GUCHEN® Friction Pendulum

Engineered for Movement. Built for Longevity.

Hebei Guchen Engineering Rubber Co., Ltd.

COMPANY PROFILE

Guchen Bridge Systems is a premier manufacturer and Leading Global Supplier of Friction Pendulum. Operating from our advanced production facilities in Hebei, China, we engineer durability and reliability into every product, ensuring the safety and longevity of critical infrastructure projects worldwide.

For over 15 years, we have combined precision engineering with rigorous quality control to deliver solutions that stand up to the most demanding conditions—from heavy traffic loads and extreme weather to seismic events. Our commitment is not just to meet expectations but to exceed them, providing unparalleled value and support at every stage of your project.

Why Partner With Guchen?

Engineering Excellence: Our in-house team of experienced engineers utilizes state-of-the-art design and finite element analysis (FEA) to create joints that perform flawlessly under specified movement ranges and dynamic loads. We offer custom-designed solutions tailored to your project's unique requirements.

Uncompromising Quality: From the selection of high-grade, corrosion-resistant steels and advanced, weather-proof elastomers to our meticulous manufacturing processes, every step is controlled to ensure superior product life. Our products comply with major international standards, including EN, AASHTO, and DIN.

Proven Global Performance: Our Friction Pendulum have been specified and installed for over 30 projects worldwide, encompassing a wide range of structures including Hospitals, Schools, Government Office Buildings, Stadiums, Exhibition Centers, and Airport Terminals. This global experience equips us with a deep understanding of the diverse challenges faced by engineers and contractors.

Total Project Support: We are more than just a supplier; we are your partner. We provide comprehensive technical documentation, detailed installation guidance, and responsive after-sales support to ensure seamless integration and optimal performance of our systems.

Our Commitment

At Guchen Bridge Systems, our mission is to empower engineers and builders with reliable, innovative, and cost-effective elastomeric bearings that ensure the structural integrity and safety of bridges for decades to come.

Let us help you build smarter, safer, and longer-lasting.

CERTIFICATIONS & COMPLIANCE


营业执照
（副本）


开户许可证


证书
CERTIFICATE
河北古晨工程橡胶有限公司
国家3.15诚信企业
STATE 3.15 GOOD FAITH ENTERPRISES
中国名牌产品培育委员会
中国品牌调查统计中心

企业信用等级证书
ENTERPRISE CREDIT RATING CERTIFICATE
河北古晨工程橡胶有限公司
AAA级
AAA CERTIFICATE

证书
CERTIFICATE
北古晨工程橡胶有限公司
重合同·守信用企业


中泰认证
质量管理体系认证证书
环境管理体系认证证书
职业健康安全管理体系认证证书
河北古晨工程橡胶有限公司
GB/T 19001-2016 idt ISO 9001:2015
GB/T 24001-2016 idt ISO 14001:2015
GB/T 45001-2020 idt ISO 45001:2018
中泰联合认证有限公司


外观设计
实用新型专利
外观设计专
实用新型专利证书


检验检
型式检验报
检 验
检 验 报 告
球型钢支座
中冶天工集团有限公司
委托检验


检 验 报
检 验
检 验
建筑摩擦摆隔震支座
检 测 报 告
工程名称：FPS-II-3500-300-4.4 型式检验
样品名称：建筑摩擦摆隔震支座
委托单位：河北古晨工程橡胶有限公司
检测日期：2024 年 01 月 15 日-2024 年 03 月 15 日
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委托编号：ZHA2-F119-2024000050
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Friction Pendulum

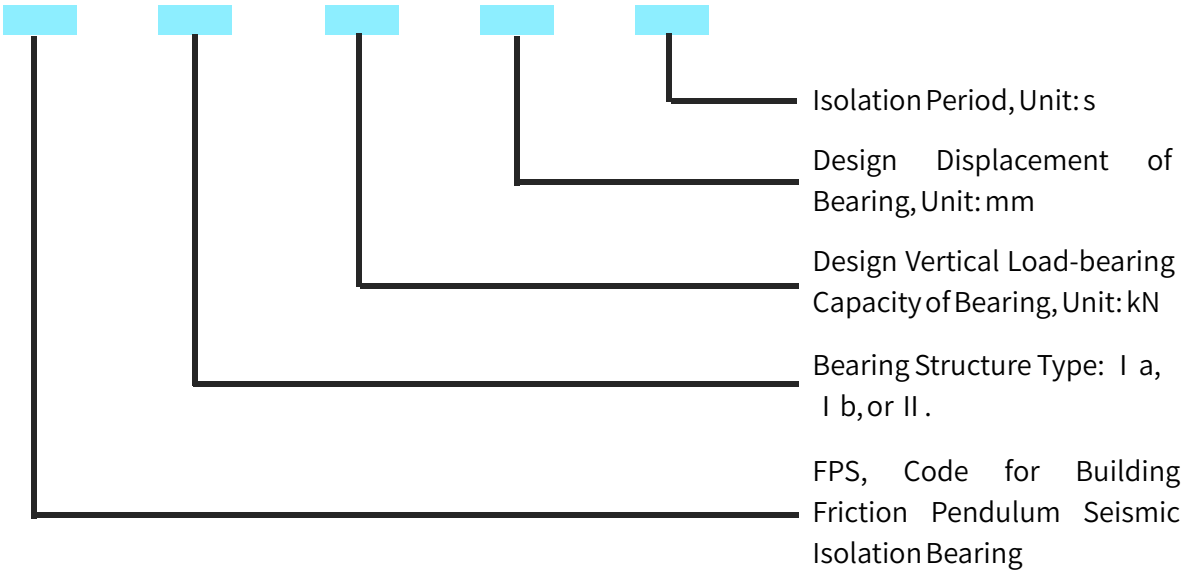
I. Definition and Composition of Building Friction Pendulum

