



AD BRACE

Aseismic Retrofitting



AD BRACE is a steel pipe brace with pin connections for earthquake - resistant structures. Comparing with conventional H-shaped steel braces, **AD BRACE** has higher designability and a more user-friendly implementation. Moreover, slight length adjustment and ease of installation can be achieved with the turnbuckling function.

Characteristics of AD BRACE

» Reliability

Design and manufacture of **AD BRACE** has been approved by the Japanese government. officially.

» Flexibility

Five types of clevis and pipes can be combined to choose the most suitable brace.

» Designability

Since the main members are steel pipes, it is less coercive with high designability.

» Safety

Comparing with conventional H-steel types braces it has less angulated parts and exposed bolts, thus it can prevent unexpected accidents.

» Ease of installation

With the turnbuckling function, it is easy to adjust the distance between the pins between ± 20 mm. Thus, it provides ease of installation.

» Reliable materials

For the clevis, cast steel SCW620 as per JIS standard is used . For the pins, SCM453 approved by the Ministry of Land and Transportation in Japan, is used.



Force Application Test

In order to verify validity of the design and capability of the members used, five types of steel pipes are tested.



$\phi 244.5 \times 8$ L=4852 (slenderness ratio 58)



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$\phi 244.5 \times 8$ L=2530 (slenderness ratio 30)

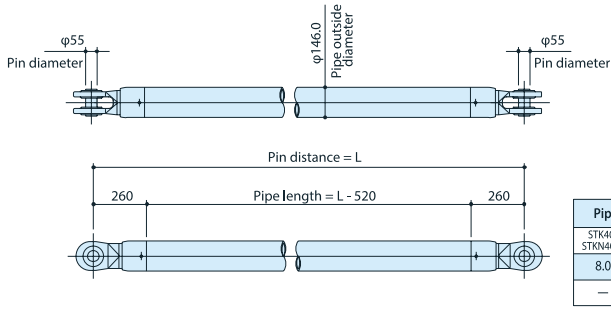


$\phi 244.5 \times 8$ L=2530 (slenderness ratio 30)

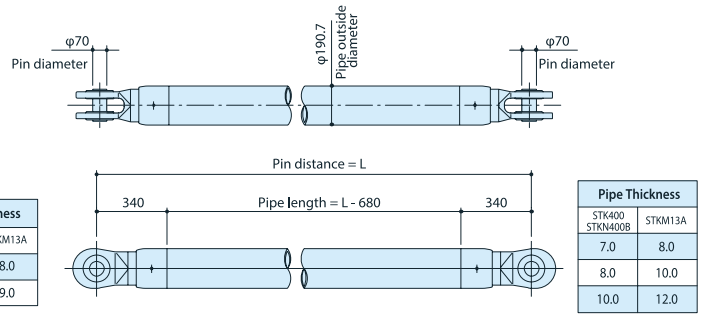
Standard Dimensions

Brace design slenderness ratio shall be below 58.

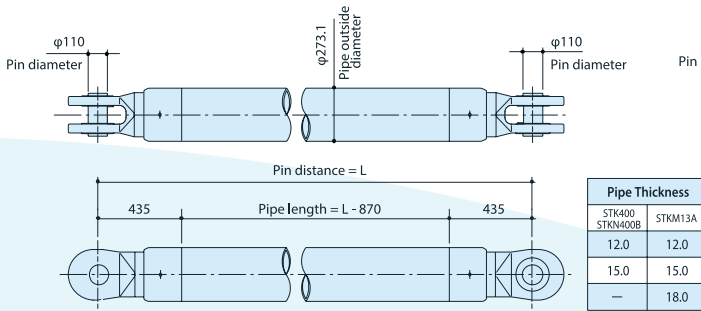
»Steel pipe outer diameter: $\phi 146.0$



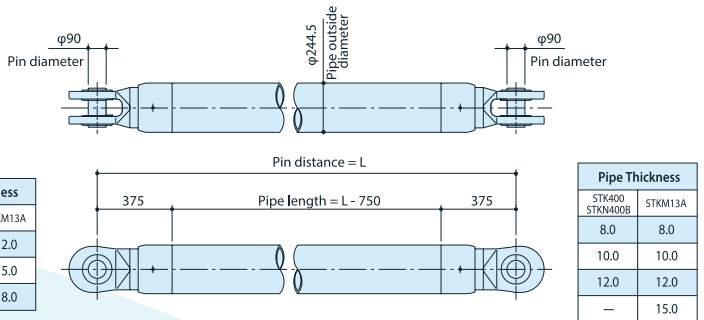
»Steel pipe outer diameter: $\phi 190.7$



