

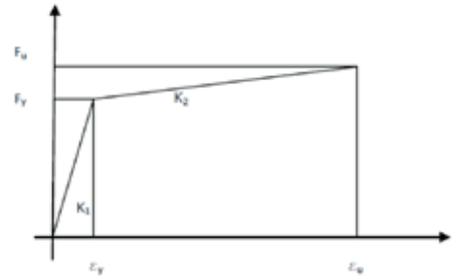


**DISPLACEMENT DEPENDENT
DEVICE RED AND AIOS TYPES**

HYSTERETIC STEEL DAMPERS RED TYPE

Devices with non linear behaviour (NLD) in displacement dependent steel are metal retainers, which use the hysteretic properties of the material to dissipate energy. They consist of a series of steel elements designed to deform plastically under seismic action.

The RED type, made with crescent moon elements has an unidirectional configuration, so it acts in a single horizontal direction.



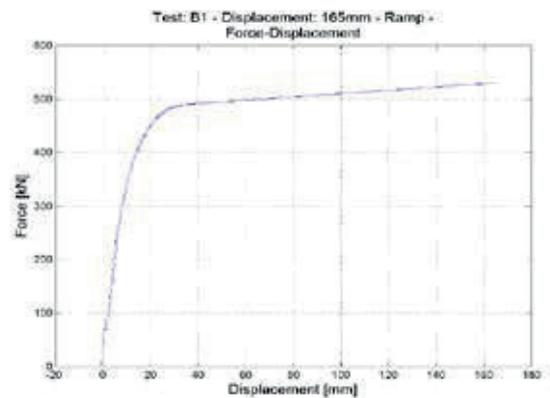
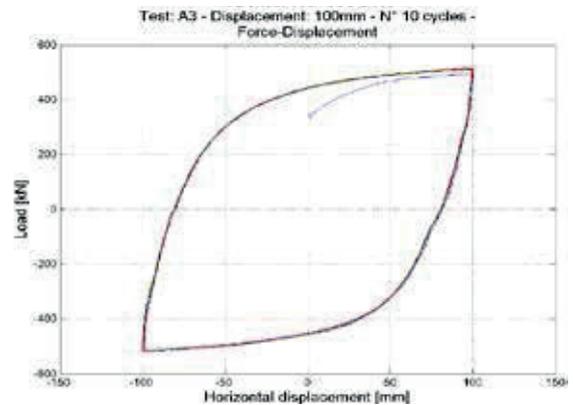
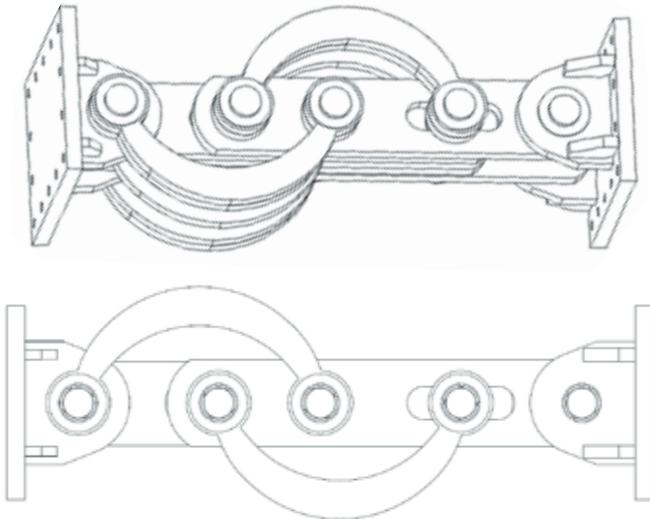
The AIOS type is a combination of fixed elastomeric disc bearings and hysteretic steel elements. The 'C' shaped steel elements acting as dissipators, may be placed in one horizontal direction only or in both, thus providing the device with unidirectional or bidirectional behaviour.

Hysteretic dissipative bracing is often used for retrofitting and seismic improvement of existing buildings applying passive protection to the building that increases the strength and rigidity of the structure.

KEY TO LABEL:

RED 1000/200

Device with max axial load 1000 kN and displacement $d_i \pm 100$ mm



AIOS AND RED DEVICES ARE DESIGNED AND MANUFACTURED ACCORDING TO EN 15129

The damper RED is a steel device with non-linear behavior (NLD) and dependent on the displacement. The RED are steel restrains, which exploit the hysteretic properties of the material to dissipate energy, they are made of a series of steel elements shaped crescent-shaped and designed to deform themselves plastically under the action of seismic project.

