

7774 Series Stainless Steel Insertion/Removal Assembly for Use with Durafet[®] II pH Electrodes

70-82-25-88

Rev. 0

5/99

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About This Document

Abstract

This manual covers the 7774-46, -90, -95, -96, and -97 Stainless Steel Insertion/Removal Assembly for Durafet II Electrodes.

There are additional 7774 options with CPVC Plastic wetted materials covered by Manual 70-82-25-89.

Revision Notes

The following list provides notes concerning all revisions of this document.

| Rev. ID | Date | Notes |
|---------|------|--|
| 0 | 5/99 | This document is the initial release of this manual. The manual was previously released as 70-82-24-44 Rev. 0. |

References

Honeywell Documents

The following list identifies all Honeywell documents that may be sources of reference for the material discussed in this publication.

| Document Title | Honeywell ID # |
|-------------------------|----------------------------|
| pH Meredian Electrodes | 70-82-25-69 |
| Preamplifier Modules | 70-82-25-36 |
| Durafet II Electrodes | 70-82-25-87 |
| 080239 Preamplifier Kit | 70-82-25-64 |
| Adapter Modules | 70-82-25-13 70-82-25-65 |

Contacts

The following list identifies important contacts within Honeywell.

| Organization | Telephone | Address |
|---------------|---|--|
| Honeywell TAC | 1-800-423-9883 Voice | 1100 Virginia Drive Fort Washington, PA 19038 |
| Web Address | http://www.IAC.Honeywell.com | |

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1. Introduction

1.1 Overview

About Insertion/Removal Assemblies

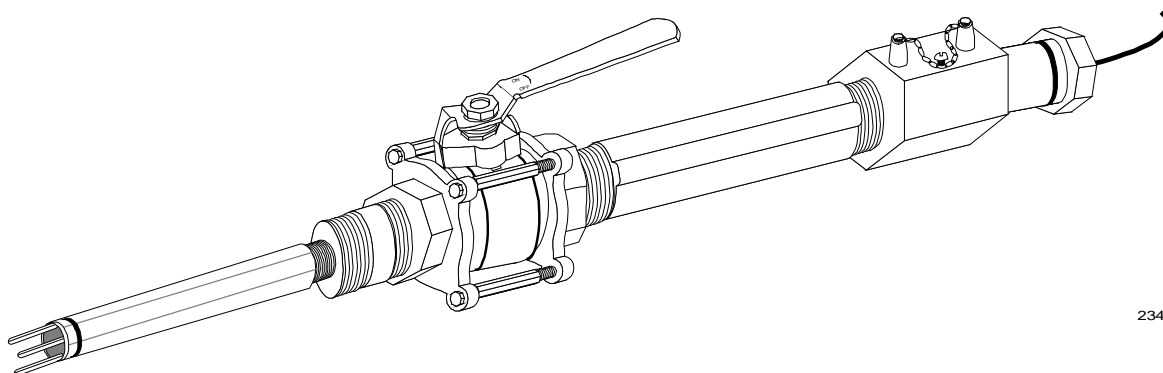
The following Stainless Steel Insertion/Removal Assemblies are designed for use with either the Meredian or Durafet II Electrode in a pipeline or closed vessel.

- Model 7774-30, -40, 60, and -80 for Meredian Electrode
- Model 7774-46, 90, 95, 96 and 97 for Durafet II Electrode

You can remove the electrode for inspection and maintenance without shutting down the system and releasing the pressure. Figure 1-1 shows a typical assembly consisting of the electrode, valve assembly, and support tube assembly.

ATTENTION

Pressure must not exceed the maximum specifications for the electrode supplied and must withstand reduction to 344.8 kPa (50 psig) during insertion and removal of the electrode.



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Figure 1-1—7774 Stainless Steel Insertion/Removal Assembly

Refer to the Specifications in this section for pressure and temperature data and information on wetted materials.

1.2 Description

Assembly items

Catalog number suffix designations and components are described in the back of this section. The assembly usually includes these items:

| Item | Durafet II Electrode | See |
|---|----------------------|------------|
| Valve Assembly 31741450 | X | Figure 1-2 |
| Support Tube Assembly 31086303-002 | X | Figure 2-2 |
| Preamplifier module per Catalog Table I | X | |
| Electrode per Catalog Table II | X | |

The Valve Assembly 31741450, Figure 1-2, consists of a 1-1/4" valve, a 1-1/4" NPT mounting nipple, a special valve nipple, and a stuffing box, Figure 2-9, all made of 316 stainless steel. Support Tube assembly 31086303-002, Figure 2-2, which slides into the stuffing box, is fitted on one end with a cable clamp. The support tube assembly is also made of 316 stainless steel.

The user must install the electrode in the support tube assembly.

