

# PALMER

## Circular Chart Recorders

Pressure

Temperature

Pressure &  
Temperature

Differential

Pressure Test & Valve

Proven reliability for your  
toughest application.

Versatility that adapts to your  
needs.

**Palmer  
Wahl**  
**BEYOND THE SCALE**  
Building Recorders in the USA since 1962



Palmer Recorders are  
hand-crafted in our  
Asheville, North Carolina factory  
to last longer than any other  
recorder on the market!



# Palmer Aluminum Case Chart Recorders

## Proven Reliability!



Palmer Aluminum Chart Recorders provide proven reliability for accurate measurement and recording of pressure and temperature in many applications. Since 1962 we have manufactured and supplied recorders for industry in the U.S. and around the world. Palmer Recorders are designed for indoor or outdoor use, and provide long service life, even in harsh conditions. Many of our Recorders are still in service after 50 years!

**Each Recorder is custom made to order, enabling you to specify the options necessary for your requirements.**

Palmer Recorders are available in 8" or 12" models, and come in either heavy die cast aluminum, or our new Pelican® case shown on the next page. Palmer Recorders come complete with a battery operated chart drive and up to three (3) felt tip pens. Electric or Spring Wound chart drives are also available. Case mounting styles are Wall, Flush, Pedestal, Pipestand or Portable. The many combinations of case mounts and internals we offer allow selections which will meet your specific requirements without limiting performance or demanding a custom price.

### Aluminum Case Features

- The heavy-duty die cast aluminum case has a corrosion resistant under coat and a top White Gloss Powder Coat for a long lasting corrosion resistant finish, even in extreme environments. Black Matte Powder Coat or Gray Gloss Powder Coat are also available.
- The case is heat treated to prevent distortion or warping. Doors and windows are weather tight, and can be selected as solid or with a glass or plexiglass window. Shatter-proof glass is also available.
- Doors close with a draw pull latch with hasp. Flush Mount case closes with a black lever handle. Double cam latch bar with padlock type handle is available as an option on a solid door.
- Temperature and/or pressure connections are located at the back, top, or bottom of case, depending on mounting style or your specific requirements.
- Pressure Recorders have 1/2" diameter air vent holes in case. All internal components are corrosion resistant.

### Aluminum Case Styles

**Wall Mount:** Supplied with pressure connection at the bottom of case unless otherwise specified.

**Flush Mount:** Supplied with pressure connection at the back of the case. Black lever handle standard.

**Pipestand Mount:** Supplied with pressure connection at the bottom of case unless otherwise specified.

**Portable:** Supplied with pressure connection at the back of the case unless otherwise specified.

**Pedestal Mount:** Supplied with pressure connection at the back of the case unless otherwise specified.

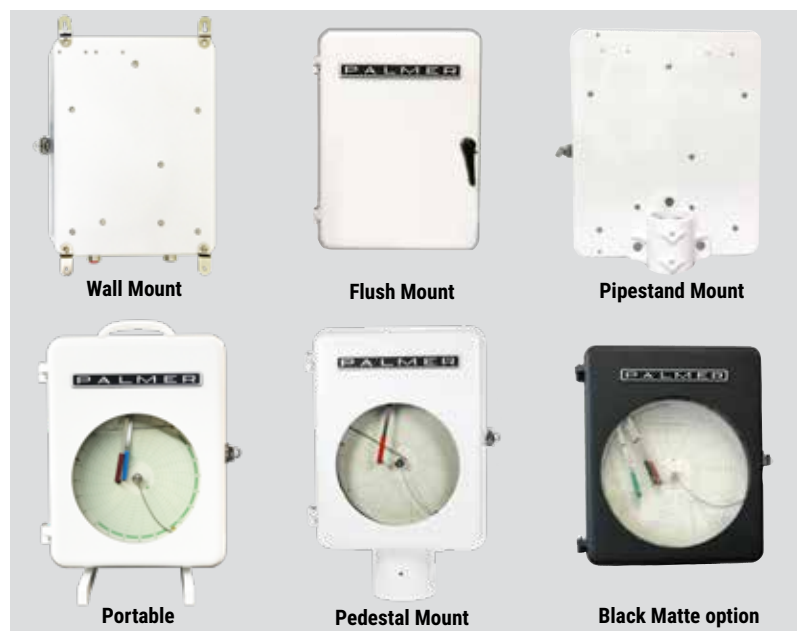
**Case Dimensions:** (Exterior box only, depending on case style)

8 inch Case - 10-9/16" Wide x 13-5/8" High x 4-7/8" Deep  
(268.3 x 346.0 x 123.8 mm).

12 inch Case - 13-1/16" Wide x 15-13/16" High x 4-7/8" Deep  
(331.8 x 401.6 x 123.8 mm).

**Case Weight:** (Empty box only, depending on mounting style)

8 inch Case - 12 lbs (5.44 kg). 12 inch Case - 16 lbs (7.25 kg).



# Palmer Pelican® Case Chart Recorder For Tough Outdoor Environments

Palmer Pelican® Case Chart Recorders - our top quality 8" and 12" chart recorders now comes housed in a rugged Pelican case. Built for outdoor use in extreme environments, they can withstand high levels of vibration. Lightweight and easy to carry, the Palmer Pelican Case Recorder offers the convenience and protection you need in a recorder.

Palmer Pelican Case Chart Recorders come complete with either battery operated PC-11 chart drive as standard, or optional Spring Wound or Electric chart drive. Temperature and Pressure can be combined inside the same recorder with up to three (3) systems.

## Pelican Case Features

- Watertight, Crushproof, and Dust-proof.
- Plexiglass Window (Standard) or optional Solid Door.
- Easy Open Double Throw Latches.
- Comfortable rubber over-molded side and top handles.
- Stainless Steel padlock protectors provide extra strength against tamper resistance when locked.
- Heavy Duty Deflector Ribs to protect against shock and impact.
- All internal components are corrosion resistant.
- Popular Portable Model is Lightweight and easy to carry with NO SLIP rubberized adjustable feet keep recorder level.

**Designed for indoor or outdoor use,  
all Palmer Recorders provide long service life,  
even in harsh conditions.**



## Pelican Case Styles

**Wall Mount:** Supplied with capillary or pressure connection at the bottom of case unless otherwise specified.

**Pipestand Mount:** Supplied with capillary or pressure connection at the bottom of case unless otherwise specified.

**Portable:** Supplied with capillary or pressure connection at the back of the case unless otherwise specified.

**Case Dimensions:** (Exterior box only, without Handle and Feet)

8 inch Case - 13.00" Wide x 16.44" High x 6.82" Deep  
(330.2 x 417.5 x 173.2 mm).

