EMFLEX®

Core Product Catalogue 2016

N. Minikin & Sons Limited

Unit 2B, Brickyard Road, Roecliffe, York, North Yorkshire, YO51 9NS

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UKAS MANAGEMENT SYSTEMS 0026

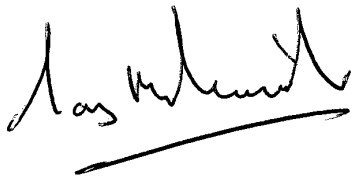
minikin

Making all the right connections

The company was formed in 1975 with the aim of marketing expansion joints and flexible connectors to the building services industry. Growth was steady, involving three moves as the need for larger premises became apparent, each time with the increase of staff and capabilities. The last move in 1989 was to premises offering 13.500 sq.ft. and enabled the company to keep all its in-house operations under one roof, namely estimating, sales, manufacturing, warehousing, finance and technical.

The company has always adopted a firm policy of giving excellent service to all concerned, from consulting engineers and contractors to end users. This policy is upheld by the dedicated board of directors, managers and staff. Engineers and representatives of the company are based throughout the UK and offer full product and technical advice. Large stocks of finished and semi-finished items are always available to maintain the excellent delivery service, which is one of the company's better known qualities.

Much emphasis is placed on quality in all areas of the company's business. Products are manufactured to very exacting standards and satisfy many inspection authorities. The company is a registered firm to ISO 9001:2008 for the manufacture of rubber and steel flexible connectors.
(Certificate number 3973/14)



Tony Minikin
Managing Director

EMFLEX®

Flanged Axial Expansion Joints

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Flanged Axial Expansion Joints

EMFLEX axial expansion joints are used to absorb thermal expansion in straight pipelines. They are installed in the pipeline and substantial anchors are required to withstand the forces set up in the pipeline due mainly to the internal pressure in the bellows. Correct alignment of the pipeline is essential with this type of expansion joint and proper pipe alignment guides are recommended. Only one axial expansion joint should be installed between each pair of anchors.

TYPE BAF

For use on steel pipelines and is suitable for steam and hot water for heating. This unit has stainless steel bellows and inner sleeve with flanges of carbon steel.

TYPE BAFN

For use on copper pipelines and is suitable for condensate, gases and domestic hot water. This unit has stainless steel internals comprising stainless steel bellows, inner sleeve and van-stone ends with backing flanges of carbon steel.

Nominal Size	Axial Compression	Installed Overall Length	Force To Compress	Effective Area
mm	mm	mm	Newtons/mm	cm^2
50	50	225	70	35
65	50	225	90	56
80	50	225	200	75
100	50	225	250	118
125	50	277	300	187
150	50	277	350	260
200	50	306	350	440
250	50	306	450	665

Other sizes and movements are available.

External protective sleeves are available, suffix E, e.g. BAFE and BAFNE.

Working Pressure: 16 bar (1600 kPa).

Test Pressure: 1.5 x Working Pressure.

Press./Temp. ratings for carbon steel PN16 Flanges.

Design Temp.	(ºC)	120	150	200	250	300
Working Press.	Bar	16	14	12	11	9

Material Specifications:
Bellows and internal sleeve are stainless steel.
For steel service the flanges are carbon steel.
For copper service van-stone ends are stainless steel and backing flanges are carbon steel.

Design Consideration:
For details of pipe anchors and alignment guides see our design book. Axial expansion joints can be supplied at a compressed length for use as contraction joints on chilled water services.

Notice:
All axial expansion joints are pre-stressed at the factory and are supplied at the installation length.

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Screwed Axial Expansion Joints

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Screwed Axial Expansion Joints

EMFLEX axial expansion joints with screwed ends are used to absorb thermal expansion in straight pipelines. They are installed in the pipeline and anchors are required to withstand the forces set up in the pipeline due mainly to the internal pressure in the bellows. Correct alignment of the pipeline is essential with this type of expansion joint and proper pipe alignment guides are recommended. Only one axial expansion joint should be installed between each pair of anchors.

TYPE BAT

For use on steel pipelines and is suitable for steam and hot water for heating. This unit has stainless steel bellows, inner sleeve and carbon steel ends with male BSP taper thread.

TYPE BATN

For use on copper pipelines and is suitable for condensate and domestic hot water. This unit has stainless steel bellows, inner sleeve and stainless steel ends with male BSP taper thread.

Normal Size Mm	Axial Compression Mm	Installed Overall Length Mm	Force to Compress Newtons / mm	Effective Area Cm²
15	25	182	15	4
20	25	182	15	6
25	25	185	13	10
32	25	200	31	16
40	25	215	31	21
50	25	247	24	35
15	50	334	8	4
20	50	343	8	6
25	50	335	6	10
32	50	340	15	16
40	50	340	16	21
50	50	328	17	35

Other sizes and movements are available.
External protective sleeves are available, suffix E, e.g. BATE and BATNE.

Working Pressure: 16 bar (1600 kPa).
Test Pressure: 1.5 x Working Pressure.
Temperature: 185°C maximum.

Design Consideration:
For details of pipe anchors and alignment guides see our design book. Axial expansion joints can be supplied at a compressed length for use as contraction joints on chilled water services.

Material Specifications:
Bellows and internal sleeves are stainless steel.
For steel service the tube ends are carbon steel with male BSP taper thread.
For copper service the tube ends are stainless steel with male BSP taper thread.

Notice

All axial expansion joints are pre-stressed at the factory and are supplied at the installation length.

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Angular Expansion Joints

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Angular Expansion Joints

EMFLEX angular expansion joints are effectively a hinged bend in the pipeline and allow the pipe to bend through an angle in one plane only of up to +/-6 degrees. These units are pressure restrained, being fitted with hinges, so they impose only small forces within the system and light anchors are sufficient. The main applications are where large movements have to be accommodated in the piping system or where it is impossible to fit heavy anchors.

TYPE BHF

For use on steel pipelines and is suitable for steam and hot water for heating. This unit has stainless steel bellows and inner sleeve with carbon steel flanges and hinges.

TYPE BHFN

For use on copper pipelines and is suitable for condensate and domestic hot water. This unit has stainless steel internals comprising stainless steel bellows, inner sleeve and van-stone ends with carbon steel backing flanges and hinges.

Nominal Size	Installed Length	AngularRate	Force required forMaximum Deflection
mm	mm	Nm / degree	Newtons
50	133	4.1	21
65	133	4.8	24
80	133	13.6	68
100	133	26.6	133
125	202	30.7	154
150	202	50.3	252
200	218	105.0	525
250	218	192.0	960

Other lengths and sizes are available. External protective sleeves are available.

Working Pressure: 16 bar (1600 kPa).
Test Pressure: 1.5 x Working Pressure.

Press./Temp. ratings for carbon steel PN16 Flanges.

Design Temp.	(ºC)	120	150	200	250	300
Working Press.	Bar	16	14	12	11	9

Material Specifications:
Bellows and internal sleeve are stainless steel.
For steel service the flanges and hinges are carbon steel.

For copper service van-stone ends are stainless steel, backing flanges and hinges are carbon steel.

Design Consideration:
Force for maximum deflection is based on two joints with a distance of one metre between the hinge pins of the joints.

Maximum angular movement of each joint is +/- 6 degrees.

For details of layouts, pipe anchors and alignment guides see our design book.

EMFLEX®

Single Articulated Expansion Joints

(Single Untied or Tied Flexible Connector)

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Single Articulated Expansion Joints

(Single Untied or Tied Flexible Connector)

EMFLEX single articulated expansion joints (also known as single ‘untied’ or ‘tied’ flexible connectors) are used to absorb vibration in pumped systems and misalignment in pipework systems. They are usually installed at the pump suction and discharge connections. The tie rods prevent elongation due to the internal pressure thrust. The units are not intended to absorb vibration and misalignment simultaneously. Axial thrust must not be applied to these units, for example when pipework is mounted vertically from the unit. In this situation the pipework should be supported using spring supports.

TYPE BFC

For use on steel pipelines and is suitable for steam and hot water for heating. This unit has stainless steel bellows and inner sleeve with carbon steel ‘untied’ or ‘tied’ flanges.

TYPE BFCN

For use on copper pipelines and is suitable for condensate and domestic hot water. This unit has stainless steel internals comprising stainless steel bellows, inner sleeve and van-stone ends with carbon steel ‘untied’ or ‘tied’ backing flanges.

Nominal Size	Installed Length	Vibration Movement	Lateral Deflection at 10 bar
mm	mm	+/-mm	mm
50	130	0.75	2
65	130	0.75	2
80	130	0.75	2
100	130	0.75	2
125	150	0.75	2
150	150	0.75	2
200	200	0.75	2
250	200	0.75	2

Other lengths and sizes are available. External protective sleeves are available.

Working Pressure: 16 bar (1600 kPa).
Test Pressure: 1.5 x Working Pressure.

Press./Temp. ratings for carbon steel PN16 Flanges.

Design Temp.	(ºC)	120	150	200	250	300
Working Press.	Bar	16	14	12	11	9

Material Specifications:
Bellows and internal sleeve are stainless steel.
For steel service the flanges and tie rods are carbon steel.
For copper service van-stone ends are stainless steel; backing flanges and tie rods are carbon steel.

Design Consideration:
Single tied flexible connectors are used on high temperature pumps etc where conventional rubber flexible connectors do not have sufficient temperature capability (i.e. above 100ºC).

They are usefully employed to relieve stresses on boiler crown valves and other vulnerable plant connection points.

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Double Hinged Expansion Joints

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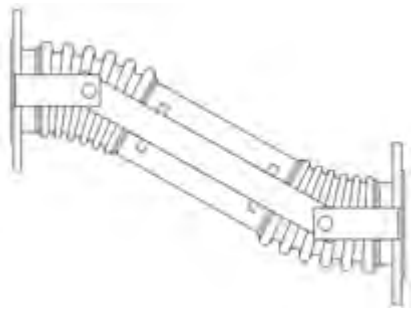
Double Hinged Expansion Joints

EMFLEX double hinged expansion joints consist of two bellows connected by a piece of pipe which permits a pipeline to move in a lateral direction in one plane only, with each bellows moving through an angle of up to +/-5 degrees. These units are pressure restrained, being fitted with hinges, so they impose only small forces within the system and light anchors are sufficient. The main applications are where large movements have to be accommodated in the piping system or where it is impossible to fit heavy anchors.



TYPE BDHF

For use on steel pipelines and is suitable for steam and hot water for heating. This unit has two stainless steel bellows and inner sleeves with carbon steel intermediate pipe, flanges and hinges.

TYPE BDHFN

For use on copper pipelines and is suitable for condensate and domestic hot water. This unit has stainless steel internals comprising stainless steel bellows, inner sleeves, intermediate pipe and van-stone ends with carbon steel backing flanges and hinges.

Nominal Size	Installed Lengthfor +/- 25mm mvt.	Force required forMaximum Deflection	Additional Length per+/- 25mm mvt. Increase
mm	mm	Newtons	mm
50	510	80	285
65	540	100	285
80	590	150	285
100	670	170	285
125	670	290	285
150	720	700	285
200	740	1400	285

Other lengths and sizes are available. External protective sleeves are available.

Working Pressure: 16 bar (1600 kPa).
Test Pressure: 1.5 x Working Pressure.

Design Consideration:
For details of layouts, pipe anchors and alignment guides see our design book.

Press./Temp. ratings for carbon steel PN16 Flanges.

Design Temp.	(ºC)	120	150	200	250	300
Working Press.	Bar	16	14	12	11	9

Material Specifications:
Bellows and internal sleeves are stainless steel.
For steel service the intermediate pipe, flanges and hinges are carbon steel.

For copper service the intermediate pipe and van-stone ends are stainless steel, backing flanges and hinges are carbon steel.

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Fully Articulated Expansion Joints

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Fully Articulated Expansion Joints

EMFLEX fully articulated expansion joints consist of two bellows connected by a piece of pipe which permits a pipeline to move in any lateral direction, with each bellows moving through an angle of up to +/-6 degrees. These units are pressure restrained, being fitted with tie-rods, so they impose only small forces within the system and light anchors are sufficient. The main applications are where large movements have to be accommodated in the piping system or where it is impossible to fit heavy anchors.

TYPE BLF

For use on steel pipelines and is suitable for steam and hot water for heating. This unit has two stainless steel bellows and inner sleeves with carbon steel intermediate pipe, flanges and tie-rods.

TYPE BLFN

For use on copper pipelines and is suitable for condensate and domestic hot water. This unit has stainless steel internals comprising stainless steel bellows, inner sleeves, intermediate pipe and van-stone ends with carbon steel backing flanges and tie-rods.

Nominal Size	Installed Length for +/- 25mm mvt.	Force required for Maximum Deflection	Additional Length per+/- 25mm mvt. Increase
mm	mm	Newtons	mm
50	510	80	285
65	540	100	285
80	590	150	285
100	670	170	285
125	670	290	285
150	720	700	285
200	740	1400	285
250	780	2500	285

Other lengths and sizes are available. External protective sleeves are available.

Working Pressure: 16 bar (1600 kPa).
Test Pressure: 1.5 x Working Pressure.

Design Consideration:
For details of layouts, pipe anchors and alignment guides see our design book.

Press./Temp. ratings for carbon steel PN16 Flanges.

Design Temp.	(ºC)	120	150	200	250	300
Working Press.	Bar	16	14	12	11	9

Material Specifications:
Bellows and internal sleeves are stainless steel. For steel service the intermediate pipe, flanges and tie-rods are carbon steel. For copper service the intermediate pipe and van-stone ends are stainless steel, backing flanges and tie-rods are carbon steel

EMFLEX®

Screwed Braided Flexible Connectors

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Screwed Braided Flexible Connectors

EMFLEX braided flexible connectors are used to suppress vibration from pumps, to absorb intermittent lateral movement in pipelines and to compensate for subsidence when pipelines cross building movement lines. They must be installed at right angles to the direction of movement when installed in pipelines and close to the suction and discharge connections when used on pumps. They are not suitable for absorbing AXIAL movement, but are an alternative to articulated or angular expansion joints for low velocity applications.

TYPE BBT

For use on Steel Pipelines and is suitable for steam and hot water for heating and gas. This unit has stainless steel hose and overbraiding with fixed male BSP taper threads in carbon steel as standard.

TYPE BBTN

For use on copper pipelines and is suitable for condensate, domestic hot water and gas. This unit has stainless steel hose and overbraiding with fixed male BSP taper threads in stainless steel as standard. This unit is also suitable for potable water, as all internal surfaces are stainless steel.

Normal Size	Minimum Bend Radius	Overall Length for +/- 3mmLateral Mvt.	Overall Length for +/- 12mmLateral Mvt.	Overall Length for +/- 25mmLateral Mvt.	Overall Length for +/- 50mmLateral Mvt.
mm	mm	mm	mm	mm	mm
15	165	190	250	290	390
20	225	220	300	350	440
25	260	250	330	380	480
32	300	280	370	430	530
40	340	320	430	500	620
50	390	360	490	570	710

Other lengths and sizes are available.

Working Pressure: 16 bar (1600 kPa).
Test Pressure: 1.5 x Working Pressure.
Working Temperature: 185ºC.

Material Specifications:
Convoluted hose and overbraid are stainless steel.
For steel service the threaded ends are carbon steel.
For copper service the threaded ends are stainless steel.

End fittings available:
A wide range of different end fittings are available; please contact us for more information. Please note, however, that the stated overall lengths for a given lateral movement will change with different end fittings.

