

Static control filter elements

Filtration technology improving
safety and oil life time



Static-free is a promise difficult to fulfil

It is not only a filter - the overall portfolio of system components, circuit layout, oil brand and type and environmental conditions have an important influence on the electro-static process in systems and if it occurs to a level that can cause damage.

Parker Static Control Media is an effective method of reducing the overall impact of the electro-static process. **For a static free solution, the complete system and its environment needs to be considered and evaluated, not just the filter in isolation.**

Parker Filtration offers support with analysis of the system oil, wear & tear on system components and the condition of the filter elements.



Contact Information: Parker Advantages:

Parker Hannifin
Hydraulic Filter Division Europe

**European Product
Information Centre**
Freephone: 00800 27 27 5374
**(from AT, BE, CH, CZ, DE, EE, ES,
FI, FR, IE, IT, PT, SE, SK, UK)**
filtrationinfo@parker.com

www.parker.com/hfde

- Parker Static Control Filter media supports the reduction of varnish sealed in an oil system.
- Parker Static Control elements typically extend the oil life time.
- Using Parker Static Control Filter elements offers end-users no compromise in efficiency, dirt holding capacity or flow pressure drop.
- No vessel modifications are required.
- A 'drop-in' solution for system designers and maintenance engineers.
- Available in a wide range of element configurations.

Static-electric charging of oil reduces oil and system life time

Parker is pleased to present new patent-pending solutions to eliminate the negative impact of electro-static charging. Hydraulic fluids can be sensitive to electro-static charging when being pumped through a system or flowing through a fibrous synthetic filter media structure. The particles/molecules in the hydraulic fluid can gain electro-static load. The problem is related to the negative impact of discharging this load.

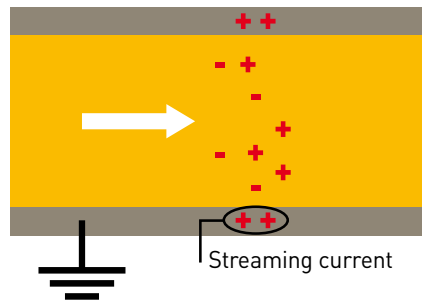
Electro-static charging can result in a sudden static discharge (sparks in oil) that, as a consequence, creates local micro hot spots in the oil. Like lightning the discharge occurs in milli-seconds and is associated with very high, localised increases in the temperature of the oil. This temperature increase causes damage to the molecular structure of the oil and hence affects its performance. The process of electro-static charging can eventually cause varnishing in the system.

Example of holes burned in the filter media



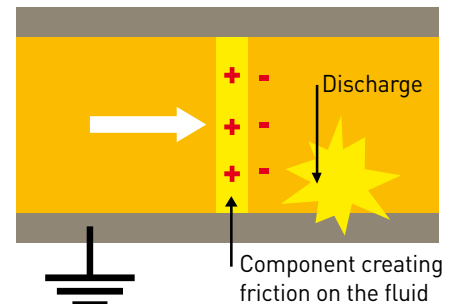
Because the discharge often occurs directly downstream of the filter element, the sparks can burn holes in the filter media. This directly influences the filter efficiency.

Fluid with good conductivity



Electro-static charging can occur anywhere in the system. A conductive fluid is able to prevent the local accumulation of electro-static charge. In various components connected to earth a streaming current can be measured.

Fluid with reduced conductivity



When the fluid conductivity is too low, the amount of Electro-static energy can achieve a level which is sufficient to create a sudden discharge. Just as a balloon can accumulate a specific volume of air, the lower the fluid conductivity the more electro-static energy can build up before a discharge (sparks in the oil) occurs.

Impact of oil groups

Differences amongst the base oil groups can have an impact on the presence of the electro-static discharge process in systems.

Group I oils usually apply a mixture of different hydrocarbon chains with limited or no uniformity. Typically these oils are used in basic applications.

Group II and III oils are in general more applied for demanding applications. **The lower zinc content can have a negative impact on the fluid conductivity.** Group III oils are commonly mixed with additives and positioned as synthetic or semi-synthetic oils. Oil manufacturers can decide to add additives to improve the fluid conductivity.

Group IV are more often applied for automotive and industrial applications, using chemical engineered base stocks like Polyalphaolefins (PAO's).