12 inch Case - 15.77" Wide 19.78" High x 7.41" Deep  
(400.5 x 502.4 x 188.2 mm).

**Case Weight:** (Empty box only, depending on case and # of systems)

8 inch Case - approx 6.39 lbs (2.9 kg).

12 inch Case - approx 9.35 lbs (4.2 kg).



Wall Mount

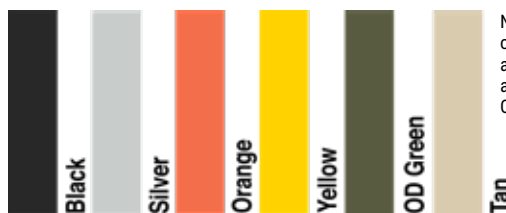


Pipestand Mount



Portable

Palmer Pelican Case Recorders are available in the colors below:



Note: High minimum order quantity and additional charges are required for OD Green and Tan.



*Pelican is a trademark of Pelican Products, Inc.*

Specifications subject to change without notice. Go to [www.palmerwahl.com](http://www.palmerwahl.com) for most current information.

February  
2024

Call Toll Free 1-800-421-2853 • Or visit [www.palmerwahl.com](http://www.palmerwahl.com)

**Palmer / Wahl**  
BEYOND THE SCALE

# Palmer Pressure Test and Valve Chart Recorder

## Flexibility for Your Application

**Palmer Test and Valve Recorders are custom made to your specifications.**

Palmer Test and Valve Recorders can be designed with specialty Single or Dual Inlets with high range elements, low range elements or both. Used for critical applications, inlet connections have shut-off valves to isolate each recorder element from source pressure to confirm recorder is reading correctly.

Internal pressure connection test ports are threaded for a gauge or a Pete's Plug®. Either can be specified. Connect a pressure gauge into the threaded fitting directly into recorder system, or into a Pete's Plug® Adapter to be pushed into the Pete's Plug opening after cap is removed.

A precision back-up gauge can also be attached while shut-off valves are closed, to allow both the gauge and recorder to be read together. For dual input systems, each input can be shut off and each side checked independently.

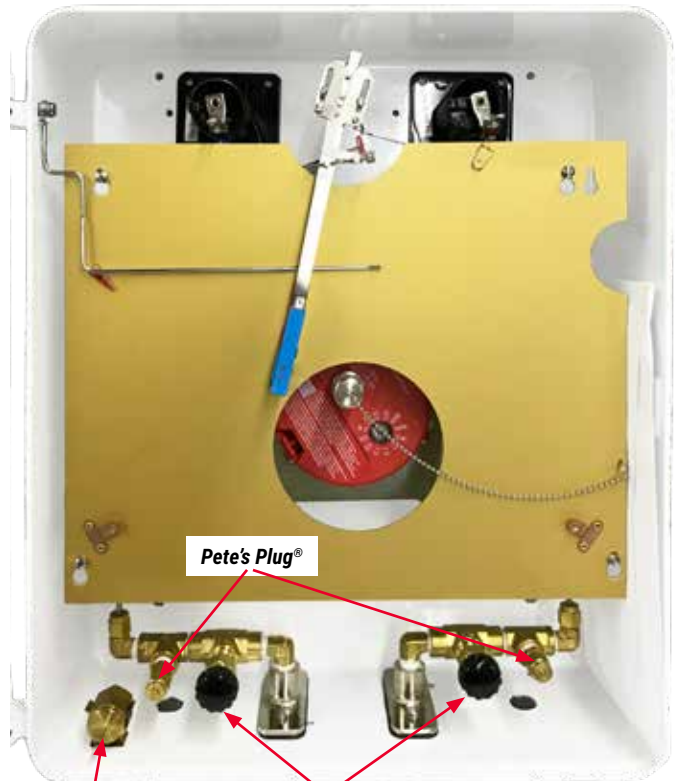
Built to last longer than any other recorder on the market, Palmer Test and Valve Recorders, like our other Chart Recorders, are available in either heavy duty corrosion resistant aluminum case, or rugged Pelican® case.

Pelican Case Test & Valve Recorder



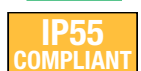
Single Inlet shut-off valve

Aluminum Case Test & Valve Recorder

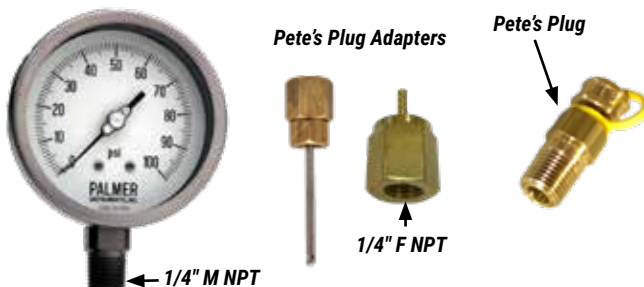


Pete's Plug Adapter

Dual Inlet shut-off valves



Pete's Plug is a Trademark of the Peterson Products Company. It is designed for the natural gas industry to allow for quick pressure readings. Pelican is a trademark of Pelican Products, Inc.



### Test & Valve Specifications

<b>Case</b>	Aluminum Case - Wall, Portable, Pedestal - Std. Flush and Pipestand available.
<b>Mounting:</b>	Pelican Case - Wall and Portable - Std. Pipestand available.
<b>Chart Size:</b>	Aluminum - 8" & 12". Pelican - 8" only.
<b>Pen Configurations:</b>	Available in 1or 2 Pen Pressure Configuration.
<b>Range:</b>	PSI, Hg, kPa and Bar. (See Table pg 9).
<b>Accuracy:</b>	± 1/2 chart graduation. Optional ± 1/4 chart graduation. (Top Pen only)
<b>Chart Drive:</b>	Battery Operated, Electric or Spring Wound.

### Available Case Colors:

Aluminum - White Gloss Powder Coat. Black Matte Powder Coat or Gray Gloss Powder Coat available. Pelican - Black (Standard), Silver, Orange, Yellow, OD Green\* (Olive Drab), Desert Tan\*. (\* High minimum order quantity and additional charges required for OD Green and Tan)

Recorder images on this page are representative of what can be designed for your application. Test & Valve Pelican case dimensions differ from our standard offering. Contact us for help with ordering information.

Specifications subject to change without notice. Go to [www.palmerwahl.com](http://www.palmerwahl.com) for most current information.



# Recorder Charts and Pens

Palmer Recorders use superior quality chart paper and pens engineered to work together for optimum performance and accuracy.

## Recorder Charts

**Palmer Recorder Charts:** Our superior quality charts meet or exceed OEM standards for accuracy and performance. Charts are manufactured to provide stiffness and curl control for use in the field for normal and high stress conditions. A wide assortment of single, dual and triple range charts are available in both 8" and 12" diameters, in a large selection of rotation speeds. Charts are packaged 100 per box.

