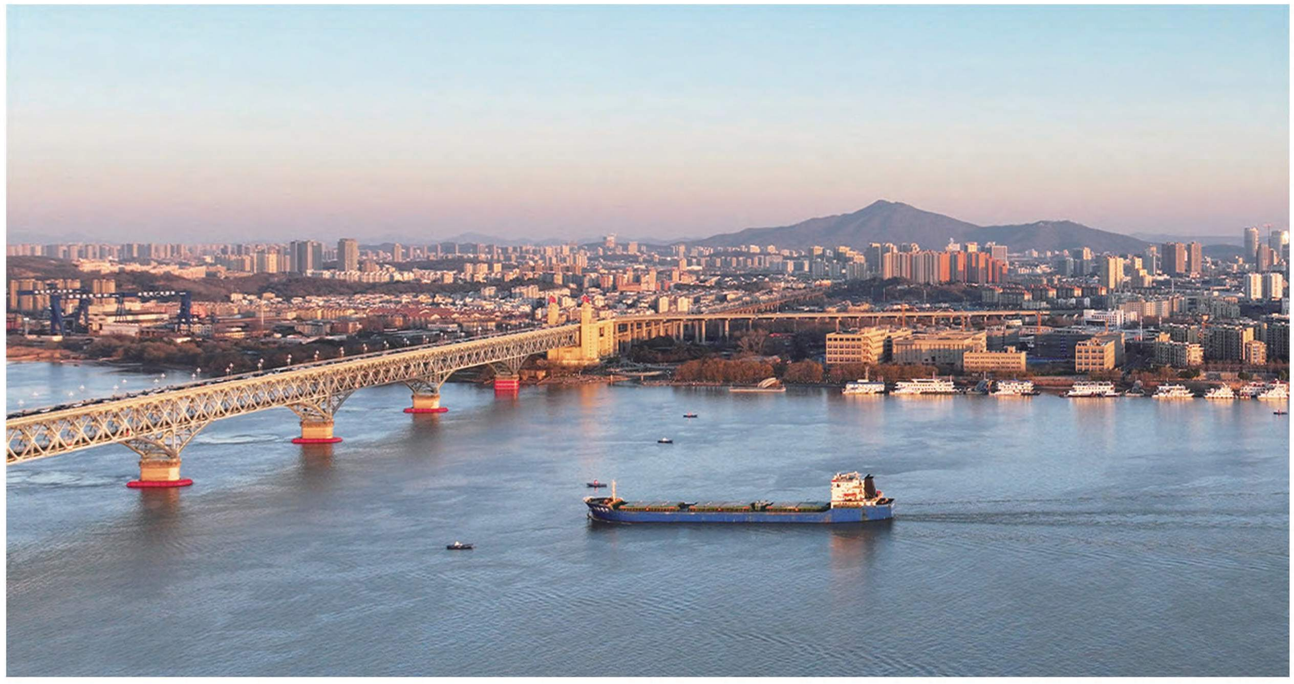
PT KARYA EVEREST PACIFIC





BRIDGE BEARING

NOISE BARRIER

BRIDGE EXPANSION JOINT



INDEXES

Bridge Expansion Joint ---------- 01

Strip Seal Bridge Expansion joint ---------- 01

Modular Bridge Expansion joint ---------- 04

Finger Bridge Expansion joint ---------- 09

Rubber Bridge Expansion joint ---------- 12

Bridge Bearing ---------- 14

Bridge Elastomeric Bearing ---------- 14

- Laminated Elastomeric Bearing Pads ---------- 14
- SeismicIsolators for Building, Bridge and Highway ---------- 17

Bridge Pot Bearing ---------- 19

Spherical Bearing ---------- 21

Noise Barrier ---------- 22

Strip Seal Bridge Expansion Joint

• Designed for bridge heavy traffic load and can be used for both bridge structure and building structure.

• Consists of two steel edge profiles with anchor loops and a replaceable sealing profile. In addition, steel edge profiles can be available in different models, such as: F-type, C-type, E-type, Z-type, RG-type, L-type.

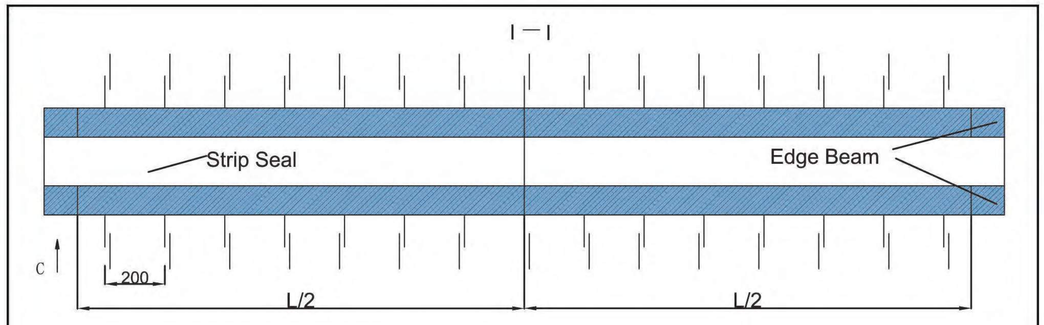
• Can be cast into the concrete slab; Strong anchor loops ensure the reliable anchorage of expansion joint with bridge structure.

• On the anti-corrosion side, the steel profile is in accordance with ISO12944 or other national standard as requested, such as ASTRA, RVS and ACQPA.

• Extrusion cavity mechanically locks rubber seals for watertight purpose

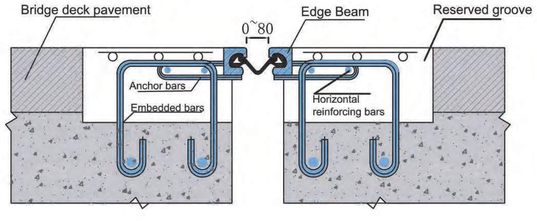
• Allows a longitudinal movement capacity up to 80mm; movement and rotation can occur in three axes

• Custom design available for unique projects.



