



# PROCESS GAUGES

## GEARLESS, DIRECT DRIVE PRESSURE GAUGES

Designed to perform on any application

### ADVANTAGES

#### ONE MOVING PART

Unmatched vibration, pulsation and shock performance. No linkages, springs, gears, or liquid fill to wear, break or leak.

#### OOPS! PROOF

Proof pressure (over-pressure) of 150% F.S. exceeds industry standards. Survives the day to day beatings of an unpredictable industrial environment.

#### TEMPERATURE HERO

Trusted in extremes from -65°F up to 600°F media. Accuracy is 25% less affected by temp fluctuations. Inconel Element = Low Coefficient of Thermal Expansion

#### AEROSPACE QUALITY | MILITARY TRUSTED

Direct Drive is demanded on critical applications. The same military grade Direct Drive technology used in our Aerospace and Military designs is used in our industrial gauges for commercial applications.

#### MINI-SEAL COMPATIBILITY

Requires 85% less fill fluid than the competition. Accuracy is 50% less affected by temps above 68°F. Low volume design enables performance on mini-diaphragm seals providing performance advantages and cost savings.

**Lifetime Limited Warranty**



**ACCURACY** (Ref. @ 68°F, ±2°F)  
±0.5% F.S. at M.S. / ±1.0% F.S.  
±0.5% F.S. (Grade 2A)

**RANGE AVAILABILITY**  
Vacuum – 15,000 psi (or equivalent)  
Single Scale, Dual Scale, Vacuum and Compound  
psi, bar, kPa, MPa, kg/cm<sup>2</sup>, inHg, mmHg

**DIAL**  
Stainless Steel, Powder Coated Finish  
Standard: White with Black Markings  
Ray Series: Neon Yellow, Black Markings, Red Pointer

**WINDOW**  
Acrylic  
Tempered Glass

**POINTER**  
Anodized Aluminum  
Zero-adjustable

**CONNECTION**  
316 SS or Monel  
¼ or ½ NPT (other options available)  
Welded Mini-Diaphragm Seal

**WETTED PARTS**  
Inconel X-750  
300-series SS  
Silver Braze (nickel available)

**BURST PRESSURE**  
500% F.S. pressure or 25,000 psi

**PROOF PRESSURE**  
150% F.S. for gauges ≤ 5,000 psi  
125% F.S. for gauges ≥ 5,000 psi

**CUSTOMIZATION AVAILABLE. CONTACT THE FACTORY.**

## CASE CONFIGURATIONS

### ABS PLASTIC

#### COLORS

Black, Blue, Green, Red, White, Yellow (availability varies by size)

#### OPERATING TEMPERATURE

**Process:** -65°F to 250°F

**Ambient:** -65°F to 190°F



2.5", 4.5", 6", 8.5"  
Front Flange



2.5", 4.5", 6"  
No Flange



2.5", 4.5", 6"  
Rear Flange



3.5", 4.5"  
Turret

### METAL

### MILITARY GRADE

### HIGH TEMP

High performance cases providing extreme temperature, chemical and shock resistance.



2.5" No Flange  
Aluminum



4.5" No Flange  
SS Case, Alum. Ring



4.5" No Flange  
Stainless Steel



3.5", 4.5", 8.5"  
Rear Flange  
Aluminum/Skydrol



4.5" Turret  
Glass-Filled Nylon

#### COLORS

**SS and Aluminum:** Powder Coated Finish (specify color)

**Skydrol:** Purple Anodized Ring, Unpainted Case

**Glass-Filled Nylon:** Available in yellow only

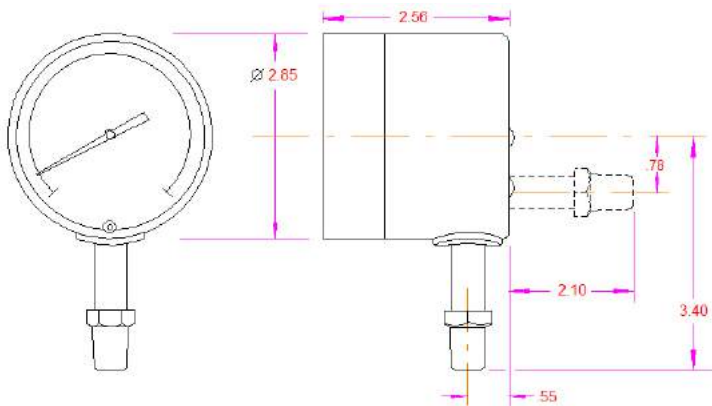
#### OPERATING TEMPERATURE

**Process:** -65°F to 600°F

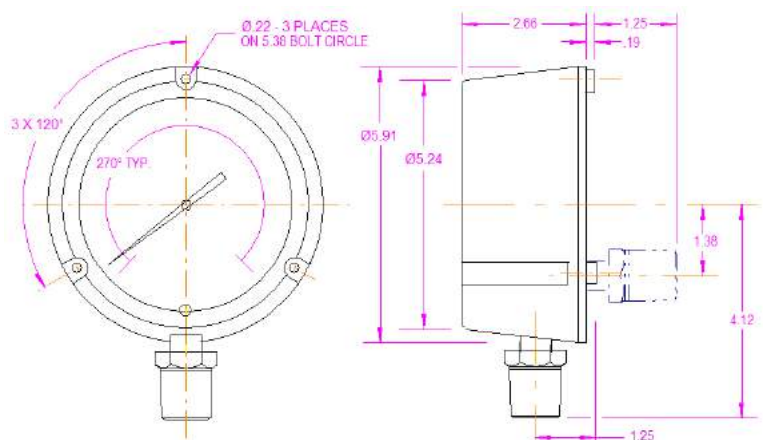
**Ambient:** -65°F to 400°F

CALIBRATION CERTIFICATE AVAILABLE.

## DIMENSIONAL SPECS (common sizes)



2.5" No Flange Aluminum



4.5" Turret



## PRECISION TEST GAUGES GEARLESS, DIRECT DRIVE PRESSURE GAUGES

Reliable accuracy on critical applications

### ADVANTAGES

#### ONE MOVING PART

Unmatched vibration, pulsation and shock performance. No linkages, springs, gears, or liquid fill to wear, break or leak.

