Recognized worldwide for cutting-edge exploration, drilling and production technology, Dril-Quip maintains its leadership in today’s demanding oil and gas industry. While Dril-Quip’s state-of-the-art equipment, support and service give unique advantages to operators in the tough environments of today, our engineering staff brings proven skills and experience to bear on the complex needs of the future. The Dril-Quip quality system ensures that proper steps are taken to provide consistent high quality in accordance with industry standards. We employ the most modern equipment and techniques available to ensure dimensional accuracy and consistent high quality.

DRIL-QUIP: A LEADER IN TECHNOLOGY AND QUALITY

TABLE OF CONTENTS

- Facilities ...................................................... 1

Threaded Connectors
- Quik-Thread® & Multi-Thread™ ....................... 2
- Quik-Stab™ .................................................. 10
- Quik-Jay™ .................................................. 14
- Design ......................................................... 16
- Testing ......................................................... 17
- Fabrication ................................................... 18
- Pipe .............................................................. 19
- Pipe Specifications ................................. 20
Headquartered in Houston, Texas, Dril-Quip has manufacturing facilities in the United States, Scotland, Singapore and Brazil. The Company also has sales and services offices in numerous locations throughout the world.

All Dril-Quip facilities have a commitment to manufacture and deliver high quality products and services. The Company manufactures essentially all of its products in-house from high grade steel forgings produced at the Company’s forging facility. Computer numerically controlled (CNC) machine tools are used for consistent high quality, precision machining and dimensional accuracy. Computer tracking systems schedule and monitor each customer’s order throughout the manufacturing process, ensuring product quality and timely delivery.

The Company’s quality management system assures that products are manufactured to customer specifications and applicable industry standards. Dril-Quip quality management system and manufacturing facilities are ISO 9001:2008 certified, licensed to applicable API product specifications and API Q1 certified.
Quik-Thread Connectors offer fast make-up, reliable sealing and versatility to excel in a variety of drilling applications. Their rugged thread form and automatic self-aligning profiles allow for quick and easy installation in the field. Quik-Thread Connectors can be outfitted with anti-rotation keys for added security in harsh drilling environments.

Recommended Applications
- For casing run from any floating rig where rig movement and deepwater current may be encountered
- For casing run from a dual-activity floating rig
- For “lost circulation” hole sections
- For riser casing strings in mudline suspension system wells

Only 2½ turns to fully make up

The Quik-Thread Connector provides a fast and reliable means of running large diameter tubulars in any application.

FEATURES: Quik-Thread and Multi-Thread
- Easy stabbing
- Self-aligning
- No cross-threading
- Fast make-up
- Low torque
- Visual indication of make-up
- High strength
- High-pressure sealing
- Driveable
- Anti-rotation devices available
- Reusable
- Fully tested
- Field-proven technology
- Easily weldable
Multi-Thread Connectors provide a definite advantage for quick make-up of large diameter tubulars. Only 5/8 turn to fully make up. Recommended Applications:

- Shallow water applications
- All bottom supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Suitable for jetting operations when used with anti-rotation devices

Multi-Thread Connectors make up in less than one turn and cannot be cross-threaded.

Multi-Thread Connectors and protectors have an identifying groove that easily distinguishes them from Quik-Thread Connectors.

The Multi-Thread Connector provides a definite advantage for quick make-up of large diameter tubulars.
EXCEPTIONAL STRENGTH

Drill-Quip threaded connectors are manufactured from high-quality ring-rolled alloy forgings. The unique geometry of the connectors, combined with high-quality materials, provide for optimum bending, tension and pressure capacities.

RUGGED THREAD FORM

The rugged thread forms of the Quik-Thread and Multi-Thread Connectors are designed with a negative 5° angle on the load flank of the thread. This feature provides an interlocking force, ensuring a positive radial mechanical lock between the box and pin that prevents thread jump-out. The pitch of the thread provides for higher load-carrying capacity while reducing stress concentration. The non-interference thread design reduces radial stresses in the connection. The steep thread taper provides thicker wall sections at the higher load-carrying first threads of the pin and box.

RELIABLE SEALING CAPACITY

A resilient seal located in the box provides reliable high pressure-sealing capacity. The seal is located below the threads to prevent pressure migration through the threaded area for increased pressure-sealing capacity. Dual metal-to-metal sealing is available as an option.

POSITIVE ALIGNMENT

Alignment profiles above and below the threaded section provide alignment before thread contact occurs. This unique design assures perfect alignment every time and prevents cross-threading.
OPTIONAL CONNECTORS FOR FATIGUE APPLICATIONS

Dril-Quip Quik-Thread Connectors can be used in deepwater conductor pipe and production platform riser applications where long-term fatigue life is crucial. For these riser applications, Dril-Quip offers a thread form with a full root radius that dramatically decreases the Stress Amplification Factor and increases fatigue life. Connectors best suited for long-term fatigue applications are the H-type with drive shoulder on the pin and the HC-type.

CONNECTORS WITH METAL-TO-METAL SEALS

Dril-Quip offers a metal-to-metal sealing option on its Quik-Thread Connectors. Two metal-to-metal areas straddle the O-ring groove in the box connector with a corresponding metal seal area on the connector pin nose. By adding the metal seal, the connectors become suitable for gas service.

FAST MAKE-UP AND EASY HANDLING

1. Pick up the pipe according to normal rig operations; no special handling is required.

2. Check pin connector for contamination or damage.

3. If needed, re-apply to the box connection a light coat of lubricant.

4. Stab the pin into the box and slack off full joint weight on the connection.

5. Rotate the joint to the right with power tongs or rig tongs.
   
   **Quik-Thread**: Rotate approximately 2 1/2 turns to fully make up.

   **Multi-Thread**: Rotate approximately 5/8 of a turn to fully make up.

6. Perform final make-up torque according to table below.

7. Confirm connector make-up by examining the visual indicator.

### Specialty Threaded Connector

<table>
<thead>
<tr>
<th>Size</th>
<th>Recommended Torque Range (ft-lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16&quot;</td>
<td>16,000 50,000</td>
</tr>
<tr>
<td>18 7/8&quot;</td>
<td>19,000 50,000</td>
</tr>
<tr>
<td>20&quot;</td>
<td>20,000 50,000</td>
</tr>
<tr>
<td>22&quot;</td>
<td>22,000 50,000</td>
</tr>
<tr>
<td>24&quot;</td>
<td>24,000 50,000</td>
</tr>
<tr>
<td>26&quot;</td>
<td>26,000 50,000</td>
</tr>
<tr>
<td>28&quot;</td>
<td>28,000 50,000</td>
</tr>
<tr>
<td>30&quot;</td>
<td>30,000 50,000</td>
</tr>
<tr>
<td>36&quot;</td>
<td>36,000 50,000</td>
</tr>
<tr>
<td>38&quot;</td>
<td>38,000 50,000</td>
</tr>
</tbody>
</table>

30” Quik-Thread installation
Threaded connectors are often used in applications that require the use of anti-rotation devices. These devices prevent connection back-out or over-torque that may occur as a result of torsional forces or impact loads.

Torsional forces, for example, could be applied to the connectors during make-up/release of mudline suspension running and tie-back tools and high-current conditions. Also, impact loads generated during driving applications can result in connector back-off or over-torque. Anti-rotation keys are available to prevent these types of rotation.

Dril-Quip offers two types of anti-rotation devices:

- **Horizontal Cam Key**
- **Vertical Slot Key**

The connector selected for a given application determines which key is used.

**Horizontal Cam Key**

Connectors designed with a secondary drive shoulder are designated D-type connectors. These connectors are equipped with horizontal cam-type anti-rotation keys.

Cam-style anti-rotation keys are installed into a mating cam-shaped slot on the OD of the pin. Diametrically opposed keys are installed in opposite directions to prevent right- or left-hand rotation. The hardened keys have serrations that bite into the top shoulder of the box. Any attempt to rotate the pin is immediately stopped by the camming action of the keys. The keys are retained in their slots by an Allen-head bolt and can be easily removed, if necessary.

**Vertical Slot Key**

Connectors that do not have a secondary drive shoulder require vertical slot keys. When the key is installed into a slot in the pin, the serrations bite into the ID of the box, preventing rotation of the pin relative to the box. The key is captured in the slot to prevent disengagement during driving operations. The key does not protrude past the OD of the box and can be easily removed, if necessary.
SPECIALTY CONNECTORS

Technical Data Sheets

Type E and S Family
The 20” E-60 specialty connector is Dril-Quip’s standard model, weld-on, light duty performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The E-60 Connector is manufactured using 60 ksi yield carbon steel material and is compatible with pipe material of similar strength. The connector has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments. The connector has passed the requirements set forth by ISO 13679:2011(Draft) CAL I-E.

Dril-Quip provides two types of threaded connectors:

The E-60 Quik-Thread Connector – up to 2-1/2 turns make-up connector recommended for:

- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

The E-60 Multi-Thread Connector – up to a 5/8 turn make-up connector recommended for:

- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

E-60 20" x 0.625" Technical Specifications

<table>
<thead>
<tr>
<th>Size</th>
<th>Wall</th>
<th>OD</th>
<th>ID</th>
<th>Material Yield</th>
<th>Yield Capacities</th>
</tr>
</thead>
<tbody>
<tr>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(psi)</td>
<td>Compression</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tension</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bending</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Internal Pressure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>External Pressure</td>
</tr>
<tr>
<td>20</td>
<td>.625</td>
<td>20.87</td>
<td>18.75</td>
<td>60,000</td>
<td>1.069 (10^6 lbf)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.684 (10^6 lbf)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.444 (10^6 ft-lb)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2,460 (psi)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,320 (psi)</td>
</tr>
</tbody>
</table>

For fatigue information contact your Dril-Quip representative.
The 30" S-60 specialty connector is a medium performance, weld-on connector that incorporates all of the field-proven, easy operational features of Dril-Quip’s standard specialty connector. The S-60 Connector is manufactured using 60 ksi yield carbon steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. The connector has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments. The connector has passed the requirements set forth by ISO 13679:2011(Draft) CAL I-E.

