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Tecumseh Europe : the commercial refrigeration specialist

Tecumseh Europe, a major player in the refrigeration and climatic comfort industry, is a subsidiary of the American group Tecumseh Products Company. As a human-sized international company, Tecumseh Europe designs and manufactures compressors and condensing units using new technologies, which positions it as the leader in commercial refrigeration. Today, about 25% of global food consumption is spoiled due to non-compliance with the cold chain. Faced with this reality, Tecumseh aims to offer a range of high added-value products and services.

■ Values in the service of customers and the company

For more than 75 years, Tecumseh's success has been based on key values shared by its managers and all its employees:

- the human value: the people that make up the company
- the actual customer orientation and the place given to its customers
- the importance of the quality of services and products offered
- the permanent technological innovation.

■ The people: most important resource of the company

This value can be seen especially in the professionalism of each employee, all of whom have significant technical and commercial skills as well as a real industrial dimension.

The development of skills by in-house training and promotion aims to involve employees to a greater degree.

■ Innovative products

Since 1934, Tecumseh has been committed to developing products using innovating technologies that guarantee low energy consumption as well as a high level of reliability. Today, Tecumseh is the only company that offers its customers the 3 technologies used in a hermetic compressor: **Reciprocating, Rotary and Scroll.**

Internationally recognised, the benchmark brands of the Group such as L'Unité Hermétique®, Silensys®, Wintsys®, Masterflux®, Celseon®, and Vector® **form part of the pillars of the refrigeration industry thanks to a strong distribution network with thousands of points of sale on all 5 continents.**

■ Tecumseh also offers service

Tecumseh offers a complete assistance service from the selection of products, **design, and training**, to **on-site** technical assistance by a high-performance Sales Administration department.

■ Tecumseh: the desire to propose a green offer

Because it is aware of the future economic and ecological demands, **the company is committed to sustainable development by offering products that use the refrigeration fluids** in phase with the current market. Because it follows a rigorous approach of continuous improvement, Tecumseh works according to the **ISO 14001** certification (environmental management system) as well as standard **ISO 9001** for its quality management system.

With more than 1,350 employees, Tecumseh Europe focuses on innovation, the quality of the products with complete solutions. At present and for the foreseeable future, the company is the best supplier of 100% customer-oriented commercial refrigeration.



«L'Unité Hermétique», a Tecumseh brand internationally recognised by professionals in the cooling industry, stands for reliability, expertise and skill. Tecumseh offers solutions labeled «Expertise L'Unité Hermétique», referencing the performance of the historical benchmark of the refrigeration market on all 5 continents.



Tecumseh

Cooling for a Better Tomorrow™

www.tecumseh.com

COMMERCIAL
REFRIGERATION



SILENSYS INVERTER



Precision, Energy Saving, Multi-use

SILENSYS INVERTER

SILENSYS: A REPUTATION BUILT OVER YEARS:

Tecumseh condensing units offer a multitude of choices to installers. Depending on their dimensional, technical or acoustic requirements, Tecumseh Europe offers a wide power range for each of the condensing unit ranges. SILENSYS INVERTER is a condensing unit for commercial positive refrigeration which allows a huge cooling capacity variation.

Key features of the product

SILENSYS Inverter presents the following key features:

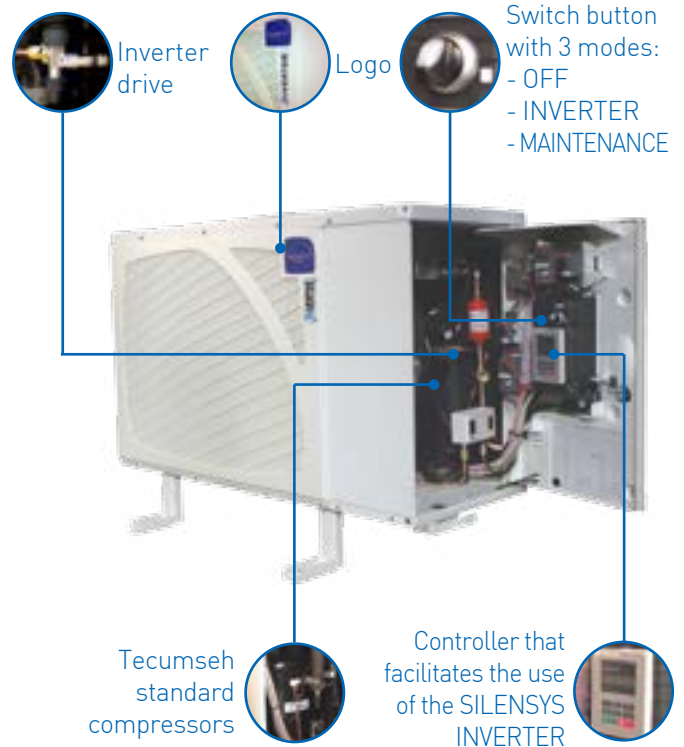
- A proven standard Tecumseh reciprocating compressor
- A proven controller with a good notoriety.
- SILENSYS know-how and reliability, state of art product in terms of quality and acoustic.
- Ability to operate in high ambient temperature up to 46°C.
- Easy-to-use: all parameters are pre-set at -10°C evap. and ready to plug.

