



engineering for a better world



AFC Compact Systems: GEA Searle SM Air Coolers

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.





Industrial Air Coolers

AFC Compact Systems

GEA Searle's range of industrial cooling products, offer a wide range of solutions for industrial refrigeration, both standard and special. In addition, GEA Searle also offer unmatched technical support and excellent manufacturing capabilities and capacity. Based on many years experience in these market places, GEA Searle can combine these resources to work with customers in designing and manufacturing bespoke solutions to meet any industrial application.

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.

Industrial 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.

Casework

The LSR, SM and FM coolers are manufactured using galvanised sheet case work, white or grey power coated, oven cured at 180 °c to provide a guard durable finish.

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 capacities for operational (or 'wet') conditions. They have been calculated from the tested 'dry' conditions, conducted in accordance with EN 328, using ratios as specified by Eurovent Standard 7/C/001. Tests are conducted under dry conditions which allows performance to stabilise and permits measurement over a prolonged period. Please note that these ratios are already included in the performance data.

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.



SM Industrial Cooler

AFC Compact Systems



SM 16 1 - 4 4 - A3 EL CU/AL

Range	SM
Height of case	Tubes high = 16, 20, 24, 30
No. of fans	1, 2, 3, 4
Coil depth (No of rows)	4, 6, 8
Fin spacing	4mm, 6mm, 8mm
Fan/Motor type	Ducted axial = A1, A2, A3, A4, A5, A6, Propeller = P1
Defrost	EL = Electric defrost in coil and drain tray, HGEA,B,C,D = hot gas coil, electric drain tray defrost, HGDA,B = hot gas coil and drain tray defrost, HGDC = hot gas coil and drain tray defrost, HGDD = hot gas coil and drain tray defrost,
Coil materials	Cu/Al = Copper, Aluminium fin,

SM Industrial Cooler

Features

- Versatile range of floor mounted coolers.
- Robust construction, designed to withstand demanding applications.
- Capacities can be achieved with many choices of size, fin spacing and air volume.
- Can be flush-mounted to ceiling.
- Easy access for maintenance and cleaning. Structural, one-piece draintray allows units to be lifted, fully-assembled, from underneath.
- Fin design provides high surface area for frost build-up. Minimal refrigerant charge.
- Double-skinned, insulated draintray assists defrost in low temperature applications and prevents condensation in high temperature applications.

General

The SM range has been designed to be as versatile as possible, whilst allowing unit selections to be easily made. The following specification pages have been laid out to ease the selection process. Unit sizes and coils have been matched with different fan/ motor combinations to broadly meet two common operating conditions: 1. High temperature applications such as store rooms and occupied areas. These units, with either propeller or ducted axial fans, feature low face velocities, low noise and high efficiency. These fans have also been selected to ensure that there is no water carry-over.

2. Low temperature applications such as cold storage or blast freezing in generally unoccupied areas. These units, with ducted axial fans, feature high face velocities and high air throws where low noise levels are not required. These units offer greater duty for a given size than high temperature units.

The choice of particular units is not restricted to these operating conditions, but greater care will need to be taken in the application of units outside the given conditions. For example, water carry-over could occur when operating 'low temperature' units in certain high temperature applications. The range is divided into 4 heights; the SM16, SM20, SM24 and the SM30, with up to 4 fans - either propeller or ducted axial - and 3 coil depths. Data is shown for 4, 6 and 8mm fin spacing. For 12mm fin spacing multiply 8mm duty figures by 0.8.

Refrigerant

Capacity data is shown for R404A, with correction factors provided for other common refrigerants. For refrigerants and fluids not shown, including ammonia and water/glycol mixes, please consult your supplier.

This will lead to reduced on going energy costs. In addition, the relatively low internal coil volume results in reduced refrigerant charge.

Fan/Motors

Propeller or ducted axial fans with varying face velocities and air throws are offered to provide optimum performance in the two broad operating conditions outlined in 'General' above.

