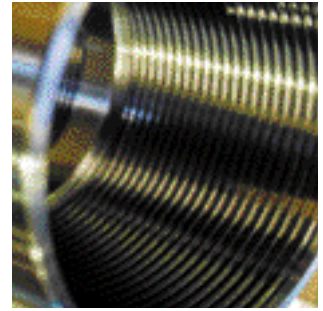
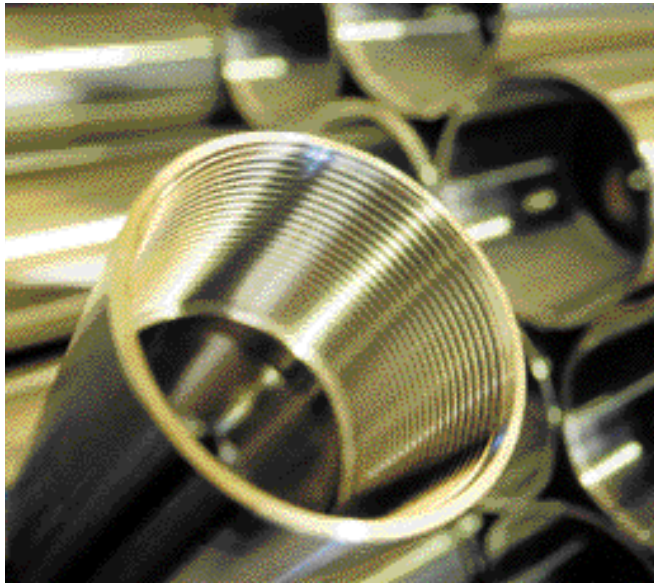




