

# VARIANT

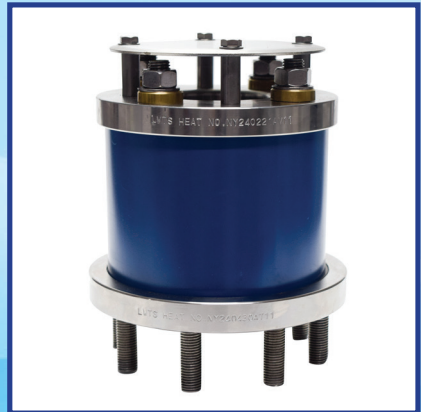
# L

WTS

Innovative Designs



## AIR VALVES



## BREAK PRESSURE TANKS



## Contents

General	1
LX Series	2
LN Series	4
LN Series	6
LH Series	8
L R Series	10
LT Series	12
LS Series	14
LSN Series	16
Break Pressure Tanks	18

For additional technical  
information and product  
videos please visit our  
website at

[www.variantairvalves.co.za](http://www.variantairvalves.co.za)

## About Us

LW Tank Systems is a proudly South African company that was established in 2002. We design and manufacture products which optimize the transfer of water and protect pipelines across the civils, mining, and irrigation sectors.

Our innovative products address practical challenges associated with the design, operation and maintenance of water supply systems, while providing effective solutions that enhance efficiency and reliability.

All our products are manufactured from materials of the highest quality ensuring unparalleled service and longevity. You can rest assured that your system will operate as designed, knowing that our products have all been tested by an independent third party.

We strive to exceed the needs of our clients by embracing the ethos of a family business. Personal, friendly service backed by sound technical knowledge and value for money has seen us become the leading manufacturer of air valves and the only manufacturer of Break pressure tanks in Africa.

Committed to developing local manufacturing, LW Tank Systems supports the Department of Trade and Industry's initiative to create jobs in South Africa by ensuring that all our products exceed the 70% local content requirement.

# VARIANT AIR VALVES

## General

Variant combination air release and vacuum break valves safeguard pipelines from harmful vacuum conditions, whilst preserving system efficiency. The integral anti-shock mechanism provides additional protection against damaging surges caused by uncontrolled filling or pump stoppages.

### OPERATION:

#### HIGH-CAPACITY AIR DISCHARGE

Before filling, pipelines are filled with air. As the pipeline fills, air travels along the pipeline toward the high points. Air valves placed at these locations discharge this air through large orifices to the atmosphere.

#### HIGH-CAPACITY AIR INTAKE

The primary role of air valves is to admit air into pipelines to prevent damaging negative pressures that can arise under conditions such as:

- Isolation
- Interruption of supply
- Scouring
- Negative pressures during surge events.

Variant air valves provide a full-bore, unobstructed flow path that maximizes air in-take capacity.

#### PRESSURIZED AIR RELEASE

During normal operational conditions, unwanted air enters the air valves located at the high points along the pipeline. Once sufficient air accumulates in the valves, they will automatically release this air into the atmosphere, thereby maintaining pipeline efficiency.

#### SURGE ALLEVIATION

When airflow through the valve surpasses a predetermined threshold, the anti-shock float is activated and rises to partially restrict air discharge. This controlled restriction creates an air cushion within the pipeline, mitigating potentially damaging surges during events such as pump trips or rapid filling.

LX SERIES

Air valve selection & technical specifications

APPLICATION

- Potable water
- Settled raw water

FUNCTIONS

- High-capacity air discharge
- High-capacity air intake
- Pressurized air release
- Surge alleviation

FEATURES

- Optimal flow performance
- Lowest anti-shock switching rates
- Reliable sealing at low pressures (20 kPa)
- Compact, efficient design
- No dissimilar metal corrosion

OPTIONAL EXTRAS

- Stainless steel cover screen
- ¼ inch bleed port with plug
- Air-out only configuration

SIZING

Correct sizing of air valves primarily depends on intake requirements under vacuum conditions. To safeguard pipelines and joints, it is key to limit negative pressures to a maximum of 35 kPa. This is achieved by ensuring sufficient airflow into the pipeline when vacuum conditions occur.

Valve sizing calculations must account for:

- Pipeline diameter
- Gradient
- Rupture percentage
- Scour valve sizes

After determining these parameters and calculating the required intake flow rates, the appropriate air valve size can be selected.

SURGE ALLEVIATION

While valve sizing is dictated by required airflow during vacuum conditions, surge protection effectiveness depends significantly on the airflow rate at which the anti-shock mechanism engages.

INTAKE FLOW RATES AT 35 kPa VACUUM	
VALVE SIZE	INTAKE FLOW RATES
25MM	58 NL/S
50MM	215 NL/S
80MM	573 NL/S
100MM	792 NL/S

INTAKE FLOW RATES AT 35 kPa VACUUM	
VALVE SIZE	INTAKE FLOW RATES
150MM	2053 NL/S
200MM	3361 NL/S
250MM	4716 NL/S
300MM	6386 NL/S

LX SERIES SWITCHING RATES AND PRESSURES								
	25MM	50MM	80MM	100MM	150MM	200MM	250MM	300MM
ANTI SHOCK ORIFICE SIZE MM	4	9	14	17	25	34	40	40
INLET SIZE MM	25	50	80	100	150	200	250	300
OUTLET SIZE MM	25	50	80	100	150	200	250	300
SWITCHING FLOW RATE L/S	12	30	119	161	447	632	1201	1477
SWITCHING PRESSURE kPa	0.95	1.0	0.94	0.83	0.78	0.79	1.3	1.22



## SPECIFICATIONS

*Type: Triple acting, three-stage*

### MATERIAL SPECIFICATIONS:

- Body: 304/316 Stainless Steel
- Automatic Orifice: 316 Stainless Steel
- Automatic Float: High-Density Polyethylene
- Kinetic Float: High-Density Polyethylene
- Anti-Shock Float: High-Density Polyethylene
- Automatic Seal: EPDM
- Kinetic Seal & O-Rings: Nitrile / EPDM
- Spacers, Studs, Tie Rods, Bolts, Nuts & Washers: 304/316 Stainless Steel
- Cover: 304/316 Stainless Steel
- O-Ring Spacers: Brass

### STANDARD FACTORY TEST

- Hydrostatic test at 1.5 times rated working pressure
- Low-pressure sealing - 20 kPa
- Verify automatic orifice operation