Group V includes Esters and Polyolesters, these are not used as base oils but added to other base oils. This influences the conductivity amongst the oils covered by this group.

Static-free is a promise difficult to fulfil

The electro-static phenomena can occur anywhere in the system. A filter can generate static electricity but other system components such as pumps, valves, hoses and piping can as well.

The parameters influencing the electro-static phenomena are mainly:

- Type of oil
- Oil temperature
- Air content of the oil
- Relaxation time of the oil in the hydraulic reservoir
- Fluid velocity in the system
- Electro-static energy created by components with rotating parts
- Conductivity & earthing of hoses and piping
- Weather conditions (not mathematically defined)

Table I: Typical element properties by oil group

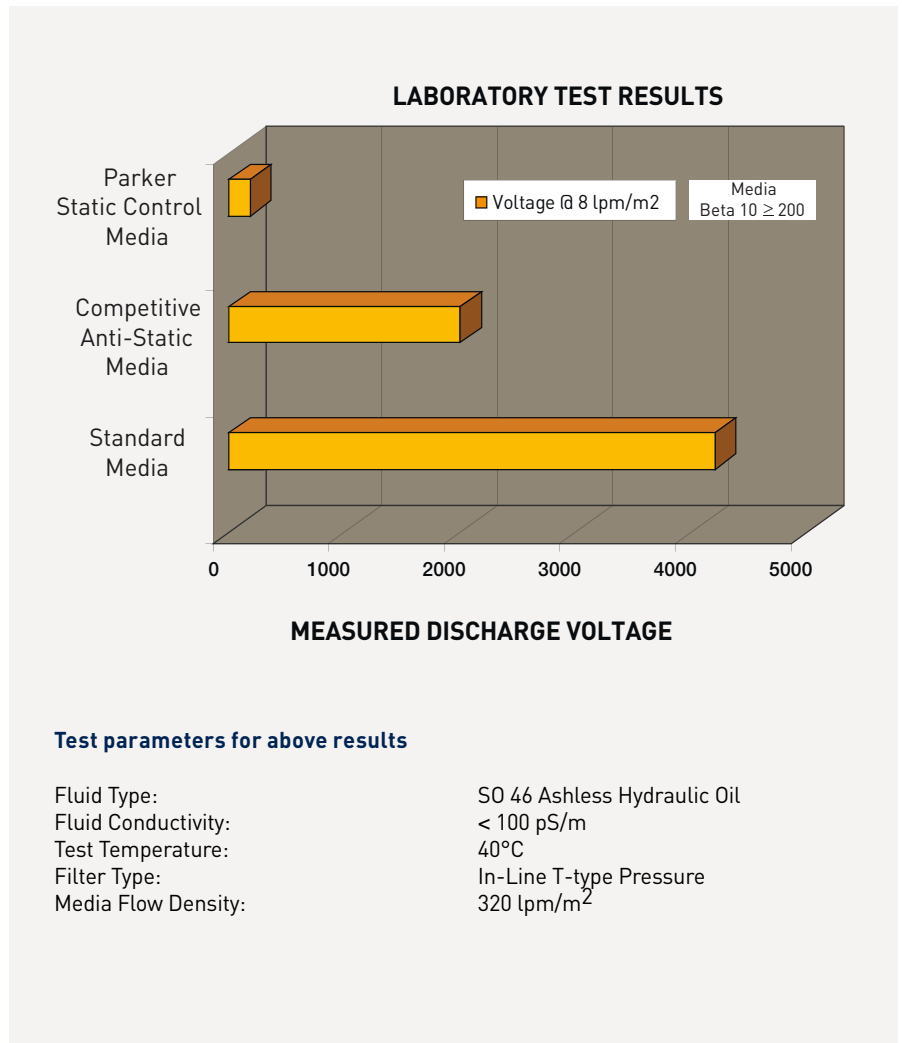
	Group	I	II	III	IV	V
Element	P	+/- 0,05%	<0,05%	+/- 0,02%	Not included	Not included
Element	Zn	+/- 0,08%	<0,03%	<0,03%	Not included	Not included
Element	S	>0,03%	<0,03%	<0,03%	Not included	Not included
Viscosity Index	VI	80-120	80-120	>120	Not included	Not included
Saturation	%	<90%	>90%	>90%	Not included	Not included

