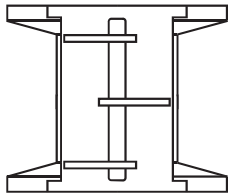


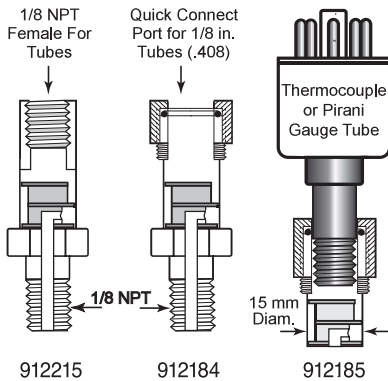


Stainless steel dust baffle for NW-25 gauge tubes



High conductance baffles for gauges operating below 10-3 Torr.

NW-16 912278  
NW-25 912249



Brass baffles 1/8" NPT or quick connect O-Ring seal

**Stainless Steel Baffles** designed for applications where dust, dirt and pump fluid can shorten gauge tube life. Typical applications include freeze drying, vacuum melting, and steel degassing. These inexpensive baffles are easy to use. Just connect the baffle into the vacuum system then connect tube into the back end of the baffle.

All Stainless Steel baffles are made from 300 Series SS and leak checked to  $5 \times 10^{-10}$  SCC/S.

Sensor Side Connection	System Side Connection	Part No.	Price
1/8 NPT female	1/8 NPT male	912007	\$155
NW-25	NW-25	912307	\$194
NW-25	NW-16	912308	\$194
NW-25	1/8 NPT male	912309	\$194
NW-16	1/8 NPT male	912003	\$194
VCR-8 male	VCR-8 female	912305	\$363
High conductance baffles for gauges below 10-3 Torr			
NW-16 (1.4" overall length)	NW-16	912278	\$229
NW-25 (1.4" overall length)	NW-25	912249	\$229

**Snubber Style Baffle; 1/8" NPT Inlet & Outlet** Protects diaphragm sensors from fatigue failure when installed on the discharge side of Roots type blowers. 300 series S.S.

P/N: 912016 ..... \$163

**Dust Baffle for 3/4" OD Tubes; 100 mTorr Gauges** Fits into 3/4 inch quick connect and has 3/4 inch quick connect for the gauge tube. 300 series S.S. P/N: 912153..... \$386

## Brass Baffles with Quick Connect or 1/8 NPT Threads

These baffles will extend the life of your gauge tubes by keeping dust and oil vapors from condensing in the tube. It provides a labyrinth with eight 90° turns between the tube and the vacuum system but the large internal diameters provide fast response and are easy to clean. Note that standard 1/8 in. NPT thermocouple and Pirani tubes are .403 in. outside diameter. O-Ring in quick connect is Buna-N.

Sensor Side Connection	System Side Connection	Part No.	Price
0.403 inch O.D. quick connect	1/8 NPT male	912184	\$236
0.500 inch O.D. quick connect	1/8 NPT male	912187	\$222
0.403 inch O.D. quick connect	15 mm O.D.	912185	\$222
0.500 inch O.D. quick connect	15 mm O.D.	912182	\$193
1/8 NPT female thread	Threaded with 15 mm O.D.	912214	\$127
1/8 NPT female thread	1/8 NPT male thread	912215	\$177

## Wax & Binder Traps for Sintering

**BUY NOW! Go to [www.vacuumresearch.com](http://www.vacuumresearch.com) to order online**

These traps require no cooling water but rely on the large surface of the body fins for convection cooling. The tortuous path and large internal surface area provide ample space for waxes and binders to condense before reaching the gauge tube. The trap can be opened, cleaned and returned to service in a matter of minutes and no tools are required. The standard trap has 1/8 inch NPT on both gauge and system side but any pipe size or NW Style flange can be provided.

