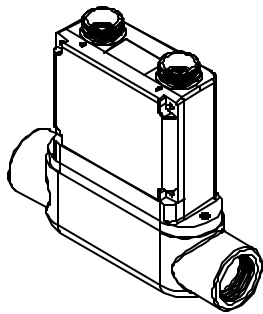


# 200135 Dual Seal Leak flexiTIM™ Module and 200136 Seal Leak Detection Transducer

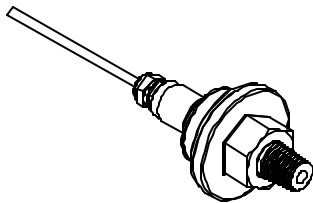
Bently Nevada™ Asset Condition Monitoring

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## Description



The Seal Leak flexiTIM System consists of the 200136 Seal Leak Detection Transducer and the 200135 Dual Seal Leak flexiTIM Module. The Seal Leak Detection Transducer utilizes a sensor detecting the position of a diaphragm to measure the gauge pressure. The Dual Seal Leak flexiTIM Module provides two channels of static pressure, conditions the signals and sends the information into the Trendmaster® 2000 system to display the pressure readings. It is designed as a scanning system as part of the Trendmaster 2000 system to measure pressure changes primarily near the seals on tandem-seal or dual seal pumps. It can also be used on single seal pumps if there is an expected pressure increase near the sensor of greater than 5% of full scale in the event of a seal failure.



The Seal Leak Detection Transducer has a robust design to increase its survivability in harsh environments. It is able to withstand an occasional 10.3 bar (150 psig) water jet at the rear of the sensor and on the transducer cable. Cable seal adapters or conduit fittings protect the connectors to enable the entire system to withstand condensing humidity. The system is designed to meet IP66 for moisture ingress. The Transducer is also designed to withstand extremely high pressures caused by valve or seal failures without any degradation of the diaphragm, returning to normal operation when the pressure is within the Transducer's specified range.

The Seal Leak Detection Transducer is a robust, trending seal leak detection system. For higher accuracy pressure applications please refer to the 200132 Pressure Transducer and the associated datasheet.

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## Specifications

### Seal Leak flexiTIM System

Operation outside the specified limits will result in false or inaccurate readings

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#### Electrical & Mechanical Characteristics

##### Measurement

###### Range:

0 to 2.1 bar (0 to 30 psig)

##### Full Scale

###### Output:

2320 mV/bar (160 mV/psig)  $\pm$  10% (includes linearity, interchangeability, and repeatability error sources)

##### Span:

$\pm$ 0.11% F.S./ $^{\circ}$ C ( $\pm$ 0.06% F.S./ $^{\circ}$ F) over the compensated temperature range 0  $^{\circ}$ C to 45  $^{\circ}$ C (32  $^{\circ}$ F to 113  $^{\circ}$ F)

$\pm$ 0.18% F.S./  $^{\circ}$ C ( $\pm$ 0.10% F.S./ $^{\circ}$ F) over the extended temperature range -18  $^{\circ}$ C to 85  $^{\circ}$ C (0  $^{\circ}$ F to 185  $^{\circ}$ F)

##### Zero:

Initial System zero @ 25  $^{\circ}$ C (77  $^{\circ}$ F)

Nominal: 0 PSI  $\pm$  3 PSI

Maximum: 0 PSI  $\pm$  4.5 PSI

$\pm$ 0.12% F.S./ $^{\circ}$ C ( $\pm$ 0.07% F.S./ $^{\circ}$ F) as temperature varies from 25  $^{\circ}$ C (77  $^{\circ}$ F) over the extended temperature range.

##### Resolution:

0.007 bar (0.1 psig)

##### Proof Pressure

###### Rating:

20.7 bar (300 psig)

##### Burst Pressure

###### Rating:

27.6 bar (400 psig)

##### Classification:

Complies with the European CE Mark

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## Environmental Limits

### Operating

#### Temperature:

-35  $^{\circ}$ C to 85  $^{\circ}$ C (-31  $^{\circ}$ F to 185  $^{\circ}$ F) for the flexiTIM module

See Environmental Limits for the Seal Leak Detection transducer

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## 200135 flexiTIM Module

### Electrical & Mechanical Characteristics

#### Housing

##### Material:

Polybutulene Terephthalate/

Polycarbonate 20% glass fiber blend.

