22 TECHNICAL INFO

ECO-FRIENDLY - 100% RECYCLABLE

Aalco steel elements are 100% recyclable: they can be recycled to produce new objects.

IAM DESIGN® INNOVATION ARCHITECTURAL METAL

K2 PROTECTION FROM FALLING

Siting of pedestrian guarding

For all buildings

3.1 Provide guarding in all of the following locations:

a. where it is reasonably necessary for safety to guard the edges of any part of a floor (including the edge below an opening window), gallery, balcony, roof (including roof lights and other openings), any other place to which people have access, and any light well, basement or similar sunken area next to a building.

b. in vehicle parks.

NOTE: You do not need to provide guarding in the following locations:

a. on ramps used only for vehicle access

b. in places such as loading bays where it would obstruct normal use.

Design of guarding

For all buildings

3.2 Guarding should be provided in accordance with all of the following.

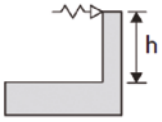
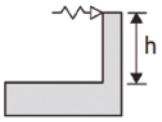
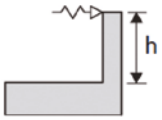
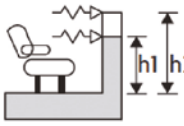
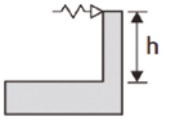
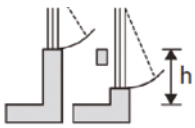
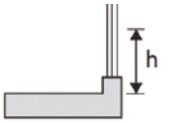
a. Ensure that guarding is, as a minimum, the height shown in Diagram 3.1.

b. You can use any wall, parapet, balustrade or similar obstruction as guarding.

c. Ensure that guarding can resist, as a minimum, the loads given in BS EN 1991-1-1 with its UK National Annex and PD 6688-1-1.

NOTE: Typical locations for guarding are shown in Diagram 3.2. For further guidance on the design of barriers and infill panels, refer to BS 6180.

Diagram 3.1 Guarding design

Building Category and location See paras 3.2 and 3.4		**Height (h)**	
Single family dwellings	Stairs, landings, ramps, edges of internal floors	900mm for all elements	
	External balconies, including Juliette balconies and edges of roof	1100mm	
Factories and warehouses (light traffic)	Stairs, ramps	900mm	
	Landings and edges of floors	1100mm	
Residential, institutional, educational, office and public buildings	All locations	900mm for flights otherwise 1100mm	
Assembly	Within 530mm in front of fixed seating	800mm (h1)	
	All other locations	900mm for flights elsewhere 1100mm (h2)	
Retail	All locations	900mm for flights otherwise 1100mm	
Glazing in all buildings	At opening windows except roof windows in loft extensions, see Approved Document B1	800mm	
	At glazing to changes of levels to provide containment	Below 800mm	

K2 PROTECTION FROM FALLING

3.3 In a building that may be used by children under five years of age during normal use, guarding should be constructed in accordance with both of the following.

a. To prevent children being held fast by the guarding: ensure that a 100mm sphere cannot pass through any openings in the guarding.

b. To prevent children from readily being able to climb the guarding: avoid horizontal rails.

Guarding of areas used for maintenance
For all buildings

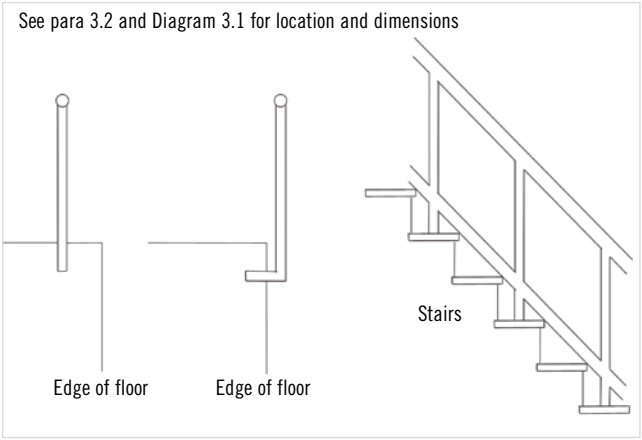
3.4 Where people will use the stairs or ladders to access areas for maintenance they should comply with one of the following.

