ENGINEERING
TOMORROW

Danfoss

VZH, 3rd generation of inverter scroll compressors

Advanced efficiency, precision cooling

Design an HVAC system like no other

Stand out in the commercial HVAC and process cooling marketplace by boosting your unit performance and shortening development time with the Danfoss pre-qualified and manifoldable 4-26TR inverter packages.



Scanning this code
will take you to
inverterscroll.danfoss.com



3-26TR

3rd generation of inverter scrolls with IDVs and extended maps.

http://inverterscroll.danfoss.com

Applying inverter scroll technology keeps getting easier

Now you can build the system you want to build — the way you want to build it. That's because VZH inverter scroll compressors from Danfoss give you more efficiency, precision, capacity and simplicity.

Choose VZH inverter scrolls when you want the best for commercial air conditioning and industrial cooling. They enable you to create the best systems for a wide range of applications in data centers, IT cooling, telecom facilities, offices, industrial and residential buildings.







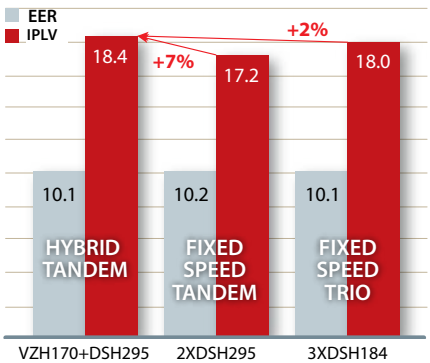
Advanced efficiency:
As a leader in HVAC technology, Danfoss has developed the VZH inverter scroll compressor in response to environmental and energy challenges. It uses a brushless Interior Permanent Magnet (IPM) motor to give you higher efficiency. It is optimized for varying pressure ratios to deliver a high level of efficiency across a wide range of applications.
A cooling solution optimized for low energy consumption and for power grid requirements.
Intermediate Discharge Valves (IDVs) in VZH 4-26TR models increase efficiency at low-pressure ratios, further increasing the part-load efficiency of both the compressors and the units.

Extended capacity:
With cooling capacities from 4-26TR with a single compressor, the VZH range offers the biggest capacity on the market. The VZH inverter scroll can operate from 25 to 100 RPS, for the 13-26 TR models, from 15 to 100 RPS for the 4-7 TR models and from 17 to 110 RPS for the 8.5-11 TR models. Furthermore, pre-qualified tandem capability extends the cooling capacity to 52 TR and a 7:1 stepless modulation.
The pre-qualified compressor and drive package is fully integrated to get your product to market faster. Pick the capacity range you need for either chiller or rooftop applications.

Precise cooling:
An exact match to your cooling requirements exactly to control temperature and humidity is critical for the best comfort and process, data availability as well as product quality. This enhances the energy savings, providing a shorter payback time to the end user – in most cases, less than 3 years.

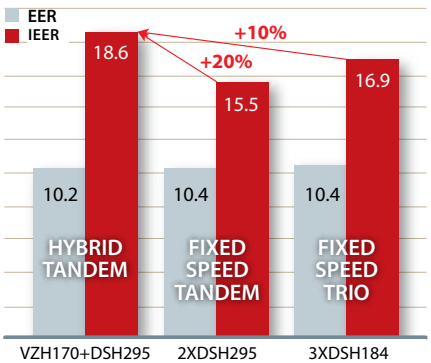
Performance comparison in 50TR Chillers and Rooftop

A/W Chiller (50TR)



VS Fans	9.5% of CP-Pabs
Tc (FL)	50°C / 122°F
Te (FL)	3.2 °C / 37.8°F

A/A Rooftop (50TR)



VS Fans	9.5% of CP-Pabs
Tc (FL)	50°C / 122°F
Te (FL)	9.7°C / 49.5°F

Variable-speed technology improves performance on otherwise poorly modulated systems, with rooftop units and chillers seeing the greatest benefits.

Source: IPLV system simulations with 1 circuit, run with Danfoss software.

4 to 52TR* fully modulated solutions for:

- **Superior seasonal efficiency:** up to 30% versus fixed-speed systems
- **Precise load matching:** down to +/- 0.3°C
- **Faster time to market:** up to 6 months faster, thanks to the pre-qualified compressor and drive packages and Danfoss's dedicated and experienced support team
- **Extended modulation:** 4:1 or 7:1 turn down ratio depending on model
- **Pre-qualified tandems:** Pre-qualified, patented hybrid manifold configurations with fixed-speed compressors optimize performance and costs

**4-52 TR (15-183kW) @60Hz*
4-47 TR (13-167kW) @50Hz

Reduce your time to market while increasing reliability

Danfoss offers a dedicated drive for Danfoss Inverter Scrolls for the Light Commercial and Commercial markets.

