



# APPROVED CONNECTION LIST



CONNECTION	SIZE RANGE	PRIMARY MANUFACTURER	CLASS	APPROVAL STATUS	RECOMMENDED APPLICATION	COMMENTS (*7)
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LARGE OD CONNECTIONS for CASING (NON-ROTATING, WEIGHT SET)						
ALT-2	20.000"-42.000"	Vetco-Gray	I	Approved <sup>(*5)</sup>	COND/SURFACE	Threadless, weight set, driveable, heavy duty connector. Requires mechanical release. Typically reusable.
ST-2	30.000"	Vetco-Gray	I	Approved <sup>(*5)</sup>	COND/SURFACE	Smaller version of ALT-2 for thinner wall pipe. Same characteristics.
SR-20	20.000"-32.000"	Vetco-Gray	I	Approved <sup>(*5)</sup>	COND/SURFACE RISER	Threaded, but uses hydraulic clamp to snap together. Requires hydraulics and one turn to release. Driveable and typically reusable. Good fatigue properties.
QUIK-STAB	20.000"-36.000"	DRIL-QUIP	I	Approved <sup>(*5)</sup>	COND/SURFACE	Threadless, weight set, driveable, heavy duty connector. Requires mechanical release. Typically reusable. Several versions, see manufacturer's catalog.
QUICK-JAY	30.000"-36.000"	DRIL-QUIP	I	Approved <sup>(*5)</sup>	COND/SURFACE	Threadless, weight set, driveable connector. Release w/key and 1/16 turn. Typically reusable.
LYNX	20.000"-36.000"	Oil States	I	Approved <sup>(*5)</sup>	COND/SURFACE	Threadless, weight set, driveable, 3-piece connector. Requires jacking bolts for release. Typically reusable. SA, HT & HD versions.
MERLIN	20.000"-48.000"	Oil States	I	Approved <sup>(*5)</sup>	COND/SURFACE RISER	Grooved, uses hydraulic clamp and pressure injector to assemble. requires same equipment for release. Good fatigue properties. S, D, HT & TLE versions. Other sizes available.



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LARGE OD CONNECTIONS for CASING (THREADED )						
<b>RL-4</b>	20.000"-36.000"	Vetco Gray	I	Approved <sup>(*5)</sup>	COND/SURFACE	Threaded 1/4 turn make-up and release. Driveable and typically reusable. Lock tabs strongly recommended. RL4S and several other versions available, see manufacturer's catalog.
<b>RL-1</b>	20.000"-36.000"	Vetco Gray	I	Approved <sup>(*5)</sup>	COND/SURFACE	1-2 turn make-up version of RL-4
<b>QUIK-THREAD</b>	20.000"-36.000"	DRIL-QUIP	I	Approved <sup>(*5)</sup>	COND/SURFACE	Threaded 2.5 turn make-up and release. Driveable and typically reusable. Several versions, see manufacturer's catalog.
<b>MULTI-THREAD</b>	20.000"-36.000"	DRIL-QUIP	I	Approved <sup>(*5)</sup>	COND/SURFACE	Threaded 5/8 turn make-up and release version of Quik-Thread. Lock tabs strongly recommended.
<b>LEOPARD SD</b>	20.000"-36.000"	Oil States	I	Approved <sup>(*5)</sup>	COND/SURFACE	Threaded one turn makeup & release. Driveable and typically reusable.
<b>SWIFT DW2</b>	20.000"-36.000"	Oil States	I	Approved <sup>(*5)</sup>	COND/SURFACE	Similar to Leopard with a radial metal-to-metal seal.
<b>VIPER</b>	20.000"-36.000"	Grant Prideco	I	Provisional <sup>(*2)</sup>	COND/SURFACE	Threaded 2-3 turn make-up and release. Driveable and typically reusable.
<b>XLF</b>	20.000"-48.000"	Grant Prideco	II	Approved	COND/SURFACE	Flush ID and OD, tapered dovetail threads, high yield torque, radial metal-to-metal seal. Economical connection for drive, conductor & surface applications. 55-65%TE/CE.
<b>XLF-RB</b>	20.000"-48.000"	Grant Prideco	II	Approved	COND/SURFACE	XLF with a flush OD and a reduced ID bore for increased axial strength. Pin and box are machined from thick pipe and welded-on. 100%TE/CE.
<b>XLCS</b>	20.000"-48.000"	Grant Prideco	II	Approved	COND/SURFACE RISER	XLF with increased thread root radii for better fatigue life and an external environmental seal. Excellent fatigue properties. 55-65%TE/CE



