



Shurjoint The way Forward

Luthra Pneumsys



DAVID NEWMAN

○ Introduction

United Kingdom

- Married - 3 children
- Work Experience
 - Qualified Electrical/Machinal Eng.
 - Foreman for Matthew Hall (4 years)
 - Regional sales Manager Marshall Tufflex (15 Years)
 - Sales Manager Southern Region - covering London & SE, South West, Southern Wales and Southern Ireland for Technical Tyco Grinnell (9 Years)
 - Sales Manager Middle East Tyco Grinnell (3 Years)
 - GM KTMR Consulting FZE Middle east (5 Years)
- Joined Shurjoint November 2019
 - Sales Director Middle East & Africa



Programme for Today

- Introductions & Objectives
- Grooved Pipe Jointing Concept
- Making the Pipe Groove End
- Coupling Types and Capabilities
 - » Thermal movement, noise & vibration
- Product Applications
- Innovating with grooved
- Prefabrication and Off Site Manufacture
- Customer Technical Support Information & Data
- Q&A
- Session is about 30 minutes to APRX

Shurjoint Grooved Pipe Jointing Concept



Programme Objectives:

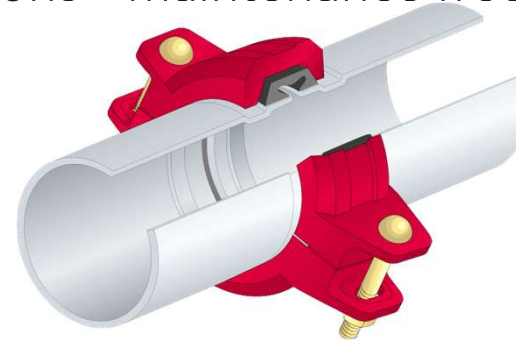
- Share the Grooved Pipe Jointing concept.....



- dispel any concerns
- differences between traditional and grooved jointing
- principles of design/installation
- solutions to common piping problems
- technical and support capabilities when help is required
- product range, applications and limitations
- correct product selection and best practice installation
- ensure that **Luthra Pneumsys** maximise the opportunity

Grooved Pipe Jointing Concept

“A proven, safe, simple, clean and fast method of joining steel and stainless-steel pipes to deliver long term performance, noise & vibration attenuation and accommodation of thermal movement across a wide range of applications - maintenance free”



- No flame, fume or hot work permits, as with welding
- No removal of metal or application of cutting oils as with threading
- No pre-alignment & bolting materials as with flanging
- No solvents or additional supports as with plastics
- No requirement for specialist training & highly skilled installers
- No maintenance

Our Value Proposition:

- Ensure that engineers, contractors & owners benefit by using grooved joints
- Pipe systems advice relating to Shurjoint Grooved Products
- Material Take Off Service
- Seminars and training on site or at customer premises
- Shurjoint Grooved Product Specification
- Calculations on expansion and thermal movement
- Installed cost analysis V's welding, flanging and plastics
- On site grooving demonstrations, training and toolbox talks
- 2D & 3D CAD Drawing Blocks
- Technical submittal document
- Bespoke logistics
- 10 Year product warranty



Grooved Jointing Concept

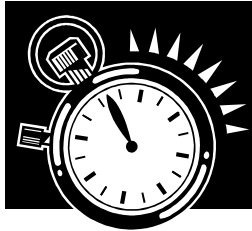


- Accreditation and Approvals...



Why use Shurjoint Mechanical Grooved?"

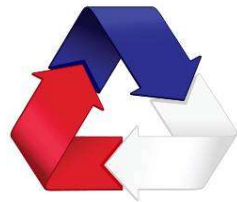
Quick



Compact



Clean



Safe



**Maintenance
Free**



Easy



Cost-Saving

10

Dependable

Year
Limited
Warranty

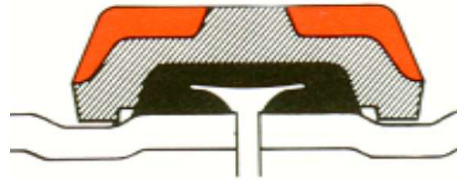
The Product Range

- Couplings
- Fittings
- Valves
- Tools



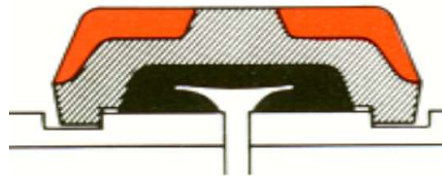
Grooved & Ring Joint systems

- Roll Groove



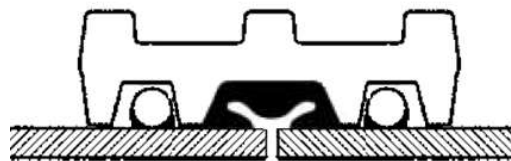
- + Fast / flexible on site grooving
- Protrusion in the pipe
- Limitations on wall thickness
- Interference with cement mortar lining

- Cut Groove in pipe



- + No protrusion / more linear movement
- Weakens pipe wall thickness
- Cut grooving on-site is slow and difficult

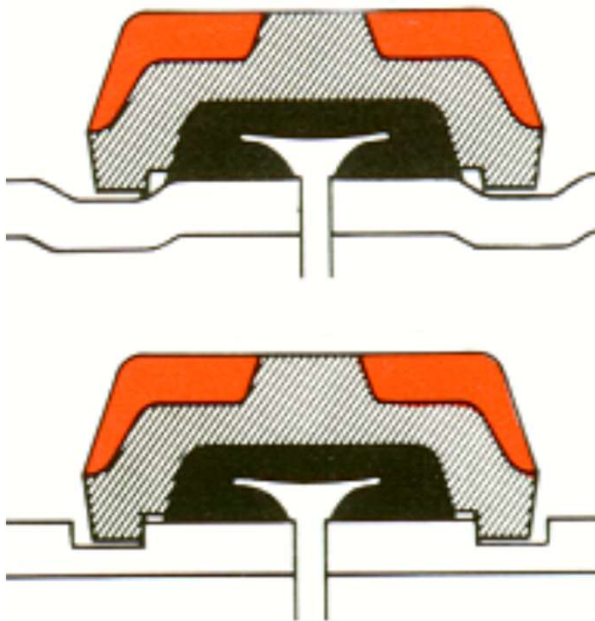
- Ring Joint connections



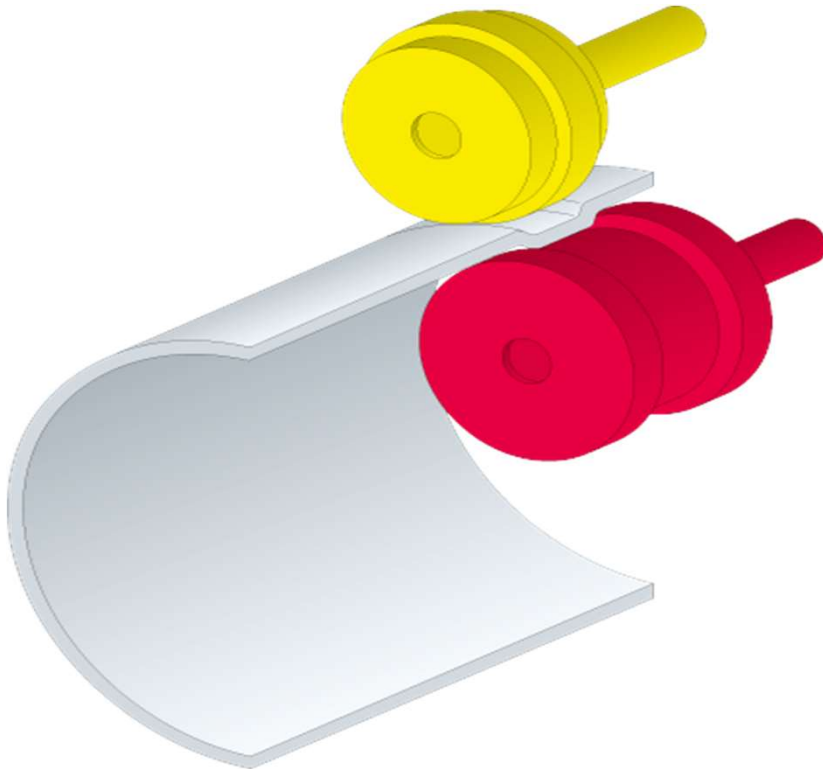
- + No protrusion / pipe wall remains intact
- + Only structural weld required
- + Low cost weld rings
- More difficult to fabricate on site

Grooved Jointing Concept

Grooved Pipe Ends - Roll or Cut Grooved?

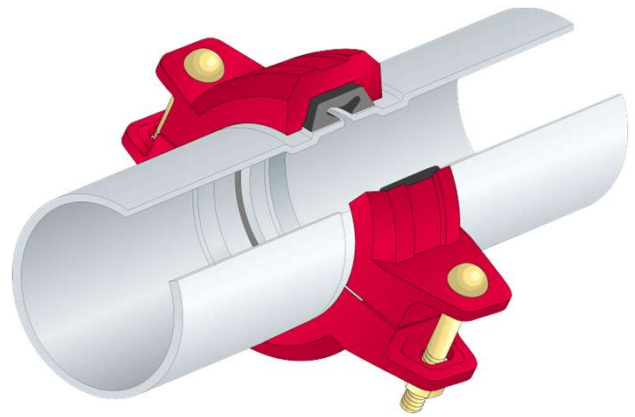


The Grooved Jointing Concept



- >90% of all grooved pipe ends use roll grooved pipes (not cut groove)
- Roll grooving forms an indentation in the pipe which we describe as a groove.
- Roll grooving does not remove or cut away the material of the pipe.
- Allows thinner wall piping to be utilised

The Jointing Principal



- Working Pressure up to 69 bar / 1000 PSI
- Temperatures up to 121°C
- ¾" to 42" standard nominal sizes.
- (up to 96" as Ring Joint System)

First Seal

"C" Shape gasket naturally seals on pipe ends.

Note: This "Gap" is known as "Pipe End Separation"



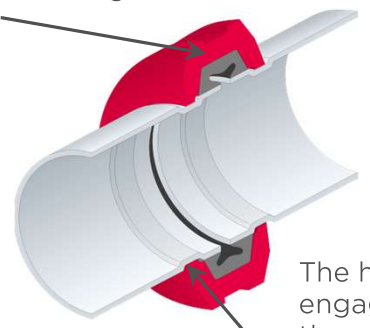
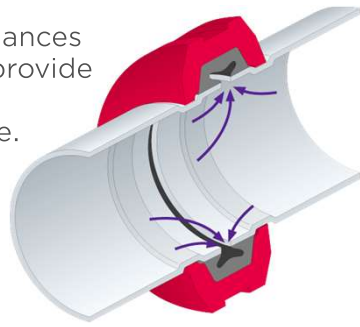
Third Seal

The system pressure or vacuum enhances the seal to provide leak-tight performance.