The perfect match of compressor and drive deliver a package from a single supplier that greatly reduces the qualification effort of the OEM, reducing the OEM's time to market. The end user can expect maximum product satisfaction because an expert team of Danfoss engineers, with years of variable speed compressor experience, developed the entire system.

Low in-rush current
Inverter logic ensures a soft start that reduces in-rush current, decreasing the impact on the power grid – and the electricity bill.

EMC compliance and small footprint
The frequency converter is designed with built-in harmonic filters, making it easy to install in the electrical panel while complying with industry standards.

Versatility
With a drive operating in up to 50°C of ambient temperature with no performance compromise, a conformal coating to protect the circuit boards and a large compressor operating envelope, this package can easily cover several applications in different parts of the world – even under extreme climate conditions.

User-friendliness
The drive's parameter interface is the same for both the small and large inverter series. This minimizes the servicing and implementation efforts. Besides, the user interface is available in 7 languages for increased user-friendliness.

More options:

- The frequency converter can operate as a master PID stand alone or as the slave of the unit controller.
- Optional graphic display and keypad - with on-board memory - can be used to make parameter changes easily.
- Comprehensive input/output provide RS-485, analog, digital and USB interfaces*, supporting diagnostics, load monitoring and communication.
- Embedded modbus protocol.
- Danfoss MCT10 software allows integration and programming of inverter parameters from a Windows PC.

** USB interfaces for CDS 303 drive only.*



New in 2020
MCX15/20B2

Danfoss revamps medium and large programmable controls and introduces variable-speed VZH compressor management.

Danfoss upgrades its MCX15B and MCX20B controllers with the introduction of the MCX15B2 and MCX20B2 controllers. Both models combine best-in-class connectivity and security.

New compressor control logic libraries further enhance the reliability and performance of our VZH inverter scroll compressors and facilitate their integration. The libraries include control of the operating map, oil management, and preconfigured Modbus control of the CDS drive.

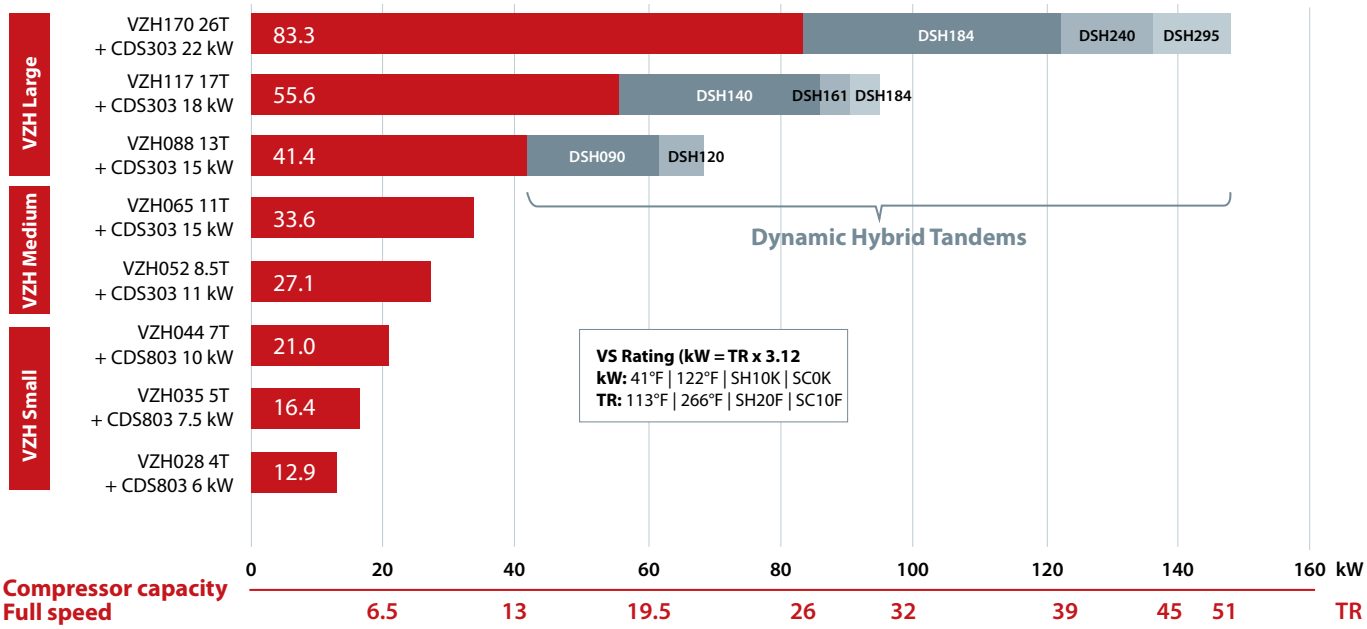
Do you want more information about the VZH inverter?

