

# Collapsed Filters

**A Spin-on filter has been removed from service and upon inspection it has been noted that the filter has collapsed in on itself. Why? What has caused this condition?**



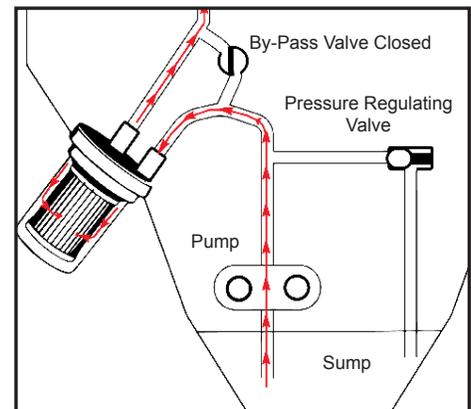
The first thought might be that the filter has some type of manufacturing defect that has caused this problem. This is usually not the case. Lubrication systems are equipped with a by-pass valve that is present in either the system or within the system's oil filter. This by-pass valve is not to be confused with the pressure regulating valve that controls system oil pressure. The pressure regulating valve opens to redirect oil flow back to the sump when system pressure begins to exceed the manufacturer's specified ranges.

The by-pass valve opens to allow oil to go around the filter when conditions make it difficult or impossible for it to pass through the filter's media. Cold start-ups or a filter that has not been properly serviced are two common instances during which time it will become necessary for the oil to circumnavigate the filter. The opening of the by-pass valve is necessary to prevent oil starvation.

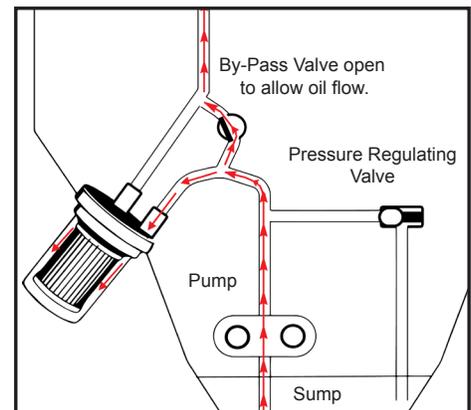
An open by-pass valve resulting from a cold start is usually a short term condition because the oil temperature quickly rises as the engine heats up.

When the filter is improperly serviced, and becomes plugged, the filtering process can be negated until such time as a new filter is put into service. During this plugged condition, the by-pass valve will continually open and close to allow oil to flow around the filter. If this occurs, the oil will not be properly cleaned by the filter.

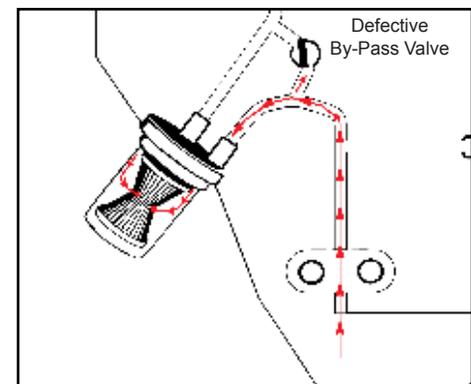
The collapsed filter is a clear indicator that the lubrication system is not functioning properly and that maintenance may be required.



Oil can pass through filter media. By-pass valve closed.



Oil cannot pass through filter media. By-pass valve opens.



If the by-pass valve fails to open, differential pressure may increase to the point of filter collapse.