Version 1.1

SATEC COMPRESSION MACHINE
Standard Operating Procedure

UNB

Andrew Sutherland	**Mechanical & Electrical**
Supervisor of Laboratory/Workshop	Type of hazards (mechanical, electrical, chemical, biological or radiation)

SATEC Hydraulic Compression Tester **Room A13**

Name and Function of Lab/Project

INSTRON-SATEC	**1000RD**
Make	Model

A. Introduction/Features

- 1,000,000 lbf Capacity
- Heavy-duty, ultra-stiff frame design permits advanced testing of concrete
- Front and rear safety guards ensure operator safety
- High-accuracy pressure transducer load weighing system
- Digital control electronics provide high accuracy and fast response
- Includes standard 150 x 300 mm (6 x 12 in) concrete compression fixture

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**.

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 SATEC compression 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.*

- Turn on computer
  - Obtain login password from civil department technician (see contact information at end of document)
  - Select "**supr**" icon
  - Select appropriate testing profile
    - Choose testing parameters
- Open the front guard door
  - Select appropriate loading head **Figure 1 (A)**
  - Properly place specimen (centered on base plate) **Figure 1 (B)**

Raise base plate by performing the following:

- Turn both red "STOP" dials clockwise **Figure 2 (C)**
- Turn dial to "SERVO" **Figure 2 (D)**
- Turn lever to middle position (clockwise one notch) **Figure 2 (E)**
- Press white "PUMP START" button **Figure 2 (F)**

Use hand control panel to adjust spacing for loading

- Press "JOG UP" button for fast coarse adjustment of base plate upwards **Figure 2 (G)**
- Use "FINE POSITION" scroll till pre-load is reached **Figure 2 (H)**
- CLOSE guard door

- Select "Run Test" on software program

Once Sample breaks or reaches max load;

- Press red "PUMP STOP" button **Figure 2 (C)**
- Turn lever to "UNLOAD" position (counter-clockwise) **Figure 2 (E)**

To test another specimen;

- Press the "Test" tab;
  - Select "Next Specimen"
- Open guard door and remove sample (continue as previously advised)

Once finished;

- Clean entire workstation (front and back)
  - Properly discard broken specimens
- Properly shutdown computer

If you ever have any doubts or questions, <u>ASK THE SHOP TECHNICIANS</u>!

Figure 1. INSTRON SATEC RD1000

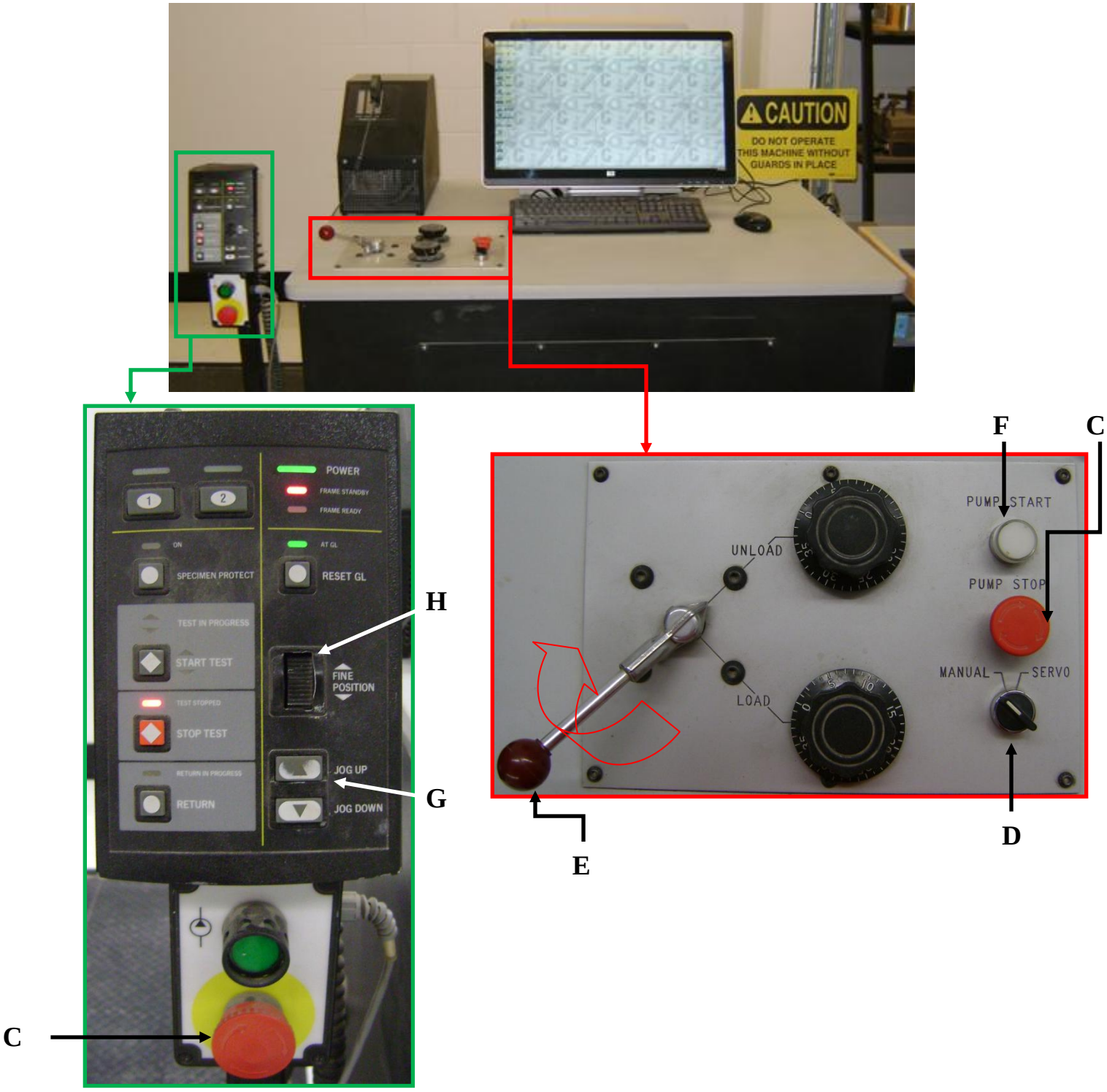

Figure 2. Control Station

Table 1: INSTRON SATEC Specifications

	Model 1000RD
Frame Capacity, Max.	5,000 kN
	500,000 kgf
	1,100,000 lbf
Frame Stiffness	1.60 X 10^{10} N/m
	90,000,000 lb/in
Vertical Test Opening, Max.	647 mm
	25.5 in
Horizontal Test Opening, Max.	762 mm
	30 in
Power Stroke	76 mm
	3 in
Piston Diameter	558 mm
	22 in
Testing Speed, Max.	75 mm/min
	3 in/min
Power PC/Controller	115V or 230V,
	1 ph, 50/60 Hz
Load Accuracy	+/- 1.0% of reading down to 4% of machine capacity
Strain Accuracy	1/50 of full range to ASTM E83 class B-1, B-2 or ISO 9513 class 0.5 extensometer

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)