

# OIL-X Die-cast Aluminium Compressed Air Filters

Grade WS Water/Liquid Separators (1/4" - 3")



## Water/Liquid Separators

Untreated compressed air contains a minimum of 10 contaminants that must be treated for the system to operate safely, efficiently & cost effectively. Liquid water (and to a lesser extent, liquid oil) exist in all compressed air systems. Often these two liquids combine to make an aggressive, oily, acidic sludge, all of which causes problems such as corrosion of piping, permanent damage to valves, cylinders, pneumatic tools, machinery and reducing the effectiveness of aftercoolers and heat exchangers. Liquids are typically the first of 10 contaminants to be treated.

Parker OIL-X Grade WS high efficiency water/liquid separators have been designed for use with compressor inter coolers/after coolers, integration with refrigeration dryer heat exchangers or protection of coalescing filter from heavy liquid contamination. Traditional centrifugal water separators are designed for maximum separation efficiency at maximum flow rate, with separation efficiency falling off as flow rates vary (especially with variable speed compressors). As separators rarely operate at 100% of rated flow all the time, the Parker OIL-X Grade WS high efficiency water/liquid separators were designed with variable speed compressors in mind and provide >92% liquid separation from compressed air between 25% and 100% of their rated flow.

Parker OIL-X Grade WS water/liquid separators have also been designed with the perfect balance between air quality and energy efficiency to provide maximum separation efficiency with minimal operational costs.



## Features/Benefits

- Water separator module design includes optimised vanes to spin the compressed air, a high efficiency impinger for maximum separation efficiency, vortex concentrator and 90-degree elbow with turning vanes to promote a consistent, optimum air flow with minimal pressure loss.
- Integrated flow management system - Engineered to provide smooth air flow from entry to exit.
- Designed specifically for the high condensate volumes produced by a compressor aftercooler.
- T1 / T2 Timed solenoid drains ensure high volume liquid discharge from the liquid separator.
- Parker OIL-X Grade WS is suitable for all air compressor types and has been specifically optimised for use with variable speed air compressors.
- High liquid separation efficiency at all flow conditions makes Parker OIL-X Grade WS liquid separators fitted with a T1 (230V 50/60Hz) or T2 (115V 50/60Hz) Timed Solenoid Drain ideal for installation at the outlet of modern air compressors which no longer include a liquid separator.
- Parker OIL-X Grade WS is perfectly matched to provide upstream liquid removal and protection of Parker OIL-X Grade AO and AA coalescing Filters.
- Meets the requirements for air quality (liquids) shown in all editions of ISO8573-1, the international standard for compressed air quality.
- Parker OIL-X Grade WS water/liquid separators are fully tested - In accordance with ISO12500-4 and ISO8573-9 for liquid water.
- Separation performance independently validated - by Lloyds Register.
- Housing Guarantee - 10 year guarantee on filter housings.
- Parker OIL-X materials of construction are FDA Title 21 CFR compliant and EX1935/2004 exempt.



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## Filtration Performance

Filtration Grade	Filter Type	Particle Reduction (inc water & oil aerosols)	Max Remaining Oil Content at 21°C (70°F)	Liquid Separation Efficiency	Change Element Every	Precede with Filtration Grade
WS	Liquid Separator	Not Applicable	Not Applicable	>93%	Not Applicable	Not Applicable

## Technical Data

Filtration Grade	Water Separator Models	Min Operating Pressure		Max Operating Pressure		Min Operating Temperature		Max Operating Temperature	
		bar g	psi g	bar g	psi g	°C	°F	°C	°F
WS	PX010 - PX055 (Float Drain)	1.5	22	16	232	2	35	65	149
	PX010 - PX055 (Timed Solenoid Drain)	1.5	22	17	246.5	2	35	80	176

## Flow Rates

Stated flows are for operation at 7 bar (g) (102 psi g) with reference to 20°C, 1 bar (a), 0% relative water vapour pressure.

