

# Air cooler VNS

## Agricultural

Cu/Al - R404A

GEA refrigeration



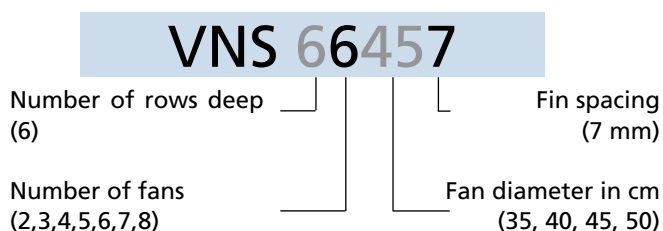
Goedhart



# Goedhart VNS

The Goedhart VNS range of ceiling mounted aircoolers are specially designed for use in chill rooms, working with an air temperature of  $\pm 0^{\circ}\text{C}$ . The aircoolers are especially suitable for vegetable and fruit storage, working with a small  $\Delta T$  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 coil block is standard build from aluminium end plates, copper tubes and aluminium fins. The range consists of 16 types with a nominal capacity range between 11,5 and 63,2 kW. The modular design incorporates 4 different sizes of fans (350, 400, 450 and 500 mm)..

## Type description



## Coil execution

- Tube pitch : 50x50 mm square
- Fin spacing : 7 mm
- Material : 15mm o.d. copper tubes  
: aluminium HT-fins
- Optimized cooling circuits
- Standard refrigerant connections are positioned on the left hand side of the unit when looking with the direction of the airflow.
- Goedhart 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.
- The coolers are suitable for the most commonly used refrigerants/mediums with the exception of  $\text{NH}_3$ .

## Casing

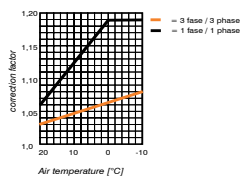
- Construction for ceiling mounting
- Casing material of galvanized sheet steel
- Finishing is standard white epoxy spray (RAL 9003)
- Bend/header projection by end covers, easy removed for maintenance
- Hinged drip tray
- Defrost by hot gas spiral or electric defrost elements will be fixed to the bottom side of the coil.

# General range features

## Fans

- Manufacturer : Süd Electric
- Diameter : 350, 400, 450 and 500 mm
- Electrical supply : 3x400V-50Hz or 1x230V-50Hz
- Protection class : IP44 (IP 66 on request)
- Frequency regulation : only in combination with sinus filter
- Temperature : between -40°C and +45°C
- Thermo contact : PTO

When the air temperature is lower then -40 °C , special fans are needed. These special fans have a longer delivery time. The technical data in the selection table 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.



## Capacities

The capacities in the table below are based on R404A. The indicated temperature differences (DTM) are between the evaporating temperature ( $T_o$ ) and the average air temperature across the cooler. The nominal capacity is based on:

- evaporation temperature ( $T_o$ ) -5 °C
- liquid temperature before expansion valve +25 °C ( $T_o$  = -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

### 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.

## Mounting and Maintenance

VNS is delivered on a wooden frame. When on the frame, Goedhart VNS can be handled by forklift truck, which makes positioning and installation simple. Refer to our maintenance and installation manual.



## Sound data

The mean sound pressure (LpA @ 3m ± 2 dB (A)) each air cooler is a calculated indication value according to the EN13487 standard parallel pipe. Goedhart uses the fan manufacturer's

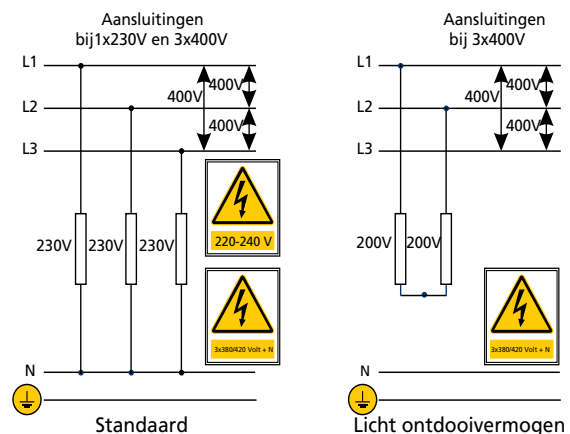
sound power level (LwA) at the inlet side of the fan. Changes to or by the fan or the product, affect the sound, in these cases, consult the manufacturer for the new indication value. In critical sound requirements, we advise you to consult an expert.

