

Radial Seal Air Filter Design

For many years, air filters shared a common design philosophy. Whether for automotive or heavy duty applications, cartridge air filter elements sealed by compressing sealing gaskets on one or both ends of the filter element. This filter element design relied on "axial" loading to establish proper seal compression and maintain alignment within the housing. Squeezing a marshmallow between the palms of your hands would duplicate the type of force applied to an axial sealing air filter within its housing.

In recent years, a new type of air filter system has been developed which is now being used in increasing numbers on heavy duty and automotive applications. Unlike previous designs, this new system uses "radial" sealing of the air filter element(s) to a mounting tube which is permanently affixed to the air filter housing.

Radial sealing air filters are designed with one (1) open endcap and one (1) closed endcap. The seal in the air filter housing (mounting tube) is created on the inside diameter (ID) of the open endcap for the primary element or the outside diameter (OD) of the secondary (inner) air filter element. A primary element seals against the outside of the mounting tube while a secondary element (if present) seals against the inside of the mounting tube. This "radial" sealing mechanism duplicates the type of forces created when a plastic lid is stretched onto a coffee can (outer element) or a stopper is placed in a bottle (secondary element). By the nature of their design, radial sealing elements are self centering and self aligning.

Radial sealing air filter systems offer several advantages, but because of their unique design, they also have some special service tips and procedures which should be followed.

Standard replacement "axial" sealing air filter elements and "radial" sealing air filter elements are designed to fit and function very differently. "Radial" sealing elements cannot be mixed with conventional "axial" sealing elements.

1. Radial sealing elements cannot be fitted into housing unless it is equipped with the proper mounting tube.
2. Care should be taken when mixing different brands of radial sealing elements as there may be design differences between manufacturers which may not make all elements interchangeable.

3. The cover of the air cleaner housing must be reinstalled after the filter element is serviced. The cover plays no part in sealing the element to the housing, but does prevent the element from moving from its mounting tube.

4. Do not use the latches of the housing cover to force the air filter element onto the mounting tube. The element should be fully inserted onto the tube before the housing cover is replaced.

5. Follow manufacturers' special instructions if there are any for the application of a lubricant for the element seal. Generally, dry lubricants such as baby powder or talcum powder, or silicon's are used if they are necessary for installation.

For additional information, contact:

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