

BALDWIN COMPRESSION/TENSION MACHINE

Standard Operating Procedure

Version 1.1



Andrew Sutherland

Supervisor of Laboratory/Workshop

Mechanical & Electrical

Type of hazards (mechanical, electrical, chemical, biological or radiation)

Baldwin Compression & Tension Machine

Room A2

Name and Function of Lab/Project

Baldwin

Make

49850

Model

A. Introduction/Specifications

- **Manufacturer**
 - Load Frame: Baldwin Foundry & Machine Co., USA
 - Load Cell and Controller: Tate-Emery, USA
- **Load Capacity:** 200 kip (890 kN) in tension and compression
 - 200 kip, 50 kip, and 10 kip load ranges
- **Control System:** Manual Load Control
- **Clearances:**
 - Tension, jaw to jaw: 6 ft
 - Compression, crosshead platen to base : 6ft (1.8 m)
 - Lateral clearance, tower to tower: 30 in (760 mm)
 - Compression Platen: 20 in x 20 in (508 mm x 508 mm)
 - Tension Jaw Width: 4 in (100 mm)
 - Clamping mechanism: Mechanical
- **Calibration/Certification:** ASTM E4 on all force ranges

B. Health and Safety Considerations

I. Safety devices required (e.g. machine guards, personal protective equipment, etc.)

- ***SAFETY GOGGLES/GLASSES*** must be worn **at all times in the lab**. Prescription glasses can be worn under the safety goggles.
- ***HARD TOE BOOTS/SHOES*** must be worn **at all times in the lab**.

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II. General Safety

- **FOOD AND DRINK** are not allowed in any laboratory
- Be aware of the specific hazards associated with each lab exercise.
- Wear appropriate clothing and foot wear (**NO OPEN-TOED SHOES**).
- Familiarize yourself with all emergency safety equipment (eyewash, fire alarm, fire extinguishers, telephone).
- Do not leave hazardous experiment unattended
- **Clean** your work area before leaving the laboratory

FIRE: Immediately **report it to the supervisor or lab demonstrator** or other responsible personal, and then exit the laboratory and building quickly via proper exit route (Make sure you know where the exits are). Use fire extinguishers for bench-top fires or other small fires.

ACCIDENTS AND INJURIES must be reported to the demonstrator or other responsible personal. There are emergency first aid supplies available and all technicians are trained in basic first-aid, however any injury of consequence will be handled by the medical services.

UNSUPERVISED WORK: No student is permitted in the laboratories unless there is a supervisor present.

THE BEST SAFETY PRECAUTIONS include **ADVANCED PREPARATION** for each laboratory and a **CLEAN ORGANIZED WORK SPACE**.

D. Operation Procedures:

*The following guidelines are for persons who request the use of the Baldwin compression/tension tester. A verbal **request** to departmental technicians must be made to obtain permission to use any testing equipment. If operating any equipment for the first time, a competent certified operator must be present to provide adequate training and guidance.*

Note: Before starting the pump, ensure that the fine and coarse load adjust wheels are closed (Turn tightly clockwise) **Figure 1 (A)**

- Open the front guard door **Figure 1 (B)**
- Press “START” button **Figure 2 (C)**
- Use “right” load adjust wheel (turn counter-clockwise) to raise the bed to the indicated line **Figure 1 (D)**
 - Turn “right” adjusting wheel (clockwise) to close valve **Figure 1 (A)**
- Properly place specimen (centered on base plate) **Figure 1 (E)**

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- Select appropriate load range **Figure 2 (F)**
- If using low load range;
 - Turn dial to OPEN; or **Figure 2 (G)**
- If using medium or high load range;
 - Turn dial to “SHUT” position **Figure 2 (G)**

- Use H, M, L dials to zero load wheel as required **Figure 2 (H)**
- Ensure air dial is turned to ON **Figure 2 (I)**
- Press “DOWN” button to bring cross-head down (leave 10mm gap) **Figure 2 (J)**
- Use right loading wheel to bring up the base to touch the cross-head **Figure 1 (A)**
- DO NOT LOAD SPECIMEN WITH CROSS-HEAD**
- Close guard door
- Switch load dial to “ON” **Figure 2 (K)**
 - Turn dial to loading rate desired **Figure 2 (L)**
 - Watch loading disc and control rate by adjusting wheel
 - Maintain proper loading rate using center dial (right-wheel) **Figure 1 (A1)**

Note: Left wheel unloads, right wheel loads, center dial is fine adjust, and outside wheel allows coarse adjustments

Once specimen fails;

- Turn “right” load adjust wheel clockwise **Figure 1 (A)**
- Turn “left” load adjust wheel counter-clockwise till base returns to line indicated
- Turn “left” load adjust wheel clockwise **Figure 1 (A)**
- Switch load dial to “OFF” **Figure 2 (K)**
- Press “STOP” button **Figure 2 (M)**
- Clean entire workstation (front and back)
 - Properly discard broken specimens

You **must** acquire the assistance of a technician to perform any **tension testing!**

If you ever have any doubts or questions, ASK THE SHOP TECHNICIANS!