Standard Palmer Recorder charts have an Arc Line of 6-3/8". The top pen follows the arc line. We can supply any maker chart you need, as well as order custom range charts. For information about Charts and Pens designed for our DP Recorder, please see pages 6-7.



## Recorder Pens

**Palmer Recorder Pens:** Our Recorder pens are engineered to produce superior image quality in the most demanding conditions. Our pen assembly transmits the movement of the sensors into a smooth, gliding arc across the chart. This prevents burrowing, resulting in longer pen life and better accuracy and readability.

Palmer Recorder Pens come in different NIB Heights and are installed on separate Pen Arms which have different lengths and heights. This enables the pens to overlap and operate independently of each other. On a standard Recorder the Top Pen follows the Arc Line of 6-3/8".

Replaceable fine point, felt tip pens are available in packages of 5 in Red, Blue, Green, and Black. Be sure to order the correct pen for the desired position. Standard color pens, shown here, are recommended. Other colors and configurations are available as special order.

Temperature Recorders and Test & Valve Recorders will differ in system options. For Charts and Pens designed for our DP Recorder, see pages 6-7.



Recorder Pen Order Information						
Pen Arm #	Pen Position	Color	Part Number	1 Pen Recorder	2 Pen Recorder	3 Pen Recorder
RP-3	TOP PEN on 3 Pen Recorder	Red	AR-3714-11-6	✓	✓	Std
		Blue	AR-3714-14-6	✓	✓	✓
		Green	AR-3714-13-6	✓	✓	✓
		Black	AR-3714-12-6	✓	✓	✓
RP-2	ONLY PEN on 1 Pen Recorder TOP PEN on 2 Pen Recorder MIDDLE PEN on 3 Pen Recorder	Red	AR-3714-06-6	Std	Std	✓
		Blue	AR-3714-09-6	✓	✓	Std
		Green	AR-3714-08-6	✓	✓	✓
		Black	AR-3714-07-6	✓	✓	✓
RP-1	BOTTOM PEN on 2 or 3 Pen Recorder	Red	AR-3714-01-6	✓	✓	✓
		Blue	AR-3714-04-6	✓	Std	✓
		Green	AR-3714-03-6	✓	✓	Std
		Black	AR-3714-02-6	✓	✓	✓

### 1 Pen Recorder:

ONLY PEN

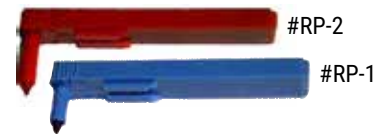
Order: #RP-2, Red - #AR-3714-06-6 (Standard)



### 2 Pen Recorder:

TOP PEN, Order: #RP-2, Red - #AR-3714-06-6 (Standard)

BOTTOM PEN, Order: #RP-1, Blue - #AR-3714-04-6 (Standard)

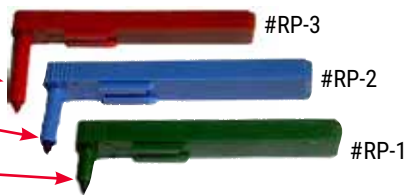


### NIB Heights:

#RP-3 = 0.813"

#RP-2 = 0.533"

#RP-1 = 0.253"



### 3 Pen Recorder:

TOP PEN, Order: #RP-3, Red - #AR-3714-11-6 (Standard)

MIDDLE PEN, Order: #RP-2, Blue - #AR-3714-09-6 (Standard)

BOTTOM PEN, Order: #RP-1, Green - #AR-3714-03-6 (Standard)

Specifications subject to change without notice. Go to [www.palmerwahl.com](http://www.palmerwahl.com) for most current information.

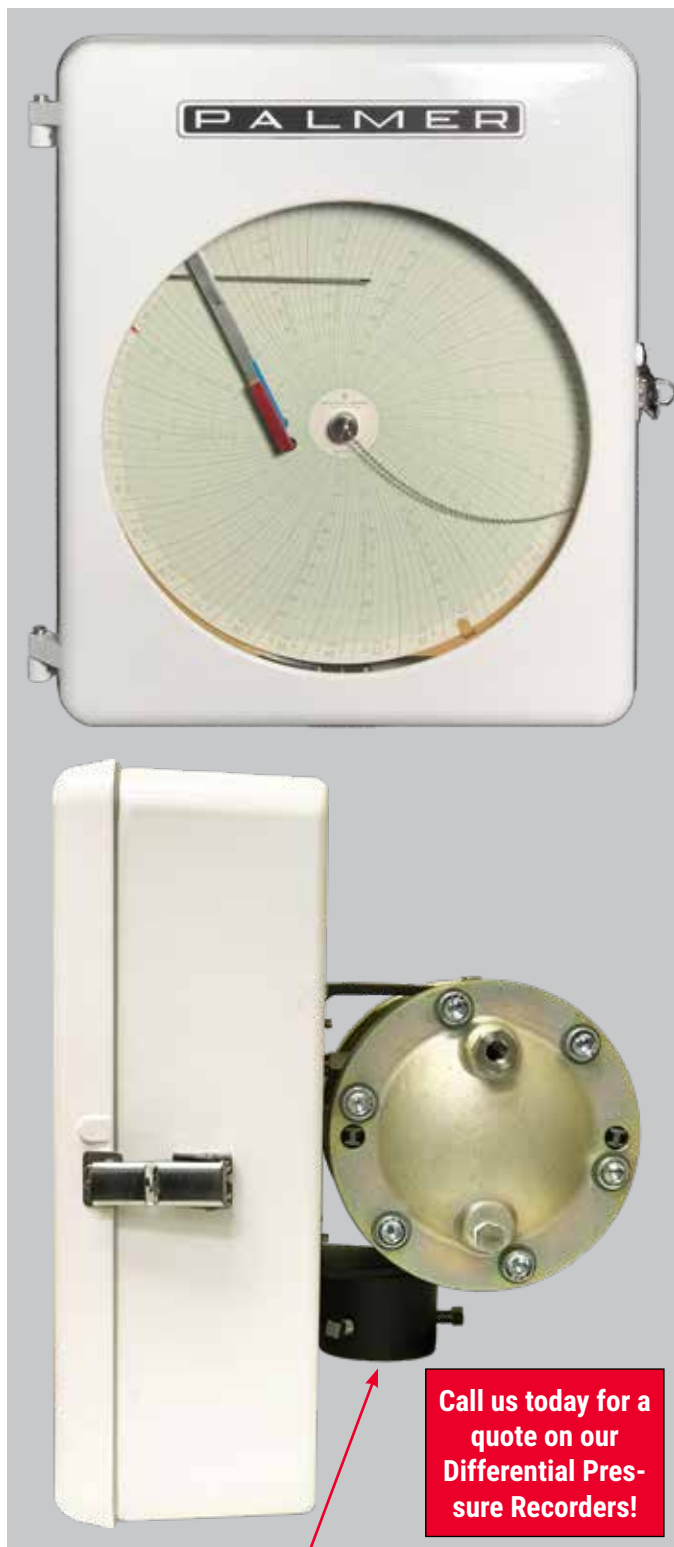
February  
2024

Call Toll Free 1-800-421-2853 • Or visit [www.palmerwahl.com](http://www.palmerwahl.com)

**Palmer / Wahl**  
BEYOND THE SCALE

# Palmer Differential Pressure Recorder

## Dependability You Can Trust



The Palmer Differential Pressure Recorder is available in Pipestand Mount only.

