Manual # PP3123-03-0101

Series 3100
Automatic Burst Testing System
Stage I, II and III Volume Control

User's Guide

Manual # PP3123-03-0101

SATEC Pipe and Pressure

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CONGRATULATIONS

Welcome to the INSTRON-SATEC SYSTEMS family of materials testing.

INSTRON-SATEC SYSTEMS designs, manufactures, and delivers high-quality materials testing hardware and software equipment for a variety of industrial, commercial, and institutional customers. Tracing its roots to the century-old Baldwin line of universal testers, INSTRON-SATEC SYSTEMS focuses on responding to its customers through its international force of highly trained sales, service, and technical personnel.

Our current line of machines and accessories range from simple, manually-controlled units, to fully-automated, computer-controlled systems, complete with the latest innovations. If your testing needs require unique systems, we view special designs as if they were standards. We also carry an extensive line of grips and fixtures to meet a wide variety of testing needs. Call for our catalog.

Whatever your testing needs, INSTRON-SATEC SYSTEMS delivers.

SATEC SYSTEMS
National Headquarters in Grove City, Pennsylvania, USA

About Your Documentation

This User's Guide describes the installation, construction and maintenance of the SATEC PIPE & PRESSURE Series 3100 Stage I, II, or III Automatic Burst Test Systems.

Please read this User's Guide carefully and study the illustrations and drawings that are provided in the "Reference Drawing" section.

A thorough understanding of the machine and close attention to maintenance will pay big dividends in trouble-free operation.

Throughout your documentation are NOTE, CAUTION and WARNING statements that alert your attention to important information.

NOTE:
Notes provide further clarification on particular issues.

CAUTION:
Cautions alert the user to situations that may cause equipment damage.

WARNING!
Warnings alert the user to situations that may cause serious personal injury or death.

General Safety Precautions

Materials testing involves inherent hazards from high forces, rapid motions and stored energy. You must be aware of all moving and operating components that are potentially hazardous.

Whenever you consider that safety is compromised, press the **EMERGENCY STOP** button, shutoff the air supply, bleed off high pressure from the system and check system thoroughly before returning it to service.

Carefully read all relevant manuals and observe all Warnings and Cautions. As discussed previously, the term Warning is used where a hazard may lead to personal injury or death. The term Caution is used where a hazard may lead to damage to equipment.

Ensure that the test set-up and the actual test you will be using on materials, assemblies, or structures constitutes no hazard to yourself or others. Make full use of any mechanical and electronic limits. These features are supplied for your safety.

The following pages detail general warnings that you must heed at all times while using materials testing equipment. Specific Warnings and Cautions appear whenever a potential hazard exists.

Your safest precautions are to gain a thorough understanding of your equipment by reading your instruction manuals, and to always use good judgment.

WARNING!
If the equipment is used in a manner not specified by SATEC, the protection provided by the equipment may be impaired. Injury to personnel or damage to machine may result. Be sure to read and understand the material presented in this User's Guide and in any other accompanying instructions.

WARNING!
Keep all body parts clear of the testing space while the machine is in use.

WARNING!
This equipment uses water at very high pressures. Use caution when working near any high pressure line.

WARNING!
Wear eye protection and use protective shields or screens whenever any possibility exists of a hazard from the failure of a specimen, assembly or structure under test.

Use protective shields whenever a risk of injury to operators and observers exists from the failure of a test specimen, assembly or structure, particularly where explosive disintegration may occur. Due to the wide range of specimen materials, assemblies or structures that may be tested, any hazard resulting from the failure of a test specimen, assembly or structure is entirely the responsibility of the owner and the user of the equipment.

WARNING!
Never pressurize a specimen without bleeding out the trapped air. Use purge valves on specimen end caps (one end).

WARNING!
Shut off the air and water supplies and discharge residual pressure in high pressure lines before working on system.

– Disconnect air supply and shutoff water supply.
– Shutoff each manifold shutoff valve.
– Discharge pressure in each high pressure line. Crack line from each station and line between manifold shutoff valve and static pressure regulator.
– Bleed pressure between accumulator and manifold shutoff valves. Make sure system On-Off valve is open.

