Ideas, Engineering and Manufacture

AGOM®

AGOM AGFLEXJ

Bridge Mat Expansion Joints

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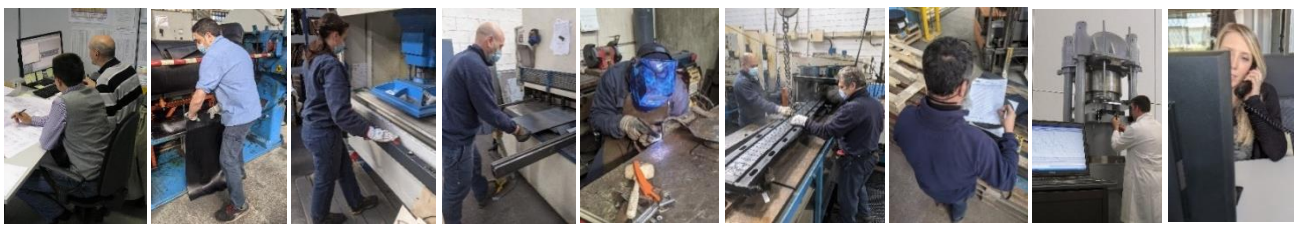
AGOM International: Experience and Quality

Bridges are subjected to movements and rotation caused by traffic, temperature changes, earthquakes, shrinkage, prestressing, creep, etc. Bridge construction requires carefully designed and manufactured bearings, anti-seismic devices, shock absorbers and expansion joints to ensure that such forces are properly dealt with throughout the life of the structure.

Agom has over 50 years' experience in design and manufacturing bridge bearings, bridge expansion joints, anti-seismic devices and shock absorbers for bridge-building and construction industry. All products comply with the latest European standards and all main international standards.

The quality and durability of these products are ensured by:

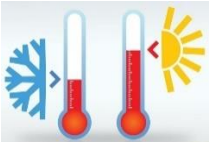
- our team of skilled engineers, who can conceptualise and design the most appropriate engineering solutions
- qualified professionals, trained and continually updated in quality production techniques
- virgin raw materials that are quality assessed in our on-site testing laboratory
- ISO 9001:2015 quality standard accreditation
- strict quality control processes
- periodical external inspections by globally recognized bodies such as the TZUS of Prague and Certiquality:
- independent international inspection and certification authorities.



Bridge Deck Movements

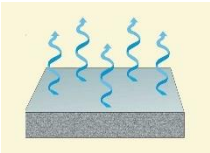
The horizontal movements of a bridge superstructure are due to:

- Temperature expansion and contraction
- Shrinkage of concrete
- Shortening of concrete due to creep effect
- Elastic shortening
- Movements due to induced external loads (e.g. earthquake, wind, vehicular braking etc.)



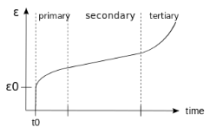
Temperature

Temperature variations cause both expansion and shortening of the bridge deck and are usually computed as a plus and minus range about a mean structure temperature which occurs when the superstructure is placed on the bearings. Temperature differentials also occur in the deck from top to bottom and from one side to other side of the deck. Temperature differentials through the depth of the deck have little effect on the bearings and piers but those from one side of the deck to the other cause the deck to bend in plan which results in horizontal forces on the bearings and piers.



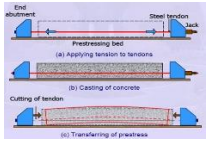
Shrinkage of Concrete

Shrinkage of concrete results in the shortening of the bridge superstructure. This effect depends upon factors such as quality of concrete used, size of the member, relative humidity and time after casting.



Shortening due to Creep Effect

Effect of creep of concrete under prestressing and other permanent loads results in the shortening of the superstructure. It is a time dependent effect.



Elastic Shortening

This phenomenon occurs in case of prestressed superstructure during prestressing (post-tensioning). The amount of shortening depends on the stage at which the superstructure is placed on the bearings and also at what stage it is prestressed. Sometimes, partial or complete prestressing may be carried out before the superstructure is placed on the bearings thus eliminating this shortening from affecting the bearings at least partly.