Markets served by SILENSYS INVERTER

- Frequency variation from 30-60 Hz can supply several cold rooms.
- SILENSYS INVERTER serves specific applications that require either a fine variation of refrigeration production or a large thermal load variations.
- SILENSYS INVERTER brings a major improvement to the fine-tuning of regulation. ON/OFF is replaced by the variable speed control.

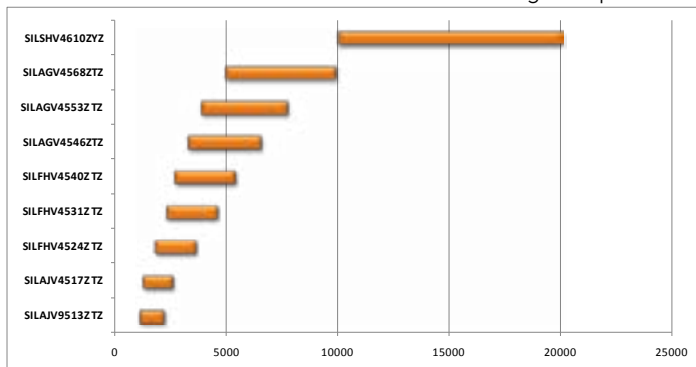
SILENSYS INVERTER energy efficiency and environmental impact

- The stability of the evaporation pressure allows energy savings up to 25% with less icing (defrost cycle) of the evaporator and through better stability of the evaporation pressure.
- The equipment is selected with the maximum heat load, which is real only a few days per year.
- To evaluate energy performance, Tecumseh takes into account the variations of thermal loads throughout the year.
- The change in capacity of 1 to 2 (30-60Hz) covers these changes, thus maintaining a stable and optimum evaporator pressure.
- The stability of the evaporation pressure maintains the COP of the compressor and explains the energy saving of the installation.



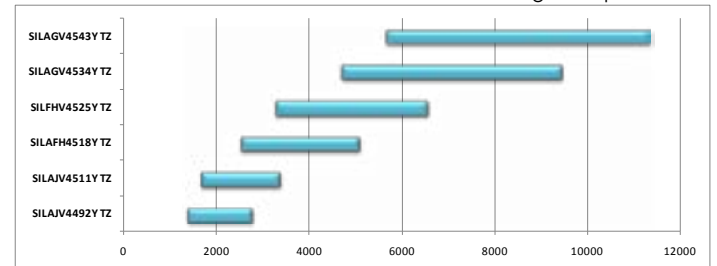
A full range

R404A 9 models at -10°C evaporating temp.



Cooling performance (Watts) EN13215 at 32°C ambient, superheat 10K, sub-cooling 3K.

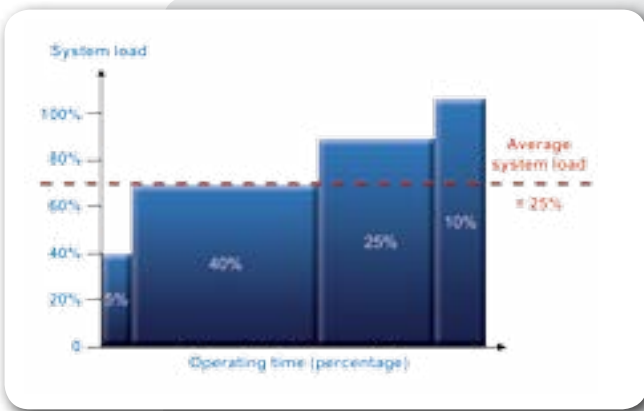
R134a 6 models at -10°C evaporating temp.



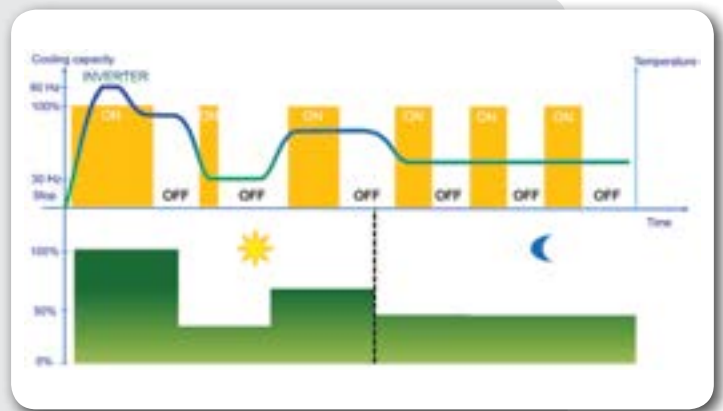
Cooling performance (Watts) EN13215 at 32°C ambient, superheat 10K, sub-cooling 3K.

