



1 - SCOPE OF APPLICATION

This specification, complementary to TSLI 440 "Horizontal make - up of VAM connections", gives specific instructions for make - up and make – up torque values for DINO VAM connections.

The tolerances on torque are +/- 10% of optimum for the mill sides; and +/- 15% of optimum for the field sides and for the accessories.

The mill side torque is to used when the make-up is limited by the contact on make-up-arrestor and the field side torque is used when the make-up is limited by the pipe and itself.

If requested torque values are missing on this TSLI, please contact VAM Services.

2 - DOPE APPLICATION

For DINO VAM , 100% of dope quantity on box is acceptable only for the mill end.

3 - DOPE QUANTITY

MINIMUM DOPE QUANTITY FOR MAKE - UP
--

Nominal O.D.	Dope volume	
	(cm ³)	(in ³)
(in.)		
9 5/8	41	2.5
9 3/4	42	2.5
9 7/8	43	2.6
10 3/4	46	2.8
11 3/4	59	3.6
11 7/8	60	3.6
13 3/8	67	4.1
13 5/8	67	4.1
14	70	4.3
16	87	5.4

The weight of dope to apply on a connection depends of the specific gravity of the used dope. For example, the make – up dope quantity in 9 5/8" DINO VAM will be :

*41*1.67=68g with a dope having a gravity of 1.67 g/cm³ and 2.5*1.00=2.5 oz with a dope having a gravity of 1.00 oz/in³*

Make-up torques

SIZE (OD)	NOMI- NAL WEIGHT	WALL THICK- NESS	55-65 ksi			Field side & accessories		
			min.	Mill side opti	max.	min.	opti	max.
in. mm	lb/ft	in. mm	ft.lb. N.m					
9 5/8" 244.48	36.00	0.352	4690	5210	5730	4240	4990	5740
		8.94	6400	7100	7800	5750	6800	7850
	40.00	0.395	4950	5500	6050	5780	6800	7820
		10.03	6700	7500	8300	7850	9200	10550
	43.50	0.435	6120	6800	7480	7400	8700	10000
		11.05	8300	9200	10100	10000	11800	13600
	47.00	0.472	6320	7020	7720	8650	10150	11650
		11.99	8500	9500	10500	11600	13700	15800
	53.50	0.545	6510	7230	7950	11050	13000	14950
		13.84	8800	9800	10800	15000	17700	20400
	58.40	0.595	7150	7950	8750	12600	14850	17100
		15.11	9700	10800	11900	17100	20100	23100
	59.40	0.609	6840	7600	8360	10450	12300	14150
		15.47	9300	10300	11300	14150	16700	19250
61.10	0.625	7150	7950	8750	10750	12650	14550	
	15.88	9700	10800	11900	14650	17200	19750	
64.90	0.672	7830	8700	9570	12300	14450	16600	
	17.07	10600	11800	13000	16600	19600	22600	
70.30	0.734	8150	9050	9950	14450	17000	19550	
	18.64	11100	12300	13500	19550	23000	26450	
71.80	0.750	8150	9050	9950	14750	17350	19950	
	19.05	11100	12300	13500	19900	23500	27100	
9 3/4" 247.65	59.20	0.595	6840	7600	8360	10750	12650	14550
		15.11	9300	10300	11300	14650	17200	19750
	60.20	0.609	7150	7950	8750	11050	13000	14950
		15.47	9700	10800	11900	15000	17700	20400
9 7/8" 250.83	62.80	0.625	7470	8300	9130	11700	13750	15800
		15.88	10200	11300	12400	15750	18600	21450
	66.40	0.661	7830	8700	9570	12900	15200	17500
		16.79	10600	11800	13000	17450	20600	23750
	67.50	0.678	7830	8700	9570	13200	15550	17900
		17.22	10600	11800	13000	17950	21100	24250
68.90	0.700	7830	8700	9570	14150	16650	19150	
	17.78	10600	11800	13000	19150	22600	26050	
70.50	0.720	7830	8700	9570	14750	17350	19950	
	18.29	10600	11800	13000	19900	23500	27100	
10 3/4" 273.05	40.50	0.350	5860	6510	7160	4610	5420	6230
		8.89	7900	8800	9700	6350	7400	8450
	45.50	0.400	6510	7230	7950	7050	8300	9550
		10.16	8800	9800	10800	9650	11300	12950
	51.00	0.450	7150	7950	8750	9200	10850	12500
		11.43	9700	10800	11900	12450	14700	16950
	55.50	0.495	7830	8700	9570	11050	13000	14950
		12.57	10600	11800	13000	15000	17700	20400
	60.70	0.545	8450	9400	10350	13200	15550	17900
		13.84	11400	12700	14000	17950	21100	24250
	65.70	0.595	8750	9750	10750	15400	18100	20800
		15.11	11900	13200	14500	20750	24500	28250
	66.15	0.611	9150	10150	11150	12300	14450	16600
		15.52	12300	13700	15100	16600	19600	22600
73.20	0.672	9450	10500	11550	14750	17350	19950	
	17.07	12800	14200	15600	19900	23500	27100	
76.10	0.709	9850	10850	11850	16300	19150	22000	
	18.01	13200	14700	16200	22100	26000	29900	
79.20	0.734	10100	11200	12300	17200	20250	23300	
	18.64	13700	15200	16700	23300	27500	31700	

