

AERZEN

SCREW COMPRESSORS

Aerzen Screw Compressor VARISCREW for the refrigeration industry



AERZEN

AERZENER MASCHINENFABRIK

GMBH

V1-038 | 03 | EN

1500 7.2003



Aerzener Maschinenfabrik was founded in 1864. In 1868, Aerzen produced Europe's very first rotary piston machine designed according to the Roots principle. The manufacture of rotary piston gas meters began in 1930, followed by the instruction of the first rotary screw compressor in 1943.

Experience in the production of twin shaft rotary lobe machines is also reflected in quality assurance. Since 1990, Aerzener Maschinenfabrik counts itself among the manufacturers whose quality assurance has been certified acc. to ISO 9001, world-wide.

Dedicated to constant technological progress, Aerzen has evolved into a modern enterprise and a world leader in the field of specialized machine engineering. The steady growth of our staff, presently counting over 1000 experienced engineers, technicians and craftsmen ensures Aerzen's leading position.

The excellence of Aerzen's sales and service organization is recognized around the world.

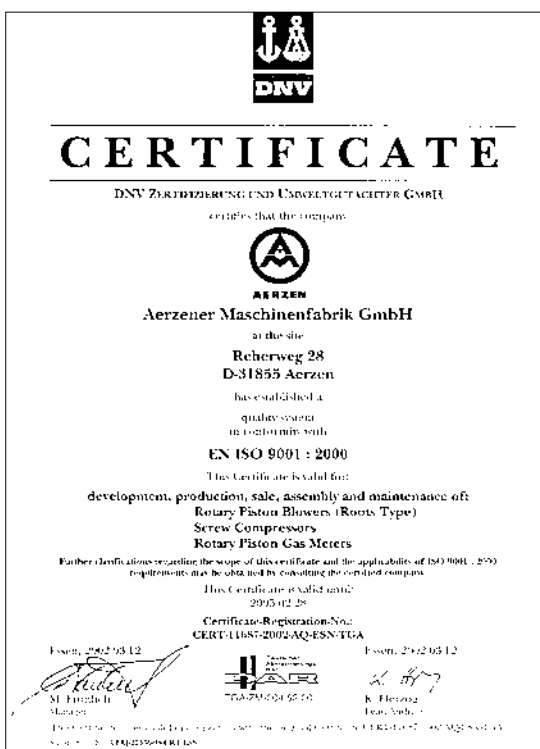
As pioneer of the German engineering branch of industry the Aerzener Maschinenfabrik started the development of screw compressors in the thirties.

By constant further development and application of most modern technology the Aerzener Maschinenfabrik succeeded in belonging to today's market leader in the range of oil-free and oil-injected compressors for nearly all gases.

In 25 years of co-operation with the company SABROE more than 3000 screw compressors have been delivered for the refrigeration application in the food industry, pharmaceutical industry, chemical and petrochemical industry, marine refrigeration as well as heat pump and expander for utilization of combustion heat.

The VARISCREW-series in the most different designs will firmly establish itself in the industrial and commercial refrigeration.

A new era in Aerzen's refrigeration history started at the fair IKK'96 in Nuremberg where the new refrigeration compressor series '46 – called VARISCREW – was presented to the general public.





VARISCREW, the new generation of refrigeration compressors made by Aerzener Maschinenfabrik, is part of a wide range of screw compressors providing an individually suitable solution for any customer.

Application of VARISCREW

The VARISCREW-type of compressor has been designed for the capacity range 233 m³/h up to 2.700 m³/h with 50 Hz (280 m³/h up to 2930 m³/h with 60 Hz).

Main characteristics

- Liquid injection as oil cooling device has been foreseen
- Oval flange
- Length-diameter ratio is equal for all screw compressors
- Optimization of the axial outlet – for COP increase
- Space saving unit assembly due to compact compressor design and low weight
- Automatic V_i - control (VMY 346)

Advantages of VARISCREW

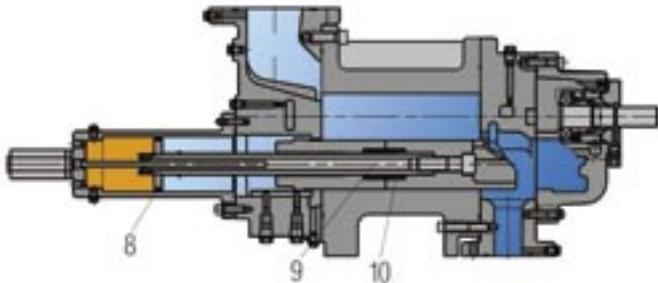
Where low operation costs and high reliability are basic demands, VARISCREW is the right decision for the entire range of marine and industrial refrigeration.

