



TABLE OF CONTENTS

Appendix

Bit and Casing Combinations Charts.....	AP-1a-b
Conversion Factors.....	AP-2
QT-700® Coiled Tubing Technical Data Charts.....	AP-3a-d
Temperature Conversion of Fahrenheit to Centigrade...	AP-4
API Casing - Bit Sizes and Clearances.....	AP-5
A.P.I. Ring Joint Flange Data.....	AP-6
Flange Reference Charts.....	AP-7a-k

Bit and Casing Combinations

Casing OD	Weight (lb/ft)	Casing ID	Casing Drift	Bit Size	Standard Bit Pin Thread
4-1/2	9.5	4.090	3.965	3-7/8	2-3/8 API Regular
	10.5	4.052	3.927	3-7/8	
	11.6	4.000	3.875	3-7/8	
	13.5	3.920	3.795	3-3/4	
5	11.5	4.560	4.435	4-1/4	2-3/8 API Regular
	13.0	4.494	4.369	4-1/4	
	15.0	4.408	4.283	4-1/4	
	18.0	4.276	4.151	4-1/8	
5-1/2	13.0	5.044	4.919	4-3/4	2-7/8 API Regular
	14.0	5.012	4.887	4-3/4	
	15.5	4.950	4.825	4-3/4	
	17.0	4.892	4.767	4-3/4	
	20.0	4.778	4.653	4-5/8	
	23.0	4.670	4.545	4-1/2	2-3/8 API Regular
	26.0	4.548	4.423	4-3/8	
6	15.0	5.524	5.399	5-3/8	3-1/2 API Regular
	18.0	5.424	5.299	5-1/8	
	20.0	5.352	5.227	5-1/8	
	23.0	5.240	5.115	5-1/8	
6-5/8	17.0	6.135	6.010	6	3-1/2 API Regular
	20.0	6.049	5.924	5-7/8	
	24.0	5.921	5.796	5-5/8	
	28.0	5.791	5.666	5-5/8	
	32.00	5.675	5.550	5-3/8	
7	17.0	6.538	6.413	6-1/4	3-1/2 API Regular
	20.0	6.456	6.331	6-1/4	
	23.0	6.366	6.241	6-1/4	
	26.0	6.276	6.151	6-1/8	
	29.0	6.184	6.059	6	
	32.0	6.094	5.969	6	
	35.0	6.004	5.879	5-7/8	
	38.0	5.920	5.795	5-3/4	
7-5/8	20.0	7.125	7.000	6-3/4	3-1/2 API Regular
	24.0	7.025	6.900	6-3/4	
	26.4	6.969	6.844	6-3/4	
	29.7	6.875	6.750	6-3/4	
	33.7	6.765	6.640	6-5/8	
	39.0	6.625	6.500	6-1/2	

Bit and Casing Combinations

Casing OD	Weight (lb/ft)	Casing ID	Casing Drift	Bit Size	Standard Bit Pin Thread
8-5/8	24.0	8.097	7.972	7-7/8	4-1/2 API Regular
	28.0	8.017	7.892	7-7/8	
	32.0	7.921	7.796	7-5/8	
	36.0	7.825	7.700	7-5/8	
	40.0	7.725	7.600	7-5/8	
	44.0	7.625	7.500	7-3/8	3-1/2 API Regular
	49.0	7.511	7.386	7-3/8	
	29.3	9.063	8.907	8-3/4	4-1/2 API Regular
	32.3	9.001	8.845	8-3/4	
	36.0	8.921	8.765	8-3/4	
9-5/8	40.0	8.835	8.679	8-5/8	
	43.5	8.755	8.599	8-5/8	
	47.0	8.681	8.525	8-1/2	
	53.5	8.535	8.379	8-3/8	
10-3/4	32.7	10.192	10.036	9-7/8	6-5/8 API Regular
	40.5	10.050	9.894	9-7/8	
	45.5	9.950	9.794	*9-3/4	
	51.0	9.850	9.694	*9-5/8	
	55.5	9.760	9.604	*9-5/8	
11-3/4	38.0	11.150	10.994	11	6-5/8 API Regular
	42.0	11.084	10.928	10-3/4	
	47.0	11.000	10.844	*10-3/4	
	54.0	10.880	10.724	*10-5/8	
	60.0	10.772	10.616	*10-5/8	
13-3/8	48.0	12.715	12.559	12-1/4	6-5/8 API Regular
	54.5	12.615	12.459	12-1/4	
	61.0	12.515	12.359	12-1/4	
	68.0	12.415	12.259	12-1/4	
	72.0	12.347	12.191	12	
16	55.0	15.375	15.188	15	6-5/8 API Regular
	65.0	15.250	15.062	15	
	75.0	15.125	14.938	14-3/4	
	84.0	15.010	14.822	14-3/4	
20	94.0	19.124	18.936	17-1/2	6-5/8 API Regular

*5-1/2 API Regular Thread optional

Conversion Factors

Multiply	By	To Obtain
Pounds of water/min.	.000267	Cubic ft./sec.
Pounds/foot	1.488	Kgs./meter
Pounds/gallon	0.1199	Grams/cubic cm.
Pounds/inch	178.6	Grams/cm.
Pounds/sq. foot	.01602	Feet of water
Pounds/sq. foot	.0004883	Kgs./sq. cm.
Pounds/sq. foot	.006945	Pounds/sq. inch
Pounds/sq. inch	.06804	Atmospheres
Pounds/sq. inch	2.307	Feet of water
Pounds/sq. inch	2.36	Inches of Mercury
Pounds/sq. inch	.07031	Kgs./sq. cm.
Quarts (dry)	67.20	Cubic inches
Quarts (liquid)	57.75	Cubic inches
Quarts (liquid)	.946	Liter
Quintal	.50802	CWT (hundred weight)
Quintal (Argentina)	101.28	Pounds
Quintal (Brazil)	129.54	Pounds
Quintal (Castile, Peru)	101.43	Pounds
Quintal (Chile)	101.41	Pounds
Quintal (Mexico)	101.47	Pounds
Quintal (metric)	220.46	Pounds
Rod	16.5	Feet
Rod	25.0	Links
Square centimeter	.1550	Square inch
Square foot	.0929	Square meter
Square foot	.1296	Square vara (Texas)
Square inch	6.452	Square centimeters
Square kilometer	.3861	Square mile
Square meter	10.76	Square feet
Square mile	2.590	Square kilometers
Square vara (Texas)	7.716	Square feet
Square mile	640.	Acre
Temp. (°C.) + 273	1.	Abs. temp. (°C.)
Temp. (°C.) + 17.78	1.8	Temp. (°F.)
Temp. (°F.) + 460	1.	Abs. temp. (°F.)
Temp. (°F.) - 32	.5555	Temp. (°C.)
Tons (long)	1,016.	Kilograms
Tons (long)	2,240.	Pounds
Tons (long)	1.12000	Tons (short)
Tons (metric)	1,000.	Kilograms
Tons (metric)	2,205.	Pounds

QT-700® Coiled Tubing Technical Data

QT-700® Coiled Tubing Technical Data
 Provided by Quality Tubing, Inc., Houston, Texas

