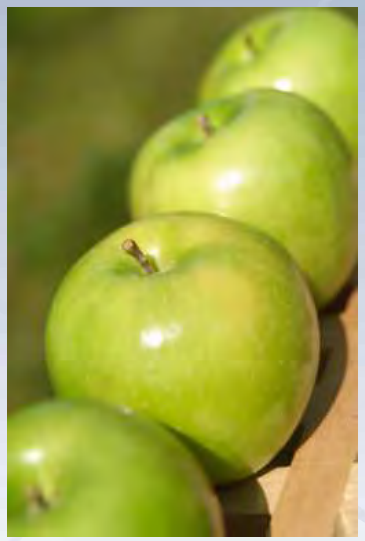
Goedhart
Cooling Equipment

# FLEXIBLE SOLUTIONS
*in cooling and freezing*

# VNS

**Agricultural aircoolers** **Cu/Al**



Blow throug aircooler suitable for vegetable and fruit storage

For refrigerant R404A

Hygienic design

9,8 51,5 kW

CE

+10°C
-10°C
0°C

# 1. General

The VNS range of ceiling mounted aircoolers are specially designed for use in chill rooms, working with an air temperature of ± 0°C. The aircoolers are especially suitable for vegetable and fruit storage, working with a small D T to prevent dehydration of the product. The height of the aircooler is low, so the maximum space in the chill room can be utilised. The range consists of 16 types with a nominal capacity range between 6,4 and 55,6 kW. The modular design incorporates 4 different sizes of fans (355, 400, 450 and 500 mm).

## 1.1. Execution

Coil

| | | | | |
|---|---|---|---|---|
| Tube Pitch | : | 50x50 mm square | | |
| Fin Spacing | | : | 7 mm | |
| Material | : | Tubes | : | Copper 15 mm o d |
| | | Fins | : | Goedhart Aluminum HT-Fins |

Standard refrigerant connections are positioned on the left hand side of the unit when looking with the direction of the airflow. VNS coil blocks have copper tubes mechanically expanded into fully collared aluminium fins, providing excellent thermal contact. All evaporator coils are pressure tested to 30 bars and supplied with a light overpressure charge.

### 1.1.1. Casing

The casing is made from galvanized sheet steel to form a robust construction.
The casing has a corrosion resistant white epoxy spray finish ( RAL 9003 )
Almost all fixings are stainless steel to prevent corrosion. The end covers that protect the return bends and headers can be easily removed for maintenance. The aircooler is executed with a hinged driptray. A possible hot gas spiral or electric defrost elements will be fixed to the bottom side of the coil.

### 1.1.2. Mounting

VNS is delivered on a wooden frame.
When on the frame, VNS can be handled by forklift truck, which makes positioning and installation simple.

## 1.2. Maintenance

Refer to our maintenance and installation manual.

## 1.3. Capacity DTM:

The capacities in the table below are based on R404A.
The indicated temperature differences (DTM) are between the evaporating temperature (To) and the average air temperature across the cooler.
The nominal capacity is based on:
- evaporation temperature (To) -5 °C
- liquid temperature before expansion valve +25 °C (To=-5 °C)
- relative humidity 85% of the air-on
- light frosting of the coilblock (after 30 minutes)
- refrigerant superheat of max. 5 K, depending on the temperature difference

### 1.3.1. Capacity optimisation

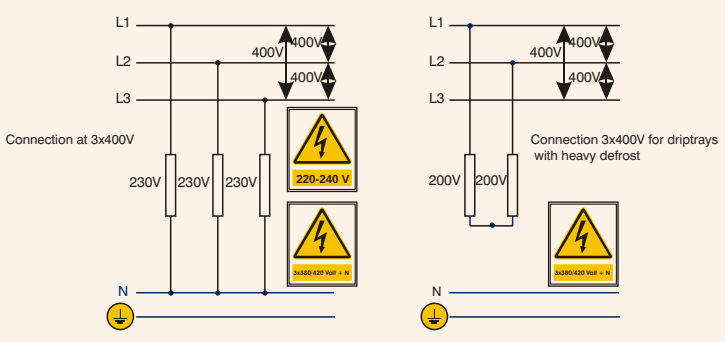
Goedhart optimise the coil circuitry to suit the design condition. This provides the best performance for a given cooler in combination with application, refrigerant and capacity.

