Standard sealing assemblies are generally available from stock. Unlimited custom designs are available for virtually any probe or wire sealing application.

For more information and for assistance with gland selection and application engineering advice, contact your Conax® Buffalo Technologies representative.

The standard ranges of sealing assemblies shown in this brochure can be customised through the use of other materials for gland bodies, the choice of special sealant materials and by specifying optional mounting and cap threads.

In addition to these variations we also design glands for non-threaded mounting. In most cases, our wide variety of off-the-shelf products can be adapted to meet the needs of your application.

For those truly unique requirements and for specific applications where standard glands, or modified versions, cannot meet customers’ specifications, our engineers are ready to put more than 50 years of experience to work designing the perfect solution for your application. Many of our custom designs are now industry standards. Our knowledgeable, experienced staff would welcome the opportunity to discuss your application and recommend solutions.

2300 Walden Avenue
Buffalo, New York 14225, USA
Fax: 1-716-684-7433 • Phone: 1-716-684-4500
Toll free in the USA at 1-800-223-2389

E-mail: conaxbuf@conaxbuffalo.com
Website: www.conaxbuffalo.com

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Grafoil is a registered trademark of the UCAR Carbon Company

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Catalog #722 EUR 11/05

CALL US OR VISIT OUR WEBSITE TO REQUEST OTHER CONAX BUFFALO CATALOGS:

THE EXPERIENCE AND INGENUITY TO MEET ANY APPLICATION REQUIREMENTS...

The complete guide to PRESSURE AND VACUUM SEALING ASSEMBLIES

Feedthrough glands for sensors, probes, electrodes, wires, wire bundles and optical fibres
Conax® Buffalo Technologies developed the "soft sealant" method of pressure/vacuum sealing in the 1950s and remains the leading manufacturer of this type of sealing device. This "soft sealant" technology maintains a secure seal on wires, probes and electrodes that must pass through a pressure or environmental boundary while still allowing ease of installation, adjustment and replacement of these elements.

Based on the compression of a sealant material within a fixed housing, the practical application of this technology relies on a thorough understanding of the behavior of sealant materials. Conax® Buffalo Technologies continues to research and perfect this knowledge as we expand our capabilities to meet the changing needs of industry worldwide.

Conax® Buffalo Technologies offers a complete range of pressure/vacuum sealing gland options to seal everything from a single element up to 240 wires through a single gland. We offer assemblies to accommodate bore sizes ranging from 1mm to 1-1/2" pipe, and pressures from vacuum to 2070 bar.

In the past 50 years, Conax® Buffalo Technologies has developed a reputation as the company to turn to for quality solutions to application needs. Our knowledgeable, multi-disciplinary sales and engineering staff welcomes the opportunity to discuss challenging applications and present solutions. From a simple "off-the-shelf" assembly to the most complicated design challenge, turn to Conax® Buffalo Technologies for quality, innovation, on-time delivery and commitment to customer satisfaction.
GLAND THREADS AND MATERIALS, PRESSURE AND VACUUM RATING GUIDES, GENERAL INFORMATION FOR SPECIFIERS

**GLAND BODY MATERIALS**
Conax pressure and vacuum sealing gland component parts are manufactured in the following standard materials:
- 316L stainless steel (1.4404 – SS2346 – Z 2 CN 18.09)
- 303 stainless steel (1.4305 – SS2346 – Z 2 CN 18.09)
- Monel 405
- Other stainless grades and Carbon (mild) steel (to special order).

Glands may also be specified with bodies manufactured in:
- Hastelloy C276
- Monel 405
- Other stainless grades and Carbon (mild) steel (to special order).

The following types of glands are available as standard items with 316SS bodies and are compliant with NACE (National Association for Corrosion Engineers) International Standard MR0175-95 for metallic materials in contact with sour environments:
- PG, MNC, MRR (body and seal 318L), EG, EBT, PL and TG.
- Caps and followers of all of these glands are 303SS or 318L.
- PG glands are available as standard items with Hastelloy C276 or Monel 405 bodies (caps and followers made in 303SS or 318L).

### PRESSURE RATINGS
Pressure rating guide values for glands with elements restrained by the sealant only. Higher pressures may possibly be attained by additional element restraint. Please consult Conax for advice.

Stub elements to close unused holes in sealants must be restrained to prevent ejection under pressure.

All pressure and vacuum ratings are determined at 20°C using elements appropriate to the gland type. Ratings may vary according to temperature and sealant material. The ratings shown in the specification tables are for guidance only. Please consult Conax for advice.

### EUROPEAN PRESSURE DIRECTIVE (PED)
Conax Buffalo sealing gland assemblies up to 25.4 mm bore conform to the Standard Engineering Practice (SEP) requirements of the European Pressure Equipment Directive (PED) 97/23/EC. Contact Conax Buffalo for further information.

Glands with Neoprene, Viton, Teflon and Grafoil sealants are rated for use with 6.76 x 10⁻⁷ Pa (6.67 x 10⁻⁹ mbar).

Glands with Lava sealants are generally not recommended for use in vacuum applications.

Pressure and vacuum sealing glands:
- Are used when probes and other elements must pass through a pressure or environmental boundary.
- Maintain the integrity of the seal at the point of feedthrough penetration.
- Employ “soft” sealant technology so that probes can be adjusted, removed and replaced yet are not deformed during installation.
- Satisfy pressure, vacuum and environmental sealing applications in many industries - from process control and power generation to semi-conductor fabrication and steel production.
- Frequently reduce the overall cost of ownership, when compared with other sealing techniques, through reductions in installation time, downtime and the cost of replacement parts.

There are 10 types of pressure and vacuum sealing glands. There are also a number of assemblies that are configured for specific applications, e.g., for multiple wire and optical fibre feedthroughs.

Specifications and ratings for each type are included in this catalogue.

Standard sealing assemblies are generally available from stock and unlimited custom designs are available for virtually any probe or wire sealing application.

A brief description and typical applications for each gland assembly is shown on the next pages to help you to pin-point the most suitable gland for your application.

For assistance with gland selection and for technical and application engineering advice contact your Conax® Buffalo Technologies representative or our offices in the USA, Postal, E-mail and web site addresses, phone and fax numbers are shown on the back cover.
PRODUCT DIRECTORY

Single sensor and probe glands for elements 1.0mm (0.040”) to 25.4mm (1.00”) dia. - PG glands - pages 10 & 11

Probe sealing glands are excellent for applications such as single, sheathed thermocouples, resistance thermometers, thermistor probes and other types of sensors. They are easily assembled by simply inserting the sensor element and torquing the cap.

Multiple sensor and probe glands for elements 0.5mm (0.020”) to 3.2mm (1.00”) dia. - MHC glands - pages 16 & 17.

MHC glands enable multiple thermocouples, thermistor probes, RTD’s, tubes or other sensors to pass through a single gland. Each probe is electrically isolated and its immersion length is adjustable. Elements may be individually adjusted, removed and replaced.

Metal to metal tube and probe sealing - MK glands - pages 12 & 13.

Single sensor and probe glands for elements 25.4mm (1.00”) to 44.45mm (1.75”) dia. - PG glands - pages 10 & 11

Probe sealing glands are excellent for applications such as single, sheathed thermocouples, resistance thermometers, thermistor probes and other types of sensors. They are easily assembled by simply inserting the sensor element and torquing the flange bolts.

Multiple sensor and probe glands, for non-standard sizes and custom configurations - MHM glands - pages 18 & 19

MHM glands can often be used when other types of probe glands are not suitable - they can be customised to accommodate non-standard sizes and a mixture of element sizes, for special hole patterns and for a higher density of elements than can be accommodated by other types of sealing assemblies.

Mk Midlock Glands seal a single tube or probe. Featuring a metal-to-metal seal rather than our standard soft sealant technology, MK glands are used where a joint must be opened and resealed in the same setting. Their unique design forms the seal well within the body housing to provide superior performance in high vibration applications.

Single electrode with ceramic insulators - EG glands; and with Teflon insulator/sealant - EGT glands - pages 14 & 15.

These single conductor sealing glands are used for high voltage and/or high current feedthroughs to vacuum chambers, autoclaves, transformers, motor enclosures, reactor vessels and environmental chambers.

EG glands are available with a choice of sealants and have ceramic insulators. Max.rating 2kV/400A.

EGT glands employ a single-piece, Teflon, combined insulator/sealant component to surround the electrode. Max.rating 8kV/525A.

Copper, Nickel or Stainless Steel electrodes may be specified.

Single and multiple sensor glands with split internal components - PG5, PG6 & DSPG glands - pages 26 & 27.

These glands are used when the elements to be sealed can pass through the gland body but not through the internal components. Their process ends may be of a larger diameter than at the sealing point, there may be connectors to pass through the gland, elements may be long and difficult to handle, or, there are other installation constraints.

Insulated wire sealing - Pt. glands - pages 20 & 21

Bearing sensor wire seals - BSWS - page 25

High density, mechanically sealed, wire feedthroughs using single or multiple probe glands - HD - pages 30 & 31

Fibre Optic seal assemblies for sealing on optical fibre cables - FSA - pages 29 & 29

Bare wire sealing and insulated wire sealing - TG glands - pages 22 to 24.

TGF glands seal multiple bare wires in a range of wire sizes. They can be used for solid bare wire transducers such as thermocouples, strain-gauges, thermistors, resistance element leads and low voltage-low current supply and signal wires to instrumentation.

The same glands can also be specified as complete assemblies, ready for installation, with fiberglass insulated thermocouple wire for applications reaching up to 42°C.

The same glands can also be specified as complete assemblies, ready for installation, with 24 AWG size Teflon insulated thermocouple material or copper wires. Applications for this variant include sealing of wires exiting compressor bearing housings, pressure vessels and instruments.

FSA optical fibre sealing assemblies enable a range of sizes of fibre optic cable to pass through environmental boundaries. Fibres are housed in individual, protective stainless steel tube seals. These may be supplied as complete integral assemblies, with connectors if required, in standard pressure and vacuum sealing glands.

These feedthrough assemblies comprise a high-density, wire feedthrough mounted in a sealing gland. A Teflon-lined, stainless steel tube is swaged over 12, 24, 40 or 60, solid, Teflon-coated, copper and/or thermocouple material wires to make the continuous wire feedthrough for thermocouples, RTD’s and low-voltage instrumentation.
TUBE OR PROBE SEALING - PG GLANDS

- SEALS A SINGLE ELEMENT - USUALLY A TUBE, PROBE OR SENSOR
- FOR GAS OR LIQUID APPLICATIONS
- PRESSURE: Vacuum to 690 bar
- TEMPERATURE: -240°C to +870°C
- FIELD ADJUSTABLE
- REPLACEABLE SEALANT FOR REPEATED USE OF FITTING
- STAINLESS STEEL BODY, CAP AND FOLLOWER
- SIMPLE ASSEMBLY - INSERT ELEMENT, TORQUE CAP

Glands with type B’ cap have a threaded extension on the cap for a conduit connection. The thread is the same size as the gland mounting thread.

PG glands are designed for sealing a single element, usually a tube or probe, where it crosses a pressure or environmental boundary. Glands are available to carry elements in both metric and inch sizes from 1.8mm (0.04") dia. to tubes and pipes of 44.49mm (1.75") dia.

Applications for PG glands include: Pressure and vacuum sealing of thermocouples, RTDs, dial-type thermometers, thermostat probes, glass thermometers, thermovells (pockets) - including those made from fragile materials, capillary tubes and other sensor elements.

PG gland parts are manufactured from Stainless Steel AISI grades 316L (W-Nr. 1.4404) and 316 (1.4306). Other materials, 316SS (NACE), Hastelloy C276, Monel 405 are available.