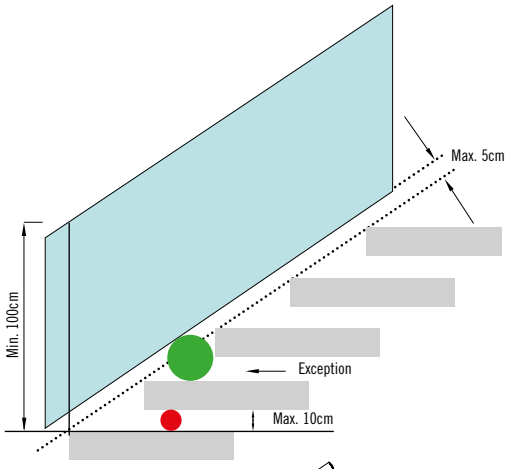
a. If access will be required frequently (e.g. a minimum of once per month): follow provisions such as those suggested for dwellings in this Approved Document (see Diagram 3.1).

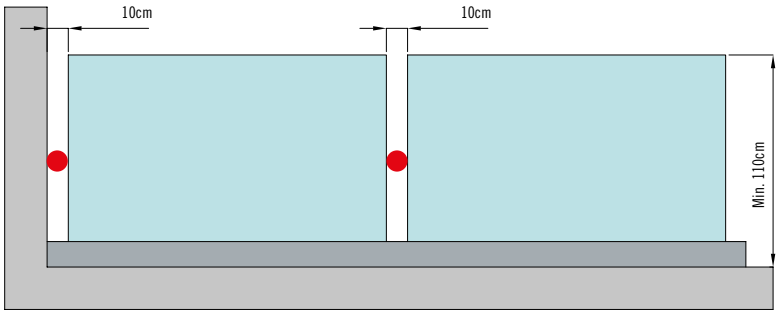
b. If access will be required less frequently than once a month: it may be appropriate to use temporary guarding or warning notices. The Construction (Design and Management) Regulations 2007 and the Work at Height Regulations 2005 give provisions for such measures.

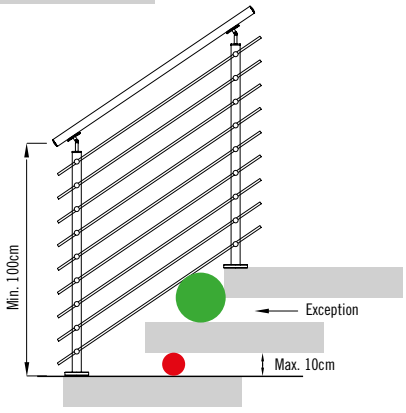
3.5 Use signs as specified in the Health and Safety (Safety Signs and Signals) Regulations 1996.

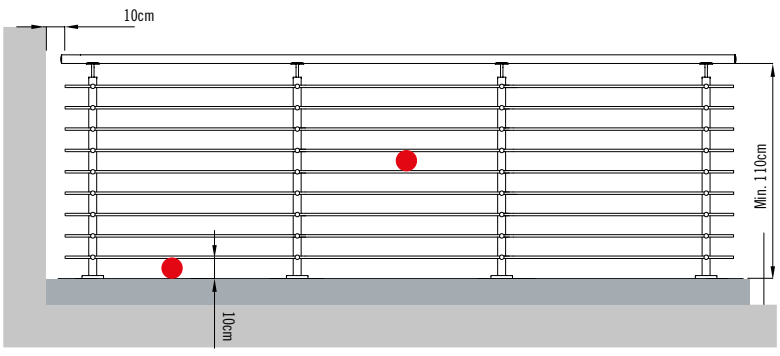
Diagram 3.2 Typical locations for guarding

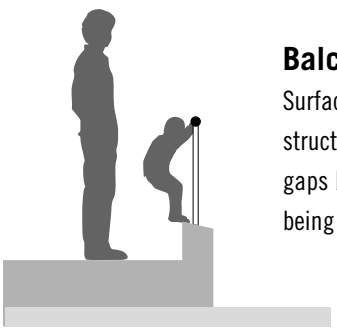












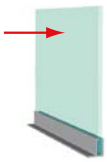
Balconies & Regulations

Surfaces representing a fall risk from a height of 50cm or more must be safeguarded by a protective structure. The minimum height of the structure must be 100cm for stairs and 110cm for balconies, with any gaps between a maximum of 10cm. This is to prevent climbing from/onto the balcony and to avoid children being able to squeeze through gaps.

