VTS

ventus

N-TYPE

Attractive price

On stock availability

Monocoque technology

DUCT AIR CONDITIONING

4 continents
27 countries
84 VTS offices

VTS Group

Established 24 years ago, the VTS Group is a leading supplier of air handling units, as well as heating appliances. The VTS Capital Group comprises more than ten regional companies located in Europe, the Middle East and the Asia - Pacific region.

The company offers its customers an innovative series of VENTUS, VENTUS N-TYPE and VENTUS S-TYPE ventilation and air handling units, as well as a VTS EUROHEAT product range, combining high quality VOLCANO heaters and DEFENDER air curtains.

BRAND
YOU CAN TRUST

VTS products conform to a number of European standard requirements in terms of their construction and operational parameters.

We fulfill all the European product security standards requirements (CE) as well as the principles for an integrated system of ensuring quality and environmental protection ISO 9001/ISO 14001.

ISO 9001
ISO 14001

ISO 9001 guarantees the complete repeatability of all the VTS units. ISO 14001 certifies the efficiency of the environmental management system.

CE

The VTS units conform to the security standards compliant with the European Union guidelines.

VTS
PRODUCT RANGE

VTS is not only the supplier of suspended, duct and standing air handling units, but also the manufacturer of high quality DEFENDER air curtains and VOLCANO water heaters offered under VTS EUROHEAT brand.

VENTUS air handling units was developed with the use of state-of-the-art technology, advanced materials engineering and with absolutely innovative solutions implemented. This allows VTS to offer reliable, energy efficient and fully adopted to market and customer's requirements devices.

VTS EUROHEAT

VOLCANO water heater

is an integral part of modern heating systems.

- comfort of dwelling in medium and large cubature rooms,
- reliable European quality and attractive price,
- low maintenance cost,
- regulation of parameters within the full range,
- high fan efficiency,
- easy and simple installation,
- unit low weight, on-line availability.

DEFENDER air curtain

is able to maintain a protective barrier at the building entrance.

- protection against cold air, dust, exhausts, wind and insects,
- exceptional housing and state-of-the-art technology,
- three sizes (1m; 1.5m; 2m) and two models: with water and electric heater,
- safe, maintenance-free operation,
- reliable European quality, attractive price,
- on-line availability.

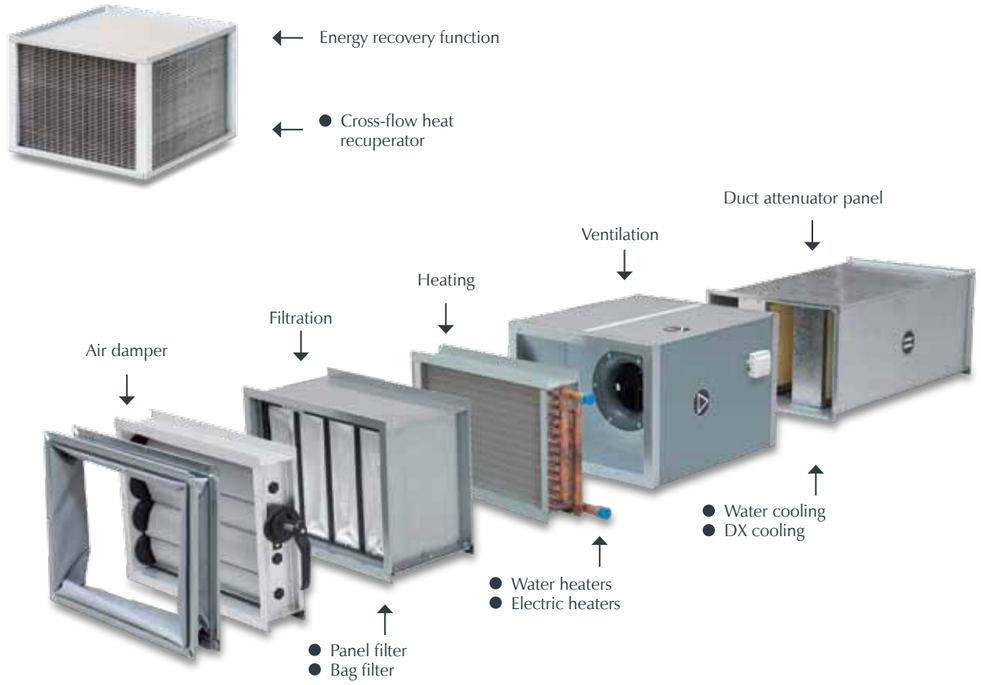
VTS EUROHEAT

VENTUS N-TYPE
FUNCTIONS

The N-TYPE air handling units are designed for installation and operation in ventilation systems with rectangular ducts, indoor. Each function is provided by a separate section, which enables the customer to freely configure the sequence of sections.

Available functions:

- air filtration classes EU4, EU5, EU7,
- water heating,
- electric heating,
- water cooling,
- direct refrigerant expansion cooling,
- noise attenuation,
- energy recovery.



ventus N-TYPE

Maximum air flow velocity in the cross section [m/s]

G4	F5	F7	WH	CW / DX	EH	V
4.26	4.66	3.59	4.74	4.54	5.50	4.60

Maximum air flow rate for the sections [m³/h]

Size	G4	F5	F7	WH	WC/DX	EH	V
NVS 23	2200	2200	2198	2200	2200	2200	2200
NVS 39	3984	4190	3232	4226	2901	4500	4500
NVS 65	5822	5865	4525	6415	4733	6500	6500
NVS 80	7967	8547	6593	8550	6804	8550	8550

** P - parameters of cross-flow heat recuperator are specified on page 14*

Monocoque frameless housing

- based on “Sandwich” type panels, provides compact and strong construction
- minimises thermal bridges and condensation effect

Plug - Fan type fan assembly

- direct drive of fan
- PLUG type fan rotors with aerodynamic blades bent to the back of the unit

Control system

- controller integrated HMI OPTIMA user interface
- provides convenient and simple adjustment of air parameters

N-CAD selection program

- provides accurate calculation of output parameters of the unit
- integrated with application which automatically generates quotation documents

On stock availability

- possibility of full and continuous availability

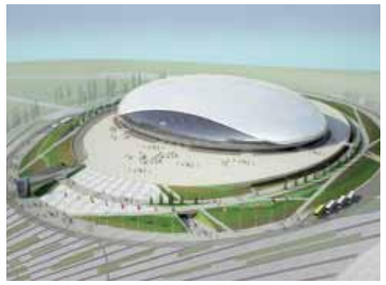
Attractive price

- devices available at competitive prices

ADVANTAGES

VENTUS N-TYPE belongs to the duct air handling units market, and the 4 sizes of the product cover range from 2000 to 8500 m³/h. The offer includes air handling basic functions, which are provided by a separate sections.