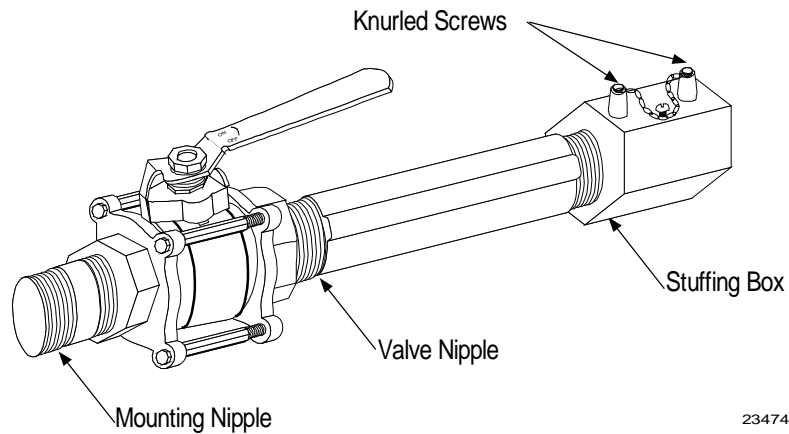


Figure 1-2—Valve Assembly 31741450

Document references

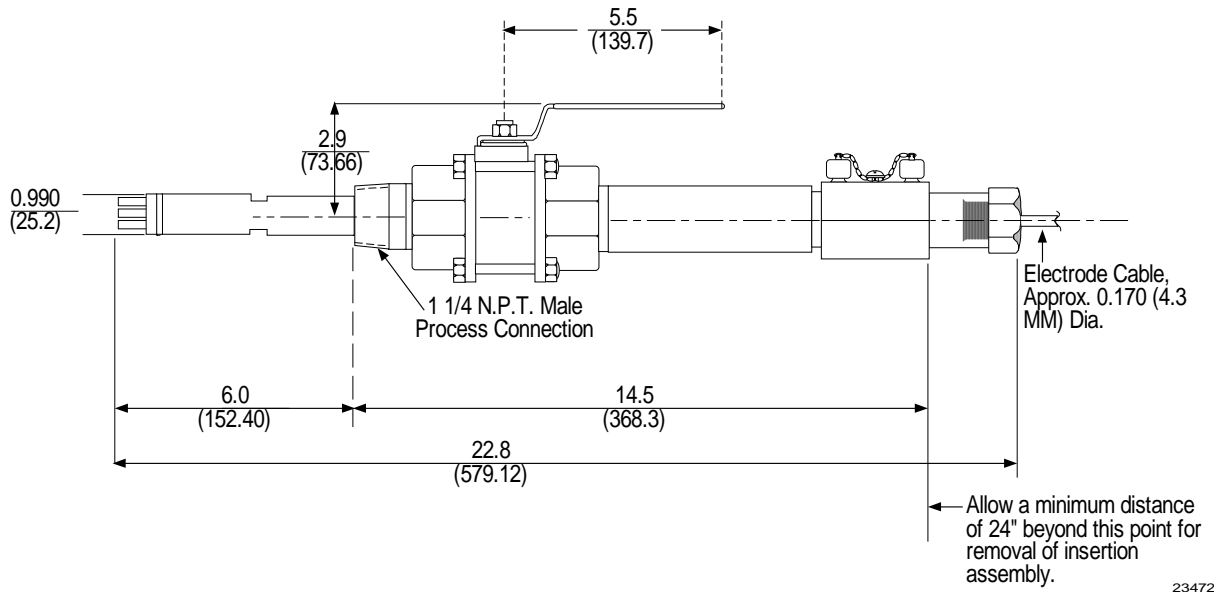
Durafet II electrodes are described in Directions 70-82-25-87.

1.3 Specifications

Operation/Physical Data

The following table lists general operation and physical data for reference.

| Parameter | Description |
|--|---|
| Pressure and Temperature Limits | 689.5 kPa at 60°C (100 psig at 140°F) 344.8 kPa at 100°C (50 psig at 212°F) 206.8 kPa at 130°C (30 psig at 266°F) |
| Maximum Pressure for Insertion or Removal | 344.8 kPa (50 psig) Temperature limits may depend on electrode selection. |
| Preamplifier Module 31079288 Temperature Limits | –40 to 70°C (–40 to 158°F) |
| Mounting | 1-1/4 " NPT male process connection. See Figure 1-3. |
| Mounting Position | Electrode mounting can be used in any position. |
| Insertion Depth | 6" (152mm) into process. |
| Overall Length | 16.8" (427mm) measured from process connection. See Figure 1-3. |
| Allowance Required for Electrode Removal | Approximately 38.5" (978mm) measured from the process connection. See Figure 1-3. |
| Electrical Classification | Suitable for use in Class I, Division 2, Groups B, C, D, locations. FM approved intrinsically safe for Class I, Division 1, Groups A, B, C, or D. When used with 7079 Series Transmitters and suitable barriers. FM approval does not include Table I = 30, 46, 80, 95, or 96. |
| Wetted Materials | Durafet II Electrode: Ryton body, EPM, ceramic junction, silicon. Mounting: 316 Stainless Steel, Teflon and Vitonseals. |
| Electrode Size | Mounting is designed for 15.32" (12mm) diameter electrode, 6" (152mm) long. |
| Housing Size | Electrode housing is 6" (152mm) long. Its outside diameter is 1" (25.4mm). |
| Weight | Approximately 11lb (5kg) including electrode for Insertion/removal Assembly. Approximately 4lb (1.8kg) Preamplifier Module, Table I = 95 or 96. Approximately 1.5lb (0.7kg) Preamplifier Module, Table I = 90. Approximately 1lb (0.5 kg) Preamplifier Module, Table I = 97. |



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Figure 1-3—Outline & Dimensions Drawing—Catalog 7774 Stainless Steel Insertion/Removal Assembly.

1.4 Model Selection Guide

Key Number

Table I

| Electrode Type, Instrument, Preamp (316 Stainless Steel Assembly) | | | |
|--|---|--|----|
| Durafet II pH Electrode | 9782P-03, 7082-4_, 76 Analyzers (w/internal Durafet II preamp) | None (direct electrode to instrument connection) | 46 |
| | Other Honeywell Analyzers or Transmitters (w/o internal preamp) | 31079288 (includes a 31079236 preamp and a 31075723 20ft quick disconnect cable) | 90 |
| | pH Analyzers or Transmitters Other than Honeywell | 31079290 Interface Module - 120 VAC Power | 95 |
| | | 31084755 Interface Module - 240 VAC Power | 96 |
| | | 31075773 Interface Module - Batter Powered - CE Compliant | 97 |

Table II

| Electrode Type, Leads, Temp. Range, Part Number | | | | |
|--|--------------|--------------------|--------------------|------------------|
| Electrode Type | Leads | Temp. Range | Part Number | Selection |
| Durafet II | 12' Integral | -10 to 110°C | 51204976-003 | 61 |
| | 20' Integral | -10 to 110°C | 51204976-004 | 62 |
| | 50' Integral | -10 to 110°C | 51204976-005 | 63 |

Table III - Options

| | | |
|---------|---|---|
| Tagging | None | 0 |
| | Linen Customer I.D. Tag, limit to 3 lines, 22 spaces per line | L |
| | Stainless Steel Customer I.D. Tag, limit to 3 lines, 22 spaces per line | S |

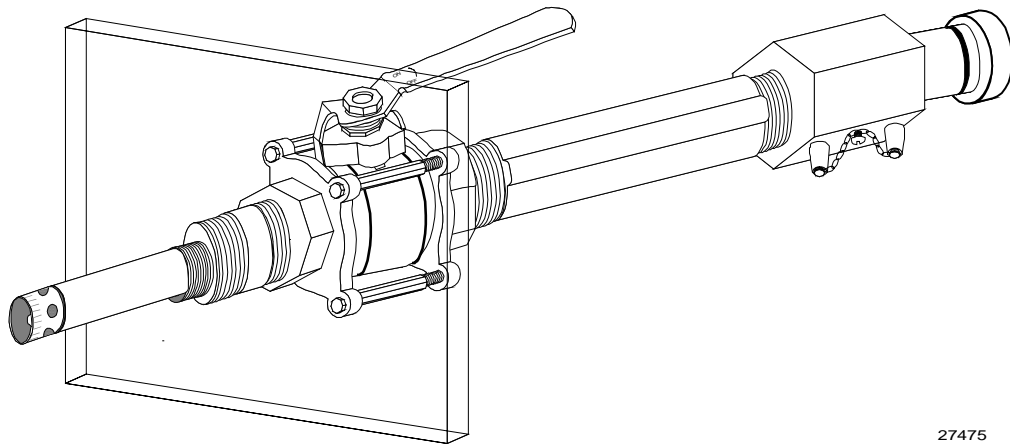
2. Durafet II Electrode Applications

2.1 Mounting the Valve Assembly

Procedure

Secure the valve assembly to the process solution container by means of either a threaded hole (1-1/4" NPT) or by welding the valve nipple in place.