Design Consideration:
The overall lengths in the table are for flexing applications. When using these units on static applications, for example subsidence, they will absorb 1.5 times the lateral movements shown.

For installation details see our design book.

Notice
Braided flexible connectors must not be used to absorb AXIAL compression or elongation.

Do not exceed the minimum bend radius.

Do not stretch or twist the unit.

Type BBTA and BBTNA

As type BBT and BBTN above but with 'Armaflex' insulation applied over the braiding.
Temperature: 105ºC

Type BBTP and BBTNP

As type BBT and BBTN above but with a smooth plastic shrink fit cover applied over the braiding. Available in red, blue, green, yellow, black and white.
Temperature: 90ºC

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Flanged Braided Flexible Connectors

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Flanged Braided Flexible Connectors

EMFLEX braided flexible connectors are used to suppress vibration from pumps, to absorb intermittent lateral movement in pipelines and to compensate for subsidence when pipelines cross building movement lines. They must be installed at right angles to the direction of movement when installed in pipelines and close to the suction and discharge connections when used on pumps. They are not suitable for absorbing AXIAL movement, but are an alternative to articulated or angular expansion joints for low velocity applications.

TYPE BBF

For use on steel pipelines and is suitable for steam and hot water for heating. This unit has stainless steel hose and over braiding with flanges of carbon steel.

TYPE BBFN/A

For use on copper pipelines and is suitable for condensate and domestic hot water. This unit has stainless steel hose and over braiding with ends having stainless steel to all internal surfaces. Hence, this unit is also suitable for potable water.

Nominal Size	Minimum Bend Radius	Overall length for +/- 3mm Lateral Mvt.	Overall length for +/- 12mm Lateral Mvt.	Overall length for +/- 25mm Lateral Mvt.	Overall length for +/- 50mm Lateral Mvt.
mm	mm	mm	mm	mm	mm
15	165	140	200	240	340
20	225	160	230	280	370
25	260	170	250	310	400
32	300	180	280	330	440
40	340	220	330	400	520
50	390	260	390	470	610
65	500	290	430	520	680
80	525	310	470	590	770
100	625	330	510	630	820
125	750	360	550	670	880
150	900	400	630	770	1030
200	1020	440	680	830	1110
250	1220	500	750	900	1220

Other lengths and sizes are available.

Working Pressure:
Using carbon steel PN16 flanges and single overbraid.

Nominal Size	*20ºC*	*100ºC*	*150ºC*
15-80mm	16bar	16bar	14bar
100mm	14bar	13bar	12bar
125mm	10bar	9.5bar	8.5bar
150mm	8bar	7.5bar	7bar
200mm	7bar	6.5bar	6bar
250mm	6bar	4.5bar	4bar

N.B. A higher working pressure can be achieved using double overbraid.

Test Pressure: 1.5 x Working Pressure.

Design Consideration:
The overall lengths in the table are for flexing applications. When using these units on static applications, for example subsidence, they will absorb 1.5 times the lateral movements shown.
For installation details see our design book.

Notice:
Braided flexible connectors must not be used to absorb AXIAL compression or elongation.
Do not exceed the minimum bend radius.
Do not stretch or twist the unit.

Material Specifications:
Convoluted hose and overbraid are stainless steel.
For steel service the flanges are carbon steel.
For copper service all wetted surfaces are stainless steel.

EMFLEX®

Flanged Braided PTFE Flexible Connectors

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Flanged Braided PTFE Flexible Connectors

EMFLEX braided PTFE flexible connectors are used to suppress vibration from pumps, to absorb intermittent lateral movement in pipelines and to compensate for subsidence when pipelines cross building movement lines. They must be installed at right angles to the direction of movement when installed in pipelines and close to the suction and discharge connections when used on pumps.

TYPE PTFE

For use on steel, stainless, dairy or copper pipelines and is suitable for steam, dairy, food stuff, domestic and hot water for heating. This unit has PTFE convoluted hose and polymer chord or stainless steel over braiding with flanges of stainless steel.

Nominal Size	Minimum Bend Radius	Max Working Pressure	Burst Pressure	Wall Thickness	Overall length for
mm	mm	Bar	Bar	mm	mm
15	25	47	190	0.63	340
20	50	32	130	0.89	370
25	65	26	105	1.00	400
32	70	25	100	1.00	440
40	115	20	85	1.25	520
50	130	15	70	1.25	610

Other lengths and sizes are available.

Design Consideration:
The overall lengths in the table are for flexing applications. When using these units on static applications, for example subsidence, they will absorb 1.5 times the lateral movements shown.
For installation details see our design book.

Notice:
Do not exceed the minimum bend radius.
Do not stretch or twist the unit.

N.B. A higher working pressure can be achieved using double overbraid.

Test Pressure: 1.5 x Working Pressure.

Material Specifications:
Convoluted PTFE hose and overbraid are high tensile polymer chord or stainless steel.

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Catering Equipment Connectors

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Catering Equipment Connectors

EMFLEX catering equipment connectors are used to enable catering appliances to be moved easily for regular cleaning, in line with legislation for hygiene in kitchens. They are installed between the mains supply and the catering appliance and are finished with a plastic cover which can be easily wiped clean.

TYPE CATG

A flexible hose and quick release coupling for use on gas service. This unit has stainless steel hose with carbon steel ends, an integral quick release coupling (15mm, 20mm and 25mm NB only), a smooth yellow plastic shrink fit cover to denote gas, and restraining wire as standard.
This unit is both leak-proof and fire-proof and is in accordance with BS669 Part 2, 1997 and is British Gas approved.

End fittings available:

1. Fixed male BSP taper thread.
2. Single shut off quick release coupling

Working Pressure: 3 bar (300 kPa).
Test Pressure: 1.5 x Working Pressure.
Working Temperature: 90ºC maximum.

TYPE CATW

A flexible hose for use on water service. This unit has stainless steel hose and overbraiding with stainless steel end fittings and a smooth white plastic shrink fit cover as standard. A quick release coupling is optional; see type CATQ below. This unit is leak-proof and has all internal surfaces manufactured from material grades accepted by the WRc. This unit can be supplied with a full red, blue or green plastic cover to distinguish between different water services; alternatively coloured bands can be shrink fitted to denote the service.

End fittings available:

1. Fixed male BSP taper thread.
2. Fixed female BSP taper thread.
3. Cone seat full male BSP union.
4. Cone seat full female BSP union.
5. Flat face female swivel BSP nut.
6. All above with 90 degree elbow.

Working Pressure: 16 bar (1600 kPa).
Test Pressure: 1.5 x Working Pressure.
Working Temperature: 90ºC maximum.

Nominal Size	Minimum Bend Radius	Nominal Length 1	Nominal Length 2	Nominal Length 3	Nominal Length 4
mm	mm	mm	mm	mm	mm
15	150	500	1000	1250	1500
20	200	500	1000	1250	1500
25	225	500	1000	1250	1500

Larger sizes and alternative lengths are available on special request.

(Note larger size CATG not with integral quick release coupling).

Notice:
When installing the hoses do not exceed the minimum bend radius.
Do not stretch or twist the hose.
Do not install where contact can be made with equipment whose temperature exceeds 90ºC.
Do not allow chloride, chlorine or chlorite contamination of the convoluted stainless steel hose wall.

EMFLEX®

Rubber Hoses

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Rubber Hoses

EMFLEX rubber hoses are used as an economical final connection to fancoil units. They are designed to offer a high degree of flexibility to allow for misalignment of the pipework and the suppression of possible vibration from the fancoil unit. The basic hose connector is available in varying standard lengths, although almost any length can be manufactured. Double shut-off quick release couplings are available to allow immediate removal of the fancoil unit in the event of break-down or for maintenance purposes. A great deal of time and money can be saved by an engineer if the need to drain down is eliminated by the use of hoses and quick release couplings.

TYPE RH

A high quality EPDM hose and stainless steel over braiding with nickel plated brass end fittings. Suitable for heating circuits. BSRIA cycle tested in excess of an estimated 12 yrs of simulated operation.

TYPE RHA

A high quality EPDM hose and stainless steel over braiding with nickel plated brass end fittings. With 9mm thick 'Armaflex' Class '0' insulation and vapour seal. Suitable for chilled water circuits.

Nominal Size	Minimum Static Bend Radius	Overall Length 1	Overall Length 2	Overall Length 3
mm	mm	mm	mm	mm
15	70	300	450	600
20	90	300	450	600
25	110	300	450	600

Larger sizes and alternative lengths are available on special request.

Work Pressure: 10 bar (1000 kPa) for all sizes.
Test Pressure: 1.5 x Working Pressure.
Temperature: 90ºC maximum.

End fittings available:

1. Fixed male BSP taper thread.
2. Flat faced female swivel nut, BSP parallel thread,for use with rubber washer.
3. Compression fitting.
4. Brass standpipe.
5. All above with 90 degree elbow.

Please note that the stated overall lengths may need to increase with the use of different end fittings.

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Rubber Hoses

EMFLEX rubber hoses are used as an economical final connection to fancoil units. They are designed to offer a high degree of flexibility to allow for misalignment of the pipework and the suppression of possible vibration from the fancoil unit. The basic hose connector is available in varying standard lengths, although almost any length can be manufactured. Double shut-off quick release couplings are available to allow immediate removal of the fancoil unit in the event of break-down or for maintenance purposes. A great deal of time and money can be saved by an engineer if the need to drain down is eliminated by the use of hoses and quick release couplings.

TYPE RH

A high quality EPDM hose and stainless steel over braiding with nickel plated brass end fittings. Suitable for heating circuits. BSRIA cycle tested in excess of an estimated 12 yrs of simulated operation.

TYPE RHA

A high quality EPDM hose and stainless steel over braiding with nickel plated brass end fittings. With 9mm thick 'Armaflex' Class '0' insulation and vapour seal. Suitable for chilled water circuits.

Nominal Size	Minimum Static Bend Radius	Overall Length 1	Overall Length 2	Overall Length 3
mm	mm	mm	mm	mm
15	70	300	450	600
20	90	300	450	600
25	110	300	450	600

Larger sizes and alternative lengths are available on special request.

Work Pressure: 10 bar (1000 kPa) for all sizes.
Test Pressure: 1.5 x Working Pressure.
Temperature: 90ºC maximum.

End fittings available:

1. Fixed male BSP taper thread.
2. Flat faced female swivel nut, BSP parallel thread,for use with rubber washer.
3. Compression fitting.
4. Brass standpipe.
5. All above with 90 degree elbow.

Please note that the stated overall lengths may need to increase with the use of different end fittings.

EMFLEX®

EPDM Rubber Flexible Connectors (130mm long)

N. Minikin & Sons Limited

Unit 2B, Brickyard Road, Roecliffe, York, North Yorkshire, YO51 9NS

Email: enquiries@minikins.co.uk Web: www.minikins.co.uk

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ISOQAR REGISTERED UKAS MANAGEMENT SYSTEMS 0026

EPDM Rubber Flexible Connectors (130mm long)

EMFLEX EPDM (Ethylene Propylene Diene Monomer) rubber flexible connectors are comprised of a synthetic rubber membrane reinforced with nylon. The collars are wire reinforced and the unit is complete with carbon steel flanges. They are capable of absorbing movement in several directions; axial compression, axial elongation and lateral deflection. A small amount of angular movement may also be allowed. They are normally installed in the pipework to isolate various items of plant which produce noise and vibration. These flexible connectors effectively dampen the transmission of sound and vibration from plant items in building services installations.

TYPE EE

EPDM rubber membrane reinforced with a nylon textile cord and fitted with ‘untied’ or ‘tied’ carbon steel flanges. Suitable for use with hot water and chilled water.

Nominal Size	Installed Overall Length	Untied & Tied Units Axial Compression	Untied Units Only Axial Elongation	Untied & Tied Units Lateral Deflection
mm	mm	mm	mm	mm
25	130	12	9	12
32	130	12	9	12
40	130	12	9	12
50	130	12	9	12
65	130	12	9	12
80	130	12	9	12
100	130	14	9	12
125	130	14	9	12
150	130	14	9	12
200	130	14	9	12
250	130	14	9	12

Vacuum support rings are available.

Working Pressure:
4 bar (400 kPa) for ‘untied’ units, unless the pipe is secured.10 bar (1000 kPa) for ‘tied’ units with top hat washers.16 bar (1600 kPa) for ‘tied’ units with hemispherical washers.
Test Pressure: 1.5 x Working Pressure.
Working Temperature: -10ºC to 100ºC.

Key Features:
Fully traceable and has the date of manufacture, nominaldiameter, manufacturer, and type permanently moulded into the membrane.

Noise and vibration reduction capabilities. Tied units are fitted with noise absorbing top hat washers.

Design Consideration:
Rubber flexible connectors are subject to the same internal pressure force as metal expansion joints and the force is equal to the internal pressure multiplied by the maximum internal area. This force causes the connector to lengthen and tied units are recommended where the working pressure exceeds 4 bar, unless the pipework is secured to restrict movement.

Tie-rods are fitted through oval flanges and to isolate the tie-rods from the flanges special neoprene top hat washers are used to prevent any metal to metal contact whatsoever, effectively preventing noise transmission.

After installation of TIED UNITS the tie-rod nuts should be checked to have 1mm clearance over the steel washers.

When using with items of plant mounted on vibration isolators, such as springs or inertia bases, then TIED UNITS must be installed.

EMFLEX®

EPDM Rubber Flexible Connectors (130mm long)

N. Minikin & Sons Limited

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ISOQAR REGISTERED UKAS MANAGEMENT SYSTEMS 0026

EPDM Rubber Flexible Connectors (130mm long)

EMFLEX EPDM (Ethylene Propylene Diene Monomer) rubber flexible connectors are comprised of a synthetic rubber membrane reinforced with nylon. The collars are wire reinforced and the unit is complete with carbon steel flanges. They are capable of absorbing movement in several directions; axial compression, axial elongation and lateral deflection. A small amount of angular movement may also be allowed. They are normally installed in the pipework to isolate various items of plant which produce noise and vibration. These flexible connectors effectively dampen the transmission of sound and vibration from plant items in building services installations.

TYPE EE

EPDM rubber membrane reinforced with a nylon textile cord and fitted with ‘untied’ or ‘tied’ carbon steel flanges. Suitable for use with hot water and chilled water.

Nominal Size	Installed Overall Length	Untied & Tied Units Axial Compression	Untied Units Only Axial Elongation	Untied & Tied Units Lateral Deflection
mm	mm	mm	mm	mm
25	130	12	9	12
32	130	12	9	12
40	130	12	9	12
50	130	12	9	12
65	130	12	9	12
80	130	12	9	12
100	130	14	9	12
125	130	14	9	12
150	130	14	9	12
200	130	14	9	12
250	130	14	9	12

Vacuum support rings are available.

Working Pressure:
4 bar (400 kPa) for ‘untied’ units, unless the pipe is secured.10 bar (1000 kPa) for ‘tied’ units with top hat washers.16 bar (1600 kPa) for ‘tied’ units with hemispherical washers.
Test Pressure: 1.5 x Working Pressure.
Working Temperature: -10ºC to 100ºC.

Key Features:
Fully traceable and has the date of manufacture, nominaldiameter, manufacturer, and type permanently moulded into the membrane.

Noise and vibration reduction capabilities. Tied units are fitted with noise absorbing top hat washers.

Design Consideration:
Rubber flexible connectors are subject to the same internal pressure force as metal expansion joints and the force is equal to the internal pressure multiplied by the maximum internal area. This force causes the connector to lengthen and tied units are recommended where the working pressure exceeds 4 bar, unless the pipework is secured to restrict movement.