**Dril-Quip** provides two types of threaded connectors:

The S-60 Quik-Thread Connector – up to 2-1/2 turns make-up connector recommended for:
- Conductor pipe run from a floating rig where rig movement or ocean currents may be encountered
- Conductor pipe run from a dual-activity floating rig
- "Lost circulation" hole sections
- Riser casing strings in mudline suspension system wells
- Jetting operations when used with anti-rotation devices
- Make-up using power tongs

The S-60 Multi-Thread Connector – up to a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where conductor pipe will be run directly into the hole
- Make-up using manual tongs

---

**S-60 30” x 1.00” Technical Specifications**

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Wall (in)</th>
<th>OD (in)</th>
<th>ID (in)</th>
<th>Material Yield (ksi)</th>
<th>Yield Capacities (psi)</th>
<th>Limit*</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>1.00</td>
<td>32.00</td>
<td>28.00</td>
<td>60,000</td>
<td>Compression: 3.887 (10^6 lbf)  Tension: 3.992 (10^6 lbf)  Bending: 2.342 (10^6 ft-lbf)  Internal Pressure: 4,800 (psi)  External Pressure: 2,500 (psi)</td>
<td></td>
</tr>
</tbody>
</table>

For fatigue information contact your Dril-Quip representative.

*External pressure limited by connector seal.
For fatigue information contact your Dril-Quip representative.

---

**S-60D 30” x 1.00” SPECIALTY CASING CONNECTOR**

**Dril-Quip** provides two types of threaded connectors:

**The S-60D Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Conductor pipe run from a floating rig where rig movement or ocean currents may be encountered
- Conductor pipe run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Jetting operations when used with anti-rotation devices
- Make-up using power tongs

**The S-60D Multi-Thread Connector** – up to a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where conductor pipe will be run directly into the hole
- Make-up using manual tongs

---

**S-60D 30” x 1.00” CONNECTOR**

- **Internal Pressure Compression Load**
- **Internal Pressure Tension Load**
- **External Pressure Compression Load**
- **External Pressure Tension Load**

True Wall Tension (lbs X 10^6)

Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA.

---

**S-60D 30” x 1.00” Technical Specifications**

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Wall (in)</th>
<th>OD (in)</th>
<th>ID (in)</th>
<th>Material Yield (psi)</th>
<th>Compression (10^6 lbf)</th>
<th>Tension (10^6 lbf)</th>
<th>Bending (10^6 ft-lb)</th>
<th>Internal Pressure (psi)</th>
<th>External Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>1.00</td>
<td>32.00</td>
<td>28.00</td>
<td>60,000</td>
<td>5.299</td>
<td>3.992</td>
<td>2.573</td>
<td>4,990</td>
<td>2,500</td>
</tr>
</tbody>
</table>

*External pressure limited by connector seal.

For fatigue information contact your Dril-Quip representative.
**Dril-Quip Technical Data Sheet**

**S-60D 28” x .750” Specialty Casing Connector**

**D = Suitable For Driving Applications**

The 28” S-60D specialty connector is Dril-Quip’s standard model, weld-on, medium performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The S-60D Connector is manufactured using 60 ksi yield carbon steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. It has a dual shoulder profile that makes it stronger in compression and suitable for driving applications. The connector has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments. The connector has passed the requirements set forth by ISO 13679:2011(Draft) CAL I-E.

**Dril-Quip provides two types of threaded connectors:**

- **The S-60D Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
  - Casing run from a floating rig where rig movement or ocean currents may be encountered
  - Casing run from a dual-activity floating rig
  - “Lost circulation” hole sections
  - Riser casing strings in mudline suspension system wells
  - Make-up using power tongs

- **The S-60D Multi-Thread Connector** – up to a 5/8 turn make-up connector recommended for:
  - Shallow and deep water applications
  - Bottom-supported drilling vessels or moored floating drilling vessels
  - Applications where casing will be run directly into the hole
  - Make-up using manual tongs

---

**S-60D 28” x .750” Connector**

- **Internal Pressure Compression Load**
- **Internal Pressure Tension Load**
- **External Pressure Compression Load**
- **External Pressure Tension Load**

![Graph showing connector performance envelope](image)

Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA. Capacity envelope validated with physical test at 90% level per ISO 13679 CAL I-E.

**S-60 28” x .750” Technical Specifications**

<table>
<thead>
<tr>
<th>Size</th>
<th>Wall</th>
<th>OD</th>
<th>ID</th>
<th>Material Yield</th>
<th>Yield Capacities</th>
<th>Limit*</th>
</tr>
</thead>
<tbody>
<tr>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(psi)</td>
<td>Compression</td>
<td>Tension</td>
</tr>
<tr>
<td>28</td>
<td>.750</td>
<td>29.88</td>
<td>26.25</td>
<td>60,000</td>
<td>4.289</td>
<td>3.267</td>
</tr>
</tbody>
</table>

*For fatigue information contact your Dril-Quip representative.*

*External pressure limited by connector seal.*

12072016
The 24" S-60 specialty connector is Dril-Quip’s standard model, weld-on, medium performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The S-60 Connector is manufactured using 60 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. The connector has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

**Dril-Quip** provides two types of threaded connectors:

The **S-60 Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

The **S-60 Multi-Thread Connector** – up to a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

---

**S-60 24” x .500” SPECIALTY CASING CONNECTOR**

**24”**

**S-60 Profile**

**S-60 24” x .500” CONNECTOR**

**Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA.**

---

**S-60 24” x .500” Technical Specifications**

<table>
<thead>
<tr>
<th>Size</th>
<th>Wall</th>
<th>OD</th>
<th>ID</th>
<th>Material Yield</th>
<th>Yield Capacities</th>
<th>Limit*</th>
</tr>
</thead>
<tbody>
<tr>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(psi)</td>
<td>Compression</td>
<td>Tension</td>
</tr>
<tr>
<td>24</td>
<td>.500</td>
<td>25.25</td>
<td>22.25</td>
<td>60,000</td>
<td>1.566</td>
<td>2.162</td>
</tr>
</tbody>
</table>

*External pressure limited by connector seal.

For fatigue information contact your Dril-Quip representative.
The 22" S-60 specialty connector is Dril-Quip’s standard model, weld-on, medium performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The S-60 Connector is manufactured using 60 ksi yield carbon steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. The connector has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments. The connector has passed the requirements set forth by ISO 13679:2011(Draft) CAL I-E.

**DRIL-QUIP provides two types of threaded connectors:**

**The S-60 Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The S-60 Multi-Thread Connector** – up to a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

---

**S-60 22" x 1.00" Connector**

<table>
<thead>
<tr>
<th>ID</th>
<th>OD</th>
<th>Wall</th>
<th>Material Yield</th>
<th>Compression (10^6 lbf)</th>
<th>Tension (10^6 lbf)</th>
<th>Bending (10^6 ft-lbf)</th>
<th>Internal Pressure (psi)</th>
<th>External Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>2.00</td>
<td>1.00</td>
<td>60,000</td>
<td>2.015</td>
<td>2.442</td>
<td>1.101</td>
<td>3,975</td>
<td>3,780</td>
</tr>
</tbody>
</table>
The 22” S-90DM-CR specialty connector is DRIL-QUIP’s standard model, weld-on, high performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The S-90DM-CR Connector is manufactured using 90 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. It has a dual shoulder profile that makes it stronger in compression and suitable for driving applications. The connector has been designed with both resilient and metal-to-metal seals in the shoulder of the box to provide gas tight sealing capacity suitable for most high pressure applications. An elastomeric environment exclusion seal provides high collapse resistance without requiring increased make-up torque. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

Dril-Quip provides two types of threaded connectors:

The S-90DM-CR Quik-Thread Connector – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

The S-90DM-CR Multi-Thread Connector – up to a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

For fatigue information contact your Dril-Quip representative.

**External pressure limited by connector seal.**
The 22" S-90DME-CR specialty connector is Dril-Quip’s standard model, weld-on, high performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The S-90DME-CR Connector is manufactured using 90 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. It has a dual shoulder profile that makes it stronger in compression and suitable for driving applications. The connector has been designed with both resilient and metal-to-metal seals in the shoulder of the box to provide gas tight sealing capacity suitable for most high pressure applications. The enhanced metal-to-metal seal passes ISO 13679 make and break-out testing requirements. An elastomeric environment exclusion seal provides high collapse resistance without requiring increased make-up torque. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments. The connector has passed the requirements set forth by ISO 13679:2011(Draft) CAL I-E.

Dril-Quip provides two types of threaded connectors:

The S-90DME-CR Quik-Thread Connector – up to 2-1/2

turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

The S-90DME-CR Multi-Thread Connector – up to a 5/8 turn

make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

For fatigue information contact your Dril-Quip representative. *External pressure limited by connector seal.
The 20” S-60 specialty connector is Dril-Quip’s standard model, weld-on, medium performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The S-60 connector is manufactured using 60 ksi yield carbon steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. The connector has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

Dril-Quip provides two types of threaded connectors:

The S-60 Quik-Thread Connector – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

The S-60 Multi-Thread Connector – up to a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

**S-60 20” x .812” CONNECTOR**

Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA.

**S-60 20” x .812” Technical Specifications**

<table>
<thead>
<tr>
<th>Size</th>
<th>Wall</th>
<th>OD</th>
<th>ID</th>
<th>Material Yield</th>
<th>Yield Capacities</th>
<th>Limit*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(psi)</td>
<td>Compression (10^6 lbf)</td>
<td>Tension (10^4 lbf)</td>
</tr>
<tr>
<td>20</td>
<td>.812</td>
<td>21.00</td>
<td>18.25</td>
<td>60,000</td>
<td>1.196</td>
<td>1.903</td>
</tr>
</tbody>
</table>

*External pressure limited by connector seal.

For fatigue information contact your Dril-Quip representative.

12072016
The 20" S-60 specialty connector is Dril-Quip’s standard model, weld-on, medium performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The S-60 Connector is manufactured using 60 ksi yield carbon steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. The connector has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments. The connector has passed the requirements set forth by ISO 13679:2011(Draft) CAL I-E.

**Dril-Quip provides two types of threaded connectors:**

**The S-60 Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The S-60 Multi-Thread Connector** – up to a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA. Capacity envelope validated with physical test at 90% level per ISO 13679 CAL I-E.

