



#### **The Value of Experience**

The field of tensile architecture is exacting and precise, its success demanding the aggregation of knowledge and experience. From its facilities across Australia and the USA, in Denmark, New Zealand and the U.K., Ronstan supplies rod systems born from over 50 years of continual research, development and improvement. This Australian manufacturer is now recognised as a world leader with products available in 55 countries and in the following applications.

#### **Ronstan Structural Rod Applications:**

- Suspension Bridges
- Curtain Walls and Glazed Structures
- Sports Facilities
- Exhibition Buildings
- System Selection

Specifying a Ronstan structural rod system begins by identifying your application and then utilising the catalogue to:

- 1. Select corrosion protection Stainless Steel or High Tensile Carbon Steel.
- 2. Match the load case with rod type and system.
- 3. Select the rod diameter.

#### The Total Solution

And when assistance is required we offer:

- Design support
- Rod and fitting selection
- Assistance with corrosion protection
- Cost estimates and budgets
- Method statements and schedules
- Structural analysis
- Site supervision
- Installation

- Nets and Grid Structures
  Fabric Architecture
  Braces and Trusses
- vailable in 55 countries and in the following od Applications:



# structural rods

Space. Simple form. Both mask a complexity inherent in tensile architecture. The structure in place, itself evidence of science and careful planning, stands to remind us of what can be achieved with the intelligent use of rods working together in tension. Be it a glazed curtain wall, a tensioned fabric roof, a simple yet elegant suspension bridge, or a cable net or grid structure, all can depend on rods as the primary load carrying elements. The results are structures of unique depth and openness, with large spans made possible by balancing the need for reduced self weight, with the application of minimalist and efficient high tensile rod tendons. This is lightweight tensile architecture and a Ronstan passion.

The intriguing capabilities of Ronstan structural rod systems are artfully revealed through their many applications. Our aim is to inspire and enthuse, and to provide a simple guide for selecting the right tension rod for your application. In this catalogue we are delighted to offer three new ranges; our high strength 550 stainless rods, with their unique compact adjustable forks, and the high tensile grade 520 and 460 carbon steel ranges. All complement our renowned Grade 316 stainless steel rods, an industry benchmark for 15 years, and all can now be specified with a single part number.

The process is simple. After determining the required material and level of corrosion protection, black or heavy galvanised in the case of carbon steel, the selection of rod diameter is a simple process of matching your load requirements. If the standard systems don't suit, then you have a range of other Ronstan rod fittings from which to make your selection.

Even if you have never designed with tensile rods before, it need not be a mystery. Ronstan maintains a fully staffed design engineering department to assist clients with concept development, rod system selection, or to tailor a solution to your needs. Often, attaching the rod system to your structure is the most difficult consideration. We can assist with design here as well, before our project management team takes over to ensure the proper coordination from concept to installation, and even commissioning.

# ARS1 ARS2 ARS3 ARS4 ARS5

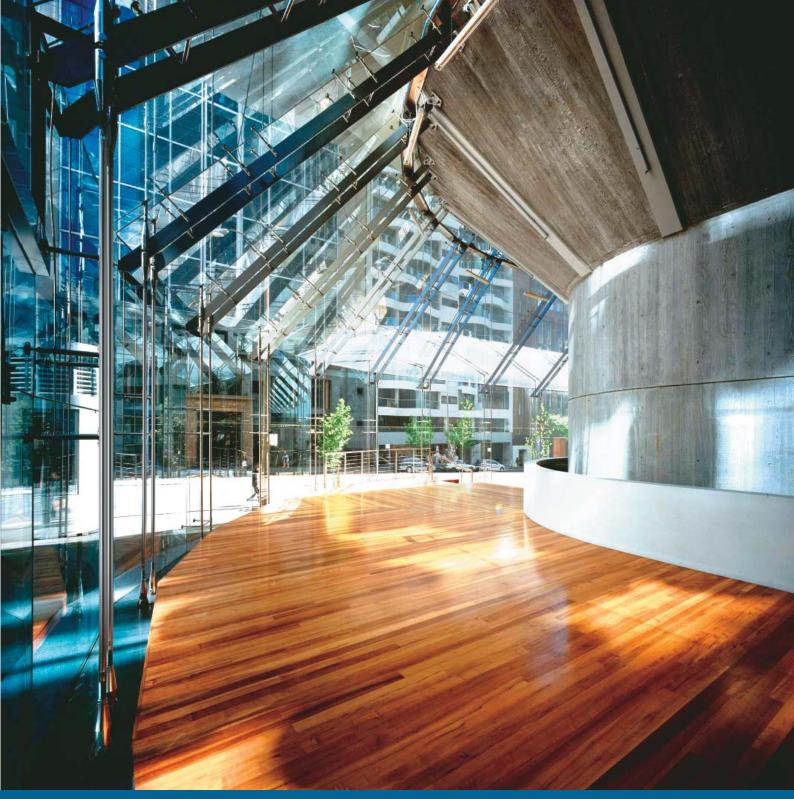


# Façade

The façade represents the ultimate expression of individuality, reflecting the image of the occupier, classic or modern, modest or impressive. At the same time façade systems may be designed to shade, provide fall protection, reflect dramatic lighting, or enhance the corporate identity.

Ronstan Structural rods are tools with which architects and engineers can shape façade and shade elements, their functional elegance obvious to the inspired, yet light and sufficiently transparent to allow the façade to convey its message.

Project: Location Architect MCG Members Entrance Melbourne, Australia MCG5 - Daryi Jackson, Cox Sanderson Ness, Tomkins, Shaw & Connell Mott MacDonald, Arup Ronstan International Pty Ltd Peter Hvatt



# **Curtain Walls and Glazed Structures**

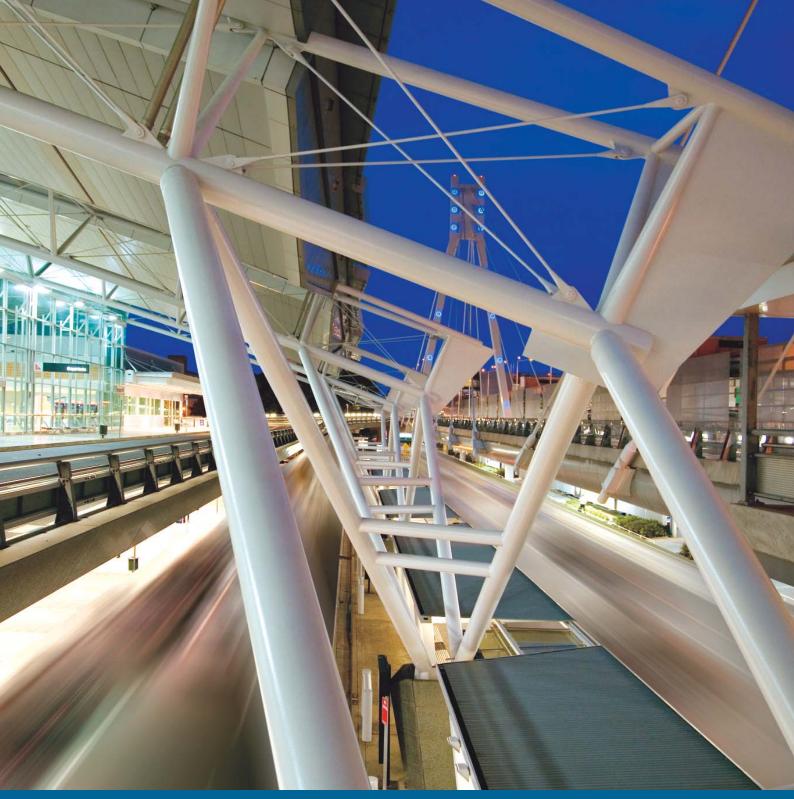
The technology of transparency. Of emerging glazing technology, the penultimate is a seamless glass structure without visible means of support. At Ronstan we embrace this challenge.

