engineering for a better world



AFC Compact Systems: GEA Searle NS Air Cooler

Top-level engineering solutions

GEA Heat Exchangers

For full selection data either refer to the Selection data tables or use the Searle selection software, either online or via your local GEA Searle representative.





Commercial Air Coolers
AFC Compact Systems

GEA Searle's wide range of commercial unit coolers guarantee the continued excellence of our product range in terms of innovation, design and performance to offer the ideal cooler at a competitive price. They are the 1st choice product for their proven design and reliability, the range comes with many benefits which is often utilised across many industries the applications include small and large cold rooms and cabinets, warehouses, food storage and preparation rooms, freezers and blast freezing.

For more information, please refer to our Selection Software program or selection data tables. Alternatively a fully interactive version of selection software is available online at www.searle.co.uk, where it is possible to view all brochures and Installation & Maintenance manuals.

Commercial Air Coolers general features
AFC Compact Systems



Motors & Fansets

GEA Searle selects the optimum combination of motors and fans to deliver the best performance for the cooler size and application range. All motors and fansets are verified for power input and air volume in our Research & Development department. Specific motor data details are provided in the relevant section for each cooler type.

EC

EC fansets offer the optimum in energy efficient performance combined with low noise levels and high reliability. The KEC and TEC Cooler range uses EC fansets as standard making them the most energy efficient cooler products available. Energy usage can be less than 50% of that of similar products, resulting in a product with a reduced payback period. Additional benefits include;-

- Internal motor protection
- Long service life
- High efficiency across the full operating range

For more information on EC fansets please see "Energy Efficient Fansets" in this catalogue

Casework

The standard GEA Searle cooler casework is white powder coated, oven cured at 180^{o}C to provide a hard durable finish. The JG, KLe and NS coolers are manufactured using aluminium casework, while the TEC, KEC, KMe and DSR all utilise galvanised steel casing.

Blygold® Coating (Optional)

GEA Searle specialist coating facility, where a Blygold® coating is applied and cured to protect the finned coils against harsh environmental conditions such as erosion by sand or salt. It provides a barrier and avoids the risk of electrolytic reactions between the two metals involved. The coating contains aluminium, in order to maintain the thermal performance of the coil, resulting in an extension of the lifetime, maximum cooling capacity and reduction of energy costs. The coating is oriented in such a way that it creates a very high chemical resistance at low layer thickness.



The Blygold® concept is a revolutionary product created to prevent corrosion which will ultimately reduce energy costs.





The duties presented in the specification tables are nominal. Tests are conducted in accordance with EN 328 under dry conditions which allows performance to stabilise and permits measurement over a prolonged period. The wet catalogue capacities are calculated from the dry capacities using the ratios given in the Eurovent Standard 7/C/001.



Refrigeration	R404A	R134a	R507A	R407A/F	R407C
Capacity factor (dew point, DT1)	1.00	0.91	0.97	1.18*	1.35*
Refrigerant charge density (kg/dm^3)	0.312	0.338	0.313	0.332	0.332

*Dew point capacity factors for refrigerants with high glide apply only at the nominal rating condition. Mid point factors can be used for all conditions. Refrigerant Charge Densities based on 25% of the internal volume being liquid.



Commercial Air Coolers
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Range benefits

The GEA Searle range of commercial unit coolers combine versatility and aesthetic design with consistent performance to offer the ideal cooler at a competitive price. They are typically the 1st choice product for the following applications due to their proven design and reliability :-

- Cold rooms
- Food storage
- Food preparation
- Cool cabinets

GEA Searle coolers are approved for many supermarkets across the world and are used extensively in convenience stores, commercial refrigeration applications and many industrial & agricultural projects.

Selection software

Due to the large number of models available and the range of alternative refrigerants, selection of the optimum cooler is best performed using the latest Searle Selection Software. The software can be obtained either as a CD, direct from your GEA Searle representative or dowloaded from the GEA Searle website, where it is also possible to view all brochures and installation & maintenance data.

Energy efficient

With the increasing importance of energy efficiency as part of the selection criteria, the new GEA Searle coolers utilise fansets which offer significant energy savings over traditional motor assemblies. The KEC and TEC cooler have high efficiency EC fans as standard across the range.