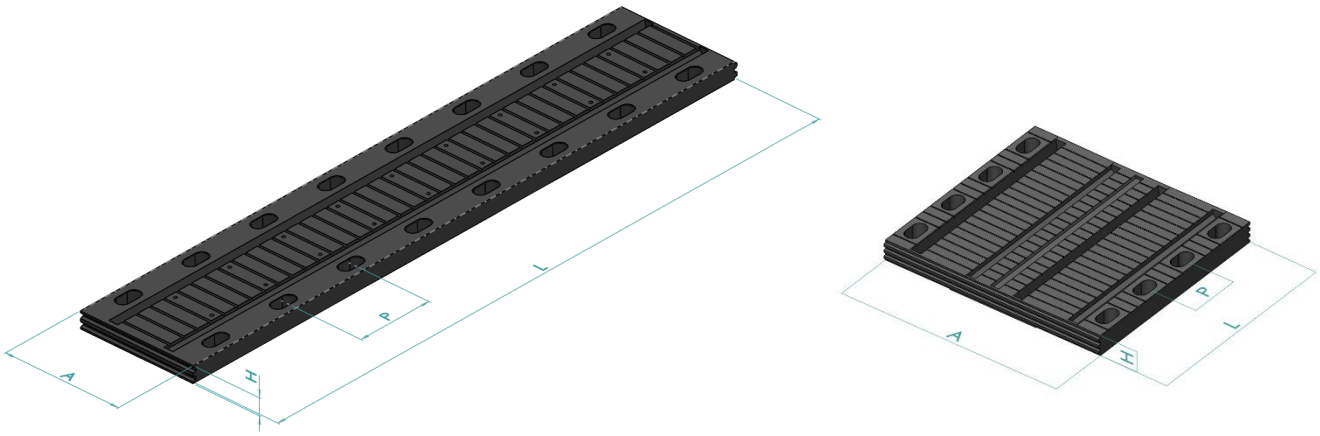
AGOM AGFLEXJ - Bridge Mat Expansion Joints

Bridge Mat Expansion Joints

AGFLEXJ expansion joint

AGOM's AGFLEXJ expansion joints are designed to enable service displacements up to ±165 mm with respect to the bridge decks they are fastened to. Entirely waterproof, they are secured to the structure with suitable anchor bolts. The deformable rubber elements are vulcanised with rolled steel reinforcements made up of two angular plates and a bridge plate (standard EN 10025). AGFLEXJ joints also allow displacement of the structure's parts relative to each other in any direction.

Technical Specifications

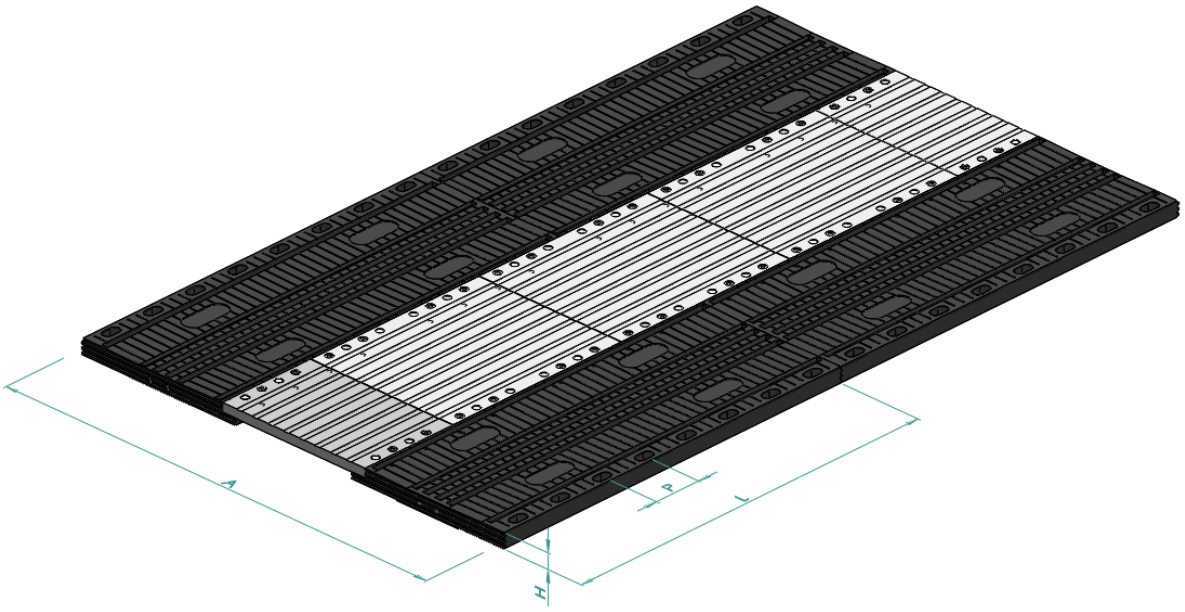


Model	Service movement [mm]	Dimensions AxHxL [mm]	P [mm]	Weight [kg/m]
AGFLEX J30	±15	269 x 32 x 2000	200	17.5
AGFLEX J50	±25	272 x 40 x 2000	200	22.0
AGFLEX J80	±40	358 x 47 x 2000	250	32.5
AGFLEX J100	±50	388 x 53 x 2000	250	37.0
AGFLEX J120	±60	427 x 70 x 1000	250	58.0
AGFLEX J140	±70	465 x 80 x 2000	250	79.0
AGFLEX J160	±80	492 x 84 x 2000	250	88.5
AGFLEX J200	±100	800 x 70 x 2000	250	145
AGFLEX J250	±125	880 x 78 x 2000	250	180
AGFLEX J330	±165	1100 x 100 x 1000	250	270

AGOM AGFLEXJ - Bridge Mat Expansion Joints

AGFLEX BJ large displacements expansion joint

AGOM's AGFLEX BJ large displacements-type expansion joints are designed to enable very large displacements with respect to the bridge decks they are fastened to, up to ±330mm. Entirely waterproof, they are secured to the structure with suitable anchor bolts. The joint movement is obtained by deformation of rubber elements vulcanised with rolled steel reinforcements. The gap between structures is overcome by a bridge steel zinc coated plate (standard EN 10025).