Installation information and torque settings for glands are shown in the Assembly Instructions, see pages 38 to 41.

Conax pressure and vacuum sealing assemblies can be specified for use in a range of temperature, pressure and environmental situations by choosing a sealant that is suitable for the application. Replacement sealants are available to enable repeatable use of fittings.

**SEALANT SELECTION GUIDE**

<table>
<thead>
<tr>
<th>Sealant (Sealant Code)</th>
<th>Temperature range</th>
<th>Pressure range @ 20°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neoprene (NP)</td>
<td>-40°C to +90°C</td>
<td>Vacuum to 345 bar</td>
</tr>
<tr>
<td>Viton (V)</td>
<td>-20°C to +232°C</td>
<td>Vacuum to 690 bar</td>
</tr>
<tr>
<td>Teflon (T)</td>
<td>-180°C to +232°C</td>
<td>Vacuum to 220 bar</td>
</tr>
<tr>
<td>Lava (L)</td>
<td>-180°C to +670°C</td>
<td>Year to 600 bar</td>
</tr>
<tr>
<td>Grafoil (G)</td>
<td>240°C to +695°C (b +100°C is a roughly stress)</td>
<td>Vacuum to 690 bar</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

<table>
<thead>
<tr>
<th>Size of gland</th>
<th>Gland mounting thread (NPT)</th>
<th>Body Hex size (in.)</th>
<th>Cap Hex size (in.)</th>
<th>Cap size</th>
<th>Length of gland with type A cap (mm, A10m)</th>
<th>Length of gland with type B cap (mm, B20m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGC</td>
<td>NPT 1/4”</td>
<td>1/4”</td>
<td>1/4”</td>
<td>23.81</td>
<td>23.81</td>
<td>31.90</td>
</tr>
<tr>
<td>MPG</td>
<td>NPT 1/8”</td>
<td>3/32”</td>
<td>3/32”</td>
<td>30,16</td>
<td>30.16</td>
<td>38.89</td>
</tr>
<tr>
<td>PGS2</td>
<td>NPT 1/8”</td>
<td>1/4”</td>
<td>1/4”</td>
<td>30.80</td>
<td>30.80</td>
<td>39.93</td>
</tr>
<tr>
<td>PGS4</td>
<td>NPT 1/8”</td>
<td>1/4”</td>
<td>1/4”</td>
<td>63.50</td>
<td>63.50</td>
<td>62.95</td>
</tr>
<tr>
<td>PGS6</td>
<td>NPT 1/8”</td>
<td>1/8”</td>
<td>1/8”</td>
<td>73.03</td>
<td>73.03</td>
<td>82.08</td>
</tr>
<tr>
<td>PGS8</td>
<td>NPT 1/8”</td>
<td>3/32”</td>
<td>3/32”</td>
<td>88.90</td>
<td>88.90</td>
<td>114.30</td>
</tr>
<tr>
<td>Pg2</td>
<td>1/4”</td>
<td>1/4”</td>
<td>1/4”</td>
<td>76.25mm dia.</td>
<td>95.25</td>
<td>127.00</td>
</tr>
<tr>
<td>PGS10</td>
<td>1/16”</td>
<td>1/16”</td>
<td>1/16”</td>
<td>101.6mm dia.</td>
<td>108.00</td>
<td>-</td>
</tr>
<tr>
<td>PGS9</td>
<td>1/8”</td>
<td>1/8”</td>
<td>1/8”</td>
<td>127.00mm dia.</td>
<td>128.58</td>
<td>-</td>
</tr>
</tbody>
</table>

**SPECIFICATIONS, ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>Diameter of element to be sealed (See note 2) (mm)</th>
<th>Gland mounting thread (NPT) (See note 4)</th>
<th>Gland Description (Order Code) (See note 5 &amp; 6)</th>
<th>Pressure rating by sealant dual (See note 3, 5 &amp; 8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP16</td>
<td>NPT 1/8”</td>
<td>A - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>MP18</td>
<td>NPT 1/8”</td>
<td>B - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>MP26</td>
<td>NPT 1/8”</td>
<td>A - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>MP32</td>
<td>NPT 1/4”</td>
<td>A - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>MP40</td>
<td>NPT 1/4”</td>
<td>B - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>MP56</td>
<td>NPT 1/4”</td>
<td>A - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>MP64</td>
<td>NPT 1/4”</td>
<td>B - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>MP80</td>
<td>NPT 1/4”</td>
<td>A - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>MP100</td>
<td>NPT 1/4”</td>
<td>B - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>MP125</td>
<td>NPT 1/4”</td>
<td>A - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>MP160</td>
<td>NPT 1/4”</td>
<td>B - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>MP200</td>
<td>NPT 1/4”</td>
<td>A - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>MP250</td>
<td>NPT 1/4”</td>
<td>B - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>MP320</td>
<td>NPT 1/4”</td>
<td>A - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>MP400</td>
<td>NPT 1/4”</td>
<td>B - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>ME125</td>
<td>NPT 1/4”</td>
<td>A - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>ME180</td>
<td>NPT 1/4”</td>
<td>B - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>ME315</td>
<td>NPT 1/4”</td>
<td>A - **</td>
<td>100 - 220</td>
</tr>
<tr>
<td>ME500</td>
<td>NPT 1/4”</td>
<td>B - **</td>
<td>100 - 220</td>
</tr>
</tbody>
</table>

**NOTES**

Note 1: The Gland Description (Order Code) shown in the table is completed by selecting the type of cap required - A or B is inserted at **. (MIC, MPG, and PG - type B not available).

Note 2: The code letter for the sealant selected is inserted at **

Note 3: All pressure and vacuum ratings are determined at 20°C with a stainless steel rod as the element.

Note 4: PG2 glands are available with a 1/8" NPT or a 1" NPT mounting thread. The gland description PG2- etc. indicates that a 1/8" NPT mounting thread is required; the description PG5(*)"NPT"- etc. indicates that a 1" NPT mounting thread is required.

Note 5: Where no value is shown in the tables the option is not available.

Note 6: Pressure ratings on large bore models may be influenced by numerous factors and are therefore application specific. Please consult Conax Buffalo Technologies for details.

Note 7: PG7, PG8, PG9 gland assemblies have a flange-design cap with qty. 8 x head cap screws.
Conax Buffalo Technologies Model MK Midlock Glands seal a single tube or probe. Featuring a metal-to-metal seal rather than our standard soft sealant technology, MK glands are used where a joint must be opened and resealed in the same setting. Their unique design forms the seal well within the body housing to provide superior performance in high vibration applications. The MK gland uses compression to deform a stainless steel ferrule against the tube/probe without cutting the sheath surface. A slight deformation of the tube/probe surface may occur, however. MK glands are freely adjustable until first tightened. After that, they may be opened and resealed at that fixed immersion depth.

The rugged reusable body and ferrule are constructed from 303SST standard. The single stainless steel ferrule is deformed against tube and makes a seal without cutting sheath surface. REUSABLE CAPABILITY: All metal MIDLOCK fittings may be opened and resealed at fixed immersion depth.

Applications for MK glands include:
- Pressure or vacuum sealing of thermocouple and RTD probes, tube shielded thermistor probes, laboratory test lines, etc. Use where joint must be opened and resealed in same setting.
- Pressure or vacuum sealing of thermocouple and RTD probes, tube shielded thermistor probes, laboratory test lines, etc. Use where joint must be opened and resealed in same setting.

**Sealant Selection Guide**

<table>
<thead>
<tr>
<th>Sealant Material</th>
<th>Temperature range</th>
<th>Pressure range @ 20°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless Steel (SST)</td>
<td>Cryogenic to +870°C</td>
<td>Vacuum to 690 bar</td>
</tr>
</tbody>
</table>

**Accessories**
The replaceable ferrule permits repeated use of the same fitting. The ferrule may be replaced in the field.

Glands are supplied factory lubricated. If glands are cleaned prior to assembly or when reused, the glands should be relubricated to maintain the published torque and pressure ratings. See page 35 for information on our lubrication kit.

**Pressure Rating Guide**

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Pressure Rating** (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MK-062-A</td>
<td>690</td>
</tr>
<tr>
<td>MK-125-A</td>
<td>690</td>
</tr>
<tr>
<td>MK-187-A</td>
<td>690</td>
</tr>
<tr>
<td>MK-250-A</td>
<td>690</td>
</tr>
<tr>
<td>MK-375-A</td>
<td>690</td>
</tr>
</tbody>
</table>

**Catalog Numbering System**

To order a Replacement Ferrule, order Ferrule, MK – (Diameter)

**Notes**

Note 1: All pressure and vacuum ratings determined at 20°C.

Note 2: Pressure rating guide values are for glands with elements restrained by the compressed ferrule.

Note 3: All pressure and torque ratings determined at 20°C with solid stainless steel rod used as the element.

Note 4: Tolerance of tube or probe diameter, ±0.127mm (0.005”). Deviation from the nominal may effect pressure ratings.

**Specifications, Ordering Information**

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Probe or Tube Diameter***</th>
<th>Thread NPT</th>
<th>Length (mm)</th>
<th>Hose Size</th>
<th>Torque** (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MK-062-A</td>
<td>.062</td>
<td>1/8”</td>
<td>30.15</td>
<td>1/8”</td>
<td>14</td>
</tr>
<tr>
<td>MK-125-A</td>
<td>.125</td>
<td>1/8”</td>
<td>30.15</td>
<td>1/8”</td>
<td>17</td>
</tr>
<tr>
<td>MK-187-A</td>
<td>.187</td>
<td>1/8”</td>
<td>30.15</td>
<td>1/8”</td>
<td>24</td>
</tr>
<tr>
<td>MK-250-A</td>
<td>.250</td>
<td>1/2”</td>
<td>41.28</td>
<td>1”</td>
<td>41</td>
</tr>
<tr>
<td>MK-375-A</td>
<td>.375</td>
<td>1”</td>
<td>50.80</td>
<td>1”</td>
<td>68</td>
</tr>
</tbody>
</table>
ELECTRODE SEALING – EG & EGT GLANDS

- **SEALS A SINGLE ELECTRODE OR EQUIVALENT DIAMETER TUBE OR PROBE**
- **FOR APPLICATIONS IN GAS OR NON-CONDUCTIVE LIQUIDS**
- **PRESSURE:** Vacuum to 550 bar
- **TEMPERATURE:** -185°C to +870°C
- **VOLTAGE:** To 8,000 Vdc
- **CURRENT:** To 525A
- **VOLTAGE:** To 345 bar
- **TEMPERATURE:** -40ºC to +93ºC

EG and EGT glands are pressure / vacuum sealing assemblies. Glands with type ‘B’ cap have a threaded extension on the cap for a conduit connection. The thread is the same size as the thread of the cap. EG-750-400NPT gland is 400 mm long, rated 345 bar and 525 Amps. Inside diameter of gland is 16.52 mm and mounting thread is 1 1/2” NPT. The gland has a lead-in extension, 110 mm long, which is torqued in place.