---

**S-60 20" x 1.00" Technical Specifications**

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Wall (in)</th>
<th>OD (in)</th>
<th>ID (in)</th>
<th>Material Yield (ksi)</th>
<th>Yield Capacities</th>
<th>Limit (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Compression (10^6 lbf)</td>
<td>Tension (10^6 lbf)</td>
</tr>
<tr>
<td>20</td>
<td>1.00</td>
<td>21.00</td>
<td>18.00</td>
<td>60,000</td>
<td>1.585</td>
<td>1.905</td>
</tr>
</tbody>
</table>

For fatigue information contact your Dril-Quip representative. *External pressure limited by connector seal.*
DRIL-QUIP Technical Data Sheet

S-60D  20” x 1.00” SPECIALTY CASING CONNECTOR

D = Suitable For Driving Applications

The 20” S-60D specialty connector is DRIL-QUIP’s standard model, weld-on, medium performance connector that incorporates all of the field-proven, easy operational features of it’s specialty connector product family. The S-60D Connector is manufactured using 60 ksi yield carbon steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. It has a dual shoulder profile that makes it stronger in compression and suitable for driving applications. The connector has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

DRIL-QUIP provides two types of threaded connectors:

The S-60D Quik-Thread Connector – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

The S-60D Multi-Thread Connector – up to a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

---

**S-60D 20” x 1.00” CONNECTOR**

![Connector Profile]

**S-60D Profile**

**S-60D 20” x 1.00” Technical Specifications**

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Wall (in)</th>
<th>OD (in)</th>
<th>ID (in)</th>
<th>Material Yield (psi)</th>
<th>Yield Capacities</th>
<th>Limit* (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>1.00</td>
<td>21.00</td>
<td>18.00</td>
<td>60,000</td>
<td>Compression: 2.936</td>
<td>Internal Pressure Tension: 1.905</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tension: 1.905</td>
<td>External Pressure: 1.053</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bending: 6,870</td>
<td>Internal Pressure: 6,870</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>External Pressure: 3,000</td>
<td></td>
</tr>
</tbody>
</table>

*For fatigue information contact your DRIL-QUIP representative. * *External pressure limited by connector seal.*
The 20" S-90 specialty connector is Dril-Quip’s standard model, weld-on, high performance connector that incorporates all of the field-proven, easy operational features of it’s specialty connector product family. The S-90 Connector is manufactured using 90 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. The connector has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

Dril-Quip provides two types of threaded connectors:

**The S-90 Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- "Lost circulation" hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The S-90 Multi-Thread Connector** – up to a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

---

**S-90 20" x .812" Connector Bending Capacities**

Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA.

---

**S-90 20" x .812" Technical Specifications**

<table>
<thead>
<tr>
<th>Size</th>
<th>Wall</th>
<th>OD</th>
<th>ID</th>
<th>Material Yield</th>
<th>Yield Capacities</th>
<th>Limit*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(in)</td>
<td>Compression (10^6 lbf)</td>
<td>Tension (10^5 lbf)</td>
</tr>
<tr>
<td>20</td>
<td>.812</td>
<td>21.00</td>
<td>18.25</td>
<td>90,000</td>
<td>1.904</td>
<td>2.855</td>
</tr>
</tbody>
</table>

For fatigue information contact your Dril-Quip representative.

*External pressure limited by connector seal.
The 28" D-60-CR specialty connector is a weld-on, medium performance connector that incorporates all of the field-proven, easy operational features of Dril-Quip’s standard specialty connector. The D-60-CR Connector is manufactured using 60 ksi yield alloy steel material and is compatible with pipe material of similar strength. It has a thick wall section and rugged thread form that makes it ideal for applications requiring high structural capacity. The connector has a dual shoulder profile that makes it stronger in compression and a flush O.D. that facilitates penetration in driving applications. It has been designed with a one-way seal in the shoulder of the pin to isolate the thread from seawater and a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

**Dril-Quip provides two types of threaded connectors:**

**The D-60-CR Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The D-60-CR Multi-Thread Connector** – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

---

**D-60-CR 28" x .750" CONNECTOR**

**Internal Pressure**
- Compression Load:
  - 4,760 lbf
- Tension Load:
  - 3,000 lbf

**External Pressure**
- Compression Load:
  - 4,000 lbf
- Tension Load:
  - 4,000 lbf

**True Wall Tension (lbs x 10^6)**

**Connector Performance Envelope (at 100% Yield)**

**D-60-CR 28" x .750" Technical Specifications**

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Wall (in)</th>
<th>OD (in)</th>
<th>ID (in)</th>
<th>Material Yield (psi)</th>
<th>Compression Tension (10^6 lbf)</th>
<th>Bending (10^6 ft-lbf)</th>
<th>Internal Pressure (psi)</th>
<th>External Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>.750</td>
<td>28.12</td>
<td>24.25</td>
<td>60,000</td>
<td>3.831</td>
<td>2.803</td>
<td>1.928</td>
<td>4,760</td>
</tr>
</tbody>
</table>

For fatigue information contact your Dril-Quip representative.

*External pressure limited by connector seal.*
The 30" D-60 specialty connector is a weld-on, medium performance connector that incorporates all of the field-proven, easy operational features of Dril-Quip’s standard specialty connector. The D-60 Connector is manufactured using 60 ksi yield alloy steel material and is compatible with pipe material of similar strength. It has a thick wall section and rugged thread form that makes it ideal for applications requiring high structural capacity. The connector has a dual shoulder profile that makes it stronger in compression and a flush O.D. that facilitates penetration in driving applications. It has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

**Dril-Quip** provides two types of threaded connectors:

**The D-60 Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The D-60 Multi-Thread Connector** – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

---

**D-60 30" x 1.000" CONNECTOR**

**D-60 30" x 1.000" SPECIALTY CASING CONNECTOR**

---

**D-60 30" x 1.000" Technical Specifications**

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Wall (in)</th>
<th>OD (in)</th>
<th>ID (in)</th>
<th>Material Yield (ksi)</th>
<th>Compression (10^6 lbf)</th>
<th>Tension (10^6 lbf)</th>
<th>Bending (10^6 ft-lbf)</th>
<th>Internal Pressure (psi)</th>
<th>External Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>1.000</td>
<td>30.12</td>
<td>26.25</td>
<td>60,000</td>
<td>4.807</td>
<td>3.363</td>
<td>2.778</td>
<td>5,450</td>
<td>1,000</td>
</tr>
</tbody>
</table>

*For fatigue information contact your Dril-Quip representative.*

*External pressure limited by connector seal.*
The 30" D-60 specialty connector is a weld-on, medium performance connector that incorporates all of the field-proven, easy operational features of Dril-Quip’s standard specialty connector. The D-60 Connector is manufactured using 60 ksi yield alloy steel material and is compatible with pipe material of similar strength. It has a thick wall section and rugged thread form that makes it ideal for applications requiring high structural capacity. The connector has a dual shoulder profile that makes it stronger in compression and a flush O.D. that facilitates penetration in driving applications. It has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments. The connector has passed the requirements set forth by ISO 13679:2011(Draft) CAL I-E.

**D-60 Qwik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**D-60 Multi-Thread Connector** – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

---

**D-60 30" x 1.500" Technical Specifications**

<table>
<thead>
<tr>
<th>Size</th>
<th>Wall</th>
<th>OD</th>
<th>ID</th>
<th>Material Yield</th>
<th>Compression</th>
<th>Tension</th>
<th>Bending</th>
<th>Internal Pressure</th>
<th>External Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(psi)</td>
<td>(10^6 lbf)</td>
<td>(10^6 lbf)</td>
<td>(10^6 ft-lb)</td>
<td>(psi)</td>
<td>(psi)</td>
</tr>
<tr>
<td>30</td>
<td>1.500</td>
<td>30.12</td>
<td>26.25</td>
<td>60,000</td>
<td>4.980</td>
<td>3.563</td>
<td>2.778</td>
<td>6,040</td>
<td>1,000</td>
</tr>
</tbody>
</table>

*For fatigue information contact your Dril-Quip representative.  *External pressure limited by connector seal.
The 30” D-90 specialty connector is a heavy-duty model weld-on, medium performance connector that incorporates all of the field-proven, easy operational features of Dril-Quip’s standard specialty connector. The D-90 Connector is manufactured using 90 ksi yield alloy steel material and is compatible with pipe material of similar strength. It has a thick wall section and rugged thread form that makes it ideal for applications requiring high structural capacity. The connector has a dual shoulder profile that makes it stronger in compression and a flush O.D. that facilitates penetration in driving applications. It has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments. The connector has passed the requirements set forth by ISO 13679:2011(Draft) CAL I-E.

Dril-Quip provides two types of threaded connectors:

The D-90 Quik-Thread Connector – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

The D-90 Multi-Thread Connector – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA. Capacity envelope validated with physical test at 90% level per ISO 13679 CALI-E.

<table>
<thead>
<tr>
<th>D-90 30” x 1.500” Technical Specifications</th>
<th>Limit*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>Wall</td>
</tr>
<tr>
<td>(in)</td>
<td>(in)</td>
</tr>
<tr>
<td>30</td>
<td>1.500</td>
</tr>
</tbody>
</table>

*External pressure limited by connector seal.

For fatigue information contact your Dril-Quip representative.
The 36" D-60 specialty connector is a weld-on, medium performance connector that incorporates all of the field-proven, easy operational features of Dril-Quip’s standard specialty connector. The D-60 Connector is manufactured using 60 ksi yield alloy steel material and is compatible with pipe material of similar strength. It has a thick wall section and rugged thread form that makes it ideal for applications requiring high structural capacity. The connector has a dual shoulder profile that makes it stronger in compression and a flush O.D. that facilitates penetration in driving applications. It has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

Dril-Quip provides two types of threaded connectors:

The D-60 Quik-Thread Connector – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

The D-60 Multi-Thread Connector – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA.