Tube Dimensions (Inches)				Tube Area (Sq. In.)		Weight (Lb/Ft)	Load Capacity (Lbs)				Pressure Capacity (PSI)				Torque (Lb-Ft)		Internal Capacity Per 1000 Ft		Extrnl Displcmnt Per 1000 Ft	
O.D. Nom.	Wall Nom.	Wall Min.	I.D. Nom.	Wall Nom.	I.D. Nom.		Yield Min.	Ultimate Min.			Yield Min.	Test 80%	Burst Min.	Collapse Min.	Yield Nom.	Ultimate Nom.	Gals.	Bbls.	Gals.	Bbls.
1.000	0.080	0.075	0.840	0.231	0.554	0.786	16185	18497	10500	8400	13427	5152	329	438	28.79	0.690	40.80	0.971	40.80	0.971
1.000	0.087	0.082	0.826	0.250	0.536	0.848	17460	19960	11470	9100	14600	11120	306	408	27.84	0.663	40.80	0.971	40.80	0.971
1.000	0.095	0.090	0.810	0.270	0.515	0.918	18900	21600	12600	10000	16130	12030	326	435	26.77	0.637	40.80	0.971	40.80	0.971
1.000	0.102	0.097	0.796	0.288	0.498	0.978	20140	23020	13570	10800	17480	12820	343	457	25.85	0.616	40.80	0.971	40.80	0.971
1.000	0.109	0.104	0.782	0.305	0.480	1.037	21350	24400	14560	11600	18830	13590	359	478	24.95	0.594	40.80	0.971	40.80	0.971
1.250	0.080	0.075	1.090	0.294	0.933	1.000	20583	23524	8400	6720	10580	7631	539	719	48.47	1.150	63.75	1.518	63.75	1.518
1.250	0.087	0.082	1.076	0.318	0.909	1.081	22250	25420	9180	7300	11520	8820	504	673	47.24	1.125	63.75	1.518	63.75	1.518
1.250	0.095	0.090	1.060	0.345	0.882	1.172	24120	27570	10080	8000	12720	9830	540	720	45.84	1.091	63.75	1.518	63.75	1.518
1.250	0.102	0.097	1.046	0.368	0.859	1.251	25750	29420	10860	8600	13770	10490	570	760	44.64	1.063	63.75	1.518	63.75	1.518
1.250	0.109	0.104	1.032	0.391	0.836	1.328	27350	31250	11640	9300	14830	11140	599	798	43.45	1.035	63.75	1.518	63.75	1.518
1.250	0.125	0.120	1.000	0.442	0.785	1.502	30920	35340	13440	10700	17280	12600	660	881	40.80	0.971	63.75	1.518	63.75	1.518
1.250	0.134	0.129	0.982	0.470	0.757	1.597	32880	37580	14440	11500	18680	13390	692	923	39.34	0.937	63.75	1.518	63.75	1.518
1.250	0.156	0.151	0.938	0.536	0.691	1.823	37530	42890	16910	13500	22110	15290	764	1018	35.90	0.855	63.75	1.518	63.75	1.518
1.500	0.095	0.090	1.310	0.419	1.348	1.426	29350	33540	8400	6700	10490	7480	808	1078	70.02	1.667	91.80	2.186	91.80	2.186
1.500	0.102	0.097	1.296	0.448	1.319	1.523	31350	35830	9050	7200	11350	8480	856	1141	68.53	1.632	91.80	2.186	91.80	2.186
1.500	0.109	0.104	1.282	0.476	1.291	1.619	33340	38100	9700	7700	12220	9430	902	1202	67.06	1.597	91.80	2.186	91.80	2.186
1.500	0.125	0.120	1.250	0.540	1.227	1.836	37790	43190	11200	8900	14220	10690	1001	1334	63.75	1.518	91.80	2.186	91.80	2.186
1.500	0.134	0.129	1.232	0.575	1.192	1.955	40250	46000	12040	9600	15360	11380	1053	1404	61.93	1.474	91.80	2.186	91.80	2.186
1.500	0.156	0.151	1.188	0.659	1.108	2.239	46100	52690	14090	11200	18180	13040	1172	1563	57.58	1.371	91.80	2.186	91.80	2.186
1.750	0.109	0.104	1.532	0.562	1.843	1.910	39330	44950	8320	6600	10380	7260	1267	1689	95.76	2.280	124.95	2.975	124.95	2.975
1.750	0.125	0.120	1.500	0.638	1.767	2.169	44660	51050	9600	7600	12070	9210	1413	1883	91.80	2.186	124.95	2.975	124.95	2.975
1.750	0.134	0.129	1.482	0.680	1.725	2.313	47620	54420	10320	8200	13040	9890	1491	1988	89.61	2.134	124.95	2.975	124.95	2.975
1.750	0.156	0.151	1.438	0.781	1.624	2.656	54680	62490	12080	9600	15420	11360	1670	2227	84.37	2.009	124.95	2.975	124.95	2.975
1.750	0.175	0.170	1.400	0.866	1.539	2.944	60610	69270	13590	10800	17500	12600	1812	2416	79.97	1.904	124.95	2.975	124.95	2.975

QT-700® Coiled Tubing Technical Data

QT-700® Coiled Tubing Technical Data Provided by Quality Tubing, Inc., Houston, Texas