Make-up torques

SIZE (OD)	NOMI- NAL WEIGHT	WALL THICK- NESS	55-65 ksi					
			Mill side			Field side & accessories		
in. mm	lb/ft.	in. mm	min.	opti.	max.	min.	opti.	max.
			ft.lb. N.m.					
11 3/4" 298.45	47.00	0.375	6840	7600	8360	7700	9050	10400
		9.53	9300	10300	11300	10500	12300	14100
	54.00	0.435	7150	7950	8750	10750	12650	14550
		11.05	9700	10800	11900	14650	17200	19750
	60.00	0.489	7830	8700	9570	9500	11200	12900
		12.42	10600	11800	13000	12950	15200	17450
	65.00	0.534	9150	10150	11150	12000	14100	16200
71.00		13.56	12300	13700	15100	16250	19100	21950
		0.582	9850	10850	11850	14150	16650	19150
		14.78	13200	14700	16200	19150	22600	26050
	71.80	0.582	9850	10850	11850	14150	16650	19150
		14.78	13200	14700	16200	19150	22600	26050
13 3/8" 339.73	54.50	0.380	8750	9750	10750	9500	11200	12900
		9.65	11900	13200	14500	12950	15200	17450
	61.00	0.430	9150	10150	11150	12900	15200	17500
		10.92	12300	13700	15100	17450	20600	23750
	68.00	0.480	9450	10500	11550	16000	18800	21600
		12.19	12800	14200	15600	21600	25500	29400
	72.00	0.514	10100	11200	12300	18450	21700	24950
		13.06	13700	15200	16700	25050	29400	33750
	77.00	0.550	10450	11550	12650	15400	18100	20800
		13.97	14100	15700	17300	20750	24500	28250
	80.70	0.580	11700	13000	14300	17500	20600	23700
		14.73	15900	17700	19500	23700	27900	32100
	85.00	0.608	12100	13400	14700	18450	21700	24950
		15.44	16300	18100	19900	25050	29400	33750
	86.00	0.625	12450	13750	15050	18450	21700	24950
	15.88	16700	18600	20500	25050	29400	33750	
13 5/8" 346.08	88.20	0.625	12450	13750	15050	18450	21700	24950
		15.88	16700	18600	20500	25050	29400	33750

Make-up torques

SIZE (OD)	NOMI- NAL WEIGHT	WALL THICK- NESS	55-65 ksi					
			Mill side			Field side & accessories		
			min.	opti	max.	min.	opti	max.
in. mm	lb/ft	in. mm	ft.lb. N.m.					
13 5/8" 346.08	88.20	0.625	12450	13750	15050	18450	21700	24950
		15.88	16700	18600	20500	25050	29400	33750
14" 355.60	82.50	0.562	13700	15200	16700	13800	16250	18700
		14.27	18500	20600	22700	18800	22100	25400
	86.00	0.600	14300	15900	17500	16600	19550	22500
		15.24	19400	21600	23800	22450	26500	30550
	93.00	0.650	15000	16650	18300	18450	21700	24950
		16.51	20300	22600	24900	25050	29400	33750
	94.80	0.656	15600	17350	19100	18450	21700	24950
		16.66	21100	23500	25900	25050	29400	33750
	99.00	0.688	16300	18100	19900	18450	21700	24950
		17.48	22000	24500	27000	25050	29400	33750
	100.00	0.700	16600	18450	20300	18450	21700	24950
		17.78	22500	25000	27500	25050	29400	33750
106.00	0.750	16900	18800	20700	18450	21700	24950	
	19.05	22900	25500	28100	25050	29400	33750	
114.00	0.800	16900	18800	20700	18450	21700	24950	
	20.32	22900	25500	28100	25050	29400	33750	
16" 406.40	65.00	0.375	12450	13750	15050	10750	12650	14550
		9.53	16700	18600	20500	14650	17200	19750
	75.00	0.438	13000	14450	15900	16600	19550	22500
		11.13	17600	19600	21600	22450	26500	30550
	84.00	0.495	13700	15200	16700	18450	21700	24950
		12.57	18500	20600	22700	25050	29400	33750
	84.80	0.500	14000	15550	17100	18450	21700	24950
		12.70	19000	21100	23200	25050	29400	33750
	94.50	0.562	16900	18800	20700	15700	18450	21200
		14.27	22900	25500	28100	21250	25000	28750
	97.00	0.575	19550	21700	23850	18450	21700	24950
		14.61	26500	29400	32300	25050	29400	33750
104.00	0.625	17600	19550	21500	18450	21700	24950	
	15.88	23800	26500	29200	25050	29400	33750	
109.00	0.656	18900	21000	23100	18450	21700	24950	
	16.66	25600	28400	31200	25050	29400	33750	
128.00	0.781	19550	21700	23850	18450	21700	24950	
	19.84	26500	29400	32300	25050	29400	33750	