**Installation information and torque settings for glands supplied untorqued:**
- **Pressure rated by sealant (bar):**
  - EG-750: 345 bar
  - EG-312: 170 bar
  - EG-250: 135 bar
  - EG-187: 125 bar
  - EG-125: 95 bar
  - EG-093: 60 bar

**Dimensions:**

- **Size of gland**
- **Electrode (Conductor) Dia. (mm)**
- **Body Hex size (mm)**
- **Cap Hex size (mm)**
- **Length of gland with Type A Cap Dim. A (mm)**
- **Length of gland with Type B Cap Dim. B (mm)**

**Comments:**

- **EG** glands are size 7/8” with a 200 mm long cap screw. EG-750 Flange dia. 82.55mm.
- **EGT** example: EGT-250-A-CU
- **Replacement Insulator Order Code for EG glands (Single insulator):**
  - RI-EG-125
- **Replacement Insulator Order Code for EG glands (Sealant and two ceramic insulators):**
  - RE-EG-125
- **Replacement Electrode Order Code Examples:**
  - RE-EG-125-NI
  - RE-EGT-250-CU

- **Notes:**
  - The Gland Description [Order Code] shown in the table, is completed by selecting the type of cap and electrode required - A or B is inserted at *.
  - The code for the electrode required is inserted as follows:
    - **CU** for Copper (Max. temp. 380°C)
    - **Ni** for Nickel (Max. temp. 600°C)
    - **SS** for Stainless Steel (Max. temp. 870°C)
  - XX without an electrode means a flanged-in-cap with a nickel electrode rated 15A max., with type B cap and Lava sealant.
  - EG example: EG-125-8-NI-L describes an EG-125 size gland (1/2” NPT mounting thread) with a nickel electrode rated 15A max., and type A cap.

**Specifications, Ordering Information:**

- **Current Rating (A) Electrode (Conductor) (See note 2)**
- **Gland Description (Order Code) (See note 3)**
- **Pressure rating by sealant (bar) (See note 3)**

**Gland Description [Order Code]**

- **Neoprene (N)**
- **Teflon (T)
- **Lava (L)
- **EGT-1000 A**
- **EGT-750 A**
- **EGT-500 A**
- **EGT-250 A**
- **EGT-093 A**

**Sealing Selection Guide:**

<table>
<thead>
<tr>
<th>Sealing Material</th>
<th>Temperature Range</th>
<th>Pressure Range @ 20°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neoprene (N) [EG]</td>
<td>-40°C to +90°C</td>
<td>Vacuum to 255 bar</td>
</tr>
<tr>
<td>Teflon (T) [EG &amp; EGT]</td>
<td>-185°C to +232°C</td>
<td>Vacuum to 345 bar</td>
</tr>
<tr>
<td>Lava (L) [EG]</td>
<td>-185°C to +870°C</td>
<td>1 bar to 550 bar</td>
</tr>
</tbody>
</table>

**Examples:**

- RE-EG-125-NI
- RE-EGT-250-CU

**Notes:**

- **Note 1:** The Gland Description [Order Code] shown in the table, is completed by selecting the type of cap and electrode required - A or B is inserted at *.

- **Note 2:** Electrodes have tapped threads and are fitted with two nuts and washers at each end for ring torque or lug-type cable terminals.

- **Note 3:** All pressure and vacuum ratings are determined at 20°C with a stainless steel rod as the element. For vacuum ratings see page 42.

- **Note 4:** Where no value is shown in the tables the option is not available.

- **Note 5:** EG-750 & EGT-1000 gland assemblies have a flanged-in-cap with qty. 8 hex. head cap screws. Type B cap not available. An EG-750 gland and an EGT-1000 body style is same as PG-3 on page 10.
MULTIPLE TUBE OR PROBE SEALING - MHC GLANDS

- SEALS 1 TO 16 ELEMENTS
- ADJUSTABLE IMMERSION LENGTH FOR EACH TUBE, PROBE OR SENSOR
- PRESSURE: Vacuum to 690 bar
- TEMPERATURE: -240°C TO +870°C
- FIELD ADJUSTABLE
- REPLACEABLE "SOFT" SEALANT
- STAINLESS STEEL REUSABLE FITTING
- SELECTED ELEMENTS EASILY REPLACED IN THE FIELD
- EASY INSTALLATION

MHC glands allow for pressure and vacuum sealing of up to 16 tubes or probes through a single fitting. Glands are available to carry elements in both metric and inch sizes from 0.5mm (0.020”) to 3.2mm (0.125”) dia.

Applications for MHC glands include:
- Pressure and vacuum sealing of multiple thermocouples, resistance thermometers, thermistor probes, tube bundles, liquid level sensors, or a variety of other sensors and devices.

MHC gland bodies, followers and caps are manufactured from Stainless Steel AISI grades 316, (W-Nr 1.4404) and 303 (1.4305). Other materials may be specified see page 42. MHC insulators are Alumina.

Installation information and torque settings for glands are shown in the Assembly Instructions, see pages 36 to 41.

Conax pressure and vacuum sealing assemblies can be specified for use in a range of temperature, pressure and environmental situations by choosing a sealant that is suitable for the application. Replacement sealants and replacement packing sets (sealant with two insulators) are available to enable repeated use of fittings.

SEALANT SELECTION GUIDE

<table>
<thead>
<tr>
<th>Sealant (Sealant Code)</th>
<th>Temperature range</th>
<th>Pressure range @ 20°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neoprene (N)</td>
<td>-40°C to +80°C</td>
<td>Vacuum to 690 bar</td>
</tr>
<tr>
<td>Viton (V)</td>
<td>-20°C to +232°C</td>
<td>Vacuum to 690 bar</td>
</tr>
<tr>
<td>Teflon (T)</td>
<td>-185°C to +222°C</td>
<td>Vacuum to 690 bar</td>
</tr>
<tr>
<td>Lava (L)</td>
<td>-185°C to +870°C</td>
<td>1bar to 690 bar</td>
</tr>
<tr>
<td>Grafoil (G)</td>
<td>-240°C to +460°C (to +160°C in a reducing atm.)</td>
<td>Vacuum to 690 bar</td>
</tr>
</tbody>
</table>

GLANDS WITH THREAD SIZE REDUCTION

MHC, PL* and TG glands are optionally available with reduced size mounting threads and conduit threads on 'B' type caps.

Sizes (Standard size reduced to smaller size)
- 1/4 to 1/8 NPT
- 1/2 to 1/4 NPT
- 3/4 to 1/2 NPT

*Not available for PL-18-10 & -12, PL-16-10 & -12, PL-14-10 & -12, PL-B-3.

Order Code: Add thread size required after Gland Description
Example: MHC4-040-6-B-T, 1/4 NPT

CONEX® BUFFALO TECHNOLOGIES

NOTES
Note 1: The Gland Description [Order Code] shown in the table, is completed by selecting the type of cap required - A or B is inserted at * followed by the number of elements to be sealed. (Where there is no choice for the number of elements the number is already shown). The code-letter for the sealant selected is inserted at ** (See opposite page for sealant information).

Example: MHC4-040-6-B-T describes an MHC4 size gland (*NPT mounting thread) suitable for quantity 6 x 1.0mm (0.040”) dia. elements, with type B cap and Teflon sealant.

Replacement Sealant Order Code Example:
- RS-MHC4-040-6-T

Replacement Packing Set Order Code Example:
- RPS-MHC4-040-6-T

Note 2:
- Tolerance of tube or probe diameter = ±0.068mm (0.003”) for elements <1.0mm (0.040”) and ±0.127mm (0.005”) for elements >1.0mm.
- Deviation from the nominal may affect pressure ratings.

Note 3:
- All pressure and vacuum ratings are determined at 20°C with a stainless steel rod as the element. For vacuum ratings see page 42.

DIMENSIONS

<table>
<thead>
<tr>
<th>Size of gland</th>
<th>Gland mounting thread (NPT)</th>
<th>Body hex size (in)</th>
<th>Cap hex size (in)</th>
<th>Length of gland with type A cap (in. A)</th>
<th>Length of gland with type B cap (in. B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHC1</td>
<td>3/8”</td>
<td>3/8”</td>
<td>3/8”</td>
<td>34.89</td>
<td>44.45</td>
</tr>
<tr>
<td>MHC2</td>
<td>3/8”</td>
<td>3/8”</td>
<td>3/8”</td>
<td>58.80</td>
<td>66.68</td>
</tr>
<tr>
<td>MHC4</td>
<td>3/8”</td>
<td>3/8”</td>
<td>3/8”</td>
<td>66.68</td>
<td>85.73</td>
</tr>
<tr>
<td>MHC5</td>
<td>3/4”</td>
<td>1”</td>
<td>1”</td>
<td>73.03</td>
<td>92.08</td>
</tr>
</tbody>
</table>

Specifications, Ordering Information

<table>
<thead>
<tr>
<th>Diameter of element to be sealed</th>
<th>Number of elements</th>
<th>Gland mounting thread</th>
<th>Gland Description (Order Code)</th>
<th>Pressure rating by sealant (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(See note 2)</td>
<td>(See note 3)</td>
<td>(See note 4)</td>
<td>(See note 5)</td>
<td>(See note 6)</td>
</tr>
</tbody>
</table>

| 0.25 | 2 | MHC1 - 025 - *2 - ** | 690 | 690 | 690 | 690 |
| 0.25 | 4 | MHC1 - 025 - *4 - ** | 690 | 690 | 690 | 690 |
| 0.25 | 6 | MHC1 - 025 - *6 - ** | 690 | 690 | 690 | 690 |
| 0.40 | 2 | MHC2 - 040 - *2 - ** | 690 | 690 | 690 | 690 |
| 0.40 | 4 | MHC2 - 040 - *4 - ** | 690 | 690 | 690 | 690 |
| 0.40 | 6 | MHC2 - 040 - *6 - ** | 690 | 690 | 690 | 690 |
| 0.62 | 1 | MHC1 - 062 - *1 - ** | 550 | 550 | 550 | 550 |
| 0.62 | 2, 3, 4 | MHC1 - 062 - *2 - ** | 550 | 550 | 550 | 550 |
| 0.62 | 6 | MHC1 - 062 - *6 - ** | 550 | 550 | 550 | 550 |
| 0.80 | 2 | MHC5 - 080 - *2 - ** | 275 | 275 | 415 | 690 |
| 0.80 | 6 | MHC5 - 080 - *6 - ** | 275 | 275 | 415 | 690 |
| 1.25 | 2 | MHC5 - 125 - *2 - ** | 275 | 275 | 415 | 690 |
| 1.25 | 6 | MHC5 - 125 - *6 - ** | 275 | 275 | 415 | 690 |
CUSTOM MULTIPLE TUBE OR PROBE SEALING - MHM GLANDS

MHM glands allow for pressure and vacuum sealing of tubes or probes through a single fitting. They are intended for use when other types of glands are not suitable or not available in a particular configuration. MHM glands may also be specified when a mixture of element sizes need to pass through a single fitting, when special hole patterns or irregular shapes are required and when a higher density of elements, than possible in other types of glands, is needed. Glands are available to carry elements in both metric and inch sizes from 1.0mm (0.040") to 9.53mm (0.375") dia.

Applications for MHM glands include: Pressure and vacuum sealing of gradient thermocouples, thermistor probes, tube bundles, liquid level sensors, or a variety of other sensors and devices in a single fitting.

MHM gland bodies, followers, caps and seats are manufactured from Stainless Steel AISI grades 316L (X-Nr. 1.4404) and 303 (1.4005). Other materials may be specified see page 42.

Installation information and torque settings for glands are shown in the Assembly Instructions, see pages 38 to 41. Conax pressure and vacuum sealing assemblies can be specified for use in a range of temperature, pressure and environmental situations by choosing a sealant that is suitable for the application. Replacement sealants and replacement packing sets (sealant with follower and seat) are available to enable repeated use of fittings.

MHM glands are intended for use when other types of glands are not suitable or not available in a particular configuration. MHM glands may also be specified when a mixture of element sizes need to pass through a single fitting, when special hole patterns or irregular shapes are required and when a higher density of elements, than possible in other types of glands, is needed. Glands are available to carry elements in both metric and inch sizes from 1.0mm (0.040") to 9.53mm (0.375") dia.

