

TORQUE MAKE-UP FOR FJ-4S			FOR FL-4S								
SIZE	WT/FT	GRADE	MAKE-UP TORQUE			SIZE	WT/FT	GRADE	MAKE-UP TORQUE		
			FT/LBS						FT/LBS		
			MIN.	OPT.	MAX.				MIN.	OPT.	MAX.
2 3/8"	4.43	J-55	400		500	4"	9.11	N-80	1300		1500
2 3/8"	4.43	N-80	500		600	4"	9.11	P-110	1400		1600
2 3/8"	4.43	P-110	550		650	4"	10.46	J-55	1200		1500
2 3/8"	5.75	J-55	400		500	4"	10.46	N-80	1400		1600
2 3/8"	5.75	N-80	500		600	4"	10.46	P-110	1400		1750
2 3/8"	5.75	P-110	600		700	4"	11.34	J-55	1300		1600
2 7/8"	6.16	J-55	600		700	4"	11.34	N-80	1600		1900
2 7/8"	6.16	N-80	800		900	4"	11.34	P-110	2200		2600
2 7/8"	6.16	P-110	800		1000	4 1/2"	9.40	J-55	1800		2300
2 7/8"	7.66	J-55	600		700	4 1/2"	9.40	N-80	1800		2300
2 7/8"	7.66	N-80	800		900	4 1/2"	9.40	P-110	1800		2400
2 7/8"	7.66	P-110	800		1000	4 1/2"	10.23	J-55	1800		2300
3 1/2"	7.58	J-55	900		1000	4 1/2"	10.23	N-80	1800		2300
3 1/2"	7.58	N-80	1100		1300	4 1/2"	10.23	P-110	1800		2400
3 1/2"	7.58	P-110	1150		1350	4 1/2"	10.79	J-55	1800		2300
3 1/2"	8.81	J-55	900		1000	4 1/2"	10.79	N-80	2200		2800
3 1/2"	8.81	N-80	1400		1600	4 1/2"	10.79	P-110	2300		3000
3 1/2"	8.81	P-110	1600		1800	4 1/2"	11.35	J-55	2100		2600
3 1/2"	9.91	J-55	1000		1200	4 1/2"	11.35	N-80	2200		290
3 1/2"	9.91	N-80	1400		1600	4 1/2"	11.35	P-110	2300		3100
3 1/2"	9.91	P-110	1600		1800	4 1/2"	12.24	J-55	2100		2600
3 1/2"	12.52	J-55	1300		1500	4 1/2"	12.24	N-80	2200		3000
3 1/2"	12.52	N-80	1500		1700	4 1/2"	12.24	P-110	2400		3300
3 1/2"	12.52	P-110	1700		1900	4 1/2"	13.04	J-55	2200		2700
4"	9.11	J-55	1100		1400	4 1/2"	13.04	N-80	2300		3100
SIZE	WT/FT	GRADE	MAKE-UP TORQUE			SIZE	WT/FT	GRADE	MAKE-UP TORQUE		
			FT/LBS						FT/LBS		
			MIN.	OPT.	MAX.				MIN.	OPT.	MAX.
4 1/2"	13.04	P-110	2800		3400	5 1/2"	22.54	N-80	4400		5200
5"	11.23	J-55	1200		1800	5 1/2"	22.54	P-110	4600		5600
5"	11.23	N-80	1200		1800	6 5/8"	20.00	K-55	3000		4000
5"	11.23	P-110	1200		1800	6 5/8"	20.00	L-80	3000	3500	4000
5"	12.83	J-55	1200		1800	6 5/8"	20.00	P-110	3100	3600	4200
5"	12.83	N-80	1200		1800	6 5/8"	23.20	K-55	3200		4200
5"	12.83	P-110	1200		1800	6 5/8"	23.20	L-80	3300	3800	4300
5"	14.87	J-55	3000		3600	6 5/8"	23.20	P-110	3600	4100	4700
5"	14.87	N-80	3000		3900	6 5/8"	24.00	K-55	3300		4300
5"	14.87	P-110	3600		4300	6 5/8"	24.00	L-80	5200	5700	6200
5"	17.93	J-55	3000		3600	6 5/8"	24.00	P-110	6000	6500	6800
5"	17.93	N-80	3100		3700	6 5/8"	28.00	K-55			
5"	17.93	P-110	3600		4300	6 5/8"	28.00	L-80	5400	5900	6400
5 1/2"	13.70	J-55	1900		2400	6 5/8"	28.00	P-110	6200	6700	7000
5 1/2"	13.70	N-80	1900		2500	6 5/8"	32.00	K-55			
5 1/2"	13.70	P-110	1900		2500	6 5/8"	32.00	L-80	5500	6000	6500
5 1/2"	15.35	J-55	2300		2700	6 5/8"	32.00	P-110	6300	6800	7100
5 1/2"	15.35	N-80	2800		3400	6 5/8"	40.80	K-55			
5 1/2"	15.35	P-110	3100		3600	6 5/8"	40.80	L-80	6500	7200	7500
5 1/2"	16.81	J-55	2400		2900	6 5/8"	40.80	P-110	7500	8000	8500
5 1/2"	16.81	N-80	3000		3600	7"	17.00	K-55	2500		3500
5 1/2"	16.81	P-110	4000		4600	7"	17.00	L-80	2800	3300	3800
5 1/2"	19.81	J-55	2800		3300	7"	17.00	P-110	2900	3400	3900
5 1/2"	19.81	N-80	3400		4100	7"	20.00	K-55	2500		3500
5 1/2"	19.81	P-110	4400		5200	7"	20.00	L-80	2900	3400	3900
5 1/2"	22.54	J-55	2900		3400	7"	20.00	P-110	2800	3300	3800
SIZE	WT/FT	GRADE	MAKE-UP TORQUE			SIZE	WT/FT	GRADE	MAKE-UP TORQUE		
			FT/LBS						FT/LBS		
			MIN.	OPT.	MAX.				MIN.	OPT.	MAX.
7"	23.00	K-55	3800		4400	7"	49.50	P-110	10000	10800	11500
7"	23.00	L-80	4900	5400	5900	7 5/8"	24.00	K-55	4000		4800
7"	23.00	P-110	5100	5600	6100	7 5/8"	24.00	L-80	4500	4900	5500
7"	26.00	K-55				7 5/8"	24.00	P-110	4700	5100	5800
7"	26.00	L-80	6000	6600	7200	7 5/8"	26.40	K-55	4300		5100
7"	26.00	P-110	6400	7000	7100	7 5/8"	26.40	L-80	6200	6800	7300
7"	29.00	K-55				7 5/8"	26.40	P-110	7000	7700	8100
7"	29.00	L-80	6000	6600	7200	7 5/8"	29.70	K-55	4400	5200	
7"	29.00	P-110	6400	7000	7400	7 5/8"	29.70	L-80	6200	6800	7300
7"	32.00	K-55				7 5/8"	29.70	P-110	7200	7900	8300
7"	32.00	L-80	6500	7100	7500	7 5/8"	33.70	K-55			
7"	32.00	P-110	7500	8300	8700	7 5/8"	33.70	L-80	6400	7000	7100
7"	35.00	K-55				7 5/8"	33.70	P-110	7400	8100	8500
7"	35.00	L-80	5900	7600	8000	7 5/8"	39.00	K-55			
7"	35.00	P-110	7600	8400	8800	7 5/8"	39.00	L-80	6500	7100	7500
7"	38.00	K-55				7 5/8"	39.00	P-110	7500	8300	8700
7"	38.00	L-80	7500	8200	8700	7 5/8"	45.30	K-55			
7"	38.00	P-110	7800	8600	9000	7 5/8"	45.30	L-80	7000	7700	8100
7"	41.00	K-55				7 5/8"	45.30	P-110	8000	8700	9200