Tie-rods are fitted through oval flanges and to isolate the tie-rods from the flanges special neoprene top hat washers are used to prevent any metal to metal contact whatsoever, effectively preventing noise transmission.

After installation of TIED UNITS the tie-rod nuts should be checked to have 1mm clearance over the steel washers.

When using with items of plant mounted on vibration isolators, such as springs or inertia bases, then TIED UNITS must be installed.

EMFLEX®

EPDM Rubber Flexible Connectors (150mm long)

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EPDM Rubber Flexible Connectors (150mm long)

EMFLEX EPDM (Ethylene Propylene Diene Monomer) rubber flexible connectors are comprised of a synthetic rubber membrane reinforced with nylon. The collars are wire reinforced and the unit is complete with carbon steel flanges. They are capable of absorbing movement in several directions; axial compression, axial elongation and lateral deflection. A small amount of angular movement may also be allowed. They are normally installed in the pipework to isolate various items of plant which produce noise and vibration. These flexible connectors effectively dampen the transmission of sound and vibration from plant items in building services installations.

TYPE EE

EPDM rubber membrane reinforced with a nylon textile cord and fitted with ‘untied’ or ‘tied’ carbon steel flanges. Suitable for use with hot water and chilled water.

Nominal Size	Installed Overall Length	Untied & Tied Units Axial Compression	Untied Units Only Axial Elongation	Untied & Tied Units Lateral Deflection
mm	mm	mm	mm	mm
25	150	12	9	12
32	150	12	9	12
40	150	12	9	12
50	150	12	9	12
65	150	12	9	12
80	150	12	9	12
100	150	14	9	12
125	150	14	9	12
150	150	14	9	12
200	150	14	9	12
250	150	14	9	12

Vacuum support rings are available.

Working Pressure:
4 bar (400 kPa) for ‘untied’ units, unless the pipe is secured.10 bar (1000 kPa) for ‘tied’ units with top hat washers.16 bar (1600 kPa) for ‘tied’ units with hemispherical washers.
Test Pressure: 1.5 x Working Pressure.
Working Temperature: -10ºC to 100ºC.

Key Features:
Fully traceable and has the date of manufacture, nominaldiameter, manufacturer, and type permanently moulded into the membrane.

Noise and vibration reduction capabilities. Tied units are fitted with noise absorbing top hat washers.

Design Consideration:
Rubber flexible connectors are subject to the same internal pressure force as metal expansion joints and the force is equal to the internal pressure multiplied by the maximum internal area. This force causes the connector to lengthen and tied units are recommended where the working pressure exceeds 4 bar, unless the pipework is secured to restrict movement.

Tie-rods are fitted through oval flanges and to isolate the tie-rods from the flanges special neoprene top hat washers are used to prevent any metal to metal contact whatsoever, effectively preventing noise transmission.

After installation of TIED UNITS the tie-rod nuts should be checked to have 1mm clearance over the steel washers.

When using with items of plant mounted on vibration isolators, such as springs or inertia bases, then TIED UNITS must be installed.

EMFLEX®

Rubber Flexible Connectors

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Chlorobutyl Rubber Flexible Connectors

EMFLEX chlorobutyl (often shortened to 'butyl') rubber flexible connectors are comprised of a synthetic rubber membrane reinforced with nylon. The collars are wire reinforced and the unit is complete with carbon steel flanges. They are capable of absorbing movement in several directions; axial compression, axial elongation and lateral deflection. A small amount of angular movement may also be allowed. They are normally installed in the pipework to isolate various items of plant which produce noise and vibration. These flexible connectors effectively dampen the transmission of sound and vibration from plant items in building services installations.

TYPE BB

Chlorobutyl rubber membrane reinforced with a nylon textile cord and fitted with ‘untied’ or ‘tied’ carbon steel flanges. Suitable for use with hot water and chilled water.

Nominal Size	Installed Overall Length	Untied & Tied Units Axial Compression	Untied Units Only Axial Elongation	Untied & Tied Units Lateral Deflection
mm	mm	mm	mm	mm
25	95	8	4	8
32	95	8	4	8
40	95	8	4	8
50	105	8	4	8
65	115	12	6	10
80	130	12	6	10
100	135	18	10	12
125	170	18	10	12
150	180	18	10	12
200	205	25	14	22
250	240	25	14	22

Vacuum support rings are available.

Working Pressure:
4 bar (400 kPa) for ‘untied’ units, unless the pipe is secured.10 bar (1000 kPa) for ‘tied’ units with top hat washers.16 bar (1600 kPa) for ‘tied’ units with hemispherical washers.
Test Pressure: 1.5 x Working Pressure.
Working Temperature: -10ºC to 100ºC

Key Features:
Fully traceable and has the date of manufacture, nominaldiameter, manufacturer, and type permanently moulded into the membrane.

Noise and vibration reduction capabilities. Tied units are fitted with noise absorbing top hat washers.

Design Consideration:
Rubber flexible connectors are subject to the same internal pressure force as metal expansion joints and the force is equal to the internal pressure multiplied by the maximum internal area. This force causes the connector to lengthen and tied units are recommended where the working pressure exceeds 4 bar, unless the pipework is secured to restrict movement.

Tie-rods are fitted through oval flanges and to isolate the tie-rods from the flanges special neoprene top hat washers are used to prevent any metal to metal contact whatsoever, effectively preventing noise transmission.

After installation of TIED UNITS the tie-rod nuts should be checked to have 1mm clearance over the steel washers.

When using with items of plant mounted on vibration isolators, such as springs or inertia bases, then TIED UNITS must be installed.

EMFLEX®

WRAS Approved Rubber Flexible Connectors

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ISOQAR REGISTERED UKAS MANAGEMENT SYSTEMS 0026

WRAS Approved Rubber Flexible Connectors

EMFLEX EPDM (Ethylene Propylene Diene Monomer) WRAS approved rubber flexible connectors are comprised of a synthetic rubber membrane reinforced with nylon. The collars are wire reinforced and the unit is complete with carbon steel flanges. They are capable of absorbing movement in several directions; axial compression, axial elongation and lateral deflection. A small amount of angular movement may also be allowed. They are normally installed in the pipework to isolate various items of plant which produce noise and vibration. These flexible connectors effectively dampen the transmission of sound and vibration from plant items in building services installations.

TYPE WRAS Untied

EPDM rubber membrane reinforced with a nylon textile cord and fitted with untied (circular) zinc plated carbon steel flanges. Suitable for use on potable services under 4 bar working pressure.

TYPE WRAS Tied

EPDM rubber membrane reinforced with a nylon textile cord and fitted with tied (oval) zinc plated carbon steel flanges complete with isolating tie bars. Suitable for use on potable services under 10 bar working pressure.

Nominal Bore	Installed Overall Length	Untied & Tied Unit Axial Compression	Untied Units Only Axial Elongation	Untied & Tied Unit Lateral Deflection
mm	mm	mm	mm	mm
25	130	12	9	12
32	130	12	9	12
40	130	12	9	12
50	130	12	9	12
65	130	12	9	12
80	130	12	9	12
100	130	14	9	12
125	130	14	9	12
150	130	14	9	12
200	130	14	9	12
250	130	14	9	12
300	200	14	9	12
350	200	14	9	12

Working Pressure:
4 bar (400kPA) for untied units, unless pipe is secured.
10 bar (1000kPA) for tied units with top hat washers.
16 bar (1600kPA) PLEASE CONTACT OUR OFFICES.

Test Pressure: 1.5 x Working Pressure

Working Temperature: -10°C to 90°C

Key Features:

- Fully traceable and has the date of manufacture, nominal diameter, manufacturer, and type permanently moulded into the membrane.
- Noise and vibration reduction capabilities.
- All Tied units are fitted with noise absorbing top hat washers.

Design Consideration:
Rubber flexible connectors are subjected to the same internal pressure force as metal expansion joints and that the same force is equal to the internal pressure multiplied by the maximum internal area. This force causes the connector to lengthen and tied units are recommended where the working pressure exceeds 4 bar, unless the pipework is secured to restrict movement.

Tie rods are fitted through oval flanges and to isolate the tie-rods from the special neoprene top hat washers are used to prevent any metal to metal contact whatsoever, effectively preventing noise transmission.

After Installation of TIED UNITS the tie-rod nuts should be checked to have 1mm clearance over the steel washers.

When using with items of plant mounted on vibration isolators, such as springs or inertia bases, then TIED units must be installed.

WRAS Approval Code: 112503

EMFLEX®

EPDM Rubber Flexible Connectors to DIN4809

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ISOQAR REGISTERED UKAS MANAGEMENT SYSTEMS 0026

EPDM Rubber Flexible Connectors to DIN4809

EMFLEX EPDM (Ethylene Propylene Diene Monomer) rubber flexible connectors are comprised of a synthetic rubber membrane reinforced with a high tensile polymer textile cord. The collars are wire reinforced and the unit is complete with carbon steel flanges. They are capable of absorbing movement in several directions; axial compression, axial elongation and lateral deflection. A small amount of angular movement may also be allowed. They are normally installed in the pipework to isolate various items of plant which produce noise and vibration. These flexible connectors effectively dampen the transmission of sound and vibration from plant items in building services installations.

TYPE RR

EPDM rubber membrane reinforced with a high tensilepolymer textile cord and fitted with ‘untied’ or ‘tied’ carbon steel flanges. Suitable for use with hot water and chilled water. They are approved to DIN4809 for use in heating plants and are fully certified to this effect.

Nominal Size	Installed Overall Length	Untied & Tied Units Axial Compression	Untied Units Only Axial Elongation	Untied & Tied Units Lateral Deflection
mm	mm	mm	mm	mm
25	130	30	30	30
32	130	30	30	30
40	130	30	30	30
50	130	30	30	30
65	130	30	30	30
80	130	30	30	30
100	130	30	30	30
125	130	30	30	30
150	130	30	30	30
200	130	30	30	30
250	130	30	30	30
300	130	30	30	30

Vacuum support rings are available.

Working Pressure: 10 bar (1000 kPa)
Test Pressure: 1.5 x Working Pressure.
Working Temperature: -10ºC to 100ºC at 10 bar / 110ºC at 6 bar.

Key Features:

Complies with DIN4809 Parts 1 & 2 and is fully approved and certified to this effect.
Verified burst pressure of 30 bar gauge minimum after 10 years service. An increased safety point.
Fully traceable and has the date of manufacture, DIN approval registration number, pressure and temperature rating, nominal diameter, manufacturer, type and identifiable colour coding permanently moulded into the membrane.
Laboratory tested for noise and vibration reduction capabilities.
Tied units are fitted with noise absorbing top hat washers.

Design Consideration:

Rubber flexible connectors are subject to the same internal pressure force as metal expansion joints and the force is equal to the internal pressure multiplied by the maximum internal area. This force causes the connector to lengthen and tied units are recommended where the working pressure exceeds 4 bar, unless the pipework is secured to restrict movement.
Tie-rods are fitted through profiled flanges and to isolate the tie-rods from the flanges rubber top hat washers are used to prevent any metal to metal contact whatsoever, effectively preventing noise transmission.
After installation of TIED UNITS the tie-rod nuts should be checked to have 1mm clearance over the steel washers.
When using with plant items mounted on vibration isolators, such as springs or inertia bases, then TIED UNITS must be installed.

EMFLEX®

EPDM Rubber Flexible Connectors to DIN4809

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EPDM Rubber Flexible Connectors to DIN4809

EMFLEX EPDM (Ethylene Propylene Diene Monomer) rubber flexible connectors are comprised of a synthetic rubber membrane reinforced with a high tensile polymer textile cord. The collars are wire reinforced and the unit is complete with carbon steel flanges. They are capable of absorbing movement in several directions; axial compression, axial elongation and lateral deflection. A small amount of angular movement may also be allowed. They are normally installed in the pipework to isolate various items of plant which produce noise and vibration. These flexible connectors effectively dampen the transmission of sound and vibration from plant items in building services installations.

TYPE RR

EPDM rubber membrane reinforced with a high tensilepolymer textile cord and fitted with ‘untied’ or ‘tied’ carbon steel flanges. Suitable for use with hot water and chilled water. They are approved to DIN4809 for use in heating plants and are fully certified to this effect.

Nominal Size	Installed Overall Length	Untied & Tied Units Axial Compression	Untied Units Only Axial Elongation	Untied & Tied Units Lateral Deflection
mm	mm	mm	mm	mm
25	150	30	30	30
32	150	30	30	30
40	150	30	30	30
50	150	30	30	30
65	150	30	30	30
80	150	30	30	30
100	150	30	30	30
125	150	30	30	30
150	150	30	30	30
200	150	30	30	30
250	150	30	30	30
300	150	30	30	30

Vacuum support rings are available.

Working Pressure: 10 bar (1000 kPa)
Test Pressure: 1.5 x Working Pressure.
Working Temperature: -10ºC to 100ºC
at 10 bar / 110ºC at 6 bar.

Key Features:

Complies with DIN4809 Parts 1 & 2 and is fully approved and certified to this effect.
Verified burst pressure of 30 bar gauge minimum after 10 years service. An increased safety point.
Fully traceable and has the date of manufacture, DIN approval registration number, pressure and temperature rating, nominal diameter, manufacturer, type and identifiable colour coding permanently moulded into the membrane.
Laboratory tested for noise and vibration reduction capabilities.
Tied units are fitted with noise absorbing top hat washers.

Design Consideration:

Rubber flexible connectors are subject to the same internal pressure force as metal expansion joints and the force is equal to the internal pressure multiplied by the maximum internal area. This force causes the connector to lengthen and tied units are recommended where the working pressure exceeds 4 bar, unless the pipework is secured to restrict movement.
Tie-rods are fitted through profiled flanges and to isolate the tie-rods from the flanges rubber top hat washers are used to prevent any metal to metal contact whatsoever, effectively preventing noise transmission.
After installation of TIED UNITS the tie-rod nuts should be checked to have 1mm clearance over the steel washers.
When using with plant items mounted on vibration isolators, such as springs or inertia bases, then TIED UNITS must be installed.

EMFLEX®

Nitrile Rubber Flexible Connectors (130mm Long)

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ISOQAR REGISTERED UKAS MANAGEMENT SYSTEMS 0026

Nitrile Rubber Flexible Connectors (130mm Long)

EMFLEX Nitrile rubber flexible connectors are comprised of a synthetic rubber membrane reinforced with nylon. The collars are wire reinforced and the unit is complete with carbon steel flanges. They are capable of absorbing movement in several directions; axial compression, axial elongation and lateral deflection. A small amount of angular movement may also be allowed. They are normally installed in the pipework to isolate various items of plant which produce noise and vibration. These flexible connectors effectively dampen the transmission of sound and vibration from plant items in building services installations.

TYPE N Untied

Nitrile rubber membrane reinforced with a nylon textile cord and fitted with untied (circular) zinc plated carbon steel flanges. Suitable for use on gas and fuels under 4 bar unless the pipework is secured.

TYPE N Tied

Nitrile rubber membrane reinforced with a nylon textile cord and fitted with tied (oval) zinc plated carbon steel flanges complete with isolating tie bars. Suitable for use on gas and fuels under 10 bar.

