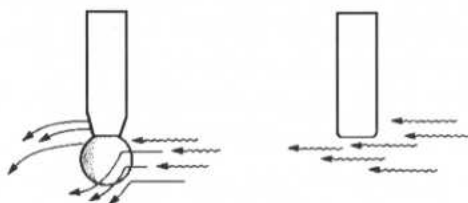


SELF-CLEANING pH AND ORP ELECTRODES



FLAT SURFACE DESIGN

These Walchem pH and ORP electrodes are self-cleaning because they have a flat measuring surface. This means that turbulent flow scrubs the entire measuring surface; there is no dead flow area. On the other hand, the downstream side of a spherical electrode is shielded from flow, and coatings form on the shielded side.



Spherical Electrode

Flat Electrode

A flat electrode is abrasion-resistant because particles sweep past the flat surface without impinging on the delicate pH sensitive glass. But spherical electrodes are bombarded on the upstream side causing abrasion, shifting of calibration, or possible breakage.

Viscous materials flow past the flat surface in shear, allowing the old material to be uniformly displaced by fresh material. However, a spherical

bulb's downstream side coats with the old material, which reduces measurement accuracy.

Applications for self-cleaning electrodes include:

Oily waste water	Emulsions
Lime slurries	Gas wet scrubbers
Head box pulp pH	Flocculant coagulation

All pH and ORP electrodes in this series are easy maintenance, cartridge-type combination electrodes with quick disconnect BNC connectors. Electrodes can be installed and removed in just a few seconds without tools.

Built into the electrode's body is a sealed, gel-filled double junction reference. This provides an extra barrier against reference-side contamination. It also allows the electrodes to be used in applications where sulfides, mercaptans, heavy metal ions and similar materials are present.

PRODUCT HIGHLIGHTS

- Prevent most oily and solid coating problems
- Excellent for viscous materials
- Abrasion-resistant
- Reduce maintenance
- Minimize breakage
- Prolong life
- Overall cost savings

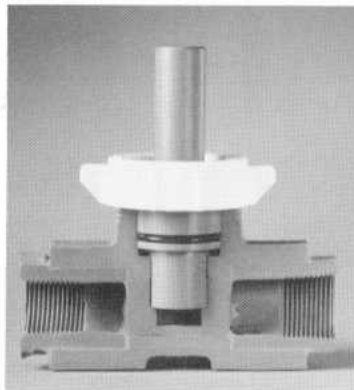
SELF-CLEANING ELECTRODE MOUNTING CHOICES

SIDE STREAM (BY-PASS) LINE MOUNTING

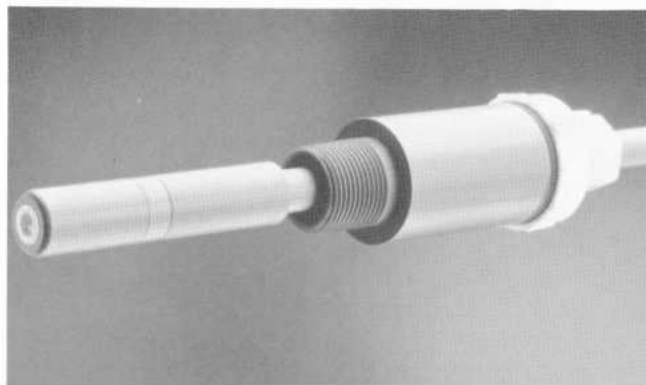
Measurements in 3/4" side stream lines allow electrodes to be mounted in convenient locations. Side Stream mountings are particularly useful in applications involving oily coatings, low suspended solids content or moderately viscous materials.

Side Stream mounting hardware allows the velocity past the electrode to be controlled. In the 3/4" flow cell's restricted 1/4" flow channel, each GPM flow provides a 2ft/sec velocity past the flat electrode's sensing surface. Flow rates of 3 to 5 GPM provide adequate cleaning velocities in water weight applications. Exact control of flow rates is not required.

In viscous material applications these flow rates may be difficult to achieve; however, lower rates still provide flow in shear to assure that fresh material is at the measuring surface.



INSERTION MOUNTING



The Insertion Assembly allows pH measurements to be made in pressurized tanks and main lines without the need for system shutdown for electrode maintenance. Its adjustable insertion depth allows it to be positioned in a turbulent flow region so it can operate in the self-cleaning mode. In abrasive applications, the electrode is usually positioned even with the pipe wall. It is well suited for measurements in liquids with high suspended solids and for measurements in viscous liquids.

A ball valve, packing gland arrangement allows the electrode to be installed and removed from the pressurized system without shutting the system down. The special electrode used in the Insertion Assembly allows it to be mounted in any position; for example, through the bottom of a tank with its measuring surface facing upwards.