Our structural rod systems are the structure. They replace larger compression elements in domes, façades and point supported glass systems, and heavy mullions in conventional curtain walls, with high tensile minimalist elements of stainless or carbon steel.

And designers at the leading edge of tensile glazing technology appreciate our depth of experience in corrosion resistant stainless alloys and our elegant rod fittings.



ct: PTW er: Connell Mott MacDonald Ronstan International Pty Ltd Martin Van der Wal



# Wide Span Structures

Integral to any wide span structure is the creation of exciting dynamic spaces, which are clean, clear and economical, and serve to enhance the architectural experience.

With increased spans tensile rods can be used to optimise truss efficiency, replacing heavy steel members and transferring load, whilst minimising the self weight of the structure.

Sports and exhibition facilities, airports and other public spaces all benefit from the minimalist efficiency of Ronstan structural rods with their unique design aesthetics, range of finishes and structural integrity.

Project: Qantas Domestic Tern Location: Sydney, Australia Architect: Hassell Engineer: Connell Wagner Rods: Macalloy Photo: Martin Van der Wal



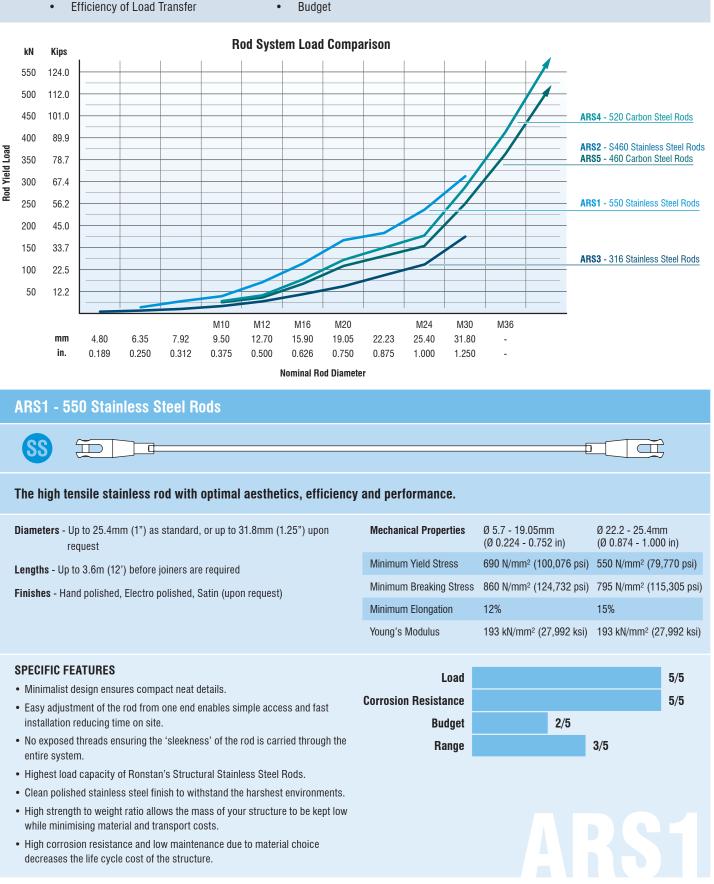
# **Structural Bracing**

Iconic structures like the Eiffel Tower and the Sydney Harbour Bridge provide the motivation for architects and engineers to express the beauty and crispness of exposed steel on building exteriors.

With recent developments in high tensile rod and bar systems, we see new applications of exposed steel engineering and a new generation of structurally expressive buildings.

And with the dream comes the reality; with the challenge comes the risk. This is why so many innovative and award winning architects and engineers are working with Ronstan.

Project: 88 Wood Stre Location: London Architect: Richard Roge Engineer: Arup Structural Rods: Macalloy Photo: James Newm



# STRUCTURAL ROD OPTIONS

## SS Rod Systems

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- Structural Performance Finish
- **Resistance to Corrosion**

Ronstan offer a comprehensive range of 5 different rod system options in Carbon and Stainless Steel reflecting:

•

- Strength, Durability & Load Capacity
- **Mechanical Properties** 
  - Aesthetic Appeal

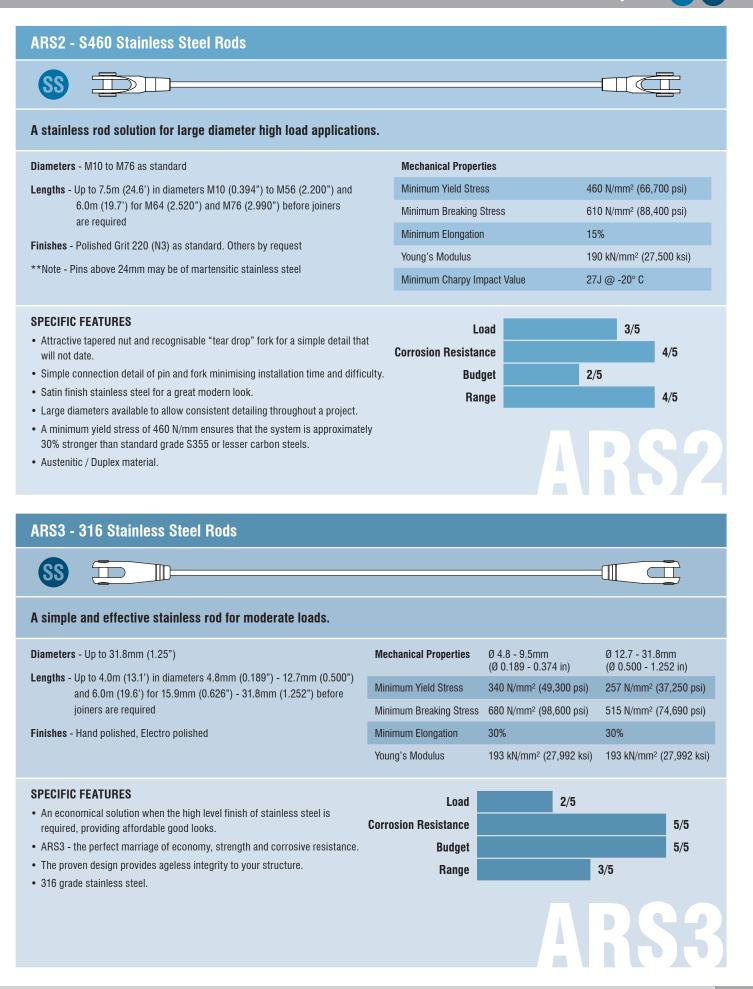
Efficiency of Load Transfer





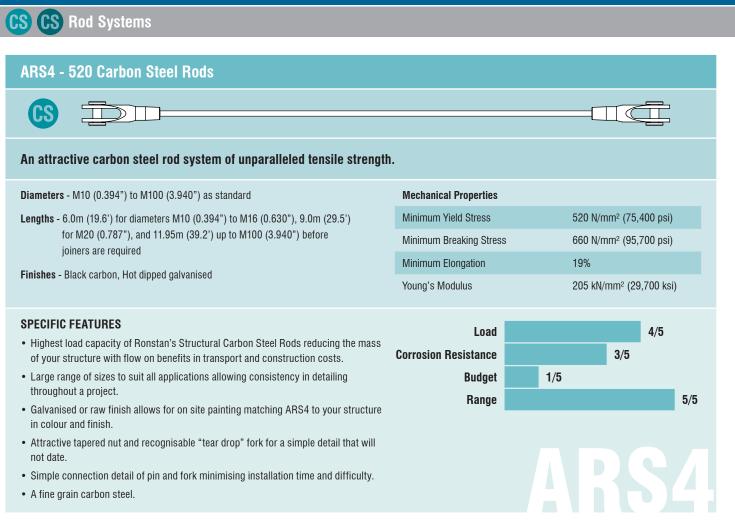
## STRUCTURAL ROD OPTIONS

Rod Systems (SS) (S



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# **STRUCTURAL ROD OPTIONS**