SILENSYS INVERTER KEY BENEFITS

Energy saving

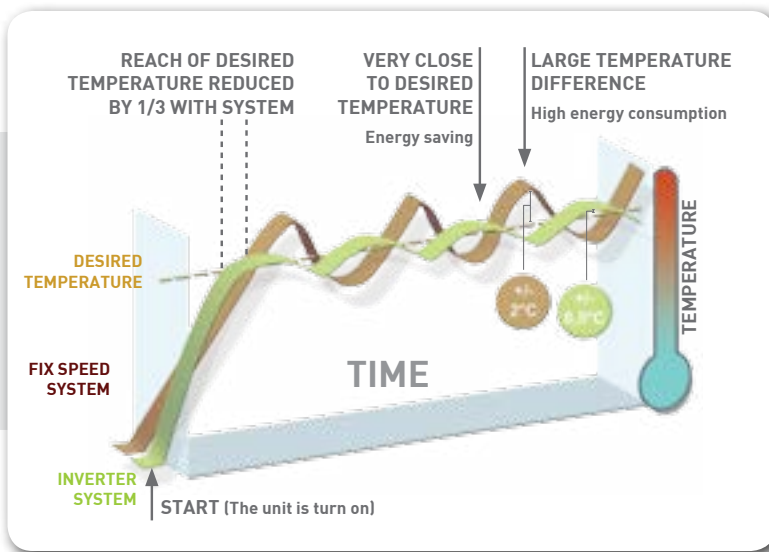


Low operating cost



SILENSYS INVERTER will meet the system cooling demand. Consequently, average energy consumption during the operation time will be reduced up to 25%.

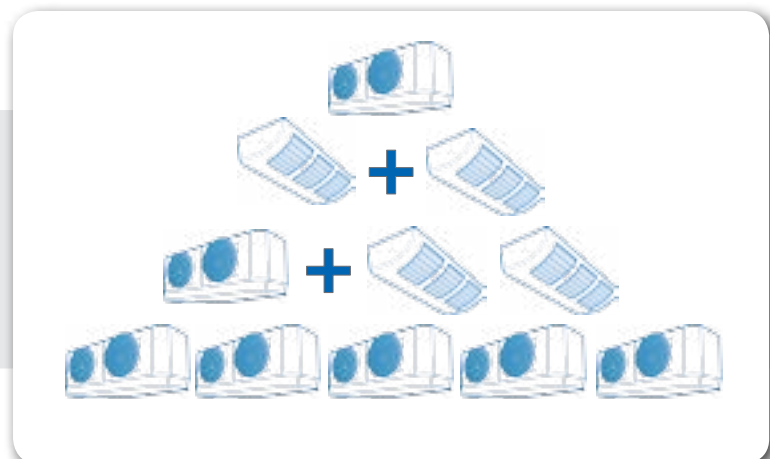
Accurate regulated temperature



SILENSYS INVERTER is the best solution to fine-tune the needed temperature and hydrometry in your cold room. The better system control will avoid any ambient fluctuations to improve fresh food or goods lifetime and quality.

Multiple cold room

Just one SILENSYS INVERTER will allow you to manage many cold rooms. refer to page 5:
SELECTION TOOLS



Key benefits

- Connect the pressure sensor on the valve compressor
- Turn ON (Auto position, factory pre-set at -10 ° C for refrigerants R404A and R134a)
- Follow the installation guide to fine tune the factory setting (Set point, inside the authorized range)

Increased safety



- The speed variation from 30 to 60 hertz is limited in order to secure the compressor, motor and electrical components
- 2 modes: INVERTER with capacity variation or ON/OFF regulation
- Ability to operate in high ambient temperature through the condenser (HTA)
- Low noise and vibration
- Oil return (Optional)

Easy maintenance and customer service

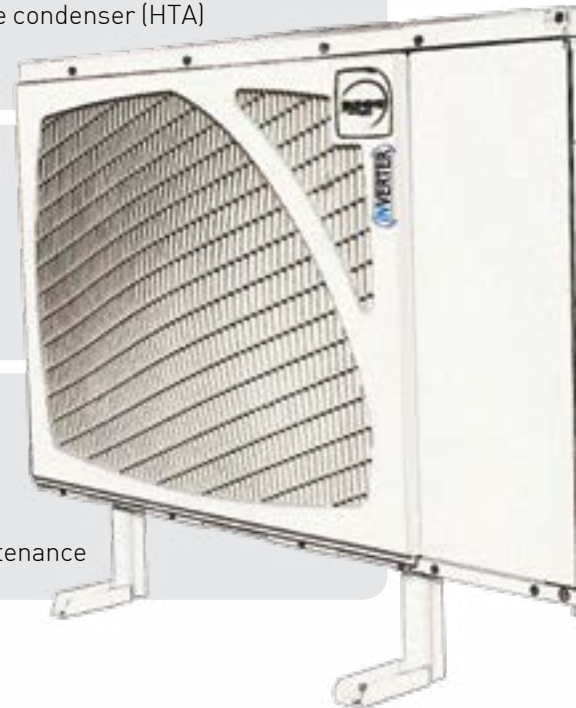


- Assembly time
- Reduction of components
- A Tecumseh Europe dedicated technical support
- Technicians are trained and in contact with Inverter experts

