AERZEN

SCREW COMPRESSORS

AERZEN

AERZENER MASCHINENFABRIK GMBH

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Aerzen Screw Compressors

for compressing air and gases

The Aerzener Maschinenfabrik has been manufacturing screw compressors functioning on the Lysholm principle since the year 1943.
Initially, the only types produced were machines that were designed to convey the medium with complete freedom from any contamination by the lubricating oil.
In the year 1968, after many years of intensive development work, the screw compressors manufacturing program was enlarged to include compressors of a similar type, but operating on the principle of oil injection. These are our series VMX and VMY machines.
The Aerzener Maschinenfabrik is now in a position to supply a screw compressor capable of meeting every possible requirement in regard to the compression of air and of gases.
Aerzen Screw Compressors may be found in use throughout the world and branches of industry as highly developed serial products.
Aerzen Screw Compressor units are available according to ATEX 100 A on request.

VRO 836 L for compression of lime kiln gas

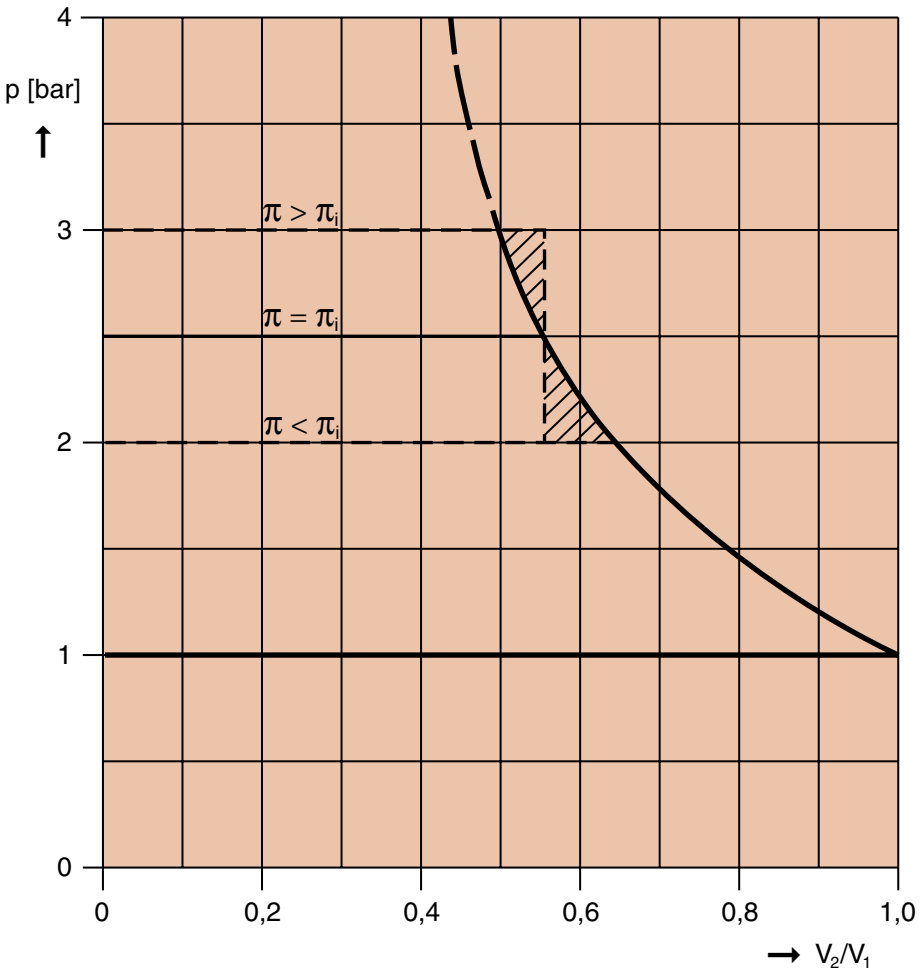
How the Aerzen Screw Compressor operates

A screw compressor is a twin-shaft rotary piston machine functioning on the principle of positive displacement combined with internal compression.

The medium handled is conveyed from the suction port to the discharge port, entrapped in ever diminishing spaces between the convolutions of the two helical rotors, being thus compressed up to the final pressure before it is discharged into the discharge nozzle.

The spaces referred to are those formed between the cylinder walls and the interlocking convolutions of the two helical rotors. The position of the edge of the outlet port determines the so-called “built-in volumetric ratio” v_i. The “built-in compression ratio” π_i , results from the equation $\pi_i = v_i^{\chi}$.

The compression process is shown in the theoretical p-V-diagram.



p-V-diagram of an Aerzen Screw Compressor operating under different working pressure conditions.

Compression process

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

Compression process
As rotation of the rotors proceeds, the air intake aperture closes, the volume diminishes and pressure rises.

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

Calculation of Aerzen Screw Compressors

The intake volume flow may be calculated for any compression ratio, provided the data applicable to the particular compressor being considered are known. One revolution of the main helical rotor conveys the unit volume q_0 = theoretical conveying volume per rotation [l/U].

This gives us the theoretical intake flow volume $\dot{V}_0$ with speed n_{HR} [rpm]

$$\dot{V}_0 = \frac{n \cdot q_0}{1000} \text{ [m}^3\text{/min]}$$

The actual intake flow volume $\dot{V}_1$ is lower by the amount of gas $\dot{V}_v$ flowing back through the very small clearances.

Thus $\dot{V}_1 = \dot{V}_0 - \dot{V}_v$ [m^3/min]

The return flow quantity $\dot{V}_v$ is mainly dependent on the following individual factors:
total cross-section of clearances
density of medium handled
operating pressure ratio
circumferential speed for rotor
built-in volumetric ratio

Volumetric efficiency is

$$\eta_v = \frac{\dot{V}_1}{\dot{V}_0} = 1 - \frac{\dot{V}_V}{\dot{V}_0}$$

The theoretical power input required to compress the intake flow volume $\dot{V}_1$ is:

$$P_{th} = \frac{\rho \cdot \dot{V}_0 \cdot h_{1ad}}{60} \text{ [kW]}$$

h_{1ad} $\left[\frac{kJ}{kg}\right]$ being the amount of energy required for the adiabatic compression of 1 kg of gas from p_1 to p_2.

The theoretical power input requirement is increased by the dynamic flow loss P_{dyn} and by the mechanical losses P_v.
The latter consists of the losses in bearings, timing gears, and step-up gears.

Therefore, the power consumption is:

$$P_k = P_{th} + P_{v\,dyn} + P_{v\,mech} \text{ [kW]}$$

Screw compressors are manufactured acc. to VDI 2045 standards with a permissible tolerance of ± 5 % in regard to power requirements and intake flow volume.
These tolerances result from the manufacturing processes.
The final compression temperature is calculated for a dry-type compressor as follows:

$$t_{2\,th} = t_1 + \Delta t_{th} \text{ [°C]}$$

$$\Delta t_{th} = T_1 \left[\left(\frac{p_2}{p_1} \right)^{\frac{\chi - 1}{\chi}} - 1 \right] \frac{1}{\eta_v} \text{ [K]}$$

When operating on the oil-free, dry-running principle, a screw compressor may come up to a maximum final compression temperature of 250 °C.