Model	Pipe Size	L/S	m <sup>3</sup> /min	m <sup>3</sup> /hr	cfm	Initial Saturated Differential Pressure							
						100% Flow		75% Flow		50% Flow		25% Flow	
						mbar	psi	mbar	psi	mbar	psi	mbar	psi
WSPX010A <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	¼"	10	0.6	36	21	53	0.8	29	0.4	14	0.2	4	0.1
WSXP010B <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	¾"	10	0.6	36	21	51	0.7	27	0.4	12	0.2	2	0.0
WSPX010C <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	½"	10	0.6	36	21	48	0.7	25	0.4	10	0.1	0	0.0
WSPX015B <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	¾"	40	2.4	144	85	64	0.9	25	0.4	12	0.2	6	0.1
WSPX015C <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	½"	40	2.4	144	85	55	0.8	22	0.3	10	0.1	4	0.1
WSPX020D <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	¾"	40	2.4	144	85	42	0.6	22	0.3	7	0.1	2	0.0
WSPX025D <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	¾"	110	6.6	396	233	98	1.4	55	0.8	23	0.3	4	0.1
WSPX025E <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1"	110	6.6	396	233	95	1.4	52	0.8	20	0.3	1	0.0
WSPX030G <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1½"	110	6.6	396	233	82	1.2	30	0.4	13	0.2	4	0.1
WSPX035G <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1½"	350	21	1260	742	57	0.8	24	0.3	5	0.1	5	0.1
WSPX040H <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	2"	350	21	1260	742	52	0.8	19	0.3	0	0.0	0	0.0
WSPX045I <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	2½"	350	21	1260	742	55	0.8	22	0.3	3	0.0	1	0.0
WSPX050I <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	2½"	800	48	2880	1695	116	1.7	57	0.8	16	0.2	5	0.1
WSPX055J <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	3"	800	48	2880	1695	111	1.6	52	0.8	11	0.2	0	0.0

## Part Selection Options

Pipe Size:  for BSPP Threads /  for NPT Threads.

Condensate Drain\*:  for Float /  for 230V 50/60Hz Timed Solenoid /  for 115V 50/60Hz Timed Solenoid). See next page for further information.

\*T1 and T2 drain options not available for when selecting N pipe thread option.

## Product Selection & Correction Factors

To correctly select a separator model, the flow rate of the separator must be adjusted for the minimum operating (inlet) pressure at the point of installation.

1. Obtain the minimum operating (inlet) pressure and maximum compressed air flow rate at the inlet of the separator.
2. Select the correction factor for minimum inlet pressure from the CFMIP table (always round down e.g. for 5.3 bar, use 5 bar correction factor)
3. Calculate the minimum filtration capacity. Minimum Filtration Capacity = Compressed Air Flow Rate x CFP
4. Using the minimum filtration capacity, select a filter model from the flow rate tables above (filter selected must have a flow rate equal to or greater than the minimum filtration capacity).

## CFMIP - Correction Factor Minimum Inlet Pressure

Minimum Inlet Pressure	bar g	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	psi g	15	29	44	58	73	87	100	116	131	145	160	174	189	203	218	232
Correction Factor		4.00	2.63	2.00	1.59	1.33	1.14	1.00	0.94	0.89	0.85	0.82	0.79	0.76	0.73	0.71	0.68

## Tested In Accordance With

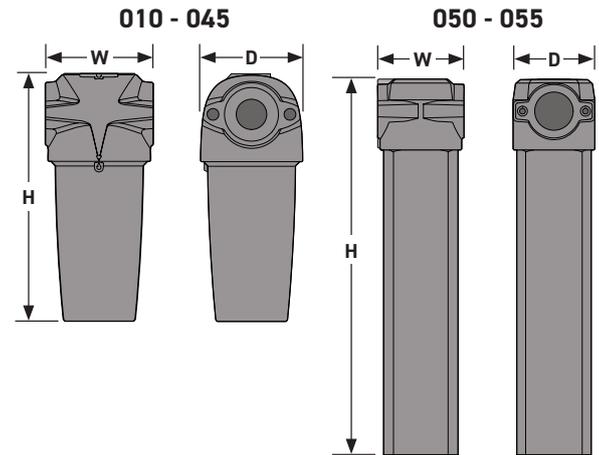
<b>Filtration Grade</b>	<b>WS</b>
<b>Filter Type</b>	<b>Liquid Separator</b>
<b>Test Methods Used</b>	ISO 8573-9:2004 ISO 12500-4:2009
<b>ISO12500-4 Inlet Challenge Concentration</b>	33 ml of liquid water per cubic metre of compressed air

