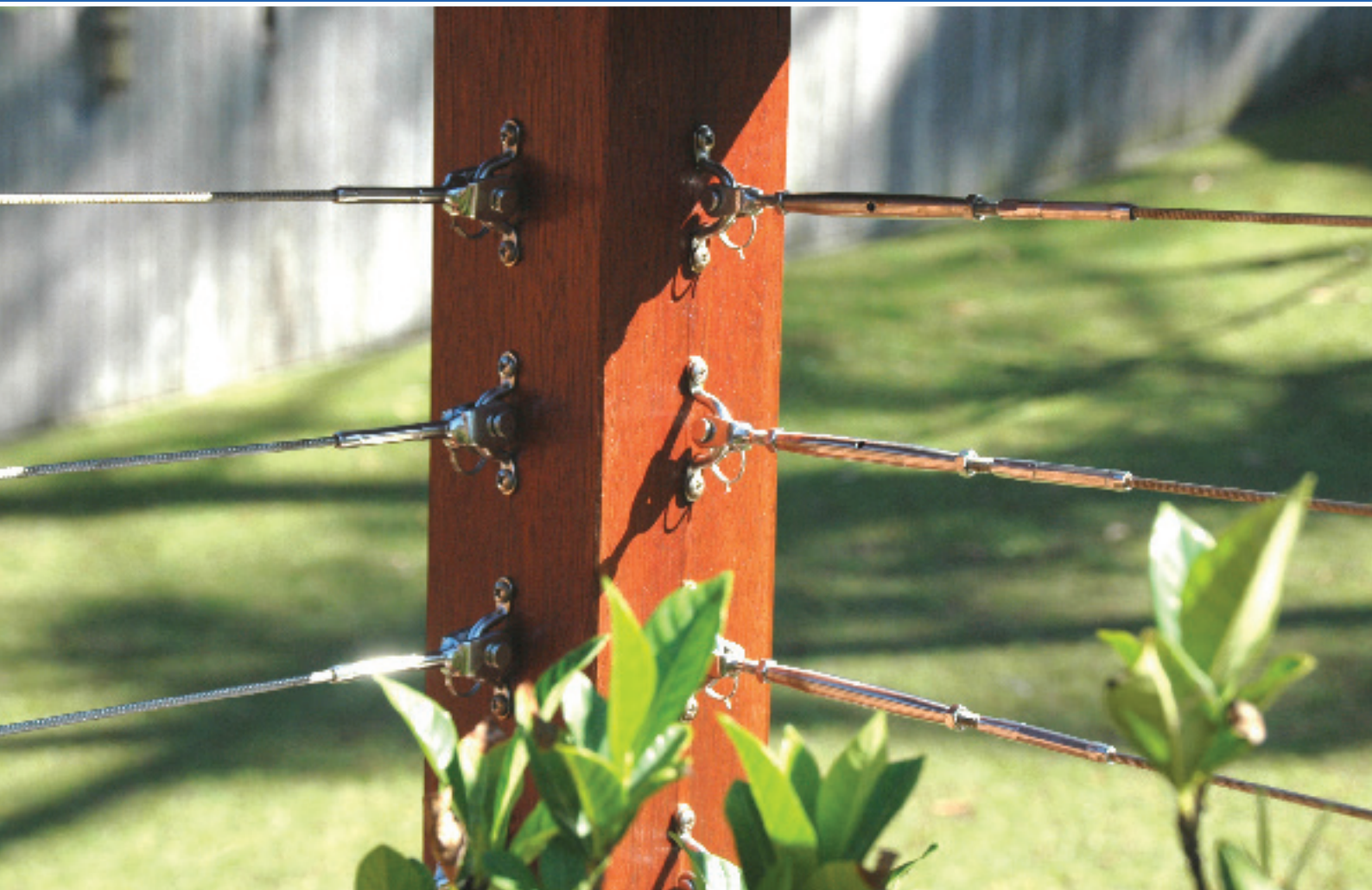




# DIY Stainless Balustrading The AAA way



# Introduction

The best decks are practical, look good and are safe. At AAA Metal Suppliers we can help you achieve a professional quality job, whilst saving you money. Our high quality wire and marine grade stainless fittings have proven themselves in the marketplace for many years and have been used by professional balustraders, builders and DIY customers with outstanding results.