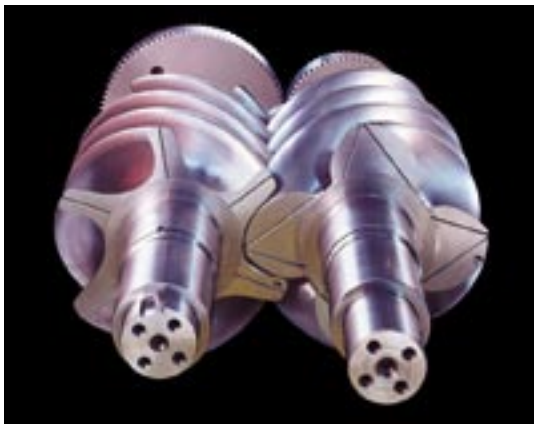
When air is the medium handled, this temperature (isentropic exponent χ = 1.4) corresponds to a compression ratio of

$$\frac{p_2}{p_1} \approx 4{,}5$$

On the other hand, gases with a χ = 1.2 will permit, within the temperature limits mentioned, a compression ratio of as high as

$$\frac{p_2}{p_1} \approx 7$$

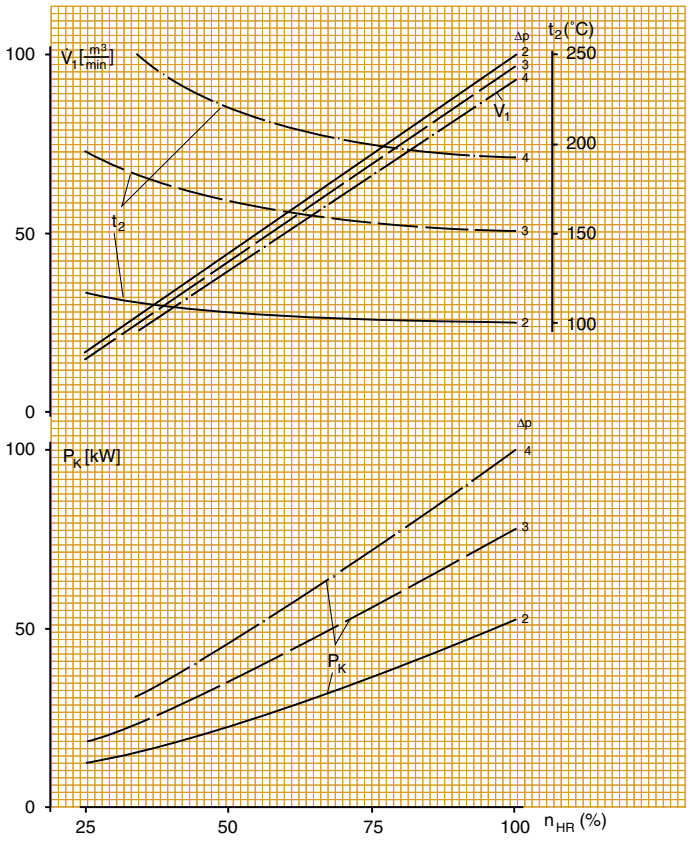
In the case of a screw compressor operating on the principle of oil injection, most of the drive energy applied to the machine is carried away again by the oil. The amount of oil injected is adjusted to ensure that final compression temperatures of approx. 90 °C are not exceeded. When taking in air under atmospheric pressure, compression ratios of as high as p_2/p_1 = 16 are obtainable.



Schedule of symbols and units used in formulae

Symbol	Unit	Meaning
h_{1ad}	kJ/kg	specific adiabatic work of compression
χ	-	isentropic exponent
n	rpm	speed of rotation
p_1	bar	suction pressure
p_2	bar	discharge pressure
p_e	bar	compression overpressure (+) resp. intake vacuum pressure (-)
Δp	bar	pressure difference
P_{th}	kW	theoretical power input
$P_{v\ mech}$	kW	mechanical losses
$P_{v\ dyn}$	kW	dynamic losses
P_k	kW	power consumption
q_0	l/U	theoretical conveying volume per rotation
$\dot{V}_0$	m^3/min	theoretical intake volume flow
$\dot{V}_v$	m^3/min	return volume flow
$\dot{V}_1$	m^3/min	actual intake volume flow
t_1	°C	inlet temperature
t_2	°C	discharge temperature
Δt_{th}	K	theoretical increase in temperature
T_1	K	abs. inlet temperature
v_i	-	volumetric ratio
ρ	kg/m^3	density
η_v	-	volumetric efficiency
π_i	-	compression ratio
π	-	operating pressure ratio

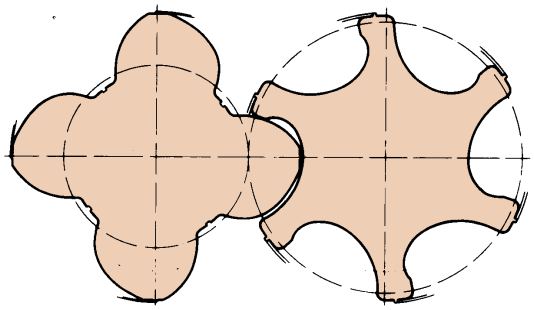
Characteristic diagram of screw compressor (schematic)



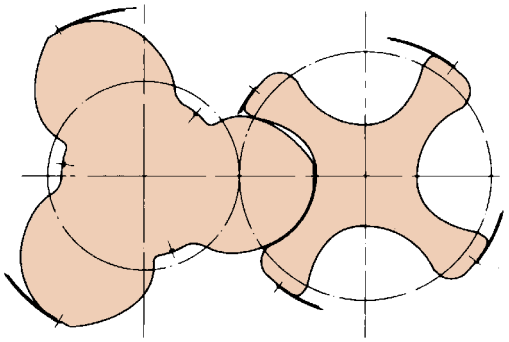
Rotor-profiles of Aerzen Screw Compressors

The rotors having asymmetrical profile are manufactured on special tool machines with highest accuracy.
So, optimum volumetric effiencies are guaranteed.
The rotors are dynamically balanced.
Aerzen determines the rotor profiles according to the main field of application, where for example for large flow volumes and small differential pressures the most favourable profile combination 3 + 4 is selected.
The male rotor has 3 teeth, the female rotor 4.
For larger differential pressures as well as for process gas compressors profile combination 4 + 6 is always applied.

male rotor female rotor



male rotor female rotor



Volume control for Aerzen Screw Compressors

In principle, it is necessary to consider the problems of volume control for dry-running and for oil injection type screw compressors separately.

Volume control for dry screw compressors

Control by variable speed:

In consequence of the fact that screw compressors displace the medium positively, the most advantageous method of achieving volume control is that obtained by variable speed. This may be done in any of the following ways:

- by variable speed electric motors
- by use of a torque converter
- by steam turbine drive
- by diesel engine

Speed may be reduced to about 50 % of the maximum permissible speed. Intake flow volume and power consumption are in this manner reduced in approximately the same proportion.

Control by bypass:

Using this method, the surplus gas volume is allowed to flow back to the intake side by way of a governor that is controlled by the admissible final pressure.

An intermediate cooler cools back the surplus gas volume down to the intake temperature.

Full load/idling speed governor:

As soon as a predetermined final pressure is attained, a pressostat operates a diaphragm valve which opens up a bypass between discharge- and suction side of the compressor. When this occurs, the compressor idles until pressure in the system drops to a predetermined minimum value, whereupon the valve will close once again on receiving an impulse from the pressostat, thereby bringing the compressor back onto full load once again.

Suction throttle control:

This method of control is suitable for air compressors only. As in the case of the full load/idling speed control method, a predetermined maximum pressure in the system, for example in a compressed air receiver, causes pressure on the discharge side to be relieved down to atmospheric pressure.

Simultaneously, the suction side of the system is throttled down to about 0.15 bar absolute pressure. When pressure in the whole of the system has dropped to an admissible minimum value, full load is restored once again.

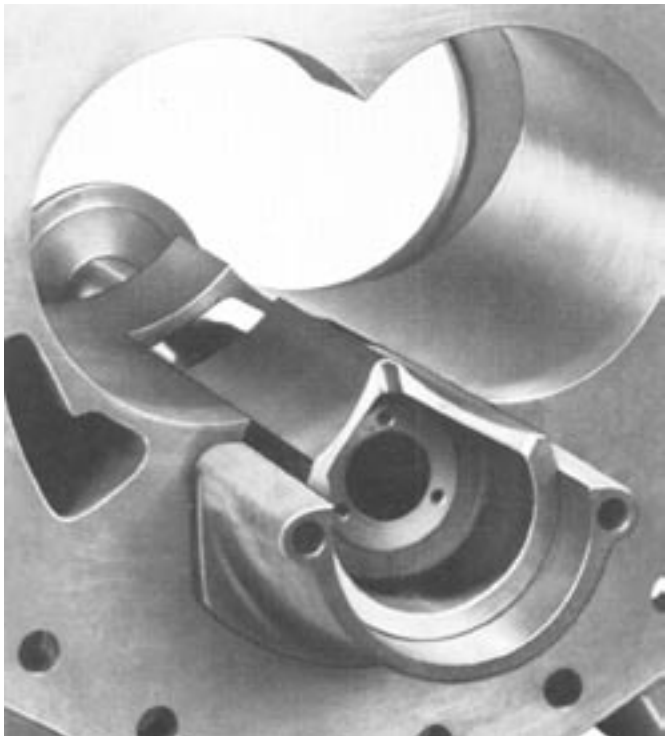
Control of screw compressors equipped with oil injection

Suction throttle control:

Since final compression temperature is governed by the injected oil, a greater range of compression ratios such as may arise when the induced volume is throttled down, can be safely coped with. This permits the main flow volume to be varied infinitely within wide limits. This particular type of control is the one to be preferred for compressors of the VMX series. Built-in volume governor:

The larger size compressors in the VMY series are equipped with an internal volume regulating device. By operating a slide that is shaped to match the contours of the housing and which is built into the lower part of the housing, designed to move in a direction parallel to the rotors, the effective length of the rotors can be shortened. The scope of this control lies between the limits of about 10 % and 100 %.

