Wabo®Modular

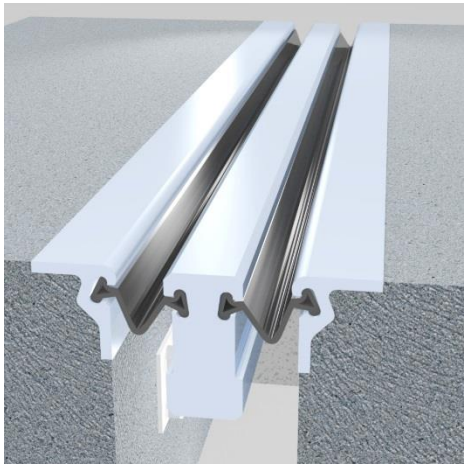
STM and D Series
Large movement expansion joint system

Features	Benefits
• Watertight	The continuous elastomeric gland prevents runoff water from passing through to the substructure. The D series gland utilizes two elements for added protection
• Durable	Engineered to last as long or longer than the bridge decks they protect
• Versatile	Provides a smooth riding surface while absorbing the impact of heavy traffic

DESCRIPTION:

WaboModular is designed for use in heavy trafficked bridge structures requiring movements in excess of 4 inches. This joint system allows the bridge deck to move while maintaining a smooth watertight riding surface. Engineered to last longer than the bridge decks they protect, WaboModular joint system longevity comes from the steel multiple support bar system, which combines the strength to support traffic loads and impacts with the flexibility to accommodate continual structure movement.

Each WaboModular is made to order and available in two styles, the WaboModular with a box seal (D series), which utilizes a double, layer sealing element and the WaboModular with a strip seal (STM Series).



RECOMMENDED FOR:

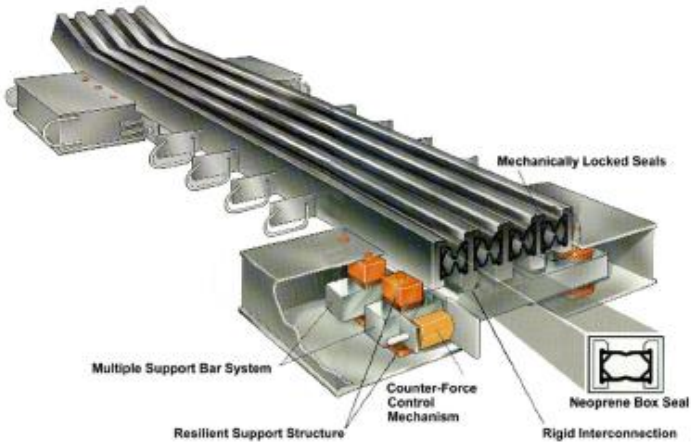
- Sealing joints on bridges with movements greater than 4 inches.
- New construction or repair of existing expansion joint systems.
- High impact conditions.

PACKAGING/COVERAGE:

- WaboModular elastomeric glands are cut to length and either installed at the factory or shipped on pallets per limitations of required shipping methods.
- WaboModular system is shipped as one unit
- WaboPrimaLub – 1 gal container

Watson Bowman Acme Corp.
95 Pineview Drive
Amherst, NY 14228
phone: 716-691-7566
fax: 716-691-9239
wbacorp.com

TECHNICAL DATA:



Mechanically Locked Seal

The neoprene sealing elements of the WaboModular are mechanically locked into the machined edge and separation beam cavity. Each seal is designed to absorb the expansion and contraction movements with its folding action and preformed hinges. WaboModular seals are made of high quality neoprene and are highly resistant to deterioration from exposure to weather, sunlight, and oils. WaboModular joint systems are available with box or strip seal sealing elements. The box seal provides increased rigidity and a double layer of watertight protection. The strip seal sealing element uses an inner-locking single layer, providing watertightness and ease of installation in the field.

Multiple Support Bars

Each traffic-bearing separation beam in a WaboModular joint system has a dedicated support bar in every support box along the length of the joint. The feature of multiple support bars consists of assigning each separation beam its own set of support bars and connecting it rigidly to them. This arrangement will transmit loads to the edges of the joint and at the time, move freely in the direction of movement of the structure.

Rigid Connection

Separation beams in the WaboModular joint system are maintained on support bars bridging the main gap. Each beam is securely fixed to independent support bars and is prevented from tilting due to the action of horizontal loads.

High Rotation Bearings

Designers and owners now have the latest high rotation bearing technology available for Standard Modular Systems. If you have structures with high rotation requirements, contact your WBA sales representative.

Resilient Support Structure

The resilient support structure of the WaboModular allows the joint system to accommodate thermal movement as well as rotation and deflection of the bridge. Support bars in the WaboModular joint system ride between specially engineered resilient bearings and springs, which act to dampen the dynamic loading. The bearings support the bar while the springs above the bars prevent looseness, rattling, and uplifting.

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Equidistance Control System

The WaboModular Equidistance Control System prevents each seal from expanding beyond its intended movement range while maintaining equal spacing between separation beams at all stages of movement. Polyurethane control buffers are mounted on nylon dowels between steel flanges on adjacent support bars. Polyurethane is ideally suited for large deformation movement. It has high longitudinal strain capacity with low later strain, good sound attenuating properties and excellent vibration dampening and impact absorption. Control buffers develop their maximum compressive force when the joint is open and become fully relaxed when the joint is closed to its minimum while maintaining equal seal spacing.