#### TRAVEL READY

Survives the day to day beatings of an industrial environment or a bumpy ride in the back of a pickup.

#### TRUSTED ACCURACY

Accuracy is 25% less affected by temp fluctuations. Trusted in extremes from -65°F up to 600°F media. Inconel Element = Low Coefficient of Thermal Expansion

#### AEROSPACE QUALITY | MILITARY TRUSTED

Direct Drive is demanded on critical applications. The same military grade Direct Drive technology used in our Aerospace and Military designs is used in our industrial gauges for commercial applications.

**Lifetime Limited Warranty**



#### ACCURACY (Ref. @ 68°F, ±2°F)

±0.25% F.S. (Grade 3A)

Calibration Certificate Included

Accuracy exceptions. Contact factory for details.

#### RANGE AVAILABILITY

Vacuum – 15,000 psi (or equivalent)

Single Scale, Dual Scale, Vacuum and Compound psi, bar, kPa, MPa, kg/cm<sup>2</sup>, inHg, mmHg

#### DIAL

Stainless Steel, Powder Coated Finish

White with Black Markings

#### WINDOW

Acrylic

Tempered Glass

#### POINTER

Anodized Aluminum

Zero-adjustable

#### CONNECTION

316 SS or Monel

¼ or ½ NPT (other options available)

#### WETTED PARTS

Inconel X-750

300-series SS

Silver Braze (nickel available)

#### BURST PRESSURE

500% F.S. pressure or 25,000 psi

#### PROOF PRESSURE

150% F.S. for gauges ≤ 5,000 psi

125% F.S. for gauges ≥ 5,000 psi

CUSTOMIZATION AVAILABLE. CONTACT THE FACTORY.



## CASE CONFIGURATIONS

### ABS PLASTIC

#### COLORS

Black, Blue, Green, Red, White, Yellow (availability varies by size)

#### OPERATING TEMPERATURE

Process: -65°F to 250°F  
Ambient: -65°F to 190°F



2.5", 4.5", 6", 8.5"  
Front Flange



2.5", 4.5", 6"  
No Flange



2.5", 4.5", 6"  
Rear Flange



4.5"  
Turret

### METAL

### MILITARY GRADE

### HIGH TEMP

High performance cases providing extreme temperature, chemical and shock resistance.



2.5" No Flange  
Aluminum



4.5" No Flange  
SS Case, Alum. Ring



4.5" No Flange  
Stainless Steel



4.5", 8.5"  
Rear Flange  
Aluminum/Skydrol



4.5" Turret  
Glass-Filled Nylon

#### COLORS

SS and Aluminum: Powder Coated Finish (specify color)

Skydrol: Purple Anodized Ring, Unpainted Case

Glass-Filled Nylon: Available in yellow only

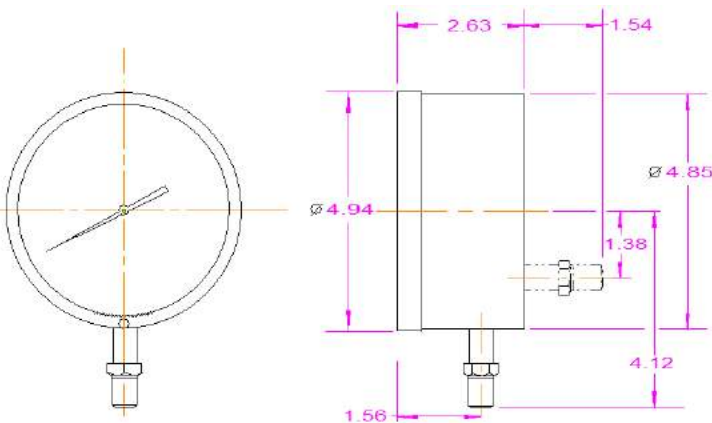
#### OPERATING TEMPERATURE

Process: -65°F to 600°F

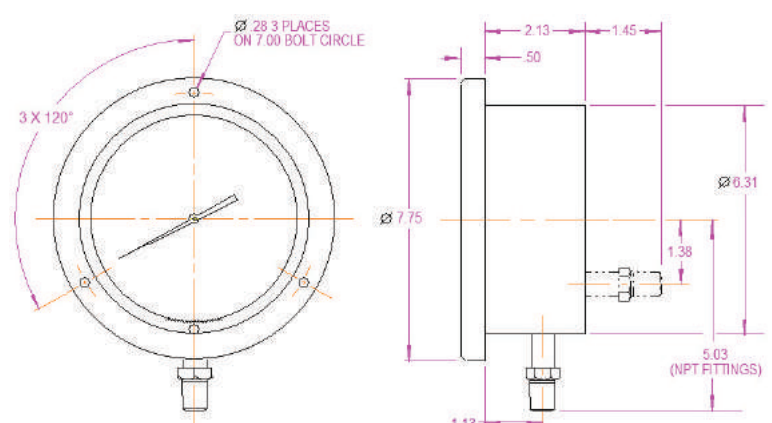
Ambient: -65°F to 400°F

CLEANED FOR OXYGEN SERVICE AVAILABLE.

## DIMENSIONAL SPECS (common sizes)



4.5" No Flange



6" Front Flange



# WELDED DIAPHRAGM SEALS

Offering the Premier Pressure Gauge / Mini-Seal Combination

## ADVANTAGES

### PROVEN PERFORMANCE

**Gearless, Direct Drive Design** sets the industry standard for vibration, pulsation and shock. Performance without gauge fill fluid means sanitary environment friendly.

### RELIABLE ACCURACY

**Accuracy is 50% less affected by temp fluctuations. Requires 85% less fill fluid vs. the competition.** Compact, low-volume design significantly reduces the impact of temperature on gauge accuracy.

### ELIMINATE LEAK PATHS

**Sleek, all-welded design** customized to perform specifically on Perma-Cal® gauges and eliminate potential leak paths.

### PRICE ADVANTAGE

**Superior performance at a superior price.** Perma-Cal® Gauge on Mini-Seal versus C-Tube Gauge on Mini or Standard Seal

The choice is clear.



