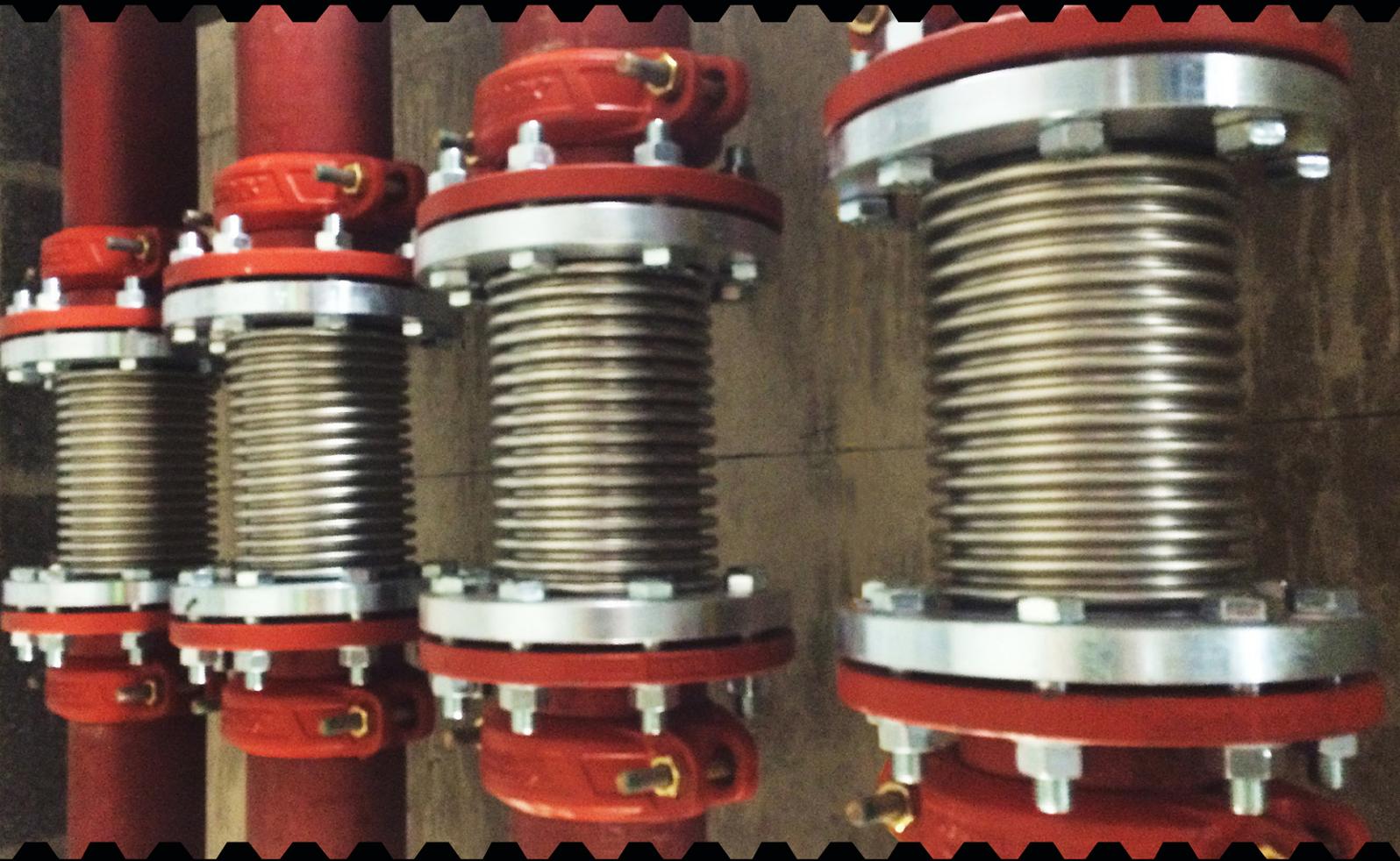


Thermal Expansion & Anti-vibration



Keeping the art of distribution simple

Thermal Expansion & Anti-vibration

Shawston offer a complete range of products and services for Thermal Expansion & Anti-vibration solutions, all available from our 5 nationwide branches on a next day delivery service.

Our product ranges includes expansion bellows, pipe anchors and guiding systems, anti-vibration mounts and spring hanger systems. We can provide expert technical solutions and advice on correct product selection, installation and design.

Simply send us your drawings and we'll do the rest.

Expansion Bellows

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Anti-vibration Mounts & Hangers

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Fixed Anchor Points

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Thermal Expansion

AX2 Flanged Axial Bellow



Key Features:

- Requires full guiding.
- Available for any temperature or pressure.
- Supplied with CE certs where applicable.
- Internal flow liner as standard.
- Bellows are pre-cold drawn.

CODE	Size (mm)	Axial Compression (mm)	Installed Length	Effective Area CM2	Force to Compress N/mm
EXAX2035	32nb / 35cu	30	130	14	39
EXAX2042	40nb / 42cu	30	130	20	53
EXAX2054	50nb / 54cu	50	225	32	53
EXAX2067	65nb / 67cu	50	225	49	91
EXAX2076	80nb / 76cu	50	230	66	99
EXAX2108	100nb / 108cu	50	230	124	121
EXAX2133	125nb / 133cu	60	240	180	117
EXAX2159	150nb / 159cu	60	240	262	173
EXAX2200	200nb	70	275	419	179
EXAX2250	250nb	70	280	665	270
EXAX2300	300nb	70	285	909	320

Designed to accept linear expansion on copper and stainless steel pipe systems. Standard product details are shown below, although these may vary dependant upon application and PED requirements.

Material Specification:

- **Flanges:** Carbon steel PN16 with stainless steel facings (stainless steel to all wetted areas)
- **Convolutions:** 316 stainless steel
- **Internal Sleeve:** 316 stainless steel

Working Conditions:

- **Pressure:** 16 Bar
- **Temperature:** 120 °C
- **Test:** 1.5x working

PED Requirements

All bellows supplied by Shawston are manufactured and certified in accordance with EU PED legislation and as such carry the relevant CE certification where required.

The anchor loads generated by this type of axial expansion compensator are high. A bracket guide with a low frictional resistance should be used.

Please note these units are not suitable for use on a drop rod system and need to be suitably guided using a low friction slide guide, or roller chair and guide.

Primary Pipe Guide Spacings



Thermal Expansion

AX3 (SPE) Stainless Pipe Ends



- Key Features:**
- Requires full guiding.
 - Available for any temperature or pressure.
 - Supplied with CE certs where applicable.
 - Internal flow liner as standard.
 - Bellows are pre-cold drawn.

CODE	Size (mm)	Axial Compression (mm)	Installed Length	Effective Area CM2	Force To Compress N/mm
EXAX3015SPE25	15	25	200	4	1.47
EXAX3012SPE25	18	25	200	5	1.47
EXAX3020SPE25	20	25	200	6	1.47
EXAX3025SPE25	25	25	200	10	1.27
EXAX3032SPE25	32	25	210	16	3.04
EXAX3040SPE25	40	25	220	21	3.04
EXAX3050SPE25	50	25	250	40	3.34

AX3 (SPE) Axial Bellows

Designed to accept linear expansion on steel and copper pipe systems.

