ROTORCOMP VERDICHTER

BETRIEBSANLEITUNG

OPERATING INSTRUCTION

MANUALE DI ISTRUZIONI OPERATIVE

MODE D'EMPLOI

INSTRUCCIONES DE SERVICIO

NK 160

30 – 45 kW / 40 – 60 HP

Edition 2000

Operation Instruction

Kompakt-Verdichtermodul NK 160

30 - 45 kW / 40 - 60 HP

1.No_____

2.No_____

Edition 2000/E

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This operating manual informs you about all details required to install, start and operate the unit. Maintenance instructions are also included (you must also observe for maintenance purposes).

If you do not observe this operating instruction and/or arbitrarily change the unit or components supplied by us , you forfeit any claim under warranty. Please contact our customer service department if initial troubles or breakdowns occur.

Make use of our service to start your unit. Request a maintenance and a safety contract for the current maintenance.

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ROTORCOMP COMPONENTS are thoroughly tested at the production plant. Correctly operated and installed, they are fail-safe.

The **ROTORCOMP** WARRANTY includes all components (as long as the term of warranty applies).

Concerning our warranty, please note:

ROTORCOMP exclusively produces screw compressor components, not complete installations ready for work. Therefore, **ROTORCOMP** is merely accountable for those shortcomings that may occur with the above mentioned individual components and which fall into RC's liability according to the warranty conditions.
Warranty **cannot** be granted in case of:

- **inadequate application**
- **incorrect handling of the installation**
- **inappropriate fuels**
- **modifications of the original state**
- **use of inadequate tools**
- **using other than original spare parts**
- **modifications of the installation or the components**
- **use of inappropriate add-on pieces**

Respecting the indicated working temperatures avoids the FORMATION OF CONDENSATE in the screw compressor.
Warranty does not apply in case of damages caused by condensation.

COMPRESSOR OILS: Only those types of oil may be filled in that have been classified by the oil producer as appropriate for screw compressors.
In case of doubt, please consult **ROTORCOMP** prior to filling in the oil in order to determine the appropriate type of oil. In case defects occur, having used inappropriate types of oil results in the loss of the warranty.

ROTORCOMP COMPONENTS are designed for ambient temperatures of +5°C to + 45°C / 41°F to 113°F. Operation at other ambient temperatures is only permitted after having consulted **ROTORCOMP**.

BITTE BEACHTEN - WICHTIG
PLEASE NOTE - IMPORTANT
ATTENTION - IMPORTANT
SI PREGA DI FARE ATTENZIONE - IMPORTANTE

1. Vor Inbetriebnahme der Maschine unbedingt Betriebsanleitung lesen.
   Operating Instructions must be carefully read before operating machine.
   Lire attentivement le mode d'emploi avant la mise en service de la machine.
   Prima di mettere in funzione la macchina, leggere assolutamente le istruzioni per l'uso.

2. Netzspannung und Absicherung entsprechend des Typenschildes oder Maschinenkarte vornehmen.
   Line voltage and line fuse specifications must be according to nameplate or machine card.
   Brancher sur la tension du secteur et installer les fusibles conformément à la plaque signalétique ou à la notice de la machine.
   La tensione della rete e il fusibile devono corrispondere a quelli indicati sulla targhetta del modello o sulle indicazioni della macchina.

3. Öl einfüllen bzw. Ölstand prüfen.
   Fill in oil and/or check oil level.
   Remplir la machine d'huile ou contrôler le niveau d'huile.
   Riempire d'olio o controllare il livello dell'olio.

4. Antrieb, z.B. Keilriemenspannung prüfen.
   Check drive, e.g. V-belt tension.
   Contrôler l'entraînement, p.e. la tension de la courroie trapézoidale.
   Controllare l'azionamento, per es. la tensione della cinghia trapezoidale.

5. Beim Anschließen der Maschine auf die richtige Drehrichtung der Rotoren achten.
   When connecting the machine to electric power, correct direction of rotation of the rotors must be observed.
   Veiller lors du branchement de la machine à ce que les vis tournent dans le bon sens.
   Quando si allaccia la macchina fare attenzione al giusto senso di rotazione dei rotori.

6. Die Einsatzbereitschaft der Maschine bleibt erhalten, wenn Wartungsarbeiten (Reinigen - Schmieren) regelmäßig durchgeführt werden.
The machine will function properly when regularly maintained (cleaning - lubrication).
La machine fonctionnera normalement si elle est entretenue (nettoyage - graissage) régulierement.
La macchina rimane sempre pronta per l'uso se i lavori di manutenzione (pulitura - lubrificazione) vengono eseguiti regolarmente.

7. Dauerndes Überlasten des Gerätes vermeiden.
Continuous overloading of the machine should be avoided.
Eviter une surcharge permanente de la machine.
Evitare un sovraccarico continuo dell'apparecchio.

8. Bei Funktionsstörungen zuerst Haupt- und Maschinensicherung prüfen.
In case of malfunction check main fuses and machine fuses first.
coupe-circuit à fusible de la machine.
In caso di guasti di funzionamento controllare dapprima i fusibili principali e quelli della macchina.

9. Service- und Reparaturarbeiten nur durch den Fachmann ausführen lassen.
Service and maintenance should only be performed by experienced personnel.
Ne faire exécuter les travaux d'entretien et de réparation que par un spécialiste.
Far eseguire i lavori di servizio e di riparazione solo da un tecnico qualificato.

10. Bei Ersatzteilbestellungen unbedingt Maschinentyp, Maschinennummer und Ersatzteilnummern angeben.
When ordering spare parts it is absolutely necessary to indicate model, machine number and spare part number.
Mentionner impérativement le type de la machine, le numéro de la machine et le numéro de la pièce de rechange lors de la commande des pièces de rechange.
Se si ordinano pezzi di ricambio, riferire assolutamente il modello della macchina, il numero della macchina ed il numero del pezzo di ricambio.

SYMBOLS AND EXPLANATIONS

	Before starting up or carrying out maintenance work on this compressor, read the operating manual.		**Warning:** Do not operate with open doors or loose clothing
	Do not operate the machine without the guard.		**Warning:** Hot surface
	Do not inhale compressed air from this machine		**Warning:** Part or system under pressure
	**Warning:** The machine can be started automatically by remote control after a power failure.		Lifting point
	**Warning:** The machine will run for a further 30 seconds after the O-button has been pressed		**Warning:** Danger of electric shock
	Note cooling air		Active environ mental protection

SYMBOLS AND EXPLANATIONS

Danger

Locations thus designated indicate possible danger to persons.

Warning

Locations thus designated indicate possible danger to machinery or machine parts.

Note

Locations thus designated provide technical information on the most efficient use of the machinery.

1

SAFETY REGULATIONS AND PREVENTIONS OF ACCIDENTS

These provisions shall apply for screw-type compressor components of the Rotorcomp company. The relevant manufacturers' provisions shall apply for components of other manufacturers or suppliers, respectively.

Please read them carefully and act accordingly when you install, start or repair the machine or its components.

In addition to the usual safety regulations to be observed for screw-type compressors, their components and accessories, you must strictly comply with the following safety instructions and provisions.

The operating personnel must employ safe techniques and observe all local safety regulations and provisions for operation.

The operator is responsible for the machine to be kept in safe operating condition. If parts and accessories are considered not to be reliable for safe operation, they must be replaced immediately.

The unit must only be installed, operated, maintained and repaired by authorized, trained and qualified personnel.

Limits (pressure values, temperature values, time settings, etc.) must be permanently marked.

If any of the provisions contained in this list (especially concerning safety) does not comply with local provisions of law, the safer provision must be applied.

These safety regulations are general and apply to various machine types and equipment. Therefore, some specifications may not apply to the unit(s) described in this manual.

Installation

In addition to the general technical operation according to the regulations of the local authorities, the following guide lines must be strictly observed:

1. Use an appropriate hoist complying with the local safety regulations to lift a screw-type compressor. Secure all loose and swinging parts such that they cannot be moved before lifting the machine. It is strictly forbidden to be in the danger area of a lifted load. The acceleration and deceleration of transportation must stay within permissible limits.

continued

2. Remove all blind flanges, plugs, caps and bags containing drying agents before assembling the tubes. Unions and tube connections must have the right size and be fit for the relevant operating pressure. Screw connections must be torqued to the indicated values, unless otherwise indicated.

3. The unit must be installed in a place where the ambient air is as cool and clean as possible. Never obstruct admission of air. Make sure that moisture in the intake air is kept to a minimum.

4. The intake air must not contain any inflammable vapors or exhaust vapors, such as paint solvents, which may cause an internal fire.

5. Air cooled machines must be installed such that an adequate flow of cooling air is provided and that the outlet air does not recirculate into the inlet.

6. Arrange the air intake such that loose clothes cannot be drawn in.

7. Make sure that the pressure pipe from the compressor to the aftercooler or air delivery main can expand due to the heat and does not come into contact with inflammable material.

8. No external force may be exerted at the air outlet valve; the connected pipe must be fitted without tension.

9. If a remote control is provided, the unit must be equipped with a clearly visible plate with the following lettering:

Warning: This unit is operated by remote control and could start without any warning.

As an additional protective measure, persons who start a unit by remote control must make sure that no person is checking or operating the unit. For this purpose, a corresponding plate must be provided at the remote control unit.

10. Screw-type compressors must in principle be set up on a level surface and levelled with a spirit level as necessary.
In exceptional cases, for example in the case of portable systems, the latter must be operated at a maximum angle of tilt of 10°. In such cases, check the oil level particularly carefully.

continued

Maintenance

Maintenance and repair work may only be executed under the supervision of a person qualified for this work.

1. Use only the right tools designed for maintenance and repair work.
2. Use only original spare parts.
3. Execute any repair work other than current repair work only when the unit is switched off and the mains supply is disconnected. Make sure that the unit cannot be switched on unintentionally.
4. Shut off the unit from all pressure sources and discharge the entire unit from pressure before removing a part under pressure.
5. Do not use inflammable solvents or carbon tetrachloride to clean parts. Take precautions against toxic vapors of cleaning solvents.
6. Take care that extreme cleanliness is observed during maintenance or repair work. Keep away dust. Cover parts or bare openings with a clean cloth, paper or adhesive tape.
7. Do not weld or perform any other work requiring heat near the oil system.
8. Make sure that no tools, loose parts or cleaning rags are left in or on the unit.
9. Before releasing the unit for operation after it has been maintained or overhauled, check whether the operating pressure temperatures and time adjustments are correct and the control and switch-off devices in perfect working order.

SAFETY REGULATIONS AND PREVENTIONS OF ACCIDENTS

continued

10. Protect the motor, the air filter, electrical components, control system, etc. against moisture , e.g. when cleaning them by means of steam jet.

11. Do not remove or change the noise-insulating material.

12. Do not use corrosive solvents, which could affect the materials of the air delivery main, such as polycarbonate bowls.

13. In the case of stationary engine driven units you must take additional safety precautions, especially those mentioned on the cover of each instruction manual for ROTORCOMP portable compressors, e.g. mount a spark divertor, be careful when filling in fuel, etc..

The manufacturer assumes no responsibility for any damage or injury caused by ignoring these safety provisions or the usual carefulness and precaution during handling, operation, maintenance and repair, even if they are not expressly mentioned in this operating manual.

SAFETY REGULATIONS AND PREVENTIONS OF ACCIDENTS

This operating manual describes how the machine(s) must be handled and operated in order to achieve safe operation, maximum efficiency and long service live.

Read the operating manual before starting the machine, so that appropriate handling, operation and maintenance is ensured from the very beginning. The maintenance plan contains all measures required to keep the machine in good condition. Maintenance is simple but must be executed regularly.

Keep the operating manual available for the operators and take care that operation and maintenance is performed according to the instructions. Enter all operating data, executed maintenance measures, etc. in an operating book. Observe all relevant safety provisions, e.g. those mentioned on the envelope or on the first few pages of this manual.

Repair should be performed by qualified personnel only.

Specify the model and the complete serial number (indicated on the nameplate) in all correspondence.

All specific data not mentioned in the text can be found in the section "Technical Data" or on the data plate.

The manufacturer reserves the right to make technical changes without prior notice.

Warranty Information:

The **ROTORCOMP** Company is only a manufacturer of screw-type compressor components and not one of unit installations ready for service. Within the scope of the warranty terms, **ROTORCOMP** shall only be liable for any possible defects of such individual components **ROTORCOMP** is responsible for.

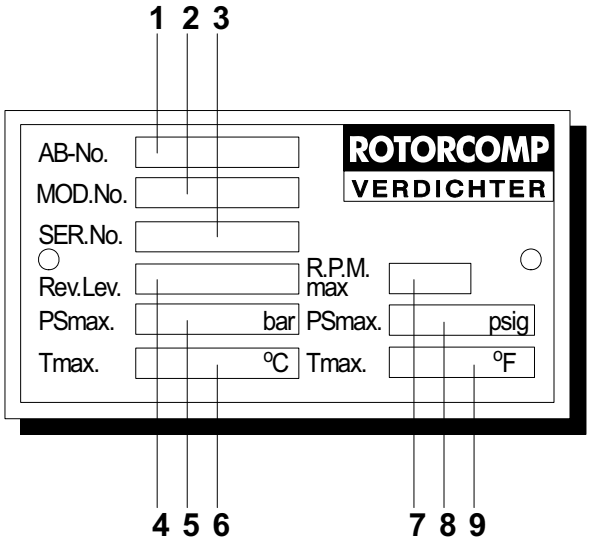
Claims under warranty are invalid in the event of:

- **Operating errors/faults**
- **Inadequate maintenance**
- **Non-compliant fuels/working materials**
- **Failure to use original spare parts**
- **Reconstruction / conversion work on the system and/or components**

2

NAME PLATE

The nameplate is attached on the operation side of the housing.
If you have any questions, please quote the data specified on the nameplate. This ensures that you receive the correct information.



Labelling or customers outside Germany (Europe)

1. Order N°		6. Operating temperature max.	
2. Type (Model)		7. Speed max.	
3. Serial N°		8. Pressure max.	
4. Year of construction		9. Operating temperature max.	
5. Pressure max.			

NAME PLATE

TECHNICAL DATA

Screw type compressor model	**RC**		**NK 160**
Operating pressure, max.	bar		15
	psi		218
Air delivery according to DIN 1945	m3/min		7.0
up to	CFM		247
Power required up to	kW		45
(full load without fan)	HP		60
Speed of main rotor, max.	-1/min		6.400
	RPM		6.400
Nominal contents of housing	l		55
	l		55
Oil filling quantity, approx.	l		20
	l		20
Machine weight (without oil)	kg		197
approx.	lbs		434
Compressed air connection	mm		35
	inch		1¼“
Max. outlet temperature	°C		110
	°F		230
Max. room temperature	°C		45
	°F		115

Note

Note:

This list only shows general technical data for this machine type.

For calculation, design and measuring see the relevant **ROTORCOMP**-OUTPUT DATA SHEET.

Technical data regarding the entire screw-type compressor installation, driving motor or engine, electrical equipment and accessories, refer to the corresponding data sheet of the manufacturer or supplier.

3

TECHNICAL DESCRIPTION OF MAIN COMPONENTS

	Item No *	
- COMPLETE UNIT	GA 8.9	E
- FLOW CHART	FB 8.10	E
- INTAKE AIR FILTER CARTRIDGE	IF 8.4	E
- INTAKE CONTROL SYSTEM	IC 9.9	E
- NK 160	AB 6.7	E
- SCREW COMPRESSOR V-BELT PULLEY	SK 1.2	E
- PURIFIER CARTRIDGE	FA 3.1	E
- OIL SUCTION CHECK VALVE	OR 1.6	E
- MINIMUM PRESSURE VALVE	MD 3.5	E
- OIL FILTER	OF 4.2	E
- AIR-OIL CIRCUIT	LO 5.8	E
- V-BELT DRIVE	KA 3.10	E
- COMPRESSED AIR CONNECTION	DA 3.1	E

NK 60 ACCESSORIES (NK 60 CONCEPT)

- OIL COOLER/AIR AFTERCOOLER	KN 3.1	E
- OIL THERMOSTAT	TV 6.6	E
- FAN AND PROTECTIVE GRID	VR 5.5	E
- SAFETY VALVE	SV 2.0	E
- FINAL PRESSURE SWITCH AND SAFETY PRESSURE SWITCH	DR 2.0	E
- COMBISTAT	CO 3.1	E
- PRESSURE GAUGE	MA 1.0	E

*The Item-No is interpreted in the following manner:
Register – Chapter – Abbreviation Revision code Language

TECHNICAL DESCRIPTION

COMPLETE UNIT NK 160

COMPLETE UNIT NK 160

Possibilities of use

The NK 160 screw compressor unit consists of individual components which have to be assembled in order to form an operable unit for installation.
If you add the drive, the electric control and the necessary accessories, such as housing, compressed air tank, filters etc., it is a complete compressed air station.

Modes of drive

The compressed air unit is especially suitable for electric motor drive by means of V-belts. Diesel engines, hydraulic motors etc. can also be used.

Attention

The speed control of the drive motor must be adapted to the suction intake controller of the screw compressor system. Downgrading of the regulated compressor speed, for instance due to centrifugal couplings, hydraulic motors or the like, can seriously impair the effectiveness of the suction intake controller. If the stop procedure of the screw compressor is significantly lengthened contrary to operating instructions, the controller will not close fast enough, and oil may enter the intake filter. This can also happen if the compressor system is switched off prior to attaining the final pressure level in the lower pressure range of about 0.1 to 5.0 bar/about 1.4 to 70.0 psi. The prescribed minimum operating pressure is

6 bar/85 psi

unless a different operating overpressure range is specified in the operating data sheet.

Installation in vehicles

Note

Its compact construction is suited for installation in road and rail vehicles.
The installation of an electric heating element is possible.

Installation without housing

If it is permissible in the place of installation, the screw compressor unit can be operated without housing.
It is not absolutely necessary to provide a special compressor room, but if the unit is installed in a room with a low level of surrounding noises, we recommend to fit a housing or a silencer.

COMPLETE UNIT NK 160

Installation on a tank

It is possible to install the screw compressor unit directly on an air tank of horizontal or vertical design.
Mount the unit on the tank plates using vibration isolators.

Noise control

If you wish to reduce the operating noise of the compressor unit, we recommend to install it in a steel sheet housing.
A washable, non-flammable interior coating fitting the housing can be supplied.

Special version

The screw compressor system can be extended and complemented as required.

Additional components that correspond to the screw compressor system concept are available for this. - Please refer to the **ROTORCOMP** Catalogue.

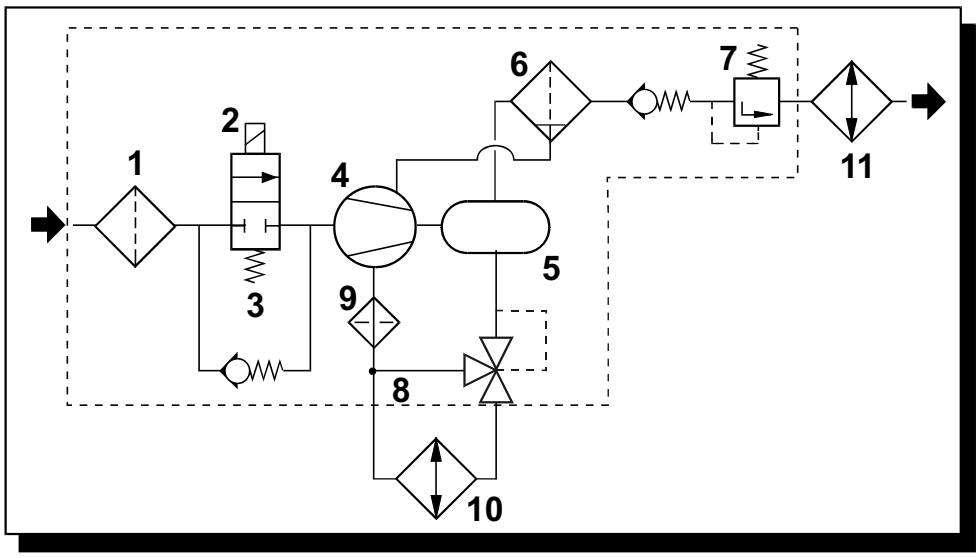
Caution:

A screw compressor constructed with the NK 160 can be fitted optionally with a water cooler or air cooler for oil cooling and pressure cooling. Dimensions must be selected according to the drive power and the temperature of the cooling medium. The cooler must be located in the screw compressor so as to ensure that there is always sufficient oil available for the cooling and lubrication system. The actual oil level must also be able to be checked at the oil filter nozzle.