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LARGE OD CONNECTIONS for CASING (THREADED ) (continued)						
<b>XLCS-RB</b>	20.000"-48.000"	Grant Prideco	II	Approved	COND/SURFACE RISER	XLC-S with a flush OD and a reduced ID bore for increased axial strength. Pin and box are machined from thick pipe and welded-on. 100%TE/CE.
<b>XLW</b>	20.000"-48.000"	Grant Prideco	II	Approved <sup>(*5)</sup>	COND/SURFACE	Tapered dovetail threads, high yield torque, radial metal-to-metal seal. The box has an elevator shoulder, is machined on a forging and welded to the pipe, the pin is machined directly on the pipe. 100% TE/CE.



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**THREADED & COUPLED CONNECTIONS for TUBING & CASING**

<b>SEAL LOCK HC</b>	4.500"-14.000"	Hunting	IV	Approved	INT/PRODUCTION M <sup>(*6)</sup>	Hooked threads, trapped ID torque shoulder, radial metal-to-metal seal. 100%TE/35-72%CE
<b>563</b>	2.375"-16.000"	Hydril	IV	Approved	INT/PRODUCTION H <sup>(*6)</sup>	Tapered dovetail threads, high yield torque, radial metal-to-metal seal. Excellent connection for bending, rotating & high torque. 100%TE/CE.
<b>561</b>	2.375"-4.500"	Hydril	II	Approved	PRODUCTION H <sup>(*6)</sup>	Tapered dovetail threads, high yield torque, thread seal. Excellent connection for bending, rotating & high torque. 100%TE/CE.
<b>VAM TOP VAM TOP KP</b>	2.375"-14.000"	V&M/SMI	IV	Approved	INT/PRODUCTION M <sup>(*6)</sup>	Hooked threads, trapped ID torque shoulder, radial metal-to-metal seal. KP version for BP sizes 5"-7.625", completely interchangeable with VAM TOP. 100%TE/60%CE (CE 100% sizes 2.375"-4.500")
<b>VAM TOP HT</b>	5.000"-7.000"	V&M/SMI	IV	Approved	INT/PRODUCTION M <sup>(*6)</sup>	VAM TOP for high torque applications. 100%TE/ 80%CE
<b>VAM TOP HC</b>	5.000"-7.750"	V&M/SMI	IV	Approved	INT/PRODUCTION M <sup>(*6)</sup>	VAM TOP for high compression applications. 100%TE/ 100%CE
<b>BEAR</b>	2.375"-9.625"	JFE	III	Provisional <sup>(*2)</sup>	INT/PRODUCTION L <sup>(*6)</sup>	Positive angle load flank thread, trapped ID torque shoulder, radial metal-to-metal seal. 100%TE/ 100%CE
<b>TC-II</b>	5.000"-13.375"	Grant Prideco	III	Provisional <sup>(*2)</sup>	INT/PRODUCTION L <sup>(*6)</sup>	Positive angle load flank thread, trapped ID torque shoulder, radial metal-to-metal seal. 100%TE/ 100%CE
<b>BLUE</b>	2.375-13.625"	Tenaris	III	Provisional <sup>(*2)</sup>	INT/PRODUCTION M <sup>(*6)</sup>	Positive angle load flank thread, trapped ID torque shoulder, radial metal-to-metal seal. 100%TE/ 100%CE
<b>VAM HW ST</b>	5.000"-14.000"	V&M/SMI	III	Approved	INT/PRODUCTION M <sup>(*6)</sup>	Hooked threads, trapped ID torque shoulder, radial metal-to-metal seal. For thick wall pipe where VAM TOP doesn't work. 100%TE40%CE