\*Flow rates can be calculated using an orifice plate.

**Call us today for a quote on our Differential Pressure Recorders!**

### Differential Pressure Recorder - Model 524

Our Model 524 Differential Pressure (DP) Recorder offers you dependability you can trust from a company you know. Designed primarily for use in the Oil and Gas industry, Differential Pressure Recorders are ideal for monitoring flow\*, filtration, and liquid levels. Palmer DP Recorder measures the differential between two inputs, from 20 to 400 Inches of Water. Maximum input pressure up to 2500 psi.

This model is also available with up to two additional pens for measuring static pressure up to 30,000 PSI or 600 Bar; and/or temperature from -30° to 600°F (0° to 300°C), with non-mercury temperature elements and 10 feet of capillary standard.

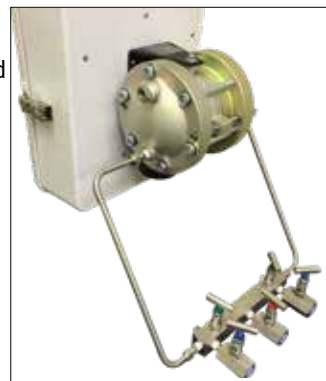
The differential pressure cell with dual bellows design is made of 316L SS and features over-range protection dampening to compensate for pulsations in line pressure. The edge welded rupture proof pressure cell provides up to 30% added lifespan and greatly improved linearity.

The fully mechanical differential pressure cell features a temperature compensator to protect the unit from drift caused by ambient temperature changes.

The 12" heavy die cast aluminum case is offered in our pipestand mount style for this application. The case is double protected by a corrosion resistant coating and an additional powder coated finish, making it weather resistant even in harsh conditions. Standard color is White Gloss Powder Coat, with Black Matte or Gray Gloss Powder Coat available as options. Instrument glass window is Standard.

The Palmer DP Recorder comes standard with our PC-11 Multi-Speed Battery Operated Chart Drive (UL listed). Optional PC-12 or a Spring Wound Chart Drive.

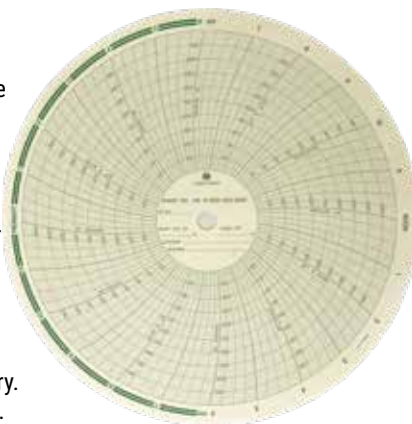
Also available is our 5 Valve Manifold, Model AWR-3691-01 shown at right. Sold separately as a kit with connection hardware to connect DP Recorder to your system.



### DP Recorder Charts

#### Palmer DP Recorder Charts:

have a 9-7/16" arc line and are fully compatible and interchangeable with the famous maker model charts. They are engineered to work together with our DP Recorder pens for optimum performance and accuracy. Our superior quality charts meet or exceed OEM standards and are designed specifically for the gas industry. Charts are packaged 100/box.



Specifications subject to change without notice. Go to [www.palmerwahl.com](http://www.palmerwahl.com) for most current information.

Differential Pressure Recorder Specifications		
Model 524	Systems	Choose from 1, 2 or 3 Pens: DP only, or DP with Pressure and/or Temperature
	Chart Size	12" Chart
	Arc Line	9-7/16" Arc Line
	Chart Drive	Multi-speed Battery-Operated Chart Drive (BOCD) (UL Approved) or Spring Wound - Specify Speed and Chart
DP Actuator	Range Availability	0/20" H <sub>2</sub> O; 0/50" H <sub>2</sub> O; 0/100" H <sub>2</sub> O; 0/200" H <sub>2</sub> O; 0/300" H <sub>2</sub> O; 0/400" H <sub>2</sub> O
	Accuracy	± 0.5% of Full Scale
	Temperature Limit	-40° to 180°F (-40° to 82°C)
	Recording Mechanism	All Stainless Steel parts for longer field life
	Maximum Non-Linearity	± 0.5%
	Repeatability	± 0.20%
	Pressure Element	Dual Bellows: 316L SST
	Bellows Fill	Mineral Oil - (M)
	Safe Working Pressure	2,500 PSI (172 Bar) Maximum
	DP Housing/Center Plate	Forged Steel AISI C1018
	Housing Seals	Fiber Gasket
	Torque Tube Material	Beryllium Copper, Hermetically sealed to eliminate friction and leakage
	Torque Tube Rotation	8 Degrees ± 10%
	Range Springs	Inconel
	Bolts	AISI 4140, per ASTM A 320 L7M, Grade 8
	Cleaning	General
Optional Static Pressure Elements	Ranges	25 to 30,000 PSI; 6 to 600 bar
	Accuracy	± 1/2 chart graduation
	Pressure Element	316SS bellow diaphragm, helical coil bourdon tube with stainless steel fittings and tubing.
Optional Temperature Elements	Non-Mercury Ranges	From: -30° to 600°F / 0° to 300°C
	Capillary	1/4" dia, flex armored, 10 ft standard. Non-Toxic fill capillary is 304SS, Hydrocarbon fill capillary is 316SS.
	Accuracy	± 1 chart graduation
	Element	Non-Toxic fill elements are 304SS, Hydrocarbon fill elements are 316SS.
Housing	Case Size / Description	12" case with Instrument Glass Window Standard, Pipestand only
	Case Material	Die Cast Aluminum Case with Draw Pull Latch/Hasp and Corrosion Resistant Internals
	Case Color	White Gloss Powder Coat - Standard. Black Matte Powder Coat or Gray Gloss Powder Coat - Optional.
	Dimensions	H: 15-13/16" x W: 13-1/16" x D: 13" (includes DP Cell) (401.66 mm x 331.8 mm x 330.2 mm)
	Weight	55 lbs. (24.94 kg) (includes DP Cell)

### DP Recorder Pens

Palmer DP Recorders come standard with scannable pens designed specifically to produce consistently clean, scannable charts for the Gas Industry.

