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**Searchline Excel Cross Duct  
Plastic Functional Test Filters**

## Searchline Excel Cross Duct: Plastic Functional Test Filters

*Note: These filters can be used with all Mod states of Searchline Excel units, however they have been specifically designed to work with cross-duct Excel units of Mod state 3 (or higher).*

*Testing of Mod state 2 (or lower) cross-duct Excel units should continue to be performed using the original plastic test filters, with the results to be anticipated detailed in Issue 8/9 of the Technical Handbook, 2104M0506.*

### 1. Functional Testing of Cross-Duct Searchline Excel

The correct function of Searchline Excel Cross-Duct can be verified using plastic functional test filters. When introduced into the measurement path, plastic test filters produce infrared absorption which approximates that of hydrocarbon gas.

*Note: Because plastic filters have infrared absorption properties that only approximate those of hydrocarbon gas, they cannot be used for testing the calibration of cross-duct Searchline Excel units. The only way of testing the calibration of a cross-duct Searchline Excel unit is by using high %v/v gas in the gassing cell, which is how cross-duct Searchline Excel units are calibrated in the factory.*

The functional test filters supplied for testing cross-duct Searchline Excel units do not have a specified gas reading range. Instead, they are marked with letters B to H, with the reading produced by each filter increasing from filter B to filter H.

The procedure for testing a cross-duct Searchline Excel using the functional test filters is as follows:-

1. Connect the SHC-1 Handheld Interrogator to the unit to be tested. (See the Searchline Excel Cross-Duct manual for details on how to connect the SHC-1).
2. Select **DISPLAY** from the **Calibrate** menu. (This inhibits the Searchline Excel Cross-Duct 4-20mA output).
3. Remove the top cover from the mounting cell.  
*The cover is retained by 3 x M4 captive bolts, and a chain attaches the lid to the mounting cell when opened. There are no electrical hazards inside the mounting block and a hot work permit is **NOT** required.*
4. Insert a suitable functional test filter (see table below) into the slot in the mounting cell in front of the receiver.

Duct Width	Minimum Test Filter	Recommended Test Filter
0.5 - 0.75m	B	B
0.75 - 1.0m	B	C
1.0 - 1.5m	C	D
1.5 - 2.0m	D	E
2 - 3m	E	F
3 - 4m	F	G
4 - 5m	F	H

5. If this is the first time that the unit has been tested with this particular test filter, record the gas reading that is produced. This reading should be treated as correct and should be used to verify correct operation in the future.
6. If this is not the first time that the unit has been tested with this particular filter, note the gas reading it produces and compare it to the original value recorded for this unit when tested with this filter. Provided that the reading is within  $\pm 15\%$  LEL of the original value, the unit is working correctly.
7. If the gas reading is not within the expected range it is possible that the unit needs cleaning and re-zeroing. Refer to the Searchline Excel Cross-Duct Manual for instructions.
8. Remove the test filter and replace the top cover of the mounting cell.
9. Using the SHC1 Handheld Interrogator release the Searchline Excel signal output.  
*The output can be released by pressing **ESC** followed by  $\leftarrow$  on the keyboard*
10. Turn off the Interrogator and disconnect it from the gas detector.