This guide to DIY balustrading, using AAA Metal Suppliers fittings, will show you in easy steps how to achieve a professional looking result. All you need is a basic set of tools including a measuring tape and a drill. We can offer hydraulic pre-swaged wires cut to fit your posts together with the fittings of your choice or, if you prefer, we can supply you with the parts and tools needed to hand or hydraulically swage your balustrade fittings.

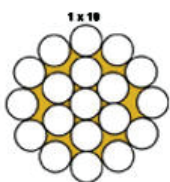
When you are ready just tell us the measurements between the posts you will be anchoring the wire from, the type of fittings you are after and we shall phone/fax/email a quote to you with a range of options that meet the Building Code of Australia (BCA) regulations. Any deck that is more than one metre off the ground has to have a balustrade or railing. The regulations also specify the types of materials allowed and the spacing between the wires. If you are building a new deck, or retrofitting a new balustrade to an existing deck, it's always good to check with your local council first. The distance between the wires and their ability to prevent small children from falling through is most important.

The cost of a wire balustrade depends on if you are having it professionally installed or if you are doing it yourself. AAA Metal Suppliers DIY Balustrade wires are exactly the same as we supply to the trade, but by doing it yourself, you will save many dollars and find the experience quite easy with our on call Technical and installation support. Together with our 100% lifetime guarantee, just like our many 1000's of satisfied customers, you can't go wrong.

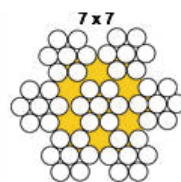
## Choosing the Look

First you will need to decide how you would like the finished job to look. Please take a look at the photos in the DIY Gallery at [www.aaametalsuppliers.com.au](http://www.aaametalsuppliers.com.au). They show some of the options available depending on whether you are using timber or steel posts or having the fittings hydraulically or hand swaged.

The most common wires used for balustrades are 3.2mm 1 x 19, 3.2mm 7 x 7 and 3.2mm 7 x 19 wire. 3.2mm refers to the diameter of the wire and 1 x 19, 7 x 7 or 7 x 19 refers to its construction, i.e. a 7 x 7 wire is made up of 7 wires with 7 strands within each wire.



**1 x 19** - Is a very rigid wire making it very well suited for wire balustrades, however it cannot be hand swaged, making it only suitable for hydraulic swaging.