APPLICATION

The N-TYPE air handling units are designed for indoor operation as duct AHUs. They are used in any types of buildings, in which heating, ventilation or air conditioning functions are ensured by a duct system.

- sport facilities
- garages
- dwelling-houses
- service centres
- trading centres
- industrial facilities

SYMBOLS AND CODING

NVS

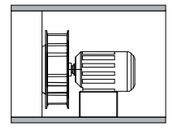
Size of AHU

nominal air flow [m³/h x 100]

23	39	65	80

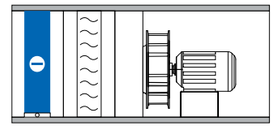
BASE AND ADDITIONAL FUNCTIONS

BASE UNITS



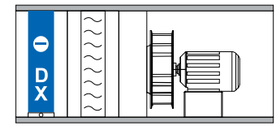
Ventilation V

- fan section (ventilation)



Ventilation with water cooling coil

- fan section with water coil cooler (3-row exchanger)



Ventilation with DX cooling coil DX3.1V

- fan section with direct expansion cooler (3-row mono-section exchanger)

HEATING

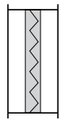
WH3, WH2 water heaters

- ducted water coil heater (3-row exchanger)
- ducted water coil heater (2-row exchanger)

EH (18-72 kW) electric heaters

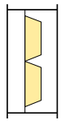
- ducted electric heater (18 kW)
- ducted electric heater (36 kW)
- ducted electric heater (54 kW)
- ducted electric heater (72kW)

AIR FILTRATION



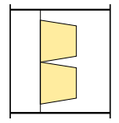
P.G4 (EU4) Flat filter

- ducted flat filter (EU4)



B.F5 (EU5) Bag filter

- ducted bag filter (EU5)



B.F7 (EU7) Bag filter

- ducted bag filter (EU7)

NOISE ATTENUATION

S noise attenuation panels

- set of noise attenuator panels

HEAT RECOVERY FUNCTION

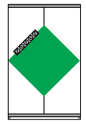
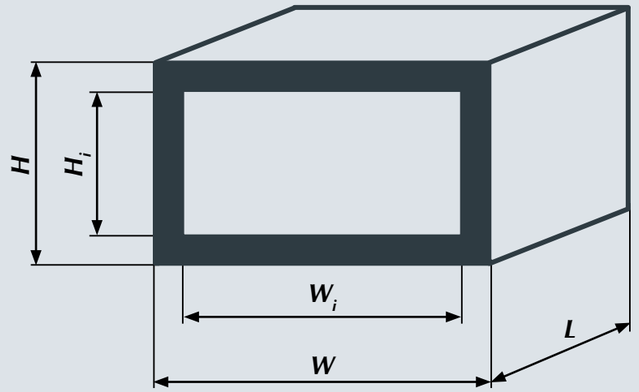


TABLE OF CONTENTS

DIMENSIONS OF THE SECTIONS AND FUNCTIONAL ELEMENTS

NVS 23	Code	W [mm]	W_i [mm]	H [mm]	H_i [mm]	L [mm]	M [kg]
Fan section (ventilation)	**NVS 23 V**	680	600	402	322	757	32
Fan section with water cooling coil (3-row exchanger)	**NVS 23 WC3.V**	680	600	402	322	1 122	51
Fan section with direct expansion cooler (3-row mono-section exchanger)	**NVS 23 DX3.1.V**	680	600	402	322	1 122	51
Ducted water heating coil (3-row exchanger)	**NVS 23 WH3**	660	600	373	318	112	9
Ducted water heating coil (2-row exchanger)	**NVS 23 WH2**	660	600	373	318	85	7
Ducted electric heater (18 kW)	**NVS 23 EH18**	660	600	373	313	206	6
Ducted flat filter (EU4)	**NVS 23 PG4**	660	600	373	290	132	5
Ducted bag filter (EU5)	**NVS 23 BF5**	660	600	373	290	342	9
Ducted bag filter (EU7)	**NVS 23 BF7**	660	600	373	290	642	14
Set of noise attenuator panels (x2 pcs)*	**NVS 23 S**		600		309	1 000	8

NVS 39	Code	W [mm]	W_i [mm]	H [mm]	H_i [mm]	L [mm]	M [kg]
Fan section (ventilation)	**NVS 39 V**	680	600	510	430	757	39
Fan section with water cooling coil (3-row exchanger)	**NVS 39 WC3.V**	680	600	510	430	1 122	61
Fan section with direct expansion cooler (3-row mono-section exchanger)	**NVS 39 DX3.1.V**	680	600	510	430	1 122	61
Ducted water heating coil (3-row exchanger)	**NVS 39 WH3**	660	600	490	413	140	10
Ducted water heating coil (2-row exchanger)	**NVS 39 WH2**	660	600	490	413	85	8
Ducted electric heater (36 kW)	**NVS 39 EH36**	660	600	490	430	246	8
Ducted flat filter (EU4)	**NVS 39 PG4**	660	600	490	430	132	6
Ducted bag filter (EU5)	**NVS 39 BF5**	660	600	490	430	342	10
Ducted bag filter (EU7)	**NVS 39 BF7**	660	600	490	430	642	16
Set of noise attenuator panels (x2 pcs)*	**NVS 39 S**		600		425	1 000	10



