

BIW Controls

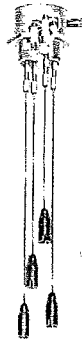
Electrode Holders/Electrodes

CAST PRESSURE-TIGHT ELECTRODE HOLDERS WITH EXTERNAL PIPE THREAD

BIW pressure-tight electrode holders are designed especially for applications which require a positive, leak-proof assembly. Such installations include boiler feed and condensate return systems, hydropneumatic tanks, and various types of chemical processing equipment, etc.

Whenever possible, these holders should be mounted in a vertical position through the top of the tank with the electrodes extending downward to the desired operating levels.

For applications requiring flange mounting BIW offers companion flanges in 2", 3", or 4" sizes made of cast iron or 304 SS. See Catalog Section 7014.



TYPE E-4 HOLDER WITH ROD ELECTRODES



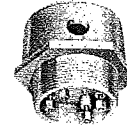
TYPE E-4 HOLDER WITH E-1P ELECTRODES



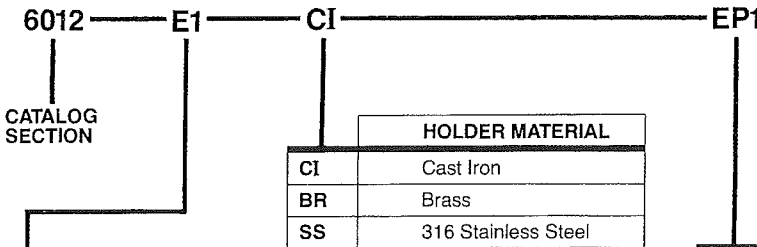
TYPE E-2 & E-3
Gasket Cover
1/2" Pipe Tap 3.65
2" Pipe Thrd. 1.00



TYPE E-1 Holder
Gasket Cover
1/2" Pipe Tap 3.65
1" Pipe Thrd. 1.00



TYPE E-4 TO E-7
Cover Gasket
3/4" Pipe Tap 3.93
3" Pipe Thrd. 1.25



HOLDER MATERIAL	
CI	Cast Iron
BR	Brass
SS	316 Stainless Steel

	No. of Electrodes	Mounting Thread	Shipping Weight
E1	1	1" Pipe	1.5 LB
E2	2	2" Pipe	3.0 LB
E3	3	2" Pipe	3.0 LB
E4	4	3" Pipe	5.0 LB
E5	5	3" Pipe	5.0 LB
E6	6	3" Pipe	6.0 LB
E7	7	3" Pipe	6.0 LB

NOTE — Price of electrode holder includes a standard electrode plug as indicated in the chart to the right.

ELECTRODE PLUGS FOR CAST IRON & BRASS HOLDERS	
EP1	Furnished as standard equipment. Suitable for most applications. Up to 250 psi at 212°F (100°C). Up to 700°F (371°C) at 100 psi.
EP2	Recommended for saturated steam applications Up to 250 psi at 400°F (204°C) Up to 550°F (288°C) at 200 psi
EP3	Recommended for low pressure applications that are subject to some vibration or shock. Also for long electrode rods.
EP4	Used only for non pressure applications and only for wire suspension electrodes where the standard plug and wire connector arrangement is not suitable.
X	Holder furnished without electrode plugs but with the specified number of 3/8-18 Dryseal pipe thread holes for the plugs.

CROSS REFERENCE TO OLD BIW PART NUMBERS

HOLDER TYPE	NUMBER OF ELECTRODES	MATERIALS AND PART NUMBERS		
		BRASS	CAST IRON	316 STAINLESS
E-1	1	12-048000	12-048100	12-048200
E-2	2	12-048400	12-048500	12-048600
E-3	3	12-048800	12-048900	12-049000
E-4	4	12-049200	12-049300	12-049400
E-5	5	12-049600	12-049700	12-049800
E-6	6	12-050000	12-050100	12-050200
E-7	7	12-050400	12-050500	12-050600

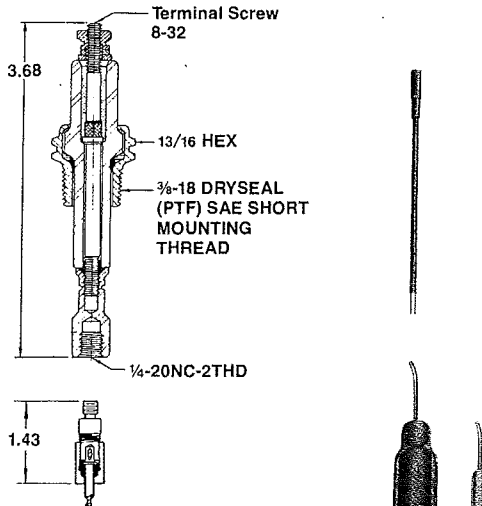
ELECTRODE PLUGS FOR 316 SS HOLDERS	
EP2	Furnished as standard equipment. Suitable for many corrosive applications, and for saturated steam up to 400 psi and 445°F (230°C).
EP3	Recommended for low pressure applications that are subject to some vibration or shock. Also for long electrode rods.
X	Holder furnished without electrode plugs but with the specified number of 3/8-18 Dryseal pipe thread holes for the plugs.

