ARTIFICIAL LIFT SOLUTIONS

Sucker Rod Solutions

Strength and Endurance for Efficiency and Profit

Weatherford®

Unmatched Durability for Today's Most Challenging Wells

In the oil and gas realm of demanding environments, operators require equipment that can reliably withstand the toughest downhole conditions. This is why Weatherford sucker rods are engineered with the leading-edge processes and premium materials necessary to deliver superior fatigue tolerance and long-lasting durability—ensuring consistent performance in even the most aggressive well conditions.

Engineered for Reliability

Weatherford sucker rod solutions define the culmination of expert engineering and design with superior manufacturing processes, featuring the industry's finest assurance of reliability. Weatherford artificial lift specialists are here to help operators design and install a complete line of high-performance, rod lift solutions, from downhole to the surface.

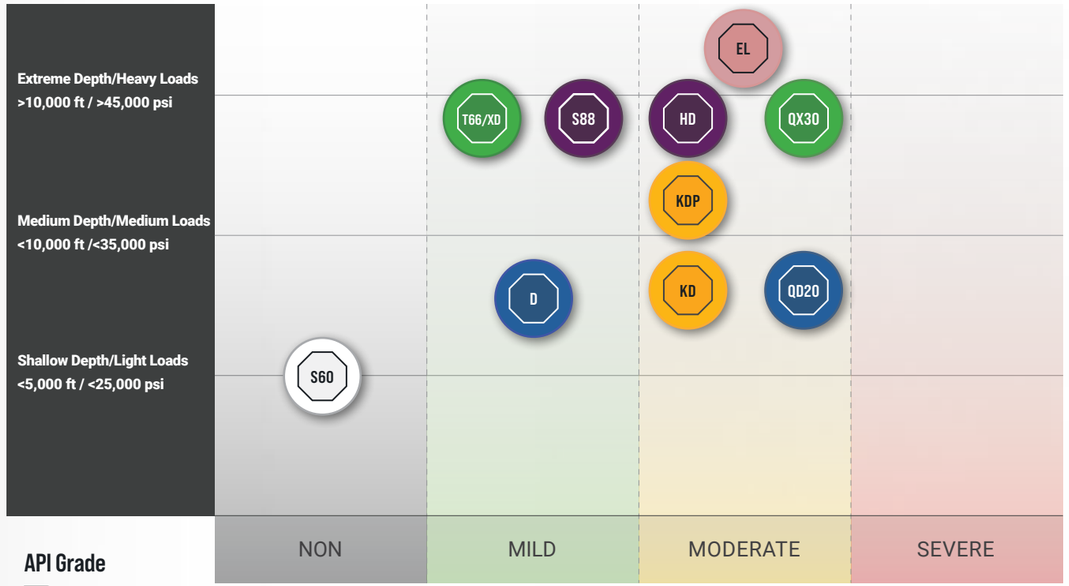
Since 1908, Weatherford has been on the pioneering front of superior-manufactured, rod lift equipment. With world-class facilities in Greenville, Texas and Zibo, China, Weatherford implements rigorous quality-assurance processes that exceed ISO 9001 quality-management standards and go beyond API 11B guidelines for an exacting program that ensures consistent materials with zero manufacturing defects.

These state-of-the-art facilities apply industry-leading manufacturing techniques including physics-based heating processes from quenched and tempered (Q&T) to normalized and tempered (N&T). Weatherford procedures also feature robotic forges with proprietary, precision-engineered shot peening for improved fatigue-crack resistance. With all processes combined, the results produce rods that yield 10X greater strength when compared to equivalent-grade series sucker rods—creating an effective chemical-inhibition program that extends meantime between failures (MTBF), reduces deferred production, and decreases workover costs.

Fit-for-Purpose, Life-of-Well Solutions

From deep, highly loaded wells to challenging environments with corrosive elements, Weatherford sucker rods are built for a variety of applications, including reciprocating rod lift, PCP lift, and medium- to heavy-load systems in both noncorrosive and inhibited wells. Designed for maximum toughness and stress resistance, Weatherford sucker rods provide proven performance that will improve uptime, extend service life, increase efficiency, and reduce maintenance costs within the most demanding applications.

Sucker Rod Capabilities At-a-Glance



*Due to the number downhole variables that can impact corrosion rates of metals such as temperature, chlorides, WC%, partial pressures, and H_2S/CO_2 concentrations, this application matrix should be used for reference only. Weatherford recommends effectively inhibiting rods in corrosive environments. For sour environments, consider T66/XD, however, QX is recommended. For sweet environments, consider HD, but QX is recommended. EL rods should not be run in a high H_2S, low pH environments. EL rods should be considered when T66/HD/QX are heavily loaded. Please contact your Weatherford ALS specialist for further assistance selecting the ideal sucker rod for a well's load application and downhole environment.

Every Grade, Any Well

All Weatherford sucker rods conform to appropriate rod classifications that are manufactured under strict quality standards and available in sizes ⅝ in. to 1-⅛ inches.

KD™

Proven fatigue endurance within corrosive wells

Alloy Steel Composition
- 4720M nickel-chromium molybdenum
- API Grade DS special

KD sucker rods are designed for medium-load applications within inhibited, moderately corrosive wells and offer an upgrade from API DA alloys to offer even greater corrosion resistance. KD sucker rods are forged with N&T steel for overall toughness and reduced brittleness. Each rod receives a proprietary shot-peen process proven to improve fatigue life by up to 10 times.