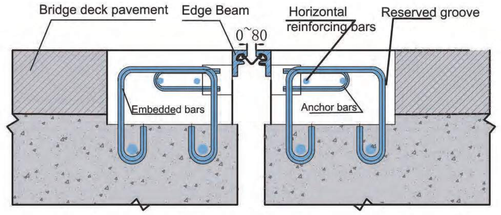


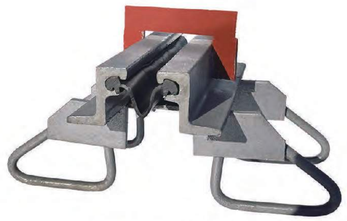
MS-GQF-C



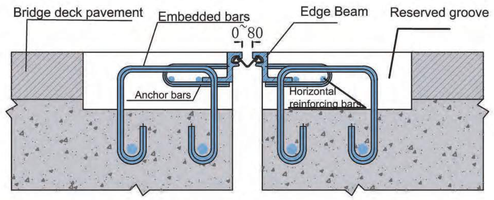


MS-GQF-F



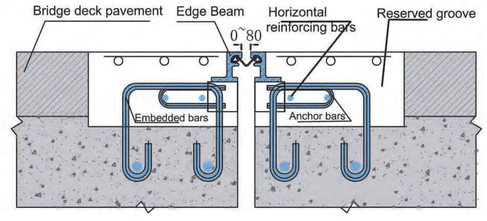


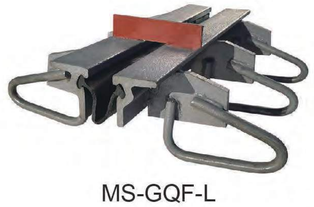
MS-GQF-Z



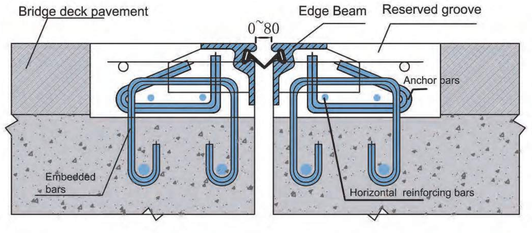


MS-GQF-E



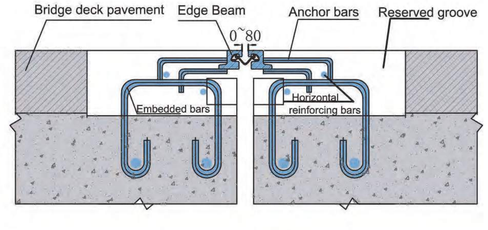


MS-GQF-L





MS-GQF-RG







Modular Bridge Expansion Joint

• A number of profiled steels as edgebeams/centerbeams at different dimensions and weight available
• Large movements from 160 mm to more than 2000 mm in transversal and vertical direction.
• Accommodate movements in every direction and rotations about every axis.
• Two main systems are load transferring system and gap control system
• Steel profiles are integrated fabrication to ensure consistent strength; Yield strength of steel profiles all reaches 345 MPa;
• Extrusion cavity mechanically locks rubber seals for watertight purpose;
• Noise reduction by adding sinus plates available upon request;
• Design and manufacture standard: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, Section 14.5
• Custom design available for unique projects.