1. Sign up for your free e-lesson at learning.danfoss.com
2. Scan the QR-code for more technical information and case studies



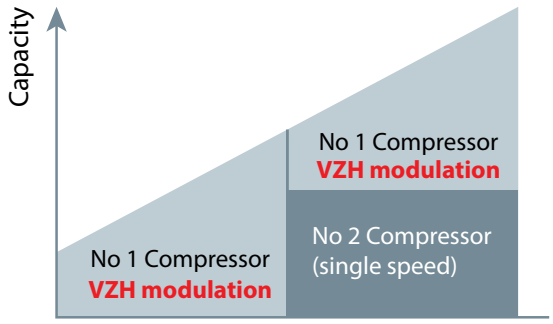
Technical data

VZH compressor lineup – The largest in the market



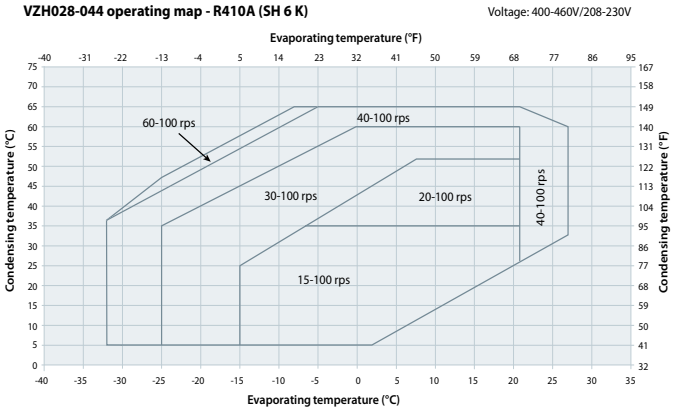
Rating conditions @50Hz: Maximum capacity: 100 RPS ARI
Minimum capacity: 15 RPS (VZH 028-044), 17 RPS (VZH 052-065) & 25 RPS (VZH 088-170) 44,6°F / 95°F / 11,1K / 8,3K (Part load)

Stepless modulation

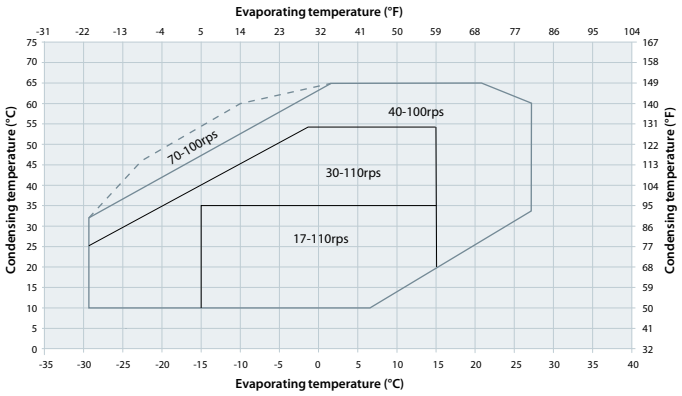


Operating envelopes (R410A-SH 6K)

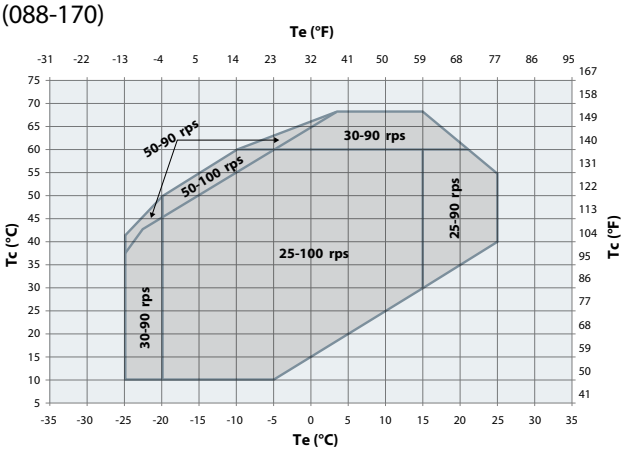
VZH 4-7 TR
(028-044)



VZH 8.5-11 TR
(052-065)



VZH 13-26 TR
(088-170)



VZH have built-in Intermediate Discharge Valves (IDVs). IDVs adapt the effort of the motor and its energy consumption to the varying load thus improving the seasonal efficiency of air conditioning systems.

