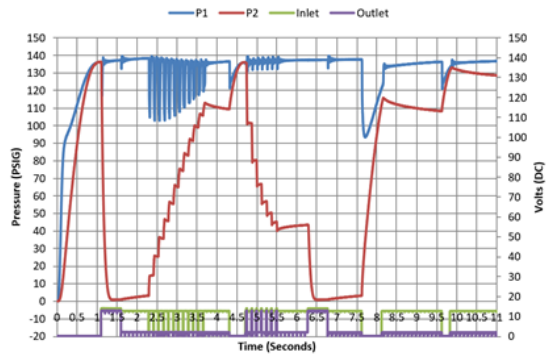# SMV Outlet Fixed Blockage Comparison
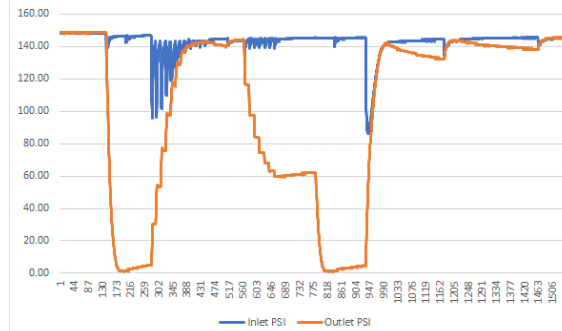
End-of-Line Test Results

Fixed Blockage - Outlet
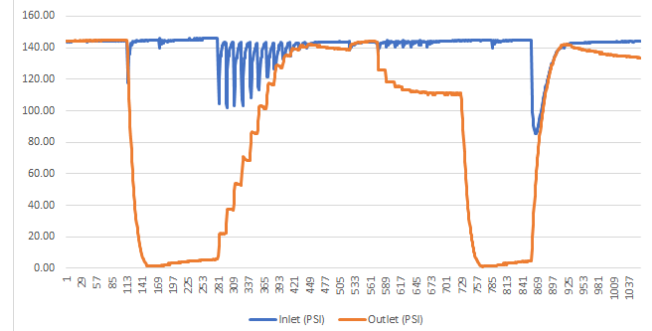

Control, 0% OV Blockage
4.2 Characteristic Curve, Sample 1

Valve #1 50% OV Blockage

Valve #18 80% OV

Blockage Matrix

port diameter in mm	inner hole diameter in mm	sectional area in mm2	area ratio	diameter ratio	flow rate SLPM @ 100psi	flow blockage ZF NA	Calculated flow blockage	ZF FD-VD	ZF NA	DTI
3.3	3.30	8.55	0%	0%	332			x		
3.3	2.33	4.28	50%	29%			-3%	x		
3.3	2.09	3.42	60%	37%			18%	x		
3.3	1.81	2.57	70%	45%			39%	x		
3.3	1.65	2.14	75%	50%	167	50%	49%	x	x	
3.3	1.48	1.71	80%	55%			59%	x		
3.3	1.28	1.28	85%	61%	120	64%	69%	x	x	
3.3	1.04	0.86	90%	68%	65	80%	79%	x	x	
3.3	0.74	0.43	95%	78%			88%	x		
3.3	0.66	0.34	96%	80%	30	91%	90%		x	
3.3	0.50	0.20	97.7%	85%			93%	x		
3.3	0.33	0.09	99.0%	90%	22	93%	94%		x	

Formula to calculate the inner hole diameter from the flow blockage:

$$d_{inner} = 2 * \sqrt{\pi(\frac{d_{port}}{2})^2 * \frac{(100\% - X_{FlowBlockage}\%)}{\pi}}$$

Formula to calculate the sectional area from the inner hole diameter:

$$A_{Flow} = \pi * (\frac{d_{inner}}{2})^2$$

Formula to calculate diameter ratio:

$$d_{ratio} = 100\% - \frac{d_{inner}}{d_{port}}\%$$

$y = -0.1987x^2 + 0.0434x + 0.9516$