Ametek offers a wide selection of BIW electrode plugs for mounting electrodes in tanks and vessels. They are designed to meet a variety of environmental conditions to provide a strong mechanical mounting and to insulate the electrode from the tank structure; they also have a secure method to make the electrode lead wire connection to the BIW control-relay. Details of a typical pressure tight electrode plug are shown in the diagram at the right. The central rod is sealed to the inside of the ceramic insulator glass, and the stainless steel bushing is sealed to the outside of the insulator with copper and/or Teflon® gaskets.

Electrode plugs are included in the Type E electrode holders. Also, these plugs are often used on OEM applications to provide reliable and inexpensive individual mounting of electrodes in special situations.

Other types of electrode plug and electrode assemblies are described in this Section. Should none of our standard items be suitable, special electrodes can be made to order to meet specific operating and/or installation conditions.

ELECTRODE PLUGS



WIRE CONNECTOR
One required with each wire suspension electrode.

SOLID ROD ELECTRODES

Type A rod is used for short electrodes and is available in a variety of corrosion-resisting materials.

WIRE SUSPENSION ELECTRODES

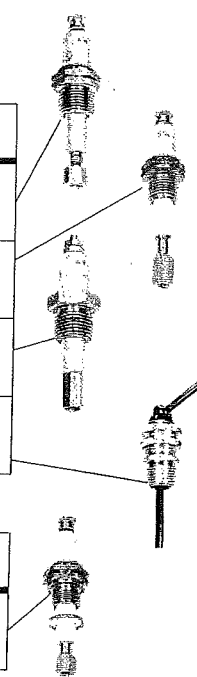
These electrodes are used for long lengths and where space prevents use of rod electrodes.

6012 — EP2

CATALOG SECTION

These plugs can be installed in Type E Holders.

	OLD PART NUMBER	MOUNTING THREAD	CONSTRUCTION MATERIALS	PRESSURE/TEMPERATURE RATINGS
EP1	04-126400	3/8-18 Dryseal (PTF) SAE Short Pipe Thread	Shell-303SS Insulator-Ceramic Seal-Glass & Copper	2000 psi Up to 200°F (93°C) 700°F (371°C) Up to 100 psi
EP2	04-141300	3/8-18 Dryseal (PTF) SAE Short Pipe Thread	Shell-303SS Insulator-Ceramic Seal-Glass & Teflon®	2000 psi Up to 200°F (93°C) 550°F (288°C) Up to 200 psi Saturated Steam Up to 450 psi
EP3	04-149600	3/8-18 Dryseal (PTF) SAE Short Pipe Thread	Shell-303SS Insulator-Teflon® Seal-Teflon®	500 psi Up to 270°F (132°C) 300°F (149°C) Up to 250 psi Saturated Steam Up to 125 psi
EP4	12-066400	3/8-18 NPT Pipe Thread	Shell-Aluminum Cord Grip with Neoprene Packing	For Nonpressure Use Up to 190°F (88°C) (Only for wire suspension electrodes)



6012 — EP5

CATALOG SECTION

This plug is for separate mounting only.

	OLD PART NUMBER	MOUNTING THREAD	CONSTRUCTION MATERIALS	PRESSURE/TEMPERATURE RATINGS
EP5	04-134900	3/8-24 NEF-3 Machine Thread	Shell-303SS Insulator-Ceramic Seal-Glass & Copper	2000 psi Up to 200°F (93°C) 700°F (371°C) Up to 100 psi

ELECTRODE PLUG COVER

Catalog Number	Old Part No.	Description
6012-PC	04-129000	Designed to insulate and protect the electrode lead connection. Made of neoprene and fits all standard plugs.



SOLID ROD ELECTRODES

ELECTRODE MATERIAL SELECTION

The chart below suggests electrode material for some typical liquids. Electrode corrosion is difficult to predict because the rate of corrosion is effected by many factors such as: concentration, temperature and impurities. Therefore, this information should be used as a general guide, and the final choice should be determined from actual application conditions based on previous experience and knowledge.

