BOVEMA

LTV - LTV-N

Air Handling Unit

Aluminium. According EN 12101

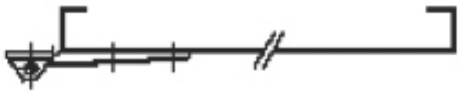
- Mechanical ventilation.
- Heating.
- Cooling.
- Filtration.
- Heat recovery.
- Recirculation.
- Wetting.
- Dehumidification.

BOVEMA

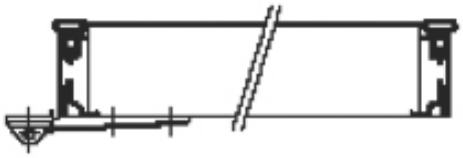
S-air International B.V. ● Hogelandseweg 79, 6545 AB Nijmegen
Tel: 0031-(0)24-3732373 ● Fax: 0031-(0)24-3737456
Internet www.s-air.nl ● E-mail: info@s-air.nl

LTV - LTV-N

Panel design

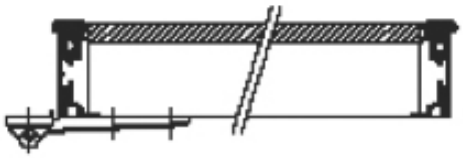


Single-skin aluminium panel



50 mm double skin aluminium thermally insulated panel

20 mm double skin aluminium thermally insulated panel



50 mm thermally insulated panel:
Extrenal skin, aluminium
Intrenal skin, plastic

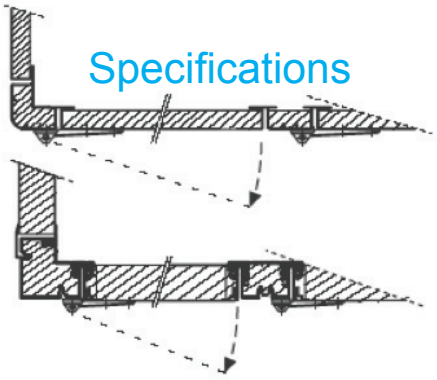
Max. air volumes for LTV in m³/hr.

Type	Air extraction	Air supply with filtration/heating	Air supply with cooling
406	5000	4000	3100
508	8000	7000	6500
610	11000	10000	9000
712	17000	15000	12000
812	24000	22000	15000
814	27000	26000	21500
916	35000	33000	30000
1018	47000	45000	42500
1222	55000	52000	50000

Other specificaions available on request.

Applications

Specifications



Filter options

Type Filter	Mat filter	Bag filter	Compact filter	High performance filter
G1	X	-	-	-
G2	X	-	-	-
G3	X	-	-	-
G4	X	X	-	-
F5	-	X	-	-
F6	-	X	-	-
F7	-	X	-	-
F8	-	X	X	-
F9	-	-	X	-
H10	-	-	X	-
H11	-	-	-	X

Other specificaions available on request.

Filter maaterial	
- Filter mat G1 - Compact filter - High performance filter	Glass-fiber medium
- Bag filter and other Filters	Synthetic medium

On request, bag filters and compact filters can be treated with a biostatic agent to inhibit the growth of bacteria and moulds.

Technical information

Type	A	B non-insulated	B non-insulated	C	D	E	F	G	H	K
406	740	680	700	50	400x400	250	400	190	400	450
508	940	880	900	50	500x500	350	600	235	500	500
610	1140	1080	1100	50	600x600	450	800	335	600	600
712	1340	1280	1300	50	700x700	550	1000	435	700	650
812	1340	1280	1300	50	700x700	550	1000	435	700	650
814	1540	1480	1500	50	800x800	700	1000	535	800	750
916	1800	1700	1720	50	900x900	800	1200	555	1000	850
1018	2000	*1920	*1940	55	1000x1000	900	1400	*785	1000	850
1222	2210	*2340	*2340	55	1200x1200	1000	1600	*775	1000	850

*For assembly flanges, internal dimensions -/- 20 mm

Type	L-1	L-2	L-3	L-4	L-5	L-6	L-7	L-8	L-9	L-10	L-11	L-12
406	1320	1680	2340	2640	3960	5280	1320	1680	2340	2640	3960	5280
508	1720	1720	2580	3040	3900	4760	1720	1720	2580	3040	3900	4760
610	1620	2120	2680	3180	4240	5300	1620	2120	2680	3180	4240	5300
712	1920	2520	3180	3780	4440	5700	1920	2520	3180	3780	4440	5700
812	1920	2520	3180	3780	4440	5700	1920	2520	3180	3780	4440	5700
814	2220	2920	3680	4380	5840	7300	2220	2920	3680	4380	5840	7300
916	3440	4300	5160	6020	6880	7740	3440	4300	5160	6020	6880	7740
1018	3840	4800	5760	6720	7680	8640	3840	4800	5760	6720	7680	8640
1222	4260	4970	5680	5680	7100	8520	4260	4970	5680	5680	7100	8520

Size in mm.

Heating/cooling in kW.

