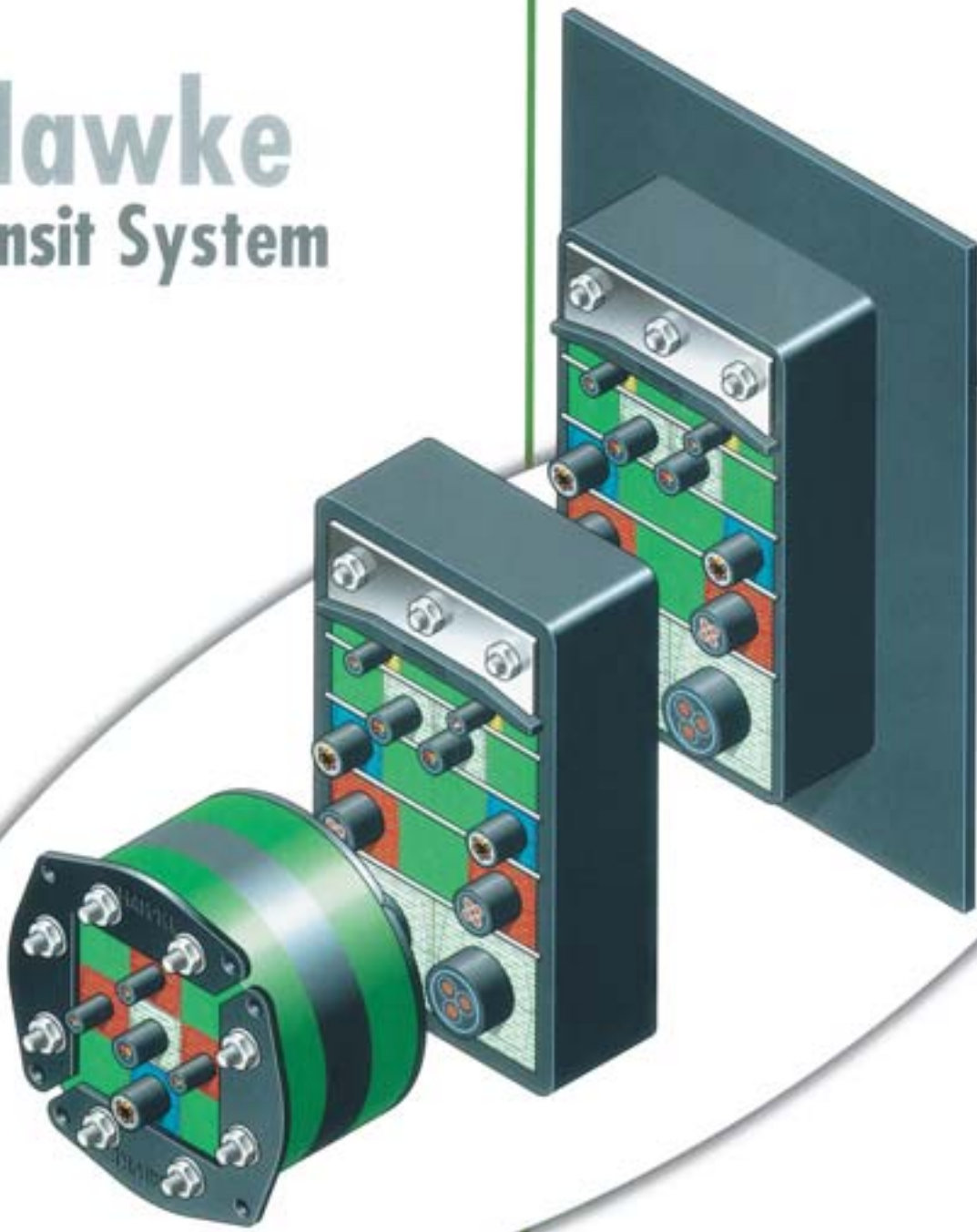


Hawke Transit System



OHTS[®]
HAWKE TRANSIT SYSTEM

CABLE JOINTS, CABLE TERMINATIONS, CABLE GLANDS, CABLE CLEATS
FEEDER PILLARS, FUSE LINKS, ARC FLASH, CABLE ROLLERS, CUT-OUTS

11KV 33KV CABLE JOINTS & CABLE TERMINATIONS
FURSE EARTHING
www.cablepoints.co.uk
Thorne and Derrick UK

Tel 0044 191 490 1547 Fax 0044 191 477 5371
Tel 0044 117 977 4647 Fax 0044 117 9775582



HAWKE ROUND, MARINE AND CI

Cable/Pipe Tolerant Blocks

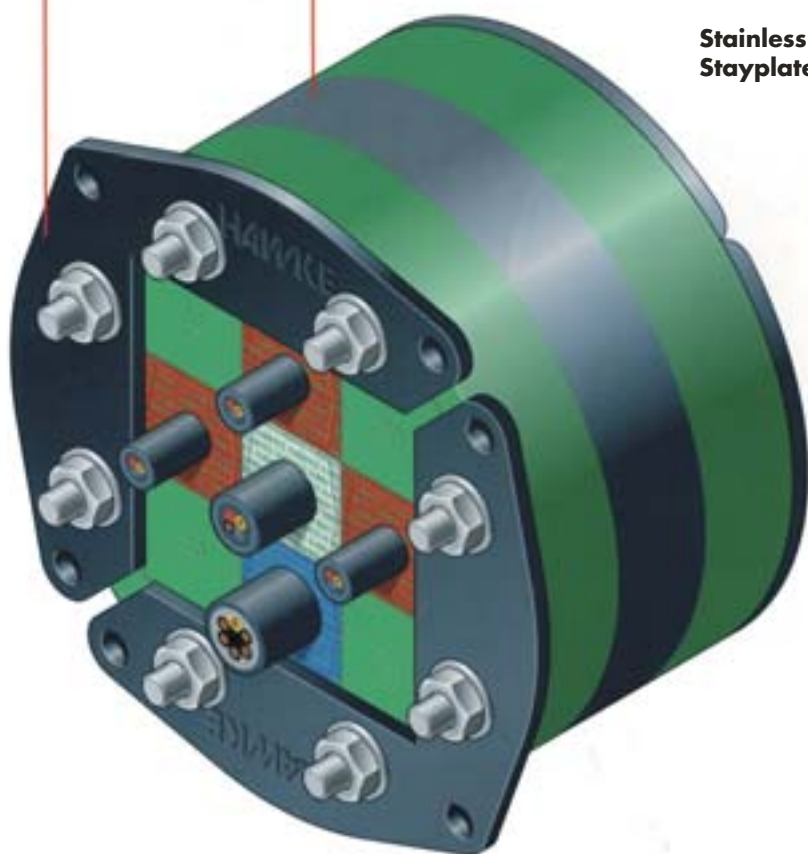
Made of zero halogen, intumescent elastomeric polymer. Each block accepts a range of cable and/or pipe diameters enabling the complete range of standard sizes to be covered by a small number of blocks. Hawke's unique inspectable colour coding shows that the top half and the bottom half are correctly matched for sizes.

Blank Filler Blocks

Made of the same material as the cable/pipe blocks, filler blocks also come in the same modular size range. Blank filler blocks are used to fill up unused space in the frame. The blocks are all marked with their modular size.

Radial Compression System

Compression Rings



The Compression System

1. End Packer

The final element of the frame installation, this is inserted above the compression plate and the bolts tightened to seal the whole frame.

2. Compression Plate

This goes on the top row of blocks, to distribute the pressure from the compression tool and compression system.

Stayplates

Each evenly packed row of blocks is held by a stayplate to assist with assembly, before the next row is packed on top.

Compression System

1. End Packer

2. Compression Plate

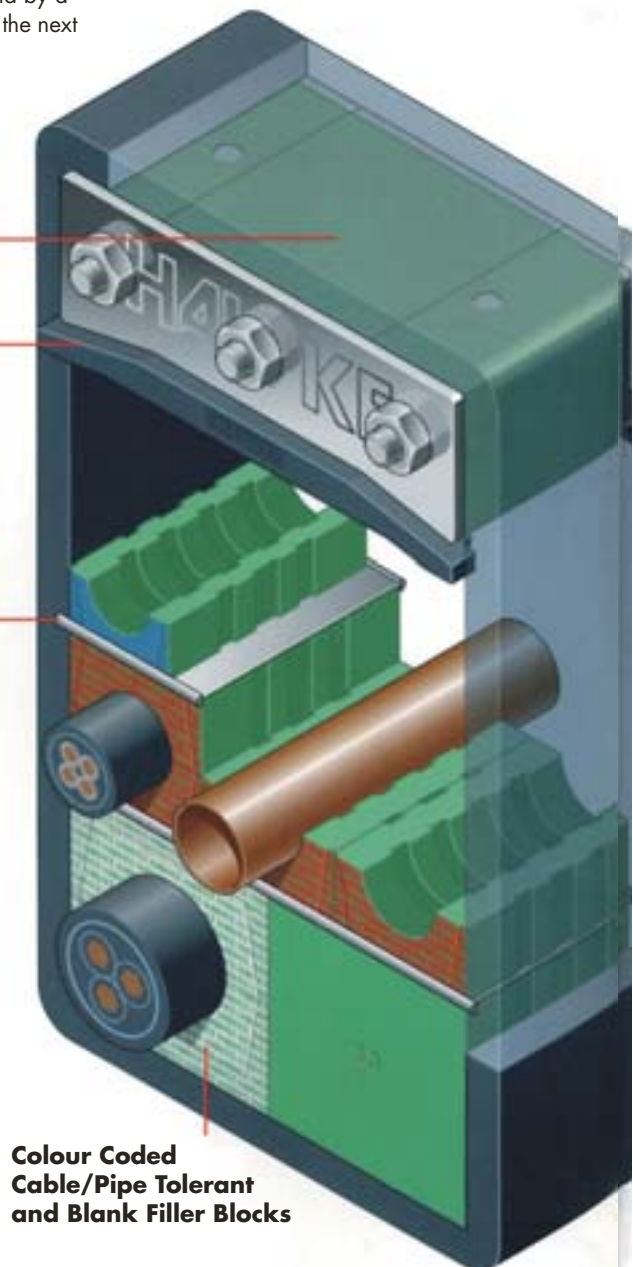
Stainless Steel Stayplate

The Transit Frame

Made of primed or plated mild steel, stainless steel or aluminium, a Hawke frame is carefully welded at the corners and finished to the highest quality. Hawke frames can be cast within a concrete wall, cemented into a wall, bolted to a wall or welded or bolted to a metal bulkhead.

Open Frames

All frames are also available as open versions, for use where cables are already in position.



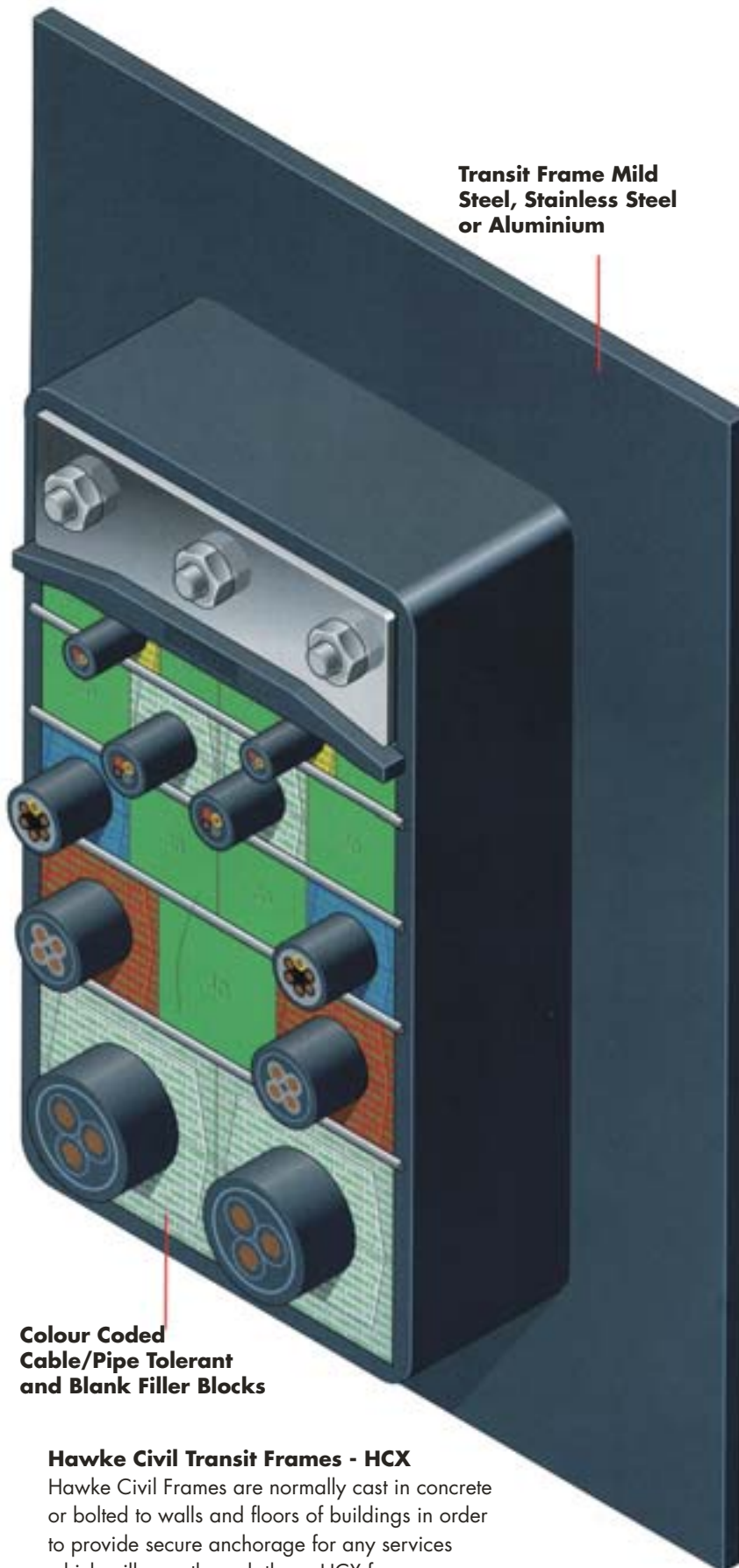
Colour Coded Cable/Pipe Tolerant and Blank Filler Blocks

Hawke Round Transit Frames - HRT

Hawke round Frames effectively seal cables and pipes passing through circular apertures, and pressure seal against fire, water and gas, etc. The seal is formed by tightening the compression bolts which expand the system radially, this causes pressure to be exerted against the aperture wall and closes down the tolerant blocks.

Hawke Marine Transit Frames - HMX

Hawke Marine Frames are normally welded into decks and bulkheads in order to provide a secure anchorage for the services which pass through them. HMX frames are made from 60mm x 10mm bar.

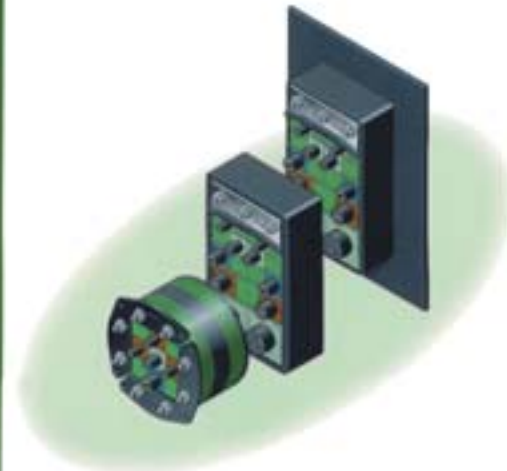


Transit Frame Mild Steel, Stainless Steel or Aluminium

Colour Coded Cable/Pipe Tolerant and Blank Filler Blocks

Hawke Civil Transit Frames - HCX

Hawke Civil Frames are normally cast in concrete or bolted to walls and floors of buildings in order to provide secure anchorage for any services which will pass through them. HCX frames are made from 60mm x 60mm x 6mm angle.



Features and Benefits	4
Selection and Specification	8
Blocks, Components and Accessories	9
Transit Frame Dimensions	11
Civil Transit Frame System	12
Civil Transit Installation Instructions	14
Civil Frame Aperture Dimensions	16
Marine Transit Frame Systems	20
Marine Transit Installation Instructions	22
Marine Frame Bulkhead/Deck Aperture Dimensions	26
Civil and Marine Transit Block Installation Guide	27
Round Transit Frame System	28
Round Transit Block Installation Guide	30
Transit Assembly Checklist	31
EMC Transit System	32
EMC Transit System Block Installation Guide	34
Design Template	35

ALL COPYRIGHT RESERVED - HAWKE TRANSIT SYSTEM 2006

THIS DOCUMENT AND ALL COPYRIGHT THEREIN IS THE PROPERTY OF: HAWKE TRANSIT SYSTEM. Copyright Condition: This document shall be used only for the purpose for which it is provided and no reproduction or publication of the document may be made and no article may be manufactured or assembled in accordance with information contained in the document without prior written consent of the owner.

WHAT IS A CABLE TRANSIT SYSTEM?



A Transit System is a means to maintain the integrity of a firewall, bulkhead or deck through which cables pipes and other services pass.

The transit system will seal against and exhibit resistance to:

- Fire
- EMC
- Water
- Radiation
- Gas
- Chemicals
- Explosion
- Ultra Violet light
- Smoke
- Vermin

WHERE WOULD YOU USE A TRANSIT SYSTEM?

Wherever a wall or bulkhead is penetrated by cable or pipe the occupants and integrity of the structure are exposed to risk from hazards such as fire and smoke, water ingress, toxic gases and attack by vermin.



Typical Applications

- Water Treatment Plant
- Portable Buildings
- Chemical Plant
- Pharmaceutical Manufacturing
- Offshore Accommodation Modules

Typical Applications

- Offshore platforms
- Oil & Gas Refineries
- Floating Production Off-loading Vessel
- Nuclear Plant
- Ship Building
- Computer/Bank Installation
- Telecommunications
- Jet Engine Test Facilities
- National Defence Agencies
- Tunnel Systems



WHY USE A HAWKE TRANSIT SYSTEM?

