

MEKO
230, 280

V-MEKO
250, 300, 400

R-MEKO
600, 720, 1200, 1440

OPERATING INSTRUCTIONS

For Oil-free Membrane Compressors up to 2.2 kW

For reasons of clarity, these operating instructions do not contain detailed information on all possible variations and every conceivable setup and operation situation.

Should you require further information not contained in these operating instructions, please contact the manufacturer directly.

ABN APPARATUS ENGINEERING NITTENAU GMBH

Our sales and delivery terms apply.

R-MEKO 720/10 D

with 2 x 5 l buffer tank and noise-absorbing, screw-mounted suction filters.

R-MEKO 720

720 l/min. intake power; 6 bar maximum pressure from only a 230V-50Hz power outlet; weight only 65 kg; volume 88dB(A)
Also available with V-belt drive or as a stationary system.





Information on the operating Instructions

Introduction

The following operating instructions apply exclusively to ABN membrane compressors.

Operators are solely responsible

- for adhering to local, regional and national regulations
- for observing the regulations and points contained in the operating instructions (laws, ordinances, directives etc.) governing safe handling and maintenance procedures.
- for ensuring that the operating instructions are made available to operating and service personnel and that the warnings and safety regulations are complied with in all their details.

For assistance (service or replacement parts), please contact one of our service stations or our factory directly.

Declaration of Conformity

A declaration of conformity is issued for all compressors and sent to the invoice recipient.

The respective CE-marking has been attached to the rating plate.



Compressor plate



Air-compression technics

Warranty

The terms have been set forth in the sales and delivery terms of the company
ABN APPARATUS ENGINEERING NITTENAU GMBH.

No warranty will be assumed for damage to the delivered components caused by one or more of the following reasons:

- ignorance of or non-compliance with the operating instructions.
- unqualified or insufficiently trained operating personnel.
- use of non-original ABN replacement parts.

The operator is solely responsible for ensuring that

- the safety regulations are followed,
- operation contrary to regulations as well as improper installation or initial startup are avoided,
- the compressor will be used only as intended and will be operated according to the conditions agreed upon in the contract.



Information on the product

The following device-specific entries are to be made upon receiving the compressor, at latest, however, before the initial startup procedure.

Compressor (rating plate is located on the condenser)

Factory no.

Model

Type/version

For tank version (rating plate is located on the tank)

Tank no.

Production date

The rating plate of the electric motor is fastened to the motor.



Tank plate



Motor plate



Compressor plate



Air-compression technics

Range of uses

The oil-free ABN membrane compressors can be used for commercial, industrial and private purposes.

Due to their intended purpose, they are applied wherever compressed air is required with normal atmospheric composition, for example:

- working air
- blowing air
- control air

Depending on the intended use, the compressed air generated must be treated (filtered, dried) for use as:

- respiratory air
- air for food processing
- air for aerating fish ponds

Other than air in a normal atmospheric composition, no other gases must be used for operating ABN membrane compressors.

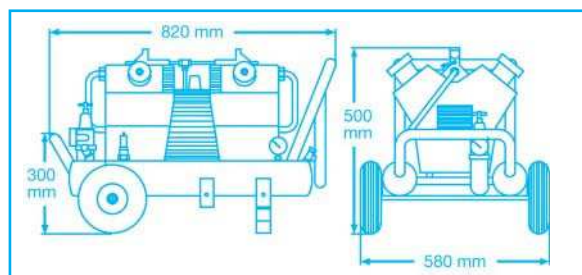
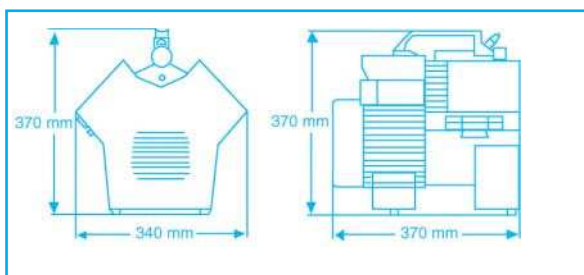
Familiarity with the safety regulations contained in these operating instructions is a prerequisite for using ABN membrane compressors.