Tube Dimensions (Inches)				Tube Area (In.)		Weight (Lb/Ft)	Load Capacity (Lbs)		Pressure Capacity (PSI)				Torque (Lb-Ft)		Internal Capacity Per 1000 Ft		Extrnl Displcmnt Per 1000 Ft	
O.D. Nom.	Wall Nom.	Wall Min.	I.D. Nom.	Wall Nom.	I.D. Nom.	Nom.	Yield Min.	Ultimate Min.	Yield Min.	Test 80%	Burst Min.	Collapse Min.	Yield Nom.	Ultimate Nom.	Gals.	Bbls.	Gals.	Bbls.
2.000	0.109	0.104	1.782	0.648	2.494	2.201	45320	51800	7280	5800	9020	5610	1694	2259	129.56	3.085	163.20	3.886
2.000	0.125	0.120	1.750	0.736	2.405	2.503	51540	58900	8400	6700	10490	7310	1896	2528	124.95	2.975	163.20	3.886
2.000	0.134	0.129	1.732	0.786	2.356	2.671	54980	62840	9030	7200	11320	8260	2005	2673	122.39	2.914	163.20	3.886
2.000	0.156	0.151	1.688	0.904	2.238	3.072	63260	72290	10570	8400	13370	10060	2257	3009	116.25	2.768	163.20	3.886
2.000	0.175	0.170	1.650	1.003	2.138	3.411	70230	80260	11890	9500	15170	11170	2459	3279	111.08	2.645	163.20	3.886
2.000	0.188	0.183	1.624	1.070	2.071	3.638	74910	85610	12810	10200	16420	11920	2590	3453	107.60	2.562	163.20	3.886
2.000	0.203	0.198	1.594	1.146	1.996	3.896	80220	91680	13860	11000	17860	12760	2733	3644	103.67	2.468	163.20	3.886
2.375	0.109	0.104	2.157	0.776	3.654	2.638	54310	62070	6130	4900	7540	3780	2452	3270	189.83	4.520	230.14	5.479
2.375	0.125	0.120	2.125	0.884	3.547	3.004	61850	70680	7070	5600	8750	5210	2755	3673	184.24	4.387	230.14	5.479
2.375	0.134	0.129	2.107	0.943	3.487	3.207	66030	75470	7600	6000	9440	6010	2920	3993	181.13	4.313	230.14	5.479
2.375	0.156	0.151	2.063	1.088	3.343	3.697	76120	87000	8900	7100	11150	7980	3304	4406	173.64	4.134	230.14	5.479
2.375	0.175	0.170	2.025	1.210	3.221	4.112	84660	96760	10020	8000	12640	9550	3617	4823	167.31	3.983	230.14	5.479
2.375	0.188	0.183	1.999	1.292	3.138	4.391	90410	103330	10780	8600	13670	10200	3822	5095	163.04	3.882	230.14	5.479
2.375	0.203	0.198	1.969	1.385	3.045	4.709	96960	110810	11670	9300	14860	10940	4048	5397	158.18	3.766	230.14	5.479
2.875	0.125	0.120	2.625	1.080	5.412	3.671	75590	86390	5840	4600	7170	3260	4151	5535	281.14	6.694	337.24	8.029
2.875	0.134	0.129	2.607	1.154	5.338	3.923	80770	92310	6280	5000	7730	3930	4408	5877	277.29	6.602	337.24	8.029
2.875	0.156	0.151	2.563	1.333	5.159	4.530	93270	106600	7350	5800	9120	5560	5014	6685	268.01	6.381	337.24	8.029
2.875	0.175	0.170	2.525	1.484	5.007	5.046	103900	118750	8270	6600	10330	6960	5512	7349	260.12	6.193	337.24	8.029
2.875	0.188	0.183	2.499	1.587	4.905	5.395	111080	126950	8910	7100	11160	7920	5841	7787	254.80	6.067	337.24	8.029
2.875	0.203	0.198	2.469	1.704	4.788	5.793	119280	136320	9640	7700	12130	9030	6207	8276	248.71	5.922	337.24	8.029
3.500	0.134	0.129	3.232	1.417	8.204	4.817	99180	113350	5160	4100	6300	2490	6700	8933	426.19	10.147	499.80	11.900
3.500	0.156	0.151	3.188	1.639	7.982	5.571	114710	131100	6040	4800	7420	3500	7653	10203	414.66	9.873	499.80	11.900
3.500	0.175	0.170	3.150	1.828	7.793	6.215	127960	146240	6790	5400	8400	4650	8444	11259	404.84	9.639	499.80	11.900
3.500	0.188	0.183	3.124	1.956	7.665	6.650	136920	156490	7320	5800	9070	5440	8969	11959	398.18	9.481	499.80	11.900
3.500	0.203	0.198	3.094	2.103	7.518	7.148	147180	168210	7920	6300	9860	6350	9559	12746	390.57	9.299	499.80	11.900

NOTES: 1. The effect of Axial Tension on Pressure Rating has **not** been applied to the above data. 2. Above data is for new tubing at minimum strength.
Maximum Working Pressure is a function of tube condition and is determined by the user.

QT-800® Coiled Tubing Technical Data

QT-800® Coiled Tubing Technical Data
 Provided by Quality Tubing, Inc., Houston, Texas

Tube Dimensions (Inches)				Tube Area (Sq. In.)		Weight (Lb/Ft)	Load Capacity (Lbs)		Pressure Capacity (PSI)				Torque (Lb-Ft)		Internal Capacity Per 1000 Ft		Extrnl Displcmnt Per 1000 Ft	
O.D. Nom.	Wall Nom.	Wall Min.	I.D. Nom.	Wall Nom.	I.D. Nom.	Nom.	Yield Min.	Ultimate Min.	Yield Min.	Test 80%	Burst Min.	Collapse Min.	Yield Nom.	Ultimate Nom.	Gals.	Bbls.	Gals.	Bbls.
1.000	0.080	0.198	0.840	0.231	0.554	0.786	16185	18497	11200	8960	14229	5890	288	383	28.79	0.690	40.80	0.971
1.000	0.087	0.082	0.826	0.250	0.536	0.848	19960	22450	13110	10400	16430	12700	350	466	27.84	0.663	40.80	0.971
1.000	0.095	0.090	0.810	0.270	0.515	0.918	21600	24300	14400	11500	18150	13750	373	497	26.77	0.637	40.80	0.971
1.000	0.102	0.097	0.796	0.288	0.498	0.978	23020	25890	15510	12400	19660	14650	392	522	25.85	0.616	40.80	0.971
1.000	0.109	0.104	0.782	0.305	0.480	1.037	24400	27450	16640	13300	21190	15530	410	546	24.95	0.594	40.80	0.971
1.250	0.080	0.198	1.090	0.294	0.933	1.000	20583	23524	8960	7168	11230	7134	472	629	48.47	1.150	63.75	1.518
1.250	0.087	0.082	1.076	0.318	0.909	1.081	25420	28600	10490	8300	12960	9800	576	769	47.24	1.125	63.75	1.518
1.250	0.095	0.090	1.060	0.345	0.882	1.172	27570	31020	11520	9200	14310	11230	617	823	45.84	1.091	63.75	1.518
1.250	0.102	0.097	1.046	0.368	0.859	1.251	29420	33100	12410	9900	15490	11990	652	869	44.64	1.063	63.75	1.518
1.250	0.109	0.104	1.032	0.391	0.836	1.328	31250	35160	13310	10600	16690	12730	684	913	43.45	1.035	63.75	1.518
1.250	0.125	0.120	1.000	0.442	0.785	1.502	35340	39760	15360	12200	19440	14400	755	1006	40.80	0.971	63.75	1.518
1.250	0.134	0.129	0.982	0.470	0.757	1.597	37580	42280	16510	13200	21010	15310	791	1055	39.34	0.937	63.75	1.518
1.250	0.156	0.151	0.938	0.536	0.691	1.823	42890	48250	19320	15400	24870	17470	873	1164	35.90	0.855	63.75	1.518
1.500	0.095	0.090	1.310	0.419	1.348	1.426	33540	37730	9600	7600	11800	8260	924	1232	70.02	1.667	91.80	2.186
1.500	0.102	0.097	1.296	0.448	1.319	1.523	35830	40310	10340	8200	12770	9410	978	1304	68.53	1.632	91.80	2.186
1.500	0.109	0.104	1.282	0.476	1.291	1.619	38100	42860	11090	8800	13740	10560	1030	1374	67.06	1.597	91.80	2.186
1.500	0.125	0.120	1.250	0.540	1.227	1.836	43190	48590	12800	10200	16000	12220	1144	1525	63.75	1.518	91.80	2.186
1.500	0.134	0.129	1.232	0.575	1.192	1.955	46000	51750	13760	11000	17290	13010	1204	1605	61.93	1.474	91.80	2.186
1.500	0.156	0.151	1.188	0.659	1.108	2.239	52690	59280	16100	12800	20460	14900	1340	1786	57.58	1.371	91.80	2.186
1.750	0.109	0.104	1.532	0.562	1.843	1.910	44950	50570	9500	7600	11880	8010	1448	1930	95.76	2.280	124.95	2.975
1.750	0.125	0.120	1.500	0.638	1.767	2.169	51050	57430	10970	8700	13580	10250	1614	2152	91.80	2.186	124.95	2.975
1.750	0.134	0.129	1.482	0.680	1.725	2.313	54420	61220	11790	9400	14670	11310	1704	2271	89.61	2.134	124.95	2.975
1.750	0.156	0.151	1.438	0.781	1.624	2.656	62490	70300	13800	11000	17350	12990	1908	2545	84.37	2.009	124.95	2.975
1.750	0.175	0.170	1.400	0.866	1.539	2.944	69270	77930	15540	12400	19690	14400	2071	2761	79.97	1.904	124.95	2.975

