ram. Dia.)	P
*In. Hg. Vac. & P.S.I.G. cm. Hg. Vac. & Kg/cm ²	Q
*In. Hg. Vac. & P.S.I.G. kPa Vac. & Press.	R
*In. Hg. Vac. & P.S.I.G. bar Vac. & Press.	S
Pounds (Specify Ram. Dia.)	T
Tons (Specify Ram. Dia.)	U
Kilograms (*Specify Ram. Size)	V
In. Hg. Vac. & P.S.I.G. degrees F (red outer scale)	W
Inches Hg. Vacuum	Z

* See note 3

Table 5 – Special Application Gauges

Type	Code	3½	4½	6	8½
None	0				
Test Gauge (TG) (¼%) (with aluminum cases only) *	1		•	•	•
Liquid Filled Gauge (1%) (See Table 6)	2	•			
Indicating Pressure Sw. (with aluminum cases only)	3		•	•	
Oxygen Gauge (OG)	4	•	•	•	•
Reid Vapor Test (RVT)	5		•		
Air Receiver Gauge (AR) (3-15)	6	•	•	•	•
Refrigerant 12 Gauge (R12)	7	•	•	•	•
Refrigerant 22 Gauge (R22)	8	•	•	•	•
Refrigerant Gauge Ammonia (AMM)	9	•	•	•	•

*3 1/2" Test Gauge is ANSI Grade 2A-1/2% alloy

Table 6 – Gauge Options

Option & Abbreviation	Code	3½	4½	6	8½
None	0				
S2 Snubber (S2)	A	•	•	•	•
S4 Snubber (S4)	B	•	•	•	•
S6 Snubber (S6)	C	•	•	•	•
Plastic Lens (PL)	D	•	•	•	•
Oil Free System (Specify Media) (OF)	E	•	•	•	•
Shatterproof Lens (SL)	F	•	•	•	•
Grease Fitting (GF)	G	•	•	•	•
System Bleed (SB)	H	•	•	•	•
Renewable Valve (RV)	J	•	•	•	•
Red Max. Pointer with Reset (RMP)	K	•	•	•	•
Red Set Hand (RSH)	L	•	•	•	•
Micro Range Adjuster (MR)	M		•	•	•
Micro Pointer (MP)	P	•	•	•	•
Black Dial & White Pointer (BL)	Q	•	•	•	•
U-Clamp for Flush Case (UC)	R	•	•	•	•
Front Flush Mounting (FF)	S		•	•	•
Side Connection, 3 O'clock (S3)	T	•	•	•	•
Side Connection, 9 O'clock (S9)	U	•	•	•	•
9/16-18 Aminco Internal (918)	V	•	•	•	•
7/16-20 Internal (720) †	W	•	•	•	•
Mineral Oil Filled Gauge (LM)	X	•*			
Silicone Oil Filled Gauge (LS)	Z	•*			

* 304 St.St. Case only

† AND 10050-4 & MC 240-4

Switch Options

Option & Abbreviation	Code	4½	6
None	0		
I.S.I.	A	•	•
I.S.D.	B	•	•
I.D.C.	C	•	•
I.D.I.	D	•	•
I.D.D.	E	•	•
I.T.C.	F	•	
Normally Closed Switch (NC)	G	•	•
Direct Current Switch (DC)	H	•	•
Tamper Proof Cover (TC)	J	•	•
BX Sealtite Connector (BX)	K	•	•
Terminal Strip (TS)	L	•	•
S2 Snubber (S2)	M	•	•
S4 Snubber (S4)	N	•	•
S6 Snubber (S6)	P	•	•
Grease Fitting (GF)	Q	•	•
System Bleed (SB)	R	•	•
Renewable Valve (RV)	S	•	•
Micro Range Adjuster (MR)	T	•	•
U-Clamp for Flush Case (UC)	V	•	•
Front Flush Mounting (FF)	W	•	•

