Marinas with Steel Pontoons

Operating and Maintenance Manual For Pontoon Equipment Manufactured and Installed by Walcon Marine Limited

WM/M

Date: insert date

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1. INTRODUCTION

Walcon Marine Ltd have worked with marinas and berthing facilities for many years, most of the requirements are to remove and dispose of existing pontoon equipment, piles/wall columns, then to manufacture, deliver and install new pontoons, access bridges and drive new piles. All the work thats carried out is planned and documented as show on the Walcon General Arrangement drawings ”As Built”, and reduced copies will be enclosed in site specific Operation & Maintenance Manuals.

The standard components forming marina facilities may be summarized thus: -

- 11.46m x 2.64m WW1 steel framed pontoons
- 7.46m x 2.64m WW2 steel framed pontoons
- 11.46m x 2.03m WW3 steel framed pontoons
- 7.46m x 2.03m WW4 steel framed pontoons
- 11.46m x 1.73m WW5 steel framed pontoons
- 7,46m x 1.73m WW6 steel framed pontoons
- 4.5m x 0.7m LSF finger
- 6.0m x 0.7m LSF finger
- 7.5m x 0.7m LSF finger
- 9.0m x 1.0m LSF finger
- 10.5m x 1.0m LSF finger
- 12.0m x 1.44m piled finger
- 13.5m x 1.44m piled finger
- Steel tubular or Green Heart timber piles ranging from 339mm – 610mm dia at lengths to suit topography
- Access bridges ranging from 5.0m – 30.0m long with 1.2m, 1.5m and 2.0m internal measurements
- 11.0m x 2.46m Walifloat pontoon
- 11.46m x 2.46m Walifloat pontoon
- 11.46m x 2.9m Walifloat pontoon

We also design and manufacture bespoke pontoons to suit customers’ requirements

General Construction

All the new steel pontoon equipment has been manufactured from Walcon Marine Ltd "System 21" range of products, as shown in the technical data sheets contained in this manual.

These pontoons have galvanised steel frames which are hot dipped galvanised to B.S.729.

The pontoons are all finished with either yellow Balau hardwood timber deck boards or GRP mesh panels and fendered with yellow Balau timber. All the pontoons are decked and fendered in the Walcon factory at Fareham.

The walkway pontoons are secured in position by steel tubular or Green Heart timber piles 339mm – 610mm diameter. The piles are driven into the sea bed approx.6-8m depending on topography. The pile guides are bolted to the side of the pontoons and finished with Schlagle wear pads, alternatively they may be built into the walkway pontoon frames.

Floats

The technical data sheets for the Walcon manufactured floats are contained in this manual

Spare Parts/General Material

Any spare parts are generally available ex stock, or readily available from Walcon Marine Ltd at the following address: -

Walcon Marine Ltd
Cockerell Close
Segensworth West
Fareham
PO15 5SR

Tel: 01489 579977
Fax: 01489 579988
Email: sales@walconmarine.com
Website: www.walconmarine.com
Contact: Sales Department

2. GENERAL MAINTENANCE INSTRUCTIONS

The following describes the routine maintenance which will have to be carried out periodically. It is important to remember that this pontoon equipment is subject to continual movement and fluctuation in stress and must be regarded more as plant that static equipment.

2.1 Pontoon Decking:

- The Timber deck boards and GRP deck panels should be cleaned with a stiff brush and if necessary, jet washed using water
- Any damage to the timber deck boards or GRP, should be replaced immediately

2.2 Pontoon frames:

- The frames require no maintenance, should they sustain any damage which requires any welded repairs, it might be necessary to remove the unit to repair them in workshop conditions.
- There are occasions when stains appear on the frames and these may look like rust but in general, they are stains caused by the water/rain or sap seeping from the timber. It is, however, easily removed by cleaning.

2.3 Pontoon – Pontoon Joint:

- Ensure that all pontoon – pontoon connections are kept tight. If joints become loose, the rubber connection block should be replaced prior to tightening. Loose connections usually make a noise and this can often indicate that maintenance is required.
- All connection joints can be accessed by lifting the adjacent deck board or GRP panel.

2.4 Float attachments to the pontoon frame:

- The floats are attached to the underside of the frame using stainless steel studs.
- To check these connections, it is necessary to lift the adjacent duct cover, deck board or GRP panel and carry out a visual inspection.
- Check to ensure that all connections, nuts etc are tight.

2.5 Pile Guides:

- All pile guides can be easily inspected.
- Check that all bolts, including those holding the wear blocks remain tight.
- The wear blocks should be checked for wear and if this becomes excessive, replace the wear blocks to ensure that the piles do not make contact with any steelwork.

2.6 Floats:

- It is not necessary to remove any growth from the floats; this does not affect their performance.

2.7 Mooring Cleats/Bollards:

- Ensure that all the holding down bolts remain tight

3. INSPECTIONS

Six Monthly Inspection:

The following inspections should be carried out on a six-monthly cycle

- Check the Pontoon – Pontoon connections
- Check the pontoon – Float connections
- Carry out a visual inspection on all the timber deck boards or GRP panels and their fixings.
- Check that all pile guide fixings are kept tight
- Check that all holding down bolts on mooring cleats/bollards remain tight.
- Check hinge pins are secure and rollers are not worn on access bridges

Twelve Monthly Inspection:

The Twelve-monthly cycle is as above but with the addition of:

- Cleaning timber deck boards or GRP panels with a stiff brush and if necessary, a jet wash.

4. RECORD DRAWING:

Site specific General Arrangement as built drawings will be issued on completion of works

It is not considered necessary for this manual to include complete drawings for the various pontoons, please refer to Walcon Technical Data Sheets enclosed herein.

5. WALCON TECHNICAL DATA SHEETS:

The Following Technical Data Sheets are Enclosed: -

- System 21 Pontoons (steel framed)
- Fibre Concrete Float Data Sheet
- Maintenance Data Sheet
- Marina Hardware Data Sheet
- Access bridges Data Sheet
- Walifloat Data Sheet

6. PONTOON CONNECTION DRAWINGS:

The following drawings are enclosed, this shows the build-up of the pontoons used at most marina's :

- System 21 End–End Connection Detail
- System 21 End-Side Connection Detail
- System 21 Finger Connection Detail
- Float Connection Detail

7. RECOMMENDED TOOL KIT

The following tools will be required to carry out the proper maintenance of this facility with examples of where they would be used.