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THREADED & COUPLED CONNECTIONS for TUBING & CASING (continued)						
<b>BOSS</b>	7.625"-20.000"	Hunting	II	Approved	SURFACE/INT/PRODUCTION L (*6)	Hooked threads, pin-to-pin torque shoulder, thread seal. 100%TE/45-73%CE
<b>SEAL LOCK HT</b>	2.063"-7.000"	Hunting	II	Approved	INT/PRODUCTION L (*6)	BOSS on smaller OD sizes. 100%TE/50-84%CE.
<b>DINO VAM</b>	9.625"-16.000"	V&M/SMI	II	Approved	SURFACE/INT/PRODUCTION L (*6)	Hooked threads, pin-to-pin torque shoulder, thread seal. 100%TE/50%CE
<b>ATS-E</b>	7.000"-20.000"	Grant Prideco	II	Provisional (*2)	SURFACE/INT/PRODUCTION L (*6)	Hooked threads, pin-to-pin torque shoulder, thread seal. 100%TE/50%CE
<b>GB 3P</b>	16.000"-20.000"	Hydril	II	Approved	SURFACE/INT/PRODUCTION L (*6)	Positive angle load flank thread, zero degree torque shoulder, thread seal. 100%TE/83-100%CE
<b>BUTTRESS</b>	4.500"-13.375"	API	I	Approved (*5)	SURFACE/INT/PRODUCTION L (*6)	API buttress thread, no torque shoulder, no seal. Available up to 20", but not recommended above 13-3/8". Will not contain pressure long term, is typically difficult to make up and is usually not reusable. 85-95%TE.
<b>LT&amp;C</b>	4.500"-9.625"	API	I	Approved (*5)	INT/PRODUCTION L (*6)	API 8 Round thread, no torque shoulder, no seal. Will not contain pressure long term. Easier to make-up than buttress, but still usually not reusable. 75-95%TE.
<b>EUE 8R</b>	2.063"-4.500"	API	I	Approved (*5)	PRODUCTION L (*6)	API 8 Round thread machined on external upset pipe, no torque shoulder, no seal. Will not contain pressure. 100%TE.



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INTEGRAL CONNECTIONS for CASING (EXPANDED/SWAGED or SEMI-FLUSH TYPE)						
SLIJ-II	5.000"-13.625"	V&M/SMI	IV	Approved	LINER/TIEBACK L <sup>(*6)</sup>	Two-step hooked threads, 90° step torque shoulder, radial metal-to-metal ID seal. 70-80%TE/70%CE.
SLSF	4.500"- 14.000"	Hunting	IV	Approved	LINER/TIEBACK L <sup>(*6)</sup>	Hooked threads, trapped OD torque shoulder, radial metal-to-metal ID & OD seals. 73-76%TE/47-52%CE.
Advanced NJO	4.500"-13.625"	Grant Prideco	IV	Approved	LINER/TIEBACK M <sup>(*6)</sup>	Two-step hooked threads, trapped step torque shoulder, radial metal-to-metal ID seal. 68-80%TE/35-65%CE
SLX	4.500"-13.625"	Hydril	IV	Approved	LINER/TIEBACK M <sup>(*6)</sup>	Two-step hooked threads, trapped step torque shoulder, radial metal-to-metal ID seal. 68-80%TE/36-41%CE.
MAC II	5.500"-16.000"	Hydril	IV	Approved	LINER/TIEBACK M <sup>(*6)</sup>	Two-step hooked threads, trapped step torque shoulder, radial metal-to-metal ID seal. Basically SLX for thick wall pipe. 66-82%TE/33-40%CE
523	7.000"-16.000"	Hydril	III	Approved	LINER/TIEBACK H <sup>(*6)</sup>	Tapered dovetail threads, high yield torque, metal-to-metal ID seal. Excellent connection for bending, rotating & high torque. Machined on a 3-5% box expansion. 71-76%TE/80-84%CE
521	4.000"-18.625"	Hydril	II	Approved	LINER/TIEBACK H <sup>(*6)</sup>	Tapered dovetail threads, high yield torque, thread seal. Excellent connection for bending, rotating & high torque. Machined on a 3-5% box expansion. 61-77%TE/74-89%CE.



