Normalized and tempered T66/XD and HD sucker rods

Dependable, High-Strength Service

T66/XD rods are extremely dependable and are designed for high-strength service. They provide an intermediate step between the API Grade D and ultrahigh-strength EL rods. These rods are manufactured with 4138M chrome-moly steel to handle the toughest stresses. The special alloy steel provides resistance to sulfide-stress cracking.

HD sucker rods provide an additional intermediate step between API Grade D and ultrahigh-strength EL rods. The HD rods are manufactured with 4332SRX nickel-chrome-moly steel, designed for high-strength service.

The metallurgical makeup of the T66/XD and HD sucker rods is checked continually for quality assurance. Rods are forged, normalized and tempered, and shot-blasted Pins are precision-machined and cold-roll threaded.

The continuous in-process inspection confirms that only the finest sucker rods bear the Weatherford name.

Applications

Deep, highly loaded wells in mildly corrosive environments when satisfactory corrosion-inhibiting practices are followed.

Specifications

- T66/XD rods: special chrome-moly alloy steel
- HD rods: special nickel-chrome-moly alloy steel
- Normalized and tempered (T66/XD and HD)
- Pin ends machined with cold-rolled threads (T66/XD and HD)
- Pony rods conform to appropriate rod classifications and are manufactured under strict quality standards and from the same alloy steels as sucker rods

Maximum Allowable Stress

T66/XD and HD: $Sa = (T/2.8 + 0.375\ S_{min})\ SF$

Sa = Maximum allowable stress, psi
T = Minimum tensile stress, psi
S_{min} = Minimum stress, psi
SF = Service factor

Recommended Makeup from Hand-Tight Positions for Weatherford EL, T66/XD, and HD Sucker Rods

Rod Size (in.)	Wrench Square (in.)	Coupling	Coupling Box OD (in.)	New and Rerun Rods	
				Minimum (in.)	Maximum (in.)
5/8	7/8 API	Full-size, slimhole, API Grade T couplings and Grade SM couplings	1 1/2	21/64	25/64
3/4	1 API		1 5/8	26/64	30/64
7/8 (EL rod)	1-1/8 non-API to match sucker rod strength		1 13/16	29/64	36/64
7/8	1 API		1 13/16	29/64	36/64
1	1 5/16 API		2 3/16	37/64	46/64
1 1/8	1 1/2 API		2 3/8	45/64	52/64

Recommended maximum weight indicator pull

Rod Type	Size (in.)	Load	
		(lb)	(DaN)
MD	5/8	23,400	10,400
	3/4	33,800	15,000
	7/8	45,900	20,400
	1	60,000	26,600
D	5/8	27,600	12,200
	3/4	39,700	17,600
	7/8	54,100	24,000
	1	70,600	31,400
	1-1/8	89,400	39,700
KD	3/4	37,700	16,800
	7/8	51,400	22,800
	1	67,100	29,800
	1-1/8	84,900	37,700
Grade HD T66/XD	3/4	45,700	20,300
	7/8	62,200	27,600
	1	81,200	36,100
	1-1/8	102,800	45,700
S67 67D	3/4	43,700	19,400
	7/8	59,500	26,400
	1	77,700	34,500
	1-1/8	98,400	43,700
S87	3/4	45,700	20,300
	7/8	62,200	27,600
	1	81,200	36,100
S88	3/4	51,600	22,900
	7/8	70,300	31,200
	1	91,800	40,800
	1-1/8	116,200	51,700
EL rod	5/8	35,900	15,900
	3/4	51,600	22,900
	7/8	70,300	31,200
	1	91,800	40,800
	1-1/8	116,200	51,700

Size (in.)	Weight	
	(lb/ft)	(kg/m)
5/8	1.114	1.657
3/4	1.634	2.432
7/8	2.224	3.310
1	2.904	4.322
1-1/8	3.676	5.471

Tabulated here is the maximum weight indicator pull (load) that can be applied to a stuck sucker-rod string. The ratings are based on 90 percent of the minimum yield strength for a sucker-rod string in “like new” condition. The maximum pull should be reached with a steady pull and not with a shock load. For a tapered string, calculate the weight of the sucker rod above the smallest and lowest section, and add the calculated weight to the value tabulated here for the type and size of the lower section. For a single-taper sucker-rod string, the values tabulated here are the maximum pull.

Progressing cavity pumping torque limits

Grade	Rod Size[a] (in.)	Yield Strength (ksi, MPa)	Specified Torque Limit[b] (ft-lb, N•m)
MD	3/4	85 586	430 583
	7/8		675 915
	1		1,000 1,356
D	3/4	100 689	460 624
	7/8		735 997
	1		1,100 1,491
	1 × 7/8		1,100[c] 1,491
	1-1/8		1,570 2,129
S67 67D	7/8	110 758	780 1,058
	1		1,165 1,580
	1-1/8		1,660 2,251
KD	3/4	95 655	440 597
	7/8		750 1,017
	1		1,110 1,505
	1 × 7/8		1,110[c] 1,505
	1-1/8		1,500 2,034
	1-1/4 × 1		1,680[c] 2,278
S87	7/8	115 793	815 1,105
	1		1,220 1,654
	1-1/8		1,740 2,359

[a]Not all sucker rod sizes are listed in this table. For information about additional sizes, contact your authorized Weatherford representative.
[b]Weatherford requires that a 0.8 service factor be applied to all specified torque limits.
[c]Hi-T coupling and special makeup procedures required.
[d]Hi-T 5-in. couplings are required for all 1 1/4 × 1 1/8 and 1 1/2 × 1 1/8-in. torque rods.

Grade	Rod Size[a] (in.)	Yield Strength (ksi, MPa)	Specified Torque Limit[b] (ft-lb, N•m)
Special Alloy T66/XD	3/4	115 793	500 678
	7/8		800 1,085
	1		1,200 1,627
	1 × 7/8		1,200[c] 1,627
	1-1/8		1,700 2,305
	1-1/4 × 1		2,000[c] 2,712
	1-1/4 × 1-1/8[d]		3,125[c] 4,237
	1-1/2 × 1-1/8[d]		3,750[c] 5,084
HD	3/4	115 793	500 678
	7/8		800 1,085
	1		1,200 1,627
	1 × 7/8		1,200[c] 1,627
	1-1/8		1,700 2,305
	1-1/4 × 1		2,000[c] 2,712
	1-1/4 × 1-1/8[d]		3,125[c] 4,237
	1-1/2 × 1-1/8[d]		3,750[c] 5,084
S88	7/8	130 896	920 1,247
	1		1,380 1,871
	1-1/8		1,965 2,664
EL rod	7/8	—	1,250[c] 1,695
	1		2,000[c] 2,712
	1-1/8		3,125[c] 4,596