



南通爱德普船舶科技有限责任公司

NANTONG ADEPTMARINE TECHNICAL CO., LTD

产品手册

PRODUCT MANUALS

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南通爱德普船舶科技有限责任公司坐落于美丽的江苏省南通市，属于上海 1 小时经济圈；公司在职骨干很多来自世界 500 强企业，服务过的项目遍及世界各地，船东包括

美国，英国，挪威，丹麦，墨西哥等国，有丰富的项目设计及管理经验；公司秉承“服务客户，服务员工，服务社会”的己任，未来将为全球客户压载水处理改装，脱硫改装及新造项目提供具有竞争力的解决方案及设计总包服务。

Nantong Adeptmarine Technical Co., Ltd. is located in the beautiful city of Nantong, Jiangsu Province, which belongs to the 1-hour economic circle of Shanghai. Most of the current backbone of our company come from the world's top 500 enterprises and they have worked for projects all over the world cooperating with ship owners from the United States, England, Norway, Denmark, Mexico, and many other countries, with their rich experience in project design and management; Adhering to the mission of "serving customers, serving employees and serving the society", in the future the company will provide competitive solutions and overall design services for global customers , including retrofit of ballast water treatment equipment , exhaust gas cleaning system and



企业精神：爱岗敬业 德行天下 普惠大众

企业价值观：服务客户 服务员工 服务社会

ENTERPRISE SPIRIT:

DEDICATION AND HARD WORK

THRIVING ON MORALITY

BENEFIT THE PUBLIC

CORPORATE VALUES:

SERVING CUSTOMERS

SERVING EMPLOYEES

SERVING SOCIETY

产品目录 Product catalog

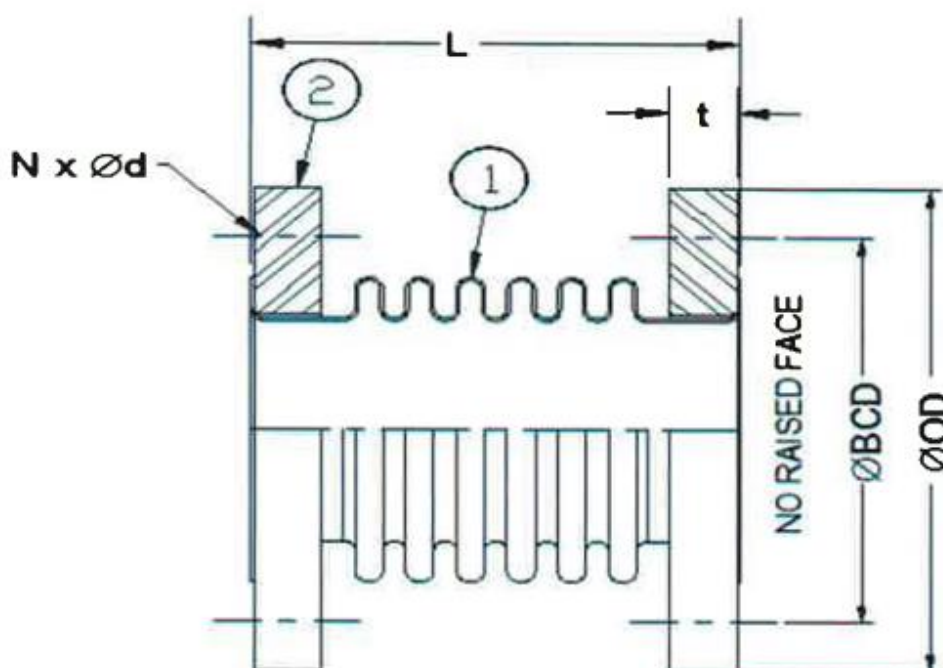
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ADP-ME 不锈钢波纹管(ADP-ME Stainless steel bellows)



产品介绍: 不锈钢波纹管, 材质为 316L, 254SMO, Duplex 2205 等等。最大直径可达到 DN3000 多, 用于脱硫改装系统。

Introduction: Stainless steel bellows made of 316L, 254SMO, Duplex 2205, etc. The maximum diameter can reach up to more than DN3000. Used for desulfurization modification system.



ADP-QY-ZHGZQ 减震器(ADP-QY-ZHGZQ VIBRATION DAMPERS)

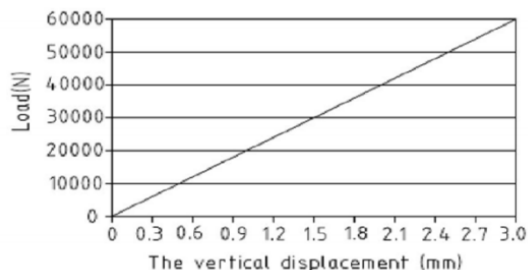
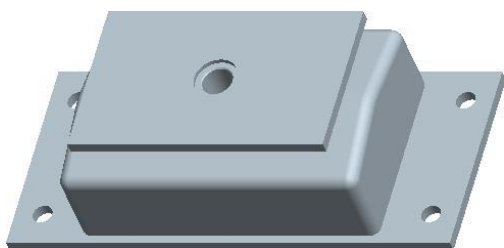
南通爱德普船舶科技有限责任公司 (NANTONG ADEPTMARINE TECHNICAL CO., LTD)

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技术要求

Technical requirements

- 1、材料：低碳钢，特殊橡胶
 - 2、减震器的安装高度是 $113 \pm 2\text{mm}$
 - 3、减震器组装完成后，所有金属表面均应涂环氧底漆
 - 4、负载：20000N 到 60000N（2000kg 到 6000kg）
 - 5、标称荷载的竖向位移为 $3 \times (1 \pm 20\%) \text{ mm}$
 - 6、标称荷载的垂直固有频率为 11-17HZ
 - 7、温度范围： -20°C 到 $+150^{\circ}\text{C}$ (-4°F 到 302°F)
 - 8、减震器性能测试应符合环境温度要求： $20^{\circ}\text{C} \pm 5^{\circ}\text{C}$
 - 9、专为压缩负荷设计
 - 10、对锚杆支护
 - 11、用于脱硫改装系统
-
- 1) Material:Mild steel,special rubber
 - 2) The installation of vibration damper height is $113 \pm 2\text{mm}$
 - 3) After the vibration damper assembly is completed,all metal surfaces shall be coated with epoxy primer
 - 4) Load:20000N to 60000N(2000kg to 6000kg)
 - 5) The vertical displacement in nominal load is $3 \times (1 \pm 20\%)\text{mm}$
 - 6) The vertical natural frequency in nominal load is 11-17HZ
 - 7) Temperature range: -20°C up to $+150^{\circ}\text{C}$ (-4°F up to 320°F)
 - 8) The vibration damper performance testing should meet the environment temperature requirement: $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$
 - 9) Designed only for compression load
 - 10) For bolting
 - 11) Used for desulfurization modification system

ADP-CM 型系列隔振器(ADP-CM series vibration isolator)



ADP-CM-I



ADP-CM-II(G)



ADP-CM-III(G)&ADP-CM-V-1



ADP-CM-VIII



ADP-CM-IV



ADP-CM-VI-1



ADP-CM-VII

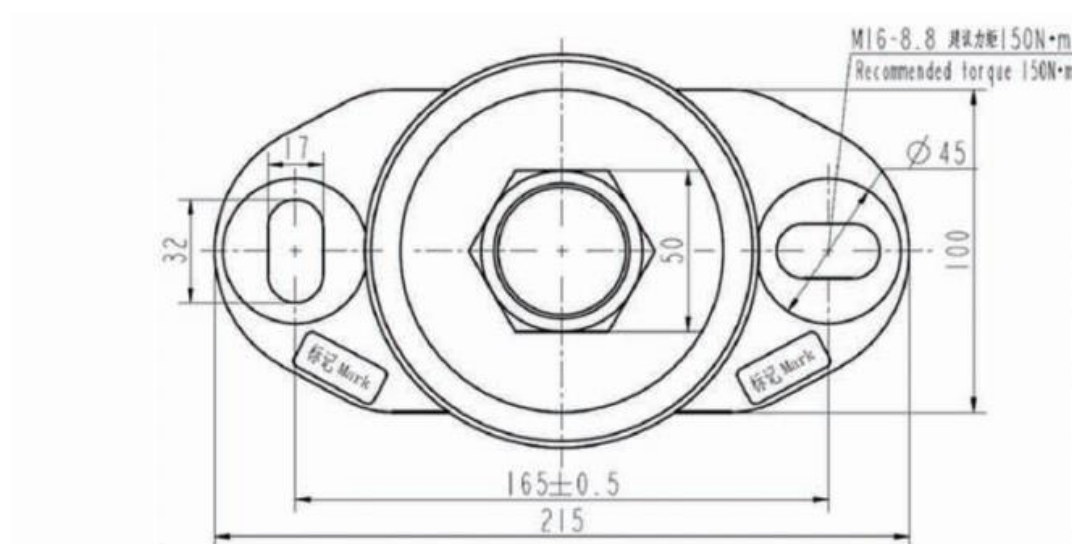
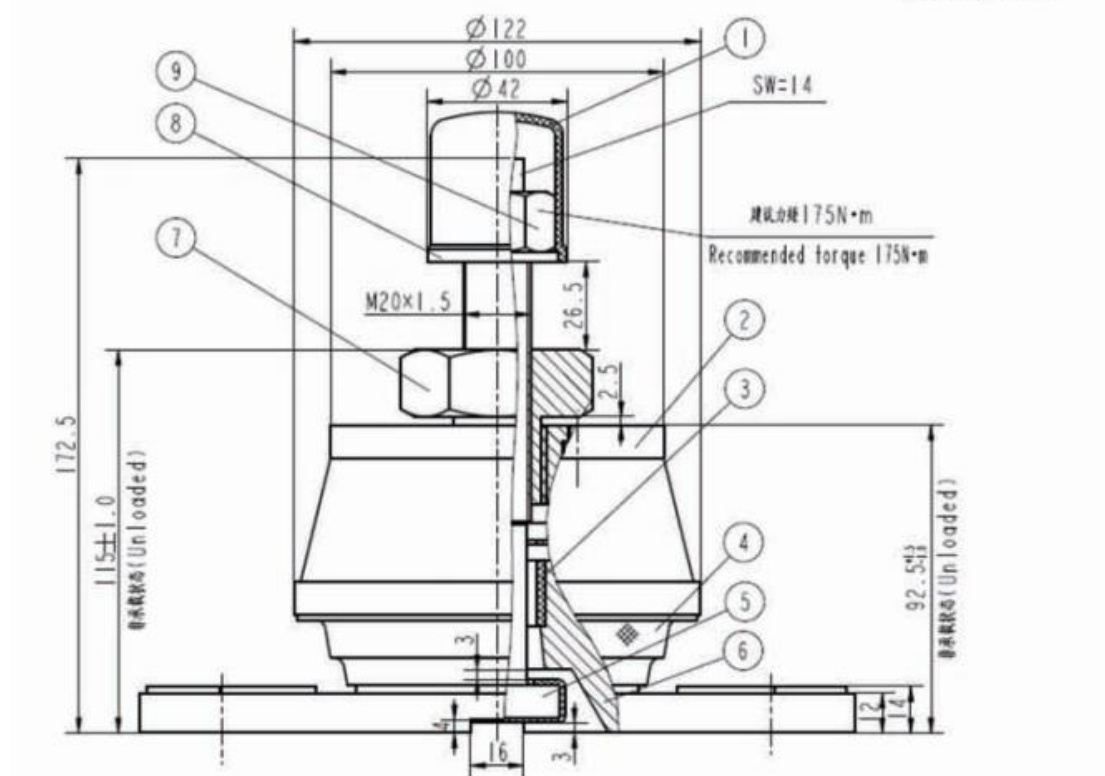


ADP-CT314(ADP-CM OEM)