## 1.4. Defrost Systems

For room temperatures where ice-build up can be expected and where the coil can not be defrosted by the room air, electric or hot gas defrost is necessary

### 1.4.1. Electrical Defrost

On request VNS can be provided with electrical defrost.
The stainless steel heating elements are fitted in the coil block within aluminium tubes, which forms a highly conductive medium between the heaters and the fins. In the drip tray heater elements are fitted to the underside of the aluminium inner tray. The elements are rated for 220/240 V and are connected (IP55) for 380/415 V (with neutral) supply. The heater elements in the coil block are removable from the bend side, whilst the tray heater elements can be removed once the outer tray has been removed.




### 1.6.2. Hot gas defrost

The coil block is suited for hot gas defrost ( hot gas supply through the suction header ). The drip tray can be provided with a copper hot gas spiral. This is enclosed in aluminium profiles that are rigidly secured to the under side of the aluminium inner drip tray.

## 1.5. Optional extras:

Various optional extras for the VNS are available with price and delivery time upon request, some of them are:

+ insulation discs
+ coating of the coilblock
+ overheatprotection on the motors
+ glycol/water/etc. cooling mediums
+ stainless steel casing
+ coupling between hotgas spiral and suctionheader
+ other fin spacings
+ relative humidity regulation (the coilblock will be supplied in 2 parts, a heating section and a cooling section).
+ feet for floor mounting
+ 60 Hz motors
+ single phase motors
+ pump system

## 1.6. Capacities DT1:

The listed "DT1" nominal capacities are are based on R404 en DT1 (the difference between **air-on temperature** and the **evaporation temperature** of the cooler). The capacities apply to an air on temperature of 0°C and evaporation temperature of -8°C (SC2 condition)

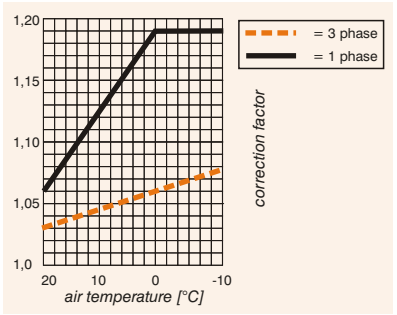
| Type | Fan | DTM | | | DT1 | Air volume | Surface | Volume | Weight | Dimensions | | | | | | | | | | | Electrical defrost 3x400V | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | Suspension | | | Drain | | | | Number of elements | | |
| | | DTM = 7K -5 / +2 | DTM = 6K -5 / +1 | DTM = 5K -5 / 0 | DT1 = 8K Air on =0°C -8 / 0 | | | | | L | B | H | C | E1 | E2 | E3 | D2 | D1 | D3 | Size | Block | Driptray | Total defrost load |
| VNS | mm | R404A kW | | | kW | m³/h | m² | dm³ | kg | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | | | | kW |
| 6.3.35.7 | 3x Ø355 | 13,2 | 11,0 | 8,5 | 11,5 | 6947 | 77 | 19 | 149 | 2260 | 800 | 540 | 600 | | 1856 | | | 1130 | | ¾" | 2 | 1 | 5,43 |
| 6.4.35.7 | 4x Ø355 | 17,2 | 13,3 | 10,8 | 15,0 | 9261 | 102 | 26 | 190 | 2860 | 800 | 540 | 600 | | 2456 | | | 1430 | | ¾" | 2 | 1 | 7,43 |
| 6.5.35.7 | 5x Ø355 | 22,9 | 18,1 | 12,8 | 19,8 | 11575 | 128 | 32 | 229 | 3460 | 800 | 540 | 600 | | 3056 | | | 1730 | | ¾" | 4 | 2 | 8,04 |
| 6.6.35.7 | 6x Ø355 | 27,1 | 22,2 | 17,0 | 23,5 | 13888 | 154 | 38 | 267 | 4060 | 800 | 540 | 600 | 1828 | 1828 | | | 2030 | | ¾" | 4 | 2 | 9,46 |
| 6.7.35.7 | 7x Ø355 | 32,0 | 25,2 | 20,0 | 27,5 | 16203 | 179 | 45 | 309 | 4660 | 800 | 540 | 600 | 1828 | 2428 | | 1165 | | 2330 | ¾" | 4 | 2 | 10,87 |
| 6.8.35.7 | 8x Ø355 | 37,0 | 29,6 | 22,2 | 31,9 | 18516 | 205 | 51 | 349 | 5260 | 800 | 540 | 600 | 2428 | 2428 | | 1315 | | 2630 | ¾" | 4 | 2 | 12,34 |
| 6.3.40.7 | 3x Ø400 | 19,3 | 15,4 | 12,1 | 16,8 | 10005 | 107 | 27 | 191 | 2710 | 770 | 590 | 600 | | 2306 | | | 1355 | | 1¼" | 2 | 1 | 6,88 |
| 6.4.40.7 | 4x Ø400 | 25,7 | 20,8 | 16,1 | 22,4 | 13337 | 142 | 36 | 244 | 3460 | 770 | 590 | 600 | | 3056 | | | 1730 | | 1¼" | 4 | 2 | 8,04 |
| 6.5.40.7 | 5x Ø400 | 31,1 | 25,3 | 20,1 | 27,2 | 16671 | 178 | 44 | 298 | 4210 | 770 | 590 | 600 | 1528 | 2278 | | | 2105 | | 1¼" | 4 | 2 | 9,46 |
| 6.6.40.7 | 6x Ø400 | 39,1 | 30,8 | 23,0 | 33,9 | 20004 | 213 | 53 | 352 | 4960 | 770 | 590 | 600 | 2278 | 2278 | | | 2480 | | 1¼" | 4 | 2 | 11,60 |
| 6.3.45.7 | 3x Ø450 | 29,6 | 23,7 | 18,5 | 25,8 | 15493 | 162 | 40 | 256 | 3310 | 770 | 690 | 600 | | 2906 | | | 1655 | | 1¼" | 3 | 2 | 10,61 |
| 6.4.45.7 | 4x Ø450 | 39,5 | 32,1 | 24,7 | 34,4 | 20655 | 216 | 54 | 329 | 4260 | 770 | 690 | 600 | 1928 | 1928 | | | 2130 | | 1¼" | 6 | 2 | 13,03 |
| 6.5.45.7 | 5x Ø450 | 50,0 | 40,0 | 30,9 | 43,4 | 25817 | 270 | 67 | 404 | 5210 | 770 | 690 | 600 | 1928 | 2878 | | 1303 | | 2605 | 1¼" | 6 | 2 | 15,92 |
| 6.6.45.7 | 6x Ø450 | 57,9 | 48,0 | 37,3 | 50,7 | 30979 | 325 | 80 | 477 | 6160 | 770 | 690 | 600 | 2878 | 2878 | | 1540 | | 3080 | 1¼" | 6 | 2 | 19,73 |
| 6.5.50.7 | 5x Ø500 | 58,1 | 47,4 | 35,7 | 52,2 | 35311 | 284 | 71 | 453 | 5460 | 890 | 690 | 700 | 2028 | 3028 | | 1365 | | 2730 | 1¼" | 6 | 2 | 16,94 |
| 6.6.50.7 | 6x Ø500 | 70,3 | 54,9 | 43,7 | 63,4 | 42375 | 341 | 85 | 536 | 6460 | 890 | 690 | 700 | 2028 | 2000 | 2028 | 1615 | | 3230 | 1¼" | 6 | 2 | 20,91 |