- A decent ratchet spanner and various sized open-ended spanners as below.
- ½ inch drive 19mm socket (tighten cleat bolts, remove fender etc.)
- 19mm open-ended spanner.
- ½ inch drive 24mm deep throat socket plus extension bar (tighten floats)
- 24mm open-ended spanner
- ¾ inch drive 36mm deep throat socket (pontoon connections)
- 36mm open-ended spanner
- Battery drill with Posi drive bit type PZ2 (remove deck boards or GRP panels)

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SYSTEM 21

THE ORIGINAL WALCON PONTOON DESIGN NOW IN USE FOR NEARLY THIRTY YEARS

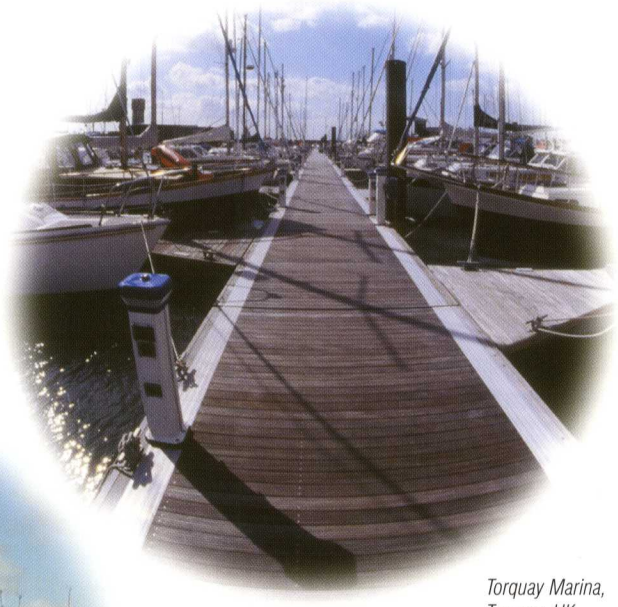
This popular design of pontoon using a galvanised steel frame with a hardwood deck and supported on fibre concrete floats is still widely used, although many details have been improved over the years.

The design has the following features:

- All-welded mild steel structure with a heavy duty 180×75 channel on all walkways.
- The structure is hot-dip galvanised in one piece to B.S. 729.
- Proven record of Walcon fibre concrete protected expanded polystyrene floats.
- A modular pontoon system suitable for most layouts.
- Fingers adjustable in position at 500mm centres.
- Hardwood deck and fenders.
- Full provision for the increasingly complex service requirements of modern marinas.
- Various freeboards and live loadings available.

DURABILITY

System 21 is one of the strongest pontoon designs for marinas. It has withstood for many years the severe test of forming the temporary marina at Southampton International Boat Show. The combination of welded frame units and flexible connections give a durable design. Where galvanising is not considered adequate, such as in more corrosive environments than the United Kingdom, an additional or alternative paint treatment can be specified.



Torquay Marina, Torquay, UK



Dun Laoghaire Marina Ireland

SERVICES

Services have often been an afterthought in marina construction but easy access to cables and connections during installation and subsequently for maintenance saves money. System 21 walkways may be fitted with continuous ducts along both sides of walkways which give direct access to services and connections without the need to remove decking.



Glenarm Marina,
Co Antrim,
Northern Ireland





STANDARD RANGE

The standard range of interconnecting units comprises:

WALKWAY UNITS (WW)

Walkway units may be used for the main concourse of a marina and for many other pontoon applications. Standard lengths are 11.46m and 7.46m; widths 2.56m, 1.93m and 1.65m

FINGER UNITS (SF)

Cantilever finger units are used in conjunction With walkways giving individual berths. Fingers Are supplied in lengths of 4.5m, 6.0m, 7.5m, 9.0m and 10.5m. Units are made in a splay design with a minimum width of 750mm. The structure of fingers is designed at a minimum length of 75% of the length of the boat. Longer units are available but will be parallel sided and supported by an end pile.

ECONOMY FINGERS (EF)

Lightweight mooring arms with limited access Are designed as an economic alternative to 4.5m And 6.0m fingers.



TECHNICAL PLANS

WALKWAY PONTOONS

WW1		11.46x2.64M
WW2		7.46x2.64M
WW3		11.46x2.03M
WW4		7.46x2.03M
WW5		11.46x1.73M
WW6		7.46x1.73M

FINGERS

SF4.5		4.5x0.70M
SF6.0		6.0x0.70M
SF7.5		7.5x0.70M
SF9.0		9.0x0.1.01M
SF10.5		10.5x1.01M
SF12.0P		12.0x1.44mEPG
SF13.5P		13.5x1.44mEPG

TECHNICAL SPECIFICATION

LOADING

1kN/m^2-2.5kN/m^2.

FREEBOARD

500mm nominal unloaded freeboard with 300mm draft, other options available.

STRUCTURE

All-welded mild steel frame of standard channel sections, cross-braced with rolled steel angles. All hot-dip galvanised to B.S. 729 after fabrication.

DECKING

Ex 150×25 hardwood boards, planed, grooved to give antislip surface and screwed to fenders and spines using grade A4 stainless steel screws.

FLOATS

Standard Walcon floats constructed of fibre concrete protected expanded polystyrene.

CONNECTIONS

The proven flexible couplings comprise compressed rubber blocks with hot dipped spun galvanised through bolts, castle nuts and split pins. This ensures security and prevents vertical and lateral misalignment but allows vertical angular movement of the adjacent units. No noise is generated by the connections.

CLIMATIC CONDITIONS

Maximum wave height 400mm.

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FIBRE CONCRETE FLOATS

THE WALCON CONCRETE FLOAT HAS A PROVEN RECORD OF MORE THAN 30 YEARS SATISFACTORY SERVICE.

This famous float comprises expanded polystyrene protected by glass reinforced concrete – it is tough, durable and virtually maintenance free.

The design has the following features:

- Unsinkable.
- Virtually maintenance free.
- No corrosion.
- No electrolytic action.
- Stainless steel fixings.
- Polystyrene core

STRUCTURE

The float comprises expanded polystyrene core protected by 19mm of glass reinforced concrete.



Gun Wharf Quays, Portsmouth, UK



FIXINGS

Four Stainless Steel (grade A4) fixing bolts are cast into the top surface for normal use, although through-bolt connections with timber bearers may be used where the units are expected to take the ground.