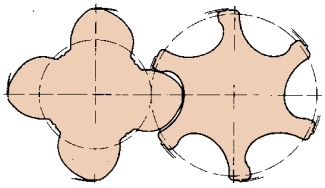
Compared with control by throttle only, this type of control offers a more efficient utilisation of the power absorbed.

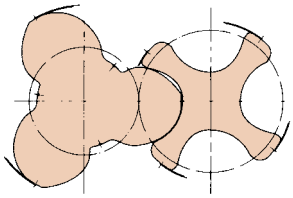


Aerzen Process Gas Screw Compressor for the compression of 36.500 m^3/h coke oven gas. Length 3000 mm, width 1850 mm, height 1850 mm, weight approx. 15 t.

Aerzen Screw Compressors DELTA SCREW – VM / VML

dry compression





Sizes:

VM 8 R	VM 15 R
VM 21 R	VM 37 R
VM 45	VM 75
VM 85	VM 140

Sizes:

VML 18 R	VML 25 R
VML 40 R	
VML 60	VML 95
VML 150	VML 250

Performances – Series VM

Intake flow volumes $\dot{V}_1$ from approx. 200 m^3/h up to approx. 11.600 m^3/h. Volume control: bypass, speed adjustment, full load/idling speed control.
Positive pressure operation: up to p_e = 3.5 bar

Performances – Series VML

Intake flow volumes $\dot{V}_1$ from approx. 300 m^3/h up to approx. 15000 m^3/h. Flow volume control via bypass, speed control, full load/idling speed control.
Positive pressure operation: up to p_e = 2.0 bar
Vacuum operation: down to p_e = -0.7 bar resp. -0.85 bar (vacuum operation with pre-inlet).

Fields of application

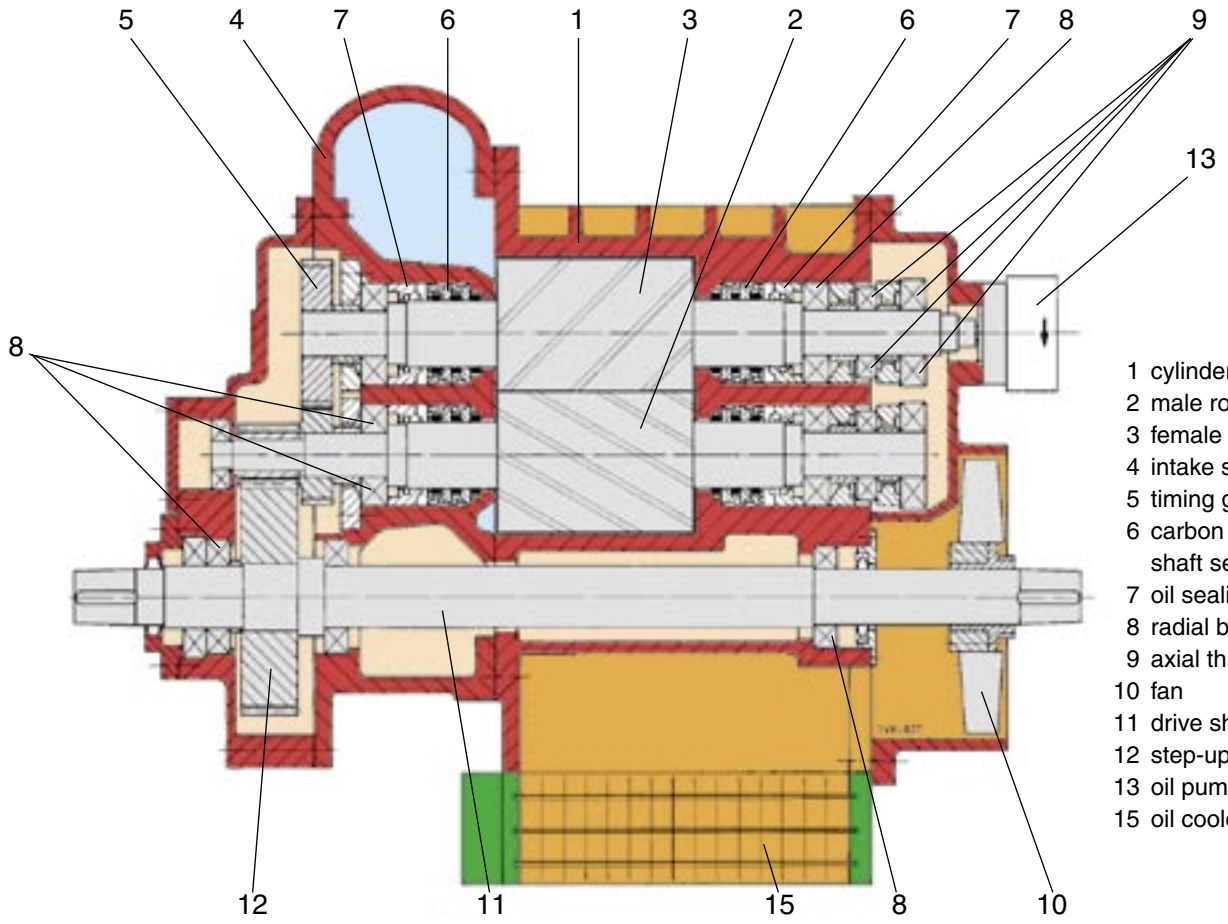
Compression of air and neutral gases, pneumatic conveyance of bulk materials, homogenizing of cement, aeration of water reservoirs, keeping shipping locks free from ice, glass industry, food industry, beverage industry, textile industry, tobacco industry, aeration of sewage basins, vacuum generation in glass- and paper industries.

Unit design

Compression without liquid injection.
The units are delivered readily mounted for connection and including standardized accessories.
Only small spaces are necessary for the compact arrangement of accessories. No special foundations are necessary because of the flexible mounting.
It is possible to mount with standard acoustic hood for compressor and driving motor.

Bearing design/lubrication

The VM-/VML-compressors and the transmission gears have roller bearings and forced feed lubrication.
Oil supply is made by a mechanically driven oil pump.



1 cylinder
2 male rotor
3 female rotor
4 intake side plate
5 timing gears
6 carbon ring shaft sealing
7 oil sealing
8 radial bearing
9 axial thrust bearing
10 fan
11 drive shaft
12 step-up gears
13 oil pump
15 oil cooler

Cooling
No cooling water is necessary for the VM-/VML-compressors. The lubricating oil is cooled by the ambient air, in case of VML-compressors by air-cooled ribbed cooler.

Shaft sealings
Sealing at conveying chamber by carbon-labyrinth sealings with neutral chambers to the atmosphere. Sealing of driving shaft through radial/ seal ring resp. peak type labyrinth sealing.

Direction of conveyance
VM-compressor - from top to top,
VML-compressor - from top to top,
VM/VML-R-compressor - from bottom to top.

Drive
Drive is made through flanged spur gear, resp. belt drive.

Materials
housing: GG 20/25
rotors: C 45 N
Use of special materials possible within limits.