The housing compresses the gasket increasing the pressure sealing capacity

Second Seal

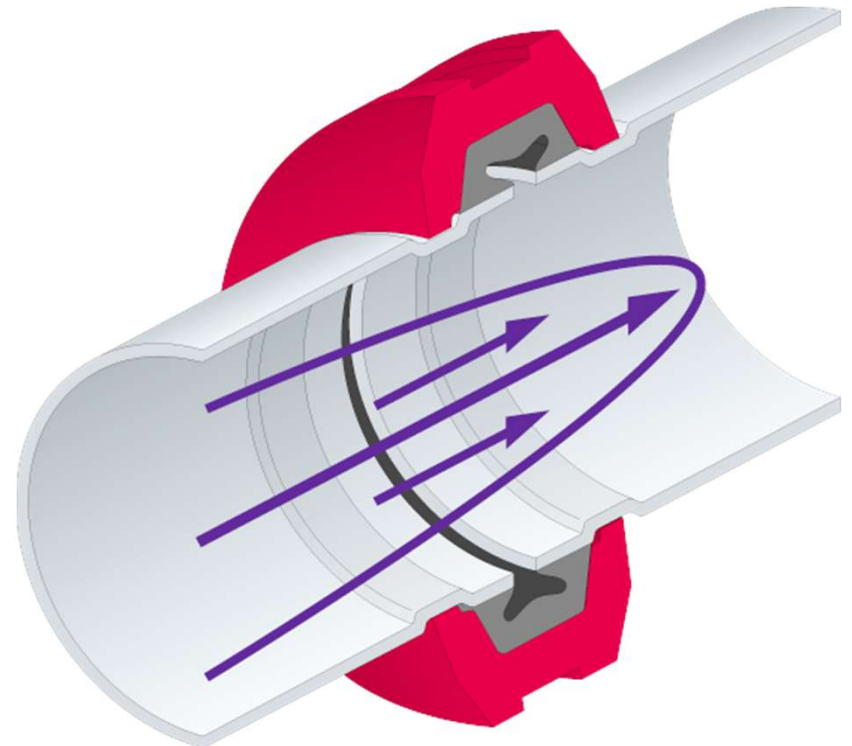
The housing engages within the grooves to resist pressure thrust



The gasket is said to be "Pressure Responsive"

Grooved Jointing Concept

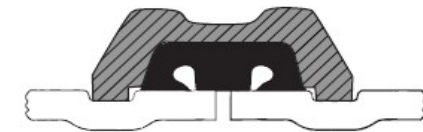
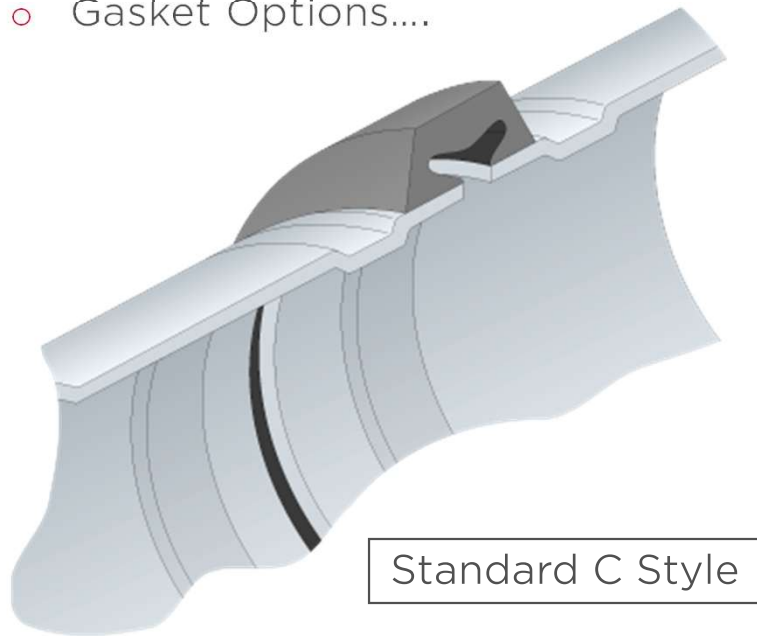
- Standard Grooved Product
- Compatible with standard industry groove dimensions
- No special grooving tools are required
- Shurjoint products can be installed or retrofitted on any existing system using standard groove dimensions



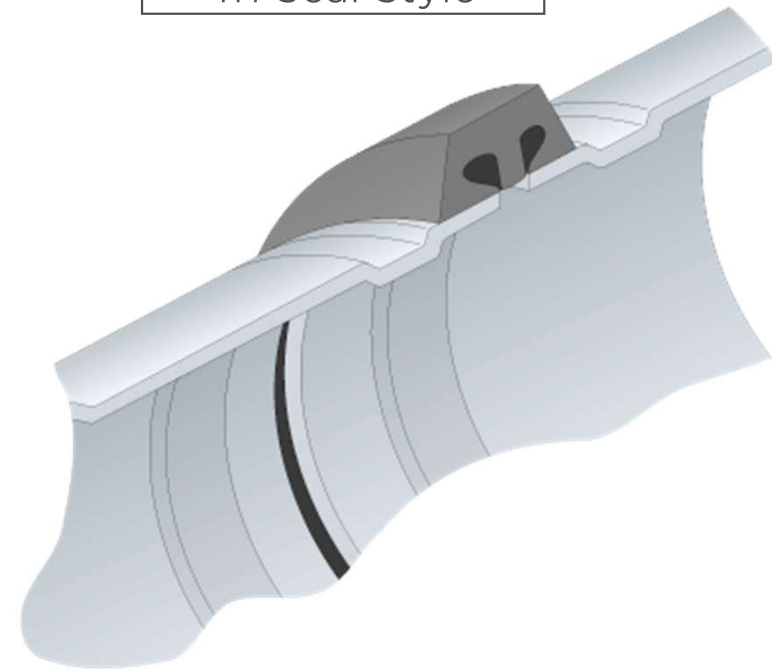
Roll grooving effect on the internal flow characteristics of the pipe is less than <1%.

Grooved Jointing Concept

- Gasket Options....

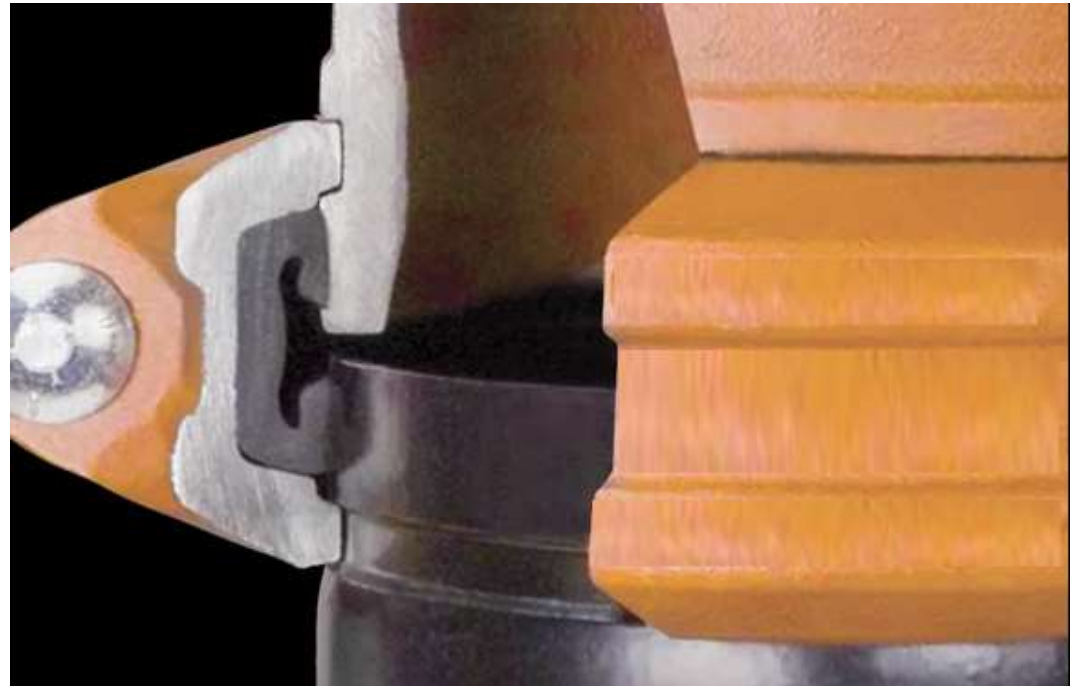


Tri Seal Style



Grooved Jointing Concept

- Housing
 - Keyways
 - Engagement
 - Cavity
- Gasket
 - Lips
 - Cavity
- Pipe
 - “A” Dimension
 - Gap
 - Clearances



Grooved Jointing Concept

- Grooving of Small Diameter & Stainless Steel Pipes....



Stainless Steel 168mm Sch. 10



1 1/4" BS 1387 Galvanised Mild Steel Bundle



Grooved Jointing Concept

Coupling Types

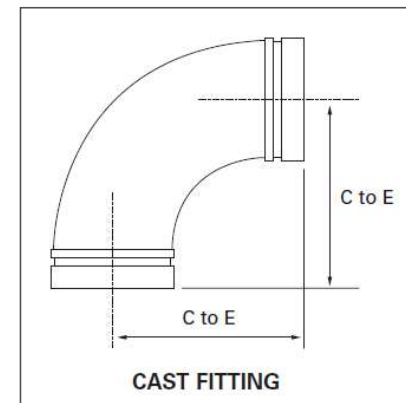
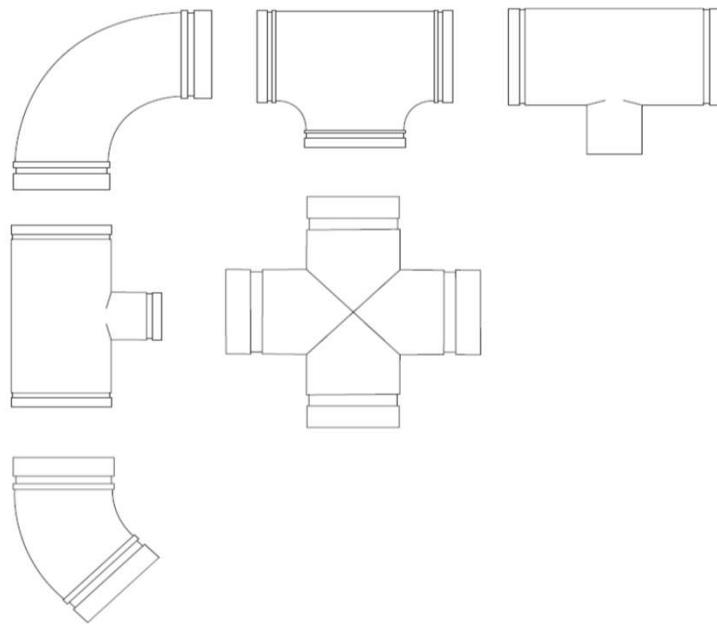
- Rigid
 - » Full Keyway Engagement
 - » Wider Keyways Fill Groove
 - » Pull Pipe Ends Close