Sealant Selection Guide

<table>
<thead>
<tr>
<th>Sealant (Sealant Code)</th>
<th>Temperature range</th>
<th>Pressure range @ 20°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neoprene (N)</td>
<td>-40°C to +90°C</td>
<td>Vacuum to 550 bar</td>
</tr>
<tr>
<td>Viton (V)</td>
<td>-20°C to +230°C</td>
<td>Vacuum to 600 bar</td>
</tr>
<tr>
<td>Teflon (T)</td>
<td>-18°F to +205°F</td>
<td>Vacuum to 550 bar</td>
</tr>
<tr>
<td>Lava (L)</td>
<td>-185°C to +650°C</td>
<td>1bar to 600 bar</td>
</tr>
<tr>
<td>Grafoil (G)</td>
<td>-240°F to +450°F (to +1650°F in a reducing atmos.)</td>
<td>Vacuum to 600 bar</td>
</tr>
</tbody>
</table>

MHM glands allow for pressure and vacuum sealing of tubes or probes through a single fitting. They are intended for use when other types of glands are not suitable or not available in a particular configuration. MHM glands may also be specified when a mixture of element sizes need to pass through a single fitting, when special hole patterns or irregular shapes are required and when a higher density of elements, than possible in other types of glands, is needed. Glands are available to carry elements in both metric and inch sizes from 1.0mm (0.040") to 9.53mm (0.375") dia.

Applications for MHM glands include: Pressure and vacuum sealing of gradient thermocouples, thermistor probes, tube bundles, liquid level sensors, or a variety of other sensors and devices in a single fitting.

MHM gland bodies, followers, caps and seats are manufactured from Stainless Steel AISI grades 316L (X-Nr. 1.4404) and 303 (1.4005). Other materials may be specified see page 42.

Installation information and torque settings for glands are shown in the Assembly Instructions, see pages 38 to 41. Conax pressure and vacuum sealing assemblies can be specified for use in a range of temperature, pressure and environmental situations by choosing a sealant that is suitable for the application. Replacement sealants and replacement packing sets (sealant with follower and seat) are available to enable repeated use of fittings.
INSULATED WIRE SEALING - PL GLANDS

- SEALS 1 TO 18 WIRES
  SIZES 8 TO 20 AWG

- AVAILABLE WITH OR WITHOUT
  KAPTON-INSULATED COPPER
  OR THERMOCOUPLE MATERIAL
  CONDUCTORS

- PRESSURE:
  Vacuum to 690 bar

- TEMPERATURE:
  -240°C to +232°C

- RATED 600Vac / 850VDC
  @ 55A MAX.

- EASILY ASSEMBLED IN THE
  FIELD. WIRES CAN BE
  INDIVIDUALLY REPLACED

- WIRE IDENTIFICATION
  NO POTTING

PL glands carry from 1 up to 18 wires in 8 AWG to 20 AWG wire sizes. Standard glands are supplied with Kapton insulated copper or thermocouple material wires pre-installed in the gland that is torqued ready for installation. PL glands can also be supplied untorqued and without wires.

Applications for PL glands include: Safety seals for transformers and motor power supplies, conduit and junction box feedthroughs, power and instrumentation feedthroughs in pressure vessels and vacuum chambers, automobiles and ovens.

PL gland bodies, followers and caps are manufactured from Stainless Steel AISI grades 316L (W-Nr. 1.4404) and 303 (1.4305). Other materials may be specified see page 42.

PL insulators are Alumina. Body and cap sleeves are Teflon. Kapton is a polyimide film with an FEP binder that is hermetically wrapped on wires with a 50% overlap. It is abrasion resistant and has excellent dielectric and insulation properties. It does not readily absorb moisture but should not be used in environments where pH<12.

For applications where pH>12, LSGlax® is recommended.

**SEALANT SELECTION GUIDE**

<table>
<thead>
<tr>
<th>Sealant (Sealant Code)</th>
<th>Temperature range</th>
<th>Pressure range @ 20°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teflon (T)</td>
<td>-180°C to +22°C</td>
<td>Vacuum to 345 bar</td>
</tr>
<tr>
<td>Grafoil (G)</td>
<td>-240°C to +232°C</td>
<td>Vacuum to 690 bar</td>
</tr>
</tbody>
</table>

Kapton is a polyimide film with an FEP binder that is hermetically wrapped on wires with a 50% overlap. It is abrasion resistant and has excellent dielectric and insulation properties. It does not readily absorb moisture but should not be used in environments where pH<12.

**NOTES**

Note 1:

The Gland Description [Order Code] shown in the table, is completed by selecting the type of cap required - A or B is inserted after the number of wires required. The code letter for the sealant selected is inserted at ** (See opposite page for sealant information).

The length of wire required is inserted at y (See opposite page for wire length). The wire length is determined at 20°C with Kapton insulated copper wires (5% NPT mounting thread), with type A cap and Grafoil sealant. 1 metre of wire is required on the cap side of the gland and 2 metres of wire on the process side.

When thermocouple material wires are required, the type of T/C wire (18B AWG size, types E, J, K & T available) is added after the wire size in the order code.

Example: PL-18(BJ)-A4-G-1m/2m describes a PL-18 size gland with 2 x 18B AWG copper wires (5% NPT mounting thread), with type A cap and Grafoil sealant.

When no wires are required the wire length information is omitted and XX is placed after the sealant code.

Example: PL-18-BJ-G-XX

**SPECIFICATIONS, ORDERING INFORMATION**

**NOTES**

Note 2:

Customer-supplied insulated wire or other elements of equivalent O.D. may be used when PL glands are supplied without wire. Refer to the table of wire sizes on page 41.

An allowance of 0.48mm dia. should be made for the thickness of the Kapton insulation.

Glands with Kapton insulated copper wire can be supplied with solderless (crimped) terminals fitted to wire ends - at additional cost.

**SPECIFICATIONS, ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>Wire Size (AWG)</th>
<th>Number of wires</th>
<th>Current rating per wire (A)</th>
<th>Gland mounting thread (NPT)</th>
<th>Gland Description (Order Code)</th>
<th>Pressure rating by sealant (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>2, 3 or 4</td>
<td>2.5</td>
<td>5</td>
<td>PL-20-<strong>-A</strong></td>
<td>345</td>
</tr>
<tr>
<td>6 or 8</td>
<td>18</td>
<td>-</td>
<td>4</td>
<td>PL-20-<strong>-B</strong></td>
<td>230</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>5</td>
<td>14</td>
<td>PL-16-<strong>-A</strong></td>
<td>195</td>
</tr>
<tr>
<td>2, 3 or 4</td>
<td>14</td>
<td>1</td>
<td>14</td>
<td>PL-18-<strong>-A</strong></td>
<td>110</td>
</tr>
<tr>
<td>6 or 8</td>
<td>10 or 12</td>
<td>2</td>
<td>14</td>
<td>PL-16-<strong>-B</strong></td>
<td>275</td>
</tr>
<tr>
<td>12</td>
<td>17</td>
<td>1</td>
<td>14</td>
<td>PL-16-<strong>-C</strong></td>
<td>195</td>
</tr>
<tr>
<td>6 or 8</td>
<td>10 or 12</td>
<td>2</td>
<td>14</td>
<td>PL-16-<strong>-D</strong></td>
<td>146</td>
</tr>
<tr>
<td>2, 3 or 4</td>
<td>10</td>
<td>2</td>
<td>14</td>
<td>PL-16-<strong>-E</strong></td>
<td>270</td>
</tr>
<tr>
<td>6</td>
<td>24</td>
<td>5</td>
<td>14</td>
<td>PL-14-<strong>-A</strong></td>
<td>55</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>5</td>
<td>14</td>
<td>PL-14-<strong>-B</strong></td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>5</td>
<td>14</td>
<td>PL-14-<strong>-C</strong></td>
<td>130</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>5</td>
<td>14</td>
<td>PL-14-<strong>-D</strong></td>
<td>110</td>
</tr>
<tr>
<td>6 or 8</td>
<td>15</td>
<td>2</td>
<td>14</td>
<td>PL-14-<strong>-E</strong></td>
<td>110</td>
</tr>
<tr>
<td>8</td>
<td>55</td>
<td>5</td>
<td>14</td>
<td>PL-18-<strong>-A</strong></td>
<td>90</td>
</tr>
<tr>
<td>3</td>
<td>55</td>
<td>5</td>
<td>14</td>
<td>PL-18-<strong>-B</strong></td>
<td>80</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

<table>
<thead>
<tr>
<th>Size of gland</th>
<th>Gland mounting thread (NPT)</th>
<th>Body Hex size (in.)</th>
<th>Cap Hex size (in.)</th>
<th>Length of gland with type A cap Dim. A (mm)</th>
<th>Length of gland with type B cap Dim. B (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL-18-**-1</td>
<td>3/4</td>
<td>1/8</td>
<td>5/8</td>
<td>97.30</td>
<td>46.83</td>
</tr>
<tr>
<td>PL-14-**-1</td>
<td>3/4</td>
<td>1/8</td>
<td>5/8</td>
<td>66.68</td>
<td>85.73</td>
</tr>
<tr>
<td>PL-14-**-2</td>
<td>1/2</td>
<td>1/4</td>
<td>5/8</td>
<td>73.03</td>
<td>92.08</td>
</tr>
<tr>
<td>PL-20-**-2</td>
<td>1/2</td>
<td>1/4</td>
<td>5/8</td>
<td>68</td>
<td>92.08</td>
</tr>
<tr>
<td>PL-16-**-2</td>
<td>1/2</td>
<td>1/4</td>
<td>5/8</td>
<td>68</td>
<td>92.08</td>
</tr>
<tr>
<td>PL-14-**-3</td>
<td>1/4</td>
<td>1/4</td>
<td>5/8</td>
<td>68</td>
<td>92.08</td>
</tr>
</tbody>
</table>

**REPLACEMENT SEALANT ORDER CODE EXAMPLE:**

Example: RS-PL-18-4-G

**REPLACEMENT PACKING SET ORDER CODE EXAMPLE:**

Example: PPS-PL-18-4-G
BARE WIRE SEALING AND INSULATED WIRE SEALING
WITH 24 AWG TEFLOW INSULATED WIRE – TG GLANDS

- SEALS 1 TO 16 ELEMENTS
- FOR LOW-VOLTAGE & LOW-CURRENT, BARE
  LOW-CURRENT, BARE
- FOR INSULATED COPPER OR
  THERMOCOUPLE-MATERIAL
  WIRE.
- PRESSURE:
  Vacuum to 690 bar
- TEMPERATURE:
  -240°C to +870°C
- FOR NON-CONDUCTIVE
  GAS AND LIQUID.
- EASILY ASSEMBLED IN
  THE FIELD, WIRES CAN BE
  INDIVIDUALLY REPLACED.
- REPLACEABLE ‘SOFT’ SEALANT
- EASY INSTALLATION - NO POTTING.

TG glands are designed for sealing up to 16 bare, solid wire conductors (not stranded). Glands can accommodate wire sizes 8 to 24 AWG. Max. voltage rating 50kV.

The same glands can also be specified as complete assemblies type TG-24, ready for installation, with 24 AWG size Teflon insulated copper or thermocouple material wires. A Teflon sealant is used in these assemblies.

Applications for TG glands include:
- Pressure and vacuum sealing of solid bare wire transducers such as thermocouples, strain-gauges, thermistors, resistance element units and low voltage, low current supplies and signal wires to instrumentation. Applications for TG-24 gland assemblies with insulated wire include sealing of wires exiting compressor bearing housings, pressure vessels and instrument.

