Xtendam

Steel Plate Damper

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SENQCIA

Overview • Features

1 Overview

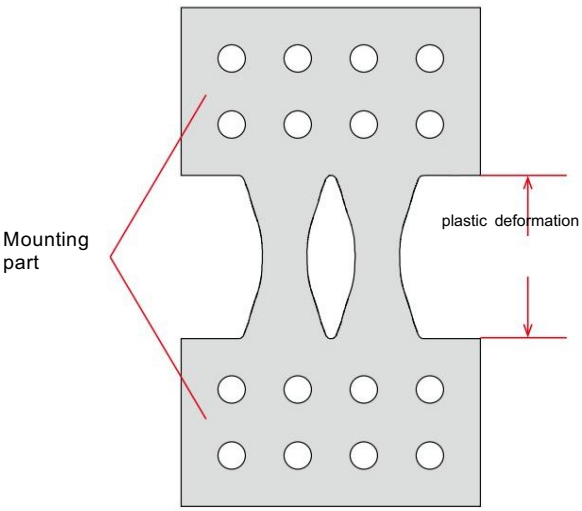
When an earthquake occurs, loads are applied to the pillars and beams of the building. Therefore, by installing the Xtendam, the Xtendam will yield and absorb the energy of the earthquake. This reduces the load on the pillars and beams and suppresses the shaking of an earthquake.

2 Features

- Absorbs energy during an earthquake, reduces the load on columns and beams, and suppresses earthquake shaking.
- Excellent deformation performance and energy absorption are achieved by making the plastically deformed part X-shaped.
- The type of damper can be selected according to the amount of deformation of the building during anearthquake.
- Uses steel material with high toughness (low yield point steel LY225)
- Uses paint with excellent elongation performance
- It is economical
- Easy to replace*

*If cracks occur in the Xtendam's plastically deformed part, replace it.

Shape example



Structural performance evaluation report (copy)

Construction procedures

Temporary assembly of pillars, beams, and braces (hereafter referred to as frames) is performed.

Install a temporary plate using temporary bolts where Xtendam is to be installed.

After installing the temporary plate, perform final tightening of the frame.

After tightening the frame, remove the temporary plate.

Install the Xtendam and confirm that
the hole positions of the Xtendam and the frame are aligned.