## 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

### Electrical defrost

On request Goedhart 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.



### Hot gas defrost

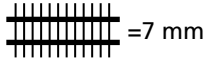
The coil block is suited for hot gas defrost ( hot gas supply through the suction header). The drip tray can be provided with a copper hot gas spiral. This is enclosed in aluminium profiles that are rigidly secured to the under side of the aluminium inner drip tray

## Optional extras

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

- Insulation discs
- Feet for floor mounting
- Coating on the coil block
- 60Hz fan motors
- EC-fans
- Cooling mediums (glycol/water/etc.)
- Pump system
- 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 and cooling section)

# VNS Technical data



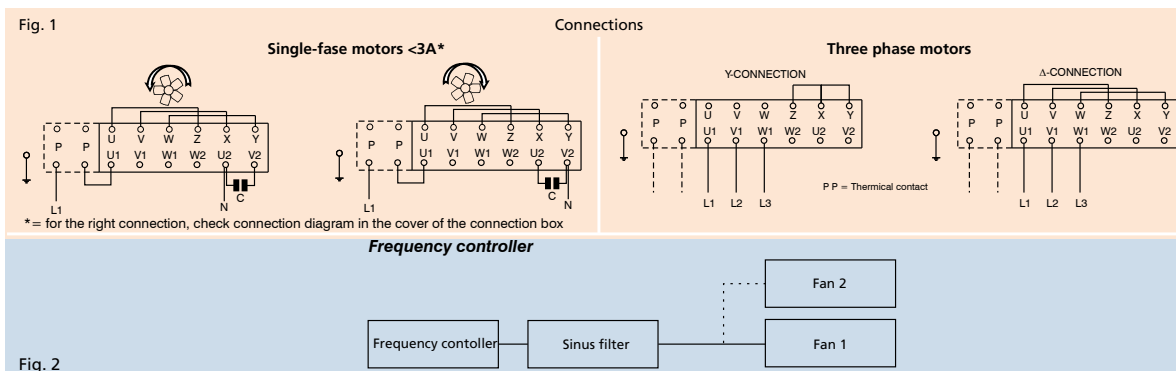
| Type                                                                                                                        | 3x400V-50Hz-4 pole - Δ (1500 tpm) |                 |                |                                |           |                                                       | Surface | Fans   |          | Electrical defrost |           |       |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------|----------------|--------------------------------|-----------|-------------------------------------------------------|---------|--------|----------|--------------------|-----------|-------|
|                                                                                                                             | Capacity                          |                 |                | Capacity                       | Airvolume | Sound pressure indication (LpA) at 3 m (+/- 2 dB(A))* |         | Number | Diameter | Coilblock          | Drip tray | Total |
|                                                                                                                             | DTM=7K<br>-5/+2                   | DTM=6K<br>-5/+1 | DTM=5K<br>-5/0 | DT1=8K<br>Air on=0°C<br>-8 / 0 |           |                                                       |         |        |          |                    |           |       |
| VNS                                                                                                                         | kW                                | kW              | kW             | kW                             | m³/h      | dB(A)                                                 | m²      |        | mm       | kW                 | kW        | kW    |
| 6.3.35.7                                                                                                                    | 13,6                              | 11,3            | 8,9            | 11,5                           | 6950      | 57                                                    | 77      | 3      | 350      | 3,36               | 2,07      | 5,43  |
| 6.4.35.7                                                                                                                    | 17,7                              | 13,5            | 11,2           | 14,9                           | 9260      | 58                                                    | 102     | 4      | 350      | 4,66               | 2,76      | 7,42  |
| 6.5.35.7                                                                                                                    | 23,7                              | 18,8            | 13,3           | 19,8                           | 11580     | 58                                                    | 128     | 5      | 350      | 5,68               | 2,34      | 8,02  |
| 6.6.35.7                                                                                                                    | 27,9                              | 23,0            | 17,7           | 23,5                           | 13890     | 59                                                    | 154     | 6      | 350      | 6,72               | 2,74      | 9,46  |
| 6.7.35.7                                                                                                                    | 33,1                              | 25,9            | 20,8           | 27,5                           | 16200     | 59                                                    | 179     | 7      | 350      | 7,76               | 3,12      | 10,88 |
