

# MS™

2 3/8" TO 14"



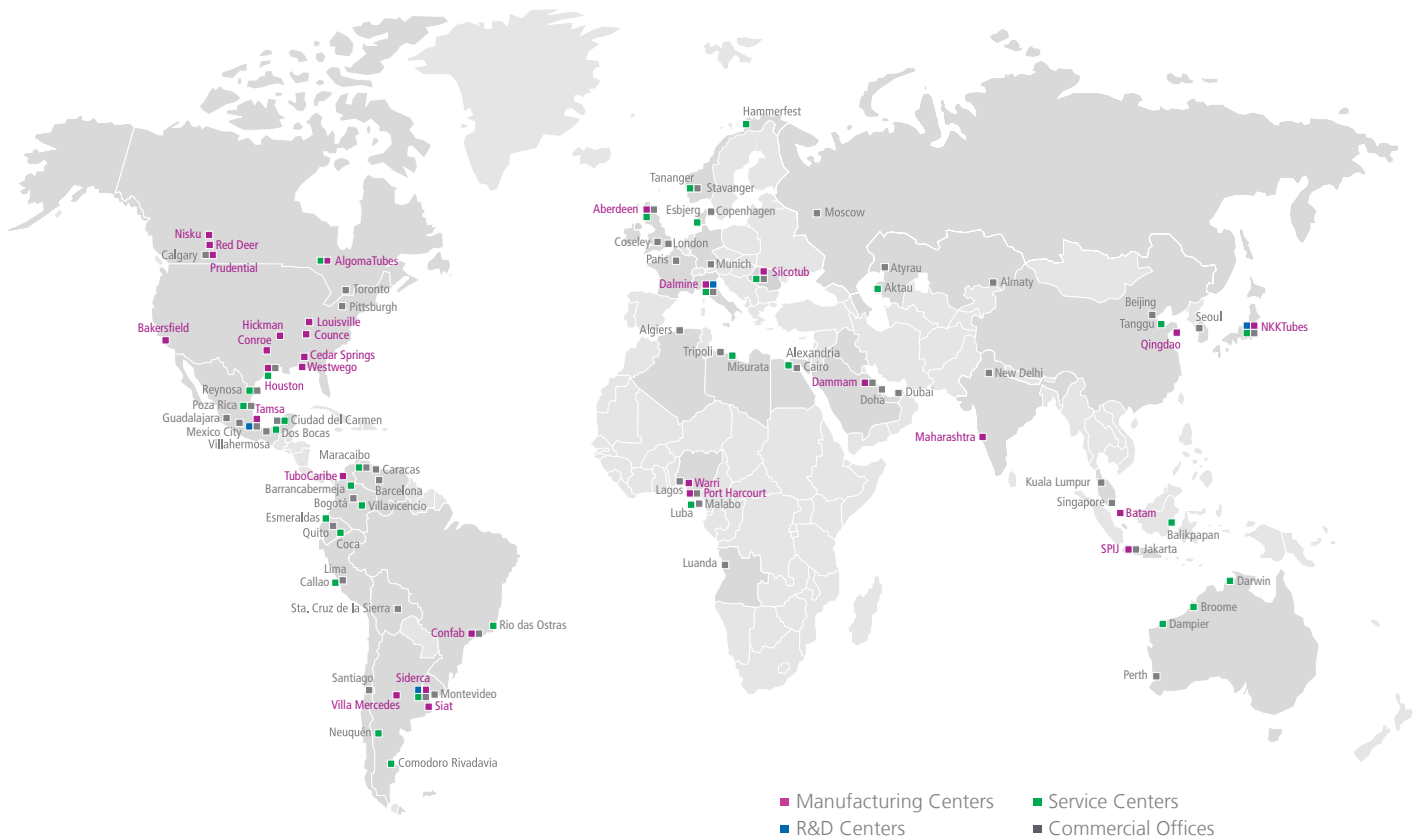


# TenarisHydril

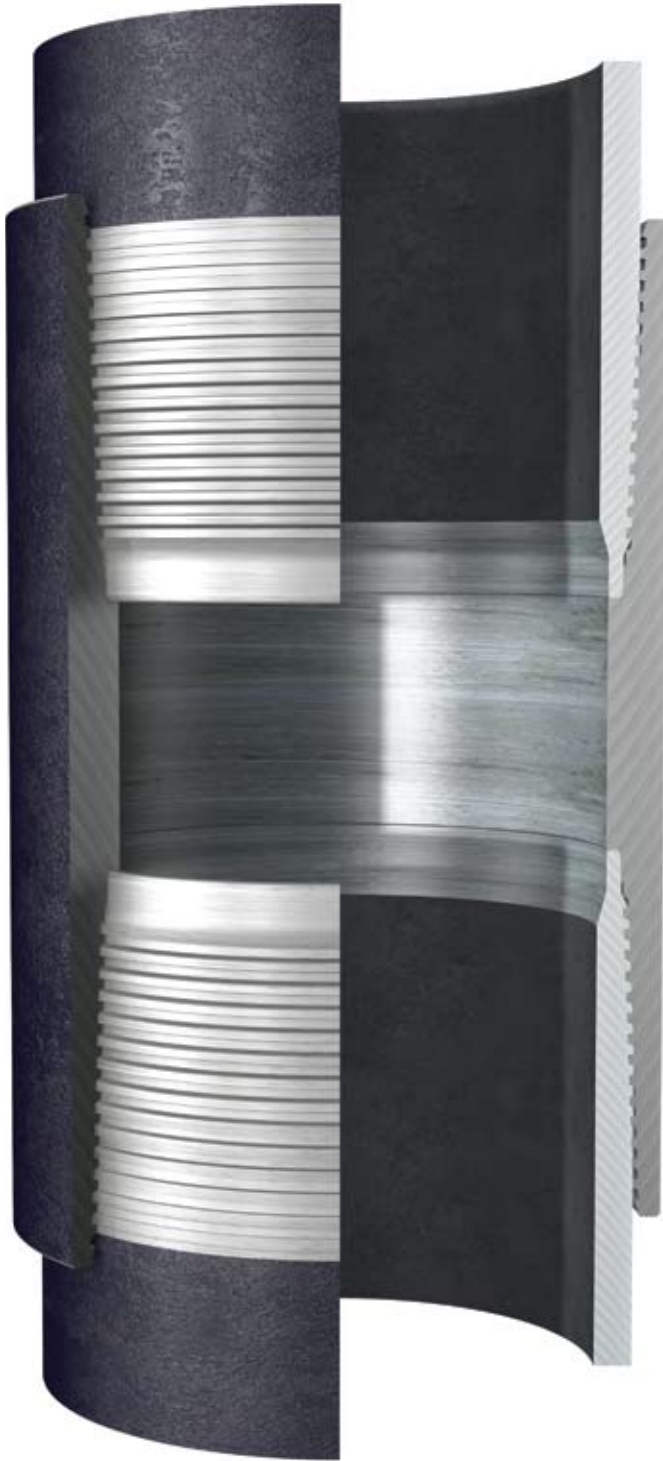
TenarisHydril offers outstanding premium connection design and technology worldwide. With a comprehensive range of high performance products backed by an extensive global field service network and licensed threading shops, we develop solutions to meet the needs of ever more demanding E&P environments.

TenarisHydril premium connections are supplied and supported by Tenaris, the leading manufacturer and supplier of steel tubes and integrated tubular services to the world's energy industry.

For further information please visit our website at [www.tenaris.com](http://www.tenaris.com).



# Main attributes



## SIZE AVAILABILITY

2 3/8" TO 14"

## FEATURES

- Proven design provides excellent gas tightness with high mechanical properties.

