Iron Roughnecks
Stemming from the development of “Big Foot” in the 1970s, NOV Iron Roughnecks are the most versatile and dependable solutions for handling tubular connections on the drill floor. Building from our experience in equipment manufacturing, we offer a fleet of iron roughnecks – both for land and offshore. Evidenced by our ST-80C2 Iron Roughneck, we continuously improve our models based on customer feedback and engineering analysis. In addition to control responsiveness, ease in serviceability and compact construction, our iron roughnecks are designed to minimize rig floor hazards and streamline the make and break process, providing you maximized uptime and improved crew safety. We also support our Iron Roughnecks in the field through our global aftermarket services team.
Overall Features

• Compact size and lightweight - ideal for small drill floors, some models have ability to relocate away from personnel by raising/lowering when fully retracted to provide clearance underneath

• Flexible mounting methods - linear track mounted and/or on a rotating pedestal system using NOV’s patented scissor arm design and NOV Timing Link

• Intuitive control methods - via local control panel on tool, hard-wired remote control, wireless remote control, or through the integrated driller’s controls in the driller’s cabin (model dependent). Advanced remote controls on certain models automatically perform complete make/break cycles, providing increased levels of automation and safety for the drilling rig.

• Soft clamp - minimal clamp force is applied to box connection during spinning operations and is aimed to eliminate “belling” of thin-walled connections, extend tool joint life, and quicken makeup/breakout times.

• Tool shutdowns - primary method to disable any iron roughneck functions via an easily accessible button, lanyard or detection sensor, enabling complete control to the user

• Hydraulic and electrical interlocks - enable/disable certain tool functions, serving as additional safety features to the user (model dependent)

• Proximity and analog position sensors - identify tool’s position in relation to the tubular (model dependent)

• All assemblies are 200,000 cycle tested

Overall Benefits

• Enhanced safety by mechanizing or automating dangerous drill floor tasks; need for tongs, pipe spinners, and catheads reduced or eliminated

• Proven efficiency of routine make/break operations while prioritizing safety

• Intuitive control panels for ease in tool operation and unparalleled, quick responsiveness

• Configurable to your needs with an established set of spare parts for streamlined maintenance

• Ideal balance of torque, reach and footprint to provide the maximum cost per square foot of rig floor space

• Quality construction provides structural stability, impact resistance and durability, equating to longer duty life and lower cost of ownership

1975

• Varco International announce first Iron Roughneck, “Big Foot”

1987

• National and Oilwell merge to become National Oilwell

1993

• AR-3200 - the first model of the AR-3000 series. Over 300 AR-3200 models have been sold to date

2000

• ST-80 - first generation model released

2001

• AR-4000 - the first model of the AR-4000 series

2003

• ARN-166 - the first model of the ARN series

2005

• ST-80C - first generation model released. To date, over 400 ST-80C models have been sold

2006

• ST-80C 2 - second generation model released

2008

• ST-120 released

2011

• ST-100 released

2013

• ST-160 released

2015

• NOV breaks the 200,000 ft-lb torque limit

• ST-80C 2 - second generation model of ST-80C

• ARN-270 released

• MPT-270 released

2016

• New high torque casing tong introduced
A combination of customer-feedback-based improvements and engineering analysis.

**ST-80C²**

**Installation / Technical Specifications**

**Controls**
- Local control
- Hand-wired remote console

**Mount**
- Pedestal with floor mounted socket

**Shutoff Valve**
- Manual

**Hydraulic Requirements (Min)**
- 28 GPM @ 2,100 psi (106 LPM @ 145 bar)

**Hydraulic Requirements (Max)**
- 40 GPM @ 3,000 psi (151 LPM @ 207 bar)

**Assembly Weight**
- 7,800/8,320 lbs (3,538/3,773 kg)

**Tool Joint Connection (OD) Range**
- *4 1/8" to 8 1/2"

**Spin Speed**
- 75 RPM with 5" DP, 35 GPM

**Spin Torque**
- 1,750 ft-lbs (2,373 N-m) with 5" DP, 35 GPM

**Maximum Makeup Torque**
- 60,000 ft-lb (81,349 N-m)

**Maximum Breakout Torque**
- 80,000 ft-lb (108,465 N-m)

**Connection Height**
- 23" to 59" (584 mm to 1,498 mm)

**Horizontal Travel**
- ±90° (manual and power slew)

**Vertical Adjustment**
- 36" (914 mm) or 72" (1,828 mm)

**Casing Ready**
- No

**Torque Wrench Angle**
- 30°

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* ST-80 and ST-100 can make/break certain tool joints on 27/8" drill pipe
** NOV classifies total horizontal travel as the distance between points A and B. Point A is defined as the centerline of the jaw dies when the iron roughneck is fully retracted. Point B is defined as the centerline of the jaw dies when the iron roughneck is fully extended.
*** Horizontal travel may be increased upon request with use of an extension plate.