| 6.8.35.7                                                                                                                    | 38,2                              | 30,7            | 22,9           | 31,9                           | 18520     | 60                                                    | 205     | 8      | 350      | 8,80               | 3,52      | 12,32 |
| 6.3.40.7                                                                                                                    | 19,9                              | 15,9            | 12,5           | 16,8                           | 10005     | 56                                                    | 107     | 3      | 400      | 4,40               | 2,46      | 6,86  |
| 6.4.40.7                                                                                                                    | 26,5                              | 21,6            | 16,7           | 22,4                           | 13340     | 57                                                    | 142     | 4      | 400      | 5,68               | 2,34      | 8,02  |
| 6.5.40.7                                                                                                                    | 32,1                              | 26,0            | 20,9           | 27,0                           | 16670     | 58                                                    | 178     | 5      | 400      | 6,72               | 2,74      | 9,46  |
| 6.6.40.7                                                                                                                    | 40,4                              | 32,0            | 23,6           | 33,8                           | 20000     | 59                                                    | 213     | 6      | 400      | 8,28               | 3,34      | 11,62 |
| 6.3.45.7                                                                                                                    | 30,6                              | 24,4            | 19,2           | 25,7                           | 15490     | 60                                                    | 162     | 3      | 450      | 8,28               | 2,34      | 10,62 |
| 6.4.45.7                                                                                                                    | 40,7                              | 33,2            | 25,7           | 34,4                           | 20660     | 61                                                    | 216     | 4      | 450      | 10,08              | 2,92      | 13,00 |
| 6.5.45.7                                                                                                                    | 51,5                              | 41,5            | 32,1           | 43,4                           | 25820     | 62                                                    | 270     | 5      | 450      | 12,42              | 3,52      | 15,94 |
| 6.6.45.7                                                                                                                    | 59,7                              | 49,6            | 38,8           | 50,7                           | 30980     | 63                                                    | 325     | 6      | 450      | 15,60              | 4,16      | 19,76 |
| 6.5.50.7                                                                                                                    | 59,3                              | 48,8            | 37,0           | 52,1                           | 35310     | 69                                                    | 284     | 5      | 500      | 13,20              | 3,74      | 16,94 |
| 6.6.50.7                                                                                                                    | 72,1                              | 56,2            | 45,1           | 63,2                           | 42380     | 69                                                    | 341     | 6      | 500      | 16,56              | 4,38      | 20,94 |
| * = Sound pressure indication (LpA) at 3 m distance each air cooler (+/- 2 dB(A)), free field conditions, according EN13487 |                                   |                 |                |                                |           |                                                       |         |        |          |                    |           |       |