Installation speed



- Ergonomics in the installation
- Assembly time
- Reduction of components
- A plug and play solution to save installation time and maintenance



DIFFERENTS BENEFITS FOR DIFFERENTS STAKEHOLDERS

For the end customer

SILENSYS INVERTER offers the following benefits to the final customer:

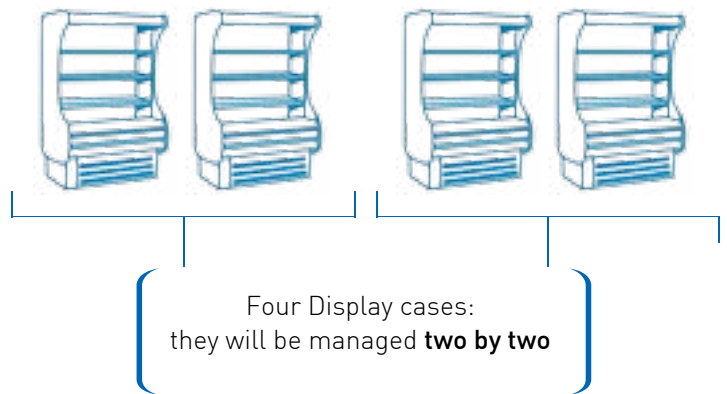
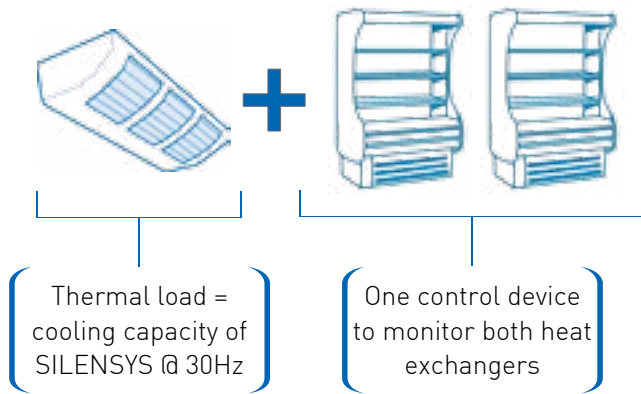
- A lower product cost in the case of a multiple cold rooms
- A lower installation cost due to the reduced number of components
- An operating cost with a possible savings of up to 25%
- A quiet condensing unit for facilities in urban areas

For the installer

SILENSYS INVERTER offers the following benefits to the installer:

- A condensing unit type "Plug & Play" with a limited number of connections and wiring.
- A condensing unit that offers the reliability of a standard Tecumseh compressor
- A standard compressor available in wholesale networks
- A decreased number of condensing units installed reduces maintenance. To get the expected gains, do not oversize the unit.

Selection tool



3 evaporators monitored individually



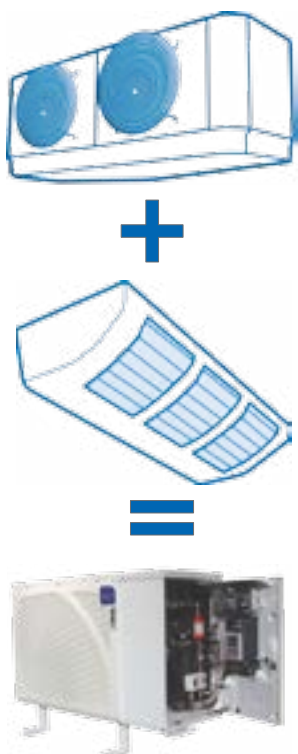
- Use of correction factor (0.85)
- Evap N°1 (4.3Kw) + Evap N°2 (4.3Kw) + Evap N°3 (4.3Kw) = 12.9Kw
 - ▶ SILAGV4568Z = 10.97Kw (@ 60Hz, Amb 32°C, To=-6°C, SH=5K, SC=3K, RG=10°C)
 - ▶ When only one evaporator will be fed, evaporating pressure will drop down to - 12°C

Multi evaporators examples with 7 evaporators



- Considering that :
- evaporators don't run all together
 - condensing unit is selected at the maximum surrounding ambient
- ▶ A correction factor will be applied to the calculated need, to not lower the evaporating pressure & the COP of the system all along the year.
- 7 evaporators of 1.2kw each. Total duty= 8.4Kw @ To=-8°C
- ▶ Average capacity needed : duty * Cor factor (0.8)
 - ▶ 6.7 Kw taken into account to select the unit
 - ▶ SIL AG 4546Z = 6.5 Kw à To=-8°C, Amb =32°C, SH=5K, SC=3K

Examples



1st case

-Cooling capacity requested: 10KW
 -2 cold rooms with the same cooling capacity. (5KW)
 How to select?