The floats are produced in steel moulds giving a smooth surface.









DURABILITY

They are virtually maintenance free, require no anodes and are not attacked by electrolytic action, the effects of marine environment or the ultra-violet rays of sunlight.

This form of construction ensures permanent flotation as the Polystyrene core material is closed cell, absorbing water up to a maximum of 5% by volume.

The floats have a proven record of more than thirty years satisfactory service with minimal maintenance.

SIZES

Most requirements can be met from the standard range of float sizes. For non-standard applications, special sizes can be made to order.

Floats are manufactured in the following plan sizes at various depths:

FLOATS

Ref.	Description	Size (Nominal) Metric (m)	Size (Nominal) Imperial (ft)	Weight (kg)
CF1	Walkway floats	2.44×1.22×0.685	8×4×2'3"	521
CF2	Walkway floats	1.83×1.53×0.685	6×5×2'3"	479
CF10	Walkway floats	2.44×1.22×0.61	8×4×2	497
CF11	Walkway floats	1.83×1.53×0.61	6×5×2	457
CF12	Finger floats	1.22×0.61×0.76	4×2×2'6"	212
CF13	Finger floats	1.22×0.61×0.915	4×2×3	236
CF14	Finger floats	1.22×0.915×0.915	4×3×3	293
CF15	Finger floats	1.53×0.61×0.76	5×2×2'6"	253
CF16	Finger floats	1.53×0.61×0.915	5×2×3	282
CF17	Finger floats	1.33×0.915×0.915	5×3×3	347
CF18	Finger floats	1.83×0.61×0.81	6×2×2'8"	304
CF19	Finger floats	1.83×0.61×0.915	6×2×3	326
CF20	Finger floats	1.83×0.915×0.915	6×3×3	399
CF21	Walkway floats	2.44×1.22×0.915	8×4×3	595
CF24	Walkway floats	1.83×0.915×0.76	6×3×2'6"	363

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MAINTENANCE

MAINTENANCE SERVICE – A VITAL PART OF MARINA MANAGEMENT

Pontoon equipment is subject to continual movement and fluctuation in stresses and must be regarded more as plant than static equipment.

Site conditions vary widely in marinas and the degree of maintenance required will vary correspondingly.

The maintenance service features:

- Regular Inspections
- Structural Reports
- Comprehensive Servicing of
  Floats
  Decks
  Moorings







SERVICE CONTRACT

Walcon engineers will inspect and prepare a full maintenance report on any marina installation with recommendations for urgent and desirable work.

The general maintenance advice provided overleaf is given to assist in obtaining the maximum life from pontoon equipment.

A comprehensive service is included in Walcon's range of marina activities. An annual contract is offered to cover regular maintenance on Walcon installed pontoons together with emergency call-out service where appropriate. Each contract is negotiated to suit the exposure, location and type of system used.

As an alternative, experienced Walcon engineers may be retained to prepare a structural report on any marina or other type of marine floating structure.



FLOATS

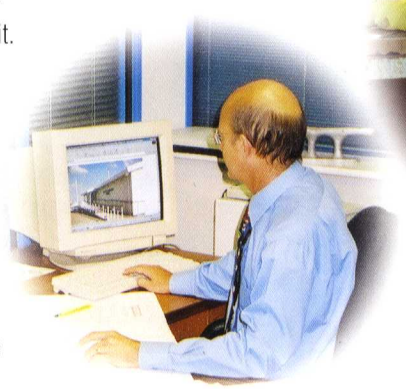
Walcon Marine floats are known for their reliability and no maintenance should be required. Small cracks in the surface concrete are no defect and will not result in a loss of buoyancy or in any way effect the performance of the unit.

It is usually not necessary to remove growth from the floats as this does not significantly affect the buoyancy.

Damage to floats can only occur from mechanical means such as impact, grounding or excessive wave action.

If exposed, the expanded polystyrene core to the floats will be attacked by petroleum products.





STEEL STRUCTURES

Most steel structures are hot dip galvanised to BS.729. The expected life of such a treatment varies depending upon its exposure.

Should the galvanising break down, due to local damage, it can be remedied by thorough cleaning (e.g. wire brushing, needle gun chipping) and treatment with zinc rich paint.

ALUMINIUM STRUCTURES

Aluminium will quickly develop a white surface coating which is not detrimental to the structure. It need not be remedied other than for aesthetic reasons.

In the event of structural damage, it is usually necessary to take the affected item/items to a covered workshop to carry out welded repairs.

MOORING POINTS AND CHAIN MOORINGS

Pontoons held by chains generally require more maintenance than those fixed by piles.

It is difficult to obtain an even distribution of loading with a moored system which may lead to higher local stresses within the floating elements.

The moorings that secure a marina system may require adjustment during an initial period of anything up to two years or until it has sustained severe weather conditions from all directions.

After this, moorings should be inspected regularly.

Distortions in the layout, excessive curvature of walkways or changes in tension of the chains should be investigated immediately.

PILE MOORINGS

In general a demountable pile guide is bolted onto the pontoon deck frame. Wear blocks in hardwood timber or low friction high density polyethylene are fitted and depending on the local characteristics of wind, wave and pontoon layout some blocks will need replacing sooner than others. It is important to check wear block retaining bolts for tightness, loose blocks can cause jamming.

TIMBER

Walcon products have hardwood timber decks.

Various timbers may be used subject to availability but species such as Balau are commonly used.

The life of the timber can be enhanced by ensuring the surface is kept clean. Moss or lichen should be regularly cleaned from the deck.

This can be achieved by use of a high pressure water hose or scrubbing machine. Regular washing of the deck with salt water, allowing the salt to dry on the surface, helps to prevent growth or algae.

JOINTS

The most vulnerable part of any pontoon system is the joints. Loose joints promote wear and it is advisable to inspect and tighten if necessary all joints and connections at least once a year and after severe weather.

Joint wear is very dependent on exposure of the site.

Pontoons that take the ground at certain states of the tide are also liable to require regular joint maintenance due to the twisting and bending that can arise when grounding on an uneven surface.

Rubber connection blocks which form part of all Walcon flexible joints may require replacing when badly deformed or age hardened. It is usually most cost effective to replace both bolts and rubber blocks on a planned basis.