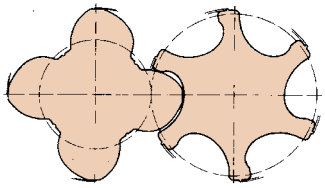
For detailed information please ask for worksheet V1-018 and V1-019

VM 8 R to VM 37 R
VML 18 R to VML 40 R
with belt drive
Design without acoustic hood

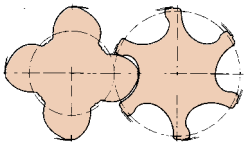
VM 45 - VM 75 / VML 60 to VML 95

Aerzen Screw Compressor DELTA TWIN

Double-stage, dry compressing



1st stage



2nd stage

Sizes:				
	DT 7/8	AB or WB	DT 13/10	AB or WB
	DT 7/10	AB or WB	DT 14/8	AB or WB
	DT 9/8	AB or WB	DT 14/10	AB or WB
	DT 9/10	AB or WB	DT 16/8	AB or WB
	DT 11/8	AB or WB	DT 16/10	AB or WB
	DT 11/10	AB or WB	DT 20/8	AB or WB
	DT 13/8	AB or WB	DT 20/10	AB or WB

Performances

The DELTA TWIN compressor units cover motor ratings from 75 up to 200 kW and differential pressures up to 10,5 bar. The series is available as water-cooled as well as air-cooled design and realizes volume flows from 500 m³/h up to 2.100 m³/h.

Ranges of application

The double-stage units are designed for oil-free conveyance of air and neutral gases and are mainly used in industrial generation of compressed air.

They distinguish themselves by the high economic efficiency and are used a.o. in foodstuff technology, beverage industry, pharmacy, chemistry- and process technology, pneumatic, glass industry, paint spraying units, medicine technology, surface technology, breweries, dairies and many other applications.

Unit design

The heart of the new DELTA TWIN-series are the dry conveying Screw Compressors, each available as high- and low pressure stage. Constructive modifications on rotors and housings guarantee an excellent efficiency of the Screw Compressors. The drive of the compressors is effected via V-belts. The driving motor is installed on a hinged motor mounting plate, due to its own weight always arranging for optimal belt tension. The structure of the new compressed air units is subdivided into three ranges: the electric-/driving range, the compressor- and the cooling range.

Due to this fact all components are optimally accessible.

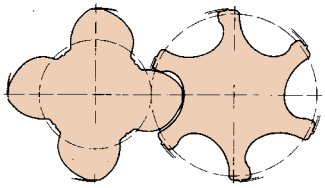
The units are available in water-cooled as well as in air-cooled design. The intermediate- and aftercooler in standard design water-sided are made of CuNiFe. In case of heavy conditions, e.g. aggressive cooling water alternative materials can be used.

The control system used is combined with an integrated monitoring- and fault indication system with clear plain writing display. It operates the units especially energy-saving. The DELTA TWIN units are delivered completely assembled, to make a quick installation and troublefree commissioning possible.

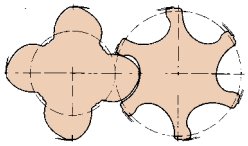
For detailed information please ask for worksheet V1-016.

Aerzen Screw Compressor VMT

Double-stage, dry compressing



1st stage



2nd stage

Sizes:

VMT 1W/L	VMT 5 W
VMT 2 W/L	VMT 6 W
VMT 3 W	VMT 8 W
VMT 4 W	

Performances

The VMT compressor units cover motor ratings from 90 up to 1100 kW and differential pressures up to 10 bar. The series is available as water-cooled as well as air-cooled design and realizes volume flows from 640 m³/h up to 10.000 m³/h.

Ranges of application

The double-stage units are designed for oil-free conveyance of air and neutral gases and are mainly used in special cases of application of generation of compressed air.

They distinguish themselves by various modification possibilities and the realization of special customer-orientated solutions. To the ranges of application belong a.o. refineries, compression of Argon,...

Unit design

The compression is effected without liquid injection. The units are supplied ready for connection and including standardized accessories. The compact arrangement of accessories requires few space. Due to the rotating masses no special foundations are required. The installation is always effected with sound-absorbing hood for compressor and driving motor.

The VMT-compressors are available in water- as well as in air-cooled design (VMT 1/2).

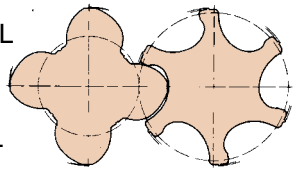
The drive in any compressor stage is effected via flanged spur gear. Cooling of the compressors is effected via ambient air. Besides a standard instrumentation with electronic malfunction- and monitoring indication system even the use of a programmable controller is possible.

Aerzen Screw Compressor VRa

for process gas technique, dry compression

Sizes:

VRa 136 S/137 L	VRa 736 S/L
VRa 236 S	VRa 836 L
VRa 336 S/337 L	VRa 936 L
VRa 436 S/437 L	VRa 1036 L
VRa 536 S/537 L	



Performances

Intake flow volumes $\dot{V}_1$ from approx. 550 m^3/h to approx. 120.000 m^3/h.
Volume control: bypass, speed adjustment.
Positive pressure operation gas conveyance, single stage up to p_e = 3.5 bar, multi-stage up to p_e = 40 bar.
Vacuum operation down to p_e = -0.9 bar.

Fields of application

Screw Compressors of series VRa are used for example in chemical works, refineries, soda manufacturing plants, steel making plants, for the compression of nearly all gases such as acethylene, butadiene, HCl-gas, natural gas, helium, argon, lime-kiln gas, coke oven gas, hydrogen, town gas, methane, propane, SO_2-gas, NO-gas, nitrogen, VC-gas, carburetted hydrogen gas mixture and so on.
Compressors intended for the handling of badly contaminated gases or of strongly polymerising gases can be fitted with liquid injection.
Specifications, such as API / NACE / TEMA / ASME, or standard specifications, can be taken into consideration.

Unit design

The compression is made with resp. without liquid injection. Depending on the scope of supply the units can be supplied readily mounted for connection.
It is possible to deliver standard or special accessories as well as installation with suitable acoustic hood. By combination of single stages multistage units can be made.

Bearing design/lubrication

Screw compressors of series VRa have slide bearings and pressure feed lubrication. The oil supply is made by a mechanically driven main oil pump as well as through a separately driven auxiliary oil pump during start- and stop-position.

Cooling

Cooling of compressor stage by air. The inter- and after-coolers are water-cooled with water.

Shaft seals

The compression chamber is sealed by
a) carbon-labyrinth seals, gas-sealed
b) carbon-labyrinth seals, water-sealed
c) single acting mech. seal, combined with carbon rings
d) double acting mechanical seals, water-, oil- and gas-sealed
e) mechanical seals in tandem arrangement, gas-sealed

the driving shaft is sealed by
a) peak type seal
b) radial seal ring
c) double acting mechanical seal, oil-sealed

