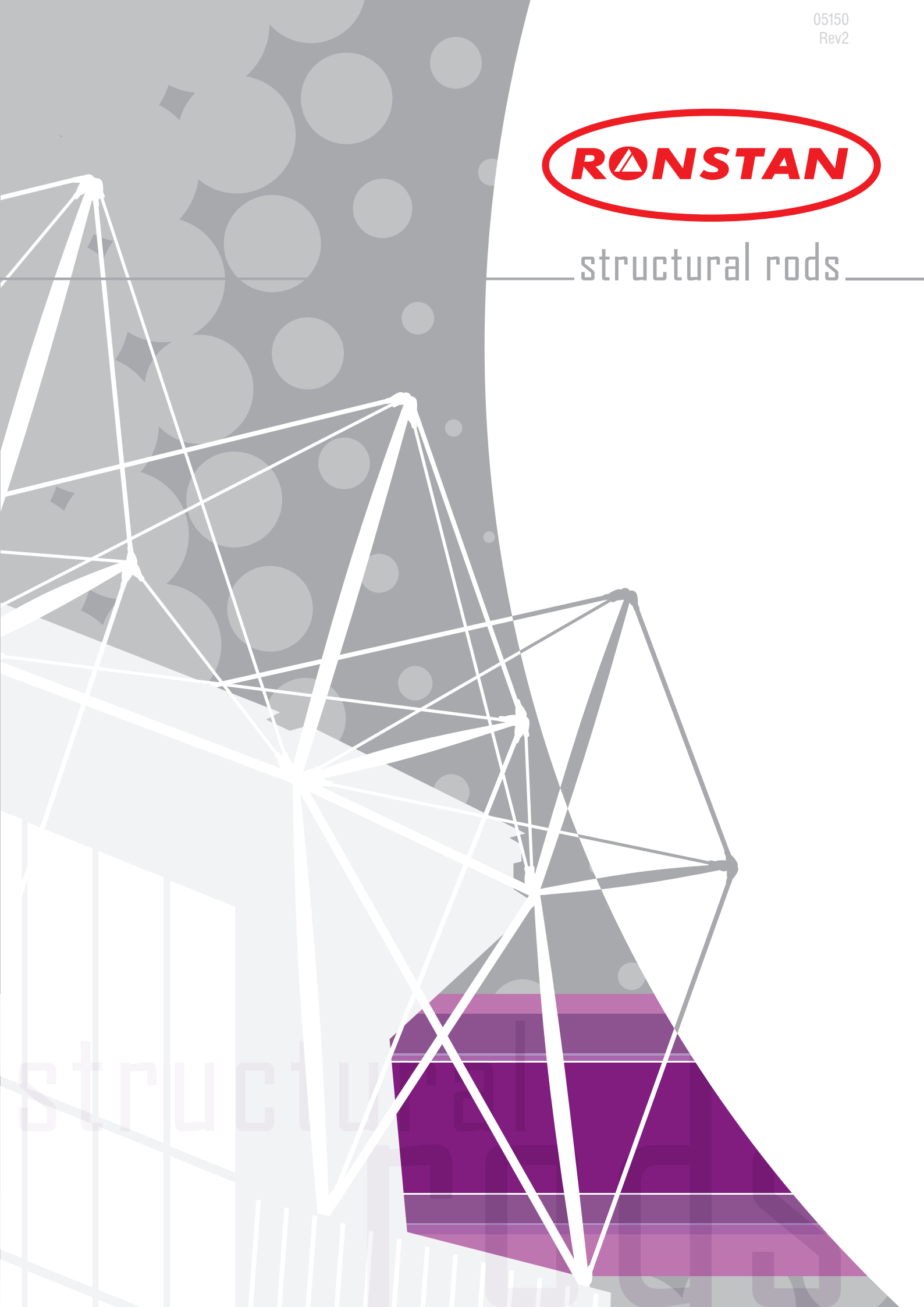




structural rods





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, Denmark and the USA, Ronstan supplies rod systems born from nearly 60 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
- Entrance Structures
- Nets and Grid Structures
- Fabric Architecture
- Braces and Trusses

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



structural rods

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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 4 rod options, in stainless steel or carbon steel with a complete range of diameters, load capacities and surface finishes. All parts can be specified with the simplicity of a single Ronstan "ARS" part number.

The process is simple. After determining the required material and suitable surface finish, 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, estimating 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.

ARS1A | ARS2 | ARS3 | ARS4



Facade

The facade represents the ultimate expression of individuality, reflecting the image of the occupier, classic or modern, modest or impressive. At the same time facade 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 facade and shade elements; their functional elegance obvious to the inspired, yet light and sufficiently transparent to allow the facade to convey its message.

Project: MCG Members Entrance
Location: Melbourne, Australia
Architect: MCG5 - Daryl Jackson, Cox Sanderson Ness, Tomkins, Shaw & Evans, HOK Sport
Engineers: Connell Mott MacDonald, Arup
Rods: Ronstan Tensile Architecture
Photo: Peter Hyatt



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 key. They replace larger compression elements in domes, facades and point supported glass systems, and heavy mullions in conventional curtain wall with high tensile minimalist elements of stainless or carbon steel.

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

Project: Adelaide BMW
Location: Adelaide, Australia
Architect: Matthews Architects
Engineer: Avrecon Group
Rods: Ronstan Tensile Architecture
Photo: Chameleon Photography



Tension & Compression Elements

While steel bars have long been used as tensile elements within trusses, the development of steel compression elements matching the aesthetics of their tensile counterparts presents new opportunities for integrated truss solutions.

The truss elements at San Diego Yacht Club used pre-stressed stainless steel tension and compression members in a combination that ensured uncompromised function and aesthetics.

Project: Malin Burham Sailing Centre,
San Diego Yacht Club
Location: San Diego, USA
Architect: Architects Hanna Gabriel Wells
Engineer: KPFF Consulting Engineers
Rods: Ronstan Tensile Architecture
Photo: Architects Hanna Gabriel Wells



Bridges

Cable stayed or cable supported bridges provide mechanisms through which designers and engineers can engage with bridge users.

A truly successful bridge design is one where users can be seen paused on the bridge handling the cables or bars and marvelling at the simple function of the tensile elements.

While the structurally expressive nature of suspended bridges presents a form that can be simply understood, the engineering complexity remains. Ronstan understand the behaviour of cables and bars and can help realize the most exuberant of bridge concepts.

Project: Kingsway Pedestrian Bridge
Location: Burnaby, BC, Canada
Architect: Busby Perkins + Will
Engineer: Fast & Epp Structural Engineers
Rods: Ronstan Tensile Architecture
Photo: Busby Perkins + Will



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: WA Basketball Centre
 Location: Mt Claremont, Western Australia
 Architect: Peter Hunt & Daryl Jackson Architects
 Engineer: Wood & Grieve Engineers
 Structural Rods: Ronstan Tensile Architecture
 Photo: Scott Shirley Photography



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 buildings.

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: QVB - Queen Victoria Building
Location: Sydney, Australia
Architect: Anchor Mortlock Wolley
Engineer: Hyder Consulting
Rods: Ronstan Tensile Architecture
Photo: Martin Van De Wal

ARS1A - 316 Stainless Steel Rods



The seamless stainless rod with optimal aesthetics, efficiency and performance.

Sizes/Diametres - 6.35mm to 31.8mm (0.250in. to 1.250in.).

Lengths - Up to 3.6m (11.8ft) for Ø6.35-12.70mm (0.250-0.500in.),
Up to 6.0m (19.7ft) for Ø15.88-31.75mm (0.625-1.250in.),
before joiners are required.

Finishes - Bright Polished #7+Passivation, Satin Polished #4.
Others by request.

Finishes to ASTM - A380/A967/B912.

Threads - ASNZ:3635.

Mechanical Properties	Ø6.35 - 9.5mm (Ø0.250 - 0.374in.)	Ø12.7 - 31.8mm (Ø0.500 - 1.252in.)
Minimum Yield Stress	340N/mm ² (49,300psi)	257N/mm ² (37,250psi)
Minimum Breaking Stress	680N/mm ² (98,600psi)	515N/mm ² (74,690psi)
Minimum Elongation	30%	30%
Young's Modulus	193kN/mm ² (27,992ksi)	193kN/mm ² (27,992ksi)
Material to	ASTM A276-A	

SPECIFIC FEATURES

- Minimalist design ensures compact neat details.
- Easy adjustment of the rod from one end without the need to rotate the bar.
- Clean polished stainless steel finish to withstand the harshest environments.
- Good strength to weight ratio allows the mass of your structure to be kept low while minimising material and transport costs.
- Good corrosion resistance and low maintenance due to material choice decreases the life cycle cost of the structure.
- 316 grade stainless steel with 94% average recycled content*.
- Hidden threads ensuring 'sleekness' of the rod carried through entire system.
- Moderate load capacity of Ronstan's Structural Stainless Steel Rods.

*Source: UGITECH, France.

ARS1A

ARS2 - S520 Stainless Steel Rods



A stainless rod solution for large diameter high load applications.

Sizes/Diametres - M12 to M56 as standard. Larger sizes available on request.

Lengths - Up to 6.0m (19.7ft) for Ø M12 - M16 (0.472-0.630in)
Up to 7.5m (24.6ft) for Ø M20 - M42 (0.787-1.654in)
Up to 6.0m (19.7ft) for Ø M48 - M56 (1.890-2.205in)
before joiners/turnbuckles are required.

Finishes - Satin Polished or Bright Polished. Others by request.

Finishes to - EN 10088-2.

Threads to - BS3643.

Mechanical Properties	M12-M42 (0.472 - 1.654in)	M48 - M56 (1.890 - 2.205in)
Minimum Yield Stress	520N/mm ² (75,400psi)	460N/mm ² (66,700psi)
Minimum Breaking Stress	650N/mm ² (94,300psi)	610N/mm ² (88,400psi)
Minimum Elongation	19%	19%
Young's Modulus	193kN/mm ² (27,992ksi)	193kN/mm ² (27,992ksi)
Material to	EN 10283 / EN 10088 BS970	EN 10283 / EN 10088 BS970

SPECIFIC FEATURES

- Attractive tapered nut and recognisable "tear drop" fork for a simple elegant style that will not date.
- Simple connection detail of pin and fork minimising installation time.
- Satin finish stainless steel for a modern aesthetic. Other finishes available on request.
- Large range of diameters available to allow consistent detailing throughout a project.
- Austenitic material.

ARS2

ARS3 - 316 Stainless Steel Rods



A simple and effective stainless rod for moderate loads.

Size/Diametres - 4.76mm to 31.75mm (0.188in to 1.250in.).

Lengths - Up to 3.6m (11.8ft) for Ø4.76 - 12.70mm (0.188 - 0.500in.),
Up to 6.0m (19.6ft) for Ø15.88 - 31.75mm (0.625 - 1.250in.),
before joiners are required.

Finishes - Electropolished, to ASTM A380/A967/B912.
Others by request.

Threads to - ASNZ:3635.