- Increased Safety
- Total Inspectability
- Flexibility
- Speed of Assembly
- Cost Effectiveness
- Quality and Certification

Can you be su

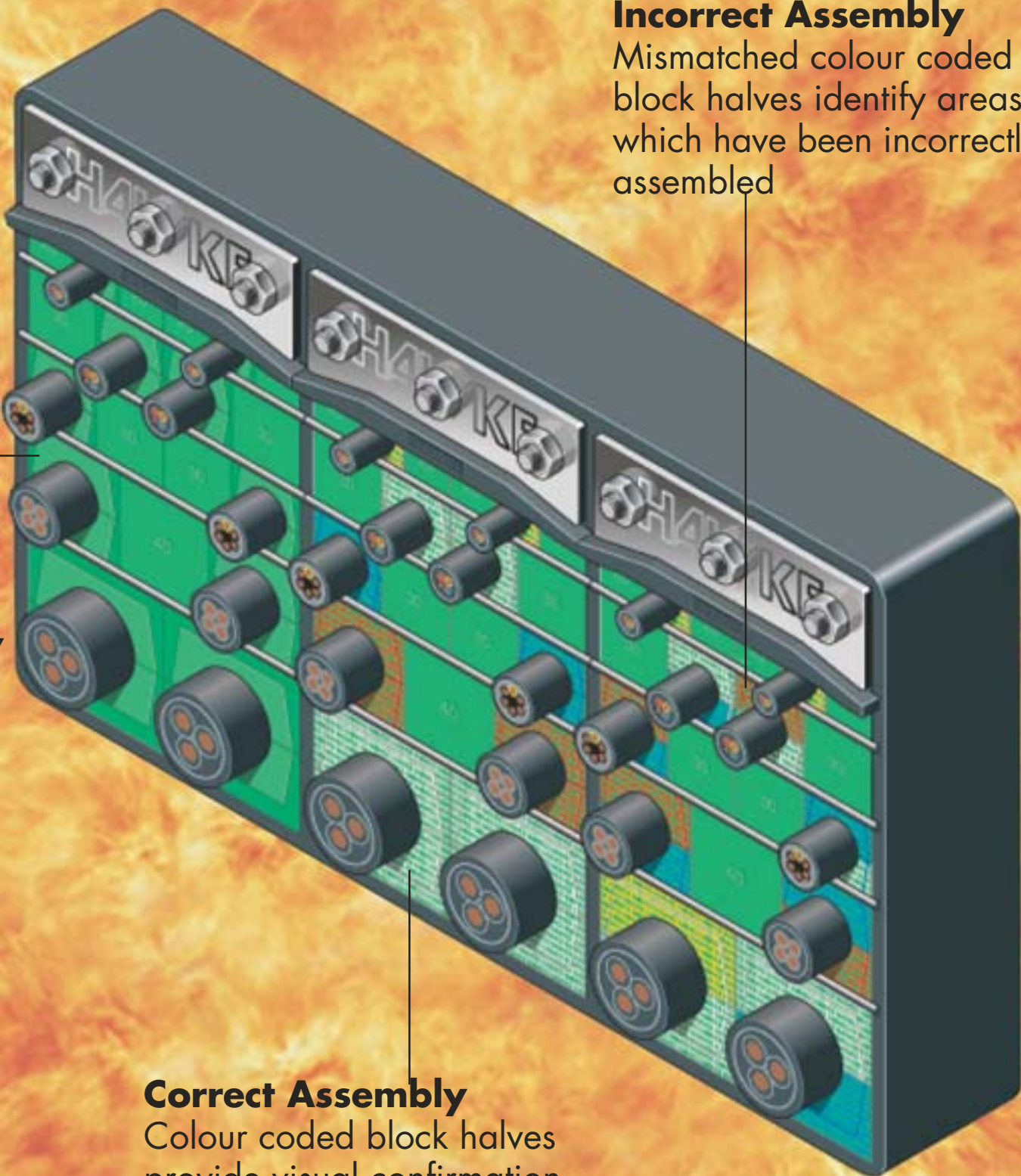
Incorrect Assembly
Without colour coding incorrect assembly is impossible to detect.

A Transit v
installed- f

Ensure that your Transit is correctly installed?

Incorrect Assembly

Mismatched colour coded block halves identify areas which have been incorrectly assembled



Correct Assembly

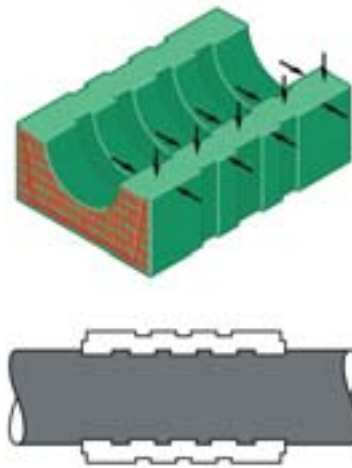
Colour coded block halves provide visual confirmation of correct assembly

will only perform as well as it has been for complete Confidence insist on Hawke

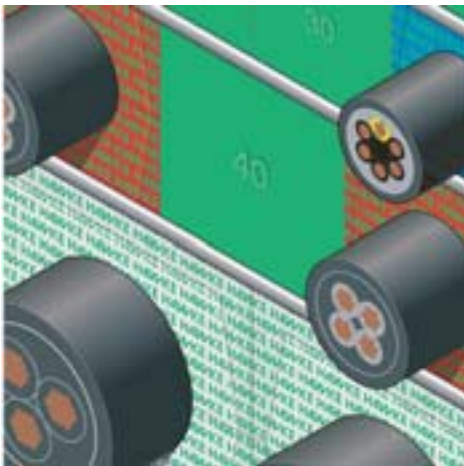
TOLERANT BLOCK SIZE RANGE

This enables a wide range of cable or pipe diameters to be accommodated by a compact range of tolerant block sizes.

Hawke tolerant blocks have five sealing faces that are displaced by the sealing process. This results in a tolerance of up to 4mm for cable diameters.



TOTAL INSPECTABILITY



The Hawke colour coded block system provides total inspectability of the transit installation even after assembly has been completed.

On each of the two exposed block faces minimum and maximum diameters are clearly marked. This indicates the specific sealing range of the block size.

HAWKE MEASURING TAPE

The tape enables cable diameters to be accurately measured thus ensuring that the correct size of block is selected for the cable diameter.

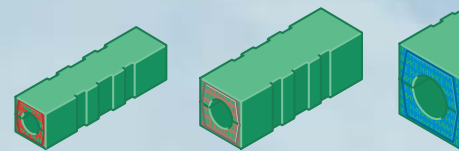
The gauge is wrapped around the cable this then details the correct block to select for that cable together with the colour coding.



The Hawke only

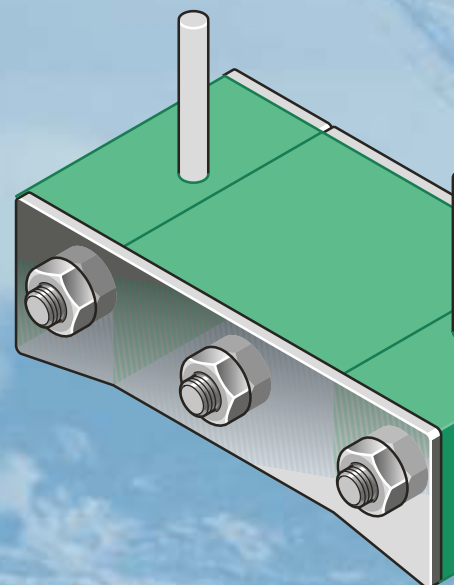
HAWKE COLOUR

Each individual block has a colour code that each size and pair of tolerant blocks is correctly matched to the cable diameter.



UNIQUE PATENTED

Unique steel insert pins on both sides of the Compression System ensure that the correct force is applied to each installation.

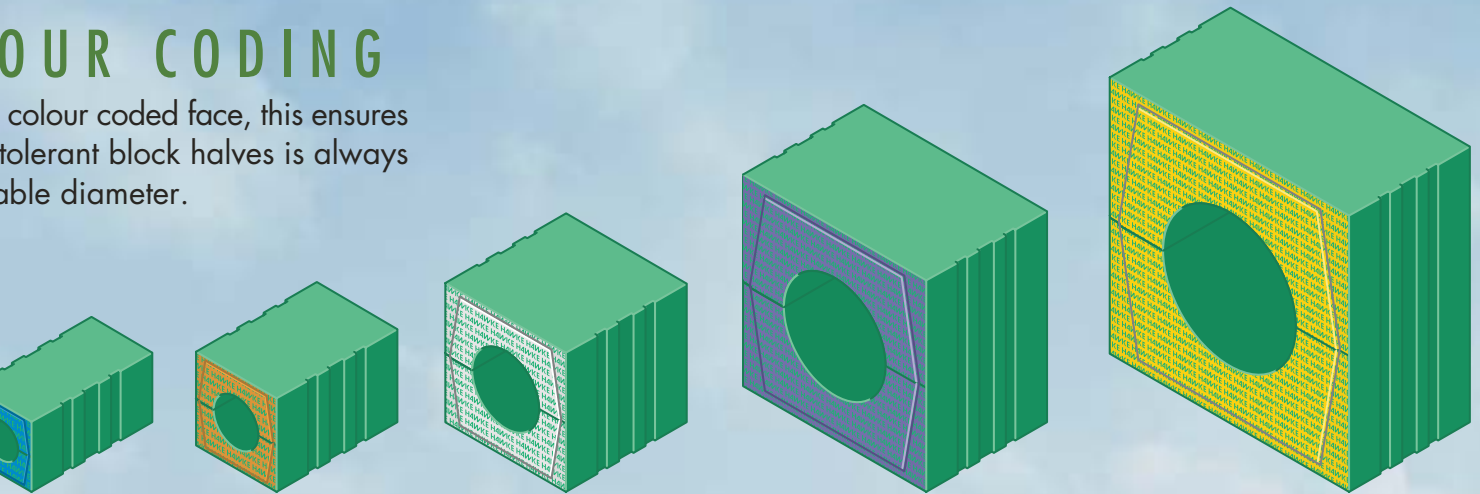


www.hawke-hts.com

Hawke Cable Transit System is the Totally Inspectable System

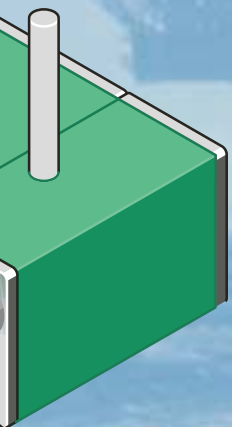
OUR CODING

colour coded face, this ensures
tolerant block halves is always
able diameter.



D COMPRESSION SYSTEM

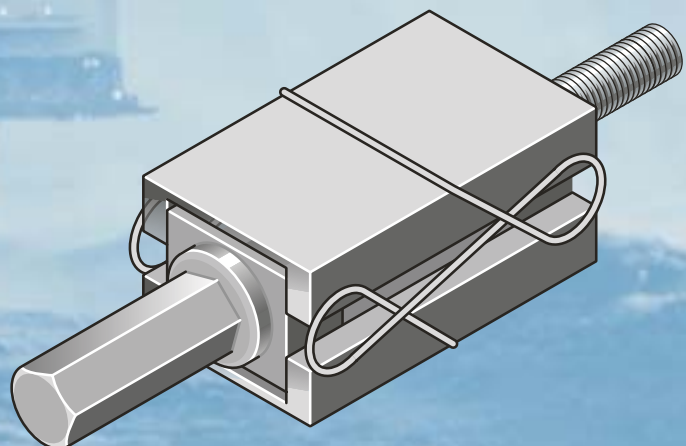
both sides of the Hawke Transit
e that the correct level of compression
ion.



HAWKE COMPRESSION TOOL

With this tool the system is
quickly compressed using a
ratchet socket operable from
outside the frame.

- Reduces installation time by up to 50%.
- Consistent compression independent of the operators skill.



SELECTION AND SPECIFICATION PROCEDURE

Selection and Specification

There are two main starting points in practice.

A. Cables or pipes known, no frame.

The ideal way, is when the numbers and diameters of cable or pipe are known, in advance of ordering the frame. The procedure should then follow route A.

B. Frame already installed.

However, if a transit frame and cables or pipes are already installed, and sealing specifications are to be determined later, follow route B.

No frame, cable or pipe requirements to be advised in future.

If a frame only is required, and all cable/pipe requirements are to be advised at a later date in the contract, install as large a frame as is possible, and fill it with blank blocks.

Modular Cable/Pipe Tolerant Blocks

In the Block Selector Table below, the first column indicates the module size, second and third columns indicate minimum and maximum diameters of cable or pipe which can be accommodated by each block.

Blank Filler blocks are suffixed '0'
e.g. 15/0 20/0 etc.

Code Numbers

For ordering purposes block code numbers are made up from the numbers in columns 1 and 2 and are indicated in column 5. i.e. A 40 module block capable of accommodating cable/pipe from 28mm diameter up to 31mm diameter is denoted 4028. A HF prefix denotes zero Halogen blocks.

NOTE: Two insert blocks are required for each cable or pipe.

Selection and Specification Procedure

A- Cables/pipes known, no frame

B- Frame already installed

START

1. Check (or measure) cable/pipe diameters and numbers

1. Check (or measure) frame(s) size and model number

2. Determine the block requirements per frame, using the design template on Page 35

2. Check cable or pipe numbers/diameters to go through frame (s)

3. Determine the frame(s) size required to accommodate blocks, not forgetting to use blank blocks to allow for future expansion

3. Determine the block requirements per frame, using the design template on Page 35

4. Check with builder/construction/engineer/architect that proposed frame will be accommodated by building

4. Check if the block arrangements fit in frame(s) provided.

YES?

5. If YES, complete your order, including all stayplates, compression blocks and blank blocks, arranged in the appropriate frame size (s), and return to Hawke - or your Hawke Transit Distributor - for checking and order confirmation.

NO

5. If NO, consult with builder/construction/engineer/architect to determine what frame(s) can be accommodated, and cables/pipes required, before re-specifying by starting at 1 above

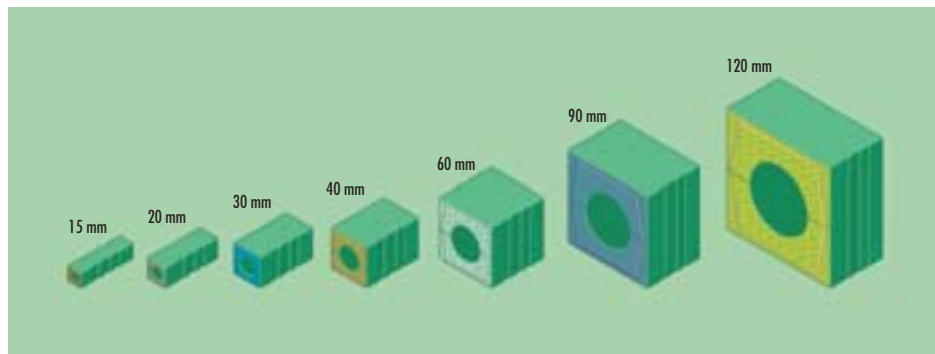
BLOCK SELECTION TABLE				
MODULE DIMENSION	CABLE/PIPE DIAMETER		BLOCK COLOUR CODE	HF ZERO HALOGEN BLOCKS
	MIN.	MAX.		
MM	MM	MM		
5	120 x 60 x 5 Packaging Strip ¹			HF50
10	120 x 60 x 10 Packaging Strip ¹			HF100
15	0	5	Red	HF150
	3	7	White	HF153
	5	9	Blue	HF155
	7			HF157
20	0	6	Green	HF200
	3	9	Pink	HF203
	6	12	Brown	HF206
	9	14	Yellow	HF209
	11	16	Gold	HF2011
	13			HF2013
30	0	15	Red	HF300
	12	18	White	HF3012
	15	21	Blue	HF3015
	18	24	Orange	HF3018
	21			HF3021
40	0	15	Green	HF400
	12	18	Pink	HF4012
	15	22	Red	HF4015
	22	25	White	HF4022
	25	28	Blue	HF4025
	28	31	Orange	HF4028
	31	34		HF4031
60	0	34	Red	HF600
	31	37	White	HF6031
	34	40	Blue	HF6034
	37	43	Orange	HF6037
	40	46	Purple	HF6040
	43	49	Yellow	HF6043
	46	52	Green	HF6046
	49	54	Pink	HF6049
	52			HF6052
90	0	56	Red	HF900
	53	59	White	HF9053
	56	62	Blue	HF9056
	59	65	Orange	HF9059
	62	68	Purple	HF9062
	65	71	Yellow	HF9065
	68			HF9068
120	0	75	Red	HF1200
	72	78	White	HF12072
	75	81	Blue	HF12075
	78	84	Orange	HF12078
	81	87	Purple	HF12081
	84	90	Yellow	HF12084
	87	93	Green	HF12087
	90	96	Pink	HF12090
	93	100	Brown	HF12093
	96			HF12096

1. Packing strips are supplied as solid strips or with strips precut or scored into individual blocks:

TA50 (1 solid block 120x60x5 mm) **TA100** (1 solid block 120x60x10 mm)

TA50 x 24 (24 pieces 5x60x5 mm) **TA100** x 12 (1 block prescored x 12 pieces 10x60x10 mm)

TOLERANT INSERT BLOCKS



Cable/Pipe Tolerant Blocks

Made of zero halogen, intumescent elastomeric polymer. Hawke tolerant blocks are produced in modular form to accommodate cables and/or pipe sizes ranging from 3mm to 100mm in diameter.

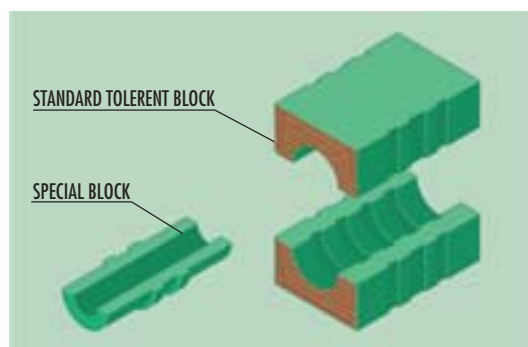
The cable range is shown on the end of each block and indicates the maximum and minimum cable and/or pipe sizes, example 18/21 = 18mm min. 21mm max. For ease of reference each block is colour coded. See Block Selector Table on page 8 for ordering information.

Blank Filler Blocks

Filler Blocks are available in the same materials as the tolerant Blocks. They are used to fill spaces within the frame which are not required for services, thus allowing spare capacity for future requirements.



SPECIAL INSERT BLOCKS



Non Standard penetrations

where Hawke Transit Frames are penetrated by services that are shaped anything other than circular e.g. busbars, earth straps etc. special blocks can be manufactured. Hawke manufacture a range of blocks to suit the most popular waveguide sizes. See table opposite. Please note that other sizes can be made to order. Please contact our Sales Office with details.

To ease assembly and guarantee system performance it is a requirement that cables enter and exit the aperture perpendicular in all axis to the face of the frame.

ELLIPTICAL WAVEGUIDE REF	MAJOR AXIS	MINOR AXIS	STANDARD TOLERANT BLOCK SIZE REQUIRED FOR E.W. INSERT
	MM	MM	
EW220	17.8	11.2	4031
EW132	24.4	15.5	4031
EW127A	28.2	17.1	4031
EW85	33.5	22.9	6049
EW77	43.6	25.4	6049
EW64	48.5	28.4	6049

Hawke Transit System Components



Hawke Cable/Pipe Tolerant Blocks

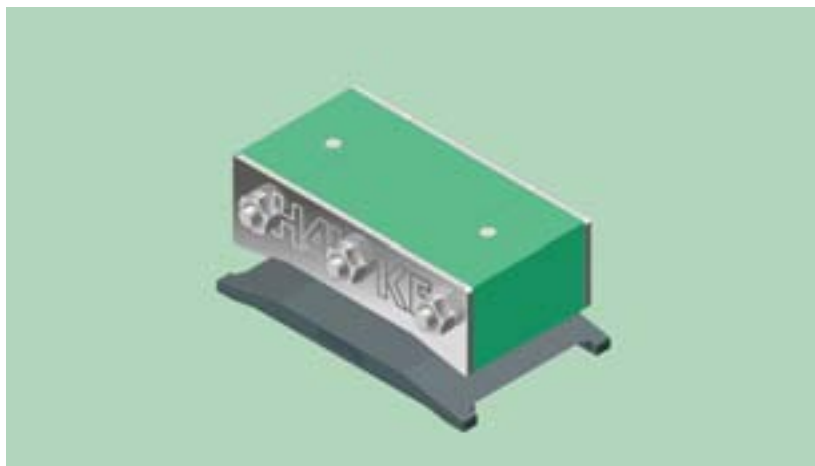
Hawke's unique inspectable colour coded blocks ensure that the top and bottom half of each block has been correctly matched for size.

