FIC·FRIO

JANUARY / FEBRUARY / MARCH – 2020
YEAR 29 • Nº 111

TECUMSEH PAC³

PHOTOVOLTAIC PANEL MARKET
PAGES 11 AND 12

110V OR 220V COMPRESSORS? DOES THE EFFICIENCY CHANGE? MITH OR FACT?
PAGES 13 AND 14

PRESSURE SWITCH ADJUSTMENT PER APPLICATION
PAGE 21

TECHNOLOGY AND SUSTAINABILITY

Combine performance and energy savings.
The development of high performance solutions equipped with low or no potential global warming refrigerants, obtained through research and innovation.
Design, manufacture new generations of established products and seek an ever better world for future generations.
The power of machines must come with the environment and people appreciation.
This is technology. This is sustainability. This is Tecumseh.

BUILT FOR TODAY. READY FOR TOMORROW.

REBECA/COMETERRA

Cooling for a Better Tomorrow™

www.tecumseh.com

Rua Ray Wesley Herrick, 700 | Jardim Jockey Club | **São Carlos | SP**
CEP: 13565-090 | **Tel.: +55 (16) 3362-3000 • +55 (16) 3363-7219**

Tecumseh

MASTHEAD

The Fic Frio magazine is a quarterly publication by Tecumseh do Brasil.
Rua Ray Wesley Herrick, 700
Jardim Jockey Club | São Carlos--SP
ZIP Code: 13565-090
Telephone: +55 (16) 3362-3000
Fax: +55 (16) 3363-7219

Coordination:
Homero Busnello

Collaborators on this edition:
Gabriela de Paula, Helen Gitrotto, Homero Busnello, Johan Gouws, Somesh Kumar, Luis Sales, Mário Berti e Renato André.

Production:
Agência Marshal
www.agenciamarshal.com.br

Journalist in charge:
Maria Eliza Rosa
MTb: 0083950/SP

Editing:
Bruno Santos
Mariana Mesquita

News writing:
Gabriela Toledo

Graphic design and desktop publishing:
Beatriz Roberta

Revision:
Ricardo Oliveira

Print run:
Electronic

CONTACT
Follow Fic Frio on the magazine's website.

Make your comments and suggestions by e-mail or mail.

Websites:
www.tecumseh.com
www.ficfrio.com.br

E-mail:
ficfrio@tecumseh.com

Mail contact:
Tecumseh do Brasil – Fic Frio
Rua Ray Wesley Herrick, 700
Jardim Jockey Club
ZIP Code: 13565-090 | São Carlos-SP

A PROMISING FUTURE

2020 has begun with new expectations and opportunities worldwide from both the business and the technology point of view. There is a race against time, as big players work hard to provide new information, as well as agile, useful and sustainable solutions. Tecumseh in search of continuous improvement works with commitment and determination in line with its development team to understand the market needs and the refrigeration sector, so that it can provide innovation within its products and services.

We can rate 2020 as the year of change, movement and great achievements and process optimizations. We seek to increasingly understand our clients, their needs, aspirations and opportunities so that it is possible to strengthen these ties.

Fic Frio's 111th Edition presents the latest in products and services, with interesting themes in a boldly designed layout so that we can add and share knowledge with our readers.

We also want to know what are the best practices so that we can be closer to you, which are the preferred media channels and what is the opinion of our readers on our stance and topics covered, as well as their availability.

Keeping an eye on the legislation and the latest developments, Tecumseh teams around the world daily learn good production practices for their products and services so that environmental friendly actions are on the spotlight.

This edition brings tips and information on the use of devices related to refrigeration, equipment voltage, energy efficiency and more details on the use of photovoltaic panels, a subject widely debated in Brazil today.

You, dear reader, will also have at your disposal a step--by-step guide to ease the search for products on our website, so that it is easier to identify which model is right for your needs!

It is also worth mentioning that the Tecumseh Corporate University welcomes new students for its online courses, due to the covid-19, and invites you to join our many clients and professionals in the area. Have a great read!

