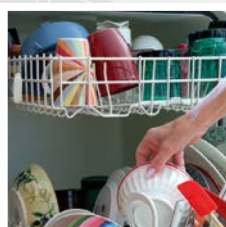
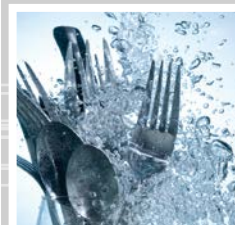
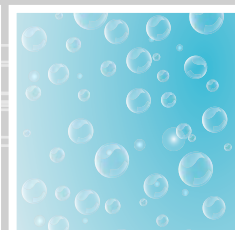




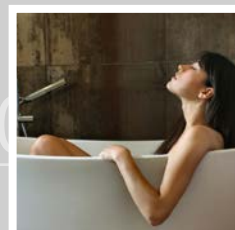
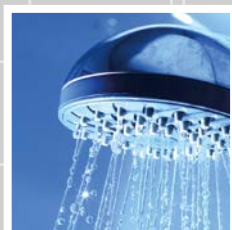
SIPHONS ABLÄUFE



HL Article

10. Air admittance valves

10



DN50
DN75

48

HL Air admittance valves

Basic information about design and installation

Air admittance valves nowadays are part of nearly every drainage system. The main task of these valves is, to care on the one hand for an atmospherical pressure compensation in the drainage system and on the other hand to avoid stench coming up from the sewer. Please find below answers to the main questions.

▲ Is it necessary to lead the downpipe over the roof?

Yes. Minimum one downpipe has to lead into the fresh air, which cares for the ventilation and also for the deaeration of the sewer system (also valid for passive houses acc. Austrian Standard B2501)

▲ What is the sense of air admittance valves?

When wastewater runs down the drainage system, it comes to a vacuum, which might suck out the water in the stench trap.

Air admittance valves care for pressure compensation and avoid nasty side effects like gurgling, emptying of the siphon or stench. They may be installed with little effort.

▲ When does one have to use air admittance valves?

Single or multiple drainage pipes, which are longer than **4 m** away from the downpipe have to be equipped with ventpipes (air admittance valves). Minimum one downpipe must be installed over the roof, all other downpipes may be ventilated with air admittance valves.

▲ Where are they used?

At downpipes above the last drained device (e.g. above the highest toilet. The advantage is, that the pipe may not be lead through the ceiling into the attic). Also at renovations, when a single trap has to be ventilated, to solve existing problems.

▲ How do air admittance valves work?

Inside the ventpipe a rubber disc regulates the air flow. This membrane closes the air inlet, when there is no pressure or overpressure and avoids air (or stench) coming up from the sewer. This is the reason, why these valves must be installed always vertically.

▲ Position for installation/operating temperature

Air admittance valves must be installed in that way, that enough air from the surrounding may get into the sewer system. The operating temperature is described in DIN1986-100 and EN12380. E.g. our ventpipe HL900N has, acc. to these standards, classification A-I, highest range from -20°C to +60°C.

▲ Is it allowed to use ventpipes below the flood level?

Yes, but only, when the drain pipe is secured against backwater.

▲ Is it allowed to use air admittance valves to ventilate lift stations?

No, lift stations must be connected to one main ventilation pipe, which leads above the roof.

▲ Maintenance

Take care, that air admittance valves are installed in places, where it is possible to clean or, in case of damage, replace them. For cleaning HL provides its ventpipes with an insect screen, which can be easily removed for cleaning. In general one can say, that, as long as there is no stench problem in the drainage system, the air admittance valve works for long time.