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A consistent, reliable tool featured on our most popular land rigs.

**ST-80CL**

**Installation / Technical Specifications**

**Controls**
- Local control
- Hand-wired remote console
- Integrated with NOV hoster controls

**Mount**
- Pedestal with floor mounted socket

**Shutoff Valve**
- Manual

**Hydraulic Requirements (Min)**
- 28 GPM @ 2,100 psi (106 LPM @ 145 bar)

**Hydraulic Requirements (Max)**
- 40 GPM @ 3,000 psi (151 LPM @ 207 bar)

**Assembly Weight**
- Approximately 9,400 lbs (4,263 kg)

**Tool Joint Connection (OD) Range**
- *4 1/8" to 8 1/2"

**Spin Speed**
- 75 RPM with 5" DP, 35 GPM

**Spin Torque**
- 1,750 ft-lbs (2,373 N-m) with 5" DP, 35 GPM

**Maximum Makeup Torque**
- 60,000 ft-lb (81,349 N-m)

**Maximum Breakout Torque**
- 80,000 ft-lb (108,465 N-m)

**Connection Height**
- 23" to 65" (584 mm to 1,651 mm)

**Horizontal Travel**
- 100" (2,540 mm)

**Vertical Adjustment**
- 42" (1,067 mm)

**Casing Ready**
- No

**Torque Wrench Angle**
- 30°

---

* ST-80 and ST-100 can make/break certain tool joints on 27/8" drill pipe
** NOV classifies total horizontal travel as the distance between points A and B. Point A is defined as the centerline of the jaw dies when the iron roughneck is fully retracted. Point B is defined as the centerline of the jaw dies when the iron roughneck is fully extended.

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rig@nov.com
### ST-100 Installation / Technical Specifications

<table>
<thead>
<tr>
<th>Controls</th>
<th>ST-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Manual</td>
<td>Integrated with NOV driller's controls</td>
</tr>
<tr>
<td>Hard-wired Remote Console</td>
<td>Integrated into NOV driller's controls</td>
</tr>
<tr>
<td>Pedestal Rotation</td>
<td>±90° (power slew)</td>
</tr>
<tr>
<td>Hydraulic Requirements (Min)</td>
<td>45 GPM @ 2,500 psi (170 LPM @ 172 bar)</td>
</tr>
<tr>
<td>Hydraulic Requirements (Max)</td>
<td>55 GPM @ 3,000 psi (208 LPM @ 207 bar)</td>
</tr>
<tr>
<td>Assembly Weight</td>
<td>11,500 lbs (5,216 kg)</td>
</tr>
<tr>
<td>Tool Joint Connection (OD) Range</td>
<td>*3½” to 9¾”</td>
</tr>
<tr>
<td>Spin Speed</td>
<td>80 RPM with 5” DP, 45 GPM</td>
</tr>
<tr>
<td>Spin Torque</td>
<td>3,000 ft-lb (4,067 N·m)</td>
</tr>
<tr>
<td>Maximum Makeup Torque</td>
<td>100,000 ft-lb (135,582 N·m)</td>
</tr>
<tr>
<td>Maximum Breakout Torque</td>
<td>120,000 ft-lb (162,698 N·m)</td>
</tr>
<tr>
<td>Connection Height</td>
<td>30” to 66” (762 mm to 1,676 mm)</td>
</tr>
<tr>
<td>Horizontal Travel**</td>
<td>60” (1,524 mm) or 96” (2,438 mm)</td>
</tr>
<tr>
<td>Vertical Adjustment</td>
<td>36” (914 mm)</td>
</tr>
</tbody>
</table>

*ST-90 and ST-100 can make/break certain tool joints on 27/8” drill pipe
**NOV classifies total horizontal travel as the distance between points A and B. Point A is defined as the retraction of the jaw dies when the iron roughneck is fully retracted. Point B is defined as the extension of the jaw dies when the iron roughneck is fully extended.

