



WORK-OVER SHEET V1.0



THE 7 TRAITS

- Planning
- Honesty & Sincerity
- Friendly & Respectful
- Leadership & Knowledge
- Appearance
- Dedication

TERMINOLOGY TO KNOW

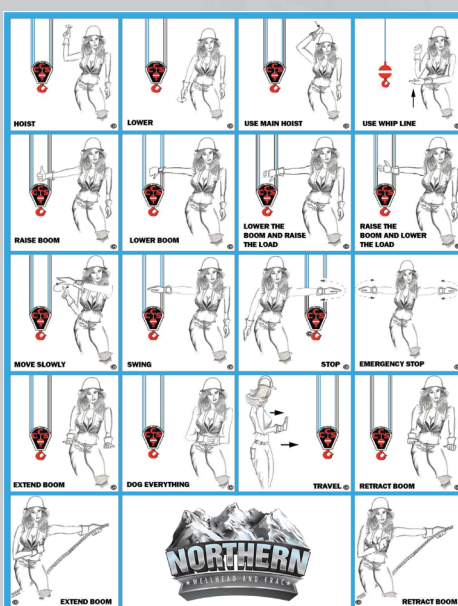
- TIW = Floor Valve
- ORBIT = 8-Round Valve
- A-SECTION = Casing Head
- B-Section = Casing Spool or Tubing Head
- C-Section = Tubing Head

CASING DATA	Size OD Inches	Weight LBS Per Foot	Grade	Inside DIAM. Inches	Burst Press. PSI	Collapse Press. PSI	Tensile Strength Pounds	Vol. of Liquid BBL/100FT
	4.5	11.6	N-80	4	7,760	5,930	220,000	1.55
	4.5	13.5	N-80	3.92	9,020	7,360	258,000	1.49
	5.5	17	N-80	4.892	7,740	5,890	320,000	2.32
	5.5	23	N-80	4.67	10,560	8,900	440,000	2.12
	7	26	N-80	6.276	7,240	5,320	260,000	3.83
	7	32	N-80	6.094	9,060	7,400	578,000	3.61

TUBING DATA	Size OD Inches	Weight LBS Per Foot	Grade	Inside DIAM. Inches	Burst Press. PSI	Collapse Press. PSI	Tensile Strength Pounds	Vol. of Liquid BBL/100FT	Torque Min FT/LBS	Torque Max FT/LBS
	2 3/8	4.7	N-80	1.995	11,200	11,780	104,340	0.39	1350	2250
	2 7/8	6.5	N-80	2.441	10,570	11,160	144,960	0.58	1730	2880
	PH6	5.95	P-110	1.867	20,587	21,012	186,173		2700	3400

API 6A SPEC FLANGE BOLT & RING CHART

API Pressure Rating	Flange Size & Bore	Stud Size	Nut Size A.F.	API Torque	
				f=0.07	f=0.13
3000 lb	2 1/16"	7/8"	1 7/16"	188	319
	2 9/16"	1"	1 5/8"	279	474
	3 1/8"	7/8"	1 7/16"	188	319
	4 1/16"	1 1/8"	1 13/16"	401	686
	5 1/8"	1 1/4"	2"	553	953
	7 1/16"	1 1/8"	1 13/16"	401	686
	9"	1 3/8"	2 3/16"	739	1281
	11"	1 3/8"	2 3/16"	739	1281

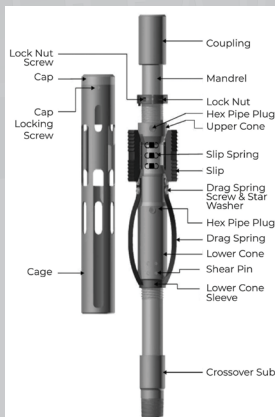


ROUND SLINGS

Polyester Round Slings

Color	Vertical (lbs.)	Choker (lbs.)	Basket (lbs.)
Purple	3,000	2,400	6,000
Green	6,000	4,800	12,000
Yellow	9,000	7,200	18,000
Gray	12,000	9,600	24,000
Red	14,000	11,200	28,000
Brown	17,000	13,600	34,000
Blue	22,000	17,600	44,000
Green	26,000	20,800	52,000
Green	32,000	25,600	64,000
Green	50,000	40,000	100,000
Green	60,000	48,000	120,000
Orange	70,000	56,000	140,000
Orange	80,000	64,000	160,000
Orange	90,000	72,000	180,000