Air-compression technics

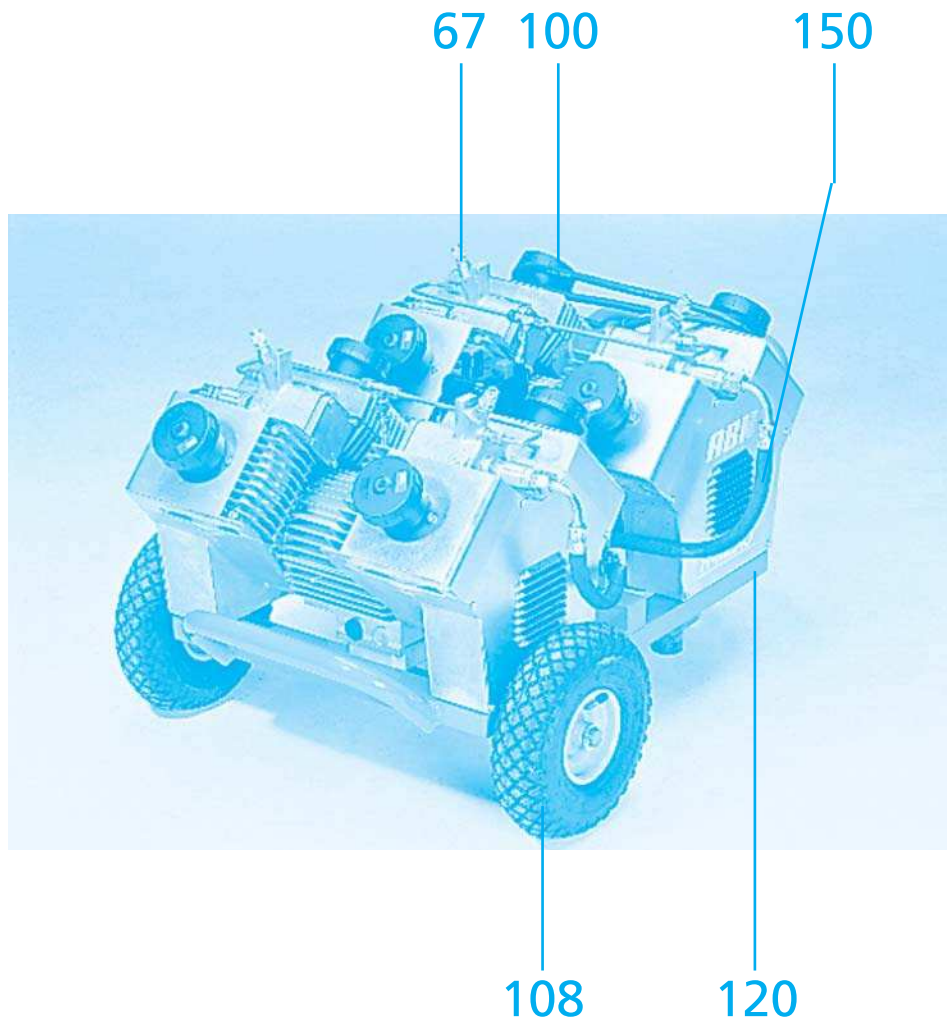
Technical specifications

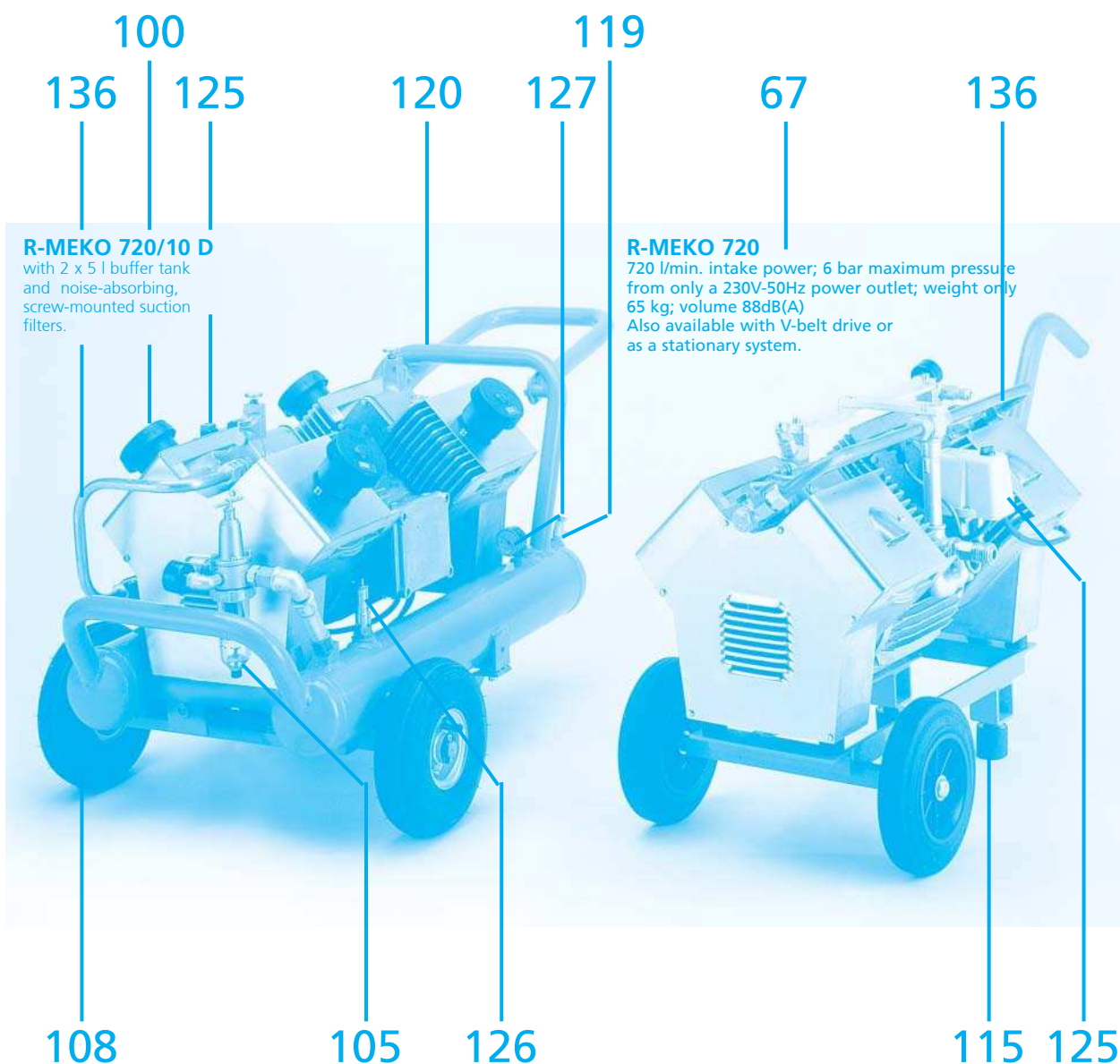
Model	V-Meko 250	V-Meko 300	V-Meko 400	R-Meko 500	R-Meko 600	R-Meko 720	R-Meko 1440	V-Meko 800
Max. operating pressure (bar)	6	6	6	6	6	6	6	6
Theoretical volume flow (l/min)	240	300	360	500	600	720	2 x 720	720
Effective volume flow (l/min)*	112	135	172	224	270	344	688	344
Nominal power output (kW)	1.1	1.1	1.1	2.2	2.2	2.2	2 x 2.2	2 x 1.1
Motor speed 50 Hz (min)	1400	1400	1400	1400	1400	1400	1400	1400
Motor speed 60 Hz (min)	1680	1680	1680	1680	1680	1680	1680	1680
Noise level dB (A)	71	72	74	75	76	79	79	78
Dimensions and weights								
Length (mm)	370	370	370	820	820	820	860	1180
Width (mm)	340	340	340	580	580	580	640	585
Height (mm)	370	370	370	500	500	500	530	910
Weight (kg) unit only	24	24	24					
Weight (kg) with frame				53	53	53	90	
Weight (kg) with tank	48	48	48	70	70	70		98
*measured at 4 bar								