Direction of conveyance

from top to bottom

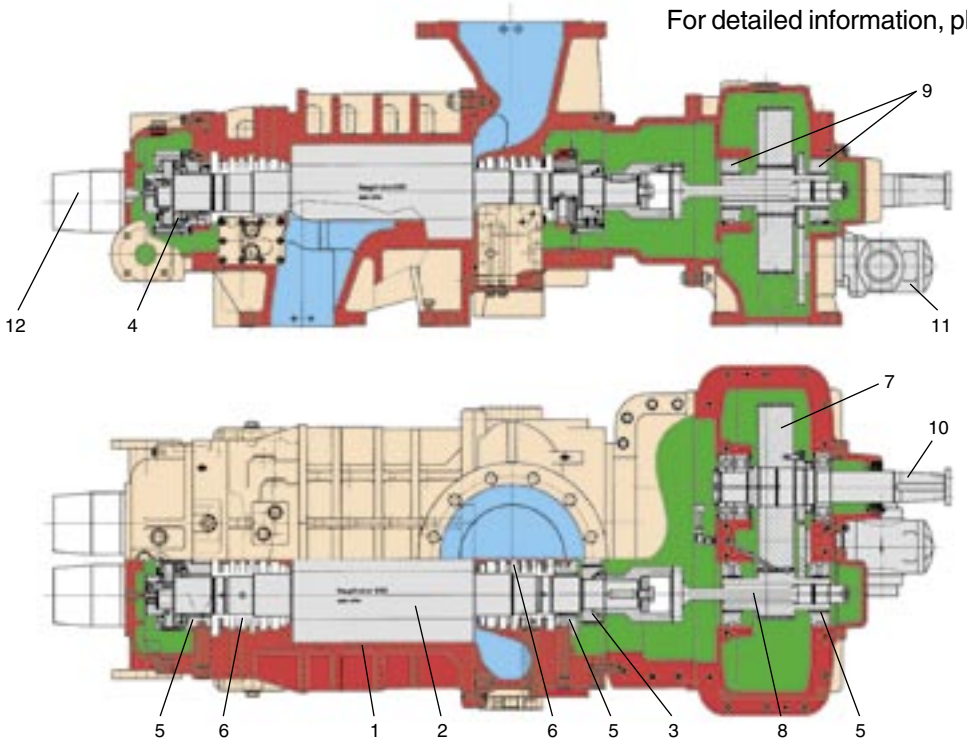
Drive

Types of drive available:
a) via flanged spur gear
b) via a separately arranged spur gear
c) by direct coupling

Available materials

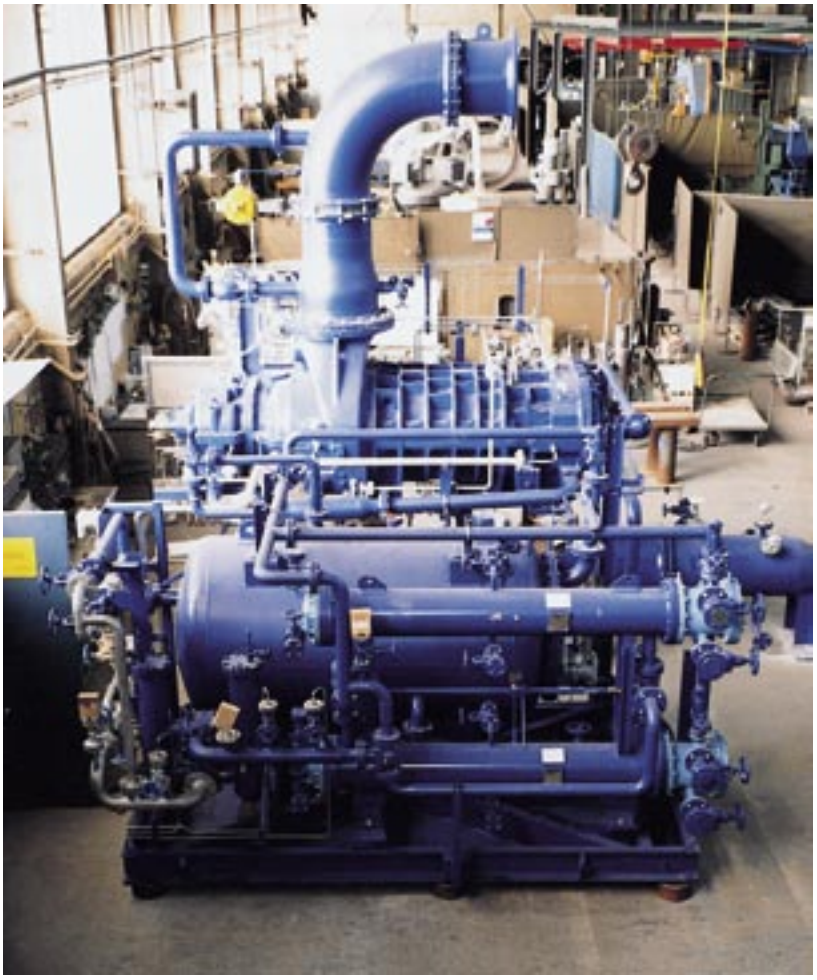
housing: GGG 40, (0.7040), GS-C 25, (1.0619)
GX 7 CrNiNb 189, (1.4552),
GX 4 CrNi 13-4, (1.4317)
rotors: C 45 N, 1.4313
sealings: C 45 N, 1.4057

For detailed information, please ask for worksheet V1-067.



1 cylinder
2 male rotor
3 timing gears
4 axial thrust bearing
5 radial bearing
6 conveying chamber sealing
7 gearbox
8 torsion shaft
9 roller bearings
10 drive shaft
11 oil pump
12 axial thrust monitoring

Aerzen screw compressor unit VRa 836 L
for the compression of lime kiln gas

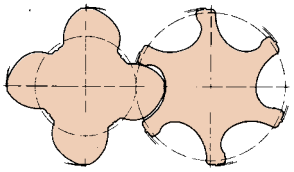


Compression of styrene
gas with a Aerzen screw
compressor unit VRa 736 L

Aerzen Screw Compressor VMY

for process gas technique, with oil injection

Sizes: VMY 236 H/M/B
VMY 336 H/M/B
VMY 436 H/M/B
VMY 536 H/M/B



Performances

Intake flow volumes $\dot{V}_1$ from approx. 500 m^3/h to approx. 10.000 m^3/h.
Volume control: infinitely variable between approx. 10 % and 100 % by means of a built-in slide valve.
Positive pressure operation:
up to p_e = 20 bar, H-design
up to p_e = 16 bar, M-design
up to p_e = 8 bar, B-design
Vacuum operation down to p_1 = -0.99 bar.

Fields of application

Screw compressors of series VMY are applied e.g. in chemical works, refineries, power plants, steel making plants, for the compression of all oil consistent gases such as natural gas, methane, propane, hydrogen gas mixtures, helium, nitrogen.

Unit design

Compression with oil injection. The VMY-compressor can be supplied as complete unit with standardized accessories, ready for connection.
Design can be effected acc. to international guidelines, such as API and NACE.

Bearing design/lubrication

The screw compressors of series VMY have axial anti-friction bearings and radial slide bearings. Lubrication is made by oil pressure feed. The supply is made with the integrated oil pump.

Cooling

The injected oil carries off the compression heat.
Water- resp. air-cooled oil cooler recool the oil.

Shaft sealings

Sealing at driving shaft by slide ring sealing.