### END CONNECTIONS

- Threaded: Male BSP / NPT
- Flanged: Studded

### OPERATING TEMPERATURES

- 4°C to 75°C



NOMINAL SIZE	MODEL NUMBER	PRESSURE RATING	HEIGHT	DIAMETER
25MM Threaded	025LX16	1600 kPa	325	95
25MM Threaded	025LX25	2500 kPa	325	95
25MM Threaded	025LX40	4000 kPa	380	115
25MM Flanged	025LX16	1600 kPa	260	115
25MM Flanged	025LX25	2500 kPa	260	115
25MM Flanged	025LX40	4000 kPa	320	115
50MM Threaded	050LX16	1600 kPa	335	120
50MM Threaded	050LX25	2500 kPa	335	120
50MM Threaded	050LX40	4000 kPa	375	120
50MM Flanged	050LX16	1600 kPa	255	165
50MM Flanged	050LX25	2500 kPa	255	165
50MM Flanged	050LX40	4000 kPa	296	165
80MM Flanged	080LX16	1600 kPa	330	200
80MM Flanged	080LX25	2500 kPa	330	200
80MM Flanged	080LX40	4000 kPa	380	200

NOMINAL SIZE	MODEL NUMBER	PRESSURE RATING	HEIGHT	DIAMETER
100MM Flanged	100LX16	1600 kPa	330	220
100MM Flanged	100LX25	2500 kPa	330	235
100MM Flanged	100LX40	4000 kPa	385	235
150MM Flanged	150LX16	1600 kPa	440	285
150MM Flanged	150LX25	2500 kPa	440	300
150MM Flanged	150LX40	4000 kPa	520	300
200MM Flanged	200LX16	1600 kPa	510	340
200MM Flanged	200LX25	2500 kPa	510	360
200MM Flanged	200LX40	4000 kPa	595	375
250MM Flanged	250LX16	1600 kPa	580	405
250MM Flanged	250LX25	2500 kPa	590	425
250MM Flanged	250LX40	4000 kPa	615	450
300MM Flanged	300LX16	1600 kPa	640	460
300MM Flanged	300LX25	2500 kPa	655	485
300MM Flanged	300LX40	4000 kPa	675	515

# LNLM SERIES

## Air valve selection & technical specifications

### APPLICATION

- Potable water
- Settled Raw Water
- Sea water
- Brackish water

### FUNCTIONS

- High-capacity air discharge
- High-capacity air intake
- Pressurized air release
- Surge alleviation

### FEATURES

- Optimum flow characteristics
- Lowest anti-shock switching rates
- Reliable sealing at low pressures (20 kPa)
- Compact, efficient design
- Nylon body suitable for sea and brackish water

### OPTIONAL EXTRAS

- Stainless steel cover screen

### ANTI-THEFT

Air valve theft adversely affects the reliability and efficiency of pipelines. This problem is compounded when multiple air release valves are stolen simultaneously from the same pipeline. The LNM series has very little scrap value and is not prone to theft.

### SIZING

Correct sizing of air valves primarily depends on intake requirements under vacuum conditions. To safeguard pipelines and joints, it is key to limit negative pressures to a maximum of 35 kPa. This is achieved by ensuring sufficient airflow into the pipeline when vacuum conditions occur.

Valve sizing calculations must account for:

- Pipeline diameter
- Gradient
- Rupture percentage
- Scour valve sizes

After determining these parameters and calculating the required intake flow rates, the appropriate air valve size can be selected.

### SURGE ALLEVIATION

While valve sizing is dictated by required airflow during vacuum conditions, surge protection effectiveness depends significantly on the airflow rate at which the anti-shock mechanism engages.

#### INTAKE FLOW RATES AT 35 kPa VACUUM

VALVE SIZE	INTAKE FLOW RATES
25MM	58 NL/S
50MM	215 NL/S
80MM	573 NL/S
100MM	792 NL/S

#### LNLM SERIES SWITCHING RATES & PRESSURES

	25MM	50MM	80MM	100MM
ANTI SHOCK ORIFICE SIZE MM	4	9	14	17
INLET SIZE MM	25	50	80	100
OUTLET SIZE MM	25	50	80	100
SWITCHING FLOW RATE L/S	12	30	119	161
SWITCHING PRESSURE kPa	0.95	1.0	0.94	0.83

## SPECIFICATIONS

*Type: Triple acting, three stage*

### MATERIAL SPECIFICATIONS:

- Body: Nylon UV Stabilized
- Automatic orifice: 316 Stainless Steel
- Automatic float: High-Density Polyethylene
- Kinetic float: High-Density Polyethylene
- Anti-shock float: High-Density Polyethylene
- Automatic seal: EPDM
- Kinetic seal and O-rings: Nitrile/EPDM
- Internal spacers and guides (80mm and 100mm): 304/316 Stainless Steel
- Cover: 304/316 Stainless Steel.
- External bolts, washers and nuts: 304/316 Stainless Steel.
- Optional: Super Duplex wetted metal components

### STANDARD FACTORY TEST

- Hydrostatic test at 1.5 times rated working pressure
- Low-pressure sealing - 20 kPa
- Verify automatic orifice operation

### END CONNECTIONS

- Threaded valves - Female BSP/NPT
- Flanged

### OPERATING TEMPERATURES

- 4°C to 75°C



NOMINAL SIZE	MODEL NUMBER	PRESSURE RATING	HEIGHT	DIAMETER	NOMINAL SIZE	MODEL NUMBER	PRESSURE RATING	HEIGHT	DIAMETER
25MM Threaded	025LNM16	1600 kPa	285	145	50MM Flanged	050LNM25	2500 kPa	320	177
25MM Threaded	025LNM25	2500 kPa	285	145	80MM Flanged	080LNM16	1600 kPa	425	246
50MM Threaded	050LNM16	1600 kPa	295	177	80MM Flanged	080LNM25	2500 kPa	425	246
50MM Threaded	050LNM25	2500 kPa	295	177	100MM Flanged	100LNM16	1600 kPa	460	280
50MM Flanged	050LNM16	1600 kPa	320	177	100MM Flanged	100LNM25	2500 kPa	460	280

# LN SERIES

## Air valve selection & technical specifications

### APPLICATION

- Potable water
- Settled Raw Water
- Sea water
- Brackish water

### FUNCTIONS

- High-capacity air discharge
- High-capacity air intake
- Pressurized air release
- Surge alleviation

### FEATURES

- Optimum flow characteristics
- Lowest anti-shock switching rates
- Reliable sealing at low pressures (20 kPa)
- Compact design
- Nylon body suitable for sea and brackish water

### OPTIONAL EXTRAS

- Stainless steel cover screen

### ANTI-THEFT

Air valve theft adversely affects the reliability and efficiency of pipelines. This problem is compounded when multiple air release valves are stolen simultaneously from the same pipeline. The LN series has very little scrap value and is not prone to theft.

### SIZING

Correct sizing of air valves primarily depends on intake requirements under vacuum conditions. To safeguard pipelines and joints, it is key to limit negative pressures to a maximum of 35 kPa. This is achieved by ensuring sufficient airflow into the pipeline when vacuum conditions occur.