Hawke cable/pipe tolerant blocks have been designed with a degree of flexibility in order to accommodate variances in cable diameters. Additionally this flexibility enables each Hawke block size to accept a range of cable or pipe diameters.

Available in seven sizes from 3mm to 100mm in diameter, Hawke blocks are marked with minimum and maximum cable diameters e.g. block size 3018 is marked with sizes 18/21 to signify that it will accept cable diameters from 18mm up to maximum of 21mm.

In practice this means that a small number of blocks can accommodate the full range of standard cable sizes. There is less inventory to manage and the installation and inspection procedure is much faster and simpler than competing systems.

COMPRESSION SYSTEM COMPONENTS



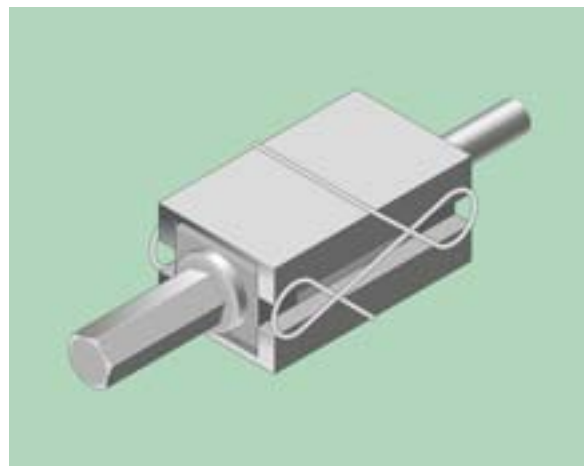
Compression System

Order Codes:

1642 Complete Compression System.

1642A Compression Plate only.

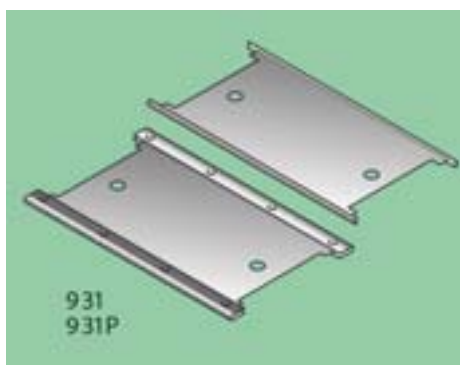
1642B End Packing assembly only.



Compression Tool

Order Code: **981**

HAWKE TRANSIT ACCESSORIES



Stayplates

Order Code: **931** - stainless steel.

For pressure application in excess of 3.5 bar

Order Code: **931P** - stainless steel.



Backing plate

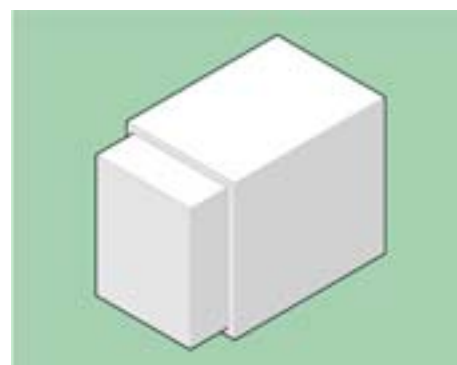
Order Code:

Size 2: **TABP2**

Size 6: **TABP6**

Size 4: **TABP4**

Size 8: **TABP8**



Polystyrene Moulds

Order Code

Size 2 **965/2**

Size 6 **965/6**

Size 4 **965/4**

Size 8 **965/8**



Pulling Device

Order Code: **980**



Lubricant

Order code: **967**



Intumescent Mastic (310ml cartridge)

Order code: **966**

General and Gas applications

HAWKE TRANSIT FRAME DIMENSIONS

Hawke Civil Frame Dimensions

The space available in each frame is divided into two sections; the Compression System 40mm x 120mm and the cable/pipe installation area.

Civil frames are designated by the letters HCX.

The available installation area being indicated by a number added to this designation, i.e.

HCX2

Indicating 60mm x 120mm

Available cable/pipe installation area.

HCX4

Indicating 120mm x 120mm

Available cable/pipe installation area.

HCX6

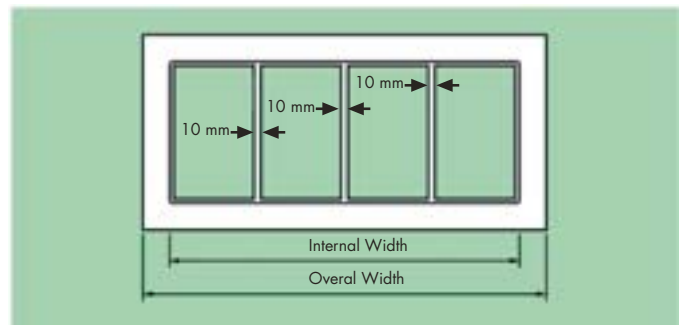
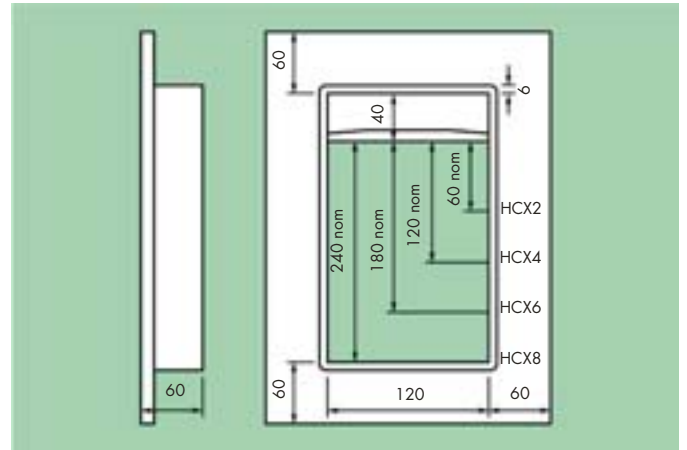
Indicating 180mm x 120mm

Available cable/pipe installation area.

HCX8

Indicating 240mm x 120mm

Available cable/pipe installation area.



Multiple Civil Frames

On multiple frames a 10mm wide strip separates each aperture. To obtain the overall frame length add 10mm for every dividing strip.

Hawke Marine Frame Dimensions

The space available in each frame is divided into two sections; the Compression System 40mm x 120mm and the cable/pipe installation area.

Marine frames are designated by the letters HMX.

The available installation area being indicated by a number added to this designation, i.e.:

HMX2

Indicating 60mm x 120mm

Available cable/pipe installation area.

HMX4

Indicating 120mm x 120mm

Available cable/pipe installation area.

HMX6

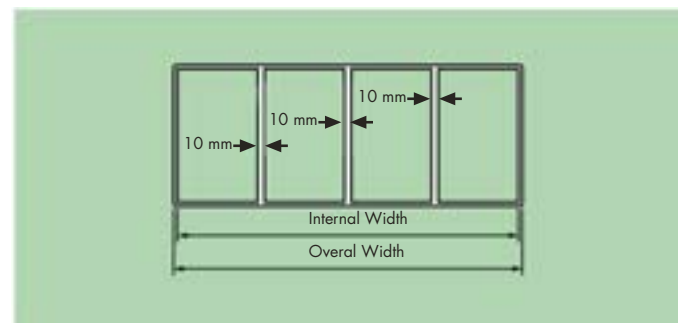
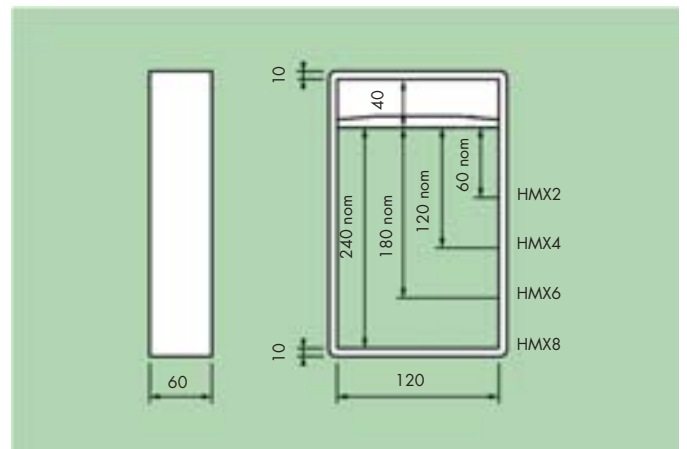
Indicating 180mm x 120mm

Available cable/pipe installation area.

HMX8

Indicating 240mm x 120mm

Available cable/pipe installation area.



Multiple Marine Frames

On multiple frames a 10mm wide strip separates each aperture. To obtain the overall frame length add 10mm for every dividing strip. HMXF, HMOX, HMEX, HMBX and HMRX are also available as multiples

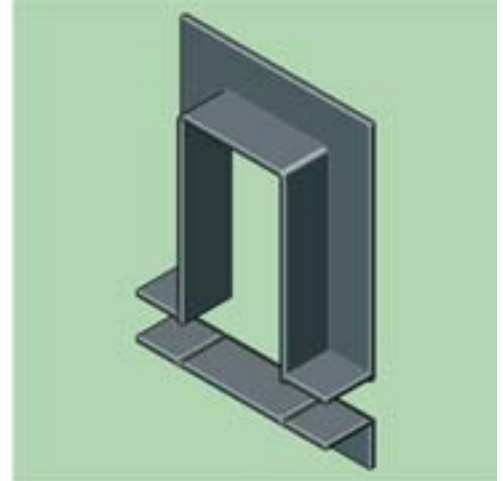
Note: All dimensions are in mm and are nominal sizes. For frame and wall/bulkhead cut out sizes see pages 16 and 18. (civil frames) 24 and 26 (marine frames)

HAWKE CIVIL TRANSIT SY



The HCX Frame

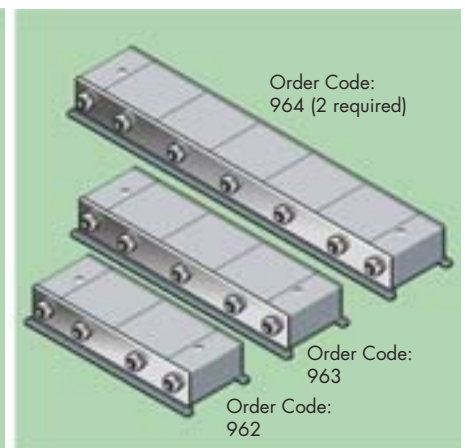
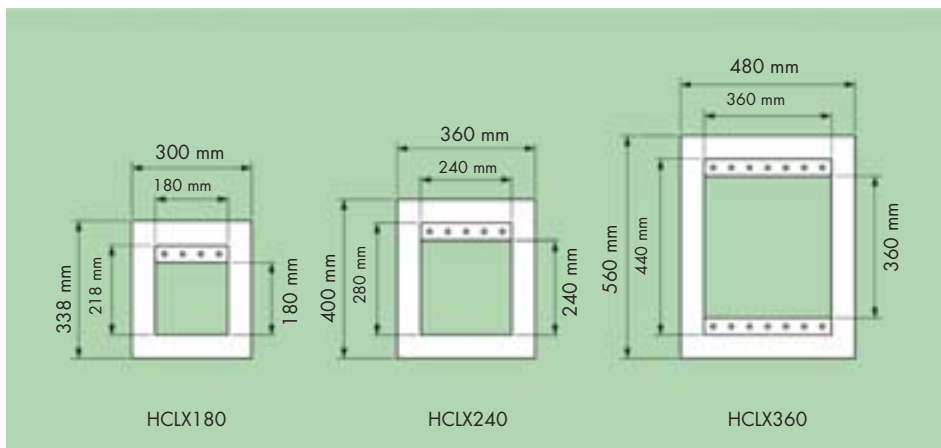
For general use. A compression tool (Order No. 981) is required for use with all 'X' designated frames.



The HCOX Frame

A removable end allows the frame to be installed around existing cables and pipes.

HAWKE TRANSIT LARGE FRAMES



HCLX Civil Large Frames

For sealing services with an overall diameter in excess of 100mm. HCLX Civil large frames are available in three sizes either as single units or as combinations.

FRAME	NOMINAL FRAME DIMENSIONS	
	INSTALLATION AREA	CABLE/PIPE O.D.
	mm	mm
HCLX180	180 x 180	101-140
HCLX240	240 x 240	141-200
HCLX360	360 x 360	200-330

HCLX Compression System

Sealing is accomplished by an extended compression system available for each size of frame. Installation is as the standard unit except that force is applied to the compression plate by a series of compression tools. Top and bottom for 964.

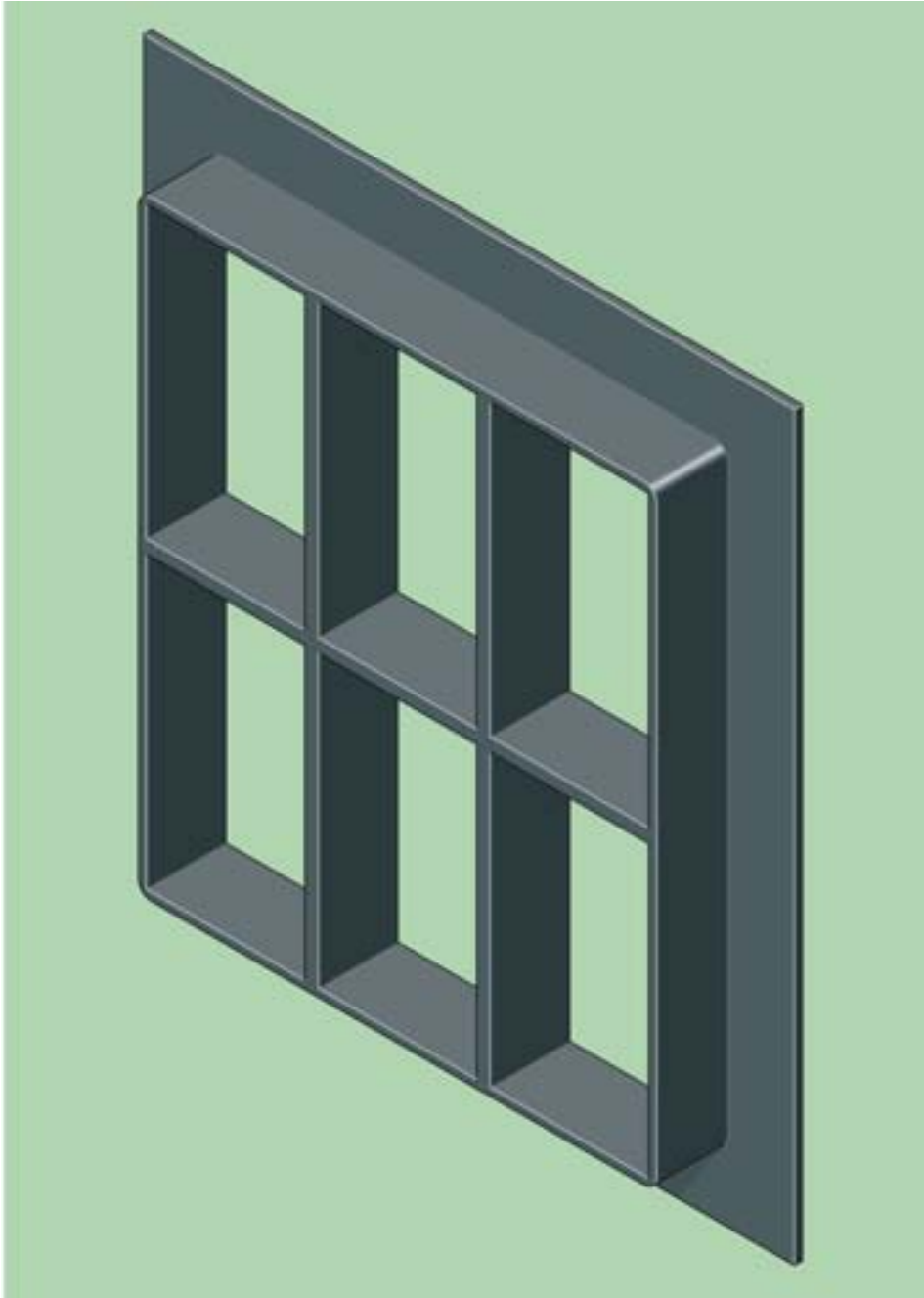
CIVIL FRAMES

Weld Removal

Where aesthetic considerations or specific mounting conditions are a requirement all protruding welds can be ground flush, this process alters standard manufacturing techniques and must be requested when ordering frames, Standard frames should not be modified on site as this could potentially weaken welding joints.

NOMINAL FRAME DIMENSIONS					
CIVIL FRAME	INSTALLATION AREA (mm)	OVERALL HEIGHT (mm)	OVERALL WIDTH (mm)	DEPTH (mm)	THICKNESS (mm)
HCK2	60 X 120	220	240	60	6
HCK4	120 X 120	280	240	60	6
HCK6	180 X 120	340	240	60	6
HCK8	240 X 120	400	240	60	6

STEM FRAME SIZES



CIVIL MULTIPLE FRAMES

Frame Materials

Hawke Transit Frames are available in mild steel, stainless steel and aluminium.

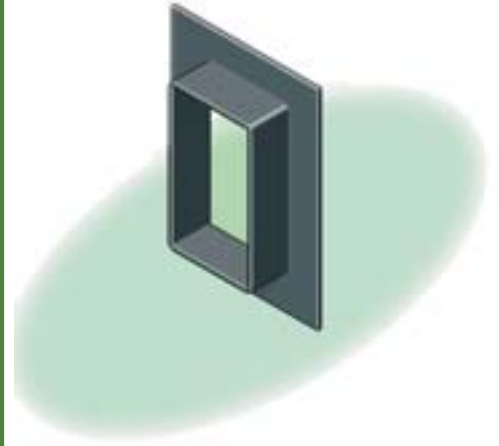
For specialist applications frames can be manufactured to suit customers specific requirements.

Eddy Currents

Where there is a possibility of eddy currents being induced into the transit frames causing the frame to heat up, frames can be manufactured with non magnetic inserts to reduce the effects.

Hawke

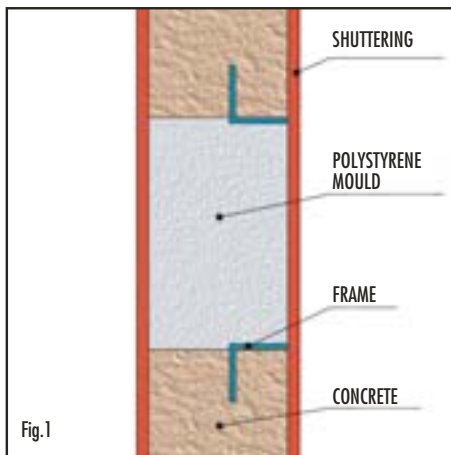
Civil Transit System



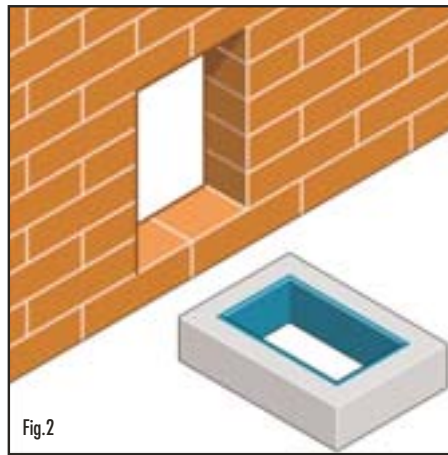
Hawke Civil Transit Frames

- Available in Mild Steel, Stainless Steel and Aluminium
- Easily installed in concrete/brick constructions without the need for specialised tools or personnel
- Available in single and multiple aperture combinations
- Unique Hawke Compression Tool for ease and speed of installation
- Extraction Tool enables blocks to be removed for cabling modifications if required.