**Tenaris**Hydril

Premium Connections  
for Demanding  
Environments



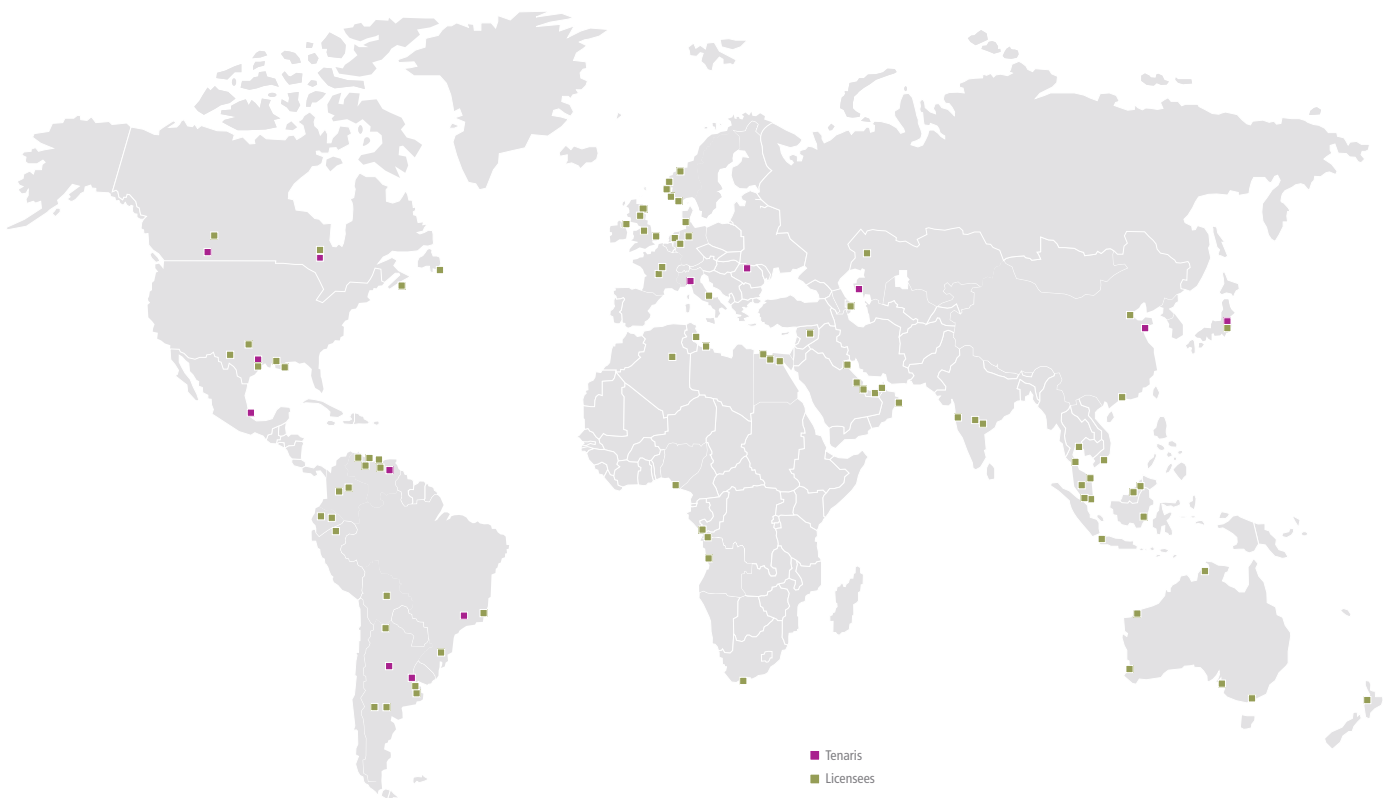
# TenarisHydril

TenarisHydril offers the best in premium connection design and technology worldwide. With a comprehensive range of high performance products backed by an extensive global service network, we are developing solutions to meet

the needs of ever more demanding oil and gas drilling environments.

TenarisHydril connections are supplied and supported by Tenaris, the leading manufacturer and supplier

of steel tubes and integrated tubular solutions to the world's energy industry, and a worldwide network of licensed threading and repair shops.



# Design and Technology

TenarisHydril offers a comprehensive range of outstanding and proven products designed to meet the requirements of the most challenging applications.

## TenarisBlue®

TenarisBlue is the most advanced premium connection technology available. TenarisBlue connections are designed for the most complex and environmentally sensitive oil and gas wells and for testing under ISO 13679 CAL IV. Providing all-round excellent performance, TenarisBlue connections add value by increasing safety, lowering trouble time and reducing risk.

## Dopeless™

Our Dopeless technology is the only dry dope-free technology in the market. Designed for use with TenarisBlue connections, it combines improved operational efficiency with enhanced environmental protection. It is particularly suitable for use in sensitive offshore operations where its operational advantages of improved safety and reduced running times can have the greatest benefits.

## Wedge Series 500™

Wedge Series 500 technology is specially designed for use where torque strength is critical. With high compression resistance and several times the torque strength of most technologies, Wedge Series 500 connections provide high



performance even on pipe with thin walls. They are used in demanding applications from highly deviated wells to strings that must be rotated and pushed into place.

Wedge Series 500 connections are available in flush, near-flush, upset pipe-end and threaded and coupled configurations, with or without metal-to-metal seals. Each connection bears a number in the 500 series where the second digit denotes the connection configuration and pipe end and the third digit denotes the sealing system.

## Legacy Technologies

Not every well calls for the exceptional performance capabilities of TenarisBlue or Wedge Series 500 technology. That is why

TenarisHydril offers a broad range of proven performers –both integral and threaded and coupled. These connections have well-established track records and in many cases represent milestones in the development of the industry over the past 60 years.

## Atlas Bradford®

In addition to TenarisHydril connections, Tenaris supplies and supports Atlas Bradford connections outside the USA. Tenaris has exclusive license rights for manufacturing and marketing of Atlas Bradford connections outside North America and non-exclusive rights in Canada.



# Quality and Manufacturing

TenarisHydril premium connections are manufactured to exacting quality standards under the same quality management system that Tenaris uses throughout its global manufacturing system. This holds global ISO 9001 registration. By manufacturing premium connections as part of an integrated process of

pipe design, production, treatment and finishing, we assure the quality of the product. We can also respond promptly and flexibly to changes in required specifications and other unexpected conditions while maintaining the highest quality standard expected by the industry.



# Repair Shops and Field Services

TenarisHydril premium connections and accessories are supported worldwide by Tenaris's pipe finishing and service facilities plus a network of licensed threading and repair shops. Experienced field specialists are on hand

to assist customers in running and handling connections. Workshops and their personnel are trained and audited by Tenaris in accordance with its unified, global quality management system



