Weatherford®

Sucker Rods

Innovative technology for unsurpassed results.

The Weatherford portfolio offers depth, breadth, and experience.

Weatherford, the only oilfield services company to offer extensive solutions for all forms of artificial lift, brings global expertise and an unparalleled depth of products to suit any production need. We are the only original equipment manufacturer to offer fully integrated production optimization solutions, including manufacturing, service, repair, and refurbishment.

With a complete well-optimization package, from pumps to wellsite automation to data analysis, we create customized solutions with the most advanced technology available. Our tools are the culmination of expert engineering and design, superior materials, and the Weatherford promise of reliability.

Weatherford offers comprehensive artificial-lift solutions.

Support for the life of your well.

Weatherford has become a leader in global oil and gas products and services through our commitment to technology development, quality mechanical solutions, and excellent service. We understand the unique challenges of oil and gas drilling and production, and we have the expertise and equipment to help you meet and exceed your objectives.

Our service to you does not end when you buy our product. When you choose Weatherford technology, you also gain a partner to support that technology for the life of your well.

Around the globe, our technical and engineering experts are available 24/7 to provide on-site support services to our clients.

Since each site has its own unique conditions, we work with you to find the fit-for-purpose solution that’s right for you. Our comprehensive approach means you’ll get the right technology and engineering for your objectives and environment, so you can maximize production even in challenging circumstances.

Contents

Sucker-rod manufacturing

Weatherford sucker rods are designed and built by experts using state-of-the-art manufacturing processes.

Maximize Your Performance

When it is time to take your production capabilities to the next level, look to Weatherford artificial-lift systems. Our premium-quality, high-strength sucker rods are individually tested and have high and ultra-high load ratings. Each rod is heat treated, fatigue resistant, and has pin ends machined with rolled threads. And with options ranging from traditional steel to innovative specialty rods, you'll find a solution to fit the needs of even the most challenging well.

Whether your rods have parted and you need to get back up and running, or you want to leverage the power of your operations with a superior artificial-lift system, Weatherford will partner with you to get the results you want, efficiently. Our inventory is available worldwide, so you'll be able to get the equipment you need when and where you need it.

We have experts that can help you choose the best solution and artificial-lift system for your well. In addition to traditional equipment, Weatherford offers innovative technology such as our LOWIS-enabled intelligent rod rotator, rod guides, the COROD® continuous rod, and fiberglass rods.

Superior Quality for the Toughest Conditions

We stand behind the unsurpassed quality of our products and services. Each sucker rod has a unique heat code for traceability, so we can easily locate the plant and crew that manufactured it. This saves you maintenance time and helps us provide rapid and thorough service when needed.

Weatherford sucker rods are available quenched and tempered, giving them a stronger and finer-grain structure that is more resistant to fatigue. Typical charpy impact results for these rods are more than 70 ft-lb, as opposed to 20 ft-lb range for normalized and tempered rods. Their greater impact strength gives our rods superior performance and longevity even in extreme conditions.

We offer a wide variety of sucker rods to suit the specific needs of each well. Our expert personnel will help you find the solution that works best to increase production safely at your well.