Dear reader, due to the interruption of some services due to the pandemic caused by COVID-19, this edition will not have a printed version, being available only in digital format. Please follow the latest news and novelties on our digital channels.

Tecumseh

source envato elements

CULTURAL, ECONOMIC AND SOCIAL CHARACTERISTICS OF THE MIDDLE EAST

This region is a benchmark in technology, growth and innovation without leaving aside its cultural values and background

The Middle East is an undeniable growing economic powerhouse. The United Arab Emirates (UAE) is entitled to the title of oil power. Its economy is based mainly on the sale of oil and natural gas. The country also manufactures chemicals, clothing, cement, metals, minerals and food products. Abu Dhabi is a city divided between tradition and modernity, with many investments capable of attracting the attention of the world. The uniqueness in quality services make visits to the region unforgettable. In this edition, we interviewed Johan Gouws who shared with us the great challenges, cultural peculiarities and the main differences between the daily lives of workers in the East compared to what we are used to in the West.

We know that the United Arab Emirates is a multicultural country. What did challenge you the most at the Tecumseh Middle East office? Why?

The UAE is a multinational and multicultural country. The United Arab Emirates is estimated to be home to more than 200 different nationalities today. What makes the UAE unique is the fact that approximately 20% of the population – estimated at 10 million – are "local citizens" that is, they are born here. The

other 80% of the population includes expatriates from these 200 nations. This mix of so many different nationalities and cultures creates a vibrant atmosphere for people and an opportunity to see, feel and experience different traditions from around the world.
Today, the Tecumseh office in the Middle East is represented by three different nationalities: Indian, Filipino and South African, so we are also a multicultural community!

When was the Middle East office created?

The Middle East office was officially established in January 2018. However, it is important to remember that Tecumseh has been operating in the Middle East region for over 30 years. Before having a dedicated office presence established in Dubai, sales were managed indirectly by Tecumseh's manufacturing region through its sales organizations, respectively.

Today, the Dubai-based office manages a total of 10 countries across the Middle East (from western Lebanon to eastern Pakistan) and offers consolidated Tecumseh compressors and cooling systems to all of our clients.

The Middle East is a very specific region, due to its remarkable culture, what are the main cultural factors that you identify as different from the West and that affect your daily life and that of your co-workers?

From a commercial point of view, probably the biggest cultural difference we experience in the Middle East, when compared to the typical Western-style work culture, is that our workweek starts on Sunday (or is sometimes humorously called "Arab Monday") and ends on a Thursday. The weekend is considered Friday and Saturday. Some companies, especially in the retail and wholesale sectors, choose to resume normal business operations on Saturday.

Johan Gouws, Managing Director
Tecumseh Middle East

CURIOSITIES ABOUT THE MIDDLE EAST

The Middle East is located at the junction of Eurasia, Africa, the Mediterranean Sea and the Indian Ocean. It is considered one of the major business hubs in the world, in view of its great global economic influence, unique politics and culture and the palpable influence of religion in the daily lives of individuals.
The United Arab Emirates is a federation made up of 7 emirates: **Dubai, Abu Dhabi, Ajman, Sharjah, Fujairah, Umm Al-Qaiwain, Ras Al-Khaimah.** Its capital is Abu Dhabi.

APPROPRIATE TOOLS FOR REFRIGERATION

Use of Appropriate Tools for Installation and Maintenance in Refrigeration Systems

All professionals in the refrigeration sector already know, it is essential to use appropriate tools when executing any service in refrigeration systems. In order to bring the main tools used by the contractor on a daily basis, the following table represents what are the most desired tools by these professionals.

Below is a brief explanation of some of the most important:

• **Vacuum pump:** its function is to evacuate all moisture present internally in the refrigeration circuit and eliminate any impurities that may be present in it.

• **Vacuum gauge:** coupled to the vacuum pump, it is an essential item for vacuum reading, whose measurement unit can be expressed in: Pa (Pascal), µm (micron meter), mmHg (millimeters of mercury), µHg (micron of mercury), atm (atmosphere) or Torr. (Torricelli).

• **Manifold set:** it is a set of low and high pressure gauges, interconnected by a system that allows hose connections to access the cooling system.