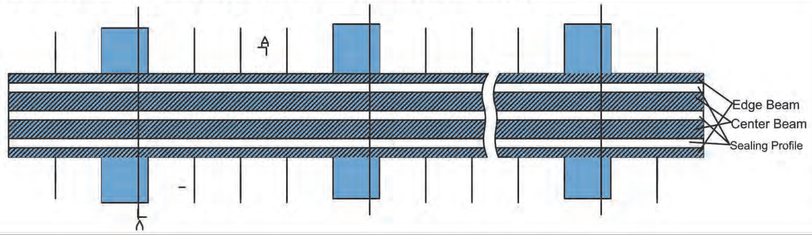
MS-GQF-MZL160



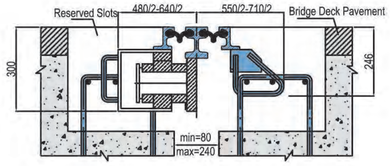
MS-GQF-MZL 240



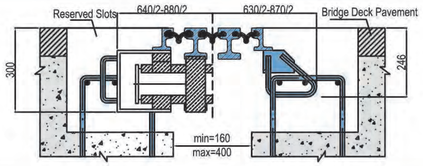
Detailed Drawings For Modular Joint



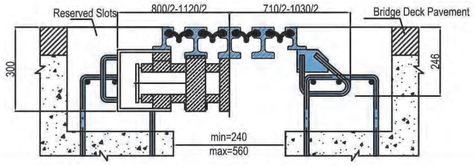
MZL160



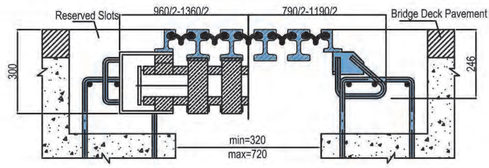
MZL240



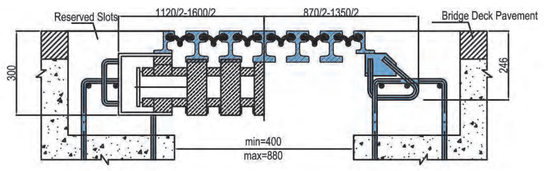
MZL320



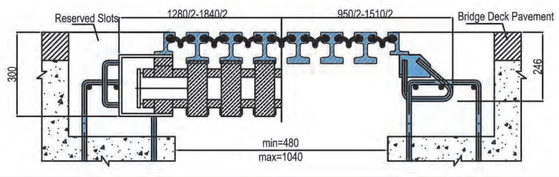
MZL400



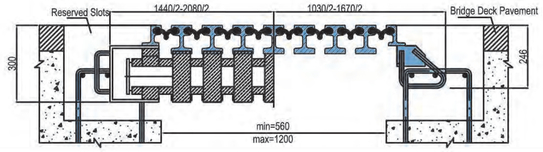
MZL480



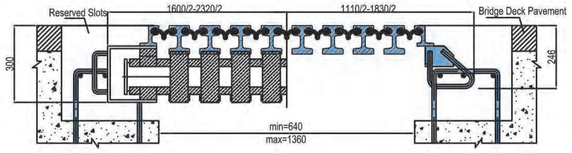
MZL560



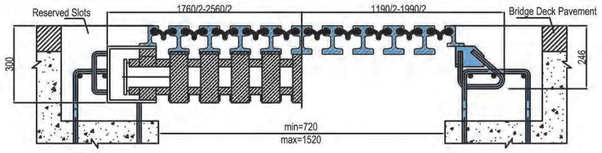
MZL640



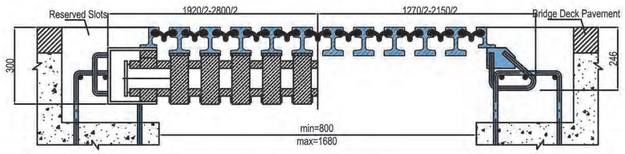
MZL720



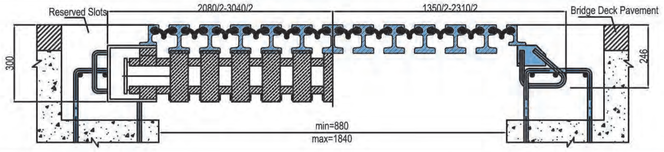
MZL800



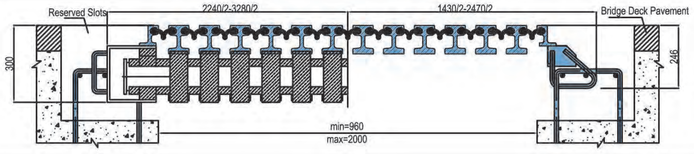
MZL880



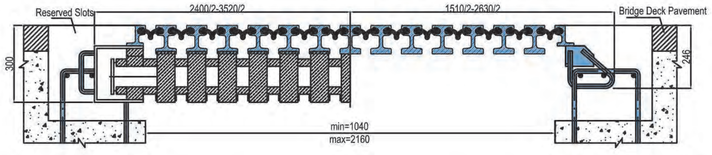
MZL960



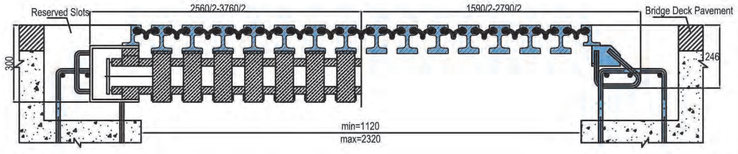
MZL1040



MZL1120



MZL1200



THE MAIN DESIGN PARAMETER OF EXPANSION JOINT

Specification	Number of joint	Displacement	Clearance	Size of preformed groove		Steel bar size		
MS-GQF-MZL160	2	160	110-270	350	350	135	90	16
MS-GQF-MZL 240	3	240	190-430	440	350	135	90	16
MS-GQF-MZL 320	4	320	270-590	530	400	135	90	16
MS-GQF-MZL 400	5	400	350-750	610	450	135	90	16
MS-GQF-MZL 480	6	480	430-910	690	470	135	90	16



Application scenarios of Bridge Expansion Joint

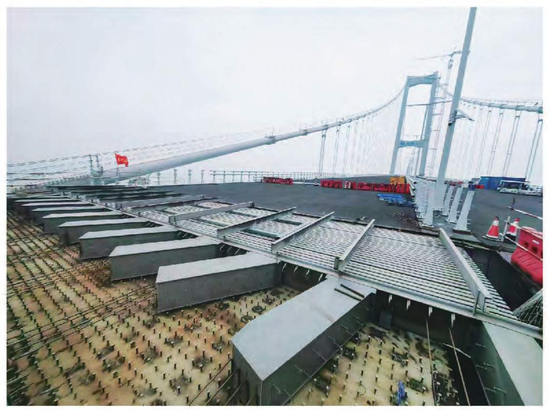
Modular Bridge Expansion Joint could bear large loads and large deformations, such as long-span bridges, highway bridges, etc. Its advantage is that it can provide greater expansion and contraction capacity and higher load capacity, which is suitable for bridges under heavy load conditions.

It is suitable for bridges with large spans and large traffic volumes, and can provide greater expansion and contraction capacity and higher bearing capacity, and is often used in important bridges such as highways and railways.









Repair and maintenance

- Regularly clean the debris inside the rubber sealing belt
- Regularly check the flatness of the telescopic device
- Regularly check the uniformity of the steel gaps
- Regularly check whether the connection between the steel section and the bridge deck pavement is damaged

Finger Bridge Expansion Joint

Introduction:

• Suitable for use in bridges with heavy traffic loading where block-out dimensions are limited for modular expansion joint

• Designed for longitudinal movement capacity up to 400 mm and even more

• Steel edge profiles are welded with strong anchor loops for the durable concrete connection to the bridge structure.

• Finger plates are fixed with steel edge profile by high strength bolts and can reduce the noise emission and increase driving comfort when traffic passes.

• Connection method ensures the quick replacement of any finger plate on site and easy maintenance with a small crew and minimal lane closure time

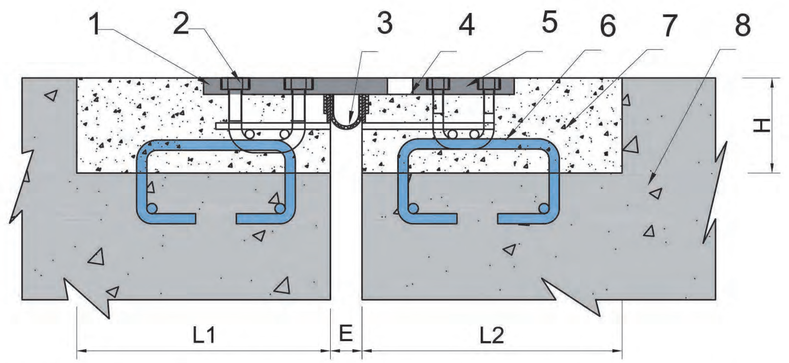
• A drainage channel is firmed connected with the two steel edge profiles, which ensures the expansion joint is watertight.