Standard Ranges

	*English Units					*Metric Units		
	P.S.I.	Major Graduation		Minor Graduation		Pascal	Major Graduation	Minor Graduation
		STD.	TEST	STD.	TEST			
Pressure	0-15	1	1	0.1	0.05	0-100 kPa	10	1
	0-30	2	2	0.2	0.1	0-160 kPa	20	2
	0-60	5	5	0.5	0.2	0-250 kPa	50	2
	0-100	10	10	1	0.5	0-400 kPa	50	5
	0-150	10	10	1	0.5	0-600 kPa	50	5
	0-200	20	20	2	1	0-1,000 kPa	100	10
	0-300	50	20	2	1	0-1,600 kPa	200	20
	0-500	50	50	5	2	0-2,500 kPa	500	20
	0-600	50	50	5	2	0-4,000 kPa	500	50
	0-1,000	100	100	10	5	0-6,000 kPa	500	50
	0-1,500	200	100	10	5	0-10 MPa	1	0.1
	0-2,000	200	200	20	10	0-16 MPa	2	0.2
	0-3,000	500	200	20	10	0-25 MPa	5	0.2
	0-5,000	500	500	50	20	0-40 MPa	5	0.5
	0-6,000	500	500	50	20	0-60 MPa	5	0.5
	0-10,000	1,000	1,000	100	50	0-100 MPa	10	1
	0-20,000	2,000		200		0-160 MPa	20	2
Compound	In. Hg. VAC/P.S.I.	Major Graduation		Minor Graduation		Pascal	Major Graduation	Minor Graduation
		STD.	TEST	STD.	TEST			
	30/15	10/5	5/3	0.5/0.2	0.2/0.1	- 100/150 kPa	20	2
	30/30	10/5	10/5	0.5/0.2	0.5/0.2	- 100/300 kPa	50	5
	30/60	10/10	10/5	2/1	1/0.5	- 100/500 kPa	50	5
	30/100	10/10	10/10	2/1	1/0.5	- 100/900 kPa	100	10
	30/150	10/25	10/10	2/1	2/1	- 100/150 kPa	200	20
	30/200	10/20	10/20	5/2	2/1	- 100/2400 kPa	500	20
	30/300	30/50	30/20	5/2	5/1			
Vacuum	In. Hg Vac	Major Graduation		Minor Graduation		Pascal	Major Graduation	Minor Graduation
		STD.	TEST	STD.	TEST			
	30/0	2	2	0.2	0.1	- 100/0 kPa	10	1

Dial arc 270° except ranges over 10,000 P.S.I. are 230°.

*Standard dual scale dials have P.S.I. (outer scale) and kPa, bar or kg/cm² (inner scale).

**Other ranges available on application.

Accessories

Cartridge Snubber & Housing

Used to reduce or eliminate gauge pointer pulsation. No moving parts, no adjustments needed. Available in the following:

- ☐ 316 Stainless Steel Sintered Snubbers for Air, Water, or Heavy Liquid
- ☐ Brass Housing ¼ inch NPT (Male & Female)
- ☐ Steel Housing ¼ inch NPT (Male & Female)
- ☐ Steel Housing ½ inch NPT (Male & Female)
- ☐ 303 Stainless Steel Housing ¼ inch NPT (Male & Female)
- ☐ Stainless Steel Housing ½ inch NPT (Male & Female)

Coil Pipe Siphons (Pigtail)

Used to protect gauges from high temperature steam. Steam condenses in the siphon coil forming a water trap. Available in the following:

- ☐ ¼ inch NPT Brass, 250 P.S.I. and 400°F
- ☐ ¼ inch Steel, Extra Heavy, 1,000 P.S.I. and 850°F
- ☐ ¼ inch N.P.T. 316 Stainless Steel, 500 P.S.I. and 400°F
- ☐ ½ inch NPT Steel, Extra Heavy, 1,000 P.S.I. and 850°F
- ☐ ½ inch NPT Steel, Double, Extra Heavy, 2,000 P.S.I. and 850°F
- ☐ ½ inch NPT 304 Stainless Steel, 1,300 P.S.I. and 950°F

Diaphragm Seals

A device used to isolate a gauge from a process fluid which would normally corrode, clog, or solidify the gauge system assembly. Available with welded or replacable diaphragms, in a wide variety of corrosion resistant materials and styles. Refer to Helicoid® Diaphragm Seal Catalog HG-103 for details.