Working Conditions:

- **Pressure:** Standard 10 Bar (Up to 16 Bar - dependant on PED Conditions)
- **Temperature:** 120 °C
- **Test:** 1.5x Working

PED Requirements

All bellows supplied by Shawston are manufactured and certified in accordance with EU PED legislation and as such carry the relevant CE certification where required.

The anchor loads generated by using this type of axial expansion compensator are high. It is worth keeping in mind the type of pipework bracketry that will be used. A guide bracket with a low frictional resistance should be used.

Please note these units are not suitable for use on a drop rod system and need to be suitably guided.

Primary Pipe Guide Spacings



Thermal Expansion

AX3 Screwed Axial Bellow



Key Features:

- Requires full guiding.
- Available for any temperature or pressure.
- Supplied with CE certs where applicable.
- Internal flow liner as standard.
- Bellows are pre-cold drawn.

CODE	Size (mm)	Axial Compression (mm)	Installed Length	Effective Area CM2	Force to Compress N/ MM
EXAX3I015	15	25	200	4	1.47
EXAX3I020	20	25	200	6	1.47
EXAX3I025	25	25	200	10	1.27
EXAX3I032	32	25	210	16	3.04
EXAX3I040	40	25	220	21	3.04
EXAX3I050	50	25	250	40	3.34
EXAX3I065	65	25	273	50	3.54
EXAX3I015050	15	50	250	4	1.47
EXAX3I020050	20	50	250	6	1.47
EXAX3I025050	25	50	250	10	1.27
EXAX3I032050	32	50	260	16	3.04
EXAX3I040050	40	50	270	21	3.04
EXAX3I050050	50	50	300	40	3.04

AX3 Axial Bellows

Designed to accept linear expansion on steel and copper pipe systems.

Working Conditions:

- **Pressure:** Standard 10 Bar (Up to 16 Bar - dependant on PED conditions)
- **Temperature:** 120 °C
- **Test:** 1.5x Working

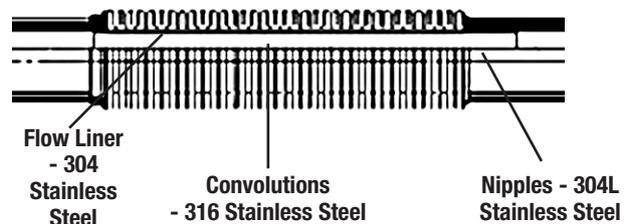
PED Requirements

All bellows supplied by Shawston are manufactured and certified in accordance with EU PED legislation and as such carry the relevant CE certification where required.

The anchor loads generated by using this type of axial expansion compensator are high. It is worth keeping in mind the type of pipework bracketry that will be used. A guide bracket with a low frictional resistance should be used.

Please note these units are not suitable for use on a drop rod system and need to be suitably guided.

Material Specification

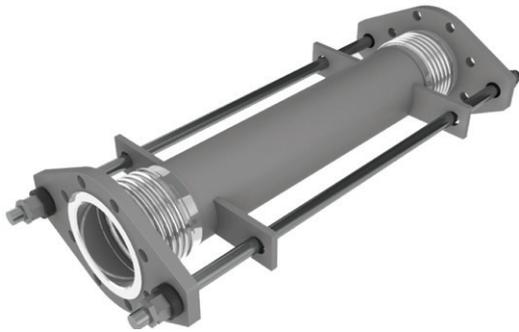


Primary Pipe Guide Spacings



Thermal Expansion

FA1 & FA2 Fully Articulated Bellow



Key Features:

- **FA1 for steel pipes.**
- **FA2 for copper and stainless steels.**
- **Supplied with CE Certs where applicable.**
- **Internal flow liner as standard.**

Material Specification:

- **Connections:** Carbon steel drilled PN16 (van-stone facings on AN2).
- **Convolutions:** 321 stainless steel (316 stainless steel on FA2).
- **Internal sleeve:** 321 stainless steel (316 stainless steel on FA2).
- **Tie rods:** Carbon steel.
- **Hemispherical washers:** Carbon steel.
- **Connecting spool:** Carbon steel (316 stainless steel on FA2).

The FA1 & FA2 lateral expansion compensator is suitable for use on systems up to 2500C at 16 bar pressure PED.

Certification supplied dependant upon application. All units are supplied at installation lengths and are pre stressed.

Standard Installation

These units are often used when new mains are being connected to existing mains. They allow a lateral movement to occur. These units are also useful for connections from boilers and plant, which will compensate any stresses put onto the "headers". Advice should always be sought when using these units to ensure the units will allow the amount of movement which will occur.

CODE	Size (mm)	Installed Length +/- 25mm	Force To Deflect +/- 25mm (N/mm)	Installed Length +/- 50mm	Force To Deflect +/- 50mm
EXFA1025PN16	25	465	10.7	750	2.8
EXFA1032PN16	32	465	10.7	750	2.8
EXFA1040PN16	40	465	10.7	750	2.8
EXFA1050PN16	50	465	12.1	750	4
EXFA1065PN16	65	465	15.9	750	5
EXFA1080PN16	80	465	56.7	750	16
EXFA1100PN16	100	465	94.0	750	27
EXFA1125PN16	125	760	21.6	1000	11
EXFA1150PN16	150	760	38.2	1000	19
EXFA1200PN16	200	1010	29.8	1250	17
EXFA1250PN16	250	1010	55.2	1250	32

CODE	Size (mm)	Installed Length +/- 75mm	Force To Deflect +/- 75mm (N/mm)	Installed Length +/- 100mm	Force To Deflect +/- 100mm
EXFA1025PN16	25	1035	1.3	1320	1.3
EXFA1032PN16	32	1035	1.3	1320	1.3
EXFA1040PN16	40	1035	1.3	1320	1.3
EXFA1050PN16	50	1035	1.7	1320	1.3
EXFA1065PN16	65	1035	2.2	1320	1.3
EXFA1080PN16	80	1035	7.7	1320	2.7
EXFA1100PN16	100	1035	12.3	1320	5.4
EXFA1125PN16	125	1240	4.3	1480	5.4
EXFA1150PN16	150	1240	11.1	1480	4.5
EXFA1200PN16	200	1490	11.5	1730	4.5
EXFA1250PN16	250	1490	22.8	1730	4.5

Thermal Expansion

AN1 & AN2 Angular Bellow



Key Features:

- **AN1 for steel pipes.**
- **AN2 for copper and stainless steel.**
- **Supplied with CE certs where applicable.**
- **Internal flow liner as standard.**

CODE	Size (mm)	Angular Deflection	Installed Length	Effective Area CM2	Force To Deflect NM/DEG
EXAN1025PN16	25	+/- 50	195	40	1.27
EXAN1032PN16	32	+/- 50	195	40	3.04
EXAN1040PN16	40	+/- 50	200	40	3.04
EXAN1050PN16	50	+/- 50	133	40	3.34
EXAN1065PN16	65	+/- 50	133	62	1.47
EXAN1080PN16	80	+/- 50	133	81	1.47
EXAN1100PN16	100	+/- 50	133	127	1.27
EXAN1125PN16	125	+/- 6.50	199	195	3.04
EXAN1150PN16	150	+/- 6.50	199	273	3.04
EXAN1200PN16	200	+/- 7.50	212	469	3.34
EXAN1250PN16	250	+/- 7.50	212	700	3.04

Material Specification:

- **Connections:** Carbon steel Drilled PN16 (Van-stone facings on AN2, other flanges available if required).
- **Convolutions:** 321 stainless steel (316 stainless steel on AN2).
- **Internal Sleeve:** 321 stainless steel (316 stainless steel on AN2).
- **Hinge Pins:** Carbon steel.