Use a good thread compound for all threaded joints. Allow mounting clearance given in Specifications.



27475

Figure 2-1—Final Position of Inserted Tube in Pressurized Vessel

2.2 Preparing the Support Tube Assembly

Removing O-ring retainer

Refer to Figure 2-2. The O-ring retainer is used as a safety stop when removing and inserting an electrode for maintenance or replacement. The O-ring and retainer must be removed from the support tube assembly to insert the assembly into the stuffing box as outlined in the following procedure.

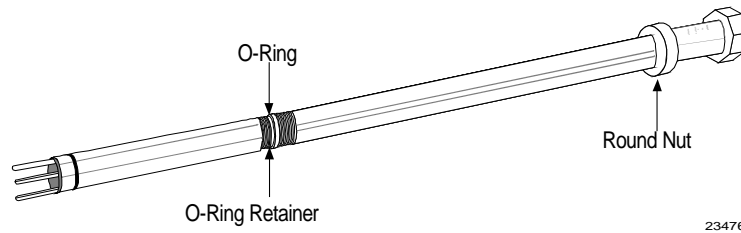


Figure 2-2— Support Tube Assembly 31086303

Refer to Figure 2-3 and remove the O-ring and retainer from the support tube assembly as shown. Lay them aside.

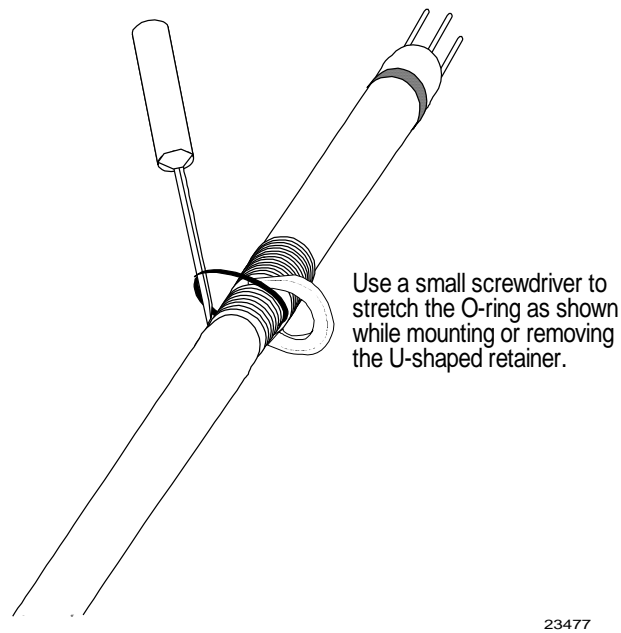


Figure 2-3— Mounting/Removing O-ring and Retainer

Inserting support tube assembly

Use the procedure in Table 2-1 to insert the support tube assembly into the stuffing box.

Table 2-1 Inserting Support Tube Assembly into Stuffing Box

| Step | Action |
|------|---|
| 1 | Refer to Figure 1-2. From the stuffing box, remove the knurled screw that is closest to the valve and unscrew the stuffing box from the valve assembly. Remove the plastic washer, metal gland ring and compression seal from the stuffing box and lay them aside. |
| 2 | Remove the other knurled screw from the stuffing box. |
| 3 | Hold the stuffing box in your left hand so that you can read the embossed instructions found on one face of the box. |
| 4 | Hold the support tube assembly in your right hand with the electrode housing pointing to the left. |
| 5 | Slide the support tube assembly into the stuffing box as far as it will go (until the round nut on the right side of the tube is seated into the stuffing box). |
| 6 | Replace the knurled screw on the right end of the stuffing box. |
| 7 | Replace the compression seal on the support tube with the beveled edge facing the stuffing box. Then slip the gland ring and plastic washer (in that order) over the left end of the support tube assembly and push them and the compression seal into the left side of the stuffing box. |
| 8 | Refer to Figure Figure 2-3 and replace the O-ring and retainer. |

2.3 Installing the Electrode

Preparing electrode

Refer to the directions supplied with the electrode and follow the instructions for preparing the electrode.

Installing electrode

Use the procedure in Table 2-2 to install the electrode.

Table 2-2 Installing the Electrode

| Step | Action |
|------|---|
| 1 | Apply a thin film of silicone grease (supplied) about one inch wide near the sensor end of the electrode body. Start the film about 3/4" from end of body. <i>Caution:</i> Keep silicone grease away from the ISFET sensor and the reference junction of the electrode. |
| 2 | Remove the compression nut, dual O-ring and long plastic c-shaped spacer from the support tube assembly. Remove the cap nut, thin plastic washer and cable grip grommet from the other end of the support tube assembly. |
| 3 | Feed the electrode and integral cable through the cap nut and washer. (See section 2-4.) |
| 4 | Position the c-shaped spacer against the electrode connector so that the cable lays in the spacer groove. Note that the cable grip grommet is slit along its axis. Spread the grommet and apply a thin film of silicone grease to the inside hole diameter. |

Table 2-2 Installing the Electrode, Continued

| Step | Action |
|------|---|
| 5 | Slip the grommet around the cable with the smaller end facing the c-shaped spacer. Push the grommet up to and snugly against the spacer. |
| 6 | Insert the electrode, cable, spacer and grommet into the support tube. Seat the grommet firmly and slide the washer and cap nut into place. Hand-tighten the cap nut. |
| 7 | Slide the dual O-ring over the exposed electrode tip and replace the compression nut hand-tight only. <i>DO NOT OVERTIGHTEN</i> . This action positions the dual O-ring on the electrode body and completes the seal between the electrode and the housing. |
| 8 | The support tube assembly is ready for insertion into the process solution through the valve assembly |

ATTENTION

When properly assembled, the electrode tip must NOT extend beyond the compression nut. If it does, remove the compression nut, dual O-ring and cap nut. Withdraw the assembly and check that the c-shaped spacer is properly seated between grommet and the electrode connector.

2.4 Connecting Cables

About the cables

Durafet II electrodes for the 7774 Stainless Steel Insertion/Removal assembly have integral and a rectangular plastic 8-pine keyed push-on connector on the other end. The rectangular connector mates with the preamplifier. See Installation Wiring Diagram, Figure 2-7.

Ensure that the mating half of the connector located on the input side of the preamplifier inside the plastic housing is kept clean and dry.