Pump circulation

Arranged as bottom feed for pump rates between 3:1 and 5:1. For other pump rates please refer to your supplier.

Location

Incorrect unit location will adversely affect unit performance and air flow. Units should be adequately spaced from walls to ensure even air coverage over the coil block. For advice on unit location, please contact your supplier.

Air throw

Air throws quoted within this catalogue are base on a terminal velocity of 0.25m/s in ideal conditions. Store layout, cooler location and type of fan can affect the air throw. Please refer to your supplier for further information.

Noise Levels

Noise levels are quoted at a distance of 3m from the unit at an angle of 45° to the horizontal within a free field condition. The figures are supplied as a guide only, showing comparative noise levels between models and fan selections. If the application is noise sensitive we would advise the appointment of an independent noise consultant.

Specification

Location

Incorrect unit location will adversely affect unit performance and air throw. Units should be adequately spaced from walls to ensure even air coverage over the coil block. For advice on unit location, please contact your supplier.

Defrost

Electric defrost coil and draintray Stainless steel heater elements with hermetically sealed terminals are pre-wired to a common junction box.

Hot gas coil, electric draintray (HGEA, HGEB, HGEC, HGED) Incorporating four circuiting options all with electric heater rods within the draintray.

Hot gas coil and draintray (HGDA, HGDB, HGDC, HGDD) Generally as above but units are supplied with a hot gas tube matrix within the draintray. Fan Plate Heaters. For high latent load applications, fan plate heaters are available as an option on propeller fan units.

Defrost Defrost

Defrost loads include drain pan power as below.

Modules	FM--1	FM--2	FM--3	FM--4
Drainpan	1.6	3.2	4.8	6.4

Peripheral heater load (where fitted) for ducted axial fan sets 800mm diameter = 630W, 900mm diameter = 710W per fan

Correction factors

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

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

General

Note: All data for 400V, 3 phase, 50Hz supply. Noise levels are quoted at a distance of 3m from the units (free field). Capacities are nominal, based on DT1 dew point and stated at Eurovent standard condition 2 (-8°C saturated suction temp, 0°C air entering).

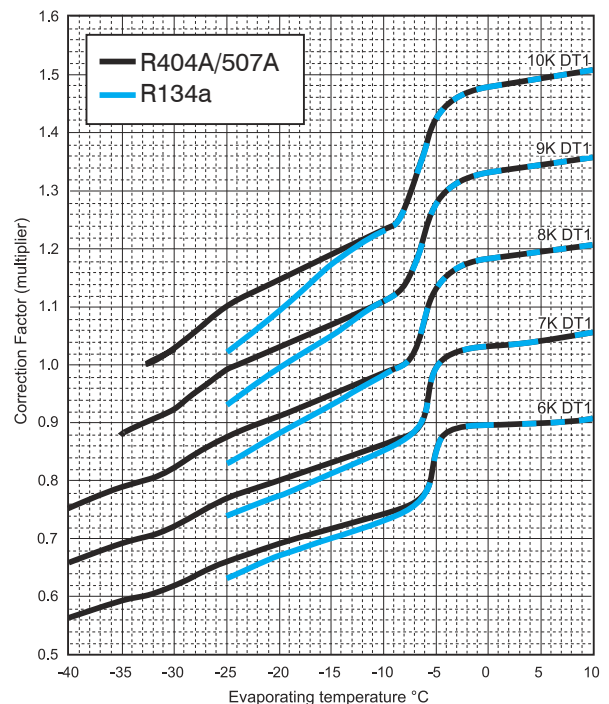
Correction Factors (Multiply capacity by appropriate correction factor to give performance at chosen conditions)

Peripheral Heaters recommended for use on all ducted axial fan options when operating below freezing.

