
BY PRECISION
SEMI
PREMIUMCONNECTIONS
FIELD TESTED.
FIELD PROVEN.

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HT SEMI-PREMIUM

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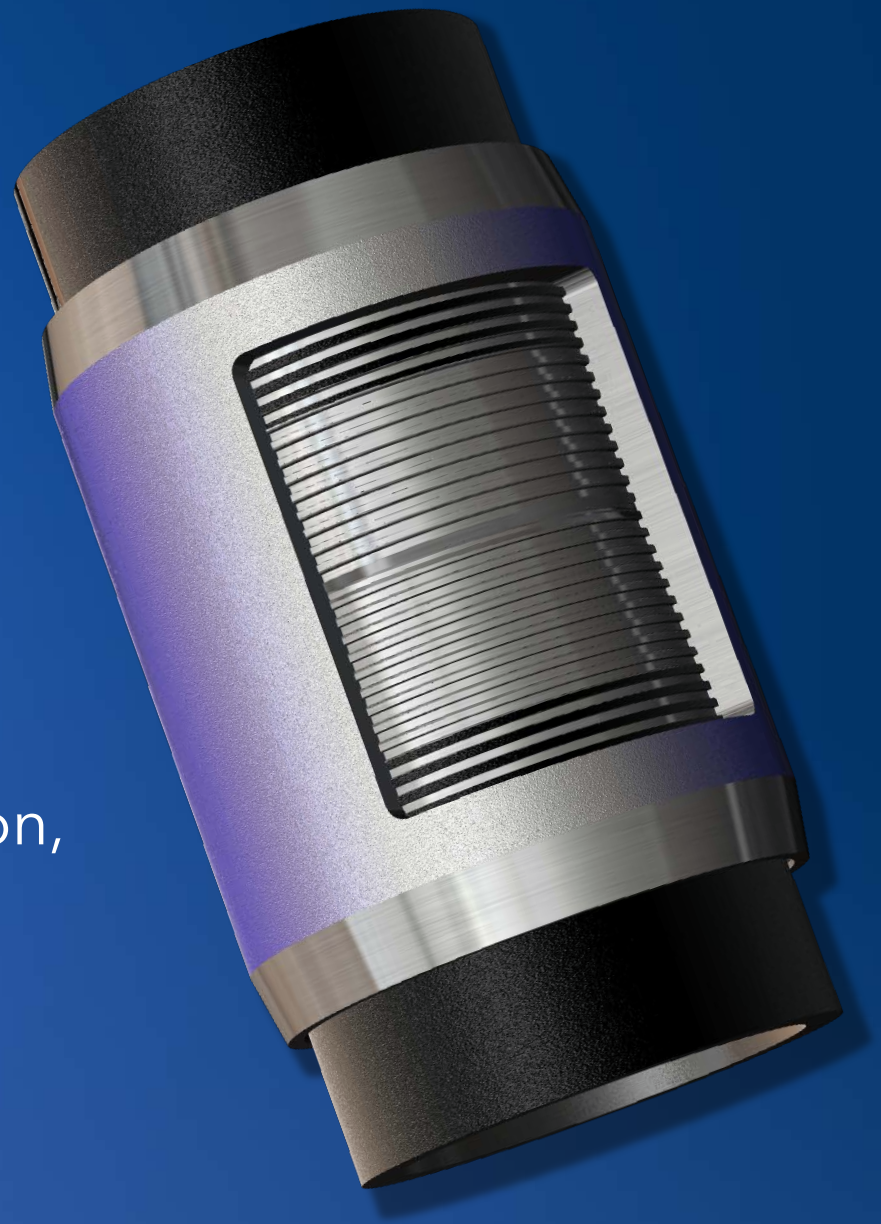
EXPERIENCE
TRUE INNOVATION

BK-HT is a third generation, semi-premium connection, designed for HIGH PRESSURE / HIGH TORQUE frac strings.



FIRST GENERATION

Steam Injection and Steam Assisted Gravity Drain Wells. Needed torque for installation and sealing. Needed pin nose contact for compressive strength due to thermal stresses.

SECOND GENERATION

Drilling with casing Wells. Needed torque and fatigue life for installation. Vertical wells that were not extremely deep.

THIRD GENERATION

Horizontal Wells. Need torque for installation. Need hoop strength and better sealing for high frac pressures. Need fatigue life for rotating during installation through a curved bore.

THIRD GENERATION

BK-HT was designed for Frac-Strings unlike first generation designs which were for drilling with casing in shallow vertical wells, or steam injection wells.

BUTTRESS COMPATIBLE

For cost savings on hangers, float shoes, float collars, crossovers and custom tools.

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Features

Higher Torque and Improved Sealing

- The BK-HT uses a thicker coupling with a larger OD to increase strength and torque resistance.
- The thicker coupling can take higher frac pressures and supports thicker wall pipe with 100% matched pipe strength.
- Provides more strength when utilizing high collapse or enhanced burst strength pipe.
- Designed for High collapse P110 and L80
- Great for 125ksi min yield P110 grades
- Pipe with thicker walls like 5.5” 26# which are not covered by API.

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Features

Higher Torque & Lower Drag

- A thicker coupling is stiffer and will stretch less axially and radially as the pin noses react to torque.
- The OD is beveled to reduce drag in horizontal wells.
- Optional Solid Body (SB) design for retaining centralizers available.
- Offered on 4.5″, 5″, 5.5″, 6″, 6.625″ and 7″ pipe.
- 7″ and 6″ always come with BK-HT.

FIELD **PROVEN.**

100%

FRAC STRENGTH

Tensile , compressive and pressure strength for high pressure frac jobs

27+

WELLS PER MONTH

Servicing over 27+ wells monthly

10K+

MONTHLY INSTALLS

Over 10,000 couplings installed each month

7.5MIL+

FEET INSTALLED

Over 8 million feet of couplings have been installed overall

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BK-HT accounts for 25% of all BK sales

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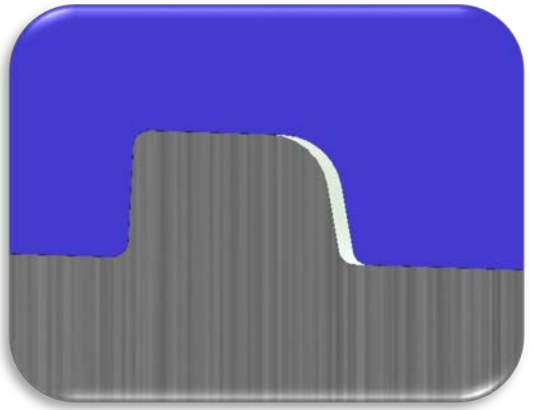
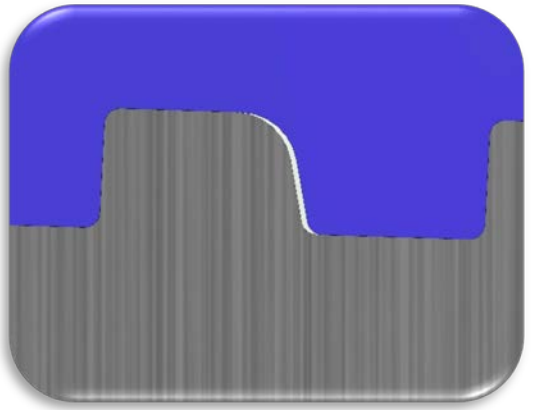
BETTER BUTTRESS SEALING

Modified buttress thread for tighter thread sealing and pin nose seal stabilization.