All work performed is comprised from the vacuum, through the fluid refrigerant charge. It is also through this set that the system is balanced. We can mention that there are two types of manifolds: analog and digital.

It is worth highlighting the current digital manifolds. They are much easier to handle not to mention the ease to take the measurements, in some versions the sending of reports can be done via cell phone bluetooth connection and with the sharing of thermal balance data.

• **Thermometer:** instrument to measure the temperature of the bodies and which, in general, reaches thermal equilibrium with the system subject to measurement. A practical example, the measurement of internal temperatures of an enclosure until its setpoint value is reached, as well as the temperatures of the compressor, condenser, evaporator, suction and discharge tubes among other various temperature measurements that are extremely relevant to a correct system adjustment.

• **Scale:** used during the refrigerant fluid charging process, it has the function of indicating the mass (weight *) of the cylinder. The fluid load will be controlled by the difference between the initial and final mass.

INDISPENSABLE TOOLS USED IN REFRIGERATION

	Vacuum pump and vacuometer
	Recovery machine and refrigerant fluid cylinder
	Manifold set
	Coolant hoses
	Scale
	Clamp meter and multimeter
	Thermometer
	Pipe cutter

Images of the Brazilian HCFCs-PBH Elimination Program

	Capillary tube plier
	Countersink
	Abrasive sponge, plug-in steel brush
	Press connections
	Brazing inspection mirror
	Impact flange and reamer assembly
	Pipe bender
	Brazing equipment
	Pressure regulator
	Torch lighter

Images of the Brazilian HCFCs-PBH Elimination Program

	Pipe drilling tools
	Schrader valve core replacement tool
	Torquimeter spanner
	Universal and screwdriver

Images of the Brazilian HCFCs PBH Elimination Program

Clarifying the difference between mass and weight

We usually use the word weight instead of mass, this is an error.

Definitions:

Mass (m): it is a positive and invariant scalar quantity, which measures the inertia (property of the bodies remaining in accelerated or delayed movement) of the bodies, that is, the amount of matter present in a body.

Weight (P): it is a vector quantity since it presents intensity, direction and sense, being the product of the mass of a body and the acceleration of gravity exerted on it.

$$P = m.g$$

m(mass): kg

g (force of gravity): m/s^2

Source: https://www.todamateria.com.br/peso-e-massa

Once the list of the main tools is known, it is also recommended that the contractor make use of individual protective equipment – IPE'S. Please see box below:

Main IPE's for maintenance on refrigeration equipment:

- work overall, pants and jacket;
- non-slip work gloves;
- disposable breathing mask;
- safety shoes;
- safety glasses with side protection and full coverage;
- safety helmet;
- ear protection.

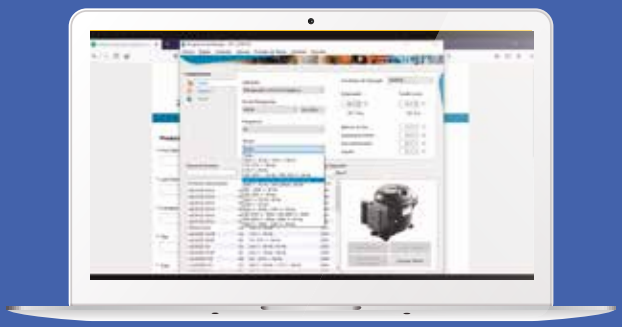
WARNING!

For systems that use flammable fluids, e.g., R-290 or R-600a, we recommend reading the article available in the issue no. 100 of the FIC FRIO magazine.

TUTORIAL

Your project faster and more accurate through Tecumseh solutions!

Find out the software for the consultation of Tecumseh products and their applications. Watch the video tutorial and learn how to use this tool.



Scan the QR code from your cell phone, tablet or smartphone.

Tecumseh

Cooling for a Better Tomorrow™

SOLAR ENERGY AND OUR MARKET

Clean and free!

The debate on the energy matrix is something that never leaves the agenda. Technological advances, the strong demand for consumption and the global population growth lead us to continuously seek new renewable sources for the supply of energy.

