HOLZ
Rubber Company, Inc.

Severe Duty Fabric Expansion Joints

Engineered for the Power Generation, Chemical and Processing Industries

Experience the Holz Difference

Application-Matched Products

Holz Rubber is a leading supplier of fabric expansion joints serving the coal-fired power generation, gas turbine, marine, cement, incineration, nuclear, pulp & paper, refining, petrochemical, and general industrial markets.

Our commitment to research and development of high performance elastomers has led to a complete product offering to provide engineered solutions to the most severe air/gas handling applications–from ambient temperature to over 2000˚.

Our specially designed composite belts and construction techniques are directed at solving air, gas and media problems in today's complex ducting systems. If you are experiencing problems with condensation, media accumulation or large movements let Holz Rubber's experienced team solve your problem.

Types of Movement

Axial Compression - The dimensional shortening of the expansion joint face-to-face gap parallel to its longitudinal axis.

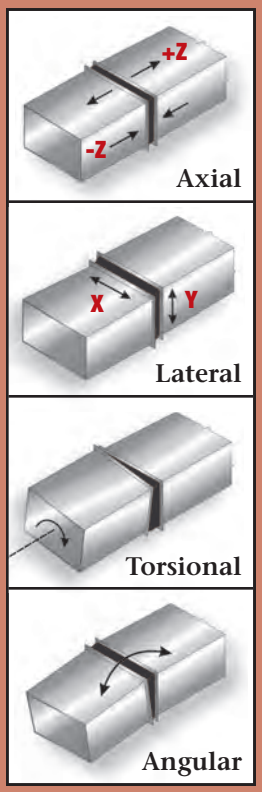
Axial Extension - The dimensional lengthening of the expansion joint face-to-face gap parallel to its longitudinal axis.

Lateral - The dimensional displacement of the inlet and the outlet flanges of the expansion joint perpendicular to its longitudinal axis.

Torsional Rotation - The twisting of one end of the expansion joint with respect to the other end about its longitudinal axis.

Angular Rotation - That movement which occurs when one flange of the expansion joint is moved to an out-of-parallel position with the opposite flange.

Vibration - The rapid, small movements, back and forth that can occur in any combination of planes.



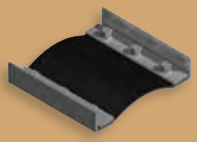
Typical Movement Capabilities

TYPE	ACTIVE LENGTH	AXIAL COMPRESSION (-Z)	AXIAL EXTENSION (+Z)	LATERAL (X & Y)
FLAT BELT STYLE ELASTOMERIC OR FLUOROPLASTIC				
300-LT 400-LT	6" (152mm) 9" (229mm) 12" (305mm) 16" (406mm)	2" (51mm) 3" (76mm) 4" (102mm) 5" (127mm)	1/2" (13mm) 1/2" (13mm) 1" (25mm) 1" (25mm)	1" (25mm) 1-1/2" (38mm) 2" (51mm) 2-1/2" (64mm)
FLANGED ELASTOMERIC EXPANSION JOINTS				
300-LT 400-LT	6" (152mm) 9" (229mm) 12" (305mm) 16" (406mm)	1" (25mm) 2-1/4" (57mm) 3-1/2" (89mm) 5" (127mm)	1/2" (13mm) 1/2" (13mm) 1" (25mm) 1" (25mm)	1" (25mm) 1-1/2" (38mm) 2" (51mm) 2-1/2" (64mm)
HIGH TEMPERATURE COMPOSITE EXPANSION JOINTS				
600-HT 800-HT 1000-HT 1200-HT	6" (152mm) 9" (229mm) 12" (305mm) 16" (406mm)	1" (25mm) 2" (51mm) 3" (76mm) 4" (102mm)	1/2" (13mm) 1/2" (13mm) 1" (25mm) 1" (25mm)	1/2" (13mm) 1" (25mm) 1-1/2" (38mm) 2" (51mm)

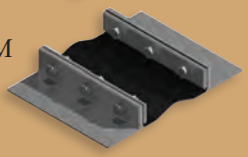
Table represents examples of typical movement capabilities of expansion joints and should not be used for design purposes as a sole reference. Contact Holz for your specific application.