THEIRS API Thread Tolerance- Verified fit of several major insert manufacturers. Wide thread root.



OURS Minimizes thread gap for better thread sealing. **Custom Premium Insert.**



BETTER BUTTRESS PIPE THREADS FOR SEALING

Modified buttress thread for tighter thread sealing and pin nose seal stabilization.

- More threads for sealing than API tolerances provide.
- Tighter tolerances on lead, taper and pitch diameter.
- Aggressive de-burr for trouble free make-ups.

* **Black Crested Threads provide a leak path.**

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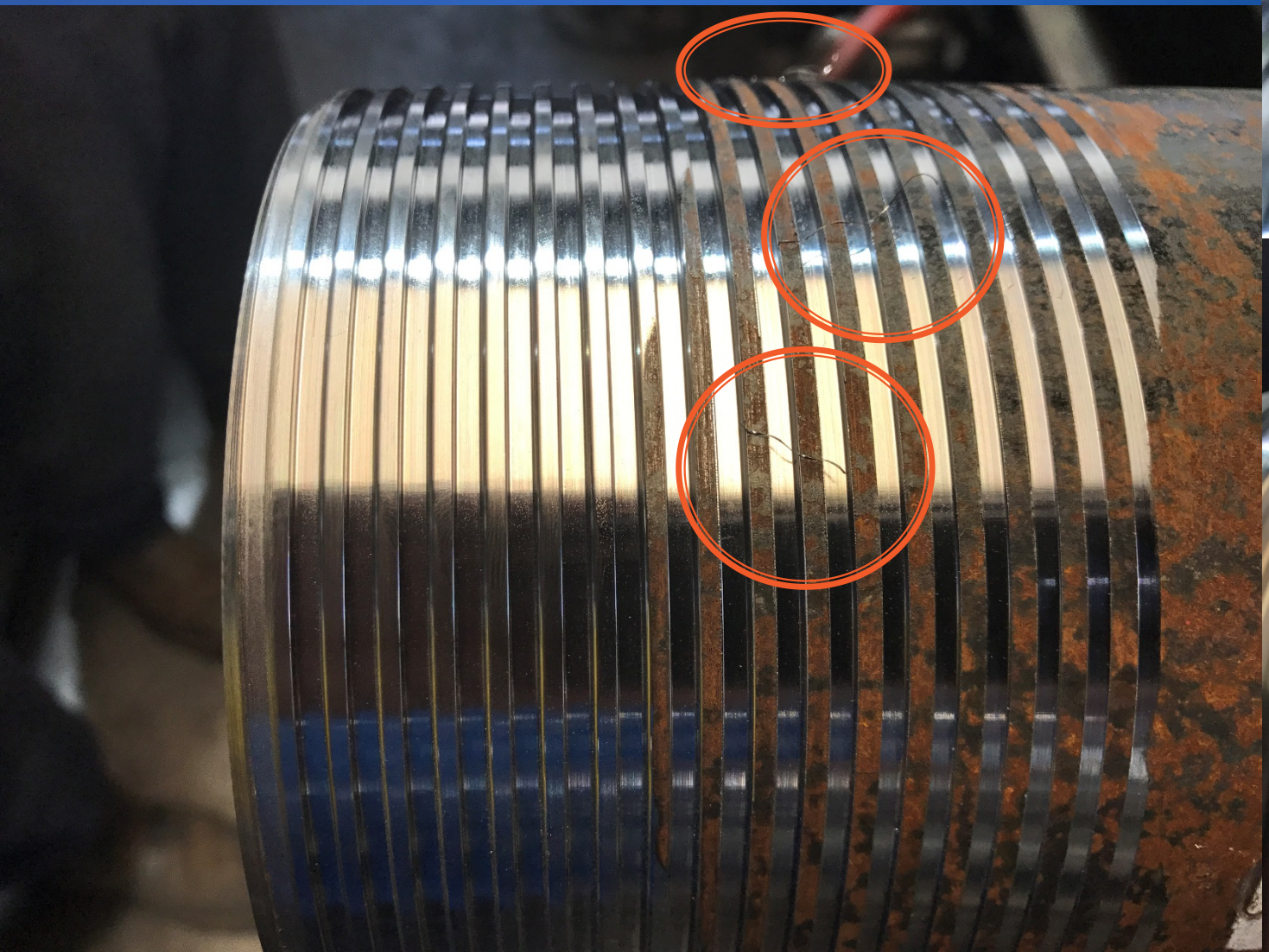
Burrs and Shavings.

Burrs commonly form in the runout / black crested pin thread region. They are a major cause of galling and rough coupling make ups. They also form on the pin nose. Most shops make no effort to remove these.



