

TEST PROCEDURE

TEST AND CALIBRATION
DEPARTMENT

MODEL NUMBER:

320BRCD/320PD

PROCEDURE NUMBER:

TP-320PD FINAL

PAGE: 1 OF 7

REV.: 0 REV. DATE 2-3-00

ECO #:98-0255

WARNING

TESTING OF THIS INSTRUMENT MAY INVOLVE ELECTROSTATIC SENSITIVE DEVICES (ESD), HIGH VOLTAGE, HAZARDOUS GASES, AND/OR CHEMICALS. PERSONNEL WHO ARE NOT FAMILIAR WITH PROCEDURES FOR THE ABOVE MUST CHECK WITH THEIR SUPERVISOR PRIOR TO BEGINNING THE TEST.

CONCURRENCE

DATE

CONCURRENCE

DATE

ORIGINATOR

SENSOR DEPARTMENT

PRODUCTION ENGINEER

QUALITY ASSURANCE

TEST DEPARTMENT

OTHER

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1.0 INTRODUCTION

The purpose of this procedure is to set the standards of test results and to establish the process used to test the 320PD or 320BRCD Analyzers.

2.0 APPLICABLE DOCUMENTS

- 2.1 Operator's Manual 320PD or 320BRCD depend on the Analyzer under test.
- 2.2 B-12536 Schematic (100-120 VAC) and B-13225 Schematic (220-240 VAC).
- 2.3 See Running Sheet

3.0 TEST OBJECTIVE

The objective of this test is to exercise all the functions of the analyzer to ensure it performs to the specifications as outlined in the above referenced documents.

4.0 TEST DESCRIPTION

The Running Sheet will list all options that this unit has installed. Preliminary alignment and sub-assembly test procedures for all these options must have been performed prior to the start of this test. The test will begin with a comprehensive check of the electrical characteristics to specified tolerances. Following a successful completion of the electrical functionality, the unit under test will be subjected to gas sample analyses to endure functionality of the gas sensor system.

5.0 TEST EQUIPMENT

5.1 Power requirements will be per the Running Sheet. If no power is specified, power shall be 5 VDC.

5.2 Charging batteries power will be per the Running Sheet. If not specified, AC power shall be 120 VAC.

5.3 Equipment Requirements

- 5.3.1 AC power cord
- 5.3.2 Keithley current/source
- 5.3.3 DMM Fluke Model 8020A or equivalent
- 5.3.4 Pump test gauge fixture
- 5.3.5 Nitrogen gas (oxygen free)

6.0 TEST SET-UP

Set up the unit to be tested per Figure 1. Verify that all options and jumpers have been installed and all special instructions accomplished per the Running Sheet and applicable drawings.

Circuit oscillations may be generated when using Keithley. If this happens, place a 10K or 20K OHM resistor in series with the input connector.

The system must be in a vertical or upright position during testing.

ELECTRONIC SET UP

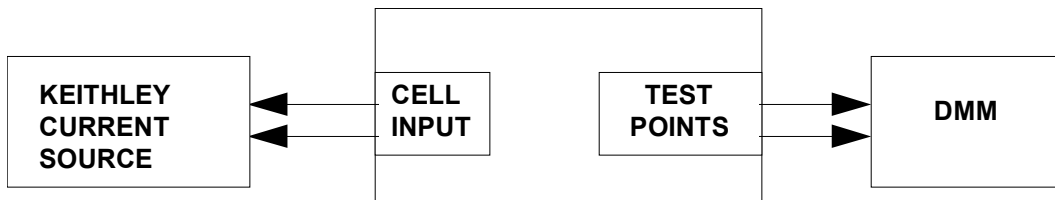


FIGURE 1

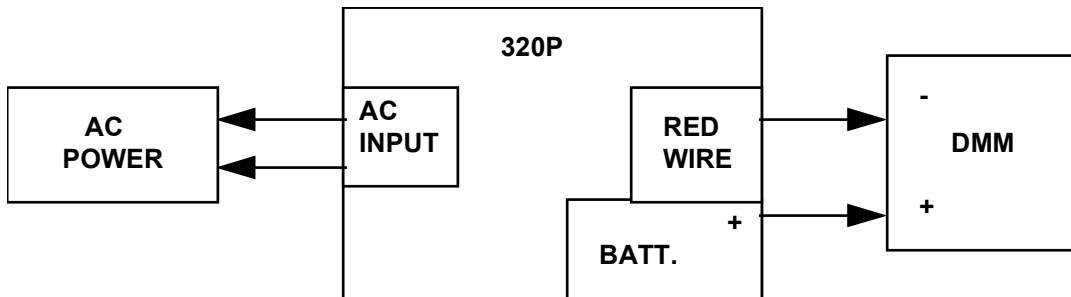


FIGURE 2

GAS SET UP

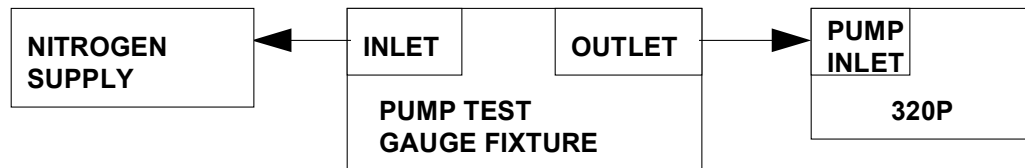


FIGURE 3

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7.0 Current settings are varied for various cell classes. All current settings are in microamps.