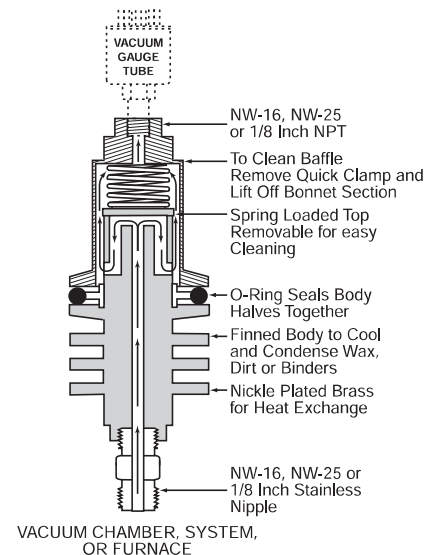
1/8 inch NPT both gauge and system side  
P/N: 912224 ..... \$639

1/8 inch NPT gauge side, NW-16 system side  
P/N: 912221 ..... \$680

NW-25 gauge side, NW-25 system side  
P/N: 912297 ..... \$726

NW-16 gauge side, NW-16 system side  
P/N: 912223 ..... \$749

NW-25 gauge side, 1/8 inch NPT system side  
P/N: 912222 ..... \$792

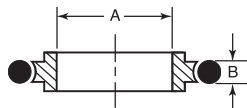




## Stainless Steel Bellows

- 304 Stainless Steel Formed Bellows
- Leak Rate Better Than  $2 \times 10^{-10}$  scc/s
- ISO, ANSI, and JIS Flanges Available
- Custom Lengths To Fit Your System
- Interchangeable with NW & QF Components

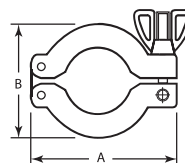
500 mm (19 inches)		1000 mm (38 inches)	
Part No.	Price	Part No.	Price
BEL-16-500	\$138	BEL-16-1000	\$165
BEL-25-500	\$138	BEL-25-1000	\$172
BEL-40-500	\$186	BEL-40-1000	\$266
BEL-50-500	\$201	BEL-50-1000	\$282



## Centering Rings

304 Stainless Steel  
With Viton O-Rings

Flange Size	A	B	Part Number	Price
NW-16	0.63 (16)	0.21 (5.3)	CTR-RING 16	\$8.00
NW-25	0.984 (25)	0.21 (5.3)	CTR-RING 25	\$9.00
NW-40	1.575 (40)	0.21 (5.3)	CTR-RING 40	\$12.00
NW-50	1.969 (50)	0.21 (5.3)	CTR-RING 50	\$15.00



## Clamps


Aluminum Clamps With Wing  
Nut & Screw Fastener

Flange Size	A	B	Part Number	Price
NW-16	1.69 (43)	2.24 (57)	AL-Clamp 16	\$8.00
NW-25	2.17 (55)	2.76 (70)	AL-Clamp 25	\$9.00
NW-40	2.76 (70)	3.39 (88)	AL-Clamp 40	\$10.00
NW-50	3.70 (94)	4.33 (110)	AL-Clamp 50	\$15.00

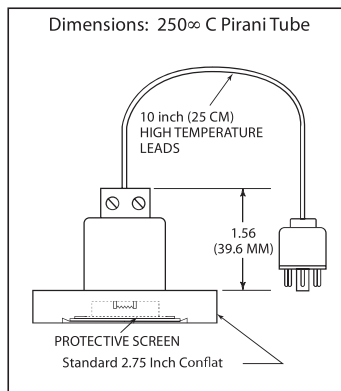
## Rubber and PVC Vacuum Hose; SS Hose Clamps



Hose Material	Hose I.D.	Hose I.D.	Part No.	Price
Rubber	.188 inch	.563 inch	HOSE-RUB-3/16"	\$12.00/Foot
Rubber	.25 inch	.625 inch	HOSE-RUB-1/4"	\$21.00/Foot
Rubber	.75 inch	1.5 inch	HOSE-RUB-3/4"	\$23.00/Foot
Rubber	1 inch	2 inch	HOSE-RUB-1"	\$33.00/Foot
Reinforced PVC	1.5 inch	1.8125 inch	HOSE-PVC-1.5"	\$20.00/Foot
Reinforced PVC	2 inch	2.375 inch	HOSE-PVC-2"	\$24.00/Foot

