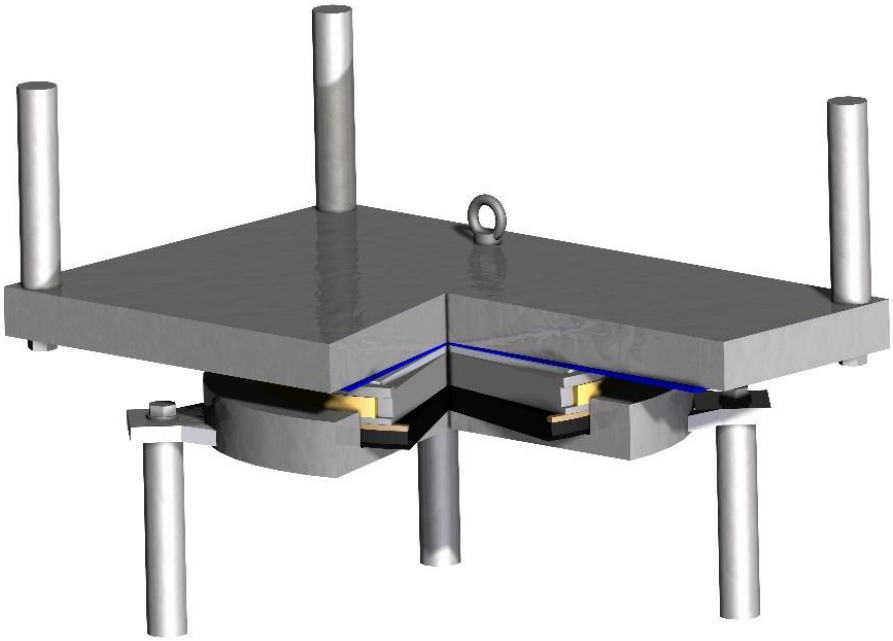
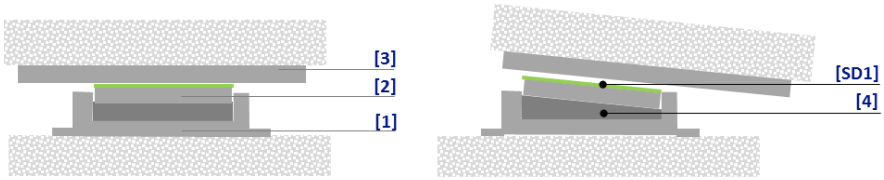
[POT] POT Bearing

Product Description

High performance mechanical bearing allowing high vertical and horizontal loads

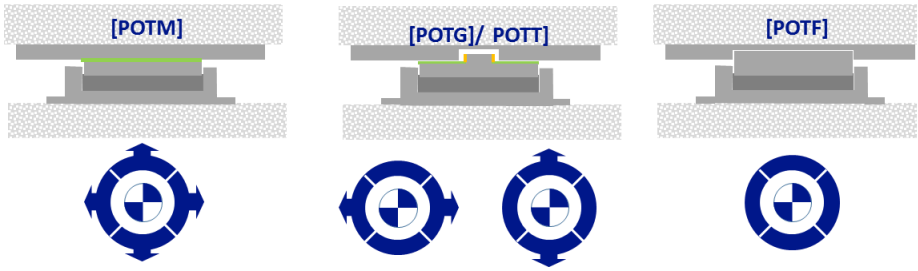


Bearings are constituted of 3 main steel elements: Pot [1], Piston [2] and Upper tray [3].



Rotations in both directions are ensured by a elastomeric pad [4] confined by the pot [1] and the piston [2]

Displacements in both directions (M Type), one direction (G and T type) or none are ensured by a sliding interphase [SD1] between element [2] and [3]



Uses

- Bridges (steel and concrete) and any type of civil/Industrial construction
- Maximum Vertical Load: (typical pressure >up to 42MPa ULS)
- Maximum displacements: unlimited
- Maximum rotation: limited to 30 mRad

Advantages

- High Vertical Loads bearing capacity compared to other bridge bearings such as elastomeric bearings (15 MPa)
- Enhanced durability compared to elastomeric bearings (rubber is not fully exposed to environment but confined inside the pot
- Competitive price compared to other mechanical bearings.