The AN1 and AN2 Angular Expansion compensators are suitable for use on systems up to 200°C at 16 bar pressure. All units are supplied at installation lengths and are pre stressed. Please note we can design and supply angular expansion compensators to accommodate higher system temperatures / pressures or special dimensions. Please advise at time of enquiry / order the system temperature and pressure to allow correct selection of compensator.

PED Requirements

CE Certificates issued if required. All units are categorised to PED standards, and we require accurate temperatures and pressures at time of order to enable correct selection and certification.

Standard Installation

These units are commonly used in pairs, although three pin systems can be designed if required. Please contact our Sales Office for application and design advice. These units can be used on a drop rod system.

Thermal Expansion

GI1 & GI2 Gimbal Bellow



Key Features:

- **GI1 for steel pipes.**
- **GI2 for copper and stainless steel.**
- **Supplied with CE certs where applicable.**
- **Internal flow liner as standard.**

CODE	Size (mm)	Angular Deflection	Installed Length	Force to Deflect NM/DEG
EXGI1025PN16	25	+/- 50	195	8.3
EXGI1032PN16	32	+/- 50	195	8.3
EXGI1040PN16	40	+/- 50	195	8.3
EXGI1050PN16	50	+/- 50	180	8.3
EXGI1065PN16	65	+/- 50	180	10.1
EXGI1080PN16	80	+/- 50	180	31.4
EXGI1100PN16	100	+/- 50	180	60.8
EXGI1125PN16	125	+/- 6.50	225	36.2
EXGI1150PN16	150	+/- 6.50	225	55.3
EXGI1200PN16	200	+/- 7.50	250	107.1
EXGI1250PN16	250	+/- 7.50	250	192

Material Specification:

- **Connections:** Carbon steel drilled PN16 (Vanstone facings on GI2). Other flanges available if required.
- **Convolutions:** 321 stainless steel (316 stainless steel on GI2).
- **Internal Sleeve:** 321 stainless steel (316 stainless steel on GI2).
- **Hinge Pins:** Carbon steel.

The GI1 & GI2 Gimbal Expansion compensators are suitable for use on systems up to 2000C at 16 bar pressure. All units are supplied at installation lengths and are pre stressed.

Please note we can design and supply gimbal expansion compensators to accommodate higher system temperatures / pressures or special dimensions. Please advise at time of enquiry / order the system temperature and pressure to allow correct selection of compensator.

PED Requirements

CE certificates issued if required. All units are categorised to PED standards, and we require accurate temperatures and pressures at time of order to enable correct selection and certification.

Standard Installation

These units are commonly used in pairs, although three pin systems can be designed if required.

Thermal Expansion

S-Flex Untied Flanged Pump Flexible



Key Features:

- **Flanges: carbon steel - drilled PN16 or PN6 (other flanges available).**
- **Nylon reinforced EPDM rubber body.**
- **Steel reinforced collars.**
- **Round flanges - no tie bars.**

CODE	Size (mm)	Installed Length	Material Type	Temperature Limits °C
EXPF16U032	32	130	Nylon Reinforced EPDM	-10 - 100
EXPF16U040	40	130	Nylon Reinforced EPDM	-10 - 100
EXPF16U050	50	130	Nylon Reinforced EPDM	-10 - 100
EXPF16U065	65	130	Nylon Reinforced EPDM	-10 - 100
EXPF16U080	80	130	Nylon Reinforced EPDM	-10 - 100
EXPF16U100	100	130	Nylon Reinforced EPDM	-10 - 100
EXPF16U125	125	130	Nylon Reinforced EPDM	-10 - 100
EXPF16U150	150	130	Nylon Reinforced EPDM	-10 - 100

S-Flex Pump Flexibles are installed to absorb vibration and noise levels caused by “plant” upon which they are fitted. These are suitable for use on systems carrying chilled and heated water. Please see above for temperature and pressure limits.

S-Flex units are not suitable for use with potable water, water with oil additives, compressed air and food applications.

S-Flex Untied units should not be installed on pumps located on Inertia bases

S-Flex units are manufactured from spherical moulded EPDM, which is a soft compound to offer a high isolation efficiency and high noise absorbing properties.

The units are a full bore thus removing pressure drop problems. The EPDM rubber is nylon reinforced, and has a steel wire reinforced collar.

Flanges BZP coated carbon steel PN16.

S-Flex units have a 10 year design life when used on LTHW systems.

S-Flex units are stamped with origin of manufacture, date of manufacture, batch number and size.

Please note no torsion forces should be applied to these units.

We also supply DIN 4809 approved pump flexibles.

Thermal Expansion

S-Flex Tied Flanged Pump Flexible



Key Features:

- **Flanges: carbon steel - Drilled PN16 (other flanges Available).**
- **Nylon reinforced EPDM rubber body.**
- **Steel reinforced collars.**
- **Tie bars: anti-tamper carbon steel.**

CODE	Size (mm)	Installed Length	Material Type	Temperature Limits °C
EXPF16T032	32	130	Nylon Reinforced EPDM	-10 - 100
EXPF16T040	40	130	Nylon Reinforced EPDM	-10 - 100
EXPF16T050	50	130	Nylon Reinforced EPDM	-10 - 100
EXPF16T065	65	130	Nylon Reinforced EPDM	-10 - 100
EXPF16T080	80	130	Nylon Reinforced EPDM	-10 - 100
EXPF16T100	100	130	Nylon Reinforced EPDM	-10 - 100
EXPF16T125	125	130	Nylon Reinforced EPDM	-10 - 100
EXPF16T150	150	130	Nylon Reinforced EPDM	-10 - 100
EXPF16T200	200	130	Nylon Reinforced EPDM	-10 - 100
EXPF16T250	250	130	Nylon Reinforced EPDM	-10 - 100
EXPF16T300	300	On Request	Nylon Reinforced EPDM	-10 - 100
EXPF16T350	350	On Request	Nylon Reinforced EPDM	-10 - 100
EXPF16T400	400	On Request	Nylon Reinforced EPDM	-10 - 100

S-Flex Pump Flexibles are installed to reduce vibration and noise levels caused by “Plant” upon which they are fitted. These are suitable for use on systems carrying chilled and heated water. Please see above for temperature and pressure limit. S-Flex units are not suitable for use with potable water, water with oil additives, compressed air and food applications.

S-Flex units are manufactured from spherical moulded EPDM, which is a soft compound to offer a high isolation efficiency and high noise absorbing properties.