Stainless Steel Hose Clamps, Outside Diameter of Hose		Part No.	Price
	For 1.5 " O.D. Rubber Hose	HOSE CLAMP 1.5	\$6.00
	For 2 " O.D. Rubber Hose	HOSE CLAMP 2.0	\$5.00
	For 1.8 " O.D. PVC Hose	HOSE CLAMP 2.0	\$5.00
	For 2.4 " O.D. PVC Hose	HOSE CLAMP 2.5	\$5.00

## High Temperature Pirani Bakeable to 250°C Without Damage



- Bakeout Temperature up to 250 oC, Operate 0 to 50°C
- 1-2000 mTorr & .01-20 Torr Use With Any VRC Instruments
- Standard 2.75 in. CF Flange; Extension Cables To 250 ft.

1 to 2000 mTorr Nude Design Pirani Gauge Tube mounted on 2.75 Conflat® flange with 25 cm (10 inch) long pigtail with high temperature insulation.  
P/N 912078.....\$501

.01 to 20 Torr Nude Design Pirani Gauge Tube mounted on 2.75 Conflat® flange with 2 cm (10 inch) long pigtail with high temperature insulation.  
P/N 912260.....\$501

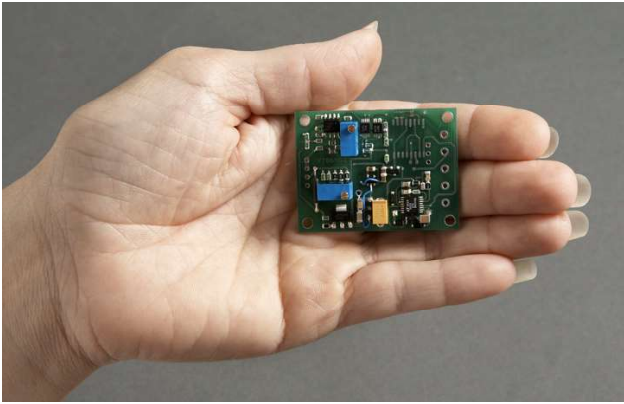


Photo shows PC Board convection gauge. Gauge tubes available with various flange styles.

## Convection Gauge 1 mTorr to Atmosphere

(Choose any Sensor on Page 12)

Convection gauges are popular because they can measure from atmosphere to 1 mTorr. More properly described as Convection Enhanced Pirani Gauges, these rugged and inexpensive instruments can directly interface with your PLC to control crossovers and initiate substrate heat down to  $1 \times 10^{-3}$  Torr. Other units of measure such as mbar and Pascal can be easily selected.

P/N V801188, 12 to 35 VDC Power, 0 to 5 VDC non-linear output. Dimensions 1.8" (47 mm) X 3.5" (89 mm)  
Calibrated and ready to operate .....\$277

For more information on PC Board Gauges contact factory or go to [www.vacuumresearch.com](http://www.vacuumresearch.com) and type "PC Board" in the Search field.

## Pirani Gauge 1 to 2000 mTorr (Choose any Sensor on Page 15)

P/N V801097, 12 to 35 VDC Power, 0 to 5 VDC non-linear output.

Dimensions 2.75" (70 mm) X 3.5" (89 mm)

Calibrated and ready to operate .....\$220

## 2000 mTorr Pirani with Sensor & cable; no Enclosure

P/N 905005, 12 VAC Power, 0 to 2 VDC linear output. Includes

sensor and 1 ft. cable. Dimensions 2.1" (54 mm) X 4.6" (118 mm)

Calibrated and ready to operate .....\$537

## Pirani Gauge 0.01 to 20 Torr (Choose any Sensor on Page 16)

P/N V801181, 12 to 35 VDC Power, 0 to 5 VDC non-linear output

Dimensions 2.5" (63 mm) X 3.5" (89 mm)

Calibrated and ready to operate .....\$234

## Diaphragm Gauge 1 to 1500 Torr (Choose any Sensor on Page 9)

P/N V801170, 12 to 35 VDC Power, 0 to 1.5 VDC linear output

Dimensions 2.5" (63 mm) X 3.5" (89 mm)

Calibrated and ready to operate .....\$248

## Pirani Gauge 0.01 to 100 mTorr (Choose any Sensor on Page 14)

P/N 910256, 12 to 35 VDC Power, 0 to 1 VDC non-linear output.

