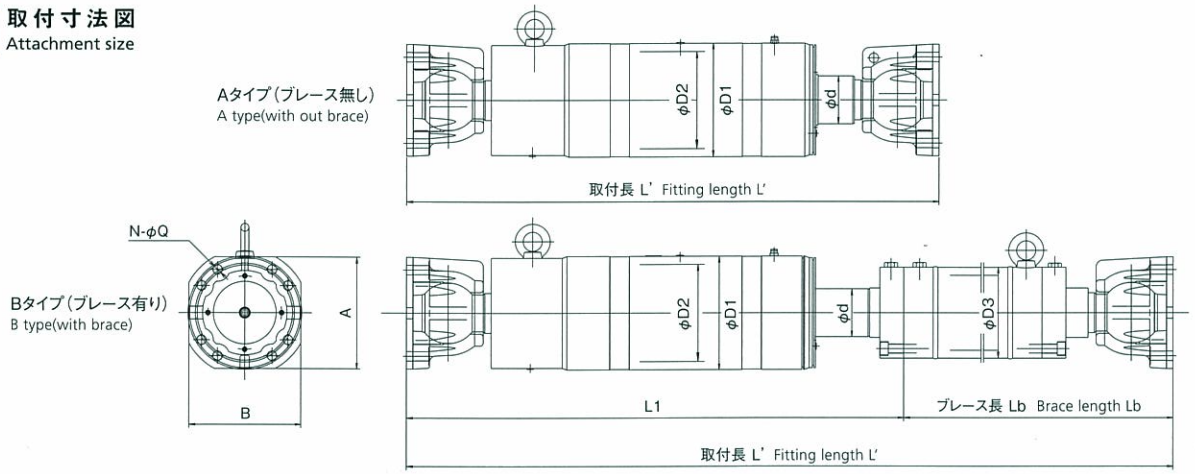
制震用オイルダンパ〈BDHシリーズ〉

Oil dampers for vibration control devices. 〈BDH series〉

建物の構造にオイルダンパを取付け、地震や風による揺れに対して振動エネルギーを効率よく吸収し、揺れを軽減させます。

By installing oil dampers on the structure of a building, vibratory energy is efficiently absorbed from quaking by earthquake or wind, thereby mitigating quaking.

取付寸法図
Attachment size



型式 model	最大減衰力 max damping force	St	φD1	φD2	φD3 (厚さ) (Thickness)	φd	取付長 Fitting length Aタイプ A type L'	取付長 Fitting length Bタイプ B type L1	A	B	N-Q	質量(kg) weight Aタイプ A type	質量(kg) weight Bタイプ B type	ダンパ剛性※1 (kN／cm) Stifness (参考値) (for reference)
BDH250120	250kN	±60	139.8	110	139.8 (9.5t)	55	900	835	φ215	—	4-φ18	86	108+0.031×(Lb-84)	900
160		±80					960	875				89	110+0.031×(Lb-84)	750
BDH500120	500kN	±60	190	150	216.3 (10.3t)	70	1140	1105	245	245	8-φ18	191	265+0.0491×(Lb-150)	1600
160		±80					1200	1145				196	269+0.0491×(Lb-150)	1400
200		±100					1260	1185				201	273+0.0491×(Lb-150)	1100
BDH1000120	1000kN	±60	274	230	267.4 (12.7t)	110	1340	1285	340	340	8-φ26	453	601+0.08×(Lb-124)	3500
160		±80					1400	1325				464	610+0.08×(Lb-124)	3000
200		±100					1460	1365				475	619+0.08×(Lb-124)	2400
BDH1500160	1500kN	±80	310	270	318.5 (17.4t)	120	1590	1480	350	350	8-φ29	691	885(888)※2+0.13×(Lb-170)	4300
200		±100					1650	1520				700	893(896)※2+0.13×(Lb-170)	3800
240		±120					1710	1560				709	901(904)※2+0.13×(Lb-170)	3200
BDH2000160	2000kN	±80	355.6	300	355.6 (19t)	150	1670	1560	350	350	8-φ29	834	1104(1107)※2+0.158×(Lb-170)	5400
200		±100					1730	1600				848	1116(1119)※2+0.158×(Lb-170)	4500
240		±120					1790	1640				863	1128(1131)※2+0.158×(Lb-170)	3900

※1 上表の※1ダンパ剛性は参考値であり保証するものではありません。 ※1 damper rigidity of a top table is a reference value, and don't guarantee it.