• Can be supplied with post tensioned anchors into concrete headers, cast into concrete blockouts, or bolted to existing steel members

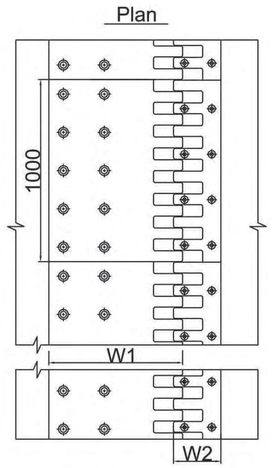
• Custom design available for unique projects.







1-Moving Toothed Plate; 2-Anchor Bolt; 3-Waterproof Rubber Strip; 4-Sliding Plate; 5-Fixed Toothed Plate; 6-Embedded Anchor Bolt; 7-C50 Reinforced Concrete; 8-Body Beam



Note:

1.Beam interval Size "E" should be ensured by installation site temperature.

2.The embedded depth of embedded bar>la.

3.Installation Steps: install bolt sets and weld embedded bar-cast steel-fiber concrete in preformed groove--install dustproof water barrier--install sliding plate--install span beam tooth plate and side tooth plate--concrete maintenance--expansion joint system surface re-handling.

THE MAIN DESIGN PARAMETER OF EXPANSION JOINT

Model	Move-ment (mm)	Groove Size (mm)			Structural Joint (mm)		Expansion Joint Size (mm)		
		H	L1	L2	MIN	MAX	Main Tooth Plate WidthW1	Span Beam Tooth Plate Width W2	Thickness H
MS-GQFJ	80	200	>570	>720	20	100	735	260	28
MS-GQFJ	160	200	>600	>750	20	180	742	280	28
MS-GQFJ	240	200	>620	>790	30	270	830	360	35
MS-GQFJ	320	240	>650	>850	30	350	930	450	40
MS-GQFJ	400	240	>700	>900	40	440	1020	550	50

Working Principle

When the bridge expands and contracts due to temperature changes, the large and small comb-toothed plates anchored on the beam achieve telescopic movement through intermittent changes in the tooth roots between them. Compared with the steel telescopic device, the unique concave and convex staggered structure of the MS-GQFJ comb plate telescopic device prevents impact on the vehicle when passing by, thereby reducing noise and increasing driving comfort.





Performance Characteristics

• Prevent the bridge structure from being eroded by rainwater.

• Using the rubber elements to effectively protect the beam body; noise are small, which increases driving comfort.

• The fixed and movable comb plates make corresponding expansion and contraction movements with the beam body, ensure that the stones and silt between the tooth gaps are smoothly discharged.

• The building height is small and the burial depth required for installation is shallow. Suitable for new bridge installation and old bridge joint replacement projects.

Rubber Bridge Expansion Joint

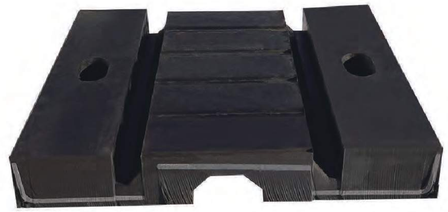
• Used for up to 330mm movements and consist of a waterproof rubber and steel plates.

• Produced under high temperature and pressure with rubber plates and steel plates

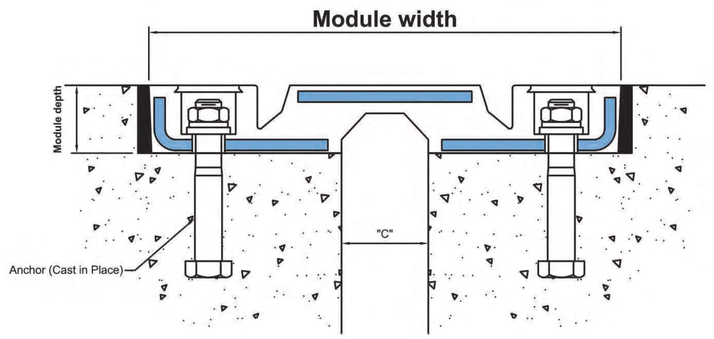
• Long-lasting solution with rubber surface which is strong against to surface oil, grease, oil, chemicals, resistant to UV rays, snow and salt.

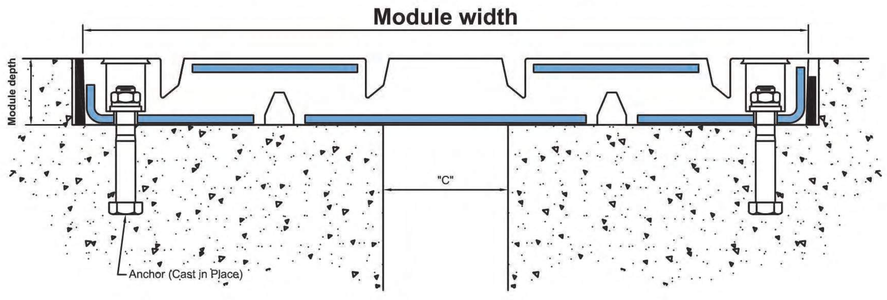
• Fixed to the reinforced concrete from both sides by using of suitable corrosion-resistant galvanized anchor bolts and chemical anchors to absorb elastic reactions

• Custom design available for unique projects.