ADP-CM-I 型隔振器结构和安装尺寸

Structure and installation size of ADP-CM-I vibration isolator

单位(Unit): mm

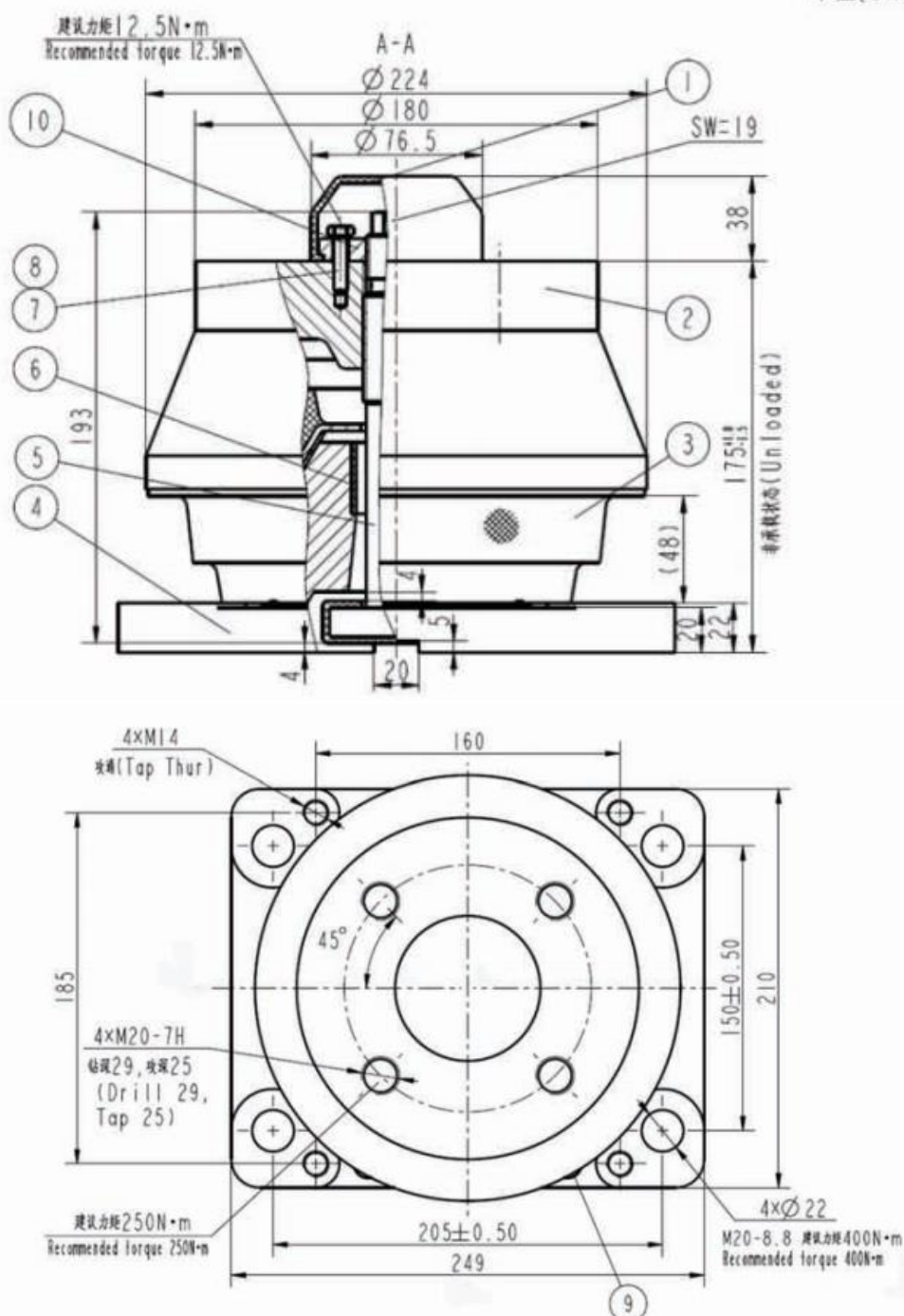


- 1、防油帽(Oil Cap); 2、上座板组件(Top Casting); 3、橡胶圈(Rubbe Coil);
- 4、锥形减振圈(Resilient Mounting); 5、缓冲限位螺栓(Internal Buffer);
- 6、下座板(Base Casting); 7、调节螺母(Adjusting Nut); 8、垫圈(Washer);
- 9、细牙螺母(Serrated Nut)。

ADP-CM-II(G)型隔振器结构和安装尺寸

Structure and installation size of ADP-CM-II(G) vibration isolator

单位(Unit): mm

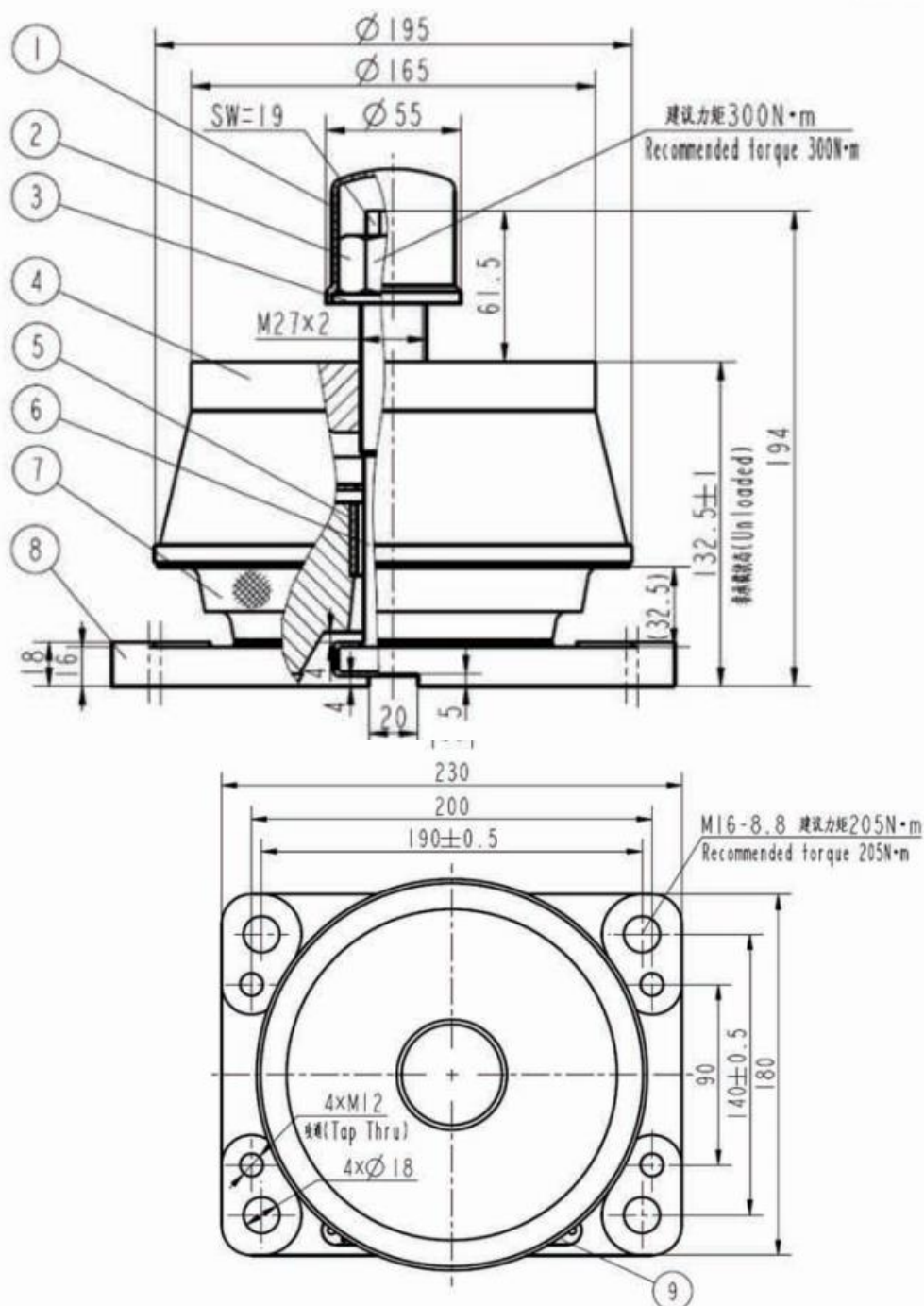


- 1、防油帽(Oil Cap); 2、上座板(Top Casting); 3、锥形减振圈(Resilient Mounting);
4、下座板(Base Casting); 5、缓冲限位螺栓(Internal Buffer); 6、橡胶圈(Rubber Coil);
7、锁紧螺钉(Locking Screw); 8、弹簧垫圈(Spring Washer); 9、铭牌(Name Plant);
10、锁紧环(Locking Ring)。

ADP-CM-III(G)型隔振器结构和安装尺寸

Structure and installation size of ADP-CM-III(G) vibration isolator

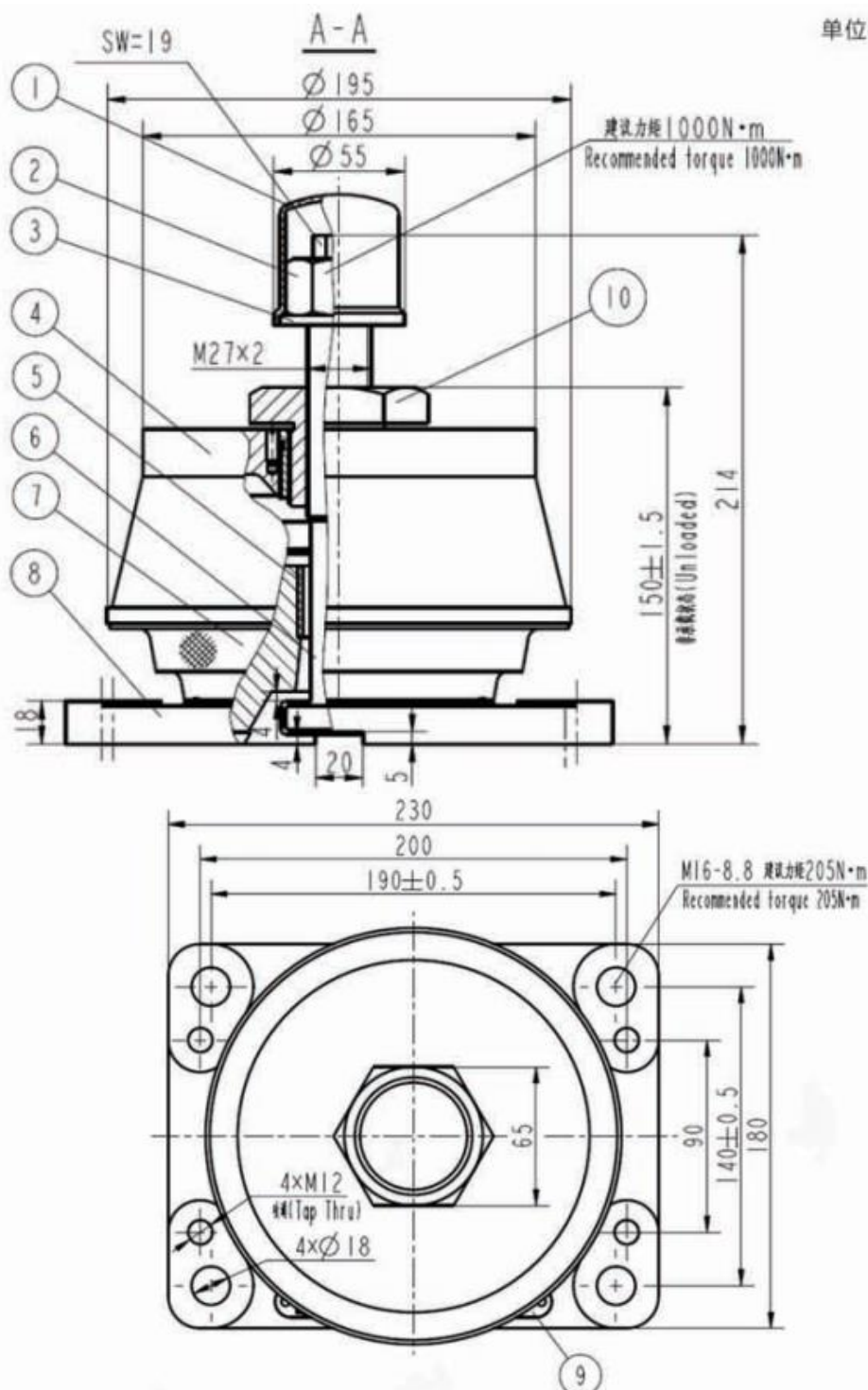
单位(Unit): mm



- 1、防水帽(Waterproofing Cap)；2、细牙螺母(Serrated Nut)；3、垫圈(Washer)；
4、上座板(Top Casting)；5、橡胶圈(Rubble Coil)；6、缓冲限位螺栓(Internal Buffer)
7、锥形减振圈(Resilient Mounting)；8、下座板(Base Casting)；
9、铭牌(Name Plant)。

