

BELLOWS & EXPANSION JOINT



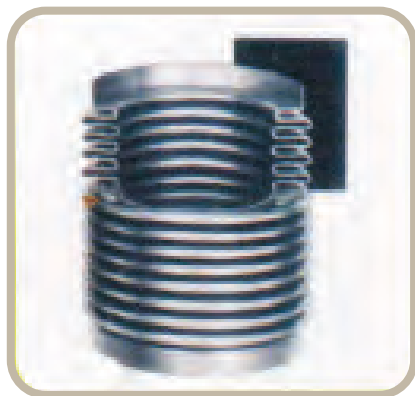


MANAGING FLEXIBILITY

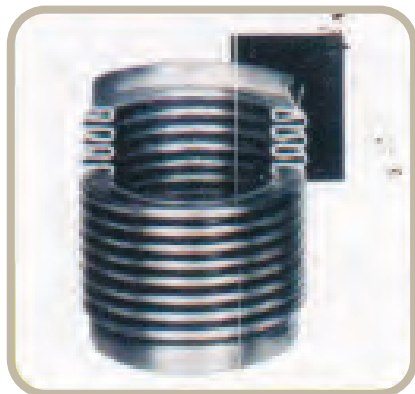
ISO-9001-2015 Certified Company

*Beyond 32 years in system's field and industrial plants,
supplying solution adapted to every technological need,
today more and more sophisticated requirement.*

BEST TECHNOLOGY APPLIED FOR BELLOWS



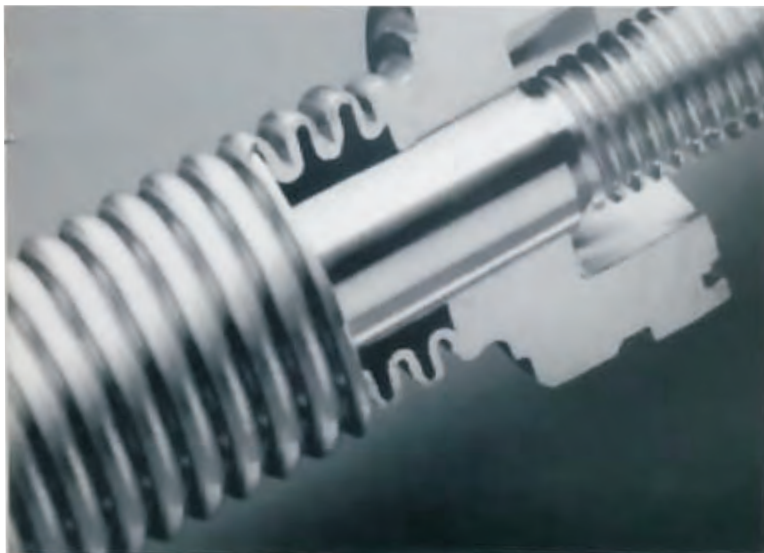
Single-Plied



Double-Plied



Triple-Plied



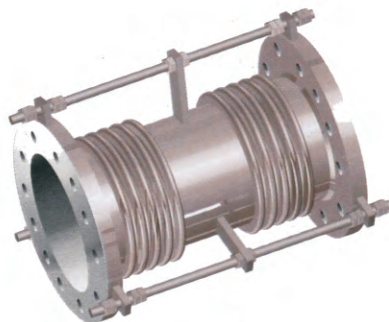
Better Products

The variety of application areas is nearly limitless. However, all product solutions have the following in common: maximum safety, even under sometimes extreme operating conditions

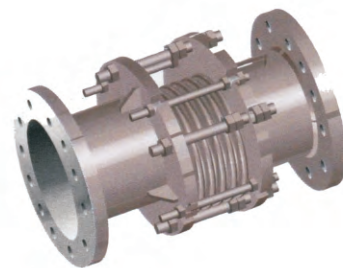
This applies to all Alfa Products- ranging from highly-flexible metal hoses or expansion joints for use in industry to precision bellows for high-pressure fuel pumps, piezo injectors or pressure sensor glow plugs in modern vehicle engines.

