

Notes

Mono block DC construction	Uniform Yield throughout, no weld.
Stress Relief Groove in the Pin (NS-1)	SRG
Stress Relief Features is BB and SRG	SRF
Bore Back in the box	BB
BSR	Bending Strength Ratio of a Connection. Calculations have taken into account the stress relief features when calculating results.
Factor Diff. Stick.	Calculated based on the % of the component at full od.
ER Bending inertia loss	Bending inertia loss - is the % difference between the reduced area bending stiffness and the full DC CSA stiffness.
SR Bending inertia loss	ER is Elevator Recess, SR is Slip Recess.
Dawson Paslay Equivalent Buckling Resistance	Using the Dawson Paslay equn for buckling , this gives a comparison to the buckling resistance of the main DC OD / ID dimensions for the Elevator recess. Effectively a limit on WOB, buoyancy ignored as this is a comparison.
Calculations involving Yield Strength	A deration of 1.15 is applied to tensile yield load capacities, so loads shown are working loads.
MUT	Slight difference between API MUT and above MUT as SRG Area is considered, rather than calculating it ignoring the SRG

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API formulae used where applicable

Technical 8.25" OD Elevator groove DC's 90 square or 18 taper shoulder	Unit	Standard 90 Square	Alt 1 18 taper	Alt 2 18 taper	Alt 3 18 taper	Alt 4 18 taper
Overall New Length	ft	30.58	32.67	32.67	32.67	32.67
Box tong space	in	20	20	20	20	20
Elevator recess OD	in	7 1/2	6 5/8	5 7/8	5 5/8	5 1/2
Elevator recess length	in	18	33 1/2	33 1/2	33 1/2	33 1/2
Wear pad 1	in	3	3	3	3	3
Slip recess length	in	21	39.5	39.5	39.5	39.5
Slip recess OD	in	7 3/4	6 5/8	5 7/8	5 5/8	5 1/2
Wear pad 2	in	12	12	12	12	12
Spiral section area	in ²	47.52	47.52	47.52	47.52	47.52
Spiral length	in	269	244	244	244	244
Pin tong space	in	24	40	40	40	40
Max. ID	in	2 13/16	2 13/16	2 13/16	2 13/16	2 13/16
Min. Wall thickness	in	2.34	1.91	1.53	1.41	1.34
Factor diff. stick. in hole		53%	50%	50%	50%	50%
Closed end displacement	bbl/ft	0.07379	0.07033	0.06791	0.06722	0.06688
Capacity	bbl/ft	0.01025	0.01025	0.01025	0.01025	0.01025
Weight	lbf	4,680	4,764	4,600	4,553	4,530
Weight Variation from Std.	%	0	102%	98%	97%	97%
Wt / ft	lbf/ft	153	146	141	139.4	139
Connection						
OD	API	6 5/8" reg				
ID	in	8.25				
BB + SRG (NS-2)	in	2.8125				
Connection Tensile Capacity	lbf	yes				
Connection Torsional Capacity	ft.lbf	1,464,597				
Make up torque (with SRG)	ft.lbf	78,547				
B.S.R (With SRFs)	ft.lbf	44,629				
		2.604				
Body						
Tensile Capacity	lbf	3,354,509	2,752,992	1,998,737	1,782,752	1,678,282
Torsional Capacity	ft.lbf	386,796	299,132	199,531	173,283	160,970
Stiffness						
ER Area moment of inertia	in ⁴	132	94	55	46	42
ER Bending inertia variation from Std.	%	0%	71%	42%	35%	32%
SR Area moment of inertia	in	152	94	55	46	42
SR Bending inertia variation from Std.	%	0%	62%	36%	30%	28%
Stiffness Ratio	<3.5	1.47	1.92	2.88	3.32	3.57
Dawson Paslay Equivalent Buckling Resistance	lbf WOB	225,027	185,373	139,571	126,619	120,373
Material minimum yield strength	psi	110,000	110,000	110,000	110,000	110,000

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API formulae used where applicable

