



Pinion Products Corporation Inc.

GST-400

GROUND SYSTEM TESTER



OPERATIONAL MANUAL

IMPORTANT!! READ THIS MANUAL BEFORE OPERATING
UNIT!!

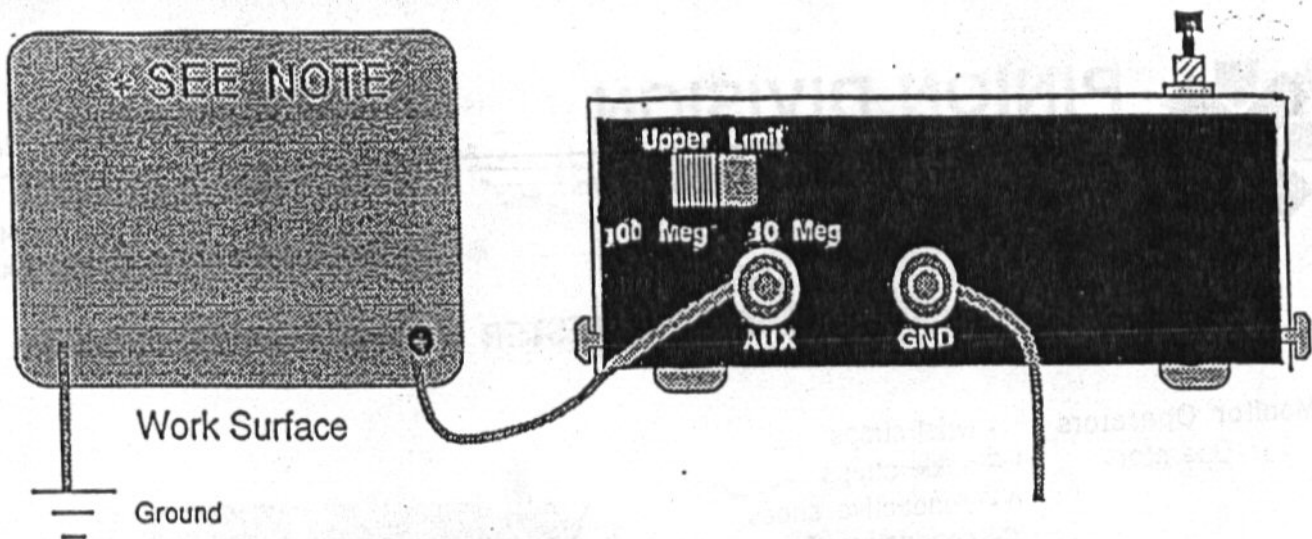
GST-400 GROUND SYSTEM TESTER

Pinion Products Corporation's Ground System Tester model GST-400 is an enhanced version of the WSST-400 (Wrist Strap System Tester). The GST-400 is designed to permit a fast, simple, safe, and convenient means to test the resistance of work surfaces (table tops, mats, etc.) to ground, as well as an operator's resistance to ground. A work surface, or an operator, may be tested by simply depressing a button, or the lid of the GST-400, respectfully. The GST-400 test the work surface or operator for a resistance to ground of greater that 750 K ohm and less than 10 or 100 megohms, depending on the range selected with a switch. The upper limit tests whether static is being effectively dissipated from the operator. The lower limit of 750K ohms is considered a minimum for reasons of personnel safety.

OPERATING INSTRUCTIONS

Installation

The GST-400 should be located on or near a work station. Installation of the GST-400 consists of connecting the GND post on the back of the unit to ground and the AUX post on the back of the unit to the work surface, using the wires provided, and selecting the desired range for the upper limit. The upper limit should be selected based on the ESD sensitivity of the components being handled by the operator. The GST-400 case must be isolated from ground, with only the rubber feet touching the work surface. The work surface should be tested at least once a day. Operators should test their resistance to ground (through a wrist strap or another grounding system) several times a day.



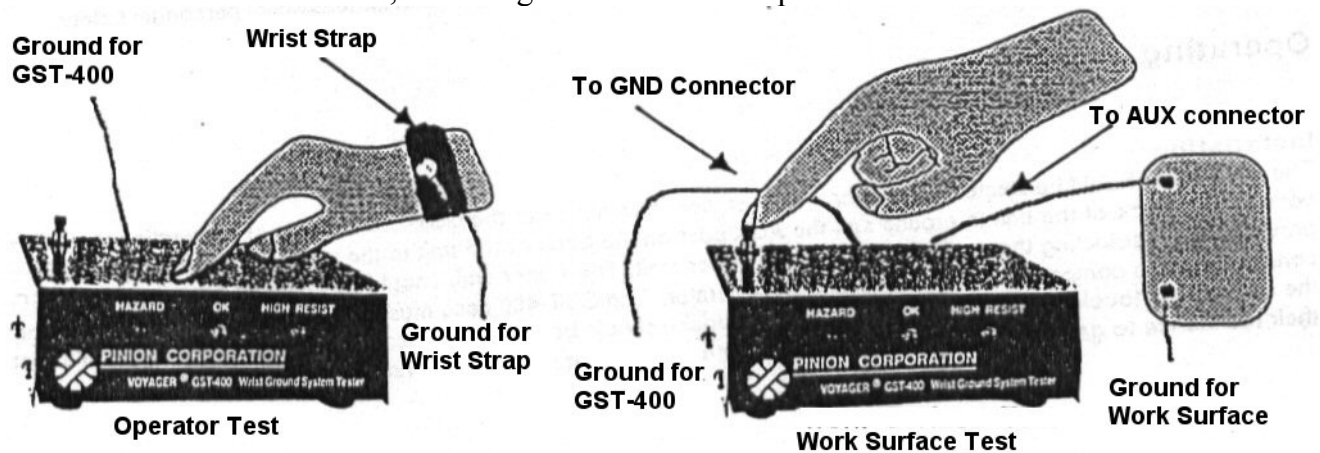
- Resistance of work surface to ground must be between 750KΩ and 100MΩ. This resistance corresponds to the resistance between the AUX post connection and ground. The GST-400 will test work surfaces in this range only.

