MAX AICHER

AICHER STEEL AMERICAS, INC.

ASA Thread Bars and Accessories
Hollow Bars
Formwork Bars and Ultra Low Temperature Steel

Aicher Steel Americas Inc.
Company Overview

Aicher Steel Americas is your trusted partner for the most challenging projects.

SAS Systems have long been the preferred material for the most advanced applications. Our unique approach to supply perfectly matched connectors and related accessories has made SAS Systems the most recognized partner in the world of advanced engineering.

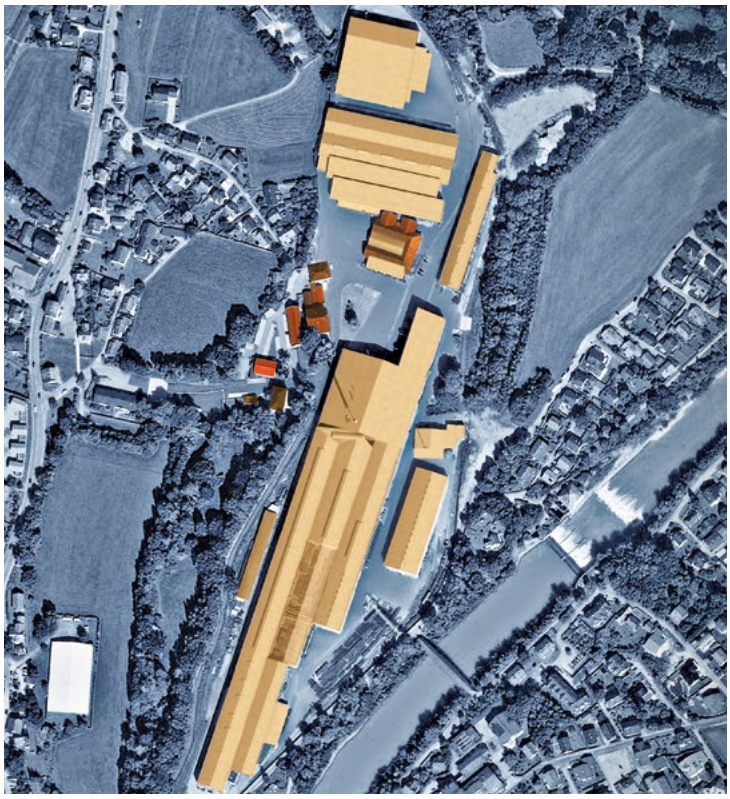
Our high strength reinforcement systems have been used in some of the most iconic landmark buildings in the US and worldwide.

The product range of SAS Systems features various grades of high quality hot-rolled threaded bars and hollow core bars.

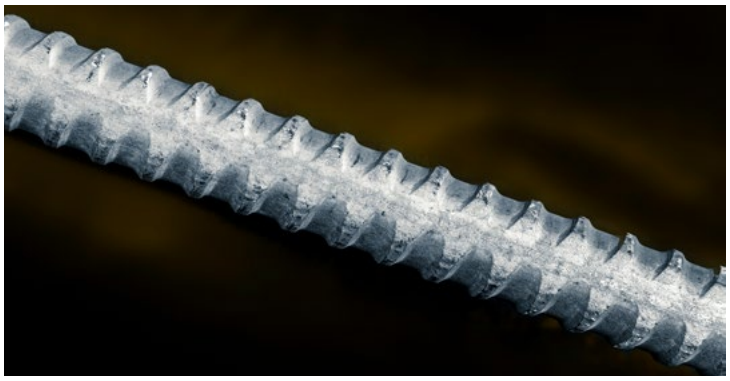
With bars ranging from ¾ to 3 in diameter, we are able to design perfectly engineered solutions for your project. Readily available grades of thread bars are grade 75, grade 80, grade 97, grade 100 and grade 150 for post-tensioning applications.

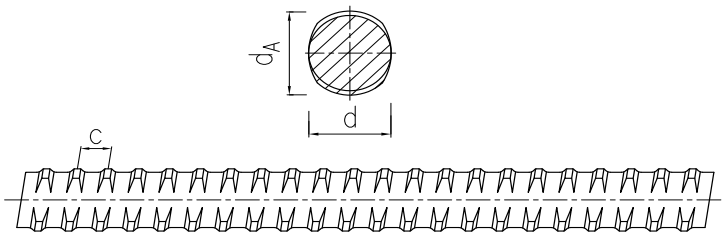
With warehouses located in Roseland (New Jersey, USA) and Hamilton (Ontario, Canada) we are well represented to satisfy your needs. In addition, we have local technical sales and engineering professionals located throughout North America. Our team is ready to assist you with your next project.