Make-up torques

SIZE (OD)	NOMI- NAL WEIGHT	WALL THICK- NESS	75-80-85 ksi					
			min.	Mill side opti.	max.	Field side & accessories		
In. mm	lb/ft	in. mm	ft.lb. N.m.					
9 5/8" 244.48	36.00	0.352 8.94	6060	6730	7400	5590	6580	7570
	40.00	0.395 10.03	8200	9100	10000	7550	8900	10250
		0.435 11.05	6510	7230	7950	7700	9050	10400
	43.50	0.472 11.99	8800	9800	10800	10500	12300	14100
		0.545 13.84	6840	7600	8360	9800	11550	13300
	47.00	0.595 15.11	9300	10300	11300	13300	15700	18100
		0.609 15.47	6840	7600	8360	11700	13750	15800
	53.50	0.625 15.88	9300	10300	11300	15750	18600	21450
		0.672 17.07	7470	8300	9130	15400	18100	20800
	58.40	0.734 18.64	10200	11300	12400	20750	24500	28250
		0.750 19.05	7830	8700	9570	17850	21000	24150
	59.40	0.750 19.05	10600	11800	13000	24200	28400	32600
		0.609 15.47	8450	9400	10350	14150	16650	19150
	61.10	0.625 15.88	11400	12700	14000	19150	22600	26050
		0.672 17.07	8750	9750	10750	14750	17350	19950
64.90	0.672 17.07	11900	13200	14500	19900	23500	27100	
	0.734 18.64	9150	10150	11150	16900	19900	22900	
70.30	0.734 18.64	12300	13700	15100	22950	27000	31050	
	0.750 19.05	9450	10500	11550	18450	21700	24950	
71.80	0.750 19.05	12800	14200	15600	25050	29400	33750	
	0.750 19.05	9850	10850	11850	18450	21700	24950	
9 3/4" 247.65	59.20	0.595 15.11	7470	8300	9130	14750	17350	19950
	60.20	0.609 15.47	10200	11300	12400	19900	23500	27100
62.80		0.609 15.47	7830	8700	9570	15400	18100	20800
	66.40	0.625 15.88	10600	11800	13000	20750	24500	28250
67.50		0.661 16.79	8750	9750	10750	15700	18450	21200
	68.90	0.661 16.79	11900	13200	14500	21250	25000	28750
70.50		0.678 17.22	9150	10150	11150	17500	20600	23700
	70.50	0.678 17.22	12300	13700	15100	23700	27900	32100
73.20		0.700 17.78	9450	10500	11550	18450	21700	24950
	73.20	0.700 17.78	12800	14200	15600	25050	29400	33750
76.10		0.720 18.29	9450	10500	11550	18450	21700	24950
	76.10	0.720 18.29	12800	14200	15600	25050	29400	33750
79.20		0.720 18.29	9850	10850	11850	18450	21700	24950
	79.20	0.720 18.29	13200	14700	16200	25050	29400	33750
10 3/4" 273.05		40.50	0.350 8.89	7470	8300	9130	6090	7160
	45.50	0.400 10.16	10200	11300	12400	8200	9700	11200
		0.450 11.43	8150	9050	9950	9200	10850	12500
	51.00	0.450 11.43	11100	12300	13500	12450	14700	16950
		0.495 12.57	8450	9400	10350	12300	14450	16600
	55.50	0.495 12.57	11400	12700	14000	16600	19600	22600
		0.545 13.84	9150	10150	11150	15050	17700	20350
	60.70	0.545 13.84	12300	13700	15100	20400	24000	27600
		0.595 15.11	9850	10850	11850	18150	21350	24550
	65.70	0.595 15.11	13200	14700	16200	24550	28900	33250
		0.611 15.52	10100	11200	12300	18450	21700	24950
	66.15	0.611 15.52	13700	15200	16700	25050	29400	33750
		0.672 17.07	10450	11550	12650	16300	19150	22000
	73.20	0.672 17.07	14100	15700	17300	22100	26000	29900
		0.709 18.01	11100	12300	13500	18450	21700	24950
76.10	0.709 18.01	15000	16700	18400	25050	29400	33750	
	0.734 18.64	11450	12650	13850	18450	21700	24950	
79.20	0.734 18.64	15500	17200	18900	25050	29400	33750	
	0.734 18.64	11700	13000	14300	18450	21700	24950	
79.20	0.734 18.64	15900	17700	19500	25050	29400	33750	

Make-up torques

SIZE (OD)	NOMI- NAL WEIGHT	WALL THICK- NESS	75-80-85 ksi			Field side & accessories			
			min.	Mill side opti	max.	min.	opti	max.	
in. mm	lb/ft	in. mm	ff.lb. N.m.						
11 3/4" 298.45	47.00	0.375	8750	9750	10750	10450	12300	14150	
		9.53	11900	13200	14500	14150	16700	19250	
	54.00	0.435	9150	10150	11150	15050	17700	20350	
		11.05	12300	13700	15100	20400	24000	27600	
	60.00	0.489	9850	10850	11850	12900	15200	17500	
		12.42	13200	14700	16200	17450	20600	23750	
65.00	0.534	10450	11550	12650	16300	19150	22000		
		13.56	14100	15700	17300	22100	26000	29900	
	71.00	0.582	11100	12300	13500	18450	21700	24950	
		14.78	15000	16700	18400	25050	29400	33750	
	11 7/8" 301.63	71.80	0.582	11100	12300	13500	18450	21700	24950
		14.78	15000	16700	18400	25050	29400	33750	
13 3/8" 339.73	54.50	0.380	11450	12650	13850	12900	15200	17500	
		9.65	15500	17200	18900	17450	20600	23750	
	61.00	0.430	11700	13000	14300	17850	21000	24150	
		10.92	15900	17700	19500	24200	28400	32600	
	68.00	0.480	12100	13400	14700	18450	21700	24950	
		12.19	16300	18100	19900	25050	29400	33750	
	72.00	0.514	12450	13750	15050	18450	21700	24950	
		13.06	16700	18600	20500	25050	29400	33750	
	77.00	0.550	12700	14100	15500	18450	21700	24950	
		13.97	17200	19100	21000	25050	29400	33750	
	80.70	0.580	13000	14450	15900	18450	21700	24950	
		14.73	17600	19600	21600	25050	29400	33750	
	85.00	0.608	13350	14850	16350	18450	21700	24950	
		15.44	18100	20100	22100	25050	29400	33750	
86.00	0.625	13700	15200	16700	18450	21700	24950		
	15.88	18500	20600	22700	25050	29400	33750		
13 5/8" 346.08	88.20	0.625	13700	15200	16700	18450	21700	24950	
	15.88	18500	20600	22700	25050	29400	33750		