Valve sizing calculations must account for:

- Pipeline diameter
- Gradient
- Rupture percentage
- Scour valve sizes

After determining these parameters and calculating the required intake flow rates, the appropriate air valve size can be selected.

### SURGE ALLEVIATION

While valve sizing is dictated by required airflow during vacuum conditions, surge protection effectiveness depends significantly on the airflow rate at which the anti-shock mechanism engages.

#### INTAKE FLOW RATES AT 35 kPa VACUUM

VALVE SIZE	INTAKE FLOW RATES
150MM	2053 NL/S
200MM	3361 NL/S

#### LN SERIES SWITCHING RATES AND PRESSURES

	150MM	200MM
ANTI SHOCK ORIFICE SIZE MM	25	34
INLET SIZE MM	150	200
OUTLET SIZE MM	150	200
SWITCHING FLOW RATE L/S	447	632
SWITCHING PRESSURE kPa	0.78	0.79

## SPECIFICATIONS

*Type: Triple acting, three stage*

### MATERIAL SPECIFICATIONS:

- Body: Nylon UV stabilized
- Automatic float: High-Density Polyethylene
- Kinetic float: High-Density Polyethylene
- Anti shock float: High-Density Polyethylene
- Automatic seal: EPDM
- Kinetic seal and O-rings: Nitrile/EPDM
- Spacers, studs, tie rods, nuts and bolts: 304/316 Stainless Steel
- O-ring spacers: Nylon and Stainless Steel 304/316
- Cover: 304/316 Stainless Steel
- Optional: Super Duplex wetted metal components

### STANDARD FACTORY TEST

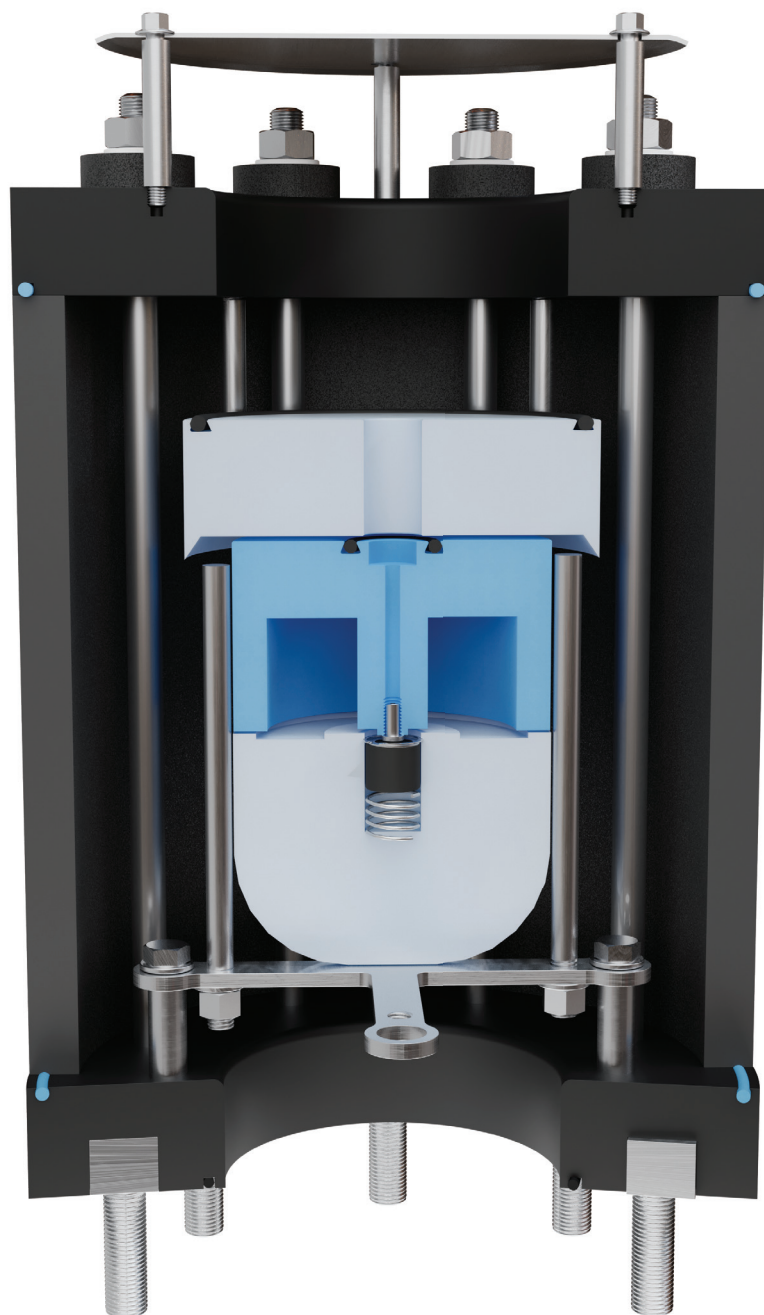
- Hydrostatic test at 1.5 times rated working pressure
- Low-pressure sealing - 20 kPa
- Verify automatic orifice operation

### END CONNECTIONS

- Threaded valves - Male BSP/NPT
- Flanged studded

### OPERATING TEMPERATURES

- 4°C to 75°C



NOMINAL SIZE	MODEL NUMBER	PRESSURE RATING	HEIGHT	DIAMETER	NOMINAL SIZE	MODEL NUMBER	PRESSURE RATING	HEIGHT	DIAMETER
150MM Flanged	150LN16	1600 kPa	500	324	200MM Flanged	200LN16	1600 kPa	560	386
150MM Flanged	150LN25	2500 kPa	500	324	200MM Flanged	200LN25	2500 kPa	560	386



# LH SERIES

## Air valve selection & technical specifications

### APPLICATION

- Raw water
- Grey water
- Treated sewerage

### FUNCTIONS

- High-capacity air discharge
- High-capacity air intake
- Pressurized air release
- Surge alleviation

### FEATURES

- Optimum flow characteristics
- Lowest anti-shock switching rates
- Reliable sealing at low pressures (20 kPa)
- Compact design
- No dissimilar metal corrosion.

### OPTIONAL EXTRAS

- Stainless steel cover screen
- ¼ inch bleed port with plug

### SIZING

Correct sizing of air valves primarily depends on intake requirements under vacuum conditions. To safeguard pipelines and joints, it is key to limit negative pressures to a maximum of 35 kPa. This is achieved by ensuring sufficient airflow into the pipeline when vacuum conditions occur.

Valve sizing calculations must account for:

- Pipeline diameter
- Gradient
- Rupture percentage
- Scour valve sizes

After determining these parameters and calculating the required intake flow rates, the appropriate air valve size can be selected.

### SURGE ALLEVIATION

While valve sizing is dictated by required airflow during vacuum conditions, surge protection effectiveness depends significantly on the airflow rate at which the anti-shock mechanism engages.