Do not exceed rated capacities. Sling capacity decreases as the angle from horizontal decreases. Lifting slings shall not be used at angles of less than 30°

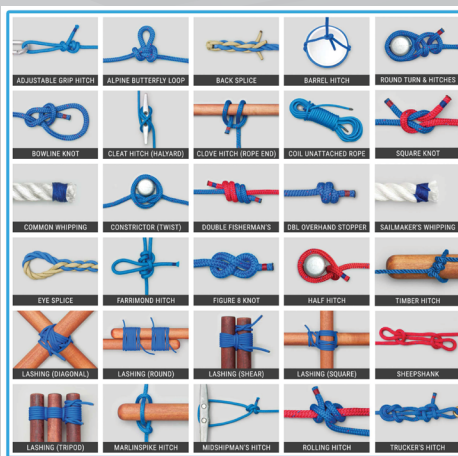


API Pressure Rating	Flange Size & Bore	Ring Gasket	Number of Studs	Nut/Hammer Wrench Size	Stud Dimensions	
					Diameter	Length
5000 lb	2 1/16"	R-24	8	1 7/16"	7/8"	6 1/4"
	2 9/16"	R-27	8	1 5/8"	1"	7"
	3 1/8"	R-35	8	1 13/16"	1 1/8"	7 3/4"
	4 1/16"	R-39	8	2"	1 1/4"	8 1/2"
	5 1/8"	R-44	8	2 3/8"	1 1/2"	10 3/4"
	7 1/16"	R-46	12	2 3/16"	1 3/8"	11 1/4"

API Pressure Rating	Flange Size & Bore	Ring Gasket	Number of Studs	Nut/Hammer Wrench Size	Stud Dimensions	
					Diameter	Length
5000 lb	1 13/16"	BX-151	8	1 1/4"	3/4"	5 1/4"
	2 1/16"	BX-152	8	1 1/4"	3/4"	5 1/2"
	2 9/16"	BX-153	8	1 7/16"	7/8"	6 1/4"
	3 1/16"	BX-154	8	1 5/8"	1"	7 1/4"
	4 1/16"	BX-155	8	1 13/16"	1 1/8"	8 1/4"
	5 1/8"	BX-169	12	1 13/16"	1 1/8"	9"
	7 1/16"	BX-156	12	2 3/8"	1 1/2"	11 3/4"

Recommended Shear Values Based on The Calculated Pickup Load

Tension Required (From Calculations)	Recommended Shear Value	Number of Shear Pins Required
0-10,000 lb.	25,000 lb	5
10,000-20,000 lb.	30,000 lb	6
20,000-30,000 lb.	40,000 lb	8
30,000-40,000 lb.	50,000 lb	10
40,000-50,000 lb.	60,000 lb	12



Width (in)	Rated Capacities (lbs.)			Width (in)	Rated Capacities (lbs.)				
	Vert.	Choker	Vert. Basket		Vert.	Choker	Vert. Basket		
ONE PLY	1	1,600	1,280	3,200	1	4,100	3,300	8,200	
	2	3,100	2,480	6,200	2	8,300	6,600	16,600	
	3	4,700	3,760	9,400	3	12,500	10,000	25,000	
	4	6,200	4,960	12,400	4	16,000	12,800	32,000	
	5	7,800	6,240	15,600	5	19,200	15,400	38,400	
	6	9,300	7,440	18,600	6	23,000	18,400	46,000	
	8	11,750	9,400	23,500	8	30,700	24,500	61,400	
	10	14,700	11,760	29,400	10	36,800	29,400	73,600	
	12	17,650	14,120	35,300	12	44,000	35,200	88,000	
	TWO PLY	1	3,100	2,480	6,200	1	5,500	4,400	11,000
		2	6,200	4,960	12,400	2	11,000	8,800	22,000
		3	8,800	7,040	17,600	3	16,450	13,160	32,900
4		11,000	8,800	22,000	4	20,400	16,320	40,800	
5		13,700	10,960	27,400	5	25,500	20,400	51,000	
6		16,500	13,200	33,000	6	30,600	24,480	61,200	
8		22,750	18,200	45,500	8	39,700	31,700	79,400	
10		28,400	22,720	56,800	10	49,600	39,600	99,200	
12		34,100	27,280	68,200	12	59,500	47,600	119,000	