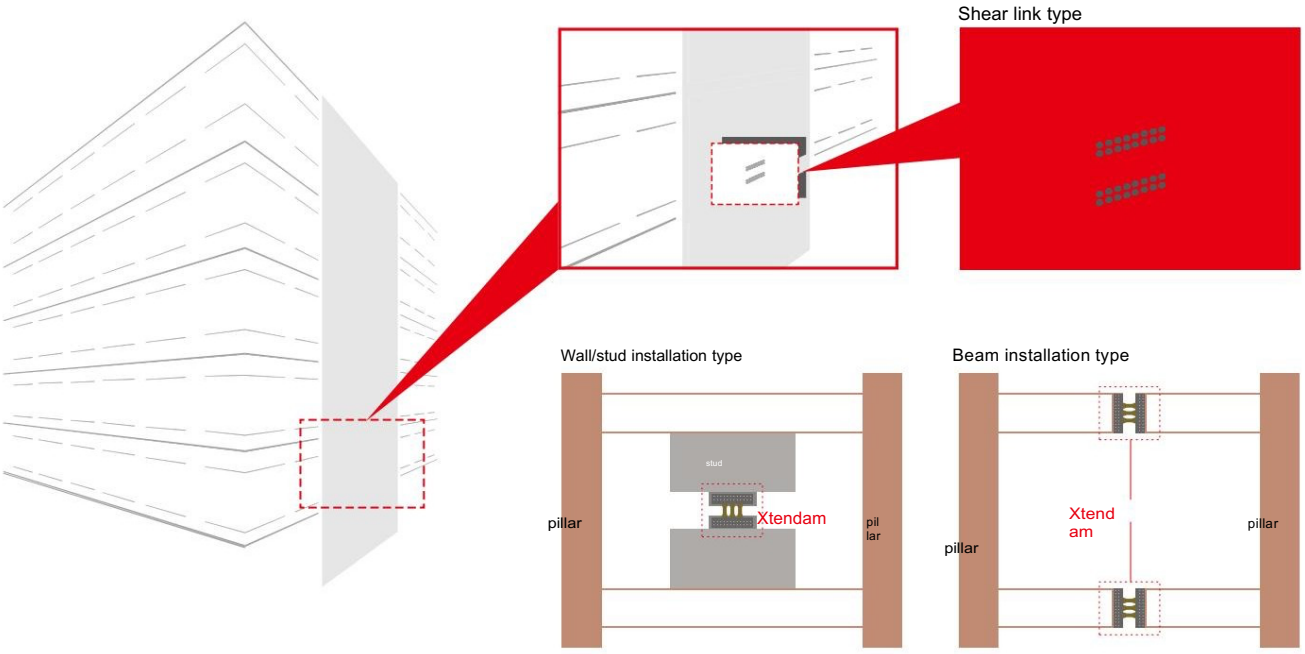
If there is a deviation

Align the hole position with a knife or the like.

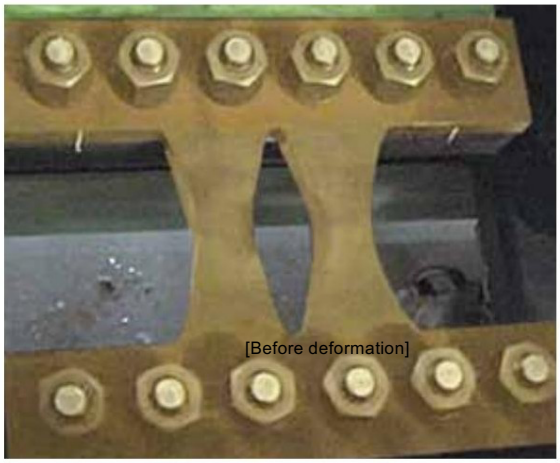
Installation, primary tightening, and final tightening of bolts are performed according to the high-strength bolt connection design and construction guidebook (Architectural Institute of Japan) or the construction instructions of the high-strength bolt manufacturer.

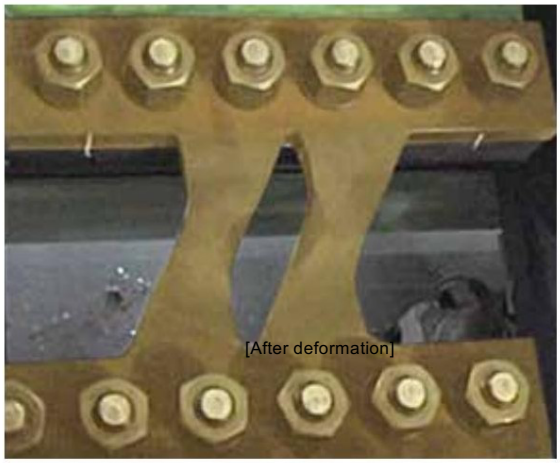
After final tightening, paint the bolts and the mounting part. If there is paint peeling on the plastically deformed part, touch up.

Setting example



*Please use indoors. Please contact us for outdoor use.