QT-800® Coiled Tubing Technical Data

QT-800® Coiled Tubing Technical Data
 Provided by Quality Tubing, Inc., Houston, Texas

Tube Dimensions (Inches)				Tube Area (Sq. In.)		Weight (Lb/Ft)	Load Capacity (Lbs)		Pressure Capacity (PSI)				Torque (Lb-Ft)		Internal Capacity Per 1000 Ft		Extnl Displcmnt Per 1000 Ft	
O.D. Nom.	Wall Nom.	Wall Min.	I.D. Nom.	Wall Nom.	I.D. Nom.		Yield Min.	Ultimate Min.	Yield Min.	Test 80%	Burst Min.	Collapse Min.	Yield Nom.	Ultimate Nom.	Gals.	Bbls.	Gals.	Bbls.
2.000	0.109	0.104	1.782	0.648	2.494	2.201	51800	58270	8320	6600	10150	6090	1936	2581	129.56	3.085	163.20	3.886
2.000	0.125	0.120	1.750	0.736	2.405	2.503	58900	66260	9600	7600	11800	8060	2167	2889	124.95	2.975	163.20	3.886
2.000	0.134	0.129	1.732	0.786	2.356	2.671	62840	70690	10320	8200	12730	9160	2291	3055	122.39	2.914	163.20	3.886
2.000	0.156	0.151	1.688	0.904	2.238	3.072	72290	81330	12080	9600	15050	11500	2579	3439	116.25	2.768	163.20	3.886
2.000	0.175	0.170	1.650	1.003	2.138	3.411	80260	90300	13590	10800	17070	12770	2810	3747	111.08	2.645	163.20	3.886
2.000	0.188	0.183	1.624	1.070	2.071	3.638	85610	96310	14640	11700	18470	13620	2960	3946	107.60	2.562	163.20	3.886
2.000	0.203	0.198	1.594	1.146	1.996	3.896	91680	103140	15840	12600	20100	14590	3123	4164	103.67	2.468	163.20	3.886
2.375	0.109	0.104	2.157	0.776	3.654	2.638	62070	69830	7000	5600	8480	3980	2802	3737	189.83	4.520	230.14	5.479
2.375	0.125	0.120	2.125	0.894	3.547	3.004	70680	79520	8080	6400	9850	5630	3149	4198	184.24	4.387	230.14	5.479
2.375	0.134	0.129	2.107	0.943	3.487	3.207	75470	84900	8690	6900	10620	6570	3337	4449	181.13	4.313	230.14	5.479
2.375	0.156	0.151	2.063	1.088	3.343	3.697	87000	97870	10170	8100	12540	8840	3776	5035	173.64	4.134	230.14	5.479
2.375	0.175	0.170	2.025	1.210	3.221	4.112	96760	108850	11450	9100	14220	10810	4134	5512	167.31	3.983	230.14	5.479
2.375	0.188	0.183	1.999	1.292	3.138	4.391	103330	116250	12320	9800	15380	11660	4368	5823	163.04	3.882	230.14	5.479
2.375	0.203	0.198	1.969	1.365	3.045	4.709	110810	124660	13330	10600	16720	12500	4626	6168	158.18	3.766	230.14	5.479
2.875	0.125	0.120	2.625	1.080	5.412	3.671	86390	97190	6670	5300	8070	3470	4744	6326	281.14	6.694	337.24	8.029
2.875	0.134	0.129	2.607	1.154	5.338	3.923	92310	103840	7170	5700	8700	4150	5038	6717	277.29	6.602	337.24	8.029
2.875	0.156	0.151	2.563	1.333	5.159	4.530	106600	119920	8400	6700	10260	6030	5730	7640	268.01	6.381	337.24	8.029
2.875	0.175	0.170	2.525	1.484	5.007	5.046	118750	133590	9460	7500	11620	7660	6300	8399	260.12	6.193	337.24	8.029
2.875	0.188	0.183	2.499	1.587	4.905	5.395	126950	142820	10180	8100	12560	8770	6675	8900	254.80	6.067	337.24	8.029
2.875	0.203	0.198	2.469	1.704	4.788	5.793	136320	153360	11010	8800	13650	10050	7094	9458	248.71	5.922	337.24	8.029
3.500	0.134	0.129	3.232	1.417	8.204	4.817	113350	127520	5890	4700	7090	2640	7657	10209	426.19	10.147	499.80	11.900
3.500	0.156	0.151	3.188	1.639	7.982	5.571	131100	147490	6900	5500	8350	3650	8746	11661	414.66	9.873	499.80	11.900
3.500	0.175	0.170	3.150	1.828	7.793	6.215	146240	164520	7770	6200	9450	4990	9650	12867	404.84	9.639	499.80	11.900
3.500	0.188	0.183	3.124	1.956	7.665	6.650	156490	176050	8360	6600	10210	5900	10251	13668	398.18	9.481	499.80	11.900
3.500	0.203	0.198	3.094	2.103	7.518	7.148	168210	189230	9050	7200	11090	6950	10925	14567	390.57	9.299	499.80	11.900

NOTES: 1. The effect of Axial Tension on Pressure Rating has not been applied to the above data. 2. Above data is for new tubing at minimum strength.
Maximum Working Pressure is a function of tube condition and is determined by the user.

Temperature Conversion of Fahrenheit to Centigrade

Fahrenheit	Centigrade	Fahrenheit	Centigrade	Fahrenheit	Centigrade
+300°	+148.89°	+180°	+82.22°	+60°	+15.56°
+295°	+146.11°	+175°	+79.44°	+55°	+12.78°
+290°	+143.33°	+170°	+76.67°	+50°	+10.00°
+285°	+140.55°	+165°	+73.89°	+45°	+7.22°
+280°	+137.78°	+160°	+71.11°	+40°	+4.44°
+275°	+135.00°	+155°	+68.33°	+35°	+1.67°
+270°	+132.22°	+150°	+65.55°	+30°	-1.11°
+265°	+129.44°	+145°	+62.78°	+25°	-3.89°
+260°	+126.67°	+140°	+60.00°	+20°	-6.67°
+255°	+123.89°	+135°	+57.22°	+15°	-9.44°
+250°	+121.11°	+130°	+54.44°	+10°	-12.22°
+245°	+118.33°	+125°	+51.67°	+5°	-15.00°
+240°	+115.55°	+120°	+48.89°	0°	-17.78°
+235°	+112.78°	+115°	+46.11°	-5°	-20.56°
+230°	+110.00°	+110°	+43.33°	-10°	-23.33°
+225°	+107.22°	+105°	+40.56°	-15°	-26.11°
+220°	+104.44°	+100°	+37.78°	-20°	-28.89°
+215°	+101.67°	+95°	+35.00°	-25°	-31.67°
+210°	+98.89°	+90°	+32.22°	-30°	-34.44°
+205°	+96.11°	+85°	+29.44°	-35°	-37.22°
+200°	+93.33°	+80°	+26.67°	-40°	-40.00°
+195°	+90.55°	+75°	+23.89°	-45°	-42.78°
+190°	+87.78°	+70°	+21.11°	-50°	-45.56°
+185°	+85.00°	+65°	+18.33°		