FORMULAS

Rectangular Volumes	$0.0148 \times L \times W$ (in feet) = BBLs / INCH
Round Tank Volumes	$0.001181 \times (\text{CIRC. FT} \times \text{CIRC. FT}) = \text{BBLs} / \text{INCH}$
Pipe & hole volumes	$0.00097 \times (\text{ID} \times \text{ID})$ (in inches) = BBLs / FT
Area of a Circle	$\text{DIA} \times \text{DIA} \times 0.7854$
Bottom Hole Pressure For Water	$0.434 \times \text{Depth} = \text{LBS} / \text{SQ. INCH}$
Bottom Hole Pressure For Mud	$0.00695 \times \text{Depth} \times \text{WT MUD} = \text{LBS} / \text{SQ. INCH}$
Bottom Hole Pressure For Oil	$0.434 \times \text{Depth} \times \text{SP. GR.} = \text{LBS} / \text{SQ. INCH}$

2,000-5,000 PSI EXPANDING OR SLAB GATE VALVES

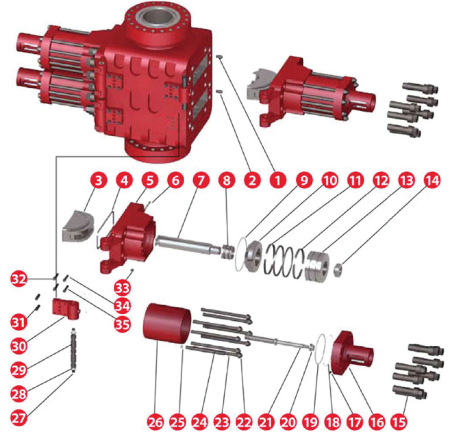
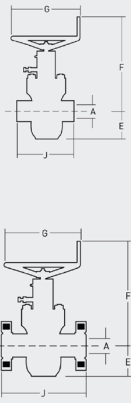
A - Valve Bore
E - Bore centerline to bottom of valve
F - Bore centerline to handwheel top
G - Handwheel diameter
J - Flange face to face
WT - Estimated weight
N - Number of turns to open valve

THREADED VALVES

SIZE	Working (PSI)	A		E		F		G		J		WT		N
		in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kgs	
2 1/2"	2000	2.06	52	4.81	122	19.25	488	11.00	279	9.62	244	90	40	13
	3000-5000	2.06	52	5.06	128	19.43	493	13.00	330	9.62	244	125	56	
2 9/16"	2000	2.56	65	5.62	142	20.18	512	13.00	330	10.25	260	125	56	15-1/2"
	3000-5000	2.56	65	5.93	150	20.43	519	16.00	406	10.25	260	160	72	
3 1/4"	2000	3.12	79	6.93	176	22.50	571	13.00	330	11.37	288	190	86	20
	3000-5000	3.12	79	7.31	185	22.75	577	16.00	406	11.37	288	230	104	
4 1/8"	2000	4.06	103	8.62	219	25.93	658	16.00	406	13.00	330	320	145	24-1/2"
	3000-5000	4.06	103	9.06	230	26.37	669	20.00	508	13.00	330	420	190	