## ARS5 - 460 Carbon Steel Rods



#### The all purpose carbon steel rod system.

Diameters - M10 (0.394") to M100 (3.940") as standard

Lengths - 6.0m (19.6') for diameters M10 (0.394") to M16 (0.630"), 9.0m (29.5') for M20 (0.787"), and 11.95m (39.2') up to M100 (3.940") before joiners are required

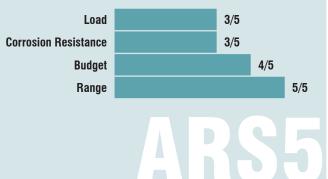
Finishes - Black carbon, Hot dipped galvanised

#### **Mechanical Properties**

Minimum Yield Stress	460 N/mm <sup>2</sup> (66,700 psi)
Minimum Breaking Stress	610 N/mm² (88,400 psi)
Minimum Elongation	19%
Young's Modulus	205 kN/mm² (29,700 ksi)

#### SPECIFIC FEATURES

- Large range of sizes to suit all applications allowing consistency in detailing throughout a project.
- Galvanised or raw finish allows for on site painting, matching ARS5 to your structure in colour and finish.
- Attractive tapered nut and recognisable "tear drop" fork for a simple detail that will not date.
- Simple connection detail of pin and fork minimising installation time and difficulty.
- A minimum yield stress of 460 N/mm<sup>2</sup> ensures that the system is approximately 30% stronger than standard grade S355 or lesser carbon steels.



## **TECHNICAL NOTES**

**Dimensioning, Identification, Installation** 

When installing Ronstan Structural Rod Systems consideration should be given to the following:

#### How to dimension your Rods for manufacture

Figure 1 shows a Ronstan rod system broken down into its parts. Dimensions for rod production are taken from centre-of-pin to centre-of-pin.

Thread engagement – Unless otherwise requested rod systems are manufactured at mid-adjustment. This means we manufacture the rod to the dimension provided with 1/2 of the thread already taken up within each fork. This ensures adjustment can be either taken up or let out.

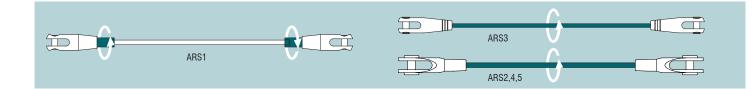
#### **Isolation bushes**

Ronstan can manufacture isolation bushes to suit your installation. The bushes demonstrated are typically used to isolate dissimilar metals and prevent galvanic corrosion. eg. where stainless steel rods are being connected to a mild steel structure. The bushes are custom made and must be requested individually at the time of order.

#### **Tensioning your Ronstan Structural Rod System**

Ronstan ARS1 is tensioned by rotating the spanner flat on the adjuster while using a second spanner to hold the rod still. This can be done at one or both ends. Tensioning of the rod from one end (using one person) saves time, installation costs, and the need to tension at height if the rods are elevated.

Ronstan ARS2-5 are tensioned by rotating the bar only via the spanner flats. Once length is achieved, the tapered lock nuts should be screwed down onto the fork end and firmly tensioned.





# **550 Stainless Steel Rods**

# The beauty and form of tensile architecture demands more from a tendon than the simple transfer of load. Proof that optimal structural performance does not always come at the expense of aesthetics, lies in the existence of ARS1; a rod system of such elegance that its real purpose and role in the structure are disguised.

The optimal strength to weight ratio of ARS1 ensures a minimal cross sectional area for your detail. With minimalist proportions, unique adjustable end connections, and rods in high strength 'condition B' Grade 316 stainless steel, ARS1 will guarantee tendons of the highest efficiency and minimal self weight.

# ARS1 - The optimal tensile stainless rod.

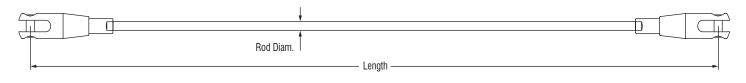


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ARS1 - 550 Stainless Steel Rods SS

# ARS1 - Systems



PRODUCT	THREAD	R	OD Ø	ADJUST	rment ±	1	MIN. YIELD L	DAD		MIN. ULT L	OAD
No.	TYPE	mm	in.	mm	in.	kN	kg	lb	kN	kg	lb
ARS1-SS-04	1/4" UNF	5.7	0.224	18.0	0.709	16.0	1631	3596	20.4	2080	4585
ARS1-SS-05	5/16" UNF	7.2	0.283	20.0	0.787	26.0	2650	5844	32.6	3323	7328
ARS1-SS-06	3/8" UNF	8.8	0.346	23.0	0.906	39.0	3976	8766	49.1	5005	11036
ARS1-SS-08	1/2" UNF	11.8	0.465	26.0	1.024	72.0	7339	16183	89.4	9113	20094
ARS1-SS-10	5/8" UNF	15.9	0.626	30.0	1.181	115.0	11723	25849	143.1	14587	32165
ARS1-SS-12	3/4" UNF	19.1	0.752	31.0	1.220	167.0	17023	37537	208.0	21203	46752
ARS1-SS-14	7/8" UNF	22.2	0.874	33.0	1.299	182.0	18552	40908	263.0	26809	59115
ARS1-SS-16	1" UNF	25.4	1.000	32.0	1.260	237.0	24159	53271	342.0	34862	76872

\* Larger diameters by request.

\*\* Up to 3.6m lengths before joiners are required.



RONSTAN

# SS ARS1 - 550 Stainless Steel Rods

### **ARS1 - Component Dimensions**

#### SS Compact Adjusters

ROD Ø	THREAD Type	A	В	C	D	E MIN.	E MAX.	F	WEIGHT
mm		mm	mm	mm	mm	mm	mm	mm	g
5.7	1/4" UNF	7.0	9.0	11.0	6.3	53.0	71.0	14.5	55
7.2	5/16" UNF	8.5	11.0	13.2	7.9	66.0	86.0	18.0	103
8.8	3/8" UNF	10.0	13.2	18.0	9.5	78.0	101.0	21.3	177
11.8	1/2" UNF	14.0	17.7	24.0	12.7	101.0	127.0	30.0	444
15.9	5/8" UNF	18.0	22.2	30.0	15.9	122.0	152.0	37.2	834
19.0	3/4" UNF	22.0	26.5	38.0	19.0	146.0	177.0	45.0	1439
22.2	7/8" UNF	24.0	31.3	45.0	22.2	164.0	197.0	51.0	2049
25.4	1" UNF	27.0	35.2	53.0	25.4	187.0	219.0	57.6	2998

