

Glossary of Standard Terms

ABSOLUTE FILTRATION RATING: The diameter of the largest hard spherical particle that will pass through a filter under specified test condition. This is an indication of the largest opening in the filter element. It does not indicate the largest particle that will pass through the element, since particles of greater length than diameter may pass.

CAVITATION: A localized condition within a liquid stream causing the rapid implosion of a gaseous bubble.

CELSIUS: A temperature scale. 0 Celsius (or 0 Centigrade) is the freezing point of water (32° F).

CENTIPOISE: A unit of absolute (dynamic) viscosity.

CENTISTOKE: A unit of kinematic viscosity.

CLEANLINESS LEVEL: The analog of contamination level.

COLLAPSE PRESSURE: The outside-in differential pressure that causes structural failure.

CONTAMINATION LEVEL: A quantitative term specifying the degree of contamination.

CONTAMINANT: Any material or substance which is unwanted or adversely affects the fluid power system or components, or both.

CONTAMINANT, BUILT-IN: Initial residual contamination in a component, fluid, or system. Typical built-in contaminants are burrs, chips, flash, dirt, dust, fiber, sand, moisture, pipe dope, weld spatter, paints and solvents, flushing solutions, incompatible fluids, and operating fluid impurities.

DEPTH (FILTER): A filter medium which primarily retains contaminant within tortuous passages.

DIRT CAPACITY (DUST CAPACITY)

(CONTAMINANT CAPACITY): The weight of a specified artificial contaminant which must be added to the fluid to produce a given differential pressure across a filter at specified conditions. Used as an indication of relative service life.

EFFICIENCY (FILTER): The ability, expressed as a percent, of a filter to remove specified artificial contaminant at a given contaminant concentration under specified test conditions.

ELEMENT (CARTRIDGE): The porous device which performs the actual process of filtration.

FLOW, LAMINAR (STREAMLINE): A flow situation in which fluid moves in parallel lamina or layers. (See Reynold's number.)

FLOW, TURBULENT: A flow situation in which the fluid particles move in a random manner. (See Reynold's number.)

FLUID: A liquid, gas, or combination thereof.

FLUID POWER SYSTEM: A system that transmits and controls power through use of a pressurized fluid within an enclosed circuit.

INDICATOR: A device which provides external visual evidence of sensed phenomena.

INDICATOR, BY-PASS: An indicator which signals that an alternate flow path is being used.

INDICATOR, DIFFERENTIAL PRESSURE: An indicator which signals the difference in pressure between two points.

MICROMETER (MICRON)*: A unit of measurement one millionth of a meter long, or approximately 0.00003937 inch expressed in English Units. *Deprecated.

MIGRATION: Contaminant released downstream.

PRESSURE, CRACKING: The pressure at which a pressure-operated valve begins to pass fluid.

PRESSURE, DIFFERENTIAL (PRESSURE DROP): The difference in pressure between any two points of a system or a component.

PRESSURE, OPERATING: The pressure at which a system is operated.

PRESSURE, RATED FATIGUE: A pressure that a pressure-containing component is represented to sustain 10 million times without failure.

RATED FLOW: The maximum flow that the power supply system is capable of maintaining at a specific operating pressure.

REYNOLD'S NUMBER: A numerical ratio of the dynamic forces of mass flow to the shear stress due to viscosity. Flow usually changes from laminar to turbulent between Reynold's numbers 2,000 and 4,000.

FILTER CONFIGURATIONS

Top-Ported Filter: Also known as a T-Ported or In-Line filter. All porting, the bypass valve, and indicators are located in the head. The head is permanently attached to the plumbing and the element is accessed by removing the bowl.

Base-Ported Filter: All porting, the bypass valve, and indicators are located in the base. The base is permanently attached to the plumbing and the element is removed through a cap, instead of removing the entire bowl.

Manifold Mounted Filter: Also known as a Sub-Plate filter. Most Base-Ported filters come with a manifold mount option. In some cases, a Top-Ported filter can also have a manifold mounting option. This allows the filter to be mounted directly onto a manifold, eliminating the need for hoses and fittings.

Cartridge Filter: Can be inserted directly into the manifold, eliminating the need for a separate housing or plumbing. Element is removed through a plug on the manifold.

Sandwich Filter: Is designed to be placed in between and directly interface with a manifold and stacked valves. Eliminates the need for hoses and fittings.

Duplex Filter: Made up of two or more filter assemblies. A valve allows the user to switch from one chamber to another. When one element is fully loaded, fluid is redirected through the second element. The loaded element can be changed without an interruption in flow. In the center position, the valve allows the oil to flow through both filters.

FILTER CLASSIFICATIONS

Low Pressure Filter*: Filter pressure range from 0 to 500 psi. Mostly applied in return line filtration where system pressure is at a low point.

Medium Pressure Filter*: Filter pressure range from 500 to 1500 psi. Often used in hydrostatic charge pressure applications.

High Pressure Filter*: Filter pressure range is 1500 psi and above. Mostly applied on the pressure side of the system where pressure is highest.

High Pressure Hydrostatic Filter: Used in high pressure hydrostatic closed loop systems. Allows for reverse flow through the system.

Bypass vs. Non-Bypass: The pressure rises as an element becomes loaded with contaminants. Standard filters are equipped with a bypass valve that redirects hydraulic fluid when the pressure drop reaches a predetermined level, so the element does not lose its structural integrity. The filter element is bypassed and fluid continues on through the system.

In non-bypass filters bypass is not optional. They are used to protect expensive components that are more sensitive to contaminants, and cannot be exposed to unfiltered fluid. The element is exposed to higher pressures, as there is no bypass. For that reason this type of filter requires a high crush element to guarantee its structural integrity.

Air Breather: Filters air that is drawn into a reservoir when the fluid level changes.

Desiccant Air Breather: In addition to filtering out particle contaminants, this breather also removes water vapor.

Schroeder Industries LLC wishes to thank both the National Fluid Power Association and Penton Publishing for the use of certain generic terms shown in this glossary. Excerpts taken from ANSI B93.2-1986/NFPA T3.10.3. 1967(R1980) and Penton Publishing's *Fluid Power Handbook & Directory (2006-2007)*.

*These ranges have been determined to provide a quick reference for the purpose of creating our catalog. This is currently no industry standard terminology. These ranges are subject to change.