Application in

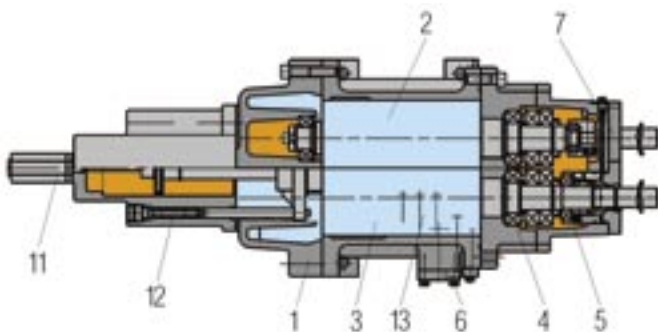
- meat and poultry industry
- cold storage
- dairies and breweries
- mine cooling
- marine refrigeration
- air conditioning
- process refrigeration
- heat pumps

VMY 046 - VMY 246

vertical cross section



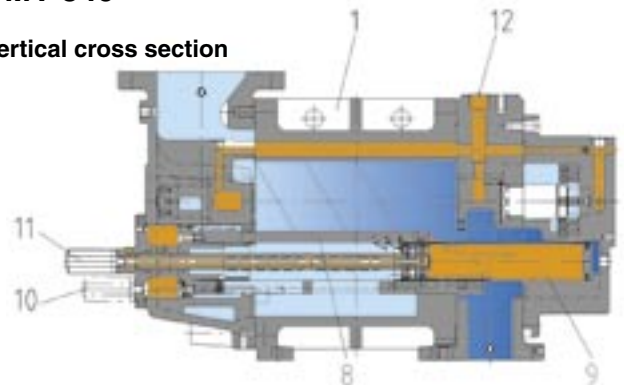
horizontal cross section



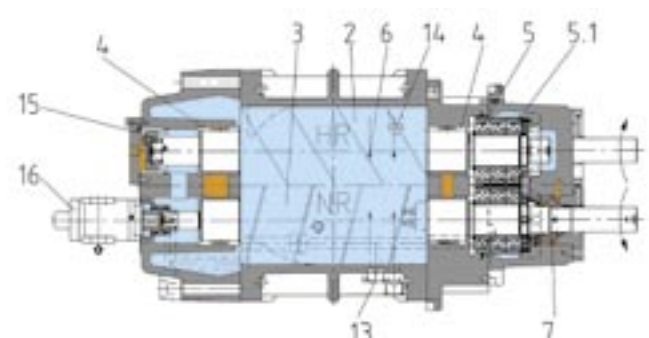
- | | |
|-------------------------------------|---------------------------|
| 1 Housing | 9 Slide valve |
| 2 Male rotor | 10 Spring |
| 3 Female rotor | 11 Transsolar transmitter |
| 4 Radial bearings | 12 V_i -Adjustment |
| 5 Axial bearings | 13 Economizer connection |
| 6 Oil injection | |
| 7 Mechanical seal | |
| 8 Hydraulic thrust capacity control | |