D™

Proven technology for greater fatigue tolerance

Alloy Steel Composition
- 4142 chromium-molybdenum
- API Grade DA alloy

Grade D sucker rods are designed for medium-load applications within inhibited, mildly corrosive wells. They conform to API 11B DA specifications including N&T steel for improved mechanical properties, overall toughness, and reduced brittleness. Grade D sucker rods undergo a proprietary shot-peen process that is proven to improve fatigue life by up to 10 times.

QD20™

Improved performance in rod lift and PCP lift wells

Alloy Steel Composition
- 20CroMoA chrome-moly
- API Grade DA alloy

QD20 sucker rods are designed for medium-load applications in inhibited, moderate-to-severely corrosive wells. They include a quenched and tempered treatment resulting in a Charpy impact value that is 8X greater than N&T D-grade rods. QD20 sucker rods undergo a proprietary process for a finer-grain structure shown to improve fatigue-crack resistance, compared to conventional treatments.

S60™

Reliable performance in rod lift and PCP lift wells

Alloy Steel Composition
- 1029 Carbon Manganese
- API Grade C

S60 sucker rods are part of the Weatherford series of quenched and tempered sucker rods and are recommended for light- to medium-duty pumping services in noncorrosive or inhibited wells. Manufactured to API specifications from AISI 1029 modified carbon steel that is quenched and tempered for added durability and strength.

KDP™

Increased uptime in challenging wells

Alloy Steel Composition
- 4330M special nickel-chromium-molybdenum
- API Grade DS special

KDP sucker rods are designed for medium-to-heavy-load applications within moderately inhibited corrosive wells. They are engineered as an impact-resistant sucker rod with improved mechanical properties for managing wells that require aggressive pumping under heavy loads. KDP sucker rods have the highest impact values when compared with next-best alternative rods.

QX30™

Extreme toughness and fatigue resistance

Alloy Steel Composition
- 30CroMoA
- API Grade HA

QX30 sucker rods are designed for highly loaded applications within inhibited, moderately to severely corrosive wells. They are part of the Weatherford high-strength series rods and undergo a quench and tempered process that is shown to improve fatigue-crack resistance compared to conventional treatments. QX30 sucker rods provide a Charpy impact value that is 7X greater than normalized and tempered HS-grade rods.

T66/XD™

High-strength service for enhanced stress tolerance

Alloy Steel Composition
- 4138 chrome-moly
- API Grade HA

T66/XD sucker rods are designed for highly loaded applications within inhibited, mildly corrosive wells. They are a proven intermediate solution between API DA grades and any ultrahigh-strength rods. T66/XD sucker rods are composed of a special-chemistry blend for added resistance to sulfide-stress cracking. T66/XD sucker rods can handle the toughest downhole stresses and are proven to decelerate fatigue propagation by up to 10 times.

HD™

Proven fatigue endurance within deep, mildly corrosive wells

Alloy Steel Composition
- 4333MV nickel-chrome-moly
- API Grade HS

HD sucker rods provide an additional intermediate step between API Grade D and ultrahigh-strength, Weatherford EL rods. HD sucker rods are designed for high-strength service and extended run life that is shown to last 3X longer than next-best alternative sucker rods.

S88™

Enhanced durability for high-stress/fatigue tolerance in deep wells

Alloy Steel Composition
- 3130M nickel-chrome
- API Grade HS special

S88 sucker rods provide an intermediate step between API Grade D sucker rods and ultrahigh-strength, EL sucker rods. They are proven to decelerate crack propagation for improved fatigue resistant in highly loaded wells.