INTAKE FLOW RATES AT 35 kPa VACUUM	
VALVE SIZE	INTAKE FLOW RATES
25MM	58 NL/S
50MM	215 NL/S
80MM	573 NL/S
100MM	792 NL/S

INTAKE FLOW RATES AT 35 kPa VACUUM	
VALVE SIZE	INTAKE FLOW RATES
150MM	2053 NL/S
200MM	3361 NL/S
250MM	4716 NL/S
300MM	6386 NL/S

LH SERIES SWITCHING RATES AND PRESSURES								
	25MM	50MM	80MM	100MM	150MM	200MM	250MM	300MM
ANTI SHOCK ORIFICE SIZE MM	4	9	14	17	25	34	40	40
INLET SIZE MM	25	50	80	100	150	200	250	300
OUTLET SIZE MM	25	50	80	100	150	200	250	300
SWITCHING FLOW RATE L/S	12	30	119	161	447	632	1201	1477
SWITCHING PRESSURE kPa	0.95	1.0	0.94	0.83	0.78	0.79	1.3	1.22



## SPECIFICATIONS

*Type: Triple acting, three stage*

### MATERIAL SPECIFICATIONS:

- Body: 304/316 Stainless Steel.
- Automatic orifice: 316 Stainless Steel.
- Automatic float: High-Density Polyethylene.
- Kinetic float: High-Density Polyethylene.
- Anti shock float: High-Density Polyethylene.
- Automatic seal: EPDM.
- Kinetic seal and O-rings: Nitrile/EPDM.
- Spacers, studs, tie rods, bolts, nuts and washers: 304/316 Stainless Steel.
- Cover: 304 /316 Stainless Steel
- O-ring Spacers: Brass.

### STANDARD FACTORY TEST

- Hydrostatic test at 1.5 times rated working pressure
- Low-pressure sealing - 20 kPa
- Verify automatic orifice operation

### END CONNECTIONS

- Threaded valves - Male BSP/NPT
- Flanged valves - studded

### OPERATING TEMPERATURES

- 4°C to 75°C



NOMINAL SIZE	MODEL NUMBER	PRESSURE RATING	HEIGHT	DIAMETER
25MM Threaded	025LH16	1600 kPa	370	95
25MM Threaded	025LH25	2500 kPa	370	95
25MM Threaded	025LH40	4000 kPa	450	115
25MM Flanged	025LH16	1600 kPa	305	115
25MM Flanged	025LH25	2500 kPa	305	115
25MM Flanged	025LH40	4000 kPa	365	115
50MM Threaded	050LH16	1600 kPa	390	120
50MM Threaded	050LH25	2500 kPa	390	120
50MM Threaded	050LH40	4000 kPa	430	120
50MM Flanged	050LH16	1600 kPa	310	165
50MM Flanged	050LH25	2500 kPa	310	165
50MM Flanged	050LH40	4000 kPa	350	165
80MM Flanged	080LH16	1600 kPa	435	200
80MM Flanged	080LH25	2500 kPa	435	200
80MM Flanged	080LH40	4000 kPa	485	200

NOMINAL SIZE	MODEL NUMBER	PRESSURE RATING	HEIGHT	DIAMETER
100MM Flanged	100LH16	1600 kPa	440	220
100MM Flanged	100LH25	2500 kPa	440	235
100MM Flanged	100LH40	4000 kPa	495	235
150MM Flanged	150LH16	1600 kPa	580	285
150MM Flanged	150LH25	2500 kPa	580	300
150MM Flanged	150LH40	4000 kPa	660	300
200MM Flanged	200LH16	1600 kPa	650	340
200MM Flanged	200LH25	2500 kPa	650	360
200MM Flanged	200LH40	4000 kPa	735	375
250MM Flanged	250LH16	1600 kPa	730	405
250MM Flanged	250LH25	2500 kPa	740	425
250MM Flanged	250LH40	4000 kPa	765	450
300MM Flanged	300LH16	1600 kPa	790	460
300MM Flanged	300LH25	2500 kPa	800	485
300MM Flanged	300LH40	4000 kPa	825	515

# LR SERIES

## Air valve selection & technical specifications

### APPLICATION

- Potable water
- Settled Raw Water

### FUNCTIONS

- High-capacity air intake

### FEATURES

- Optimum flow characteristics
- 1 KPa low pressure sealing
- Compact design
- No dissimilar metal corrosion.

### OPTIONAL EXTRAS

- Stainless steel cover screen
- ¼ inch bleed port with plug

### SIZING

Correct sizing of air valves primarily depends on intake requirements under vacuum conditions. To safeguard pipelines and joints, it is key to limit negative pressures to a maximum of 35 kPa. This is achieved by ensuring sufficient airflow into the pipeline when vacuum conditions occur.

Valve sizing calculations must account for:

- Pipeline diameter
- Gradient
- Rupture percentage
- Scour valve sizes

After determining these parameters and calculating the required intake flow rates, the appropriate air valve size can be selected.

### INTAKE FLOW RATES AT 35 kPa VACUUM

VALVE SIZE	INTAKE FLOW RATES
25MM	49 NL/S
50MM	181 NL/S
80MM	498 NL/S
100MM	665 NL/S
150MM	1745 NL/S
200MM	2957 NL/S
250MM	3301 NL/S
300MM	5236 NL/S

## SPECIFICATIONS

*Type: Vacuum Break*

### MATERIAL SPECIFICATIONS:

- Body: 304/316 Stainless Steel.
- Kinetic float: High-Density Polyethylene.
- Vacuum seal: Nitrile/EPDM
- Spacers, studs, tie rods, bolts, nuts and washers: 304/316 Stainless Steel.
- Cover: 304 /316 Stainless Steel
- O-ring spacers: Brass.
- O-rings: Nitrile/EPDM