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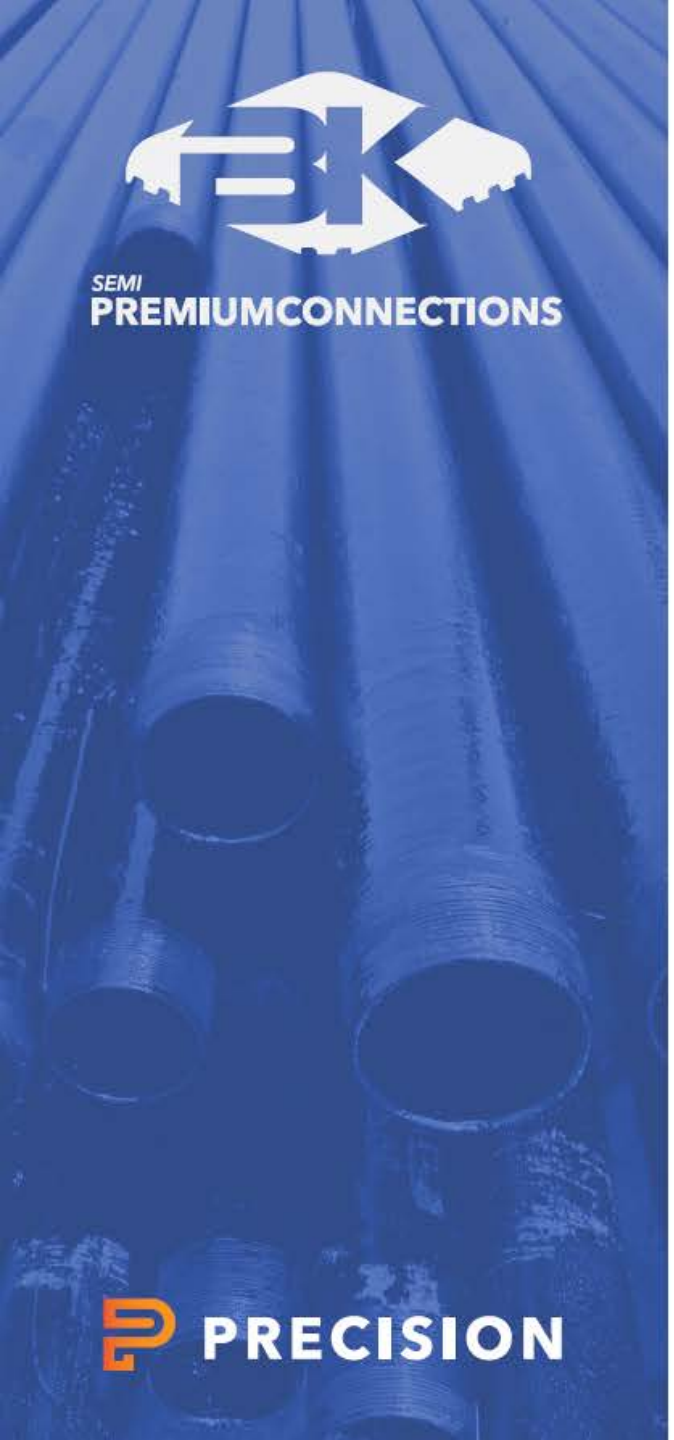
Deburring.

Deburring the runout/black crested threads and the pin nose is crucial to a trouble free make up. It ensures that the connection shoulders with a lower torque and can be made up multiple times without galling. This step is usually only performed on premium threads.

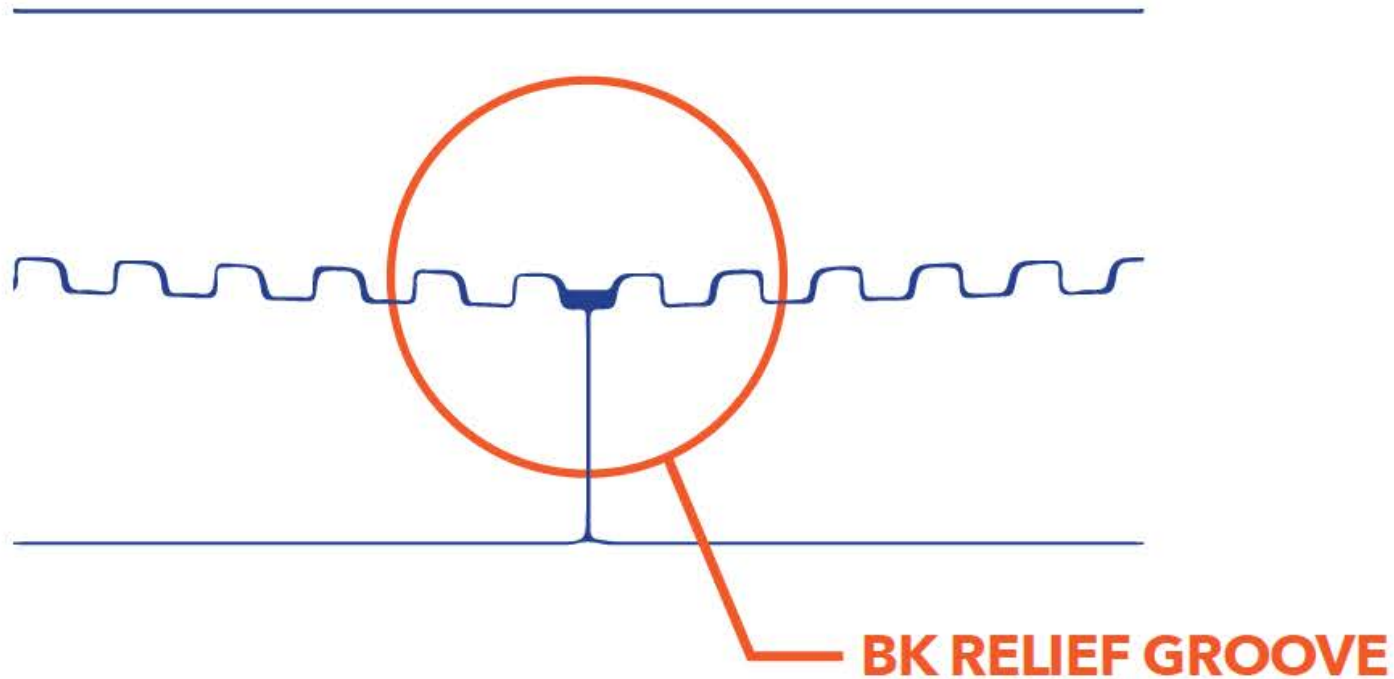
Saves End Users Time and Money

It requires time, tools and resources to deburr, which is why it is often skipped on semi premium. Without a deburr the cost is passed onto the end user who has to remake joints or lay down joints on a lousy make up. Deburred threads can be run faster (RPM) without galling.