7"	41.00	L-80	8000	8600	9200
7"	41.00	P-110	8500	9400	10000
7"	46.00	K-55			
7"	46.00	L-80	8200	8900	9500
7"	46.00	P-110	9000	9800	10500
7"	49.50	K-55			
7"	49.50	L-80	10000	10800	11500
SIZE	WT/FT	GRADE	MAKE-UP TORQUE		
			FT/LBS		
			MIN.	OPT.	MAX.
7 5/8"	53.06	L-80	9000	9500	10100
7 5/8"	53.06	P-110	10000	10700	11700
7 3/4"	46.10	K-55			
7 3/4"	46.10	L-80	9000	9700	10400
7 3/4"	46.10	P-110	9500	10500	10900
8 5/8"	24.00	K-55	4500		5600
8 5/8"	24.00	L-80	4500	4800	6200
8 5/8"	24.00	P-110	4600	4900	6300
8 5/8"	28.00	K-55	4500		5600
8 5/8"	28.00	L-80	4500	4800	6200
8 5/8"	28.00	P-110	4600	4900	6300
8 5/8"	29.35	K-55	5000		6000
8 5/8"	29.35	L-80	4900	5200	6600
8 5/8"	29.35	P-110	5000	5300	6700
8 5/8"	32.00	K-55	5500		6500
8 5/8"	32.00	L-80	7000	7700	8200
8 5/8"	32.00	P-110	7200	7900	8400
8 5/8"	36.00	K-55			
8 5/8"	36.00	L-80	7200	7900	8300
8 5/8"	36.00	P-110	7400	8100	8500
8 5/8"	40.00	K-55			
8 5/8"	40.00	L-80	8000	8800	9200
8 5/8"	40.00	P-110	8200	9000	9400
8 5/8"	44.00	K-55			
8 5/8"	44.00	L-80	8500	9300	9800
8 5/8"	44.00	P-110	9500	10500	11000

7 5/8"	47.10	K-55			
7 5/8"	47.10	L-80	7100	7800	8200
7 5/8"	47.10	P-110	8100	8800	9300
7 5/8"	51.20	K-55			
7 5/8"	51.20	L-80	8300	8800	9400
7 5/8"	51.20	P-110	9900	10500	11500
7 5/8"	53.06	K-55			
SIZE	WT/FT	GRADE	MAKE-UP TORQUE		
			FT/LBS		
			MIN.	OPT.	MAX.
8 5/8"	49.00	K-55			
8 5/8"	49.00	L-80	8800	9500	10100
8 5/8"	49.00	P-110	9700	10700	11200
9 5/8"	46.50	K-55	5000		5800
9 5/8"	46.50	L-80	5400	5900	6300
9 5/8"	46.50	P-110	6200	6800	7200
9 5/8"	47.00	K-55			
9 5/8"	47.00	L-80	6500	7000	7500
9 5/8"	47.00	P-110	7400	8000	8500
9 5/8"	53.50	K-55			
9 5/8"	53.50	L-80	8000	8800	9200
9 5/8"	53.50	P-110	10500	11600	12100
9 5/8"	71.80	K-55			
9 5/8"	71.80	L-80	12000	13200	15000
9 5/8"	71.80	P-110	14000	16000	18000