Note: All given values are indicative

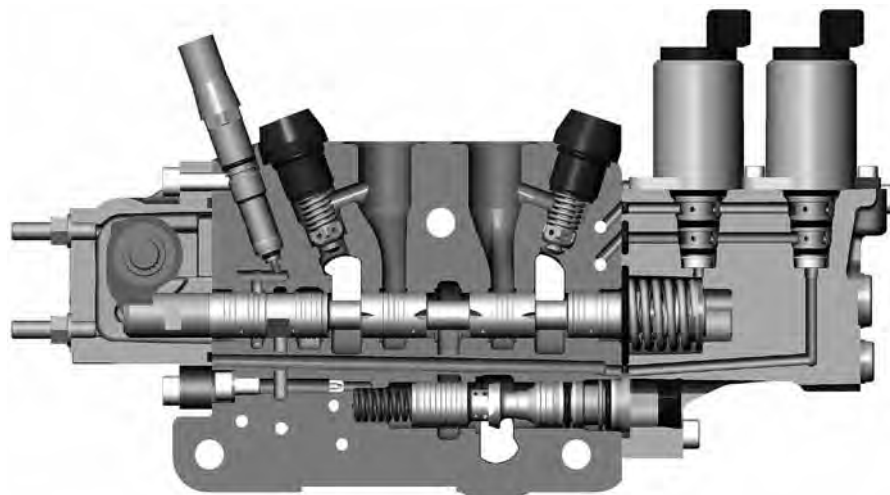
Studies have been conducted and these suggest that varnish is formed due to the thermal degradation and oxidation of the hydraulic oil. The discharge process in the oil can create thermal degradation of the oil. In addition to this, the discharge process can cause pitting of component surfaces.

Varnish can cause system damage and lower system productivity by:

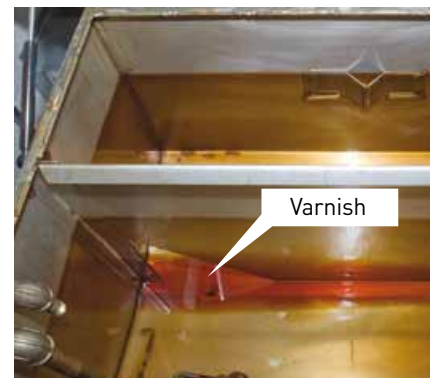
- Varnish build-up on surfaces, blocking flow path of components like heat exchangers
- Causing sticking (servo-) valves
- Slower response of system components with moving parts
- Plugging filters



Varnish can block flow channels or cause 'stick-effect' in valves



Varnish is attracted to metal surfaces, the result is an overall decrease in productivity.



Parker filters available with static control media

TTF Series

Tanktop Mounted Return Line Filters, Max 500 l/min - 10 bar

- Aluminium filter head housing
- In-to-out flow
- ATEX certified version available
- Multiple - return ports (on request)



15/40/80CN Series

Medium Pressure Filters, Max 600 l/min - 70 bar

- Aluminium filter head housing
- In-to-out flow
- ATEX certified version available
- Multiple - return ports (on request)



STF Series

Tanktop Mounted Return Line Filters, Max 500 l/min - 10 bar

- Steel filter housing
- In-to-out flow
- ATEX certified version available
- Multiple - return ports (on request)



EPF iprotect® (Ecological Pressure Filter)

High Pressure Filters, Max 700 l/min - 450 bar

- Steel filter housing
- Patented filter element and reduction of waste typically over 50%
- Reduced surface area
- ATEX certified version available



BGT Series

Tanktop Mounted Return Line Filters, Max 2400 l/min - 10 bar

- Aluminium filter housing
- In-to-out flow
- ATEX certified version available
- Multiple - return ports (on request)



Other filter types available on request.