### STANDARD FACTORY TEST

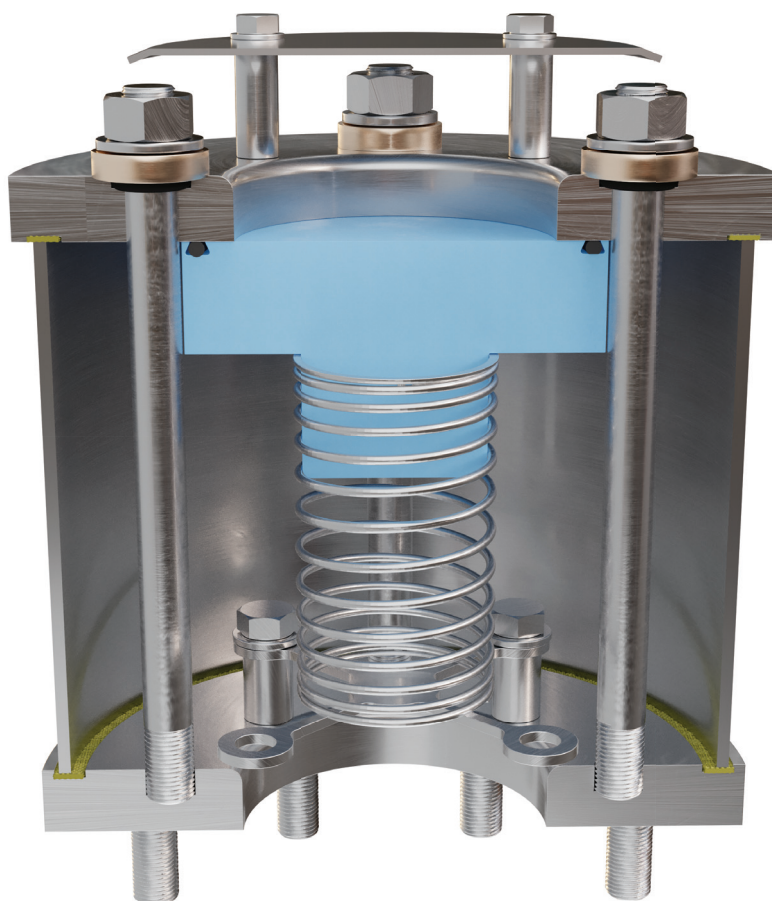
- Hydrostatic test at 1.5 times rated working pressure
- Low-pressure sealing - 1 kPa

### END CONNECTIONS

- Threaded valves - Male BSP/NPT
- Flanged valves - studded

### OPERATING TEMPERATURES

- 4°C to 75°C



NOMINAL SIZE	MODEL NUMBER	PRESSURE RATING	HEIGHT	DIAMETER	NOMINAL SIZE	MODEL NUMBER	PRESSURE RATING	HEIGHT	DIAMETER
50MM Threaded	50LR16	1600 kPa	190	120	150MM Flanged	150LR16	1600 kPa	270	285
50MM Flanged	50LR16	1600 kPa	120	165	200MM Flanged	200LR16	1600 kPa	330	340
80MM Flanged	80LR16	1600 kPa	185	200	250MM Flanged	250LR16	1600 kPa	400	405
100MM Flanged	100LR16	1600 kPa	200	220	300MM Flanged	300LR16	1600 kPa	450	460

# LT SERIES

## Air valve selection & technical specifications

### APPLICATION

- Potable water
- Settled Raw Water

### FUNCTIONS

- High-capacity air discharge
- High-capacity air intake
- Pressurized air release
- Surge alleviation

### FEATURES

- Optimum flow characteristics
- Lowest anti-shock switching rates
- Reliable sealing at low pressures (20 kPa)
- Compact design
- No dissimilar metal corrosion
- Anti-theft

### OPTIONAL EXTRAS

- Stainless steel cover screen
- ¼ inch bleed port with plug

### ANTI-THEFT

Air valve theft adversely affects the reliability and efficiency of pipelines. This problem is compounded when multiple air release valves are stolen simultaneously from the same pipeline. The Variant LT series cannot be removed from a pressurized pipeline when installed above a wafer isolating valve. The unique design enables maintenance to be performed without having to remove or disassemble the valve.

### SIZING

Correct sizing of air valves primarily depends on intake requirements under vacuum conditions. To safeguard pipelines and joints, it is key to limit negative pressures to a maximum of 35 kPa. This is achieved by ensuring sufficient airflow into the pipeline when vacuum conditions occur.

Valve sizing calculations must account for:

- Pipeline diameter
- Gradient
- Rupture percentage
- Scour valve sizes

After determining these parameters and calculating the required intake flow rates, the appropriate air valve size can be selected.

### SURGE ALLEVIATION

While valve sizing is dictated by required airflow during vacuum conditions, surge protection effectiveness depends significantly on the airflow rate at which the anti-shock mechanism engages.

#### INTAKE FLOW RATES AT 35 kPa VACUUM

VALVE SIZE MM	INTAKE FLOW RATES
50MMR	67 NL/S
50MM	190 NL/S
80MM	540 NL/S
100MM	870 NL/S
150MM	1865 NL/S
200MM	3135 NL/S

#### LT SERIES SWITCHING RATES AND PRESSURES

	50MMR	50MM	80MM	100MM	150MM	200MM
ANTI SHOCK ORIFICE SIZE MM	4	9	14	17	25	34
INLET SIZE MM	25	50	80	100	150	200
OUTLET SIZE MM	25	50	80	100	150	200
SWITCHING FLOW RATE L/S	9	25	48	130	350	500

## SPECIFICATIONS

*Type: Triple acting, three stage*

### MATERIAL SPECIFICATIONS:

- Body 304/316 Stainless Steel
- Automatic float: High-Density Polyethylene
- Kinetic float: High-Density Polyethylene
- Anti shock float: High-Density Polyethylene
- Automatic seal: EPDM
- Kinetic seal and o-rings: Nitrile / EPDM
- Spacers, studs, tie rods, nuts and bolts: 304/316 Stainless Steel
- Cover: 304 Stainless Steel

### STANDARD FACTORY TEST

- Hydrostatic test at 1.5 times rated working pressure
- Low-pressure sealing - 20 kPa
- Verify automatic orifice operation

### END CONNECTIONS

- Flanged studded.

### OPERATING TEMPERATURES

- 4°C to 75°C



NOMINAL SIZE	MODEL NUMBER	PRESSURE RATING	HEIGHT	DIAMETER	NOMINAL SIZE	MODEL NUMBER	PRESSURE RATING	HEIGHT	DIAMETER
50MM Flanged	050LT16R	1600 kPa	300	165	100MM Flanged	100LT16	1600 kPa	360	235
50MM Flanged	050LT25R	2500 kPa	300	165	100MM Flanged	100LT25	2500 kPa	360	235
50MM Flanged	050LT40R	4000 kPa	325	165	100MM Flanged	100LT40	4000 kPa	450	235
50MM Flanged	050LT16	1600 kPa	300	165	150MM Flanged	150LT16	1600 kPa	510	370
50MM Flanged	050LT25	2500 kPa	300	165	150MM Flanged	150LT25	2500 kPa	510	370
50MM Flanged	050LT40	4000 kPa	325	165	150MM Flanged	150LT40	4000 kPa	575	370
80MM Flanged	080LT16	1600 kPa	360	235	200MM Flanged	200LT16	1600 kPa	590	410
80MM Flanged	080LT25	2500kPa	360	235	200MM Flanged	200LT25	2500 kPa	590	410
80MM Flanged	080LT40	4000kPa	450	235	200MM Flanged	200LT40	4000 kPa	650	410



# LS SERIES

## Air valve selection & technical specifications

### APPLICATION

- Sewerage water
- Certain slurries

### FUNCTIONS

- High-capacity air discharge
- High-capacity air intake
- Pressurized air release
- Surge alleviation

### FEATURES

- Optimum flow characteristics
- Reliable sealing at low pressures (20 kPa)
- Compact design
- No dissimilar metal corrosion

### OPTIONAL EXTRAS

- Stainless steel cover screen
- ¼ inch bleed port with plug

### SIZING

Correct sizing of air valves primarily depends on intake requirements under vacuum conditions. To safeguard pipelines and joints, it is key to limit negative pressures to a maximum of 35 kPa. This is achieved by ensuring sufficient airflow into the pipeline when vacuum conditions occur.