Formulas for Conversion of Fahrenheit
and Centigrade Temperature Readings

$$^{\circ}\text{F} = \frac{[^{\circ}\text{C} \times 9]}{5} + 32$$

$$^{\circ}\text{C} = \frac{[^{\circ}\text{F} - 32]}{9} \times 5$$

API Casing - Bit Sizes and Clearances

CASING DATA				DRILL BIT SPECIFICATIONS									
				8 ROUND AND BUTTRESS CASING					X-LINE CASING				
O.D.	WEIGHT T&C	I.D. 8 R.D. & BUTT.	UPSET I.D. X-LINE	SIZE	CONN. API REG.	WT. (lbs.)	CLEARANCE		SIZE	CONN. API REG.	WT. (lbs.)	CLEARANCE	
(in.)	(lbs.-ft.)	(in.)	(in.)	(in.)			DEC.	FRAC.	(in.)			DEC.	FRAC.
4-1/2	9.50	4.090	—	3-7/8			.215	7/32	—	—	—	—	—
	10.50	4.052	—	3-7/8			.177	11/64	—	—	—	—	—
	11.60	4.000	—	3-7/8	2-3/8	10	.125	1/8	—	—	—	—	—
	13.50	3.920	—	3-3/4			.170	11/64	—	—	—	—	—
5	11.50	4.560	—	4-1/4			.310	5/16	—	—	—	—	—
	13.00	4.494	—	4-1/4			.244	1/4	—	—	—	—	—
	15.00	4.408	4.198	4-1/4	2-3/8	11	.158	5/32	4-1/8	2-3/8	11	.073	5/64
	18.00	4.276	4.198	4-1/8			.151	5/32	4-1/8	2-3/8	11	.073	5/64
5-1/2	14.00	5.012	—	4-3/4	2-7/8	16	.262	17/64	—	—	—	—	—
	15.50	4.950	4.736	4-3/4	2-7/8	16	.200	13/64	4-5/8	2-7/8	16	.111	7/64
	17.00	4.892	4.701	4-3/4	2-7/8	16	.142	9/64	4-5/8	2-7/8	16	.076	5/64
	20.00	4.778	4.701	4-5/8	2-7/8	16	.153	5/32	4-5/8	2-7/8	16	.076	5/64
	23.00	4.670	4.610	4-1/2	2-3/8	12	.170	11/64	4-1/2	2-3/8	12	.110	7/64
6-5/8	20.00	6.049	—	5-7/8	3-1/2	29	.174	17/64	—	—	—	—	—
	24.00	5.921	5.781	5-5/8	3-1/2	24	.296	19/64	5-5/8	3-1/2	24	.156	5/32
	28.00	5.791	5.731	5-5/8	3-1/2	24	.166	11/64	5-5/8	3-1/2	24	.106	7/64
	32.00	5.675	5.615	4-3/4	2-7/8	15	.925	59/64	4-3/4	2-7/8	15	.865	55/64
7	17.00	6.538	—	6-1/4		30	.288	9/32	—	—	—	—	—
	20.00	6.456	—	6-1/4		30	.206	13/64	—	—	—	—	—
	23.00	6.366	6.171	6-1/8		30	.241	1/4	6-1/8	3-1/2	30	.046	3/64
	26.00	6.276	6.171	6-1/8		30	.151	5/32	6-1/8	3-1/2	30	.046	3/64
	29.00	6.184	6.123	6	3-1/2	29	.184	3/16	6	3-1/2	29	.123	1/8
	32.00	6.094	6.032	6		29	.219	7/32	5-7/8	3-1/2	29	.157	5/32
	35.00	6.004	5.940	5-7/8		29	.129	1/8	5-7/8	3-1/2	29	.065	1/16
	38.00	5.920	5.860	5-7/8		24	.295	3/64	5-5/8	3-1/2	24	.235	15/64

DIAMETRICAL CLEARANCES LISTED ABOVE ARE BASED ON THE INSIDE DIAMETER OF CASING (OR JOINT I.D. FOR X-LINE CASING).

CASING DATA OBTAINED FROM TABLES 6.1 & 6.3, PP 54 & 61, API SPEC 5C7, 3RD ED., DEC. 1, 1990.

A.P.I. Ring Joint Flange Data

Nom. Size	Series	Service Pressure Rating P.S.I.	FLANGE		BOTS - STUDS				A.P.I. Ring	
			O.D.	Thickness	Dia. Bolt Circle	Bolt Quantity	Bolt Dia.	Bolt Length over-all	Stud Length over-all	Pitch Dia.
		10000	9 1/8"	2 1/16"	7 1/4"	8	7/8"	6 1/4"	4 3/8"	3.492
		15000	10"	2 1/4"	7 7/8"	8	1"	7"	4 7/8"	3.492
		20000	12 13/16"	3 1/8"	10 5/16"	8	1 1/4"	9 1/2"	6 1/4"	3.492
2900	10000	8 7/8"	2 3/4"	6 5/8"	8"	1"	8 3/8"	5 1/4"	3 9/16"	86
3"	400	960	8 1/4"	1 9/16"	6 5/8"	8	3/4"	5 1/2"	3 5/8"	4 7/8"
600	2000	8 1/4"	1 9/16"	6 5/8"	8"	3/4"	5 1/2"	3 5/8"	4 7/8"	31
3"	900	3000	9 1/2"	1 13/16"	7 1/2"	8	7/8"	6 1/4"	4 1/8"	31
3"	1500	5000	10 1/2"	2 3/16"	8"	8	1 1/8"	7 5/8"	5"	35
3"	split	5000	9 1/8"	2 3/4"	3 17/32">	C/B 5	1"	7 3/4"	5"	4"
		10000	10 5/8"	2 19/64"	8 1/2"	8	1"	7 1/4"	4 7/8"	4.079
		15000	11 5/16"	2 17/32"	9 1/16"	8	1 1/8"	8"	5 1/4"	4.079
		20000	14 1/16"	3 3/8"	11 5/16"	8	1 3/8"	10 1/4"	6 3/4"	4.079
3"	2900	10000	10"	3 1/16"	7 1/2"	8	1 1/8"	9 1/4"	6"	3 15/16"
3 1/2"	2900	10000	11 1/2"	3 3/8"	8 1/2"	8	1 1/4"	10 1/4"	6 3/8"	R 89
4"	400	960	10"	1 11/16"	7 7/8"	8	7/8"	6"	4"	5 7/8"
4"	600	2000	10 3/4"	1 13/16"	8 1/2"	8	7/8"	6 1/4"	4 1/8"	5 7/8"
4"	900	3000	11 1/2"	2 1/16"	9 1/4"	8	1 1/8"	7 3/8"	4 7/8"	R 37
4"	1500	5000	12 1/4"	2 7/16"	9 1/2"	8	1 1/4"	8 1/2"	5 1/2"	R 39
4"	split	5000	10 5/8"	2 3/4"	4 1/16">	C/B 6	1 1/8"	8 1/4"	5 1/4"	5 1/4"
		10000	12 7/16"	2 49/64"	10 3/16"	8	1 1/8"	8 3/8"	5 5/8"	5.232
		15000	14 3/16"	2 3/32"	11 7/16"	8	1 3/8"	9 1/2"	6 3/4"	5.232