Technical 8.00 " OD Elevator groove DC's 90 square or 18 taper shoulder	Unit	Standard 90 Square	Alt 1 18 taper	Alt 2 18 taper	Alt 3 18 taper
Overall New Length	ft	30.58	32.71	32.71	32.71
Box tong space	in	20	20	20	20
Elevator recess OD	in	7 1/4	6 5/8	5 7/8	5 1/2
Elevator recess length	in	18	33 1/2	33 1/2	33 1/2
Wear pad 1	in	3	3	3	3
Slip recess length	in	21	39.5	39.5	39.5
Slip recess OD	in	7 1/2	6 5/8	5 7/8	5 1/2
Wear pad 2	in	12	12	12	12
Spiral section area	in ²	47.52	47.52	47.52	47.52
Spiral length	in	269	244.5	244.5	244.5
Pin tong space	in	24	40	40	40
Max. ID	in	2 13/16	2 13/16	2 13/16	2 13/16
Min. Wall thickness	in	2.22	1.91	1.53	1.34
Factor diff. stick. in hole		53%	50%	50%	50%
Closed end displacement	bbf/ft	0.06924	0.06618	0.06376	0.06273
Capacity	bbf/ft	0.01025	0.01025	0.01025	0.01025
Weight	lbf	4,391	4,482	4,318	4,249
Weight Variation from Std.	%	0	102%	98%	97%
Wt / ft	lbf/ft	144	137	132	130
Connection		API	6 5/8" reg		
OD	in		8		
ID	in		2.8125		
BB + SRG (NS-2)			yes		
Connection Tensile Capacity	lbf		1,464,597		
Connection Torsional Capacity	ft.lbf		77,846		
Make up torque (with SRG)	ft.lbf		44,230		
B.S.R (With SRFs)			2.604		
Body					
Tensile Capacity	lbf	3,354,509	2,752,992	1,998,737	1,678,282
Torsional Capacity	ft.lbf	386,796	299,132	199,531	160,970
Stiffness					
ER Area moment of inertia	in ⁴	132.5	94	55	41.8
ER Bending inertia variation from Std.	%	0%	71%	42%	32%
SR Area moment of inertia	in	152	94	55	41.8
SR Bending inertia variation from Std.	%	0%	62%	36%	28%
Stiffness Ratio	<3.5	1.35	1.75	2.62	3.25
Dawson Paslay Equivalent Buckling Resistance	lbf WOB	211,470	174,447	131,198	113,095
Material minimum yield strength	psi	110,000	110,000	110,000	110,000

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Created for DOS by Fearnley Procter Norge based on information supplied to them.
API formulae used where applicable

Technical 6.75" OD Elevator groove DC's 90 square or 18 taper shoulder	Unit	Standard 90 Square	Alt 1 18 taper	Alt 2 18 taper	Alt 3 18 taper	Alt 4 18 taper
Overall New Length	ft	30.63	32.71	32.71	32.71	32.71
Box tong space	in	20	20	20	20	20
Elevator recess OD	in	6	5 7/8	5 1/2	5	4 1/2
Elevator recess length	in	18	33 1/2	33 1/2	33 1/2	33 1/2
Wear pad 1	in	3	3	3	3	3
Slip recess length	in	21	39.5	39.5	39.5	39.5
Slip recess OD	in	6 1/4	5 7/8	5 1/2	5	4 1/2
Wear pad 2	in	12	12	12	12	12
Spiral section area	in ²	31.44	31.44	31.44	31.44	31.44
Spiral length	in	269.5	244.5	244.5	244.5	244.5
Pin tong space	in	24	40	40	40	40
Max. ID	in	2 13/16	2 13/16	2 13/16	2 13/16	2 13/16
Min. Wall thickness	in	1 10/16	1 9/16	1 6/16	1 2/16	14/16
Factor diff. stick. in hole		53%	50%	50%	50%	50%
Closed end displacement	bbl/ft	0.04627	0.04491	0.04388	0.04261	0.04147
Capacity	bbl/ft	0.01025	0.01025	0.01025	0.01025	0.01025
Weight	lbf	2,934	3,042	2,972	2,886	2,809
Weight Variation from Std.	%	0	105%	106%	98%	96%
Wt / ft	lbf/ft	95.80	93.00	90.86	88.23	85.88
Connection	API	NC 50				
OD	in	6.75				
ID	in	2.8125				
BB + SRG (NS-2)		yes				
Connection Tensile Capacity	lbf	987,913				
Connection Torsional Capacity	ft.lbf	45,966				
Make up torque (with SRG)	ft.lbf	26,117				
B.S.R (With SRFs)		2.55				
Body						
Tensile Capacity	lbf	2,110,251	1,998,737	1,678,282	1,283,875	927,031
Torsional Capacity	ft.lbf	213,491	199,531	160,970	116,819	80,195
Stiffness						
ER Area moment of inertia	in ⁴	60.5	55.4	41.8	27.6	17
ER Bending inertia variation from Std.	%	0	92%	69%	46%	28%
SR Area moment of inertia	in	71.8	55.4	41.8	27.6	17
SR Bending inertia variation from Std.	%	0	77%	58%	38%	24%
Stiffness Ratio	<3.5	1.45	1.55	1.92	2.65	3.86
Dawson Paslay Equivalent Buckling Resistance	lbf WOB	102,698	96,790	83,147	66,556	51,607
Material minimum yield strength	psi	110,000	110,000	110,000	110,000	110,000

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API formulae used where applicable

