Diaphragm Process Guage Stainless Steel Case

HAWK
Since 1971

P-1E

- Solid Front / Blow - Out Back
- Threaded or Flanged Process Connection
- Better Performance in Low Pressure and Vacuum System
- Lower Temperature Effect than Liquid Filled Actuated System
- Heavy Duty Bourdon Tube / Rotary Geared Movement

HAWK Diaphragm Pressure Gauge use a diaphragm as its sensing element which can be welded or bonded or clamped to the upper and lower housing. The diaphragm deflects upward or downward when subjecting or releasing to pressure. This variation is converted into the rotary motion of the pointer by a movement and a connecting rod. It is a alternatvie to a liquid filled actuated system(pressure gauge and diaphragm seal assembly). HAWK type 83L diaphragm process gauges with Ss304 case are widely used for petrochemical and chemical processing industries. There is a solid wall between pressure sensing element and the window. This design provides better safety for monitoring the gauges in the event of the gauge failure.

Typical Application

- Petrochemical and chemical processing
- Offshore oil platforms & gas industries
- Industrial OEM equipments
- Power generating stations
- Food processing plants
- Energy and water treatment plants

Specifications

Dial Size
4½"(115mm)

Case&Ring
Stainless Steel 304(SS316-option), polished bayonet ring

Socket
316 Stainless Steel

Movement
Stainless steel movement with overload and underload stops-standard, silicon dampened movement on request

Sensing Element
Diaphragm

Window
Tempered safety glass-standard Polycarbonate or laminated safety glass-optional

Bolts
Stainless Steel

Upper Housing Material
Stainless steel 316, 304 Stainless Steel, Carbon Steel with Nickel Plated, Titanium, PTFE Coating, PFA Coating, ETFE Coating, FEP Coating, PVDF Coating, Halar Coating

Diaphragm Material
316L Stainless Steel, 304SS, Monel, Hastelloy B, Hastelloy C, Inconel, Nickel, Titanlum, Tantalum, Platinum, Zirconium, PTFE Coating, PFA Coating, ETFE Coating, FEP Coating, PVDF Coating, Halar Coating, PTFE Lining

Lower Housing Material
316L Stainless Steel, 304SS, Monel, Hastelloy B, Hastelloy C, Inconel, Nickel, Titanlum, Tantalum, Platinum, Zirconium, PTFE Coating, PFA Coating, ETFE Coating, FEP Coating, PVDF Coating, Halar Coating, PTFE Lining

Gasket
Telfon (Standard), Viton, Buna N

Pointer
Anodized aluminum with black finish

Accuracy
1.5% of span...Standard
1.0% of span...Option

Zero-Adjustment
Micro-adjustable pointer

Scale
PSI, Kpa, Mpa, Bar, kg/cm2, inHg, cmHg, torr, mmHg, mmH2O, mbar, inH2O, oz./in2, torr (single or dual scale)

Connection
Thread or Flange

Mounting
Stem, surface, flush mounting

Weatherproof
NEMA 3/3X(IP54)...Standard
NEMA 4/4X(IP65)...Option

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Pressure Limit

Steady: 100%*full scale value

Pulsation: 90%*full scale value

Sudden: 130%*full scale value

The appropriate operating range falls in the middle half of the gauge(25% to 75% of full scale). If you choose the unsuitable range, the fatigue of bourdon tube may be resulted. HAWK Supplies a wide selection of range from vacuum to 25 bar including compound range.

Special design for high overpressure(5 times), but max 25 bar is available on request.

Temperature limit

Ambient: -40 to 80°C(Dry)
-10 to 65°C(Liquid Filled)
Media: max 125°C -SS(Standard),
300°C (Optional)

Temperature effect

Accuracy of measurement will be effected by the temperature change. This inaccuracy may as high as 0.8% for 10°C temperature change.

Liquid Filled

Liquid filling of the diaphragm gauge is available. Please note that the influence of the fluid column is significant, especially for low pressure.

Features

Solid front with pressure relief back to ASME B40.1 standard that will reduce the possibility of window failure and projection of parts outward through the front of the gauge.

The stainless steel rotary geared movement reduces friction and corrosion which assures a smooth-moving pointer. Max and Min stop pin can be offered to protect against damage caused by sudden vacuum and over-pressure.