Rating Conditions and Correction Factors

The duties shown in this catalogue are at Eurovent Standard 7/C/001, Standard Condition 2 - (-8°C saturated suction temp. (dewpoint), 0°C air entering). Capacities are based on DT1 the difference between the entering air temperature and the saturated suction temperature at the outlet of the cooler.

SM Cooler DT1 - WET



6mm Specification

High/low temperature

Low face velocity, low capacity, low air throw, compact unit

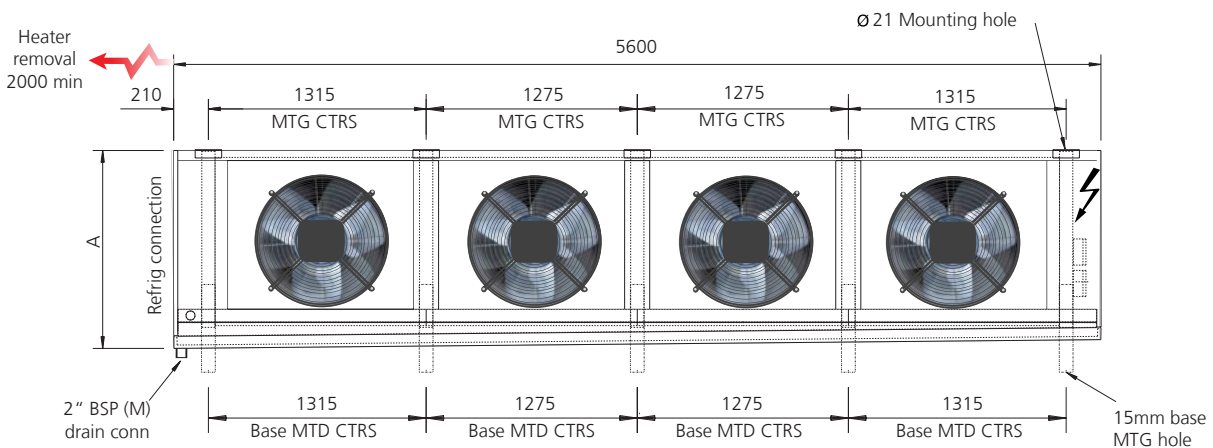
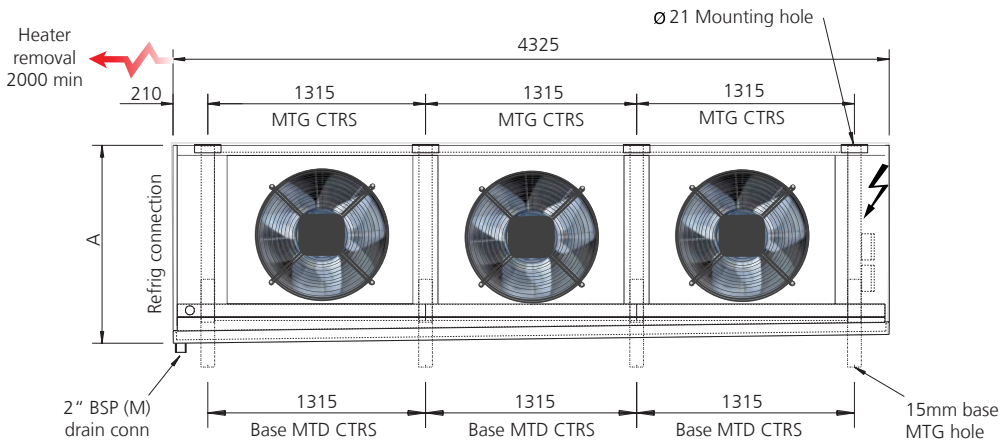
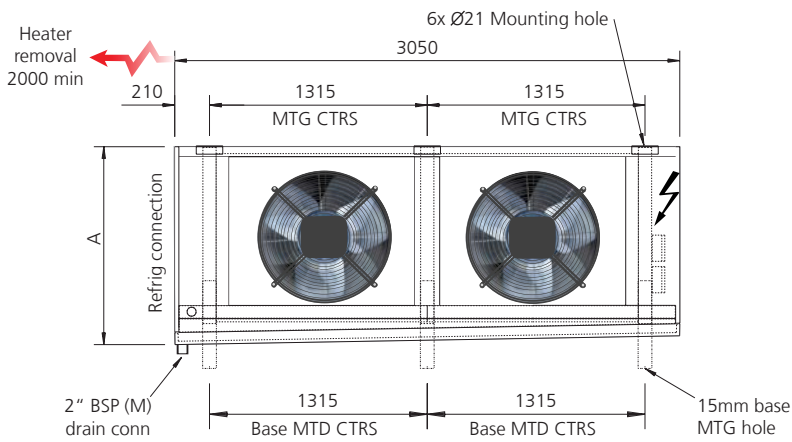
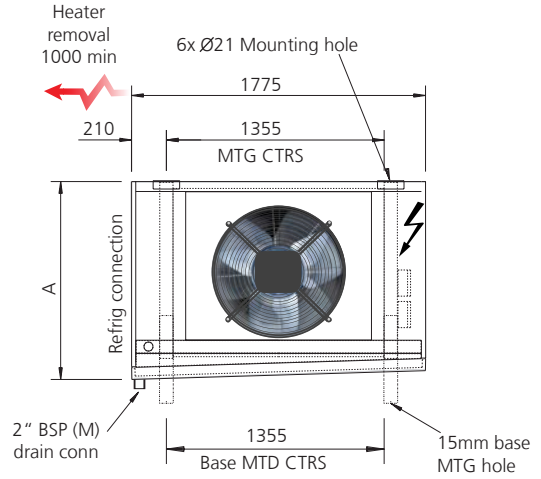
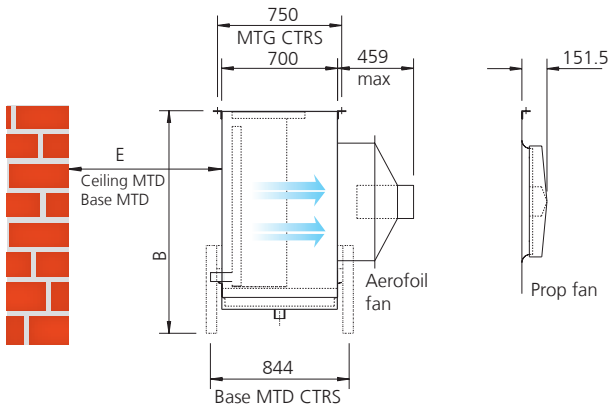
Model	Air entering -25 °C to +20 °C					Air entering -25 °C to +20 °C					Connections		Surface area m ²	Internal volume dm ³	Defrost power kW
	Propeller					Ducted Axial					Outlet	Inlet			
	Fan / Motor	R404A capacity kW	Air volume m ³ /s	Air throw m	Noise dB(A)	Fan / Motor	R404A capacity kW	Air volume m ³ /s	Air throw m	Noise dB(A)					