• Random wave force

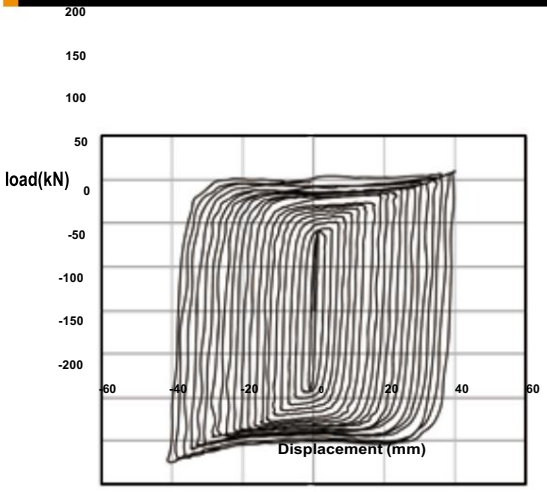


Fig. 1 Hysteresis characteristics

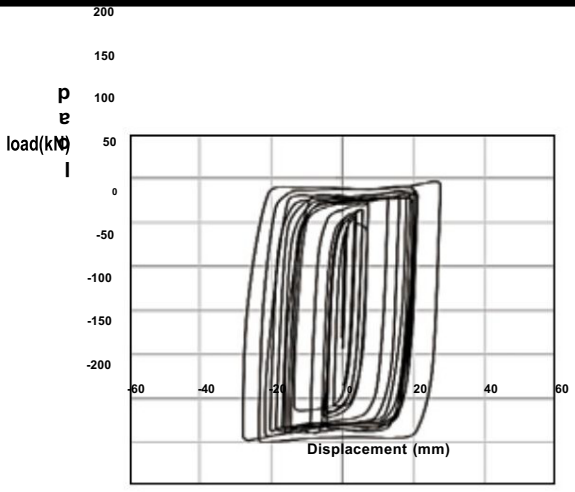


Fig.2 Random wave

Fatigue characteristic chart **Damper member angle R (rad)**

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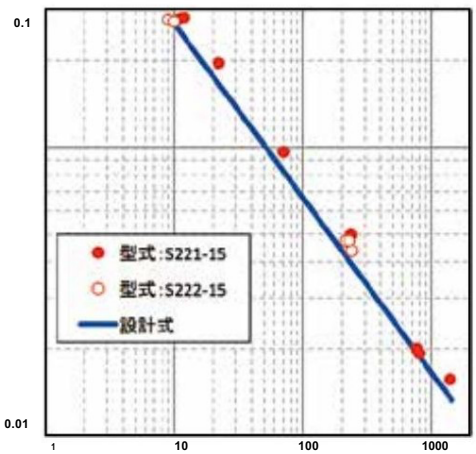


Fig. 3 Fatigue characteristics

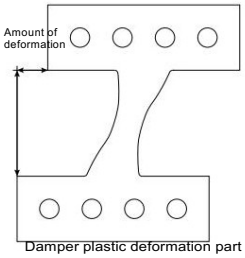
Design $N=\left(\frac{1.079}{R}\right)^{1.654}$

N: number of repetitions

R: Damper plastic deformation member angle*

*Within the range of R < 1/3.5

Please use it.



Damper plastic deformation part member angle R =δ/h

Specification

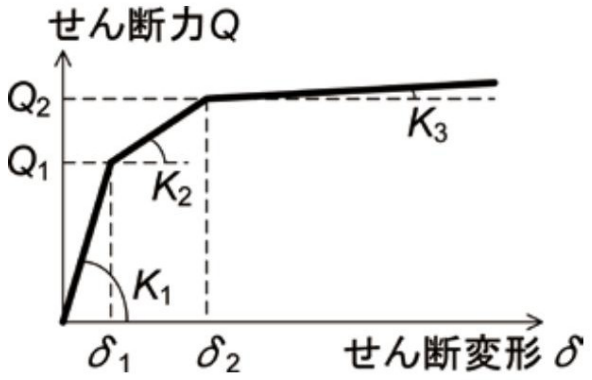
Model: S 22 2 - 15

Plastic deformation part height (150mm)

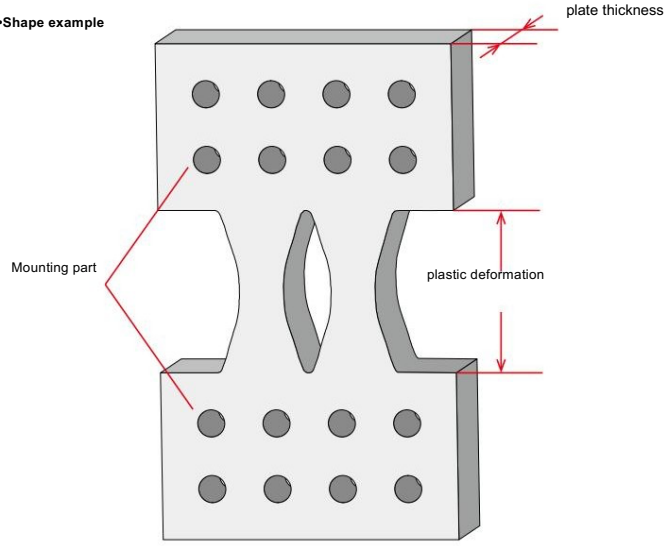
Number of plastically deformed parts (2)

Thickness (22mm)