Option

T-Tempered safety glass lens

Q-Movement with PTFE coated gear

X-Cleaned for oxygen service

W-Electrical alarm contact

1-Improved Accuracy 1.0%(Grade 1A-ASME B40.1)

L-Laminated safety glass lens

Z-Movement with Titanium coated gear

G-Glycerine Filled

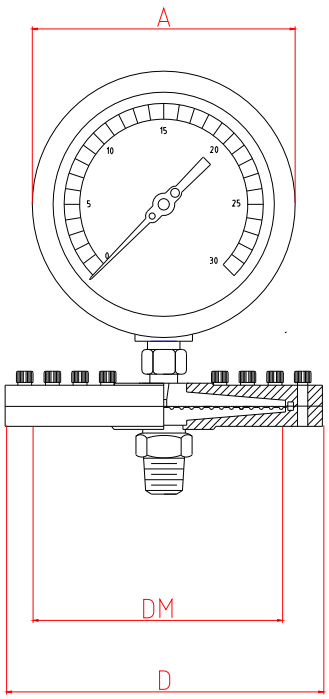
J-Maximum pointer

P-Polycarbonate lens Customer dial

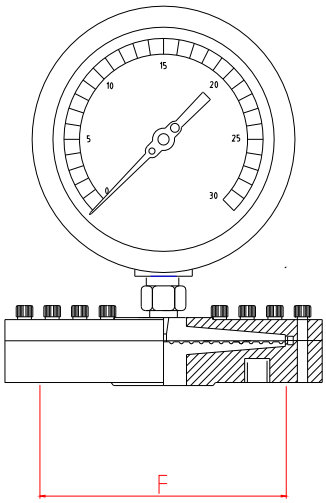
M-Dampened movement

C-Certification of calibration

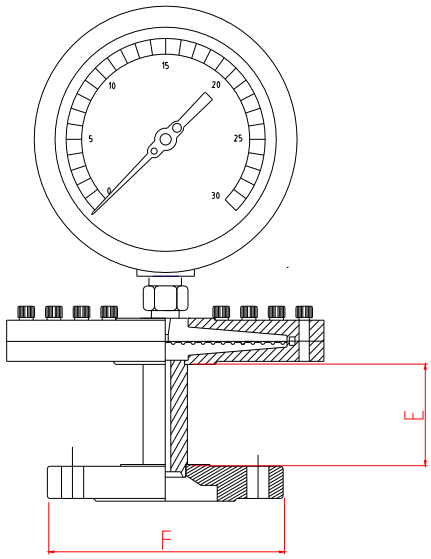
Dimensions



THREAD



FLANGE



DOUBLE FLANGE

Dimensions, in.(mm)

Type No	Dial Size	Range	DM	A	B	C	D	E	F
83L	4.5”	16...400 mbar	5.11" (130)	5.81" (148)			3.94" (100)	2.36" (60)	Thread, Flange, Double Flange
83L	4.5”	0.6...25 bar	2.95" (75)	5.81" (148)			6.30" (160)	2.36" (60)	

Thread
1/4"NPT, 3/8"NPT, 1/2"NPT, 3/4"NPT, 1"NPT, G1/2",G3/8", G1/4", R1/4", M20*1.5, M14*1.0 Male or Female

Flange
ANS1-1/2".....5", Rating-150, 300, 400, 600
DIN-DN15.....100, Rating-PN2.5-6, 10-40
JIS-10A.....100A, Rating-JIS10K, 16K, 20k, 30K, 40K

Pressure Range

- The other scales and ranges(DIN) are available in request.
- Not all listed ranges and scales are in stock, consult your distributors for available.

Pressure Ranges

SINGLE SCALE										DUAL SCALE			
PSI		Mbar		Kpa		mmH2O		inH2O		mmH2O & mbar		oz./in2. & inH2O	
Code	Range	Code	Range	Code	Range	Code	Range	Code	Range	Code	Range	Code	Range
P29	6	B28	60	K21	6	H21	600	J12	6	Q33	250 mbar/mmH2O	F27	6 oz./in2./inH2O
P30	8	B30	100	K23	10	H23	1000	J14	10	Q35	400 mbar/mmH2O	F271	9 oz./in2./inH2O
P32	15	B31	160	K24	16	H25	1600	J15	15	Q37	600 mbar/mmH2O	F28	12 oz./in2./inH2O
P33	20	B32	200	K25	20	H26	2000	J16	20	Q39	1000 mbar/mmH2O	F29	20 oz./in2./inH2O
P35	30	B33	250	K26	25	H27	2500	J17	25	Q40	1600 mbar/mmH2O	F30	30 oz./in2./inH2O
P37	40	B34	300	K27	30	H28	3000	J19	30	Q41	2000 mbar/mmH2O	F301	35 oz./in2./inH2O
P38	50	B35	400	K29	40	H30	4000	J20	40	Q42	2500 mbar/mmH2O	F31	60 oz./in2./inH2O
P39	60	B36	500	K30	50	H31	5000	J21	50	Q43	4000 mbar/mmH2O	F32	100 oz./in2./inH2O
P40	80	B37	600	K31	60	H32	6000	J22	60	Q44	6000 mbar/mmH2O	F33	160 oz./in2./inH2O
P40A	85	B39	1000	K33	100	H34	10000	J24	100	Q45	10000 mbar/mmH2O	F34	250 oz./in2./inH2O