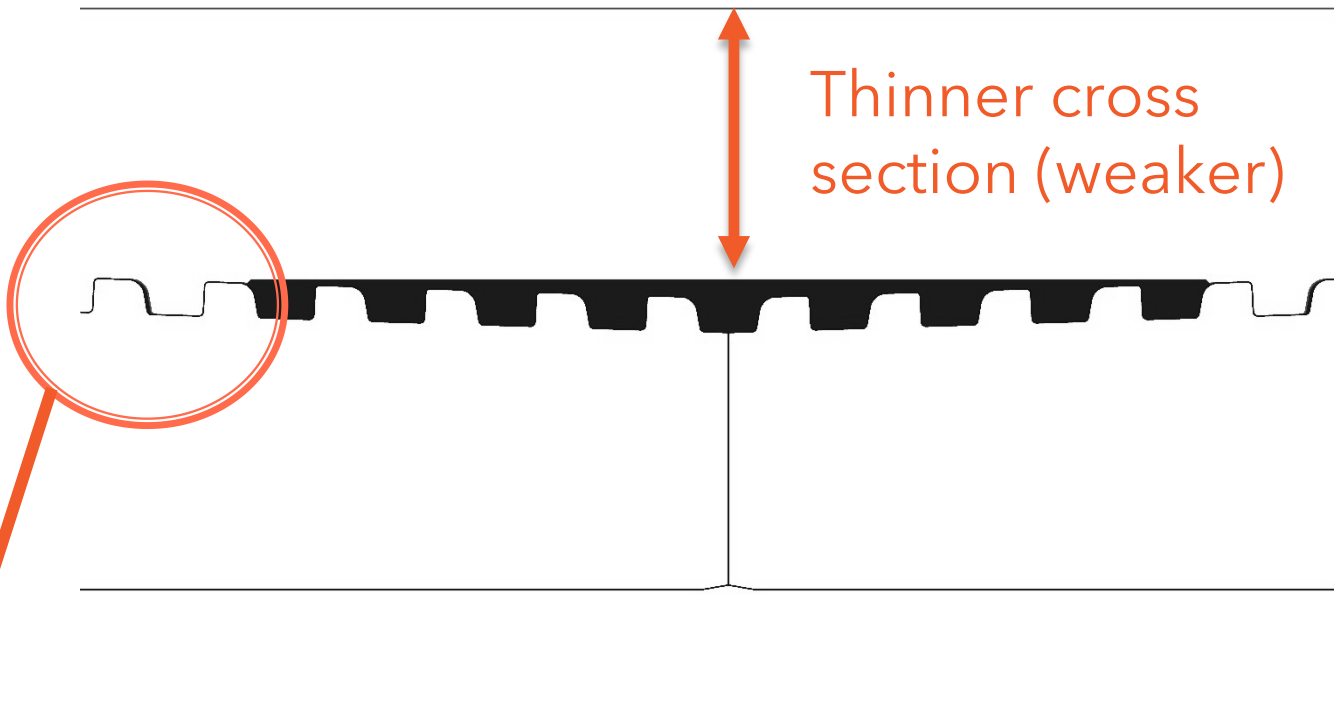


ADVANCED RELIEF GROOVE

Ensures more threads are engaged for maximum sealing. The thicker midpoint cross sectional area provides additional coupling strength.



First Generation Relief Groove



Dark Areas indicate unengaged thread regions

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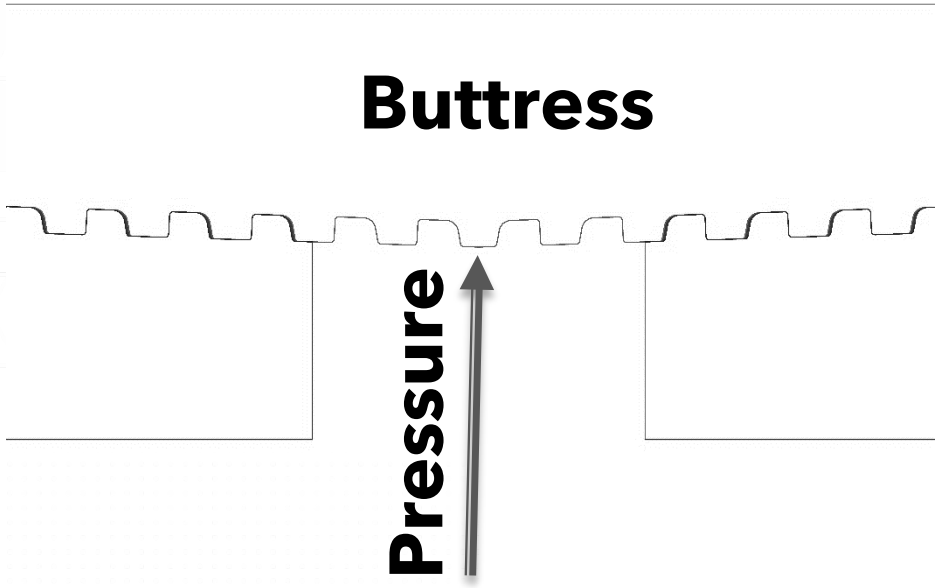
STRENGTH

Pin Nose to Coupling contact for high torque resistance, higher pressure ratings, higher bending loads and higher structural compressive loading . Smooth Premium Bore with no J-Area to get hung up on. Not susceptible to coupling turning like pin nose to pin nose.



Standard Buttress allows the internal pressure to react against the thin walled coupling.

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Types of Semi Premium Failures – Over Torque Split

The Coupling parts at the center from too much torque, load or combination of both.