Our parent company, the Max Aicher Group, operates various steel mills throughout North America and Europe, including the Stahlwerk Annahuette, the oldest continually operating steel mill in the world, dating back to the year 1537.



SAS Thread Bars Grade 75/80
for Geotechnical and Reinforcing Applications Based on ASTM A615





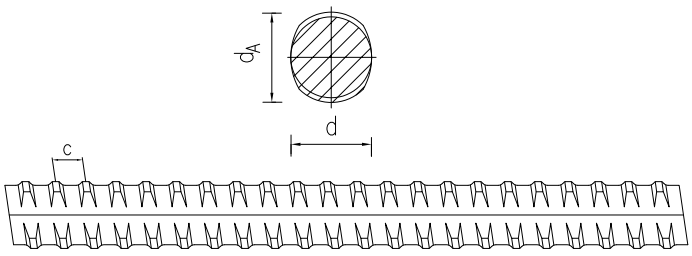
SAS Thread Bar Hot Rolled, Ribbed - Left hand Thread

Aicher Steel Americas carries a full line of matching accessories from Hex Nuts to Couplers, including oversized versions for hot dipped galvanized and epoxy coated applications. Our SAS grade 75/80 bars conform to ASTM A615.

Areas of Application	Nominal diameter			Yield Load	Ultimate Load	Cross Section Area	Weight	item No.	Elongation	
	#	[in]	[mm]	[kips]	[kips]	[in²]	[lb/ft]		A_{gt} [%]	A_{10} [%]
SAS Grade 75										
	4		12	13.1	15.1	0.175	0.60	120GL		
			14	17.9	20.7	0.239	0.81	140GL		
	5	5/8	16	23.4	26.8	0.312	1.06	160GL		
Reinforcing Systems	6	3/4	20	36.5	42.5	0.487	1.66	200GL		
	8	1	25	57.1	65.6	0.761	2.59	250GL		
	9	1 1/8	28	71.6	82.5	0.955	3.25	280GL	6	10
	10	1 1/4	32	93.5	106.8	1.246	4.24	320GL		
Geotechnical Systems	11	1 3/8	36	118.6	136.0	1.581	5.37	360GL		
	13	1 5/8	40	146.5	167.5	1.953	6.63	400GL		
	14	1 3/4	43	168.8	193.8	2.251	7.66	430GL		
	16	2	50	227.9	262.1	3.038	10.35	500GL		
	24	3	75	513.6	546.3	6.848	23.30	750GL	5	---
SAS Grade 80										
	8	1	25	60.9	79.9	0.761	2.59	250GL		
Reinforcing Systems	9	1 1/8	28	76.4	100.3	0.955	3.25	280GL		
	10	1 1/4	32	99.7	130.8	1.246	4.24	320GL	6	10
Geotechnical Systems	11	1 3/8	36	126.5	166.0	1.581	5.37	360GL		
	14	1 3/4	43	180.1	236.4	2.251	7.66	430GL		
	18	2 1/4	57.5	322.0	408.7	4.025	13.69	575GL	5	---
	20	2 1/2	63.5	392.7	498.0	4.909	16.71	635GL		---

SAS Thread Bars Grade 97/100

High Strength Reinforcement Systems (HSRS®) According to AC 237 / ICC Approved Grade 97



SAS Thread Bar Hot Rolled, Ribbed - Right Hand Thread

SAS grade 97/100 is the perfect solution when high strength reinforcement is demanded. Equally well suited for tension and compression applications SAS grade 97/100 has been used to realize the most sophisticated projects in modern engineering. Combined with innovative design and value engineered solutions, our products can be used as a high strength alternative to common reinforcement in the construction of high rise buildings and deep foundation elements. SAS grade 97 carries its own ICC approval for high strength reinforcing.

