VIKING

THORKOM

CIRCULAR

CONNECTORS

A Commitment To Service
**FEATURES**

- Available in various shell sizes, high density contact arrangements and mounting styles
- Quick connect and disconnect with either POSI-LOK or V-LOK coupling
- U.L. approved, 94V-2
- "High temperature resistant" thermoplastic for autoclaving processes
- Low unit cost
- Durable and competitively priced screw machined contacts
- Screw machined dip solder contacts
- Various backshell and strain relief options
- Environmental molded cable assemblies

**PERFORMANCE CHARACTERISTICS**

- Current Rating on Contacts: 5 Amperes
- Dielectric Withstanding Voltage: 1500 VRMS Maximum @ Sea Level, 600 VRMS @ 70,000 feet (21,336 meters)
- Ambient Temperature: -55° to +125° C. (-67° to +257° F.)
- Insulation Resistance: 5,000 Megohms Minimum
- Contact Retention: 10 lbs. (4.5 kg) axially after one cycle.

**APPLICATIONS**

- THORKOM connectors have been used in a broad variety of commercial and industrial applications. Some of these include:
  - Computer Equipment
  - Medical Instrumentation
  - Automotive
  - Communications
  - Marine
  - Aviation
  - Process Control
  - Audio Equipment
  - Consumer Electronics
  - Agriculture

**MATERIALS AND FINISHES**

- Connector Housing: High Strength Thermoplastic, U.L. 94V-2 approved or "High Temperature Resistant" thermoplastic material for autoclaving processes*, U.L. 94V-0 approved
- Sealed Gasket: Neoprene Rubber
- Screw Machined Contacts: Copper Alloy (stainless steel hood over socket tines), gold plated per MIL-G-45204B Type II, Grade C over nickel (.000010" gold) or tin plated per MIL-T-10727A Type I, bright finish (.000020" min.)
- Cable Clamps: Aluminum, Chemical Conversion Coating
- Panel Mount Retaining Ring: Carbon Steel
- Strain Relief and Cable Clamp Backshells: High Strength Thermoplastic, U.L. 94V-2 approved
- Stove Pipe and Tie Strap Backshells: High Density Polyethylene, U.L. 94V-2 approved
- Contacts No. 22 (accepts 22-24-26 AWG wire)

**STEPS IN SELECTING THORKOM CONNECTORS**

To assist you in selecting and ordering our connectors for your specific application, we have some suggested guidelines to follow:

1. Type of cable to be used (jacketed, shielded, coil, straight, AWG of individual wire)
2. Where connector is used (bulkhead, cable to cable)
3. What are the current requirements (volts, amps, etc.)
4. Size of connector and type (number of contacts, right angle or straight)
5. Strain relief (yes or no. if yes, type of backshell)
6. Type of approval connector needs to meet (U.L., CSA, VDE)

All these questions, when answered, will help expedite the placing of your order and ensure your receiving the correct product.

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**THORKOM CONNECTORS, BACKSHELLS AND CONTACTS**

**THORKOM CONNECTORS, BACKSHELLS AND CONTACTS**

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**STRAIN RELIEF BACKSHELLS**

- CRIMP SOCKETS
- MACHINED
- DIP SOLDER
- DUMMY FILLER
- V-LOK BULKHEAD RECEPTACLE
- MACHINED
- DIP SOLDER
- DUMMY FILLER
- POSI-LOK SQUARE FLANGE RECEPTACLE

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**STRAIN RELIEF BACKSHELLS**

- CRIMP PINS
- MACHINED
- DIP SOLDER
- DUMMY FILLER
HOW TO MATE AND UNMATE THORKOM

THORKOM connectors can be mated and unmated by means of two locking styles: V-LOK or POSI-LOK.

The plugs used for both locking styles are identical. The receptacles differ in the latch configurations.

HOW TO APPLY STRAIN RELIEF BACKSHELL

STEP 1
Insert backshell and strain relief on cable before inserting contacts into insulator.