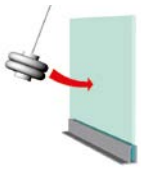
TESTING

Achieving the highest standards in terms of quality and safety has always been a prime focus for us.
Our range of standard components have all been tested to exacting criteria, with full supporting test documentation available. We can also arrange for appropriate testing of bespoke manufactured products.
There is a dedicated test facility at IAM Design which is used to ensure that the systems and components meet the required functional and performance standards required. The tests are conducted by qualified experts before, during and after production to ensure comprehensive analysis is achieved. The resulting data is then fed into ongoing research and development to further enhance the performance of our handrail systems.
This in-house testing is also backed by third party certification whereby the products are submitted to independent test houses to ensure conformance with the appropriate standards. Certification has been achieved for the standards in force in many European countries.

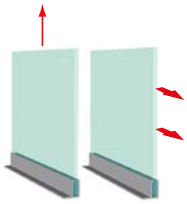
Testing procedures are designed to cover a range of functional and performance criteria including:



HORIZONTAL PRESSURE RESISTANCE
This test adopts the parameters required in Regulation (UN) eN 1991-1-2, UNI 10806: 1999 D.M 14/01/08. It examines the mechanical resistance to loads in railings, balustrades and balconies. Break loads are calculated by applying horizontal thrust forces up to the handrail for a defined time period.



IMPACT RESISTANCE
This test requires a moving body to crash into the most critical point on a piece of glass held in position by Glass U profiles. The 1.5 metre long pendulum, weighing 50kg, passes through 30 degrees from the point of release to impact. The procedures for the test are contained within UNI EN 12600: 2004, while the mechanical resistance is covered under UNI 1087:1999.



TRACTION RESISTANCE
Based on the Regulation UNI 10808: 1999, this test is designed to calculate the mechanical resistance to loads in ready-made railings, balustrades and balconies, establishing the size, features and mechanical performance depending on their final use and location.

CORROSION RESISTANCE
Regulation UNI EN ISO 9227:2012 relates to this test which measures the effects of neuter salt mist (NSS), acetic salt mist (AASS) and cupro acetic salt mist (CASS) on metal products. It evaluates their corrosion resistance, with and without anti-corrosion protection. The items under test are placed in a room in which a 5% NaC1 saline solution is emitted with a Ph from 6.5 and 7.2 and at a fixed temperature of 35°C for a duration of 120 hours.

CE MARKING & CERTIFICATIONS

EN 1090-1 - CE LABELLING FOR STEEL OR ALUMINIUM STRUCTURAL ELEMENTS

Our products are CE marked to the relevant requirements: EN 1090 – 1:2009/EC 1-2011, which has been in place since 1 July, 2014. This relates to the provision of CE marking on aluminium and steel structure elements in construction, from metal stairs to lofts, from roofing to entire buildings (or part thereof). This means that it can cover the requirements of a whole building, a single element or even just a simple detail. It therefore specifies an appropriate level of quality in terms of safety, whatever the metal product, providing the peace of mind that it complies with the requirements for its expected use.

CE

MARKING

DESIGNED ON THE BASIS OF EN1090-1
CE Marking states that the product is assessed before being placed on the market and meets EU safety, health and environmental protection requirements

ACTIVITIES	METHOD 1	METHOD 2	METHOD 3A	METHOD 3B
Calculations of the structural project for a single element	**NONE** (except for production, storage and loading phases)	**YES** Based on Eurocodes	**NONE** Calculation provided by customers (except for production, storage and loading phases)	**YES** Based on National Legislation (DM 14/01/08)
Basis of production	**MPCS** Specifications of the component provided by the manufacturer	**MPCS** Specifications of the component provided by the manufacturer	**MPCS** Specifications of the component provided by the manufacturer	**MPCS** Specifications of the component provided by the manufacturer
Statement on elements features	Information about **structure and materials**, useful for estimates and structural calculations	Delivered elements must be in agreement with EN1090-1 rule, with reference to Eurocodes and resistances given as distinctive value, or projects	Delivered elements must be **in agreement with project's** spec set by the customer	Delivered elements must be **in agreement with project's** spec set by the producer or so as to national legislation planning

ISO 14001

ISO 9001

Certification: we obtained the ISO 9001 Quality Certification about 15 years ago. Such certification enables us to monitor the company processes and to further increase the already high quality of our products and the services that we offer.
Environmentally friendly: since 2006 we are certified according to the ISO 14001 standards.