Conveying direction

from top to bottom

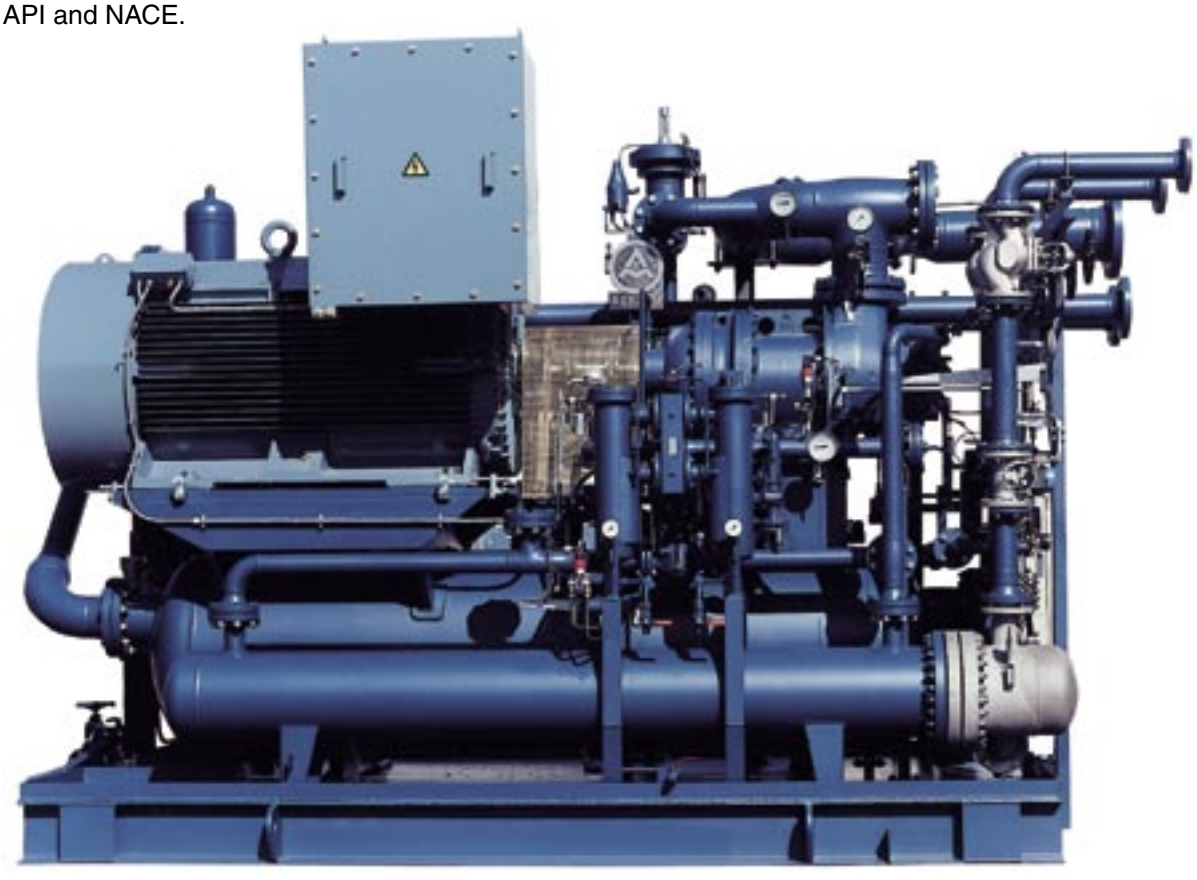
Drive

Direct coupling or via additional gearbox

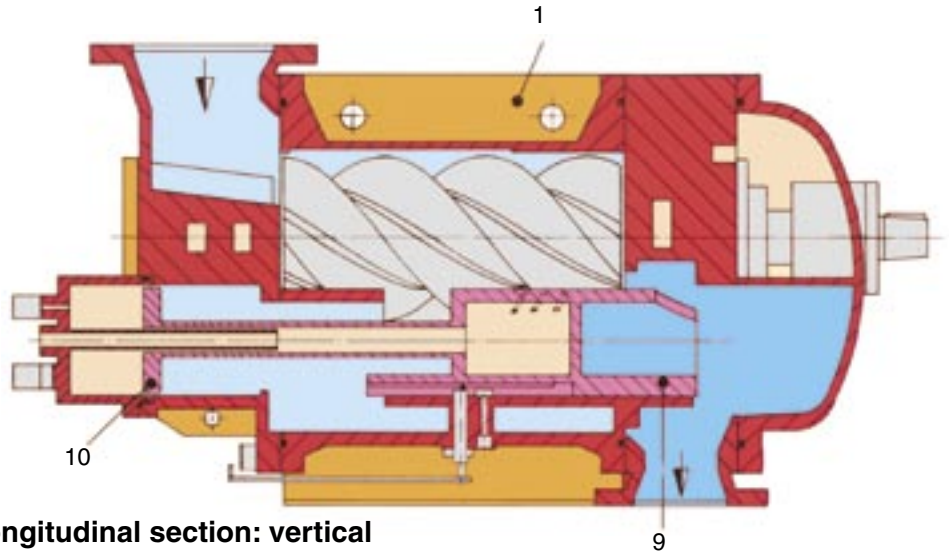
Materials

housing: EN-GJS-400-18-LT (GGG 40.3) / GP 240 GH (GSC 25)
rotors: C 45 N

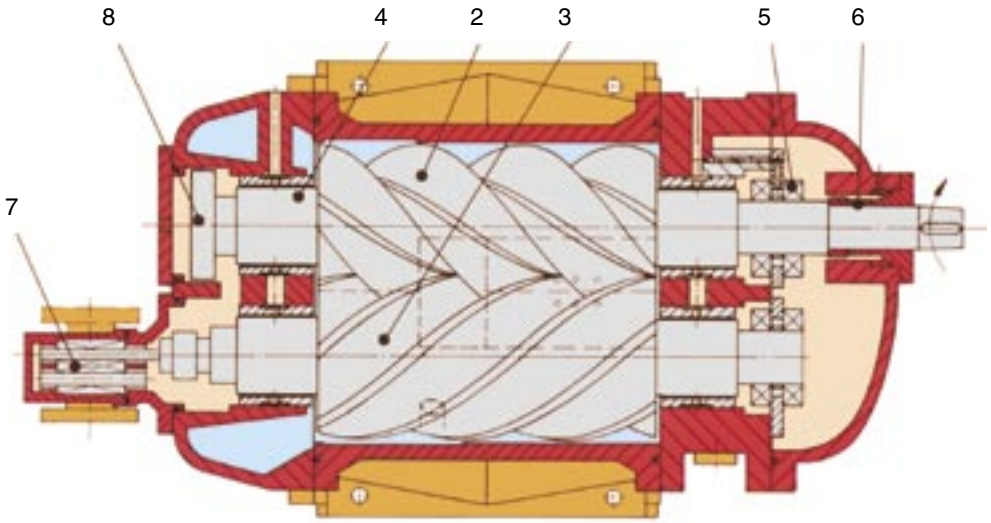
For detailed information, please ask for worksheet V1-030 and V1-038.



VMY 336 H - compression of nitrogen, design acc. to ASME VIII, Div. I, U-Stamp



longitudinal section: vertical



longitudinal section: horizontal

Principal components

1 cylinder
2 male rotor
3 female rotor
4 radial bearing
5 axial thrust bearing
6 mechanical sealing
7 oil pump
8 balance piston
9 slide valve
10 hydraulic rotor

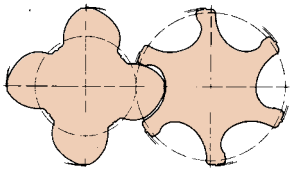
compressor stage VMY 336

Aerzen Screw Compressor VMY Mark 2.5, VMY Mark 4, VARISCREW and VMY .56 for the refrigeration industry

with oil injection

Sizes:

Mark 2.5	VMY 236 H/M/B
	VMY 336 H/M/B
Mark 4	VMY 436 H/M/B
	VMY 536 H/M/B
Variscrew:	VMY 046 H/N
VMY .56	VMY 156 M H/N
	VMY 256 M H/N
	VMY 356 M H/N



Performances:

Intake flow volumes $\dot{V}_1$ from approx. 200 m^3/h to approx. 10.000 m^3/h.
Volume control: infinitely variable between approx. 10% and 100% by means of a built-in slide valve.
Positive pressure operation:

VMY .56:	p_e = 25 bar (compression overpressure)
Mark 2.5/ Mark 4:	p_e = 20 bar, H-design
	p_e = 16 bar, M-design
	p_e = 8 bar, B-design
Variscrew:	p_e = 16 bar (compression overpressure)

Vacuum operation down to p_e = -0.99 bar (suction negative pressure)

Fields of application:

Applicable in the range of refrigeration industry and process gas technique, e.g. with

- pure halocarbons, such as R 22, R 134a, R 507, R 404a
- halocarbon mixtures
- hydrocarbons, e.g. propane, propylene, butane
- gases for process applications, e.g. helium, carbon dioxide and LPG
- ammonia (R 717)

Application ranges:

- meat- and poultry technics
- cooling- and refrigeration houses
- dairies and breweries
- railways
- mine cooling
- air conditioning plants
- process cooling
- heat pumps

Bearing design/lubrication

The screw compressors of series Mark 2.5 have axial anti-friction bearings and radial slide bearings. The supply is effected by the integrated oil pump. The VMY .56 series are provided with axial- and radial roller bearings. The oil supply is carried out by the integrated oil pump.

Cooling

The injected oil carries off the compression heat.
The recooling of the oil is effected via an oil cooler system.
In addition, a liquid injection is prepared as oil cooling.

Shaft sealing

Sealing at drive shaft by mechanical seal.