R-Meko 1440

- 67** Relief valve
- 100** Suction filter
- 108** Wheel
- 120** Chassis
- 150** Pressure hose



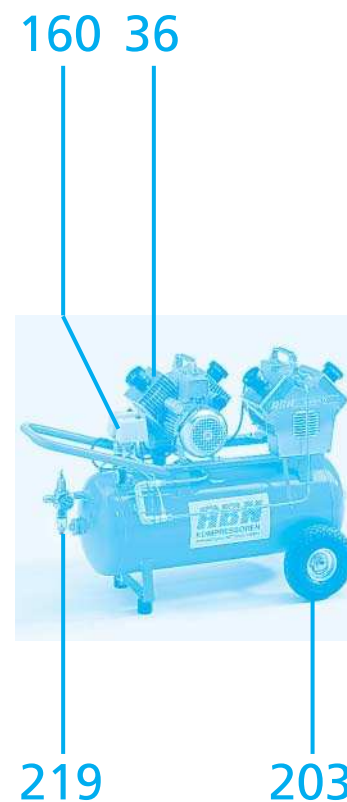
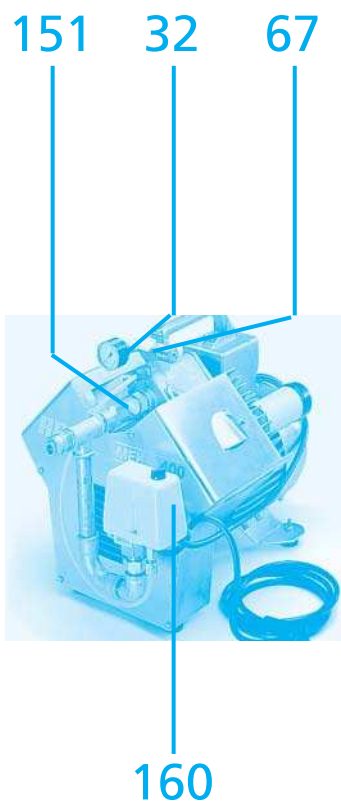


- 67 Relief valve
- 100 Suction filter
- 105 Filter pressure reducing valve
- 105a Manometer (Filter pressure reducing valve)
- 108 Wheel
- 115 Buffer
- 119 Water outlet

- 120 Chassis (tank)
- 125 Pressure switch
- 126 Safety valve
- 127 Tank pressure gauge
- 136 Pressure tube
(OPTION : flexible hose)



Air-compression technics



32 Pressure gauge
36 Suction filter
67 Relief valve
151 Check valve

160 Pressure switch
200 Tank
203 Wheel
219 Filter pressure reducing valve



Air-compression technics

Compressor

ABN membrane compressors are oil-free devices driven by an electric flange-mounted motor.

Electric Motor

The electric motors used are alternating current and three-phase motors which can be operated with 230 and 400 standard volts respectively and frequencies of 50 Hz. The electric motors are manufactured according to the EN 60034-1 standard.

Operating with a frequency of 60 Hz or other voltages not listed above is not permitted. Please contact the manufacturer for specific information. The ventilating wheel mounted on the motor is designed to cool the motor.

Safety valve

The safety valve is set to a relief pressure of 5 bar. When the relief pressure is reached, the compressed air is discharged to prevent the compressor from overloading. The relief pressure can also be reduced by the customer.

Suction filter

The suction filters (dry filters) are located on the intake side of the compressor heads (under the opening of the casing sheet). Option: screw-on filter with lamina inset.

The suction filters clean the particles of dirt or intake air polluted by paint mist. Strongly contaminated filters can fail and thus lead to membrane and valve damage. The electric motor is also overloaded and the condenser power strongly reduced.

Pressure switch (option)

Pressure switches are used for membrane compressors which are not intended for continuous operation (basic version). The pressure switch is mounted onto the compressor and assumes control for switching the compressor ON and OFF depending on the set operating pressure. The ON-OFF switching moments are dependent on the work areas set on the pressure switch.

Mobile compressor version with pressure tank.

The pressure tanks have been mounted with a pressure switch, tank pressure gauge, safety valve, condensation discharge and check valve.



Air-compression technics

Work Site

The ambient temperature must not exceed 35° C or fall below 10° C.

When setting up the compressor, care should be taken that no dust or paint mist is drawn in. The suction filters must be cleaned regularly (depending on the degree of contamination) to prevent damage to the compressor.

Ensure that the air drawn in by the compressor does not come into contact with explosive gases or dust.

Do not operate the unit in damp rooms.

Moist air will also be compressed and settle in the compressed air hose as condensed water. In this case, we recommend using a condensation separator.

