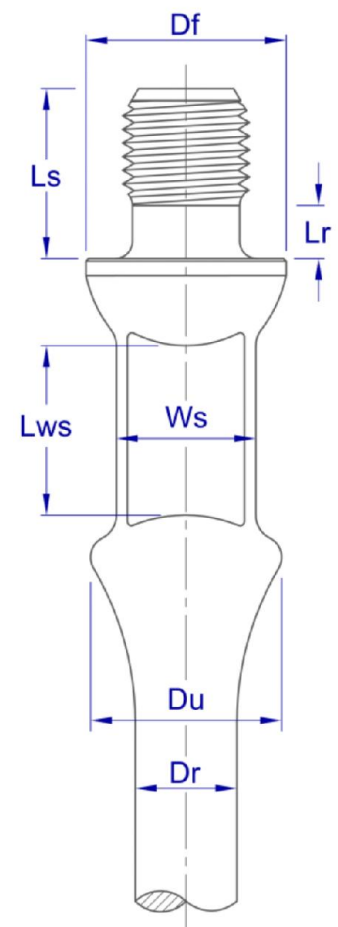


# AlphaRod® X-Torque Sucker & Pony Rod

## Dimensions:

X-Torque is a Tenaris special connection designed to support high torques in progressive cavity pumping (PCP) operations.

Nominal Size			Dr	Df	Ws	Lws (min)	Du	Lr	Ls
Rod	Pin	Units							
1"	7/8"	in	1	1.625	1	1.25	1.5	0.394	1.909
			+0.009	+0.005	±0.031		+0.004	+0.031	+0.039
			-0.018	-0.01			-0.122	-0	-0.00
		mm	25.4	41.28	25.4	31.75	38.1	10	48.5
			+0.23	+0.12	±0.8		+0.1	+0.8	+1
			-0.43	-0.25			-3.1	-0	-0
1 1/8" (**)	7/8" (**)	in	1.125	1.704	1.303	1.25	1.905	0.394	1.909
			+0.01	+0.005	±0.04		+0.004	+0.031	+0.039
			-0.02	-0.01			-0.181	-0	-0.00
		mm	28.58	43.3	33.1	31.75	48.4	10	48.5
			+0.25	+0.12	±1.0		+0.1	+0.8	+1
			-0.51	-0.25			-4.6	-0	-0
1 1/8" (**)	1" (**)	in	1.125	2	1.524	1.625	2	0.394	1.875
			+0.01	+0.005	±0.031		+0.005	+0.031	+0.062
			-0.02	-0.01			-0.01	-0	-0.00
		mm	28.58	50.8	38.7	41.28	50.8	10	47.63
			+0.25	+0.12	±0.8		+0.12	+0.8	+1.58
			-0.51	-0.25			-0.25	-0	-0
1 1/4"	1"	in	1.25	2*	1.407	1.5	2.083	0.394	1.875
			+0.01	+0.005	±0.037		+0.004	+0.031	+0.062
			-0.021	-0.01			-0.232	-0	-0.00
		mm	31.75	50.8	35.75	38.1	52.9	10	47.63
			+0.25	+0.12	±1.25		+0.1	+0.8	+1.58
			-0.25	-0.25			-5.9	-0	-0
1 1/4"	1 1/8"	in	1.25	2.25	1.494	1.625	2.185	0.394	2.125
			+0.01	+0.015	±0.037		+0.004	+0.031	+0.062
			-0.021	-0.015			-0.197	-0	-0.00
		mm	31.75	57.15	37.95	41.28	55.5	10	53.98
			+0.25	+0.38	±0.95		+0.1	+0.8	+1.58
			-0.25	-0.38			-5.00	-0	-0
1 1/2" (**)	1 1/8" (**)	in	1.5	2.25	1.494	1.625	2.185	0.394	2.125
			+0.01	+0.015	±0.037		+0.004	+0.031	+0.062
			-0.02	-0.015			-0.197	-0	-0.00
		mm	38.1	57.15	37.95	41.28	55.5	10	53.98
			+0.25	+0.38	±0.95		+0.1	+0.8	+1.58
			-0.51	-0.38			-5.00	-0	-0



(\*\*) Product is under development dimensions, tolerances and performance data is subjected to trials.

Sucker Rods Nominal Lengths: 25 ft (7.62m)

Pony Rods Nominal Lengths:\* 2, 4, 6, 8, 10, 12 ft (0.61, 1.22, 1.83, 2.44, 3.05, 3.66 m)

\*Other lengths might be available upon request.

## Steel Grades:

The AlphaRod® series was created to overcome more demanding requirements and offer a solution to fatigue and corrosion-fatigue problems. During oil production sucker rods face operative productions that get tougher by the day. Mature conventional wells and non-conventional wells expose sucker rods in such ways that lead to an increase in premature fails. The new steel grades of the AlphaRod® generation were specially designed to satisfy these operative conditions.