Valve sizing calculations must account for:

- Pipeline diameter
- Gradient
- Rupture percentage
- Scour valve sizes

After determining these parameters and calculating the required intake flow rates, the appropriate air valve size can be selected.

### SURGE ALLEVIATION

The anti-shock float is kept up by a spring so it is always in operation.

### INTAKE FLOW RATES AT 35 kPa VACUUM

VALVE SIZE	INTAKE FLOW RATES
50MM	195 NL/S
80MM	458 NL/S
100MM	792 NL/S
150MM	1663 NL/S
200MM	2790 NL/S

### LS SERIES ANTI-SHOCK ORIFICE INFORMATION

	50MM	80MM	100MM	150MM	200MM
ANTI SHOCK ORIFICE SIZE MM	9	14	17	25	34
INLET SIZE MM	50	80	100	150	200
OUTLET SIZE MM	50	80	100	150	200



## SPECIFICATIONS

*Type: Triple acting, three stage*

### MATERIAL SPECIFICATIONS:

- Body 304/316 Stainless Steel
- Automatic orifice: 316 Stainless Steel
- Automatic float: High-Density Polyethylene
- Kinetic float: High-Density Polyethylene
- Anti shock float: High-Density Polyethylene
- Automatic seal: EPDM
- Kinetic seal and O-rings: Nitrile/EPDM
- Spacers, studs, tie rods, nuts, bolts and washers: 304/316 Stainless Steel
- Cover: 304/316 Stainless steel
- O-ring spacers: Brass

### STANDARD FACTORY TEST

- Hydrostatic test at 1.5 times rated working pressure
- Low-pressure sealing - 20 kPa
- Verify automatic orifice operation

### END CONNECTIONS

- Threaded valves - Male BSP/NPT
- Flanged valves - studded

### OPERATING TEMPERATURES

- 4°C to 75°C



NOMINAL SIZE	MODEL NUMBER	PRESSURE RATING	HEIGHT	DIAMETER
50MM Threaded	050LS16	1600 kPa	725	175
50MM Threaded	050LS25	2500 kPa	725	175
50MM Flanged	050LS16	1600 kPa	650	175
50MM Flanged	050LS25	2500 kPa	650	175
80MM Flanged	080LS16	1600 kPa	650	230
80MM Flanged	080LS25	2500 kPa	650	230

NOMINAL SIZE	MODEL NUMBER	PRESSURE RATING	HEIGHT	DIAMETER
100MM Flanged	100LS16	1600 kPa	650	200
100MM Flanged	100LS25	2500 kPa	650	235
150MM Flanged	150LS16	1600 kPa	850	285
150MM Flanged	150LS25	2500 kPa	850	300
200MM Flanged	200LS16	1600 kPa	850	340
200MM Flanged	200LS25	2500 kPa	850	360

# LSN SERIES

## Air valve selection & technical specifications

APPLICATION

Sewerage water

FUNCTIONS

- High-capacity air discharge
- High-capacity air intake
- Pressurized air release

FEATURES

- Optimum flow characteristics
- Reliable sealing at low pressures (20 kPa)
- Compact design
- Nylon body

OPTIONAL EXTRAS

- Stainless steel cover screen
- Threaded outlet

SIZING

Correct sizing of air valves primarily depends on intake requirements under vacuum conditions. To safeguard pipelines and joints, it is key to limit negative pressures to a maximum of 35 kPa. This is achieved by ensuring sufficient airflow into the pipeline when vacuum conditions occur.

Valve sizing calculations must account for:

- Pipeline diameter
- Gradient
- Rupture percentage
- Scour valve sizes

After determining these parameters and calculating the required intake flow rates, the appropriate air valve size can be selected.

LSN SERIES ANTI-SHOCK ORIFICE INFORMATION	
	50MM
ANTI SHOCK ORIFICE SIZE MM	9
INLET SIZE MM	50
OUTLET SIZE MM	50

INTAKE FLOW RATES AT 35 kPa VACUUM	
VALVE SIZE	INTAKE FLOW RATES
50MM	221 NL/S

## SPECIFICATIONS

*Type: Triple acting, three stage*

### MATERIAL SPECIFICATIONS:

- Body: Nylon UV stabilized
- Automatic floats: High-Density Polyethylene
- Kinetic float: High-Density Polyethylene
- Automatic nozzle 316 Stainless Steel
- Automatic seal: EPDM
- Kinetic seal and O-rings: Nitrile/EPDM
- Internal spacers and guides: 304/316 Stainless Steel
- External bolts, nuts, spacers: 304/316 Stainless Steel