OPERATOR TEST

An operator may test their resistance to ground by simply depressing the top cover of the GST-400 while a wrist strap or other grounding method is being employed. The operator should not touch the push button on the top cover while performing this test. A tone and green light indicates that the operator is effectively grounded. The tone will come on only when the green light is on. An amber light indicates a resistance too high (greater than the upper limit of 10 or 100 megohms) to satisfactorily dissipate static charges within desired time limits. A red light indicates the resistance to ground is below the lower limit of 750K ohms.

WORK SURFACE TEST

A work surface is tested by simply pressing the push button on the top cover of the GST-400 while work surface is connected to the AUX post on the back of the GST-400, as described in the section on installation. The upper limit range switch should be set to 100 megohms when testing a work surface, to test that work surface is static dissipative. The user should be careful not to touch the top cover of the GST-400 while performing the work surface test, as that may alter the results of the test. A tone and green light indicates that the work surface is effectively grounded. The tone will come on only when the green light is on. An amber light indicates a resistance too high (greater than the upper limit of 100 megohms) to satisfactorily dissipate static charges within desired time limits. A red light indicates the resistance to ground is below the lower limit of 750K ohms. Don't forget to switch the range switch back to 10 megohms after the work surface test, if 10 megohms is used for operator test.



TROUBLESHOOTING

Most apparent problems with the GST-400 can be traced to a weak or dead battery, or improper connections.

While depressing the lid, if the light levels are low, there is no tone when the green light is on, or there are no lights or tone, the 9 bolt battery should be replaced. To replace the battery, remove the 4 screws on the sides of the unit and lift the lid off. Replace the battery and reassemble the unit, making sure the lid still pivots on the screws.

If test results seem to be wrong the GST-400 system being tested may not be connected properly. The GND post on the back of the unit should be connected to ground; the AUX post on the back of the GST-400 should be connected to ground through a wrist strap or some other method. A common ground should be used for all ground connections. The wires used for making these connections should be checked for continuity, or a specified resistance as with a wrist strap. If all of this checks out, check the unit for calibration.

SPECIFICATIONS

Parts included:

GST-400 unit
Ground wire (7 to 8 ft, with alligator clip on one end)
Work surface connection wire (7 to 8 feet with alligator clip on one end.)
Documentation (instruction sheet)

Resistance Tolerances:

Lower Limit -	750K ohms	±10%
Upper Limit -	10 megohms	±15% (switch set for 10M)
	100 megohms	±20% (switch set for 100M)

Battery:

9 volts (battery life > 3 yrs typical for 10 tests/day)

Test Voltage:

7.6 volts normal

CALIBRATION CHECK

The calibration of the GST-400 should be checked every year, using the procedure defined here. The WSST-CAL calibration check unit may be used to provide the resistance needed for this procedure. The GST-400 is checked for calibration by checking the test results for resistance at each of the three possible limits, at the extremes of the tolerance values. The following resistance values should be used, giving the results listed. The resistance used should be within tolerances listed. The GND and AUX posts on the back of the GST-400 should be connected together with a wire while doing the calibration check. Perform the test by connecting one end of the resistor to the GND post on the back of the unit and the other end to the lid of the unit, while depressing the lid to activate the unit, as in an operator test. An additional test should be performed with no resistor connected to the lid and the range switch set to 100MΩ while pressing the push button on the top cover of the GST-400, as in a work surface test. This last test should result in a red light and no tone.

Lower limit (750 KΩ)	675KΩ (±1.0%)	red light	no tone
	825KΩ (±1.0%)	green light	tone
Upper limit (10MΩ):	8.5MΩ (±1.5%)	green light	tone
	11.5MΩ (±1.5%)	amber light	no tone
Upper limit (100MΩ):	80MΩ (±4%)	green light	tone
	120MΩ (±4%)	amber light	no tone

Contact Pinion Products Corporation for further technical assistance in the case that the calibration does not check out.

RELATED PRODUCTS

Pinion Products Corporation offers the following related products:

WSST-300	Wrist Strap System Tester (operator to ground test only)
WSST-CAL	Calibration check unit for WSST-300and GST-400
SRM/110	Surface Resistivity Meter
RTG-210	Resistance To Ground Meter
SRM/RTG	Combination Meter

Contact Pinion for information on these and other products offered.

Contact numbers:

Toll free	800-404-6018
Phone	956-544-1212
Fax	956-544-1795