Needle Valves

Throttling or shut-off needle valves made from brass, carbon steel or stainless steel. Stainless steel stem and Teflon® packing provide smooth operation. Maximum operating hydraulic pressure:

- ☐ Brass 5,000 P.S.I.
- ☐ Carbon Steel 10,000 P.S.I.
- ☐ Stainless Steel 10,000 P.S.I.

Available in ¼ inch and ½ inch NPT female threads.

Gauge Cocks

An assortment of gauge cocks is available suitable for air or water service up to 300 P.S.I. All are made of polished brass with ¼ inch NPT connections. Available in the following:

- ☐ T-Handle (Female Connections)
- ☐ Lever Handle (Female Connections)
- ☐ Lever Handle Union (Male and Female Connections)

Pointer Puller Kit

A two-piece tool set for easy removal and reinstallation of gauge pointers.



Dials

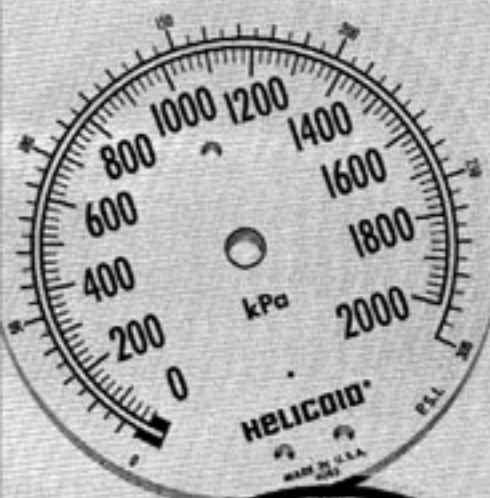
Dials are available in a variety of sizes, ranges and colors. Special dials can be supplied to meet most requirements. Company logo and application information can be applied to any dial. Both

English and metric units are available in either single or dual-scale arrangements. (Our standard dual-scale has psi on the outside scale, metric on the inside.)

Prolonged exposure to ambient temperatures in excess of 150°F will cause dial discoloration.

Dial types (3½", 4½", 6", 8½")

- ☐ White
- ☐ Black
- ☐ Test (white, 4½", 6", 8½" only)
- ☐ Air Receiver
- ☐ Refrigeration
- ☐ Abbreviated Scale
- ☐ Square Root
- ☐ Hydraulic Force