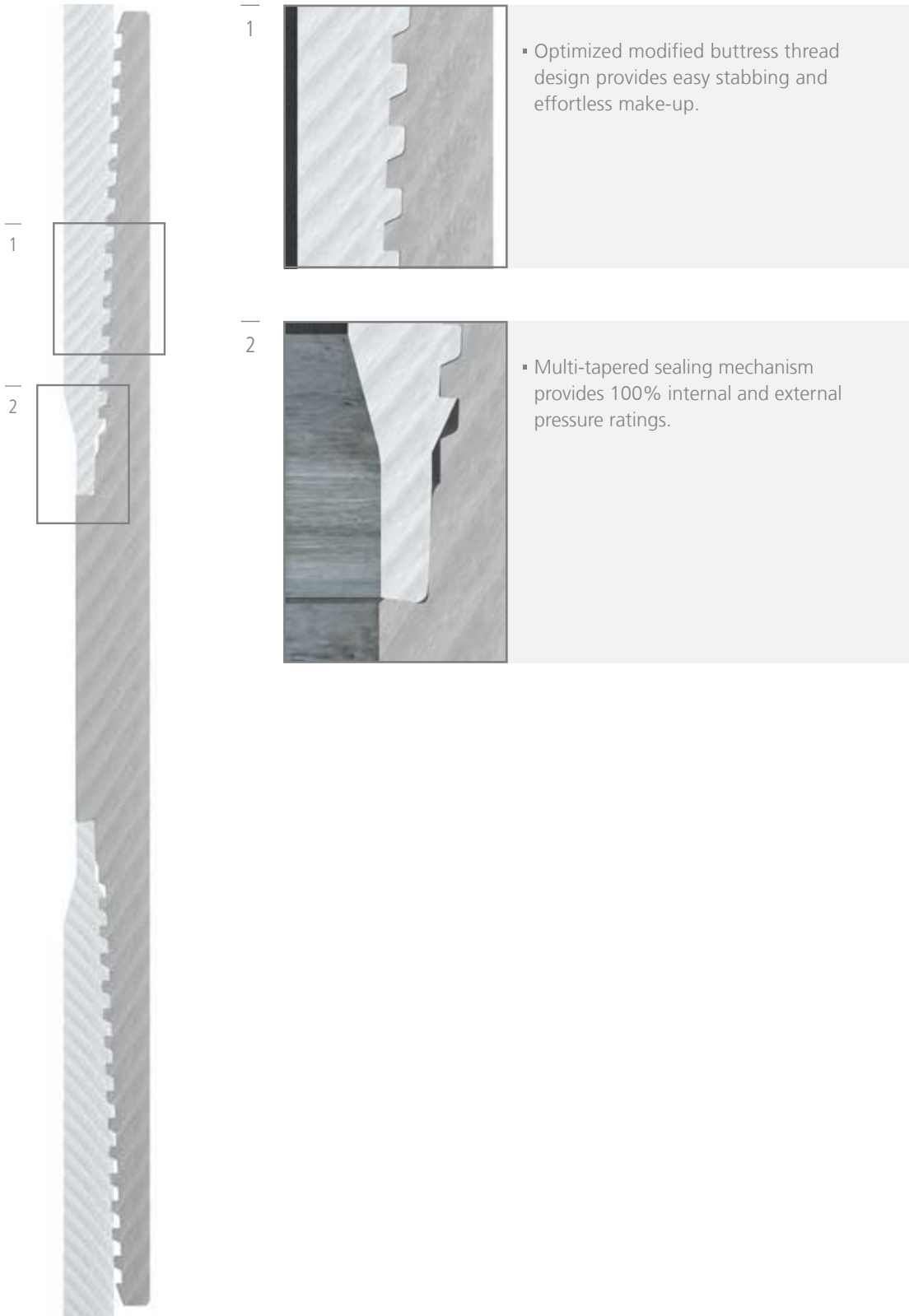
## APPLICATIONS

- Production casing
- Production tubing

## OPTIONS

- Matched strength
- Special clearance
- Special bevel

# Operational features



# Proven reliability

The capabilities of the TenarisHydril MST™ in terms of ease of running and excellent gas-tightness have demonstrated successful performance in carbon steel applications in a variety of environments around the world.

## OPTIMIZED THREAD DESIGN

The TenarisHydril MST™ has been designed to provide an efficient gas-sealing connection with practical running. The Buttress-modified thread shape provides a low-tendency to galling, while the different thread tapers and thread pitches (with specific variations along the product range) supply the ease of running that can make a significant impact in terms of saving time and reducing the cost of casing and completion operations.

## PERFORMANCE AROUND THE GLOBE

### Experienced technology

More than 60 million feet of TenarisHydril MST™ connections have been run in over 60 countries over its twenty-year trajectory. The technology has proven a reliable option for a variety of functional applications in

both onshore and offshore environments. For example, an energy company in Italy has chosen the connection for geothermal operations. It has also been used in highly deviated, horizontal wells in Norway. In the Mediterranean, E&P operators chose the MST™ for high-pressure/high-temperature wells while in Egypt the connection has performed consistently in mature fields.

### Full support

The MST™ connection is supported by an extensive range of licensed threading and repair shops. Qualified to thread this TenarisHydril technology, these shops provide dependable support for oil and gas companies that need to receive pipes and accessories.

Tenaris can also deploy its team of field service specialists anywhere in the world to assure the correct handling and running procedures for the MST™ and all TenarisHydril technologies. The onsite assistance looks to optimize running times and minimize risks, while upholding the highest health, safety and environmental standards.

## OPTIMIZED THREAD DESIGN

OD	THREAD TAPER	THREAD PITCH	STABBING FLANK ANGLE	LOAD FLANK ANGLE	SEAL TAPER
2 3/8"	6.25%	8 TPI	15°	0°	8.50%
2 7/8"	6.25%	8 TPI	15°	0°	8.50%
3 1/2"	6.25%	6 TPI	15°	0°	8.50%
4"	6.25%	6 TPI	15°	0°	8.50%
4 1/2"	6.25%	6 TPI	15°	0°	8.50%
5"	6.25%	5 TPI	15°	0°	8.50%
5 1/2"	6.25%	5 TPI	15°	0°	8.50%
6 5/8"	8.50%	4 TPI	25°	2°25'	8.50%
7"	8.50%	4 TPI	25°	2°25'	8.50%
7 3/4"	8.50%	4 TPI	25°	2°25'	8.50%
7 5/8"	8.50%	4 TPI	25°	2°25'	8.50%
8 5/8"	8.50%	4 TPI	25°	2°25'	8.50%
9 5/8"	8.50%	4 TPI	25°	2°25'	8.50%
10 3/4"	8.50%	4 TPI	25°	2°25'	8.50%
11 3/4"	8.50%	4 TPI	25°	2°25'	8.50%
13 3/8"	8.50%	4 TPI	25°	2°25'	8.50%
14"	12.50%	3 TPI	25°	0°	20%

# Technical data table & Torque table for MS™

# Technical data table | 2 3/8" TO 7" (7 5/8" TO 14" on reverse side)

DESIGNATION		PIPE BODY			COUPLING		CONNECTION INSIDE DIAMETER	MAKE-UP LOSS	CRITICAL SECTION AREA	TENSILE EFFICIENCY	
Size	Nominal Weight	Wall Thickness	Inside Diameter	Drift Diameter	Outside Diameter	Length					
in	lb/ft	in	in	in	in	in	in	sq in	%		
<b>2 3/8</b>	4.60	] 0.190	1.995	1.901	2.776	6.220	1.939	2.520	1.730	100	
	5.10		0.218	1.939	1.845	2.776	6.220	1.939	2.520	1.730	100
	5.80		0.254	1.867	1.774	2.815	6.220	1.939	2.520	1.903	100
<b>2 7/8</b>	6.40	] 0.217	2.441	2.348	3.337	6.850	2.384	2.835	2.503	100	
	7.70		0.276	2.323	2.230	3.406	6.850	2.384	2.835	2.868	100
	8.60		0.308	2.259	2.166	3.406	6.850	2.384	2.835	2.868	100
<b>3 1/2</b>	7.70	] 0.216	3.068	2.943	3.917	7.953	2.994	3.386	2.891	100	
	9.20		0.254	2.992	2.867	3.917	7.953	3.033	3.386	2.891	100
	10.20		0.289	2.922	2.797	3.996	7.953	2.994	3.386	3.382	100
	12.70		0.375	2.750	2.625	4.134	7.953	2.947	3.386	4.261	100
<b>4</b>	10.90	] 0.262	3.476	3.351	4.421	9.173	3.500	3.701	3.435	100	
	13.00		0.330	3.340	3.215	4.551	9.173	3.406	3.701	4.351	100
	14.85		0.380	3.240	3.115	4.646	9.173	3.346	3.701	5.033	100
<b>4 1/2</b>	10.50	] 0.224	4.052	3.927	4.921	9.803	4.076	4.016	3.009	100	
	11.60		0.250	4.000	3.875	4.921	9.803	4.045	4.016	3.984	100
	12.60		0.271	3.958	3.833	4.921	9.803	4.006	4.016	3.984	100
	13.50		0.290	3.920	3.794	4.961	9.803	4.006	4.016	4.289	100
	15.10		0.337	3.826	3.701 *	5.079	9.803	3.955	4.016	5.220	100
	16.60		0.375	3.750	3.624	5.079	9.803	3.927	4.016	5.220	100
	17.00		0.380	3.740	3.615	5.079	9.803	3.927	4.016	5.220	100
	18.90		0.430	3.640	3.515	5.114	9.803	3.896	4.016	5.504	100
	21.50		0.500	3.500	3.375	5.213	9.803	3.852	4.016	6.302	100
	23.70		0.560	3.380	3.255	5.291	9.803	3.817	4.016	6.952	100
	<b>5</b>		13.00	] 0.253	4.494	4.369	5.563	10.866	4.488	4.252	5.513
15.00		0.296	4.408		4.283	5.563	10.866	4.488	4.252	5.513	100
18.00		0.362	4.276		4.151	5.563	10.866	4.439	4.252	5.513	100
20.30		0.408	4.184		4.059	5.563	10.866	4.339	4.252	5.513	94
20.80		0.422	4.156		4.031	5.563	10.866	4.339	4.252	5.513	91
21.40		0.437	4.126		4.001	5.563	10.866	4.339	4.252	5.513	88
23.20		0.478	4.044		3.919	5.563	10.866	4.339	4.252	5.513	81
24.10		0.500	4.000		3.875	5.563	10.866	4.339	4.252	5.513	78
<b>5 1/2</b>	14.00	] 0.244	5.012	4.887	6.051	10.866	4.980	4.252	5.929	100	
	15.50		0.275	4.950	4.825	6.051	10.866	4.980	4.252	5.929	100
	17.00		0.304	4.892	4.767	6.051	10.866	4.931	4.252	5.929	100
	20.00		0.361	4.778	4.653	6.051	10.866	4.902	4.252	5.929	100
	23.00		0.415	4.670	4.545	6.146	10.866	4.843	4.252	6.834	100
	26.00		0.476	4.548	4.423 *	6.260	10.866	4.843	4.252	7.947	100
	26.80		0.500	4.500	4.375	6.260	10.866	4.791	4.252	7.947	100
	28.40		0.530	4.440	4.315	6.346	10.866	4.791	4.252	8.804	100
	29.70		0.562	4.376	4.251	6.346	10.866	4.740	4.252	8.804	100
	32.60		0.625	4.250	4.124	6.425	10.866	4.740	4.252	9.593	100
<b>6 5/8</b>	24.00	] 0.352	5.921	5.796	7.390	11.457	6.024	4.252	9.911	100	
	28.00		0.417	5.791	5.666	7.390	11.457	5.906	4.252	9.911	100
	32.00		0.475	5.676	5.550	7.390	11.457	5.906	4.252	9.911	100
<b>7</b>	23.00	] 0.317	6.366	6.241 *	7.657	11.772	6.386	4.409	9.302	100	
	26.00		0.362	6.276	6.151	7.657	11.772	6.307	4.409	9.302	100
	29.00		0.408	6.184	6.059 *	7.657	11.772	6.307	4.409	9.302	100
	32.00		0.453	6.094	5.969 *	7.657	11.772	6.307	4.409	9.302	100
	35.00		0.498	6.004	5.879	7.657	11.772	6.307	4.409	9.302	91
	38.00		0.540	5.920	5.794 *	7.657	11.772	6.307	4.409	9.302	85
	41.00		0.590	5.820	5.694	7.657	11.772	6.240	4.409	9.302	78