EXPANSION JOINTS

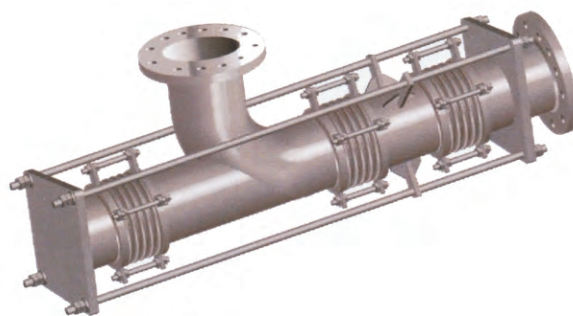
METAL BELLOWS



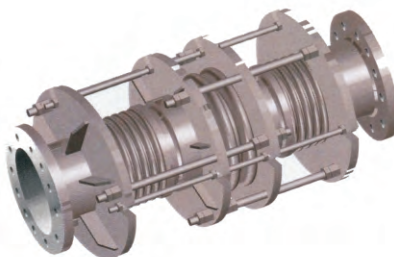
Double type



Single guide rod type



Single pipe pressure balanced type



Bent pipe pressure balance type



Single type

METAL BELLOWS

Metal bellows are thin-walled cylinder components. The surface area features a corrugated structure which is perpendicular to the cylinder axis. Because of this corrugated structure, the bellows are highly flexible during axial, lateral and/or angular deformation. At the same time, they are pressure-resistant, tight, temperature- and corrosion-resistant as well as torsion resistant. Metal bellows are the preferred construction element anytime a combination of these properties is required; for example

- as pressure and temperature resistant sealants for valve shafts,
- as circuit breaker in high voltage facilities,
- as flexible seals in pumps and pressure accumulators
- as flexible as well as pressure - and temperature resistant sealing element in modern gasoline injectors
- as mechanical couplings,
- as tight spring elements in sliding ring seals or
- as tight and mechanically stress-free duct through container walls.

BEST IN QUALITY

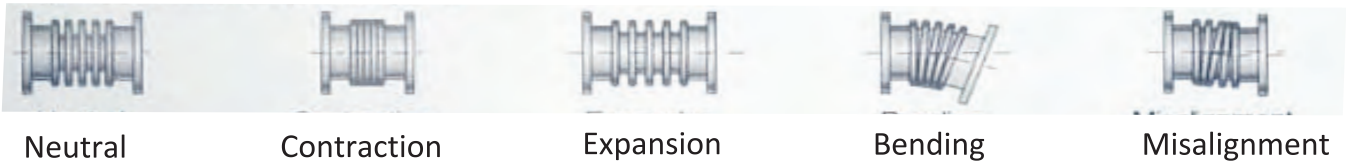


When configured correctly, alfa metal bellows are robust and maintenance-free components with a high degree of operational safety and long service life.

Metal Bellows Are Manufactured From Thin-walled Tubes By Hydraulic Shaping. Depending On The Requirement Profile, They Can Be Designed Either With One Or Multiple Walls. Single-walled Bellows Feature Low Spring Rates And Are Used Particularly In Vacuum Technology.