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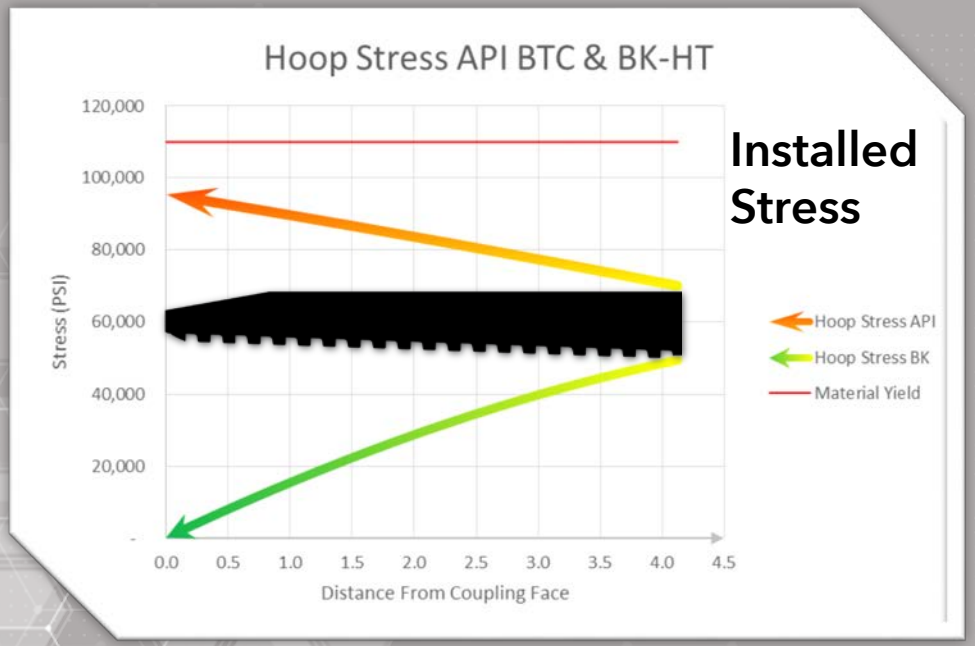
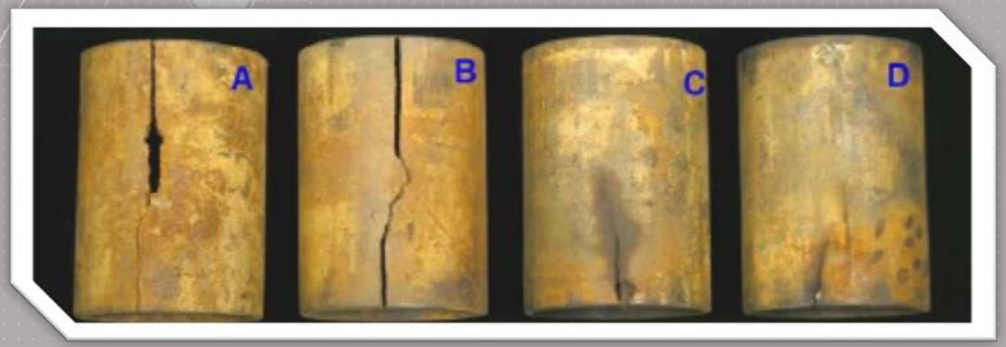
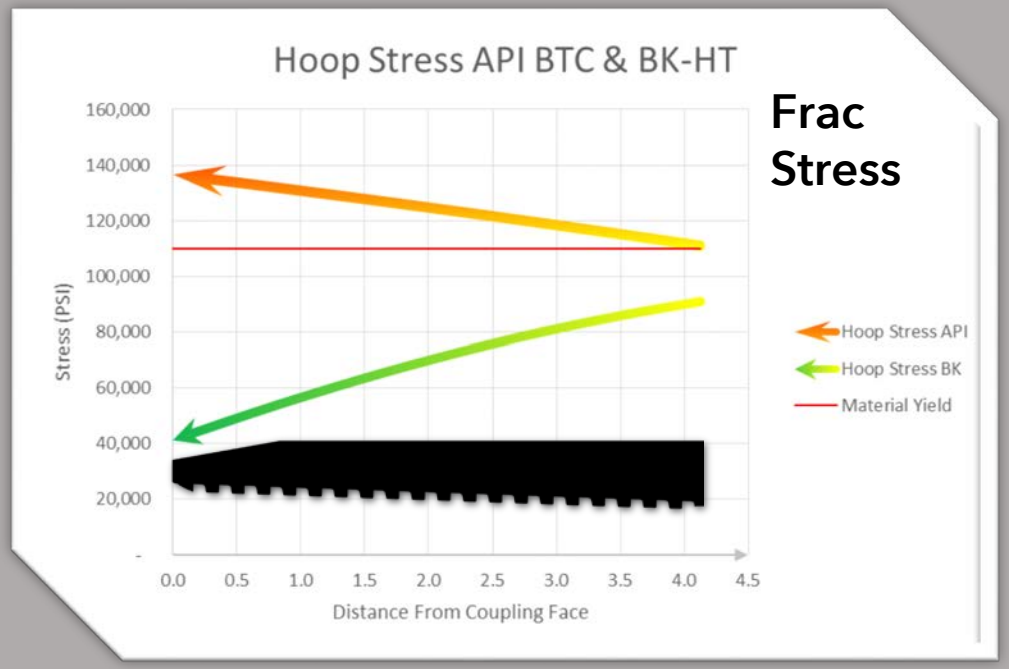
STRENGTH

A low hoop stress design reduces the chance of coupling splits and leaks from high frac pressures. **Stress is kept below material yield strength.**



<u>The coupling will return to its original shape after the frac without high residual stresses and deformations that accelerate corrosion and crack growth.</u>





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HIGH RPM FATIGUE RESISTANCE FROM LOW STRESS RUNOUT THREADS

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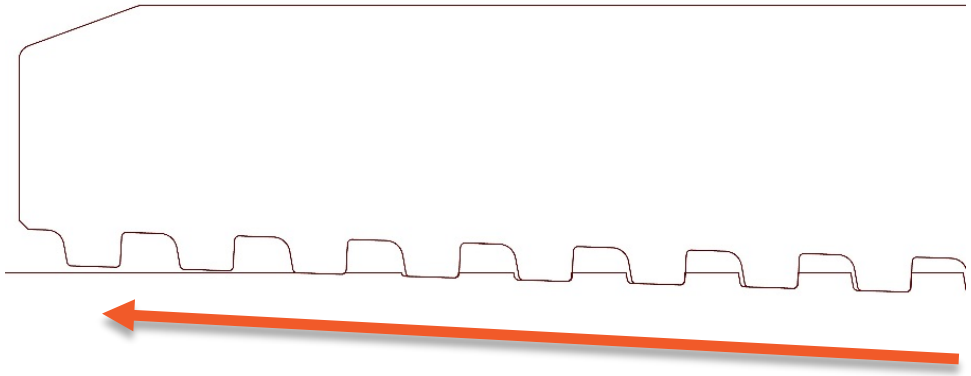
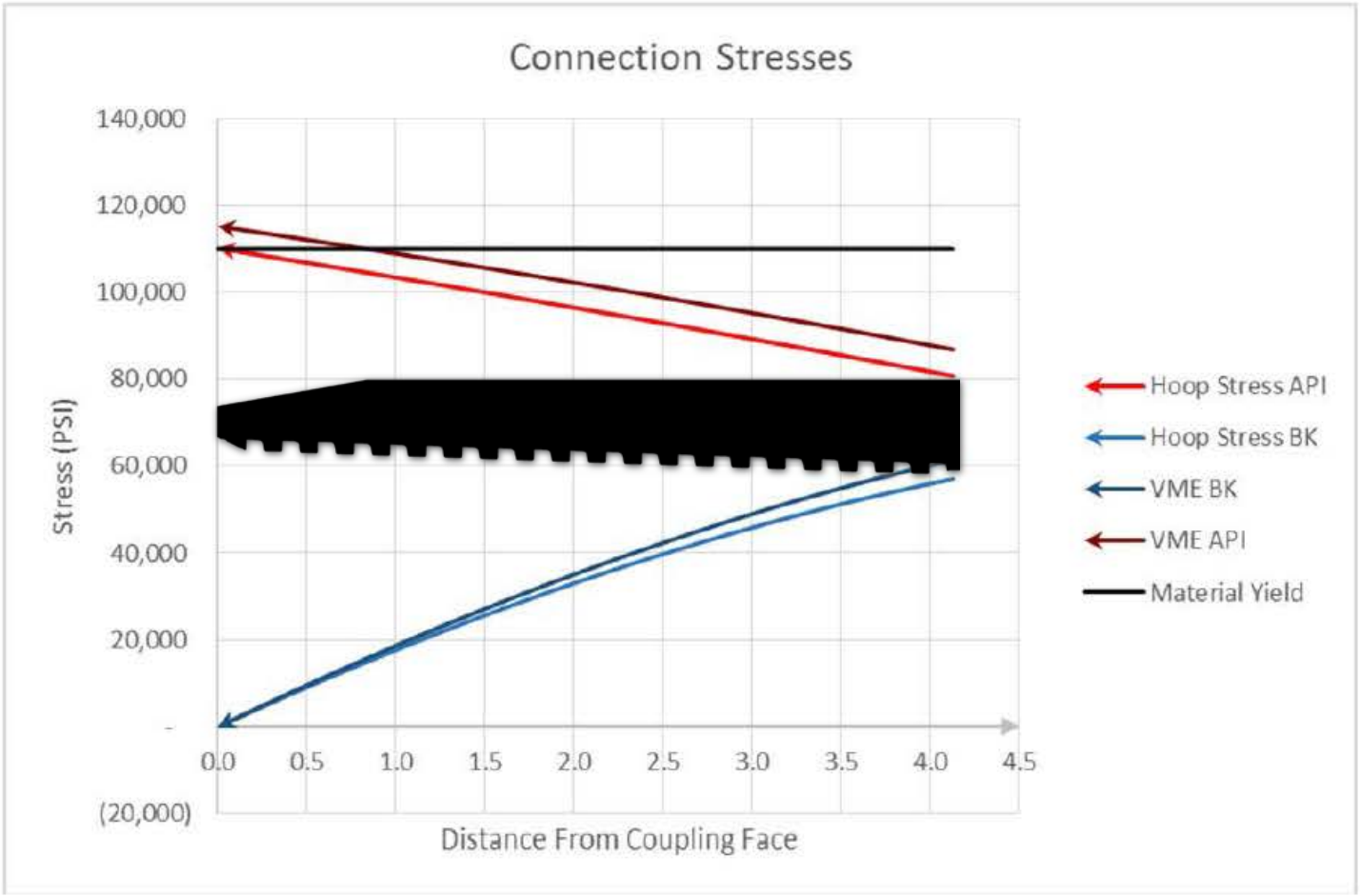