D-60 36" x 1.000" CONNECTOR

D-60 Profile

D-60 36" x 1.000" Technical Specifications

<table>
<thead>
<tr>
<th>Size</th>
<th>Wall</th>
<th>OD</th>
<th>ID</th>
<th>Material Yield</th>
<th>Yield Capacities</th>
<th>Limit*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(ksi)</td>
<td>Compression 10^6 lbf</td>
<td>Tension 10^6 lbf</td>
</tr>
<tr>
<td>36</td>
<td>1.000</td>
<td>36.12</td>
<td>32.00</td>
<td>60,000</td>
<td>5.008</td>
<td>3.666</td>
</tr>
</tbody>
</table>

For fatigue information contact your Dril-Quip representative. *External pressure limited by connector seal.
The 36” D-90-FR specialty connector is a weld-on, medium performance connector that incorporates all of the field-proven, easy operational features of Dril-Quip’s standard specialty connector. The D-90 Connector is manufactured using 90 ksi yield alloy steel material and is compatible with pipe material of similar strength. It has a thick wall section and rugged thread form that makes it ideal for applications requiring high structural capacity. Its features a full root radius thread that has been optimized to extend fatigue life. The connector has a dual shoulder profile that makes it stronger in compression and a flush O.D. that facilitates penetration in driving applications. It has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

**Dril-Quip provides two types of threaded connectors:**

**The D-90-FR Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The D-90-FR Multi-Thread Connector** – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

**Finish machine drawing only. No assembly drawing.**

**D-90-FR 36” x 1.127” Technical Specifications**

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Wall (in)</th>
<th>OD (in)</th>
<th>ID (in)</th>
<th>Material Yield (ksi)</th>
<th>Compression (lbf X 10^6)</th>
<th>Tension (lbf X 10^6)</th>
<th>Bending (ft-lb X 10^6)</th>
<th>Internal Pressure (psi)</th>
<th>External Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>1.127</td>
<td>36.12</td>
<td>32.00</td>
<td>90,000</td>
<td>10.113</td>
<td>5.692</td>
<td>5.501</td>
<td>7,175</td>
<td>1,100</td>
</tr>
</tbody>
</table>

*For fatigue information contact your Dril-Quip representative.*

*External pressure limited by connector seal.*
The 36” D-60 specialty connector is a weld-on, medium performance connector that incorporates all of the field-proven, easy operational features of Dril-Quip’s standard specialty connector. The D-60 Connector is manufactured using 60 ksi yield alloy steel material and is compatible with pipe material of similar strength. It has a thick wall section and rugged thread form that makes it ideal for applications requiring high structural capacity. The connector has a dual shoulder profile that makes it stronger in compression and a flush O.D. that facilitates penetration in driving applications. It has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments. The connector has passed the requirements set forth by ISO 13679:2011(Draft) CAL I-E.

**Dril-Quip** provides two types of threaded connectors:

**The D-60 Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The D-60 Multi-Thread Connector** – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

---

### D-60 36” x 1.500” SPECIALTY CASING CONNECTOR

<table>
<thead>
<tr>
<th>Size</th>
<th>Wall</th>
<th>OD</th>
<th>ID</th>
<th>Material Yield</th>
<th>Internal Pressure Capacity</th>
<th>External Pressure Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(psi)</td>
<td>(psi X 1000)</td>
<td>(psi X 1000)</td>
</tr>
<tr>
<td>36</td>
<td>1.50</td>
<td>36.12</td>
<td>32.00</td>
<td>60,000</td>
<td>8.0</td>
<td>60,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.829</td>
<td>4.236</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.124</td>
<td>5,570</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,100</td>
<td></td>
</tr>
</tbody>
</table>

*Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA. Capacity envelope validated with physical test at 90% level per ISO 13679 CAL I-E.*

---

For fatigue information contact your Dril-Quip representative.  

*External pressure limited by connector seal.*
The 36” D-90 specialty connector is Dril-Quip’s heavy-duty model, weld-on, high performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The D-90 Connector is manufactured using 90 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. The connector has a dual shoulder profile that makes it stronger in compression and a flush O.D. that facilitates penetration in driving applications. The connector has been designed with both resilient and metal-to-metal seals in the shoulder of the box to provide gas tight sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

**Dril-Quip provides two types of threaded connectors:**

**The D-90 Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The D-90 Multi-Thread Connector** – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

---

**D-90  36" x 1.500" Technical Specifications**

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Wall (in)</th>
<th>OD (in)</th>
<th>ID (in)</th>
<th>Material Yield (psi)</th>
<th>Compression (10^6 lbf)</th>
<th>Tension (10^6 lbf)</th>
<th>Bending (10^6 ft-lbf)</th>
<th>Internal Pressure (psi)</th>
<th>External Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>1.500</td>
<td>36.12</td>
<td>32.00</td>
<td>90,000</td>
<td>10.243</td>
<td>6.667</td>
<td>6.176</td>
<td>8,695</td>
<td>1,100</td>
</tr>
</tbody>
</table>

*For fatigue information contact your Dril-Quip representative.*

*External pressure limited by connector seal.*
SPECIALTY CONNECTORS

Technical Data Sheets

Type H Family
The 38” H-100D-FR specialty connector is a weld-on, heavy-duty performance connector that incorporates all of the field-proven, easy operational features of Dril-Quip’s standard specialty connector. The H-100D-FR Connector is manufactured using 80 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural integrity. The connector has a dual shoulder profile that makes it stronger in compression and the thread form has been optimized to extend fatigue life. It has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

**DRIL-QUIP provides two types of threaded connectors:**

The H-100D-FR Quik-Thread Connector – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

The H-100D-FR Multi-Thread Connector – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

**H-100D-FR 38” x 1.000” SPECIALTY CASING CONNECTOR**

| H-100D-FR Profile |

**H-100D-FR 38” x 1.000” CONNECTOR**

Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA.

**H-100D-FR 38” x 1.000” Technical Specifications**

<table>
<thead>
<tr>
<th>Size</th>
<th>Wall</th>
<th>OD</th>
<th>ID</th>
<th>Material Yield</th>
<th>Yield Capacities</th>
<th>Limit*</th>
</tr>
</thead>
<tbody>
<tr>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(psi)</td>
<td>Compression (10^6 lbf)</td>
<td>Tension (10^6 lbf)</td>
</tr>
<tr>
<td>38</td>
<td>1.000</td>
<td>39.50</td>
<td>33.50</td>
<td>80,000</td>
<td>9.649</td>
<td>7.831</td>
</tr>
</tbody>
</table>

For fatigue information contact your Dril-Quip representative. *External pressure limited by connector seal.*

12072016
The 38" H-100D-FR specialty connector is a weld-on, heavy-duty performance connector that incorporates all of the field-proven, easy operational features of Dril-Quip’s standard specialty connector. The H-100D-FR Connector is manufactured using 80 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. The connector has a dual shoulder profile that makes it stronger in compression and the thread form has been optimized to extend fatigue life. The connector has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

**Dril-Quip** provides two types of threaded connectors:

**The H-100D-FR Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The H-100D-FR Multi-Thread Connector** – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA.

**H-100D-FR 38" x 1.500" CONNECTOR**

<table>
<thead>
<tr>
<th>Size</th>
<th>Wall</th>
<th>OD</th>
<th>ID</th>
<th>Material Yield</th>
<th>Compression Limit*</th>
<th>Tension Limit*</th>
<th>Bending Limit*</th>
<th>Internal Pressure Limit*</th>
<th>External Pressure Limit*</th>
</tr>
</thead>
<tbody>
<tr>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(psi)</td>
<td>(10^6 lbf)</td>
<td>(10^6 lbf)</td>
<td>(10^6 ft-lb)</td>
<td>(psi)</td>
<td>(psi)</td>
</tr>
<tr>
<td>38</td>
<td>1.500</td>
<td>39.50</td>
<td>33.50</td>
<td>80,000</td>
<td>14.301</td>
<td>7.872</td>
<td>6.701</td>
<td>8,070</td>
<td>1,000</td>
</tr>
</tbody>
</table>
Dril-Quip Technical Data Sheet

**H-90D 30” x 1.00” SPECIALTY CASING CONNECTOR**

D = Suitable For Driving Applications

The 30” H-90D specialty connector is a weld-on, heavy-duty performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The H-90D Connector is manufactured using 90 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. The connector has a dual shoulder profile that makes it stronger in compression. The connector has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

Dril-Quip provides two types of threaded connectors:

- **The H-90D Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
  - Casing run from a floating rig where rig movement or ocean currents may be encountered
  - Casing run from a dual-activity floating rig
  - “Lost circulation” hole sections
  - Riser casing strings in mudline suspension system wells
  - Make-up using power tongs

- **The H-90D Multi-Thread Connector** – a 5/8 turn make-up connector recommended for:
  - Shallow and deep water applications
  - Bottom-supported drilling vessels or moored floating drilling vessels
  - Applications where casing will be run directly into the hole
  - Make-up using manual tongs

Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA.

**H-90D 30” x 1.00” TECHNICAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Size</th>
<th>Wall</th>
<th>OD</th>
<th>ID</th>
<th>Material Yield</th>
<th>Yield Capacities</th>
<th>Limit*</th>
</tr>
</thead>
<tbody>
<tr>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(psi)</td>
<td>Compression (10^6 lbf)</td>
<td>Tension (10^6 lbf)</td>
</tr>
<tr>
<td>30</td>
<td>1.00</td>
<td>32.25</td>
<td>28.00</td>
<td>90,000</td>
<td>8,139</td>
<td>7,960</td>
</tr>
</tbody>
</table>

For fatigue information contact your Dril-Quip representative. *External pressure limited by connector seal.
**DRIL-QUIP Technical Data Sheet**

**H-60D 30” x 1.500” SPECIALTY CASING CONNECTOR**

D = Suitable For Driving Applications

The 30” H-60D specialty connector is a weld-on, medium-duty performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The H-60D Connector is manufactured using 60 ksi yield carbon steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. The connector has a dual shoulder profile that makes it stronger in compression. The connector has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments. The connector has passed the requirements set forth by ISO 13679:2011(Draft) CAL I-E.

**DRIL-QUIP provides two types of threaded connectors:**

- **The H-60D Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
  - Casing run from a floating rig where rig movement or ocean currents may be encountered
  - Casing run from a dual-activity floating rig
  - “Lost circulation” hole sections
  - Riser casing strings in mudline suspension system wells
  - Make-up using power tongs

- **The H-60D Multi-Thread Connector** – a 5/8 turn make-up connector recommended for:
  - Shallow and deep water applications
  - Bottom-supported drilling vessels or moored floating drilling vessels
  - Applications where casing will be run directly into the hole
  - Make-up using manual tongs

**H-60D 30” x 1.500” CONNECTOR**

**Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA. Capacity envelope validated with physical test at 90% level per ISO 13679 CAL-I-E.**

**H-60D 30” x 1.500” Technical Specifications**

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Wall (in)</th>
<th>OD (in)</th>
<th>ID (in)</th>
<th>Material Yield (ksi)</th>
<th>Yield Capacities</th>
<th>Limit*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Compression (10^6 lbf)</td>
<td>Tension (10^6 lbf)</td>
</tr>
<tr>
<td>30</td>
<td>1.500</td>
<td>32.25</td>
<td>27.00</td>
<td>60,000</td>
<td>8.024</td>
<td>4.478</td>
</tr>
</tbody>
</table>

*For fatigue information contact your DRIL-QUIP representative.