ADP-CM-IV 型隔振器结构和安装尺寸

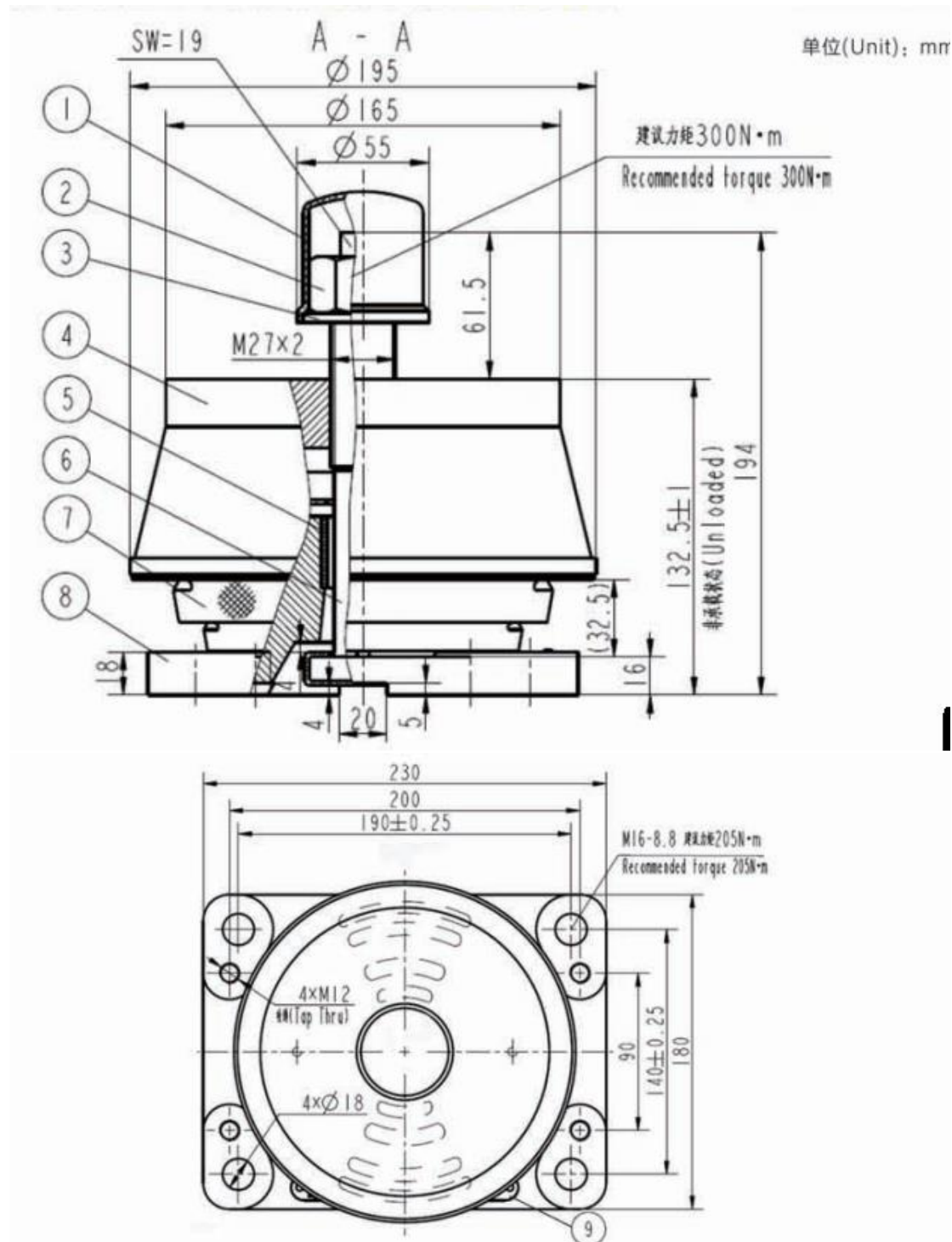
Structure and installation size of ADP-CM-IV vibration isolator



- 1、防水帽(Waterproofing Cap) ; 2、细牙螺母(Serrated Nut) ; 3、垫圈(Washer) ;
 4、上座板(Top Casting) ; 5、橡胶圈(Rubbele Coil) ;
 6、锥形减振圈(Resilient Mounting) ; 7、缓冲限位螺栓(Internal Buffer) ;
 8、下座板(Base Casting) ; 9、铭牌(Name Plant) ; 10、调节螺母(Adjusting Nut) 。

ADP-CM-V-1 型隔振器结构和安装尺寸

Structure and installation size of ADP-CM-V-1 vibration isolator

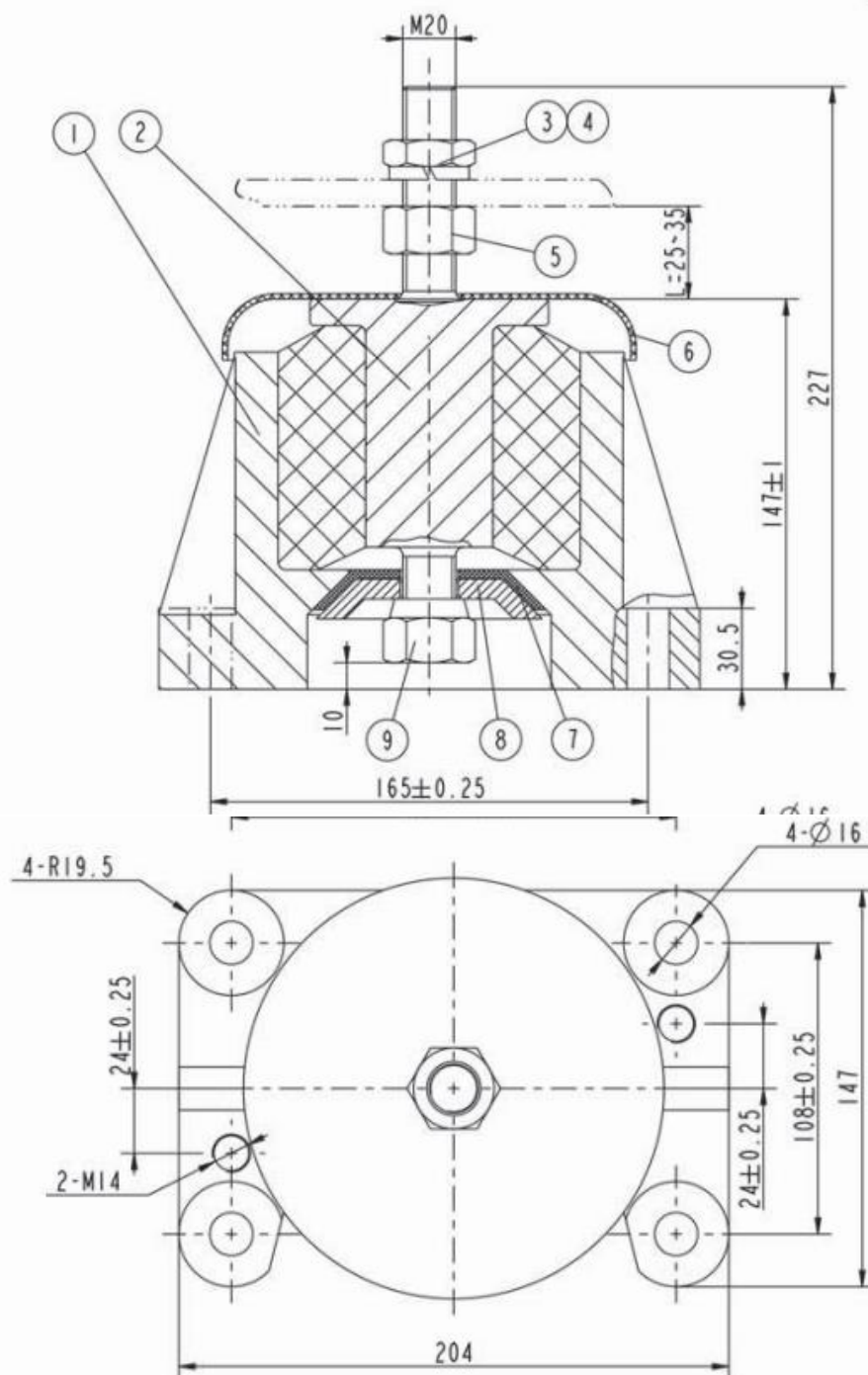


- 1、防水帽(Waterproofing Cap) ; 2、细牙螺母(Serrated Nut) ; 3、垫圈(Washer) ;
- 4、上座板(Top Casting) ; 5、橡胶圈(Rubbe Coil) ;
- 6、缓冲限位螺栓(Internal Buffer) ; 7、锥形减振圈(Resilient Mounting) ;
- 8、下座板(Base Casting) ; 9、铭牌(Name Plant) 。

ADP-CM-VI-1 型隔振器结构和安装尺寸

Structure and installation size of ADP-CM-VI-1 vibration isolator

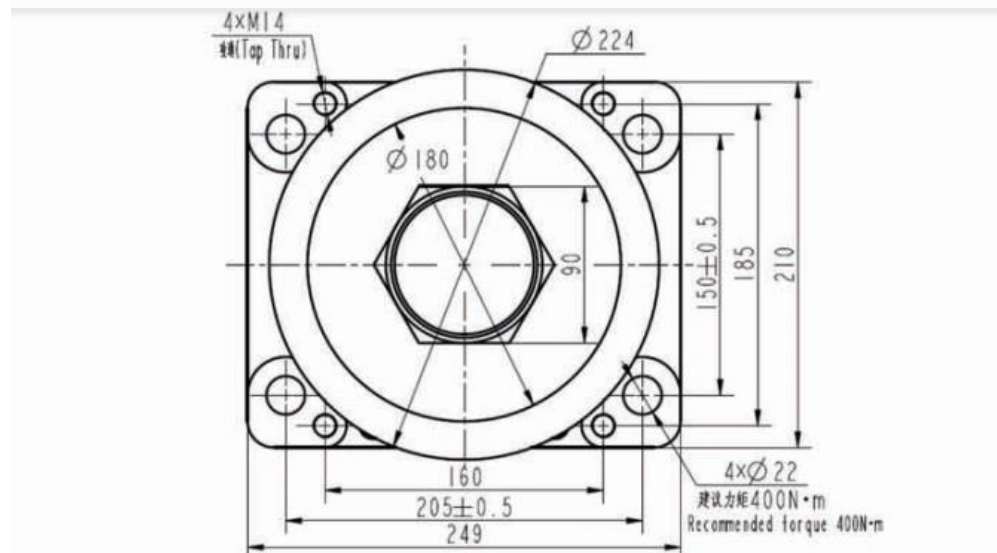
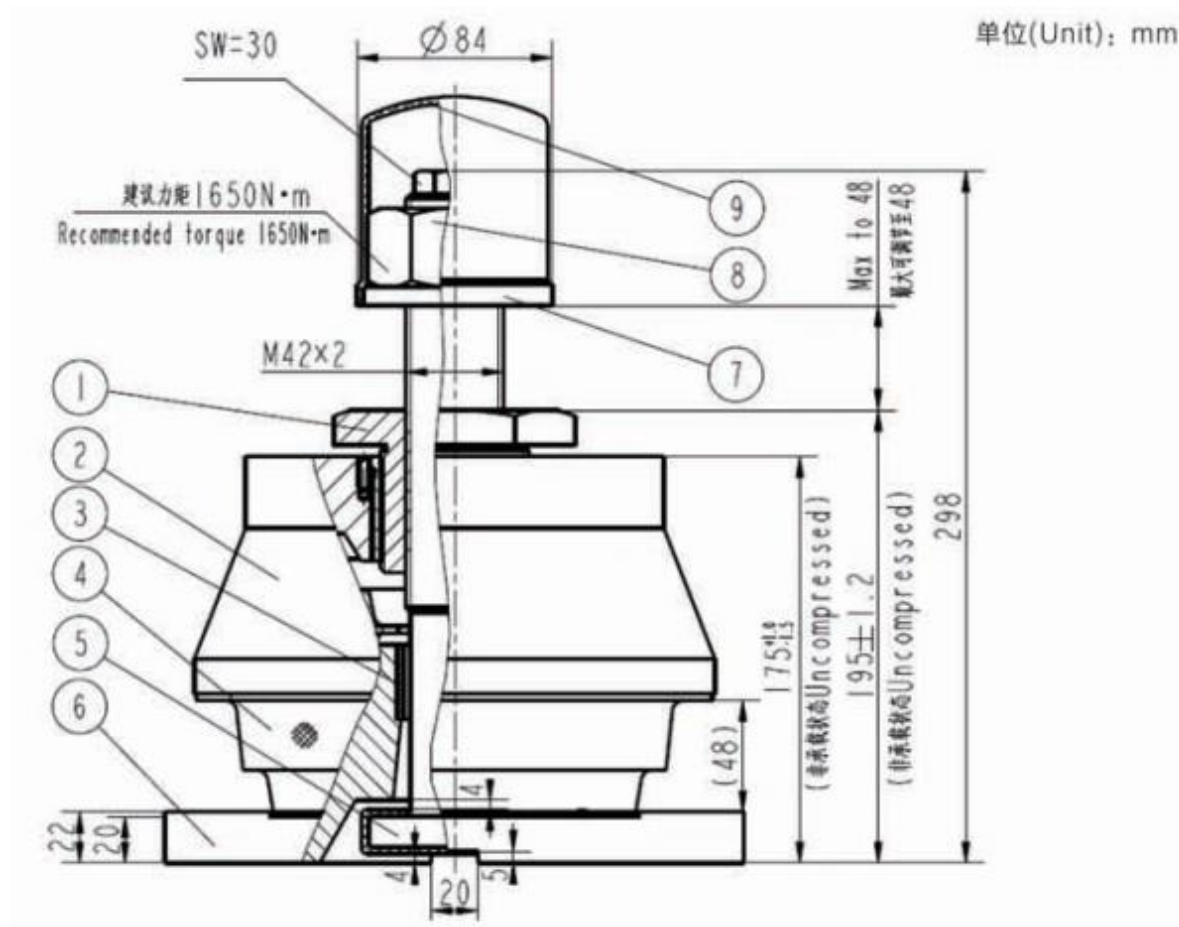
单位(Unit): mm