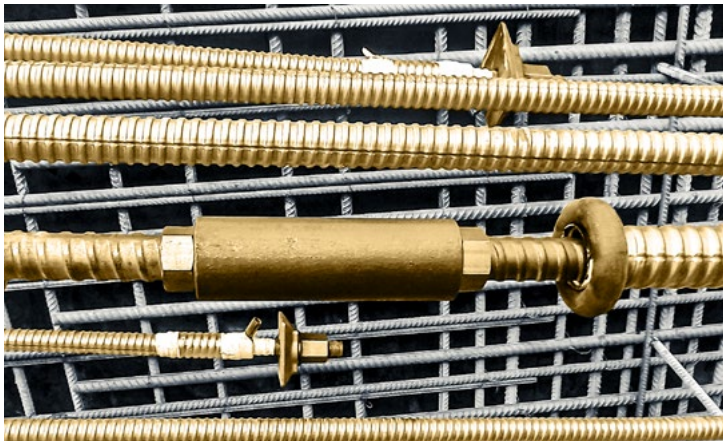
Areas of Application

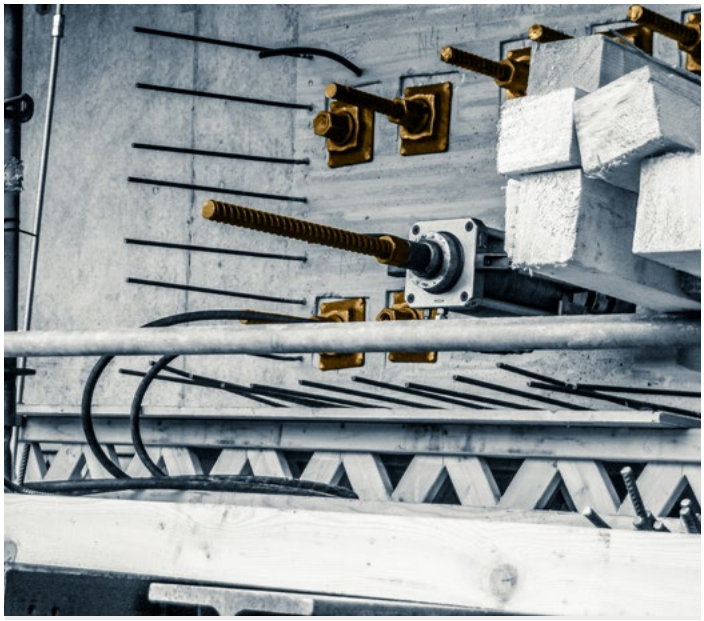
- **Geotechnical Systems**
- **Tunneling & Mining**
- **High-Strength Reinforcement**

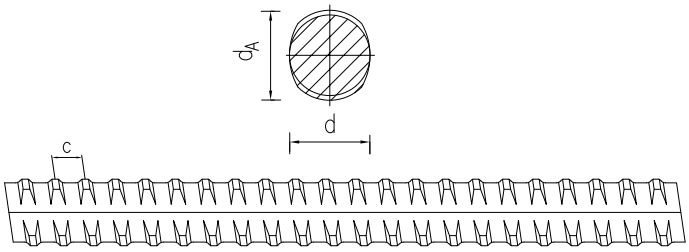
Nominal Diameter			Yield Load	Ultimate Load	Cross Section Area	Weight	Item No.	Elongation	
#	[in]	[mm]	[kips]	[kips]	[in²]	[lb/ft]		A_{gt}[%]	A_{10}[%]
SAS Grade 97									
6	3/4	18	38.2	45.9	0.394	1.34	180AT	5	10
7	7/8	22	57.1	68.3	0.589	2.00	220AT		
8	1	25	73.8	88.3	0.761	2.59	250AT		
9	1 1/8	28	92.6	110.8	0.955	3.25	280AT		
10	1 1/4	30	106.3	127.0	1.096	3.73	300AT		
11	1 3/8	35	144.6	173.1	1.491	5.07	350AT		
14	1 3/4	43	218.3	261.2	2.251	7.66	430AT		
16	2	50	295.1	353.0	3.043	10.35	500AT		
18	2 1/4	57.5	390.5	466.9	4.025	13.69	575AT		---
20	2 1/2	63.5	476.2	569.7	4.909	16.71	635AT		---
24	3	75	664.2	794.7	6.848	23.30	750AT		---
SAS Grade 100									
6	3/4	18	39.4	45.3	0.394	1.34	180AT	5	10
7	7/8	22	58.9	67.7	0.589	2.00	220AT		
8	1	25	76.1	87.5	0.761	2.59	250AT		
9	1 1/8	28	95.5	109.8	0.955	3.25	280AT		
10	1 1/4	30	109.6	126.0	1.096	3.73	300AT		
11	1 3/8	35	149.1	171.5	1.491	5.07	350AT		
14	1 3/4	43	225.1	258.9	2.251	7.66	430AT		
16	2	50	304.3	350.0	3.043	10.35	500AT		
18	2 1/4	57.5	402.5	462.9	4.025	13.69	575AT		---
20	2 1/2	63.5	490.9	564.5	4.909	16.71	635AT		---