Extends the time it can be rotated through a dogleg at high RPM.



SELF CENTERING ANTI-ROTATION

Prevents the coupling from turning past center during make up with a thread interlock.

US Patent # 9,261,207 & 9,261,208.

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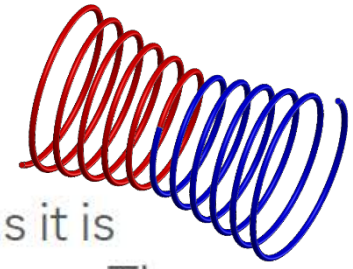
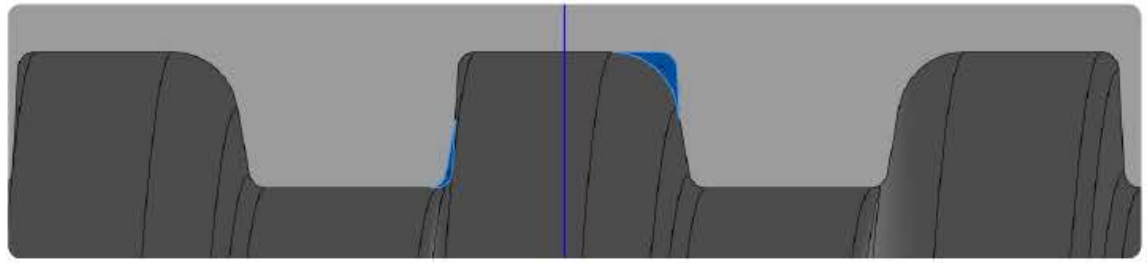


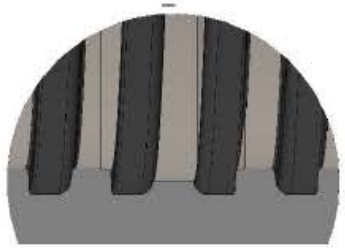
Thread Interlock

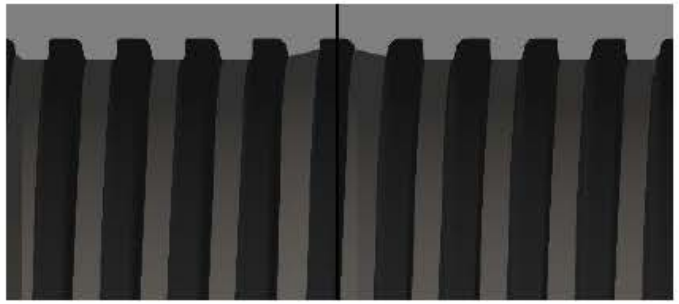
The pin tooth will lock up past center as it is forced into a groove that is a mirror image. The connection acts like a shouldered coupling.



Phase locked grooves

The grooves (Coupling Thread Roots) are cut in phase / lead so they meet in the middle of the coupling.





The Anti-rotation mechanism was designed to prevent the coupling from splitting or cracking. Some semi premium connections cross thread when rotated past the center.

The pin tooth crest can ride on top of the box tooth crest past the coupling center; the cross threading leads to a crack initiated washout.