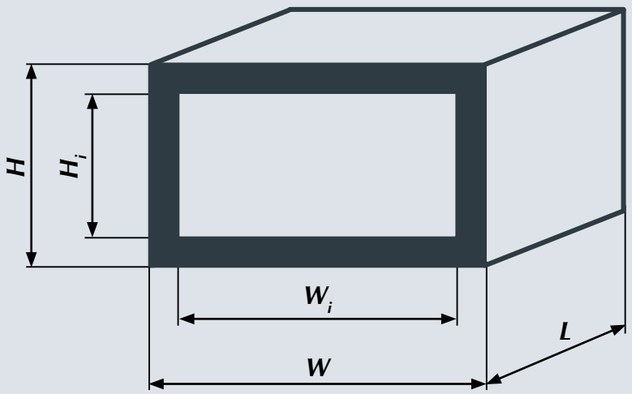
** panel length 1000 mm, width 140 mm*

W - *outer width*
W_i - *internal cross section width*
H - *outer height*
H_i - *internal cross section width*
L - *length*
M - *weight*

DIMENSIONS OF THE SECTIONS AND FUNCTIONAL ELEMENTS

NVS 65	Code	W [mm]	W_i [mm]	H [mm]	H_i [mm]	L [mm]	M [kg]
Fan section (ventilation)	NVS 65 V	820	740	593	513	757	52
Fan section with water cooling coil (3-row exchanger)	NVS 65 WC3.V	820	740	593	513	1 122	81
Fan section with direct expansion cooler (3-row mono-section exchanger)	NVS 65 DX3.1.V	820	740	593	513	1 122	81
Ducted water heating coil (3-row exchanger)	NVS 65 WH3	800	740	573	508	140	13
Ducted water heating coil (2-row exchanger)	NVS 65 WH2	800	740	573	508	85	11
Ducted electric heater (54 kW)	NVS 65 EH54	800	740	573	513	246	11
Ducted flat filter (EU4)	NVS 65 PG4	800	740	573	513	132	7
Ducted bag filter (EU5)	NVS 65 BF5	800	740	573	513	342	14
Ducted bag filter (EU7)	NVS 65 BF7	800	740	573	513	642	22
Set of noise attenuator panels (x2 pcs)*	NVS 65 S		740		508	1 000	17

NVS 80	Code	W [mm]	W_i [mm]	H [mm]	H_i [mm]	L [mm]	M [kg]
Fan section (ventilation)	NVS 80 V	940	860	689	609	757	76
Fan section with water cooling coil (3-row exchanger)	NVS 80 WC3.V	940	860	689	609	1 122	113
Fan section with direct expansion cooler (3-row mono-section exchanger)	NVS 80 DX3.1.V	940	860	689	609	1 122	113
Ducted water heating coil (3-row exchanger)	NVS 80 WH3	920	860	673	603	140	17
Ducted water heating coil (2-row exchanger)	NVS 80 WH2	920	860	673	603	85	15
Ducted electric heater (72 kW)	NVS 80 EH72	920	860	673	609	246	11
Ducted flat filter (EU4)	NVS 80 PG4	920	860	673	609	132	8
Ducted bag filter (EU5)	NVS 80 BF5	920	860	673	609	342	16
Ducted bag filter (EU7)	NVS 80 BF7	920	860	673	609	642	25
Set of noise attenuator panels (x2 pcs)*	NVS 80 S		860		608		19



** panel length 1000 mm, width 140 mm*

W - outer width
W_i - internal cross section width (air flow slot)
H - outer height
H_i - internal cross section width (air flow slot)
L - length
M - weight

CONSTRUCTION OF THE SECTIONS

The base sections of the N-TYPE range are thermally secured by casing manufactured using Monocoque technology.

- **Fan set.**
- **Fan set with water coil cooler.**
- **Fan set with direct expansion cooler.**

FAN SECTION (VENTILATION)

FUNCTION AND APPLICATION:

- Room ventilation.
- Forced air circulation in supply and exhaust systems.

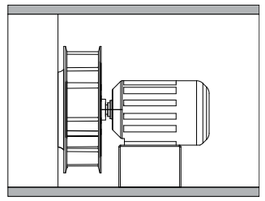
CONSTRUCTION:

- The housing of the section has a light, rigid and durable frameless construction.
- The casing is made of 40 mm thick panels, made of polyurethane foam (PUR-40) and two galvanized sheets (S280GD + Z180). The external surface of the casing panel is additionally protected with a 25 μm thick organic coating.

CASING PANELS:

- PPU density: 42 kg/m^3.
- Panel weight: 10 kg/m^2.

FAN SETS



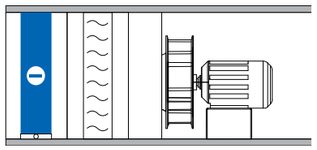
- Fan sets are equipped with highly efficient plug fans with a direct drive. The impeller's blades are backward-curved. The fan's design allows for the smooth and efficient regulation of the air flow rate.Fan sets are equipped with highly efficient plug fans with a direct drive. The impeller's blades are backward-curved.
- The profile of the impeller is aerodynamic helping to reduce friction-related pressure losses and excessive noise.
- The profile of the impeller is aerodynamic helping to reduce friction-related pressure losses and excessive noise.
- The impeller is made of a styrene/acrylonitrile polymer with glass fibre. The impeller is made of material ensuring a long service life and high resistance to air contamination.
- Three-phase asynchronous electric motors:
  - rated voltage: 3 x 240 V / 3 x 400 V AC,
  - motor winding insulation class: F (mated to an inverter),
  - bearing life: L_{10} = 20000 h / L_{50} = 100000 h,
  - protection rating: IP55,
  - working environment: 60°C.

