

RECOMMENDED MINIMUM MAKE-UP TORQUE (ft-lb)

Size and Type of Connection	OD (in.)	Bore of Drill Collars (in.)								
		1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	2 13/16	3	3 1/4
2 3/8" API I.F. or API N.C. 26 or	3 1/2	4600	4600	3700						
	3 3/4	5500	4700	3700						
2 7/8" P.A.C.	3	3800	3800	2900						
	3 1/8	4900	4200	2900						
	3 1/4	5200	4200	2900						
2 7/8" Extra Hole or 3 1/2" Dbl. Streamline 2 7/8" Mod. Open	3 3/4	4100	4100	4100						
	3 7/8	5300	5300	5300						
	4 1/8	8000	8000	8000						
2 7/8" API I.F. or API N.C. 31 or 3 1/2" Slim Hole	3 7/8	4600	4600	4600	4600					
	4 1/8	7300	7300	7300	6800					
	4 1/4	8800	8800	8100	6800					
	4 1/2	10000	9300	8100	6800					
API N.C. 35	4 1/2			8900	8900	8900	7400			
	4 3/4			12100	10800	9200	7400			
	5			12100	10800	9200	7400			
3 1/2" Extra Hole or 4" Slim Hole or 3 1/2" Mod. Open	4 1/4			5100	5100	5100	5100			
	4 1/2			8400	8400	8400	8200			
	4 3/4			11900	11700	10000	8200			
	5			13200	11700	10000	8200			
	5 1/4			13200	11700	10000	8200			
3 1/2" API I.F or API N.C. 38 or 4 1/2" Slim Hole	4 3/4			9900	9900	9900	9900	8300		
	5			13800	13800	12800	10900	8300		
	5 1/4			16000	14600	12800	10900	8300		
	5 1/2			16000	14600	12800	10900	8300		
3 1/2" H-90	4 3/4			8700	8700	8700	8700	8700		
	5			12700	12700	12700	12700	10400		
	5 1/4			16900	16700	15000	13100	10400		
	5 1/2			18500	16700	15000	13100	10400		
4" Full Hole or API N.C. 40 or 4" Mod Open or 4 1/2" Dbl.Streamline	5			10800	10800	10800	10800	10800		
	5 1/4			15100	15100	15100	14800	12100		
	5 1/2			19700	18600	16900	14800	12100		
	5 3/4			20400	18600	16900	14800	12100		
	6			20400	18600	16900	14800	12100		
4" H-90	5 1/4				12500	12500	12500	12500		
	5 1/2				17300	17300	17300	16500		
	5 3/4				22300	21500	19400	16500		
	6				23500	21500	19400	16500		
	6 1/4				23500	21500	19400	16500		
4 1/2" API Regular	5 1/2				15400	15400	15400	15400		
	5 3/4				20300	20300	19400	16200		
	6				23400	21600	19400	16200		
	6 1/4				23400	21600	19400	16200		
API N.C. 44	5 3/4				20600	20600	20600	18000		
	6				25000	23300	21200	18000		
	6 1/4				25000	23300	21200	18000		
	6 1/2				25000	23300	21200	18000		
4 1/2" API Full Hole	5 1/2				12900	12900	12900	12900	12900	
	5 3/4				17900	17900	17900	17900	17700	
	6				23300	23300	22800	19800	17700	
	6 1/4				27000	25000	22800	19800	17700	
	6 1/2				27000	25000	22800	19800	17700	
4 1/2" Extra Hole or API N.C. 46 or 4" API I.F. or 5" Dbl/ Streamline or 4 1/2" Mod. Open	5 3/4					17600	17600	17600	17600	
	6					23200	23200	22200	20200	
	6 1/4					28000	25500	22200	20200	
	6 1/2					28000	25500	22200	20200	
	6 3/4					28000	25500	22200	20200	
4 1/2" H-90	5 3/4					17600	17600	17600	17600	
	6					23400	23400	23000	21000	
	6 1/4					28500	26000	23000	21000	
	6 1/2					28500	26000	23000	21000	
	6 3/4					28500	26000	23000	21000	

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		1 3/4	2	2 1/4	2 1/2	2 13/16	3	3 1/4	3 1/2	3 3/4
5" H-90	6 1/4			25000	25000	25000	25000			
	6 1/2			31500	31500	29500	27000			
	6 3/4			35000	33000	29500	27000			
	7			35000	33000	29500	27000			
5 1/2" H-90	6 3/4			34000	34000	34000	34000			
	7			41500	40000	36500	34000			
	7 1/4			42500	40000	36500	34000			
	7 1/2			42500	40000	36500	34000			
5 1/2" API Regular	6 3/4			31500	31500	31500	31500			
	7			39000	39000	36000	33500			
	7 1/4			42000	39500	36000	33500			
	7 1/2			42000	39500	36000	33500			
4 1/2" API I.F. or API N.C. 50 or 5" Extra Hole or 5" Mod Open or 5 1/2" Dbl. Streamline	6 1/4			22800	22800	22800	22800	22800		
	6 1/2			29500	29500	29500	29500	26500		
	6 3/4			36000	35500	32000	30000	26500		
	7			38000	35500	32000	30000	26500		
	7 1/4			38000	35500	32000	30000	26500		
5 1/2" API Full Hole	7				32500	32500	32500	32500		
	7 1/4				40500	40500	40500	40500		
	7 1/2				49000	47000	45000	41500		
	7 3/4				51000	47000	45000	41500		
API N.C. 56	7 1/4				40000	40000	40000	40000		
	7 1/2				48500	48000	45000	42000		
	7 3/4				51000	48000	45000	42000		
	8				51000	48000	45000	42000		
6 5/8" API Regular	7 1/2				46000	46000	46000	46000		
	7 3/4				55000	53000	50000	47000		
	8				57000	53000	50000	47000		
	8 1/4				57000	53000	50000	47000		
6 5/8" H-90	7 1/2				46000	46000	46000	46000		
	7 3/4				55000	55000	53000	49500		
	8				59500	56000	53000	49500		
	8 1/4				59500	56000	53000	49500		
API N.C. 61	8				54000	54000	54000	54000		
	8 1/4				64000	64000	64000	61000		
	8 1/2				72000	68000	65000	61000		
	8 3/4				72000	68000	65000	61000		
	9				72000	68000	65000	61000		
5 1/2" API I.F.	8				56000	56000	56000	56000	56000	
	8 1/4				66000	66000	66000	63000	59000	
	8 1/2				74000	70000	67000	63000	59000	
	8 3/4				74000	70000	67000	63000	59000	
	9				74000	70000	67000	63000	59000	
6 5/8" API Full Hole	9 1/4									
	9 1/2									
	9					67000	67000	67000	67000	66500
	8 3/4					78000	78000	76000	72000	66500
	9					83000	80000	76000	72000	66500
API N.C. 70	9 1/4					83000	80000	76000	72000	66500
	9 1/2					83000	80000	76000	72000	66500
	9					75000	75000	75000	75000	75000
7 5/8" API Regular	9 1/4					88000	88000	88000	88000	88000
	9 1/2					101000	101000	100000	95000	90000
	9									
	8 1/2									
7 5/8" H-90	8 1/2									
	8 3/4									
	9									
	9 1/4									
Connections with Full Face	9 1/2									
	9									
	8 1/2									
7 5/8" API Regular	8 1/2									
	8 3/4									
	9									
	9 1/4									
7 5/8" H-90	9 1/2									
	9 1/4									
	9									