

**A NEW LANDMARK ON AIR  
CONDITIONING SEGMENT VR<sup>2</sup>**



# ABOUT VR<sup>2</sup> KEY CHARACTERISTICS

## SOUND

Attend the market needs for sound and vibration, on AC split systems application.  
Reduction of 5.5 dBA from previous generation.

## VERSATILE

Industry standard suction and discharge connections, facilitate ease of installation and serviceability. Can be adapted by customers need – upon request.



## PERFORMANCE 1

New motor combined with improved compression mechanism provides improved compressor efficiency +3.6% increase when compared with previous generation.

## PERFORMANCE 2

Attend new INMETRO ordinance nr. 269/2021 new classes that will come into force from Jan./2023 on.

## FLUID REFRIGERANT

Designed to attend R-410A and low GWP, ZERO ODP R-32 refrigerants (-20% on refrigerant charge compared with R-410A).





## WHY VR²?

- Tecumseh is pleased to announce the availability of the VR², a high efficiency compressor designed for air conditioning – AC and heatpump applications.
- The VR² series are a highly rotary inverter performance choice for the AC segment.
- The VR² series compressor meets two important market needs:
  - first, it is designed to attend both fluid refrigerants R-410A and R-32 (low GWP level solution)
  - second, to attend the new INMETRO ordinance NR. 269/2021, new classes that will come into force from January/2023 on.

### TABLE SPLIT AC - IDRS

Split air conditioning	
Classes	IDRS – Seasonal performance index (Wh/Wh)
A	≥ 5.50
B	≥ 5.00
C	≥ 4.50
D	≥ 4.00
E	≥ 3.50
F	≥ 3.14



**Note:** new energy efficiency classes applied for split air conditioning (deadline to attend it is Dec./31st/22) for manufacturing and importation.

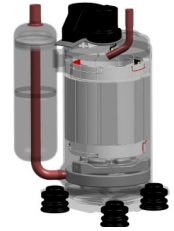




## VR<sup>2</sup> WHAT IS THE SAME & DIFFERENT?

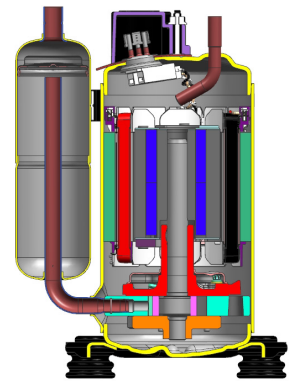
### THE SAME

- Tecumseh has over than 85 years of experience on refrigeration and AC
- Local source, Tecumseh has compressors operations in Brazil
- Application engineering service available in Brazil and abroad
- Tecumseh has an accredited air conditioning lab. by Inmetro in Brazil
- Certification SGS, others upon request



### DIFFERENT:

- New lamination design
- New rotor balancing to reduce vibration
- New magnets with high energy
- Mechanical kit, better design fit, to improve compressor efficiency
- New accumulator types available, upon request
- Easily adjustable for the original air conditioning software
- New displacements 5.4 and 9.52cc / rev