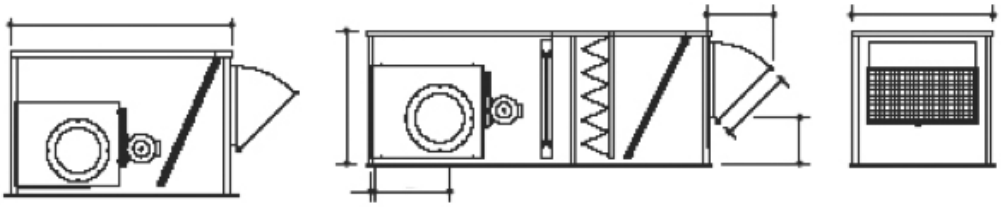
Type	Heating ww 70/50°C, ti 0°C				Cooling ti 28°C, rv 0°C		
	1-row	2-row	3-row	4-row	3-row(kw)	4-row(kw)	4-row(dx)
406	13,4	25,5	35	44	12,5	16,1	9,8
508	26	47,5	68	82,4	26	32,5	20,3
610	43,7	80,7	105	128	41	52	34
712	76	137	12	208	67	82	58
812	87	163	216,5	262	72	90	60,8
814	116,4	204	277	328	109	134	84
916	153	275	362	430	145	182	119
1018	206	364	488	590	194,5	255	157,5
1222	270	485	628	733	272	334	214

*kw= feed water 6/10°C. dx = direct expansion. R 407C verd. temperatuur 7°C. ti = Air inlet temperature.

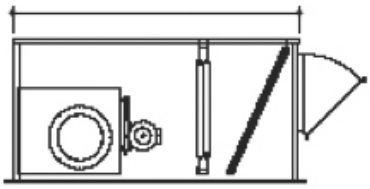
LTV - LTV-N

Standard designs

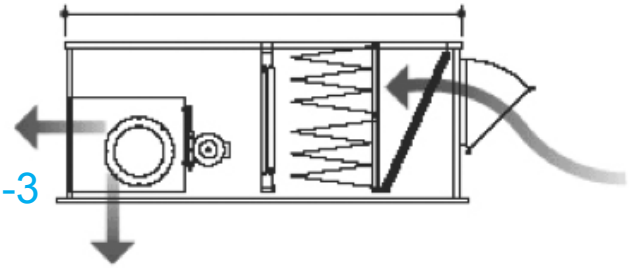
L-1



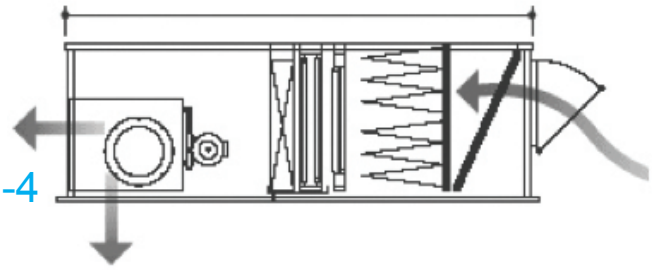
L-2



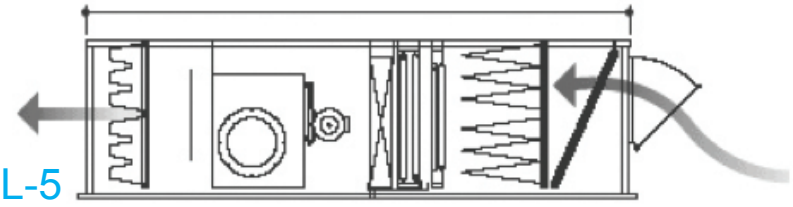
L-3



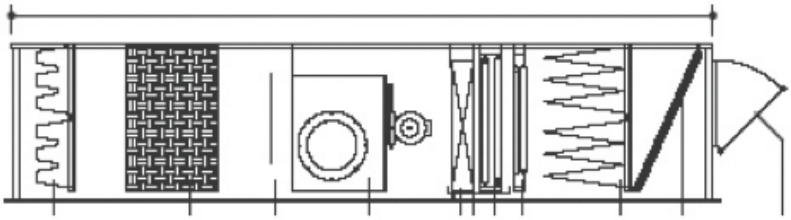
L-4



L-5



L-6



BOVEMA

Description

The LTV and LTV-N air handling units are designed to cover the various requirements of heating, cooling, heat recovery, humidification and air filtration, for both commercial and industrial buildings. The modular construction and large choice of design capacities make it possible to customise the systems to meet exact customer and project specifications. The lightweight, corrosion-free aluminium construction allows for external or internal installation of the units. External installation saves space and minimises the effects of unwanted noise, with double skin insulation protecting the conditioned air from the effects of the environment. The units have a smooth external surface to facilitate cleaning in hygiene sensitive areas such as the food industry. Large hinged doors provide easy access for simple maintenance or cleaning of the internal components. The production of LTV and LTV-N units are carried out in a quality assured factory, certified according to the NEN-EN-150 9002 standard. The standard units are manufactured from corrosion resistant aluminium to ensure many years of trouble free operation, and special applications can also be catered for by the manufacture of units with internal housings in stainless steel or chemical resistanct materials. This allows for the use of aggressive cleaning materials, or methods where the procress requires it for hygienic air flow conditions over a long period of operation.