STEP 2
Align stand-offs on insulator with slots on strain relief and mate them together.

STEP 3
Slide backshell over strain relief to meet threads. Do not turn backshell before this, or you may disengage strain relief from correct position. When backshell is against insulator threads push and turn in the same motion as to ensure continual mating of strain relief.

STEP 4
Continue to turn backshell until it bottoms out on insulator. (Hand tight only)

ORDERING INFORMATION

CONNECTORS - A connector order consists of connector and backshell. To order, use the chart shown below and combine component part numbers as required to suit your needs.

CONTACTS - Contacts for Thorkom connectors must be ordered separately. Ordering information for contacts is provided on pages 4 and 7. To order, use the chart shown below.

<table>
<thead>
<tr>
<th>Connector Type</th>
<th>Component Part Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>THORKOM</td>
<td>B: Bulkhead (7 &amp; 12 only) (pg. 5)</td>
</tr>
<tr>
<td></td>
<td>N: Plug and Receptacle (pg. 5-6)</td>
</tr>
<tr>
<td></td>
<td>K: Bulkhead or Plug (24 pos. only) (pg. 5)</td>
</tr>
<tr>
<td></td>
<td>F: Square flange (24 pos. only) (pg. 6)</td>
</tr>
<tr>
<td></td>
<td>R: Receptacle (pg. 5-7)</td>
</tr>
<tr>
<td></td>
<td>P: Plug (pg. 3-4)</td>
</tr>
<tr>
<td></td>
<td>07: 7 Contact positions</td>
</tr>
<tr>
<td></td>
<td>12: 12 Contact positions</td>
</tr>
<tr>
<td></td>
<td>24: 24 Contact positions</td>
</tr>
<tr>
<td>BACKSHELLS:</td>
<td>10: Cable Backshell</td>
</tr>
<tr>
<td></td>
<td>11: Without Backshell</td>
</tr>
<tr>
<td></td>
<td>12: Stove Pipe Backshell</td>
</tr>
<tr>
<td></td>
<td>13: Tie Strap Backshell</td>
</tr>
<tr>
<td></td>
<td>15: Long Cable Clamp Backshell</td>
</tr>
<tr>
<td></td>
<td>21: Strain Relief, 7 position, Cable Dia. .150 - .185</td>
</tr>
<tr>
<td></td>
<td>22: Strain Relief, 7 position, Cable Dia. .190 - .220</td>
</tr>
<tr>
<td></td>
<td>23: Strain Relief, 7 position, Cable Dia. .240 - .255</td>
</tr>
<tr>
<td></td>
<td>24: Strain Relief, 12 position, Cable Dia. .230 - .260</td>
</tr>
<tr>
<td></td>
<td>25: Strain Relief, 12 position, Cable Dia. .275 - .300</td>
</tr>
<tr>
<td></td>
<td>26: Strain Relief, 12 position, Cable Dia. .335 - .345</td>
</tr>
</tbody>
</table>

LOCKING STYLE:
(use for receptacle only)

- P-POSI-LOK
- V-V-LOK

* Color
- 0 - Gray
- 1 - Black
PLUGS

Plugs are available in three shell sizes to accommodate 7, 12 and 24 contact configurations, in either gray or black. Plugs use socket contacts and mate with either POSI-LOK or V-LOK receptacles.

NEW PLUG DESIGN

The new design offers the OEM customer an insulator that accommodates screw machined contacts. The new closed entry protects the contact from any possible stubbing when mating the connectors together.