Artificial-Lift Optimization

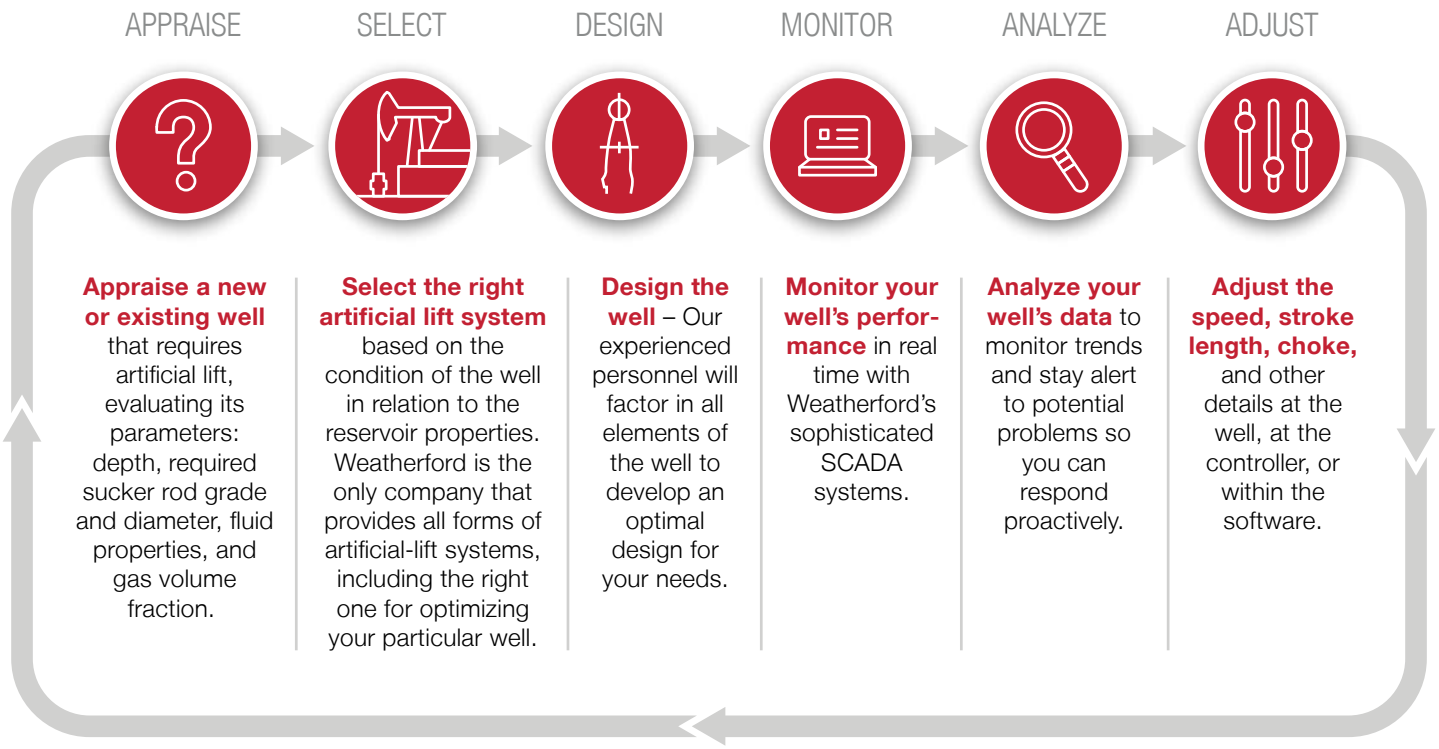
The Weatherford approach to developing a solution for a well follows the same process that is used in the field: appraise, select, design, monitor, analyze, and adjust.

No matter how well a system is operated and designed, artificial-lift systems can have failures. Our goal is to keep failures to a minimum and the time between failures as long as possible. If a system does fail, you can be armed with the history of the well, the collected real-time data, and a team of Weatherford employees to help you optimize the performance of your well.

Our Commitment to Safety

At Weatherford, our technology is not just built to maximize production. We also design our products and solutions with safety in mind. We are committed to delivering high-quality, reliable equipment and services that help to keep your personnel and environment as safe as possible while increasing your performance.

We are also committed to the safety of our own people through the use of state-of-the-art robotics in manufacturing, and through our Operational Excellence and Performance System (OEPS). By following an established safety protocol, and by analyzing and improving our practices, we manufacture and deliver your goods safely and efficiently.



High-strength sucker rods

Premium Fatigue Protection

Weatherford artificial-lift systems offer premium-quality, high-strength sucker rods with high and ultrahigh load ratings plus corrosion-resistant properties. These rods are normalized and tempered prior to induction case hardening. Each rod is heat treated and has pin ends that are machined with rolled threads.

Ultrahigh-strength EL® sucker rods

Designed to provide an ultrahigh load rating and corrosion fatigue resistance, EL rods are part of the Weatherford premium line of high-strength coupled sucker rods. Our induction-case-hardening process gives these rods the ultimate in fatigue resistance.

Ordinary sucker rods tend to fail from fatigue that originates at the surface, which is under tension. The unique engineering of Weatherford EL rods puts them in a class of their own. The compression layer at the surface of each rod remains under compression, even under normal operating tensile loads. With the surface thus protected from tensile stresses, the chance of developing fatigue cracks is greatly reduced.

In addition, the stringent quality-control procedures we apply to the manufacture of these rods promote reliable and long service life.

EL sucker rods are available in 5/8-, 3/4-, 7/8-, 1- and 1 1/8-in. diameters. All sizes are offered in 25- and 30-ft (7.6- and 9.1-m) lengths.