Mechanical Properties	Ø 4.76 - 9.53mm (Ø 0.188 - 0.375in.)	Ø 12.70 - 31.75mm (Ø 0.500 - 1.250in.)
Minimum Yield Stress	340N/mm ² (49,300psi)	257N/mm ² (37,250psi)
Minimum Breaking Stress	680N/mm ² (98,600psi)	515N/mm ² (74,690psi)
Minimum Elongation	30%	30%
Young's Modulus	193kN/mm ² (27,992ksi)	193kN/mm ² (27,992ksi)
Material to	ASTM A276-A	

SPECIFIC FEATURES

- Most economical solution when the good level finish of stainless steel is required, providing affordable good looks.
- ARS3 - the perfect marriage of economy, strength and corrosive resistance.
- The proven design provides ageless integrity to your structure.
- 316 grade stainless steel, utilising cold drawn bar material with 94% average recycled content*.

*Source: UGITECH, France.

ARS3

ARS4 - 520 Carbon Steel Rods



An attractive carbon steel rod system of unparalleled tensile strength.

Sizes/Diametres - M12 to M100.

Lengths - Up to 6.0m (19.7ft) for Ø M12 - M16 (0.472-0.630in)
Up to 12m (39.4ft) for Ø M20 - M100 (0.787-3.937in)
before joiners/turnbuckles are required.

Finishes - Raw, hot-dip galvanised to BS EN ISO 1461:2009
grit blast + prime painted. Others by request.

Threads to - BS3643.

Mechanical Properties	M12 (0.472")	M16 - M100 0.630" - 3.940"
Minimum Yield Stress	355 N/mm ² (51,490psi)	520 N/mm ² (75,400psi)
Minimum Breaking Stress	610 N/mm ² (88,400psi)	650 N/mm ² (94,300psi)
Minimum Elongation	20%	19%
Young's Modulus	205 kN/mm ² (29,700ksi)	205 kN/mm ² (29,700ksi)
Material to	EN 10025	EN 10267

SPECIFIC FEATURES

- High load capacity reducing the mass of your structure with flow on benefits in transport and construction costs.
- Large range of sizes to allow consistent detailing throughout a project.
- Galvanised, raw or primed finish allows for on site paint matching to structure colour and finish.
- Attractive tapered nut and recognisable "tear drop" fork for a simple elegant style that will not date.
- Simple connection detail of pin and fork minimising installation time.
- A fine grain micro alloyed carbon steel which is fully weldable.

ARS4



Ronstan – ARS Surface Finishes

Ronstan ARS rod systems are available with a range of surface finish options to suit the project aesthetics, installation location, environmental corrosion criteria and available budget requirements. Considering these parameters and drawing on our many years of field experience, Ronstan can assist you select an appropriate finish to ensure the product performs adequately over the course of the products intended life.

The following surface finishes are offered as standard options.

SS Stainless Steel Rod Finishes

Satin Polished #4 (240 grit)

A grainy, matt finish. Often used in architectural applications for its unobtrusive & minimalist appearance. Better suited to internal non-corrosive environments.

Electropolished

The most cost effective stainless steel finish, providing a high level of corrosion protection and light aesthetics. Note; this process may sometimes produce an uneven ‘frosting’ appearance due to surface reaction with the chemical process. It may also highlight marks or imperfections in the raw material surface. A selective electro chemical metal removal process (exactly the reverse of plating). The process results in the simultaneous smoothing, levelling and brightening of stainless steel. It selectively removes surface flaws, embedded impurities and high points in the surface layer.

Bright Polished #7 with Passivation

The smoothest, shiniest finish providing an improved level of corrosion protection. Bars are mechanically polished then passivated. Passivation is a chemical treatment applied to the surface of the stainless steel to remove contaminants and assist in the formulation of a continuous chromium-oxide passive film. (Note-ARS2 passivation is not standard).

CS Carbon Steel Rod Finishes

Raw

Raw carbon steel as drawn or cast (sometimes referred to as “black” or “self colour”). The lowest cost surface but will require a secondary coating to prevent oxidation and corrosion staining from forming. Note; raw carbon steel rods and components placed in storage or transport may suffer surface corrosion as a result of the environment they are subjected to.

Hot-Dip Galvanised

The most cost effective finish for carbon steel tendons providing well proven performance to BS EN ISO1461:2009.

Grit Blast and Prime Painted

A typical finish requirement for carbon steel items before receiving a final colour top coating. The grit blasting is done to remove surface impurities and provides a clean surface for a metal primer paint to key to. Note; painted surfaces may be affected/damaged by transport and handling.

Other surface finishes for the stainless steel or carbon steel rod systems are available on request. Contact Ronstan to discuss your requirements.

How to Dimension Your Rods for Manufacture

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

Thread setting – 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 (and turnbuckle if used). This ensures adjustment can be either taken up or let out.

Joiners or turnbuckles will be equispaced along the assembly length, unless specified otherwise.

Other thread positions or end types available, (eg: hexnut) on request.

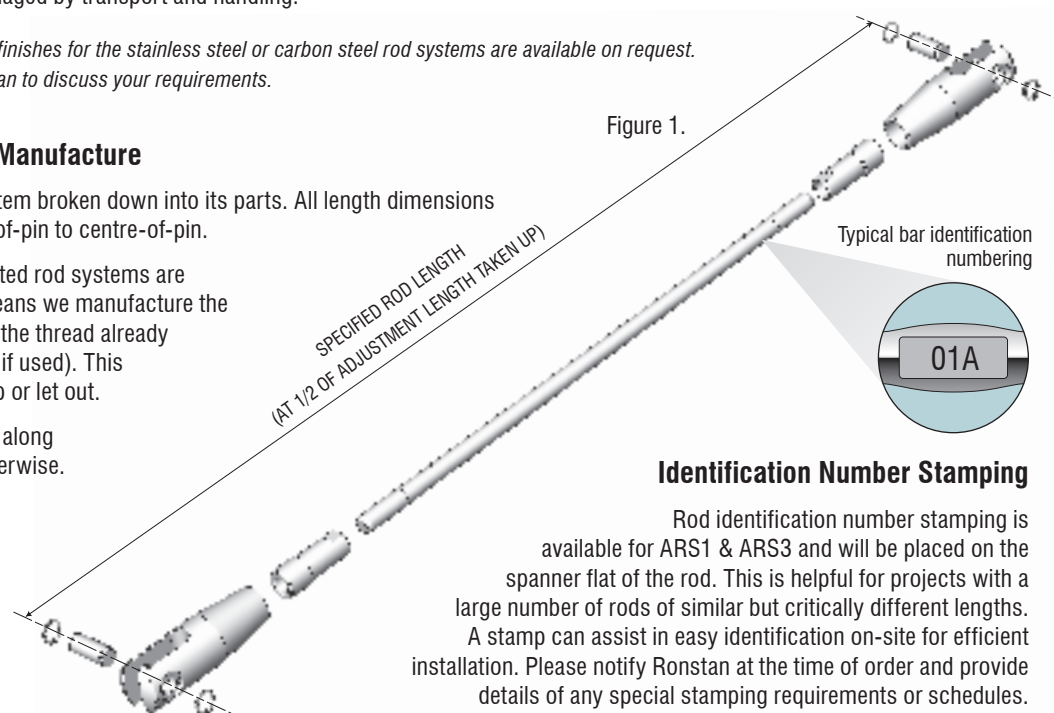


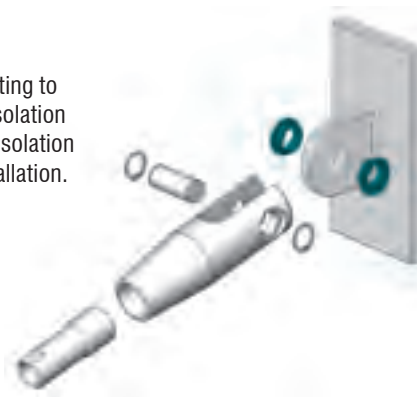
Figure 1.

Identification Number Stamping

Rod identification number stamping is available for ARS1 & ARS3 and will be placed on the spanner flat of the rod. This is helpful for projects with a large number of rods of similar but critically different lengths. A stamp can assist in easy identification on-site for efficient installation. Please notify Ronstan at the time of order and provide details of any special stamping requirements or schedules.

Isolation Systems for Dissimilar Metals

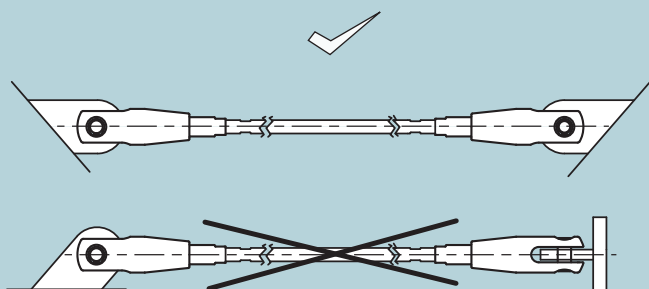
Installations that combine dissimilar metals (eg: stainless steel rods connecting to a carbon steel structure) may be subject to galvanic corrosion and require isolation systems to prevent damage to the rods and structure. Ronstan can provide isolation systems to suit typical installations. These are custom made to suit the installation.



End Connection Requirements

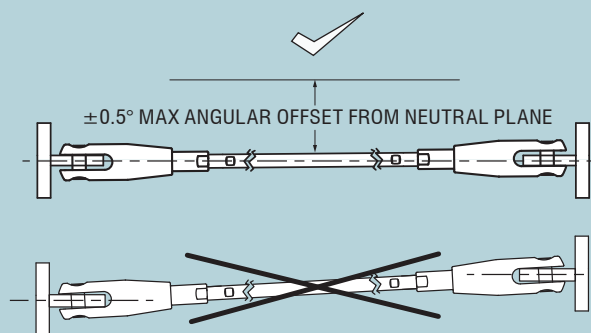
Ronstan threaded rod systems are suitable for a wide range of applications. However, like all properly engineered mechanical systems these products require certain basic structural engineering principles to be followed to ensure proper functionality.

1. FORK END PIN CONNECTIONS TO BE PARALLEL TO PERMIT SYSTEM SELF-ALIGNMENT. ENSURE MOUNTING TAKEOFF CLEATS ARE IN LINE WITH LOAD DIRECTION.



Fork pin orientation is to be such that both clevis pins are in the same plane. Eg. total system orientation should permit the rod assembly to pivot at both ends and follow natural movement within the connected structure, to avoid bending or restriction.

2. MOUNTING TAKE-OFF CLEAT CONNECTIONS SHOULD BE WELL ALIGNED. TO AVOID INCORRECT LOADING ON END FITTINGS & TAKE-OFF CLEATS.



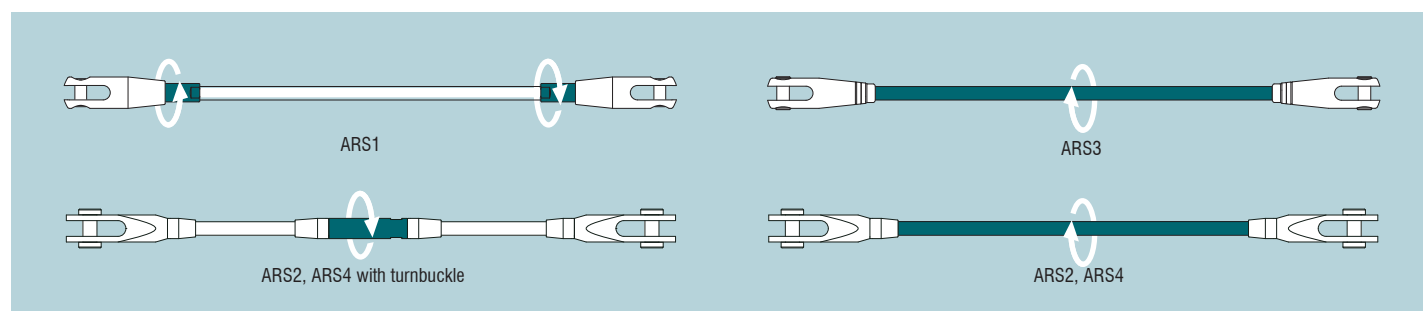
Rod assembly end connection alignment is required to be within $\pm 0.5^\circ$ from the neutral axis. Eg. the tendon assembly should connect structure and avoid bending of the pin, tang/cleat or clevis jaw & the resulting restriction of movement.