Vacuum Ranges

SINGLE SCALE								DUAL SCALE			
Mbar		Kpa		mmH2O		inH2O		mmH2O & mbar		oz./in2. & inH2O	
Code	Range	Code	Range	Code	Range	Code	Range	Code	Range	Code	Range
BVN	-60	KVL	-6	HVM	-600	JVE	-10	QVM	-50 mbar/mmH2O	FVR	-6 oz./in2./inH2O
BVO	-100	KVN	-10	HVO	-1000	JVF	-15	QVN	-60 mbar/mmH2O	FVR1	-9 oz./in2./inH2O
BVQ	-160	KVO	-16	HVQ	-1600	JVG	-20	QVO	-100 mbar/mmH2O	FVS	-12 oz./in2./inH2O
BVR	-200	KVP	-20	HVR	-2000	JVJ	-30	QVP	-150 mbar/mmH2O	FVT	-20 oz./in2./inH2O
BVS	-250	KVQ	-25	HVS	-2500	JVM	-60	QVQ	-160 mbar/mmH2O	FVU	-30 oz./in2./inH2O
BVT	-300	KVR	-30	HVT	-3000	JVN	-80	QVR	-200 mbar/mmH2O	FVU1	-35 oz./in2./inH2O
BVU	-400	KVT	-40	HVV	-4000	JVO	-100	QVS	-250 mbar/mmH2O	FVV	-60 oz./in2./inH2O
BVV	-500	KVU	-50	HVX	-6000	JVP	-150	QVU	-400 mbar/mmH2O	FVW	-100 oz./in2./inH2O
BVW	-600	KVV	-60	HVY	-8000	JVQ	-200	QVW	-600 mbar/mmH2O	FVX	-160 oz./in2./inH2O
BVX	-1000	KVX	-100	HVZ	-10000	JVR	-250	QVX	-1000 mbar/mmH2O	FVY	-250 oz./in2./inH2O

Compound Ranges

SINGLE SCALE								DUAL SCALE	
Mbar		Kpa		mmH2O		inH2O		mmH2O & mbar	
Code	Range	Code	Range	Code	Range	Code	Range	Code	Range
BCQ	-6/10	KCQ	-1.25/1.25	HCM	-50/50	JCL	-5/5	QCP	-5/5 mbar/mmH2O
BCS	-10/10	KCR	-1.5/1.5	HCP	-100/100	JCM	-10/10	QCS	-10/10 mbar/mmH2O
BCW	-20/20	KCU	-2.0/2.0	HCT	-200/200	JCN	-15/15	QCU	-12.5/12.5 mbar/mmH2O
BCX	-25/25	KOB	-5.0/5.0	HCU	-250/250	JCO	-20/20	QCW	-20/20 mbar/mmH2O
BOC	-20/20	KOE	-10/10	HCY	-500/500	JCP	-30/30	QOD	-50/50 mbar/mmH2O
BOF	-100/100	KOK	-20/20	HOA	-800/800	JCQ	-50/50	QOG	-100/100 mbar/mmH2O
BOJ	-200/200	KOL	-25/25	HOB	-1000/1000	JCR	-100/100	QOK	-200/200 mbar/mmH2O
BOK	-250/250	KOM	-25/40	HOF	-2000/2000	JCS	-150/150	QON	-300/300 mbar/mmH2O
BOM	-300/300	KON	-30/30	HOI	-3000/3000	JCT	-200/200	QOO	-400/400 mbar/mmH2O
BOP	-500/500	KOP	-50/50	HOJ	-5000/5000	JCU	-250/250	QOQ	-500/500 mbar/mmH2O