TG gland bodies, followers and caps are manufactured from Stainless Steel AISI grades 316L (NPN 1.4404) and 303 (1.4305). TG insulators are Alumina.

Installation information and torque settings for glands are shown in the Assembly Instructions, see pages 36 to 41.

Conax pressure and vacuum sealing assemblies can be specified for use in a range of temperature, pressure and environmental situations by choosing a sealant that is suitable for the application. Replacement sealants and replacement packing sets (sealant and four insulators) are available to enable repeated use of fittings.

**Sealant Selection Guide**

<table>
<thead>
<tr>
<th>Sealant (Sealant Code)</th>
<th>Temperature range</th>
<th>Pressure range @ 20°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neoprene (N)</td>
<td>-40°C to +80°C</td>
<td>Vacuum to 690 bar</td>
</tr>
<tr>
<td>Viton (V)</td>
<td>-20°C to +220°C</td>
<td>Vacuum to 690 bar</td>
</tr>
<tr>
<td>Teflon (T)</td>
<td>-185°C to +232°C</td>
<td>Vacuum to 690 bar</td>
</tr>
<tr>
<td>Lava (L)</td>
<td>-185°C to +60°C</td>
<td>1 bar to 690 bar</td>
</tr>
</tbody>
</table>

For assemblies carrying more than 16 wires refer to High Density wire feedthrough assemblies type HD - pages 30 & 31.

**Specifications, Ordering Information**

<table>
<thead>
<tr>
<th>Wire (gauge)</th>
<th>Number of wires</th>
<th>Grand mounting thread (NPT)</th>
<th>Grand Description (Order Code)</th>
<th>Pressure rating by sealant (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>2</td>
<td>MTG-24-T-2-0-T, %</td>
<td>690</td>
<td>Teflon (T)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>MTG-24-T-4-0-T, %</td>
<td>690</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>MTG-24-T-8-0-T, %</td>
<td>690</td>
<td></td>
</tr>
</tbody>
</table>

**Notes**

Note 1:
- The Gland Description (Order Code) shown in the table, is completed by selecting the type of cap required - A or B is inserted at * followed by the number of elements to be sealed. (Where there is no choice for the number of elements the number is already shown). The code letter for the sealant selected is inserted at **. (See opposite page for sealant information).

Example: TG-20-B-2/N describes a TG gland for 2 x 20 AWG leads with type B cap and Neoprene sealant.

Replacement Sealant Code Example: RPS-TG-20-B-N

Replacement Packing Set Order Code Example: RPS-TG-20-B-N

Note 2:
- Customer-supplied insulated solid wire of equivalent size may be substituted for bare wire to provide a higher voltage carrying capability. Other elements of equivalent O.D. may also be used. Caution: Pressure ratings may vary. Refer to the table of wire sizes on page 41.

Note 3:
- All pressure and vacuum ratings are determined at 20°C with a stainless steel rod as the element. For vacuum ratings see page 42.

Note 4:
- The Gland Description (Order Code) shown in the tables of TG-24 & TGF assemblies, is completed by selecting the wire type required, (refer to the table of wire types available). The wire type code is inserted at **. The cap type required - A or B is inserted at * followed by the number of elements to be sealed.

Example: TG-24-TJ-2-T, 1.0mm/2.5mm describes an assembly with a single pair of 24 AWG type-J thermocouple material wires. The gland has a T” NPT mounting, a type A cap and a Teflon sealant.

Note 5:
- All pressure and vacuum ratings are determined at 20°C with Teflon-insulated wire as the element. For vacuum ratings see page 42.
When insulated solid wire is substituted for bare wire, or if it is intended to use wires in sizes other than AWG, tolerance of wire diameter = ±0.076mm (0.003”) for wire sizes 24, 20 and 18 AWG, and ±0.127mm (±0.005”) for wire sizes 14 and 8 AWG. Deviation from the nominal may affect pressure ratings.

Insulators Nos. 1 & 4 are not fitted to TG24T or TGF assemblies.

Example: TG-24(F-J)-A2-T, 24P/36, TGF

Notes (continued)

Be sure to specify the type of Insulator required. The thread is the same size as the gland mounting thread. BSWS gland bodies, followers and caps are manufactured from Stainless Steel AISI grades 316L (N-W. Nr. 1.4404) and 303 (1.4305).

Installation information and torque settings for glands are shown in the Assembly Instructions, see pages 36 to 41.

Replacement sealants are available to enable repeated use of fittings.

Typical applications for BSWS assemblies include: Motors, turbines, pumps and journal bearing pedestals.

BEARING SENSOR WIRE SEALS – BSWS

- SEALS THE LEADS OF EMBEDDED BEARING TEMPERATURE SENSORS
- SEALS 2 to 14 WIRES
- EASY INSTALLATION - NO POTTING
- PRESSURE: To 3.5 bar
- TEMPERATURE: Ambient to 37°C

Table 1

<table>
<thead>
<tr>
<th>Diameter of wire</th>
<th>Number of wires</th>
<th>Gland mounting thread (NPT)</th>
<th>Gland Description [Order Code]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 - 1.5</td>
<td>2 to 8</td>
<td>BSWS4-20-4-~V</td>
<td></td>
</tr>
<tr>
<td>1.1 - 1.5</td>
<td>2 to 14</td>
<td>BSWS5-20-4-~V</td>
<td></td>
</tr>
<tr>
<td>0.94 - 1.3</td>
<td>2 to 8</td>
<td>BSWS5-22-4-~V</td>
<td></td>
</tr>
<tr>
<td>0.81 - 1.14</td>
<td>2 to 14</td>
<td>BSWS4-24-4-~V</td>
<td></td>
</tr>
<tr>
<td>0.71 - 1.06</td>
<td>2 to 14</td>
<td>BSWS4-26-4-~V</td>
<td></td>
</tr>
<tr>
<td>3.12 - 3.25</td>
<td>2 to 4</td>
<td>BSWS5-325-4-~V</td>
<td></td>
</tr>
</tbody>
</table>

Example: BSWS4-20-A4-V

Describes a Bearing Sensor wire seal gland to carry 4 wires of overall diameter in the range 1.1 to 1.5mm. Mounting thread 3/8 NPT.

Replacement Sealant Order Code

Example: RS-BSWS4-20-A4-V

Notes

Note 1: The Gland Description [Order Code] shown in the table, is completed by selecting the type of cap required - A or B is inserted at * followed by the number of wires required. (Sealant - Viton only).

Example: RS-BSWS4-20-A4-V

Be sure to specify the type of Insulator required. The thread is the same size as the gland mounting thread.

Glands with type ‘B’ cap have a threaded extension on the cap for a conduit connection. The thread is the same size as the gland mounting thread.

A range of Miniature Bearing Sensors is available for use in embedded applications where temperature monitoring of bearings is critical to machine performance and reliability. There are various cap designs and sensor elements may be specified as RTD’s (Pt100) and Thermocouple types J, K, T and E. Contact your Conax Buffalo Technologies representative or our Sales offices for a data sheet and further information.
Conax pressure and vacuum sealing assemblies can be specified for use in a range of temperature, pressure and environmental situations by choosing a sealant that is suitable for the application. Replacement split sealants and replacement sealant materials are available in all sealant materials and hole dimensions. SPG75 and all DSPG75 sizes are not available with Grafoil sealants.

Where no value is shown in the table the option is not available.

Note 4: For pressure ratings for SPG & DSPG glands please consult Conax. All pressure and vacuum ratings are determined at 20°C with a stainless steel rod as the element. For vacuum ratings see page 42.
FSA optical fibre sealing assemblies enable a range of sizes of fibre optic cable to pass through environmental boundaries. A lined, stainless steel tube is swaged over an optical fibre cable to make the tube seal. One tube per fibre is used. Single mode or multi-mode fibres may be housed in the protective tubes. These are employed as complete pressure and vacuum feedthrough assemblies using standard sealing glands PG or PGS glands for single fibres and MHC or MHM glands for multiple fibres.

Feedthrough tubes are made from Stainless Steel AISI grades 304 (W-Nr. 1.4301) or 316 (1.4401).

**Features**
- Wide range of connector terminations: ST, SMA, FC, FC/APC, FC/PC and SC/APC
- Standard fibre core sizes: 8.3, 62.5, 100, 200, 400, 600 & 700 micron & larger
- Adaptable to customer-supplied fibre
- Can seal outside jacket diameters from 400 to 1040 microns
- Protection Tubing: Standard furcation tube (black in color) is constructed of a polypropylene inner tube with a dried Kevlar® Aramid yarn strength member and a 3.0 mm outer polyethylene jacket.
- Models FSA2 and FSA4 are available with a low-outgassing furcation tube. Please specify FSA2B or FSA4B for this feature.

**Specifications**
- Helium Leak Rate: $1 \times 10^{-6}$ scc/sec typical
- Transmission Loss: Less than 0.3dB typical (excluding connectors)
- Pressure Rating: 70 bar standard, up to 207 bar optional
- Temperature Rating: -20°C to +85°C
- Higher temperature models are available in some configurations. Please consult factory.

**Catalog Numbering System**

<table>
<thead>
<tr>
<th>Model Type</th>
<th>Fiber Core Size</th>
<th>Overall Length (mm)</th>
<th>Connector Termination Conduit Side</th>
<th>Connector Termination Process Side</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSA1</td>
<td>-0 8.3 µm</td>
<td></td>
<td>XX – No Connector</td>
<td>XX – No Connector</td>
</tr>
<tr>
<td>FSA1B – low outgassing</td>
<td>-1 62.5 µm</td>
<td></td>
<td>905 – SMA 905</td>
<td>905 – SMA 905</td>
</tr>
<tr>
<td>FSA2</td>
<td>-2 100 µm</td>
<td></td>
<td>906 – SMA 906</td>
<td>906 – SMA 906</td>
</tr>
<tr>
<td>FSA2B – low outgassing</td>
<td>-3 200 µm</td>
<td></td>
<td>ST – ST</td>
<td>ST – ST</td>
</tr>
<tr>
<td>FSA3</td>
<td>-4 400 µm</td>
<td></td>
<td>FST – ST with female adapter</td>
<td>FST – ST with female adapter</td>
</tr>
<tr>
<td></td>
<td>-5 600 µm</td>
<td></td>
<td>FC – FC</td>
<td>FC – FC</td>
</tr>
<tr>
<td></td>
<td>-6 700 µm</td>
<td></td>
<td>FC/PC – FC with PC Polish</td>
<td>FC/PC – FC with PC Polish</td>
</tr>
<tr>
<td></td>
<td>-7 700 µm</td>
<td></td>
<td>FC/APC – FC with APC, 8° Angle Polish</td>
<td>FC/APC – FC with APC, 8° Angle Polish</td>
</tr>
<tr>
<td></td>
<td>-8 Customer supplied fiber</td>
<td></td>
<td>SC/APC – SC with APC, 8° Angle Polish</td>
<td>SC/APC – SC with APC, 8° Angle Polish</td>
</tr>
</tbody>
</table>

Example: FCA2B-4-1000-ST/ST
HD feedthrough assemblies comprise a Conax Buffalo Technologies high-density, wire feedthrough sealed with a sealing gland.

A Teflon-lined, stainless steel tube is swaged over 12, 24, 40 or 60, bundled, 24 AWG, solid, Teflon-coated insulated, copper and/or thermocouple material wires, to make the high-density feedthrough. The swaged tube is mounted in a sealing gland.

Assemblies are supplied with a minimum of 600mm of wire on each side of the feedthrough, longer lengths can be specified to requirements.

Typical applications include sealing of wires exiting pressure vessels, instruments, furnaces, sterilisers and reactors.