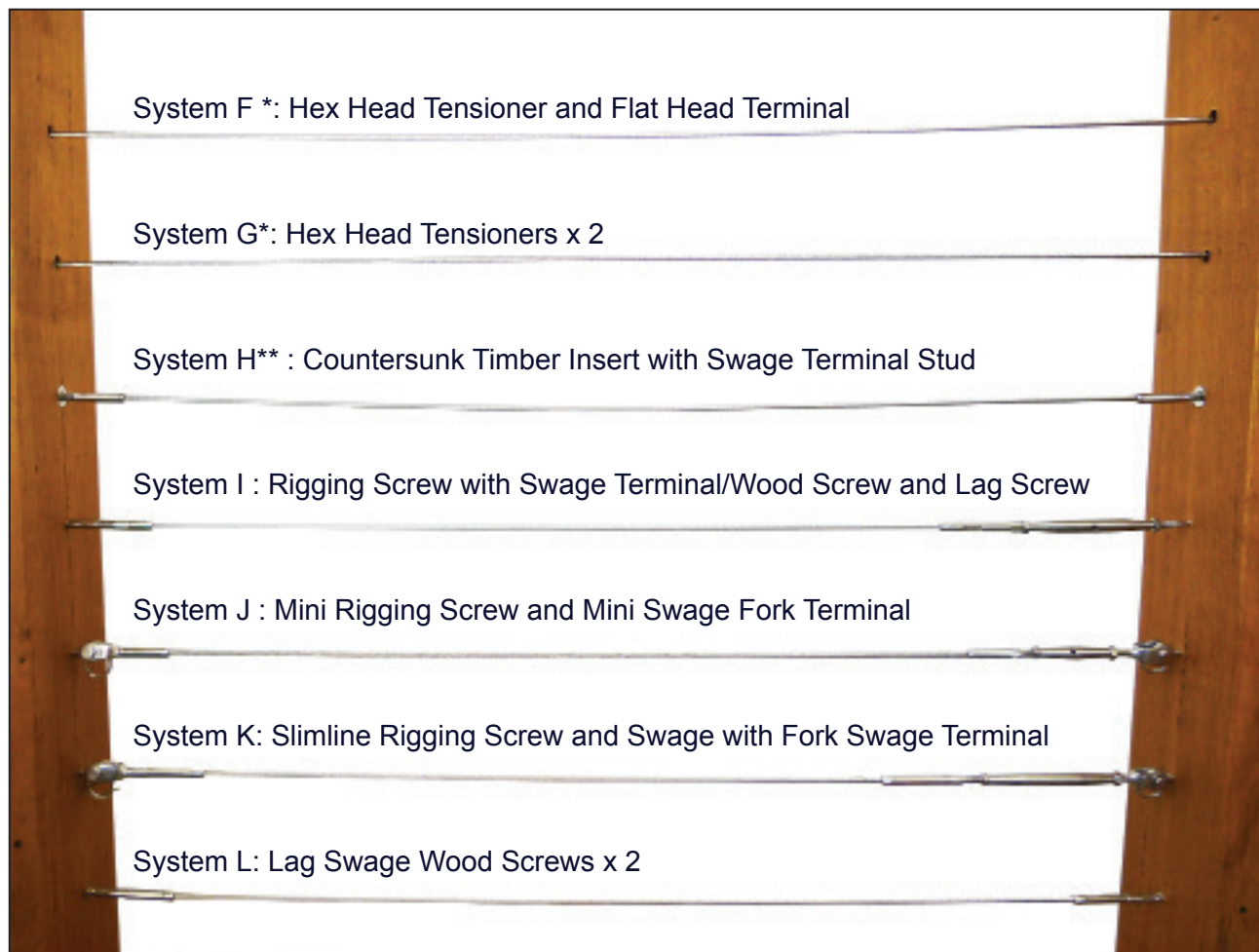


**7 x 7** - Is a semi flexible wire making it the perfect choice for balustrades where hand swaging is being used.

If you intend to hand swage the fittings yourself, use 7 x 7 or 7 x 19 wire rope with a thimble and ferrule at each end. The wire is tensioned using a Jaw/Jaw Rigging Screw. This gives a balanced, neat looking job.



Some DIY customers prefer the smoother line of hydraulically swaged fittings and 1 x 19 wire rope (swaging is undertaken in our workshop or we can hire you an hydraulic swager if you prefer). There are a variety of options available depending on whether you are using metal or timber posts.



\* Systems G and F are through wiring using hex head tensioning screws.

\*\* We also offer System S, especially suited for stainless tube and System M for masonry walls.

# The Building Code of Australia (BCA) WIRE BALUSTRADE REGULATIONS

Most Councils have adopted the BCA Regulations for the spacing, position and installation of stainless wire balustrading. A few have their own particular requirements and we recommend that you check with your local council's building department before commencing this work.

**If the bottom of your deck is less than 1 metre off the ground**, then the Regulations will not apply to you. You can decide the most appropriate level of safety, wire spacing, and how many support posts you use on your balustrade.

**If your deck has a drop of more than 1 metre to the area below and less than 4 metres** you will need to fit your wires and posts according to BCA Regulations. In order to satisfy the 2009 BCA Regulations for a horizontal wire balustrade your system must not exceed the maximum deflections set out in Table I

**If your deck has a drop of more than 4 metres to the area below**, you are not allowed to use horizontal wires and instead they will need to be vertical or you can use a mesh infill.

Runs of wire can only be installed in straight lines and must be terminated at each corner. We recommend a maximum length of any run to be 10 metres. If you have a straight line of over 10 metres you should terminate on one side of a centre post and start a new run on the other.