The S-Flex units tied type has specially designed anti-tamper tie bars. This will only allow the units to be installed at their optimal length and avoid elongation of the unit. These units are 16 bar rated.

The units are a full bore thus removing pressure drop problems. The EPDM rubber is nylon reinforced, and has a steel wire reinforced collar.

Flanges BZP coated carbon steel PN16.

S-Flex units have a 10 year design life when used on LTHW systems.

S-Flex units are stamped with Origin of Manufacture, Date of Manufacture, Batch Number and Size.

Please note no torsion forces should be applied to these units.

We also supply DIN 4809 Approved Pump Flexibles.

Thermal Expansion

S-Flex Screwed Pump Flexible



Key Features:

- **Unions: carbon steel.**
- **Nylon reinforced EPDM rubber body.**
- **Steel reinforced collars.**

CODE	Size (mm)	Installed Length	Material Type	Temperature Limits °C
EXPFS15	15	200	Nylon Reinforced EPDM	-10 - 100
EXPFS20	20	200	Nylon Reinforced EPDM	-10 - 100
EXPFS25	25	200	Nylon Reinforced EPDM	-10 - 100
EXPFS32	32	200	Nylon Reinforced EPDM	-10 - 100
EXPFS40	40	200	Nylon Reinforced EPDM	-10 - 100
EXPFS50	50	200	Nylon Reinforced EPDM	-10 - 100

S-Flex Pump Flexibles are installed to absorb vibration and noise levels caused by “plant” upon which they are fitted. These are suitable for use on systems carrying chilled and heated water. Please see above for temperature and pressure limits.

D-Flex units are not suitable for use with potable water, water with oil additives, compressed air and food applications.

S-Flex Untied units should not be installed on pumps located on Inertia Bases.

S-Flex units are manufactured from spherical moulded EPDM, which is a soft compound to offer a high isolation efficiency and high noise absorbing properties.

The units are a full bore thus removing pressure drop problems. The EPDM rubber is nylon reinforced, and has a steel wire reinforced collar.

Unions BZP coated carbon steel PN16.

S-Flex units have a 10 year design life when used on LTHW systems.

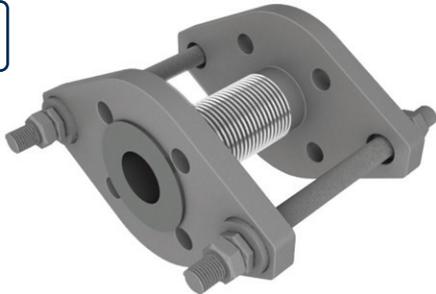
S-Flex units are stamped with origin of manufacture, date of manufacture, batch number and size.

Please note no torsion forces should be applied to these units.

We also supply DIN 4809 approved pump flexibles.

Thermal Expansion

FA3 Stainless Steel Pump Flexible



Key Features:

- Suitable for potable water.
- Suitable for high temperatures.
- PED certified as required.
- Stainless steel to all wetted areas.

CODE	Size (mm)	Installed Length	Material Type	Temperature Limits °C
EXFA3032PN16T	32nb / 35cu	150	316 St/Steel to all Wet Areas	-10 - 200
EXFA3040PN16T	40nb / 42cu	150	316 St/Steel to all Wet Areas	-10 - 200
EXFA3050PN16T	50nb / 54cu	150	316 St/Steel to all Wet Areas	-10 - 200
EXFA3065PN16T	65nb / 67cu	150	316 St/Steel to all Wet Areas	-10 - 200
EXFA3080PN16T	80nb / 76cu	150	316 St/Steel to all Wet Areas	-10 - 200
EXFA3100PN16T	100nb / 108cu	150	316 St/Steel to all Wet Areas	-10 - 200
EXFA3125PN16T	125nb / 133cu	150	316 St/Steel to all Wet Areas	-10 - 200
EXFA3150PN16T	150nb / 159cu	150	316 St/Steel to all Wet Areas	-10 - 200
EXFA3200PN16T	200nb	150	316 St/Steel to all Wet Areas	-10 - 200
EXFA3250PN16T	250nb	On Request	316 St/Steel to all Wet Areas	-10 - 200
EXFA3300PN16T	300nb	On Request	316 St/Steel to all Wet Areas	-10 - 200
EXFA3350PN16T	350nb	On Request	316 St/Steel to all Wet Areas	-10 - 200
EXFA3400PN16T	400nb	On Request	316 St/Steel to all Wet Areas	-10 - 200

S-Flex Pump Flexibles are installed to reduce vibration and noise levels caused by “plant” upon which they are fitted. These are suitable for use on systems carrying high temperature water or potable water systems. Please see above for temperature and pressure limits. FA3 units are suitable for use with potable water, water with oil additives, compressed air and food applications.

Material Specification:

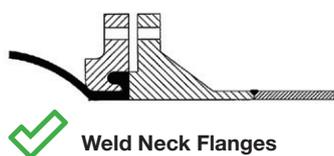
- **Connections:** Carbon steel drilled PN16 van-stone facings.
- **Convolutions:** 316 stainless steel.
- **Internal Sleeve:** 316 stainless steel.
- **Tie Rods:** Carbon steel.
- **Hemispherical Washers:** Carbon steel.
- **Connecting Spool:** 316 stainless steel.

The FA3 Pump Flexible is suitable for use on systems up to 200°C at 16 bar pressure. PED certification supplied dependant upon application.

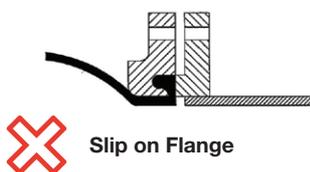
All units are supplied at installation lengths and are pre stressed. Please note, we can design and supply flexible connections to accommodate higher system temperatures / pressures.

Thermal Expansion

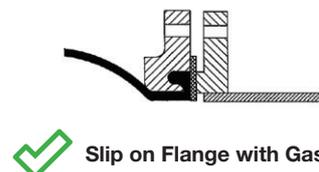
S-Flex Pump Flexible Fitting Instructions



Weld Neck Flanges



Slip on Flange



Slip on Flange with Gasket

A. Pre-installation Check

1. Selection

Prior to installation, check you have the right bellows for the particular duty.

Rubber bellows have temperature and pressure limitations. All rubber bellows will extend under pressure. These pressure thrust forces can be substantial at pressures above 2 bar and 65mm nominal bore size. Unless the pipe work can be sufficiently anchored tied bellows should be fitted.

2. Mating Flanges

We recommend the rubber bellows are mated up against full-bore weld neck flanges. If installed in this manner no additional gaskets are required.

We advise against using slip on or screwed flanges as mating flanges, as these can damage the rubber bellows. Once the sealing face has been damaged, medium will penetrate the reinforcement layers and destroy the integrity of the bellows.

If it is unavoidable to use this type of mating flange, a gasket must be installed. (This should be a hard gasket such as Klingerite and be at least 3mm thick.) The gasket should reach the internal bore of the rubber bellows. Another option is to fill the gap of the slip on flange with weld and grind it flush.