Make-up torques

SIZE (OD)	NOMI- NAL WEIGHT	WALL THICK- NESS	75-80-85 ksi					
			Mill side			Field side & accessories		
			min.	opti.	max.	min.	opti.	max.
in. mm	lb/ft	in. mm	ft.lb. N.m					
14" 355.60	82.50	0.562	15600	17350	19100	18150	21350	24550
		14.27	21100	23500	25900	24550	28900	33250
	86.00	0.600	16300	18100	19900	18450	21700	24950
		15.24	22000	24500	27000	25050	29400	33750
	93.00	0.650	16900	18800	20700	18450	21700	24950
		16.51	22900	25500	28100	25050	29400	33750
	94.80	0.656	17600	19550	21500	18450	21700	24950
		16.66	23800	26500	29200	25050	29400	33750
	99.00	0.688	18200	20250	22300	18450	21700	24950
		17.48	24700	27500	30300	25050	29400	33750
	100.00	0.700	18900	21000	23100	18450	21700	24950
		17.78	25600	28400	31200	25050	29400	33750
106.00	0.750	19550	21700	23850	18450	21700	24950	
	19.05	26500	29400	32300	25050	29400	33750	
114.00	0.800	19550	21700	23850	18450	21700	24950	
	20.32	26500	29400	32300	25050	29400	33750	
16" 406.40	65.00	0.375	15600	17350	19100	14450	17000	19550
		9.53	21100	23500	25900	19550	23000	26450
	75.00	0.438	16300	18100	19900	18450	21700	24950
		11.13	22000	24500	27000	25050	29400	33750
	84.00	0.495	16900	18800	20700	18450	21700	24950
		12.57	22900	25500	28100	25050	29400	33750
	84.80	0.500	17250	19150	21050	18450	21700	24950
		12.70	23400	26000	28600	25050	29400	33750
	94.50	0.562	18900	21000	23100	18450	21700	24950
		14.27	25600	28400	31200	25050	29400	33750
	97.00	0.575	19550	21700	23850	18450	21700	24950
		14.61	26500	29400	32300	25050	29400	33750
	104.00	0.625	19550	21700	23850	18450	21700	24950
		15.88	26500	29400	32300	25050	29400	33750
	109.00	0.656	19550	21700	23850	18450	21700	24950
16.66		26500	29400	32300	25050	29400	33750	
128.00	0.781	19550	21700	23850	18450	21700	24950	
	19.84	26500	29400	32300	25050	29400	33750	

Make-up torques

SIZE (OD)	NOMI- NAL WEIGHT	WALL THICK- NESS	90-95-100 ksi					
			Mill side			Field side & accessories		
in.	lb/ft	in.	min.	opti	max.	min.	opti	max.
mm		mm	ft.lb. N.m.					
9 5/8" 244.48	36.00	0.352	6510	7230	7950	6460	7600	8740
		8.94	8800	9800	10800	8800	10300	11800
	40.00	0.395	6840	7600	8360	8900	10500	12100
		10.03	9300	10300	11300	12100	14200	16300
	43.50	0.435	7470	8300	9130	11400	13400	15400
		11.05	10200	11300	12400	15400	18100	20800
	47.00	0.472	7470	8300	9130	13500	15900	18300
		11.99	10200	11300	12400	18300	21600	24900
	53.50	0.545	7830	8700	9570	17850	21000	24150
		13.84	10600	11800	13000	24200	28400	32600
	58.40	0.595	8150	9050	9950	18450	21700	24950
		15.11	11100	12300	13500	25050	29400	33750
	59.40	0.609	8750	9750	10750	16300	19150	22000
		15.47	11900	13200	14500	22100	26000	29900
	61.10	0.625	9150	10150	11150	17200	20250	23300
	15.88	12300	13700	15100	23300	27500	31700	
64.90	0.672	9450	10500	11550	18450	21700	24950	
	17.07	12800	14200	15600	25050	29400	33750	
70.30	0.734	9850	10850	11850	18450	21700	24950	
	18.64	13200	14700	16200	25050	29400	33750	
71.80	0.750	10100	11200	12300	18450	21700	24950	
	19.05	13700	15200	16700	25050	29400	33750	
9 3/4" 247.65	59.20	0.595	8150	9050	9950	17200	20250	23300
		15.11	11100	12300	13500	23300	27500	31700
	60.20	0.609	8450	9400	10350	18150	21350	24550
	15.47	11400	12700	14000	24550	28900	33250	
9 7/8" 250.83	62.80	0.625	9150	10150	11150	18450	21700	24950
		15.88	12300	13700	15100	25050	29400	33750
	66.40	0.661	9450	10500	11550	18450	21700	24950
		16.79	12800	14200	15600	25050	29400	33750
	67.50	0.678	9850	10850	11850	18450	21700	24950
		17.22	13200	14700	16200	25050	29400	33750
	68.90	0.700	9850	10850	11850	18450	21700	24950
	17.78	13200	14700	16200	25050	29400	33750	
70.50	0.720	10100	11200	12300	18450	21700	24950	
	18.29	13700	15200	16700	25050	29400	33750	
10 3/4" 273.05	40.50	0.350	8450	9400	10350	6760	7950	9140
		8.89	11400	12700	14000	9150	10800	12450
	45.50	0.400	9150	10150	11150	10750	12650	14550
		10.16	12300	13700	15100	14650	17200	19750
	51.00	0.450	9450	10500	11550	14450	17000	19550
		11.43	12800	14200	15600	19550	23000	26450
	55.50	0.495	9850	10850	11850	17850	21000	24150
		12.57	13200	14700	16200	24200	28400	32600
	60.70	0.545	10100	11200	12300	18450	21700	24950
		13.84	13700	15200	16700	25050	29400	33750
	65.70	0.595	10450	11550	12650	18450	21700	24950
		15.11	14100	15700	17300	25050	29400	33750
	66.15	0.611	11100	12300	13500	18450	21700	24950
		15.52	15000	16700	18400	25050	29400	33750
	73.20	0.672	11700	13000	14300	18450	21700	24950
	17.07	15900	17700	19500	25050	29400	33750	
76.10	0.709	12100	13400	14700	18450	21700	24950	
	18.01	16300	18100	19900	25050	29400	33750	
79.20	0.734	12450	13750	15050	18450	21700	24950	
	18.64	16700	18600	20500	25050	29400	33750	

