



NORRIS DRIVE ROD

As part of your COMPLETE PCP SYSTEM, MANTL is proud to offer high quality Norris Drive Rods.



DRIVE RODS®

- Specifically designed to withstand the high torque levels experienced in Progressing Cavity Pump applications.
- Furnished with modified pins to maximize their torque capacity.
- Modified pins provide a minimum 50% increase in torque over conventional API thread connections.
- Available in 1" (25.40mm), 1-1/4" (31.75mm) and 1-1/2" (38.10mm) body diameter.
- Full length normalized to relieve residual stresses, air quenched and tempered to refine and homogenize the grain structure.

Norris Steel Sucker Rods	Type	54	75	78	96	97
	AISI Series	C-1541-VM	A-4330-M	A-4142-M	A-4138-M	A-4330-M
	API Grade	D Carbon	D Special	D Alloy	Special	Special
	Chemical Properties, %	54	75	78	96	97
	Carbon	.40/.44	.30/.34	.38/.43	.38/.42	.30/.34
	Manganese	1.40/1.60	.80/1.00	.80/1.00	1.1/1.4	.80/1.00
	Phosphorus	.040 Max.	.035 Max.	.035 Max.	.035 Max.	.035 Max.
	Sulfur	.040 Max.	.040 Max.	.035 Max.	.035 Max.	.040 Max.
	Silicon	.15/.35	.15/.35	.15/.35	.20/.35	.15/.35
	Copper	.35 Max.	.35 Max.	.35 Max.	.35 Max.	.35 Max.
Nickel	.25 Max.	1.65/1.85	25 Max.	.30 Max.	1.65/1.85	
Chromium	.20 Max.	.80/1.00	.90/1.10	.55/.85	.80/1.00	
Molybdenum	.06 Max.	.20/.30	.15/.25	.25/.35	.20/.30	
Vanadium	.07/0.09	.07/0.09	.030/.045	.07/0.09	.07/0.09	
Physical Properties As Normalized & Tempered	54	75	78	96	97	
Tensile						
ksi	115/140	125/140	120/140	140/150	140/150	
Mpa	793/965	861/965	827/965	965/1034	965/1034	
Yield, 2% Offset						
ksi	85 Min.	100 Min.	100 Min.	115 Min.	115 Min.	
Mpa	586 Min.	689 Min.	689 Min.	793 Min.	793 Min.	
Elongation, 8" (203.2mm)	15 Min.	10 Min.	10 Min.	10 Min.	10 Min.	
Reduction, %	50 Min.	45 Min.	45 Min.	45 Min.	45 Min.	
Rockwell, HRC	22/30	25/30	23/30	30/33	30/33	

DRIVE RODS® AND DRIVE PONY RODS TORQUE CHART

Maximum Service Torque for Drive Rods® and Drive Pony Rods

Rod Size	Grade D Special Alloy (75)	Grade D Alloy (78)	Special Service (96)	Special Service (97)
*7/8" (22.25mm) Drive Rods	750	735	800	800
*1" (25.4mm) Drive Rods	1,110	1,100	1,200	1,200
*1-1/8" (27.35mm) Drive Rods	1,570	1,570	1,700	1,700
*1-1/4" (31.75mm) Drive Rods	2,100	2,000	2,500	2,500
*1-1/2" (38.1mm) Drive Rods	3,150	3,000	3,750	3,750

All torque values are ft. lbs.

Rod Size	Grade D Special Alloy (75)	Grade D Alloy (78)	Special Service (96)	Special Service (97)
*7/8" (22.25mm) Drive Rods	1,017	997	1,085	1,085
*1" (25.4mm) Drive Rods	1,505	1,491	1,627	1,627
*1-1/8" (27.35mm) Drive Rods	2,129	2,129	2,305	2,305
*1-1/4" (31.75mm) Drive Rods	2,847	2,712	3,390	3,390
*1-1/2" (38.1mm) Drive Rods	4,271	4,067	5,084	5,084