Tensioning/Length Adjustment

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 often the need to tension at height if the rods are elevated.

Ronstan ARS2, ARS3 & ARS4 are tensioned by rotating the rod only, via the spanner flats on the rod or turnbuckle. Once the required length/tension is achieved, the tapered lock nuts should be screwed down onto the fork/turnbuckle ends and firmly tensioned.

ARS2 & ARS4 systems can utilize Ronstan's pre-stressing equipment.



www.RonstanTensileArch.com prides itself on key principles of concept development, design assistance, cable and fitting selection, structural analysis and installation. Comprehensive installation instructions and support is provided for each project.

Custom System Solutions

The standard Ronstan ARS rod systems provide solutions for most applications however, there are some situations where a non-standard solution will be required. With nearly 60 years of in-the-field experience, Ronstan has the technical expertise and production capability to provide the exact product solution with the same ease, quality and competitive price as our standard options. Some of these other solutions include:

Compression members

Utilising the proven fork ends based from Ronstan ARS2 stainless steel or ARS4 carbon steel systems. Elements based on customer supplied project product details.

Threaded rod systems with hex nuts and washers

Some projects require simple threaded ends instead of a pinned connection. Ronstan offer threaded bars with plain nuts and washers.

Eye/spade end fittings

Eyes or spades may be required for linkages or other connections. Based on the standard fork sizes, we have many options available as made to order items.

Multi-segmented rod assemblies

Often used internally as stair tread supports or externally as louver or passive sun shade supports, sometimes a rod assembly requires a mix of fully threaded & short threaded elements connected by joiners to meet the design requirements.

Welded, machined or other non-standard items

We know that in the competitive world of tensile architecture and design, to stand out from the crowd you need a point of difference. While your product choice may not be available off-the-shelf today and has to be specially created for your cutting edge project, Ronstan Tensile Architecture is right there with you, ready to assist with your designs and ideas and make your vision a reality.

Ronstan has contributed to some of the world's most intriguing examples of tensile architecture, while providing a tailored solution for each installation. To experience the full scope of what our Tensile Architectural Services Department has achieved, please visit

www.RonstanTensileArch.com



Project Services

Ronstan Tensile Architecture draws on an unparalleled understanding of every phase and consideration involved in tensile design and construction, delivering a full range of design, engineering and installation capabilities. As a leading end-to-end specialty contractor and supplier, Ronstan brings continuity, efficiency, quality control and cost effectiveness to projects while providing a tailored solution for each installation.

Our services include:

- Concept development
- Design assistance
- Rod & Cable system and component selection
- Site supervision
- Project documentation eg. work method statements
- Cost / budget estimates
- Structural analysis
- Corrosion protection assistance
- On-site installation / tensioning
- Schedules & quality documentation



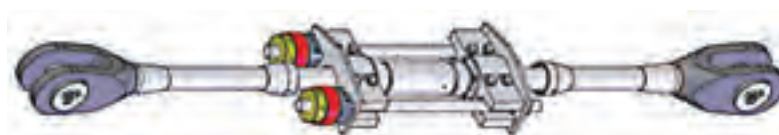
Ronstan's design engineers tailor solutions to meet the demands of each project, while our project management team ensures the proper coordination of project requirements. Working with a client's project team throughout the design-build process, Ronstan delivers the highest quality product and project installation world-wide. For a full overview of services available in your region, please contact your local Ronstan office. *Note: Some services not available in North America.*

Additionally, because Ronstan initially made its name in the industry as a manufacturer of architectural rigging, the company boasts invaluable expertise related to the performance characteristics of tensile architecture materials including:

- Load Requirements
- Cable Construction
- Clamps, Anchors and Assorted Fittings
- Cable Creep
- Temperature
- Corrosion Protection
- End Connections
- Factors affecting Cable Length
- Elongation Due to Clamping
- Elastic Elongation

Site Pre-Stressing

Certain applications may require tendons to be pre-stressed after installation. This can be performed provided jacking turnbuckles have been specified. Ronstan offer a robust and easy-to-use range of jacking equipment to provide a simple solution for the stressing of tendons which can be performed by most competent steel erectors. Site supervision can be provided. *Note: Must be specified at time of rod ordering.*



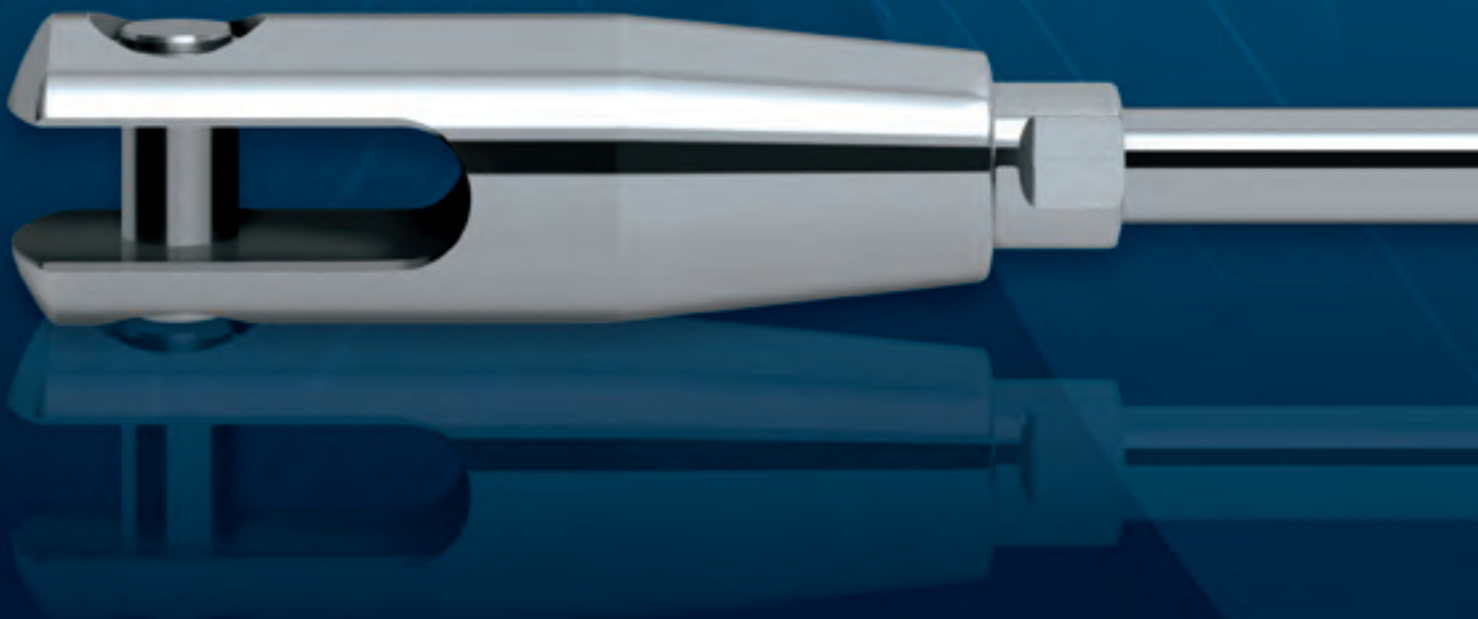
316 Stainless Steel Rods

ARS1A

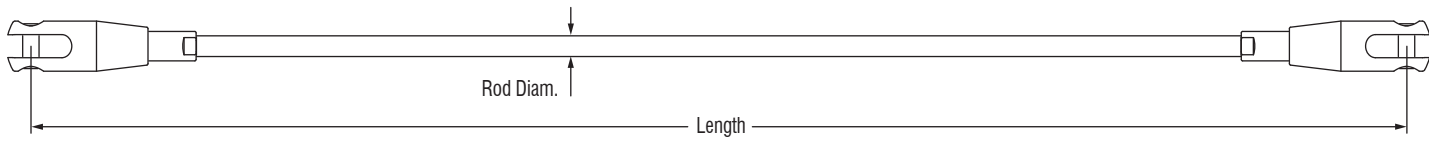
The beauty and form of tensile architecture demands more from a tendon than the simple transfer of load. Proof that optimal structural performance does not always come at the expense of aesthetics, lies in the existence of ARS1A; a rod system of such elegance that its real purpose and role in the structure are disguised.

The optimal strength to weight ratio of ARS1A ensures a minimal cross sectional area for your detail. With minimalist proportions, unique adjustable end connections, and rods in highly polished Grade 316 stainless steel, ARS1A will guarantee tendons of the highest efficiency and minimal self weight.

ARS1A - The optimal tensile stainless rod.



ARS1A - Systems



METRIC

PRODUCT No.	THREAD TYPE	ROD Ø mm	ROD MASS kg/m	ADJUSTMENT ± PER ASSY mm	*MAX SINGLE ROD LENGTH m	MIN. YIELD LOAD kN	MIN. ULT LOAD kN
ARS1A-SS-04	1/4" UNF	6.4	0.25	18.0	3.6	8	16
ARS1A-SS-05	5/16" UNF	7.9	0.39	20.0	3.6	13	26
ARS1A-SS-06	3/8" UNF	9.5	0.56	23.0	3.6	16	33
ARS1A-SS-08	1/2" UNF	12.7	1.00	26.0	3.6	27	53
ARS1A-SS-10	5/8" UNF	15.9	1.56	30.0	6.0	42	85
ARS1A-SS-12	3/4" UNF	19.1	2.25	31.0	6.0	62	124
ARS1A-SS-14	7/8" UNF	22.5	3.06	33.0	6.0	85	169
ARS1A-SS-16	1" UNF	25.4	4.0	32.0	6.0	110	220
ARS1A-SS-20	1 1/4" UNF	31.8	6.3	32.0	6.0	178	356

IMPERIAL

	TYPE	in.	lbs/ft	in.	ft	kips	kips
ARS1A-SS-04	1/4" UNF	0.252	0.168	0.709	11.8	1.80	3.60
ARS1A-SS-05	5/16" UNF	0.311	0.262	0.787	11.8	2.92	5.85
ARS1A-SS-06	3/8" UNF	0.374	0.378	0.906	11.8	3.60	7.42
ARS1A-SS-08	1/2" UNF	0.500	0.673	1.024	11.8	6.07	11.91
ARS1A-SS-10	5/8" UNF	0.626	1.051	1.181	19.7	9.44	19.11
ARS1A-SS-12	3/4" UNF	0.752	1.513	1.220	19.7	13.94	27.88
ARS1A-SS-14	7/8" UNF	0.874	2.060	1.299	19.7	19.11	37.99
ARS1A-SS-16	1" UNF	1.000	2.690	1.260	19.7	24.73	49.46
ARS1A-SS-20	1 1/4" UNF	1.252	4.203	1.260	19.7	40.02	80.03

* Joiner(s) may be used if maximum rod length material is not available and/or to reduce shipping costs or time.