*External pressure limited by connector seal.*
The 30” H-90D specialty connector is a weld-on, heavy-duty performance connector that incorporates all of the field-proven, easy operational features of it’s specialty connector product family. The H-90D Connector is manufactured using 90 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. The connector has a dual shoulder profile that makes it stronger in compression. It has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments. The connector has passed the requirements set forth by ISO 13679:2011(Draft) CAL I-E.

**DRIL-QUIP provides two types of threaded connectors:**

The **H-90D Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

The **H-90D Multi-Thread Connector** – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

---

**H-90D 30” x 1.500” Technical Specifications**

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Wall (in)</th>
<th>OD (in)</th>
<th>ID (in)</th>
<th>Material Yield (ksi)</th>
<th>Compression Yield (10^6 lbf)</th>
<th>Tension Yield (10^6 lbf)</th>
<th>Bending Yield (10^6 ft-lb)</th>
<th>Internal Pressure Limit (psi)</th>
<th>External Pressure Limit (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>1.500</td>
<td>32.25</td>
<td>27.00</td>
<td>90,000</td>
<td>12,035</td>
<td>7,965</td>
<td>5,470</td>
<td>10,260</td>
<td>2,000</td>
</tr>
</tbody>
</table>

*For fatigue information contact your DRIL-QUIP representative.*

*External pressure limited by connector seal.*

---

 Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA. Capacity envelope validated with physical test at 90% level per ISO 13679 CALI-E.
Dril-Quip Technical Data Sheet

H-100DM 23” x 2.000” SPECIALTY CASING CONNECTOR

D = Suitable For Driving Applications  M = Metal-To-Metal Seal

The 23” H-100DM specialty connector is a weld-on, heavy-duty performance connector that incorporates all of the field-proven, easy operational features of Dril-Quip’s standard specialty connector. The H-100DM Connector is manufactured using 90 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. The connector has a dual shoulder profile that makes it stronger in compression. It has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

Dril-Quip provides two types of threaded connectors:

**The H-100DM Quik-Thread Connector – up to 2-1/2 turns** make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

---

### H-100DM 23” x 2.000” Technical Specifications

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Wall (in)</th>
<th>OD (in)</th>
<th>ID (in)</th>
<th>Material Yield (ksi)</th>
<th>Yield Capacities</th>
<th>Limit* (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>23</td>
<td>2.000</td>
<td>24.38</td>
<td>18.54</td>
<td>90,000</td>
<td>Compression 8,444</td>
<td>External Pressure 5,000</td>
</tr>
</tbody>
</table>

---

For fatigue information contact your Dril-Quip representative. *External pressure limited by connector seal.
Dril-Quip provides two types of threaded connectors:

The H-90D Quik-Thread Connector – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

The H-90D Multi-Thread Connector – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

### H-90D 22" x 1.00" Technical Specifications

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Wall (in)</th>
<th>OD (in)</th>
<th>ID (in)</th>
<th>Material Yield (psi)</th>
<th>Compression (10^6) lbf</th>
<th>Tension (10^6) lbf</th>
<th>Bending (10^6) ft-lbf</th>
<th>Internal Pressure (psi)</th>
<th>External Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>1.00</td>
<td>23.00</td>
<td>19.00</td>
<td>90,000</td>
<td>6.023</td>
<td>4.630</td>
<td>2.413</td>
<td>10,880</td>
<td>1,500</td>
</tr>
</tbody>
</table>

*For fatigue information contact your Dril-Quip representative. *External pressure limited by connector seal.
The 22” H-100DM specialty connector is a wed-on heavy-duty performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The H-100DM Connector is manufactured using 100 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. It has a dual shoulder profile that makes it stronger in compression and suitable for driving applications. The connector has been designed with both resilient and metal-to-metal seals in the shoulder of the box to provide gas tight sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

**Dril-Quip provides two types of threaded connectors:**

**The H-100DM Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The H-100DM Multi-Thread Connector** – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

---

**H-100DM 22” x 1.500” CONNECTOR**

**H-100DM Profile**

**H-100DM 22” x 1.500” Technical Specifications**

<table>
<thead>
<tr>
<th>Size</th>
<th>Wall</th>
<th>OD</th>
<th>ID</th>
<th>Material Yield</th>
<th>Yield Capacities</th>
<th>Limit*</th>
</tr>
</thead>
<tbody>
<tr>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(psi)</td>
<td>Compression</td>
<td>External Pressure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(10^6 lbf)</td>
<td>(psi)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tension</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(10^6 lbf)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bending</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(10^6 ft-lb)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Internal Pressure</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(psi)</td>
<td></td>
</tr>
</tbody>
</table>

- Suitable For Driving Applications
- Metal-To-Metal Seal
- For fatigue information contact your Dril-Quip representative.
- *External pressure limited by connector seal.
**Dril-Quip Technical Data Sheet**

**H-90DME-FR-CR 22” x 1.250” Specialty Casing Connector**

The 22” H-90DME-FR-CR specialty connector is a weld-on, heavy-duty performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The H-90DME-FR-CR Connector is manufactured using 90 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. It has a dual shoulder profile that makes it stronger in compression. The connector has been designed with both resilient and metal-to-metal seals in the shoulder of the box to provide gas tight sealing capacity suitable for most high pressure applications. The thread form has been optimized to extend fatigue life, and the enhanced metal-to-metal seal passes ISO 13679 make and break-out testing requirements. An elastomeric environment exclusion seal provides high collapse resistance without requiring increased make-up torque. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

**Dril-Quip provides two types of threaded connectors:**

**The H-90DME-FR-CR Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The H-90DME-FR-CR Multi-Thread Connector** – up to a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

**H-90DME-FR-CR Profile**

Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA.

### H-90DME-FR-CR 22” x 1.250” Technical Specifications

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Wall (in)</th>
<th>OD (in)</th>
<th>ID (in)</th>
<th>Material Yield (ksi)</th>
<th>Compression (10^6 lbf)</th>
<th>Tension (10^6 lbf)</th>
<th>Bending (10^6 ft-lb)</th>
<th>Internal Pressure (psi)</th>
<th>External Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>1.250</td>
<td>23.00</td>
<td>19.00</td>
<td>90,000</td>
<td>3.945</td>
<td>4.970</td>
<td>2.313</td>
<td>9,355</td>
<td>5,500</td>
</tr>
</tbody>
</table>

For fatigue information contact your Dril-Quip representative.
The 22" H-90DME-FR-CR specialty connector is a weld-on, heavy-duty performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The H-90DME-FR-CR Connector is manufactured using 90 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. It has a dual shoulder profile that makes it stronger in compression. The connector has been designed with both resilient and metal-to-metal seals in the shoulder of the box to provide gas tight sealing capacity suitable for most high pressure applications. The thread form has been optimized to extend fatigue life, and the enhanced metal-to-metal seal passes ISO 13679 make and break-out testing requirements. An elastomeric environment exclusion seal provides high collapse resistance without requiring increased make-up torque. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments. The connector has passed the requirements set forth by ISO 13679:2011(Draft) CAL I-E.

**Dril-Quip** provides two types of threaded connectors:

**The H-90DME-FR-CR Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The H-90DME-FR-CR Multi-Thread Connector** – up to a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

**H-90DME-FR-CR 22" x 1.500" Technical Specifications**

<table>
<thead>
<tr>
<th>Size</th>
<th>Wall</th>
<th>OD</th>
<th>ID</th>
<th>Material Yield</th>
<th>Yield Capacities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(in)</td>
<td>(in)</td>
<td>(psi)</td>
<td>Compression</td>
</tr>
<tr>
<td>22</td>
<td>1.500</td>
<td>23.00</td>
<td>19.00</td>
<td>90,000</td>
<td>4.375</td>
</tr>
</tbody>
</table>

For fatigue information contact your Dril-Quip representative.
The 20” H-60DM specialty connector is a weld-on, medium-duty performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The H-60DM Connector is manufactured using 60 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. It has a dual shoulder profile that makes it stronger in compression. The connector has been designed with a resilient and metal seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

**Dril-Quip** provides two types of threaded connectors:

**The H-60DM Quik-Thread Connector** – a 2-1/2 turn make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The H-60DM Multi-Thread Connector** – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

**Dril-Quip** Technical Data Sheet

**H-60DM 20” x .812” SPECIALTY CASING CONNECTOR**

<table>
<thead>
<tr>
<th>Size</th>
<th>Wall</th>
<th>OD</th>
<th>ID</th>
<th>Material Yield</th>
<th>Yield Capacities</th>
<th>Limit*</th>
</tr>
</thead>
<tbody>
<tr>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(psi)</td>
<td>Compression</td>
<td>External Pressure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(10^8 lbf)</td>
<td>(psi)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tension</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(10^8 lbf)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bending</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(10^8 ft-lb)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Internal Pressure</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(psi)</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>.812</td>
<td>21.50</td>
<td>18.00</td>
<td>60,000</td>
<td>2.513</td>
<td>5,905</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.134</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.912</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3,060</td>
<td></td>
</tr>
</tbody>
</table>

For fatigue information contact your Dril-Quip representative. *External pressure limited by connector seal.
The 20" H-60 specialty connector is a weld-on, medium-duty performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The H-60 Connector is manufactured using 60 ksi yield carbon steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. The connector has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments. The connector has passed the requirements set forth by ISO 13679:2011(Draft) CAL I-E.

**Dril-Quip** provides two types of threaded connectors:

**The H-60 Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- "Lost circulation" hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The H-60 Multi-Thread Connector** – up to a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

---

**H-60 20" x 1.00" CONNECTOR**

Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA. Capacity envelope validated with physical test at 90% level per ISO 13679 CAL I-E.