### Basic Plug Assembly

<table>
<thead>
<tr>
<th>Number of Contacts</th>
<th>Part Number</th>
<th>A (in)</th>
<th>B Dia. (in)</th>
<th>C Thd</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>TNP07-1 1</td>
<td>.63</td>
<td>.51</td>
<td>13/32-16 stub acme</td>
</tr>
<tr>
<td>12</td>
<td>TNP12-1 1</td>
<td>.63</td>
<td>.61</td>
<td>1/2-16 stub acme</td>
</tr>
<tr>
<td>24</td>
<td>TKP24-1 1</td>
<td>.83</td>
<td>.81</td>
<td>11/16-16 stub acme</td>
</tr>
</tbody>
</table>

*All dimensions in inches and (millimeters). Tolerance ±.010 (.25) unless otherwise specified.*

### New Plug Design

**POTTING SLEEVE**

**SEALING GASKET**

### Ordering Information

Part numbers on this page do not include contacts. Order socket contacts separately (see page 4). To order plug assemblies separately, use ordering diagram at right.

**PLUG SIZE:**

- 07 7 Contacts
- 12 12 Contacts
- 24 24 Contacts TKP (for 24 positions only)

**COLOR:**

- 0 Gray
- 1 Black

**TNP 07 - 1**
CABLE APPLICATIONS

Shown in this diagram is a typical wire to wire cable assembly application. Plugs mate with flange and bulkhead receptacles. Improved single piece rugged construction allows for easy mating and unmating, with either V-LOK or POSI-LOK locking styles.

SOCKET CONTACTS

Contacts are available in a screw machined style. Socket contacts are to be used with plugs. Contacts accept 22-26 AWG wire and use MIL-T-22520 crimp tool (for screw machined contacts only). To order contacts separately use part numbers below.

ORDERING INFORMATION

TYPE OF CONTACT:
TS-100* Screw Machined
DS-100* Dip Solder
TD-200 Dummy Filler
AU Gold
T Tin

*Add Au for gold plate or T for tin plate

THORKOM PLUG GASKET INSTALLATION INSTRUCTIONS

Tool Numbers: 7 position - 000407-0127
12 position - 000407-0128

Instructions: To Install Gasket:
A. Place gasket between shell and insulator.
B. Set installation tool grooves in line with locking keys of shell and push gasket down into the connector.
BULKHEAD MOUNTED RECEPTACLES

All receptacles are available in 7, 12 or 24 contacts in gray or black. POSI-LOK and V-LOK styles are offered. This receptacle can be used for cable applications or bulkhead mounted with a retaining ring which is supplied as part of the assembly.

BASIC BULKHEAD RECEPTACLE

MATERIAL AND FINISH

Insulator - High Strength Thermoplastic, U.L. 94V-2 approved.
Retaining Ring - Carbon Steel

REFERENCE INFORMATION

Applicable Specifications - Page 1
Backshell and Accessories - Page 8
Mateable Connectors - Page 3
Terminating Tools - Page 10

ORDERING INFORMATION-BULKHEAD RECEPTACLES

Part numbers on this page do not include contacts. Order pin contacts separately (see page 7). To order bulkhead mounted receptacles separately, use ordering diagram at right.
SQUARE FLANGE MOUNTED RECEPTACLES

All square flange receptacles are available in 7, 12 or 24 contacts in gray or black. Both POSI-LOK and V-LOK latching styles are offered.

### SQUARE FLANGE RECEPTACLE

**PART NUMBER**
- **TNR07-** 7 Contacts
- **TNR12-** 12 Contacts
- **TFR24-** 24 Contacts

**DIMENSIONS**
- **7 CONTACTS**
  - A: 0.50 (12.70) SQ.
  - C Thd: 0.420 (10.7)
- **12 CONTACTS**
  - A: 0.50 (12.7) SQ.
  - C Thd: 0.510 (12.9)
- **24 CONTACTS**
  - A: 0.700 (17.7) SQ.
  - C Thd: 0.710 (18.0)

**COLOR:**
- Gray (0)
- Black (1)

**LOCKING STYLE:**
- POSI-LOK (P)
- V-LOK (V)

### MOUNTING HOLE SIZES

<table>
<thead>
<tr>
<th>NUMBER OF CONTACTS</th>
<th>H Dia.</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>0.420 (10.7)</td>
<td>0.500 (12.7)</td>
</tr>
<tr>
<td>12</td>
<td>0.510 (12.9)</td>
<td>0.625 (15.8)</td>
</tr>
<tr>
<td>24</td>
<td>0.700 (17.7)</td>
<td>0.750 (19.0)</td>
</tr>
</tbody>
</table>

**ORDERING INFORMATION**

- Part numbers on this page do not include contacts. Order pin contacts separately (see page 7).
- To order square flange receptacles separately, use ordering diagram at right.