- Flexible
 - » Floating Engagement
 - » Thinner Keyways
 - » Wider, Dynamic Pipe Gap
 - » Allowable Pipe Movement



Grooved Jointing Concept

Centre Line and Centre To End Fitting Coordination



Working Pressures of Cast Fittings Conforms to those of the Heavy-Duty Flexible Coupling

Grooved Jointing Concept

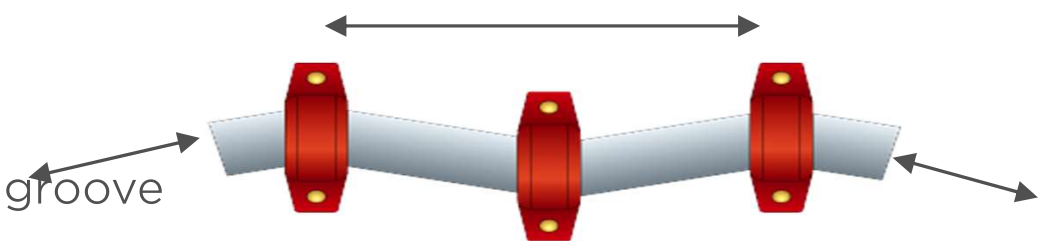
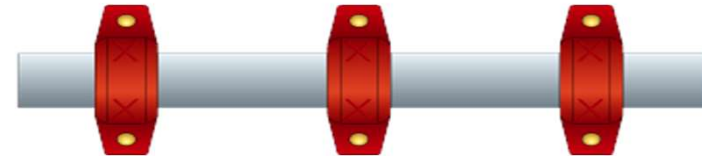
Flexible or Rigid Couplings?

- Rigid Couplings
- \$multi-million design
- Hold pipes in alignment similar to welding
- One nut/bc
- Flexible couplings
- Allow the pipe to move
- Within the limits of the groove
- In a linear motion
- In angular deflection

Rigid Joints



Flexible Joints

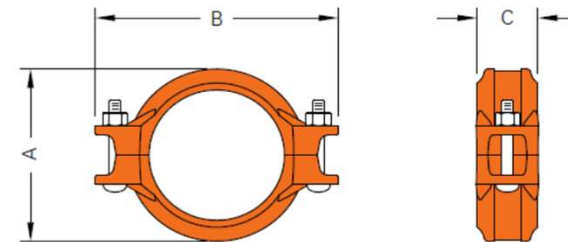


Grooved Jointing Concept



Model 7705 Flexible Coupling

The Shurjoint Model 7705 is a standard flexible coupling designed for use in a variety of moderate pressure general piping applications. The Model 7705 coupling features flexibility that can accommodate misalignment, distortion, thermal stress, vibration, noise and seismic tremors. The Model 7705 can even accommodate an arced or curved piping layout. See Typical Applications - Flexible Couplings on page 191.

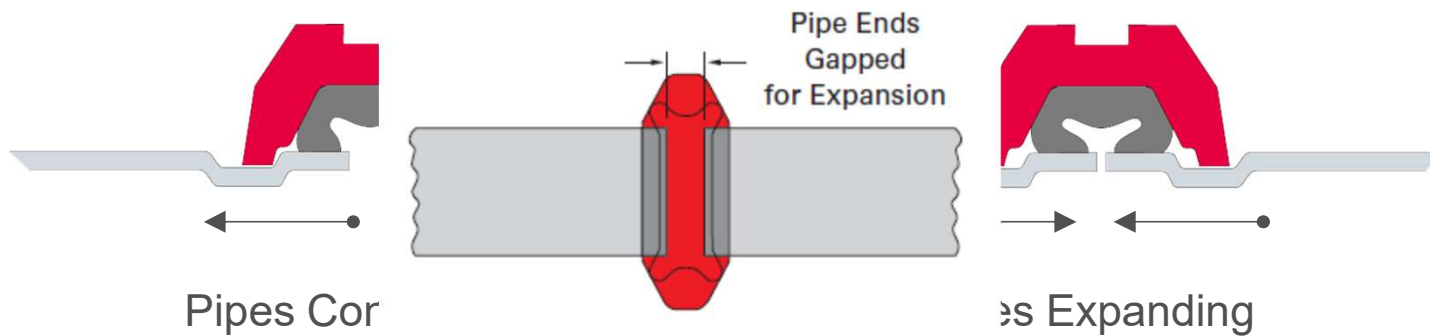


Nominal Size	Pipe O.D.	Max. Working Pressure (CWP)*	Max. End Load (CWP)	Axial Displacement †	Angular Movement**†		Dimensions			Bolt Size	Weight
					Degree Per Coupling	Per Pipe	A	B	C		
in	in	PSI	Lbs	in	(°)	in/ft	in	in	in	in	Lbs
mm	mm	Bar	kN	mm		mm/m	mm	mm	mm	mm	Kgs
1	1.315	500	670	0.0625	2° - 45'	0.58	2.24	3.94	1.81	¾ x 1¾	1.3
2½	33.4	35	3.12	1.6		48	57	100	46	M10 x 45	0.6
1¼	1.660	500	1080	0.0625	2° - 10'	0.46	2.60	4.06	1.81	¾ x 2¼	1.5
32	42.2	35	4.94	1.6		38	66	103	46	M10 x 55	0.7

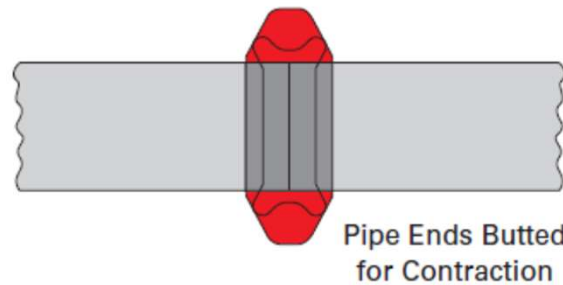
Grooved Jointing Concept

Flexible Couplings Capabilities...

- Linear Pipeline Movement



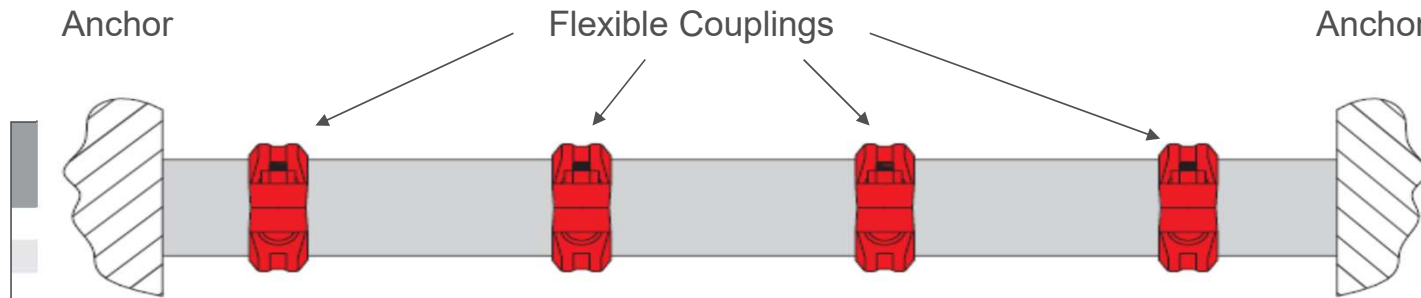
Coupling Size	Pipe End Separation
1 1/4" to 3"	0 to 3.3mm
4" to 24"	0 to 6.4mm



Reduction Roll Groove	Roll Groove Pipe End Movement
50%	0.8mm
50%	2.4mm

Grooved Jointing Concept

Utilising Linear Deflection Capabilities



0	0	90	1.08
20	0.24	110	1.32
30	0.36	120	1.44
40	0.48	130	1.56

Shurjoint 168mm Flexible coupling = +/-2.4mm each
 This is the design distance allowed between pipe ends
 Roll groove joint with 25% Safety Factor

24mm movement / 2.4mm
 = 10 couplings required
 Pipe length = 4 metres
 Pipe supports @ 3.7mtrs