Pony rods are manufactured under strict quality standards and from the same alloy steels as the EL sucker rod.

Key Benefits

- Energy saving (through pumping with a lighter string) with no compromise in production
- Higher fluid production with existing pumping unit
- Reduction in the size of the pumping unit with no reduction in production
- Use of smaller, more economical tubing
- Increased pump speeds for additional production
- Avoidance of more unconventional and expensive recovery techniques
- Extended service life

Applications

Superhigh load capacity in mild, sweet (CO_2) and sour (H_2S) corrosive environments when satisfactory corrosion inhibiting practices are followed.

Specifications

- Special chrome-moly alloy steel
- Normalized, tempered and induction case hardened
- Pin ends have fully rolled, cold-formed threads

Maximum Allowable Stress

$Sa = (55{,}000 \text{ psi} + 0.2143\ S_{min})\ SF$

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

EL rod

Quenched and tempered sucker rods

S88 rod

Enhanced Toughness for Extreme Applications

Designed for high-strength and fatigue-resistant performance, S88 rods provide an intermediate step between API Grade D and ultrahigh-strength EL rods.

Quench and tempering results in enhanced toughness and a finer grain structure to better resist fatigue. For example, quenched and tempered rods typically have charpy impact results in the +70 ft-lb range, while normalized and tempered rods are typically in the 20 ft-lb range. This enhanced toughness provides the added fatigue resistance you need in extreme applications.

Weatherford offers S88 sucker rods in 5/8-, 3/4-, 7/8-, 1- and 1 1/8-in.* diameters. All sizes are available in 25- and 30-ft* (7.6- and 9.1-m*) lengths. This rod features fully rolled, cold-formed threads designed to provide a precise, smooth, reinforced thread structure unattained by normal machine-cut threads. Metal is displaced, rather than removed, and the resultant cold working strengthens the thread root.

Pony rods conform to appropriate rod classifications and are manufactured under strict quality standards and from the same alloy steels as sucker rods.

Applications

Rod	Recommended Application	Composition
S60 API Grade C	Light- to medium-duty pumping in noncorrosive or inhibited wells	1029 carbon-manganese alloy steel
S67 API Grade D*	Medium- to heavy-load applications in noncorrosive or inhibited wells	1029 carbon-manganese alloy steel
67D API Grade D	Medium- to heavy-load applications in noncorrosive or inhibited wells	4120 chromium-molybdenum alloy steel
S87 API Grade D	Heavy-load applications in effectively inhibited corrosive wells	3130M nickel-chrome steel

*Pony rods for this composition are not available.

High-Strength Applications

Rod	Recommended Application	Composition
S88 Special Service	Deep, highly-loaded wells in mildly corrosive environments when satisfactory corrosion inhibiting practices are followed	3130M nickel-chrome steel

Maximum Allowable Stress (S88)

$Sa = (T/2.8 + 0.375\ S_{min})\ SF$

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

*This size is available for minimum-quantity orders.

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

API normalized and tempered rods

API Coupled Sucker Rods

A complete line of API grade sucker rods is available from Weatherford. Each rod is manufactured from special quality (SBQ) bar stock and is held to the same stringent quality-control measures and careful handling as our high-strength rods.

API Pony Rods

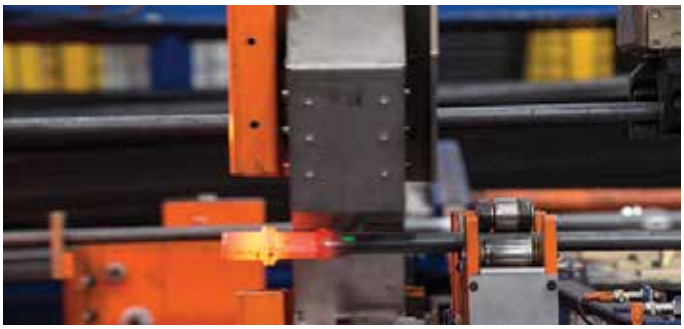
- Conform to appropriate API classifications
- Manufactured under strict quality standards and from the same alloy steels as sucker rods

Certified Strength and Structure

Weatherford API sucker rods are manufactured to API 11B specifications in our ISO 9001/API Q1 certified Greenville plant, one of the most modern facilities of its type in the industry. These rods feature fully rolled, cold-formed threads designed to provide a precise, smooth, reinforced thread structure unattained by normal machine-cut threads. Metal is displaced, rather than removed, and the resultant cold working strengthens the thread root. Weatherford rods are cleaned by shot-blasting to remove any scale and oxidation. They are then liberally coated with rust inhibitors and carefully palletized in bundles for safe transport and handling.

