

WABO[®] MODULAR

Large movement expansion joint systems

DESCRIPTION

WABO MODULAR Expansion Joint is designed for large movement and use in heavy trafficked bridge structures requiring movements in excess of 100 mm. This joint system allows the bridge deck to move while maintaining a smooth watertight riding surface.

WABO MODULAR joint system longevity comes from the stable design of simple span concept with huge section of steel center beam and support bar system, which combines the strength to support traffic loads and impacts with the flexibility to accommodate continual structural movement. Each **WABO MODULAR** Joint is made to order and available in any shape and direction changes of bridge deck and curved parapet.

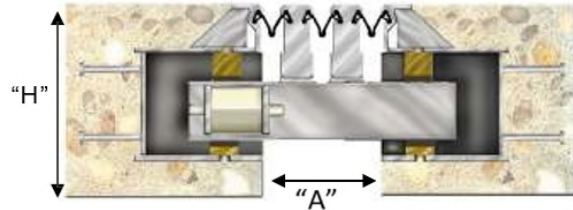
ADVANTAGES

- **Versatility**
WABO MODULAR joint systems is able to provide a smooth riding surface while absorbing the impact of heavy traffic. Each modular joint is engineered and manufactured to meet a variety of conditions and requirements.
- **Watertight**
WABO MODULAR joint systems reliably seal the joint gap, keeping runoff water from passing through to the substructure. The continuous elastomeric sealing element offers twice the leak proofing protection by being bonded to the steel members and then mechanically locked in place.
- **Durable**
WABO MODULAR joint systems are engineered to last longer than the bridge decks they protect. Each separation beam is connected to support bar ensuring rigidity in resisting horizontal forces from traffic and, at the same time, providing free movement in the direction of expansion and contraction of the structure

RECOMMENDED FOR

- Sealing of joints on bridges with movements greater 100 mm.

- Rehabilitation or new construction.
- High impact and repetitive loading conditions.



MOVEMENT TABLE

Model Number	Total Movement (mm.)	Dimension "A" (mm.)		Dimension "H" (mm.)
		Min.	Max.	
SDM-160	160	110	270	400
SB-240	240	190	430	410
SB-320	320	270	590	410
SB-400	400	350	750	420
SB-480	480	422	902	430
SB-560	560	510	1070	440
SB-640	640	590	1230	450
SB-720	720	670	1390	460
SB-800	800	750	1550	470

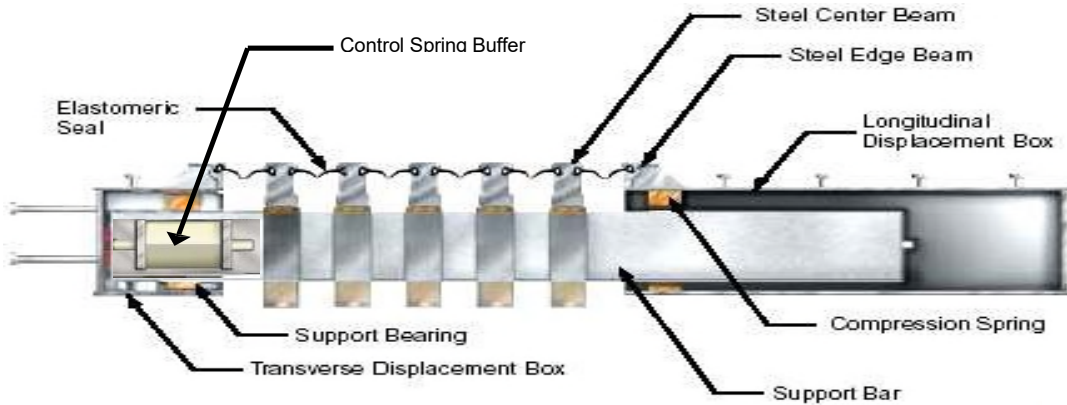
Note: Contact Wabo for larger movement requirements.

