

Quotation No: _____
Customer Reference: _____
Project Description: _____

Date: _____

For The Attention Of: _____

_____ Hospital

Address

Address

Address

Address

Post Code

Dear _____,

Following on from my site survey of _____ I can make the following comments;

Plantroom 14, Pump Reference: A&E

2 x 80mm Stourflex type JP02 tied PN16, correctly installed although slightly over compressed. Does not need replacing in the short term.

Plantroom 14, Pump Reference: Maternity Pully

2 x 65mm Stourflex type JP02, correctly installed although slightly over compressed. It appears they may have been a leak at some point as the flanges are corroded. I would recommend these units are changed.



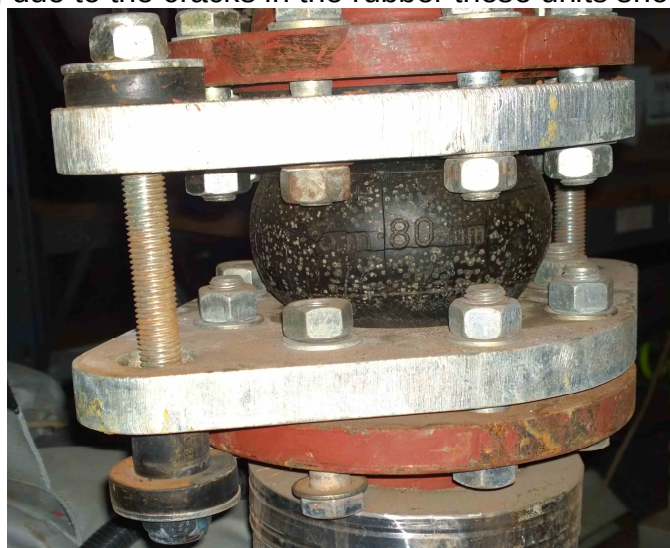
Plantroom 14, Pump Reference: Maternity CHW 1

2 x 80mm Engineering Appliances EPDM tied PN16, correctly installed, in very poor condition with cracks visible on the rubber and heavily corroded flanges, it also looks like some kind of sap or sticky substance has been dropped on the rubber over the years which may have further damaged the rubber. I would recommend these units are changed as a matter of urgency.



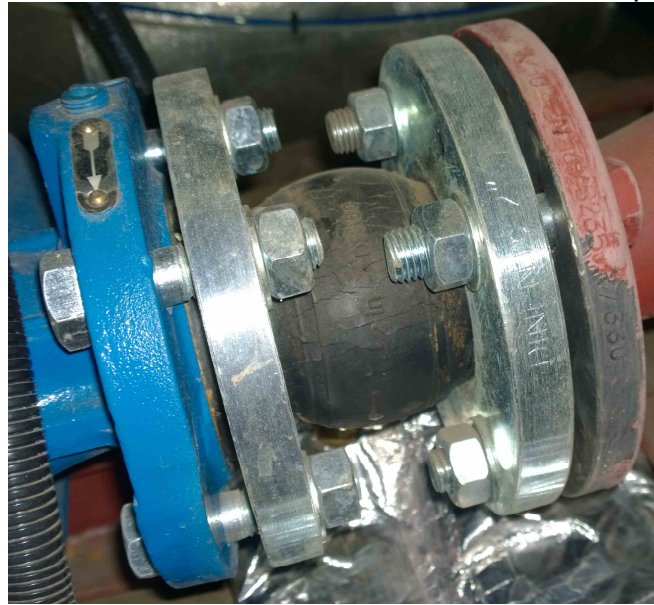
Plantroom ZPL8, Pump Reference: A&E Heating

2 x 80mm Stourflex type JP02 EPDM tied PN16, in-correctly installed, in poor condition with cracks visible on the rubber and loose tie bars and bolts, due to this the rubber bellow will not be working efficiently at noise and vibration isolation. The tie bars and nuts + bolts should be tightened immediately, due to the cracks in the rubber these units should be replaced.



Plantroom ZPL8, Pump Reference: North Podium

2 x 50mm Stourflex type JP01 EPDM untied PN16, in-correctly installed by way of over compression - length 100mm, in poor condition with cracks visible on the rubber, also misaligned. Due to the cracks in the rubber these units should be replaced.



Plantroom ZPL8, Pump Reference: South Podium

2 x 80mm Stourflex type JP01 EPDM untied PN16, in-correctly installed by use of gaskets in-between rubber bellows and mating flanges, use of gaskets prevents a true seal being made between the rubber and the mating flange. In poor condition with cracks visible on the rubber. Due to the cracks in the rubber these units & the leak these should be replaced as a matter of urgency.