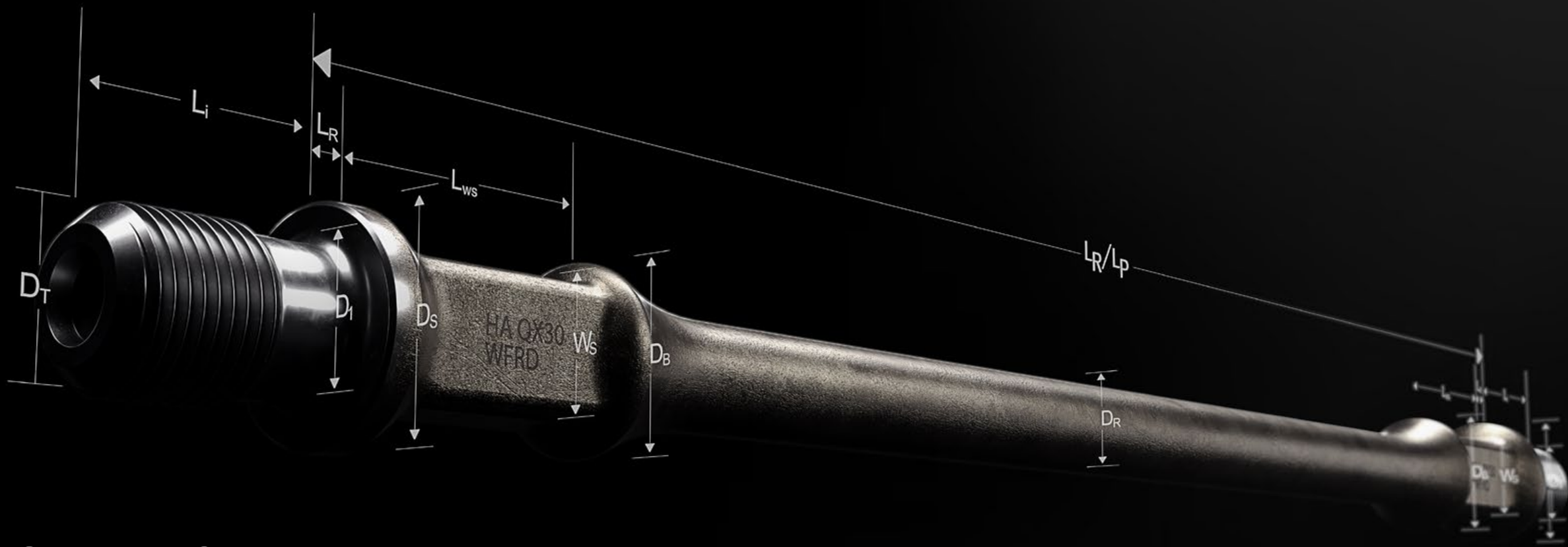
EL®

Increased uptime in heavy-load applications and harsh environments

Alloy Steel Composition
- Proprietary
- API Grade HY

EL high-strength sucker rods provide an ultrahigh-load rating and fatigue resistance for sweet, mildly corrosive environments which are properly inhibited for improved uptime in heavy-load applications and harsh well environments. Their exclusive induction case-hardening process gives EL sucker rods the superior fatigue resistance required for the most aggressive pumping environments.

Fit-for-Purpose Sucker Rod Solutions



Specifications At-a-Glance

Mechanical/Torque-Limit Properties

API Grade	WFRD Grade	Material	Tensile Strength ksi (MPa)	Yield Strength ksi (MPa) Mn	Elongation % 8 in. Mn	Reduction % Mn	Heat Treatment
C Carbon	**S60**	1029M	100 to 115 (689 to 792)	90 (620)	13	55	Quenched and Tempered
DA Alloy	**QD20**	20CMoA	115 to 140 (792 to 965)	105 (724)	10	45	
	D	4142SR		100 (689)			Normalized and Tempered
DS Special	**KD**	4720SR		90 (620)			
	KDP	4333MV	125 to 140 (861 to 965)	100 (689)	14	50	
HA Alloy	**QX30**	30CroMoA	140 to 155 (965 to 1,069)	120 (827)	10	40	Quenched and Tempered
	T66/XD	4138M		115 (792)			Normalized and Tempered
HS Special	**HD**	4333MV					
	S88	3130M		130 (896)	11		Quenched and Tempered
HY	**EL**	- Proprietary -					Normalized and Tempered

Chemical Properties

WFRD Grade	Steel Type	C %	Mn %	Si %	Ni %	Cr %	Mo %	Ph %	S % Mx%	Other %
S60	1029M	0.22 to 0.29	1.00 to 1.32	0.15 to 0.30	0.15 Mx	0.20 Mx	0.05 Mx	0.025 Mx	0.040 Mx	0.35 Mx Cu 0.010 to 0.03 Va
QD20	20CrMoA	0.17 to 0.24	0.40 to 0.70	0.17 to 0.37	0.30 Mx	0.80 to 1.10	0.15 to 0.25 Mx		0.200 Mx	0.20 Mx Cu
D	4142SR	0.40 to 0.45	0.75 to 1.00	0.15 to 0.30	0.25 Mx			0.035 Mx	0.040 Mx	0.45 Mx Cu 0.055 to 0.075 Va
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 Mx	0.030 Mx		0.40 to 0.60 Cu 0.020 to 0.040 Va
KDP	4333SR	0.30 to 0.35	0.70 to 0.90	0.20 to 0.35	1.40 to 1.60	0.85 to 1.10	0.15 to 0.25 Mx	0.025 Mx	0.025 Mx	0.35 Mx Cu 0.07 to 0.10 Va
QX30	30Cro-MoA	0.26 to 0.33	0.40 to 0.70	0.17 to 0.37	0.30 Mx	0.80 to 1.10			0.020 Mx	0.20 Mx Cu
T66/XD	4138M	0.38 to 0.42	1.00 to 1.30	0.20 to 0.35		0.55 to 0.85	0.24 to 0.32 Mx	0.035 Mx	0.040 Mx	0.35 Mx Cu 0.08 to 0.11Va
HD	4333SRX	0.30 to 0.35	0.70 to 0.90	0.20 to 0.35	1.65 to 2.00	0.85 to 1.10	0.15 to 0.25 Mx			0.35 Mx 0.07 to 0.10Va
S88	3130M	0.22 to 0.29	0.70 to 1.00	0.15 to 0.35	0.70 to 0 .10	0.41 to 0.65	--	0.025 Mx	0.030 Mx	--
EL	- Proprietary -									

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

Max Weight/Pull Indicator & Torque Values

WFRD Grade	Size in.	Specified Torque Limit ft-lbs (Nm)*	Load lbf (daN)**
S60	⅝	250 (338)	24,800 (11,000)
	¾	435 (590)	35,700 (15,900)
	⅞	685 (929)	48,600 (21,600)
	1	1,025 (1,390)	63,500 (28,200)
	1-⅛	1,460 (1,979)	80,400 (35,700)
QD-20	¾	505 (685)	41,700 (18,500)
	⅞	800 (1,085)	56,700 (25,200)
	1	1,195 (1,620)	74,100 (32,900)
	1-⅛	1,705 (2,312)	93,800 (41,700)
D	¾	480 (650)	39,700 (17,600)
	⅞	765 (1,037)	54,000 (24,000)
	1	1,140 (1,546)	70,600 (31,400)
	1-⅛	1,620 (2,196)	89,400 (35,700)
KD	¾	435 (590)	35,700 (15,900)
	⅞	685 (929)	48,600 (21,600)
	1	1,025 (1,390)	63,500 (28,200)
	1-⅛	1,460 (1,979)	80,400 (35,700)
KDP	¾	480 (650)	39,700 (17,600)
	⅞	765 (1,037)	54,000 (24,000)
	1	1,140 (1,546)	70,600 (31,400)
	1-⅛	1,620 (2,196)	89,400 (35,700)