Flange Reference Chart

Flange Size	Ring Gasket	Number of Bolts	Stud Bolt	Tap End Stud	Wrench Size	Torque* Ft. Lbs.
1-13/16" 10M	BX-151	8	3/4" x 5-1/2"	3/4 x 3-3/4"	1-1/4"	200
1-13/16" 10M 6BX TO 17SV	BX-151 SBX-151	8	3/4" x 6-1/2"	3/4 x 4-3/4"	1-1/4"	See Page 11
1-13/16" 15M	BX-151	8	7/8" x 6"	7/8" x 4-1/8"	1-7/16"	319
1-13/16" 20M	BX-151	8	1" x 7-3/4"	1" x 5-1/8"	1-5/8"	474
2-1/16" 2M***	R-23 or RX-23	8	5/8" x 5"	5/8" x 3-5/8"	1-1/16"	115
2-1/16" 3M***	R-24 or RX-24	8	7/8" x 6-1/2"	7/8" x 4-5/8"	1-7/16"	319
2-1/16" 5M***	R-24 or RX-24	8	7/8" x 6-1/2"	7/8" x 4-5/8"	1-7/16"	319
2-1/16" 5M 17 SS TO SS	BX-152 SBX-152	8	7/8" x 6"	7/8" x 4-1/4"	1-7/16"	See Page 11
2-1/16" 5M 17 SS TO SV	BX-152 SBX-152	8	7/8" x 7"	7/8" x 5"	1-7/16"	See Page 11
2-1/16" 10M	BX-152	8	3/4" x 5-1/2"	3/4" x 3-7/8"	1-1/4"	200
2-1/16" 10M 6BX TO 17SV	BX-152 SBX-152	8	3/4" x 6-1/2"	3/4" x 4-3/4"	1-1/4"	See Page 11
2-1/16" 15M	BX-152	8	7/8" x 6-1/2"	7/8" x 4-3/8"	1-7/16"	319
2-1/16" 20M	BX-152	8	1-1/8" x 8-1/2"	1-1/8" x 5-3/4"	1-13/16"	686
2-9/16" 2M***	R-26 or RX-26	8	3/4" x 5-1/2"	3/4" x 4"	1-1/4"	200



Flange Reference Chart

Flange Size	Ring Gasket	Number of Bolts	Stud Bolt	Tap End Stud	Wrench Size	Torque* Ft. Lbs.
2-9/16" 3M***	R-27 or RX-27	8	1" x 7"	1" x 5-1/8"	1-5/8"	474
2-9/16" 5M***	R-27 or RX-27	8	1" x 7"	1" x 5-1/8"	1-5/8"	474
2-9/16" 5M 17 SS TO SS	BX-153 SBX-153	8	1" x 6-1/2"	1" x 4-5/8"	1-5/8"	See Page 11
2-9/16" 5M 17 SS TO SV	BX-153 SBX-153	8	1" x 7-1/4"	1" x 5-3/8"	1-5/8"	See Page 11
2-9/16" 10M	BX-153	8	7/8" x 6-1/2"	7/8" x 4-3/8"	1-7/16"	319
2-9/16" 10M 6BX TO 17SV	BX-153 SBX-153	8	7/8" x 7-1/4"	7/8" x 5"	1-7/16"	See Page 11
2-9/16" 15M	BX-153	8	1" x 7-1/4"	1" x 4-7/8"	1-5/8"	474
2-9/16" 20M	BX-153	8	1-1/4" x 9-1/2"	1-1/4" x 6-1/4"	2"	953
3-1/8" 2M***	R-31 or RX-31	8	3/4" x 5-3/4"	3/4" x 4-1/8"	1-1/4"	200
3-1/8" 3M***	R-31 or RX-31	8	7/8" x 6-1/2"	7/8" x 4-5/8"	1-7/16"	319
3-1/8" 5M***	R-35 or RX-35	8	1-1/8" x 7-3/4"	1-1/8" x 5-5/8"	1-13/16"	686
3-1/8" 5M 17 SS TO SS	BX-154 SBX-154	8	1-1/8" x 7-1/4"	1-1/8" x 5-1/8"	1-13/16"	See Page 11
3-1/8" 5M 17 SS TO SV	BX-154 SBX-154	8	1-1/8" x 8"	1-1/8" x 5-3/4"	1-13/16"	See Page 11



Flange Reference Chart

Flange Size	Ring Gasket	Number of Bolts	Stud Bolt	Tap End Stud	Wrench Size	Torque* Ft. Lbs.
3-1/16" 10M	BX-154	8	1" x 7-1/4"	1" x 5"	1-5/8"	474
3-1/16" 10M 6BX TO 17SV	BX-154 SBX-154	8	1" x 8"	1" x 5-3/4"	1-5/8"	See Page 11
3-1/16" 15M	BX-154	8	1-1/8" x 8"	1-1/8" x 5-1/2"	1-13/16"	686
3-1/16" 20M	BX-154	8	1-3/8" x 10-1/4"	1-3/8" x 6-3/4"	2-3/16"	1,281
4-1/16" 2M***	R-37 or RX-37	8	7/8" x 6-1/2"	7/8" x 4-5/8"	1-7/16"	319
4-1/16" 3M***	R-37 or RX-37	8	1-1/8" x 7-1/2"	1-1/8" x 5-1/2"	1-13/16"	686
4-1/16" 5M***	R-39 or RX-39	8	1-1/4" x 8-1/2"	1-1/4" x 6-1/8"	2"	953
4-1/16" 5M 17 SS TO SS	BX-155 SBX-155	8	1-1/4" x 8"	1-1/4" x 5-5/8"	2"	See Page 11
4-1/16" 5M 17 SS TO SV	BX-155 SBX-155	8	1-1/4" x 8-3/4"	1-1/4" x 6-1/4"	2"	See Page 11
4-1/16" 10M	BX-155	8	1-1/8" x 8-1/2"	1-1/8" x 5-3/4"	1-13/16"	686
4-1/16" 10M 6BX TO 17SV	BX-155 SBX-155	8	1-1/8" x 9-1/2"	1-1/8" x 6-5/8"	1-13/16"	See Page 11
4-1/16" 15M	BX-155	8	1-3/8" x 9-3/4"	1-3/8" x 6-1/2"	2-3/16"	1,281