Fully compatible and interchangeable with famous maker model pens.

DP Pens feature:

- Broader line width to assure reliable scanner processing.
- Exclusive inks which virtually eliminate skips and estimations.
- All temperature inks for a solid, scannable trace in all types of climates.
- Pen arrays can be calibrated to a 15 minute time lag (.090") between Differential and Static pens on the Zero Line of a 24 hour chart.

Palmer Differential Pressure Recorders have an Arc Line of 9-7/16".

The Differential Pressure Pen follows the Arc Line.

Specifications subject to change without notice. Go to [www.palmerwahl.com](http://www.palmerwahl.com) for most current information.

See Data Sheet for Case Options

Standard Differential Pen is Red



Standard Temperature Scan Pen is Green



Standard Pressure Scan Pens are Black or Blue



# Chart Drives - Flexibility for the Field

## Battery Operated Quartz Multi-Speed Chart Drives (BOCD) offer complete flexibility for recording - even in the most demanding applications

Designed for outdoor use, hermetically sealed Chart Drives for Palmer Recorders have a broad operating temperature range of -40°F to 160°F and operate reliably even in wet or dirty environments. Freezer tested to -40°F, they will withstand extreme temperatures below 10°F when used with a "C" size 3.6V Lithium Thionyl Chloride Battery. The highly adaptable design will fit any chart recorder, and makes exchange in the field a snap.

The multi-speed dial on the front of the case allows field selectable recording intervals from 30 minutes (PC-12) to 32 days (PC-11) and 96 days (PC-18). The dial also turns the unit off to conserve battery power (PC-11/18 models). A pulsating LED indicator behind the dial shows that the battery is charged and that the unit is operating.

Our PC-11, PC-12 and PC-18 are rated Intrinsically Safe, which makes them ideal for use by gas utility companies and in other situations where hazardous or combustible materials are present. hermetically sealed Chart Drives for Palmer Recorders have



### BOCD Chart Drive Features

- **PC-11** - 11 Speeds: switch selectable, choose from 60 min., 96 min., 12 hr., 24 hr., 48 hr., 7 day, 8 day, 14 day, 16 day, 31 day or 32 day recording intervals and OFF.
- **PC-12** - 12 Speeds: switch selectable, choose from 30 min., 60 min., 2 hr., 4 hr., 6 hr., 8 hr., 12 hr., 24 hr., 48 hr., 3 day, 4 day, or 7 day recording intervals. No OFF.
- **PC-18** - 12 Speeds: switch selectable, choose from 60 min., 96 min., 12 hr., 1 day, 7 day, 8 day, 14 day, 16 day, 31 day, 32 day, or 96 day recording intervals and OFF.
- Universal Mounting Bracket: fits all chart recorders for easy replacement.
- .25" Drive Shaft with flat: accepts different drive hubs.
- High Torque: 25 oz/in torque increases life and improves accuracy.
- No Axial or Angular Backlash: charts don't shift.
- Battery: 1.5 volt "C" alkaline battery (not included). For temperatures below 10°F use with a "C" size 3.6V Lithium Thionyl Chloride Battery.
- Molded Body Pilot: Permits field exchange without recalibration.
- Maintenance-Free: Closed construction case protects all moving parts.
- Separate Battery Compartment: prevents drive damage from corrosion.
- UL Listed: Class I, Groups C and D; CUL Listed; Intrinsically Safe.

## Spring Wound Chart Drive

Switchable Dual Speed Clock. - By use of a shift lever, the drive can be set for 24 hour or 7 day rotation. Rotation is set at factory to conform to your specifications. Verify that the drive is set properly. To wind the drive, remove chart and use the key furnished with the recorder.

Standard Rotation: 24 hour / 7 day



## Electric Chart Drive

When installing, check to verify that proper voltage and frequency are used. Not available for DP Recorders. Available on Special Order. Minimum order quantities apply.



### Available clock rotations FOR ALL CLOCKS: Select one for Factory Setting

Code	Rotation Options	PC-11	PC-12	PC-18	Spring Wound	110V/220V Clock
A	15 Min				Special Order	
B	30 Min		✓			
C	60 Min / 1 Hour	✓	✓	✓	Special Order	
D	96 Min	✓		✓	Special Order	
E	2 Hour		✓		Special Order	
X	3 Hour				Special Order	
F	4 Hour		✓		Special Order	
G	6 Hour		✓			
H	8 Hour		✓		Special Order	
J	12 Hour	✓	✓	✓		Special Order*
K	24 Hour / 1 Day	✓	✓	✓	✓	Special Order*
L	48 Hour / 2 Day	✓	✓			Special Order*
M	3 Day		✓			
N	4 Day		✓			
P	7 Day	✓	✓	✓	✓	Special Order*
R	8 Day	✓		✓		
S	14 Day	✓		✓		
T	16 Day	✓		✓		
U	31 Day	✓		✓		
V	32 Day	✓		✓		
W	96 Day			✓		

\* Minimum Order Quantities apply



# Palmer Pressure Elements and Ranges

## Pressure Elements

Each Palmer Pressure Element is individually designed and calibrated for each selected pressure range span. Palmer subjects these elements to extensive testing during calibration to ensure better than specified accuracy. The all-welded system prevents deterioration.

- Accuracy:  $\pm 1/2$  chart graduation. Optional:  $\pm 1/4$  chart graduation is available on the Top Pen only, for ranges over 30 to 10,000 PSI only (using the Standard Pressure Element only). (Factory setting only). Not available on DP Recorder.
- Angular deflection of the pen arm of 22.5° for 8" and 36° for 12" Cases.
- Standard pressure ranges are available in pounds per square inch, bar, inches of water, inches of mercury, kilo pascals, and ounces per square inch.
- The all welded construction on the Standard Pressure Element offers over-range protection for ranges 30 PSI to 10,000 PSI (with 1/4" NPT female connection).
- Ranges 10,000 PSI and under come standard with 1/4" NPT female connection. 10,000 PSI may choose an optional Autoclave fitting. Ranges above 10,000 require a 9/16"-18 UNF high pressure female Autoclave style fitting. (Also requires user supplied tubing assembly).
- Precalibrated pressure elements for field replacement are also available.

**Low Pressure Element:**  
316 Stainless Steel bellows diaphragm, tubing and fittings for ranges 30 PSI and below with 1/4" NPT.



**Standard Pressure Element:**  
316 Stainless Steel helical coil bourdon tube with Stainless Steel Fittings and tubing for ranges over 30 to 10,000 PSI, with 1/4" NPT.