Electrical Connections

Slow fuses must be used.

Model	Motor	Operating voltage 230 V			Operating voltage 400 V		
		Fuse	Cable-diameter	max. length	Fuse	Cable-diameter	max. length
V-Meko 250	1.1 kw	16 A	2,5 mm ²	30 m	10 A	1,5 mm ²	60 m
V-Meko 300	1.1 kw	16 A	2,5 mm ²	30 m	10 A	1,5 mm ²	60 m
V-Meko 400	1.1 kw	16 A	2,5 mm ²	30 m	10 A	1,5 mm ²	60 m
R-Meko 500	2.2 kw	20 A	2,5 mm ²	15 m	16 A	1,5 mm ²	40 m
R-Meko 600	2.2 kw	20 A	2,5 mm ²	15 m	16 A	1,5 mm ²	40 m
R-Meko 720	2.2 kw	20 A	2,5 mm ²	15 m	16 A	1,5 mm ²	40 m
R-Meko 1440	2 x 2.2 kw	-	-	-	20 A	2,5 mm ²	40 m

CAUTION:

The compressor must not be operated with an overvoltage or undervoltage of more than 5%

Operation

Before initially starting the compressor operation, please observe the following points in the operating instructions:

- Information on the operating instructions (page 2)
- Range of uses (page 5)
- Technical specifications (page 6)

CAUTION:

Avoid frequently switching the compressor on and off as this could damage the condensers and the motor coils.



Air-compression technics

Initial Startup

Before initially starting the compressor, observe the operating instructions.
The compressor must only be started without pressure!

Switching on: Turn the power switch to the **I** position
for versions equipped with a pressure switch, switch to the **I** position.

Shutdown: Turn the power switch to **0**
for versions equipped with a pressure switch, switch to the **0** position.

ABN membrane compressors can only be safely operated when they are used as intended by the manufacturer, when the safety-related points are observed, and when the instructions are properly applied.



Air-compression technics

Problems, Failures, Causes and How to Correct Them

Symptom	Possible causes	Corrective measure
Compressor does not start	1) Blown fuses	Check the electric cable and motor, use slow fuses.
	2) Pressure in the pressure hose/tube has not been relieved	Set the pressure switch (option) to 0.
	3) Motor protection is activated	Check if the motor protection has been correctly set. Check electrical connection (undervoltage). Check electric cables and the power supply.
	4) Burned-out motor	Check electric cables and the power supply.
Motor overheats	1) Undervoltage in the electrical power supply	Check power supply. Use sufficient cable diameters.
	2) The motor is being switched on and off too frequently	Reduce frequency (page 11)
Compressor does not deliver enough air, desired pressure is not achieved.	1) Suction filter is dirty	Clean filter (page 10) or replace it.
	2) Membrane is damaged	Replace membrane. Use repair set, (see appendix) .
Compressor overheats	1) Ambient temperature is too high	Protect from direct sunlight.
	2) Ventilator cowl on the motor is dirty	Clean ventilator cowl.
	3) Relief pressure is too high	Reduce relief pressure, replace safety valve.
	4) Valve plate is damaged	Check valve plate, replace if necessary.



Air-compression technics

Symptom

Possible causes

Corrective measure

Unusual noises

- | | |
|--|--|
| 1) Whistling sound at the cylinder head | Eliminate leakage, replace O-ring seals, if necessary. |
| 2) Rattling sound at the safety valve (option) | Check if the pressure switch is correctly set. Compressor valves leak. |
| 3) Knocking sound | Tighten fixing nut or screw. |
| 4) Compressor valve | Check valve, replace if necessary. |
| 5) Connecting rod bearings are worn out | Compressor must be sent in for repair. |
| 6) Grinding sound | Ball bearing damage, compressor must be sent in for repair. |

Pressure in the pressure hose/tube remains when the compressor is switched off (option)

- | | |
|--------------------------|--------------------------------|
| 1) Relief valve is dirty | Clean or replace relief valve. |
|--------------------------|--------------------------------|

Pressure hose/tube constantly blows off air at the relief valve (option)

- | | |
|-------------------------------------|---|
| 1) when the compressor is running | Clean or replace relief valve. |
| 2) when the compressor is shut down | Remove air from the tank.
Clean check valve. |

Excess current protection is activated

- | | |
|--|---|
| 1) Incorrect setting | Reset. |
| 2) Overvoltage in the power supply | Set the current and voltage correctly. Check if voltage is within allowed tolerances. |
| 3) Feed line is too weak | Cable diameter is too small.
Select appropriate cable. |
| 4) Compressor is being switched on and off too frequently. | Reduce frequency (page 11) |
| 5) Compressor does not relieve pressure | Check relief valve,
replace if necessary. |
| 6) Pressure set too high | Check the pressure switch setting,
set as needed. |



Air-compression technics

Information on Maintenance and Repair

General:

Maintenance and repair work are to be carried out in accordance with our operating instructions. The safety precautions must be observed.

NOTE: Before beginning any work on the compressor, you must first shut it down and pull out the power plug.

Never operate the compressor without the intake filter

Filters, O-rings, connecting rods, and membranes are to be replaced according to instructions.

The compressor in the tank version is subject to overpressure. There is danger of injury when releasing the compressed air.

Release all pressure before beginning work on the tank!

Notes on ordering replacements part

Please provide the following information when ordering replacement parts:

- compressor model
- factory number
- production date (if applicable, purchase date).

Repair instructions

for changing diaphragm



Safety warning

- Only have repairs performed by qualified persons.
- Before commencing repair, turn main switch to "0" and disconnect main plug from socket outlet.
- Detach compressed-air hose from compressor
- Always change diaphragm (8) on both cylinders.