WARNING!
Shut down the hydrostatic/burst power supply and discharge pressure before disconnecting any fluid coupling.

Do not disconnect any coupling without first shutting down the hydrostatic power supply and discharging stored pressure to zero. Tie down or otherwise secure all pressurized hoses to prevent movement during system operation and to prevent the hose from whipping about in the event of a rupture.

WARNING!
Disconnect the air pressure supply prior to shutting off electric. Possible pressure could be released.

WARNING!
Disconnect the electrical power supply before attempting to disassemble, inspect, or clean the system.

WARNING!
Disconnect the electrical power supply before removing the covers to electrical equipment.

Disconnect equipment from the electrical power supply before removing any electrical safety covers or replacing fuses. Do not reconnect the power source while the covers are removed. Refit covers as soon as possible.

WARNING!
Shut off electrical power before servicing or making any adjustments inside the cabinet.

WARNING!
Take care when installing or removing a specimen.

Installation or removal of a specimen involves working with high pressures and possibly high temperatures.

WARNING!
Use protective guards or screens if any possibility exists of a hazard from the failure of a specimen, assembly or structure under test.

Use protective guards whenever a risk of injury to operators and observers exists from the failure of a test specimen, assembly or structure, particularly where explosive disintegration may occur. Due to the wide range of specimen materials, assemblies or structures that may be tested, any hazard resulting from the failure of a test specimen, assembly or structure is entirely the responsibility of the owner and the user of the equipment.

WARNING!
Protect all cables and hoses (electric, hydraulic and air) from damage and inadvertent disconnection.

The hoses used for this system are high pressure hoses. If hoses are damaged or disconnected without being properly drained, water can be emitted at very high pressures and cause injury to personnel. Never route cables or hoses across the floor without protection, nor suspend them overhead. Use padding to avoid chafing where they are routed around corners or through wall openings.

WARNING!
Wear protective clothing when handling equipment at extremes of temperature.

Materials testing is often carried out at non-ambient temperatures using ovens, furnaces or cryogenic chambers. Extreme temperature means an operating temperature exceeding 60 °C (140 °F) or below 0 °C (32 °F). You must use protective clothing, such as gloves, when handling equipment at these temperatures. Display a warning notice concerning low or high temperature operation whenever temperature control equipment is in use. You should note that the hazard from extreme temperature could extend beyond the immediate area of the test.

Support Services – Contact List

If it becomes necessary to contact us, these guidelines should be followed:

- For systems sold within the **United States**, contact INSTRON-SATEC SYSTEMS. See the information listed below.
- For systems sold outside the US, contact your local INSTRON Office. A listing of these can be found on the INSTRON website at www.instron.com.

INSTRON-SATEC SYSTEMS can be reached at:

900 Liberty Street
Grove City, PA 16127
Phone: (724) 458-9610 or
1-800-473-7838, select Option 2
Fax: (724) 458-9614

Contact INSTRON-SATEC SYSTEMS for information about other products, options, retrofits or replacement parts.

The following phone list can be used to contact specific INSTRON-SATEC SYSTEMS departments for help in designated areas. Call either of the above phone numbers and enter the appropriate phone extension as listed below.

Customer Support Hotline – Hardware.....Service, ext. 772

INTRODUCTION

WARNING!
If the equipment is used in a manner not specified by SATEC, the protection provided by the equipment may be impaired. Injury to personnel or damage to machine may result. Be sure to read and understand the material presented in this User's Guide and in any other accompanying instructions.

The purpose of this manual is to supplement, but not to replace the services of qualified personnel to start up and adjust this equipment.

Persons without previous experience with this equipment should not attempt the initial adjustment and check out procedures required until this installation is considered ready for operation by a qualified operator.

Each cabinet carries an individual serial number on the nameplate mounted on the cabinet. Please refer to this number when ordering replacement parts or when requesting any further information.

This pressure supply system is primarily designed for the burst testing of plastic pipe.

INSTALLATION

Uncrating

Remove the shipping crate and packing material carefully from the burst supply cabinet. Do not discard the packing material until all the items on the packing lists have been accounted for.