We are commited to future generations, but not only that, we also need to face the high costs of energy generation, especially the electrical one, bearing in mind that there are impacts on the environment associated with the most common sources of energy, such as nuclear and thermoelectric plants.

This article presents compressor solutions for refrigeration and air conditioning powered by solar energy, and a brief presentation of its power system when applied with photovoltaic panels.

A photovoltaic system can present three different configurations: isolated, hybrid and grid-connected systems.

Isolated systems are those that are not connected to the public power grid. They consist of generating electrical energy through solar panels, photovoltaic panels, and directing it to a storage system, the most common being a battery bank.

Once generated and stored, this energy can be used to supply various equipment, such as refrigeration, air conditioning, lighting, among others.

There are pieces of equipment such as hermetic compressors that can be powered by a DC power source*, and can be applied to the aforementioned isolated systems. The set that allows this electrical connection consists of a controller that can have a voltage of 24 VDC, 48 VDC, 600 VDC, etc., and the compressor.

In this case, it is not necessary to use an inverter, as the power supply is DC*. For equipment that does not have the DC power option, the inverter will be necessary.

Tecumseh boasts the Masterflux line of compressors in its portfolio. These compressors are designed for DC supply. They are products offered to the market in two compression technologies, which can be by connecting rod/piston (reciprocating) or by roller and vane (rotary).

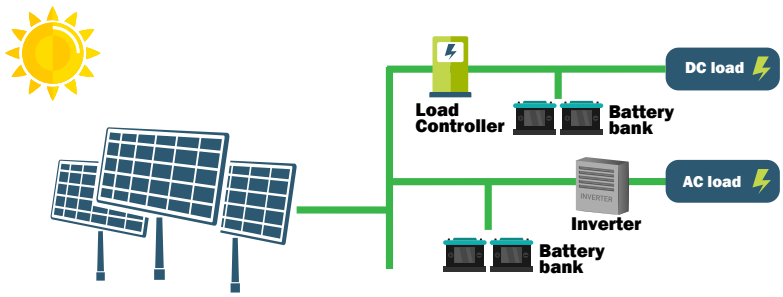
The reciprocating ones are represented by the Cascade family, which has a capacity of 200 Btu/h to 1200 Btu/h. The Sierra, Atlas and Mesa families are representatives of the rotary technology, with a capacity range from 200 Btu/h to 15000 Btu/h. The entire Masterflux line can be applied at low, medium or high evaporation temperature. To learn more about the Masterflux line and its applications, check the QR Code on the right.

TECUMSEH ARCHIVE

"In addition to these main components – photovoltaic panels, charge controller and battery bank – protection and control devices must be installed, in accordance with current standards, for example: ABNT NBR 5410 - deals with low voltage installations including photovoltaic connection and the NR10 that regulates facility safety and electrical services, among others."

IMAGEM ENVATO

THE PICTURE BELOW REPRESENTS A DIAGRAM OF PHOTOVOLTAIC SYSTEMS



Photovoltaic panels

INFOGRAPHIC INSPIRED BY THE CRESESB 2006 CONCEPT

DC* = it is a type of energy conduction through direct current that is usually supplied by car or motorcycle batteries (6, 12 or 24V), dynamos or solar cells as a power source.

References:
Technical note DEA 19/14 from EPE (Empresa de Pesquisa Energética), a public company linked to the Ministry of Mines and Energy. CRESESB – Centro de Referência para Energia Solar [Reference Center for Solar Energy] and Eólica Sérgio Brito / CEPEL – Centro de Pesquisas de Energia Elétrica [Electric Energy Research Center].
<http://www.cresesb.cepel.br/index.php?section=com_content&lang=pt&cid=341> - Last accessed on: 03/09/2020

110V OR 220V COMPRESSORS? DOES EFFICIENCY CHANGE?

Mith or Fact?

There is a recurring doubt among refrigeration technicians, regarding the difference in efficiency between compressors with 220V and 127V supply voltage. Many technicians think that that 127V motors are less efficient than their 220V counterparts.

But after all, is this a myth or a fact? This is a MYTH.