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HARDWARE

THE ESSENTIAL EXTRA COMPONENTS REQUIRED TO COMPLETE A MARINA

These illustrations highlight some items of hardware available. Complete descriptions of all items can be found on the following pages.







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MH1 Large Emergency Cabinet



MH2 Small Emergency Cabinet

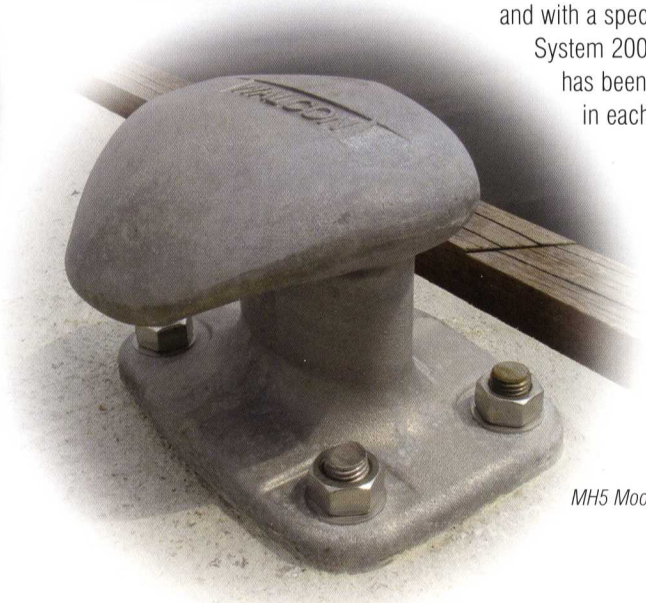




MH3 Emergency Ladder



MH4 Mooring Cleat



MH5 Mooring Bollard

HARDWARE

EMERGENCY EQUIPMENT LARGE EMERGENCY CABINET (MH1)
Glass re-inforced panel cabinet as standard: 2 No. 9kg dry powder fire extinguishers, first aid box, axe and lifebelt. Optional additional items include vandal alarm, integral light and emergency telephone.

SMALL EMERGENCY CABINET (MH2)
Similar cabinet to MH1 but smaller with standard inventory: 1 No. 9kg dry powder fire extinguisher and lifebelt. An integral light is an optional extra.

EMERGENCY LADDER (MH3)
G.R.P. ladder to enable someone who has fallen into the water to climb on to the pontoon. The ladder may be fixed direct to the walkway or to a pile guide.

MOORING FIXINGS

MOORING CLEATS (MH4)
The Walcon twin-posted cast aluminium mooring cleat can be fitted to all standard units with a simple through-bolt connection. The assembly has been load-tested to 3 tonnes in line and 1 tonne laterally. Cleats on System 2000 walkways are fitted into a groove on the side extrusion and may be simply moved by sliding.

MOORING BOLLARD (MH5)
The Walcon cast aluminium bollard can be fitted to the corner of each System 21 and with a special adaptor plate to System 2000 walkways. The bollard has been load-tested to 3 tonnes in each direction.

WATER EQUIPMENT

WATER OUTLET (MH7)

These free-standing units are designed to conform to the National Yacht Harbour Association recommendations for supplying drinking water from a stand pipe within reach of each berth. A tap is mounted on the upright of the aluminium stand and 18m of hose supplied as standard either coiled or at extra cost on a reel.



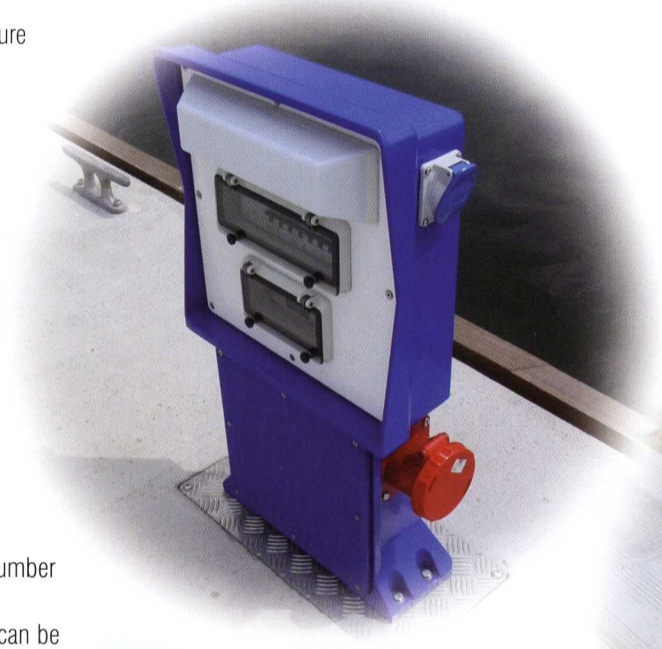
MH7 Water Stand

ELECTRICAL EQUIPMENT

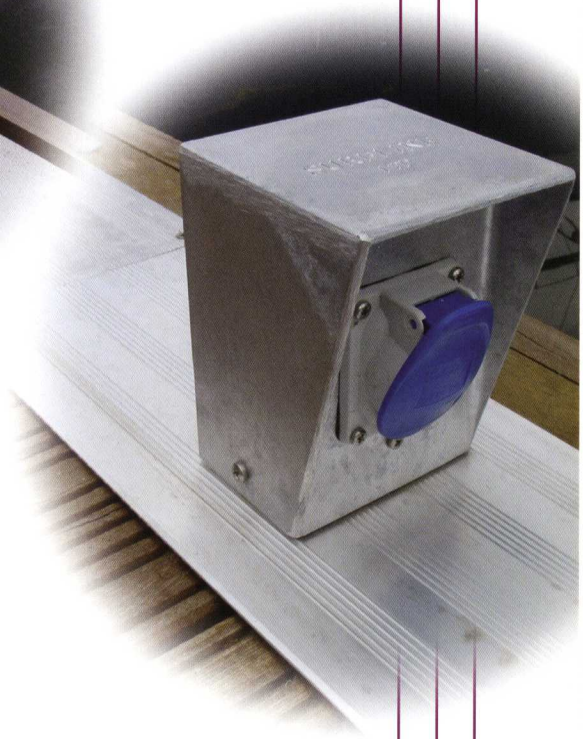
(MH6 & MH9)

Whilst Walcon does not manufacture marina electrical equipment. We have ensured that suitable units will fit our equipment. The modules illustrated (MH6) are manufactured by Sureline Electrical Modules Limited & Rolec Services Limited (Alternative types of equipment available from other manufacturers). The units incorporate walkway light, Miniature Circuit Breakers and Earth Leakage Circuit Breakers for both sockets mounted on the casing or remotely fixed. Various specifications for the rating and number of sockets are available.

