



Technical Bulletin 3

INNER FILTERS

Inner Air Elements: Purpose and Function

Filter manufacturers often receive inquiries regarding the purpose and filtration efficiency of inner air filter elements. Some users suspect that the inner element is a secondary filter, such as you might find in some fuel systems which utilize a primary and secondary fuel filter. They therefore believe the purpose of the inner element is to remove very small contaminant that may pass through the outer filter. This bulletin explains the use and purpose of the inner air element.

While some applications do not utilize an inner air element, there are numerous heavy-duty engine applications that use a combination of inner and outer air filter elements. The primary purpose of the inner element is to keep dirt and other contaminant from falling directly into the air intake system of the engine while the outer element is being serviced. Given the dimensional limitations placed on inner filters, only a small amount of filter media can be used in their design and manufacture. The same amount of air that flows through the outer filter must also flow through the inner element. Therefore, the filter media of the inner element must be much more open than the filter media in the outer filter to permit necessary air flow. This air flow requirement also results in the media having lower filtration efficiency than that of the outer filter media. As a consequence of the necessary differences in the filter media, inner elements **MUST NEVER** be used by themselves.

As stated previously, the primary purpose of the inner element is to keep dirt and other contaminant from falling into the air intake system of the engine while the outer filter is being serviced. General recommendations are to replace the inner element every third time the outer is replaced.