THE MAIN DESIGN PARAMETER OF EXPANSION JOINT

Model	Movement (mm)	Module Length (mm)	Module Width (mm)	Module Depth (mm)	Stud Diameter (mm)	Weight (kg/m)
30	±15	2000	271	33	12	18
50	±25	2000	276	43	12	25
80	±40	2000	356	46	20	34
100	±50	2000	392	54	20	45
160	±80	2000	502	84	24	88
200	±100	2000	806	71	24	135
330	±165	1000	1108	100	30	280



Bridge Elastomeric Bearing

Laminated Elastomeric Bearing Pads

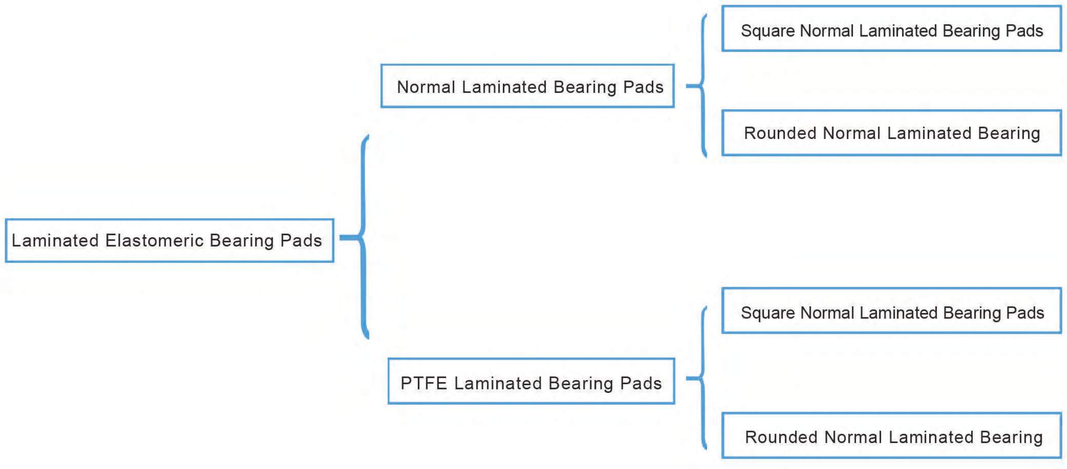
Meishuo elastomeric bearings act as elastic load-transferring connections between structural elements which must be able to move or rotate relative to each other. They can be designed to transmit vertical and horizontal forces from the superstructure to the substructure without constraints. They also accommodate rotations about any axis and where appropriate movements of the superstructure. Meishuo elastomeric bearings are designed and manufactured in accordance with customer requirements and international standards such as EN 1337, AASHTO, BS 5400, AS 5100 or DIN 4141.

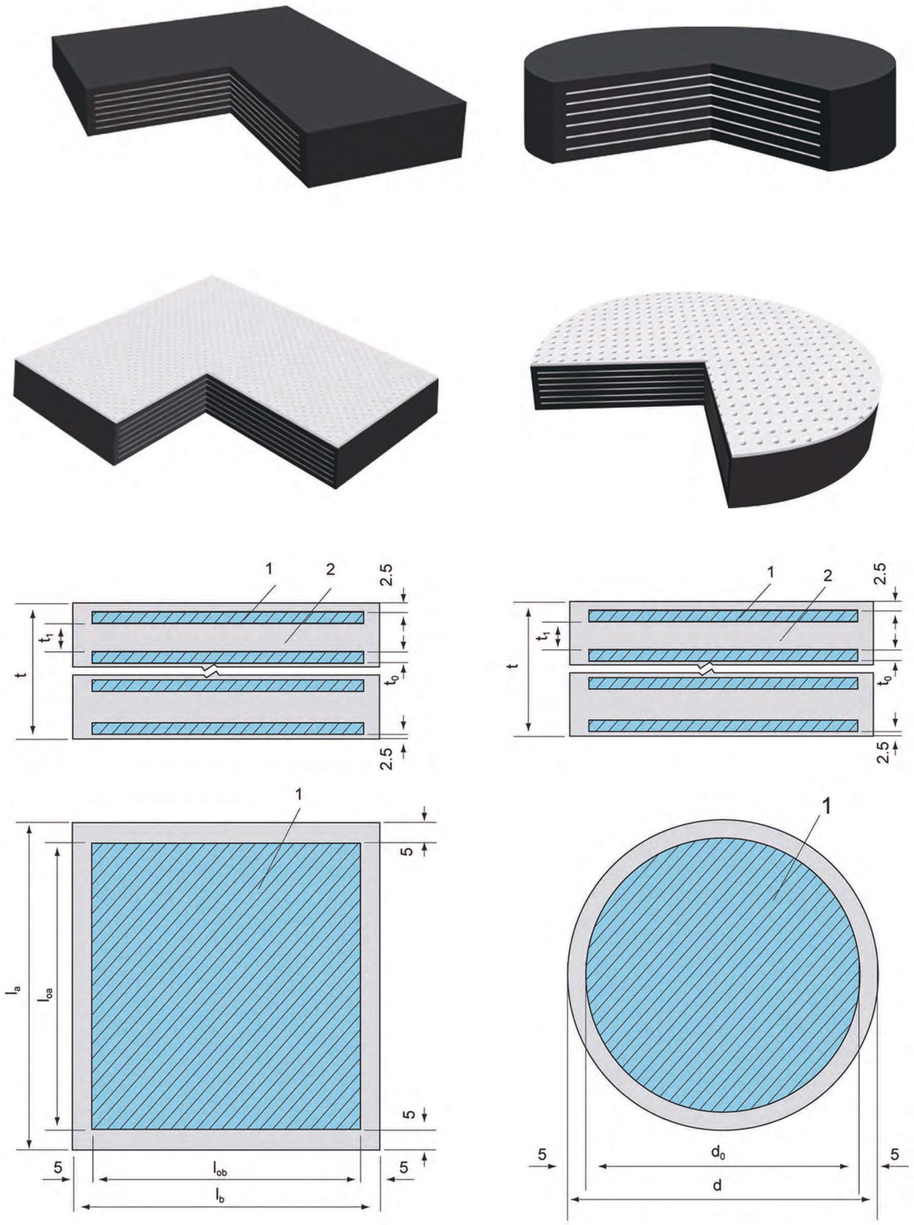
Features:

- Capable to withstand severe vertical loads and external forces.
- High accommodation of movements caused by expansion, contraction, concrete creep effects and shrinkage, etc.
- Allow for rotations of the bearing in any horizontal axis caused by deflections or misalignments.
- Absorb vibrations and isolate sounds.
- Great traction resistance.
- Corrosion free in that the steel plates are embedded in the rubber without contact of air.
- Easy to install.