Dimensions 2.75" (70 mm) X 3.5" (89 mm)

Calibrated and ready to operate .....\$206

## Accessories for Circuit Board Gauges

Cable Assembly includes a connector for the sensor on one end and stripped and tinned leads on the other end to connect to the terminal strip. Specify length.

P/N 801168- xxx feet .....\$30. plus \$3./Ft.

## Power Supplies 100 to 240 V, 50-60 Hz input, 15 VDC @ 1.0 A output.

Wallmount style with adapter plugs for US, UK, Europe, Australia.

P/N: V104124 .....\$75. each

**Electronic Calibrators** Absolute pressure gauges can be adjusted to factory specifications using our compact electronic calibrators. These calibrators allow you to adjust zero and full scale without using a

## 10 Bar Diaphragm Vacuum Gauge With 6 Independent Set Points With Relays



Designed for pressure quench heat treat furnaces, this Diaphragm Vacuum and Pressure Gauge covers the entire range from 30 inches Hg vacuum to 150 PSIG.

The instrument includes 6 independent set points which are adjustable over the entire range and each set point drives a separate relay. Each of the six relays has SPDT contacts rated for 3 amps @ 115 or 220 VAC non-inductive.

P/N 902090 .....\$1,974

P/N 912065, Silicon Diaphragm Sensor 1/8 NPT .....\$337

P/N 912093, 316L SS Diaphragm Sensor 1/4 NPT .....\$526

For complete specifications, transducers, and prices go to [www.vacuumresearch.com](http://www.vacuumresearch.com) or contact factory

## Dual Display Gauges 1 - 2000 mTorr Pirani or 1 - 1500 Torr Diaphragm



These compact instruments use the same sensors and gauge tubes as our original instruments but now the display portion is in an 1/8 DIN enclosure panel space! With the combination Diaphragm and Pirani Gauge you can now measure from  $10^{-3}$  Torr to Atmosphere with a single 1/8 DIN instrument. Each instrument has an independent DC analog output and an adjustable set point with a built in relay for process control. Relays have 3 Amp contacts, form C, and have screw terminal connectors on the rear of the instruments.

For complete specifications, transducers, and prices go to [www.vacuumresearch.com](http://www.vacuumresearch.com) or contact factory





## Airborne Sensors

Our Pirani sensor technology uses an extremely low mass filament (less than .08 mg). The resulting low inertia and reduced fatigue contribute to long life and high shock & vibration resistance. The enclosure is optimized for the vehicle. In some cases the sensor enclosure is fabricated by our customer and shipped to us for sensor installation and calibration. A no charge license and schematic for sensor power is available.



## Gauge Tube Selector Switch

The gauge tube selector allows any VRC gauge to display the output of up to 5 gauge tubes just by turning the switch. Each gauge tube selector includes 3 or 5 gauge tube cables 10 ft. (3 m) long and one 12 inch (30 cm) cable to connect to your vacuum gauge. See below if longer cables are required.

3 Position Switch for Pirani, Diaphragm, Convection Gauges, P/N: 902027 .....	\$504
5 Position Switch for Pirani, Diaphragm, Convection Gauges, P/N: 902026 .....	\$681
3 Position Switch for Wide Range Diaphragm Manometers, P/N: 902156 .....	\$574



## Quick Connect Couplings

Reliable brass quick connect adapters give a leak tight seal without the use of tools. The quick connect seals on the unthreaded (.404 inch diameter) portion of our standard 1/8" NPT gauge tubes. For the permanent connection to your system select either 1/8" NPT or 15 mm diameter.