---

<table>
<thead>
<tr>
<th>Size</th>
<th>Wall</th>
<th>OD</th>
<th>ID</th>
<th>Material Yield</th>
<th>Yield Capacities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(psi)</td>
<td>Compression</td>
</tr>
<tr>
<td>(psi)</td>
<td>(10^6 lbf)</td>
<td>(psi)</td>
<td>(10^6 lbf)</td>
<td>(psi)</td>
<td>(psi)</td>
</tr>
<tr>
<td>20</td>
<td>1.00</td>
<td>21.50</td>
<td>18.00</td>
<td>60,000</td>
<td>1.691</td>
</tr>
</tbody>
</table>

For fatigue information contact your Dril-Quip representative.
DRIL-QUIP Technical Data Sheet

H-90DM 20” x .812” SPECIALTY CASING CONNECTOR

D = Suitable For Driving Applications  M = Metal-To-Metal Seal

The 20” H-90DM specialty connector is a weld-on, heavy-duty performance connector that incorporates all of the field-proven, easy operational features of it’s specialty connector product family. The H-90DM Connector is manufactured using 90 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. It has a dual shoulder profile that makes it stronger in compression. The connector has been designed with a resilient and metal seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

**DRIL-QUIP** provides two types of threaded connectors:

**The H-90DM Quik-Thread Connector** – a 2-1/2 turn make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The H-90DM Multi-Thread Connector** – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

---

**H-90DM 20” x .812” Technical Specifications**

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Wall (in)</th>
<th>OD (in)</th>
<th>ID (in)</th>
<th>Material Yield (psi)</th>
<th>Yield Capacities</th>
<th>Limit* (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>0.812</td>
<td>21.50</td>
<td>18.00</td>
<td>90,000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Compression (10^6 lbf)  Tension (10^6 lbf)  Bending (10^6 ft-lbf)  Internal Pressure (psi)  External Pressure (psi)
3.770  4.335  1.872  8,920  3,060

Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA.

---

For fatigue information contact your DRIL-QUIP representative. *External pressure limited by connector seal.
The 20” H-90 specialty connector is a weld-on, heavy-duty performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The H-90 Connector is manufactured using 90 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. The connector has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments. The connector has passed the requirements set forth by ISO 13679:2011(Draft) CAL I-E.

**Dril-Quip** provides two types of threaded connectors:

**The H-90 Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The H-90 Multi-Thread Connector** – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

**H-90 20” x 1.00” CONNECTOR**

![H-90 Profile](image)

Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA. Capacity envelope validated with physical test at 90% level per ISO 13679 CAL I-E.

**H-90 20” x 1.00” Technical Specifications**

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Wall (in)</th>
<th>OD (in)</th>
<th>ID (in)</th>
<th>Material Yield (ksi)</th>
<th>Compression (10^6 lbf)</th>
<th>Tension (10^6 lbf)</th>
<th>Bending (10^3 ft-lbf)</th>
<th>Internal Pressure (psi)</th>
<th>External Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>1.00</td>
<td>21.50</td>
<td>18.00</td>
<td>90,000</td>
<td>2.665</td>
<td>4.390</td>
<td>1.123</td>
<td>10,370</td>
<td>8,675</td>
</tr>
</tbody>
</table>

For fatigue information contact your Dril-Quip representative.

10/27/2016
Dril-Quip Technical Data Sheet

H-90D 20” x 1.00” SPECIALTY CASING CONNECTOR

D = Suitable For Driving Applications

The 20” H-90D specialty connector is a weld-on, heavy-duty performance connector that incorporates all of the field-proven, easy operational features of its specialty connector product family. The H-90D Connector is manufactured using 90 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. It has a dual shoulder profile that makes it stronger in compression. The connector has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments. The connector has passed the requirements set forth by ISO 13679:2011(Draft) CAL I-E.

Dril-Quip provides two types of threaded connectors:

The H-90D Quik-Thread Connector – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

The H-90D Multi-Thread Connector – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

<table>
<thead>
<tr>
<th>Size</th>
<th>Wall</th>
<th>OD</th>
<th>ID</th>
<th>Material Yield</th>
<th>Yield Capacities</th>
<th>Limit*</th>
</tr>
</thead>
<tbody>
<tr>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(in)</td>
<td>(psi)</td>
<td>Compression (10^6 lbf)</td>
<td>Tension (10^6 lbf)</td>
</tr>
<tr>
<td>20</td>
<td>1.00</td>
<td>21.50</td>
<td>18.00</td>
<td>90,000</td>
<td>3.884</td>
<td>4.336</td>
</tr>
</tbody>
</table>

Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA. Capacity envelope validated with physical test at 90% level per ISO 13679 CAL I-E.

For fatigue information contact your Dril-Quip representative. *External pressure limited by connector seal.
Type HC Family
The 36" HC-100D specialty connector is a weld-on, high capacity performance connector that incorporates all of the field-proven, easy operational features of Dril-Quip's standard specialty connector. The HC-100D Connector is manufactured using 100,000 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. The connector has a dual shoulder profile that makes it stronger in compression and a near flush O.D. that facilitates penetration in driving applications. It has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

Dril-Quip provides two types of threaded connectors:

**The HC-100D Quik-Thread Connector** – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

**The HC-100D Multi-Thread Connector** – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

---

### HC-100D 36" x 1.500" Technical Specifications

<table>
<thead>
<tr>
<th>Size (in)</th>
<th>Wall (in)</th>
<th>OD (in)</th>
<th>ID (in)</th>
<th>Material Yield (ksi)</th>
<th>Compression (10^6 lbf)</th>
<th>Tension (10^6 lbf)</th>
<th>Bending (10^6 ft-lb)</th>
<th>Internal Pressure (psi)</th>
<th>External Pressure Limit (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>1.500</td>
<td>36.38</td>
<td>30.18</td>
<td>100,000</td>
<td>13.747</td>
<td>11.363</td>
<td>9.707</td>
<td>10,940</td>
<td>1,000</td>
</tr>
</tbody>
</table>

---

For fatigue information contact your Dril-Quip representative. *External pressure limited by connector seal.*
The 42” HC-100D specialty connector is a weld-on, high capacity performance connector that incorporates all of the field-proven, easy operational features of Dril-Quip’s standard specialty connector. The HC-100D Connector is manufactured using 90 ksi yield alloy steel material and is compatible with pipe material of similar strength. Its thick wall section and rugged thread form makes it ideal for applications requiring high structural capacity. The connector has a dual shoulder profile that makes it stronger in compression and a near flush O.D. that facilitates penetration in driving applications. It has been designed with a resilient seal in the shoulder of the box to provide sealing capacity suitable for most high pressure applications. The connector’s automatic self-aligning profiles prevent/eliminate cross-threading to allow for fast, easy make-up. The connector can be outfitted with an anti-rotation feature for added security in harsh operational environments.

Dril-Quip provides two types of threaded connectors:

The HC-100D Quik-Thread Connector – up to 2-1/2 turns make-up connector recommended for:
- Casing run from a floating rig where rig movement or ocean currents may be encountered
- Casing run from a dual-activity floating rig
- “Lost circulation” hole sections
- Riser casing strings in mudline suspension system wells
- Make-up using power tongs

The HC-100D Multi-Thread Connector – a 5/8 turn make-up connector recommended for:
- Shallow and deep water applications
- Bottom-supported drilling vessels or moored floating drilling vessels
- Applications where casing will be run directly into the hole
- Make-up using manual tongs

Connector bending capacities determined based on full 3D FEA. All other ratings based on 2D FEA.
Quik-Stab™ Connectors

Quik-Stab Connectors provide for fast, reliable weight-set connections of large-diameter tubulars. Their design allows for high-angle stabbing and self-aligning and automatic locking of pin and box. Quik-Stab Connectors are an excellent choice for applications that require fast make-up without rotation.

FEATURES

- High-angle stab
- Self aligning
- Automatic positive lock
- Mechanical release
- Requires no rotation
- Rugged, high-strength design
- Reliable high-pressure sealing
- Reusable
- Easily weldable
- Driveable
- Anti-rotation features
- Field-proven technology
**Unique Load-Carrying Design**

The multiple load shoulders on the lock ring and box provide maximum load-bearing areas with minimum lock ring travel. This means higher load capacity with more load-carrying steel per inch of cross-section than conventional lock ring type connectors. The design of the lock ring provides a positive lock of the pin and box members. The dual taper ensures that the lock ring is moved fully into the box grooves and remains there under all load conditions.

---

**Easily Released**

Releasing bolts push lock ring out of the multiple-load shoulder profile, unlocking the connection.

**Stabbed**

Unique design of profile allows stabbing and self alignment at angles up to 12 degrees.

**Stabbed and Locked**

Connection made without rotation or torque, lock ring automatically locks pin and box together.

**30” Quik-Stab machining**

**Quik-Stab installation on jack-up**
### Type SL-60 Technical Specifications

<table>
<thead>
<tr>
<th>Wall (in.)</th>
<th>OD (in.)</th>
<th>ID (in.)</th>
<th>Tensile (10^6 lbs)</th>
<th>Bending (10^6 ft-lbs)</th>
<th>Internal Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30&quot;</td>
<td>3.20</td>
<td>2.70</td>
<td>2.08</td>
<td>3.27</td>
<td>1.47</td>
</tr>
<tr>
<td>1.00</td>
<td>3.20</td>
<td>2.70</td>
<td>2.08</td>
<td>3.27</td>
<td>1.47</td>
</tr>
</tbody>
</table>

*Other sizes available upon request*

### Type SF-60 Technical Specifications

<table>
<thead>
<tr>
<th>Wall (in.)</th>
<th>OD (in.)</th>
<th>ID (in.)</th>
<th>Tensile (10^6 lbs)</th>
<th>Bending (10^6 ft-lbs)</th>
<th>Internal Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30&quot;</td>
<td>3.30</td>
<td>2.80</td>
<td>2.08</td>
<td>3.27</td>
<td>1.47</td>
</tr>
<tr>
<td>1.00</td>
<td>3.30</td>
<td>2.80</td>
<td>2.08</td>
<td>3.27</td>
<td>1.47</td>
</tr>
</tbody>
</table>