3. Misalignment

Check the two mating flanges are parallel and that they are in line (maximum allowed offset is 5mm in any direction.) The gap between flanges should be within +/- 5mm of the bellows neutral. Under no circumstances must the Pump Flexible be used to take up misalignment.

Ensure the pipework is adequately supported. The bellows must not support pipes or plant.

B. Installation

1. Bolts

Bolts should be inserted from the bellows side. On some larger sizes this may not be possible. In that case a bolt of the exact length needs to be selected. An alternative is to use studding cut to length and fitted with a nut at both sides. This is important, as the bellows will increase in diameter under pressure. Even if there is space between the bolt and the bellows in an unpressurised state, they may foul when pressurised. Bolts of the right diameter must be used to ensure correct alignment.

2. Alignment

Take care when inserting the bellows into the gap between the two mating flanges. Sharp edges can damage the sealing face of the rubber bellows. Before tightening the bolts, ensure the bellows sits evenly in its flange groove and does not get pinched between flanges. The sealing face of the bellows must be concentric with the sealing face of the mating flanges.

3. Tightening the Bolts

Great care has to be taken with the tightening of the flange bolts. Remember you are tightening against a rubber face. As with gaskets, over tightening will cause the joints to leak and it will damage the bellows. Tighter is definitely not better!

Tighten opposite bolts to get an even pressure all round (check the gap between the flanges.)

Rubber will set and the bolts will have to be retightened after 24 hours.

4. Tie Bars

Once the bellows are fitted, ensure the tie bars are tight. All tie bars should be at equal length. When three or more tie bars are fitted it may be necessary to remove one tie bar to install the bellows. Ensure that washers are re-assembled in the right order and orientation.

Thermal Expansion

D-Flex Pump Flexible Fitting Instructions

C. Taking Care of Rubber Bellows

1. Paint

Do not paint rubber bellows. The paint will attack the rubber. (This also applies to paint splatter.)

2. Welding

Protect the rubber from weld splatter.

3. Lagging

Do not lag rubber bellows on heating systems. The increased temperature will reduce the life of the bellows.

4. Tie Bar Check

Once the system is filled but not under pressure, check the tie bars are still tight (pipe work on springs may have dropped due to the weight of the water.)

Note: Tie bars should never be slackened off to reduce noise or vibration transmission, major damage to equipment may occur.

5. Water Treatment

Most bellows use an EPDM inner liner. EPDM is a proven material in heating and chilled water systems. It is resistant to glycol and to most chemicals used in water treatment when used in normal concentrations. Suppliers of water treatment chemicals are reluctant to give information about their formulations. We cannot approve any specific chemical.

Always check with the chemical supplier that the additives are suitable for use with EPDM rubber.

D. Best Practice

The following are only recommendations but if followed they will ensure proper installation and maximum service life of the rubber bellows:

1. Fitting

We recommend the use of spool pieces to align mating flanges and to ensure the correct gap.

2. System

When the bellows are installed on rotating equipment such as pumps to absorb noise and vibration, the pipe work either side of the bellows should be guided. This ensures the bellows move and not the pipe work thus acting as an acoustic break.

Thermal Expansion

EPDM Flexible Hose



- Key Features:**
- EPDM rubber core.
 - 304 stainless steel overbraid.
 - Hose WRAS approved.
 - Manufactured in the UK.
 - 0 - 100°C @ 10 bar.

Description
 EPDM Rubber hose with 304 Stainless steel overbraid, swaged fittings to clients requirements.

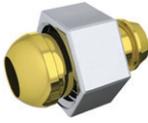
Testing
 Hydrostatic batch test to minimum 20 bar cold. Test Certificate can be submitted upon request.

Approvals
 All hose is WRAS approved irrespective of application.

Applications:

- Fan coil connections.
- Radiant panel connections.
- Tap connections.

Fittings

FIT001	Fixed Taper Male		FIT006	Flat Face 900 Female	
FIT002	Swivel Flat Face Female		FIT007	Coned Face 900 Female Elbow	
FIT003	Swivel Coned Seat Female		FIT008	Plastic Push Fit (Brass Push Fit Available on Request)	
FIT004	Compression		FIT009	Flat Faced Insert with Retained Washer	
FIT005	Brass Standpipe		FIT0010	Long Tap Tail (Also Available Short Tail)	

Thermal Expansion

Stainless Steel Flexible Hose



Key Features:

- 321 stainless steel core.
- 304 stainless steel overbraid.
- Manufactured in the UK.
- 0 - 100°C @ 10 bar.

Description

321 Stainless Steel hose with 304 Stainless Steel overbraid. Welded fittings to client requirements.

Testing

Hydrostatic batch test to minimum 20 bar cold. Test Certificate can be submitted upon request.

Applications:

- Fan coil connections.
- Radiant panel connections.
- Tap connections.
- Final connections to equipment.

Fittings

FIT001	Fixed Taper Male		FIT006	Flat Face 90° Female	
FIT002	Swivel Flat Face Female		FIT007	Coned Face 90° Female Elbow	
FIT003	Swivel Coned Seat Female				

Thermal Expansion

Flexible Hose Fitting Instructions



Key Features:

- 10 year guarantee for EPDM. 2 year guarantee for stainless steel.
- 25 year design life.
- ISO9001 quality system.
- Manufactured in the UK.

Installation

Installation conditions as below must be adhered to in order to ensure longevity of the product.

Slack is present on straight lengths & ends are aligned.



Avoid bending radius becoming too small by using elbows.



Hose is long enough to allow smooth curve.



Do not bend hose too close to crimped end.



Observe minimum bend radius.



Thermal Expansion

Inertia Base



Inertia Bases are supplied in a flat pack form to allow ease of installation on site, but can be delivered assembled if required. These are supplied with spring mounts and all fixings required to assemble the Inertia Base.

We can calculate the size of the Inertia Base required. Please forward the pump details to our Sales Office. As standard the Inertia Bases are supplied either 150mm or 300mm deep.

Inertia Bases are supplied to provide no less than 1.5 : 1.0 Rate of inertia. As standard these bases are supplied with springs.

We can, if required supply these bases fully assembled and cast with a 24N mix of concrete.

We advise that PN16T Tied S-Flex Pump Flexibles are used for isolating vibration from pump connections.

Please Note:

Spring selection should be based upon equipment weight - we can advise on selection at time of ordering.

Plant and pipework can be loaded unevenly, therefore different spring loads may be required at different locations - again we can advise on selection at time of ordering.

Standard springs and housings are BZP with yellow passivate, other coatings can be offered for external use. Please advise if your application is external.

Springs when fitted should be loaded equally, installing one spring before another will lead to uneven load.

Thermal Expansion

DS0 & DS1 Enclosed Spring Mount



Key Features:

- **Anti-vibration mount for plant and machinery.**
- **Enclosed spring for greater stability.**
- **Standard 25mm deflection.**
- **Can be used in conjunction with Inertia Bases.**

Please Note:

Spring selection should be based upon equipment weight - we can advise on selection at time of ordering.

Plant and pipework can be loaded unevenly, therefore different spring loads may be required at different locations - we can advise on selection at time of ordering.