SAS Stress Bars Grade 150

Post-Tensioning Bars
Based on ASTM A722 TYPE II







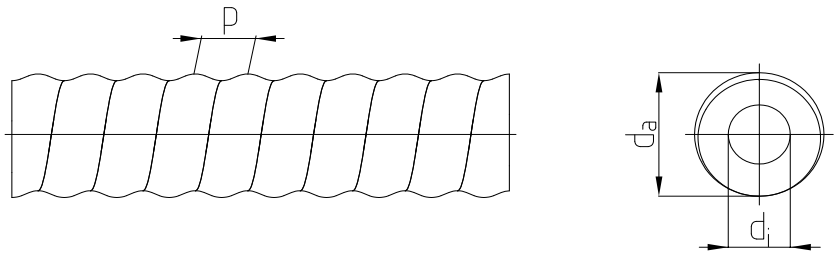
SAS Thread Bar Hot Rolled, Ribbed - Right Hand Thread

SAS post-tensioning bars are an integral part of modern post-tensioning solutions in bridge construction, structural engineering and the retrofitting of structures. Due to the manufacturing process, SAS grade 150 steel bars, as compared to standard bars, feature a distinct and well defined yield point while at the same time possessing high strength and ductility.

Areas of Application	Nominal Diameter		Yield Load	Ultimate Load	Cross Section Area	Weight	Item No.	Elongation	
	[in]	[mm]	[kips]	[kips]	[in²]	[lb/ft]		A_{gt}[%]	A_{10}[%]
SAS Grade 150									
	3/4	18	51.7	57.3	0.374	1.32	180WR	5	7
	1	26.5	118.0	130.4	0.854	3.01	265WR		
Geotechnical Systems	1-1/4	32	170.9	190.0	1.246	4.39	320WR		
	1-3/8	36	215.8	240.5	1.581	5.56	360WR		
Post-Tensioning Systems	1-5/8	40	267.5	296.7	1.948	6.86	400WR		
	1-7/8	47	370.9	409.2	2.689	9.47	470WR		
	2-1/4	57	484.5	600.5	4.001	14.08	570W	4	---
	2-1/2	65	625.0	774.9	5.163	18.21	650W		---
	3	75	829.5	1027.8	6.848	24.12	750W		---

SAS Hollow Bars and Accessories

Self-Drilling Hollow Bar Systems and Accessories

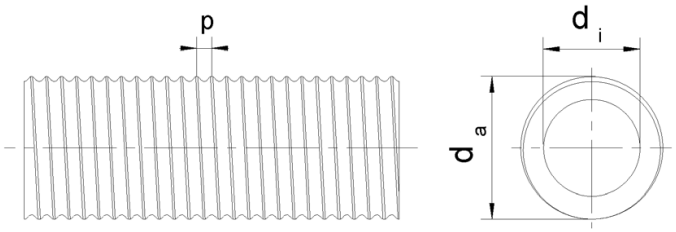


Round Thread R Ø 32 - 51 mm

Cold Rolled - Left Hand Thread

Aicher Steel Americas carries a full line of hollow bar accessories to ensure accelerated production. Various types of drill bits are available to suit a variety of soil and ground conditions.

Type	Unit	R38	R51	RR64	RR76	RR108
Ratio		H0500-38	H0800-51	H1200-64	H1600-76	H2400-108
d_a	[in]	1.50	1.97	2.52	3.03	4.25
d_i	[in]	0.73	1.14	1.52	2.03	3.25
p	[in]	0.50	0.50	0.32	0.32	0.32
So	[in²]	1.147	1.783	2.666	3.519	5.503
Weight	[lbs/ft]	3.9	6.0	9.1	12.0	18.7
Fy	[kips]	89.9	141.6	213.6	269.8	400.2
Fu	[kips]	112.4	179.8	269.8	359.7	539.5



Trapezoidal Thread T Ø 64 - 108 mm
Cold Rolled - Right Hand Thread

Type Ø	[mm]	*T64	T64	*T76	T76	*T76	T108
Bar No.		H 1000-64	**H 1200-64**	H 1380-76	**H 1600-76**	H 1900-76	**H 2500-108**
d_a	[in]	2.52	**2.52**	3.03	**3.03**	3.03	**4.25**
d_i	[in]	1.65	**1.52**	2.13	**2.03**	1.87	**3.25**
p	[in]	0.32	**0.32**	0.32	**0.32**	0.32	**0.32**
Area	[in^2]	2.36	**2.80**	3.24	**3.70**	3.91	**5.66**
Weight	[lbs/ft]	7.73	**9.07**	10.62	**11.96**	13.24	**18.68**
Yield Load	[kips]	180	**214**	243	**270**	315	**400**
Ultimate Load	[kips]	225	**270**	315	**360**	405	**540**

T-thread Ø 64 - 108 mm according to factory standard

in stock

**available upon request*

DRILLBITS

ARC-SHAPED DRILL BIT EC
- hardened, triple edged drill bit
- universal drill bit for cohesive soils, mixed soils, weak sedimentary rock, medium limestone
- SPT 0-50