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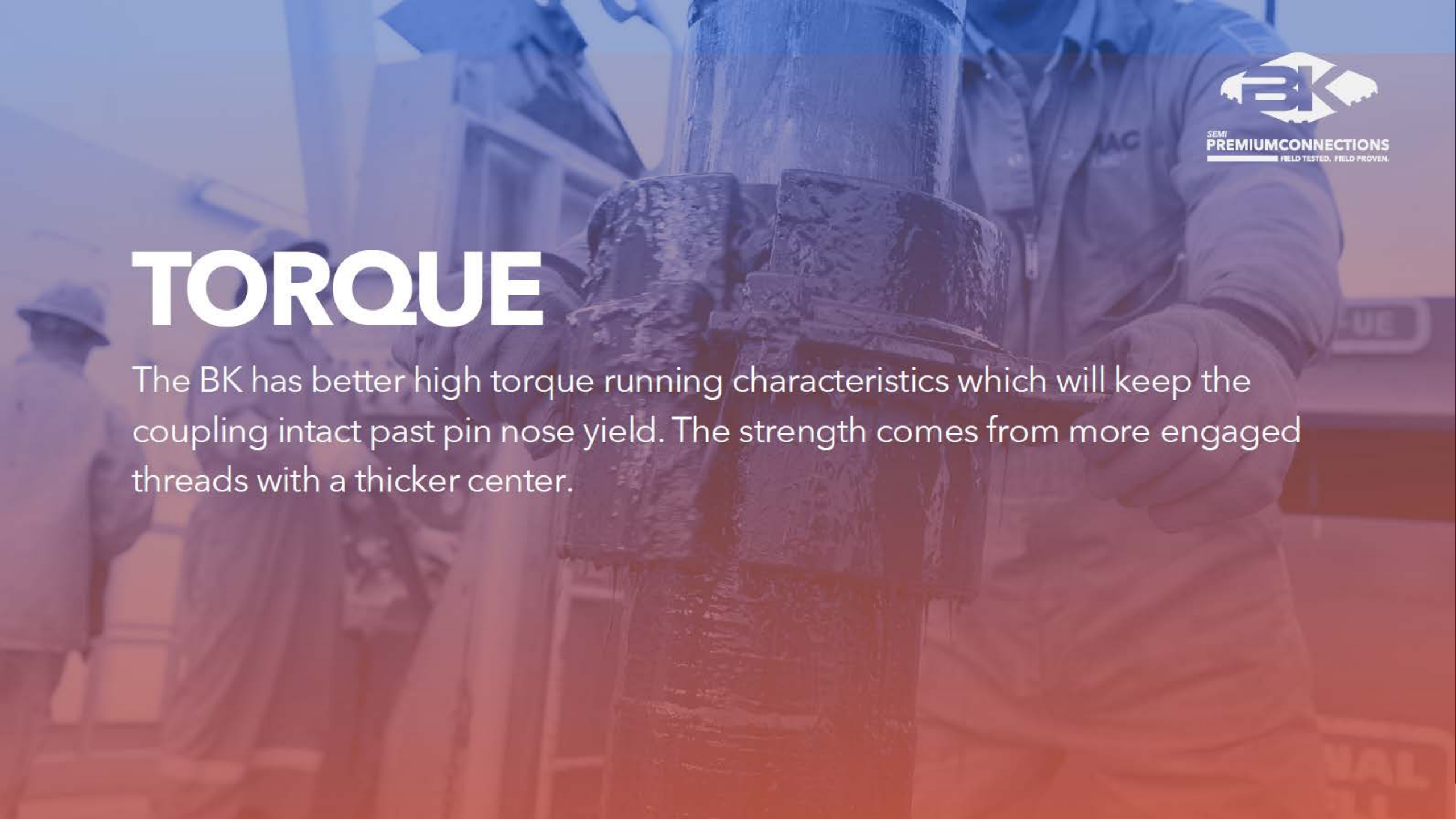

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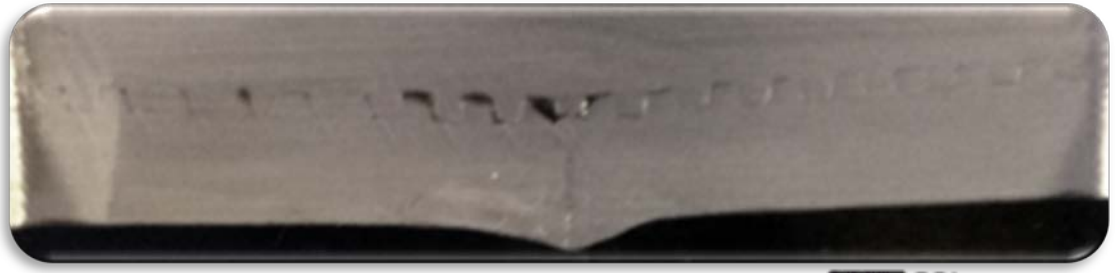
TORQUE

The BK has better high torque running characteristics which will keep the coupling intact past pin nose yield. The strength comes from more engaged threads with a thicker center.

Over-Torque



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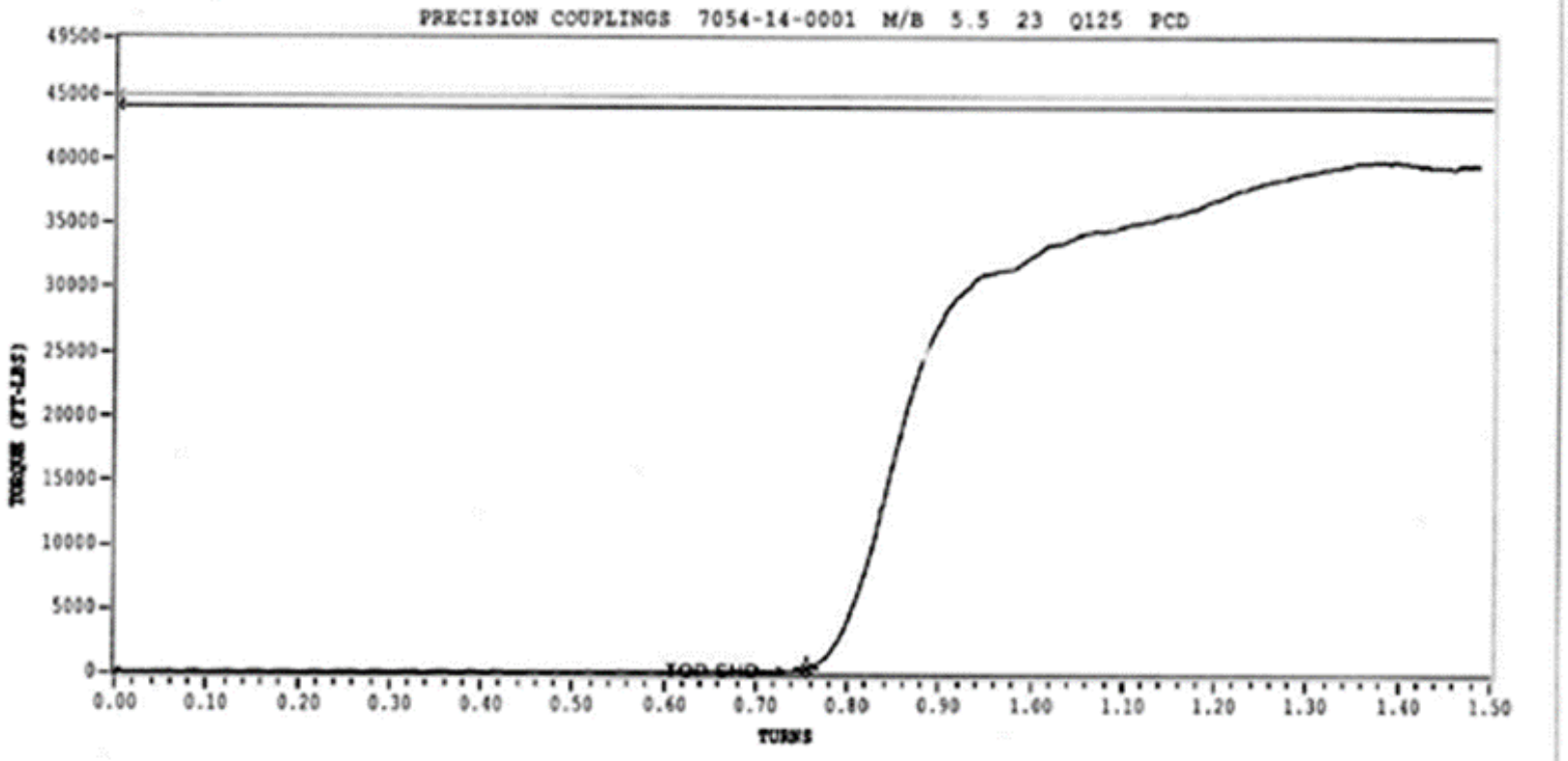
FRANK'S