Elastomeirc Bearing Pad Physical Properties (JT/T4-2004)				
Physical Properties		CR	NR	EPDM
Hardness		60±5	60±5	60±5
Tensile Strength/Mpa ≥		17	18	15
Elongation at Break/% ≥		400	450	350
brittleness temperature(℃) ≤		-40	-50	-60
EN Compression Set(70℃*24h)/% ≤		15	30	25
Ozon Resistance(20% elongation, 40℃*96h)		$100*10^{-3}$	$25*10^{-8}$	$100*10^{-8}$
		No Crack	No Crack	No Crack
Air Oven Aging(Max change, comparing with datas without aging)	Test Conditions(℃*h)	100*70	70*168	100*70
	Tensile Strength(%) ≤	15	15	15
	Elongation at Break/% ≤	40	20	40
	Hardness Change	0~+10	-5~+10	0~+10
Peel Strength between Rubber and Steel(kN/m) ≥		10	10	10
Peel Strength between Rubber and PTFE(kN/m) ≥		7	7	7

Mechanical Properties		
Ultimate Compressive Strength Ru(MPa)		≥70
Measure of Compressive Elastic Mould E1(MPa)		E±E*30%
Measure of Shear Elastic Mould G1 (MPa)		G±G*15%
Measure of Shear Elastic Mould after Aging G2 (MPa)		$G_1±G_1$*15%
Measure Corner Tangent tgθ	Concrete Bridge	≥1/300
	Steel Bridge	≥1/500
Measure Friction Coefficient μf (with grease)		≤0.03





Square Laminated Bearing Pads Drawing(mm)

1. Steel Plate; 2. Rubber layer

Rounded Normal Laminated Bearing

1. Steel Plate; 2. Rubber layer

Seismic Isolators for Building, Bridge and Highway

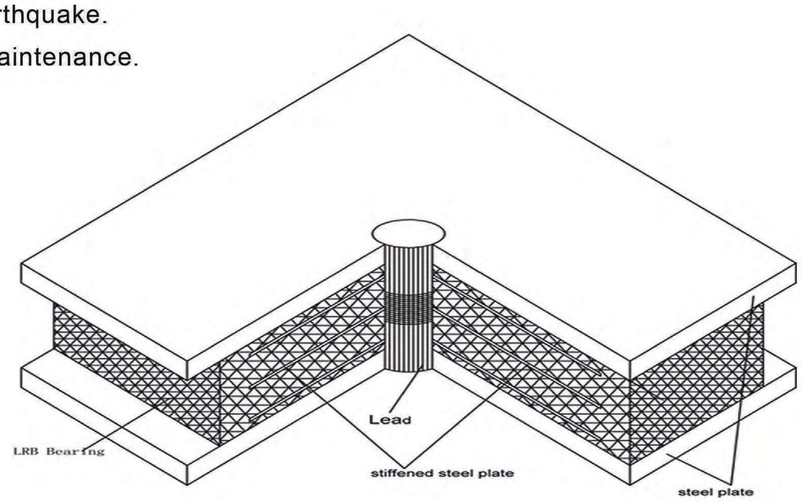
Lead Elastomeric Bearing

Lead rubber bearing, applied to building and bridge constructions is a practical and cost-effective choice for seismic isolation. It is composed of laminated elastomeric bearing pad, top and bottom sealing & connecting plates and lead plug inserted in the middle of the bearing as shown in the following picture.



Features:

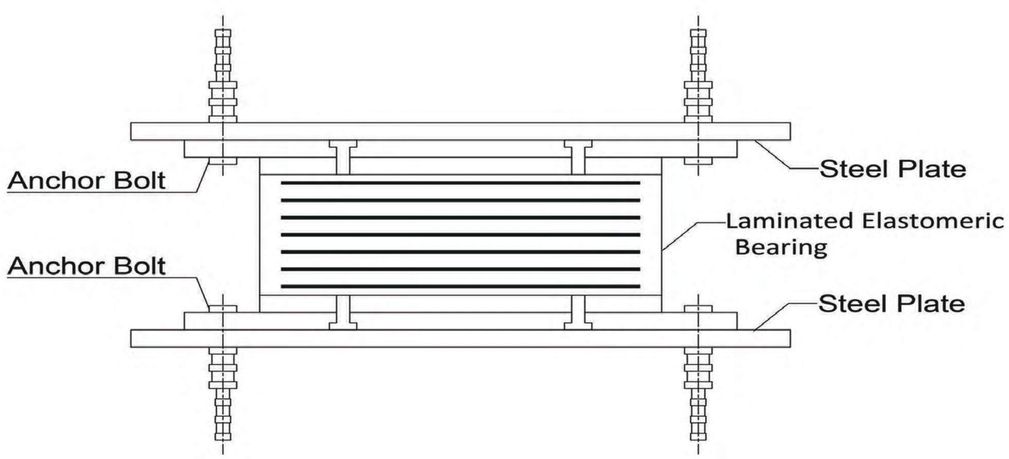
- Stiff and strong in vertical direction but flexible in horizontal direction.
- Absorb earthquake-generated force by changing the bearing's shape.
- Allow the buildings to retain their original shapes and position owing to the high elastic force of rubber.
- Capable to adjust damping amount just by changing the number of lead plugs.
- Excellent vertical load capacity ranging from 5 tonf to 2000 tonf.
- Reduce the ground acceleration by extending the structure vibration period.
- High durable and elasticity of the rubber part - not suffer any damages during and after earthquake.
- Low maintenance.



HDR High Damping Rubber Bearing

HDR high damping rubber bearings consist of alternate layers of elastomeric material and vulcanized reinforcement steel plates. They provide a high level of damping of up to 16% since they are made up of a chemically improved rubber compound providing better damping and displacement capacity. As the reinforcement steel plates are fully embedded in the elastomeric material they are sealed and thus protected against corrosion. The devices are manufactured with the rubber vulcanised to the top and bottom connection plates. The bearings can also be supplied with additional anchor plates,allowing easier replacement of the device in case of maintenance needs.