**CONNECTOR SIZE:**
- **TNR 07-** 7 Contacts
- **TNR 12-** 12 Contacts
- **TFR 24-** 24 Contacts (TFR 24 position only)

**COLOR:**
- Gray (0)
- Black (1)

**LOCKING STYLE:**
- POSI-LOK (P)
- V-LOK (V)
CONTACT PATTERNS

THORKOM subminiature cylindricals offer high contact density within minimum shell sizes. Shown here are contact hole patterns for the three THORKOM shell sizes.

PIN CONTACTS

Pin contacts are available in a screw machined type. Pins are typically used with receptacles. Contacts accept 22-26 AWG wire and use MIL-T-22520 crimp tool (screw machined contact only). To order contacts separately, use part numbers below.

*Add Au for gold plate or T for tin plate

ORDERING INFORMATION

To order backshells separately, use ordering diagram below. See page 2 for ordering backshells as part of complete assemblies.

TYPE OF PIN CONTACT:
- TP-100* Screw Machine Pin Contact
- DP-100* Dip Solder Pin Contact
- TD-200 Dummy Filler
- AU Gold
- T Tin

WIRE TO WIRE APPLICATIONS

This diagram illustrates a bulkhead mounted receptacle with attached strain relief backshell.

DIP SOLDER APPLICATIONS

Using dip solder contacts, THORKOM receptacles may be soldered directly into printed circuit boards or flexible circuitry. The dip solder contact is also used as a solder post for pressure or temperature transducer applications.
BACKSHELLS AND ACCESSORIES

The THORKOM series includes an assortment of backshells and accessories that provide environmental protection and strain relief protection. Backshells can be ordered separately or as complete connector/backshell assemblies, as illustrated on page 9.

STANDARD BACKSHELL

Viking standard strain relief/protective backshell assembly is easily installed. See page 2 for installation instructions. These strain relief backshells come in gray or black. The 7 and 12 position connectors each accommodate three different cable diameters.

NONSTANDARD BACKSHELLS

Long and short cable clamp, tie-strap and stovepipe backshells can create connector assemblies to be used in a multitude of applications. These backshells will require a factory quotation for price and delivery.

<table>
<thead>
<tr>
<th>NUMBER OF CONTACTS</th>
<th>PART NUMBER</th>
<th>RANGE OF CABLE DIAMETERS</th>
<th>STANDARD BACKSHELL DIMENSIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A ±.010</td>
<td>C Thd ±.005 D ±.005 E ±.005</td>
</tr>
<tr>
<td>7</td>
<td>TSR07-2C01</td>
<td>.50 (12.7)</td>
<td>13/32-16 stub acme .25 (6.3)</td>
</tr>
<tr>
<td>7</td>
<td>TSR07-2C2</td>
<td>.50 (12.7)</td>
<td>13/32-16 stub acme .25 (6.3)</td>
</tr>
<tr>
<td>7</td>
<td>TSR07-2C3</td>
<td>.50 (12.7)</td>
<td>13/32-16 stub acme .25 (6.3)</td>
</tr>
<tr>
<td>12</td>
<td>TSR12-2C4</td>
<td>.62 (15.7)</td>
<td>1-2/16 stub acme .31 (7.8)</td>
</tr>
<tr>
<td>12</td>
<td>TSR12-2C5</td>
<td>.62 (15.7)</td>
<td>1-2/16 stub acme .31 (7.8)</td>
</tr>
<tr>
<td>12</td>
<td>TSR12-2C6</td>
<td>.62 (15.7)</td>
<td>1-2/16 stub acme .31 (7.8)</td>
</tr>
</tbody>
</table>

ORDERING INFORMATION

To order backshells separately, use ordering diagram below. See page 2 for ordering backshells as part of complete assemblies.