A remote socket outlet type MH9 can be supplied for use with the main control module.



MH6 Electrical Module Sureline Bollard



MH9 Remote Socket Outlet



MH6 Electrical Module Rolec Bollard

MISCELLANEOUS

PILE CAPS (MH8)

Piles, although fundamental to the marina. can be an eyesore and an attractive fibreglass cap embellished. if required. with the pier number or letter and colour-coded. can be an inexpensive way of brightening up the installation. Caps can be made in any size and colour.



MH8 Pile Cap

PILE GUIDES

The size and type of pile guides varies widely and each contract is examined individually. Standard features of guides are:

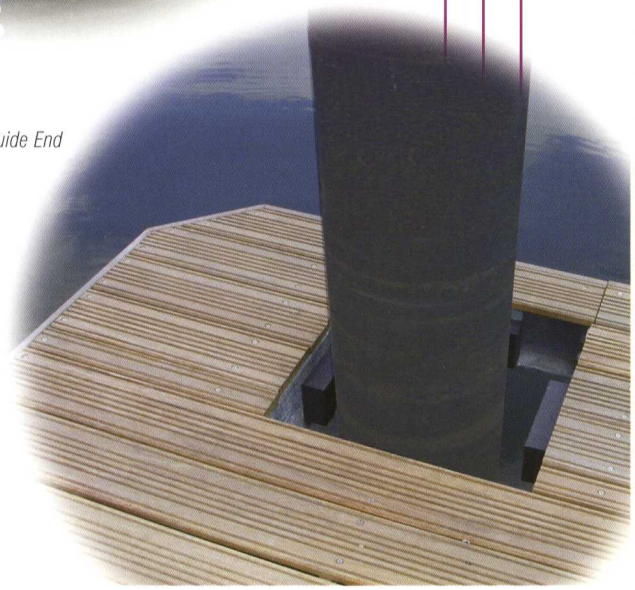
1. Built-in tolerance of ±50mm.
2. Hardwood or composite rubbing strips. Pile guides incorporated within the walkway can be provided as special units.



G2 Pile Guide Standard



G2 Pile Guide Internal



G2 Pile Guide End

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ACCESS BRIDGES

THE FOCAL POINT OF ANY MARINA OR BERTHING FACILITY

A range of standard width, length and live load steel or aluminium structured access bridges are available, although ramps can be designed and built to customers' specific requirements. Shorter, steel ramps can be provided with a galvanised finish, larger steel structured bridges will be painted. Aluminium bridges are generally finished self colour, although a decorative paint system can be applied if required.







Bridges and ramps are generally decked using anti-slip hardwood decking, although alternative finishes are always available.

Larger bridges feature warren truss side rail structures and can be fitted with mesh infill or vertical rail anti-climb panels.



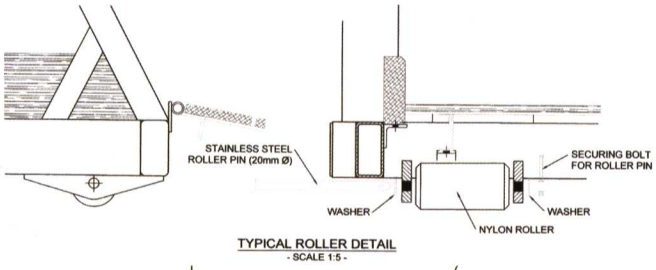


Sizes of Standard Steel Structured Access Bridges

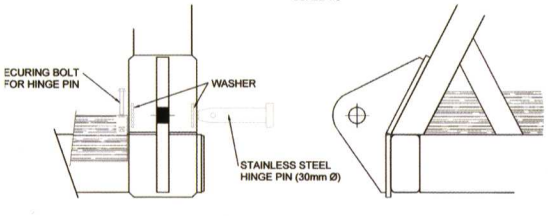
All bridges design live loading is in excess of 2.5kn/m²

LENGTH	WIDTH		
	1.2m (internal)	1.5m (internal)	2.0m (internal)
	Approx Weight	Approx Weight	Approx Weight
5.00m	750kg	850kg	950kg
6.25m	900kg	1000kg	1150kg
7.50m	1100kg	1200kg	1300kg
8.75m	1250kg	1350kg	1500kg
10.00m	1500kg	1650kg	1900kg
11.25m	1700kg	1800kg	2050kg
12.50m	1850kg	2000kg	2300kg
13.75m	2000kg	2200kg	2500kg
15.00m	2800kg	3000kg	3300kg
16.50m	3000kg	3250kg	3600kg
18.00m	3250kg	3500kg	3900kg
19.50m	3500kg	3800kg	4200kg
21.00m	3800kg	4050kg	4500kg
22.50m	4000kg	4300kg	4800kg
24.00m	4300kg	4600kg	5100kg
25.50m	4600kg	4900kg	5400kg
27.00m	4900kg	5200kg	5700kg
28.50m	5300kg	5600kg	6100kg
30.00m	5700kg	6000kg	6500kg

Modified live loaded and longer span bridges are available, subject to design.



TYPICAL ROLLER DETAIL
- SCALE 1:5 -



TYPICAL HINGE DETAIL
- SCALE 1:5 -

Specification

1. Material

Steel

All steel to conform to BS EN 10113
Grade S275 43A (Plate & Rolled)
Grade 43C (RHS & Tubing)

Aluminium

All aluminium to be grade H30

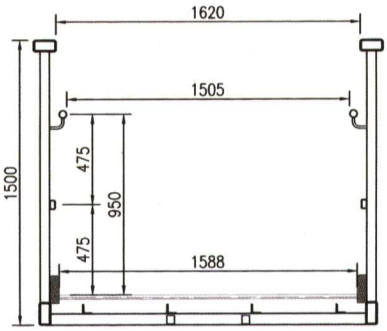
2. Fabrication

Fully welded construction

3. Finish

All steelwork to be shot blast to SA 2.5 then zinc metal sprayed to BS 5493 – system ref: SC10Z – top coat to be white (RAL 9003) polyurethane finish.