WFRD Grade	Size in.	Specified Torque Limit ft-lbs (Nm)*	Load lbf (daN)**
QX30	¾	575 (780)	47,600 (21,100)
	⅞	915 (1,241)	64,900 (28,800)
	1***	1,365 (1,851)	84,700 (37,600)
	1-⅛	1,945 (2,637)	107,300 (47,700)
T66/XD	¾	555 (752)	45,700 (20,300)
	⅞	880 (1,193)	62,200 (27,600)
	1	1,310 (1,776)	81,200 (36,100)
	1-⅛	1,865 (2,529)	102,800 (45,700)
HD	¾	555 (752)	45,700 (20,300)
	⅞	880 (1,193)	62,200 (27,600)
	1	1,310 (1,776)	81,200 (36,100)
	1-⅛	1,865 (2,529)	102,800 (45,700)
S88	¾	625 (847)	51,600 (22,900)
	⅞	990 (1,342)	70,300 (31,200)
	1	1,480 (2,007)	91,800 (40,800)
	1-⅛	2,110 (2,861)	116,200 (51,700)
EL	⅝	400 (542)	35,000 (15,900)
	¾	865 (1,173)	51,600 (22,900)
	⅞	1,375 (1,864)	70,300 (31,200)
	1	2,050 (2,779)	91,800 (40,800)
	1-⅛	3,125 (4,596)	116,200 (51,700)

*Weatherford recommends Hi-T couplings and applying a service factor to the specified torque limit based on operating conditions. Please refer to Weatherford engineering bulletin TB-135 for further guidance on torque limits.

**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.

***1.00-in. QX30 rods are provided with modified pin, torque rating: 1,365 ft-lbs/1,851 Nm.

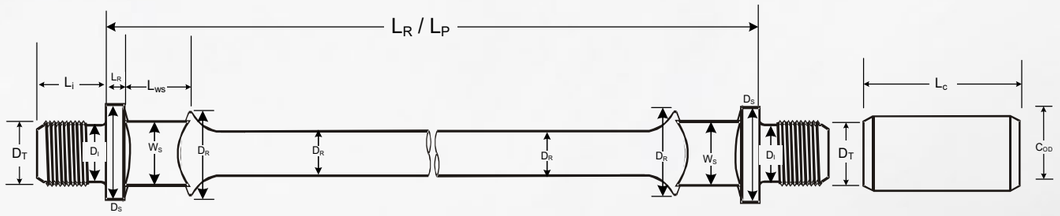
Approximate Weight (25 ft)

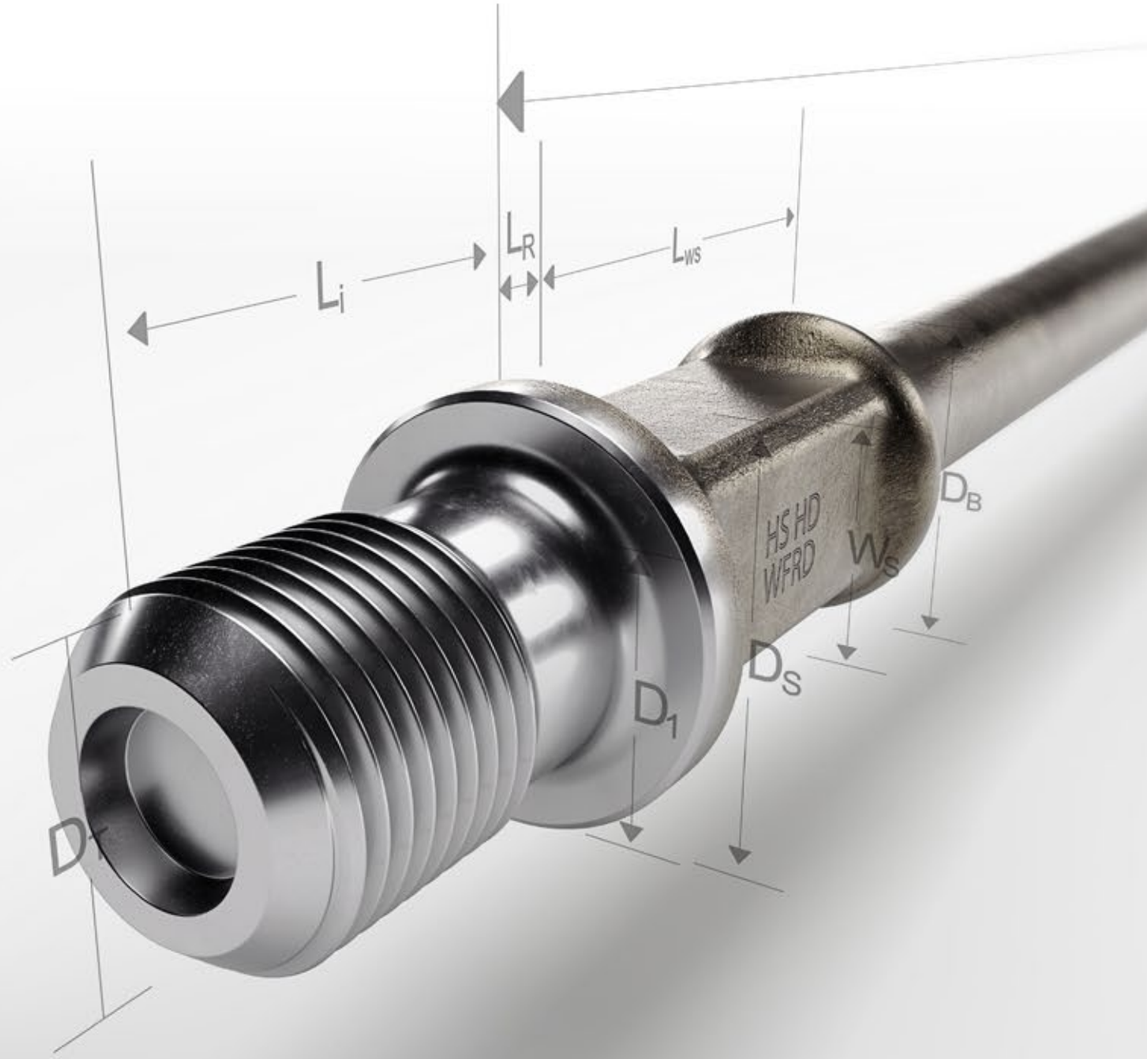
Size in.	Without Couplings lbs (kg)	With Slim-Hole Couplings lbs (kg)	With Standard Coupling lbs (kg)
⅝	27.20 (12.30)	28.20 (12.80)	28.50 (12.90)
¾	38.50 (17.50)	39.80 (18.10)	40.00 (18.10)
⅞	52.00 (23.60)	53.50 (24.30)	53.80 (24.40)
1	69.90 (31.70)	71.90 (32.60)	72.50 (32.90)
1-⅛	88.70 (40.20)	91.17 (41.45)	91.80 (41.60)