- Drift diameters displayed are standard. Items marked with \* will pass popular oversize drift (Special Drift).
- ] Interchangeable where bracketed. Small variations in the connection Internal Diameter will appear. For make-up torque information, refer to TenarisHydril Running Manual.
- Torque recommendation values available at [www.tenaris.com](http://www.tenaris.com).
- Compression efficiency for SC option is the same as the standard connection.
- For the MS option, the coupling OD is reduced to the minimum critical area capable of providing the same tensile efficiency as the standard option.

## OPTIONS

COMPRESSION EFFICIENCY	JOINT YIELD STRENGTH						SPECIAL CLEARANCE COUPLING			MATCHED STRENGTH
	55 ksi	80 ksi	90 ksi	95 ksi	110 ksi	125 ksi	Outside Diameter	Critical Section Area	Tensile Efficiency	Outside Diameter
%	x 1000 lb						in	sq in	%	in
100	72	104	117	124	143	163	—	—	—	2.676
89	81	118	133	140	162	185	—	—	—	2.717
78	93	135	152	161	186	212	—	—	—	2.767
100	100	145	163	172	199	227	—	—	—	3.202
81	124	180	203	214	248	282	—	—	—	3.289
74	137	199	224	236	273	310	—	—	—	3.333
94	123	178	201	212	245	279	—	—	—	3.868
71	142	207	233	246	285	324	—	—	—	3.868
72	160	233	262	277	321	364	—	—	—	3.921
66	202	295	331	350	405	460	—	—	—	4.044
72	169	246	277	292	338	385	—	—	—	4.366
79	209	304	342	361	419	476	—	—	—	4.474
80	238	346	389	411	475	540	—	—	—	4.548
53	165	241	271	286	331	376	4.875	3.633	100	4.875
57	184	267	300	317	367	417	4.875	3.633	100	4.875
63	198	288	324	342	396	450	4.875	3.633	100	4.875
59	211	307	345	364	422	479	4.875	3.633	94.7	4.903
62	242	353	397	419	485	551	4.875	3.633	82.4	4.976
62	267	389	437	462	535	607	4.875	3.633	74.8	5.034
61	271	393	443	467	541	615	4.875	3.633	73.9	5.041
60	302	440	495	522	605	687	4.875	3.633	66.1	5.114
59	346	503	565	597	691	785	4.875	3.633	57.8	5.211
58	381	555	624	659	762	866	4.875	3.633	52.4	5.289
74	208	302	340	358	415	472	5.374	3.891	100	5.358
63	241	350	394	416	481	547	5.374	3.891	89.0	5.433
63	290	422	475	501	580	659	5.374	3.891	73.8	5.535
74	303	441	496	524	606	689	5.374	3.891	66.1	5.606
71	303	441	496	524	606	689	5.374	3.891	64.1	5.626
69	303	441	496	524	606	689	5.374	3.891	62.1	5.650
64	303	441	496	524	606	689	5.374	3.891	57.3	5.709
61	303	441	496	524	606	689	5.374	3.891	55.0	5.740
79	222	322	363	383	443	504	5.878	4.306	100	5.848
70	248	361	406	429	497	564	5.878	4.306	95.4	5.902
76	273	397	447	471	546	620	5.878	4.306	86.8	5.949
70	321	466	525	554	641	729	5.878	4.306	73.9	6.043
72	365	530	597	630	729	829	5.878	4.306	65.0	6.126
63	413	601	676	714	826	939	5.878	4.306	57.3	6.217
68	432	628	707	746	864	982	5.878	4.306	54.8	6.256
65	455	662	745	786	910	1034	5.878	4.306	52.0	6.295
68	480	697	785	828	959	1090	5.878	4.306	49.4	6.339
62	526	766	861	909	1053	1197	5.878	4.306	45.0	6.425
53	382	555	624	659	763	867	7.000	5.506	79.4	7.129
66	447	651	732	773	895	1017	7.000	5.506	67.7	7.235
58	504	733	825	871	1009	1146	7.000	5.506	60.0	7.326
58	366	532	599	632	732	832	7.375	5.960	89.6	7.434
67	415	604	679	717	830	944	7.375	5.960	78.9	7.510
60	465	676	760	803	929	1056	7.375	5.960	70.5	7.586
54	512	745	839	885	1025	1165	7.375	5.960	64.0	7.658
49	512	744	837	884	1023	1163	7.375	5.960	58.6	7.729
46	512	744	837	884	1023	1163	7.375	5.960	54.4	7.794
51	512	744	837	884	1023	1163	7.375	5.960	50.2	7.869