This difference is not related to the compressor's rated voltage. In fact, there are subtle differences between the same product in its two voltage versions, this is related to the particularities of the motor design and the tolerance range of the supply voltage. In many cases the 127V version can be more efficient than the 220V.

During the development process of a compressor, the designers of electric motors always seek to maximize their efficiency. A factor that directly impacts the values reached is the voltage range. To meet the standards of each market, a product must work perfectly within the specified range. An important requirement is the minimum voltage, as it defines the minimum starting condition of the compressor.

Not all countries have the same tensions and tolerance ranges. For example, we can mention the difference between the voltage range used in Latin America and India. In Latin America, some countries use the nominal voltage 220V/50Hz, whose range is between 180V and 242V.

In India the nominal voltage is 230V/50Hz, the range commonly used is 160V to 260V, therefore much more comprehensive than the previous one. The reason for such differences is related to the quality of electricity supply in the respective countries.

In this case, an motor destined for Latin America will be more efficient than one designed to serve the

Indian market.

Going back to the differences, between the 127V and 220V versions, it is necessary to clarify that the current of the 127V version is always higher than that of the 220V. For the correct understanding of this fact, one should remember the physics classes on electricity, especially the formula that relates current, voltage and power. The equation, derived from Ohm's law, lists these quantities as follows: in an inductive circuit, in the case of the motors in question, there are other quantities that interfere in this relationship, even so, the general behavior between them follows the equation below.

Please note that to deliver the same amount of power, an equipment powered by 127V will necessarily have a higher current than its 220V version. It is concluded, therefore, that the higher current is not related to lower efficiency.

$$P = U \cdot I$$

Note:
P= Power in Watts [W]
U= Voltage in Volts [V]
I = Ampere Current [A]

SOURCE ENVATO ELEMENTS

ELECTRONIC EXPANSION VALVE

Find out what its features and applications are

One of the fundamental components in refrigeration systems is the expansion device. Every compression refrigeration and gas expansion system requires an expansion device to work, the most common being: capillary tube, thermostatic expansion valve and electronic expansion valve.

Expansion devices can be found in the following products: water purifiers, home refrigerators, breweries, among others.

It is necessary to clarify some points that may differ regarding the use of the capillary tube or thermostatic expansion valve or electronic expansion valve.

Capillary tube: The simplest of the three types of expansion systems. Its central elements for dimensioning are associated with the internal diameter and the length of the tube. Once the ideal combination is defined, there are no further adjustments to be made.

Expansion valves: for refrigeration systems of greater power, there is a need for control in the flow of refrigerant fluid, as this has a strong impact on the system's performance and efficiency. The expansion valve becomes the best option because it has the ability to adjust the flow of refrigerant entering the evaporator, according to the varia-

Image provided by the manufacturer

Danfoss Image

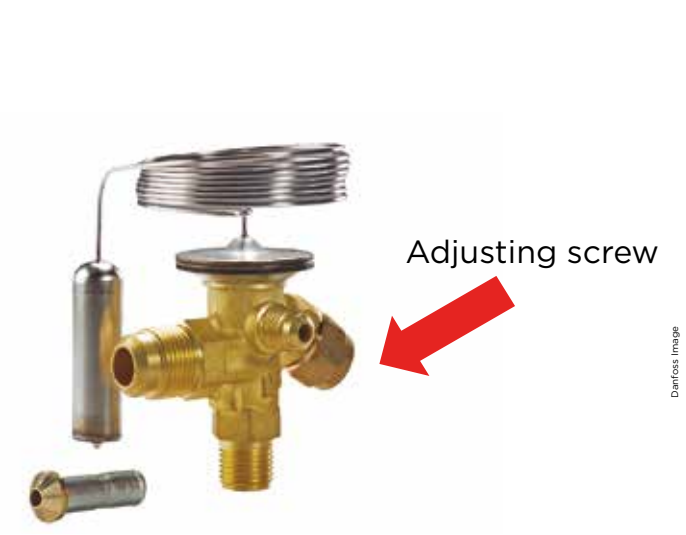
Iran Parts Image

THERMOSTATIC EXPANSION VALVE

CAPILLARY TUBE

ENVATO ELEMENTS

tion of the thermal load.
This is done by adjusting a screw (see figure below):



Danfoss Image

Once this concept is known, we can now differentiate between the two types of expansion valve.