MATERIALS & FINISHES

AISI304

AISI 304 Stainless Steel

This is an alloy with a Cr content of 18%-20% and a Ni content of 8%-11%. It is the most widely utilised stainless steel in the world, representing more than half of the total, and is ideal for interior applications.

AISI316

AISI 316 Stainless Steel

This alloy has a Cr content of 16%-18%, a Ni content of 11%-14% and a Mo content of 2%-3%. The latter ensures a better corrosion resistance so makes it ideal for exterior use. In particularly challenging external environments, a mirror finish version of AISI 316 is recommended as this offers even greater resistance to the effects of atmospheric agents, pollutants and chlorides associated with seaside locations.

AISI316 MIRROR

IRON

Galvanised Iron

This Fe360B galvanised iron costs less than stainless steel but is more prone to corrosion. To help address this, it is hot dip galvanised and is a cost-effective option for external locations.

ALU

Aluminium

The aluminium we use in our systems is anodised and brushed. The anodising process chemically changes the material surface to make it longer lasting and more resistant to the effects of oxidisation. The brushed finish provides a surface similar to that of glazed stainless steel, offering a more cost-effective solution for both interior and exterior applications.

The appearance of stainless steel can take many forms, depending on the type of finish that is applied to the metal. Those commonly used in architectural applications include:

Satin Finish

Satin finish is mechanically achieved thanks to 400 micron abrasive strips that give the steel a polished effect.

Mirror

This mechanical finish employs abrasive brushes to polish the surface and increase corrosion resistance.

Electropolishing

Using an electrochemical procedure, irregularities are removed from the item's surface, not only making it smoother but also increasing its reflective properties. Aesthetically, the reflection is equal to that achievable through mechanical polishing procedures. In terms of practicality, a smoother surface also enhances corrosion resistance as it reduces the possibility of the surface retaining contaminating particles. It also makes it easier to clean.

Colours

All Glass U profiles and Aalco stainless steel products can be powder coated. This a process through which metallic surfaces are covered with an organic film. This has benefits in terms of both aesthetics and protecting against strong agents. For exterior applications, galvanising is recommended prior to painting. In addition to all RAL colours, other finishes are available, including textured. Please contact us for further details.

MATERIALS & FINISHES

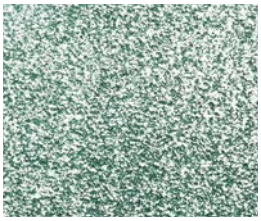
Powder Coating

All Glass U profiles and Aalco's stainless steel products can be powder coated. Powder coating is a metallic surfaces covering procedure done with an organic film; that is created both for decorative purposes and corrosion and strong agents protection. If stainless steel items are placed outside, it is recommended to have them galvanised before painting. In addition to all RAL colours, several finishes are available on demand.

Textured finishings

Code: YAC 180 P

Code: R 283 SOP



Code: MCB 105 Z

Code: SA 161 P

Code: YAA 111 P

Code: YAB 062 P

Upon request, the profile can be supplied with a special primer, which can be coloured with any mural painting.

Handrails

Aalco offers a wide variety of stainless steel handrails, with mechanical hooks, finishing tops, pillars and angle brackets also coordinated with the special colour finishes of the profiles. Combination with wooden handrails, in different styles, is also available. The wood we employ comes from sustainably managed forests.

Ø 33.7mm
Ø 42.4mm
Ø 48.3mm

◫ 40 x 40mm

Ø 42mm

AISI316 SAT | AISI304 SAT | 316 MIRROR | IRON

NATURAL | BEECH | WENGÈ

Ø 42.4mm
Ø 48.3mm

◫ 25 x 25mm

Ø 42.4mm

◫ 40 x 40mm

AISI316 SAT | AISI304 SAT | 316 MIRROR

NATURAL | BEECH | WENGÈ

MAINTENANCE & CLEANING

To ensure the handrail systems are maintained in optimal condition, Aalco has developed a line of cleaning products specifically designed to remove polluting elements and recreate the original film protection on the metal's surface. A combination of the products can even help to restore a damaged surface.
For general cleaning, a damp soft rag should be used, with no solvent or abrasive material, with the surface then dried to avoid limestone stains. Cleaning at least once a year with Aalco products is highly recommended. In locations subject to particularly high levels of pollution, such as inner cities or coastal locations, cleaning intervals of 1 to 2 months are recommended (or as soon as stains appear).