▲ Safety

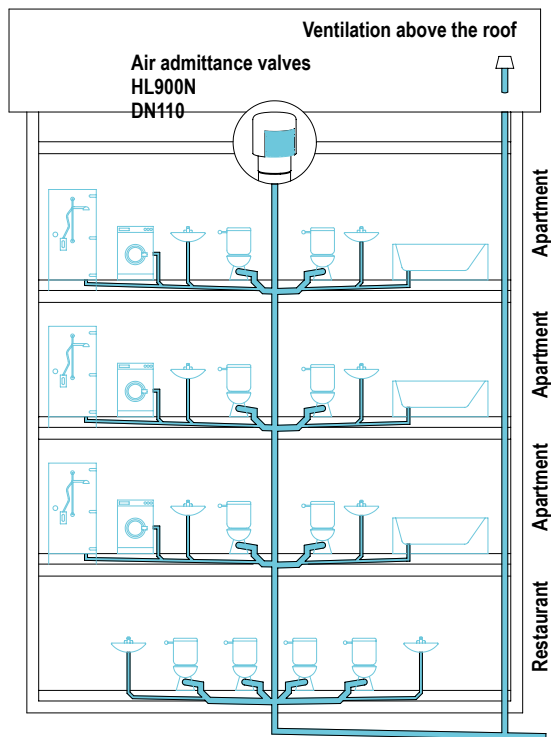
To reach highest functioning, we recommend to use only design approved and externally controlled types.

Relevant standards/directives

EN 12056-2 Gravity drainage systems inside of buildings
 EN12380..... Air admittance valves for soil and waste systems
 DIN 1986-100 Drainage systems for buildings and estates
 ÖNORM B2501 Drainage of buildings

HL Air admittance valve - Calculation - Function

Calculation example for an apartment building with restaurant according the calculation formula in EN 12056-2.



$$Q_{ww} = K \sqrt{\sum DU}$$

Definition of terms:

Q_{ww} = Waste water quantity (l/s)

K = Waste water coefficient

$\sum DU$ = Total connected value of drained units

Q_a = required quantity of air

Apartments

6 WC's with 7,5 l toilet tank	6 x 2,0 l/s = 12 l/s
6 washbasins	6 x 0,5 l/s = 3 l/s
3 bath tubs	3 x 0,8 l/s = 2,4 l/s
3 showers	3 x 0,6 l/s = 1,8 l/s
3 washing machines	3 x 0,8 l/s = 2,4 l/s
Total	21,6 l/s

Restaurant

4 WCs with 7,5 l toilet tank	4 x 2,0 l/s = 8 l/s
2 washbasins	2 x 0,5 l/s = 1 l/s
Total	9 l/s

$Q_{ww} \text{ Apartments} = 0,5 \times \sqrt{21,6} \text{ l/s} = 0,5 \times 4,65 \text{ l/s} = 2,33 \text{ l/s} (Q_{tot})$

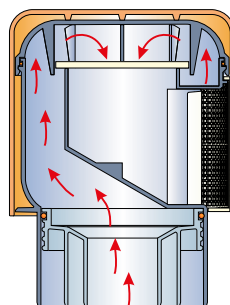
$Q_{ww} \text{ Restaurant} = 0,7 \times \sqrt{9} \text{ l/s} = 0,7 \times 3 \text{ l/s} = 2,1 \text{ l/s} (Q_{tot})$

$Q_a = 8 \times (Q_{tot} \text{ Apartments} + Q_{tot} \text{ Restaurant})$

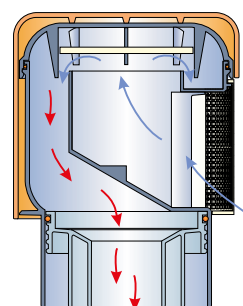
$Q_a = 8 \times 4,43 \text{ l/s} = 35,44 \text{ l/s}$

Airflow capacity of HL900N = 37 l/s

Function



At overpressure in the sewer system the valve stays closed. No stench can get out.



At vacuum in the sewer the valve opens and the inflowing air causes pressure compensation.

Typical waste water coefficients (K)

Irregular use like e.g. in apartment buildings, b&bs, offices	0,5
Regular use like e.g. in hospitals, schools restaurants, hotels	0,7
Frequent use like e.g. in public toilets and/or showers	1
Special use like e.g. in laboratories	1,2