40 metres DN150 Sch. 40 Steel Tube

Installation temperature = 25°C

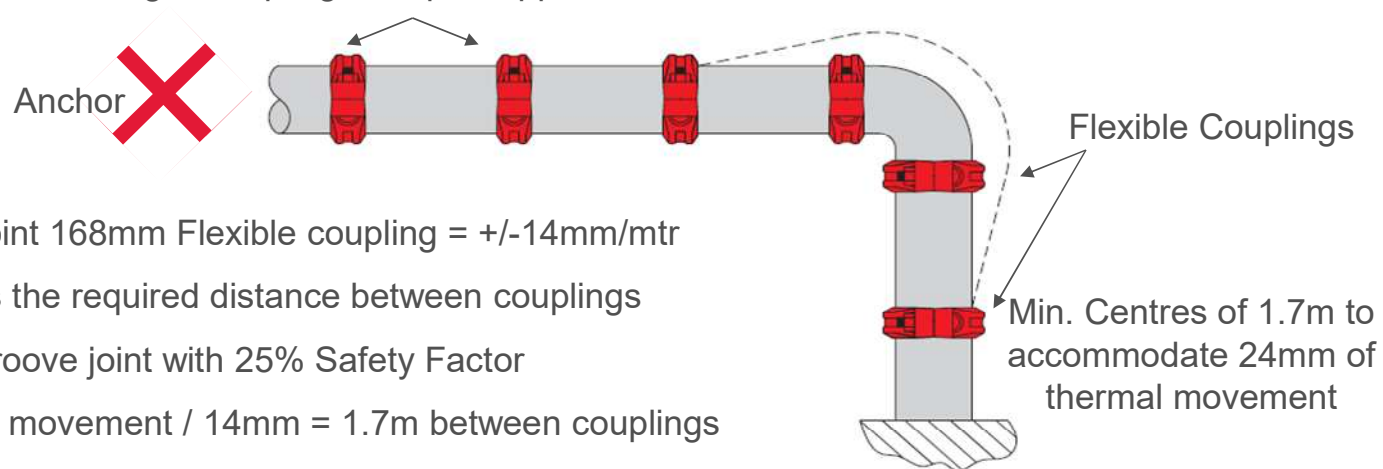
Operating temperature = 75°C

dt = 50°C or 0.6mm/mtr x 40 mtr = 24mm expansion

Grooved Jointing Concept

Utilising Angular Deflection Capabilities

Rigid Couplings – Pipe Supports at 6.1 mtr centres



Shurjoint 168mm Flexible coupling = +/-14mm/mtr

This is the required distance between couplings

Roll groove joint with 25% Safety Factor

$24\text{mm movement} / 14\text{mm} = 1.7\text{m between couplings}$

40 metres DN150 Sch. 40 Steel Tube

Installation temperature = 25°C

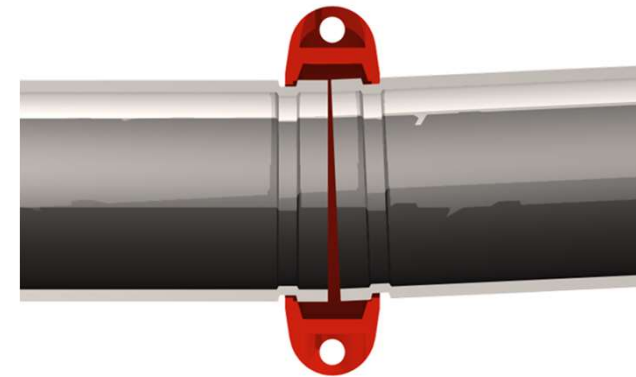
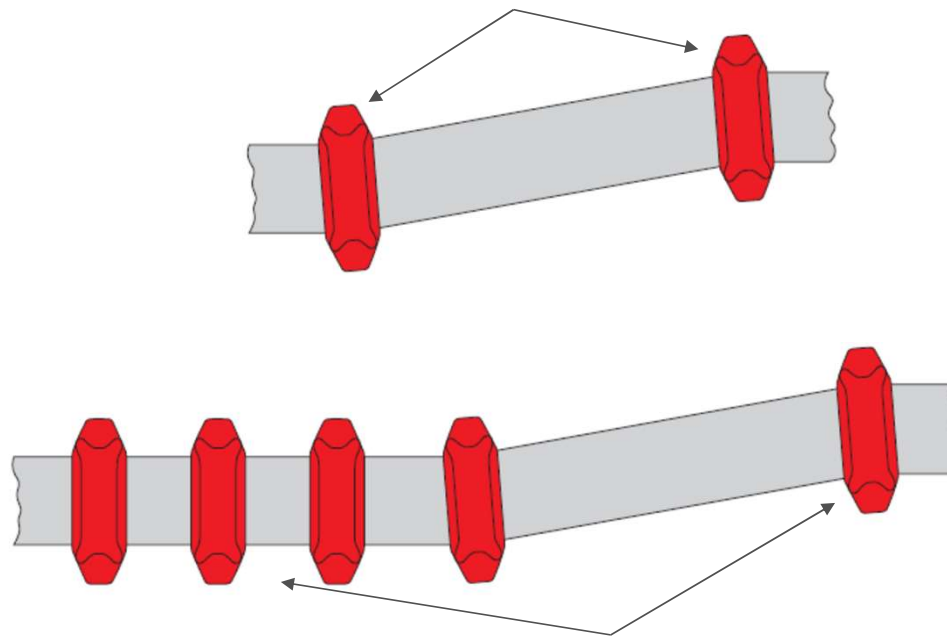
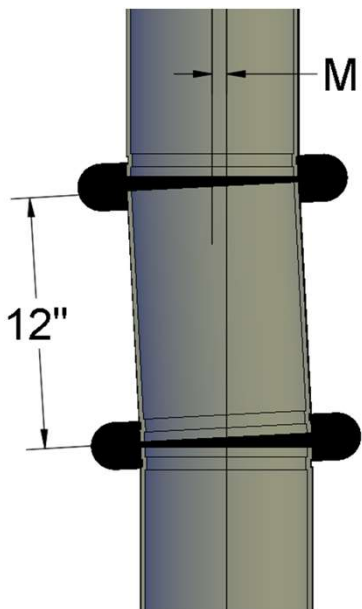
Operating temperature = 75°C

$dt = 50^\circ\text{C}$ or $0.6\text{mm/mtr} \times 40\text{ mtr} = 24\text{mm expansion}$

Grooved Jointing Concept

Utilising Angular Deflection Capabilities

Flexible Couplings to Connect Off Set Pipes



For Simultaneous Linear & Angular deflection be Sure to Utilise sufficient Couplings

Grooved Jointing Concept

Utilising Angular Deflection Capabilities

Flexible Couplings to Connect Pipes in Curved Situations

T = Total Angular Deflection of All
Coupling

N = Number of Couplings

R = Radius of Curve (feet)

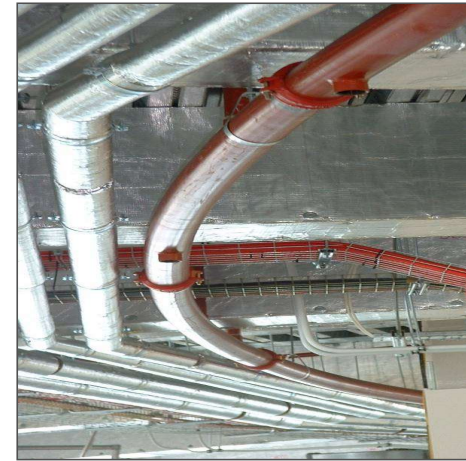
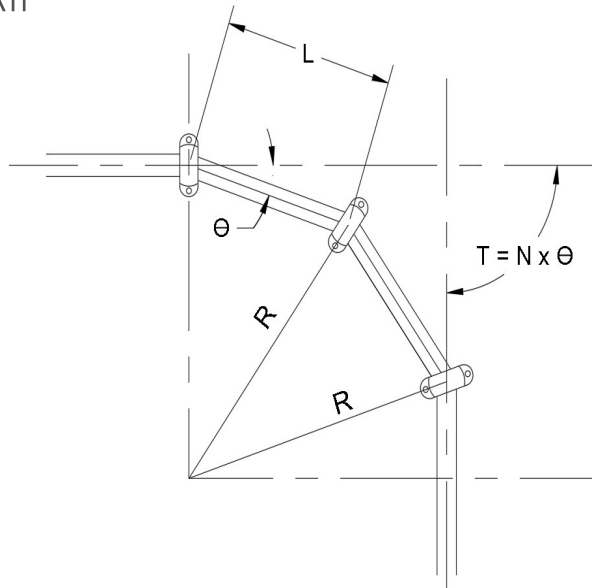
L = Pipe Length (feet)

θ = Angler Deflection Per
Coupling (degrees)

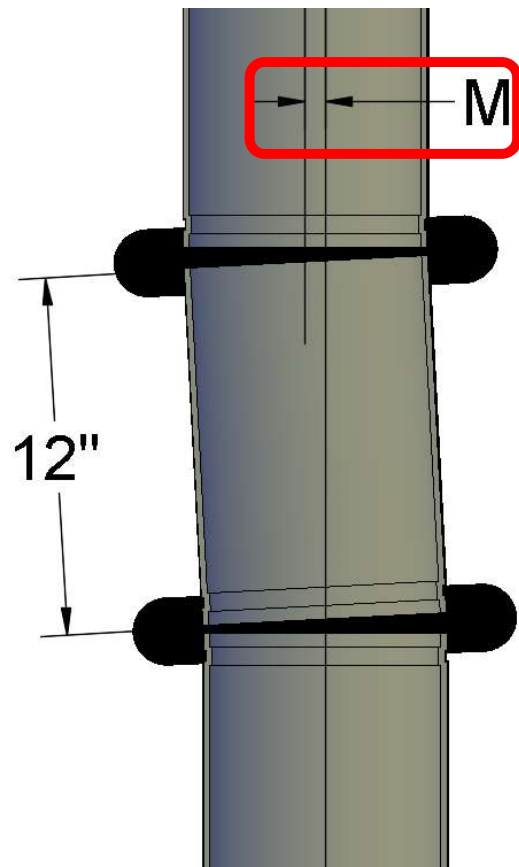
$$R = L / (2 \times \sin(\theta/2))$$

$$L = 2 \times R \times \sin(\theta/2)$$

$$N = T / \theta$$



Grooved Jointing Concept



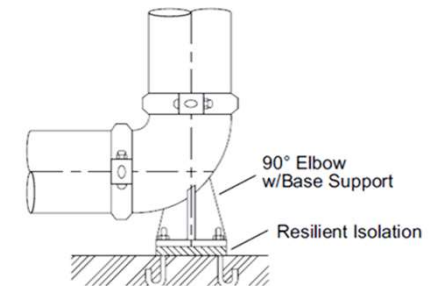
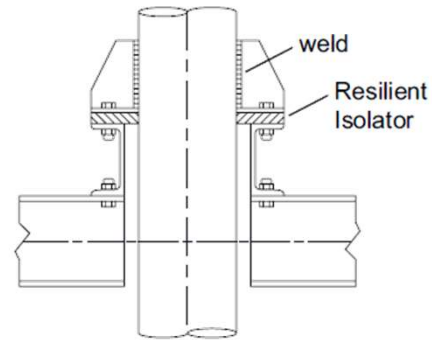
Nominal Size	Pipe O.D.	Max. Working Pressure (CWP)*	Max. End Load (CWP)	Axial Displacement †	Angular Degree Per Coupling	Movement**	Dimensions		
in	in	PSI	Lbs	in	(°)	in/ft	A	B	C
mm	mm	Bar	KN	mm		mm/m	mm	mm	mm
1	1.315	500	670	0.0625	2°-45'	0.58	2.24	394	1.81
25	33.4	35	3.12	1.6		48	57	100	46
1 1/4	1.660	500	1080	0.0625	2°-10'	0.46	2.60	406	1.81
32	42.2	35	4.94	1.6		38	66	103	46
1 1/2	1.900	500	1410	0.0625	1°-54'	0.4	2.83	425	1.81
40	48.3	35	6.41	1.6		33	72	108	46
2	2.375	500	2210	0.0625	1°-31'	0.32	3.31	508	1.85
50	60.3	35	9.99	1.6		27	84	129	47
2 1/2	2.875	500	3240	0.0625	1°-15'	0.26	3.90	559	1.85
65	73.0	35	14.64	1.6		22	99	142	47
76.1 mm	3.000	500	3530	0.0625	1°-12'	0.25	4.02	579	1.85
80	76.1	35	15.91	1.6		21	102	147	47
3	3.500	500	4800	0.0625	1°-02'	0.22	4.57	646	1.85
80	88.9	35	21.71	1.6		18	116	164	47
101.6 mm	4.000	500	6280	0.0625	0°-54'	0.19	5.07	7.24	1.85
101.6 mm	101.6	35	28.36	1.6		16	129	184	47
108.0 mm	4.250	500	7080	0.1250	1°-42'	0.36	5.43	7.56	2.05
108.0 mm	108.0	35	32.05	3.2		30	138	192	52
4	4.500	500	7940	0.1250	1°-36'	0.34	5.71	7.76	2.05
100	114.3	35	35.89	3.2		28	145	197	52
133.0 mm	5.250	450	9730	0.1250	1°-23'	0.29	6.50	9.09	2.05
133.0 mm	133.0	31	43.05	3.2		24	165	231	52
139.7 mm	5.500	450	10680	0.1250	1°-18'	0.28	6.69	9.76	2.05
139.7 mm	139.7	31	47.49	3.2		23	170	248	52
5	5.563	450	10930	0.1250	1°-18'	0.27	6.77	9.17	2.05
125	141.3	31	48.59	3.2		23	172	233	52
159.0 mm	6.250	450	13790	0.1250	1°-09'	0.24	7.48	9.96	2.05
159.0 mm	159.0	31	61.52	3.2		20	190	253	52
165.1 mm	6.500	450	14920	0.1250	1°-07'	0.24	7.72	10.28	2.09
165.1 mm	165.1	31	66.33	3.2		20	196	261	53
6	6.625	450	15500	0.1250	1°-05'	0.23	7.87	10.55	2.09
160	168.3	31	68.93	3.2		19	200	268	53
8	8.625	300	17510	0.1250	0°-50'	0.18	10.24	13.27	2.44
200	219.1	20	75.37	3.2		15	260	337	62
8 (7705H)	8.625	450	26270	0.1250	0°-50'	0.18	10.47	13.07	2.44
200	219.1	31	116.82	3.2		15	266	332	62
10	10.750	300	27210	0.1250	0°-40'	0.14	13.50	13.78	2.56
250	273.0	20	117.01	3.2		12	343	350	65
12	12.750	300	38280	0.1250	0°-34'	0.12	15.35	15.75	2.56
300	323.9	20	164.71	3.2		10	390	400	65
200 JIS	8.516	300	17079	0.1250	0°-51'	0.18	10.00	13.70	2.36
200 JIS	216.3	20	73.45	3.2		15	254	348	60
250 JIS	10.528	300	26103	0.1250	0°-41'	0.15	13.27	15.28	2.56
250 JIS	267.4	20	112.26	3.2		12	337	388	65
300 JIS	12.539	300	37027	0.1250	0°-35'	0.12	15.31	17.48	2.56
300 JIS	318.5	20	159.26	3.2		10	389	444	65