The electronic expansion valve controls the overheating through a pressure transducer and a temperature sensor, which are fixed to the evaporator outlet and connected to an electronic controller.

This control acts quickly and precisely by controlling the valve in its opening or closing functions. In the case of thermostats, this opening and closing control is done mechanically by a bulb that is connected to the valve by a capillary tube.

Thus, it is clear that the function of both types of valve is the same, that is, by controlling overheating, the valve opens and increases the flow of refrigerant into the evaporator (this happens when there is an increase in the overheating), or closes by decreasing the flow of refrigerant in the evaporator (this happens when the overheating decreases).

The different technologies presented allow to obtain a better use of the refrigeration system. There is a clear advantage from the efficiency point of view in the use of electronic solutions, however this type of solution is more expensive. What is recommended in a project is to understand the technical requirements and the cost limits involved. This will assist in the decision-making process for choosing the expansion technology to be adopted.


SOURCE FREEPIK PREMIUM

PROJECT: RESTAURANT WITH CENTRAL KITCHEN IN SURABAYA

Ensuring the refrigeration quality in cold chambers.

Geography and environmental factors are not the same around the world. Temperature, humidity and salt concentration in the for the perfomance of the refrigeration units. Higher temperatures and humidity mean that compressors need to work harder to keep these critical limits stable. Salt is also very corrosive to metals, which can also seriously affect the lifespan and efficiency of compressors and condensing units. Therefore, these factors need to be taken into account before making a purchase decision.

When our Indonesian representative, PT Sarana Nikoteknik, informed us that they had a new client with a project in the coastal city of Surabaya, and that it required an cold room on each of its 8 floors, we needed to ensure that all three factors were considered. Surabaya is located in the tropical region of Southeast Asia, with temperatures reaching a maximum of 35°C, with air humidity around 74% throughout the year.

The project site was located approximately 12 km from the Java Sea. This means that our compressors not only had to work harder, they also had to be built to withstand exposure to higher levels of salinity in the atmosphere.

PT Sarana Nikoteknik had noted that the construction industry often demanded short delivery times and therefore keeps stock of our PAC³ condensing units ordered especially for its humid tropical climate, with additional protection against saline corrosion, as they are located in the largest archipelago in the world.

Picture of the PAC³ Tecumseh condenser unit installed and front view.

In the past 25 years, Tecumseh Malaysia has built a strong business with the aim of offering high value-added engineering solutions, a commitment to adopting a customer-oriented approach and a reputation for quality assurance. From the design of plug and play products that are easy to install, through the implementation of ISO 9001 Quality Management Systems for production, to the performance of rigorous tests on each unit that leaves our plants.

Commercial safety, electrical, leakage and application testing have become mandatory practices before packaging and transporting our products.

An excellent example of Tecumseh's commitment to providing engineering solutions emerged from the early days when it was found that the aggressive atmosphere of SE Asia, being too saline, would cause corrosion wear in our products. We quickly understood and invested heavily in the search for alternative methods and materials that would protect the efficiency and durability of our products.

Our products have undergone 500 hours of salt spray, which is equivalent to 10 years of exposure in a coastal environment. The results made it possible to create products adequately protected against saline corrosion. Jason Chong, Sales and Marketing Account Manager – Indonesia, said: "We have been very close to our distributors in Indonesia for a long time, because they trust us to provide good quality products that are individually tested. We even have our internal facilities specially built to carry out such tests. This additional effort means that they will order and maintain inventory, as there is little risk of installation failure. When we work regionally, transportation is expensive and time consuming, so we prefer to eliminate the risk of needing to replace parts in the event of a failure. We prefer to ensure that each product we send is in the best possible condition in the first place."