Excerpt from EN 12056-2 chart 2

Waste water values

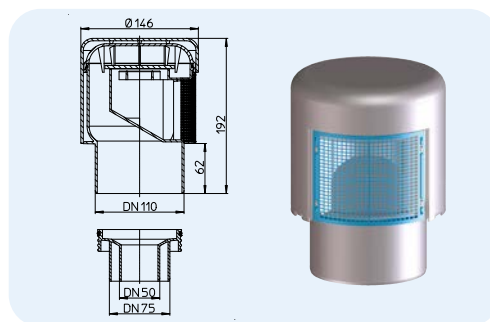
Drained unit	Value
DU (l/s)	
Washbasins, bidet	0,5
Shower without plug	0,6
Shower with plug	0,8
Bathtub	0,8
Kitchen sink	0,8
Dish washer	0,8
Washing machine up to 6 kg	0,8
Washing machine up to 12 kg	1,5
WC with 7,5 l toilet tank	2,0
Floor drain DN50	0,8
Floor drain DN70	1,5
Floor drain DN100	2,0

HL Air admittance valves – Products – Data

HL900N Air admittance valve with reduction

Data

Material	PP
Connection dimension	DN110/75/50 Socket
Airflow capacity	37 l/s
Standard	EN 12380, type A1 design approved
Recommended for	Ventilation of single or multiple downpipes
Additional information	with removable insect screen (easy cleaning), solid rubber disc, double wall thermal insulation and reduction DN50/75

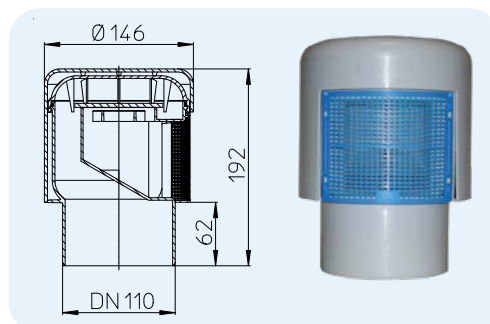


HL-No.	Dimension	Weight	EAN	Piece/package
900N	DN110/75/50	550 g	+909001	10

HL900NECO Air admittance valve

Data

Material	PP
Connection dimension	DN110
Airflow capacity	37 l/s
Standard	EN 12380, type A1 design approved
Recommended for	Ventilation of single or multiple downpipes
Additional information	with removable insect screen (easy cleaning), solid rubber disc and double wall thermal insulation

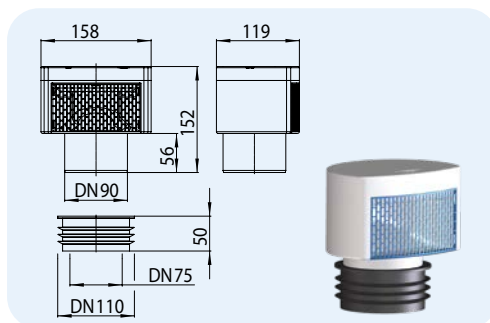


HL-No.	Dimension	Weight	EAN	Piece/package
900NECO	DN110	470 g	+016839	10

HL901 Air admittance valve

Data

Material	PP
Connection dimension	DN75/110 plain pipe DN90 Socket
Airflow capacity	32 l/s
Standard	EN 12380, type A1 design approved
Recommended for	Ventilation of single or multiple downpipes
Additional information	with removable insect screen (easy cleaning), solid rubber disc and double wall thermal insulation, flat!

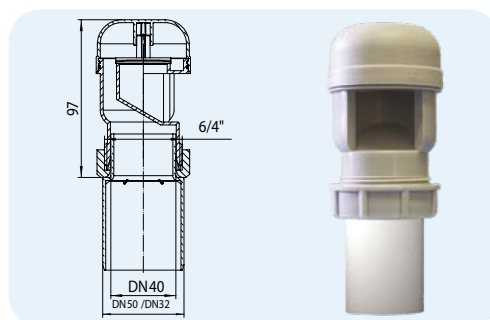


HL-No.	Dimension	Weight	EAN	Piece/package
901	DN75/90/110	362 g	+031269	10

HL904 Air admittance valve

Data

Material	PP
Connection dimension	DN32/50 Socket DN40 plain pipe
Airflow capacity	5,5 l/s
Standard	EN 12380, type A1 design approved
Recommended for	Ventilation of single drain units and collected units
Additional information	with adapter