# Application Guide

SURFACE CASING	INTERMEDIATE CASING	LINERS	PRODUCTION CASING & TIE-BACKS
<p><b>Threaded &amp; Coupled</b></p> <p>Wedge 563™ ERT™</p> <p><b>Integral</b></p> <p>Wedge 511™ Wedge 513™ Wedge 521™ Wedge 523™</p>	<p><b>Threaded &amp; Coupled</b></p> <p>Blue™ (1) Wedge 563™ 3SB™ MST™ HW™</p> <p><b>Integral</b></p> <p>Blue Near Flush™ (1) SLX™ MAC-II™ Wedge 521™ Wedge 523™</p>	<p><b>Conventional Liners</b></p> <p>Blue™ (1) Blue Near Flush™ (1) SLX™ Wedge 511™ Wedge 513™ Wedge 521™ Wedge 523™</p> <p><b>Rotating /Drilling Liners</b></p> <p>Blue™ (1) Wedge 511™ Wedge 513™ Wedge 521™ Wedge 523™</p>	<p><b>Integral</b></p> <p>Blue Near Flush™ (1) Wedge 513™ Wedge 523™ MAC-II™ SLX™</p> <p><b>Threaded &amp; Coupled</b></p> <p>Blue™ (1) Wedge 563™ 3SB™ MST™</p>
HORIZONTAL AND EXTENDED REACH WELLS	THERMAL WELLS	HEAVY-WALL	PRODUCTION TUBING & WORKSTRINGS
<p>Wedge 511™ Wedge 513™ Wedge 521™ Wedge 523™ Wedge 563™</p>	<p><b>Steam Injection</b></p> <p>Blue™ (1) Wedge 563™</p> <p><b>Slotted Pipes, SAGD</b></p> <p>Blue SAGD™ Wedge 511™ Wedge 521™</p>	<p><b>Threaded &amp; Coupled</b></p> <p>HW</p> <p><b>Integral</b></p> <p>MAC-II™</p>	<p><b>Metal Seal</b>      <b>Thread Seal</b></p> <p>3SB™      Wedge 501™ MST™      Wedge 531™ CS®      Wedge 551™ PH-4™      Wedge 561™ PH-6™ Wedge 503™ Wedge 533™ Wedge 553™ Wedge 563™ PJD™</p>
DRILLING WITH CASING	DRILLING WITH TUBING	TUBING FOR INTERNAL COATING (CB)	DEEP HP/HT WELLS
<p><b>Threaded &amp; Coupled</b></p> <p>Blue™ (1) Blue SAGD™ Wedge 563™</p> <p><b>Integral</b></p> <p>Wedge 511™ Wedge 513™ Wedge 521™ Wedge 523™ Wedge 533™</p>	<p>CS® PH-4™ PH-6™ Wedge 533™ Wedge 553™ Wedge 563™</p>	<p>CS® PH-4™ PH-6™ Wedge 533™ Wedge 553™ Wedge 563™</p>	<p>Blue™ Blue Near Flush™ Wedge 511™ Wedge 513™ Wedge 521™ Wedge 523™ Wedge 563™ MAC-II™</p>

(1) Dopeless™ technology available

# Product Characteristics

## THREADED & COUPLED



### Blue™

Available in sizes from 2 3/8" to 13 5/8"

Dopeless™ technology available

#### Applications

- Production tubing and casing, including HP/HT environments
- Intermediate casing
- Tie-backs
- Highly deviated and horizontal and extended reach wells
- Liners
- Drilling with casing
- High compression and high torque
- Thermal well solutions, including steam injection
- Majority of carbon steel applications
- Especially suitable for corrosion-resistant alloys

#### Key Features and Benefits

- Easy stabbing
- Fast make-up and no cross-threading risk
- Structural efficiency equivalent to pipe body
- Gas tightness under combined-load conditions
- Superior performance under tension / compression cycles
- Dopeless™ option available for operational efficiency and enhanced environmental protection
- High torque strength



### Blue SAGD™

Available in sizes from 2 3/8" to 10 3/4"

#### Applications

- Thermal well solutions – slotted pipes, SAGD operations
- Rotating liners
- Horizontal wells
- Drilling with casing

#### Key Features and Benefits

- High torque and compression capacity for rotating in horizontal liners
- Optimized thread profile for maximum structural integrity on thin-wall pipe
- Fast and easy make-up with no cross-threading risk
- Structural efficiency equivalent to pipe body



### Wedge 561™

Available in sizes from 2 3/8" to 4 1/2"

#### Applications

- Work strings
- High deviated, extended-reach wells
- Milling, jarring, fishing
- Drilling cement
- Diamond-coring operations