Feedthrough tubes are made from Stainless Steel AISI grades 304 (W-Nr. 1.4301) or 316 (1.4401).

**Continued Wire Feedthroughs for Thermocouples, RTD's and Other Low-Voltage Instrumentation**

- **No epoxy and no potting**
- **Pressure:** Vacuum to 345 bar
- **Temperature:** -80°C to +120°C
- **Rated 100Vdc @ 500mA**
- **Single or multiple feedthroughs in a single sealing gland**

**Notes**

1. Any combination of thermocouple pairs and single copper wires may be specified. Copper wires are counted individually and thermocouple wires are counted as pairs.
2. To specify a combination of different types of thermocouple pairs and copper wires, identify the combination required in the style of the following examples:

   - Example: HD25-450(12K/Pg2AT), 0.6m/0.6m (with gland)
   - Example: HD25-450(6K/12Cu), 0.6m/2.0m (without gland)
   - Example: HD25-450/24Cu/jMHSaA1T, 1.0m/1.0m (with multiple feedthrough gland)

   T/C pairs and individual copper wires are marked on each side of the feedthrough for identification.

**Catalog Numbering System**

<table>
<thead>
<tr>
<th>Gland Type</th>
<th>Feedthrough Diameter</th>
<th>Number of Conductors</th>
<th>Wire Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG</td>
<td>18 – 0.187” OD</td>
<td>12</td>
<td>J – Iron/Constantan</td>
</tr>
<tr>
<td></td>
<td>25 – 0.250” OD</td>
<td>24</td>
<td>K – Chromel/Alumel</td>
</tr>
<tr>
<td></td>
<td>31 – 0.312” OD</td>
<td>40</td>
<td>T – Copper/Constantan</td>
</tr>
<tr>
<td></td>
<td>37 – 0.375” OD</td>
<td>60</td>
<td>E – Chromel/Constantan</td>
</tr>
</tbody>
</table>

**Dimensions, Specifications**

- **Feedthrough tube diameter:** 4.75mm (HD18)
- **Tube length:** 114mm
- **Voltage / current rating:** 100Vdc / 500mA
- **Temperature range:** -80°C to +120°C
- **Pressure rating:** 345 bar max. @ 20°C
- **Leak rate:** 1 X 10^-9 sec/sec, Helium at 20°C, 1 Atm. supplied
- **Vacuum Rating:** 5 X 10^-3 mtorr @ 20°C

**Notes**

1. Any combination of thermocouple pairs and single copper wires may be specified. Copper wires are counted individually and thermocouple wires are counted as pairs.
2. To specify a combination of different types of thermocouple pairs and copper wires, identify the combination required in the style of the following examples:

   - Example: HD25-450(12K/Pg2AT), 0.6m/0.6m (with gland)
   - Example: HD25-450(6K/12Cu), 0.6m/2.0m (without gland)
   - Example: HD25-450/24Cu/JMHSaA1T, 1.0m/1.0m (with multiple feedthrough gland)

   T/C pairs and individual copper wires are marked on each side of the feedthrough for identification.
Conax Buffalo Technologies manufactures high pressure sealing assemblies up to 2070 bar for instrument signal wires. High pressure seals are designed for installation onto the pressure vessel wall using threaded mounting configurations only. High pressure assemblies are factory torqued, so disassembly and reassembly in the field is not recommended.

These assemblies feature body and caps constructed from high strength 316SST and a proprietary sealant. HPPL assemblies are provided with Kapton-insulated 26 gauge solid copper wire. Standard assemblies include 0.6m of wire on each side. To order other wire lengths, indicate the desired lengths after the catalog number.

A 1/2” NPT thread can be added to the assembly cap to allow mounting a terminal box or other type of enclosure. Consult factory for ordering details.

For other types of high pressure applications such as electrode sealing, please consult the factory.

**Specifications – High Pressure Assemblies**

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Wire Gauge</th>
<th>Number of Wires</th>
<th>Length</th>
<th>Thread Size</th>
<th>Hex Size (Body Cap)</th>
<th>Pressure Rating (Bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPPL14/AM3/S316B-26-A/S316B-2-CGL</td>
<td>26</td>
<td>2</td>
<td>76.2mm</td>
<td>3/4-16</td>
<td>1-1/8”-12</td>
<td>2,070</td>
</tr>
<tr>
<td>HPPL14/AM3/S316B-26-A/S316B-4-CGL</td>
<td>26</td>
<td>4</td>
<td>76.2mm</td>
<td>3/4-16</td>
<td>1-1/8”-12</td>
<td>2,070</td>
</tr>
<tr>
<td>HPPL14/AM3/S316B-26-A/S316B-7-CGL</td>
<td>26</td>
<td>7</td>
<td>76.2mm</td>
<td>3/4-16</td>
<td>1-1/8”-12</td>
<td>2,070</td>
</tr>
<tr>
<td>HPPL14/AM3/S316B-26-A/S316B-10-CGL</td>
<td>26</td>
<td>10</td>
<td>76.2mm</td>
<td>3/4-16</td>
<td>1-1/8”-12</td>
<td>2,070</td>
</tr>
</tbody>
</table>

*Note: HPPL14 mates with Snap-tite/Autoclave Engineers part type F-375-C. HPPL8 mates with Snap-tite/Autoclave Engineers part type F-562-C.*

Quick Mount Couplers provide a quick and positive method to remove and reseal multiple wires and probes. They eliminate the twisting or entangling of long leadwires caused by rotation while screwing the fitting into place. Assemblies can be provided for pressure applications up to 415 bar.

**Steam Jacketed Sealing Assemblies**

All Conax Buffalo sealing assemblies can be jacketed to allow the assembly to be heated or cooled. Heating is generally used to avoid cooling or crystallization of hot viscous media flowing around the assembly and to enhance flow. Cooling is sometimes needed in applications where the temperatures radiating from the process could exceed the sealant rating or the heated gland has the potential to burn workers if touched. Jackets are constructed from rugged stainless steel and provide inlet and outlet ports to allow the steam or coolant to circulate around the gland body.

**Cooling**

Cooling is sometimes used to avoid cooling or crystallization of hot viscous media flowing around the assembly. Conax Buffalo Technologies offers a high temperature version of the PL Series for use in furnaces with oxidizing atmospheres. In place of the traditional Kapton-insulated copper wire, which has a maximum operating temperature of 232°C (450°F), this PL assembly uses Kapton-insulated Alumel® wire covered with Fiberglass or Refrasil® insulation on the process side. The operating temperature of the PL gland with Grafoil sealant is 232°C (450°F), but the wires that are exposed to the process operate up to 482°C (900°F) with the fiberglass insulation or 682°C (1280°F) with the Refrasil insulation. This PL assembly is normally offered with 18 gauge wire. Please consult the factory for application guidelines. These assemblies can be fitted with any Conax Buffalo flange, thread or weld mount.

**Steam Jacketed Light Gases**

The TG-20-14 is a specialized TG assembly for sealing light gases where reduction of potential leak paths is critical. This assembly provides a 1/2” NPT mounting port rather than the 1/4” NPT normally found on the TG-20. This eliminates the need for a reducer bushing and eliminates a potential leak path. The assembly uses 20 gauge wire and is available as a 2- or 4-hole assembly. The TG-20-14 can be fitted with any Conax Buffalo flange, thread or weld mount.

**Customized Flange Mounts**

In addition to our standard CF, KF, SFA and ASME/ANSI flange mounts, specialized mounts such as tube flares, integral flanges and custom shapes can be provided to easily adapt Conax Buffalo’s proven sealing techniques to your process equipment requirements. Consult your Conax Buffalo sales engineer for details.

**TG Assembly for Light Gases**

Conax Buffalo Technologies offers a high temperature version of the PL Series for use in furnaces with oxidizing atmospheres. In place of the traditional Kapton-insulated copper wire, which has a maximum operating temperature of 232°C (450°F), this PL assembly uses Kapton-insulated Alumel® wire covered with Fiberglass or Refrasil® insulation on the process side. The operating temperature of the PL gland with Grafoil sealant is 232°C (450°F), but the wires that are exposed to the process operate up to 482°C (900°F) with the fiberglass insulation or 682°C (1280°F) with the Refrasil insulation. This PL assembly is normally offered with 18 gauge wire. Please consult the factory for application guidelines. These assemblies can be fitted with any Conax Buffalo flange, thread or weld mount.

**High Temperature PL Assembly**

Conax Buffalo Technologies offers a high temperature version of the PL Series for use in furnaces with oxidizing atmospheres. In place of the traditional Kapton-insulated copper wire, which has a maximum operating temperature of 232°C (450°F), this PL assembly uses Kapton-insulated Alumel® wire covered with Fiberglass or Refrasil® insulation on the process side. The operating temperature of the PL gland with Grafoil sealant is 232°C (450°F), but the wires that are exposed to the process operate up to 482°C (900°F) with the fiberglass insulation or 682°C (1280°F) with the Refrasil insulation. This PL assembly is normally offered with 18 gauge wire. Please consult the factory for application guidelines. These assemblies can be fitted with any Conax Buffalo flange, thread or weld mount.
**REPLACEMENT SEALANTS**

The replaceable sealant used in Conax Buffalo sealing assemblies allows repeated use of the same fitting. Replacement sealants are available in Neoprene, Viton, Teflon, Lava or Grafoil, depending on the sealing assembly type. Instructions on how to order replacement sealants are provided in the catalog section for the appropriate gland series.

**REPLACEMENT PACKING SETS**

Replacement Packing Sets for MHM, SPI, DSPG and FSS series assemblies consist of one replacement sealant with the appropriate number of ceramic insulators for that specific assembly.

**REPLACEMENT INSULATORS**

In addition to Replacement Packing Sets, Conax Buffalo can supply individual Alumina (Al2O3) Ceramic Insulators appropriate for use with copper wire, thermocouple wire for thermocouple calibrations J, K, E, T, R, S, B and C, or electrodes.

To order replacement insulators, order Insulator (Gland) – (Wire Gauge) – (Number of Holes) – (Material) – (Diameter) – (Thread)

**REPLACEMENT CONDUCTORS/ELECTRODES**

Conax Buffalo supplies conductors/electrodes for Conax EG and EGT assemblies in stainless steel, copper or nickel, and in sizes from 0.093” to 1.00”. Each set is supplied with 4 nuts and 4 washers.

To order replacement electrode, order Conductor, (Gland) – (Diameter) – (Material)

**Example: Conductor, EGT-093-CU**

**POWER LEAD/INSULATED WIRE**

Conax Buffalo can supply bulk Kapton-insulated, solid conductor power lead wire, rated to 650 volts, in wire gauges from 28 to 8. Minimum order is 15m.

**Example: Conductor, EGT-093-CU**

**ACCESSORIES**

**Replacement Insulator Kits**

Conax Buffalo Technologies sealing assemblies are supplied factory lubricated. This lubricant is used on the internal cap threads and followers to reduce friction at metal-to-metal contact points and to ensure maximum transfer of torque for sealant compression when screwing the assembly together. If cleaned before assembly or any time the gland is loosened and retightened, the assembly should be relubricated. The same lubricant used by the factory can be purchased in small, one-application disposable packages with the applicator included. The use of this convenient kit ensures consistent sealing performance without the need to purchase and store large quantities of lubricant.

**Retro Fit Gland and Electrode Kits**

Conax Buffalo Technologies offers kits for use with existing Conax and competitive gland sealing assemblies. These kits are supplied complete with the appropriate gland, electrode and replacement packing sets.

**Example: Insulator, TG-20-2**

Please specify if the insulators are to be used with Grafoil sealants.