**High Pressure Element:**  
316 Stainless Steel helical coil bourdon tube for ranges 10,000 PSI, 15,000, 20,000 and 30,000 PSI with autoclave fitting (with calibration on rise only for 15,000 and above.)

## Pressure Ranges

Pressure Ranges							
PSI Ranges			Hg Ranges	kPa Ranges	in H <sub>2</sub> O Ranges	Bar Ranges	
0 to 1 PSI	0 to 75 PSI*	0 to 1,500 PSI	0 to 10 Hg*	0 to 5 kPa*	0 to 10 in H <sub>2</sub> O	0 to 6 Bar*	0 to 250 Bar
0 to 3 PSI	0 to 100 PSI*	0 to 2,000 PSI	0 to 30 Hg*	0 to 20 kPa*	0 to 15 in H <sub>2</sub> O	0 to 10 Bar*	0 to 300 Bar
0 to 5 PSI*	0 to 120 PSI*	0 to 2,500 PSI	0 to 50 Hg*	0 to 80 kPa*	0 to 20 in H <sub>2</sub> O	0 to 16 Bar*	0 to 400 Bar
0 to 6 PSI*	0 to 150 PSI*	0 to 3,000 PSI	oz/in <sup>2</sup> Ranges	0 to 100 kPa*	0 to 25 in H <sub>2</sub> O	0 to 25 Bar	0 to 500 Bar
0 to 8 PSI*	0 to 200 PSI*	0 to 4,000 PSI	0 to 10 oz/in <sup>2</sup> *	0 to 500 kPa*	0 to 30 in H <sub>2</sub> O	0 to 40 Bar	0 to 600 Bar
0 to 10 PSI*	0 to 250 PSI*	0 to 5,000 PSI	0 to 15 oz/in <sup>2</sup> *	0 to 800 kPa*	0 to 40 in H <sub>2</sub> O	0 to 50 Bar	0 to 1,000 Bar
0 to 15 PSI*	0 to 300 PSI*	0 to 6,000 PSI	0 to 20 oz/in <sup>2</sup> *	0 to 1,000 kPa*	0 to 50 in H <sub>2</sub> O	0 to 60 Bar	0 to 1,200 Bar
0 to 20 PSI*	0 to 350 PSI	0 to 8,000 PSI	0 to 25 oz/in <sup>2</sup> *	0 to 2,000 kPa*	0 to 60 in H <sub>2</sub> O	0 to 100 Bar	0 to 1,600 Bar
0 to 25 PSI*	0 to 400 PSI	0 to 10,000 PSI	0 to 30 oz/in <sup>2</sup> *	0 to 5,000 kPa	0 to 100 in H <sub>2</sub> O	0 to 160 Bar	0 to 2,000 Bar
0 to 30 PSI*	0 to 500 PSI	0 to 15,000 PSI	0 to 50 oz/in <sup>2</sup> *			0 to 200 Bar	
0 to 35 PSI*	0 to 600 PSI	0 to 20,000 PSI					
0 to 45 PSI*	0 to 750 PSI	0 to 25,000 PSI					
0 to 50 PSI*	0 to 800 PSI	0 to 30,000 PSI					
0 to 60 PSI*	0 to 1,000 PSI	3/15 PSI					

Note: Beige boxes denote Static Pressure Ranges available for additional pens on a DP Recorder.

\* Pressure Ranges available for Test & Valve Recorders.

**We build to order:  
if your process requires  
a pressure range not  
shown here please call  
Customer Service.**

## Process Connections

- 1/4" FNPT, Standard
- 1/2" FNPT, Optional
- 9/16"-18 UNF High Pressure Female Autoclave style fitting required on PSI ranges 15,000 and above, optional for 10,000 PSI.



**Standard Pressure Connection:**  
1/4" FNPT Female pressure connections for ranges up to 10,000 PSI.



**Autoclave Pressure Connection:**  
9/16"-18 UNF High Pressure Female Autoclave style fitting - optional for 10,000 PSI, required for ranges 15,000 and above. (Also requires user supplied tubing assembly).

Specifications subject to change without notice. Go to [www.palmerwahl.com](http://www.palmerwahl.com) for most current information.

February  
2024

Call Toll Free 1-800-421-2853 • Or visit [www.palmerwahl.com](http://www.palmerwahl.com)

**Palmer Wahl**  
BEYOND THE SCALE

# Palmer Temperature Elements and Ranges

## Temperature Elements

Palmer Temperature Elements (or bulbs) must pass the same stringent quality control as the most precise scientific laboratory thermometers. All mercury filled systems conform to ASME 5B. Non-mercury systems conform to 1A over 30 feet and 1B under 30 feet. Each system is pressurized after filling for overrange capabilities above and below its specified range.

Rapid response to changes in temperature make it extremely accurate and reliable. The system is completely welded to prevent deterioration. Points most susceptible to physical damage are reinforced with added flexible armor.

Temperature elements are remote from the recorder case and offered in a choice of standard Mercury filled and Non-Mercury filled probes. Our engineering department can also custom design probes for a wide variety of applications.

- Accuracy  $\pm 1$  chart graduation.
- Heat treated coil provides superior spring action.
- Durable, low maintenance design: thermal system and other parts can be easily replaced by field technician.
- 300 Series stainless steel bulb, interconnection capillary, and armor available on certain designs.
- Standard case compensated system for uncompensated capillary lengths not exceeding the limits of the selected fill.
- Precalibrated temperature elements for field replacement are also available.

## Temperature Ranges

Temperature Ranges	
°F Ranges	°C Ranges
-30° to 120°F	0° to 60°C
0° to 100°F	0° to 100°C
0° to 120°F	0° to 120°C
0° to 150°F	0° to 150°C
0° to 200°F	0° to 200°C
0° to 250°F	0° to 250°C
0° to 300°F	0° to 300°C
0° to 400°F	0° to 350°C
0° to 500°F	0° to 400°C
0° to 600°F	
0° to 800°F	

We offer a wide variety of standard temperature ranges to meet the needs of many different applications. Each temperature element is precisely calibrated to the required range.

**Note:** all ranges are available in Mercury filled elements.

Beige boxes denote ranges available in Non-Mercury filled and DP Recorder.

Temperature recorders with mercury bulbs may be restricted for sale in some states or countries.

Call for more information.