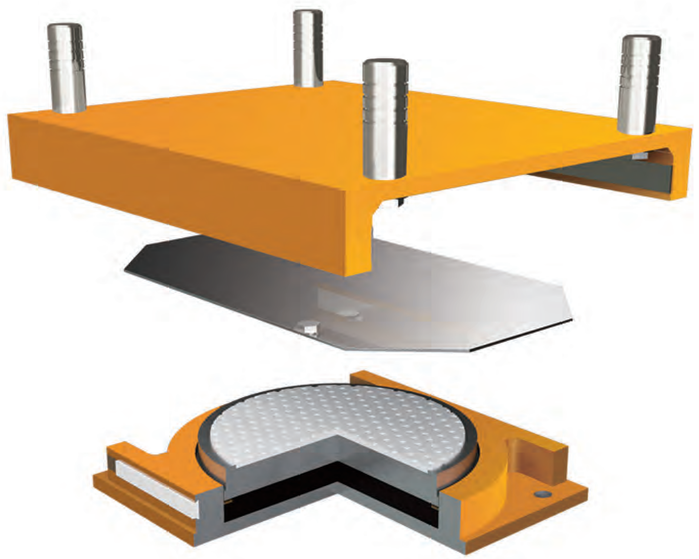
Bridge Pot Bearing

GPZ Highway Bridge Pot Bearing Pad

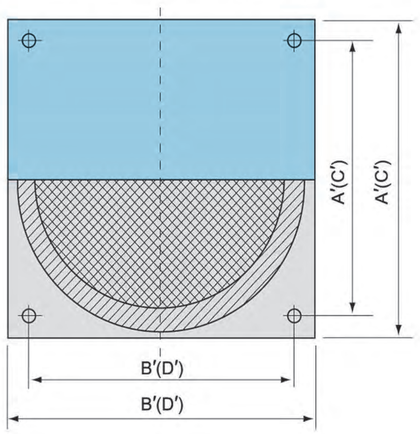
Meishuo pot bearings ensure the transfer of loads between a structure's superstructure and its sub-structure. Meanwhile they canaccommodate rotation and movements of the superstructure. Meishuo pot bearings are generally suitable for the use in any type of structure,and can be subjected to low or high loading and frequent movements and rotation.

Features:

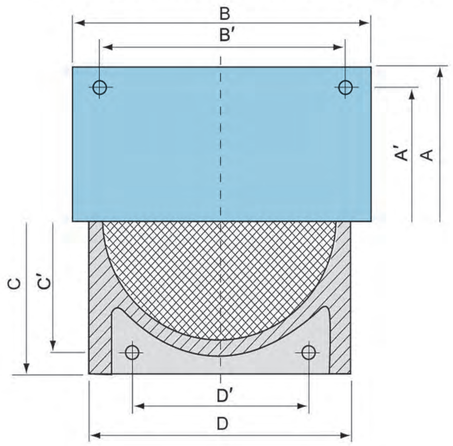
- With low-profile yet high loading capability over 50,000 KN.
- Maximized shearing strength of elastomer pad through the method of encasing it in the steel pot.
- Allow for large rotations ranging from 0 to 0.03 rad.
- Low friction coefficient between 1% and 3%.
- Excellent fatigue, impact and aging resistance of the layer of PTFE.
- All the metallic parts are protected against corrosion by galvanization and epoxy painting according to EN 1337-9 (other protective coatings are available as your requirements).
- Complying with BS EN-1337, KS4424, AASHO, ISO or other custom standards.



GPZ Fixing Type (GD)

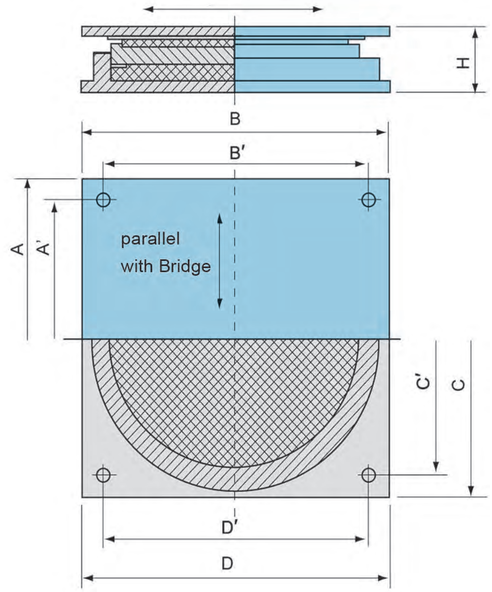


GPZ Single Direction Moving Type (DX)



GPZ Two Directions Moving Type (SX)