Grooved Jointing Concept

Anchor and Guiding

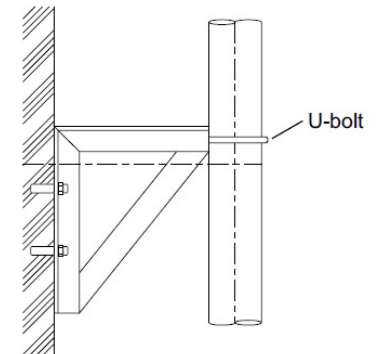
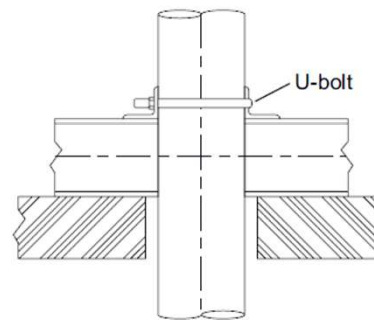
○ Anchors

- » Fixed points that help us control the thermal movement



○ Guides

- » Help us direct the movement and prevent “snaking” in a systems using flexible joint

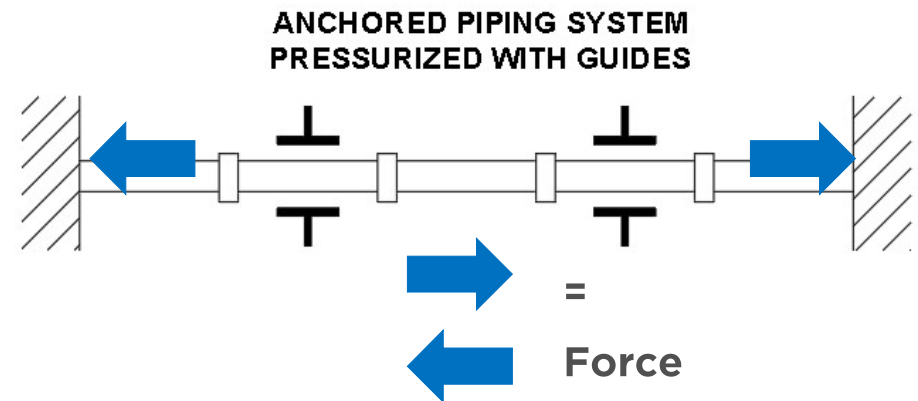
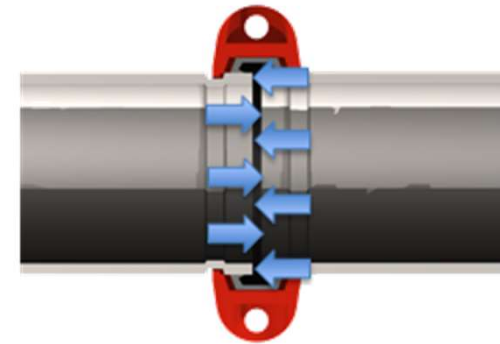


Grooved Jointing Concept

Anchors

- Pressure Thrust - Force due to pressure (F_p)
- Pressure (P) at flexible joint location
- Cross sectional Area of pipe (A_p)

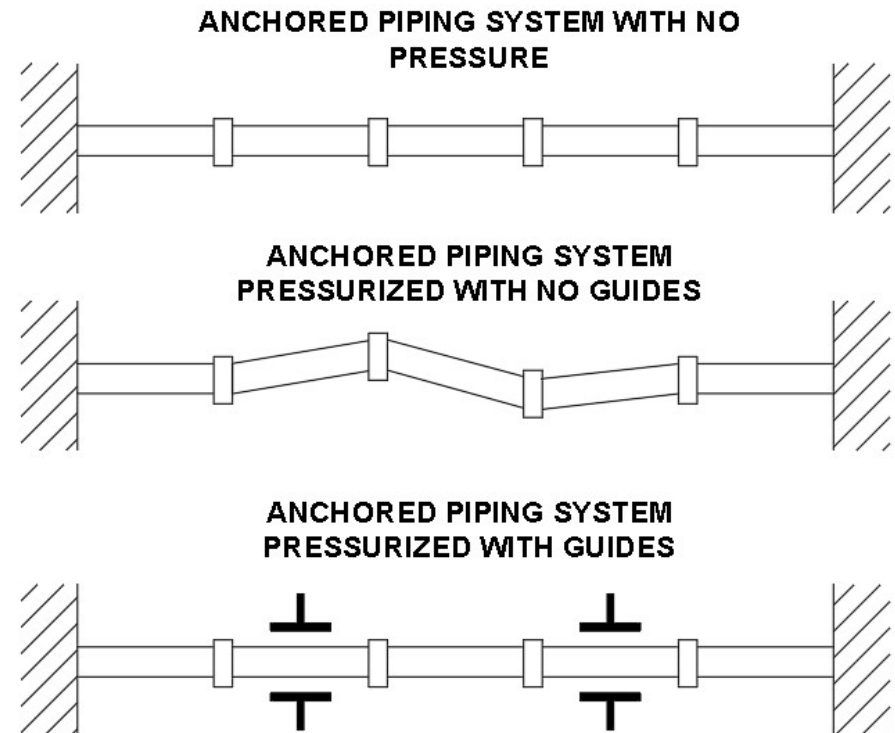
$$F_p = P \times A_p$$



Grooved Jointing Concept

Guides

- Pipe should be guided before and after flexible joint.
- Unguided pipe using flexible couplings will cause pipe snaking.
- Fully deflected flexible couplings will not allow for linear movement



Grooved Jointing Concept

Where is Shurjoint Used ?

Boosted Water
Chilled Water
LTHW
Dry Risers
Wet Risers

Riser Pipework
Run-outs
Plant-rooms
Airports
Noise & Vibration Reduction
On-site
Accommodation of Expansion
High Rise Buildings

Pre-fabrication
From 25mm thru 600mm
Stainless Steel Option
Schools & Universities
Curved Pipe Runs
Theatres & Cinemas
Accommodation of Angular Deflection
Hospitals

Condenser Cooling
Fire Sprinklers
Compressed Air
Vacuum
Fire Mains

Grooved Jointing Concept

- Building Services
- Industrial & Process
- Water Treatment

Application	Suitability
Boosted Mains Water	☑
Brine to -32°C	☑
Chilled Water Pipework	☑
Compressed air	☑
Condenser Cooling	☑
Dry Riser	☑
Ethylene Glycol to -40°C	☑
Floors/Risers	☑
Fire Main	☑
Fuel oil	☑
Gas extinguishing	☑
Hose reel	☑
HWS	☑
Hydrants	☑
Instrument air	☑
LPG	✘
LTHW	☑
Mains Cold Water	☑
Natural gas	✘
Plant Room	☑
Prefabrication Offsite	☑
Sprinkler Fire Protection	☑
Treated/ Deionised / Demineralised Water	☑
Vacuum	☑
Wet Riser	☑



Grooved Jointing Concept

Stadia, High Rise, Hospitals, Universities, Residential, Retail, Airports, Leisure and Infrastructure Projects – Design to Build

Bei-I Road Tunnel (Hsuehshan Tunnel)



Tokyo Metropolitan Government Building (Tokyo City Hall)



Map Ta Phut Industrial Estate Power Plant



Merck Chemical Factory



Dubai International Airport Terminal 3 Concourse 2 (Exclusive for Emirates Airlines)



Design Services

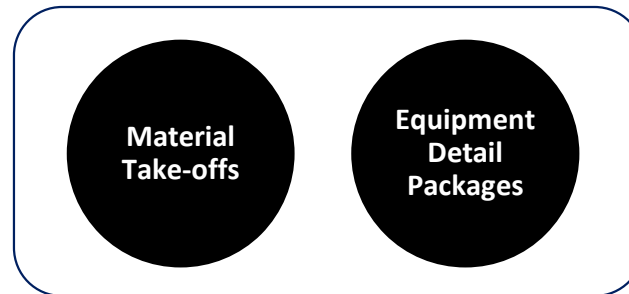
What are Shurjoint Grooved Design Services



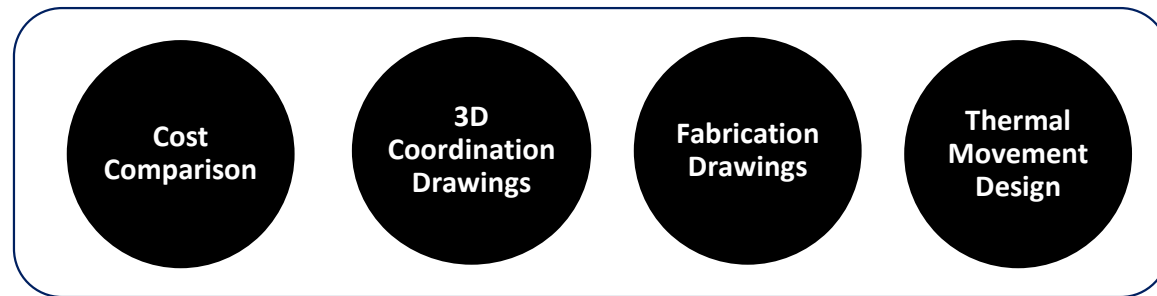
- A group that provides:
 - value added services;
 - professional solution for systems
- Intended to help the customer become more profitable when using our products