Plantroom ZPL8, Pump Reference: Tower Block

2 x 100mm Stourflex type JP01 EPDM untied PN16, correctly installed, length within tolerance, no need to replace currently.

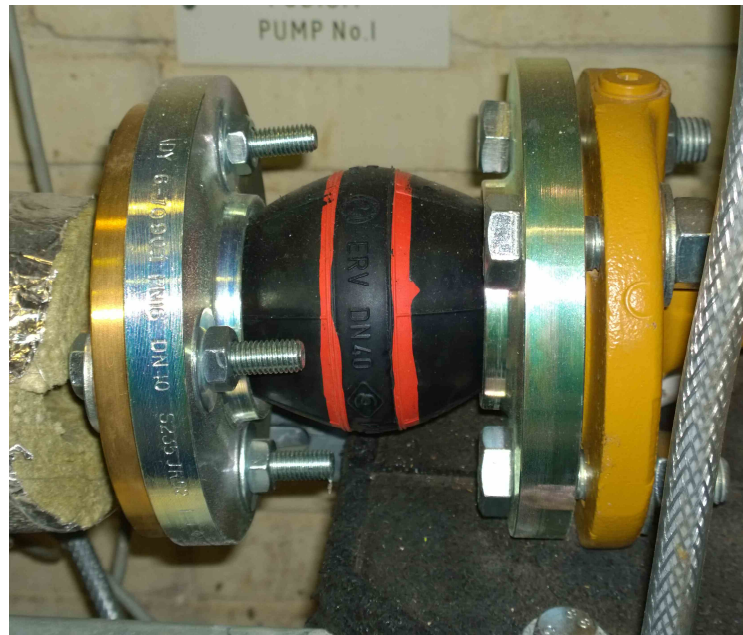
Plantroom ZPL8, Pump Reference: A&E HWS

2 x stainless steel braided pump connectors, 40mm Stourflex type JP20BS screwed male, correctly installed, length within tolerance, no need to replace currently.



Plantroom ZPL8, Pump Reference: HWS Podium I

2 x 40mm ERV type flanged PN16, in-correctly installed, length within tolerance, no need to replace currently. The bellows flanges and mating flanges do not properly match, the bolts are undersized in an attempt to mate the flanges. These bellows are new and if refitted to a correct mating flange should still be ok to use.



Plantroom ZPL8, Pump Reference: HWS Tower Block

2 x 50mm ERV type EPDM untied PN16, correctly installed, length within tolerance, new bellows so no need to replace currently.

Plantroom East West Duct ADI ZP08





7 x Rubber bellows although there are also stool pieces that may indicate where failed bellows have been removed and not replaced. The location of these bellows is highly unusual as they are both sides of a 90° corner in the same pipes, I do not know if they were originally installed in a misguided attempt to deal with thermal expansion, or if they are there to prevent noise & vibration travelling along the pipe and potentially into a sensitive area of the hospital, indeed vibration could be felt in the pipes, brackets and supports as we stood there. All of the bellows are in a very poor condition and need either removing (if they are

deemed surplus to requirements) or replacing as a matter of urgency. This is because several of them are already leaking, some are starting to bubble under the skin of the bellows and some of them are extremely hard and brittle. There is a variety of bellows:

1 x 65mm EMFLEX EPDM Untied Table E x 115mm Long on Heating.

2 x 100mm Nitrile Untied Table E on Heating.

2 x 150mm Viton Untied Table E x 150mm Long on Heating.

2 x 80mm EPDM Untied Table E x 110mm Long on Heating.

1 x 100mm Viton Untied PN16 x 115mm Long on Chilled Water.

1 x 125mm Nitrile Untied PN16 x 150mm Long on Heating.

1 x 200mm EPDM Untied PN10 x 115mm Long on CT Heating. (This item is leaking badly as the 80mm rubber bellow has been installed into a 70mm pipe).

Plantroom ZPL5, Pump Reference: Main Soft Transfer Pump

No bellows installed, PN16 flanged pumps.

Plantroom ZPL5, Pump Reference: Main Hard Transfer Pump

No bellows installed, PN16 flanged pumps.

Plantroom ZPL5 Duct

As with the East West Duct these bellows are located in runs of pipe, not on pumps.

1 x 50mm Whiteband type Nitrile untied Table E, correctly installed, very hard and needs replacing. In a copper line and on Chilled Water.

1 x 100mm EPDM untied Table E, in-correctly installed due to misalignment and missing bolt holes, very hard and needs replacing. On a heating line.

All of the bellows are in a very poor condition and need either removing (if they are deemed surplus to requirements) or replacing as a matter of urgency.