Make-up torques

SIZE (OD)	NOMI- NAL WEIGHT	WALL THICK- NESS	90-95-100 ksi					
			Mill side			Field side & accessories		
in. mm	lb/ft	in. mm	min.	opti.	max.	min.	opti.	max.
			ft. lb. N.m.					
11 3/4" 298.45	47.00	0.375	9850	10850	11850	12300	14450	16600
		9.53	13200	14700	16200	16600	19600	22600
	54.00	0.435	10450	11550	12650	17500	20600	23700
		11.05	14100	15700	17300	23700	27900	32100
	60.00	0.489	10850	11950	13050	14750	17350	19950
		12.42	14600	16200	17800	19900	23500	27100
65.00	0.534	11100	12300	13500	18450	21700	24950	
		13.56	15000	16700	18400	25050	29400	33750
	71.00	0.582	11700	13000	14300	18450	21700	24950
		14.78	15900	17700	19500	25050	29400	33750
11 7/8" 301.63	71.80	0.582	11700	13000	14300	18450	21700	24950
		14.78	15900	17700	19500	25050	29400	33750
13 3/8" 339.73	54.50	0.380	12700	14100	15500	14750	17350	19950
		9.65	17200	19100	21000	19900	23500	27100
	61.00	0.430	13000	14450	15900	18450	21700	24950
		10.92	17600	19600	21600	25050	29400	33750
	68.00	0.480	13350	14850	16350	18450	21700	24950
		12.19	18100	20100	22100	25050	29400	33750
	72.00	0.514	13700	15200	16700	18450	21700	24950
		13.06	18500	20600	22700	25050	29400	33750
	77.00	0.550	13700	15200	16700	18450	21700	24950
		13.97	18500	20600	22700	25050	29400	33750
	80.70	0.580	14000	15550	17100	18450	21700	24950
		14.73	19000	21100	23200	25050	29400	33750
	85.00	0.608	14300	15900	17500	18450	21700	24950
		15.44	19400	21600	23800	25050	29400	33750
86.00	0.625	14600	16250	17900	18450	21700	24950	
	15.88	19900	22100	24300	25050	29400	33750	
13 5/8" 346.08	88.20	0.625	14300	15900	17500	18450	21700	24950
		15.88	19400	21600	23800	25050	29400	33750

Make-up torques

SIZE (OD)	NOMI- NAL WEIGHT	WALL THICK- NESS	90-95-100 ksi			Field side & accessories		
			min.	Mill side opti	max.	min.	opti	max.
in. mm	lb/ft	in. mm	ft.lb. N.m.					
14" 355.60	82.50	0.562	16300	18100	19900	18450	21700	24950
		14.27	22000	24500	27000	25050	29400	33750
	86.00	0.600	16900	18800	20700	18450	21700	24950
		15.24	22900	25500	28100	25050	29400	33750
	93.00	0.650	17600	19550	21500	18450	21700	24950
		16.51	23800	26500	29200	25050	29400	33750
	94.80	0.656	18200	20250	22300	18450	21700	24950
		16.66	24700	27500	30300	25050	29400	33750
	99.00	0.688	18900	21000	23100	18450	21700	24950
		17.48	25600	28400	31200	25050	29400	33750
	100.00	0.700	19550	21700	23850	18450	21700	24950
		17.78	26500	29400	32300	25050	29400	33750
106.00	0.750	19550	21700	23850	18450	21700	24950	
	19.05	26500	29400	32300	25050	29400	33750	
114.00	0.800	19550	21700	23850	18450	21700	24950	
	20.32	26500	29400	32300	25050	29400	33750	
16" 406.40	65.00	0.375	17600	19550	21500	16600	19550	22500
		9.53	23800	26500	29200	22450	26500	30550
	75.00	0.438	18200	20250	22300	18450	21700	24950
		11.13	24700	27500	30300	25050	29400	33750
	84.00	0.495	18900	21000	23100	18450	21700	24950
		12.57	25600	28400	31200	25050	29400	33750
	84.80	0.500	19550	21700	23850	18450	21700	24950
		12.70	26500	29400	32300	25050	29400	33750
	94.50	0.562	19550	21700	23850	18450	21700	24950
		14.27	26500	29400	32300	25050	29400	33750
	97.00	0.575	19550	21700	23850	18450	21700	24950
		14.61	26500	29400	32300	25050	29400	33750
104.00	0.625	19550	21700	23850	18450	21700	24950	
	15.88	26500	29400	32300	25050	29400	33750	
109.00	0.656	19550	21700	23850	18450	21700	24950	
	16.66	26500	29400	32300	25050	29400	33750	
128.00	0.781	19550	21700	23850	18450	21700	24950	
	19.84	26500	29400	32300	25050	29400	33750	