\* Larger diameters by request

**Dimensions in Imperial** 

**Dimensions in Metric** 

in.		in.	0Z						
0.225	1/4" UNF	0.276	0.354	0.433	0.248	2.087	2.795	0.571	1.9
0.284	5/16" UNF	0.335	0.433	0.520	0.311	2.598	3.386	0.709	3.6
0.346	3/8" UNF	0.394	0.520	0.709	0.374	3.071	3.976	0.839	6.3
0.466	1/2" UNF	0.551	0.697	0.945	0.500	3.976	5.000	1.181	15.7
0.625	5/8" UNF	0.709	0.874	1.181	0.626	4.803	5.984	1.465	29.5
0.750	3/4" UNF	0.866	1.043	1.496	0.748	5.748	6.969	1.772	50.8
0.875	7/8" UNF	0.945	1.232	1.772	0.874	6.457	7.756	2.008	72.4
1.000	1" UNF	1.063	1.386	2.087	1.000	7.362	8.622	2.268	105.9

\* Larger diameters by request

#### S Joiner ROD Ø THREAD Α TYPE mm mm 1/4" UNF 5.7 10.0 24.0

7.2	5/16" UNF	11.8	32.0	17
8.8	3/8" UNF	14.2	38.0	25
11.8	1/2" UNF	19.8	50.0	65
15.9	5/8" UNF	23.8	60.0	110
19.0	3/4" UNF	30.0	72.0	270
22.2	7/8" UNF	34.5	83.0	330
25.4	1" UNF	39.5	90.0	460

\* Larger diameters by request

#### **Dimensions in Imperial**

**Dimensions in Metric** 

WEIGHT

g

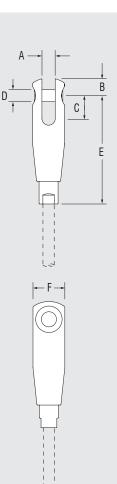
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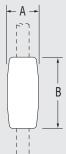
В

mm

in.		in.	in.	0Z
0.225	1/4" UNF	0.394	0.945	0.4
0.284	5/16" UNF	0.465	1.260	0.6
0.346	3/8" UNF	0.559	1.496	0.9
0.466	1/2" UNF	0.780	1.969	2.3
0.626	5/8" UNF	0.937	2.362	3.9
0.748	3/4" UNF	1.181	2.835	9.5
0.874	7/8" UNF	1.358	3.268	11.7
1.000	1" UNF	1.555	3.543	16.3

\* Larger diameters by request





ARS1 - 550 Stainless Steel Rods SS

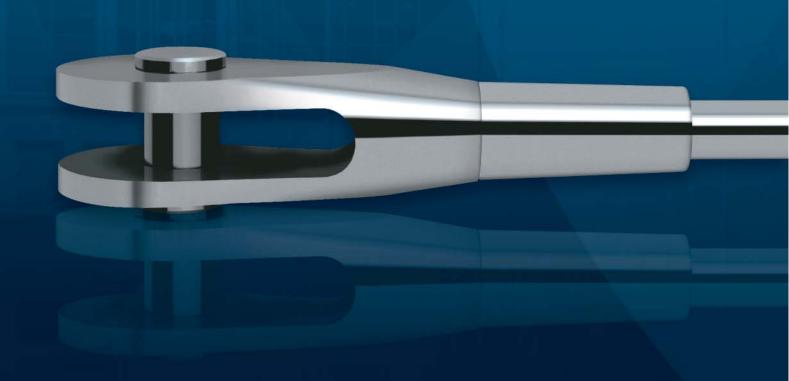


# **S460 Stainless Steel Rods**

A great all-rounder, ARS2 is the rod system that goes all the way, available right up to the largest stainless diameters our mills can provide. So when strength and aesthetics are still the driving design consideration, but exceed the capability of our 550 stainless rods, ARS2 is the system to specify.

And with the larger diameters requiring cast stainless forks, the fork design takes on a purpose and style reflective of strength and durability, but with uncompromised architectural form.

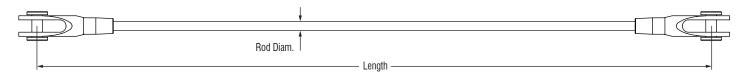
## ARS2 - A robust stainless rod solution.



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ARS2 - S460 Stainless Steel Rods SS

# ARS2 - Systems



PRODUCT	THREAD	R	OD Ø	ADJUST	MENT ±		MIN. YIELD LO	DAD		MIN. ULT I	.OAD
No.	TYPE	mm	in.	mm	in.	kN	kg	lb	kN	kg	lb
ARS2-SSM30	M30	28.0	1.102	15.0	0.591	249	25382	55968	330	33639	74174
ARS2-SSM36	M36	34.0	1.339	18.0	0.709	364	37105	81817	483	49235	108564
ARS2-SSM42	M42	39.0	1.535	21.0	0.827	501	51070	112610	665	67788	149472
ARS2-SSM48	M48	45.0	1.772	24.0	0.945	660	67278	148349	875	89195	196674
ARS2-SSM56	M56	52.0	2.047	28.0	1.102	912	92966	204991	1209	123242	271748
ARS2-SSM64	M64	60.0	2.362	25.0	0.984	1204	122732	270624	1596	162691	358734
ARS2-SSM76	M76	72.0	2.835	25.0	0.984	1756	179001	394697	2329	237411	523491
ARS2-SSM85	M85	82.0	3.228	25.0	0.984	2239	228236	503261	2969	302650	667344
ARS2-SSM90	M90	87.0	3.425	25.0	0.984	2533	258206	569344	3358	342304	754780
ARS2-SSM100	M100	97.0	3.819	25.0	0.984	3172	323344	712972	4206	428746	945385

\* Up to 7.5m length in M36 - M56 & 6.0m in M64 - M76 before joiners are required.





# **SS** ARS2 - S460 Stainless Steel Rods

# **ARS2 - Component Dimensions**

#### SS Stainless Fork

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	ROD Ø	THREAD TYPE	A	В	C	D	E	F	WEIGHT
	mm		mm	mm	mm	mm	mm	mm	g
	28.0	M30	26.0	53.0	61.0	29.0	215.0	81.0	2680
	34.0	M36	34.0	61.0	70.0	35.0	243.0	94.0	5940
	39.0	M42	39.0	70.0	78.5	41.0	262.0	109.0	7180
	45.0	M48	44.0	81.0	89.0	47.0	285.0	123.0	10830
	52.0	M56	49.0	97.0	105.5	55.0	322.0	147.0	16750
	60.0	M64	59.0	111.0	119.5	63.0	341.0	169.0	25450
	72.0	M76	76.0	132.0	139.0	76.0	385.0	201.0	46900
	82.0	M85	78.0	153.0	156.5	90.0	426.0	236.0	55600
	87.0	M90	86.0	162.0	167.0	93.0	455.0	248.0	72100
	97.0	M100	91.0	188.0	196.5	108.0	509.0	289.0	94050

#### **Dimensions in Metric**

#### **Dimensions in Imperial**

in.		in.	in.	in.	in.	in.	in.	0Z
1.102	M30	1.024	2.087	2.402	1.142	8.471	3.189	94.5
1.339	M36	1.339	2.402	2.756	1.378	9.574	3.701	209.5
1.535	M42	1.535	2.756	3.091	1.614	10.323	4.291	253.3
1.772	M48	1.732	3.189	3.504	1.850	11.229	4.843	382.0
2.047	M56	1.929	3.819	4.154	2.165	12.687	5.787	590.8
2.362	M64	1.732	3.189	4.705	2.480	13.435	6.654	897.7
2.835	M76	2.323	4.370	5.472	2.992	15.169	7.913	1654.3
3.228	M85	3.071	6.024	6.161	3.543	16.784	9.291	1961.2
3.425	M90	3.386	6.378	6.575	3.661	17.927	9.764	2543.2
3.819	M100	3.583	7.402	7.736	4.252	20.055	11.378	3317.5