Typical Applications

300-LT



- Wet or dry service up to 300 F and 5psig.



- Neoprene, EPDM or Chlorobutyl rubber.
- Single or multiple layers of woven fabric or knitted wire
- Applications include baghouses, FD fans, wet or dry scrubbers and precipitators.
- Belt or flanged configurations.

400-LT

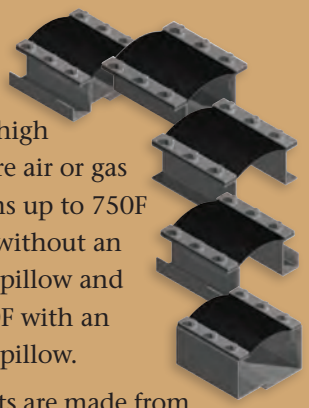
- Can be used in wet or dry service up to 400F and 5psig.
- Constructed using Viton® rubber and is reinforced with single or multiple layers of woven fabric or knitted wire.
- Additional FEP or PTFE gas barrier can also be added for increased chemical resistance especially in applications where ammonia slip is expected.
- Applications include air heater gas outlets, baghouses, precipitators, induced draft fans, wet or dry scrubbers and stack breeching ducts.
- Can withstand excursion temperatures up to 750F in the case of air heater failure for short durations.
- Offered in either belt or flanged configurations.

500-T

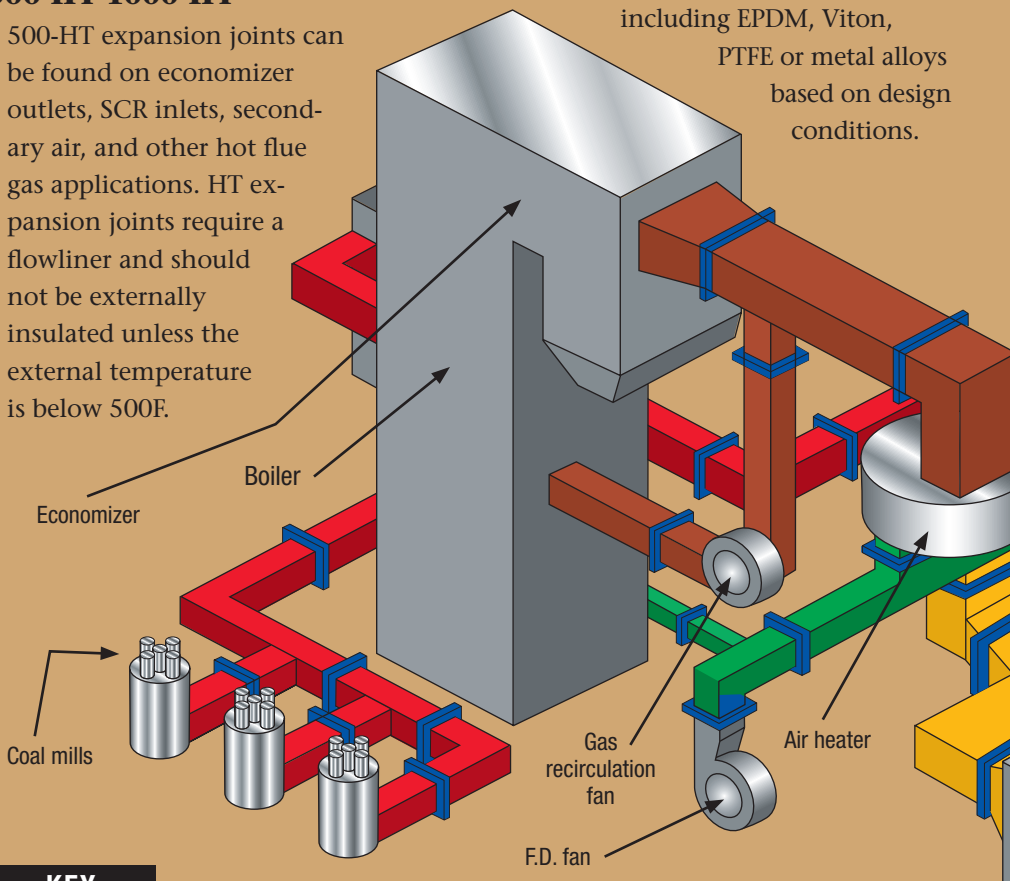
- Designed for use in wet or dry service up to 575F and 5psig.
- Constructed from fiberglass reinforced PTFE with a zero porosity gas barrier of varying thickness ranging from 5mils to 30mils mechanically bonded to the substrate.
- Applications include paper processing liquors to pollution control equipment such as wet scrubbers.