Note - ARS1A systems now use Condition A grade 316 stainless steel (with the same yield and ultimate loads as ARS3). Pre-2011 Condition B material was used. Contact Ronstan for further information.

STRUCTURAL ROD SYSTEM SPECIFICATIONS

SS 316 ARS1A - 316 Stainless Steel Rods

ARS1A - Component Dimensions

Compact Adjusters - Internal RH Thread Only.

METRIC

THREAD TYPE	ROD Ø	A	B	C	D	E MIN.	E MAX.	F	WEIGHT
	mm	mm	mm	mm	mm	mm	mm	mm	g
1/4" UNF	6.35	7.0	9.0	11.0	6.4	53.0	71.0	16.3	55
5/16" UNF	7.93	8.5	11.0	13.2	7.9	66.0	86.0	20.0	103
3/8" UNF	9.53	10.0	13.2	18.0	9.5	78.0	101.0	24.0	177
1/2" UNF	12.70	14.0	17.7	24.0	12.7	101.0	127.0	33.5	444
5/8" UNF	15.88	18.0	22.2	30.0	15.9	122.0	152.0	42.0	834
3/4" UNF	19.05	22.0	26.5	38.0	19.1	146.0	177.0	51.0	1439
7/8" UNF	22.23	24.0	31.3	45.0	22.2	164.0	197.0	57.3	2049
1" UNF	25.40	26.0	35.2	53.0	25.4	187.0	219.0	64.8	2998
1 1/4" UNF	31.75	32.0	44.7	66.0	31.8	229.0	262.0	78.3	5300

IMPERIAL

	in.	in.	in.	in.	in.	in.	in.	in.	oz
1/4" UNF	0.250	0.276	0.354	0.433	0.250	2.087	2.795	0.640	1.9
5/16" UNF	0.312	0.335	0.433	0.520	0.312	2.598	3.386	0.787	3.6
3/8" UNF	0.375	0.394	0.520	0.709	0.375	3.071	3.976	0.945	6.2
1/2" UNF	0.500	0.551	0.697	0.945	0.500	3.976	5.000	1.319	15.7
5/8" UNF	0.625	0.709	0.874	1.181	0.625	4.803	5.984	1.654	29.4
3/4" UNF	0.750	0.866	1.043	1.496	0.750	5.748	6.969	2.001	50.8
7/8" UNF	0.875	0.945	1.232	1.772	0.875	6.457	7.756	2.256	72.3
1" UNF	1.000	1.024	1.386	2.087	1.000	7.362	8.622	2.551	105.8
1 1/4" UNF	1.250	1.260	1.760	2.598	1.250	9.016	10.315	3.083	187.0

* Joiner(s) may be used if maximum rod length material is not available and/or to reduce shipping costs or time.

Note - ARS1A systems now use Condition A grade 316 stainless steel (with the same yield and ultimate loads as ARS3).

Pre-2011 Condition B material was used. Contact Ronstan for further information.

Joiners - Internal RH Thread Only.

METRIC

THREAD TYPE	ROD Ø	A	B	WEIGHT
	mm	mm	mm	g
1/4" UNF	6.35	10.2	24.0	10
5/16" UNF	7.93	12.5	32.0	17
3/8" UNF	9.53	14.2	38.0	25
1/2" UNF	12.70	19.8	50.0	65
5/8" UNF	15.88	23.8	60.0	110
3/4" UNF	19.05	30.2	72.0	270
7/8" UNF	22.23	34.5	83.0	330
1" UNF	25.40	39.5	90.0	460
1 1/4" UNF	31.75	50.0	112.0	680

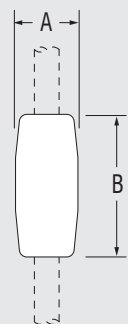
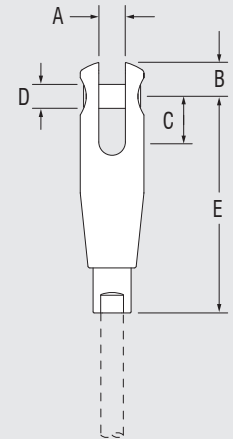
IMPERIAL

in.	in.	in.	in.	oz
1/4" UNF	0.250	0.394	0.945	0.4
5/16" UNF	0.312	0.492	1.260	0.6
3/8" UNF	0.375	0.559	1.496	0.9
1/2" UNF	0.500	0.780	1.969	2.3
5/8" UNF	0.625	0.937	2.362	3.9
3/4" UNF	0.750	1.181	2.835	9.5
7/8" UNF	0.875	1.358	3.268	11.7
1" UNF	1.000	1.555	3.543	16.3
1 1/4" UNF	1.250	1.969	4.409	24.0

* Joiner(s) may be used if maximum rod length material is not available and/or to reduce shipping costs or time.

Note - ARS1A systems now use Condition A grade 316 stainless steel (with the same yield and ultimate loads as ARS3).

Pre-2011 Condition B material was used. Contact Ronstan for further information.



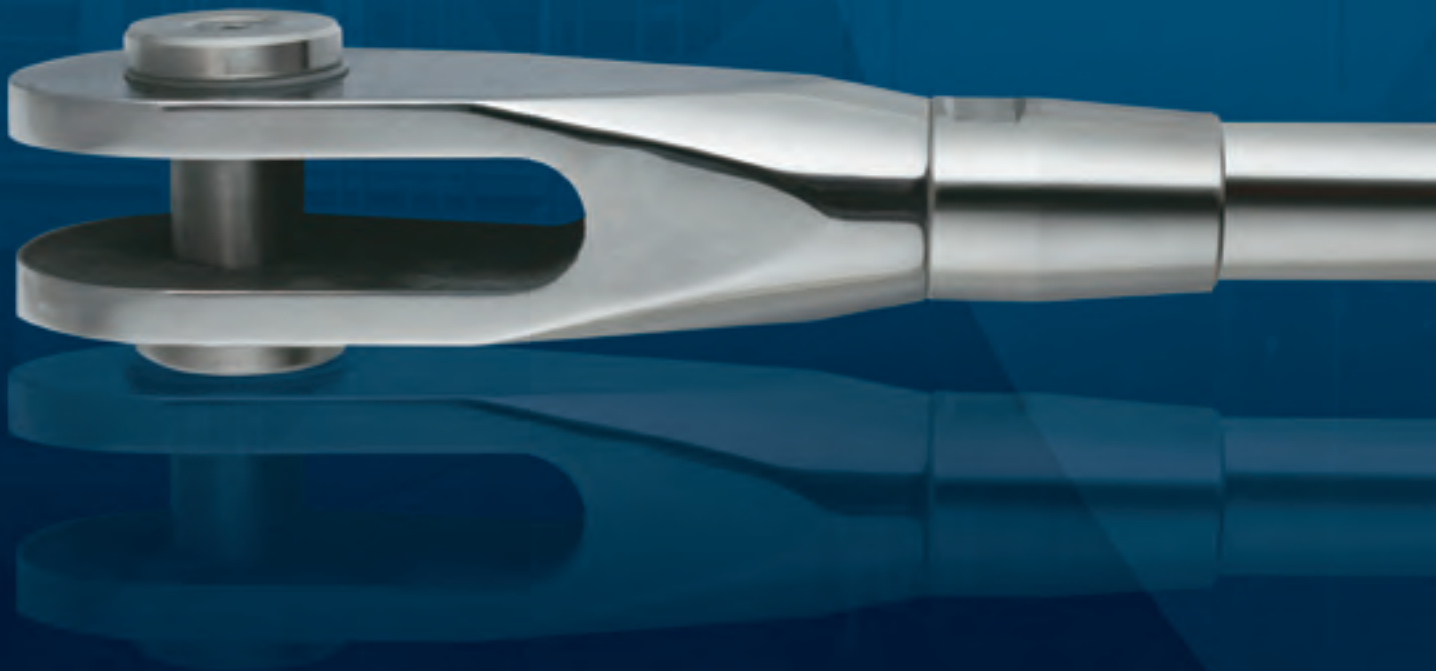
S520 Stainless Steel Rods

ARS2

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 other 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.

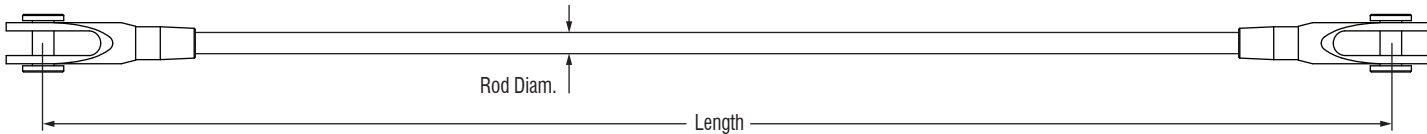
ARS2 - A robust stainless rod solution.



STRUCTURAL ROD SYSTEM SPECIFICATIONS

SS 520 ARS2 - S520 Stainless Steel Rods

ARS2 - Systems



METRIC

PRODUCT	THREAD	ROD Ø	ROD MASS	ADJUSTMENT	**ADJUSTMENT	*MAX SINGLE	MIN. YIELD LOAD	MIN. ULT LOAD
No.	TYPE	mm	kg/m	± PER ASSY	± PER TB IF USED	ROD LENGTH	kN	kN
ARS2-SSM12	M12	11	0.72	15.0	25.0	6	44.0	55
ARS2-SSM16	M16	15	1.39	15.0	25.0	6	82.0	104
ARS2-SSM20	M20	18	2.23	15.0	50.0	7.5	127	162
ARS2-SSM24	M24	22	2.98	20.0	50.0	7.5	184	233
ARS2-SSM30	M30	27	4.83	20.0	50.0	7.5	292	370
ARS2-SSM36	M36	33	7.13	20.0	50.0	7.5	425	539
ARS2-SSM42	M42	39	9.38	25.0	50.0	7.5	583	740
ARS2-SSM48	M48	45	12.5	25.0	50.0	7.5	677	898
ARS2-SSM56	M56	52	16.7	25.0	50.0	6	933	1238

IMPERIAL

		in.	lbs/ft	in.	in.	ft	kips	kips
ARS2-SSM12	M12	0.433	0.484	0.591	0.984	19.7	9.85	12.5
ARS2-SSM16	M16	0.591	0.934	0.591	0.984	19.7	18.3	23.3
ARS2-SSM20	M20	0.709	1.498	0.591	1.969	24.6	28.55	36.3
ARS2-SSM24	M24	0.866	2.002	0.787	1.969	24.6	41.36	52.3
ARS2-SSM30	M30	1.063	3.246	0.787	1.969	24.6	65.64	83.1
ARS2-SSM36	M36	1.299	4.791	0.787	1.969	24.6	95.54	121.2
ARS2-SSM42	M42	1.535	6.303	0.984	1.969	24.6	131.06	166.4
ARS2-SSM48	M48	1.772	8.386	0.984	1.969	24.6	152.20	201.9
ARS2-SSM56	M56	2.047	11.202	0.984	1.969	19.7	209.75	278.3

* Joiners or turnbuckles may be used if maximum rod length material is not available and/or to reduce shipping costs or time.
** Where Turnbuckle required order: ARS2-SSxxxTB



ARS2 - Component Dimensions

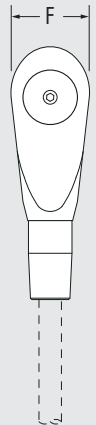
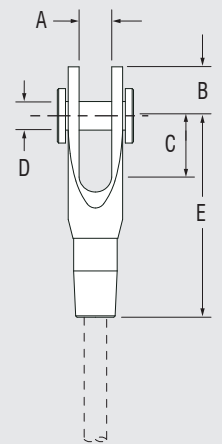
Fork Ends - Internal RH or LH Threads. Including Lock Covers.