### ACCURACY (Ref. @ 68°F, ±2°F)

±.5% F.S. at M.S. / ±1% F.S.  
±.5% F.S. (Grade 2A)

### RANGE AVAILABILITY

Vacuum to 1,000 psi (or equivalent)  
Single Scale, Dual Scale, Vacuum and Compound psi, bar, kPa, kg/cm<sup>2</sup> (others available)  
*Gauges below 100 psi may see loss of accuracy at low pressures.*

### DIAL

Stainless Steel, Powder Coated Finish  
Standard: White with Black Markings  
Ray Series: Neon Yellow, Black Markings, Red Pointer  
*Customization available. Contact the factory.*

### WINDOW

Acrylic  
Tempered Glass

### POINTER

Anodized Aluminum  
Zero-adjustable

### DIAPHRAGM SEAL

**Material (Wetted Parts):** 316 SS or Hastelloy  
**Connection Type:** ½ NPT or ¼ NPT, Male or Female  
**Burst Pressure:** 10,000 psi

### FILL FLUID

**Standard Fill:** Silicone DC200 (or equivalent)  
Operating Temp: -40°F to 400°F  
**Inert Fill:** Halocarbon 6.3 (similar to Fluorolube but suitable for vacuum service)  
Operating Temp: -40°F to 400°F  
**High-Temp Fill:** Silicone DC704 (or equivalent)  
Operating Temp: 0°F to 650°F  
*Max 200°F in vacuum service for all fills.*

CONSULT THE FACTORY FOR OTHER OPTIONS.

## CASE CONFIGURATIONS

### ABS PLASTIC

#### COLORS

Black, Blue, Green, Red, White, Yellow (availability varies by size)

#### OPERATING TEMPERATURE\*

Process: -40°F to 650°F

Ambient: -40°F to 190°F



2.5", 4.5" No Flange



4.5" Rear Flange



3.5", 4.5" Turret

### METAL

### MILITARY GRADE

### HIGH TEMP

High performance cases providing extreme temperature, chemical and shock resistance.



2.5" No Flange  
Aluminum



4.5" No Flange  
SS Case, Alum. Ring



4.5" No Flange  
Stainless Steel



3.5", 4.5"  
Rear Flange  
Aluminum



4.5" Turret  
Glass-Filled Nylon

#### COLORS

SS and Aluminum: Powder Coated Finish (specify color)

Glass-Filled Nylon: Available in yellow only

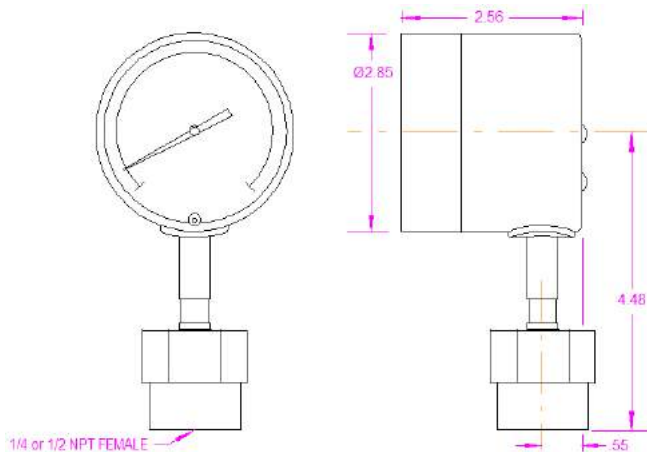
#### OPERATING TEMPERATURE\*

Process: -40°F to 650°F

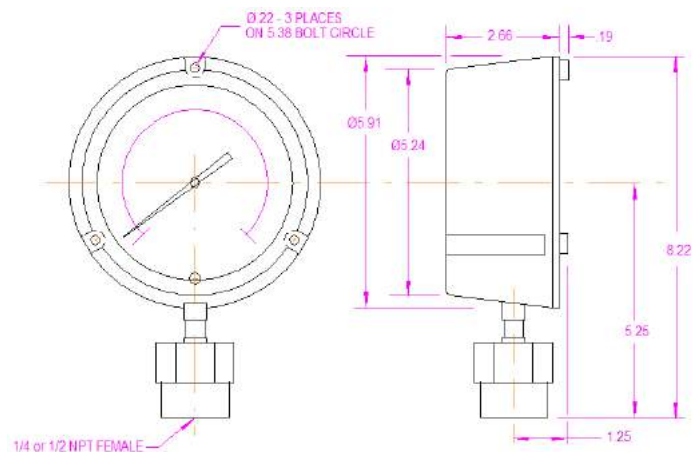
Ambient: -40°F to 400°F

\*Case, Diaphragm Seal, and Fill Fluid selection determines operating temperature range.

## DIMENSIONAL SPECS (common sizes)



2.5" No Flange Aluminum with Female Mini-Seal



4.5" Turret with Female Mini-Seal

Go through the eleven blocks of options listed below and select an option code for each specific feature you need.