Three-phase motor ratings

Size	Type of electric motor	Rated power [kW]	Rated speed [1/min]	Rated voltage [V]	Current [A]
NVS 23	71M-0.55/2p	0.55	2800	3~230 V / 3~400 V	2.4 / 1.4
NVS 39	80M-1.1/2p	1.10	2845	3~230 V / 3~400 V	4.2 / 2.40
NVS 65	90L-2.2/2p	2.20	2880	3~230 V / 3~400 V	7.9 / 4.55
NVS 80	112M-4/2p	4.00	2905	3~400 V / 3~690 V	7.8 / 4.5

Single-phase motor ratings

Size	Type of electric motor	Rated power [kW]	Rated speed [1/min]7	Rated voltage [V]	Current [A]
NVS 23	71M-0.37/2p	0.37	2820	1~230 V	2.70
NVS 39	80M-1.1/2p	1.1	2780	1~230 V	7.00
NVS 65	90L-2.0/2p	2.0	2780	1~230 V	13.00



COOLING SECTION WITH A WATER COOLING COIL

COMPOSITION:

Direct driven PLUG fan with a water coil cooler in insulated casing.

FUNCTIONS AND APPLICATION:

- Cooling of the air supplied to the room.
- Air dehumidification.

CONSTRUCTION:

- The water section consists of a fan set, a three-row cooling coil with droplet eliminator and “monocoque” casing that provides perfect thermal insulation, high rigidity and a drainage system (for condensing water).
- The combination of a fan set with a cooler in one block provides the high tightness and strength of the section. The construction ensures that the fan and the cooling coil are perfectly matched.

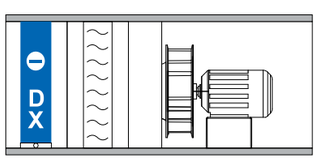
WATER COOLER:

- Tube diameter: ½”.
- Number of R rows: 3.
- Minimum ice water temperature: +5°C.
- Maximum operating pressure of the medium: 1.6 MPa = 16 bar (tested 21 bar).
- Maximum content of glycol: 50%.

Cooling section characterisitic data

Size	Heat transfer area, m²	Stub pipe diameter	Power*, kW
NVS 23	8.1	DN25 (1")	18
NVS 39	10.5	DN25 (1")	28
NVS 65	17.2	DN32 (11/4")	48
NVS 80	24.1	DN32 (11/4")	60

** air temperature 40°C, relative humidity 50%, water temperature 7°C / 12°C*



COOLING SECTION WITH A DIRECT EXPANSION COOLING COIL

COMPOSITION:

PLUG fan and direct expansion (DX) cooling coil in an insulated casing.

FUNCTIONS AND APPLICATION:

- Cooling of the air supplied to the room.
- Air dehumidification.

CONSTRUCTION:

- The unit consists of a fan set, a three-row direct expansion cooling coil with a droplet eliminator, a “monocoque” casing that provides perfect thermal insulation, high rigidity and a drainage system (for condensing water).
- The combination of a fan set with a cooler in one block provides the high tightness and strength of the section. The construction ensures that the fan assembly is properly connected to the cooler.

DIRECT EXPANSION COOLING COIL SECTION:

- Copper tubes with embedded aluminium fins (Cu/Al).
- Tube diameter: ½”.
- Minimum temperature of the medium for ice water: +3°C.
- Maximum operating pressure of the medium: 2.2 MPa = 22 bar (tested 29 bar).

DUCTED WATER HEATING COIL

FUNCTIONS AND APPLICATION:

- Heating of the air supplied to a room.
- Heating of the air after the dehumidification process.

CONSTRUCTION:

- Copper tubes with fixed aluminium lamellas (Cu/Al).
- Tube diameter: ½”.
- Number of rows: 2.3.
- Maximum temperature of the medium (heat carrier) 150°C (automatics up to: 140°C).
- Maximum operating pressure of the medium: 1.6 MPa = 16 bar (test: 21 bar).
- Maximum content of glycol: 50%.

Duct water heater characteristic data

Size	Heat transfer area, m²	Number of rows	Stub pipe diameter	Power*, kW
NVS 23 WH2	30	2	DN25 (1")	30
NVS 23 WH3	50	3	DN25 (1")	50
NVS 39 WH2	60	2	DN25 (1")	60
NVS 39 WH3	80	3	DN25 (1")	80
NVS 65 WH2	100	2	DN32 (11/4")	100
NVS 65 WH3	110	3	DN32 (11/4")	110
NVS 80 WH2	105	2	DN32 (11/4")	105
NVS 80 WH3	115	3	DN32 (11/4")	115

** water temperature 95°C / 70°C, air temperature -30°C*

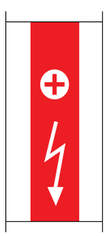
ELECTRIC HEATER

FUNCTIONS AND APPLICATION:

- Heating of the air supplied to the room.
- Heating of the air after the dehumidification process in the summer.

CONSTRUCTION:

- The assembly of the resistance heating elements made of Cr-Ni-Fe alloy, each with 6 KW / 400 V capacity.
- As a standard, the heater is equipped with a thermostat to protect from overheating.
- Minimum air flow velocity: v = 1.0 m/s.
- Maximum allowable ambient temperature around the heating elements: 65°C.
- Heating elements are connected in groups, each with a capacity of 18 kW.
- The required heating power can be obtained through a flexible regulation system or through a gradual adjustment (wiring diagram available in the operating manual).



Electric heater dimensions

Size	W [mm]	W_i [mm]	H [mm]	H_i [mm]	L [mm]	Number of heating elements	Heating capacity [kW]
NVS 23	660	600	373	313	206	3	18
NVS 39	660	600	490	430	246	6	36
NVS 65	800	740	573	513		9	54
NVS 80	920	860	673	609		12	72

W - outer width
W_i - internal cross section width (air flow slot)
H - outer height
H_i - internal cross section width (air flow slot)
L - length

NOISE ATTENUATION PANELS

FUNCTIONS AND APPLICATION:

- Reduction of sound power level.
- The noise attenuation function is an optional element of the air handling unit's equipment.
- The noise attenuation panels are 140 mm thick and 1000 mm long.
- The internal filling of the noise attenuation panel consists of sound-absorbent and non-combustible mineral wool with a density of 60 kg/m^3 and 80 kg/m^3 respectively.
- Outer surface: thin non-woven fabric ("veil"), which eliminates the passage of wool particles into the ventilation air stream.
- Number of noise attenuation panels per attenuation block: 2 (NVS 23, NVS 39); 3 (NVS 65, NVS 80).