Aluminium to be self colour



1.5m (Int.) WIDE

Typical Section Through Access Bridge



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WALIFLOTE

HEAVY DUTY CONTINUOUS BUOYANCY FLOTATION UNIT

The original Waliflote pontoon unit was developed for the heavy services loading that was required with the Brighton marina pontoon facility.

The pontoon, now evolved, comes complete with either a concrete deck finish with hardwood fenders or a traditional pontoon finish with a galvanised steel frame clad in hardwood timber boards and fender.



Waliflote and S21 Deck



Annalong Harbour, N. Ireland



Shamrock Quay, Southampton

Waliflotes offer continuous buoyancy and therefore exhibit wave attenuating characteristics which can be used to good effect in areas where wave heights are marginal for safe marina development.

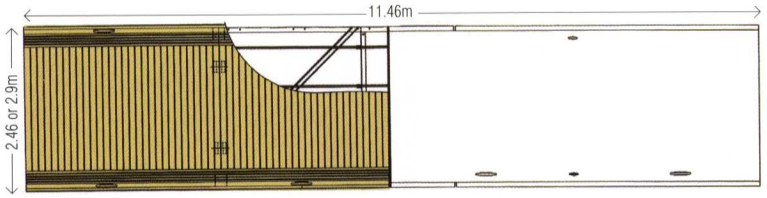


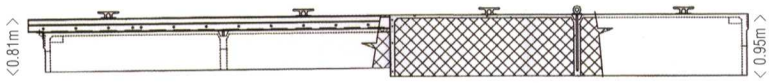
Penarth Water Taxi, Cardiff Bay



Jumbo Waliflote, 11.46 x 2.9 x 0.95

Waliflotes are continuous buoyancy concrete floats. They are cast in one section and may be used alone or in conjunction with System 21 walkways to provide an exceptionally stable and maintenance free pontoon. Two standard depths are offered providing alternative freeboards and loading capacities.





SPECIFICATION

Structure: Steel reinforced concrete walls, glassfibre concrete deck, expanded polystyrene integral buoyancy and elastomer base protection.

Decking: Waliflotes may be used with System 21 deck superstructures providing all the features of System 21 or used alone with a concrete deck to which epoxy screeds, paints and other decorative treatments may be added.

	WALIFLOTE	SUPER WALIFLOTE	JUMBO WALIFLOTE
Dimensions	11.0 x 2.46 x 0.61	11.46 x 2.46 x 0.95	11.46 x 2.9 x 0.95
Weight	7.5t	10.0t	12.0t
Freeboard with deck	500mm	650mm	700mm
without deck	350mm	500mm	550mm
Live Load	3kN/m²	5kN/m²	5.5kN/m²

Other variations are possible, subject to design.

Flexible connections – The proven flexible couplings comprise compressed rubber blocks, through bolts, castle nuts and split pins. This ensures security and prevents vertical and lateral misalignment but allows vertical angular movements of the adjacent units. No noise is generated by the connection.

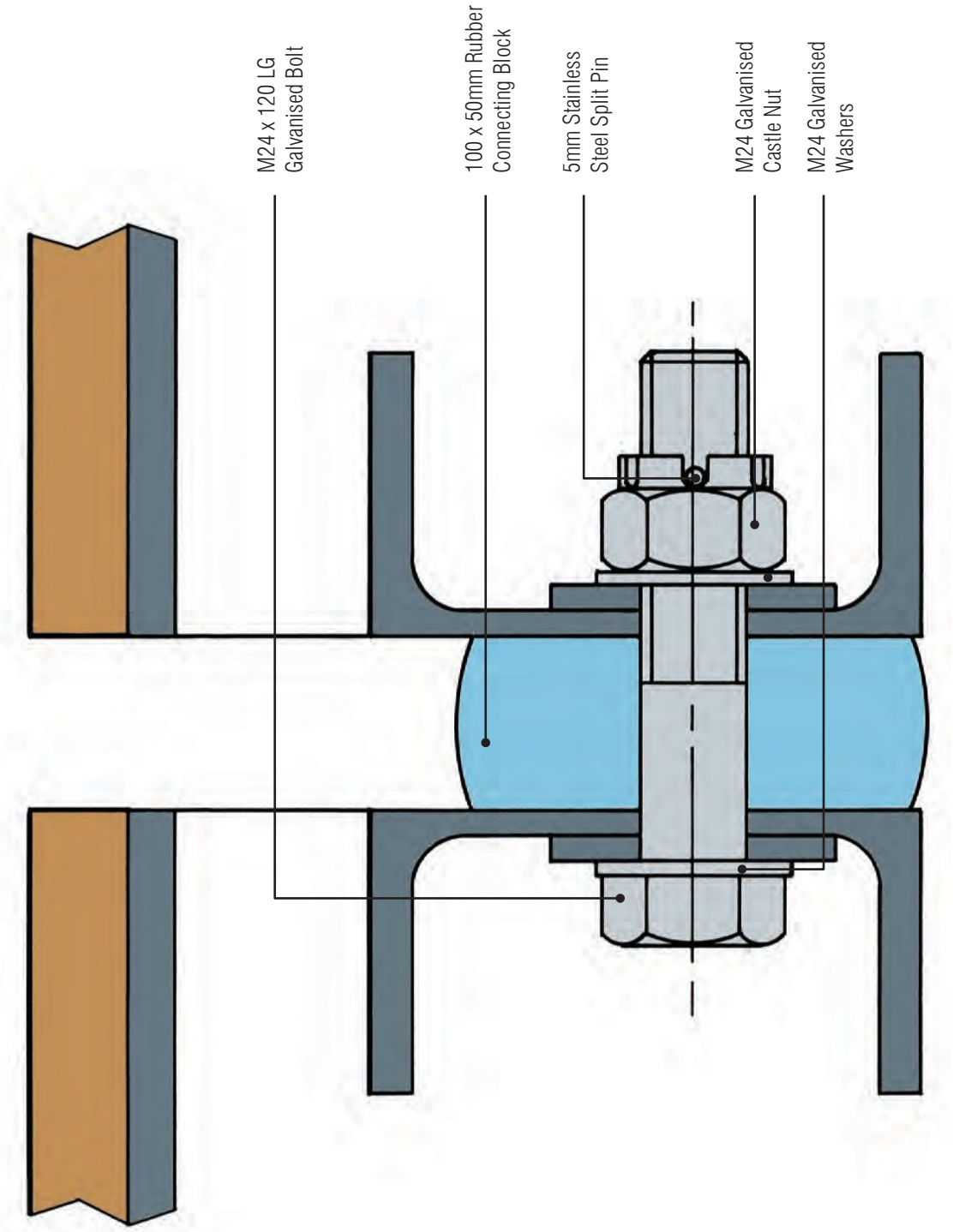


Jumbo Waliflote and End Pile

www.walconmarine.com Tel: **+44 (0)1489 579977** E-mail: **sales@walconmarine.com**