*Other sizes available upon request*

### Type NS-60 Technical Specifications

<table>
<thead>
<tr>
<th>Wall (in.)</th>
<th>OD (in.)</th>
<th>ID (in.)</th>
<th>Tensile (10^6 lbs)</th>
<th>Bending (10^6 ft-lbs)</th>
<th>Internal Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30&quot;</td>
<td>3.27</td>
<td>2.75</td>
<td>2.50</td>
<td>3.90</td>
<td>1.76</td>
</tr>
<tr>
<td>1.25</td>
<td>3.27</td>
<td>2.75</td>
<td>2.50</td>
<td>3.90</td>
<td>1.76</td>
</tr>
<tr>
<td>1.50</td>
<td>3.27</td>
<td>2.75</td>
<td>2.50</td>
<td>3.90</td>
<td>1.76</td>
</tr>
</tbody>
</table>

*Other sizes available upon request*

### Type HD-90 Technical Specifications

<table>
<thead>
<tr>
<th>Wall (in.)</th>
<th>OD (in.)</th>
<th>ID (in.)</th>
<th>Tensile (10^6 lbs)</th>
<th>Bending (10^6 ft-lbs)</th>
<th>Internal Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30&quot;</td>
<td>3.90</td>
<td>3.25</td>
<td>4.73</td>
<td>7.43</td>
<td>4.04</td>
</tr>
<tr>
<td>1.50</td>
<td>3.90</td>
<td>3.25</td>
<td>4.73</td>
<td>7.43</td>
<td>4.04</td>
</tr>
<tr>
<td>1.75</td>
<td>3.90</td>
<td>3.25</td>
<td>4.73</td>
<td>7.43</td>
<td>4.04</td>
</tr>
<tr>
<td>2.00</td>
<td>3.90</td>
<td>3.25</td>
<td>4.73</td>
<td>7.43</td>
<td>4.04</td>
</tr>
</tbody>
</table>

*Where comparative analysis for joint strength ratings are required, please contact your local Dril-Quip sales representative for additional joint strength rating.*
### Type NF-60 Technical Specifications

<table>
<thead>
<tr>
<th>Wall (in.)</th>
<th>OD (in.)</th>
<th>ID (in.)</th>
<th>Tensile (10^6 lbs)</th>
<th>Bending (10^6 ft-lbs)</th>
<th>Internal Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30°</td>
<td>.750</td>
<td>34.00</td>
<td>28.00</td>
<td>2.50 3.53 1.76 2.30</td>
<td>1,500</td>
</tr>
<tr>
<td></td>
<td>1.00</td>
<td>34.00</td>
<td>28.00</td>
<td>2.50 3.53 1.76 2.30</td>
<td>1,500</td>
</tr>
<tr>
<td>36°</td>
<td>1.00</td>
<td>40.00</td>
<td>34.00</td>
<td>2.80 4.40 2.45 3.09</td>
<td>1,500</td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td>40.00</td>
<td>33.00</td>
<td>2.80 4.40 2.45 3.09</td>
<td>1,500</td>
</tr>
</tbody>
</table>

Other sizes available upon request

### Type HF-90 Technical Specifications

<table>
<thead>
<tr>
<th>Wall (in.)</th>
<th>OD (in.)</th>
<th>ID (in.)</th>
<th>Tensile (10^6 lbs)</th>
<th>Bending (10^6 ft-lbs)</th>
<th>Internal Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30°</td>
<td>.750</td>
<td>34.00</td>
<td>28.00</td>
<td>3.75 5.89 2.64 3.45</td>
<td>1,500</td>
</tr>
<tr>
<td></td>
<td>1.00</td>
<td>34.00</td>
<td>28.00</td>
<td>3.75 5.89 2.64 3.45</td>
<td>1,500</td>
</tr>
<tr>
<td>36°</td>
<td>1.00</td>
<td>40.00</td>
<td>34.00</td>
<td>4.20 6.60 3.87 4.63</td>
<td>1,500</td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td>40.00</td>
<td>33.00</td>
<td>4.20 6.60 3.87 4.63</td>
<td>1,500</td>
</tr>
</tbody>
</table>

Other sizes available upon request

### Type FOD-90 Technical Specifications

<table>
<thead>
<tr>
<th>Wall (in.)</th>
<th>OD (in.)</th>
<th>ID (in.)</th>
<th>Tensile (10^6 lbs)</th>
<th>Bending (10^6 ft-lbs)</th>
<th>Internal Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30°</td>
<td>.750</td>
<td>30.12</td>
<td>24.00</td>
<td>3.65 5.43 2.19 2.87</td>
<td>1,500</td>
</tr>
<tr>
<td></td>
<td>1.00</td>
<td>30.12</td>
<td>24.00</td>
<td>3.65 5.43 2.19 2.87</td>
<td>1,500</td>
</tr>
<tr>
<td>36°</td>
<td>1.00</td>
<td>36.00</td>
<td>29.30</td>
<td>4.67 7.34 3.60 4.71</td>
<td>1,500</td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td>36.00</td>
<td>29.30</td>
<td>4.67 7.34 3.60 4.71</td>
<td>1,500</td>
</tr>
<tr>
<td>48°</td>
<td>1.50</td>
<td>48.00</td>
<td>39.80</td>
<td>7.47 11.75 7.84 10.24</td>
<td>1,500</td>
</tr>
<tr>
<td></td>
<td>1.75</td>
<td>48.00</td>
<td>39.80</td>
<td>7.47 11.75 7.84 10.24</td>
<td>1,500</td>
</tr>
<tr>
<td></td>
<td>2.00</td>
<td>48.00</td>
<td>39.80</td>
<td>7.47 11.75 7.84 10.24</td>
<td>1,500</td>
</tr>
</tbody>
</table>

Other sizes available upon request

### Type CS-90 Technical Specifications

<table>
<thead>
<tr>
<th>Wall (in.)</th>
<th>OD (in.)</th>
<th>ID (in.)</th>
<th>Tensile (10^6 lbs)</th>
<th>Bending (10^6 ft-lbs)</th>
<th>Internal Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30°</td>
<td>1.00</td>
<td>34.00</td>
<td>28.00</td>
<td>2.94 1.65 2.10 1.500</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td>34.00</td>
<td>27.00</td>
<td>2.94 1.65 2.10 1.500</td>
<td></td>
</tr>
<tr>
<td>36°</td>
<td>1.00</td>
<td>40.00</td>
<td>34.00</td>
<td>3.75 2.62 3.76 1.500</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td>40.00</td>
<td>33.00</td>
<td>3.75 2.62 3.76 1.500</td>
<td></td>
</tr>
</tbody>
</table>

Other sizes available upon request

The CS-90 Quik-Stab Connector is designed to facilitate quick nipple-up and nipple-down of surface pipe and wellhead equipment. The CS-90 Connector incorporates captive release bolts that can be lubricated through a grease fitting built into the bolt assembly. A test port on the box OD allows external testing of the seals. This versatile connector can be manufactured with a landing shoulder to accommodate supplemental hangers and seals.

*Where comparative analysis for joint strength ratings are required, please contact your local Dril-Quip sales representative for additional joint strength rating.*

---

Type NF-60 Technical Specifications

![NF-60](image)

Type HF-90 Technical Specifications

![HF-90](image)

Type FOD-90 Technical Specifications

![FOD-90](image)

Type CS-90 Technical Specifications

![CS-90](image)
Quik-Jay™ Connectors

Quik-Jay Connectors are ideal for use at the mudline for quick, remote release of riser strings. They provide fast make-up, effective anti-rotation, remote disconnect and diverless tie-back. The Quik-Jay box accepts a standard Quik-Stab pin for diverless, weight-set tie-back operations.

Features

- Mechanical, diverless release
- High-angle, self-aligning tie-back
- Only 1/16 turn to make up
- Reusable
- Effective anti-rotation
- Field-proven technology
- Diverless tie-back
- Easily weldable

The release cable is pulled from the surface and the cam reacts against the reaction plate to provide the necessary clearance to remove the anti-rotation key.
Fully Engaged
The pin is totally made up in the box and the connector is locked with \( \frac{1}{16} \)-turn rotation

Positively Locked
The anti-rotation key is inserted to provide a positive lock between pin and box; at disconnect time, the key is removed from the surface by pulling up on its cable

Unique design of profile allows stabbing and self alignment at angles up to 12 degrees

A Quik-Stab pin provides for automatic, weight-set tie-back of the riser string

### Quik-Jay Connectors Technical Specifications

<table>
<thead>
<tr>
<th>Wall (in.)</th>
<th>OD (in.)</th>
<th>ID (in.)</th>
<th>Tensile (10^6 lbs) Rated</th>
<th>Bending (10^4 ft-lbs) Rated</th>
<th>Internal Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>24.00&quot;</td>
<td>.625</td>
<td>27.28</td>
<td>22.22</td>
<td>3.62</td>
<td>1.44 1.500</td>
</tr>
<tr>
<td></td>
<td>.875</td>
<td>27.28</td>
<td>22.22</td>
<td>3.62</td>
<td>1.90 1.500</td>
</tr>
<tr>
<td></td>
<td>1.00</td>
<td>27.28</td>
<td>21.97</td>
<td>3.62</td>
<td>2.12 1.500</td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td>27.28</td>
<td>20.97</td>
<td>3.62</td>
<td>2.93 1.500</td>
</tr>
<tr>
<td>26.00&quot;</td>
<td>.438</td>
<td>29.30</td>
<td>24.00</td>
<td>3.84</td>
<td>1.34 1.500</td>
</tr>
<tr>
<td></td>
<td>.500</td>
<td>29.30</td>
<td>24.00</td>
<td>3.84</td>
<td>1.34 1.500</td>
</tr>
<tr>
<td></td>
<td>.625</td>
<td>29.50</td>
<td>24.00</td>
<td>4.01</td>
<td>1.70 1.500</td>
</tr>
<tr>
<td></td>
<td>.750</td>
<td>29.50</td>
<td>24.00</td>
<td>4.01</td>
<td>1.98 1.500</td>
</tr>
<tr>
<td></td>
<td>1.00</td>
<td>29.50</td>
<td>24.00</td>
<td>4.01</td>
<td>2.51 1.500</td>
</tr>
<tr>
<td>28.00&quot;</td>
<td>1.50</td>
<td>32.25</td>
<td>26.09</td>
<td>4.32</td>
<td>3.55 1.500</td>
</tr>
<tr>
<td>30.00&quot;</td>
<td>.500</td>
<td>34.25</td>
<td>28.00</td>
<td>4.66</td>
<td>1.89 1.500</td>
</tr>
<tr>
<td></td>
<td>.750</td>
<td>34.25</td>
<td>28.00</td>
<td>4.66</td>
<td>2.66 1.500</td>
</tr>
<tr>
<td></td>
<td>1.00</td>
<td>34.25</td>
<td>28.00</td>
<td>4.66</td>
<td>3.40 1.500</td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td>34.25</td>
<td>27.00</td>
<td>4.66</td>
<td>4.75 1.500</td>
</tr>
<tr>
<td>34.00&quot;</td>
<td>1.00</td>
<td>36.25</td>
<td>30.00</td>
<td>4.96</td>
<td>3.89 1.500</td>
</tr>
<tr>
<td></td>
<td>1.75</td>
<td>36.25</td>
<td>30.50</td>
<td>4.96</td>
<td>6.88 1.500</td>
</tr>
<tr>
<td>36.00&quot;</td>
<td>1.00</td>
<td>40.28</td>
<td>32.97</td>
<td>4.72</td>
<td>4.97 1.500</td>
</tr>
<tr>
<td></td>
<td>1.50</td>
<td>40.28</td>
<td>32.97</td>
<td>4.72</td>
<td>7.02 1.500</td>
</tr>
</tbody>
</table>