VMY 346

vertical cross section



horizontal cross section



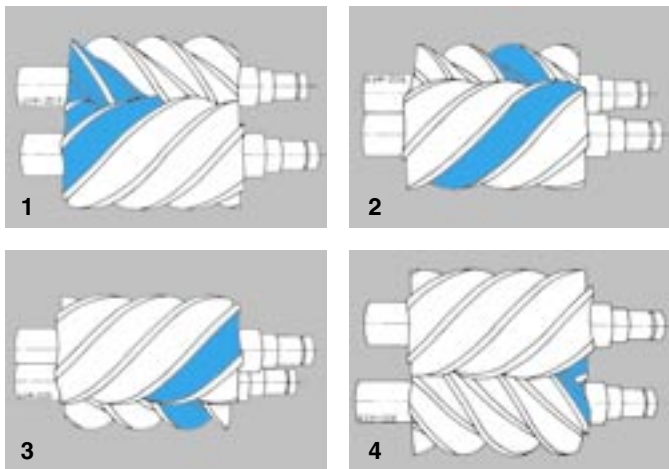
- | | |
|--------------------------------------|---|
| 1 Housing | 9 Slide valve |
| 2 Male rotor | Capacity control |
| 3 Female rotor | 10 Transsolar V_i |
| 4 Radial bearings | 11 Transsolar transmitter |
| 5 Axial bearings | 12 Oil supply bearings, mechanical seal |
| 6 Oil injection | 13 Economizer connection |
| 7 Mechanical seal | 14 SOC connection |
| 8 Hydraulic thrust V_i -Adjustment | 15 Balancing piston |
| | 16 Oil pump |

Operational lifetime and costs

The newly designed rotor profile – another step in development of the existing 4+6 D-Profile – as well as the bearing quality, consequently tested for long lifetime (up to 50.000 hours), prolongate maintenance periods and lower operational costs. An optimal operating safety is guaranteed by a flanged oil pump for lubrication of the compressor (VMY 346).

Quality

Now that decades of experience in the manufacture of compressors have been connected with the latest concepts of production and development a refrigeration compressor has been designed that can be operated with all refrigerants presently known. With its certified quality Aerezner Maschinenfabrik is always prepared to meet the customer's particular demands.



1 Intake

Gas enters through the gas intake aperture and flows into the helical grooves of the rotors which are open at the intake side.

2 and 3 Compression process

As rotation of the rotors proceeds, the gas intake aperture closes, oil is injected, the volume diminishes and pressure rises.

4 Discharge

The compression process is completed, the final pressure attained, the discharge commences.

Compressor size

Depending on the compressor size a modular system of equipment is available so that the customer's requirements can be met exactly. As both, male and female rotor drive can be chosen any required conveying volume flow can be achieved on a well-tested serial machine. No costly and complicated case to case developments have to be made.

Smooth operation, Low noise

No pending masses influence the operation of these machines. All moving parts are rotating and have been dynamically balanced so that no free inertia forces occur.

The noise level has been minimized by means of absolutely suitable wall thicknesses and axial outlet area.



VARISCREW: District cooling

Economy, environmental safety and flexibility

Slide valve or speed control, as well as regulation automatic control of the internal pressure ratio, either with or without motor flange – those are the catchwords for a concept of economy, environmental safety and flexibility.



***VARISCREW** are used for a various range of applications, e.g. from low temperatures, air conditioning plants to refrigeration plants on ships.*



VARISCREW: Process cooling



VARISCREW: Freezing of shrimps



VARISCREW: Liquid chiller



VARISCREW: Low temperature storage



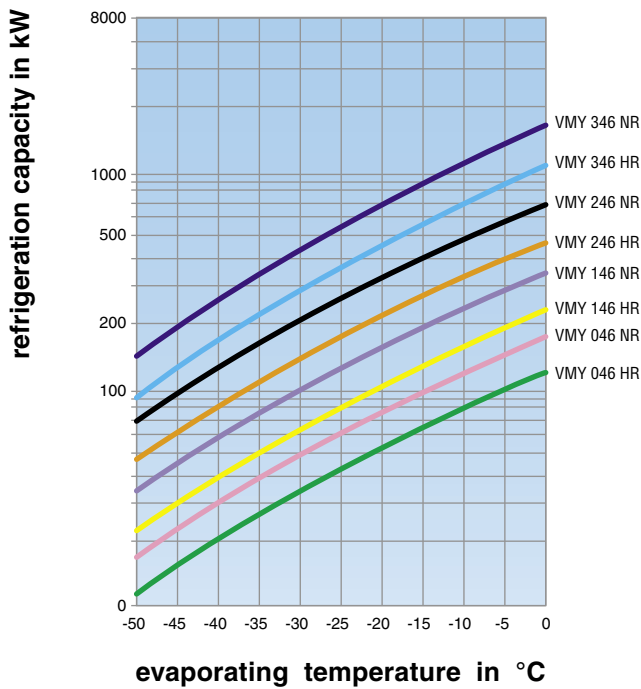
VARISCREW: Freezing plant

Refrigerants free from halo: R 717 (NH₃), methane, ethane, propane, butane, CO₂, propene.