METRIC

THREAD TYPE	ROD Ø	A	B	C	D	E	F	WEIGHT
	mm	mm	mm	mm	mm	mm	mm	kg
M12	11	14	21	25	12	94	32	0.43
M16	15	16	27	30	16	111	43	0.94
M20	18	19	33	42	20	139	51	1.61
M24	22	24	41	50	24	159	62	2.24
M30	27	30	52	59	30	187	79	4.26
M36	33	36	61	68	36	211	93	5.79
M42	39	39	69	78	42	234	107	13.1
M48	45	44	78	87	48	248	121	16.2
M56	52	49	96	105	56	292	145	23.9

IMPERIAL

	in.	in.	in.	in.	in.	in.	in.	lbs
M12	0.433	0.551	0.827	0.984	0.472	3.701	1.260	0.94
M16	0.591	0.630	1.063	1.181	0.630	4.370	1.693	2.06
M20	0.709	0.748	1.299	1.654	0.787	5.472	2.008	3.55
M24	0.866	0.945	1.614	1.969	0.945	6.260	2.441	4.94
M30	1.063	1.181	2.047	2.323	1.181	7.362	3.110	9.39
M36	1.299	1.417	2.402	2.677	1.417	8.307	3.661	12.8
M42	1.535	1.535	2.717	3.071	1.654	9.213	4.213	28.9
M48	1.772	1.732	3.071	3.425	1.890	9.764	4.764	35.7
M56	2.047	1.929	3.780	4.134	2.205	11.496	5.709	52.7



STRUCTURAL ROD SYSTEM SPECIFICATIONS



ARS2 - S520 Stainless Steel Rods

ARS2 - Component Dimensions

ARS2 Joiners - Internal RH Threads Only.

Use Joiner for joining rods only.

METRIC

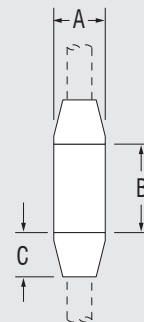
THREAD TYPE	ROD Ø	A	B	C	WEIGHT
	mm	mm	mm	mm	kg
M12	11	18	37	30	0.11
M16	15	24	45	33	0.22
M20	18	29	53	78	0.36
M24	22	35	64	84	0.54
M30	27	43	75	87	0.94
M36	33	52	89	93	1.58
M42	39	60	100	102	2.14
M48	45	68	115	105	3.22
M56	52	80	135	106	4.74

IMPERIAL

THREAD TYPE	ROD Ø	A	B	C	WEIGHT
	in.	in.	in.	in.	lbs
M12	0.433	0.709	1.457	1.181	0.24
M16	0.591	0.945	1.772	1.299	0.49
M20	0.709	1.142	2.087	3.071	0.80
M24	0.866	1.378	2.520	3.307	1.19
M30	1.063	1.693	2.953	3.425	2.07
M36	1.299	2.047	3.504	3.661	3.48
M42	1.535	2.362	3.937	4.016	4.72
M48	1.772	2.677	4.528	4.094	7.1
M56	2.047	3.150	5.315	4.173	10.5

* Joiners or turnbuckles may be used if maximum rod length material is not available and/or to reduce shipping costs or time.

** Where joiner required order: ARS2-SSxxxJ.



Turnbuckle Dimensions - Internal RH & LH Threads. Including Lock Nuts.

Use Turnbuckle where extra adjustment required or for rod joining.

METRIC

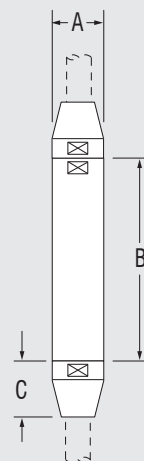
THREAD TYPE	ROD Ø	A	B	C	WEIGHT
	mm	mm	mm	mm	kg
M12	11	18	70	30	0.13
M16	15	24	85	33	0.19
M20	18	29	144	78	0.64
M24	22	35	155	84	1.0
M30	27	43	170	87	1.8
M36	33	52	180	93	2.7
M42	39	60	195	102	3.8
M48	45	68	210	105	5.2
M56	52	80	230	106	7.9

IMPERIAL

	in.	in.	in.	in.	lbs
M12	0.433	0.709	2.756	1.181	0.29
M16	0.591	0.945	3.346	1.299	0.42
M20	0.709	1.142	5.669	3.071	1.42
M24	0.866	1.378	6.102	3.307	2.11
M30	1.063	1.693	6.693	3.425	3.88
M36	1.299	2.047	7.087	3.661	5.85
M42	1.535	2.362	7.677	4.016	8.43
M48	1.772	2.677	8.268	4.134	11.6
M56	2.047	3.150	9.055	4.173	17.3

* Joiners or turnbuckles may be used if maximum rod length material is not available and/or to reduce shipping costs or time.

** Where Turnbuckle required order: ARS2-SSxxxTB.



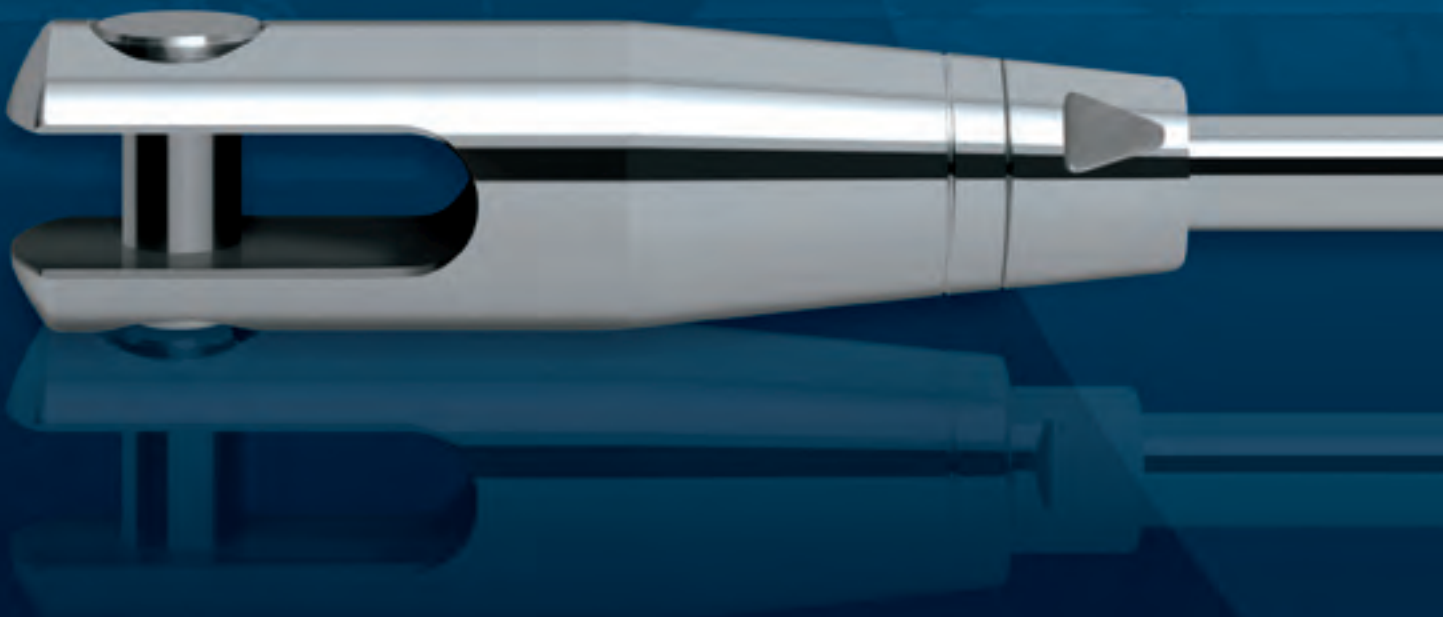
316 Stainless Steel Rods

ARS3

The industry benchmark. ARS3 is known world-wide as one of the original 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 an electropolished finish now as standard for long lasting performance.

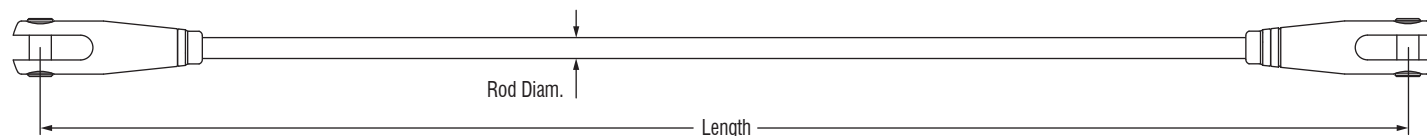
ARS3 - An efficient, economical rod for moderate loads.



STRUCTURAL ROD SYSTEM SPECIFICATIONS

SS 316 ARS3 - 316 Stainless Steel Rods

ARS3 - Systems



METRIC

PRODUCT No.	THREAD TYPE	ROD Ø mm	ROD MASS kg/m	ADJUSTMENT ± PER ASSY mm	*MAX SINGLE BAR LENGTH m	MIN. YIELD LOAD kN	MIN. ULT LOAD kN
ARS3-SS-03	# 10-32 UNF	4.76	0.14	13.0	3.6	4.4	8.7
ARS3-SS-04	1/4" UNF	6.35	0.25	13.0	3.6	8	16
ARS3-SS-05	5/16" UNF	7.93	0.39	17.0	3.6	13	26
ARS3-SS-06	3/8" UNF	9.53	0.56	21.0	3.6	16	33
ARS3-SS-08	1/2" UNF	12.70	1.00	29.0	3.6	27	53
ARS3-SS-10	5/8" UNF	15.88	1.56	37.0	6	42	85
ARS3-SS-12	3/4" UNF	19.05	2.25	47.0	6	62	124
ARS3-SS-14	7/8" UNF	22.23	3.06	55.0	6	85	169
ARS3-SS-16	1" UNF	25.40	4.0	64.0	6	110	220
ARS3-SS-20	1 1/4" UNF	31.75	6.3	64.0	6	178	356

IMPERIAL

		in.	lbs/ft	in.	ft	kips	kips
ARS3-SS-03	# 10-32 UNF	0.188	0.094	0.512	11.8	0.99	1.96
ARS3-SS-04	1/4" UNF	0.250	0.168	0.512	11.8	1.80	3.60
ARS3-SS-05	5/16" UNF	0.312	0.262	0.669	11.8	2.92	5.85
ARS3-SS-06	3/8" UNF	0.375	0.378	0.827	11.8	3.60	7.42
ARS3-SS-08	1/2" UNF	0.500	0.673	1.142	11.8	6.07	11.91
ARS3-SS-10	5/8" UNF	0.625	1.051	1.457	19.7	9.44	19.11
ARS3-SS-12	3/4" UNF	0.750	1.513	1.850	19.7	13.94	27.88
ARS3-SS-14	7/8" UNF	0.875	2.060	2.165	19.7	19.11	37.99
ARS3-SS-16	1" UNF	1.000	2.690	2.520	19.7	24.73	49.46
ARS3-SS-20	1 1/4" UNF	1.250	4.203	2.520	19.7	40.02	80.03

* Joiner(s) may be used if maximum rod length material is not available and/or to reduce shipping costs or time.