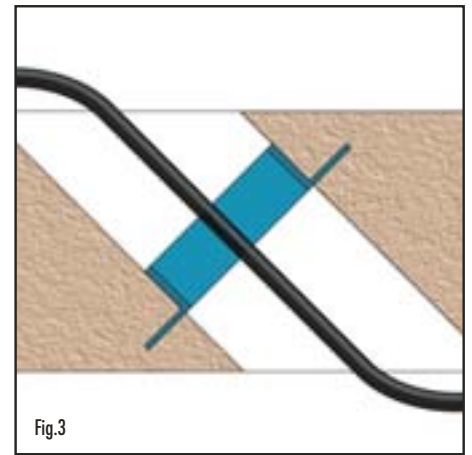
CIVIL TRANSIT SYSTEM INSTALL



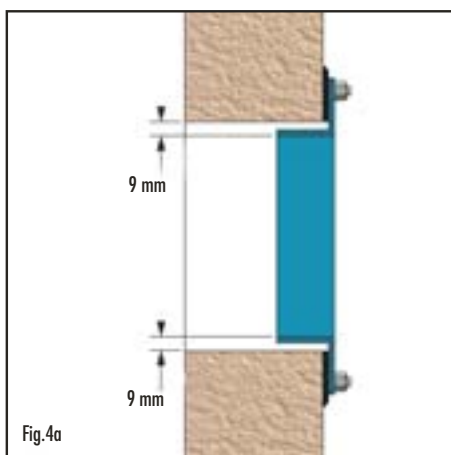
1. The frame can be cast directly into a wall or floor.



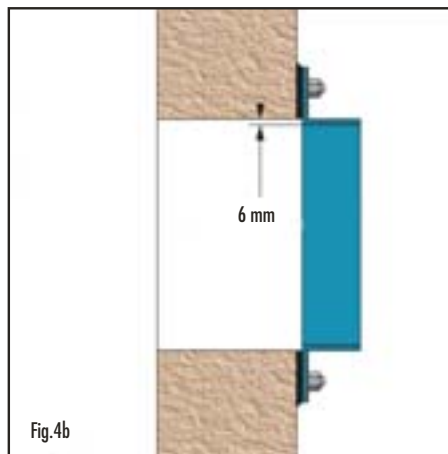
2. The frame may be cast into a concrete jacket this method being normally used for brick and blockwork walls which in turn is fixed into the wall or floor.



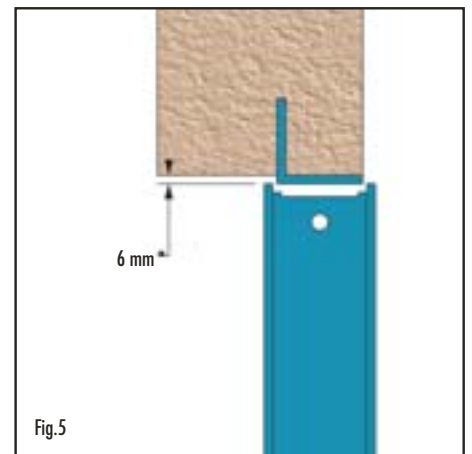
3. Where transits are for cables of a large diameter, inclined installations of the frame is advisable to reduce the bending radius.



4. Frames can be bolted to floors and walls in either of the options shown. For bolted installations mastic should be inserted between the frames flange and the structure. Use Hawke mastic Ref. 966. When frames are reverse fixed then 9mm clearance is required to all faces. Hawke recommend a minimum of 1 hole per corner set 25mm in from outside edge of frame with additional fixings at a max of 200mm centres.

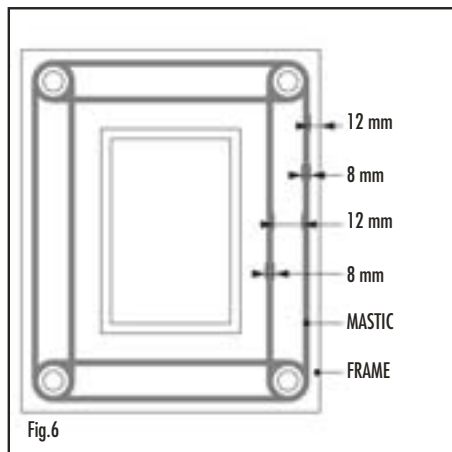


Size of fixing holes and type of fastener are to be established by the civil contractor dependent on size of frame weight and structure to which it is to be fixed.



5. Stayplates and compression plates have retaining lugs. Clearance for these must be allowed when a frame is cast into a structure. This allowance is 12mm and should be added to the total internal width of the frame to obtain the correct dimensions. Hawke Moulds have this allowance built in. (See Page 10).

LATION INSTRUCTIONS



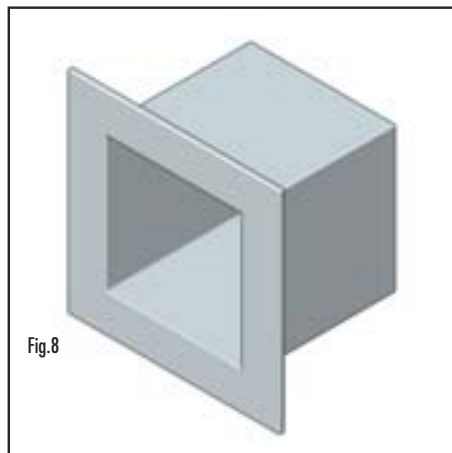
Mastic Application

Each 330ml tube of mastic should be sufficient to mount and seal 3 individual frames or a multiple frame of up to 4 apertures

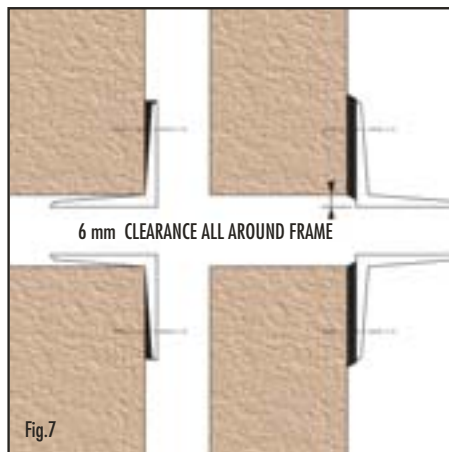
1. Prior to application of sealant ensure that faces to be sealed are dry and free from grease and any loose material, ensure that transit frame mates up with any fixings/holes already present checking especially the aperture over which the frame is to be mounted.

2. Cut nozzle on mastic to produce a bead diameter of approximately 8mm.

3. Apply two parallel rows of mastic and run a bead of mastic around each hole as shown in Fig.6.

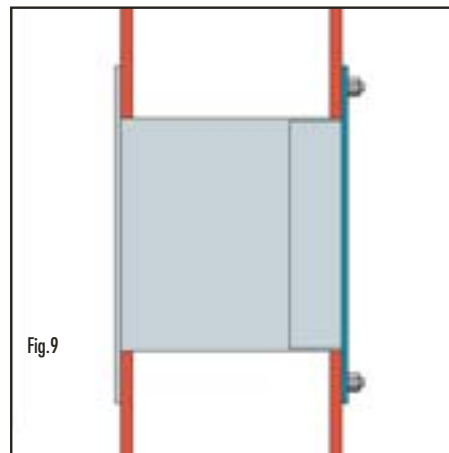


Lightweight sheet steel backing plates are available to be used in conjunction with Hawke Civil Frames. These maintain the openings through the walls and floors and add to the finished appearance of the installation.



4. The mastic can be applied to front or rear of the frame dependant on the installation, see Fig.7.

5. The frame can now be placed over its fixings and the fasteners tightened to clamp the frame to the wall. In tightening the fixtures the mastic should be extruded out of the decreasing gap between frame and structure, any excess should be removed and disposed of. When tightened up to the required amount, the mastic should be faced off to the frame leaving a fillet of mastic around the internal and external edges of the frame. See Fig.7 above.



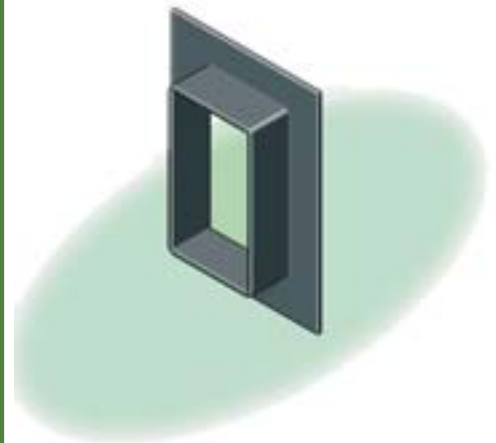
It should be noted that the backing plates do not add to the fire resistance of a transit assembly and should not be used to stop fire spread in cavity walls.

Backing plates are produced in standard lengths for wall thickness of 60mm to 200mm for sizes 2, 4, 6 and 8 frames plus multiples thereof, but specials can be made.

Please state thickness of wall when ordering.

Hawke

Civil Transit System



Installations and Applications

There are several methods which can be used to install Hawke Frames, each method giving an inspectable professional finish to any cable penetration.

When fixing frames to concrete/brick type structures care should be taken if using expanding type fixings as they could burst into the aperture. For Hawke Frames which are cast into a wall or floor it is recommended that a Hawke Polystyrene Mould is used. Frames and moulds require support to ensure that the correct position is maintained whilst the concrete is being poured. This may be achieved by nailing through the shuttering into the mould.

Hawke Moulds are available to suit sizes 2, 4, 6 and 8 frames with 300mm lengths and may be cut to suit the depth of the wall or floor as required.

CIVIL FRAME - DIMENSIONAL DATA

MINIMUM APERTURE DIMENSIONS WHEN FRAMES ARE CAST INTO OR BOLTED * ONTO A WALL										
Frame Type	MULTIPLE									
	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
HCX 2	(h)113	113	113	113	113	113	113	113	113	113
HCOX 2	X	X	X	X	X	X	X	X	X	X
	(w)132	262	392	522	652	782	912	1042	1172	1302
HCX 4	171.5	171.5	171.5	171.5	171.5	171.5	171.5	171.5	171.5	171.5
HCOX 4	X	X	X	X	X	X	X	X	X	X
	132	262	392	522	652	782	912	1042	1172	1302
HCX 6	230	230	230	230	230	230	230	230	230	230
HCOX 6	X	X	X	X	X	X	X	X	X	X
	132	262	392	522	652	782	912	1042	1172	1302
HCX 8	288.5	288.5	288.5	288.5	288.5	288.5	288.5	288.5	288.5	288.5
HCOX 8	X	X	X	X	X	X	X	X	X	X
	132	262	392	522	652	782	912	1042	1172	1302
HCX 2+2	224	224	224	224	224	224	224	224	224	224
HCOX 2+2	X	X	X	X	X	X	X	X	X	X
	132	262	392	522	652	782	912	1042	1172	1302
HCX 2+4	282.5	282.5	282.5	282.5	282.5	282.5	282.5	282.5	282.5	282.5
HCOX 2+4	X	X	X	X	X	X	X	X	X	X
	132	262	392	522	652	782	912	1042	1172	1302
HCX 2+6	341	341	341	341	341	341	341	341	341	341
HCOX 2+6	X	X	X	X	X	X	X	X	X	X
	132	262	392	522	652	782	912	1042	1172	1302
HCX 2+8	399.5	399.5	399.5	399.5	399.5	399.5	399.5	399.5	399.5	399.5
HCOX 2+8	X	X	X	X	X	X	X	X	X	X
	132	262	392	522	652	782	912	1042	1172	1302
HCX 4+4	341	341	341	341	341	341	341	341	341	341
HCOX 4+4	X	X	X	X	X	X	X	X	X	X
	132	262	392	522	652	782	912	1042	1172	1302
HCX 4+6	399.5	399.5	399.5	399.5	399.5	399.5	399.5	399.5	399.5	399.5
HCOX 4+6	X	X	X	X	X	X	X	X	X	X
	132	262	392	522	652	782	912	1042	1172	1302
HCX 4+8	458	458	458	458	458	458	458	458	458	458
HCOX 4+8	X	X	X	X	X	X	X	X	X	X
	132	262	392	522	652	782	912	1042	1172	1302
HCX 6+6	458	458	458	458	458	458	458	458	458	458
HCOX 6+6	X	X	X	X	X	X	X	X	X	X
	132	262	392	522	652	782	912	1042	1172	1302
HCX 6+8	516.5	516.5	516.5	516.5	516.5	516.5	516.5	516.5	516.5	516.5
HCOX 6+8	X	X	X	X	X	X	X	X	X	X
	132	262	392	522	652	782	912	1042	1172	1302
HCX 8+8	575	575	575	575	575	575	575	575	575	575
HCOX 8+8	X	X	X	X	X	X	X	X	X	X
	132	262	392	522	652	782	912	1042	1172	1302

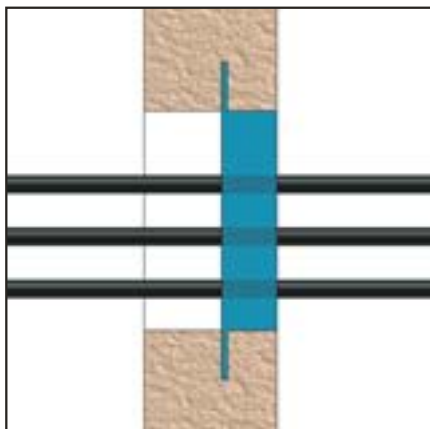
When cast apertures are produced using a Hawke preformed polystyrene mould these clearances are built in.
When frames are to be turned into a wall add 6mm to each of the dimensions used from the above table.

MINIMUM APERTURE DIMENSIONS WHEN FRAMES ARE CAST INTO OR BOLTED* ONTO A WALL						
Frame Type	MULTIPLE					
	x1	x2	x3	x4	x5	x6
	mm	mm	mm	mm	mm	mm
HCLX 180	(h)230	230	230	230	230	230
	x	x	x	x	x	x
	(w)192	382	572	762	952	1142
HCLX 240	292	292	292	292	292	292
	x	x	x	x	x	x
	252	502	752	1002	1252	1502
HCLX360	452	452	452	452	452	452
	x	x	x	x	x	x
	372	742	1112	1482	1852	2222

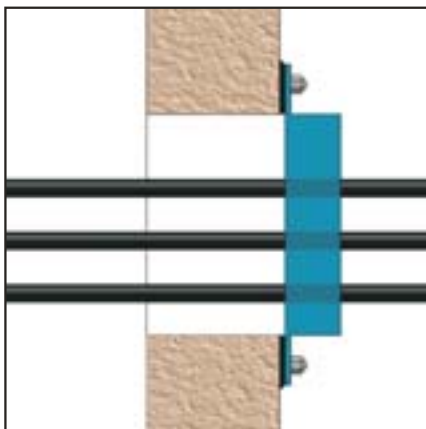
For other HCLX frame styles and sizes please contact Hawke technical dept.

When frames are to be turned into a wall add 6mm to each of the dimensions used from the above table.

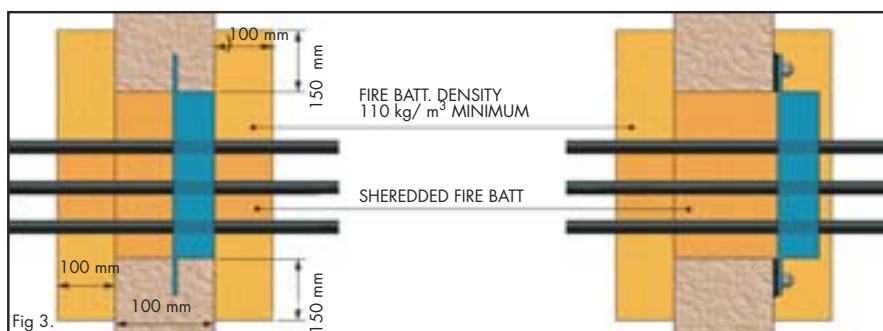
CIVIL APPROVALS - FIRE



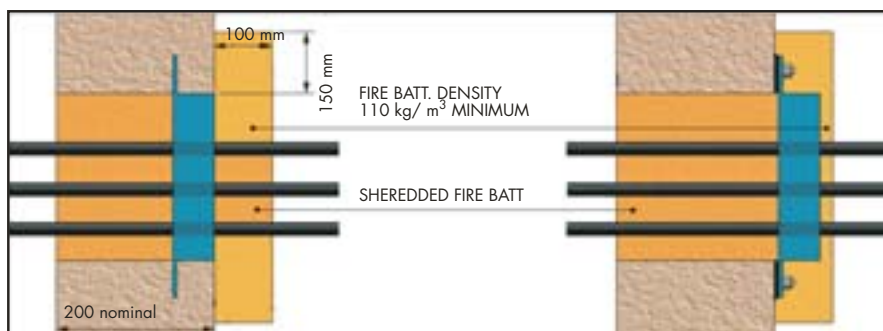
1. Frame cast into wall or floor.



2. For frames bolted to walls or floors, 966 Hawke intumescent mastic to be used behind the flange or frame.

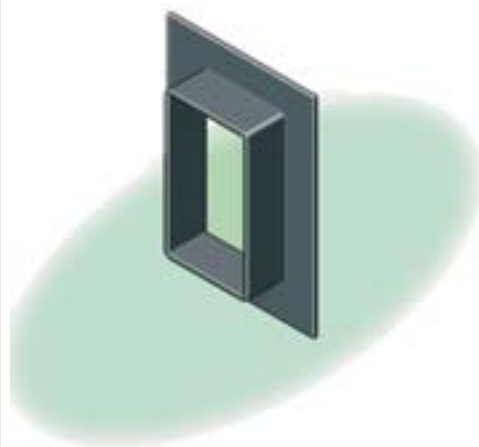


3. For periods in excess of 120 mins, it may be necessary for frames to be mounted on both sides of the wall or to be insulated as shown. (Contact Hawke for latest tech info).



4. For certain conditions it may be necessary to restrict the average temperature rise above ambient on the unexposed face of a compartment wall or floor. Since the metal used in cable construction readily transmits heat, the following installation methods are recommended to provide compliance for up to 360 minutes. (See Figs. 3 and 4 above).

Hawke Civil Transit System



Civil Approvals - Fire

In order to limit the spread of fire, regulations generally demand that buildings are divided into compartments each offering a degree of fire spread resistance.