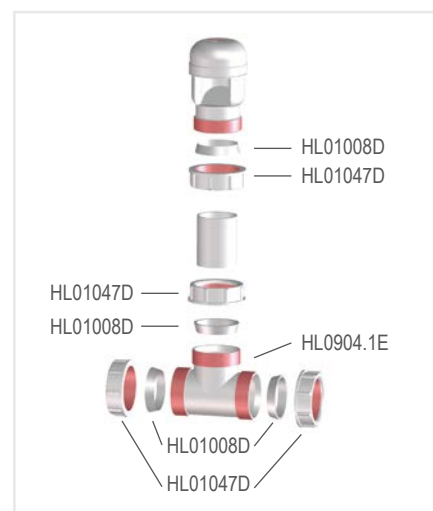
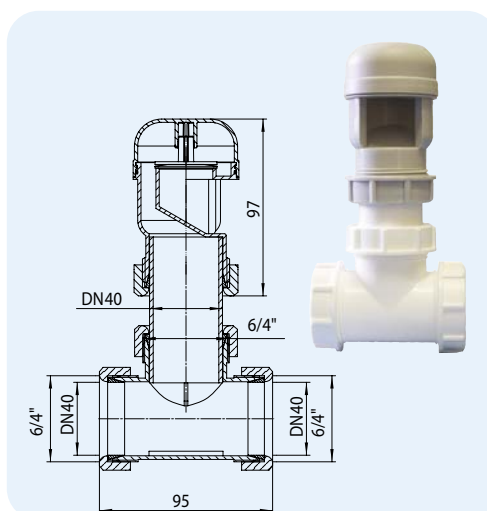


HL-No.	Dimension	Weight	EAN	Piece/package
904	DN32/40/50	90 g	+909049	10

HL904T Air admittance valve with T-connector

Data

Material	PP
Connection dimension	DN40 plain pipe
Airflow capacity	5,5 l/s
Standard	EN 12380, type A1 design approved
Recommended for	Ventilation of single drain units and collected units
Additional information	with T-connector and adapter

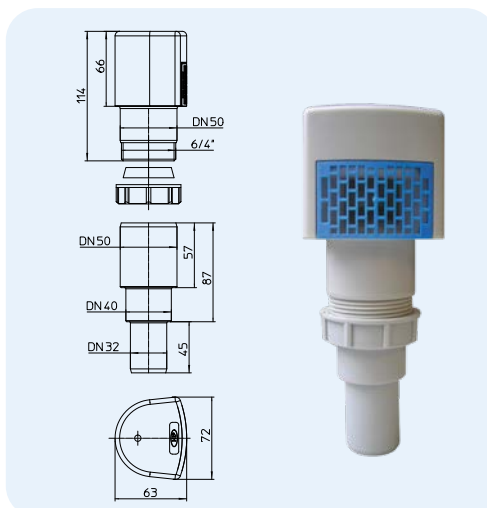


HL-No.	Dimension	Weight	EAN	Piece/package
904T	DN40	136 g	+919048	1

HL903 Air admittance valve

Data

Material	ABS/PP
Connection dimension	DN32/50 Socket DN40 plain pipe
Airflow capacity	8 l/s
Standard	EN 12380, type A1 design approved
Recommended for	Ventilation of single drain units and collected units
Additional information	With removable insect screen, adapter and double wall thermal insulation.

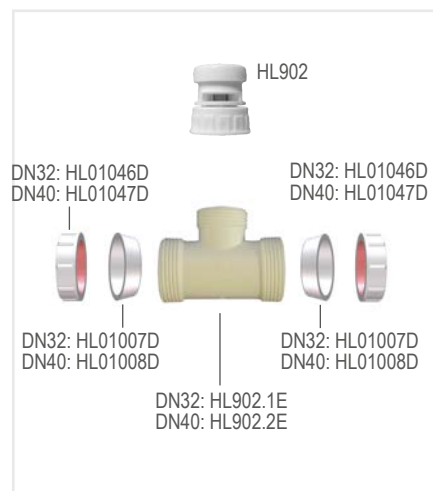
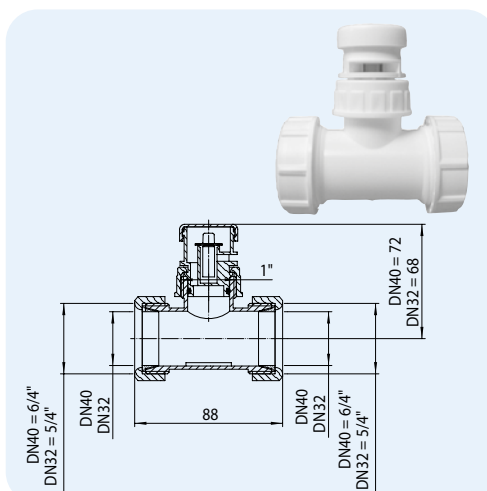