- 1、壳体(Shell); 2、弹性组件(Elastic Component); 3、薄螺母(Thin Nut);
 4、垫圈(Washer) ; 5、厚螺母(Thick Nut) ; 6、防油罩(Oil Cover) ;
 7、橡胶垫圈(Rubber Washer) ; 8、耳形垫圈(Ear Washer) ;
 9、锁紧螺母(Locking Nut) 。

ADP-CM-VII 型隔振器结构和安装尺寸

Structure and installation size of ADP-CM-VII vibration isolator

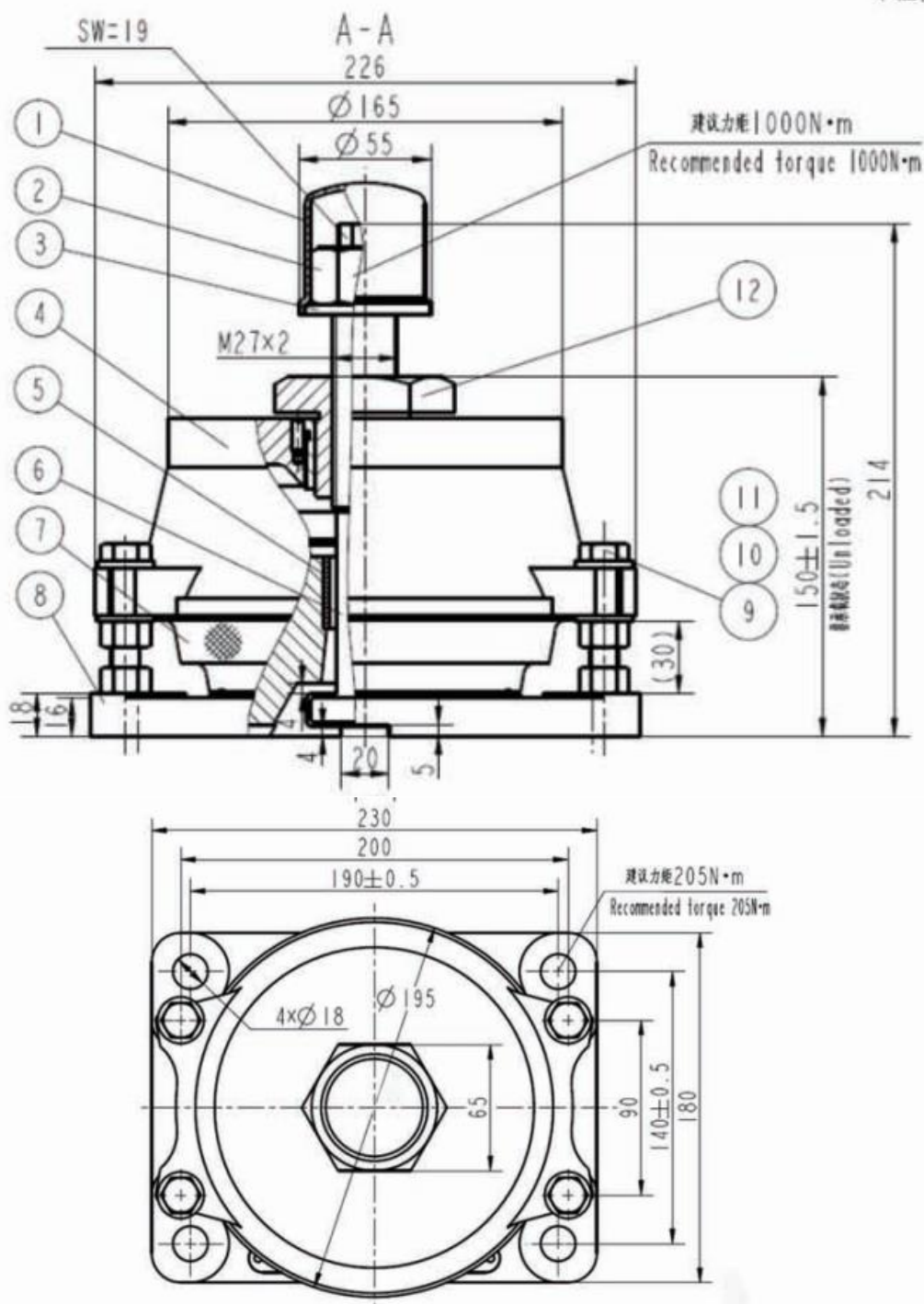


- 1、调节螺母(Adjusting Nut) ; 2、上座板(Top Casting) ; 3、橡胶圈(Rubble Coil) ;
4、锥形减振圈(Resilient Mounting) ; 5、缓冲限位螺栓(Internal Buffer) ;
6、下座板(Base Casting) ; 7、垫圈(Washer) ; 8、细牙螺母(Serrated Nut) ;
9、防水帽(Waterproofing Cap) 。

ADP-CM-VIII 型隔振器结构和安装尺寸

Structure and installation size of ADP-CM-VIII vibration isolator

单位(Unit): mm



- 1、防水帽(Waterproofing Cap)；2、细牙螺母(Serrated Nut)；3、垫圈(Washer)；
4、上座板(Top Casting)；5、橡胶圈(Rubber Coil)；6、缓冲限位螺栓(Internal Buffer)；
7、锥形减振圈(Resilient Mounting)；8、下座板(Base Casting)；9、螺栓(Bolt)；
10、螺母(Nut)；11、垫圈(Washer)；12、调节螺母(Adjusting Nut)。

规格和性能参数

Specifications and performance parameters

型号Model	CM-I -1		CM-I -2		CM-I -3		CM-I -4	
额定载荷 Rated load (kN)	3		4		6		8	
型号Model	CM-I -5		CM-I -6		CM-I -7		CM-I -8	
额定载荷 Rated load (kN)	10		12		14		16	
变形量 Deformation (mm)	5.0±1.0	固有频率 Natural frequency (Hz)		8.0±1.5	参考重量 Reference weight (kg)		3.2(铝合金) (Aluminium alloy)	
型号Model	CM-II(G) -1A		CM-II(G) -1B		CM-II(G) -2		CM-II(G) -3	
额定载荷 Rated load (kN)	29		33		41		47	
型号Model	CM-II(G) -4		CM-II(G) -5		CM-II(G) -6		CM-II(G) -7	
额定载荷 Rated load (kN)	52		58		67		74	
变形量 Deformation (mm)	8.0±1.0	固有频率 Natural frequency (Hz)		8.0±1.5	参考重量 Reference weight (kg)		14.3(铝合金) (Aluminium alloy)	
型号Model	CM-III(G)-1		CM-III(G)-2		CM-III(G)-3		CM-III(G)-4	
额定载荷 Rated load (kN)	25		32		36		43	
变形量 Deformation (mm)	8.0±1.0	固有频率 Natural frequency (Hz)		8.0±1.5	参考重量 Reference weight (kg)		8.4(铝合金) (Aluminium alloy)	
型号Model	CM-IV-1		CM-IV-2		CM-IV-3		CM-IV-4	
额定载荷 Rated load (kN)	25		32		36		43	
变形量 Deformation (mm)	9.0±2.0	固有频率 Natural frequency (Hz)		7.0±1.0	参考重量 Reference weight (kg)		9.2(铝合金) (Aluminium alloy)	

型号 Model	额定载荷 Rated load (kN)	垂向静刚度 Vertical static stiffness (kN/m)	纵向静刚度 Longitudinal static stiffness (kN/m)	横向静刚度 Lateral static stiffness (kN/m)	参考重量 Reference weight (kg)
CM-V-1	20	4300×(1±10%)	7550×(1±10%)	3150×(1±10%)	8.2(铝合金) (Aluminium alloy)
型号 Model	额定载荷 Rated load (kN)	最大承载载荷 Maximum bearing load (kN)	参考硬度 Reference hardness (shore A)	额定载荷下静变形 Static deformation at rated load (mm)	参考重量 Reference weight (kg)
CM-VI-1	6.8	9.1	46°	6.4±1.0	13.7(碳钢) (Carbon steel)
型号Model	CM- VII -1		CM- VII -2	CM- VII -3	CM- VII -4
额定载荷 Rated load (kN)	29		33	41	47
型号Model	CM- VII -5		CM- VII -6	CM- VII -7	CM- VII -8
额定载荷 Rated load (kN)	52		58	67	74
变形量 Deformation (mm)	10.0±1.5	固有频率 Natural frequency (Hz)	6.0±1.0	参考重量 Reference weight (kg)	30.5(碳 钢) (Carbon steel) 17.7(铝合金) (Aluminium alloy)
型号Model	CM-VIII-1A		CM-VIII-1B	CM-VIII-2	CM-VIII-3
额定载荷 Rated load (kN)	6		9	12	15
型号Model	CM-VIII-4		CM-VIII-5	CM-VIII-6	CM-VIII-7
额定载荷 Rated load (kN)	18		21	25	32
变形量 Deformation (mm)	7.0±1.0	固有频率Natural frequency (Hz)	7.0±1.0	参考重量 Reference weight (kg)	9.5(铝合金) (Aluminium alloy)

性能特点

Features

- ◆具有压缩和剪切复合的承载方式，体积小，重量轻，但承载能力强。
- ◆同样的外形尺寸和安装尺寸，可选配不同型号的橡胶锥形减振元件，得到不同的承载能力，有利于隔振布置时的载荷分配。
- ◆内置可调式的缓冲限位结构，满足了船舶在风浪海况下航行时机组摇摆的限位稳定要求。
- ◆组合式的装配结构，便于减振弹性元件的维护保养和更换，降低了隔振器的维护成本。
- ◆Compression and shear combined mode of bearing, small volume, light weight, strong bearing capacity;
- ◆The same overall dimensions and installation dimension, matching different types of tapered rubber damping element to achieve different bearing capacity and improve load distribution at the time of isolation layout;
- ◆Built with adjustable buffer and limiting structure to meet the requirement for stable limiting when the unit swings during+ sailing in stormy days;
- ◆Composite assembly structure to facilitate maintenance and replacement of elastic element for vibration isolation and reduce the maintenance cost of vibration isolator.

适用机型

Applicable models

※ MAN B&W L23/30、L16/24、L21/31、L27/38、L28/32 和L32/40系列

※ DAIHUTSU (大发) 5DK-20系列

※ WARTSILA (瓦锡兰) AUXPAC系列

※ DEUTZ (道依茨) MWM TBD系列等

※ CATERPILLAR系列等

※ MAN B&W L23/30、L16/24、L21/31、L27/38、L28/32 and L32/40 series

※ DAIHUTSU 5DK-20 series

※ WARTSILA AUXPAC series

※ DEUTZ MWM TBD series etc.

※ CATERPILLAR series etc.

部分实船应用照片

Photos of ship application



CATERPILLAR 3512B 柴电机组
CATERPILLAR 3512B diesel generator



WARTSILA 8L26 柴电机组
WARTSILA 8L26 diesel generator



MAN 7L 16/24 柴电机组
MAN 7L 16/24 diesel generator



MAN 5L 16/24 柴电机组
MAN 5L 16/24 diesel generator



铝合金隔振器安装布置
Installation and layout of aluminum alloy
vibration isolator

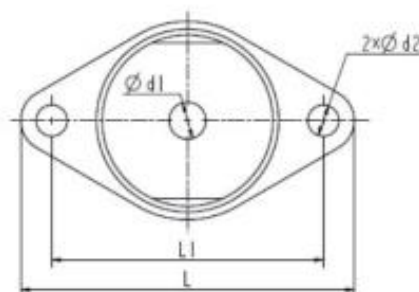
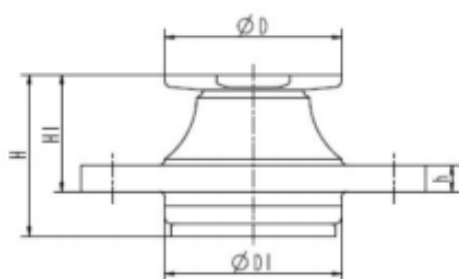


MAN 6L 21/31 柴电机组
MAN 6L 21/31 diesel generator

ADP-6JX 型系列隔振器(ADP-6JX series vibration isolator)



ADP-6JX 型 (ADP-6JX type)



性能特点及适用范围

Features and scope of application

- (1) 该型隔振器采用封闭式结构,即使橡胶体受损断裂,也能保证隔振器与设备、基础的连接,保证设备的正常工作;
- (2) 固有频率低,且具有等频特性,在二分之一额定载荷至额定载荷范围内,隔振器固有频率变化较小;
- (3) 承载范围宽,变形量大,有较好的抗冲击性能;
- (4) 一般在轴向(Z向)承载情况下使用;
- (5) 适用于船舶、车辆等对随机振动和冲击隔离要求较高的动力机械及电子设备的减震和缓冲,如水(油)泵、空压机等。

- (1) This type of vibration isolator adopts an enclosed structure to ensure the connection with equipment and the base and ensure normal operation of equipment even if the rubber body is damaged or broken;
- (2) Low inherent frequency, equal frequency, and little variation of inherent frequency in the range from 1/2 rated load to rated load;
- 3) Wide load range, high deformation, and good impact resistance;
- (4) Generally used under axial (Z direction) load;
- (5) Applicable to damping of ship, vehicle and other power machinery and electronic equipments with high requirement for random vibration and impact isolation, such

as water (oil) pump and air compressor.