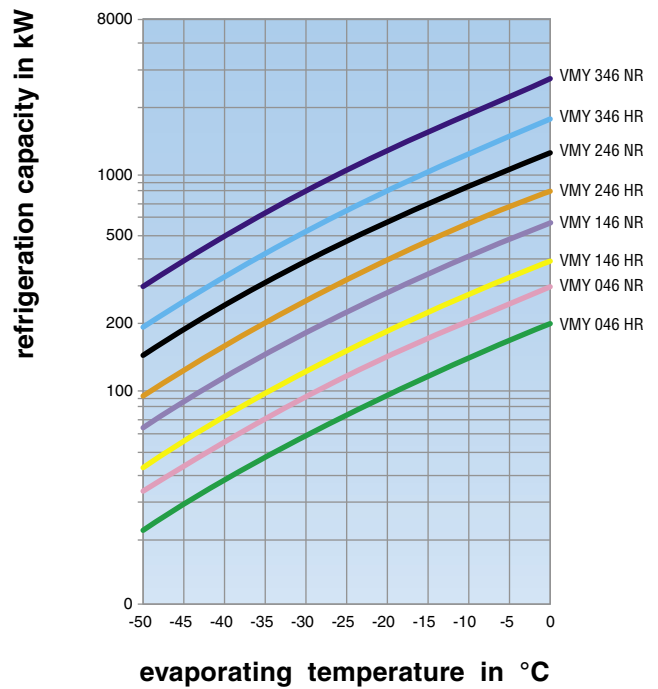
Halo carbons: R 22, R 134a, R 507, R 404A

Performance data at 2950 rpm; condensing temperature 35°C; superheating 2 K; subcooling 2 K