Site Preparation

The testing area requires floor drains.

Positioning the Burst Test Cabinet

When transferring the burst supply cabinet from the shipping pallet or from location to location, use moving blankets between the cabinet and the moving machinery. Follow accepted practices to avoid damage to the equipment and personnel.

Use a fork truck to remove the burst supply test cabinet from the shipping pallet. Position the cabinet in the desired location and level the cabinet. Verify that the by-pass valve, located inside the cabinet, is in the Off position. Be sure to allow adequate floor space for maintenance personnel to have easy access to the system.

Connecting

1. Connect the water supply line into the "water supply" inlet port on the side of the cabinet with the customer provided shut off hand valve. It is recommended that additional water filters be added as required to provide clean water to the system.

WARNING!
Always connect the water supply first, before applying the compressed air to the system. The pumping system will start as soon as air pressure is supplied to the pump. Damage to the pump may result if the pump is run dry. A 40 psi minimum and 100 psi maximum water supply pressure is recommended. Use ½ inch I.D. fittings. Using smaller fittings could reduce the capacity of the pump.

2. Connect the high-pressure supply outlet and return to the burst fixture. Use only suitable high-pressure hose, tubing and fittings with appropriate psi rating (typically 3000 or 5000 psi depending on the system).

3. Plug in the electrical power cable to the customer's power outlet. Normal electrical requirements are 120 Volt, 60 Hertz, and 1 Phase.

4. Start the supply of water into the unit by opening the fill valve. Some discharge flow from the drain should be noticed.

5. Connect the compressed air supply line into the "air supply" port on the side of the cabinet with the customer provided filter compressed air shut off hand valve.

CAUTION:

DO NOT connect the air supply to the pumping unit without first turning ON the water supply.

NOTE:

For the best performance the air supply pressure should not drop below 90 PSI or exceed 115 PSI.

SYSTEM COMPONENTS

Some of the major components of the burst system are described below.

Air Powered Water Pump (Standard)

The standard burst test system is supplied with an air operated high pressure water pump. It provides the high-pressure water supply for the burst system. Water pressure will be either 3000 or 5000 psi depending on the supply pressure, check the **SUPPLY PRESSURE** gauge on the burst cabinet. Refer to the manufacturer's instructions included separately in this manual for more specific information about the pump.

CAUTION:

Avoid running the pump dry. Always be sure water is on to the console before turning on the air. Operate pump only when testing a specimen. TO STOP THE PUMP, TURN OFF THE COMPRESSED AIR SUPPLY TO THE PUMP.

Electric Piston Pump (Optional)

In lieu of the standard air over water pump, Stage II and Stage III burst systems can be purchased with an optional electric piston pump. Like the air over water pump, it provides the high-pressure water supply for the burst system, but at a faster rate. Water pressure is typically 3000 psi, check the **SUPPLY PRESSURE** gauge on the burst cabinet. Refer to the manufacturer's instructions included separately in this manual for more specific information about the pump.

CAUTION:

Avoid running the pump dry. Operate pump only when testing a specimen.

Pressure Control

Specimen pressure is controlled by means of a Eurotherm controller and an ER-3000 pressure regulator. The Eurotherm is a digital, programmable controller and the ER-3000 is a very precise programmable pressure regulator. Operators enter test parameters (maximum pressure and ramp rate) into the Eurotherm, which then sends output signals to the ER-3000 based on these test parameters. The ER-3000 controls a dome regulator to pressurize the specimen. The Eurotherm displays the current specimen pressure and the programmed setpoint. It also records the maximum pressure reached (burst pressure) by the specimen. For more information on the Eurotherm controller, refer to page 22 and to the manufacturer's information included separately in this manual. For more information on the ER-3000, refer to the manufacturer's information included separately in this manual.

High Volume Flow Regulator

Stage II and Stage III burst systems are equipped with a high volume flow regulator that controls the flow to the specimen. Operation of the high volume flow regulator is controlled via the ER-3000/Eurotherm controller.