TERMS AND SYMBOLS

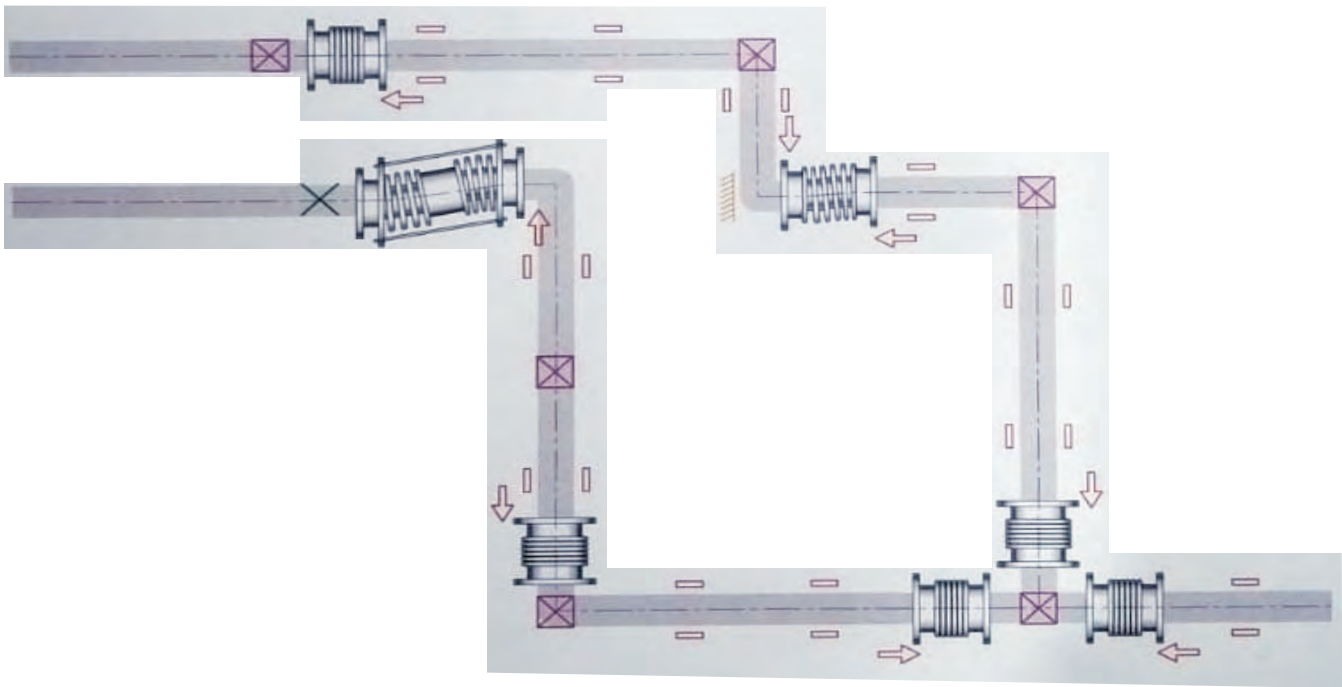
Basic Motions Of Bellows Expansion Joints



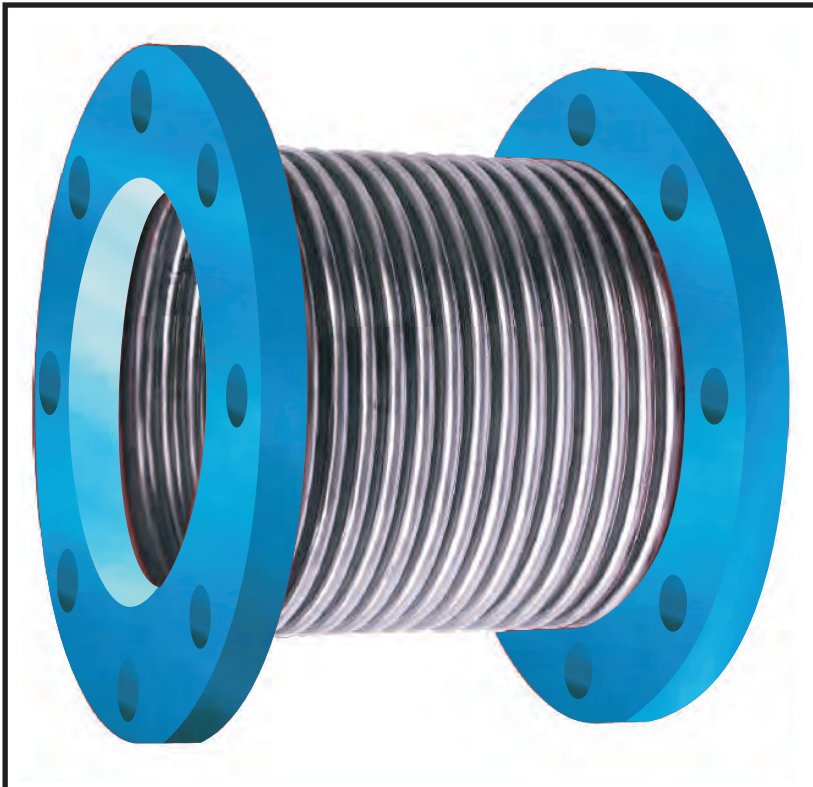
Example of application of bellows expansion joints