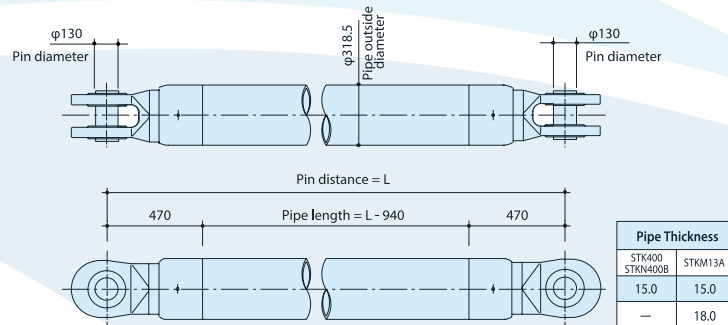
»Steel pipe outer diameter: $\phi 273.1$



»Steel pipe outer diameter: $\phi 244.5$



»Steel pipe outer diameter: $\phi 318.5$



STKN400B, STK400

Type	Pipe dimension (mm)	Pipe thickness (mm)	Section area (mm ²)	Tensile yield strength (kN)
AD-1408N	$\phi 146.0$	8.0	3,468	895
AD-1907N	$\phi 190.7$	7.0	4,040	1,042
AD-1908N		8.0	4,592	1,185
AD-1910N		10.0	5,677	1,465
AD-2408N	$\phi 244.5$	8.0	5,944	1,534
AD-2410N		10.0	7,367	1,901
AD-2412N		12.0	8,765	2,261
AD-2712N	$\phi 273.1$	12.0	9,843	2,540
AD-2715N		15.0	12,163	3,138
AD-3115N	$\phi 318.5$	15.0	14,302	3,690

STKM13A

Type	Pipe dimension (mm)	Pipe thickness (mm)	Section area (mm ²)	Tensile yield strength (kN)
AD-1408M	$\phi 146.0$	8.0	3,468	819
AD-1409M		9.0	3,874	914
AD-1908M	$\phi 190.7$	8.0	4,592	1,084
AD-1910M		10.0	5,677	1,340
AD-1912M		12.0	6,737	1,590
AD-2408M	$\phi 244.5$	8.0	5,944	1,403
AD-2410M		10.0	7,367	1,739
AD-2412M		12.0	8,765	2,069
AD-2415M		15.0	10,815	2,552
AD-2712M	$\phi 273.1$	12.0	9,843	2,323
AD-2715M		15.0	12,163	2,870
AD-2718M		18.0	14,426	3,404
AD-3115M	$\phi 318.5$	15.0	14,302	3,375
AD-3118M		18.0	16,993	4,010

Gusset Plate

Each part of the gusset plate is designed for the tensile yield axial force to be lower than the allowable stress for temporary loading. A wide range of standard dimensions have already been designed considering the maximum allowable tensile stress.

Standard dimensions

	φ146.0	φ190.7	φ244.5	φ273.1	φ318.5
t1 (mm)	19	28	36	40	40
t2 (mm)	12	16	22	22	22
Rp (mm)	90	105	120	155	185
Dp (mm)	160	180	210	270	320
Dh (mm)	100	140	160	200	220
H (mm)	150	200	250	300	300

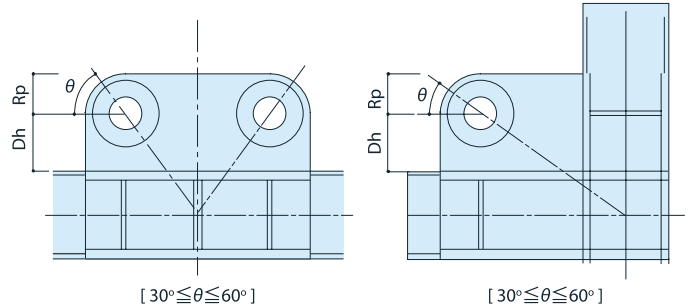
<Requirement of the standard dimensions>

List of the standard dimensions is shown on the left.

The extension line of the brace shall reach core of the steel frame.

- t1 : Thickness of the central plate
- t2 : Thickness of the round plate
- Rp : Diameter of the round plate
- Dp : Distance between the hole center and the H-shaped steel
- Dh : (The shorter one at the corner of intersection)
- H : Dimension (height) of H-shaped steel

Material of the gusset plate: SM490



Application Examples



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