Applications

Rod	Recommended Application	Composition
Grade C	Light- to medium-load applications in noncorrosive or inhibited wells	AISI 1536 carbon-manganese alloy steel
Grade K	Medium- to heavy-load applications in noncorrosive or inhibited wells	AISI 4623 nickel-molybdenum alloy steel
Grade MD	Medium- to heavy-load applications in noncorrosive or inhibited wells	AISI 1541 carbon-manganese alloy steel
Grade D	Medium to heavy-load applications in noncorrosive or effectively inhibited corrosive wells	AISI 4142 chromium-molybdenum alloy steel
Grade KD (API Grade D Service)	Medium- to heavy-load applications in effectively inhibited corrosive wells	AISI 4720 nickel-chromiumium-molybdenum alloy steel



COROD® continuous sucker rods

Extended Tubing Life and Production

Weatherford manufactures COROD continuous sucker rods for distinct production enhancement and cost-saving advantages in various rod-string applications. Unlike conventional sucker rods, which are coupled every 25 or 30 feet, continuous sucker rods require couplings only at the top and bottom of the rod string, regardless of well depth. With fewer joints, this solid length of steel is lighter and enhances tubing life because contact between the tubing and sucker rod is uniform. It also addresses many premature tubing-wear challenges, especially in directional and horizontal wells.

Special Applications

Special applications, such as highly deviated wells and heavy, high-viscosity oil production, are prime opportunities for the high-strength, high-torque capabilities of the COROD system. COROD sucker rods are especially well suited to both reciprocating and rotary-pumping applications.