**TABLE I - WIRE BALUSTRADE CONSTRUCTION – MAXIMUM PERMISSIBLE DEFLECTION FOR STAINLESS STEEL WIRES, BCA 2009**

		Clear Distance Between Posts (mm)					
		600	900	1200	1500	1800	2000
Wire dia. (mm)	Wire spacing (mm)	Maximum permissible deflection of each wire in mm when a 2 kg mass is suspended at mid span					
2.5	60	17	11	9	8	8	8
	80	7	5	5	5	X	X
3.0	60	19	13	8	7	7	7
	80	8	6	6	5	5	5
4.0	60	18	12	8	8	7	7
	80	8	6	4	4	4	4
<b>Notes:</b>							
1	Where a change of direction is made in a run of wire the 2 kg mass must be placed at the middle of the longest span.						
2	If a 3.2 mm wire is used, the deflection figures for 3.0 mm wire are applied.						
3	This table may also be used for a set of non-continuous (single) vertical wires forming a balustrade using the appropriate clear distance between posts as the vertical clear distance between the rails. The deflection (offset) is measured by hooking a standard spring scale to the mid span of each wire and pulling it horizontally until a force of 19.6 N is applied.						
4	X = Not allowed because the required tension would exceed the safe load of the wire.						
5	This table has been limited to 60 mm and 80 mm spaces for 2.5 mm, 3 mm and 4 mm diameter wires because the required wire tensions at greater spacings would require the tension to be beyond the wire safe load limit, or the allowed deflection would be impractical to measure.						

### Decide how many wires your need?

As a general guide we have found that the easiest way to ensure that the tension required for your balustrade will pass inspection is as follows:

Using 3.2mm 1 x 19 wire with hydraulically swaged fittings

- Distance between any posts no greater than 1200mm

- 80mm spacing between wires

or

Using 3.2mm 7x7 or 7x19 wire with hand swaged fittings

- Distance between posts no greater than 1200mm
- 60mm spacing between wires



### Still confused?

If you wish to have greater distances between your posts and your job requires inspection, then posts may be further apart up to a maximum of 2m, but the trade off is your wire must be tensioned more tightly and spacing between wires reduced.

### How to test?

Hang a 2kg weight, a full 2lt milk container works well, in the mid point of your wire between posts and measure the difference in deflection. If the wire deflects more than the maximum permissible as per Table 1 then the wire needs to be tensioned further. However, we suggest you contact AAA Metal Suppliers for advice on the most appropriate fittings to use in your situation.

## Common Balustrade Fittings



Rigging Screw Jaw/Jaw (RSJJ-032)



Rigging Screw Jaw/Swage (RS-JS-53)



Counter Sunk Timber Insert (CST1)



Hex Head Tensioner (HTEN-R)



Swivel Connector (SWC-06)



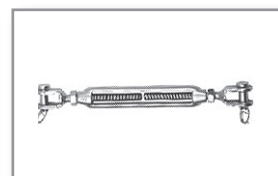
Fork Swage Terminal (FT-032)



Threaded Swage Terminal (TT-03205)



Lag Screw Swaged Terminal (LS-ST-032)



Turnbuckle Jaw/Jaw (TB-JJ-05)



Turnbuckle Eye/Eye (TB-EE-05)



Thimble (TH-03)



Saddle (SAD-05)



Ferrule (FE-MS-03)



Coach Screw Eye (CSE)



Lag Eye Screw (LS-06)



## Steps to Installing Hand Swaged Wire Balustrade Using 5mm Saddles as the Anchor Point



CHECK OUT THE VIDEO

**DIY BALUSTRADING**   
System A, B, C, D, E

### What's easiest for a first timer?

#### Step 1

Make up a template with desired wire spacings (i.e. 60mm, 80mm, 100mm).

#### Step 2

Drill holes in the template 20mm either side of the desired wire spacings to locate the screw points/pop rivets for the saddles.

#### Step 3

Clamp template to anchor post.

#### Step 4

Using a 3mm drill, drill out holes for screwing in the saddles

#### Step 5

Drill new holes in the template at the desired wire spacings. These holes must line up with the middle of the saddles or your wires will not be parallel.