•Restoring force characteristic chart



•Shape example



Restoring force characteristic table

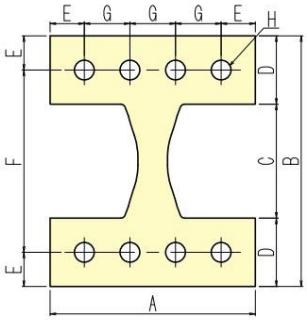
Model	1st break point load Q1(kN)	Second break point load Q2(kN)	initial rigidity K1 (kN/mm)	second rigidity K2 (kN/mm)	third rigidity K3 (kN/mm)	First break point displacement δ1(mm)	Second break point displacement δ2(mm)	Maximum allowable deformation δmax(mm)
S221-15	85	135	125	18.75	0.50	0.68	3.35	42.9
S222-15	170	270	250	37.50	1.00	0.68	3.35	42.9
S223-15	255	405	375	56.25	1.50	0.68	3.35	42.9
S224-15	340	540	500	75.00	2.00	0.68	3.35	42.9
S301-20	150	240	165	25.00	0.65	0.91	4.51	57.1
S302-20	300	480	330	50.00	1.30	0.91	4.51	57.1
S303-20	450	720	495	75.00	1.95	0.91	4.51	57.1
S304-20	600	960	660	100.0	2.60	0.91	4.51	57.1
S371-25	235	375	205	31.25	0.80	1.15	5.63	71.4
S372-25	470	750	410	62.50	1.60	1.15	5.63	71.4
S373-25	705	1125	615	93.75	2.40	1.15	5.63	71.4
S374-25	940	1500	820	125.0	3.20	1.15	5.63	71.4