TRI CRESCENT DRILL BIT EY-DC
- hardened, triple edged with drop center
- improved directional stability
- universal drill bit for cohesive soils, mixed soils, weak sedimentary rock, medium limestone
- SPT 0-55

TRI CRESCENT DRILL BIT w/ CARBIDE INSERTS EYY-DC
- drill bit with carbide inserts
- triple edged with drop center
- for soils and weak to medium rock

CROSS BIT EX
- hardened drill bit
- universal drill bit for loose gravel, weak sedimentary rock, medium limestone
- UCS 100 MN/mm²

CROSS BIT w/ CARBIDE INSERTS EXX
- drill bit with carbide inserts
- for hard rock and concrete obstacles
- UCS 100 MN/mm²

BUTTON BIT ES
- hardened button bit
- for fractured and weak rock, soft and dry mudstone
- SPT 0-55
- hardened, triple edged drill bit

BUTTON BIT w/ CARBIDE INSERTS ESS
- button bit with carbide inserts
- for fractured, hard rock
- UCS 80 MN/mm²

DROP CENTER BUTTON BIT ES-DC
- hardened, button drill bit
- improved directional stability
- for fractured and weak rock, soft and dry mudstone
- SPT 0-55

DROP CENTER BUTTON BIT w/ CARBIDE INSERTS ESS-DC
- drill bit with carbide inserts
- improved directional stability
- for hard rock

CLAY BIT EW
- four hardened cross-blades
- Retroflush and sideflush
- for soft cohesive soils
- SPT 0-50

SAS Stressteel Formwork Bars

Weldable and Non-Weldable Bars including all related Accessories

SAS form ties and SAS formwork accessories are used worldwide by well-known leading formwork companies and building contractors to connect and anchor concrete formworks and scaffolding in civil and structural engineering projects.

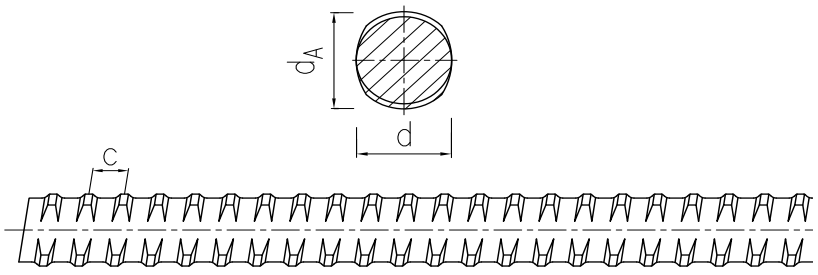
Although form ties make up only a relatively minor part of the overall formwork system costs, they are of essential structural importance. They absorb and transfer all forces acting onto the formworks and working platforms. Therefore, maximum quality and reliability must be absolutely ensured.

Our accessories meet equally high quality standards. As a rule, they are tested up to the bar's ultimate load.
Aicher Steel Americas offers Formwork Ties in 15mm (5/8"), 20mm (7/8") and 26.5mm (1 inch) diameters.

Areas of Application	Nominal Diameter		Yield Load	Ultimate Load	Cross Section Area	Weight	Item No.	Elongation	
	[in]	[mm]	[kips]	[kips]	[in²]	[lb/ft]		A_{gt}[%]	A_{10}[%]
SAS Grade 160 FA									
Formwork Ties	5/8	15	35.7	43.8	0.274	0.97	150FA	3	7
	3/4	20	63.6	77.6	0.487	1.72	200FA		
	1	26.5	111.3	136.2	0.854	3.01	265FA	2	
SAS grade 150 FC									
Formwork Ties	5/8	15	35.7	41.8	0.274	0.97	150FC	3	7
	3/4	20	63.6	74.2	0.487	1.72	200FC		
SAS Grade 150 E	1	26.5	118.0	130.4	0.854	3.01	265E	2	7

SAS ULTS Cryogenic Bars

for the Construction of LNG Tanks SAS ULTS 500/600
SAS ULTS Ultra Low Temperatur Steel (-165°C)



SAS Thread Bar Hot Rolled, Ribbed - Left Hand Thread

Aicher Steel Americas SAS ULTS has been developed for the construction of large scale LNG Tanks. SAS ULTS has been used for a variety of LNG projects throughout the world and has surpassed all required testing to be used in such demanding applications.

SAS 500/600 fulfills all the requirements set forth in the updated DIN EN 14620-3, the internationally adapted standard for ULTS material testing.