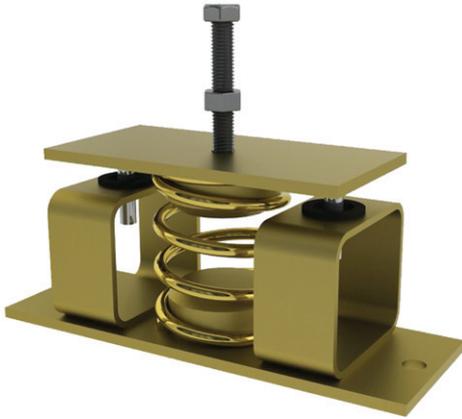
Standard housing is powder coated, the standard spring is BZP, other coatings can be offered for external use. Please advise if your application is external.

Springs when fitted should be loaded equally, installing one spring before another will lead to uneven load.

CODE	Overall Width (mm)	Bolt Centres (mm)	Bolt Ø	Fixing Bolt Ø	Weight Range (KG)	Deflection (mm)
AVDS00050	130	110	M10	M12	11 - 23	25
AVDS00080	130	110	M10	M12	18 - 37	25
AVDS00130	130	110	M10	M12	30 - 60	25
AVDS00200	130	110	M10	M12	45 - 91	25
AVDS00300	130	110	M10	M12	68 - 137	25
AVDS00500	130	110	M10	M12	114 - 228	25
AVDS00630	130	110	M10	M12	148 - 296	25
AVDS00800	130	110	M10	M12	182 - 364	25
AVDS10150	173	148	M12	M12	34 - 69	25
AVDS10200	173	148	M12	M12	45 - 91	25
AVDS10300	173	148	M12	M12	68 - 137	25
AVDS10500	173	148	M12	M12	114 - 228	25
AVDS10750	173	148	M12	M12	170 - 341	25
AVDS11000	173	148	M12	M12	227 - 455	25
AVDS11200	173	148	M12	M12	273 - 546	25
AVDS11400	173	148	M12	M12	318 - 637	25
AVDS121700	173	148	M12	M12	386 - 773	25
AVDS121900	173	148	M12	M12	432 - 864	25

Thermal Expansion

Restrained Spring Mount



Key Features:

- 2 year guarantee.
- 25 year design life.
- ISO9001 quality system.
- Manufactured in the UK.

Please Note:

Spring selection should be based upon equipment weight - we can advise on selection at time of ordering.

Plant and pipework can be loaded unevenly, therefore different spring loads may be required at different locations - we can advise on selection at time of ordering.

Standard springs and housings are BZP with yellow passivate, other coatings can be offered for external use. Please advise if your application is external.

Springs when fitted should be loaded equally, installing one spring before another will lead to uneven load.

CODE	Overall Width (mm)	Bolt Centres (mm)	Bolt Ø	Fixing Bolt Ø	Weight Range (KG)	Deflection (mm)
AVRS00050	230	198	M12	M12	11 - 23	30
AVRS00080	230	198	M12	M12	18 - 37	30
AVRS00130	230	198	M12	M12	30 - 60	30
AVRS00200	230	198	M12	M12	45 - 91	30
AVRS00300	230	198	M12	M12	68 - 137	30
AVRS00500	230	198	M12	M12	114 - 228	30
AVRS00630	230	198	M12	M12	148 - 287	30
AVRS00800	230	198	M12	M12	182 - 364	30
AVRS01100	230	198	M12	M12	250 - 500	30
AVRS10425	230	198	M12	M12	97 - 194	30
AVRS10600	230	198	M12	M12	136 - 273	30
AVRS10750	230	198	M12	M12	170 - 341	30
AVRS11000	230	198	M12	M12	227 - 455	30
AVRS11400	230	198	M12	M12	318 - 637	30
AVRS11700	230	198	M12	M12	386 - 773	30
AVRS12000	230	198	M12	M12	455 - 910	30
AVRS12400	230	198	M12	M12	545 - 1091	30

Thermal Expansion

DS0 & DS1 Enclosed Spring Mount



Key Features:

- 2 year guarantee.
- 25 year design life.
- ISO9001 quality system.
- Manufactured in the UK.

Please Note:

Spring selection should be based upon equipment weight - we can advise on selection at time of ordering.

Plant and pipework can be loaded unevenly, therefore different spring loads may be required at different locations - we can advise on selection at time of ordering.

Standard springs and housings are BZP with yellow passivate, other coatings can be offered for external use. Please advise if your application is external.

Springs when fitted should be loaded equally, installing one spring before another will lead to uneven load.

CODE	Overall Width (mm)	Bolt Centres (mm)	Bolt Ø	Fixing Bolt Ø	Weight Range (KG)	Deflection (mm)
AVOS00050	130	92	M12	M10	11 - 23	30
AVOS00080	130	92	M12	M10	18 - 37	30
AVOS00130	130	92	M12	M10	30 - 60	30
AVOS00200	130	92	M12	M10	45 - 91	30
AVOS00300	130	92	M12	M10	68 - 137	30
AVOS00500	130	92	M12	M10	114 - 228	30
AVOS00630	130	92	M12	M10	148 - 287	30
AVOS00800	130	92	M12	M10	182 - 364	30
AVOS01100	130	92	M12	M10	250 - 500	30
AVOS10425	165	120	M12	M12	97 - 194	30
AVOS10600	165	120	M12	M12	136 - 273	30
AVOS10750	165	120	M12	M12	170 - 341	30
AVOS11000	165	120	M12	M12	227 - 455	30
AVOS11400	165	120	M12	M12	318 - 637	30
AVOS11700	165	120	M12	M12	386 - 773	30
AVOS12000	165	120	M12	M12	455 - 910	30
AVOS12400	165	120	M12	M12	545 - 1091	30

Neoprene

Neoprene Mount



- Key Features:**
- Suitable for isolating vibration from packaged units.
 - Pressurisation units.
 - Please advise the weight and plant footprint requiring isolation for mount recommendations.

CODE	Weight (KG)	Material Type	Hole Tapping Size	Dimensions (mm) Width x Height
AVCMC150M	150	Neoprene Commercial Grade Black Rubber	M10	75 x 32
AVCMC300M	300	Neoprene Commercial Grade Black Rubber	M12	90 x 40

Neoprene Hanger



- Key Features:**
- Isolating vibration from pipework.
 - Please advise the weight of plant requiring isolation for mount recommendations.

Please Note:

Mount selection should be based upon equipment weight - we can advise on selection at time of ordering.

Plant and pipework can be loaded unevenly, therefore different mount loads may be required at different locations - again we can advise on selection at time of ordering.

Mounts when fitted should be loaded equally, installing one mount before another will lead to uneven load.

CODE	Weight (KG)	Material Type	Hole Tapping Size	Dimensions (mm) Width X Height
AVCMC150BM	150	Neoprene Commercial Grade Black Rubber	M10	75 x 32
AVCMC300BM	300	Neoprene Commercial Grade Black Rubber	M12	90 x 40

Thermal Expansion

Standard Spring Hanger



Key Features:

- 2 year guarantee.
- 25 year design life.
- ISO9001 quality system.
- Manufactured in the UK.