Too low oil flow will lead to excessively temperatures.

Too high oil flow will cause the oil to foam on unloading the system and will reduce the effectiveness of the fine oil separation in the delivery phase. 6 litres of oil must be available in the NK 160 oil chamber.

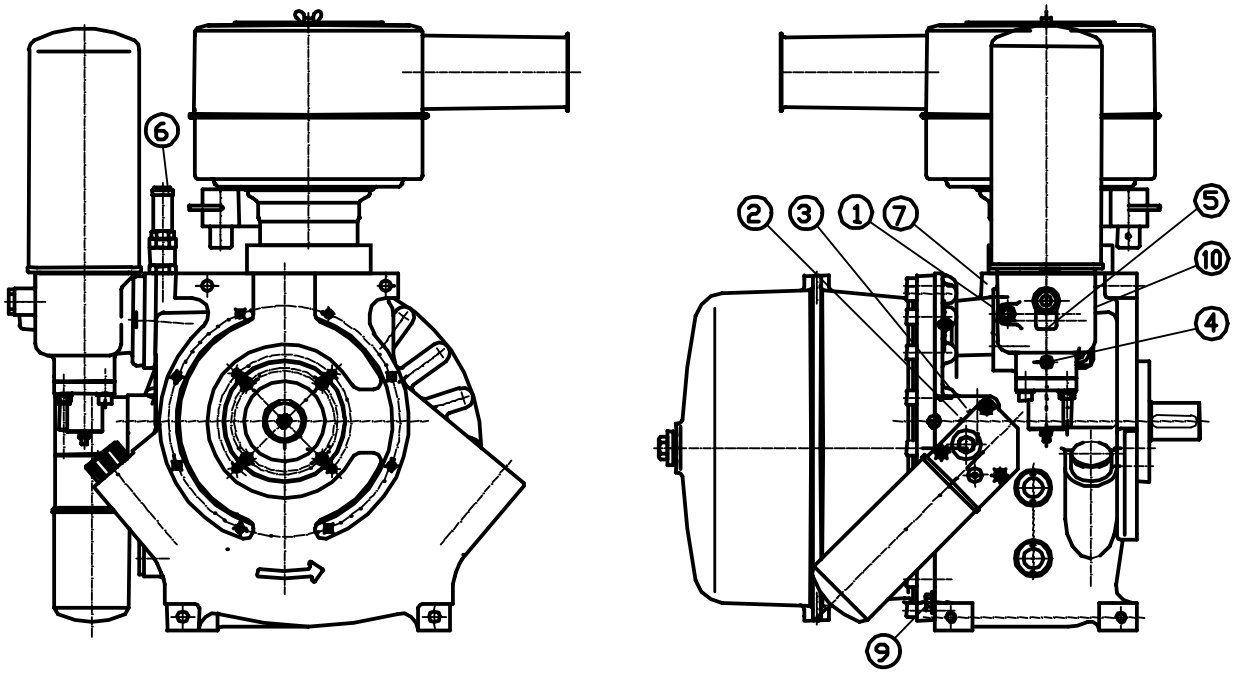
FLOW CHART NK 160



This chart shows the complete system, the individual components are fitted according to order.

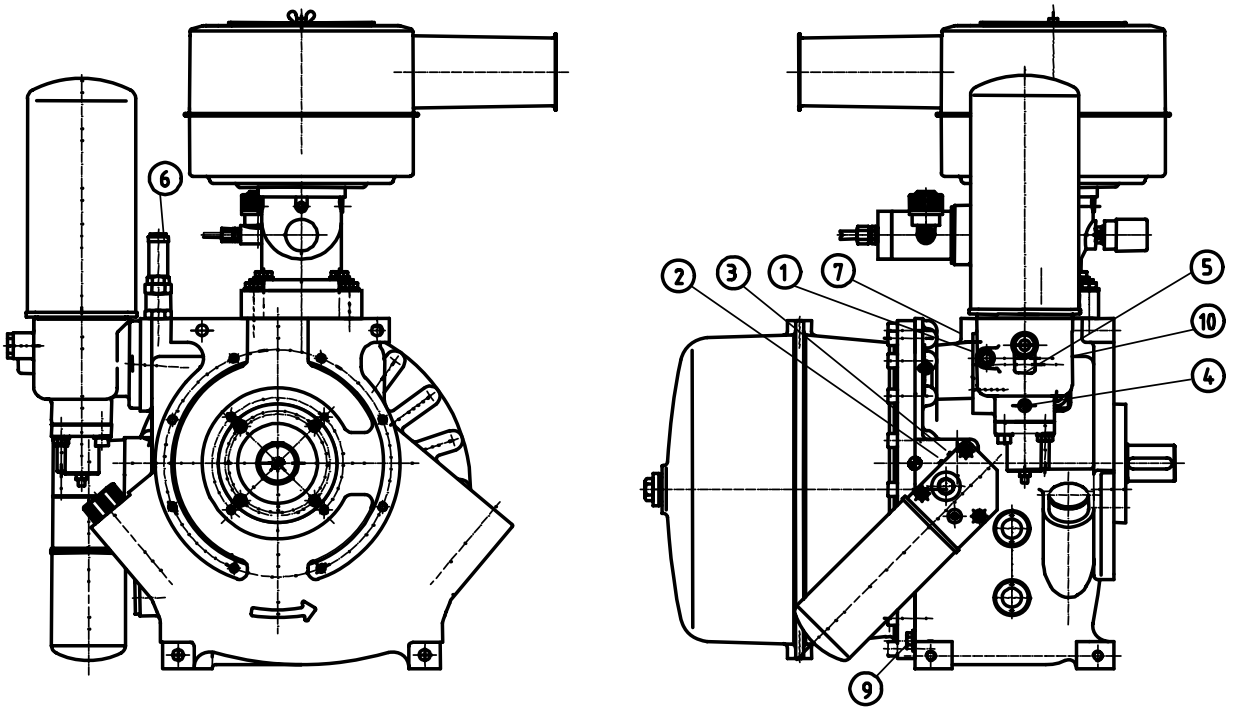
1	Intake filter
2	intake control
3	control for item 2
4	screw compressor
5	separator receiver
6	purifier
7	minimum pressure valve
8	oil thermovalve
9	oil filter
10	oil cooler
11	air aftercooler

NK 160
PIPELINE CONNECTIONS "ELECTRICAL"



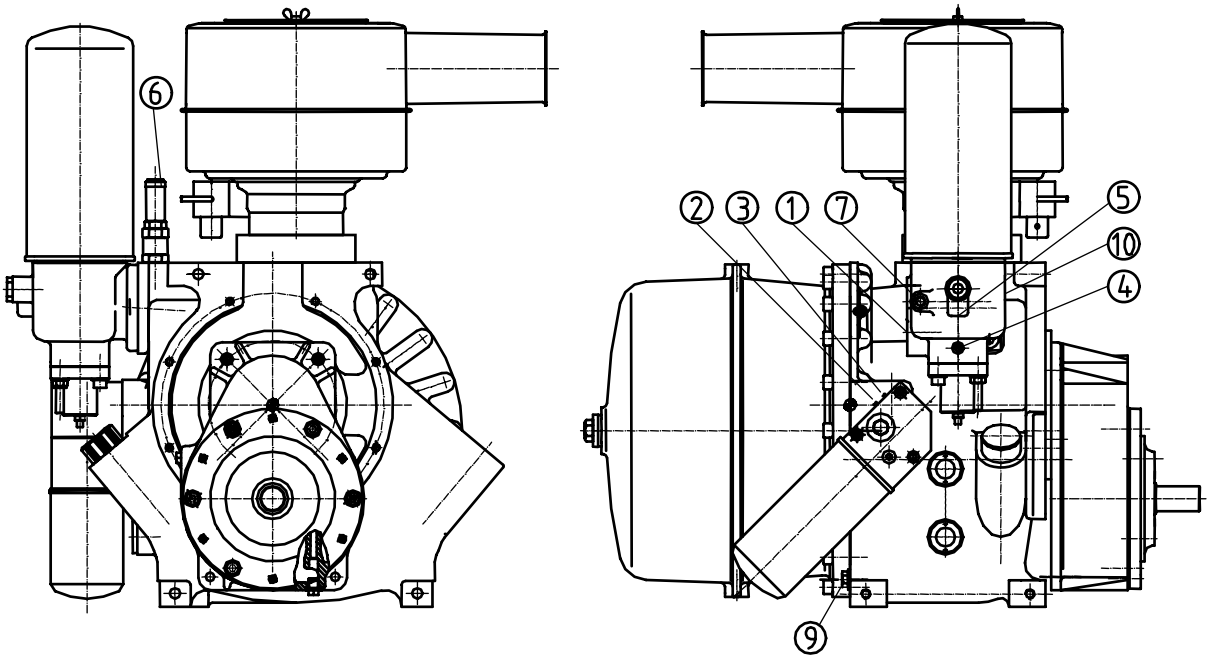
1	Compressed air OUTLET	1¼"	6	Safety valve	¾"
2	Oil OUTLET	½"	7	Control air to control unit	¼"
3	Oil INLET	½"	8		
4	Final pressure (Pressure gauge) (Pressure switch)	1/8"	9	Oil drain	½"
5	Pressure at cartridge inlet	1/8"	10	Temperature sensor	3/8"

NK 160
PIPELINE CONNECTIONS "PNEUMATIC"



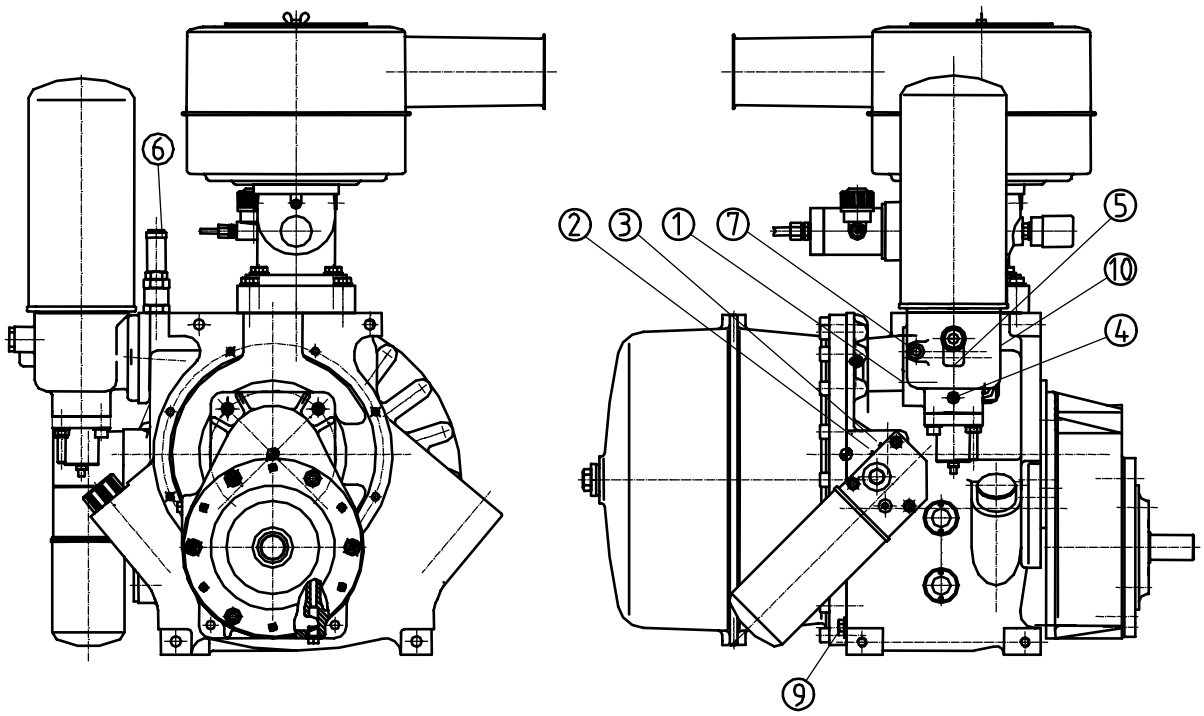
1	Compressed air OUTLET	1¼"	6	Safety valve	¾"
2	Oil OUTLET	½"	7	Control air to control unit	¼"
3	Oil INLET	½"	8		
4	Final pressure (Pressure gauge) (Pressure switch)	1/8"	9	Oil drain	½"
5	Pressure at cartridge inlet	1/8"	10	Temperature sensor	3/8"

NK 160-G
PIPELINE CONNECTIONS "ELECTRICAL"



1	Compressed air OUTLET	1¼"	6	Safety valve	¾"
2	Oil OUTLET	½"	7	Control air to control unit	¼"
3	Oil INLET	½"	8		
4	Final pressure (Pressure gauge) (Pressure switch)	1/8"	9	Oil drain	½"
5	Pressure at cartridge inlet	1/8"	10	Temperature sensor	3/8"

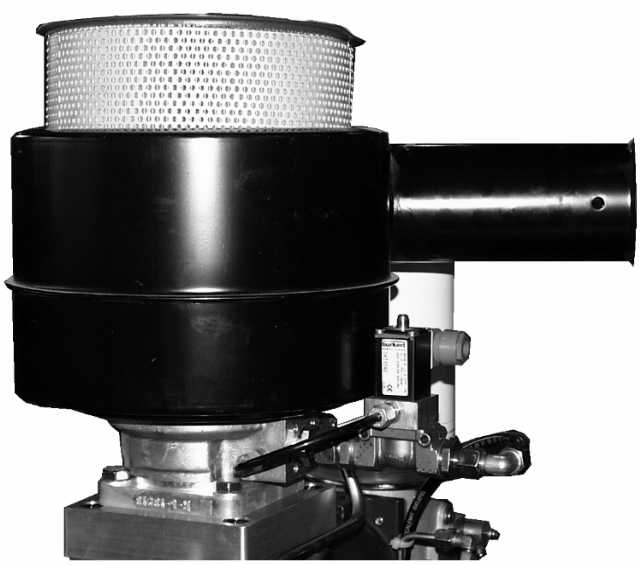
NK 160-G
PIPELINE CONNECTIONS "PNEUMATIC"



1	Compressed air OUTLET	1¼"	6	Safety valve	¾"
2	Oil OUTLET	½"	7	Control air to control unit	¼"
3	Oil INLET	½"	8		
4	Final pressure (Pressure gauge) (Pressure switch)	$^1/_8$"	9	Oil drain	½"
5	Pressure at cartridge inlet	$^1/_8$"	10	Temperature sensor	G $^3/_8$"

TECHNICAL DESCRIPTION

INTAKE AIR FILTER CARTRIDGE



The **ROTORCOMP** intake air filter, which is integrated in the housing, is mounted directly on the air intake fitting of the intake controller.

The micro-dry-filter cartridge with a fineness level of 10 µ is used for intake air filtering.

The replaceable cartridge is the fine-filter element of all dry-air filters. It is a filter element that completely fulfils the requirements of modern filtering technology:

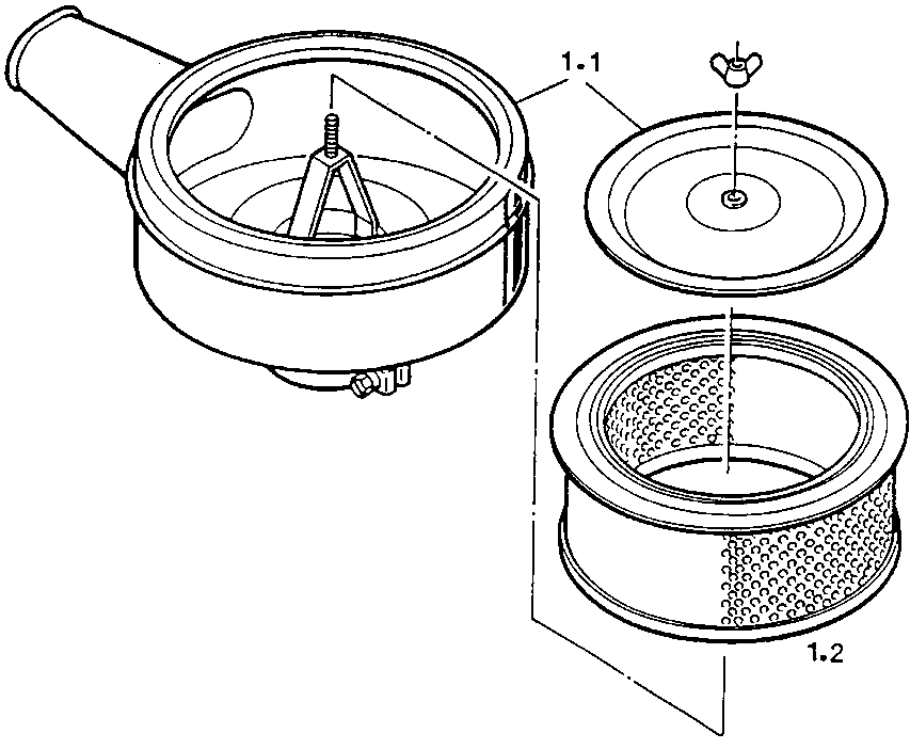
- constant separation level of nearly 100% at all load phases
- insensitive to heat and coldness, water, oil and fuel due to special impregnation and heat treatment
- large filtering surface within a very small area due to folded-filter geometry and advanced manufacturing processes.
- The embossing of the paper folding bellows enables the filtering surface to be completely effective during the entire service life. The result: great dust intake capacity - long service life.
- The cartridges can be cleaned in-between times repeatedly. But if they have to be replaced anyway, then only an original replaceable cartridge should be used.

Inlet filter monitoring: Maintenance indicator, visual (option)
Maintenance indicator, electrical (option)

For **standard applications** micro-drying filter cartridges are recommended as **single-action filters** with low resistance.

Note:
For **special applications**, as for example installations in heavily polluted environment or mobile installations, etc., **double-action filters** with a slightly higher filter resistance, but a more efficient degree of separation are required in order to protect the compressor installation.
Filter type / Order No.: upon demand.

INTAKE AIR FILTER IF 150



1.1 Intake air filter housing
1.1 Intake air filter cartridge

The **ROTORCOMP** intake air filter, model IF, is mounted in the steel sheet housing directly on top of the intake connection piece of the intake control.

The micro cartridge of the drier filter with a fineness of approx. 10 µ is used to filter the intake air.

Intake filter supervision – standard: visual
Intake filter supervision – optional: electric

INTAKE CONTROL SYSTEM NK 160

The intake control regulates the air flow sucked in by the screw compressor.

This control is mounted directly on the inlet flange of the screw compressor.

These may also be different control systems for different compressor operating modes:

1. Intake control with electric control unit
2. Intake control with pneumatic control unit.

Mode of operation of the intake control:

The **ROTORCOMP** intake control has only one main valve. This operates as a continuously variable governing valve as well as a tightly closing stop valve. When operating under full load, the intake orifice with minimum pressure drop is fully open. In partial load mode, the intake cross-sectional area is automatically regulated by stroke limitation and adjusted to the actual air requirement.