SAS 500/600 ULTS is the threaded bar solution and cost cutting alternative to cryogenic rebar. The very high ductility of the material exceeds the requirements of the standards for ultra-low temperature applications. All known advantages of the thread bar geometry persist in this cryogenic material. Full line of accessories available to revolutionize the way LNG tanks are manufactured.

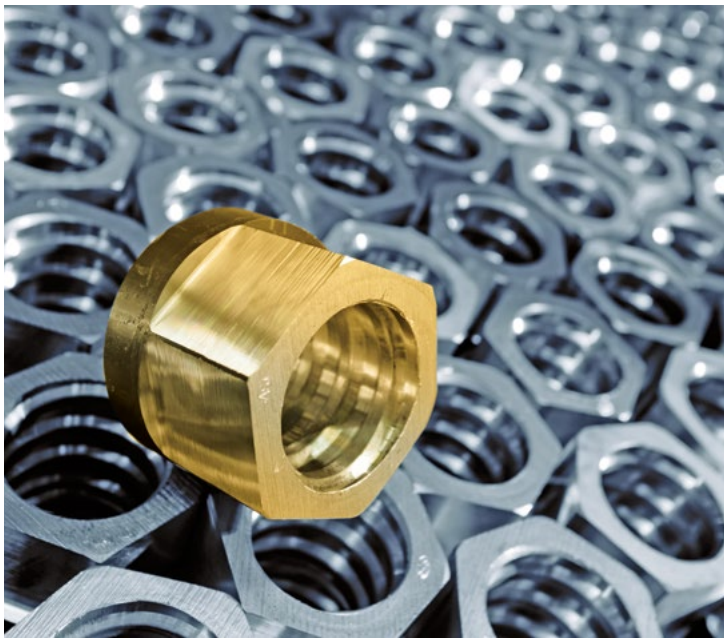
Areas of Application	Nominal diameter			Yield load	Ultimate Load	Cross Section Area	Weight	Item No.	Elongation	
	#	[in]	[mm]	[kips]	[kips]	[in²]	[lb/ft]		A_{gt} [%]	A_{10} [%]
SAS 500/600 - ULTS										
	4		12	12.8	15.3	0.175	0.60	120UT	≥5 (A$_g$ > 3.0) (NSR ≥ 1.0) (Yield ratio ≥ 1.15) acc. EN14620-3:2006	
			14	17.3	20.7	0.239	0.81	140UT		
Ultra Low Temperature Steel	5	5/8	16	22.5	27.2	0.312	1.06	160UT		
	6	3/4	20	36.0	42.3	0.487	1.66	200UT		
	8	1	25	55.1	66.3	0.761	2.59	250UT		
	9	1 1/8	28	69.7	83.2	0.955	3.25	280UT		
	10	1 1/4	32	91.1	108.4	1.246	4.24	320UT		

SAS System Accessories

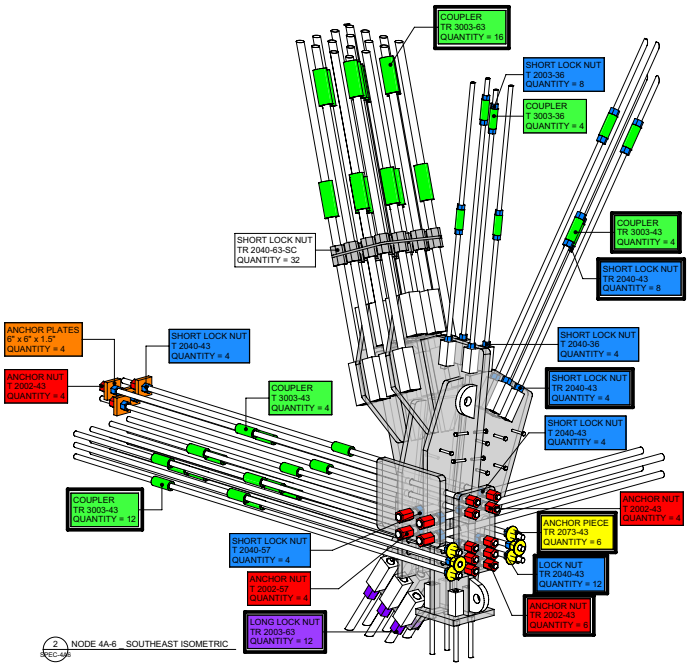
Aicher Steel Americas carries a complete line of perfectly matched accessories to our thread bar and hollow bar products.

All SAS System accessories comply with the highest quality standards to ensure perfect connectivity between the individual system components. In addition, we offer oversized accessories to be used with hot-dipped galvanized and epoxy coated bars for special applications where additional corrosion protection is desired or required.