# 7 5/8" TO 14"

DESIGNATION		PIPE BODY			COUPLING		CONNECTION INSIDE DIAMETER	MAKE-UP LOSS	CRITICAL SECTION AREA	TENSILE EFFICIENCY				
Size	Nominal Weight	Wall Thickness	Inside Diameter	Drift Diameter	Outside Diameter	Length								
in	lb/ft	in	in	in	in	in	in	sq in	%					
<b>7 5/8</b>	26.40	] 0.328	6.969	6.844	8.500	12.165	6.996	4.606	13.158	100				
	29.70		6.876	6.750		12.165								
	33.70		6.765	6.640		12.165								
	39.00		6.625	6.500		12.165								
	42.80		6.502	6.376		12.165								
	45.30		6.435	6.310*		12.165								
	47.10		6.375	6.250		12.165								
<b>7 3/4</b>	46.10	0.595	6.560	6.435*	8.626	12.165	6.756	4.606	13.325	100				
	47.60	0.625	6.500	6.374	8.626	12.165	6.728	4.606	13.325	95				
	48.60	0.640	6.470	6.344	8.626	12.165	6.713	4.606	13.325	93				
<b>8 5/8</b>	32.00	] 0.352	7.921	7.796*	9.626	12.402	7.972	4.724	16.830	100				
	36.00		7.825	7.700		12.402					7.874	4.724	16.830	
	40.00		7.725	7.600*		12.402					7.874	4.724	16.830	
	44.00		7.625	7.500		12.402					7.874	4.724	16.830	
	49.00		7.511	7.386		12.402					7.874	4.724	16.830	
<b>9 5/8</b>	36.00	] 0.352	8.921	8.765	10.626	12.402	8.976	4.724	18.693	100				
	40.00		8.835	8.679*		12.402					8.878	4.724	18.693	
	43.50		8.755	8.599*		12.402					8.878	4.724	18.693	
	47.00		8.681	8.525		12.402					8.878	4.724	18.693	
	53.50		8.535	8.379*		12.402					8.878	4.724	18.693	
	58.40		8.435	8.279*		12.402					8.878	4.724	18.693	
	64.90		8.281	8.125		12.402					8.819	4.724	18.693	
<b>9 7/8</b>	62.80	] 0.625	8.625	8.469*	10.827	12.402	9.102	4.724	18.350	100				
	67.30		8.539	8.383*		12.402					9.055	4.724	21.047	
	68.80		8.475	8.319*		12.402					9.055	4.724	21.047	
	70.40		8.461	8.305*		12.402					9.055	4.724	21.047	
	72.10		8.425	8.269*		12.402					9.055	4.724	21.047	
<b>10 3/4</b>	40.50	] 0.350	10.050	9.894	11.748	12.402	10.110	4.724	20.719	100				
	45.50		9.950	9.794*		12.402					9.992	4.724	20.719	
	51.00		9.850	9.694		12.402					9.992	4.724	20.719	
	55.50		9.760	9.604*		12.402					9.992	4.724	20.719	
	60.70		9.660	9.504		12.402					9.992	4.724	20.719	
	65.70		9.560	9.404*		12.402					9.992	4.724	20.719	
	73.20		9.406	9.250		12.402					9.811	4.724	20.719	
	76.60		9.350	9.194		12.402					9.811	4.724	20.719	
<b>11 3/4</b>	47.00	] 0.375	11.000	10.843	12.752	12.402	11.055	4.724	22.653	100				
	54.00		10.880	10.724		12.402					10.925	4.724	22.653	
	60.00		10.772	10.616*		12.402					10.925	4.724	22.653	
	65.00		10.682	10.526*		12.402					10.874	4.724	22.653	
<b>11 7/8</b>	71.80	0.582	10.711	10.555*	12.764	12.402	10.941	4.724	20.662	100				
<b>13 3/8</b>	54.50	] 0.380	12.615	12.459	14.374	12.402	12.677	4.724	25.676	100				
	61.00		12.515	12.359		14.374					12.402	12.559	4.724	25.676
	68.00		12.415	12.259		14.374					12.402	12.559	4.724	25.676
	72.00		12.347	12.191*		14.374					12.402	12.559	4.724	25.676
<b>13 1/2</b>	80.40	0.576	12.348	12.161*	14.500	12.402	12.559	4.724	25.911	100				
<b>13 5/8</b>	88.20	0.625	12.375	12.187*	14.626	12.402	12.685	4.724	26.145	100				
<b>14</b>	82.50	] 0.562	12.876	12.689	15.000	13.583	12.807	5.512	32.226	100				
	94.80		12.688	12.501		13.583					12.677	5.512	32.226	
	99.30		12.624	12.436		13.583					12.677	5.512	32.226	
	110.00		12.456	12.269		13.583					12.598	5.512	32.226	
	111.00		12.442	12.254*		13.583					12.598	5.512	32.226	

- Drift diameters displayed are standard. Items marked with \* will pass popular oversize drift (Special Drift).
- ] Interchangeable where bracketed. Small variations in the connection Internal Diameter will appear. For make-up torque information, refer to TenarisHydril Running Manual.
- Torque recommendation values available at [www.tenaris.com](http://www.tenaris.com).
- Compression efficiency for SC option is the same as the standard connection.
- For the MS option, the coupling OD is reduced to the minimum critical area capable of providing the same tensile efficiency as the standard option.

## OPTIONS

COMPRESSION EFFICIENCY	JOINT YIELD STRENGTH					
	55 ksi	80 ksi	90 ksi	95 ksi	110 ksi	125 ksi
%	x 1000 lb					
56	414	602	677	714	827	940
49	469	682	768	810	938	1066
61	535	778	875	923	1069	1215
53	616	895	1007	1063	1231	1399
48	685	997	1121	1184	1371	1558
45	723	1051	1183	1248	1445	1643
43	724	1053	1184	1250	1447	1645
76	736	1070	1204	1271	1471	1672
76	733	1066	1199	1266	1466	1666
76	733	1066	1199	1266	1466	1666
55	503	732	823	869	1006	1144
66	568	827	930	982	1137	1292
59	636	925	1040	1098	1271	1445
54	702	1021	1149	1212	1404	1595
49	776	1129	1271	1341	1553	1765
54	564	820	923	974	1128	1282
67	630	916	1031	1088	1260	1432
61	691	1005	1130	1193	1381	1570
56	746	1086	1222	1289	1493	1697
49	855	1244	1399	1477	1710	1943
45	928	1350	1519	1604	1857	2110
47	1028	1495	1682	1776	2056	2337
45	999	1453	1635	1725	1998	2270
48	1063	1546	1739	1836	2125	2415
46	1110	1614	1816	1917	2219	2522
46	1120	1629	1833	1934	2240	2545
44	1146	1667	1876	1980	2292	2605
53	629	915	1029	1086	1258	1429
68	715	1040	1171	1236	1431	1626
61	801	1165	1311	1383	1602	1820
56	877	1276	1435	1515	1754	1993
51	961	1398	1573	1660	1922	2184
47	1044	1519	1708	1803	2088	2373
61	1140	1658	1865	1968	2279	2590
59	1140	1658	1865	1968	2279	2590
60	737	1072	1206	1273	1474	1675
74	850	1237	1392	1469	1701	1933
66	951	1384	1557	1643	1903	2162
67	1035	1505	1693	1788	2070	2352
69	1136	1652	1858	1962	2271	2581
60	853	1241	1396	1474	1706	1939
73	962	1399	1574	1661	1924	2186
66	1069	1556	1750	1847	2139	2431
61	1142	1661	1869	1973	2284	2596
68	1286	1871	2105	2222	2573	2923
63	1404	2042	2297	2425	2808	3191
63	1305	1898	2135	2254	2610	2966
69	1513	2200	2475	2613	3025	3438
66	1583	2302	2590	2733	3165	3597
66	1765	2567	2887	3048	3529	4010
66	1780	2588	2912	3074	3559	4044

SPECIAL CLEARANCE COUPLING			MATCHED STRENGTH
Outside Diameter	Critical Section Area	Tensile Efficiency	Outside Diameter
in	sq in	%	in
8.125	8.274	100	8.125
8.125	8.274	96.9	8.147
8.125	8.274	85.1	8.238
8.125	8.274	73.9	8.351
8.125	8.274	66.3	8.448
8.125	8.274	63.0	8.499
8.125	8.274	60.2	8.544
—	—	—	8.630
—	—	—	8.675
—	—	—	8.697
9.125	9.467	100	9.125
9.125	9.467	91.6	9.186
9.125	9.467	81.9	9.271
9.125	9.467	74.2	9.353
9.125	9.467	67.1	9.445
10.125	10.545	100	10.108
10.125	10.545	92.1	10.183
10.125	10.545	84.0	10.252
10.125	10.545	77.7	10.315
10.125	10.545	67.8	10.436
10.125	10.545	62.5	10.517
10.125	10.545	55.8	10.638
—	—	—	10.816
—	—	—	10.884
—	—	—	10.933
—	—	—	10.944
—	—	—	10.972
11.250	11.759	100	11.250
11.250	11.759	90.4	11.322
11.250	11.759	80.8	11.409
11.250	11.759	73.7	11.486
11.250	11.759	67.3	11.571
11.250	11.759	61.9	11.653
11.250	11.759	55.3	11.778
11.250	11.759	53.2	11.823
—	—	—	12.288
—	—	—	12.394
—	—	—	12.488
—	—	—	12.565
—	—	—	—
—	—	—	13.917
—	—	—	14.007
—	—	—	14.095
—	—	—	14.155
—	—	—	14.389
—	—	—	14.599
—	—	—	14.635
—	—	—	14.798
—	—	—	14.853
—	—	—	14.994
—	—	—	15.006