L2 East West Link Corridor Ceiling Void

A very strange setup, which again may once have been installed to take out thermal expansion of the pipework, or noise and vibration. Although in this position I believe the thermal expansion explanation is more likely, you have a straight run of pipe above the corridor that goes for a fair distance which will generate growth in the pipe. There are two fixed points (or anchor points) at either end of the run, this layout would lend itself to a typical axial expansion joint installation (please see my sketch below). However there is nothing at all between the anchors, this will be exerting force on the anchors as the pipe expands but can not move past the anchors.

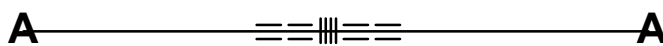
Then we have the mix of rubber bellows & an axial expansion joint past the top anchor. The untied rubber bellows have had their flanges fixed to a beam on one side of one of the flanges. This installation is incorrect in many ways, untied rubber bellows would require anchoring on both sides to prevent extension under pressure, untied rubber bellows are also prone to misalignment which would be made worse by only fixing the flange on one side (as shown in the photo).

Then we have the single axial expansion joint in the copper line, again this isn't anchored or guided in a proper fashion and can be seen to be misaligned.

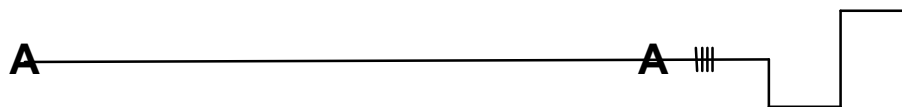
Without knowing what the purpose of the bellows in this location is (i.e. dealing with noise / vibration, or dealing with thermal expansion), it would be unwise of me to advise you to remove the units completely. However I am equally uncomfortable with the use of untied un-anchored rubber bellows and their inherent instability.

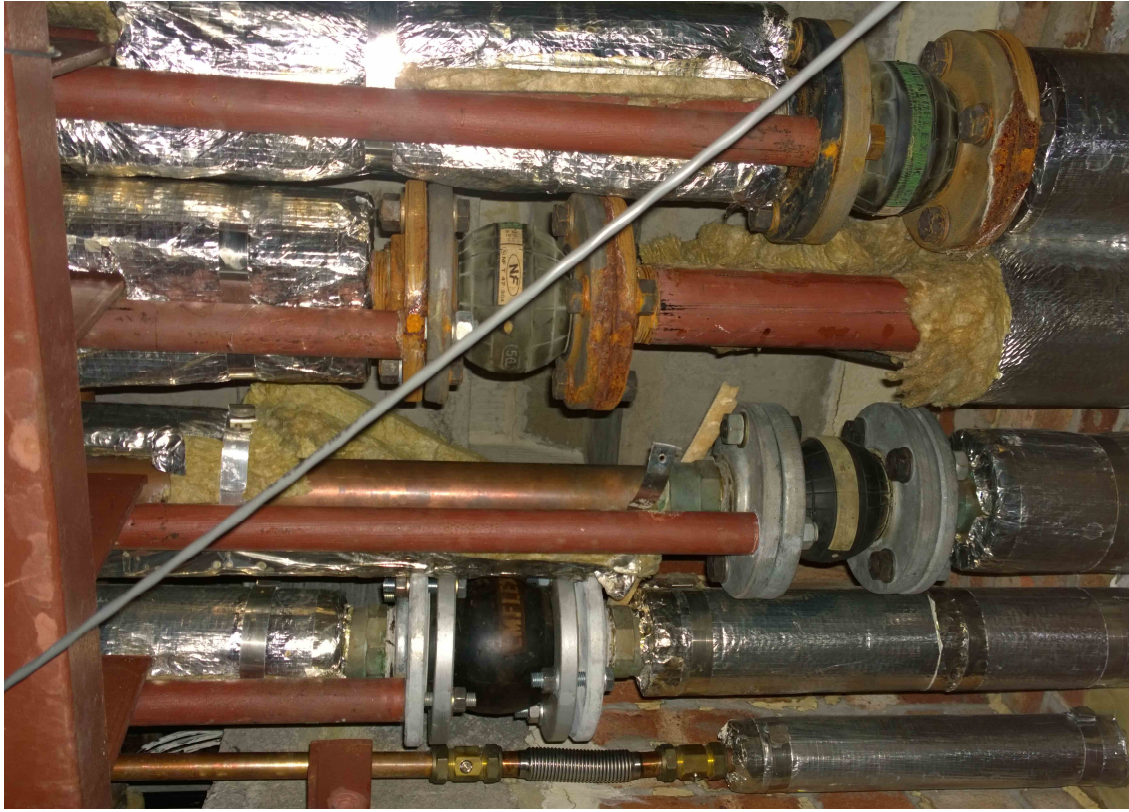
Therefore I would suggest the use of our restrained bellows, either in JP02 or JP23VS form. I will provide further details of these at the end of this report.