Dual Scale

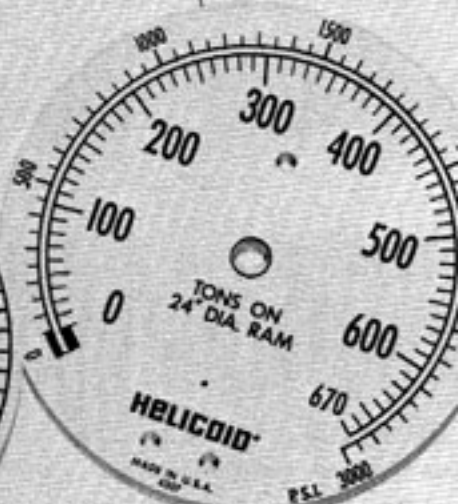


Black



Square Root

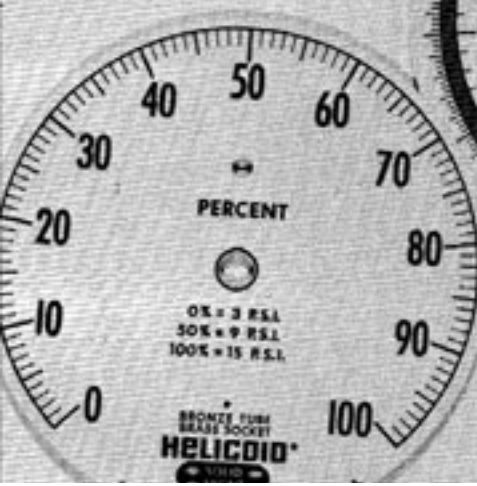
Hydraulic Force



Test



Abbreviated Scale

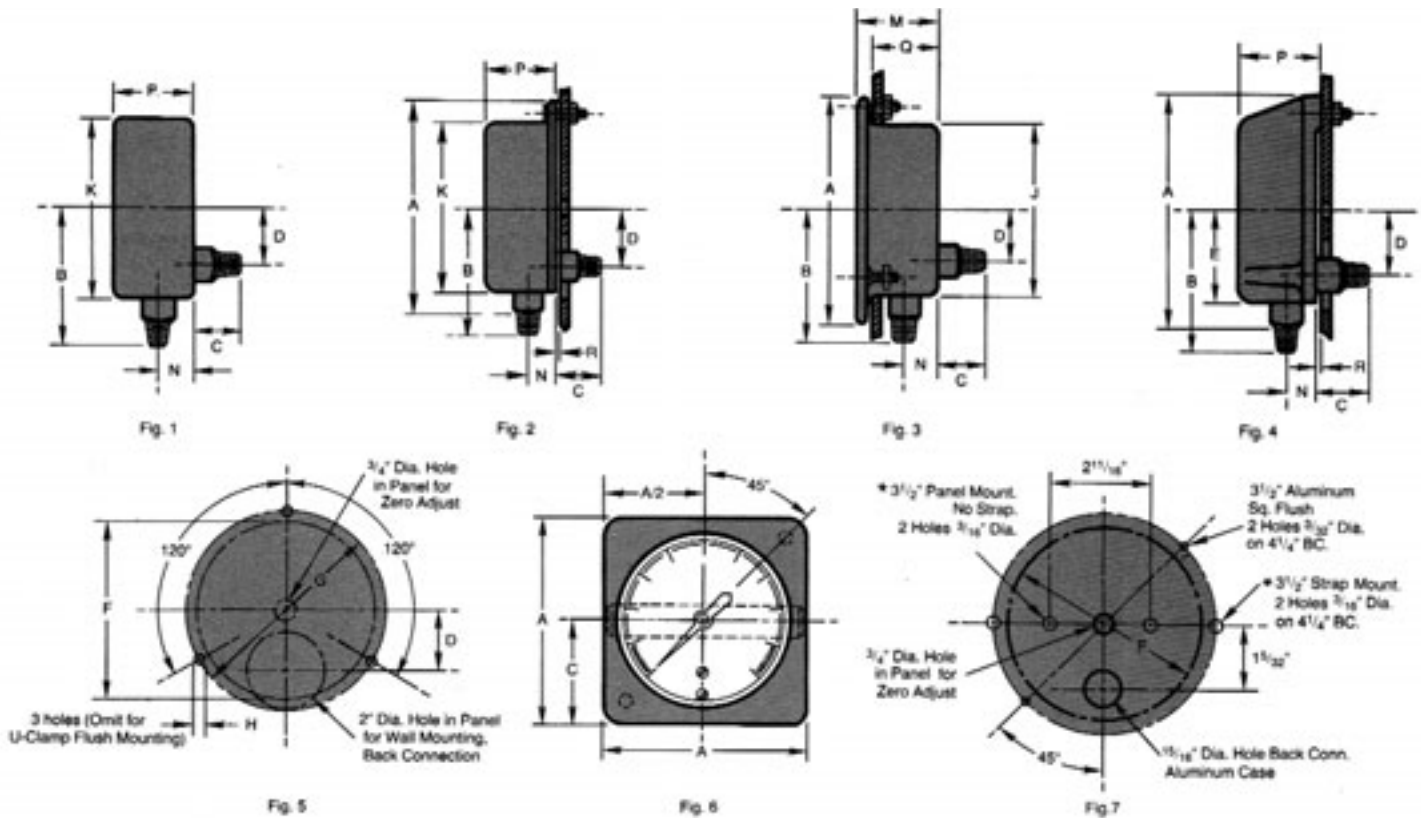


Air Receiver



Refrigeration

Dimensions



Open Front			Stem Mount				Wall Mount										Flush Mount									
Gauge Size	Case Material	Dwg. Ref.	Fig. No.'s	D	K	N	P	Fig. No.'s	A	D	G	H	K	N	P	R	Fig. No.'s	A	D	F	G	H	J	M	N	Q
3½"	Aluminum	3239 2078	1	1.16	4.12	.73	1.98	1,7	*	1.16	*	*	4.12	.73	1.98	—	3,7	4.12	1.16	3 ²⁷ / ₃₂	—	—	3.65	1.98	.73	1.70
	Phenol	2078	4	1.16	—	.77	2.11	4,5	4.75	1.16	4¼	⅝ ₃₂	—	.77	2.11	.06	—	—	—	—	—	—	—	—	—	
	St. St.**	4693 5094	1	1.16	3.93	.80	2.22	2,5	4.75	1.16	4¼	⅝ ₃₂	3.93	.80	2.22	.31	3,5	4.12	1.16	3 ¹¹ / ₁₆	—	—	3.47	2.22	.80	1.56
4½"	Aluminum	1366 4060	1	1.62	4.97	.83	2.11	2,5	5.81	1.62	5⅜	7 ₃₂	4.97	.83	2.11	.06	3,5	5.94	1.62	5 ¹ / ₁₆	5⅜	7 ₃₂	4.81	2.19	.83	1.72
	Phenol	1366 4060	4	1.62	—	.83	2.27	4,5	5.81	1.62	5⅜	7 ₃₂	—	.83	2.27	.06	—	—	—	—	—	—	—	—	—	