At 60HZ	SILAGV4568Z	9,95KW	2 cold rooms	OK
At 30HZ	SILAGV4568Z	4,97KW	1 cold room	OK

2nd case

- Cooling capacity requested: 12KW
 - correction factor (0,85)=consequence the Silensys can give 10KW
 - 2 cold rooms- 1 cold room 7KW and 1 cold room 5KW
 How to select?

At 60HZ	SILAGV4568Z	9,95KW	2 cold rooms	OK
At 30HZ	SILAGV4568Z	4,97KW	1 cold room	OK

3rd case

-Cooling capacity requested: 10KW
 -2 cold rooms - 1 cold room 7KW and 1 cold room 3KW
 How to select?

At 60HZ	SILAGV4568Z	9,95KW	2 cold rooms	OK
At 30HZ	SILAGV4568Z	4,97KW	1 cold room	OK

PRESSURE CONTROL VALVE

SILENSYS INVERTER TECHNICAL DATA

R-404A

COMMERCIAL POSITIVE REFRIGERATION

Cooling capacity (W), EN 13215, Ambient temperature 32°C, superheating 10K, subcooling 3K, 3 PHASES, R404A*

Models	BOM	Ambient temp.	Frequency	Cooling capacity (W)							Absorbed power (W)			Pre setting of the inverter (P1-03) Suction pressure reference
		°C	Hz	Evaporating temperature (°C)							Evaporating temperature (°C)			
				-20	-15	-10	-5	0	5	10	-15	0	10	
SIL AJV 9513 Z	S991330242	32	30	698	893	1114	1362	1637	1939	2270	558	742	879	-10°C 3,5 bar
			60	1395	1785	2228	2723	3273	3878	4540	1045	1453	1746	
		43	30	505	673	860	1066	1293	1542	1817	557	797	962	
			60	1009	1346	1719	2131	2585	3084	3633	997	1518	1874	
SIL AJV 9517 Z	S993030242	32	30	780	996	1234	1496	1786	2108	2464	687	909	1077	
			60	1560	1991	2467	2992	3572	4215	4927	1286	1780	2139	
		43	30	573	768	977	1204	1452	1725	2029	690	966	1157	
			60	1146	1536	1954	2408	2903	3449	4057	1235	1839	2255	
SIL FHV 4524 Z	S993530242	32	30	1086	1433	1829	2273	2767	3311	3909	945	1326	1580	
			60	2105	2787	3564	4436	5402	6467	7635	1771	2596	3141	
		43	30	710	1002	1330	1696	2100	2548	3044	909	1385	1688	
			60	1419	2004	2660	3391	4200	5095	6088	1628	2638	3289	
SIL FHV 4531 Z	S993730242	32	30	1403	1808	2260	2763	3320	3938	4626	1151	1605	2011	
			60	2805	3615	4519	5525	6639	7875	9251	2156	3144	3997	
		43	30	996	1353	1743	2171	2642	3166	3757	1098	1632	2074	
			60	1991	2705	3486	4341	5284	6332	7514	1966	3108	4040	
SIL FHV 4540 Z	S993830242	32	30	1682	2141	2644	3194	3795	4455	5186	1584	2157	2693	
			60	3364	4281	5287	6387	7589	8909	10372	2968	4224	5352	
		43	30	1295	1712	2164	2653	3188	3781	4450	1481	2182	2781	
			60	2590	3424	4327	5305	6376	7561	8900	2651	4156	5419	
SIL AGV 4546 Z	S995130242	32	30	1947	2578	3299	4106	4998	5968	7015	1735	2420	2777	
			60	3778	5077	6508	8060	9718	11464	13285	3221	4870	6088	
		43	30	1166	1738	2356	3017	3720	4462	5247	1641	2580	3109	
			60	2332	3476	4711	6034	7439	8923	10493	2879	4823	6210	
SIL AGV 4553 Z	S995230242	32	30	2339	3068	3878	4764	5723	6750	7843	1996	2821	3433	
			60	4677	6135	7755	9528	11446	13500	15686	3740	5525	6822	
		43	30	1580	2228	2934	3698	4521	5406	6358	1917	2895	3577	
			60	3159	4455	5867	7395	9042	10811	12716	3433	5513	6969	
SIL AGV 4568 Z	S995430242	32	30	3209	4016	4970	6062	7281	8614	10052	2533	3619	4438	
			60	6259	7975	9942	12101	14393	16757	19137	4747	7088	8820	
		43	30	2390	3068	3876	4790	5783	6830	7915	2372	3457	4295	
			60	4780	6135	7752	9580	11565	13660	15830	4248	6583	8368	
SIL SHV 4610 Z	S999000242	32	30	6638	8237	9836	11996	14155	16563	18972	3814	4671	5156	
			60	12693	15372	18052	20362	22672	24823	26975	4923	6342	7254	
		43	30	5122	6561	8001	9824	11648	13693	15739	4149	5284	5973	
			60	10183	12487	14790	17247	19703	20899	22095	8160	11212	13836	