Option >	A	B	C	D	E	F	G	H	I	J	-	K*
Part Number >											-	

OPTION	CODE	FEATURES					
<b>A</b> Product Type	1	Pressure Gauges					
	2	Pneumo Depth Gauges (Sea Water depth measurement)					
	3	Caisson Gauges (6" and 8.5" only)					
<b>B</b> Accuracy*	0	±0.25% F.S. (Calibration Certificate included)					
	1	±0.5% F.S.					
	2	±0.5% F.S. at M.S. / ±1.0% F.S.					
	* <a href="#">See Accuracy Specifications</a> for more details						
<b>C</b> Dial Size	0	6"					
	1	4.5"					
	2	3.5"					
	3	2.5"					
	4	2"					
	8	8.5"					
<b>D</b> Case Type	F	Front Flange (2.5", 4.5", 6", 8.5")					
	M	No Flange Metal (4.5"; Flange Kit available, Stainless Steel Case, Aluminum Ring)					
	N	No Flange (2", 2.5", 4.5", 6", 8.5")					
	R	Rear Flange (2.5", 4.5", 6")					
	S	No Flange Stainless Steel (4.5"; Flange Kit available)					
	T	Turret (3.5" and 4.5")					
<b>E</b> Pointer Type	I	Process (bold, easy-reading)					
	T	Test (knife-edged, precision reading)					
<b>F</b> Dial Trim		<b>Dial Size</b>	<b>Mirror Band</b>	<b>Pointer Dampening</b>	<b>External Zero Adjust</b>	<b>Material *</b>	
	A	2.5", 4.5", 6", 8.5"	No	No	Yes	Stainless Steel	
	B	2.5", 4.5", 6", 8.5"	No	Yes	Yes	Stainless Steel	
	D	All Sizes	No	Yes	No	Stainless Steel	
	M	2.5", 4.5", 6", 8.5"	Yes	Yes	Yes	Stainless Steel	
	N	All Sizes	No	No	No	Stainless Steel	
	R	Obsolete (same as "D")					
	S	Obsolete (same as "N")					
	W	2.5", 4.5", 6", 8.5"	Yes	No	Yes	Stainless	
	* All 2" dials are aluminum.						
<b>G</b> Pressure Range	XX	A two character code specifies pressure range and units of measurement. <a href="#">See Dial Availability Chart</a> for available ranges and their corresponding codes.					



<b>H</b> Case Color		<b>Color</b>	<b>Available Case Types/ Sizes</b>	
	<b>A</b>	Black	All case types and sizes	
	<b>B</b>	Blue	All case types except 3.5" Turret	
	<b>F</b>	Gray	Metal, Aluminum and SS cases only	
	<b>G</b>	Green	4.5" & 6" Front, No, Rear Flange/ 8.5" Front Flange	
	<b>H</b>	High-Temp Yellow	4.5" Turret Only (Glass-Filled Nylon)	
	<b>R</b>	Red	All case types except 3.5" Turret	
	<b>S</b>	Skydrol Purple	Aluminum cases only (Purple anodized ring w/ unpainted case)	
	<b>U</b>	Unpainted	Metal, Aluminum and SS cases only	
	<b>W</b>	White	4.5" & 6" Front, No, Rear Flange/ 8.5" Front Flange	
	<b>X</b>	Customer Specified	Consult factory	
<b>Y</b>	Yellow	All case types except 3.5" Turret		
<b>I</b> Fitting Position	<b>0</b>	Rear		
	<b>2</b>	Bottom (6 o'clock position)		
	<b>4</b>	Top (12 o'clock position)		
<b>J</b> Fitting Type	<b>Standard Connection</b>			
	<b>1</b>	¼ NPT	<b>6</b>	AS5202004 (MS33649-04)
	<b>2</b>	Not Assigned	<b>7</b>	Not Assigned
	<b>3</b>	½ NPT	<b>8</b>	9/16-18 O-ring union (MIL-G-18997)
	<b>4</b>	AS33514E04 (MS33514E04)	<b>9</b>	¼ BSP
	<b>5</b>	AS4395E04 (MS33656E04)	<b>X</b>	Customer Specified (VCR style, etc.)
	<b>Welded Diaphragm Seal Installed*</b>			
		<b>Material</b>	<b>Connection</b>	<b>Fill Fluid</b>
	<b>A</b>	316 SS	¼ NPT Female	High Temp
	<b>B</b>	316 SS	¼ NPT Female	Inert
	<b>C</b>	316 SS	¼ NPT Female	Standard
	<b>D</b>	316 SS	½ NPT Female	High Temp
	<b>E</b>	316 SS	½ NPT Female	Inert
	<b>F</b>	316 SS	½ NPT Female	Standard
	<b>H</b>	Hastelloy	½ NPT Female	Standard
	<b>J</b>	Hastelloy	½ NPT Female	High Temp
	<b>K</b>	Hastelloy	½ NPT Female	Inert
	<b>M</b>	316 SS	½ NPT Male	Standard
	<b>N</b>	316 SS	½ NPT Male	High Temp
	<b>Q</b>	316 SS	½ NPT Male	Inert
<b>R</b>	316 SS	¼ NPT Male	Standard	
<b>T</b>	316 SS	¼ NPT Male	High Temp	
<b>U</b>	316 SS	¼ NPT Male	Inert	
* <a href="#">See Specifications Page</a> for details and availability				
<b>K</b> Miscellaneous Options  * there is no limit to the number of options you may select	<b>C</b>	Calibration certificate (included with all test gauges)		
	<b>E</b>	EPDM isolator installed (N/A on vacuum and compound gauges)		
	<b>H</b>	Helium leak test certified		
	<b>L</b>	Tempered glass lens		
	<b>N</b>	Microbrazed		
	<b>O</b>	Oxygen cleaned		
	<b>P</b>	Stop pin		
	<b>R</b>	Reid vapor handle		
	<b>T</b>	Stainless steel tag (customer specifies information)		
	<b>V</b>	Viton® isolator installed (N/A on vacuum and compound gauges)		
	<b>Y</b>	High visibility dial (Neon yellow background w/ red pointer. 4.5", psi, process only)		
	<b>Z</b>	Aluminum case (2.5" No Flange, 3.5", 4.5" & 8.5" Rear Flange case types only)		





### ACCURACY SPECIFICATIONS

This document defines the accuracy by P/N code for a given psi range (or equivalent) specification.

Code (aBcdefghij-k)	<30 psi	30 ≤ 5000 psi	5001 ≤ 10000 psi	>10000 psi	Vacuum <sup>2</sup>	Compound <sup>1</sup>
Test (0) <sup>3 4</sup>	±0.5% F.S.	±0.25% F.S.	±0.25% F.S. Ascending ±1.0% F.S. Descending	±0.5% F.S. Ascending ±1.0% F.S. Descending	±0.20 inHg	±0.25% F.S. Pos. Pressure Greater of ±0.5% F.S. or ±1.0inHg on Vac.
Process (1)	±0.5% F.S.	±0.5% F.S.	±0.5% F.S. Ascending ±1.0% F.S. Descending	±0.5% F.S. Ascending ±1.0% F.S. Descending	±0.25 inHg	±0.5% F.S. Pos. Pressure Greater of ±0.5% F.S. or ±1.0inHg on Vac.
Process (2)	±1.0% F.S.	±0.5% F.S. at M.S. ±1.0% F.S.	±1.0% F.S.	±1.0% F.S.	±0.30 inHg	±1.0% F.S. Pos. Pressure Greater of ±1.0% F.S. or ±1.0inHg on Vac.