HL-No.	Dimension	Weight	EAN	Piece/package
903	DN32/40/50	139 g	+029013	10

HL902T Air admittance valve with T-connector

Data

Material	PP
Connection dimension	HL902T/30: DN30 plain pipe HL902T/40: DN40 plain pipe
Standard	EN 12380
Recommended for	Ventilation of single drain units



HL-No.	Dimension	Weight	EAN	Piece/package
902T/30	DN32 x 1"	75 g	+004836	1
902T/40	DN40 x 1"	80 g	+004850	1

HL905N Flat concealed air admittance valve complet with white cover

Data

Material	PP/ABS
Connection	DN50/75
Airflow capacity	13 l/s
Standard	EN 12380-A1, EN 12056-2

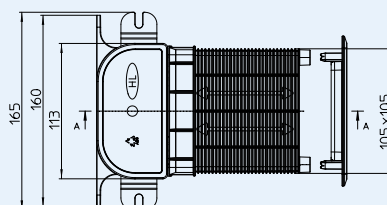
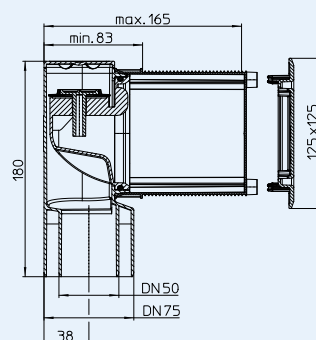


Recommended for In-wall installation, ventilation of secondary downpipes and single- or multiple downpipes, which are more than 4m away from the downpipe (EN12056-2)

Due to the flat design an installation in plasterboard walls with 75mm inner dimension is possible

Additional information By installing this air admittance valve, you make sure, that enough air is getting into the outlet pipes of the whole bathroom, so the water inside the trap is not sucked out by vacuum, which might cause bad odour. The functional cartridge is removable for cleaning and revision and, additionally, allows an open access to the sewer system. Please see installation video at www.hl.at

HL905N



HL905N.2E

HL905N.3E



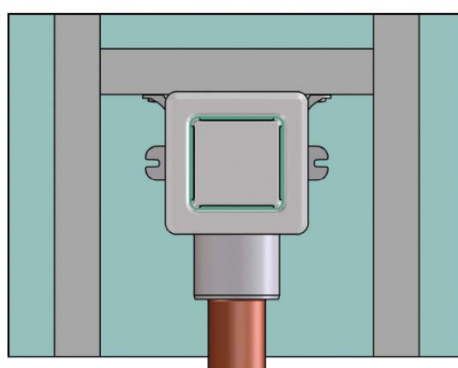
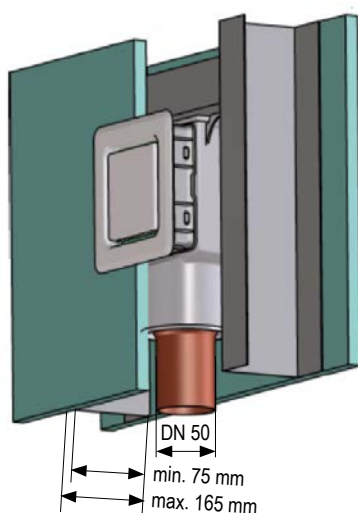
HL905N.1E