*: Cooling capacity is given for information purpose and may change, without prior notice, with improvement that Tecumseh Product Company is permanently making to its products. The SILSHV4610Z as been calculated with 20°C return gas



CUSTOMER SERVICE

- A Tecumseh Europe dedicated technical support
- Technicians are trained and in contact with INVERTER experts

R-134a

COMMERCIAL POSITIVE REFRIGERATION

Cooling capacity (W), EN 13215, Ambient temperature 32°C, superheating 10K, subcooling 3K, 3 PHASES, R134a*

Models	BOM	Ambient temp. °C	Frequency Hz	Cooling capacity (W)							Absorbed power (W)			Pre setting of the inverter (P1-03) Suction pressure reference
				Evaporating temperature (°C)							Evaporating temperature (°C)			
				-20	-15	-10	-5	0	5	10	-15	0	10	
SIL AJV 4492 Y	S990930242	32	30	379	526	694	886	1104	1352	1633	349	473	573	-10°C 2 bar
			60	757	1051	1388	1771	2208	2704	3265	654	925	1138	
		43	30	261	398	550	721	913	1131	1376	339	509	634	
			60	522	795	1099	1441	1826	2261	2751	606	968	1235	
SIL AJV 4511 Y	S991030242	32	30	488	672	877	1102	1349	1616	1900	444	631	786	
			60	976	1343	1753	2204	2698	3231	3800	832	1236	1562	
		43	30	356	533	725	934	1159	1401	1658	436	676	858	
			60	711	1065	1449	1867	2317	2801	3316	781	1287	1673	
SIL FHV 4518 Y	S993430242	32	30	476	756	1084	1463	1897	2389	2945	622	761	897	
			60	952	1511	2167	2925	3793	4778	5890	1166	1491	1783	
		43	30	301	509	764	1067	1423	1836	2312	618	762	891	
			60	601	1018	1527	2134	2846	3672	4624	1106	1450	1735	
SIL FHV 4525 Y	S993630242	32	30	880	1229	1616	2044	2518	3040	3616	688	901	1083	
			60	1759	2457	3231	4088	5035	6079	7231	1288	1764	2151	
		43	30	676	947	1264	1630	2048	2523	---	684	930	--	
			60	1351	1894	2528	3259	4095	5046	---	1225	1771	--	
SIL AGV 4534 Y	S994830242	32	30	1146	1671	2276	2966	3746	4625	5609	1202	1706	2078	
			60	2292	3342	4552	5931	7492	9249	11218	2252	3341	4130	
		43	30	696	1161	1697	2308	3000	3781	4660	1087	1724	2168	
			60	1392	2322	3393	4615	6000	7562	9320	1946	3283	4223	
SIL AGV 4543 Y	S995030242	32	30	1638	2219	2889	3653	4518	5492	6587	1491	2178	2727	
			60	3276	4438	5778	7305	9035	10984	13173	2793	4265	5419	
		43	30	1107	1631	2227	2901	3659	4510	---	1417	2233	-	
			60	2213	3261	4453	5801	7317	9020	---	2538	4253	-	

*: Cooling capacity is given for information purpose and may change, without prior notice, with improvement that Tecumseh Product Company is permanently making to its products