Terms and symbols

Term	Description	Symbol
Main anchor	Must be resistant to the expansion joint thrust force and The spring reaction force.	
Silde anchor	Must be resistant to the expansion joint thrust force and the spring Reaction force but does not restrain the force in the sliding direction.	
Intermediate anchor	Must be resistant to the spring reaction force of expansion force of expansion joint.	
Guide	Pipe guide device for transmitting smoothly the necessary force for centering Of expansion joint and pipe and movement in axial direction to the anchor	
Direction of expansion of Pipe		



TERMS AND SYMBOLS



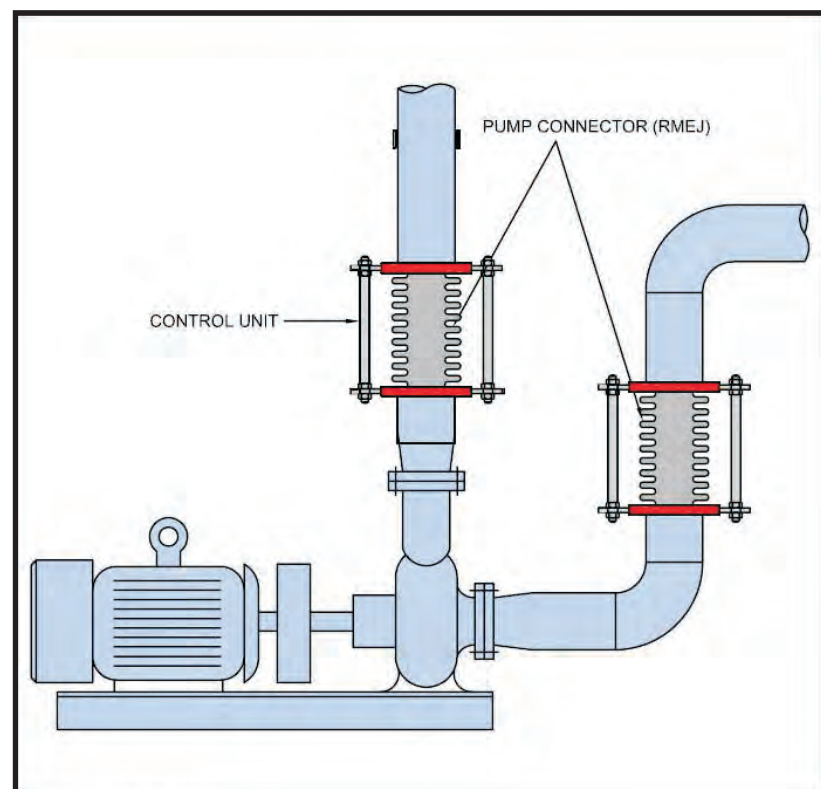
DESIGN

Metal expansion joints are elastic pipe elements designed to provide compensation for expansion movements and vibrations in the pipe lines.