## 2. Fans

The manufacturer of the fans is Süd Electric (we reserve the right to alter the manufacturer). The fans have glass fibre reïnforced polypropylene impellers. The motors are available for 400V-50Hz-3 phase or 230V-50Hz-1 phase electrical supply. 2-Speed regulation can be achieved at 400/690V-50Hz-3 phase by using a Δ-Y reconnection (fig. 1). 3 Phase motors are suitable for a frequency controller (A sinus filter is needed, fig. 2). 1 Phase motors are suitable for phase control and transformator. The motors are standard executed with a thermo contact. The fans are suitable for operation in air temperature applications between -40 °C and +45 °C. When the air temperature is lower then -40 °C , special fans are needed. These speciale fans have a longer delivery time. The technical data in the table below are the same as on the motor name plates and is valid for an air temperature of +40 °C.
For air temperatures lower then +40 °C, the current amperage can be calculated by using the diagram multiplication factor, suitable thermal overloads can then be selected.

### 1x230V - 50Hz

| Fan type | Speed | Input | FLC | Protection class** | Sound pressure level each fan |
|---|---|---|---|---|---|
| | RPM | W | A | | dBA* |
| 4 poles motors | | | | | |
| 350-36° | 1350 | 170 | 0.80 | IP44 | 49 |
| 400-32° | 1350 | 450 | 1.95 | IP44 | 52 |
| 450-32° | 1350 | 450 | 1.95 | IP44 | 56 |
| 500-40° | 1330 | 700 | 3.40 | IP44 | 58 |