### ST-120 Installation / Technical Specifications

<table>
<thead>
<tr>
<th>Controls</th>
<th>ST-120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Manual</td>
<td>Wireless Remote</td>
</tr>
<tr>
<td>Hard-wired Remote Console</td>
<td>Integrated into NOV driller's controls</td>
</tr>
<tr>
<td>Pedestal Rotation</td>
<td>±90°</td>
</tr>
<tr>
<td>Hydraulic Requirements (Min)</td>
<td>45 GPM @ 2,500 psi (170 LPM @ 172 bar)</td>
</tr>
<tr>
<td>Hydraulic Requirements (Max)</td>
<td>65 GPM @ 3,000 psi (246 LPM @ 207 bar)</td>
</tr>
<tr>
<td>Assembly Weight</td>
<td>19,800 lbs (8,981 kg)</td>
</tr>
<tr>
<td>Tool Joint Connection (OD) Range</td>
<td>37/8” to 10”</td>
</tr>
<tr>
<td>Spin Speed</td>
<td>80 RPM (nominal on 5” DP)</td>
</tr>
<tr>
<td>Spin Torque</td>
<td>3,000 ft-lb (4,067 N·m)</td>
</tr>
<tr>
<td>Maximum Makeup Torque</td>
<td>100,000 ft-lb (135,582 N·m)</td>
</tr>
<tr>
<td>Maximum Breakout Torque</td>
<td>120,000 ft-lb (162,698 N·m)</td>
</tr>
<tr>
<td>Connection Height</td>
<td>31.5” to 73.4” (800 mm to 1,864 mm)</td>
</tr>
<tr>
<td>Horizontal Travel*</td>
<td>144” (3,658 mm)</td>
</tr>
<tr>
<td>Vertical Adjustment</td>
<td>42” (1,067 mm)</td>
</tr>
<tr>
<td>Casing Ready</td>
<td>No</td>
</tr>
</tbody>
</table>

*NOV classifies total horizontal travel as the distance between points A and B. Point A is defined as the retraction of the iron roughneck as fully retracted. Point B is defined as the extension of the iron roughneck as fully extended.

The embodiment of offshore equipment power into a package fit for a land rig.
### AR-3200

A track-mounted, industry-recognized model that has stood the test of time.

**AR-3200 Installation/Technical Specifications**

<table>
<thead>
<tr>
<th>Controls</th>
<th>Mount</th>
<th>Shutoff Valve</th>
<th>Pedestal Rotation</th>
<th>Hydraulic Requirements (Min)</th>
<th>Hydraulic Requirements (Max)</th>
<th>Assembly Weight</th>
<th>Tool Joint Connection (OD) Range</th>
<th>Spin Speed</th>
<th>Spin Torque</th>
<th>Maximum Makeup Torque</th>
<th>Maximum Breakout Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Manual</td>
<td>Track Mounted</td>
<td>Manual</td>
<td>N/A</td>
<td>45 GPM @ 2,000 psi</td>
<td>45 GPM @ 2,500 psi</td>
<td>12,100 lbs (5,490 kg)</td>
<td>3½” to 9¾”</td>
<td>100 RPM</td>
<td>2,000 ft-lbs</td>
<td>100,000 ft-lb</td>
<td>120,000 ft-lb</td>
</tr>
</tbody>
</table>

* NOV classifies total horizontal travel as the distance between points A and B. Point A is defined as the centerline of the jaw dies when the iron roughneck is fully retracted. Point B is defined as the centerline of the jaw dies when the iron roughneck is fully extended.

**Optional Additions:**
- Mud bucket
- Doper
- Bit breaker
- Casing module
- Rotation table

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### ST-160

Our high torque, floor socket mounted model with full automatic controls combines power with versatility.

**ST-160 Installation/Technical Specifications**

<table>
<thead>
<tr>
<th>Controls</th>
<th>Mount</th>
<th>Shutoff Valve</th>
<th>Pedestal Rotation</th>
<th>Hydraulic Requirements (Min)</th>
<th>Hydraulic Requirements (Max)</th>
<th>Assembly Weight</th>
<th>Tool Joint Connection (OD) Range</th>
<th>Spin Speed</th>
<th>Spin Torque</th>
<th>Maximum Makeup Torque</th>
<th>Maximum Breakout Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireless Remote</td>
<td>Pedestal with floor mounted socket</td>
<td>Manual</td>
<td>±90°</td>
<td>55 GPM @ 3,000 psi</td>
<td>65 GPM @ 3,000 psi</td>
<td>26,600 lbs (12,065 kg)</td>
<td>37/8” to 10”</td>
<td>80 RPM</td>
<td>3,467 ft-lbs</td>
<td>140,000 ft-lb</td>
<td>160,000 ft-lb</td>
</tr>
</tbody>
</table>

* NOV classifies total horizontal travel as the distance between points A and B. Point A is defined as the centerline of the jaw dies when the iron roughneck is fully retracted. Point B is defined as the centerline of the jaw dies when the iron roughneck is fully extended.

**Optional Additions:**
- Mud bucket
- Doper
- Bit breaker
- Casing module
- Rotation table

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“We love the AR-3200; it’s a really good machine.”

- Drilling Contractor

“We prefer the ST-160 due to its reliability and simplicity.”