ADP-6JX 型系列隔振器外形和接口尺寸

Boundary dimension and interfance size of ADP-6JX type series vibration isolator

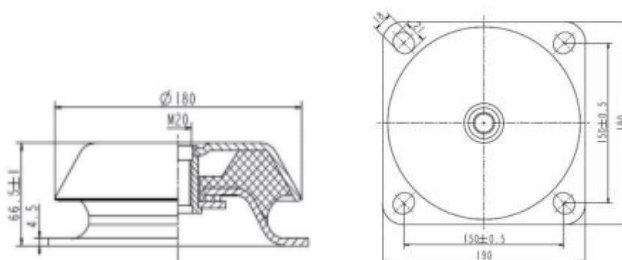
型 号 Model	L	L1	H	H1	h	D	D1	d1	d2
6JX-25	126	100	60	46	8	70	70	10	12
6JX-45	150	120	66	51	10	76	76	14	14
6JX-70	168	136	68	53	12	82	82	16	16
6JX-100	168	136	70	55	12	82	82	16	16
6JX-120	168	136	70	55	12	82	82	16	16
6JX-200	172	140	80	58	13	88	88	19	16
6JX-200N	172	140	80	56	13	88	88	19	16
6JX-200NA(1)	172	140	80	58	13	88	88	19	16
6JX-200NA(2)	172	140	80	56	13	88	88	19	16
6JX-300	172	140	80	58	13	88	88	19	16
6JX-400	248	210	108	82	18	140	165	26	20
6JX-600	260	220	112	86	20	150	170	30	22
6JX-900	290	244	115	90	22	165	190	33	24
6JX-1200	340	288	135	95	26	193	224	36	26
6JX-1500	340	288	135	95	26	193	224	36	26

ADP-6JX 型系列隔振器主要规格和性能参数

Main specifications and performance parameters of ADP-6JX type series vibration isolator

型 号 Model	额定载荷 Rated load (N)	额定载荷下静变形 Static deformation at rated load (mm)	额定载荷下固有频率 Natural frequency at rated load (Hz)		重量 Weight (kg)
			天然胶 Natural rubber	丁腈胶 Nitrile rubber	
6JX-25	250	7±1.5	7±1.5	8±1.5	1.00
6JX-45	450	7±1.5	7±1.5	8±1.5	1.05
6JX-70	700	8±1.5	7±1.5	8±1.5	1.26
6JX-100	1000	8±1.5	7±1.5	8±1.5	1.36
6JX-120	1200	8±1.5	7±1.5	8±1.5	1.36
6JX-200	2000	8±1.5	7±1.5	8±1.5	1.90
6JX-200N	2000	8±1.5	7±1.0	8±1.0	2.00
6JX-200NA(1)	2500	8±1.5	7±1.5	8±1.5	1.90
6JX-200NA(2)	3000	8±1.5	7±1.0	8±1.0	2.00
6JX-300	3000	8±1.5	7±1.5	8±1.5	1.90
6JX-400	4000	14±2.0	7±1.5	8±1.5	7.30
6JX-600	6000	12±2.0	7±1.5	8±1.5	9.00
6JX-900	9000	18±3.0	6±1.5	8±1.5	12.5
6JX-1200	12000	22±4.0	6±1.5	8±1.5	21.0
6JX-1500	15000	17±2.0	6±1.5	8±1.5	21.0

ADP-CKM 型系列隔振器 (ADP-CKM series vibration isolator)



ADP-CKM 型 (ADP-CKM type)

性能特点及适用范围

Features and scope of application

- (1) ADP-CKM 型系列橡胶隔振器具有防脱落保护式结构, 在橡胶体受损或断裂时, 仍能保持设备与隔振器的连接, 不会脱落;
- (2) 采用碗形上盖与下座铆接, 结构紧凑, 安装简单、拆卸方便
- (3) 主要用于各类陆用中小型动力设备, 如: 柴油机、发电机组、空压机、泵组及风机等。

(1) CKM rubber vibration isolator is designed with a fall protection structure, which can maintain the connection of equipment and isolator and prevent fall-off when the rubber body is damaged or broken;

(2) U-shape upper cover and riveted base, compact structure, simple for installation and easy for disassembly;

(3) Mainly used for stationary medium-small power equipments, such as diesel engine, generator unit air compressor, pumping set and fan etc.

ADP-CKM 型隔振器主要规格和技术数据

Main specifications and performance parameters of ADP-CKM type series vibration isolator

型号 Model	额定载荷 Rated load (kN)	额定载荷下 静变形 Static deformation at rated load (mm)	额定载荷下 参考静刚度 Reference static stiffness at rated load (kN/mm)	额定载荷下 固有频率 Natural frequency at rated load (Hz)	重量 Weight (kg)
CKM-1	8.0	5±1.0	1.6×(1±15%)	10±1.5	3.36
CKM-2	13.5		2.7×(1±15%)		
CKM-3	16.8		3.4×(1±15%)		
CKM-4	18.5		3.7×(1±15%)		
CKM-5	21.0		4.2×(1±15%)		
CKM-6	25.0		5.0×(1±15%)		
CKM-7	32.0		6.4×(1±15%)		

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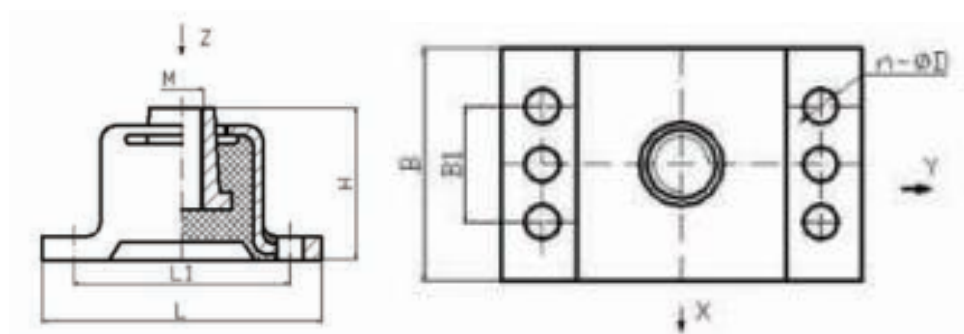
邮箱(E-MAIL): eric@adeptmarinetech.com

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ADP-BE 型系列隔振器 (ADP-BE series vibration isolator)



ADP-BE 型 (ADP-BE type)



性能特点及适用范围

Features and scope of application

- (1) ADP-BE 型系列隔振器具有防脱落保护式结构, 在橡胶体受损 或断裂时, 仍能保持设备与隔振器的连接, 不会脱落;
- (2) 适用于平置、侧挂及倒挂等多种安装形式;
- (3) 耐油、耐海水、耐盐雾和日照, 满足舰船环境条件;
- (4) 主要用于柴油机、风机、水泵、空压机及电机等各类 1500r/min 以上船用、陆用、航空用设备的振动、冲击隔离。

(1) This type of vibration isolator has a fall protection structure, which can maintain connection with equipment and prevent fall- off even if the rubber body is damaged or broken;

(2) Applicable to horizontal installation, side mounting, upside down mounting and other forms of installation;

(3) Resistant to oil, sea water, salt mist and sunlight, as required for ships;

(4) Mainly used for vibration and impact isolation of diesel engine, fan, water pump, air compressor, motor and other marine, stationary and aeronautical mechanical equipments over 1500 r/min.

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ADP-BE 型系列隔振器外形和接口尺寸

Boundary dimension and interfance size of ADP-BE type series vibration isolator

型号Model	M	L	L1	H	B	B1	n	d
BE-10	M8	70	54	40	36	-	2	Φ7
BE-15	M8	70	54	40	36	-	2	Φ7
BE-25	M8	70	54	40	40	-	2	Φ7
BE-40	M10	85	68	46	55	-	2	Φ9
BE-60	M12	100	80	50	65	-	2	Φ9
BE-85	M14	120	100	60	70	-	2	Φ11
BE-120	M16	140	112	60	85	-	2	Φ13
BE-160	M18	145	115	62	90	-	2	Φ13
*BE-220	M22	150	120	62	100	-	2	Φ15
BE-220	M22	150	120	70	105	-	2	Φ15
*BE-300	M24	155	125	67	105	60	4	Φ15
BE-300	M24	155	125	75	115	60	4	Φ15
*BE-400	M27	160	130	67	110	65	4	Φ15
BE-400	M27	175	140	80	120	65	4	Φ17

注：表中产品尺寸除标*型号外，全部尺寸为型谱规定尺寸，但标*产品也为市场流通产品。
Note: the product size in addition to the models indicated with *, all size are for size spectrum regulation, but the * products are also for market circulation.

ADP-BE 型系列隔振器主要规格和性能参数

Main specifications and performance parameters of ADP-BE type series vibration isolator

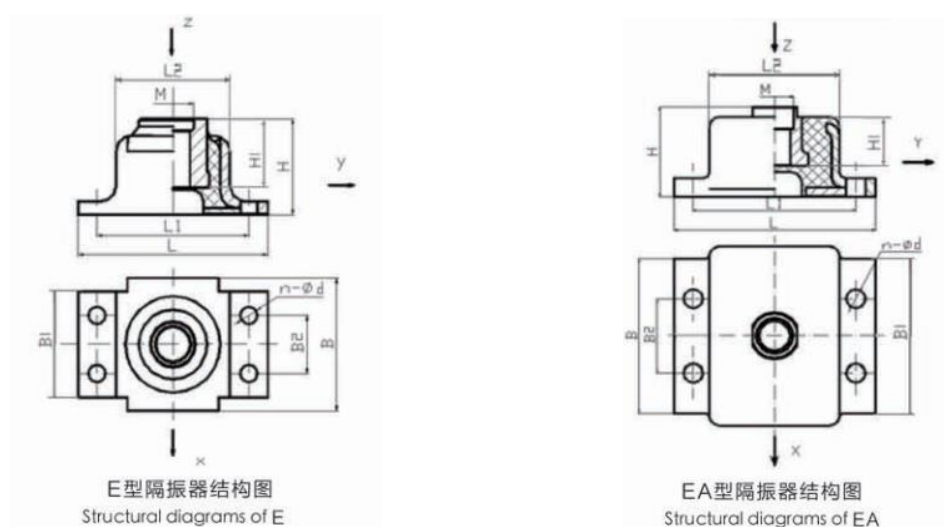
型号 Model	额定载荷 Rated load (N)				静变形 Static deformation (mm)	动刚度 Dynamic stiffness (N/mm)				固有频率 Natural frequency (Hz)	阻尼比 Damping ratio (C/Cc)	重量 Weight (kg)
	Z _正	Z _反	Y	X	Z	Z _正	Z _反	Y	X	10±1.5	0.07~0.11	
BE-10	100	70	120	50	1.5~3.0	40	44	96	37			
BE-15	150	100	170	70		60	67	145	55			
BE-25	250	170	300	150		100	110	241	92			
BE-40	400	280	450	200	3.5~5.0	161	178	387	148			
BE-60	600	400	700	300		242	266	580	222			
BE-85	850	600	1000	400		342	377	822	315			
BE-120	1200	800	1350	600		483	533	1280	445			
BE-160	1600	1100	1800	800		644	710	1570	560			
BE-220	2200	1500	2400	1100		880	977	2268	816			
BE-300	3000	2000	3300	1500		1210	1332	3093	1110			
BE-400	4000	2800	4300	1800		1610	1776	4120	1480			

注：Z_正为座式安装的额定载荷，Z_反为吊挂式安装的额定载荷。
Note: Z₊ is a seat-installed rated load, and Z₋ is an overhang-mounted rated load

ADP-E、EA 型系列隔振器(ADP-E、EA series vibration isolator)



ADP-E 型 (ADP-Etype) ADP-EA 型 (ADP-EA type)



性能特点及适用范围

Features and scope of application

- (1) ADP-E 型和 ADP-EA 型系列橡胶隔振器具有防脱落保护式结构，在橡胶体受损或断裂时，仍能保持设备与隔振器的连接，不会脱落；
- (2) ADP-E 型和 ADP-EA 型系列橡胶隔振器适用设备平置、侧挂及倒挂等多种安装形式，安装简单、拆卸方便；
- (3) ADP-E 型和 ADP-EA 型系列橡胶隔振器都耐油、耐海水、耐盐雾和日照，满足舰船环境条件；

- (4) 主要用于柴油机、空压机、水泵和风机等舰船用辅机、电子电器设备。

(1) ADP-E and ADP-EA types of vibration isolator adopt an enclosed structure to ensure the connection with equipment and the base and normal operation of equipment even if the rubber body is damaged or broken;

(2) Both types are applicable to horizontal installation, side mounting, upside down mounting and other forms of installation; simple for installation and easy for disassembly;

(3) Both types are resistant to oil, sea water, salt mist and sunlight as required for ships;

(4) Mainly used for diesel engine, air compressor, water pump, fan and other

auxiliary and electronic equipments of ships.