Design Standards

EN1337 (EN1337-5) or AASHTO

Bearings and Joints

Bearings and Joints

Materials

- Steel elements [1], [2], [3], dowels and masonry plates

Element	Parameter	EN 1337-5 (EN 10025)	AASTHO (ASTM A709)
Steel elements [1], [2], [3], etc	Standard and grade	S355 acc. To EN 10025	ASTM A709-11 GR.50 TYPE 1

- Rubber element [4]:

Element	Parameter	EN 1337-5 (ISO 6446)	AASTHO (ASTM D4014)
Nat Ruber NR Clorophrene CR	Hardness	50 ± 5 HSh	50 ± 5 HSh
	Tensile strength	≥ 15,5 MPa	≥ 15,5 MPa
	Elongation	≥ 400 %	≥ 400 %
	Compression set (22 h, 70ºC)	≤ 25 %	≤ 25 %

- Brass Seals

Element	Parameter	EN 1337-5 (EN 12167)	AASTHO (ASTM B36)
Brass seal	Standard and grade	CuZn39Pb3 acc.EN 12163 - 12167 (A.2.1)	ASTM B36M C26800 H02 half hard

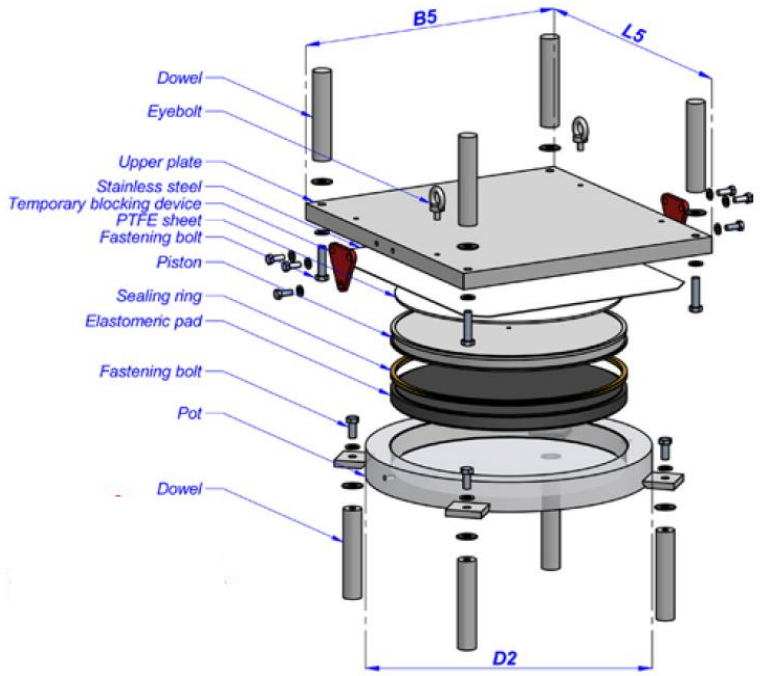
- Sliding surface [SD1]: PTFE dimpled sheet vs Stainless Steel

Element	Parameter	EN 1337-5 (EN 1337-2)	AASTHO (ASTM 4894)
PTFE dimpled sheet	Stand specc gravity	2.14 – 2.20 gr/cm^3	2.13 – 2.19 gr/cm^3
	Tensile strength	29.0 – 40.0 MPa	≥ 27.6 MPa
	Elongation	300 %	300 %
Element	**Parameter**	**EN 1337-5 (EN 337-2)**	**AASTHO (SAE)**
Lubrifiant		Silicon grease acc. to EN 1337-2	Silicon Grease acc. To SAE AS 8660
Element	**Parameter**	**EN 1337-5 (EN 1337-2)**	**AASTHO (ASTM A 240)**
Stainless steel sheet	Standard and grade	1.4404+2B acc. EN 10088-2 (AISI 316)	ASTM A 240 gr. 304 (AISI 304)