Muffler specifications

Size	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Lw [dB]
NVS 23	10.6	16.0	26.7	32.0	34.1	34.7	33.9	40.0
NVS 39	10.0	15.0	24.9	30.0	32.0	32.5	31.8	37.9
NVS 65	9.4	14.1	23.5	28.1	30.0	30.4	29.9	36.0
NVS 80	9.0	13.5	22.4	26.9	28.7	29.1	28.6	34.7

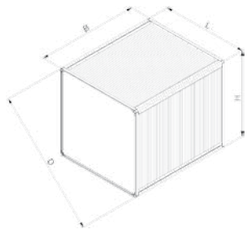
CROSS-FLOW HEAT RECUPERATOR

FUNCTION AND APPLICATION:

- Indirect recovery of energy (latent heat) cumulated in stream of exhausted air and transfer of the energy to air supplied into a room.
- Energy recover with very good isolation of supplied air stream from exhausted air stream (99.9%).

CONSTRUCTION:

- Set of transversally pressed aluminium plates with air flows in between, by alternate manner of cross-flow system.



Cross-flow recuperator dimensions

Size	H [mm]	L [mm]	B [mm]	D [mm]	m [kg]
NVS 23	690	690	360	963	22
NVS 39	690	690	470	963	26
NVS 65	840	840	555	1175	38
NVS 80	990	990	650	1387	57

Cross-flow recuperator specifications

Size	Airflow range	Max. efficiency	Min. efficiency	Min. air face velocity	Max. air face velocity	Min. pressure drop	Max. pressure drop
	m^3/h	%	%	m/s	m/s	Pa	Pa
	min.-max.			supply/exhaust	supply/exhaust	supply/exhaust	supply/exhaust
NVS 23	700-2200	56	53	2.1 / 1.9	3.5 / 3.1	63 / 55	160 / 140
NVS 39	1700-3300	56	53	2.0 / 1.8	3.9 / 3.5	59 / 52	190 / 170
NVS 65	2600-5000	58	55	2.0 / 1.8	3.9 / 3.5	60 / 53	190 / 170
NVS 80	3400-7000	62	59	1.9 / 1.7	3.9 / 3.4	59 / 51	210 / 184

AIR FILTERS

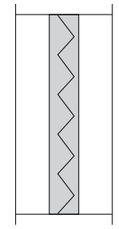
Ducted panel filter (P.G4)

FUNCTIONS AND APPLICATION:

- Final filters for general ventilation and air conditioning systems with average air purity requirements.
- Pre-filters for ventilation and air conditioning systems with high air purity requirements installed upstream from the final filters.

CONSTRUCTION:

- Pleated filter fabric in the steel mesh housing installed in a 50 mm thick frame.
- The filter fabric is made of polyester fibre.
- Installation: System of guides allows for the quick and easy replacement of filters.



Sectional filter specifications

Size	Filter type	Filter properties		
		Filter dimensions W_i x H_i x B_i	Frontal cross-sectional area	Filter area
		[mm] x [mm] x [mm]	[m^2]	[m^2]
NVS 23	G4	594x290x50	0,17	0.34
NVS 39		594x430x50	0,26	0.51
NVS 65		734x513x50	0,38	0.75
NVS 80		854x609x50	0,52	1.04

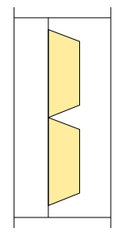
Ducted bag filter (B.F5)

FUNCTIONS AND APPLICATION:

- Final filters for general ventilation and air conditioning systems with average air purity requirements.
- Pre-filters for ventilation and air conditioning systems with high air purity requirements, installed upstream from the final filters.

CONSTRUCTION:

- The filter fabric is made of polyester fibre.
- Vertical arrangement of the filter bags.
- Installation: System of guides allows for the quick and easy replacement of filters.



Ducted bag filter specifications (B.F5)

Size	Filter type	Filter properties		
		Filter dimensions W_i x H_i x B_i	Frontal cross-sectional area	Filter area
		[mm] x [mm] x [mm]	[m^2]	[m^2]
NVS 23	F5	592x287x300	0.17	1.11
NVS 39		592x428x300	0.25	1.66
NVS 65		428x490x300 287x490x300	0.35	2.16
NVS 80		428x592x300 428x592x300	0.51	2.89

Ducted bag filter (B.F7)

FUNCTIONS AND APPLICATION:

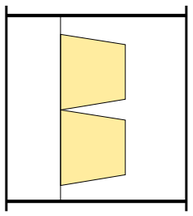
- Final filters for ventilation and air conditioning systems with high air purity requirements.

CONSTRUCTION:

- 600 mm filter bags in a 25 mm thick frame.
- The filter fabric is made of polyester fibre.
- Vertical arrangement of the filter bags.
- Installation: System of guides allows for the quick and easy replacement of the filters.

Ducted bag filter specifications (B.F7)

Size	Filter type	Filter properties		
		Filter dimensions W_1 x H_1 x B_1	Frontal cross-sectional area	Filter area
		[mm] x [mm] x [mm]	[m²]	[m²]
NVS 23	F7	592x287x600	0.17	3.13
NVS 39		592x428x600	0.25	4.68
NVS 65		428x490x600 287x490x600	0.35	6.28
NVS 80		428x592x600	0.51	8.66
		428x592x600		



Flexible connection

FUNCTIONS AND APPLICATION:

- Protection of the ventilation system (ducts) from vibrations transferred from the air handling unit.
- Compensation of ventilation ducts' misalignment in relation to the axis of the air handling unit.

