PRINCO™

Instrumentation designed with the user in min

Continuous Probe Selection Guide

For use with PRINCO™ level transmitters and multiple point controllers



Many factors are involved in selecting a probe for continuous level transmitters and multiple point controllers. There are electrical, chemical, and mechanical aspects to be considered.

Electrically, a ground reference (such as the vessel wall) must be present and the probe must be built to provide proper response.

Chemically, the probe must be compatible with the process material. It must be immune to attack and must offer no chance of contaminating the process.

Mechanically, the probe must be able to withstand the pressure and temperature extremes of the application. In addition, turbulence, consistency, viscosity, abrasion, and mounting configuration may also play a role in probe selection. A flexible probe is required where probe length exceeds 236 inches or where physical restrictions (i.e., lack of headroom) prevents installation of a rigid probe.

Even though all of these factors may demand consideration when selecting a probe, most applications are easily defined and the proper probe can be quickly selected.

Probe Selection Guide

Listed at right and below are the nine most common types of applications and the probe recommended for each. Please refer to the following pages for a complete description of each system.

Conductive Liquids

100 Micromhos/cm or higher (water-based liquids)

System	Vessel	Consistency[1]	Sensor	Model No.	Wetted Surfaces[2]
I	Metal	Any	Rigid	L101	316 SS & Kynar™ or Teflon™
II	Metal	Any	Flexible	L109	316 SS & Kynar or Teflon
III[3]	Non-Metal	High	Rigid	L127	316 SS & Kynar or Teflon
IV[3]	Non-Metal	Low	Flexible	L113	316 SS & Kynar or Teflon
V[3]	Non-Metal	High	Flexible	L115	316 SS & Kynar or Teflon

Non-Conductive Liquids

5 Micromhos/cm or less (hydrocarbons, solvents, etc.)

System	Vessel	Consistency[1]	Sensor	Model No.	Wetted Surfaces[2]
VI	Any	Low	Rigid	L107	316 SS & Kynar™ or Teflon™
VII	Any	Medium	Rigid	L102	316 SS & Kynar or Teflon
VIII	Any	High	Rigid	L127	316 SS & Kynar or Teflon
IX	Any	Any	Flexible	L115	316 SS & Kynar or Teflon

NOTES:

1. Consistency: The tendency for a liquid to coat or cling to the probe.
2. If 316 SS is not compatible, use a probe with appropriate covering on all wetted surfaces.
3. If customer can supply metal ground to a level at or below bottom of probe, then System I or II applies.

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Probe Information

MATERIALS OF CONSTRUCTION

- ❑ NPT vessel connections are Type 316 SS. Special alloys can be provided.
- ❑ Seals are Teflon.
- ❑ Ground elements on Systems II through IX are 316 SS.
- ❑ Flanges are Carbon Steel (standard). Type 316, or 304 SS (optional). For other alloys or material, consult factory.

PROBE INSULATION	PROBE TYPE	REMARKS
B = Bare (No insulation)	Rigid or flexible probe.	Used only when there is no possibility that moisture will be present anywhere in the product or vessel.
KP = Kynar® Pipe (60 Mil Kynar over carbon steel)	Rigid probe with excellent performance at low cost.	First choice for most water-based products.
KS = Kynar Sheath (17 Mil Kynar over 316 SS rod)	Rigid probe.	For rigid probe applications where highly conductive, severe coating is present.
KW= Kynar Wire (20 Mil Kynar over 316 SS wire rope)	Alternate flexible probe used where significant conductive coating is present.	Tie-down or weight required. Tie-down/weight does not sense level.
TP = Teflon® Pipe (60 Mil PFA Teflon over 316 SS rod)	Rigid probe.	For applications requiring a low response rigid probe.
TS = Teflon Sheath (17 Mil Teflon over 316 SS rod)	Rigid probe.	Used where chemical compatibility or temperature precludes use of Kynar.
TW= Teflon Wire (12 Mil Teflon over copper wire)	Flexible probe. Tie-down or weight required.	Primary choice for most applications requiring flexible probe. Tie-down/weight does not sense level.

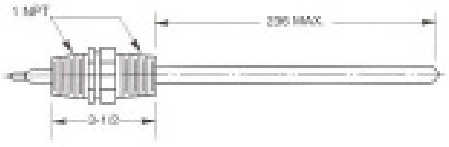
Probe Pressure / Temperature Ratings

Model Number	Probe Covering	Pressure Rating at Temperature Indicated						
		-300°F	-40°F	100°F	250°F	300°F	400°F	500°F
L101, L102 L104, L107 L109, L113	Teflon or Bare	1250PSI	1250PSI	1250PSI	550PSI	460PSI	350PSI	0 PSI
	Kynar		1000PSI	1000PSI	250PSI	0 PSI		
L115, L116, L127, L128	Teflon or Bare	275' PSI	275' PSI	275' PSI	225' PSI	210' PSI	180' PSI	0 PSI
	Kynar		275' PSI	275' PSI	225' PSI	0 PSI		

NOTES:
1. Rating of Carbon Steel 150 lb. flange. For higher ratings, consult factory.
2. Temperature Limits: Bare or Teflon Covered Probes: -300°F (-184°C) to 500°F (260°C) Kynar Covered Probes: -40°F (-40C) to 300°F (149°C). For temperatures beyond these limits, consult factory.