Dimensions

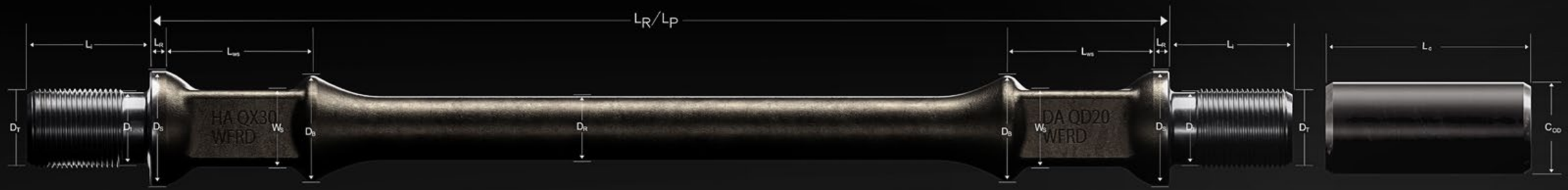
ID	Description	Nominal size* (ft/m)			
D_R	Rod body diameter	0.750 (19.05)	0.875 (22.23)	1.000 (25.40)	1.125 (28.58)
D_S	Pin shoulder OD	1.500 (38.10)	1.625 (41.28)	2.000 (50.80)	2.250 (57.15)
D_T	Nominal thread diameter	1.063 (26.99)	1.187 (30.16)	1.375 (34.93)	1.562 (39.69)
L_i	Pin length	1.430 (36.51)	1.620 (41.28)	1.870 (47.63)	2.125 (53.98)
W_S	Wrench square width*	1.000 (25.40)		1.313 (33.34)	1.500 (38.10)
L_{Ws}	Wrench square length	1.250 (31.75)			1.630 (41.28)
D_B	Bead diameter	1.400 (35.72)	1.500 (38.10)	1.900 (48.42)	2.187 (55.63)
D_I	Stress relief diameter	0.915 (23.24)	1.040 (26.42)	1.220 (31.17)	1.414 (35.92)
L_R	Sucker rod length	25 and 30 ft (7.62 and 9.144 m)			
L_P	Pony rod length	2, 4, 6, 8, 10 ft (.6, 1.2, 1.8, 2.4, 3 m)			
L_C	Coupling OD, SH	4.00 (101.6)			
C_{OD}	Coupling OD, SH	1.500 (38.10)	1.625 (41.30)	2.000 (80.80)	2.250 (53.00)
C_{OD}	Coupling OD, FH	1.625 (41.30)	1.812 (46.00)	2.187 (55.60)	2.375 (60.30)

* ⅞ EL sucker rods come with a 1-⅛ in. wrench square





T-Rod™
Torque Rods



Weatherford T-Rod torque rods are specifically designed to withstand the higher, rotational torque consistently applied by typical PCP drive-head systems as well as the additional peak-torque produced from gas pockets and variations in liquid phases. T-Rods provide added strength for the vertical loads and rotational forces that conventional sucker rods were never designed to tolerate. T-Rods are manufactured from special bar quality (SBQ) steel and held to the same stringent, quality-control measures and handling required for all Weatherford sucker rods. All T-Rods also run through the Weatherford proprietary shot-peen process that defers fatigue cracks and extends runlife.