Nominal Bore	Installed Overall Length	Untied & Tied Unit Axial Compression	Untied Units Only Axial Elongation	Untied & Tied Unit Lateral Deflection
mm	mm	mm	mm	mm
25	130	12	9	12
32	130	12	9	12
40	130	12	9	12
50	130	12	9	12
65	130	12	9	12
80	130	12	9	12
100	130	14	9	12
125	130	14	9	12
150	130	14	9	12
200	130	14	9	12
250	130	14	9	12

Working Pressure:
4 bar (400kPA) for untied units, unless pipe is secured.
10 bar (1000kPA) for tied units with top hat washers.
16 bar (1600kPA) PLEASE CONTACT OUR OFFICES.

Test Pressure: 1.5 x Working Pressure

Working Temperature: -10°C to 95°C

Key Features:

- Fully traceable and has the date of manufacture, nominal diameter, manufacturer, and type permanently moulded into the membrane.
- Noise and vibration reduction capabilities.
- All Tied units are fitted with noise absorbing top hat washers.

Design Consideration:
Rubber flexible connectors are subjected to the same internal pressure force as metal expansion joints and that the same force is equal to the internal pressure multiplied by the maximum internal area. This force causes the connector to lengthen and tied units are recommended where the working pressure exceeds 4 bar, unless the pipework is secured to restrict movement.

Tie rods are fitted through oval flanges and to isolate the tie-rods from the special neoprene top hat washers are used to prevent any metal to metal contact whatsoever, effectively preventing noise transmission.

After Installation of TIED UNITS the tie-rod nuts should be checked to have 1mm clearance over the steel washers.

When using with items of plant mounted on vibration isolators, such as springs or inertia bases, then TIED units must be installed.

EMFLEX®

Full Face Rubber Flexible Connectors

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Tel: 01423 326789 Fax: 01423 323877

ISOQAR REGISTERED UKAS MANAGEMENT SYSTEMS 0026

Full Face Rubber Flexible Connectors

EMFLEX full faced rubber flexible connectors are comprised of a synthetic rubber membrane reinforced with synthetic fibre. The membrane finishes with a full face behind which are carbon steel split backing flanges. The rubber face is drilled to match the flange table. They are capable of absorbing movement in several directions; axial compression, axial elongation and lateral deflection. A small amount of angular movement may also be allowed. They are designed to allow for movements in pipework systems due to thermal changes. This relieves stresses, protects machinery attached to the pipework, and thus lengthens the life of the whole system. Their ability to flex axially and laterally also allows for isolation of vibration, reduction in noise transmission and compensation for pipework misalignment. These flexible connectors are custom built to suit the requirements of pressure and temperature.

TYPE FF Untied

A full faced rubber membrane with untied flanges.

Working Pressure:
These units are custom built to suit working pressure requirements.

Test Pressure:
Generally a test pressure of 1.5 x required working pressure is allowed for, however units will be designed to system requirements.

Working Temperature:
This is dependent on rubber type and synthetic fibre type used.

Vacuum Conditions:
Vacuum support rings are available for vacuum conditions to prevent distortion of the unit.

TYPE FF Tied

A full faced rubber membrane with tied flanges.

Design Consideration:

Rubber flexible connectors are subject to the same internal pressure force as metal expansion joints and the force is equal to the internal pressure multiplied by the maximum internal area. This force causes the connector to lengthen and tied units are recommended where the working pressure exceeds 4 bar, unless the pipework is secured to restrict movement.

When using with plant items mounted on vibration isolators, such as springs or inertia bases, then TIED UNITS must be installed.

Material Specifications:
These units can be manufactured from many different rubber compounds to suit a wide variety of media. The following is a list of the more frequently used compounds with an indication of capabilities:-

Neoprene - has excellent weathering resistance and good ageing and abrasion qualities, as well as good oil resistance.
Chlorobutyl - has high temperature resistance and excellent weathering resistance.
Nitrile - has excellent resistance to oil, grease and fuels, as well as good heat resistance.
Hypalon - has excellent ozone and weathering resistance, and is used mainly with oxidising acids.
Viton - has excellent high temperature and chemical resistance.

Backing flanges are carbon steel and reinforcement is nylon for standard units; other materials can be used on request.

Additional Equipment:
Fairing Pieces - are an internal sleeve, normally manufactured from the same compound as the lining of the unit. Metallic fairing pieces can also be supplied.

External Support Rings - are needed where high temperatures and / or pressures occur.

Fireguards - completely enclose the unit to protect it from flames in the event of a fire. Since it is more flexible than the unit, the performance is not impaired.

EMFLEX®

Twin Sphere Rubber Flexible Connectors

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ISOQAR REGISTERED UKAS MANAGEMENT SYSTEMS 0026

Twin Sphere Rubber Flexible Connectors

EMFLEX twin sphere rubber flexible connectors are comprised of a twin sphere or double bubble synthetic rubber membrane reinforced with nylon. The collars are wire reinforced and the unit is complete with galvanised or stainless steel female unions. They are capable of absorbing movement in several directions; axial compression, axial elongation and lateral deflection. A small amount of angular movement may also be allowed. They are normally installed in the pipework to isolate various items of plant which produce noise and vibration. These flexible connectors effectively dampen the transmission of sound and vibration from plant items in building services installations.

TYPE TS

EPDM rubber membrane reinforced with a nylon textile cord and fitted with galvanised female unions. Suitable for steel pipework.

Nominal Size	Installed Length	Axial Compression	Axial Elongation	Lateral Movement	Angular Movement
mm	mm	mm	mm	+/- mm	Deg
20	200	22	6	22	10
25	200	22	6	22	10
32	200	22	6	22	10
40	200	22	6	22	10
50	200	22	6	22	10
65	240	22	6	22	10
80	240	22	6	22	10

Maximum Working Pressure: 4 bar.

Test Pressure: 1.5 x Working Pressure.

Working Temperature: -10°C to 90°C.

Design Consideration:

Rubber flexible connectors are subjected to the same internal pressure force as metal expansion joints and that the same force is equal to the internal pressure multiplied by the maximum internal area.

EMFLEX®

Heavy Duty Restrained Spring Mounts

N. Minikin & Sons Limited

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Heavy Duty Restrained Spring Mounts

EMFLEX heavy duty restrained spring mounts are used beneath mechanical equipment, either alone or in conjunction with inertia bases, to minimise the transmission of noise and vibration to the building structure. They are designed to ensure that once the vertical load is applied, the horizontal and vertical forces are restrained without affecting the isolation efficiency.

They are suitable for mechanical equipment such as chillers, cooling towers, fans, pumps, air handling units, booster sets, etc and offer an economic solution to many vibration problems encountered with plant.

Available with a standard deflection of 25mm. The spring will compress proportionally to the actual load applied; ie full compression of 25mm will be achieved when a load is applied which is equal to the load rating. The fixing bolt allows the equipment to be levelled when the spring mounts have been installed.

TYPE MROS-HD

An open spring mount consisting of a colour coded steel spring and rubber isolating end caps with internal tapped steel inserts. Fitted to a plated steel base beneath and complete with two heavy steel channel restraint housings and heavy top plate to provide maximum resistance to forces. A ribbed rubber acoustic pad is bonded to the underside of the base plate.

TYPE	BOX HEIGHT	BASE PLATE WIDTH	BASE PLATE LENGTH	FIXING
MROS-HD-B 50Kg	205mm	80mm	170mm	M12
MROS-HD-B 75Kg	205mm	80mm	170mm	M12
MROS-HD-B 100Kg	205mm	80mm	170mm	M12
MROS-HD-B 150Kg	205mm	80mm	170mm	M12
MROS-HD-B 200Kg	205mm	80mm	170mm	M12
MROS-HD-B 300Kg	205mm	80mm	170mm	M12
MROS-HD-B 400Kg	205mm	80mm	170mm	M12
MROS-HD-B 500Kg	205mm	80mm	170mm	M12
MROS-HD-C 400Kg	250mm	100mm	180mm	M16
MROS-HD-C 600Kg	250mm	100mm	180mm	M16
MROS-HD-C 800Kg	250mm	100mm	180mm	M16
MROS-HD-C 1000Kg	250mm	100mm	180mm	M16
MROS-HD-C 1200Kg	250mm	100mm	180mm	M16

High deflection (50mm) units are available.
Add suffix 'H' to the model type code. (e.g. MROS-HD-A-H).
Dimensions are available on request.

EMFLEX®

Open Spring Mounts

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Open Spring Mounts

EMFLEX open spring mounts are used beneath mechanical equipment, either alone or in conjunction with inertia bases, to minimise the transmission of noise and vibration to the building structure.

They are suitable for mechanical equipment such as fans, pumps, air handling units, booster sets, etc and offer an economic solution to many vibration problems encountered with rotating plant.

Available with a standard deflection of 25mm. The spring will compress proportionally to the actual load applied; ie full compression of 25mm will be achieved when a load is applied which is equal to the load rating. The fixing bolt allows the equipment to be levelled when the spring mounts have been installed.

TYPE MOS

An open spring mount consisting of a colour coded steel spring and rubber isolating end caps with internal tapped steel inserts. Fitted to a plated steel base beneath and supplied with plated levelling / fixing bolt. A ribbed rubber acoustic pad is bonded to the underside of the base plate.

TYPE	HEIGHT	BASE PLATE WIDTH	BASE PLATE LENGTH	FIXING
MOS-A 25Kg Yellow	80mm	40mm	75mm	M8
MOS-A 50Kg Green	80mm	40mm	75mm	M8
MOS-A 75Kg Blue	80mm	40mm	75mm	M8
MOS-A 100Kg Red	80mm	40mm	75mm	M8
MOS-B 50Kg Black	115mm	60mm	110mm	M12
MOS-B 75Kg Orange	115mm	60mm	110mm	M12
MOS-B 100Kg White	115mm	60mm	110mm	M12
MOS-B 150Kg Green	115mm	60mm	110mm	M12
MOS-B 200Kg Yellow	115mm	60mm	110mm	M12
MOS-B 300Kg Blue	115mm	60mm	110mm	M12
MOS-B 400Kg Purple	115mm	60mm	110mm	M12
MOS-B 500Kg Red	115mm	60mm	110mm	M12
MOS-C 400Kg Black	160mm	100mm	150mm	M16
MOS-C 600Kg Yellow	160mm	100mm	150mm	M16
MOS-C 800Kg Green	160mm	100mm	150mm	M16
MOS-C 1000Kg Blue	160mm	100mm	150mm	M16
MOS-C 1200Kg Red	160mm	100mm	150mm	M16

High deflection (50mm) units are available.
Add suffix 'H' to the model type code. (e.g. MOS-A-H).
Dimensions are available on request.

EMFLEX®

Rubber Turret Mounts

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Rubber Turret Mounts

EMFLEX rubber turret mounts are used beneath mechanical equipment, either alone or in conjunction with inertia bases, to minimise the transmission of noise and vibration to the building structure. They are also used for snubbing of rocking modes with plant and as isolators for floating floors etc.

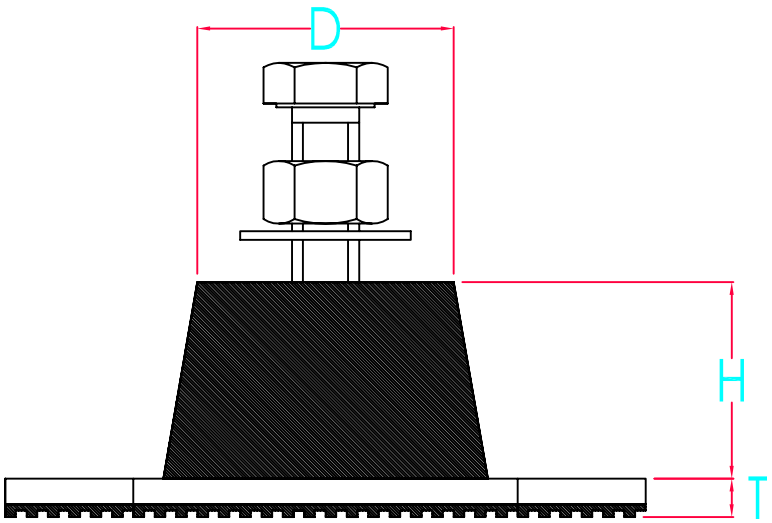
They are available for load ratings up to a maximum of 1200kg per mount. The rubber element will compress proportionally to the actual load applied; ie full compression will be achieved when a load is applied which is equal to the load rating.

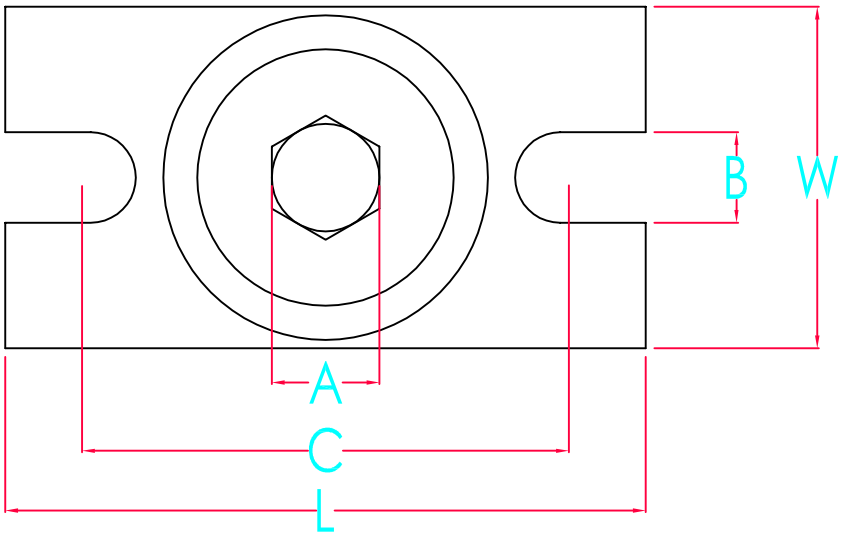
The fixing bolt allows ease of fixing to inertia bases, plant frames and other equipment items.

TYPE MNR

A moulded rubber turret mount consisting of a colour coded rubber element with threaded steel inserts in the top and bottom. Fitted to a plated steel base beneath and supplied with a plated levelling / fixing bolt. A ribbed rubber acoustic pad is bonded to the underside of the base plate.

TYPE	HEIGHT	BASE PLATE WIDTH	BASE PLATE LENGTH	FIXING
MNR-A 25Kg Red	23mm	40mm	75mm	M8
MNR-A 60kg Yellow	23mm	40mm	75mm	M8
MNR-A 85Kg Blue	23mm	40mm	75mm	M8
MNR-B 100Kg Red	37mm	60mm	110mm	M10
MNR-B 200Kg Yellow	37mm	60mm	110mm	M10
MNR-B 300Kg Blue	37mm	60mm	110mm	M10
MNR-C 450Kg Yellow	63mm	100mm	150mm	M12
MNR-C 600Kg Blue	63mm	100mm	150mm	M12





Isolator Type	Dimensions in mm							
	A	B	C	D	H	L	W	T
MNR-A	M8	8	60	30	23	75	40	6
MNR-B	M10	10	90	40	37	110	60	6
MNR-C	M12	10	120	60	63	150	100	6

EMFLEX®

Closed Spring Mounts

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Closed Spring Mounts

EMFLEX closed spring mounts are used beneath mechanical equipment, either alone or in conjunction with inertia bases, to minimise the transmission of noise and vibration to the building structure.

They are suitable for mechanical equipment such as fans, pumps, air handling units, booster sets, etc and offer an economic solution to many vibration problems encountered with rotating plant.

Available with a standard deflection of 25mm. The spring will compress proportionally to the actual load applied; ie full compression of 25mm will be achieved when a load is applied which is equal to the load rating. The fixing bolt allows the equipment to be levelled when the spring mounts have been installed.