6"	Aluminum	" "	1	1.62	6.47	.86	2.31	2,5	7.62	1.62	7	⅜ ₃₂	6.47	.86	2.31	.06	3,5	7.62	1.62	6 ⁷ / ₁₆	7	⅜ ₃₂	6.25	2.19	.86	1.72
	Phenol	" "	4	1.62	—	.86	2.31	4,5	7.62	1.62	7	⅜ ₃₂	—	.86	2.31	.06	—	—	—	—	—	—	—	—	—	
8½"	Aluminum	" "	1	1.62	8.94	.86	2.16	2,5	10.25	1.62	9⅝	⅜ ₃₂	8.94	.86	2.16	.06	3,5	10.25	1.62	8 ²⁷ / ₃₂	9⅝	⅜ ₃₂	8.69	2.22	.86	1.75
	Phenol	" "	4	1.62	—	.86	2.31	4,5	10.25	1.62	9⅝	⅜ ₃₂	—	.86	2.31	.06	—	—	—	—	—	—	—	—	—	

Solid Front			Stem Mount				Wall Mount										Flush Mount									
Gauge Size	Case Material	Dwg. Ref.	Fig. No.'s	D	K	N	P	Fig. No.'s	A	D	G	H	K	N	P	R	Fig. No.'s	A	D	F	G	H	J	M	N	Q
4½"	Aluminum	2874 4063	1	1.62	5.0	.92	2.42	—	—	—	—	—	—	—	—	—	3,5	5.94	1.62	5⅛	5⅜	⅞	4.81	2.42	.92	1.97
	Phenol	" "	4	1.62	—	.92	2.81	4,5	5.81	1.62	5⅜	⅞	—	.92	2.81	.37	—	—	—	—	—	—	—	—	—	—
	Polyester	5189	1	1.69	4.91	1.19	2.75	2,5	5.94	1.69	5⅜	⅞	4.91	1.19	3.41	.47	3,5	5.94	1.69	4⅞	5⅜	⅞	4.91	2.94	1.19	2.31
6"	Aluminum	2874 4063	1	1.62	6.5	.92	2.42	—	—	—	—	—	—	—	—	—	3,5	7.62	1.62	6⅞	7	⅞	6.17	2.42	.92	1.92