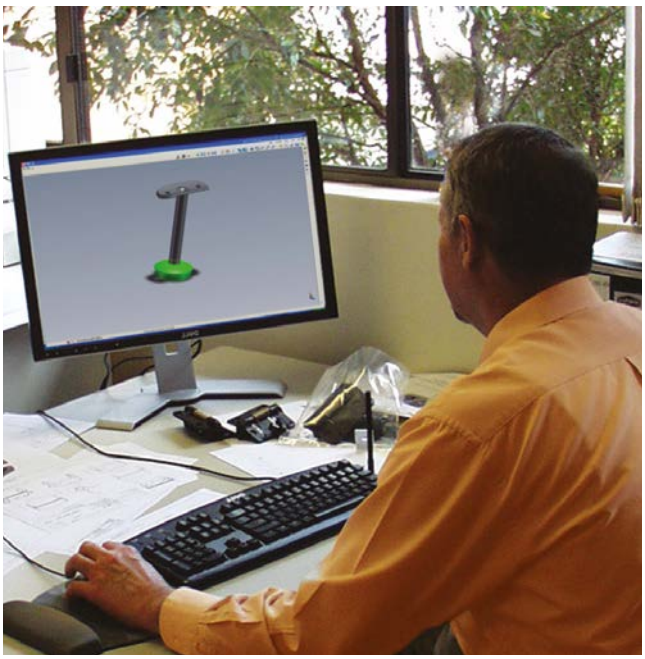
RESEARCH & DEVELOPMENT

The needs of our customers are always foremost in what we do as a business. We listen to their requirements and feed back to a team of designers and engineers who are constantly working to develop new products and to further improve our existing range.

As customers discover new and innovative ways in which handrail systems can be employed in increasingly diverse applications, so we look at how our products can work with different materials to perform both aesthetically and structurally. Ease of installation is also a constant focus in the R&D that we undertake. That applies not only to how our own handrail systems are installed but also to how they can integrate with and enhance other architectural features.

Flexibility to accommodate a wide range of different scenarios is a fundamental consideration in developing new additions to the range.

Alongside our extensive range of off-the-shelf products, we can also work with architects and designers to develop bespoke items to meet specific needs. Further information is available from our Bespoke Fabrication Service section of the website.

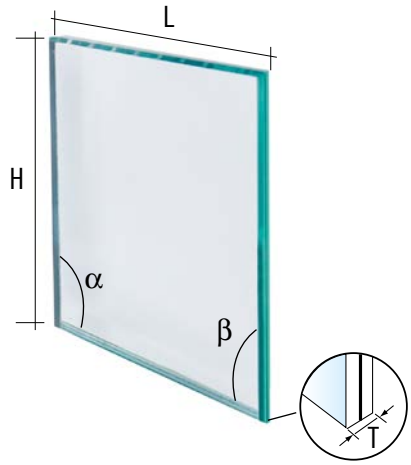


BENDING SERVICE

WE OFFER A BENDING SERVICE ON REQUEST. CONTACT US AT YOUR LOCAL SERVICE CENTRE

QUOTE OR ORDER FORM - GLASS

ASK FOR YOUR SPECIFIC GLASS



Quantity _____ mm

Height **H** _____ mm

Width **L** _____ mm

α _____

β _____

Thickness **T**

Monolithic glass

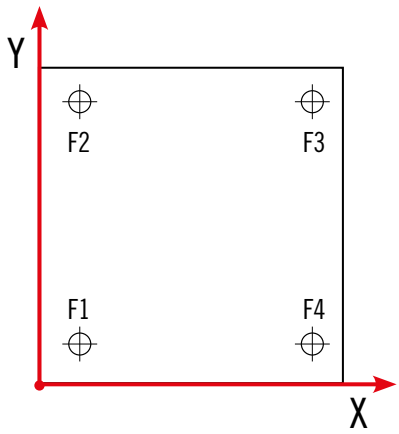
- ☐ 6mm
- ☐ 8mm
- ☐ 10mm
- ☐ 12mm
- ☐ 15mm
- ☐ Other _____