Fit-for-Purpose Sucker Rod Solutions

Mechanical Properties

API Grade	Grade[ab]	Material	Yield Strength ksi (MPa) Mn	Size[a] MP in. (mm)	Torque Limit[cd] ft-lbs (Nm)	Heat Treatment
DA Alloy	**QD20**	20CrMoA	105 (724)	1 x ⅞ (25.4 x 22.23)	1,150 (1,559)	Quenched and Tempered
				1-¼ x 1 (31.75 x 25.4)	2,330 (3,159)	
DS Special	**KD**	4720SR	90 (620)	1 x ⅞ (25.4 x 22.23)	1,000 (1,355)	Normalized and Tempered
				1-¼ x 1 (31.75 x 25.4)	2,000 (2,711)	
HA Alloy	**T66-XD**	4138Mx	115 (792)	1 x ⅞ (25.4 x 22.23)	1,250 (1,694)	Normalized and Tempered
				1-¼ x 1 (31.75 x 25.4)	2,560 (3,470)	
				1-¼ x 1-⅛[e] (31.75 x 28.58)		
				1-½ x 1-⅛[e] (38.1 x 28.58)	3,300 (4,474)	
HA Alloy	**QX30**	30CroMoA	120 (827)	1 x ⅞ (25.4 x 22.23)	1,300 (1,763)	Quenched and Tempered
				1-¼ x 1[e] (31.75 x 25.4)	2,670 (3,470)	
				1-¼ x 1-⅛[e] (31.75 x 28.58)		
				1-½ x 1-⅛[e] (38.1 x 28.58)	3,450 (4,678)	
HS Special	**HD**	4333MV	115 (792)	1 x ⅞ (25.4 x 22.23)	1,250 (1,694)	Normalized and Tempered
				1-¼ x 1 (31.75 x 25.4)	2,560 (3,470)	
				1-¼ x 1-⅛[e] (31.75 x 28.58)		
				1-½ x 1-⅛[e] (38.1 x 28.58)	3,300 (4,474)	
HY	**EL**	Proprietary		⅞ (22.23)	1,375 (1,864)	Normalized and Tempered/ Case Hardened
				1 (25.4)	2,050 (2,779)	
				1-⅛ (28.58)	3,125 (4,596)	

MP = Modified extended pin, Mn = Minimum, Mx = Maximum.

[a] Not all sucker rod grades and sizes are listed in this table. For more information, contact an authorized Weatherford representative.

[b] Provided satisfactory corrosion inhibiting practices are followed.

[c] Weatherford recommends applying a service factor to the specified torque limit based on operating conditions.

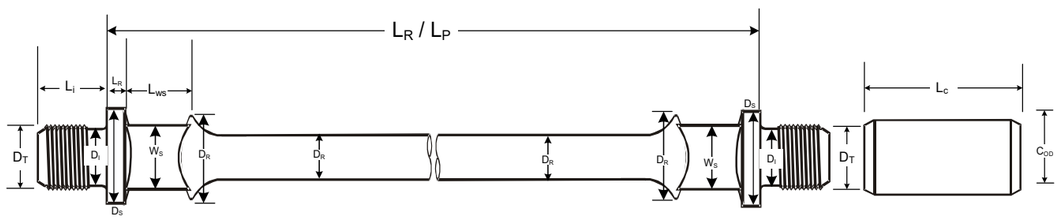
[d] Hi-T couplings and special makeup procedure required.

[e] Hi-T 5-in. couplings are required for all 1-¼ x 1-⅛ in. and 1-½ x 1-⅛ sizes.

Specifications

ID	Description	Nominal Size in. (mm) 1.000 x ⅞ (25.4 x 22.2) MP	1.250 x 1 (31.75 x 25.4) MP	1.250 x 1-⅛ (31.75 x 28.58) MP	1.500 x 1-⅛ (38.1 x 28.58) MP
D_r	Rod body diameter	1.000 (25.4)	1.250 (31.75)	1.250 (31.75)	1.500 (38.10)
D_s	Pin shoulder OD	1.625 (41.28)	2.000 (50.80)	2.265 (57.53)	2.350 (59.69)
D_t	Nominal thread diameter	1.187 (30.16)	1.375 (34.93)	1.562 (39.69)	1.562 (39.69)
L_i	Pin length	1.770 (44.95)	1.870 (47.63)	2.400 (60.96)	2.444 (62.07)
W_s	Wrench square width	1.000 (25.40)	1.313 (33.34)	1.500 (38.10)	
L_{ws}	Wrench square length	1.250 (31.75)	1.500 (38.10)	1.630 (41.28)	
D_b	Bead diameter	1.500 (38.10)	1.900 (48.42)	2.187 (55.63)	
D_i	Stress relief diameter	1.040 (26.42)	1.220 (31.17)	1.414 (35.92)	
L_r	Sucker rod length	25 and 30 ft (7.62 and 9.144 m)			
L_p	Pony rod length	2, 4, 6, 8, 10 ft (.6, 1.2 ,1.8, 2.4, 3 m)			
L_c	Coupling length	4.00 (101.60)			5.000 (127.00)
C_{OD}	Coupling OD, SH	1.625 (41.30)	2.000 (80.80)	2.250 (53.00)	
C_{od}	Coupling OD, FH	1.81 (46.00)	2.187 (55.60)	2.375 (60.30)	--

Note: For EL Rod, reference table for conventional sucker rod dimensions.



Connect It All with the Best of All Couplings

Fit-for-Purpose Sucker Rod Solutions

Boost Uptime in Inhibited, Noncorrosive, or Mildly Corrosive Wells

API Grade T and API Spray Metal™ (SM) sucker rod and polish rod couplings are manufactured to strict quality-control standards from high-strength alloy steel and conform to API Specifications 11B.

Hi-T™ and Hi-T SM couplings are designed to carry the high-torque requirements of progressing-cavity pumping or heavy-load applications in rod lift wells.