*Where comparative analysis for joint strength ratings are required, please contact your local Dril-Quip sales representative for additional joint strength rating.*
Dril-Quip specialty connectors are designed to offer superior operational and strength characteristics. The first step in the design process is the conceptual development of a connector that provides a fast, safe and efficient means of connecting casing joints under worst-case field conditions. Special attention is given to durability to avoid handling damage while in transport and/or running into the hole. Having met these requirements, the design is then refined utilizing computer-aided finite element analyses to optimize the connector geometry regarding both static and cyclic fatigue-type loadings.

Connector capacities are based on the maximum shear stress theory of failure. This theory, in generalized form, states that a material subjected to any combination of loads will fail (by yielding or fracturing) whenever the maximum shear stress exceeds the shear strength (yield or ultimate) of the material. Dril-Quip connector ratings are based on the following conservative design criteria:

1) the maximum membrane stress intensity should not exceed \( \frac{2}{3} \) of the material yield strength; and

2) the maximum membrane plus bending stress intensity should not exceed the material yield strength.

Stress intensity at a point is defined as twice the maximum shear stress at that point and is the maximum algebraic difference between the three principal stresses at the point. Membrane stress intensity is the stress intensity based on average principal stresses for the particular section. Membrane plus bending stress intensities at the inside and outside of a section are simply the stress intensities at these respective locations, but referred to as membrane plus bending stress intensities since both the section’s resultant force and locally induced bending contribute to the stress.

All specialty connectors are designed to be field compatible with the casing weight and grade to which they are attached.
Prototypes of each Dril-Quip specialty connector type undergo extensive function and load testing. This testing verifies design, structural and operational specifications.

**FUNCTIONAL TESTING**

Repeated functional tests under simulated worst-case field conditions are conducted to:

1) Verify connector operational characteristics meet or exceed the design criteria
2) Verify repeatability and accuracy of connector stab, make-up and release
3) Verify connector ruggedness for handling
4) Perform drive testing where applicable
5) Monitor any unusual wear

**LOAD TESTING**

Tensile, bending and pressure testing are performed to:

1) Verify finite element analyses
2) Monitor connector performance under tensile, bending and combined tensile and bending loading conditions
3) Establish rated and ultimate capacities based on test data
4) Verify connector pressure ratings and seal performance
All Dril-Quip manufacturing facilities are equipped to fabricate connectors to casing joints in accordance with customer specifications, using qualified procedures that conform to industry standards.

**Welding**

Dril-Quip uses state-of-the-art welding equipment to ensure connectors are welded to the pipe in conformity with industry standards. Dril-Quip procedures and welders are qualified and certified in accordance with ASME Section IX and API Spec. 6A. Typical welding processes used are Gas Metal Arc Welding (GMAW) and Submerged Arc Welding (SAW).

**Inspection**

All connector welds are 100% radiographically inspected. Other alternative non-destructive testing procedures, such as ultrasonic inspection, can be performed upon customer request. The inspection procedures used by Dril-Quip conform to ASME Section V or API Spec. 1104.

**Traceability**

Data sheets that include inspection and material certification are prepared for each casing joint. This data, which is recorded by a unique serial number, is available to the customer upon request and provides 100% material traceability.

**Fast Turnaround**

Dril-Quip emphasizes quality production and fast turnaround for on-time delivery of casing joints.

**Inventory**

Inventory of connectors is maintained at every Dril-Quip facility worldwide to meet customer requirements.
Contact your nearest Dril-Quip representative for information on availability of casing joints for your specific application.

Dril-Quip stocks pipe of various sizes and grades to fabricate casing joints quickly upon customer request. Pipe stocks are kept in every Dril-Quip manufacturing facility for fast delivery worldwide. Mill certificates are available for all pipe in stock to ensure quality and traceability. Dril-Quip supplies connectors, pipe and fabrication for turnkey casing joints of consistent and verifiable high quality. This translates into timely deliveries and cost savings for the customer.
The charts above provide the strength and capacities of pipe for frequently requested sizes and grades. This information can be used as a guide to determine the most suitable Drill-Quip connector for any application. For every pipe grade and wall thickness, there is a Drill-Quip connector designed to match or exceed the strength and capacity of the pipe.
<table>
<thead>
<tr>
<th>Grade</th>
<th>Wall (in)</th>
<th>Plain End Weight (lbs)</th>
<th>ID (in)</th>
<th>Tensile (ksi)</th>
<th>Bending (106 lbs)</th>
<th>Internal Pressure (psi)</th>
<th>Collapse Pressure (psi)</th>
<th>Tensile (ksi)</th>
<th>Bending (106 lbs)</th>
<th>Internal Pressure (psi)</th>
<th>Collapse Pressure (psi)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25</td>
<td>15.125</td>
<td>1.380</td>
<td>439</td>
<td>3115</td>
<td>1015</td>
<td>1.497</td>
<td>473</td>
<td>3228</td>
<td>1015</td>
<td>1.711</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>15.112</td>
<td>1.583</td>
<td>496</td>
<td>3955</td>
<td>1564</td>
<td>1.704</td>
<td>534</td>
<td>3828</td>
<td>1521</td>
<td>1.936</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>14.988</td>
<td>2.056</td>
<td>832</td>
<td>2762</td>
<td>2622</td>
<td>2.113</td>
<td>652</td>
<td>4785</td>
<td>2506</td>
<td>2.345</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>14.889</td>
<td>2.533</td>
<td>777</td>
<td>3492</td>
<td>3785</td>
<td>2.531</td>
<td>777</td>
<td>7742</td>
<td>3525</td>
<td>2.893</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>14.837</td>
<td>3.034</td>
<td>1191</td>
<td>5002</td>
<td>5660</td>
<td>2.604</td>
<td>862</td>
<td>1059</td>
<td>5207</td>
<td>3.152</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>14.783</td>
<td>3.535</td>
<td>1642</td>
<td>6512</td>
<td>6660</td>
<td>2.659</td>
<td>918</td>
<td>1179</td>
<td>5754</td>
<td>3.307</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>14.734</td>
<td>4.036</td>
<td>2093</td>
<td>8023</td>
<td>8160</td>
<td>2.680</td>
<td>951</td>
<td>1255</td>
<td>6193</td>
<td>3.381</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>14.681</td>
<td>4.537</td>
<td>2544</td>
<td>9534</td>
<td>9660</td>
<td>2.691</td>
<td>977</td>
<td>1327</td>
<td>6633</td>
<td>3.455</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>14.631</td>
<td>5.038</td>
<td>3005</td>
<td>11045</td>
<td>11160</td>
<td>2.701</td>
<td>1000</td>
<td>1399</td>
<td>7073</td>
<td>3.529</td>
</tr>
<tr>
<td></td>
<td>34</td>
<td>14.580</td>
<td>5.539</td>
<td>3466</td>
<td>12556</td>
<td>12660</td>
<td>2.710</td>
<td>1025</td>
<td>1472</td>
<td>7513</td>
<td>3.599</td>
</tr>
<tr>
<td></td>
<td>35</td>
<td>14.529</td>
<td>6.039</td>
<td>3927</td>
<td>14067</td>
<td>14160</td>
<td>2.719</td>
<td>1050</td>
<td>1545</td>
<td>8053</td>
<td>3.670</td>
</tr>
<tr>
<td></td>
<td>36</td>
<td>14.478</td>
<td>6.540</td>
<td>4388</td>
<td>15578</td>
<td>15660</td>
<td>2.728</td>
<td>1075</td>
<td>1619</td>
<td>8603</td>
<td>3.741</td>
</tr>
<tr>
<td></td>
<td>37</td>
<td>14.428</td>
<td>7.040</td>
<td>4849</td>
<td>17090</td>
<td>17160</td>
<td>2.737</td>
<td>1100</td>
<td>1694</td>
<td>9153</td>
<td>3.811</td>
</tr>
<tr>
<td></td>
<td>38</td>
<td>14.379</td>
<td>7.540</td>
<td>5310</td>
<td>18602</td>
<td>18260</td>
<td>2.745</td>
<td>1125</td>
<td>1740</td>
<td>9703</td>
<td>3.882</td>
</tr>
<tr>
<td></td>
<td>39</td>
<td>14.329</td>
<td>8.040</td>
<td>5771</td>
<td>20114</td>
<td>20360</td>
<td>2.754</td>
<td>1150</td>
<td>1815</td>
<td>10253</td>
<td>3.952</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>14.280</td>
<td>8.540</td>
<td>6232</td>
<td>21626</td>
<td>21660</td>
<td>2.762</td>
<td>1175</td>
<td>1890</td>
<td>10803</td>
<td>4.022</td>
</tr>
<tr>
<td></td>
<td>43</td>
<td>14.130</td>
<td>10.040</td>
<td>7615</td>
<td>26162</td>
<td>26160</td>
<td>2.788</td>
<td>1250</td>
<td>2115</td>
<td>12453</td>
<td>4.232</td>
</tr>
</tbody>
</table>

**DrilTech**