Accumulator

An accumulator provides the volume capacity necessary for testing. The accumulator(s) can vary from 1 gallon to two 10-gallon units or larger depending upon the volume needed for the individual testing requirements. Refer to the manufacturer's instructions for more specific information about the accumulator.

Pressure Transducers

The burst system is equipped with two pressure transducers. One transducer communicates with the ER-3000 for specimen control; the other is located on the return line from the specimen and communicates with the Eurotherm controller for its display and programmed alarms. For more information on the programmed alarms, see page 25.

Water Filter

Protects the system from dirt particles to help keep system maintenance to a minimum.

High Pressure Relief Valve

A high pressure relief valve protects the system from overpressure by relieving excess pressure. The relief valve discharges excess water from a tube on the side of the control cabinet. If water drainage is visible from this tube, immediately disconnect the air supply and slowly open the by-pass valve until pressure is below the system maximum; watch the **SUPPLY PRESSURE** gauge. Call INSTRON-SATEC SYSTEMS for service.

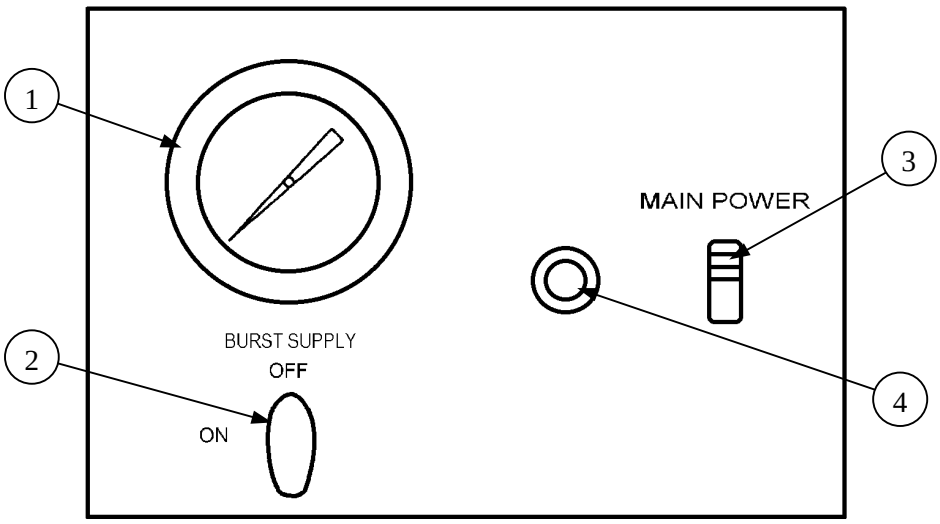
WARNING!
Immediate attention is needed if this valve starts relieving high pressure. Shut off the air to the system and bleed off the high pressure by opening the internal by-pass valve inside the cabinet. Check system thoroughly, especially the pump's air regulator for correct setting, before returning the system to service. Call INSTRON-SATEC SYSTEMS for service.

Multiple Specimen Option

A multiple specimen option can be purchased that permits the preparation and testing of multiple specimens. Specimens are tested one at a time through the use of a **SPECIMEN** selector dial. The number of specimens that can be prepared and tested varies from system to system and depends on customer requirements.