# ARS2 - S460 Stainless Steel Rods SS

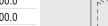
## **ARS2 - Component Dimensions**

SS Stainless Turnbuckle & Lock Nuts Dimensions in Metric										
THREAD TYPE	A	В	C							
	mm	mm	mm							
M30	43.0	160.0	90.0							
M36	52.0	172.0	100.0							
M42	60.0	184.0	100.0							
M48	68.0	196.0	100.0							
M56	80.0	212.0	105.0							
	THREAD TYPE           M30           M36           M42           M48	THREAD TYPE         A           M30         43.0           M36         52.0           M42         60.0           M48         68.0	THREAD TYPEABmmmmM3043.0160.0M3652.0172.0M4260.0184.0M4868.0196.0							

\* Larger sizes available upon request.

in.		in.	in.	in.
1.102	M30	1.693	6.299	3.543
1.339	M36	2.047	6.771	3.937
1.535	M42	2.362	7.244	3.937
1.772	M48	2.677	7.717	3.937
2.047	M56	3.150	8.346	4.134

\* Larger sizes available upon request.



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#### Dimensions in Imperial

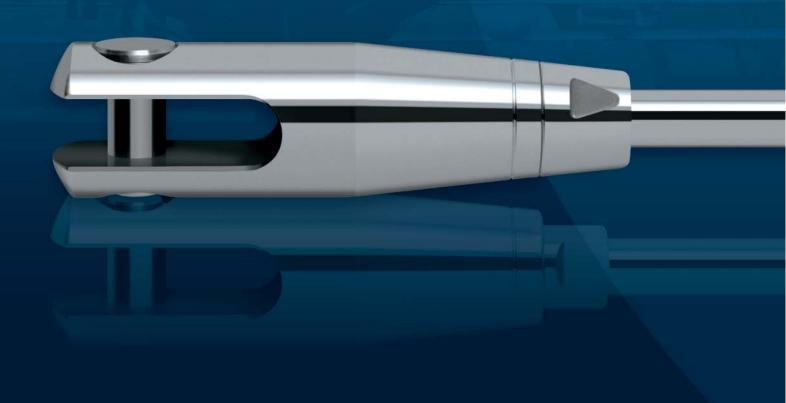


# **316 Stainless Steel Rods**

The industry benchmark. ARS3 is known world-wide as one of the original few stainless rod systems. It marries the qualities of timeless aesthetics, lasting good looks, corrosion resistance and strength, in an economical and functional stainless rod tendon. So if a moderate static load needs to be carried or braced between two points, with simple efficiency and good looks at the same time, ARS3 should be the rod of choice.

And the philosophy behind ARS3's enduring appeal - no compromise on quality, with even our most economical range polished and passivated for proven, long lasting performance.

## ARS3 - An efficient rod for moderate loads.

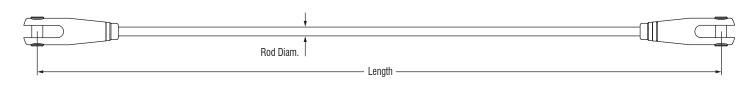


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ARS3 - 316 Stainless Steel Rods SS

# ARS3 - Systems



PRODUCT	THREAD	R	DD Ø	ADJUST	MENT ±	N	NIN. YIELD LO	AD		MIN. ULT L	OAD
No.	TYPE	mm	in.	mm	in.	kN	kg	lb	kN	kg	lb
ARS3-SS-03	# 10-32 UNF	4.8	0.189	13.0	0.512	4.4	449	1009	8.7	887	1995
ARS3-SS-04	1/4" UNF	6.4	0.252	13.0	0.512	8.0	815	1835	16.0	1631	3670
ARS3-SS-05	5/16" UNF	7.9	0.311	17.0	0.669	13.0	1325	2982	26.0	2650	5963
ARS3-SS-06	3/8" UNF	9.5	0.374	21.0	0.827	16.0	1631	3670	33.0	3364	7569
ARS3-SS-08	1/2" UNF	12.7	0.500	29.0	1.142	27.0	2752	6193	53.0	5403	12156
ARS3-SS-10	5/8" UNF	15.9	0.626	37.0	1.457	42.0	4281	9633	85.0	8665	19495
ARS3-SS-12	3/4" UNF	19.0	0.748	47.0	1.850	62.0	6320	14220	124.0	12640	28440
ARS3-SS-14	7/8" UNF	22.2	0.874	55.0	2.165	85.0	8665	19495	169.0	17227	38761
ARS3-SS-16	1" UNF	25.4	1.000	64.0	2.520	110.0	11213	25229	220.0	22426	50459
ARS3-SS-20	1 1/4" UNF	31.8	1.252	64.0	2.520	178.0	18145	40826	356.0	36290	81651

\* Up to 4.0m length in 4.8 - 12.7 & 6.0m in 15.9 - 31.8 before joiners are required.

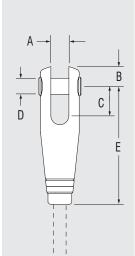


# SS ARS3 - 316 Stainless Steel Rods

# **ARS3 - Component Dimensions**

#### SS Stainless Fork

SS Stainle	ss Fork						Dimensi	ons in Metric
ROD Ø	THREAD TYPE	A	В	C	D	E	F	WEIGHT
mm		mm	mm	mm	mm	mm	mm	g
4.8	10/32" UNF	6.0	7.0	9.0	4.8	40.0	10.6	30
6.4	1/4" UNF	7.0	9.0	11.0	6.4	46.0	13.5	40
7.9	5/16" UNF	8.5	10.8	13.2	7.9	55.0	16.7	80
9.5	3/8" UNF	10.0	12.0	18.0	9.5	70.0	19.3	130
12.7	1/2" UNF	14.0	16.0	24.0	12.7	95.0	28.1	370
15.9	5/8" UNF	18.0	20.0	30.0	15.9	119.0	35.1	710
19.0	3/4" UNF	22.0	24.0	38.0	19.0	149.0	41.1	1250
22.2	7/8" UNF	24.0	28.0	45.0	22.2	171.0	45.5	1700
25.4	1" UNF	26.0	32.0	53.0	25.4	198.0	55.7	2900
31.8	1 1/4" UNF	32.0	40.0	66.0	31.8	229.0	66.4	4200



**Dimensions in Imperial** 

in.		in.	in.	in.	in.	in.	in.	0Z
0.189	10/32" UNF	0.236	0.276	0.354	0.189	1.575	0.417	1.1
0.252	1/4" UNF	0.276	0.354	0.433	0.252	1.811	0.531	1.4
0.311	5/16" UNF	0.335	0.425	0.520	0.311	2.173	0.657	2.8
0.374	3/8" UNF	0.394	0.472	0.709	0.374	2.756	0.760	4.6
0.500	1/2" UNF	0.551	0.630	0.945	0.500	3.740	1.106	13.1
0.626	5/8" UNF	0.394	0.472	0.709	0.374	4.685	1.382	25.0
0.748	3/4" UNF	0.709	0.787	1.181	0.626	5.866	1.618	44.1
0.874	7/8" UNF	0.945	1.102	1.772	0.874	6.732	1.791	60.0
1.000	1" UNF	1.024	1.260	2.087	1.000	7.795	2.193	102.3
1.252	1 1/4" UNF	1.260	1.575	2.598	1.252	9.016	2.614	148.1