For more information see the video



Technical data

VZH 4-7TR				Cooling				Heating		
				Capacity	Efficiency			Capacity	Efficiency	
Models	Speed	Conditions	TR	kW	EER [Btu/Wh]	COP [W/W]	Speed	kW	EER [Btu/Wh]	COP [W/W]
VZH028	15 RPS	Part load (1)	0.71	2.5	17.17	5.03	30 RPS	3.77	9.52	2.79
	Full speed 100 RPS	ARI (2)	4.15	14.6	9.59	2.83	Full speed 100 RPS	13.26	9.89	2.9
		EN12900 (3)	3.67	12.9	9.18	2.71				
VZH035	15 RPS	Part load (1)	0.91	3.2	21.97	5	30 RPS	4.68	9.76	2.86
	Full speed 100 RPS	ARI (2)	5.26	18.5	10.17	3	Full speed 100 RPS	16.47	10.30	3.02
		EN12900 (3)	4.66	16.4	9.72	2.87				
VZH044	15 RPS	Part load (1)	1.20	4.2	20.68	5.14	30 RPS	6	9.93	2.91
	Full speed 100 RPS	ARI (2)	6.77	23.8	10.44	3.06	Full speed 100 RPS	21.04	10.44	3.06
		EN12900 (3)	5.97	21.00	10.00	2.93				
VZH 8.5-11TR										
VZH052	17 RPS	Part load (1)	1.64	5.80	21.18	6.20	40 RPS	8.15	8.47	2.48
	Full speed 110 RPS	ARI (2)	8.67	30.50	10.09	2.96	100 RPS	26.81	9.67	2.83
		EN12900 (3)	7.70	27.05	9.74	2.85				
VZH065	17 RPS	Part load (1)	2.02	7.10	21.13	6.19	40 RPS	10.50	8.47	2.48
	110 RPS	ARI (2)	10.75	37.80	10.21	2.99	100 RPS	33.20	9.84	2.88
	Full speed 110 RPS	EN12900 (3)	9.56	33.62	9.93	2.91				
VZH 13-26TR										
VZH088	25 RPS	Part load (1)	4.11	14.45	21.81	6.39	25 RPS	10.47	9.45	2.77
	Full speed 100 RPS	ARI (2)	13.42	47.21	10.20	2.99	Full speed 100 RPS	42.72	10.20	2.99
		EN12900 (3)	11.90	41.85	9.79	2.87				
VZH117	25 RPS	Part load (1)	5.53	19.46	22.56	6.61	25 RPS	13.70	10.00	2.93
	Full speed 100 RPS	ARI (2)	17.89	62.93	10.50	3.08	Full speed 100 RPS	56.45	10.54	3.09
		EN12900 (3)	15.85	55.75	10.10	2.96				
VZH170	25 RPS	Part load (1)	8.05	28.32	22.11	6.48	25 RPS	20.01	10.17	2.98
	Full speed 100 RPS	ARI (2)	26.19	92.11	10.85	3.18	Full speed 100 RPS	80.95	10.85	3.18
		EN12900 (3)	23.15	81.41	10.44	3.06				

RATING CONDITIONS:

(1) Part load: Evaporating Temp 7.2°C; Condensing Temp 35°C; Superheat 11.1K; Subcooling 8.3K
(2) ARI: Evaporating Temp 7.2°C; Condensing Temp 54.4°C; Superheat 11.1K; Subcooling 8.3K
(3) EN12900: Evaporating Temp 5°C; Condensing Temp 50°C; Superheat 10K; Subcooling 0K
(4) Heating mode: Evaporating Temp -7°C; Condensing Temp 50°C; Superheat 5K; Subcooling 5K.
All data include drive losses.

NOTES:
All data are for 380-480V
Also available for 200-240V

Contact your local Danfoss sales office today to find out what your business can gain from working with the leader in variable speed technology.

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