CONTROLS

System Supply Panel



1. System Pressure Gauge
2. Burst Supply ON/OFF Valve
3. Main Power Circuit Breaker
4. Main Power Indicator

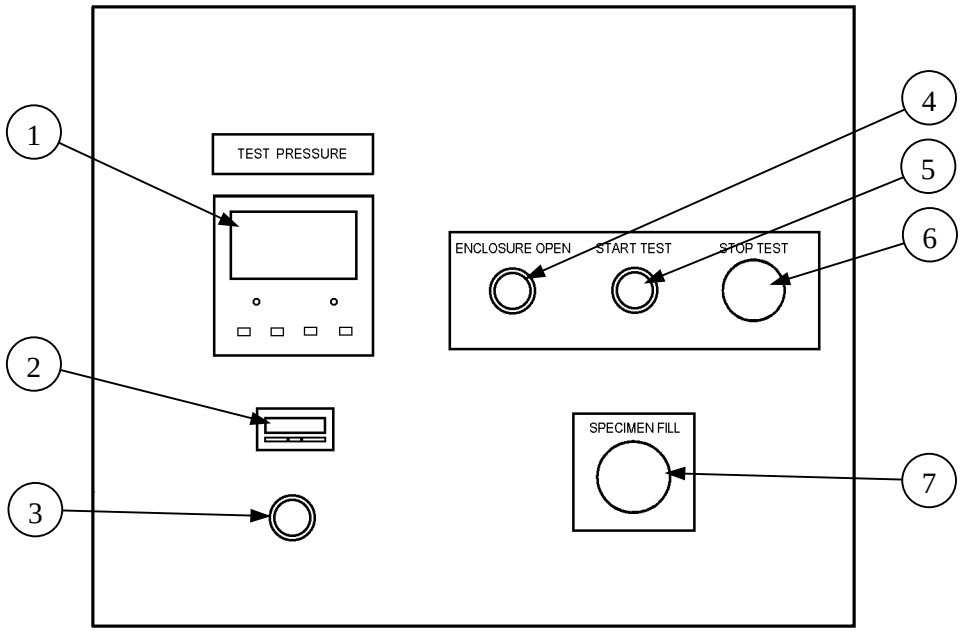
Figure 1: System Controls.

System Pressure Gauge: This pressure gauge (1, *Figure 1*) indicates the pressure (psi) available in the accumulator. The maximum range displayed on this gauge is the maximum range of the system.

Burst Supply ON/OFF Valve: This is the main shut-off valve (2) for the system. When in the OFF position, the water supply is shut-off from the cabinet.

Main Power Circuit Breaker and Indicator: The main power circuit breaker (3) is a Ground Fault Interrupt type (GFI) and controls all of the electrical power to the burst test cabinet. The power indicator (4) will illuminate to show a power ON condition.

Burst Panel



1. Eurotherm Controller
2. Elapsed Timer
3. Timer Light
4. Enclosure Open Indicator
5. Start Test Button and Indicator
6. Stop Test Button and Indicator
7. Specimen Fill Valve

Figure 2: Burst Controls.

Eurotherm Controller: Refer to page 22.

Elapsed Timer and Timer Light: The elapsed timer (2, *Figure 2*) indicates the time to specimen burst or the elapsed time in a static test. The timer light (3) will illuminate to show that the timer is counting. Press the button on the timer to reset it to zero.

The timer and timer light are activated by an alarm set in the Eurotherm controller once the starting pressure is reached. This starting pressure is set at 75 psi.

ENCLOSURE OPEN Indicator: This indicator (4) illuminates when the burst enclosure lid is open. Testing can not start until lid is closed. If lid is opened during a test, testing will stop. Opening the lid during a test has the same effect as pressing the **STOP TEST** button. The lid must be closed and the test restarted to resume testing that specimen.

START TEST Button and Indicator: Once a specimen is properly installed and filled, start a test by pressing this button (5). The indicator will illuminate to show that pressure is being increased to the specimen. Once the starting pressure is reached, the timer will begin counting. Pressure will be supplied to the specimen at the rate defined in the Eurotherm controller. If test will not start, check that **STOP TEST** button is disengaged and that the burst enclosure lid is closed.

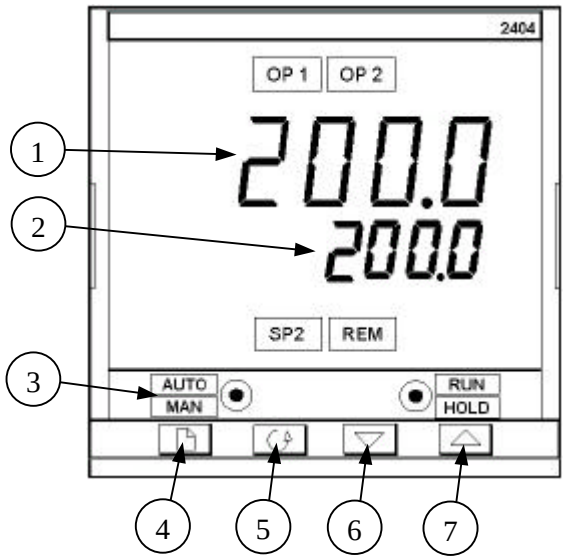
STOP TEST Button: Any test can be stopped immediately by pressing this button (6). When the **STOP TEST** button is pressed: the supply valve closes; the drain valve opens; and the current program is cancelled (setpoint goes to zero). Once the specimen pressure falls below the start pressure (75 psi), the timer stops counting. The button must be disengaged (pulled out) before testing can be restarted.