##### Mass:

0.55 kg (1.2 lbm) not including fittings or conduit body

##### Dimensions:

See diagram

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## Environmental Limits

### Humidity:

100% condensing on exposed surfaces.

Condensation on rear plate of flexiTIM Module is not recommended.

### Enclosure:

Designed to meet IP66

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## Electromagnetic Compatibility

### Radiated

#### Emissions:

EN 55022 (1998), Class A.

### Electrostatic

#### Discharge:

EN 61000-4-2 (1995), Criteria A.

**Radiated  
Susceptibility:**

EN 61000-4-3 (1996), Criteria A.

**Conducted  
Susceptibility:**

ENV 50141 (1993), Criteria A.

**Electrical Fast  
Transient:**

EN 61000-4-4 (1995), Criteria A.

**Magnetic Field:**

EN 61000-4-8 (1994), Criteria A.

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**Hazardous Area Approvals**  
**CSA/NRTL/C**

*With Barriers*

Class I, Groups A, B, C and D

Class II, Groups E, F and G

Class III

T4 @ Ta = 100 °C

Enclosure Type 4

Class I, Groups A, B, C and D

Enclosure Type 3R

*Non-Incendive:*

Ex nA IIC

Class I, Zone 2

Class I, Div 2, Groups A,B,C,D

T4 @ Ta = 100 °C

Enclosure Type 4


*Certification  
Number*

CSA 1389797 (LR 26744-211)

**ATEX**

**Approval Option  
(02)**

**For Selected Ordering Options  
with ATEX/CSA agency  
approvals:**

 II 3/(3) G

EEx nCAL[L] IIC

T4 @ Ta = -20°C to +65°C

(-4°F to +150°F)

*Certification  
Number*

LCIE 04 ATEX 6161X

**Note:** When used with Internal Barrier I/O  
Module, refer to specification sheet  
141495-01 for approvals information.

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**200136 Transducer with integral cable**

**Electrical & Mechanical Characteristics**

**Span:**

±0.03% F.S./ °C (±0.02% F.S./°F)  
over the temperature range -7 °C  
to 93 °C

(20 °F to 200 °F) for wetted  
diaphragm

**Zero:**

±0.06% F.S./°C (±0.03% F.S./°F) as  
temperature varies from 25 °C (77  
°F) over -7 °C to 93 °C (20 °F to  
200 °F) for wetted diaphragm

**Transducer DC  
resistance:**

8.73 ± 0.70 ohms measured from  
center conductor to outer  
conductor

**Minimum Cable  
Bend Radius:**

25.4 mm (1 in)

**Cable Material:**

75 ohm triaxial, fluoroethylene  
propylene (FEP) insulated

**Tensile Strength  
(max rated):**

330 N (75 lbf) Transducer case to Transducer lead to extension cable connectors.

**Construction:**

3300 XL Probe viewing a 17-7 PH cond C stainless steel diaphragm, housed in a 304 stainless steel body.

**Connector:**

Gold plated brass nut, Gold plated Beryllium Copper body with PTFE dielectric insert

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**Environmental Limits**

**Humidity:**

100% condensing on exposed surfaces.  
Condensation on connector is not permitted.

**Enclosure:**

Designed to meet IP66

**Operating  
Temperature:**

Dependent upon ORing Material  
Fluorocarbon: -18 °C to 149 °C (0 °F to 300 °F)  
Ethylene Propylene: -18 °C to 121 °C (0 °F to 250 °F)

**Pressure Media:**

Fluids compatible with 17-7 PH cond C stainless steel, 304 stainless steel, and either Fluorocarbon or Ethylene Propylene, depending on ORing Material option (common applications shown below)

**Fluorocarbon:**

Molten sulfur, propane, ethane, naphtha, butylene, propylene, sulfuric acid, butane, fuel oil, natural gas, petroleum oil, and turbine oil

**Ethylene  
Propylene:**

Hydrogen sulfide, amine, caustic soda, MEA, ammonium hydroxide, carbon dioxide, chlorine, nitrogen, gaseous oxygen and steam