These spring mounts have built-in snubbing which allows some control of vertical and horizontal movement. (Note:- Where large forces need to be controlled re movement, then EMFLEX restrained spring mounts must be used - please ask our engineers).

TYPE MCS

An enclosed spring mount consisting of a helical steel spring and plated steel cup enclosures with rubber O-ring to prevent metal to metal contact. Fitted to a plated steel base beneath and supplied with plated levelling / fixing bolt. A ribbed rubber acoustic pad is bonded to the underside of the base plate.

TYPE	HEIGHT	BASE PLATE WIDTH	BASE PLATE LENGTH	TOP FIXING
MCS-A 25Kg Yellow	75mm	40mm	75mm	M8
MCS-A 50Kg Green	75mm	40mm	75mm	M8
MCS-A 75Kg Blue	75mm	40mm	75mm	M8
MCS-A 100Kg Red	75mm	40mm	75mm	M8
MCS-B 50Kg Black	115mm	100mm	150mm	M10
MCS-B 75Kg Orange	115mm	100mm	150mm	M10
MCS-B 100Kg White	115mm	100mm	150mm	M10
MCS-B 150Kg Green	115mm	100mm	150mm	M10
MCS-B 200Kg Yellow	115mm	100mm	150mm	M10
MCS-B 300Kg Blue	115mm	100mm	150mm	M10
MCS-B 400Kg Purple	115mm	100mm	150mm	M10
MCS-B 500Kg Red	115mm	100mm	150mm	M10
MCS-C 400Kg Black	125mm	100mm	150mm	M12
MCS-C 600Kg Yellow	125mm	100mm	150mm	M12
MCS-C 800Kg Green	125mm	100mm	150mm	M12
MCS-C 1000Kg Blue	125mm	100mm	150mm	M12
MCS-C 1200Kg Red	125mm	100mm	150mm	M12

High deflection (50mm) units are available.
Add suffix 'H' to the model type code. (e.g. MCS-A-H).
Dimensions are available on request.

EMFLEX®

Inertia Base & Mount Packages

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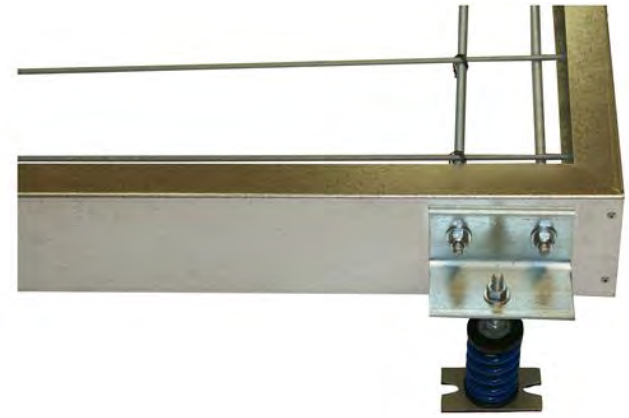
Inertia Base & Mount Packages

EMFLEX inertia base and mount packages are used beneath mechanical equipment to improve stability and to minimise the vibratory movement and noise transmission due to equipment start-up, operation and run-down.

They are designed and manufactured to meet with individual requirements and are suitable for mechanical equipment such as pumps, air handling units, chillers, booster sets, compressors, etc.

They are supplied to site ready for filling with concrete. We recommend that a concrete mix ratio of 4 parts gravel : 2 parts sand : 1 part cement is used to give a concrete density of 2,400 to 2,500 kg/m3.

We request that our engineers are contacted for assistance with this type of equipment.



TYPE IBMP

A package consisting of a pre-galvanised formed steel inertia frame, zinc plated steel reinforcing bars, zinc plated steel 'outrigger' mounting brackets and suitable anti vibration mounts to suit the mechanical equipment being isolated. Heavy steel channel sections and steel angle section may be used where necessary.

The approximate concrete weight is calculated from:-
Weight (kg) = A x B x C x D

Where,
A = Frame Length (m)
B = Frame Width (m)
C = Frame Depth (m)
D = Concrete Density (2400kg/m3)

The weight of the inertia base should be between 1.5 and 2.0 times that of the equipment being supported.
To reduce rocking modes, the height of the centre of gravity above the top of the isolators for the combined base and equipment must be less than the horizontal distance to the isolators.

Allow 150mm between equipment hold down bolts and the edge of the frame so as not to crack the concrete.
The guidance tables above show sizes of inertia bases that utilise 4 isolator mounting positions. Larger sizes are available and generally utilise more isolators.

Please contact our sales team for further information.

EMFLEX®

Spring Hangers

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Spring Hangers

EMFLEX spring hangers are used to support pipework from above, to minimise the transmission of noise and vibration to the building structure.

They may be suspended from drop rods above or bolted directly to the soffit or slab.

Available with a standard deflection of 25mm. The spring will compress proportionally to the actual load applied; ie full compression of 25mm will be achieved when a load is applied which is equal to the load rating.

TYPE HS

An open spring hanger consisting of a colour coded steel spring and rubber isolating end caps. Fitted in a plated steel hanger box. Complete with fixing stud and connector for fixing lower drop rod.

TYPE	HEIGHT	HOLE DIAMETER	WIDTH	LENGTH	FIXING
HS-A 25Kg Yellow	100mm	9mm	50mm	50mm	M8
HS-A 50Kg Green	100mm	9mm	50mm	50mm	M8
HS-A 75Kg Blue	100mm	9mm	50mm	50mm	M8
HS-A 100Kg Red	100mm	9mm	50mm	50mm	M8
HS-B 50Kg Black	150mm	14mm	80mm	100mm	M12
HS-B 75Kg Orange	150mm	14mm	80mm	100mm	M12
HS-B 100Kg White	150mm	14mm	80mm	100mm	M12
HS-B 150Kg Green	150mm	14mm	80mm	100mm	M12
HS-B 200Kg Yellow	150mm	14mm	80mm	100mm	M12
HS-B 300Kg Blue	150mm	14mm	80mm	100mm	M12
HS-B 400Kg Purple	150mm	14mm	80mm	100mm	M12
HS-B 500Kg Red	150mm	14mm	80mm	100mm	M12
HS-C 400Kg Black	200mm	18mm	100mm	100mm	M16
HS-C 600Kg Yellow	200mm	18mm	100mm	100mm	M16
HS-C 800Kg Green	200mm	18mm	100mm	100mm	M16
HS-C 1000Kg Blue	200mm	18mm	100mm	100mm	M16
HS-C 1200Kg Red	200mm	18mm	100mm	100mm	M16

High deflection (50mm) units are available.
Add suffix 'H' to the model type code. (e.g. HS-A-H).
Dimensions are available on request.

Note:
The fixing stud size is based on safe working loads stated in BS3974.

EMFLEX®

Ductwork Rubber Hangers

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Ductwork Rubber Hangers

EMFLEX ductwork rubber hangers are an economic solution for isolating building services ductwork from the structure.

They are available for load ratings up to a maximum of 200kg per hanger. The rubber turret element will compress proportionally to the actual load applied; ie full compression will be achieved when a load is applied which is equal to the load rating.

TYPE HR

A moulded rubber turret hanger consisting of a colour coded rubber element fitted in an aluminium hollow section housing. Fixing holes allow for installation in standard stud.

TYPE	HEIGHT	WIDTH	LENGTH	FIXING
HR-A 25Kg Red	100mm	50mm	60mm	M8
HR-A 60Kg Yellow	100mm	50mm	60mm	M8
HR-A 85Kg Blue	100mm	50mm	60mm	M8
HR-B 100Kg Red	150mm	80mm	100mm	M12
HR-B 200Kg Yellow	150mm	80mm	100mm	M12
HR-B 300Kg Blue	150mm	80mm	100mm	M12
HR-C 450Kg Yellow	200mm	100mm	100mm	M16
HR-C 600Kg Blue	200mm	100mm	100mm	M16

EMFLEX®

Positioned Spring Hangers

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Positioned Spring Hangers

EMFLEX positioned spring hangers are used to support pipework from above, to minimise the transmission of noise and vibration to the building structure.

They are specifically designed with a positioning plate for initial supporting and levelling of the pipework during installation. When the pipe is fully installed and filled, the load is transferred to the isolating spring by adjustment of the nuts on the fixing stud.

They may be suspended from drop rods above or bolted directly to the soffit or slab.

Available with a standard deflection of 25mm. The spring will compress proportionally to the actual load applied; ie full compression of 25mm will be achieved when a load is applied which is equal to the load rating.

TYPE HPS

An open positioned spring hanger consisting of a colour coded steel spring and rubber isolating end caps. Fitted in a plated steel hanger box with integral positioning plate. Complete with fixing stud and connector for fixing lower drop rod.

TYPE	BOX HEIGHT	HOLE DIAMETER	BOX WIDTH	BOX LENGTH	FIXING
HPS-A 25Kg Yellow	150mm	12mm	50mm	100mm	M8
HPS-A 50Kg Green	150mm	12mm	50mm	100mm	M8
HPS-A 75Kg Blue	150mm	12mm	50mm	100mm	M8
HPS-A 100Kg Red	150mm	12mm	50mm	100mm	M8
HPS-B 50Kg Black	200mm	14mm	80mm	100mm	M12
HPS-B 75Kg Orange	200mm	14mm	80mm	100mm	M12
HPS-B 100Kg White	200mm	14mm	80mm	100mm	M12
HPS-B 150Kg Green	200mm	14mm	80mm	100mm	M12
HPS-B 200Kg Yellow	200mm	14mm	80mm	100mm	M12
HPS-B 300Kg Blue	200mm	14mm	80mm	100mm	M12
HPS-B 400Kg Purple	200mm	14mm	80mm	100mm	M12
HPS-B 500Kg Red	200mm	14mm	80mm	100mm	M12
HPS-C 400Kg Black	300mm	26mm	100mm	100mm	M16
HPS-C 600Kg Yellow	300mm	26mm	100mm	100mm	M16
HPS-C 800Kg Green	300mm	26mm	100mm	100mm	M16
HPS-C 1000Kg Blue	300mm	26mm	100mm	100mm	M16
HPS-C 1200Kg Red	300mm	26mm	100mm	100mm	M16

High deflection (50mm) units are available.
Add suffix 'H' to the model type code. (e.g. HPS-A-H).
Dimensions are available on request.

Note:
The fixing stud size is based on safe working loads stated in BS3974.

EMFLEX®

Damping & Isolating Sheets

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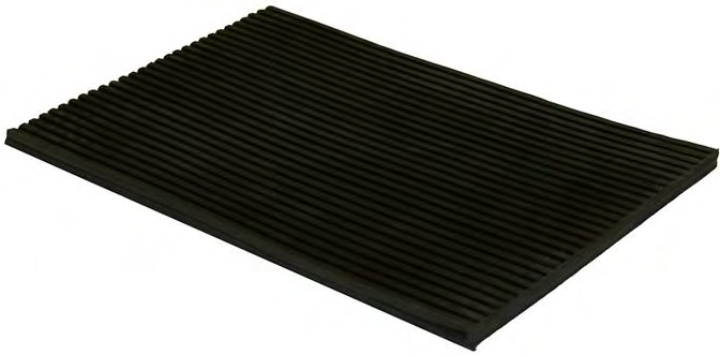
Damping & Isolating Sheets

EMFLEX damping and isolating sheets are used primarily for damping purposes but at higher forcing frequencies they have inherent isolation properties. They can be used as a damping sheet beneath mechanical equipment, either alone or in conjunction with cast concrete inertia block sandwich, to reduce the transmission of noise and vibration to the building structure.

They can be applied as a damping sheet beneath mechanical equipment such as pumps, air handling units, boilers, booster sets, etc . When used for isolation please ask our engineers about the suitability of the application.

Individual pads or strips can be cut to size if required.



TYPE NRP

A ribbed rubber damping sheet consisting of bi-directional profiled top and bottom surfaces. These sheets can be bonded together with intermediate steel shim plates to form composites giving higher deflections and different damping properties.

TYPE NWP

A rubber damping sheet similar to NRP but consisting of profiled grids (or 'waffles') on the top and bottom surfaces.

These sheets can be bonded together with intermediate steel shim plates to form composites giving higher deflections and different damping properties.

TYPE	COLOUR	LOAD RATING	DEFLECTION	Dim A LENGTH	Dim B WIDTH	Dim C THICKNESS
		Kg/cm2	mm	mm	mm	mm
NRP	BLACK	8.0	2.5	500	500	10
NWP	BLACK	8.0 6.0 4.0 2.5	1.5	500	500	8

EMFLEX®

Slide Guide & Rubber Lined Clip Set

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Slide Guide & Rubber Lined Clip Set

EMFLEX slide guide and clip sets are essential for the correct operation of AXIAL type expansion joints. A pipeline which contains an expansion joint and is anchored at each end can be considered as a load bearing column. Thus when pressure is applied, guides are necessary to prevent bowing and bending.

TYPE SS

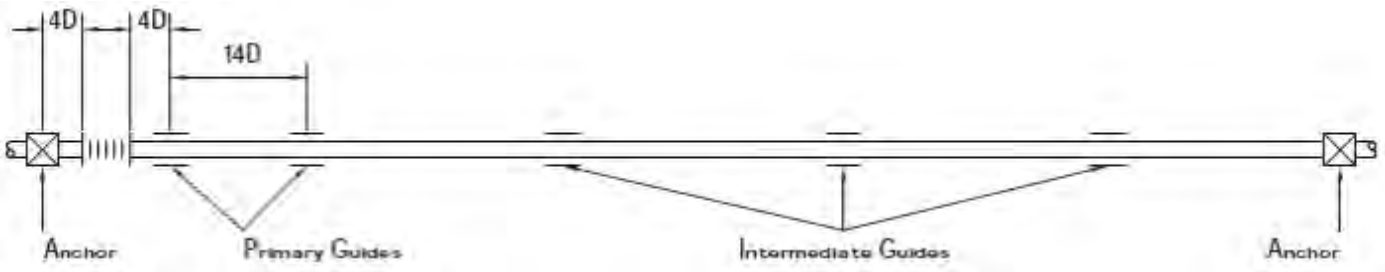
For use on steel pipelines for LPHW (low pressure hot water). Consists of a plated formed steel sliding component and slide rest, incorporating a threaded plated steel fixing (M10 or M12) complete with a single or double rubber lined pipe clip.

TYPE SSN

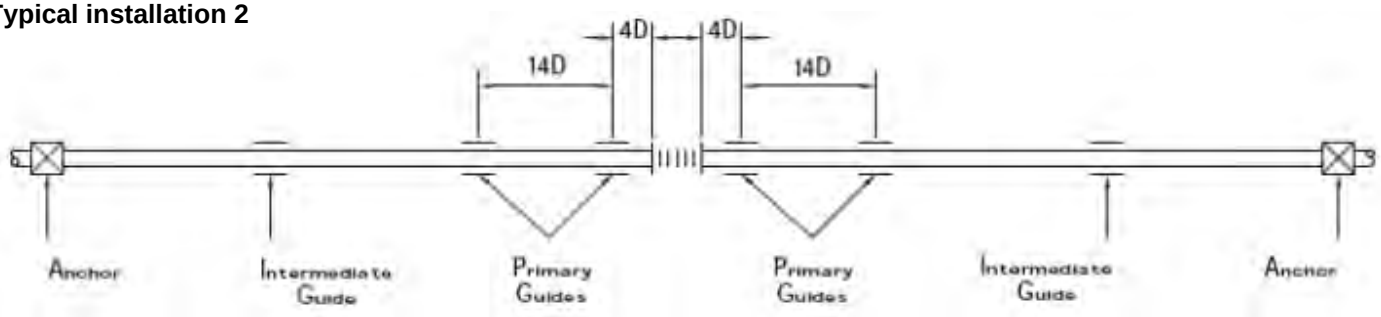
For use on copper pipelines domestic and hot water services. Consists of a plated formed steel sliding component and slide rest, incorporating a threaded plated steel fixing (M10 or M12) complete with a single or double rubber lined pipe clip.