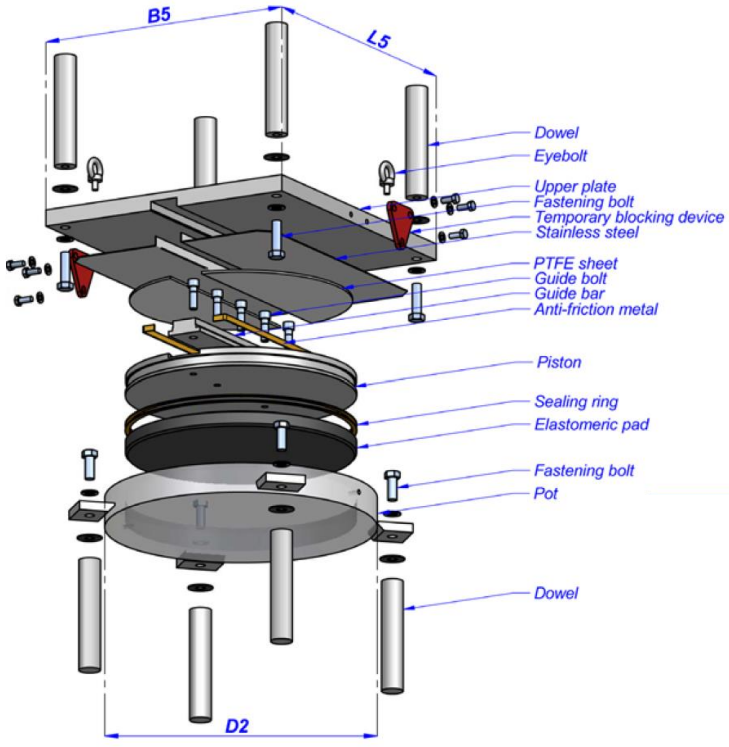
- Sliding surface on guides: CM1 vs Stainless Steel
- Bolts: 10.9

Image

[POTM]



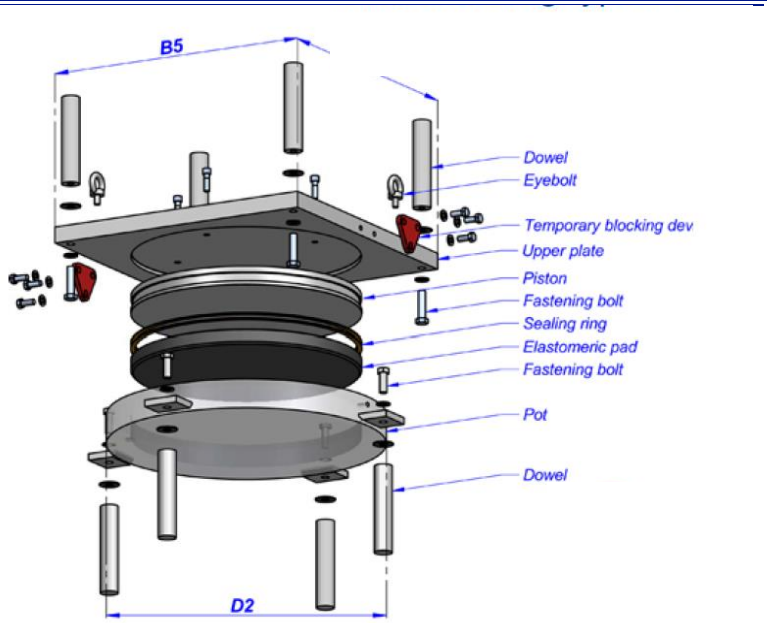
[POTG]
[POTT]



Bearings and Joints

Bearings and Joints

[POTF]