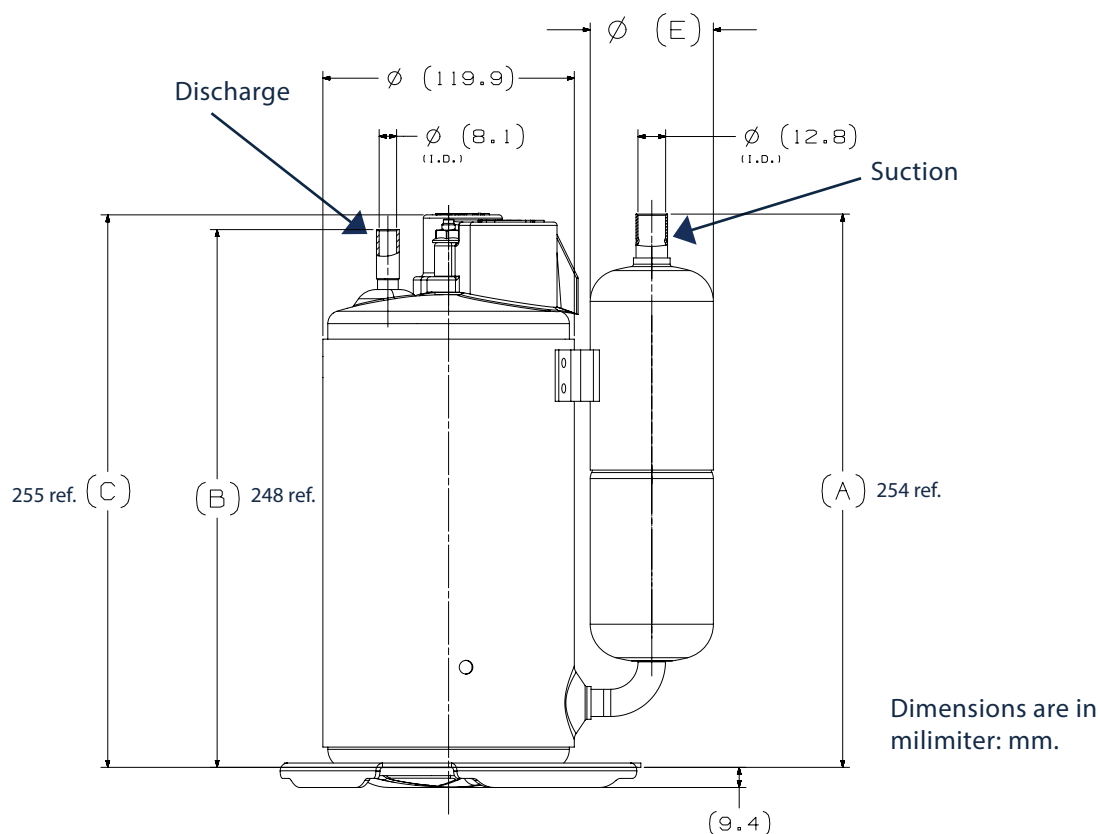
## VR<sup>2</sup> VALUE PROPOSITION

Benefits	Features
Size	Displacements: 5.4 cc/rev.; 8.55 cc/rev.; 9.52 cc/rev. 10.23 cc/rev.
Interchangeability	Same mounting footprint as RG series Same safety certifications as RG series Equivalent cooling capacities between R-410A and R-32 refrigerant Industry standard connections.
Enhanced Efficiency	Standard oil type - POE
Robustness	Highly efficient compressor New motor design and mechanism optimized
Product Main Features	Operating range from 30 - 216.6 Hz Operating range from 900 - 6500 rpm DC Bus Voltage Range 265 ~360 VDC
Application	Air conditioning Window RAC and Split
Controller	No need controller, use the same as the AC cabinet

More technical details characteristics please consult datasheets

**Note:** housing sizes can attend all market needs, flexible to support different accumulator volume, mounting bracket position as well tubes (suction, discharge and process).

## CONNECTIONS



## VR<sup>2</sup> RANGE AND PERFORMANCE – R-410A VR5510B-MF5H

### TECHNICAL SPECIFICATION MODEL VR5510B-MF5H

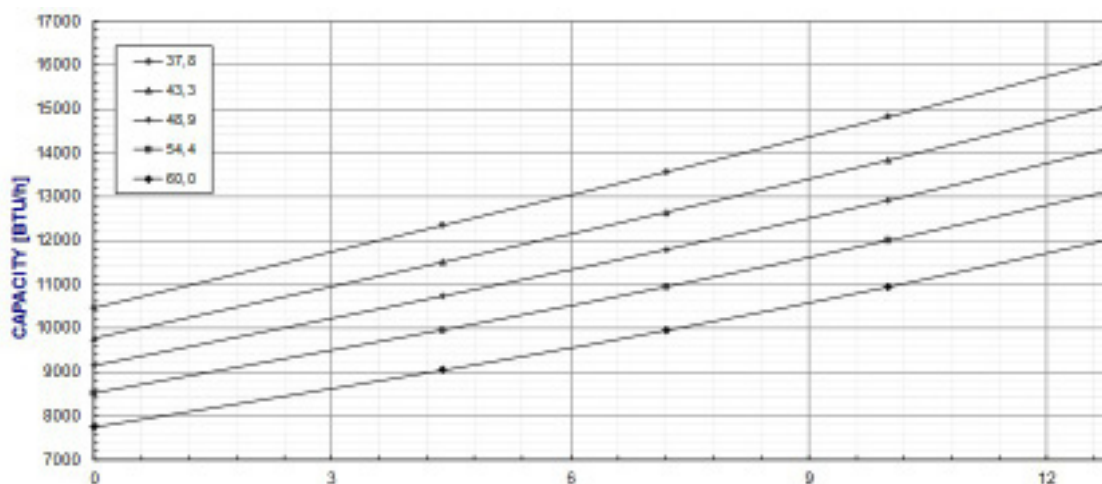
test condition: Ashrae - HBP A/C\* (speed 3600rpm)