Step 1



Step 2

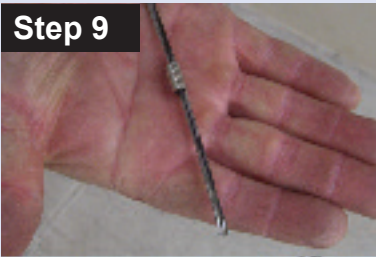


Step 3



Step 4



**Step 7****Step 9****Step 10****Step 12****Step 6**

Clamp template to intermediate posts, if any, and drill holes. If grommets are to be inserted into intermediate posts a 9.0mm hole is required.

Measure and cut the length of the wire required. Wire must be 7x7 or 7x19 construction.

The length of wire can be calculated using the following formula:

- A. The length inside to inside of posts
- B. The overall length of the rigging screw/turnbuckle in a semi open position (minimum of 25mm of thread exposed at each end).
- C. The inside height of the saddle at each end (approx 10mm for SAD-05 saddles)
- D. The wire loop around the thimble and ferrule on each end of wire (approx 50mm for 3.0mm thimbles)

Length of wire = A-B-2C+2D

**Step 7**

Cut the wire with parrot beak wire cutters, not pliers. Hint: If using 3.2mm diameter wire, mark 85mm back from each end of the wire with a marker pen. This is where the back of the ferrule should end.

**Step 8**

Slip the wire through the intermediate post holes before commencing swaging. Split grommets can be fitted after installation is complete.

**Hand swaging the ferrule****Step 9**

Slip the ferrule over the main wire and loop the end of the wire also into the ferrule. Using pliers to hold the ferrule in place pull the main wire down onto the thimble until the wire holds the thimble in position. Ideally the thimble should be held firmly inside the loop of the wire but this is not critical. For safety and aesthetic reasons it is best that the very end of the wire does not protrude beyond the end of the ferrule.

**Step 10**

Using the hand crimper with the correct jaw size place the ferrule/thimble/wire into its jaws and squeeze handles fully together to crimp the ferrule onto the wire. Note: Different size ferrules require different size jaw openings.

**Step 11**

Slip the saddle through the eye of the thimble and attach to the post using 8 gauge screws or pop rivets depending on post type.

**Step 12**

Tension the wire strands by rotating turnbuckle/rigging screw.

**We recommend that you make up one wire and test it in position before doing multiple runs. If OK, repeat for the other wires.**

# Steps to Installing hydraulically swaged wire balustrade

(single point anchors such as lag screw eyes, coach screw eyes, eye bolts)



## What's easiest for a first timer?

### Step 1

Make up a template with desired wire spacings.

### Step 2

Clamp template to post.

### Step 3

Using suitable sized drill, drill out holes for fixing anchor points.

### Steps 4A and 4B

Attach anchor points. Hint: Use the socket tool, LS-tool, to drive the lag screw into the post. If using saddles use 8 gauge screws to attach to post.

### Step 5

Clamp template to intermediate posts, if any, and drill holes. Note: If using pre-swaged wires 7.5mm (min) hole is needed for the wire to pass through the holes. If grommets are to be inserted into intermediate posts a 9.0mm hole is required.

### Step 6

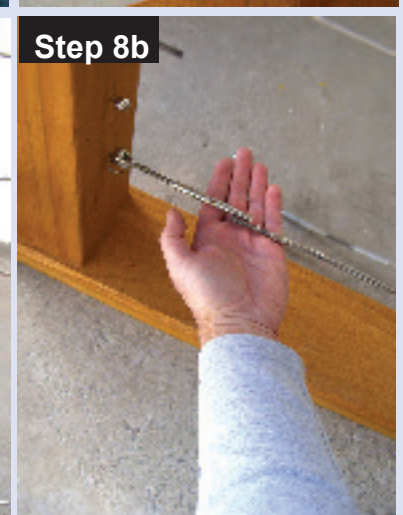
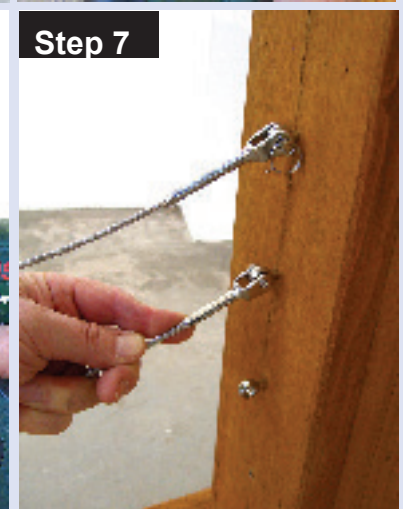
If wires are factory swaged, lay out wires with the adjustable ends in their intended position, otherwise go to step 11.