Acoustics, Dimensions, Connections

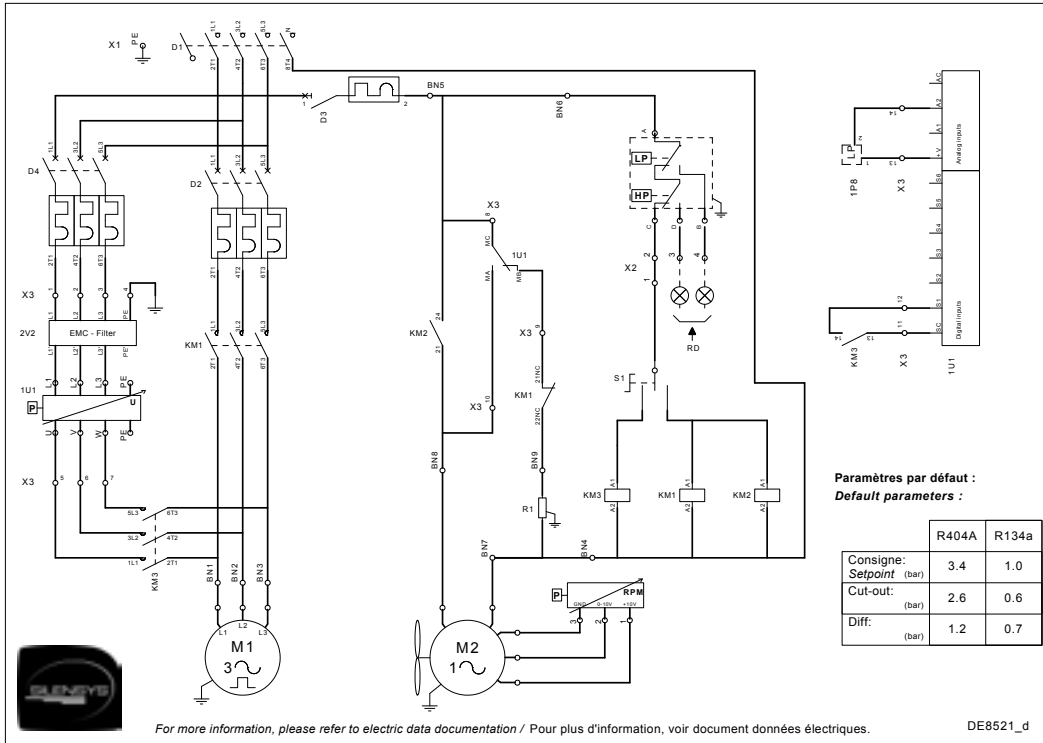
A higher performance with a low noise level

	Models	I max C.U.(60 Hz)	Weight		Acoustic pressure	Receiver Volume	Diameter of connection		Fan		Fan absorbed power	Fan voltage
		I max	Net	Gross	10m**	L	Suction	Liquid	Nbr	Diam.	Per fan W	V
		A	Kg	Kg	dB(A)		Ø"	Ø"	mm			
R134a	SIL AJV 4492 Y TZ	5,1	73	93	30	1,5	1/2	3/8	1	360	65	230
	SIL AJV 4511 Y TZ	7,2	74	94	30	1,5	5/8	3/8	1	360	65	230
	SIL AFH 4518 Y TZ	8,3	82	106	34	2,35	5/8	1/2	1	450	126	230
	SIL FHV 4525 Y TZ	12,3	86	108	36	2,35	5/8	1/2	1	450	126	230
	SIL AGV 4534 Y TZ	22,2	133	108	39	6	7/8	3/8	2	450	126	230
	SIL AGV 4543 Y TZ	22,2	133	148	39	6	7/8	3/8	2	450	126	230
R404A	SIL AJV 9513 Z TZ	8,3	76	96	31	1,5	5/8	3/8	1	360	65	230
	SIL AJV 4517 Z TZ	8,3	75	97	36	2,35	5/8	3/8	1	450	126	230
	SIL FHV 4524 Z TZ	12,3	86	111	37	2,35	5/8	1/2	1	450	126	230
	SIL FHV 4531 Z TZ	22,2	92	114	41	3,9	7/8	1/2	1	450	126	230
	SIL FHV 4540 Z TZ	22,2	92	114	39	3,9	7/8	1/2	1	450	126	230
	SIL AGV 4546 ZTZ	22,2	133	148	37	6	7/8	5/8	2	450	126	230
	SIL AGV 4553 Z TZ	27	139	154	37	6	7/8	5/8	2	450	126	230
	SIL AGV 4568 Z TZ	27	143	158	37	6	1 1/8	5/8	2	450	126	230
	SIL SHV 4610 Z YZ	27	270	289	48	9,5	1 1/8	5/8	2	500	180	230

