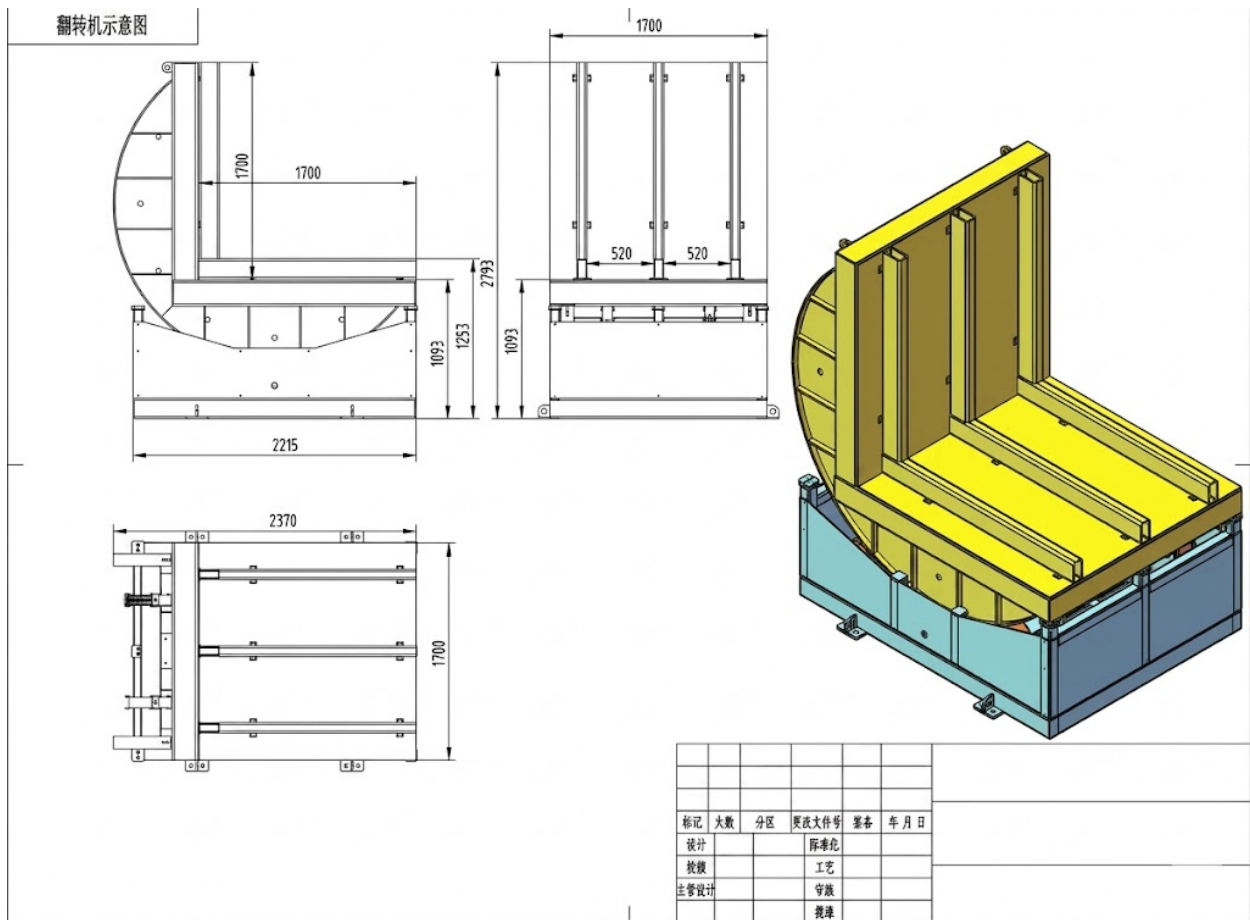


# Heavy-Duty Mechanical Flip Table Deep Case Analysis



This customized heavy-duty flip table was designed for a university experimental laboratory to safely rotate ultra-heavy stone specimens during wall-breaking and structural testing procedures. The project required exceptional structural rigidity, stable 90-degree turning performance, and improved operational safety for laboratory personnel.

## 1. Project Overview

**Client:** Shandong University

**Application:** Stone flipping platform for destructive testing experiments

**Rated Capacity:** 10,000 kg

**Turning Angle:** 90 degrees

**Drive System:** 4 kW motor and heavy-duty chain transmission

**Surface Finish:** Industrial yellow anti-corrosion coating

## 2. Industry Pain Points

Research laboratories handling oversized stone or concrete specimens often face major operational challenges. Manual repositioning is dangerous, inefficient, and difficult to control with precision. Conventional lifting systems also struggle with uneven center-of-gravity conditions during rotation.

The client needed a solution capable of safely rotating heavy stone materials, reducing manpower requirements, improving repeatability of experimental operations, and allowing forklift access during loading and unloading.

### **3. Customized Engineering Design**

The engineering team developed a reinforced mechanical turnover structure using high-strength welded steel components. The platform frame adopted heavy-duty structural members combined with an 8 mm deck plate for maximum rigidity under dynamic load conditions.

Additional customized features included removable wing plates expanding the platform size to 1700 x 1700 mm, detachable rectangular tube forklift channels, wireless remote-control operation, and optimized mechanical balance structure.

### **4. Mechanical Structure Advantages**

Compared with hydraulic turnover systems, the selected mechanical turning design provides lower maintenance requirements and higher long-term operational stability.

Core advantages include more stable synchronization under eccentric loads, reduced risk of hydraulic leakage, simpler maintenance procedures, and stronger structural reliability in continuous-duty applications.

### **5. Safety Optimization**

Safety was a critical design objective because the equipment handles ultra-heavy experimental materials. Multiple protection strategies were integrated into the final solution, including remote operation reducing personnel exposure, stable low-speed mechanical turning, reinforced anti-deformation platform structure, and controlled 90-degree stop positioning.

### **6. Final Customer Value**

The completed project significantly improved laboratory workflow efficiency while reducing operational risks. The client achieved safer material handling, faster experimental preparation, and more repeatable testing conditions.

This project demonstrates advanced customization capabilities in heavy-duty mechanical handling

systems for scientific research, industrial testing, and specialized material-processing industries.