ADP-E、EA 型隔振器主要规格和技术数据

Main specifications and performance parameters of ADP-E、EA type series vibration isolator

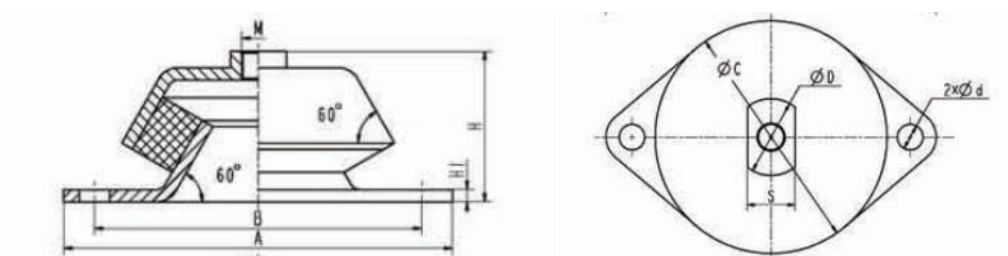
型号 Model	外形尺寸和连接尺寸(mm) Dimensions and link dimensions (mm)										重量(kg)
	L	L1	L2	B	B1	B2	H	H1	M	nxd	
E10	70	54	40	35	35		40	27	M8	2xΦ7	0.18
E15	70	54	40	40	40		40	27	M8	2xΦ7	0.22
E25	70	54	40	40	40		40	27	M8	2xΦ7	0.22
EA25	70	54	40	48	40		40	27	M8	2xΦ7	0.22
E40	85	68	48	55	55		46	32	M10	2xΦ9	0.42
EA40	85	68	48	63	55		46	32	M10	2xΦ9	0.42
E60	100	80	56	65	65		50	35	M12	2xΦ9	0.72
EA60	100	80	56	73	65		50	35	M12	2xΦ9	0.72
E85	120	100	76	70	70		60	42	M14	2xΦ11	1.14
EA85	120	100	76	80	70		60	42	M14	2xΦ11	1.14
E120	140	112	80	85	85		65	46	M16	2xΦ13	1.60
EA120	140	112	80	101	85		65	46	M16	2xΦ13	1.60
E160	145	115	81	108	90		60	42	M18	2xΦ13	1.95
EA160	145	115	81	108	90		60	42	M18	2xΦ13	1.95
E220	150	120	86	118	110		60	42	M22	2xΦ15	2.37
EA220	150	120	86	118	110		60	42	M22	2xΦ15	2.37
E300	155	125	88	125	105	60	65	47	M22	2xΦ15	2.90
EA300	155	125	88	125	105	60	65	47	M22	2xΦ15	2.90
E400	175	140	96	130	110	65	65	47	M27	2xΦ17	3.40
EA400	175	140	96	130	110	65	65	47	M27	2xΦ17	3.40

型号 Model	额定载荷(N) Rated load (N)			静变形 Static deformation (mm)	动刚度(N/mm) Dynamic stiffness (N/mm)			固有频率(Hz) Natural frequency (Hz)			阻尼比 Damping ratio (C/Cc)
	Z	X	Y		Z	X	Y	Z	X	Y	
E10	100	50	100	0.6±0.3	330	350	500	28.5	29.5	35.0	0.08~0.12
E15	150	100	150	0.7±0.3	450	430	660	27.0	27.0	33.0	
E25	250	100	250	0.9±0.3	750	690	880	27.0	26.0	29.5	
EA25	250	100	250	1.0±0.4	500	560	950	22.0	23.5	30.5	
E40	400	150	400	0.7±0.3	1300	740	1100	28.5	21.5	26.0	
EA40	400	150	400	1.2±0.4	870	800	1000	23.0	22.5	25.0	
E60	600	250	600	0.7±0.3	1600	900	1400	25.5	19.5	24.0	
EA60	600	250	600	1.2±0.4	1500	900	1900	25.0	19.5	28.0	
E85	850	350	850	0.6±0.3	2000	1000	1900	24.0	17.0	23.5	
EA85	850	350	850	1.0±0.4	1850	1000	2100	23.0	17.0	25.0	
E120	1200	500	1100	0.9±0.3	2500	1100	2100	23.0	15.0	21.0	
EA120	1200	500	1100	1.5±0.4	1530	800	1700	18.0	13.0	19.0	
E160	1600	700	1500	0.6±0.3	5500	1400	2800	29.0	14.5	21.0	
EA160	1600	700	1500	1.0±0.4	4000	1150	2450	25.0	13.5	19.5	
E220	2200	800	1900	0.6±0.3	7000	1500	3500	28.0	13.0	20.0	
EA220	2200	800	1900	1.1±0.4	4500	1400	2800	22.5	12.5	18.0	
E300	3000	900	2100	0.6±0.3	11000	2260	5500	30.0	13.5	21.5	
EA300	3000	900	2100	1.1±0.4	5600	1500	3350	21.5	11.0	16.5	
E400	4000	1000	2600	0.7±0.3	13000	2400	6200	28.5	12.0	20.0	
EA400	4000	1000	2600	1.4±0.4	6500	1700	5000	20.0	10.5	17.5	

ADP-Z 型系列隔振器 (ADP-Z series vibration isolator)



ADP-Z 型 (ADP-Z type)



适用范围

Scope of application

三向等频，可广泛应用于各种机械、仪表、机床、设备、动力机械等方面。

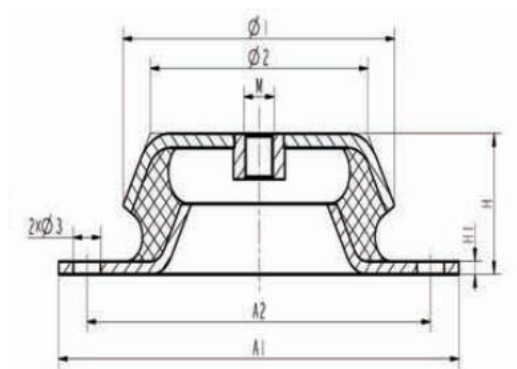
Equal frequency in three directions, widely used in various machinery, meters, instruments, machine tools, equipment, power generating machine and other fields.

ADP-Z 型系列隔振器主要规格和技术数据

Main specifications and performance parameters of ADP-Z type series vibration isolator

型号 Model	M	A	B	C	D	S	H	H1	d
Z1	12	120	95	75	30	19	40	3	12
Z2	16	170	140	115	40	28	58	4	14
Z3	20	225	185	155	50	36	75	5	18
Z4	22	250	210	180	55	40	90	7	20
Z5	24	285	240	200	66	41	110	9	22
型号 Model	垂向额定载荷 Vertical Rated load (N) (kN)	垂向额定载荷 下静变形 Static deformation under vertical load (mm)		垂向额定载荷下 固有频率 Natural frequency under vertical load (Hz)		重量 Weight (kg)			
Z1	1.0	~ 3		~ 12		0.33			
Z2	2.0	~ 5		~ 10		0.90			
Z3	3.5	~ 7		~ 9		2.35			
Z4	6.0	~ 8.5		~ 8		4.25			
Z5-A	10.0	10±1.5		7±1.0		6.10			
Z5-B	20.0	10±1.5		7±1.0		6.10			
Z5-C	25.0	10±1.5		7±1.0		6.10			

ADP-ZA 型系列隔振器 (ADP-ZA series vibration isolator)



ADP-ZA 型 (ADP-ZA type)

适用范围

Scope of application

主要应用于风力发电机、水泵、中小型柴油发电机等设备的减振，适用范围广，减振效果好。产品变形量可根据客户要求定制。

Mainly used for vibration reduction of wind turbine, water pump, medium and small diesel generator; wide scope of application, good damping effect. Product deformation can be customized as demand by customers.

ADP-ZA 型系列隔振器主要规格和技术数据

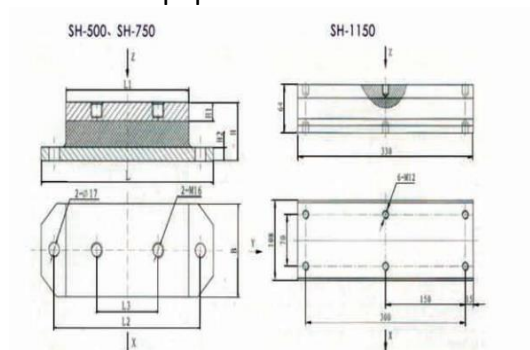
Main specifications and performance parameters of ADP-ZA type series vibration isolator

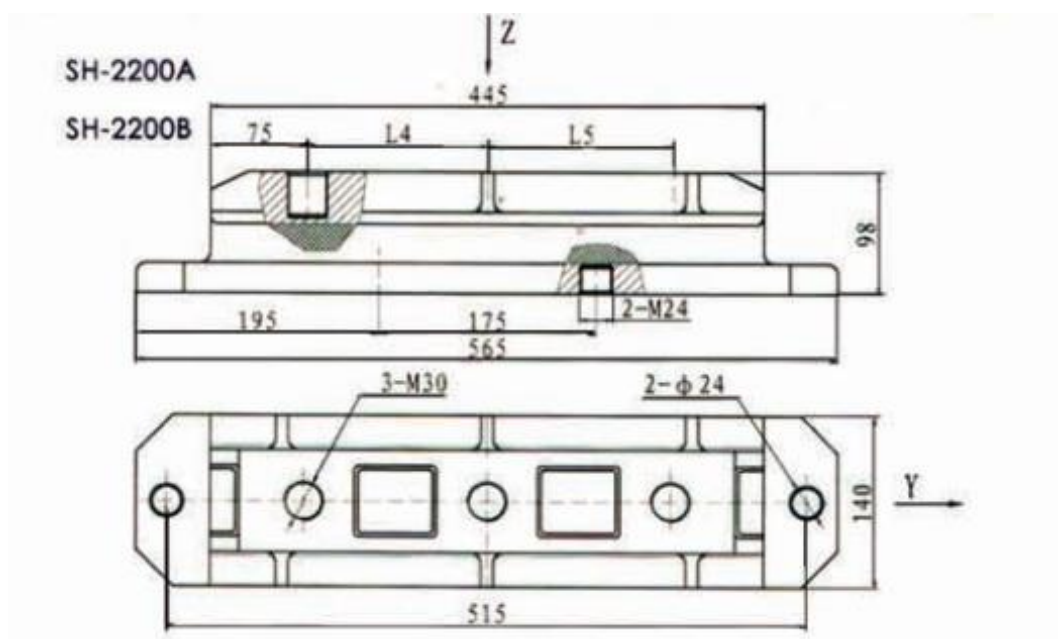
型号 Model	Φ1	Φ2	Φ3	A1	A2	H	H1	M	重量 Weight (kg)
ZA-39	104	82	13.5	172	135	39	5	16	0.60
ZA-49	144	115	14.5	212	182	49	5	16	1.15
型号 Model	载荷范围 Load range (N)		垂向静变形 Vertical static deformation (mm)	垂向固有频率 Vertical natural frequency (Hz)		阻尼比 Damping ratio (C/C _c)		工作温度 working temperature (°C)	
ZA-39-40	900 ~ 1500		1.0 ~ 3.0	13 ~ 17		0.08		-40 ~ +70	
ZA-39-50	1500 ~ 2500		1.0 ~ 3.0	13 ~ 17		0.08		-40 ~ +70	
ZA-39-60	2500 ~ 4000		1.0 ~ 3.0	13 ~ 17		0.08		-40 ~ +70	
ZA-39-70	4000 ~ 6400		1.0 ~ 3.0	13 ~ 17		0.08		-40 ~ +70	
ZA-49-40	2500 ~ 5500		3.8 ~ 8.0	8.5 ~ 10		0.08		-40 ~ +70	
ZA-49-50	5500 ~ 7500		2.0 ~ 5.7	9.5 ~ 14		0.08		-40 ~ +70	
ZA-49-60	7500 ~ 10000		2.4 ~ 5.5	10 ~ 15		0.08		-40 ~ +70	
ZA-49-70	10000 ~ 12000		2.3 ~ 4.5	11 ~ 15		0.08		-40 ~ +70	



Scope of application

Mainly used for vibration reduction and sound insulation of ship machinery, main and auxiliary engines and other equipments.