CONSTRUCTION:

- Flange: PVC-C material with UV stabilizer.
- Ambient temperature: from -30°C to 97°C. Fire resistance UL 94HB [ISO 1210].
- Composite material: PVC coated polyester fabric. Ambient temperature: from -30°C to 70°C.
- Flexible connections are to be fitted with an earthing wire to balance the electric potential.

CONTROL SYSTEM

The professional control system is offered along with the air handling units of VENTUS N-TYPE series. It ensures easy control over ventilation and air conditioning systems and results in failure-free operation. Desired air parameters are achieved at minimal costs. The heart of control system is integrated with HMI OPTIMA user interface. It ensures unprecedented convenience and simplicity of air parameters adjustment.

OPTIONAL ELEMENTS

Air damper

FUNCTIONS AND APPLICATION:

- Air flow cut-off through the air handling unit.
- Air flow adjustment through the air handling unit.
- Air mixing rate adjustment in the supply and exhaust air handling units.

CONSTRUCTION:

- The blades are made of constructional plastic (ASA), with the edges protected with seals of soft composite material.
- The blades rotate in pairs in opposing directions.
- Aluminium frame.
- The drive is realized by means of composite gears installed inside the damper's frame.
- The damper is equipped with a square stem fitted for actuator installation.

HMI OPTIMA - USER INTERFACE

FUNCTIONS AND APPLICATION:

- Setting and reading the parameters of the air handling unit.
- Selection and configuration of the operating mode.
- Operating calendar settings.
- Information on the alarm status and possibility of its cancellation.

OPERATING PARAMETERS:

- Supply voltage: 230 V AC.
- Frequency: 50 Hz ± 1 Hz.
- Supply voltage in the control circuits: 24 V AC.
- Protection degree: IP20.
- Operating environment temperature: from 0°C to +40°C.

DUCT TEMPERATURE SENSOR

FUNCTIONS AND APPLICATION:

- Measurement of the temperature of supply air, exhaust air or external air.
- Protection of maximum and minimum supply air temperature.

CONSTRUCTION:

- Resistive measuring element installed in the aluminium 25 cm long bayonet probe.

OPERATING PARAMETERS:

- Measurement: from -50°C to +110°C, Measurement accuracy: ±0,5 K.
- Measuring element: PT1000, output signal: resistance.
- Communication cable length: maximum 150 m.
- Protection degree: IP67.

STRAP - ON RETURN WATER TEMPERATURE SENSOR

FUNCTIONS AND APPLICATION:

- Functions and application.
- Protection of maximum return water temperature.

OPERATING PARAMETERS:

- Measurement: from -30°C to +110°C, Measurement accuracy: ±0,5 K.
- Measuring element: PT1000, output signal: resistance.
- Protection rating: IP67.
- Designed for DN 20 - DN 80 pipes; (Outer diameter from 20 to 88 mm).

DIFFERENTIAL PRESSURE SWITCH

FUNCTIONS AND APPLICATION:

- Control of the filter's contamination level by measuring the permissible air pressure difference in front of and behind the filter.

CONSTRUCTION:

- A membrane coupled with a mechanical system which reacts when the acceptable pressure difference is exceeded, and, as a result, switches electrical contacts (filter contamination signal or fan unit operation).
- Housing: ABS,

OPERATING PARAMETERS:

- Measurement: 40 ÷ 400 Pa (class G4 ÷ F7 filters).
- Rated operating voltage: 250 V AC (Imax = 3 A).
- Output signal: voltage free contact NO or NC.
- Number of cycles: 1 million of cycles (in temp. of 60°C).
- Protection degree: IP54.
- Operating environment: from -15°C to +60°C.

OVER - HEATING PROTECTION THERMOSTAT

FUNCTIONS AND APPLICATION:

- Protection of the electric heater against excessive temperatures above the limit - switching off the heater and its automatic activation when the temperature drops by the hysteresis value.
- The element is part of the electric heater's standard equipment.

CONSTRUCTION:

- A bimetallic element installed inside a metal housing.

OPERATING PARAMETERS:

- Temperature to signal overheating condition: 65°C.
- Switch-off hysteresis value: 22 K.
- Output signal: dry de-energized contact, (change-over contact).
- Rated operating voltage: 20 V DC, 230 V AC.

ON-OFF AND ON-OFF/S - ELECTRIC AIR AMPER ACTUATOR AND ELECTRIC AIR DAMPER ACTUATOR (with return spring)

FUNCTIONS AND APPLICATION:

- Opening or cutting off the air flow in the air handling unit:ON/OFF actuator.
- Adjustment of mixing ratio for air supplied into and exhausted from a room (recirculation): 0-10 V actuator.
- For air handling units fitted with a water heater the air damper actuator has a built-in "return" spring - the air damper closes in the absence of voltage supllying the AHU.

CONSTRUCTION:

- Mechanical system with an electric motor fitted in the housing.

OPERATING PARAMETERS:

- Control type: two-point, closed/open 0 - 100%.
- Supply voltage: 24 V AC/DC.
- Input signal: ON/OFF.
- Torque: 16 Nm, angle of rotation: 90°.
- Protection degree: IP54.
- Operating environment: from -20°C to +50°C.

ANTI-FROST THERMOSTAT ON AIR SIDE

FUNCTIONS AND APPLICATION:

- Protection of the water heater against freezing is based on the measurement of the minimum allowable temperature of the air flow behind the heater.
- If the minimum limit for air temperature is exceeded, the signal sent to the controller triggers the closure of the damper at the inlet to the unit, switches off the fan and opens the water valve at its maximum flow.

CONSTRUCTION:

- Measuring element.
- 2 m long capillary filled with refrigerant.
- The thermostat has adjusting screws for the proper setting of the allowable minimum operating temperature and the temperature of the re-powering of the system (hysteresis).
- Housing: composite.
- The capillary of the thermostat should be installed in the area of the lowest temperatures of the medium that supplies the water heat exchanger.