※2 上表の※2( )内は屋外仕様の数値となります。 The inside of ※2( ) of upper table serves as a numerical value of outdoor specification.

基本性能
Basic performance

下表の様に250kNより2000kNまで幅広くシリーズ化されています。

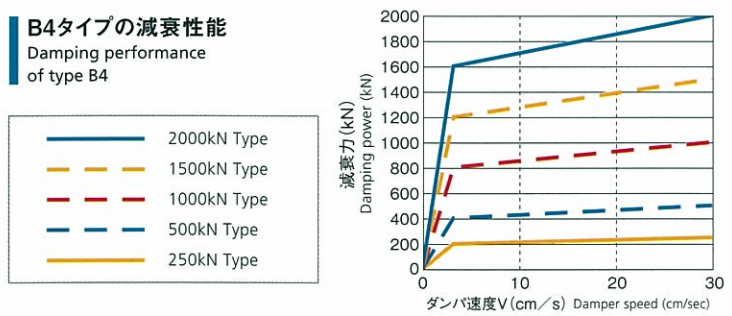
As shown in the following table, lineup is carried out more broadly from 250kN to 2000kN.

大きさ size	型式 model	最大減衰力 max damping force (kN)	限界速度 limited speed (cm/s)	減衰係数C1 equiverent damping coefficient (kN·s/cm)	減衰係数C2 equiverent damping coefficient (kN·s/cm)	リリーフ荷重 Relief load (kN)	リリーフ速度 relief velocity (cm/sec)
250kN	BDH250***-B1	250	30	15.6	2.9	200	12.8
	-B2	250	30	31.3	2.1	200	6.4
	-B3	250	30	46.9	1.9	200	4.3
	-B4	250	30	62.5	1.9	200	3.2
	-B5	250	30	78.1	1.8	200	2.6
	-B6	250	30	93.8	1.8	200	2.1
	-L	250	30	8.3	—	—	—
500kN	BDH500***-B1	500	30	31.3	5.8	400	12.8
	-B2	500	30	62.5	4.2	400	6.4
	-B3	500	30	93.8	3.9	400	4.3
	-B4	500	30	125.0	3.7	400	3.2
	-B5	500	30	156.3	3.6	400	2.6
	-B6	500	30	187.5	3.6	400	2.1
	-L	500	30	16.7	—	—	—
1000kN	BDH1000***-B1	1000	30	62.5	11.6	800	12.8
	-B2	1000	30	125.0	8.5	800	6.4
	-B3	1000	30	187.5	7.8	800	4.3
	-B4	1000	30	250.0	7.5	800	3.2
	-B5	1000	30	312.5	7.3	800	2.6
	-B6	1000	30	375.0	7.2	800	2.1
	-L	1000	30	33.3	—	—	—
1500kN	BDH1500***-B1	1500	30	93.8	17.4	1200	12.8
	-B2	1500	30	187.5	12.7	1200	6.4
	-B3	1500	30	281.3	11.7	1200	4.3
	-B4	1500	30	375.0	11.2	1200	3.2
	-B5	1500	30	468.8	10.9	1200	2.6
	-B6	1500	30	562.5	10.8	1200	2.1
	-L	1500	25	60.0	—	—	—
2000kN	BDH2000***-B1	2000	25	125.0	32.8	1600	12.8
	-B2	2000	30	250.0	16.9	1600	6.4
	-B3	2000	30	375.0	15.5	1600	4.3
	-B4	2000	30	500.0	14.9	1600	3.2
	-B5	2000	30	625.0	14.6	1600	2.6
	-B6	2000	30	750.0	14.4	1600	2.1
	-L	2000	25	80.0	—	—	—

本表は最大速度30kine用の性能を示しております。15kine用も用意していますのでお問合せください。

This table shows the performance for maximum speed 30kine. Since the object for 15kine is also prepared, please ask.