SM161-46	P1 Dia. = 630mm 6 pole FLC/SC = 1.4/5A input = 650W	14.8	2.70	19	59	A1 Dia. = 630mm 6 pole FLC/SC = 1.5/4.5A input = 7W	15.4	2.88	37	58	1 3/8"	1/2"	75	20	7
SM161-66		18.6	2.56	18	59		19.4	2.72	35	58	1 3/8"	5/8"	112	30	10
SM161-86		-	-	-	-		21.4	2.56	33	58	1 3/8"	5/8"	149	40	12
SM162-66		37.4	5.10	18	62		39.0	5.44	35	61	1 5/8"	5/8"	224	57	19
SM162-86		-	-	-	-		43.2	5.12	33	61	2 1/8"	7/8"	299	77	24
SM163-64		56.2	7.66	18	64		58.7	8.18	35	63	2 1/8"	1 1/8"	336	84	29
SM163-44	-	-	-	-	65.0	7.68	33	63	2 1/8"	1 1/8"	448	112	39		
SM201-66	P1 Dia. = 630mm 6 pole FLC/SC = 1.4/5A input = 650W	21.9	3.14	22	59	A2 Dia. = 710mm 6 pole FLC/SC = 1.8/3A input = 620W	22.2	2.98	34	60	1 3/8"	5/8"	140	38	12
SM201-86		-	-	-	-		24.8	2.88	33	60	1 5/8"	5/8"	187	50	14
SM202-66		43.8	6.28	22	62		44.6	5.94	34	63	2 1/8"	7/8"	280	72	24
SM202-86		-	-	-	-		49.4	5.76	33	63	2 1/8"	1 1/8"	374	96	29
SM203-66		65.9	9.42	22	64		47.1	8.92	34	65	2 1/8"	1 1/8"	420	106	36