RANGE	SETTING	A3/A5	B1	B3	C3
100%	100%	885.16	2210.52	1435.4	956.936
	25%	221.292	552.630	358.850	239.234
	21%	185.000	462.000	300.000	200.000
	10%	88.517	221.05	143.540	95.694
	5%	44.259	110.53	71.770	47.847

TABLE 1

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STEP #	OPERATOR ACTION	EXP RESULT	TOLERANCE	
	<u>CHARGING BATTERIES POWER AND SHORT CHECK</u>			
1	Connect AC power cord to AC jack of the unit.			
2	Do not connect power cord to AC source at this time.			
3	Configure the DMM as Ohmmeter.			
4	Connect DMM between HOT and NEUTRAL lines.	80 Ohms for 115 VAC	+/- 20 Ohms	
5	Position ON/OFF switch to OFF. DMM shall read	160 Ohms for 220 VAC	+/- 20 Ohms	
6	Connect DMM between HOT and GROUND lines. DMM shall read	> 20 Meg Ohms		
7	Disconnect positive wire (red lead) of the batteries.			
8	Configure the DMM as ampmeter.			
9	Connect DMM positive lead to the positive terminal of the batteries (SEE FIGURE 2).			
10	Connect DMM negative lead to the red wire (SEE FIGURE 2).			
11	Connect power cord to AC source. DMM shall read	400 mADC	+/- 70 mADC	
12	Remove power cord and reconnect the red wire back to the battery.			
	<u>AMPLIFIER CHECKS</u>			
13	Position ON/OFF switch to ON.			
14	Connect the Keithley positive to outer spring, negative to center spring of the sensor probe.			
15	Set Keithley to 100% reading for the cell used. (REFER TO TABLE 1).			
16	Adjust span pot for full scale reading			
17	Meter shall read 100.0.	100.0	Exact	
18	Configure DMM as voltmeter			

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STEP #	OPERATOR ACTION	EXP RESULT	TOLERANCE
19	Connect DMM positive lead to output signal +		
20	Connect DMM negative lead to output signal -		
21	DMM shall read millivolts per the value specified by the Running Sheet	Milivolts	± 2%FS
22	Set Keithley to 25% for the cell used. (REFER TO TABLE 1).		
23	Meter shall read	25.0	±0.5
24	Set Keithley to 21% for the cell used. (REFER TO TABLE 1).		
25	Meter shall read	21.0	±0.42
26	Set Keithley to 10% reading for the cell used. (REFER TO TABLE 1).		
27	Meter shall read.	10.0	±0.2
28	Set Keithley to 5% reading for the cell used. (REFER TO TABLE 1).		
29	Meter shall read	5.0	±0.1
	<u>BATTERY CHECK</u>		
30	Hold range switch to BATT test position.		
31	Meter shall read.	> -500	
	NOTE: for model 320BRCD, test are completed.		
	<u>GAS AND LEAK CHECK</u>		
32	Connect outlet pump test gauge fixture to the pump inlet of the unit. (SEE FIGURE 3).		
33	Turn the fixture inlet metering valve fully clockwise. Position range switch to ON		
34	Install a sensor (See Running Sheet for the cell used).		
35	Adjust span pot until the meter displays 20.9	20.9	Exact
36	Hold pump switch down.		

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STEP #	OPERATOR ACTION	EXP RESULT	TOLERANCE
37	Vacuum gauge shall indicate 5 inches of Mercury (HG) Release pump switch.	> 5 Inches (HG)	± 20%
38	The gauge shall not drop more than 1 inch in five seconds.	< .2 Inches Per Second	
39	Connect nitrogen supply to inlet of the test fixture and set the regulator of the nitrogen supply to 10 PSIG. (REFER TO FIGURE 3).	10 PSIG	
40	Hold pump switch down.		
41	Slowly open the test fixture inlet metering valve until the gauge reads 2 PSIG.	2 PSIG	± .2 PSIG
42	The meter shall read less than 0.2.	<0.2	
43	Turn off gas line.		
44	Remove all tubings.		
45	Remove and rebag the sensor.		
	TEST IS NOW COMPLETED.		