



Filter Knowledge, Unfiltered

Technical Service Bulletin 94-4R2

Compression Gaskets: Their Function & Styles

A compression seal is a means of preventing migration of liquids, gases or solid contaminants across a joint or opening in an assembly or housing. A seal not only prevents the escape of fluid from inside and foreign material from entering the system from outside, but it must provide for easy installation and removal.

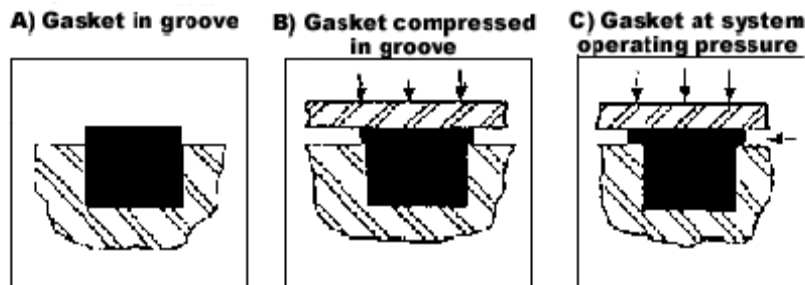
The majority of compression-type seal applications are static in nature. This means the rigid components of the seal groove do not move in relation to each other or to the seal. The only movement of the seal is caused by vibration or internal fluid pressure.

In service, the compressive force exerted by the gasket on the mating surfaces insures a positive seal, even at low pressure. The flexibility of the gasket material conforms to mating surfaces closing off the flow of fluid.

Figure 1 shows the gasket installed (A), compressed to form a seal (B) and under pressure (C). As system pressure increases, the gasket moves to the low pressure side of the groove and is supported by the groove wall. The amount of pressure required to move the gasket within the groove is determined by the frictional force of the seal material on the sealing surfaces. Only when system pressure exceeds the frictional forces will the seal seat itself on the low pressure side of the groove.

Under high pressure, the gasket acts just like a viscous fluid. Thus, due to the laws of fluid, the gasket transmits the system's pressure to all sealing surfaces including the low pressure side of the groove. In actuality, system pressure insures consistent gasket sealing.

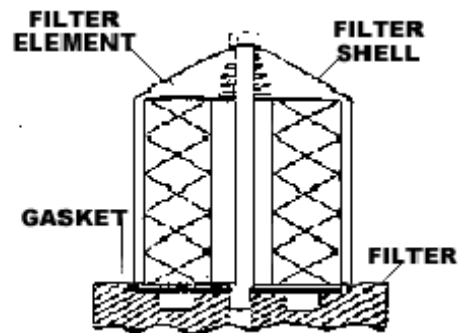
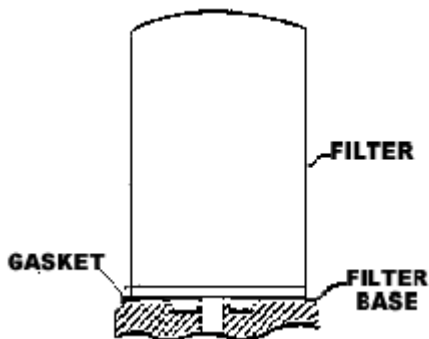
FIG. 1



Gaskets require the sealing surfaces to be finely finished so that the initial compressive force can be applied until there is no clearance between the surfaces and the gasket. Additional force is applied to compress the gasket material to itself to achieve the required sealing pressures. This force is obtained by tightening the filter per the installation instructions. Following the recommended installation procedure is essential (Refer to TSB 93-3R1).

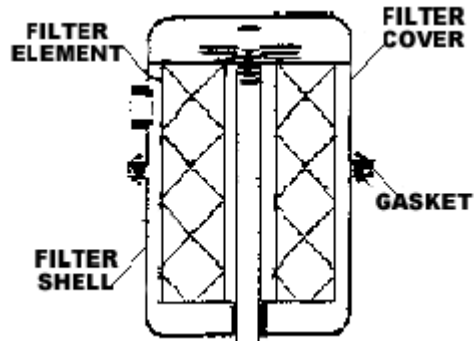
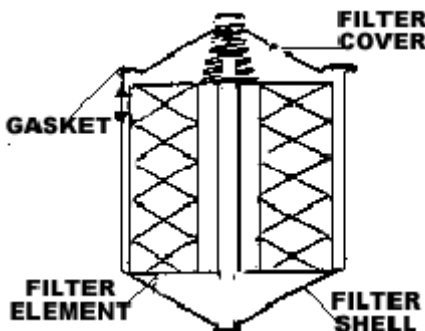
Figure 2 shows the basic types of filter designs and their gasket sealing arrangements. In applications where an element fits in a housing the filtering element may contain one or more gaskets which are integral parts of the element. This listing identifies the gaskets necessary to seal the filter assembly or which may require field replacement.

Figure 2



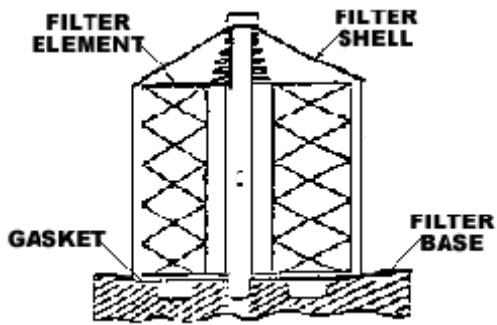
SPIN-ON OR SCREW-ON FILTER WITH SELF CONTAINED SEALING GASKETS: Amount of torque required for proper sealing varies with Filter design. Follow instruction supplied with each individual Filter.

TRAPPED SEAL FILTER: The bottom of the Filter housing fits into a groove in the Filter base where the gasket is contained. Torque Recommendations: 20-25 ft. lbs.



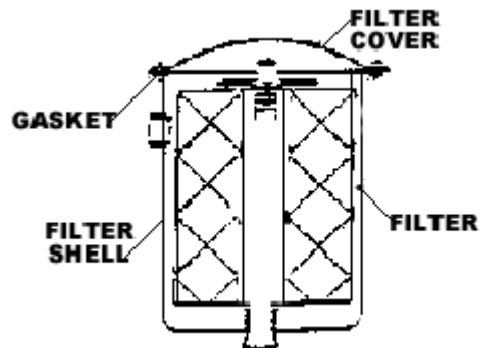
COVER SEAL FILTER HOUSING: Requires a gasket to seal the cover to the body when Filter element is replaced. Torque Recommendations: 10-15 ft. lbs.

BAND SEAL OR O-RING SEAL: Band seal housings may use an O-Ring gasket or an irregular shaped gasket. The gasket is compressed and sealed when the band is tightened. No torque recommendations can be given to cover all housings, but clamp and sealing flanges must be kept in good



LIP SEAL FILTER HOUSING: The bottom of the Filter housing is provided with a turned lip which contacts a gasket contained in a recess in the Filter base. Torque Recommendations: 15-20 ft. lbs.

condition.



BOLT FLANGE SEALED FILTERS: The gasket is held securely between the flange at the top of the housing and Filter cover by screws or bolts. Torque Recommendations: 20-25 ft. lbs.

For additional information, contact:

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