#### Key Features and Benefits

- Exceptional torque strength
- Positive torque stop virtually eliminates pin-end and ID restrictions from overtorque
- Rugged, coarse-pitch thread and deep stabbing prevents cross-threading
- Wear indicator useful for extended work string applications
- 100% pipe body rating for compression
- 100% collapse-rated thread seal
- High tension and bending strength
- Special clearance OD retains full tension and pressure ratings
- Roller-stenciled make-up band provides visual confirmation of make-up
- Interchangeable with 501, 531 and 551
- Corrosion-barrier (CB) ring optional



### Wedge 563™

Available in casing sizes from 5" to 16"

Available in tubing sizes from 2 3/8" to 7"

#### Applications

- Majority of carbon steel applications
- Production tubing and casing
- Intermediate casing
- Tie-backs
- Highly deviated and extended-reach applications
- Especially suitable for corrosion-resistant alloys
- Thermal well solutions, including steam injection

#### Key Features and Benefits

- Work Strings
- Tubing for internal coating
- Drilling with tubing
- Exceptional torque strength
- 100% rated metal seal for internal pressure
- 100% collapse-rated thread seal
- High tension and bending strength
- Special clearance OD retains full tension and pressure ratings
- Roller-stenciled make-up band provides confirmation of make-up
- Interchangeable with 503, 533 and 553 on tubing sizes



### 3SB™

Available in sizes from 2 3/8" to 13 5/8"

#### Applications

- Especially suitable for corrosion-resistant alloys and sour service
- Production tubing and casing
- Surface casing
- Intermediate casing
- Tie-backs

#### Key Features and Benefits

- Excellent gas tightness
- Optimum joint efficiency
- Easy stabbing with no cross-threading risk
- Rugged torque shoulder
- Special clearance and special bevel options available



### ER™

Available in sizes from 7" to 24 1/2"

#### Applications

- Surface casing
- Intermediate casing

#### Key Features and Benefits

- Easy stabbing, fast make-up with no cross-threading risk
- Optimum joint efficiency
- Strong torque shoulder
- Matched strength, special clearance and special bevel options available



### HW™

Available in sizes from 5" to 10 3/4" and 14"

#### Applications

- Heavy-wall
- Production casing
- Intermediate casing
- Salt dome application

#### Key Features and Benefits

- Specially designed for medium to heavy wall pipes
- Excellent gas tightness
- Easy stabbing and no cross-threading risk
- Hook thread design
- Optimum joint efficiency
- Rugged torque shoulder
- Special clearance and API regular options available
- Metal to metal seal



### MST™

Available in sizes from 2 3/8" to 14"

#### Applications

- Production tubing and casing
- Intermediate casing
- Geothermal wells
- Majority of carbon steel applications

#### Key Features and Benefits

- Excellent gas tightness
- Rugged torque shoulder
- Easy stabbing, fast make-up and no cross-threading risk
- Optimum joint efficiency
- Corrosion barrier (CB) and seal ring options available
- Match strength, special clearance and special bevel options available
- 100% tensile efficiency
- 100% internal pressure and collapse ratings
- High compression strength

## INTEGRAL SEMI-FLUSH



### Blue Near Flush™

Available in sizes from 5" to 13 5/8"  
Dopeless™ technology available

#### Applications

- Production casing
- Liners
- Intermediate casing
- Deviated and horizontal wells
- HP/HT applications
- Tight clearance applications

#### Key Features and Benefits

- Semi-flush design for improved clearance
- Superior compression efficiency, over 50%
- High-tension efficiency up to 78%
- Excellent structural integrity
- High overtorque capacity
- Dopeless™ option available for operational efficiency and enhanced environmental protection
- Tested to ISO 13679 CAL IV



### Wedge 521™

Available in sizes from 4" to 18 5/8"

#### Applications

- Large-diameter, high-clearance surface casing
- Intermediate casing
- Clearance situations
- Horizontal and extended reach strings
- Drilling with casing
- Horizontal liners
- Rotating while cementing
- Thermal well solutions, including slotted pipe, SAGD operations

#### Key Features and Benefits

- Exceptional torque and compression strength
- Tension and bending strengths of 65-75% of pipe body, even on thin-wall pipe
- Compression efficiency exceeds tension, typically 80-89%
- 100% collapse-rated thread seal
- Available on non-API sizes for clearance situations
- Roller stenciled make-up band provides visual confirmation of make-up



### Wedge 523™

Available in sizes from 7" to 16"

#### Applications

- Production casing
- Intermediate casing
- Tie-backs
- Drilling with casing
- Horizontal, extended-reach wells
- Tight clearance situations
- Push and rotate into place
- Rotate during cementing in deviated holes