System Information

System I -
Conductive fluid, metal vessel, any consistency, rigid probe.
L101 Heavy Duty Probe
Availability: KP, TS, TP, KS
Serves most applications, especially where flow, turbulence or agitation is present. Vessel must be metallic or contain a ground reference.



System II -
Conductive fluid, metal vessel, any consistency, flexible probe.
L109 Flexible Wire Probe
Availability: TW, KW
For applications where physical restrictions prevent installation of rigid probe (e.g., minimum head room), or where probe length exceeds 236 inches. Available with tie down or weight. Vessel must be metallic or contain a ground reference.



System III -
Conductive fluid, non-metal vessel, any consistency, rigid probe.
L127 Flange Mounted Heavy Duty Dual Probe
Availability: KP, TS, TP, KS
This probe provides a ground reference and may be used where flow, turbulence, or agitation is present.



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Continuous Probe Selection Guide

System Information, continued

System IV -
Conductive fluid, non-metal vessel, low consistency, flexible probe.

L113 Flexible Wire Probe with Ground
Availability: TW, KW

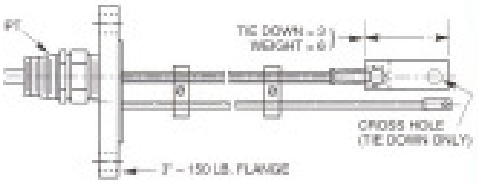
Use where probe length exceeds 236 inches, or where physical restrictions prevent installation of rigid probe (e.g., minimum head room). Available with tie down or weight. Stainless steel wire provides ground reference. For low consistency liquids.



System V -
Conductive fluid, non-metal vessel, high consistency, flexible probe.

L115 Flange Mounted Dual Wire Probe
Availability: TW, KW

Use where probe length exceeds 236 inches, or where physical restrictions prevent installation of rigid probe (e.g., minimum head room). Available with tie down or weight. Provides ground reference. For high consistency liquids.



System VI -
Non-conductive fluid, any vessel, low consistency, rigid probe.

L107 Dual Concentric Probe
Availability: TS, TP, B, KS

Provides a ground reference. Minimizes effects of turbulence. For low consistency liquids.



System VII -
Non-conductive fluid, any vessel, medium consistency, rigid probe.

L102 Dual Concentric Probe
Availability: KP, TS, TP, B, KS

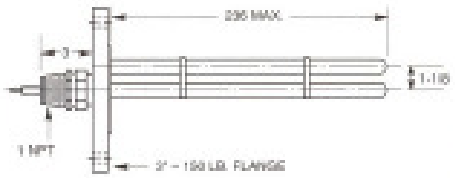
Provides a ground reference. Minimizes effects of turbulence. For medium consistency liquids.



System VIII -
Non-conductive fluid, any vessel, high consistency, rigid probe.

L127 Flange Mounted Heavy Duty Dual Probe, Availability: KP, TS, TP, B, KS

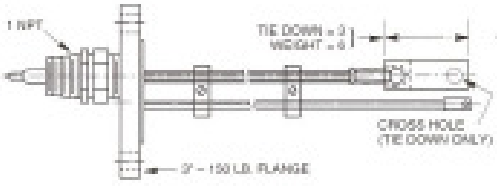
This probe provides a ground reference and may be used where flow, turbulence, or agitation is present.



System IX -
Non-conductive fluid, any vessel, any consistency, flexible probe.

L115 Flange Mounted Dual Wire Probe
Availability: TW, KW, B

Use where probe length exceeds 236 inches, or where physical restrictions prevent installation of rigid probe (e.g., minimum head room). Available with tie down or weight. Provides ground reference. For high consistency liquids.



SANITARY PROBES:

L104 Sanitary Probe
Availability: KP, TS, TP, KS

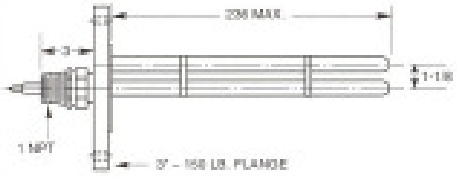
With TRI-CLAMP® fitting, sizes 1" to 4". PRINCO has been authorized to apply the 3-A symbol to this probe. All wetted surfaces are Teflon or Kynar covered.