Design Services

Primary Design Services



Advanced Design Services



For Shurjoint Groove System

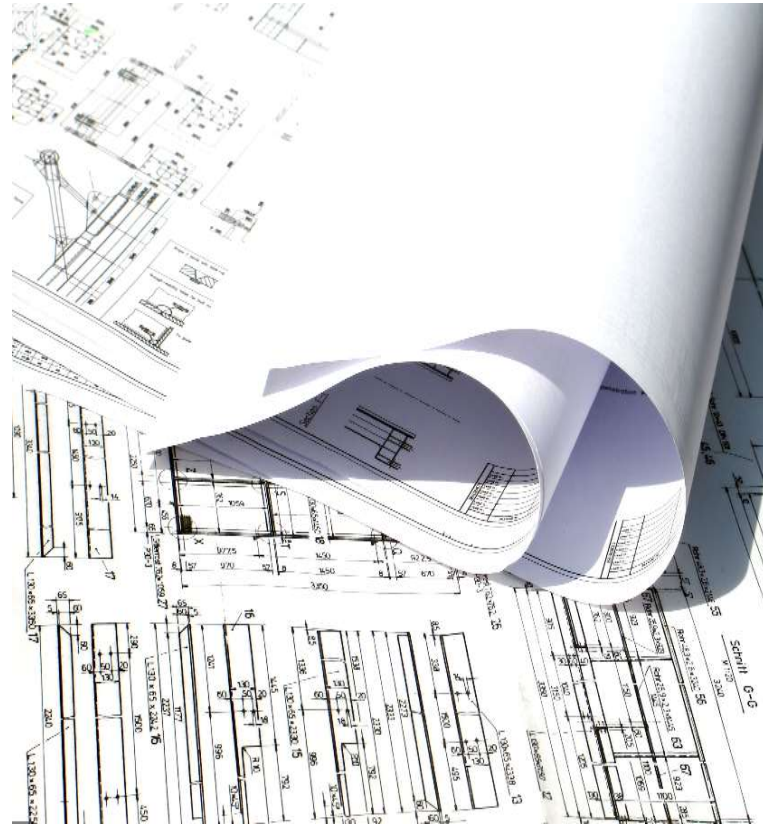
Material Take-offs

Inputs Required:

- Preliminary Piping Plans
- Flow Diagrams
- Schedules
- Details

Take-offs:

- ~90% accuracy
- Engineering Drawings
- Fittings, Valves, Pipes Piping Accessories



Technical services

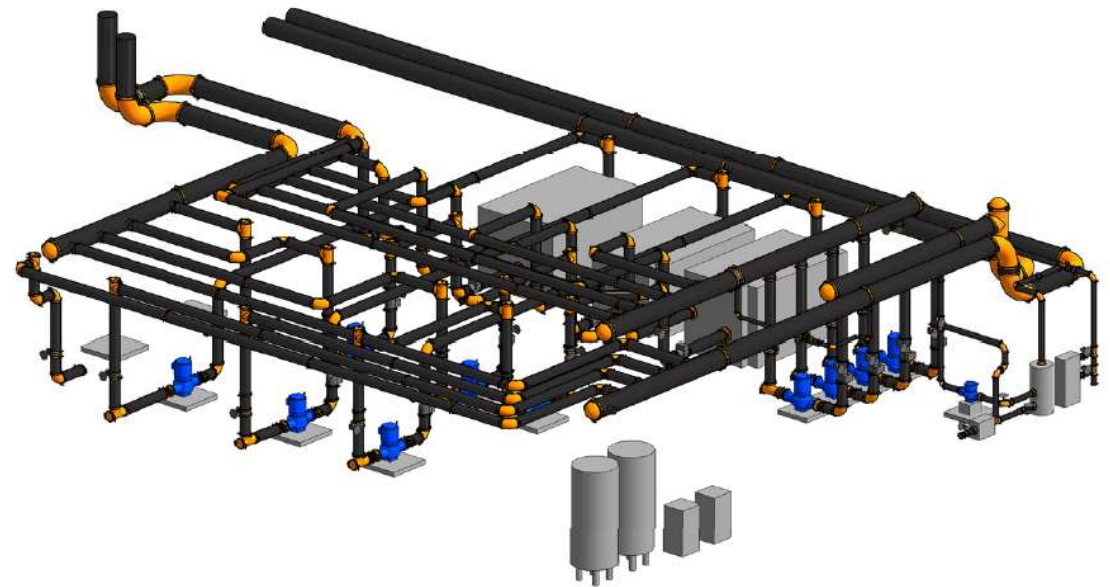
3D Coordination Drawings

3D Coordination Drawings

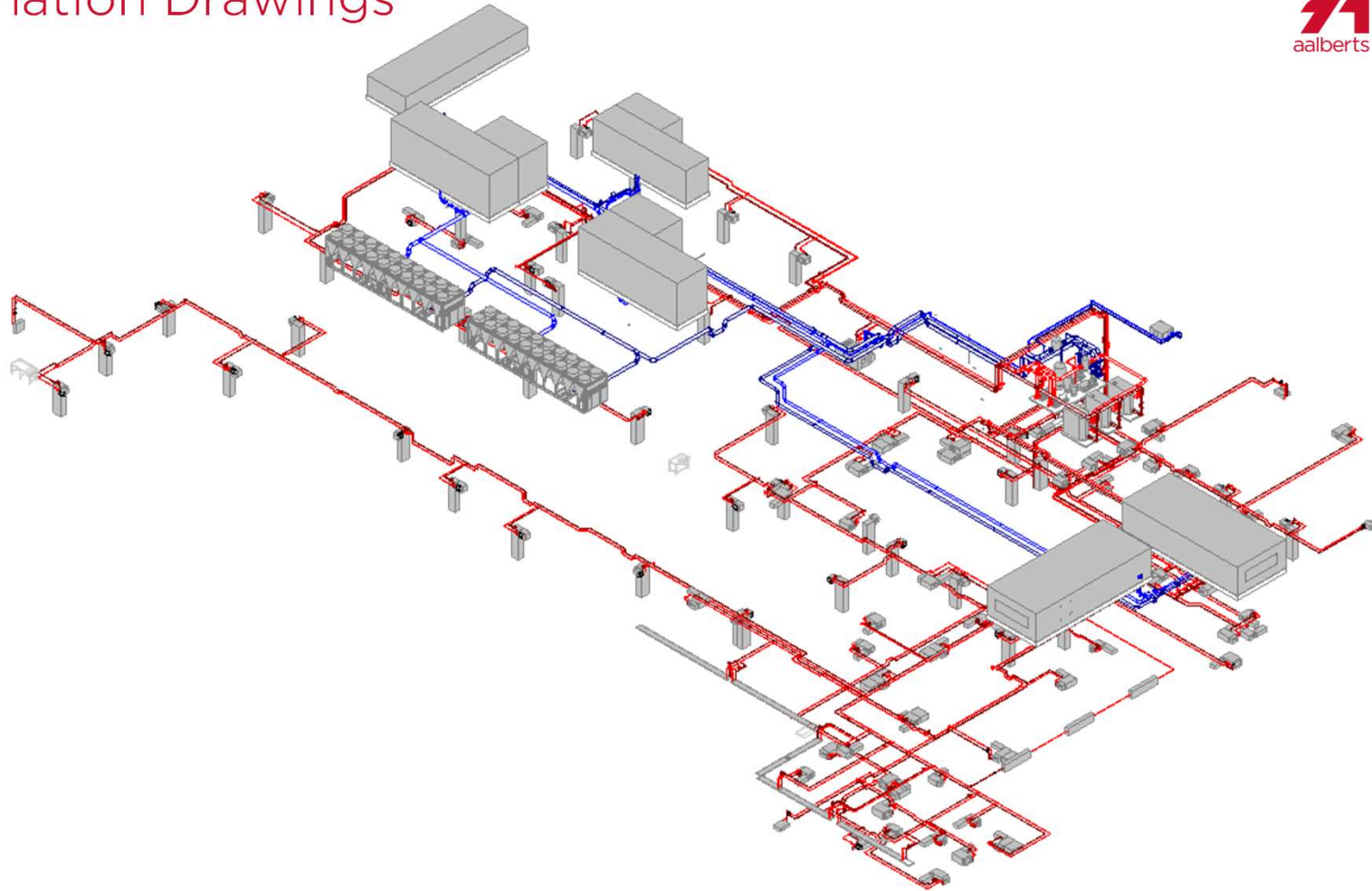
- 3D shop drawings for coordination
- Identify building interferences and trade conflicts.
- Provide accurate fitting, valve, and piping accessory material lists/schedules to get an early start on material orders.

Needs:

