



Vandal Bucks

CALIBRATION FIXTURE FOR RIVET INSERTION EQUIPMENT

PROBLEM STATEMENT

- ✖ Create test fixture and associated calibration methods to measure the required force to optimally compress and seat rivets in the production of knives. Provide assistance to both designers and machine operators that improves the quality and consistency across a spectrum of knife families.

DELIVERABLES

- ✘ A detailed write up and report on our analysis and findings pertaining to the compression of a single rivet taking into account the different materials (brass and nickel) and the addition of the compliant material to the pressing process.
- ✘ A force calibration tool comprised of a load cell and digital display allowing for the reading of a specific

BUDGET BREAKDOWN

Item	Description	Cost
Load Cell	Pressure Transducer	\$550
Cable	Transmits data from Load cell to display	\$50
Display	Amplification, calibration, and digital display	\$450 (\$750 with logging capabilities)
Travel		\$300
Shop Use		\$300
Materials		\$200
		Total: \$1850 (\$2150)

LOAD CELL: \$550

THC SERIES



CAPACITY RANGES:

250, 500, 1,000, 2,000,
3,000, 5,000, 7,500, 10,000 lb

Our THC Series through hole donut load cells offer an outside diameter of 2.00 inches and up to six different through hole diameter options per capacity range. These load cells are manufactured from heat treated 17-4 ph stainless steel. The sensing element incorporates bonded foil strain gages of the highest quality and are sealed for protection against most industrial environments.



- This is the load cell transducer that we are interested in purchasing
- There are a couple varying models but we feel this one is suited well for our application

DIGITAL DISPLAY: OPTION 1 \$450

MODEL DPM-3



DPM-3 Manual



DPM-3 Serial Communication Manual



DPM-3 Instrument Setup Software



USB Driver

The DPM-3 is a smart Plug & Play TEDS IEEE 1451.4 compliant Digital Panel Mount Load Cell meter. Just plug in a TEDS compatible Load Cell or Torque Sensor and the DPM-3 will automatically self-calibrate. When used with a non-TEDS Load Cell or Torque Sensor, the DPM-3 can be set up by simple front panel push buttons. The DPM-3 can be scaled to a full 5 digit display from 0 to 99,999 counts to read directly in engineering units such as grams, ounces, pounds, etc. The DPM-3 samples 60 readings per second (50 for 50Hz operation) for fast control response and true peak/valley reading capability. The meter has an adaptive digital filter that can automatically select the best time constant for minimum noise, yet respond rapidly to an actual change in signal level. The peak and valley values can be displayed by a push of a button on the front panel. Auto-tare allows the meter to be set to zero for any input signal level. Available options include dual relays, analog output, serial communications, and low voltage power supply.



PLUG-IN OPTIONS

- **OPTION C** is a dual setpoint controller Form C relays
- **OPTION H** is an isolated linearized analog outputs
- **OPTION T** is an isolated Serial Data Board (RS-232 or RS-485)
- **OPTION U** is an isolated Serial Data Board (USB)
- **OPTION V** is an isolated low voltage power supply

DIGITAL DISPLAY: OPTION 2 \$750

MODEL SSI



SSI Manual



SSI Serial Communication Manual



SSI Instrument Setup Software



USB Driver

The SSI is a smart Plug & Play TEDS IEEE 1451.4 compliant portable handheld Load Cell Indicator. Just plug in a TEDS compatible Load Cell or Torque Sensor and the SSI will automatically self-calibrate. When used with a non-TEDS Load Cell or Torque Sensor, the SSI can be set up by simple front panel push buttons. The SSI can be scaled to a full 5 digit display from 0 to 99,999 counts to read directly in engineering units such as grams, ounces, pounds, inch pounds, etc. The SSI also has a Units key for automatic conversion of readings for load, torque and pressure. The SSI has an ultra-fast signal-sampling rate of 15,360 samples/second for true peak and/or valley testing capability. Auto-tare allows the meter to be set to zero for any input signal level. The SSI also features a USB port for data logging to a PC. You can also log data to the SSI's internal memory storing up to 8,000 time and date stamped readings. The SSI also features 2 built-in solid-state alarm relays with LED and audible indicators. The SSI will operate up to 65 hours on a single charge or use the included battery charger for applications where the SSI is mounted permanently.