Mr. Niko, from PT Sarana Nikoteknik, said: "We have distributed the Tecumseh PAC³ condensing units, as we have found that they are very easy to install, which saves time and labor costs. They are also easy to operate and convenient to maintain, which makes our job easier. But the main factor that built this strong relationship between us is the fact that we have great support from the Engineering and Sales teams. So, when we encounter a problem, we know that they will support us all the way."

For more information on refrigeration products for coastal and tropical areas, contact us via email: marketing@tecumseh.com

SPECIFICATIONS PAC³ - MALAYSIA/ASIA

RECIPROCATING TECHNOLOGY

LOW TEMPERATURE APPLICATION (LBP)

Model	HP	Platform	Oil Type	Fan		Liquid Tank (L)	Connection Diameter mm		PAC³ Dimensions (mm)			Mass (kg)
				Dimension (mm)	Power (W)		Suction	Liquid	Width	Length	Height	
PACS2446Z PAC2446Z	1.2	Mini	POE	1 x 350	129	2.35	15.9 (5/8")	9.5 (3/8")	913	416	532	57
PACS2464Z PAC2464Z	1.6											58
PACS2480Z PAC2480Z	2.0	Small		1 x 450	250	3.9	15.9 (5/8")	9.5 (3/8")			638	78
PACS2511Z PAC2511Z	2.8											78
PAC2513Z	3.3	Medium		1 x 500	380		22.2 (7/8")	12.7 (1/2")			792	96
PAC2516Z	4.0											97
PAC2522Z	5.5											99
PAC2525Z	6.3											99

MEDIUM HIGH TEMPERATURE APPLICATION (M/HBP)

Model	HP	Platform	Oil Type	Fan		Liquid Tank (L)	Connection Diameter mm		PAC³ Dimensions (mm)			Mass (kg)
				Dimension (mm)	Power (W)		Suction	Liquid	Width	Length	Height	
PACS4460Z	0.5	Mini	POE	1 x 350	129	2.35	15.9 (5/8")	9.5 (3/8")	913	416	532	49
PACS9480Z PAC9480Z	0.7											57
PACS9510Z PAC9510Z	0.8											58
PACS9513Z PAC9513Z	1.1											58
PACS4517Z PAC4517Z	1.4	Small		1 x 450	250	3.9	15.9 (5/8")	9.5 (3/8")			633	63
PACS4519Z PAC4519Z	1.6											63
PACS4524Z PAC4524Z	2.0											80
PACS4531Z PAC4531Z	2.6											81
PACS4540Z PAC4540Z	3.3	Medium		1 x 500	380		22.2 (7/8")	12.7 (1/2")			792	89
PAC4546Z	3.8											96
PAC4553Z	4.4											98
PAC4561Z	5.0	Large		2 x 450	2 x 250	9.5	22.2 (7/8")	12.7 (1/2")			1149	125
PAC4568Z	5.7											126
PAC4573Z	6.0											127
PAC4581Z	6.8											127

SCROLL TECHNOLOGY

MEDIUM HIGH TEMPERATURE APPLICATION (M/HBP)

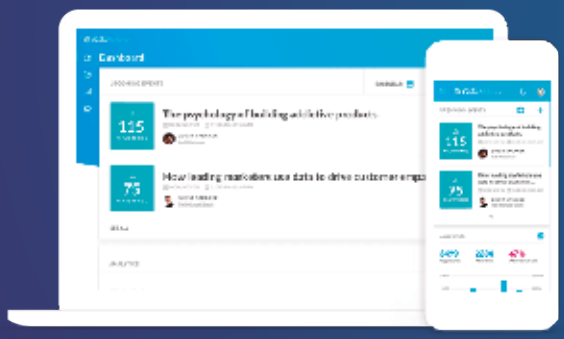
Model	HP	Platform	Oil Type	Fan		Liquid Tank (L)	Connection Diameter mm		PAC³ Dimensions (mm)			Mass (kg)
				Dimension (mm)	Power (W)		Suction	Liquid	Width	Length	Height	
PACS4536Z PAC4536Z	3.0	Medium	POE	1 x 500	380	3.9	22.2 (7/8")	12.7 (1/2")	913	416	792	82
PAC4548Z	4.0											83
PAC4560Z	5.0	Large		2 x 450	2 x 250	9.5	22.2 (7/8")	12.7 (1/2")			1149	110
PAC4572Z	5.0											112
PAC4584Z	7.0											119
PAC4596Z	8.0	Extra Large		2 x 500	2 x 380	9.5	28.6 (1-1/8")	12.7 (1/2")			1271	140
PAC4611Z	9.0											49
PAC4612Z	10.0											49

Tecumseh UNIVERSITY

Online courses

2020

Free online courses will be offered by Tecumseh Corporate University. Check the schedule on our social networks, and don't miss our content! Hit us on Facebook. QR Code below.