Operating principles

Outside air is drawn in via a weather protected hood fitted with a stainless steel bird mesh. The air then passes through a fan unit and other modules, which regulate the air flow and condition it as required, prior to discharge into the building. The following modules may be incorporated in any required arrangement to meet the system design air quality requirements.

Warm air re-circulation

Using a module with a set of opposed blade dampers, fresh air and internal room air may be mixed together in the correct proportions. Fixed or operable damper system allow for fixed or variable percentages of fresh/re-circulated air to be mixed, with proportional or fixed maximum values as required.

Air filtration

Flat panel or bag type filter systems can be incorporated to protect the heating or cooling elements or to act as a pre-filter units for a higher class of final filter. Bag filters up to class EU9 or HEPA quality filters are available, fitted into corrosion-free frames for ease of inspection and replacement as required. The final filter may installed after the fan section. Pressure differential manometers or time clock systems are available to monitor the filter system performance or operating cycle times. A plastic conden sate collection tray under the filters may be supplied as an optional extra.

Air cooling

Direct expansion, split package, refrigeration type air conditioning units or chilled water cooling coils may be provided to cool the air as it passes through the air handling unit. Plastic condensate collectors and drainage trays may be built into the cooling module as required.

Indirect air heating

Indirect air heating elements may be provided within the heating module. Hot water, steam, thermal transfer oil systems or indirect gas fired heat exchangers may be fitted, and where these operate in combination with air re-circulation systems, a most economical solution may be provided for many applications.

Direct air heating

A gas fired, direct air heating system may also be provided using a special heating module.
It is not possible to combine this alternative with air re-circulation modules.

Heat recovery

In areas with high process or other heat gains, a heat recovery system may be appropriate as an energy economy measure, and to accomodate this require ment a special heat recovery module is available. This module may incorporate a plate type heat exchanger, a heat wheel exchanger unit or a twin coil heat exchange unit, with the correct type being selected to optimise the heat load characteristics of the building.

LTV - LTV-N

Service

BOVEMA offers a comprehensive service covering the specification and installation of our products.

BOVEMA

S-air International B.V.
Hogelandseweg 79
6545 AB Nijmegen
The Netherlands
Internet www.s-air.nl
Tel: 0031-(0)24-3732373
Fax: 0031-(0)24-3737456
E-mail: info@s-air.nl

Subject to technical changes and misprints.

Fans

Efficient, twin entry, centrifugal fans are chosen for each application. The fans have backward or forward curved blades, selected to meet the system resistance and fan characteristics.

Motors

The fan motors are of foot mounted construction, with aluminium casings, all as supplied by a major West European manufacturer to ensure compliance with Europe an standards and C.E. regulations. Motors may be single, two speed or frequency-con trolled units. All are manufactured to IP55 standard, class F insulation. To ensure compatibility with existing motors in a particular building, we can standardise our units with motors from the clients existing manufacturer, where suitable motors are available.

Drive

The drive between fan motor and fan is by a mutiple V-belt system with taper-lock adapter sleeves for optimum operation, long life and simplicity of maintenance.

Noise reduction

Sound attentuation modules are available to reduce the volume of noise entering or leaving the building. The attentuators are specifically designed to provide acceptable sound level conditions inside or outside the building, to meet the specified project requirements.The attentuators are fabricated under control, to our own specification, and are manufactured from corrosion resistant materials, being purpose built for each project.

Applications

- Commercial buildings
- Hospitals
- Swimming baths
- Industrial buildings
- Hotels
- etc.

Design

The standard units are available with construction from single skin aluminium, double skin thermally insulated aluminium or double skin thermally broken and insulated aluminium. Special units are available as the standard unit but with the addition of a stainless steel or plastic internal housing.

Controls

All systems may be operated by manual operation of the appropriate electrical switches. Semi-automatic or fully automated operation is also available using appropriate control panels and systems to control the re-circulation mode, air temperature, humidity levels or any other required parameters. The control systems may be interfaced with building management systems or other external control or sensor systems as required. Factory fitted local control panels with thermal overload or other protective systems are available if required.

Materials

- Corrosion resistant aluminium.
- ALMg3 aluminium sheet.
- ALMgSi 0.5 extruded aluminium sections.
- Weather-resistant EPDM seals.
- All fixings are in stainless steel.

General

The LTV and LTV-N air handling units are normally delivered as fully assembled units to specified requirements. Where site requirements are restricted the units may be delivered as individual modules for site assembly. The standard product is in mill finished natural aluminium. A polyester powder paint finish to any RAL colour is also available. A complete range of ductwork, dampers and air distribution grilles, may be available for suitable projects. Due to their relatively low weight the LTV and LTV-N air handling units may be installed in most internal or external locations, including installation into glazed or polycarbonate roof light areas. The weathering flanges for roof or wall penetrations are specifically designed to suit each application and are of fully welded construction to ensure they are completely waterproof.