

# **BX-301 MID RANGE MEMBRANE INSTRUCTIONS**



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# 1 About the BX-301 Mid-Range Membrane

The BX-301 is a special purpose mid-range membrane foil assembly which may be used to verify the linearity of the BAM-1020 mass calculation system. The mass calculation of the BAM-1020 is inherently linear in nature, and therefore it is unnecessary to audit a mid range point in the vast majority of applications. The BX-301 is provided only as a convenience to certain customers who may be required to perform the check by local regulations.

The BAM-1020 unit performs a span membrane check automatically every hour using it's built-in membrane with a mass of approximately 0.800 mg/cm<sup>2</sup>. The BX-301 allows the user to periodically perform an additional span check at about 0.500 mg/cm<sup>2</sup>.

The BX-301 membrane is a fragile assembly, and must be handled very carefully. Any puncture or damage to the foil surface will render the part useless. Any dirt or contamination on the foil surface will be measured as mass, and will also invalidate the measurement. This assembly must be protected and stored in a safe location away from heat and direct sunlight.

## 2 Mid Range Span Check Procedure

**Note:** The BAM-1020 unit must be powered on and warmed up for at least one hour before performing the test. The pump does not need to be running during warm-up.

1. Remove the ten case cover screws and washers from the BAM-1020. You will need to access the inside of the unit later to complete the test.
2. Verify the factory determined **ABS** value of the BAM-1020 unit. This can be found in the SETUP > CALIBRATE menu or on the calibration certificate for the unit. This is the expected mass of the span membrane foil in the unit, and will be about 0.800 mg/cm<sup>2</sup>.
3. Enter the TEST > CALIBRATE menu on the user interface. This is the screen that will be used for the membrane tests. See Section 7.13 of the BAM-1020 manual.

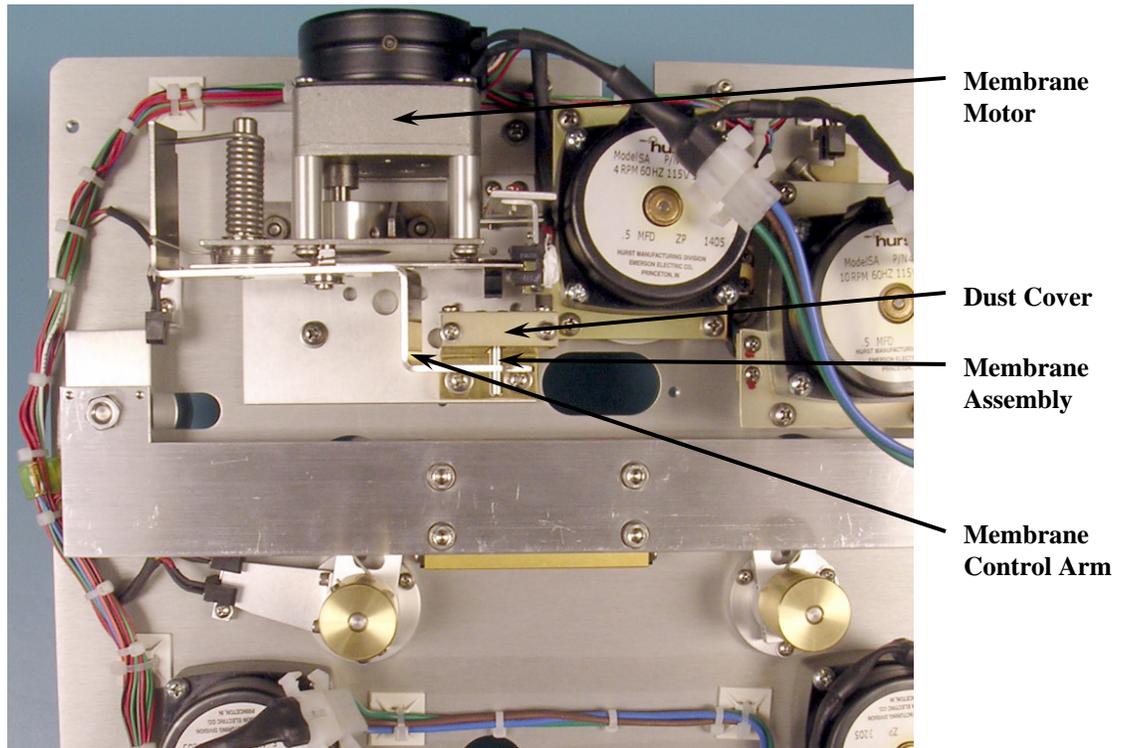
CALIBRATION MODE		
REF MBRN: <		
COUNT (I <sub>o</sub> ):	634000	
COUNT (I):	556234	
CAL MASS M:	0.801 mg/cm <sup>2</sup>	
START	STOP	EXIT

The CALIBRATE Test Screen

4. Press the START soft key to start a membrane measurement with the existing foil. The test will take about eight minutes to complete. The unit will then display the measured value of the span membrane foil as the **CAL MASS M** value. Compare this value with the ABS (expected) value and record the results. These should typically match within a few micrograms. **Note:** If these values disagree by 5% or

more, then there is something wrong with the unit such as a dirty membrane or an incorrect ABS value. Do not proceed with the test if the BAM-1020 is not reading its own membrane correctly.

5. Remove the BAM case cover. Locate the membrane assembly on the inside of the unit, and the brass raceway in which the membrane assembly slides forwards and backwards. Remove the small dust cover (two small screws and washers). Set the parts aside.



The Membrane Assembly Inside the BAM-1020

6. Carefully remove the existing membrane from the unit: Pull back the control arm against its spring pressure until you can slide the membrane from the back of the assembly. There should be an expected mass value printed on the back of the mid-range membrane. Record this value. Insert the mid-range membrane foil exactly as the other membrane was installed. **Note:** Make sure the pin of the membrane is in the slot of the control arm, or the test will not work. Swapping membranes is a very simple matter once you know what you are doing.
7. Press the START soft-key to start the test with the mid-range membrane in place. When the unit has calculated and displayed the new **CAL MASS M** value, record it and start the test over. Perform the test two more times and take an average of the three measured values. This average must be within 5% of the expected value printed on the membrane, and will typically be within a few micrograms. Record the results.
8. Remove the mid-range membrane and replace the original part. Reinstall the small dust cover and the main case cover of the BAM-1020.

# BAM-1020 Membrane Foil Mid-Range Linearity Check

## Test Results Record:

Test Performed By: \_\_\_\_\_

Test Date: \_\_\_\_\_

BAM-1020 Serial Number: \_\_\_\_\_

Expected ABS Value:	_____	mg/cm <sup>2</sup>
Measured Mass of Existing Foil:	_____	mg/cm <sup>2</sup>
Difference:	_____	mg/cm <sup>2</sup>
Difference %:	_____	%

Expected Mass of Mid-Range Foil:	_____	mg/cm <sup>2</sup>
Measured Mid-Range Mass, Test 1:	_____	mg/cm <sup>2</sup>
Measured Mid-Range Mass, Test 2:	_____	mg/cm <sup>2</sup>
Measured Mid-Range Mass, Test 3:	_____	mg/cm <sup>2</sup>
Average Mid-Range Mass:	_____	mg/cm <sup>2</sup>
Difference from Expected Value:	_____	mg/cm <sup>2</sup>
Difference %:	_____	%