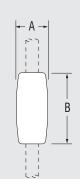
# ARS3 - 316 Stainless Steel Rods SS

# **ARS3 - Component Dimensions**

SS Joiner			Dim	ensions in Metric
ROD Ø	THREAD TYPE	А	В	WEIGHT
mm		mm	mm	g
4.8	3/16" UNF	7.8	18.0	7
5.7	1/4" UNF	10.0	24.0	10
7.2	5/16" UNF	11.8	32.0	17
8.8	3/8" UNF	14.2	38.0	25
11.8	1/2" UNF	19.8	50.0	65
15.9	5/8" UNF	23.8	60.0	110
19.0	3/4" UNF	30.0	72.0	270
22.2	7/8" UNF	34.5	83.0	330
25.4	1" UNF	39.5	90.0	460
31.8	1 1/4" UNF	50.0	112.0	680

**Dimensions in Imperial** 

in.		in.	in.	0Z
0.189	3/16" UNF	0.307	0.709	0.2
0.225	1/4" UNF	0.394	0.945	0.4
0.284	5/16" UNF	0.465	1.260	0.6
0.346	3/8" UNF	0.559	1.496	0.9
0.466	1/2" UNF	0.780	1.969	2.3
0.626	5/8" UNF	0.937	2.362	3.9
0.748	3/4" UNF	1.181	2.835	9.5
0.874	7/8" UNF	1.358	3.268	11.7
1.000	1" UNF	1.555	3.543	16.3
1.252	1 1/4" UNF	1.969	4.409	24.0





# **520 Carbon Steel Rods**

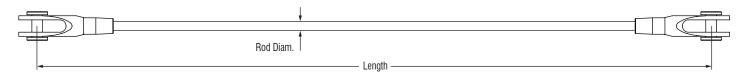
# The latest innovative development in carbon rod tendons, ARS4 provides all the benefits of the ARS5 grade 460 carbon steel rods, with the added attribute of increased load capacity to take carbon steel rod tendons to the next level. ARS4 grade 520 carbon steel rods are for serious applications. What may seem like a modest increase in load carrying capacity can often leap a threshold to realise a new, previously unheard of application in lightweight tensile architecture.

## ARS4 - A carbon steel rod of unparalleled tensile strength.



ARS4 - 520 Carbon Steel Rods CS

# ARS4 - Systems



PRODUCT	THREAD	F	ROD Ø	ADJUST	rment ±		MIN. YIELD L	OAD		MIN. ULT	LOAD
No.	TYPE	mm	in.	mm	in.	kN	kg	lb	kN	kg	lb
ARS4-CSM10	M10	10.0	0.394	5.0	0.197	28	2854	6294	35	3568	7867
ARS4-CSM12	M12	11.0	0.433	6.0	0.236	41	4179	9216	52	5301	11688
ARS4-CSM16	M16	15.0	0.591	8.0	0.315	77	7849	17307	98	9990	22028
ARS4-CSM20	M20	19.0	0.748	10.0	0.394	122	12436	27422	155	15800	34839
ARS4-CSM24	M24	22.0	0.866	12.0	0.472	176	17941	39560	223	22732	50124
ARS4-CSM30	M30	28.0	1.102	15.0	0.591	284	28950	63835	360	36697	80917
ARS4-CSM36	M36	34.0	1.339	18.0	0.709	411	41896	92381	522	53211	117330
ARS4-CSM42	M42	39.0	1.535	21.0	0.827	566	57696	127220	719	73293	161610
ARS4-CSM48	M48	45.0	1.772	24.0	0.945	746	76045	167679	946	96432	212633
ARS4-CSM56	M56	52.0	2.047	28.0	1.102	1030	104995	231514	1308	133333	294000
ARS4-CSM64	M64	60.0	2.362	25.0	0.984	1360	138634	305688	1727	176045	388179
ARS4-CSM76	M76	72.0	2.835	25.0	0.984	1985	202345	446170	2520	256881	566422
ARS4-CSM85	M85	82.0	3.228	25.0	0.984	2531	258002	568894	3212	327421	721963
ARS4-CSM90	M90	87.0	3.425	25.0	0.984	2862	291743	643294	3633	370336	816592
ARS4-CSM100	M100	97.0	3.819	25.0	0.984	3585	365443	805803	4551	463914	1022931

\* Up to 6.0m length in M10 - M16, 9.0m in M20, & 11.95m to M100 before joiners are required.



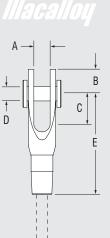


# CS ARS4 - 520 Carbon Steel Rods

# **ARS4** - Component Dimensions

#### **CS** Carbon Fork

ROD Ø	THREAD Type	A	В	C	D	E	F	WEIGHT
mm		mm	mm	mm	mm	mm	mm	g
10.0	M10	11.0	18.0	22.5	10.5	74.0	30.0	160
11.0	M12	12.0	22.0	26.0	12.0	84.0	34.0	220
15.0	M16	15.0	29.0	33.5	16.0	94.0	45.0	490
19.0	M20	19.0	34.0	42.5	20.0	116.0	53.0	990
22.0	M24	24.0	42.0	50.0	24.0	140.0	64.0	1580
28.0	M30	26.0	53.0	61.0	29.0	167.0	81.0	2680
34.0	M36	34.0	61.0	70.0	35.0	194.0	94.0	5940
39.0	M42	39.0	70.0	78.5	41.0	221.0	109.0	7180
45.0	M48	44.0	81.0	89.0	47.0	252.0	123.0	10830
52.0	M56	49.0	97.0	105.5	55.0	296.0	147.0	16750
60.0	M64	59.0	111.0	119.5	63.0	327.0	169.0	25450
72.0	M76	76.0	132.0	139.0	76.0	385.0	201.0	46900
82.0	M85	78.0	153.0	156.5	90.0	426.0	236.0	55600
87.0	M90	86.0	162.0	167.0	93.0	455.0	248.0	72100
97.0	M100	91.0	188.0	196.5	108.0	509.0	289.0	94050





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**Dimensions in Metric** 

in.		in.	in.	in.	in.	in.	in.	0Z
0.394	M10	0.433	0.709	0.886	0.413	2.916	1.181	5.6
0.433	M12	0.472	0.866	1.024	0.472	3.310	1.339	7.8
0.591	M16	0.591	1.142	1.319	0.630	3.704	1.772	17.3
0.748	M20	0.748	1.339	1.673	0.787	4.570	2.087	34.9
0.866	M24	0.945	1.654	1.969	0.945	5.516	2.520	55.7
1.102	M30	0.748	1.339	1.673	1.142	6.580	3.189	94.5
1.339	M36	1.024	2.087	2.402	1.378	7.644	3.701	209.5
1.535	M42	1.535	2.756	3.091	1.614	8.707	4.291	253.3
1.772	M48	1.732	3.189	3.504	1.850	9.929	4.843	382.0
2.047	M56	1.929	3.819	4.154	2.165	11.662	5.787	590.8
2.362	M64	2.323	4.370	4.705	2.480	12.884	6.654	897.7
2.835	M76	2.992	5.197	5.472	2.992	15.169	7.913	1654.3
3.228	M85	3.071	6.024	6.161	3.543	16.784	9.291	1961.2
3.425	M90	3.386	6.378	6.575	3.661	17.927	9.764	2543.2
3.819	M100	3.583	7.402	7.736	4.252	20.055	11.378	3317.5