APPLICATIONS

These joints are mainly used in pipe lines for the conveyance of a liquid, gas or granular medium under lowest and highest temperatures involving a wide range of applications such as :

EXHAUST PIPES OF ENGINES
AND TURBINES
SHIP INDUSTRY
CHEMICAL AND PETRO
CHEMICAL PLANTS
POWER PLANTS
CONSTRUCTION MACHINE
INDUSTRY
AIR CRAFT AND NUCLEAR
INDUSTRY
DISTRICT HEATING SYSTEM



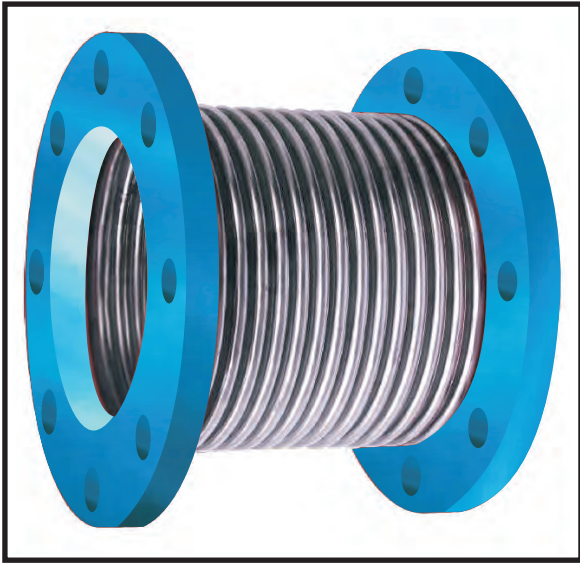
ADVANTAGES

COMPENSATES FOR AXIAL
MOVEMENTS DUE TO THERMAL
CHANGES
COMPENSATES FOR
TORSIONAL AND ANGULAR
MOVEMENTS
ISOLATES VIBRATIONS,
DAMPENS NOISE AND
PRESSURE SURGES.

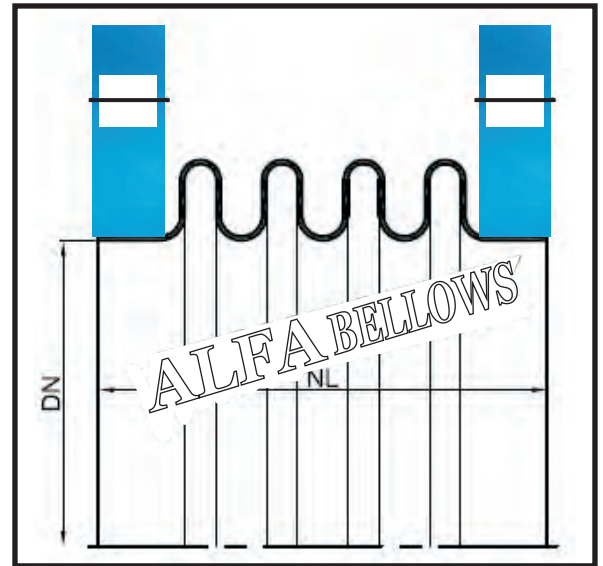
**EVERY JOINT IS TESTED
FOR PRESSURE & VACUUM**