Hawke have tested the Transit system extensively to National and International standards

CIVIL TRANSIT SYSTEMS - MULTIPLE

MULTIPLE FRAME SIZE CHART

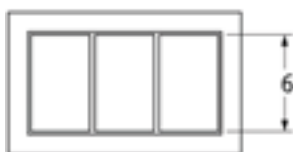
FRAME SIZE/ COMBINATION	OVERALL HEIGHT	OVERALL WIDTH EXTERNAL									
	EXTERNAL	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10
	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM
HCX-2X	221	240	370	500	630	760	890	1020	1150	1280	1410
HCX-4X	279.5	240	370	500	630	760	890	1020	1150	1280	1410
HCX-6X	338	240	370	500	630	760	890	1020	1150	1280	1410
HCX-8X	396.5	240	370	500	630	760	890	1020	1150	1280	1410
HCX-2+2X	332	240	370	500	630	760	890	1020	1150	1280	1410
HCX-2+4X	390.5	240	370	500	630	760	890	1020	1150	1280	1410
HCX-2+6X	449	240	370	500	630	760	890	1020	1150	1280	1410
HCX-2+8X	507.5	240	370	500	630	760	890	1020	1150	1280	1410
HCX-4+4X	499	240	370	500	630	760	890	1020	1150	1280	1410
HCX-4+6X	507.5	240	370	500	630	760	890	1020	1150	1280	1410
HCX-4+8X	566	240	370	500	630	760	890	1020	1150	1280	1410
HCX-6+6X	566	240	370	500	630	760	890	1020	1150	1280	1410
HCX-6+8X	624.5	240	370	500	630	760	890	1020	1150	1280	1410
HCX-8+8X	683	240	370	500	630	760	890	1020	1150	1280	1410

x= number of frames wide. Material thickness is 6 mm externally and 10mm between multiple apertures.

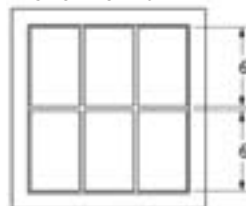
Please Note: Frames can be supplied in multiple stacking arrangements.

Examples:

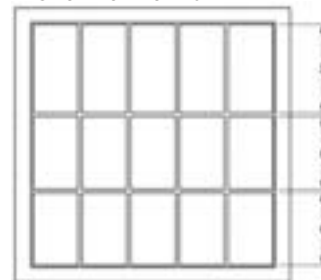
HCX6 x 3



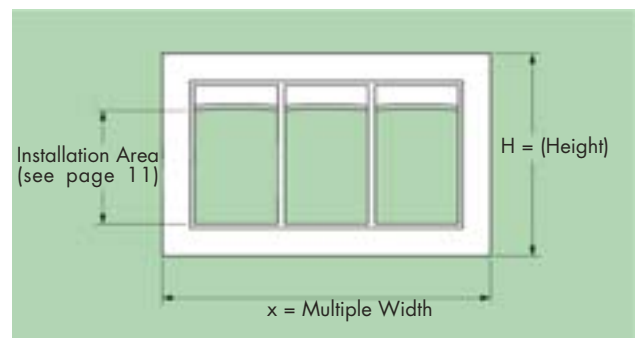
HCX6 + 6 x 3



HCX6 + 6 + 8 x 3



MAXIMUM NUMBER OF CABLES/PIPES							
MM	MODULAR SIZE						
	15	20	30	40	60	90	120
FRAME SIZE	MAXIMUM NUMBER OF CABLES/PIPES						
HMX-2	32	18	8	3	2	-	-
HMX-4	64	36	16	9	4	1	1
HMX-6	96	54	24	12	6	2	1
HMX-8	127	72	32	18	8	2	2



FRAME APPLICATION DATA

Hawke Civil Transit System



WEIGHT CHART							
MATERIAL	FRAME SIZE/ COMBINATION	x1 KGS	X2 KGS	X3 KGS	X4 KGS	X5 KGS	X6 KGS
MILD STEEL	2	3.2	4.9	7.1	9.0	11.1	13.0
	4	3.9	6.0	8.2	10.5	12.6	14.9
	6	4.5	7.0	9.5	11.6	14.1	16.2
	8	5.1	7.9	10.6	13.3	16.2	18.6
	2+2	5.1	8.1	11.0	14.1	17.2	20.1
	2+4	5.7	9.2	12.5	15.9	19.5	22.8
	2+6	6.3	10.1	13.7	17.5	21.4	25.1
	2+8	7.0	11.2	15.2	19.4	23.7	28.1
	4+4	6.1	10.0	13.7	17.5	21.4	24.0
	4+6	7.0	11.2	15.2	19.4	23.7	23.9
	4+8	7.4	12.0	16.3	20.8	25.4	29.8
	6+6	7.5	11.7	15.9	19.8	23.7	27.6
	6+8	8.2	13.1	18.0	22.9	28.0	32.8
	8+8	8.7	13.4	19.6	22.5	27.5	32.4
STAINLESS STEEL	2	3.3	5.2	7.2	9.1	11.1	13.0
	4	4.0	6.2	8.4	10.6	12.8	15.0
	6	4.6	7.0	9.5	11.9	14.3	17.5
	8	5.3	8.0	10.8	14.1	16.4	19.1
	2+2	5.2	8.2	11.3	14.3	17.3	20.4
	2+4	5.2	8.2	11.3	14.3	17.3	20.4
	2+6	6.4	10.2	14.0	17.9	21.7	25.5
	2+8	7.0	11.2	15.4	19.6	23.8	28.0
	4+4	6.4	10.2	14.0	17.9	21.7	25.5
	4+6	7.0	11.2	15.4	19.6	23.8	28.0
	4+8	7.7	12.0	16.7	21.2	25.7	30.2
	6+6	7.4	11.9	16.4	20.9	25.4	29.9
	6+8	8.5	13.4	18.4	23.4	28.4	33.4
	8+8	9.2	14.5	20.1	25.4	31.1	36.3
ALUMINIUM	2	1.2	1.9	2.6	3.2	3.9	4.2
	4	1.3	2.0	2.8	3.5	4.3	5.0
	6	1.7	2.5	3.3	4.2	5.0	5.8
	8	1.7	2.6	3.6	4.5	5.5	6.4
	2+2	1.9	2.9	4.0	5.0	6.0	7.1
	2+4	1.9	3.1	4.3	5.4	6.6	7.8
	2+6	2.3	3.6	4.9	6.2	7.5	8.8
	2+8	2.3	3.8	5.2	6.6	8.1	9.5
	4+4	2.3	3.6	4.9	6.2	7.5	8.8
	4+6	2.3	3.8	5.2	6.6	8.1	9.5
	4+8	2.7	4.1	5.8	7.3	8.9	10.4
	6+6	2.7	4.0	5.8	7.3	8.9	10.4
	6+8	2.8	4.7	6.2	7.9	9.6	11.3
	8+8	3.1	4.9	7.0	8.8	10.7	12.6

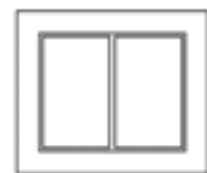
Civil Multiple Frames

Multiple frames consist of two or more apertures arranged either horizontally, vertically or a combination of both.

When specifying multiple frames a '+' sign signifies that the apertures are stacked in a vertical row e.g. one on top of the other.

An 'x' sign means that the apertures are arranged side by side in an horizontal row.

Examples:

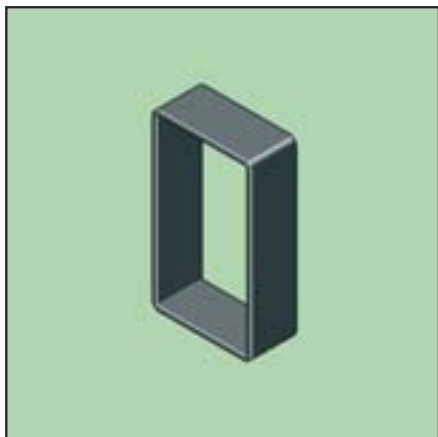


HCX6 x 2

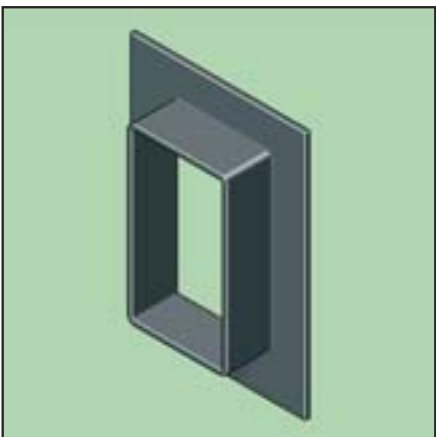


HCX6 + 6 x 2

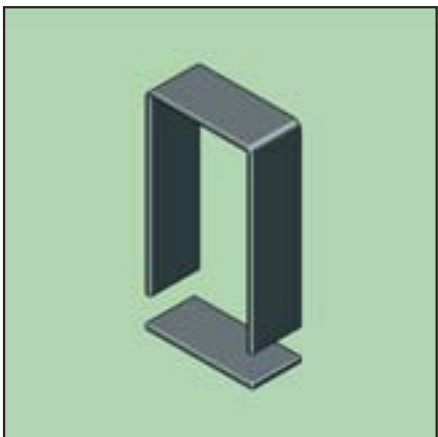
HAWKE MARINE TRANSITS



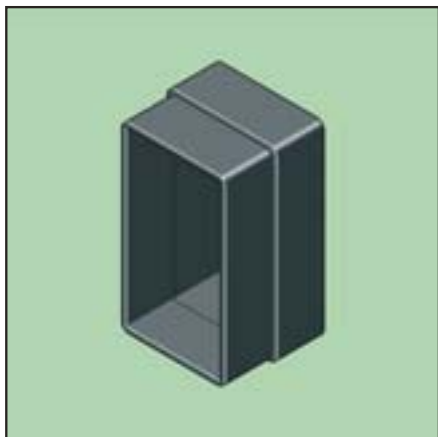
The HMX Frame
For general use. A Hawke compression tool (Ref.981) is required for use with all 'x' designated frames.



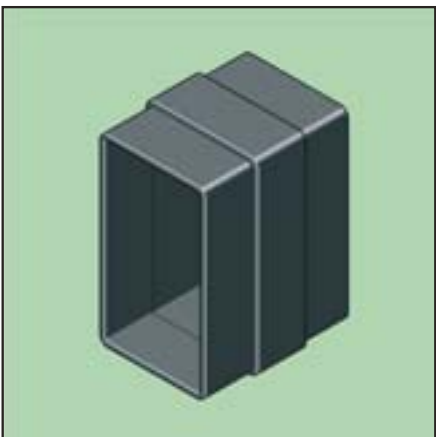
The HMFx Frame
Has a 60mm wide flange and is available in the same materials and finishes as HMX frames. For overall dimensions of HMFx frames add 120mm (allowance for flange) to those given for standard HMX frames.



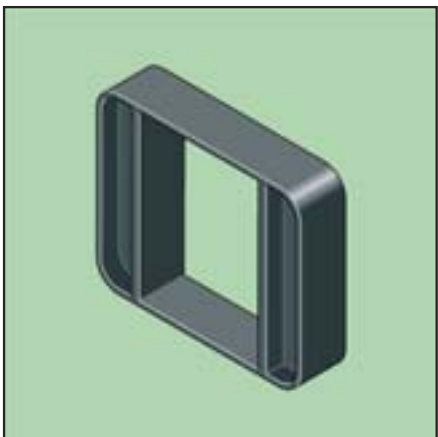
The HMOx Frame
A removable end allows the frame to be installed around existing cables and pipes.



The HMEx Frame
A standard HMX frame extended using a welded collar. For use in corrugated bulkheads or to fit the frame above deck level. For overall dimensions of HMEx frames add 20mm to external measurements of Standard HMX frames.



The HMBx Frame
For sealing cable routes in uninsulated HO rated areas or similar applications. Add 20mm to external dimensions of standard HMX frames to determine overall width and height.



The HMRx Frame
For stressed area applications, end fillet pieces with radius corners are added to the HMX frame.

Also used in 2 hour Jet Fire applications

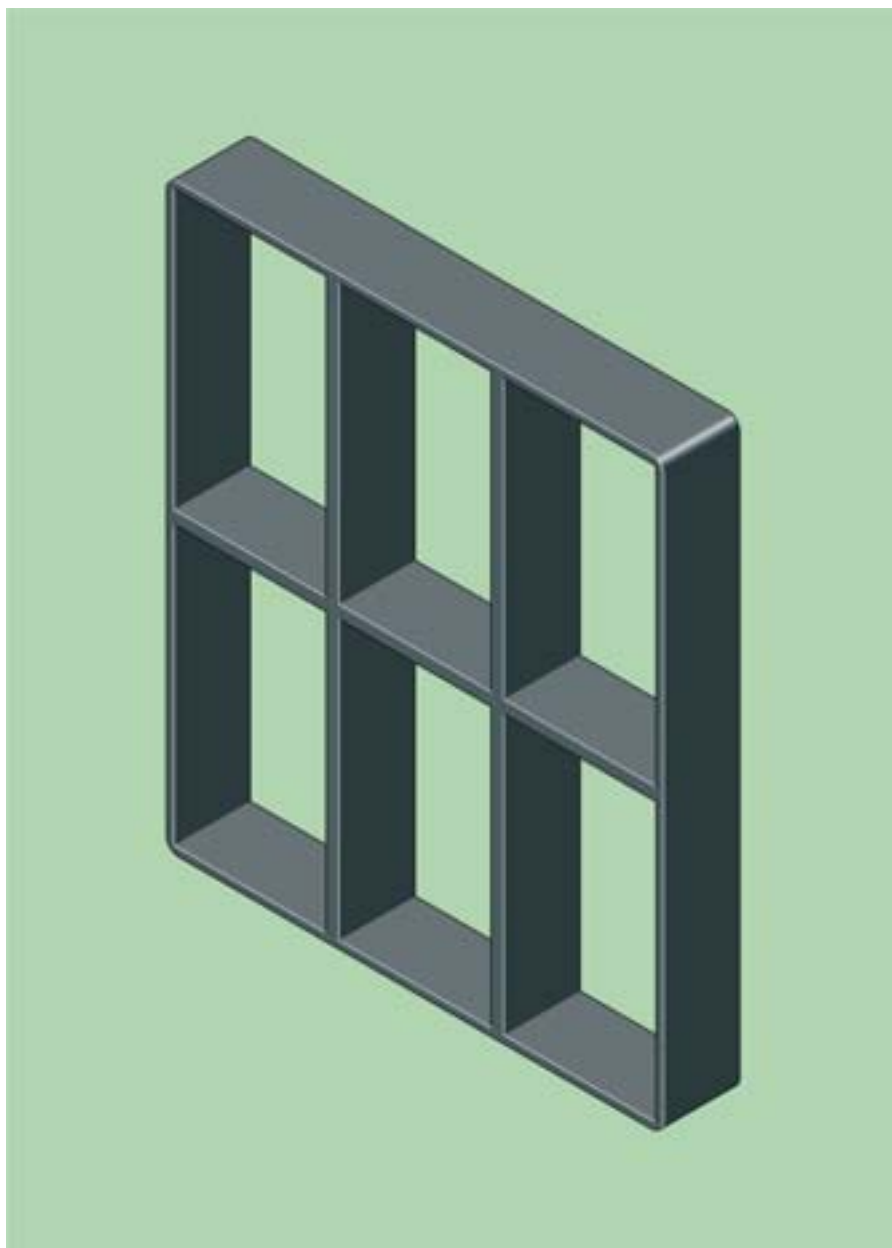
Marine Frames

Weld Removal

Where aesthetic considerations or specific mounting conditions are a requirement all protruding welds can be ground flush, this process alters standard manufacturing techniques and must be requested when ordering frames. Standard frames should not be modified on site as this could potentially weaken welding joints.

NOMINAL FRAME DIMENSIONS					
MARINE FRAME	INSTALLATION AREA MM	OVERALL HEIGHT MM	OVERALL WIDTH MM	DEPTH MM	THICKNESS MM
HMX2	60x120	120	140	60	10
HMX4	120x120	180	140	60	10
HMX6	180x120	240	140	60	10
HMX8	240x120	300	140	60	10

SYSTEM FRAME SIZES



MARINE MULTIPLE FRAMES

Frame Materials

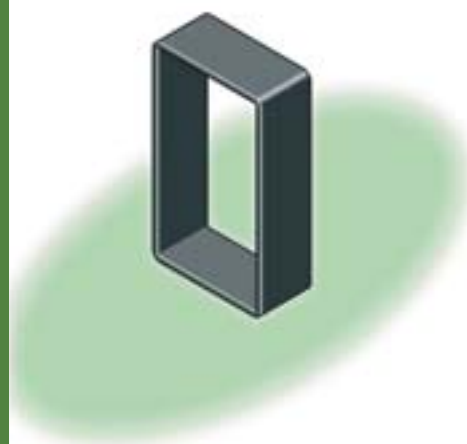
Hawke Transit Frames are available in Mild Steel, stainless steel and aluminium. For specialist applications frames can be manufactured to suit customers specific requirements.

Eddy Currents

Where there is a possibility of eddy currents being induced into the transit frames causing the frame to heat up, frames can be manufactured with non magnetic inserts to reduce the effects.

Hawke

Marine Transit System



Hawke Marine Transit Frames

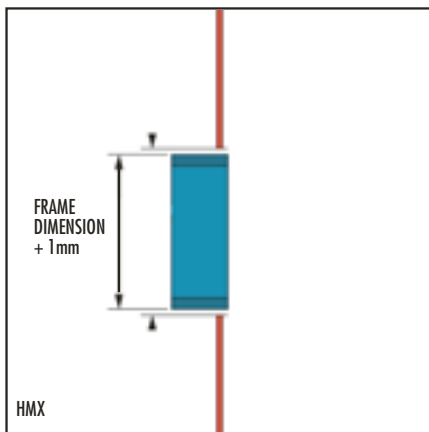
- Available in Mild Steel, Stainless Steel and Aluminium
- Fully certified for Marine applications
- Easily installed using standard welding techniques
- Unique Hawke Compression Tool for ease and speed of installation
- Extraction Tool enables blocks to be removed for cabling modifications

MARINE FRAME INSTALLATION INSTRUCTIONS

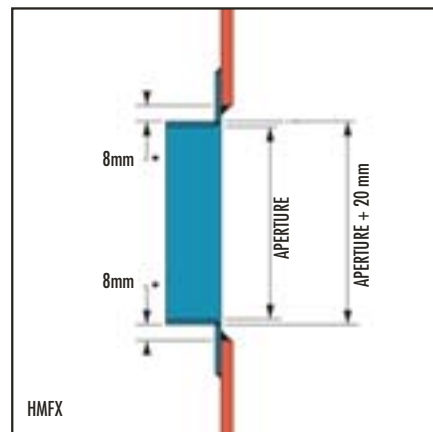
Installation Methods

A choice of Hawke Marine Frames is available to meet the varied criteria given by each situation.

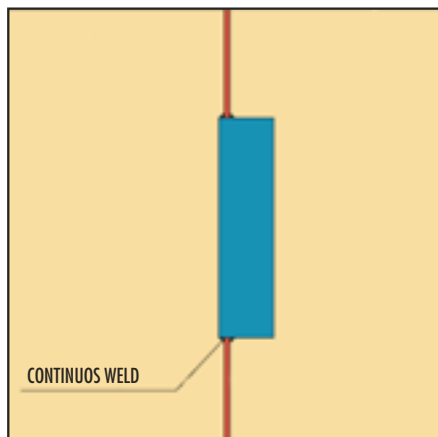
Examples of frame installations are as follows, each method giving an inspectable professional finish to any cable penetration.