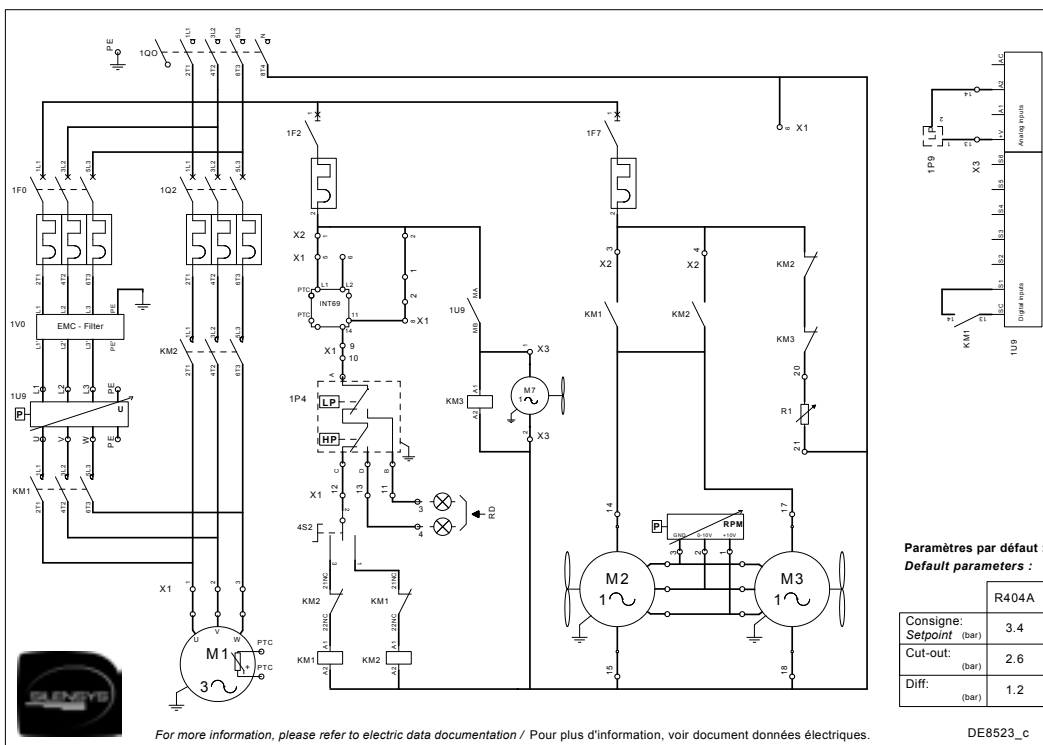
** : Acoustic pressure at 50Hz with maximum fan speed

Electrical drawings

DE8521 SIL FH ... Y/Z TZ (INVERTER)



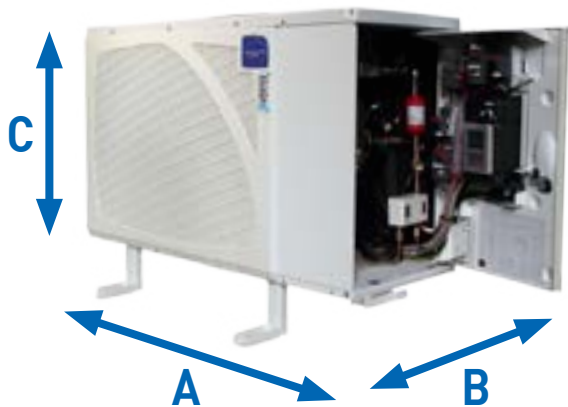
DE8523 SIL SHV 4610 ZYZ



Drawing Number	Reference
DE8520*	SIL AJV 9513 Z TZ SIL AJV 4492 Y TZ SIL AJV 4511 Y TZ
DE8521	SIL FHV 4524 Z TZ SIL FHV 4531 Z TZ SIL FHV 4540 Z TZ SIL FHV 4518 Y TZ SIL FHV 4525 Y TZ
DE8522*	SIL AGV 4546 Z TZ SIL AGV 4553 Z TZ SIL AGV 4568 Z TZ SIL AGV 4534 Y TZ SIL AGV 4543 Y TZ
DE8523	SIL SHV 4610 Z YZ
DE8524*	SIL AJV 4517 Z TZ

* Drawing available on request

Dimensions & Packaging



Sizes	A	B	C
S	930 mm	575 mm	690 mm
M	1145 mm		1315 mm
L			1300 mm
XL	1615 mm		

Spare parts reference and sizes

	Product references	Reference	INVERTER spare part code	Sizes
R-404A	SIL AJV 9513 Z TZ	S991330242	8580105	S
	SIL AJV 4517 Z TZ	S993030242	8580105	M
	SIL FHV 4524 Z TZ	S993530242	8580106	M
	SIL FHV 4531 Z TZ	S993730242	8580120	M
	SIL FHV 4540 Z TZ	S993830242	8580120	M
	SIL AGV 4546 Z TZ	S995130242	8580102	L
	SIL AGV 4553 Z TZ	S995230242	8580118	L
	SIL AGV 4568 Z TZ	S995430242	8580104	L
	SIL SHV 4610 Z YZ	S999000242	8580109	XL
R-134a	SIL AJV 4492 Y TZ	S990930242	8580112	S
	SIL AJV 4511 Y TZ	S991030242	8580114	S
	SIL AFH 4518 Y TZ	S993430242	8580116	M
	SIL FHV 4525 Y TZ	S993630242	8580107	M
	SIL AGV 4534 Y TZ	S994830242	8580103	L
	SIL AGV 4543 Y TZ	S995030242	8580103	L
	Controller for all models	-	8586050	-

Packaging

- High quality
- Similar Packaging of SILENSYS
- Dedicated Palets
- Forklift Standard indication
- Easy to unpack
- Tiltwatch® on S and M size