ELECTRODE MATERIAL	TYPICAL LIQUID TO BE CONTROLLED
Brass	Soft Water, Condensate
316 SS	Water, Sewage, Beer, Alcohol, Food Products, Chemicals, Many Mild Acids
Monel	Acetic Acid, Sea Water
Nickel	Boric Acid, Calcium Hydroxide
Carpenter 20	Sulphuric Acid, Alum Solutions
Hastelloy B	Hydrochloric Acid
Hastelloy C	Hydrofluoric Acid
Titanium	Phosphoric Acid, Brine Ferric Chloride, Hot Nitric Acid
Carbon Tip	Hydrochloric Acid Carbonated Water

Contact Factory for specific recommendations.



6012E4 HOLDER



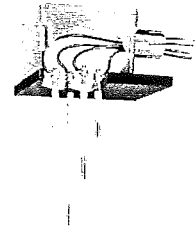
6013 ELECTRODE PLUG



AE-2 HOLDER



6012-CE2 HOLDER TYPE B RODS



6012-FR-56 HOLDER TYPE D RODS

TYPE A RODS

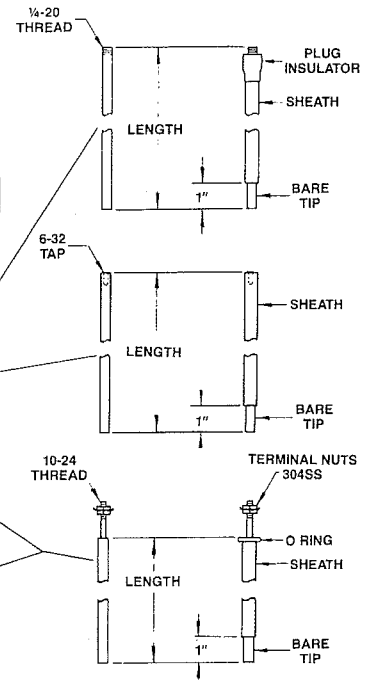
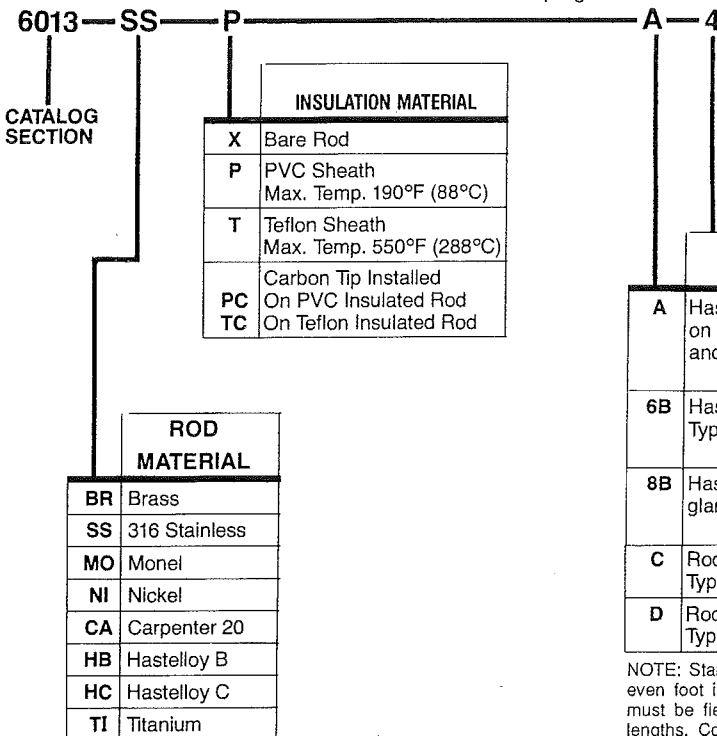
Solid rod electrodes are generally used where relatively short lengths of 6 feet or less are required. Care should be exercised when specifying lengths over 6 feet. Longer rods and those installed horizontally should be insulated. After cutting insulated rods, strip about 1 inch of insulation off lower end to expose the bare rod.

TYPE A electrode rods are 1/4" diameter and have 1/4-20 thread for use with electrode plugs, and Type E and Type AE-2 electrode holders. A boot made of the sheath material is furnished to protect and insulate the lower side of the electrode plug.

TYPE B electrode rods are 1/4" diameter and are tapped 6-32 for use only on Type CE-2 and CE-3 holders. Lengths over 12 inch should be insulated and lengths over 30 inch not recommended.

TYPE C electrode rods are 1/4" diameter and have the upper end machined with a shoulder and 10-24 thread to assemble into Type KF holders.

TYPE D electrode rods are 1/4" diameter are similar to Type C except the upper end is machined to a length that fits only Type FR holders.



NOTE: Standard stock rods are furnished in even foot increments up to 10 ft. long, and must be field cut for intermediate operating lengths. Contact Factory for pricing on other lengths and materials.