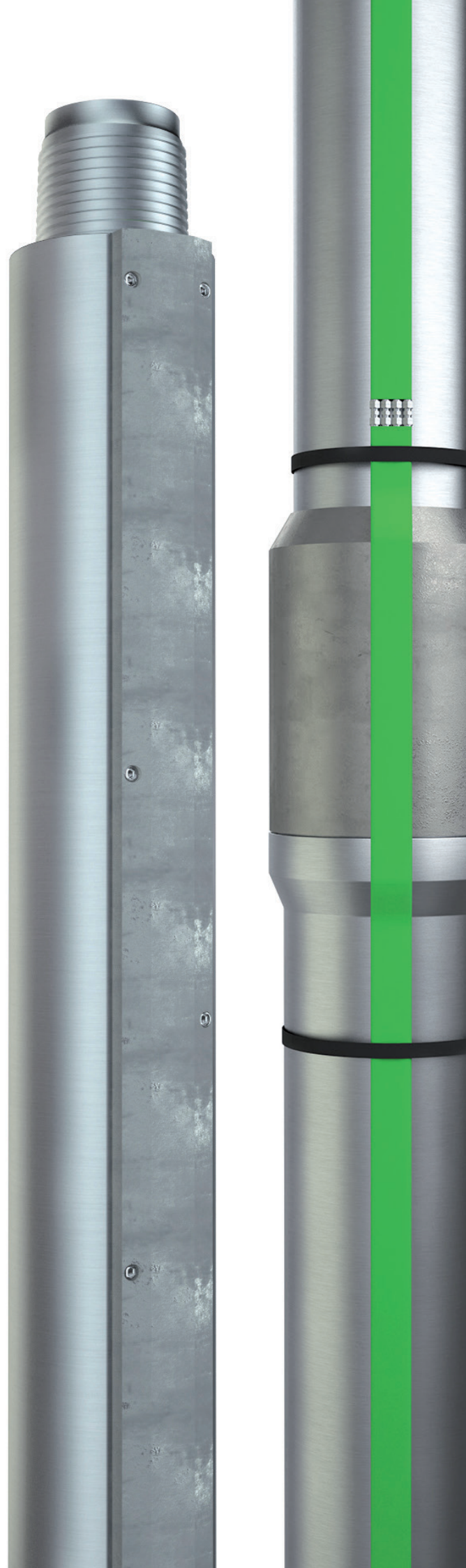


Swivel Joint & Blast Save



Your fast way
for completion
and control lines
protection

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Tenaris around the world

Tenaris is a leading global manufacturer and supplier of steel pipe products and related services for the world's energy industry and other industrial applications.

Our customers include most of the world's leading oil and gas companies and our revenues amounted to US\$ 7.1 billion in 2015.



Employing around 21,700 people worldwide, we operate an integrated network of steel pipe manufacturing, research, finishing and service facilities with

industrial operations in the Americas, Europe, the Middle East, Asia and Africa and a direct presence in most major oil and gas markets.



Swivel Joint

ALIGNMENT SUB WITH METAL TO METAL SEALS

Originally designed to solve dual completion installation problems, the Swivel Joint has been further developed to satisfy the requirements of offset equipment used within any completion, especially intelligent completions since they are more complex in their architecture.

The Tenaris Swivel Joint is an alignment sub equipped with a dual metal to metal seal that allows a quick and easy alignment of the upper and lower assembly, together with the full strength and sealability of a premium connection. Before make up, the upper and lower halves of the swivel joints can be stabbed and aligned with complete rotation freedom. During the make up, the chosen alignment is kept. After the make up, the joint performs same as a typical tubing premium connection: it does not rotate, it's

rated 100% of the corresponding tubing string, it's gas tight with double barrier effect thanks to the dual metal to metal seals.

The Swivel Joint can be made-up and broken down several times without damaging the seals, and it has been fully tested and qualified to a modified ISO 13678 CAL IV standard protocol.

The Swivel Joint is available in a wide range of sizes, metallurgies and steel grades, and its upper and lower ends can be customized with a variety of TenarisHydril premium connections to fit any customer's need.