Receiver Ranges	Refrigerant Ranges	Caisson Gauges
±1.0% F.S. only	±0.5% F.S. or ±1.0% F.S. only	±0.25% F.S. Ascending ±0.5% F.S. Descending

**NOTES:**

1. Full scale (F.S.) is defined as the sum of the positive and negative pressure ranges.
2. ±0.25% F.S. and ±0.5% F.S. test not available.
3. Test gauges have higher resolution dials. See [Dial Availability Chart](#) for details.
4. 8.5" test gauges ≤30 psi are ±0.5% F.S. Ascending, ±1.0% F.S. Descending.



## DIAL AVAILABILITY CHART

([Contact the factory](#) for custom dials or to view specific dial layouts)

### Pressure Ranges

psi		psi   kPa		psi   bar		kg/cm <sup>2</sup>   psi	
CODE	RANGE	CODE	RANGE	CODE	RANGE	CODE	RANGE
00 (135°)	15	BB	15   100	DB	15   1	AB	1   15
01	30	BA	30   200	DA	30   2	AA	2.1   30
02 (135°)	30						
03	60	BC	60   400	DC	60   4	AC	4.2   60
04	100	BD	100   700	DD	100   7	AD	7   100
05	150	BE	150   1000	DE	150   10	AE	10.5   150
23	160	BL	160   1100	DL	160   11	AL	11   160
06	200	BF	200   1400	DF	200   14	AF	14   200
07	300	BG	300   2000	DG	300   20	AG	21   300
08	400	BH	400   2800	DH	400   28	AH	28   400
20	500	BI	500   3500	DI	500   35	AI	35   500
09	600	BQ	600   4000	DJ	600   40	AJ	42   600
10	800	BY	800   5500	DY	800   55	AY	56   800
11	1000	BK	1000   7000	DK	1000   70	AK	70   1000
12	1500	BM	1500   10,000	DM	1500   100	AM	106   1500
13	2000	BN	2000   14,000	DN	2000   140	AN	140   2000
14	3000	BP	3000   20,000	DP	3000   210	AP	210   3000
22	4000	BJ	4000   28,000	DQ	4000   280	AQ	280   4000
15	5000	BR	5000   35,000	DR	5000   350	AR	350   5000
16	6000	BS	6000   40,000	DS	6000   400	AS	420   6000
21	8000	BW	8000   55,000	DW	8000   550	AW	550   8000
17	10,000	BT	10,000   70,000	DT	10,000   700	AT	700   10,000
18	15,000	BU	15,000   100,000	DU	15,000   1000	AU	1000   15,000

inHg (positive pressure)	
CODE	RANGE
JA	0 / 60
JC	0 / 100

#### NOTES

1. All gauges above 5,000 psi (or equivalent) are ±1% F.S. descending accuracy.
2. For accuracy limitations, see [Accuracy Specifications](#) sheet.
3. Pressure codes in this bulletin are primarily for Perma-Cal's® internal operations and are subject to change without notice. When ordering, to assure the desired pressure range is secured, write the pressure range and unit of measurement for each line item on the order. If a conflict occurs between a specified pressure code and the designated pressure range / unit of measurement, the latter shall prevail in processing the order.



## DIAL AVAILABILITY CHART

([Contact the factory](#) for custom dials or to view specific dial layouts)

### Pressure Ranges

kPa		bar		kg/cm <sup>2</sup>		MPa	
CODE	RANGE	CODE	RANGE	CODE	RANGE	CODE	RANGE
CA	200	40	2	GA	2		
		41 (135°)	2				
CB	250						
CC	400	42	4	GC	4		
				GB	6		
CD	700	43	7	GD	7		
CE	1000	44	10	GE	10	EE	1
CF	1400	45	14				
CL	1600			GL	16		
CG	2000	46	20	GG	20	EG	2
				GH	25		
CI	2800	56	28				
		47	35	GI	35		
CJ	4000	48	40	GJ	40	EJ	4
				GK	60		
CK	7000	49	70				
CM	10,000	50	100	GM	100	EM	10
CN	14,000	51	140				
				GN	160		
CP	20,000	52	200	GP	200	EP	20
CQ	25,000	58	250	GQ	250	EQ	25
		55	280				
CR	35,000	53	350	GR	350	ER	35
CS	40,000	57	400	GS	400	ES	40
CW	60,000			GW	600		
CT	70,000	54	700	GT	700	ET	70
CU	100,000			GU	1000	EU	100

#### NOTES

1. All gauges above 5,000 psi (or equivalent) are ±1% F.S. descending accuracy.
2. For accuracy limitations, see [Accuracy Specifications](#) sheet.
3. Pressure codes in this bulletin are primarily for Perma-Cal's® internal operations and are subject to change without notice. When ordering, to assure the desired pressure range is secured, write the pressure range and unit of measurement for each line item on the order. If a conflict occurs between a specified pressure code and the designated pressure range / unit of measurement, the latter shall prevail in processing the order.