# ARS4 - 520 Carbon Steel Rods CS

## **ARS4** - Component Dimensions

CS Carbon Turnbuc	kle & Lock Nuts		Din	nensions in Metric
ROD Ø	THREAD TYPE	А	В	C
mm		mm	mm	mm
10.0	M10	17.0	74.0	29.0
11.0	M12	19.0	78.0	31.0
15.0	M16	25.0	86.0	37.0
19.0	M20	29.0	90.0	43.0
22.0	M24	35.0	98.0	74.0
28.0	M30	43.0	160.0	105.0
34.0	M36	52.0	172.0	111.0
39.0	M42	60.0	184.0	117.0
45.0	M48	68.0	196.0	123.0
52.0	M56	80.0	212.0	136.0
60.0	M64	91.0	228.0	144.0
72.0	M76	108.0	252.0	156.0
82.0	M85	121.0	270.0	165.0
87.0	M90	129.0	280.0	170.0
97.0	M100	143.0	300.0	180.0

# 

#### **Dimensions in Imperial**

in.		in.	in.	in.
0.394	M10	0.669	2.913	1.142
0.433	M12	0.748	3.071	1.221
0.591	M16	0.984	3.386	1.457
0.748	M20	1.142	3.543	1.692
0.866	M24	1.378	3.858	2.913
1.102	M30	1.693	6.299	4.133
1.339	M36	2.047	6.772	4.370
1.535	M42	2.362	7.244	4.606
1.772	M48	2.677	7.717	4.843
2.047	M56	3.150	8.346	5.354
2.362	M64	3.583	8.976	5.669
2.835	M76	4.252	9.921	6.142
3.228	M85	4.764	10.630	6.496
3.425	M90	5.079	11.024	6.693
3.819	M100	5.630	11.811	7.087

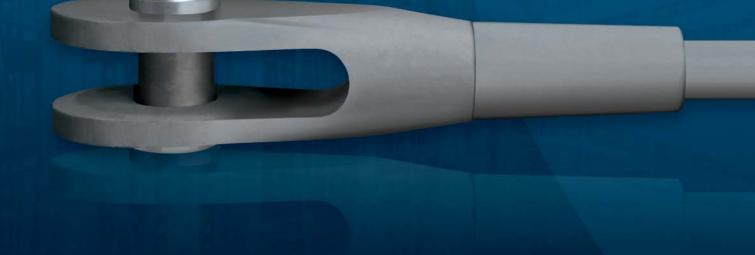


# M460 Carbon Steel Rods

It all comes down to function. Simple, efficient, effective and minimalist, all words that describe ARS5, "the work horse" of the Ronstan rod range. An industry standard in its own right, ARS5 with its grade 460 minimum yield carbon steel and instantly recognisable teardrop cast forks, is a proven performer in every respect.

30% stronger than standard carbon steels, an ARS5 rod can replace heavy steel work with a lightweight and efficient tendon that can be painted or finished to blend into the surrounding structure.

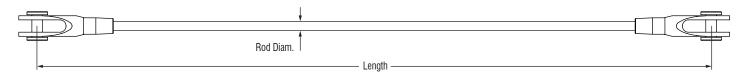
# ARS2 - The high tensile carbon steel rod.





ARS5 - 460 Carbon Steel Rods CS

# ARS5 - Systems



PRODUCT	THREAD	R	OD Ø	ADJUST	MENT $\pm$		MIN. YIELD L	DAD		MIN. ULT I	OAD
No.	TYPE	mm	in.	mm	in.	kN	kg	lb	kN	kg	lb
ARS5-CSM10	M10	10.0	0.394	5.0	0.197	25	2548	5619	33	3364	7417
ARS5-CSM12	M12	11.0	0.433	6.0	0.236	36	3670	8092	48	4893	10789
ARS5-CSM16	M16	15.0	0.591	8.0	0.315	69	7034	15509	91	9276	20454
ARS5-CSM20	M20	19.0	0.748	10.0	0.394	108	11009	24275	143	14577	32142
ARS5-CSM24	M24	22.0	0.866	12.0	0.472	156	15902	35064	207	21101	46528
ARS5-CSM30	M30	28.0	1.102	15.0	0.591	249	25382	55968	330	33639	74174
ARS5-CSM36	M36	34.0	1.339	18.0	0.709	364	37105	81817	483	49235	108564
ARS5-CSM42	M42	39.0	1.535	21.0	0.827	501	51070	112610	665	67788	149472
ARS5-CSM48	M48	45.0	1.772	24.0	0.945	660	67278	148349	875	89195	196674
ARS5-CSM56	M56	52.0	2.047	28.0	1.102	912	92966	204991	1209	123242	271748
ARS5-CSM64	M64	60.0	2.362	25.0	0.984	1204	122732	270624	1596	162691	358734
ARS5-CSM76	M76	72.0	2.835	25.0	0.984	1756	179001	394697	2329	237411	523491
ARS5-CSM85	M85	82.0	3.228	25.0	0.984	2239	228236	503261	2969	302650	667344
ARS5-CSM90	M90	87.0	3.425	25.0	0.984	2533	258206	569344	3358	342304	754780
ARS5-CSM100	M100	97.0	3.819	25.0	0.984	3172	323344	712972	4206	428746	945385

\* Up to 6.0m length in M10 - M16, 9.0m in M20, & 11.95m to M100 before joiners are required.



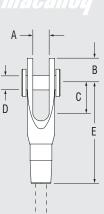


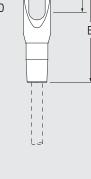
# CS ARS5 - 460 Carbon Steel Rods

# **ARS5** - Component Dimensions

#### **CS** Carbon Fork

ROD Ø	THREAD Type	A	В	C	D	E	F	WEIGHT
mm		mm	mm	mm	mm	mm	mm	g
10.0	M10	11.0	18.0	22.5	10.5	74.0	30.0	160
11.0	M12	12.0	22.0	26.0	12.0	84.0	34.0	220
15.0	M16	15.0	29.0	33.5	16.0	94.0	45.0	490
19.0	M20	19.0	34.0	42.5	20.0	116.0	53.0	990
22.0	M24	24.0	42.0	50.0	24.0	140.0	64.0	1580
28.0	M30	26.0	53.0	61.0	29.0	167.0	81.0	2680
34.0	M36	34.0	61.0	70.0	35.0	194.0	94.0	5940
39.0	M42	39.0	70.0	78.5	41.0	221.0	109.0	7180
45.0	M48	44.0	81.0	89.0	47.0	252.0	123.0	10830
52.0	M56	49.0	97.0	105.5	55.0	296.0	147.0	16750
60.0	M64	59.0	111.0	119.5	63.0	327.0	169.0	25450
72.0	M76	76.0	132.0	139.0	76.0	385.0	201.0	46900
82.0	M85	78.0	153.0	156.5	90.0	426.0	236.0	55600
87.0	M90	86.0	162.0	167.0	93.0	455.0	248.0	72100
97.0	M100	91.0	188.0	196.5	108.0	509.0	289.0	94050