# Torque table for MS™

# MS™ Torque Table | 2 3/8" TO 4 1/2"

SIZE (OD)	NOMINAL WEIGHT	WALL THICKNESS	SMYS OF STEEL GRADE	MAKE UP TORQUE			SHOULDER TORQUE		YIELD TORQUE
				Minimum	Optimum	Maximum	Minimum	Maximum	
in	lb/ft	in	ksi	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb
<b>2 3/8</b>	4.60	0.190	55	1200	1300	1400	200	980	1790
			80	1670	1800	1940	270	1350	2140
			90	1850	2000	2150	300	1500	2290
			95	1850	2000	2150	300	1500	2360
			110	2040	2200	2370	330	1650	2570
	5.10	0.218	125	2040	2200	2370	330	1650	2780
			55	1200	1300	1400	200	980	1830
			80	1670	1800	1940	270	1350	2180
			90	1940	2100	2260	320	1580	2320
			95	1940	2100	2260	320	1580	2390
	5.80	0.254	110	2130	2300	2470	350	1730	2600
			125	2130	2300	2470	350	1730	2810
			55	1300	1400	1510	210	1050	1900
			80	1760	1900	2040	290	1430	2250
			90	2080	2250	2420	340	1690	2390
<b>2 7/8</b>	6.40	0.217	95	2080	2250	2420	340	1690	2460
			110	2220	2400	2580	360	1800	2670
			125	2220	2400	2580	360	1800	2880
			55	1900	2050	2200	310	1540	2400
			80	2220	2400	2580	360	1800	2950
	7.70	0.276	90	2590	2800	3010	420	2100	3160
			95	2590	2800	3010	420	2100	3270
			110	2910	3150	3390	470	2360	3600
			125	2910	3150	3390	470	2360	3920
			55	2080	2250	2420	340	1690	2890
	8.60	0.308	80	2410	2600	2800	390	1950	3480
			90	2780	3000	3230	450	2250	3720
			95	2780	3000	3230	450	2250	3840
			110	3100	3350	3600	500	2510	4190
			125	3100	3350	3600	500	2510	4550
<b>3 1/2</b>	7.70	0.216	55	2220	2400	2580	360	1800	2940
			80	2590	2800	3010	420	2100	3530
			90	2960	3200	3440	480	2400	3770
			95	2960	3200	3440	480	2400	3890
			110	3330	3600	3870	540	2700	4240
	9.20	0.254	125	3330	3600	3870	540	2700	4600
			55	2410	2600	2800	390	1950	3240
			80	2780	3000	3230	450	2250	3980
			90	3240	3500	3760	530	2630	4270
			95	3240	3500	3760	530	2630	4420
	10.20	0.289	110	3700	4000	4300	600	3000	4860
			125	3700	4000	4300	600	3000	5300
			55	2590	2800	3010	420	2100	3800
			80	3050	3300	3550	500	2480	4640
			90	3520	3800	4090	570	2850	4980
12.70	0.375	95	3520	3800	4090	570	2850	5150	
		110	3980	4300	4620	650	3230	5650	
		125	3980	4300	4620	650	3230	6160	
		55	3010	3250	3490	490	2440	4620	
		80	3560	3850	4140	580	2890	5590	
<b>4</b>	10.90	0.262	90	4160	4500	4840	680	3380	5970
			95	4160	4500	4840	680	3380	6170
			110	4590	4960	5330	740	3720	6750
			125	4590	4960	5330	740	3720	7330
			55	3010	3250	3490	490	2440	4220
			80	3560	3850	4140	580	2890	5270

SIZE (OD)	NOMINAL WEIGHT	WALL THICKNESS	SMYS OF STEEL GRADE	MAKE UP TORQUE			SHOULDER TORQUE		YIELD TORQUE
				Minimum	Optimum	Maximum	Minimum	Maximum	
in	lb/ft	in	ksi	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb
4	10.90	0.262	90	3980	4300	4620	650	3230	5690
			95	3980	4300	4620	650	3230	5900
			110	4440	4800	5160	720	3600	6530
			125	4440	4800	5160	720	3600	7160
	13.00	0.330	55	3330	3600	3870	540	2700	4980
			80	3700	4000	4300	600	3000	6160
			90	4160	4500	4840	680	3380	6630
			95	4160	4500	4840	680	3380	6870
	14.85	0.380	110	4630	5000	5380	750	3750	7580
			125	4630	5000	5380	750	3750	8290
			55	3890	4200	4520	630	3150	6630
			80	4260	4600	4950	690	3450	8200
		90	4810	5200	5590	780	3900	8830	
		95	4810	5200	5590	780	3900	9140	
		110	5460	5900	6340	890	4430	10090	
		125	5460	5900	6340	890	4430	11030	
4 1/2	10.50	0.224	55	2910	3150	3390	470	2360	3360
			80	3240	3500	3760	530	2630	4200
			90	3560	3850	4140	580	2890	4530
			95	3560	3850	4140	580	2890	4700
			110	3930	4250	4570	640	3190	5210
			125	3930	4250	4570	640	3190	5710
	11.60	0.250	55	3150	3400	3660	510	2550	3900
			80	3470	3750	4030	560	2810	4900
			90	3890	4200	4520	630	3150	5290
			95	3890	4200	4520	630	3150	5490
			110	4260	4600	4950	690	3450	6090
			125	4260	4600	4950	690	3450	6680
	12.60	0.271	55	3240	3500	3760	530	2630	4540
			80	3560	3850	4140	580	2890	5720
			90	3980	4300	4620	650	3230	6200
			95	3980	4300	4620	650	3230	6440
			110	4440	4800	5160	720	3600	7150
			125	4440	4800	5160	720	3600	7860
	13.50	0.290	55	3330	3600	3870	540	2700	4640
			80	3700	4000	4300	600	3000	5830
			90	4160	4500	4840	680	3380	6300
			95	4160	4500	4840	680	3380	6540
			110	4630	5000	5380	750	3750	7250
			125	4630	5000	5380	750	3750	7960
	15.10	0.337	55	3890	4200	4520	630	3150	5680
			80	4260	4600	4950	690	3450	7110
			90	4810	5200	5590	780	3900	7680
			95	4810	5200	5590	780	3900	7960
			110	5460	5900	6340	890	4430	8820
			125	5460	5900	6340	890	4430	9680
	16.60	0.375	55	4380	4730	5080	710	3550	6200
			80	4810	5200	5590	780	3900	7760
			90	5460	5900	6340	890	4430	8380
			95	5460	5900	6340	890	4430	8690
			110	6150	6650	7150	1000	4990	9630
			125	6150	6650	7150	1000	4990	10560
17.00	0.380	55	4380	4730	5080	710	3550	6210	
		80	4810	5200	5590	780	3900	7770	
		90	5460	5900	6340	890	4430	8390	
		95	5460	5900	6340	890	4430	8700	
		110	6150	6650	7150	1000	4990	9640	
		125	6150	6650	7150	1000	4990	10570	
18.90	0.430	55	4880	5280	5680	790	3960	6860	
		80	5370	5800	6240	870	4350	8570	
		90	6100	6590	7080	990	4940	9250	
		95	6100	6590	7080	990	4940	9590	

4 1/2 " TO 6 5/8 "

SIZE (OD)	NOMINAL WEIGHT	WALL THICKNESS	SMYS OF STEEL GRADE	MAKE UP TORQUE			SHOULDER TORQUE		YIELD TORQUE		
				Minimum	Optimum	Maximum	Minimum	Maximum			
in	lb/ft	in	ksi	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb		
4 1/2	18.90	0.430	110	6860	7420	7980	1110	5570	10610		
			125	6860	7420	7980	1110	5570	11630		
			21.50	0.500	55	5430	5870	6310	880	4400	7840
					80	5970	6450	6930	970	4840	9740
					90	6770	7320	7870	1100	5490	10500
					95	6770	7320	7870	1100	5490	10880
	23.70	0.560	110	7630	8250	8870	1240	6190	12020		
			125	7630	8250	8870	1240	6190	13160		
			55	6450	6970	7490	1050	5230	8640		
			80	7090	7660	8230	1150	5750	10700		
	5	13.00	0.253	55	3150	3400	3660	510	2550	5860	
				80	3520	3800	4090	570	2850	7480	
90				3890	4200	4520	630	3150	8130		
95				3890	4200	4520	630	3150	8460		
110				4160	4500	4840	680	3380	9430		
125				4160	4500	4840	680	3380	10410		
15.00		0.296	55	3610	3900	4190	590	2930	6000		
			80	3890	4200	4520	630	3150	7630		
			90	4350	4700	5050	710	3530	8280		
			95	4350	4700	5050	710	3530	8600		
			110	4530	4900	5270	740	3680	9580		
			125	4530	4900	5270	740	3680	10550		
18.00	0.362	55	4440	4800	5160	720	3600	7060			
		80	4720	5100	5480	770	3830	8980			
		90	5180	5600	6020	840	4200	9750			
		95	5180	5600	6020	840	4200	10130			
		110	5460	5900	6340	890	4430	11280			
		125	5460	5900	6340	890	4430	12430			
20.30	0.408	55	5000	5400	5810	810	4050	8990			
		80	5270	5700	6130	860	4280	11500			
		90	5740	6200	6670	930	4650	12500			
		95	5740	6200	6670	930	4650	13000			
		110	6010	6500	6990	980	4880	14500			
		125	6010	6500	6990	980	4880	16010			
20.80	0.422	55	5370	5800	6240	870	4350	9020			
		80	5740	6200	6670	930	4650	11530			
		90	6290	6800	7310	1020	5100	12530			
		95	6290	6800	7310	1020	5100	13030			
		110	6660	7200	7740	1080	5400	14530			
		125	6660	7200	7740	1080	5400	16030			
21.40	0.437	55	5640	6100	6560	920	4580	9050			
		80	6110	6600	7100	990	4950	11560			
		90	6660	7200	7740	1080	5400	12560			
		95	6660	7200	7740	1080	5400	13060			
		110	7030	7600	8170	1140	5700	14560			
		125	7030	7600	8170	1140	5700	16060			
23.20	0.478	55	5920	6400	6880	960	4800	9130			
		80	6290	6800	7310	1020	5100	11630			
		90	6940	7500	8060	1130	5630	12630			
		95	6940	7500	8060	1130	5630	13130			
		110	7400	8000	8600	1200	6000	14640			
		125	7400	8000	8600	1200	6000	16140			
24.10	0.500	55	6110	6600	7100	990	4950	9160			
		80	6480	7000	7530	1050	5250	11670			
		90	7120	7700	8280	1160	5780	12670			
		95	7120	7700	8280	1160	5780	13170			
		110	7590	8200	8820	1230	6150	14670			
		125	7590	8200	8820	1230	6150	16180			