## DIAL AVAILABILITY CHART

([Contact the factory](#) for custom dials or to view specific dial layouts)

### Pressure Ranges

FSW		MSW   FSW		ft H <sub>2</sub> O		ft H <sub>2</sub> O   psi	
CODE	RANGE	CODE	RANGE	CODE	RANGE	CODE	RANGE
70	70	87	21   70	WB	70	HA	70   30
						HC	140   60
71 (200°)	100					HD	230   100
72	150	86	45   150	WC	150		
73	250	88	75   250	WD	250		
74	300	89	90   300				
75	350	90	100   350			HE	350   150
76	450	91	140   450			HF	450   200
				WF	460		
77	600						
78	700					HG	700   300
		93	225   750				
79	1000	94	300   1000	WH	1000	<b>in H<sub>2</sub>O   psi</b>	
85	1200	96	350   1200			WA	840   30
80	1500	95	450   1500				
81	2000						
82	3500	97	1000   3500				

#### NOTES

Pressure codes in this bulletin are primarily for Perma-Cal's® internal operations and are subject to change without notice. When ordering, to assure the desired pressure range is secured, write the pressure range and unit of measurement for each line item on the order. If a conflict occurs between a specified pressure code and the designated pressure range / unit of measurement, the latter shall prevail in processing the order.





## DIAL AVAILABILITY CHART

([Contact the factory](#) for custom dials or to view specific dial layouts)

### Compound Ranges

inHg / psi		psi		psi   kPa		kPa	
CODE	RANGE	CODE	RANGE	CODE	RANGE	CODE	RANGE
26	30 / 15	P1	-15 / 15				
27	30 / 30	P2	-15 / 30	B1	30inHg / 30   -100 / 200		
						C2	-100 / 300
24	30 / 60	P3	-15 / 60	B2	30inHg / 60   -100 / 400		
29	30 / 100	P4	-15 / 100	B3	30inHg / 100   -100 / 700	C3	-100 / 700
						C4	-100 / 900
28	30 / 150	P5	-15 / 150	B4	30inHg / 150   -100 / 1000	C5	-100 / 1000
35	30 / 160	P6	-15 / 160	B5	30inHg / 160   -100 / 1100		
30	30 / 200	P7	-15 / 200	B6	30inHg / 200   -100 / 1400		
31	30 / 300	P8	-15 / 300	B7	30inHg / 300   -100 / 2000		
32	30 / 400						
33	30 / 500						
34	30 / 600						
bar		bar   psi		mmHg / kg/cm <sup>2</sup>		cmHg / kg/cm <sup>2</sup>   inHg / psi	
CODE	RANGE	CODE	RANGE	CODE	RANGE	CODE	RANGE
61	-1 / 2	D1	-1 / 2   30inHg / 30	G1	760 / 2	A1	80 / 2   30 / 30
62	-1 / 3						
66	-1 / 4	D2	-1 / 4   30inHg / 60	G2	760 / 4	A2	80 / 4   30 / 60
				G3	760 / 6		
63	-1 / 7	D3	-1 / 7   30inHg / 100			<b>mmHg</b>	
64	-1 / 10	D4	-1 / 10   30inHg / 150	G4	760 / 10	CODE	RANGE
		D5	-1 / 11   30inHg / 160			J1	-760 / 760
65	-1 / 14	D6	-1 / 14   30inHg / 200				
68	-1 / 20	D7	-1 / 20   30inHg / 300				
67	-1 / 28						

#### NOTES

- For accuracy limitations, see [Accuracy Specifications](#) sheet.
- Pressure codes in this bulletin are primarily for Perma-Cal's® internal operations and are subject to change without notice. When ordering, to assure the desired pressure range is secured, write the pressure range and unit of measurement for each line item on the order. If a conflict occurs between a specified pressure code and the designated pressure range / unit of measurement, the latter shall prevail in processing the order.



## DIAL AVAILABILITY CHART

([Contact the factory](#) for custom dials or to view specific dial layouts)

### Vacuum Ranges

inHg		mmHg   inHg		mmHg	
CODE	RANGE	CODE	RANGE	CODE	RANGE
25	30 / 0	VA	760   30	VB	760 / 0
kPa		inHg   kPa		bar	
CODE	RANGE	CODE	RANGE	CODE	RANGE
C0	-100 / 0	B0	30   -100	60	-1 / 0

Receiver Ranges		Refrigerant Ranges	
CODE	RANGE	CODE	RANGE
KA (was 35)	0-100% (with numerals)	RC	30inHg-0-30 R114
KB (was 36)	0-10 sq rt (with numerals)	RG‡	30inHg-0-150 Ammonia
KC (was 39)	3-15 psi (with numerals)	RH	30inHg-0-150 R12
KD (was 37)	0-100 linear (less numerals)	RI	30inHg-0-150 R22
KE (was 38)	0-10 sq rt (less numerals)	RD	30inHg-0-150 R134a
		RL	30inHg-0-200 R134a
		RQ‡	30inHg-0-300 Ammonia
		RR	30inHg-0-300 R12
		RS	30inHg-0-300 R22
		‡ Specify Microbraz® welds	

#### NOTES

1. For accuracy limitations, see [Accuracy Specifications](#) sheet.
2. Pressure codes in this bulletin are primarily for Perma-Cal's® internal operations and are subject to change without notice. When ordering, to assure the desired pressure range is secured, write the pressure range and unit of measurement for each line item on the order. If a conflict occurs between a specified pressure code and the designated pressure range / unit of measurement, the latter shall prevail in processing the order.



## DIAL AVAILABILITY CHART

([Contact the factory](#) for custom dials or to view specific dial layouts)

### Test Dial Specifications - psi Ranges

CODE	RANGE	FIGURE INTERVAL		DIAL GRADUATIONS			
		MAJOR	MINOR	MAJOR	INTERMEDIATE		MINOR
					Long	Short	
00	0-15 (135°)	5	1	5	1	0.5	0.1
01	0-30	5	1	5	1	0.5	0.1
02	0-30 (135°)	5	1	5	1	-	0.2
03	0-60	5	1	5	1	-	0.2
04	0-100	10	2	10	2	1	0.5
05	0-150	10	2	10	2	1	0.5
23	0-160	10	2	10	2	1	0.5
06	0-200	20	2	10	2	-	1
07	0-300	50	10	50	10	5	1
08	0-400	50	10	50	10	-	2
20	0-500	50	10	50	10	-	2
09	0-600	50	10	50	10	-	2
10	0-800	100	20	100	20	10	5
11	0-1000	100	20	100	20	-	5
12	0-1500	100	20	100	20	-	5
13	0-2000	200	20	100	20	-	10
14	0-3000	500	100	500	100	50	10
22	0-4000	500	100	500	100	-	20
15	0-5000	500	100	500	100	-	20
16	0-6000	500	100	500	100	-	20
21	0-8000	1000	200	1000	200	-	40
17	0-10,000	1000	200	1000	200	100	50
18	0-15,000	1000	200	1000	200	-	50

**NOTES**

1. Minor dial graduations on some 6" and 8½" gauges may have twice the resolution of the number shown. Graduations on 2½" gauges may not comply with ASME B40.100 or the above chart due to space limitations.
2. For accuracy limitations, see [Accuracy Specifications](#) sheet.