Assured performance

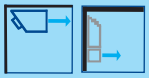
All our commercial unit coolers where applicable are certified under the Eurovent Certify All" programme to guarantee that every unit will perform as specified.

Availability

Many of the models in the commercial unit cooler ranges are available ex-stock from your local distributor, with backup stocks held at the UK manufacturing plant centre.

Backing our beliefs

We offer 24 months warranty on all products in the range, with 24 months warranty on all coolers (subject to standard Terms & Conditions of Sale and excluding corrosion through misapplication).

	Models	No fans	Configuration	Eurovent
	JG	1 - 3		✔
	TEC*	1 - 3		✔
	NS	1 - 4		✔
	KEC*	1 - 3		✔
	KMe	1 - 4		✔
	KLe	1 - 3		✔
	DSR*	1 - 4		✔

✔ Yes X No O Option

	Options							Capacity KW @ 8 kTD
	Suppy	EC Fans	Standard Electric Defrost	Heavy Electric Defrost	Hot Gas Defrost A/B/C/D	CO2	Fin Materials	1 — 10 — 100
	1 ph	X	✔ Kit	X	X	X	Al	0.3 - 1.6 kW
	1 ph	✔	✔ Kit	X	X	X	Al	0.5 - 3.4 kW
	1 ph	X	✔	X	X	X	Al	1.7 - 6.9 kW
	1 ph	✔	✔	X	✔	✔	Al	1.2 - 10.5 kW
	1 & 2 ph	O	✔	✔	✔	✔	Al	5.7 - 28 kW
	3 ph	✔	✔	X	✔	✔	Al	8 -51 kW
	1 ph	X	✔	X	✔	✔	Al	0.8 - 15 kW

Note: * See page 196 for CO2 variations of these coolers

NS Air Cooler
AFC Compact Systems



NS	25	6	Al

Range	NS
Model	14,25,28,37,43,57
Fin spacing	6 mm
Fin material	Al = Aluminium



NS Unit Cooler

This low profile range of NS unit coolers continues the GEA Searle philosophy of energy efficient product design. With a capacity range from 1.69 kW up to 6.93kW and 6mm fin spacing, these coolers are suitable for both high and low temperature applications. The heat exchanger incorporates Searle'D' fin with extended inner surface copper tube which has proved very popular since its introduction. Its unique coil geometry is highly efficient and provides a high secondary surface on which to deposit frost and extend initiation times between defrost cycles. The range is certified for its performance by Eurovent (see below) and the capacities listed are in accordance with its strict rules.

Casework

All the coolers are constructed from aluminum sheet panels to form a rigid but lightweight structure. To enable the unit to be lifted directly into place the drain tray is constructed from pregalvanized steel. There are key hole slots in the top plate to allow the cooler to be fitted flush to the ceiling thereby limiting the opportunities for bacterial growth. The end covers are secured by only two screws, thus making removal quick and easy for installation and service needs.

.Coils

Standard (Cu/Al) coils are manufactured from copper tube (with extended inner surface) mechanically expanded into aluminum fins. The metric fin spacing of 6mm, this equates to approximately 4 fins per inch. All coils are tested to 35.8 bar using dry air down to -40˚C dew point. The Searle 'D' fin which has been specially developed for refrigeration applications, ensures optimum heat transfer efficiency combined with minimum defrost demand and low refrigerant charge. The units have been designed with the refrigerant connections located at the left hand side when looking at the fans.

Distribution System

Good refrigerant distribution is essential to a achieve maximum and stable performance from any system. The NS coolers have been thoroughly tested to determine the ideal distribution system to operate over the wide range of conditions expected. The NS14 can be used with an internally equalized TEV. All other units must use externally equalized TEV's.

Motors and Fans

All units use 1300rpm 18 Watt shaded pole motors fitted with 5 bladed 254mm diameter fans. These components were selected after extensive testing and trials. These 4 pole motors conform to IP42 and are suitable for 230V-1ph-50/60 Hz supply. They are individually connected back to a terminal box via a push on plug and socket which allows the motor fan assembly to be quickly and easily dismounted for service purposes.

Defrost

The low temperature versions of these coolers employ electric defrost systems comprising two stainless steel hairpin heater elements fitted into the coil block and one to the coil base plate. Extensive testing has been carried out to determine the optimum heater wattage necessary to clear frost formation whilst minimizing power input and the risk of steaming. The heaters are individually wired to the terminal box located at the opposite end to the refrigerant connections.