#### Key Features and Benefits

- Exceptional torque strength
- High performance, even on thin walls
- Tension and bending efficiencies 70-75% of pipe body
- Compressions efficiencies typically 80-85%
- 100% rated metal seal for internal pressure
- 100% collapse-rated thread seal
- Clearance OD typically less than 2% larger than pipe body
- Available on non-API sizes for clearance situations
- Interchangeable with 513 for a given size and weight



### MAC-II™

Available in sizes from 5 1/2" to 16"

#### Applications

- Heavy-wall casing for critical HP/HT use
- Production casing
- Intermediate casing
- Tie-backs
- Shifting salt intervals

#### Key Features and Benefits

- Formed pin and box ends increase tension strength and combined load performance
- Performance ratings account for API pipe body dimension variations
- 100% rated metal seal for internal pressure
- 100% rated metal seal for external pressure
- Deep-stabbing, two-step design provides trouble-free makeup, even on heaviest pipe weights



### SLX™

Available in sizes from 4 1/2" to 13 5/8"

#### Applications

- Production casing
- Intermediate casing
- Tie-backs
- Liners
- Clearance applications
- Gas storage production strings
- High-alloy liners

#### Key Features and Benefits

- Clearance OD typically less than 2% larger than pipe body OD
- Hooked threads virtually eliminate thread pullout, even on pipe with a high diameter-to-thickness ratio
- Tension strength typically exceeds 75%
- 100% pipe body rating for sealing gas
- 100% pipe body collapse rating
- Deep-stabbing, two-step design for easy make-up
- Non-API sizes for clearance
- Seal saver protects pin seal from handling damage and acts as a stiffener to improve metal seal function

## INTEGRAL FLUSH



### Wedge 511™

Available in sizes from 2 1/16" to 18 5/8"

#### Applications

- Large-diameter, high-clearance surface casing
- Drilling with casing
- Thermal well solutions- slotted pipe, SAGD operations
- Wash pipe
- Wire-wrapped screens for horizontal, extended reach wells
- Tubing salvage

#### Key Features and Benefits

- Exceptional torque strength
- Pipe body-OD connection
- Exceptional compression efficiency, up to 75%, exceeds tension
- 100% collapse-rated thread seal
- Drilling and workover-rig compatible with commonly used procedures, equipment
- Available on non-API sizes for clearance situations



### Wedge 513™

Available in sizes from 4 1/2" to 16"

#### Applications

- Production liners
- Horizontal, extended-reach wells
- Rotating into place and during cementing
- Tight clearance situations
- Steam injection wells
- Drilling with casing

#### Key Features and Benefits

- Exceptional torque strength
- Pipe body-OD connection
- Tension and bending strengths of 60-65% of pipe body
- Exceptional compression efficiency, up to 78%, exceeds tension
- 100% rated metal seal for internal pressure
- 100% pipe body collapse strength
- Available on non-API sizes for clearance situations
- Interchangeable with 523 for a given size and weight

## INTEGRAL UPSET



### Wedge 501™

Available in sizes from 2 3/8" to 4 1/2"

#### Applications

- Work strings
- High deviated, extended-reach wells
- Milling, jarring, fishing
- Drilling cement
- Diamond-coring operations

#### Key Features and Benefits

- Exceptional torque work strings
- Positive torque stop virtually eliminates pin-end and ID and restrictions from overtorque
- Wear indicator useful for extended work string applications
- Rugged, coarse-pitch thread and deep stabbing prevent cross-threading
- 100% pipe body ratings for compression, tension and bending
- 100% collapse-rated thread seal
- Interchangeable with 531, 551 and 561

## INTEGRAL UPSET



### Wedge 503™

Available in sizes from 2 3/8" to 4 1/2"

#### Applications

- Production tubing
- High-torque work strings
- Injection/production strings for SAGD wells
- Drilling cement
- Diamond-coring operations
- J-lay flowlines
- Highly deviated, extended reach wells

#### Key Features and Benefits

- Exceptional torque strength
- Positive torque stop virtually eliminates pin-end and ID restrictions from overtorque
- 100% rated pipe body ratings for compression, tension and bending
- 100% rated metal seal for internal pressure
- 100% collapse-rated thread seal
- Interchangeable with 533, 553, and 563



### Wedge 531™

Available in sizes from 2 3/8" to 4 1/2"