## DIAL AVAILABILITY CHART

([Contact the factory](#) for custom dials or to view specific dial layouts)

### Process Dial Specifications - psi Ranges

CODE	RANGE	FIGURE INTERVAL		DIAL GRADUATIONS			
		MAJOR	MINOR	MAJOR	INTERMEDIATE		MINOR
					Long	Short	
00	0-15 (135°)	5	-	5	1	-	0.25
01	0-30	3	-	3	1	-	0.2
02	0-30 (135°)	5	-	5	1	-	0.5
03	0-60	5	-	5	2.5	-	0.5
04	0-100	10	-	10	5	-	1
05	0-150	15	-	15	5	-	1
23	0-160	20	-	20	10	-	2
06	0-200	20	-	20	10	-	2
07	0-300	50	-	50	10	-	2
08	0-400	50	-	50	25	-	5
20	0-500	50	-	50	25	-	5
09	0-600	100	-	100	25	-	5
10	0-800	100	-	100	50	-	10
11	0-1000	100	-	100	50	-	10
12	0-1500	150	-	150	50	-	10
13	0-2000	200	-	200	100	-	20
14	0-3000	500	-	500	100	-	25
22	0-4000	500	-	500	250	-	50
15	0-5000	500	-	500	250	-	50
16	0-6000	1000	-	1000	500	250	50
21	0-8000	1000	-	1000	500	-	100
17	0-10,000	1000	-	1000	500	-	100
18	0-15,000	1500	-	1500	500	-	100

**NOTES**

For accuracy limitations, see [Accuracy Specifications](#) sheet.





## DIAL AVAILABILITY CHART

([Contact the factory](#) for custom dials or to view specific dial layouts)

### Test Dial Specifications - Vacuum and Compound Range

CODE	RANGE	FIGURE INTERVAL		DIAL GRADUATIONS			
		MAJOR	MINOR	MAJOR	INTERMEDIATE		MINOR
					Long	Short	
26	30inHg-0 (132°) 0-15 psi (135°)	5	1	5	1	-	0.5
		5	1	5	1	0.5	0.2
25	30inHg-0 (135°)	5	1	5	1	-	0.25
27	30inHg-0 (66°) 0-30 psi (135°)	10	2	10	2	-	0.5
		5	1	5	1	-	0.2
24	30inHg-0 (66°) 0-60 psi	10	2	10	2	1	0.5
		5	1	5	1	0.5	0.25
29	30inHg-0 (40°) 0-100 psi	10	5	10	5	-	1
		10	2	10	2	1	0.5
28	30inHg-0 (26°) 0-150 psi	10	5	10	5	-	1
		10	2	10	2	-	0.5
35	30inHg-0 (26°) 0-160 psi	10	5	10	5	-	1
		10	2	10	2	1	0.5
30	30inHg-0 (20°) 0-200 psi	30	10	30	10	-	2
		20	2	20	10	2	1
31	30inHg-0 (13°) 0-300 psi	30	10	30	-	10	2
		50	10	50	10	5	1
32	30inHg-0 (10°) 0-400 psi	30	-	30	10	-	5
		50	10	50	10	-	2
33	30inHg-0 (8°) 0-500 psi	30	-	30	10	-	5
		50	10	50	10	-	2
34	30inHg-0 (7°) 0-600 psi	30	-	30	15	-	7.5
		50	10	50	10	-	2

**NOTES**

1. Minor dial graduations on some 6" and 8½" gauges may have twice the resolution of the number shown. Graduations on 2½" gauges may not comply with ASME B40.100 or the above chart due to space limitations.
2. For accuracy limitations, see [Accuracy Specifications](#) sheet.
3. Unless otherwise specified, the arc for the positive pressure side is 270°. All other arcs are rounded to the nearest integer.



## DIAL AVAILABILITY CHART

([Contact the factory](#) for custom dials or to view specific dial layouts)

### Process Dial Specifications - Vacuum and Compound Ranges

CODE	RANGE	FIGURE INTERVAL		DIAL GRADUATIONS			
		MAJOR	MINOR	MAJOR	INTERMEDIATE		MINOR
					Long	Short	
26	30inHg-0 (132°) 0-15 psi (135°)	5 5	- -	5 5	- 1	- -	1 0.5
25	30inHg-0 (135°)	5	-	5	2.5	-	0.5
27	30inHg-0 (66°) 0-30 psi (135°)	10 5	- -	10 5	5 2.5	- -	1 0.5
24	30inHg-0 (66°) 0-60 psi	10 5	- -	10 5	5 2.5	- -	1 0.5
29	30inHg-0 (40°) 0-100 psi	30 10	- -	10 10	- 5	- -	2 1
28	30inHg-0 (26°) 0-150 psi	30 15	- -	10 15	- 5	- -	2 1
35	30inHg-0 (26°) 0-160 psi	30 20	- -	10 20	- 10	- -	2 2
30	30inHg-0 (20°) 0-200 psi	30 20	- -	15 20	- 10	- -	5 2
31	30inHg-0 (13°) 0-300 psi	30 30	- -	30 30	15 10	- -	5 2
32	30inHg-0 (10°) 0-400 psi	30 50	- -	30 50	10 25	- -	7.5 5
33	30inHg-0 (8°) 0-500 psi	30 50	- -	30 50	15 25	- -	7.5 5
34	30inHg-0 (7°) 0-600 psi	30 100	- -	30 50	15 25	- -	7.5 5

**NOTES**

1. For accuracy limitations, see [Accuracy Specifications](#) sheet.
2. Unless otherwise specified, the arc for the positive pressure side is 270°. All other arcs are rounded to the nearest integer.