ADP-SH 型系列隔振器主要规格和技术数据

Main specifications and performance parameters of ADP-SH type series double plate vibration isolator

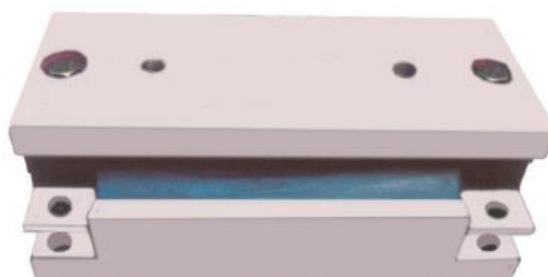
型号Model	L1	L	H1	H	H2	B	L3	L2
SH-500	160	230	22	68	16	90	100	198
SH-750	200	280	22	68	16	110	100	238
SH-1150	尺寸如图Size as graph							
型号Model	L4				L5			
SH-1750	尺寸如图Size as graph							
SH-2200A	150				145			
SH-2200B	140				180			

型号Model	额定载荷 Rated load (kN)	额定载荷下 静变形Static deformation at rated load (mm)	额定载荷下 固有频率 Natural frequency at rated load (Hz)	工作温度 working temperature (°C)	重量 Weight (kg)
SH-500	5.0	0.6 ~ 1.1		-5 ~ +70	5.4
SH-750	7.5	0.6 ~ 1.1			8.2
SH-1150	11.5	0.4 ~ 0.9	25±3.0		10.2
SH-1750	17.5	0.4 ~ 0.9	25±3.0		19.1
SH-2200A	22.0	0.3 ~ 0.9			25.9
SH-2200B	22.0	0.3 ~ 0.9			25.0

适用范围：主要应用于船舶的机械和主、辅机和其他设备减振、隔音。

Scope of application: mainly used in ship machinery and the main and auxiliary equipment and other equipment vibration noise.

ADP-WH 型系列剪切压缩式隔振器 (ADP-WH series shear compression type vibration isolator)

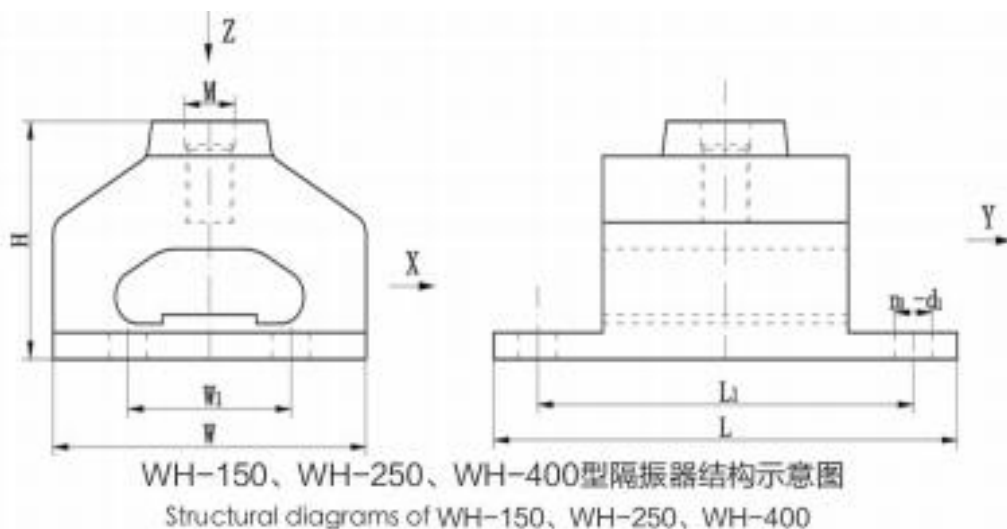


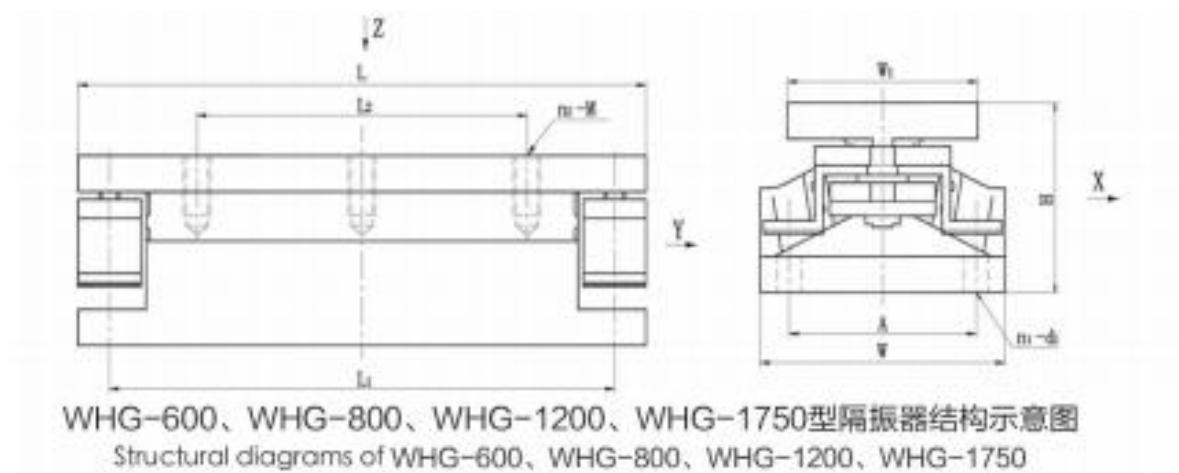
ADP-WH 型 (ADP-WH type)

性能特点及适用范围

Features and scope of application

- (1) 固有频率较低，在较宽的干扰频率范围内隔振效果较好；阻尼比适当，对共振峰有一定的抑制能力。耐油、耐海水、耐盐雾和日照。
 - (2) 一般用于设备的平置安装，可用于一般机械设备和电器设备的振动冲击隔离。
- (1) Low inherent frequency, good effect of vibration isolation in a wide range of interfering frequency; proper damping ratio, certain abatement to resonance peak. Resistant to oil, seal water, salt mist and sunlight.
- (2) Generally used for horizontal installation, and can be used for vibration and impact isolation of general mechanical and electrical equipments.





ADP-WH 型系列隔振器主要规格和技术数据

Main specifications and performance parameters of ADP-WH type series shear compression type vibration isolator

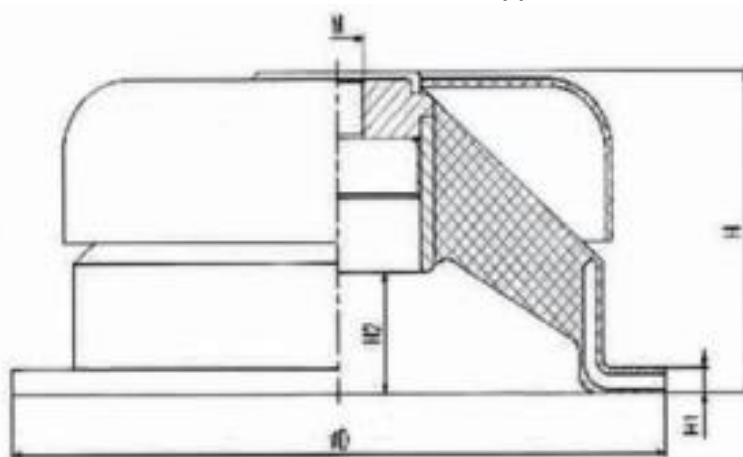
型号 Model	外形尺寸和接口尺寸Dimensions and interface dimensions (mm)										
	L	L1	L2	H	W	W1	A	n1	d1	n2	M
WH-150	185	150	—	80	127	65	—	4	15	1	M18
WH-250	185	150	—	80	127	65	—	4	17	1	M22
WH-400	185	150	—	80	127	65	—	4	19	1	M24
WHG-600	280	243	140	100	144	112	110	4	14	2	M16
WHG-800	334	297	194	100	144	112	110	4	14	3	M16
WHG-1200	340	296	200	130	204	115	168	4	20	3	M24
WHG-1750	460	403	240	130	204	115	168	4	20	3	M24

型号 Model	Z向额定载荷 Z Rated load (kN)	额定载荷下静变形 Static deformation at rated load (mm)	额定载荷下固有频率 Natural frequency at rated load (Hz)	重量 Weight (kg)
WH-150	1.5	12±2.0	6±1.0	3.0
WH-250	2.5	12±2.0	6±1.0	3.3
WH-400	4.0	12±2.0	6±1.0	3.5
WHG-600	6.0	12±2.0	6±1.5	14.2
WHG-800	8.0	12±2.0	6±1.5	17.1
WHG-1200	12.0	12±2.0	6±1.5	28.1
WHG-1750	17.5	12±2.0	6±1.5	38.3

ADP-JG 型系列剪切式隔振器 (ADP-JG series shear type vibration isolator)



ADP-JG 型(ADP-JG type)



适用范围

Scope of application

可作为精密仪器仪表、精密机床、动力机床、空调恒温设备、风机、发电机组、压缩机组、离心机防振基础的减振元件。对隔振,消振和抵抗冲击有良好的效果。

Used as the damping element of anti-vibration base of precise instrument or meter and machine tool, power machine tool, air conditioning and thermostatic equipments, fan, generator set, compressor unit and centrifugal machine; good effect of vibration isolation, absorption and impact resistance.

ADP-JG 型剪切式隔振器的应用

Application of ADP-JG shear type vibration isolator



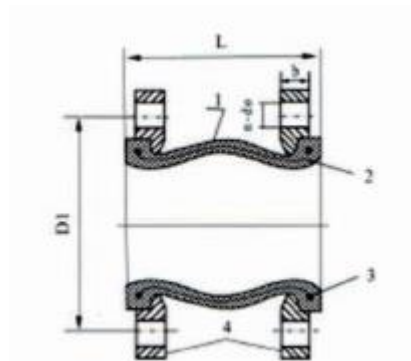
ADP-JG 型系列隔振器主要规格和技术数据

Main specifications and performance parameters of ADP-JG type series shear type vibration isolator

型号Model		M	D	H	H1	H2	重量Weight (kg)		
JG1		M12	100	43	6	15	0.35		
JG3		M16	200	87	7	33	2.20		
JG4		M20	290	133	8	53	6.00		

型号 Model			积极隔振Active vibration isolation			消极隔振Passive vibration isolation			极限 compression amount (mm)	破坏载荷 Breaking load ≤(kg)
			额定载荷 Rated load (kg)	静变形 Natural frequency (mm)	固有频率 (Hz)	额定载荷 Rated load (kg)	静变形Static deformation (mm)	固有频率 Natural frequency (Hz)		
JG1	-1	19	3 ~ 5.5	10.8 ~ 15.3	24	4 ~ 6.5	10 ~ 13	12	92	
	-2	27			32				165	
	-3	37			46				182	
	-4	48			59				238	
	-5	58			70				290	
	-6	70			86				320	
	-7	84			103				380	
JG3	-1	100	6 ~ 11.5	7 ~ 10	120	10 ~ 15.5	6.3 ~ 7.6	28	385	
	-2	140			175				690	
	-3	200			250				770	
	-4	270			335				1000	
	-5	330			410				1230	
	-6	405			500				1350	
	-7	483			600				1600	
JG4	-1	300	10.5 ~ 22	5.1 ~ 7.4	370	15 ~ 26.5	4.7 ~ 6.3	50	930	
	-2	420			510				1670	
	-3	580			710				1860	
	-4	720			900				2400	
	-5	920			1130				3000	
	-6	1080			1320				3200	
	-7	1260			1540				3800	

ADP-CKXT 型系列可曲挠单球橡胶接头（ADP-CKXT series flexible single-sphere rubber joint）



产品介绍

Introduction

该产品系内胶层，尼龙帘布或聚酯帘布增强，外胶层复合的橡胶球体和金属法兰松套组成的产品。

具有耐压高、弹性好、位移量大、吸振降噪效果好、安装方便等特点，可广泛用于给水排水、暖通空调、消防、压缩机、造纸、制药、船舶、水泵、风机等管道系统。

This product is reinforced by nylon or polyester cord fabric in the inner layer and designed with rubber sphere and loose metallic flange in the outer layer.