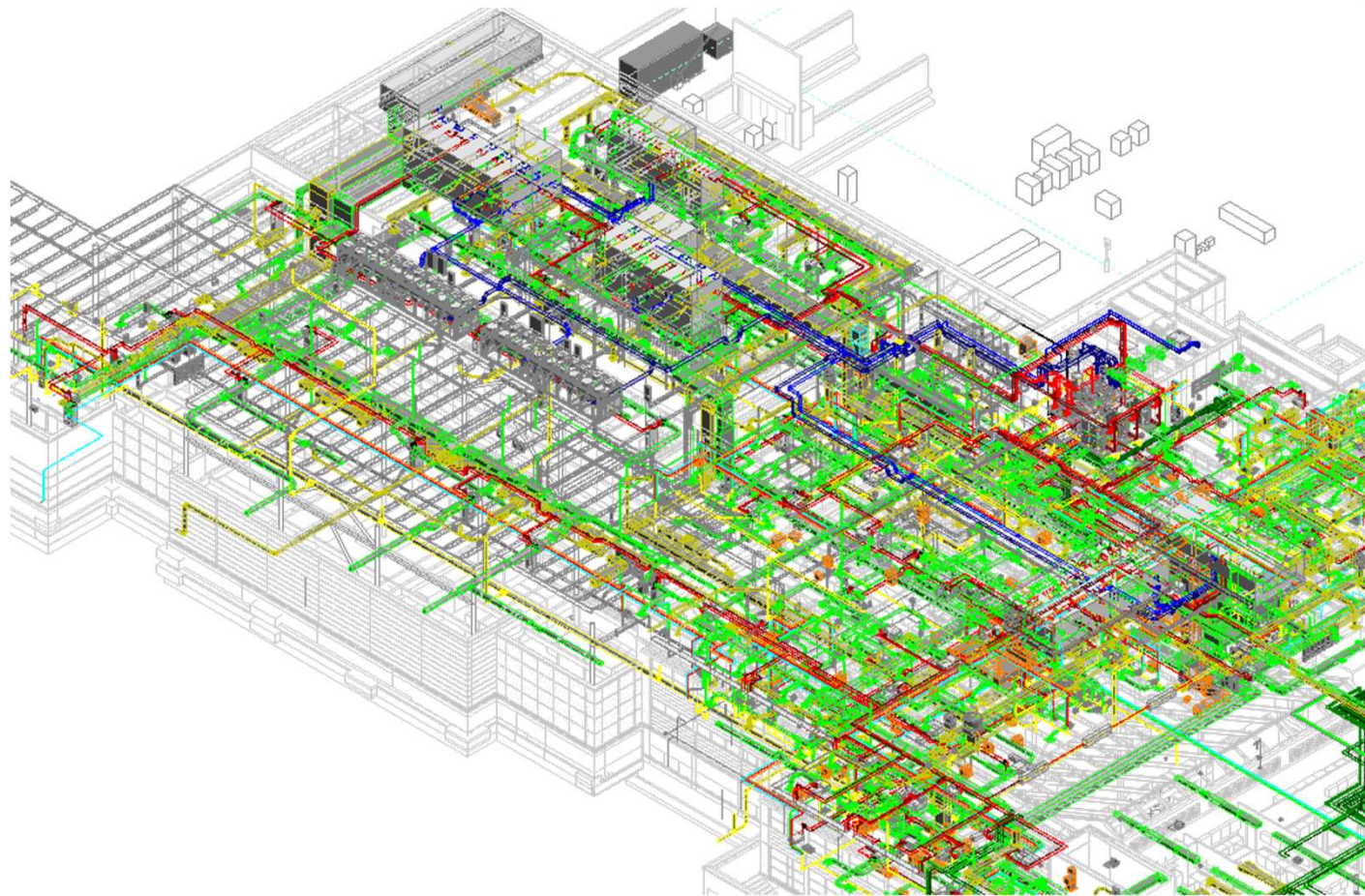
- Architectural CAD drawings
- Structural CAD drawings
- MEP Engineering drawings



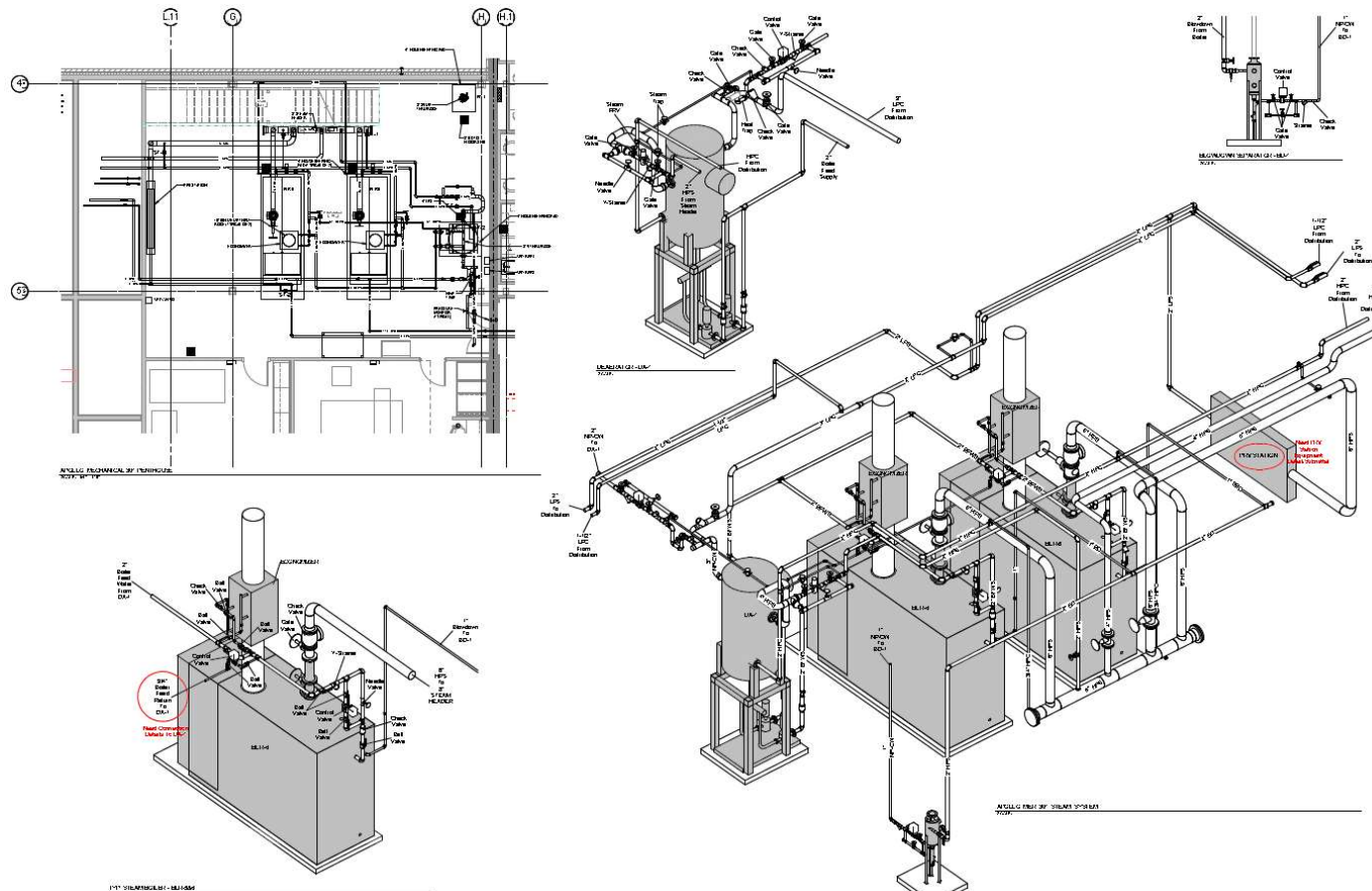
Coordination Drawings



Coordination Drawings



Coordination Drawings



6/9/2020

Aalberts Integrated Piping Systems - Grooved Mechanical presentation



Technical services

Fabrication Drawings

Fabrication drawings

- 3D layouts of MERs with fully tagged fabrication drawings.
- Fitting and valve/accessory BOMs
- Piping spool lists

Needs:

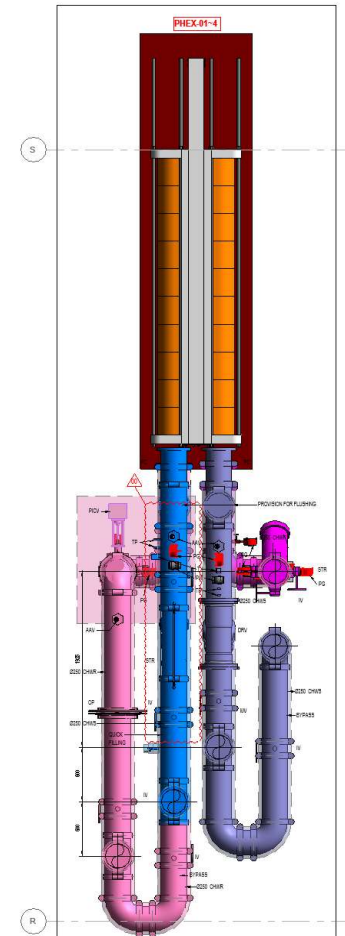
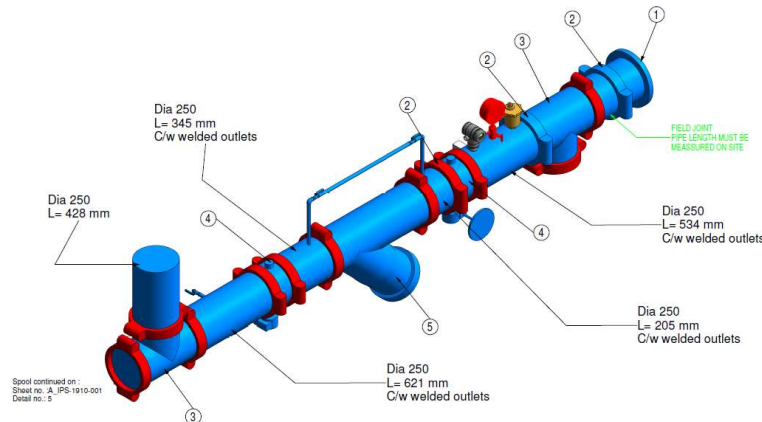
- Architectural CAD drawings
- Structural CAD drawings
- Mech Engineering drawings
- Equipment submittals
- Piping specifications

Grooved Pipe Schedule					
System Type	Description	Size	Length	Comments	Pipe outlets
CHWR-DISCHARGE	Grooved pipe	250	143	SCHWS	
CHWR-DISCHARGE	Grooved pipe	250	230	SCHWS	welded outlets
CHWR-DISCHARGE	Grooved pipe	250	232	SCHWS	
CHWR-DISCHARGE	Grooved pipe	250	243	SCHWS	
CHWR-DISCHARGE	Grooved pipe	250	353	SCHWS	
CHWR-DISCHARGE	Grooved pipe	250	365	SCHWS	welded outlets
CHWR-DISCHARGE	Grooved pipe	250	400	SCHWS	welded outlets
CHWR-DISCHARGE	Grooved pipe	250	520	SCHWS	welded outlets

Shurjoint Pipe Fitting Schedule					
Tag number	Part Description	Part Number	Part Size	Count	
1	Grooved x Flange Nipple PN16	7180	250	1	
2	Flexible Coupling	7707	250	3	
3	Standard Rigid Coupling	7771	250	15	
4	Grooved Equal Tee	7120	250	2	
5	Grooved End Cap	7160	250	1	
6	Ductile Iron Grooved End Elbow	7110	250	3	

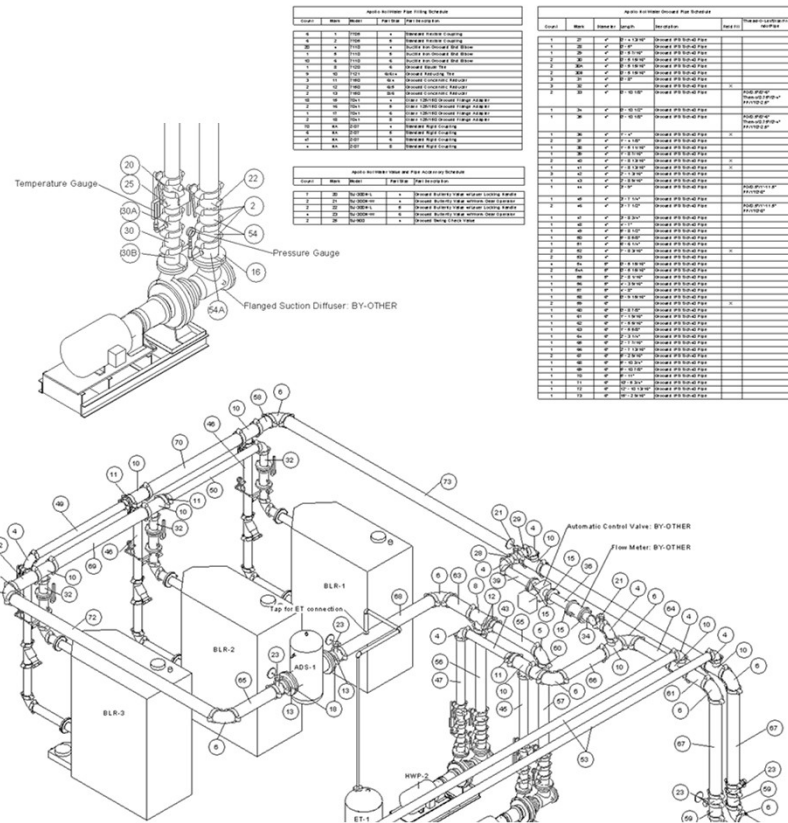
Shurjoint Grooved Pipe Accessory Schedule					
Position	Part Number	Part Description	Part Size	Count	
7	SJ-300N-W	Grooved Butterfly Valve w/Worm Gear Operator	250	2	

ALL COUPLINGS ARE RIGID COUPLINGS MODEL 7771 UNLESS MENTIONED



Fabrication Drawings

- 3D layouts of MERs with fully tagged fabrication drawings.
- Fitting and valve/accessory BOMs
- Piping spool lists
- Bag and tag material list (insure product gets to the jobsite and is easily identified for installation).