NS Selection data, Drawings and Dimensions

Model	R404A Catacity @ SC2	Fan and motor specifications 230 - 1ph 50Hz								Coil data		Connections		Electric defrost
		No of fans	Air volume	Air throw (***)	Noise level (**)	Total power input †	Motor speed	F.L.C per fan	SC per fan	Surface area	Internal volume	Inlet	Outlet	
	kW*		m^3/s	m	dBA	W	W	A	A	m^2	dm^2			W
NS14 - 6	1.69	1	0.24	6.0	53	70	18	0.55	1.5	9.02	2.48	1/2"	1/2"	1.29
NS25 - 6	2.74	2	0.50	6.5	56	140	18	0.55	1.5	12.02	3.01	1/2"	5/8"	2.21
NS28 - 6	3.44	2	0.49	6.0	56	140	18	0.55	1.5	18.04	4.52	1/2"	5/8"	2.25
NS37 - 6	4.13	3	0.75	6.5	58	210	18	0.55	1.5	18.04	4.52	1/2"	7/8"	3.18
NS43 - 6	5.18	3	0.73	6.0	58	210	18	0.55	1.5	27.06	6.56	1/2"	7/8"	3.24
NS57 - 6	6.73	4	0.97	6.0	59	280	18	0.55	1.5	36.07	8.60	1/2"	7/8"	4.23

Notes:

Rating conditions:
The duties shown in this catalogue are at EN 328 Standard Condition 2 (-8°C saturated suction temperature, 0°C air entering). For data on refrigerants not shown, please contact your supplier.

* DT1 is the difference between the entering air temperature and the saturated suction temperature at the outlet of the cooler.
** Noise levels are based on free field conditions at a distance of 3m. Actual noise levels will depend upon cold store construction, store loading and the number of coolers installed.
*** Terminal air velocity 0.25m/s, free air conditions at 10°C. Air throw cannot be considered on absolute value because many factors have a substantial effect on the distance achieved.
† Total Power Input at Standard Condition 2 (-8°C saturated suction temperature, 0°C air entering).

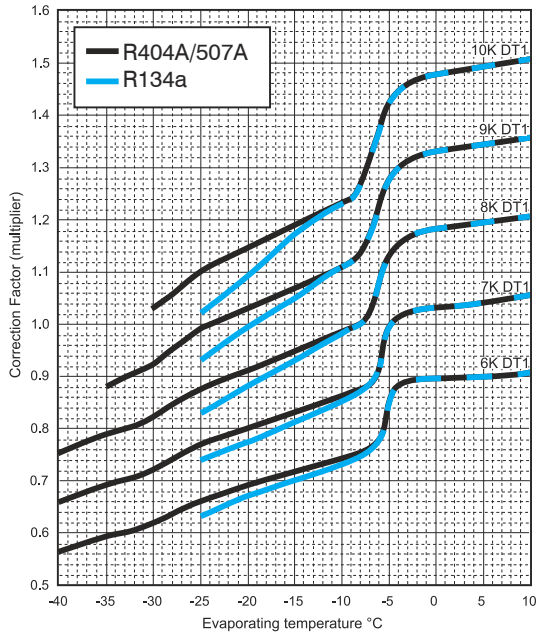
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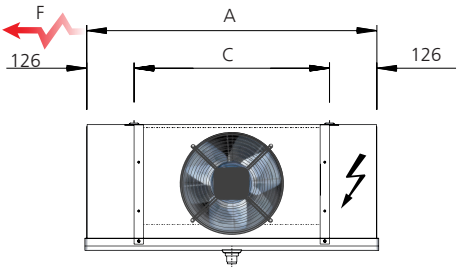
* Capacity factors for refrigerants with high glide apply only at the nominal rating condition. Refrigerant charge densities are based on 25% of the internal volume being liquid.

