Nominal Steady State Water Flow Rate Measurements Through Devices

Testing of two commercial oil stop valves for water flow rates at different head pressures while stopping oil.

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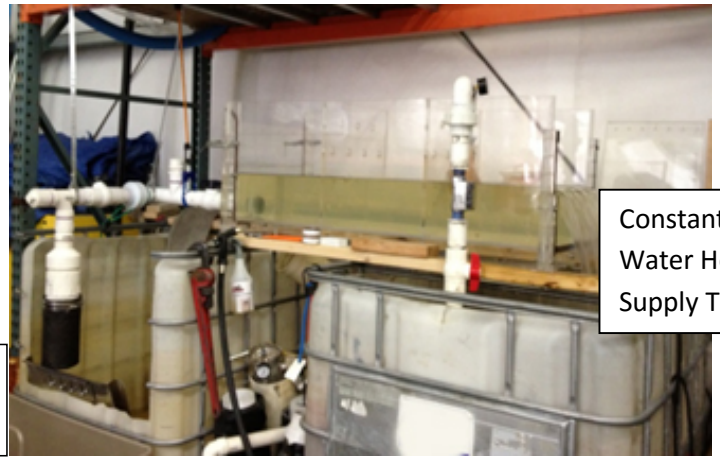
See vita on page 4

Measurement data collected April 2012



Test procedure:

1. Set up the test apparatus for the desired water head. Three levels of water head are available: 2”, 6” and 12”. This apparatus provides the steady state water head for the test.
2. Install the device to be tested in Vertical or Horizontal configuration.
3. Start water flow through the test device to achieve “steady state” water flow rate.
4. Measure the water flow rate at “steady state” flow.
5. Repeat water flow rate measurement. Run two (2) replicate water flow rates and report them and average of these two measurements.

Nominal Steady State Water Flow Rates (Gallons/Hour)

*First number = actual filter outside diameter
**Second number = filter length

Device		Vertical Mount Flow rate at Water Head 2"	6"	12"	Horizontal Mount Flow rate at Water Head 2"	6"	12"
Petro Plug® *2.75"OD x *10" Long	Test 1	80	110	130	17	30	50
	Test 2	80	110	130	15	30	50
	Average	**80**	**110**	**130**	**16**	**30**	**50**
Petro Plug® 3.75"OD x 6" Long	Test 1	130	150	200	17	70	90
	Test 2	120	150	200	17	60	90
	Average	**130**	**150**	**200**	17	**70**	**90**
Petro Plug® 3.75"OD x 10" Long	Test 1	130	150	180	17	45	80
	Test 2	140	150	190	17	45	80
	Average	**140**	**150**	**190**	17	**45**	**80**
Petro Plug® 3.75"OD x 16" Long	Test 1	80	130	170	30	60	60
	Test 2	80	130	170	30	60	60
	Average	**80**	**130**	**170**	**30**	**60**	**60**
Petro Pipe® 5.5"OD x 16" Long	Test 1	150	240	240	30	80	130
	Test 2	160	250	230	30	80	130
	Average	**160**	**250**	**240**	**30**	**80**	**130**

Note: Petro Plug® and Pipe devices are manufactured by Solidification Products International. Device diameter is outside diameter (OD).

Nominal Steady State Water Flow Rates (Gallons/Hour)

*First number = actual filter outside diameter
**Second number = filter length

Device		Vertical Mount Flow rate at Water Head 2"	6"	12"	Horizontal Mount Flow rate at Water Head 2"	6"	12"
C.I.Agent® HFF * 3"OD x **9" Long (2" x 12")	Test 1	60	300	460	10	70	220
	Test 2	60	310	450	10	80	230
	Average	**60**	**310**	**460**	**10**	**80**	**230**
C.I.Agent® HFF 5.5"OD x 9" Long (4" x 12")	Test 1	240	540	1060	70	300	660
	Test 2	230	530	1100	60	300	670
	Average	**240**	**540**	**1100**	**70**	**300**	**670**
C.I.Agent® HFF 5.5"OD x 20" Long (4" x 24")	Test 1	240	740	1480	120	540	760
	Test 2	260	750	1280	120	530	700
	Average	**260**	**750**	**1480**	**120**	**540**	**760**
C.I.Agent® HFF 6.75"OD x 18" Long (6" x 24")	Test 1	240	1260	1880	90	550	1420
	Test 2	250	1270	1860	80	550	1390
	Average	**250**	**1270**	**1880**	**90**	**550**	**1420**

Note: C.I.Agent® HFF Oil Stop Valve devices are manufactured by C.I.Agent Solutions®. Device diameter is outside diameter (OD).

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EDUCATION:

PH.D FIBER AND POLYMER SCIENCE, North Carolina State University**,** Raleigh, NC, 1974

MASTER OF SCIENCE, Textile Technology, North Carolina State University**,** Raleigh, NC, 1970

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EXPERTISE:

Broad Technology/Marketing/Business experience in polymers, fibers, nonwovens, textiles, carpets and adhesives.

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- American Cyanamid (1970-71)
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Over 25 U.S. Patents issued and many pending.

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