SIZE (OD)	NOMINAL WEIGHT	WALL THICKNESS	SMYS OF STEEL GRADE	MAKE UP TORQUE			SHOULDER TORQUE		YIELD TORQUE
				Minimum	Optimum	Maximum	Minimum	Maximum	
in	lb/ft	in	ksi	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb
5 1/2	15.50	0.275	55	3610	3900	4190	590	2930	6920
			80	3890	4200	4520	630	3150	8970
			90	4350	4700	5050	710	3530	9780
			95	4350	4700	5050	710	3530	10190
			110	4630	5000	5380	750	3750	11420
	17.00	0.304	125	4630	5000	5380	750	3750	12650
			55	3980	4300	4620	650	3230	8070
			80	4350	4700	5050	710	3530	10470
			90	4720	5100	5480	770	3830	11440
			95	4720	5100	5480	770	3830	11920
	20.00	0.361	110	5000	5400	5810	810	4050	13360
			125	5000	5400	5810	810	4050	14810
			55	4530	4900	5270	740	3680	8870
			80	5000	5400	5810	810	4050	11490
			90	5460	5900	6340	890	4430	12530
23.00	0.415	95	5460	5900	6340	890	4430	13060	
		110	5640	6100	6560	920	4580	14630	
		125	5640	6100	6560	920	4580	16200	
		55	5640	6100	6560	920	4580	10440	
		80	6200	6700	7200	1010	5030	13480	
26.00	0.476	90	6660	7200	7740	1080	5400	14700	
		95	6660	7200	7740	1080	5400	15310	
		110	6940	7500	8060	1130	5630	17140	
		125	6940	7500	8060	1130	5630	18960	
		55	6110	6600	7100	990	4950	10780	
26.80	0.500	80	6660	7200	7740	1080	5400	13830	
		90	7120	7700	8280	1160	5780	15040	
		95	7120	7700	8280	1160	5780	15650	
		110	7490	8100	8710	1220	6080	17480	
		125	7490	8100	8710	1220	6080	19300	
28.40	0.530	55	6110	6600	7100	990	4950	11970	
		80	6660	7200	7740	1080	5400	15370	
		90	7120	7700	8280	1160	5780	16730	
		95	7120	7700	8280	1160	5780	17420	
		110	7490	8100	8710	1220	6080	19460	
29.70	0.562	125	7490	8100	8710	1220	6080	21500	
		55	6660	7200	7740	1080	5400	12180	
		80	7220	7800	8390	1170	5850	15590	
		90	7680	8300	8920	1250	6230	16950	
		95	7680	8300	8920	1250	6230	17630	
32.60	0.625	110	8050	8700	9350	1310	6530	19670	
		125	8050	8700	9350	1310	6530	21710	
		55	7120	7700	8280	1160	5780	13390	
		80	7680	8300	8920	1250	6230	17140	
		90	8140	8800	9460	1320	6600	18640	
6 5/8	24.00	0.352	95	8140	8800	9460	1320	6600	19390
			110	8510	9200	9890	1380	6900	21640
			125	8510	9200	9890	1380	6900	23900
			55	8050	8700	9350	1310	6530	13680
			80	8600	9300	10000	1400	6980	17430
28.00	0.417	90	9070	9800	10540	1470	7350	18930	
		95	9070	9800	10540	1470	7350	19680	
		110	9440	10200	10970	1530	7650	21930	
		125	9440	10200	10970	1530	7650	24180	
		55	6940	7500	8060	1130	5630	13580	
			80	7400	8000	8600	1200	6000	17690

6 5/8" TO 8 5/8"

SIZE (OD)	NOMINAL WEIGHT	WALL THICKNESS	SMYS OF STEEL GRADE	MAKE UP TORQUE			SHOULDER TORQUE		YIELD TORQUE			
				Minimum	Optimum	Maximum	Minimum	Maximum				
in	lb/ft	in	ksi	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb			
6 5/8	28.00	0.417	90	7860	8500	9140	1280	6380	19330			
			95	7860	8500	9140	1280	6380	20150			
			110	8330	9000	9680	1350	6750	22610			
			125	8330	9000	9680	1350	6750	25080			
	32.00	0.475	55	7860	8500	9140	1280	6380	13790			
			80	8330	9000	9680	1350	6750	17900			
			90	8790	9500	10210	1430	7130	19540			
			95	8790	9500	10210	1430	7130	20360			
			110	9440	10200	10970	1530	7650	22820			
			125	9440	10200	10970	1530	7650	25290			
			7	23.00	0.317	55	5640	6100	6560	920	4580	10230
						80	6200	6700	7200	1010	5030	13390
90	6480	7000				7530	1050	5250	14660			
95	6480	7000				7530	1050	5250	15290			
110	6940	7500				8060	1130	5630	17190			
125	6940	7500				8060	1130	5630	19090			
26.00	0.362	55		6380	6900	7420	1040	5180	13080			
		80		7220	7800	8390	1170	5850	17190			
		90		7490	8100	8710	1220	6080	18840			
		95		7490	8100	8710	1220	6080	19660			
		110		7960	8600	9250	1290	6450	22130			
		125		7960	8600	9250	1290	6450	24600			
29.00	0.408	55	7220	7800	8390	1170	5850	15180				
		80	7960	8600	9250	1290	6450	19800				
		90	8330	9000	9680	1350	6750	21650				
		95	8330	9000	9680	1350	6750	22580				
		110	8790	9500	10210	1430	7130	25350				
		125	8790	9500	10210	1430	7130	28130				
32.00	0.453	55	7860	8500	9140	1280	6380	13420				
		80	8600	9300	10000	1400	6980	17530				
		90	8970	9700	10430	1460	7280	19180				
		95	8970	9700	10430	1460	7280	20000				
		110	9530	10300	11070	1550	7730	22470				
		125	9530	10300	11070	1550	7730	24940				
35.00	0.498	55	8140	8800	9460	1320	6600	13560				
		80	8880	9600	10320	1440	7200	17670				
		90	9340	10100	10860	1520	7580	19320				
		95	9340	10100	10860	1520	7580	20140				
		110	9990	10800	11610	1620	8100	22610				
		125	9990	10800	11610	1620	8100	25080				
38.00	0.540	55	8510	9200	9890	1380	6900	13680				
		80	9340	10100	10860	1520	7580	17790				
		90	9810	10600	11400	1590	7950	19440				
		95	9810	10600	11400	1590	7950	20260				
		110	10450	11300	12150	1700	8480	22730				
		125	10450	11300	12150	1700	8480	25200				
41.00	0.590	55	8970	9700	10430	1460	7280	16080				
		80	9810	10600	11400	1590	7950	20990				
		90	10270	11100	11930	1670	8330	22950				
		95	10270	11100	11930	1670	8330	23930				
		110	10920	11800	12690	1770	8850	26870				
		125	10920	11800	12690	1770	8850	29810				
7 5/8	26.40	0.328	55	6290	6800	7310	1020	5100	12060			
			80	6940	7500	8060	1130	5630	15840			
			90	7220	7800	8390	1170	5850	17360			
			95	7220	7800	8390	1170	5850	18110			
			110	7590	8200	8820	1230	6150	20390			
	29.70	0.375	125	7590	8200	8820	1230	6150	22660			
			55	7120	7700	8280	1160	5780	12330			
			80	7860	8500	9140	1280	6380	16110			
			90	8230	8900	9570	1340	6680	17630			
			95	8230	8900	9570	1340	6680	18380			