Racer™ and Racer Hi-T SM severe-service, sucker rod couplings provide 6X greater wear resistance compared to conventional or premium wear-resistant couplings in laboratory and field tests. Designed exclusively in a co-commercialization partnership with ExxonMobil, Racer severe-service sucker rod couplings are engineered to significantly reduce production-tubing friction and wear in sandy, corrosive, and deviated wells. Available in a selection of two proprietary coatings—a single-stage process and a triple-layer, diamond-like coating—Racer couplings are ideal for problematic PCP and rod lift wells.

- Effective wear reduction on production tubing and the coupling lowers OPEX and CAPEX by reducing workover intensity and frequency.
- Tailored chemistry and architecture are proven in extensive field and laboratory tests to provide extreme increases in tubing life between planned workovers.

The threads of all Weatherford couplings are cold formed and produced by the displacement of material rather than by remove of material, as with cut threads. Cold forming the threads results in a compressive stress at the root of the threads, giving maximum strength to the known weak point of cut-thread couplings. Weatherford couplings are available in slim-hole, full-size, and oversized configurations in sizes of ⅝ in. through 1-⅛ inches.

Selection

Coupling	Well Application	Tensile Minimum ksi (MPa)
API Grade T	General noncorrosive	95 (655)
API Grade SM	Abrasive/properly inhibited	
Hi-T™ Grade T	High-torque or heavy load, noncorrosive	130 (896)
Hi-T Grade SM	High-torque or heavy load, abrasive/properly inhibited	
Racer™	Severe abrasives and sideloads/properly inhibited	95 (655)
Racer Hi-T	Severe side loads/PCP-torque/properly inhibited	130 (896)

Mechanical Properties

API Grade	Weatherford Grade	Base Material	Yield Strength ksi (MPa)	Tensile Strength ksi (MPa)	Surface Hardness
TA	T	35CrMo/ 8630	80 (552)	95 to 125 (655 to 827)	~59 HR_A
TS SM	Spray Metal				56 to 63 HR_C
--	Racer				DLC
HA	Hi-T		115 (862)	130 to 145 (896 to 1,000)	~30 HR_C
--	Hi-T Spray Metal				43 to 47 HR_C
	Racer Hi-T				DLC

Note: Other API base materials provided (41XX/30CrMo). For more information please contact your Weatherford representative.

Chemical Properties

Grade[a]	C %	Mn %	Si %	P %	S %	Cr %	Mo %	Ni %	Cu %
35CrMoA	0.32Mn	0.40Mn	0.17Mn	--	--	0.80Mn	0.15Mn	--	--
	0.40Mx	0.70Mx	0.37Mx	0.03Mx	0.025Mx	1.10Mx	0.25Mx	0.25Mx	0.3Mx
8630	0.26Mn	0.70Mn	0.15Mn	--	--	0.40Mn	0.15Mn	0.40Mn	--
	0.33Mx	0.90Mx	0.35Mx	0.03Mx	0.025Mx	0.70Mx	0.25Mx	0.85Mx	0.3Mx

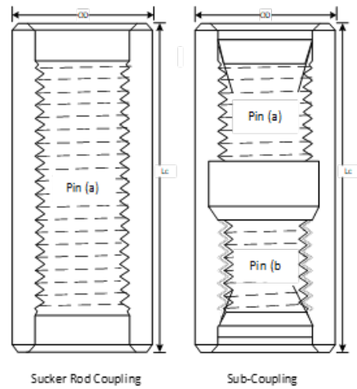
Coating

Coating	Surface Fin OD µin (µm)	Surface Hardness HRC	Thickness in. (mm)
Spray Metal™ SM	125 (3.175) R_a	56	0.01 to 0.02 (0.25 to 0.51)
Racer™	0.08 to 0.10 (2.032 to 2.54) CoF	DLC	Proprietary
Hi-T™ SM	63 R_a (1.6)	43 to 47	0.01 to 0.02 (0.25 to 0.51)

Dimensions

API Size[b] in.	OD in. (mm)		Weight lbs (kg)		Nominal Thread in.		Length in. (mm)	Packaging SR CPLG/Box[d]	
	STD	SH	STD	SH	(a)	(b)		STD	SH
¾	1.625 (41.30)	1.500 (38.10)	1.50 (0.68)	1.26 (0.57)	¾	⅝	4.0 (101.60)	25	30
⅞	1.812 (46.00)	1.625 (41.30)	1.80 (0.82)	1.50 (0.68)	⅞	¾	4.0 (101.60)	20	25
1	2.187 (55.60)	2.000 (50.80)	2.58 (1.17)	2.01 (0.91)	1	⅞: ¾	4.0 (101.60)	--	16
1-⅛	2.375 (60.33)	2.258 (57.35)	3.13 (1.42)	2.50 (1.34)	1-⅛	1: ⅞	4.5 (114.30)	--	--
1-⅛	2.375 60.33)	2.258 (57.35)	3.60 (1.63)	3.30 (1.49)	1-⅛	1: ⅞	5.0 (127.00)	--	--

Weatherford recommends changing sucker rod couplings after three make-ups, provided the connection threads have been inspected and deemed for reuse.



[a] This grade specification pertains to AISI 41XX/8630 or similar grade (30CroMo/35CroMo) bar and seamless tubing suitable for API-11B

[b] For information about additional sizes, contact your authorized Weatherford representative.

[c] All dimensions according to API 11B latest addition except for the 1-⅛ in. SH SR couplings.

[d] Please contact your Weatherford representative for package quantities for Racer couplings.

Sucker Rod Guides

Premium Thermoplastics with Reinforced Glass or Aramid Fibers

Using a wide range of premium thermoplastics to match a variety of production applications, Weatherford offers rod guide solutions for the most demanding wells, including those with high water cuts, high temperatures, corrosives, and abrasives.