FLANGED END VALVES

SIZE	Working (PSI)	A		E		F		G		J		WT		N
		in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kgs	
2 1/2"	2000	2.06	52	4.81	122	19.25	488	11.00	279	11.62	295	120	54	13
	3000-5000	2.06	52	5.06	128	19.43	493	13.00	330	14.62	371	125	56	
2 9/16"	2000	2.56	65	5.62	142	20.18	512	13.00	330	13.12	333	180	81	15-1/2"
	3000-5000	2.56	65	5.93	150	20.43	519	16.00	406	16.62	422	220	99	
3 1/4"	2000	3.12	79	6.93	176	22.50	571	13.00	330	14.12	359	220	99	20
	3000	3.12	79	7.31	185	22.75	577	16.00	406	17.12	435	300	136	
5000	3.12	79	7.31	185	22.75	577	16.00	406	18.62	473	340	154		
4 1/8"	2000	4.06	103	8.62	219	25.93	658	16.00	406	17.12	435	360	163	24-1/2"
	3000	4.06	103	9.06	230	26.37	669	20.00	508	20.12	511	520	235	
5000	4.06	103	9.06	230	26.37	669	20.00	508	21.62	549	560	254		
5 1/2"	2000	5.12	130	11.62	295	32.50	825	21.00	533	22.12	562	800	362	31
	3000	5.12	130	11.62	295	32.50	825	23.50	596	24.12	613	900	408	
5000	5.12	130	11.62	295	32.50	825	23.50	596	28.62	727	980	444		
7 1/2"	2000	7.06	179	13.87	352	33.10	840	13.00	330	26.12	663	1021	463	42
	3000	7.06	179	13.87	352	34.10	866	16.00	406	28.12	714	1118	507	
5000	7.06	179	13.87	352	34.10	866	20.00	508	32.00	813	1398	634		