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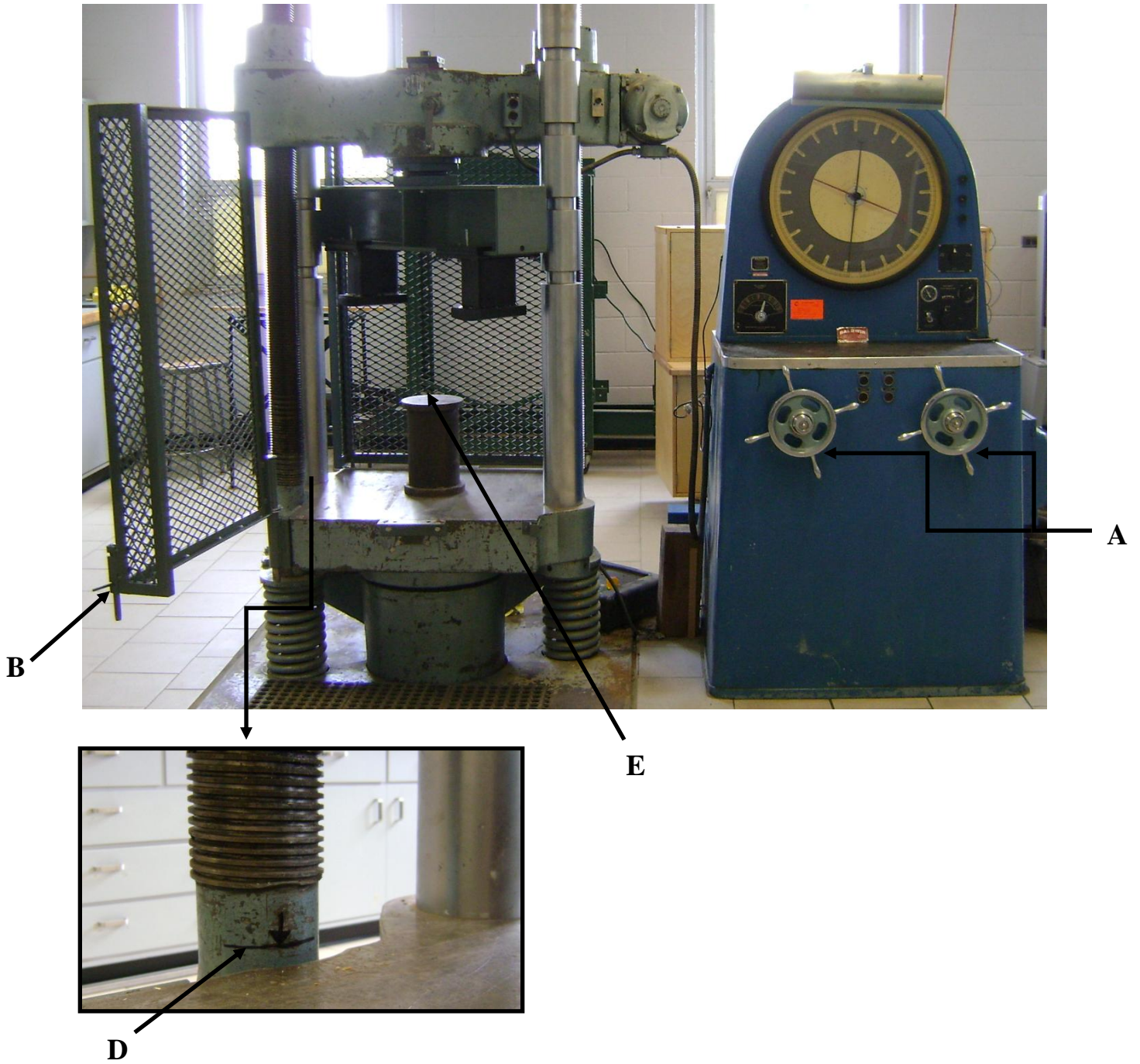