Make-up torques

SIZE (OD)	NOMI- NAL WEIGHT	WALL THICK- NESS	105-110-115 ksi					
			min.	Mill side opti.	max.	Field side & accessories		
In. mm	lb/ft	in. mm	ft.lb. N.m.					
9 5/8" 244.48	36.00	0.352	7470	8300	9130	7050	8300	9550
		8.94	10200	11300	12400	9650	11300	12950
	40.00	0.395	7830	8700	9570	10150	11950	13750
		10.03	10600	11800	13000	13800	16200	18600
		0.435	8150	9050	9950	12900	15200	17500
	43.50	11.05	11100	12300	13500	17450	20600	23750
		0.472	8150	9050	9950	15700	18450	21200
	47.00	11.99	11100	12300	13500	21250	25000	28750
		0.545	8750	9750	10750	18450	21700	24950
	53.50	13.84	11900	13200	14500	25050	29400	33750
		0.595	9150	10150	11150	18450	21700	24950
	58.40	15.11	12300	13700	15100	25050	29400	33750
		0.609	9150	10150	11150	18450	21700	24950
	59.40	15.47	12300	13700	15100	25050	29400	33750
		0.625	9450	10500	11550	18450	21700	24950
61.10	15.88	12800	14200	15600	25050	29400	33750	
	0.672	9850	10850	11850	18450	21700	24950	
64.90	17.07	13200	14700	16200	25050	29400	33750	
	0.734	10100	11200	12300	18450	21700	24950	
70.30	18.64	13700	15200	16700	25050	29400	33750	
	0.750	10450	11550	12650	18450	21700	24950	
71.80	19.05	14100	15700	17300	25050	29400	33750	
	59.20	0.595	8750	9750	10750	18450	21700	24950
9 3/4" 247.65		15.11	11900	13200	14500	25050	29400	33750
	60.20	0.609	9150	10150	11150	18450	21700	24950
15.47		12300	13700	15100	25050	29400	33750	
62.80		0.625	9450	10500	11550	18450	21700	24950
	15.88	12800	14200	15600	25050	29400	33750	
9 7/8" 250.83	66.40	0.661	9850	10850	11850	18450	21700	24950
	16.79	13200	14700	16200	25050	29400	33750	
	0.678	10100	11200	12300	18450	21700	24950	
67.50	17.22	13700	15200	16700	25050	29400	33750	
	0.700	10100	11200	12300	18450	21700	24950	
68.90	17.78	13700	15200	16700	25050	29400	33750	
	0.720	10450	11550	12650	18450	21700	24950	
70.50	18.29	14100	15700	17300	25050	29400	33750	
	40.50	0.350	9450	10500	11550	7700	9050	10400
9 3/4" 273.05		8.89	12800	14200	15600	10500	12300	14100
	45.50	0.400	9850	10850	11850	12000	14100	16200
10.16		13200	14700	16200	16250	19100	21950	
51.00	0.450	10100	11200	12300	16300	19150	22000	
	11.43	13700	15200	16700	22100	26000	29900	
55.50	0.495	10450	11550	12650	18450	21700	24950	
	12.57	14100	15700	17300	25050	29400	33750	
60.70	0.545	11100	12300	13500	18450	21700	24950	
	13.84	15000	16700	18400	25050	29400	33750	
65.70	0.595	11700	13000	14300	18450	21700	24950	
	15.11	15900	17700	19500	25050	29400	33750	
66.15	0.611	11450	12650	13850	18450	21700	24950	
	15.52	15500	17200	18900	25050	29400	33750	
73.20	0.672	12100	13400	14700	18450	21700	24950	
	17.07	16300	18100	19900	25050	29400	33750	
76.10	0.709	12700	14100	15500	18450	21700	24950	
	18.01	17200	19100	21000	25050	29400	33750	
79.20	0.734	13000	14450	15900	18450	21700	24950	
	18.64	17600	19600	21600	25050	29400	33750	

Make-up torques

SIZE (OD)	NOMI- NAL WEIGHT	WALL THICK- NESS	105-110-115 ksi			Field side & accessories		
			min.	opti	max.	min.	opti	max.
in. mm	lb/ft	in. mm				ft.lb.		
						N.m.		
11 3/4" 298.45	47.00	0.375	11100	12300	13500	14150	16650	19150
		9.53	15000	16700	18400	19150	22600	26050
	54.00	0.435	11700	13000	14300	18450	21700	24950
		11.05	15900	17700	19500	25050	29400	33750
	60.00	0.489	11700	13000	14300	16900	19900	22900
		12.42	15900	17700	19500	22950	27000	31050
65.00	0.534	12450	13750	15050	18450	21700	24950	
	13.56	16700	18600	20500	25050	29400	33750	
71.00	0.582	13000	14450	15900	18450	21700	24950	
	14.78	17600	19600	21600	25050	29400	33750	
11 7/8" 301.63	71.80	0.582	12450	13750	15050	18450	21700	24950
		14.78	16700	18600	20500	25050	29400	33750
13 3/8" 339.73	54.50	0.380	14300	15900	17500	16900	19900	22900
		9.65	19400	21600	23800	22950	27000	31050
	61.00	0.430	15000	16650	18300	18450	21700	24950
		10.92	20300	22600	24900	25050	29400	33750
	68.00	0.480	15300	17000	18700	18450	21700	24950
		12.19	20700	23000	25300	25050	29400	33750
	72.00	0.514	15600	17350	19100	18450	21700	24950
		13.06	21100	23500	25900	25050	29400	33750
	77.00	0.550	15600	17350	19100	18450	21700	24950
		13.97	21100	23500	25900	25050	29400	33750
	80.70	0.580	15950	17700	19450	18450	21700	24950
		14.73	21600	24000	26400	25050	29400	33750
85.00	0.608	16300	18100	19900	18450	21700	24950	
	15.44	22000	24500	27000	25050	29400	33750	
86.00	0.625	16600	18450	20300	18450	21700	24950	
	15.88	22500	25000	27500	25050	29400	33750	
13 5/8" 346.08	88.20	0.625	16300	18100	19900	18450	21700	24950
		15.88	22000	24500	27000	25050	29400	33750