Corrosion Protection

- Standard Protection

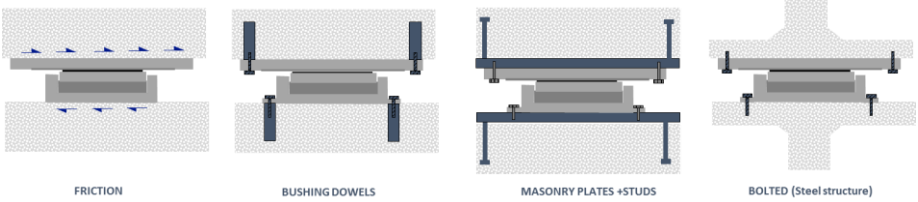
Designation EN12944-5	Corrosivity category	Type of surface	Primer NDFT	Inter NDFT	Inter NDFT	Final NDFT	Expected Durability
A4.14-EP-PUR	C4	Mechanical Cleaning	Zn (R) 60µm	Epoxy 80µm	NA	AP 60µm	Medium
A4.15-EP-PUR	C4	Mechanical Cleaning	Zn (R) 60µm	Epoxy 80µm	Epoxy 80µm	AP 60µm	High
A5M.06-EP-PUR	C5-M, C5-I	Mechanical Cleaning	Zn (R) 60µm	Epoxy 100µm	Epoxy 100µm	AP 60µm	High
A8.02-EP-PUR	C5-M, C5-I	TS 85Zn-15Al	Epoxy 60µm	Epoxy 100µm	NA	AP 80µm	High
A8.04-EP-PUR	C5-M, C5-I	TS 85Zn-15Al	Epoxy 60µm	Epoxy 80µm	Epoxy 80µm	AP 60µm	High

AP: Aliphatic Polyurethane TS: Thermal Spray coating (Epoxy Sealed)

C4: Highly Corrosive C5-M: Extremely Corrosive Marine C5-M: Extremely Corrosive Industrial

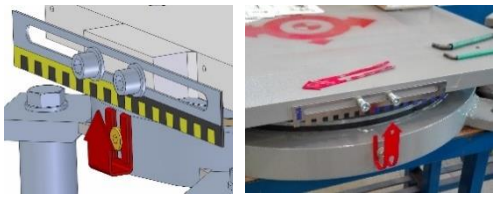
- Other types of protections are available on demand
- Standard RAL: 7037

Fastening options

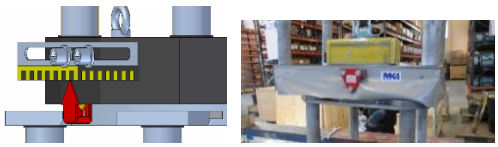


Accessories

- Measuring kit

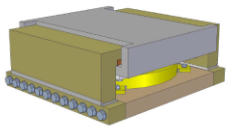


- Antidust skirt

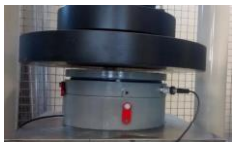


Bearings and Joints

- Uplift clamps



- Monitoring
  (load cells, tilt meters, displacement gauges)



- Folding sheet to prevent upwards blow of dust

Designation

Exemples:

POTM Pot Bearing Type Moveable	20000 Vertical Load at ULS in kN	400 Max acceptable displacement in Long direction	50 Max acceptable displacement in Transv direction
POTG Pot Bearing Type Guided Long	20000 Vertical Load at ULS in kN	4000 Transverse Load at ULS in kN	50 Max acceptable displacement in Long direction
POTT Pot Bearing Type Guided Transv	20000 Vertical Load at ULS in kN	4000 Longitudinal Load at ULS in kN	50 Max acceptable displacement in Transv direction
POTF Pot Bearing Type Fixed	20000 Vertical Load at ULS in kN		

Durabilitiy

Design Lifetime: 50 years

Warranty

Standard warranty against defects in materials, function, integrity and corrosion protection: 5 years

Certificates

CE mark

Typical dimensions

On demand

Required information to produce quotation

For each bearing:

- Nsd,max Nsd,min Maximum and Minimum vertical loads
- NGd NQd Maximum Vertical permanent and life Load
- Fyd Fxd Maximum horizontal loads in both axis
- Most adverse combination of maximum horizontal load and minimum vertical load
- Δx+ and Δy+ movements in longitudinal and transverse direction
- Δx.pv Preset value to counteract irreversible displacements (i.e creep, shrinkage)
- θx+ and θy+ rotations in longitudinal and transverse direction
- Concrete strenght in upper and lower interphase
- Desired fastening option
- Desired accesories

Bearings and Joints

Reference Projects