All our accessories are designed to carry the nominal load capacity of the respective bars to ensure ultimate safety. Custom solutions are available on request. Please contact us for more information.



Aicher Steel Americas - Services



Aicher Steel Americas offers custom solutions for various projects, ranging from engineering support to the construction of our industry leading pre-built caissons and reinforcing segments.

Our engineering services include complete structural calculations and custom solutions for the most challenging engineering projects to date. Our subsequent fabrication ensures that all elements are realized in the perfect manner to be delivered and installed at your job site.

Aicher Steel Americas offers various corrosion protection measures, ranging from Hot Dipped Galvanized bars to Epoxy Coating and Double Corrosion Protected anchors.

Our caisson elements are color coded for easy assembly on the job site, ensuring timely installation and resulting in monetary savings over traditionally assembled reinforcing elements.

MAX AICHER

AICHER STEEL AMERICAS, INC.

SAS Thread Bars Grade 80/97/100

for Geotechnical and Reinforcing Applications based on ASTM A615

SAS Grade 80	#	8	9	10	11	14	18	20
	[in]	1	1 1/8	1 1/4	1 3/8	1 3/4	2 1/4	2 1/2
	[mm]	25	28	32	36	43	57.5	63.5
Item No.		250GL	280GL	320GL	360GL	430GL	575GL	635GL
max. d_A	[in]	1.14	1.26	1.42	1.61	1.89	2.48	2.76
f_{yk} ($f_{0,2k}$) / f_{tk} / A_{gt} [1)]		80 ksi / 105 ksi / ≥ 5 %						
F_{yk} ($F_{0,2k}$)	[kips]	60.9	76.4	99.7	126.5	180.1	322.0	392.7
F_{tk}	[kips]	79.9	100.3	130.8	166.0	236.4	422.6	515.5
A	[in^2]	0.761	0.955	1.246	1.581	2.251	4.025	4.909
G	[lb/ft]	2.59	3.25	4.24	5.37	7.66	13.69	16.71

SAS Grade 97	#	6	7	8	9	10	11	14	16	18	20
	[in]	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 3/4	2	2 1/4	2 1/2
	[mm]	18	22	25	28	30	35	43	50	57.5	63.5
Item No.		180AT	220AT	250AT	280AT	300AT	350AT	430AT	500AT	575AT	635AT
max. d_A	[in]	0.83	0.98	1.10	1.26	1.34	1.58	1.89	2.17	2.48	2.76
f_{yk} ($f_{0,2k}$) / f_{tk} / A_{gt} [1)]		97 ksi / 116 ksi / ≥ 5 %									
F_{yk} ($F_{0,2k}$)	[kips]	38.2	57.1	73.8	92.6	106.3	144.6	218.4	295.2	390.4	476.2
F_{tk}	[kips]	45.7	68.3	88.3	110.8	127.1	173.0	261.1	353.0	466.9	569.4
A	[in^2]	0.394	0.589	0.761	0.955	1.096	1.491	2.251	3.043	4.025	4.909
G	[lb/ft]	1.34	2.00	2.59	3.25	3.73	5.07	7.66	10.35	13.69	16.71

SAS Grade 100	#	6	7	8	9	10	11	14	16	18	20
	[in]	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 3/4	2	2 1/4	2 1/2
	[mm]	18	22	25	28	30	35	43	50	57.5	63.5
Item no.		180AT	220AT	250AT	280AT	300AT	350AT	430AT	500AT	575AT	635AT
max. d_A	[in]	0.83	0.98	1.10	1.26	1.34	1.58	1.89	2.17	2.48	2.76
f_{yk} ($f_{0,2k}$) / f_{tk} / A_{gt} [1)]		100 ksi / 115 ksi / ≥ 5 %									
F_{yk} ($F_{0,2k}$)	[kips]	39.4	58.9	76.1	95.5	109.6	149.1	225.1	304.3	402.5	490.9
F_{tk}	[kips]	45.3	67.7	87.5	109.8	126.0	171.5	258.9	350.0	462.9	564.5
A	[in^2]	0.394	0.589	0.761	0.955	1.096	1.491	2.251	3.043	4.025	4.909
G	[lb/ft]	1.34	2.00	2.59	3.25	3.73	5.07	7.66	10.35	13.69	16.71

[1)] Percentage total elongation at maximum force

Weight specifications of bar and accessories are average values. The actual values may deviate due to fabrication tolerances.