When the equipment is stopped, this valve quickly and automatically closes the entire cross-sectional area of the intake. The control system multifunction are actuated by means of only one flanged-on **ROTORCOMP** control unit.

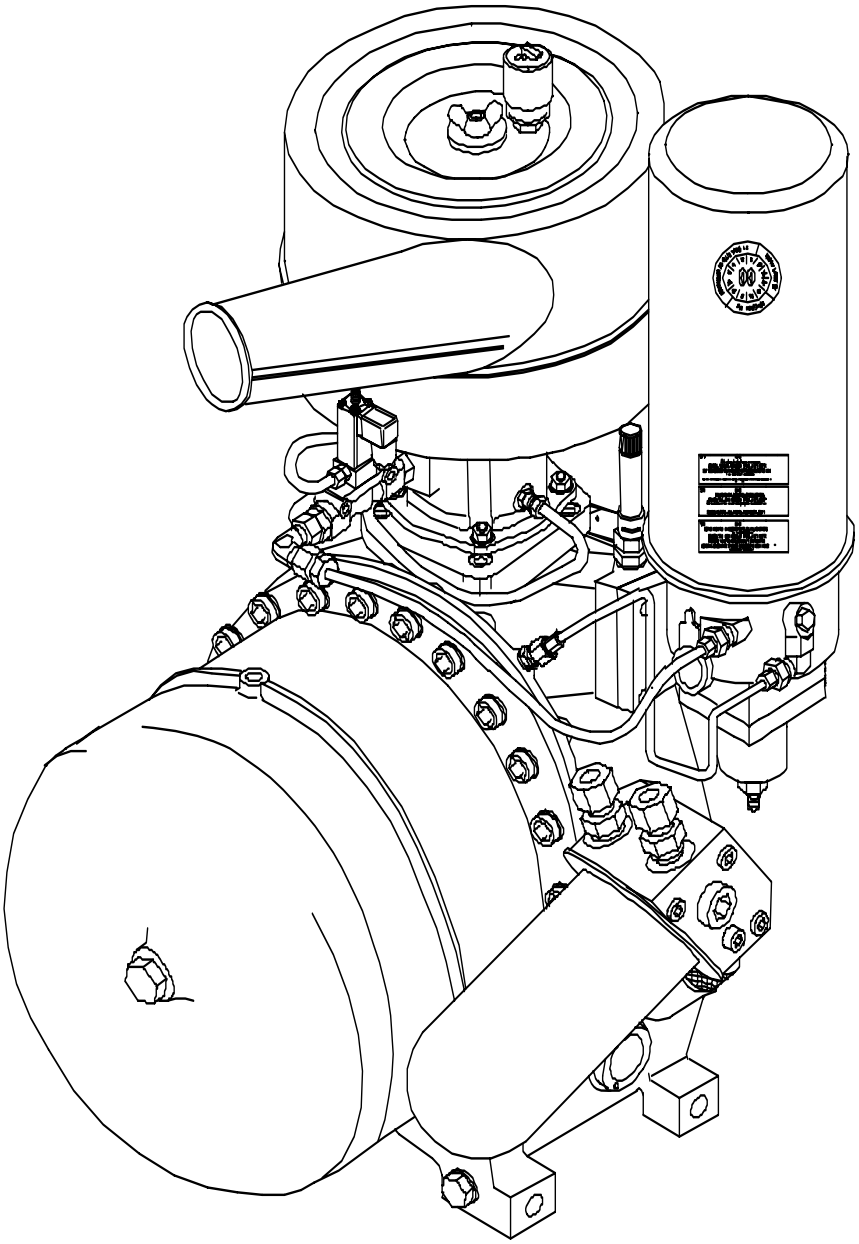
Attention:

With each decompression, an oil-air mixture will foam in the compressor system at about 1 to 2 bar residual pressure to a greater or lesser extent depending on the types of oil used. A major factor here is the decompression time. If this time is extended, for example by fitting a smaller vent nozzle, this will reduce foaming (also at higher operating pressures).

TECHNICAL DESCRIPTION

INTAKE CONTROL NK 160-2

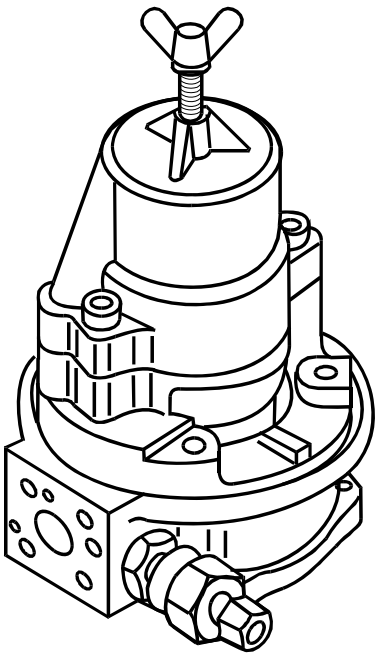
WITH ELECTRICAL CONTROL UNIT EMC

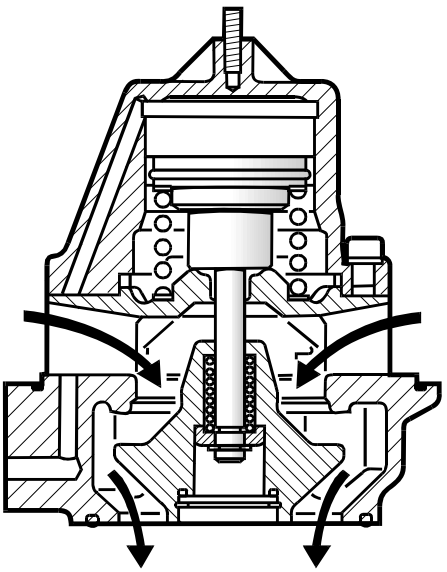


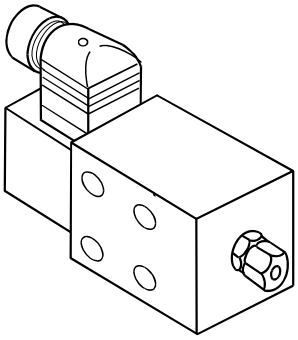
TECHNICAL DESCRIPTION

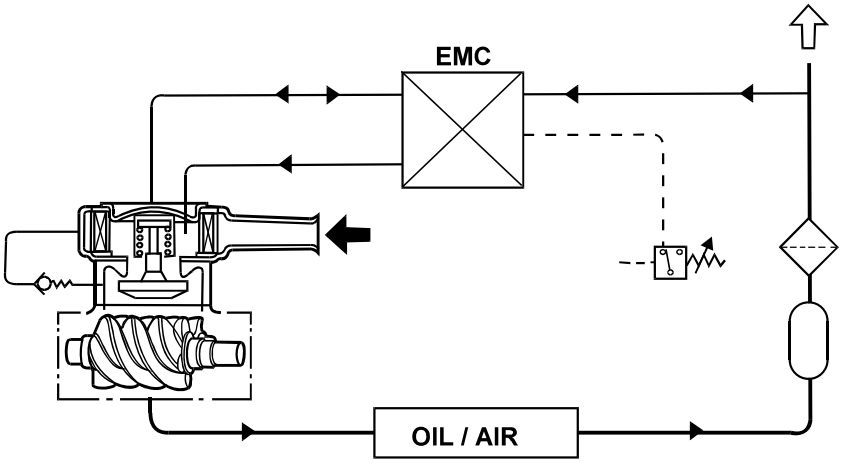
INTAKE CONTROL NK 160-2

WITH ELECTRICAL CONTROL UNIT EMC









TECHNICAL DESCRIPTION

1. Intake control with ROTORCOMP electrical control unit EMC

This intake control system offers the options of an efficient start/stop or idling mode in relation to the final pressure by means of an adjustable electric pressure switch.

The main component of this control unit is a solenoid valve which can be provided for different power supplies.

Caution:
Check the control voltage before start-up (imprinted on nameplate)!

This electric control unit is operated by hand or automatically by means of a pressure switch. At final pressure p max., the integrated solenoid valve opens. The space in the cylinder above the actuating piston is relieved of pressure and the control system closes under spring force. The solenoid valve closes at the start or at final pressure p min. The pressure in the cylinder above the actuating piston rises, overcomes the spring force and opens the control system. In idling mode, the system is relieved of pressure up to residual pressure and when stopped is fully relieved of pressure. A restart will then in principle take place with the screw compressor totally relieved of pressure.

Final pressure setting:

The pressure switch is used to set the final pressure p max. or p min. required.

System start:

When the system is shut off, the control system is closed under spring tension. The force required by the screw compressor at the start with the intake orifice closed is small. With the main valve still closed, control air is sucked in through a bypass valve and compressed to control system opening pressure. The control system opens fully and the delivery phase is initiated. The control unit then regulates further operation.

Maintenance:

ROTORCOMP intake control systems are maintenance-free. Seals and moving parts are subject to natural wear. A function test within the scope of the prescribed system maintenance is necessary.

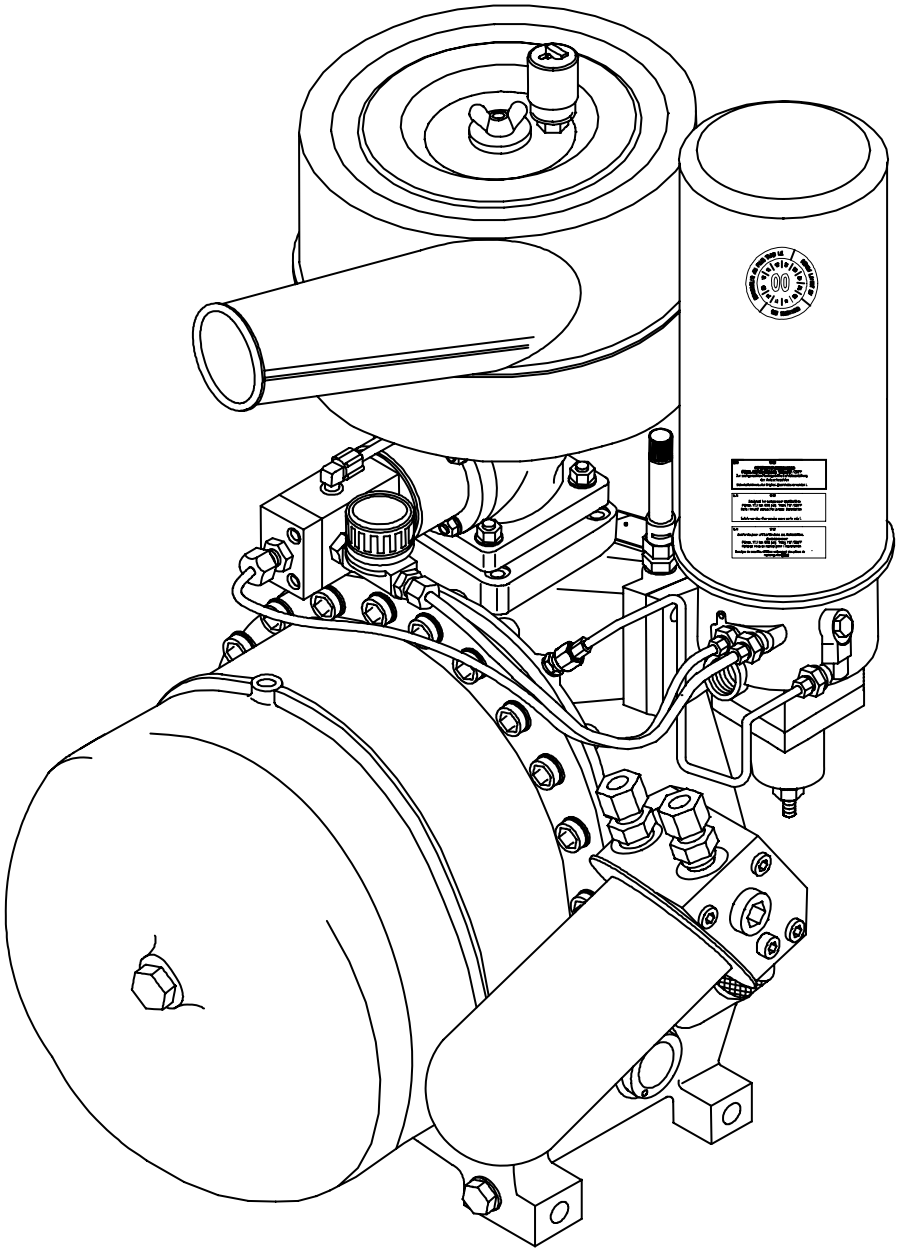
Malfunctions:

ROTORCOMP intake controls conform to the latest state of the art. They have already been thoroughly tested in the factory and are absolutely safe and reliable in operation. Nevertheless, should a malfunction occur, please refer to the Service Note No. KV IC Serv. in the „Maintenance“ section.

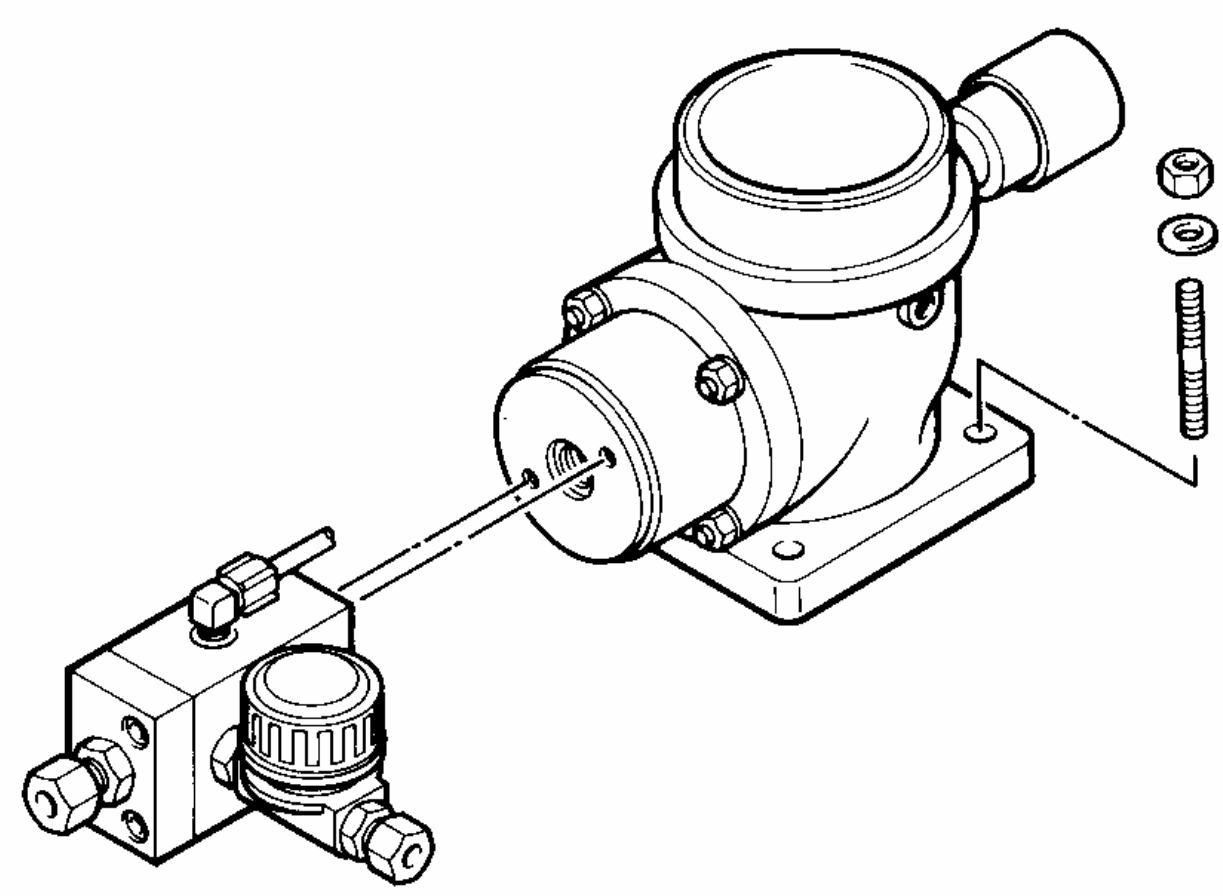
TECHNICAL DESCRIPTION

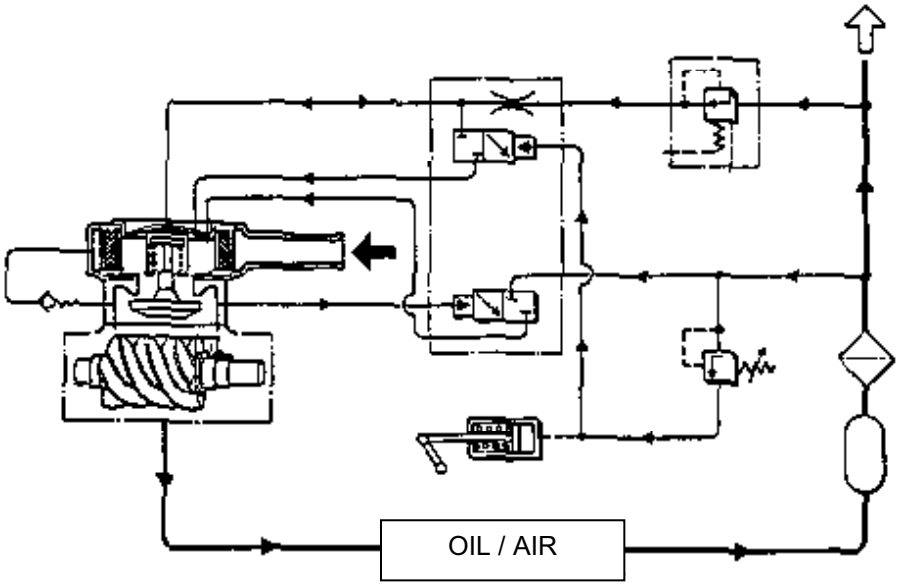
INTAKE CONTROL NK 160-3

WITH PNEUMATIC CONTROL UNIT PMC



INTAKE CONTROL NK 160-3
WITH PNEUMATIC CONTROL UNIT PMC





2. Intake control systems with pneumatic control unit PMC

These intake control systems are for use as required when strong extraction fluctuations occur with the slightest differential pressure. No solenoid valves are necessary for the PMC control system.

Final pressure setting:

The adjuster screw of the proportional control is used to set the final pressure p max. or p min. required.
With the pneumatic control, the control action in idling mode can be varied by exchanging the nozzle M5 according to type and speed of the screw compressor. Control systems with pneumatic control units are set in the factory to p max. / 7 bar.

System start:

When the system is shut off, the control system is closed under spring tension. The force required by the screw compressor at the start with the intake orifice closed is small. With the main valve still closed, control air is sucked in through a bypass valve and compressed to control system opening pressure. The control system opens fully and the delivery phase is initiated. The control unit then regulates further operation.

Maintenance:

ROTORCOMP intake control systems are maintenance-free. Seals and moving parts are subject to natural wear. A function test within the scope of the prescribed system maintenance is necessary.

Malfunctions:

ROTORCOMP intake controls conform to the latest state of the art. They have already been thoroughly tested in the factory and are absolutely safe and reliable in operation. Nevertheless, should a malfunction occur, please refer to the Service Note No. KV IC Serv. in the „Maintenance“ section.

TECHNICAL DESCRIPTION

NK 160

An additional separator tank is not required for the **ROTORCOMP** module NK 160.

There is sufficient room for the required amount of oil and for oil separation in the machine housing.

The oil-inlet and oil-drain sleeves are integrated.

The size of the machine housing is designed for a maximum operating pressure of 15 bar/213 psig at a maximum temperature of 110°C / 230°F.

Warning

Sense of rotation with view to the shaft: „**counter-clockwise“.**
With NK 160 sense of rotation with view to the shaft **„clockwise“.**

The oil connection to the installed screw compressor is at the bottom.