Disassembly

- Remove socket head cap screws (45) and take off metal cladding (19)

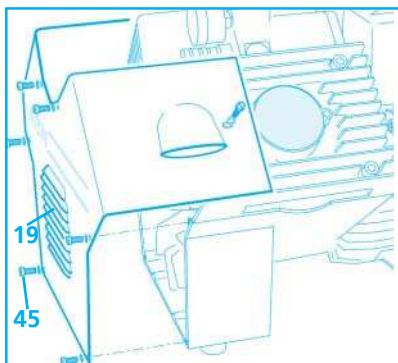


Fig. 1

- Remove and dispose of soiled foam filter (36) in an environmentally acceptable manner.
- Undo socket head cap screws (53) using 6 mm hexagon socket screw key and remove compressor head (10).

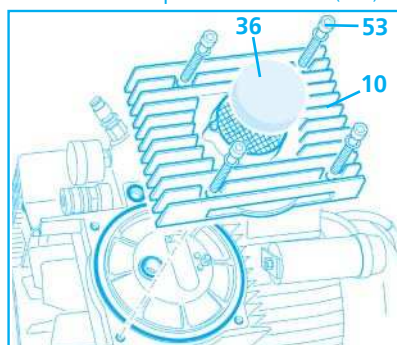


Fig. 2

- Remove and dispose of old O-rings (23, 24, 25) in an environmentally acceptable manner.

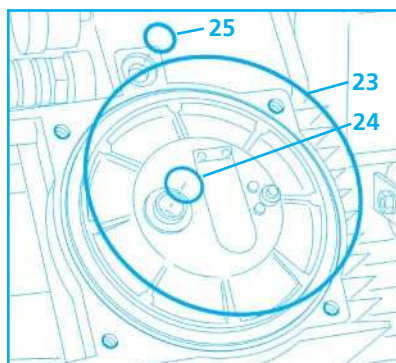


Fig. 3

- Lift out diaphragm cover (9)

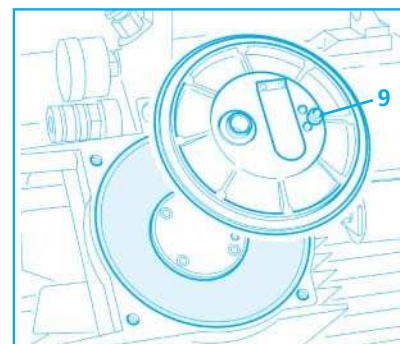


Fig. 4

- Remove socket head cap screws (46) with lock washers (62) and take off diaphragm disk (7).

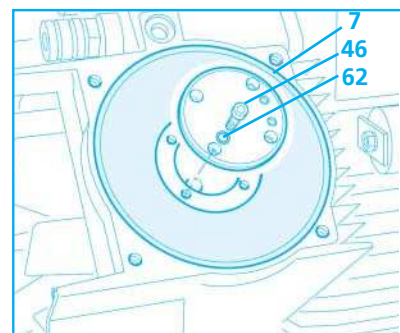


Fig. 5

- Remove and dispose of spent diaphragms (8) in an environmentally acceptable manner.

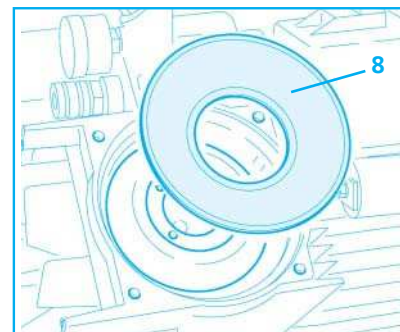


Fig. 6

Additional instructions for installing connection rod

Connecting rod must be centred with the crankcase aperture into which the diaphragm is inserted (tolerance ± 0.1 mm). Tighten the connecting rod locking screw (M 5x25, DIN 912) to 0.9 mkp. Make sure to use only new, specially tempered fillister head screws (46) (M5 x 16, DIN 7984 - special tempering treatment).

Attention: Make sure that always both diaphragms are replaced, use a new set of packings and turn each connecting rod completely downwards before installation of the diaphragm!

Re-fitting

- Using impeller wheel (4), turn connecting rod (5) of the cylinder being fitted to bottom dead centre and from this position proceed with further re-fitting procedure.
- Insert new diaphragm (8) so that it is flat and uncreased.

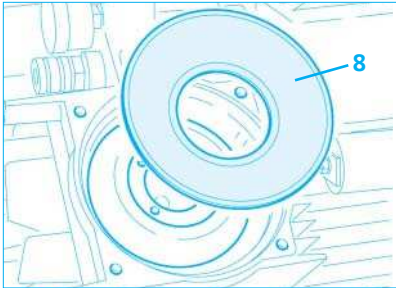


Fig. 7

ATTENTION

Always make sure that - when viewing the impeller wheel - the two bores in the diaphragm disk (7) point from the centre of the connecting rod towards the motor at the right-hand cylinder and from the centre of the connecting rod away from the motor at the left-hand cylinder.

- Place the diaphragm disk (7) onto the diaphragm (8) in such a way that the two bores point towards the right. This is important to prevent the rivet heads from contacting the underside of the diaphragm cover (9).
- Screw down diaphragm disk (7) crosswise using new socket head cap screws (46), Loctite and lock washers (62) to prevent the diaphragm from distorting. (Tightening torque 0.9 mkp).