HL905.1



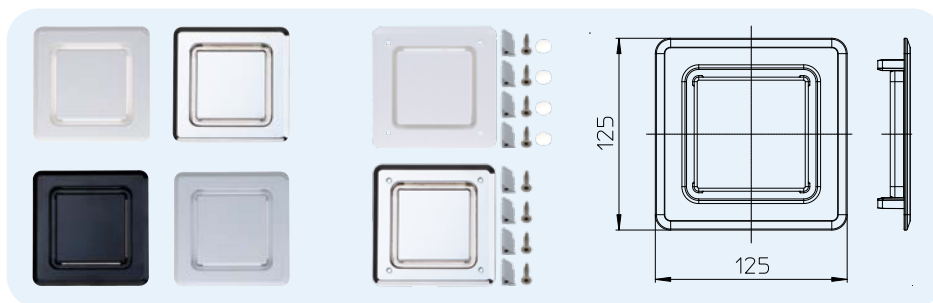
HL-No.	Dimension	Cover	Weight	EAN	Piece/package
905N	DN50/75	white	383 g	+049752	1
905N.0	DN50/75	without cover	336 g	+049769	1



HL905.1, (.2), (.3), (.4) Cover plate for HL905N
HL905.1V, (.2V) Screwable cover for HL905N

Data

Material	HL905.1: ABS
Dimension	125 x 125 mm
Recommended for	HL905N



HL-No.	Dimension	Colour	Weight	EAN	Piece/package
905.1	125 x 125 mm	White	47 g	+036080	1
905.1V	125 x 125 mm	White	78 g	+603814	1
905.2	125 x 125 mm	Chromated	47 g	+037117	1
905.2V	125 x 125 mm	Chromated	78 g	+603815	1
905.3	125 x 125 mm	Black	47 g	+037124	1
905.4	125 x 125 mm	Gray	47 g	+037131	1

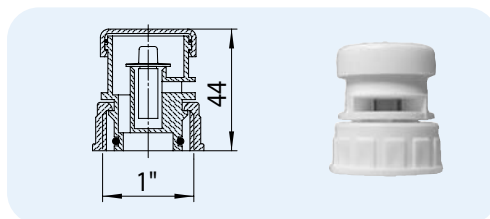


HL Air admittance valves – Accessories – Data

HL902 Air admittance valve

Data

Material	PP
Connection dimension	1" IG
Standard	EN 12380
Recommended for	Ventilation of single drain units

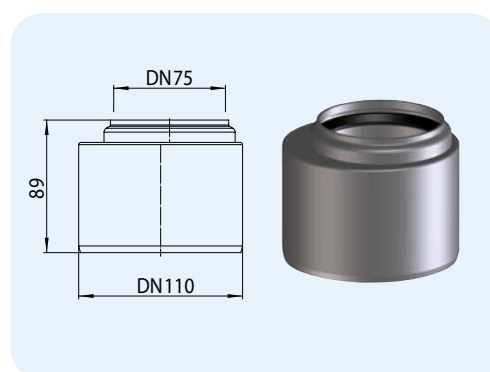


HL-No.	Dimension	Weight	EAN	Piece/package
902	1"	30 g	+909025	10

HL0317.4E Reduction DN75 x DN110

Data

Material	PP
Connection dimension	DN75 socket DN110 straight end
Recommended for	Reduction of HL905

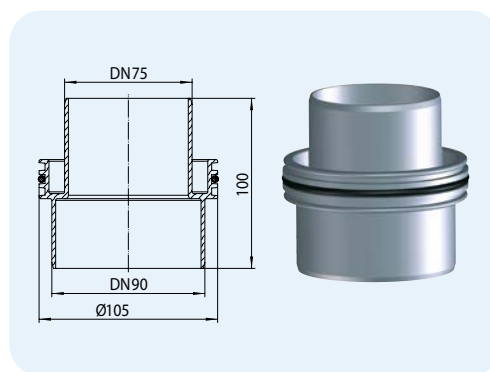


HL-No.	Dimension	Weight	EAN	Piece/package
0317.4E	DN75/110	104 g	+317042	1

HL990 Reduction

Data

Material	PP
Connection dimension	DN75/90
Recommended for	fits to HL900N (ECO)



HL-No.	Dimension	Weight	EAN	Piece/package
990	DN75/90	97 g	+018246	1