### COMPRESSOR PERFORMANCE

MODEL: VR5510B-MF5H

TEST CONDITION: ASHRAE - HBP A/C\*  
VOLTAGE: 220V/60Hz

MOTOR TYPE: PM3M  
COOLING: STATIC  
SPEED: 3600rpm



		EVAPORATING TEMPERATURE (°C)				
		0.0	4.4	7.2	10.0	12.8
Condensing temperature (°C)	37.8	10460	12342	13562	14815	16116
	43.3	9771	11503	12642	13826	15070
	48.9	9147	10729	11788	12905	14093
	54.4	8512	9952	10935	11987	13123
	60.0	7746	9044	9553	10942	12027

Values in Btu/h

\*Ambient temp.: 35°C; Return gas temp.: 35°C; Subcooling: 8.3k

## TECHNICAL SPECIFICATION MODEL VR55IOB-MF5H

Inductance Variation Due to Stator Current

Quadrature axis inductance ( $L_q$ ) dependency with current:

Quadrature axis inductance ( $L_q$ )								
$I_{ref}(A)$	$V_{rms}(V)$	$I_{rms}(A)$	W	$Z(\Omega)$	$\cos\phi$	$R(\Omega)$	$X_L(\Omega)$	L(mH)
0.5	4.3	0.53	0.4	4.05	0.18	0.71	3.99	6.34
1.0	8.9	1.09	1.5	4.07	0.15	0.63	4.02	6.40
1.5	12.1	1.46	2.6	4.15	0.15	0.61	4.10	6.53
2.0	16.3	1.95	4.6	4.19	0.15	0.61	4.15	6.60
3.0	25.4	2.98	10.8	4.27	0.14	0.61	4.55	6.72
4.0	34.7	4.10	20.3	4.23	0.14	0.60	4.19	6.66
5.0	42.7	5.26	33.0	4.06	0.15	0.60	4.01	6.39
6.0	47.9	6.21	45.6	3.86	0.15	0.59	3.81	6.06
7.0	51.6	7.00	57.4	3.70	0.16	0.59	3.65	5.81
8.0	56.9	8.15	77.5	3.49	0.17	0.58	3.44	5.48

Direct axis inductance ( $L_d$ ) dependency with current:

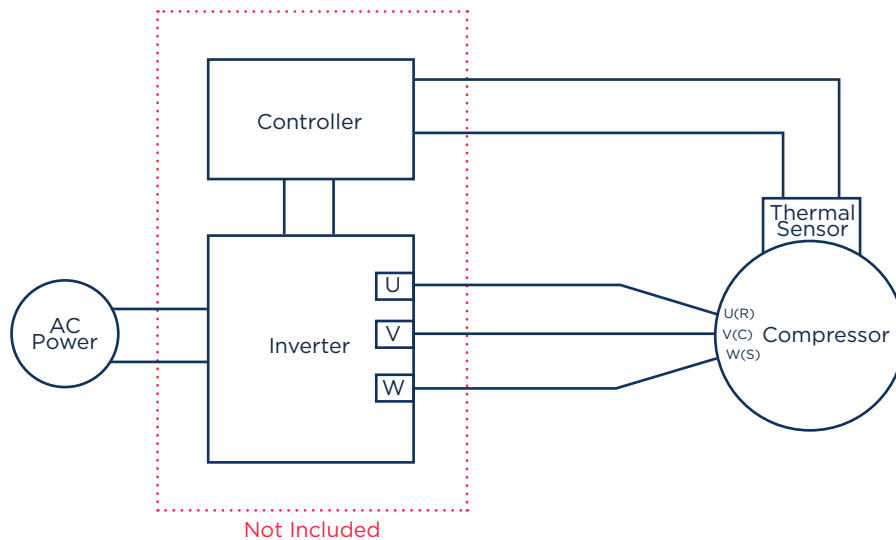
Direct axis inductance ( $L_d$ )								
$I_{ref}(A)$	$V_{rms}(V)$	$I_{rms}(A)$	W	$Z(\Omega)$	$\cos\phi$	$R(\Omega)$	$X_L(\Omega)$	L(mH)
0.5	8.4	0.459	0.4	9.15	0.10	0.95	9.10	14.48
1.0	18.1	0.978	1.9	9.25	0.11	0.99	9.20	14.64
1.5	28.5	1.527	4.2	9.33	0.10	0.90	9.30	14.78
2.0	38.2	2.068	7.4	9.24	0.09	0.87	9.20	14.63
3.0	52.4	3.054	16.3	8.58	0.10	0.87	8.50	13.58
4.0	61.4	3.964	24.3	7.74	0.10	0.79	7.70	12.26
5.0	68.3	4.896	36.3	6.98	0.10	0.76	6.90	11.04
6.0	74.5	5.917	50.3	6.30	0.11	0.72	6.30	9.95
7.0	79.0	6.805	65.4	5.80	0.12	0.71	5.80	9.17
8.0	84.6	8.091	88.2	5.12	0.13	0.67	5.20	8.25