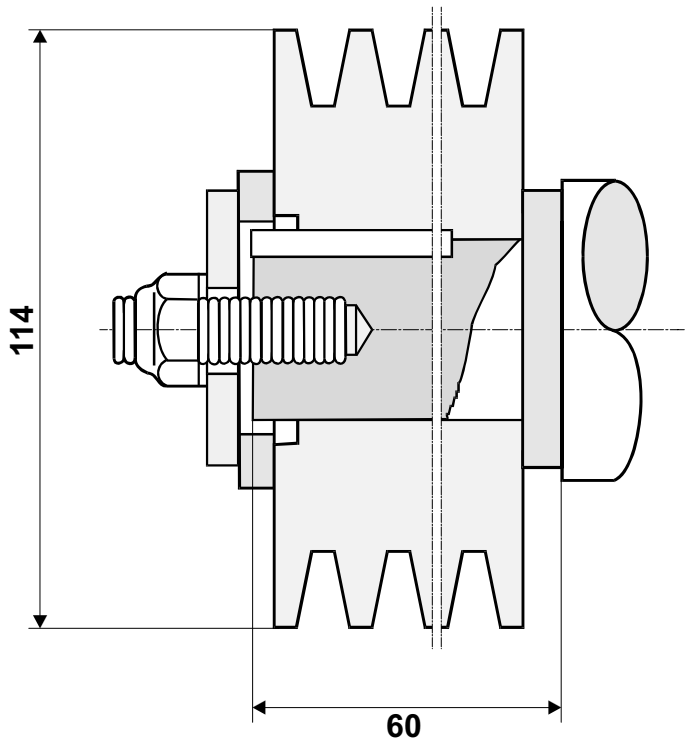
The screw compressor is directly mounted at the NK 160 housing so that pipe connections for the compressor outlet and the oil injection are not necessary.

The screw compressor is maintenance-free.

TECHNICAL DESCRIPTION

SCREW COMPRESSOR
V-BELT PULLEY NK 160 (optional)

Ø 114 mm (dW) : 101435
complete : 105329



Profile: SPA

A suitable V-belt pulley must be mounted on the drive shaft if the screw compressor has a V-belt drive. This V-belt pulley must be:

a) adapted to the compressor shaft

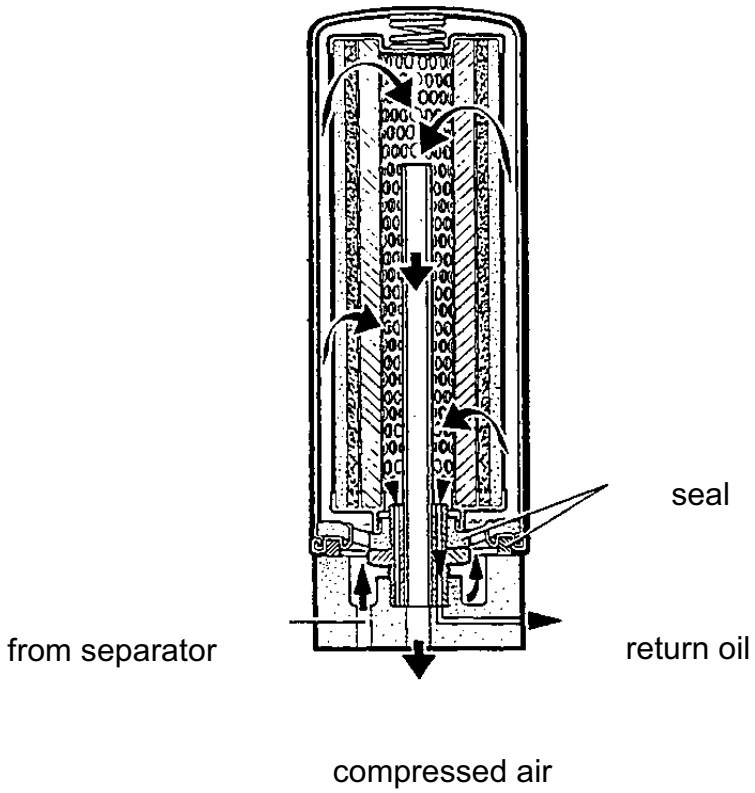
b) balanced to100% concentricity

The diameter must not be less than the specified minimum diameter, since otherwise the V-belt service life is reduced and power transmission is not ensured. After mounting the V-belt pulley, check the concentricity with a dial gauge.

The fastening screws must be tightened by means of a torque wrench.

Multi-grooved pulleys and other pulley diameters are available on request.

PURIFIER CARTRIDGE



The purifier cartridge is the air/oil separating element of the screw compressor unit.

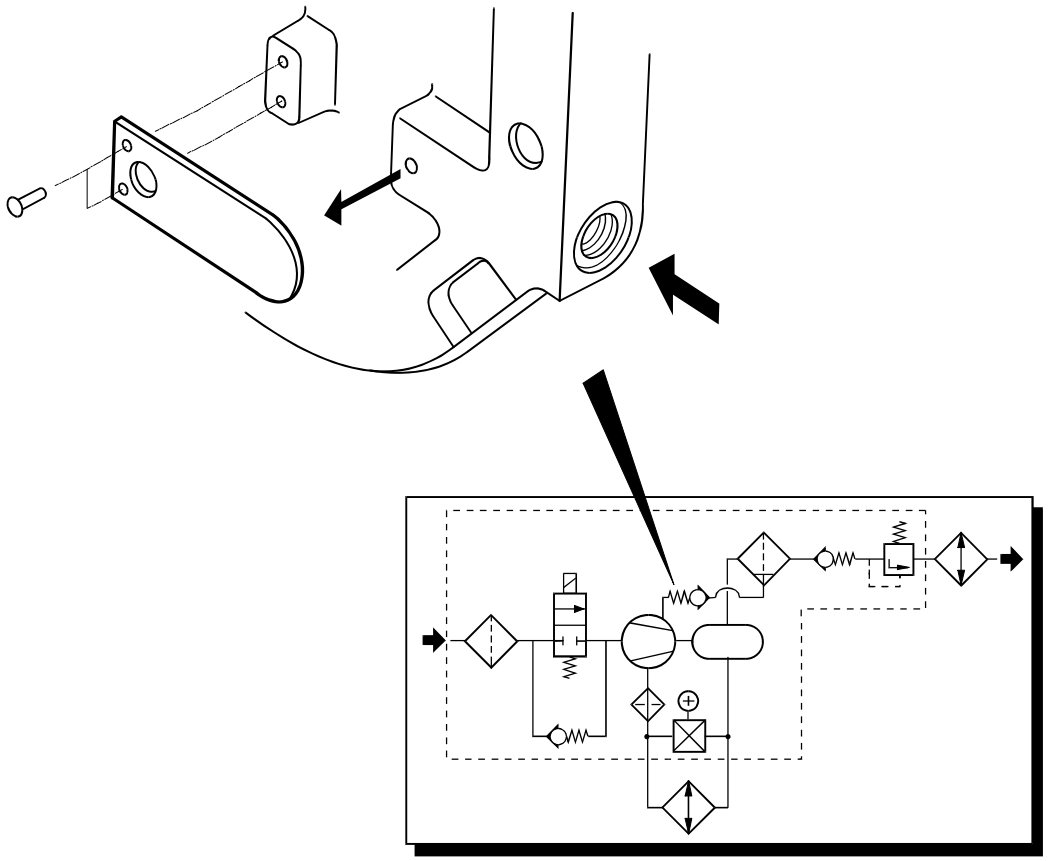
This cartridge is interchangeable and screwed on the filter support of the separator tank by a fitting.

The female screw thread of the fitting corresponds to the thread of the purifier cartridge which is adequate for the screw compressor unit in size and output.

The air/oil separator element (separator cartridge) is used to recover the finely dispersed residual oil in the form of drops after pre-separation. It is possible to obtain a technically almost oil-free compressed air, together with the vapour-type oil contents which cannot be separated with this procedure and in dependence on the operating temperature, the operating pressure, the flow speed and the type of mineral oil used.

The air/oil separator element must be replaced after approx. 3000 - 6000 operating hours or at least every 12 months.

OIL SUCTION CHECK VALVE NK 160

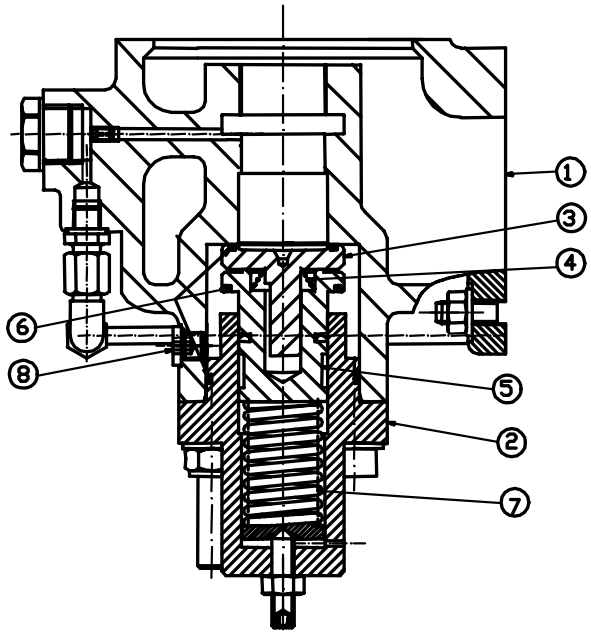


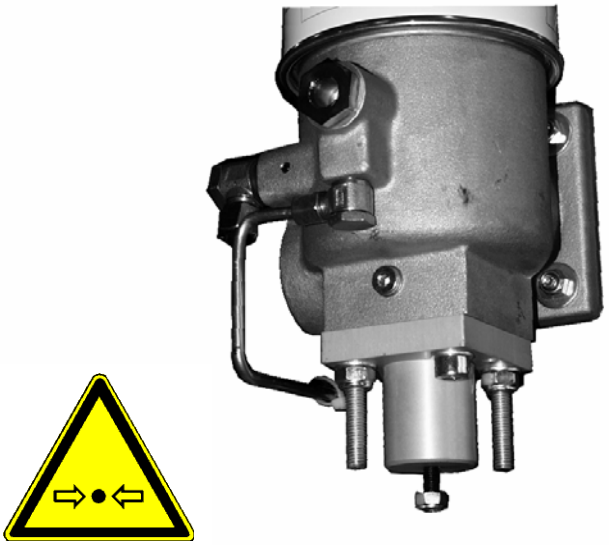
The oil suction check valve installed in the screw compressor prevents the back-flow of oil from the air end to the purifier cartridge when the unit is switched off which causes a pressure difference in the system.

This valve is maintenance-free.

TECHNICAL DESCRIPTION

MINIMUM PRESSURE VALVE NK 160





1 Separator head
2 Housing of pressure maintaining valve
3 Check valve plate
4 Check valve spring
5 Piston of pressure maintaining valve
6 O-ring
7 Pressure maintaining valve spring
8 Measuring connection for operating pressure

The minimum pressure valve is situated at the outlet of the compressor, upstream of the air aftercooler. It is used as

a) Pressure maintaining valve

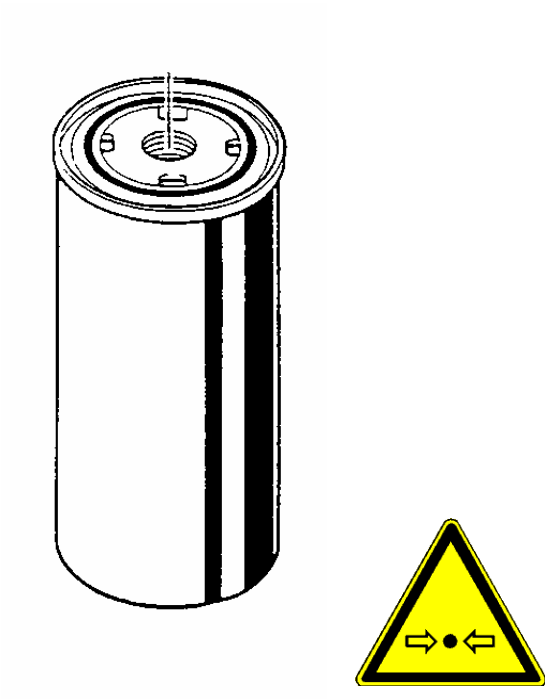
It prevents a pressure drop - if there is no back pressure - below the minimum pressure of 6 bar = 85 psi. This pressure is necessary to safeguard the oil supply of the compressor. At the same time it is precondition for a good oil separation.
The valve piston is acted upon by control air during pressure-relief.

b) Check valve

This valve prevents the backflow of compressed air from the system or from the pressure tank into the screw compressor.
Therefore, the separator tank can be totally discharged when the unit stops.
This valve works automatically.

Adjustment: see MAINTENANCE

OIL FILTER



The oil (change) filter cleans the compressor oil from impurity.

The filter fineness is 5 - 10 µ.

The oil (change) filter is well accessible at the compressor and is manually screwed on the return nipple.

The oil (change) filter provides a bypass valve which is opened in the case of cold, very viscous oil or if the filter is very contaminated. Thus, an undersupply of the screw compressor with oil is not possible when an above malfunction occurs which would cause the permissible compressor temperature to be exceeded.

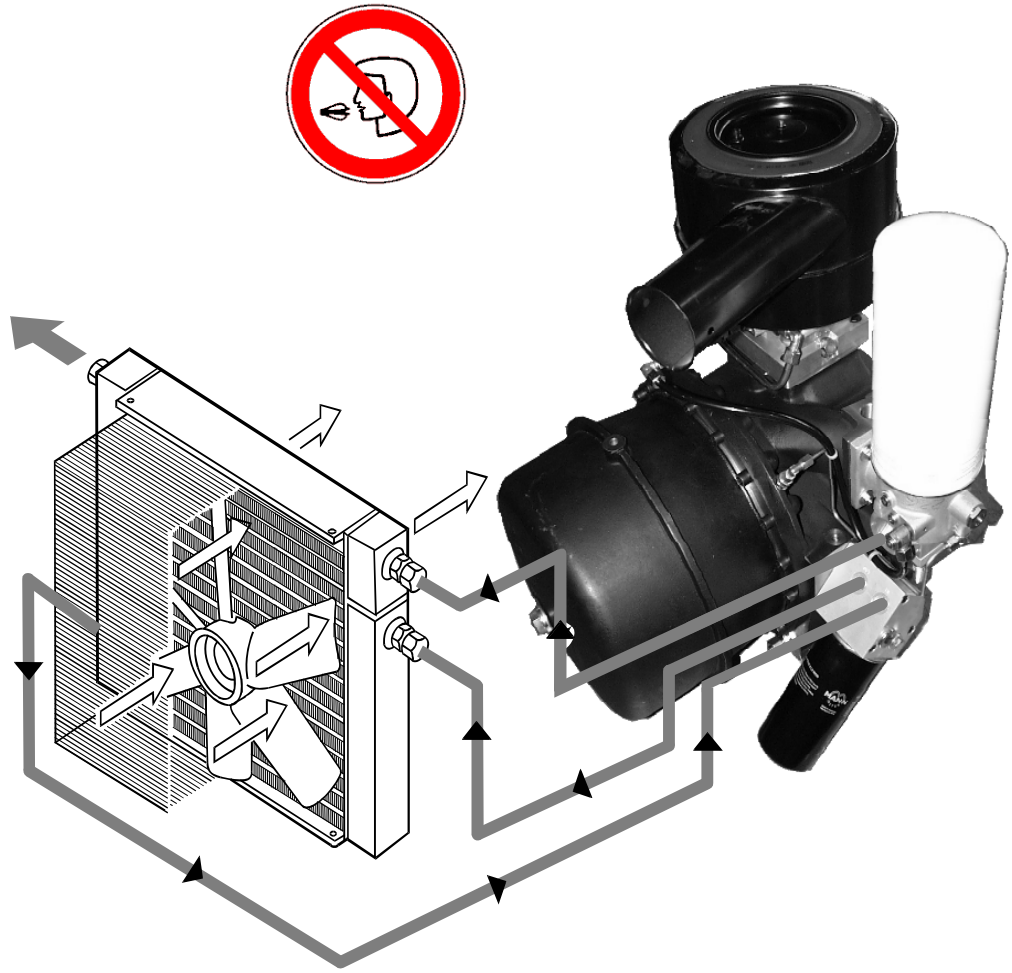
You must slightly lubricate the special rubber gasket at the filter before screwing it in. Check the cartridge for impermeability and tighten it again, if required, after warming up of the compressor unit.

Renew the filter at least every 1000 operating hours, or - if you do not reach this number of operating hours - at least once per year.

Also replace it if the differential pressure of the oil filter cartridge exceeds 1.0 bar (14,2 psi).

TECHNICAL DESCRIPTION

AIR-OIL CIRCUIT NK 160



Schematic diagram

The rotors in the screw block transport the oil-air mixture to the separator receiver.
Inside the separator receiver, the oil is immediately preseparated from the compressed air by decreasing the flow speed and deviating the flow direction. The compressed air then flows over the oil level of the oil sump, is deviated again and passes to the oil trap.

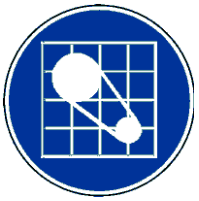
There, the oil separated from the compressed air accumulates in the separator, from where it passes through a check valve to the compression chamber under the oil-trap (purifier cartridge) which has a lower pressure than the final pressure.

The separated oil is conducted from the purifier through an oil gauge glass (option) for inspection.

Under normal operating conditions the oil trap (purifier cartridge) needs no service. Its life depends mainly on the amount of contamination of the intake air as well as the correct maintenance at regular intervals of the oil filter and the air filter.

V-BELT DRIVE

The screw compressor unit is designed for V-belt drive; the following V-belt set is used or recommended for each unit:



FO-Z high performance V-belts,
SPZ/SPB/SPA profile, belt length according to the relevant unit type.

The V-belt pulleys should be made of cast iron.

Drive motor:
Dual V-belt pulley with taper-lock tension sleeve aligned as per specification.

Screw compressor:
V-belt full pulley, single-unit with bore, attached to the shaft with central safety bolt.

Kinetic energy rating (of both pulleys): as per VDI 2060. Q 6.3.

Attention:

When installing the V-belt pulley on the compressor drive shaft, make sure that the small V-belt pulley for the auxiliary fan drive is pressed firmly over the central bolt until it can be pressed no further so that wear of the compressor shaft is avoided.

Warning

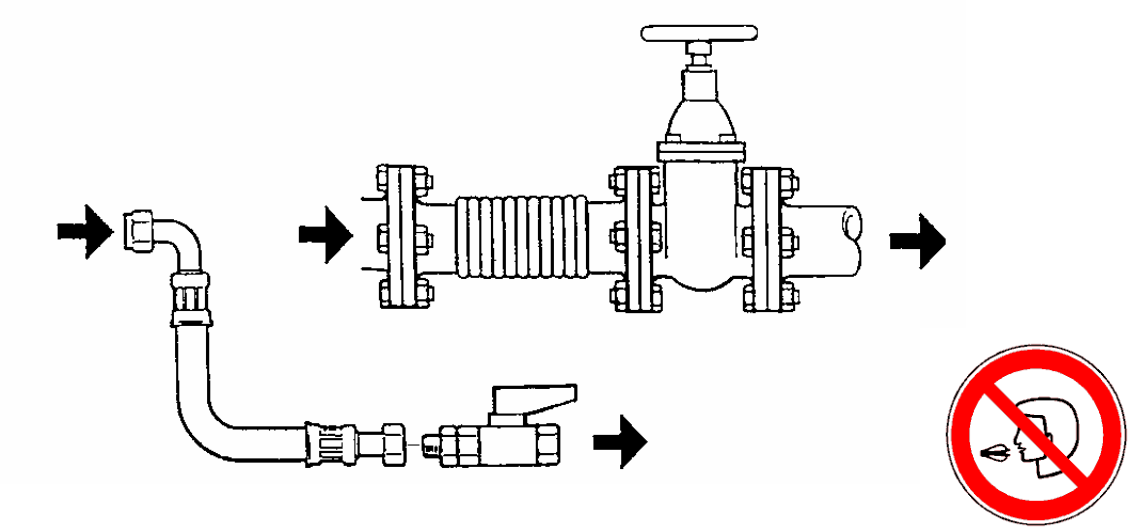
Danger

V-belt pulley diameter
The effective diameters of the V-belt pulleys (dW) must be selected according to mathematical considerations; the speeds of the drive motor and of the screw compressor are the main factors.