Axial expansion joints are designed to absorb movements generally between 25mm and 80mm, although longer movements of 75mm are available on request. They are fitted in the pipeline, in line with the movement. They require an anchor each end of the system to resist the pressure force and to compress the bellows. The following diagrams show two types of typical installations.

Typical installation 1



Typical installation 2



We strongly recommend that this type of slide guide be only used on 80mm nominal bore pipework and below. Please see our type SSHD/SSHDN for further details on pipe slide guides for above 80mm NB pipework.

EMFLEX®

Slide Guide & Rubber Lined Clip Set

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Slide Guide & Rubber Lined Clip Set

EMFLEX slide guide and clip sets are essential for the correct operation of AXIAL type expansion joints. A pipeline which contains an expansion joint and is anchored at each end can be considered as a load bearing column. Thus when pressure is applied, guides are necessary to prevent bowing and bending.

TYPE SSM

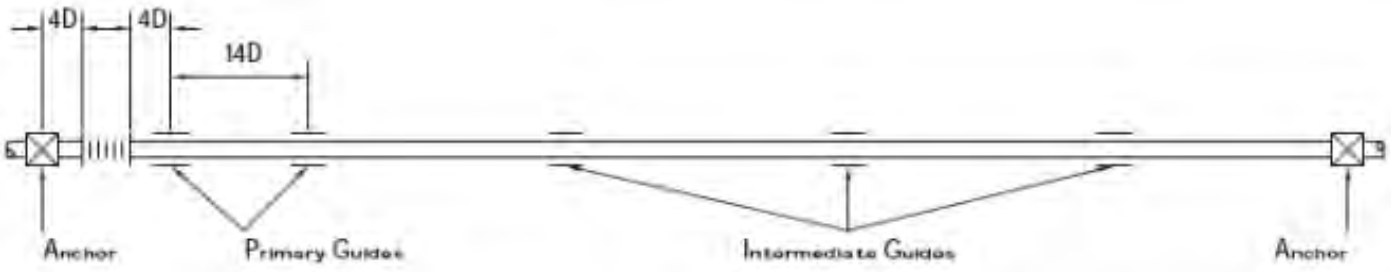
For use on steel pipelines for LPHW (low pressure hot water). Consists of a plated formed steel sliding component and slide rest, incorporating a threaded plated steel fixing (M12 or M16) complete with a rubber lined pipe clip.

TYPE SSMN

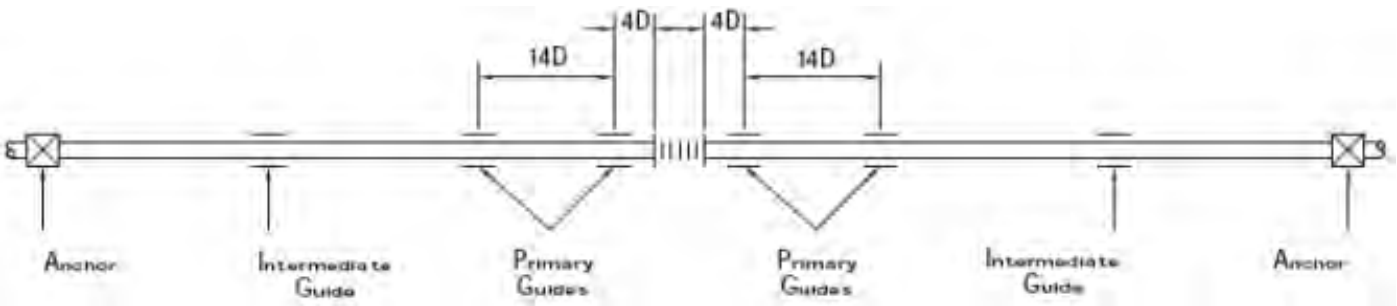
For use on copper pipelines domestic and hot water services. Consists of a plated formed steel sliding component and slide rest, incorporating a threaded plated steel fixing (M12 or M16) complete with a rubber lined pipe clip.

Axial expansion joints are designed to absorb movements generally between 25mm and 50mm, although longer movements of 75mm are available on request. They are fitted in the pipeline, in line with the movement. They require an anchor each end of the system to resist the pressure force and to compress the bellows. The following diagrams show two types of typical installations.

Typical Installation 1



Typical Installation 2



EMFLEX®

Heavy Duty Skid Guide Clip Set

N. Minikin & Sons Limited

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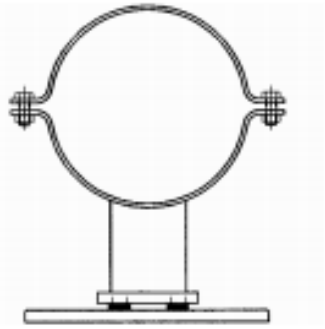
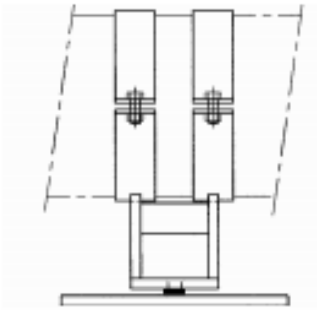
ISOQAR REGISTERED UKAS MANAGEMENT SYSTEMS 0026

Heavy Duty Skid Guide Clip Set

EMFLEX skid guide and clip sets are essential for the correct operation of angular expansion joints. A pipeline which contains an expansion joint and is anchored at each end can be considered as a load bearing column. Thus when pressure is applied, skids are necessary to allow sideways movement.





TYPE SSK

For use on steel pipelines for LPHW (low pressure hot water). Consists of a PTFE and steel skid base with a pipe clip set. This skid guide has been designed for larger pipework where great thrusts and expansion are associated. The pipes are attached to a pipe clip which is allowed to freely skid quietly, and accurately on PTFE maintenance free bearings. The slide base is either welded or clamped to the support. The pipe clip can be insulated if requested in calcium, wood, phenolic or vermiculite blocks these are then surrounded with galvanised steel sleeving.

TYPE SSKN

For use on copper pipelines domestic and hot water services. Consists of a PTFE and steel guided skid base with a pipe clip set. This skid guide has been designed for larger pipework where great thrusts and expansion are associated. The pipes are attached to a pipe clip which is allowed to freely skid quietly, and accurately on PTFE maintenance free bearings. The slide base is either welded or clamped to the support. The pipe clip can be insulated if requested in calcium, wood, phenolic or vermiculite blocks these are then surrounded with galvanised steel sleeving.

Typical Application

A planar pipe guide is a guide which permits transverse movement and/or bending of the pipeline in one plane. It is commonly used in applications involving lateral deflection or angular rotation resulting from "L" or "Z" shaped piping configurations.

EMFLEX

Heavy Duty Slide Guide Clip Set For (Above 50mm)

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ISOQAR REGISTERED UKAS MANAGEMENT SYSTEMS 0026

Heavy Duty Slide Guide Clip Set For (Above 50mm)

EMFLEX slide guide and clip sets are essential for the correct operation of AXIAL type expansion joints. A pipeline which contains an expansion joint and is anchored at each end can be considered as a load bearing column. Thus when pressure is applied, guides are necessary to prevent bowing and bending.
.

TYPE SSHD

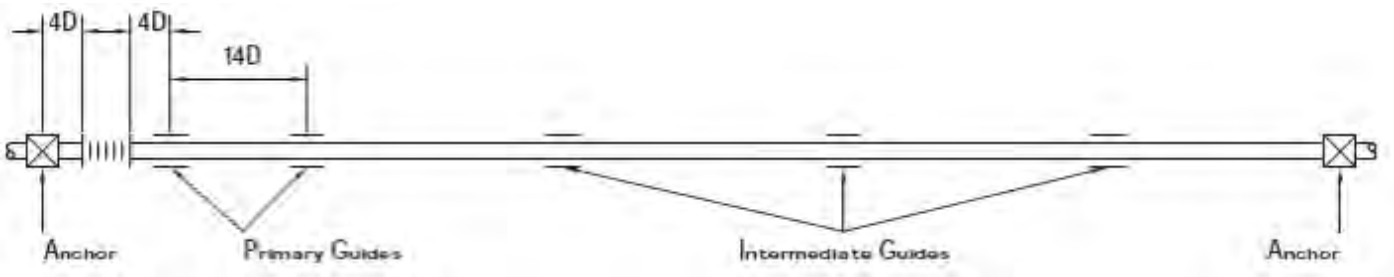
For use on steel pipelines for HTHW & Steam. Consists of a PTFE and steel guided slide base with a pipe clip set. This slide guide has been designed for larger pipework where great thrusts and expansion are associated. The pipes are attached to a pipe clip which is allowed to freely slide quietly, and accurately on PTFE maintenance free bearings. The slide base is either welded or clamped to the support. Movement is guided along the axis of the pipe with the use of stainless steel and reinforced PTFE. The pipe clip can be insulated if requested in calcium, wood, phenolic or vermiculite blocks these are then surrounded with galvanised steel sleeving.

TYPE SSHDN

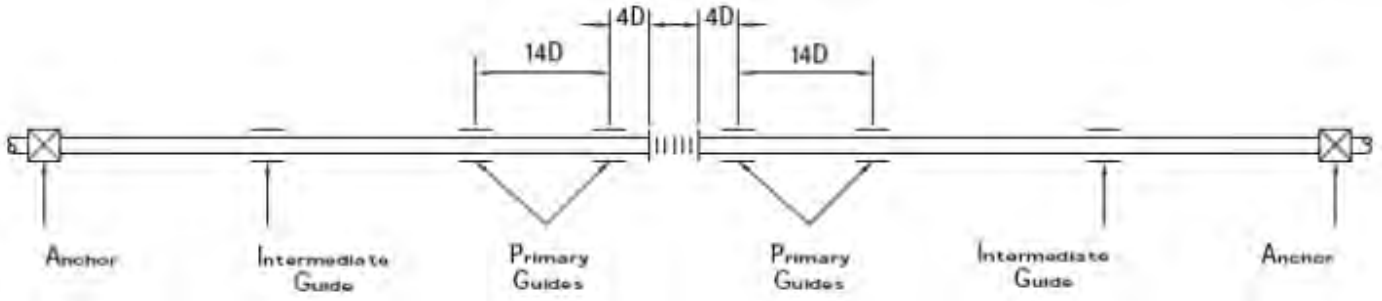
For use on copper pipelines DWS domestic water services and HWS hot water servies. Consists of a PTFE and steel guided slide base with a pipe clip set. This slide guide has been designed for larger pipework where great thrusts and expansion are associated. The pipes are attached to a pipe clip which is allowed to freely slide quietly and accurately on PTFE maintenance free bearings. The slide base is either welded or clamped to the support. Movement is guided along the axis of the pipe with the use of stainless steel and reinforced PTFE. The pipe clip can be insulated if requested in calcium, wood, phenolic or vermiculite blocks these are then surrounded with galvanised steel sleeving.

Axial expansion joints are designed to absorb movements generally between 25mm and 50mm, although longer movements of 75mm are available on request. They are fitted in the pipeline, in line with the movement. They require an anchor each end of the system to resist the pressure force and to compress the bellows. The following diagrams show two types of typical installations.

Typical Installation 1



Typical Installation 2



EMFLEX®

Type SAC & SACN Saddle Anchor Clamp

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Type SAC & SACN Saddle Anchor Clamp

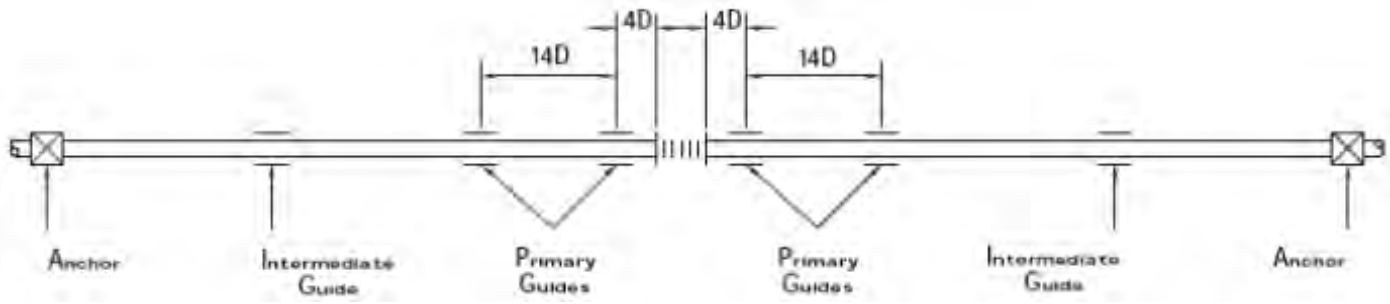
EMFLEX saddle anchor clamps are a steel clamp which come in either a bright zinc plated or nylon coated finish and are used to anchor and prevent axial movement along the pipework.

Designed to BS2871/EN1057.

SAC: Carbon Steel with a BZP finish
SACN: Carbon Steel with a nylon coated BZP finish

(See below for typical installation).

Nominal Bore	Maximum Force	Clip Size	Bolt Hole Diameter & Size To Use	Product Code
mm	N	Wth x Thk	mm	
15	225	25 x 3	7mm x M6	15mm SACN
22	225	25 x 3	7mm x M6	22mm SACN
28	225	25 x 3	7mm x M6	28mm SACN
35	650	30 x 3	11mm x M10	35mm SACN
42	650	30 x 3	11mm x M10	42mm SACN
54	650	30 x 3	11mm x M10	54mm SACN
15	450	25 x 3	7mm x M6	15mm SAC
20	450	25 x 3	7mm x M6	20mm SAC
25	450	25 x 3	7mm x M6	25mm SAC
32	1300	30 x 3	11mm x M10	32mm SAC
40	1300	30 x 3	11mm x M10	40mm SAC
50	1300	30 x 3	11mm x M10	50mm SAC



EMFLEX Type SAC & SACN can be used in conjunction with the following applications:

Low Temperature Heating (LTHW) SAC & SACN
Medium Temperature Heating (MTHW) SAC & SACN
High Temperature Hot Water (HTHW) SAC & SACN
Domestic Hot Water (DHWS) SACN Only

If you require any additional information please contact our Sales Team on 01423 889 845.