Sucker rod comparison: chemical analyses

Manufacturer	Type	Steel Type	% Carbon	% Manganese	% Phosphorus	% Sulphur	% Silicon	% Nickel	% Chromium	% Molybdenum	% Other
API Grade C–Carbon Steel											
Weatherford	S60	1029M	0.22 to 0.29	1.00 to 1.32	0.025Mx	0.040Mx	0.15 to 0.30	0.15Mx	0.20Mx	0.05Mx	0.010 to 0.03 Va, 0.35Mx Cu
	C	1536SR	0.30 to 0.37	1.20 to 1.50	0.040Mx		0.20 to 0.30	–	0.25Mx		
Norris	30	1536M	0.30 to 0.39	1.10 to 1.40	0.040Mx	0.045Mx	0.15 to 0.35	0.35Mx	0.30Mx	0.06Mx	0.02 to 0.07 Va, 0.35Mx Cu
Tenaris	C	1530M	0.31 to 0.36	1.40 to 1.60	0.025Mx	0.025Mx	0.25 to 0.40	0.15Mx	0.20Mx	0.05Mx	0.10 to 0.15 Va, 0.01 to 0.04 Al, 0.25Mx Cu
Upco	C	1536M	0.30 to 0.37	1.20 to 1.50	0.040Mx	0.040Mx	0.15 to 0.35	0.25Mx	0.25Mx		0.015 to 0.030 Va, 0.35Mx Cu
API Grade K–Nickel Moly Alloy											
Weatherford	S59	4617M	0.14 to 0.21	0.55 to 0.75	0.025Mx	0.035Mx	0.15 to 0.35	1.65 to 2.00	–	0.20 to 0.30	
	K	4623SR	0.20 to 0.25	0.75 to 1.00	0.035Mx	0.040Mx	0.20 to 0.35		0.25Mx		1.01 to 1.03 Va, 0.40Mx Cu
Norris	40	4621M	0.18 to 0.25	0.60 to 0.80	0.035Mx	0.035Mx	0.15 to 0.35			0.15 to 0.25	0.03 to 0.07 Va, 0.35Mx Cu
Tenaris	K	4621M	0.18 to 0.25	0.70 to 1.00	0.025Mx	0.025Mx	0.15 to 0.30		0.30Mx	0.20 to 0.30	0.01 to 0.04 Al, 0.25Mx Cu
Upco	K	4620M	0.20 to 0.25	0.75 to 1.00	0.035Mx	0.040Mx	0.15 to 0.35		0.25Mx	0.20 to 0.28	0.015 to 0.030 Va, 0.40Mx Cu
API Grade D–Carbon Steel, Chrome-Moly Alloy and Special Alloy											
Weatherford	S67	1029M	0.22 to 0.29	1.00 to 1.32	0.025Mx	0.040Mx	0.15 to 0.30	0.15Mx	0.20Mx	0.05Mx	0.35Mx Cu
	67D	4120M	0.17 to 0.24	0.40 to 0.70		0.025Mx	0.17 to 0.37	0.30Mx	0.80 to 1.10	0.15 to 0.25	0.20Mx Cu
	S87	3130M	0.22 to 0.29	0.71 to 1.00		0.035Mx	0.15 to 0.35	0.70 to 1.00	0.41 to 0.65	0.05Mx	0.35Mx Cu
	MD	1541MV	0.40 to 0.44	1.35 to 1.55	0.035Mx	0.040Mx	0.15 to 0.30	0.25Mx	0.25Mx	0.05Mx	0.055 to 0.075 Va, 0.035Mx Cu
	D	4142SR	0.40 to 0.45	0.75 to 1.00					0.80 to 1.10	0.15 to 0.25	0.20 to 0.30 Va, 0.45Mx Cu
	KD	4720SR	0.19 to 0.23	0.85 to 1.05			0.15 to 0.35	0.90 to 1.20	0.80 to 1.05	0.22 to 0.30	0.020 to 0.030 Va, 0.40 to 0.60 Cu
Norris	54	1541M	0.36 to 0.45	1.35 to 1.65	0.040Mx	0.040Mx	0.15 to 0.35	0.35Mx	0.30Mx	0.06Mx	0.04 to 0.09 Va, 0.35Mx Cu
	78	4142M	0.38 to 0.45	0.80 to 1.00	0.035Mx	0.035Mx		0.45Mx	0.80 to 1.10	0.15 to 0.25	0.03 to 0.07 Va, 0.35Mx Cu
	90	4320M	0.18 to 0.24	0.80 to 1.00	0.025Mx	0.025Mx		1.15 to 1.50	0.70 to 0.90	0.20 to 0.30	
Tenaris	DC	1530M	0.31 to 0.36	1.40 to 1.60	0.025Mx	0.025Mx	0.25 to 0.40	0.15Mx	0.20Mx	0.05Mx	0.10 to 0.15 V, 0.01 to 0.04 Al, 0.25Mx Cu
	DA	4142M	0.40 to 0.45	0.75 to 1.00			0.15 to 0.35	0.25Mx	0.80 to 1.10	0.15 to 0.25	0.01 to 0.04 Al, 0.25Mx Cu
	KD	4320M	0.18 to 0.25	0.80 to 1.00				1.15 to 1.50	0.70 to 0.90	0.20 to 0.30	0.03 to 0.07 V, 0.01 to 0.05 Al, 0.25Mx Cu
	DS	4330M	0.29 to 0.37	0.70 to 0.95				1.65 to 2.00	0.80 to 1.10		0.035 to 0.100 V, 0.01 to 0.06 Al, 0.25Mx Cu
Upco	CD	1541M	0.40 to 0.44	1.35 to 1.55	0.035Mx	0.040Mx	0.15 to 0.35	0.25Mx	0.25Mx	0.05Mx	0.05Mx Va, 0.35Mx Cu
	AD	4142M	0.40 to 0.45	0.75 to 1.00					0.80 to 1.10	0.15 to 0.25	0.020 to 0.030 Va, 0.45Mx Cu
	KD	4720M	0.19 to 0.23	0.85 to 1.05				0.90 to 1.20	0.80 to 1.05	0.22 to 0.30	0.020 to 0.030 Va, 0.40 to 0.60 Cu
	SD	4730M	0.25 to 0.31	0.91 to 1.15				1.90 to 1.45			

M = Modified; Mn = Minimum; Mx = Maximum
SR and SRX are steel manufacturers' designations.
All specifications are subject to change without notice.