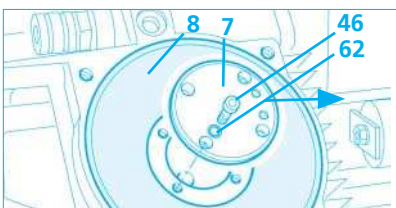


Fig. 8 shows right-hand cylinder

- Fit diaphragm cover (9).

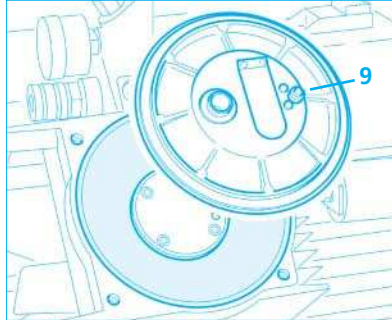


Fig. 9

- Fit new O-rings (23, 24, 25).

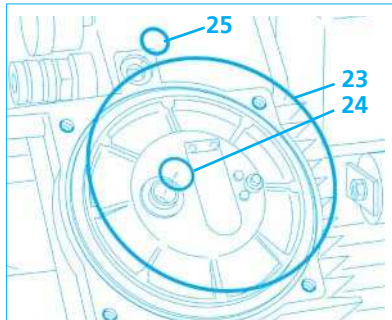


Fig. 10

- Fit compressor head (10) on diaphragm cover (9) in such a way that adjusting pins (9-1) on diaphragm cover (9) are aligned with bore in compressor head (10).
- Screw in socket head cap screws (53) with lock washers (60) and loosely tighten.

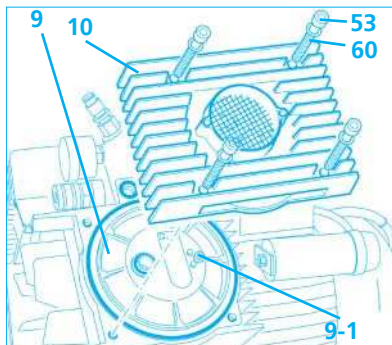


Fig. 11

- Rotate impeller wheel several times by hand. If strong resistance is felt, you must repeat disassembly procedure.
- Firmly tighten socket head cap screws (45) crosswise
- Insert new foam filters (36).

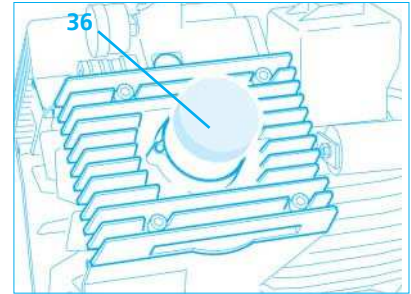


Fig. 12

- Fit metal cladding (19) and secure with socket head cap screws (45) and washers.

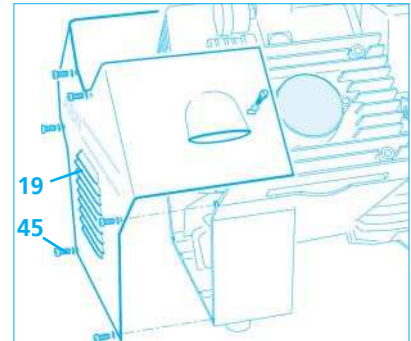


Fig. 13

Compressor is now ready for operation again.

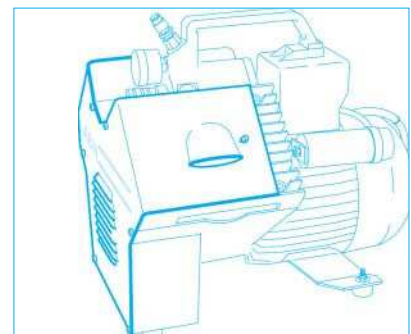
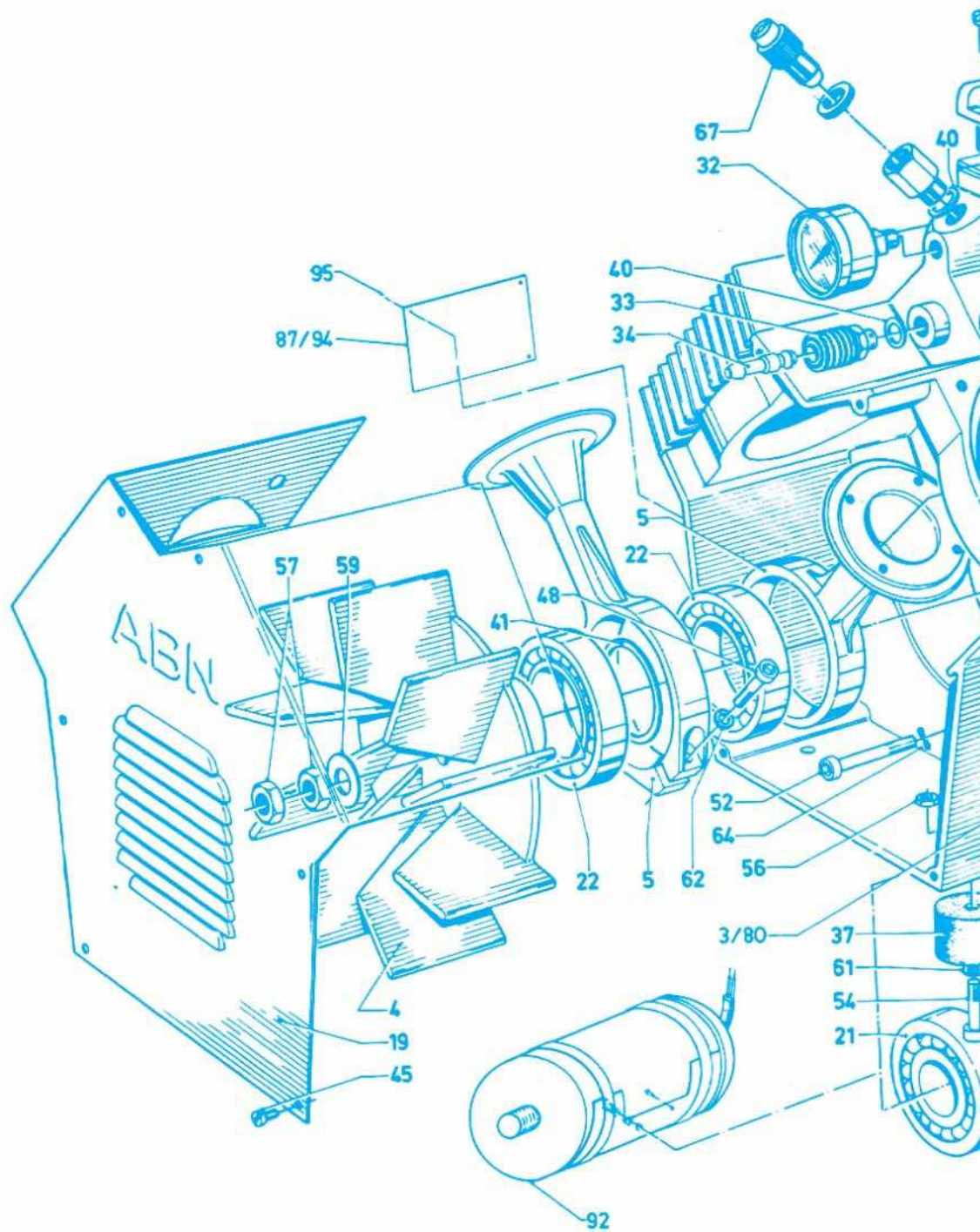