for durability, long life &
trouble free service

TERMS AND SYMBOLS



SINGLE PLY FLANGE TYPE

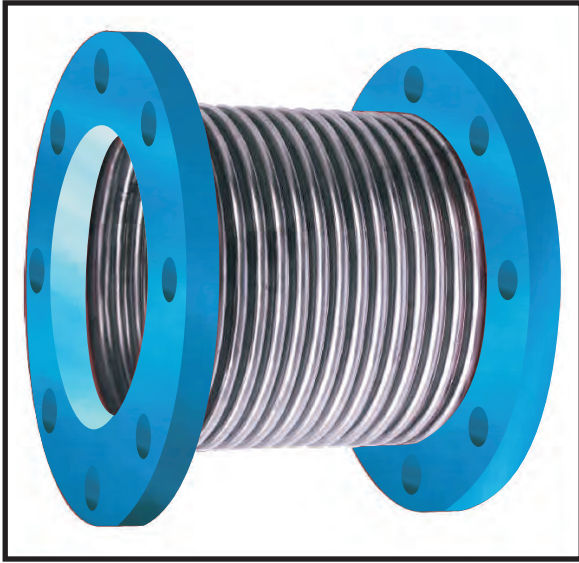


FOR EXHAUST APPLICATION

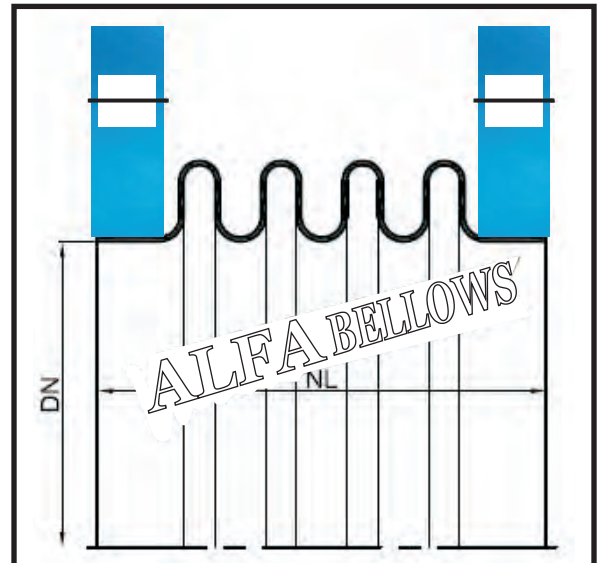
PART NO.	NOMINAL BORE (MM)	STANDARD LENGTH (MM)	AXIAL EXPANSION	AXIAL COMPRESSION	LATERAL MOVEMENT	DESIGN TEMP.	CS FLANGES THICKNESS	TEST PRESSURE PN-5
AHB-AB-80	80	200/250/300	15/20/25 mm	25/30/40 mm	± 10 MM	450°C	10 to 12mm	5kg/cm ²
AHB-AB-100	100	200/250/300	15/20/25 mm	25/30/40 mm	± 10 MM	450°C	10 to 12mm	5kg/cm ²
AHB-AB-125	125	200/250/300	15/20/25 mm	25/30/40 mm	± 10 MM	450°C	10 to 12mm	5kg/cm ²
AHB-AB-150	150	200/250/300	15/20/25 mm	25/30/40 mm	± 10 MM	450°C	10 to 12mm	5kg/cm ²
AHB-AB-200	200	200/250/300	15/20/25 mm	25/30/40 mm	± 10 MM	450°C	10 to 12mm	5kg/cm ²
AHB-AB-250	250	200/250/300	15/20/25 mm	25/30/40 mm	± 10 MM	450°C	10 to 12mm	5kg/cm ²
AHB-AB-300	300	200/250/300	15/20/25 mm	25/30/40 mm	± 10 MM	450°C	10 to 12mm	5kg/cm ²
AHB-AB-350	350	200/250/300	15/20/25 mm	25/30/40 mm	± 10 MM	450°C	10 to 12mm	5kg/cm ²
AHB-AB-400	400	200/250/300	15/20/25 mm	25/30/40 mm	± 10 MM	450°C	10 to 12mm	5kg/cm ²
AHB-AB-450	450	200/250/300	15/20/25 mm	25/30/40 mm	± 10 MM	450°C	10 to 12mm	5kg/cm ²
AHB-AB-500	500	200/250/300	15/20/25 mm	25/30/40 mm	± 10 MM	450°C	10 to 12mm	5kg/cm ²
AHB-AB-550	550	200/250/300	15/20/25 mm	25/30/40 mm	± 10 MM	450°C	10 to 12mm	5kg/cm ²
AHB-AB-600	600	200/250/300	15/20/25 mm	25/30/40 mm	± 10 MM	450°C	10 to 12mm	5kg/cm ²