SUBMERSION MOUNTING

Measurements in tanks, flumes, and sewer lines are conveniently made with the Submersion system. It is well suited for applications with high suspended solids or where flocculation operations require low velocities. It is also useful for coating problems in tanks which have high agitation.

Where only low velocities are present and coating is a problem, the electrode can be mounted at a 45 degree angle facing into the flow to obtain increased scrubbing action across the measuring surface.

In certain applications it may be necessary to install a small circulating pump and use the Side Stream unit to achieve the needed self-cleaning action.



IN-LINE MOUNTING

In-Line mountings are ideal for replacing existing 3/4" threaded electrodes. They are useful in piping systems where flow can be shut off for electrode maintenance and where flow rates match the application's needs; for example, turbulent flow is needed in self-cleaning applications. A simple, re-useable 3/4" MNPT gland is used to mount the electrode in mating openings.



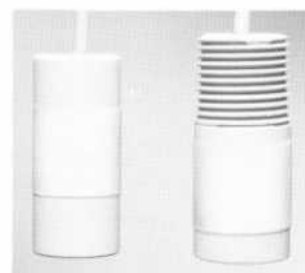
CABLE ASSEMBLY CHOICES

Three Cable Assemblies are available. They are supplied with cable lengths of up to 100 feet and with connectors as required by the pH meter or transmitter to which the cables will be attached. All include protected connectors that plug onto the electrode and seal against the electrode's leak tight O-ring(s).

The 51160 has a 1/2" MNPT thread to which a coupling and length of supporting pipe can be attached for submersion applications. It is also used when cables must be installed in conduit.

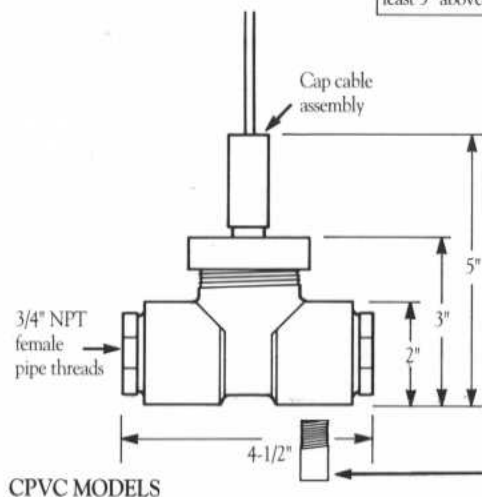
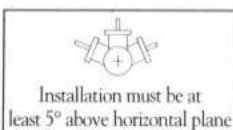
Another cable assembly, the 51153, has a smooth cap. It is used where cable lengths are short and conduit is not used. It is not designed for use in submersible applications.

The last cable assembly, the 51253, is a waterproof version of the threaded cable. It is used for wet installations where conduit is not available.

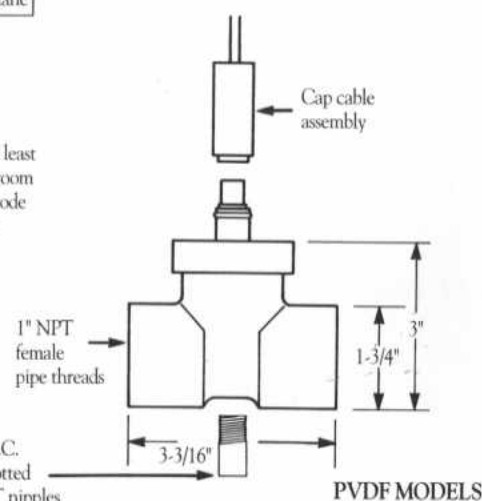


OUTLINE AND MOUNTING DIMENSIONS

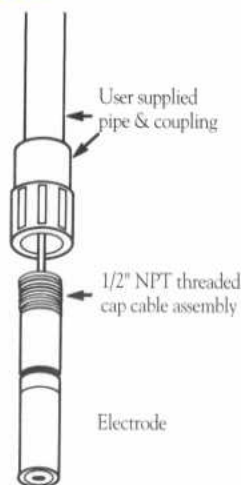
SIDE STREAM



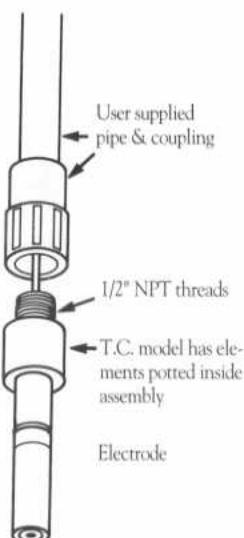
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SUBMERSION