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**Ordering Information**

**200135 Dual Seal Leak flexiTIM module**

**(All conduit bodies have 1-inch hubs)**

**200135-AXX-BXX-CXX-DXX-EXX**

**A: Conduit body style**

- 0 0** No conduit body
- 0 1** Appleton® Style C body, Malleable Iron
- 0 2** Appleton® Style E body, Malleable Iron
- 0 3** Appleton® Style C body, Aluminum
- 0 4** Appleton® Style E body, Aluminum
- 0 5** Weatherproof housing mount

**B: Channel A Length and Measurement**

- 5 0** 5 Metre, 0 to 2.1 bar (0 to 30 psig)

**C: Channel B Length and Measurement**

- 5 0** 5 Metre, 0 to 2.1 bar (0 to 30 psig)

**D: Supplied Fitting Type**

**Note:** Choose identical fitting options for flexiTIM Module and Transducer. In order to protect the flexiTIM Module, choose Cable seal option unless conduit is run from the Transducer to the flexiTIM Module.

- 0 1** 2 Cable Seal Adapters
- 0 2** 2 Seal-Tite Conduit Adapters
- 0 3** 1 Conduit and 1 Cable Seal Adapter
- 0 4** 1 Cap and 1 Cable Seal Adapter
- 0 5** 1 Cap and 1 Conduit Adapter
- 0 6** 2 Caps

**E: Approvals**

- 0 0** CSA, Class 1 DIV 2, no barriers
- 0 5** Multi Approva
- Note:** Verify availability with your local Bently Nevada representative before ordering.

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**200136 Seal Leak Detection Transducer****200136-AXX-BXX-CXX-DXX-EXX**

- A:** Pressure  
    **0 3** 0 to 2.1 bar (0 to 30 psig)
- B:** Integral Cable Length  
    **5 0** 5 Metre
- C:** Front Mounting Thread  
    **0 1** ¼ NPT
- D:** O-Ring Material

**Note:** When ordering, careful consideration should be given to the type of O-ring specified. The O-ring must be compatible with the type of gas or fluid that the transducer will be exposed to in the pressure media. Contact your local Bently Nevada representative for additional assistance.

- 0 1** Fluorocarbon  
    **0 2** Ethylene Propylene

- E:** Supplied Fitting Option  
**Note:** Choose identical fitting options for flexiTIM Module and Transducer. In order to protect the flexiTIM Module, choose Cable seal option unless

conduit is run from the Transducer to the flexiTIM Module.

- 0 1** Cable Seal Without Armor  
**0 2** Seal-Tite Conduit  
**0 3** Cable Seal With Armor

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**Accessories**

- 126709-01 Trendmaster 2000 Installation Guide (flexiTIM installation guide is included)
- 137230-01 FlexiTIM installation guide
- 01620085 Extra terminal plugs for SPA line connection. Three terminal plugs provided with each flexiTIM module