**Sealing Gland Lubrication Kit**

Conax Buffalo Technologies sealing assemblies are supplied factory lubricated. This lubricant is used on the internal cap threads and followers to reduce friction at metal-to-metal contact points and to ensure maximum transfer of torque for sealant compression when screwing the assembly together. If cleaned before assembly or any time the gland is loosened and retightened, the assembly should be relubricated. The same lubricant used by the factory can be purchased in small, one-application disposable packages with the applicator included. The use of this convenient kit ensures consistent sealing performance without the need to purchase and store large quantities of lubricant.

**Thread Seal Materials**

Use of mounting thread environmental seal materials maximizes the efficiency of the NPT seal. Conax Buffalo recommends Teflon tape for use up to 232°C (450°F) and Grafoil tape for use between 232°C (450°F) and 482°C (900°F).

**Example: Insulator, TG-20-2**

Please specify if the insulators are to be used with Grafoil sealants.

**Sealing Gland Lubrication Kit**

Conax Buffalo Technologies sealing assemblies are supplied factory lubricated. This lubricant is used on the internal cap threads and followers to reduce friction at metal-to-metal contact points and to ensure maximum transfer of torque for sealant compression when screwing the assembly together. If cleaned before assembly or any time the gland is loosened and retightened, the assembly should be relubricated. The same lubricant used by the factory can be purchased in small, one-application disposable packages with the applicator included. The use of this convenient kit ensures consistent sealing performance without the need to purchase and store large quantities of lubricant.

**Thread Seal Materials**

Use of mounting thread environmental seal materials maximizes the efficiency of the NPT seal. Conax Buffalo recommends Teflon tape for use up to 232°C (450°F) and Grafoil tape for use between 232°C (450°F) and 482°C (900°F).

**Example: Insulator, TG-20-2**

Please specify if the insulators are to be used with Grafoil sealants.

**Sealing Gland Lubrication Kit**

Conax Buffalo Technologies sealing assemblies are supplied factory lubricated. This lubricant is used on the internal cap threads and followers to reduce friction at metal-to-metal contact points and to ensure maximum transfer of torque for sealant compression when screwing the assembly together. If cleaned before assembly or any time the gland is loosened and retightened, the assembly should be relubricated. The same lubricant used by the factory can be purchased in small, one-application disposable packages with the applicator included. The use of this convenient kit ensures consistent sealing performance without the need to purchase and store large quantities of lubricant.

**Thread Seal Materials**

Use of mounting thread environmental seal materials maximizes the efficiency of the NPT seal. Conax Buffalo recommends Teflon tape for use up to 232°C (450°F) and Grafoil tape for use between 232°C (450°F) and 482°C (900°F).

**Example: Insulator, TG-20-2**

Please specify if the insulators are to be used with Grafoil sealants.

**Sealing Gland Lubrication Kit**

Conax Buffalo Technologies sealing assemblies are supplied factory lubricated. This lubricant is used on the internal cap threads and followers to reduce friction at metal-to-metal contact points and to ensure maximum transfer of torque for sealant compression when screwing the assembly together. If cleaned before assembly or any time the gland is loosened and retightened, the assembly should be relubricated. The same lubricant used by the factory can be purchased in small, one-application disposable packages with the applicator included. The use of this convenient kit ensures consistent sealing performance without the need to purchase and store large quantities of lubricant.

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Use of mounting thread environmental seal materials maximizes the efficiency of the NPT seal. Conax Buffalo recommends Teflon tape for use up to 232°C (450°F) and Grafoil tape for use between 232°C (450°F) and 482°C (900°F).

**Example: Insulator, TG-20-2**

Please specify if the insulators are to be used with Grafoil sealants.

**Sealing Gland Lubrication Kit**

Conax Buffalo Technologies sealing assemblies are supplied factory lubricated. This lubricant is used on the internal cap threads and followers to reduce friction at metal-to-metal contact points and to ensure maximum transfer of torque for sealant compression when screwing the assembly together. If cleaned before assembly or any time the gland is loosened and retightened, the assembly should be relubricated. The same lubricant used by the factory can be purchased in small, one-application disposable packages with the applicator included. The use of this convenient kit ensures consistent sealing performance without the need to purchase and store large quantities of lubricant.

**Thread Seal Materials**

Use of mounting thread environmental seal materials maximizes the efficiency of the NPT seal. Conax Buffalo recommends Teflon tape for use up to 232°C (450°F) and Grafoil tape for use between 232°C (450°F) and 482°C (900°F).

**Example: Insulator, TG-20-2**

Please specify if the insulators are to be used with Grafoil sealants.

**Sealing Gland Lubrication Kit**

Conax Buffalo Technologies sealing assemblies are supplied factory lubricated. This lubricant is used on the internal cap threads and followers to reduce friction at metal-to-metal contact points and to ensure maximum transfer of torque for sealant compression when screwing the assembly together. If cleaned before assembly or any time the gland is loosened and retightened, the assembly should be relubricated. The same lubricant used by the factory can be purchased in small, one-application disposable packages with the applicator included. The use of this convenient kit ensures consistent sealing performance without the need to purchase and store large quantities of lubricant.

**Thread Seal Materials**

Use of mounting thread environmental seal materials maximizes the efficiency of the NPT seal. Conax Buffalo recommends Teflon tape for use up to 232°C (450°F) and Grafoil tape for use between 232°C (450°F) and 482°C (900°F).

**Example: Insulator, TG-20-2**

Please specify if the insulators are to be used with Grafoil sealants.

**Sealing Gland Lubrication Kit**

Conax Buffalo Technologies sealing assemblies are supplied factory lubricated. This lubricant is used on the internal cap threads and followers to reduce friction at metal-to-metal contact points and to ensure maximum transfer of torque for sealant compression when screwing the assembly together. If cleaned before assembly or any time the gland is loosened and retightened, the assembly should be relubricated. The same lubricant used by the factory can be purchased in small, one-application disposable packages with the applicator included. The use of this convenient kit ensures consistent sealing performance without the need to purchase and store large quantities of lubricant.

**Thread Seal Materials**

Use of mounting thread environmental seal materials maximizes the efficiency of the NPT seal. Conax Buffalo recommends Teflon tape for use up to 232°C (450°F) and Grafoil tape for use between 232°C (450°F) and 482°C (900°F).

**Example: Insulator, TG-20-2**

Please specify if the insulators are to be used with Grafoil sealants.

**Sealing Gland Lubrication Kit**

Conax Buffalo Technologies sealing assemblies are supplied factory lubricated. This lubricant is used on the internal cap threads and followers to reduce friction at metal-to-metal contact points and to ensure maximum transfer of torque for sealant compression when screwing the assembly together. If cleaned before assembly or any time the gland is loosened and retightened, the assembly should be relubricated. The same lubricant used by the factory can be purchased in small, one-application disposable packages with the applicator included. The use of this convenient kit ensures consistent sealing performance without the need to purchase and store large quantities of lubricant.

**Thread Seal Materials**

Use of mounting thread environmental seal materials maximizes the efficiency of the NPT seal. Conax Buffalo recommends Teflon tape for use up to 232°C (450°F) and Grafoil tape for use between 232°C (450°F) and 482°C (900°F).

**Example: Insulator, TG-20-2**

Please specify if the insulators are to be used with Grafoil sealants.

**Sealing Gland Lubrication Kit**

Conax Buffalo Technologies sealing assemblies are supplied factory lubricated. This lubricant is used on the internal cap threads and followers to reduce friction at metal-to-metal contact points and to ensure maximum transfer of torque for sealant compression when screwing the assembly together. If cleaned before assembly or any time the gland is loosened and retightened, the assembly should be relubricated. The same lubricant used by the factory can be purchased in small, one-application disposable packages with the applicator included. The use of this convenient kit ensures consistent sealing performance without the need to purchase and store large quantities of lubricant.
SEALING GLAND ASSEMBLY AND INSTALLATION INSTRUCTIONS

Please read the following notes before installation.

1. These assembly and installation instructions assume that there is free access to the process end(s) of element(s) and that the assembly of glands can be undertaken before mounting in an enclosure or vessel. Unless otherwise stated, element(s) and components are inserted into gland bodies from the cap thread end. If access is restricted to the opposite end(s) of element(s), it is necessary to mount the gland body before assembly, or, there are other installation constraints, it may be necessary to change the order in which the gland components are fitted. Refer to the relevant sealing gland diagram.

2. Unlike conventional compression fittings, Conax gland caps are tightened to a specified torque setting for each type and size of gland, according to the sealant material used. Refer to the Torque tables for each type of gland. If glands are over-torqued or under-torqued the desired seal may not be achieved or the maximum pressure rating will not be achieved. A torque wrench should be used.

3. Gland caps may be slackened to adjust element(s) or disassembled to remove element(s) or replace sealants and insulators without removing the gland body from the installation. (Except EG and EGT glands and other installations where the elements cannot pass through the gland body).

4. When gland bodies must be mounted in the vessel or enclosure before assembly, and where installed glands are slackened or disassembled, glands must be torqued or re-torqued as assembled, using a torque wrench on the cap and a spanner or wrench on the gland body hex. Glands should not be torqued against the vessel or enclosure mounting. Thread tape is recommended for use on gland mounting threads. PTFE or Teflon tape is commonly used for temperatures to 232°C. Grafoil tape may be used for higher temperatures. (See page 36).

5. Gland threads, followers and the inside top face of caps have lubricant applied during manufacture to prevent galling (sticking) between component parts. Gland components should not be de-greased prior to assembly and installation. Substitution of factory applied lubricant will affect gland torque values. The same lubricant that is applied to each new gland shipped from the factory, is available in a single-application, disposable applicator package. Whenever a gland is opened for adjustment or replacement of the element(s) or sealant, it is recommended that this lubricant is re-applied. (See page 35).

6. Glands must not be slackened or disassembled while an installation is in use - under pressure, vacuum or other working conditions. Stub elements to close unused holes in multi-element glands must be restrained to prevent unwanted ejection.

PG glands (including MIC and MPG glands)

1. Identify the type of gland to be assembled. Verify that the total length of the element(s) to be installed is such that it provides sufficient length for desired immersion and leads.

2. Place the cap and then the follower over the element(s) (refer to the gland diagrams).

3. Ensure that the correct sealant has been chosen for use at the working pressure, temperature and process environment. Place the sealant over the element.

4. Using a vice, secure the gland body in a vertical position, cap end uppermost. Insert the element through the gland body and slide the follower and sealant into the gland body. Ensure that the sealant is sealed.

5. Thread the cap on to the body until finger tight (6 x hex. head cap screws on PG7). Adjust the immersion length of the element(s) to the desired position. Using a torque wrench, tighten the cap to the specified torque shown in the Torque table for the size of gland and sealant used. Cap screws on PG7 to be progressively tightened in the order 1-4-2-5-3-6.

6. The assembly is now ready for mounting in the vessel, housing or enclosure. Tighten the gland body using a spanner or wrench on the gland body flats - not on the cap.

MHC glands

1. Identify the type of gland to be assembled. Verify that the total length of the element(s) to be installed are such that they provide sufficient length for desired immersion and leads.

2. Place the cap and then the follower over the element(s) (refer to the gland diagrams).

3. Ensure that the correct sealant has been chosen for use at the working pressure, temperature and process environment. Slide insulator 2, then the sealant, then insulator 1 over the element(s). There are individual holes in these components for each element.

4. Using a vice, secure the gland body in a vertical position, cap thread uppermost. Insert the element(s) through the gland body and slide the insulators, sealant and follower into the body.

5. Ensure that insulator 1 is pushed in until it is stopped by the shoulder in the gland. Ensure that the sealant is sealed and that insulator 2 fits inside the follower. As the follower enters the gland body rotate the assembly so that the anti-rotation pin keyways in the body and the follower are aligned. Insert the pin and push in the follower - ensuring that the elements are correctly positioned.