## Quality Assurance / IP Rating / Pressure Vessel Approvals

<b>Development/Manufacture</b>	ISO 9001 / ISO 14001
<b>Ingress Protection Rating</b>	Not Applicable
<b>EU</b>	Pressure vessel approved for fluid group 2 in accordance with the Pressure Equipment Directive 2014/68/EU
<b>USA</b>	Approval to ASME VIII Div. 1 not required
<b>AUS</b>	Approval to AS1210 not required
For use with Compressed Air, N <sub>2</sub> & CO <sub>2</sub>	

## Weights & Dimensions

Housing Model	Height (H)		Width (W)		Depth (D)		Weight	
	mm	ins	mm	ins	mm	ins	kg	lbs
<b>010</b>	180	7.09	76	2.99	65	2.56	0.81	1.78
<b>015/020</b>	238	9.37	89	3.50	84	3.31	1.41	3.10
<b>025</b>	277	10.91	120	4.72	115	4.53	2.66	5.86
<b>030</b>	277	10.91	120	4.72	115	4.53	2.66	5.86
<b>035/040/045</b>	440	17.32	164	6.46	157	6.18	6.87	15.14
<b>050</b>	614	24.17	192	7.56	183	7.20	8.47	18.66
<b>055</b>	515	20.28	192	7.56	183	7.20	8.47	18.66



## Condensate Drain Selection

OIL-X WS liquid separators are available with three condensate drain options, timed solenoid T1 (230V 50/60Hz), timed solenoid T2 (115V 50/60Hz) and float.

Water Separator drains must be sized and selected based upon the volume of condensate at the point of WS installation. If in doubt, use T1 or T2 variant.

The timed solenoid drain options are currently only available for G thread pipe connection models.

When selecting a drain option please use reference T1 (230V50/60Hz Timed Solenoid), T2 (115V 50/60Hz Timed Solenoid) or F (Float).

## Options

Drain Type	Electrical Supply	Part Code Reference	Connections		Maximum Operating Pressure	
			Inlet	Outlet	bar g	psi g
<b>Float</b>	N/A	F	N/A	1/8"	16	232
<b>Timed Solenoid</b>	230V 1ph 50/60Hz	T1	1/2"	3/8"	17.25	250
	115V 1ph 50/60Hz	T2	1/2"	3/8"	17.25	250

## Part Number Configuration

Filtration Grade	Model	Pipe Size	Connection Type	Drain Option	Incident Monitor
<b>WS</b>	PX and 3-digit code denotes filter housing size	Letter denotes pipe size 1/4" to 3"	G = BSPP N = NPT	F = Float Drain T1 = Timed Solenoid (230V 1ph 50/60Hz) T2 = Timed Solenoid (115V 1ph 50/60Hz)	X = None
	010 to 055	A to J			

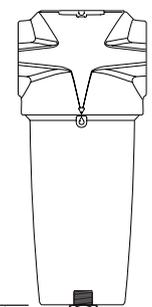
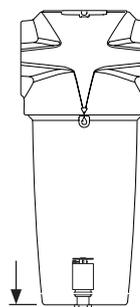
## Examples

<b>WS</b>	PX010	A	G	T1	X
<b>WS</b>	PX040	H	G	T2	X
<b>WS</b>	PX045	I	N	F	X

Float Drain



Timed Solenoid Drains



010 - 045: 30mm (1.18")  
050 - 055: 32mm (1.25")

125mm (4.92")  
100mm (3.93")

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