V-belt tension
The V-belt pulley is tensioned with the tensioning device. The drive motor is shifted during this process.
After the adjustment procedure, tighten the driving motor in its position and secure it.

Malfunctions:
Refer to the service manual "V-belt drives" BS 3E0, page 5/9

COMPRESSED AIR CONNECTION (OPTIONAL)



The compressed air connection of the screw compressor unit is performed by means of a flexible hose and must be vibration-isolated so that no transmission of vibrations of the screw compressor to the pressure tube network or to the pressure container occurs.

We recommend you additionally install a shut-off valve, so that the pressure valve and the tube network do not have to be depressurised in the case of repair works.

Main compressed-air pipeline:

The required pipeline cross-section can be roughly calculated by means of the following equation:

$$d = \sqrt[5]{\frac{L \bullet 450 \bullet V^{1.85}}{P \bullet \Delta p}}$$

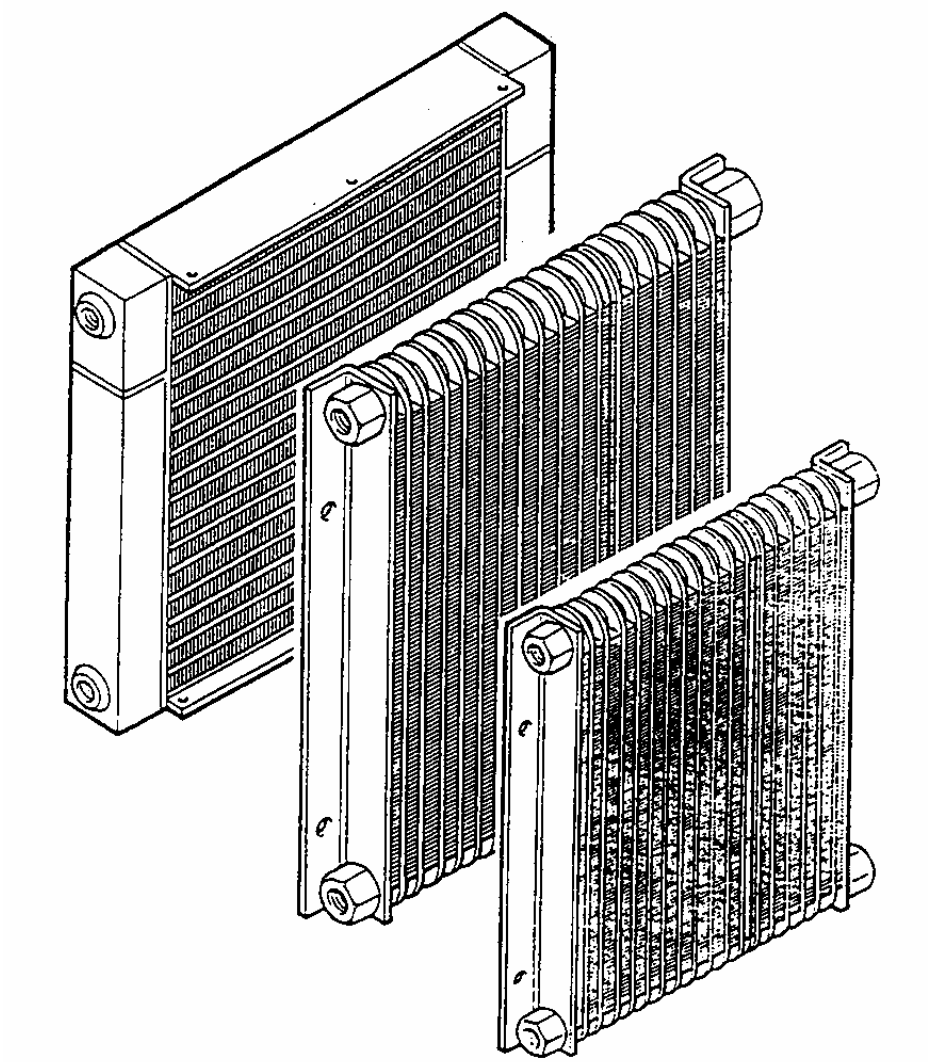
d : interior pipeline diameter in mm
L : total pipeline length in m
p : absolute operating pressure in bar
Δp: pressure drop in bar (0.1 - 0.2 bar)
V : volume flow in l/s

We recommend using pipelines made of galvanized steel.

Compressed-air conditioning:

Depending on the desired compressed air quality, components for compressed air conditioning such as separators, filters or dryers must be added on to the screw compressor. The respective connection instructions of these devices must be observed when connecting them to the system.

OIL COOLER / AIR AFTERCOOLER (OPTIONAL)



The combined cooler, which is made of aluminium lamellas, is connected to the air/oil circuit of the compressor via tubes.

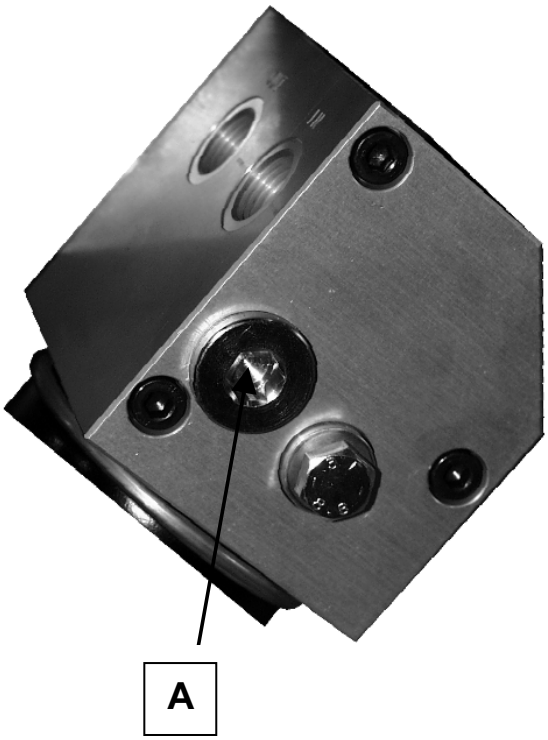
This cooler is designed such that it ensures operational reliability at an ambient temperature up to +40° C / +105° F if sufficient cooling air is provided.

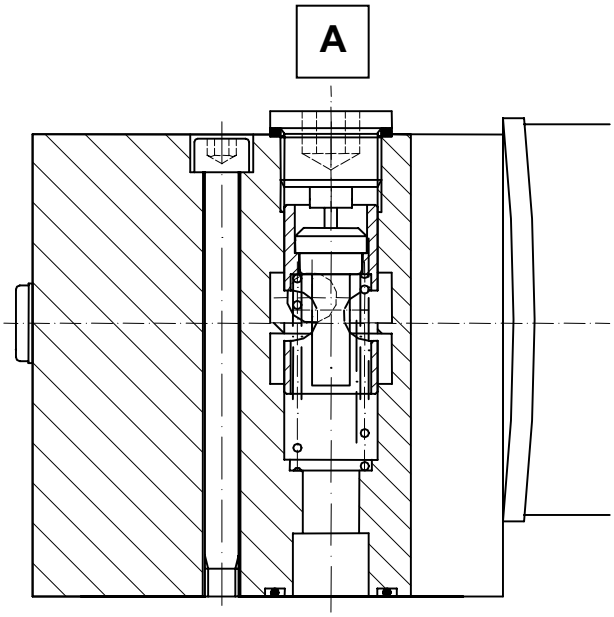
The aftercooler cools the compressed air to approx. 10°-20°C/18°-36° F above ambient temperature; also in this case only if sufficient cooling air is provided.

For the separation of the resulting condensate, install an automatic condensate drain downstream of the separator.

TECHNICAL DESCRIPTION

OIL THERMOSTAT NK 160





Module NK 160 is provided with an integral oil thermostat (**A**). This is located in the casing in front of the oil filter and is accessible from outside (screw plug, SW 12 mm / M24 x 1,5 Allen key).

The oil thermostat includes the 70°C /158°F operating element and controls the operating temperature of the screw compressor. Depending on the compressor operating data, this temperature should be between 80°C - 110°C (176°F - 230°F) and should be reached as quickly as possible after a cold start.

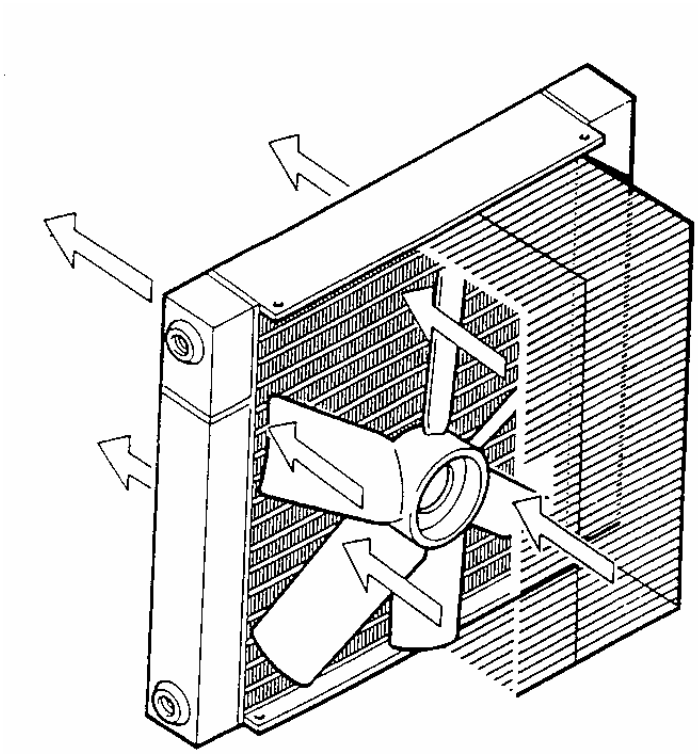
The oil cooler connected by pipelines to the NK 160 then receives oil automatically according to temperature via a thermostat sliding sleeve with reset spring.

The thermostat element is exchangeable.

When the screw compressor NK 160 is operated at a working temperature of 80°C - 110°C / 176 - 230°F (measured at the compressor outlet) this largely eliminates condensate in the oil circuit when this temperature is reached quickly and maintained.

The oil thermostat is maintenance-free. Operating the compressor at an unacceptably high temperature may cause the thermostat element to malfunction (replacement of the element will then be required).

FAN AND PROTECTIVE GRID NK 160 (OTIONAL)



Danger

The screw compressor system is air-cooled.

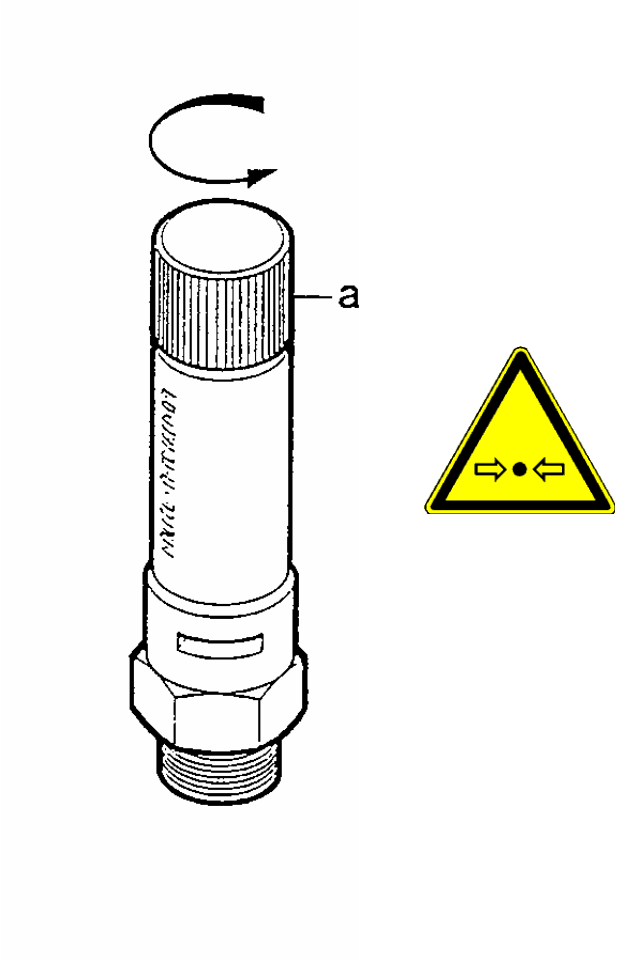
An axial fan blows cooling air through the oil cooler and the air aftercooler (combined cooler set).

Depending on the employed system design concept for the NK 160, an air-intaking or an air-forcing fan can be used. It is expedient to have the drive running directly from the compressor drive motor (installed on the motor shaft).

The fan size is adapted to the required cooling air volume, with the fan speed being correspondingly reduced. This keeps fan noise at a minimum level.

The fan and protective grid are maintenance-free. The fastening of these parts must be checked as part of routine maintenance work. The protective grid must be free of dirt.

SAFETY VALVE (optional)



The safety valve is mounted on the separator receiver in front of the purifier cartridge, it is spring-weighed.

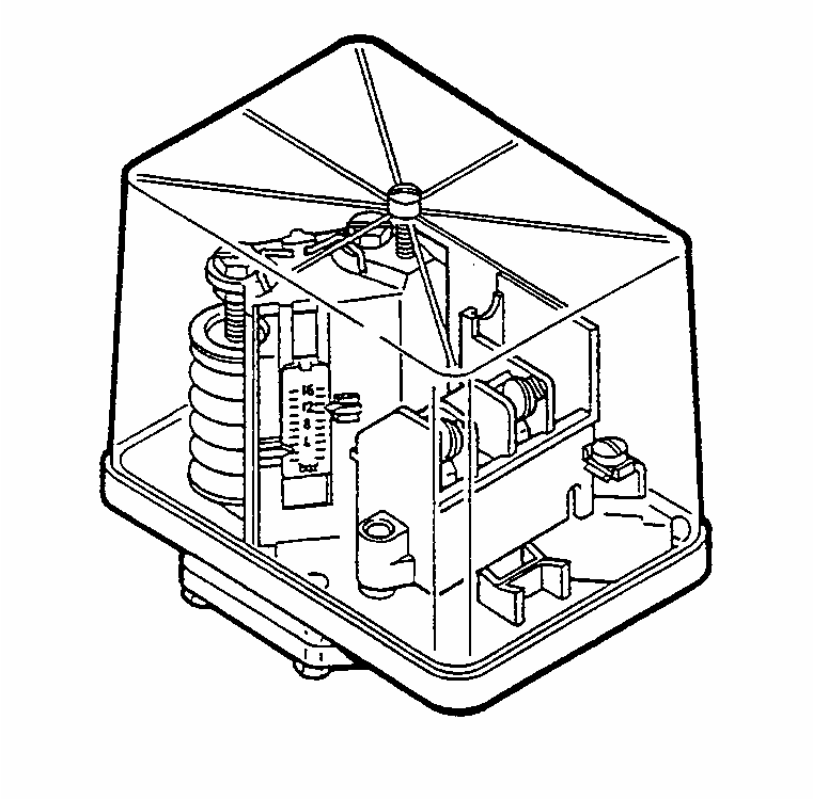
The blow-off pressure is 1 - 2 bar (14-28 psig) above the relevant operating pressure (final pressure) of the unit. This is necessary in order to take the differential pressure in the separator system including cartridge and pressure maintaining valve into account.

The valve is type-tested (manufacturer certificate available on request) and leaded. It is equipped with a testing device.

The functional test is executed by turning the knurled screw (a) on the top to the left. You reset it again by turning it to the right until it stops.

TECHNICAL DESCRIPTION

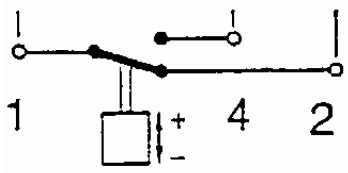
FINAL PRESSURE SWITCH-ELECTRIC (Optional)



Connect the final pressure switch to the outlet connection (at the minimum pressure valve) of the screw compressor or to the pressure tank by means of a tube of ∅ 6 mm.
Adjust the pressure switch according to the instructions.

Pressure switch data:

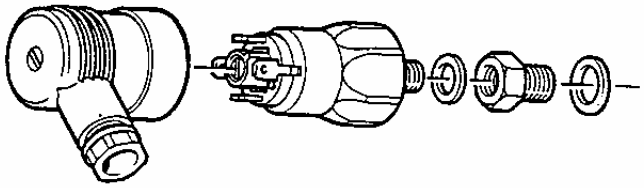
switching range	1 - 16 bar / 14 - 230 psig
smallest switching difference	1 bar / 14 psig
lowest switching pressure	4 bar / 57 psig
medium temperature	+ 70° C

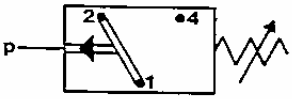


Electrical supply:
to be performed according to wiring diagram

TECHNICAL DESCRIPTION

SAFETY PRESSURE SWITCH -ELECTRIC (Optional)





The safety pressure switch is installed in front of the screw compressor, directly in the intake area by means of a corresponding fitting.

Function:

The safety pressure switch interrupts the electric circuit as soon as the pressure in the intake area of the screw compressor rises above the switch point of the pressure switch, e.g. when the compressor unit is not relieved of pressure. This prevents a starting of the unit against excessive residual pressure and the possible overcharging of the motor resulting from this.

It also switches off in case of wrong rotor speed at the first start-up of the unit.

Pressure switch data:

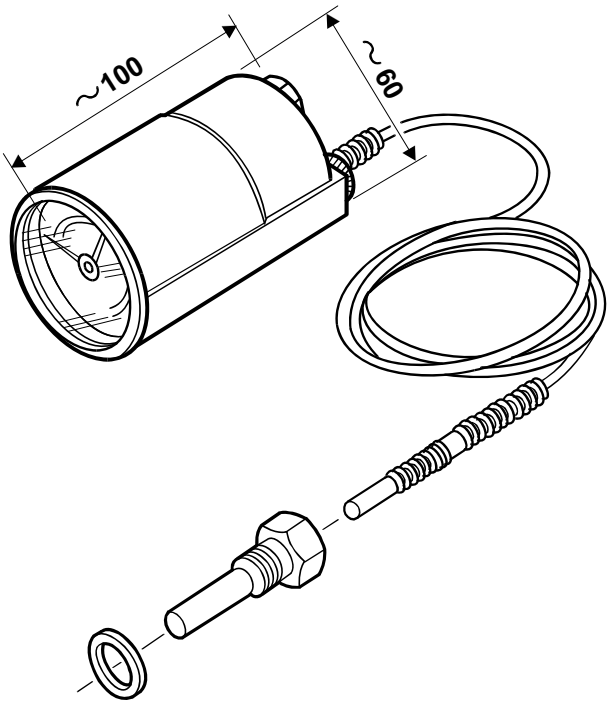
Setting range	0.3 - 1.5 bar = 4.3 - 21.3 psig
rupturing capacity	4A/250V
system of protection	IP65 binder IPOO
No. of switching actuations	200/min
infusibility	depending on membrane quality: -30^{O}C to +100^{O}C -22^{O}F to +210^{O}F

Electric connection:
Carry through according to switching diagram

TECHNICAL DESCRIPTION

COMBISTAT (optional)

Operating instructions



1. General information

The Combistat is a temperature indicator and switch which is installed in the instruction panel. Its function is to control the admissible working temperature of the screw compressor installation, which is set to 100°C by the manufacturer (indicated by the red marking).