EMFLEX®

Type CAB & CABN Cleated Anchor Bracket

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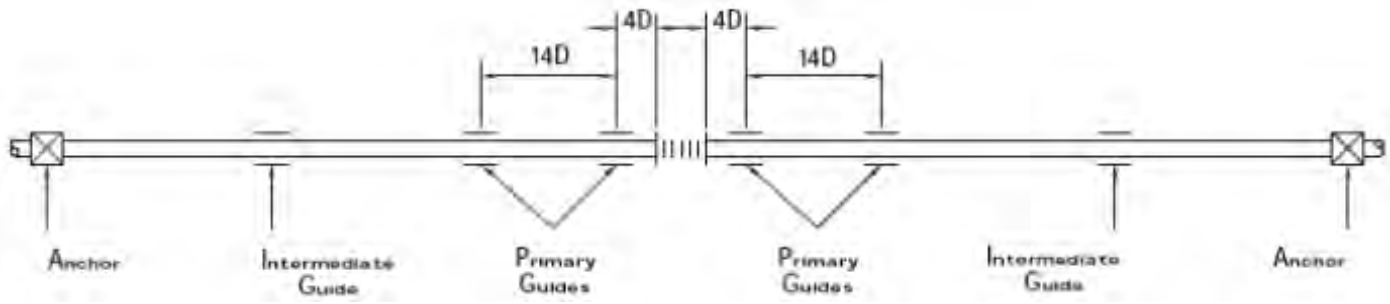
Type CAB & CABN Cleated Anchor Bracket

EMFLEX cleated anchor brackets are an assembly of plated steel formed angle cleats and steel clamps. To suit carbon steel (CAB Plain Clips), copper and stainless steel pipework (CABN Rubber Bonded Clips). They are to be used predominantly in conjunction with our axial bellows and twin clip slide guide sets.

(See below for typical installation).

Nominal Bore	Maximum Force	Clip Size	Nut & Bolt Size	Product Code
mm	N	Wth x Thk	Qty x mm	
15	450	25 x 3	6 x 25	15mm CABN
22	450	25 x 3	6 x 25	22mm CABN
28	450	25 x 3	6 x 25	28mm CABN
35	450	25 x 3	6 x 25	35mm CABN
42	1250	30 x 3	10 x 30	42mm CABN
54	1250	30 x 3	10 x 30	54mm CABN
67	1250	30 x 3	10 x 30	67mm CABN
15	900	25 x 3	6 x 25	15mm CAB
20	900	25 x 3	6 x 25	20mm CAB
25	900	25 x 3	6 x 25	25mm CAB
32	900	30 x 3	10 x 30	32mm CAB
40	2500	30 x 3	10 x 30	40mm CAB
50	2500	30 x 3	10 x 30	50mm CAB
65	2500	40 x 3	12 x 40	65mm CAB



EMFLEX Type CAB & CABN can be used in conjunction with the following applications:

Low Temperature Heating (LTHW) CAB & CABN
Medium Temperature Heating (MTHW) CAB & CABN
High Temperature Hot Water (HTHW) CAB & CABN
Domestic Hot Water (DHWS) CABN Only

For Steam and Condensate applications please contact our Sales Team on 01423 326789.

EMFLEX®

Type THOR Heavy Duty Anchor Bracket

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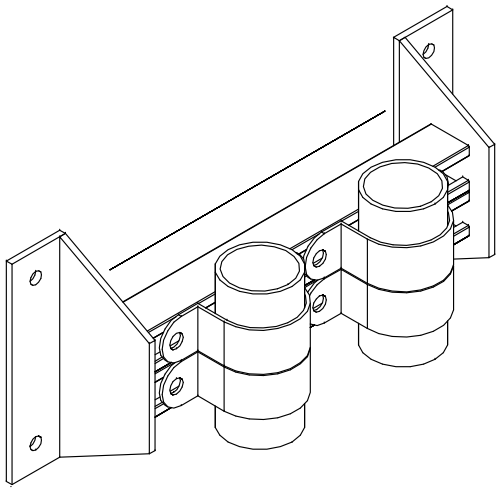
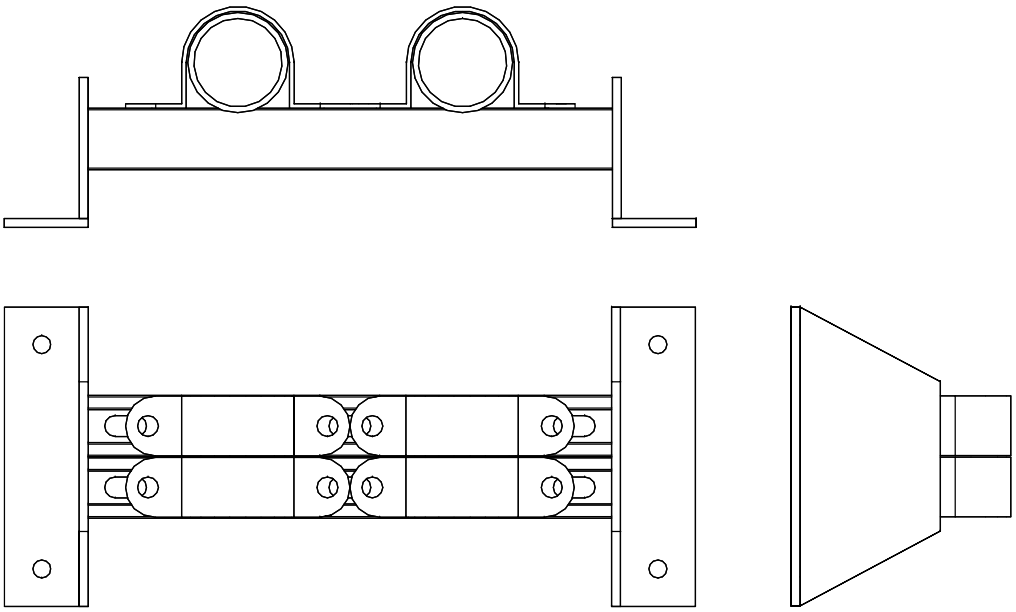
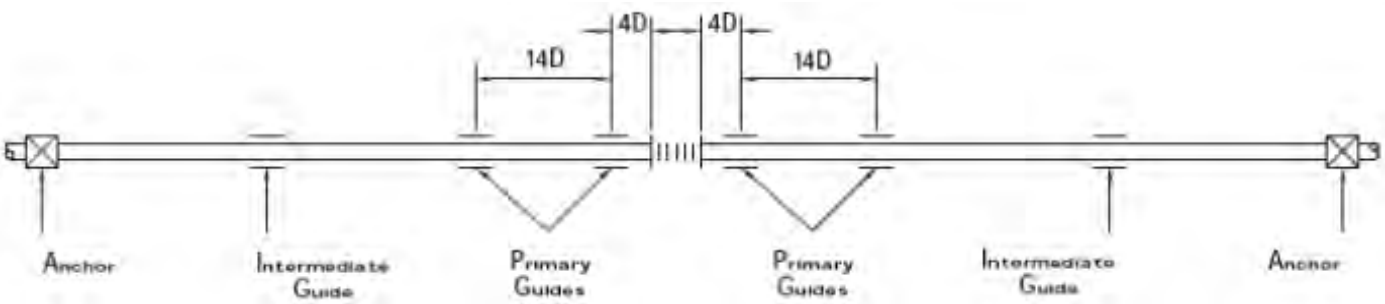
Type THOR Heavy Duty Anchor Bracket

EMFLEX heavy duty anchor brackets are a heavy weight dual or single anchor used for higher forces than our CAB/CABN cleated anchor brackets. Manufactured either from carbon steel, stainless steel channel or unistrut railing depending on the anchor loads being produced.

(See below for typical installation).

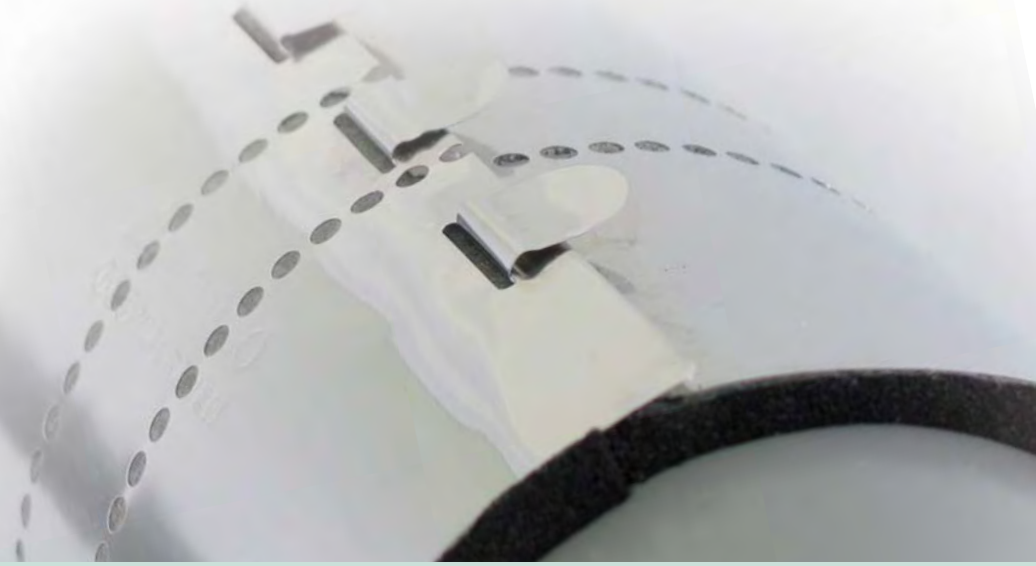






For Steam and Condensate applications please contact our Sales Team on 01423 889 845.

Fire, smoke and noise barrier



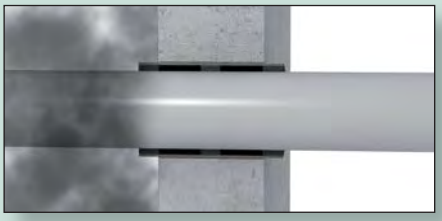
Operational benefits

- Prevents the spreading of fire
- Prevents the spreading of smoke
- Prevents the conduction of noise
- Remains operational for decades without maintenance
- Expansion and contraction of the pipe remains possible
- Contains no dangerous materials
- Emits no toxic gases or smoke in the event of a fire

Smoke seal

When a fire burns, it generates carbon dioxide, water vapor, carbon monoxide, particulate matter, chemicals and hazardous gases. Most victims of fires (ca. 95%) die from smoke or toxic gases, not from burns.

Thanks to its 3 foam strips the BIS Pacifyre® MK II Fire Sleeve is a perfect seal. Also at lower temperatures it allows smoke no chance of penetrating other areas in any situation!

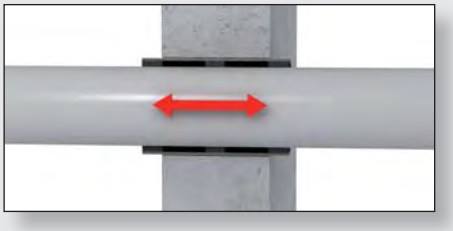


Perfect smoke seal

Free pipe expansion and noise barrier

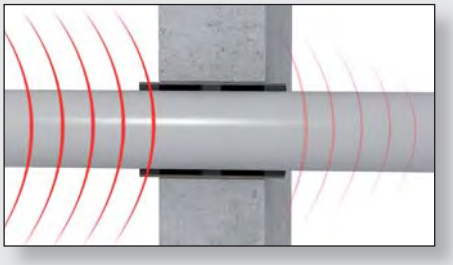
In normal day-to-day operation pipes shrink and swell. Eg. because of temperature or pressure fluctuations or fluids running through the pipe. When such a pipe is in direct contact with the building, it produces noise.

Thanks to the three foam strips in the BIS Pacifyre® MK II Fire Sleeve the pipe can expand and contract freely. Noise transmission from one room to another and contact noises are being absorbed and reduced.



Free expansion and contraction

Reduction of contact noise



Reduction of noise transmission

The noise reducing properties of the BIS Pacifyre® MK II Fire Sleeve have been tested extensively by independent authorities in the United Kingdom and Germany:

Sound reduction with a metal pipe in a modular wall	
Weighted Sound Reduction Index (WSRI)	Rw 49-50
Test in accordance with:	BS 2750, Part 3 (Sound Research Laboratories Ltd UK) SRL Test Report C/98/5L/7424/1
Fraunhofer Institut	S9712 - Technical Comment on Noise Control Performance

BIS Pacifyre® MK II Fire Sleeve is one of the few fire stops that, as well as being fire resistant, also offers good smoke sealing and noise proofing!

Ease of installation above all

1. Wrap the sleeve around the pipe

2. Tabs in proper position

3. Bend and lock the tabs

4. Slide the sleeve into the aperture and centre it

5. Fill the opening with acrylic, foam or mortar

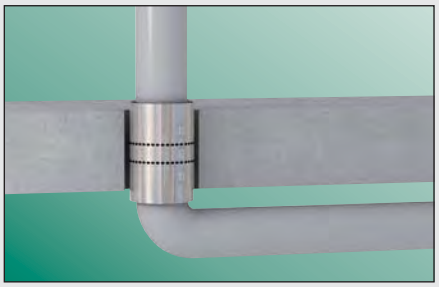
6. Fix BIS Pacifyre® ID-Card (Part No. 214 9 999903)

Simple and easy to install

The BIS Pacifyre® MK II Fire Sleeve is installed simply and easily without using special fixing materials. Only one pair of hands is needed for the whole installation. After wrapping the sleeve around the pipe, the closing tabs are bent and locked.

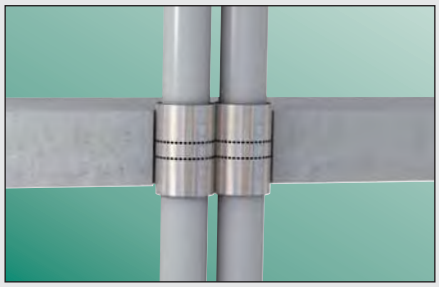
Then slide the sleeve into the aperture. You then fill the rest of the opening with fire resistant acrylic, foam or mortar. Fill out the BIS Pacifyre® ID-Card and place it next to the aperture and the job is done!

For nearly all situations



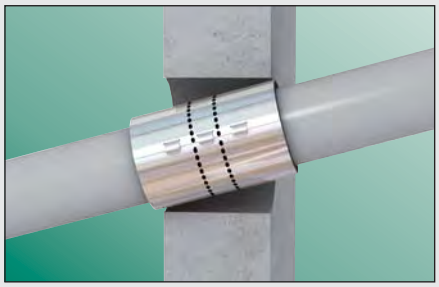
Small distance

Places with difficult accessibility (for example an aperture that is only accessible from one side) cause no problems.
The BIS Pacifyre® MK II Fire Sleeve is also usable when the distance between the wall or ceiling and pipe is very small.



Close spacing

The BIS Pacifyre® MK II Fire Sleeve is kept in place due to its closing tabs. It has no obtrusive fixing tabs, which is an advantage when parallel running pipes are installed. Thanks to its compact design the centre distance between pipes is very small.



Any direction!

The BIS Pacifyre® MK II Fire Sleeve can be used for horizontal, vertical and even diagonal running pipes!

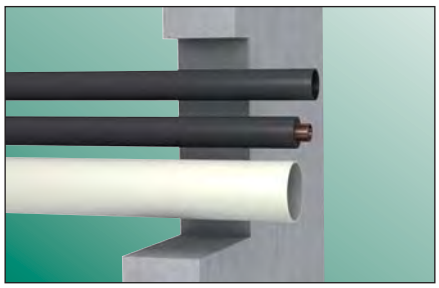
BIS
FIRE PROTECTION SYSTEMS

"The biggest advantage? Easily placed by one person with no extra fixing materials."

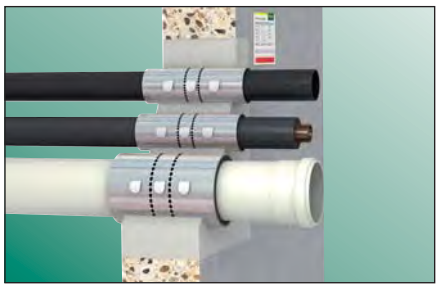
Dutch Building Prize Jury

Installation benefits

- Simple and easy to install, without special training
- Just one sleeve per aperture
- Close wall distance
- Close spacing
- For pipes in any direction!