	3 1/2" Bronze		3 1/2" Steel		4 1/2" Bronze		4 1/2" Steel, St.St., & Monel		6" Bronze		6" Steel, St.St., & Monel		8 1/2" Bronze		8 1/2" Steel, St.St., & Monel	
	1/4" NPT	1/2" NPT	1/4" NPT	1/2" NPT	1/4" NPT	1/2" NPT	1/4" NPT	1/2" NPT	1/4" NPT	1/2" NPT	1/4" NPT	1/2" NPT	1/4" NPT	1/2" NPT	1/4" NPT	1/2" NPT
B	2.97	—	3.58	3.58	4.12 (3.83)	4.06 (4.16)	4 (4)	4 (4)	5.31 (5.14)	5.50 (5.33)	4.73 (4.73)	4.73 (4.73)	6.16	6.34	5.98	5.98
C	1.41	—	1.66	1.66	1.28 (1.17)	1.44 (1.31)	1.42 (1.33)	1.42 (1.33)	1.25 (1.17)	1.41 (1.31)	1.39 (1.33)	1.39 (1.33)	1.25	1.41	1.39	1.39

Note: Solid Front Dimensions B and C in parenthesis.

**See drawing 4964 for Liquid-Filled Gauge.

The company reserves the right to revise this drawing without prior notice or without incurring responsibility for the outcome when referring to other than current certified prints.

Solid State Indicating Pressure Switch

Is a combination of the Helicoid® pressure gauge and lens-mounted solid state switching elements. A magnet mounted to the gauge pointer activates a hermetically-sealed reed switch at each set point. Upper and/or lower set points normally have capture tabs to prevent the gauge pointer from moving beyond the set points, thus providing a mechanical power-off memory.

There is a continuous indication of the process variable between set points. In AC applications the reed switch energizes a triac (solid state switch), while for DC applications the control current is carried directly by the reed switch. Typical applications include on-off control of motors, pumps, solenoids, relays, annunciators and alarms.

- ☐ 4½" and 6" gauge sizes in open front, round aluminum cases.
- ☐ Single- or dual-set point arrangements.
- ☐ Triple set points available in 4½" only.
- ☐ Standard reed switch with normally open SPST contacts.
- ☐ Set points externally adjustable between 5% and 95% of gauge range.
- ☐ Minimum differential between set points is 5% of gauge range.
- ☐ Minimum pull-in/dropout of each set point is 2% of gauge range.

- ☐ Standard switch rating—120 volts AC 60 Hz 2 amps.
- ☐ Optional switch ratings—10 watts max., 100 volts DC, 0.5 amp.
- ☐ Switch provided with 4 feet of no 20 AWC hookup wire.

Options:

- ☐ Terminal strip on rear of case.
- ☐ Tamper-proof cap for set point adjusting knobs.
- ☐ ¾" Sealrite Bx connector.
- ☐ Normally closed SPST reed switches.
- ☐ AC voltage suppressor accessory.
- ☐ Controller Unit on/off/alarm situation such as pump discharge and vacuum, level control, etc.

Switch Configurations:

- ☐ ISI—One switch for pressure increase
- ☐ ISD—One switch for pressure decrease
- ☐ IDC—Low switch for pressure decrease high switch for pressure increase
- ☐ IDI—Two switches for pressure increase
- ☐ IDD—Two switches for pressure decrease
- ☐ ITC—Low switch for pressure decrease Mid switch for pressure increase High switch for pressure increase

All vacuum, compound, and pressure scales are designed with clockwise rotation of the pointer with application of a more positive pressure.

*FOR ADDITIONAL INFORMATION, SEE CATALOG HG-138



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Other Helicoid products include a full line of small gauges from 1½" to 2½" and diaphragm seals.



Helicoid can take your temperature.

Helicoid offers a complete line of cost-effective bimetal thermometers for industrial and laboratory use. Featuring high quality at a competitive price, they are available with 3" and 5" dials in straight back, bottom or adjustable angle configurations; and in a 2" dial straight back model.

- ☐ Ranges from -100°F to 1000°F
- ☐ Stainless welded construction
- ☐ Hermetically sealed case—silicone fill available
- ☐ External reset
- ☐ Stem lengths from 2½" to 48"
- ☐ Anti-parallax dials

Additional Helicoid Products

- Thermowells (Catalog HG-113)
- Bi-Metal Thermometers (Catalog HG-112)
- Gas Actuated Thermometers (Catalog HG-119)
- Digital Gauges (Catalog HG-139)
- Diaphragm Seals (Catalog HG-103)