SIZE (OD)	NOMINAL WEIGHT	WALL THICKNESS	SMYS OF STEEL GRADE	MAKE UP TORQUE			SHOULDER TORQUE		YIELD TORQUE		
				Minimum	Optimum	Maximum	Minimum	Maximum			
in	lb/ft	in	ksi	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb		
<b>7 5/8</b>	29.70	0.375	110	8700	9400	10110	1410	7050	20650		
			125	8700	9400	10110	1410	7050	22920		
			33.70	0.430	55	8510	9200	9890	1380	6900	16770
					80	9530	10300	11070	1550	7730	22090
					90	9990	10800	11610	1620	8100	24220
	95	9990			10800	11610	1620	8100	25280		
	110	10550			11400	12260	1710	8550	28470		
	39.00	0.500	125	10550	11400	12260	1710	8550	31660		
			55	9160	9900	10640	1490	7430	17080		
			80	10180	11000	11830	1650	8250	22390		
			90	10730	11600	12470	1740	8700	24520		
			95	10730	11600	12470	1740	8700	25580		
	42.80	0.562	110	11380	12300	13220	1850	9230	28770		
			125	11380	12300	13220	1850	9230	31960		
			55	9990	10800	11610	1620	8100	17310		
80			10920	11800	12690	1770	8850	22630			
90			11560	12500	13440	1880	9380	24750			
45.30	0.595	95	11560	12500	13440	1880	9380	25820			
		110	12300	13300	14300	2000	9980	29010			
		125	12300	13300	14300	2000	9980	32200			
		55	10820	11700	12580	1760	8780	17420			
		80	11470	12400	13330	1860	9300	22740			
47.10	0.625	90	12120	13100	14080	1970	9830	24870			
		95	12120	13100	14080	1970	9830	25930			
		110	12860	13900	14940	2090	10430	29120			
		125	12860	13900	14940	2090	10430	32310			
		55	11380	12300	13220	1850	9230	17520			
7 3/4	46.10	0.595	80	11930	12900	13870	1940	9680	22840		
			90	12580	13600	14620	2040	10200	24960		
			95	12580	13600	14620	2040	10200	26030		
			110	13320	14400	15480	2160	10800	29220		
			125	13320	14400	15480	2160	10800	32410		
7 3/4	46.10	0.595	55	12580	13600	14620	2040	10200	28640		
			80	13320	14400	15480	2160	10800	37850		
			90	14060	15200	16340	2280	11400	41530		
			95	14060	15200	16340	2280	11400	43370		
			110	14890	16100	17310	2420	12080	48900		
7 3/4	47.60	0.625	125	14890	16100	17310	2420	12080	54430		
			55	13230	14300	15370	2150	10730	29920		
			80	13880	15000	16130	2250	11250	39510		
			90	14620	15800	16990	2370	11850	43350		
			95	14620	15800	16990	2370	11850	45270		
7 3/4	48.60	0.640	110	15540	16800	18060	2520	12600	51020		
			125	15540	16800	18060	2520	12600	56780		
			55	14430	15600	16770	2340	11700	30640		
			80	15080	16300	17520	2450	12230	40450		
			90	15820	17100	18380	2570	12830	44370		
8 5/8	32.00	0.352	95	15820	17100	18380	2570	12830	46340		
			110	16650	18000	19350	2700	13500	52220		
			125	16650	18000	19350	2700	13500	58110		
			55	6660	7200	7740	1080	5400	15620		
			80	7490	8100	8710	1220	6080	20740		
8 5/8	36.00	0.400	90	7960	8600	9250	1290	6450	22800		
			95	7960	8600	9250	1290	6450	23820		
			110	8420	9100	9780	1370	6830	26900		
			125	8420	9100	9780	1370	6830	29970		
			55	7490	8100	8710	1220	6080	20760		
8 5/8	36.00	0.400	80	8330	9000	9680	1350	6750	27740		
			90	8790	9500	10210	1430	7130	30520		
			95	8790	9500	10210	1430	7130	31920		
			110	9250	10000	10750	1500	7500	36100		
			125	9250	10000	10750	1500	7500	40280		

8 5/8" TO 10 3/4"

SIZE (OD)	NOMINAL WEIGHT	WALL THICKNESS	SMYS OF STEEL GRADE	MAKE UP TORQUE			SHOULDER TORQUE		YIELD TORQUE			
				Minimum	Optimum	Maximum	Minimum	Maximum				
in	lb/ft	in	ksi	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb			
8 5/8	40.00	0.450	55	8700	9400	10110	1410	7050	21050			
			80	9620	10400	11180	1560	7800	28020			
			90	10080	10900	11720	1640	8180	30810			
			95	10080	10900	11720	1640	8180	32200			
			110	10550	11400	12260	1710	8550	36380			
	44.00	0.500	125	10550	11400	12260	1710	8550	40560			
			55	9530	10300	11070	1550	7730	21300			
			80	10640	11500	12360	1730	8630	28270			
			90	11100	12000	12900	1800	9000	31060			
			95	11100	12000	12900	1800	9000	32450			
	49.00	0.557	110	11660	12600	13550	1890	9450	36630			
			125	11660	12600	13550	1890	9450	40820			
			55	10180	11000	11830	1650	8250	21560			
			80	11290	12200	13120	1830	9150	28530			
			90	11840	12800	13760	1920	9600	31320			
			95	11840	12800	13760	1920	9600	32710			
			110	12490	13500	14510	2030	10130	36890			
			125	12490	13500	14510	2030	10130	41080			
			9 5/8	36.00	0.352	55	7310	7900	8490	1190	5930	18530
						80	8330	9000	9680	1350	6750	24900
90	8790	9500				10210	1430	7130	27440			
95	8790	9500				10210	1430	7130	28720			
110	9250	10000				10750	1500	7500	32540			
40.00	0.395	125	9250	10000	10750	1500	7500	36360				
		55	8330	9000	9680	1350	6750	24770				
		80	9340	10100	10860	1520	7580	33480				
		90	9810	10600	11400	1590	7950	36960				
		95	9810	10600	11400	1590	7950	38700				
43.50	0.435	110	10270	11100	11930	1670	8330	43920				
		125	10270	11100	11930	1670	8330	49140				
		55	9440	10200	10970	1530	7650	25020				
		80	10550	11400	12260	1710	8550	33720				
		90	11100	12000	12900	1800	9000	37200				
47.00	0.472	95	11100	12000	12900	1800	9000	38940				
		110	11660	12600	13550	1890	9450	44160				
		125	11660	12600	13550	1890	9450	49390				
		55	10180	11000	11830	1650	8250	25220				
		80	11290	12200	13120	1830	9150	33930				
53.50	0.545	90	11840	12800	13760	1920	9600	37410				
		95	11840	12800	13760	1920	9600	39150				
		110	12490	13500	14510	2030	10130	44370				
		125	12490	13500	14510	2030	10130	49590				
		55	11190	12100	13010	1820	9080	32210				
58.40	0.595	80	12400	13400	14410	2010	10050	43090				
		90	12860	13900	14940	2090	10430	47440				
		95	12860	13900	14940	2090	10430	49620				
		110	13510	14600	15700	2190	10950	56150				
		125	13510	14600	15700	2190	10950	62680				
64.90	0.672	55	11750	12700	13650	1910	9530	25800				
		80	12950	14000	15050	2100	10500	34510				
		90	13410	14500	15590	2180	10880	37990				
		95	13410	14500	15590	2180	10880	39730				
		110	14060	15200	16340	2280	11400	44950				
9 7/8	62.80	0.625	125	14060	15200	16340	2280	11400	50170			
			55	12490	13500	14510	2030	10130	29700			
			80	13690	14800	15910	2220	11100	39780			
			90	14150	15300	16450	2300	11480	43820			
			95	14150	15300	16450	2300	11480	45830			
			110	14800	16000	17200	2400	12000	51880			
			125	14800	16000	17200	2400	12000	57930			