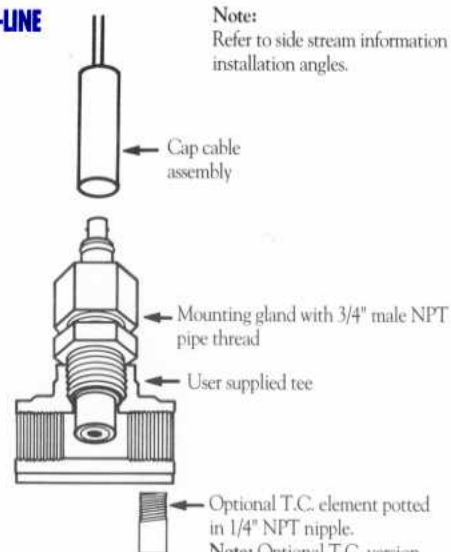
CPVC AND PVDF MODELS



CPVC AND PVDF MODELS TEMPERATURE COMPENSATED

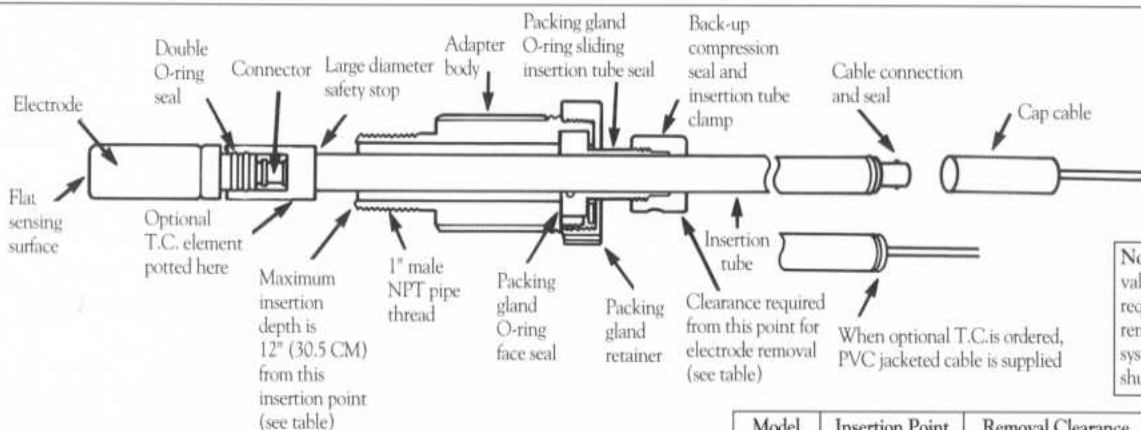
IN-LINE

Note:
Refer to side stream information for installation angles.



CPVC ONLY

INSERTION



Note: A 1\"/>

CPVC AND PVDF MODELS

Model	Insertion Point	Removal Clearance	Material Available
51188	12 inches	24 inches	CPVC
51196	12 inches	24 inches	Kynar

SPECIFICATIONS

pH Range:	0-14 PH (0-12 without sodium ion error)
ORP Range:	±750 mV
Speed of Response:	95% in less than 5 seconds
Temperature/Pressure Rating:	50-170°F @ 100 PSIG 50-180°F @ 85 PSIG 50-212°F @ 50 PSIG
Wetted Materials of Construction:	
CPVC Designs:	CPVC, HDPE, Viton, glass (and Pt for ORP Electrodes)
PVDF Designs:	PVDF (Kynar), Viton, glass (and Pt for ORP Electrodes)

ORDERING INFORMATION

Electrode Selection Guide

Mounting Style	Electrode		ATC Cable Assy's pH only (includes all mounting fittings)		Non-ATC Cables (Must choose Mounting Fitting <i>and</i> Cable)				
					Mounting Fitting		Conduit Cable* (threaded cap)	Exposed Cable* (smooth cap)	Waterproof Cable* (threaded cap)
	CPVC	PVDF	CPVC	PVDF	CPVC	PVDF	*CPVC except where noted		
Side Stream pH ORP	51155 51156	51194 51266	51197 —	51200 —	51157	51204	51160	51153	51253
Insertion pH ORP	51188 51268	51196 51269	51198 —	51202 —	51203	51205	51160	51153	51253
Submersion pH ORP	51158 51159	51195 51267	51168 —	51201 —	(not necessary for this style)		51160 51206 (PVDF)	do not submerge exposed cable	51253 51271 (PVDF)
In-Line pH ORP	51147 51270	— —	51199 —	— —	51151	—	51160	51153	51253

- Standard cable length is 20 feet with ATC, 10 feet without ATC.
- Standard cable connectors are BNC for the pH/ORP connection, and bare wires for the ATC connection.
- Special orders are available to fit your application.



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