When this temperature is reached, the electric circuit is interrupted. The installation switches off automatically and its circuitry has to be blocked. Then, technical faults have to be eliminated and the installation has to be restarted manually; see malfunctions.

The instrument range of the Combistat (109550) is -40°C to +150°C
-40°F to +302°F.

The rupturing capacity is 5 A for 250 V AC.
The temperature sensor has to be screwed into the corresponding screw thread.

ATTENTION:
Buckling of the connecting capillary must be avoided, since this causes an interruption of the electrical circuit, too.

The Combistat is an electro-mechanical thermostat for universal use with instantaneous-value indication. It can be used both as a thermostat and a temperature controller. The measuring systems are filled with liquid or gas.

2. Functional description

The temperature-dependent changes in volume of a measuring system filled with liquid or the temperature-dependent changes in pressure of a measuring system filled with gas are transformed into a rotary movement of the instantaneous-value hand by means of a Bourdon tube without transmission. The rotary movement of the set-hands arbor actuates the micro switch.

3. Mounting position
To assure proper functioning of the Combistat, the following indications have to be observed.

3.1 Concussions
Subjecting the Combistat to strong concussions affects its function and working life. For this reason, the device should be assembled as free from concussions as possible.

3.2 Surrounding conditions
The Combistat should not be directly exposed to aggressive surrounding conditions. When assembling it, the system of protection has to be taken into consideration.

3.3 Ambient temperatures
The Combistat reaches its highest measuring accuracy when the ambient temperature at the housing and the distributing main amounts to +23°C / +74°F. Any other ambient temperatures cause indication errors with the following effects:

Effect on the housing
with measuring systems filled with liquid: 0.15% of the scale range for each K the ambient temperature changes
with measuring systems filled with gas: 0.05% of the scale range for each K the ambient temperature changes

Effect on the distributing main
with measuring systems filled with liquid: 0.015% of the scale range for each K the ambient temperature changes
with measuring systems filled with gas: no effect

Admissible ambient temperature at the housing
-20....+70°C / -4°F ….+158°F

4. Mounting
4.1 Sparing for the control panel
The sparing for the control panel must be adapted to the corresponding device. For the dimensions, see table I. If the thickness of the control panel exceeds 5 mm, the fixing bracket has to be shortened accordingly.

Table I

Devise dimensions	Sparing for the control panel
Ø 60 mm	Ø 62 $^{+0,5}$ mm

4.2 Installation of the device
The Combistat can be installed in any position desired. It is fixed by means of a fixing bracket and knurled nuts.
- screw off the fixing bracket
- place the Combistat into the control panel
- put back on the fixing bracket and tighten the knurled nuts by hand
- connect electrically according to the connection scheme indicated on the nameplate.

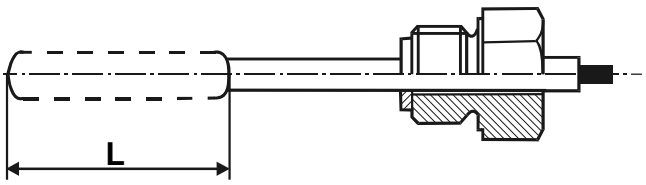
4.3 Laying of the distributing main

When laying the distributing main, take care that it is not placed in the proximity of refrigerating or heating means. Moreover, it has to be protected against possible damages. The minimum bending radius is 5 mm. Bucklings or interruptions cause the device to fail. If the sensor is exposed to concussions or vibrations during operation, the distributing main should be placed in such a way that it can run freely between the last fixing point and the sensor, forming several loops.

4.4 Installation of the sensor

The temperature sensor has to be installed in such a way that its “active part” (indicated by length “L” in fig. 1) immerses in the medium that is to be measured, otherwise a measurement error occurs. When selecting the site for the temperature sensor, the temperature distribution within the medium that is to be measured has to be taken into account.
When using protective coverings, the heat transmission resistance between the outer wall of the sensor and the inner wall of the protection tube can be reduced by filling in a thermo conducting paste .

Figure 1



4.5 Excess temperature security

The excess temperature security amounts to a maximum of 15% of the full scale.

4.6 Electric connection

When connecting the Combistat and the devices connected thereto, the corresponding regulations of the VDE and the national regulations have to be observed!
For the admissible rupturing capacity, see nameplate.
The electric connection is made by means of flat plugs A 6.3 x 0.8 according to DIN 46244, or terminal screws.

Combistat with	required connecting line	line* max. line diameter
1 contact	4 x 0,5 - 1,5 mm^2	Pg 9 / 8 mm
1 contact + control lamp	5 x 0,5 - 1,5 mm^2	Pg 9 / 8 mm
2 contacts	7 x 0,5 - 1,5 mm^2	Pg 11 / 10 mm
2 contacts + control lamp	8 x 0,5 - 1,5 mm^2	Pg 11 / 10 mm

* For devices provided with a cover:
Don’t forget the seal when mounting the cover!

5. Functioning

When the temperature indication reaches the set value, the contact switches. If the temperature indication continues to rise, this is due to a ballistic effect which may be caused by coasting of temperature.

When the temperature at the sensor falls under the set value, the contact switches again. If the temperature continues to fall, this may be due to a prolonged cooling effect.

The difference between the lowest and the highest temperature value is called range of control.

The temperature difference – indicated on the Combistat – between the point where the contact is switched on point and the point where the contact is switched off is the so-called switch difference.

6. Maintenance
The Combistat is maintenance-free. As part of the prescribed system maintenance, functional checks have to be carried out at regular intervals.

Ordering data:

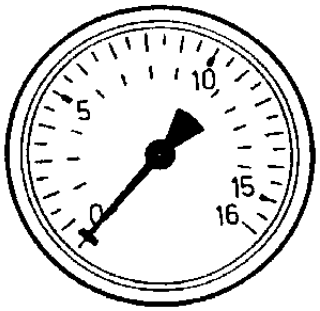
Combistat mit capillary	1,5 m	109550 ROTORCOMP
	1,5 m	114207 neutral
	3,0 m	109692
	6,0 m	109691
Accessories:	brass	104565
adaptor G $^{3}/_{8}$“	steel	100377

Important

In case any part of the operating instructions may not be intelligible for you, please, never try to put the device into operation „off your own bat“. Such attempts may endanger your warranty rights.
In case of doubt, please contact **ROTORCOMP**.

TECHNICAL DESCRIPTION

PRESSURE GAUGE (optional)



Operation:

Pressures in screw compressor systems:

Final pressure
Oil pressure
Intermediate pressures
In the overpressure ranges up to

bar	16	25	40	60
psig	230	360	570	860

Metrological properties:

Display accuracy:	Class 1,6
Temperature resistance	
Ambient temperature:	-25°C to +60°C
Measuring substance temperature	
for soft soldering:	up to + 60°C
for welding:	up to +100°C

When correcting the measuring results, it must be borne in mind that the temperature relates to the measuring system, and not to the measuring substance.

Admissible application range:

Upper limit during even load operation: 3/4 of the scale value, during varying load operation: 2/3 of the scale value, for brief periods up to maximum scale values.

Display range (as per DIN 16128):

Options:

0 - 16 bar / 0 - 230 psig	0 - 40 bar / 0 - 570 psig
0 - 25 bar / 0 - 360 psig	0 - 60 bar / 0 - 860 psig

4

TRANSPORT AND PACKING

The system is delivered in appropriate packing according to the desired mode of dispatch.

Even though great care is taken at the factory, damage can occur to the screw compressor unit during transport. We, therefore, recommend that you check the machine for possible transportation damage. Any resultant damage claims must be settled with the carrier.

Important Information on Transportation Damage!

In the case of transportation damage, it is in your interest to secure your damage compensation claims by having a representative of the transportation company on hand to inspect the damage within the prescribed period of time, i.e.:

A) Outwardly visible damage or losses

- must be officially noted by means of an appropriate entry in the bill of lading. In the case of rail transportation damage, you must also demand a written statement of facts from the railway company.
- In the case of postal consignments, damaged packages, etc. must be confirmed in writing by the postal service before you officially accept the consignment.

B) In the case of damage that is not immediately apparent:

- If this damage becomes apparent during unpacking, then the transportation carrier must be notified immediately **in writing.**
- Do not alter the condition of packing materials and damaged products prior to inspection of the damage and recording of a statement of facts.

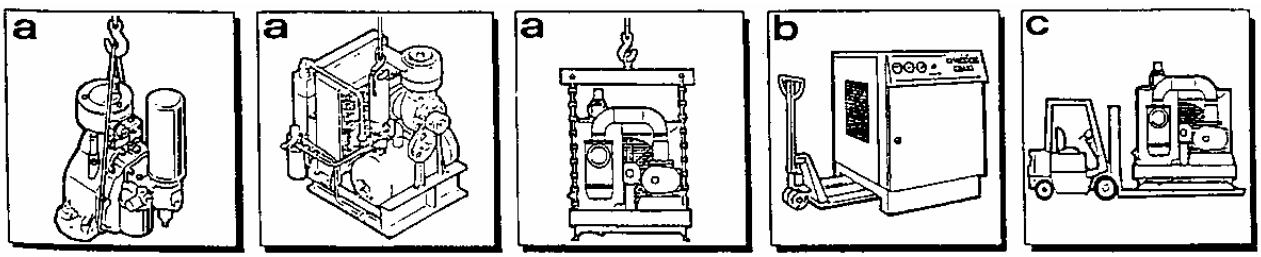
The deadlines are as follows:

a) GERMAN RAIL: within 7 days (Section 81/82 of the German Rail Ordinance - EVO)
b) ROAD CARRIER: within 7 days (Section 60 of the German Road Transportation Law - ADSp)
c)POSTAL SERVICE: immediately - at the latest 24 hours after delivery of the consignment.

Prior to dispatch, each product is inspected with regard to type and quantity. If, despite this, you have a complaint, please state the order number.

The unpacked unit should be handled as shown below if transported by:
a) a crane
b) a low lift truck
c) a fork lift truck

Approx. weight of unit:
see "Technical Data"



5

INSTALLATION

The screw compressor system can be installed without a socle on a solid, flat base. If it is installed on a floor of a multi-storey building, the bearing capacity of the floor must be taken into account. It is essential that a minimum distance from walls, other machines, etc. be observed.

If several compressors are installed, there must be an optimum cooling intake system, i.e. it must be prevented that any of the compressors sucks in the heated-up outgoing air of another machine.

The compressor room should be kept frost-free when the machines are not in operation (e.g. on weekends). The intake-air and outgoing-air vents should be closed with a combined weather protection set (weather-proof grid and blind flap).

The heat that is generated during compression must be carried off, and fresh air must be supplied.

If the compressor room cannot be aired (windows, wall openings, etc.), then it is necessary to provide forced ventilation by means of room fans.

In order to ensure good heat circulation, the air volume moved by these additional fans should be 15 to 20% larger than the sum total of the cooling air volumes of all the compressors located in the room.

The screw compressor system is designed for ambient temperatures of

+5°C to +40°C / +37°F to +104°F

In exceptional cases, the temperatures may exceed or fall below the indicated values, but only after having consulted **ROTORCOMP**.

The required cooling air volume can be ascertained by means of the following equation:

$$V = \frac{Q}{C_p \bullet \Delta t}$$

Q : heat volume to be carried off (kJ/s kW)
C_p : 1,3 kJ/m^3·K
Δt : temperature rise (K)
V : volume flow (m^3/s)

Attention: If the system is delivered by the manufacturer without cooler air connection ducts, the manufacturer must be contacted prior to installation of such intake-air and outgoing-air ducts.

MOUNTING / ASSEMBLY

Threaded connections / Assembly

Attaching screws

For fixing, the NK housing is provided with internal screw threads. Only screws adapted to these internal screw threads and presenting METRIC SCREW-THREADS may be used.

Tube connections

For connecting tubes (compressed-air outlet, oil circuit, exhaust and control lines), the NK housing is provided with internal screw threads. Only fittings and unions adapted to these internal screw threads and presenting PARALLEL THREADS BASING ON INCH-SYSTEM may be used.

CONIC THREADS should not be used, since they may damage the NK housing when they are screwed in.

The maximum permissible torque for all threaded connection must not be exceeded.

VDI 2230

For fixing the compressor housing, only the bolts designed for this purpose may be used.

In case of doubt, please consult **ROTORCOMP** prior to fixing.

Torque values

NOTE

The maximum permissible torque for all threaded connections must not be exceeded.

VDI 2230

Unless otherwise specified, the following torque values apply. All bolts require torque wrench tightening! The torque values given below apply to bolts in a greased condition. Replace self-retaining nuts on reassembly.

Bolt type	Thread	Max. torque
Hex and allen head	M 6	10 Nm (7ft.lbs)
Hex and allen head	M 8	25 Nm (18 ft.lbs)
Hex and allen head	M 10	45 Nm (32 ft.lbs)
Hex and allen head	M 12	75 Nm (53 ft.lbs)
Hex and allen head	M 14	120 Nm (85 ft.lbs)
Hex and allen head	M 16	180 Nm (126 ft.lbs)
Pipe connections (swivel nuts):		finger-tight + 1/2 turn

6

PREPARATIONS FOR START-UP

Each screw compressor was operated in the factory and carefully tested before delivery. The test ensures that the compressor provides the specified data and that it works properly. Observe the compressor during the first few operating hours to find out about possible malfunctions.

I Absolutely observe the following points before initial start

1. Do not connect the screw compressor unit to a voltage other than the one specified on the motor nameplate. Sense of rotation: very important - see section II, „Checking the sense of rotation“.
2. Do not operate the screw compressor unit with a higher final pressure than specified on the nameplate.
3. Install the compressor unit such that it is frost-protected with an ambient temperature between +3° and +40° C / 37° and 104° F.
4. If an outlet channel is provided, it must have at least the diameter of the cooler outlet surface and can be ca. 1 m =3ft long. In the case of longer conducts or conducts with an elbow, provide an additional fan, about 20 % bigger than the compressor fan.
5. Install the unit such that there is a free space of approx. 0.5 m = 1½ ft between the air intake and a wall.
6. Do not switch off a compressor unit which is operating under load, with the main switch.
7. Retighten all screw and clamp connections in the control cabinet.
8. Control of oil level (see para. „Maintenance“, W-OK 3.4 E)

II Checking the sense of rotation

Check the sense of rotation of the screw compressor when operating it for the first time or after changes have been made on the electrical feed line. To do this, switch on the drive engine only for a very short time.
A wrong sense of rotation for more than 2 seconds results in deterioration of the screw compressor. Re-clamp connecting cables, if necessary.

III Trial Run

Make sure the following is observed during the trial run:

- The stopcock should always be closed when the system is switched off!
- If possible, the system should be connected to a compressed air tank!

In the stop operation mode "with open stopcock" the system is very rapidly depressurised down to the opening pressure level "minimum pressure valve"! This can result in foaming of the oil in the separator tank.

Note

The possible consequences are:

- Oil emission with the depressurising air.
- Oil flooding of the fine separator cartridge.
- Oil in the compressed air when the system is re-started.

REOPERATION OF THE SCREW COMPRESSOR UNIT

You can reoperate screw compressor units which were out of service, shut down or stored for more than three months only after observing the following points:

1. Rotate the screw compressor manually several times in the direction of rotation.

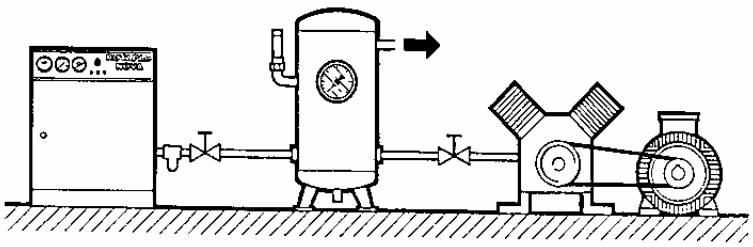
2. Fill 0.25 l = 25qt. of oil (same oil type as in the oil separator receiver) into the intake connection pipe after removing the intake filter cap with the screw compressor stopped.

3. Rotate the screw compressor again manually in the direction of rotation.

4. Check the oil level in the separator receiver and top it up, if required as described in section "MAINTENANCE".

5. Start the screw compressor unit and check it for at least 15 minutes.

INTERCONNECTED OPERATION OF SEVERAL UNITS



If several compressors, e.g. also piston compressors, load into the same air delivery main, insert an adequately dimensioned compressed air receiver.

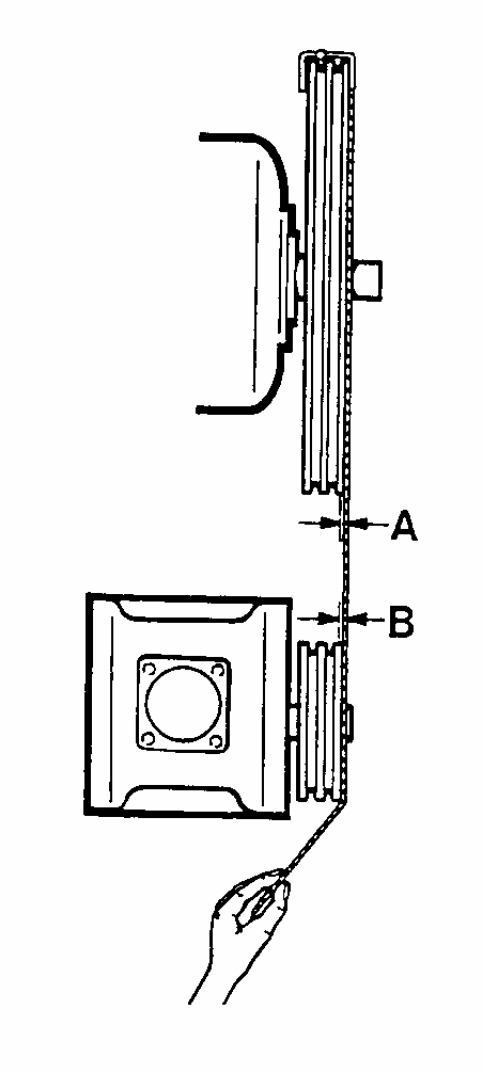
The optimum receiver size can be calculated in accordance with the following equation:

$$V = \frac{f_v \bullet V_k \bullet P_1 \bullet T_B}{f \bullet p \bullet T_1}$$

- V : Receiver volume in l
- f_v : Consumption-dependent factor max. 0.25 (at V_v:V_k = 0.5)
- V_k : Delivery volume of the largest compressor in l/s
- V_v : Compressed air requirement in l/s
- P_1 : Intake pressure in bar
- T_B : Receiver temperature in K
- f : Cycle frequency = 1 S/60 s to 1 S/120 s
- p : Pressure difference at the pressure switch in bar
- T_1 : Intake temperature

The definition of the receiver size must be based on a "worst-case philosophy". In the case of several compressors, one receiver is required for the largest compressor.