Air coolers details

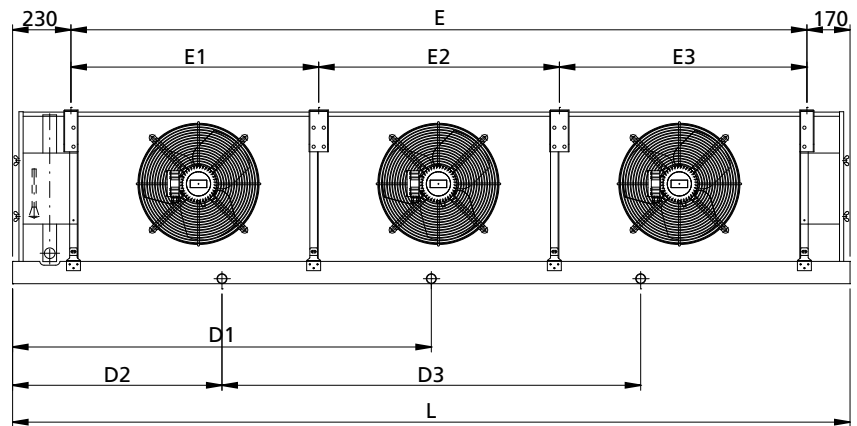
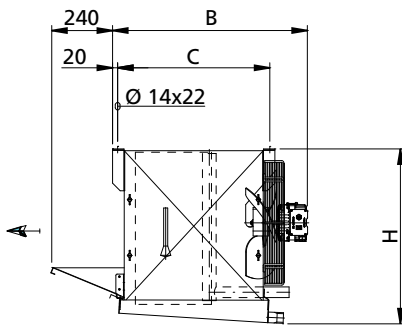
Air coolers details

|          | Nominal values at<br>50Hz- <b>3x400V</b> -T=40°C |                |              |                                             |                   |                |              | Nominal values at<br>50Hz- <b>1x230V</b> -T=40°C |                |              | Fan details |
|----------|--------------------------------------------------|----------------|--------------|---------------------------------------------|-------------------|----------------|--------------|--------------------------------------------------|----------------|--------------|-------------|
| Fan type | Δ                                                |                |              |                                             | Y                 |                |              | Speed                                            | Absorbed Power | Absorbed FLC |             |
|          | Speed                                            | Absorbed Power | Absorbed FLC | Sound power level each fan (LwA) (+/- 2dBA) | Speed             | Absorbed Power | Absorbed FLC |                                                  |                |              |             |
| mm       | min <sup>-1</sup>                                | Watt           | A            | dB(A)                                       | min <sup>-1</sup> | Watt           | A            | min <sup>-1</sup>                                | Watt           | A            |             |
| 350-36°  | 1340                                             | 110            | 0,48         | 74                                          | 960               | 70             | 0,12         | 1350                                             | 170            | 0,80         |             |
| 400-32°  | 1350                                             | 250            | 0,60         | 74                                          | 1050              | 150            | 0,30         | 1350                                             | 450            | 1,95         |             |
| 450-32°  | 1350                                             | 400            | 0,85         | 78                                          | 1050              | 300            | 0,50         | 1350                                             | 450            | 1,95         |             |
| 500-40°  | 1380                                             | 880            | 1,90         | 85                                          | 1050              | 660            | 1,15         | 1330                                             | 700            | 3,40         |             |