Conveying direction

from top to bottom

Drive

direct coupling or via additional gearbox

Materials	**VMY .56**
housing:	EN-GJS-400-18 LT
rotors:	C 45 N

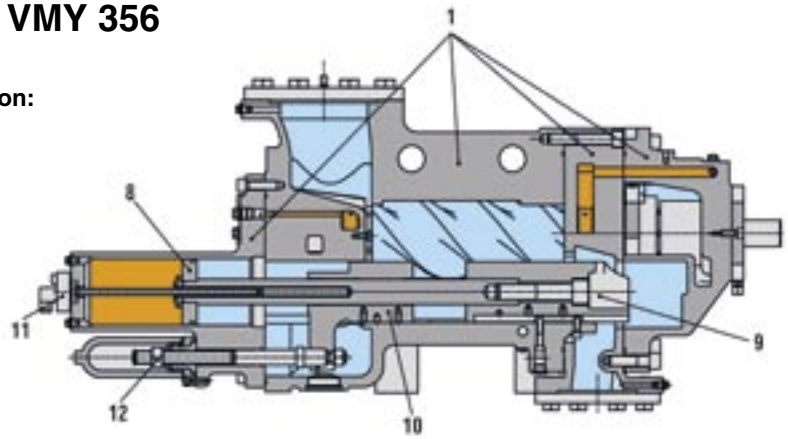
Materials	**VMY Mark 2.5 / Mark 4**
housing:	EN-GJS-400-18 LT
rotors:	C 45 N / GP-240 GH

For detailed information, please refer to worksheets V1-035 and V1-040.

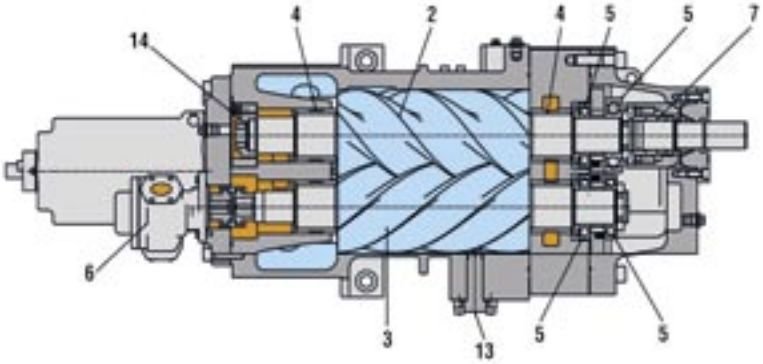
VMY 246 NR

VMY 156 to VMY 356

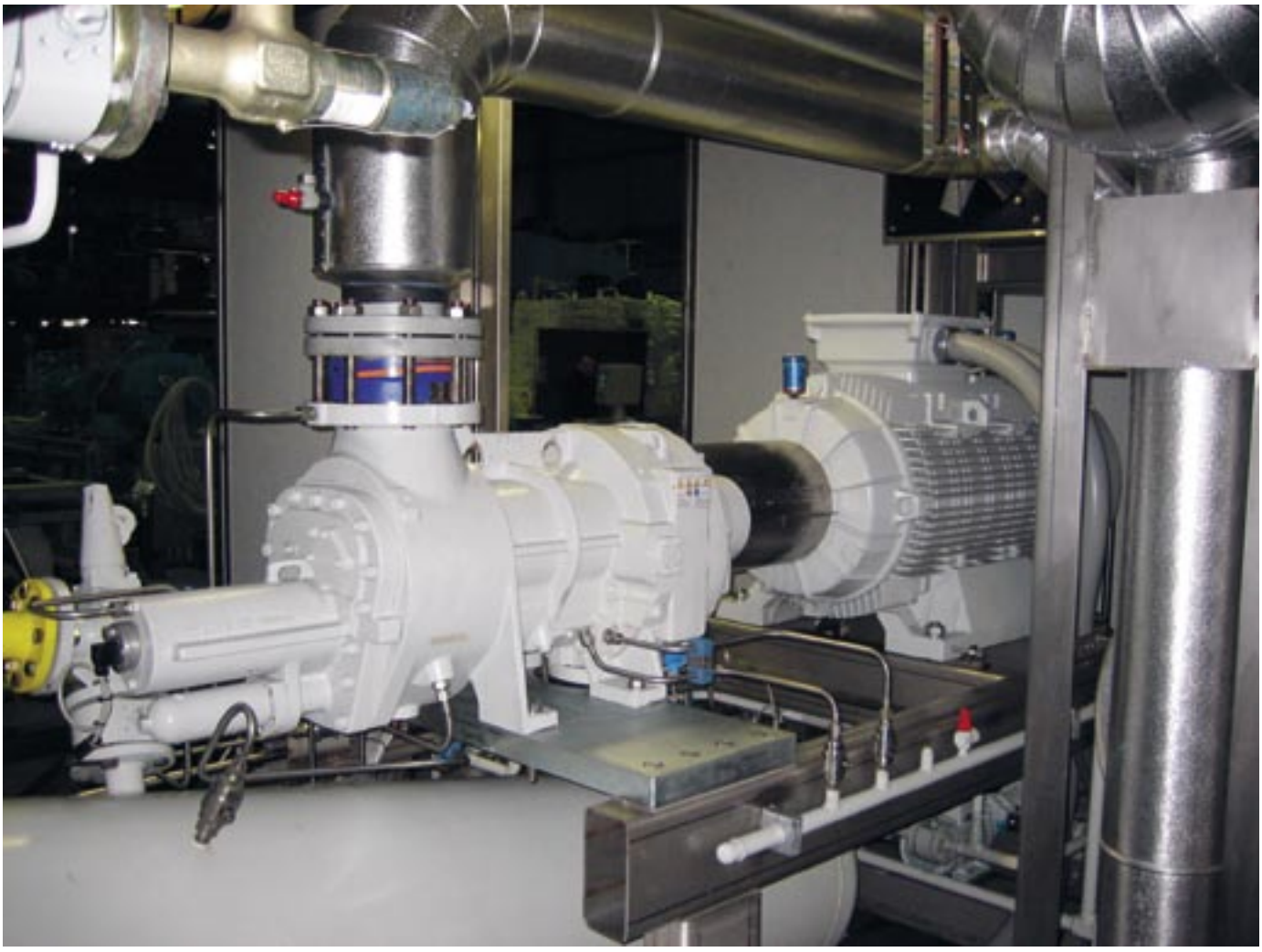
longitudinal section: vertical



longitudinal section: horizontal



1 housing
2 male rotor
3 female rotor
4 radial bearing
5 axial thrust bearing
6 oil injection
7 mechanical seal
8 hydraulic piston capacity control
9 capacity side
10 V_i-slide
11 position pickup Transsonar
12 V_i-adjustment
13 ECO-connection
14 compensating rotor

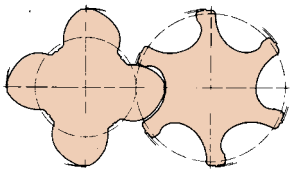


Aerzen Screw Compressor VMX

with oil injection

Sizes:

VMX 22 R
VMX 37 D
VMX 45 RD
VMX 75 RD
VMX 110 RD
VMX 160 RD
VMX 250 RD
VMX 160 G
VMX 250 G



Performances

Intake flow volumes $\dot{V}_1$ from approx. 70 m^3/h up to approx. 3180 m^3/h.
Volume flow control via suction throttle and speed adjustment.
Positive pressure operation up to p_e = 15 bar (compression overpressure)

Fields of application

Compressed air units, portable compressor plants for use on building sites, providing a supply of compressed air, pneumatic conveying plants, providing a supply of compressed air for pneumatic tools.

Design of unit

Compression by oil injection. The VMX-compressor stages are supplied as components to manufacturers of compressed air compressors.

Bearing design/lubrication

The screw compressors of series VMX have roller bearings, pressure feed lubricated. The oil pressure is obtained out of the system via pressure maintaining valve.

Cooling

The injected oil conducts away the heat generated by the compression process.

Shaft seals

Sealing of driving shaft by radial seal ring.