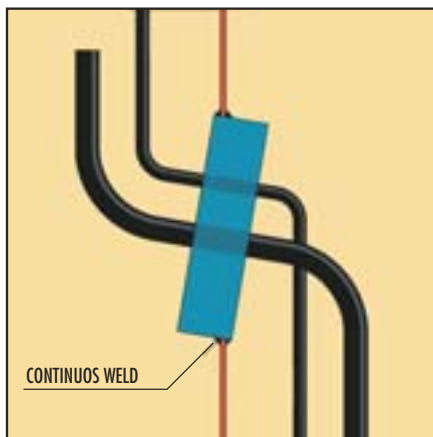
For HMX Frames.
Bulkhead aperture diameter must be Frame size plus 1mm. See table on page 26.



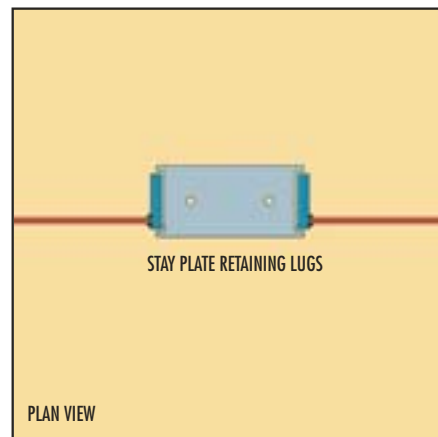
For HMFx Frames.
A minimum clearance of 16 mm is required to both height and width dimensions as shown.



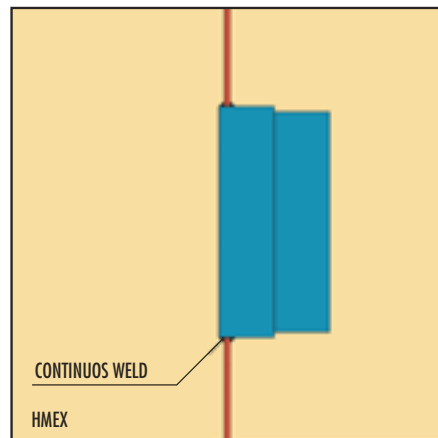
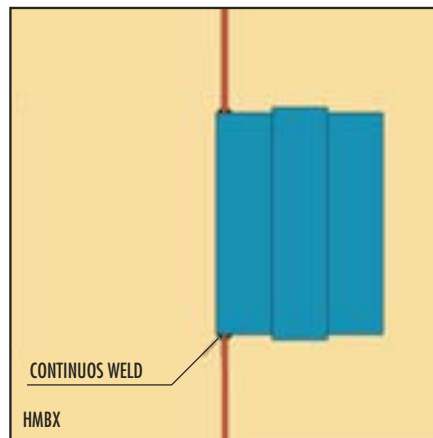
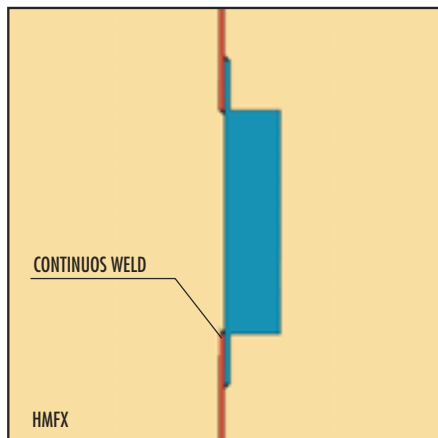
Hawke Marine Frames should be welded from both sides.



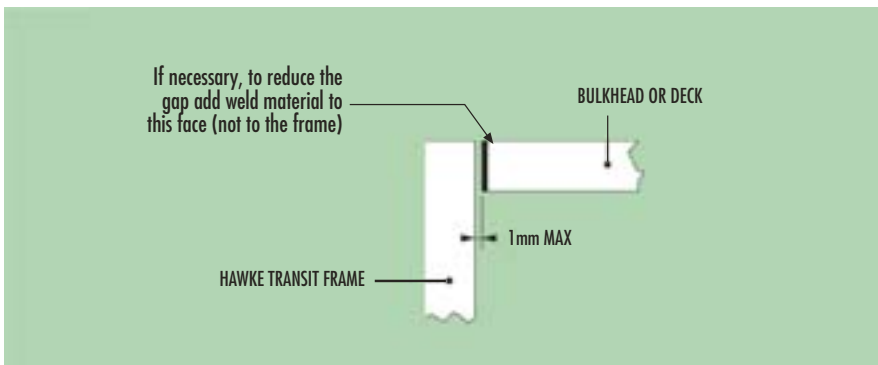
Hawke Marine Frames can be offset from the horizontal or vertical to reduce the bending radius on cables passing through them.



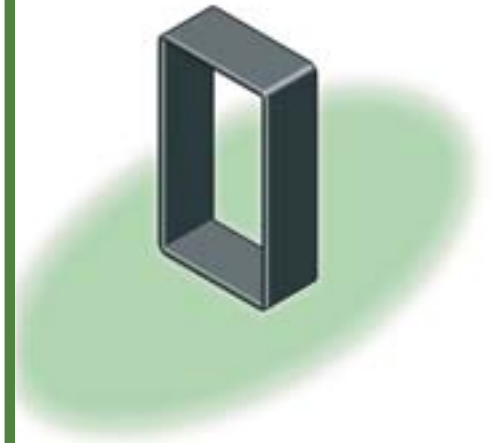
Note: When installing Marine Frames ensure the edges of the frame are free of weld which could interfere with retaining lugs on stay and compression plates.



FRAME WELDING INSTRUCTIONS

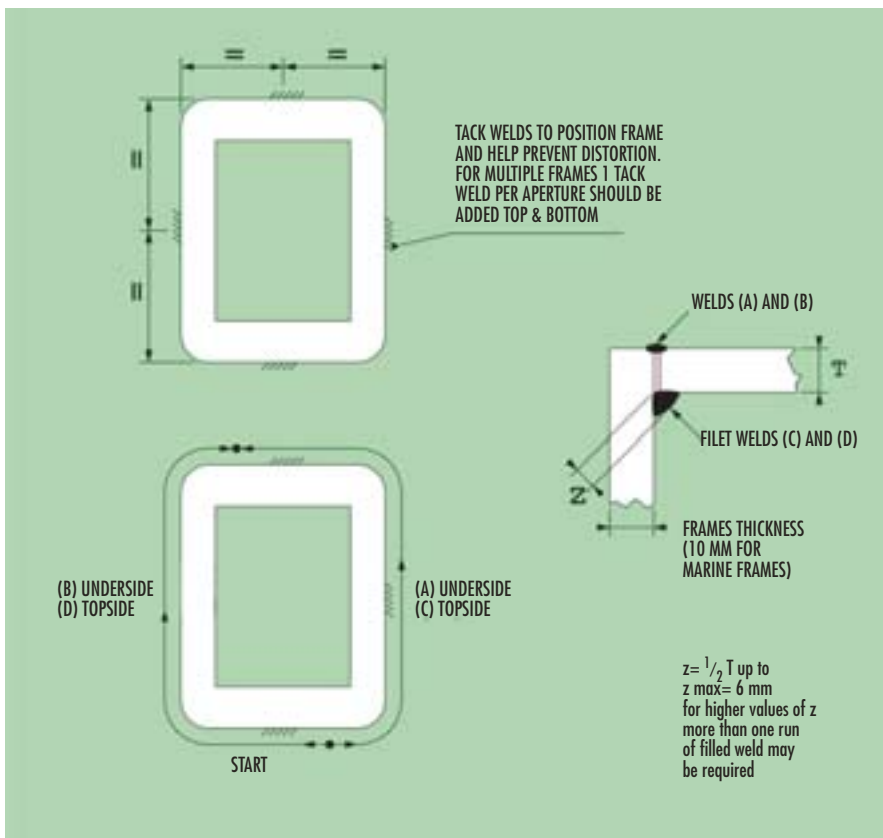


The aperture in the bulkhead/deck should be cut out such that the gap surrounding the frame 1mm.
If gap is in excess of 1mm weld material may be added to the bulkhead/deck cut face to reduce the gap. The bulkhead/deck should then be dressed and prepared as previously stated.



Welding Instructions for Mild and Stainless Steel Frames

Prior to any welding process the joint and surrounding area should be prepared. The area must be clean, dry and free from any oil, grease, scale or oxide and any other debris/contaminates that may affect weld performance e.g. protective coatings and primers.



Prior to completing welds on either side of the bulkhead the frame should be tacked into position as in the sketch above. The tack welds reducing the amount of distortion in the parent metals.
The frame must be welded from both sides of the bulkhead.

Welding Sequence

1st (A) underside, 2nd (B) underside, 3rd (C) topside, 4th (D) topside

Note: Allow adequate time for cooling to prescribed levels to prevent cracking between each weld run. Weld runs should not start or stop at a tack weld but should run over a tack.

M U L T I P L E F R A M E A P P

FRAME SIZE CHART - MULTIPLE WIDTH x SINGLE HEIGHT

FRAME SIZE/ COMBINATION	OVERALL HEIGHT EXTERNAL MM	OVERALL WIDTH EXTERNAL									
		X1 MM	X2 MM	X3 MM	X4 MM	X5 MM	X6 MM	X7 MM	X8 MM	X9 MM	X10 MM
HMX-2x	121	140	270	400	530	660	790	920	1050	1180	1310
HMX-4x	179.5	140	270	400	530	660	790	920	1050	1180	1310
HMX-6x	238	140	270	400	530	660	790	920	1050	1180	1310
HMX-8x	296.5	140	270	400	530	660	790	920	1050	1180	1310

FRAME SIZE CHART - SINGLE WIDTH x MULTIPLE HEIGHT

HMX-2+2x	232	140	FOR SINGLE APERTURE STACK FRAMES ONLY								
HMX-2+4x	290.5	140									
HMX-2+6x	349	140									
HMX-2+8x	407.5	140									
HMX-4+4x	349	140									
HMX-4+6x	407.5	140									
HMX-4+8x	466	140									
HMX-6+6x	466	140									
HMX-6+8x	524.5	140									
HMX-8+8x	583	140									

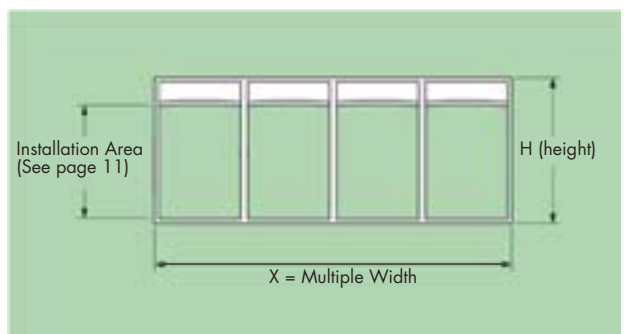
FRAME SIZE CHART - MULTIPLE WIDTH x SINGLE HEIGHT

HMX-2+2x	242	-	270	400	530	660	790	920	1050	1180	1310
HMX-2+4x	300.5	-	270	400	530	660	790	920	1050	1180	1310
HMX-2+6x	359	-	270	400	530	660	790	920	1050	1180	1310
HMX-2+8x	417.5	-	270	400	530	660	790	920	1050	1180	1310
HMX-4+4x	359	-	270	400	530	660	790	920	1050	1180	1310
HMX-4+6x	417.5	-	270	400	530	660	790	920	1050	1180	1310
HMX-4+8x	476	-	270	400	530	660	790	920	1050	1180	1310
HMX-6+6x	476	-	270	400	530	660	790	920	1050	1180	1310
HMX-6+8x	534.5	-	270	400	530	660	790	920	1050	1180	1310
HMX-8+8x	593	-	270	400	530	660	790	920	1050	1180	1310

X= number of frames wide. Material thickness is 10 mm

MAXIMUM NUMBER OF CABLES/PIPES

FRAME SIZE	MODULAR SIZE						
	15	20	30	40	60	90	120
MAXIMUM NUMBER OF CABLES/PIPES							
HMX-2	32	18	8	3	2	-	-
HMX-4	64	36	16	9	4	1	1
HMX-6	96	54	24	12	6	2	1
HMX-8	127	72	32	18	8	2	2





WEIGHT CHART IN KILOGRAMS							
MATERIAL	FRAME SIZE/ COMBINATION	X1 KGS	X2 KGS	X3 KGS	X4 KGS	X5 KGS	X6 KGS
MILD STEEL	2	2.2	3.7	5.3	7.6	9.6	11.3
	4	2.8	4.8	6.4	8.5	10.6	12.6
	6	3.4	5.6	7.8	10.0	12.3	14.7
	8	3.7	6.1	8.6	11.0	13.5	16.1
	2+2	3.8	8.3	12.0	15.9	19.9	23.7
	2+4	4.3	9.0	12.9	16.9	21.1	25.0
	2+6	1.9	9.4	13.7	18.0	22.3	26.4
	2+8	5.6	10.5	14.8	19.3	23.9	28.3
	4+4	4.9	9.4	13.5	16.8	22.3	26.4
	4+6	5.5	10.5	14.8	19.3	23.9	28.3
	4+8	6.0	11.3	15.9	20.7	25.5	30.2
	6+6	5.7	11.2	15.9	20.7	25.5	28.0
	6+8	6.4	12.2	17.1	22.3	27.5	32.5
	8+8	7.0	13.1	17.0	23.9	29.5	34.9
STAINLESS STEEL	2	3.0	4.0	5.9	7.7	9.5	11.3
	4	2.8	4.9	6.8	8.7	10.7	12.7
	6	3.3	5.5	7.7	10.3	12.3	14.6
	8	3.9	6.6	9.2	11.8	14.4	17.0
	2+2	3.8	8.4	12.3	16.2	20.1	24.0
	2+4	4.2	8.9	13.0	17.0	21.1	25.1
	2+6	5.0	9.8	14.1	18.3	22.6	26.8
	2+8	5.5	10.5	15.0	19.5	24.0	28.5
	4+4	5.0	9.8	14.1	18.3	22.6	26.8
	4+6	5.5	10.5	15.0	19.5	24.0	28.5
	4+8	5.9	11.5	16.3	21.1	25.9	30.7
	6+6	6.8	11.2	15.9	20.8	25.6	30.4
	6+8	6.8	12.4	17.6	22.7	27.9	33.0
	8+8	7.5	13.1	18.9	24.2	30.0	35.3
ALUMINIUM	2	0.8	1.3	2.1	2.7	3.3	3.9
	4	1.0	1.7	2.2	2.9	3.5	4.2
	6	2.0	1.9	2.8	3.5	4.2	5.1
	8	1.4	2.1	3.0	3.9	4.8	5.7
	2+2	1.4	2.9	4.3	5.6	7.0	8.3
	2+4	1.4	3.0	4.4	5.8	7.1	8.5
	2+6	1.8	3.4	4.9	6.3	7.8	9.2
	2+8	1.8	3.5	5.1	6.6	8.2	9.7
	4+4	1.8	3.4	4.9	6.3	7.8	9.2
	4+6	1.8	3.5	5.1	6.6	8.2	9.7
	4+8	2.2	4.0	5.6	7.3	8.9	10.5
	6+6	2.1	3.9	5.6	7.3	8.9	10.5
	6+8	2.4	4.3	5.9	7.6	9.4	11.1
	8+8	2.4	4.4	6.5	8.4	10.3	12.2

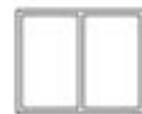
Marine Multiple Frames

Multiple frames consist of two or more apertures arranged either horizontally, vertically or a combination of both.

When specifying multiple frames a '+' sign signifies that the apertures are stacked in a vertical row e.g. one on top of the other.

A 'x' sign means that the apertures are arranged side by side in an horizontal row.

Examples:



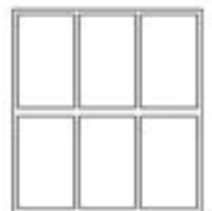
HMX6 x 2



HMX6x3



HMX6 +6 x2



HMX6+ 6 x 3

MARINE FRAME - DIMENSIONAL DATA

NOMINAL BULKHEAD/DECK APERTURE DIMENSIONS PRIOR TO FRAME INSTALLATION/WELDING										
Frame Type	MULTIPLE									
	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10
	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM
HMX 2	(h)122	122	122	122	122	122	122	122	122	122
HMOX 2	x	x	x	x	x	x	x	x	x	x
HMBX 2	(w)141	271	401	531	661	791	921	1051	1181	1311
HMX 4	180.5	180.5	180.5	180.5	180.5	180.5	180.5	180.5	180.5	180.5
HMOX 4	x	x	x	x	x	x	x	x	x	x
HMBX 4	141	271	401	531	661	791	921	1051	1181	1311
HMX 6	239	239	239	239	239	239	239	239	239	239
HMOX 6	x	x	x	x	x	x	x	x	x	x
HMBX 6	141	271	401	531	661	791	921	1051	1181	1311
HMX 8	297.5	297.5	297.5	297.5	297.5	297.5	297.5	297.5	297.5	297.5
HMOX 8	x	x	x	x	x	x	x	x	x	x
HMBX 8	141	271	401	531	661	791	921	1051	1181	1311
HMX 2+2	233	243	243	243	243	243	243	243	243	243
HMOX 2+2	x	x	x	x	x	x	x	x	x	x
HMBX 2+2	141	271	401	531	661	791	921	1051	1181	1311
HMX 2+4	291.5	301.5	301.5	301.5	301.5	301.5	301.5	301.5	301.5	301.5
HMOX 2+4	x	x	x	x	x	x	x	x	x	x
HMBX 2+4	141	271	401	531	661	791	921	1051	1181	1311
HMX 2+6	350	360	360	360	360	360	360	360	360	360
HMOX 2+6	x	x	x	x	x	x	x	x	x	x
HMBX 2+6	141	271	401	531	661	791	921	1051	1181	1311
HMX 2+8	408.5	418.5	418.5	418.5	418.5	418.5	418.5	418.5	418.5	418.5
HMOX 2+8	x	x	x	x	x	x	x	x	x	x
HMBX 2+8	141	271	401	531	661	791	921	1051	1181	1311
HMX 4+4	350	360	360	360	360	360	360	360	360	360
HMOX 4+4	x	x	x	x	x	x	x	x	x	x
HMBX 4+4	141	271	401	531	661	791	921	1051	1181	1311
HMX 4+6	408.5	418.5	418.5	418.5	418.5	418.5	418.5	418.5	418.5	418.5
HMOX 4+6	x	x	x	x	x	x	x	x	x	x
HMBX 4+6	141	271	401	531	661	791	921	1051	1181	1311
HMX 4+8	467	477	477	477	477	477	477	477	477	477
HMOX 4+8	x	x	x	x	x	x	x	x	x	x
HMBX 4+8	141	271	401	531	661	791	921	1051	1181	1311
HMX 6+6	467	477	477	477	477	477	477	477	477	477
HMOX 6+6	x	x	x	x	x	x	x	x	x	x
HMBX 6+6	141	271	401	531	661	791	921	1051	1181	1311
HMX 6+8	525.5	535.5	535.5	535.5	535.5	535.5	535.5	535.5	535.5	535.5
HMOX 6+8	x	x	x	x	x	x	x	x	x	x
HMBX 6+8	141	271	401	531	661	791	921	1051	1181	1311
HMX 8+8	584	594	594	594	594	594	594	594	594	594
HMOX 8+8	x	x	x	x	x	x	x	x	x	x
HMBX 8+8	141	271	401	531	661	791	921	1051	1181	1311

For HMEF Frames add 20mm to both height and width-dimensions.