Laminated glass

- ☐ 6.76mm
- ☐ 8.76mm
- ☐ 9.52mm
- ☐ 12.76mm
- ☐ 16.76mm
- ☐ 17.52mm
- ☐ 21.52mm
- ☐ Other _____

☐ Without holes

☐ With holes



Holes: _____

Ø/dia Holes: _____ mm

Holes position (x-y): _____ mm

Centre of the hole	X	Y
F1	mm	mm
F2	mm	mm
F3	mm	mm
F4	mm	mm

Name _____ Post Code _____

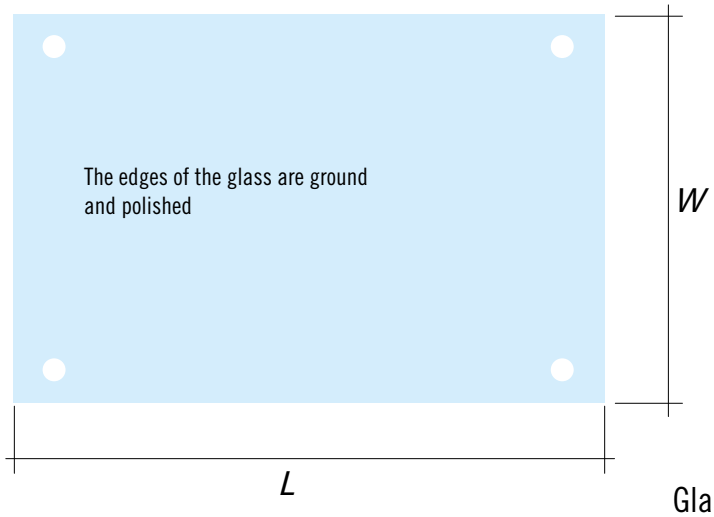
Company _____ Tel _____

Address _____ E-mail _____

FOR A QUOTE OR TO PLACE AN ORDER, COMPLETE FORM AND FAX OR E-MAIL TO YOUR LOCAL SERVICE CENTRE

QUOTE OR ORDER FORM - CANOPY GLASS

GLASS FOR CANOPIES



Model: _____

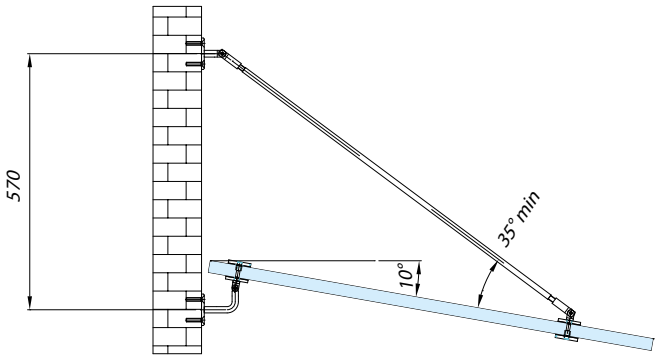
Quantity: _____

L: _____

W: _____

Glass Thickness

8+8 ☐ 10+10 ☐ 12+12 ☐



Tempered Glass

YES ☐ NO ☐

Glass Inclination _____

NOTES:

_____

_____

_____

_____

Name _____ Post Code _____

Company _____ Tel _____

Address _____ E-mail _____

FOR A QUOTE OR TO PLACE AN ORDER, COMPLETE FORM AND FAX OR E-MAIL TO YOUR LOCAL SERVICE CENTRE

QUOTE OR ORDER FORM - CUSTOM NEWEL POSTS

CUSTOM NEWEL POSTS WITH OR WITHOUT ROUND BAR HOLDERS

☐ QUOTE ☐ ORDER

Name _____ _____

Company _____ Post Code _____

Address _____ Tel _____

_____ E-mail _____

DELIVERY

STANDARD ☐
Estimated **10** workings days

EXPRESS ☐
Estimated **3** working days

QUANTITY

NO. _____

Notes ! Optional

_____

_____

_____

_____

1 MATERIAL AND FINISHING — ! SELECT ONE SQUARE

AISI304		AISI316		IRON		
☐ SATIN FINISH	☐ MIRROR POLISHED	☐ SATIN FINISH	☐ MIRROR POLISHED	☐ RAW, UNFINISHED	☐ GALVANISED	☐ GALVANISED AND PAINTED