1. Open aperture



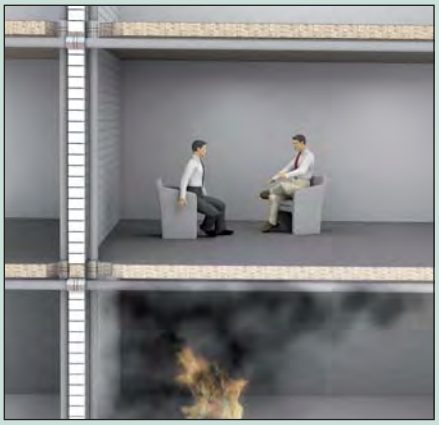
2. Completely finished aperture

"Just the thing!"

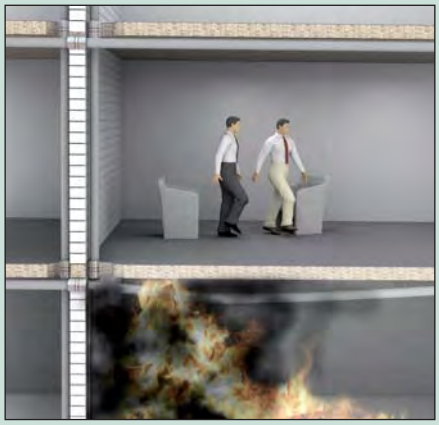
Dutch Building Prize Jury

The BIS Pacifyre® MK II Fire Sleeve in action

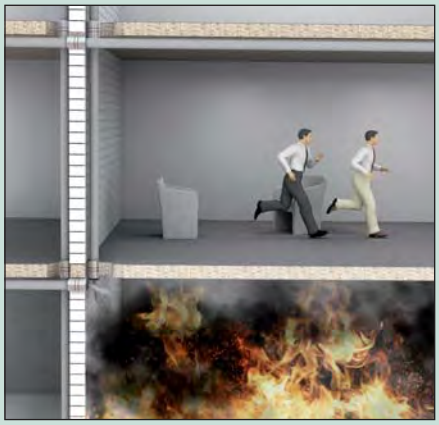
At a temperature in excess of 140 °C the intumescent in the BIS Pacifyre® MK II Fire Sleeve starts to swell. In case of a metal pipe, the stop seals the space between pipe and wall against fire. With a plastic pipe the BIS Pacifyre® MK II seals the aperture against fire by completely crushing the pipe. Smoke and fire have no chance of entering the adjoining areas. The BIS Pacifyre® MK II Fire Sleeve has protected those present and has given them time to reach safety.



1. Fire breaks out in a fire compartment



2. The fire spreads and the residents are warned



3. The BIS Pacifyre® MK II starts to work and the residents have time to reach safety

Composition

The BIS Pacifyre® MK II Fire Sleeve comprises of:

1. Three foam strips (smoke seal and noise barrier)
2. A layer of intumescent (seal in the event of a fire)
3. A sleeve of stainless steel for counter pressure and protection

01/2015 - Subject to modifications

EMFLEX®

Air Separator Threaded

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Air Separator Threaded

EMFLEX microbubble air separators are used in pipelines for the virtual elimination of air from heating and cooling systems in buildings.

By using the processes detailed earlier in this booklet, it is possible to remove:-

Air which is present in the system water in the form of small bubbles and microbubbles.

Air which is dissolved in the system water.

Air which is present where an EMFLEX automatic air vent can not be installed.

TYPE SMAT

A brass body with female threaded end connections from 20mm to 40mm nominal size.

Normal Size mm	Overall Height mm	Pipe C/L to Top mm	Body Diam. mm	Across Nut Flats mm	End Fitting	Length mm	Weight (empty) kg
20	205	146	80	36	¾" Female BSP	110	1.4
25	205	146	80	36	1" Female BSP	110	1.4
32	225	166	88	45	1¼" Female BSP	124	1.8
40	225	166	88	60	1½" Female BSP	124	2.4
50	225	160	94	60	2" Female BSP	130	2.5

Notes

Other designs of air separators are available.

We also provide a full range of air and dirt separation equipment for building services pipework systems. These include combined microbubble air and dirt separators, centrifugal air separators, dirt separators, automatic air vents and combined dirt filter/ball valves

EMFLEX®

Microbubble Air Separators

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Microbubble Air Separators

EMFLEX microbubble air separators are used in pipelines for the virtual elimination of air from heating and cooling systems in buildings.

By using these units it is possible to remove:-

- Air which is present in the system water in the form of small bubbles and microbubbles.
- Air which is dissolved in the system water.
- Air which is present where an EMFLEX automatic air vent can not be installed.

TYPE SMAF
A steel shell with flanged end connections.

TYPE SMAW
A steel shell with weld end connections.

Dimensions (mm)							
Model No.	A	B	C	D	F	G	Tested to
SMAF-50	50	430	114	170	390	504	21 bar
SMAF-65	65	430	120	170	384	504	21 bar
SMAF-80	80	490	141	220	459	600	21 bar
SMAF-100	100	490	154	220	446	600	21 bar
SMAF-125	125	630	193	325	585	778	21 bar
SMAF-150	150	630	207	325	571	778	21 bar
SMAF-200	200	810	251	410	649	900	21 bar
SMAF-250	250	880	303	510	835	1138	21 bar
SMAF-300	300	1100	353	610	947	1300	21 bar
SMAF-350	350	1500	406	770	1025	1431	21 bar
SMAF-400	400	1500	432	770	1262	1694	21 bar
SMAF-450	450	1750	495	920	1218	1713	21 bar
SMAF-500	500	2000	595	1220	1230	1825	21 bar

Notes:
Other designs of air separators are available.

We also provide a full range of air and dirt separation equipment for building services pipework systems. These include combined microbubble air and dirt separators, centrifugal air separators, dirt separators, automatic air vents and combined dirt filter/ball valves.

Design Consideration:
For details of operation, installation and selection please contact our sales team.

EMFLEX®

Microbubble Air & Dirt Separators

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Microbubble Air & Dirt Separators

EMFLEX combined microbubble air and dirt separators are used in pipelines for the virtual elimination of air and separation of solid particles from heating and cooling systems in buildings. By using the processes detailed earlier in this booklet, it is possible to remove:-

- Air which is present in the system water in the form of small bubbles and microbubbles.
- Air which is dissolved in the system water.
- Air which is present where an EMFLEX automatic air vent cannot be installed.
- Dirt and solid particles that are in suspension.
- Solid and solid particles that sink or float.

TYPE SMADF
A steel shell with BS4504 PN16 flanged end connections.

TYPE SMADW
A steel shell with weld end connections.

Dimensions (mm)								
Model No.	A	B	C	D	E	F	G	Tested to
SMADF-50	50	430	300	170	25	380	680	21 bar
SMADF-65	65	430	300	170	25	380	680	21 bar
SMADF-80	80	490	360	220	25	440	800	21 bar
SMADF-100	100	490	360	220	25	440	800	21 bar
SMADF-125	125	630	470	325	25	550	1020	21 bar
SMADF-150	150	630	470	325	25	550	1020	21 bar
SMADF-200	200	810	625	410	50	625	1250	21 bar
SMADF-250	250	880	775	510	50	775	1550	21 bar
SMADF-300	300	1100	875	610	50	875	1750	21 bar
SMADF-350	350	1500	950	770	50	950	1900	21 bar
SMADF-400	400	1500	1125	770	50	1125	2250	21 bar
SMADF-450	450	1750	1125	920	50	1125	2250	21 bar
SMADF-500	500	2000	1175	1220	50	1175	2350	21 bar
SMADF-600	600	2000	1325	1220	50	1325	2650	21 bar

Notes:

We also provide a full range of air and dirt separation equipment for building services pipework systems.

These include microbubble air separators, centrifugal air separators, dirt separators, automatic air vents and combined dirt filter/ball valves.

EMFLEX®

Microbubble Air & Dirt Separators (De-Mountable)

N. Minikin & Sons Limited

Unit 2B, Brickyard Road, Roecliffe, York, North Yorkshire, YO51 9NS

Email: enquiries@minikins.co.uk Web: www.minikins.co.uk

Tel: 01423 326789 Fax: 01423 323877

ISOQAR REGISTERED UKAS MANAGEMENT SYSTEMS 0026

Microbubble Air & Dirt Separators

EMFLEX combined microbubble air and dirt separators are used in pipelines for the virtual elimination of air and separation of solid particles from heating and cooling systems in buildings. By using the processes detailed earlier in this booklet, it is possible to remove:-

- Air which is present in the system water in the form of small bubbles and microbubbles.
- Air which is dissolved in the system water.
- Air which is present where an EMFLEX automatic air vent cannot be installed.
- Dirt and solid particles that are in suspension.
- Solid and solid particles that sink or float.

TYPE SMADF-D
A demountable steel shell with BS4504 PN16 flanged end connections.

TYPE SMADW-D
A demountable steel shell with weld end connections.

Dimensions (mm)								
Model No.	A	B	C	D	E	F	G	Tested to
SMADF-D-50	50	430	338	170	25	380	718	21 bar
SMADF-D-65	65	430	338	170	25	380	718	21 bar
SMADF-D-80	80	490	408	220	25	440	848	21 bar
SMADF-D-100	100	490	408	220	25	440	848	21 bar
SMADF-D-125	125	630	518	325	25	550	1068	21 bar
SMADF-D-150	150	630	518	325	25	550	1068	21 bar
SMADF-D-200	200	810	695	410	50	625	1320	21 bar
SMADF-D-250	250	880	845	510	50	775	1620	21 bar
SMADF-D-300	300	1100	945	610	50	875	1820	21 bar
SMADF-D-350	350	1500	1020	770	50	950	1970	21 bar
SMADF-D-400	400	1500	1195	770	50	1125	2320	21 bar
SMADF-D-450	450	1750	1195	920	50	1125	2320	21 bar

Notes:

We also provide a full range of air and dirt separation equipment for building services pipework systems.

These include microbubble air separators, centrifugal air separators, dirt separators, automatic air vents and combined dirt filter/ball valves.

EMFLEX®

Dirt Separators

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ISOQAR REGISTERED UKAS MANAGEMENT SYSTEMS 0026

Dirt Separators

EMFLEX dirt separators are used in pipelines for the high efficiency removal of impurities from heating and cooling systems in buildings.

It is possible to remove dirt and solid particles that are heavier than the system water by gravitating out as the water velocity decreases whilst passing through the large reservoir..

TYPE SDF
A steel shell with BS4504 PN16 flanged end connections.

TYPE SDFI (with Insulation)
A steel shell with BS4504 PN16 flanged end connections. This unit has an insulated enclosure.

Dimensions (mm)								
Model No.	A	B	C	D	E	F	G	Tested to
SDF-40	40	430	310	170	25	114	424	21 bar
SDF-50	50	430	310	170	25	114	424	21 bar
SDF-65	65	430	304	170	25	120	424	21 bar
SDF-80	80	490	379	220	25	141	520	21 bar
SDF-100	100	490	366	220	25	154	520	21 bar
SDF-125	125	630	505	325	25	193	698	21 bar
SDF-150	150	630	491	325	25	207	698	21 bar
SDF-200	200	810	649	410	50	251	900	21 bar
SDF-250	250	880	835	510	50	303	1138	21 bar
SDF-300	300	1100	947	610	50	353	1300	21 bar
SDF-350	350	1500	1025	770	50	406	1431	21 bar
SDF-400	400	1500	1262	770	50	432	1694	21 bar
SDF-450	450	1750	1218	920	50	495	1713	21 bar
SDF-500	500	2000	1230	920	50	595	1825	21 bar

Notes:

We also provide a full range of air and dirt separation equipment for building services pipework systems. These include microbubble air separators, centrifugal air separators, dirt separators, automatic air vents and combined dirt filter/ball valves.

Temperature and Pressure.

Maximum Working Pressure = 5 barg.
(10 bar units are available on special request)

Maximum Operating Temperature = 120 deg.C.

Specification:

Construction: Steel, welded fabrication.
Isolating valve.

Insulation is an optional extra (Type SDFI).

DATA SHEET

Pressure Step De-Aerator

N. Minikin & Sons Limited

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Pressure Step De-Aerator

The SPDA is a differential pressure de-aeration unit (Pressure step degasser).

System fluid is sampled from the system, isolated and subjected to a full vacuum.

All dissolved air within the sample is liberated, in accordance with Henry's Law and vented to atmosphere.

The de-aerated fluid is then reintroduced to the system.

This process is automatically repeated and controlled with a digital processor.

A turbo mode is available for initial system setup, to allow for rapid de-aeration of new installations.

The real-time display shows the status of the mechanical components.

A common alarm volt free contact is included within the SPDA control unit for remote indication of a fault.

Operating Parameters

	SPDA
Maximum System Volume	150,000 litres
Working Pressure Range	3.0 – 8.0 bar(g)
Design Pressure	10.0 bar @ 120°C
Max. Installation Pressure	10.0 bar(g)
System Temperature Range	0 - 70°C
Ambient Temperature Range	0 - 45°C
Noise Rating Approx. 55 dB(A)	Approx. 55 dB(A)
Connection To System	¾" BSPP (F)
Connection From System	¾" BSPP (F)
Top-Up Unit Connection	¾" BSPP (F)
Length x Width x Height	728 x 525 x 1250
Weight	Approx. 60 Kg
Electrical Requirements	1 x 230V / 50 Hz
Full Load Current	10.6 Amps
Power Used	2 x 1.1 kW
Fuse Rating	16 Amps
Safety Rating	IP 54
Control Interface	RS 485
Volt Free Contact	Top Up Contact (Fluid Make-Up) & Common Fault Contact

EMFLEX®

Dosing Pot

N. Minikin & Sons Limited

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EMFLEX Dosing Pot

Dosing pots are required in order to feed liquid chemicals such as corrosion inhibitors into closed systems.

The dosing pots consist of a stainless steel vessel with inlet (return) and outlet (flow) valves, a drain valve and a filling valve. A steel tundish, air release valve, wall mounting brackets and a non-return valve.

Dosing pots can also be supplied without the valves, and air release valve if requested.

Installation

It is important that the dosing pots are fitted correctly in to the system to allow rapid chemical feed. This is best achieved by connecting across the main flow and return pipework. Ideally the flow connection should be made on the bottom of the dosing pot (Valve C), and the return the top (Valve B).

The dosing pot is designed for the conditions stated on the name plate, the system into which the dosing pot is installed should have adequate protection to ensure the dosing pot is operated within these limits at all times.

We are now manufacturing all our chemical dosing pots so they can be installed either left or right handed for ease of installation purposes. Floor stands are also available upon request.

Operation

1. Isolate Pot: Closes valves
2. Drain Pot: Open valves A and D
3. Charge Pot: Close valve D and introduce solution via valve A
4. Expel Air: Open air vent until solution appears
5. Inject Treatment: Close valve A fully and open valves B and C
6. The dosing pot may reach temperatures up to 120°C. Protection or warnings should be applied to ensure that personnel do not come into contact with the pot so as to avoid burns
7. A check valve is to be installed to prevent accidental scolding and chemical saturation (blow back) of personnel operating the dosing pot

Maintenance

After long-term use the valves may require replacement. Periodic inspection should be conducted on the dosing pot in particular checking for corrosion wear. 1mm corrosion allowance is provided for in the design. If corrosion is found to be greater than 1mm the dosing pot should be taken out of use.