ARS3 - Component Dimensions

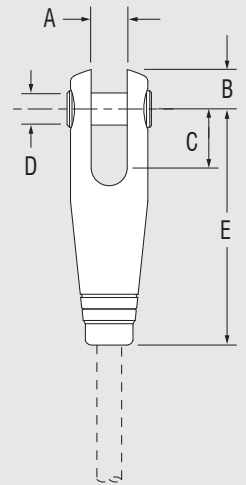
Fork Ends - Internal RH or LH Threads. Including Lock Nuts.

METRIC

THREAD TYPE	ROD Ø	A	B	C	D	E	F	WEIGHT
	mm	mm	mm	mm	mm	mm	mm	g
10/32" UNF	4.76	6.0	7.0	9.0	3.6	40.0	10.6	30
1/4" UNF	6.35	7.0	9.0	11.0	3.6	46.0	13.5	40
5/16" UNF	7.93	8.5	10.8	13.2	3.6	55.0	16.7	80
3/8" UNF	9.53	10.0	12.0	18.0	9.5	70.0	19.3	130
1/2" UNF	12.70	14.0	16.0	24.0	12.7	95.0	28.1	370
5/8" UNF	15.88	18.0	20.0	30.0	15.9	119.0	35.1	710
3/4" UNF	19.05	22.0	24.0	38.0	19.1	149.0	41.1	1250
7/8" UNF	22.23	24.0	28.0	45.0	22.2	171.0	45.5	1700
1" UNF	25.40	26.0	32.0	53.0	25.4	198.0	55.7	2900
1 1/4" UNF	31.75	32.0	40.0	66.0	31.8	229.0	66.4	4200

IMPERIAL

	in.	in.	in.	in.	in.	in.	in.	oz
10/32" UNF	0.188	0.236	0.276	0.354	0.142	1.575	0.417	1.1
1/4" UNF	0.250	0.276	0.354	0.433	0.142	1.811	0.531	1.4
5/16" UNF	0.312	0.335	0.425	0.520	0.142	2.165	0.657	2.8
3/8" UNF	0.375	0.394	0.472	0.709	0.375	2.756	0.760	4.6
1/2" UNF	0.500	0.551	0.630	0.945	0.500	3.740	1.106	13.1
5/8" UNF	0.625	0.709	0.787	1.181	0.625	4.685	1.382	25.0
3/4" UNF	0.750	0.866	0.945	1.496	0.750	5.866	1.618	44.1
7/8" UNF	0.875	0.945	1.102	1.772	0.875	6.732	1.791	60.0
1" UNF	1.000	1.024	1.260	2.087	1.000	7.795	2.193	102.3
1 1/4" UNF	1.250	1.260	1.575	2.598	1.250	9.016	2.614	148.1



ARS3 - Component Dimensions

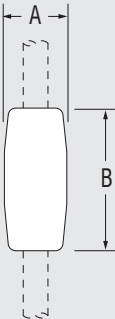
Joiners - Internal RH & LH Threads.

METRIC

ROD Ø	THREAD TYPE	A	B	WEIGHT
mm		mm	mm	g
4.76	10/32" UNF	7.8	18.0	7
6.35	1/4" UNF	10.0	24.0	10
7.93	5/16" UNF	12.5	32.0	20
9.53	3/8" UNF	14.2	38.0	25
12.70	1/2" UNF	19.8	50.0	65
15.88	5/8" UNF	23.8	60.0	110
19.05	3/4" UNF	30.0	72.0	270
22.23	7/8" UNF	34.5	83.0	330
25.40	1" UNF	39.5	90.0	460
31.75	1 1/4" UNF	50.0	112.0	680

IMPERIAL

in.		in.	in.	oz
0.188	10/32" UNF	0.307	0.709	0.2
0.250	1/4" UNF	0.394	0.945	0.4
0.312	5/16" UNF	0.492	1.260	0.7
0.375	3/8" UNF	0.559	1.496	0.9
0.500	1/2" UNF	0.780	1.969	2.3
0.625	5/8" UNF	0.937	2.362	3.9
0.750	3/4" UNF	1.181	2.835	9.5
0.875	7/8" UNF	1.358	3.268	11.7
1.000	1" UNF	1.555	3.543	16.3
1.250	1 1/4" UNF	1.969	4.409	24.0

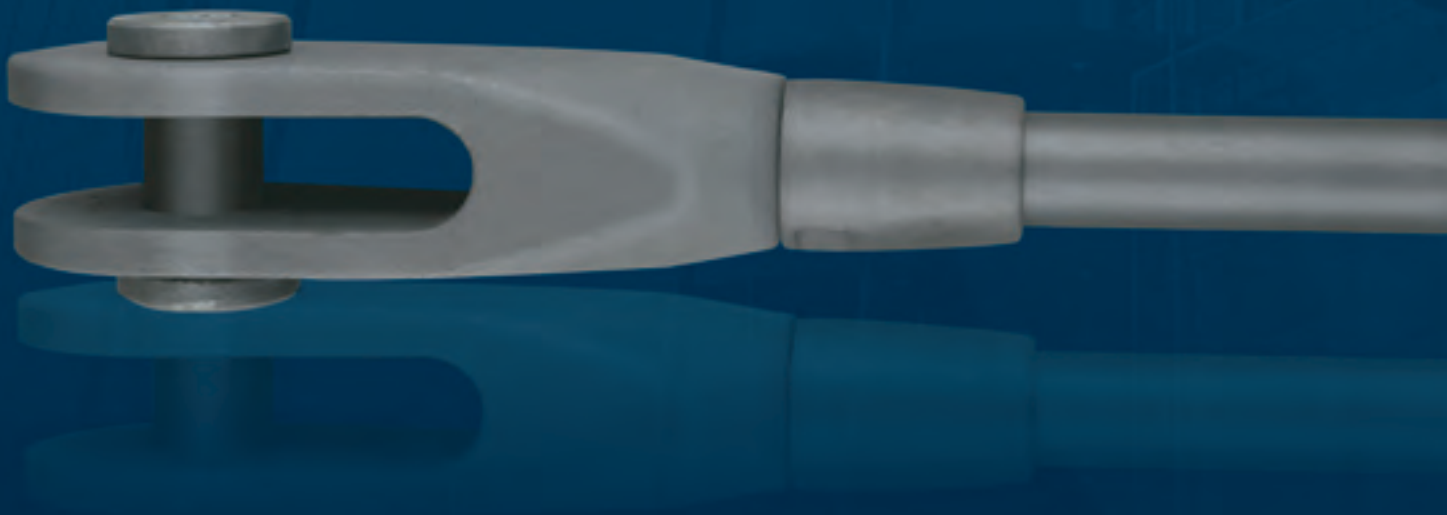


520 Carbon Steel Rods

ARS4

The latest innovative development in carbon steel rod tendons, ARS4 now has even higher load capacity with its grade 520 minimum yield carbon steel. The hero of the Ronstan range, ARS4 is ideal for those high load applications where a simple, efficient and minimalist carbon steel rod solution is required. ARS4 rod tendons can be used to replace heavy steel structure with a lightweight tendon that can be painted or finished to blend into the surrounding structure.

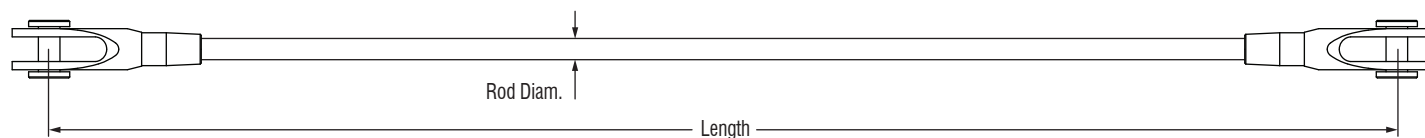
ARS4 - The carbon steel rod of unparalleled tensile strength.



STRUCTURAL ROD SYSTEM SPECIFICATIONS

CS 520 ARS4 - 520 Carbon Steel Rods

ARS4 - Systems



METRIC

PRODUCT No.	THREAD TYPE	ROD Ø mm	ROD MASS kg/m	ADJUSTMENT ± PER ASSY mm	**Adjustment ± PER TB mm	*MAX SINGLE BAR LENGTH m	MIN. YIELD LOAD kN	MIN. ULT LOAD kN
ARS4-CSM12	M12	12	0.72	15.0	25.0	6	30.0	52
ARS4-CSM16	M16	16	1.39	15.0	25.0	6	82.0	102
ARS4-CSM20	M20	19	2.23	15.0	50.0	12	127	159
ARS4-CSM24	M24	22	2.98	20.0	50.0	12	184	229
ARS4-CSM30	M30	28	4.83	20.0	50.0	12	292	364
ARS4-CSM36	M36	34	7.13	20.0	50.0	12	425	531
ARS4-CSM42	M42	39	9.38	25.0	50.0	12	583	729
ARS4-CSM48	M48	45	12.5	25.0	50.0	12	766	958
ARS4-CSM56	M56	52	16.7	25.0	50.0	12	1056	1320
ARS4-CSM64	M64	60	21.5	0.0	50.0	12	1392	1739
ARS4-CSM76	M76	72	32.0	0.0	50.0	12	1999	2528
ARS4-CSM90	M90	85	44.5	0.0	50.0	12	2879	3634
ARS4-CSM100	M100	97	56.8	0.0	50.0	12	3605	4547

IMPERIAL

		in.	lbs/ft	in.	in.	ft	kips	kips
ARS4-CSM12	M12	0.472	0.484	0.591	0.984	19.7	6.72	11.6
ARS4-CSM16	M16	0.630	0.934	0.591	0.984	19.7	18.3	22.9
ARS4-CSM20	M20	0.748	1.498	0.591	1.969	39.4	28.6	35.8
ARS4-CSM24	M24	0.866	2.002	0.787	1.969	39.4	41.2	51.5
ARS4-CSM30	M30	1.102	3.246	0.787	1.969	39.4	65.5	81.9
ARS4-CSM36	M36	1.339	4.791	0.787	1.969	39.4	95.4	119
ARS4-CSM42	M42	1.535	6.303	0.984	1.969	39.4	131	164
ARS4-CSM48	M48	1.772	8.386	0.984	1.969	39.4	172	215
ARS4-CSM56	M56	2.047	11.202	0.984	1.969	39.4	237	297
ARS4-CSM64	M64	2.362	14.420	0.000	1.969	39.4	313	391
ARS4-CSM76	M76	2.835	21.476	0.000	1.969	39.4	449	568
ARS4-CSM90	M90	3.346	29.929	0.000	1.969	39.4	647	817
ARS4-CSM100	M100	3.819	38.181	0.000	1.969	39.4	810	1022

* Joiners or turnbuckles may be used if maximum rod length material is not available and/or to reduce shipping costs or time.