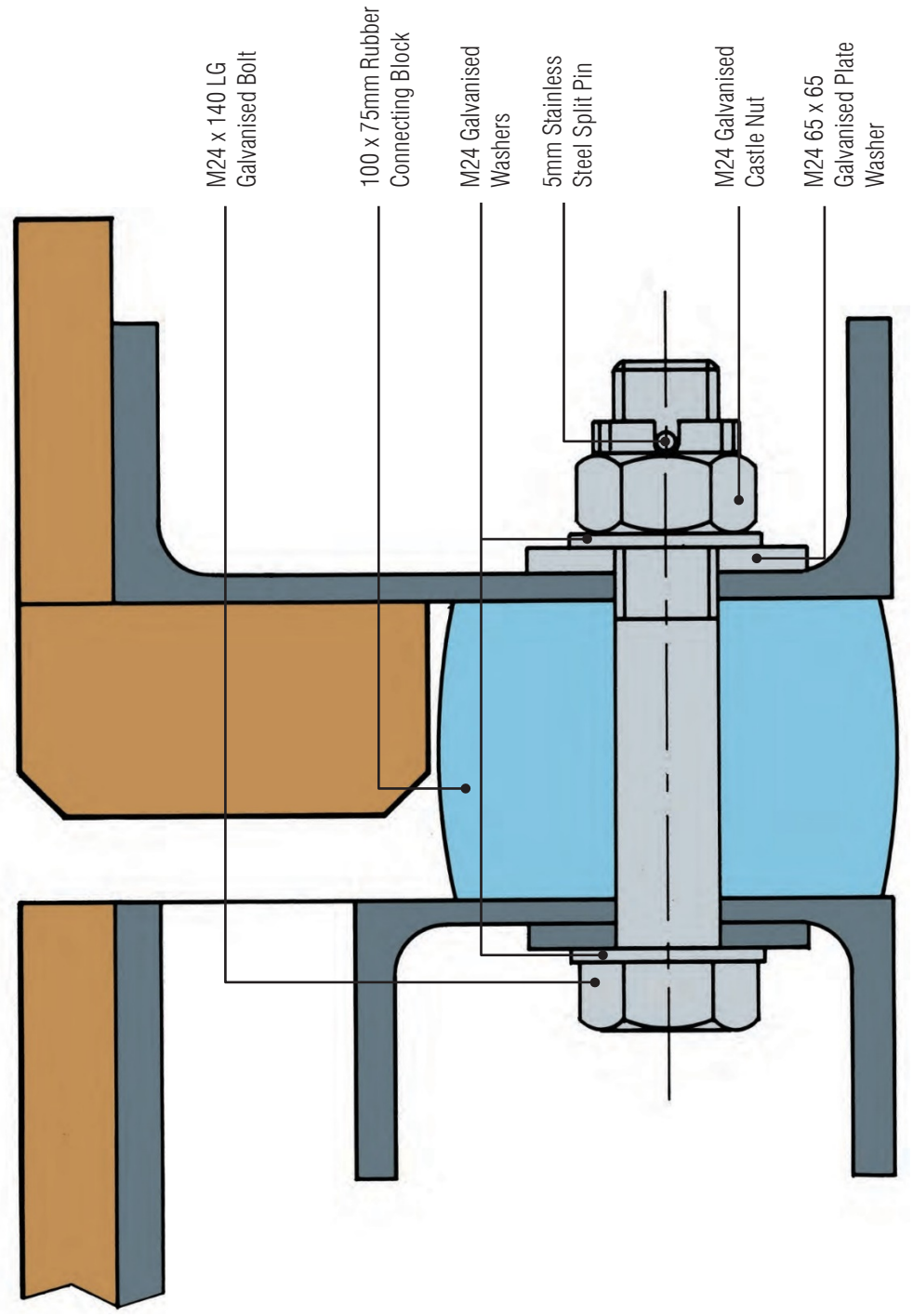
Due to our policy of continuous product development we reserve the right to change specifications without prior notice.