These areas may be cleaned by spraying with a good quality electronic cleaner/degreaser or by wiping clean with a cotton swab moistened with isopropyl alcohol. Allow connectors to dry completely before making connections.

2.5 Inserting the Tube Assembly

Procedure

Use the procedure in Table 2-3 to insert the tube assembly into a valve assembly used in a standard application.

WARNING

Do not loosen cap nut while assembly is pressurized

Table 2-3 Inserting Tube Assembly in Valve Assembly

| Step | Action |
|------|---|
| 1 | Remove both knurled screws from the stuffing box and slide the support tube assembly into the valve nipple. Ensure that the electrode tip does not touch the ball of the valve during insertion. |
| 2 | Screw the stuffing box onto the nipple and replace and tighten the forward knurled screw. Hand-tighten the stuffing box so that the tube slides stiffly when pushed. |
| 3 | Reduce the process pressure to 344.8 kPa (50 psig) or less. Open the valve. |
| 4 | Push the support tube assembly all the way in. Replace and tighten the back knurled screw on the stuffing box. Note that the shoulder of the tube must be seated in the stuffing box before the knurled screw is tightened. |
| 5 | Hand-tighten the stuffing box, and return the process to normal operating pressure. |

2.6 Removing the Tube Assembly

Procedure

Use the procedure in Table 2-4 to remove the tube assembly from the valve assembly.

WARNING

Do not stand behind the valve assembly when performing Step 2 in this procedure.

Do not loosen cap nut while assembly is pressurized.

Table 2-4 Removing Tube Assembly from Valve Assembly

| Step | Action |
|------|---|
| 1 | Reduce process pressure to 344.8 kPa (50 psig) or less. |
| 2 | Grasp the exposed end of the tube assembly in one hand and remove the back knurled screw from the stuffing box. Loosen the stuffing box slightly. |
| 3 | Allow the tube assembly to be forced out slowly to its stop. Close the ball valve. |
| 4 | Remove the other knurled screw. Unscrew the stuffing box and withdraw the tube assembly. |

2.7 Making Pre-amplifier Connections

General reference data

The 31079288 preamplifier module is constructed of corrosion-resistant glass-filled polypropylene. It is rated NEMA 4X corrosion-resistant. The preamplifier module does not require line voltage power; the dc operating voltages are supplied from the pH instrument through the preamplifier cable.

CAUTION

Do not over-tighten any fitting into the preamplifier module housing.

The preamplifier module contains a replaceable preamplifier assembly which is sealed against humidity in a metal can. The can has quick disconnects on one end for the output cable and one the opposite end for the Durafet II electrode cable.

If Table I of the 7774 Mounting is 46, the Durafet II pH electrode cable is connected directly to the pH Analyzer.

If Table I of the 7774 Mounting is 90, see *Installing and connecting a 31079288 preamplifier module* below.

If Table I of the 7774 is 95, 96 or 97, the Durafet II pH electrode cable is connected to the adapter module. Output from the adapter module is fed to pH analyzers which are manufactured by vendors other than us. For installation instructions, refer to our Manual p/n 70-82-25-13 or 70-82-25-65 supplied with Adapter modules.

Installing and connecting a 31079288 preamplifier module

Refer to Figure 2-4 and Figure 2-5 to remove both end caps from the module and make input and output connections.

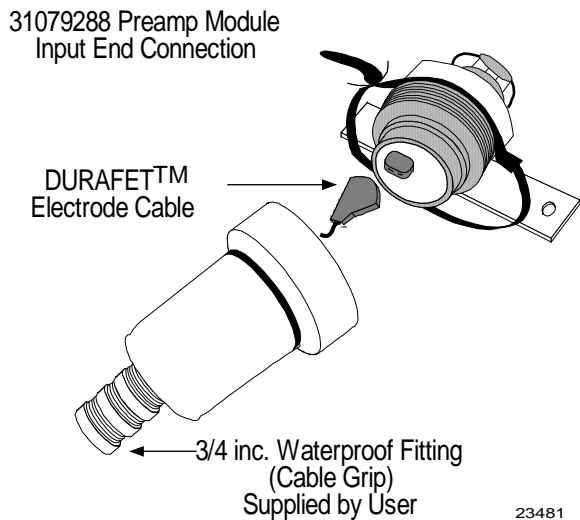


Figure 2-4— 31079288 Preamplifier Module, Input End Removed.

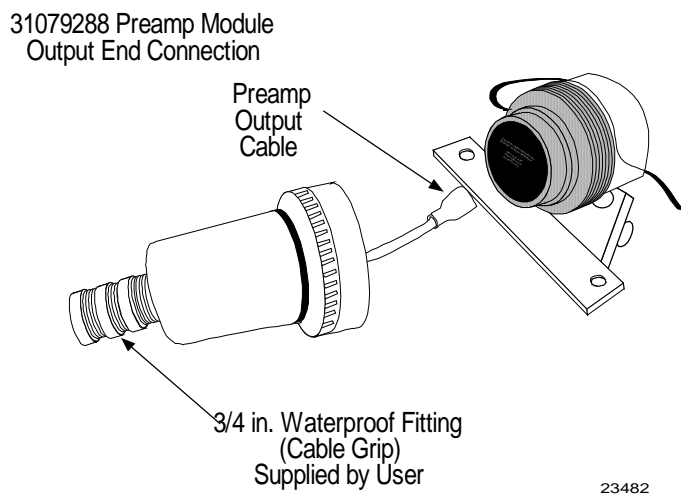


Figure 2-5— 31079288 Preamplifier Module, Output End Cap Removed.

Connecting cable to an external preamplifier

When the Model 31079288 external preamplifier is specified, an output cable is supplied which has a polarized rectangular connector and rubber protective boot on one end. Use the procedure in Table 2-5 to connect the cable to the preamplifier.

ATTENTION

You must prepare the other end of this cable to accommodate the termination at the measuring instrument or junction box to which the cable will be attached. See Figure 2-7.

Table 2-5 Connecting Cable to an External Preamplifier

| Step | Action |
|------|---|
| 1 | Connect the polarized connector to the output side of the preamplifier, as illustrated in Figure 2-5. |
| 2 | When the connector is firmly in place -- DO NOT FORCE IT ON -- slide the protective boot firmly over the connector. |
| 3 | Replace the end caps, ensuring that the O-rings are lightly lubricated with silicone grease, our part 31090011. Leave a few inches of cable slack in the preamplifier module. |

ATTENTION

The covers are slotted and the holder is keyed. A white mark on the covers and holder threads indicate the location of the slots and keys. When replacing a cover:

- Align its mark with the mark on the holder threads before tightening the connecting ring.
- With the O-ring in place, hold the cover firmly in position while tightening the connecting ring.