Typical Installation Of Metallic Axial Expansion Joints, Guides And Anchors.



L2 East West Link Corridor Installation Of Anchors Rubber Bellows & Metallic Axial Expansion Joints





1 x 15mm Copper Standpipe Stainless Steel Axial Expansion Joint. On Domestic Hot Water.

1 x 65mm EMFLEX EPDM Untied Table E x 115mm Long. On Domestic Hot Water.

1 x 50mm Whiteband Untied PN16 x 135mm Long. On Potable Water.

1 x 50mm Dilatoflex EPDM Untied PN16 x 115mm Long. On Heating.

Stamped 110°C 10Bar.

1 x 50mm Dilatoflex EPDM Untied PN16 x 115mm Long. On Heating. Leaking On Flange.

Stamped 110°C 10Bar.

Two of these bellows are leaking from the flanges and therefore need changing quite quickly, the other two visually look ok although I couldn't get close enough to see how firm they are. I would recommend they are changed as well simply because of the movement they may have been exposed to as part of the unusual anchoring.

Kitchen Back Corridor Ceiling Void

1 x 15mm Copper Standpipe Stainless Steel Axial Expansion Joint. On Domestic Hot Water. Has been removed at some point and replaced with an ineffectual expansion loop, also isn't anchored.

2 x 50mm Dilatoflex EPDM Untied PN16. On Potable Water.

2 x 50mm Dilatoflex EPDM Untied PN16. On Heating.



One of these has recently been replaced and looks to be in acceptable condition, although as with L2 East West Link Corridor Ceiling Void I would be concerned about the potential movement that these bellows are exposed to, as we are unsure about if and where they are anchored. The other 3 bellows in this position require replacing as they are showing signs of splitting and seepage.

ZPL16 Duct

These units were examined after I left due to an access issue, my thanks to John May for sending me the information on these.

2 x 80mm EPDM Untied Table F. On Chilled Water.

1 x 100mm Nitrile Tied PN16. 135mm Long. On Heating.

1 x 100mm EPDM Tied PN16. 130mm Long. On Heating.

As I didn't see them I can't comment on their condition, however I think it's a safe assumption that if they are in a similar condition to the bellows in the other two ducts then they will need replacing.

Conclusion

There are several issues that need considering before I offer you prices for a standard range of products:

Firstly, in several locations you have rubber bellows on Potable Water pipework, this is now in contravention of the The Water Fittings Regulations 1 July 1999 in England and Wales, basically this system run by the Water Regulations Advisory Scheme means that all products that come into contact with mains water, must be made from a WRAS Approved material to help prevent misuse, waste, undue consumption or erroneous measurement of water and, most importantly, to prevent contamination of drinking water. For more information on WRAS see www.wras.co.uk Our JP23VS is WRAS approved and we were amongst the very first people supplying the water authorities with these units when the regulations came into force.

Secondly, in many positions you have untied rubber bellows installed in pipe runs for one of two reasons that I mentioned in my report, either thermal expansion or noise and vibration. However whichever reason they were installed for, they should be anchored to prevent the bellows expanding under pressure and creating instability in the system. The use of tied bellows (either rubber or metal) would help reduce this issue as the tie bars can contain much of the pressure thrust.

Thirdly, as stated you have a huge variety of different flange types, lengths, bellows materials etc. it is highly unlikely that I could provide you with like for like units on everything surveyed even if it was a good idea technically, which it isn't.

Given all of the above I have two products that I can recommend; neither of them will fit all of your installations without modifications to your pipe or mating flanges;

JP02 – Our standard tied EPDM rubber bellow is 130mm long and can be used up to 82°C, although they can not be used on the Potable Water WRAS applications. We have large stocks of these products and you could carry a range in your stores that are suitable for most of the applications you have. They are PN16 flanged.

JP23VS – Our WRAS Approved metallic pump connector is 130mm long and can be used up to 300°C, they are suitable for all applications you have on site and would enable you to carry less stock as the bellows can replace any failure / cover any replacement you have on site. The JP23VS will accommodate some axial movement, it will remove noise and vibration, and it can be used on each system you have on site. It is therefore this product I recommend you keep stocks of.

Please see attached quote & datasheet.

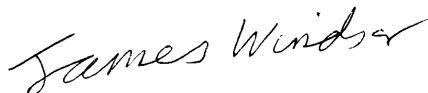
I would like to thank John May for the time and effort he took in taking me round the hospital.

If you have any questions about this report, please do not hesitate to contact me.



Assuring you of our best attention at all times.

Yours sincerely,



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James F Windsor

Stourflex Sales Engineer