So the unidirectional type acts in one horizontal direction at a time.

The model associated with the behavior of the device is elastic-plastic, where the stiffness K governs the purely elastic behaviour, while F_y is related to the ability of the post-elastic material and represents the yield strength of the material, as well as the load of activation of the damper.

HYSTERETIC STEEL DAMPERS AIOS TYPE

The devices AIOS are a combination of a POT bearing and hysteretic steel elements.

The steel elements which perform the function of dampers, in the shape of “C”, can be placed in one horizontal direction or in both, thus giving to the device a behavior unidirectional or bidirectional.



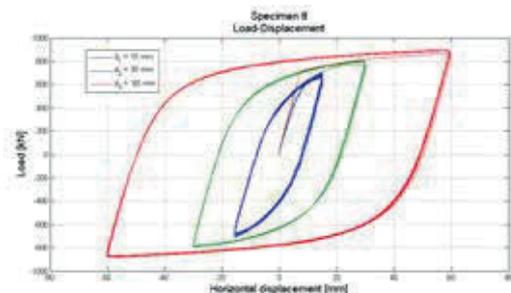
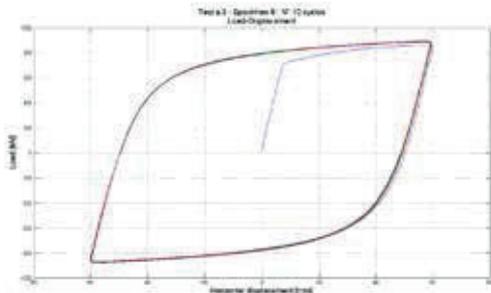
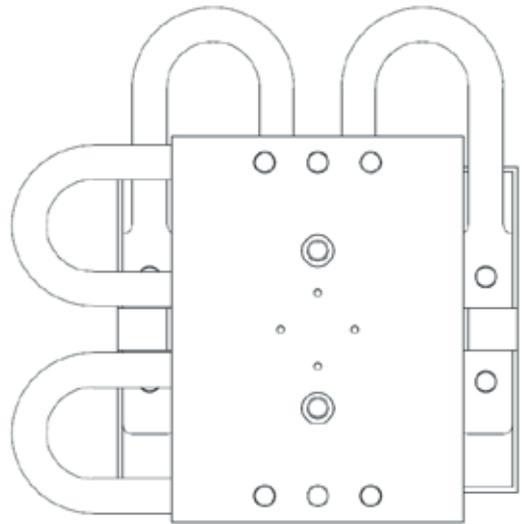
KEY TO LABEL

AIOS 1000-250/200-180/150 (BIDIRECTIONAL TYPE)

Device with max axial load 1000 kN, max longitudinal load 250 kN, longitudinal displacement 200 (±100) mm, max transversal load 180 kN and transversal displacement 150 (±75) mm.

AIOS 2000/150-300/200 (UNIDIRECTIONAL TYPE)

Device with max axial load 2000 kN, longitudinal free displacement 150 (±75) mm, max transversal load 300 kN and transversal displacement 200 (±100) mm.



IDENTIFICATION LABEL

| | | | | | | | | |
|-----------------|--------------------|-------|---------------|------------|---------------------|---------------------|---------------------|---------------------|
| | DISPOSITIVE TYPE | YEAR | JOB | V max (kN) | F _u (kN) | s _u (mm) | F _u (kN) | s _u (mm) |
| | AIOS MULTI | 2015 | 13 | | | ± | | ± |
| 2204-CPR-0045.1 | DISPOSITIVE CODE | ORDER | SERIAL NUMBER | RANK | F _u (kN) | s _u (mm) | F _u (kN) | s _u (mm) |
| | AIOS - / - / - / - | | 13 - - | | | ± | | ± |

MATERIALS

| COMPONENT | MATERIAL | STANDARD |
|-----------|----------|----------|
| CYLINDER | S355J2 | EN 10025 |

The devices RED and AIOS are designed and produced in according to EN 15129 identified in section 6.2 of Table I.

TABLE I

| | | | | | | |
|--------------------------------------|---------------------------|-----|--|--|--|--|
| Displacement Dependent Devices (DDD) | Linear Devices (LDs) | 6.1 | | | | |
| | Non-Linear Devices (NLDs) | 6.2 | | | | |



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