2.8 Preamplifier Mounting Considerations

General guidelines

- When mounting the preamplifier module, allow enough slack between the electrode and the preamplifier to permit removal of the electrode for maintenance.
- The module is designed for surface mounting. Figure 2-6 illustrates the dimensions required for mounting the module. A mounting bracket constructed of nickel-plated steel and a plastic quick release locking strap are provided to facilitate mounting.

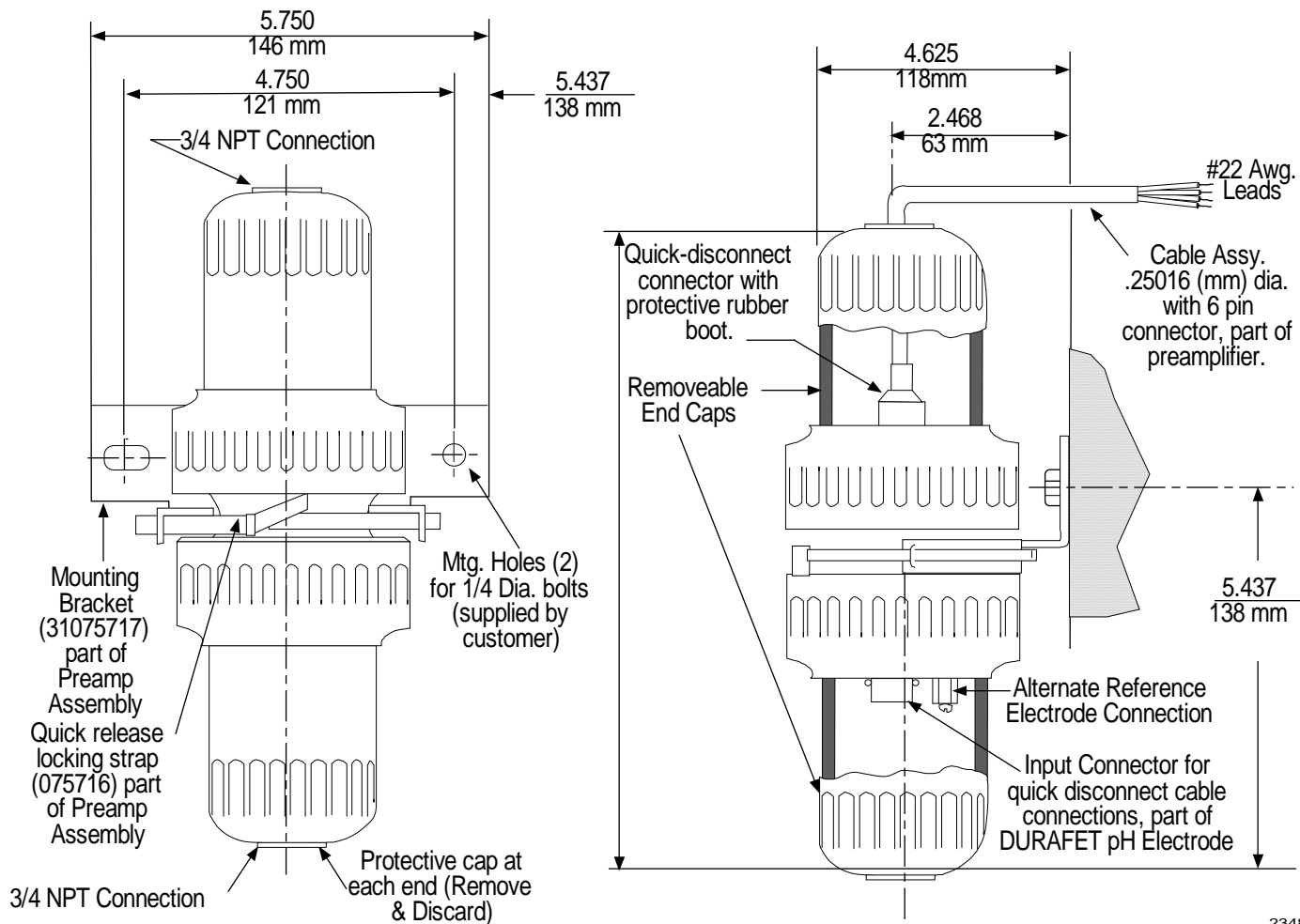
ATTENTION

The module can be mounted in any convenient position in addition to the vertical mounting shown in Figure 2-6. Do not attach the preamp module to the 31741450 Removal Device.

- Do not mount the module where the temperature limits will exceed the Specifications outlined at the beginning of this manual.
- Do not mount the module over or near sources of corrosive vapors which could enter the preamplifier module during installation or maintenance.

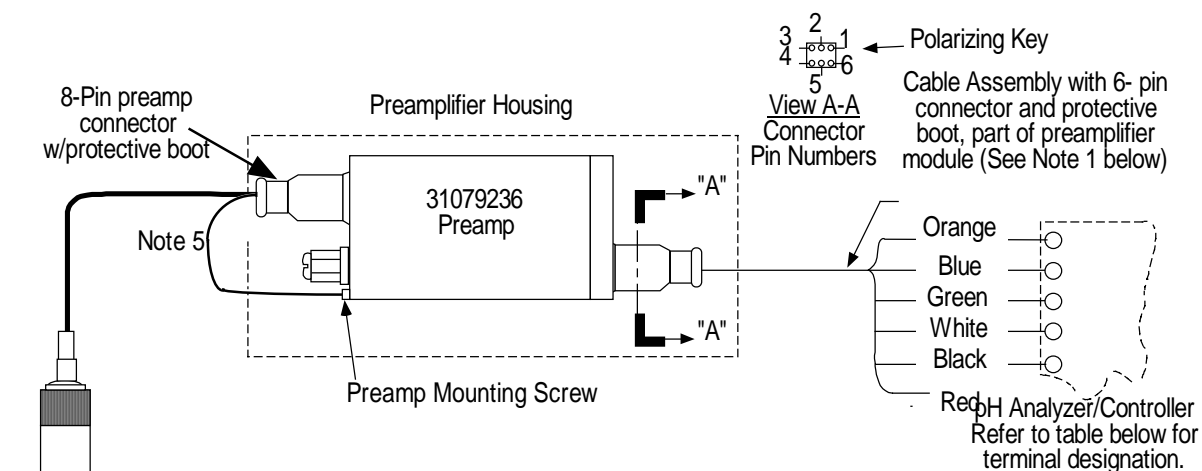
General guidelines, continued

- All electrical connections to the preamplifier must be completed and the 3/4" NPT connections must be sealed before exposing the unit to corrosive or wet conditions.
- Before installing cabling, remove the grommets from the cable grips and cut one side along the axis to permit cable insertion.
- Do not use the preamplifier module mounting bracket to support anything but the 31079288 Module. the plastic locking strap is designed to secure the preamplifier module only.