To establish minimum aperture dimensions for HMEF Frames add 15mm to both height and width dimensions in above table.

For HMRX apertures contact Hawke Technical Department.

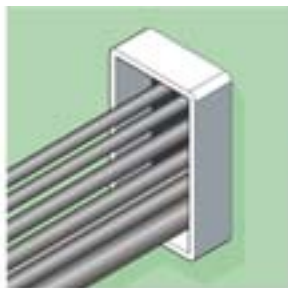
TRANSIT INSTALLATION GUIDE

Civil and Marine Transit System

The following diagrams explain step by step how easy it is to install Hawke cable/pipe tolerant blocks into Civil or Marine Transit frames.



1 Draw up a Hawke Design Template to determine your cable/pipe layout.



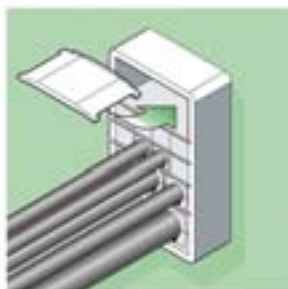
2 Make sure the frame is clean, then pull cables or pipes through, placing the largest at the bottom. (Note: Use open ended frame to fit around existing cables/pipes).



3 Lubricate the inside of the frame and all the insert blocks.



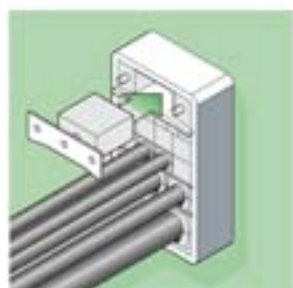
4 Begin packing the frame. A stayplate is inserted between each layer of insert blocks.



5 Insert the compression plate before the last row of blocks or earlier if required with additional stayplates.



6 Pack the last row, insert the compression tool and tighten until there is sufficient room to fit the tapered end packers.



7 Insert two outside packing pieces then remove tool before fitting centre block.



8 Tighten the nuts on the endpacking to compress and complete the seal. Approximately 10mm of thread should protrude on each bolt.



9 Hawke's unique colour coding system enables the installation to be visually inspected after completion and ensures correct matching of the block halves.

Note:

HF600 filler blocks must be installed with the faces moulded with 4 holes in vertical position

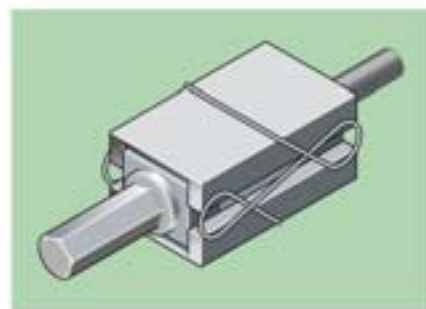
Hawke Transit System



Hawke Cable/Pipe/Block Selection Gauge

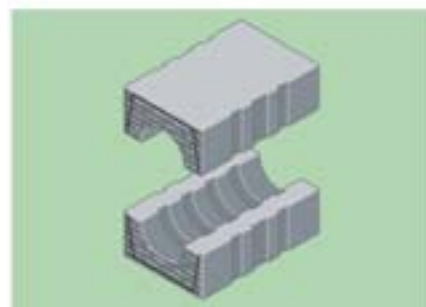
1. Simply wrap the gauge tightly around the cable or pipe from the measurement line.
2. Reading along the measurement line will reveal the correct block size for the cable or pipe and identify it by colour code. e.g. 4022 RED

Where there is an overlap between two block sizes e.g. 6052 or 9053, either size can be selected to best use the available space in the transit frame.



Hawke Compression Tool

Hawke's unique Compression Tool. Simplifies the process of compressing tolerant blocks within X type frames and speeds installation considerably when compared to competitors methods.



Hawke Cable/Pipe Tolerant Blocks

Hawke's unique inspectable colour coded blocks ensure that the top and bottom half of each block has been correctly matched for size.



Round Transit Frames

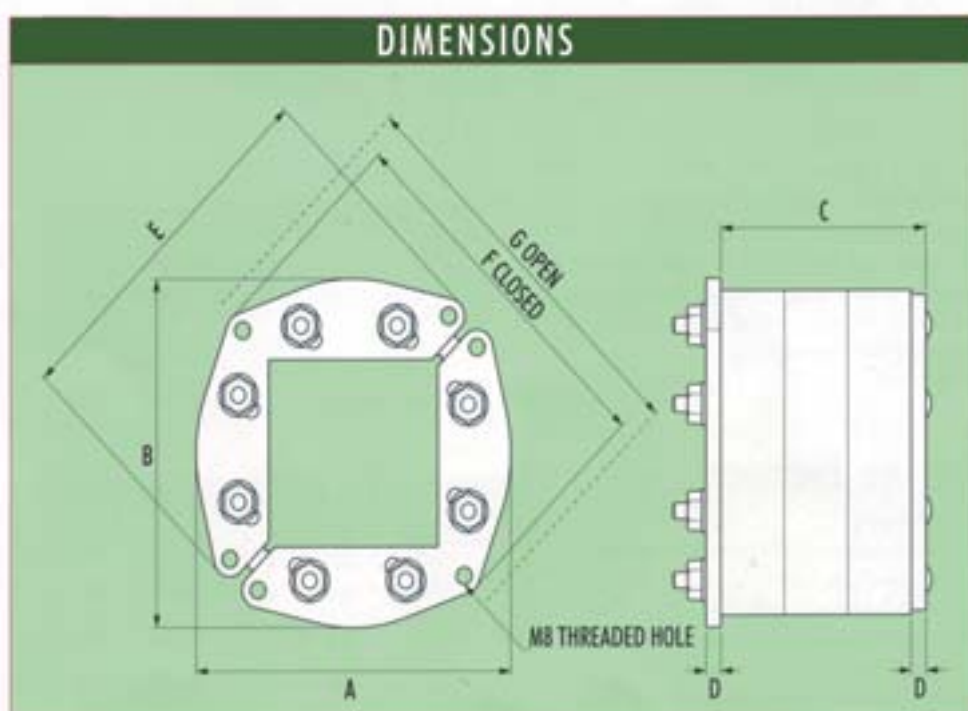
The system has been designed by Hawke to effectively seal cables and pipes passing through circular apertures, providing a barrier and pressure seal against fire, water and gas, etc. The seal is formed by tightening the compression bolts which expand the system radially.

Easily installed without the need for specialised personnel.

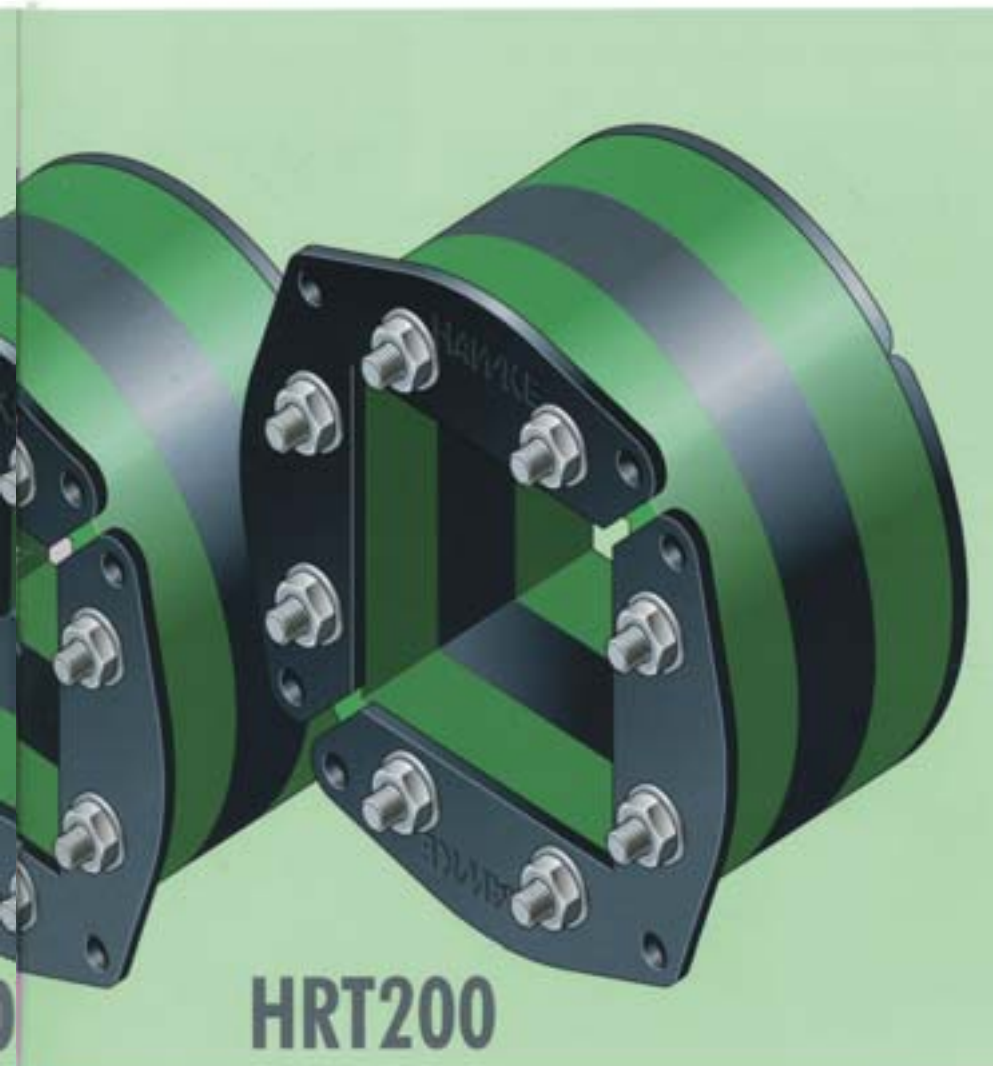
Requires no special frame or tools for installation.

Integral extraction facility enables cabling to be modified

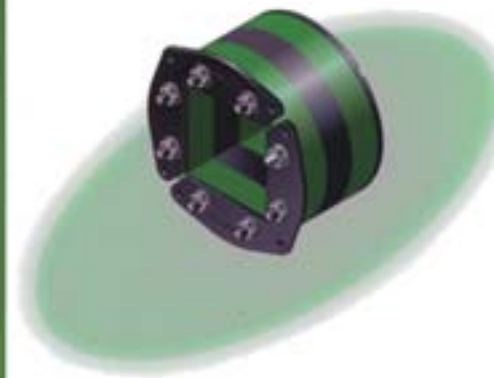
The system is designated by the letters HRT (or HRT0 for the open versions). The compression plates are also available in stainless steel.



TECHNICAL FRAME SIZES



Hawke Round Transit System



Hawke Round Transit Frames

- Certified for both Civil and Marine applications
- May be used to seal existing cable and pipes
- HRTO – open version available in all sizes for applications where cables/pipes are already in position
- Easily installed without the need for specialised personnel
- Requires no special frame or tools for installation
- Integral extraction facility enables cabling to be modified

FRAME DIMENSIONS

CODE	BOLT SIZE	A	B	C	D	E	F	G
		MM	MM	MM	MM	MM	MM	MM
HRT 30	4XM5X70	32	32	64	4	32	-	-
HRT 40	4XM5X70	40	40	64	4	40	-	-
HRT 50	4XM5X70	50	50	64	4	50	-	-
HRT 70	4XM6X85	85	85	70	4	94	96	105
HRT 100	4XM6X85	108	108	70	4	124	126	137
HRT 150	8XM8X90	160	160	74	5	176	176	187
HRT 200	8XM8X90	210	210	74	5	226	226	237

HRT APPLICATION DATA

CODE	WEIGHT		NOMINAL	PIPE RANGE		CABLE INSTALLATION AREA
	STEEL	STAINLESS STEEL		STANDARD HRT FRAME	OPEN HRTO FRAME	
	KGS	KGS	MM	MM	MM	MM
HRT 30	0.11	0.12	31	31-33	31-32	15x15
HRT 40	0.15	0.16	39	39-40	39-40	20x20
HRT 50	0.18	0.19	49	49-52	49-50	30x30
HRT 70	0.5	0.7	69	69-72	69-70	40x40
HRT 100	0.80	0.85	99	99-102	99-100	60x60
HRT 150	1.9	2.2	149	149-153	149-150	90x90
HRT 200	3.7	3.7	199	199-203	199-200	120x120

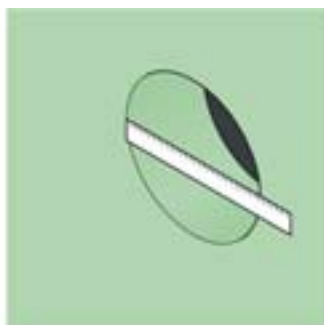
TRANSIT INSTALLATION GUIDE

Round Transit System

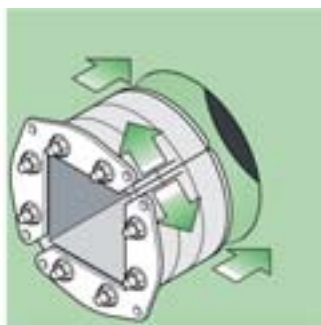
The following diagrams explain step by step how easy it is to install Hawke cable/pipe tolerant blocks into Round Transit frames.



1 Draw up a Hawke Design Template to determine your cable/pipe layout.



2 Measure the inside of pipe or aperture to ensure that it is within the tolerance of the Round Transit Frame to be used.



3 Insert the Round Transit Frame and open the two front plate*. No lubricant should be applied to the aperture or outside of the frame



Hawke Cable/Pipe/Block Selection Gauge

1. Simply wrap the gauge tightly around the cable or pipe from the measurement line.

2. Reading along the measurement line will reveal the correct block size for the cable or pipe and identify it by colour code.

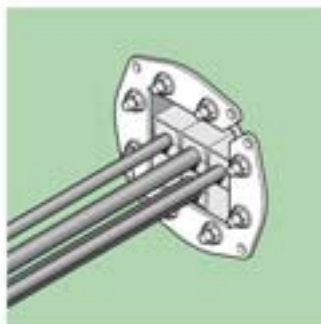
e.g. 4022 RED
Where there is an overlap between two block sizes e.g. 6052 or 9053, either size can be selected to best use the available space in the transit frame.



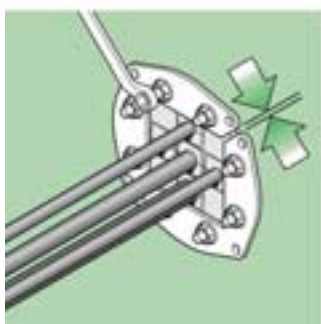
4 Pull the cables or pipes through the frame. (Note: Use open ended Round Transit to fit around existing cables/pipes).



5 Lubricate the inside of the frame and each of the insert blocks.



6 Begin packing the transit frame starting at the bottom and finishing at the top. Ensure that the blocks are pushed firmly against the rear retaining lip.



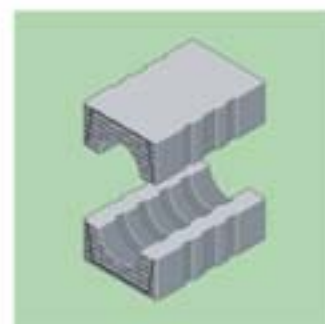
7 Slide the two front plates together and tighten the nuts 2mm each time, applying equal pressure to both plates*. The bolts should be tightened until the cables/pipes are sealed. A minimum of 10mm of thread should protrude on each bolt.



8 Hawke's unique colour coding system enables the installation to be visually inspected after completion and ensures the correct matching of the block halves.



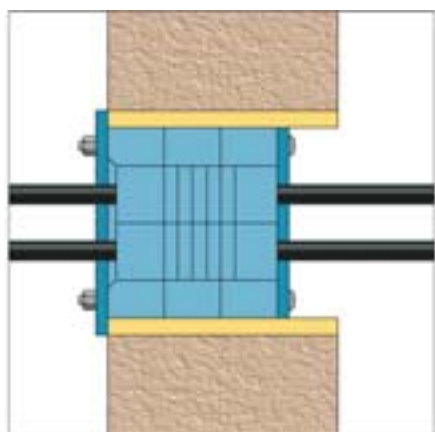
9 EXTRACTION OF SYSTEM
Extraction is achieved by releasing the compression, i.e. by reversing steps 5 and 6 and screwing M8 bolts(not supplied) into the threaded holes at each corner of the front plates. This releases the assembly from the aperture and allows the system to be disassembled.



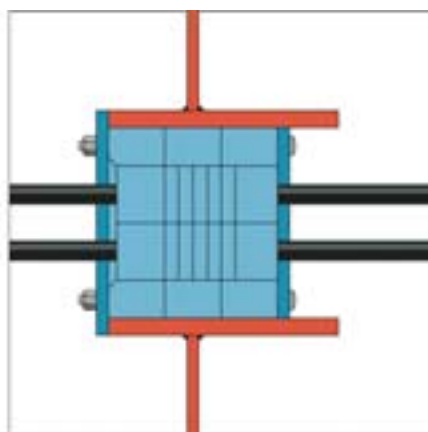
Hawke Cable/Pipe Tolerant Blocks
Hawke's unique inspectable colour coded blocks ensure that the top and bottom half of each block has been correctly matched for size.

* Note: HRT30, HRT40 and HRT50 front plates are fixed

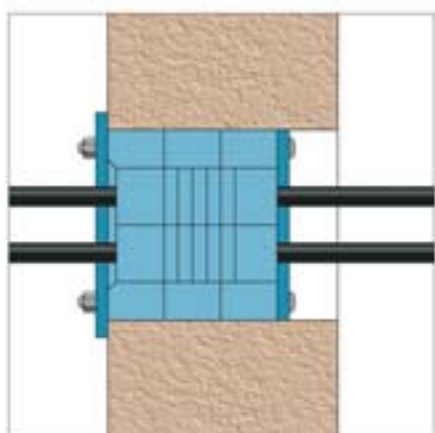
HRT APPLICATIONS



Cast Pipe



Welded Tube



Core Drilled Hole

Hawke Round Transit System



HRT Applications

The HRT is certified for use in civil and marine installations.

The HRT seals cables or pipes within cast pipes, welded tubes or core drilled holes.

TRANSIT ASSEMBLY CHECKLIST

1. Measure the outside diameter of each cable and ensure that the diameter is within the cable range marked on the front of the block that seals each cable.
2. Check that all colour codes on the block pairs are matching.
3. Check that there are sufficient blocks installed into the frame and that there are no gaps not sealed by blocks.
4. If the transit application is in excess of 3.5 bar high pressure stayplates should be used ref. 931p, together with an extra 5mm sealing strip.
5. Check the correct amount of compression has been applied to the end packer bolts, 10mm of thread on each bolt should be protruding.

THE HAWKE EMC TRANSIT SYSTEM

Stainless Steel Stayplates

Installed to anchor insert and filler blocks into the frame and ease assembly. They also increase the conductance throughout the frame.

Tolerant insert and filler blocks.

Made from an intumescent flame retardant elastomer coated on all surfaces with a silver loaded spray which is highly conductive and provides the excellent shielding ability. In addition, a layer of adhesive copper strip is applied around the block to aid conductivity. Hawke blocks can accommodate cables ranging from 3mm to 100mm diameter, and include tolerant blocks which allow for variations in cable diameters by using five individual sealing faces which take up the cable variations within their own individual areas.