<table>
<thead>
<tr>
<th>TYPE OF BACKSHELL</th>
<th>NUMBER OF CONTACTS</th>
<th>PART NUMBER</th>
<th>RANGE OF CABLE DIAMETERS</th>
<th>ORDERING INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>TKH</td>
<td>7</td>
<td>TKH07-1C0</td>
<td>.71 (18.0)</td>
<td>Thd .005</td>
</tr>
<tr>
<td>TPS</td>
<td>7</td>
<td>TPS07-1C2</td>
<td>.90 (22.8)</td>
<td>.50 (12.7)</td>
</tr>
<tr>
<td>TPS</td>
<td>7</td>
<td>TPS07-1C3</td>
<td>.90 (22.8)</td>
<td>.50 (12.7)</td>
</tr>
<tr>
<td>TPH07-1C5</td>
<td>1.46 (37.0)</td>
<td>.51 (12.9)</td>
<td>13/32-16 stub acme .23 (5.8)</td>
<td></td>
</tr>
<tr>
<td>TKH</td>
<td>12</td>
<td>TKH12-1C0</td>
<td>.71 (18.0)</td>
<td>Thd .005</td>
</tr>
<tr>
<td>TPS</td>
<td>12</td>
<td>TPS12-1C2</td>
<td>.90 (22.8)</td>
<td>.50 (12.7)</td>
</tr>
<tr>
<td>TPS</td>
<td>12</td>
<td>TPS12-1C3</td>
<td>.90 (22.8)</td>
<td>.50 (12.7)</td>
</tr>
<tr>
<td>TPH07-1C5</td>
<td>1.46 (37.0)</td>
<td>.51 (12.9)</td>
<td>13/32-16 stub acme .23 (5.8)</td>
<td></td>
</tr>
<tr>
<td>TKH</td>
<td>24</td>
<td>TKH24-1C0</td>
<td>.71 (18.0)</td>
<td>Thd .005</td>
</tr>
<tr>
<td>TPS</td>
<td>24</td>
<td>TPS24-1C2</td>
<td>.90 (22.8)</td>
<td>.50 (12.7)</td>
</tr>
<tr>
<td>TPS</td>
<td>24</td>
<td>TPS24-1C3</td>
<td>.90 (22.8)</td>
<td>.50 (12.7)</td>
</tr>
<tr>
<td>TPH07-1C5</td>
<td>1.63 (41.4)</td>
<td>.81 (20.5)</td>
<td>11/16-16 stub acme .34 (8.6)</td>
<td></td>
</tr>
</tbody>
</table>

*COLOR: 0 Gray 1 Black
CONTACTS: 07 12 Contacts 24 24 Contacts

All dimensions in inches and (millimeters). Tolerance ± .010 (.25) unless otherwise specified.
PLUG BACKSHELL ASSEMBLY DIMENSIONS

Plugs can be made up into plug backshell assemblies by ordering them with any of the five backshells available.

BULKHEAD & SQUARE FLANGE RECEPTACLES BACKSHELL ASSEMBLY DIMENSIONS

Receptacle backshell assemblies can be made up with either bulkhead or square flange receptacles and any of the five available backshells.