** Where Turnbuckle required order: ARS4-SSxxxTB



ARS4 - Component Dimensions

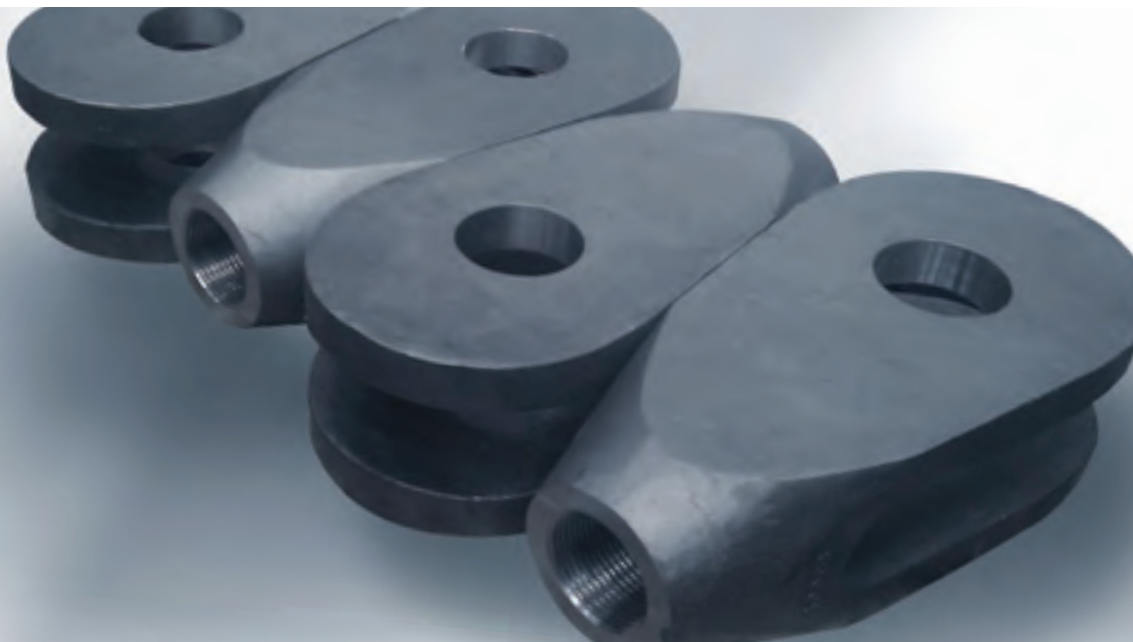
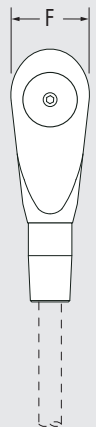
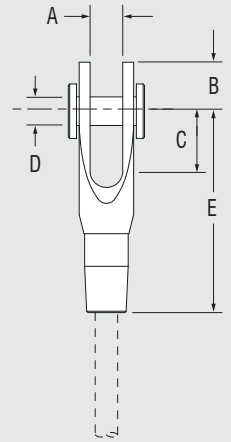
Fork Ends - Internal RH or LH Threads. Including Lock Covers.

METRIC

THREAD TYPE	ROD Ø	A	B	C	D	E	F	WEIGHT
	mm	mm	mm	mm	mm	mm	mm	kg
M12	12	14	21	25	12	94	32	0.426
M16	16	16	27	30	16	111	43	0.935
M20	19	19	33	42	20	139	51	1.61
M24	22	24	41	50	24	159	62	2.24
M30	28	30	52	59	30	187	79	4.26
M36	34	36	61	68	36	211	93	5.79
M42	39	39	69	78	42	234	107	13.1
M48	45	44	78	87	48	248	121	16.2
M56	52	49	96	105	56	283	145	23.9
M64	60	59	110	120	64	323	167	33.4
M76	72	76	131	141	76	380	199	52.2
M90	85	86	161	171	94	463	246	76
M100	97	91	188	197	109	521	287	108

IMPERIAL

	in.	in.	in.	in.	in.	in.	in.	oz
M12	0.472	0.551	0.827	0.984	0.472	3.701	1.260	0.94
M16	0.630	0.630	1.063	1.181	0.630	4.370	1.693	2.06
M20	0.748	0.748	1.299	1.654	0.787	5.472	2.008	3.55
M24	0.866	0.945	1.614	1.969	0.945	6.260	2.441	4.94
M30	1.102	0.748	2.047	2.323	1.181	7.362	3.110	9.39
M36	1.339	1.181	2.402	2.677	1.417	8.307	3.661	12.8
M42	1.535	1.535	2.717	3.071	1.654	9.213	4.213	28.9
M48	1.772	1.732	3.071	3.425	1.890	9.764	4.764	35.7
M56	2.047	1.929	3.780	4.134	2.205	11.142	5.709	52.7
M64	2.362	2.323	4.331	4.724	2.520	12.717	6.575	73.6
M76	2.835	2.992	5.157	5.551	2.992	14.961	7.835	115
M90	3.346	3.386	6.339	6.732	3.701	18.228	9.685	168
M100	3.819	3.583	7.402	7.756	4.291	20.512	11.299	238



STRUCTURAL ROD SYSTEM SPECIFICATIONS



ARS4 - 520 Carbon Steel Rods

ARS4 - Component Dimensions

Joiners - Internal RH Threads Only. Including Lock Covers

Use joiners for connecting rods only.

METRIC

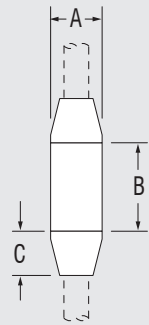
THREAD TYPE	ROD Ø	A	B	C	WEIGHT
	mm	mm	mm	mm	g
M12	12	18	37	25	0.11
M16	16	24	45	26	0.22
M20	19	29	53	40	0.36
M24	22	35	64	45	0.54
M30	28	43	75	50	0.94
M36	34	52	89	55	1.58
M42	39	60	100	60	2.14
M48	45	68	115	60	3.22
M56	52	80	135	75	4.74
M64	60	91	145	85	6.74
M76	72	108	165	91	10.5
M90	85	129	195	126	17.3
M100	97	143	215	134	24.2

IMPERIAL

THREAD TYPE	ROD Ø	A	B	C	WEIGHT
	in.	in.	in.	in.	lbs
M12	0.472	0.709	1.457	0.984	0.24
M16	0.630	0.945	1.772	1.024	0.49
M20	0.748	1.142	2.087	1.575	0.80
M24	0.866	1.378	2.520	1.772	1.19
M30	1.102	1.693	2.953	1.969	2.07
M36	1.339	2.047	3.504	2.165	3.48
M42	1.535	2.362	3.937	2.362	4.72
M48	1.772	2.677	4.528	2.362	7.1
M56	2.047	3.150	5.315	2.953	10.4
M64	2.362	3.583	5.709	3.346	14.9
M76	2.835	4.252	6.496	3.583	23.2
M90	3.425	5.079	7.677	4.961	38.1
M100	3.819	5.630	8.465	5.276	53.4

* Joiners or turnbuckles may be used if maximum rod length material is not available and/or to reduce shipping costs or time.

** Where Joiner required order: ARS4-CSxxxJ.



Turnbuckle - Internal RH & LH Threads. Including Lock Covers.

Use turnbuckles where additional adjustment is required.

METRIC

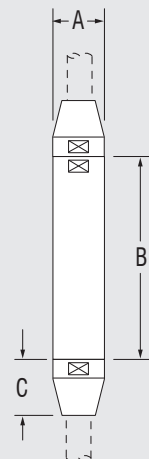
THREAD TYPE	ROD Ø	A	B	C	WEIGHT
	mm	mm	mm	mm	kg
M12	12	18	70	30	0.13
M16	16	24	85	33	0.19
M20	19	29	144	78	0.64
M24	22	35	155	84	1.0
M30	28	43	170	87	1.8
M36	34	52	180	93	2.7
M42	39	60	195	102	3.8
M48	45	68	210	105	5.2
M56	52	80	230	106	7.9
M64	60	91	240	112	10.4
M76	72	108	268	118	16.1
M90	85	129	290	153	26.2
M100	97	143	315	160	34.1

IMPERIAL

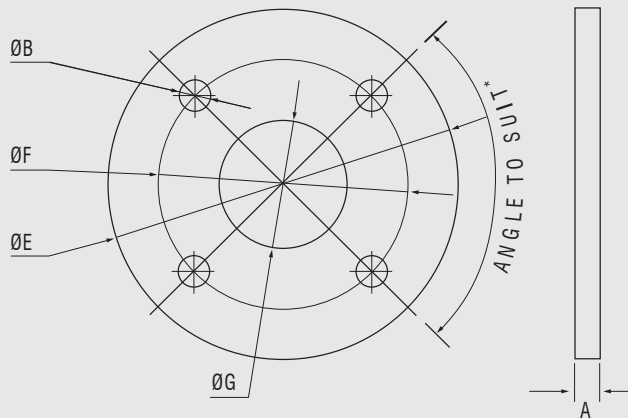
	in.	in.	in.	in.	lbs
M12	0.472	0.709	2.756	1.181	0.29
M16	0.630	0.866	3.346	1.299	0.42
M20	0.748	1.142	5.669	3.071	1.42
M24	0.866	1.378	6.102	3.307	2.11
M30	1.102	1.693	6.693	3.425	3.88
M36	1.339	2.047	7.087	3.661	5.85
M42	1.535	2.362	7.677	4.016	8.43
M48	1.772	2.677	8.268	4.134	11.6
M56	2.047	3.150	9.055	4.173	17.3
M64	2.362	3.583	9.449	4.409	22.9
M76	2.835	4.252	10.551	4.646	35.5
M90	3.346	5.079	11.417	6.024	57.7
M100	3.819	5.630	12.402	6.299	75.2

* Joiners or turnbuckles may be used if maximum rod length material is not available and/or to reduce shipping costs or time.

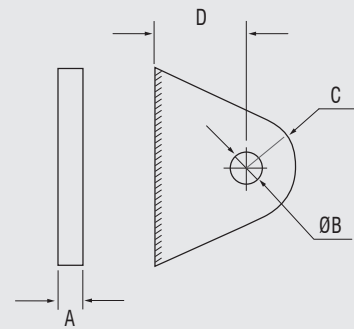
** Where Turnbuckle required order: ARS4-CSxxxTB



Centre Discs and Connection Plates - Carbon Steel or Stainless Steel



Centre Disk



*Not to scale

Connection Plate

METRIC

MATCHING ROD SIZE THREAD	A mm	B mm	C mm	D mm	E mm	F mm	(Optional) G mm
M12	10	13.0	21.0	32	145	110	50
M16	12	17.0	27.0	38	185	140	60
M20	15	21.0	33.0	52	245	180	70
M24	20	25.0	41.0	62	285	210	90
M30	25	31.0	52.0	74	350	260	100
M36	30	37.0	61.0	87	420	310	120
M42	35	43.0	69.0	97	490	360	140
M48	40	49.0	78.0	107	560	410	160
M56	45	57.0	96.0	125	660	480	200

IMPERIAL

TYPE	in.	in.	in.	in.	in.	in.	in.
M12	0.394	0.512	0.827	1.260	5.709	4.331	1.969
M16	0.472	0.669	1.063	1.496	7.283	5.512	2.362
M20	0.591	0.827	1.299	2.047	9.646	7.087	2.756
M24	0.787	0.984	1.614	2.441	11.220	8.268	3.543
M30	0.984	1.220	2.047	2.913	13.780	10.236	3.937
M36	1.181	1.457	2.402	3.425	16.535	12.205	4.724
M42	1.378	1.693	2.717	3.819	19.291	14.173	5.512
M48	1.575	1.929	3.071	4.213	22.047	16.142	6.299
M56	1.772	2.244	3.780	4.921	25.984	18.898	7.874

Note:

- Centre disk and connection plate designs are based on grade S355J2G3 plate to BS EN 10025 for carbon steel, or BS EN 10088 for Stainless Steel.
- Local plate equivalents may be used, but must match associated ARS rod system mechanical properties. See pages 6-7.
- Ensure adequate clearances for for paint or galvanising thickness to match fork ends.
- Suits ARS2 and ARS4 systems. ARS1 and ARS3 systems upon request.