High pressure resistance, good elasticity, significant displacement, good effect of vibration absorption and noise reduction, and easy for installation; widely used in the piping systems of water supply and drainage, HVAC, fire control, compressor, papermaking, pharmaceutical, ship, pump, fan and other pipe systems.

接头材料表

Joint materials

序号	部位	材料	S.N	Part	Material
1	主体	极性橡胶	1	Main body	Polarized rubber
2	内衬	尼龙帘布或聚酯帘布	2	Lining	Nylon or polyester cord fabric
3	骨架	硬钢丝或钢圈	3	Casing	Hard wire or steel ring
4	法兰	低碳钢或不锈钢	4	Flange	Low-carbon or stainless steel

技术条件

Technical requirements

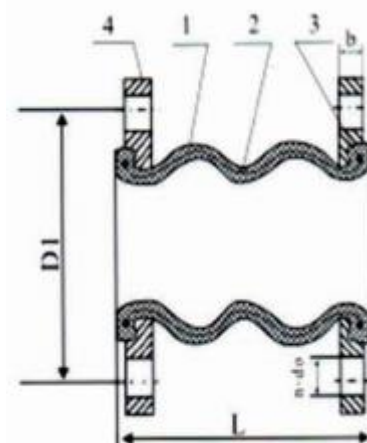
型 号 项 目Model item	CKXT-F(I)	CKXT-F(II)	CKXT-F(III)
工作压力 Working pressure MPa(kgf/cm²)	2.0(20)	1.2(12)	0.8(8)
爆破压力 Bursting pressure MPa(kgf/cm²)	6.0(60)	3.5(35)	2.4(24)
真空度Vacuum degree kPa(mmHg)	100(750)	86.7(650)	53.3(400)
适用温度Suitable temperature (°C)	-20 ~ +115		
适用介质Applicable media	空气、压缩空气、水、海水、热水、弱酸等 Air, compressed air, water, sea water, hot water, weak acid, etc.		
接头两端可任意偏转，便于自由调节轴向或横向位移。 Both ends of the joint can be arbitrarily deflected, easy for free adjustment of axial or lateral displacement.			

主要数据表(表格内法兰尺寸按 CB/T46-2007 1.0MPa)

Main data table(flange dimensions in the table are CB/T46-2007 1.0MPa)

公称通径 Nominal drift diameter DN		长度 Length L (mm)	法兰厚度 Flange thickness b (mm)	螺栓数 Bolt number n	螺栓孔直径 Diameter of bolt hole d (mm)	螺栓孔中心圆直径 Diameter of central circle in bolt hole D1 (mm)	轴向位移 Axial displacement (mm)		横向位移 Transverse displacement (mm)	偏移角度 Offset Angle
(mm)	(吋) (inch)						伸长 Elongation	压缩 Compression		
40	1 1/2	95	14	6	15	93	6	10	9	15°
50	2	106	14	6	15	103	8	10	11	15°
65	2 1/2	115	14	6	15	123	8	10	11	15°
80	3	136	14	8	15	138	10	12	13	15°
100	4	151	14	8	15	158	12	15	15	15°
125	5	167	14	10	15	183	14	18	18	15°
150	6	180	14	12	15	208	16	20	20	15°
200	8	190	17	12	17	273	16	20	20	15°
250	10	230	21	14	21	336	16	22	22	15°

ADP-CKST 型系列可曲挠双球橡胶接头（ADP-CKST series flexible double-sphere rubber joint）



产品介绍

Introduction

该产品系内胶层，多层尼龙帘布或聚酯帘布增强，外胶层复合的橡胶球体和金属法兰松套组成的产品。

具有耐压高、弹性好、位移量大、吸振降噪效果好、安装方便等特点，可广泛用于给水排水、暖通空调、消防、压缩机、造纸、制药、船舶、水泵、风机等管道系统。

This product is reinforced by multiple layers of nylon or polyester cord fabric in the inner layer and designed with rubber sphere and loose metallic flange in the outer layer.

High pressure resistance, good elasticity, significant displacement, good effect of vibration absorption and noise reduction, and easy for installation; widely used in the piping systems of water supply and drainage, HVAC, fire control, compressor, papermaking, pharmaceutical, ship, pump, fan and other pipe systems.

接头材料表

Joint materials

序号	部位	材料	S.N	Part	Material
1	主体	极性橡胶	1	Main body	Polarized rubber
2	内衬	尼龙帘布或聚酯帘布	2	Lining	Nylon or polyester cord fabric
3	骨架	硬钢丝或钢圈	3	Casing	Hard wire or steel ring
4	法兰	低碳钢或不锈钢	4	Flange	Low-carbon or stainless steel

技术条件

Technical requirements

型 号 项 目 Model item	CKST-F(I)	CKST-F(II)	CKST-F(III)
工作压力 Working pressure MPa(kgf/cm²)	2.0(20)	1.2(12)	0.8(8)
爆破压力 Bursting pressure MPa(kgf/cm²)	6.0(60)	3.5(35)	2.4(24)
真空度 Vacuum degree kPa(mmHg)	100(750)	86.7(650)	53.3(400)
适用温度 Suitable temperature (°C)	-20 ~ +115		
适用介质 Applicable media	空气、压缩空气、水、海水、热水、弱酸等 Air, compressed air, water, sea water, hot water, weak acid, etc.		
接头两端可任意偏转，便于自由调节轴向或横向位移。 Both ends of the joint can be arbitrarily deflected, easy for free adjustment of axial or lateral displacement.			

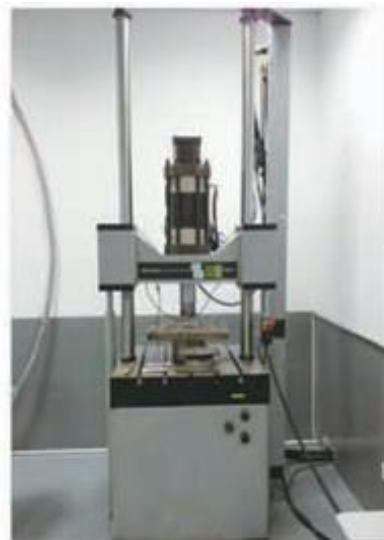
主要数据表(表格内法兰尺寸按 CB/T46-2007 1.0MPa)

Main data table(flange dimensions in the table are CB/T46-2007 1.0MPa)

公称通径 Nominal drift diameter DN		长度 Length L (mm)	法兰厚度 Flange thickness b (mm)	螺栓数 Bolt number n	螺栓孔直径 Diameter of bolt hole d (mm)	螺栓孔中心圆直径 Diameter of central circle in bolt hole DI (mm)	轴向位移 Axial displacement (mm)		横向位移 Transverse displacement (mm)	偏移 角度 Offset Angle
(mm)	(吋) (inch)						伸长 Elongation	压缩 Compression		
40	1 1/2	175	14	6	15	93	30	50	45	40°
50	2	175	14	6	15	103	30	50	45	40°
65	2 1/2	175	14	6	15	123	30	50	45	40°
80	3	175	14	8	15	138	30	50	45	40°
100	4	225	14	8	15	158	35	50	40	35°
125	5	225	14	10	15	183	35	50	40	35°
150	6	225	14	12	15	208	35	50	40	35°
200	8	325	17	12	17	273	35	60	35	30°
250	10	325	21	14	21	336	35	60	35	30°
300	12	325	21	16	21	391	35	60	35	30°



MTS 60吨微机控制万能静态试验机
MTS 60t microprocessor-controlled
universal static tester



INSTRON 25吨动态试验机
INSTRON 25t dynamic tester



MTS 5kN电子拉力试验机
MTS 5kN electronic tensile tester



泵压及爆破试验台
Hose impulse test bench



软管脉冲试验台
Pumping pressure and bursting test bench



高低温试验箱
High-low temperature test chamber



橡胶硫化仪
Rubber vulcameter



热老化试验箱
Heat aging test chamber

一、隔振设计所需资料

1) 一般说明

被隔振设备的类型、规格等；

支承的结构型式，如混凝土结构、钢结构等；

设备的安装位置，如机房、底层、楼层、屋顶或船用、陆用等；

要求达到的隔振效率和容许使用标准，设备能允许承受的振级。

2) 安装设备的资料

设备的外形、安装图以及有关尺寸；

设备的重力和重心位置；

在设备重心处建立的直角坐标上，给出设备各安装固定点的坐标位置；

设备主要部分或易损部件的固有频率。

3) 支承结构的资料

支承结构的静态性质、固定点；

支承结构应尽可能刚强、坚固，并力求避免该结构与扰动频率产生共振。

4) 隔振器制造厂应提供的资料

物理数据：隔振器图纸、许用载荷范围、推荐的安装方式等；

性能资料：静刚度、动态性能、阻尼比、耐久性和有关使用、维护要求。

I • Information required for vibration isolation design

1) General description

Types and specifications of vibration isolation equipment, etc.;

Supported structure types, such as reinforced concrete structure and steel structure;

Equipment installation location, such as machine room, ground floor, floors, roof, or marine and land use;

Vibration isolation efficiency required to be achieved and the using standards allowed, and the vibration level allowed to be undergone by equipment.

2) Data for equipment installation

Equipment outline, installation diagram and related dimensions;

Equipment weight and position of the center of gravity;

The established rectangular coordinates is based on the center of gravity, and the coordinate position of each installation and fixing point of the equipment is given.

Natural frequencies of the main parts or vulnerable parts of the equipment

3) Data of the supporting structure

Static nature and fixing point of the supporting structure;

The supporting structure should be strong and solid as far as possible, and the structure shall avoid generating resonance with disturbance frequency.

4) The information that the vibration isolator manufacturer should provide

Physical data: vibration isolator drawings, allowable load range and recommended installation method, etc.;

Performance data: static stiffness, dynamic performance, damping ratio, durability, and the requirements related to use and maintenance.

二、隔振设计步骤

- 1) 明确任务：是积极隔振还是消极隔振。
 - 2) 选择弹性支承装置的固有频率。
 - 3) 检查积极隔振中机器的平衡品质，以便确认能否用隔振方法来解决振动问题。
 - 4) 求出机器与台架的全部重量、重心位置、惯性主轴的位置以及绕三根轴的惯性矩。
 - 5) 确定弹性元件材料。
 - 6) 弹性支承的布置应尽可能满足非耦合的条件。
 - 7) 对于重心较高和设备（如重心距支承平面的距离大于方向两端隔振器之间的距离时）应采取：大质量惯性块；加大底座尺寸和隔振器间距；在支承平面上文加设侧隔振器（作限位器用）；采用横向刚度大的隔振元件以及采用斜置式安装方法来改善其稳定性。
 - 8) 根据所需的固有频率来选取弹性支承的刚度（弹性常数），并确定所需的静挠度（下层屋）。
 - 9) 在确定了弹性支承的刚度后，再从强度方面的要求来校核弹性支承的大小、尺寸。
 - 10) 对于安装于船舶、机车上的机械设备，还需作平衡位置偏移的检验。
 - 11) 检查机组的振动幅值，应符合规定的性能指标。
- 此外，在设计隔振装置时，还需考虑到空间安装间隙以及各种挠性接管、弹性联轴节的连接方式和结构型式。

II. Design steps of vibration isolation

- 1) Specific task: it is active vibration isolation or passive vibration isolation.
- 2) Select the natural frequency of the elastic supporting device.
- 3) Check the balance quality of the machine in the active vibration isolation, in order to confirm whether the vibration problem can be solved by means of vibration isolation.
- 4) Calculate the total weight and centre-of-gravity position of the machine and bench, the position of the principal axis of inertia, and the inertia moment around the three axes of the machine and bench.
- 5) Determine elastic component materials.
- 6) The layout of elastic supports should meet the uncoupled conditions as far as possible.
- 7) For the equipment with a high center of gravity (if the distance of supporting plane of center-of-gravity moment is greater than the distance between the directional two-end vibration isolators), the following measures should be taken: adding a massive inertia block; increasing the space between the base size and vibration isolator; setting up a lateral vibration isolator on the supporting plane (used as limiter); adopting the vibration isolation element with big lateral stiffness and the diagonal installation method to improve its stability
- 8) Select the stiffness of elastic support (elastic constant) according to the natural frequency, and determine the static deflection (lower amount) required.
- 9) After the stiffness of the elastic support is determined, check the dimension and size of the elastic support from the aspect of strength requirements.

10) For the mechanical equipment installed on ships and locomotives, there is still a need to inspect the offset of equilibrium position.

11) Check that the vibration amplitude of the unit which should comply with the specified performance indicators.

In addition, in the design of vibration isolation device, the installation clearance and the connection mode and structure type of a variety of flexible connecting pipes and elastic coupling should also be taken into account.