Inputs Required:

- Architectural CAD drawings
- Structural CAD drawings
- Trade CAD drawings
- Mech Engineering drawings
- Equipment submittals
- Piping specifications

Equipment Details

PROJECT: _____
 CONTRACTOR: _____
 LOCATION: _____
 SALES PERSON: _____

SHURJOINT® PUMP PACKAGE

FLANGED/WELDED CONNECTION

Notes:
 A. Butterfly valve for control and isolation. EPDM disc, 300 psi rated.
 B. Manufacturers recommend a minimum of 3 pipe diameters between pump and check or Tri-service valves.

QTY	TAG#	PART #	DESCRIPTION	MATERIAL COST			LABORTIME		
				LIST PRICE	EXT. LIST	MULTY	NET PRICE	HOURS PER UNIT	HOURS TOTAL
WELD/FLANGE FITTINGS									
4	1	HA	5" - Weld Neck Flange	\$ 74.43	\$ 333.32	8.39	\$ 123.35	4.02	16.08
4	2	HA	5" - Braided Flex Connector	\$ 1,614.88	\$ 4,451.88	6.4	\$ 2,682.40	3.23	12.92
LUGGED / FLANGED VALVES & ACCESSORIES									
2	3	HA	5" - Lugged Butterfly Valve w/Lever Handle	\$ 419.00	\$ 836.00	6.4	\$ 334.40	2.28	4.56
2	4	HA	5" - Flanged Triple Duty Valve	\$ 1,614.88	\$ 3,229.88	6.4	\$ 1,291.20	1.79	3.58
2	5	HA	5" - Flanged Wye Strainer	\$ 1,447.00	\$ 2,894.00	6.4	\$ 1,317.14	1.8	3.6

Total MCAA Man Hours =	40.72	Total Material Cost =	\$ 5,647.95
Factor =	0.50	Total Labor Cost =	\$ 1,323.40
Adjusted Man Hours =	20.36	Total Cost =	\$ 6,971.35
Labor Rate =	65.00		

PROJECT: _____
 CONTRACTOR: _____
 LOCATION: _____
 SALES PERSON: _____

SHURJOINT® PUMP PACKAGE

SHURJOINT GROOVED CONNECTION

Notes:
 A. The use of three flexible couplings provides vibration and noise attenuation that meets or exceeds the performance of braided or rubber flanged flex connectors.
 B. Butterfly valve for isolation. EPDM disc, 300 psi rated.
 C. Triple Duty Valve should be located a min. of 3 pipe diameters from pump.

QTY	TAG#	PART #	DESCRIPTION	MATERIAL COST			LABORTIME		
				LIST PRICE	EXT. LIST	MULTY	NET PRICE	HOURS PER UNIT	HOURS TOTAL
COUPLINGS									
6	1	2975SP	5" - 2975 Rigid Coupling w/Braided E Gasket	\$ 181.00	\$ 1,086.00	6.25	\$ 271.50	6.35	9.9
12	2	2785SP	5" - 2785 Flexible Coupling w/Braided E Gasket	\$ 215.00	\$ 2,580.00	6.25	\$ 1,465.00	6.21	3.52
4	3	74425P	5" - 7442 Flexible Adapter	\$ 744.50	\$ 3,058.00	6.25	\$ 744.50	2.99	4.32
TEES									
2	4	SJ3889SEL	5" - SJ-3889-L Butterfly Valve w/Lever Handle	\$ 1,372.50	\$ 2,745.00	6.25	\$ 616.25	2.23	4.46
2	5	HA	5" - Grooved Triple Duty Valve	\$ 4,315.00	\$ 8,630.00	6.25	\$ 2,051.25	3.2	6.4
2	6	7245P	5" - 724 Wye Strainer	\$ 2,151.50	\$ 4,303.00	6.25	\$ 1,878.25	3.3	6.6

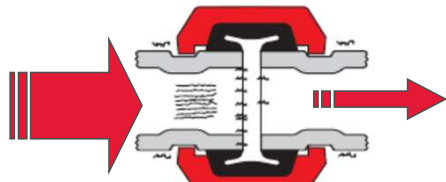
Total MCAA Man Hours =	29.20	Total Material Cost =	\$ 5,604.20
Factor =	0.50	Total Labor Cost =	\$ 949.00
Adjusted Man Hours =	14.60	Total Cost =	\$ 6,553.20
Labor Rate =	65.00		

Grooved Jointing Concept

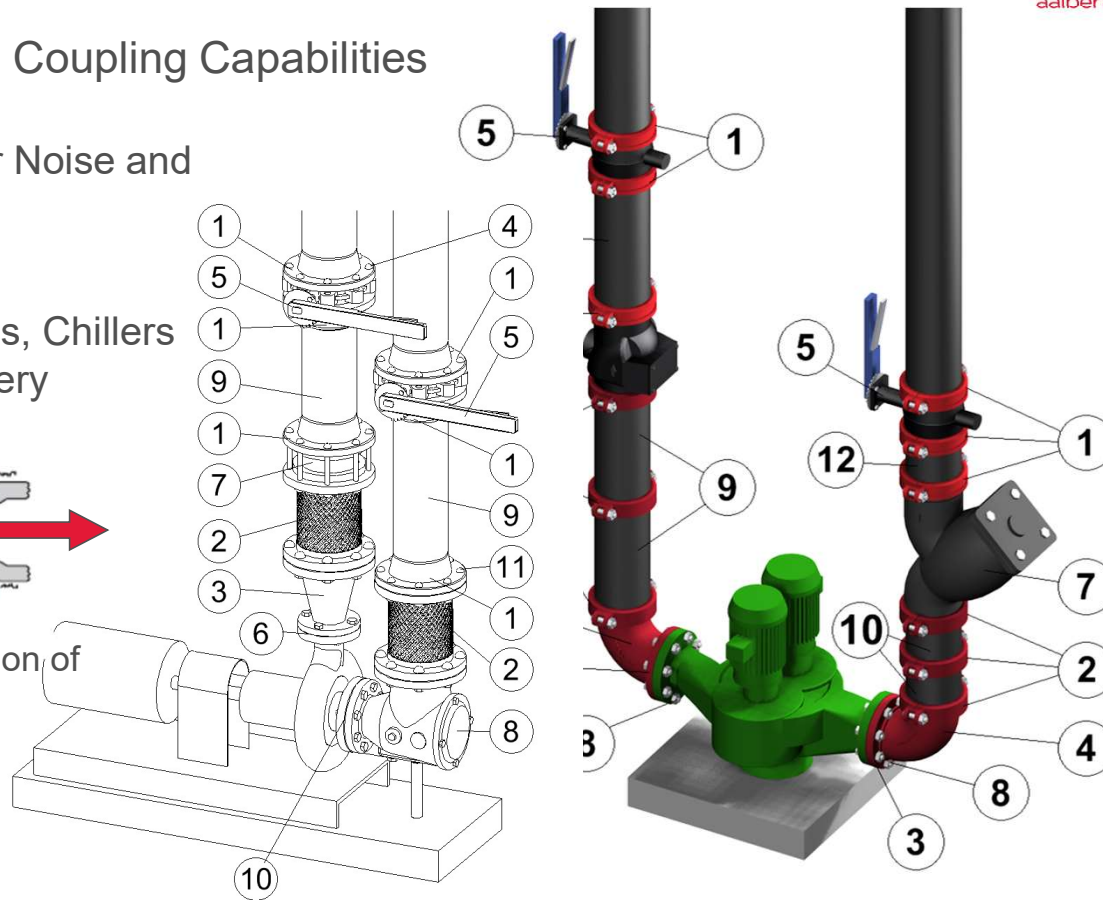
Utilising Flexible Coupling Capabilities

Flexible Couplings for Noise and Vibration Attenuation

Connections to Pumps, Chillers and Vibrating Machinery



Gap prevents transmission of vibration
Traditional Method with Flanged Braided Flexibles



.....to Innovative



.....to Innovative



6/9/2020

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Warranty



13. WARRANTY – Unless otherwise stated in a customer master agreement, quotation documents or product literature provided with the Product at the time of sale, Products manufactured by Seller are warranted solely to the original Buyer against defects in material and workmanship, when paid for and properly installed and maintained under normal use and service, for eighteen (18) months from date of shipment or one (1) year from date of installation, whichever occurs first, except SHURJOINT couplings and fittings, for which the warranty period shall be 10 years from the date of shipment, In all cases, this warranty will expire not later than ten (10) years from date of shipment by Seller. Warranty will be immediately voided by substitution of non-Seller provided parts. This warranty specifically excludes a) products or components manufactured by companies not affiliated by ownership with Seller and not bearing Seller's or its affiliates' brand name, b) for Products and components that have been subject to normal wear and tear, misuse, improper installation, corrosion, exposed to incompatible chemicals or materials, or c) that have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association and/or the standards of any other Authorities Having Jurisdiction. Materials found by Seller to be defective shall be either repaired or replaced, at Seller's sole option. Seller neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of Products or parts of Products. Seller shall not be responsible for system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives. In no event shall Seller be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to lost profits and labor charges, regardless of whether Seller was informed about the possibility of such damages, and in no event shall Seller's liability exceed an amount equal to the sales price. THE FOREGOING WARRANTY IS MADE IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in Products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory. This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.



questions and answers