6. Thread the cap on to the body until finger tight. Adjust the immersion length of the element(s) to the desired position(s). Using a torque wrench, tighten the cap to the specified torque shown in the Torque table for the size of gland and sealant used.

7. The assembly is now ready for mounting in the vessel, housing or enclosure. Tighten the gland body using a spanner or wrench on the gland body hex. Flats - not on the cap.

TORQUE TABLE (Nm) – PG GLANDS

<table>
<thead>
<tr>
<th>Sealant</th>
<th>N / V</th>
<th>T</th>
<th>L</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIC</td>
<td>-</td>
<td>0.79 - 1.02</td>
<td>5.06 - 5.65</td>
<td></td>
</tr>
<tr>
<td>MPG</td>
<td>6.21 - 6.78</td>
<td>6.21 - 6.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PG5</td>
<td>40.8 - 47.6</td>
<td>20.4 - 27.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PG4</td>
<td>34.8 - 41.5</td>
<td>17.0 - 19.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PG5</td>
<td>34.8 - 41.5</td>
<td>17.0 - 19.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PG6</td>
<td>224 - 231</td>
<td>40.7 - 441</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIC</td>
<td>-</td>
<td>47.8 per cap screw</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIC</td>
<td>-</td>
<td>Consult Factory</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TORQUE TABLE (Nm) – MHC GLANDS

<table>
<thead>
<tr>
<th>Sealant</th>
<th>N / V</th>
<th>T</th>
<th>L</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHC1</td>
<td>27.2 - 340</td>
<td>27.2 - 340</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MHC2 &amp; 0.52</td>
<td>340 - 40.9</td>
<td>40.9 - 47.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MHC2 &amp; 0.62</td>
<td>340 - 40.9</td>
<td>40.9 - 47.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIC</td>
<td>61.2 - 680</td>
<td>68.0 - 748</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIC</td>
<td>102 - 116</td>
<td>272 - 299</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MHC &amp; PL</td>
<td>-</td>
<td>Consult Factory</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CONAX™ BUFFALO TECHNOLOGIES
MHM, PGS, SPG and DSPG Glands

1. Identify the type of gland to be assembled. Verify that the total length of the elements to be installed are such that they provide sufficient length for desired immersion and leads.

Note: Where PGS, SPG and DSPG glands are to be assembled with elements that have a larger section than at the point where they pass through the gland, e.g., a bolt or a screw, they are fitted connectors. Ensure that the largest dimension will pass through the gland body and cap (allowing for the dimensions of the other elements to be fitted, if applicable). Refer to the table opposite for maximum dimensions.

2. Ensure that the correct sealant has been chosen for use at the working pressure, temperature and process environment.

MHM Glands

3a. Place the cap over the element(s). Slide the follower, then the sealant, then the seal over the element(s), there are individual holes in these components for each element. (Refer to the gland diagrams).

4a. Using a vice, secure the gland body in a vertical position, cap thread uppermost. Insert the element(s) through the gland body and slide the seal, sealant and follower into the body.

PGS, SPG & DSPG Glands

3b. Using a vice, secure the gland body in a vertical position, cap thread uppermost. Pass the element(s) through the gland body and the cap. This can be done from either direction. (Refer to the gland diagrams).

4b. Assemble the split parts of the seal around the element(s) and slide the seal into the gland body. Repeat this procedure for the seal and then the split follower.

5. As the follower enters the gland body rotate the assembly so that the anti-rotation pin keyways in the body and the follower are aligned. Insert the pin and push in the follower - ensuring that the elements are correctly positioned. (Not applicable to PGS).

6. Thread the cap on to the body until finger tight. Adjust the immersion length of the element(s) to the desired position(s). Using a torque wrench, tighten the cap to the specified torque shown in the Torque Table for the size of gland and sealant used.

7. The assembly is now ready for mounting in the vessel, housing or enclosure. Tighten the gland body using a spanner or wrench on the gland body hex flats - not on the cap.

HD and FSA Assemblies

Type HD high-density, wire feedthrough assemblies when assembled with glands, are despatched from the factory with glands already assembled on the feedthrough but loose (untorqued). Type FSA optical fibre feedthrough assemblies, when ordered with glands, are despatched from the factory with glands already assembled and torqued to the correct value. These assemblies are ready for installation. It is not necessary to re-torque these glands.

HD and FSA assemblies may be specified with PG or PGS glands for single feedthroughs, or MR (FSA only), MHM, SPG and DSPG glands for multiple feedthroughs. Refer to the assembly and installation instructions for the relevant gland type used when installing or re-assembling HD and FSA feedthroughs in their mounting glands.

EG and EGT Glands

EG and EGT glands are despatched from the factory already torqued to the correct value and ready for installation. It is not necessary to re-torque these glands. The following instructions apply to glands that are to be re-assembled, have been ordered to be hand tightened only, without electrodes.

1. Identify the type of gland to be assembled. Ensure that the correct sealant and electrode material have been chosen for use at the working voltage, current, pressure, temperature and process environment. Remove the nuts and washers from the electrode.

EG Glands

2a. Place one ceramic insulator over the electrode or alternative element. Place the sealant* followed by the second ceramic insulator over the electrode.

EGT Glands

2b. Place the Teflon, combined sealant/insulator over the electrode.

3. Using a vice, secure the gland body in a vertical position, cap thread end uppermost.

4. Insert the insulators, sealant* and electrode (EG) or the combined, sealant/insulator and electrode (EGT) as assembled, into the cap thread end of the gland body until the ceramic insulator or Teflon insulator/insulator is stopped by the shoulder in the gland. Hold the electrode to prevent it from dropping through.

Note: EG-375 and EG-500 Lava sealants are two-piece mating cone and cup designs. Insert the cup tapered end up and the cone tapered end down.

5. Insert the follower. Seat the undercut edge to the face of the insulator (EG). Thread the cap on to the body until finger tight (6 x hex head cap screws on EG-750).

6. Make the final electrode adjustment, ensuring that the ceramic insulators or sealant/insulator are firmly seated and aligned. Using a torque wrench, tighten the cap to the specified torque shown in the Torque Table for the size of gland and sealant used. (Cap screws on EG-750 to be progressively tightened in the order 1-4-2-5-2-6). Extreme care should be taken when torquing EG glands. Caps should be tightened slowly and smoothly to the recommended torque setting.

7. Install the nuts and washers at each end of the electrode. The assembly is now ready for mounting in the vessel, housing or enclosure. Tighten the gland body using a spanner or wrench on the gland body flats - not on the cap.

8. Make the electrical connections to the electrode using ring-tongue, lug-type or spade terminals. These are positioned between the washers, the nuts should be tightened securely.

Application of a proprietary, self-setting locking fluid or paste to the electrode threads and nuts is recommended, particularly where they pass through the gland, e.g., a bulb or there are inter-elementic insulators or sealant/insulator are firmly seated and aligned.

Application of a proprietary, self-setting locking fluid or paste to the electrode threads and nuts is recommended, particularly where they pass through the gland, e.g., a bulb or there are inter-elementic insulators or sealant/insulator are firmly seated and aligned.

EG Glands except EG-750

TORQUE TABLE (Nm) - EG GLANDS

EG-093
EG-125 & -187
EG-250
EG-375 & -500
EG-750
6.1 - 6.8 per bolt

6 x ½ in. hex. head cap screws

EG-750

TORQUE TABLE (Nm) - EGT GLANDS

EGT-093
EGT-125 & -187
EGT-250
EGT-375 & -500
EGT-750
68.0 - 74.8
81.6 - 88.4
94.4 - 102
109 - 122
170 - 190
246 - 272

Non-pressure sealing

Conductor connection side

Sealant tapered end

Process side

FOLLOWER BODY

INSLATOR

CAP

SINGLE PIECE TEFON SEALANT/INSULATOR

EG glands

MHM, PGS, SPG, & DSPG glands

Size of gland

Sealant

Internal dia.

(min. element dia. mm)

PGS, SPG & DSPG glands

PGS2, PGS3 & DSPG5

PGS4, PGS100 & DSPG100

PGS5, PGS100 & DSPG150

PGS6, PGS150 & DSPG150

FORWARD TABLE (Nm) - MHM GLANDS

Sealant

N/V

T

L

G

MHM2

34 - 41

34 - 41

34 - 41

MHM3

108 - 122

108 - 122

108 - 122

108 - 122

108 - 122

108 - 122

108 - 122

MHM5

163 - 177

204 - 224

227 - 259

238 - 258

MHM6

41 - 47

41 - 47

41 - 47

FORWARD TABLE (Nm) - PGS GLANDS

Sealant

N/V

T

L

G

PGS2

40.8 - 47.6

28.4 - 32.7

54.4 - 61.2

47.6 - 54.4

PGS4

74.8 - 81.6

74.8 - 81.6

130 - 150

122 - 136

PGS6

74.8 - 81.6

122 - 136

272 - 299

238 - 258

FORWARD TABLE (Nm) - SPG GLANDS

Sealant

N/V

T

L

G

SPG2 & DSPG5

34.0 - 40.8

34.0 - 40.8

34.0 - 40.8

34.0 - 40.8

SPG100 & DSPG100

108 - 122

108 - 122

108 - 122

108 - 122

SPG150 & DSPG150

163 - 177

204 - 224

227 - 259

238 - 306

* When torquing elements of 1.0mm dia. or less with Grafoil as the insulator, install several washers between the washers, the nuts should be tightened securely.
**TROUBLE TABLE (Nm) – TG GLANDS**

<table>
<thead>
<tr>
<th>Sealant</th>
<th>AWG</th>
<th>T</th>
<th>L</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTU</td>
<td>27.2 - 34.0</td>
<td>27.2 - 34.0</td>
<td>40.8 - 47.6</td>
<td>34.0 - 40.8</td>
</tr>
<tr>
<td>TG-24</td>
<td>34.0 - 40.8</td>
<td>40.8 - 47.6</td>
<td>54.4 - 61.2</td>
<td>47.6 - 54.4</td>
</tr>
<tr>
<td>TG-14-1</td>
<td>34.0 - 40.8</td>
<td>40.8 - 47.6</td>
<td>54.4 - 61.2</td>
<td>54.4 - 61.2</td>
</tr>
<tr>
<td>TG-20 &amp; 8</td>
<td>61.2 - 68.0</td>
<td>68.0 - 74.8</td>
<td>110 - 116</td>
<td>112 - 116</td>
</tr>
<tr>
<td>TG-20-16</td>
<td>112 - 116</td>
<td>112 - 116</td>
<td>272 - 299</td>
<td>204 - 224</td>
</tr>
</tbody>
</table>

**CONVERSION FACTORS**

**To convert °F to °C:**

\[ °C = \left( \frac{°F - 32}{9} \right) \times 5 \]

**To convert °C to °F:**

\[ °F = \left( \frac{°C}{5} \right) \times 9 + 32 \]

**Temperature**

- To convert psi (lbf/in²) to bar: bar = psi x 0.0689
- To convert bar to psi: psi = bar x 14.5
- To convert °C to °F: °F = °C + 32

**Pressure**

- To convert ft/lb to Newton metres: Nm = ft/lb x 1.36
- To convert in/lb to Newton metres: Nm = in/lb x 0.113
- To convert kg/cm to Newton metres: Nm = kg/cm x 0.008
- To convert Newton metres to ft/lb: ft/lb = Nm / 0.385
- To convert Newton metres to in/lb: in/lb = Nm / 0.085
- To convert Newton metres to kg/cm: kg/cm = Nm / 10.2