Fan details



# VNS Technical data



| Type     | Dimensions |     |     |     |            |      |      |       |      |      |      | Internal<br>volume | Weight<br>(empty) | Dimension details |
|----------|------------|-----|-----|-----|------------|------|------|-------|------|------|------|--------------------|-------------------|-------------------|
|          | L          | B   | H   | C   | Suspension |      |      | Drain |      |      |      |                    |                   |                   |
|          |            |     |     |     | E1         | E2   | E3   | D1    | D2   | D3   | Size |                    |                   |                   |
| VNS      | mm         | mm  | mm  | mm  | mm         | mm   | mm   | mm    | mm   | mm   | Size | dm³                | kg                |                   |
| 6.3.35.7 | 2260       | 800 | 540 | 600 |            | 1856 |      | 1128  |      |      | ¾"   | 19                 | 149               |                   |
| 6.4.35.7 | 2860       | 800 | 540 | 600 |            | 2456 |      | 1428  |      |      | ¾"   | 26                 | 190               |                   |
| 6.5.35.7 | 3460       | 800 | 540 | 600 | 1528       | 1528 |      |       | 864  | 1728 | ¾"   | 32                 | 229               |                   |
| 6.6.35.7 | 4060       | 800 | 540 | 600 | 1828       | 1828 |      |       | 1014 | 2028 | ¾"   | 38                 | 267               |                   |
| 6.7.35.7 | 4660       | 800 | 540 | 600 | 1828       | 2428 |      |       | 1164 | 2328 | ¾"   | 45                 | 309               |                   |
| 6.8.35.7 | 5260       | 800 | 540 | 600 | 2428       | 2428 |      |       | 1314 | 2628 | ¾"   | 51                 | 349               |                   |
| 6.3.40.7 | 2710       | 770 | 590 | 600 |            | 2306 |      | 1353  |      |      | 1 ¼" | 27                 | 191               |                   |
| 6.4.40.7 | 3460       | 770 | 590 | 600 | 1528       | 1528 |      |       | 864  | 1728 | 1 ¼" | 36                 | 244               |                   |
| 6.5.40.7 | 4210       | 770 | 590 | 600 | 1528       | 2278 |      |       | 1052 | 2103 | 1 ¼" | 44                 | 298               |                   |
| 6.6.40.7 | 4960       | 770 | 590 | 600 | 2278       | 2278 |      |       | 1239 | 2478 | 1 ¼" | 53                 | 352               |                   |
| 6.3.45.7 | 3310       | 770 | 690 | 600 |            | 2906 |      |       | 827  | 1653 | 1 ¼" | 40                 | 256               |                   |
| 6.4.45.7 | 4260       | 770 | 690 | 600 | 1928       | 1928 |      |       | 1064 | 2128 | 1 ¼" | 54                 | 329               |                   |
| 6.5.45.7 | 5210       | 770 | 690 | 600 | 1928       | 2878 |      |       | 1302 | 2603 | 1 ¼" | 67                 | 404               |                   |
| 6.6.45.7 | 6160       | 770 | 690 | 600 | 2878       | 2878 |      |       | 1539 | 3078 | 1 ¼" | 80                 | 477               |                   |
| 6.5.50.7 | 5460       | 890 | 690 | 700 | 2028       | 3028 |      |       | 1364 | 2728 | 1 ¼" | 71                 | 453               |                   |
| 6.6.50.7 | 6460       | 890 | 690 | 700 | 2028       | 2000 | 2028 |       | 1614 | 3228 | 1 ¼" | 85                 | 536               |                   |

# Goedhart standard product information

## Goedhart standard aircooler overview



VCI



DVS/DRS/DZS



ZGB/ZGZ



PAC



FC38



ZFB/ZFZ



# Goedhart air coolers for every application

For Contractors and Original Equipment Manufacturers (OEM) related to the industrial refrigeration industry, GEA Goedhart B.V. offers an unlimited range of air coolers and air cooled condensers in several configurations.

Depending on the application, the optimum configuration will be selected in close cooperation with our customers.

## Configurations

The following material combinations are available in various tube pitches and various fin spacing:

| Tube material                      | Tube configuration  | Fin material                       |
|------------------------------------|---------------------|------------------------------------|
| Copper (Cu)                        | 38x33, 50x50, 60x60 | Aluminium (Al)                     |
| Stainless steel (Stst)             | 38x33, 50x50, 60x60 | Aluminium (Al)                     |
| Stainless steel (Stst)             | 50x50               | Stainless steel (Stst)             |
| Aluminium (Al)                     | 60x60               | Aluminium (Al)                     |
| Hot dipped galvanized steel (FeZn) | 60x60, 75x75        | Hot dipped galvanized steel (FeZn) |

## Options on aluminium fins

- Goldlack coated fins
- Seawater resistant aluminium fins (AlMg)

## Applications

| Cooling                            | Freezing                           |
|------------------------------------|------------------------------------|
| Cold stores / Distribution centres | Cold stores / Distribution centres |
| Food processing rooms              | Tunnel / spiral freezers           |
| Fruit storage                      | Slaughter houses                   |
| Banana ripening storage            | Automotive testing rooms           |
| Greenhouse conditioning            | Ski domes                          |

## Pressure Equipment Directive (P.E.D.)

All aircoolers produced by Goedhart comply with the Pressure Equipment Directive 97/23/EC. PED certificates can be downloaded from [www.goedhart.nl](http://www.goedhart.nl).





GEA Refrigeration

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GEA Refrigeration

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