Flange Reference Chart

Flange Size	Ring Gasket	Number of Bolts	Stud Bolt	Tap End Stud	Wrench Size	Torque* Ft. Lbs.
4-1/16" 20M	BX-155	8	1-3/4" x 12-1/2"	1-3/4" x 8-3/8"	2-3/4"	2,696
5-1/8" 2M***	R-41 or RX-41	8	1" x 7-1/4"	1" x 5-1/4"	1-5/8"	474
5-1/8" 3M***	R-41 or RX-41	8	1-1/4" x 8-1/4"	1-1/4" x 6"	2"	953
5-1/8" 5M***	R-44 or RX-44	8	1-1/2" x 10-1/2"	1-1/2" x 7-3/8"	2-3/8"	1,677
5-1/8" 5M 17 SS TO SS	BX-169 SBX-169	8	1-1/2" x 10"	1-1/2" x 6-7/8"	2-3/8"	See Page 11
5-1/8" 5M 17 SS TO SV	BX-169 SBX-169	8	1-1/2" x 11"	1-1/2" x 7-3/4"	2-3/8"	See Page 11
5-1/8" 10M	BX-169	12	1-1/8" x 9-1/4"	1-1/8" x 6"	1-13/16"	686
5-1/8" 10M 6BX TO 17SV	BX-169 SBX-169	12	1-1/8" x 10-1/4"	1-1/8" x 7"	1-13/16"	See Page 11
5-1/8" 15M	BX-169	12	1-1/2" x 11-1/2"	1-1/2" x 7-5/8"	2-3/8"	1,677
7-1/16" 2M***	R-45 or RX-45	12	1" x 7-1/2"	1" x 5-3/8"	1-5/8"	474
7-1/16" 3M***	R-45 or RX-45	12	1-1/8" x 8-1/2"	1-1/8" x 5-7/8"	1-13/16"	686
7-1/16" 5M***	R-46 or RX-46	12	1-3/8" x 11-1/4"	1-3/8" x 7-1/2"	2-3/16"	1,281



Flange Reference Chart

Flange Size	Ring Gasket	Number of Bolts	Stud Bolt	Tap End Stud	Wrench Size	Torque* Ft. Lbs.
7-1/16" 5M 17 SS TO SS	BX-156 SBX-156	12	1-3/8" x 10-3/4"	1-3/8" x 7"	2-3/16"	See Page 11
7-1/16" 5M 17 SS TO SV	BX-156 SBX-156	12	1-3/8" x 11-3/4"	1-3/8" x 8-1/8"	2-3/16"	See Page 11
7-1/16" 10M	BX-156	12	1-1/2" x 11-3/4"	1-1/2" x 7-3/4"	2-3/8"	1,677
7-1/16" 10M 6BX TO 17SV	BX-156 SBX-156	12	1-1/2" x 13"	1-1/2" x 9"	2-3/8"	See Page 11
7-1/16" 15M	BX-156	16	1-1/2" x 13"	1-1/2" x 8-3/8"	2-3/8"	1,677
7-1/16" 20M	BX-156	16	2" x 17-3/4"	2" x 11-1/8"	3-1/8"	4,061
9" 2M***	R-49 or RX-49	12	1-1/8" x 8-1/2"	1-1/8" x 5-7/8"	1-13/16"	686
9" 3M***	R-49 or RX-49	12	1-3/8" x 9-1/2"	1-3/8" x 6-3/4"	2-3/16"	1,281
9" 5M***	R-50 or RX-50	12	1-5/8" x 12-1/2"	1-5/8" x 8-1/2"	2-9/16"	2,146
9" 5M 17 SS TO SS	BX-157 SBX-157	12	1-5/8" x 12"	1-5/8" x 8"	2-9/16"	See Page 11
9" 5M 17 SS TO SV	BX-157 SBX-157	12	1-5/8" x 13-1/4"	1-5/8" x 9-1/8"	2-9/16"	See Page 11
9" 10M	BX-157	16	1-1/2" x 13-1/2"	1-1/2" x 8-1/2"	2-3/8"	1,677



Flange Reference Chart

Flange Size	Ring Gasket	Number of Bolts	Stud Bolt	Tap End Stud	Wrench Size	Torque* Ft. Lbs.
9" 10M 6BX TO 17SV	BX-157 SBX-157	16	1-1/2" x 15"	1-1/2" x 10-1/8"	2-3/8"	See Page 11
9" 15M	BX-157	16	1-7/8" x 16"	1-7/8" x 10-1/8"	2-15/16"	3,332
9" 20M	BX-157	16	2-1/2" x 21-3/4"	2-1/2" x 13-3/4"	3-7/8"	8,030
11" 2M***	R-53 or RX-53	16	1-1/4" x 9-1/4"	1-1/4" x 6-1/2"	2"	953
11" 3M***	R-53 or RX-53	16	1-3/8" x 10"	1-3/8" x 7"	2-3/16"	1,281
11" 5M***	R-54 or RX-54	12	1-7/8" x 14-1/4"	1-7/8" x 9-5/8"	2-15/16"	3,332
11" 5M 17 SS TO SS	BX-158 SBX-158	12	1-7/8" x 13-3/4"	1-7/8" x 9-1/8"	2-15/16"	See Page 11
11" 5M 17 SS TO SV	BX-158 SBX-158	12	1-7/8" x 15-1/4"	1-7/8" x 10-1/2"	2-15/16"	See Page 11
11" 10M	BX-158	16	1-3/4" x 15-1/4"	1-3/4" x 9-3/4"	2-3/4"	2,696
11" 10M 6BX TO 17SV	BX-158 SBX-158	16	1-3/4" x 17"	1-3/4" x 11-1/2"	2-3/4"	See Page 11
11" 15M	BX-158	20	2" x 19-1/2"	2" x 12"	3-1/8"	4,061
11" 20M	BX-158	16	2-3/4" x 23-3/4"	2-3/4" x 15"	4-1/4"	9,712



Flange Reference Chart

Flange Size	Ring Gasket	Number of Bolts	Stud Bolt	Tap End Stud	Wrench Size	Torque* Ft. Lbs.
13-5/8" 2M***	R-57 or RX-57	20	1-1/4" x 9-1/2"	1-1/4" x 6-5/8"	2"	726**
13-5/8" 3M***	R-57 or RX-57	20	1-3/8" x 10-3/4"	1-3/8" x 7-3/8"	2-3/16"	976**
13-5/8" 5M	BX-160	16	1-5/8" x 12-3/4"	1-5/8" x 8-3/8"	2-9/16"	2,146
13-5/8" 10M	BX-159	20	1-7/8" x 17-3/4"	1-7/8" x 11"	2-15/16"	3,332
13-5/8" 10M 6BX TO 17SV	BX-159 SBX-159	20	1-7/8" x 19-3/4"	1-7/8" x 13-1/8"	2-15/16"	See Page 11
13-5/8" 15M	BX-159	20	2-1/4" x 21-1/4"	2-1/4" x 13-1/4"	3-1/2"	5,822
13-5/8" 20M	BX-159	20	3" x 29-3/4"	3" x 18-1/8"	4-5/8"	12,654
16-3/4" 2M***	R-65 or RX-65	20	1-1/2" x 10-3/4"	1-1/2" x 7-1/2"	2-3/8"	1,278**
16-3/4" 3M***	R-66 or RX-66	20	1-5/8" x 12-1/4"	1-5/8" x 8-3/8"	2-9/16"	2,146
16-3/4" 5M	BX-162	16	1-7/8" x 14-3/4"	1-7/8" x 9-1/2"	2-15/16"	3,332
16-3/4" 10M	BX-162	24	1-7/8" x 17-3/4"	1-7/8" x 11"	2-15/16"	3,332
18-3/4" 5M	BX-163	20	2" x 17-3/4"	2" x 11-1/4"	3-1/8"	4,061
18-3/4" 10M	BX-164	24	2-1/4" x 22-3/4"	2-1/4" x 14"	3-1/2"	5,822
18-3/4" 15M	BX-164	20	3" x 26-3/4"	3" x 16-3/4"	4-5/8"	12,654