SAS All-Threadbar

Areas of Application

	Nominal diameter ø			Yield Load	Ultimate Load	Cross Section Area	Weight	Item No.	Elongation	
	#	[in]	[mm]	[kips]	[kips]	[in²]	[lb/ft]		A_{gt} [%]	A_{10} [%]
SAS Grade 75										
			12	13.1	15.1	0.175	0.60	120GL		
			14	17.9	20.7	0.239	0.81	140GL		
Reinforcing Systems	5	5/8	16	23.4	26.8	0.312	1.06	160GL		
	6	3/4	20	36.5	42.5	0.487	1.66	200GL		
	8	1	25	57.1	65.6	0.761	2.59	250GL		
	9	1 1/8	28	71.6	82.5	0.955	3.25	280GL	6	10
	10	1 1/4	32	93.5	106.8	1.246	4.24	320GL		
Geotechnical Systems	11	1 3/8	36	118.6	136.0	1.581	5.37	360GL		
		1 5/8	40	146.5	167.5	1.953	6.63	400GL		
	14	1 3/4	43	168.8	193.8	2.251	7.66	430GL		
	16	2	50	227.9	262.1	3.038	10.35	500GL		
	24	3	75	513.6	546.3	6.848	23.30	750GL	5	---
SAS Grade 80										
	18	2 1/4	57.5	322.0	408.7	4.025	13.69	575GL	5	---
	20	2 1/2	63.5	392.7	498.0	4.909	16.71	635GL		---
SAS 500 / 600 - ULTS										
			12	12.8	15.3	0.175	0.60	120UT		
			14	17.3	20.7	0.239	0.81	140UT	≥5	
Ultra Low Temperature Steel	5	5/8	16	22.5	27.2	0.312	1.06	160UT		
	6	3/4	20	36.0	42.3	0.487	1.66	200UT	(A_g >3,0)	
	8	1	25	55.1	66.3	0.761	2.59	250UT	(NSR ≥1,0)	
	9	1 1/8	28	69.7	83.2	0.955	3.25	280UT	(Yield ratio ≥ 1,15)	
	10	1 1/4	32	91.1	108.4	1.246	4.24	320UT	acc. EN14620-3:2006	
SAS Grade 97										
	6	3/4	18	38.2	45.9	0.394	1.34	180AT		
Geotechnical Systems	7	7/8	22	57.1	68.3	0.589	2.00	220AT		
	8	1	25	73.8	88.3	0.761	2.59	250AT		
	9	1 1/8	28	92.6	110.8	0.955	3.25	280AT		
	10	1 1/4	30	106.3	127.0	1.096	3.73	300AT		10
Tunneling & Mining	11	1 3/8	35	144.6	173.1	1.491	5.07	350AT	5	
	14	1 3/4	43	218.3	261.2	2.251	7.66	430AT		
	16	2	50	295.1	353.0	3.043	10.35	500AT		
	18	2 1/4	57.5	390.5	466.9	4.025	13.69	575AT		---
High-Strength Reinforcement	20	2 1/2	63.5	476.2	569.7	4.909	16.71	635AT		---
	24	3	75	664.2	794.7	6.848	23.30	750AT		---
SAS Grade 150										
		3/4	18	51.7	57.3	0.374	1.32	180WR		
Post-Tensioning Systems		1	26.5	118.0	130.4	0.854	3.01	265WR		
		1 1/4	32	170.9	190.0	1.246	4.39	320WR	5	7
		1 3/8	36	215.8	240.5	1.581	5.56	360WR		
Geotechnical Systems		1 5/8	40	267.5	296.7	1.948	6.86	400WR		
		1 7/8	47	370.9	409.2	2.689	9.47	470WR		
		2 1/4	57	484.5	600.5	4.001	14.08	570W		---
		2 1/2	65	625.0	774.9	5.163	18.21	650W	4	---
		3	75	829.5	1027.8	6.848	24.12	750W		---

For 3/4" to 1-7/8" diameter bars, yield stress is 137 ksi (0.91 fu) and maximum jacking stress 120 ksi (0.80 fu)
For 2-1/4" to 3" diameter bars, yield stress is 120 ksi (0.80 fu) and maximum jacking stress 105 ksi (0.70 fu)

SAS Grade 160 FA										
		5/8	15	35.7	43.8	0.274	0.97	150FA	3	
Formwork Ties		7/8	20	63.6	77.6	0.487	1.72	200FA		7
			26.5	111.3	136.2	0.854	3.01	265FA	2	
SAS grade 150 FC										
Formwork Ties		5/8	15	35.7	41.8	0.274	0.97	150FC	3	7
		7/8	20	63.6	74.2	0.487	1.72	200FC		
SAS Grade 150 E		1	26.5	118.0	130.4	0.854	3.01	265E	5	7

Accessories for all dimensions and applications available

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