■ Ultra Low Pressure Range

Pressure Ranges

SINGLE SCALE

PSI		Mbar		Pa		Kpa		mmH2O		inH2O	
Code	Range	Code	Range	Code	Range	Code	Range	Code	Range	Code	Range
P21	1	B12	1.6	A12A	125	K13	1.0	H3	16	J3	0.5
P23	2	B13	2.0	A14	160	K14	1.6	H4	20	J5	1.0
P25	3	B14	2.5	A15	200	K15	2.0	H5	25	J7	2.0
P28	5	B15	3.0	A16	250			H6	30	J9	3.0
P31	10	B16	4.0	A19	400			H8	40	J10	4.0
		B17	5.0	A20	500			H9	50	J11	5.0
		B18	6.0	A21	600			H10	60	J12	6.0
		B20	10	A22	800			H12	100	J13	8.0

Vacuum Ranges

SINGLE SCALE

Mbar		Pa		Kpa		mmH2O		inH2O	
Code	Range	Code	Range	Code	Range	Code	Range	Code	Range
BV8	-1.6	AVD	-150	KVD	-1.0	HV3	-16	JV3	-0.5
BV9	-2.0	AVE	-160	KVE	-1.6	HV4	-20	JV5	-1.0
BVA	-2.5	AVF	-200	KVF	-2.0	HV5	-25	JV7	-2.0
BVB	-3.0	AVG	-250			HV6	-30	JV9	-3.0
BVC	-4.0	AVJ	-400			HV8	-40	JVA	-4.0
BVD	-5.0	AVK	-500			HV9	-50	JVB	-5.0
BVE	-6.0	AVM	-600			HVA	-60	JVC	-6.0
BVF	-10	AVN	-800			HVC	-100	JVD	-8.0

Compound Ranges

SINGLE SCALE

Mbar		Pa		Kpa		mmH2O		inH2O	
Code	Range	Code	Range	Code	Range	Code	Range	Code	Range
BCH	-1.0/+1.0	ACR	-125/+125	KCM	-0.5/+0.5	HCB	-6/+10	JCE	-0.5/+0.5
BCI	-1.0/+1.6	ACT	-200/+200	KCO	-1.0/+1.0	HCC	-8/+8	JCF	-1.0/+1.0
BCJ	-1.25/+1.25	ACU	-250/+250			HCD	-10/+10	JCG	-1.5/+1.5
BCK	-1.6/+2.5	ACW	-300/+300			HCE	-10/+16	JCH	-2.0/+2.0
BCL	-2.0/+2.0					HCG	-16/+25	JCI	-2.5/+2.5
BCM	-2.5/+4.0					HCH	-20/+20	JCJ	-3.0/+3.0
BCN	-3.0/+3.0					HCJ	-25/+40	JCK	-4.0/+4.0
BCO	-4.0/+6.0					HCK	-30/+30		
BCP	-5.0/+5.0					HCL	-40/+60		
						HCM	-50/+50		