# Graphs and Figures

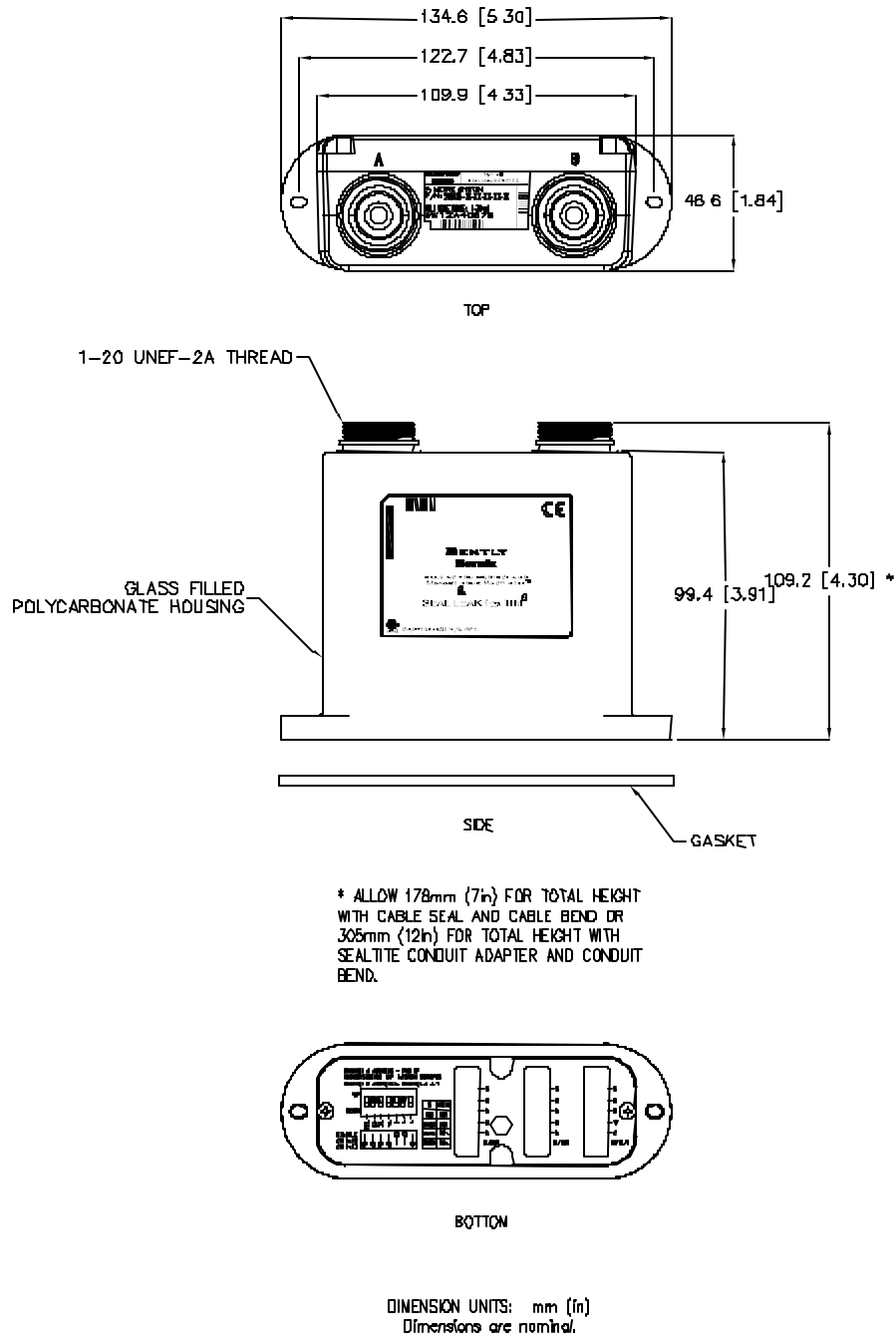
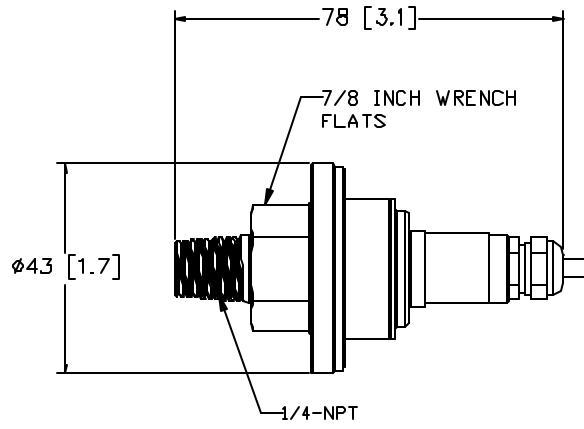
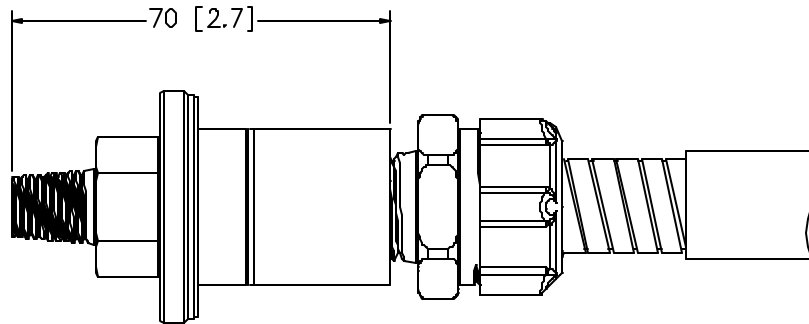


