

## POT BEARINGS EN 1337-5



Agom V-Max pot bearings are designed to carry combinations of vertical loads, horizontal loads, longitudinal and transversal movements and rotations and they are used in road and railway bridges in steel and concrete.

A completely encased natural rubber pad is positioned in a steel pot. Under high pressure the pad behaves like a liquid. The elasticity of the rubber allows tilting movement (rotation) of the piston in the horizontal axis.

Depending on whether the bearing is fixed, guided sliding or a free sliding, Agom V-Max bearings accommodate vertical loads and corresponding horizontal forces, as well as movements in longitudinal or transversal directions

### Load Combinations

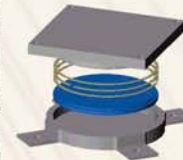
This kind of bearings can carry very high loads, over 50.000 kN

The bearings are designed for combined maximum vertical and horizontal loads. The standard range of Agom pot bearing is designed to have an horizontal load  $\leq 15\%$  of the maximum vertical load with a

maximum rotation of  $\pm 0.01$  rad (other load and rotation combinations are provided on request).

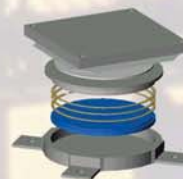
### Fixed V-Max AGPF

These bearings consist of a pot / piston assembly within which an elastomeric disc is encapsulated and fitted with an anti-extrusion sealing device. Under load this encapsulated elastomeric disc acts in a similar manner to an incompressible confined fluid, enabling the pot and piston to rotate relative to each other. Agom V-Max bearings enable rotation in any direction while at the same time the structure is constrained horizontally. The pot and piston feature fittings for securing the bearing to the bridge structure.



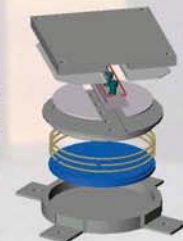
### Free sliding V-Max AGPM

Identical in construction to the fixed bearings, these multi-directional devices are fitted with a virgin PTFE sheet in contact with an austenitic steel plate, enabling the bearing to slide in all directions.



### Guided sliding V-Max AGPL-AGPT

Guided sliding devices are identical in construction to free sliding bearings but are also fitted with one or more guides to limit the bearing's movement to only one direction.



### FIXING TYPES

In case of horizontal loads  $< 20\%$  of the simultaneous vertical load, if there is sufficient friction



between the bearing and the sub or superstructure, the anchor bolts can be left out and the bearing can be connected to the structure by means of cementitious or epoxy resin (if the local code allow it).



Upper and lower anchors can be provided on request

In case of pre-cast concrete beam the bearings can be provided with upper pin and top subsidiary plate

In case of steel beams the bearings shall be provided with upper pin or connecting bolts.

To adjust the angle of inclination of the superstructure, the pot bearing's top plate can be manufactured tapered or a wedge plate can be fixed at the top of the bearing.



### Concrete and elastomer pressure

According to EN 1337-5 the allowable concrete pressure depends on the relative dimensions of the bearing structure interface to the total support area and the characteristic strength of the concrete.

## Friction of the bearings

The reaction of the bearing to the movement can be mathematically calculated by considering friction coefficient between stainless steel and PTFE to be 0,03.

The exact friction coefficient between stainless steel and PTFE is determined in accordance to EN 1337-2.

## Quality

Agom V-Max bearings are designed and manufactured in accordance with the requirements of the new European standard EN 1337-5 and have the qualification of the CE mark. Agom can also supply pot bearings complying with other standards. Every single component is mechanically worked and assembled by fully qualified and trained workers at the Agom factory with regular external inspections according to EN 1337 and under strict ISO 9001:2000 quality control standards.



All the V-Max bearings are manufactured using only high-quality materials:

## Materials

### Elastomer material

The elastomer material used for the elastomeric pad is natural rubber in accordance with ISO 6446.

Characteristics	Test method	Requirements
Tensile strength (MPa)	ISO 37 type 2	≥ 15,5
Elongation at break (%)	ISO 37 type 2	≥ 450
Compression Set 22 h; 70 °C	ISO 815	≤ 30
Hardness (IRHD)	ISO 48	50 ± 5

### Ferrous material for pot and piston:

The pot, the piston and if applicable the sliding plate are manufactured from ferrous material in accordance with EN 10025 standard

### Austenitic steel sheet

The austenitic steel used for sliding surfaces is X5CrNiMo17-12-2 in accordance with EN 10088-2 1.4401 with a minimum thickness of 1.5 mm



The roughness is  $R_{ySi} \leq 1 \mu m$

The hardness  $\geq 150 HV1$  and  $\leq 220 HV1$

### PTFE

Agom uses only virgin PTFE without regenerated or filler materials.



The minimum thickness of PTFE is 4.5 mm and varies in according with the bearings size.

Characteristics	Test method	Requirements
Tensile strength (MPa)	ISO 527-1/3	≥ 29
Elongation at break (%)	ISO 527-1/3	≥ 300
Hardness	EN ISO 2039 -1	H132/60=23 to 33 MPa

## Corrosion Protection:

Steel components exposed to the elements are protected against corrosion. Agom adjusts the corrosion protection in accordance with the aggressiveness of the environment in which the V-Max bearings are to be installed and each customer's requirements.

The standard corrosion protection according to EN 1337-9 is as follows:

- sandblasting SA2.5 grade
- two components high thickness epoxy zinc paint: 250  $\mu m$

The high resistant corrosion protection (metallization) is as follow:

- sandblasting SA 2.5 grade
- Metal spraying to 85  $\mu m$  with Zn/Al 85/15
- Sealing: Epoxy sealer 20-25  $\mu m$
- Top coat: Polyurethane paint 100  $\mu m$

## Comprehensive Labelling:

All the bearings are provided with a metal label detailing the proprieties of the bearings:

- bearing type
- maximum vertical and horizontal loads
- rotation
- order number
- date of manufacture
- CE Mark



The top face of the bearing gives information on the type of the bearing, the direction of the axis of the bridge, the presetting (if any), the position.



On customer request, a special sliding label gives the information about the movement condition of the bearing.