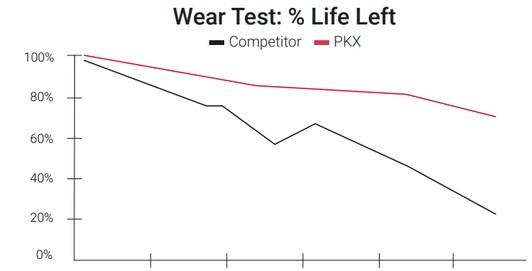
Materials

Material	Base Polymer	Continuous Use Temp Limit	Sour Crude	Water/ Brine	Tubing Wear	Application
AF	PPA Polyphthalamide	400°F (204°C)	Reliable	Reliable	Reliable	Excellent chemical resistance, dependable wear properties
PPS	PPS Polyphenylene	400°F (204°C)	Superior	Enhanced	Reliable	Excellent wear properties, excellent chemical resistance (40% glass)
PPS-LG	PPS Low-Glass	400°F (204°C)	Superior	Superior	Superior	Low-glass material, excellent chemical resistance
PK-X	Polyketone	280°F (138°C)	Superior	Superior	Superior	CSG and CBM, polylined or coated tubing, plus oil and gas applications

Weatherford PK-X Material

Comprised of an elastomer blend formulated from unfilled-glass material for enhanced performance.

- Zero abrasive fillers such as glass fibers
- Optimized tubing protection minimizing tubing wear
- Proprietary blend enhances high-abrasion resistance, enabling durability in low lubricity
- Enhanced resistance to corrosion inhibitors



Weatherford PPSF Rod Guide Material

Blended with a low-glass filled material for enhanced performance and durability.

- PPSF20 material uses a less-abrasive compound compared to most rod guide materials
- Contains ~15-20% glass for extended runtime when paired with PPSF20 material
- Improves tubing protection and reduces tubing wear
- Excellent resistance to aromatics, corrosion inhibitors, acids, CO_2 and H_2S, plus other chemicals

Item	Weatherford Specs
Based Polymer	PPS
Glass Fiber Content	15-20%
Max Temperature	400˚F (204˚C)
Hardness (R scale)	110
Tensile Strength	15.9 ksi (110 MPa)
Elongation at Break	2%

Fit-for-Purpose Sucker Rod Solutions

Premium Sucker Rod Guides

Unparalleled Technology for Enhanced Protection

Weatherford premium sucker rod guides outperform conventionally designed guides, including many “premium” designs on the market. Weatherford high-performance guides offer wider vanes, more erodible wear volume (EWV), and excellent tubing protection protection—even in corrosive wells.

Cobra® Sucker Rod Guides

Improved Durability

Cobra guides have more than twice the EWV of comparably sized straight-vane designs. With more material outside the coupling diameter, Weatherford 5-in. Cobra guides are a long-lasting and cost-efficient addition to any sucker rod string.

Enhanced Protection

Deep channels and extra-wide vanes are hallmark design features for Cobra guides. These characteristics distribute loads more evenly across the contact area, protect more of the tubing circumference, and improve downhole wear protection.

Extra Streamlined

Cobra guides feature tapered ends for a smooth contour that improves flow characteristics. In high-volume or corrosive wells, tapered ends reduce turbulence, keep fluid drag to a minimum, and virtually eliminate the effects of inhibitor washing above the guide.

More Intuitive

Proprietary Wear Gauge™ indicators provide visual confirmation of the remaining EWV on Cobra guides. Weatherford Wear Gauge indicators are molded onto alternating guide vanes, assuring that the tubing is protected from rod couplings.

Fit-for-Purpose Sucker Rod Solutions

King Cobra® Sucker Rod Guides

King Cobra guides offer even greater EWV and increased contact with tubing, resulting in a longer life of the rods and tubing. These guides are designed for tough wells, generally those with an inclination greater than 10° or a dogleg severity of at least 5° per 100 feet.

King Cobra LT

Designed to minimize fluid drag and turbulence created by other rod guides, the King Cobra LT offers smooth and reliable operation in highly corrosive or viscous wells. The guides allow maximum fluid-flow, and their increased length allows for better stabilization.

King Cobra T360

Designed for superior protection in highly deviated wells with maximized flow rates, King Cobra T360 guides provide a balanced geometry for improved centralization and reduced harmonics within PCP and reciprocating rod lift applications.

- 14-in. length
- Single lobe tapered

Fit-for-Purpose Sucker Rod Solutions

Conventional Sucker Rod Guides

Cost-Efficient Solutions for Long-Lasting Protection

Weatherford conventional rod guides are suited for light-corrosion wells with moderate-to-heavy-paraffin accumulation. Slant-vane and straight-vane designs are available in a variety of materials and as with Weatherford premium sucker rod guides, they are injection molded to the rod for increased strength.

Straight-Vane Sucker Rod Guides

Straight-vane rod guides control wear on the sucker rod string in low-corrosion applications that require fewer than one pull per year. All Weatherford sucker rod guides effectively centralize the rod string, which significantly reduces wear on tubing, sucker rods, and couplings.

Slant-Vane Sucker Rod Guides

A slant-vane scraper provides broader cutting action and cleans nearly the full circumference of tubing with each stroke. The slant vane rod guide efficiently removes moderate paraffin buildup, leaving the production path clear.

Fit-for-Purpose Sucker Rod Solutions

Boost Uptime and Profitability with the Right Rodstring

weatherford.com/sucker-rod-solutions