SYSTEM 21 END TO END CONNECTION



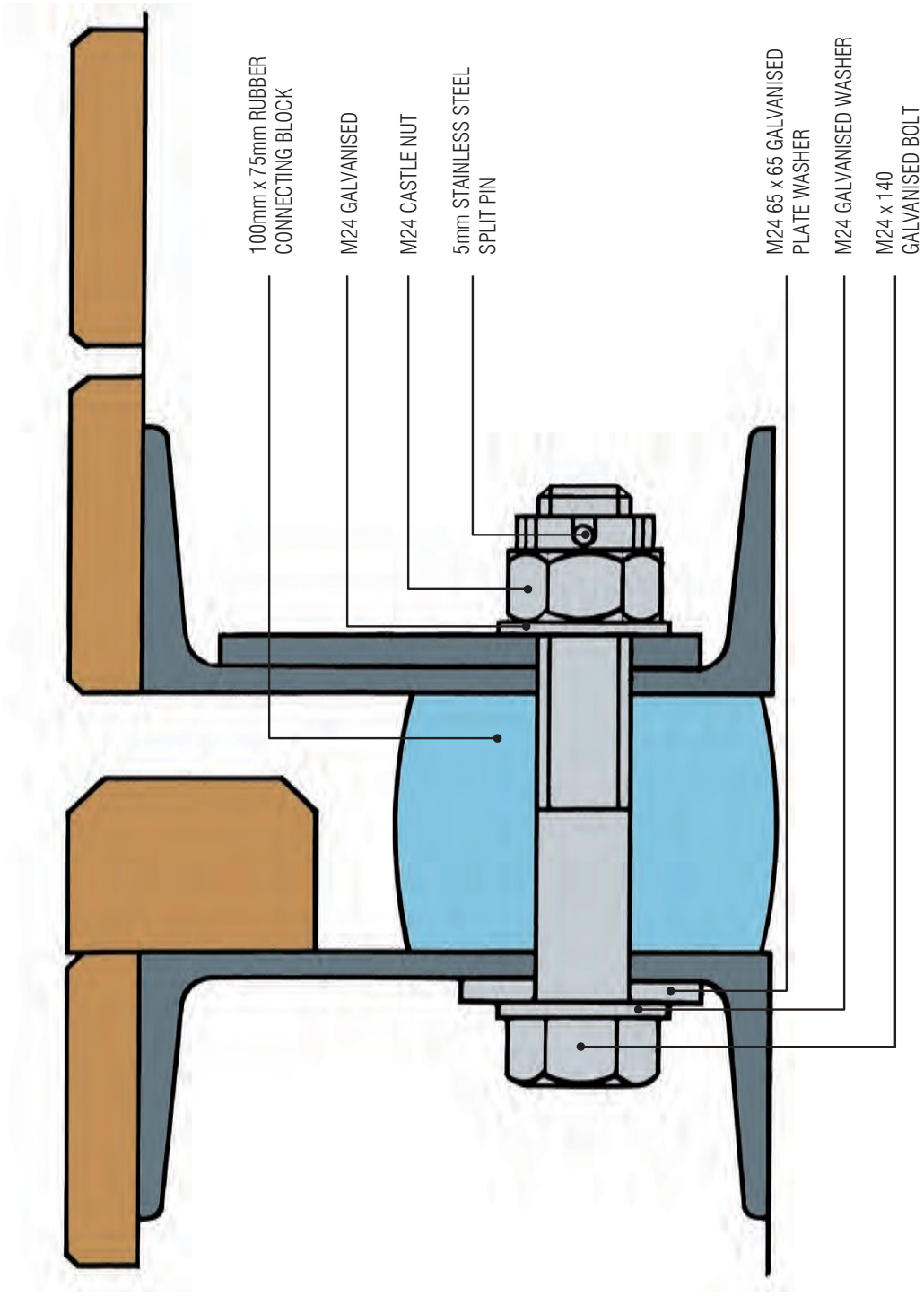
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SYSTEM 21 END TO SIDE CONNECTION

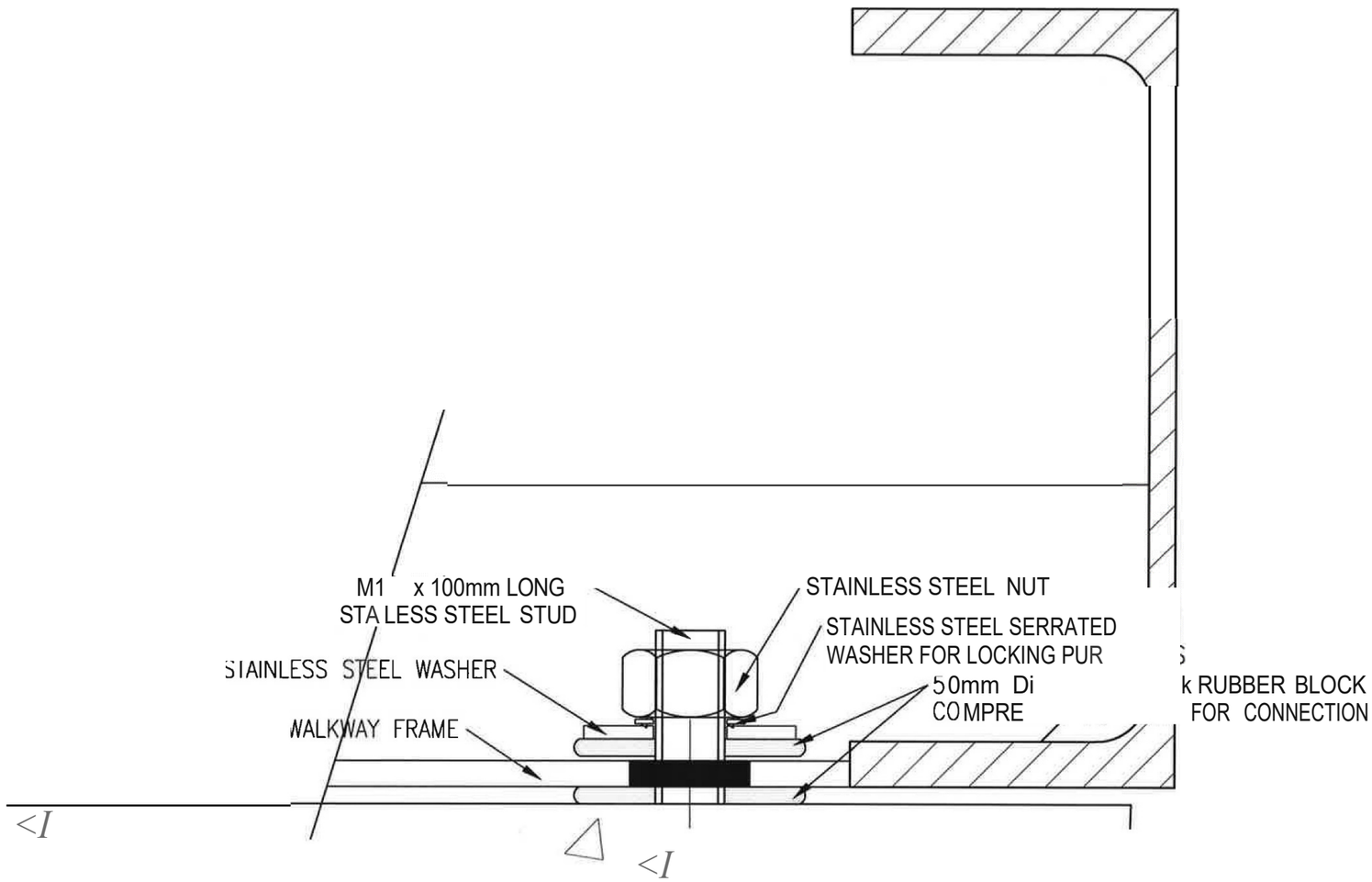


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SYSTEM 21 FINGER CONNECTIONS



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DATE 19/12/13	PROJECT TITLE WALCON MARINE	
SCALE 1:2 BY C.W		FLOAT CONNECTION DETAILS
No.	DRG. DESCRIPTION	