## Temperature System Capillary

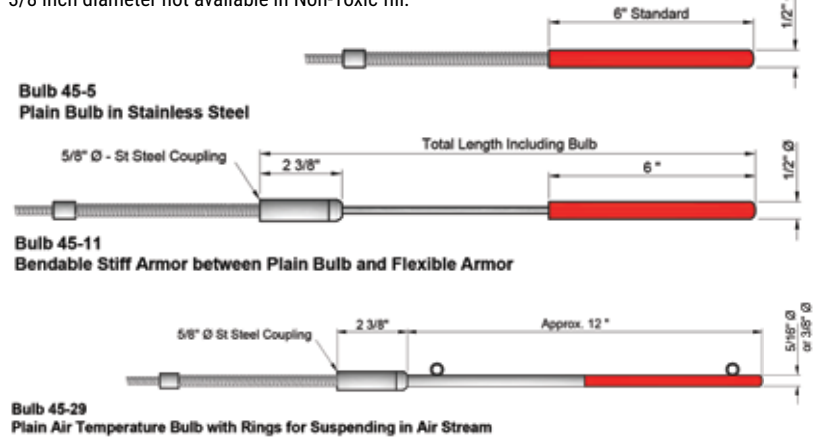
Standard capillary length for Recorders is 5 feet, for DP Recorders standard is 10 ft, both in 1/4" diameter flex armor. 3/16" diameter, Bendable stiff armor is optional for mercury filled systems only. Capillary for Mercury filled systems is 304SS, with optional lengths up to 25 feet\*; non-mercury systems is 316SS, with optional lengths up to 99 feet.

\*Lengths up to 50 feet are also available in applications where the ambient temperature remains consistent.

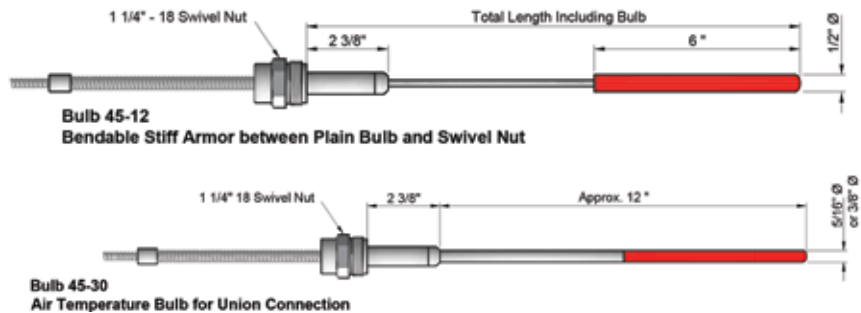
## MERCURY AND NON-TOXIC LIQUID FILLED TEMPERATURE ELEMENTS

**Models 45-5 and 45-11** are bulb and capillary systems designed to be dropped into a tank or bin and hung from the capillary. **Model 45-11** has a bendable section in the middle to expand possible insertion options.

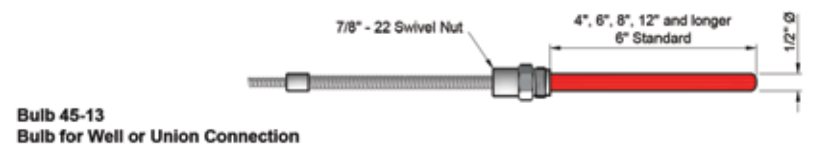
**Model 45-29** is a bulb and capillary system designed to be hung by two mounting rings for air temperature measurement. For best results, bulb should be mounted in the center of the flow. 3/8 inch diameter not available in Non-Toxic fill.



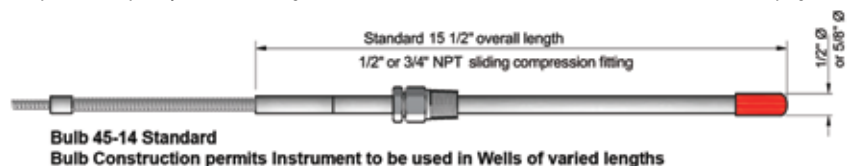
**Models 45-12 and 45-30** are bulb and capillary systems designed to be hung from a threaded connection and dropped into a tank or bin. See compatible connectors listed in table on next page. 45-30, 3/8 inch diameter not available in Non-Toxic fill.



**Model 45-13** is a bulb and capillary system designed to be inserted into a thermowell (closed receptacle) in the process or through a union hub (open end) directly into the process. See compatible connectors and thermowells listed in table on next page.



**Model 45-14** is a bulb and capillary system designed to be inserted into thermowells of various lengths (closed receptacle) in the process or through a union hub (open end) directly into the process, or using the 1/2" NPT or 3/4" NPT probe sliding compression fitting directly into the process. Specify desired fitting. See connectors and thermowells listed in table on next page.



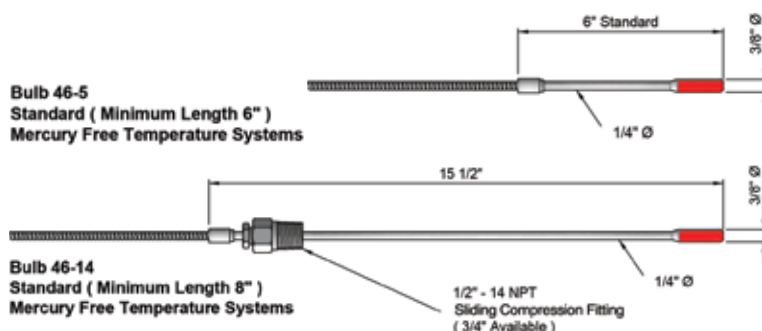
Specifications subject to change without notice. Go to [www.palmerwahl.com](http://www.palmerwahl.com) for most current information.

# Palmer Temperature Elements and Ranges

## HYDROCARBON FILLED TEMPERATURE ELEMENTS

**Model 46-5** is a bulb and capillary system designed for air temperature or to be dropped into a tank or bin and hung from the capillary.

**Model 46-14** is a bulb and capillary system designed to be inserted into a thermowell (closed receptacle) in the process or through a union hub (open end) directly into the process or using the 1/2" NPT or 3/4" NPT probe sliding compression fitting directly into the process. Specify desired fitting. See compatible connectors listed in the table below.



## Palmer Connections and Thermowells

Palmer has manufactured a wide selection of thermowells and fittings since the 1940's. Our machined wells are built in our factory in Asheville, North Carolina for complete control of the production process. Our attention to detail allows us to produce precision products to meet your needs.

Below is a reference chart to help direct you to the correct connectors or thermowells compatible with our temperature bulbs.

If your application requires use of a flange, or other options not shown here please call Customer Service.

For a complete selection, dimensions and material options for all thermowells and connections please see the Palmer Thermowells and Fittings catalog, or visit: [www.palmerwahl.com](http://www.palmerwahl.com).