The Swivel Joint has been successfully used **all over the world** with a **proven history of thousands installed pieces**.

Swivel Joint detail



Size	PPF	TORQUE TRANSMISSION	MATERIALS AND GRADES*			
			Carbon Steel 80ksi to 110ksi	13CR, Super 13CR 80ksi to 110ksi	Duplex, Super Duplex 80ksi	Nickel Alloys 110ksi to 130ksi
2 3/8"	4.7#		●	●	●	●
2 7/8"	6.5#	●	●	●	●	●
3 1/2"	9.2#, 10.2#	●	●	●	●	●
4"	10.9#, 13.2#	●	●	●	●	●
4 1/2"	12.75#, 13.5#, †15.1#	●	●	●	●	●
5 1/2"	15.5#, 17#, 20#, 23#, †26#	●	●	●	●	●
7"	26#, 29#, †32#	●	●	●	●	●
7 5/8"	26.4#, 29.7#, 33.7#, 39#	●	●	●	●	●

* Minimum Guaranteed Yield Strength




All Swivel Joints exceed the mechanical strength of the correspondent tubing size in terms of tensile, compression, burst and collapse pressures, with the only exceptions of those ppf marked with "†", where 80% or 90% of the tubing tensile strength is guaranteed.

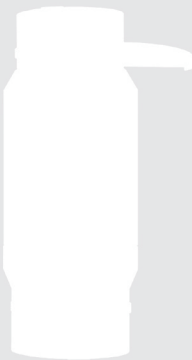
SWIVEL JOINT TT (TORQUE TRANSMISSION)

In ultra-deep, highly deviated wells, or whenever the lowermost completion subassemblies are prone to significant operational torques, a new Swivel Joint design, named TT (or Torque Transmission), has been developed.

Maintaining all the relevant features of the Swivel Joint, the Swivel Joint TT can withstand any torque in excess of the maximum make-up torque of a premium connection, without jeopardizing the consolidated dual metal-to-metal seal.

Swivel Joint

-  Completion run in sliding
-  Completion run in rotation
-  Risk of rotation in case of overtorque



Swivel Joint TT

-  Completion run in sliding
-  Completion run in rotation
-  No risk of rotation



The TT version is available with the same sizes, metallurgies and grades of the Swivel Joint.

From 2-7/8" to 5-1/2", the rotational adjustability is in steps of 20 degrees (eighteen positions along the circumference).

For 7" and 7-5/8" Swivel Joint TT, the rotational adjustability is in steps of 10 degrees (36 positions along the circumference).

Blast save

BLAST JOINT WITH SELF-ALIGNING CONTROL LINE PROTECTION

The Blast Save is an evolution of a blast joint, **designed to protect control lines** (encapsulated or bare) **from impacts or erosion** generated by lateral impacts, high pressure/high velocity wellbore fluids and particles, when the control lines are run aside of the production tubing, in front of the perforated wellbore area.

It can also be used in the completion strings where an operational wear is expected (e.g. across BOPs in sub-sea completions when the string is sitting for long time on the rotary for tubing hanger installation/test and the rig is subject to heave).

The Blast Save is provided with **one or multiple longitudinal slots**, able to lodge the control lines/ flat packs, that are then buried under protective metal covers that exceed normal coupling thickness for erosion protection. In a special version of the Blast Save, the metal cover can be lodged in a way that they are not protruding the outer diameter (Flush Version).

Every Blast Save module is provided with **dual metal-to-metal seal connections**, with the ability to **automatically align the**