/tecumsehbr/

/company/tecumsehbr/

GoToWebinar

Tecumseh

PRESSURE SWITCH ADJUSTMENT

LOW PRESSURE CONTROL APPROXIMATE CONFIGURATION

Application	Temp. Range (°C)	Evap. TD (°C)	Pressure (psig)									
			R-22		R-134a		R-404a		R-414b		R-507	
			Output (OFF)	Input (ON)	Output (OFF)	Input (ON)	Output (OFF)	Input (ON)	Output (OFF)	Input (ON)	Output (OFF)	Input (ON)
Beverage Cooler	1.7 a 3.3	8.3	41	66	17	33	53	82	15	29	55	85
Flower Display												
Refrigerated Display (vegetables)												
Smoked Meat Cooler	0 a 1.7	8.3	38	62	15	30	49	77	13	27	52	81
Meat Display												
Horizontal Display												
Seafood												
Refrigerated Meat Gondola	-3.3 a -1.7	8.3	32	54	11	25	42	68	9	22	44	71
Upright Freezer	-23.3 a -17.8	5.6	9	24	-	-	15	33	-	-	15	35
Refrigerating Chamber												
Frozen Ice Cream	-34.4 a -28.9	5.6	0	10	-	-	3	16	-	-	4	18
Frozen food												

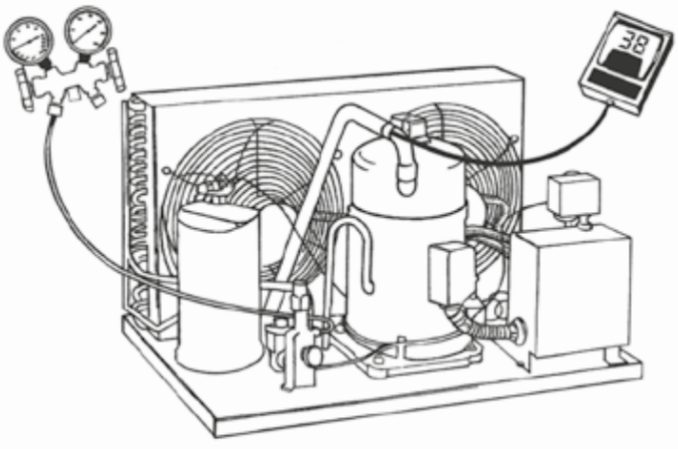
MEASURING SUPERHEAT

Refrigerant Fluid R-134a
Example

Tsu = Suction Temperature = 3.3°C
(at 15 cm from the compressor)

Tev = Evaporation Temperature = -6.7°C
(Pressure converted from 18.4 psig)

Superheat: Tsu - Tev
Superheat: = 3.3 - (-6.7)
Superheat: = 10K



SMALL SIZE **AND HIGH EFFICIENCY**

DEVELOPED WITH A ROBUST DESIGN, **THE INVERTER HERMETIC ROTARY ATLAS AND MESA ARE MICRO ROTARY COMPRESSORS** SUITED FOR REFRIGERATION OF INDEPENDENT DEVICES.
USING R-134a FLUID AND BLDC ENGINE, THEY PRESENT LOW VIBRATION AND NOISE, HIGH CAPACITY AND POSSIBILITY OF USING CLEAN AND RENEWABLE ENERGY.
INNOVATION AND EFFICIENCY IN A COMPACT FORM.

MASTERFLUX®

Cooling for a Better Tomorrow™
www.tecumseh.com

Tecumseh