Ordering Information

TTF Series

Part Number	Flow L/min	Bypass	Ports	Included Options	Micron Rating Bx(c)>200	Replacement Element Part Numbers
TTF302ABP2EG121	90	1.5 bar	G¾	None	2	937750A
TTF310ABP2EG121	90	1.5 bar	G¾	None	10	937786A
TTF602ABP2EG203	170	1.5 bar	G1¼	Diffuser type T	2	937747A
TTF610ABP2EG203	170	1.5 bar	G1¼	Diffuser type T	10	937783A
TTF802ABP2EG243	300	1.5 bar	G1¼	Diffuser type T	2	937745A
TTF810ABP2EG243	300	1.5 bar	G1¼	Diffuser type T	10	937781A
TTF1002ABP2HG24A	500	2.0 bar	G1½	Diffuser type T	2	937743A
TTF1010ABP2HG24A	500	2.0 bar	G1½	Diffuser type T	10	938010A

STF Series

Part Number	Flow L/min	Bypass	Ports	Included Options	Micron Rating Bx(c)>200	Replacement Element Part Numbers
STF802ABP2ELC24G	300	1.5 bar	1½" SAE-flange	Airtight funnel type T	2	937745A
STF810ABP2ELC24G	300	1.5 bar	1½" SAE-flange	Airtight funnel type T	10	937781A
STF1002ABP2ELC24G	500	1.5 bar	1½" SAE-flange	Airtight funnel type T	2	937743A
STF1010ABP2ELC24G	500	1.5 bar	1½" SAE-flange	Airtight funnel type T	10	938010A



Ordering Information

BGT Series

Part Number	Flow L/min	Bypass	Ports	Included Options	Micron Rating Bx(c)>200	Replacement Element Part Numbers
BGT1202ABPER323	500	1.5 bar	2" SAE-3000-PSI	Diffuser type T	2	937741A
BGT1210ABPER323	500	1.5 bar	2" SAE-3000-PSI	Diffuser type T	10	937777A
BGT1502ABPER483	1000	1.5 bar	3" SAE-3000-PSI	Diffuser type T	2	937738A
BGT1510ABPER483	1000	1.5 bar	3" SAE-3000-PSI	Diffuser type T	10	937774A
BGT1702QBPER483	2000	1.5 bar	3" SAE-3000-PSI	Diffuser type T	2	937736A
BGT1710QBPER483	2000	1.5 bar	3" SAE-3000-PSI	Diffuser type T	10	937772A

15/40/80C N Series

Part Number	Flow L/min	Bypass	Ports	Included Options	Micron Rating Bx(c)>200	Replacement Element Part Numbers
15CN102AVPKG164	50	3.5 bar	G1"	none	2	932610A
15CN110AVPKG164	50	3.5 bar	G1"	none	10	932612A
15CN202AVPKG164	100	3.5 bar	G1"	none	2	932616A
15CN210AVPKG164	100	3.5 bar	G1"	none	10	932618A
40CN102AVPKG244	180	3.5 bar	G1½"	none	2	926716A
40CN110AVPKG244	180	3.5 bar	G1½"	none	10	926836A
40CN202AVPKG244	280	3.5 bar	G1½"	none	2	926717A
40CN210AVPKG244	280	3.5 bar	G1½"	none	10	926838A
80CN102APVKG324	370	3.5 bar	G2"	none	2	932659A
80CN110APVKG324	370	3.5 bar	G2"	none	10	932661A
80CN202AVPKG324	530	3.5 bar	G2"	none	2	932665A
80CN210AVPKG324	530	3.5 bar	G2"	none	10	932667A

EPF iprotect (Ecological Pressure Filter)

Part Number	Flow L/min	Micron Rating	Bypass	Ports	Micron Rating Bx(c)>200	Replacement Element Part Numbers
EPF1102AIBPMG081	40	2	7 bar	G½"	2	944418A
EPF1110AIBPMG081	40	10	7 bar	G½"	10	944420A
EPF2202AIBPMG121	140	2	7 bar	G¾"	2	944430A
EPF2210AIBPMG121	140	10	7 bar	G¾"	10	944432A
EPF3202AIBPMG161	250	2	7 bar	G1"	2	944438A
EPF3210AIBPMG161	250	10	7 bar	G1"	10	944440A
EPF4202AIBPMG201	450	2	7 bar	G1¼"	2	944446A
EPF4210AIBPMG201	450	10	7 bar	G1¼"	10	944448A
EPF5102AIBPMG241	500	2	7 bar	G1½"	2	944450A
EPF5110AIBPMG241	500	10	7 bar	G1½"	10	944452A

WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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