Conveying direction

from top to bottom

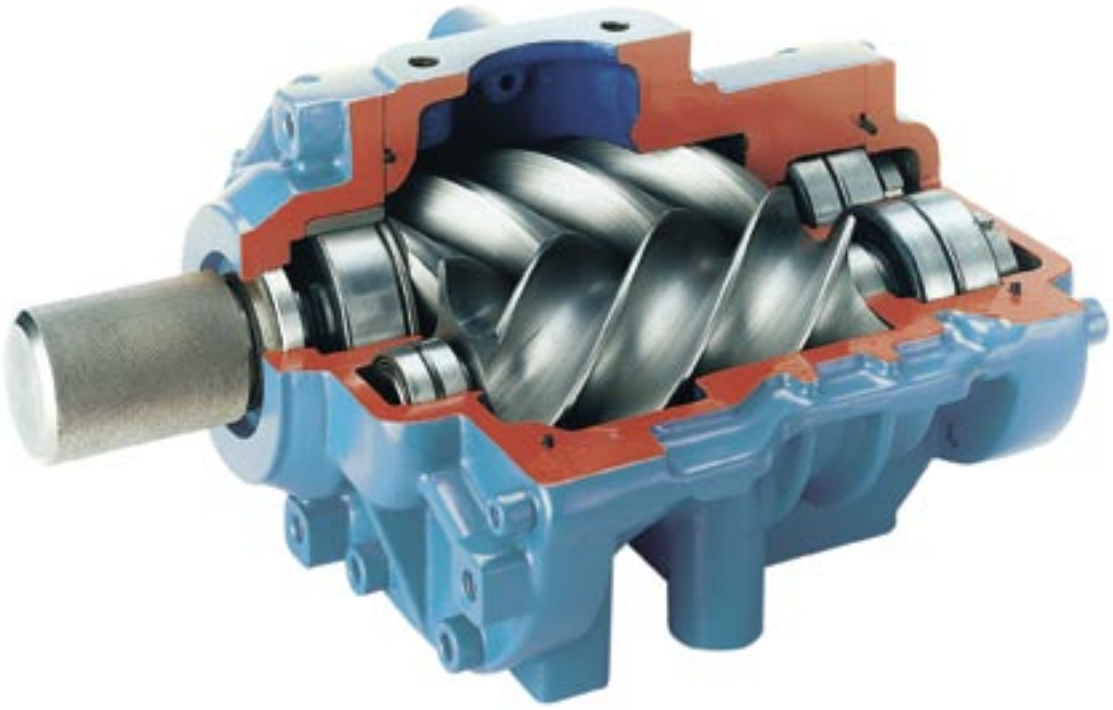
Drive

Drive is made via a) belt drive
b) frequency converter operation
c) integrated gearbox

Materials

housing: GG 20
rotors: C 45 N / GGG 50

For detailed information please ask for worksheet V 1-020.



VMX 22 R to VMX 250 RD

Recommendations in regard to the submission of engines

To enable us to offer you the most suitable compressor for the job from among our wide selection of different types, we would ask you to provide us with all the essential technical data when submitting enquiries.
These essential particulars are:

1. Nature of medium to be handled
In the case of mixtures of gases, the analysis (in percentages of weight or volume). Where special gases are concerned, it will suffice to state the density or the gas-constant R as well as the specific heat resp. the adiabatic exponent.

2. Condition of the medium to be handled
Whether moist or dry. Indication of any impurities or polymerising tendencies.
Whether behavior of medium towards grey cast iron and steel is neutral or corrosive, and what effect it would be likely to have on the lubricating oil. Indication as to whether compression is required to be completely oil-free.

3. Required flow volume
Either referred to the condition at intake in m^3/min, or given as the total flow in kg/min.

4. Induction conditions
Intake temperature t_1 (°C), absolute pressure at intake P1 (in bar). As far as air compressors are concerned, it will suffice to state that atmospheric air is the medium to be compressed. In that event, however, the height of the installation above mean seal level must be given.

5. Terminal pressures
Where there will be fluctuating working loads to contend with, both the normal final pressure that could occur should be stated.

6. Other indications
Ambient temperature at site of installation. Ventilation of plant room, quality of cooling water available.
Any existing building regulations and standards that have to be complied with.
Silencing: - Desired silencing
- Measurements to consider primary and secondary
- Installation with acoustic hood

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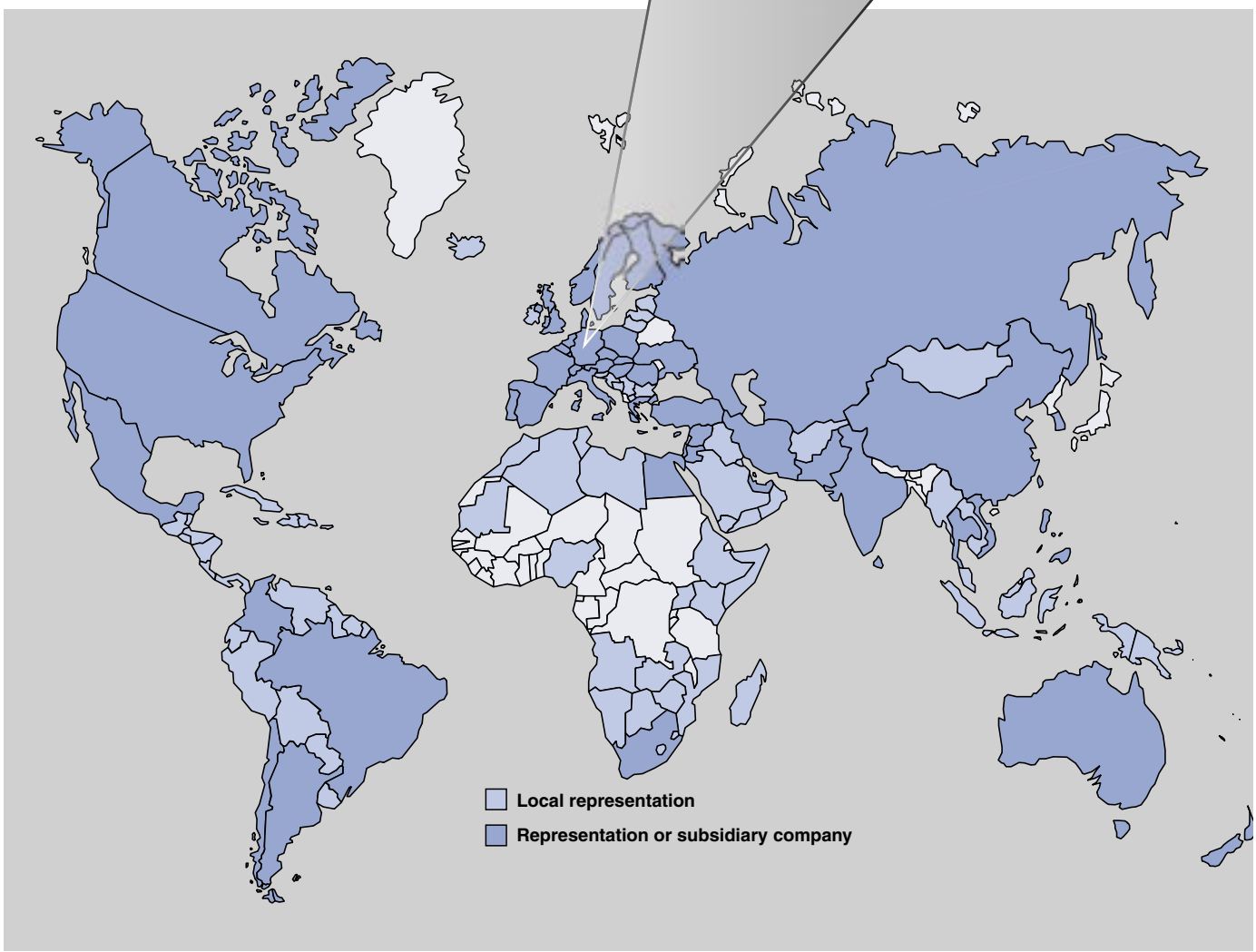
A central point of the Aerzen company policy is the local presence at the customers.

- 7 sales offices in Germany
- 1700 employees worldwide
- more than 30 international subsidiary companies
- representations for more than 100 countries
- more than 100 service technicians on all continents

are the guarantee for competent contact partners nearby and with the corresponding national language.

Addresses and communication data under
www.aerzen.com



AERZEN

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