*δmax = Height of plastically deformed part ÷ 3.5

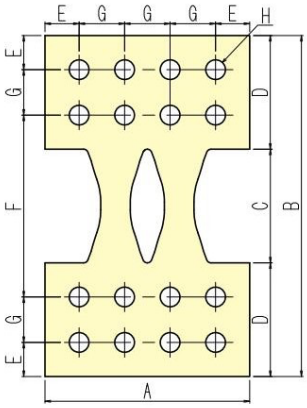
Dimension table

1 Plastic deformation part 150 mm type

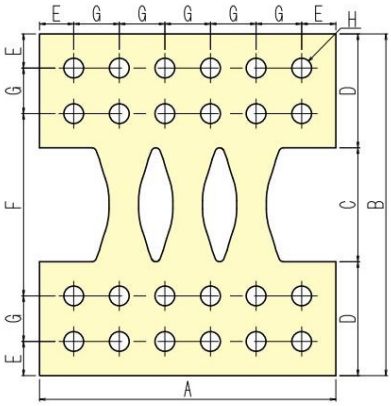
1) S221-15



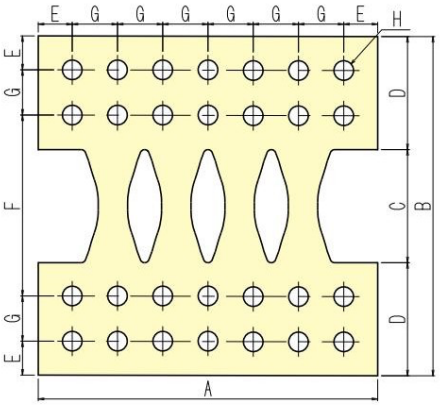
2) S222-15



3) S223-15

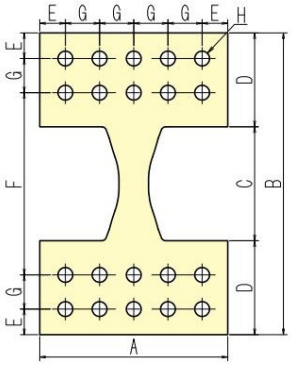


4) S224-15

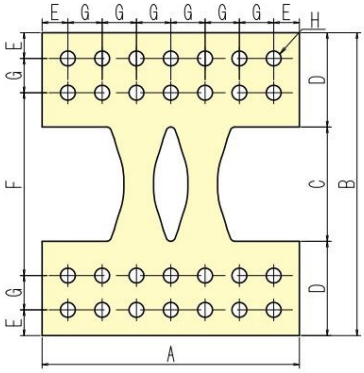


2 Plastic deformation part 200 mm type

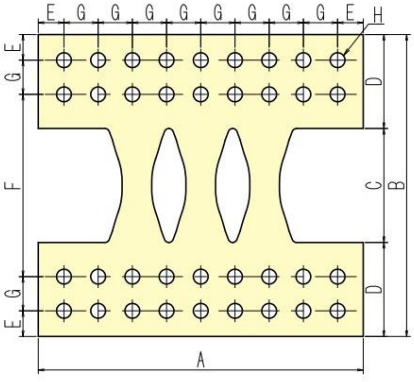
1) S301-20



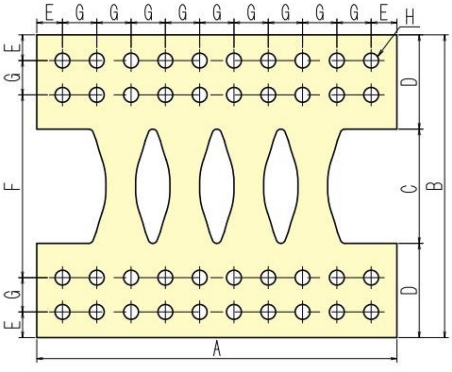
2) S302-20



3) S303-20

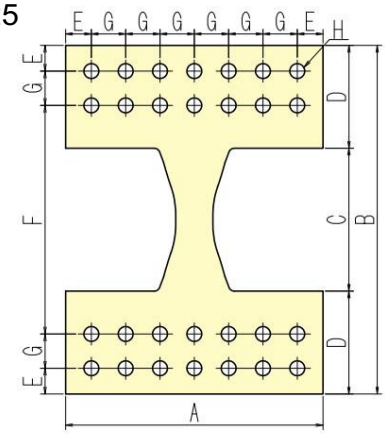


4) S304-20

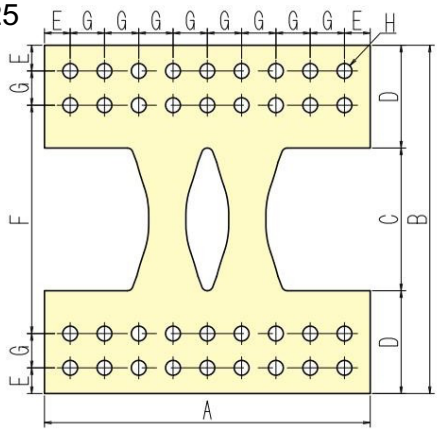


3 Plastic deformation part 250 mm type

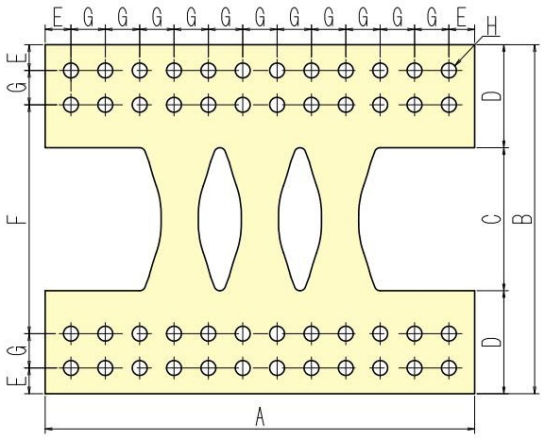
1) S371-25



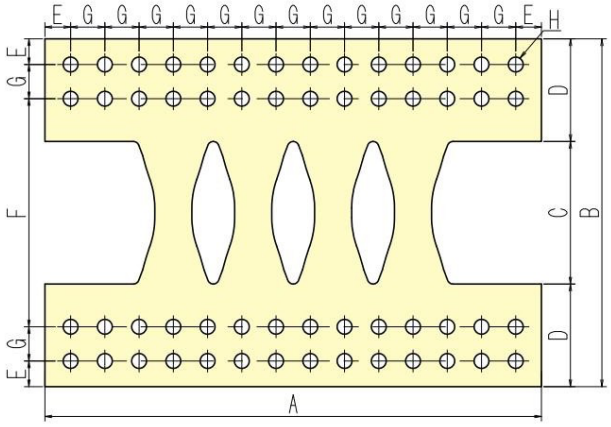
2) S372-25



3) S373-25



4) S374-25



(mm)

Type	Plate tickness	A	B	C	D	E	F	G	H*1	Mass (kg)
S221-15	22	270	330	150	90	45	240	60	8-Ø6	10
S222-15	22	270	450	150	150	45	240	60	16-Ø26	16
S223-15	22	390	450	150	150	45	240	60	24- Ø 26	23
S224-15	22	450	450	150	150	45	240	60	28- Ø 26	27
S301-20	30	330	530	200	165	45	320	60	20- Ø 26	27
S302-20	30	450	530	200	165	45	320	60	28- Ø 26	39
S303-20	30	570	530	200	165	45	320	60	36- Ø 26	51
S304-20	30	630	530	200	165	45	320	60	40- Ø 26	58
S371-25	37	450	610	250	180	45	400	60	28- Ø 26	50
S372-25	37	570	610	250	180	45	400	60	36- Ø 26	67
S373-25	37	750	610	250	180	45	400	60	48- Ø 26	91
S374-25	37	870	610	250	180	45	400	60	56- Ø 26	108

*1 Use M24 Torsia-type ultra-high-strength bolts (equivalent to S14T) for mounting bolts.

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