V-BELT PULLEY AND MOTOR ALIGNMENT



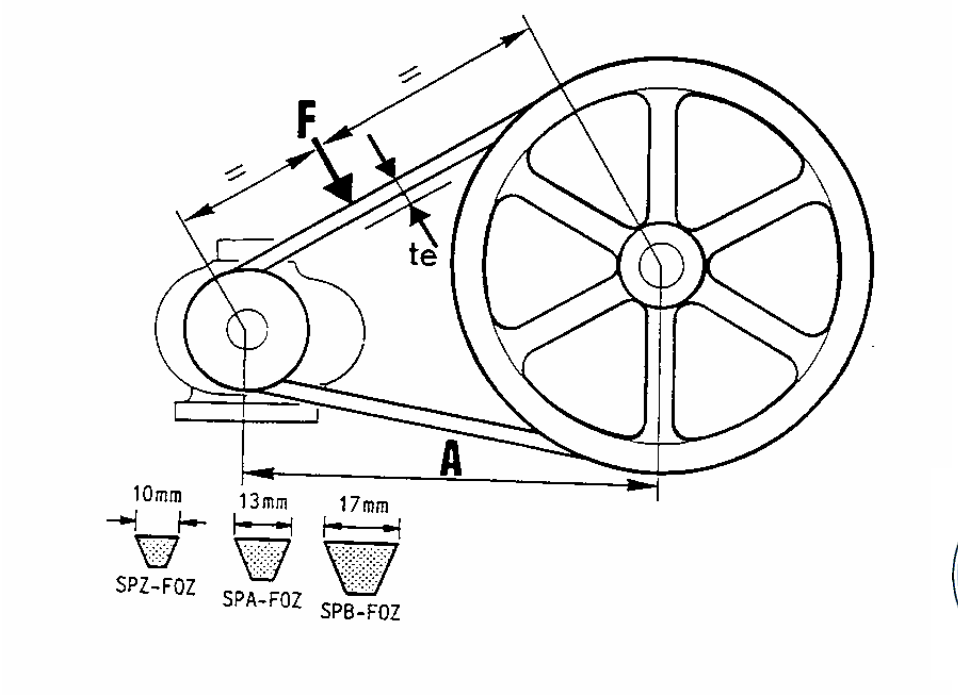
When placing and tightening a guidance line, the distance A or B should be 0 (zero), max. 0.2 mm.

Perform the horizontal alignment by shifting the motor pulley on its shaft.

Perform the lateral alignment by turning the four adjusting screws "D".

After the adjustment, tighten the motor fastening screws securely.

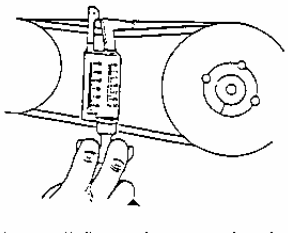
V-BELT PRE-TENSIONING



V-belt tensioning as such is effected by the setscrew located directly at the motor mounting. First testing after 2 working hours, then after 24 working hours and finally every 1000 working hours.

Testing device:

A testing device for the V-belt tension with relevant instructions for use is available.



A label "Pre-tensioning Control" shall be attached to the screw compressor installation, showing at a glance the operational data of the V-belts. These labels are available together with the V-belts. The data of the drive calculation shall be entered. In case of multi-groove drives all V-belts shall always be replaced by new ones at the same time. Always order them in TRUE SETS.

7

MAINTENANCE

MAINTENANCE OF THE SCREW COMPRESSOR

Observe for all maintenance work:

ATTENTION DANGER OF ACCIDENT

1. All maintenance works may only be carried out by authorized and qualified personnel. Contact the customer service in the case of technical problems.

2. Switch off the main switch for all maintenance works and prevent it from being switched on unintentionally.

3. Execute maintenance and repair works only when the unit is completely discharged.

4. When switching the unit on again, make sure that no person is working at the machine. Make sure that all connections are properly tightened and all safety installations in perfect working order.

MAINTENANCE INTERVALS:

- Oil level
- Condensate drain
- Changing the oil
- Oil recommendation
- Oil filter
- Separator cartridge
- Intake filter
- V-belt tension
- Minimum pressure valve
- Oil cooler/air aftercooler
- Maintenance check sheet
- Maintenance intervals

OIL LEVEL NK 160

The oil level in the oil receiver container is an important factor for the operational reliability of the system.

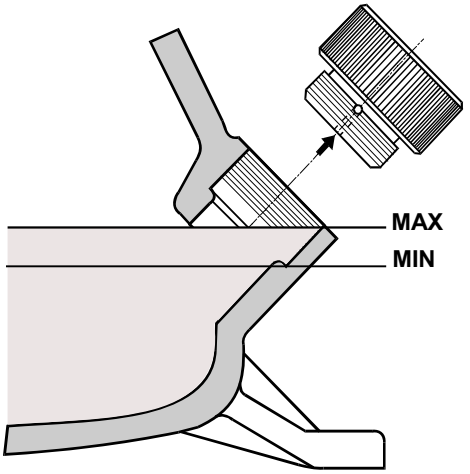
Checking intervals:

1. before starting unit

2. every 100 operating hours

Checking procedure:

1. Switch off unit with main switch and prevent it from being switched on unintentionally.
2. Allow one minute after stopping the compressor.
3. Unscrew the cap of the inlet connection pipe manually with the oil receiver discharged.
4. Check oil level with the dip stick.
5. Top oil of the same oil type to the maximum level, if required.
6. Tighten the screw cap manually.
7. Switch on the unit.
8. Check for impermeability and replace the o-ring, if required.



Note

Note:
The screw-type cap of the inlet connection pipe is provided with a lateral safety hole, from which oil or air penetrates of residual pressure exists in the separator receiver. In this case, you must wait some time.

The oil filling pipe is placed in a way that it is not possible to overfill the screw compressor unit. Excess oil runs out again o the oil filling pipe.

CONDENSATE DRAIN

Warning

The condensate content in the oil affects operating safety and life of the screw compressor unit.

If you operate the screw compressor unit for a short period of time and consequently at low operating temperature, i.e. below the switch temperature of the thermal oil bypass valve, condensate will possibly accumulate in the oil separator receiver. The relative humidity in the intake air determines the quantity of condensate.

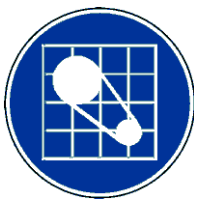
Possible Malfunctions:

- insufficient lubrication of the screw compressor
- insufficient air/oil separation and high differential pressure
- in the purifier cartridge
- corrosion and rust formation due to condensate in the oil

Drain the condensate regularly when the screw compressor unit is cold, i.e. before start-up. It is of advantage if the unit has been standing still for a longer time.

Maintenance Procedure:

1. Switch off unit with main switch and position switch (prevent it from being switched on unintentionally).
2. Slowly unscrew cover screw of oil filling pipe.
3. Unscrew oil drain plug carefully and place a container underneath.

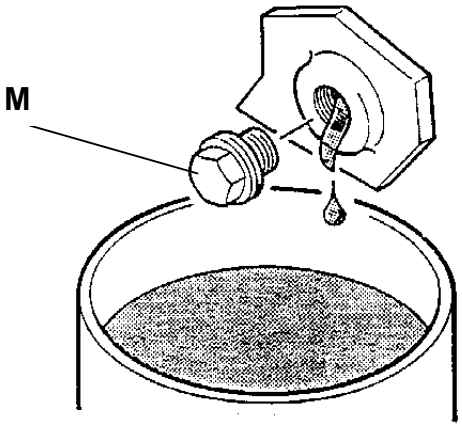


4. Drain the condensate from the separator receiver until oil comes out, then close it with the locking plug.
5. Fill separator receiver with oil up to maximum, then close oil filling pipe manually with the cover screw.

6. Switch on compressor unit and let it run for approx. 3 minutes.
7. Check oil level: if oil is missing, fill up to maximum.
8. Dispose of condensate in accordance with regulations.

9. Enter in „Maintenance check sheet“.

CHANGING THE OIL



You may only change the oil when the unit has been stopped and is completely discharged.

Make sure the unit has operating temperature (approx. 60° to 80° C / 154° to 176° F).

1. Switch off unit with main switch and position switch and prevent it from being switched on unintentionally.

2. Slowly unscrew the screw cap at the oil inlet .

3. Carefully unscrew the oil drain plug (**M**) and put a suitable container underneath.

4. Drain the oil from the separator receiver and tighten the drain plug again.

5. Refill the separator receiver with oil up to the maximum level via the oil inlet and close it tightly with the screw cap.

6. Switch on compressor unit and let it run for approx. three minutes.

7. Check the oil level:
   if oil is missing, fill up to maximum.

MAINTENANCE

OIL RECOMMENDATION

ROTORCOMP screw compressors must be operated with the most suitable oil for operation. This oil must be approved by the manufacturer for screw compressors. It must also be suitable for use in unfavourable operating conditions such as contamination of the intake air by gases, solvent vapours, exhaust gases and in high ambient temperature conditions.

Suitable types and brands of oil can be specified on request. Suitable screw compressor oils can be mineral oils, synthetic oils and also biological degradable oils.
The substances and materials used in the screw compressor such as seals must be taken into account when selecting the types of oil. Corrosion or other material degradation must **not** occur.

Do not mix different oil types.

In the case of ambient temperature close to freezing point, prevent the unit from freezing.

Remedies:
Sufficient room heating.
Installation of a heating system that is triggered whenever the compressor unit is shut off.

Topping up oil:
Use the same product and the same oil type (see label on the oil separator tank).

Pipeline materials:
The oil used in the screw compressor may attack compressed-air pipeline networks made of plastic.

Note: Follow instruction sheet carefully!

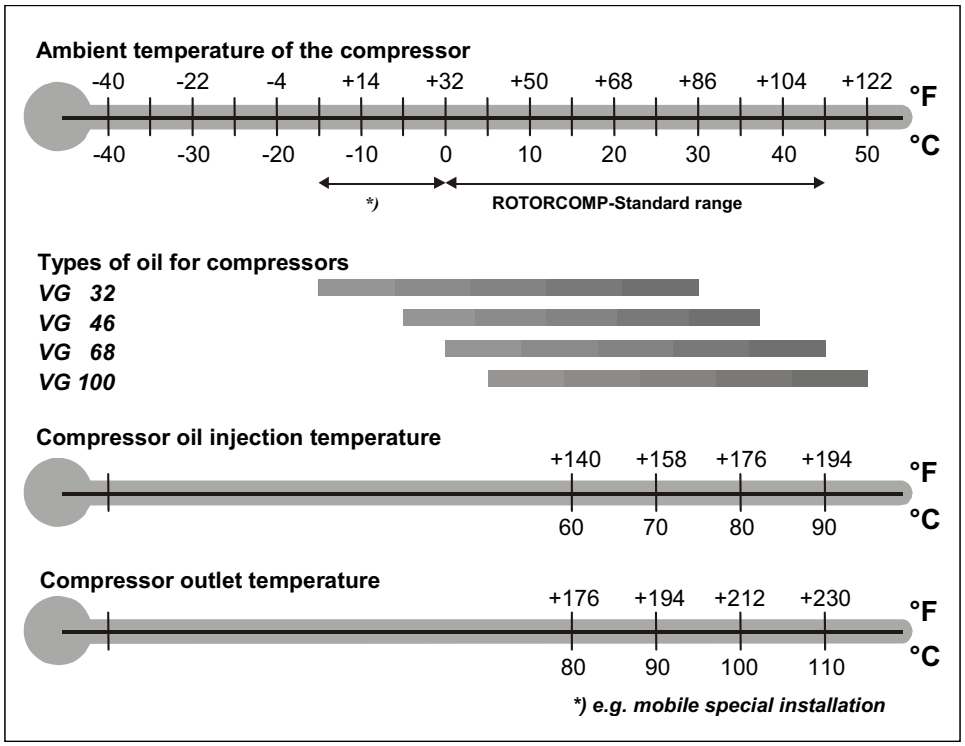
The cooling oil in the screw compressor must meet the following requirements:

- high ageing stability
- high dispersive capacity
- low emulsification tendency
- flash point: above 200°C / 400°F
- pour-point: minimum 5 degrees below the lowest ambient temperature
- Viscosity at 40°C / 104°F: ca. 42 - 50 mm^2/s (cST)
- minimum foaming
- high corrosion protection
- hydraulic or turbine oil
- basic oil: Solvate

Operating temperature	Viscosity class
All operating temperatures up to 110°C / 230°F	use oil of the viscosity class ISO VG 68

Caution:
Absolutely observe the oil viscosity, otherwise the life of the bearings is at risk.

Temperatures & types of oil



Note:
The optimum working temperatures for the screw compressor installation can only be obtained if the oil circuit components (thermostat, radiator, fan, etc.) are appropriate and the air inlet and outlet temperatures of the room where the installation is located and of the compressor installation permit these temperatures. It is required to calculate the total thermal economy.

Damages caused by condensate:
It is of vital importance to take into account (based on the selection diagram) the relative atmospheric humidity and the ultimate working pressures for the working temperatures of the thermostat component and the compressor in order to avoid the formation of condensate within the installation and damages insofar as possible.

Cold starts:
When effecting **compressor cold starts**, it is equally important that upon the start the viscosity of the oil, taking into account that the pressure drop is higher when the oil circuit is still cold, facilitates a sufficient and immediate lubrication of the compressor. The higher demand for energy of cold starts may not overload the compressor machinery.

Oil separation:
In the upper range, the fine separation of oil decreases as the compressor outlet temperature increases.

Multigrade oils:
The problem with some **multigrade oils** is that after a certain time the molecular chains of their viscosity improvers can get what you could call „cut into small pieces“ (sheared off). When this happens, the upper viscosity grade is endangered and therefore the oil does no longer offer complete temperature stability. For this reason these multigrade oils may not be used for **ROTORCOMP** compressors.

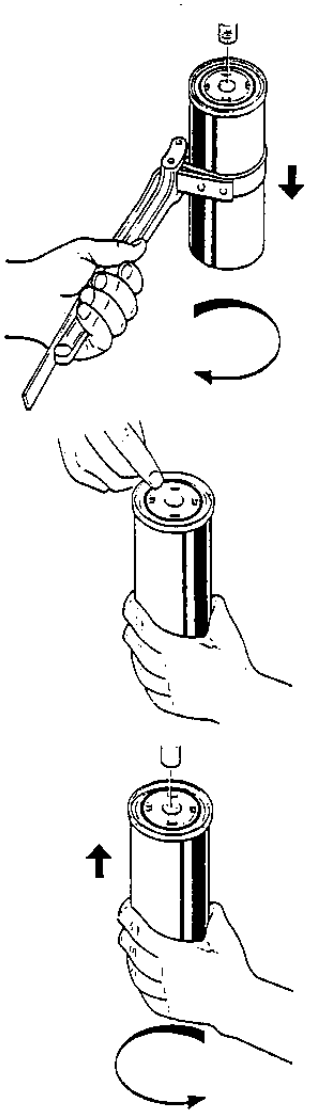
Only use oils approved for screw compressors!

OIL FILTER

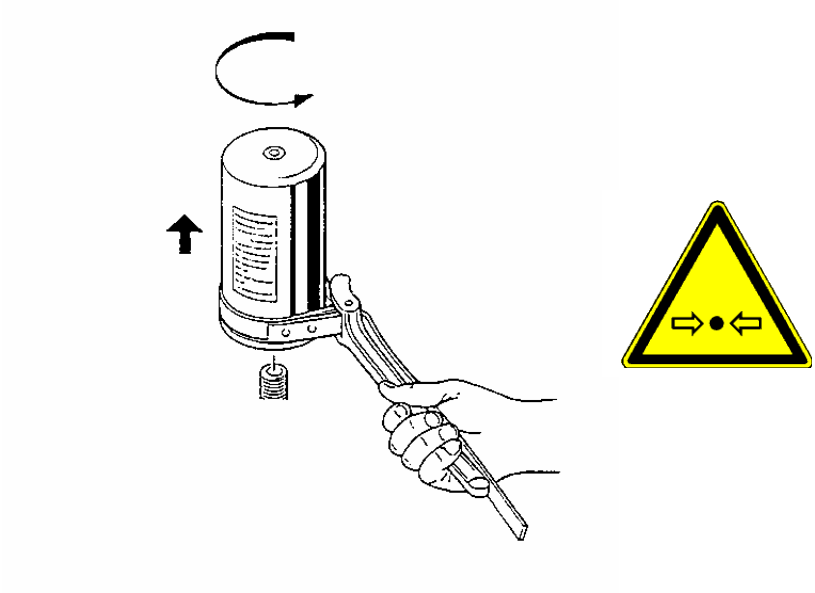
The oil filter is located in front of the screw compressor. Replace it every 50, then every 1000 operating hours, or as soon as the differential pressure is more than about 1.9 bar/25 psig.

Maintenance procedure:

1. Stop unit and fully relieve it from pressure.
2. Remove cartridge with the oil filter wrench.
3. Grease the gasket of the new cartridge.
4. Before mounting the new oil filter cartridge, hold it in upright position and fill it with the same type of oil as the separator tank.
5. Screw the new oil filter cartridge on the fitting by hand,
1. without using any tool.
6. Check whether the oil filter is tight when the unit is running.
7. Disposal of the used oil filter cartridge must be carried out in accordance with regulations.
8. Enter in „Maintenance check sheet“.



SEPARATOR CARTRIDGE



The separator cartridge is disposable. It is mounted on top of the filter support, screwed on a fitting.

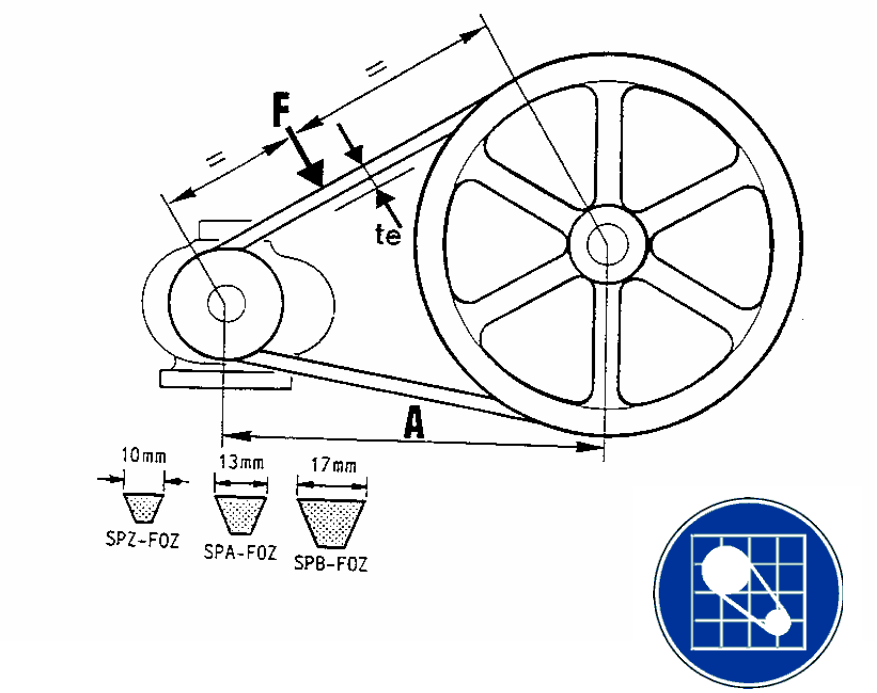
This cartridge has to be replaced at least once a year or after 3.000 - 6.000 operating hours, or as soon as the differential pressure is more than 1 bar = 14 psi. If the intake air is very contaminated or the oil quality is poor, the cartridge tends to clog earlier and may have to be replaced sooner.

Maintenance procedure:

1. Unscrew the cartridge by turning it to the left with an oil filter tool (see drawing).
2. Screw the new purifier cartridge on the fitting by hand, without using any tool.
3. Place sticker on cartridge for the next renewal and mark the 18th month.
4. Check whether the cartridge is tight.
5. Disposal of the used oil filter cartridge must be carried out in accordance with regulations.
6. Enter in "Maintenance check sheet".

MAINTENANCE

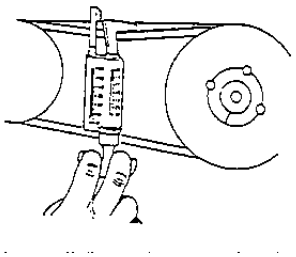
V-BELT PRE-TENSIONING



V-belt tensioning as such is effected by the setscrew located directly at the motor 1000 working hours.