SPECIMEN FILL Valve: This valve (7) allows the burst supply system to fill the test specimen with low pressure water before pressurizing. Open the specimen's purge valve to bleed air from the specimen and then open the fill valve to fill the specimen. Close the fill valve when water flows from the purge valve. Close the purge valve. A check valve prevents high pressure feed back to the water inlet of the pump should the fill valve be left open after filling the specimens.

SPECIMEN Dial: If the multiple specimen option was purchased, the burst system will be equipped with a **SPECIMEN** dial that permits an operator to select which specimen will be tested when the **START TEST** button is pressed.

Eurotherm Controller

Below is a general overview of the Eurotherm controller's basic operating features that are used with this system. For more detailed information, refer to the supplied Eurotherm manual.



1. Upper Display
2. Lower Display
3. Auto/Manual Button and Indicators
4. Page Button
5. Scroll Button
6. Down Button
7. Up Button

Figure 3: Eurotherm front panel layout.

Upper and Lower Readouts: The upper readout (1, *Figure 3*) displays the current specimen pressure, as sensed by the pressure transducer in the return line from the specimen, in psi. The lower readout (2) displays the setpoint in psi.

Auto/Manual Button and Indicators: When pressed, the AUTO/MAN button (3) toggles the controller between automatic and manual modes. The appropriate indicator (**AUTO** or **MAN**) will light to show the current mode. This system should always be operated in the automatic mode.

Page Button: Press this button (4) to select a new list of parameters.

Scroll Button: Press this button (5) to select a new parameter in a list.

Down Button: Press this button (6) to decrease a value in the lower readout (2).

Up Button: Press this button (7) to increase a value in the lower readout (2).

When power to the controller is first turned on, it runs through a self-test sequence for about three seconds and then shows the measured pressure in the upper readout and the target pressure in the lower readout. This is called the **Home** display.

Programming Parameter Setpoints

Test procedures are programmed in the Eurotherm controller as a series of 'ramp' and/or 'dwell' segments depending on the type of burst test needed. Each segment can consists of one or more setpoints. All test procedures end with an 'end' segment. For example, a standard burst test will consist of a ramp segment followed by the end segment. An FM burst test will consist of a ramp segment, dwell segment and then the end segment.

To perform a **standard burst test**:

1. Press the Page button until "**Prog**" is displayed.
2. Press the Scroll button until "**tGt**" is displayed. This is the target pressure value in psi. Use the Up/Down buttons to adjust the value as desired. The display will blink to show that the new value is accepted.
3. Press the Scroll button until "**dur**" is displayed. This is the test duration in seconds. Use the Up/Down buttons to adjust the value as desired. The display will blink to show that the new value is accepted.
4. Press the Scroll button until segment 2 is displayed. Press the Scroll button again to display the current parameter type. The parameter type should be "**End**". If it is not "**End**", use the Up/Down buttons to adjust the type to "**End**".
5. Press the Scroll button to check the setpoint value for the "**End**" parameter. It should be "**rSEt**".
6. Press Page and Scroll simultaneously to return to the **Home** display.