- Drilling Contractor

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rig@nov.com
### MPT-270

**Installation / Technical Specifications**

- **Controls:** Wireless remote
  - Integrated into NOV driller’s controls
- **Mount:** Trackless, optional with additional rails
- **Shutoff Valve:** Manual
- **Pedestal Rotation:** Slew base rotation 65°
- **Hydraulic Requirements (Min):**
  - 111 GPM @ 3,000 psi
  - (420 LPM @ 207 bar)
- **Hydraulic Requirements (Max):**
  - 115 GPM @ 3,050 psi
  - (435 LPM @ 210 bar)
- **Assembly Weight:** 14,990 lbs (6,799 kg)
- **Tool Joint Connection (OD) Range:** 3½” to 10” (27/8” kit optional)
- **Spin Speed:** 100 RPM (nominal on 5” DP)
- **Spin Torque:** 3,467 ft-lbs (4,700 N-m)
- **Maximum Makeup Torque:** 200,000 ft-lb (up to 270,000 N-m)
- **Maximum Breakout Torque:** 200,000 ft-lb (up to 270,000 N-m)
- **Connection Height:** 26.5” to 73.5” (673 mm to 1,866 mm)
- **Horizontal Travel:** Variable track
- **Vertical Adjustment:** 47” (1,193 mm)
- **Torque Wrench Angle:** 60°
- **Optional Additions:** Mud bucket, doper, bit breaker, stabbing guide, casing module, track base

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### ARN-270

**Installation / Technical Specifications**

- **Controls:** Wireless remote
  - Integrated into NOV driller’s controls
- **Mount:** Trackless, optional with additional rails
- **Shutoff Valve:** Manual
- **Pedestal Rotation:** Slew base rotation 65°
- **Hydraulic Requirements (Min):**
  - 111 GPM @ 3,000 psi
  - (420 LPM @ 207 bar)
- **Hydraulic Requirements (Max):**
  - 115 GPM @ 3,050 psi
  - (435 LPM @ 210 bar)
- **Assembly Weight:** 18,400 lbs (8,361 kg)
- **Tool Joint Connection (OD) Range:** 3½” to 10” (27/8” kit optional)
- **Spin Speed:** 100 RPM (nominal on 5” DP)
- **Spin Torque:** 3,467 ft-lbs (4,700 N-m)
- **Maximum Makeup Torque:** 200,000 ft-lb (up to 270,000 N-m)
- **Maximum Breakout Torque:** 200,000 ft-lb (up to 270,000 N-m)
- **Connection Height:** 41” to 91” (1,041 mm to 2,311 mm)
- **Horizontal Travel:** 122” (3,099 mm) (trackless, variable by track)
- **Vertical Adjustment:** 50” (1,270 mm)
- **Casing Ready:** Yes
- **Torque Wrench Angle:** 60°
- **Optional Additions:** Mud bucket, doper, bit breaker, stabbing guide, casing module, track base

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*NOV classifies total horizontal travel as the distance between points A and B. Point A is defined as the centroid of the jaw dies when the iron roughneck is fully retracted. Point B is defined as the centroid of the jaw dies when the iron roughneck is fully extended.*
Field Service
Our growing staff of proven field service personnel is available 24/7 to support all NOV products. Knowledgeable field service technicians can quickly deploy to your operating site to resolve your equipment issues, whether structural, mechanical, electrical or software-related. Our FAST solution service trucks are stocked with an extensive list of NOV’s top drive, iron roughneck, BOP, EDS, and Amphion® replacement parts, filters, consumables and tools to get your NOV equipment running at OEM specifications. Expert on-call technicians are ready to provide FAST, on-site service and repair.

Training
Field technicians train extensively on NOV Rig Systems product lines including competency training and evaluations through our NOV technical colleges and training facilities to ensure the highest quality service and support for your equipment repairs on-site.

Repair
Our highly skilled shop technicians overhaul, repair, rebuild, and re-certify a wide range of NOV equipment to the NOV Quality Assurance and OEM specifications—using only OEM parts. Our worldwide network of repair centers provides unrivaled quality customer service, on-time delivery and unmatched technical integrity. In addition, equipment exchange programs are available at various facilities. Through the Used Equipment Refurbishment Program, we provide viable, short turnaround solutions to immediate capital equipment needs, complete with data books and certificates of conformance as required.

Technical Support
One phone call to one of our technical support centers initiates a technical support team of multi-skilled backgrounds to troubleshoot and resolve your worldwide equipment needs, 24/7/365. Our team of highly skilled and experienced technical support members work together with our global pool of qualified field service technicians and subject matter experts to keep your rigs operating. The technical support team utilizes our web-based application “Tracker” to record, manage, and resolve issues.

Field Engineering
Our field engineering groups offer the unique service of providing one-off, rig-specific equipment designs, modifications and solutions to your rig-specific issues.

For 24/7 Support Services: +1 281 569 3050

NOV is with you every step of the way

Rig Aftermarket Services

Comprehensive Aftermarket Products and Services

Global Hub
Regional Hub
Existing local facility
New local facility

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