500-HT-1000-HT

- 500-HT expansion joints can be found on economizer outlets, SCR inlets, secondary air, and other hot flue gas applications. HT expansion joints require a flowliner and should not be externally insulated unless the external temperature is below 500F.



- For use in high temperature air or gas applications up to 750F and 2psig without an insulation pillow and up to 1000F with an insulation pillow.
- HT products are made from multiple layers based on design temperature requirements and utilizes components including a gas seal, insulation, woven fabric, and possibly knitted wire.
- The gas barrier can be constructed using several different materials including EPDM, Viton, PTFE or metal alloys based on design conditions.



KEY

- 600-800˚F (316-427˚C) Particulate laden flue gas (flow liner and cavity pillow recommended)
- 600-700˚F (316-371˚C) Clean air
- 300-350˚F (149-177˚C) Particulate laden flue gas (flow liner and cavity pillow recommended)
- 280-330˚F (138-166˚C) Flue gas with minimal particulate
- 280-330˚F (138-166˚C) Flue gas with acidic condition (corrosion resistant frame and belt recommended)
- 120-180˚F (49-82˚C) Flue gas at the acid dew point (corrosion resistant frame and belt recommended)
- Ambient clean air

MADE WITH DuPont Performance Elastomers Viton® fluoroelastomer GENUINE VITON®

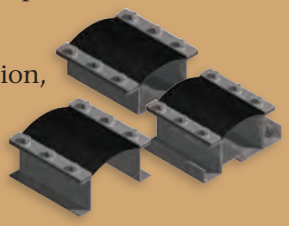
Temperature Design Standards

HOLZ PRODUCT	APPLICATION (Reference Diagram Below)	RECOMMENDED CONSTRUCTION			FLUE GAS TEMPERATURE		EXCURSION TEMPERATURE DURATION LIMITS		SERVICE
		TYPE	CONSTRUCTION	MATERIAL	OPERATING °F	EXCURSION °F	SINGLE OCCURRENCE (Hours)	MAXIMUM CUMULATIVE (Hours)	
300-LT		ELASTOMERIC	BELT OR FLANGED	EPDM/Chlorobutyl	Ambient - 300˚	350	4	150	WET/DRY
					Ambient - 300˚		2	200	WET/DRY
				Viton/Aramid	Ambient - 300˚		2	240	WET/DRY
				OR	Ambient - 300˚		2	240	WET/DRY
400-LT			BELT OR FLANGED	Viton/GLASS	Ambient - 300˚	600	2	48	WET/DRY
				OR	Ambient - 300˚	650	1	16	WET/DRY
				Viton/WIRE	Ambient - 300˚	700	1	4	WET/DRY
					Ambient - 300˚	750	0.50	2	WET/DRY
500-T		FLUOROPLASTIC	BELT OR FLANGED	PTFE/FG	Ambient - 300˚	650	1	100	WET/DRY
500-HT		COMPOSITE	BELT	COVER: PTFE, EPDM	400˚ - 500˚	CONSULT HOLZ ENGINEERING			DRY/CYCLE DEW POINT
600-HT		COMPOSITE	BELT	COVER: PTFE, EPDM	500˚ - 600˚	CONSULT HOLZ ENGINEERING			DRY/CYCLE DEW POINT
700-HT		COMPOSITE	BELT	COVER: PTFE, Viton	600˚ - 700˚	CONSULT HOLZ ENGINEERING			DRY/CYCLE DEW POINT
800-HT		COMPOSITE	BELT	COVER: PTFE, Viton	700˚ - 800˚	CONSULT HOLZ ENGINEERING			DRY/CYCLE DEW POINT
1000-HT		COMPOSITE	BELT	COVER: PTFE, Viton	800˚ - 1000˚	CONSULT HOLZ ENGINEERING			DRY/CYCLE DEW POINT
1200-HTG		COMPOSITE	BELT	COVER: PTFE, Viton	1000˚ - 1200˚	CONSULT HOLZ ENGINEERING			DRY/CYCLE DEW POINT