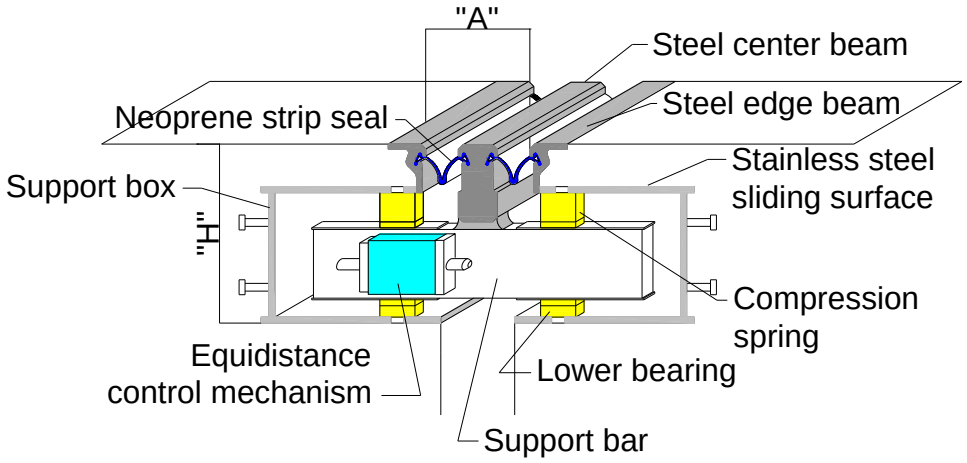
Joint Selection

The selection of the proper sealing system is straightforward when the movement of the structure is perpendicular to the centerline of the joint. The proper selection becomes somewhat more involved when the movement is not perpendicular to the expansion joint as in the case of skewed or curved structures. The movement in this case must be broken into vectors, which are perpendicular and parallel to the centerline of the joint. Joint selection would then be determined by the larger of the two vectors.

Movement Table

Model Number	Dimension "A"						Dimension "H"	
	Min		Max		Total			
	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)
STM or D-600	2.5	64	8.5	216	6.0	152	10.25	260
STM or D-900	5.0	127	14.0	356	9.0	229	10.25	260
STM or D-1200	7.5	191	19.5	495	12.0	305	10.25	260
STM or D-1500	10.0	254	25.0	635	15.0	381	10.25	260
STM or D-1800	12.5	318	30.5	775	18.0	457	10.25	260
STM or D-2100	15.0	381	36.0	914	21.0	533	10.25	260
STM or D-2400	17.5	445	41.0	1041	23.5	597	10.25	260
STM or D-2700	20.0	508	47.0	1194	27.0	686	10.25	260
STM or D-3000	22.5	572	52.5	1334	30.0	762	10.25	260

"A" was calculated using a 2.5 inch (64mm) beam. "H" may vary from the standard shown.
Consult your WBA representative with your special design requirements



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Physical Properties (Neoprene Rubber)

PHYSICAL PROPERTY	ASTM METHOD	REQUIREMENTS
Tensile Strength, min	D 412	2,000 psi (13.8 Mpa)
Elongation at Break, min	D 412	250%
Hardness, Shore A	D 2240	65 +/- 5
Oven Aging, 70 hrs. @212ºF Tensile, max loss Elongation, max loss Change in Hardness	D 573	 20% 20% 0 to 10 pts.
Oil Swell, 70 hrs. @212ºF Weight Change, max	D 471	45%
Ozone Resistance 70 hrs. @104ºF	D 1149 Modified	no cracks
Low Temperature Stiffening 7 days @14F Hardness, Shore A	D 2240	0 to +15 points
Compression Set 70 hrs @212F	D395 Modified	40%

APPLICATION:

INSTALLATION SUMMARY:

- Prepare blockout to proper width and depth. Place formwork.
- Using temporary lifting devices, the joint system is lifted and placed into the joint opening.
- Leveling devices are used to set joint system to grade.
- Once system is in position, adjustments for structure temperature are made with prestress devices. Lifting devices are removed prior to adjustments.
- Concrete is poured, taking care to ensure no voids are left under the support boxes.
- Leveling attachments are ground off and shipping devices are loosened to allow structural movement.

RELATED DOCUMENTS:

- Material Safety Data Sheets
- WaboModular Specification
- WaboModular Sales Drawings
- WaboModular Installation Procedure
- “Fatigue Design and Testing of Modular Bridge Expansion Joint Final Report”, Lehigh University, January, 1994
- “Fatigue Design and Testing of Modular Bridge Expansion Joint Final Report”, Lehigh University, April, 1994
- “Fatigue Testing of Four Seal Single Support Bar Modular Bridge Expansion Joint System”, Lehigh University, April, 1995

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FOR BEST RESULTS:

- Install when concrete substrate is clean, sound, dry, and cured (14 day minimum).
- Do not install if the joint's anticipated movement will exceed the system's movement range.
- Protect the work area with appropriate plastic sheeting.
- Do not allow any of the components to freeze prior to installation. Store all components out of direct sunlight in a clean, dry location between 50˚F and 90˚F.
- Shelf life of chemical components is 1 year.
- Periodically inspect the applied material and repair localized areas as needed. Consult a Watson Bowman Acme representative for additional information.
- Make certain the most current version of the product data sheet is being used. Please consult the website (www.wbacorp.com) or contact a customer service representative.
- Proper application is the responsibility of the user. Field visits by Watson Bowman Acme personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

OPTIONS/EQUIPMENT:

- Cherry picker/mobile crane needed to lift assemblies into the blockout.
- 4" x 4" timbers used in conjunction with leveling devices.
- Formwork as required.
- Adjustable legs for grade settings and adjustment.

LIMITED WARRANTY:

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