B4タイプの減衰性能
Damping performance of type B4



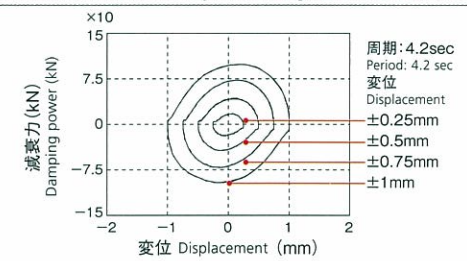
性能試験例
Sample Performance Testing

例として、2000kNタイプハイダンパの正弦波入力による周期4.2秒の減衰力ー変位線図（Qーδ線図）例を示します。風揺れや小地震に相当する微小振幅領域、中地震に相当する比例特性領域、大地震に相当するリリーフ特性領域に対する波形をそれぞれ示します。微小振幅領域から大地震までコンスタントに効果があることが判ります。

By way of explanation, let us cite damping power–displacement (Q – d) diagrams prepared from testing of a 2,000-kN HIGH oil damper conducted with sinusoidal wave inputs for a 4.2-sec period, showing the resulting waveforms according to different categorical zones: minute vibration suggestive of movement by winds or low-intensity earthquakes; proportional vibration indicative of medium-intensity earthquakes; and relief vibration representative of high-intensity earthquakes. We learn from these diagrams that the damper is invariably effective throughout the categorical zones, from low- to high-intensity motions.

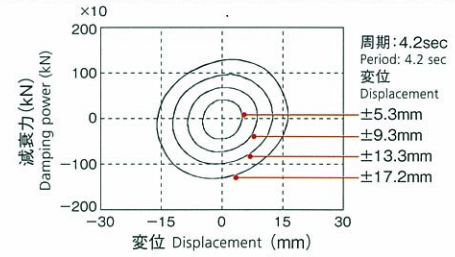
周期4.2秒での微小振幅領域加振波形

Vibration Waveforms in the Low-intensity (Minute) Categorical Zone for a 4.2-sec Period



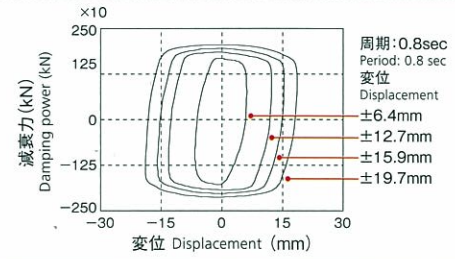
周期4.2秒での比例領域加振波形

Vibration Waveforms in the Medium-intensity (Proportional) Categorical Zone for a 4.2-sec Period

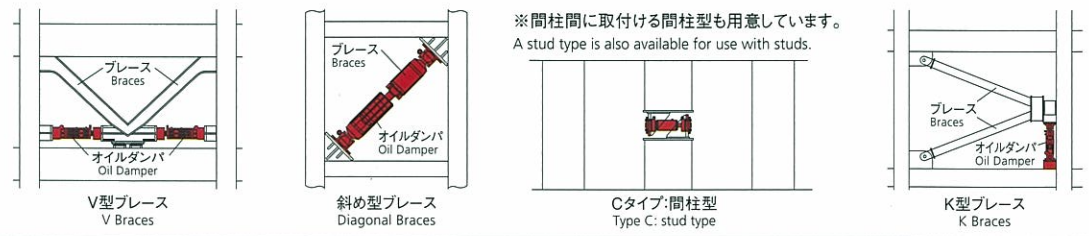


周期4.2秒でのリリーフ領域加振波形

Vibration Waveforms in the High-intensity (Relief) Categorical Zone for a 4.2-sec Period



ブレースオイルダンパの取付方法
Example of Brace Oil Damper Installation



※間柱間に取付ける間柱型も用意しています。

A stud type is also available for use with studs.