NOTE:

*You can get back to the **Home** display any time by pressing the Page and Scroll buttons simultaneously. Also, the **Home** display will return if no button is pressed for 45 seconds (10 seconds if the controller is indicating an alarm condition) or whenever the power is turned on.*

To perform an **FM burst test**:

1. Press the Page button until "**Prog**" is displayed.
2. Press the Scroll button until "**tGt**" is displayed. This is the target pressure value in psi. Use the Up/Down buttons to adjust the value as desired. The display will blink to show that the new value is accepted.
3. Press the Scroll button until "**dur**" is displayed. This is the test duration in seconds. Use the Up/Down buttons to adjust the value as desired. The display will blink to show that the new value is accepted.
4. Press the Scroll button until segment 2 is displayed. Press the Scroll button again to display the current parameter type. Use the Up/Down buttons to adjust the type to "**dwEll**".
5. Press the Scroll button until "**dwEll**" is displayed in the upper readout. This is the dwell time in seconds. Use the Up/Down buttons to adjust the value as desired.
6. Press the Scroll button until segment 3 is displayed. Press the Scroll button again to display the current parameter type. The parameter type should be "**End**". If it is not "**End**", use the Up/Down buttons to adjust the type to "**End**".
7. Press the Scroll button to check the setpoint value for the "**End**" parameter. It should be "**rSEt**".
8. Press Page and Scroll simultaneously to return to the **Home** display.

NOTE:

*You can get back to the **Home** display any time by pressing the Page and Scroll buttons simultaneously. Also, the **Home** display will return if no button is pressed for 45 seconds (10 seconds if the controller is indicating an alarm condition) or whenever the power is turned on.*

Temporary Adjustment of Setpoint

When a program is not running, the setpoint can be temporarily adjusted by pressing the Up or Down buttons as appropriate. This does not change the programmed setpoint for a test.

Parameters

One parameter is used in the Eurotherm controller; the "**LogH**" parameter. "**LogH**" measures the maximum pressure reached in the specimen during a test. At the end of each test, "**LogH**" can be read by pressing the Scroll button. "**LogH**" does not automatically reset itself at the beginning of a new test; therefore it is necessary to reset it manually:

1. Press the Scroll button until "**rES.L**" parameter is displayed. This is the parameter that resets "**LogH**". "**YES**" should be displayed below "**rES.L**". If "**YES**" is not displayed, use the Up/Down buttons to change this to "**YES**".
2. Press Page and Scroll simultaneously to return to the **Home** display.

Alarms

Alarms are flashed as messages in the lower readout of the **Home** display. A new alarm is displayed as a double flash followed by a pause. If there is more than one alarm condition, the display cycles through all the relevant alarm messages. There are three alarms that the Eurotherm is configured for:

- 1FSH – timer start pressure, typically set at 75 psi
- 3FSH – specimen failure limit, typically set at 250 psi
- 2FSL – specimen failure limit + 10 psi, typically set at 260 psi

As the burst system pressurizes a specimen, each alarm message will flash in the lower readout as that pressure is reached throughout the test. These alarm settings should not be changed. Contact INSTRON-SATEC SYSTEMS if you feel that these settings should be changed.

OPERATION

Filling a Specimen

1. Turn main power circuit breaker ON.

WARNING!
Specimen end caps must be of sufficient rating for the test pressures, temperature and the specimen.

WARNING!
Check the thrust capacity of the test fixture, specimen and the enclosures before pressurizing your specimen.

2. Install specimen end caps on the specimen.
3. Hook up the specimen in the burst tank.
4. Open the customer supplied purge valve.
5. Make sure the **STOP TEST** button is disengaged (in the out position).
6. Open the **SPECIMEN FILL** valve.
7. Close the purge valve.
8. When all of the air in the sample has been displaced by water, close the **SPECIMEN FILL** valve.
9. Close the tank lid. Be sure the **ENCLOSURE OPEN** indicator light is out.

Running a Test

WARNING!
Be sure all trapped air is bled from the system and specimens before starting a test.

CAUTION:
*Test can not start unless the **STOP TEST** button is disengaged and the burst enclosure lid is closed.*

1. Be sure specimen is installed in the burst enclosure and that all air has been bled from the specimen. See "Filling a Specimen" on the previous page.
2. Be sure Eurotherm controller is in auto mode. **AUTO** indicator should be lit.
3. Set the target pressure and test duration for the test, see page 23.
4. Be sure the elapsed timer is set to zero.
5. Be sure the maximum pressure is set to zero See page 25.
6. Press the **START TEST** button. Once the start pressure is reached, the elapsed timer will start counting and the timer light will illuminate.