Correction factors

(Multiply capacity by appropriate correction factor to give performance at chosen conditions)

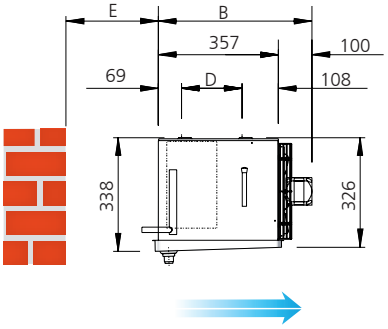
NS Cooler DT1 - WET



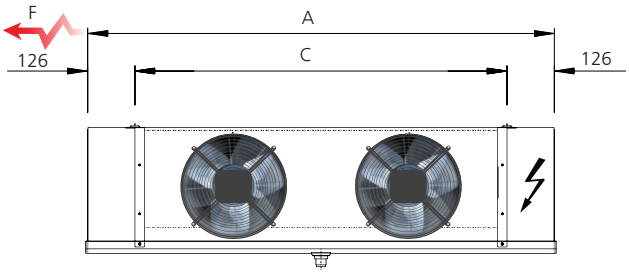


3/4" BSP (M)
Drain conn

Min HTR Unit to wall

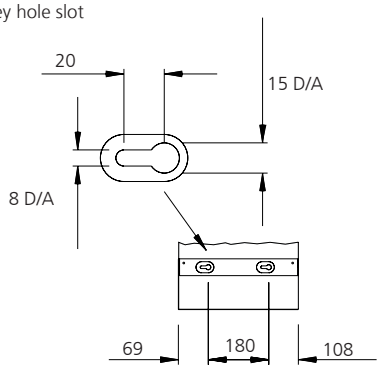


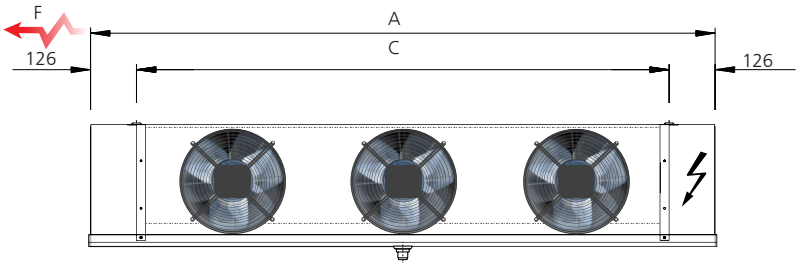
Heater removal 1000 Min



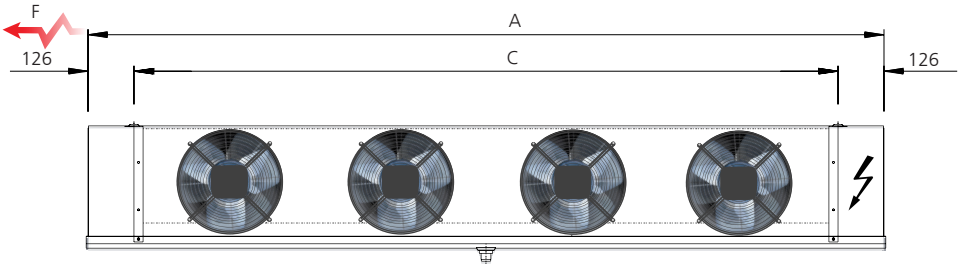
3/4" BSP (M)
Drain conn

Key hole slot





3/4" BSP (M)
Drain conn



3/4" BSP (M)
Drain conn

'F' = Min heat Withdrawal

Model	Overall		Mounting centres		E	F	Dry Weight kg
	A	B	C	D			
NS14 - 6	772	457	520	180	275	550	15
NS25 - 6	1242	457	990	180	275	1020	22
NS28 - 6	1242	457	900	180	275	1020	26
NS37 - 6	1712	457	1460	180	275	1200	31
NS43 - 6	1712	457	1460	180	275	1200	36
NS57 - 6	2182	457	1930	180	275	1200	46

Excellence Passion Integrity Responsibility GEA-versity

GEA Group is a global mechanical engineering company with multi-billion euro sales and operations in more than 50 countries. Founded in 1881 the company is one of the largest providers of innovative equipment and process technology. GEA Group is listed in the STOXX Europe 600 Index.

GEA Heat Echangers

GEA Searle

20 Davis Way, Newgate Lane, Fareham, PO14 1AR
Tel. +44 (0) 1329 823344, Fax +44 (0) 1329 821242
sales@searle.co.uk, www.searle.co.uk

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