CHALLENGING APPLICATIONS

Wabo has developed the most advanced and flexible fabrication centre to customize each **WABO MODULAR** expansion joint to meet individual project requirements. Challenging applications include:

- Modifying systems for curved structures and other conditions where the direction of thermal movement is not parallel to the bridge centerline.
- Engineering an angle or curve in a modular joint system anywhere along its length in the deck.
- Fabricating formwork into the system for ease of installation in the field (optional).
- A variety of curb treatments.

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TYPICAL PROPERTIES*

CENTER BEAMS AND EDGE BEAMS:

Center Beams and Edge Beams are produced from ASTM A588 weathering grade steel or Q345 High Strength Structural Steel.

RESILIENT SUPPORT BEARINGS:

The resilient support bearing of the **WABO MODULAR** allows the joint system to accommodate thermal movement as well as rotation and deflection of the bridge. Support bars in the **WABO MODULAR** 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.

CONTROL SPRING BUFFERS:

The **WABO MODULAR** Joint Control Spring is an Equidistance Control System which 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 lateral strain, sound attenuating properties and excellent vibration dampening and impact absorption. Control springs 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.

SUPPORT BARS:

Each traffic-bearing separation beam in a **WABO MODULAR** joint system is connected using special sliding linkages with support bar. This arrangement will transmit loads to the edges of the joint and at the same time; move freely in the direction of movement of the structure.

ELASTOMERIC SEAL:

The elastomeric sealing elements can handle movements up to 100 mm. The elastomeric seal shall meet or exceed the following properties. Properties of Elastomeric Seal as per ASTM D5973

TYPICAL PROPERTIES	ASTM TEST METHOD	REQUIREMENTS
Tensile Strength	D 412	2000 psi
Elongation @ Break	D 412	250%min.
Hardness Type A Durometer	D 2240 modified	60+/-5%points
Oven Aging, 70 hrs (212°F) Tensile Strength Elongation Hardness	D 573	20% loss max 20% loss max 0 to +10 points
Oil Swell, 70hrs. (212°F) Weight Change	D 471	45%
Ozone Resistance, 70 hrs (104°F) 20% strain, 300 pphm in air	D 1149 modified	No cracks
Low Temp Stiffening 7 days @ 14°F Hardness (Type A durometer)	D 2240	0 to +15 points
Compression Set, 70hrs @ 212°F	D395 method B modified	35%

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INSTALLATION SUMMARY

Contact Wabo for Detailed Installation Guidelines.

- Prepare block out to proper width and depth. Place formwork
- Using temporary lifting devices, the joint system is lifted and placed into the joint opening.
- Levelling devices are used to set joint system to grade.
- Once system is in position, adjustments for structure temperature are made with pre-stress devices. Lifting devices are removed prior to adjustments.
- Concrete is poured, taking care to ensure no cantilever or voids are left under the support boxes.
- Levelling attachments are ground off and shipping devices are loosened to allow structural movement.
- Open traffic after 72 hours.

ADDITIONAL REQUIREMENTS / EQUIPMENT

- Seal installation tool for installing the **WABO MODULAR** elastomeric seal. Contact Wabo Asia Pacific for seal installation tool detail.
- Cherry picker/mobile crane needed to lift the assemblies into the block out.
- Certified welder to be utilized for field welding of sections.

PACKAGING / RECOVERY

- **WABO MODULAR** expansion joint system are manufactured and supplied typically in full length in maximum 11 meters length but if longer than 11 meters it will be properly spliced for transportation.
- **WABO MODULAR** elastomeric seals are supplied in continuous lengths and coiled on a pallet for shipping.

STORAGE

- Store fabricated **WABO MODULAR** joint along with elastomeric gland in an area that will not damage the material.



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HEALTH AND SAFETY

Appropriate health and safety advice can be found in the Material Safety Data Sheets.

Users are advised to wear gloves and eye protection when installing **WABO MODULAR**.

QUALITY AND CARE

All products originating from Master Builders Solutions Dubai, UAE facility are manufactured under a management system independently certified to conform to the requirements of the quality, environmental and occupational health & safety standards ISO 9001 and ISO 14001.

* Properties listed are based on laboratory controlled tests.

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STATEMENT OF RESPONSIBILITY

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NOTE

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