Make-up torques

SIZE (OD)	NOMI- NAL WEIGHT	WALL THICK- NESS	105-110-115 ksi					
			Mill side			Field side & accessories		
in. mm	lb/ft	in. mm	min.	opti.	max.	min.	opti.	max.
			ft.lb N.m.					
14" 355.60	82.50	0.562	17600	19550	21500	18450	21700	24950
		14.27	23800	26500	29200	25050	29400	33750
	86.00	0.600	18200	20250	22300	18450	21700	24950
		15.24	24700	27500	30300	25050	29400	33750
	93.00	0.650	18900	21000	23100	18450	21700	24950
		16.51	25600	28400	31200	25050	29400	33750
	94.80	0.656	19550	21700	23850	18450	21700	24950
		16.66	26500	29400	32300	25050	29400	33750
	99.00	0.688	19550	21700	23850	18450	21700	24950
		17.48	26500	29400	32300	25050	29400	33750
	100.00	0.700	19550	21700	23850	18450	21700	24950
		17.78	26500	29400	32300	25050	29400	33750
	106.00	0.750	19550	21700	23850	18450	21700	24950
		19.05	26500	29400	32300	25050	29400	33750
114.00	0.800	19550	21700	23850	18450	21700	24950	
	20.32	26500	29400	32300	25050	29400	33750	
16" 406.40	65.00	0.375	19550	21700	23850	18450	21700	24950
		9.53	26500	29400	32300	25050	29400	33750
	75.00	0.438	19550	21700	23850	18450	21700	24950
		11.13	26500	29400	32300	25050	29400	33750
	84.00	0.495	19550	21700	23850	18450	21700	24950
		12.57	26500	29400	32300	25050	29400	33750
	84.80	0.500	19550	21700	23850	18450	21700	24950
		12.70	26500	29400	32300	25050	29400	33750
	94.50	0.562	19550	21700	23850	18450	21700	24950
		14.27	26500	29400	32300	25050	29400	33750
	97.00	0.575	19550	21700	23850	18450	21700	24950
		14.61	26500	29400	32300	25050	29400	33750
	104.00	0.625	19550	21700	23850	18450	21700	24950
		15.88	26500	29400	32300	25050	29400	33750
109.00	0.656	19550	21700	23850	18450	21700	24950	
	16.66	26500	29400	32300	25050	29400	33750	
128.00	0.781	19550	21700	23850	18450	21700	24950	
	19.84	26500	29400	32300	25050	29400	33750	

Make-up torques

SIZE (OD)	NOMI- NAL WEIGHT	WALL THICK- NESS	120-125-130 ksi					
			Mill side			Field side & accessories		
in.	lb/ft	in.	min.	opti	max.	min.	opti	max.
mm		mm	ft.lb. N.m.					
9 5/8" 244.48	36.00	0.352	8450	9400	10350	8000	9400	10800
		8.94	11400	12700	14000	10750	12700	14650
	40.00	0.395	8750	9750	10750	11400	13400	15400
		10.03	11900	13200	14500	15400	18100	20800
	43.50	0.435	9150	10150	11150	14750	17350	19950
		11.05	12300	13700	15100	19900	23500	27100
	47.00	0.472	9150	10150	11150	17500	20600	23700
		11.99	12300	13700	15100	23700	27900	32100
	53.50	0.545	9450	10500	11550	18450	21700	24950
		13.84	12800	14200	15600	25050	29400	33750
	58.40	0.595	9850	10850	11850	18450	21700	24950
		15.11	13200	14700	16200	25050	29400	33750
	59.40	0.609	9450	10500	11550	18450	21700	24950
		15.47	12800	14200	15600	25050	29400	33750
61.10	0.625	9850	10850	11850	18450	21700	24950	
	15.88	13200	14700	16200	25050	29400	33750	
64.90	0.672	10100	11200	12300	18450	21700	24950	
	17.07	13700	15200	16700	25050	29400	33750	
70.30	0.734	10450	11550	12650	18450	21700	24950	
	18.64	14100	15700	17300	25050	29400	33750	
71.80	0.750	10850	11950	13050	18450	21700	24950	
	19.05	14600	16200	17800	25050	29400	33750	
9 3/4" 247.65	59.20	0.595	9450	10500	11550	18450	21700	24950
		15.11	12800	14200	15600	25050	29400	33750
	60.20	0.609	9850	10850	11850	18450	21700	24950
	15.47	13200	14700	16200	25050	29400	33750	
9 7/8" 250.83	62.80	0.625	10100	11200	12300	18450	21700	24950
		15.88	13700	15200	16700	25050	29400	33750
	66.40	0.661	10450	11550	12650	18450	21700	24950
		16.79	14100	15700	17300	25050	29400	33750
	67.50	0.678	10850	11950	13050	18450	21700	24950
		17.22	14600	16200	17800	25050	29400	33750
	68.90	0.700	10850	11950	13050	18450	21700	24950
	17.78	14600	16200	17800	25050	29400	33750	
70.50	0.720	11100	12300	13500	18450	21700	24950	
	18.29	15000	16700	18400	25050	29400	33750	
10 3/4" 273.05	40.50	0.350	10850	11950	13050	8650	10150	11650
		8.89	14600	16200	17800	11600	13700	15800
	45.50	0.400	11100	12300	13500	13500	15900	18300
		10.16	15000	16700	18400	18300	21600	24900
	51.00	0.450	11450	12650	13850	18450	21700	24950
		11.43	15500	17200	18900	25050	29400	33750
	55.50	0.495	11700	13000	14300	18450	21700	24950
		12.57	15900	17700	19500	25050	29400	33750
	60.70	0.545	12100	13400	14700	18450	21700	24950
		13.84	16300	18100	19900	25050	29400	33750
	65.70	0.595	12450	13750	15050	18450	21700	24950
		15.11	16700	18600	20500	25050	29400	33750
	66.15	0.611	12450	13750	15050	18450	21700	24950
		15.52	16700	18600	20500	25050	29400	33750
73.20	0.672	12700	14100	15500	18450	21700	24950	
	17.07	17200	19100	21000	25050	29400	33750	
76.10	0.709	13000	14450	15900	18450	21700	24950	
	18.01	17600	19600	21600	25050	29400	33750	
79.20	0.734	13700	15200	16700	18450	21700	24950	
	18.64	18500	20600	22700	25050	29400	33750	