   Testing will stop automatically if one of the following occurs:

   - The enclosure lid is opened
   - The **STOP TEST** button is pressed
   - The specimen bursts or leaks sufficiently enough to activate the specimen failure alarm

   If the maximum system pressure (3000 or 5000 psi, depending on system) is reached during a test, the Eurotherm display will flash. At this point, the system will maintain specimen pressure. Specimen pressure can be relieved by pushing the **STOP TEST** button.

7. When the test is complete, record the maximum pressure and the elapsed time, as desired. The maximum pressure can be read by pressing the Scroll button to access the "**LogH**" parameter.
8. Reset all displays (pressure and time) to zero.
9. Remove the specimen.
10. System is ready to test another specimen.

Testing with Multiple Specimen Option

If the system is equipped with the multiple specimen option, testing procedures are similar to those outlined above except:

1. Install all specimens (as desired or permitted) in the burst enclosure and purge air from each specimen. See "Filling a Specimen" on page 26. The **SPECIMEN** dial must be set to each sample as that sample is being purged.
2. Be sure the **SPECIMEN** dial is set to **1** (or to the specimen that will be tested first).
3. Complete steps #2 through #8 of the "Running a Test" procedure on page 27.
4. Turn the **SPECIMEN** dial to select the next specimen for testing.
5. Repeat steps #3 and #4 above until all prepared specimens are tested.
6. Remove all specimens from enclosure(s).

SHUTTING DOWN THE SYSTEM

The burst test system should be shut down at the end of each work day to assure that the pump will not run unnecessarily or run dry. Shut off the main pressure, power and air supply to the console.

If the system will be stored in an area with below freezing temperatures, the system must be completely drained. All lines must be blown out with air for complete drainage. See "System Drainage for Long Term Storage" on page 30.

MAINTENANCE

As with any high pressure system, the burst system should be routinely checked for signs of wear, corrosion, and leakage of air or water. This service is available from INSTRON-SATEC SYSTEMS. Please contact the factory for current rates and service contract availability. Other maintenance points are discussed in more detail below.

Water Supply Filter

Replace water filter element annually. Inspect monthly or whenever the water flow becomes restricted. Change as required; follow the manufacturer's instructions included separately in this manual.

Air Filter/Regulator

Check the air filter/regulator weekly for moisture in the bowl. If moisture is present, drain the bowl. Change the filter annually; follow the manufacturer's instructions included separately in this manual.

Pump

Maintain in accord with the manufacturer's suggested maintenance recommendations included separately in this manual.

Pressure Gauges and Transducers

Check and calibrate pressure gauge or transducers at least annually on a dead weight pressure gage tester, or by other approved methods. This service is available from INSTRON-SATEC SYSTEMS. Call for current pricing.

Electrical

Test the ground fault circuit breaker by pushing the Red "Push To Test" and insure proper disconnect status. Keep a record of these tests.

System Drainage for Long Term Storage

Draining the system will prevent sediment build up or freezing. This section will provide you with the procedures and methods needed to successfully drain the system. This equipment is designed to provide years of service if maintained properly.

WARNING!
DO NOT store system where it may be subjected to below freezing temperatures without proper draining.

To drain the system use the following procedure:

1. Turn off main power.
2. Disconnect the air supply.
3. Shutoff and disconnect the water supply.
4. Bleed off the pressure. Slowly open the internal by-pass valve.
5. Remove the water filter canister and drain water from it. Replace the drained canister.
6. Connect an air supply to the water supply port. Turn on air supply.
7. Close the internal by-pass valve when the system is completely drained.

CALIBRATION AND VERIFICATION

Before shipment from the factory, this machine was calibrated according to system specifications, which in most cases exceeds ISO/EN or ASTM requirements. These standards recommend that verification of this calibration be repeated annually.

Service Agreements/Contracts

In many countries/territories Instron Service offers a variety of service agreements and contracts to cover such things as annual verification, maintenance, repair coverage, hotline support, etc. for your system. Contact your local Instron Office for details on a service agreement/contract that best matches your needs. A listing of Instron Offices can be found on the Instron website at www.instron.com.