SM203-86		-	-	-	-		74.1	8.64	33	65	2 1/8"	1 1/8"	561	140	43
SM242-66	A4 Dia. = 800mm 8 pole FLC/SC = 2.7/6.8A input = 1000W	-	-	-	-	57.0	7.70	39	66	2 1/8"	1 1/8"	336	87	24	
SM242-86		-	-	-	-	63.3	7.32	37	66	2 1/8"	1 1/8"	448	115	29	
SM243-66		-	-	-	-	85.8	11.60	39	68	2 1/8"	1 1/8"	505	127	36	
SM243-86		-	-	-	-	95.8	11.02	37	68	2 x 2 1/8"	2 x 1 1/8"	673	168	43	
SM244-66		-	-	-	-	114.4	15.40	39	69	2 x 2 1/8"	2 x 1 1/8"	673	166	48	
SM244-86		-	-	-	-	126.5	14.64	37	69	2 x 2 1/8"	2 x 1 1/8"	897	221	58	
SM302-66	A4 Dia. = 800mm 8 pole FLC/SC = 2.7/6.8A input = 1000W	-	-	-	-	63.4	8.18	41	66	2 1/8"	1 1/8"	420	109	29	
SM302-86		-	-	-	-	71.4	7.88	40	66	2 1/8"	1 1/8"	561	144	38	
SM303-66		-	-	-	-	96.0	12.26	41	68	2 x 2 1/8"	2 x 1 1/8"	631	158	43	
SM303-86		-	-	-	-	107.4	11.88	40	68	2 x 2 1/8"	2 x 1 1/8"	841	210	58	
SM304-66		-	-	-	-	127.7	16.34	41	69	2 x 2 1/8"	2 x 1 1/8"	841	208	58	
SM304-86		-	-	-	-	142.6	15.78	40	69	2 x 2 1/8"	2 x 1 1/8"	1121	276	77	