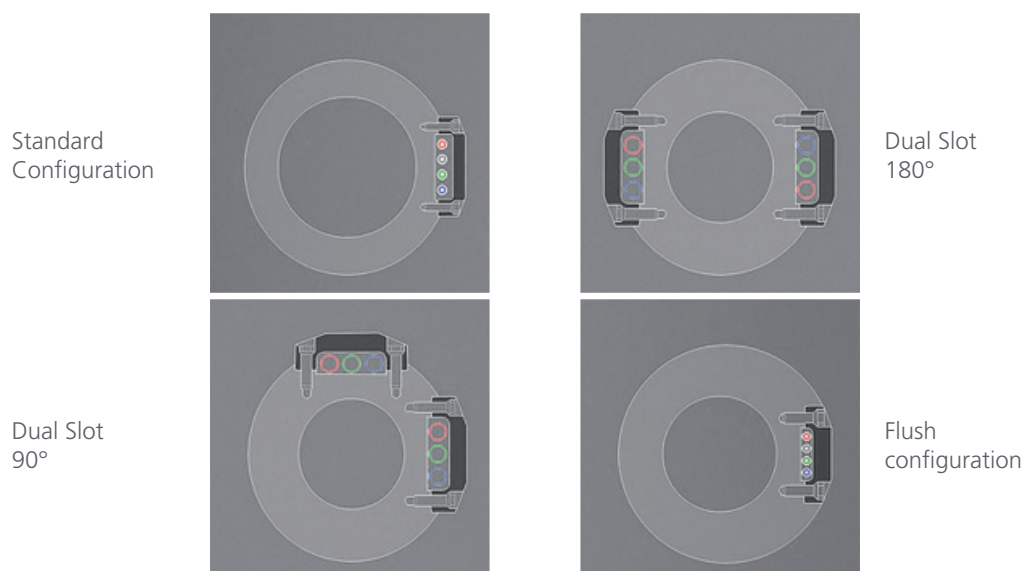
longitudinal slots when making up the string, while reaching the optimum make-up torque value. The **assembly operations are extremely quick**, since the rig operators do not need to care about slot alignment while making up the connections.

The Blast Save modules are available in lengths of 1000, 2000 and 3000mm. Any module is fully interchangeable with any other, for a total flexibility in the string space-out design in front of perforated intervals and in the assembly operations on the rig.

Having been optimized around a Premium Connection profile, the overall tool design **does not require any special qualification process**, being the features of the Premium connection not jeopardized by the tool configuration.

The Blast Save is available in a wide range of sizes, metallurgies and steel grades, and its upper and lower top adaptors can be customized with a variety of TenarisHydril premium connections to fit any customer's need.

SINGLE AND DUAL SLOT COMPLETELY CUSTOMIZABLE



Size	PPF	MATERIALS AND GRADES*			
		Carbon Steel 80ksi to 110ksi	13CR, Super 13CR 80ksi to 110ksi	Duplex, Super Duplex 80ksi	Nickel Alloys 110ksi to 130ksi
2 7/8"	6.5#	●	●	●	●
3 1/2"	9.2#, 10.2#	●	●	●	●
4 1/2"	13.5#, 15.1#	●	●	●	●

* Minimum Guaranteed Yield Strength

All Blast Save exceed the mechanical strength of the correspondent tubing size in terms of tensile, compression, burst and collapse pressures.

Blast Save detail



Quality, Health & Safety

The Swivel Joint and the Blast Save are manufactured at TenarisDalmine plant, according with Tenaris's Quality Health and Safety systems, in agreement with:

- Standard ISO 9001:2008

Moreover, the plant is fully certified by the American Petroleum Institute, API, to the following specifications:

- API 5CT
- API 5L
- API 7.1

PREMIUM CONNECTIONS LICENCES

The Swivel Joint and the Blast Save can be designed and manufactured to be easily joined to tools or joints equipped with any TenarisHydril premium connection such as TenarisHydril Blue® Series, TenarisHydril Wedge™ Series or TenarisHydril Legacy Series connections. Other licensed premium connections such as ENI A-DMS can also be directly machined in our shop.

INSPECTIONS, NDE AND TEST EQUIPMENT

The inspection service is performed in-house and in field by qualified ASNT SNT-TC-1A personnel for Dye Penetrants and Magnetic Particle Inspections.

The measuring equipment and API gauges are calibrated inhouse in the dedicated and acclimatized metrology room.

An area of the shop is dedicated to a Test Bunker to perform high-pressure hydrostatic tests of any product or sub-assembly up to 9 5/8" OD and up to 10,000 psi of applied pressure, completed with data gathering system.





For further information
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For technical assistance please contact
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