RAL _____

2 HEIGHTS — ! COMPLETE ALL THE FIELDS

H1 _____ H3 _____

H2 _____ Htot _____

3 NEWEL POST DIMENSIONS — ! SELECT ONE SQUARE

☐ Ø 33.7 x 2.0mm ☐ Ø 48.3 x 2.0mm ☐ OTHER

☐ Ø 42.4 x 2.0mm ☐ 40 x 40 x 2.0mm _____

4 HANDRAIL SUPPORT — ! SELECT ONE SQUARE

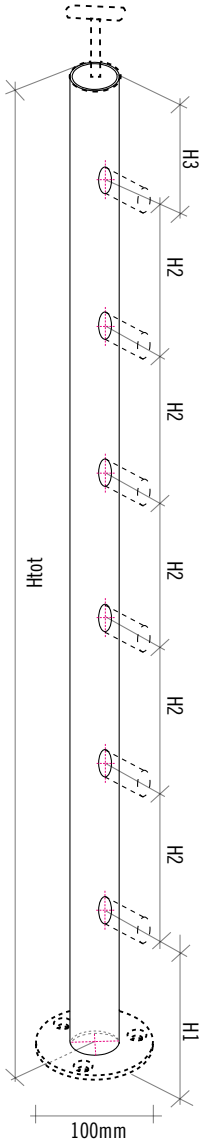
☐ Fixed

☐ Pivotable

☐ Nothing

☐ OTHER
CODE. _____

THE CORNER POSTS HOLD A MOUNTING PLATE AT 90°



Fields - 5A and 5B are alternative options (choose accordingly)

5A ROUND BAR HOLDERS — ! SELECT ONE SQUARE FOR EACH OF THE 3 FIELDS

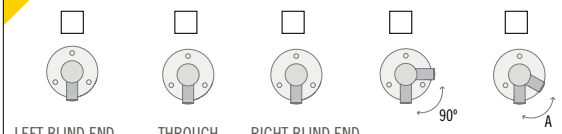
1 FOR ROUND BAR

☐ Ø 10MM
☐ Ø 12MM
☐ Ø 14MM
☐ OTHER
CODE _____

2 NO. RANGE ROUND BAR

☐ 5
☐ 7
☐ 9
☐ _____
OTHER

3 POSITIONING



☐ LEFT BLIND END ☐ THROUGH ☐ RIGHT BLIND END

A = _____

MINIMAL ANGLE: A ≥ 65°

5B HOLE — ! SELECT ONE SQUARE FOR EACH OF THE 3 FIELDS

1 PLAIN

☐ Ø 4.2mm ☐ Ø 10.2mm
☐ Ø 5.2mm ☐ Ø 12.2mm
☐ Ø 6.2mm
☐ Ø 8.2mm ☐ Ø 14.2mm

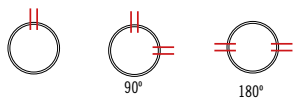
THREADED

☐ M6
☐ M8
☐ M10

2 NO. HOLES FOR NEWEL POST

TOTAL _____

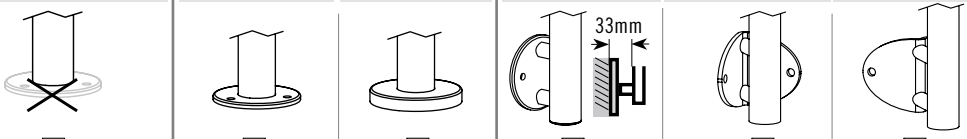
3 POSITIONING HOLES



☐ BLIND HOLE ☐ HOLE 90° ☐ HOLE 180°

6 ANCHORAGES — ! SELECT ONE SQUARE

WITHOUT ANCHORAGE	FLOOR ANCHORAGE		LATERAL ANCHORAGE		
	Without Cover	With Cover	Flat	Ext. angle	Int. angle



