



**Our Products Include:**

- Load Cells
  - Custom
  - High Capacity
  - Multiaxes
  - Underwater

- Torque Sensors
  - Custom Torque
  - OEM
  - High Capacity
  - Underwater

Calibration Kits

**Our In-House and Field Services Include:**

In-House Services

- Sensor Design
- Calibration and Gaging Services

Field Services

- Measurement of torque and horsepower in rotating equipment
- Stress/Strain Measurements of Plant Components
- Measurements in Harsh Environments
- MOV and AOV Strain Gage Instrumentation
- Measurement of Thrust and Torque on Valves and Rotating Equipment
- Structural Integrity Tests (SITs)
- Permanent and Temporary Monitoring Systems
- Design and Manufacture of Custom Sensors

Our measurement services are used to quantify operating parameters, aid with diagnostics and preventive maintenance, and troubleshoot causes for equipment failure.

Sensing Systems specializes in conducting measurements and manufacturing sensors to operate in harsh environments such as:

- High Temperature
- Low / Cryogenic Temperature
- Underwater / High Humidity
- High Magnetic Fields
- Chemical / Corrosive

Sensing Systems serves the Pharmaceutical Industry with measurement products and services. Our products and services fulfill a wide variety of measurement requirements for monitoring and control of research and production processes.

Sensing Systems designs and manufactures force and torque sensors specifically designed for pharmaceutical applications. The sensors are used to monitor and control Research and Development, Scale-up and Production activities in Tablet Presses, Mixers, and Roller Compactors. We have developed relationships with most tablet press manufacturers to design and produce sensors that monitor and control tablet press operations. The same is true of mixers and roller compactor manufacturers.

Our sensors are direct replacements of existing tablet press, mixer and roller compactor components with the ability to measure load and/or torque during normal operation. We often participate in research projects where special sensors are developed to measure a variable of interest. Sensors for very specific requirements such as punch displacement and radial wall pressure have evolved from these efforts.

We manufacture NIST traceable calibration kits to verify and periodically calibrate all tablet press and mixer sensors for compliance with cGMP requirements. The following are the most common sensors used with tablet presses, mixers and roller compactors by the pharmaceutical industry.

- Main Compression
- Pre-compression
- Ejection
- Take Off (Knock Off)
- Torque sensors
- Calibration kits
- Compression load cells
- Electronics and Signal Conditioning for all sensors



SSC Pharmaceutical Sensor©

**Pharmaceutical Sensors** for special requirements such as punch displacement and radial wall pressure are also available.

All of our sensors are identical in form and function to the part they replace with the added benefit of a load or torque measurement. In addition, they can be interfaced to any data acquisition equipment available in the market.

Tablet presses and mixers are manufactured by several companies. Each model has its own geometry and set of parts requiring that the sensors be custom made for each press or mixer. Sensing Systems maintains a large database of designs for the majority of press manufacturers with new designs being continuously added.

**CONTACT US FOR YOUR CUSTOM APPLICATIONS**

We will analyze the requirements of your application and provide a recommendation.

Tel: 508-992-0872 or 800-849-4016

Go to our website: [www.sensing-systems.com](http://www.sensing-systems.com)

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## **Main Compression and Pre-compression Sensors**

Main compression and pre-compression measurements are usually performed by replacing the pins that hold the main and pre-compression wheels in place. Sensing Systems replaces the existing pins with identical parts having measurement capabilities.

In some cases the same measurements can be effected by instrumenting a reaction rod or lever arm that fully experiences the compression or pre-compression forces. We will instrument and calibrate the existing part or replace it with a slightly modified component that will fit the existing geometry.

In all cases we provide an NIST calibration certificate stating the output and accuracy of each sensor.

## **Ejection Sensors**

Our ejection sensors are direct replacements of the ejection cams used on tablet presses. Ejection sensors are some of the most complicated parts to design and manufacture. They contain several curved and compound surfaces and must accurately measure a force over a prescribed distance. Sensing Systems has developed and incorporated innovative sensing elements into ejection sensors to accurately measure loads over the active area of the cam. We also use state of the art machining techniques to closely control the exacting geometries required by our designs.

## **Take Off Sensors**

Take off or knock off sensors are used to measure the forces involved in transferring a tablet from the die table to the collection container. Our sensors are attached or built into the take off bar that is part of the press.

## **Torque Sensors**

Torque sensors are used in pharmaceutical mixers to determine End Point conditions or to measure the amount of work or energy required to properly mix a batch of product. These measurements can be used during the R&D phase of a product or during production to accurately measure the desired mixing condition.

Mixers are available in all shapes and sizes. The standard approach is to instrument the driving shaft and calibrate it with NIST traceable weights. There are as many designs

as there are mixers. In many instances the original driving shaft is replaced with a higher strength material to insure an accurate high level measurement signal.

## **Calibration Kits**

Sensing Systems manufactures NIST traceable calibration kits used to fulfill regulatory requirements for calibration of tablet press sensors. Kits to calibrate Torque sensors are also available.

## **Electronics and Signal Conditioning**

Sensing Systems can supply all of the required electronics and/or signal conditioning equipment to interface our sensors to any data acquisition equipment available in the market. In addition, we supply digital display and peak detection meters to be used with our sensors. We also supply electronics to convert sensor signals into digital signals. Standard protocols have the advantage that the sensor signal can be read directly by a computer using commonly available software.

Electronics and signal conditioning equipment are calibrated with the sensors when sold together. This results in an NIST traceable calibration of the complete system. A calibration certificate detailing the output and accuracy of the system is provided with each system.

## **Available Designs**

We maintain a large design database of pharmaceutical sensors for most commercially available tablet presses. If your sensor is not in our database contact us and we will manufacture it for you. We will incorporate existing and proven sensing elements into the geometry required by your tablet press. All that we require is to borrow the part or a current drawing of the component the sensor will replace (i.e. compression pin, ejection cam, etc.).

## **Delivery**

Standard delivery is two to three weeks after receipt of order for sensors in our database. For new sensors delivery is three to four weeks after receipt of order. Faster delivery times are accommodated when delivery is critical to our customer's production activities.

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