OPERATING PARAMETERS:

- Maximum temperature, measurement: from -18°C to +15°C.
- Set point of the anti-frost signal: +5°C (manufacturer).
- Rated operating voltage: 30 V DC, 230 V AC.
- Output signal: dry de-energized contact.

THREE-PORT VALVE WITH ELECTRIC ACTUATOR

FUNCTIONS AND APPLICATION:

- Adjustment of the temperature of the medium flowing through the water heater. Quality control ensuring the maintenance of a constant flow of the medium which supplies the water coil at its variable temperature of supply.
- Quality regulation of the mass flow of the medium which supplies the water heat exchanger at a constant supply temperature - cooler. Installation of the valve in the return system of the medium from the water heat exchanger.
- It is required to match the valve and recirculation pump operation in order to minimize the risk of medium freezing in the water heating coil.

CONSTRUCTION:

- Mechanical system with an electric motor installed in the housing, ensuring the smooth medium flow regulation:
  - DN15 for kvs = 2.5; 4.0,
  - DN20 for kvs = 6.3,
  - DN25 for kvs = 10.

OPERATING PARAMETERS:

Actuator

- Adjustment range: 0 - 100%.
- Supply voltage: 24 V AC/DC.
- Input signal: 0 - 10 V DC.
- Angle of rotation: 90°.
- Protection degree: IP54.
- Operating environment: from -20°C to +50°C.

Valve

- Operating characteristics: equal percentage / proportional.
- Medium temperature: up to 140°C.
- Operating environment: from -20°C to +50°C.
- Glycol in the medium: 50%.

FREQUENCY CONVERTER (inverter)

FUNCTIONS AND APPLICATION:

- Smooth adjustment of the performance of the air handling unit through a proportional change in the rotational speed of the motor-fan assembly.
- Maintaining constant operating parameters of the air handling unit with variable air flow resistance through the system.

CONSTRUCTION:

- The electronic system allows for the change in the frequency of the motor voltage and maintaining optimal U/f dependence.
- The system is fitted inside the housing.
- The fan provides internal cooling of the air handling unit.
- Operating panel to set the parameters of the inverter.

OPERATING PARAMETERS:

- Adjustment range: 10 ÷ 100 Hz.
- Supply voltage: 200 ÷ 240 V AC one- and three-phase (up to 2.2 kW electric motor), three-phase 380 ÷ 480 V AC.
- Frequency: 48 ÷ 63 Hz.
- Operating connections (programmable):
  - 5 digital inputs (LS SV.. iC5),
  - 8 digital inputs (LS SV... iG5A),
  - 1 analogue input 0... 10 V (LS).
- 1 relay output with a changeover contact - 1 binary transistor output (SV... iC5 LS, LS SV.. iG5A) - 1 analogue output 0-10 V.
- Modbus RTU communication over the RS485 line.
- Connecting the motor: 3- phase.
- Operating environment: from 0°C to 40°C.
- Protection degree IP20.
- Built-in fan forced cooling.

CONTROL GEARS FOR SUPPLY AND SUPPLY-EXHAUST N-TYPE AIR HANDLING UNITS

FUNCTIONS AND APPLICATION:

- Adjustment, control and protection of the operating parameters of the air handling unit or air conditioning unit - operation, temperature, air efficiency, errors.
- The operation of the air conditioning unit according to the calendar can be divided into time "zones".
- Cooperation with outside "systems" concerning:
  - start signal,
  - fire safety signal,
  - START/STOP system.

CONSTRUCTION:

- Controller.
- System of elements protecting the motor operation.
- Main load switch.
- Control panel.

OPERATING PARAMETERS:

- Supply voltage: 3 x 400 V or 1 x 230 V AC.
- Frequency: 50 Hz ± 1 Hz.
- Supply voltage in control circuits: 24 V AC Controller.
- External communication.
- Serial port.
- Standard: RS-485.
- Protocol: Modbus RTU - Local communication with frequency converters.

Dimensions of control gears designed for applications without frequency converters

	Supply application (N)	Exhaust application (W)
NVS 23	380 x 320 x 150	395 x 235 x 115
NVS 39		
NVS 65		
NVS 80		

Dimensions of control gears and automation designed for applications with frequency converters

	Supply application (N)	Exhaust application (W)	Supply and exhaust application (NW)
NVS 23	240 x 300 x 130	460 x 340 x 170	240 x 300 x 130
NVS 39			
NVS 65			
NVS 80	240 x 400 x 130		240 x 400 x 130

THYRISTOR SPEED CONTROLLERS TR 600, TR 900, TR 2000

FUNCTIONS AND APPLICATION:

- Smooth voltage regulation within the range of 130 V - 230 V.
- Function of forced start-up at full power and returing to user parameters.

CONSTRUCTION:

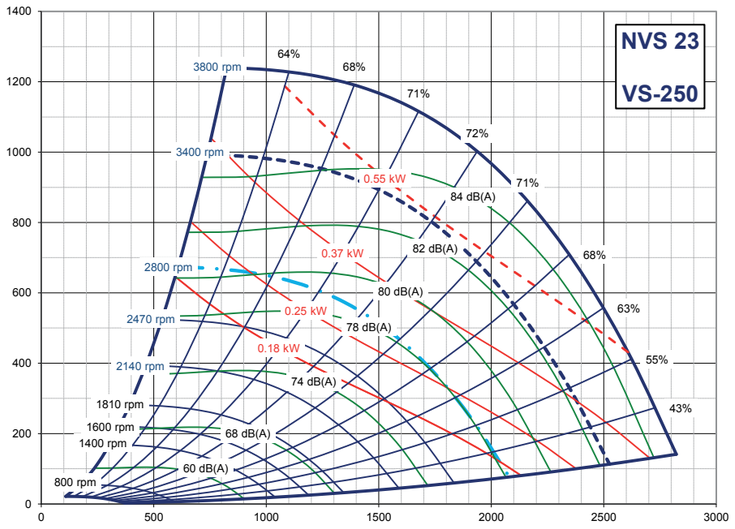
- Output circuit based on triac, controlled with microprocessor.
- Protection class IP44.