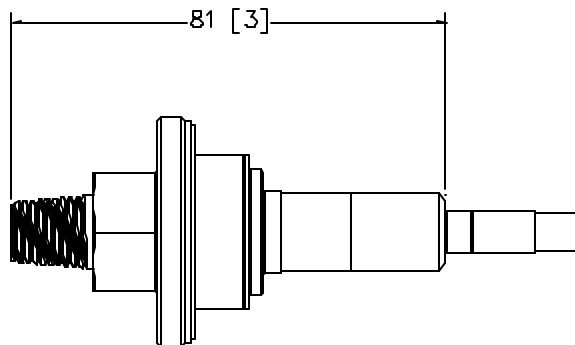
Figure 1: flexiTIM dimensional diagram



Cable Seal Without Armor Option

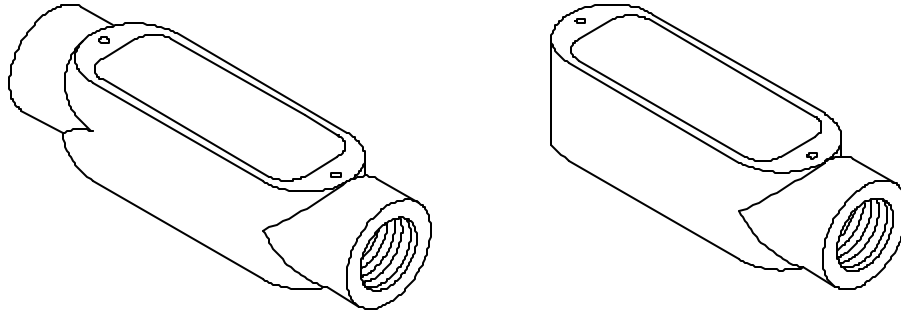


Seal-Tite Conduit Fitting Option



Cable Seal with Armor Option

**Figure 2: Transducer dimensional diagram**



Style C Conduit Body

Style E Conduit Body

Figure 3: Conduit Body Styles provided with the flexiTIM modules