Make-up torques

SIZE (OD)	NOMI- NAL WEIGHT	WALL THICK- NESS	120-125-130 ksi					
			Mill side			Field side & accessories		
			min.	opti.	max.	min.	opti.	max.
in. mm	lb/ft	in. mm	ft.lb. N.m					
11 3/4" 298.45	47.00	0.375	12450	13750	15050	15700	18450	21200
		9.53	16700	18600	20500	21250	25000	28750
	54.00	0.435	13000	14450	15900	18450	21700	24950
		11.05	17600	19600	21600	25050	29400	33750
	60.00	0.489	13000	14450	15900	18450	21700	24950
		12.42	17600	19600	21600	25050	29400	33750
65.00	0.534	13350	14850	16350	18450	21700	24950	
		13.56	18100	20100	22100	25050	29400	33750
		71.00	0.582	13700	15200	16700	18450	21700
	14.78	18500	20600	22700	25050	29400	33750	
11 7/8" 301.63	71.80	0.582	13700	15200	16700	18450	21700	24950
		14.78	18500	20600	22700	25050	29400	33750
13 3/8" 339.73	54.50	0.380	16300	18100	19900	18450	21700	24950
		9.65	22000	24500	27000	25050	29400	33750
	61.00	0.430	16600	18450	20300	18450	21700	24950
		10.92	22500	25000	27500	25050	29400	33750
	68.00	0.480	16900	18800	20700	18450	21700	24950
		12.19	22900	25500	28100	25050	29400	33750
	72.00	0.514	17250	19150	21050	18450	21700	24950
		13.06	23400	26000	28600	25050	29400	33750
	77.00	0.550	16900	18800	20700	18450	21700	24950
		13.97	22900	25500	28100	25050	29400	33750
	80.70	0.580	17250	19150	21050	18450	21700	24950
		14.73	23400	26000	28600	25050	29400	33750
	85.00	0.608	17600	19550	21500	18450	21700	24950
	15.44	23800	26500	29200	25050	29400	33750	
86.00	0.625	17900	19900	21900	18450	21700	24950	
	15.88	24300	27000	29700	25050	29400	33750	
13 5/8" 346.08	88.20	0.625	18200	20250	22300	18450	21700	24950
		15.88	24700	27500	30300	25050	29400	33750

Make-up torques

SIZE (OD)	NOMI- NAL WEIGHT	WALL THICK- NESS	120-125-130 ksi			Field side & accessories		
			min.	Mill side opti	max.	min.	opti	max.
in. mm	lb/ft	in. mm	ft.lb.			N.m.		
14" 355.60	82.50	0.562	19550	21700	23850	18450	21700	24950
		14.27	26500	29400	32300	25050	29400	33750
	86.00	0.600	19550	21700	23850	18450	21700	24950
		15.24	26500	29400	32300	25050	29400	33750
	93.00	0.650	19550	21700	23850	18450	21700	24950
		16.51	26500	29400	32300	25050	29400	33750
	94.80	0.656	19550	21700	23850	18450	21700	24950
		16.66	26500	29400	32300	25050	29400	33750
	99.00	0.688	19550	21700	23850	18450	21700	24950
		17.48	26500	29400	32300	25050	29400	33750
	100.00	0.700	19550	21700	23850	18450	21700	24950
		17.78	26500	29400	32300	25050	29400	33750
106.00	0.750	19550	21700	23850	18450	21700	24950	
	19.05	26500	29400	32300	25050	29400	33750	
114.00	0.800	19550	21700	23850	18450	21700	24950	
	20.32	26500	29400	32300	25050	29400	33750	
16" 406.40	65.00	0.375	19550	21700	23850	18450	21700	24950
		9.53	26500	29400	32300	25050	29400	33750
	75.00	0.438	19550	21700	23850	18450	21700	24950
		11.13	26500	29400	32300	25050	29400	33750
	84.00	0.495	19550	21700	23850	18450	21700	24950
		12.57	26500	29400	32300	25050	29400	33750
	84.80	0.500	19550	21700	23850	18450	21700	24950
		12.70	26500	29400	32300	25050	29400	33750
	94.50	0.562	19550	21700	23850	18450	21700	24950
		14.27	26500	29400	32300	25050	29400	33750
	97.00	0.575	19550	21700	23850	18450	21700	24950
		14.61	26500	29400	32300	25050	29400	33750
104.00	0.625	19550	21700	23850	18450	21700	24950	
	15.88	26500	29400	32300	25050	29400	33750	
109.00	0.656	19550	21700	23850	18450	21700	24950	
	16.66	26500	29400	32300	25050	29400	33750	
128.00	0.781	19550	21700	23850	18450	21700	24950	
	19.84	26500	29400	32300	25050	29400	33750	