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**Dimensions in Metric** 

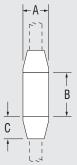
in.		in.	in.	in.	in.	in.	in.	0Z
0.394	M10	0.433	0.709	0.886	0.413	2.916	1.181	5.6
0.433	M12	0.472	0.866	1.024	0.472	3.310	1.339	7.8
0.591	M16	0.591	1.142	1.319	0.630	3.704	1.772	17.3
0.748	M20	0.748	1.339	1.673	0.787	4.570	2.087	34.9
0.866	M24	0.945	1.654	1.969	0.945	5.516	2.520	55.7
1.102	M30	0.748	1.339	1.673	1.142	6.580	3.189	94.5
1.339	M36	1.024	2.087	2.402	1.378	7.644	3.701	209.5
1.535	M42	1.535	2.756	3.091	1.614	8.707	4.291	253.3
1.772	M48	1.732	3.189	3.504	1.850	9.929	4.843	382.0
2.047	M56	1.929	3.819	4.154	2.165	11.662	5.787	590.8
2.362	M64	2.323	4.370	4.705	2.480	12.884	6.654	897.7
2.835	M76	2.992	5.197	5.472	2.992	15.169	7.913	1654.3
3.228	M85	3.071	6.024	6.161	3.543	16.784	9.291	1961.2
3.425	M90	3.386	6.378	6.575	3.661	17.927	9.764	2543.2
3.819	M100	3.583	7.402	7.736	4.252	20.055	11.378	3317.5

#### ARS5 - 460 Carbon Steel Rods CS

#### **ARS5 - Component Dimensions**

CS Carbon Turnbuckle & Lock Nuts Dimensions in Me					
ROD Ø	THREAD TYPE	А	В	C	
mm		mm	mm	mm	
10.0	M10	17.0	74.0	29.0	
11.0	M12	19.0	78.0	31.0	
15.0	M16	25.0	86.0	37.0	
19.0	M20	29.0	90.0	43.0	
22.0	M24	35.0	98.0	74.0	
28.0	M30	43.0	160.0	105.0	
34.0	M36	52.0	172.0	111.0	
39.0	M42	60.0	184.0	117.0	
45.0	M48	68.0	196.0	123.0	
52.0	M56	80.0	212.0	136.0	
60.0	M64	91.0	228.0	144.0	
72.0	M76	108.0	252.0	156.0	
82.0	M85	121.0	270.0	165.0	
87.0	M90	129.0	280.0	170.0	
97.0	M100	143.0	300.0	180.0	





#### Dimensions in Imperial

in.		in.	in.	in.
0.394	M10	0.669	2.913	1.142
0.433	M12	0.748	3.071	1.221
0.591	M16	0.984	3.386	1.457
0.748	M20	1.142	3.543	1.692
0.866	M24	1.378	3.858	2.913
1.102	M30	1.693	6.299	4.133
1.339	M36	2.047	6.772	4.370
1.535	M42	2.362	7.244	4.606
1.772	M48	2.677	7.717	4.843
2.047	M56	3.150	8.346	5.354
2.362	M64	3.583	8.976	5.669
2.835	M76	4.252	9.921	6.142
3.228	M85	4.764	10.630	6.496
3.425	M90	5.079	11.024	6.693
3.819	M100	5.630	11.811	7.087

#### **IMPORTANT CUSTOMER INFORMATION**

#### **CUSTOMER CONSIDERATIONS**

#### Factor of Safety

An appropriate factor of safety should be applied to Breaking Load (B.L.) figures to suit each application before choosing or specifying a particular product. For many industrial and safety related applications, a factor of safety greater than two (2) should be used or may be required by law or other regulations. It is the customer's responsibility to ensure that an appropriate factor of safety is used, and it should allow for safety implications, service life, fatigue (as may be caused by wind stresses or repetitive cyclical loading), type of load, exposure to ultraviolet light, corrosion and stress corrosion (such as in high humidity or chlorine environments). Note that a 'safe working load' is not specified as this is dependent on the factor of safety, which must be determined by the user relative to each application.

#### Useful Life

The useful life of any product is determined by the above factors and must be assessed in each application, and thus no guarantee can be provided for product life, load capacity or any other factor due to the variability in usage. In some jurisdictions government regulations require the replacement of rigging components within certain periods of time, usually every three to five years. You must ascertain whether any such regulations affect you. While every precaution is taken in the product design and manufacturing processes to minimise the effects of corrosion and stress corrosion, there are also preventative as well as corrective treatments that can be carried out after installation. Contact your local representative for further assistance and advice.

#### **Product Information Amendments**

All catalogue information is subject to specification changes during a product's life-cycle. Any alterations will be posted on the Website: - **www.ronstan.com** which should be considered the most up to date source of product information.

#### DEFINITIONS

#### Yield Load (Y.L.)

Yield Load (YLL) is the maximum static and/or dynamic load at which the product will still function without distortion, wear or permanent deformation of components. Above this load moving parts may seize and stainless steel components may begin to bend, stretch or otherwise deform. Yield loads should never be exceeded in use.

#### Ultimate Load (ULT)

Ultimate Load (ULT) is the load at, or around which, a major failure can be expected to occur to some part of the product's structure when new.

The Yield and Ultimate loads detailed in the catalogue should only be considered in the context of the project application. Final product selection is the sole responsibility of the user and/or their consultants.

#### WARRANTY

In addition to your rights implied by law, the goods manufactured or sold are warranted to be free of defects in materials or workmanship for three (3) years from the date of purchase by the original purchaser except that:

- This warranty shall not apply to any product which has been improperly fitted, improperly maintained, or used in any
  application for which it was not intended.
- · This warranty shall not apply to normal wear which can reasonably be expected in normal use of the product.
- No warranties are made that any products are fit for a particular purpose.
- The liability shall be limited to the repair or replacement, at the manufacturer's discretion, of the defective goods.
- The useful life of any rigging product is determined by the above factors and must be assessed in each application, and thus no guarantee can be provided for product life, load capacity or any other factor due to the variability in usage.



# www.ronstan.com

#### Australia - New South Wales Ronstan International Pty. Ltd. Unit 67, 42-46 Wattle Road, Brookvale New South Wales 2100. Australia

Australia - Queensland Ronstan International Pty. Ltd. Unit 1, 1029 Manly Road, Tingalpa Queensland 4173, Australia

Australia - Western Australia Ronstan International Pty. Ltd. 1C, No.1 Norfolk Street, Fremantle Western Australia 6160, Australia

> +61 (0)3 8599 0000 +61 (0)3 8599 0099 architectural@ronstan.com.au

**USA - Rhode Island Ronstan International Inc.** 45 High Point Avenue, #2 Portsmouth, RI 02871, USA

**USA - California** Ronstan International Inc 2033 Clement Ave, Building 31, Suite 223 Alameda, CA 94501, USA

> **USA - Florida Ronstan International Inc.** 1421 Bay Street SE, Suite 3 Saint Petersburg, FL 33701, USA

> > +1 (401) 293 0539 +1 (401) 293 0538 architectural@ronstan.us

#### HEAD OFFIC

#### Australia - Victoria onstan International Pty. Ltd. 220 Bay Road, Sandringham Victoria 3191, Australia +61 (0)3 8599 0000

+61 (0)3 8599 0099

#### Denmark

onstan Denmark Aps Karetmagervej 23 7100 Vejle, Denmark +45 76 40 82 00 +45 76 40 82 01 office@ronstan.dk

#### New Zealand –

an International Pty. Ltd. P.O. Box 91 200 Auckland Mail Centre Auckland, New Zealand +64 (0)9 418 2735 +64 (0)9 418 2736

United Kingdom

Harbour Road, Gosport, ampshire P012 1BG, UK +44 (0)23 9252 5377 +44 (0)23 9252 0966

# Ronstan also specialises in providing architectural products for:

- Structural Cable applications
- Cable Nets
- Balustrade Cables
- Greening Cables
- Façade Cables

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