Thyristor speed controllers operational parameters

Controller	Supply voltage	Current	Application
TR 600	230 V	4 A	NVS 23 (1F)
TR 900	230 V	8 A	NVS 39 (1F)
TR 2000	230 V	16 A	NVS 65 (1F)

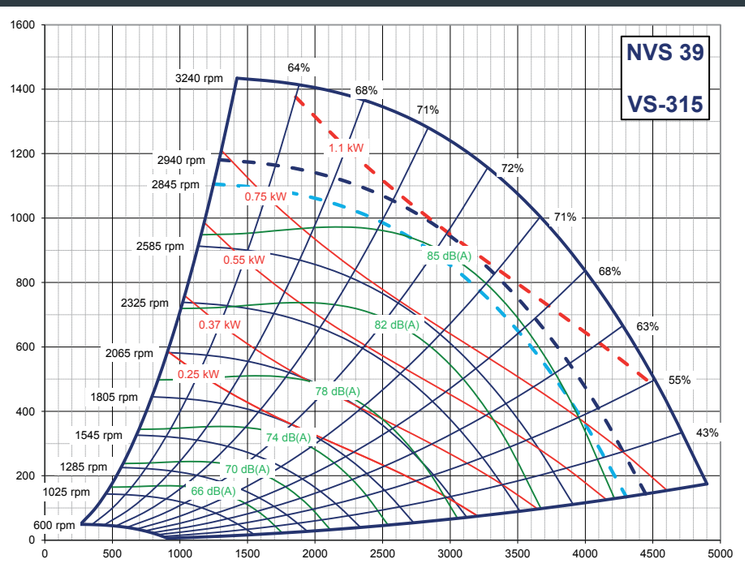
FAN CHARTS

Fan performance NVS 23



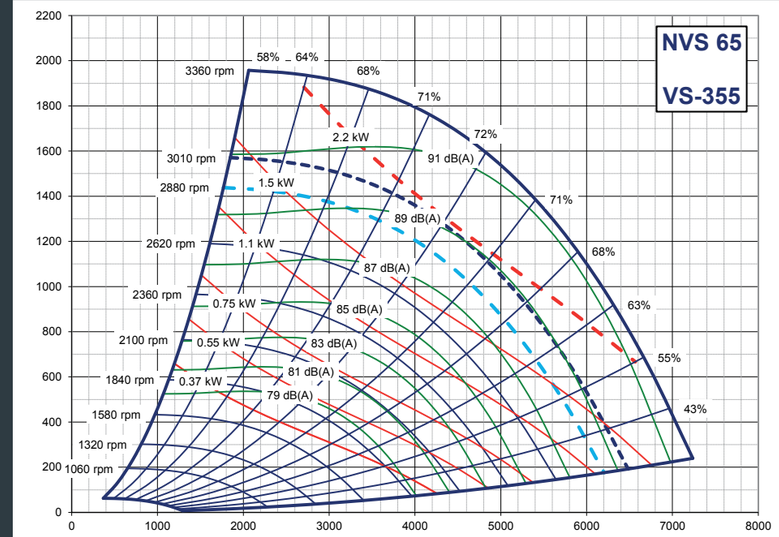
Static pressure in relation to the air flow P [Pa] = f (V [m³/h])

Fan performance NVS 39



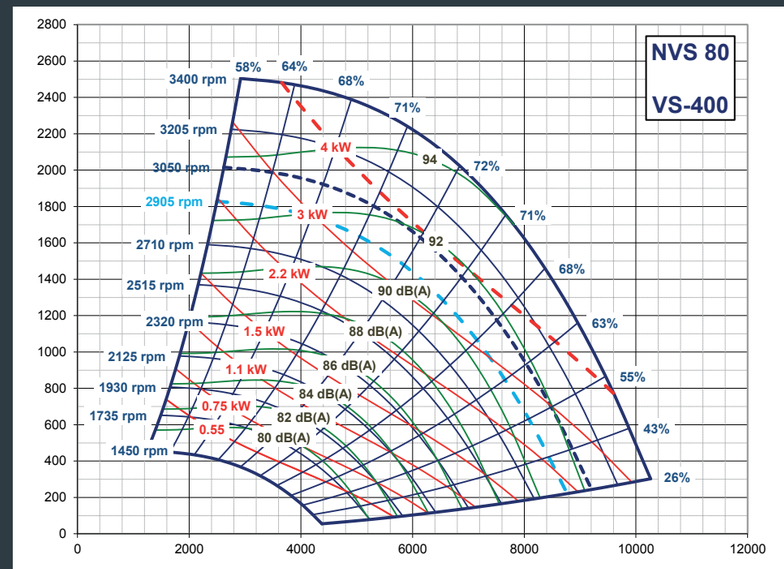
Static pressure in relation to the air flow P [Pa] = f (V [m³/h])

Fan performance NVS 65

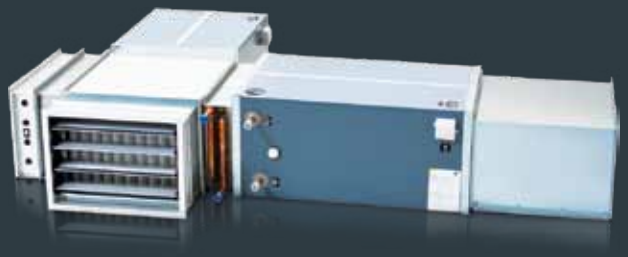


Static pressure in relation to the air flow P [Pa] = f (V [m³/h])

Fan performance NVS 80



Static pressure in relation to the air flow P [Pa] = f (V [m³/h])



VTS Vilnius UAB

Rygos g. 6-34, Vilnius
05270 Lithuania
Tel: +370 52636152
Fax: +370 52636156
vilnius@vtsgroup.com

www.vtsgroup.com