Flange Reference Chart

Flange Size	Ring Gasket	Number of Bolts	Stud Bolt	Tap End Stud	Wrench Size	Torque* Ft. Lbs.
20-3/4" 3M***	R-74 or RX-74	20	2" x 15"	2" x 10-1/8"	3-1/8"	4,061
21-1/4" 2M***	R-73 or RX-73	24	1-5/8" x 12-1/4"	1-5/8" x 8-3/8"	2-9/16"	1,635**
21-1/4" 5M	BX-165	24	2" x 19"	2" x 11-3/4"	3-1/8"	4,061
21-1/4" 10M	BX-166	24	2-1/2" x 24-3/4"	2-1/2" x 15-1/8"	3-7/8"	8,030
26-3/4" 2M	BX-167	20	1-3/4" x 14-1/4"	1-3/4" x 9-1/8"	2-3/4"	2,696
26-3/4" 3M	BX-168	24	2" x 17-1/2"	2" x 11"	3-1/8"	4,061
30" 300 MSS ¹	R-95 or RX-	28	1-3/4" x 13-1/2"	1-3/4" x 9-1/8"	2-3/4"	2,696
30" 600 MSS ^{1,2}	R-95 or RX-95	28	2" x 15-3/4"	2" x 10-1/2"	3-1/8"	4,061
30" 900 MSS ^{1,2}	R-102 or RX-102	20	3" x 14"	3" x 20-1/2"	4-5/8"	7,400**
30" 2M	BX-303	32	1-5/8" x 14-1/2"	1-5/8" x 9-1/4"	2-9/16"	2,146
30" 3M	BX-303	32	1-7/8" x 17-3/4"	1-7/8" x 11"	2-15/16"	3,332



Flange Reference Chart

These torques assume undamaged bolts, clean conditions and smooth bearing surfaces.

Stud Diameter	5/8"	3/4"	7/8"	1"	1-1/8"	1-1/4" *	1-3/8" *	1-1/2" *	1-5/8" *	1-3/4"	1-7/8"
Torque Ft. Lbs.	68	118	188	279	401	553	739	962	1,226	1,534	1,890

Stud Diameter	2"	2-1/4"	2-1/2"	2-5/8"	2-3/4"	3"	3-1/4"	3-3/4"	3-7/8"	4"
Torque Ft. Lbs.	2,297	3,276	4,500	4,716	5,424	7,047	8,965	13,782	15,208	16,730

* Certain API Spec. 6A flanges have stress limits that necessitate lower than normal torque values for bolts used in these flanges. Use the chart below for these flanges.

Flange Size	13-5/8" 2M	13-5/8" 3M	16-3/4" 2M	21-1/4" 2M
Stud Diameter	1-1/4"	1-3/8"	1-1/2"	1-5/8"
Torque Ft. Lbs.	421	563	733	934



Flange Reference Chart

CAUTION: API Spec 17D requires flange connection bolt tightness (tension stress in the bolt) equal to 67% to 70% of the specified minimum yield strength of L7/B7 bolts. When using some lubricants and/or anti-corrosion coatings on bolts, tightening bolts consistent with the torque table shown above may in fact produce tension closer to the actual yield strength of the bolts. Operators should use an alternate method to measure tension in the bolts to confirm the applicability of this table.

Obsolete, Discontinued or Withdrawn flanges not included in this chart also use B7/L7 connecting bolts. For bolt sizes and torque values for these flanges, see individual flange pages in the Flange Slide Rule Program on the www.woodcousa.com web site. Flanges with "R" ring grooves can connect and seal with either R or RX ring gaskets. RX gaskets increase the stand-off between flanges, and studs shown on this chart have sufficient length to accommodate RX gaskets in these connections. In some cases equipment design may restrict clearance and shorter studs will increase convenience. For information on these shorter stud lengths, see AWHM document TR9501 at www.awhem.org/docs.htm. To compare the difference in stand-off see <http://www.woodcousa.com/standoff.htm#Select>

CAUTION: The difference in stand-off between R and RX gaskets can cause alignment problems on close coupled manifolding or pressure controlling loops. Assembly designers specify component dimensions which allow for the difference in stand-off between flanges when choosing either R or RX gaskets. When operators perform maintenance that involves disassembly, trouble free reassembly requires using gaskets the same as the gaskets originally chosen.

Ring gaskets marked SRX or SBX have identical measurements to RX and BX ring gaskets with the the same number designation, and they will fit the same corresponding connectors. API Spec 17D intends SBX gaskets to seal all 17D SS and SV flanges and all 6BX flanges used for subsea applications. API Spec 17D intends SRX gaskets to seal only 5000 psi segmented flanges, not listed above. The "S" indicates these gaskets have vent holes to allow reliable connector makeup underwater (subsea). API Spec 17D requires that manufacturers use only corrosion resistant alloy as the material for these gaskets.



Flange Reference Chart

Flange Reference Chart API Spec17D Recommended Torque For Flange Bolts and Nuts With Fluoropolymer Coating Used for Subsea Applications

Bolt Size	Hex Nut Size Across Flats	Minimum 67% Yield Stress *		Maximum 70% Yield Stress *	
		Bolt Tension lbf	Make up Torque ft lbs	Bolt Tension lbf	Make up Torque ft lbs
3/4 - 10 UNC	1-1/4	23,530	160	24,538	167
7/8 - 9 UNC	1-7/16	32,483	253	33,937	264
1 - 8 UN	1-5/8	42,614	376	44,522	393
1-1/8 - 8 UN	1-13/16	55,608	539	58,098	564
1-1/4 - 8 UN	2	70,330	744	73,478	777
1-3/8 - 8 UN	2-3/16	86,777	994	90,662	1,038
1-1/2 - 8 UN	2-3/8	104,951	1,294	109,650	1,352
1-5/8 - 8 UN	2-9/16	124,852	1,649	130,442	1,723
1-3/4 - 8 UN	2-3/4	146,480	2,063	153,038	2,155
1-7/8 - 8 UN	2-15/16	169,833	2,541	177,438	2,654
2 - 8 UN	3-1/8	194,914	3,087	203,642	3,225
2-1/4 - 8 UN	3-1/2	250,256	4,402	261,461	4,599
2-1/2 - 8 UN	3-7/8	312,504	6,044	326,497	6,315
2-3/4 - 8 UN**	4-1/4	345,310	7,284	360,772	7,611
* Torque ft lbs calculated to give % of yield tension stress for ASTM A-193 B7 or ASTM A-302 L7 bolts using ASTM A 194 GR. 2H nuts. ** Calculated based on reduced yield strength of 95,000 psi.					