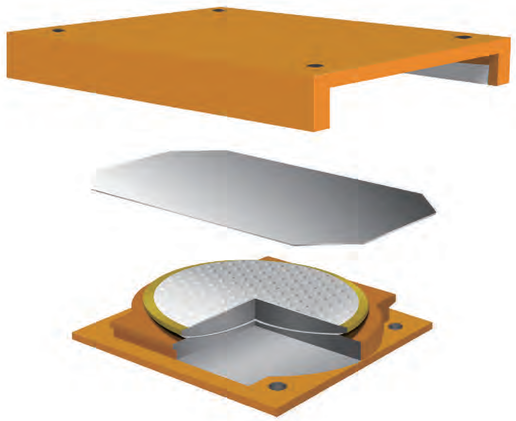
vertical with Bridge



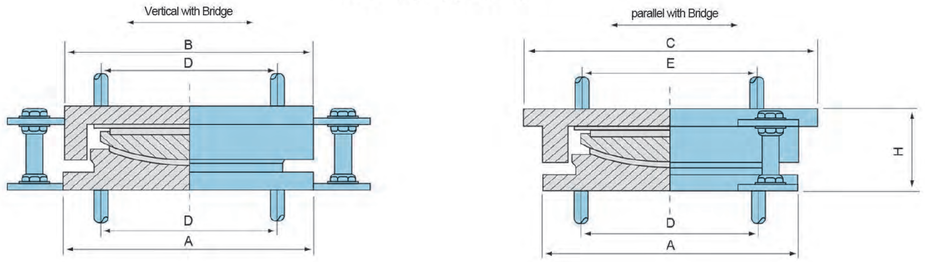
Spherical Bearing

QZ Spherical Bearing

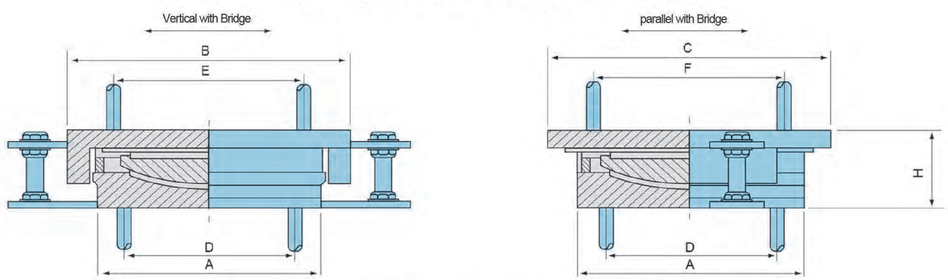
Spherical bridge bearings, composed of precision-machined steel plates with spherical concave and convex surfaces, provide flexible movements and rotations between the superstructure and supporting structures to transfer whether horizontal or vertical force safely.



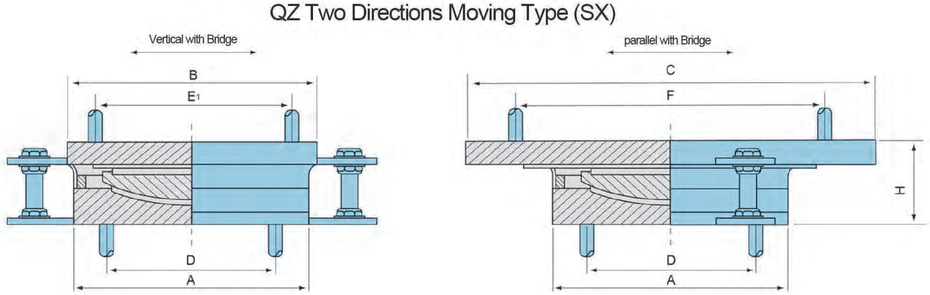
QZ Fixing Type (GD)



QZ Single Direction Moving Type (DX)



QZ Two Directions Moving Type (SX)



Noise Barrier

Introduction:

A noise barrier (also called a soundwall, sound berm, sound barrier, or acoustical barrier) is an exterior structure designed to protect inhabitants of sensitive land use areas from noise pollution. Noise barriers are the most effective method of mitigating roadway, railway,and industrial noise sources – other than cessation of the source activity or use of source controls.

Sound Absorption Coefficient

Frequency(Hz)	100	125	160	200	250	315	400	500	630
Sound Absorption Coefficient a	0.21	0.24	0.36	0.41	0.64	0.81	0.98	1.02	0.96
Frequency(Hz)	800	1000	1250	1600	2000	2500	3150	4000	5000
Sound Absorption Coefficient a	0.91	0.96	1.05	1.12	1.12	1.10	1.04	0.99	0.94

Sound Transmission Loss

Frequency(Hz)	100	125	160	200	250	315	400	500	630
Sound Transmission Loss(dB)	24	26	23	21	19	19	20	21	22
Frequency(Hz)	800	1000	1250	1600	2000	2500	3150	4000	5000
Sound Transmission Loss(dB)	23	25	26	28	30	32	34	36	26

Features:

- Soundproof function: sound insulation STC≥30-35
- Noise absorption function: Using advanced centrifugal glass wool, Average noise reduction coefficient NRC≥0.95
- Solid and steady: Using aluminum and steel post, wind resistance 1500N/m2
- Anti-aging and anti-corrosion
- we provide custom service as our customers' requirements

Classification:

1、Metal Perforated Noise Barrier

There are many small holes in the noise barrier surface. When the sound enters sound absorption materials and moves forward, the sound power turns into heat energy because of viscosity and heat conduction effects in the transmission. At the same time, sound waves are absorbed by sound absorption materials after being reflected by steel backboard.



2、Metal Shutter Noise Barrier

Sound Insulation: average 37dB
Sound Absorption Coefficient: average 0.84 Waterproof, heat resistant, custom color and shape, easy to install



3、PC polycarbonate Noise Barrier

Good light transmittance: Can reach 90%. It won't get yellowing and nebulization with sun exposure.Shock.
Resistance: 250-300 times of normal glass, 20-30 times of acrylic plate(PMMA).
Flame retardance: refractory B1. its physical performance keeps steady in -40℃- +120℃. Its auto ignition temperature is 630℃.Light and easy toinstall: Its weight is 1/2 of glass with the same thickness.It can both be cold-formed and hot-formed and customized to any shapes.UV Resistant:double UV-coating, anti-aging.



Noise Barrier Shapes

Flat Perforated Noise Barrier



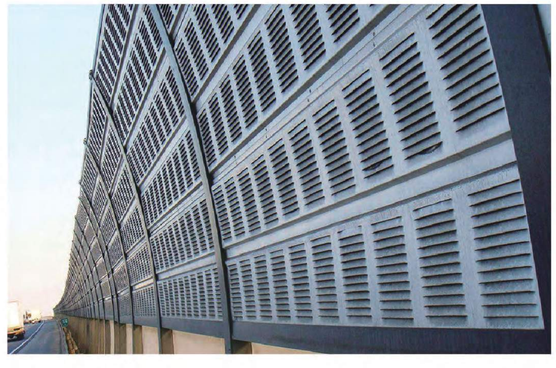
Top Curved Noise Barrier



Top Straight-bend Noise Barrier



Arc-shape Noise Barrier



Shutter Noise Barrier



Concave-convex Perforated Noise Barrier