<b>Brass QC .404 X 1/8" NPT</b> P/N: 912108 .....	\$150.	<b>Brass QC .404 X 15mm</b> P/N: 912109 .....	\$141
<b>For Stainless Steel Body</b> (Brass Nut) Add "SS" suffix to part number and to the price .....		add \$93	



## Waterproof Vacuum Sensors

Totally waterproof boot that fits all VRC gauge tubes. With this option, sensors can be installed in wet and high humidity areas. Even 100% RH with condensation occurring is acceptable because with this boot in place the only parts exposed to the moisture are the 300 series stainless steel stem and cup used on all VRC vacuum sensors and gauge tubes.

<b>Waterproof Boot for Gauge Tubes</b> P/N: 902416 .....	\$49
<b>Vinyl Cap for Gauge Tube Connector Pins</b> P/N: 912124 .....	\$7



## LED Displays

Many VRC instruments are built with backlighted liquid crystal displays (BLLCDs). However, in some places where vacuum gauges are used light level is low and a light emitting diode (LED) display may be a better choice. Green LED displays are available on all gauges and can be retrofitted to existing gauges.

### LED instead of LCD installed at time of original purchase

3 1/2 place P/N: V801300 .....	\$121.	4 1/2 place P/N: V801301 .....	\$304
LED Retrofit Kit in existing gauges 3 1/2 place .....	\$152	4 1/2 place .....	\$334



## Bench Mount Cabinets

Bench mount cabinets can accept one or two standard enclosure gauges, or one gauge and a gauge tube selector switch. When the optional handle is purchased, your instrument can be easily transported. Rubber feet are included on all cabinets to protect your bench tops. Handle can also be installed directly to the top of either 1/4 DIN or standard enclosures.

<b>Single Cabinet</b> P/N: V805002 .....	\$154.	<b>Double Cabinet</b> P/N: V805003 .....	\$174
<b>Handle Installed on Cabinet or Instrument</b> P/N: V805005 .....		\$28	



All extension cables are shipped ready to use with connectors at both ends. Two jacket types are now available: PVC or abrasion resistant urethane.

## Gauge Tube Extension Cables

### Extension Cable for Wide Range Diaphragm Manometer Transducers

Up to 75 Meter (250 ft.) max. with 2 connectors P/N: 902080 ..... \$64. plus \$3.00 per foot.

### Extension Cable for Pirani, Thermocouple, Convection, & Diaphragm Gauge Tubes

Up to 150 Meter (500 ft.) max. with 2 connectors.

Standard PVC jacket P/N: 912063 ..... \$39. plus \$3.00 per foot.

Abrasion resistant urethane jacket P/N: 912401 ..... \$38. plus \$7.00 per foot.

### Cable Only without Connectors In one piece or installed as extra length on new gauges.

Standard PVC jacket P/N: V122195 ..... \$7.00 per foot.

Abrasion resistant urethane jacket P/N: V122178 ..... \$11.00 per foot.

### Connector Assemblies for Pirani, Thermocouple, Convection, and Diaphragm Gauges

Socket, Boot and Strain Relief included on both Male and Female Connector Assemblies.

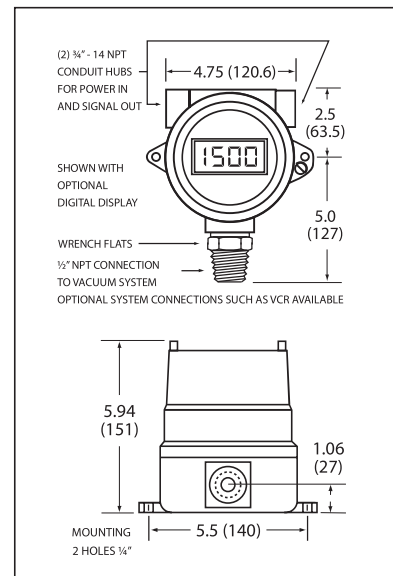
Male P/N: V805008.....\$33. each Female P/N: V805009..... \$33. each

# Gauges in Explosion Proof Enclosures, Class 1, Div. 1, ATEX Certificate



Sensor and gauge with & without optional digital display. Both provide 4 - 20 mA and 0-10 VDC output. Enclosures meet ATEX 95 equipment directive 94/9/EC requirements for Apparatus Group II, Categories 2G/2D: II 2 G EEx e II T3-T4; II 2 G EEx D IIC T3-T4; II 2 D IP66 TI 10°C - T140°C.