## Chemical Composition:

Typical chemical compositions (wt%) are listed in the following table:

Grade	C (%)	Mn (%)	Si (%)	S (%)	P (%)	Cr (%)	Ni (%)	Mo (%)	Other (%)
AlphaRod® HS	0.23	0.5	0.25	0.01 max	0.015 max	0.95	0.30 max	0.45	B: 0.01 max, Ti: 0.1 max, Nb: 0.1 max
AlphaRod® CS	0.23	0.5	0.25	0.01 max	0.015 max	0.95	0.30 max	0.45	B: 0.01 max, Ti: 0.1 max, Nb: 0.1 max
AlphaRod® XS	0.15	0.35	0.25	0.01 max	0.015 max	3.60	0.30 max	0.05 max	B: 0.01 max, Ti: 0.1 max, V: 0.01-0.03

## Mechanical Properties:

Mechanical properties are listed in the following table:

Grade	Yield Strength (0.2% offset)	Ultimate Tensile Stress	Elongation (8")	Reduction of Area	Hardness (typical)
AlphaRod® HS	Min 135 kpsi (Min 931 MPa)	Min 145 kpsi (Min 1000 MPa)	13% Min	60% Min	35 HRC
AlphaRod® CS	Min 110 kpsi (Min 758 MPa)	Min 118 kpsi (Min 814 MPa)	14% Min	70% Min	26 HRC
AlphaRod® XS	Min 110 kpsi (Min 758 MPa)	Min 118 kpsi (Min 814 MPa)	14% Min	70% Min	26 HRC

## Performance Data:

### Maximum Operative Torque:

The maximum operative torque values were determined in full-scale tests.

Tenaris recommends the end user to determine the von mises effective stress of each application and not to exceed the rod body yielding stress.

Tenaris recommends the use of a 0.75 Service Factor depending on the operative conditions (dynamic loading and environment).

Nominal Size		Maximum Operative torque			
Rod	Pin	Units	AlphaRod® HS	AlphaRod® CS	AlphaRod® XS
1"	7/8"	Lbs*ft	1380	1124	1124
		N*m	1870	1523	1523
1 1/8"	7/8"	Lbs*ft	1380	1124	1124
		N*m	1870	1523	1523
1 1/8"	1"	Lbs*ft	2354	1915	1915
		N*m	3190	2596	2596
1 1/4"	1"	Lbs*ft	3210	2622	2622
		N*m	4352	3554	3554
1 1/4"	1 1/8"	Lbs*ft	3210	2622	2622
		N*m	4352	3554	3554
1 1/2"	1 1/8"	Lbs*ft	4270	3477	3477
		N*m	5789	4714	4714

## Maximum Pulling Force:

Grade	Rod Outer Diameter			
	1"	1 1/8"	1 1/4"	1 1/2"
<b>AlphaRod® HS</b>	84.8 klb (38.5 Ton)	107.4 klb (48.7 Ton)	132.5 klb (60.1 Ton)	190.9 klb (86.6 Ton)
<b>AlphaRod® CS</b>	69 klb (31.3 Ton)	87.5 klb (39.7 Ton)	108 klb (48.9 Ton)	155.5 klb (70.5 Ton)
<b>AlphaRod® XS</b>	69 klb (31.3 Ton)	87.5 klb (39.7 Ton)	108 klb (48.9 Ton)	155.5 klb (70.5 Ton)

## Non Destructive Testing:

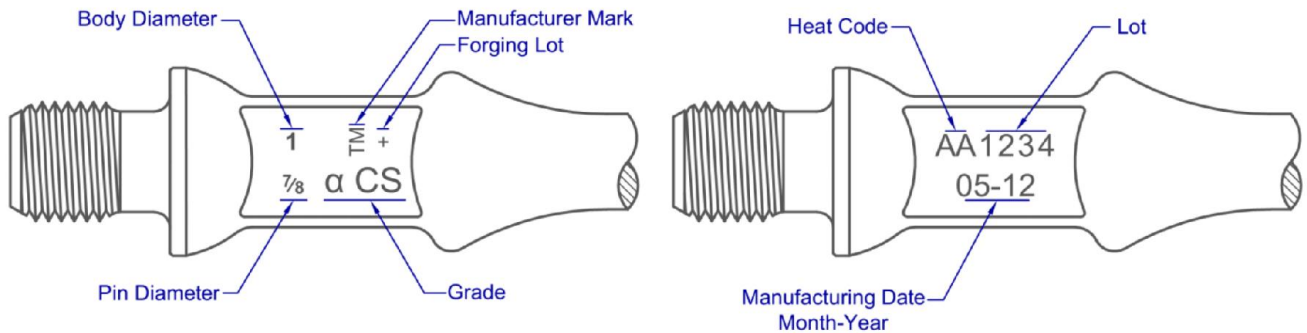
All raw material is carefully inspected using electromagnetic and/or ultrasonic methods to ensure the soundness of the final product.

## Color Code:

Grade	Color Code
<b>AlphaRod® HS</b>	Gold
<b>AlphaRod® CS</b>	Silver
<b>AlphaRod® XS</b>	Copper

\*Displayed colors are for guidance only.

## Marking:



## Ordering information:

When placing an order please attach the following information:

<b>PDS:</b>	SRXTAR
<b>Product Family:</b>	(Sucker Rod or Pony Rod)
<b>Body:</b>	1"
<b>Pin:</b>	7/8"
<b>Grade:</b>	AlphaRod® HS
<b>Length:</b>	25ft

## Labeling\*:

		<b>Metalmecánica S.A.</b> Ruta 55 Km. 754,1 Villa Mercedes (San Luis) Made in Argentina	
		<b>BOX N°</b> 60000001	QTY:
PRODUCT: SUCKER RODS		DATE:	
SPECIFICATION:			
ROD DIAM (in):			
GRADE:			
LENGTH (ft):			
NET WEIGHT: (kg)			
SALES ORDER:			
DESTINATION:			

\*Image for reference only

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