## DIAL AVAILABILITY CHART

([Contact the factory](#) for custom dials or to view specific dial layouts)

### Test Dial Specifications - bar Ranges

CODE	RANGE	FIGURE INTERVAL		DIAL GRADUATIONS			
		MAJOR	MINOR	MAJOR	INTERMEDIATE		MINOR
					Long	Short	
40	0-2	.5	0.1	0.5	0.05	-	0.01
41	0-2 (135°)	.5	0.1	0.5	0.1	-	0.02
42	0-4	.5	0.1	0.5	0.1	-	0.02
43	0-7	1	0.1	1	0.5	0.1	0.025
44	0-10	1	0.2	1	0.2	-	0.05
45	0-14	2	0.2	1	0.2	-	0.05
46	0-20	2	0.2	1	0.2	-	0.1
56	0-28	4	-	4	1	-	0.2
47	0-35	5	-	5	1	-	0.2
48	0-40	5	1	5	1	-	0.2
49	0-70	5	1	5	1	-	0.25
50	0-100	10	2	10	2	1	0.5
51	0-140	20	2	20	10	2	0.5
52	0-200	20	2	20	10	2	1
55	0-280	40	-	40	10	-	2
53	0-350	50	10	50	10	-	2
57	0-400	50	-	50	10	-	2
54	0-700	100	10	100	50	10	2.5

**NOTES**

1. Minor dial graduations on some 6" and 8½" gauges may have twice the resolution of the number shown. Graduations on 2½" gauges may not comply with ASME B40.100 or the above chart due to space limitations.
2. For accuracy limitations, see [Accuracy Specifications](#) sheet.



### DIAL AVAILABILITY CHART

([Contact the factory](#) for custom dials or to view specific dial layouts)

#### Process Dial Specifications - bar Ranges

CODE	RANGE	FIGURE INTERVAL		DIAL GRADUATIONS			
		MAJOR	MINOR	MAJOR	INTERMEDIATE		MINOR
					Long	Short	
40	0-2	.5	-	.5	0.1	-	0.02
41	0-2 (135°)	.5	-	.5	0.25	-	0.05
42	0-4	.5	-	.5	-	0.25	0.05
43	0-7	1	-	1	-	0.25	0.05
44	0-10	1	-	1	-	0.5	0.1
45	0-14	2	-	2	0.5	-	0.1
46	0-20	2	-	2	1	-	0.2
56	0-28	4	-	4	1	-	0.2
47	0-35	5	-	5	1	-	0.25
48	0-40	5	-	5	2.5	-	0.5
49	0-70	10	-	10	2.5	-	0.5
50	0-100	10	-	10	5	-	1
51	0-140	20	-	20	5	-	1
52	0-200	20	-	20	10	-	2
58	0-250	50	-	50	10	-	2
55	0-280	40	-	40	10	-	2
53	0-350	50	-	50	10	-	5
57	0-400	50	-	50	25	-	5
54	0-700	100	-	100	25	-	5

**NOTES**

For accuracy limitations, see [Accuracy Specifications](#) sheet.





## DIAL AVAILABILITY CHART

([Contact the factory](#) for custom dials or to view specific dial layouts)

### Test Dial Specifications - FSW Ranges

CODE	RANGE	FIGURE INTERVAL		DIAL GRADUATIONS			
		MAJOR	MINOR	MAJOR	INTERMEDIATE		MINOR
					Long	Short	
70	0-70	10	1	10	5	1	0.25
71	0-100 (200°)	10	2	10	2	1	0.5
72	0-150	10	2	10	2	-	0.5
73	0-250	25	5	25	5	-	1
74	0-300	50	10	50	10	5	1
75	0-350	50	10	50	10	-	2
76	0-450	50	10	50	10	-	2
77	0-600	50	10	50	10	-	2
78	0-700	100	10	50	10	-	2.5
79	0-1000	100	20	100	20	-	5
80	0-1200	100	20	100	20	10	5
81	0-1500	100	20	100	20	10	5
82	0-2000	200	20	100	20	-	10
85	0-3500	500	100	500	100	-	20

**NOTES**

Minor dial graduations on some 6" and 8½" gauges may have twice the resolution of the number shown. Graduations on 2½" gauges may not comply with ASME B40.100 or the above chart due to space limitations.



## DIAL AVAILABILITY CHART

([Contact the factory](#) for custom dials or to view specific dial layouts)

### Test Dial Specifications - MSW/FSW Ranges

CODE	RANGE	FIGURE INTERVAL		DIAL GRADUATIONS			
		MAJOR	MINOR	MAJOR	INTERMEDIATE		MINOR
					Long	Short	
87	0-21	3	-	3	1	0.5	0.1
	0-70	10	-	10	5	1	0.25
86	0-45	5	-	5	1	-	0.2
	0-150	10	-	10	5	2.5	0.5
88	0-75	10	-	10	5	1	0.25
	0-250	50	-	50	10	5	1
89	0-90	10	-	10	5	1	0.5
	0-300	50	-	50	10	5	1
90	0-100	10	-	10	5	1	0.5
	0-350	50	-	50	10	-	2
91	0-140	10	-	10	5	-	0.5
	0-450	50	-	50	10	-	2
93	0-225	25	-	25	5	-	1
	0-750	100	-	100	50	10	2.5
94	0-300	50	-	50	10	-	2
	0-1000	100	-	100	50	25	5
96	0-350	50	-	50	10	-	2
	0-1200	200	-	100	20	10	5
95	0-450	50	-	50	10	-	2
	0-1500	100	-	100	50	25	5
97	0-1000	100	-	100	20	-	5
	0-3500	500	-	500	100	-	20

**NOTES**

Minor dial graduations on some 6" and 8½" gauges may have twice the resolution of the number shown. Graduations on 2½" gauges may not comply with ASME B40.100 or the above chart due to space limitations.