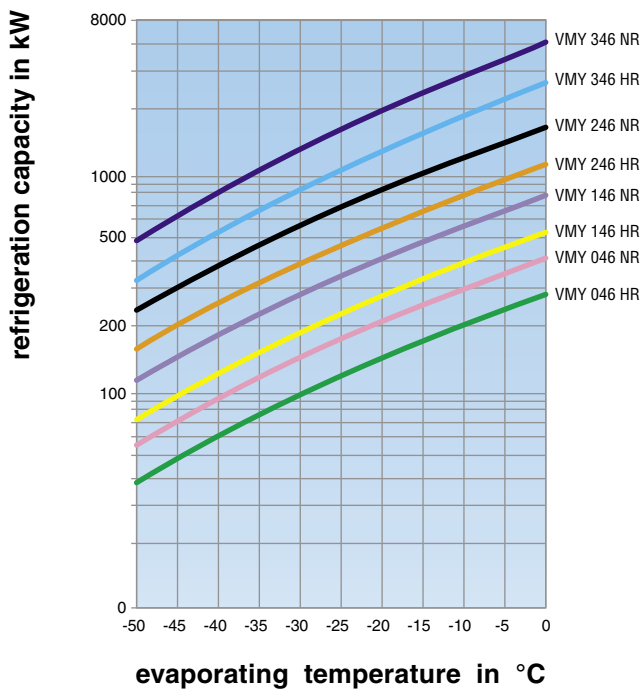
R 134A



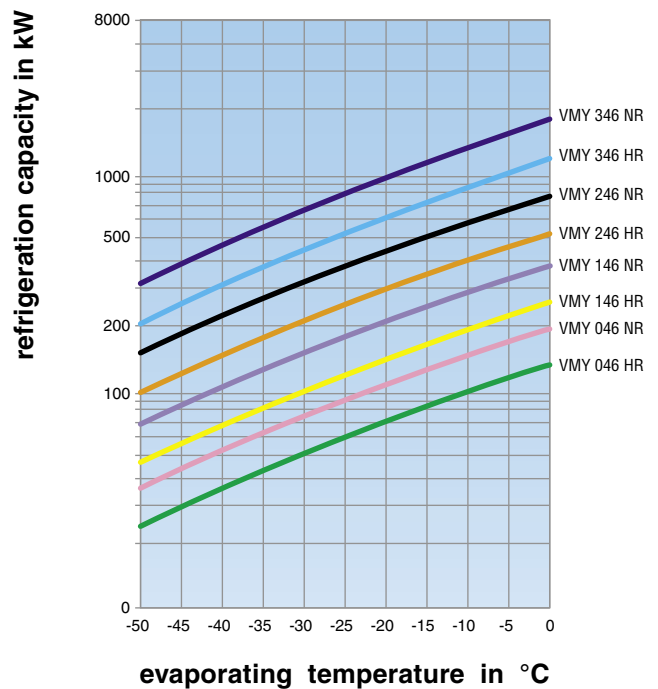
Ammonia



R 410A



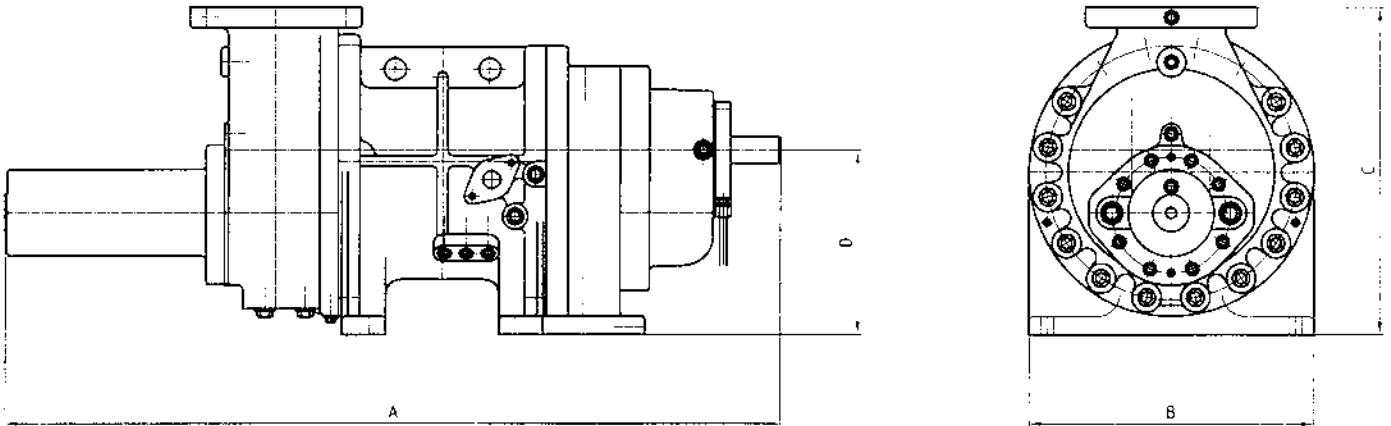
Propane





VARISCREW, is available in 4 sizes. Alternative use of the male or female rotor drive makes it possible to achieve 8 different intake volumes.

Technical data



		VMY 046		VMY 146		VMY 246		VMY 346	
		HR	NR	HR	NR	HR	NR	HR	NR
L/D		2,1	2,1	2,1	2,1	2,1	2,1	2,1	2,1
Swept volume 3000 rpm	m ³ /h	233	355	444	678	911	1378	1809	2708
Pressure difference Δp_{\max}	bar	16	16	16	16	16	16	16	16
A	mm	856	856	1055	1055	1333	1333	1416	1416
B	mm	309	309	390	390	475	475	560	560
C	mm	300	300	445	445	550	550	645	645
D	mm	180	180	250	250	300	300	355	355
Flange Gas-intake	mm	80	80	100	100	150	150	200	200
Flange Gas-discharge	mm	40	40	50	50	100	100	100	100
Volume ratio V_i		2,5 - 5,5	2,5 - 5,5	2,5 - 5,5	2,5 - 5,5	2,5 - 5,5	2,5 - 5,5	auto	auto
Weight	kg	150	150	350	350	600	600	1065	1065

HR = male drive, NR = female drive

A good address, everywhere

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