Consult with holz Rubber's Engineers for applications over 1200˚

1200-HTG

- Specifically designed for gas turbine applications where temperature is above 1000F and heavy cycling, radial growth, hot spots and large movements are expected.
- HTG joints are designed to provide long life, easy installation, low external temperatures and reduced noise.
- HTG joints are found on GT exhausts, HRSG inlets and other high temperature applications.



Holz designs utilizing various high temperature frame alloy materials, wash-down environments, and all popular connection types including hot-hot, cold-cold and/or hot-cold.

Typical Boiler Ducting Layout

Environmental Controls

Flue gas desulphurization is one of the most challenging applications for expansion joints. The nature of the process is inherently detrimental to most of the common expansion joint designs primarily due to the "wet" atmosphere found at the inlet and outlet locations and the possibility of pressure fluxuations caused by stack draft during specific weather conditions.

Typical expansion joint designs incorporate a cavity that often fills with acidic liquid. This liquid quickly works to penetrate the edges of the flex element and slowly begins to degrade the bond between the reinforcement plies and the elastomer. This process eventually causes the inner ply of the flex element to bubble and separate from the reinforcement layer and weakens the tensile strength of the reinforcement layers. This ultimately leads to the complete deterioration of the expansion joint even with the addition of a drain plug for removing the liquid.

Holz has spent many years in the development of a product suitable for long-term use in this harsh environment. Our specially designed FGD flex element utilizes a robust Viton outer flex element resistant to aggressive acids and proven to provide integrity against pressure shifts up to 5psig along with a zero porosity PTFE barrier acting as the inner gas seal.

The combination of advanced materials insures long life and predictable performance. Contact Holz Engineering for more details about specific applications.

HOLZ Rubber Company, Inc.

Experience
The Difference...

Industry leaders from around the world have relied on Holz Rubber Company's expertise and quality products for over 75 years.
We are not just an expansion joint company; we are a true rubber company that understands when to select certain elastomers in challenging environments.

Our team of engineers, product specialists, and chemists will help solve your unique application or problem. If required, our team can assist you in the field with our network of professional distributors and factory- trained sales and application specialists.

Holz Rubber offers a complete line of elastomeric and PTFE expansion joints:

- High-pressure spool joints
- Off-set design
- PTFE (Teflon) expansion joints
- Fully molded duct joints
- Turbine to condenser joints
- Filled arch designs
- Multiple arch design
- Eccentric or concentric design

Contact Holz Rubber Company at **(800)285-1600** or visit **www.holzrubber.com** to learn more.

HOLZ RUBBER COMPANY, INC.
1129 S. Sacramento Street
Lodi, California 95240
United States and Canada
Phone: 800-285-1600
Fax: 800-756-9998
Outside Of United States
Phone: 209-368-7171
Fax: 209-368-3246
www.holzrubber.com