Greenville manufacturing plant

Sucker rod comparison: chemical analyses (continued)

Manufacturer	Type	Steel Type	% Carbon	% Manganese	% Phosphorus	% Sulphur	% Silicon	% Nickel	% Chromium	% Molybdenum	% Other
Miscellaneous/Special Service											
Weatherford	HD	4332SRX	0.30 to 0.35	0.90 to1.10	0.035 Mx	0.040Mx	0.15 to 0.35	1.65 to 2.00	0.65 to 0.85	0.13 to 0.25	0.08 to 0.10 Va
	S88	3130M	0.22 to 0.29	0.71 to 1.00	0.025Mx	0.035Mx	0.15 to 0.35	0.70 to 1.00	0.41 to 0.65	0.05Mx	0.35Mx Cu
	T66/XD	4138M	0.38 to 0.42	1.00 to 1.30	0.035Mx	0.040Mx	0.20 to 0.35	0.30Mx	0.55 to 0.85	0.24 to 0.32	0.08 to 0.10 Va, 0.35Mx Cu
	EL	Special									
Norris	96	4138M	0.38 to 0.43	0.90 to 1.50	0.035Mx	0.40Mx	0.20 to 0.35	0.30Mx	0.55 to 0.85	0.25 to 0.35	0.45 to 0.65 Va, 0.35Mx Cu
	97	4330M	0.28 to 0.35	0.70 to 0.90	0.035Mx	0.040Mx	0.15 to 0.35	1.65 to 2.00	0.70 to 0.90	0.20 to 0.30	0.03 to 0.07 Va, 0.35Mx Cu
Tenaris	UHS-NR	4330M	0.29 to 0.37	0.70 to 0.95	0.025Mx	0.025Mx	0.15 to 0.35	1.65 to 2.00	0.80 to 1.10	0.20 to 0.30	0.035 to 0.100 V, 0.01 to 0.06 Al, 0.25Mx Cu
	MMS-NR	4138M	0.36 to 0.43	1.10 to 1.40			0.20 to 0.40	0.30Mx	0.50 to 0.90	0.25 to 0.50	0.04 to 0.07 V, 0.02 to 0.05 Nb, 0.01 to 0.07 Al, 0.25Mx Cu
Upco	HS	4138M	0.38 to 0.42	1.20 to 1.40	0.035Mx	0.040Mx	0.20 to 0.35	0.30Mx	0.55 to 0.85	0.24 to 0.32	0.075 to 0.095 Va, 0.35Mx Cu
Upco	HX	4334M	0.32 to 0.36	0.75 to 0.95		0.035Mx	0.15 to 0.35	1.65 to 1.85	0.70 to 0.90	0.20 to 0.30	0.060 to 0.090 Va, 0.35Mx Cu

M = Modified; Mn = Minimum; Mx = Maximum
SR and SRX are steel manufacturers' designations.
All specifications are subject to change without notice.

Sucker rod comparison: mechanical properties

Manufacturer	Type	Color Code *	Yield Strength (1,000 psi)	Tensile Strength (1,000 psi)	Elongation (% in 8 -in.)	Reduction of Area; (%)	Typical Rockwell C Hardness	Heat Treatment
API Grade C–Carbon Steel								
Weatherford	S-60	White	90/105	100/115	13Mn	55Mn	15 to 22	Quenched and tempered
	C		60Mn	90/115	18Mn	50Mn	9 to 22	Normalized
Norris	30				15Mn	45Mn	9 to 22	Normalized
Tenaris	C				—	—	9 to 22	Normalized
Upco	C				14Mn	45Mn	10 to 21	Normalized and tempered
API Grade K–Nickel Moly Alloy								
Weatherford	S-59	Blue	90/105	100/115	13Mn	55Mn	15 to 22	Quenched and tempered
	K		60Mn	90/115	16Mn	60Mn	9 to 22	Normalized and tempered
Norris	40					55Mn	9 to 23	
Tenaris	K				—	—	9 to 23	
Upco	K				16Mn	40Mn	6 to 21	
API Grade D–Carbon Steel, Chrome-Moly Alloy and Special Alloy								
Weatherford	S-67	Brown	110Mn	120/140	11Mn	55Mn	24 to 30	Quenched and tempered
	67-D	Yellow	110Mn	120/140	11Mn	55Mn	24 to 29	
	S-87	Orange	115Mn	125/140	12Mn	55Mn	25 to 30	
	MD	Brown	85Mn	115/140	14Mn	45Mn	23 to 30	Normalized and tempered
	D	Yellow	100Mn		10Mn			
	KD	Orange	95Mn					
Norris	54	Brown	85Mn	115/140	15Mn	50Mn	23 to 30	Normalized and tempered
	78	Yellow	85Mn	115/140	10Mn	45Mn	23 to 31	
	90	Orange			10Mn	40Mn		
Tenaris	DC	Brown	85Mn	115/140	—	—	23 to 30	
	DA	Yellow	100Mn	120/140	—	—	24 to 30	
	KD	Orange	85Mn	115/140	—	—	23 to 30	
	DS	Orange	100Mn	125/140	—	—	25 to 30	
Upco	CD	Brown	85Mn	115/140	10Mn	40Mn	21 to 31	
	AD	Yellow						
	KD	Orange						
	SD	Silver	100Mn	135/150	8Mn	30Mn	30/36	
Miscellaneous/Special Service								
Weatherford	S-88	Red	130Mn	140/155	11Mn	50Mn	30 to 33	Quenched and tempered
	HD	Pink	115Mn	140/150	10Mn	40Mn		Normalized and tempered
	T66/XD	Green						
	EL	Lavender	—	—	—	—	—	Normalized and tempered and induction case hardened
Norris	96	Green	115Mn	135/150	10Mn	45Mn	28 to 33	Normalized and tempered
	97	Purple	115/125	140/150	10Mn	45Mn	30 to 33	
Tenaris	UHS-NR	Violet	115Mn	140/160	—	—	30 to 34	
	MMS-NR	Green	115Mn	138/155	—	—	29 to 34	
Upco	HS	Green	105Mn	140/160	8Mn	30Mn	30 to 36	
	HX	Purple	115Mn	140/160	8Mn	30Mn		