More technical details characteristics please consult datasheets

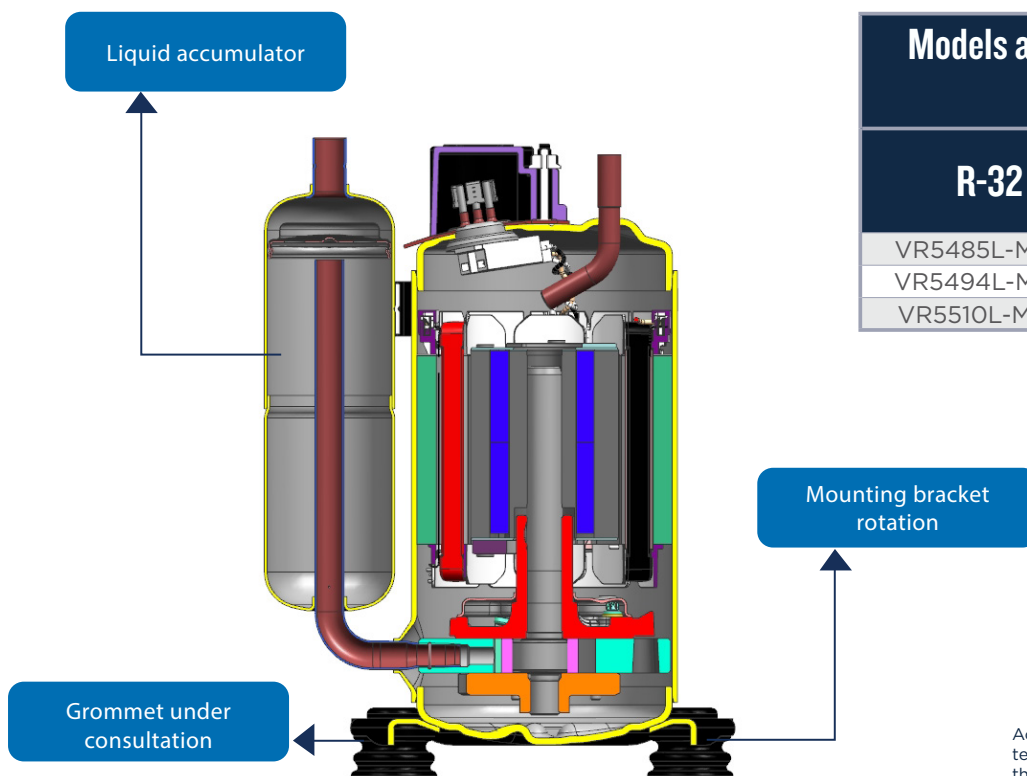
# WIRING DIAGRAM MODEL VR5510B-MF5H

## TECHNICAL SPECIFICATION MODEL VR5510B-MF5H

Wiring Diagram and thermal sensor specification



## WHAT CAN BE CUSTOMIZED ?



### Models available in two different refrigerants

R-32	R-410A
VR5485L-MF5A	VR5455B-MF5H
VR5494L-MF5A	VR5485B-MF5H
VR5510L-MF5A	VR5494B-MF5H
	VR5510B-MF5H

Access the QR Code to find technical information about the compressors:



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