Diaphragm Pressure Guage
Stainless Steel Case

Order Information

Example: P - 1E - 83L

45	5	S	S	A	P41	M2	A	3	R	H

Dial Sizes	Diaphragm Material	Upper Housing Material	Lower Housing Material	Mounting	Range	Thread Connection Size	Process Flange Rate	Process Flange Size	Process Flange Face
45-4.5" (115mm)	**5**-Carbon Steel With PTFE Caoting **S**-SS 316 **Coating& Lining** **X1**-PTFE Coating **X8**-Titanium Coating **X7**-PTFE Lining **X9**-Hast'C Lining **X10**-Monel Lining **X**-Material such as Tantalum/ PTFE Coating=**T1** 316LSS/ PTFE Lining=**S7** Steel/Ti Coating=**I8**	**S**-SS 316 **A**-SS 304 **Coating** **S1**-316 with PTFE Coating **S8**-316 with Titanium Coating	**E**-Hastelloy B **H**-Hastelloy C **O**-Inconel **M**-Monel **S**-SS316L **A**-SS304 **N**-Nickel **T**-Titanium **U**-Tantalum **Q**-Platinum **R**-Zirconium **Coating** **X1**-PTFE Coating **X**-Material such as 316SS/ PTFE Coating=**S1**	**A**-Thread **F**-Flange **D**-Double Flange	**P41**-0-100PSI **P44**-0-200PSI **P46**-0-300PSI	**Female Thread** **F2**-1/2"NPT Female Thread **F4**-1/4"NPT Female Thread **FD**-G 1/2" Female Thread **FE**-G 1/4" Female Thread **FJ**-M20*1.5 Female Thread **FK**-M14*1.5 Female Thread **Male Thread** **M2**-1/2"NPT Male Thread **M4**-1/4"NPT Male Thread **MD**-G 1/2" Male Thread **ME**-G 1/4" Male Thread **MJ**-M20*1.5 Male Thread **MK**-M14*1.5 Male Thread	**ANSI** **A**-150LB **B**-300LB **C**-400LB **D**-600LB **E**-900LB **F**-1500LB **G**-2500LB **DIN** **H**-PN2.5 **I**-PN4.0 **K**-PN10 **L**-PN16 **M**-PN25 **N**-PN40 **O**-PN64 **P**-PN100 **Q**-PN160 **R**-PN250 **S**-PN320 **T**-PN400 **JIS** **U**-PN 5K **V**-PN 10K **W**-PN 20K **X**-PN 40K **Y**-PN 63K **HG20615-97** **1**-150LB (PN2.0) **2**-300LB (PN5.0) **3**-600LB (PN11) **4**-900LB (PN15) **5**-1500LB (PN26) **6**-2500LB (PN42) **HG20592-97** **1**-PN0.25, PN0.4 **2**-PN0.6 **3**-PN1.0, 1.6 **4**-PN2.5, 4.0 **5**-PN6.3 **6**-PN10 **7**-PN16	**ANSI, DIN, HG20615, JIS** **2**-3/4" (DN20) **3**-1" (DN25) **4**-1 1/4" (DN32) **5**-1 1/2" (DN40) **6**-2" (DN50) **7**-2 1/2" (DN65) **8**-3" (DN80) **9**-4" (DN100) **0**-5" (DN125) **HG20592 PN0.25, 0.6, 1.0, 2.5, 6.3, 10, 16** **B**-DN20 **C**-DN25 **D**-DN32 **E**-DN40 **F**-DN50 **G**-DN65 **H**-DN80 **I**-DN100 **J**-DN125 **PN0.4, 1.6, 4.0** **L**-DN20 **M**-DN25 **N**-DN32 **O**-DN40 **P**-DN50 **Q**-DN65 **R**-DN80 **S**-DN100 **T**-DN125	**R**-RF (Raise Face) **M**-LMF (Large Male Face) **N**-LFF (Large Female Face) **O**-SMF (Small Male Face) **P**-SFF (Small Female Face) **L**-LTF (Large Tongue Face) **G**-LGF (Large Groove Face) **A**-STF (Small Tongue Face) **B**-SGF (Small Groove Face) **F**-FF (Flat Face) **J**-RJ (Ring joint Face) **K**-RFSF (Raise/ Smooth Face)

Limited Warranty and Liability

HAWK GAUGE CO.,LTD warrants all its mechanical instruments to be free from defects in materials and workmanship. HAWK agrees to repair or replace any pressure gauges if returned to our factory, transportation charges prepaid, and after which examination reveals is to be defective due to faculty workmanship or material.
This warrant should not apply to subject to the following terms and conditions:

A. The product has not been subjected to misuse, neglect, abuse , accident, incorrect mounting, improper use or misapplication such as negligence, accident, vandalism, shock or vibration.

B. The performance of any system of which HAWK's products are a component part.

C. The product has not been exposed to any other service, range or environment of greater severity than that for which the products were designed.

D. The product has not been altered or repaired by anyone except HAWK GAUGE or its authorized service agencies.

E. The serial number or date code has not been removed, defaced or changed.

F. The actual pressure&temperature occurring exceed the values specified for HAWK Process gauge.

Unless otherwise specified in a manual or warranty card, or agree to in a writing signed by HAWK GAUGE office, HAWK Process gauge products shall be warranted for one years from the date of sale.

This warranty is in lieu of all other warranties expressed or implied, and of all obligations or liabilities on its part for damages including but not limited to consequential damages, following the use of misuse of instruments sold by it. No agent is authorized to assume for it any liability except as set forth above.

Note

HAWK GAUGE CO.,LTD reserves the right to make product improvements and change its specifications at any time stated throughout this brochure without notification. Please contact the factory on all critical dimensions and specifications for verification.
HAWK GAUGE is not expert in the customer's technical field and therefore doesn't warrant suitability of it's product for the application selected by customer.