SIZE (OD)	NOMINAL WEIGHT	WALL THICKNESS	SMYS OF STEEL GRADE	MAKE UP TORQUE			SHOULDER TORQUE		YIELD TORQUE
				Minimum	Optimum	Maximum	Minimum	Maximum	
in	lb/ft	in	ksi	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb
<b>9 7/8</b>	62.80	0.625	90	13510	14600	15700	2190	10950	41730
			95	13510	14600	15700	2190	10950	43660
			110	14060	15200	16340	2280	11400	49460
			125	14060	15200	16340	2280	11400	55260
	67.30	0.668	55	12210	13200	14190	1980	9900	31720
			80	12950	14000	15050	2100	10500	42540
			90	13510	14600	15700	2190	10950	46870
			95	13510	14600	15700	2190	10950	49040
	68.80	0.700	110	14060	15200	16340	2280	11400	55530
			125	14060	15200	16340	2280	11400	62030
			55	12210	13200	14190	1980	9900	31840
			80	12950	14000	15050	2100	10500	42670
70.40	0.707	90	13510	14600	15700	2190	10950	47000	
		95	13510	14600	15700	2190	10950	49170	
		110	14060	15200	16340	2280	11400	55660	
		125	14060	15200	16340	2280	11400	62160	
72.10	0.725	55	12210	13200	14190	1980	9900	31870	
		80	12950	14000	15050	2100	10500	42700	
		90	13510	14600	15700	2190	10950	47030	
		95	13510	14600	15700	2190	10950	49190	
72.10	0.725	110	14060	15200	16340	2280	11400	55690	
		125	14060	15200	16340	2280	11400	62190	
		55	12210	13200	14190	1980	9900	31940	
		80	12950	14000	15050	2100	10500	42770	
72.10	0.725	90	13510	14600	15700	2190	10950	47100	
		95	13510	14600	15700	2190	10950	49260	
		110	14060	15200	16340	2280	11400	55760	
		125	14060	15200	16340	2280	11400	62250	
<b>10 3/4</b>	40.50	0.350	55	7590	8200	8820	1230	6150	21820
			80	8700	9400	10110	1410	7050	29610
			90	9340	10100	10860	1520	7580	32720
			95	9340	10100	10860	1520	7580	34280
	45.50	0.400	110	10080	10900	11720	1640	8180	38960
			125	10080	10900	11720	1640	8180	43630
			55	8790	9500	10210	1430	7130	31000
			80	9810	10600	11400	1590	7950	42340
	51.00	0.450	90	10450	11300	12150	1700	8480	46880
			95	10450	11300	12150	1700	8480	49150
			110	11290	12200	13120	1830	9150	55950
			125	11290	12200	13120	1830	9150	62750
55.50	0.495	55	9710	10500	11290	1580	7880	31330	
		80	10730	11600	12470	1740	8700	42670	
		90	11380	12300	13220	1850	9230	47200	
		95	11380	12300	13220	1850	9230	49470	
60.70	0.545	110	12210	13200	14190	1980	9900	56270	
		125	12210	13200	14190	1980	9900	63080	
		55	10640	11500	12360	1730	8630	31560	
		80	11660	12600	13550	1890	9450	42900	
65.70	0.595	90	12300	13300	14300	2000	9980	47440	
		95	12300	13300	14300	2000	9980	49710	
		110	13140	14200	15270	2130	10650	56510	
		125	13140	14200	15270	2130	10650	63320	
65.70	0.595	55	11560	12500	13440	1880	9380	31820	
		80	12580	13600	14620	2040	10200	43160	
		90	13230	14300	15370	2150	10730	47690	
		95	13230	14300	15370	2150	10730	49960	
65.70	0.595	110	14060	15200	16340	2280	11400	56770	
		125	14060	15200	16340	2280	11400	63570	
		55	12490	13500	14510	2030	10130	32050	
		80	13510	14600	15700	2190	10950	43390	
65.70	0.595	90	14150	15300	16450	2300	11480	47920	
		95	14150	15300	16450	2300	11480	50190	

# 10 3/4" TO 14"

SIZE (OD)	NOMINAL WEIGHT	WALL THICKNESS	SMYS OF STEEL GRADE	MAKE UP TORQUE			SHOULDER TORQUE		YIELD TORQUE		
				Minimum	Optimum	Maximum	Minimum	Maximum			
in	lb/ft	in	ksi	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb		
<b>10 3/4</b>	65.70	0.595	110	14800	16000	17200	2400	12000	57000		
			125	14800	16000	17200	2400	12000	63800		
			73.20	0.672	55	13320	14400	15480	2160	10800	46000
					80	14340	15500	16660	2330	11630	62640
					90	15080	16300	17520	2450	12230	69290
					95	15080	16300	17520	2450	12230	72620
	76.60	0.700	110	15730	17000	18280	2550	12750	82600		
			125	15730	17000	18280	2550	12750	92580		
			54.00	0.435	55	13320	14400	15480	2160	10800	46100
					80	14340	15500	16660	2330	11630	62740
					90	15080	16300	17520	2450	12230	69400
					95	15080	16300	17520	2450	12230	72720
110	15730	17000			18280	2550	12750	82710			
125	15730	17000	18280	2550	12750	92690					
<b>11 3/4</b>	47.00	0.375	55	8510	9200	9890	1380	6900	30600		
			80	9160	9900	10640	1490	7430	41990		
			90	9990	10800	11610	1620	8100	46550		
			95	9990	10800	11610	1620	8100	48820		
			110	10820	11700	12580	1760	8780	55660		
			125	10820	11700	12580	1760	8780	62490		
	54.00	0.435	55	9620	10400	11180	1560	7800	40450		
			80	10360	11200	12040	1680	8400	55660		
			90	11290	12200	13120	1830	9150	61750		
			95	11290	12200	13120	1830	9150	64790		
			110	12120	13100	14080	1970	9830	73910		
			125	12120	13100	14080	1970	9830	83040		
60.00	0.489	55	10730	11600	12470	1740	8700	44340			
		80	11470	12400	13330	1860	9300	60970			
		90	12400	13400	14410	2010	10050	67630			
		95	12400	13400	14410	2010	10050	70950			
		110	13320	14400	15480	2160	10800	80930			
		125	13320	14400	15480	2160	10800	90910			
<b>13 3/8</b>	54.50	0.380	55	8790	9500	10210	1430	7130	38740		
			80	9530	10300	11070	1550	7730	53650		
			90	10360	11200	12040	1680	8400	59610		
			95	10360	11200	12040	1680	8400	62590		
			110	11290	12200	13120	1830	9150	71540		
			125	11290	12200	13120	1830	9150	80490		
	61.00	0.430	55	9990	10800	11610	1620	8100	52620		
			80	10730	11600	12470	1740	8700	73120		
			90	11560	12500	13440	1880	9380	81310		
			95	11560	12500	13440	1880	9380	85410		
			110	12490	13500	14510	2030	10130	97710		
			125	12490	13500	14510	2030	10130	110000		
68.00	0.480	55	11100	12000	12900	1800	9000	52950			
		80	11840	12800	13760	1920	9600	73440			
		90	12770	13800	14840	2070	10350	81640			
		95	12770	13800	14840	2070	10350	85740			
		110	13690	14800	15910	2220	11100	98030			
		125	13690	14800	15910	2220	11100	110330			
72.00	0.514	55	12210	13200	14190	1980	9900	53150			
		80	12950	14000	15050	2100	10500	73640			
		90	13880	15000	16130	2250	11250	81840			
		95	13880	15000	16130	2250	11250	85940			
		110	14800	16000	17200	2400	12000	98230			
		125	14800	16000	17200	2400	12000	110530			
<b>13 1/2</b>	80.40	0.576	55	12210	13200	14190	1980	9900	67800		
			80	12950	14000	15050	2100	10500	93560		
			90	13880	15000	16130	2250	11250	103860		
			95	13880	15000	16130	2250	11250	109010		
			110	14800	16000	17200	2400	12000	124470		
			125	14800	16000	17200	2400	12000	139920		

SIZE (OD)	NOMINAL WEIGHT	WALL THICKNESS	SMYS OF STEEL GRADE	MAKE UP TORQUE			SHOULDER TORQUE		YIELD TORQUE
				Minimum	Optimum	Maximum	Minimum	Maximum	
in	lb/ft	in	ksi	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb	ft.lb
<b>13 5/8</b>	88.20	0.625	55	12300	13300	14300	2000	9980	69210
			80	13040	14100	15160	2120	10580	95470
			90	14060	15200	16340	2280	11400	105970
			95	14060	15200	16340	2280	11400	111230
			110	14990	16200	17420	2430	12150	126990
			125	14990	16200	17420	2430	12150	142740
<b>14</b>	82.50	0.562	55	12210	13200	14190	1980	9900	68510
			80	12670	13700	14730	2060	10280	93180
			90	13140	14200	15270	2130	10650	103050
			95	13140	14200	15270	2130	10650	107990
			110	13600	14700	15800	2210	11030	122790
			125	13600	14700	15800	2210	11030	137590
	94.80	0.656	55	12950	14000	15050	2100	10500	86900
			80	13410	14500	15590	2180	10880	118370
			90	13880	15000	16130	2250	11250	130960
			95	13880	15000	16130	2250	11250	137250
			110	14430	15600	16770	2340	11700	156130
			125	14430	15600	16770	2340	11700	175010
	99.30	0.688	55	13410	14500	15590	2180	10880	87150
			80	13880	15000	16130	2250	11250	118620
			90	14430	15600	16770	2340	11700	131210
			95	14430	15600	16770	2340	11700	137500
			110	14990	16200	17420	2430	12150	156380
			125	14990	16200	17420	2430	12150	175270
	110.00	0.772	55	13880	15000	16130	2250	11250	96420
			80	14250	15400	16560	2310	11550	131190
			90	14990	16200	17420	2430	12150	145100
			95	14990	16200	17420	2430	12150	152060
			110	15730	17000	18280	2550	12750	172920
			125	15730	17000	18280	2550	12750	193780
111.00	0.779	55	13880	15000	16130	2250	11250	96470	
		80	14250	15400	16560	2310	11550	131240	
		90	14990	16200	17420	2430	12150	145150	
		95	14990	16200	17420	2430	12150	152100	
		110	15730	17000	18280	2550	12750	172960	
		125	15730	17000	18280	2550	12750	193830	

- SMYS: Specified Minimum Yield Strength.
- An appropriate safety factor should be applied to these yield torque values.







# Tenaris Hydril

For further information on our connections, please visit our website and find:

- Running Manual (general guidelines on handling and care of connections and well installation recommendations)
- Premium Connections Performance Data (connections performance, torque values, geometries and pipe body data)
- Blanking Dimensions
- Threading & Repair Shops locations

For technical assistance, please contact [premiumconnections@tenaris.com](mailto:premiumconnections@tenaris.com)