All torque values are in N-m

'CAUSE WE GIVE A S#!T



TENARIS SUCKER ROD

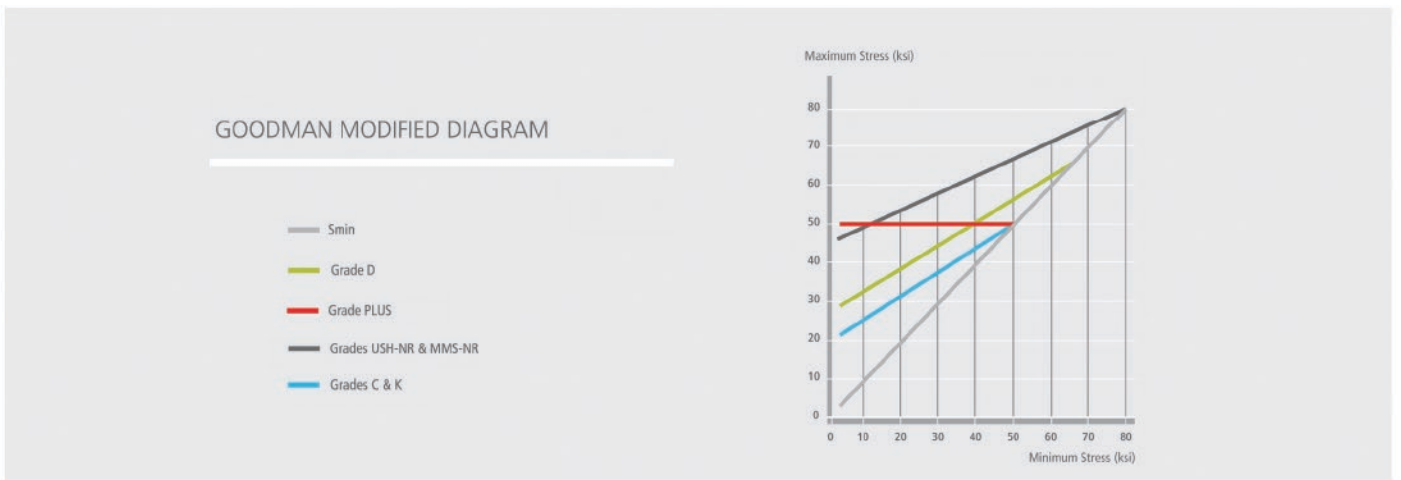
As part of your COMPLETE PCP SYSTEM, MANTL is proud to offer Tenaris API Rods and High Strength Rods.

CHEMICAL COMPOSITION	API STEEL GRADES						PROPRIETARY STEEL GRADES BY TENARIS					
	C 1530M	K 4621M	D CARBON 1530M	D ALLOY 4142M	KD 4320M	D SPECIAL 4330M	PLUS 1530M	UHS 4330M	MMS 4138M	D BLUEROD™	KD BLUEROD™	HOLLOROD™ SERIES
C	0.31-0.36	0.18-0.25	0.31-0.36	0.40-0.45	0.18-0.25	0.29-0.37	0.31-0.36	0.29-0.37	0.36-0.43	0.40-0.45	0.18-0.25	0.20-0.25
Mn	1.40-1.60	0.70-1.00	1.40-1.60	0.75-1.00	0.80-1.00	0.70-0.95	1.40-1.60	0.70-0.95	1.10-1.40	0.75-1.00	0.80-1.00	0.50-0.70
S	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX
P	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX	0.025 MAX
Si	0.25-0.40	0.15-0.30	0.25-0.40	0.15-0.35	0.15-0.35	0.15-0.35	0.25-0.40	0.15-0.35	0.20-0.40	0.15-0.35	0.15-0.35	0.15-0.35
Ni	0.15 MAX	1.65-2.00	0.15 MAX	0.25 MAX	1.15-1.50	1.65-2.00	0.15 MAX	1.65-2.00	0.30 MAX	0.25 MAX	1.15-1.50	0.15 MAX
Cr	0.20 MAX	0.30 MAX	0.20 MAX	0.80-1.10	0.70-0.90	0.80-1.10	0.20 MAX	0.80-1.10	0.50-0.90	0.80-1.10	0.70-0.90	0.8-1.1
Mo	0.05 MAX	0.20-0.30	0.05 MAX	0.15-0.25	0.20-0.30	0.20-0.30	0.05 MAX	0.20-0.30	0.25-0.50	0.15-0.25	0.20-0.30	0.65-0.80
V	0.10-0.15	-	0.10-0.15	-	0.03-0.07	0.035-0.100	0.10-0.15	0.035-0.100	0.04-0.07	-	0.03-0.07	0.03 MAX
Nb	-	-	-	-	-	-	-	-	0.02-0.05	-	-	0.020-0.035
Al	0.01-0.04	0.01-0.04	0.01-0.04	0.01-0.04	0.01-0.05	0.01-0.06	0.01-0.04	0.01-0.06	0.01-0.07	0.01-0.04	0.01-0.05	0.01-0.05
Cu	0.25 MAX	0.25 MAX	0.25 MAX	0.25 MAX	0.25 MAX	0.25 MAX	0.25 MAX	0.25 MAX	0.25 MAX	0.25 MAX	0.25 MAX	0.25 MAX

MECHANICAL PROPERTIES												
YS (KSI)	60 MIN	60 MIN	85 MIN	100*	85 MIN	100*	115 MIN	115 MIN	115 MIN	100 MIN	85 MIN	140 MIN
UTS (KSI)	90-115	90-115	115-140	120-140	115-140	125-140	140-160	140-160	138-155	125-140	115-140	147 MIN

HEAT TREATMENT												
	NORMALIZED	NORMALIZED	NORMALIZED	NORMALIZED	NORMALIZED	NORMALIZED	NORMALIZED	NORMALIZED	NORMALIZED	NORMALIZED	NORMALIZED	QUENCHED
	TEMPERED		FORCED COOLING	TEMPERED	TEMPERED	TEMPERED	SURFACE QUENCHED	TEMPERED	TEMPERED	TEMPERED	TEMPERED	TEMPERED

The values appearing in this brochure are reference values and Tenaris reserves the right to modify them according to internal specifications without prior notice.
 (*) Typical value. Tenaris guarantees an 85 ksi minimum yield strength as specified in API 11B specifications.



'CAUSE WE GIVE A S#!T