PPI Mechanical Testing Services LLC



TIME OF MAKE UP :	2:16 PM		DATE OF MAKE UP :	Thursday, October 30, 2014	
MAXIMUM TORQUE :	40032	FT-LBS	MAXIMUM TURNS :	1.487	TURNS
SHOULDER TORQUE :	544	FT-LBS	SHOULDER TURNS :	0.757	TURNS
DELTA TORQUE :	39488	FT-LBS	DELTA TURNS :	0.730	TURNS
FILE NUMBER :	----------->>	13	JOINT STATUS :		ACCEPT

JOINT NUMBER J2511 COUPLING NUMBER 4B OVER TORQUE MAKEUP

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FAST & CONSISTENT
SHOULDER TORQUE INSTALLATION

Better threading techniques and coupling coatings allow for a quick low cost installation. The BK-HT will run quickly, reducing the run time per well.

RELIABLE MATERIALS

Unlike first generation drilling with casing connections, the BK addresses the problems that have caused couplings to fail.

ELEMENTS OF MATERIAL FAILURES

STRESS

+ 80% YIELD STREGTH
BAD MAKE-UP & CROSS THREADING
FRAC PRESSURE
MANUF.

ENVIRONMENTAL

HYDROGEN
SALT WATER
ACID
EXPOSURE TIME & TEMP.
H2S

MATERIAL PROPERTIES

CLEAN STEAL PRACTICES
BRITTLENESS
CHEMISTRY

SEMI PREMIUMCONNECTIONS

BK® SAVES YOU TIME & MONEY.

Operates quickly and smoothly, reducing your run time per well, and your overall production costs.

BK-HT

TOUGHER, THICKER AND BUILT TO LAST.

The BK-HT uses a thicker coupling with a larger OD to increase strength and torque resistance. A thicker coupling is stiffer and will stretch less axially and radially as the pin noses react to torque.

BK-FX

STRONGER, RELIABLE AND MORE EFFICIENT

The BK-FX uses a thicker coupling with a larger OD to increase strength and torque resistance. The FX also provides more strength when utilizing high-collapse or enhanced burst strength

SPECIFICATIONS

Size	Weight	Wall	Drift Dia.	Grade	Coupling Dia.	Pipe & Connection ID	Coupling Length	Make Up Loss	Torque (ft-lbf)		Yield Strength (x 1000lbs)		Yield Pressure (PSI)	
									Optimum	Yield	Tensile	Compression	Internal	Collapse
4.5	11.60	0.250	3.875	L-80	5.250	4.000	7.875	3.938	3,000	8,350	267	267	7,780	6,350
4.5	11.60	0.250	3.875	HC P-110	5.250	4.000	7.875	3.938	4,150	11,500	367	367	10,690	8,830
4.5	13.50	0.290	3.795	L-80	5.250	3.920	7.875	3.938	3,950	10,900	307	307	9,020	8,540
4.5	13.50	0.290	3.795	HC P-110	5.250	3.920	7.875	3.938	5,400	15,000	422	422	12,410	11,810
4.5	15.10	0.337	3.701	L-80	5.250	3.826	7.875	3.938	4,950	13,800	353	353	10,480	11,080
4.5	15.10	0.337	3.701	HC P-110	5.250	3.826	7.875	3.938	6,850	19,000	485	485	14,420	15,130
5	18.00	0.362	4.151	L-80	5.750	4.276	8.125	4.063	5,500	15,250	422	422	10,140	10,490
5	18.00	0.362	4.151	HC P-110	5.750	4.276	8.125	4.063	7,550	21,000	580	580	13,940	14,360
5	21.40	0.437	4.001	L-80	5.750	4.126	8.125	4.063	6,650	18,500	446	446	12,240	12,760
5	21.40	0.437	4.001	HC P-110	5.750	4.126	8.125	4.063	9,150	25,450	613	613	16,820	18,870
5.5	17.00	0.304	4.767	L-80	6.300	4.892	8.250	4.125	6,950	19,250	397	397	7,740	6,290
5.5	17.00	0.304	4.767	HC P-110	6.300	4.892	8.250	4.125	9,550	26,500	546	546	10,640	8,730
5.5	20.00	0.361	4.653	L-80	6.300	4.778	8.250	4.125	8,400	23,250	466	466	9,190	8,830
5.5	20.00	0.361	4.653	HC P-110	6.300	4.778	8.250	4.125	11,500	32,000	641	641	12,640	12,200
5.5	23.00	0.415	4.545	L-80	6.300	4.670	8.250	4.125	10,200	28,350	483	483	10,560	11,160
5.5	23.00	0.415	4.545	HC P-110	6.300	4.670	8.250	4.125	14,050	39,000	729	664	14,530	15,310
7	26.00	0.362	6.151	L-80	7.875	6.276	9.000	4.500	9,300	25,800	604	604	7,240	5,410
7	26.00	0.362	6.151	HC P-110	7.875	6.276	9.000	4.500	12,800	35,500	830	830	9,960	7,540
7	29.00	0.408	6.059	L-80	7.875	6.184	9.000	4.500	11,150	30,900	676	676	8,160	7,030
7	29.00	0.408	6.059	HC P-110	7.875	6.184	9.000	4.500	15,300	42,500	929	929	11,220	9,750
7	32.00	0.453	6.000	L-80	7.875	6.094	9.000	4.500	12,850	35,650	745	745	9,060	8,600
7	32.00	0.453	6.000	HC P-110	7.875	6.094	9.000	4.500	17,650	49,000	1025	1025	12,460	11,890

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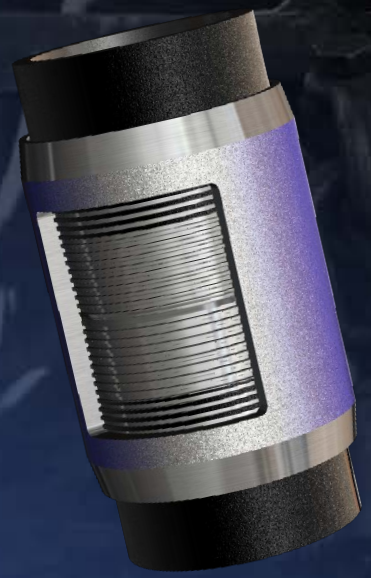
SEMI PREMIUM CONNECTION



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