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INTEGRAL CONNECTIONS for TUBING & CASING (FLUSH TYPE)						
<b>FJL</b>	2.375"-7.625"	V&M/SMI	III	Approved <sup>(*8)</sup>	LINER L <sup>(*6)</sup>	Hooked threads, trapped OD torque shoulder, radial metal-to-metal ID seal. 50-65%TE/40%CE.
<b>SLF</b>	2.875"-7.625"	Hunting	III	Approved <sup>(*8)</sup>	LINER L <sup>(*6)</sup>	Hooked threads, trapped OD torque shoulder, radial metal-to-metal ID seal. 48-65%TE/27-48%CE.
<b>STL</b>	2.375"-7.625"	Grant Prideco	III	Approved <sup>(*8)</sup>	LINER L <sup>(*6)</sup>	Hooked threads, trapped OD torque shoulder, radial metal-to-metal ID seal. Two start thread form. 44-65%TE/CE = 0.6TE
<b>513</b>	4.500"-16.000"	Hydril	III	Approved	LINER H <sup>(*6)</sup>	Tapered dovetail threads, high yield torque, metal-to-metal ID seal. Excellent connection for bending, rotating & high torque. Machined on non-upset pipe. 59-66%TE/70-79%CE.
<b>511</b>	2.063"-11.875" 16.000"-18-625"	Hydril	II	Approved	LINER H <sup>(*6)</sup>	Tapered dovetail threads, high yield torque, thread seal. Excellent connection for bending, rotating & high torque. Machined on non-upset pipe. 55-65%TE/68-81%CE.



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INTEGRAL CONNECTIONS for TUBING & CASING (UPSET)						
533	2.375"-7.625"	Hydril	III	Approved	PRODUCTION H <sup>(*6)</sup>	Tapered dovetail threads, high yield torque, metal-to-metal ID seal. Excellent connection for bending, rotating & high torque. Machined on a two-step upset. Available with CB ring for internal coating applications. 100%TE/CE
531	2.375"-4.500"	Hydril	II	Approved	PRODUCTION H <sup>(*6)</sup>	Tapered dovetail threads, high yield torque, thread seal. Excellent connection for bending, rotating & high torque. Machined on a two-step upset. Available with CB ring for internal coating applications. 100%TE/CE
553	2.375"-7.625"	Hydril	III	Approved	PRODUCTION H <sup>(*6)</sup>	Tapered dovetail threads, high yield torque, metal-to-metal ID seal. Excellent connection for bending, rotating & high torque. Machined on API OUE pipe 88-92%TE/100%CE
551	2.375"-4.500"	Hydril	II	Approved	PRODUCTION H <sup>(*6)</sup>	Tapered dovetail threads, high yield torque, thread seal. Excellent connection for bending, rotating & high torque. Machined on API OUE pipe 88-92%TE/100%CE
503	2.375"-4.500"	Hydril	III	Approved	PRODUCTION H <sup>(*6)</sup>	Tapered dovetail threads, high yield torque, metal-to-metal ID seal. Excellent connection for bending, rotating & high torque. Machined on an API EUE upset. 100%TE/CE
501	2.375"-4.500"	Hydril	II	Approved	PRODUCTION H <sup>(*6)</sup>	Tapered dovetail threads, high yield torque, thread seal. Excellent connection for bending, rotating & high torque. Machined on an API EUE upset. 100%TE/CE