Technical Specifications

Model	Service movement [mm]	Dimensions AxHxL [mm]	P [mm]	Weight [kg/m]
AGFLEX BJ400	+200/-200	2160 x 70 x 2000	250	525
AGFLEX BJ500	+250/-250	2430 x 78 x 2000	250	628
AGFLEX BJ660	+330/-330	3060 x 100 x 1000	250	945

AGFLEX BJ joints also allow relative displacements in the direction orthogonal to the axis of the carriageway of the same order of magnitude as those in the parallel direction and limited relative displacements between the structures in the vertical direction.

Features of AGFLEXJ-series expansion joints

Waterproofing

AGFLEXJ joints are entirely waterproof if correctly installed.

Ease of assembly

AGFLEXJ joints are extremely easy to fit. The joint elements are connected each other by a male-female coupling and secured to the structure with suitable anchor bolts.

Corrosion resistance

The steel structure is thoroughly embedded in the rubber, so it is protected from the atmospheric agents. For large movements joints, the external bridge plate is zinc coated according to ISO 1461.

Low noise

Thanks to the special design of the rubber cover, the joint makes little noise as vehicle runs over it.

Durability

The special anti-abrasive rubber used to manufacture AGOM joints has been designed to withstand the action of oil, grease, petrol and ageing due to constant exposure to sunlight and changes in temperature.

Cleanability

AGFLEXJ joints do not need specific maintenance to be kept clean because of their own configuration, small debris would be automatically ejected and removed by rubber deformation and water. In case of necessity, they can be clean manually.

Skid resistance

The geometry of joints surface is designed to guarantee a high skid resistance also in wet conditions, to guarantee traffic safety.

Resistance to wear

AGFLEXJ rubber surfaces have a good resistance to abrasion and wear.

Replacing

AGFLEXJ is a particularly suitable choice for replacing existing joints.

Installation materials

The dimensions and features of anchor bars, bedding mortar and transition strip are shown in the AGFLEXJ typical drawings and AGFLEXJ installation & maintenance manual.

AGOM AGFLEXJ - Bridge Mat Expansion Joints

Reference Standard

EAD 120110-00-0107 European Assessment Document – Mat expansion joints for road bridges

AASHTO LRFD Bridge Design Specifications

Quality of materials

All the expansion joints are manufactured using only first-class rubber (natural or synthetic) in accordance with the main international standards.

		SBR	NR	CR
Hardness	[IHRD]	60 ± 5	60 ± 5	60 ± 5
Tensile strength	[MPa]	≥ 15	≥ 16	≥ 16
Minimum elongation at break	[%]	> 375	> 425	> 425
Accelerated ageing		(14 d ; 70°C)	(7 d ; 70°C)	(3 d ; 100°C)
- hardness	[IHRD]	+/-7	-5 / 10	+/-5
- tensile strength	[%]	+/-20	+/-15	+/-15
- elongation at break	[%]	+/-30	+/-25	+/-25
Ozone resistance		elongation 20% 72 h (40°C +/- 2°C) 50 pphm	elongation 30% 96 h (40°C +/- 2°C) 25 pphm	elongation 30% 96 h (40°C +/- 2°C) 100 pphm
Brittleness temperature	[°C]	≤ -55	≤ -40	≤ -40

Steel parts are according with EN10025.

Comprehensive Labelling

All elastomeric expansion joints are provided with a non-fading mark directly moulded on the rubber outlining the properties of the joint:

- joint type
- order number;
- international standards;
- date of manufacture.

AGOM AGFLEXJ - Bridge Mat Expansion Joints

MORE THAN 50 YEARS EXPERIENCE DESIGNING AND MANUFACTURING DEVICES FOR CONSTRUCTION, OFFSHORE AND INDUSTRIAL MARKETS

Expansion joints

Elastomeric joints
Joints for high movements
Finger joints
Buried joints
Railway joints

Bridge bearings

Elastomeric Bridge bearings
Pot bearings
Spherical bearings
Incremental launching bearings
Horizontal load bearings
Special bearings

Seismic Isolators

Seismic Isolators
High damping rubber bearings
Lead core rubber bearings
Multilayer rubber bearings
Shock transmitters
Shock absorber
Rubber dampers

Services

Design
Consulting
On site assistance
Installations
Tests
Inspection

CERTIFIED QUALITY MANAGEMENT SYSTEM
CERTIQUALITY
UNI EN ISO 9001:2015