Testing device:

A testing device for the V-belt tension with relevant instructions for use is available.



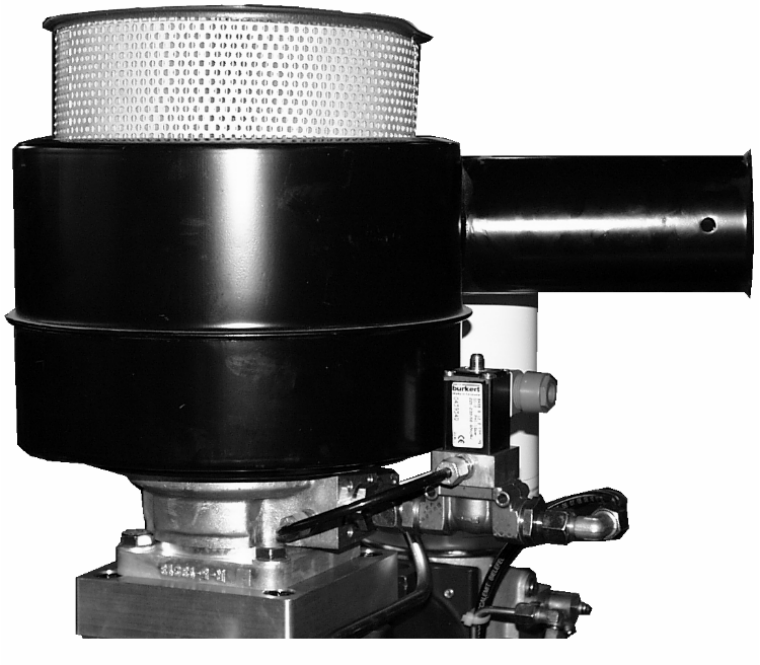
A label "Pre-tensioning Control" shall be attached to the screw compressor installation, showing at a glance the operational data of the V-belts. These labels are available together with the V-belts. The data of the drive calculation shall be entered. In case of multi-groove drives all V-belts shall always be replaced by new ones at the same time. Always order them in TRUE SETS.

Malfunctions:

Refer to the service manual "V-belt drives" BS3.0 E, page -5/10

MAINTENANCE

INTAKE FILTER NK 160



In accordance with the provisions, the exchange cartridge of the intake air filter shall be replaced after every 1000 hours of running time. If intake air is strongly polluted, an earlier exchange or cleaning of the cartridge is required whenever the optical or electronical maintenance indicator shows it.

Maintenance operations:

1. Switch off system and protect it against unauthorized re-starting.
2. Open filter lid and carefully remove dust.
3. Remove cartridge, clean or renew it.

   a. **Cleaning by knocking out**
   Knock the face of the cartridge several times against the ball of your thumb so that dust falls off. Do not use force, avoid damaging the cartridge. Clean seating of gaskets.

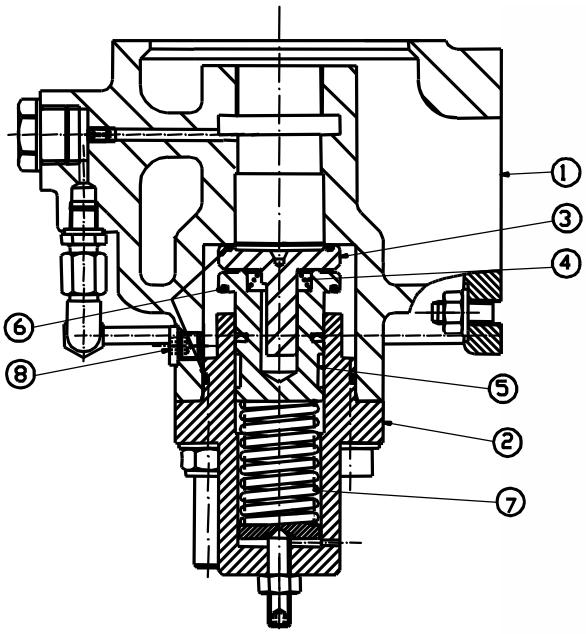
   b) **Cleaning by blowing**
   Blow cartridge surface with dry compressed air of no more than 5 bar at an angle from the outside and the inside.

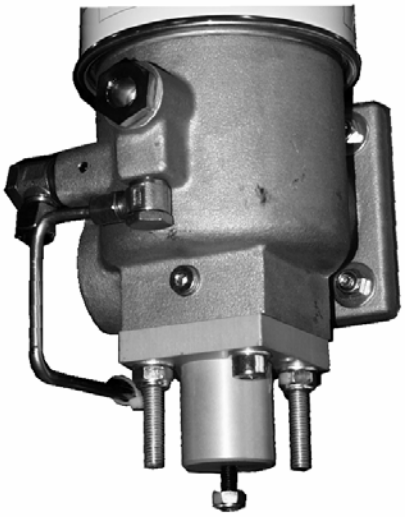
4. Close filter lid, observe correct positioning during assembly.
5. Disposal of the used oil filter cartridge must be carried out in accordance with regulations.
6. Test run and functional test.

Warning

ATTENTION:
No dirt our dust particles must reach the air-intake of the screw compressor.

MINIMUM PRESSURE VALVE





At the factory the minimum pressure valve is set to 6 bar / 85 psi. When servicing the screw compressor unit, a check of the minimum pressure may be necessary, e.g. when the oil separation is disturbed.

Readjustment of the minimum pressure:

1. Remove lock nut W

2. Turn adjusting screw U

   a) to the right = increasing pressure
   b) to the left = reduce pressure

3) Retighten lock nut W firmly

OIL COOLER / AIR AFTERCOOLER

For the operational safety of the screw compressor unit, clean the cooler regularly.

Keep the cooling ribs of the cooler clean. This is a prerequisite for achieving optimum cooling power. Adequate cooling means low oil temperature and thus longer service life.

We recommend to clean with compressed air, steam jet or cleansing agent.

If this cleaning process does not result in a drop of the operating temperature, clean the cooler on the oil side with a decarbonizer. Remove it for this purpose.

Should the intake air (cooling air) be strongly contaminated, clean the cooler in shorter intervals, especially if the compressor outlet temperature is above the normal value.

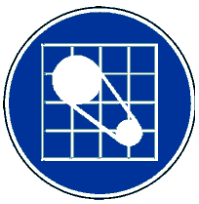
In case a prefilter mat is fitted before the screw compressor, shake out the dust or replace mat.

Maintenance procedure:

1. Switch off system and protect it against unauthorized re-starting.

2. Cleaning procedure - for this purpose
   a) remove cooler housing,
   b) discharge unit, drain oil and remove cooler.

3. Clean and remove dirt.



4. Assemble all removed parts.

5. Fill in oil.

6. Test run

MAINTENANCE CHECK SHEET

• Operating hours								
	• Renew air filter cartridge							
		• Renew oil filter cartridge						
			• Renew oil separator cartridge					
				• Tighten V-belts				
					• Renew V-belts			
						• Unit check		
							• Date	
								• Signature

Mark the work carried out with an „x“ or enter the measured values and confirm them with your signature.

MAINTENANCE INTERVALS

Maintenance intervals (OH=operating hours)	Maintenance jobs	Details see page	
Before start-up	Check oil level in tank Check V-belt tension	W-OK W-KL	
After 2 service hours	Check V-belt tension and oil level	W-KL W-OK	
After 24 service hours	Check V-belt tension and oil level	W-KL W-OK	
Once after the first 50 OH not if NK	Check oil level in tank, replace oil filter, retighten all pipe screw connections and electric. clamps, check all other connections on tightness. Check V-belt tension.	 W-OK W-OW W-OF W-KL	
Every 100 OH	Check oil level in oil tank, refill if low. Check maintenance indicator.	 W-OK	
Every 1.000 OH or at least once a year if this number of OH is not reached	Replace oil filter, renew filter insert of air filter, check setting of pressure switch, readjust, if necessary, check electric clamps and retighten. Check V-belts and V-belt tension, clean cooling of the combined oil / air cooler. Remove and clean oil gauge glass. Check unit on tightness..	W-OF IF W-KL W-KN OS LO	
Every 3.000-6.000 OH or at least once every 18 months	Replace purifier cartridge, check cooler, clean it, if necessary, carry out oil change, change oil filter, system inspection.	W-FA W-KN W-OV W-OF	

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MAINTENANCE PARTS

MAINTENANCE PARTS FOR ROTORCOMP-MODULES
Edition 2000

Model	Mode of * control	Oil filter Order No.	Intake filter Order No.	Purifier Order No.
NK 40	-2 ---------- -3	R-9206	R 9213	R-12476
NK 60	-2 ---------- -3	R-2979	R- 215 ---------- R- 771	R-12476
NK 100	-2 ---------- -3	R- 333	R- 8556 ---------- R- 771	R-12101
N60 UF	-2 ---------- -3	R-2979	R- 215 ---------- R- 771	R-12476
R2S UF	-2 ---------- -3	R- 333	R- 8556 ---------- R- 771	R- 228
R2S MP	-3	R- 333	R- 771	R-12104
N160 UF/60	-2 ---------- -3	R-1161	R-12017 ---------- R- 1225	R-12101
N160 UF/75	-2 ---------- -3	R-1161	R- 1225 ---------- R- 1225	R-12101
NK160	-2 ---------- -3	R-1161	R-12017 ---------- R-1225	
MK80		R-14858	R-11033	R-15518
N250 UF	---------- -3	R-5542	R-12238	R-12708
N260 UF	-2 ---------- -3	R-5542	R-12238	R-12708

* -2 = with electric control unit
  -3 = with pneumatic control unit

When ordering maintenance parts, please state

NAME PLATE DATA:
1. Order No. / Serial No.
2. Model
3. Year of construction

CAUTION:
Exclusively use the original spare parts.

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REMEDY OF MALFUNCTIONS I

Malfunction	Cause	Remedy	see page
Wrong sense of rotation	Phases reverse	Reclamp 2 feed line phases	
Unit does not start	No current	Check	
	Main and control fuses feed line	Check and tighten, if necessary	
	Loose cables or fuses	Check and tighten, if necessary	
	Motor protection switch has switched off	Unlock (in the control box)	
	Contact thermometer (combined thermovalve) is interrupted - defective	Check and replace, if defective	
	Contact thermometer switches off due to excessive temperature	Check oil level, oil cooling and thermal bypass	CO
Unit takes too long to start	Time or Y-delta switchover: too long too short	Time setting must be - put back - put forward	
	Unit is pressure-loaded	Check solenoid and relief valves and replace them, if necessary	CB
	Voltage fluctuations in the mains	Check	
	Low ambient temperature, compressor oil too viscous	Heat unit	AS
	Oil too viscous	Use adequate oil types	W-OE

REMEDY OF MALFUNCTIONS II

Malfunction	Cause	Remedy	see page
Unit stops before reaching final pressure	Response of the motor protection relay or the motor protection	Check setting of motor protection relay, correct it, if necessary. Check pressure setting at pressure control device, correct it, if necessary. Check feed line for phase failure	
	Combined thermovalve has switched off due to excessive temperature	Check cooling, thermo bypass, determine cause.	
	Short-circuit in the control line	Defective fuse, replace	
Differential pressure	Excessive temperature between air end and separator cartridge	Replace separator Cartridge	
Motor protection relay (therm. over-current relay) switches off unit	Unit is blocked	Determine cause and remove it	
	Phase failure	Check feed line	
	Excess load setting at the pressure control device and setting of the motor	Check pressure	
	Protection relay	Correct it, if required	
	Excessive ambient temperature	Supply cooling air	

REMEDY OF MALFUNCTIONS III

Malfunction	Cause	Remedy	see page
Contact thermometer switches off due to excessive temperature	Lack of oil	Check oil level in the oil receiver and fill it up if required	CO
	Oil filter contaminated	Replace oil filter cartridge	W-OV
	Thermostat defective	Replace thermostat	W-OF
	Oil cooler contaminated	Clean oil cooler with air and oil, if required	TV W-KH
	Incorrect installation: a) room ventilation b) cooling air stream c) thermal short circuit	Observe recommendations for installation of the unit	AS
	Contact thermometer defective or wrong setting	Replace or reset contact thermometer	CO
Safety valve blows off	Safety valve defective	Replace safety valve	SV
	Purifier cartridge clogged	Replace cartridge	W-FA
	Unit does not discharge (continuous operation)	see malfunction page -10/10	W-FA
	Unit is not switched off automatically (intermittent operation)	see malfunction page -10/10	CO
Oil in the compressed air	Oil intake pipe with nozzle in the oil gauge glass contaminated	Clean oil intake system	
	Purifier cartridge damaged	Check cartridge, replace it, if necessary	W-FA
	Oil level in the oil receiver too high or too much condensate in the oil	Observe oil level marking, drain and renew oil if necessary	CO

REMEDY OF MALFUNCTIONS IV

Malfunction	Cause	Remedy	see page
Unit is not discharged in continuous operation, unit is not switched off automatically in intermittent operation (i.e. safety valve blows off)	Upper shift point of pressure control device too high	Reset pressure control device	DA
	Solenoid valve defective	Replace solenoid valve	CB
	Relief valve defective	Replace relief valve	
	Minimum pressure valve jammed	Check minimum valve, clean and/or repair it, if necesssary	MD
Unit constantly discharges a small amount of air	Solenoid valve / relief valve defective	Replace solenoid valve / relief valve	CB
	Electrical feed line to solenoid valve interrupted	Remove interruption	ϟ
	Auxiliary contact at the Y contactor defective	Check switch and replace it, if required	ϟ
No or too little free air delivery	Intake filter contaminated	Replace filter insert	IC
	Intake control or intake flap is jammed or is incorrectly set	Check control and flap, clean bearing and guides, check stroke	IC
	Leakage in the system	Check and seal it	LO
Intake control does not close at final pressure	Setting cylinder defective, nozzle clogged or frozen	Replace, clean	W-IC

FAULT-FINDER

MALFUNCTIONS OF THE V-BELT DRIVES IN ROTORCOMP-SCREW COMPRESSORS I

Malfunction	Cause	Remedy
V-belts get twisted	Pulleys are not in alignment	Align pulleys
	Wrong belt / pulley profile	Use matching belt and pulley profiles
	Greatly worn-down pulley grooves	Replace pulleys
	Excessive vibrations	Install absorber rollers that act from the inside to the outside at the tensioned side of the belt, install power bands
	Not enough pre-tension	Re-tension drive
	Foreign bodies in the pulley grooves	Remove foreign bodies and shield the drive
Unusual belt edge wear	Start-up torque too large	Check power take-off ratios, redimension
	Wrong groove angle	Re-machine or replace pulleys
	Worn-down pulley grooves	Replace pulleys
	Wrong belt / pulley profile	Use matching belt and pulley profiles
	Pulleys are not in alignment	Align pulleys
	Pulley diameter less than recommended minimum diameter	Enlarge pulley diameter (new drive dimensions)

MALFUNCTIONS OF THE V-BELT DRIVES IN ROTORCOMP-SCREW COMPRESSORS II

Malfunction	Cause	Remedy
Unsual belt edge wear (continued)		Install raw-edged, toothed V-belts
	Insufficient pre-tension	Check pre-tension, re-tension, if necessary
	Belt drags or hits against components	Remove components that get in the way, re-align drive
Excessive running noises	Pulleys are not in alignment	Align pulleys
	Pretension insufficient	Check pre-tension, re-tension, if necessary
	Drive overloaded	Check and redimension drive ratios
V-belts spongy and sticky	Effect of oil, grease, chemicals	Protect drive from foreign substances, use particularly oil-resistant belts, clean pulleys with petroleum or benzine prior to installing new belts
Irregular belt expansion	Faulty pulley grooves	Replace pulleys
	Set of belts that includes new belts and belts that have been in operation	Replace complete belt set

MALFUNCTIONS OF THE V-BELT DRIVES IN ROTORCOMP-SCREW COMPRESSORS III

Malfunction	Cause	Remedy
Irregular belt expansion (continued)	Set of belts including different belt makes	Use one make only for the set of belts
Belt breakage after short operation period (belt rupture)	Installed with too much force, resulting in damage of the draw train	Enable mounting without application of force as specified in the assembly instructions
	Effect of foreign bodies during operation	Protective device, re-tension, if necessary
	Drive under dimensioned, too few belts	Check drive ratios, re-dimension
	Drive blocked	Eliminate cause
Breakage and cracks in the underside of the belt (brittleness)	Influence of an exterior roller with a configuration and a diameter that do not correspond to our recommendations	Observe the recommendations, e.g. by increasing the diameter, install roller that acts from the inside to the outside on the tensioned side of the belt
	Pulley diameter that is less than the specified minimum diameter	Observe the minimum pulley diameter
	Pulley profile	Install raw-edged, toothed V-belts
	Excessive heat	Eliminate source of heat, shield from heat, improve air circulation; install special version XHR (extra heat-resistant belt)

MALFUNCTIONS OF THE V-BELT DRIVES IN ROTORCOMP-SCREW COMPRESSORS IV

Malfunction	Cause	Remedy
Breakage and cracks in the underside of the belt (brittleness) (continued)	Excessive coldness	Heat up belts prior to operation; install special version XCR (extra cold-resistant belt)
	Increased belt slip	Re-tension drives in accordance with assembly instructions, check drive ratios and re-dimension, if necessary
	Effect of foreign bodies Effect of chemicals	Shield drive, install special version
Heavy vibrations	Drive under dimensioned	Check drive ratios, re-dimension
	Distance between axes substantially greater than recommended	Reduce distance between axes, install absorber roller that acts from the inside to the outside at the tensioned side of the belt. Install power bands
	High instantaneous load	Use absorber roller
	Insufficient pre-tension	Correct pre-tension
	Belt pulleys not balanced	Balance pulleys

MALFUNCTIONS OF THE V-BELT DRIVES IN ROTORCOMP-SCREW COMPRESSORS V

Malfunction	Cause	Remedy
Belts can no longer be re-tensioned	Insufficient adjustment possibilities for the distance between axes	Alter adjustment possibilities in accordance with the recommendations
	Excessive belt expansion, since the belts are too small for the required performance level	Compute drive ratios, and re-dimension them
	Wrong belt length	Use correct belt

FAULT-FINDER

MALFUNCTION IN SCREW COMPRESSOR SYSTEMS
INTAKE CONTROL C 60 / C 100 / C 150 I

Malfunction	Cause	Remedy
Control does not open (opening time 7 - 15 secs. depending on separator size)	Pilot pressure too low, leak in system	Check unit, seal leak
	Solenoid valve / electrical comp., bypass valve, piston seal, minimum pressure valve	Check, replace parts if necessary
Control does not operate (infinitely variable on-off control)	Pressure switch and/or control	Check adjustment
	Nozzle M5 (pneumatic)	Replace by nozzle with other diameter
Oil leak at stop	Seal area damaged, spring broken	Check, replace parts if necessary
Unit does not discharge (pressure relief time 100 - 200 secs., depending on separator size)	Solenoid valve / electrical components	Check
	Pulsed pressure relief valve	Check, replace, if necessary
Continuous pressure relief by control	Solenoid valve / electrical	Check
	Pulsed pressure relief valve	Check, replace parts if necessary
Oil leak during pressure discharge (oil foam in purifier cartridge)	Wrong type of oil	Change oil
	Formation of oil foam at stop	Install discharge delay valve, replace by nozzle with other diameter
	Oil level too high	Drain oil

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Spare Parts Orders:

Please list the exact parts designation.

Repairs:

Please tag the part you send, and specify the type of defect.

Old parts are scrapped. We only return them on specific request.

Please specify the desired dispatch mode and the exact mailing address in your orders.

ROTORCOMP-components comply with the latest technical development. In the interest of technological progress, we retain the right to alterations.

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