#### Applications

- Work strings
- Production tubing
- Drilling with tubing
- Highly deviated, extended-reach wells
- Milling, jarring, fishing
- Drilling cement
- Diamond-coring operations

#### Key Features and Benefits

- Exceptional torque strength
- Positive torque stop virtually eliminates pin-end and ID restrictions from overtorque
- Rugged, coarse-pitch thread and deep stabbing prevent cross-threading
- Wear indicator useful for extended work string applications
- 100% pipe body rating for compression, tension, bending
- 100% collapse-rated thread seal
- Interchangeable with 501, 551 and 561



### Wedge 533™

Available in sizes from 2 3/8" to 7 5/8"

#### Applications

- Production tubing
- Work strings
- Internally-coated tubing
- Drilling with tubing
- Through tubing rotary drilling
- High-alloy strings
- HP/HT environments, including gas-storage production

#### Key Features and Benefits

- Exceptional torque strength
- Positive torque stop virtually eliminates pin-end and ID restrictions from overtorque
- Wear indicator useful for extended workstring applications
- 100% rated metal seal for internal pressure
- 100% pipe body ratings for tension, compression and bending
- 100% collapse-rated thread seal
- Interchangeable with 503, 553 and 563
- Corrosion-barrier (CB) ring optional



### Wedge 551™

Available in sizes from 2 3/8" to 4 1/2"

#### Applications

- Work strings
- Highly deviated, extended-reach wells
- Milling, jarring, fishing
- Drilling cement
- Diamond-coring operations

#### Key Features and Benefits

- Exceptional torque strength
- Positive torque stop virtually eliminates pin-end and ID restrictions from overtorque
- Rugged, coarse-pitch thread and deep stabbing prevent cross-threading
- 100% pipe body rating compression, tension, bending
- 100% collapse-rated thread seal
- Roller-stenciled make-up band provides visual confirmation of make-up
- Interchangeable with 501, 531 and 561



### Wedge 553™

Available in sizes from 2 3/8" to 7 5/8"

#### Applications

- Production tubing
- Work strings
- Internally-coated tubing
- Drilling with tubing
- High-alloy strings
- Highly deviated, extended-reach applications
- Geothermal
- HP/HT environments

#### Key Features and Benefits

- Exceptional torque strength
- Positive torque stop virtually eliminates pin-end and ID restrictions from overtorque
- 100% pipe body rating for compression
- 100% rated metal seal for internal pressure
- 100% collapse-rated thread seal
- Roller-stenciled make-up band provides visual confirmation of make-up
- Interchangeable with 503, 533 and 563
- Suitable for H2S service
- Corrosion-barrier (CB) ring optional



### CS®

Available in sizes from 3/4" to 7"

#### Applications

- Production tubing, including HP/HT environments
- Work strings
- Internally-coated tubing
- Drilling cement, milling and fishing
- High-pressure drill stem testing
- Drilling with tubing

#### Key Features and Benefits

- Two-step, non-interference thread for trouble-free makeup
- 100% pipe body tension strength
- 100% rated metal seal for internal and external pressure
- Special clearance OD retains 100% tension and pressure ratings
- Superior galling resistance for chromium strings
- High torque strength provided by 30° reverse-angle shoulder
- Suitable for H2S service
- Corrosion-barrier (CB) ring optional



### PH-6™

Available in sizes from 3/4" to 7"

#### Applications

- Production tubing, including HP/HT environments
- Work strings
- Internally-coated tubing
- Drilling cement, milling and fishing
- High-pressure drill stem testing
- Drilling with tubing

#### Key Features and Benefits

- Two-step, noninterference thread for trouble-free makeup
- 100% pipe body tension strength
- 100% rated metal seal for internal and external pressure
- Special clearance OD retains 100% tension and pressure ratings
- Superior galling resistance for chromium strings
- High torque strength provided by 30° reverse-angle shoulder
- Suitable for H2S service
- Corrosion-barrier (CB) ring optional



### PJD™

Available in sizes from 2 3/8" to 7"

#### Applications

- Production tubing
- Work strings
- HP/HT applications
- Drilling with tubing and casing

#### Key Features and Benefits

- Slim-line upset design
- Internal/external torque shoulder
- Excellent gas tightness
- Superior torque resistance
- Trouble-free make-up
- Optimum joint efficiency
- Higher performance than pipe body
- Corrosion barrier (CB) ring and internal coating options available
- Metal to metal seal
- 100% internal pressure and collapse pressure ratings



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