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Figure 2-6—Outline and Dimensions Drawing, 31079288 Preamplifier Module.



Instrument Terminal Designations

| Conn. Pin No. | Wire Color | Instrument | | | |
|---------------|------------|---|--|----------------------------|--------------|
| | | -10 -11 *Cat. 7082-12 -20 -21 and 9782 | Cat. 7084- <input type="checkbox"/> | Cat. 7075-3 Cat. 7076-3 | Cat. 7079-11 |
| 1 | Orange | PA | 16 | TA | TA |
| 2 | Blue | V+ | 13 | +16V | +5V |
| 3 | Green | V- | 14 | -16V | -5V |
| 4 | White | SC | 17 | SC | SC |
| 5 | Black | SC (Note 2 & 4) | 18 (Note 3 & 4) | PC | PC |
| 6 | Red | Not Used | Not Used | Not Used | Not Used |

Notes:

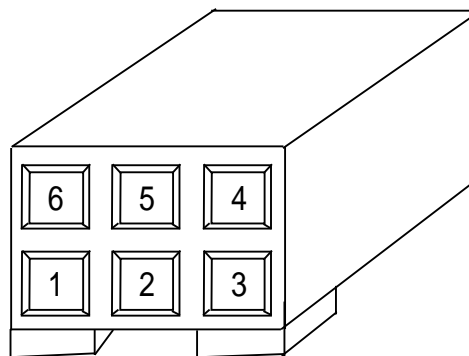
1. When distance from preamplifier module to instrument is greater than 200 ft., use 6 conductor #22 Awg cable (L&N P/N 834088 or Equiv.) and junction box (L&N P/N 316230).
2. Connect 31233300 resistor (8550 Ω) between terminals "TH" & "SC" of Cat. 7082 or 9782.
3. Connect 31233300 resistor (8550 Ω) between terminals "15" & "18" of Cat. 7084.
4. A 31233300 resistor is supplied loose with every preamp.
5. Connect yellow shield wire on the electrode cable to the preamp mounting screw adjacent to standoff connector.

* If 9782 utilizes an internal preamplifier kit, follow directions in manual 278578 supplied with kit.

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Figure 2-7—Installation Diagram for Durafet II pH Electrode and Remote Preamp.

| Pin# | Signal | Conductor Cable |
|------|-----------------|-----------------|
| 1 | Output | Orange |
| 2* | Positive Supply | Blue |
| 3* | Negative Supply | Green |
| 4 | Signal common | White |
| 5 | Power Common | Black |
| 6 | No Connection | Red |



***Caution:** If the power supply is not connected exactly as defined in this figure, irreparable damage will result

Figure 2-8—Output Cable Connector, Preamplifier End.

2.9 Making Final Electrical Connections

Background

If the pH Analyzer is within 61.0 m (200ft) of the preamp module, Honeywell output Cables can be used for the final connection. If the distance is greater than 61.0 m (200 ft.), use 6 conductor cable 31834088 and Junction Box 31316260.

Cable connections

Figure 2-8 shows the rectangular connector of the output Cable and the electrical function of each colored conductor in the cable.

CAUTION

Do not reverse the blue and green wires (dc voltage supply). The preamplifier circuit will be damaged.

Check the pH Analyzer directions for the correct connections before attempting to power up the measuring system. If the extension cable is used beyond 20 feet, carefully note conductor colors and assure that connections are made as indicated in Figure 2-8.

Refer to Figure 2-10 for an illustration of the junction box (our Part #31316260). Note that the junction box can be wall-mounted for easy access for cleaning, electrode maintenance or preamplifier replacement.

2.10 Calibrating pH Measurement System

Periodic calibration

For calibration procedures, refer to the instrument manual for the instrument you are using with the electrode. The calibration interval depends upon the operating conditions. It is recommended that when an electrode is used for the first time, it should be recalibrated at relatively short intervals. With experience, the interval may be lengthened.

Reference document

See our Manual 70-82-25-87 (supplied with the Durafet II Electrode at shipment) for precautions, cleaning, and storage information.

2.11 Precautions for High Humidity and Condensation Areas

Background

The Durafet II preamplifier is suitable as shipped for relative humidity conditions up to about 85-90%, non-condensing. If condensation occurs, *water must be prevented from accumulating in the 6 and 8-pin connectors*; otherwise, erratic performance and damage to the connectors may result.

For the Durafet II Connectors, use silicone grease to provide protection from condensation. Before applying silicone grease, be sure that the connectors are clean and dry. After treatment with the silicone grease, it is important to keep foreign material out of the connectors. Please handle all treated parts with care.

Applying silicone grease

Use our part 31090011, a 0.3-oz. Tube of High Vacuum Silicone Grease, Dow Corning High Vacuum Silicone® Grease or Dow Corning #4® Silicone Electrical Insulating Compound may also be used. Use the procedure in Table 2-6 to apply the silicone grease:

Table 2-6 Applying Silicone Grease

| Step | Action |
|------|--|
| 1 | Hold the opened end of the silicone grease tube against the pins of one of the two male connectors of the preamp, and carefully squeeze enough grease into the connector to slightly overfill it. Repeat the procedure for the second male connector, completely filling it. |
| 2 | Hold the tube of silicone grease tightly against one of the rectangular female cable connectors and squeeze grease through the small openings until it is forced out of the small slots in the sides of the connector body. Repeat the process over the rest of the face of the female connector. Initially, you will see gold-plated connector contacts through these slots. By filling these spaces with silicone grease, you will prevent the accumulation of condensed water in these spaces. Perform the same procedure on the second rectangular cable in the same manner. |
| 3 | Firmly insert the cable connectors into their mates on the preamplifier can. Press firmly for full insertion and hold for several seconds to allow excess silicone grease and entrapped air to escape. Wipe off all excess grease from the external surfaces of the assembly. |

Maintaining Silicone Grease-Protected Connectors

When disconnected, the connectors that have been protected with silicone grease must be protected from dirt and dust. A small additional application of the grease is recommended before they are reconnected. If there is any uncertainty about cleanliness, we suggest that the connectors be thoroughly blown clean with compressed air or inert gas that is water and oil free. Then repeat the application of silicone grease as described in Table 2-6.

2.12 Cleaning the Electrode

Reference document

Refer to Durafet II Electrode Directions 70-82-25-87 for electrode cleaning instructions. Thoroughly rinse the electrode with water after any type of cleaning.

General cleaning procedure

Use the procedure in Table 2-7 to routinely inspect and clean the electrode.