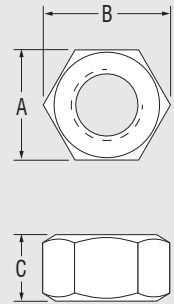
COMPONENTS SPECIFICATIONS

SS Nuts, Washers

SS Hex Nuts - Stainless Steel. 316 to ANSI B18.6.3.

METRIC

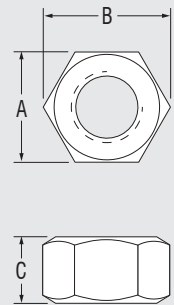
PRODUCT No.	THREAD TYPE	THREADS PER INCH	A mm	B mm	C mm	WEIGHT g
NS-03	#10 (3/16" UNF)	32	9.5	10.7	3.1	1
NS-04	1/4" UNF	28	11.0	12.5	5.6	2
NS-05	5/16" UNF	24	12.5	14.3	6.8	4
NS-06	3/8" UNF	24	14.1	16.2	8.3	6
NS-08	1/2" UNF	20	18.8	21.5	11.0	12
NS-10	5/8" UNF	18	23.6	27.0	13.9	32
NS-12	3/4" UNF	16	27.8	32.0	16.3	50
NS-14	7/8" UNF	14	32.6	37.4	19.0	82
NS-16	1" UNF	12	37.4	42.8	21.8	126
NS-20	1 1/4" UNF	12	47.5	54.5	28.0	265
NS-22	1 3/8" UNF	12	57.0	65.0	30.5	450



Hex Nuts - Chrome Plated Brass. To ANSI B18.6.3.

METRIC

PRODUCT No.	THREAD TYPE	THREADS PER INCH	A mm	B mm	C mm	WEIGHT g
NB-03*	#10 (3/16" UNF)	32	7.9	8.9	3.2	2
NB-04*	1/4" UNF	28	11.1	12.7	5.5	4
NB-05*	5/16" UNF	24	12.7	14.4	6.7	6
NB-06*	3/8" UNF	24	14.3	16.3	8.5	8
NB-08	1/2" UNF	20	19.0	21.6	11.0	18
NB-10	5/8" UNF	18	23.7	27.2	13.8	34
NB-12	3/4" UNF	16	28.3	32.3	15.8	56
NB-14	7/8" UNF	14	33.2	37.9	18.9	94
NB-16	1" UNF	12	37.8	43.2	22.0	142
NB-20	1 1/4" UNF	12	47.5	54.2	27.8	276
NB-22	1 3/8" UNF	12	57.0	65.1	30.5	478

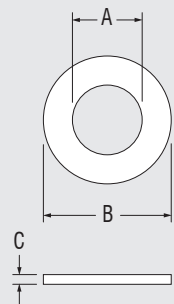


*Nickel plated

SS Flat Washers - Stainless Steel 316.

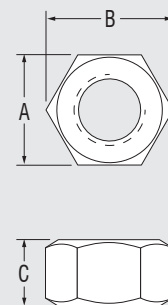
METRIC

PRODUCT No.	A mm	B mm	C mm	WEIGHT g
WS-03	4.8	11.1	0.9	1
WS-04	6.4	14.3	1.2	1
WS-05	8.0	16.0	1.2	1
WS-06	9.5	19.0	1.2	2
WS-08	12.7	25.4	2.0	5
WS-10	16.0	38.0	2.0	13
WS-12	19.0	38.0	2.0	12
WS-14	22.2	50.8	3.0	23
WS-16	25.4	47.6	2.0	18
WS-20	31.8	70.0	3.0	64
WS-22	36.0	66.0	5.0	82



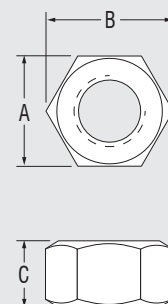
SS Hex Nuts - Stainless Steel. 316 to ANSI B18.6.3.**IMPERIAL**

PRODUCT No.	THREAD TYPE	TPI	A in.	B in.	C in.	WEIGHT oz
NS-03	#10 (3/16" UNF)	32	0.374	0.421	0.122	0.1
NS-04	1/4" UNF	28	0.433	0.492	0.220	0.1
NS-05	5/16" UNF	24	0.492	0.563	0.268	0.1
NS-06	3/8" UNF	24	0.555	0.638	0.327	0.2
NS-08	1/2" UNF	20	0.740	0.846	0.433	0.4
NS-10	5/8" UNF	18	0.929	1.063	0.547	1.1
NS-12	3/4" UNF	16	1.094	1.260	0.642	1.8
NS-14	7/8" UNF	14	1.283	1.472	0.748	2.9
NS-16	1" UNF	12	1.472	1.685	0.858	4.4
NS-20	1 1/4" UNF	12	1.870	2.146	1.102	9.3
NS-22	1 3/8" UNF	12	2.244	2.559	1.201	15.9

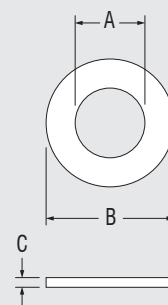
**Hex Nuts - Chrome Plated Brass. To ANSI B18.6.3.****IMPERIAL**

PRODUCT No.	THREAD TYPE	TPI	A in.	B in.	C in.	WEIGHT oz
NB-03*	#10 (3/16" UNF)	32	0.311	0.350	0.126	0.1
NB-04*	1/4" UNF	28	0.437	0.500	0.217	0.1
NB-05*	5/16" UNF	24	0.500	0.567	0.264	0.2
NB-06*	3/8" UNF	24	0.563	0.642	0.335	0.3
NB-08	1/2" UNF	20	0.748	0.850	0.433	0.6
NB-10	5/8" UNF	18	0.933	1.071	0.543	1.2
NB-12	3/4" UNF	16	1.114	1.272	0.622	2.0
NB-14	7/8" UNF	14	1.307	1.492	0.744	3.3
NB-16	1" UNF	12	1.488	1.701	0.866	5.0
NB-20	1 1/4" UNF	12	1.870	2.134	1.094	9.7
NB-22	1 3/8" UNF	12	2.244	2.563	1.201	16.9

*Nickel plated

**SS Flat Washers - Stainless Steel 316.****IMPERIAL**

PRODUCT No.	A in.	B in.	C in.	WEIGHT oz
WS-03	0.189	0.437	0.035	0.1
WS-04	0.252	0.563	0.047	0.1
WS-05	0.315	0.630	0.047	0.1
WS-06	0.374	0.748	0.047	0.1
WS-08	0.500	1.000	0.079	0.2
WS-10	0.630	1.496	0.079	0.5
WS-12	0.748	1.496	0.079	0.4
WS-14	0.874	2.000	0.118	0.8
WS-16	1.000	1.874	0.079	0.6
WS-20	1.252	2.756	0.118	2.3
WS-22	1.417	2.598	0.197	2.9



Quote/Order Form

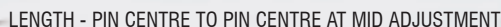
7

7

ORDER

Deposit included

These will be equispaced along length when used on assy unless otherwise specified with quote / order.



Other options available on request. Contact Ronstan to discuss your project needs.

Specification confirmed for production? YES / NO

Any other details relating to quote or order?

Fax: +1(401) 293 0538

Stainless Steel Considerations

Stainless steel generally has good natural corrosion resistance in common uses but can still suffer degradation and discoloration if subject to certain environmental, physical conditions or lack of suitable maintenance schedule and servicing. In general, clean and smooth surfaces are preferred to rough finishes to encourage a protective oxide layer to be maintained and enable stainless steel to remain bright. Specifying the cleaning & maintenance of stainless steel surfaces by regular washing to avoid staining and dirt marks is highly recommended, especially when used in more severe environments. Natural rain can often be sufficient to remove basic contaminants but more frequent scheduled cleaning may be required when products are used in inner urban and more aggressive environments. Technical advice on appropriate cleaning techniques for specific situations is available from specialist cleaning firms. Stainless steel representative associations are another good contact to consult for the most up to date advice. Information on material grades, selection, specification, end usage and other topics is also available from these organizations.

Stainless Steel Specialist Websites of Interest

Australian Stainless steel development association www.assda.asu.au
British stainless steel association www.bssa.org.uk

Specialty steel industry of North America www.ssina.com
European stainless steel development association www.euro-inox.org

Care & Use of Threaded Products

Ronstan produces and supplies many threaded items. All are made to the relevant thread standard, gauging processes and supplied under ISO9001 quality assurance system.

Stainless steel is a material which when used in male / female threaded elements and loaded with an applied torque can "Gall" or "cold weld". This occurs when the stainless steel oxide surface film breaks down as a result of direct metal to metal contact. Solid-phase welding takes place (whereby material is transferred from one surface to another via contact pick-up). The symptoms of galling include thread surface damage and permanent seizure of the thread. Galling can be minimized with the use of dissimilar metals. Ronstan generally supplies SS threaded items pre-assembled to ensure thread performance. Other Ronstan products uses brass alloys on turnbuckle ranges and use of brass nuts for the load carrying nuts as used in cable systems.

If using stainless steel male / female threaded systems, use of high pressure lubrication compound is required to help reduce the possibility of thread seizure. Care using these lubricated products is required to ensure threads stay clean during installation / service. Suitable clean up of lubricants after installation is required to avoid staining and grime build up.

Protection of threads during transport & in preparation for installation must be done to avoid any thread damage. Keeping threads wrapped until final installation is recommended. Threads must be clean of burrs, dirt, coarse grime or sand to help reduce the possibility of thread seizure and ensure the correct functionality of the product. Use of a secondary tensioning system for pre-stressing tension members on-site may be required to achieve the desired tension forces and avoid thread or product damage.

Contact your local Ronstan representative for any further assistance on these topics.

Quality Assurance

Ronstan holds full accreditation to ISO9001. Ronstan is committed to the design, manufacture, supply and installation of high, quality cable, rod and tensile architectural projects worldwide.

Environment and Sustainability

Ronstan is committed to reducing its impact on the environment through staff awareness and education, the use of responsible metal, paper, plastic and chemical recycling practices, water catchment-recycling for use within production processes, the use of energy efficient technologies which create advantages for the business and the environment. These initiatives are undertaken in conjunction with on-going government environmental programmes and other like-minded "Green" manufacturing and supply partners.



CUSTOMER CONSIDERATIONS

Factor of Safety

An appropriate factor of safety (>2) 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 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 Ronstan for further information.

Product Information Amendments

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

DEFINITIONS

Yield Load

Yield Load 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.RonstanTensile Arch.com

Ronstan Tensile Architecture also specialises
in providing architectural products for:

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

*Contact us for catalogues
or further information*

Australia

HEAD OFFICE - Victoria

Ronstan International Pty. Ltd.

19 Park Way, Braeside

Victoria 3195 Australia

+61 (0)3 8586 2000

architectural@ronstan.com.au

New South Wales Sales

0408 474 340

Queensland Sales

0417 309 582

Western Australia Sales

0408 951 878

USA

North American Head Office

Rhode Island

Ronstan International Inc.

45 High Point Avenue, #2

Portsmouth, RI 02871, USA

+1 401 924 2010

arch@ronstan.us

West Coast Sales

+1 510 590 8127