☐ ☐ ☐ ☐ ☐ ☐

QUOTE OR ORDER FORM - CUSTOM NEWEL POSTS

CUSTOM NEWEL POSTS WITH GLASS HOLDERS

☐ QUOTE ☐ ORDER

Name _____ _____

Company _____ Post Code _____

Address _____ Tel _____

_____ E-mail _____

DELIVERY

STANDARD ☐
Estimated **10** workings days

EXPRESS ☐
Estimated **3** working days

QUANTITY

NO. _____

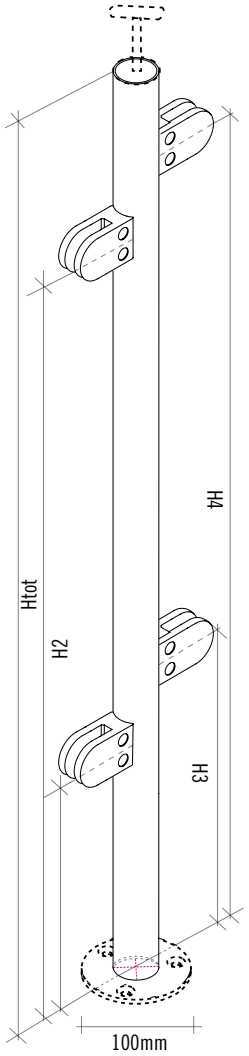
Notes ⚠ Optional

_____

_____

_____

_____



1 MATERIAL AND FINISHING ⚠ SELECT ONE SQUARE

AISI304		AISI316		IRON		
☐ SATIN FINISH	☐ MIRROR POLISHED	☐ SATIN FINISH	☐ MIRROR POLISHED	☐ RAW, UNFINISHED	☐ GALVANISED	☐ GALVANISED AND PAINTED

RAL _____

2 HEIGHTS ⚠ COMPLETE ALL THE FIELDS

H1 _____ H3 _____

H2 _____ Htot _____

3 NEWEL POST DIMENSIONS ⚠ SELECT ONE SQUARE

☐ Ø 33.7 x 2.0mm ☐ Ø 48.3 x 2.0mm ☐ OTHER

☐ Ø 42.4 x 2.0mm ☐ 40 x 40 x 2.0mm _____

4 HANDRAIL SUPPORT ⚠ SELECT ONE SQUARE

☐ Fixed ☐ Pivotable ☐ Nothing ☐ OTHER

CODE. _____

THE CORNER POSTS HOLD A MOUNTING PLATE AT 90°

5 GLASS CLAMPS ⚠ SELECT ONE SQUARE

1


☐ Round


☐ Square


☐ Da Vinci

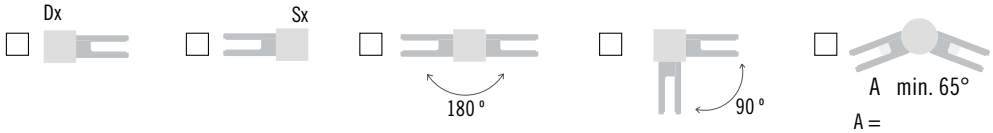
☐ OTHER
CODE _____

2 GLASS THICKNESS

☐ 6mm	☐ 9.52mm	☐ 12mm	☐ 16.76mm
☐ 8mm	☐ 10mm	☐ 12.76mm	☐ 17.52mm
☐ 8.76mm	☐ 10.76mm	☐ 13.52mm	☐ 21.52mm

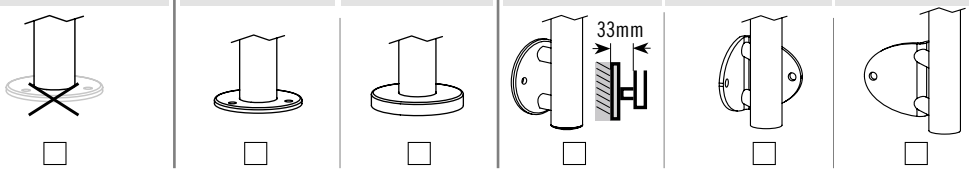
☐ OTHER _____

6 POSITIONING GLASS CLAMPS ⚠ SELECT ONE SQUARE



6 ANCHORAGES ⚠ SELECT ONE SQUARE

WITHOUT ANCHORAGE	FLOOR ANCHORAGE		LATERAL ANCHORAGE		
	Without Cover	With Cover	Flat	Ext. angle	Int. angle



☐ ☐ ☐ ☐ ☐ ☐

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