VRC offers two approaches to measuring high vacuum in hazardous areas. The first is with the sensor, gauge and optional display built into a Killark enclosure approved by UL, CSA and FM. ATEX certificate is provided with all gauges. All gauges provide both 4-20 mA and 0-10 VDC linear outputs. The alternate approach described at the bottom of this page is to have only the sensor located in the hazardous area with the gauge and display located in a non-hazardous area that can be up to 500 feet away. Power required is 15 to 35 VDC.



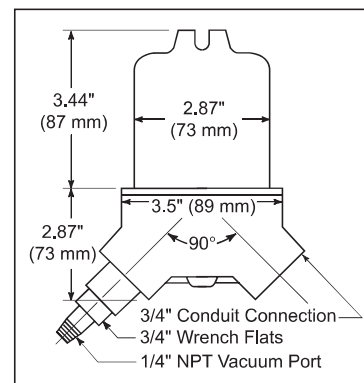
## Ordering Information: Gauge, Sensor and Optional Display

Measurement Range, Sensor Type	Maximum Working Pressure	Performance Specifications Catalog Page	Gauge & Sensor with Display & 4-20, 0-10 V Analog Output		Gauge & Sensor with 4-20, 0-10 V Output but No Display		Replacement Sensor Only	
			Part No.	Price	Part No.	Price	Part No.	Price
0.01 to 100 mTorr; Pirani	300 PSIG	14, 24	913050	\$1753	913056	\$1417	902049	\$228
1 to 2000 mTorr; Pirani	300 PSIG	15, 17, 24	913051	\$1634	913057	\$1291	902077XP	\$175
0.01 to 20.00 Torr; Pirani	300 PSIG	16, 17, 24	913052	\$1634	913058	\$1291	902089XP	\$175
1 to 1500 Torr; 316L Diaph.	30 PSIG	9, 17, 24	913053	\$1767	913059	\$1433	902079XP	\$618
-30" Hg to 150 PSIG; 316 Diaph.	150 PSIG	10, 17, 24	913054	\$1767	913060	\$1433	902086	\$618
0.1 to 200 PSIG; 316L Diaph.-30"	300 PSIG	11	913055	\$1767	913061	\$1433	902088	\$618

## Sensors for Hazardous Areas



These explosion proof Diaphragm and Pirani sensors can be used with any of the indicators and controllers described in this catalog. These sensors are complete and ready to install in any Class 1, Group C or D, Div. 1 area. Simply select the range that fits your application from the table below. Like standard Vacuum Research sensors, these explosion-proof sensors are unaffected by lead length and can be located up to 500 feet (150 m) from the display unit.



## Ordering Information

Measurement Range	Sensor Type	Performance Specifications Catalog Page	Maximum Working Pressure	Complete Enclosure with Sensor: 1/4" NPT standard, 1/2" NPT optional		Replacement Sensor Only	
				Part No.	Price	Part No.	Price
1 to 2000 mTorr	Pirani	15, 17, 24	300 PSIG	913006	\$985	902077XP	\$175
.01 to 20 Torr	Pirani	16, 17, 24	300 PSIG	913007	\$985	902089XP	\$175
1 to 1500 Torr	316L Diaph.	9, 17, 24	30 PSIG	913001	\$1642	902079XP	\$618
-30" Hg to 150 PSIG	316L Diaph.	10, 17	150 PSIG	913003	\$1642	902086	\$618
0.1 to 200 PSIG	316L Diaph.	11	300 PSIG	913005	\$1386	902088	\$618