Table 2-7 Electrode Inspection and Cleaning

| Step | Action |
|------|---|
| 1 | It may not be necessary to pull the electrode out of its housing for routine inspection and cleaning, but it is desirable to remove the compression nut periodically, and rinse off solids. |
| 2 | Remove and examine the dual O-ring to make certain no salts or granular materials are present. If necessary, clean the O-ring and O-ring seat, and coat the surfaces with silicone grease. Keep the silicone grease away from the sensor chip and reference junction. |
| 3 | To return the electrode to the housing, slip the O-ring onto the electrode, gently push the electrode and pull the cable to return the electrode to seat it in the housing. |
| 4 | Replace the compression nut and tighten it firmly by hand. |

Other maintenance

In addition to cleaning, other electrode maintenance includes electrode performance checks and treatment for a clogged or severely dry electrode; see Instruction manual p/n 70-82-25-87.

2.13 Stopping Leakage from the Tube Assembly

Background

DO NOT use excessive force when tightening the stuffing box as this may distort the end of the valve nipple on which the stuffing box is mounted. Leakage which cannot be stopped by normal tightening of the stuffing box may be due to slight distortion of the mating surfaces of the nipple and gland ring. Clean these surfaces to improve the sliding fit and eliminate distortion and resulting leaks.

Cleaning mating surfaces

Use the procedure in Table 2-8 to clean the mating surfaces between the gland ring and the nipple.

Table 2-8 Cleaning the Mating surfaces

| Step | Action |
|------|--|
| 1 | Remove the stuffing box and take out the gland ring. |
| 2 | First clean the surfaces with a flat fine sandstone, changing the direction of stroke about 15 degrees per stroke to keep the surfaces parallel. |
| 3 | Replace the Viton washer (Figure 2-9, Detail 13). |

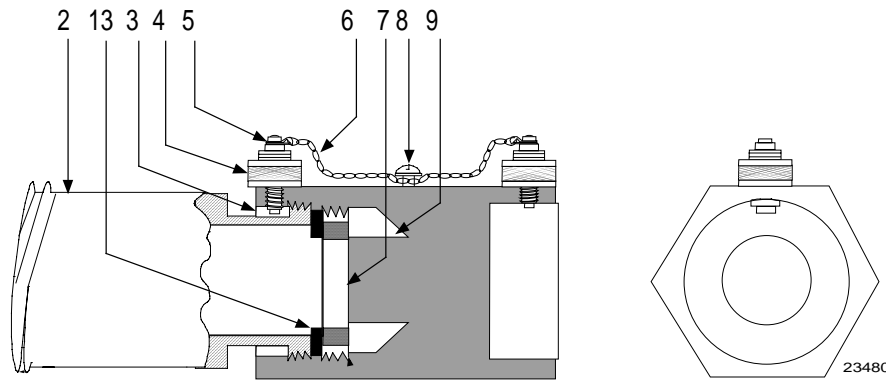


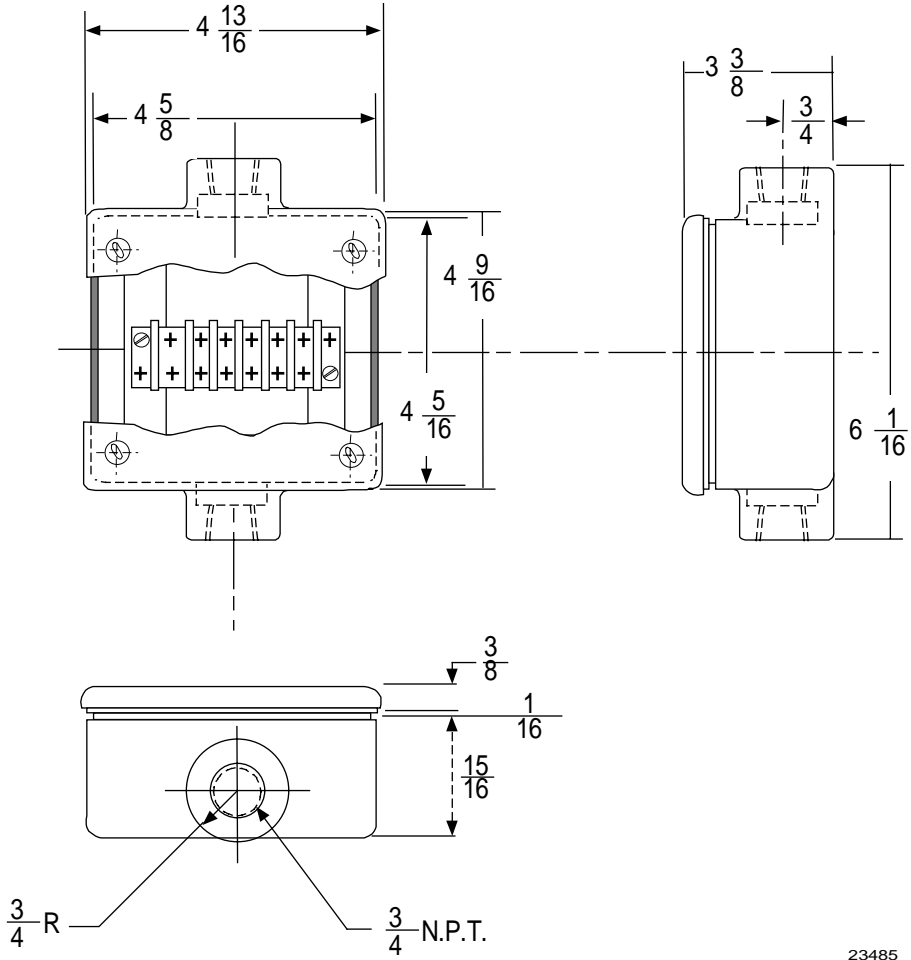
Figure 2-9—Details of the Stuffing Box

Detail reference for Figure 2-9

| Detail Number | Part Number | Description |
|---------------|-------------|--------------------------|
| 2 | 31076635 | Valve nipple |
| 3 | 31500697 | Stuffing box |
| 4 | 31004205 | Screw |
| 5 | 31001216 | Washer |
| 6 | 31500464 | Chain |
| 7 | 31001215 | Gland ring |
| 8 | 31004464 | Screw, 3/16, 6-32 Fil HB |
| 9 | 31071494 | Compression seal |
| 13 | 31301277 | Viton washer |

Handling leakage from tube assembly

If leakage is traced to support tube assembly, replace dual O-ring seal at electrode end, and/or re-apply Teflon pipe sealant to 1/2" NPT connector thread and retighten with wrench. Note orientation of O-ring groove on connector per Figure 2-3. Always be certain the c-shaped spacer is properly in place during assembly to position electrode in housing. *If spacer is missing, electrode may be pushed into support tube by process pressure and leakage will result.*



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Figure 2-10—Outline and Dimensions for 31316260 Junction Box.