A building friction pendulum is a device used for vibration control in building structures, primarily composed of friction materials, friction pressure plates, friction steel plates, and fastening bolts. Friction materials can include composite friction materials, metal-based friction materials, and polymer-based friction materials.

II. Working Principle of Building Friction Pendulum

The working principle of a building friction pendulum involves generating sliding or deformation under a predetermined load before the main structural components yield, dissipating seismic energy through friction or damping. At the same time, as the structure's natural vibration period lengthens after deformation, seismic input is reduced, thereby achieving the goal of lowering the structural seismic response.

III. Bearing Code Representation Method



IV. Specifications

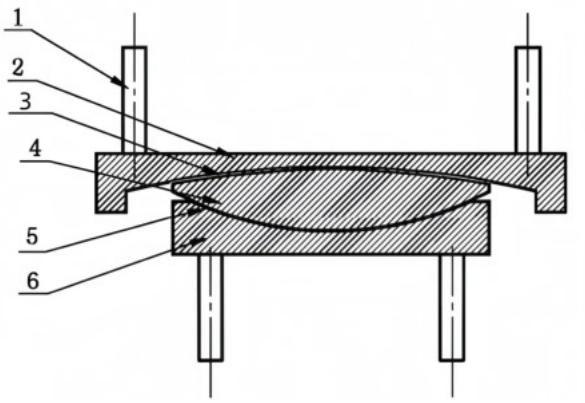
1. The rated vertical load-bearing capacity of the bearing is divided into 20 grades (kN): 1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000, 6000, 7000, 8000, 9000, 10000, 12500, 15000, 17500, 20000, 25000, 30000.

2. The ultimate displacement of the bearing is divided into 9 grades (mm): ±200, ±250, ±300, ±350, ±400, ±450, ±500, ±550, ±600.

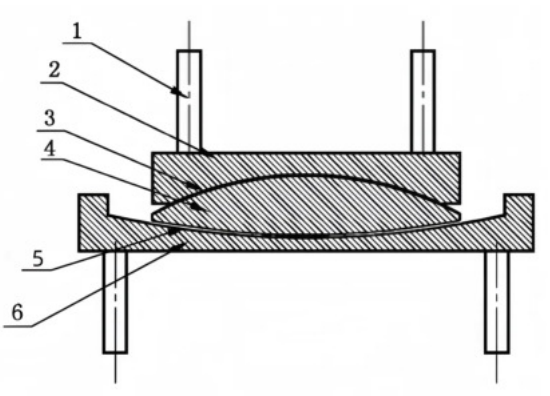
3. The oscillation period of the bearing is divided into 8 grades (s): 2, 3, 3.5, 4, 4.5, 5, 5.5, 6.

V. Classification

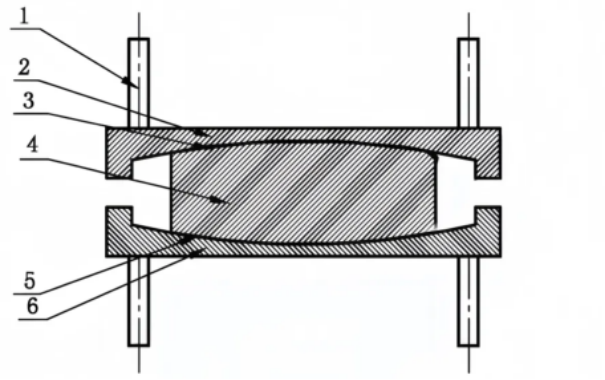
Based on the structural form of the sliding friction surface, friction pendulum seismic isolation bearings can be divided into two types. Type I is the single primary sliding friction surface type [as shown in Figure 1a) and Figure 1b)], and Type II is the double primary sliding friction surface type [as shown in Figure 1c)].



a) Type Ia



b) Type Ib



c) Type II

VI. Characteristics and Advantages of Building Friction Pendulum

1. The hysteresis curve is essentially rectangular, providing effective vibration reduction.
2. A wide variety of friction materials are available, allowing selection based on different application scenarios.
3. Simple structure, easy installation, and low maintenance costs.
4. Effective vibration reduction can be achieved across a wide range of loads.

VII. Application Areas of Building Friction Pendulum

Building friction pendulums are widely used in vibration control for large building structures such as high-rise buildings, bridges, and stadiums, as well as in seismic facilities for buildings in earthquake-prone areas.