Please Note:

Spring selection should be based upon equipment weight - Shawston can advise on selection at time of ordering.

Plant and pipework can be loaded unevenly, therefore different spring loads may be required at different locations - we can advise on selection at time of ordering.

Standard springs and housings are BZP with yellow passivate, other coatings can be offered for external use. Please advise if your application is external.

Springs when fitted should be loaded equally, installing one spring before another will lead to uneven load.

CODE	Overall Width (mm)	Bolt Centres (mm)	Bolt Ø	Fixing Bolt Ø	Weight Range (KG)	Deflection (mm)
AVSHOS00050	150	180	M12	M12	11 - 23	30
AVSHOS00080	150	180	M12	M12	18 - 37	30
AVSHOS00130	150	180	M12	M12	30 - 60	30
AVSHOS00200	150	180	M12	M12	45 - 91	30
AVSHOS00300	150	180	M12	M12	68 - 137	30
AVSHOS00500	150	180	M12	M12	114 - 228	30
AVSHOS00630	150	180	M12	M12	148 - 287	30
AVSHOS00800	150	180	M12	M12	182 - 364	30
AVSHOS01100	150	180	M12	M12	250 - 500	30
AVSHOS10425	250	250	M16	M16	97 - 194	30
AVSHOS10600	250	250	M16	M16	136 - 273	30
AVSHOS10750	250	250	M16	M16	170 - 341	30
AVSHOS11000	250	250	M16	M16	227 - 455	30
AVSHOS11400	250	250	M16	M16	318 - 637	30
AVSHOS11700	250	250	M16	M16	386 - 773	30
AVSHOS12000	250	250	M16	M16	455 - 910	30
AVSHOS12400	250	250	M16	M16	545 - 1091	30

Thermal Expansion

Spring Hanger with Positioning Plate



Key Features:

- 2 year guarantee.
- 25 year design life.
- ISO9001 quality system.
- Manufactured in the UK.

Please Note:

Spring selection should be based upon equipment weight - Shawston can advise on selection at time of ordering.

Plant and pipework can be loaded unevenly, therefore different spring loads may be required at different locations - we can advise on selection at time of ordering.

Standard springs and housings are BZP with yellow passivate, other coatings can be offered for external use. Please advise if your application is external.

Springs when fitted should be loaded equally, installing one spring before another will lead to uneven load.

CODE	Overall Width (mm)	Bolt Centres (mm)	Bolt Ø	Fixing Bolt Ø	Weight Range (KG)	Deflection (mm)
AVSHOSOP0050	150	180	M12	M12	11 - 23	30
AVSHOSOP0080	150	180	M12	M12	18 - 37	30
AVSHOSOP0130	150	180	M12	M12	30 - 60	30
AVSHOSOP0200	150	180	M12	M12	45 - 91	30
AVSHOSOP0300	150	180	M12	M12	68 - 137	30
AVSHOSOP0500	150	180	M12	M12	114 - 228	30
AVSHOSOP0630	150	180	M12	M12	148 - 287	30
AVSHOSOP0800	150	180	M12	M12	182 - 364	30
AVSHOSOP0110	150	180	M12	M12	250 - 500	30
AVSHOS1P0425	250	250	M16	M16	97 - 194	30
AVSHOSOP0600	250	250	M16	M16	136 - 273	30
AVSHOS1P0750	250	250	M16	M16	170 - 341	30
AVSHOS1P1000	250	250	M16	M16	227 - 455	30
AVSHOS1P1400	250	250	M16	M16	318 - 637	30
AVSHOS1P1700	250	250	M16	M16	386 - 773	30
AVSHOS1P2000	250	250	M16	M16	455 - 910	30
AVSHOS1P2400	250	250	M16	M16	545 - 1091	30

Thermal Expansion

Shawston AAB - Adjustable Anchor Bracket



For Steel, Copper & Stainless Steel Pipes

The Shawston AAB Adjustable Anchor Bracket banks either 2 or 3 split bands on a set of steel cleat which can be adjusted for height and fall.

As a standard up to 54mm od bands will be powder coated, with larger sizes BZP for steel pipes or powder coated for copper and stainless steel.

Other band combinations are available upon request including brass, stainless steel and thicker profile steel bands.

Safety stops must be brazed or welded to the pipe wall to prevent the pipe from slipping if the clamps are insufficiently tightened.

Construction:

- Mild steel BZP finish.
- High tensile BZP set screws.

For Use With:

Copper, steel and stainless steel pipes.

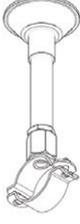
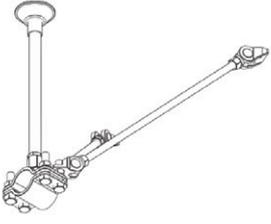
Special Features

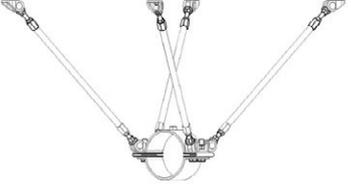
Adjustable height and angle to facilitate fall in pipework.

CODE	Pipe Size	Band Material	No of Bands	Finish	SWL (kN)
AAB(2)015	15	25 x 3	2	Black Powder Coat	2.0
AAB(2)022	22	25 x 3	2	Black Powder Coat	2.0
AAB(2)028	28	25 x 3	2	Black Powder Coat	2.0
AAB(2)035	35	25 x 3	2	Black Powder Coat	2.0
AAB(2)042	42	30 x 3	2	Black Powder Coat	2.0
AAB(2)054	54	30 x 3	2	Black Powder Coat	2.0
AAB(2)022	15	25 x 3	2	Black Powder Coat	2.0
AAB(2)028	20	25 x 3	2	Black Powder Coat	2.0
AAB(2)035	25	25 x 3	2	Black Powder Coat	2.0
AAB(2)042	32	25 x 3	2	Black Powder Coat	2.0
AAB(2)040	40	30 x 3	2	Black Powder Coat	2.0
AAB(2)050	50	30 x 3	2	BZP	2.0
AAB(3)015	15	25 x 3	3	Black Powder Coat	3.0
AAB(3)022	22	25 x 3	3	Black Powder Coat	3.0
AAB(3)028	28	25 x 3	3	Black Powder Coat	3.0
AAB(3)035	35	25 x 3	3	Black Powder Coat	3.0
AAB(3)042	42	30 x 3	3	Black Powder Coat	6.5
AAB(3)054	54	30 x 3	3	Black Powder Coat	6.5
AAB(3)067	67	30 x 3	3	Black Powder Coat	6.5
AAB(3)076	76	30 x 3	3	Black Powder Coat	6.5
AAB(3)108	108	40 x 3	3	Black Powder Coat	8.0
AAB(3)133	133	40 x 3	3	Black Powder Coat	8.0
AAB(3)159	159	40 x 3	3	Black Powder Coat	8.0
AAB(3)022	15	25 x 3	3	Black Powder Coat	3.0
AAB(3)028	20	25 x 3	3	Black Powder Coat	3.0
AAB(3)035	25	25 x 3	3	Black Powder Coat	3.0
AAB(3)042	32	25 x 3	3	Black Powder Coat	3.0
AAB(3)040	40	30 x 3	3	Black Powder Coat	6.5
AAB(3)050	50	30 x 3	3	BZP	6.5
AAB(3)065	65	30 x 3	3	BZP	6.5
AAB(3)080	80	30 x 3	3	BZP	6.5
AAB(3)100	100	40 x 3	3	BZP	8.0
AAB(3)125	125	40 x 3	3	BZP	8.0
AAB(3)150	150	40 x 3	3	BZP	8.0