2.14 Replacement Parts

31079288 Preamplifier (Figure 2-11)

| Detail | Part Number | Description |
|--------|-------------|--|
| 1 | 31075700 | Cover |
| 2 | 31175701 | Connecting Ring |
| 3 | 31175702 | Housing |
| 4 | 31075703 | O-ring |
| 5 | 31095234 | Plug Protector |
| 6 | 31041395 | Screw Terminal Clamp |
| 7 | 31075717 | Support Bracket |
| 8 | 31075716 | Sta-Strap Fastener |
| 9 | 31075723 | Cable Assy., Preamp Output |
| 10 | 31075719 | Caution Tag |
| 13 | 31055836 | O-ring |
| 15 | 31079236 | Preamplifier |
| --- | 31074354 | Cable Grip, 3/4 NPT Aluminum, 1/4-in. diameter cable |
| --- | 31084760 | Cable Grip, 3/4 NPT Aluminum, 1/8-in. diameter cable |

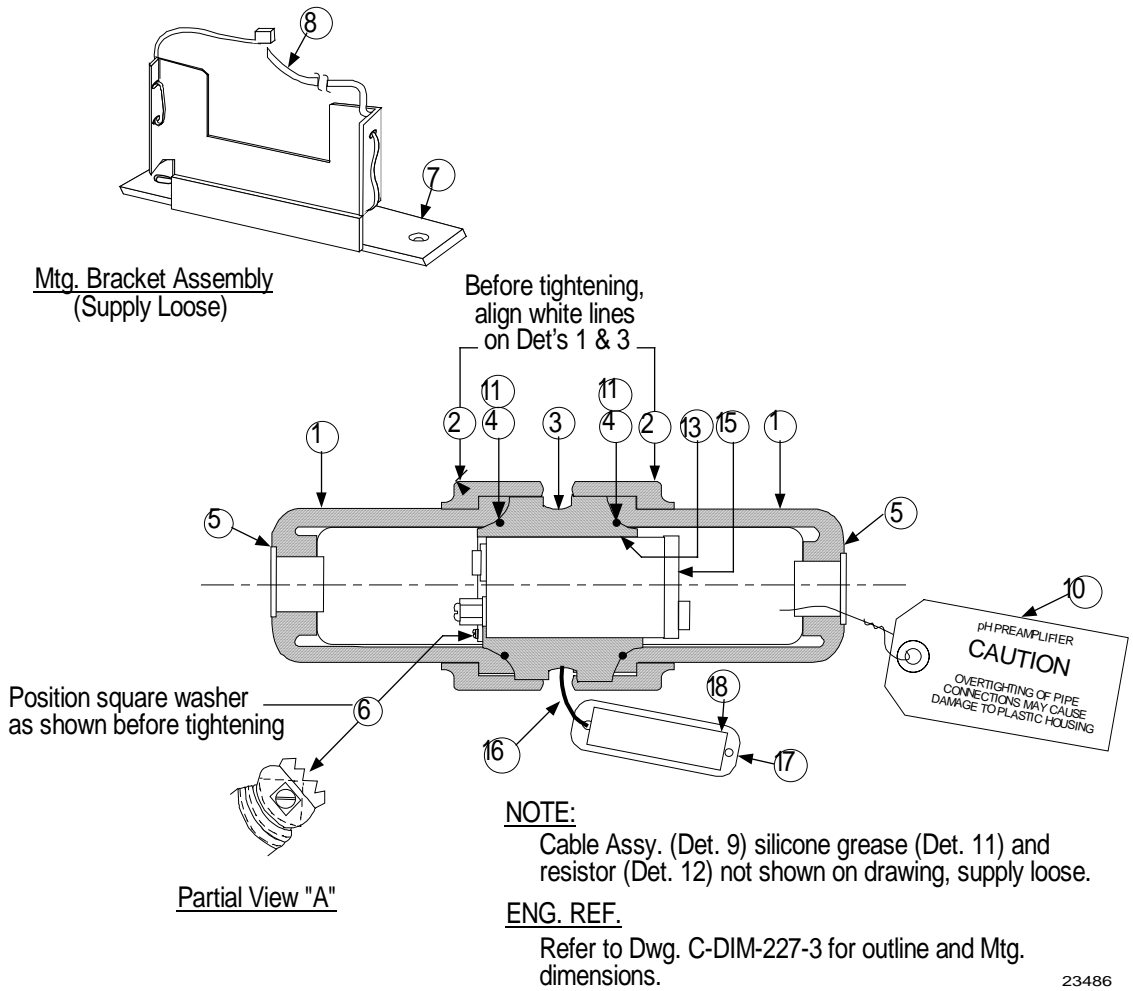


Figure 2-11—Component Parts of Preamplifier 31079288.

Durafet II electrodes and Stainless Steel Insertion/Removal Assembly

| Part Number | Description |
|--|---|
| 51204976-003 | Durafet II pH Electrodes 12' Integral cable |
| 51204976-004 | 20' Integral cable |
| 51204976-005 | 50' Integral cable |
| 31741450 31020953 31020868 | Valve Assembly (Fig. 1-3) Mounting Nipple Valve only |
| 31086303-002 31086305-002 31008721-002 31003239 31003618 31086304 31082150 31082053 31027158 31001823 | Support Tube Assembly Includes: C-shaped Spacer Cable Grip Grommet, 1/8"-diam. cable Cap Nut Compression Nut, 316 SS Electrode Housing O-ring for 003618 Nut O-ring for Retainer Retainer Washer |
| 31082124 | Dual O-ring, Viton A, Brown |
| 31082152 | Dual O-ring, Ethylene-propylene rubber, Black |

Accessories and Supplies for Durafet II Electrode Options

| Part Number | Description |
|---|--|
| Standard Buffered Reference Solutions, 1 pint | |
| 31103001 | 4.01 pH at 25°C |
| 31103002 | 6.86 pH at 25°C |
| 31103003 | 9.18 pH at 25°C |
| Miscellaneous | |
| Preamp-to-instrument Cables | |
| 31075723 | 20' Cable |
| 51309677-001 | 50' Cable |
| 51309677-002 | 100' Cable |
| 51309677-003 | 200' Cable |
| 31316260 | Junction Box (for preamp-to-instrument distances greater than 200 ft.) |
| 31833070 | 6-Conductor Cable for Junction Box-to-Instrument Connection |
| 31090011 | Silicone Grease, 0.3-oz. tube |
| 31083053 | Thread Sealant |

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