### Step 7

Attach non adjustable end (e.g. fork terminal, button terminal) to your anchor point.

### Step 8

Undo threaded terminal end from the rigging screw.







**Step 10**

**Step 9**

Feed the wire through the intermediate post. Split grommets can be fitted after installation is complete.

**Step 10**

Re attach threaded terminal end to rigging screw and tension as required using the C-Spanner.

**Step 11**

Measure and cut the length of the wire required. The length of wire can be estimated as follows, depending on the System you are using. As a guide:

- F : -75mm measured to outside of post
- G : -150mm measured to outside of post
- H : -40mm to 55mm measured to inside of post
- I : -180mm measured to inside of post
- J : -140mm measured to inside of post
- K : -210mm measured to inside of post
- L : -50mm measured to inside of post (approximately)
- S : -55mm measured to inside of post



**Step 12**

**Step 12**

Cut the wire with parrot beak wire cutters, not pliers.

**Step 13**

Slide the wire into the swage end of the fitting.



**Step 13**

**Step 14**

Hydraulically swage the fittings to the wire. Then go to step 7.



**Step 14**

**Want to do the hydraulic swaging yourself?**

We can hire you an easy to use hydraulic swager and a wire cutter for \$50 for two weeks (customer pays for return freight). Step by step instructions come with the hydraulic swager.



## Installing wire balustrade with threaded inserts (System H)

### Step 1

Use a template clamped to the post to drill out the holes for inserts.



### Step 2

Screw in the inserts (Left and right hand inserts must be fitted at opposite ends).

### Step 3

Screw swaged wires into the inserts to the desired tension.



## FLEXMESH



Made from high quality ASIS 316 marine grade stainless cable and secured with seamless stainless ferrules for added strength, FLEX Mesh offers an aesthetically pleasing, cost competitive, low maintenance barrier or plant trellis for commercial projects.

The thin stainless wire rope mesh is ideally suited for light, transparent structures under extremely high loads in harsh environments. Where fall protection and transparency are required, such as mezzanine floors, this stainless mesh can be combined as an integral part of the architectural structure.

FLEX Mesh is ideal for Green Walls or a stainless balustrade infill. It can be installed using traditional stainless tubes or strong stainless tensioning cables.

FLEX Mesh's 3D flexibility provides a light and almost invisible fall protection barrier for bridges, staircases, marinas and multi-storey carparks, large barrier fences and wildlife enclosures.

Manufactured to ISO9001 Standards, each piece of FLEX Mesh is custom made in cable diameters from 1.2mm to 4mm and diamond sizes from 25mm (MW) x 43mm (MH) to 180mm (MW) x 312mm (MH).



# DIY Stainless Steel Handrails

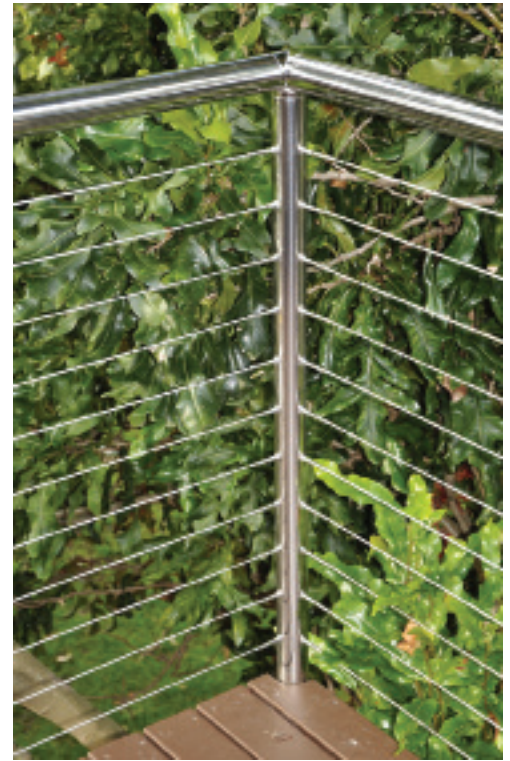
Although stainless steel posts and handrails are more expensive than timber or aluminium, they offer that high quality, much admired look that pays for itself year after year.