### 3x400V - 50Hz

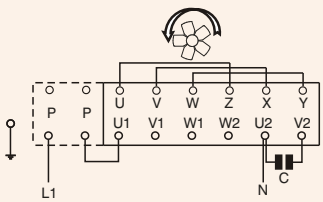
| Fan type | Tension | Δ | | | | Y | | | | Protection class** |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Speed | Input | FLC | Sound pressure level each fan | Speed | Input | FLC | Sound pressure level each fan | |
| | V | RPM | W | A | dBA* | RPM | W | A | dBA* | |
| 4 poles motors | | | | | | | | | | |
| 350-36° | 3x400/690 | 1340 | 110 | 0.48 | 49 | 960 | 70 | 0.12 | 43 | IP44 |
| 400-32° | 3x400/690 | 1350 | 250 | 0.60 | 52 | 1050 | 150 | 0.30 | 47 | IP44 |
| 450-32° | 3x400/690 | 1350 | 400 | 0.85 | 56 | 1050 | 300 | 0.50 | 50 | IP44 |
| 500-40° | 3x400/690 | 1380 | 880 | 1.90 | 58 | 1050 | 660 | 1.15 | 56 | IP44 |

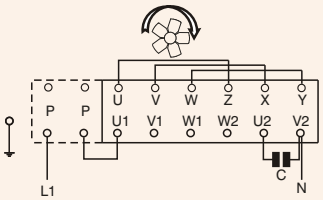
*= Soundpressure level at 5 m distance each fan, free field conditions

**= IP44 fan motors also available in IP66 execution (extra price)

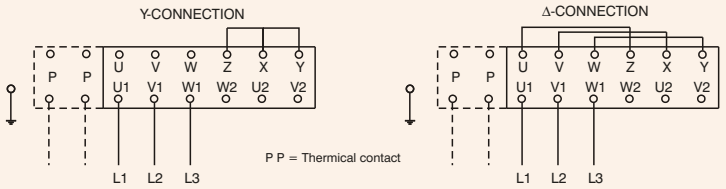
**Fig. 1** ***Connections***

**Single-fase motors**




**Three phase motors**




***Frequency controller***

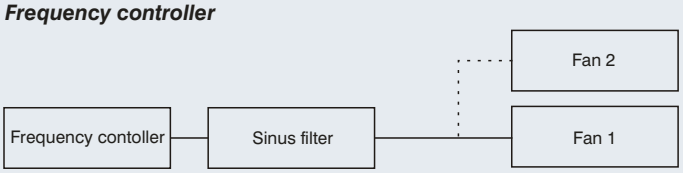
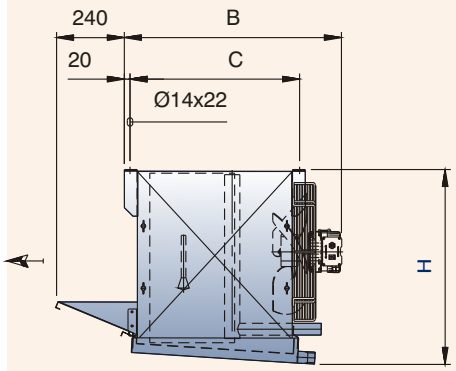
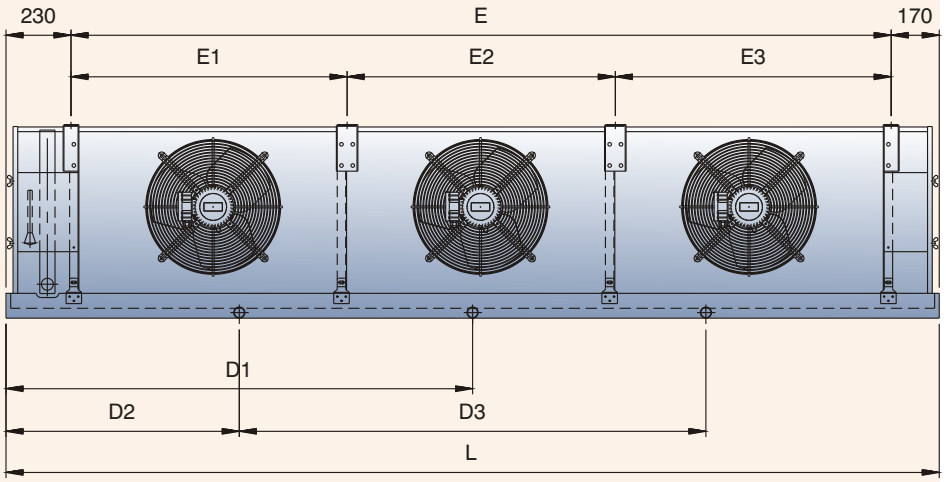



**Fig. 2**



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