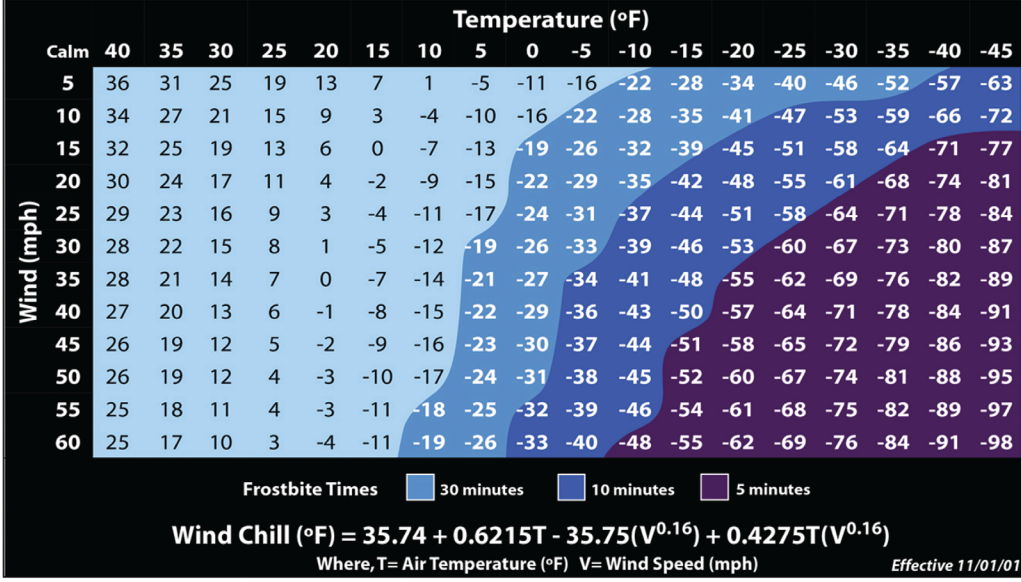
STRETCH CONSTANTS FOR TUBING

OD IN.	Weight lb/ft	ID in.	Wall Area in ²	Stretch Constant		
				in/1,000 lb/1,000 ft		
1.050	1.14	0.824	0.333	1.20120		
	1.20			1.09890		
	1.30			0.96852		
1.315	1.43	1.049	0.494	0.85653		
	1.63			0.80972		
	1.70					
	1.72					
	1.80					
1.660	2.10	1.410	0.603	0.66335		
	2.30			0.59791		
	2.33					
1.900	2.40	1.650	0.697	0.57389		
	2.60					
	2.72			1.610	0.799	0.50063
	2.75					
	2.90					
2.000	3.30	1.670	0.951	0.42061		
	3.40					
2.063	2.66	1.813	0.761	0.52562		
	3.25					
	3.30			1.751	0.935	0.42781
	3.40					
2.375	3.10	2.125	0.884	0.45249		
	3.32			0.42418		
	4.00			1.158	0.34543	
	4.60			1.304	0.30675	
	4.70			1.995	0.27082	
	5.30			1.477	0.23641	
	5.80			1.867	0.23081	
	6.20			1.853	1.733	0.18587
2.875	7.70	1.703	2.152	0.31546		
	4.36	2.441	1.812	0.30008		
	6.44			0.22075		
	6.40			0.17746		
	6.50					
	7.90			2.323	2.254	0.17746
	8.60			2.259	2.484	0.16103
	8.70					
	8.90			2.243	2.540	0.15748
	9.50			2.195	2.708	0.14771
10.40	2.151			2.858	0.13996	
11.00	2.065	3.143	0.12727			
11.65	1.995	3.366	0.11884			

NO.	Name	Qty.	NO.	Name	Qty.	NO.	Name	Qty.
1	Body	1	11	Rubber	8	24	Cylinder manifold	4
2	Pin	8	12	Wearing ring	8	25	O-ring 38x3.5	16
3	Bind ram assembly	2	13	Piston	4	26	Cylinder	4
4	Door seal	4	14	Locking plate	4	27	Screw plug Z1"	24
5	Right door	2	15	Bolt	32	28	O-ring 60x5.7	32
	Left door	2	16	Cylinder head	4	29	Hinge pin	4
	Secondary sealing screw plug	4	17	Screw plug Z3/4"	40	30	Right hinge bracket	2
6	Sealing grease	4	18	Retainer ring	4		Left hinge bracket	2
	Check valve	4	19	O-ring	4	31	Pin 20x10	8
7	Ram shaft	4	20	Locking shaft sealing assembly	4	32	Screw M24x10	16
8	Ram shaft sealing assembly	4	21	Locking shaft	4	33	Screw plug Z1"	4
9	O-ring 39x5.7	4	22	Nut	32	34	O-ring 34x3.5	8
10	Locking nut	4	23	Cylinder bolt	32	35	Oil cup MIOx1	4



Wind Chill Chart



APPS TO DOWNLOAD

- MyNOS App
- NOS Peak Safety
- VALVE WORKS
- SCHLUMBERGER GLOSSARY
- FIRST AID - AMERICAN RED CROSS
- NEXUS FLANGE SLIDE RULE
- HALLIBURTON RED BOOK

FIG. #	STANDARD SERVICE CWP TEST		PIPE SIZE (in.)			
	SUB	NUT	1	2	3	4
100	1,000	1,500				
200	2,000	3,000				
206	2,000	3,000				
400	4,000	6,000				
602	6,000	9,000				
1002	10,000	15,000				

SAFETY CHECKLIST

- JSA AND PAPERWORK COMPLETE
- SITE INSPECTION DONE
- KNOW YOUR ESCAPE ROUTE
- SAFE DRIVING IS KEY
- COMMUNICATION
- ALWAYS CHECK FOR PRESSURE

TUBING HEAD IDENTIFICATION

TYPE	PIN SPOT	BOWL	HANGER	MEASURE DOWN FROM TOP OF FLANGE
CAMERON	1-1/2"	7.030	7.010	
DOWNING	2"			
FMC/OCT	2-7/8"	7.00	6.985	

FMC, WEATHERFORD & DOWNING HANGER WILL LAND IN CAMERON BOWL W/ .045 DIFFERENCE

CAMERON HANGER WILL NOT LAND IN FMC/OCT BOWL

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