### STANDARD FACTORY TEST

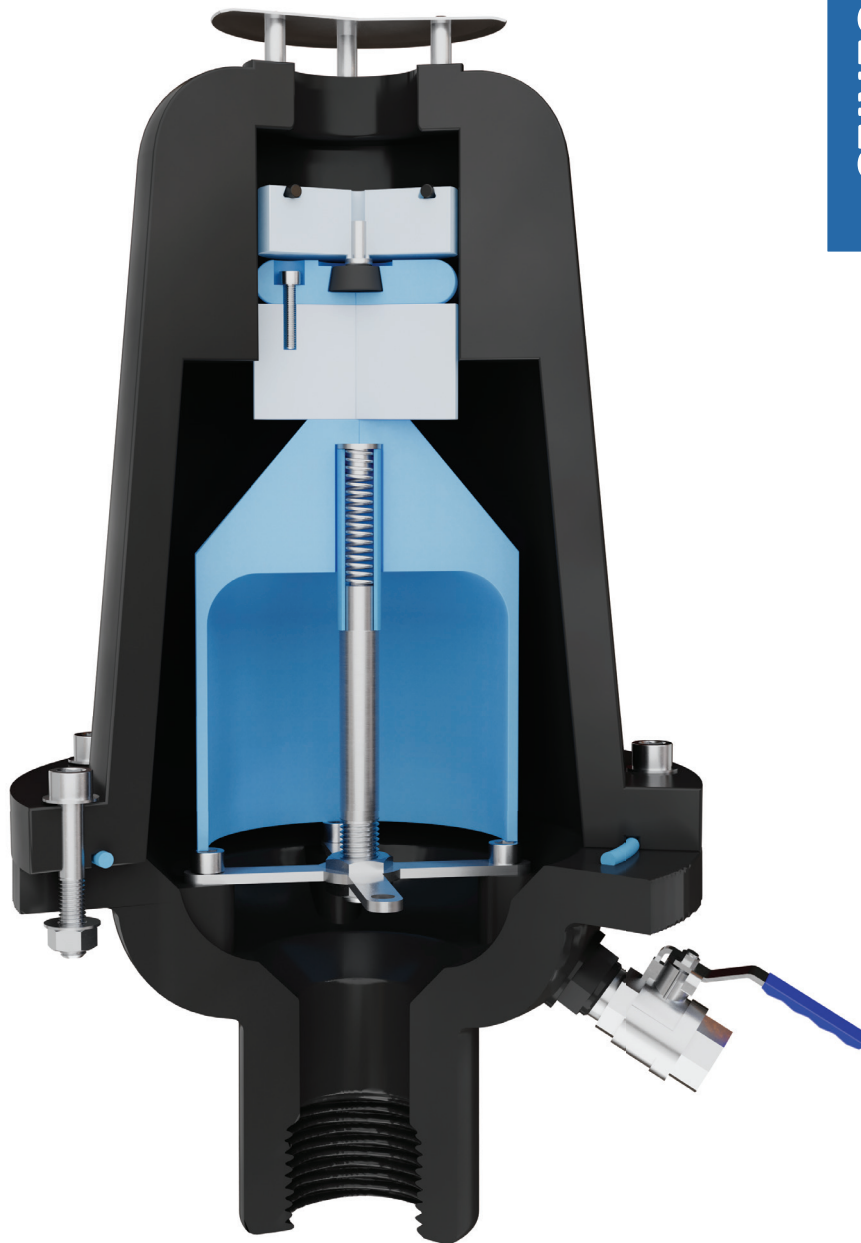
- Hydrostatic test at 1.5 times rated working pressure
- Low-pressure sealing - 20 kPa
- Verify automatic orifice operation

### END CONNECTIONS

- Threaded female BSP/NPT

### OPERATING TEMPERATURES

- 4°C to 75°C



NOMINAL SIZE	MODEL NUMBER	PRESSURE RATING	HEIGHT	DIAMETER
50MM Threaded	050LSN16	1600 kPa	460	272

# BREAK PRESSURE TANKS

## OVERVIEW:

Break pressure tanks provide a highly reliable solution for reducing pressure in small-scale bulk and reticulation water supply networks. Commonly used in rural areas where maintenance access is limited, they offer several advantages over conventional pressure-reducing valve installations.

## KEY ADVANTAGES:

- Require minimal maintenance
  - Do not “hunt” or compete with each other within the same system, unlike pressure-reducing valves
  - Offer a higher turn-down ratio than conventional pressure reducing valves
  - In the event of failure, the downstream pipeline remains protected from excessive pressure
  - Feature fewer components than conventional pressure reducing installations
  - Constructed from 3CR12 stainless steel, making them suitable for potable water systems
- Note: If raw water is used during system testing, surface corrosion may occur. It is recommended that only potable water be used in these tanks.
- 304 stainless steel tanks are available for higher corrosion resistance, though they carry an increased theft risk and cost more.

## OPERATION:

The break pressure tank operates using simple mechanical principles. Incoming water pressure opens the valve by exerting force on the sealing assembly. As the water level inside the tank rises, pressure increases on the diaphragm located at the base of the control valve.

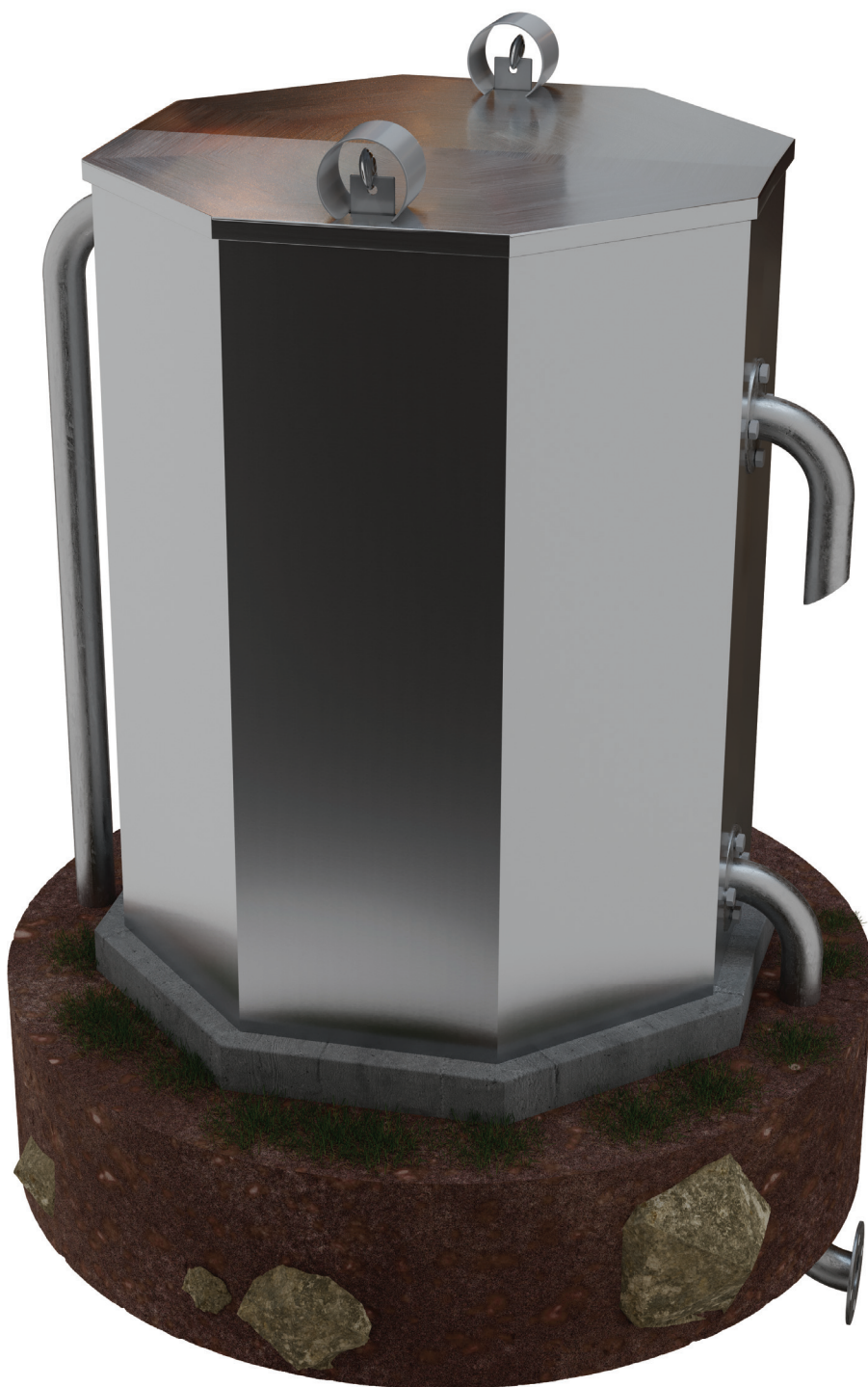
The diaphragm’s larger surface area ensures that once the tank reaches full capacity the resulting force, created by the static water pressure in the tank acting on the diaphragm, is sufficient to close the valve.