Fig. 14



Air-compression technics

V-MEKO

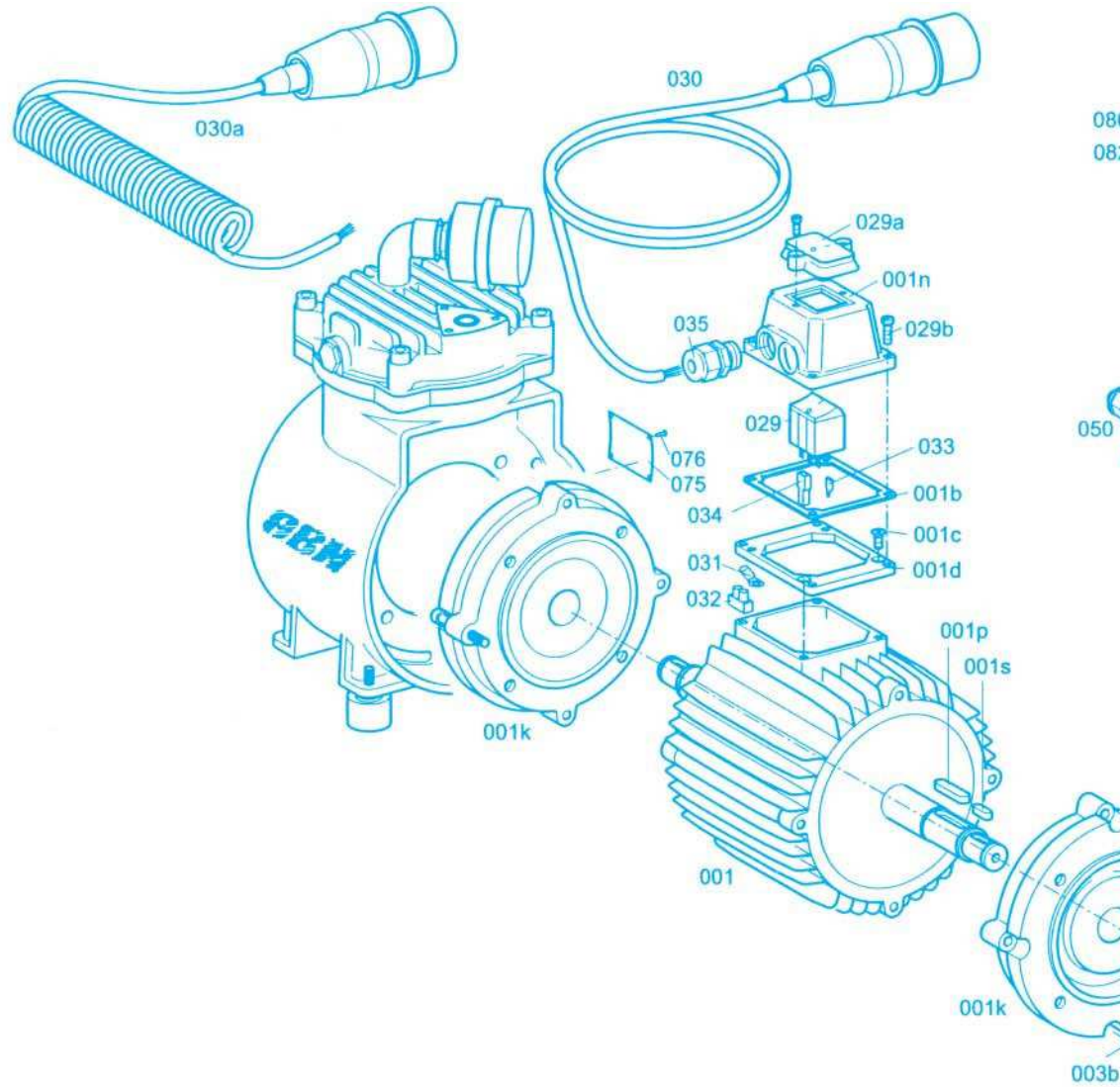


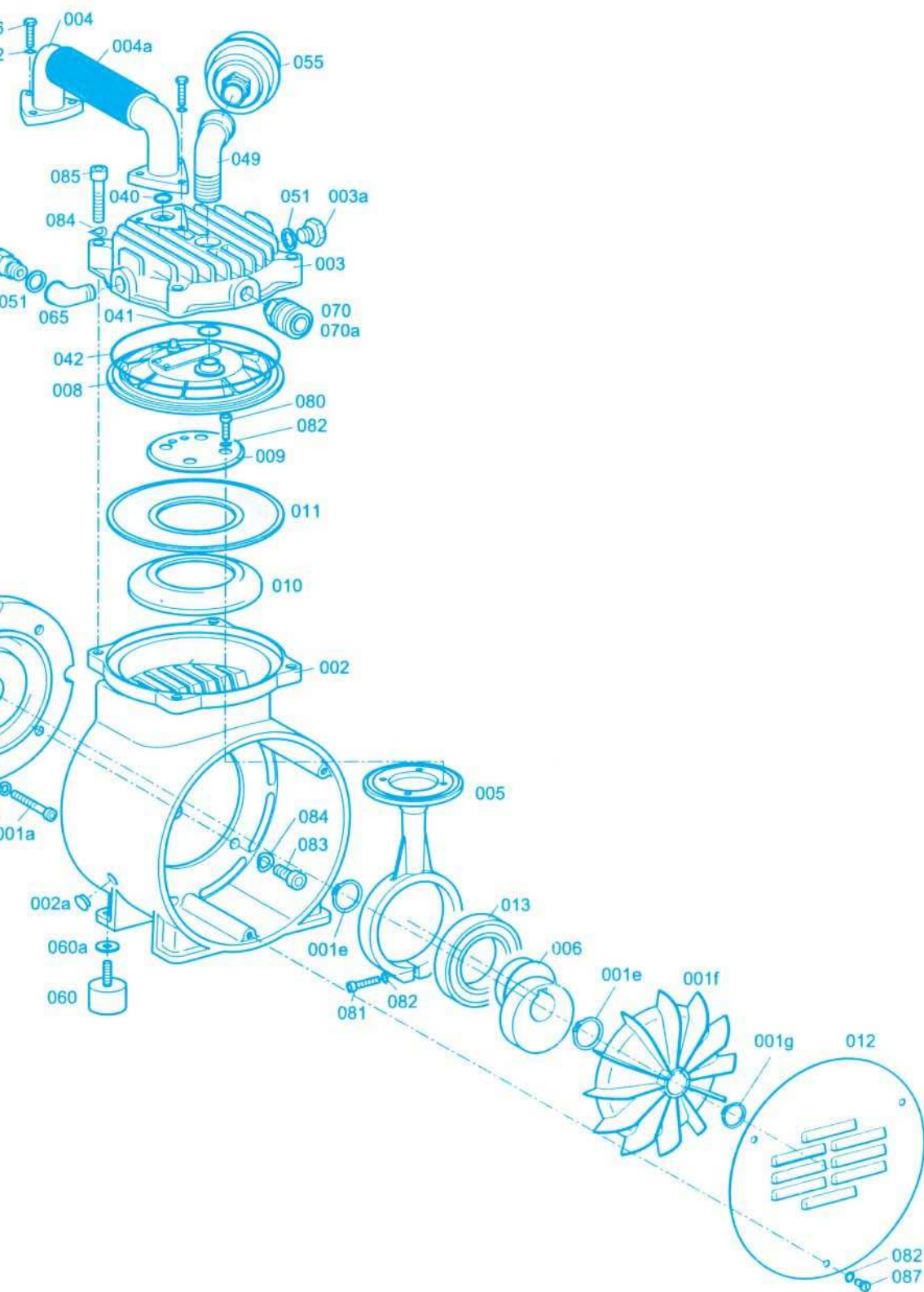




Air-compression technics

MEKO 230/280







V-Meko 400W-MDR
with automatic switch-off



Meko 400/40W
as a mobile compressor system



V-Meko 800/90 W
mobile compressor system with 2 V-Meko 400s and a 90 l tank. The second V-Meko is only switched on if more compressed air is required. This makes it particularly economical and energy saving.

ABN Membrane Compressors for Oil-free Compressed Air.

Other forms of constructions are also available

Practical advantages you can count on:

- Oil-free
- Compact and mobile
- Powerful - up to 6 bar pressure and 720 l/min intake power
- Long service life and nearly maintenance-free
- Proven in practice during continuous use
- Sturdy and safe to operate
- EEC prototype tested by TÜV-Bayern (Technical Supervisory Authority)

ABN membrane compressors are more than just an alternative to piston compressors. Their compact size and low weight make the ABN Mekos ideal candidates for mobile, on-the-spot applications.

Other forms of constructions are also available

Fields of Application

- Spray painting and lacquering (varnishing)
- Spraying emulsion paints
- Coating with textile wall plaster
- Operating plastering machines
- Interior work
- Supply air to respiratory equipment
- Food and drink processing industry
- Auxiliary compressor for all types of machines
- Compressed air control

R-MEKO 720/10 D

with 2 x 5 l buffer tank and noise-absorbing, screw mounted suction filters.



MEKO 720

720 l/min. suction power; 6 bar maximum pressure from only a 230V-50Hz power outlet; weight only 65 kg; volume: 88 dB(A) Also available with V-belt or as stationary system.