AAA Metal Suppliers marine grade stainless steel handrails are easy to install and require no welding or repolishing. Look through our range of systems and choose the items that suit your project; send us a sketch or photo showing the measurements.

We have a full selection of handrail fittings and can pre-swage your balustrade wires to fit. For the handy person who wants the full DIY experience, we offer instructions and advice when needed.

## Need a stainless stairway handrail?

AAA Metal Suppliers' range of stainless steel fittings includes adjustable components to suit sloping areas, making it easy to design your handrail to suit stairs or ramps. For many years, installing wires at an angle has been difficult. But with our patented self-adjusting swivel fittings you can easily install slimline balustrade wires. All you need is an anchor hole that allows the stainless swivel fitting to screw into it.



## Let us help!

Simply call, fax or email us and we will be happy to discuss the best options to achieve the look you're after and save you money.



## Common Balustrade Fittings



## Care of Stainless Steel Balustrade

Although stainless steel keeps its lustrous finish even under adverse conditions, it still needs regular cleaning. Regular washing with soapy water or detergent using a clean cloth, or if necessary, a soft bristle brush will help to prevent discoloration of the wire and a yellow stain known as “tea staining”.

AAA Metal Suppliers recommends applying a coat of car wax or stainless steel protectant as soon as your wires are installed. Use a soft cloth and wipe a liberal coating of wax over your wires or stainless tube in the direction of the grain of the stainless steel. This will help to seal the crevices in the wire rope and stop dirt from becoming embedded in the twists of wire rope. Repeat every 4-6 months, depending on the environment.

Do not use steel wool or metallic scrapers to remove non-washable deposits. Particles from steel wool can cause inset rusting. Also avoid cleaners containing harsh abrasives or those with a high bleach content.

Australian made “Marine Stainless 2 in 1” removes dirt, grime and tea staining from stainless steel and creates a long lasting protective barrier on all stainless steel surfaces. This cleaner is easy to apply, acid-free and weatherproof.



## Plan, Measure and Quotation

To become another of our many satisfied customers and experience the ease of installation, enjoy the savings and marvel at the professional looking job you can create, simply make a note of the following checkpoints and send your details to us, along with a plan.

- the balustrade or handrail system you would like
- the distances between the anchor points (inside to inside)
- the number of panels you need to fill (between anchor points)
- how many intermediate posts you have in each panel
- the height of your deck off the ground
- the height of the handrail and number of wires you require

Now, to make it happen, all you have to do is contact us.

**Call our expert staff on 02 4272 1077** or if it's easier for you, email us at [sales@aaametalsuppliers.com.au](mailto:sales@aaametalsuppliers.com.au) and we'll be happy to discuss your requirements.

### Important Disclaimer

The recommendations contained in this publication are necessarily of a general nature and should not be relied on for specific applications without first obtaining competent advice. Whilst we have taken all reasonable steps to ensure the information contained herein is accurate and current, we do not warrant the accuracy or completeness of the information and do not accept liability for errors or omissions.

**AAA METAL SUPPLIERS**  
UNIT 2 / 20 Doyle Avenue Unanderra NSW 2526  
Tel: 02 4272 1077 Fax: 02 4272 1366  
Email: [sales@aaametalsuppliers.com.au](mailto:sales@aaametalsuppliers.com.au)  
Website: [www.aaametalsuppliers.com.au](http://www.aaametalsuppliers.com.au)