ALTERNATE SYSTEMS FOR APPLICATIONS WHERE NO METAL CAN CONTACT THE PROCESS MATERIAL:

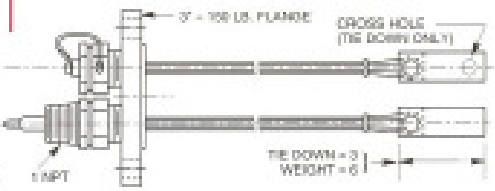
L128 Flange Mounted Dual Rigid Probe
All wetted surfaces Teflon or Kynar covered
Availability: KP, TS, TP, KS

This probe provides a ground reference and may be used where flow, turbulence, or agitation is present.



L116 Flange Mounted Dual Flexible Probe
Availability: TW, KW
All wetted surfaces Teflon or Kynar covered

Use where probe length exceeds 236 inches, or where physical restrictions prevent installation of rigid probe (e.g., minimum head room). Available with tie down or weight. Provides ground reference.



NOTE: All dimensions in inches.

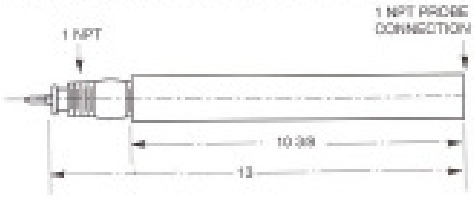
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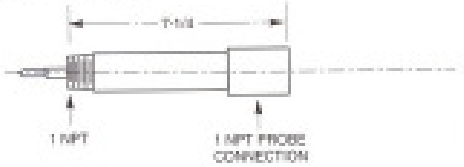
L200 Series Accessories

L205 (triaxial) and L204 (coaxial) high temperature extensions are included between the probe and electronics housing to minimize the transfer of heat from the process to the electronics via the probe.

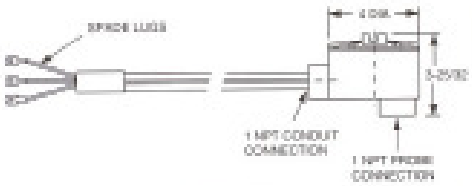
L205 - Used for applications where probe is less than 24 inches long and material dielectric is less than 5.



L204 - General purpose, used in applications other than those outlined for the L205.



L213 - Coaxial cable extension with ground (for L2610) and **L214** Triaxial cable extension (for L3610 & L4610) used to enable the remote mounting of the electronic assembly. Consult factory to determine the type of cable and maximum cable length for your application.



All probes described in this bulletin, which are to be used in explosion-proof applications, must be installed to satisfy National Electrical Code, Section 501, and applicable local codes.

Ordering Information

THREADED PROBES

Example: A Model L101 probe, Kynar pipe covered, with 12 inch insertion length would be designated as shown below:

L101 KP - 00 - 012

- L101 — Model number
- KP — Probe covering[1]
- 00 — Inactive shield[2] (in inches)
- 012 — Insertion length[3] (in inches)

SANITARY PROBES

Example: The Model L104 probe, Teflon sheath covered with 2 inch TRI-CLAMP® fitting and 6 inch insertion length, would be designated as shown below:

L104 - TS - 2 - 00 - 006

- L104 — Model number
- TS — Probe covering[1]
- 2 — Fitting size
- 00 — Inactive shield[2] (in inches)
- 006 — Insertion length[3] (in inches)

FLANGED PROBES

Example: A Model L128, flange mounted, dual, heavy-duty probe with 3 inch by 150 lb. rated, 316 stainless steel flange, Kynar pipe covered active rod, ground rod and raised face, and an insertion length of 32 inches would be designated as shown below:

L128 KP - 3 - 150 - 316 - 00 - 032

- L128 — Model Number
- KP — Probe covering[1]
- 3 — Flange size[4]
- 150 — Flange rating[5]
- 316 — Flange material[6]
- 00 — Inactive shield[2] (in inches)
- 032 — Insertion[3] Length (in inches)

FLEXIBLE (WIRE) PROBES

Example: A Model L109 Teflon wire probe, with 240 inch insertion length and 316 SS weight would be designated as shown below:

L109 - TW - 00 - 240 w/ SS wt.

- L109 — Model number
- TW — Probe covering[1]
- 00 — Inactive shield[2] (in inches)
- 240 — Insertion length[3] (in inches)

Note: Bottom 6" of this probe is made up of the weight and therefore does not sense level.

NOTES:

1. Probe coverings: KP=Kynar pipe, KS=Kynar sheath, KW=Kynar Wire, TP=Teflon pipe, TS=Teflon sheath, TW=Teflon wire, B=Bare
2. Inactive shield available only on L103
3. Insertion length is length measured from bottom of mounting hub or flange face to tip of active sensor for rigid probes. Insertion length for flexible (wire) probes is the length measured to bottom of tie-down or weight. This tie-down/weight does not sense level (except for bare probes).
4. Standard flange sizes for all flange mounted probes: 3 inch
5. Standard flange rating is 150 lbs. For higher rating, consult factory.
6. Flange material: CS=carbon steel, 304=304 SS, 316=316 SS. For other materials, insert XX and consult factory.

All dimensions in inches.

All PRINCO level instruments are designed and manufactured in the UNITED STATES OF AMERICA



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