APPLICATION NOTE—EPB-PW

INTRODUCTION

This application note is intended for guidance only. MEAS takes no responsibility for the content of this document and accepts no liability.

INSTALLATION GUIDE — EPB-PW FILTERS

Bronze Filters
Used for larger particles such as sand. Normally these are a push fit design and replaced on a regular interval, especially when contaminated by grease and oils. Care should be taken when removing the filter to ensure the sensing membrane is not damaged.

Ceramic Stones
Used for finer particles such as clay based material. The table below gives an indication of the air entry values, approximate porosity and maximum pore size.

Air Entry Value	BUBBLING PRESSURE (PSI)	APPROXIMATE POROSITY (% vol.)	SATURATED HYDRAULIC CONDUCTIVITY (cm/sec)	MAXIMUM PORE SIZE (µm)	FLOW THROUGH 1/4-INCH PLATE (ml/hr/cm2/14.7 psi)
.5 BAR (-B0.5M2)* HIGH FLOW	7 to 9	50%	3.11 x 10-5	6.0	180
1BAR (-B01M3)* HIGH FLOW	19 to 28	45%	8.6 x 10-6	2.5	50
1 BAR (-B01M1)* STANDARD FLOW	20 to 30	34%	7.56 x 10-7	1.7	5.0
2 BAR (-B02M1)* STANDARD FLOW	38 to 45	32%	6.30 x 10-7	1.1	4.2
2 BAR (-B02M2)* HIGH FLOW	32 to 42	38%	6.93 x 10-7	1.3	4.6
3 BAR (-B03M1)* STANDARD FLOW	46 to 70	34%	2.5 x 10-7	.7	1.6

5 BAR (-B05M1)* STANDARD FLOW	80	31%	1.21 x 10-7	.5	.7
15 BAR (-B15M1)* STANDARD FLOW	220	32%	2.59 X 10 -9	.16	.15
5 BAR (-B05M1)* STANDARD FLOW	80	31%	1.21 x 10-7	.5	.7
15 BAR (-B15M1)* STANDARD FLOW	220	32%	2.59 X 10 -9	.16	.15

When Ordering Sensors

The EPB-PW is supplied without a stone/filter.
An option code in the ordering information indicates if the stone is to be fitted at the factory.
A full selection of stones is listed on the data sheet.

Saturated Soils
The stone is fixed in place using two 'dots' of epoxy adhesive (180° apart) purely to retain the stone in the desired location. Recommended adhesive would be any good quality, 2-part epoxy adhesive or RTV sealant.
The use of cyanoacrylate adhesives is not recommended.

Unsaturated Soils
It is recommended that the entire stone circumference is secured with adhesive. This is to prevent the stone being pulled out by the matric suction that is often found in this type of application.

Removal and Replacement

The existing adhesive should be treated with an appropriate solvent to soften the material. Care should be taken to remove the stone without damaging the sensor diaphragm. A new stone is carefully placed and adhesive added to secure the stone. Ensure that no adhesive touches the diaphragm as this will compromise the test results by adding rigidity to the diaphragm.

De Airing Process / Calibration

The procedure differs slightly between each organization however, below is a typical example of a calibration procedure to follow for PPTs.

- De-air water to be used for calibration (usually left to de-air overnight)
- De-air the PPTs, apply a negative pressure to the PPTs. This is either -90kPa or the suction capacity of the PPTs whichever is greater. Leave for 15 minutes to allow the PPT to de-air.
- Saturate the PPTs using a pressure of 80% of PPT capacity. Let the ceramic stone PPTs saturate for 30 minutes, the brass stone PPTs saturate almost immediately.

***For ceramic stone PPTs repeat the de-airing and saturation process 3 times before carrying out the calibration.**

- Calibrate PPTs in either positive or negative pressures, or both, depending on the experiment. For negative calibration, the calibration pressure is carried out between atmospheric pressure and the lowest value the PPTs will read during the experiment.
  For positive calibration, the calibration pressure is carried out between atmospheric pressure and the highest value the PPTs will read during the experiment.

- Once the PPTs are calibrated they are stored in de-aired water until they are installed in the model. Keep this time-frame as minimal as practicably possible.

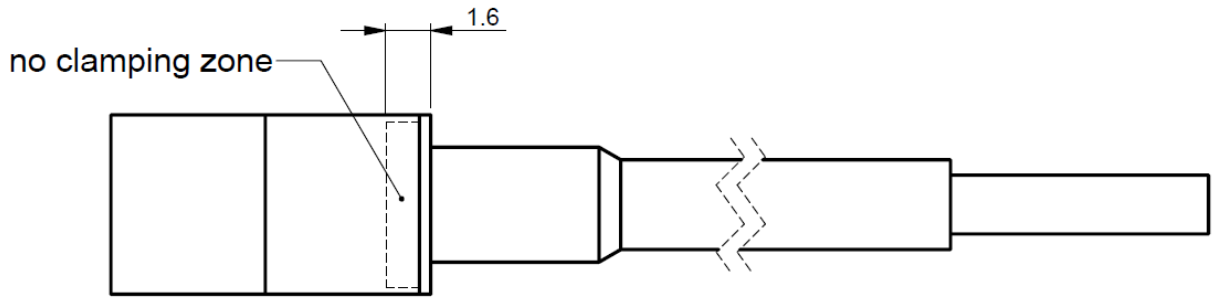
Spare Parts

Spare stones can be ordered separately. Part numbers are available on the EPB-PW datasheet.

Mounting Instruction

For clamping do not apply external forces in the “no clamping zone”.

The sensor body can withstand a pressure of 140 bar corresponding to the overload of 70 bar model without degradation with a safety factor close to 2.



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