This system balances two opposing forces, pressure from incoming water and the diaphragm’s response, allowing the valve to open and close gradually in response to fluctuating system demand. This ensures that the velocity in the upstream pipeline remains within design limits, preventing water hammer and pressure surges.

## COMPONENTS

A complete break pressure tank system includes:

- 1000L 3CR12 Stainless Steel tank (304 optional)
- Basket strainer
- Butterfly valve for isolation
- Diaphragm-operated level control valve
- Inlet, outlet, and overflow pipework
- Lockable lid



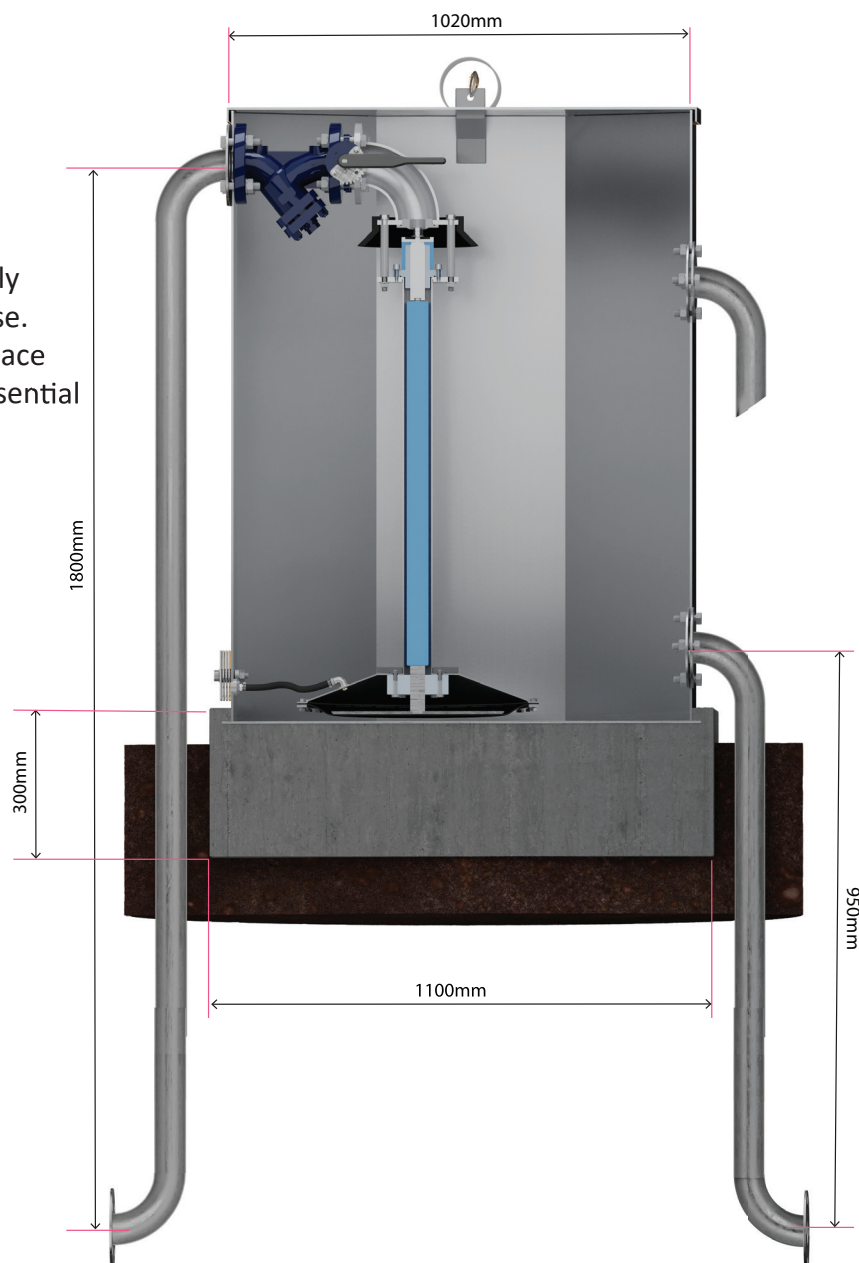
#### TECHNICAL SPECIFICATIONS

SIZE	MODEL	MAX OPERATING PRESSURE (STATIC PRESSURE)	MAX FLOW RATE
50MM	02LW10	90M	2.6 L/S
50MM	02LW16	160M	2.6 L/S
80MM	03LW10	90M	7 L/S
80MM	03LW16	160M	7 L/S
100MM	04LW10	90M	16 L/S
100MM	04LW16	160M	16 L/S



## OPERATION, MAINTENANCE & INSTALLATION

The break pressure tank must be securely installed by casting it into a concrete base. During installation, ensure the lid is in place to prevent distortion of the tank. It is essential that the tank is level to ensure proper operation and system performance.



### START UP - TROUBLESHOOTING GUIDE

SYMPTOM	PROBLEM	ACTION
Tank valve does not open.	a. Insufficient upstream pressure.	a. Restore upstream system pressure.
Tank does not meet demand.	a. Strainer blocked. b. Possible broken pipe downstream.	a. Clean strainer. b. Repair leak.
Tank overflows.	a. System is back feeding from another supply. b. Upstream pressure exceeds design limit. c. Bleed port is blocked.	a. Isolate conflicting zones. b. Consult manufacturer. c. Unblock bleed port to allow drainage.
Valve closes but leaks slightly	a. Valve seal or seat is damaged or faulty.	a. Remove seat retainer bolts and inspect/replace the seal or seat. Alternatively, replace the tank valve with a service exchange unit





☎ 039 315 7093 📠 082 331 0982 ✉ [info@lwtanks.co.za](mailto:info@lwtanks.co.za)  
 PO Box 53, Ramsgate, 4285 • Units 4&5 Business Park, Quarry Road, Uvongo  
[www.variantairvalves.co.za](http://www.variantairvalves.co.za)