Figure 1. Baldwin Compression/Tension Machine

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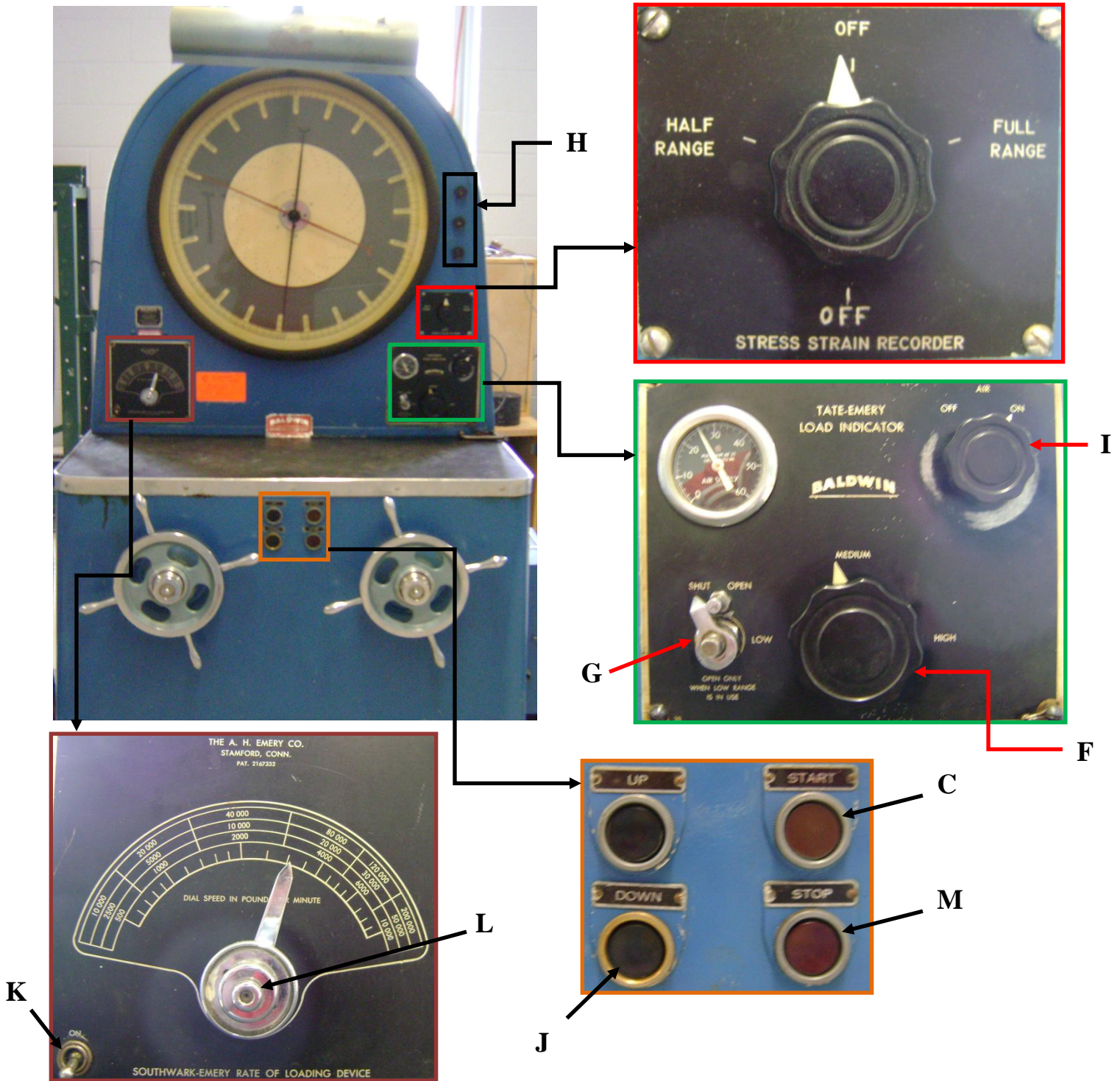


Figure 2. Baldwin Control Station

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Emergency Contacts:

Andrew Sutherland, Chief Technician, HA-11, 453-5126

Chris Forbes, Technician, HA-11, 452-6114

Ken Knoftel, Technician, HA-11, 452-6114

Campus Security, 453-4830

FIRE/AMBULANCE/SAFETY -Emergency Response, 9-911 Internal (UNB Phones)
911 External (Cell Phone)