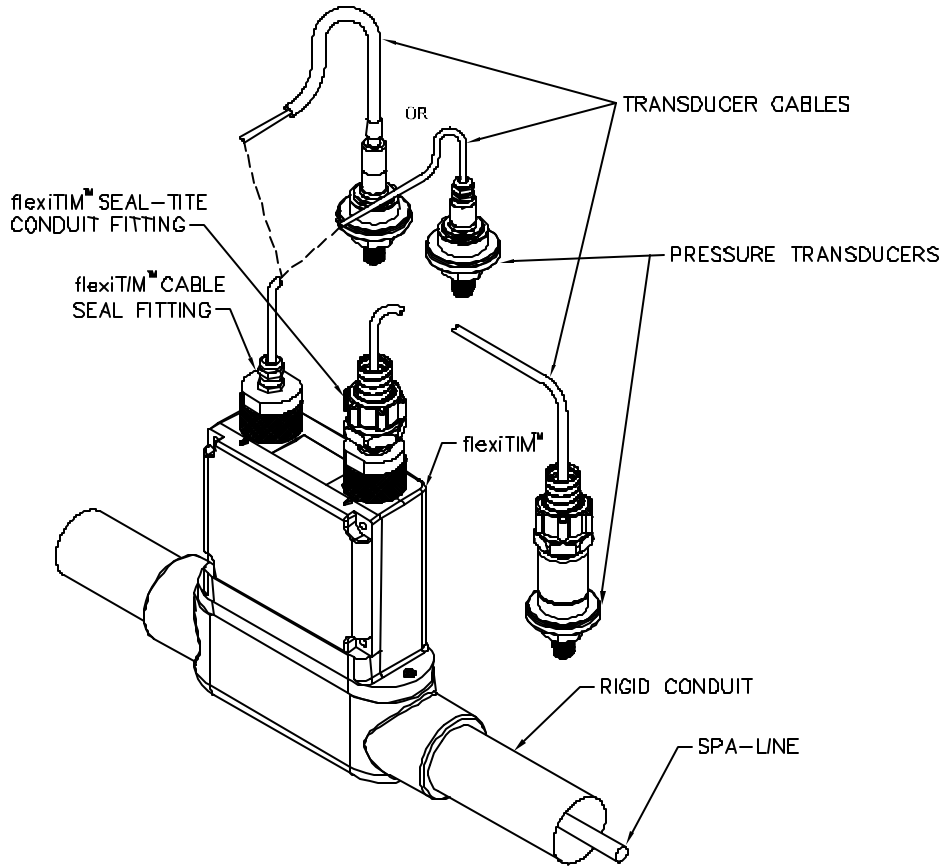
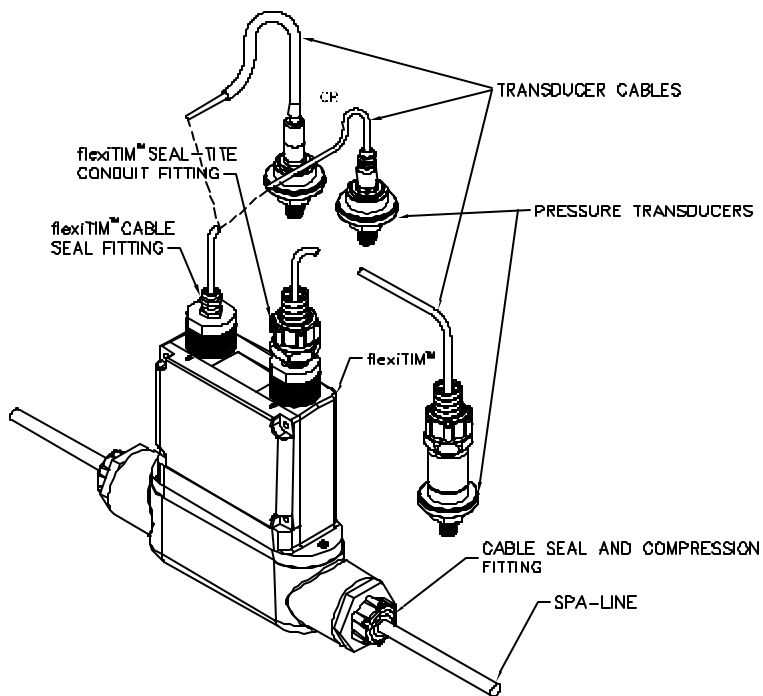
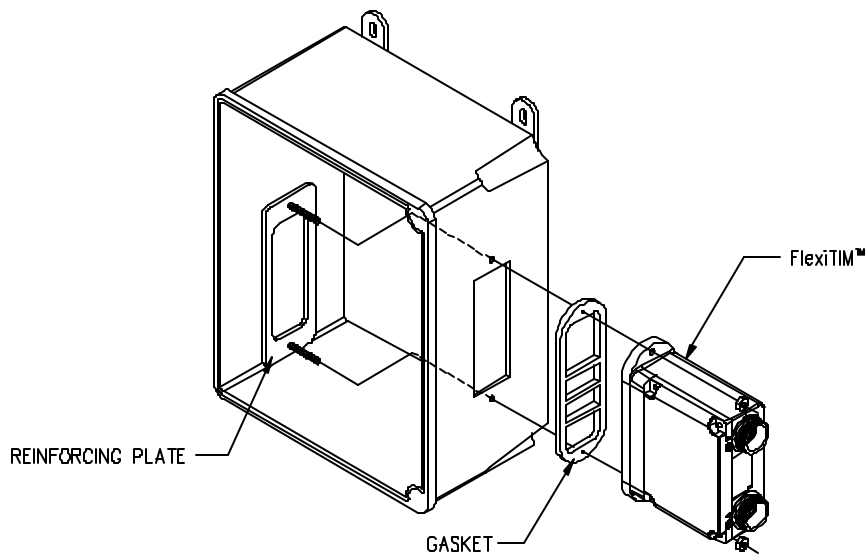


Figure 4: Installed flexiTIM module in Style C conduit body



**Figure 5: Installed flexiTIM module with cable seals**



**Figure 6: Installed flexiTIM module with weatherproof housing**

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