Thermal Expansion

Sikla Fixed Anchoring Solutions

Clamp Type	SFP1 - SMD-FP	SFP2 - UGFS-FP	SFP3 - UG2FS-FP
			
Size range - Steel Tube	½" to 2" / 15nb to 50nb	½" to 6" / 15nb to 150nb	½" to 6" / 15nb to 150nb
Size range - Copper Tube	15mm to 67mm	22mm to 159mm	22mm to 159mm
Max. centre line of pipe	100mm	500mm	500mm
Max. force	1kN	9kN	9kN
Brace thread size	N/A	M16	M16

Clamp Type	SFP4 - FS16-FP	SFP5 - FSGR12-FP	SFP6 0 FSGR1-FP
			
Size range - Steel Tube	½" to 18" / 15nb to 450nb	½" to 18" / 15nb to 450nb	½" to 18" / 15nb to 450nb
Size range - Copper Tube	22mm to 159mm	22mm to 159mm	22mm to 159mm
Max. centre line of pipe	650mm	510mm	510mm
Max. force	16kN	24kN	35kN Steel - 24kN Copper
Brace thread size	M16	½"	1"

Copper clamps are finished with a RAL 9005 black powder coating as standard and are suitable for use with copper pipe on HTG and LTHW services only MAX Temp 110°C.

Slide Guides

Shawston Low Friction Slides



LF1



LF2



LF3

Type	Internal Thread	External Thread	Max Travel	SWL
LF1	M8 / M10	N / A	65mm	0.5kN
LF2	M10	M16	90mm	2.0kN
LF3-1	M10 / M12	½"	120mm	6.0kN
LF3-2	M10 / M12	½"	135mm	6.0kN

Construction:

- Mild steel BZP finish.
- Low friction slide insert.

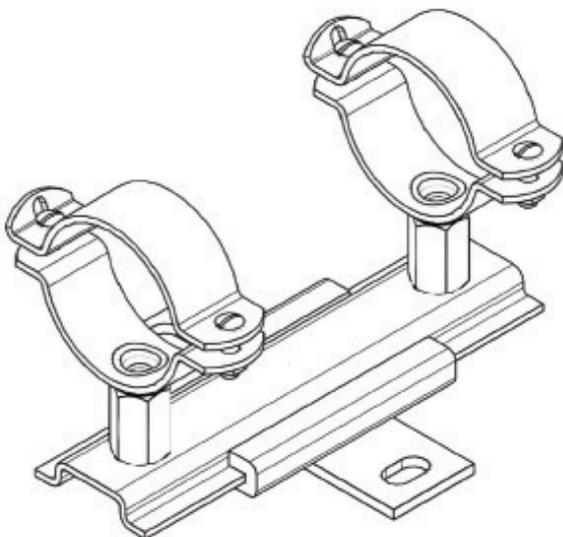
For Use With:

- Unlined and rubber lined clips.
- Bossed split bands on larger sizes.

Special Features:

- Dual and triple bosses.
- Lockable for transport.

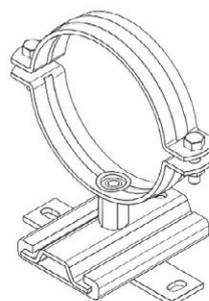
Sikla Slide Sets



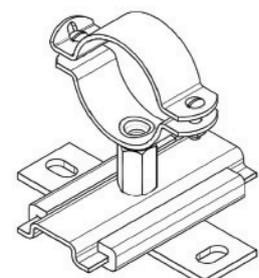
2G2-PL

H32G

Type	Internal Thread	External Thread	Max Travel	SWL Ceiling Mounted	SWL Floor Mounted
2G-PL	M10	M16	85mm	0.6kN	1.2kN
2G2-PL	M10	M16	140mm	0.6kN	1.2kN
H3G	M12 / M16	½"	100mm	5.0kN	9.0kN
H32G	M12 / M16	½"	135mm	5.0kN	9.0kN



H3G



2G-PL

**Pipe clips sold separately.*

Low Friction

Ball Hanger



Size	Movement	SWL
M8	+/-50	0.15kN
M10	+/-50	0.20kN
M12	+/-50	0.25kN

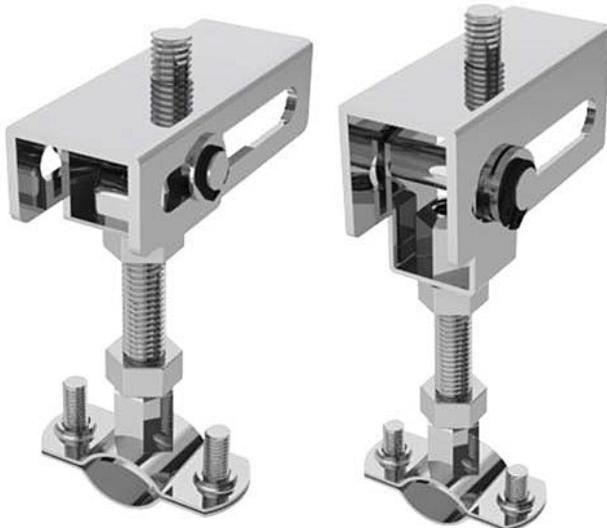
Construction:

- Mild steel.
- BZP finish.

For Use With:

- Unlined and lined clip range and hanging brackets to reduce drop rod lateral loads.

Modular Slide Guide Assembly



MS1 Slimline

MS2 Standard

Type	Internal Thread	Max Travel	SWL
MS1	M10	50mm	0.25kN
MS2	M8 / M10	50mm	0.25kN

Construction:

- Mild steel.
- BZP finish.

For Use With:

- Unlined and rubber lined brackets to create a guided system.

www.shawston.co.uk

Shawston London

Units 8 & 9,
Hillbottom Road,
Sands Industrial Estate,
High Wycombe,
Bucks HP12 4HS

Tel: 01494 460 910
Fax: 01494 522 573
Email: London@shawston.co.uk

Shawston Birmingham

Bay 1, Block D,
The Bescot Estate,
Woden Road West, Wednesbury
West Midlands WS10 7SG

Tel: 0121 556 3400
Fax: 0121 506 4669
Email: Birmingham@shawston.co.uk

Shawston Manchester

Great Norbury Street,
Hyde,
Cheshire SK14 1BW

Tel: 0161 368 4545
Fax: 0161 367 8114
Email: Manchester@shawston.co.uk

Shawston Glasgow

Block 1 Unit 4,
Annick Industrial Estate,
31 Sandilands Street,
Shettleston,
Glasgow G32 OHT

Tel: 0141 778 6975
Fax: 0141 778 6264
Email: Glasgow@shawston.co.uk