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INTEGRAL CONNECTIONS for TUBING & CASING (UPSET) (continued)						
<b>2-Step 4 or 6-pitch</b>	2.063"-4.500"	Benoit/Hunting/Grant Prideco	IV	Approved <sup>(*4)</sup>	PRODUCTION WORK STRINGS TEST STRINGS L <sup>(*6)</sup>	Two-step thread, trapped OD torque shoulder, radial metal-to-metal seal. Backup 90o torque shoulder on step. Available with CB ring for internal coating applications. Not recommended for high rate 13CR material applications. 100%TE/100%CE
<b>2-Step 8-pitch</b>	2.063"-7.000"	Benoit/Hunting/Grant Prideco	IV	Approved <sup>(*3)</sup>	PRODUCTION L <sup>(*6)</sup>	Thin wall version of 2-Step/4 or 6 pitch 100%TE/80%CE



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(\*1) Class ratings are based on differential internal pressure as follows:

- Class IV: >15,000 psi
- Class III: 10000 - 15000 psi
- Class II: 5000 - 10000 psi
- Class I: <5000 psi

Class IV and III connections shall have one metal-to-metal ID seal minimum, as the primary seal.

(\*2) Provisional means the connection has been tested and appears to be technically satisfactory, but needs field evaluation prior to final approval. Please contact EPTG Drilling prior to using any Provisional connection.

(\*3) Hydril CS/CS-CB, Benoit BTS-8/BTS-8PR, HI TS-HP/TS-HP-SR, and GP RTS-8/RTS-8PR are equivalent connections. The Benoit, Hunting, and Grant Prideco connections are interchangeable with the Hydril connection, but NOT with each other. Hydril no longer markets 2-Step connections, they will continue to support existing material.

(\*4) Hydril PH6/PH6-CB, Benoit BTS-6/BTS-6PR, HI TS-HD/TS-HD-SR, and GP RTS-6/RTS-6PR are equivalent connections. The Benoit, Hunting, and Grant Prideco connections are interchangeable with the Hydril connection, but NOT with each other. Hydril no longer markets 2-Step connections, they will continue to support existing material.

(\*5) Application on material with higher than 80 ksi minimum yield strength needs a full evaluation.

(\*6) Directional hole application recommendation based on dogleg severity:

(these are general guidelines for all connections, contact EPTG for specific connection performance outside these parameters)

- L (Low): 0-10°/100ft. for sizes <=9-7/8"; 0-5°/100ft. for sizes >9-7/8" Most connections.
- M (Medium): 10-20°/100ft. for sizes <=9-7/8"; 5-15°/100ft. for sizes >9-7/8" Connections with hooked threads and a trapped torque shoulder.
- H (High): >20°/100ft. for sizes <=9-7/8"; >15°/100ft. for sizes >9-7/8" Connections with a tapered dovetail thread form.

(\*7) Tensile (Joint) Efficiency (TE) ratings are based on axial parting load and seal maintenance.

Compression Efficiency (CE) ratings are based on seal failure, not necessarily axial mechanical failure.

(\*8) VAM FJL, Hunting FSL, and Grant Prideco STL are only recommended for sizes 2.375"-7.625" and applications of 4000 ft. (1200 m) or less in length.

### Connection Manufacturer WEB Sites

Vetco-Gray: [www.vetcogray.com](http://www.vetcogray.com)  
 Dril-Quip: [www.dril-quip.com](http://www.dril-quip.com)  
 Grant Prideco: [www.grantprideco.com](http://www.grantprideco.com)  
 Hunting: [www.huntingoilfield.com](http://www.huntingoilfield.com)  
 Hydril: [www.hydril.com](http://www.hydril.com)

JFE\*\*: [www.jfe-steel.co.jp/en/products/pipes/index.html](http://www.jfe-steel.co.jp/en/products/pipes/index.html)  
 Oil States: [www.oilstates-uk.com/connector.htm](http://www.oilstates-uk.com/connector.htm)  
 VAM: [www.vampts.com](http://www.vampts.com)  
 Tenaris: [www.tenarisconnections.com/tcn/default.asp](http://www.tenarisconnections.com/tcn/default.asp)  
 \*\*for JFE FOX or BEAR connection data sheets go to the Hunting web site