M or MD = Modified; Mn = Minimum; Mx = Maximum
* Color codes according to API Specification 11B, 24th Edition.
Grade C = White; Grade K = Blue; Grade D = Brown (carbon steel), Yellow (chrome-moly), Orange (special)
All specifications are subject to change without notice.

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.

Weatherford couplings

High-Stress Endurance

Weatherford Grade T and Grade SM sucker-rod couplings are manufactured to strict quality-control standards from high-strength alloy steel. They conform to API Specification 11B.

Weatherford Hi-T™ couplings are designed to carry the high-torque requirements of progressing cavity-pumping applications and the high loads of deep wells.

The threads of these couplings are cold formed and produced by displacement of material rather than by removal of material, as in the cut thread. Cold forming the thread results in a compressive stress at the root of the thread, giving maximum strength to the traditional weak point of cut-thread couplings.

Weatherford sprayed-metal couplings have a corrosion-resistant surface with a low coefficient of friction to reduce wear on the tubing and the coupling. These couplings are recommended for deviated wells.

Weatherford couplings are available in slimhole, fullsize, and oversized configurations in sizes of 5/8 through 1-1/8 in.

Coupling Selection

Coupling*	Application	Tensile Minimum (ksi, MPa)
API Grade T	General noncorrosive wells	95 655
API Grade SM Coated	Abrasive/properly inhibited wells	
Hi-T T	High-torque, noncorrosive wells	130 896
Hi-T SM	High-torque, abrasive/properly inhibited wells	

*Weatherford Hi-T couplings have enhanced characteristics to help carry the ultrahigh torque ratings of the EL and T-Rods.

Coupling Sizes and Weights

API Size (in.)	OD (in.)		Weight (lb, kg)	
	Standard	Slimhole	Standard	Slimhole
5/8	1-1/2	1-1/4	1.30 0.59	1.00 0.45
3/4	1-5/8	1-1/2	1.50 0.68	1.26 0.57
7/8	1-13/16	1-5/8	1.80 0.82	1.50 0.68
1	2-3/16	2	2.58 1.17	2.01 0.91
1-1/8	2-3/8	2-1/4	3.13 1.42	2.50 1.34

Approximate Weight of 25-ft Sucker Rod

API Size (in.)	Without Coupling (lb, kg)	With Standard Coupling (lb, kg)	With Slimhole Coupling (lb, kg)
5/8	27.2 12.3	28.5 12.9	28.2 12.8
3/4	38.5 17.5	40.0 18.1	39.8 18.1
7/8	52.0 23.6	53.8 24.4	53.5 24.3
1	69.9 31.7	72.5 32.9	71.9 32.6
1-1/8	88.7 40.2	91.8 41.6	91.17 41.35

API Grade T coupling

Grade SM coupling

Hi-T coupling

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

Weatherford, the only industry provider of all types of artificial lift has the full range of technology for your sucker rod needs. For more information visit us at **weatherford.com** or call your authorized Weatherford representative.

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