Low temperature

High face velocity, high capacity, high air throw, compact unit

Model	Air entering -35 °C to 0 °C					Connections		Surface area m ²	Internal volume dm ³	Defrost power kW
	Propeller					Outlet	Inlet			
	Fan / Motor	R404A capacity kW	Air volume m ³ /s	Air throw m	Noise dB(A)					
SM161-46	A3 Dia. = 630mm 4 pole FLC/SC = 3.8/14A input = 1890W	17.8	3.86	50	69	1 5/8"	5/8"	75	20	7
SM161-66		23.2	3.62	46	69	1 5/8"	5/8"	112	30	10
SM161-86		26.8	3.52	45	69	1 5/8"	5/8"	149	40	12
SM162-66		46.8	7.24	46	72	2 1/8"	1 1/8"	224	57	19
SM162-86		52.8	7.06	45	72	2 1/8"	1 1/8"	299	77	24
SM163-64		70.2	10.86	46	74	2 1/8"	1 1/8"	336	84	29
SM163-44	80.9	10.58	45	74	2 1/8"	1 1/8"	448	112	39	
SM201-66	A5 Dia. = 800mm 6 pole FLC/SC = 3.4/15A input = 2000W	30.8	4.94	50	71	1 5/8"	5/8"	140	38	12
SM201-86		34.9	4.76	48	71	1 5/8"	5/8"	187	50	14
SM202-66		61.8	9.88	50	72	2 1/8"	1 1/8"	280	72	24
SM202-86		71.0	9.50	48	72	2 1/8"	1 1/8"	374	96	29
SM203-66		93.0	14.82	50	74	2 x 2 1/8"	2 x 1 1/8"	420	106	36
SM203-86		105.8	14.26	48	74	2 5/8"	1 1/8"	561	140	43
SM242-66	A5 Dia. = 800mm 6 pole FLC/SC = 3.4/15A input = 2000W	69.2	10.64	54	72	2 1/8"	1 1/8"	336	87	24
SM242-86		79.0	10.16	51	72	2 1/8"	1 1/8"	448	115	29
SM243-66		104.0	15.96	54	74	2 x 2 1/8"	2 x 1 1/8"	505	127	36
SM243-86		118.5	15.30	52	74	2 x 2 1/8"	2 x 1 1/8"	673	168	43
SM244-66		139.2	21.28	54	75	2 x 2 1/8"	2 x 1 1/8"	673	166	48
SM244-86		154.1	20.34	51	75	2 x 2 1/8"	2 x 1 1/8"	897	221	58
SM302-66	A6 Dia. = 1000mm 6 pole FLC/SC = 5.8/24A input = 2625W	86.0	13.20	53	78	2 x 2 1/8"	2 x 7/8"	420	109	29
SM302-86		97.8	12.52	51	78	2 x 2 1/8"	2 x 1 1/8"	561	144	38
SM303-66		130.0	19.78	53	79	2 x 2 1/8"	2 x 1 1/8"	631	158	43
SM303-86		146.1	18.82	51	79	2 x 2 1/8"	2 x 1 1/8"	841	210	58
SM304-66		173.7	26.38	53	81	2 x 2 5/8"	2 x 1 1/8"	841	208	58
SM304-86		190.9	25.02	51	81	2 x 2 5/8"	2 x 1 1/8"	1121	276	77

Drawings, Dimensions and Weights



Model	Case height in rows	No. of fans	Fins per inch	Unit height ceiling mounted	Unit height base mounted	Unit weight Cu/Al
				(A) mm	(B) mm	kg
161 - 4x			4			218
161 - 6x	16	1	6	970	1141	248
161 - 8x			8			251
201 - 4x			4			258
201 - 6x	20	1	6	1173	1344	296
201 - 8x			8			299
162 - 4x			4			378
162 - 6x	16	2	6	970	1141	436
162 - 8x			8			442
202 - 4x			4			448
202 - 6x	20	2	6	1173	1344	520
202 - 8x			8			535
242 - 4x			4			504
242 - 6x	24	2	6	1376	1547	591
242 - 8x			8			607
302 - 4x			4			618
302 - 6x	30	2	6	1681	1852	727
302 - 8x			8			739
163 - 4x			4			538
163 - 6x	16	3	6	992	1141	625
163 - 8x			8			635
203 - 4x			4			642
203 - 6x	20	3	6	1195	1344	750
203 - 8x			8			773
243 - 4x			4			714
243 - 6x	24	3	6	1398	1547	844
243 - 8x			8			872
303 - 4x			4			883
303 - 6x	30	3	6	1703	1852	1045
303 - 8x			8			1064
244 - 4x			4			926
244 - 6x	24	4	6	1398	1547	1099
244 - 8x			8			1139
304 - 4x			4			1148
304 - 6x	30	4	6	1703	1852	1365
304 - 8x			8			1389

Note: Weights are maximums, based on 4mm fin spacing



Excellence

Passion

Integrity

Responsibility

GEA-iversity

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 Exchangers

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