Technical 6.50" OD Elevator groove DC's 90 square or 18 taper shoulder	Unit	Standard 90 Square	Alt 1 18 taper	Alt 2 18 taper	Alt 3 18 taper	Alt 4 18 taper
Overall New Length	ft	30.63	32.71	32.71	32.71	32.71
Box tong space	in	20	20	20	20	20
Elevator recess OD	in	5 7/8	5 7/8	5 1/2	5	4 1/2
Elevator recess length	in	18	33 1/2	33 1/2	33 1/2	33 1/2
Wear pad 1	in	3	3	3	3	3
Slip recess length	in	21	39.5	39.5	39.5	39.5
Slip recess OD	in	6	5 7/8	5 1/2	5	4 1/2
Wear pad 2	in	12	12	12	12	12
Spiral section area	in ²	31.44	31.44	31.44	31.44	31.44
Spiral length	in	269.5	244.5	244.5	244.5	244.5
Pin tong space	in	24	40	40	40	40
Max. ID	in	2 13/16	2 13/16	2 13/16	2 13/16	2 13/16
Min. Wall thickness	in	1.53	1.53	1.34	1.09	0.84
Factor diff. stick. in hole		53%	50%	50%	50%	50%
Closed end displacement	dbl/ft	0.04223	0.04152	0.04049	0.03923	0.03808
Capacity	dbl/ft	0.01025	0.01025	0.01025	0.01025	0.01025
Weight	lbf	2,678	2,812	2,743	2,657	2,579
Weight Variation from Std.	%	0	105%	102%	99%	96%
Wt / ft	lbf/ft	87.44	85.97	83.86	81.23	78.85
Connection	API	NC 50 6.5 2.8125 yes 987,913 45,493 25,848 2.36				
OD	in					
ID	in					
BB + SRG (NS-2)						
Connection Tensile Capacity	lbf					
Connection Torsional Capacity	ft.lbf					
Make up torque (with SRG)	ft.lbf					
B.S.R (With SRFs)						
Body						
Tensile Capacity	lbf	1,998,737	1,998,737	1,678,282	1,283,875	927,031
Torsional Capacity	ft.lbf	199,531	199,531	160,970	116,819	80,195
Stiffness						
ER Area moment of inertia	in ⁴	55.4	55.4	41.8	27.61	17.06
ER Bending inertia variation from Std.	%	0%	100%	75%	50%	31%
SR Area moment of inertia	in	60.55	55.4	41.8	27.61	17.06
SR Bending inertia variation from Std.	%	0%	91%	69%	46%	28%
Stiffness Ratio	<3.5	1.379	1.379	1.71	2.35	3.43
Dawson Paslay Equivalent Buckling Resistance	lbf WOB	91,802	91,802	78,118	62,453	48,368
Material minimum yield strength	psi	110,000	110,000	110,000	110,000	110,000

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API formulae used where applicable

Technical 4.75" OD Elevator groove DC's 90 square or 18 taper shoulder	Unit	Standard 90 Square	Alt 1 18 taper	Alt 2 18 taper
Overall New Length	ft	30.63	32.71	32.71
Box tong space	in	20	20	20
Elevator recess OD	in	4 1/4	4	3 5/8
Elevator recess length	in	18	33 1/2	33 1/2
Wear pad 1	in	3	3	3
Slip recess length	in	21	39.5	39.5
Slip recess OD	in	4 3/8	4	3 5/8
Wear pad 2	in	12	12	12
Spiral section area	in ²	16.83	16.83	16.83
Spiral length	in	269.5	244.5	244.5
Pin tong space	in	24	40	40
Max. ID	in	2 1/4	2 1/4	2 1/4
Min. Wall thickness	in	1.00	0.88	0.71
Factor diff. stick. in hole		53%	50%	50%
Closed end displacement	bbf/ft	0.02147	0.02053	0.01984
Capacity	bbf/ft	0.00656	0.00656	0.00656
Weight	lbf	1,362	1,390	1,344
Weight Variation from Std.	%	0	102%	99%
Wt / ft	lbf/ft	44.47	42.50	41.09
Connection				
OD	in		NC 38	
ID	in		4.75	
BB + SRG (NS-2)			2.25	
Connection Tensile Capacity	lbf		yes	
Connection Torsional Capacity	ft.lbf		456,181	
Make up torque (with SRG)	ft.lbf		16,305	
B.S.R (With SRFs)			9,264	
			2.12	
Body				
Tensile Capacity	lbf	976,626	821,680	606,869
Torsional Capacity	ft.lbf	73,460	59,812	42,127
Stiffness				
ER Area moment of inertia	in ⁴	14.8	11.3	7.2
ER Bending inertia variation from Std.	%	0%	76%	49%
SR Area moment of inertia	in	16.7	11.3	7.2
SR Bending inertia variation from Std.	%	0%	68%	43%
Stiffness Ratio	<3.5	1.44	1.77	2.5
Dawson Paslay Equivalent Buckling Resistance	lbf WOB	29,577	25,317	19,884
Material minimum yield strength	psi	110,000	110,000	110,000

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