- Bellow Material- SS/321, 316,316L and Enconel Steel is also Available as Per Cutomer Demand
- Bellow Design Temp./ -200°C+1200°C
- Flanges- SS-304, SS316 Flanges as Per Cutomer Demand
- Tie Rod and SS Linner - Optional
- Bellow Diameter More than 600mm to1200mm available as Per Cutomer Demand
- Bellow Design As Per Ejma Standard
- Bellow Length Depended To Axial/Lateral
- Alfa Technical Sheet Enclosed For Customer Reference

TERMS AND SYMBOLS



2PLY/3PLY



**FOR STEAM, WATER, CHEMICAL, OIL, GAS
TURBO ENGINE, TURBINE APPLICATION**

PART NO.	NOMINAL BORE (MM)	STANDARD LENGTH (MM)	AXIAL EXPANSION	AXIAL COMPRESION	LATERAL MOVEMENT	DESIGN TEMP.	CS FLANGES THIKNESS	TEST PRESSURE PN-5
AHB-AB-80	80	200	15 mm	25 mm	± 8	450°C	CS FLANGE RECOMMENDED 14 to 20 OR AS PER TABLE 'D', ANSI-150 LBS, DIN, AS PER CUSTOMER DETAIL	PN-12/PN-18
AHB-AB-100	100	200	15 mm	25 mm	± 8	450°C		PN-12/PN-18
AHB-AB-125	125	200	15 mm	25 mm	± 8	450°C		PN-12/PN-18
AHB-AB-150	150	200	15 mm	25 mm	± 8	450°C		PN-12/PN-18
AHB-AB-200	200	200	15 mm	25 mm	± 8	450°C		PN-12/PN-18
AHB-AB-250	250	200/250/300	15 mm	25 mm	± 8	450°C		PN-12/PN-18
AHB-AB-300	300	200/250/300	15 mm	25 mm	± 8	450°C		PN-12/PN-18
AHB-AB-350	350	200/250/300	15 mm	25 mm	± 8	450°C		PN-12/PN-18
AHB-AB-400	400	200/250/300	15 mm	25 mm	± 8	450°C		PN-12/PN-18
AHB-AB-450	450	200/250/300	15 mm	25 mm	± 8	450°C		PN-12/PN-18
AHB-AB-500	500	200/250/300	15 mm	25 mm	± 8	450°C		PN-12/PN-18
AHB-AB-550	550	200/250/300	15 mm	25 mm	± 8	450°C		PN-12/PN-18
AHB-AB-600	600	200/250/300	15 mm	25 mm	± 8	450°C		PN-12/PN-18

- Bellow Material- SS/321, 316,316L and Enconel Steel is also Available as Per Cutomer Demand
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TERMS AND SYMBOLS

ROUND EXPANSION JOINT DATA SHEET				
Customer:		Date:		Page
Project:		Prepared By:		
Applicable Codes and Standards: B31.1, B31.3, Sect 8 Div 1				
Item or Tag Number:				
Quantity:				
Size:				
Orientation:				
Style or Type (single, universal, hinged, gimbal, etc.):				
END CONNECTIONS	Thickness/Flange Rating			
	Material			
PRESSURE (PSI/INCHES WATER)	Design			
	Operating			
	Test			
TEMPERATURE	Design			
	Operating			
	Installation			
MEDIA	Media			
	Flow Velocity			
	Flow Direction			
MOVEMENTS AND CYCLE LIFE	INSTALLATION	Axial Extension		
		Axial Compression		
		Lateral		
		Angular		
		Number of Cycles		
	DESIGN	Axial Extension		
		Axial Compression		
		Lateral		
		Angular		
		Number of Cycles		
	OPERATING	Axial Extension		
		Axial Compression		
		Lateral		
		Angular		
		Number of Cycles		
MATERIALS	Bellows			
	Liner			
	Cover			
DIMENSIONS	Overall Length			
	Maximum O.d.			
	Minimum I.d.			
SPRING RATES	Maximum Axial Spring Rate			
	Maximum Lateral Spring Rate			
	Maximum Angular Spring Rate			





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