NUMBER OF CONTACTS | PART NUMBER | A | B Dia. | D | Dia. | E | Dia.
--- | --- | --- | --- | --- | --- | --- | ---
7 | TNP07 - 1 | 1.14 | (28.9) | .51 | (12.9) | .23 | ---
7 | TNP07 - 1 | 2 | 1.33 | (33.7) | .51 | (12.9) | .18 | (4.5) | .25 | (6.3)
7 | TNP07 - 1 | 3 | 1.33 | (33.7) | .51 | (12.9) | .18 | ---
7 | TNP07 - 1 | 5 | 1.89 | (48.0) | .51 | (12.9) | .36 | ---
7 | TNP07 - 2 | 1 | 1.55 | (39.9) | .51 | (12.9) | .265 | ---
7 | TNP07 - 2 | 2 | 1.55 | (39.9) | .51 | (12.9) | .265 | ---
7 | TNP07 - 2 | 3 | 1.55 | (39.9) | .51 | (12.9) | .265 | ---
12 | TNP12 - 1 | 0 | 1.14 | (28.9) | .61 | (15.5) | .30 | ---
12 | TNP12 - 1 | 2 | 1.33 | (33.7) | .61 | (15.5) | .25 | .31 | ---
12 | TNP12 - 1 | 3 | 1.33 | (33.7) | .61 | (15.5) | .25 | ---
12 | TNP12 - 1 | 5 | 1.91 | (48.9) | .61 | (15.5) | .34 | ---
12 | TNP12 - 2 | 4 | 1.55 | (38.8) | .61 | (15.5) | .345 | ---
12 | TNP12 - 2 | 5 | 1.55 | (38.8) | .61 | (15.5) | .345 | ---
12 | TNP12 - 2 | 6 | 1.55 | (38.8) | .61 | (15.5) | .345 | ---
24 | TPK24 - 1 | 2 | 1.14 | (28.9) | .81 | (20.6) | .31 | (7.8) | .37 | (9.3)
24 | TPK24 - 1 | 3 | 1.33 | (33.7) | .81 | (20.6) | .31 | ---
24 | TPK24 - 1 | 5 | 2.06 | (52.3) | .81 | (20.6) | .50 | (12.7) | ---

All dimensions in inches and (millimeters). Tolerance ± .010 (.25) unless otherwise specified.

PROTECTIVE BOOTS

Application with THORKOM Plug

The protective boot is available for use with the 7 or 12 contact series plug/backshell assembly. The boot is transparent and provides a splash proof, moisture seal for the mated plug and bulkhead mounted receptacle.

PROTECTIVE BOOTS USED WITH:

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>PROTECTIVE BOOTS</th>
<th>BOOT PART NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 contact THORKOM plug backshell assembly</td>
<td>PROTECTIVE</td>
<td>035-0158-000</td>
</tr>
<tr>
<td>12 contact THORKOM plug backshell assembly</td>
<td>BOOTS</td>
<td>035-0159-000</td>
</tr>
</tbody>
</table>
CONTACT INSERTION/EXTRACTION TOOLS

TIE-100
Handle contains 3 Tips

GREEN (115-0147-000)
Insertion (from rear)
Both Pin & Socket

RED (115-0150-000)
Socket Contact Extractor
(from front of plug)

BLUE (115-0392-000)
Pin Contact Extractor
(from front of receptacle)

CRIMP TOOLS

T-422 CRIMP TOOL
Crimps contact wire sizes 22 & 24 AWG only

TC-100 CRIMP TOOL
Crimps 22 thru 26 AWG wire sizes

HAND WIRE STRIPPER

HWS-100
Strips wire gauges 17 thru 28 AWG
to precise length every time.

ASSEMBLY INSTRUCTIONS

A. Crimping
(Use wire gauges 22 thru 26 AWG.)
1. Strip insulation from wire exposing conductor 200" + .015".
2. Insert contact into crimping tool positioner and insert stripped end of wire into contact crimp barrel.
3. Close crimp tool until tool releases—remove contact and wire assembly.

B. Contact Insertion
Step I.
Place insulator for contact insertion onto proper mating connector on fixture.
Step II.
Feed wire bundle thru the backshell (if one is used). Insert contacts by hand into the back of the insulator.
Step III.
Fit insertion tip between end of wire insulator and end of crimp barrel. Push contact into insulator until contact snaps into locked position. Slide backshell forward and thread it into the insulator.