Note:

Block module size should be suffixed E (e.g. 3012/E). The adhesive EMI Shielding Tape is available in the following lengths:
Size 18 = 16.5m
Size 36 = 32.9m

The Compression System

Seals the penetration when all the services have been installed. The 3 part endpacker transmits an evenly distributed pressure onto the compression plate and ensures an effective seal around the cables.

The materials:

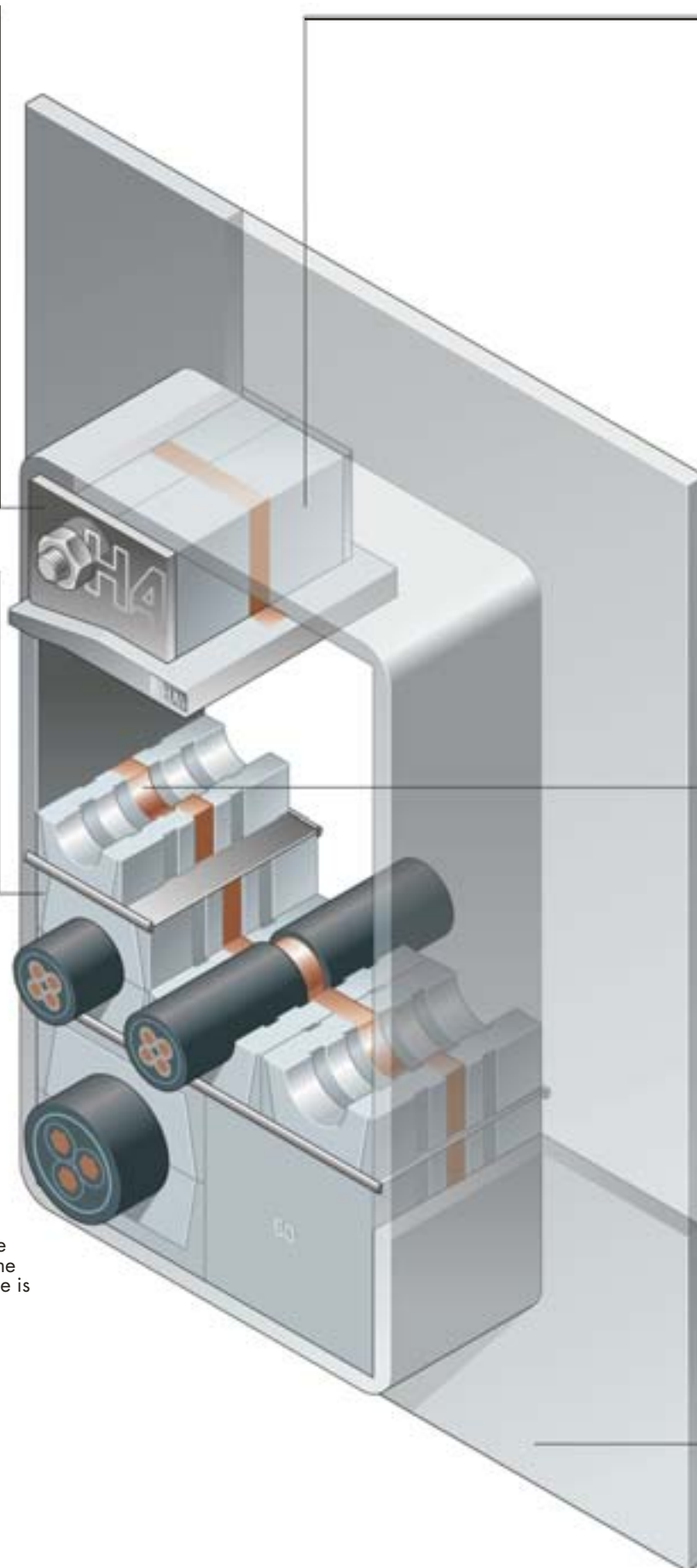
Packing blocks - intumescent flame retardant elastomer coated with a silver loaded spray and wrapped with copper strip for effective shielding. End packer plates - Electro zinc plated steel or stainless steel. Compression plates - Electro zinc plated cast steel.

Adhesive Copper Strip

Provided to build up to the insert blocks and the stripped cable. The cable outer sheath should be stripped to a maximum width of 2cm to expose the cable screen. All the cables require the removal of the outer sheath to achieve contact between the cable screen and the blocks. The copper EMI shielding tape with conductive adhesive is wrapped around the cable screen until the nominal outside diameter of the cable is achieved. This is important to ensure complete conductance of the electromagnetic pulses/fields in the inner walls of the steel frame against earth.

The Frame

The electro zinc plated steel or stainless steel frame is attached to the structure and forms the surround for the penetration.



FOR CABLES AND PIPES

Testing Procedures

Hunting Communication Technology Limited, Electromagnetic Assessment Group, were referred to as specialists with extensive testing facilities. A series of three specified tests were recommended to assess the transit performance and provide design data.

Fig 1.- Test for Shielding Effectiveness (No. U2501/TR/6660)

The aim of the test was to measure the shielding effectiveness of the Transit by a method generally in accordance with MIL STD 285. The testing was actually performed using a swept measurement technique employing a spectrum analyser with tracking generator to 1GHz and a Scalar network analyser from 1GHz to 10GHz.

Conclusion:

The Transit showed good shielding results being in excess of 70dB over much of the tested frequency range.

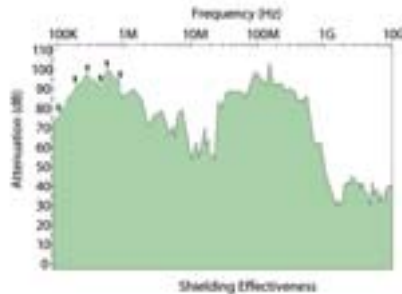


Fig 1.- Test for Shielding Effectiveness (No. U2501/TR/6660)

Fig 2.-Test for Current Leakage (No. U2501/TR/6661)

The test was designed to assess the conductivity of the Transit when used with a variety of cables. As there is not a standard specification for this assessment, a test method was formulated which measured the conductivity in terms of current leakage from the cable shield to earth within a frequency range of 100KHz to 500MHz.

Conclusion:

Based upon the worst case data obtained, it was observed that the current leakage was better than 35dB over the frequency range 100KHz to 500MHz. Infact, for most of the frequency range the current leakage was at least 50db.

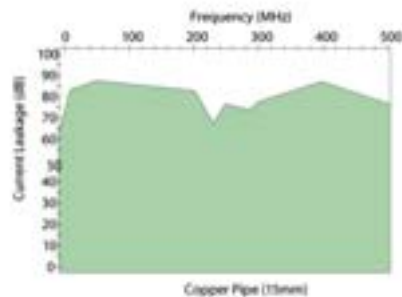


Fig 2.-Test for Current Leakage (No. U2501/TR/6661)

Fig 3.- Test for transient (pulse) conductivity (No. 2501/TR/6662)

The tests involved assessing the transient conductivity of the Transit when used with a variety of cables. The method used measured the conductivity in terms of current leakage from the cable shield to earth under the transient conditions. The test was based upon DEF STAN 59-41 using transients consisting of a 100KHz damped sinusoid applied by a current transformer.

Conclusion:

The current leakage under transient conditions for the cable set ups tested show a minimum insertion loss of 30dB.

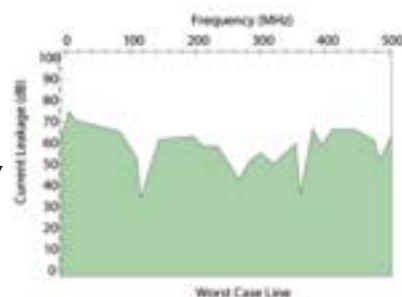


Fig 3.- Test for transient (pulse) conductivity (No. 2501/TR/6662)

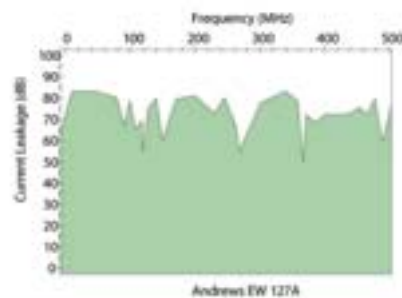
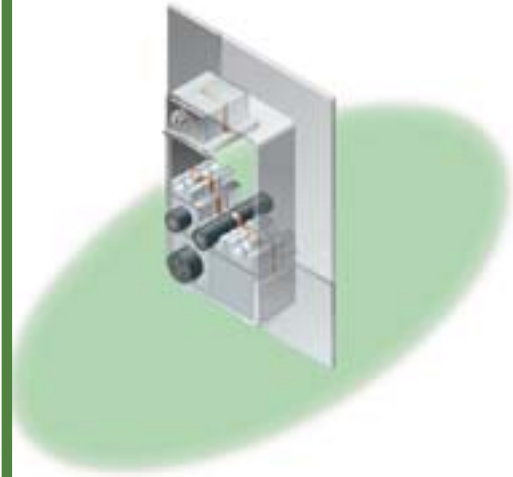


Fig 3.- Test for transient (pulse) conductivity (No. 2501/TR/6662)

Hawke

EMC Transit System for Cables and Pipes



The Hazards of RFI/EMP

The need to protect sensitive electronic equipment against extraneous electromagnetic and radio frequency radiation is an increasing and critical factor in the design of equipment and installations.

A major concern is to ensure the integrity of operation of the equipment such as computers, signalling control and communication systems by effective sealing and low resistance earth continuity bonding at cable and pipe entry points of a low 'noise' environment.

Electromagnetic Compatibility (EMC). This is the term used to express the ability of electronic equipment or systems to operate satisfactorily in a given environment without responding to electrical noise or emitting unwanted noise.

The Hawke EMC Cable Transit System. Hawke's system has been further developed from the highly successful Civil and Marine Transits which are equally suitable for cables or pipes.

Electromagnetic compatibility is achieved by reducing the Electromagnetic interference (EMI) to a level which in most applications will not disrupt the proper operation of the electronics.

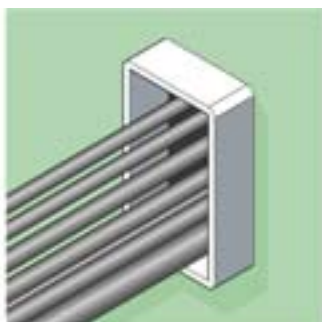
EMC TRANSIT SYSTEM INSTALLATION GUIDE

EMC Transit System

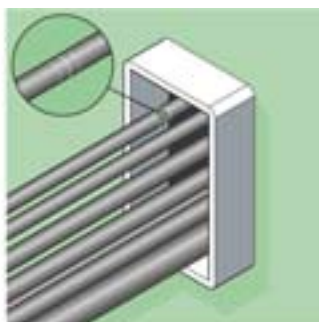
The following diagrams explain step by step how easy it is to install EMC Hawke cable/pipe tolerant blocks into EMC Transit frames.



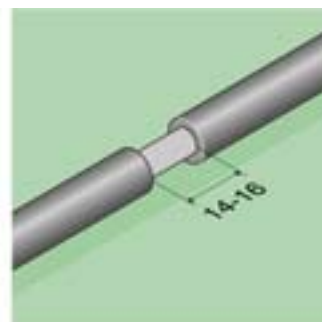
1 Draw up a Hawke Design Template to determine your cable/pipe layout.



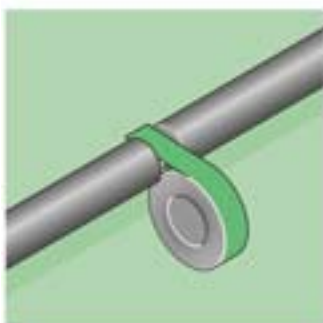
2 Make sure the frame is clean, then pull cables or pipes through, placing the largest at the bottom. (Note: Use open ended frame to fit around existing cables/pipes).



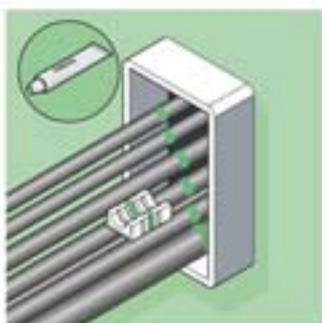
3 Mark each cable in the centre of the frame and 7-8mm either side of this point.



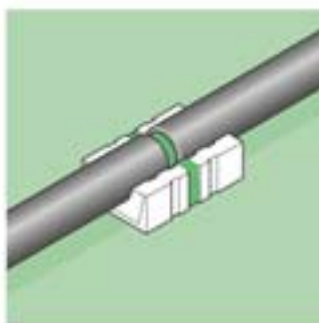
4 Cut and remove cable sheath between two outside marks, to expose the cables conductive screen.



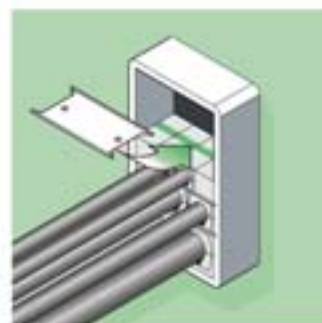
5 Using copper tape provided tightly wrap around the exposed screen until the cable outer diameter is regained. Repeat steps 3, 4 & 5 for all cables.



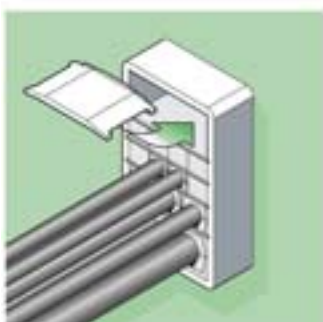
6 Very slightly lubricate the insert blocks taking care not to contaminate the copper tape on block or cable.



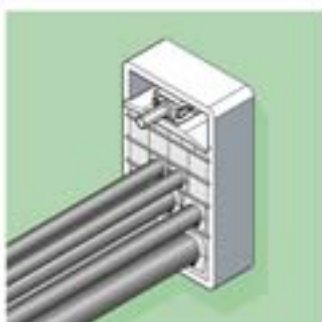
7 Ensure when fitting cables into blocks that the copper tapes on block and cable align.



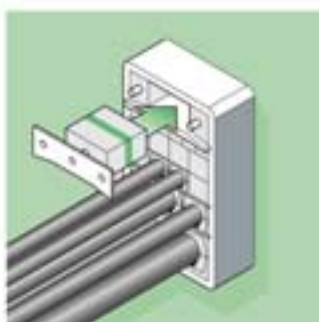
8 Begin packing the frame. A stayplate is inserted between each layer of insert blocks.



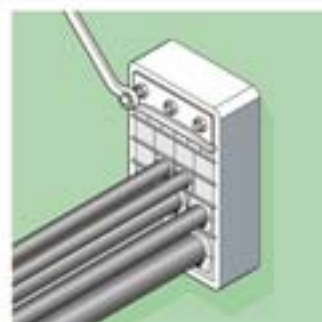
9 Insert the compression plate before the last row of blocks or earlier if required with additional stayplates.



10 Pack the last row, insert the compression tool and tighten until there is sufficient room to fit the tapered end packers.



11 Insert two outside packing pieces then remove tool before fitting centre block.



12 Tighten the nuts on the endpacking to compress and complete the seal. Approximately 10mm of thread should protrude on each bolt.

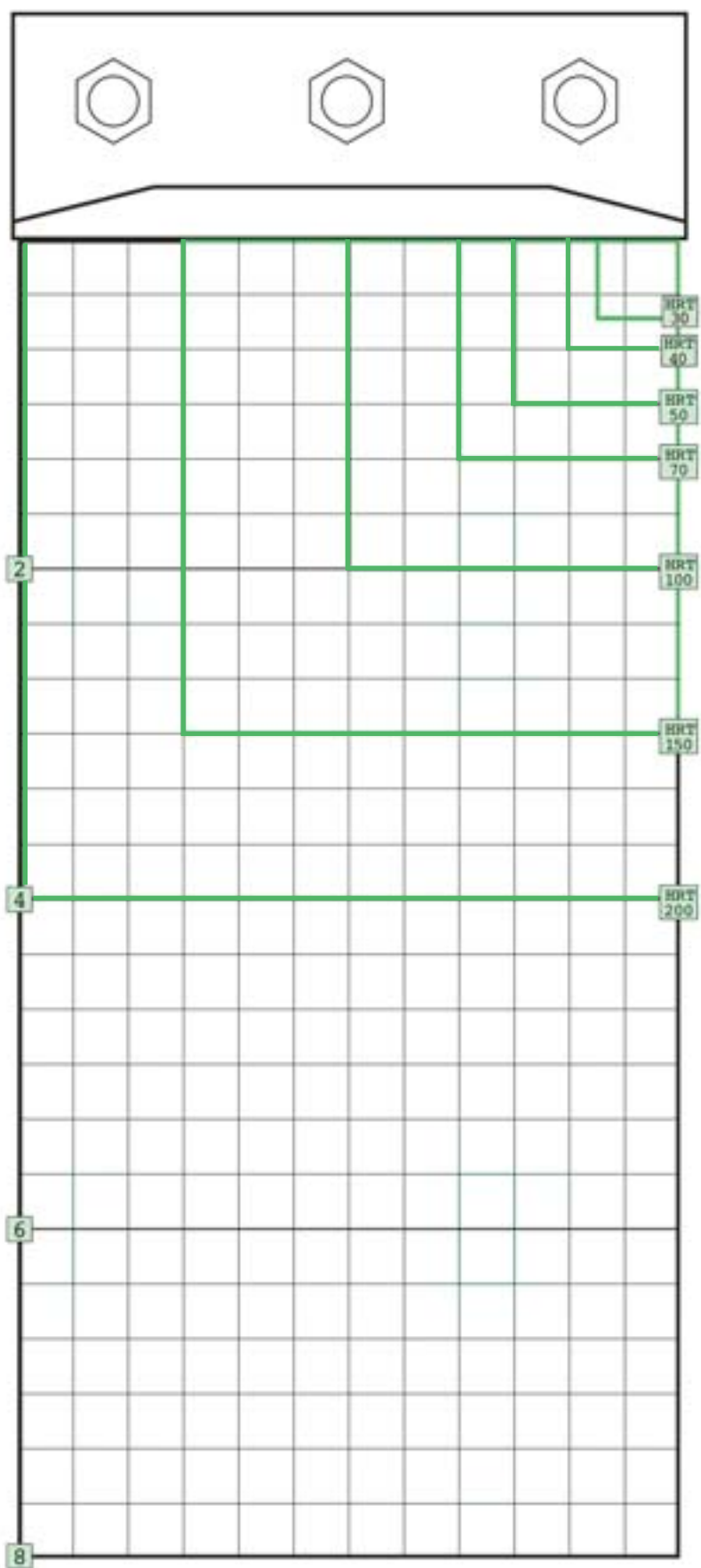
If possible after completion the assembly should be tested for conductivity

FOR CABLES AND PIPES

Hawke

Transit System

MARINE AND CIVIL FRAME SIZES



ROUND FRAME SIZES



Available from your local approved stockist



CABLE JOINTS, CABLE TERMINATIONS, CABLE GLANDS, CABLE CLEATS
FEEDER PILLARS, FUSE LINKS, ARC FLASH, CABLE ROLLERS, CUT-OUTS

11KV 33KV CABLE JOINTS & CABLE TERMINATIONS
FURSE EARTHING
www.cablejoints.co.uk
Thorne and Derrick UK
Tel 0044 191 490 1547 Fax 0044 191 477 5371
Tel 0044 117 977 4647 Fax 0044 117 977 5582