Thermowells • Union Connections • Flange Options for Temperature Bulbs											
	Bulb Type	Mercury and Non-Toxic Filled Bulbs								Hydro-Carbon Fill Bulbs	
	Bulb Model Number	45-12	45-13	45-14				45-30		46-14	
	Bulb Diameter	1/2"	1/2"	1/2"	1/2"	5/8"	5/8"	5/16"	3/8" **	3/8"	3/8"
	Probe Connection	1-1/4"-18 Swivel Nut*	7/8"-22 Swivel Nut*	1/2" NPT	3/4" NPT	1/2" NPT	3/4" NPT	1-1/4"-18 Swivel Nut*	1-1/4"-18 Swivel Nut*	1/2" NPT	3/4" NPT
OPEN ENDED	Standard Union Connection 3/4" NPT	1140-7	1150-7	1120-7	NA	1120-7	NA	1140-7	1140-7	1120-7	NA
	Standard Union Connection 1" NPT	1140-8	1150-8	1120-8	NA	1120-8	NA	1140-8	1140-8	1120-8	NA
	Lagging Extension Neck Union Connection 3/4" NPT	1141-7	1151-7	1121-7	NA	1121-7	NA	1141-7	1141-7	1121-7	NA
	Lagging Extension Neck Union Connection 1" NPT	1141-8	1151-8	1121-8	NA	1121-8	NA	1141-8	1141-8	1121-8	NA
	Surface Mount Flanged Union Connection	1140-9	1150-9	1120-9	NA	1120-9	NA	1140-9	1140-9	1120-9	NA
CLOSED RECEPTACLE	Standard Thermowell	NA	1150	1190	NA	CP-970	NA	NA	NA	1130	NA
	Lagging Extension Neck Thermowell	NA	1151	NA	NA	NA	NA	NA	NA	1131	NA
	Built-up Heavy Wall Thermowell	NA	1154	NA	NA	NA	NA	NA	NA	NA	NA
	Built-up Lagging Extension Neck Heavy Wall Thermowell	NA	1155	NA	NA	NA	NA	NA	NA	NA	NA
	Weld-in Thermowell	NA	1156	NA	NA	NA	NA	NA	NA	1136	NA
	Flanged Thermowell	NA	1157	NA	NA	NA	NA	NA	NA	1137	NA

\* Requires use of Thermowell or Union Hub. See same column as desired Bulb. \*\* Not available in Non-Toxic Fill.

Specifications subject to change without notice. Go to [www.palmerwahl.com](http://www.palmerwahl.com) for most current information.

# Palmer Calibration and Repair Services

Our Quality Management System is certified to conform to ISO 9001:2015. We maintain a calibration system in conformance with ANSI/NCSL Z-540 and MIL-STD-45662A.

- All Calibrations are performed against standard instruments, traceable to NIST. Records are stored for a minimum of three (3) years.
- Standards used have a test ratio of four times greater than the unit being calibrated.
- We can perform certified, traceable calibrations in support of companies that require meeting FAA and FDA quality standards. Calibrations to IPTS-68 and ITS-90 available.

## Calibration Services:

### NIST Traceable Certificate of Conformance:

If Calibration Test Data is desired, purchase a NIST Traceable Certificate of Conformance. With this service:

- Units are provided with a Calibration Data Sheet for NIST Traceability. A unique test number is assigned, and details of the standard instruments used to perform the calibration are included.
- "As Received" and "As Left" Test Data are provided as appropriate, with notations of any out-of-tolerance conditions.
- NIST Traceable Calibration Label on the instrument provides the date the instrument was calibrated, name of technician performing the calibration, suggested date for the next calibration, and reference to the unique test number shown on the Calibration Data Sheet.

### Certificate of Conformance:

- **Certificate of Conformance - Pack List:** Unsigned Statement that our product meets published specifications. This is included on the packing list with every product at no additional charge, and offered as a purchased service. Also includes a Calibration Label (or tag, as necessary) when you buy a new product. Label or tag is updated when products are returned for recalibration, (except for Pressure Gauges, Economy Industrials and Engraved Laboratory Thermometers\* which do not have a label or tag). The Calibration Label (or tag) shows the date the unit was calibrated, name of technician performing the calibration and the suggested date for the next calibration.
- **Certificate of Conformance - Long Form: Signed** - If Signature is needed, a Long Form Certificate of Conformance is available at an additional charge. Includes Customer name, confirming PO Number, Order Number, Part Numbers shipped, Quantity and Serial Numbers for all products included in the shipment (except for Pressure Gauges, Economy Industrials and Engraved Laboratory Thermometers\*). Also includes a Calibration Label (or tag, as necessary) showing the date the unit was calibrated, name of technician performing the calibration and the suggested date for the next calibration. Calibration Test Data is not included on the Long Form Certificate of Conformance. If Calibration Test Data is desired, select a NIST Certificate of Conformance.

## Repair Services:

Palmer Wahl offers repair services on most products we sell. Go to [palmerwahl.com](http://palmerwahl.com) and click on: Request an RMA (Return Material Authorization Number) and follow the instructions. You will receive your RMA number via email once your item is received at our facility. If you prefer, call Customer Service at: 1-800-421-2853 for assistance with the RMA process.

All repairs include:

- Repair and checking that the unit is in good working order, light cleaning, software updates (if applicable), and standard calibration. Optional NIST Calibration with before and after data is available upon request.
- Detailed Repair Report - Included with every repair, this report provides details of evaluation and repairs made.

## Additional Services:

- Custom or Added Points - We will calibrate your instruments at your specified temperature or pressure points at an additional charge per point.
- Special Requests - When calibrating your instrument, our experienced personnel will help you to achieve the level of accuracy necessary for your instruments and probes. Call us with special requests.

Payment arrangements may be required before issuing an RMA. There may also be special requirements regarding the shipment of batteries. In some cases, if unit is out of spec, additional charges may apply. All instruments returned to factory may be subject to an evaluation fee, which will be applied to any work performed.

## Quality Products from Palmer Wahl

### Temperature Products

Resistance Thermometer Assemblies  
Thermocouple Assemblies  
Multi-point RTD Assemblies  
Multi-point Thermocouple Assemblies  
Thermowells  
Bimetal Thermometers  
Dial Thermometers, Rigid & Remote  
Hygrometers & Lab Thermometers  
Industrial Thermometers  
Infrared, Fixed & Hand Held

### Pressure Gauges

Gas Test Gauges  
Industrial Gauges  
Pressure Gauges  
Sanitary Gauges  
Test Gauges  
Digital Gauge

### Transducers and Transmitters

#### Calibrators & Testers

Current  
Multifunction Process  
Pressure  
Process Signal  
RTD  
Simulators/Calibrators  
Temperature  
Thermocouple Voltage  
Micro-ohmmeters  
Soldering Iron Testers

#### Recorders

Chart Recorders:  
Pressure & Temperature  
Test & Valve  
Differential  
Temperature Recording Labels

